

A Conventional Construction Guide to Covered and Uncovered Projections from One and Two Family Dwellings

The Purpose of this policy is to assist the development community and general public in obtaining a Building Permit for Covered and Uncovered projections from Single Family Dwellings. The requirements specified in this policy have been determined by the Tuolumne County Building and Safety Division to meet the intent of the Structural and Life Safety provisions of the California Code of Regulations Title 24.

The following construction methods will be allowed without Justification by Engineering Design. The following limitations shall apply to this policy:

- This policy applies to floor and roof projections that are justified to be located in Seismic Design Category "C" only.
- This policy is valid up to a maximum ground snow load of #70 provided all aspects and limitations specified in this policy are followed.
- This policy does not remove or negate the requirement for complete building plans and details, drawn to scale, to be provided for review. The typical policy for building permit application, plan review and inner Divisional review will still apply.
- This policy does not apply to Townhouse type dwelling units.
- All structural lumber used shall only be the types listed in the following tables.
- This policy is limited to single story roof projections, single story decks and/or single story decks with a roof projection.
- Multiple tables and design aspects listed in this guide have been derived and extracted from The "Prescriptive Residential Deck Construction Guide" based on the 2012 International Residential Code (PRDCG). (© 2015 American Wood Council). The PRDCG may be referenced for design purposes however this Conventional Construction Guide to Covered and Uncovered Projections from One and Two Family Dwellings policy shall govern.

General Requirements:

- Wood materials shall be No.2 grade or better lumber, pressure treated or approved naturally durable lumber (such as red-wood or cedar) for un-covered decks.
- Any fasteners in contact with treated lumber shall be hot-dipped galvanized, Z-MAX or stainless steel.
- Joist ends and bearing locations shall be provided with lateral resistance 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.
- Ledger shall be minimum of 2x8 nominal lumber and shall connect directly to a minimum 2x solid sawn band joist or a 1x9 laminated veneer lumber.
- Intermediate support flush beams are not permitted.
- End support beam shall not be hung between posts without a continuous rim board providing continuity to all segmented beam supports. In this scenario the rim board shall be fastening to all segmented beams by two rows of 10d nails minimum 16" on center along each edge.
- A maximum projection of 18' from a structural building wall is allowed with a Ground Snow Load up to #50.
- A maximum projection of 10' from a structural building wall is allowed with a Ground Snow Load up to #70. All projections with a Ground Snow Load between 50# and 70# shall have Knee Braces installed regardless of the distance from a structural wall.
- Knee braces shall be installed at 45° angles and shall be installed on both sides of all structural columns for projections exceeding 10'. Knee bracing requirements shall be as follows:
 - Knee Braces shall be of the same dimension as the column to which it is attached to.
 - Knee Braces shall be attached with (1) ½" Lag bolt at each end of the Knee Brace with a minimum 2" penetration into the supporting member OR (2) SDS or equivalent screws at each end of the Knee Brace with a minimum 2" into the supporting member.

Limitations for Uncovered Decks/Floor Projections

> Deck Joist spans shall meet the requirements of the following table.

TABLE R507.6
MAXIMUM DECK JOIST SPANS

LOAD ^a (psf)	JOIST SPECIES ^b	JOIST SIZE	ALLOWABLE JOIST SPAN ^{b, c} (feet-inches)			MAXIMUM CANTILEVER ^{d, e} (feet-inches)							
			Joist spacing (inches)			Joist back span ^g (feet)							
			12	16	24	4	6	8	10	12	14	16	18
40 live load	Southern pine	2 × 6	9-11	9-0	7-7	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	13-1	11-10	9-8	1-0	1-6	2-0	2-6	2-3	NP	NP	NP
		2 × 10	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-4	3-4	NP
		2 × 12	18-0	16-6	13-6	1-0	1-6	2-0	2-6	3-0	3-6	4-0	4-1
	Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	2 × 6	9-6	8-4	6-10	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	12-6	11-1	9-1	1-0	1-6	2-0	2-3	2-0	NP	NP	NP
		2 × 10	15-8	13-7	11-1	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
		2 × 12	18-0	15-9	12-10	1-0	1-6	2-0	2-6	3-0	3-6	3-11	3-11
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	8-10	8-0	6-10	1-0	1-4	1-1	NP	NP	NP	NP	NP
		2 × 8	11-8	10-7	8-8	1-0	1-6	2-0	1-11	NP	NP	NP	NP
		2 × 10	14-11	13-0	10-7	1-0	1-6	2-0	2-6	3-0	2-9	NP	NP
		2 × 12	17-5	15-1	12-4	1-0	1-6	2-0	2-6	3-0	3-6	3-8	NP
50 ground snow load	Southern pine	2 × 6	9-2	8-4	7-4	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	12-1	11-0	9-5	1-0	1-6	2-0	2-5	2-3	NP	NP	NP
		2 × 10	15-5	13-9	11-3	1-0	1-6	2-0	2-6	3-0	3-1	NP	NP
		2 × 12	18-0	16-2	13-2	1-0	1-6	2-0	2-6	3-0	3-6	3-10	3-10
	Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	2 × 6	8-10	8-0	6-8	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	11-7	10-7	8-11	1-0	1-6	2-0	2-3	NP	NP	NP	NP
		2 × 10	14-10	13-3	10-10	1-0	1-6	2-0	2-6	3-0	3-0	NP	NP
		2 × 12	17-9	15-5	12-7	1-0	1-6	2-0	2-6	3-0	3-6	3-8	NP
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	8-3	7-6	6-6	1-0	1-4	1-1	NP	NP	NP	NP	NP
		2 × 8	10-10	9-10	8-6	1-0	1-6	2-0	1-11	NP	NP	NP	NP
		2 × 10	13-10	12-7	10-5	1-0	1-6	2-0	2-6	2-9	NP	NP	NP
		2 × 12	16-10	14-9	12-1	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
60 ground snow load	Southern pine	2 × 6	8-8	7-10	6-10	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	11-5	10-4	8-9	1-0	1-6	2-0	2-4	NP	NP	NP	NP
		2 × 10	14-7	12-9	10-5	1-0	1-6	2-0	2-6	2-11	2-11	NP	NP
		2 × 12	17-3	15-0	12-3	1-0	1-6	2-0	2-6	3-0	3-6	3-7	NP
	Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	2 × 6	8-4	7-6	6-2	1-0	1-6	1-4	NP	NP	NP	NP	NP
		2 × 8	10-11	9-11	8-3	1-0	1-6	2-0	2-2	NP	NP	NP	NP
		2 × 10	13-11	12-4	10-0	1-0	1-6	2-0	2-6	2-10	NP	NP	NP
		2 × 12	16-6	14-3	11-8	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	7-9	7-0	6-2	1-0	1-4	NP	NP	NP	NP	NP	NP
		2 × 8	10-2	9-3	7-11	1-0	1-6	2-0	1-11	NP	NP	NP	NP
		2 × 10	13-0	11-9	9-7	1-0	1-6	2-0	2-6	2-7	NP	NP	NP
		2 × 12	15-9	13-8	11-2	1-0	1-6	2-0	2-6	3-0	3-2	NP	NP

(continued)

