INFORMATION NEEDED FOR DECK PERMIT APPLICATION

The following must be submitted to the Inspector for approval:

- □ A completed **Building Permit application**.
- □ A **current survey map** showing the proposed location of the deck, as well as ***all other structures on lot (sheds, pools, detached garages, etc.).***
- □ 2 sets of **detailed drawings of the deck structure**, **to include materials, dimensions and elevations**, drawn to 1/4"=1' scale. Plans must include: **complete structural information** (posts, beams, girders, joists, hangers size/location); **elevation drawings** along with **railing and stair info**; **fastener and flashing info and detail**; **details of footing and column connections**.
- □ **Subdivision HOA approval** (if required).

The approval process may take up to two weeks dependent on workload. Please provide a complete set of drawings/plans and all requested information with the Building Permit application. ***Failure to provide the required info will cause delays and possible rejection of permit application.*** *Building Permits are valid for one year.*

Fees: Permit fee is $10 per $1,000 of construction value or $50 minimum, plus $60 Plan Review fee, and $5 Technology Fee. Fees are paid when the permit is approved.

17.0704 (A)(5) Decks located adjacent to a principal structure shall be located not closer to a lot line than the required side yard and rear yard requirements for the district in which they are located and shall require the issuance of a building permit. Freestanding decks or decks surrounding private swimming pools separated from the principal structure shall be located at least 10 feet from the principal structure and shall be regulated in the same manner as an accessory garage, tool shed, or gazebo.

