

**PEDESTRIAN GRADE SEPARATIONS (OVERPASSES AND UNDERPASSES)
COMPLIANCE FOR THE PHYSICALLY HANDICAPPED**

The following guidelines are taken from the State Building Code, Title 24, Part 2, California Code of Regulation, published by the State Building Standards Commission, State and Consumer Services Agency.

Pedestrian ramps on pedestrian grade separations shall comply with the requirements of the following text and figures:

- a) **Slope.** The maximum slope of a ramp shall be 1 foot rise in 12 feet of horizontal run. The slope of any appreciably warped walking surface shall not exceed 1 vertical in 12 horizontal in any direction.
- b) **Cross Slope.** Cross slopes of walking surfaces shall be the minimum possible and shall not exceed $\frac{1}{4}$ inch per foot (2.083 percent gradient).
- c) **Landings.**
 - 1) Landings shall be provided at the top and bottom of each ramp. Intermediate landings shall be provided at intervals not exceeding 30 inches of vertical rise and at each change of direction. Landings are not considered in determining the maximum horizontal distance of each ramp.

Examples of ramp dimensions are :

Slope	Maximum Rise (in)	Maximum Horizontal Projection (ft)
1:12	30	30
1:15	30	37.5
1:16	30	40
1:20	30	50

- 2) Top landings shall be not less than 60 inches wide and shall be a length not less than 60 inches in the direction of ramp run.
- 3) At bottom and intermediate landings, the width shall be at least the same as required for the ramps.
- 4) Intermediate landings at a change of direction in excess of 30 degrees and bottom landings shall have a dimension in the direction of ramp run of not less than 72 inches.

Supersedes Memo to Designers 13-1 dated October 1982

- 5) Other intermediate landings shall have a dimension in the direction of ramp run of not less than 60 inches.
- d) Handrails. Handrails are required on ramps if slope exceeds 1 foot rise in 15 feet of horizontal run. Handrails shall be placed on each side of each ramp, shall be continuous the full length of the ramp, shall be 30 inches to 34 inches above the ramp surface, shall extend a minimum of 1 foot beyond the top and bottom of the ramp, and the ends shall be returned. Handrails projecting from a wall shall have a space of not less than 1½ inches between the wall and the handrail. The grip portion shall be not less than 1¼ inches nor more than 2 inches in cross-sectional dimension. All surfaces shall be smooth with no sharp corners.
- e) Surface. The surface of ramps shall be slip-resistant as follows:
 - 1) Slopes Less than 6 Percent – Surfaces with a slope of less than 6 percent shall be at least as slip-resistant as that described as medium salted finish.
 - 2) Slopes 6 Percent or Greater – Surfaces with a slope of 6 percent or greater shall be at least as slip-resistant as that described as broom-finished concrete.
- f) Wheel-guides. Where the ramp surface is not bounded by a wall or fence and the ramp exceeds 10 feet in length, the ramp shall comply with one of the following requirements:
 - 1) A guide curb a minimum of 2 inches in height shall be provided at each side of the ramp; or
 - 2) A wheel-guide rail shall be provided, centered 3 inches plus or minus 1 inch above the surface of the ramp.
- g) Guardrails. Ramps more than 30 inches above the adjacent ground or floor shall be provided with guardrails as required below and handrails as required in d) above. Such guardrails shall be continuous from the top of the ramp to the bottom of the ramp.
 - 1) A guardrail shall consist of a top rail, mid-rail or equivalent protection, and posts, and shall have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the ramp level. The top rail shall be smooth surfaced throughout the length of the railing. The mid-rail shall be approximately halfway between the top rail and the ramp. The ends of the rails shall not overhang the terminal posts.

Note: Local building regulations may require that open guardrails shall have intermediate rails or an ornamental pattern such that a sphere 6 inches in diameter cannot pass through.
 - 2) All guardrails, including their connections and anchorages, shall be designed for a live load of 20 pounds per linear foot applied at the top rail.

- h) Exception. When the grade differential of the walking surface of a pedestrian grade separation exceeds 14 feet due to required height clearance and grade conditions, and the enforcing agency (OSA) finds that because of right-of-way restrictions, topography or natural barriers, wheelchair accessibility or equivalent facilitation would create an unreasonable hardship, such accessibility need not be provided.



