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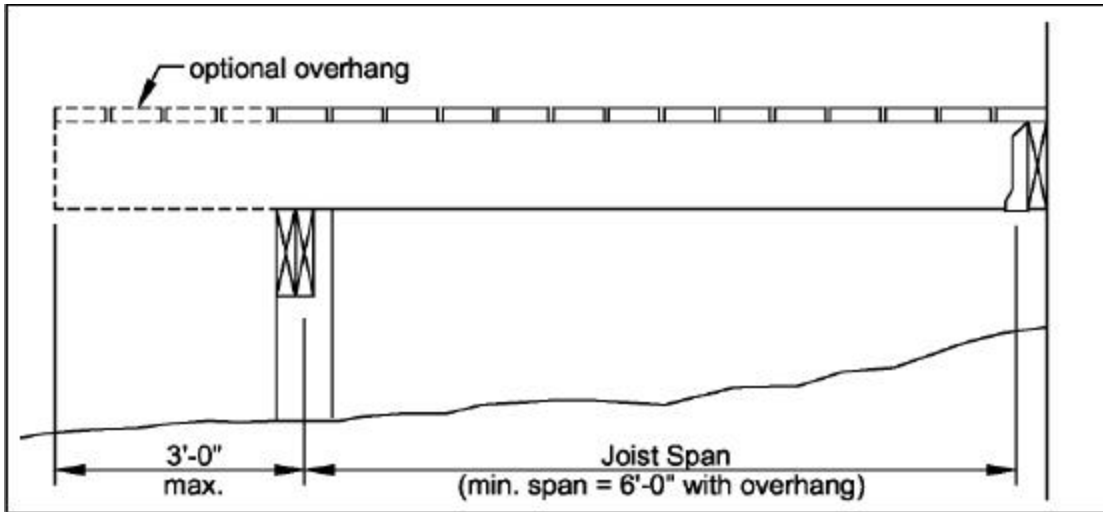
# *DECK CONSTRUCTION SPECIFICATIONS*

ACCORDING TO I.R.C. 2000

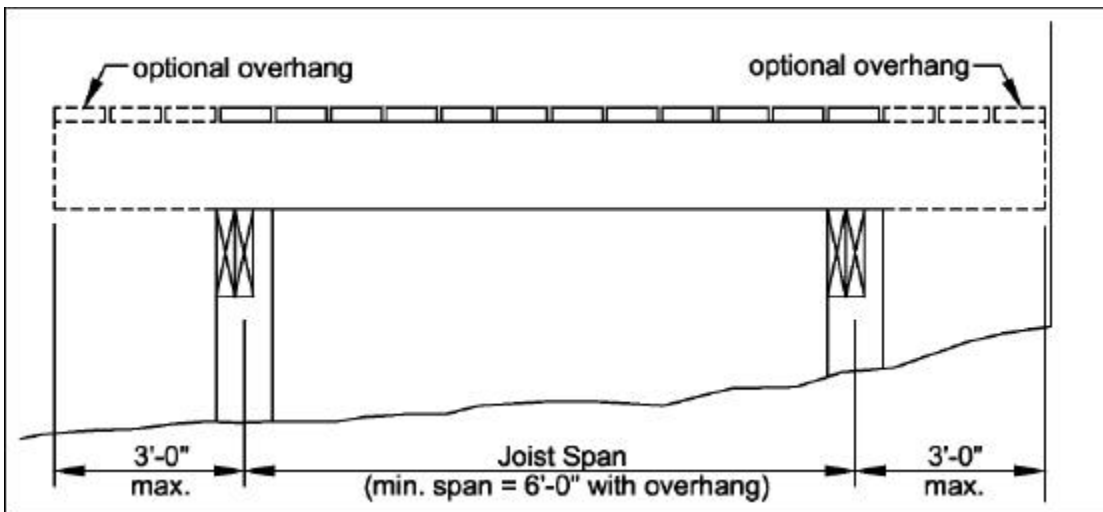
1. All lumber used for structure framing is to be pressure treated lumber.
2. All metal fasteners, connectors or other hardware in direct contact with any preservative treated lumber shall be stainless steel type 304 or type 316 or have a galvanized coating that complies with ASTM A123 (connectors) or A153 (fasteners) Class D Standards for Fasteners and Hardware. The connectors and fasteners must be made of the same material for compatibility.
3. **GIRDER SPANS:** refer to Table No. 502.5(2) for supporting one floor only.
4. Refer to Table 502.3.1(2) for allowable floor joist spans that support all areas other than sleeping and attics provided that the designed live load does not exceed 40 psf and the designed dead load does not exceed 10 psf.
5. **BEARING:** The ends of each joist beam or girder shall not have not less than 1 ½ inches of bearing on wood or metal and not less than 3 inches on masonry.  
Floor systems having joists framing from opposite sides over bearing support shall be tied together by lapping joists a minimum of 3 inches or with a wood or metal splice, or by continuity of floor sheathing overlapping the ends of joists at least 3 inches, or by other approved methods. Face nail overlapping joists together with 3-10d nails.  
Joists framing into the side of a wood girder shall be supported by approved framing anchors or on ledger strips not less than nominal 2 inches by 2 inches or on properly sized joist hangers.
6. **CANTILEVER:** Only up to 2 feet cantilever allowed.
7. **FOOTER:** The footer shall be 8 inches in depth by 12 inches in diameter to support 4" x 4" posts. Posthole depths will be a minimum of 30 inches (C.O.L. Codified Ord. 1301.09)
8. **HANDRAILS, GUARDRAILS and STAIRS:** Guardrails (Section R316) are required where any portion of the deck is greater than 30 inches above finish grade. Handrails (Section R315) are required on stairs with 3 or more risers. Stairs (Section R314) shall be a minimum of 36 inches wide. Treads are to be a minimum of 10 inches measured nose to nose and risers shall be a maximum of 7 ¾ inches in height.

**JOIST SIZE**

The span of a joist is measured from the centerline of bearing at one end of the joist to the centerline of bearing at the other and does not include overhangs. Maximum joist span lengths are noted in TABLE 1. See FIGURE 1 and FIGURE 2 for joist span types.

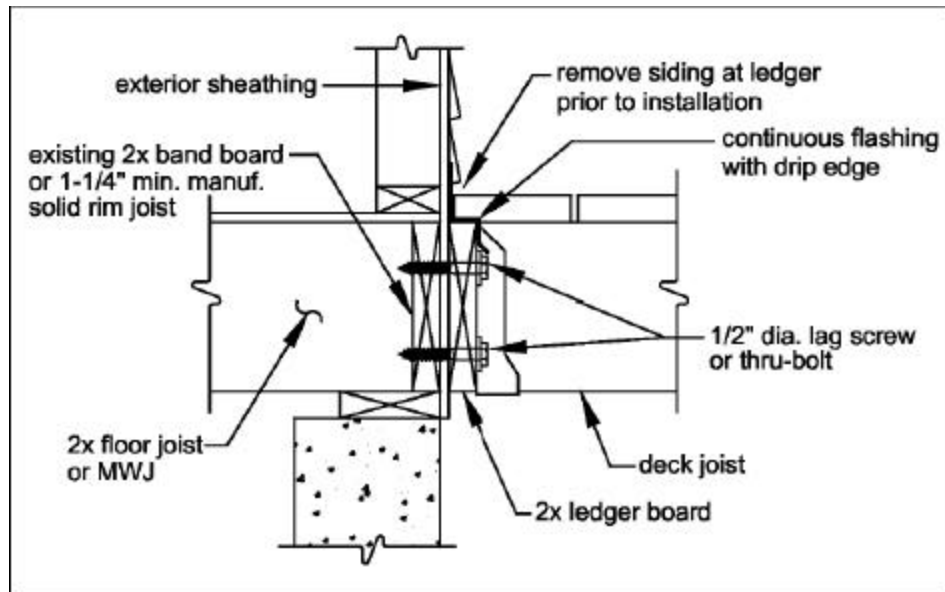


**FIGURE 1: JOIST SPAN - DECK ATTACHED AT HOUSE**

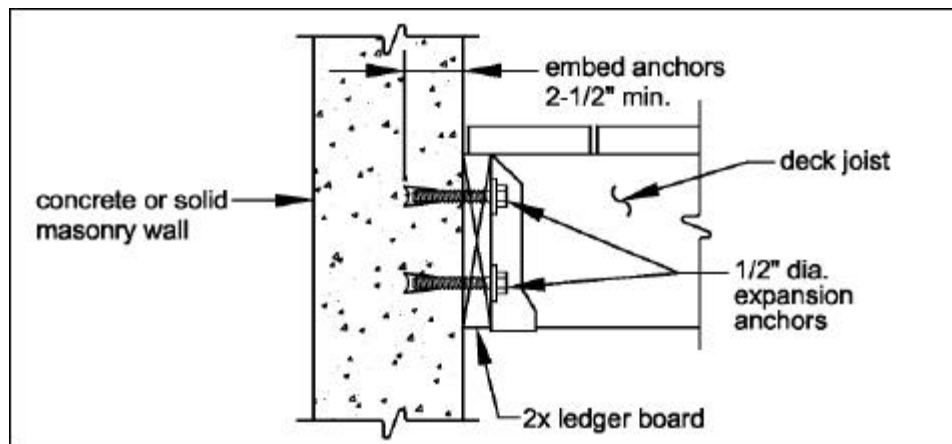


**FIGURE 2: JOIST SPAN - FREE-STANDING DECK**

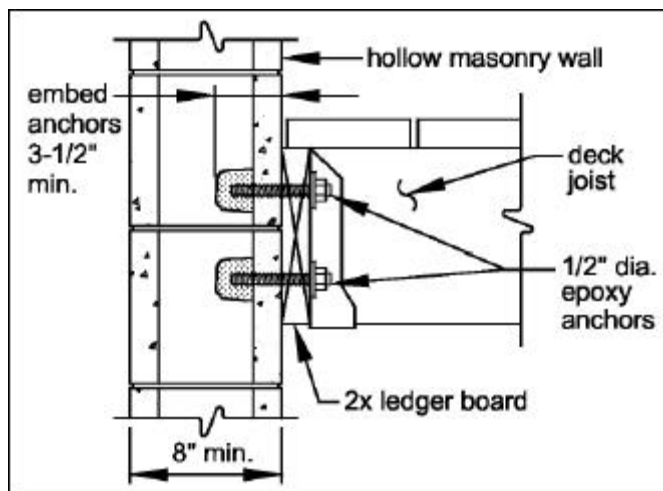
| RESIDENTIAL JOIST SPACING  |                 |
|--|-----------------|
| JOIST SPACING  | MAX. CLEAR SPAN |
| 2 X 6 @ 16" on center  | 9' - 9"         |
| 2 x 6 @ 24" on center  | 8' - 6"         |
| 2 x 8 @ 16" on center  | 12' - 10"       |
| 2 x 8 @ 24" on center  | 11' - 3"        |
| 2 x 10 @ 16" on center   | 16' - 5"        |
| 2 x 10 @ 24" on center   | 14' - 4"        |
| 2 x 12 @ 16" on center   | 19' - 11"       |
| 2 x 12 @ 24" on center   | 17' - 5"        |
| ASSUME<br>~ 40 psf LIVE LOAD using pressure treated lumber<br>~ 5 psf DEAD LOAD<br>~ Joist and beam sized are based on the use of<br>#2 Southern Yellow Pine |                 |