Sussex Building Inspection Department
Phone Number: 262-246-5212

Call Diggers Hotline 3 work days before you dig!
1-800-242-8511

Edited 4/23/24

CODE COMPLIANT DECK CONSTRUCTION

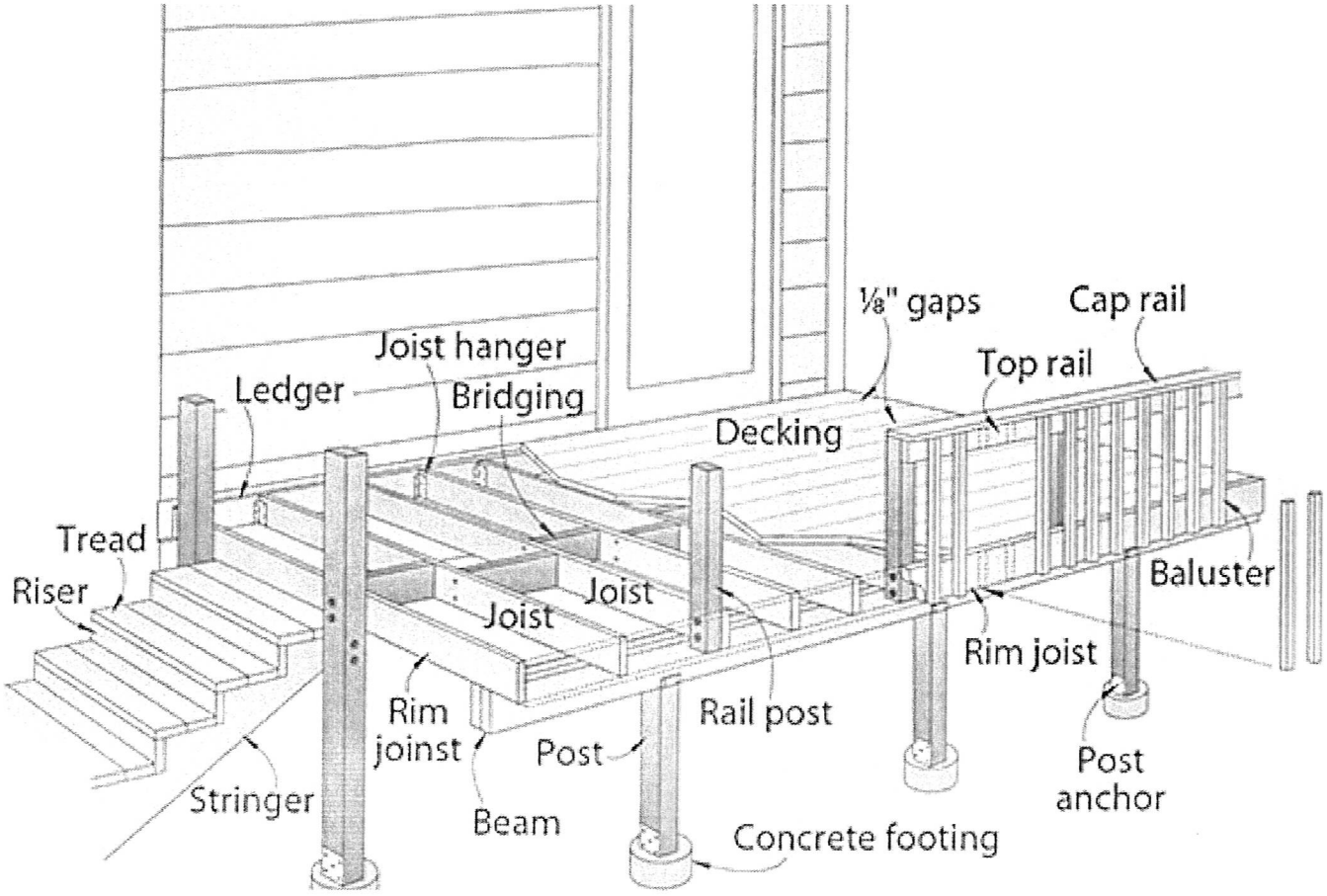
As of January 1, 2016

Per Uniform Dwelling Code SPS 321.225 and SPS 325 Appendix B&C

General Requirements

1. All lumber used for decking, must be pressure-preservative-treated and must be douglas fir/larch, hemlock/fir, spruce/pine/fir (SPF), or southern pine, of grade #2 or better. Naturally decay resistant lumber may also be used, i.e. western red cedar.
2. Nails must be threaded, which includes ring-shanked.
3. All fasteners must be galvanized, stainless steel or approved for use with pressure treated lumber.
4. Typical bolts or lags specified for various connections should be ½ inch. Oversized washers should be used. Carriage bolts may be substituted, but the washers must have square holes.
5. Concrete must be used for deck footings and the footing size must be in accordance with Table 1. (See Attached)
6. Post attachments must be in accordance with Figure 1. (See Attached)
7. Maximum post height for a 4”x4” is 6’.
8. Any post supporting a beam splice must be a minimum 6”x6”.
9. Post caps, as shown in Figure 2, must be designed for a 2 or 3 ply beam and post size used.
10. It is recommended that any cut end of posts should be field treated with wood preservative.
11. Beam size is determined using Table 3A or 3B (See Attached)
12. Where multiple 2x members are used to assemble a beam, the plies of the beam must be fastened in accordance with Figure 4. (See Attached)
13. Use Table 4 to size joist span length and joist spacing.
14. Full depth blocking or bridging must be used on 2”x10” or deeper joists at intervals not exceeding 8’.
15. Joists must be attached to beams in accordance with Figure 8 and all of the following:
    1. Use Options 1 or 2 if joists bear on a dropped beam.
    2. Use Option 3 if joists bear at a flush beam
16. Joist hanger depth must be at least 60% of joist depth.
17. The width of the joist hanger must accommodate the number of plies being carried.
18. Bending of hanger flanges is not allowed.
19. Hangers attached to a ledger board must use anchors specified by manufacturer of hanger.
20. Clip-angles (tecos) or brackets used to support framing members in lieu of joist hangers are prohibited.
21. Each joist hanger must have the capacity to carry loads listed in Table 5.

Terminology of decks



Bridging: Short pieces of lumber between joists that strengthen the framing. They are designed to prevent the joists from twisting.

Decking: 2x or 5/4 stock attached to the joists to form the deck floor.

Footings: Concrete columns below grade that support the posts and, thus, the deck. On sites where the soil freezes and thaws, concrete is poured in an above-grade form and a cylindrical hole. Ask your building department for footing depths in your area.

Joists: Horizontal framing members (usually 2x stock) fastened on top of the beam or flush with the ledger to support the decking. A header is fastened to the ends of the deck?s interior joists. Rim joists or end joists are the outermost joists perpendicular to the ledger.

Joist hangers: Metal fasteners that allow you to fasten the joists in place without notching the ends of the board. A joist hanger secures a joist to a ledger or rim joist.

