CHAPTER 10
MEANS OF EGRESS

SECTION 1001
GENERAL

1001.1 Scope
1001.1.1 Provisions of this chapter shall govern the design, construction and arrangement of elements to provide a safe means of egress from buildings and structures.

1001.1.2 In every building hereafter erected, means of egress shall comply with the minimum requirements of this chapter.

1001.1.3 Means of egress shall consist of continuous and unobstructed paths of travel to the exterior of a building. Means of egress shall not be permitted through kitchens, closets, restrooms and similar areas nor through adjacent tenant spaces.

Exception: Means of egress shall be permitted through a kitchen area serving adjoining rooms constituting part of the same dwelling unit or guest room.

1001.1.4 When unusually hazardous conditions exist, the building official may require additional means of egress to assure the safety of the occupants.

1001.2 Alterations. A building shall not hereafter be altered to reduce the capacity of the means of egress to less than required by this chapter or shall not any change of occupancy be made in any building unless such building conforms with the requirements of this chapter.

SECTION 1002
DEFINITIONS

For definitions, see Chapter 2.

SECTION 1003
OCCUPANT LOAD AND MEANS OF EGRESS CAPACITY

1003.1 Occupant load
1003.1.1 For determining the means of egress required, the minimum number of persons for any floor area shall in no case be taken less than specified in Table 1003.1.

Exceptions:
1. In a special purpose factory-industrial occupancy, the occupant load shall be the maximum number of persons to occupy the area under any probable conditions.

2. The occupant load for towers shall be the number of persons expected to occupy the space, with spaces not subject to human occupancy because of machinery or equipment excluded from the gross area calculation.

1003.1.2 The occupant load of any occupancy may be determined in accordance with 1003.1 when the necessary aisles and means of egress are provided as approved by the building official. An aisle, egress and seating diagram shall be provided to the building official to substantiate the occupant load.

**TABLE 1003.1**
MINIMUM OCCUPANT LOAD

<table>
<thead>
<tr>
<th>USE</th>
<th>AREA PER OCCUPANT²,³ (sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly without fixed seats</td>
<td>7 net</td>
</tr>
<tr>
<td>Concentrated (includes among others, auditoriums, churches, dance floors, lodge rooms, reviewing stands, stadiums)</td>
<td>7 net</td>
</tr>
<tr>
<td>Waiting Space</td>
<td>3 net</td>
</tr>
<tr>
<td>Kitchens</td>
<td>100 gross</td>
</tr>
<tr>
<td>Unconcentrated (includes among others conference rooms, exhibit rooms, gymnasiums, lounges, stages, platforms)</td>
<td>15 net</td>
</tr>
<tr>
<td>Swimming pool water surface</td>
<td>50 gross</td>
</tr>
<tr>
<td>Swimming pool deck</td>
<td>30 gross</td>
</tr>
<tr>
<td>Exercise rooms with equipment</td>
<td>50 gross</td>
</tr>
<tr>
<td>Exercise rooms without equipment</td>
<td>15 gross</td>
</tr>
<tr>
<td>Lighting and access catwalks, galleries, and gridirons</td>
<td>100 net</td>
</tr>
<tr>
<td>Skating rinks</td>
<td>50 gross</td>
</tr>
<tr>
<td>Assembly with fixed seats</td>
<td>Note 1</td>
</tr>
<tr>
<td>Bowling alleys, allow 5 persons for each alley, including 15 ft of runaway, and other spaces in accordance with the appropriate listing herein</td>
<td>7 net</td>
</tr>
<tr>
<td>Business areas</td>
<td>100 gross</td>
</tr>
<tr>
<td>Courtrooms without fixed seats</td>
<td>40 net</td>
</tr>
<tr>
<td>Courtrooms with fixed seats</td>
<td>Note 1</td>
</tr>
<tr>
<td>Day-care</td>
<td>55 net</td>
</tr>
<tr>
<td>Educational (including Educational Uses Above the 12th Grade)</td>
<td></td>
</tr>
<tr>
<td>Classroom areas</td>
<td>20 net</td>
</tr>
<tr>
<td>Shops and other vocational areas</td>
<td>50 net</td>
</tr>
<tr>
<td>Industrial areas</td>
<td>100 gross</td>
</tr>
<tr>
<td>Institutional</td>
<td></td>
</tr>
<tr>
<td>Sleeping areas</td>
<td>120 gross</td>
</tr>
<tr>
<td>Inpatient treatment and ancillary areas</td>
<td>240 gross</td>
</tr>
<tr>
<td>Outpatient area</td>
<td>100 gross</td>
</tr>
<tr>
<td>Resident housing areas</td>
<td>120 gross</td>
</tr>
<tr>
<td>Library</td>
<td></td>
</tr>
<tr>
<td>Reading rooms</td>
<td>50 net</td>
</tr>
<tr>
<td>Stack area</td>
<td>100 gross</td>
</tr>
<tr>
<td>Malls</td>
<td>Section 413</td>
</tr>
<tr>
<td>Mercantile</td>
<td></td>
</tr>
<tr>
<td>Basement and grade floor areas open to public</td>
<td>30 gross</td>
</tr>
<tr>
<td>Areas on other floors open to public</td>
<td>60 gross</td>
</tr>
<tr>
<td>Multiple street floors - each §</td>
<td>40 gross</td>
</tr>
<tr>
<td>Storage, stacks, shipping area not open to public</td>
<td>300 gross</td>
</tr>
<tr>
<td>Parking garage</td>
<td>200 gross</td>
</tr>
<tr>
<td>Residential</td>
<td>200 gross</td>
</tr>
<tr>
<td>Restaurants (without fixed seats)</td>
<td>15 net</td>
</tr>
<tr>
<td>Restaurants (with fixed seats)</td>
<td>Note 1</td>
</tr>
<tr>
<td>Storage area, mechanical</td>
<td>300 gross</td>
</tr>
</tbody>
</table>

For SI: 1 sq ft = 0.0929 m².
Notes:
1. The occupant load for an area having fixed seats installed shall be determined by the number of fixed seats. Capacity of seats without dividing arms shall equal one person per 18 inches (457 mm). For seating booths, one person per 24 inches (610 mm).
2. See 202 for definitions of gross and net floor areas.
3. The occupant load of floor areas of the building shall be computed on the basis of the specific occupancy classification of the building. Where mixed occupancies occur, the occupant load of each occupancy area shall be computed on the basis of that specific occupancy.
4. For the purpose of determining occupant load in mercantile occupancies where, due to differences in grade of streets on different sides, two or more floors directly accessible from streets exist, each such floor shall be considered a street floor. The occupant load factor shall be one person for each 40 ft² (3.7 m²) of gross floor area of sales space.

1003.2 Measurement of means of egress

1003.2.1 The width of the means of egress shall be determined from occupants served in accordance with Table 1004.

1003.2.2 The width shall be measured in the clear at its narrowest point. Handrails may project 3 1/2 inches (89 mm) and door jambs 1 inch (25.4 mm) on each side of the measured width; however, the clear width of doorways shall not be reduced.

1003.2.3 Doorways

1003.2.3.1 The clear opening at swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees.

1003.2.3.2 There shall be no projections into the required clear opening lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm) measured horizontally. Door stops at the head of the door frame are allowed to project into the clear opening according to 1003.2.5.

1003.2.4 Objects projecting from walls with their leading edges between 27 and 80 inches (686 and 2032 mm) above the finished floor shall protrude no more than 4 inches (102 mm) into walks, corridors, passageways or aisles. Free-standing objects mounted on posts or pylons may overhang 12 inches (305 mm) maximum from 27 to 80 inches (686 and 2032 mm) above the ground or finished floor.

1003.2.5 Headroom. Means of egress shall be designed and maintained to provide a minimum headroom of 7 ft 6 in. (2.3 m) with projections from the ceiling at least 6 ft 8 in. (2 m) nominal height above the finished floor. Doorways in a means of egress shall provide a minimum headroom of 6 ft 8 in. (2 m). Stairs in a means of egress shall comply with 1007.7.

Exception: Means of egress in one- and two-family dwellings shall be permitted to provide a minimum headroom of 7 ft as provided at 1203.2.

1003.2.6 Accessibility

1003.2.6.1 For accessibility provisions related to protruding objects, refer to 11-4.4 as provided at 1203.2.

1003.2.7 Changes in level in means of egress shall be either by a ramp or a stair where the elevation difference is more than 21 inches (53.3 cm). Changes in level of means of egress not exceeding 21 inches (53.3 cm) shall be achieved by a ramp or a stair. The presence and location of ramped walkways shall be readily apparent. Where a change in level of means of egress not exceeding 21 in. (53.3 cm) is achieved by a stair, the minimum tread depth of such stair shall be 13 in. and the presence and location of each step shall be readily apparent. Ramps complying with 1013 shall be used for changes in elevation of 12 in. (305 mm) or less in exit access corridors, exits and exit discharge.

Exception: Except in one- and two-family dwellings and within dwelling units.

1003.2.7.1 Changes in elevation of walking surfaces shall not exceed 1/4 in. (0.6 cm). Changes in elevation exceeding 1/4 in. (0.6 cm), but not exceeding 1 1/2 in. (1.3 cm), shall be beveled 1 to 2. Changes in elevation exceeding 1 1/2 in. shall be considered a change in level and shall comply with the requirements of 1003.2.7.

1003.2.7.2 Walking surfaces shall be nominally level. The slope of a walking surface in the direction of travel shall not exceed 1 in 20 unless complying with the requirements of 1013. The slope perpendicular to the direction of travel shall not exceed 1 in 48.

1003.2.7.3 Walking surfaces shall be slip resistant under foreseeable conditions. The walking surface of each element in the means of egress shall be uniformly slip resistant along the natural path of travel.

Exception: One- and two-family dwellings shall comply with the Exceptions at 1012.1.3.

1003.2.8 Accessibility. For accessibility provisions related to changes in levels see 11-4.3.8.

1003.3 Capacity of means of egress

1003.3.1 The width of the means of egress shall be not less than the required capacity based on occupant load from Table 1003.1.

1003.3.2 The capacity of exit stairways constructed in accordance with 1007 shall be not less than the minimum required herein. Exit stairways shall be permitted to be used as a required exit from all floors which they serve. If, for example, 3 stairways are required to serve the third floor of a building and a like number are required for the second floor, the total number of stairways required shall be 3, not 6, and the capacity of the stairway shall be determined by
1003.3.3 The required capacity of an exit access corridor shall be defined as the occupant load using the corridor for exit access divided by the required number of exits to which the corridor connects, but not less than the required capacity of the exit element to which the corridor leads.

1003.3.4 The aggregate width of passageways, aisles or corridors serving as access to exits shall be at least equal to the required width of the exit. Where all travel to any exit is along the same access to the exit, the width of the access shall be at least equal to the width of the exit. Where there are several accesses to an exit, each shall have a width suitable for the travel which it may be called on to accommodate.

1003.3.5 When exits serve more than one floor, only the occupant load of each floor, considered individually, need be used in computing the required capacity of the exits at that floor. At no point along the exit path may the exit width be decreased. When an exit from an upper floor and a lower floor converge at an intermediate floor, the capacity of the lower floor shall be based on the maximum required capacity of all the floors served.

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**TABLE 1004**

<table>
<thead>
<tr>
<th>OCCUPANCY CLASSIFICATION</th>
<th>MAXIMUM TRAVEL DIST. TO EXIT (ft)</th>
<th>MAXIMUM DEAD END CORRIDOR LENGTH (ft)</th>
<th>EGRESS WIDTH PER PERSON SERVED (in.)</th>
<th>MINIMUM CORRIDOR/ACLE WIDTH (in.)</th>
<th>MINIMUM CLEAR OP'G OF EXIT DOORS (in.)</th>
<th>MINIMUM STAIR WIDTH10 (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Within an exhibit booth or exhibit enclosure to an exit access aisle</td>
<td>150</td>
<td>200</td>
<td>20</td>
<td>0.2</td>
<td>0.3</td>
<td>44</td>
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<tr>
<td>Group B</td>
<td></td>
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<td></td>
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<tr>
<td>Group C</td>
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<tr>
<td>Group D</td>
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<tr>
<td>Group E</td>
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<tr>
<td>Group F</td>
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<tr>
<td>Group H</td>
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<tr>
<td>Group I</td>
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<tr>
<td>Restrained</td>
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<tr>
<td>Unrestrained</td>
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<tr>
<td>Group M</td>
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<tr>
<td>Group R1</td>
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<tr>
<td>Group R2</td>
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<td>Group R3</td>
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<td>Group R4</td>
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<tr>
<td>Group S</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 in. = 25.4 mm, 1 ft = 0.305 m.

Notes:
1. See 1019.10.2.
2. Maximum dead-end in HPM Facilities as defined at 408 shall be 4 ft.
3. 96 inches shall be provided in areas requiring the movement of beds.
4. See 413 for covered mall buildings.
5. 36 inches shall be permitted within dwelling units.
6. Maximum travel distance for Group S2 occupancies shall not be limited. Maximum travel distances for open parking structures constructed per 411 shall be increased to 300 ft if unsprinklered and 400 ft if sprinklered.
7. See 1004.1.6 for exceptions.
8. See 1026.1.1 for exceptions.
9. 44 inches required in areas requiring movement of beds.
10. 36 inches acceptable if stair or corridor serves occupant load of less than 50.
11. See 1024.2.6.
12. Applies to ramps, doors and corridors.
13. For HPM Facilities, as defined in 408, the maximum travel distance shall be 75 ft from any point in an HPM service corridor to an exterior or exit door, horizontal exit, exit access corridor, enclosed stairway or door into a fabrication area.
14. Use 0.3 for stairs having treads 11 inches or greater and risers heights between 4 inches minimum and 7 inches maximum.
15. Use 0.2 for Use Classification 5. 50 ft for Use Classifications 2, 3 and 4. See 1024.2.5.4.
16. See 1024.2.8.
17. Mercantile occupancies having an aggregate gross area of more than 30,000 sq ft (2800 sq m) or utilizing more than three levels, excluding mezzanines, for sales purposes shall have at least one aisle of 5 ft (1.5 m) minimum width leading directly to an exit.
18. See 1026.1.3.
19. See 1007.3.1 for industrial equipment access stairs.
20. In buildings protected throughout by an automatic sprinkler system, dead-end corridors shall be permitted to be 50 ft.
21. In storage occupancies of S2 Low Hazard classification in accordance with 312.2, dead-end corridors shall not be limited. In storage occupancies of S1 Ordinary Hazard classification in accordance with 312.2 protected throughout by an automatic sprinkler system, dead-end corridors of 100 ft shall be permitted.
ity of the exit from the intermediate floor shall be not less than the sum of the required capacities of such upper and lower floors.

1003.3.6 The minimum width of exitway access corridors shall be in accordance with Table 1004.

1003.3.7 Exit access corridors shall have fire resistance ratings as specified in Table 704.2.4.

1003.4 Elevators, escalators, and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

Exception: Elevators shall be permitted to be used as an accessible means of egress for the purpose of providing egress for people with physical disabilities only when permitted by 1004.3.

SECTION 1004
ARRANGEMENT AND NUMBER OF EXITS

1004.1 Arrangement of exits

1004.1.1 Exits shall be so located that the distance from the most remote point in the floor area, room or space served by them to the nearest exit, measured along the line of travel, shall be not more than the travel distance specified in Table 1004.

1004.1.2 Every room or tenant space shall be provided with a minimum of one means of egress. Every room or tenant space which has an occupant load of 50 or more persons or in which the travel distance from the most remote point to the entrance to the exit access from the room or tenant space exceeds 75 ft (23 m) shall have not less than two egress doors.

Exception: Doors in an HPM Facility shall comply with 408.3.9

1004.1.3 The common path of travel shall not exceed 75 ft.

Exception: As modified by Section 1018.

1004.1.4 Where two or more exits or exit access doors are required, at least two of the exits or exit access doors shall be placed a distance apart equal to not less than 1/2 of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between the nearest edge of the exit doors or exit access doors. The two exits or exit access doors shall be located and constructed to minimize the possibility that both may be blocked by any one fire or other emergency condition. Where more than two exits or exit access doors are required, at least two of the required exits or exit access doors shall be arranged to comply with the above. The other exits or exit access doors shall be located so that if one becomes blocked, the others shall be available.

Exceptions:
1. When exit enclosures are provided as a portion of the required exit and are interconnected by a corridor conforming to the requirements for one 1-hour rated construction, the exit separation may be measured along a direct line of travel within the corridor.
2. In buildings protected throughout by an approved automatic sprinkler system, the minimum separation distance between two exits or exit access doors shall be at least 1/3 the length of the maximum overall diagonal dimension of the building or area to be served.
3. In R1 and R2 occupancies, the distance between exits stipulated by 1004.1.4 shall not be applicable to common nonlooped exit access corridors in buildings that have corridor doors from the guest room or guest suite or dwelling unit that are arranged such that the exits are located in opposite directions from such doors.

1004.1.5 Where open stairways or ramps are permitted as part of the path of travel to required exits, such as between mezzanines, balconies and the floor below, the travel distance shall include:
1. The distance to reach the stair or ramp.
2. The line of travel on a stair measured in the plane of the stair nosing.
3. The distance from the end of the stair or ramp to the exit.

1004.1.6 In one-story Group F buildings equipped with automatic heat and smoke vents complying with this section and sprinklered, the travel distance may be increased

<table>
<thead>
<tr>
<th>VENT HEIGHT H</th>
<th>MINIMUM CURTAIN BOARD DEPTH</th>
<th>MAXIMUM AREA FORMED BY CURTAIN BOARDS (sq ft)</th>
<th>VENT AREA TO FLOOR AREA RATIO</th>
<th>MAXIMUM SPACING OF VENT CENTERS</th>
<th>MAXIMUM DISTANCE FROM WALL OR CURTAIN BOARDS</th>
<th>MAXIMUM DISTANCE BETWEEN CURTAIN BOARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2H (4 ft min.)</td>
<td>50,000</td>
<td>1:100</td>
<td>120 ft</td>
<td>60 ft</td>
<td>8H but ≤ 250 ft</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. H is the height of the vent above the floor.
2. The depth of the curtain board shall be measured from the bottom of the vent. The bottom of the curtain board shall be level.
Smoke and heat vents shall be constructed and installed in a manner approved by the building official.

Smoke and heat vents shall be designed to operate automatically after the design activation time of the sprinkler system. Vents shall be capable of being opened by an approved manual operation.

Smoke and heat vents shall be located so that no portion of the vent opening is directly above or within 8 inches (203 mm) of sprinklers.

Curtain boards constructed in accordance with this section shall be provided to subdivide a vented building.

Exception:
1. When a smoke and heat venting system complies with the guidelines of NFPA 204M.
2. When a building is protected by ESFR sprinklers installed in accordance with NFPA 13 and NFPA 231 or NFPA 231C.

