

Stairs

The code endeavors to improve stair safety and prevent injuries from falls by limiting the slope of the stair and by providing for minimum tread size, clearances, uniformity, and graspable handrails. The minimum 10-inch treads and maximum 7³/₄-inch risers determine the maximum steepness of the stairway, but just as important in stair safety is the uniformity of those treads and risers for the full flight of the stair. As a person walks a stair, he or she anticipates that the next step will be the same as the previous one. Variations that are not visually apparent may break the user's rhythm or otherwise cause a misstep and fall (Figures 8-7 through 8-9). [Ref. R311.7]

Winders

Winder treads have nonparallel edges, and the code permits a tread depth of 6 inches at the narrow end, provided the full tread depth of 10 inches is achieved within 12 inches of the narrow side (Figure 8-10). A person walking on winder treads and holding the handrail will typically be positioned 12 inches from the narrow side (referred to as the "walk line"), and this configuration allows a turn in the stairway without a landing and without creating an undue hazard. [Ref. R311.7.5.2.1]

Spiral stairways

The code permits spiral stairways at any location in a dwelling (Figure 8-11). They have lesser dimensions for width, treads, and headroom and greater riser heights than conventional stairs. A spiral stairway is permitted to serve as a means of egress from a story. [Ref. R311.7.10.1]

Stair landings

Similar to the general rule requiring landings at exterior doors, in most cases a floor or landing is required at the top and bottom of stairs. This is usually not an issue unless a door is installed to enclose the stairway or the stairway opening is framed too close to a wall. The landing requirement prevents the installation of a door in close proximity to the bottom tread. Such an installation would create not only a headroom problem but a falling hazard as well. An exception to the landing requirement allows a door at the top of an interior flight of stairs, provided the door does not swing over the step (Figure 8-12). [Ref. R311.7.6]

