

Loudon County Planning & Codes

Residential Deck Handout

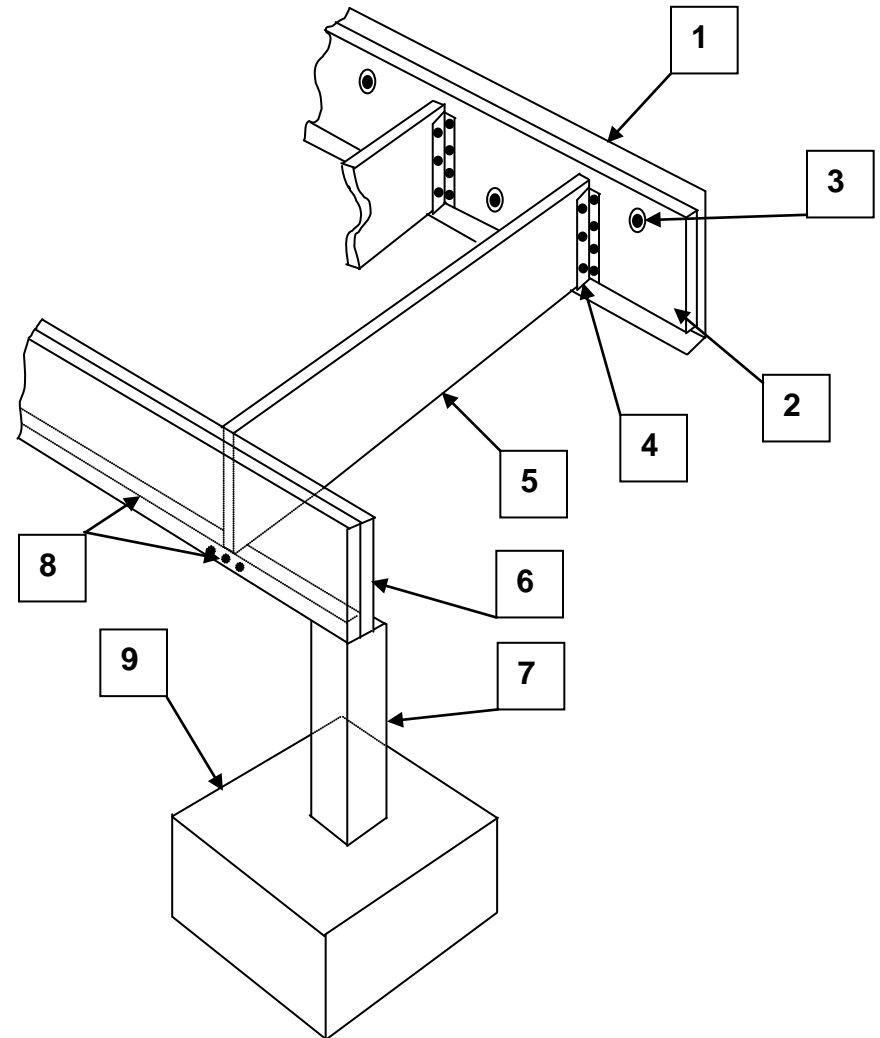


This handout is a guide and is not all-inclusive and all materials must be installed per the manufacturers' instructions and the 2012 International Residential Code IRC.

1. Flashing shall be installed in such a manner to prevent the entry of water into the wall cavity or penetration of water to the building structural framing components. Flashing shall be corrosion-resistance and installed per manufacturers instructions. This is usually stainless, double hot dipped galvanized, vinyl or copper.
2. The house wall ledger board shall be bolted to the house and be the same size as the floor joists (or larger if installing ledger strips).
3. The house ledger board shall be bolted (staggered top to bottom) to the house with minimum ½" dia. lag bolts * with washers that are long enough to fully penetrate the structural member of the house. Bolt spacing shall be per Table R507.2.
4. Joist hangers shall be sized and anchored * in accordance to the joist size and manufacturer's instructions.
5. Joists shall be sized per the table below or in accordance with the 2012 IRC.
6. Deck girders shall be sized per the table below or in accordance with the 2012 IRC.
7. Girders must be fully supported by and structurally anchored to columns. Wood columns shall not be less than 4"x4" and steel columns shall not be less than 3" in diameter or an approved equivalent. Columns shall be restrained at the bottom to prevent lateral displacement.
8. Ledger strips can be used in lieu of joist hangers or wall bearing. Ledger strips are to be 2" x 2" minimum and anchored with 3 - #16 nails * spaced 2" – 3" apart under each joist location.
9. Columns must be supported by footings. The bottom of the footings must be a minimum of 12" below final grade and sized to support all imposed loads.

*** ALL FASTENERS, HANGERS, AND NAILS ARE TO BE HOT DIPPED GALVANIZED, STAINLESS STEEL, OR AS PER SECTION R402.1.1 OF THE 2012 IRC.**

A lateral Load Connector similar to the one shown is the last example may be required.