**TABLE R607.6—continued
MAXIMUM DECK JOIST SPANS**

LOAD ^a (psf)	JOIST SPECIES ^b	JOIST SIZE	ALLOWABLE JOIST SPAN ^{b, c} (feet-inches)			MAXIMUM CANTILEVER ^{d, f} (feet-inches)							
			Joist spacing (inches)			Joist back span ^e (feet)							
			12	16	24	4	6	8	10	12	14	16	18
70 ground snow load	Southern pine	2 × 6	8-3	7-6	6-5	1-0	1-6	1-5	NP	NP	NP	NP	NP
		2 × 8	10-10	9-10	8-2	1-0	1-6	2-0	2-2	NP	NP	NP	NP
		2 × 10	13-9	11-11	9-9	1-0	1-6	2-0	2-6	2-9	NP	NP	NP
		2 × 12	16-2	14-0	11-5	1-0	1-6	2-0	2-6	3-0	3-5	3-5	NP
	Douglas fir-larch ^e Hem-fir ^e Spruce-pine-fir ^e	2 × 6	7-11	7-1	5-9	1-0	1-6	NP	NP	NP	NP	NP	NP
		2 × 8	10-5	9-5	7-8	1-0	1-6	2-0	2-1	NP	NP	NP	NP
		2 × 10	13-3	11-6	9-5	1-0	1-6	2-0	2-6	2-8	NP	NP	NP
		2 × 12	15-5	13-4	10-11	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
	Redwood ^f Western cedars ^f Ponderosa pine ^f Red pine ^f	2 × 6	7-4	6-8	5-10	1-0	1-4	NP	NP	NP	NP	NP	NP
		2 × 8	9-8	8-10	7-4	1-0	1-6	1-11	NP	NP	NP	NP	NP
		2 × 10	12-4	11-0	9-0	1-0	1-6	2-0	2-6	2-6	NP	NP	NP
		2 × 12	14-9	12-9	10-5	1-0	1-6	2-0	2-6	3-0	3-0	NP	NP

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

NP = Not Permitted.

a. Dead load = 10 psf. Snow load not assumed to be concurrent with live load.

b. No. 2 grade, wet service factor included.

c. $L/\Delta = 360$ at main span.

d. $L/\Delta = 180$ at cantilever with a 220-pound point load applied to end.

e. Includes incising factor.

f. Incising factor not included.

g. Interpolation allowed. Extrapolation is not allowed.

> Deck boards shall be limited to the on-center spacing of the joist according to the following table

**TABLE R607.7
MAXIMUM JOIST SPACING FOR WOOD DECKING**

DECKING MATERIAL TYPE AND NOMINAL SIZE	DECKING PERPENDICULAR TO JOIST		DECKING DIAGONAL TO JOIST ^a	
	Single span ^a	Multiple span ^a	Single span ^a	Multiple span ^a
	Maximum on-center joist spacing (inches)			
1 1/4-inch-thick wood ^b	12	16	8	12
2-inch-thick wood	24	24	18	24

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

a. Maximum angle of 45 degrees from perpendicular for wood deck boards.

b. Other maximum span provided by an accredited lumber grading or inspection agency also allowed.

c. Individual wood deck boards supported by two joists shall be considered single span and three or more joists shall be considered multiple span.

> Deck beam shall comply with the requirements Option A or Option B on page 9

Option A: See table below

TABLE R507.5(1)
MAXIMUM DECK BEAM SPAN—40 PSF LIVE LOAD^a

BEAM SPECIES ^d	BEAM SIZE ^e	EFFECTIVE DECK JOIST SPAN LENGTH ^{a, b, i} (feet)						
		6	8	10	12	14	16	18
		MAXIMUM DECK BEAM SPAN LENGTH (feet-inches) ^{a, b, f}						
Southern pine	1-2 x 6	4-7	4-0	3-7	3-3	3-0	2-10	2-8
	1-2 x 8	5-11	5-1	4-7	4-2	3-10	3-7	3-5
	1-2 x 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1-2 x 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2-2 x 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2-2 x 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2-2 x 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2-2 x 12	12-2	10-7	9-5	8-7	8-0	7-5	7-0
	3-2 x 6	8-6	7-5	6-8	6-1	5-8	5-3	4-11
	3-2 x 8	10-11	9-6	8-6	7-9	7-2	6-8	6-4
	3-2 x 10	13-0	11-2	10-0	9-2	8-6	7-11	7-6
	3-2 x 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir	1-2 x 6	4-1	3-6	3-0	2-8	2-5	2-3	2-1
	1-2 x 8	5-6	4-8	4-0	3-6	3-2	2-11	2-9
	1-2 x 10	6-8	5-10	5-1	4-6	4-1	3-9	3-6
	1-2 x 12	7-9	6-9	6-0	5-6	5-0	3-9	3-6
	2-2 x 6	6-1	5-3	4-9	4-4	3-11	3-7	3-3
	2-2 x 8	8-2	7-1	6-4	5-9	5-2	4-8	4-4
	2-2 x 10	10-0	8-7	7-9	7-0	6-6	6-0	5-6
	2-2 x 12	11-7	10-0	8-11	8-2	7-7	7-1	6-8
	3-2 x 6	7-8	6-8	6-0	5-6	5-1	4-9	4-6
	3-2 x 8	10-3	8-10	7-11	7-3	6-8	6-3	5-11
	3-2 x 10	12-6	10-10	9-8	8-10	8-2	7-8	7-2
	3-2 x 12	14-6	12-7	11-3	10-3	9-6	8-11	8-5
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1-2 x 6	4-2	3-7	3-1	2-9	2-6	2-3	2-2
	1-2 x 8	5-4	4-7	4-1	3-7	3-3	3-0	2-10
	1-2 x 10	6-6	5-7	5-0	4-7	4-2	3-10	3-7
	1-2 x 12	7-6	6-6	5-10	5-4	4-11	4-7	4-4
	2-2 x 6	6-2	5-4	4-10	4-5	4-0	3-8	3-4
	2-2 x 8	7-10	6-10	6-1	5-7	5-2	4-10	4-5
	2-2 x 10	9-7	8-4	7-5	6-9	6-3	5-10	5-6
	2-2 x 12	11-1	9-8	8-7	7-10	7-3	6-10	6-5
	3-2 x 6	7-8	6-9	6-0	5-6	5-1	4-9	4-6
	3-2 x 8	9-10	8-6	7-7	6-11	6-5	6-0	5-8
	3-2 x 10	12-0	10-5	9-4	8-6	7-10	7-4	6-11
	3-2 x 12	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, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation permitted. Extrapolation not permitted.

b. Beams supporting a single span of joists with or without cantilever.

c. Dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever. Snow load is not assumed to be concurrent with live load.

d. No. 2 grade, wet service factor included.

e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.

f. Beam cantilevers are limited to the adjacent beam's span divided by 4.

g. Includes incising factor.

h. Incising factor not included.

i. Deck joist span as shown in Figure R507.5.

j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with Table R507.5(5).

