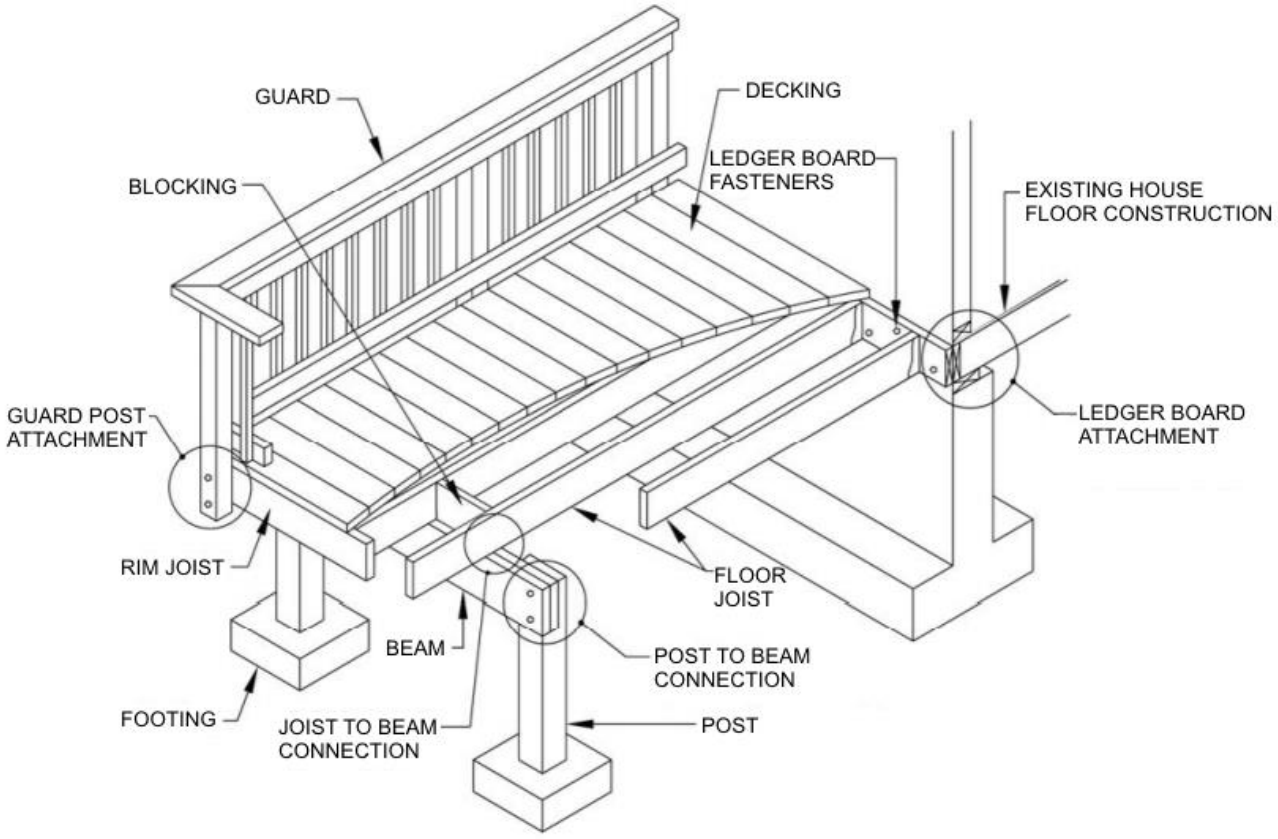
Fayette County Department of Building Safety
140 Stonewall Ave. W
Fayetteville, GA 30214
770-305-5403

# RESIDENTIAL DECK GUIDE

## REQUIRED TO BE DESIGNED PER 2018 INTERNATIONAL RESIDENTAL CODE




## PAGES:

# 1. GENERAL REQUIREMENTS

1. This document is to be used as a guide only for single span rectangular decks only.

2. Decks shall not be attached to house overhangs, bay windows, or chimneys.

3. All deck lumber shall be #2 Southern Pine or better. All lumber shall be pressure-treated – with an approved process and preservative in accordance with the American Wood Protection Association standard. All lumber in contact with the ground shall be approved preservative treated wood suitable for ground contact.

4. Deck post size and maximum post height shall be in accordance with the 2018 IRC.

5. All screws, bolts, washers, nuts and nails shall be hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Hot-dipped galvanized fasteners shall meet the requirements of ASTM A 153. Class D for fasteners 3/8” diameter and smaller or Class C for fasteners with diameters over 3/8”. Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F 1667. Fasteners other than nails and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coatings and weights in accordance with ASTM B695, Class 55, minimum.

6. All connectors (joist hangers, cast-in-place post anchors, etc.) shall be galvanized or shall be stainless steel. Hardware to be hot-dipped galvanized prior to fabrication shall meet ASTM A653, G-185 coating. Hardware to be hot-dipped galvanized after fabrication shall meet ASTM A123.

7. Screws, spirally grooved and ring shanked nails shall be used for the deck surface and only manufacturer-specified fasteners shall be used to attach the connectors. Do not mix galvanized and stainless-steel connectors.

8. Decks 30 inches or less above grade are not required to have a guardrail. Grade measurement is at any point within 36” horizontally.

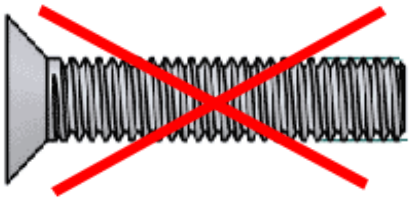
9. All decks that are accessible from the inside of the dwelling shall have at least one receptacle outlet accessible from the deck. (NEC 210.52(e)3).

## DECK TYPES

**ATTACHED DECK:** A deck structure that is physically attached to and supported by the house with a ledger board.

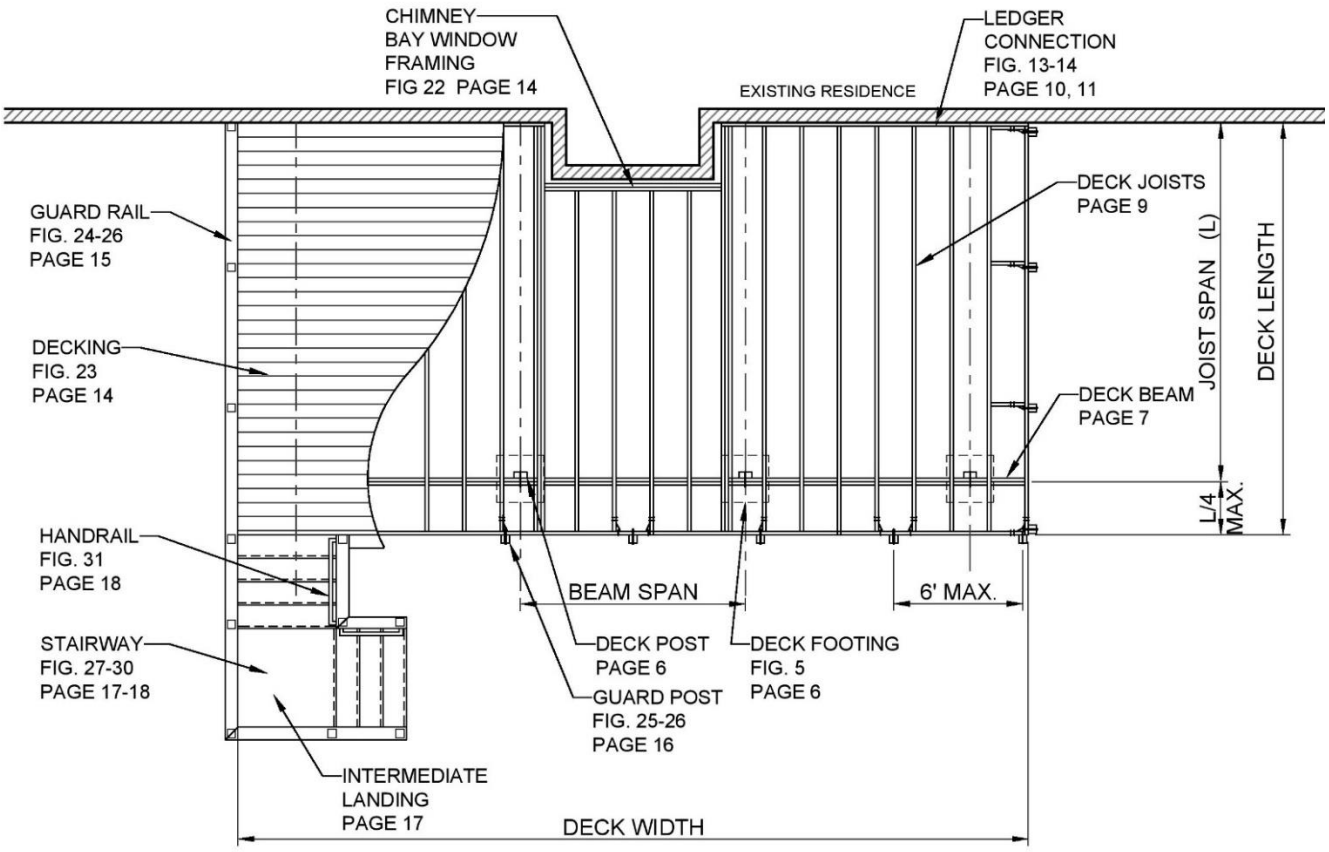
**REMINDER:** Not all decks are permitted to be attached to the house. Ledger Board attachment to brick veneer, stone or cultured stone, house cantilever, bay windows or chimneys, and web floor trusses are not permitted. Band joists supporting attached decks shall be capable of supporting the new deck. Deck joists shall be parallel to the house joists. If the condition can't be verified a free-standing deck or full plan submission will be required

