

*The most often heard contractor phrase:  
No one else makes me do that, so why do I have to ...*

Stairs have many potential violations – this Newsletter is Part 1 of two parts.

Violation 1 : Risers do not meet requirements: riser heights too high/low; too much variation between riser heights; risers improperly sloped; open riser openings allow 4-inch sphere to pass

Code Section : 2014 (5<sup>th</sup> Edition): FBC-R R311.7.5.1 Risers, and FBC-B

Comments : Contractor to correct stair dimensions as necessary to meet riser requirements

Violation 2 : Treads do not meet requirements: treads not deep enough; too much variation between tread depths; treads improperly sloped

Code Section : 2014 (5<sup>th</sup> Edition): FBC-R R311.7.5.2 Treads & R311.7.7 Stairway walking surface, and FBC-B

Comments : Contractor to correct stair dimensions as necessary to meet tread requirements

Violation 3 : Stair does not meet minimum width requirements or minimum headroom height

Code Section : 2014 (5<sup>th</sup> Edition): FBC-R R311.7.1 Width, and FBC-B 1009.4 Width

Comments : Contractor to correct stair dimensions as necessary to meet stair width requirements

Violation 1 : Risers do not meet requirements: riser heights too high/low; too much variation between riser heights; risers improperly sloped; open riser openings allow 4-inch sphere to pass

- FBC-Residential

- Riser height(s) exceed 7 3/4 inches in height.

- Riser heights vary more than 3/8 inch between tallest and shortest risers.

- Risers are open risers with opening which allow a 4-inch sphere to pass

- FBC-Building

- Riser height(s) exceed 7 inches in height.

- Riser height(s) are less than 4 inches in height.

- Risers are open risers, open risers are not allowed.

From the 2014 (5<sup>th</sup> Edition) Florida Building Code, Residential

- CHAPTER 3 BUILDING PLANNING

- SECTION R311 MEANS OF EGRESS

- R311.7 Stairways.

- R311.7.5.1 Risers.

- The maximum riser height shall be 7 3/4 inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that the opening between treads does not permit the passage of a 4-inch-diameter (102 mm) sphere.*

- Exception: The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.*

From the 2014 (5<sup>th</sup> Edition) Florida Building Code, Building

- CHAPTER 10 MEANS OF EGRESS

- SECTION 1009 STAIRWAYS

- 1009.7.2 Riser height and tread depth.

- Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the nosings of adjacent treads. Rectangular tread depths shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the foremost projection*

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*of adjacent treads and at a right angle to the tread's nosing. Winder treads shall have a minimum tread depth of 11 inches (279 mm) between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline and a minimum tread depth of 10 inches (254 mm) within the clear width of the stair.*

*Exceptions:*

- 1. Alternating tread devices in accordance with Section 1009.13.*
- 2. Ship ladders in accordance with Section 1009.14.*
- 3. Spiral stairways in accordance with Section 1009.12.*
- 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 1028.11.2.*
- 5. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 73/4 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walkline shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing projection not less than 3/4 inch (19.1 mm) but not more than 11/4 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).*
- 6. See Section 3401.1 for the replacement of existing stairways.*
- 7. In Group I-3 facilities, stairways providing access to guard towers, observation stations and control rooms, not more than 250 square feet (23 m<sup>2</sup>) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).*

#### *1009.7.3 Winder treads.*

*Winder treads are not permitted in means of egress stairways except within a dwelling unit.*

*Exceptions:*

- 1. Curved stairways in accordance with Section 1009.11.*
- 2. Spiral stairways in accordance with Section 1009.12.*

#### *1009.7.4 Dimensional uniformity.*

*Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch (9.5 mm) in any flight of stairs. The greatest winder tread depth at the walkline within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).*

*Exceptions:*

- 1. Nonuniform riser dimensions of aisle stairs complying with Section 1028.11.2.*
- 2. Consistently shaped winders, complying with Section 1009.7, differing from rectangular treads in the same stairway flight.*

*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 nonuniform 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).*