TABLE R507.5(2)
MAXIMUM DECK BEAM SPAN—60 PSF GROUND SNOW LOAD^o

BEAM SPECIES ^d	BEAM SIZE ^e	EFFECTIVE DECK JOIST SPAN LENGTH (feet) ^{a, i, j}						
		6	8	10	12	14	16	18
		MAXIMUM DECK BEAM SPAN LENGTH (feet-inches) ^{a, b, f}						
Southern pine	1-2 x 6	4-6	3-11	3-6	3-2	2-11	2-9	2-7
	1-2 x 8	5-9	4-11	4-5	4-0	3-9	3-6	3-3
	1-2 x 10	6-9	5-10	5-3	4-9	4-5	4-2	3-11
	1-2 x 12	8-0	6-11	6-2	5-8	5-3	4-11	4-7
	2-2 x 6	6-8	5-9	5-2	4-9	4-4	4-1	3-10
	2-2 x 8	8-6	7-4	6-7	6-0	5-7	5-2	4-11
	2-2 x 10	10-1	8-9	7-10	7-1	6-7	6-2	5-10
	2-2 x 12	11-11	10-3	9-2	8-5	7-9	7-3	6-10
	3-2 x 6	7-11	7-2	6-6	5-11	5-6	5-1	4-10
	3-2 x 8	10-5	9-3	8-3	7-6	6-11	6-6	6-2
	3-2 x 10	12-8	10-11	9-9	8-11	8-3	7-9	7-3
	3-2 x 12	14-11	12-11	11-6	10-6	9-9	9-1	8-7
Douglas fir-larch ^h Hem-fir ^g Spruce-pine-fir ^g	1-2 x 6	4-0	3-5	2-11	2-7	2-4	2-2	2-0
	1-2 x 8	5-4	4-7	3-11	3-5	3-1	2-10	2-8
	1-2 x 10	6-7	5-8	4-11	4-5	4-0	3-8	3-5
	1-2 x 12	7-7	6-7	5-11	5-4	4-10	4-6	4-2
	2-2 x 6	6-0	5-2	4-7	4-2	3-10	3-5	3-2
	2-2 x 8	8-0	6-11	6-2	5-8	5-0	4-7	4-2
	2-2 x 10	9-9	8-5	7-7	6-11	6-4	5-10	5-4
	2-2 x 12	11-4	9-10	8-9	8-0	7-5	6-11	6-6
	3-2 x 6	7-6	6-6	5-9	5-3	4-11	4-7	4-4
	3-2 x 8	10-0	8-8	7-9	7-1	6-6	6-1	5-8
	3-2 x 10	12-3	10-7	9-6	8-8	8-0	7-6	7-0
	3-2 x 12	14-3	12-4	11-0	10-1	9-4	8-9	8-3
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1-2 x 6	4-1	3-6	3-0	2-8	2-5	2-3	2-1
	1-2 x 8	5-2	4-6	4-0	3-6	3-2	2-11	2-9
	1-2 x 10	6-4	5-6	4-11	4-6	4-1	3-9	3-6
	1-2 x 12	7-4	6-4	5-8	5-2	4-10	4-6	4-3
	2-2 x 6	6-1	5-3	4-8	4-4	3-11	3-6	3-3
	2-2 x 8	7-8	6-8	5-11	5-5	5-0	4-8	4-3
	2-2 x 10	9-5	8-2	7-3	6-8	6-2	5-9	5-5
	2-2 x 12	10-11	9-5	8-5	7-8	7-2	6-8	6-3
	3-2 x 6	7-1	6-5	5-11	5-5	5-0	4-8	4-5
	3-2 x 8	9-4	8-4	7-5	6-10	6-04	5-11	5-7
	3-2 x 10	11-9	10-2	9-1	8-4	7-8	7-2	6-9
	3-2 x 12	13-8	11-10	10-7	9-8	8-11	8-4	7-10

For SI: 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation allowed. Extrapolation is not allowed.

b. Beams supporting a single span of joists with or without cantilever.

c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.

d. No. 2 grade, wet service factor included.

e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.

f. Beam cantilevers are limited to the adjacent beam's span divided by 4.

g. Includes incising factor.

h. Incising factor not included.

i. Deck joist span as shown in Figure R507.5.

j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with Table R507.5(5).

TABLE R507.5(3)
MAXIMUM DECK BEAM SPAN—80 PSF GROUND SNOW LOAD^a

BEAM SPECIES ^d	BEAM SIZE ^e	EFFECTIVE DECK JOIST SPAN LENGTH ^{a,i,j} (feet)						
		6	8	10	12	14	16	18
		MAXIMUM DECK BEAM SPAN LENGTH (foot-inches) ^{a,b,f}						
Southern pine	1-2 × 6	4-2	3-7	3-3	2-11	2-9	2-6	2-5
	1-2 × 8	5-3	4-7	4-1	3-9	3-5	3-3	3-0
	1-2 × 10	6-3	5-5	4-10	4-5	4-1	3-10	3-7
	1-2 × 12	7-5	6-5	5-9	5-3	4-10	4-6	4-3
	2-2 × 6	6-2	5-4	4-9	4-4	4-0	3-9	3-7
	2-2 × 8	7-10	6-10	6-1	5-7	5-2	4-10	4-6
	2-2 × 10	9-4	8-1	7-3	6-7	6-1	5-8	5-4
	2-2 × 12	11-0	9-6	8-6	7-9	7-2	6-9	6-4
	3-2 × 6	7-5	6-9	6-0	5-6	5-1	4-9	4-6
	3-2 × 8	9-9	8-6	7-8	6-11	6-5	6-0	5-8
	3-2 × 10	11-8	10-2	9-1	8-3	7-8	7-2	6-9
	3-2 × 12	13-9	11-11	10-8	9-9	9-0	8-5	7-11
Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	1-2 × 6	3-8	3-1	2-8	2-4	2-2	2-0	1-10
	1-2 × 8	5-0	4-1	3-6	3-1	2-10	2-7	2-5
	1-2 × 10	6-1	5-2	4-6	4-0	3-7	3-4	3-2
	1-2 × 12	7-1	6-1	5-5	4-10	4-5	4-1	3-10
	2-2 × 6	5-6	4-9	4-3	3-10	3-5	3-1	2-10
	2-2 × 8	7-5	6-5	5-9	5-0	4-6	4-1	3-9
	2-2 × 10	9-0	7-10	7-0	6-4	5-9	5-2	4-10
	2-2 × 12	10-6	9-1	8-1	7-5	6-10	6-4	5-10
	3-2 × 6	6-11	6-0	5-4	4-11	4-6	4-2	3-10
	3-2 × 8	9-3	8-0	7-2	6-6	6-1	5-6	5-0
	3-2 × 10	11-4	9-10	8-9	8-0	7-5	6-11	6-5
	3-2 × 12	13-2	11-5	10-2	9-4	8-7	8-1	7-7
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1-2 × 6	3-9	3-2	2-9	2-5	2-2	2-0	1-11
	1-2 × 8	4-10	4-2	3-7	3-2	2-11	2-8	2-6
	1-2 × 10	5-10	5-1	4-6	4-1	3-8	3-5	3-3
	1-2 × 12	6-10	5-11	5-3	4-10	4-5	4-2	3-11
	2-2 × 6	5-7	4-10	4-4	3-11	3-6	3-2	2-11
	2-2 × 8	7-1	6-2	5-6	5-0	4-7	4-2	3-10
	2-2 × 10	8-8	7-6	6-9	6-2	5-8	5-4	4-11
	2-2 × 12	10-1	8-9	7-10	7-2	6-7	6-2	5-10
	3-2 × 6	6-8	6-1	5-5	5-0	4-7	4-3	3-11
	3-2 × 8	8-9	7-9	6-22	6-4	5-20	5-5	5-3
	3-2 × 10	10-11	9-5	8-5	7-8	7-3	6-8	6-3
	3-2 × 12	12-8	10-11	9-9	8-11	8-3	7-9	7-3

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation allowed. Extrapolation is not allowed.

b. Beams supporting a single span of joists with or without cantilever.

c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.

d. No. 2 grade, wet service factor included.

e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.

f. Beam cantilevers are limited to the adjacent beam's span divided by 4.

g. Includes incising factor.

h. Incising factor not included.

i. Deck joist span as shown in Figure R507.5.

j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with Table R507.5(5).