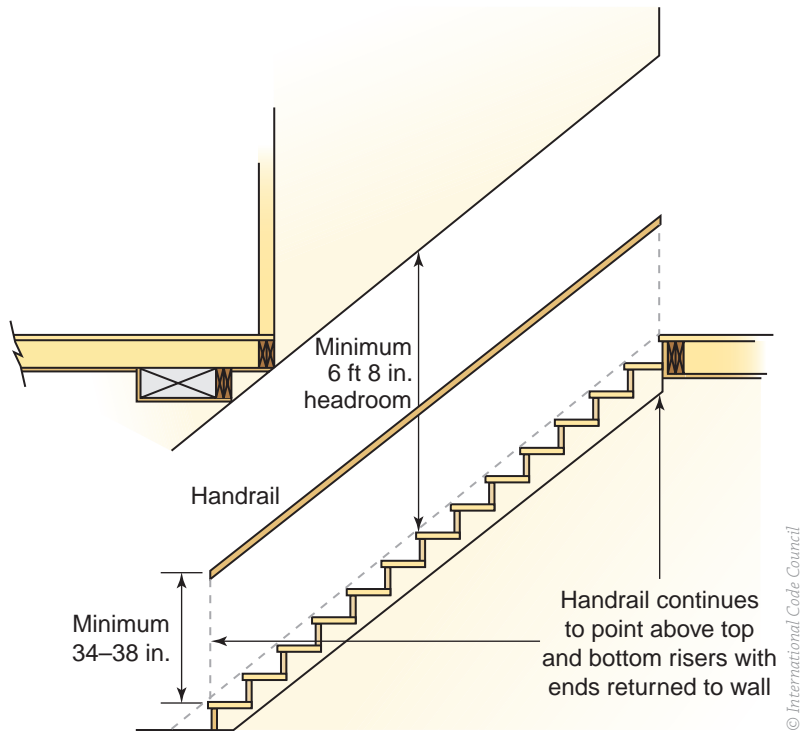


FIGURE 8-7 Stairway headroom and handrail height

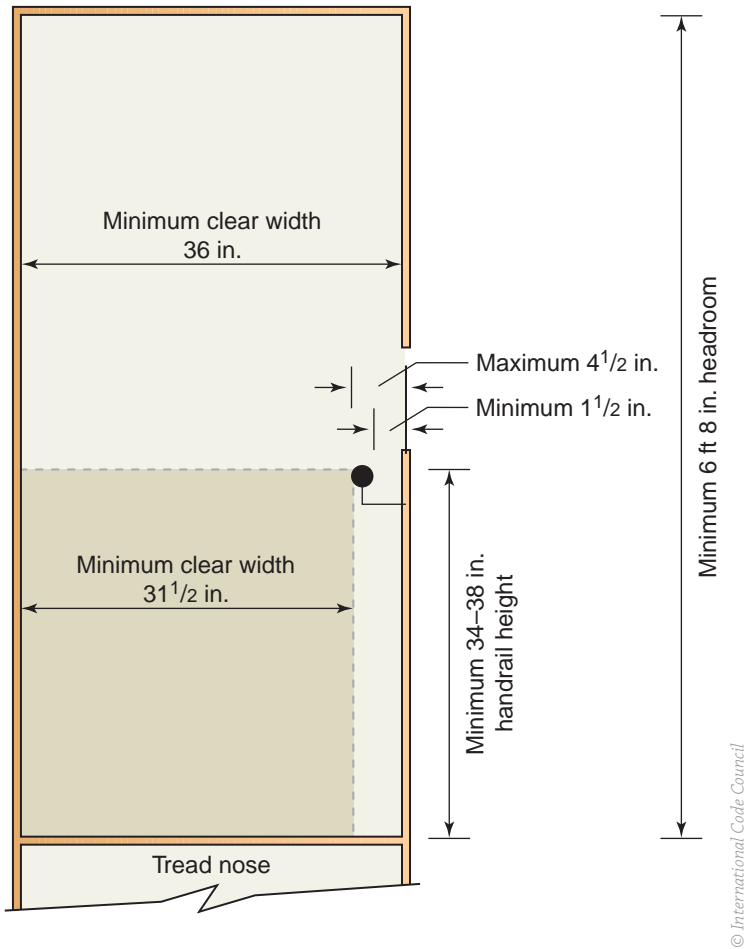


FIGURE 8-8 Stairway section, minimum width and height

Code Basics

