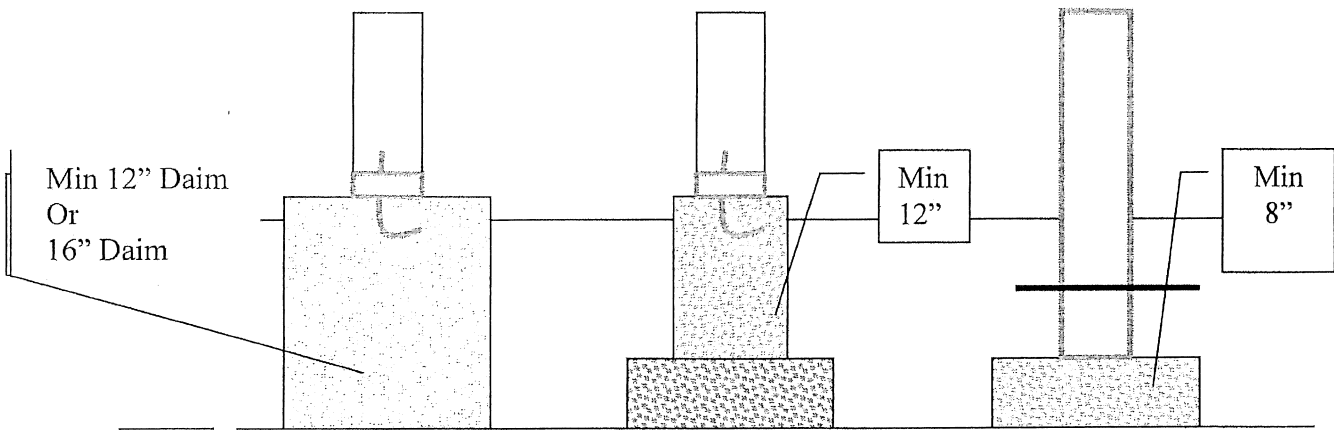


# Guide for Decks



**In General, dimensions for footer shall bear directly on undisturbed soil and;**

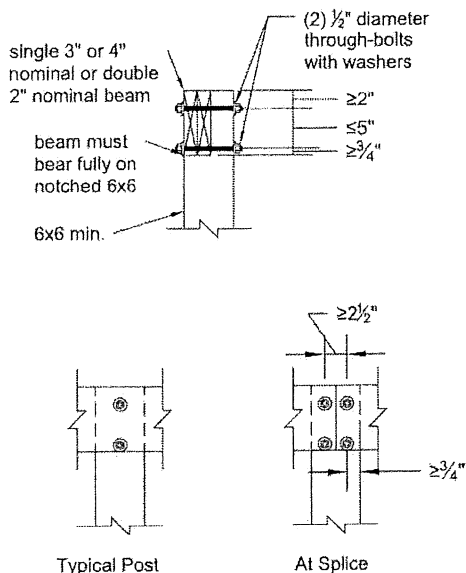
- **Min. Depth below frost 36"**
- **For a 4" X 4" Post, 12" diameter footer minimum.**
- **For a 6" X 6" Post, 16"-18" diameter footer minimum**
- **All footers minimum thickness, 8"**

## POST REQUIREMENTS

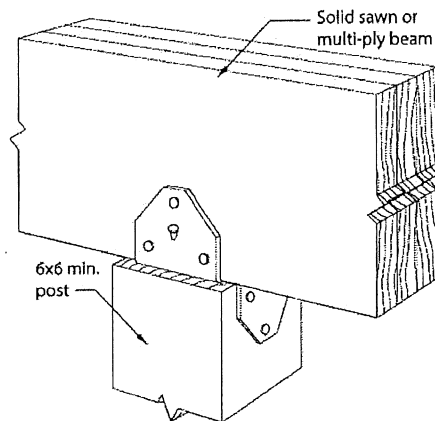
All deck post sizes shall be 6x6 (nominal) or larger, and the maximum height shall be in accordance with Table 4 and measured from grade or top of foundation, whichever is highest, to the underside of the beam. Under prescriptive limits of this document, 8x8 nominal posts can be substituted anywhere in Table 4 but are limited to a maximum height of 14'-0". Posts shall be centered on footings. Cut ends and notches of posts shall be field treated with an *approved* preservative (such as copper naphthenate) [R402.1.2]. The beam shall be attached to the post by notching as shown in Figure 8A or by providing an *approved* post cap to connect the beam and post as shown in Figure 8B. All 3-ply beams shall be connected to the post by a post cap. All through-bolts shall have washers under the bolt head and nut. Attachment of the beam to the side of the post without notching is prohibited (see Figure 9).