#### *1009.7.5.3 Solid risers.*

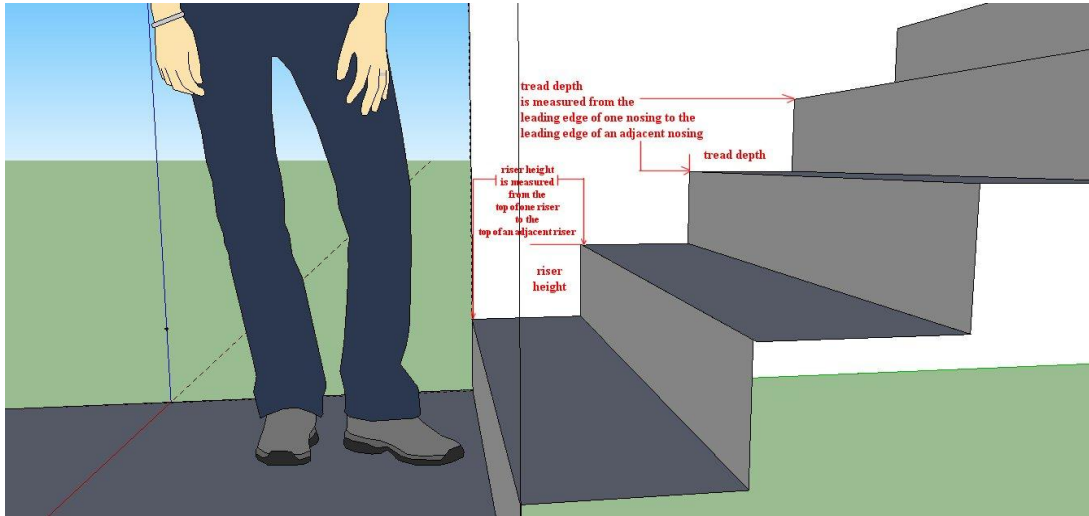
*Risers shall be solid.*

*Exceptions:*

- 1. Solid risers are not required for stairways that are not required to comply with Section 1007, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).*

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- 2. Solid risers are not required for occupancies in Group I-3 or in Group F, H and S occupancies other than areas accessible to the public. There are no restrictions on the size of the opening in the riser.
- 3. Solid risers are not required for spiral stairways constructed in accordance with Section 1009.12.
- 4. Solid risers are not required for alternating tread devices constructed in accordance with Section 1009.13.



Violation 2 : Treads do not meet requirements: treads not deep enough; too much variation between tread depths; treads improperly sloped

- FBC-Residential
  - Treads are not at least 10 inches in depth.
  - Tread depths vary by more than 3/8 inch between deepest tread depth and shallowest tread depth.
  - Tread slope exceeds 1/4 inch per foot, cross slope and/or in direction of travel.
- FBC-Building
  - Treads are not at least 11 inches in depth.
  - Tread depths vary by more than 3/8 inch between deepest tread depth and shallowest tread depth.
  - Tread slope exceeds 1/4 inch per foot, cross slope and/or in direction of travel.

From the 2014 (5<sup>th</sup> Edition) Florida Building Code, Residential

- CHAPTER 3 BUILDING PLANNING
  - SECTION R311 MEANS OF EGRESS
    - R311.7 Stairways.
      - R311.7.5.2 Treads.

*The minimum tread depth shall be 10 inches (254 mm). The 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. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).*

- CHAPTER 3 BUILDING PLANNING
  - SECTION R311 MEANS OF EGRESS
    - R311.7 Stairways.

R311.7.7 Stairway walking surface.

*The walking surface of treads and landings of stairways shall be sloped no steeper than one unit vertical in 48 inches horizontal (2-percent slope).*

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- CHAPTER 10 MEANS OF EGRESS
- SECTION 1009 STAIRWAYS

*1009.7.2 Riser height and tread depth.*

(See Violation 1 – Risers, Section 1009.7.2 Riser height and tread depth.)