**Free-Standing Deck:** a self-supporting deck structure built independently from the house, requires support beams.

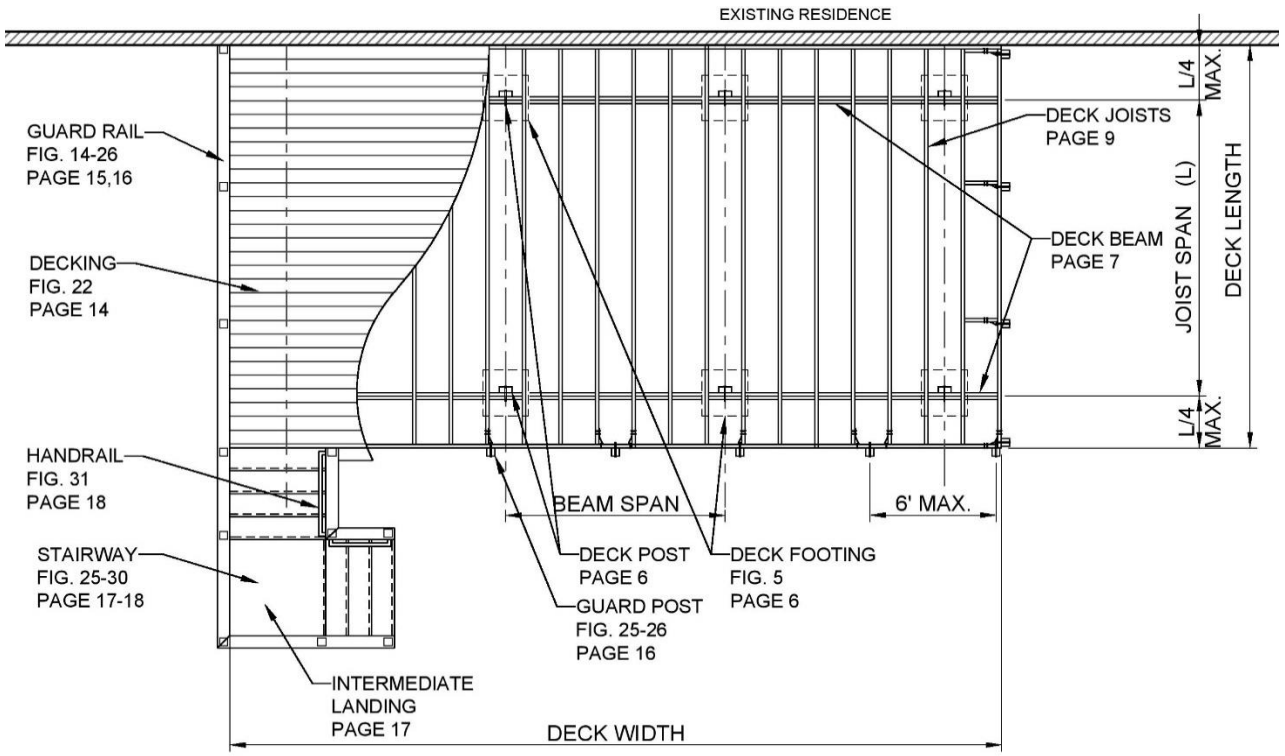


Countersunk bolts are not Permitted

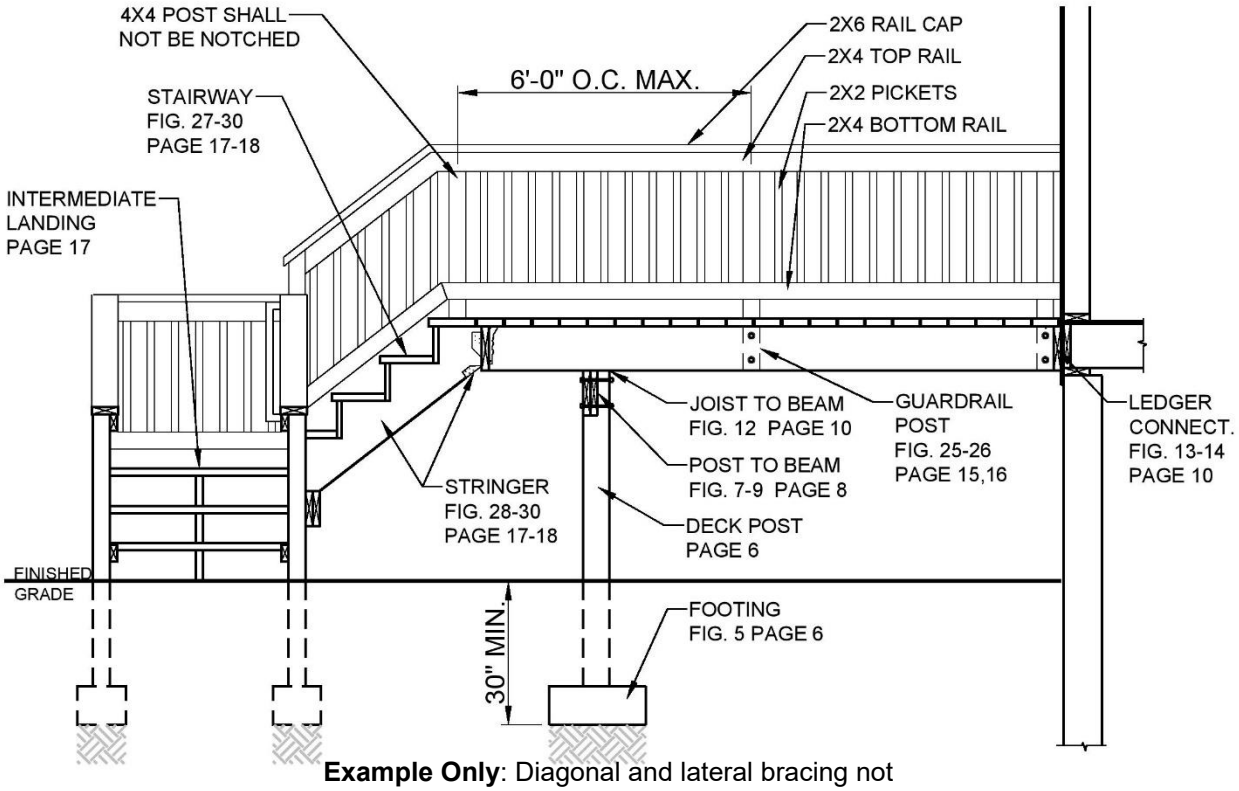
# 2. DECK FRAMING PLANS AND SECTIONS




**ATTACHED DECK**

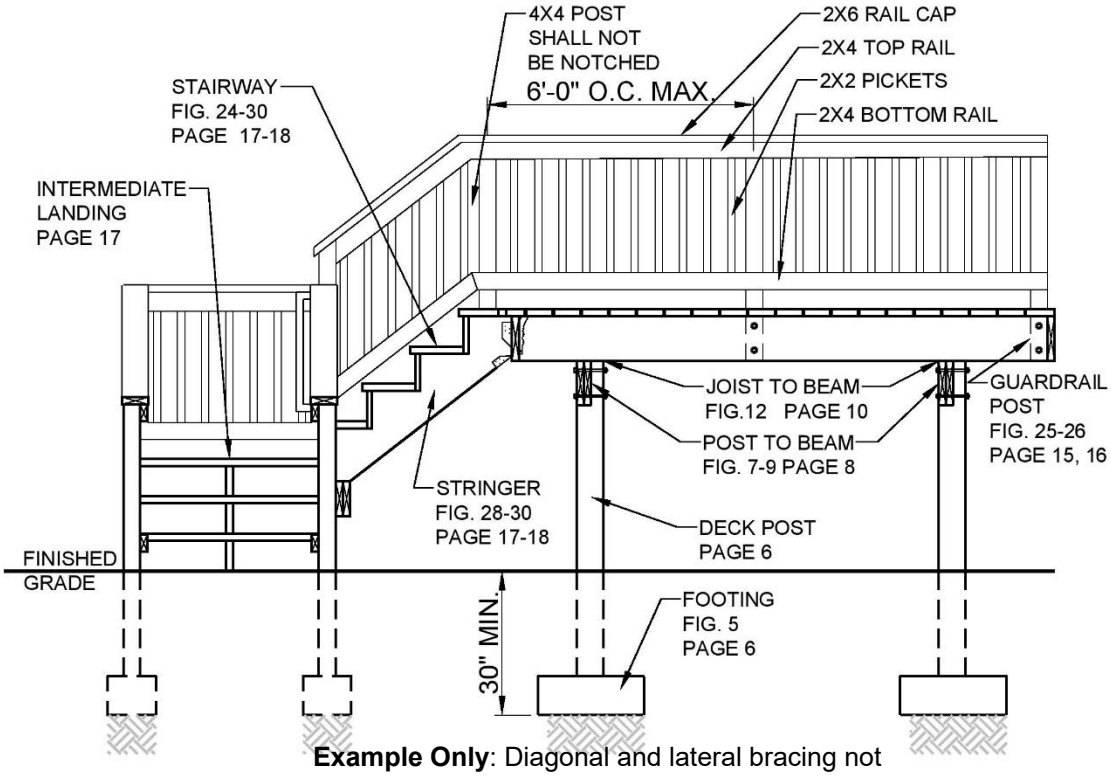



**FREE STADING DECK**




**Example Only**: Diagonal and lateral bracing not shown on example but should be on the deck building constriction plans.

