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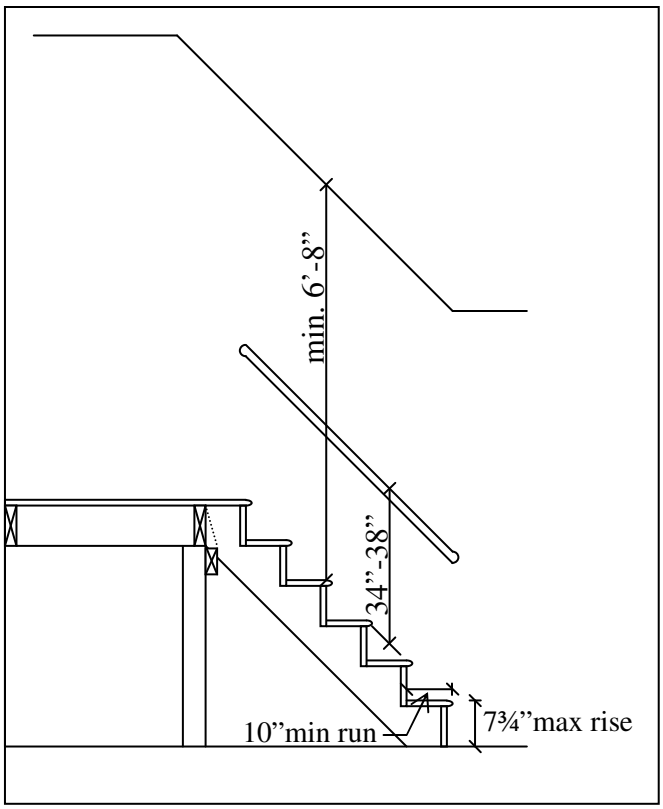
Stairways and Handrails for Residential Structures



R311.5 Stairways

Width: Stairways shall not be less than 36" in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4-1/2" 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" where a handrail is installed on one side and 27" where handrails are provided on both sides.

Treads and Risers: The max riser height is 7 3/4" and the min tread depth shall be 10". The riser height shall be measured vertically between leading edges of the adjacent treads. 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 walking surface of treads and landings of a stairway shall be sloped no steeper than 1:48(2%). The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8". The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8".

Headroom: The min headroom in all parts of the stairway shall not be less than 6'-8" measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing of platform.

Landings (R311.5.4): There shall be a floor or landing at the top and bottom of each stairway, except at the top of an interior flight of stairs provided a door does not swing over the stairs. 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.

Guards (R312): Porches, balconies or raised floor surfaces located more than 30" above the floor or grade below shall have guards not less than 36" in height. Open sides of stairs 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. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4" in diameter.

> Exception: 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.

(See Reverse for Handrails)