Provide diagonal bracing parallel to the beam at each corner post greater than 2'-0" in height as shown in Figure 10. Diagonal bracing is prohibited on center posts. Bracing shall be fastened to the post at one end and the beam at the other with  $\frac{1}{2}$ " diameter lag screws. For non-ledger decks, (see Figure 21) diagonal bracing may be omitted at the beam and posts adjacent to the house.

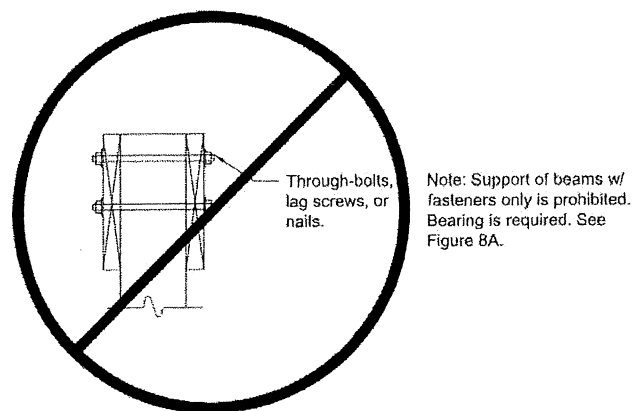
**Figure 8A. Post-to-Beam Attachment Requirements.**



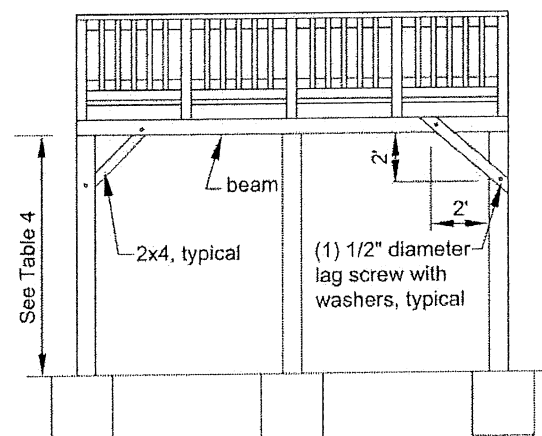
**Figure 8B. Alternate *Approved* Post-to-Beam Post Cap Attachment.**



**Figure 9. Prohibited Post-to-Beam Attachment Condition.**



**Figure 10. Diagonal Bracing.**

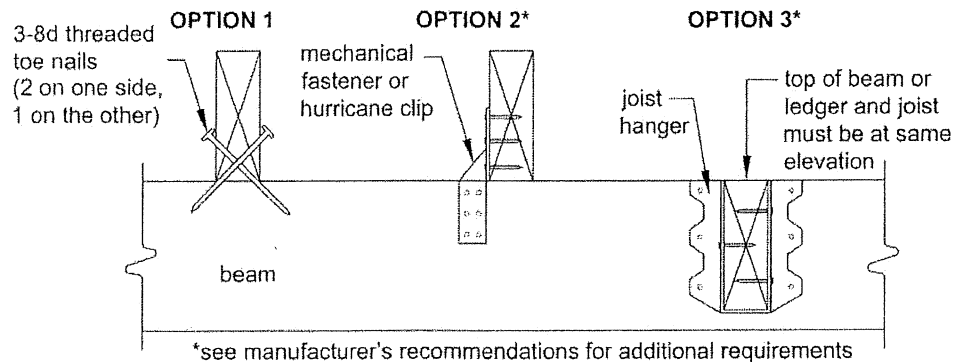


### JOIST-TO-BEAM CONNECTION

Each joist shall be attached to the beam as shown in Figure 6. Joists may bear on and overhang past the beam face the lesser of  $L_O$  or  $L/4$  when Option 1 or Option 2 is used to attach the joist to the beam and blocking is provided between joists at beam bearing. Mechanical fasteners or hurricane clips used, as shown in Option 2,

must have a minimum capacity of 100 lbs in both uplift and lateral load directions. Joists may also attach to the side of the beam with joist hangers per Option 3. Joists shall not frame in from opposite sides of the same beam. See JOIST HANGERS for more information. Hangers, clips, and mechanical fasteners shall be galvanized or stainless steel (see MINIMUM REQUIREMENTS).