## ATTACHED DECK

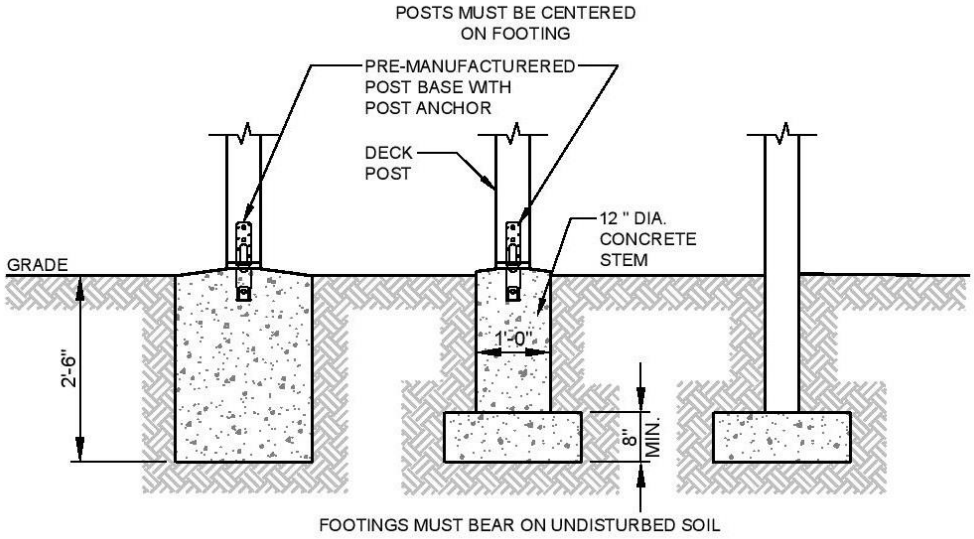



**Example Only**: Diagonal and lateral bracing not shown on example but should be on the deck building constriction plans.

## FREE STANDING DECK

## 3. DECK FOOTINGS

**Footing size is required to be on the plans. Deck footings closer than 5'-0" to an exterior house foundation wall must bear at the same elevation as the existing house foundation.**



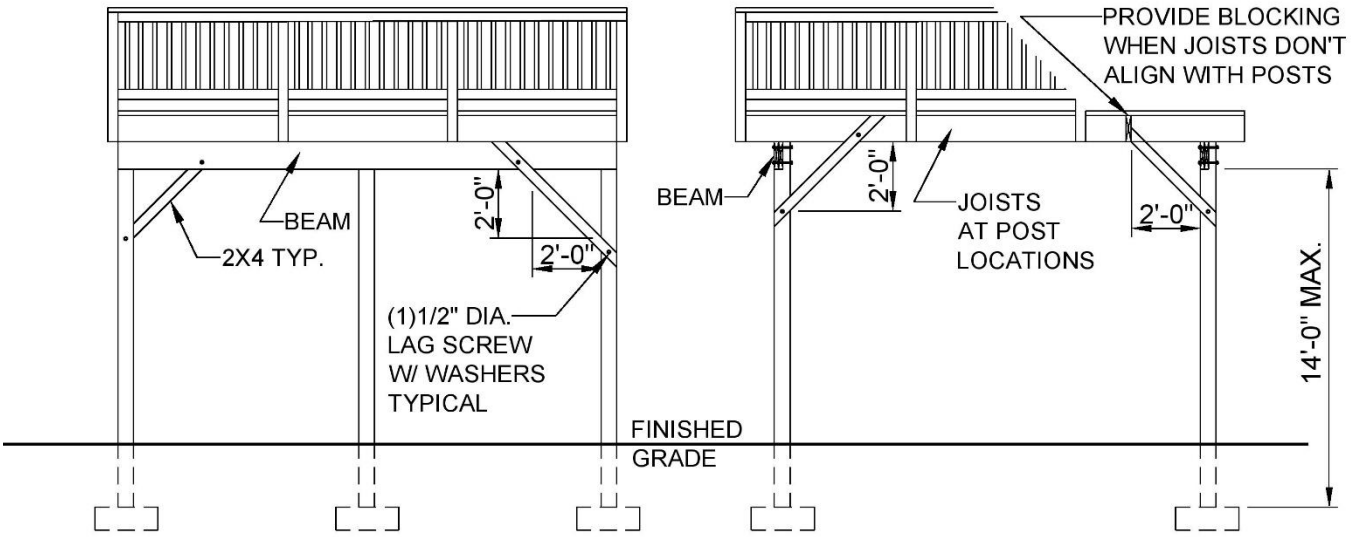

**DECK FOOTINGS**

a. Posts shall be restrained to prevent lateral displacement at the bottom support by manufacturer connectors or by a minimum of 12" in surrounding soils or concrete piers. Where expansible, compressible, shifting or other questionable soils are present, soils shall not be relied on for lateral support.
b. Cut ends of posts shall be field treated with an approved preservative.

## 4. DECK POSTS

Deck post size shall be in accordance with 2018 IRC. The height of the post is measured from grade or top of foundation (whichever is higher) to the underside of the beam.

Provide diagonal bracing at each post greater than 2 feet in height (grade to bottom of beam). Bracing shall be fastened to the post at one end with required Lag screws. One set of diagonal bracing shall be located between posts and beams or parallel to the house. Another set of diagonal bracing shall be located perpendicular to beams and house in the end spans. This bracing shall be bolted to the post and joist above the post location. If the joist spacing is such that a joist does not align over a post location an extra joist shall be added to facilitate connection of the diagonal bracing. For free standing decks see below




Note: Diagonal bracing prohibited on center posts

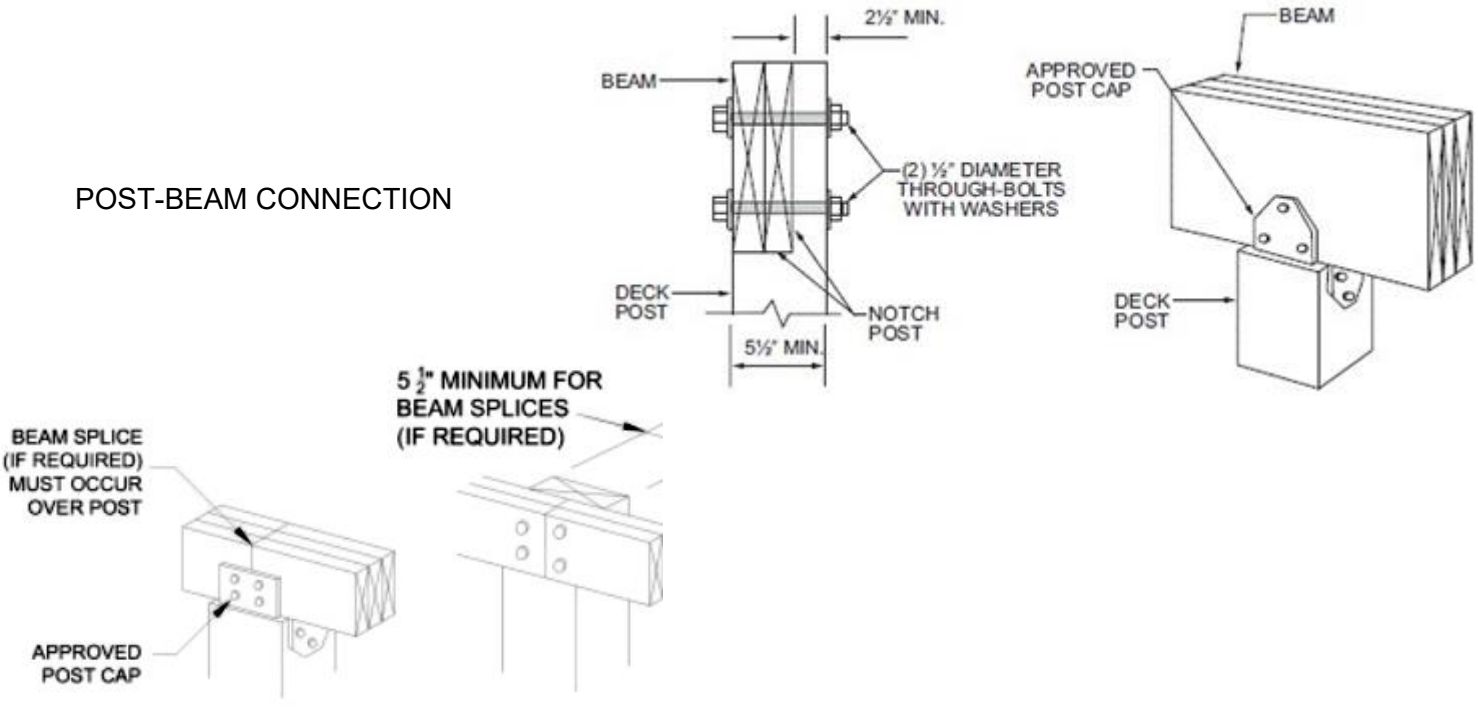
## 5. DECK BEAM

Maximum allowable spans for deck beams to be as per 2018 IRC.

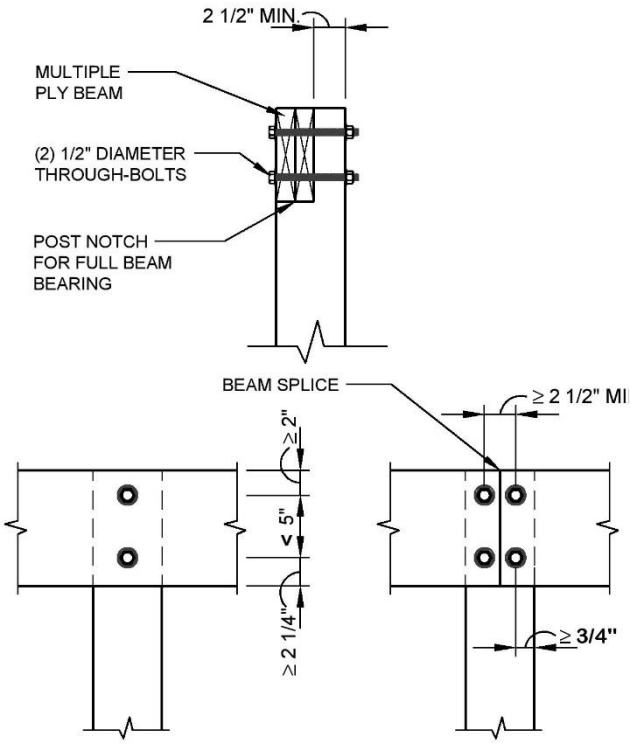
## 6. POST TO BEAM CONNECTION

Deck beams shall be attached to deck post in a manner capable of transferring vertical loads and resisting horizontal displacement. Where multiple span beams bear on intermediate posts each ply must have full bearing on the post and be reflected on the plans.

