

### **Residential Ramp Specification**

1. Ramps shall be at least 3 feet wide with a maximum 1 inch rise per 12 inch length (unless otherwise noted).
2. Landing to be level and at least 3 feet X 3 feet minimum. Landings shall be provided at the top and bottom of ramps, where doors open on to ramps and where ramps change direction.
3. All footings shall be a minimum 36 "below grade, 8" diameter for typical footing pad or otherwise required by Building Code.
4. All post shall be pressure treated 4 X 4's secured at base into 4" steel saddles anchored to concrete footings.
5. Baluster vertical, less than 4" apart. Top rail to be flat 2" X 4".
6. Floor joists shall be 2' X 8" pressure treated at 16" O.C. secured in joist hangers. Maximum span is 11'1".
7. Finished floor shall be 5/4" X 6" treated decking secured with corrosion resistant #10x3 wood screws or 10d threaded nails designed for pressure treated lumber.
8. Inside handrail to be round handrail on one side of the ramp attached with metal brackets using corrosion resistant screws and finished with polyurethane varnish. Please be advised that the minimum load requirement for any guardrail and handrail is 200lbs for a single concentrated load applied in any direction at any point along the top. Handrails shall be continuous for the full length of the ramp and ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1.5" between the wall and handrail. (See attached two pages from the American Wood Council).
9. All nails, joist brackets, screws and bolts shall be corrosion resistant designed for pressure treated lumber.
10. Ramp finished with clear waterproof sealer
11. Concrete approach pads shall be a minimum of 4" thick and have a thread type finish.
12. All modifications to existing structure for ramp installation shall be included in the square foot price.