**FIGURE 5: ATTACHMENT OF LEDGER BOARD-TO-BAND BOARD**



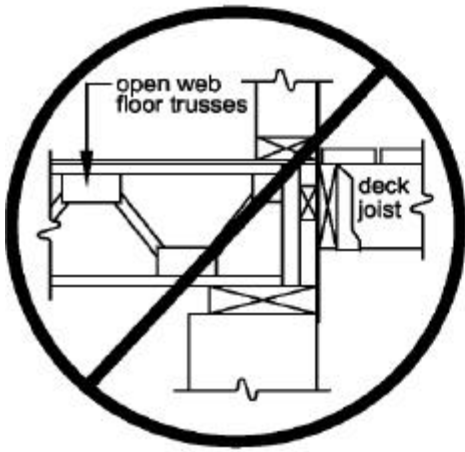
**FIGURE 6: ATTACHMENT OF LEDGER BOARD-TO-FOUNDATION WALL (CONCRETE OR SOLID MASONRY)**



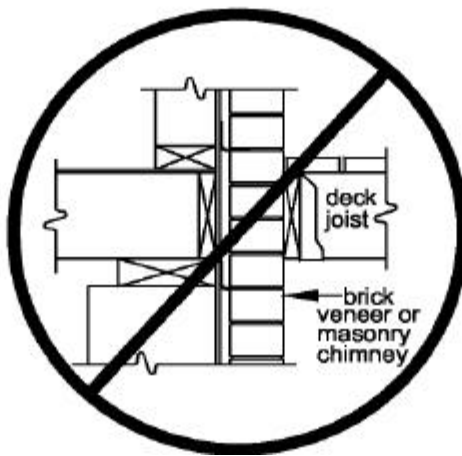
**FIGURE 7: ATTACHMENT OF LEDGER BOARD-TO-FOUNDATION WALL (HOLLOW MASONRY)**

**PROHIBITED LEDGER ATTACHMENTS**

Attachments to the ends of pre-manufactured open web joists, to brick veneers, and to house overhangs/bay windows are strictly prohibited; see FIGURE 8 through FIGURE 10. In such cases the deck shall be free-standing. See FREE-STANDING DECKS on sheet 8.



**FIGURE 8: NO ATTACHMENT TO OPEN WEB TRUSSES**



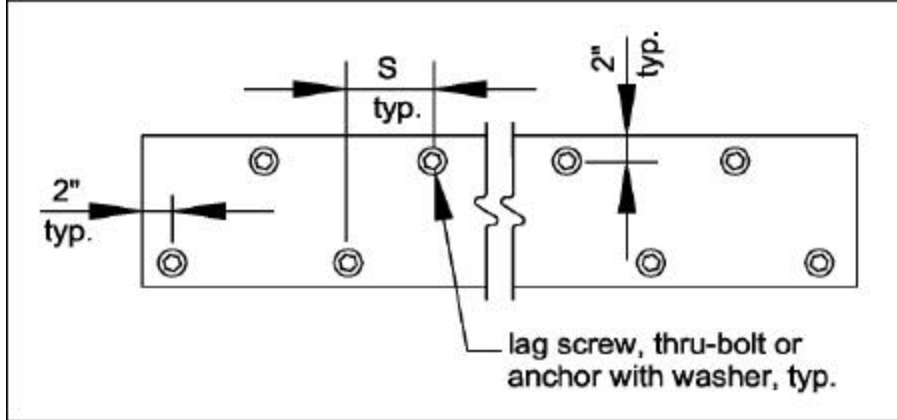
**FIGURE 9: NO ATTACHMENT TO BRICK VENEER**



**FIGURE 10: NO ATTACHMENT TO HOUSE OVERHANG**

**LEDGER BOARD FASTENERS**

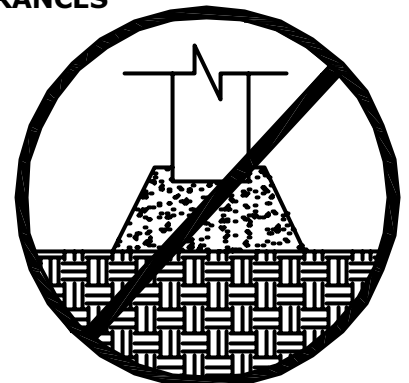
All fastener types shall be spaced per TABLE 4 and installed per FIGURE 11. All fasteners shall be installed with washers and must be thoroughly tightened. **Adequacy of connections will be verified by county inspectors.** If a ladder is required to access the ledger board, one must be provided by the property owner, permit holder, or their representative.



**FIGURE 11: LEDGER BOARD FASTENER SPACING AND CLEARANCES**

**TABLE 4: LEDGER BOARD FASTENER SCHEDULE**

| Joist Span       | S (spacing), on center |
|------------------|------------------------|
| 0 - 8'           | 10"                    |
| 8' - 10'         | 8"                     |
| 10' - 14'        | 6"                     |
| 14' - 18'        | 5"                     |
| greater than 18' | 4"                     |



### Thru-Bolts

Thru-bolts shall have a minimum diameter of  $\frac{1}{2}$ ". Lead (pilot) holes for thru-bolts shall be  $\frac{17}{32}$ " to  $\frac{9}{16}$ " in diameter. Thru-bolts must be equipped with washers at the bolt head as well as the nut.

### Expansion Anchors

Use expansion anchors when attaching a ledger board to a concrete or solid masonry wall as shown in FIGURE 6. Bolt diameters of the anchors shall be a minimum of  $\frac{1}{2}$ "; in some cases, this may require an anchor size of  $\frac{5}{8}$ ". Minimum embedment length shall be  $2\text{-}\frac{1}{2}$ ". Expansion anchors must have washers.

### Epoxy Anchors

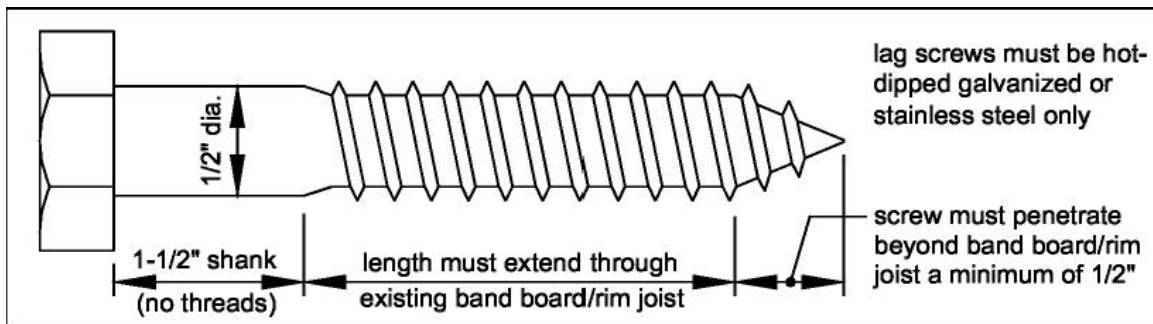
When attaching to hollow masonry, fill the cells with grout and use expansion anchors, or use one of the approved epoxy anchors listed in TABLE 5 and install as shown in FIGURE 7. Epoxy anchors shall have a minimum diameter of  $\frac{1}{2}$ " and minimum embedment length of  $3\text{-}\frac{1}{2}$ ". Installation shall be in strict conformance to the manufacturers' instructions. Epoxy anchors must have washers.

**TABLE 5: APPROVED EPOXY ANCHORS**

| Manufacturer        | Product         |
|---------------------|-----------------|
| ITW Ramset/Red Head | Epcon Acrylic 7 |
| Hilti               | HY-20           |

### Lag Screws

Lag screws shall have a minimum diameter of  $\frac{1}{2}$ " and shall be hot-dipped galvanized or stainless steel. Lag screws may be used only when the field conditions match those shown in FIGURE 5. **You must verify the existing conditions in the field prior to applying for a building permit and installing lag screws. Compliance with all the requirements herein is critical to ensure the structural stability of your deck.** See FIGURE 12 for lag screw length and shank requirements. All lag screws shall be installed with washers.

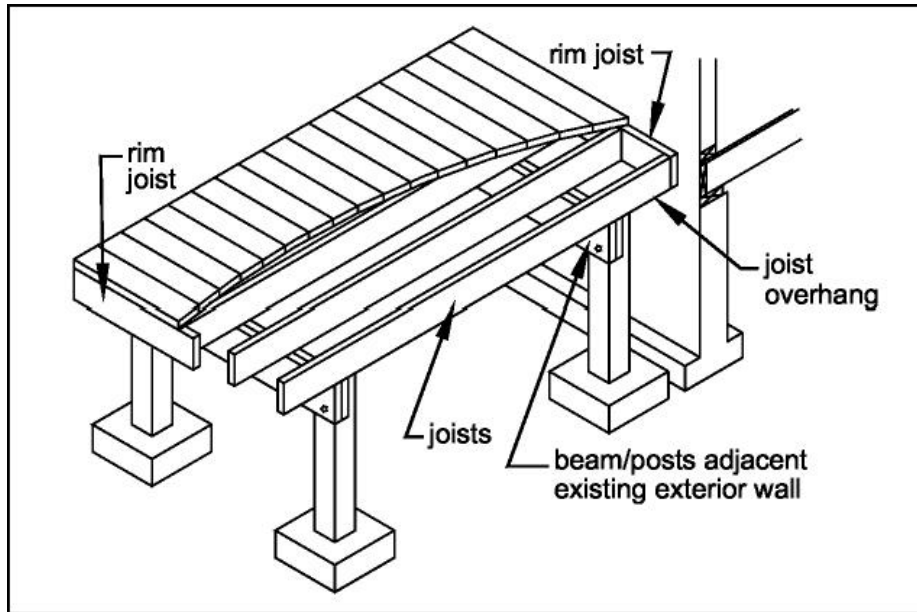


**FIGURE 12: LAG SCREW REQUIREMENTS**

**Lag screw installation requirements:** each lag screw shall have lead (pilot) holes drilled as follows: 1) drill a  $\frac{1}{2}$ " diameter hole in the ledger board, 2) drill a  $\frac{5}{16}$ " diameter hole into the solid connection material of the existing house. **DO NOT DRILL A  $\frac{1}{2}$ " DIAMETER HOLE INTO THE SOLID CONNECTION MATERIAL.**

**FREE-STANDING DECKS**

Decks which are free-standing do not utilize the exterior wall of the existing house to support vertical loads. Support at or near the house is provided by an additional beam and posts. See FIGURE 13. Beam size is determined by TABLE 2 and TABLE 3.

