



Town of Christiansburg

Deck Plan Cover Sheet

- 1) Lumber size, species, and grade: _____ (see Table 1)
 - 2) Joist span(s): A) _____' X _____" on _____" centers. (see Table 2)
 B) _____' X _____" on _____" centers.
 - 3) Beam span(s): Please circle thickness used – Single- Double- or Triple (see Table 3)
 A) _____' X _____" on _____' - _____" centers.
 B) _____' X _____" on _____' - _____" centers.
 - 4) Footing(s): A) _____" round or _____" X _____" square by _____" thick (see Table 4)
 B) _____" round or _____" X _____" square by _____" thick
 - 5) Ledger board(s): A) _____" X _____" by _____' - _____" long. (see Table 5)
 B) _____" X _____" by _____' - _____" long.
- Bolt spacing: 1/2" diameter bolts @ _____" on-center
- 6) Length and Width of Decks(s): A) _____' - _____" X _____' - _____"
 B) _____' - _____" X _____' - _____"

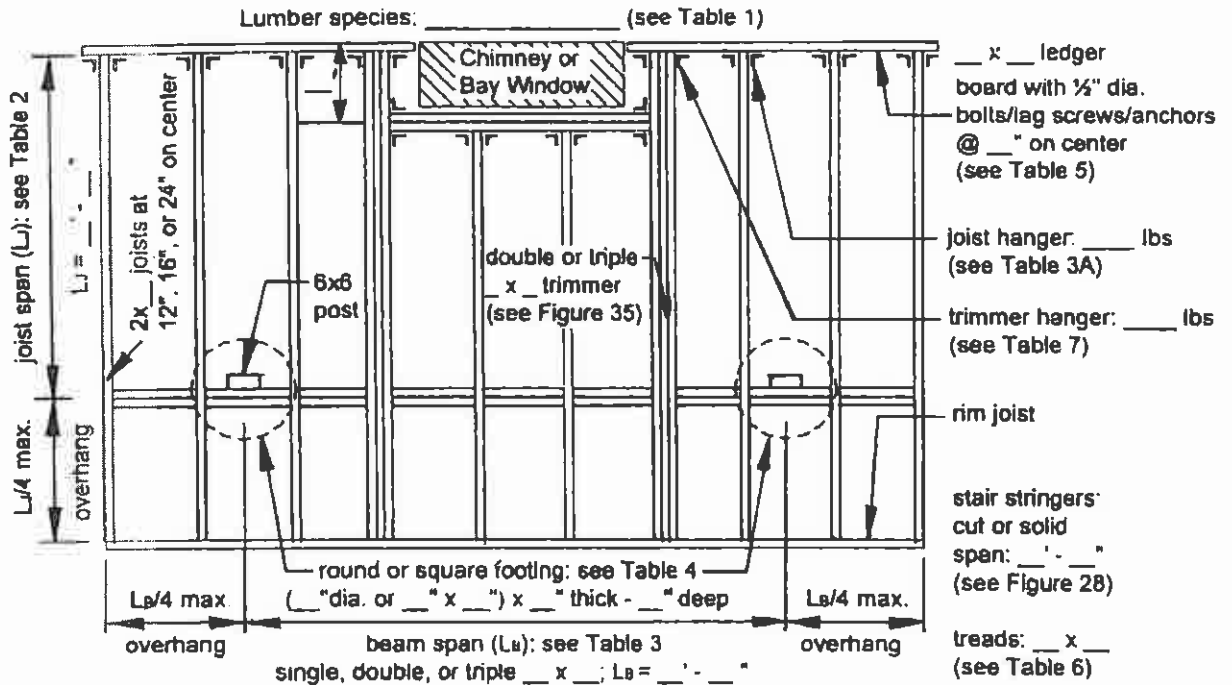


Table 1. Common preservative treatments and retention levels (pcf) for sawn lumber in ground contact.¹

Species	ACQ-B	ACQ-C	ACQ-D	CA-B	CuN-W
Southern Pine	0.40	0.40	0.40	0.21	0.11
Douglas Fir-Larch	0.40	0.40	NR	0.21	0.11
Hem-Fir	0.40	0.40	0.40	0.21	0.11
Ponderosa Pine	0.40	0.40	0.40	0.21	0.11
Red Pine	0.40	0.40	0.40	0.21	0.11
Spruce-Pine-Fir	NR	0.40	NR	NR	NR
Redwood	NR	NR	NR	NR	NR

¹ Preservatives and retentions listed in Table 1 are based on the American Wood Protection Association (AWPA) Book of Standards. NR = Treatments Not Recommended.