TABLE R507.5(4)
MAXIMUM DECK BEAM SPAN—70 PSF GROUND SNOW LOAD^a

BEAM SPECIES ^d	BEAM SIZE ^e	EFFECTIVE DECK JOIST SPAN LENGTH (feet) ^{a, b, f}						
		6	8	10	12	14	16	18
		MAXIMUM DECK BEAM SPAN LENGTH (feet-inches) ^{a, b, f}						
Southern pine	1-2 x 6	3-11	3-4	3-0	2-9	2-6	2-4	2-3
	1-2 x 8	4-11	4-3	3-10	3-6	3-3	3-0	2-10
	1-2 x 10	5-10	5-1	4-6	4-2	3-10	3-7	3-4
	1-2 x 12	6-11	6-0	5-4	4-11	4-6	4-3	4-0
	2-2 x 6	5-9	5-0	4-6	4-1	3-9	3-6	3-4
	2-2 x 8	7-4	6-4	5-8	5-2	4-10	4-6	4-3
	2-2 x 10	8-9	7-7	6-9	6-2	5-8	5-4	5-0
	2-2 x 12	10-3	8-11	8-0	7-3	6-9	6-3	5-11
	3-2 x 6	7-0	6-3	5-7	5-1	4-9	4-5	4-2
	3-2 x 8	9-3	8-0	7-2	6-6	6-0	5-8	5-4
	3-2 x 10	10-11	9-6	8-6	7-9	7-2	6-8	6-4
Douglas fir-larch ^g Hem-fir ^g Spruce-pine-fir ^g	1-2 x 6	3-5	2-10	2-5	2-2	2-0	1-10	1-9
	1-2 x 8	4-7	3-8	3-2	2-10	2-7	2-5	2-4
	1-2 x 10	5-8	4-9	4-1	3-8	3-4	3-1	2-11
	1-2 x 12	6-7	5-8	5-0	4-6	4-1	3-10	3-7
	2-2 x 6	5-2	4-6	4-0	3-5	3-1	2-10	2-7
	2-2 x 8	6-11	6-0	5-3	4-7	4-1	3-8	3-5
	2-2 x 10	8-5	7-4	6-6	5-10	5-2	4-9	4-5
	2-2 x 12	9-10	8-6	7-7	6-11	6-4	5-9	5-4
	3-2 x 6	6-6	5-7	5-0	4-7	4-2	3-9	3-5
	3-2 x 8	8-8	7-6	6-8	6-1	5-6	5-0	4-7
	3-2 x 10	10-7	9-2	8-2	7-6	6-11	6-4	5-10
Redwood ^h Western cedars ^h Ponderosa pine ^h Red pine ^h	1-2 x 6	3-6	2-11	2-6	2-3	2-0	1-11	1-9
	1-2 x 8	4-6	3-10	3-3	2-11	2-8	2-6	2-4
	1-2 x 10	5-6	4-9	4-2	3-9	3-5	3-2	3-0
	1-2 x 12	6-4	5-6	4-11	4-6	4-2	3-11	3-8
	2-2 x 6	5-3	4-7	4-1	3-6	3-2	2-11	2-8
	2-2 x 8	6-8	5-9	5-2	4-8	4-2	3-10	3-6
	2-2 x 10	8-2	7-1	6-4	5-9	5-4	4-10	4-6
	2-2 x 12	9-5	8-2	7-4	6-8	6-2	5-9	5-5
	3-2 x 6	6-4	5-8	5-1	4-8	4-3	3-10	3-6
	3-2 x 8	8-4	7-3	6-5	5-11	5-5	5-1	4-8
	3-2 x 10	10-2	8-10	7-11	7-2	6-8	6-3	5-11
	3-2 x 12	11-10	10-3	9-2	8-4	7-9	7-3	6-10

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation allowed. Extrapolation is not allowed.

b. Beams supporting a single span of joists with or without cantilever.

c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.

d. No. 2 grade, wet service factor included.

e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.

f. Beam cantilevers are limited to the adjacent beam's span divided by 4.

g. Includes incising factor.

h. Incising factor not included.

i. Deck joist span as shown in Figure R507.5.

j. For calculation of effective deck joist span, the actual joist span length shall be multiplied by the joist span factor in accordance with Table R507.5(5).

Deck Beam Option B:

- As an alternate to the laminated or solid sawn deck floor girder requirements of Table 507.5, the following shall be allowed:
 - i. A minimum 2"x10" Spandrel Beam with a Maximum span of 6', with a max joist span of 12 feet considered from one side of the beam shall be allowed if placed on both sides of the structural column and attached in the following manner:
 - ii. A minimum of (2) ½" through bolts per structural attachment with washers on each end. The bolts shall be centered in the structural column.
 - iii. Solid 4x blocking shall be installed in-between the spandrel beam with (2) ½" through bolts and washers at spans exceeding 3' in length. (Knee Bracing may be considered blocking).
- Splices in the Spandrel member shall occur over a column size of 6"x6" minimum.

➤ Deck posts shall meet the standards of the following Table.

Table R507.4
Maximum Deck Post Height²

Load ¹ (psf)	Post Species ²	Nominal Post Size ³	Tributary Area ⁴ (sqft)							
			20	40	60	80	100	120	140	160
			Maximum Allowable Deck Post Height (feet-inches)							
40 Live	Southern Pine	4x4	14-0	14-0	13-11	12-0	10-8	9-8	8-10	8-2
		4x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		8x8	14-0	13-6	10-10	9-3	8-0	7-0	6-2	5-3
	Douglas Fir, Hem- lock, SPF ⁵	4x4	14-0	14-0	13-10	11-10	10-6	9-5	8-7	7-10
		4x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		8x8	14-0	13-2	10-3	8-1	5-8	NP	NP	NP
	Redwood ⁶ , Western Cedars ⁶ , Ponderosa Pine ⁶ , Red Pine ⁶	4x4	14-0	14-0	13-6	11-4	9-9	8-4	6-9	4-7
		4x6	14-0	14-0	14-0	14-0	14-0	14-0	13-7	9-7
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
		8x8	14-0	14-0	13-11	12-0	10-8	9-8	8-10	8-2

50 Ground Snow	Southern Pine	4x4	14-0	12-2	9-10	8-5	7-5	6-7	5-11	5-4
		4x6	14-0	14-0	12-6	10-9	9-6	8-7	7-10	7-3
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	13-4
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Douglas Fir, Hem- fir, SPF	4x4	14-0	12-1	9-8	8-2	7-1	6-2	5-3	4-2
		4x6	14-0	14-0	12-4	10-7	9-4	8-4	7-7	6-11
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	14-0	12-10
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood, Western Cedars, Ponderosa Pine, Red Pine	4x4	14-0	11-8	9-0	6-10	3-7	NP	NP	NP
		4x6	14-0	14-0	12-0	10-0	8-6	7-0	5-3	NP
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	10-8	2-4
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
60 Ground Snow	Southern Pine	4x4	14-0	11-1	8-11	7-7	6-7	5-10	5-2	4-6
		4x6	14-0	14-0	11-4	9-9	8-7	7-9	7-1	6-6
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	12-9	11-2
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Douglas Fir, Hem- fir, SPF	4x4	14-0	10-11	8-8	7-3	6-2	5-0	3-7	NP
		4x6	14-0	13-11	11-2	9-7	8-4	7-5	6-8	5-11
		6x6	14-0	14-0	14-0	14-0	14-0	14-0	12-2	10-2
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood, Western Cedars, Ponderosa Pine, Red Pine	4x4	14-0	10-6	7-9	4-7	NP	NP	NP	NP
		4x6	14-0	13-7	10-9	8-9	7-0	4-9	NP	NP
		6x6	14-0	14-0	14-0	14-0	14-0	9-9	NP	NP
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
70 Ground Snow	Southern Pine	4x4	14-0	10-2	8-2	6-11	5-11	5-2	4-4	3-4
		4x6	14-0	12-11	10-5	8-11	7-10	7-1	6-5	5-10
		6x6	14-0	14-0	14-0	14-0	14-0	12-9	10-11	8-7
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Douglas Fir, Hem- fir, SPF	4x4	14-0	10-1	7-11	6-6	5-3	3-7	NP	NP
		4x6	14-0	12-10	10-3	8-9	7-7	6-8	5-10	4-11
		6x6	14-0	14-0	14-0	14-0	14-0	12-2	9-9	5-9
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood, Western Cedars, Ponderosa Pine, Red Pine	4x4	14-0	9-5	6-5	NP	NP	NP	NP	NP
		4x6	14-0	12-6	9-8	7-7	5-3	NP	NP	NP
		6x6	14-0	14-0	14-0	14-0	10-8	NP	NP	NP
		8x8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0

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

- Measured from the underside of the beam to top of footing or pier.
- 10 psf dead load. Snow load not assumed to be concurrent with live load.
- No. 2 grade, wet service factor included.
- Notched posts shall be sized to accommodate beam size per R507.5.2
- Includes incising factor.
- Incising factor not included.