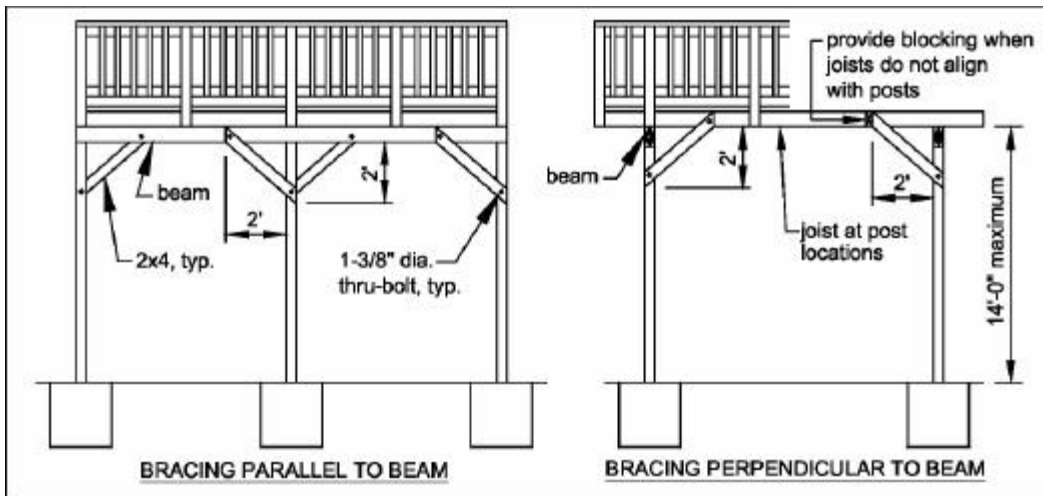


**FIGURE 13:**

**FREE-STANDING DECK LATERAL SUPPORT OF FREE STANDING DECKS**

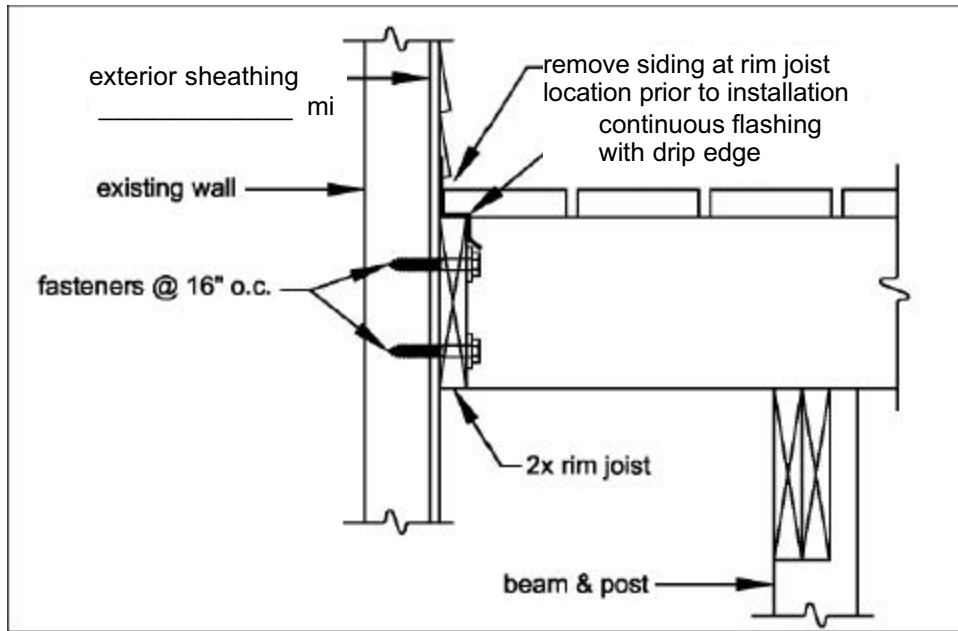
Free standing decks greater than 2 feet above grade shall resist lateral loading and movement by one of the following methods.

1. **Diagonal Bracing:** provide diagonal bracing as shown in FIGURE 14. Bracing shall be located between posts parallel to beams and bolted to the beam and post as shown. Diagonal bracing shall also be located perpendicular to beams and, in such cases, bracing shall be bolted to the post and joist above the post location.



**FIGURE 14: DIAGONAL BRACING REQUIREMENTS**

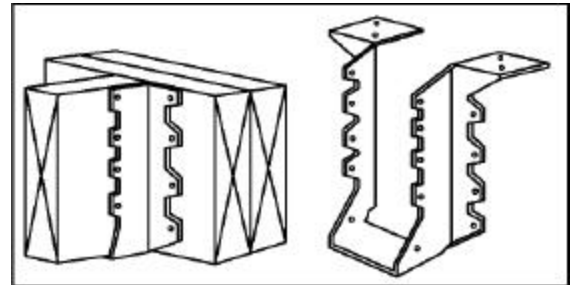
2. **Attachment To House:** lateral support is provided by the attachment of the deck rim joist to the existing house as shown in FIGURE 15. The existing exterior wall must have sheathing consisting of structural wood panels with a minimum thickness of  $\frac{3}{8}$ " , and the fasteners shall attach to an existing band board or wall stud. The deck rim joist may also attach to a masonry or concrete wall, but not to a brick veneer. YOU MUST VERIFY THIS CONDITION IN THE FIELD PRIOR TO UTILIZING THIS METHOD. Fasteners shall be 16" on center and must penetrate existing wall studs. See also the provisions noted on sheet 6. Flashing over the rim joist is required and must be installed in accordance with the flashing provisions noted on sheet 4. For rim joist size and requirements, see sheet 10.



**FIGURE 15: ATTACHMENT TO HOUSE LATERAL SUPPORT**

**JOIST HANGERS**

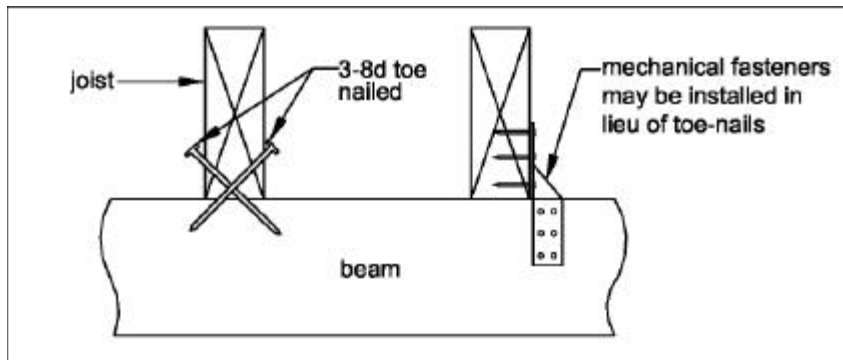
Joist hangers, as shown in FIGURE 16, shall have a Minimum capacity of 1000 lbs. Joist hangers used Shall be manufactured for their intended lumber size. Joist hangers shall be galvanized with 1.85 oz/sf of Zinc (G-185 coating) or shall be stainless steel.



**FIGURE 16: TYPICAL JOIST HANGERS**

**JOIST-TO-BEAM CONNECTION**

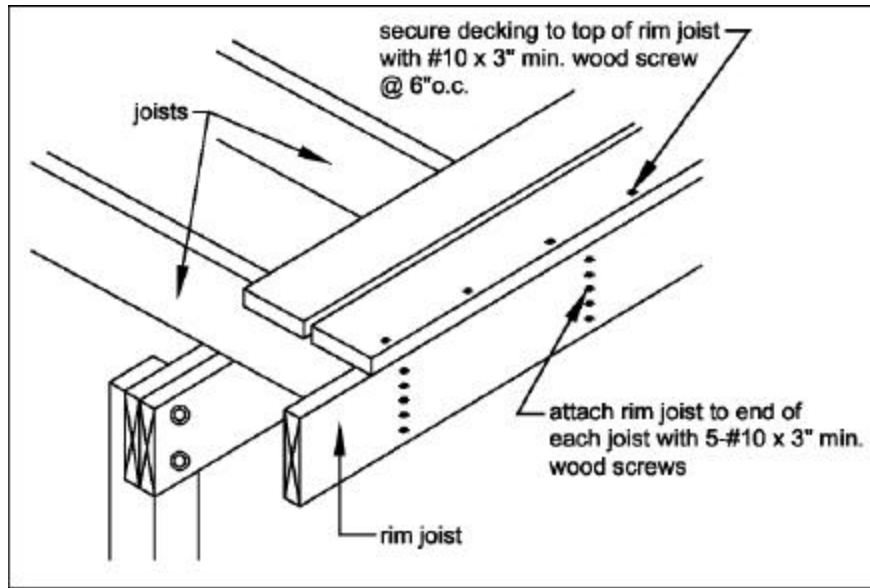
Each joist shall be attached to the beam as shown in FIGURE 17. Mechanical fasteners shall be galvanized with 1.85 oz/sf of zinc (G-185 coating) or shall be stainless steel.



**FIGURE 17: JOIST-TO-BEAM DETAIL**

**RIM JOIST REQUIREMENTS**

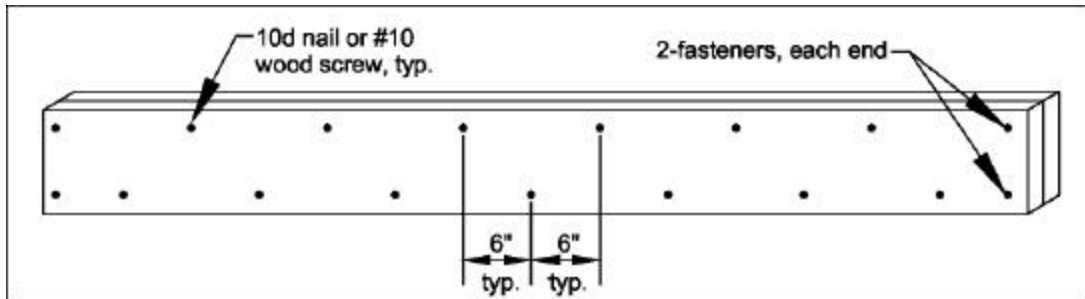
Attach a continuous rim joist to the ends of joists as shown in FIGURE 18. Please note: rim joists are required at both ends of joists associated with free-standing decks. Minimum rim joist dimensions shall be equal to the dimensions of the joist.



