

2012 Codes

Prescriptive Residential Wood Deck Construction Guide

Based on 2012 International Residential Code

This tip sheet provides building code information applicable to deck design, but does not take into account all conditions which may affect design such as slope conditions, decks supporting in excess of 50 psf uniform loads, etc. You may need to hire a licensed architect or an engineer to design decks where any of the **following conditions apply**:

- The deck serves other than a one or two family dwelling building
- The deck design includes more than one level
- The deck will support hot tubs, spas or other heavy objects, including heavy deck coverings (Pavers)
- The walking surface is more than ten feet above grade
- The deck ledger is attached to house overhangs, bay windows, bricks, stone or concrete block
- The deck is bearing on ground with slope greater than 2 feet horizontal for every 1 foot vertical
- The deck is self supporting (Not attached to an exterior wall)

Deck Construction Notes:

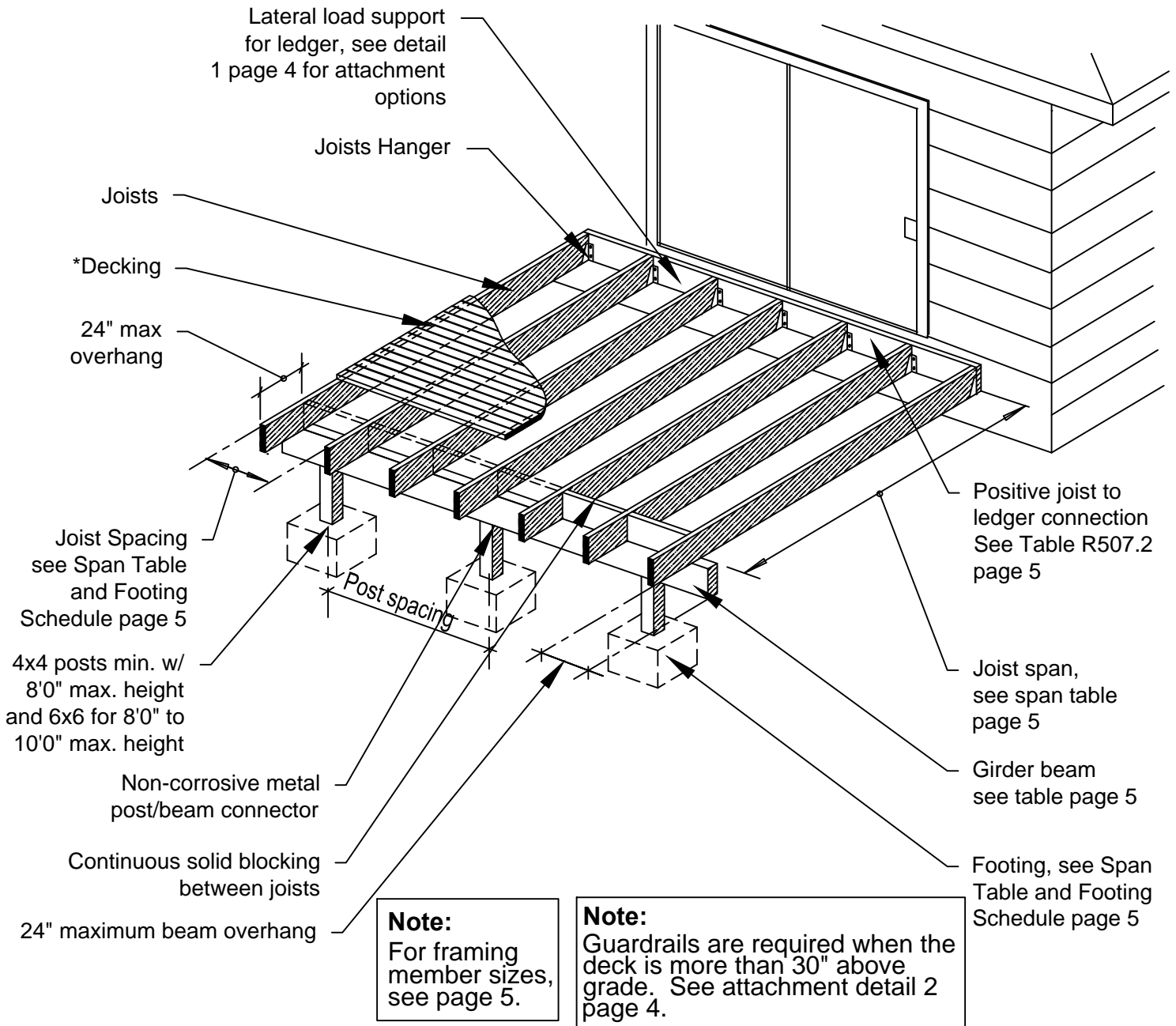
1. The illustrations and information in this tip sheet may be used for decks whether or not they require a permit. See Tip Sheet 0 for permit requirements.
2. All wood must be pressure treated or naturally resistant to decay. Treat all cut ends with end-cut solution. Use ground-contact treated wood.
3. Fasteners, hangers, nails, etc., must be stainless steel, hot-dipped galvanized, or as specifically required for the specified wood preservative used. The coating weights for zinc-coated fasteners to be in accordance with ASTM A 153. Provide documentation in the field showing the required fastener protection considering the wood chosen for your deck.
4. You may modify any components of this tip sheet with justification by analysis or calculation. Any modifications must be reviewed prior to permit issuance.
5. See Tip Sheet 01 for stairs, 02 for handrails, and 03 for guards.
6. This tip sheet is intended to represent good construction practices for deck construction and related IRC requirements.
7. All wood assumed to be Hem-Fir #2 or better.
8. Attachments must be per manufactured specifications.