Allowable Span for Deck Edge Beam One Floor Only
40psf Live Load, 10psf Dead Load, 1.00 Load Duration Factor

Span of Supported Floor Framing

Size of Wood Girder	4'	6'	8'	10'	16'
4"x 4"	5'-0"	4'-0"	NP	NP	NP
4"x 6"	8'-0"	7'-6"	6'-6"	6'-0"	4'-0"
4"x 8" or 6"x 6"	10'-0"	9'-6"	8'-0"	7'-0"	6'-0"
4"x 10"	13'-0"	11'-6"	10'-0"	9'-0"	7'-6"
4"x 12"	16'-0"	13'-6"	11'-6"	10'-0"	8'-0"
6"x 10"	16'-0"	14'-6"	13'-0"	12'-0"	9'-0"
6"x 12"	18'-0"	17'-6"	15'-0"	13'-6"	11'-0"
Beams that are the same size as the joist used may be single ply if supported every 4'					

Spans are based on No. 2 lumber Southern Yellow Pine.
Span of supported floor is found by adding the unsupported floor framing on each side of the girder and dividing by 2.

Joist Span Chart (Based on No. 2 Southern Yellow Pine)

Joist Size	Spacing of Joist O.C.			
	12"	16"	19.2"	24"
2"x 6"	9'-11"	9'-0"	8'-6"	7'-7"
2"x 8"	13'-1"	11'-10"	10'-10"	9'-8"
2"x 10"	16'-2"	14'-0"	12'-10"	11'-5"
2"x 12"	19'-1"	16'-6"	15'-1"	13'-6"

TABLE R507.2 FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH-NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST^{c, f, g} (Deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6' and less	6' 1" to 8'	8' 1" to 10'	10' 1" to 12'	12' 1" to 14'	14' 1" to 16'	16' 1" to 18'
Connection details	On-center spacing of fasteners^{d, e}						
¹ / ₂ inch diameter lag screw with ¹⁵ / ₃₂ inch maximum sheathing ^a	30	23	18	15	13	11	10
¹ / ₂ inch diameter bolt with ¹⁵ / ₃₂ inch maximum sheathing	36	36	34	29	24	21	19
¹ / ₂ inch diameter bolt with ¹⁵ / ₃₂ inch maximum sheathing and ¹ / ₂ inch stacked washers ^{b, h}	36	36	29	24	21	18	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. 1 pound per square foot = 0.0479 kPa.

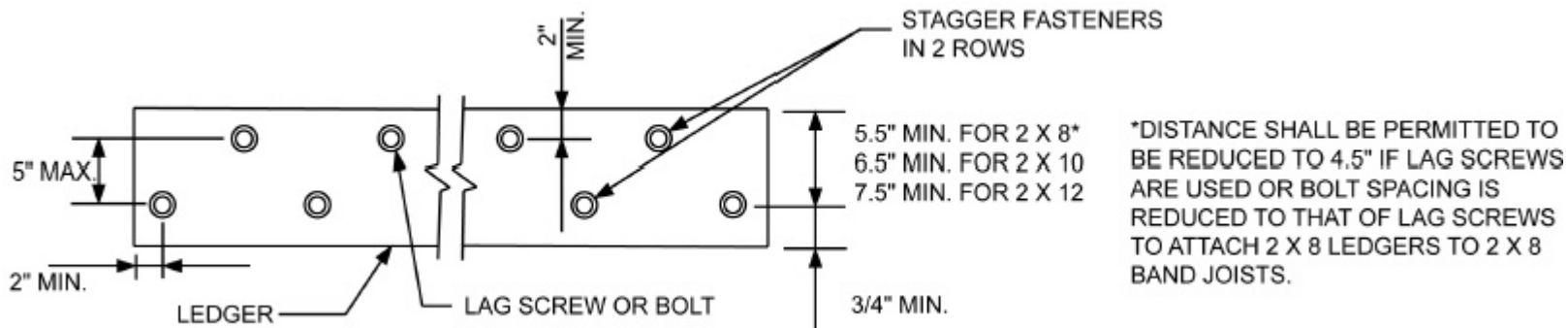
- a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be ¹/₂ inch.
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with [Section R507.2.1](#).
- e. Deck ledger shall be minimum 2 × 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1-inch-thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum 1 × 9¹/₂ Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.

TABLE 507.2.1 PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger ^a	2 inches ^d	1/4 inch	2 inches ^b	1 ⁵ / ₈ inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 ⁵ / ₈ inches ^b

For SI: 1 inch = 25.4 mm.

- a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
- b. Maximum 5 inches.
- c. For engineered rim joists, the manufacturer's recommendations shall govern.
- d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).



R507.2.3 Deck lateral load connection.

The lateral load connection required by [Section R507.1](#) shall be permitted to be in accordance with Figure R507.2.3. Where the lateral load connection is provided in accordance with Figure R507.2.3, hold-down tension devices shall be installed in not less than two locations per deck, and each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N).