POST-BEAM CONNECTION

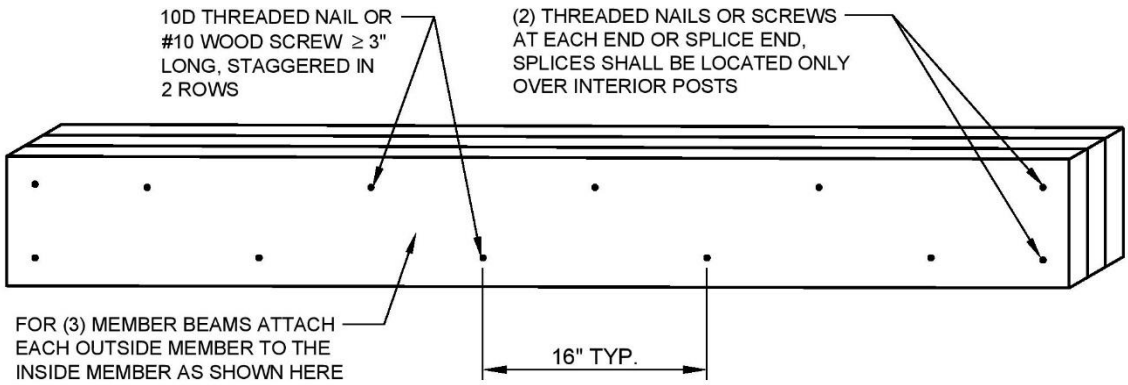


## POST-BEAM CONNECTION AT SPLICE





**POST TO BEAM PROHIBITED CONNECTION**



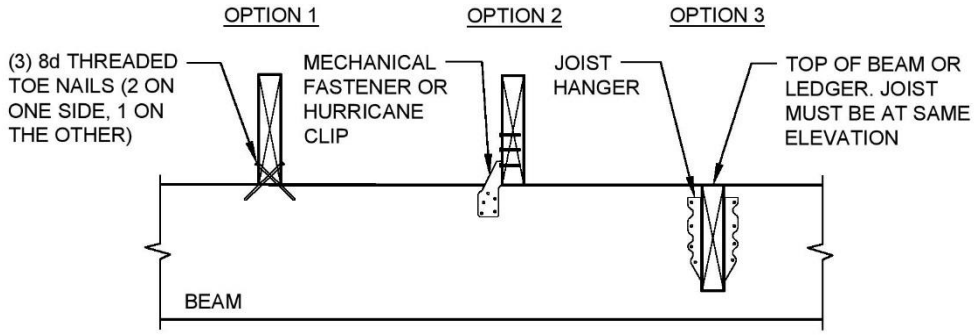

BUILT-UP BEAM CONNECTION

## 7. DECK JOIST

Maximum allowable span for deck joists to be as per 2018 irc. The maximum cantilever shall be limited to one-fourth of the actual adjacent joist span or the maximum cantilevered length shown on table 3. Whichever is less. The ends of joists shall have not less than 1 ½" bearing on wood or metal. Joist framing into the side of a beam or ledger shall be supported by approved joists hangers. Joist ends and bearings shall be provided with lateral resistance to prevent rotation by joists hangers or blocking and their depth shall not be less than 60% of the joist depth.

## 8. JOIST TO BEAM CONNECTION

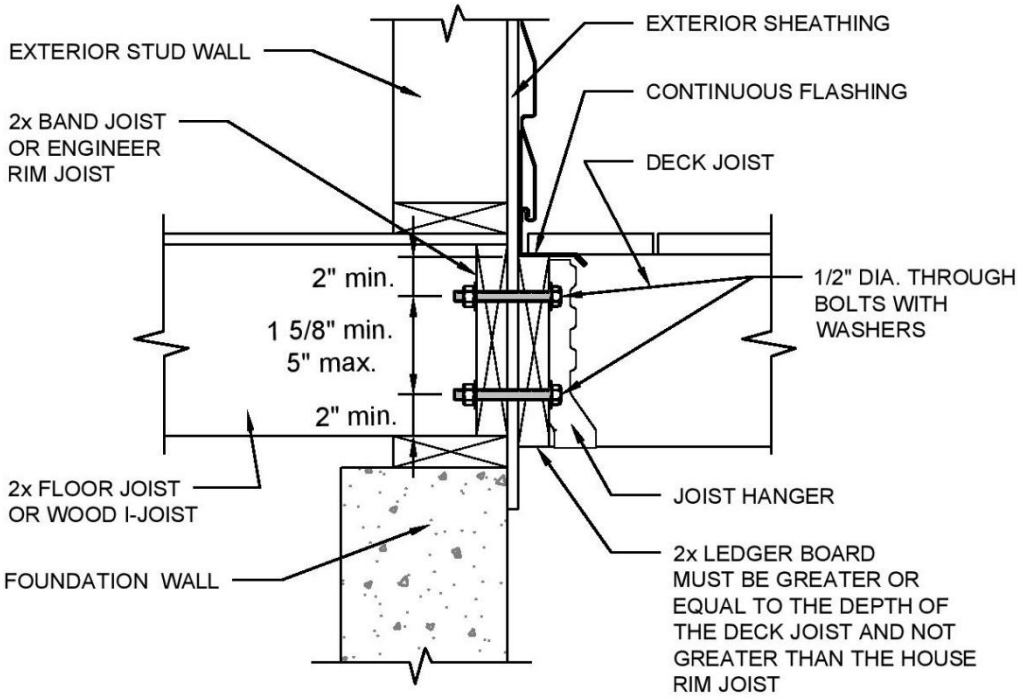
Each joist shall be attached to the beam as shown on Figure 12. Joist may bear on an overhang past the beam face when Option 1 or Option 2 is used, and blocking is provided between joists at beam bearing. Option 2 mechanical fasteners of hurricane clips must have a minimum uplift and lateral load capacity of 100 lbs in both uplift and lateral load directions. Joists may also be attached to the side of the beam with joist hangers per Option 3. Joists shall not frame in from opposite sides of the beam. Joist hangers shall be at least 60% of the ledger of beam depth. See 2018 IRC for minimum joist hanger capacity. Inside flange hangers can be used at edge conditions. Clip angles or brackets to support deck joists are prohibited.



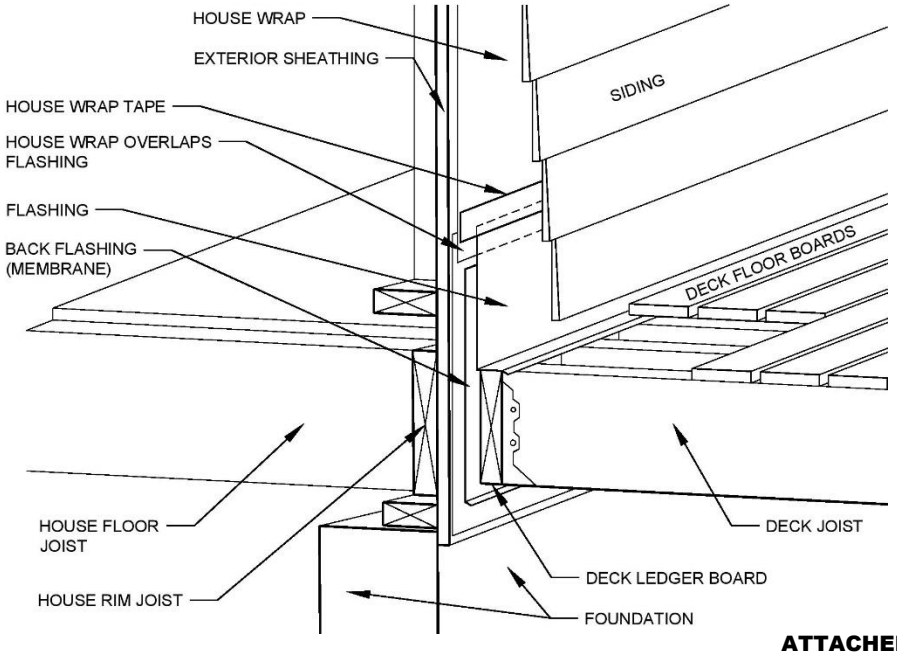

JOIST TO BEAM CONNECTION

# 9. LEDGER DECK ATTACHMENT

The ledger board shall be equal to or greater than the deck joist depth but equal or less than the house band or rim joist. Ledger board attachments to the exterior wall shall be constructed as indicated in Figure 13. The ledger shall be a minimum nominal 2x8. When attachments are made to the house band joist the connection shall be to a 2” nominal lumber band joist or LVL rim joist bearing on a sill plate or wall plate and it shall be constructed with ½” bolts with washers. The band joist shall be capable of supporting the new deck. If this cannot be verified or conditions at the house differ from the details herein, a free-standing deck or full plan submission will be required. Prohibited ledger board attachments are attachment to or through exterior veneers (Brick, Masonry, Stone) Figure 16, cantilever floor overhangs Figure 16, open web trusses Figure 16, as they are not intended or designed to support a new deck.

