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**R507.1 Decks.** Wood decks shall be designed and constructed in accordance with this section and Section R301. Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.

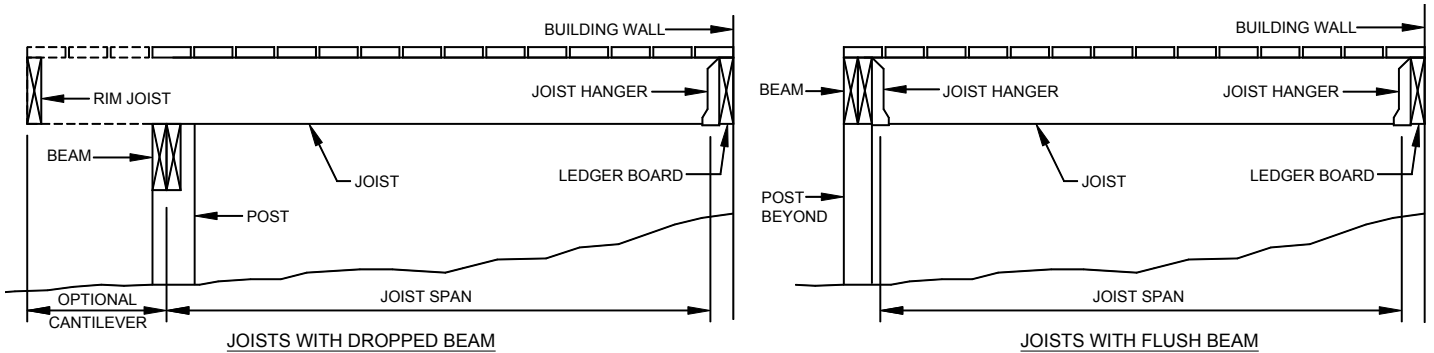
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**R507.4 Decking.** Wood decking shall have a nominal 2 inch (51 mm) thickness minimum placed at an angle between 45 and 90 degrees to deck joists spaced a maximum of 24 inches (610 mm) on center. Wood decking shall be attached to each supporting member with a minimum of (2)8d threaded nails or (2)#8 wood screws.

**Exceptions:**

1. Wood decking with a minimum nominal thickness of  $\frac{5}{4}$  inches (32 mm) shall be permitted to be installed at 90 degrees to deck joists spaced a maximum of 16 inches (406 mm) on center and up to 45 degrees to deck joists spaced a maximum of 12 inches (305 mm) on center.
2. Wood/plastic composite decking in accordance with Section R507.3.

**R507.5 Allowable deck joist spans.** Spans for wood deck joists, as shown in Figure R507.5, shall be in accordance with Table R507.5. Deck joist shall be permitted to cantilever a maximum of one-fourth of the joist span. Other grades, species, loading, materials and conditions not described herein or shown in Figure R507.5 are permitted and shall be in accordance with this section or Section 301..