Ledger: A board (usually 2x stock) attached to the house to support one side of the deck.

Piers: (not illustrated) Precast concrete pyramids made to set on in-ground footings. Where frost heave is not a factor, piers set directly on the ground to support posts.

Post anchors: Metal framing connectors that attach posts to piers or footings. They raise the base of the posts slightly above the top of the footing, protecting them from water damage.

Posts: Timbers (usually 4x or 6x) set vertically to support the deck framing. Posts are used on all but the shortest decks. The posts can be cut off below the deck surface, or they may rise above the surface to provide support for the railing. Posts may rest on top of concrete footings or they can be set plumb in the hole before the concrete is poured.

Rails: Horizontal components of railings that provide a safety barrier and handhold for stairs or along the sides of the deck.

Railing: The assembly made of rails, rail posts, cap rails, and balusters or spindles. The balusters, the smallest vertical components, are positioned to fill the space between the top and bottom rails and between rail posts. Maximum baluster spacing for child safety is 4".

Risers: Boards covering the vertical spaces between stairway treads. Although shown in the drawing, risers are often omitted on deck steps and other exterior steps.

Stringers: Long, diagonal framing parts (usually 2x12s) that support stair treads. The stair treads are attached to the stringers.

Treads: The horizontal, stepping surfaces of a stairway.

Figure 1

FOOTINGS

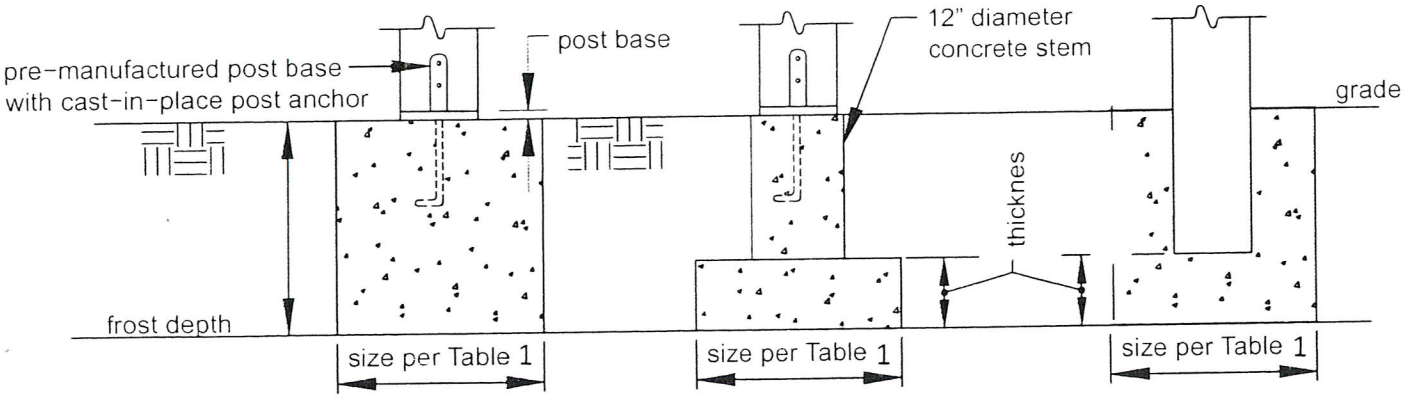
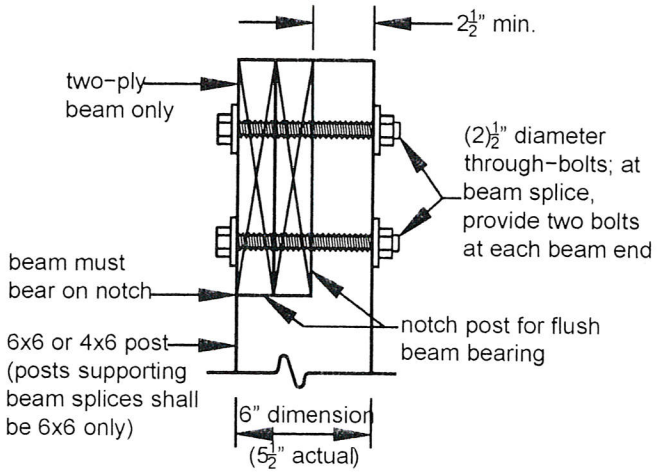
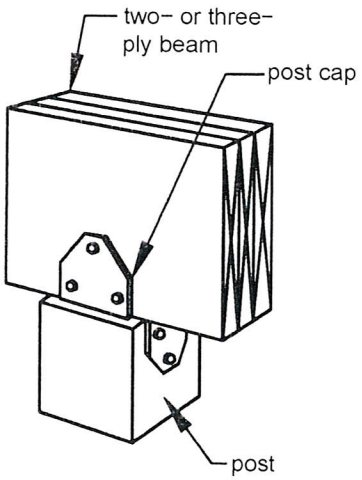