As an alternate to this tip sheet, the following may be used when designing your deck.

- Engineered design
- DCA-6 - Prescriptive Residential Deck Construction Guide - 2012 Version; see the following link: <http://www.awc.org./codes/dcaindex.html>

GENERAL INFORMATION:

- Consult with your local land use or planning department regarding setbacks and other zoning regulations
- Obtain a building permit before starting construction
- The intent of this tip sheet is to address basic code information related to residential deck construction only. Additional information can be found at your local building department.

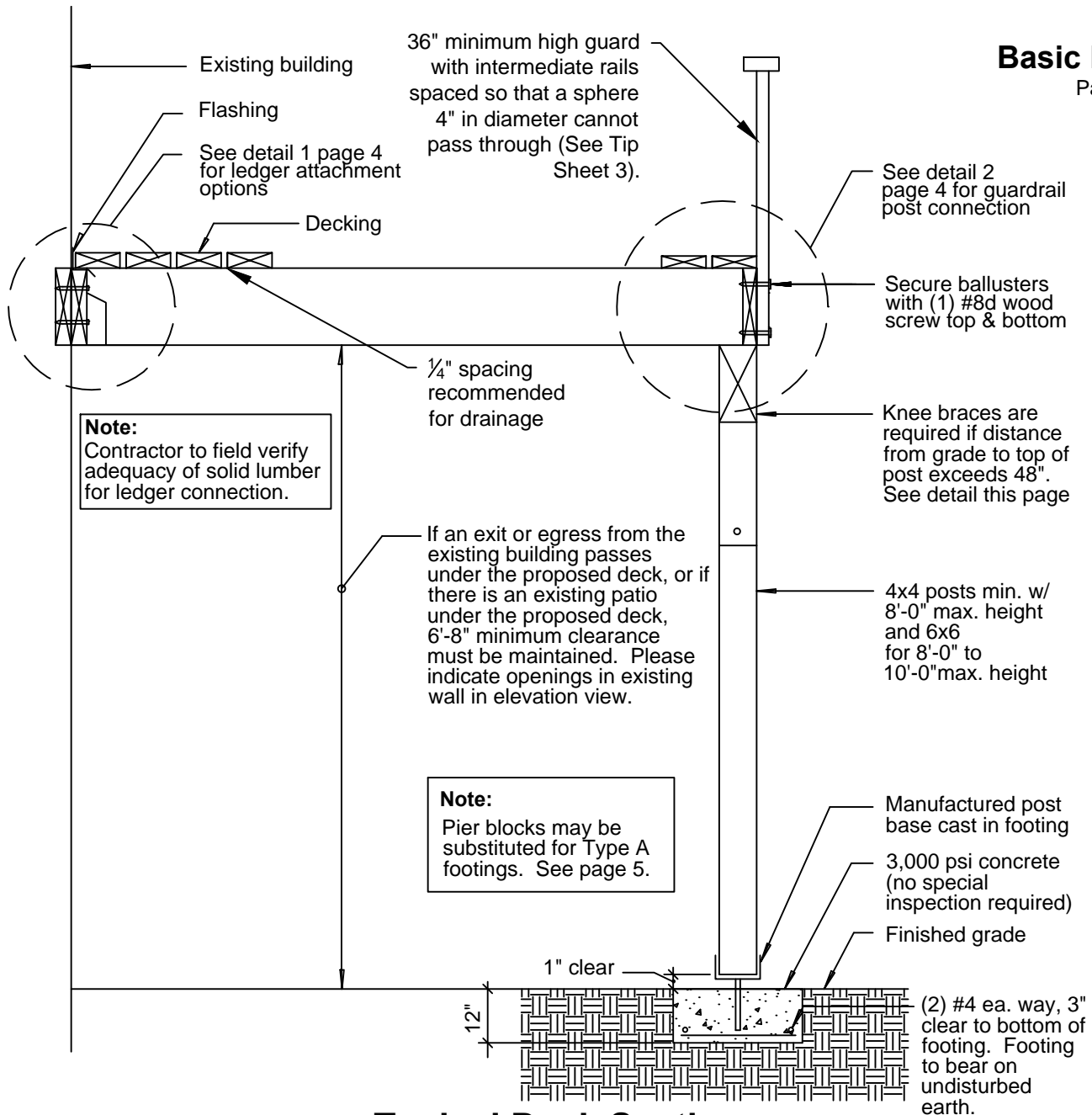


Typical Deck

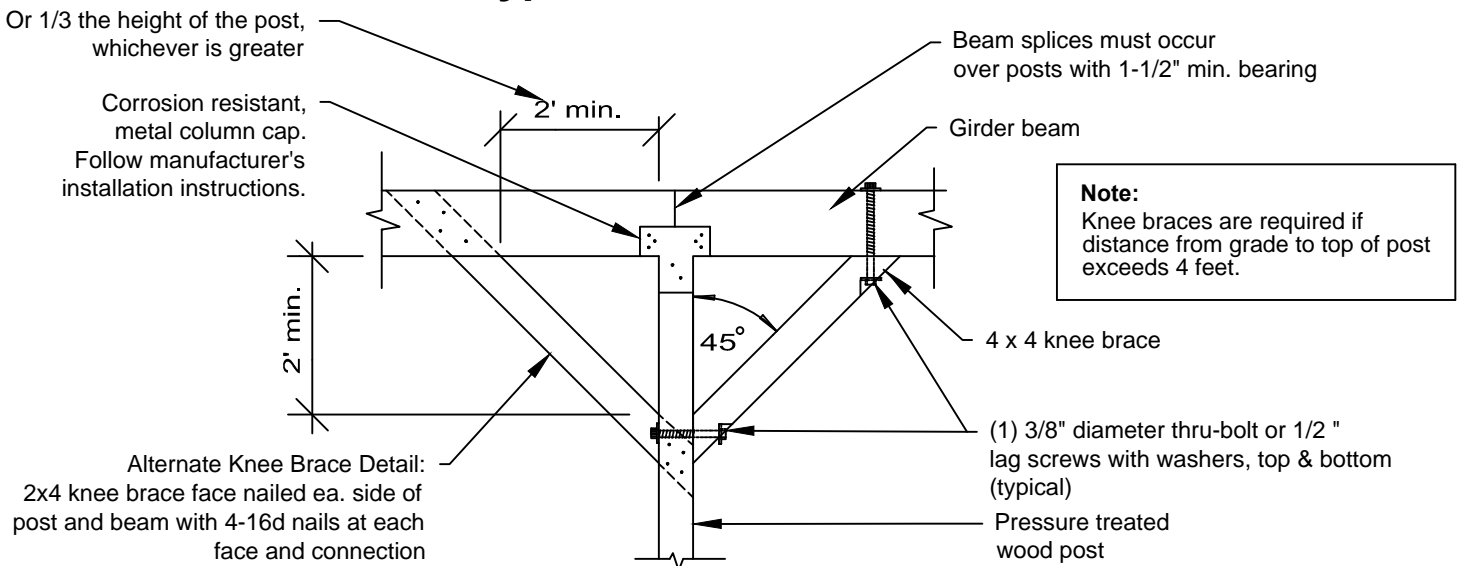
***VERIFY SPAN RATINGS OF PROPOSED DECKING MATERIALS**