**FIGURE R507.5  
TYPICAL DECK JOIST SPANS**

**TABLE R507.5  
DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft.-in.)**

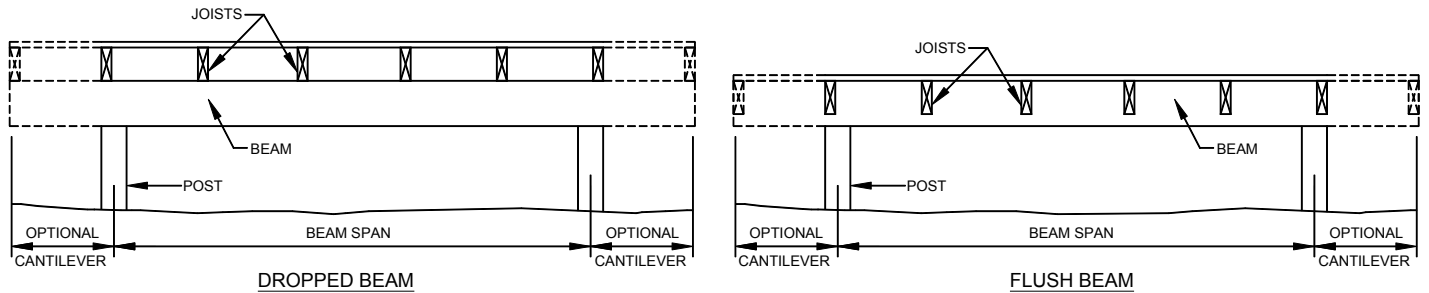
SPECIES <sup>a</sup>	SIZE	SPACING OF DECK JOISTS WITH NO CANTILEVER <sup>b</sup> (in.)			SPACING OF DECK JOISTS WITH CANTILEVERS <sup>c</sup> (in.)		
		12	16	24	12	16	24
Southern pine	2 x 6	10-4	9-5	7-10	7-1	7-1	7-1
	2 x 8	13-8	12-5	10-2	10-9	10-9	10-2
	2 x 10	17-5	15-10	13-1	15-6	15-6	13-1
	2 x 12	18-0	18-0	15-5	18-0	18-0	15-5
Douglas fir-larch <sup>d</sup> , hem-fir <sup>d</sup> , spruce-pine-fir <sup>d</sup>	2 x 6	9-6	8-8	7-2	6-3	6-3	6-3
	2 x 8	12-6	11-1	9-1	9-5	9-5	9-1
	2 x 10	15-8	13-7	11-1	13-7	13-7	11-1
Redwood, western cedars, ponderosa pine <sup>e</sup> , red pine <sup>e</sup>	2 x 6	8-10	8-0	7-0	5-7	5-7	5-7
	2 x 8	11-8	10-7	8-8	8-6	8-6	8-6
	2 x 10	14-11	13-0	10-7	12-3	12-3	10-7
	2 x 12	17-5	15-1	12-4	16-5	15-1	12-4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. No. 2 grade with wet service factor.
- b. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360.
- c. Ground snow load, live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220 pound point load applied to end.
- d. Includes incising factor.
- e. Northern species with no incising factor

**R507.5.1 Lateral restraint at supports.** Joist ends and bearing locations shall be provided with lateral support to prevent rotation. Where lateral restraint is provided by joist hangers or blocking between joists, their depth shall equal not less than 60 percent of the joist depth. Where lateral restraint is provided by rim joists, they shall be secured to the end of each joist with a minimum of (3)10d threaded nails or (3)#10x3 inch (76 mm) long wood screws.

**R507.6 Deck Beams.** Spans for deck beams, as shown in Figure R507.6, shall be in accordance Table R507.6. Beam plies shall be fastened with two rows of 10d threaded nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the beam span. Splices of multi-span beams shall be located at interior post locations. Other grades, species, loading, materials and conditions not described herein or shown in Figure R507.5 are permitted and shall be in accordance with this section or Section 301.



**FIGURE R507.6  
TYPICAL DECK BEAM SPANS**

**TABLE R507.6  
DECK BEAM SPAN LENGTHS (ft.-in.)<sup>a, b</sup>**

SPECIES <sup>c</sup>	SIZE <sup>d</sup>	DECK JOIST SPAN (ft.) LESS THAN OR EQUAL TO:						
		6	8	10	12	14	16	18
Southern pine	2-2x6	7-1	6-2	5-6	5-0	4-8	4-4	4-1
	2-2x8	9-2	7-11	7-1	6-6	6-0	5-7	5-3
	2-2x10	11-10	10-3	9-2	8-5	7-9	7-3	6-10
	2-2x12	13-11	12-0	10-9	9-10	9-1	8-6	8-0
	3-2x6	8-7	7-8	6-11	6-3	5-10	5-5	5-2
	3-2x8	11-4	9-11	8-11	8-1	7-6	7-0	6-7
	3-2x10	14-5	12-10	11-6	10-6	9-9	9-1	8-7
Douglas fir-larch <sup>e</sup> , hem-fir <sup>e</sup> , spruce- pine-fir <sup>e</sup> , redwood, western cedars, ponderosa pine <sup>e</sup> , red pine <sup>f</sup>	3x6 or 2-2x6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3x8 or 2-2x8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3x10 or 2-2x10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3x12 or 2-2x12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4x6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4x8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4x10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4x12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3-2x6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3-2x8	9-8	8-6	7-7	6-11	6-5	6-0	5-8
	3-2x10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
3-2x12	13-11	12-1	10-9	9-10	9-1	8-6	8-1	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- Ground snow load, live load = 40 psf, dead load = 10 psf,  $L/\Delta = 360$  at main span,  $L/\Delta = 180$  at cantilever with a 220 pound point load applied at the end.
- Beams supporting deck joists from one side only.
- No 2 grade, wet service factor.
- Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
- Includes incising factor.
- Northern species with no incising factor.