(Section 1009.7.2 of the Florida Building Code-Building addresses both risers and treads)

Violation 3 : Stair does not meet minimum width requirements or minimum headroom

- FBC-Residential

The minimum width of a stair is 36 inches.

- FBC-Building

The minimum width of a stair is based on occupant load but shall not be less than 44 inches.

- FBC-Residential and FBC-Building

The width of a stair is measured at and above handrail height to the headroom height (the minimum width may continue higher, the minimum headroom height is the minimum height for minimum width). Note that the width at handrail height, and below, may be reduced by an amount equal to the projection distance of the handrail(s) and maximum handrail projection distance from the wall is 4-1/2 inches (the width at and below handrail height may not be less than the width between handrails – handrail on both sides; or between the handrail and the wall – handrail on one side).

The headroom height is not at least 6 foot 8 inches high measured above the floor and/or measured above the slope line of the tread nosings.

From the 2014 (5<sup>th</sup> Edition) Florida Building Code, Residential

- CHAPTER 3 BUILDING PLANNING
- SECTION R311 MEANS OF EGRESS

*R311.7 Stairways.*

*R311.7.1 Width.*

*Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31 1/2 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides.*

*Exception: The width of spiral stairways shall be in accordance with Section R311.7.10.1.*

*R311.7.2 Headroom.*

*The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that portion of the stairway.*

From the 2014 (5<sup>th</sup> Edition) Florida Building Code, Building

- CHAPTER 10 MEANS OF EGRESS
- SECTION 1009 STAIRWAYS

*1009.4 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 for accessible means of egress stairways.*

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Exceptions:

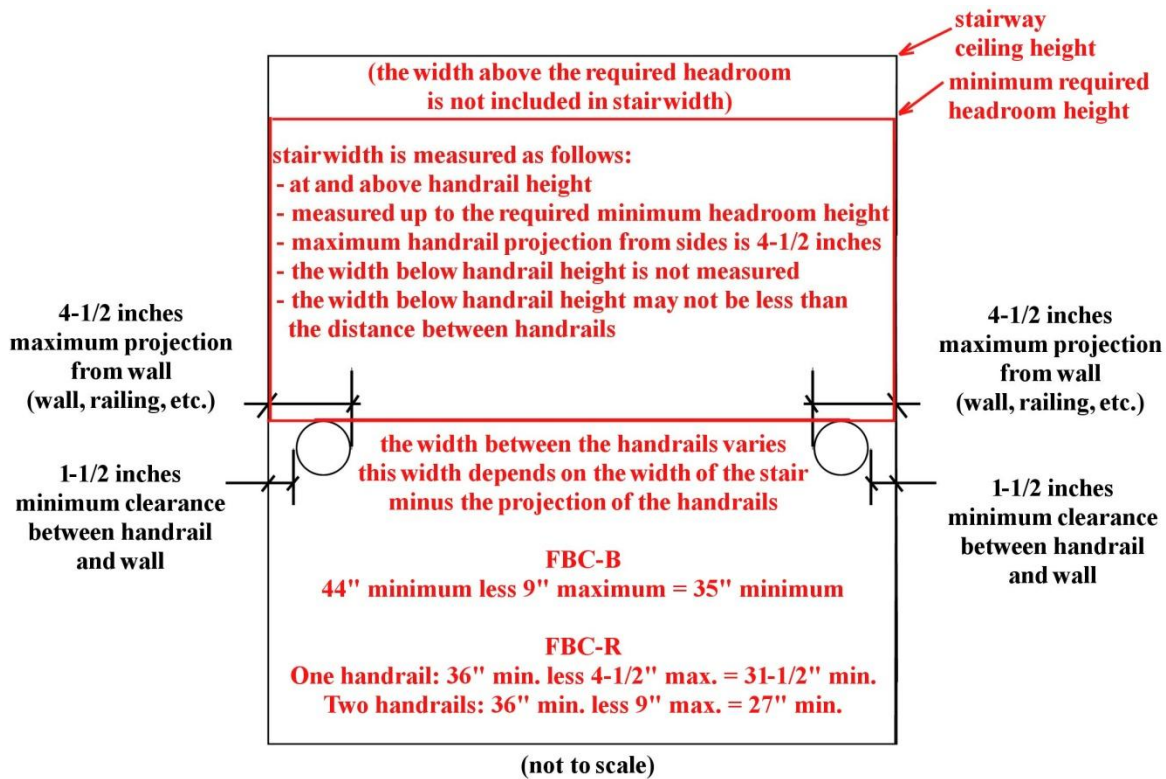
1. Stairways serving an occupant load of less than 50 shall have a width of not less than 36 inches (914 mm).
2. Spiral stairways as provided for in Section 1009.12.
3. Aisle stairs complying with Section 1028.
4. Where an incline platform lift or stairway chairlift is installed on stairways serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-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.