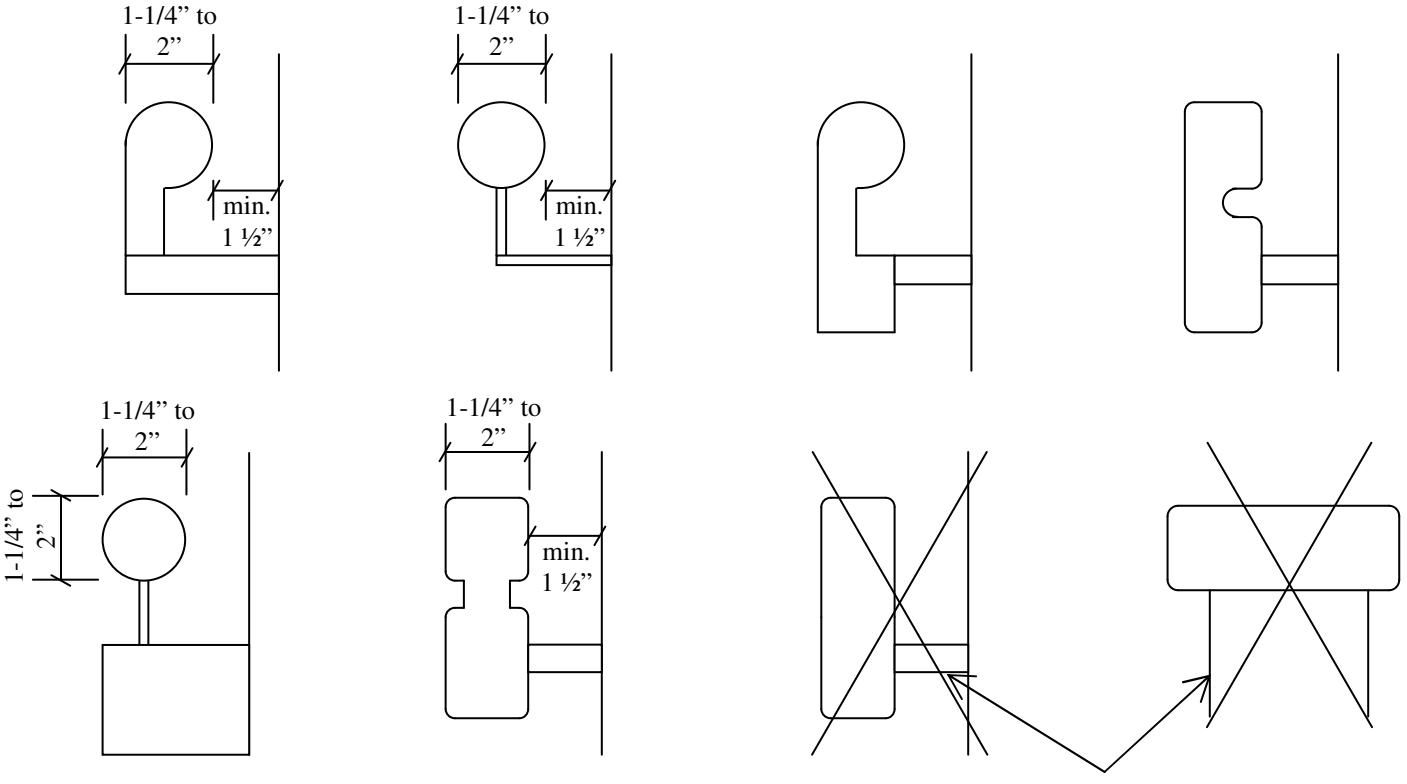
Section R311.5.6 Handrails

Handrails: Handrails having minimum and maximum heights of 34” and 38”, respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of stairways. All required handrails shall be continuous the full length of the stairs with 4 of more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight. Ends shall be returned of shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1-1/2” between the all and the handrail.

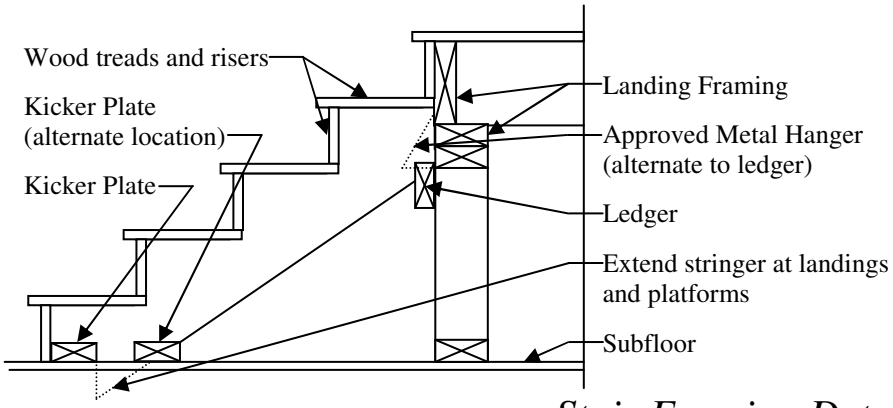
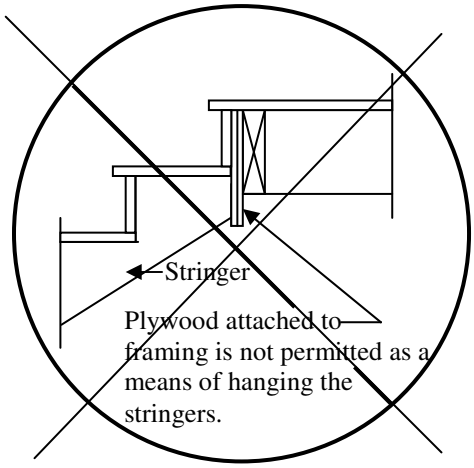
Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at a turn.
2. The use of a volute, turnout or starting easing shall be allowed over the lowest tread.

Handrail Grip Size: The handgrip portion of handrails shall have a circular cross section of 1-1/4” minimum to 2” maximum. Other handrail shapes that provide an equivalent grasping surface are permissible. Edges shall have a minimum radius of 1/8”.



(Sample Handrails) NOT ACCEPTABLE



Stair Framing Detail