Submittal Requirements:

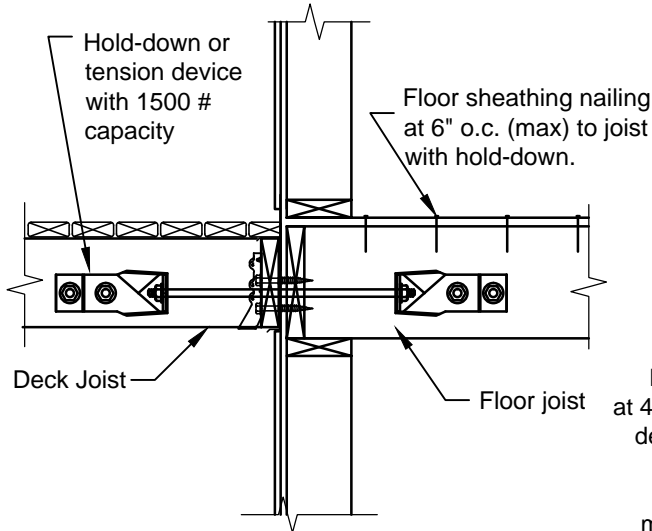
1. Two Site Plans, drawn to scale, showing dimensions of your deck and its relationship to existing buildings or structures on the property and the distance to existing property lines. Include the project address on the drawings.
2. Two plans showing the framing layout of your deck.
3. Fill out a building permit application for the appropriate jurisdiction.
4. If your deck will occur on a steep slope, please contact your local building department for additional requirements.



