

# QUESTION & ANSWER

## Building a Safe Ramp

**Q** Although my clients' deck is part of a private residence, they want a ramp access that's built in accordance with all the standards that would be required of a public, commercial deck. What would that entail?

**A** Glenn Mathewson, a building inspector in Westminster, Colo., responds: The 2006 International Residential Code (IRC) contains limited provisions for ramp construction. The slope cannot be steeper than 1:12, but can be increased to 1:8 with the specific approval from a building official and the addition of a single handrail. Also, a 36-inch-by-36-inch landing is required at the top and bottom of each ramp and at turns. That's about all that's required for residential ramps; however, the International Building Code (IBC), which governs public buildings, outlines several more provisions that will provide enhanced safety and usability for your clients.

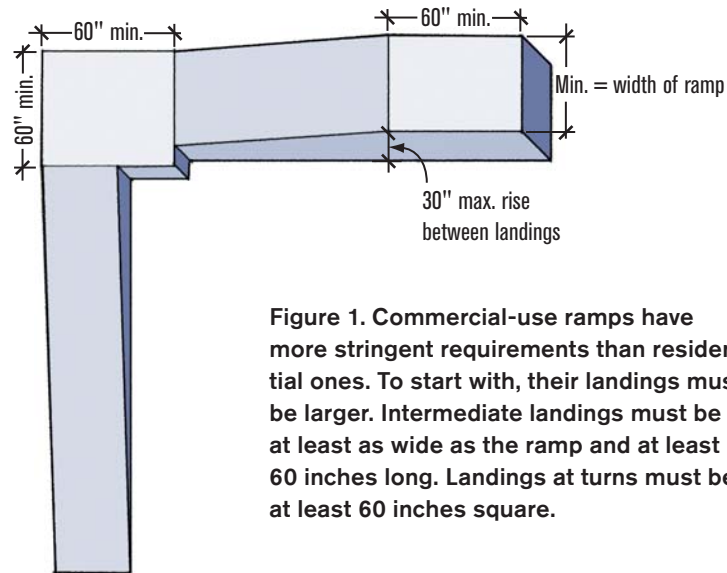
A ramp built for a public, commercial application is required to have safety features that are not required in residential applications. Under the IBC (1010.8), for example, the requirement for handrails is not related to the steepness of the ramp slope, but rather

the total rise of the ramp from top to bottom. All ramps (sloped surfaces 1:20 or steeper) must have a handrail on each side any time the total ramp rise exceeds 6 inches. The handrails must be constructed just as for stairways; graspable cross-section geometry, height from the floor surface, continuity, live-load resistance, terminated or returned ends, and distance away from the wall surface all must be considered, but are not detailed here.

Rather than the 36-inch-by-36-inch landing that's typical of all residen-

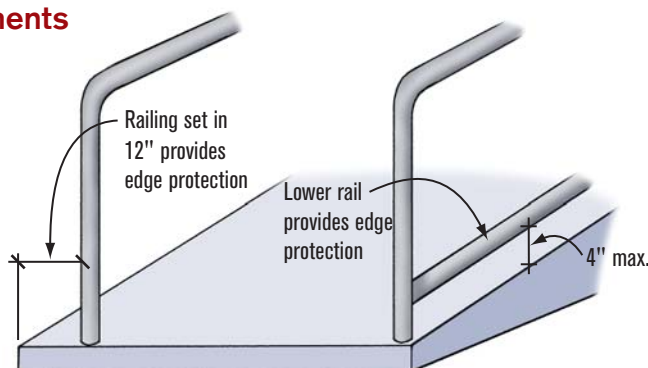
tial landings at doors, stairs, and ramps, public ramp landings must be a minimum of 60 inches in length and at least as wide as the ramp. At a turn, however, a minimum of a 60-inch-by-60-inch square landing must be provided, regardless of the width of the ramps adjoining it (Figure 1). While outdoor ramps and landings must be constructed so that water will not accumulate on them (IBC 1010.7.2), the slope of a landing, as well as the cross-slope of a ramp, cannot exceed  $\frac{1}{4}$  inch in 12 inches (IBC 1010.6.1).

## Commercial Ramps Require Landings



**Figure 1.** Commercial-use ramps have more stringent requirements than residential ones. To start with, their landings must be larger. Intermediate landings must be at least as wide as the ramp and at least 60 inches long. Landings at turns must be at least 60 inches square.

## Commercial Handrail Requirements



**Figure 2.** Handrails are required on commercial ramps when the total rise exceeds 6 inches. Most other rail requirements are similar to those in the IRC, with one exception. Edge protection must be provided so that it's harder for canes, crutches, or wheelchairs to go off the ramp below the handrail.

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The total rise of a single ramp is limited under the IBC to a maximum of 30 inches; intermediate landings are required for greater changes in elevation. Such a landing gives someone who needs assistance walking or uses a wheelchair a safe spot to take a break.

### Guard Requirements

Guards are required at the sides of ramps, just as for any other walking surface located 30 inches or more above grade, in both the IRC and IBC — nothing new there. Edge protection, however, is an additional provision that is required only on public ramps and is unrelated to height above grade. Unlike a guard, edge protection is not intended to directly inhibit a fall off the edge of the walking surface, but rather to inhibit a walking aid — such as a cane, a walker, a crutch, or a wheelchair wheel — from going off the edge and so causing a fall.

One way to provide edge protection is to create a barrier at the sides of ramps and landings such that a 4-inch sphere cannot pass between it and the walking surface. Guards that are constructed at the sides of a ramp (required by the IRC when the total rise is 30 inches or more) have to satisfy the 4-inch rule anyway. Edge protection is more of an issue with a small ramp without guards. In that case, another option would be to extend the ramp at least 12 inches horizontally beyond the inside of the handrail on both sides of the ramp. Presumably the handrail would keep a wheelchair, cane or walker at least 12 inches inside of the edge of the ramp (**Figure 2, page 20**).

When a client requests a ramp on a private deck, specifically with the intent to accommodate individuals with disabilities, I would strongly encourage the voluntary use of public-ramp provisions from the IBC. Why give your client anything less? ♦