Table 2. Maximum Joist Spans (L_j)

Species	Size	Joist Spacing (o.c.)					
		Without Overhangs ¹			With Overhangs up to L _j /4 ²		
		12"	16"	24"	12"	16"	24"
Southern Pine	2x8	13'-8"	12'-5"	10'-2"	10'-8"	10'-9"	10'-2"
	2x10	17'-5"	15'-10"	13'-1"	15'-8"	15'-6"	13'-1"
	2x12	18'-0"	18'-0"	15'-5"	18'-0"	18'-0"	15'-5"
Douglas Fir-Larch, Hem-Fir, SPF ³	2x8	12'-8"	11'-1"	9'-1"	9'-5"	9'-5"	9'-1"
	2x10	15'-8"	13'-7"	11'-1"	13'-7"	13'-7"	11'-1"
	2x12	18'-0"	16'-9"	12'-10"	18'-0"	15'-9"	12'-10"
Redwood, Western Cedars, Ponderosa Pine ⁴ , Red Pine ⁴	2x8	11'-8"	10'-7"	8'-8"	8'-8"	8'-6"	8'-8"
	2x10	14'-11"	13'-0"	10'-7"	12'-3"	12'-3"	10'-7"
	2x12	17'-5"	15'-1"	12'-4"	16'-5"	15'-1"	12'-4"

1. Assumes 40 psf live load, 10 psf dead load, L/360 deflection, No. 2 grade, and wet service conditions. See Figure 1B.
2. Assumes 40 psf live load, 10 psf dead load, L/180 cantilever deflection with 220 lb point load, No. 2 grade, and wet service conditions. See Figure 1A and Figure 2.
3. Incising assumed for refractory species including Douglas fir-larch, hem-fir, and spruce-pine-fir.
4. Design values based on northern species with no incising assumed.

Table 3. Deck Beam Spans (L_b)¹ for Joists Framing from One Side Only

Species	Size ⁴	Joist Spans (L _j) Less Than or Equal to:						
		6'	8'	10'	12'	14'	16'	18'
Southern Pine	2-2x8	7'-1"	8'-2"	6'-6"	5'-0"	4'-8"	4'-4"	4'-1"
	2-2x8	8'-2"	7'-11"	7'-1"	6'-6"	6'-0"	5'-7"	5'-3"
	2-2x10	11'-10"	10'-3"	9'-2"	8'-5"	7'-8"	7'-3"	8'-10"
	2-2x12	13'-11"	12'-0"	10'-8"	9'-10"	9'-1"	8'-6"	8'-0"
	3-2x8	8'-7"	7'-8"	8'-11"	6'-3"	5'-10"	5'-5"	5'-2"
	3-2x8	11'-4"	9'-11"	8'-11"	8'-1"	7'-8"	7'-0"	6'-7"
	3-2x10	14'-5"	12'-10"	11'-8"	10'-8"	8'-8"	8'-1"	8'-7"
Douglas Fir-Larch ³ , Hem-Fir ² , SPF ² , Redwood, Western Cedars, Ponderosa Pine ³ , Red Pine ³	3x8 or 2-2x8	6'-5"	4'-8"	4'-2"	3'-10"	3'-6"	3'-1"	2'-9"
	3x8 or 2-2x8	8'-10"	5'-11"	5'-4"	4'-10"	4'-8"	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	8'-8"	8'-5"	7'-6"	6'-10"	6'-4"	5'-11"	5'-7"
	4x8	6'-5"	5'-6"	4'-11"	4'-6"	4'-2"	3'-11"	3'-8"
	4x8	8'-5"	7'-3"	6'-8"	5'-11"	5'-5"	5'-2"	4'-10"
	4x10	9'-11"	8'-7"	7'-8"	7'-0"	6'-6"	6'-1"	5'-8"
	4x12	11'-5"	8'-11"	8'-10"	8'-1"	7'-8"	7'-0"	6'-7"
	3-2x8	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'-5"	7'-10"	7'-4"	6'-11"	
3-2x12	13'-11"	12'-1"	10'-9"	9'-10"	9'-1"	8'-6"	8'-1"	

1. Assumes 40 psf live load, 10 psf dead load, L/360 simple span beam deflection limit, L/180 cantilever deflection limit, No. 2 grade, and wet service conditions.
2. Incising assumed for refractory species including Douglas fir-larch, hem-fir, and spruce-pine-fir.
3. Design values based on northern species with no incising assumed.
4. Beam depth must be equal to or greater than joist depth if joist hangers are used (see Figure 6, Option 3).