Curtain boards shall be constructed of material that will resist the passage of smoke and consistent with the building type of construction.

Curtain boards location and depth shall comply with Table 1004.1.6.

Maximum spacing of roof vents and vent area shall comply with Table 1004.1.6.

Exception: When a smoke and heat venting system complies with the guidelines of NFPA 204M.

Minimum number of exits

There shall be not less than two approved independent exits, accessible to each tenant area, serving every story, except in Group R3 occupancies and as modified in 1018.

The minimum number of exits for all occupancies, except as modified by 1018, based on occupant load, shall be as follows:

<table>
<thead>
<tr>
<th>Minimum Number of Exits</th>
<th>Occupancy Load per Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 - 500</td>
</tr>
<tr>
<td>3</td>
<td>501 - 1,000</td>
</tr>
<tr>
<td>4</td>
<td>more than 1,000</td>
</tr>
</tbody>
</table>

Exception: A fenced outdoor assembly occupancy shall have at least two widely separated means of egress from the enclosure. If more than 6,000 persons are to be served by such means of egress, there shall be at least three means of egress; if more than 9,000 persons are to be served, there shall be at least four means of egress.

Sufficient exit facilities shall be provided so that the aggregate capacity of all such exits, determined in accordance with this chapter, shall be not less than the occupant load as determined from 1003.1.

It shall be unlawful to occupy any part of a building by a greater number of persons than that for which means of egress capacity, as prescribed in this chapter, has been provided.

Accessible means of egress. Accessible means of egress shall be provided in accordance with 11-4.1.3(8), 11-4.1.3(9), and 11-4.3.10.

SPECIAL EXIT REQUIREMENTS

Boiler, incinerator, furnace and mechanical equipment rooms. Except in one- and two-family dwellings, two egress doors shall be provided from all boiler, incinerator and furnace rooms that exceed 500 sq ft (46 m²) in area, and the largest installed piece of fuel-fired equipment exceeds 400,000 Btu (117 kW) input capacity. Egress doors shall be separated by horizontal distance not less than 1/2 the maximum horizontal dimensions of the room. A 6 inch (152 mm) sill (dike) shall be provided where oil-fired equipment is used. Interior openings between a Group H Hazardous occupancy and a boiler, incinerator, furnace or similar room shall not be permitted. Maximum distance of travel to an egress door shall not exceed 50 ft (15 m). Single means of egress and common paths of travel for boiler rooms, furnace rooms and mechanical equipment rooms shall be in accordance with 1029.

Dead-End pockets or hallways. Exits and exit access shall be so arranged that dead-end pockets or hallways in excess of 20 ft (6096 mm) long shall not occur.

Exceptions:
1. See 1024.2.5.4 for Group I Restrained.
2. See 1026.1 for Group R.
3. See 408.5.5 for HPM facilities.

Exit access corridors

It shall be prohibited to use exit access corridors, separated from building use areas by fire-rated partitions and providing access to exit, for return or exhaust from adjoining air conditioned spaces through louvers or other devices mounted in corridor doors, partitions or ceilings.

Except in Group I or Group R occupancies, 1005.3.1 may be waived by the building official, providing corridors are equipped with approved smoke detectors arranged to automatically stop supply, return and exhaust and close louvers or other devices mounted within the corridors doors, partitions or ceilings.

Emergency escape and rescue openings

Every sleeping room located on the first, second and third story or within basements of Group R occupan-
 emergencies shall have at least one exterior emergency escape and rescue opening.

**Exceptions:**
1. Buildings equipped with an approved automatic sprinkler system.
2. Sleeping rooms provided with a door to a corridor having access to two remote exits in opposite directions.
3. The emergency escape and rescue opening may open onto a balcony within an atrium provided the balcony provides access to an exit and the dwelling unit or sleeping room has a means of egress which is not open to the atrium.

**1005.4.2** Every room or space greater than 250 ft² (23.2 m²) used for classroom or other educational purposes or normally subject to student occupancy and every room or space normally subject to client occupancy, other than bathrooms, in Group D occupancies shall have not less than one outside window for emergency rescue that complies with the following:

- Such windows shall be operable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 ft² (0.53 m²) in area.
- The bottom of the opening shall be not more than 44 in. (112 cm) above the floor, and any latching device shall be capable of being operated from not more than 54 in. (137 cm) above the finished floor.
- The clear opening shall allow a rectangular solid, with a width and height that provides not less than the required 5.7 ft² (0.53 m²) opening and a depth not less than 20 in. (51 cm), to pass fully through the opening.
- Such windows shall be accessible by the fire department and shall open into an area having access to a public way.

**Exceptions:**
1. Emergency escape and rescue openings shall not be required in buildings protected throughout by an approved automatic sprinkler system.
2. Emergency escape and rescue openings shall not be required if the room or space has a door leading directly to the outside of the building.
3. Emergency escape and rescue openings shall not be required for rooms located higher than three stories above grade.

**1005.4.3** **Maximum height from floor.** The emergency escape and rescue opening shall have a sill height of not more than 44 inches (1118 mm) above the floor.

**1005.4.4** **Minimum size.** The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches.

**1005.4.5 Security devices.** Bars, grilles, grates or similar devices shall be permitted provided the minimum size and operational constraints of such devices are in accordance with 1005.4.2, 1005.4.3, and 1005.4.4.

**1005.4.6 Window Wells.** An emergency escape and rescue opening with a sill height below the adjacent ground level shall be provided with a window well in accordance with 1005.4.6.1 and 1005.4.6.2.

**1005.4.6.1** The clear horizontal dimensions of the window well shall allow the emergency escape and rescue opening to open fully and shall provide a minimum net clear space of 9 sq ft (0.84 m²) with a minimum dimension of 36 inches (914 mm).

**1005.4.6.2** Window wells with a vertical depth of more than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or stairs. The ladder or stairs shall not encroach into the required dimensions of the window well by more than 6 inches (152 mm). The emergency escape and rescue opening shall not be obstructed by the ladder or stairs.

**1005.5 Security bars, grilles and grates.** Each sleeping room or room with a required exit door in a residential occupancy that has security bars, grilles, grates or similar devices installed shall have at least one emergency escape and rescue opening.

**1005.6 Smokeproof enclosures**

**1005.6.1** Where the floor surface of any story is located more than 75 ft (23 m) above the lowest level of fire department vehicle access, each of the required exits for the building shall be a smokeproof enclosure.

**1005.6.2** A minimum 2-hour fire resistant construction shall be used for smokeproof enclosures. In each case openings into the required 2-hour construction shall be limited to those needed for maintenance and operation and shall be protected by self-closing 1½ hour fire resistance rated devices. The supporting frame shall be protected as set forth in Chapter 6.

**1005.6.3** Group B buildings exceeding 15,000 sq ft (1395 m²) per floor and complying with the area of refuge (compartmentation) option described in 412.9 are exempt from the smokeproof enclosure requirements.

**1005.6.4** Stairs in smokeproof enclosures shall be of non-combustible construction.

**1005.6.5** A smokeproof enclosure shall exit into a public way or into an exit passageway, yard, open court or open space having direct access to a public way. The exit pass-
sageway shall be without other openings and shall have walls, floors and ceiling of 2-hour fire resistance.

1005.6.6 A stairway in a smokeproof enclosure shall not continue below the grade level unless an approved barrier is provided at the ground level to prevent persons from accidently continuing into the basement.

1005.6.7 Access to the stairway shall be by way of a vestibule or by way of an open exterior balcony of non-combustible materials.

Exception: Access by way of a vestibule or an open exterior balcony is not required when the stairway meets the requirements of 1005.6.9.2, 1005.6.9.9 and 1005.6.9.10 and is located in a fully sprinklered building.

1005.6.8 Smokeproof enclosures by natural ventilation

1005.6.8.1 Where a vestibule is provided, the door assembly into the vestibule shall have a 1/2 hour fire resistance rating and the door assembly from the vestibule to the stairs shall have not less than a 20 minute fire resistance rating. The doors shall have closing devices as specified in 1005.6.9.10. Wired glass 1/4 inch (6.4 mm) thick may be installed not to exceed 100 sq in. (0.065 m²) with neither dimension exceeding 12 inches (305 mm).

1005.6.8.2 The vestibule shall have a minimum of 16 sq ft (1.49 m²) of opening, in a wall facing an exterior court, yard or public way at least 20 ft (6096 mm) wide. The vestibule shall be a minimum of 44 inches (1118 mm) wide and 72 inches (1829 mm) in the direction of travel.

1005.6.8.3 Where access to the stairway is by means of an open exterior balcony, the door assembly to the stairway shall have a 1/2 hour fire resistance rating. Doors shall have closing devices as specified in 1005.6.9.10.

1005.6.9 Smokeproof enclosures by mechanical ventilation

1005.6.9.1 Stair pressurization systems shall be independent of other building ventilation systems.

1005.6.9.2 Equipment and ductwork for stair pressurization shall comply with one of the following:

1. Be located exterior to the building and be directly connected to the stairway or connected to the stairway by ductwork enclosed in 2-hour construction.

2. Be located within the stair enclosure with intake or exhaust air directed to the outside or through ductwork in 2-hour construction.

3. Be located within the building if separated from the remainder of the building, including other mechanical equipment, with 2-hour construction.

1005.6.9.3 The door from the building into the vestibule shall have a 1 1/2-hour fire resistance rating and have closing devices as specified in 705.1.3.2.3. The door from the vestibule to the stairway shall have a minimum 20 minute fire resistance rating and have closing devices as specified in 705.1.3.2.3. Wired glass, if provided, shall not exceed 100 sq in. (0.065 m²) and shall be set in a steel frame. The door shall be provided with a drop sill or other provision to minimize air leakage.

1005.6.9.4 Where access to the stairway is by means of an open exterior balcony, the door assembly to the stairway shall have a 1 1/2-hour fire resistance rating. Doors shall have closing devices as specified in 1005.6.9.10.

1005.6.9.5 The vestibule shall have a minimum dimension of 44 inches (1118 mm) wide and 72 inches (1829 mm) in direction of exit travel.

1005.6.9.6 The vestibule shall be provided with not less than one air change per minute and the exhaust shall be 150 percent of the supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate, tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches (152 mm) of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but no more than 6 inches (152 mm) down from the top of the trap and shall be entirely within the smoke trap area. Doors, when in the open position, shall not obstruct duct openings. Duct openings may be provided with controlling dampers if needed to meet the design requirements but are not otherwise required.

1005.6.9.7 For buildings where such air changes would result in excessively large duct and blower requirements, a specially engineered system may be used. Such an engineered system shall provide 2,500 cfm (1.2 m³/s) exhaust from a vestibule when in emergency operation and shall be sized to handle three vestibules simultaneously. The smoke detector located outside each vestibule shall release to open the supply and exhaust duct dampers in that affected vestibule.

1005.6.9.8 The vestibule ceiling shall be at least 20 inches (508 mm) higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward moving air column. The 20 inch (508 mm) height requirement may be reduced proportionally if the minimum vestibule size described in 1005.6.9.5 is enlarged so as to maintain the same volume in the smoke trap area above the door when justified by design and test. In any case, minimum ceiling height shall not be less than 7 ft 6 in. (2286 mm).

1005.6.9.9 The stair shaft shall be provided with mechanical supply and exhaust air. There shall be a minimum of 2,500 cfm (1.2 m³/s) discharge through a dampered relief opening or an exhaust fan at the top of the stair shaft. The supply shall be sufficient to provide a minimum positive pressure of 0.05 inch water column (12.5 Pa) in addition...
to the maximum anticipated stack pressure, relative to other parts of the building measured with all doors closed. The combined positive pressure shall not exceed 0.35 inch water column (87 Pa). The air supply shall be taken directly from outside of the building. The stair pressure shall be static pressure measured at the level of discharge from the stair.

**Exception:** The minimum positive pressure shall be increased to 0.15 inch water column (37 Pa) in an unsprinklered building.

1005.6.9.10 The activation of the ventilating equipment shall be initiated by a smoke detector installed outside the vestibule door in an approved location. When the closing device for the stair shaft and vestibule doors is activated by smoke detection or power failure, the closing devices on all doors in the smokeproof enclosure at all levels shall be activated and the mechanical equipment shall operate at the levels specified in items 1005.6.9.6 and 1005.6.9.9.

### 1005.7 Mezzanines

1005.7.1 Two means of egress shall be provided from any mezzanine with an occupant load or travel distance to an exit or to a point where there is a choice of more than one means of egress which exceeds that shown in Table 1005.7.

#### TABLE 1005.7

<table>
<thead>
<tr>
<th>USE</th>
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<td>Stack area</td>
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<td>Mercantile</td>
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<tr>
<td>Other floors</td>
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<tr>
<td>Storage</td>
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<td>100 ft</td>
</tr>
</tbody>
</table>

For SI: 1 ft = 0.305 m.

**Notes:**

1. Maximum area with one exit or exit access door shall be 200 sq ft.

1005.7.2 If any required means of egress is through the room below, the occupant load of the mezzanine shall be added to the occupant load of the room in which it is located.

1005.7.3 Egress stairways from mezzanines shall conform with the requirements of 1007. They may be open and may descend to the floor of the room in which they are located when all the following conditions are met:

1. The space beneath the mezzanine is totally open and unencumbered by partitioned rooms or spaces.

**Exception:** The space beneath the mezzanine may be enclosed provided the enclosed space is protected throughout with a smoke detection system in accordance with NFPA 72 which sounds an alarm in the mezzanine.

2. The travel distance from the most remote point on the floor of the mezzanine to the building exit or to a protected egress corridor, exit court, horizontal passageway, enclosed stairway, or exterior exitway balcony, inclusive of travel on the stairway does not exceed 75 ft (22.9 m) where a single means of egress is permitted, or the limits of Table 1004 where multiple means of egress are required.

3. The occupant load of the mezzanine is added to the occupant load of the story or room in which it is located for purposes of determining the egress requirements of such story or room.

4. The mezzanine is not occupied for sleeping purposes, unless there are exterior windows accessible to the mezzanine and located not more than two stories above grade.

### SECTION 1006

#### STAIRWAY PROTECTION

1006.1 Enclosed stairways

1006.1.1 Exit stairways between floors shall be enclosed in or separated by fire resistant construction in accordance with 705.2 and Table 705.1.2.

**Exceptions:**

1. Stairways serving and contained within a dwelling, dwelling unit or hotel suite.
2. Exterior stairways conforming to 1006.2.
3. In open automobile parking garages when the stair is on an open side, as defined in 411.3.2.
4. In open parking garages having all sides open.

1006.1.2 Except in one- and two-family dwellings, base-ment stairways located under stairways from upper stories shall be completely enclosed by construction providing fire resistance not less than required for the stair enclosure above the basement but in no case less than 1-hour fire resistance.

1006.1.3 A stairway enclosure shall not be used for any purpose other than means of egress. Openings in exit
enclosures other than unexposed exterior openings shall be limited to those necessary for exit access to the enclosure from normally occupiable or habitable rooms and for egress from the enclosure.

1006.1.3.1 Penetrations into and openings through a stairway enclosure assembly are prohibited except for required exit doors, ductwork and equipment necessary for independent stair pressurization, sprinkler piping, standpipes and electrical conduit serving the stairway and terminating at a steel box not exceeding 16 sq in. (0.010 m²). Such penetrations shall be protected in accordance with 705.4. There shall be no penetrations or communicating openings, whether protected or not, between adjacent stair enclosures.

1006.1.3.2 Exterior walls of an enclosed stairway shall comply with the requirements of Table 600 for exterior walls. Where nonrated walls or unprotected openings are used to enclose the exterior of the stairway, the building enclosure walls within 10 ft (3048 mm) horizontally of the nonrated wall or unprotected opening shall be constructed as required for stairway enclosures, including opening protectives, but need not exceed 1-hour fire resistance with 3/4 hour opening protective. This construction shall extend vertically from the ground to a point 10 ft (3048 mm) above the topmost landing of the stairway or to the roof line, whichever is lower.

1006.1.4 There shall be no enclosed, useable space within an exit enclosure, including under stairs.

Exceptions:
1. Enclosed useable space shall be permitted under stairs provided the space is separated from the stair enclosure by the same fire resistance as the exit enclosure. Entrance to such enclosed useable space shall not be from within the stair enclosure.
2. Protection is not required for those stairways exempted from enclosure in 1006.1.1.

1006.2 Exterior exitway stairs
1006.2.1 Exterior stairways conforming to the requirements for interior stairways in all respects, except as to enclosures and except as herein specifically modified, may be accepted as an element of a required means of egress in buildings not exceeding 6 stories or 75 ft (22.9 m) in height for other than Group I Unrestrained buildings. See 1021 for exterior corridors and balconies in Group E occupancies.

1006.2.2 Exterior stairways shall be permitted where at least one door from each tenant opens onto a roofed-over open balcony, porch, or gallery, or similar space served by at least two stairways located to provide a choice of independent, unobstructed means of egress directly to the ground, except a single stairway shall be allowed when a single exit is permitted by 1020, 1025, 1026 and 1027.

Such balconies, porches, or galleries and similar spaces and stairways shall comply with the requirements for interior exitway stairways as specified in 1007 and 1014. Balconies, porches, and galleries and similar spaces shall be not less than 4 1/2 ft (1372 mm) wide. The stairways shall be located so that the entrances and all portions of the stairways on each level are a distance apart equal to not less than 1/2 of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between such stairways. The maximum travel distance from any tenant space to the nearest stairway shall be as specified in Table 1004. Porches, galleries, balconies and stairways shall be located at least 10 ft (3048 mm) from adjacent property lines and from other buildings on the same lot, unless openings in such buildings are protected by 3/4 hour fire resistant doors or windows.

Exception: A single stairway shall be permitted when a single exit is permitted by 1020, 1025, 1026, and 1027.

1006.2.3 Handrails and guardrails shall be as specified in 1007.5 and 1015, respectively.

1006.2.4 Exterior stairs shall be separated from the interior of the building by walls with a fire resistance rating of not less than 1 hour, with fixed or self-closing opening protectives as required for enclosed stairs. This protection shall extend vertically from the ground to a point 10 ft (3048 mm) above the topmost landing or the roof line, whichever is lower, and horizontally 10 ft (3048 mm) from each side of the stairway. Openings within the 10 ft (3048 mm) horizontal extension of the protected walls beyond the stairway shall be equipped with fixed 3/4 hour assemblies.

Exceptions:
1. Exterior stairways may be unprotected when serving an exterior exit access balcony which has two exterior stairways, remotely located as required in 1006.2.2.
2. Such protection is not required in two-story buildings where there is a second exit remotely located as required in 1006.2.2.

1006.2.5 All required exterior stairways shall be located so as to lead directly to a street or open space with direct access to a street. When located on the rear of the building such stairways may lead through a passageway at grade complying with 1010.