C. L. Pearson

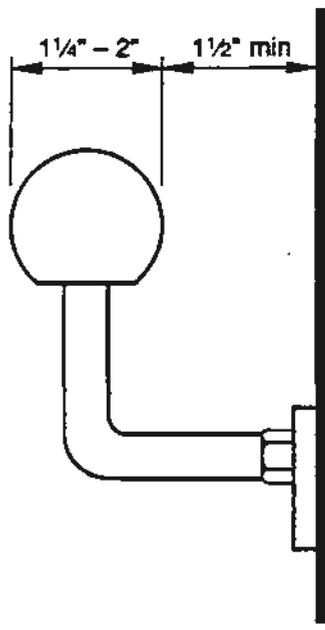


Philip C Warriner

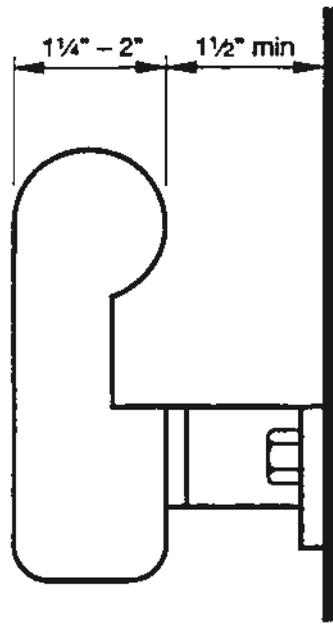


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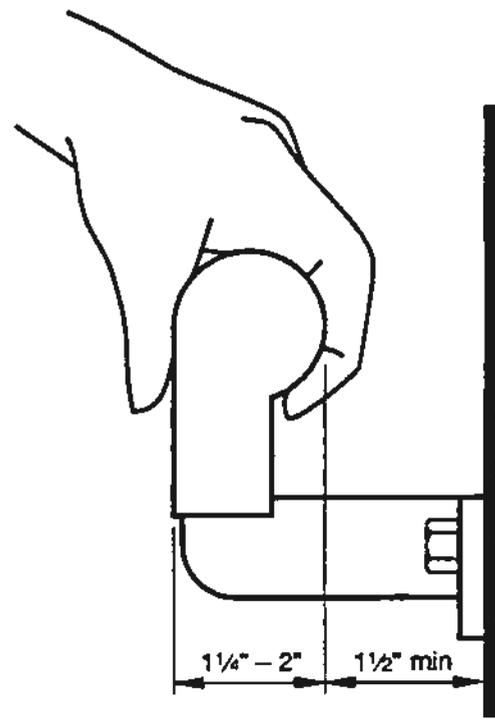
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A



