

## Florida Building Code 2004

### SECTION 1009 STAIRWAYS AND HANDRAILS

#### 1009.1 Stairway width.

The width of stairways shall be determined as specified in Section [1005.1](#), but such width shall not be less than 44 inches (1118 mm). See Section [1007.1](#) for accessible means of egress stairways.

**Exceptions:**

1. Stairways serving an occupant load of 50 or less shall have a width of not less than 36 inches (914 mm).
2. Spiral stairways as provided for in Section [1009.9](#).
3. Aisle stairs complying with Section [1024](#).
4. Where a stairway lift is installed on stairways serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-2, both as applicable in Section [101.2](#), a clear passage width not less than 20 inches (508 mm) shall be provided. If the seat and platform can be folded when not in use, the distance shall be measured from the folded position.

#### 1009.2 Headroom.

Stairways shall have a minimum headroom clearance of 80 inches (2032 mm) measured vertically from a line connecting the edge of the nosings. Such headroom shall be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance shall be maintained the full width of the stairway and landing.

**Exception:** Spiral stairways complying with Section [1009.9](#) are permitted a 78-inch (1981 mm) headroom clearance.

#### 1009.3 Stair treads and risers.

Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm). Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm). The greatest winder tread depth at the 12-inch (305 mm) walk line within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm).

**Exceptions:**

1. Circular stairways in accordance with Section [1009.7](#).

2. Winders in accordance with Section [1009.8](#).
3. Spiral stairways in accordance with Section [1009.9](#).
4. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section [1024.11.2](#).
5. In occupancies in Group R-3, as applicable in Section [101.2](#), within dwelling units in occupancies in Group R-2, as applicable in Section [101.2](#), and in occupancies in Group U, which are accessory to an occupancy in Group R-3, as applicable in Section [101.2](#), the maximum riser height shall be 7.75 inches (197 mm) and the minimum tread depth shall be 10 inches (254 mm), the minimum winder tread depth at the walk line shall be 10 inches (254 mm), and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
6. See the *Florida Existing Building Code* for the replacement of existing stairways.
7. 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 inches (559 mm), minimum tread depth of 10 inches (254 mm), maximum riser height of 9 inches (229 mm), minimum headroom of 6 feet 8 inches (2032 mm), and a maximum height between landings of 12 feet (36 576 mm).

#### **1009.3.1 Dimensional uniformity.**

Risers shall be a maximum height of 7 inches and a minimum height of 4 inches (279 mm) (102 mm). Treads shall be a minimum of 11 inches (279 mm).

#### **Exceptions:**

1. 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 <sup>3</sup>/<sub>4</sub> 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.

Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of stairway width. The nosings or leading edges of treads at such non-uniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair and shall have a slip-resistant surface. Marking stripes shall have a width of at least 1 inch (25 mm) but not more than 2 inches (51 mm).

#### **1009.3.2 Profile.**

The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight.

**Exceptions:**

1. Solid risers are not required for stairways that are not required to comply with Section 1007.1, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.

**1009.3.3**

Tread slope shall not be more than ¼ inches per foot (21 mm/m).

**1009.4 Stairway landings.**

There shall be a floor or landing at the top and bottom of each stairway. The width of landings shall not be 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. Such dimension need not exceed 48 inches (1219 mm) where the stairway has a straight run.

**Exceptions:**

1. Aisle stairs complying with Section 1024.
2. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing.

**1009.5 Stairway construction.**

All stairways shall be built of materials consistent with the types permitted for the type of construction of the building, except that wood handrails shall be permitted for all types of construction.

**1009.5.1 Stairway walking surface.**

The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

**Exception:** In Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landings shall not be prohibited provided a sphere with a diameter of 1 1/8 inches (29 mm) cannot pass through the opening.

**1009.5.2 Outdoor conditions.**

Outdoor stairways and outdoor approaches to stairways shall be designed so that water will not accumulate on walking surfaces. In other than occupancies in Group R-3, and occupancies in Group U that are accessory to an occupancy in Group R-3, treads, platforms and landings that are part of exterior stairways in climates subject to snow or ice shall be protected to prevent the accumulation of same.