Table 3A: Joist Hanger Download Capacity

Joist Size	Minimum Capacity, lbs
2x8 800	
2x10 700	
2x12 800	

Beam Span, L _B	Joist Span, L _J	Round Footing Diameter	Square Footing Dimension	Footing Thickness ²
6'	<10'	15"	13"	6"
	<14'	17"	15"	6"
	<18'	20"	18"	7"
8'	<10'	17"	15"	6"
	<14'	20"	18"	8"
	<18'	23"	21"	9"
10'	<10'	19"	17"	7"
	<14'	22"	20"	9"
	<18'	25"	23"	10"
12'	<10'	21"	19"	8"
	<14'	24"	22"	10"
	<18'	28"	26"	11"
14'	<10'	22"	20"	9"
	<14'	26"	24"	11"
	<18'	30"	28"	12"
16'	<10'	24"	22"	9"
	<14'	28"	26"	12"
	<18'	32"	30"	13"
18'	<10'	25"	23"	10"
	<14'	30"	28"	12"
	<18'	34"	32"	14"

1. Assumes 1,600 psf soil bearing capacity.
 2. Assumes 2,500 psi compressive strength of concrete. Coordinate footing thickness with post base and anchor requirements.

Species	Cut Stringer	Solid Stringer
Southern Pine	2x4 or 5/4	2x6
Douglas Fir Larch, Hem-Fir, SPF ²	2x4 or 5/4	2x8 or 3x4
Redwood, Western Cedars, Ponderosa Pine ³ , Red Pine ³	2x4 or 5/4	2x10 or 3x4

1. Assumes 300 lb concentrated load, 1/288 deflection limit, No. 2 grade, and wet service conditions.
 2. Incising assumed for refractory species including Douglas fir-larch, hem-fir, and spruce-pine-fir.
 3. Design values based on northern species with no incising assumed.

Joist Size	Minimum Capacity, lbs
2x8	1050
2x10	1380
2x12	1500

Table 5. Fastener Spacing for a Southern Pine, Douglas Fir-Larch, or Hem-Fir Deck Ledger and a 2-Inch Nominal Solid-Sawn Spruce-Pine-Fir^{7,9} Band Joist or EWP Rim Board⁶
 (Deck Live Load = 40 psf, Deck Dead Load = 10 psf)^{3,8}

Joist Span	Rim Board or Band Joist	6'-0" and less	8'-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^{4,5}						
¹ / ₂ " diameter lag screw with ¹⁵ / ₃₂ " maximum sheathing ¹	1" EWP ⁶	24"	18"	14"	12"	10"	9"	8"
	1- ¹ / ₈ " EWP ⁶	28"	21"	16"	14"	12"	10"	9"
	1- ¹ / ₂ " Lumber ^{7,9}	30"	23"	18"	15"	13"	11"	10"
¹ / ₂ " diameter bolt with ¹⁵ / ₃₂ " maximum sheathing	1" EWP ⁶	24"	18"	14"	12"	10"	9"	8"
	1- ¹ / ₈ " EWP ⁶	28"	21"	16"	14"	12"	10"	9"
	1- ¹ / ₂ " Lumber ^{7,9}	36"	36"	34"	29"	24"	21"	19"
¹ / ₂ " diameter bolt with ¹⁵ / ₃₂ " maximum sheathing and ¹ / ₂ " stacked washers ^{2,8}	1" EWP ⁶	24"	18"	14"	12"	10"	9"	8"
	1- ¹ / ₈ " EWP ⁶	28"	21"	16"	14"	12"	10"	9"
	1- ¹ / ₂ " Lumber ^{7,9}	36"	36"	29"	24"	21"	18"	16"

- The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- The maximum gap between the face of the ledger board and face of the wall sheathing shall be ¹/₂".
- Ledgers shall be flashed or caulked to prevent water from contacting the house band joist (see Figures 14, 15, and 16).
- Lag screws and bolts shall be staggered per Figure 19.
- Deck ledgers 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 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 300 lbs and 350 lbs for 1" and 1-¹/₈" EWP rim board, respectively.
- A minimum 1"x9¹/₂" Douglas fir-larch laminated veneer lumber rim board shall be permitted in lieu of the 2" nominal band joist.
- 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.
- Fastener spacing also applies to southern pine, Douglas fir-larch, and hem-fir band joists.