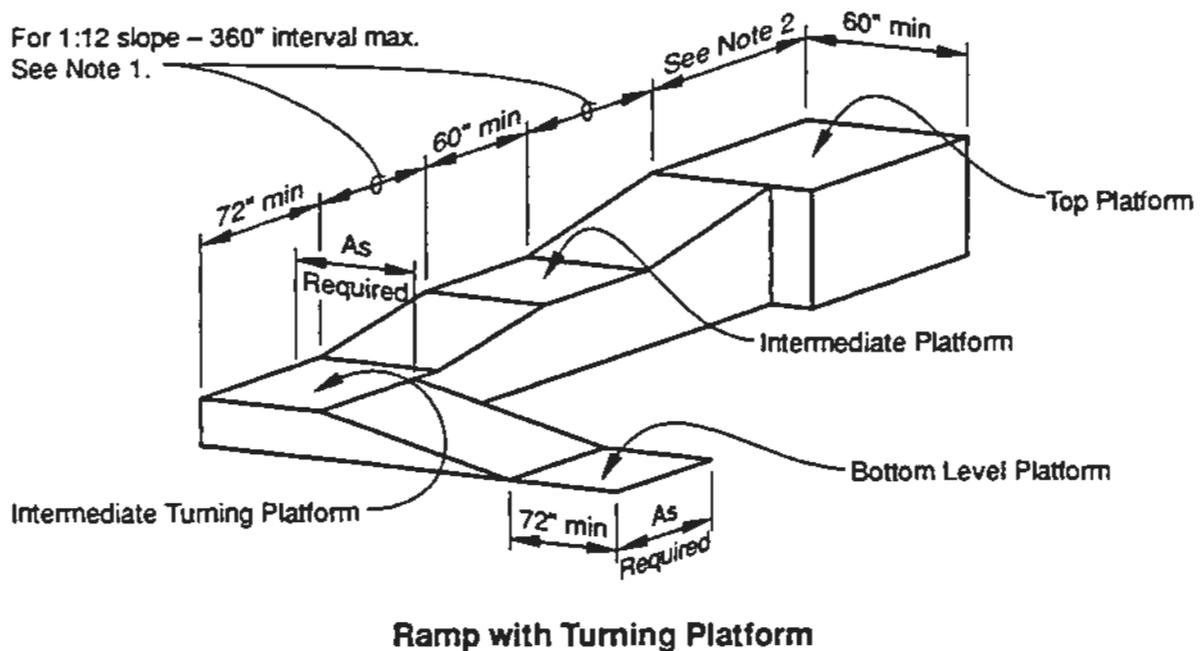
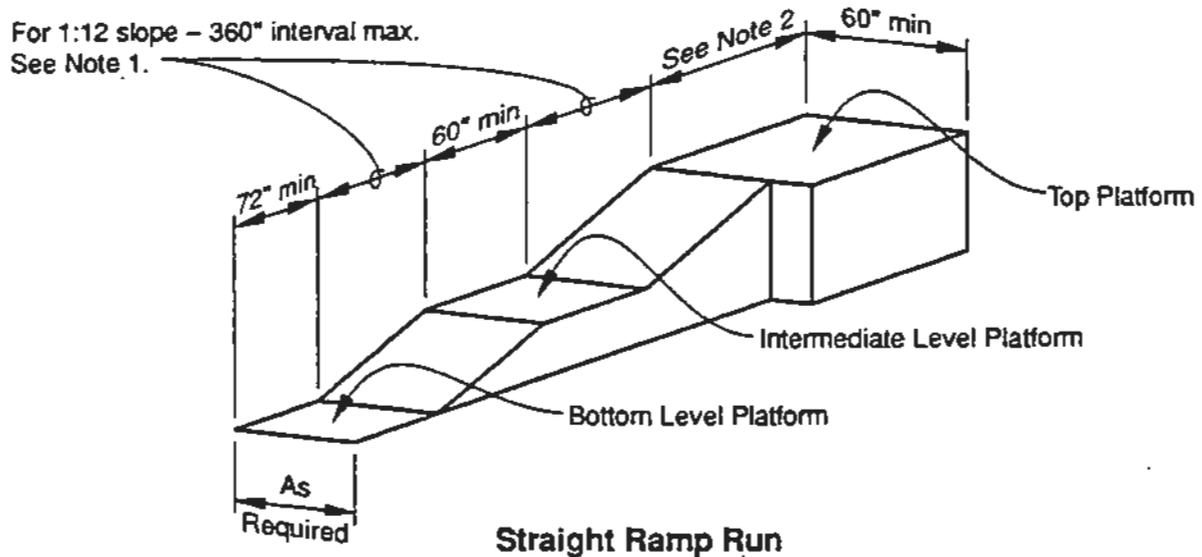
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C