**FIGURE 18: RIM JOIST CONNECTION DETAILS**

**BUILT-UP BEAM REQUIREMENTS**

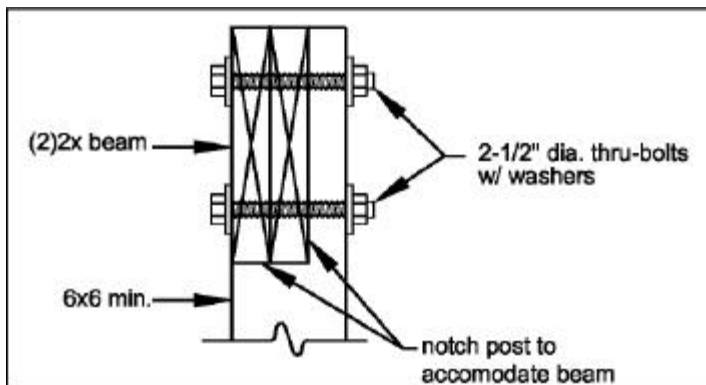
Built-up beams shall be assembled in accordance with FIGURE 19. The nailing pattern shall be staggered as shown.



**FIGURE 19: BUILT-UP BEAM DETAIL**

**POST-TO-BEAM REQUIREMENTS**

The post-to-beam connection may be accomplished by notching the 6x6 post as shown in FIGURE 20. All thru-bolts shall have washers at the bolt head and nut. All post sizes shall be 6x6, and the maximum height shall be 14'-0".



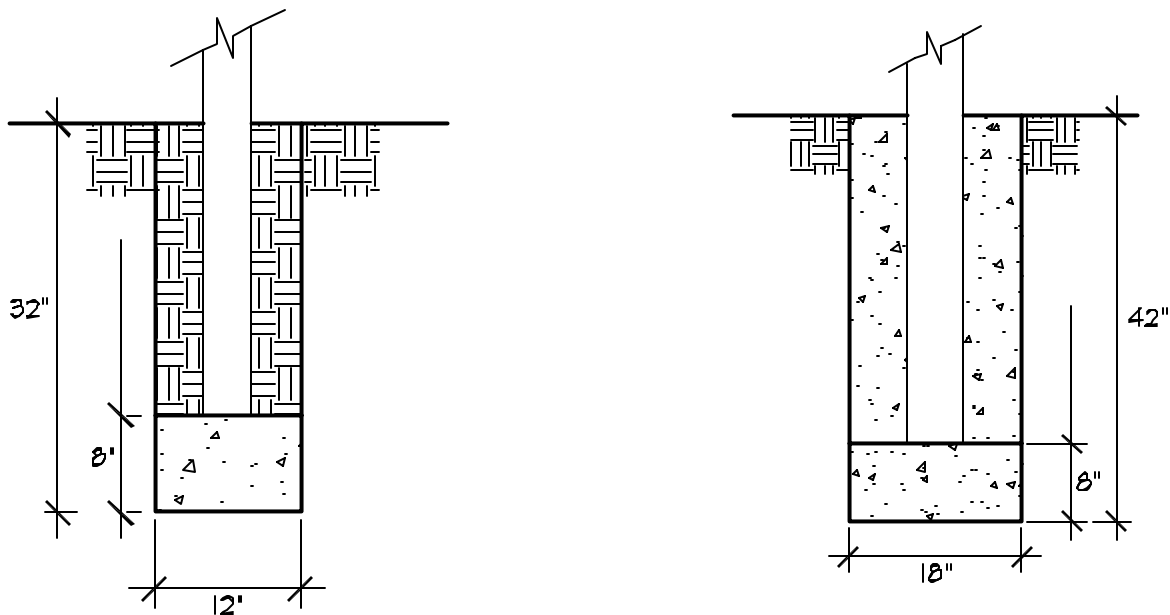
**FIGURE 20: POST-TO-BEAM REQUIREMENTS**



## FOOTINGS

See FIGURE 21 for footing size, footing thickness and post attachment options and requirements. All footings shall bear on solid ground; bearing conditions shall be verified in the field by County inspectors prior to placement of concrete. Footings closer than 5'-0" to the existing exterior house wall must bear at the same elevation as the existing wall footing. **Do not construct footings over utility lines or enclosed meters.**

Pre-manufactured post anchors shall be galvanized with 1.85 oz/sf of zinc (G-185 coating) or shall be stainless steel.



## GUARD REQUIREMENTS

Decks less than 30" above grade are not required to have a guard; however, if one is installed, it must meet these requirements. All guards shall be constructed in strict conformance with figures herein; any deviations require a plan submission.

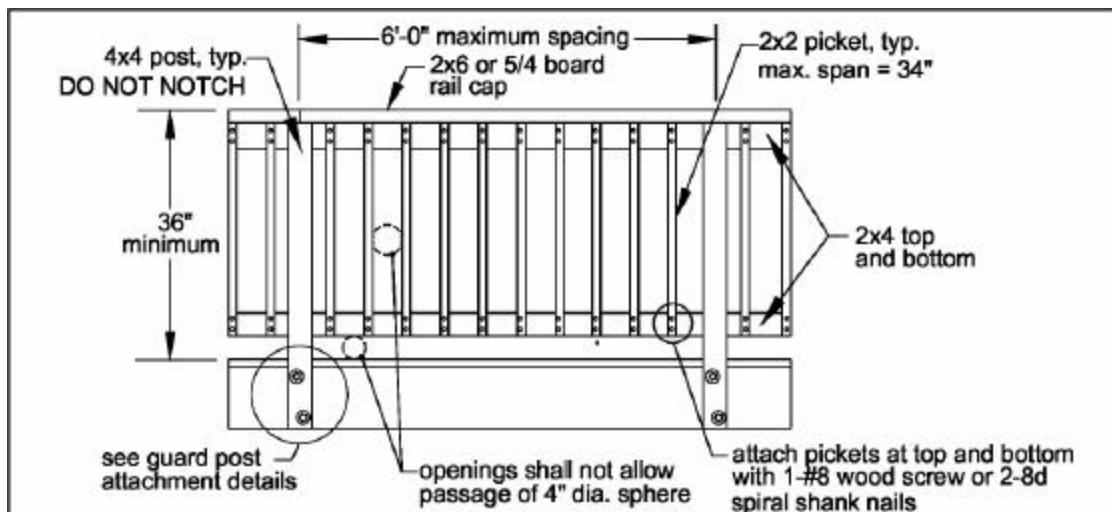
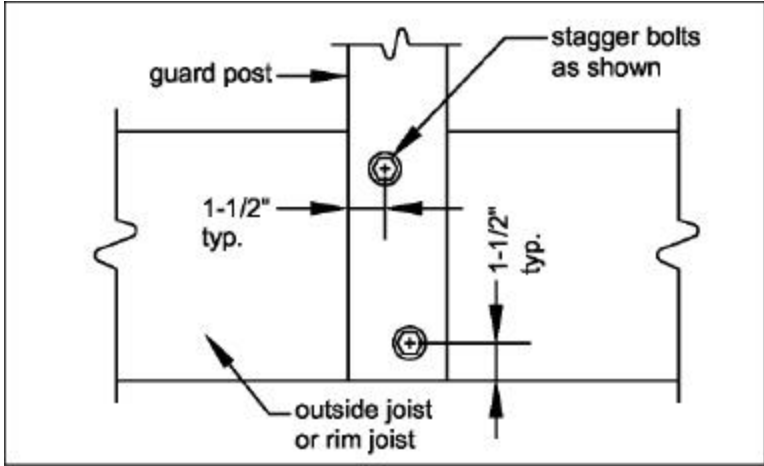


FIGURE 22: TYPICAL GUARD DETAIL

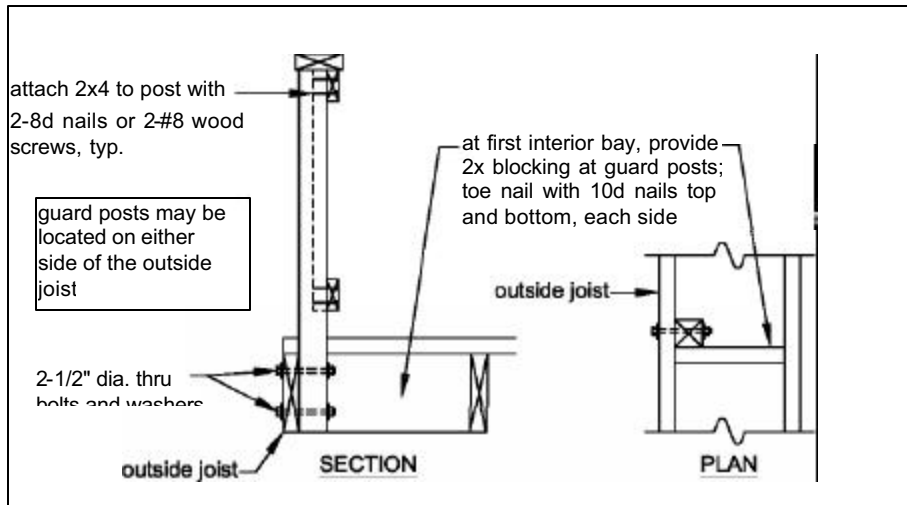
|  |         |                                    |         |
|--|---------|------------------------------------|---------|
|  <p>Asebrook &amp; Co.<br/>ARCHITECTS<br/>454 East Main Street, Suite 236<br/>Columbus, Ohio 43215</p> | 07/2/04 | <b>FOOTINGS/GUARD REQUIREMENTS</b> | Diagram |
|  | 03035   |                                    | 11      |

Any pre-fabricated wood, plastic or manufactured guard system purchased from a home center store, lumber company or similar will also require a plan submission. The rail cap is designed to withstand a concentrated load of 200 LBS anywhere along its length; the infill area is designed to withstand a horizontal load of 50 LBS on a square foot area.