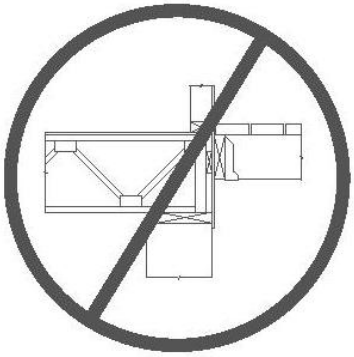



**LEDGER BOARD TO RIM JOIST ATTACHMENT**

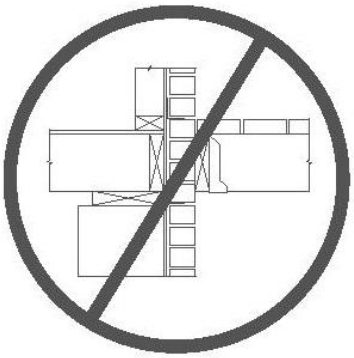



**ATTACHED DECK FLASHING DETAIL**

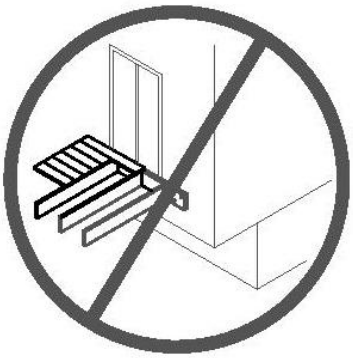
**PROHIBITED LEDGER ATTACHMENTS**



Attachment to Open Web Trusses

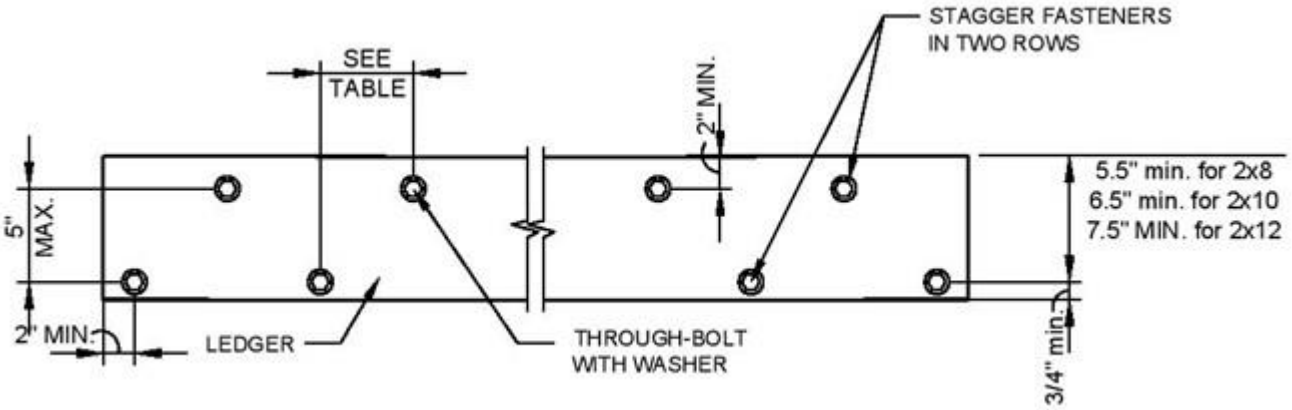


Attachment to Brick, Masonry or Stone Veneers



Attachment to House Overhang or Chimney

## 10. LEDGER BOARD FASTENERS



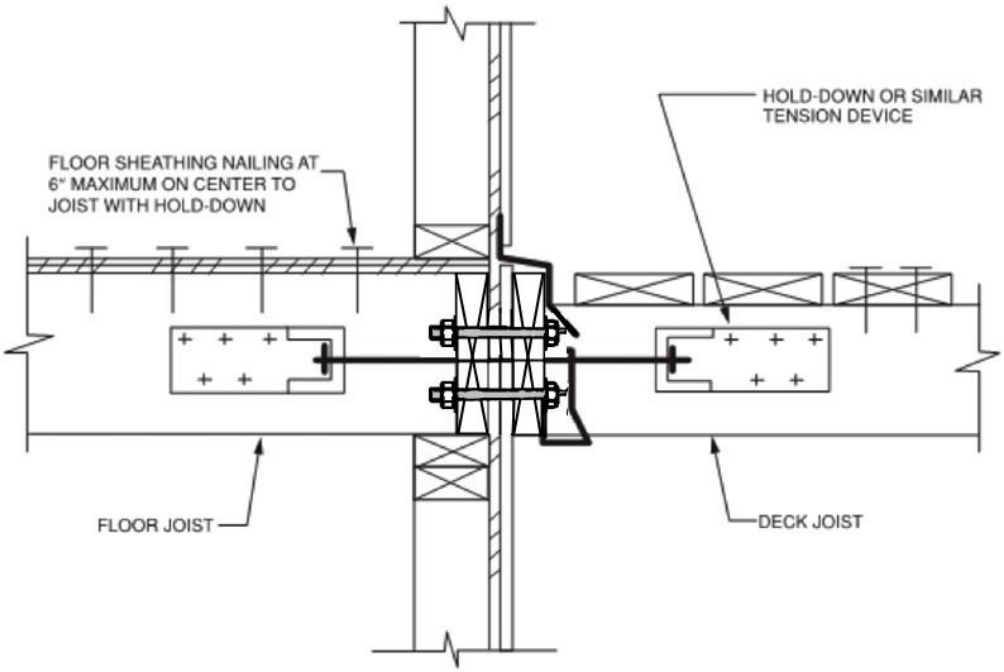

**FASTENER SPACING per 2018 IRC**

**Through-Bolts**

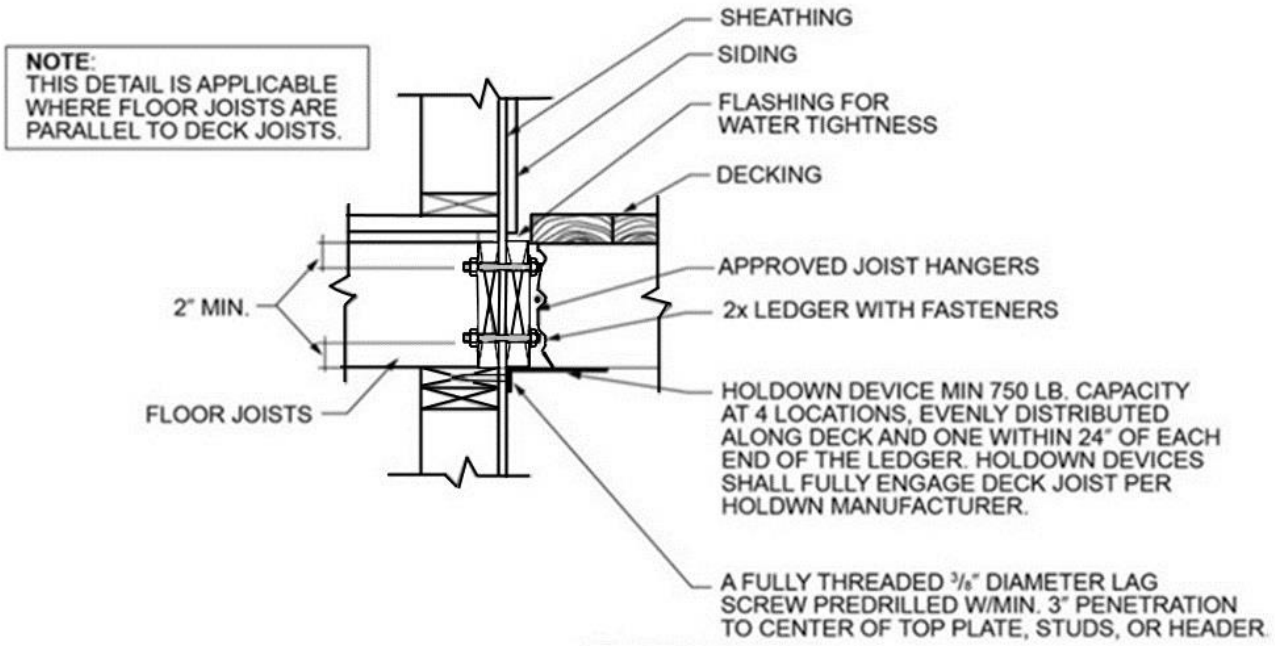
**Through-Bolts shall have a diameter of ½". Pilot holes for through-bolts shall be 17/32" to 9/16" in diameter. Through-Bolts require washers at the bolt head and nut.**

# 11. DECK LATERAL LOAD CONNECTION

Decks shall be positively anchored to the primary structure. The lateral connection shall be permitted in accordance 2018 IRC. For conditions where the house joists are parallel to the deck joists hold-down devices shall be provided not less than two locations within two feet of the edge of the deck and shall have an allowable design capacity of not less than 1,500lbs ; or hold down devices shall be connected to the base of the deck to house structure at not less than 4 locations, evenly distributed along deck and within 2 ft of each end and shall have an allowable design capacity of not less than 750 lbs each.