>Deck ledger attachments shall comply with either Option A or Option B as follows:

Option A:

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST

LOAD ^a (psf)	JOIST SPAN ^a (feet)	ON-CENTER SPACING OF FASTENERS ^b (Inches)		
		1/2-inch diameter lag screw with 1/2-inch maximum sheathing ^{d,e}	1/2-inch diameter bolt with 1/2-inch maximum sheathing ^e	1/2-inch diameter bolt with 1-inch maximum sheathing ^f
40 live load	6	30	36	36
	8	23	36	36
	10	18	34	29
	12	15	29	24
	14	13	24	21
	16	11	21	18
	18	10	19	16
50 ground snow load	6	29	36	36
	8	22	36	35
	10	17	33	28
	12	14	27	23
	14	12	23	20
	16	11	20	17
	18	9	18	15
60 ground snow load	6	25	36	36
	8	18	35	30
	10	15	28	24
	12	12	23	20
	14	10	20	17
	16	9	17	15
	18	8	15	13
70 ground snow load	6	22	36	35
	8	16	31	26
	10	13	25	21
	12	11	20	17
	14	9	17	15
	16	8	15	13
	18	7	13	11

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

a. Interpolation permitted. Extrapolation is not permitted.

b. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.

c. Dead Load = 10 psf. Snow load shall not be assumed to act concurrently with live load.

d. The tip of the lag screw shall fully extend beyond the inside face of the band joist.

e. Sheathing shall be wood structural panel or solid sawn lumber.

f. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or form sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

Option B:

➤ Simpson® SDS or equivalent screws shall be installed per the following Table:

Loading Condition	Ledger Nominal Size (in.)	SDS Screw Length (in.)	Rim Board Material and Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	2x	3½	2" nominal sawn lumber	13	10	8	6	5	5	4
	(2) 2x³	5								
	2x	3½	1" min. oriented strand board (OSB) rim board	12	9	7	6	5	4	4
	2x	3½	1½" min. oriented strand board (OSB) rim board or 1¼" min. structural composite lumber	15	11	9	7	6	5	5
60 psf Live 10 psf Dead	2x	3½	2" nominal sawn lumber	9	7	5	4	4	3	3
	(2) 2x³	5								
	2x	3½	1" min. oriented strand board (OSB) rim board	8	6	5	4	3	3	2
	2x	3½	1½" min. oriented strand board (OSB) rim board or 1¼" min. structural composite lumber	10	8	6	5	4	4	3

1. Solid-sawn rim board shall be spruce-pine-fir, hem-fir, Douglas fir-larch, or southern pine species. Ledger shall be hem-fir, Douglas fir-larch, or southern pine species.
2. Fastener spacings are based on single fastener testing of the Strong-Drive SDS screw with a safety factor of 5.0 and include NDS wet service adjustment factor.
3. Multiple ledger plies shall be fastened together per code independent of the SDS screws.
4. SDS screw spacing values (above) are equivalent to 2018 IRC Table R507.9.1.3(1) and 2015 IRC Table R507.2, based on testing of the Strong-Drive SDS screw with a factor of safety of 5.0. The table above also provides SDS screw spacing for a wider range of materials commonly used for rim board, and an alternate loading condition as required by some jurisdictions.
5. Screw models SDS25312, SDS25312SS and SDS25500.

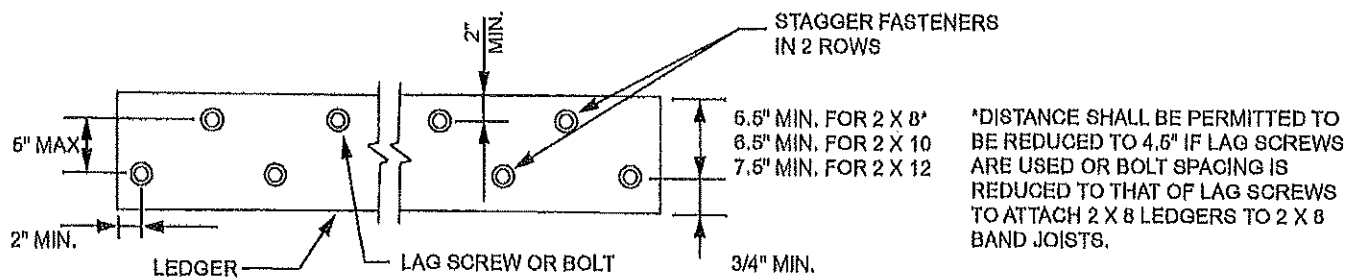
> Placement of Lag or SDS Screws Requirements

TABLE R507.9.1.3(2)
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	3/4 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

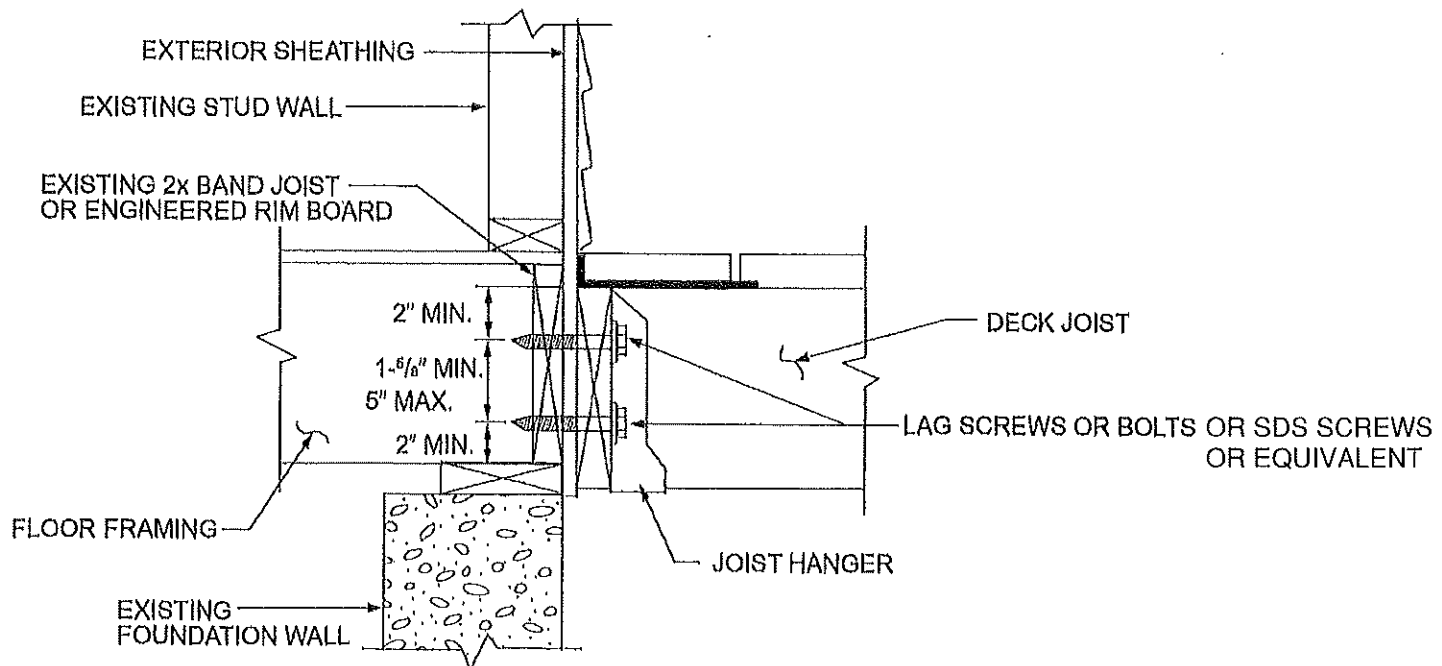
For SI: 1 inch = 25.4 mm.