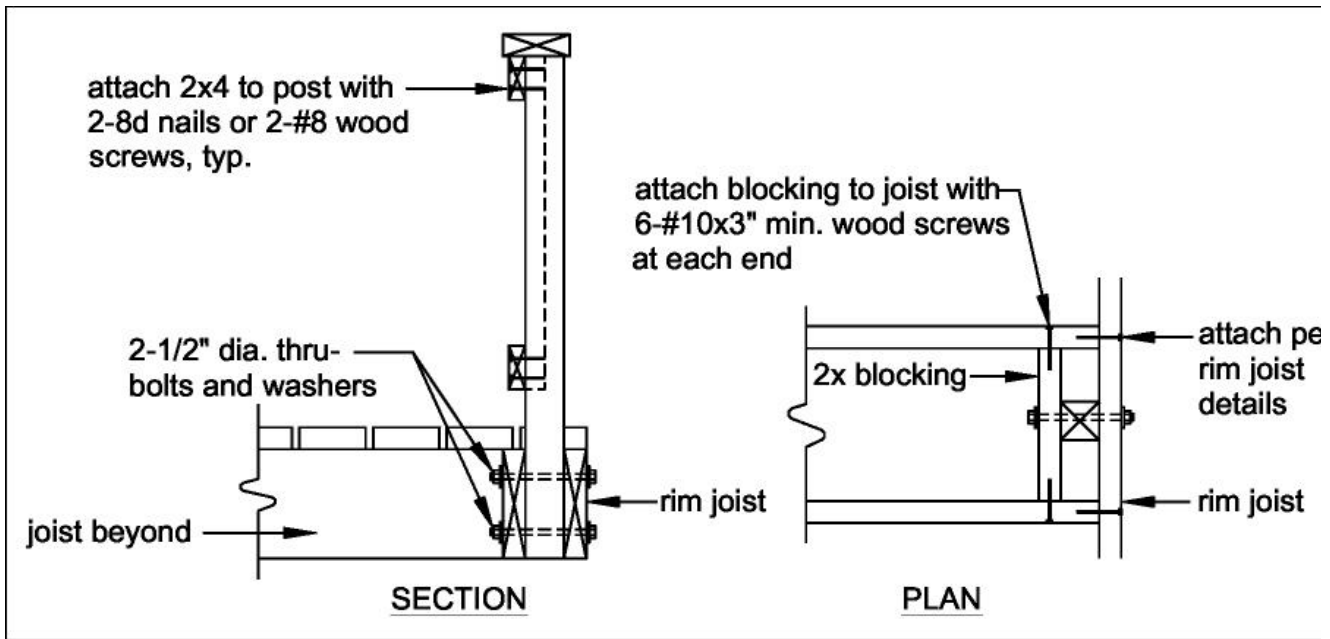
**GUARD POST ATTACHMENT:** Guard posts shall be spaced per FIGURE 22 and attached per FIGURE 23 through FIGURE 26.



**FIGURE 23: GUARD POST ATTACHMENT DETAIL**

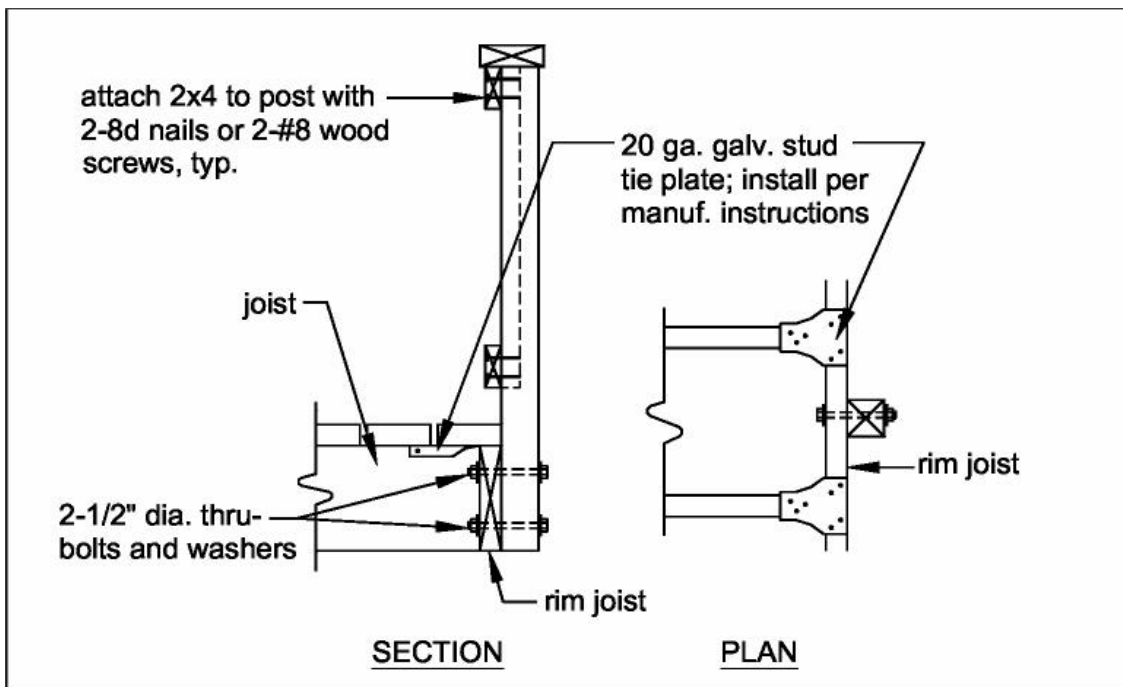


**FIGURE 24: GUARD POST TO OUTSIDE JOIST DETAIL**



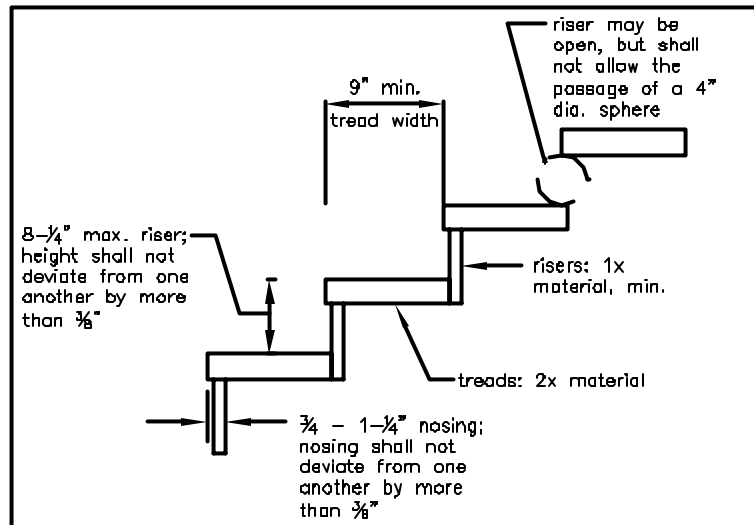
**FIGURE 25: GUARD POST TO RIM JOIST DETAIL, OPTION 1**

As shown in FIGURE 26, guard posts may be attached to the outside face of the rim joist. However, in this condition, and in addition to the attachment requirements shown in FIGURE 18, the rim joist must be fastened to the next adjacent joists with 20 gage. *stud tie plates* attached per the manufacturer's instructions with hot-dipped galvanized or stainless steel fasteners. Stud tie plates must be galvanized with 1.85 oz/sf of zinc (G-185 coating) or shall be stainless steel. Look for model number SP1 in a Zmax coating from Simpson Strong-Tie or model number SPT22 in a Triple Zinc coating from USP. **If you are unable to use *stud tie plates* in this condition, you must follow the requirements of FIGURE 25.**

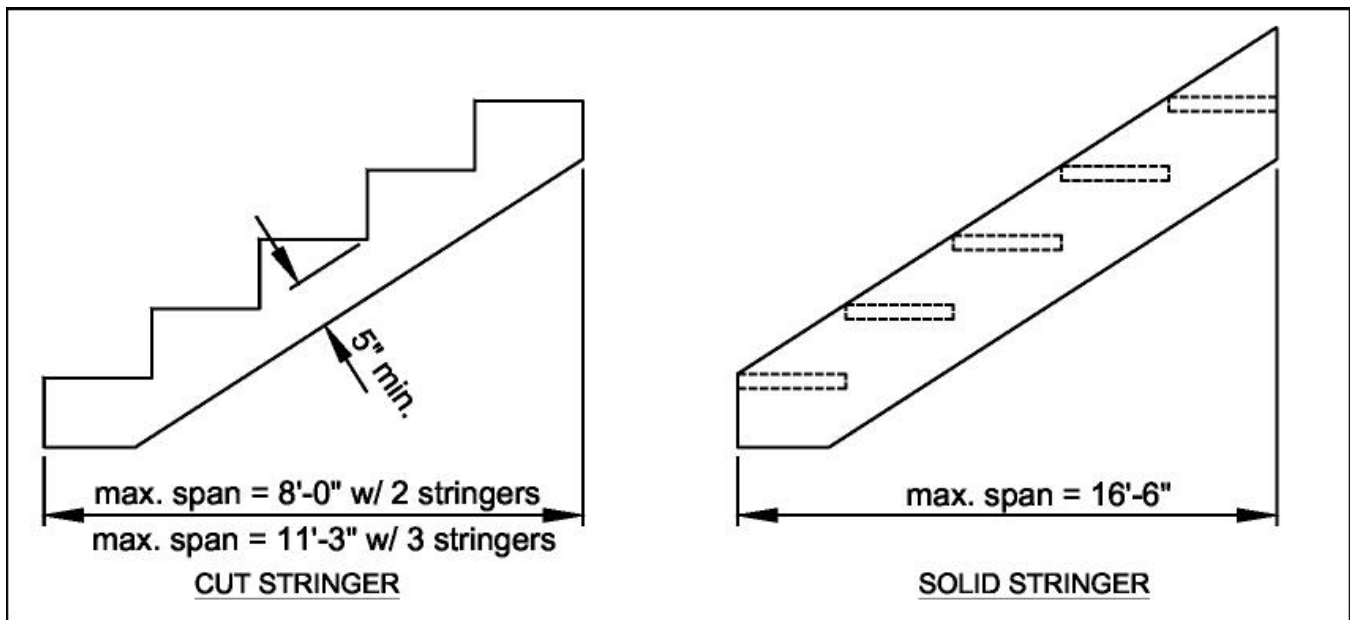


**FIGURE 26: GUARD POST TO RIM JOIST DETAIL, OPTION 2**

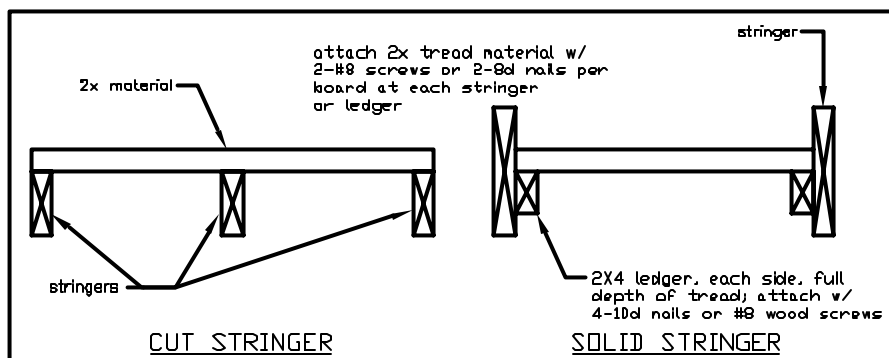
Stairs, stair stringers, and stair guard shall meet the requirements shown in FIGURE 27 through FIGURE 33. All stringers shall be 2x12.