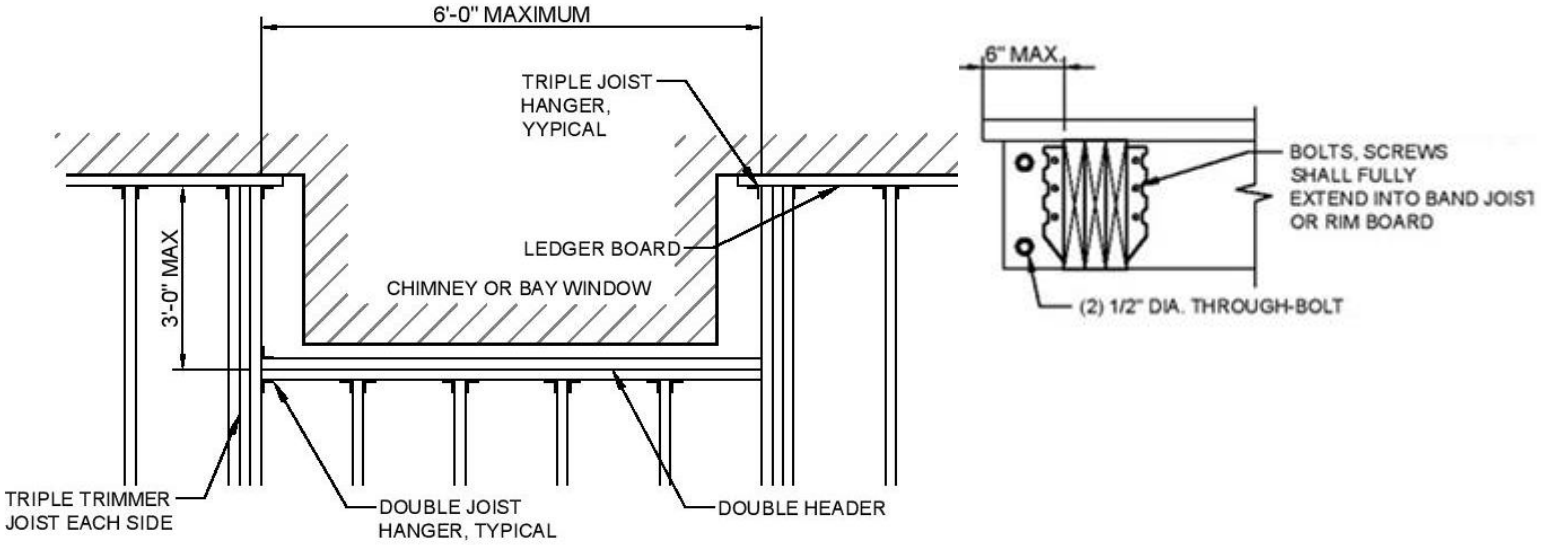

**LATERAL LOAD CONNECTION**
**DECK JOISTS PARALLEL TO HOUSE JOISTS**




**LATERAL LOAD CONNECTION**
**DECK JOISTS PARALLEL TO HOUSE JOISTS**

## 12. DECK FRAMING AT CHIMNEY OR BAY WINDOW

All members at chimneys or bay windows shall be framed in accordance with Figure 22. Header may span a maximum of 6’-0”. When a chimney or bay window is wider than 6’-0”, one or more 6x6 post may be added to reduce header spans to less than 6’-0”. In such cases, the post footing must meet the requirements in the footings section. Headers shall be located no more than 3’-0” from the end of the trimmer joist. Triple trimmer joists are required on each side of the header. Joist hangers shall each have a minimum vertical capacity in accordance with Table 4. Bolts, screws, or lag screws used to attach the hanger to the ledger shall fully extend through the ledger into the 2-inch nominal lumber band joist (1-1/2” actual) or LVL rim joist. Otherwise a free-standing deck is required.

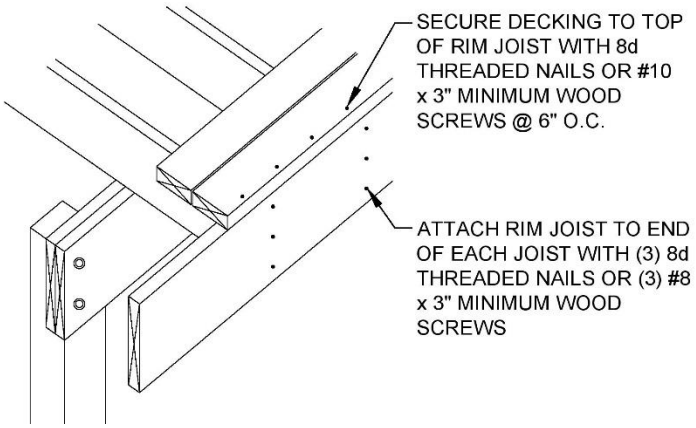



**FRAMING AROUND CHIMNEY OR BAY WINDOW**

## 13. DECKING

Decking laid perpendicular to joists may consist of 2x6 structural lumber supported by joists spaced at 24” o.c. maximum or 1 ¼ inch thick wood decking supported by joists spaced 16” o.c. maximum. Attach decking to each joist with 2-8d threated nails of 2-#10 screws. Space decking boards approximately 1/8” apart. See figure 23 for decking connection requirements to rim joist. Decking placement may range from an angle perpendicular to the joist to an angle of 45 degrees to the joist. Each segment of decking must bear on a minimum of 3 joist.

**Plastic composite deck boards and stair treads** will be accepted if they are labeled to indicate compliance with ASTM D7032. A complete current code evaluation report for the manufactured decking system that includes the maximum allowable load and span must be provided to the building inspector at the time of framing inspection. Manufactured decking systems must be installed in accordance with the code evaluation report and manufacturer’s specifications.

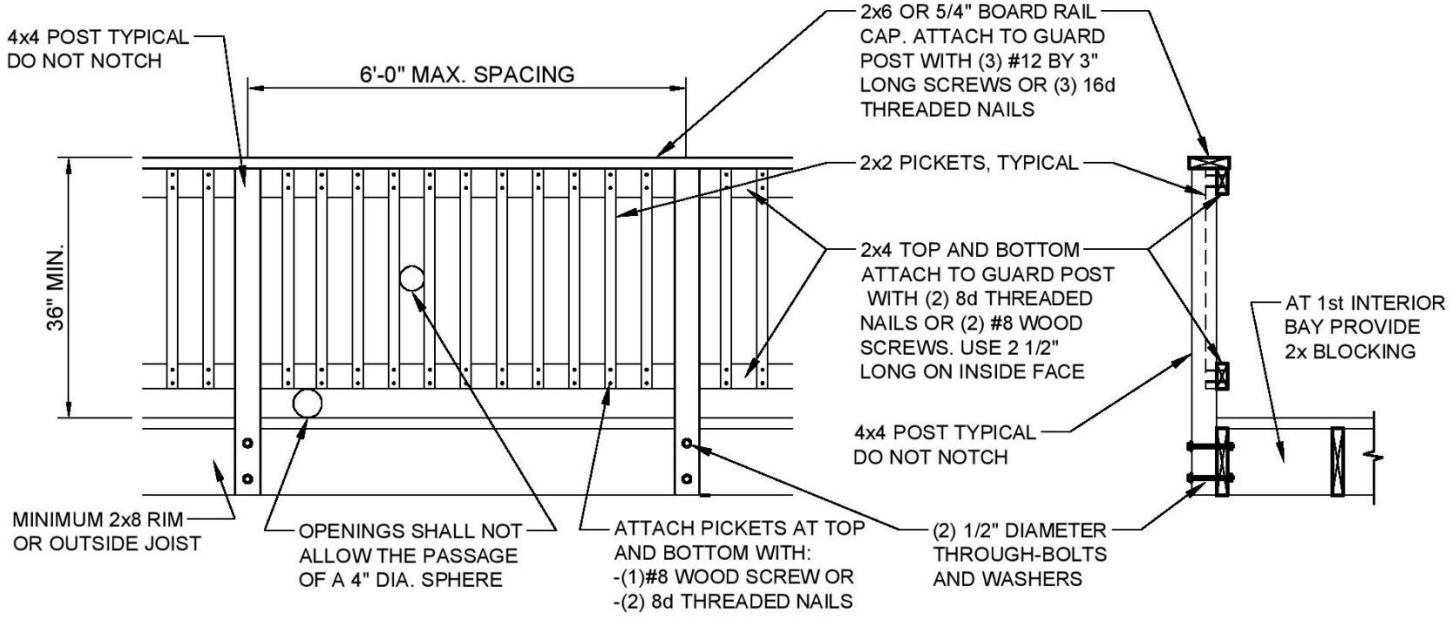



**RIM JOIST CONNECTION DETAIL**

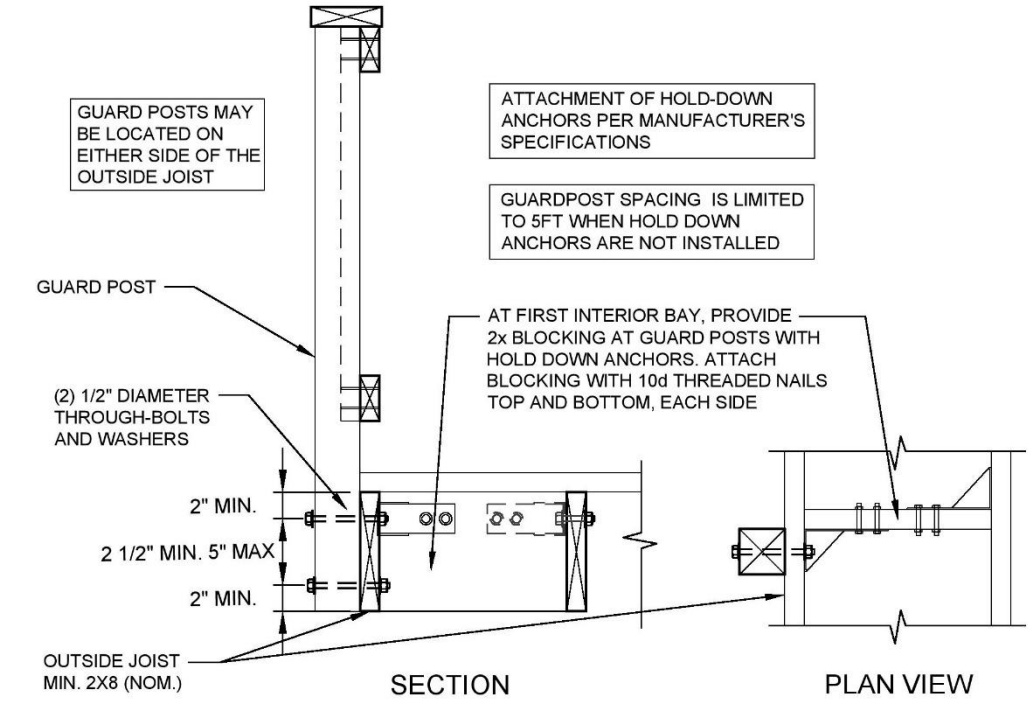
## 14. DECK GUARDRAIL

All decks greater than 30” above grade are required to have a guard constructed as shown in Figure 24. Deck guard posts shall be a minimum 4x4 (nominal). Joists and rim joists to which guards post are attached shall be a minimum of 2x8 (nominal). Guard post which run parallel to the deck joist shall be attached to the outside joist as per figure 25. Guard post that run perpendicular to the deck joists shall be attached to the rim joist in accordance with Figure 26. Hold down anchors shall have a minimum allowable tension load of 1,800 lbs for a 36” maximum guard height and shall be installed in accordance with manufacturer’s instructions.