**1009.5.3 Stair identification.**

An approved sign shall be located at each floor level landing 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 exit discharge. The sign shall be located approximately 5 feet (1524 mm) above the floor landing in a position which is

readily visible when the door is in the open or closed position. The floor level designation shall also be tactile in accordance with Chapter [11](#).

#### **1009.6 Vertical rise.**

A flight of stairs shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings.

**Exception:** Aisle stairs complying with Section [1024](#).

#### **1009.7 Circular stairways.**

Circular stairways shall have a minimum tread depth and a maximum riser height in accordance with Section [1009.3](#) and the smaller radius shall not be less than twice the width of the stairway. The minimum tread depth measured 12 inches (305 mm) from the narrower end of the tread shall not be less than 11 inches (279 mm). The minimum tread depth at the narrow end shall not be less than 10 inches (254 mm).

**Exception:** For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, both as applicable in Section [101.2](#).

#### **1009.8 Winders.**

Winders are not permitted in means of egress stairways except within a dwelling unit.

#### **1009.9 Spiral stairways.**

Where permitted by this section or in specific occupancies in accordance with Sections [1024](#) and [1026](#) through [1033](#), spiral stairs complying with this section shall be permitted as a component in a means of egress.

##### **1009.9.1**

Spiral stairs complying with the following shall be permitted:

1. Riser heights shall not exceed 7 inches (178 mm).
2. The stairway shall have a tread depth of not less than 11 inches (279 mm) for a portion of the stairway width sufficient to provide the egress capacity for the occupant load served in accordance with Section [1004.1](#).
3. At the outer side of the stairway, an additional 10 1/2 inches (267 mm) 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 Section [1009.11](#) shall be provided on both sides of the spiral stairway.
5. The inner handrail shall be located within 24 inches (610 mm), measured horizontally, of the point where a tread depth not less than 11 inches (279 mm) is provided.
6. The turn of the stairway shall be such that descending users have the outer handrail at their right side.

##### **1009.9.2**

Where the occupant load served does not exceed three and from mezzanines not exceeding 250 square feet (23 m<sup>2</sup>) 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 inches (660 mm).
2. The height of the risers shall not exceed 9½ inches (241 mm).
3. Headroom shall be not less than 6 feet 6 inches (1981 mm).
4. Treads shall have a depth not less than 7½ inches (191 mm) at a point 12 inches (305 mm) from the narrower edge.
5. All treads shall be identical.
6. Handrails complying with Section [1009.11](#) shall be provided on both sides of the spiral stairway.

### **1009.9.3**

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 9½ inches (241 mm).
3. The headroom shall be a minimum of 6 feet 6 inches (1981 mm).
4. Treads shall have a depth not less than 7½ inches (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.

### **1009.10 Alternating tread devices.**

Alternating tread devices are limited to an element of a means of egress in buildings of Groups F, H and S from a mezzanine not more than 250 square feet (23 m<sup>2</sup>) in area and which serves not more than three occupants; in buildings of Group I-3 from a guard tower, observation station or control room not more than 250 square feet (23 m<sup>2</sup>) in area and for access to unoccupied roofs.

#### **1009.10.1 Handrails of alternating tread devices.**

Handrails shall be provided on both sides of alternating tread devices and shall conform to Section [1009.11](#).

#### **1009.10.2 Treads of alternating tread devices.**

Alternating tread devices shall have a minimum projected tread of 5 inches (127 mm), a minimum tread depth of 8.5 inches (216 mm), a minimum tread width of 7 inches (178 mm) and a maximum riser height of 9.5 inches (241 mm). The initial tread of the device shall begin at the same elevation as the platform, landing or floor surface.