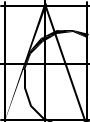
**FIGURE 27: TREAD AND RISER DETAIL**

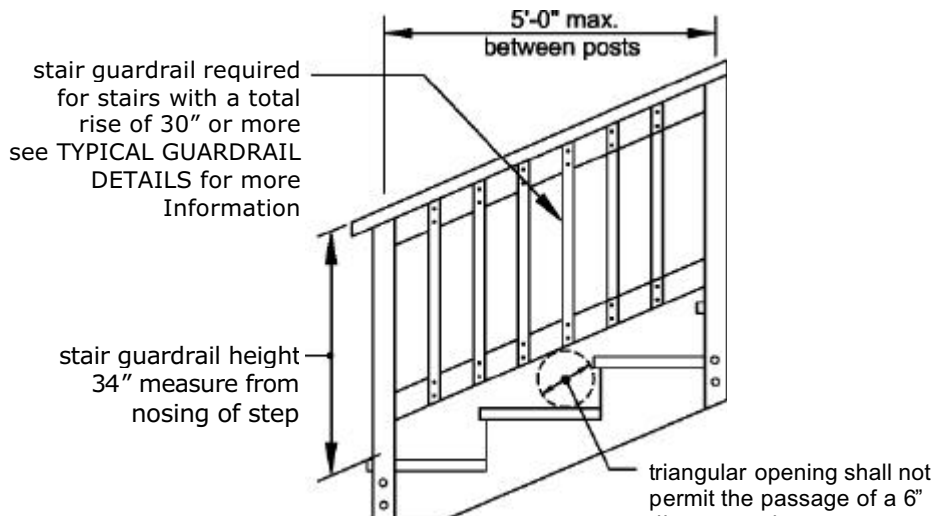


**FIGURE 28: STAIR STRINGER REQUIREMENTS**

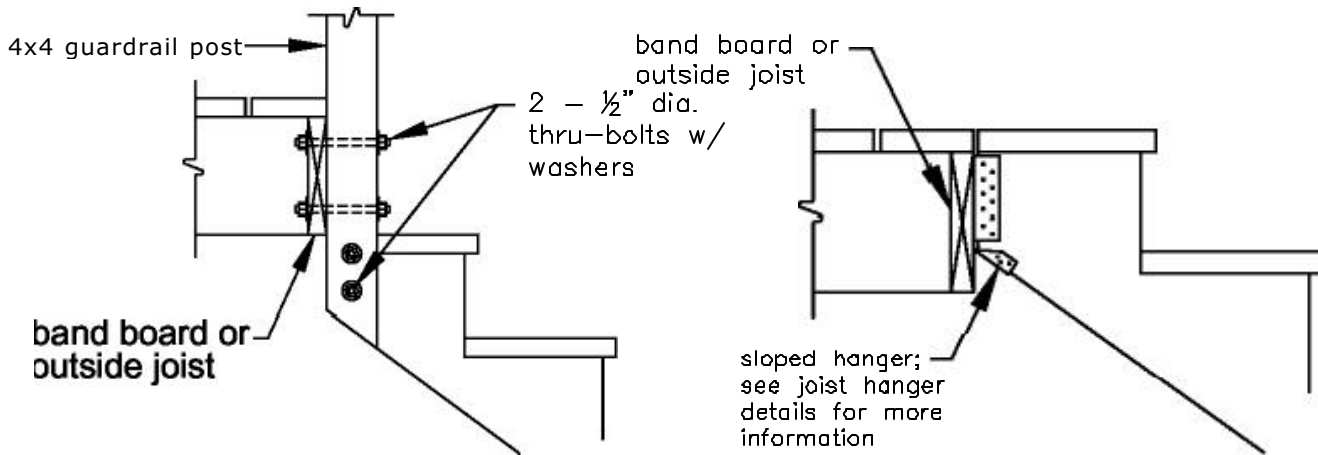


**FIGURE 29: TREAD CONNECTION REQUIREMENTS**

|   |         |                           |          |
|---|---------|---------------------------|----------|
|  <b>Asebrook &amp; Co.</b><br>ARCHITECTS<br>454 East Main Street, Suite 236<br>Columbus, Ohio 43215<br>(614) 224-2300<br>(614) 233-5812<br>www.asebrookarchitects.net | 07/2/04 | <b>STAIR REQUIREMENTS</b> | Diagrams |
|   | 03035   |                           | 14       |



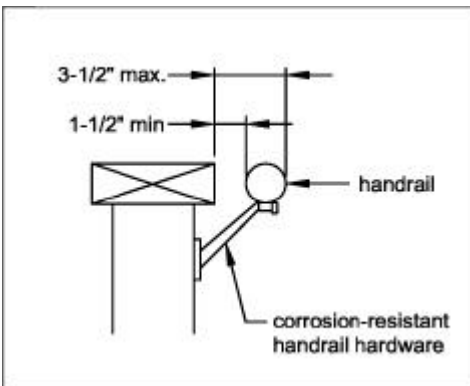
**FIGURE 30: STAIR GUARD REQUIREMENTS**



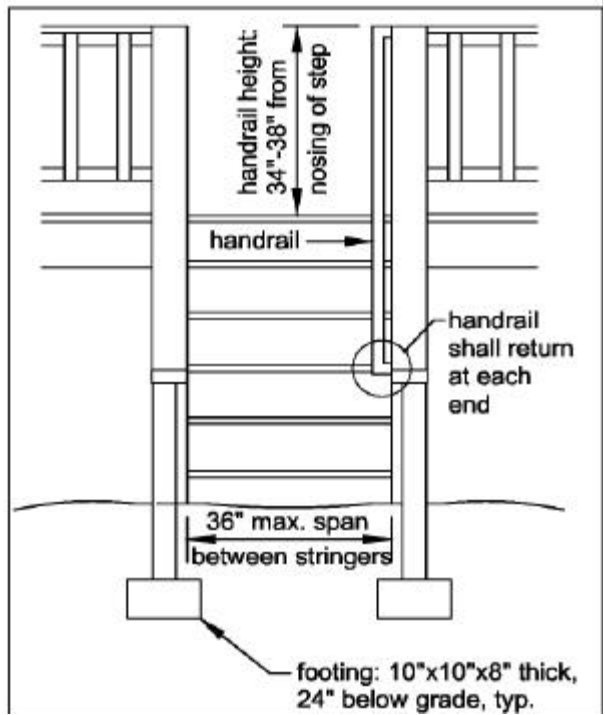
**FIGURE 31: STAIR STRINGER CONNECTION DETAIL**

**STAIR HANDRAIL REQUIREMENTS**

All stairs with 2 or more risers shall have a handrail on one side. Handrails shall be graspable and shall be composed of decay-resistant and/or corrosion resistant material. The hand grip portion, if circular, shall be between 1-1/4" and 2-1/4" in cross section. Shapes other than circular shall have a perimeter dimension between 4" and 6-1/4" with a maximum cross sectional dimension of 2-1/4". 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 at guards posts only at a turn in the stair. See FIGURE 32.



|   |         |                                    |          |
|---|---------|------------------------------------|----------|
| <p><b>Asebrook &amp; Co.</b><br/>ARCHITECTS<br/>454 East Main Street, Suite 236 Columbus, Ohio 43215<br/>(614) 224-2300 www.asebroock.com</p> | 07/2/04 | <b>STAIR HANDRAIL REQUIREMENTS</b> | Diagrams |
|   | 03035   |                                    | 15       |



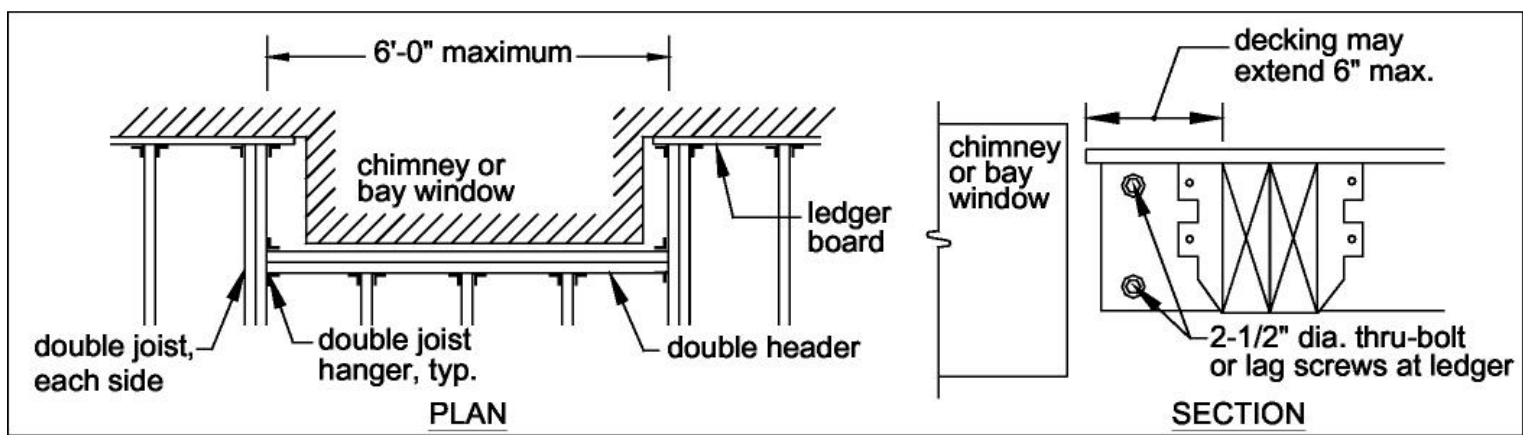
**FIGURE 33: MISCELLANEOUS STAIR REQUIREMENTS**

**STAIR ILLUMINATION REQUIREMENTS**

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.