1009.5 Headroom.

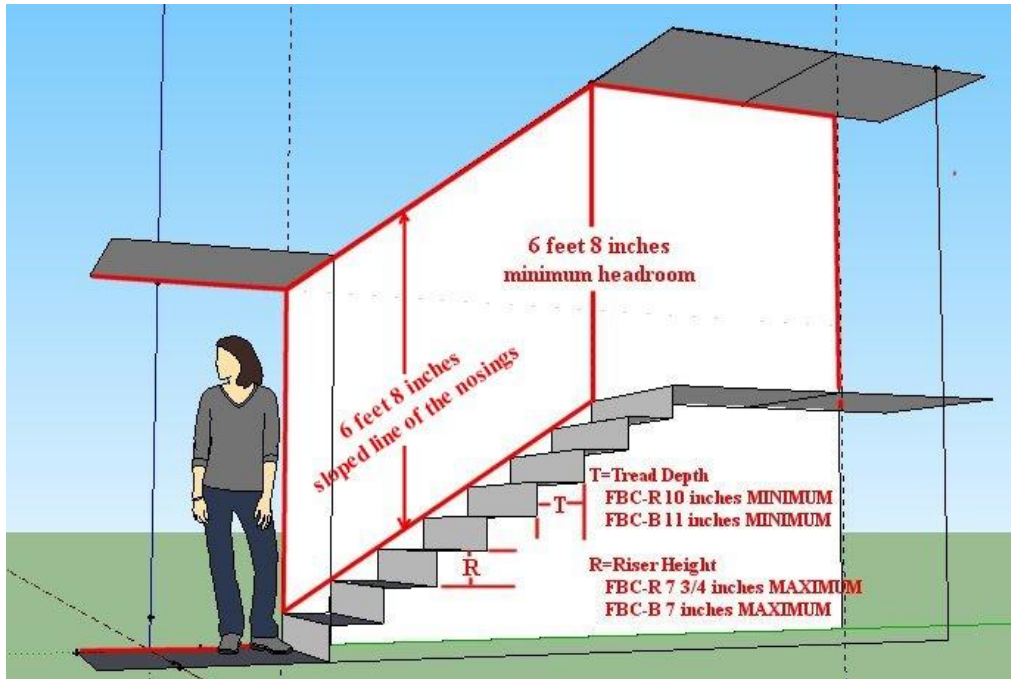
Stairways shall have a minimum headroom clearance of 80 inches (2032 mm) measured vertically from a line connecting the edge of the nosings. Such headroom shall be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum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

Exceptions:

1. Spiral stairways complying with Section 1009.12 are permitted a 78-inch (1981 mm) headroom clearance.
2. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom a maximum of 4 3/4 inches (121 mm).



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The September Newsletter contains Part 2 of Stair Violations – Part 2 addresses guard rails and handrails.

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**Please, if you have any items, issues or tips you would like to share** with other building officials / inspectors / plan reviewers, send the items, issues or tips to [jerry@jerrypeck.com](mailto:jerry@jerrypeck.com) for inclusion in future newsletters.

All contributors will be acknowledged and given credit for their contributions ... please help others by sharing the items, issues, and tips you have found in the field or during plan reviews.

I look forward to all contributions.

Respectfully submitted,

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