1006.2.6 Exterior stairways shall not project beyond the street lot line.

SECTION 1007 STAIRWAY CONSTRUCTION

1007.1 General
1007.1.1 Exterior and interior exit stairways shall be constructed of noncombustible materials throughout in the following buildings:
1. All buildings of Type I and of Type II construction.
2. All Group A-1 and Group I buildings.
3. All other buildings three stories or more in height or occupied by more than 40 persons above or below the level of exit discharge.

**Exception to item 3:** R3 occupancies and buildings of Type VI construction.

**1007.1.2** Stairways located in a required fire resistant enclosure shall have closed risers. All other stairways shall be permitted to have open risers.

**1007.1.3** Interior stairs constructed of wood, except those with open risers, shall be fireblocked as specified in 705.3.

**Exception:** Protection is not required for those stairways exempted from enclosure in 1006.1.1.

**1007.1.4** The underside of interior stairways, if of combustible construction, shall be protected to provide not less than 1-hour fire resistance.

**Exception:** When located within a dwelling unit.

**1007.1.5** Enclosed exit stairways that continue beyond the floor of discharge shall be interrupted at the floor of discharge by partitions, doors or other effective means.

**Exception:** Stairs that continue 1/2 story beyond the level of exit discharge need not be interrupted by physical barriers where the exit discharge is clearly obvious.

**1007.2** Accessible Stairs. Stairs required to be accessible by 11-4.1 shall comply with 11-4.9. Floor surfaces of stairs along accessible routes and in accessible rooms and spaces shall comply with 11-4.5.

**1007.3** Treads and risers

**1007.3.1** Risers shall be a maximum height of 7 in. (17.8 cm) and a minimum height of 4 in. (10.2 cm). Treads shall be a minimum of 11 in.

**Exceptions:**

1. In one- and two-family dwellings and within dwelling units, treads and risers of stairs shall be permitted to be so proportioned that the sum of two risers and a tread, exclusive of projection of nosing, is not less than 24 inches (610 mm) nor more than 25 inches (635 mm). The height of risers shall not exceed 7/8 inches (197 mm), and treads, exclusive of nosing, shall be not less than 9 inches (229 mm) wide. Every tread less than 10 inches (254 mm) wide shall have a nosing, or effective projection, of approximately 1 inch (25.4 mm) over the level immediately below that tread.

2. Special stairs in 1007.8.

3. Industrial equipment access stairs and landings that serve as a component of the means of egress from the involved equipment and do not serve more than 20 people shall be permitted to have a minimum clear width of 22 in. (55.9 cm), minimum tread depth of 10 in. (25.4 cm), maximum riser height of 9 in. (22.9 cm), minimum headroom of 6 ft 8 in. (203 cm), and a maximum height between landings of 12 ft.

4. As permitted at 1019.10.5 and 1019.11.7.

**1007.3.2** Riser height shall be measured as the vertical distance between tread nosings. Tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge, but shall not include beveled or rounded tread surfaces that slope more than 20 degrees (a slope of 2 in 2.75). At tread nosings, such beveling or rounding shall not be more than 12 in. (1.3 cm) in horizontal dimension.

**Exception:** Tread depth of special stairs in 1007.8 shall be measured on a line perpendicular to the centerline of tread.

**1007.3.3** Treads shall be of uniform depth and risers of uniform height in any stairway between two floors. There shall be no variation exceeding 3/16 inch (4.8 mm) in the depth of adjacent treads or in the height of adjacent risers and the tolerance between the largest and smallest riser or between the largest and smallest tread shall not exceed 3/16 inch (9.5 mm) in any flight. The uniformity of winders and other tapered treads complying with 1007.8.1, 1007.8.2 and 1007.8.3 shall be measured at consistent distances from the narrower end of the treads.

**Exception:** Where the bottom or top riser adjoins a sloping public way, walk or driveway having an established grade and serving as a landing, a variation in height of the riser of not more than 3 inches (76 mm) for every 3 ft (914 mm) of stairway width is permitted.

**1007.3.4** Tread slope shall not be more than 1/4 in. per ft (2 cm per m).

**1007.4** Landings

**1007.4.1** A flight of stairs shall not have a vertical rise of more than 12 ft (3658 mm) between floors or landings.

**1007.4.2** Stairs shall have floors or landings at door openings. Stairs and intermediate landings shall continue with no decrease in width along the direction of egress travel. The width of landings shall be not less than the width of stairways they serve. Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the stairway.

**Exceptions:**

1. Landings shall be permitted to be not more than 4 ft (122 cm) in the direction of travel provided the stair has a straight run.

2. In one- and two-family dwellings, a door at the top of a stair shall be permitted to open directly at a stair provided the door does not swing over the stair and the door serves an area with an occupant load of fewer than 50 persons.
1007.4.3 Stairway landings shall have guardrails as specified in 1015 on any open and unenclosed edges.

1007.5 Handrails

1007.5.1 Stairways shall be equipped with handrails located not less than 34 inches (864 mm) nor more than 38 inches (965 mm) above the leading edge of a tread.

Exceptions:
1. Handrails for stairs not required to be accessible that form part of a guardrail may be 42 inches (1067 mm) high.
2. As required for Group I Unrestrained in 1024.1.4.
3. In one- and two-family dwellings and within dwelling units in R2 occupancies, stairways having four or more risers above a floor or finished ground level shall be equipped with handrails located not less than 34 inches (864 mm) nor more than 38 inches (965 mm) above the leading edge of a tread.

1007.5.2 Stairways shall have handrails on each side.

Exceptions:
1. Aisle stairs provided with a center handrail need not have additional handrails.
2. Stairs within dwelling units and aisle stairs serving seating on only one side may have a handrail on one side only.
3. Spiral stairs shall be provided with handrails in accordance with 1007.8.2.

1007.5.3 Handrails shall have either a circular cross section with a diameter of 1 1/4 inches (32 mm) to 2 inches (51 mm) or a noncircular cross section with a perimeter dimension of at least 4 inches (102 mm) but not more than 6 1/4 inches (159 mm) and a largest cross section dimension not exceeding 2 1/4 inches (57 mm). Edges shall have a minimum radius of 1/8 inch (3 mm).

Exception: Handrails for dwellings or within dwelling units shall have a circular cross section with a diameter of 1 1/4 inches (32 mm) to 2 inches (51 mm), or provide a noncircular cross section with equivalent graspability performance.

1007.5.4 Gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

Exceptions:
1. Handrails within dwelling units shall be permitted to be interrupted by a newel post at a turn.
2. In dwelling units, the use of a volute, turnout or starting easing shall be allowed over the lowest tread.
3. Handrail brackets or balusters attached to the bottom surface of the handrail shall not be considered to be obstructions to graspability, provided that the following conditions are met:

(1) They do not project horizontally beyond the sides of the handrail within 1 1/2 in. (3.75 cm) of the bottom of the handrail and provided that, for each 1/2 in. (1.3 cm) of additional handrail perimeter dimension above 4 in. (10 cm), the vertical clearance dimension of 1 1/2 in. (3.15 cm) can be reduced by 1/8 in. (0.3 cm).
(2) They have edges with a radius of not less than 1/8 in. (0.3 cm).
(3) They obstruct not in excess of 20 percent of the handrail length.

1007.5.5 Handrails shall extend at least 12 inches (305 mm) horizontally beyond the top riser of a flight. At the bottom, the handrail shall continue to slope for a distance of the depth of one tread from the bottom riser.

Exceptions:
1. Handrails within a dwelling unit.
2. Continuous handrails at the inside turn of stairs.

1007.5.6 Clear space between handrail and wall shall be a minimum of 1 1/2 inches (38 mm).

1007.5.7 Handrails shall be provided within 30 inches (762 mm) of all portions of the stair width required for egress capacity in accordance with Table 1004. The required egress width shall be along the natural path of travel.

1007.5.8 Handrails, where required along open-sided flights of stairs, shall be of construction adequate in strength, durability and attachment for their purposes as prescribed in 1608.2.

1007.5.9 For provisions related to handrails on stairs which are required to be accessible, refer to 11-4.9.1, 11-4.9.4, and 11-4.26.

1007.6 Width

1007.6.1 Stairs shall be clear of all obstructions except projections not exceeding 3 1/2 inches (89 mm) at or below handrail height on each side.

1007.6.2 Width of stairs shall not decrease in the direction of exit travel.

1007.6.3 The minimum width of any stair serving as a means of egress shall be in accordance with Table 1004.

1007.7 Headroom. Stairs shall have a minimum headroom clearance of 6 ft 8 inches (2032 mm) measured vertically from a line connecting the edge of the nosings. Such headroom shall be continuous above the stair to the point where the line intersects the landing below, one tread depth beyond the bottom riser. This minimum shall be maintained the full width of the stair and landing. (See 1007.3.1 for industrial stairs.)
**1007.8 Special stairs**

1007.8.1 Winders shall have a minimum tread depth of 6 inches (152 mm) at the narrow edge and shall have a minimum tread depth of 11 inches (279 mm) at a point 12 inches (305 mm) from the narrow edge. Winders shall be permitted to be used as a component in the means of egress within a dwelling unit.

1007.8.2 Spiral Stairways. Where permitted by this section or in specific occupancies in accordance with 1018, spiral stairs complying with this section shall be permitted as a component in a means of egress.

1007.8.2.1 Spiral stairs complying with the following shall be permitted:

1. Riser heights shall not exceed 7 in. (17.8 cm).
2. The stairway shall have a tread depth of not less than 11 in. (27.9 cm) for a portion of the stairway width sufficient to provide the egress capacity for the occupant load served in accordance with 1003.1.
3. At the outer side of the stairway, an additional 10-1/2 in. (26.7 cm) of width shall be provided clear to the other handrail, and this width shall not be included as part of the required egress capacity.
4. Handrails complying with 1007.5 shall be provided on both sides of the spiral stairway.
5. The inner handrail shall be located within 24 in. (61 cm), measured horizontally, of the point where a tread depth not less than 11 in. (27.9 cm) is provided.
6. The turn of the stairway shall be such that descending users have the outer handrail at their right side.

1007.8.2.2 Where the occupant load served does not exceed three and from mezzanines not exceeding 250 sq ft. (23 m²) and an occupant load of three or less, spiral stairs meeting the following conditions shall be permitted:

1. The clear width of the stairs shall be not less than 26 in. (66 cm).
2. The height of risers shall not exceed 9 1/2 in. (24.1 cm).
3. Headroom shall be not less than 6 ft 6 in. (198 cm).
4. Treads shall have a depth not less than 7 1/2 in. (19.1 cm) at a point 12 in. (30.5 cm) from the narrower edge.
5. All treads shall be identical.
6. Handrails complying with 1007.5 shall be provided on both sides of the spiral stairway.

1007.8.2.3 Within dwellings and dwelling units, guest rooms and guest suites where the occupant load served does not exceed five, spiral stairs meeting the following conditions shall be permitted:

1. The minimum stairway width shall be 26 inches (660 mm).
2. The height of risers shall not be more than 9 1/2 inches (241 mm).
3. The headroom shall be a minimum of 6 ft 6 in. (1981 mm).
4. Treads shall have a depth not less than 7 1/2 in. (190 mm) at a point 12 inches (305 mm) from the narrow edge.
5. All treads shall be identical.
6. Handrails shall be provided on one side.

1007.8.3 Circular stairways shall be permitted to be used as a component in the means of egress providing the minimum depth of tread is not less than 11 inches (279 mm) measured 12 inches (305 mm) from the smaller radius, and the smaller radius is not less than twice the width of the stairway. In Group R3 Occupancies, circular stairs may have a minimum tread depth of 9 inches (229 mm) with 1 inch (25.4 mm) of nosing, and the smaller radius may be less than twice the width of the stairway.

1007.8.4 Alternating tread stairways shall have a minimum projected tread exclusive of nosing of 8 1/2 inches (216 mm) within a minimum total tread depth of 10 1/2 inches (267 mm). The rise to the next alternating tread surface shall be a maximum of 8 inches (203 mm). Distance between handrails shall be a minimum of 17 inches (432 mm) and a maximum of 24 inches (610 mm). A minimum distance of 6 inches (152 mm) shall be provided between the stair handrail and any other object. A minimum of 12 inches (305 mm) shall be provided between the stair handrails of adjacent alternating tread stairways.

1007.8.5 Alternating tread stairways meeting the requirements of 1007.8.4 shall be permitted to be used as a component in a means of egress from a mezzanine of not more than 250 sq ft (23 m²) in area serving not more than 3 occupants in F, H, I, within dwelling units of R2 and R3 and S occupancies.

**SECTION 1008 ACCESS TO ROOF**

Buildings four stories or more in height, except those with a roof slope greater than 4:12, shall be provided with a stairway to the roof. Such stairway shall be marked at street and floor levels with a sign indicating that it continues to the roof. Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such use or occupancy.

**SECTION 1009 HORIZONTAL EXITS**

1009.1 General

1009.1.1 Horizontal exits shall not comprise more than 1/2 of the required exits from any building or floor area and shall not serve as the only exit. The walls of horizontal exits shall have a fire resistance rating of 2 hours using materials dependent on the type of construction.
Exception: Horizontal exits comprising more than one half of the required exits shall be permitted in accordance with 1024.1.1 and 1024.2.7.

1009.1.2 Ramps meeting the requirements of 1013 shall be used where there is a difference of level between connected areas.

1009.1.3 The area into which a horizontal exit leads shall be provided with exits adequate to meet the requirements of this chapter, but not including the added capacity imposed by persons entering it through horizontal exits from another area. At least one of its exits shall lead directly to the exterior.

1009.2 Doors
1009.2.1 The width of horizontal exits shall be not less than required for exit doorways. The exit capacity of horizontal exits shall be as specified in 1003.3.

1009.2.2 All fire doors in horizontal exits shall be self-closing or automatically closing when activated by a smoke detector. All opening protectives in horizontal exits shall be consistent with the fire resistance rating of the wall with a minimum one and 1/2-hour rating.

1009.2.3 Doors in horizontal exits shall be kept unlocked and unobstructed.

1009.3 Capacity of refuge area. The refuge area of a horizontal exit shall be either public areas or spaces occupied by the same tenant and each such area of refuge shall be adequate to house the total occupant load of both connected areas. The capacity of areas of refuge shall be computed on a net floor area allowance of 3 sq ft (0.28 m²) for each occupant to be accommodated therein, not including areas of stairs, elevators and other shafts or courts.

Exception: Area for Group I shall be computed in accordance with 1024.1.1.2 and 1024.2.7.2.

SECTION 1010
EXIT DISCHARGE

1010.1 General
1010.1.1 Unless directly connected to a public way or to a space leading to a public way, required exits shall be connected to an exit court, exit passageway or vestibule leading to a public way.

1010.1.2 The minimum width of such courts, passageways, lobbies and vestibules shall be 44 inches (1118 mm) but not less than the required width of the exits to which they are connected. There shall be no reduction of width in the direction of exit travel.

1010.1.3 The minimum clear ceiling height shall be 8 ft (2438 mm).

1010.1.4 The slope of the floor of exit discharge elements shall not exceed 1:12.

1010.2 Exit courts. Exit courts 10 ft (3048 mm) or less in width shall have a minimum fire resistance rating of 1 hour with 3/4 hour opening protectives.

1010.3 Exit passageways. Exit passageways shall be constructed in accordance with 704.2.1.2, 1006.1.3, and 1006.1.3.1, with a fire resistance rating equivalent to shaft enclosures in Table 705.1.2.

Exceptions: A maximum 50 percent of the required number of exits and 50 percent of the required exit capacity shall be permitted to discharge through areas on the level of exit discharge provided all the following are met:
1. Such exits discharge to a free and unobstructed way to the exterior of the building, such way being readily visible and identifiable from the point of discharge at the exit, and
2. The entire area is separated from areas below by construction having a fire resistance rating not less than that required for the exit enclosure, and
3. The area is protected throughout by an approved automatic sprinkler system, and
4. Any other portion of the level of discharge with access to the area of discharge is protected throughout by an approved automatic sprinkler system or separated from the area of discharge in accordance with the requirements for the enclosure of exitways.

1010.4 Vestibules. An exit may discharge into an interior vestibule which meets the following criteria:
1. The depth from the exterior of the building is not greater than 10 ft (3048 mm) and the length is not greater than 20 ft (6096 mm), and
2. The vestibule is separated from the remainder of the level of exit discharge by construction providing protection equivalent to that provided by 1/4 inch (6 mm) thick labeled wired glass in steel frames.

SECTION 1011
FIRE ESCAPES

1011.1 General
1011.1.1 Fire escapes shall not be permitted except as approved by the building official for existing buildings when more adequate exit facilities cannot be provided. Fire escapes shall not provide more than 50 percent of the required exit capacity. Approved fire escapes shall comply with the Florida Fire Prevention Code.

1011.1.2 When located on the front of the building and projecting beyond the building line, the lowest landing shall be not less than 7 (2134 mm) nor more than 12 ft
1011.2 - 1012.1.6

(3658 mm) above grade, equipped with a counterbalanced stairway to the street. In alleyways and thoroughfares less than 30 ft (9144 mm) wide, the clearance under the lowest landing shall be not less than 12 ft (3658 mm) above grade, equipped with a counterbalanced stairway to the street. In alleyways and thoroughfares less than 30 ft (9144 mm) wide, the clearance under the lowest landing shall be not less than 12 ft (3658 mm).

1012.2 Fire escape ladder devices. A self-contained fire escape ladder device may be used when authorized by the building official in Group R Occupancies not exceeding 5 stories, when said device conforms to the following:
1. The exit ladder serves an occupant load of 10 or less, or a single dwelling unit or guest room.
2. The access is adjacent to an opening as specified for emergency egress or rescue from a balcony. The exit ladder shall not pass in front of any building opening at or below the unit being served.
3. The exit ladder shall be so installed that the descending face is adjacent to the building wall and each ladder device shall be offset or staggered not less than 24 inches (610 mm) from the ladder above.
4. The availability of the activation device for the exit ladder is accessible only from the opening on the balcony served.
5. An alarm sounds when the exit ladder is activated.

SECTION 1012
DOORS

Exceptions to 1012.1.2:
1. As permitted for specific occupancies in 1018.
2. Revolving doors conforming with 1012.3.
3. Horizontal sliding doors conforming with 1012.4 when used in elevator lobbies, horizontal exits, or smoke barriers, or any room or space, other than Group H, with an occupant load of less than 50.

1012.1.3 The elevation of the floor surfaces on both sides of a door shall not vary by more than 1⁄2 in. (13 mm). The elevation shall be maintained on both sides of the doorway for a distance at least equal to the width of the widest leaf. Thresholds at doorways shall not be more than 1⁄2 in. (13 mm) in height. Raised thresholds and floor level changes more than 1⁄4 in. (6.4 mm) at doorways shall be beveled with a slope not steeper than 1:2.

