



Boulder County
Land Use Department
Publications

Residential Stairways, Handrails, Ramps, & Guards

Land Use Department
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Office Hours:

Mon. Wed., Thurs., Fri. 8 a.m. to 4:30 p.m.
Tuesday 10 a.m. to 4:30 p.m.

Building Permits can be applied for
and issued until 4 p.m.

Residential Stairways, Handrails, Ramps, & Guards

Per Section 311 and 312 of the 2015 IRC.

Residential Stairways

Stairway width above the handrail — shall not be less than 36". Stairway width below the handrail shall not be less than 31- $\frac{1}{2}$ " where a handrail is installed on one side and 27" where the handrail is installed on both sides.

Handrails may not project — more than 4- $\frac{1}{2}$ " on either side of the stairway.

The minimum headroom — shall not be less than 6'-8" measured vertically from the sloped plane adjoining the tread nosing or from the floor or landing.

The maximum riser height — shall be 7- $\frac{3}{4}$ ". The riser height may not vary more than $\frac{3}{8}$ " in a flight of stairs.

The minimum tread depth — shall be 10" measured from the nosing of the adjacent treads. The tread depth may not vary more than $\frac{3}{8}$ ".

The stair profile — of the radius of curvature at the leading edge of the tread shall be not greater than 9/16". A nosing of not less than $\frac{3}{4}$ " but not more than 1- $\frac{1}{4}$ " shall be provided on stairways with solid risers. The greatest nosing projection may not exceed the smallest by more than $\frac{3}{8}$ ".

There shall be a floor or landing — at the top and bottom of each stairway (Not required at the top of an interior flight of stairs provided a door does not swing over the stairs). A landing is required every 12' of vertical rise. The width of each landing shall not be less than the stairway served. Every landing shall have a minimum dimension of 36" measured in the direction of travel. A landing is required every 147" of vertical rise.

Illumination — shall be provided for interior and exterior stairs, landings, and treads. Interior stairways shall have an artificial light source located at each landing of the stairway. There shall be a wall switch at each floor level to control the light source where the stairway has six or more risers. Exterior stairways shall have an artificial light source located at the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall have an artificial light source at the bottom landing of the stairway.

Special Stairways

Winder Stairways:

Tread Depth — may not be less than 6" at narrowest point and 10" at a point 12" from the narrow edge.

Variation — between treads may not exceed $\frac{3}{8}$ ".

Spiral Stairways:

Tread Depth — shall be a minimum of 6- $\frac{3}{4}$ " at a point 12" from the narrow edge.

Tread Width — shall be a minimum of 26".

Rise — shall have a maximum height of 9- $\frac{1}{2}$ ".

Headroom — shall have a minimum height of 6'-6".

Alternating Tread Devices

Tread Depth — Shall be a minimum of 5 inches.

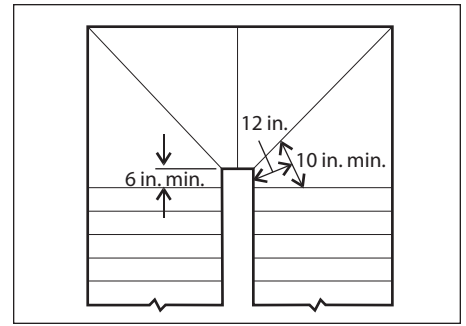
Projected Tread Depth — Shall be a minimum of 8½ inches.

Tread Width — Shall be a minimum of 7 inches.

Rise — Shall have a maximum height of 9½ inches.

Clear width (at and below the handrails) — shall be not less than 20 inches.

Alternating tread devices shall not be used as an element of a means of egress.



Winder Stairs

Ships Ladders

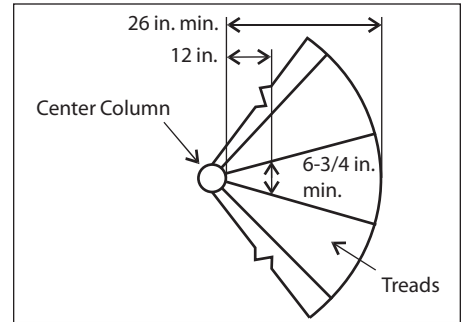
Tread Depth — Shall be a minimum of 5 inches.

Projected Tread Depth — Shall be a minimum of 8½ inches.

