



Building Safety Division  
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## Residential Deck Information

2009 International Residential Code

Building Inspectors: Charles Montgomery -- 403-6115 John Glover -- 403-6107

Office Hours:  
7:30 - 8:15 am 12:30 - 1:15pm 3:30 - 4:30 pm

### GENERAL

- Provide a site plan showing setback dimensions and property lines.
- Show the dimensions and sq. ft. area of the deck.
- Depth of posts/footings minimum of 32 in. below grade.

### FRAMING

- Wood shall be pressure treated or decay resistant.
- Show size and spacing of floor joists.
- Show size and spacing of posts.
- Show size of girders and beams supporting floor joists.
- All multi (2 ply, 3 ply, etc.) beams must be fastened together.
- Joist, beam or girder bearing is required to have not less than 1.5 inches of bearing on wood or metal and not less than 3 inches on masonry or concrete.
- If deck is attached to the house, show connection details.
- Deck is not permitted to connect to masonry veneer or cantilevered joist.
- Joist hangers are required where joists do not rest directly on a girder.
- Show the height of the deck above grade.
- For roofed over or screened in decks, include additional information, i.e., header sizes and spans; size, spacing and span of rafters or trusses; and type of roof sheathing, tar paper and shingles. Roof rafters require truss clips. Roofing license is required, unless homeowner is doing the project. Support posts require uplift connectors at bottom and top.
- Non-bearing cantilevered floor joists are limited to 2 ft. with a back span of minimum of 6 ft. and require uplift connections at the joist to beam location.
- Lateral load connections are required when the top of the deck floor is six feet or more above finish grade. Hold-down tension devices are required in not less than two locations per deck and with each device having an allowable stress design capacity of not less than 1500 pounds.

### STEPS / HANDRAILS / GUARDRAILS

- Steps of four or more risers require a handrail 34 in. -38 in. high. Handrail must be graspable and be continuous for the full length of the stairs and return or terminate in newel posts.
- Minimum 10 in. tread and maximum 7 ¾ in. risers on stairs. Tread is measured from nosing to nosing. Open riser spaces must be less than 4 in. Decks greater than 30 in. above grade require a guardrail. Grade is measured at any point within 36 in. horizontally to the edge of the deck.
- Guardrail height is minimum 36 in. above the deck.
- Openings in the guardrail shall not allow passage of a 4 in. diameter sphere.

Fastener spacing for a Southern Pine, Douglas Fir-Larch, or Hem-Fir Deck Ledger and 2-inch Nominal Solid-Sawn Spruce-Pine-Fir<sup>7,9</sup> Band Joist or EWP Rim Board<sup>6</sup> (Deck live load = 40psf, Deck dead load = 10psf)<sup>3,6</sup>

Joist Span	Rim Board or Band joist	6'-0" & less	6'-1" to 8'-0"	8'-1" to 10'-0"	10'-1" to 12'-0"	12'-1" to 14'-0"	14'-1" to 16'-0"	16'-1" to 18'-0"
Connection Details		On-Center Spacing of Fasteners <sup>4,5</sup>						
1/2" diameter lag screw with 15/32" maximum sheathing <sup>1</sup>	1" EWP <sup>6</sup>	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP <sup>6</sup>	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber <sup>7,9</sup>	30"	23"	18"	15"	13"	11"	10"
1/2" diameter bolt with 15/32" maximum sheathing	1" EWP <sup>6</sup>	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP <sup>6</sup>	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber <sup>7,9</sup>	36"	36"	34"	29"	24"	21"	19"
1/2" diameter bolt with 15/32" maximum sheathing & 1/2" stacked washers <sup>2,8</sup>	1" EWP <sup>6</sup>	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP <sup>6</sup>	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber <sup>7,9</sup>	36"	36"	29"	24"	21"	18"	16"

<sup>1</sup> The tip of the lag screw shall fully extend beyond the inside of the band joist.