Figure 6. Joist-to-Beam Detail.



### JOIST HANGERS

Joist hangers, as shown in Figure 7, shall have a depth of at least 60% of ledger or beam depth. Each hanger shall have a minimum vertical capacity in accordance with Table 3A. The joist hanger shall be selected from an *approved* manufacturer's product data based on the dimensions of the joist or header it is carrying. Joist hangers and fasteners shall be corrosion resistant (see MINIMUM REQUIREMENTS).

Use joist hangers with inside flanges when clearances to the edge of the beam or ledger board dictate. **Do not use clip angles or brackets to support joists.**

Figure 7. Typical Joist Hangers.

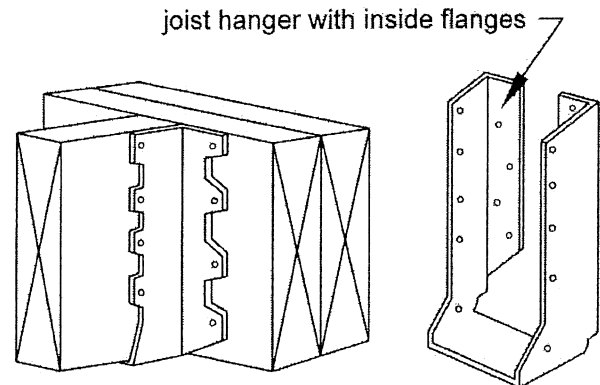


Table 3A. Joist Hanger Vertical Capacity.

Joist Size	Minimum Capacity, lbs
2x6	400
2x8	500
2x10	600
2x12	700

Figure 22. Lateral Load Device with Joists Parallel to Deck Joists.