Typical Deck Section

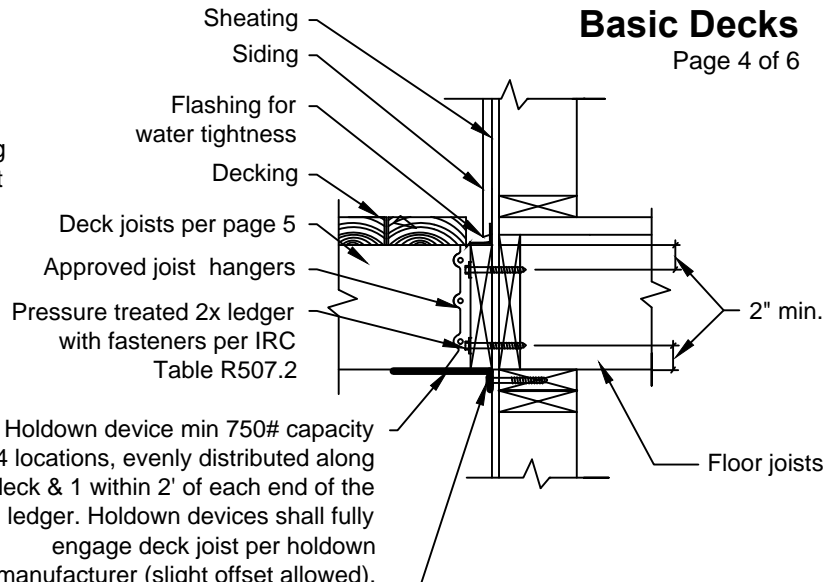


Post to Beam Connection w/ Knee Brace



Option # 1

(Required for New Construction)



Option # 2

(Existing Construction Only)

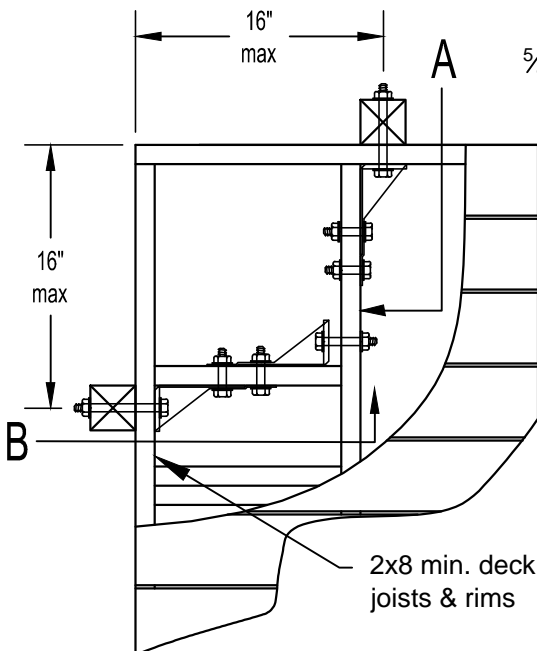
Holddown device min 750# capacity at 4 locations, evenly distributed along deck & 1 within 2' of each end of the ledger. Holddown devices shall fully engage deck joist per holddown manufacturer (slight offset allowed).

A fully threaded 3/8" diameter lag screw predrilled w/min 3" penetration to top plate, studs, or header.

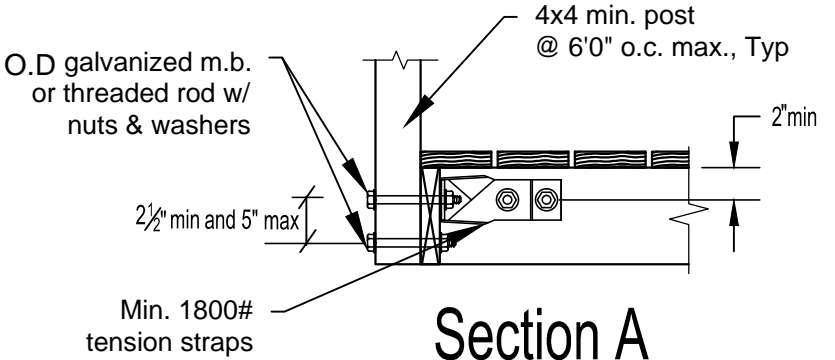
Note:
These details are applicable where floor joists are parallel to deck joists.

Note:
Holddown devices are not required for decks less than 30" high or free standing decks.

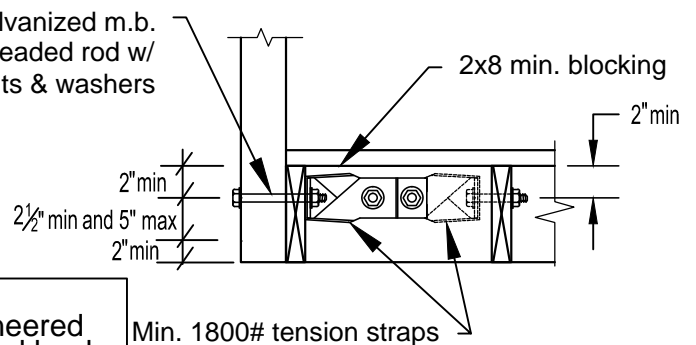
1 Ledger Attachment for Lateral Loads Per IRC 507.2