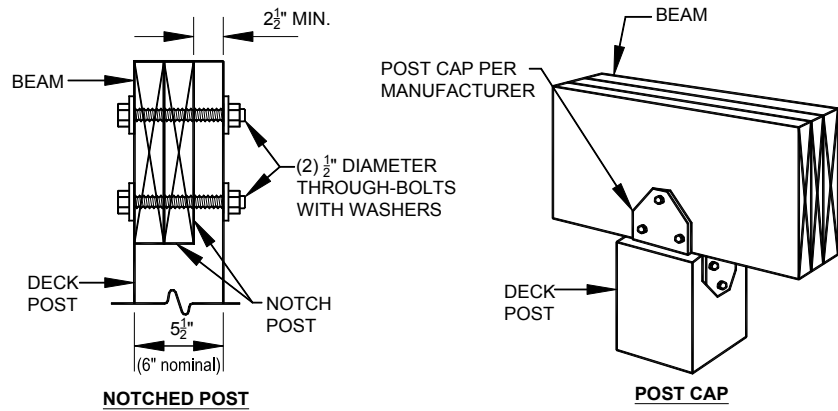
**R507.7 Deck joist and deck beam bearing.** The ends of each joist and beam shall have not less than 1.5 inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on concrete or masonry for the entire width of the beam. Joist framing into the side of a ledger board or beam shall be supported by approved joist hangers. Beam bearing at deck posts shall be in accordance with Section R507.8.1.

**R507.8 Deck posts.** For single level wood decks with beams sized in accordance with Table R507.6, posts shall be a minimum nominal 6x6 with a maximum height of 14 feet (5486 mm) measured to the underside of the beam.

**Exceptions:**

1. Nominal 4x4 or 4x6 posts shall be permitted with a maximum height of 8 feet (2438 mm).
2. Deck posts designed in accordance with Section R301.

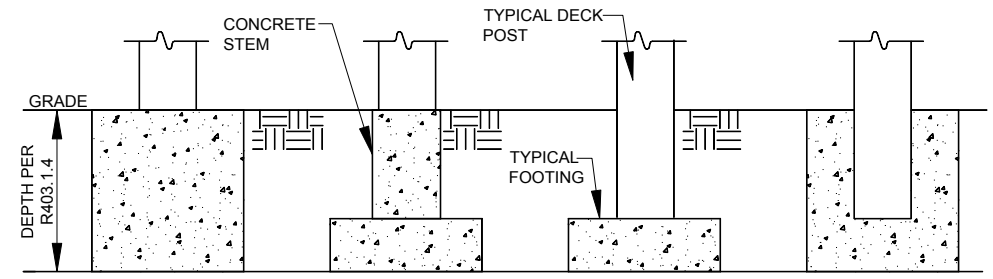
**R507.8.1 Deck post to deck beam connection.** Deck beams shall be attached to deck posts in accordance with Figure R507.8.1. Post to beam connections shall be constructed to resist lateral displacement. Manufactured post-to-beam connectors shall be sized for the post and beam sizes. All bolts shall have washers under the head and nut. Conditions not described herein or shown in Figure R507.8.1 are permitted and shall be in accordance with Section R301.



For SI: 1 inch = 25.4 mm

**FIGURE R507.8.1  
CONNECTION OF DECK BEAM TO DECK POST**

**R507.8.2 Deck post to deck footing connection.** Posts shall be centered on deck footings constructed in accordance with Section R403 and Figure R507.8.2.



**FIGURE R507.8.2  
TYPICAL CONNECTIONS OF DECK POSTS TO DECK FOOTINGS**