**FRAMING AT CHIMNEY OR BAY WINDOW**

All members at a chimney or bay window shall be framed in accordance with FIGURE 34. Headers with a span length greater 6'-0" require a plan submission.



**FIGURE 34: REQUIREMENTS FOR FRAMING AT CHIMNEY OR BAY WINDOW**

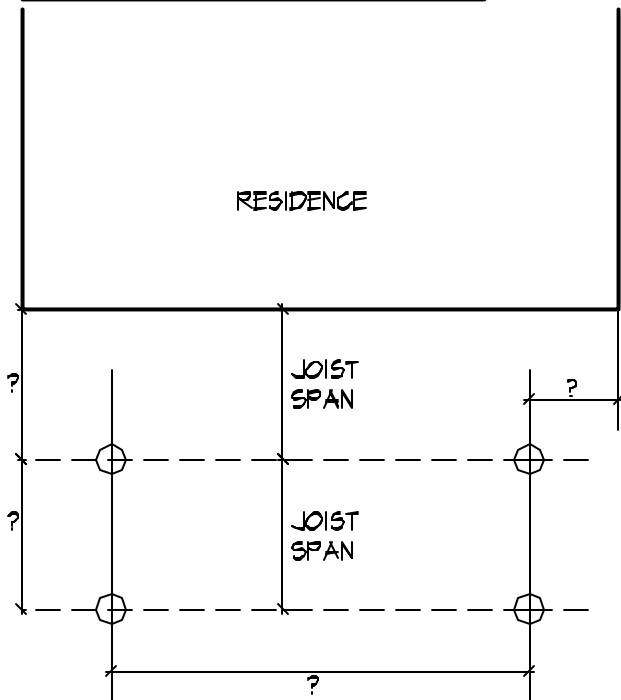
# FOUNDATION PLAN (FIGURES 1 and 2)

Plan View: Standard (See Figure 1), Floating (See Figure 2)  
 All dimensions locating post holes must be shown

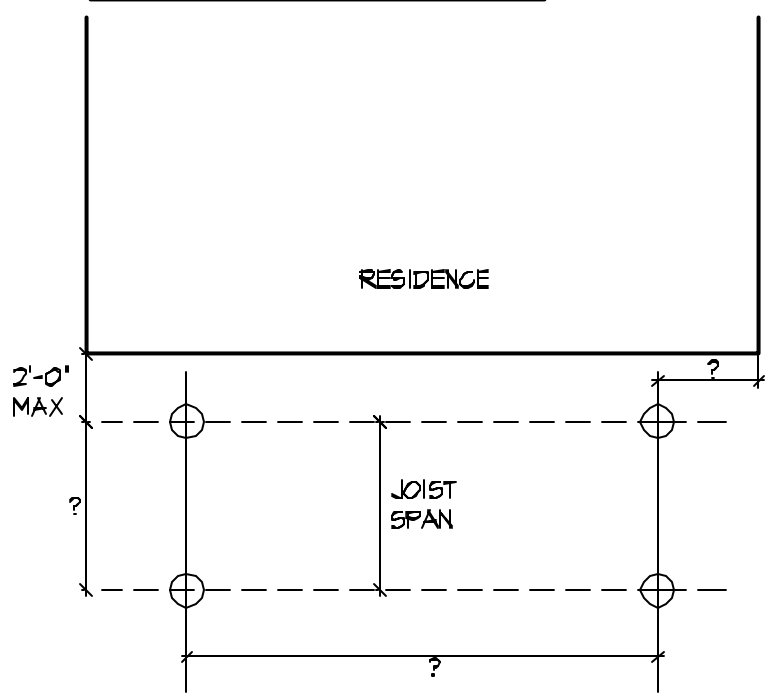
## SKIRTING

The use of solid skirting to enclose the underside of decks and screened patios to grade is PROHIBITED. Where skirting is used, it shall be done in such a manner so as to be not more than 70% opaque (closed). Skirting which is more than 70% above grade or be installed in conjunction with a rat wall which meets all requirements (CBC 4525.10)

**FIGURE 1: FOUNDATION PLAN STANDARD**



**FIGURE 2: FOUNDATION PLAN FLOATING**



| RESIDENTIAL JOIST SPACING |                 |
|---------------------------|-----------------|
| JOIST SPACING             | MAX. CLEAR SPAN |
| 2 X 6 @ 16" on center     | 9' - 9"         |
| 2 x 6 @ 24" on center     | 8' - 6"         |
| 2 x 8 @ 16" on center     | 12' - 10"       |
| 2 x 8 @ 24" on center     | 11' - 3"        |
| 2 x 10 @ 16" on center    | 16' - 5"        |
| 2 x 10 @ 24" on center    | 14' - 4"        |
| 2 x 12 @ 16" on center    | 19' - 11"       |
| 2 x 12 @ 24" on center    | 17' - 5"        |

ASSUME  
 ~ 40 psf LIVE LOAD using pressure treated lumber  
 ~ Joist and beam sized are based on the use of #2 Southern Yellow Pine  
 ~ 5 psf DEAD LOAD

## FOOTER PLAN (FIGURES 3 and 4)

Items that must be shown:

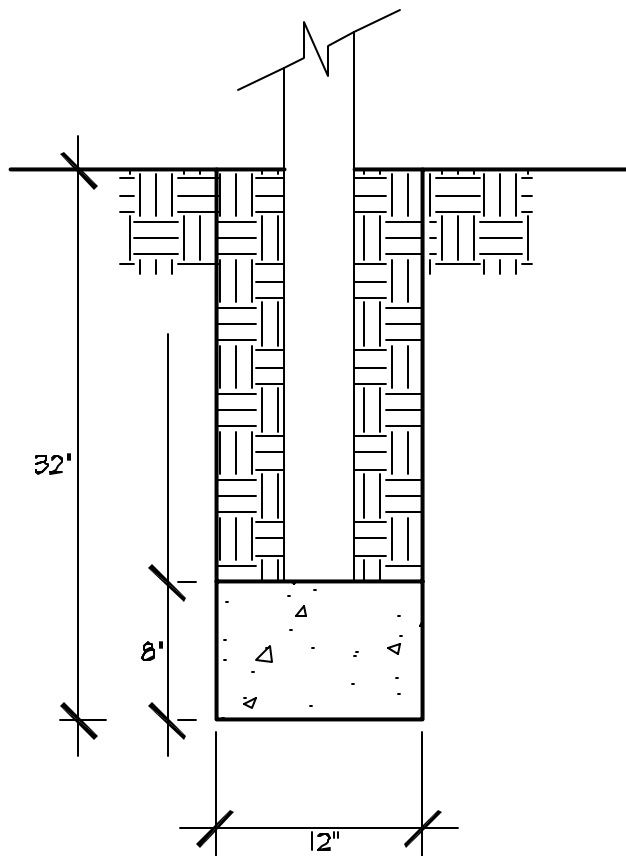
Footers for decks NOT exceeding 72" in height - See Figure 3

1. Hole diameter to be 12" throughout
2. Depth of hole 32".
3. 8" poured concrete in bottom of 32" hole.
4. Back fill around 4x4 posts with either compacted earth or poured concrete.

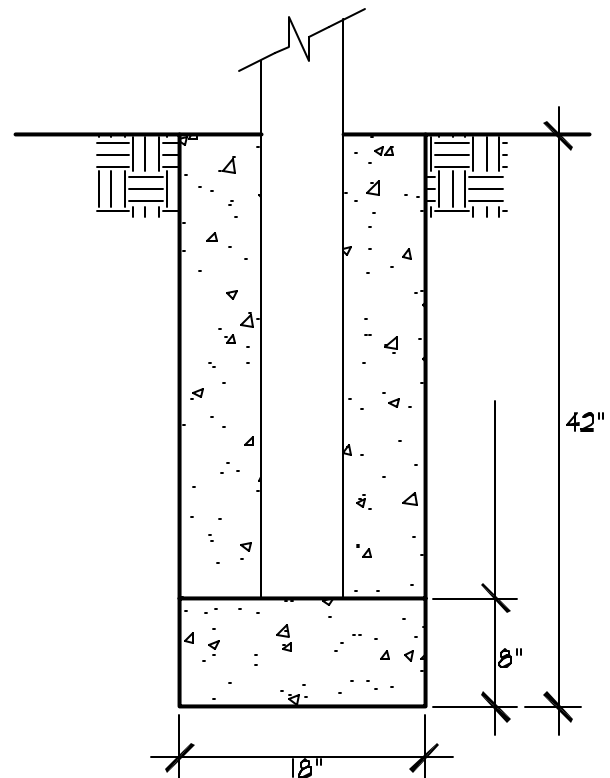
Footers for decks 72" to 168" in height - See Figure 4

1. Hole diameter to be 18" throughout
  2. Depth of hole 42"
  3. 8" poured concrete in bottom of 42" hole
- 6x6 post MUST be set in poured concrete with  $\frac{1}{2}$ " rebar penetrating the post (6" above the 8" poured foundation).
- Wind bracing may be required by plans examiner.

**FIGURE 3: FOOTERS-DECK HEIGHT LESS THAN 72"**



**FIGURE 4: FOOTERS-DECK HEIGHT 72" TO 168"**





# FRAMING PLAN (Figures 5 and 6)

Items that must be shown:

Plan View - See Figure 5

1. All beams sized with spacing dimensions shown.
2. All joists sized with direction of joists and spacing dimensions shown.

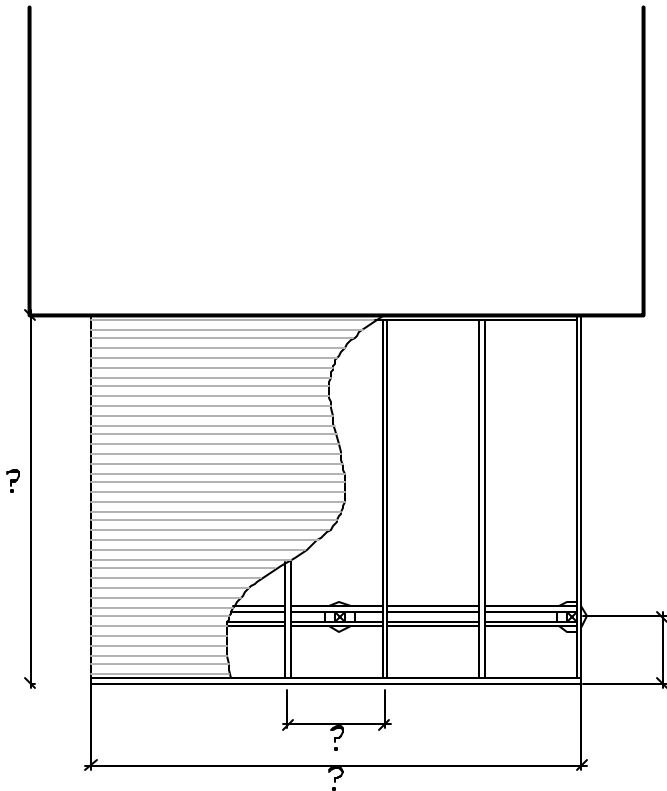
Elevation View - See Figure 6

Height of deck (measured from finish grade to deck floor) must be shown.

