R311.7 Stairways.

R311.7.1 Width. Stairways shall not be less than 36" (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" (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 31½" (797 mm) where a handrail is installed on one side and 27" (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' 8" (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.

**Exception 1:** 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 4¾" (121 mm).

**Exception 2:** The headroom for spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.3. Vertical rise. A flight of stairs shall not have a vertical rise larger the 151" (12'7") between floor levels or landings.
R311.7.4 Walkline. The walkline across winder treads shall be concentric to the curved direction of travel through the turn and located 12" (305 mm) from the side where the winders are narrower. The 12" (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. If winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.

R311.7.5 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section all dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.

R311.7.5.1 Risers. The maximum riser height shall be $7\frac{3}{4}$" (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" (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 openings located more than 30" (762mm), as measured vertically, to the floor or grade below do not permit the passage of a 4" diameter (102mm) sphere.

Exception 1: The opening between adjacent treads is not limited on spiral stairways.

Exception 2: The riser height of spiral stairways shall be in accordance with Section 311.7.10.1.

R311.7.5.2. Treads. The tread depth shall be not less than 10" (254mm). 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" (9.5mm).
R311.7.5.2.1. **Winder treads.** Winder treads shall have a tread depth of not less than 10" (254mm) measured between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline. Winder treads shall have a tread depth of not less than 6" (152mm) at any point within the clear width of the stair. Within any flight of stairs, the largest winder tread depth at the walkline shall not exceed the smallest winder tread by more than 3/8" (9.5mm). Consistently shaped winders at the walkline shall be allowed within the same flight of stairs as rectangular treads and do not have to be within 3/8" (9.5mm) of the rectangular tread depth.

![Winder treads diagram](image)

**Exception:** The tread depth at spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.5.3. **Nosings.** The radius of curvature at the nosing shall be not greater than 9/16" (14mm), or a bevel not greater than 1/2" (12.7mm). A nosing projection not less than ¾" (19mm) and not more than 1-1/4" (32mm) shall be provided on stairways. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8" (9.5mm) within a stairway.

**Exception:** A nosing projection is not required where the tread depth is not less than 11" (279mm).

![Nosings diagram](image)

R311.7.5.4. **Exterior plastic composite stairs treads.** Plastic composite exterior stair treads shall comply with the provisions of this section and Section R507.2. ASTM D7032

R311.7.6 **Landings for stairways.** There shall be a floor or landing at the top and bottom of each stairway. The width perpendicular to the direction of travel shall be not less than the width of the flight served. Landings of shapes other than square or rectangular shall be permitted provided that the depth at the walk line and the total area is not less than that of a quarter circle with a radius equal to the required landing width. Where the stairway has a straight run, the depth in the direction of travel shall be not less than 36" (914 mm).

**Exception:** A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided that a door does not swing over the stairs.

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" horizontal (2-percent slope).