



# RESIDENTIAL DECK SUBMITTAL GUIDE

Pennsylvania Uniform Construction Code (UCC) referencing the International Residential Code  
as adopted by Manheim Township Ordinance

## PERMIT REQUIREMENTS

**BUILDING PERMIT:** If any portion of the deck has a walking surface located more than 30" measured vertically to the grade below, a building permit is required. Submit the following for review and approval:

- **BUILDING PERMIT APPLICATION**

Complete the [Building Permit Application](#). It is necessary to fill out all applicable areas of the permit application including the signature of the permit applicant. Our staff will assist applicants with questions regarding the permit application.

- **PERMIT FEE SCHEDULE WORKSHEET**

Complete the [Residential Fee Worksheet](#). Permit fees for a residential deck are based on the deck square footage. Additional fees include a UCC mandated Educational Fee and Planning & Zoning Review Fee.

**A payment invoice will be provided to the permit applicant when the permit is issued**

- **PLAN REQUIREMENTS:** Submit for permit on the [Manheim Township Permit Portal](#) or submit the following at the Municipal Office.

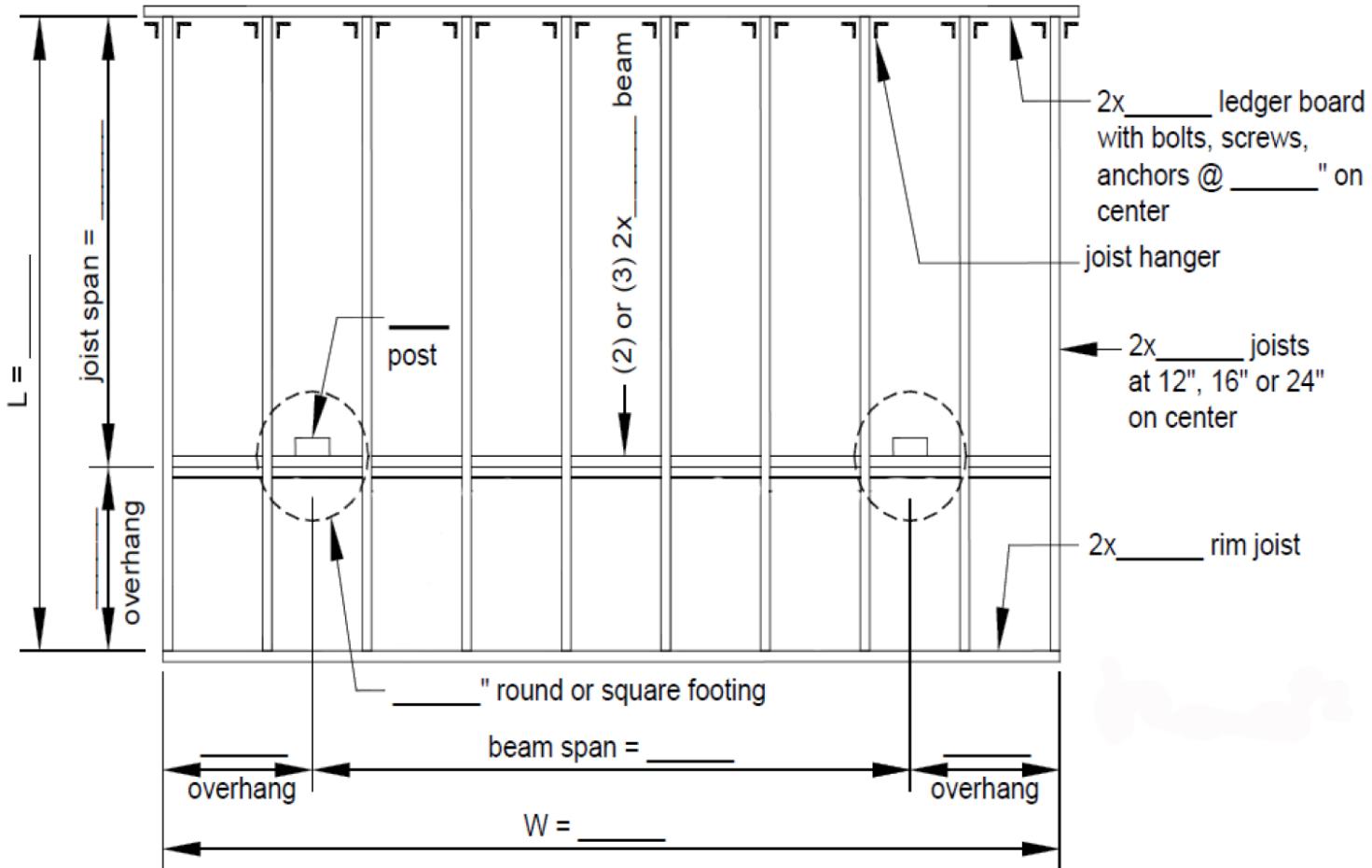
- Four (4) copies of a site plan
- Two (2) copies of a deck framing plan
- Two (2) copies of a deck cross section
- Two (2) copies of stairway/guardrail/handrail details (if applicable).

## GENERAL DECK CONSTRUCTION NOTES

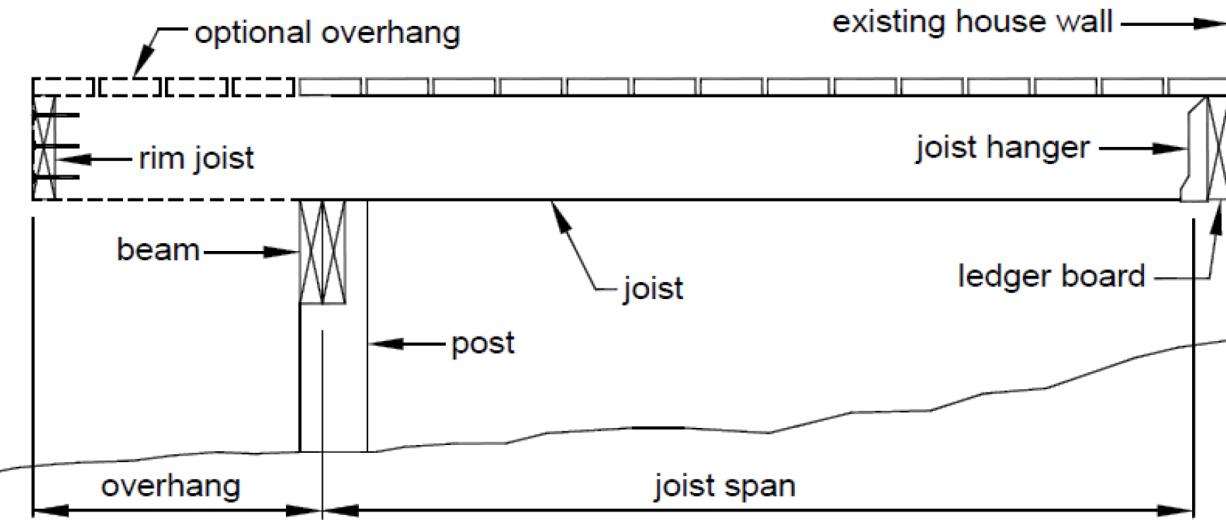
- Lumber shall be southern pine, grade #2 or better and shall be pressure treated per AWPA U1.
- Framing hardware and fasteners (joist hangers, cast-in-place anchors, mechanical fasteners) shall be hot-dipped galvanized (1.85 oz/sf of zinc, G-185 coating) or stainless steel. Use products such as "Zmax" from Simpson Strong-Tie or "Triple Zinc" and Gold Coat" from USP.
- **Decks shall not be attached to:** house overhangs, cantilevered bay windows, brick or stone veneers, exterior finishes, or chimneys without the approval of a PA registered architect or professional engineer.
- **Decks shall not be used or occupied until all final inspection approvals are obtained.**

**PLAN REQUIREMENTS:** Draw to scale or include dimensions on plans

**DECK FRAMING PLAN:** For simple, single span decks, use the "[Typical Deck Framing Plan](#)" below making note of ledger size/connections, beam span and beam size, joist size/span and o.c. spacing.