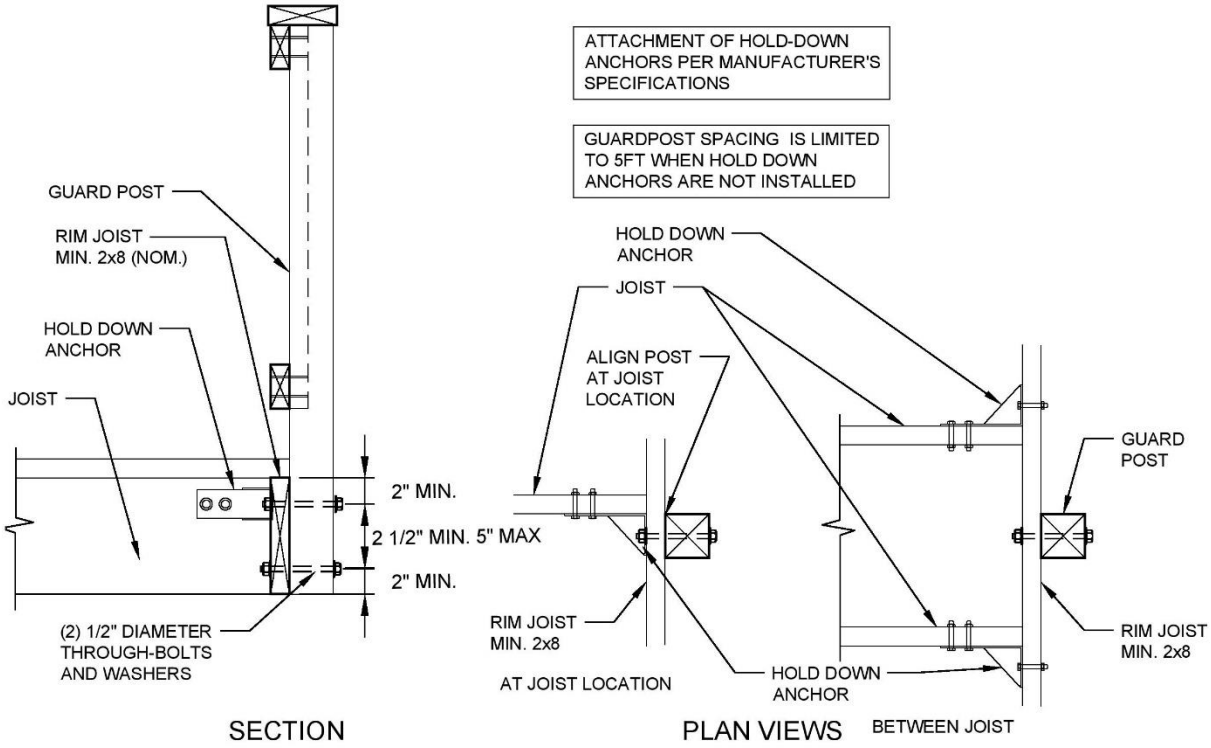
**Manufactured railing systems** will be accepted only if they are labeled to indicate compliance with ASTM D7032 and listed by an approved code agency in a current code evaluation report. A complete current code evaluation report for the manufactured railing system to be installed **must be provided to Fayette County along with the manufacture installation instructions at the time the permit application and forms are submitted**. Manufactured railing systems must be installed in accordance with the report and manufacturer’s specifications. Wood post spacing and connections, if used for supporting manufactured rails, balusters or pickets, must follow the conditions specified by the code evaluation report.




**DECK GUARD DETAIL**




**GUARD POST TO OUTSIDE JOIST**

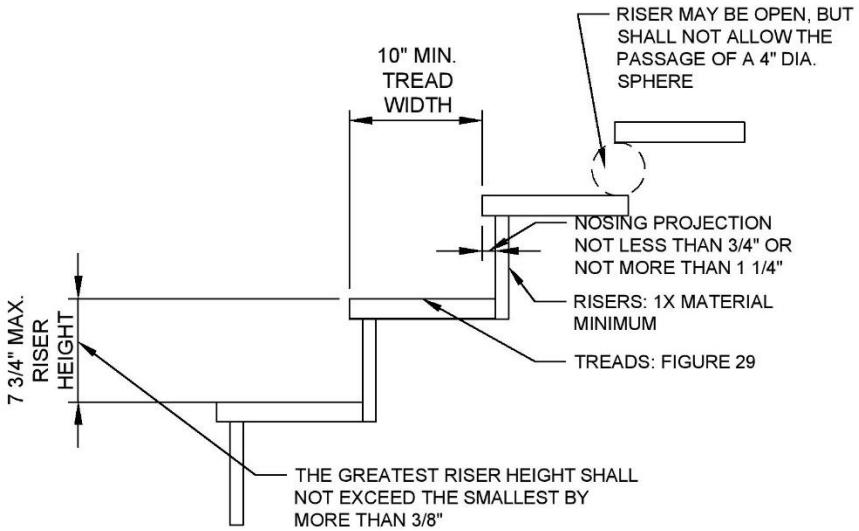



**GUARD POST TO RIM JOIST**

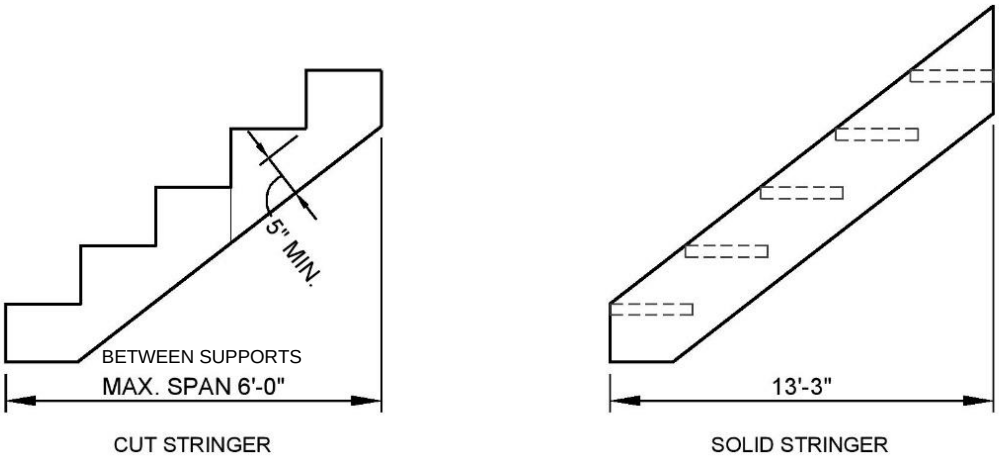
# 15. STAIR REQUIREMENTS

Stair, stair stringers, and guards shall meet the requirements per the 2018 IRC. All stringers shall be a minimum. Stair stringers shall not span more than the dimensions shown on Figure 28. An intermediate landing may also be provided to shorten the stringer span. If the total vertical height for a stairway exceeds 12’-0” and intermediate landing will be required.

All **intermediate stair landings** must be constructed as a non-ledger deck using the details in this document. Stair shall be a minimum of 36” in width. If only cut stringers are used, a minimum of 3 stringers 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. Stair stringers must be fully supported or connected to the deck structure 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 not less than the width of the stair served.

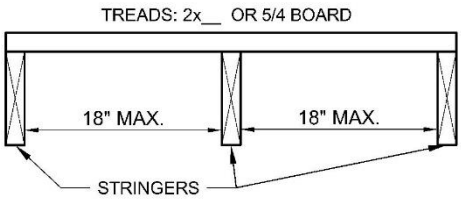



**TREAD AND RISER DETAIL**

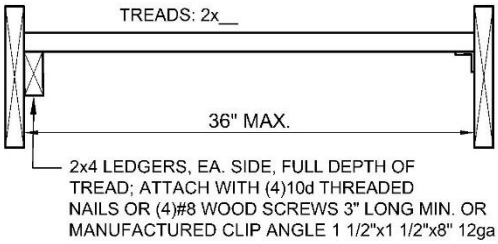



**STAIR STRINGER REQUIREMENTS**

ATTACHMENT PER TREAD AT EACH STRINGER OR LEDGER:
2x__ OR 5/4" TREADS - (2)8d THREADED NAILS OR (2)#8 SCREWS 2 1/2" LONG MIN.
3x__ TREADS - (2) 16D THREADED NAILS OR (2)#8 SCREWS 3 1/2" LONG MIN.