- 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 R507.9.1.3(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 R507.9.1.3(1).



For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

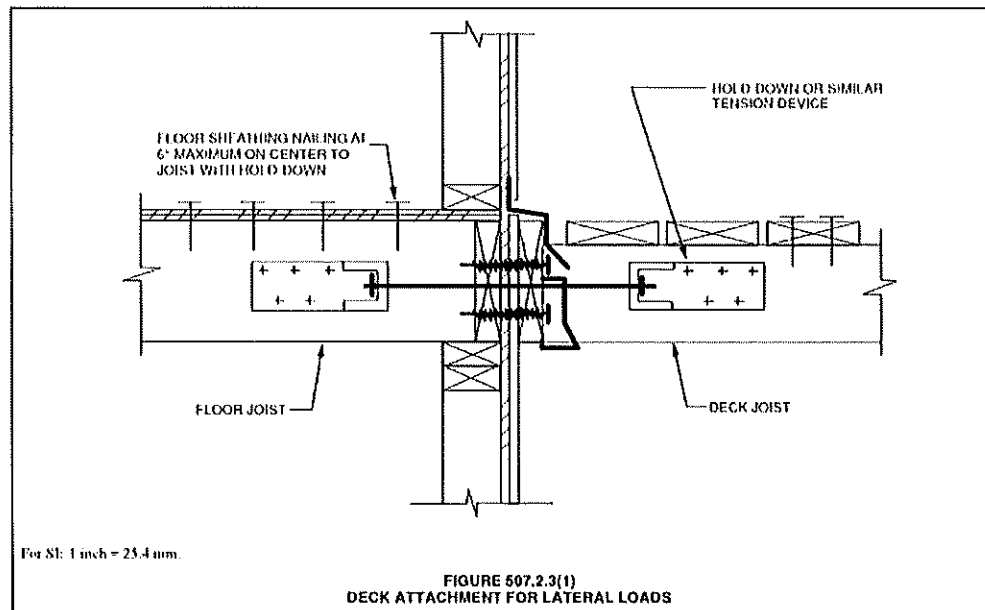


For SI: 1 inch = 25.4 mm.

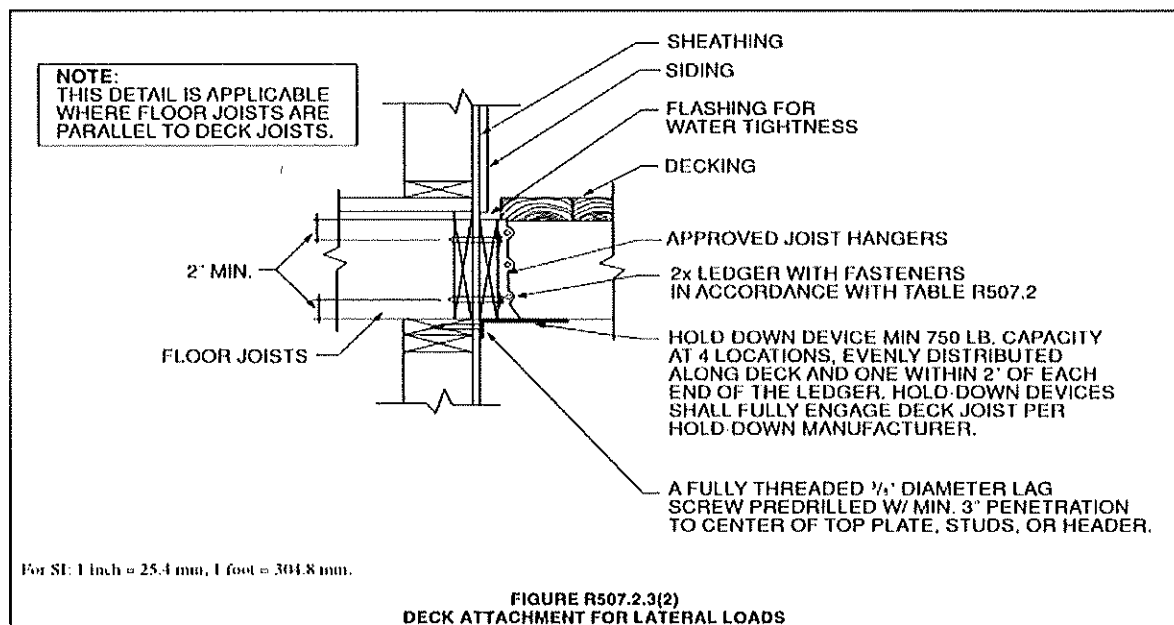
Lateral hold-down attachment shall be installed. Fasteners used in deck ledger connections shall be hot-dipped galvanized or stainless steel and shall be installed in accordance with the following details.

Each hold-down device shall have a design capacity of not less than 1500 pounds when installed according to figure 507.2.3(1) in two locations and not less than 750 pounds when installed according to figure 507.3.3(2) in four locations.