**DECK CROSS SECTION:** Submit a deck construction cross section. Make notes of ledger type, existing house wall materials/connection details, post to beam connection details and post/beam/joist sizes.



Deck joists shall be permitted to cantilever not greater than one-fourth (1/4) of the adjacent joist span

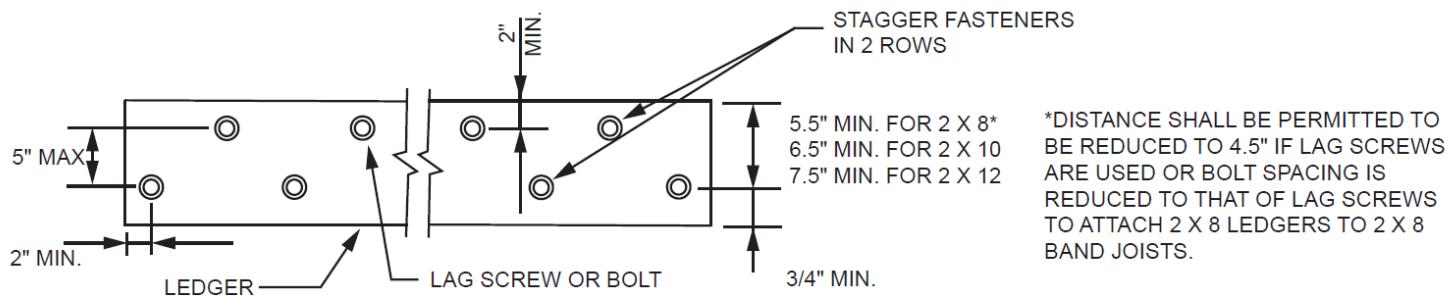
## **DECK LEDGER REQUIREMENTS**

Ledger boards shall be attached to the existing house/structure in accordance with the following:

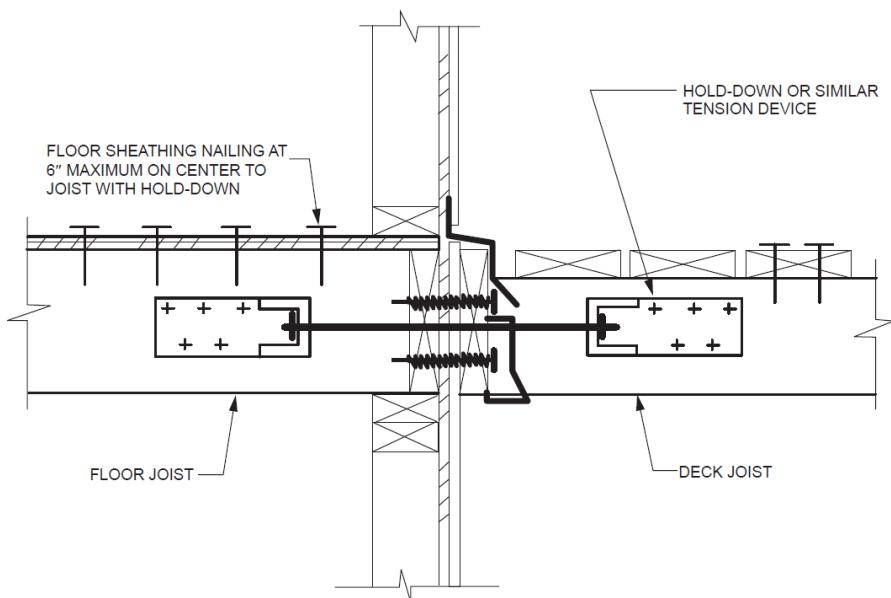
- The depth of a ledger board shall be no less than 2" x 8" PT or equal to the depth of the floor joists.   
IRC R507.9.1.1
- The band board of the existing structure shall be capable of supporting the new deck. If the structure band joist is not structurally adequate to support the new deck, a freestanding deck shall be constructed.   
IRC R507.9.1.2

- Wood I-joist floor systems may not accommodate connection of a deck ledger unless a 1" or thicker engineered band joist is installed.
- **Ledger Flashing** - Remove exterior finishes prior to installing the ledger board. Install flashing where ledgers are secured to existing construction. BOTH back flashing (behind ledger) and cap flashing (shingle style flashing over ledger board) are to be provided at deck connections. Approved flashing materials include galvanized steel, UV resistant plastics/rubber self-adhered materials, stainless steel and copper. IRC R703.4
- Flashing at a door threshold shall be installed to prevent water infiltration. IRC R703.4
- Deck ledgers shall not support concentrated loads from beams or girders. IRC R507.9.1.1
- Deck ledgers shall not be supported on stone or masonry. IRC R507.9.1.1
- **Lateral Load Connectors** shall be installed when the deck is not self-supporting. They are to be installed in compliance with one of the following methods:
  - Minimum of two (2) lateral load connectors located within 24" of each end of deck. Each device shall have an allowable capacity of not less than 1500 pounds.
  - Minimum of four (4) lateral load connectors each with an allowable capacity of not less than 750 pounds.
- Deck ledgers shall be installed per IRC Tables R507.9.1.3(1) & R507.9.1.3(2). Proprietary ledger fasteners shall be spaced in accordance with the manufacturer specification.

## PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGER BOARDS

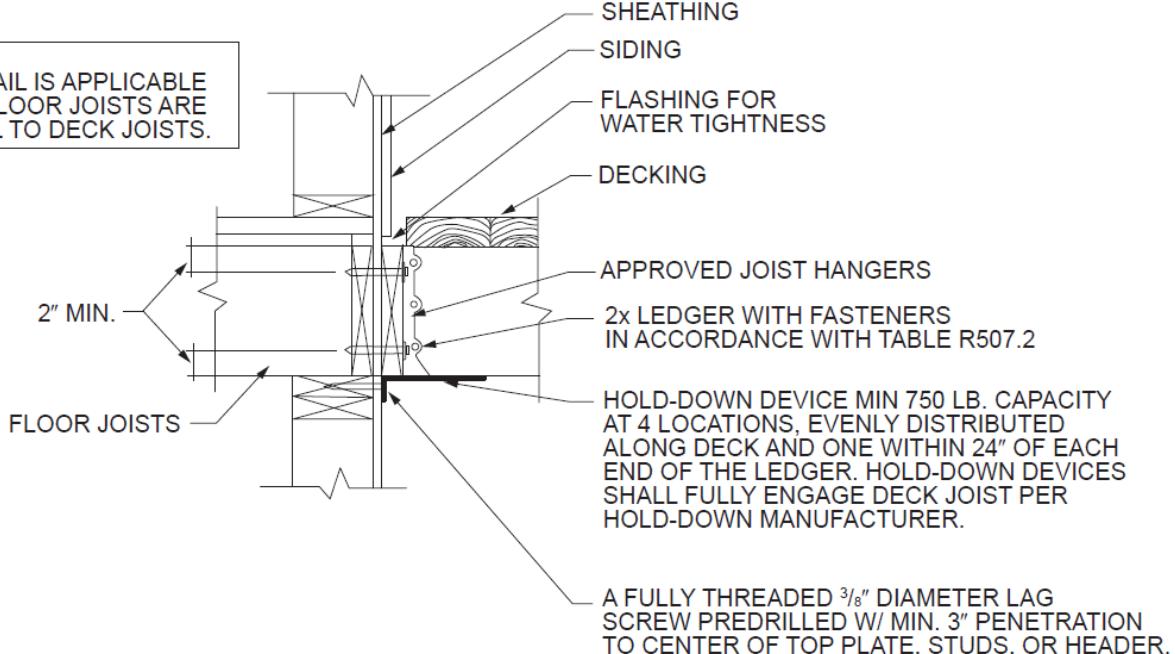


## LATERAL LOAD CONNECTORS – TWO (2) 1500 POUND CONNECTORS

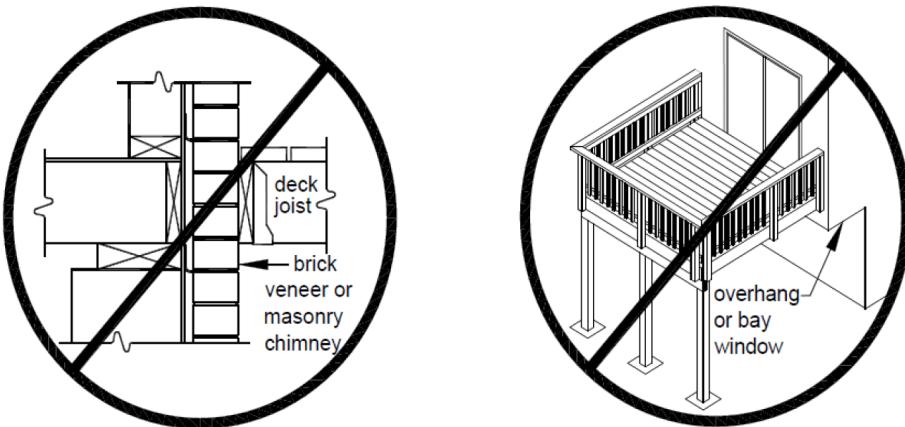


## LATERAL LOAD CONNECTORS – FOUR (4) 750 POUND CONNECTORS

**NOTE:**  
THIS DETAIL IS APPLICABLE  
WHERE FLOOR JOISTS ARE  
PARALLEL TO DECK JOISTS.



### PROHIBITED DECK LEDGER ATTACHMENTS

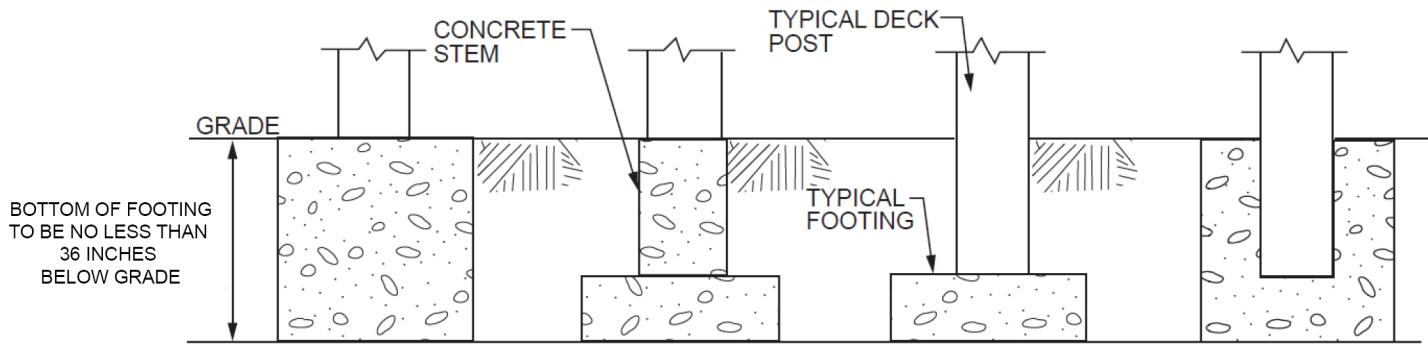


### FOOTING REQUIREMENTS

Deck footings are to be installed in accordance with the following requirements:

- Concrete footings shall have a minimum compressive strength of 3000 psi per IRC R402.2
- Precast concrete footings are permitted for deck construction.
- Footings shall bear on solid ground and be dug to a depth not less than the frost depth of 36"
- **Footings shall be designed per IRC Table R507.3.1.**
- Footings depths less than 36" are permitted and will be verified on a case-by-case basis when rock or other condition exist that warrant footings less than 36" deep.
- Posts shall be restrained to prevent lateral displacement at the bottom support. 12 inches of soil or an approved post base connector is needed to prevent displacement at post to footing connections. IRC R507.4.1
- Post anchors shall be approved galvanized or stainless-steel connectors.
- Deck footings within the house foundation overdig are to extend down to virgin soil at the depth of the house footings.

- Deck footings are not to be installed over utility lines or piping of any kind. Footings are to be arranged not to interfere with existing underground utilities and piping.



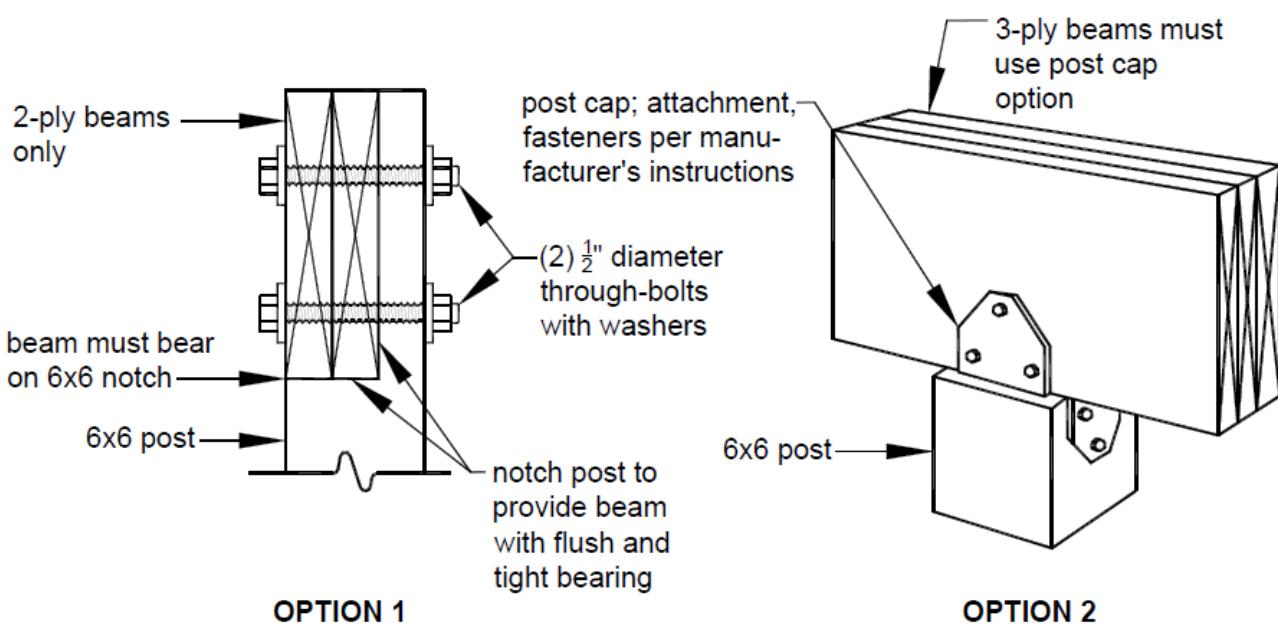
- Prior to starting deck project, contact PA One Call to have all underground utilities identified. **Call 811 before you dig.** <http://www.pa1call.org/pa811>



**Know what's below.  
Call before you dig.**

## POST REQUIREMENTS

- Single level wood framed decks are to be supported with posts sized per IRC Table R507.4
- Deck beams shall be attached to deck posts in accordance with option 1 or option 2 as applicable.
- Manufactured post-to-beam connectors shall be sized for the post and beam sizes.
- Post to beam connectors are to be approved galvanized or stainless-steel connectors.
- All bolted connections to be with  $\frac{1}{2}$ " galvanized bolts with washers under the head and nut.