**Topic:** Ramps

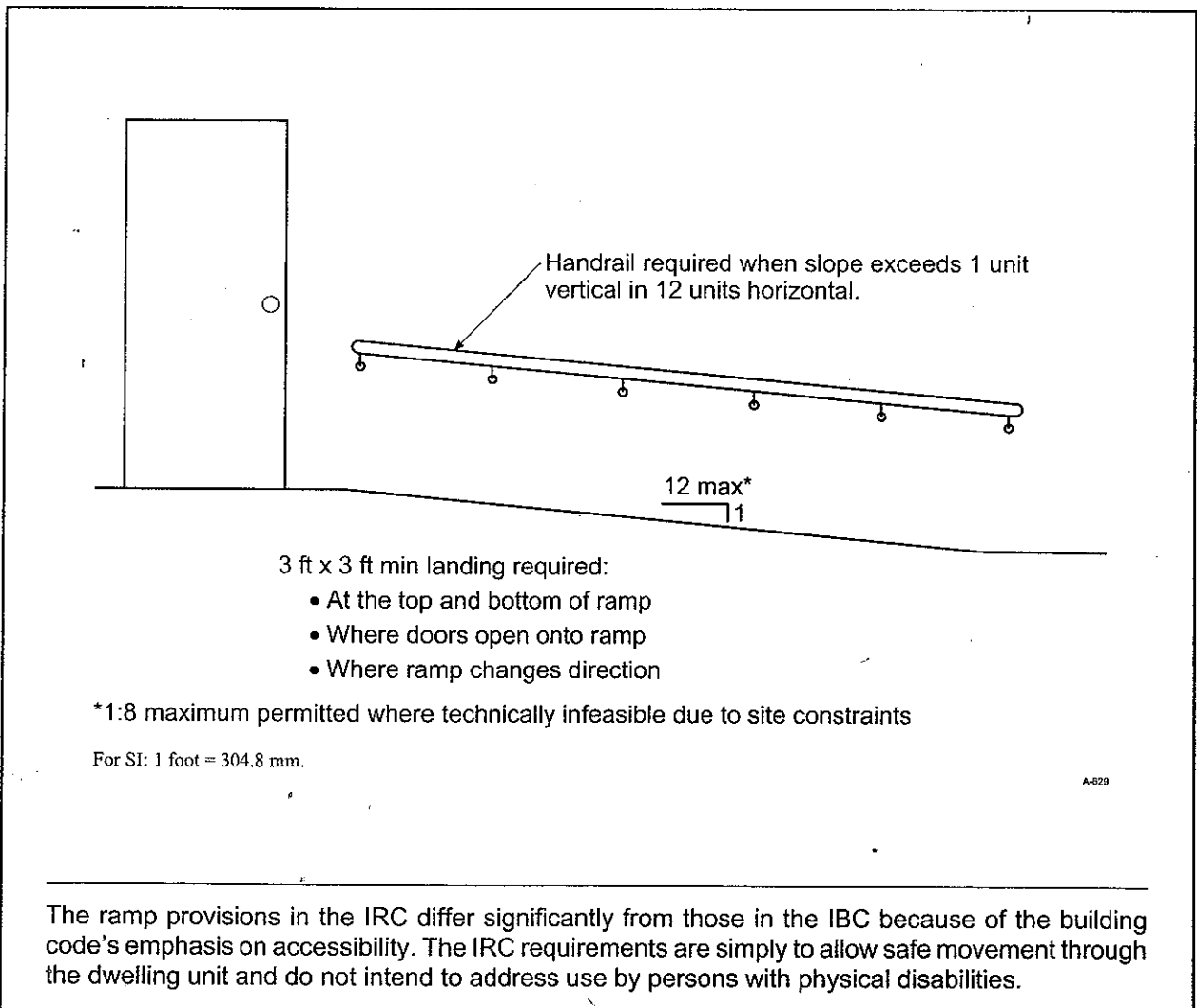
**Category:** Building Planning

**Reference:** IRC R311.8

**Subject:** Means of Egress

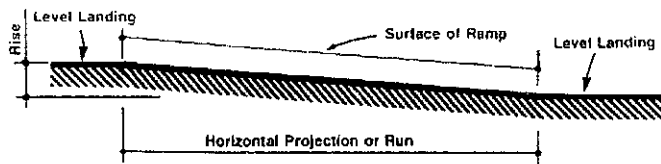
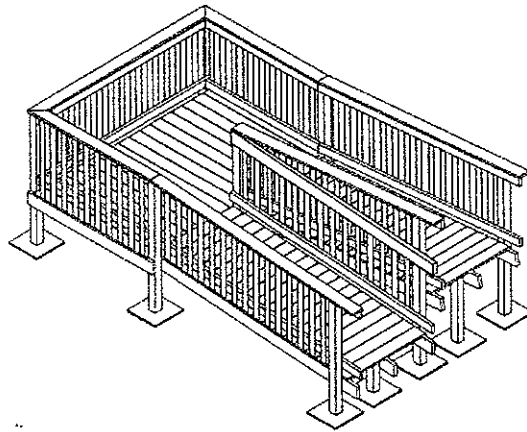
**Code Text:** *Ramps shall have a maximum slope of one unit vertical in twelve units horizontal (8.3-percent slope). See exception where technically infeasible due to site constraints. A minimum 3-foot-by-3-foot (914 mm by 914 mm) landing shall be provided: at the top and bottom of ramps, where doors open onto ramps, and where ramps change direction. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope).*

**Discussion and Commentary:** A ramp is defined as a walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope). For general use purposes as well as exiting, the maximum permitted slope is 1:12. Ramps with slopes of 1:12 to 1:20 do not require a handrail, as the rise or descent is gradual enough to provide a safe travel path. Because ramps are generally limited to a 1:12 slope, the only ramps that will require a handrail are those permitted to be steeper than 1:12 by the exception for site constraints.

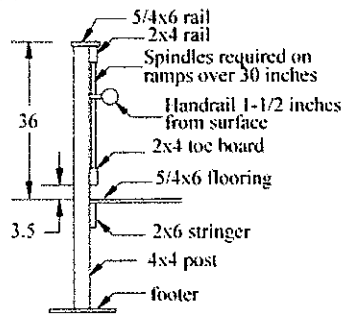


**Ramp Slope and Size:** The angle of the ramp's surfaces and the length or run of the ramp is a critical project consideration. The ramp slope will impact the layout requirements, the expense involved and the ramp's ultimate usefulness. Slope is the angle relationship of vertical height (rise) to the horizontal length or projection (run). It's usually expressed as a ratio of these two measurements, with the rise figure frequently set at a unit of one. For example, a slope of 1:12 means that as each dimensional unit (usually inches) of height changes, the other side projects (or runs out in length) 12 units (inches).

**Space Limitations That Impact Ramp Design:** Many aspects of the design of a ramp are limited by the space available and obstacles (such as trees, buildings and walkways) that affect where it can be located. By constructing a U-shaped ramp, more ramp distance can be accommodated in a smaller space.



The maximum rise for any given ramp segment should not exceed 30 inches. After rising 30 inches in elevation, a flat rest platform should be provided before the ramp continues. A flat landing must be at the top and bottom of all ramps, and landings should always be at least as wide as the ramp itself and a minimum of 60 inches in



Post detail

Railing sections should not exceed 8 feet. If the ramp section exceeds 8 feet, it's best to center the middle posts along the edges. An intermediary post should be attached to the outer joists using 1/2-inch-by-6-inch carriage bolts to insure stability.