5/8" O.D. galvanized m.b. or threaded rod w/ nuts & washers



5/8" O.D. galvanized m.b. or threaded rod w/ nuts & washers



Note:
Use above details for guard connections or provide engineered design that shows Guards can resist a single concentrated load of 200 lbs applied in any direction at any point along the top and have attachment devices and supporting structure to transfer this load to appropriate structural elements of the building per IBC sec 1607.8

2 Guardrail Connection

(Guardrails are required when the deck is more than 30" above grade.)

Span Table and Footing Schedule For Decks

Spans based on use of No.2 Hem-Fir or better
 50 p.s.f. loading (10 p.s.f. dead load + 40 p.s.f. live load)
 Beam spans and footings assume maximum 24" overhang

Joist size	Spacing of joists	Max. span of joists	Max. span of girder beams between posts / footing type					
			4x6	Footing	4x8	Footing	4x10	Footing
2X6	@ 12 in	9 ft - 10 in	5 ft - 5 in	B	7 ft - 2 in	B	8 ft - 10 in	C
	@ 16 in	8 ft - 9 in	5 ft - 8 in	B	7 ft - 6 in	B	9 ft - 2 in	B
	@ 24 in	7 ft - 1 in	6 ft - 1 in	B	8 ft - 0 in	B	9 ft - 10 in	B
2X8	@ 12 in	12 ft - 9 in	4 ft - 11 in	B	6 ft - 6 in	B	8 ft - 0 in	B
	@ 16 in	11 ft - 1 in	5 ft - 2 in	A	6 ft - 11 in	B	8 ft - 5 in	C
	@ 24 in	9 ft - 0 in	5 ft - 7 in	B	7 ft - 5 in	B	9 ft - 1 in	B
2X10	@ 12 in	15 ft - 7 in	4 ft - 7 in	B	6 ft - 0 in	B	7 ft - 5 in	C
	@ 16 in	13 ft - 6 in	4 ft - 10 in	B	6 ft - 5 in	B	7 ft - 10 in	C
	@ 24 in	11 ft - 0 in	5 ft - 3 in	A	6 ft - 11 in	B	8 ft - 5 in	B

FOOTING TYPES

TYPE	SIZE	NOTE:
A	12" X 12" X 12"	Pier blocks may be substituted for Type A footings
B	16" X 16" X 12"	
C	18" x 18" x 12"	

*Footing sizes based on assumed soil bearing pressure of 2000 p.s.f. Contact your jurisdiction for additional restrictions.

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. See notes 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. Note d and e.						
1/2 inch diameter lag screw with 15/32 inch maximum sheathing. Note (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 lag screw with 15/32 inch maximum sheathing & stacked washers. Note (b&h)	36	36	29	24	21	18	16

For SI: 1 inch = 25.4mm, 1 foot = 304.8mm. 1pound per square foot=0.04479kPa.

- The tip of the lag screw shall fully extend beyond the inside face of band joist.
- The maximum gap between face of the ledger board and face of wall sheathing shall be 1/2".
- Ledgers shall be flashed to prevent water from contacting the house band joist.
- Lag screws and bolts shall be staggered in accordance with Section R507.2.1
- Deck ledger shall be minimum 2x8 pressure-preservative-treated No.2 grade lumber or other approved materials as established by standard engineering practice.
- When solid-sawn pressure-preservative-treated-deck ledgers are attached to a minimum 1inch thick engineered wood product (structural composite lumber - laminated veneer lumber or wood structural panel band joist) the ledger attachment shall be designed in accordance of engineering practice.
- A minimum 1x 9 1/2 Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- 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 face of the band joist shall be 1 inch.