## FLOOR JOIST REQUIREMENTS

Floor joists are to be sized and installed in accordance with the following requirements:

- Joist span is measured between the centerline of bearing at each end of the joist and does not include overhangs.
- Deck joists shall be permitted to cantilever not greater than one-fourth (1/4) of the actual adjacent joist span. IRC R507.6
- Floor joist ends and bearing locations shall be provided with lateral restraint. Joist hangers, blocking between joists or rim joists shall be used for lateral restraint. IRC R507.6.2
- Rim joists shall be secured to the ends of each joist with not less than (3) 10d galvanized nails or (3) No. 10 x 3 inch wood screws. IRC R507.6.2
- The ends of each joist shall have not less than 1 1/2 inch of bearing. Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. IRC R507.6.1
- Plastic composite deck boards are to be installed per IRC Section R507.7 and manufacturer's installation instructions.

## MAXIMUM DECK JOIST SPANS (FEET-INCHES)

### MAXIMUM DECK JOIST SPANS

JOIST SPECIES <sup>b</sup>	JOIST SIZE	ALLOWABLE JOIST SPAN <sup>b, c</sup> (feet-inches)			MAXIMUM CANTILEVER <sup>d, f</sup> (feet-inches)								
		Joist spacing (inches)			Joist back span <sup>e</sup> (feet)								
		12	16	24	4	6	8	10	12	14	16	18	
Southern pine	2 x 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP	
	2 x 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP	
	2 x 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP	
	2 x 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1	

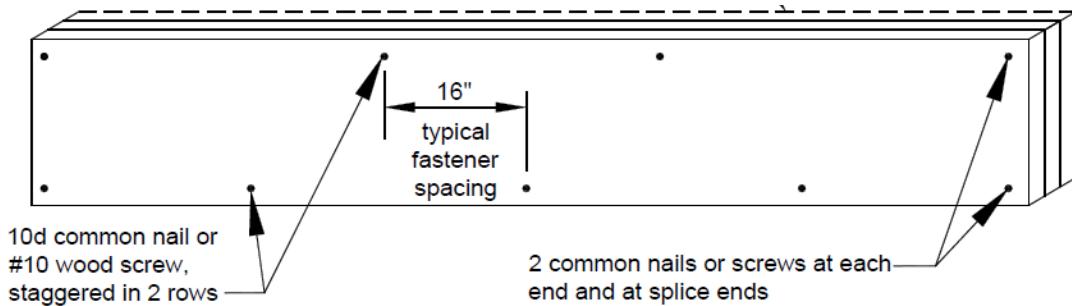
\*IRC Table R507.6. Spans are based on 40 PSF live load and 10 PSF dead load

\*This table is not applicable for decks supporting hot tubs or other concentrated loads

## BEAM REQUIREMENTS

Deck beams are to be sized and installed in accordance with the following:

- Beam plies shall be fastened with minimum of two (2) rows of 3" – 10d nails spaced at 16 inches on center along each edge.
- Beams shall be permitted to cantilever at each end up to one-fourth of the actual beam span.
- Splices of multispan beams shall be located at the interior post locations.



### DECK BEAM SPAN LENGTHS (FEET-INCHES)

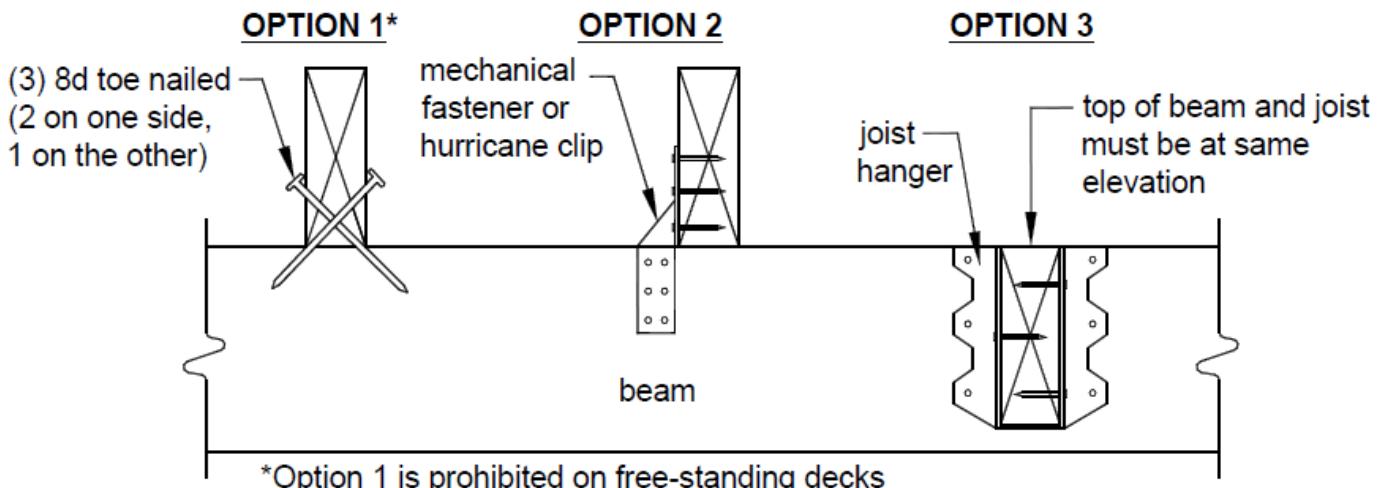
MAXIMUM DECK BEAM SPAN—40 PSF LIVE LOAD<sup>a</sup>

BEAM SPECIES <sup>d</sup>	BEAM SIZE <sup>e</sup>	EFFECTIVE DECK JOIST SPAN LENGTH <sup>a, i, j</sup> (feet)						
		6	8	10	12	14	16	18
		MAXIMUM DECK BEAM SPAN LENGTH (feet-inches) <sup>a, b, f</sup>						
Southern pine	1 – 2 × 6	4-7	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	3-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-5	7-0
	3 – 2 × 6	8-6	7-5	6-8	6-1	5-8	5-3	4-11
	3 – 2 × 8	10-11	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-2	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10

\*This table is not applicable for decks supporting hot tubs or other concentrated loads.