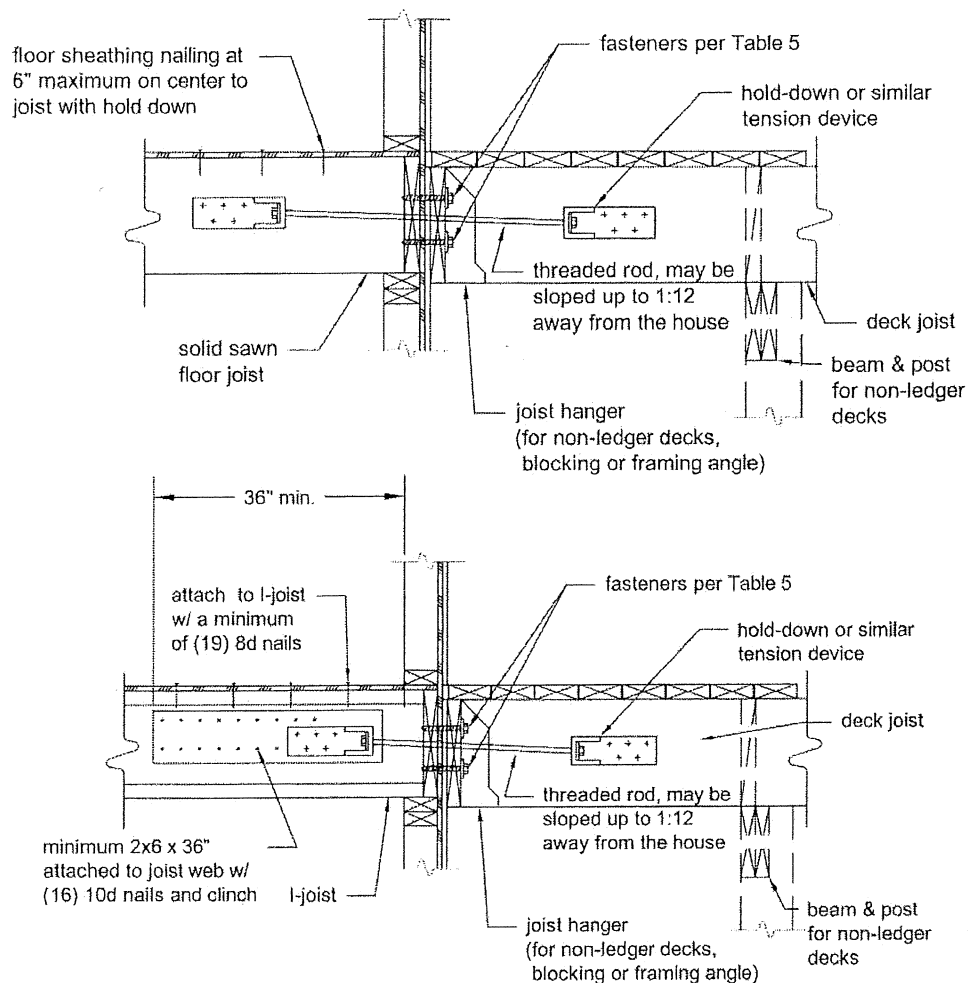
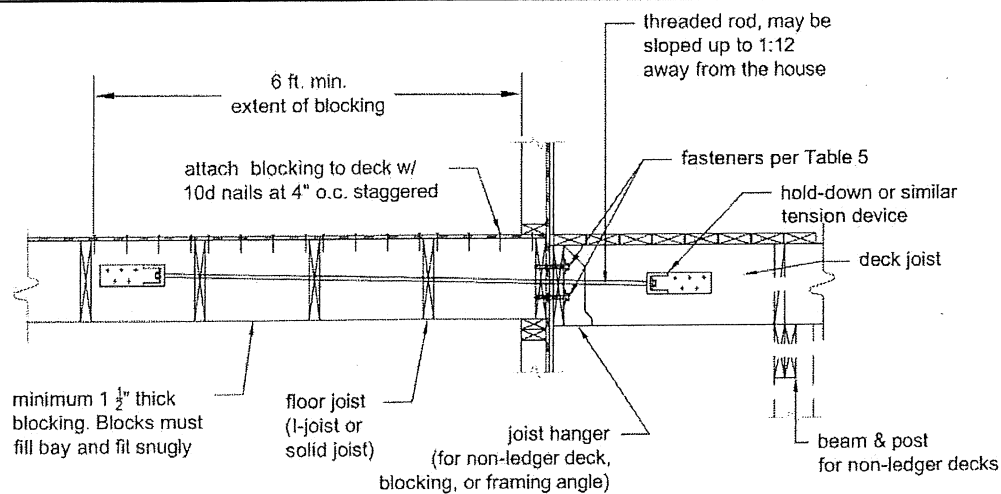


Figure 23. Lateral Load Device with Joists Perpendicular to Deck Joists.

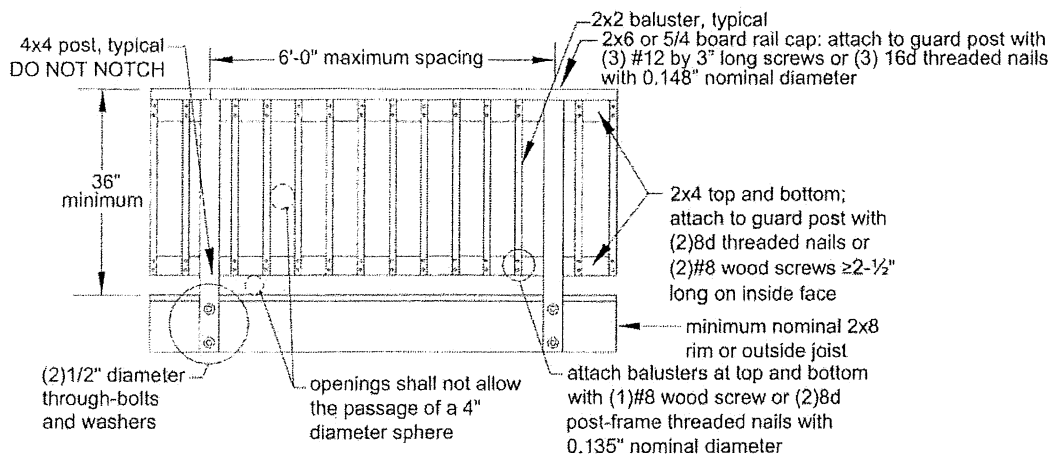


## GUARD REQUIREMENTS

All decks greater than 30" above grade are required to have a guard [R312.1] - one example is shown in Figure