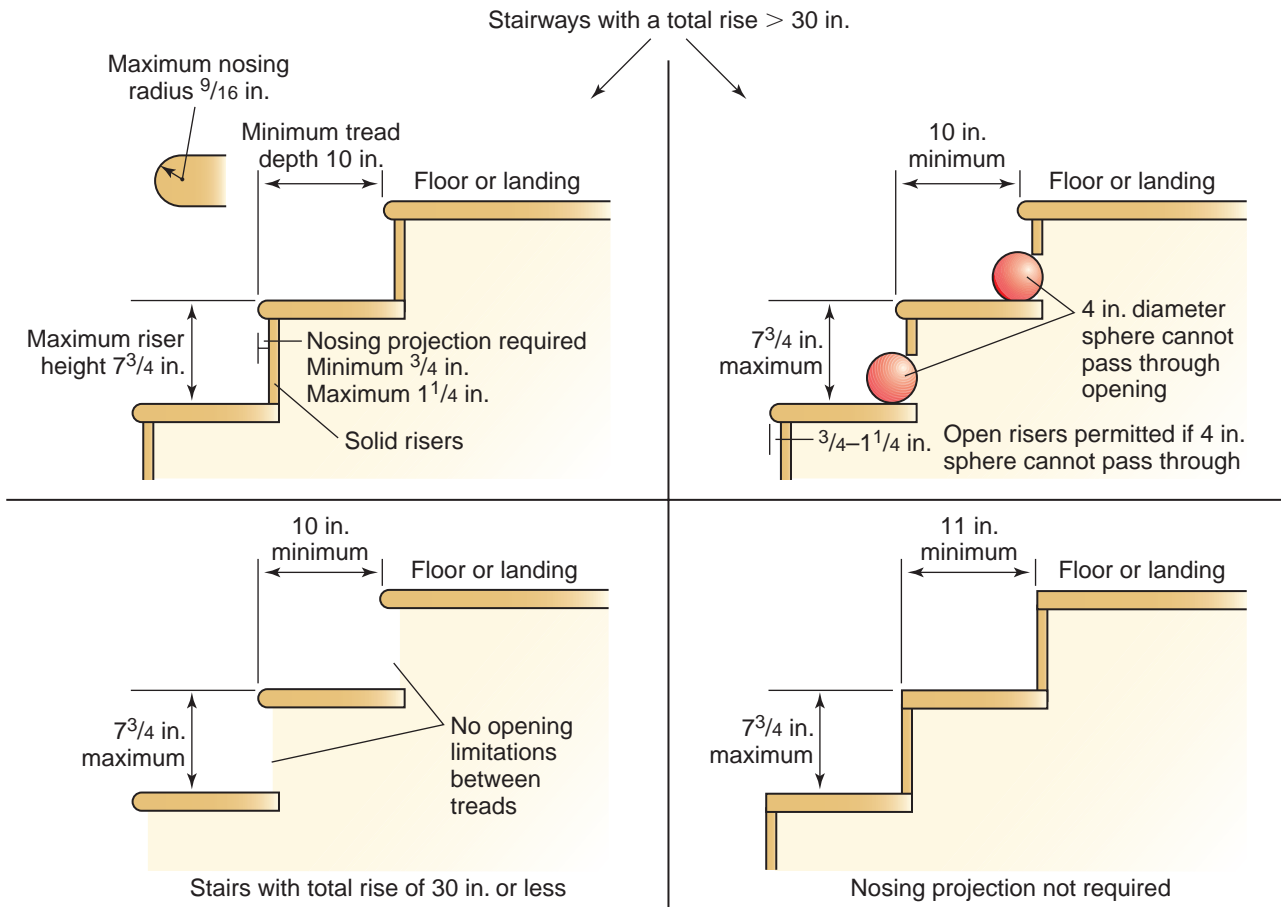
Prescriptive vs. performance

Prescriptive code provisions:

- Handrail height is 34–38 inches
- Min. guard height is 36 inches

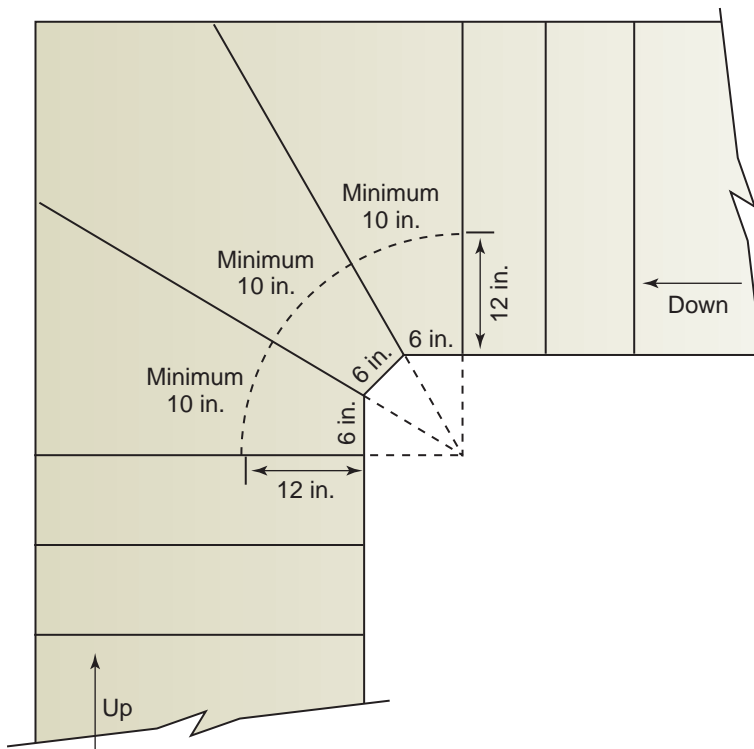
Performance code provisions:

- Handrails shall provide equivalent graspability
- Handrails and guard top rails shall resist a single concentrated load of 200 pounds ●



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FIGURE 8-9 Stair profiles



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FIGURE 8-10 Winders are permitted in the same flight of stairs as rectangular treads

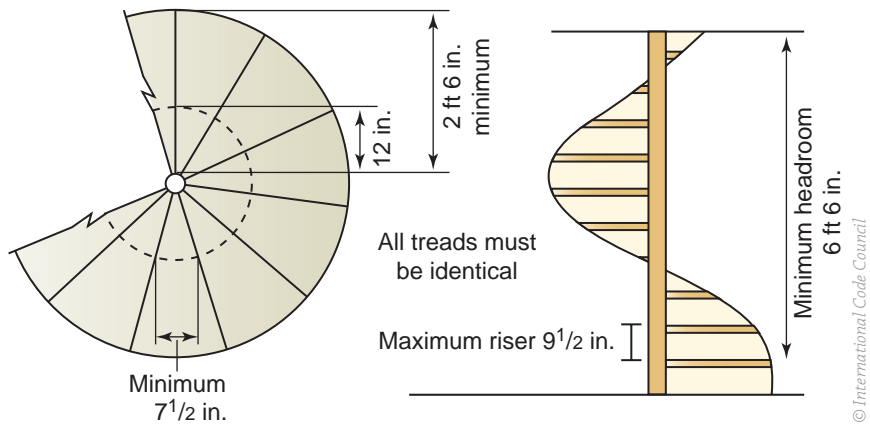


FIGURE 8-11 Spiral stair

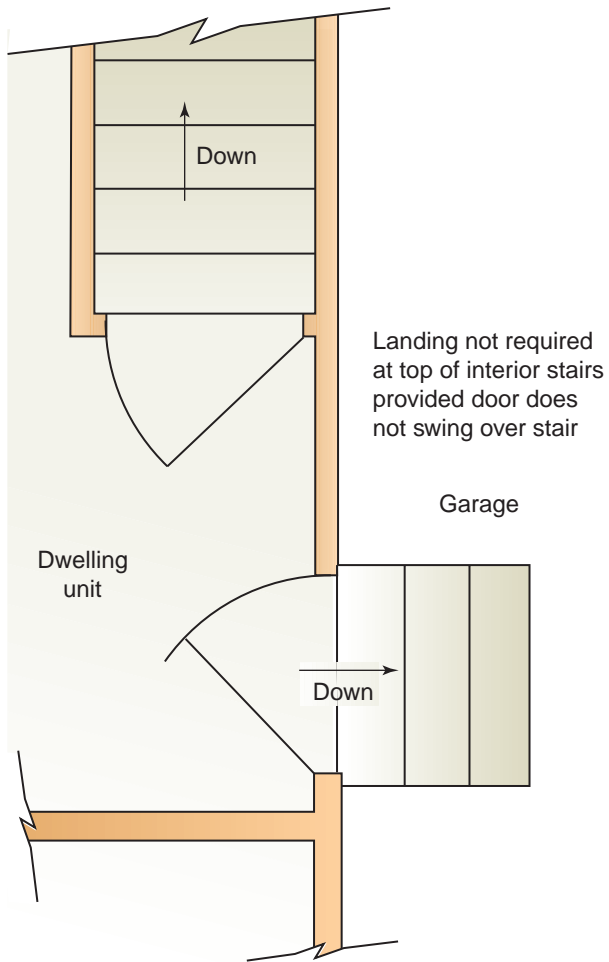


FIGURE 8-12 Door at interior stairways