Exceptions:
1. In one- and two-family dwellings where the door discharges to the outside or to an exterior balcony or exterior exit access, the floor level outside the door shall be permitted to be one step lower than the inside, but not more than 8 in. lower.
2. For exterior sliding doors serving dwelling units, thresholds at doorways shall not exceed ¾ inch (19.1 mm) in height.
3. In one- and two-family dwellings, a door at the top of a stair shall be permitted to open directly at a stair provided the door does not swing over the stair and the door serves an area with an occupant load of fewer than 50 persons.

1012.1.4 During its swing, any door in a means of egress shall leave unobstructed at least one half of the required width of an aisle, corridor, passageway, or landing, nor project more than 7 in. (17.8 cm) into the required width of an aisle, corridor, passageway or landing, when fully open. Doors shall not open immediately onto a stair without a landing. The landing shall have a width at least equal to the width of the door. See 1021.3 for door swing in Group E occupancies.

1012.1.5 In Group R3 occupancies, except for one- and two-family dwellings, a landing shall be provided on the exterior side of all egress door openings. Landing width shall be no less than the width of the door it serves and the depth shall be not less than 36 inches (914 mm). The landing may be one step lower than the inside floor level but not more than 7 inches (178 mm) lower.

1012.1.6 Door handles, pulls, latches, locks and other operating devices shall be operable with one hand and shall not require grasping, pinching, or twisting of the wrist to operate. The force required to operate the controls shall be no greater than 5 lbf (22 N).

Exception: Doorways or serving a single dwelling unit not required to be accessible by Chapter 11.
1012.1.7 Required exit doors shall be openable from the inside without the use of a key, tool, special knowledge or effort. Manually operated flush bolts or surface bolts are prohibited. All hardware must be direct acting requiring no more than one operation. Double cylinder dead bolts, requiring a key for operation on both sides, are prohibited on required means of egress doors unless the locking device is provided with a key which cannot be removed when the door is locked from the inside. Only one locking or latching device shall be permitted on a door or on one leaf of a pair of doors.

1012.1.8 A latch or other fastening device on a door shall be provided with a releasing device having an obvious method of operation under all lighting conditions. The releasing mechanism for any latch shall be located at least 34 inches (864 mm) and not more than 48 inches (1219 mm) above the finished floor. Doors shall be openable with not more than one releasing operation.

Exception: Egress doors from individual living units and guest rooms of residential occupancies shall be permitted to be provided with devices that require not more than 1 additional releasing operation if such device is operable from the inside without the use of a key or tool and is mounted at a height not more than 48 in. (122 cm) above the finished floor.

1012.1.9 For required width of doorways serving exit stairways and the exit capacity of doorways, see 1003.2 and 1003.3.

1012.1.10 Special locking arrangements shall be permitted in accordance with 1012.6 for the applicable occupancy and as permitted for specific occupancies in accordance with 1018.

1012.1.11 Every door in a stair enclosure serving more than four stories shall permit re-entry from the stair enclosure to the interior of the building, or an automatic release shall be provided to unlock all stair enclosure doors to permit re-entry. Such automatic release shall be actuated with the initiation of the building fire alarm, fire detection or fire sprinkler system.

Exception: Doors on stair enclosures shall be permitted to be equipped with hardware that prevents re-entry into the interior of the building, provided that the following conditions are met:
1. There are at least two levels where it is possible to leave the stair enclosure; and
2. There are not more than four stories intervening between stories where it is possible to leave the stair enclosure; and
3. Re-entry is possible on the top or next to top story permitting access to another exit; and
4. Doors permitting re-entry are identified as such on the stair side of the door; and
5. Doors not permitting re-entry shall be provided with a sign on the stair side indicating the location of the nearest door, in each direction of travel, permitting re-entry or exit.

1012.2 Powered doors
1012.2.1 General. Where required doors are operated by power upon the approach of a person or doors with power-assisted manual operation, the design shall be such that in the event of power failure, the door opens manually to permit egress travel or closes where necessary to safeguard the means of egress. The forces required to open these doors manually shall not be more than required in 1012.1.2 except that the force required to set the door in motion shall not be more than 50 lbf (222 N). The door shall be designed and installed so that when a force is applied to the door on the side from which egress is made, it shall be capable of swinging from any position to the full use of the required width of the opening in which it is installed. On the egress side of each door, there shall be a readily visible, durable sign that reads:

“IN EMERGENCY PUSH TO OPEN”.

The sign shall be in letters not less than 1 in. (2.5 cm) high on a contrasting background.

Power-operated doors shall comply with ANSI/BHMA 156.10-99.

Exceptions:
1. Sliding, power-operated doors in exit access serving an occupant load of fewer than 50 that manually opens in the direction of door travel with forces not more than required in 1012.1.2 shall not be required to have a swing-out feature. The required sign shall state “In Emergency Slide to Open”.
2. In the emergency break-out mode, a door leaf located within a two-leaf opening shall be exempt from the minimum 32 in. (81-cm) single-leaf requirement provided the clear width of the single leaf is at least 30 in. (76 cm).
3. For a bi-parting sliding door in the emergency break-out mode, a door leaf located within a multiple-leaf opening shall be exempt from the minimum 32 in. (81-cm) single-leaf requirement if a minimum of 32 in. (81 cm) clear opening is provided by all leaves broken out.
4. Horizontal sliding doors complying with 1012.4.
5. As provided in 1024.2.8.3.

1012.2.2 Self-closing doors. Where doors are required to be self-closing and are operated by power upon the approach of a person or are provided with power-assisted manual operation, they shall be permitted in the means of egress in accordance with the following:
1. Doors can be opened manually in accordance with 1012.2.1 to allow egress travel in the event of power failure.
2. The doors remain in the closed position unless actuated or opened manually.
3. When actuated, doors remain open for not more than 30 seconds.
4. Doors held open for any period of time close and the power-assist mechanism ceases to function upon operation of approved smoke detectors installed in such a way as to detect smoke on either side of the door opening in accordance with the provisions of NFPA 72, National Fire Alarm Code.

Doors required to be self-latching are either self-latching or become self-latching upon operation of approved smoke detectors in accordance with 1012.2.2(4).

5. Power assisted swinging doors shall comply with ANSI/BHMA A156.19-97.

1012.3 Revolving doors

1012.3.1 Each revolving door shall be capable of collapsing into a book-fold position with parallel egress paths providing an aggregate width of 36 inches (91 cm).

1012.3.2 A revolving door shall not be located within 10 ft (305 cm) of the foot of or top of stairs or escalators or the entrance or exit of a moving walk. A dispersal area shall be provided between the stairs or escalators or either end of the moving walk and the revolving doors.

1012.3.3 The turning speed of a revolving door shall not exceed the maximum permitted by Table 1012.3.3.

1012.3.4 Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 ft (305 cm).

Exception: A revolving door may be used without an adjacent swinging door for street floor elevator lobbies if a stairway, escalator or door from other parts of the building does not discharge through the lobby and the lobby does not have any occupancy or use other than as a means of travel between elevators and street.

1012.3.5 Revolving doors shall be permitted as a component in a means of egress in Group A, R1, R2, R4-Large Facilities, M and B occupancies. A revolving door to be credited as a component of a means of egress shall comply with 1012.3.1 through 1012.3.4 and the following conditions:

1. Revolving doors shall not be given credit for more than 100 percent of the required exit capacity.
2. Each revolving door shall be credited with no more than 50 persons capacity.
3. Each revolving door shall be capable of being collapsed when a force of not more than 130 lb (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

1012.3.6 A revolving door not used as a component of a means of egress shall have a collapsing force of not more than 180 lb (801 N).

Exception: A revolving door may have a collapsing force set in excess of 130 lb (801 N) if the collapsing force is reduced to not more than 130 lb (578 N) when at least one of the following is satisfied:

1. There is a power failure or power is removed to the device holding the wings in position.
2. There is an actuation of the automatic sprinkler system when such system is provided.
3. There is an actuation of a smoke detection system which is installed to provide coverage in all areas within the building which are within 75 ft (23 m) of the revolving doors.
4. There is the actuation of a manual control switch which reduces the holding force to below the 130 lb (578 N) level. Such switch shall be in an approved location and shall be clearly identified.

1012.4 Horizontal sliding doors. Approved and listed horizontal sliding doors complying with the following conditions may be used in a means of egress when specifically permitted by 1012.1.2, Exception 3.

1. The doors shall be power operated and shall be capable of being operated manually in the event of power failure, and
2. The doors shall be operable by a simple method from both sides without special knowledge or effort, and
3. The force required to operate the door shall not exceed 30 lb (133 N) to set the door in motion and 15 lb (67 N) to close the door or open it to the minimum required width, and
4. The door shall be operable with a force not to exceed 15 lb (67 N) when a force of 250 lb (1112 N) is applied perpendicular to the door adjacent to the operating device, and
5. The door assembly shall comply with the applicable fire protection rating and, when rated, shall be self-closing or automatic-closing by smoke detection, shall be installed in accordance with NFPA 80, and shall comply with 705.1.3, and
6. The door assembly shall have an integrated standby power supply, and
7. The door assembly power supply shall be electrically supervised.
8. The force, applied to the operating device in the direction of egress, required to operate the door is not more than 15 lb (67 N).

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**TABLE 1012.3.3**

<table>
<thead>
<tr>
<th>INSIDE DIAMETER (ft and in.)</th>
<th>POWER-DRIVEN TYPE</th>
<th>MANUAL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Speed Control (rpm)</td>
<td>Speed Control (rpm)</td>
</tr>
<tr>
<td>6-6</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>7-0</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>7-6</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>8-0</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>8-6</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9-0</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9-6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>10-0</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
9. In apartment buildings, hotels and dormitories, horizontal sliding doors shall not be used across corridors.

1012.5 Special doorway requirements. A door, when opening or when fully open, shall not project beyond the building line. (See Chapter 32.)

1012.6 Special locking arrangements

1012.6.1 Delayed Egress Locks. Delayed egress locks shall be permitted to be installed on doors serving low and ordinary hazard contents for the occupancies and under the conditions listed in Table 1012.6.1 in buildings provided with an approved supervised automatic fire detection system or an approved automatic sprinkler system and in accordance with the following:

1. The doors unlock upon activation of an approved, supervised automatic sprinkler system, or upon the activation of any heat detector or not more than two smoke detectors of an approved, supervised automatic fire detection system; and,

2. The doors unlock upon loss of power controlling the lock or locking mechanism; and,

3. An irreversible process releases the lock within 15 sec upon application to the release device required in 1012.1.8 of a force that shall not be required to exceed 15 lbf (67 N) nor required to be continuously applied for more than 3 sec. The initiation of the release process shall activate a signal in the vicinity of the door to ensure those attempting to egress that the system is functional. Once the door lock has been released by the application of force to the releasing device, relocking shall be by manual means only; and

Exception: Where approved by the building official, a delay of not more than 30 seconds shall be permitted provided that reasonable life safety is ensured.

4. On the door adjacent to the release device, there is a readily visible, durable sign in letters at least 1 in. (2.5 cm) high and at least 1/8 in. (0.3 cm) in stroke width on a contrasting background that reads:

"PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS".

TABLE 1012.6.1
DELAYED EGRESS LOCKS BY OCCUPANCY

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Condition for Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly</td>
<td>Doors other than main entrance/exit</td>
</tr>
<tr>
<td>Educational</td>
<td>Shall comply with 1012.6.1</td>
</tr>
<tr>
<td>Group 1 Unrestrained</td>
<td>No more than one such device is located in any egress path</td>
</tr>
<tr>
<td>R1 and R2</td>
<td>No more than one such device is located in any egress path</td>
</tr>
<tr>
<td>R4, Large Facility</td>
<td>No more than one such device is located in any egress path</td>
</tr>
<tr>
<td>Mercantile</td>
<td>Shall comply with 1012.6.1</td>
</tr>
<tr>
<td>Business</td>
<td>Shall comply with 1012.6.1</td>
</tr>
<tr>
<td>Factory Industrial</td>
<td>Shall comply with 1012.6.1</td>
</tr>
<tr>
<td>Storage</td>
<td>Shall comply with 1012.6.1</td>
</tr>
<tr>
<td>Day Care</td>
<td>Shall comply with 1012.6.1</td>
</tr>
</tbody>
</table>

1012.6.2 Emergency lighting shall be provided at the door.

1012.7 Access-Controlled egress doors. The entrance doors in a means of egress in Group B, D, M, R1 and R2 buildings and entrance doors to tenant spaces of Groups B, D, M, R1 and R2 are permitted to be equipped with an approved entrance and egress access control system which meets all of the following:

1. An approved listed releasing sensor/device, either mechanical or electrical, shall be provided on the egress side arranged to detect an occupant attempting to gain egress. The doors shall be arranged to unlock by a signal from or loss of power to the releasing sensor/device.

2. Loss of power to that part of the access control system which locks the doors shall automatically unlock the doors.

3. The doors shall be arranged to unlock from a manual unlocking device for emergency unlock purposes only. Manual unlocking devices shall be located 40 to 48 inches (1016 to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign. When operated, the manual unlocking device shall result in direct interruption of power to the lock, independent of the access control system electronics. Upon activation of the manual unlocking device, the doors shall remain unlocked for a minimum of 30 seconds.

4. Activation of the building fire alarm system, automatic sprinkler or smoke detection systems, if provided, shall automatically unlock the doors. The doors shall remain unlocked until the signaling systems have been reset.
5. Entrance doors in Group B or M shall not be secured from the egress side during periods that the building is open to the general public.
6. Entrance doors in buildings having a mechanical means of egress in conjunction with an electric strike shall be latched when not energized.
7. Independent standby power, if provided, is acceptable on doors having immediate egress upon activation with a listed releasing sensor/device and, if provided, tie in with the supervised automatic smoke/fire detection or automatic sprinkler system as described in 1012.6.1, Item 1.

SECTION 1013 RAMPS

1013.1 General. Ramps in the means of egress shall conform to 1013.2 through 1013.10.

1013.2 Construction. Exit and exit discharge ramps shall be constructed of materials as required for exit stairways by 1007.1.1.

1013.2.1 All ramps that serve as required means of egress shall be of permanent fixed construction.
1013.2.2 The ramp floor and landings shall be solid and without perforations.

1013.3 Slope. Maximum slope in the direction of travel shall be 1:12. Maximum cross slope shall be 1:50.

Exceptions:
1. Aisles which are not required to be accessible in Group A occupancies. (See 1019.)
2. Ramps that provide access to vehicles, vessels, mobile structures, and aircraft shall not be required to comply with the maximum slope or maximum rise for a single ramp run.

1013.4 Rise. Maximum rise for a single ramp run shall be 30 inches (762 mm).

Exception: Aisles which are not required to be accessible in Group A occupancies.

1013.5 Landings
1013.5.1 Ramps shall have landings in accordance with 11-4.8.4.
1013.5.2 The maximum slope of landings shall be 1:50.
1013.5.3 The landing shall be at least as wide as the widest ramp run adjoining the landing.

1013.6 Clear Width. The minimum clear width of a ramp shall be 36 in. (915 mm).

Exception: Ramps that are part of a required means of egress shall be not less than 44 inches wide.

1013.7 Handrails. Handrails shall be provided along both sides of a ramp run with a rise greater than 6 in. (15.2 cm) and shall conform to the requirements in 1007.5.3, 1007.5.4 and 1007.5.6. If handrails are not continuous, they shall extend at least 18 inches (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface. Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post. Handrails shall not rotate within their fittings. Top of the handrail gripping surface shall be not less than 34 inches (864 mm) nor more than 38 inches (965 mm) above the ramp surface.

Exceptions:
1. Handrails are not required when the total ramp run rise is 6 inches (152 mm) or less and the horizontal projection is 72 inches or less, except where required to be accessible.
2. Aisles in Group A occupancies. (See 1019.)
3. In dwelling units not required to be accessible by Chapter 11, Fair Housing requirements, handrails are not required to extend beyond the top and bottom of the ramp segment.
4. Handrails are not required on curb ramps.

1013.8 Edge Protection. Edge protection complying with 1013.8.1 or 1013.8.2 shall be provided on each side of ramp runs and at each side of ramp landings.

Exceptions:
1. Edge protection is not required on ramps not required to have handrails and having flared sides or returned curbs as required by 11-4.8.7 for curb ramps.
2. Edge protection is not required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection is not required on the sides of ramp landings having a vertical drop-off of no more than 1/2 inch (12.7 mm) within 10 inches (254 mm) horizontally of the required landing area.

1013.8.1 Extended floor or ground surface. The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with 1013.7.

1013.8.2 Curb or barrier. A curb or barrier shall be provided that prevents the passage of a 4-inch (102 mm) diameter sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

1013.9 Slip resistance. Ramps and landings shall have a slip resistant surface.

1013.10 Water accumulation. Exterior ramps and landings shall be designed so water will not accumulate on their surfaces.
SECTION 1014
BALCONIES, PORCHES, GALLERIES

1014.1 General
1014.1.1 Any exterior balcony, porch, or gallery may serve as a means of egress if it complies with all the requirements as to width, arrangement, headroom and travel distance and materials of construction that are specified in this chapter for means of egress and provided it complies with the requirements of the following paragraphs of 1014. At least 50 percent of the balcony, porch, gallery or similar space shall be open on the long side.

Exception: Protection of openings in the building walls opening onto exterior balconies shall comply with the requirements of 1006.2.4 for exterior stairs.

1014.1.2 All porches, balconies, raised floor surfaces or landings located more than 30 inches (762 mm) above the floor or grade below shall have guardrails as specified in 1015.

1014.1.3 Balconies or other open spaces serving as a means of egress shall be maintained as a required path of travel without obstruction so as to maintain the required minimum width of exit travel.

1014.1.4 Exterior balconies used as an exit access from buildings four or more stories in height shall be of non-combustible construction. (See 1404.2 and 1404.3 for fire protection requirements of balconies not used as a means of egress.)

1014.1.5 (See 3206 for projections over public property.)

SECTION 1015
GUARDRAILS

1015.1 General. All unenclosed floor and roof openings, open and glazed sides of landings, stairs, ramps, balconies and porches which are more than 30 inches (762 mm) above finished ground level or a floor below shall have guardrails as specified in 1015.

Exceptions:
1. Guardrails are not required on the loading side of loading docks.
2. Guardrails shall be permitted in conformance with requirements for specific occupancies in 1018.

1015.2 Height. Guardrails shall form a vertical protective barrier not less than 42 inches (1067 mm) high.

Exceptions:
1. The top element of a guardrail at the inside open or unenclosed edge of any intermediate stairway landing where the stairs reverse direction may be at the same height as the stairway handrails when the horizontal distance between the stair flights is 1 ft (305 mm) or less and when a continuous handrail as specified in 1007.5 is provided.
2. As permitted in 1019.