24. Other methods and materials may be used for guard construction when *approved* by the authority having jurisdiction.

**Figure 24. Example Guard Detail.**



## GUARD POST ATTACHMENTS FOR REQUIRED GUARDS

Deck guard posts for required guards shall be a minimum 4x4 (nominal) with an adjusted bending design value not less than 1,100 psi. Outside-joists and rim joists to which guard posts are attached shall be a minimum of 2x8 (nominal).

Guard posts for required guards which run parallel to the deck joists shall be attached to the outside joist per

Figure 25. Guard posts for required guards that run perpendicular to the deck joists shall be attached to the rim joist in accordance with Figure 26. Only hold-down anchor models meeting these minimum requirements shall be used. Hold-down anchors shall have a minimum allowable tension load of 1,800 pounds for a 36" maximum guard height and be installed in accordance with the manufacturer's instructions.

**Figure 25. Guard Post to Outside-Joist Example.**

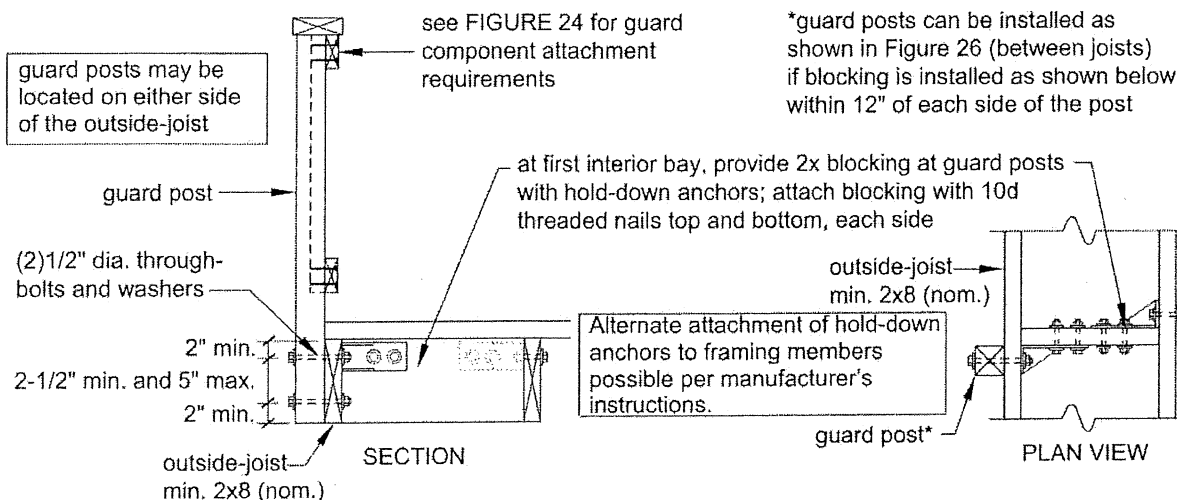
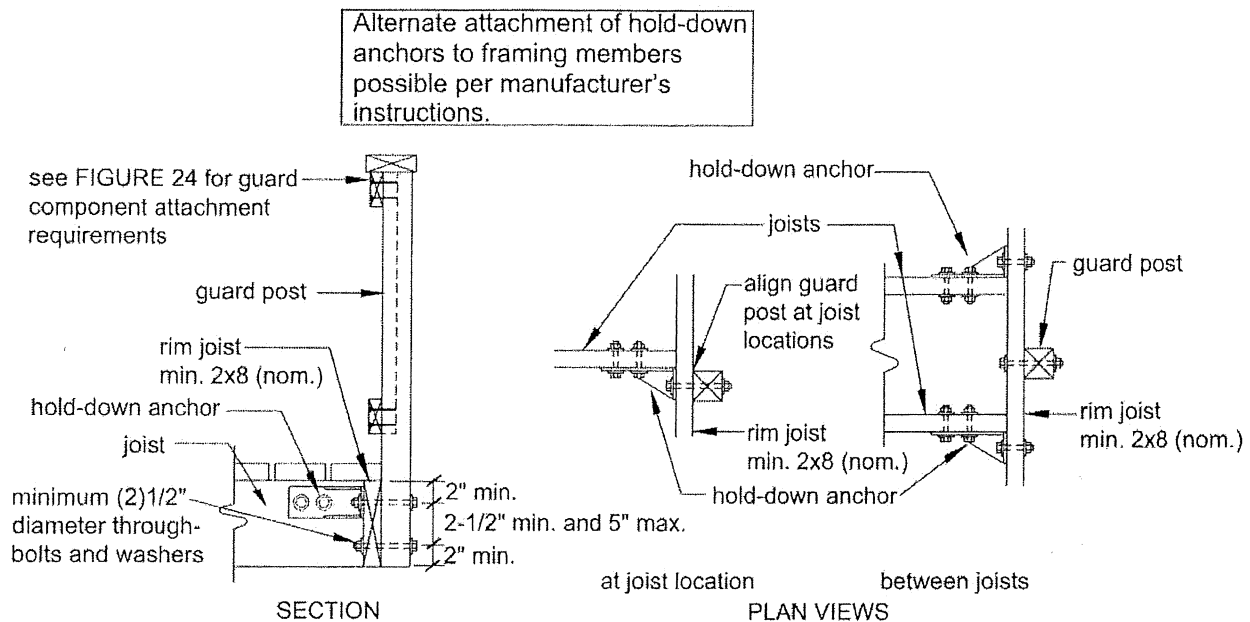