### JOIST-TO-BEAM CONNECTIONS

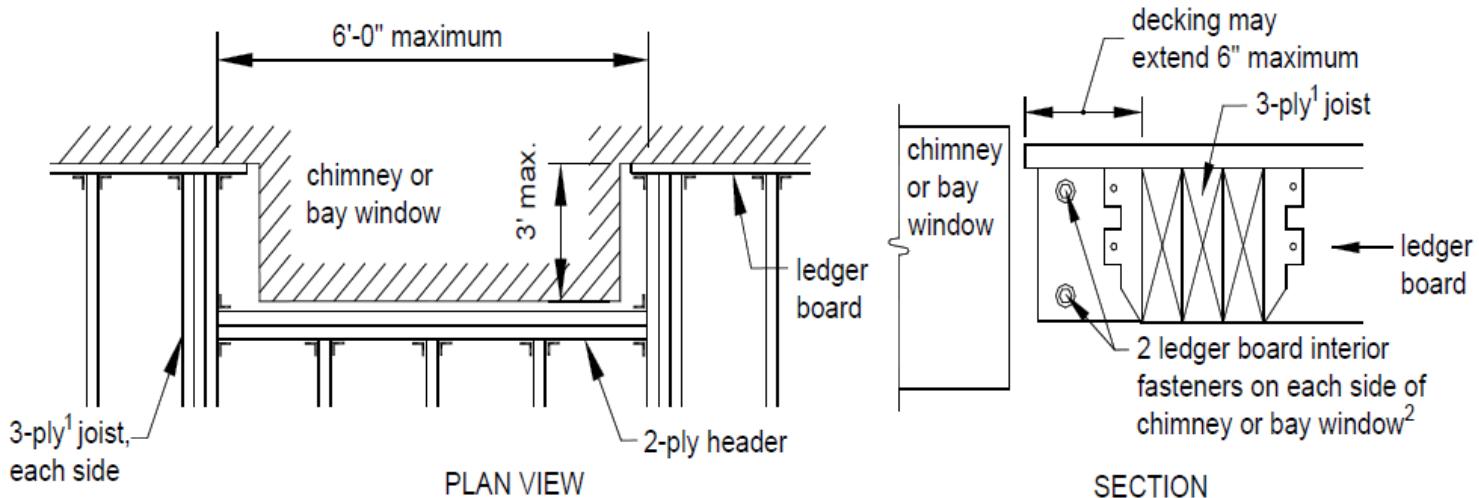
Joist to beam connections are to be installed in accordance with the following:



## FRAMING AT CHIMNEY OR BAY WINDOW

Deck framing at chimney or bay window projections is to be in accordance with the following:

- Header sizes shall equal the floor joist sizes
- When the chimney or bay window is deeper than 3'0", install a 6" x 6" post with footing below each triple joist at the location of the header connection
- When the header is longer than 6'0", install a 6"x6" post with footing below the header to reduce the span to less than 6'0".
- Joist hangers shall be specifically designed to accommodate the number of plies.

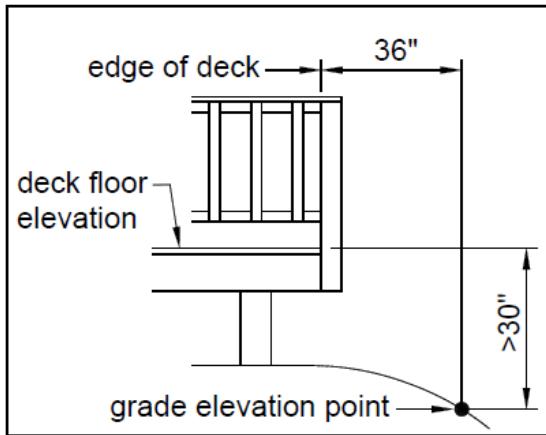


Note: joist hangers shall be sized for the number of plies supported

## GUARDRAIL REQUIREMENTS

Guardrails, whether required or not, shall be constructed in accordance with the following:

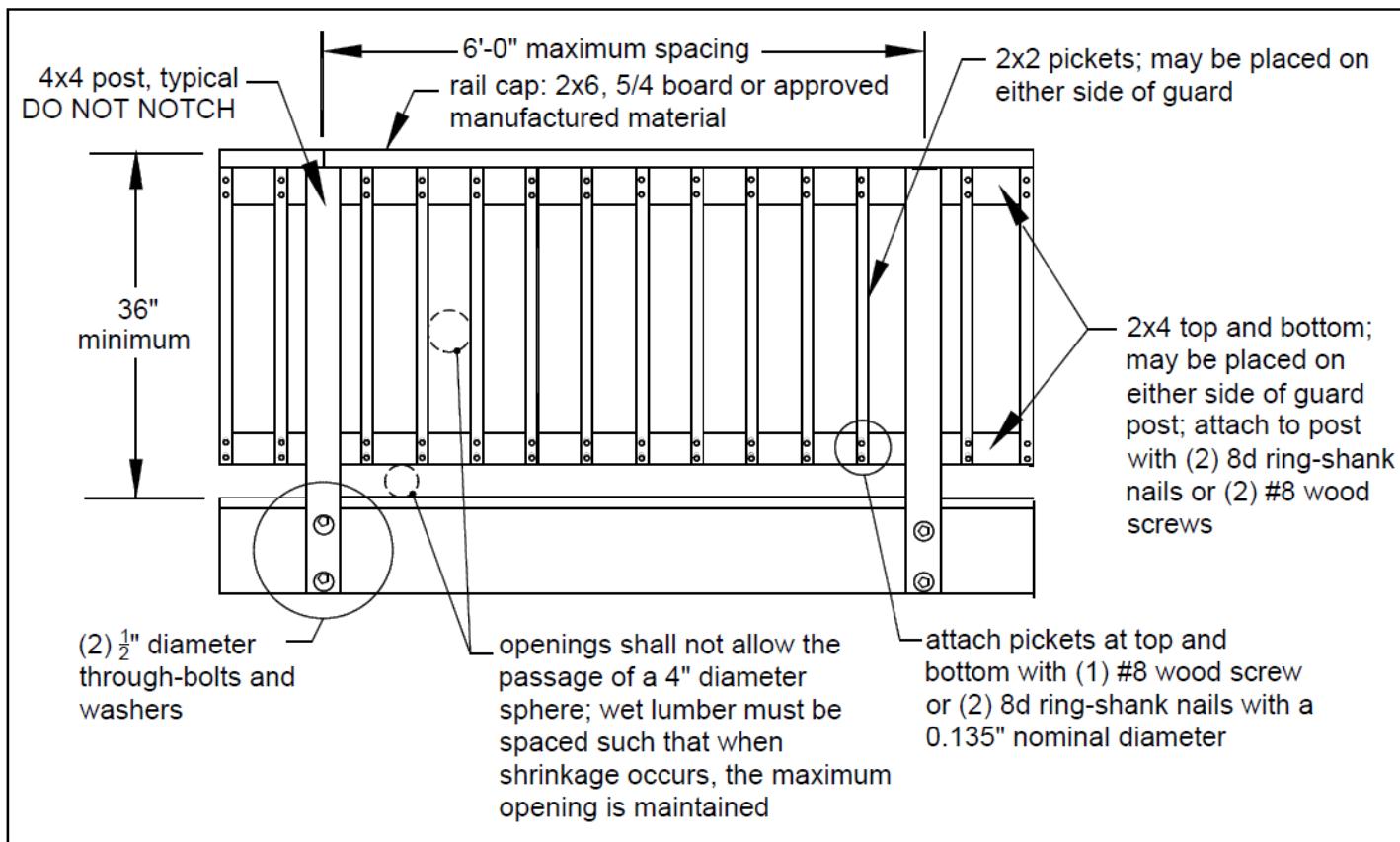
- Guardrails are required on open sided decks located more than 30 inches measured vertically to the grade below at any point within 36 horizontally to the edge of the deck. IRC R312.1.1