DECK ATTACHMENT FOR LATERAL LOADS

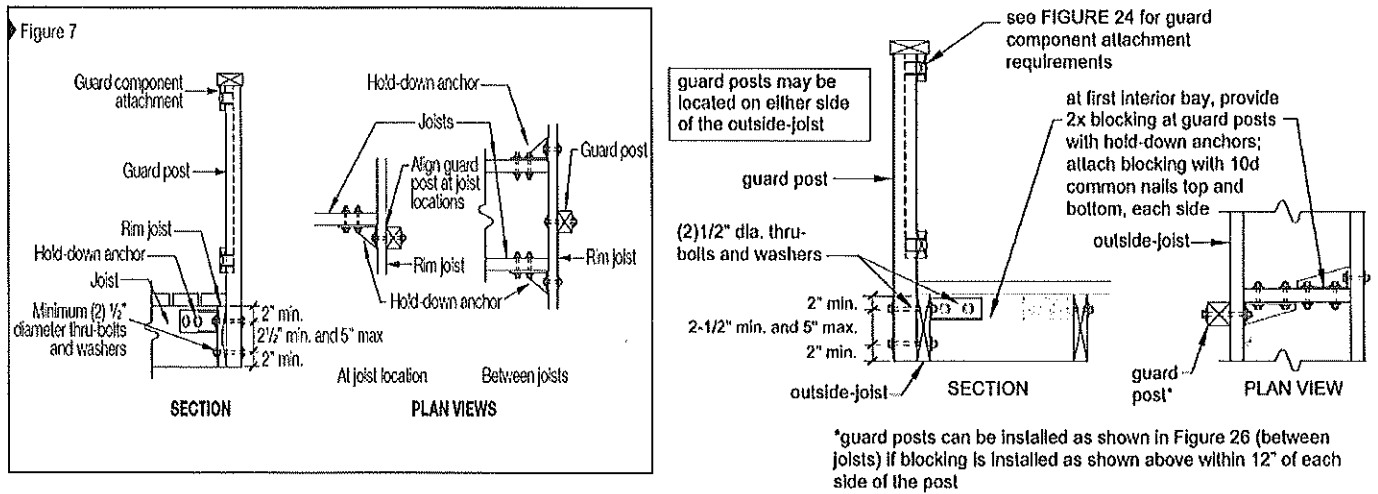


ALTERNATE DECK ATTACHMENT FOR LATERAL LOADS

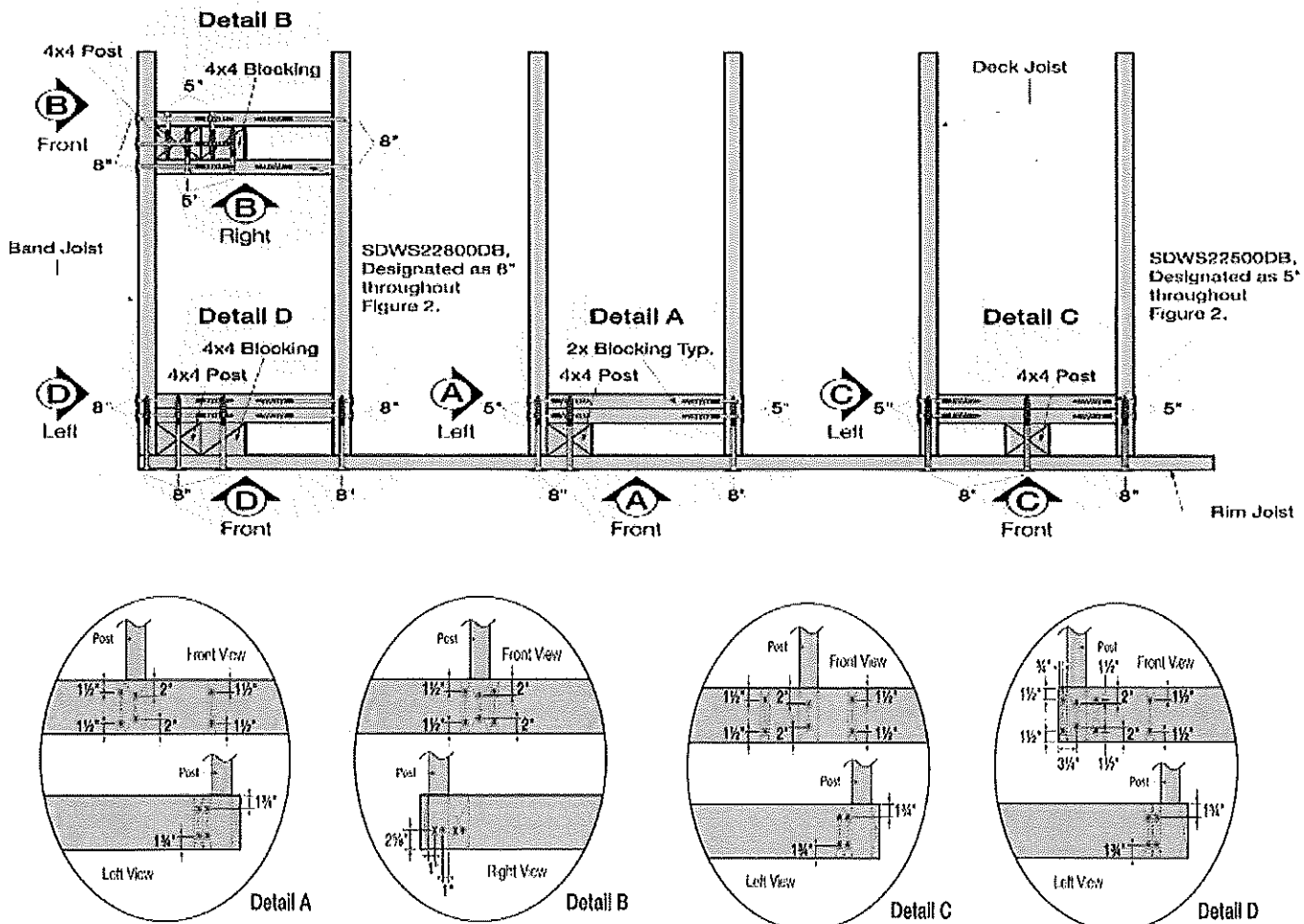


- Guard rail supports/columns shall not exceed 6' o.c. spacing. See the following details for appropriate attachment:

Option A.



Option B

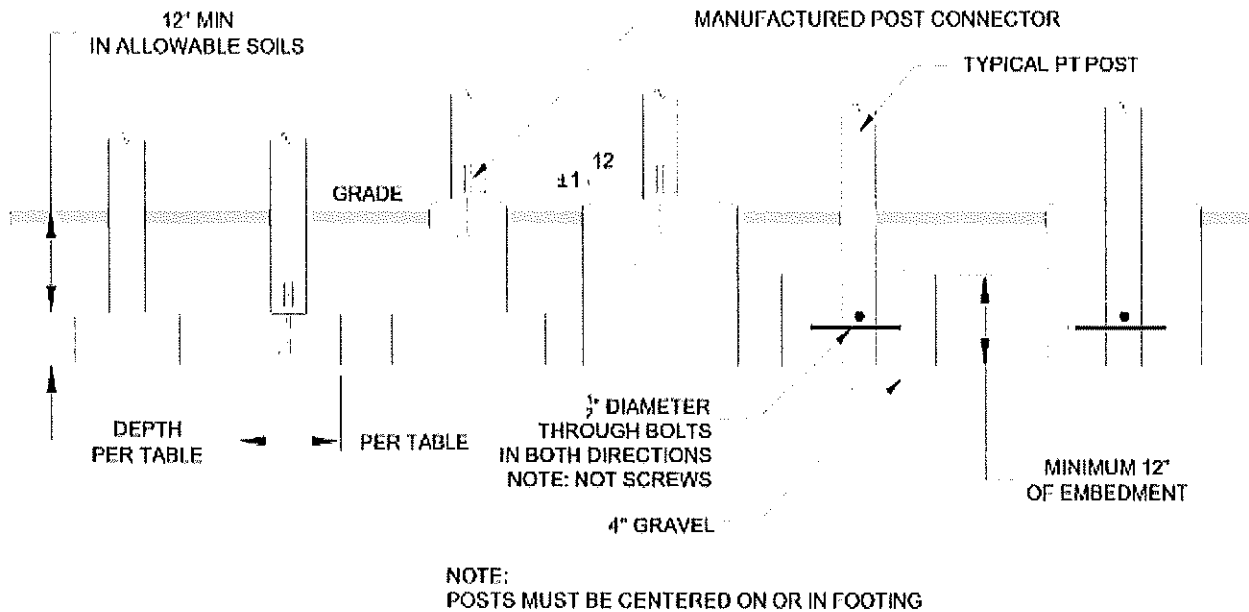


Note: Guardrails on decks (R-3 and U Occupancies) are required for those portions of elevated areas of 30-in or greater above surrounding grade or floor level within 36" horizontally shall meet the following: 42-in minimum height: Guards on open sides of stairs shall not have openings which allow passage of a sphere 4 3/8 inches in diameter. Were the guard also serves as a handrail on the open side, shall not be less than 34 inches and not more than 38 inches in height: Required guards shall not have openings from the walking surface to the required guard height which allow passage of a sphere 4 inches in diameter.