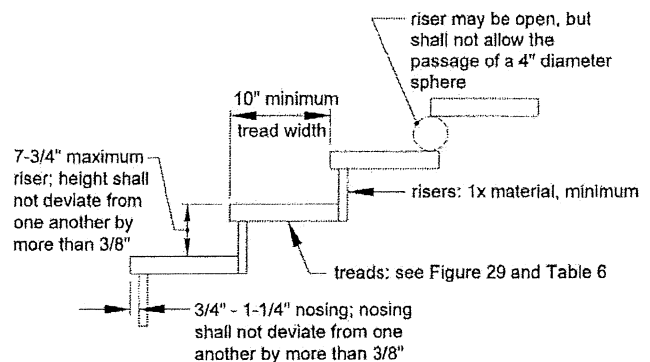
Figure 26. Guard Post to Rim Joist Example.



## STAIR REQUIREMENTS

Stairs, stair stringers, and stair guards shall meet the requirements shown in Figure 27 through Figure 34 and Table 6 except where amended by the local jurisdiction. All stringers shall be a minimum of 2x12. Stair stringers shall not span more than the dimensions shown in Figure 28. If the stringer span exceeds these dimensions, then a 4x4 post may be provided to support the stringer and shorten its span length. The 4x4 post shall be notched and bolted to the stringer with (2) 1/2" diameter through-bolts with washers per Figure 8A. The post shall be centered on a 12" diameter or 10" square, 6" thick footing. The footing shall be constructed as shown in Figure 34 and attached to the post as shown in Figure 12. An intermediate landing may also be provided to shorten the stringer span (see provisions below). If the total vertical height of a stairway exceeds 12'-0", then an intermediate landing shall be required. All intermediate stair landings must be designed and constructed as a non-ledger deck using the details in this document. Stairs shall be a minimum of 36" in width as shown in Figure 33 [R311.7]. If only cut stringers are used, a minimum of three are required. For stairs greater than 36" in width, a combination of cut and solid stringers can be used, but shall be placed at a maximum spacing of 18" on center (see Figure 29). The width of each landing shall not be less than the width of the stairway served. Every rectangular landing shall have a minimum dimension of 36" measured in the direction of travel and no less than the width of the stairway served [R311.7].