Rise — Shall have a maximum height of 9½ inches.

Clear width (at and below the handrails) — shall be not less than 20 inches.

Ships ladders shall not be used as an element of a means of egress.



Spiral Stairs

Ramps

Slope — shall be a maximum of 1 unit vertical in 12 horizontal, except where it is technically infeasible to comply because of site constraints, ramps may have a maximum slope of one unit vertical in 8 horizontal.

Landings — shall be a minimum of 3' x 3' at the top and bottom of the ramp, at a change of direction and where a door opens to a ramp.

Handrails — are required on one side of a ramp where the slope exceeds 1 unit vertical in 12 horizontal. Handrail height and continuity shall not be less than 34" and not more than 38".

Handrails

Handrails shall be provided — on at least one side of each stairway with 4 or more risers.

The height — shall not be less than 34" and not more than 38" measured vertically from the sloped plane adjoining the tread nosing.

Handrails shall be continuous — for the length of the stairway, from a point directly above the top riser to a point directly above the lowest riser.

Handrails shall return or terminate — in newel posts or safety terminals.

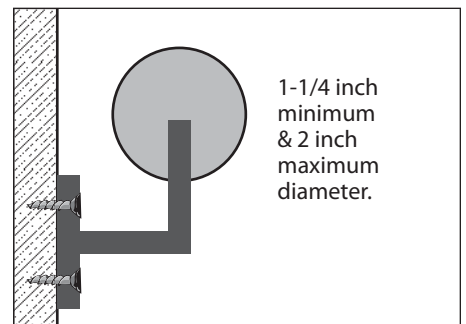
Handrails adjacent to a wall — shall have a space of not less than 1-½" between the wall and the handrail.

Handrail Grip Size

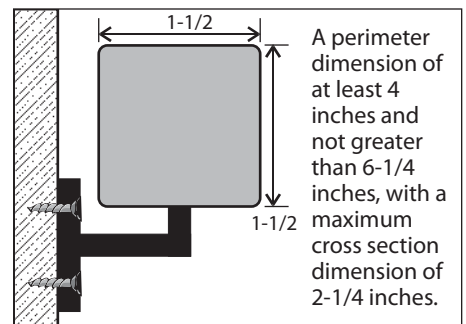
Type I:

Circular Handrails — shall have an outside diameter of 1-¼" to 2".

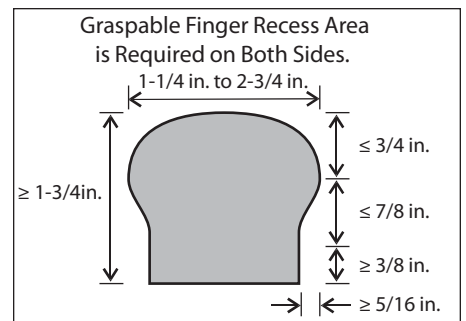
Noncircular Handrails — must have a perimeter of 4" minimum, 6-¼" maximum with a maximum cross section dimension of 2-¼".



Type I: Circular Handrail



Type I: Noncircular Handrail



Type II: Noncircular Handrail

Type II:

Noncircular Handrails — with a perimeter greater than 6-1/4" shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4" measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16" within 7/8" below the widest portion of the profile. This required depth shall continue for at least 3/8" to a level that is not less than 1-3/4" below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4" to a maximum of 2-3/4". Edges shall have a minimum radius of 0.01".

Guards

Guardrails are Required — at porches, balconies, fixed seating, and raised floor surfaces if located more than 30" above grade or floor below. Guards must be provided for porches and decks enclosed with insect screening more than 30" above grade.

The Height — shall not be less than 36" at porches, balconies and raised floors. Open sides of stairways with a total rise of more than 30" above the floor or grade below shall have guards not less than 34" in height measured vertically from the nosing of the treads.

Guard Opening Limitations — required guards on open sides of stairways, raised floor areas, balconies, and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4" or more in diameter.

The Triangular Openings — formed by the riser, tread, and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6" cannot pass through.

Window Fall Protection

Guards are required — where the opening of an operable window is located more than 72 inches above the finished grade or surface below, and the lowest part of the clear opening of the window 24 inches or less.

Guard open limitations — windows whose openings will not allow a 4 inch diameter sphere.

Exception: Openings that are provided with window fall prevention devices that comply with ASTM F 2090.