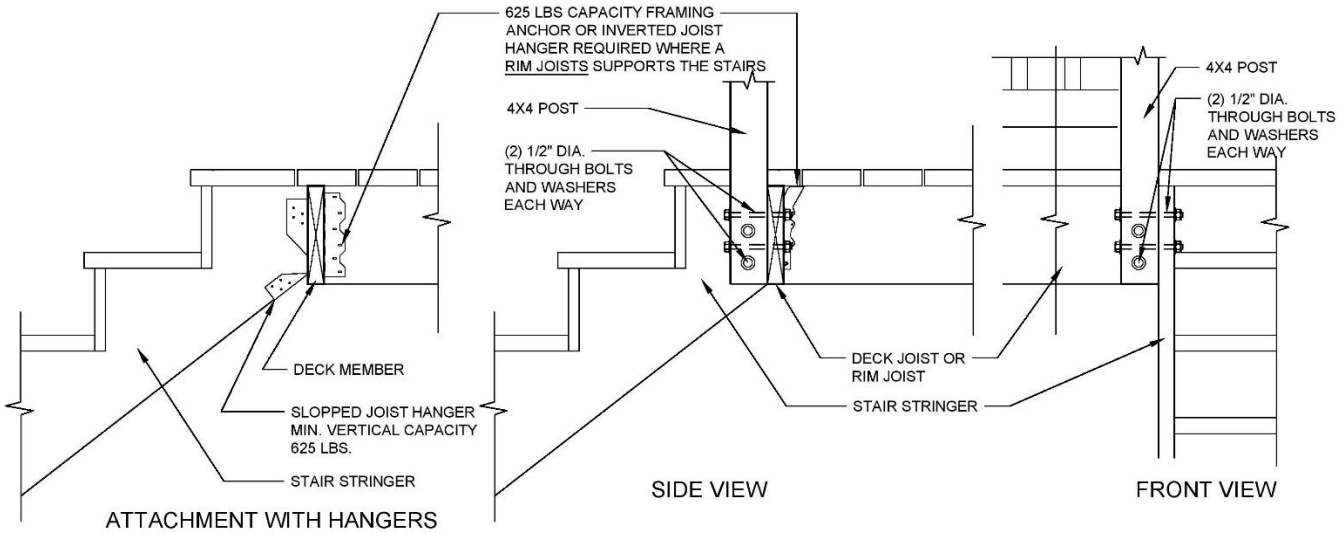



CUT STRINGER




SOLID STRINGER

## TREAD CONNECTION REQUIREMENTS

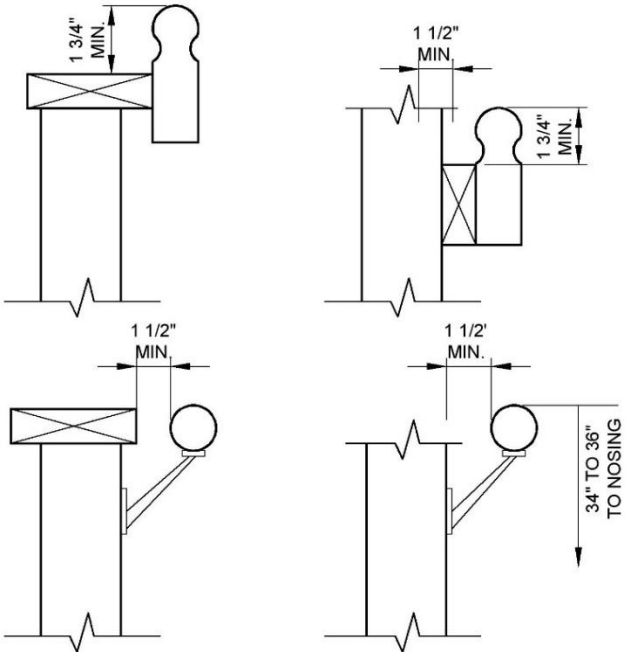



ATTACHMENT WITH HANGERS

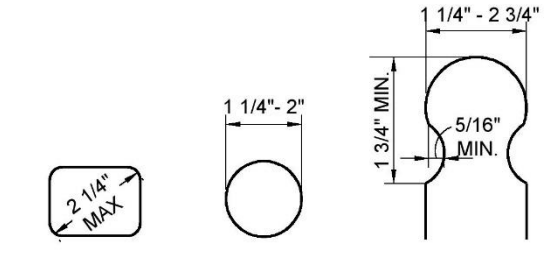
SIDE VIEW

FRONT VIEW

## STAIR STRINGER ATTACHMENT

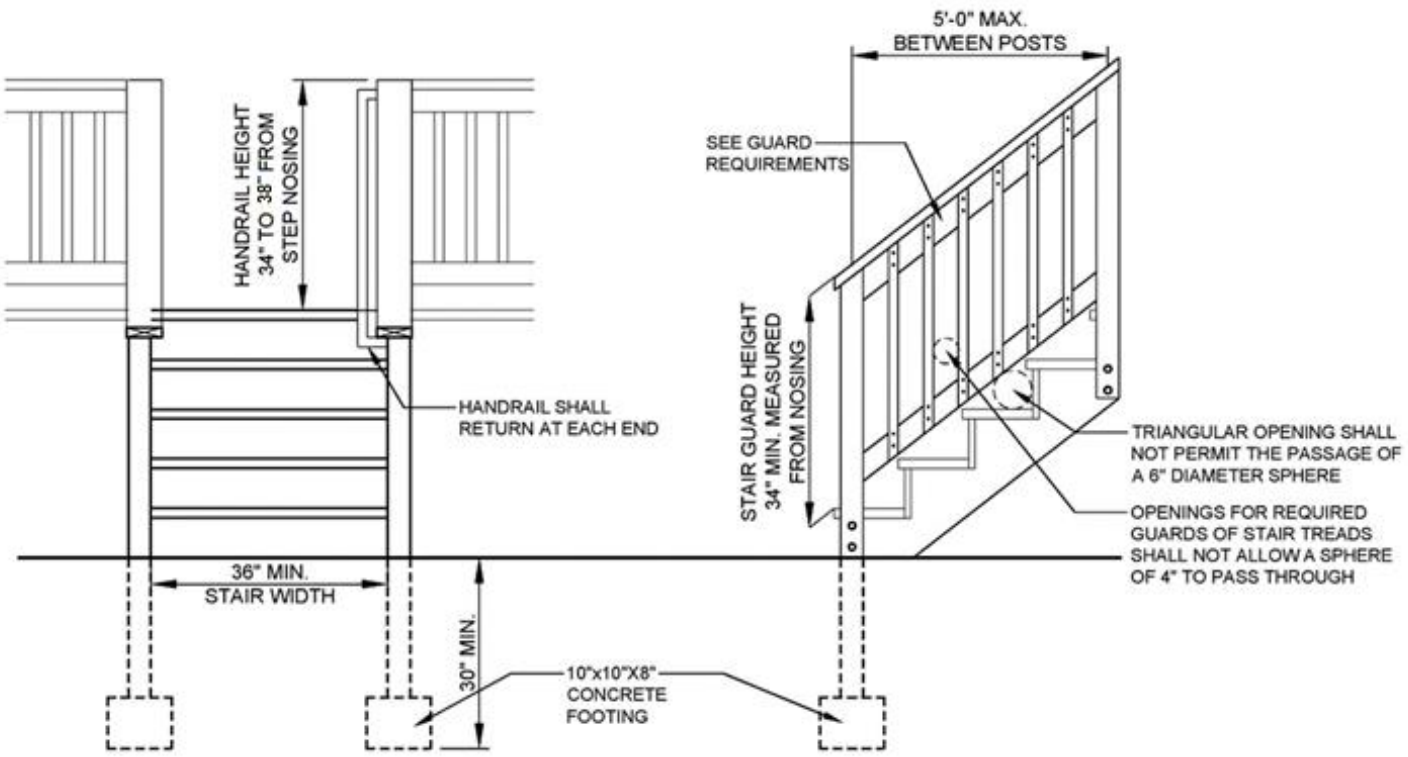



## HANDRAIL MOUNTING EXAMPLES




NON CIRCULAR CIRCULAR RECESSED

## HANDRAIL GRIP SIZE



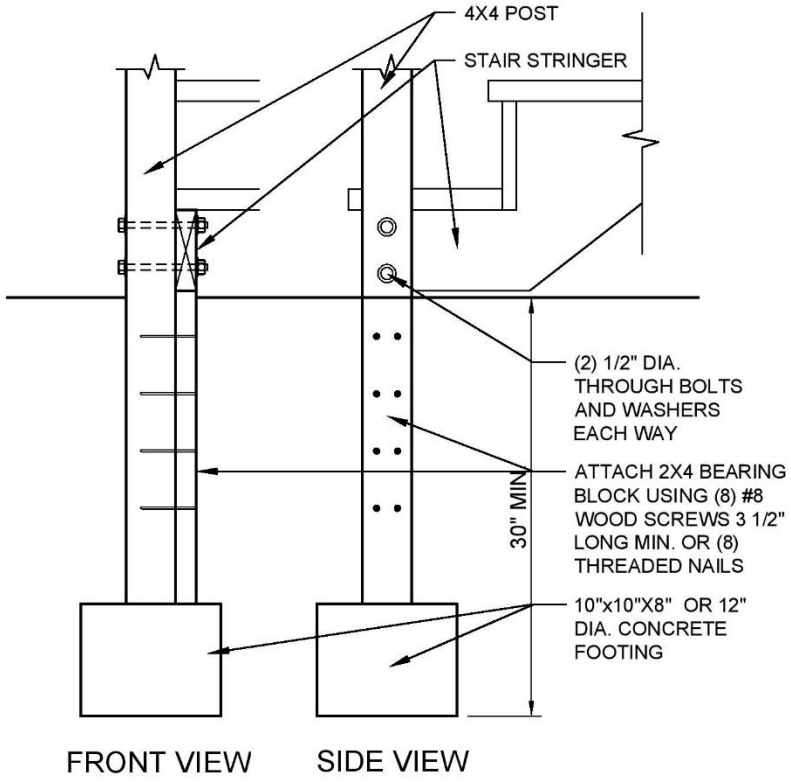

**STAIR AND GUARDRAIL REQUIREMENTS**

## STAIR FOOTING REQUIREMENTS

Where the stair meets the grade, attach the stringers to the stair guard post must be shown on the plans. Post shall bear on footings. All footing shall bear on solid ground per 2018 IRC. Stringers shall bear on concrete.

## STAIR LIGHTING 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 the inside of the house. Motion detected or timed switches are acceptable




**STAIR FOOTING DETAIL**

# 16. DECK DETAIL SUMMARY PAGE

This page is provided to help us determine compliance with the requirements of the 2018 IRC and may be added as reference page **ONLY** in your deck building construction plans. All other items listed in this guide must be included on your plans or your project could be rejected and cause approval delays:

1. Attached Deck ☐ or Free-Standing ☐ Deck
2. Deck Dimensions (L): _____ x (W)_____ x Height _____
3. Footing Size: _____ Total #:_____ (including stairs)
4. Post Spacing: _____
5. Post Size_____x_____
6. Beam Size ( ) _____ x _____
7. Post Base/Cap Connectors: ☐ YES ☐ NO
8. Ledger Size: _____ x _____ w/ ½" dia. Bolts
9. Joists _____ x _____ @ _____ o.c.
10. Deck Boards: ☐ Wood ☐ Composite*
11. Guardrails: ☐ Wood ☐ Composite*