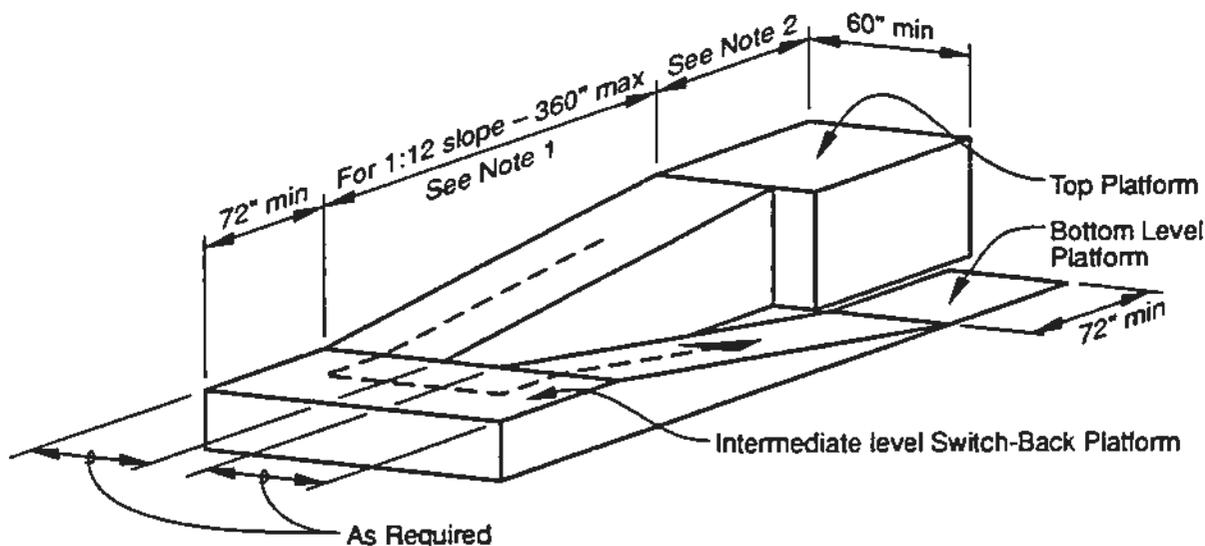
Stair Handrails

These diagrams are illustrative only of the applicable Building Standards and do not delineate the only means of complying with these standards.

**Notes:**

1. Maximum horizontal distances of each ramp and run varies. See table under Paragraph C.
2. When no door swings on landing – 60" minimum; when door swings onto landing – door width plus 42" minimum.

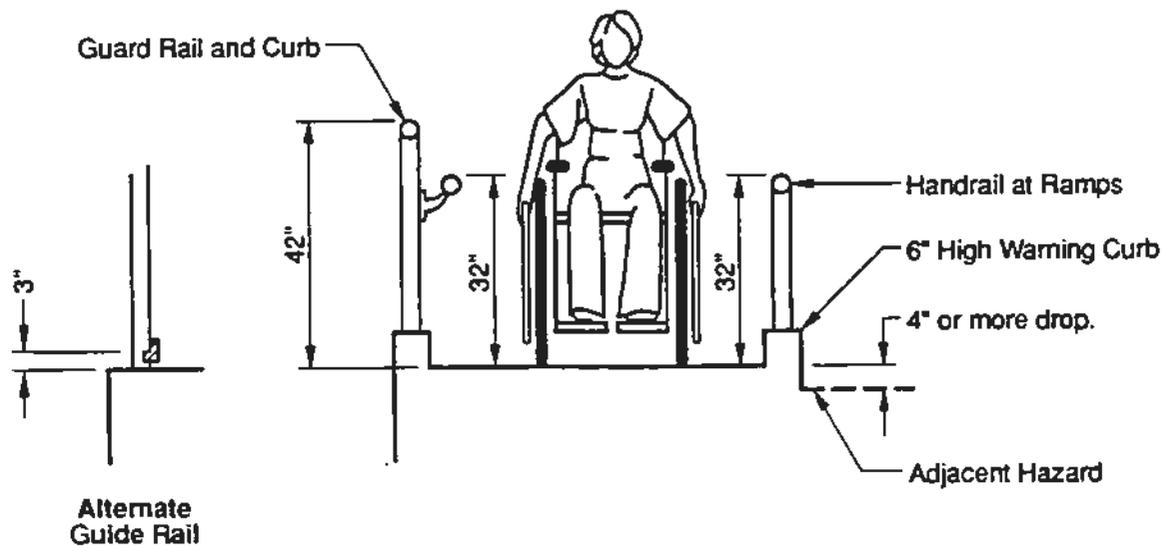
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Ramp with Intermediate Switch-Back Platform

Notes:

1. Maximum horizontal distances of each ramp and run varies. See table under Paragraph C.
2. When no door swings on landing - 60" minimum; when door swings onto landing - door width plus 42" minimum.
3. All ramps must meet handrail and curb requirements.



Ramp with Guard Rail, Handrail and Curb

These diagrams are illustrative only of the applicable Building Standards and do not delineate the only means of complying with these standards.