Figure 2

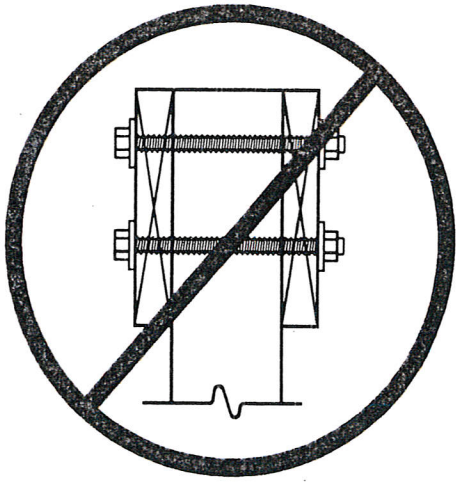
POST-TO-BEAM CONNECTIONS



NOTCHED POST



POST CAP



PROHIBITED CONNECTION

Table 1
FOOTING SIZE (In Inches)[1,2,3]

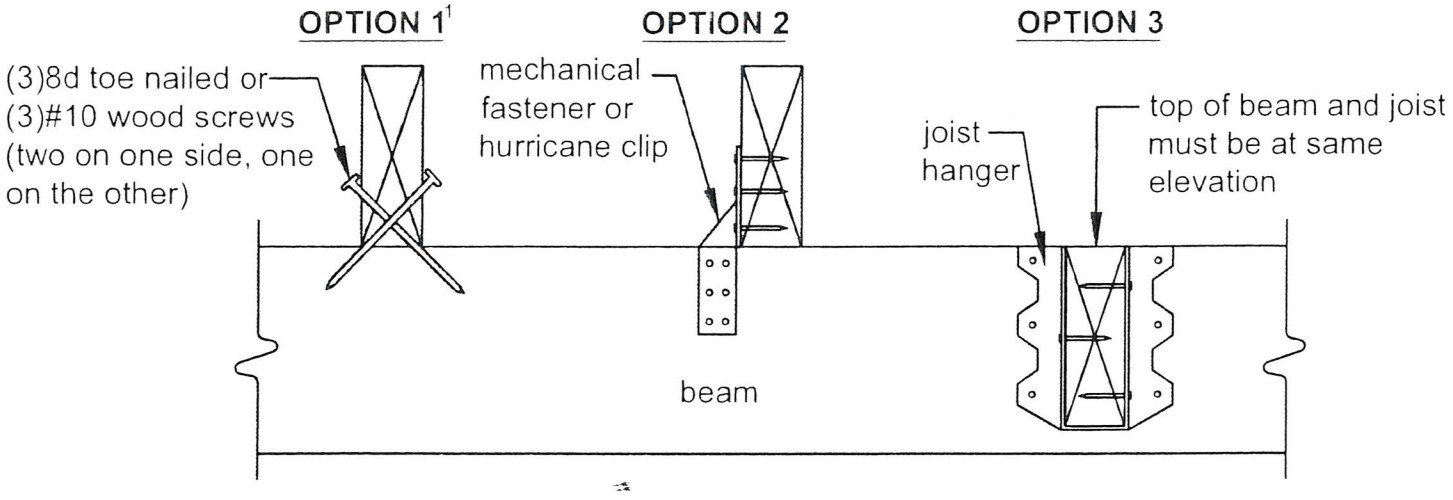
Joist Length		Post Spacing (Measured Center to Center)										
		4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
6'	Corner Footing	8	9	10	11	11	12	12	13	14	14	15
	Intermediate Footing	10	11	12	13	14	15	15	16	17	17	18
	Footing Thickness	6	6	6	6	6	6	6	6	6	6	8
7'	Corner Footing	9	10	11	11	12	13	13	14	15	15	16
	Intermediate Footing	11	12	13	14	15	16	17	17	18	19	19
	Footing Thickness	6	6	6	6	6	6	6	6	8	8	8
8'	Corner Footing	10	10	11	12	13	14	14	15	15	16	17
	Intermediate Footing	12	13	14	15	16	17	18	19	19	20	21
	Footing Thickness	6	6	6	6	6	6	8	8	8	8	8
9'	Corner Footing	10	11	12	13	14	14	15	16	16	17	18
	Intermediate Footing	12	14	15	16	17	18	19	20	20	21	22
	Footing Thickness	6	6	6	6	6	8	8	8	8	8	8
10'	Corner Footing	10	12	12	13	14	15	16	16	17	18	18
	Intermediate Footing	13	14	15	17	18	19	20	21	21	22	23
	Footing Thickness	6	6	6	6	8	8	8	8	8	8	10
11'	Corner Footing	11	12	13	14	15	16	16	17	18	19	19
	Intermediate Footing	13	15	16	17	19	20	21	22	22	23	24
	Footing Thickness	6	6	6	6	8	8	8	8	8	10	10
12'	Corner Footing	11	12	14	15	15	16	17	18	19	19	20