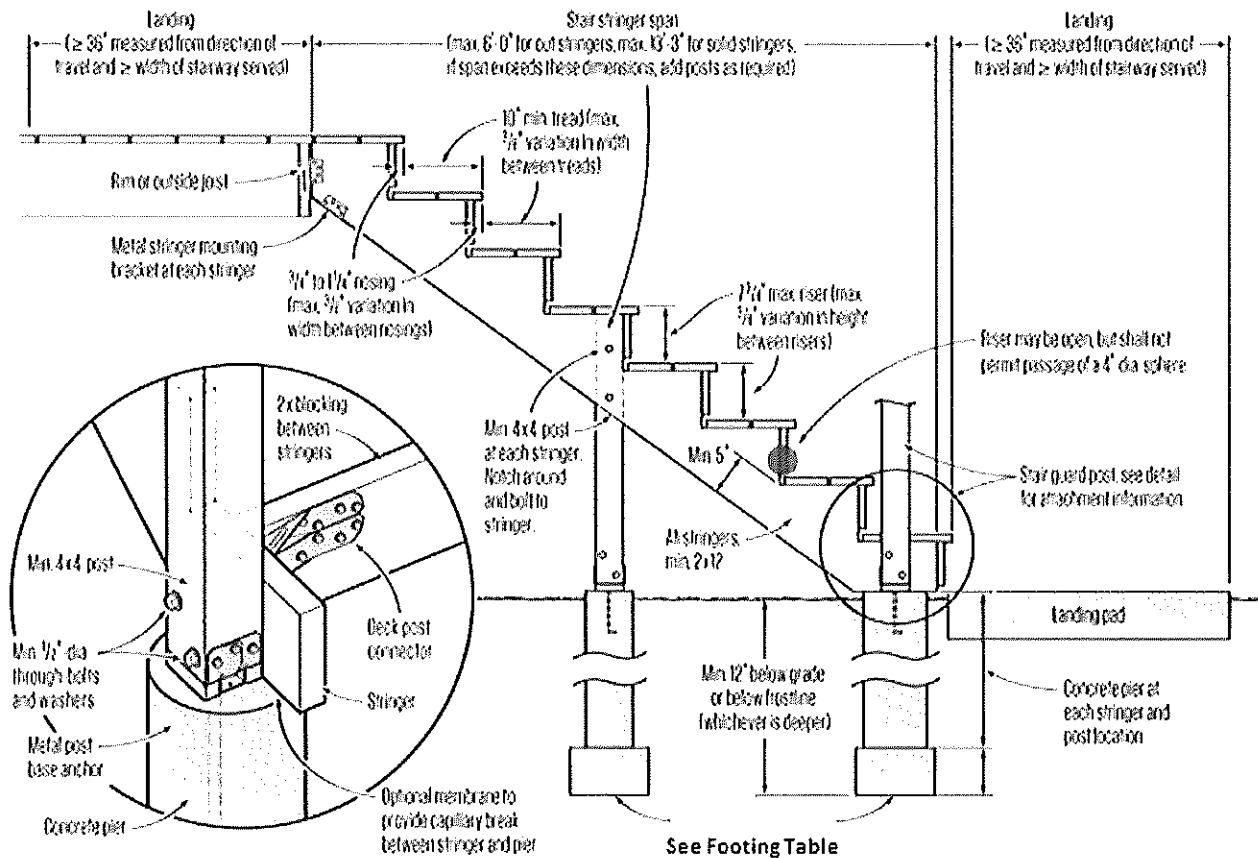
- Spread footing design shall meet the requirements of the following Table based on the tributary area of loading on the spread footing.

Portion of Table R507.3.1				
LIVE OR GROUND SNOW LOAD ^b (psf)	TRIBUTA RY AREA (sq. ft.)	LOAD BEARING VALUE OF SOILS ^{a, c, d} (psf)		
		1500 ^e		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness (inches)
40	5	7	8	6
	20	10	12	6
	40	14	16	6
	60	17	19	6
	80	20	22	7
	100	22	25	8
	120	24	27	9
	140	26	29	10
	160	28	31	11
50	5	7	8	6
	20	11	13	6
	40	15	17	6
	60	19	21	6
	80	21	24	8
	100	24	27	9
	120	26	30	10
	140	28	32	11
	160	30	34	12
60	5	7	8	6
	20	12	14	6
	40	16	19	6
	60	20	23	7
	80	23	26	9
	100	26	29	10
	120	28	32	11
	140	31	35	12
	160	33	37	13
70	5	7	8	6
	20	12	14	6
	40	18	20	6
	60	21	24	8
	80	25	28	9
	100	28	31	11
	120	30	34	12
	140	33	37	13
	160	35	40	15

- Interpolation permitted, extrapolation not permitted.
- Based on highest load case: Dead + Live or Dead + Snow
- Footing dimension shall allow complete bearing of the post.
- If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
- Area, in square feet, of deck surface supported by post and footings.
- Minimum thickness shall only apply to plain concrete footings.



Deck Stair Requirements



Note: Handrails are required on at least one side of each continuous run of treads or flight with four or more risers. [R311.7.8]. Handrails shall meet the following: Railing height minimum 34-in and maximum 38-in above the nosing of the treads. Graspable rails required 1 1/4-in to 2-in outside diameter; minimum clearance of 1 1/2-in between wall and rail; ends to return to wall or newel posts. Non-circular handrails shall have dimensions not to exceed 2 1/4 -in in cross sectional area and a perimeter dimension of at least 4-in but not to exceed 6 1/4-in. [CRC R311.7.8.5]

Note: Deck stairways shall be provided a means of illumination.

Limitation for Covered Deck or Roof Projection:

- A deck supporting a roof projection above shall be limited to the tributary area allowances considering the live and dead loads of the spread footing table in this guide.
- A maximum projection of 14' from a structural building wall is allowed for a roof projection with a Ground Snow Load up to #70 and to the tributary area allowances considering the live and dead loads of the spread footing table in this guide except as noted below.
 - Gable type roof projections are limited to 10' maximum away from a structure.
- Posts supporting a roof projection and a deck floor shall utilize the spandrel beam allowance of this guide to facilitate a through post design. (See spandrel beam requirements under "Limitations for Uncovered Deck/Floor Projections" above)
- Size of posts shall be no smaller than 6"x6".
- The maximum height of a covered porch shall be limited to the following.
 - 14' maximum post height from footing to bottom of covered roof beam and
 - 10' maximum from footing to deck/floor joists and
 - 8' maximum from top of deck/floor to bottom of covered roof beam.
- The ledger attachments identified in the Uncovered Decks/Floor Projections portion of this policy shall be used for shed/sloping type roof projections from a structural building wall.
- Gable type roof projections shall be constructed and attached to the primary structure as required by chapter 8 of the CRC.
 - No cathedral or scissor truss design is allowed without a lateral analysis from a licensed Architect or Engineer in the State of California.
 - Gable type roof projections utilizing pre-manufactured trusses are limited in span to the tributary area allowances considering the live and dead loads of the spread footing table in this guide.
 - Bottom of the ceiling joist or bottom cord of truss shall be sheathed with 3/8" wood structural panel or 1/2" sheetrock or equivalent.
 - Note: Projects requiring Wildland Urban Interface features shall meet Wildland Urban Interface Standards.

- Knee braces installed at 45° angles shall be installed on both sides of all structural columns of all roof projections exceeding 6'. (See the knee bracing section under Limitations for Uncovered Deck/Floor Projections)
 - For cut and stack gable type designs, a doubled roof rafter/ceiling joist design shall be provided at the gable end to allow the knee bracing to be attached in-between them. Or provide a beam under and parallel to the gable end for fastening the knee bracing to.
 - Manufactured truss gable designs shall require a beam under and parallel to the gable end to allow for fastening the knee bracing.
- All roof joists and beam spans shall meet the prescriptive spans provided in chapter 6 and 8 of the current edition of the CRC.
- Footing sizes supporting a covered roof and deck shall meet the standards of the spread footing table provided in this guide considering the tributary live loading of the covered roof and deck.

**Please note that all projects of this nature that are determined to be located in Seismic Design Category "D" shall be limited to a maximum projection of 6' per CRC section 301.2.2.2.5 exception 2.

All construction methods, procedures, materials, fasteners and specifications not specifically identified in this policy shall be as required by the current and governing edition of the California Residential Code.