**Exception:** Alternating tread devices used as an element of a means of egress in buildings from a mezzanine area not more than 250 square feet (23 m<sup>2</sup>) in area which serves not more than five occupants shall have a minimum projected tread of 8.5 inches (216 mm) with a minimum tread depth of 10.5 inches (267 mm). The rise to the next alternating tread surface should not be more than 8 inches (203 mm).

#### **1009.11 Handrails.**

Stairways shall have handrails on each side. Handrails shall be adequate in strength and

attachment in accordance with Section [1607.7](#). Handrails for ramps, where required by Section [1010.8](#), shall comply with this section.

**Exceptions:**

1. Aisle stairs complying with Section [1024](#) provided with a center handrail need not have additional handrails.
2. Stairways within dwelling units, spiral stairways and aisle stairs serving seating only on one side are permitted to have a handrail on one side only.
3. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require handrails.
4. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require handrails.
5. Changes in room elevations of only one riser within dwelling units and sleeping units in Group R-2 and R-3 occupancies do not require handrails.

**1009.11.1 Height.**

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

**Exceptions:**

1. Handrails for stairs not required to be accessible that form part of a guardrail may be 42 inches (1067 mm) high.
2. 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.

**1009.11.2 Intermediate handrails.**

Handrails shall be provided within 30 inches (762 mm) of all portions of the stair width required for egress capacity in accordance with Table [1005.1](#). The required egress width shall be along the natural path of travel.

**1009.11.2.1**

Where new intermediate handrails are provided in accordance with Section [1009.11.2](#), the minimum clear width between handrails shall be 20 inches (510 mm).

**1009.11.3 Handrail graspability.**

Handrails with a circular cross section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm) or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

**1009.11.4 Continuity.**

Handrail-gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

**Exceptions:**

1. Handrails within dwelling units are permitted to be interrupted by a newel post at a stair landing.

2. Within a dwelling unit, the use of a volute, turnout or starting easing is allowed on 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:

3.1. They do not project horizontally beyond the sides of the handrail within  $1\frac{1}{2}$  inches (38 mm) of the bottom of the handrail and provided that, for each  $\frac{1}{2}$  inch (12.7 mm) of additional handrail perimeter dimension above 4 inches (102 mm), the vertical clearance dimension of  $1\frac{1}{2}$  inches (38 mm) can be reduced by  $\frac{1}{8}$  inch (.3 mm).

3.2. They have edges with a radius of not less than .01 inch (.25 mm).

3.3. They obstruct not in excess of 20 percent of the handrail length.

#### **1009.11.5 Handrail extensions.**

Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight. Where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser.

#### **Exceptions:**

1. Handrails within a dwelling unit that is not required to be accessible need extend only from the top riser to the bottom riser.

2. Aisle handrails in Group A occupancies in accordance with Section [1024.13](#).

#### **1009.11.6 Clearance.**

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

#### **1009.11.7 Stairway projections**

Projections into the required width at each handrail shall not exceed 4.5 inches (114 mm) at or below the handrail height. Projections into the required width shall not be limited above the minimum headroom height required in Section [1009.2](#).

#### **1009.11.8**

For provisions related to handrails on stairs which are required to be accessible, refer to Sections [11-4.9.1](#) and [11-4.9.4](#).

#### **1009.12 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.

#### **1009.12.1**

Reserved.

#### **1009.13**

Interlocking or scissor stairs shall comply with Sections [1009.13.1](#) and [1009.13.2](#).

**1009.13.1**

New interlocking or scissor stairs shall be permitted to be considered only as a single exit.

**1009.13.2**

Existing interlocking or scissor stairs shall be permitted to be considered separate exits if they meet the following criteria:

1. They are enclosed in accordance with Section [1019](#).
2. They are separated from each other by 2-hour fire-resistance-rated noncombustible construction.
3. No protected or unprotected penetrations or communicating openings exist between the stair enclosures.

**1009.14 Accessible stairs.**

Stairs required to be accessible by Section [11-4.1](#) shall comply with Section [11-4.9](#). Floor surfaces of stairs along accessible routes and in accessible rooms and spaces shall comply with Section [11-4.5](#).