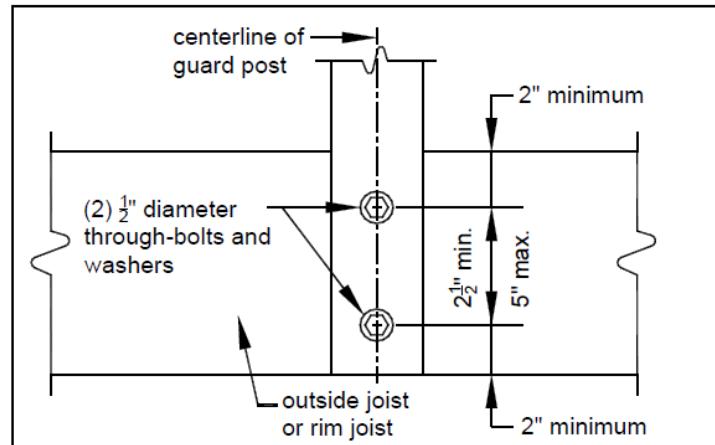
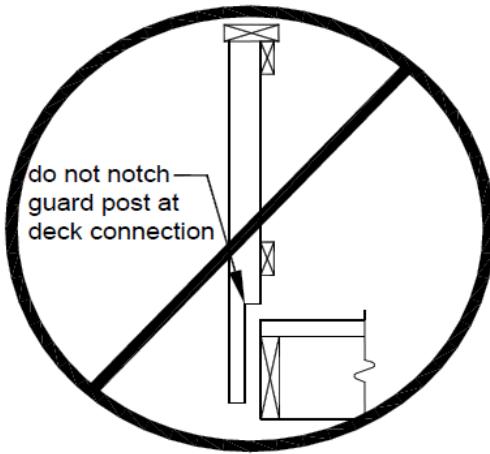
- Wood-plastic or other composite/plastic/vinyl guardrail system shall be installed per the manufacturer's installation instructions and shall be accompanied by a valid evaluation report (ICC-ES or equal). IRC R507.2.2.5

## GUARDRAIL CONSTRUCTION DETAILS

- Guard posts must be fastened to the floor framing to ensure the entire guard can resist a minimum of 200 pound lateral load placed along the top of the guardrail assembly.
- Guard posts maybe attached to either side of the rim joist or outside joist.
- **Guard posts are not to be notched at the connection to the deck framing.**



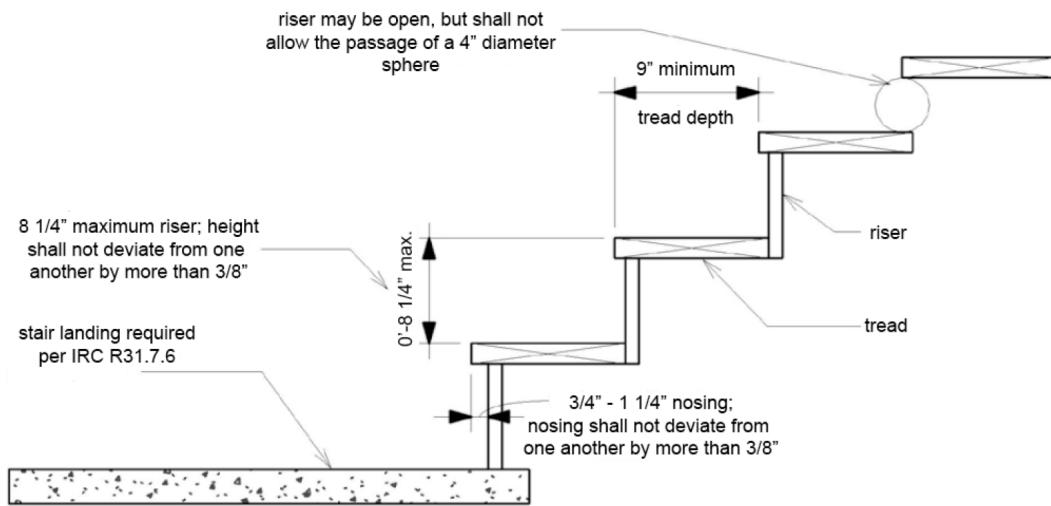
## GUARDRAIL CONSTRUCTION DETAILS



## STAIRWAY REQUIREMENTS

- Stairways shall not be less than 36" in clear width. Handrails may project into the clear width by no more than 4  $\frac{1}{2}$ " on either side of the stairway. Clear width at and below the handrail height, shall not be less than 31.5" where a handrail is installed on one side and 27" where handrails are provided on both sides. IRC R311.7.1
- Stairway riser heights are not to exceed 8  $\frac{1}{4}$ " with no more than a 3/8-inch variation in riser heights within a flight of stairs. The minimum tread depth is 9 inches measured from tread nosing to tread nosing. The greatest tread depth within any flight of stairs may not exceed the smallest by more than 3/8 inch. IRC R311.7.5 per PA UCC 403.21(2) **Risers may be open but shall not allow the passage of a 4-inch diameter sphere on stairs with a total rise of 30 inches or more.**
- A tread nosing not less than  $\frac{3}{4}$ " but not more than 1 $\frac{1}{4}$ " shall be provided on stairways with solid risers. Nosings are not required with a tread depth of 10" or more. IRC R311.7.5.3
- A floor or landing is needed at the top and bottom of each stairway per IRC R311.7.6. Stairway landings are to be as wide as or wider than the stairway and extend in the direction of travel no less than 36 inches.
- Exterior stairs shall be provided with an artificial light source located at the top landing of the stairway. IRC R303.8