Deck Connections

All fasteners, nails, bolts, screws, etc. must be corrosion resistant. See Deck Construction Note 3, page 1.	
Follow manufacturer's instructions for timber connectors.	
Connections	Nailing
1 Joist on deck beam; toenail each end	(3) 8d
2 Bridging or blocking to joist; toenail ea. side, ea. end	(3) 8d
3 2x decking to joist or deck beam; blind and face nail	(2) 16d
4 Joist hangers - See detail 1 on page 4	

**TABLE 507.2.1
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGER AND BAND JOISTS**

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
LEDGER ^a	2 Inches ^d	3/4 Inch	2 Inches ^b	1 5/8 Inches ^b
BAND JOIST ^c	3/4 Inch	2 Inches ^e	2 Inches ^b	1 5/8 Inches ^b

For SI: 1 inch = 25.4mm

- a. Lag screw 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).
- e. The 2 inches may be reduced to 3/4 inch when the band joist is directly supported by mudsill, a header or by double top wall plates.

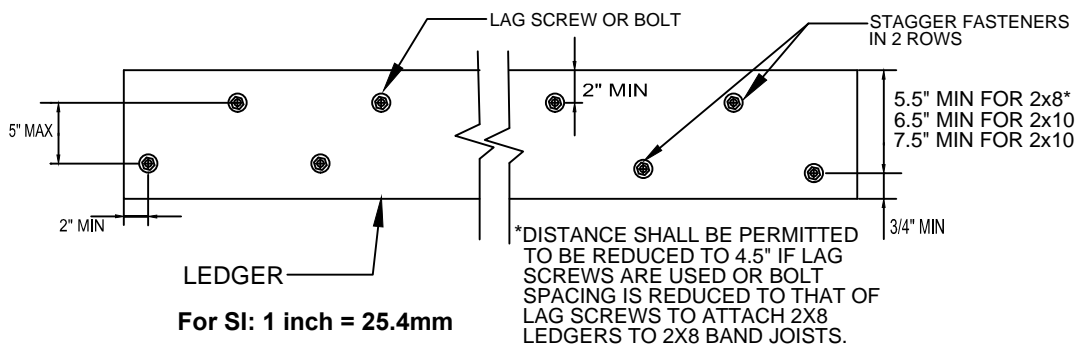


FIGURE R507.2.1(1)

PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGER

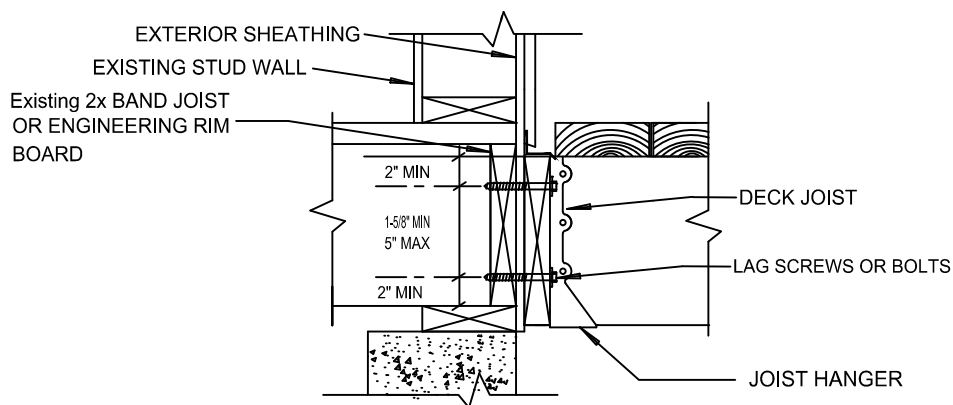


FIGURE 507.2.1(2)

PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

GENERAL INFORMATION:

- Consult with your local land use or planning department regarding setbacks and other zoning regulations
- Obtain a building permit before starting construction
- The intent of this tip sheet is to address basic code information related to residential deck construction only. Additional information can be found at your local building department.