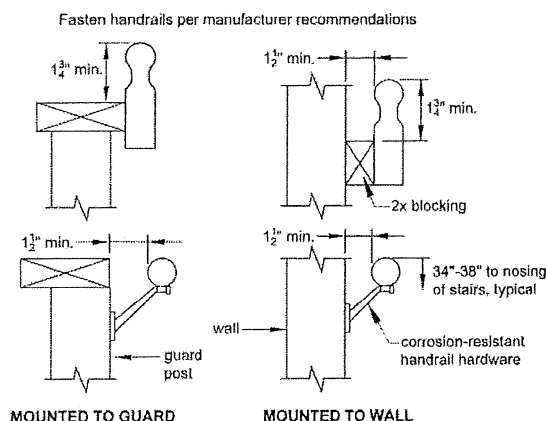
Figure 27. Tread and Riser Detail.



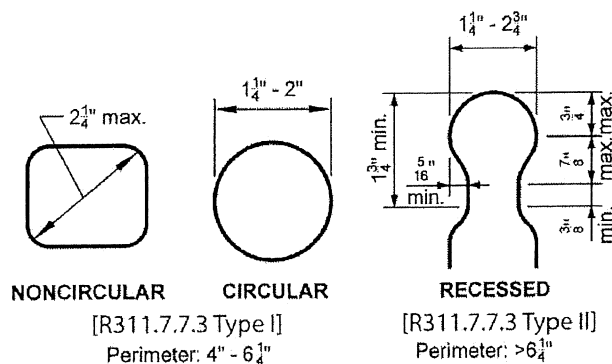
### STAIR HANDRAIL REQUIREMENTS

All stairs with 4 or more risers shall have a handrail on at least one side (see Figure 32A) [R311.7.8]. The handrail height measured vertically from the sloped plane adjoining the tread nosing shall be not less than 34 inches and not more than 38 inches (see Figure 30) [R311.7.8.1]. Handrails shall be graspable and shall be composed of decay-resistant and/or corrosion resistant material. Handrails shall be Type I, Type II, or provide equivalent graspability (see Figure 32B). Type I shall have a perimeter dimension of at least 4" and not greater than 6-1/4". Type II rails with a perimeter greater than 6-1/4" shall provide a graspable finger recess area on both sides of the profile [R311.7.8.3]. All shapes shall have a smooth surface with no sharp corners. Handrails shall run continuously from a point directly over the lowest riser to a point directly over the highest riser and shall return to the guard at each end (see Figure 33). Handrails may be interrupted by guard posts at a turn in the stair [R311.7.8.2].

**Figure 32A. Handrail Mounting Examples.**



**Figure 32B. Handrail Grip Size.**



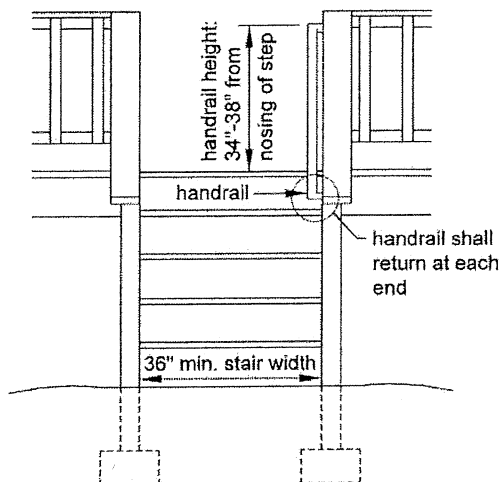
### STAIR FOOTING REQUIREMENTS [R403]

Where the stairway meets grade, attach the stringers to the stair guard posts as shown in Figure 34. Posts shall bear on footings. All footings shall bear on solid ground and shall be placed at least 12 inches below the undisturbed ground surface or below the frost line, whichever is deeper (see Figure 34). Stringers shall bear on a 2x4 bearing block attached to the post as shown. Stringers shall not bear on new or existing concrete pads or patios that are not founded below this depth. When guards are not required (see GUARD REQUIREMENTS), posts may terminate below the bottom tread elevation. Bolts are only required if a guard post is required.

### STAIR LIGHTING REQUIREMENTS [R303.7]

Stairways shall have a light source located at the top landing such that all stairs and landings are illuminated. The light switch shall be operated from inside the house. However, motion detected or timed switches are acceptable.

**Figure 33. Miscellaneous Stair Requirements.**



**Figure 34. Stair Footing Detail.**