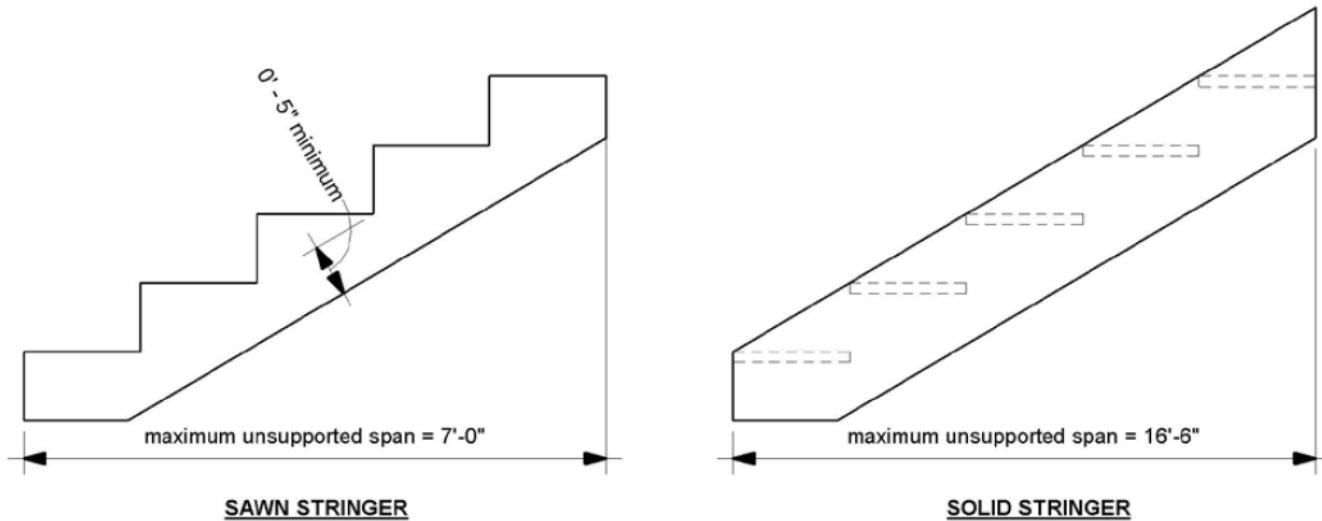
## STAIRWAY DETAIL



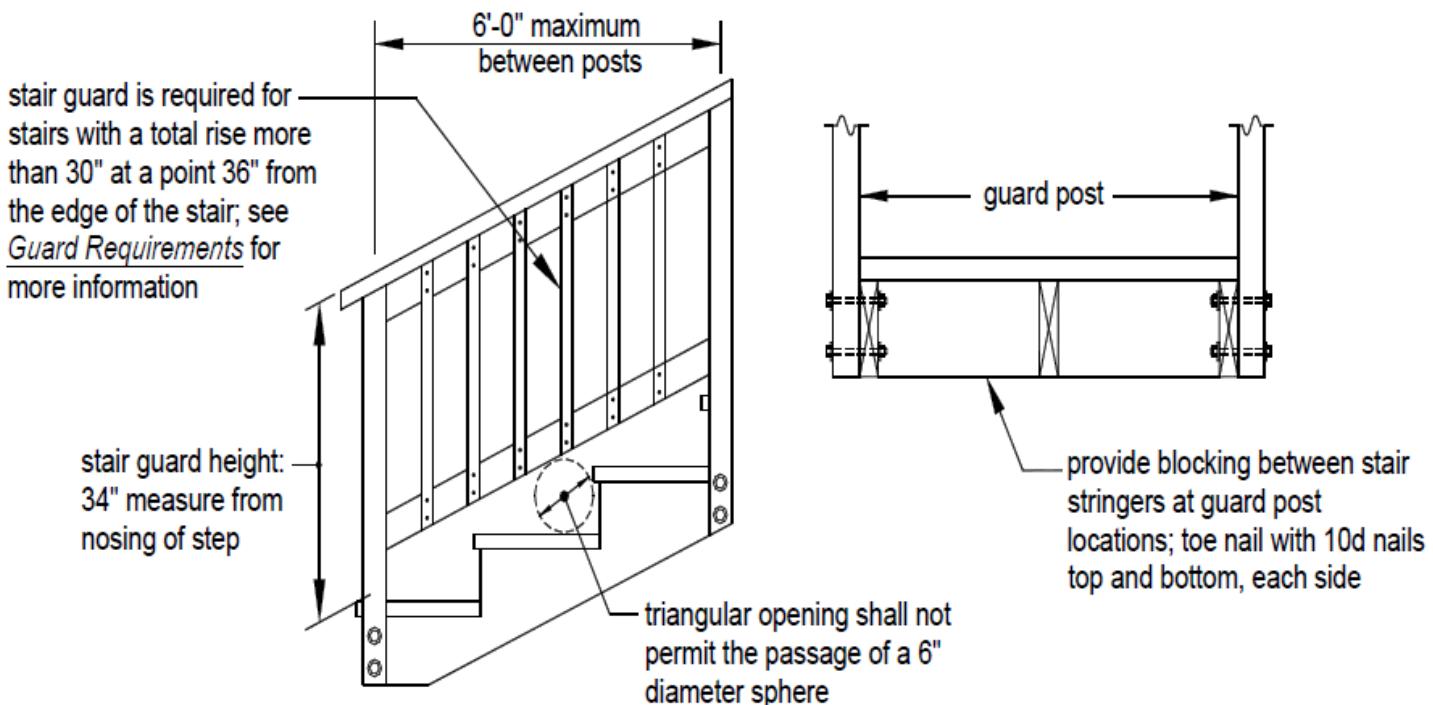
## STAIR STRINGER REQUIREMENTS

Stair stringers shall be constructed in accordance with the following:

- Stringers shall be continuous sawn or solid 2" x 12" meeting the noted stair geometry.
- Stringers shall be spaced at a maximum of 18" on center.
- Stringers with spans greater than 7 feet for sawn or 16'6" for solid shall be supported by minimum 4" x 4" posts to create multiple compliant spans. The 4" x 4" posts shall be notched and bolted to the stringer with two (2) 1/2" diameter galvanized through bolts. Posts shall be supported on frost protected footings.
- Intermediate landings may be installed to shorten stringer spans.

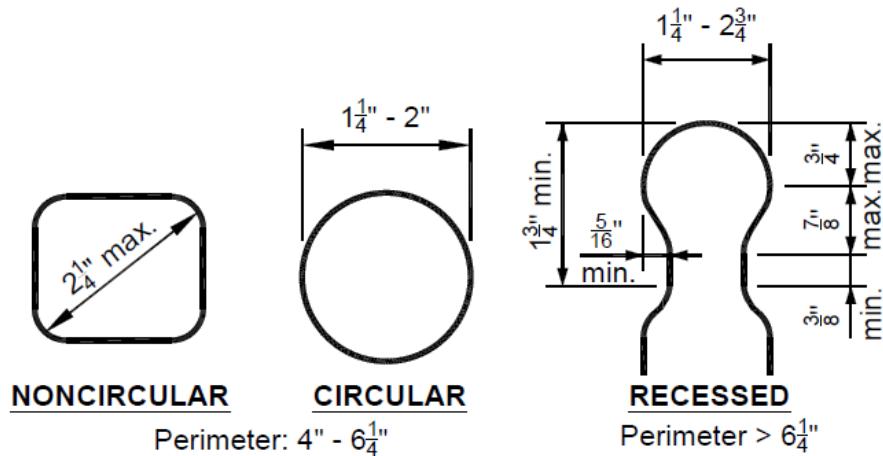


## STAIRWAY GUARDRAIL REQUIREMENTS

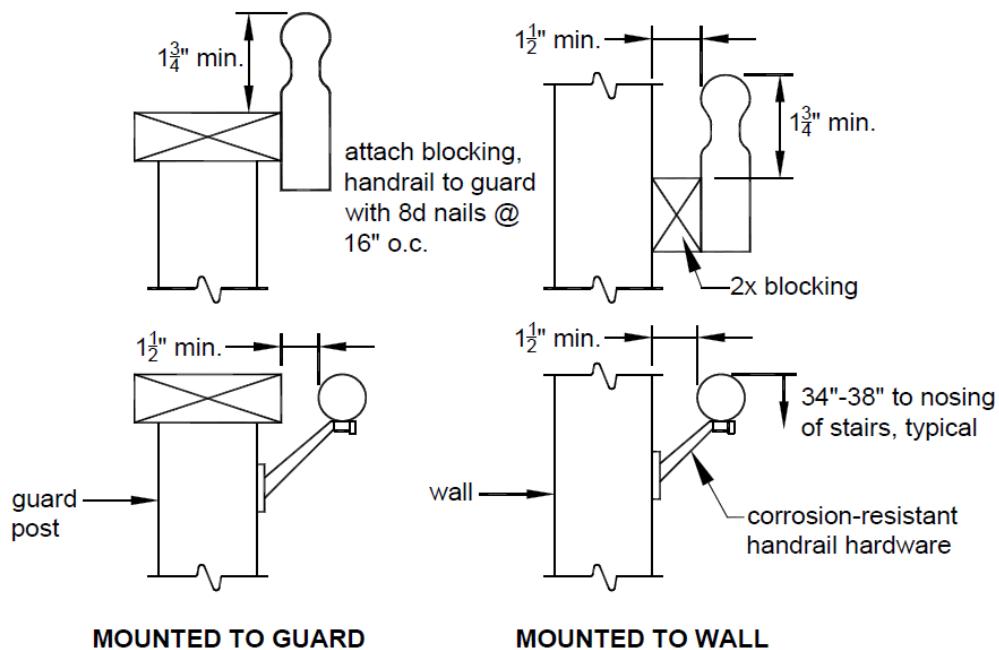


## HANDRAIL REQUIREMENTS

- Handrails shall be provided on not less than one side of each continuous stairway with **four or more risers**. Handrail height, measured vertically from the sloped plane adjoining tread nosings shall be not less than 34 inches and not more than 38 inches. IRC Section IRC R311.7.8
- Handrails shall be continuous the full length of the stairs. Handrail ends shall be returned or shall terminate in newel posts. IRC R311.7.8.4
- Handrails may be interrupted by guard posts only at a turn in the stair at a landing.
- Handrails adjacent to a wall or guardrail shall have a space not less than  $1 \frac{1}{2}$ " between the wall/guardrail and the handrail. IRC Section IRC R311.7.8.3
- Handrails shall be graspable and shall be constructed of decay-resistant and/or corrosion resistant material. Circular handrails shall be between  $1 \frac{1}{4}$ "– 2" in diameter. Non-circular handrails with a perimeter dimension greater than  $6 \frac{1}{4}$ " shall provide a graspable finger recess area on both sides of the profile. The width of the handrail above the recess shall be between  $1 \frac{1}{4}$ "- $2 \frac{3}{4}$ ". IRC R311.7.8.5
- All shapes shall have a smooth surface with no sharp edges.