1015.3 Openings. Open guardrails shall have intermediate rails or ornamental pattern such that a 4-inch (102 mm) diameter sphere cannot pass through any opening up to a height of 34 inches. A bottom rail or curb shall be provided that will reject the passage of 2-inch (51 mm) diameter sphere.

Exceptions:
1. A 6 inch (152 mm) sphere shall not pass through the triangular opening formed by a tread, riser and bottom of a guardrail.
2. See 1018 for special occupancy requirements.

1015.4 Strength, durability and attachment. Construction of guardrails shall be adequate in strength, durability and attachment for their purpose as described in 1608.2.

1015.5 Glass. Glass guardrail components shall comply with 2405.5.

SECTION 1016
MEANS OF EGRESS ILLUMINATION AND SIGNS

1016.1 Means of egress illumination
1016.1.1 Illumination of means of egress shall be provided in accordance with this section for every building and structure. For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators and passageways leading to an exit. For the purposes of this requirement, exit discharge shall include only designated stairs, aisles, corridors, ramps, escalators, walkways and exit passageways leading to a public way.

Exceptions:
1. When approved by the building official, illumination of means of egress shall not be required in industrial and storage occupancies that are occupied only during daylight hours, with skylights or windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.
2. Assembly occupancy private party tents of 1200 sq ft or less shall not be required to provide illumination of means of egress.
3. Open structures shall not be required to provide illumination of means of egress.
4. Towers occupied by not more than three persons shall not be required to provide illumination of means of egress.

1016.1.2 Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use. Artificial lighting shall be employed at such places and for such periods of time as required to maintain the illumination to the minimum criteria values herein specified.

Exception: Automatic motion sensor-type lighting switches shall be permitted within the means of egress, provided that switch controllers are equipped for fail-safe operation, illumination timers are set for a mini-
Emergency lighting and standby power

1016.1.3 The floors and other walking surfaces within an exit and within the portions of the exit access and exit discharge designated in 1016.1.1 shall be illuminated to values of at least 1 ft-candle (10 lux) measured at the floor.

Exception: In assembly occupancies, the illumination of the floors of exit access shall be at least 0.2 ft-candle (2 lux) during periods of performances or projections involving directed light.

1016.1.4 Required illumination shall be arranged so that the failure of any single lighting unit will not result in an illumination level in any designated area of less than 0.2 footcandle (2 lux).

1016.1.5 The equipment or units installed to meet the requirements of 1016.3 shall be permitted also to serve the function of illumination of means of egress, provided that all requirements of 1016.1 for such illumination are met.

1016.1.6 Sources of Illumination

1016.1.6.1 Illumination of means of egress shall be from a source of reasonably ensured reliability.

1016.1.6.2 Battery-operated electric lights and other types of portable lamps or lanterns shall not be used for primary illumination of means of egress. Battery-operated electric lights shall be permitted to be used as an emergency source to the extent permitted under Section 1016.2.3.4

1016.2 Emergency lighting and standby power

1016.2.1 Emergency lighting facilities for means of egress shall be provided in accordance with this section for the following:

1. Every building or structure where required in Table 1016, exception: One- and two-family dwellings,

2. Windowless and underground structures.

Exception: High rise structures, offices, and commercial units shall be permitted to be designed to provide the required level of illumination during daylight hours, with windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.

3. When approved by the building official, illumination of means of egress shall not be required in towers that are occupied only during daylight hours, with windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.

4. Water-surrounded structures in locations not routinely inhabited by humans shall be exempt from emergency lighting requirements.

5. When approved by the building official, illumination of means of egress shall not be required in water-surrounded structures that are occupied only during daylight hours, with windows arranged to provide the required level of illumination on all portions of the means of egress during these hours.

1016.2.2 Where maintenance of illumination depends upon changing from one energy source to another, a delay of not more than 10 seconds shall be permitted.

1016.2.3 Performance of system

1016.2.3.1 Emergency illumination shall be provided for a period of one and 1/2 hr in the event of failure of normal lighting. Emergency lighting facilities shall be arranged to provide initial illumination that is at least an average of 1-footcandle (10 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 footcandle (6 lux) average and a minimum at any point of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration.

A maximum-to-minimum illumination uniformity ratio of 40:1 shall not be exceeded.

1016.2.3.2 The emergency lighting system shall be arranged to provide the required illumination automatically in the event of any interruption of normal lighting, such as any failure of public utility or other outside electrical power supply; opening of a circuit breaker or fuse or any manual act(s), including accidental opening of a switch controlling normal lighting facilities.

1016.2.3.3 Emergency generators providing power to emergency lighting systems shall be installed in accordance with NFPA 110. Stored electrical energy systems where required in this code shall be installed and tested in accordance with NFPA 111.

1016.2.3.4 Battery-operated emergency lights shall use only reliable types of rechargeable batteries provided with suitable facilities for maintaining them in properly charged condition. Batteries used in such lights or units shall be approved for their intended use and shall comply with Chapter 27 of the Florida Building Code, Building.
with 1016.3. Externally illuminated signs shall be sized in accordance with 1016.3.5. The bottom of the sign shall be at least 6 in. (15.2 cm) nor more than 8 in. (20.3 cm) above the floor. For exit doors, the sign shall be mounted on the door or adjacent to the door with the nearest edge of the sign within 4 in. (10.2 cm) of the door frame.

1016.3.8.3 Where floor proximity egress path marking is required, a listed and approved floor proximity egress path marking system that is internally illuminated shall be installed within 8 in. (20.3 cm) of the floor. The system shall provide a visible delineation of the path of travel along the designated exit access and shall be essentially continuous, except as interrupted by doorways, hallways, corridors or other such architectural features. The system shall operate continuously or at any time the building fire alarm system is activated. The activation, duration and continuity of operation of the system shall be in accordance with 1016.2.

### TABLE 1016

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Conditions</th>
<th>Exceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly</td>
<td>None</td>
<td>Private party tents &lt; 1200 sq ft</td>
</tr>
<tr>
<td>Educational</td>
<td>For interior stairs and corridors, normally occupied spaces, flexible and</td>
<td>Exempted from administrative areas, general classrooms, mechanical rooms, and storage rooms.</td>
</tr>
<tr>
<td></td>
<td>open-plan area, interior or windowless portions, shops, and labs</td>
<td></td>
</tr>
<tr>
<td>Group I Unrestrained</td>
<td>If using life-support systems, supply the required power from life safety</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>branch of electricals as required by NFPA 99</td>
<td></td>
</tr>
<tr>
<td>Out patient clinics, ambulatory</td>
<td>If using life-support systems for other than emergency purposes, supply the required power essential electrical system as required by NFPA 99</td>
<td>None</td>
</tr>
<tr>
<td>Group I Restrained</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Hotels and dormitories</td>
<td>&gt; 25 rooms</td>
<td>All rooms direct to grade</td>
</tr>
<tr>
<td>Apartment buildings</td>
<td>&gt; 12 units or &gt; 3 stories</td>
<td>All apartments direct to grade</td>
</tr>
<tr>
<td>R4, Large Facilities</td>
<td>&gt; 25 rooms</td>
<td>All rooms direct to grade</td>
</tr>
<tr>
<td>Mercantile</td>
<td>&gt; 1 story or &gt; 3000 sq ft gross sales area and malls</td>
<td>None</td>
</tr>
<tr>
<td>Business</td>
<td>&gt; 2 stories above LED, or ≥ 50 people above or below LED, or ≥ 300 people</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td></td>
</tr>
<tr>
<td>Industrial</td>
<td>None</td>
<td>When approved by the building official, special purpose without routine occupancy, or daylight operations with windows</td>
</tr>
<tr>
<td>Storage</td>
<td>None</td>
<td>When approved by the building official, not normally occupied, or daylight operations with windows</td>
</tr>
<tr>
<td>Day-care centers</td>
<td>For interior stairs and corridors, normally occupied spaces, flexible and</td>
<td>Exempted from administrative areas, general classrooms, mechanical rooms, and storage rooms.</td>
</tr>
<tr>
<td></td>
<td>open-plan area, interior or windowless portions, shops, and labs</td>
<td></td>
</tr>
</tbody>
</table>
1016.2.3.5 The emergency lighting system shall be either continuously in operation or shall be capable of repeated automatic operation without manual intervention.

1016.2.4 Standby power. High-rise buildings shall be provided with Class 1, Type 60 standby power in accordance with Chapter 27 of the Florida Building Code, Building and NFPA 110. The standby power system shall have a capacity and rating sufficient to supply all required equipment. Selective load pickup and load shedding shall be permitted in accordance with Chapter 27 of the Florida Building Code, Building. The standby power system shall be connected to the following:

1. Emergency lighting system
2. At least one elevator serving all floors and transferable to any elevator
3. Mechanical equipment for smokeproof enclosures.

(See Section 412.7 for additional requirements for standby power in high-rise structures.)

1016.3 Exit signs

1016.3.1 Exits shall be marked by an approved sign readily visible from any direction of exit access. Every exit sign shall be suitably illuminated by a reliable light source. Externally and internally illuminated signs shall be visible in both the normal and emergency lighting.

Exception: Main exterior exit doors that obviously and clearly are identifiable as exits.

1016.3.2 Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach the exit is not readily apparent to the occupants. Sign placement shall be such that no point in the exit access corridor is more than 100 ft (30 m) from the nearest externally illuminated sign and is not in excess of the marked rating for internally illuminated signs.

1016.3.3 Every required sign shall be located and of such size, distinctive color and design as to be readily visible and shall provide contrast with interior finish or other signs. No equipment that impairs visibility of an exit sign shall be permitted, nor shall there be any brightly illuminated sign or object in or near the line of vision of the required exit sign of such a character as to detract attention from the exit sign. Floor proximity signs, where required, shall be in accordance with 1016.3.8.2 or 1016.3.8.3.

1016.3.4 At each door into an exit stair enclosure, tactile signage stating "EXIT" and complying with ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities, shall be installed adjacent to the latch side of the door 60 in. (152 cm) above the finished floor to the centerline of the sign.

1016.3.5 Externally illuminated signs shall have the word "EXIT" or other appropriate wording in plainly legible letters not less than 6 in. (15.2 cm) high with the principal strokes of letters not less than 3/4 in. (1.9 cm) wide. The word "EXIT" shall have letters of a width not less than 2 in. (5 cm), except the letter "1," and the minimum spacing between letters shall be not less than 3/8 in. (1 cm). Signs larger than the minimum established in this paragraph shall have letter widths, strokes, and spacing in proportion to their height. Externally illuminated signs shall be illuminated by not less than 5 footcandles (54 lx) at the illuminated surface and shall have a contrast ratio of not less than 0.5.

Exceptions:
1. Marking required by 1016.4.
2. Group R3 and Group R4 Small Facility occupancies.

1016.3.6 Internally illuminated signs shall be listed in accordance with UL 924, Standard for Safety Emergency Lighting Power Equipment. The visibility of an internally illuminated sign shall be the equivalent of an externally illuminated sign that complies with 1016.3.5.

Exceptions:
1. Marking required by 1016.4.
2. Signs in compliance with 1016.3.4 and 1016.3.8.2

1016.3.7 Where emergency lighting facilities are required by 1016.2, the exit signs shall be illuminated by the emergency lighting facilities. The level of illumination of the exit sign shall be at the levels provided in accordance with 1016.3.5 for the required emergency lighting time duration as specified in 1016.2.3.1, but shall be permitted to decline to 60 percent of the illumination level at the end of the emergency lighting time duration.

1016.3.8 Where the direction of travel to reach the nearest exit is not apparent, a directional sign complying with 1016.3.5 or 1016.3.6 reading "EXIT" or a similar designation with a directional indicator showing the direction of travel shall be placed in every location. Directional signs shall be listed.

1016.3.8.1 The directional indicator shall be located outside of the EXIT legend, not less than 3/4 in. (1 cm) from any letter. The directional indicator shall be of a chevron type and shall be identifiable as a directional indicator at a minimum distance of 40 ft (12.2 m). A directional indicator larger than the minimum established in this section shall be proportionately increased in height, width, and stroke. The directional indicators shall be located at the end of the sign for the direction indicated.

1016.3.8.2 Where floor proximity exit signs are required, exit signs shall be placed near the floor level in addition to those signs required for doors or corridors. These signs shall be illuminated in accordance with
1016.3.9 Signs installed as projections from a wall or ceiling within the means of egress shall provide vertical clearance no less than 7 ft (2134 mm) from the walking surface.

1016.3.10 Photoluminescent Signs. The face of photoluminescent signs shall be continually illuminated while the building is occupied. The illumination levels on the face of the photoluminescent sign shall be in accordance with its listing. The charging illumination shall be a reliable light source as determined by the building official. The charging light source shall be of a type specified in the product markings.

1016.4 Stair identification. An approved sign shall be located at each floor level in all enclosed stairways of buildings four or more stories in height. The sign shall indicate the floor level and the availability of roof access from that stairway and an identification of the stairway. The sign shall also state the floor level of and direction to egress discharge. The sign shall be located approximately 5 ft (1524 mm) above the floor landing in a position which is readily visible when the door is in the open or closed position.

SECTION 1017
EXIT OBSTRUCTIONS

Where floor space is occupied by tables, chairs or other movable furniture, aisles not less than 36 inches (914 mm) clear width shall be maintained to provide ready access to egress doors.

SECTION 1018
SPECIAL EGRESS REQUIREMENTS BY OCCUPANCY

The general requirements of Chapter 10 apply to all occupancies except as modified for specific occupancies in accordance with 1019 through 1029.

SECTION 1019
ASSEMBLY

1019.1 Means of egress capacity

1019.1.1 Every assembly occupancy shall be provided with a main entrance/exit. The minimum aggregate width of the main entrance for Group A occupancies shall be sufficient to accommodate 50 percent of the occupant load and shall be at the level of egress discharge or shall connect to a stairway or ramp leading to a street. Each level of a Group A occupancy shall have access to a main exit and such access shall have sufficient capacity to accommodate 50 percent of the occupant load of such levels. Where the main 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 exit regardless of whether all such exits serve as entrances to the building.

Exceptions:

1. In assembly occupancies where there is no well-defined entrance/exit, exits may be distributed around the perimeter of the building, provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the maximum occupant content.

2. A bowling establishment shall have a main entrance capable of accommodating 50 percent of the total occupant load regardless of the aisles that the entrance serves.

1019.1.2 Each level of an assembly occupancy shall have access to a main exit and shall be provided with additional exits of sufficient width to accommodate one-half of the total occupant load served by that level. Such additional exits shall be located as far from the main entrance/exit as practicable. Such exits shall be accessible from a cross aisle or a side aisle.

Exception: In assembly occupancies where there is no well-defined main entrance/exit, exits may be distributed around the perimeter of the building, provided the total exit width furnishes a minimum of 100 percent of the width needed to accommodate the maximum occupant content.

1019.1.3 Common path of travel. A common path of travel shall be permitted for the 20 ft (6.1 m) from any point where serving any number of occupants and for the first 75 ft from any point where serving not more than 50 occupants.

1019.2 Foyers and lobbies

1019.2.1 In every Group A - Large Assembly occupancy, a foyer consisting of a space at a main entrance of the auditorium or place of assembly shall be provided. Such foyer, if not directly connected to a public street by all the main entrances or exits, shall have a straight and unobstructed corridor or passage to every such main entrance and exit.

1019.2.2 The width of a foyer at any point shall be not less than the combined width of aisles, stairways and passageways tributary thereto.

1019.2.3 In theaters and similar Group A occupancies, where persons are admitted to the building at times when seats are not available and are allowed to wait in a lobby or similar space, such use of lobby or similar space shall not encroach upon the required clear width of exits. Such waiting areas shall be separated from the required exits by substantial permanent partitions or by fixed rigid railings not less than 42 inches (1067 mm) high.

1019.3 Interior balcony and gallery

1019.3.1 Means of egress. For balconies or galleries of Group A occupancies having a seating capacity of over 50, at least two means of egress shall be provided, one from each side of every balcony or gallery, leading directly to a street or exit court.
1019.3.2 Two means of egress shall be required from theater balconies when the occupancy exceeds 50.

1019.3.3 Enclosure and Capacity. All interior stairways and other vertical openings shall be enclosed and protected as provided in this chapter, except that stairs may be open between balcony and main assembly floor in occupancies such as theaters, churches and auditoriums. The means of egress capacity required for balconies or galleries shall be determined on the same basis as those required for the occupancy use.

1019.3.4 Travel Distance. The maximum travel distance for balcony or gallery from any seat to an exit shall be determined on the same basis as the building occupancy.

1019.4 Stages
1019.4.1 Where two means of egress are required, they shall be separate, with at least one means of egress on each side of the stage.

1019.4.2 The means of egress from lighting and access catwalks, galleries and gridirons shall meet the requirements for Group F occupancies.

Exceptions:
1. A minimum width of 22 inches (559 mm) shall be permitted for lighting and access catwalks.
2. A second means of egress is not required from these areas where a means of escape to a floor or to a roof is provided. Ladders, alternating tread stairs, or spiral stairs shall be permitted in the means of escape.

1019.4.3 Each tier of dressing rooms shall be provided with two exits.

1019.4.4 Stairways from stage and dressing rooms need not be enclosed.

1019.5 Tents. Tent exits, aisles, seating, etc., shall conform with the requirements for places of assembly. All exits shall be kept free and clear of obstructions while the tent is occupied by the public.

1019.6 Projection rooms. The projection room shall be provided with not less than one exit having a minimum opening of not less than 30 inches (762 mm) wide and 80 inches (2032 mm) high.

1019.7 Doors
1019.7.1 A key locking device may be used from the egress side on the main exterior exit doors on Group A-2 having an occupancy of 300 or less, subject to the following:
1. There is a readily visible durable sign on or adjacent to the door stating: THIS EXIT TO REMAIN UNLOCKED WHEN THIS BUILDING IS OCCUPIED. The sign shall be in letters no less than 1 inch (25.4 m) high on a contrasting background.
2. The locking device must be of a type that will be readily distinguishable as locked.
3. The main exit door is a single door or one pair of doors.
4. When unlocked, the door or both leaves of the pair must be free. The use of the key locking device may be revoked by the building official for due cause.

1019.7.2 Each door in a means of egress from an area of Group A occupancy may be provided with a latch or lock only if it is panic hardware or fire exit hardware, which releases when pressure of no more than 15 lb (67 N) is applied to the releasing devices in the direction of the exit travel. Such releasing devices may be bars or panels extending not less than 1/2 the width of the door and placed at heights suitable for the service required, but not less than 34 inches (86 cm) nor more than 48 inches (122 cm) above the floor. Whenever panic hardware is used on a labeled fire door, the panic hardware shall be labeled as fire exit hardware.