<sup>2</sup> The maximum gap between the face of the ledger board and face of the wall sheathing shall be 1/2"

<sup>3</sup> Ledgers shall be flashed or caulked to prevent water from contacting the house band joist.

<sup>4</sup> Lag screws and bolts shall be staggered.

<sup>5</sup> Deck ledgers shall be a minimum 2x8 pressure-preservative-treated No.2 grade lumber, or other approved materials as established by standard engineering practice.

<sup>6</sup> When solid-sawn pressure-preservative-treated deck ledgers are attached to engineered wood products (minimum 1" thick wood structural panel band joist or structural composite lumber including laminated veneer lumber), the ledger attachment shall be designed in accordance with accepted engineering practice. Tabulated values based on 300lbs and 350lbs for 1" and 1-1/8" EWP rim board, respectively.

<sup>7</sup> A minimum 1"x9-1/2" Douglas fir-larch laminated veneer lumber rim board shall be permitted in lieu of the 2" nominal band joist.

<sup>8</sup> Wood structural panel sheathing, gypsum board sheathing, or foam sheathing not exceeding one inch thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be one inch.

<sup>9</sup> Fastener spacing also applies to southern pine, Douglas fir-larch, and hem-fir band joists.

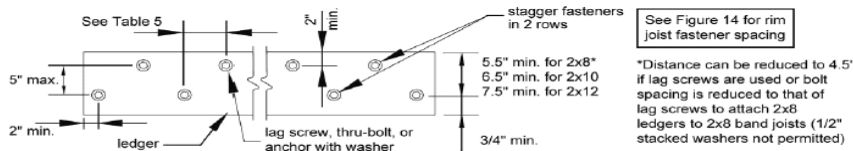
**PRESCRIPTIVE RESIDENTIAL WOOD DECK CONSTRUCTION GUIDE 13**

**Placement of lag screws or bolts in deck ledgers**

The lag screws or bolts shall be placed as shown in Figure 19. The lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of

the deck ledger (see Figure 19). Proper installation of lag screws or bolts shall be verified by the authority having jurisdiction.

**Figure 19: Ledger Board Fastener Spacing and Clearances**



**Thru-Bolts**

Thru-bolts shall have a diameter of 1/2". Pilot holes for thru-bolts shall be 17/32" to 9/16" in diameter. Thru-bolts require washers at the bolt head and nut.

Minimum spacing and embedment length shall be per the manufacturer's recommendations. All anchors must have washers.

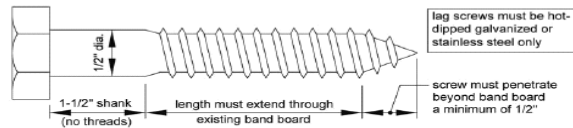
**Expansion and Adhesive Anchors**

Use approved expansion or adhesive anchors when attaching a ledger board to a concrete or solid masonry wall as shown in Figure 15 or a hollow masonry wall with a grouted cell as shown in Figure 16. Expansion and adhesive anchor bolts shall have a diameter of 1/2".

**Lag Screws**

Lag screws shall have a diameter of 1/2" (see MINIMUM REQUIREMENTS). Lag screws may be used only when the field conditions conform to those shown in Figure 14. See Figure 20 for lag screw length and shank requirements. All lag screws shall be installed with washers.

**Figure 20: Lag Screw Requirements**



**Lag screw installation requirements:** Each lag screw shall have pilot holes drilled as follows: 1) Drill a 1/2" diameter hole in the ledger board. 2) Drill a 7/16" diameter hole into the band board of the existing house. **DO NOT DRILL A 1/2" DIAMETER HOLE INTO THE BAND BOARD.**

The threaded portion of the lag screw shall be inserted into the pilot hole by turning. **DO NOT DRIVE LAG SCREWS WITH A HAMMER.** Use soap or a wood-compatible lubricant as required to facilitate tightening. Each lag screw shall be thoroughly tightened (snug but not over-tightened to avoid wood damage).