## HANDRAIL GRASPABILITY TYPES / GEOMETRY



## ZONING SITE PLAN REQUIREMENTS

The following must appear on all site plans:

- ◆ Location of all property lines. Include exact length of all property lines and include the size of your lot in square feet.
- ◆ Location of all existing buildings and improvements, including but not limited to, residence, driveways, walkways, sheds, decks, patios, porches, swimming pools, garages, hot tubs, and any other impervious surface.
- ◆ Location of all proposed projects and other improvements, including but not limited to, driveways, walkways, sheds, decks, patios, porches, swimming pools, garages, hot tubs, and any other impervious surface.
- ◆ Exact dimensions, including the area calculations in square feet, of all existing and proposed improvements on the property, including but not limited to, residence, driveways, walkways, sheds, decks, patios, porches, swimming pools, garages, hot tubs, and any other impervious surface.
- ◆ Exact dimensions from all existing and proposed improvements to all property lines, including but not limited to, residence, driveways, walkways, sheds, decks, patios, porches, swimming pools, and any other impervious surface.
- ◆ Location of all easements on the property, both public and private including the exact dimensions of the easements. (See notes below)
- ◆ Location of the 100-year floodplain and the 100 year floodplain elevation, if applicable. Boundaries of the 100-year floodplain must be field staked prior to any on site construction, if applicable. (See notes below)
- ◆ Location and dimension of any clear sight triangles on the property. (See notes below)
- ◆ Location of all required Manheim Township building setback lines.
- ◆ Location of all public street rights-of-way.
- ◆ Location of all public streets, including curb and sidewalk, if applicable.
- ◆ Location of an on-lot sewage system, if applicable.
- ◆ Location of all wetland areas, if applicable.
- ◆ Location of all Municipal boundaries, if applicable.

## NOTES

Any lot which contains a recorded easement or right-of-way MUST have the following note on the site plan.

- ◆ “Nothing shall be placed, planted, set, or put within the area of the easement that would adversely affect the function of the easement.”

Any lot which contains a 100-year floodplain MUST contain the following note.

- ◆ “Any proposed improvements to be located within the 100 year floodplain shall be in accordance with the Manheim Township Floodplain Ordinance, 2015 as amended.”

Any lot which contains a 100-foot clear site triangle MUST have the following note written on the site plan.

- ◆ “Nothing shall be placed, planted, set, or put within the area of the 100 foot clear site triangle that has the possibility of growing in excess of 30 inches or may obscure motorist vision.”

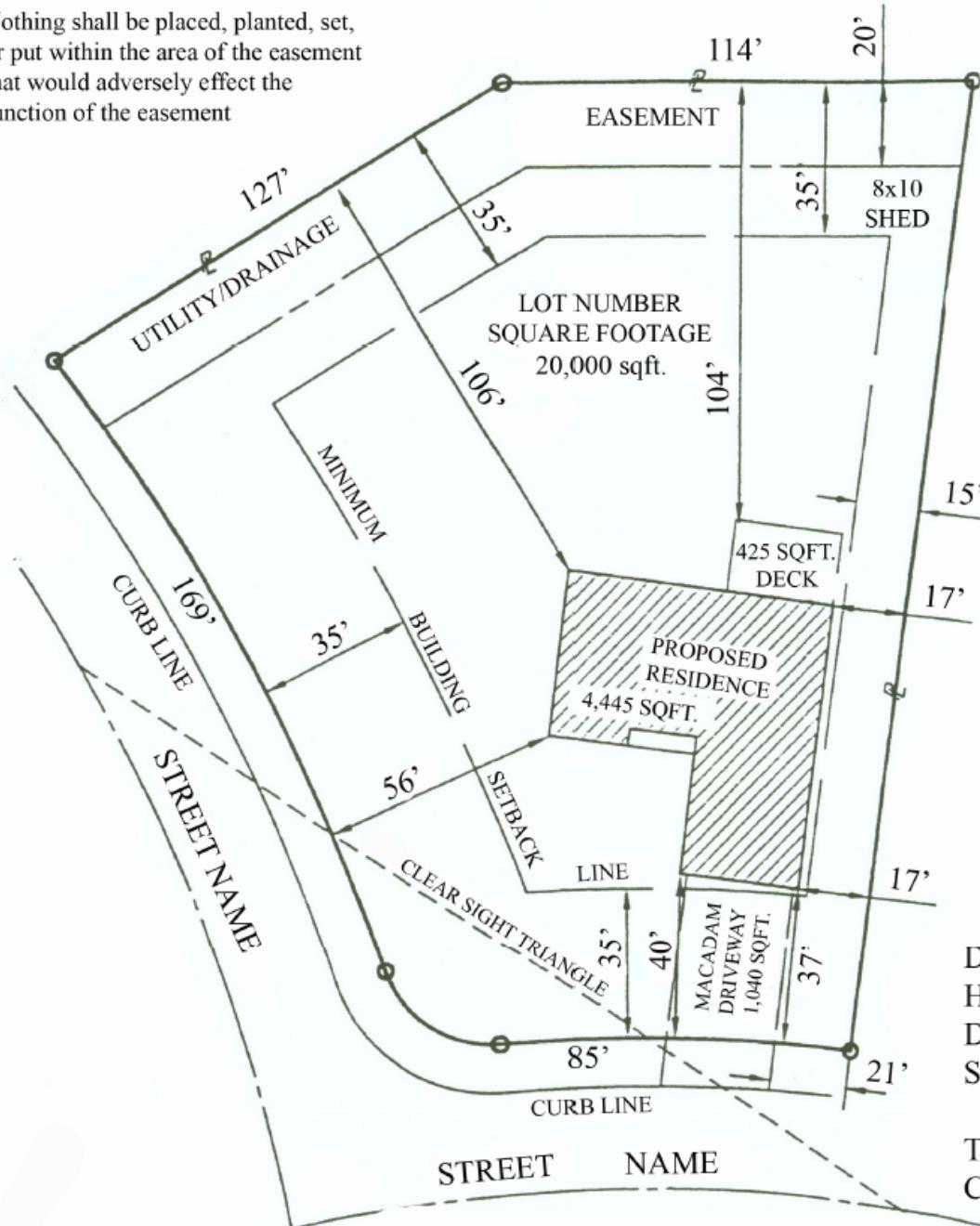


Sheds may be located up to, but not into an easement

Maintain a minimum of 5 feet setback between shed and side/rear property lines



Nothing shall be placed, planted, set, or put within the area of the easement that would adversely effect the function of the easement



Nothing shall be placed, planted, set or put within the area of a clear sight triangle that has the possibility of growing in excess of 30 inches or that may obscure motorist vision.

Name  
Address  
City, State, Zip code  
Home Phone   Work Phone

## TYPICAL SITE PLAN

SCALE: 1" = 40'0"