1019.7.3 If balanced doors are used and panic hardware is required, the panic hardware shall be of the pushpad type and the pad shall not extend more than 1/2 the width of the door measured from the latch side.

1019.8 Stairway construction
1019.8.1 In buildings of Group A occupancy, flights of less than three risers shall not be used in interior or exterior stairways, exit passageways, aisles, at entrance or elsewhere in connection with required exits. To overcome lesser differences in level, ramps in accordance with 1013 shall be used. See 1019.10 for additional aisle and stair information in assembly occupancies.

1019.9 Guardrails
(See 1019.10.9 for guardrail provisions.)

1019.10 Assembly aisles and seating
1019.10.1 General
1019.10.1.1 Scope. Provisions in 1019.10 shall apply to all assembly aisles and seating except for special provisions relating to seating for reviewing stands, grandstands and bleachers.

1019.10.1.2 Aisles Required. Every portion of any building which contains seats, tables, displays, equipment or other material shall be provided with aisles leading to exits.

1019.10.1.3 Travel Distance. Exits and aisles shall be so located that the travel distance to an exit door shall not be greater than 150 ft (61 m) measured along the line of travel. Travel distance may be increased to 200 ft (76 m) in sprinklered buildings.

Exceptions:
1. Smoke-protected assembly seating and outdoor assembly seating in accordance with 1019.11.3
2. The travel distance within an exhibit booth or exhibit enclosure to an exit access aisle shall not be greater than 50 ft (12 m).

1019.10.1.4 Seats shall be securely fastened to the floor in assembly occupancies with occupant loads greater than 200; assembly occupancies used for theatrical or similar purposes or the display of motion pictures and all balconies, galleries, boxes, or loges.

Exceptions:
1. Restaurants, cafeterias, cafeteriums, gymnasiums, gymatoriums and similar multi-purposes assembly occupancies.
2. Movable seating in rows with seats fastened together in groups of not less than three nor more than seven.
3. Seats in balconies, galleries, railed in enclosures, boxes or loges with level floor surfaces and having occupant loads not exceeding 14.
4. Assembly occupancies in accordance with Exceptions 1 or 3 shall not have more than 1 seat for 15 sq ft of net floor area and shall provide adequate aisles to reach exits.

1019.10.2 Aisle width

1019.10.2.1 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. (See 1019.10.4.) The catchment area served by an aisle is that portion of the total space that is naturally served by that section of the aisle. In establishing catchment areas, the assumption shall be made that there is a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

1019.10.2.2 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 aisles.

1019.10.2.3 Those portions of aisle accessways and aisles, where egress is possible in either of two directions, shall be uniform in required width.

1019.10.2.4 In all balconies and galleries having more than 20 rows of seats, there shall be provided a cross-aisle not less than 4 ft (1219 mm) wide leading directly to an exit.

1019.10.2.5 The minimum clear width of aisles serving seating not at tables shall be:
1. Forty-eight inches (1219 mm) for aisle stairs having seating on each side.
   Exception: Thirty-six in. (914 mm) where aisle does not serve more than 50 seats.
2. Thirty-six inches (914 mm) for aisle stairs having seating on only one side.

3. Twenty-three inches (584 mm) between an aisle stair handrail or guardrail and seating when the aisle is subdivided by a handrail. (See 1007.5.)

4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

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

5. Thirty-six inches (914 mm) for level or ramped aisles having seating only on one side.

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

1019.10.2.6 The minimum width of aisles serving seating at tables shall be 44 in. (1118 mm).

   Exception: Thirty-six in. (914 mm) where serving an occupant load of not more than 50.

1019.10.2.7 The minimum clear width of aisles in existing buildings shall be in accordance with 3404.

1019.10.3 Aisle accessways

1019.10.3.1 The aisle accessway between rows of seating shall have a clear width of not less than 12 in. (305 mm), and the minimum width shall be increased in accordance with 1019.10.3.2 and 1019.3.3 for seating not at tables and 1019.3.5 for seating at tables. The width of aisle accessways shall be the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where chairs have automatic or self-rising seats that comply with ASTM F 851, Test Method for Self-Rising Seat Mechanisms, the measurement shall be made with seats in the raised position. Where any chair in the row does not have an automatic or self-rising seat, the measurements shall be made with the seat in the down position. For seats with folding tablet arms, row spacing shall be determined with the tablet in the useable position.

   Exception: When not more than four persons are served, there shall be no minimum clear width requirement for the portion of the aisle accessway having a length not exceeding 6 ft (1.8 m) measured from the center of the seat farthest from the aisle.

1019.10.3.2 For rows of seating not at tables served by aisles or doorways at both ends there shall be no more than 100 seats per row and the 12 in. (305 mm) minimum clear width of aisle accessways shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14, but the minimum clear width shall not be required to exceed 22 inches (559 mm).

1019.10.3.3 For rows of seating not at tables served by an aisle or doorway at one end only, the 12 in. (305 mm) minimum clear width of aisle accessways shall be
increased by 0.6 inch (15.2 mm) for every additional seat beyond seven, but the minimum clear width shall not be required to exceed 22 inches (559 mm).

1019.10.3.4 For rows of seating not at tables served by an aisle or doorway on one end only, the path of travel shall not exceed 30 ft (9144 mm) from any seat to a point where a person has a choice of two paths of travel to two exits.

1019.10.3.5 Aisle accessways serving seating at tables shall have a minimum clear width of 12 in. (305 mm).

1019.10.3.5.1 Where nonfixed seating is located between a table and an aisle accessway, the measurement of required clear width of the aisle accessway shall be made to a line 19 in. (48.3 cm) away from the edge of the table. The 19 in. (48.3-cm) distance shall be measured perpendicularly to the edge of the table.

1019.10.3.5.2 The minimum 12 in. (305 mm) width required for an aisle accessway shall be increased by 0.5 in. (13 mm) for each additional 12 in. (305 mm) or fraction thereof beyond 12 ft (3.7 m) of aisle accessway length where measured from the center of the seat farthest from an aisle.

1019.10.3.5.3 The path of travel along the aisle accessway shall not exceed 36 ft (10.9 m) from any seat to the closest aisle or egress doorway.

1019.10.4 Means of egress capacity. The capacity of means of egress shall be in accordance with 1003.3. The width of aisles and other means of egress serving theater-type seating or similar seating arranged in rows shall provide sufficient capacity in accordance 1019.10.4.1 and 1019.10.4.2.

1019.10.4.1 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 1019.10.4.

1019.10.4.2 The minimum clear widths shown in Table 1019.10.4 shall be modified in accordance with all of the following:

1. If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the table by factor A, where

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

2. Stairs not having a handrail within a 30 in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated, i.e., multiply by factor B = 1.25.

3. Ramps steeper than 1:10 slope where used in ascent shall have their width increased by 10 percent, i.e., multiply by factor C = 1.10.

**TABLE 1019.10.4 CAPACITY FACTORS**

<table>
<thead>
<tr>
<th>No. of Seats</th>
<th>Nominal Flow Time (sec)</th>
<th>Inch of Clear Width Per Seat Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlimited</td>
<td>200</td>
<td>0.300 AB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.220 C</td>
</tr>
</tbody>
</table>

SI Units: 1 in. = 2.54 cm

1019.10.5 Aisle stairs and ramps. Aisles having a gradient steeper than 1:20, but not steeper than 1:8, shall consist of a ramp. Aisles with a slope exceeding 1:8 shall have an aisle stair consisting of a series of risers and treads extending across the full width of the aisles and shall be illuminated. Such aisles shall comply with 1019.10.5.1 through 1019.10.5.3. The exception to 1919.10.5.3 shall not apply.

**Exceptions:**

1. Aisles in folding and telescopic seating shall be permitted to be stepped aisles.
2. The limit on height between landings in 1007.4.1 shall not apply to aisle stairs.

1019.10.5.1 Tread depths shall be a minimum of 11 inches (279 mm) and be uniform within each aisle.

**Exceptions:**

1. Nonuniformities shall not exceed \(\frac{3}{16}\) inch (4.8 mm) between adjacent treads.
2. Where seating is on stepped platforms, one tread in each seat platform may have a greater width to accommodate access to seats.

1019.10.5.2 On aisle stairs where the slope must be the same as the slope of adjoining seating areas, the riser height shall be not less than 4 inches (102 mm) nor more than 8 inches (203 mm) and it shall be uniform within each flight.

**Exceptions:**

1. The riser height of aisle stairs in folding and telescopic seating shall be permitted to be not less than \(\frac{3}{16}\) inch (8.9 cm) and shall not exceed 11 in. (27.9 cm).
2. Where the gradient of an aisle is steeper than 8 in. (20.3 cm) in rise in 11 in. (27.9 cm) of run to maintain necessary sight lines in the adjoining seating area, the riser height shall be permitted to exceed 8 in. (20.3 cm) but shall not exceed 9 in. (22.9 cm).

3. Riser height may be nonuniform but only to the extent necessitated by changes in the slope of the adjoining seating area to maintain adequate sightlines. Where nonuniformities exceed 3/16 inch (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers.

1019.10.5.3 A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 2 inches (51 mm) wide.

Exception: 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.

1019.10.6 Aisle handrails

1019.10.6.1 Ramped aisles having a slope exceeding 1:15 and aisle stairs shall be provided with handrails located either at the side or within the aisle width.

Exceptions:

1. Handrails are not required for ramped aisles having a slope no greater than 1:8 and having seating on both sides.

2. Handrails are not required if, at the side of the aisle, there is a guardrail that complies with graspability requirements for handrails.

1019.10.6.2 Where there is seating on both sides of the aisle, the handrail shall be discontinuous with gaps or breaks at intervals not exceeding 5 rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of at least 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally and the handrails shall have rounded termination or bends.

1019.10.6.3 Where handrails are provided in the middle of aisle stairs, there shall be an additional intermediate handrail located approximately 12 inches (305 mm) below the main handrail.

1019.10.7 Aisle termination

1019.10.7.1 Dead-end aisles which terminate only at one end with a cross aisle, foyer, doorway or vomitory giving access to an exit, shall be not greater than 20 ft (6096 mm) long.

Exception: A longer dead-end aisle shall be permitted 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 minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat over a total of seven in the row.

1019.10.8 Aisle Obstructions. There shall be no obstructions in the required width of aisles except for handrails as provided in 1007.5 and 1019.10.2.5.

1019.10.9 Guardrails

1019.10.9.1 In Front of Seats. Guardrails on a balcony, loge or gallery immediately in front of the first row of fixed seats and which are not at the end of an aisle shall be not less than 26 inches (660 mm) high.

1019.10.9.2 At End of Aisles. Guardrails shall be provided at the ends of aisles where they terminate at a fascia of boxes, balconies and galleries. The top of such guardrails shall extend for the width of the aisle and be no closer than 42 inches (1067 mm) to the closest surface of the aisle where there are steps and 36 inches (914 mm) otherwise.

1019.10.9.3 Aisle guardrails

1019.10.9.3.1 Aisles located more than 30 inches (762 mm) above the floor or grade below shall have guardrails in accordance with 1015.

1019.10.9.3.2 Where an elevation change of 30 inches (762 mm) or less occurs between a cross aisle and the adjacent floor or grade below, guardrails not less than 26 inches (660 mm) above the aisle floor shall be provided.

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

1019.10.9.4 Stages and platforms

1919.10.9.4.1 Guardrails are not 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.

1019.10.9.4.2 Permanent guardrails are not required at vertical openings in the performance area of stages.
1019.10.9.5 Equipment Platforms. Guardrails are not required where the side of an elevated walking surface is to be open for the normal functioning of special lighting or for access and use of other special equipment.

1019.10.10 Other provisions. Other stair and ramp provisions are found in 1007 and 1013.

1019.11 Smoke protected assembly seating, grandstands, bleachers and reviewing stands

1019.11.1 General
1019.11.1.1 Scope. These provisions shall apply to buildings or structures of an assembly occupancy which provides permanent, temporary or portable seating facilities.

1019.11.1.2 Definitions. For definitions, see Chapter 2.

1019.11.1.3 Life safety evaluation
1019.11.1.3.1 Where a life safety evaluation is required by other provisions of this code, it shall be done by persons acceptable to the building official. The life safety evaluation shall include a written assessment of safety measures for conditions listed in 1019.11.1.3.2.

1019.11.1.3.2 Life safety evaluations shall include an assessment of the following conditions and the 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. Civil or other disturbances;
8. Hazardous materials incidents within and near the facility; and
9. Relationships among facility management, event participants, emergency response agencies and others having a role in the events accommodated in the facility.

1019.11.1.3.3 Life safety evaluations shall include assessments of both building systems and management features upon which reliance is placed for the safety of facility occupants.

1019.11.2 Smoke-Protected assembly seating
1019.11.2.1 To be considered smoke-protected assembly seating, outdoor facilities shall comply with the requirements of 1019.11.2.

1019.11.2.2 All enclosed areas with walls and ceilings in building or structures containing smoke-protected assembly seating shall be protected with an approved automatic sprinkler system.

Exceptions:
1. The floor area used for the contest, performance or entertainment is restricted to low fire hazard use and the roof construction is more than 50 ft (15 m) above the floor level.
2. Sprinklers shall be permitted to be omitted over the floor area used for the contest, performance or entertainment and over the seating areas where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection because of building height and combustible loading.

1019.11.2.3 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 smoke level at least 6 ft (1829 mm) above the floor of the means of egress.

1019.11.2.4 A life safety evaluation plan shall be prepared for any assembly occupancy using smoke-protected assembly seating.

1019.11.2.5 Common path of travel. Smoke-protected assembly seating 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.

1019.11.3 Travel distance. The travel distance shall comply with Table 1004. The distance shall be measured along the line of travel to an exit. Where aisles are required, the distance shall be measured along the aisles and aisle accessway without travel over or on the seats.

Exceptions:
1. Smoke-protected assembly seating - The travel distance from each seat to the nearest entrance to an egress vomitory portal or from egress concourse shall not exceed 400 ft (61 m). The travel distance from the entrance to vomitory portal or from egress concourse to an approved egress stair, ramp or walk at the building exterior shall not exceed 200 ft (61 m).
2. Outdoor assembly seating - The travel distance from each seat to the building exterior shall not exceed 400 ft (122 m). The travel distance shall not be limited in facilities of Type I or II construction.

1019.11.4 Aisles. Aisles shall be provided in all seating facilities except that an aisle may be omitted in bleachers when all of the following conditions exist:
1. Seats are without backrests and not otherwise physically defined.
2. The rise from row to row does not exceed 6 inches (152 mm) per row including the first row.
3. The row spacing does not exceed 28 inches (711 mm) unless the seat boards and footboards are at the same elevation.
4. The number of rows does not exceed 16 rows in height.
5. The first seating board is not more than 12 inches (305 mm) above the ground or floor below or a cross aisle.
6. Seat boards have a continuous flat surface.
7. Seat boards provide a walking surface with a minimum width of 12 inches (30.5 cm).
8. Egress from seating including the first row is not restricted by rails, guards or other obstructions.
9. Bleacher footboards shall comply with 1019.11.12.

1019.11.5 Aisle width
1019.11.5.1 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. The catchment area served by an aisle is that portion of the total space that is naturally served by that section of the aisle. In establishing catchment areas, the assumption shall be made that there is a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

1019.11.5.2 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.

1019.11.5.3 Those portions of aisle accessways and aisles, where egress is possible in either of two directions, shall be uniform in required width.

1019.11.5.4 The minimum clear width of aisles shall be:
1. Forty-eight inches (1219 mm) for stairs having seating on each side.
   **Exception:** Thirty-six inches (914 mm) where aisle does not serve more than 50 seats.
2. Thirty-six inches (914 mm) for stairs having seating on only one side.
3. Twenty-three inches (584 mm) between a stair handrail or guardrail and seating when the aisle is subdivided by a handrail.
4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.
   **Exception:** Thirty-six inches (914 mm) where aisle does not serve more than 50 seats.
5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.
6. Twenty-three inches (584 mm) between a stair handrail and seating when an aisle does not serve more than five rows on one side.

1019.11.6 Aisle termination
1019.11.6.1 Aisles shall terminate at an aisle, foyer, doorway or vomitory giving access to an exit.

**Exception:** Dead-end aisles terminating at a cross aisle, foyer, doorway or vomitory giving access to an exit at only one end and meeting any of the following conditions shall be permitted:
1. Where dead-end aisles do not exceed 20 ft (6096 mm).
2. Where there are not more than 24 seats between aisles. The aisle accessway serving those seats shall have a minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row.
3. For smoke-protected assembly seating where there are not more than 40 seats between aisles. The aisle accessway serving those seats shall have a clear minimum width of 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat above seven in the row.
4. For smoke-protected assembly seating, dead ends in vertical aisles do not exceed a distance of 21 rows.
5. When seats are without backrests, dead ends in vertical aisles do not exceed a distance of 16 rows.
6. A 16-row, dead-end aisle shall be permitted in folding and telescopic seating and grandstands.

1019.11.6.2 Each end of a cross aisle shall terminate at an aisle, foyer, doorway or vomitory giving access to an exit.

1019.11.7 Aisle - walking surfaces. Aisles having a gradient steeper than 1:20, but not steeper than 1:8, shall consist of a ramp having a slip resistant walking surface. Aisles with a slope exceeding 1:8 shall be an aisle stair consisting of a series of risers and treads extending across the full width of aisles and complying with the following requirements.

**Exception:** Aisles in folding and telescopic seating shall be permitted to be stepped aisles.

1. Tread depths shall be a minimum of 11 inches (279 mm) and be uniform within each aisle.
   **Exception:** Nonuniformities shall not exceed 3/16 inch (4.8 mm) between adjacent treads.
2. On aisle stairs where the slope must be the same as the slope of adjoining seating areas, the riser height shall be not less than 4 inches (102 mm) nor more than 8 inches (203 mm) and it shall be uniform within each flight.
Exceptions:
1. Riser height may be nonuniform but only to the extent necessitated by changes in the slope of the adjoining seating area to maintain adequate sightlines. Where nonuniformities exceed $\frac{3}{16}$ inch (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers.
2. Riser heights not exceeding 9 inches (229 mm) shall be permitted where they are necessitated by the slope of adjacent seating areas to maintain sightlines.
3. The riser height of aisle stairs in folding and telescopic seating shall be permitted to be a minimum of $3\frac{1}{2}$ inches and a maximum of 11 inches.

3. A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 2 inches (51 mm) wide.

Exception: 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.

1019.11.8 Aisle - handrails
1019.11.8.1 Ramped aisles having a slope exceeding 1:12 and aisle stairs shall be provided with handrails located at one side or along the centerline.