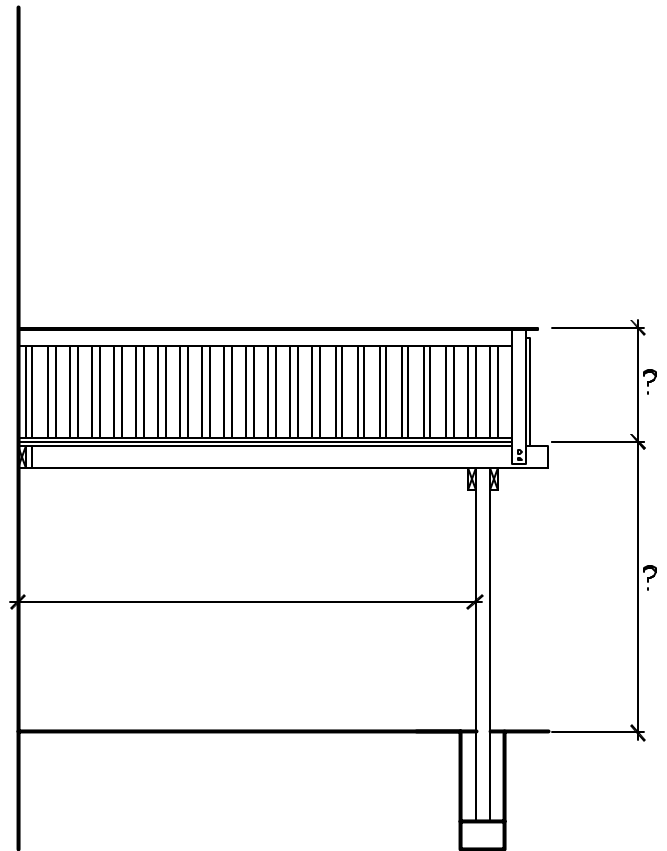
## DECKS (Figure 5)

Size of decking and the direction it is to be installed must be shown.  
AC units are NOT permitted to be placed directly on top of decking.

**FIGURE 5: FRAMING PLAN**



**FIGURE 6: FRAMING ELEVATION**

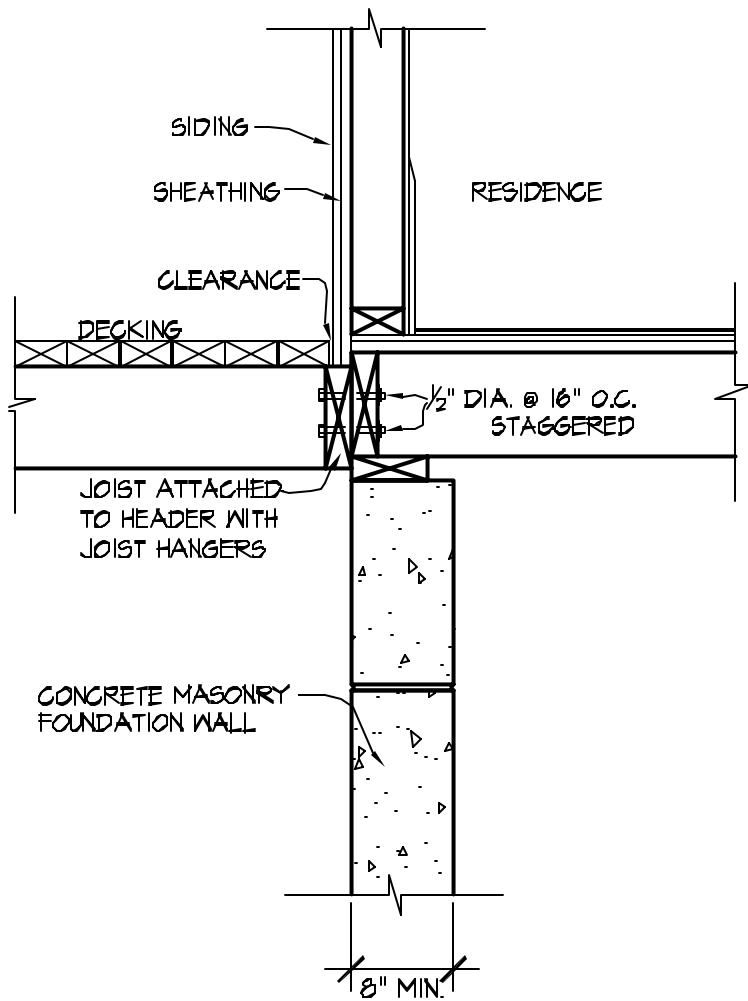


# CONNECTIONS (Figures 7, 8, and 9)

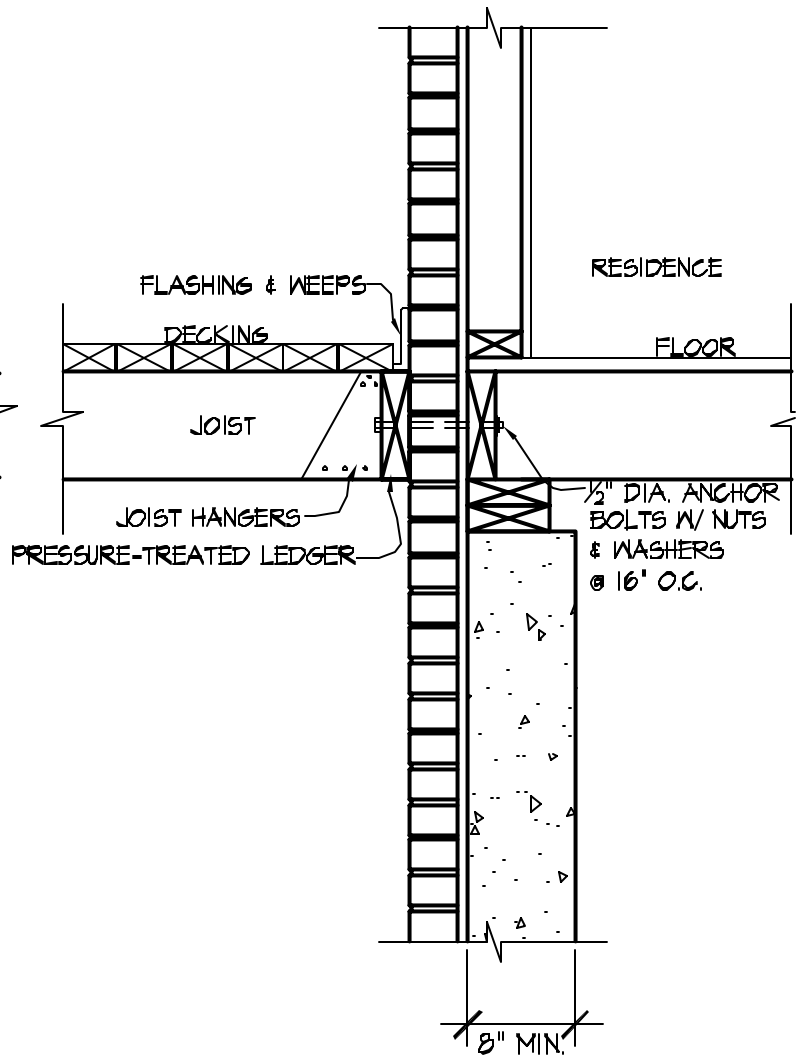
Items that must be shown:

1. Rim joist of deck to rim joist of residence
2. Beams to post
3. Joist to beams

**FIGURE 7: DECK TO SIDED WALL**



**FIGURE 8: DECK TO BRICK VENEER WALL**



# GUARD RAILS (Figures 6 and 10)

Elevation view must show:

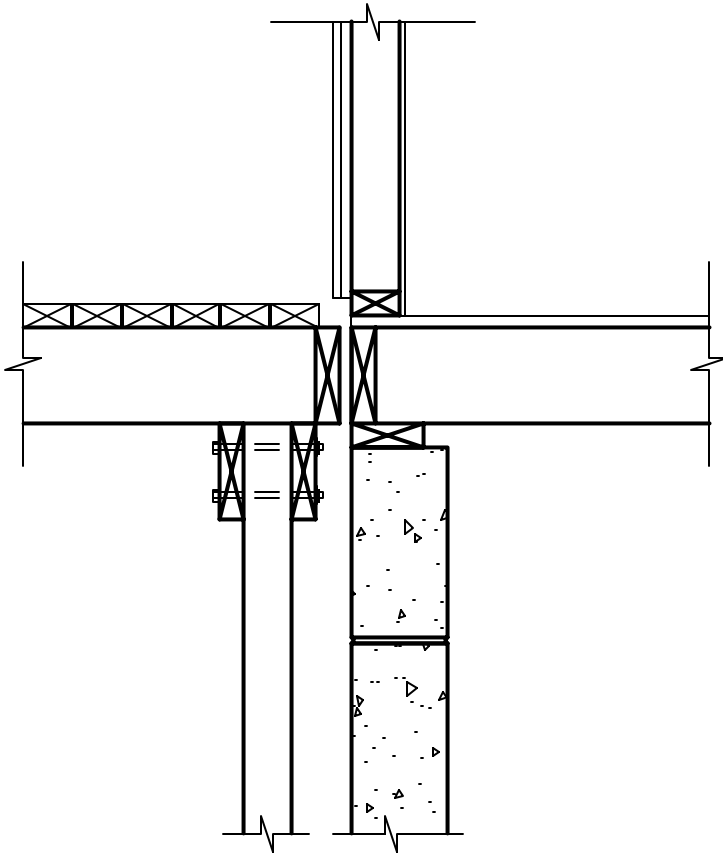
1. Minimum height 36"
2. Guard rail constructed to prevent a 4" sphere from passing through.
3. An baluster other than the traditional vertical pattern must meet all building requirements and be approved by a plans examiner.

A guard rail is NOT required if the height is less than 30" from finish grade.

Items that must be shown:

1. Location of stairs (use Figure 5)
2. Indicate rise and run of stairs showing material sizes
3. Show handrail attached to stairs. (Must be grippable)

**FIGURE 9: FLOATING DECK**



**FIGURE 10: DECK RAILING**