Exceptions:
1. Handrails are not required for ramped aisles having a slope not exceeding 1:8 and having seating on both sides.
2. Handrails are not required if, at the side of the aisle, there is a guardrail that complies with graspability requirements for handrails and the top of the gripping surface is between 34 inches and 38 inches measured vertically from the top of the rail to the leading edge of stair treads or to adjacent walking surface in the case of a ramp.

1019.11.8.2 Where there is seating on both sides of the aisle, handrails located within the aisle shall be discontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of at least 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the handrail shall have rounded terminations or bends.

1019.11.8.3 Where handrails are provided in the middle of aisle stairs, there shall be an additional, intermediate handrail located approximately 12 inches (305 mm) below the main handrail.

1019.11.9 Aisle accessways
1019.11.9.1 Seating rows shall have aisle accessways with minimum clear width measured in accordance with 1019.11.9.2. The minimum clear width of aisle accessways shall be increased for row length in accordance with 1019.11.9.3 and 1019.11.9.4.

1019.11.9.2 The minimum clear width of aisle accessways shall be not less than 12 inches (305 mm) measured as the clear horizontal distance from the back of the row or guardrail ahead and the nearest projection of the row behind. Where chairs have automatic or self-rising seats that comply with ASTM F 851, Test Method for Self-Rising Seat Mechanisms, the measurement shall be made with seats in the raised position. Where any chair in the row does not have an automatic or self-rising seat, the measurement shall be made with the seat in the down position.

1019.11.9.3 For rows of seats served by aisles or doorways at both ends, there shall be no more than 100 seats per row and the 12 in. (305 mm) minimum clear width of aisle accessways shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14, but the minimum clear width shall not be required to exceed 22 inches (559 mm).

Exception: For smoke-protected assembly seating served by aisles or doorways at both ends there shall be no more than 100 seats per row and the 12 in. (305 mm) minimum clear width of aisle accessways shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond the number stipulated in Table 1019.11.9.3. The minimum clear width shall not be required to exceed 22 in. (55.9 cm).

TABLE 1019.11.9.3

<table>
<thead>
<tr>
<th>SMOKE-PROTECTED ASSEMBLY SEATING</th>
<th>12-INCH AISLE ACCESSWAY ROW LENGTH LIMITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. Of Seats in the Space</td>
<td>No. Of Seats Per Row Permitted to Have a Minimum 12-Inch (305 mm) Clear Width</td>
</tr>
<tr>
<td>Aisle or Doorway At Both Ends of Row</td>
<td>Aisle or Doorway At One End of Row</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>
1019.11.9.4 For rows of seating served by an aisle or doorway at one end only, the 12 in. (305 mm) minimum clear width of aisle accessways shall be increased by 0.6 inch (15.2 mm) for every additional seat beyond seven, but the minimum clear width shall not be required to exceed 22 inches (559 mm).

Exception: (See exception to 1019.11.9.3.)

1019.11.9.5 For rows of seats served by an aisle or doorway on one end only, the path of travel shall not exceed 30 ft (9144 mm) from any seat to a point where a person has a choice of two paths of travel to two exits.

Exception: For smoke-protected assembly seating, the path of travel shall not exceed 50 ft (15 m) from any seat to a point where a person has a choice of two directions of egress travel.

1019.11.10 Capacity of means of egress

1019.11.10.1 The minimum clear width of aisles and other means of egress shall comply with 1019.11.10.2 in the case without smoke-protected assembly seating and with 1019.11.10.3 in the case of smoke-protected assembly seating. The clear width shall be measured to intermediate handrails, edges of seating, tread edges and walls.

Exception: Outdoor assembly seating otherwise complying with the requirements for smoke-protected seating shall have means of egress capacities determined by either the provisions of 1019.11.10.3 or 1019.11.10.4.

1019.11.10.2 Without smoke-protected assembly seating. The minimum clear width of aisles and other means of egress shall provide sufficient capacity in accordance with the following:

1019.11.10.2.1 Minimum clear widths of aisles and other means of egress shall comply with 1019.11.10.2 in the case without smoke-protected assembly seating and with 1019.11.10.3 in the case of smoke-protected assembly seating. The clear width shall be measured to intermediate handrails, edges of seating, tread edges and walls.

1019.11.10.2.2 The minimum clear widths shown in Table 1019.10.4 shall be modified in accordance with all of the following:

1. If risers exceed 7 in. (17.8 cm) in height, multiply the stair width in the table by factor A, where
   \[ A = 1 + \frac{\text{riser height} - 7 \text{ in.}}{5} \]

2. Stairs not having a handrail within a 30 in. (76-cm) horizontal distance shall be 25 percent wider than otherwise calculated, i.e., multiply by factor B = 1.25.

3. Ramps steeper than one 1:10 slope where used in ascent shall have their width increased by 10 percent, i.e., multiply by factor C = 1.10.

1019.11.10.3 Smoke-protected assembly seating. The minimum clear width of aisles and other means of egress for smoke-protected assembly seating shall provide sufficient capacity in accordance with Table 1019.11.10.3. The number of seats specified shall be within a single assembly space and interpolation shall be permitted between the specific values shown.

<table>
<thead>
<tr>
<th>TABLE 1019.11.10.3</th>
<th>MINIMUM EGRESS WIDTHS FOR SMOKE-PROTECTED ASSEMBLY SEATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF SEATS IN SPACE</td>
<td>INCHES OF CLEAR WIDTH PER SEAT SERVED</td>
</tr>
<tr>
<td></td>
<td>Stairs With Handrail</td>
</tr>
<tr>
<td>2,000</td>
<td>0.300</td>
</tr>
<tr>
<td>5,000</td>
<td>0.200</td>
</tr>
<tr>
<td>10,000</td>
<td>0.130</td>
</tr>
<tr>
<td>15,000</td>
<td>0.096</td>
</tr>
<tr>
<td>20,000</td>
<td>0.076</td>
</tr>
<tr>
<td>≥ 25,000</td>
<td>0.060</td>
</tr>
</tbody>
</table>

For SI: 1 in = 25.4 mm

Notes:

1. If risers exceed 7 inches (178 mm) in height, the minimum clear width of stairs determined from the table shall be multiplied by factor A where
   \[ A = 1 + \frac{\text{riser height} - 7 \text{ in.}}{5} \]

1019.11.10.4 Outdoor smoke-protected assembly seating. The minimum clear width of aisles and other means of egress, in inches, shall be not less than the total occupant load served by the egress element multiplied by 0.08 when the egress is by stairs and multiplied by 0.06 when the egress is by ramps, corridors, tunnels or vomitories.

1019.11.11 Guardrails. Guardrails shall be located along open-sided walking surfaces and elevated seating facilities which are located more than 30 inches (762 mm) above the floor or ground below. Guardrails shall be not less than 42 inches (1067 mm) in height measured vertically above the leading edge of the tread, adjacent walking surface or adjacent seatboards.

Exception: Guardrails at the front row of seats, which are not located at the end of an aisle and where there is no cross aisle, may have a height of not less than 26 inches (660 mm).
1019.11.12 Bleacher footboards. Bleacher footboards shall be provided for all rows of seats above the third row or beginning at such a point where the seating plank is more than 2 ft (610 mm) above the ground or floor below. When the same platform is used for both seating and footrests, footrests are not required, provided each level or platform is not less than 24 inches (610 mm) wide. When projected on a horizontal plane, there shall be no horizontal gaps exceeding 1/4 inch (6.4 mm) between footboards and seatboards. At aisles, there shall be no horizontal gaps exceeding 1/4 inch (6.4 mm) between footboards.

SECTION 1020 BUSINESS

1020.1 Single exit. A single exit is permitted in Group B occupancies when meeting the following conditions:
1. Maximum two stories in height.
2. Each floor area served by that exit does not exceed 3,500 sq ft (325 m$^2$).
3. There are no more than 40 persons above the street floor as determined by Table 1003.1.
4. The maximum distance of travel to the exit does not exceed 75 ft (23 m).

1020.2 Doors. Egress doors shall conform to the requirements of 1012.1.2, except doors serving office areas with an occupant load of 10 or less need not be side-swinging type.

1020.3 Locking. A key locking device may be used from the egress side on the main exterior exit doors on Group B occupancies subject to the following:
1. There is a readily visible durable sign on or adjacent to the door stating: THIS EXIT TO REMAIN UNLOCKED WHEN THIS BUILDING IS OCCUPIED. The sign shall be in letters no less than 1 inch (25.4 mm) high on a contrasting background.
2. The locking device must be of a type that will be readily distinguishable as locked.
3. The main exit door is a single door or one pair of doors.
4. When unlocked, the door or both leaves of the pair must be free. The use of the key locking device may be revoked by the building official for due cause.

1020.4 Handrails and guardrails. Handrails and guardrails shall be in accordance with 1007.5 and 1015.

Exception: In areas not accessible to the public and in fully enclosed stairways in office buildings not serving an A, E or R occupancy, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1020.5 Stairs. Spiral stairs complying with 1007.8.2 shall be permitted as a component in a means of egress.

1020.6 Common path of travel. In Group B buildings which are sprinklered throughout, a common path of travel not exceeding 100 ft (30 m) shall be permitted.

SECTION 1021 EDUCATIONAL

1021.1 Special exit requirement. Rooms used for first grade children and younger shall be located on the floor of exit discharge. Rooms used for second grade children shall not be located more than one story above the floor of exit discharge.

1021.2 Exterior Corridors or Balconies
1021.2.1 A corridor roofed over and enclosed on its long sides and open to the atmosphere at the ends may be considered an exterior corridor provided:
1. Clear story openings not less than one half the height of the corridor walls are provided on both sides of the corridor and above adjacent roofs or buildings, or
2. The corridor roof has unobstructed openings to the sky with the open area not less than 50 percent of the area of the roof. Openings shall be equally distributed with any louvers fixed open. The clear area of openings with fixed louvers shall be based on the actual openings between louver vanes.

1021.2.2 The minimum width of such corridors shall be sufficient to accommodate the occupant load but shall in no case be less than 6 ft.

1021.2.3 Exterior balconies or walkways complying with Sections 1006.2.2, through 1006.2.6 shall be permitted provided the Exceptions to 1006.2.4 shall not apply.

1021.3 Panic and fire exit hardware
1021.3.1 Each door in a means of egress from an area of Group E occupancy having an occupant load of 100 or more may be provided with a latch or lock only if it is panic hardware or fire exit hardware, which releases when a force of no more than 15 lb (67 N) is applied to the releasing devices in the direction of exit travel. Such releasing devices may be bars or panels extending not less than one-half the width of the door and placed at heights suitable for the service required, but not less than 34 (86 cm) nor more than 48 inches (122 cm) above the floor. Whenever panic hardware is used on a labeled fire door, the panic hardware shall be labeled as fire exit hardware.

1021.3.2 If balanced doors are used and panic hardware is required, the panic hardware shall be of the pushpad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

1021.4 Doors that swing into an exit access corridor shall be recessed to prevent interference with corridor traffic; any doors not recessed shall open 180 degrees (3.1 rad) to stop against the wall. Doors in any position shall not reduce the required corridor width by more than one half.
SECTION 1022
FACTORY-INDUSTRIAL

1022.1 Travel distance. For allowable increase in travel distance, see 1004.1.6.

1022.2 Doors. Egress doors shall conform to the requirements of 1012.1.2 except in factory areas with an occupant load of 10 or less.

1022.3 Locks. A key locking device may be used from the egress side on the main exterior exit doors on Group F occupancies subject to the following:
   1. There is a readily visible durable sign on or adjacent to the door stating: THIS EXIT TO REMAIN UNLOCKED WHEN THIS BUILDING IS OCCUPIED. The sign shall be in letters no less than 1 inch (25.4 mm) high on a contrasting background.
   2. The locking device must be of a type that will be readily distinguishable as locked.
   3. The main door is a single door or one pair of doors.
   4. When unlocked, the door or both leaves of the pair must be free. The use of the key locking device may be revoked by the building official for due cause.

1022.4 Handrails and guardrails. Handrails and guardrails shall be installed in accordance with 1007.5 and 1015.

   Exception: In areas not accessible to the public in Group F, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1022.5 Stairs. Spiral stairs complying with 1007.8.2 shall be permitted as a component in a means of egress.

1022.6 Common path of travel. Common paths of travel in Group F and Group F Special Purpose Occupancies shall not exceed 50 ft (15 m).

   Exception: In Group F buildings which are sprinklered throughout, a common path of travel not exceeding 100 ft (30 m) shall be permitted.

SECTION 1023
HAZARDOUS

1023.1 Doors. All egress doors in Group H occupancies shall swing in the direction of exit travel.

1023.2 Handrails and guardrails. Handrails and guardrails shall be installed in accordance with 1007.5 and 1015.

   Exception: In areas not accessible to the public in Group H, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1024.1 Group I Unrestrained Occupancy

1024.1.1 Horizontal exits

   1024.1.1.1 Horizontal exits meeting the requirements of 1009 may comprise 2/3 the required exits from any building or floor area in Group I Unrestrained occupancies.

   1024.1.2 The capacity of areas of refuge shall be computed in accordance with 1009 and the area for each occupant as follows:
   1. Thirty sq ft (2.8 m²) per patient for hospitals and nursing homes.
   2. Fifteen sq ft (1.4 m²) per resident for ambulatory Group I Unrestrained uses.
   3. Six sq ft (0.6 m²) per occupant on stories not housing bed or litter patients in Group I Unrestrained uses.
   4. Three sq ft (0.3 m²) per occupant in all other cases.

1024.1.2 Doors and corridors

   1024.1.2.1 Doors shall be not less than 44 inches (1118 mm) clear width in the following:
   1. doorways to areas housing bedridden patients,
   2. doorways between patient rooms and exits, and
   3. exterior exit doorways.

   Exception: Exit doors not subject to use for patient care shall be not less than thirty 36 inches (914 mm) clear width.

   1024.1.2.2 Corridors, ramps, or passageways shall be a minimum of 8 ft (2438 mm) clear width in the following:
   1. all areas occupied by patients, and
   2. all means of egress from patient areas.

1024.1.3 Locks. Patient rooms or tenant space egress doors in Group I occupancies shall not be lockable.

   Exceptions:
   1. In places of restraint or detention.
   2. Door locking arrangements without delayed egress shall be permitted in Group I Unrestrained, or portions of such occupancies, where the clinical needs of the patients require specialized security measures for their safety, provided that staff can readily unlock such doors at all times.
   3. Key locking devices that restrict access from the corridor and that are operable only by staff from the corridor side shall be permitted. Such devices shall not restrict egress from the room.

1024.1.4 Handrails. All stairs or changes in grade in hospitals, nursing homes, convalescent homes and similar occupancies shall be equipped with handrails located not less than 34 inches (762 mm) nor more than 38 inches (965 mm) above the leading edge of a tread.

   Exception: Handrails that form part of a guardrail may be 42 inches (1067 mm) high.

1024.1.5 Institutional illumination. Each building housing a Group I Unrestrained occupancy equipped with or requiring the use of life support systems shall have illumination for the means of egress and emergency lighting equipment supplied by the life safety branch of the electrical system described in Chapter 3, NFPA 99.
1024.1.6 Smokeproof enclosure. The smokeproof enclosure required by 1005.6 may be omitted when all required exit stairways are pressurized in accordance with 412.11(5).

1024.1.7 Arrangement of Means of Egress

1024.1.7.1 Every habitable room shall have an exit access door leading directly to an exit access corridor.

Exceptions:
1. If there is an exit door opening directly to the outside from the room at ground level.
2. Patient sleeping rooms shall be permitted to have one intervening room if the intervening room is not used as an exit access for more than eight patient sleeping beds.
3. Special nursing suites shall be permitted to have one intervening room where the arrangement allows for direct and constant visual supervision by nursing personnel.
4. For rooms other than patients' sleeping rooms, one or more adjacent rooms shall be permitted to intervene in accordance with 1024.1.7.7.

1024.1.7.2 Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1000 sq ft (93 sq m) shall have at least two exit access doors remotely located from each other.

1024.1.7.3 Any room or any suite of rooms, other than patient sleeping rooms, of more than 2500 sq ft (230 sq m) shall have at least two exit access doors remotely located from each other.

1024.1.7.4 Any suite of rooms that complies with the requirements of 1024.1.7.2 shall be permitted to be subdivided with nonfire-rated, noncombustible or limited-combustible partitions.

1024.1.7.5 Intervening rooms shall not be hazardous areas as defined by 409.1.5.

1024.1.7.6 Suites of sleeping rooms shall not exceed 5000 sq ft (460 sq m).

1024.1.7.7 Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 sq ft (930 sq m).

1024.1.7.8 Suites of rooms, other than patient sleeping rooms, shall be permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 ft (30 m) and shall be permitted to have two intervening rooms where the travel distance within the suite to the exit access door is not greater than 50 ft (15 m).

1024.1.7.9 Every corridor shall provide access to at least two approved exits without passing through any intervening rooms or spaces other than corridors or lobbies.

1024.1.7.10 Every exit or exit access shall be arranged so that no corridor, aisle or passageway has a pocket or dead end exceeding 20 ft.

1024.1.8 Travel Distance

1024.1.8.1 Travel distance shall not exceed that specified in Table 1004.

1024.1.8.2 Travel distance shall comply with 1024.1.8.2.1 through 1024.1.8.2.4.

1024.1.8.2.1 The travel distance between any room door required as an exit access and an exit shall not exceed 150 ft (45 m).

1024.1.8.2.2 The travel distance between any point in a room and an exit shall not exceed 200 ft (60 m).

1024.1.8.2.3 The travel distance between any point in a health care sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

1024.1.8.2.4 The travel distance between any point in a suite of sleeping rooms as permitted by 1024.1.7 and an exit access door of that suite shall not exceed 100 ft (30 m) and shall meet the requirements of 1024.1.8.2.2.

1024.2 Group I Restrained Occupancy

1024.2.1 Mixed use. Refer to 409.2.1 for means of egress requirements for areas classified as a different occupancy and traversing other use areas.

1024.2.2 Subclassification of occupancy

1024.2.2.1 Group I Restrained shall be categorized as one of the following Use Conditions:

1. Use Condition 1 - Free egress. Free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior by means of egress meeting the requirements of this code. Group I Restrained qualifying for Use Condition 1 may be classified as a Group R occupancy. (See 309.2.)

2. Use Condition 2 - Zoned egress. Free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments.

3. Use Condition 3 - Zoned impeded egress. Free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity space, with egress impeded by remote control release of means of egress from such smoke compartment to another smoke compartment.

4. Use Condition 4 - Impeded egress. Free movement is restricted from an occupied space. Remote controlled release is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the...
smoke compartment and to other smoke compartments.

5. **Use Condition 5 - Contained.** Free movement is restricted from an occupied space. Staff controlled manual release at each door is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment and to other smoke compartments.

1024.2.2.2 To be classified as Use Condition 3 or 4, the arrangement, accessibility and security of the release mechanism used for emergency egress shall be such that with the minimum available staff, at any time, lock mechanisms can be released within 2 minutes.

1024.2.3 Capacity of means of egress. The capacity of any required means of egress shall be based on the provisions of 1003.2 and 1003.3.

1024.2.4 Number of exits

1024.2.4.1 A minimum of two exits located remote from each other shall be accessible from each floor, fire compartment, or smoke compartment of the building.

1024.2.4.2 At least one of the required exits shall be accessible from each fire compartment and each required smoke compartment into which residents may be moved in a fire emergency with the exits so arranged that egress shall not require the occupants to return through the compartment from which egress originates.

1024.2.5 Arrangement of means of egress

1024.2.5.1 Every sleeping room shall have a door leading directly to an exit access corridor.

Exceptions:
1. If there is an exit door opening directly to the outside from the room at the ground level.
2. One adjacent room, such as a day room or group activity space, may intervene. Where individual occupant sleeping rooms adjoin a day room or group activity space which is used for access to an exitway, such sleeping rooms may open directly to the day space and may be separated in elevation by up to a full story height.

1024.2.5.2 All exits may discharge through the level of exit discharge. The requirements of 1010 may be waived provided that not more than 50 percent of the exits discharge into a single fire compartment.

1024.2.5.3 Exits may discharge into a fenced or walled courtyard. Enclosed yards or courts shall be of sufficient size to accommodate all occupants, a minimum of 50 ft (15 m) from the building with a net area of 15 sq ft (1.4 m²) per person.

1024.2.5.4 No exit or exit access shall contain a corridor, hallway or aisle having a pocket or dead end exceeding 50 ft (15 m) for Use Conditions 2, 3 and 4 and 20 ft (6096 mm) for Use Condition 5.

1024.2.5.5 The distance which must be traversed before two separate and distinct paths of travel to two exits are available shall not exceed 50 ft (15 m).

Exception: One hundred ft (30 m) shall be permitted in buildings completely protected by an approved automatic sprinkler system.

1024.2.5.6 A sallyport may be permitted in a means of egress where there are provisions for continuous and unobstructed passage through the sallyport during an emergency exit condition.

1024.2.5.7 Aisles, corridors and ramps required for access or exit shall be at least 4 ft (1219 mm) wide.

1024.2.6 Measurement of travel distance to exits. Travel distance shall be determined in accordance with 1004, but shall not exceed:
1. One hundred ft (30 m) between any room door required as exit access and an exit.
2. One hundred fifty ft (46 m) between any point in a room and an exit.
3. Fifty ft (15 m) between any point in a sleeping room and the door of that room.

Exceptions:
1. The travel distance above may be increased by 50 ft (15 m) in rooms other than sleeping rooms when the building is protected throughout by an approved automatic sprinkler system or smoke control system.
2. The maximum permitted travel distance shall be increased to 100 ft (30m) in sprinklered or unsprinklered open dormitories where the enclosing walls of the dormitory space are of smoketight construction. Where travel distance to the exit access door from any point within the dormitory exceeds 50 ft (15 m), a minimum of two exit access doors remotely located from each other shall be provided.

1024.2.7 Horizontal exits

1024.2.7.1 Horizontal exits may comprise 100 percent of the exits required. At least 6 sq ft (0.6 m²) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments. Every fire compartment for which credit is allowed in connection with a horizontal exit shall not be required to have a stairway or door leading directly outside, provided the adjoining fire compartments have stairways or doors leading directly outside.
1024.2.7.2 The capacity of areas of refuge shall be computed in accordance with 1009 and the area for each occupant as follows:
1. Six sq ft (0.6 m²) per occupant for Group I Restrained uses
2. Three sq ft (0.3 m²) per occupant in all other cases.

1024.2.8 Doors
1024.2.8.1 Egress doors shall conform to the requirements of 1012.1.2 except in Group I Restrained when used as a place of detention.
1024.2.8.2 Doors to resident sleeping rooms shall be at least 28 inches (711 mm) clear width.

1024.2.8.3 Doors in a means of egress may be of the horizontal sliding type provided the force to slide the door to its fully open position does not exceed 50 lb (222 N) with a perpendicular force against the door of 50 lb (222 N).

1024.2.9 Locks
1024.2.9.1 Locking devices may be used in Group I Restrained occupancies.
1024.2.9.2 Doors may be locked in accordance with the applicable use condition.
1024.2.9.3 Doors from areas of refuge to the exterior may be locked with a key lock in lieu of locking methods described in 1024.2.9.5. The keys to unlock such doors shall be available at all times, and the locks shall be operable from both sides of the door.
1024.2.9.4 Any remote release in a means of egress shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all required doors.

**Exception:** Provisions for remote unlocking in Use Conditions 3 and 4 may be waived provided not more than 10 locks must be unlocked in order to move all occupants from one smoke compartment to an area of refuge within 3 minutes. The opening of all necessary locks shall be accomplished with no more than 2 separate keys. This exception shall not be used for smoke barrier doors serving a smoke compartment containing more than 20 persons.

1024.2.9.5 All remote release operated doors shall be provided with a redundant means of operation as follows:
1. Power operated sliding doors or power operated locks shall be so constructed that in the event of power failure a manual mechanical means to release and open the doors is provided at each door.
2. Mechanically operated sliding doors or mechanically operated locks shall be provided with a manual mechanical means to release and open the door at the time.

1024.2.9.6 Emergency power shall be provided for all electrically power operated sliding doors and power operated locks. Automatic transfer from the normal power service shall be accomplished within 10 seconds and operate under full load conditions for at least 1 1/2 hours.

1024.2.9.7 Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

1024.2.10 Stairs
1024.2.10.1 Spiral stairs meeting the requirements of 1007.8.2 are permitted for access to and between staff locations.
1024.2.10.2 Alternating tread stairways meeting the requirements of 1007.8.4 and 1007.8.5 are permitted for access to and between staff locations subject to occupancy by no more than three persons all capable of using the alternating tread stairway.
1024.2.10.3 Solid risers, intermediate handrails, latticework or similar facilities required by 1007.1.2 and 1015.3 which would interfere with visual supervision of residents are not required.

1024.2.11 Handrails and guardrails. Handrails and guardrails shall be installed in accordance with 1007.5 and 1015.

**Exception:** In areas not accessible to the public in Group I Restrained, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1024.2.12 Illumination and marking of means of egress
1024.2.12.1 Illumination shall be in accordance with 1016.
1024.2.12.2 Emergency lighting shall be provided in accordance with 1016.2.
1024.2.12.3 Exit marking shall be provided in areas accessible to the public in accordance with 1016.3.

**Exception:** Exit signs may be omitted in sleeping room areas.

SECTION 1025
MERCANTILE

1025.1 Single exit. A single exit is permitted in Group M occupancies when meeting the following conditions:
1. One story maximum
2. The floor area does not exceed 2,250 sq ft (209 m²).
3. The maximum distance of travel to the exit does not exceed 50 ft (15 m).

1025.2 Locks. A key locking device may be used from the egress side on the main exterior exit doors in Group M occupancies subject to the following:
1. There is a readily visible durable sign on or adjacent to the door stating: THIS EXIT TO REMAIN UNLOCKED WHEN THIS BUILDING IS OCCUPIED. The sign shall be in letters no less than 1 inch (25.4 mm) high on a contrasting background.
2. The locking device must be of a type that will be readily distinguishable as locked.
3. The main exit door is a single door or one pair of doors.
4. When unlocked, the door or both leaves of the pair must be free. The use of the key locking device may be revoked by the building official for due cause.

1025.3 Stairs. Spiral stairs complying with 1007.8.2 shall be permitted as a component in a means of egress.

1025.4 Handrails and guardrails. Handrails and guardrails shall be installed in accordance with 1007.5 and 1015.

Exception: In areas not accessible to the public and in fully enclosed stairways in Group M not serving a Group A, E or R Occupancy, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1025.5 Common path of travel. In Group M buildings which are sprinklered throughout, a common path of travel not exceeding 100 ft (30 m) shall be permitted.

SECTION 1026 RESIDENTIAL

1026.2 Stair enclosure. Means of egress stairways in Group R4 occupancies shall be enclosed as required by Table 705.1.2. See 704.2.2.3.

1026.3 Doors. Egress doors shall conform to the requirements of 1012.1.2, except doors within a dwelling or dwelling unit need not be side swinging type unless such doors open onto common corridors, common balconies or are required exits.

1026.4 Locks. A night latch, deadbolt or security device may be used on exit doors from a dwelling unit, hotel guest room or suite provided such devices are openable from the inside without the use of a key, tool, special knowledge or effort and the device is mounted at a height not to exceed 48 inches (1219 mm) above the finished floor.

1026.5 Guardrails

1026.5.1 Guardrails for dwellings, within individual dwelling units or guest rooms, and in residential care/assisted living occupancies shall be a minimum of 36 inches (914 mm) high.

1026.5.2 For one- and two-family dwellings and residential care/assisted living occupancies, only one intermediate rail located between 14 and 18 inches (356 mm and 457 mm) above floor level shall be required between the top of the guardrail and the floor level of boat docks, piers, landings, decks on beach fronts and dune walkovers, providing the floor or deck level is not more than 6 ft (1829 mm) above the mean high water level or average grade of the beach, dune or ground below. No guardrail shall be required on that portion of a boat dock used for docking a boat.

1026.5.3 A bottom rail or curb is not required on guardrails within dwellings, dwelling units or residential care/assisted living occupancies.

1026.6 Stairways, not part of the required means of egress, providing access from the outside grade level to the basement in Group R3 Occupancies shall be exempt from 1007 when the maximum height from the basement finished floor level to grade adjacent to the stair does not exceed 8 ft (2438 mm) and the grade level opening to the stair is covered by hinged doors or other approved means.

1026.7 Common path of travel. In Group R1 and R2 occupancies no common path of travel shall exceed 35 ft (10.7 m). Travel within a guest room or guest suite shall not be included when calculating common path of travel.

Exception: In buildings protected throughout by an approved, automatic sprinkler system a common path of travel shall not exceed 50 ft (15 m).
SECTION 1027  

STORAGE

1027.1 Number of exits
1027.1.1 Single exit. A single exit is permitted in Group S occupancies when meeting the following conditions.
1. One story maximum
2. The floor area does not exceed 2,500 sq ft (232 m²).
3. The maximum distance of travel to the exit does not exceed 50 ft (15 m).

1027.1.2 Helistops. Exits and stairways from helistops shall comply with the provisions of this chapter, except that all landing areas located on buildings or structures shall have two or more exits. For landing platforms or roof areas less than 60 ft (18 m) long, or less than 2,000 sq ft (186 m²) in area, the second exit may be a fire escape or ladder leading to the floor below.

1027.1.3 Aircraft Servicing Hangars
1027.1.3.1 Exits from aircraft servicing areas shall be provided at intervals of not more than 150 ft (45 m) on all exterior walls. There shall be a minimum of two means of egress from each aircraft servicing area. Horizontal exits through interior fire walls shall be provided at intervals of not more than 100 ft (30 m) along the wall.

Exception: Dwarf or “smash” doors in doors used for accommodating aircraft shall be permitted for compliance with these requirements.

1027.1.3.2 Means of egress from mezzanine floors in aircraft servicing areas shall be arranged so that the maximum travel distance to reach the nearest exit from any point on the mezzanine shall not exceed 75 ft (23 m). Such means of egress shall lead directly to a properly enclosed stair discharging directly to the exterior, to a suitable cutoff area or to outside stairs.

1027.2 Doors. Egress doors shall conform to the requirements of 1012.1.2 except in automobile parking garages and storage areas with an occupant load of 10 or less.

1027.3 Locks. A key locking device may be used from the egress side on the main exterior exit doors in Group S occupancies subject to the following:
1. There is a readily visible durable sign on or adjacent to the door stating: THIS EXIT TO REMAIN UNLOCKED WHEN THIS BUILDING IS OCCUPIED. The sign shall be in letters no less than 1 inch (25.4 mm) high on a contrasting background.
2. The locking device must be of a type that will be readily distinguishable as locked.
3. The main exit door is a single door or one pair of doors.
4. When unlocked, the door or both leaves of the pair must be free. The use of the key locking device may be revoked by the building official for due cause.

1027.4 Stairs. Spiral stairs complying with 1007.8.2 shall be permitted as a component in a means of egress.

1027.5 Handrails and guardrails. Handrails and guardrails shall be installed in accordance with 1007.5 and 1015.

Exception: In areas not accessible to the public in Group S, the clear distance between rails or ornamental pattern shall be such as to prevent the passage of a 21-inch (533 mm) diameter sphere.

1027.6 Common path of travel
1027.6.1 In S1 Storage occupancies common path of travel shall not exceed 50 ft (15 m).

Exception: Common paths of travel shall not exceed 100 ft (30 m) in buildings protected by an approved automatic sprinkler system.

1027.6.2 In S2 Storage occupancies common paths of travel shall not be limited.

1027.6.3 A common path of travel for the first 50 ft (15 m) from any point shall be permitted in parking structures.

SECTION 1028  

DAY-CARE

1028.1 Panic and fire exit hardware
1028.1.1 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 it is panic hardware or fire exit hardware which releases when a force of no more than 15 lb (67 N) is applied to the releasing devices in the direction of exit travel. Such releasing devices may be bars or panels extending not less than one-half the width of the door and placed at heights suitable for the service required, but not less than 34 (86 cm) nor more than 48 inches (122 cm) above the floor. Whenever panic hardware is used on a labeled fire door, the panic hardware shall be labeled as fire exit hardware.

1028.1.2 If balanced doors are used and panic hardware is required, the panic hardware shall be of the pushpad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

1028.2 Doors and Corridors
1028.2.1 Every room or space with an occupant load of more than 50 persons or an area of more than 1000 sq ft (93 sq m) shall have at least two exit access doorways as remotely located from each other as practicable. Such doorways shall provide access to separate exits, but where egress is through corridors, they shall be permitted to open onto a common corridor leading to separate exits located in opposite directions.
1028.2.2 Where the two exit accesses from a day-care occupancy in an apartment building enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire resistance rating constructed in accordance with 704.2.1.5. The smoke barrier shall be located so that it has an exit on each side.

1028.2.3 Doors designed to be normally closed shall comply with 705.13.2.3.

1028.2.4 Every interior corridor shall be constructed of walls having not less than a 1-hr fire resistance rating.

1028.3 Travel Distance (FBC)

1028.3.1 Maximum travel distance shall be in accordance with Table 1004 and the following:

1. The travel distance between any room door intended as an exit access and an exit shall not exceed 100 ft (30 m); and
2. The travel distance between any point in a room and an exit shall not exceed 150 ft (45 m); and
3. The travel distance between any point in a sleeping room and an exit access door in that room shall not exceed 50 ft (15 m).

Exception: The travel distance in 1 and 2 above may be increased by 50 ft (15 m) in buildings protected throughout by an approved supervised automatic sprinkler system.

1028.4 Illumination and marking of means of egress. Illumination and marking of means of egress shall comply with Section 1016.

1028.5 Emergency lighting. Emergency lighting in accordance with 1016.2 shall be provided in the following areas:

1. Interior stairs and corridors.

Exception: Administrative areas, general classrooms, mechanical rooms and storage areas.

3. Flexible and open plan buildings.
4. Interior or windowless portions of buildings.
5. Shops and laboratories.

1028.6 Special means of egress features. Every room or space normally subject to client occupancy, other than bathrooms, shall have at least one outside window for emergency rescue and ventilation. Such window shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (51 cm) in width, 24 in. (61 cm) in height, and 5.7 sq ft (0.53 sq m) in area. The bottom of the opening shall be not more than 44 in. (112 cm) above the floor. The clear opening shall permit a rectangular solid, with a minimum width and height that provides the required 5.7 sq ft (0.53 sq m) opening and a minimum depth of 20 in. (51 cm), to pass fully through the opening.

Exceptions:

1. In buildings protected throughout by an approved, automatic sprinkler system.
2. Where the room or space has a door leading directly to the outside of the building.

1028.7 Flexible plan and open plan buildings. In day-care occupancies, each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. If three or more means of egress are required, not more than two of them shall enter into a common atmosphere.

1028.8 Group day-care homes means of escape requirements

1028.8.1 The provisions of Chapter 10 shall be applicable to means of escape in day-care homes except as modified in this section.

1028.8.2 In group day-care homes, every story occupied by clients shall have not less than two remotely located means of escape. Maximum travel distance shall be as specified at 1028.3.

1028.8.3 In group day-care homes, every room used for sleeping, living or dining purposes shall have at least two means of escape, at least one of which shall be a door or stairway that provides a means of unobstructed travel to the outside of the building at street or ground level. The second means of escape may be a window in accordance with 1028.6. No room or space that is accessible only by a ladder or folding stairs or through a trap door shall be occupied for living or sleeping purposes.

1028.8.4 In group day-care homes where spaces on the story above the story of exit discharge are used by clients, at least one means of escape shall be an exit discharging directly to the outside. The second means of escape may be a window in accordance with 1028.6.

1028.8.5 In group day-care homes where clients occupy a story below the level of exit discharge, at least one means of escape shall be an exit discharging directly to the outside. The second means of escape may be a window in accordance with 1028.6. No facility shall be located more than one story below the ground. In day-care homes, any stairway to the story above shall be cut off by a fire barrier containing a door that has at least a 20 minute fire protection rating and is equipped with a self-closing device.

1028.8.6 In group day-care homes, every room or space normally subject to client occupancy, other than bathrooms, shall have at least one outside window for emergency rescue and ventilation complying with 1028.6.

Exceptions:

1. In buildings protected throughout by an approved, automatic sprinkler system.
2. Where the room or space has a door leading directly to the outside of the building.
1028.8.7 Where the two exit accesses from a group day-care home in an apartment building enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hr fire-resistance rating constructed in accordance with 704.2.1.5. The smoke barrier shall be located so that it has an exit on each side.

SECTION 1029
BOILER, FURNACE AND MECHANICAL EQUIPMENT ROOMS

1029.1 Single means of egress. Stories used exclusively for boilers, furnaces or mechanical equipment shall be permitted to have a single means of egress where the travel distance to an exit on that story does not exceed the common path of travel stipulated at 1029.2.

1029.2 Common path of travel. Boiler rooms, furnace rooms, mechanical equipment rooms and similar spaces shall have a common path of travel not exceeding 50 ft (15 m).

Exceptions:
1. In buildings protected throughout with an approved automatic sprinkler system boiler rooms, furnace rooms, mechanical equipment rooms and similar spaces shall be permitted to have a common path of travel not exceeding 100 ft (30 m).
2. Mechanical equipment rooms with no fuel-fired equipment shall be permitted to have a common path of travel not exceeding 100 ft (30 m).