	Intermediate Footing	14	15	17	18	19	20	21	22	23	24	25
	Footing Thickness	6	6	6	8	8	8	8	8	10	10	10
13'	Corner Footing	12	13	14	15	16	17	18	19	19	20	21
	Intermediate Footing	14	16	17	19	20	21	22	23	24	25	26
	Footing Thickness	6	6	6	8	8	8	8	10	10	10	10
14'	Corner Footing	12	13	15	16	17	18	18	19	20	21	22
	Intermediate Footing	15	17	18	19	21	22	23	24	25	26	27
	Footing Thickness	6	6	8	8	8	8	10	10	10	10	10
15'	Corner Footing	12	14	15	16	17	18	19	20	21	22	22
	Intermediate Footing	15	17	19	20	21	23	24	25	26	27	28
	Footing Thickness	6	6	8	8	8	10	10	10	10	10	12
16'	Corner Footing	13	14	15	17	18	19	20	20	21	22	23
	Intermediate Footing	16	18	19	21	22	23	25	26	27	28	29
	Footing Thickness	6	8	8	8	8	10	10	10	10	12	12

[1]All footing sizes are base diameters[2].

[2]For square footings, insert the diameter (d) into the following formula: $\sqrt{((d/2)^2 \times \pi)}$. This number will give you the square dimension and must be rounded up to the nearest inch.

[3]Joist length is the joist span plus any overhang beyond a beam. See section 5.4.

Figure 8
JOIST–TO–BEAM CONNECTIONS

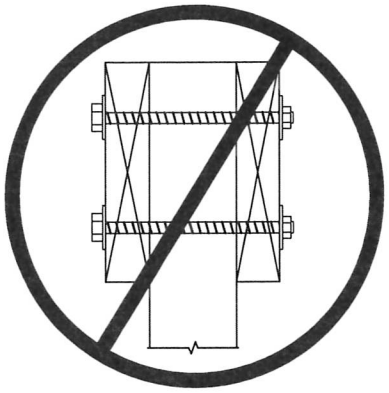


[1]Option 1 is not allowed on free–standing decks.

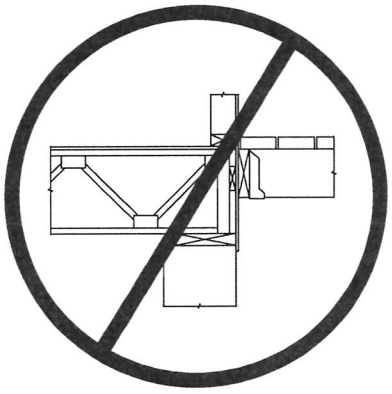
Table 5
JOIST HANGER DOWNLOAD

Joist Size	Minimum Capacity, lbs
2"x6"	500
2"x8"	500
2"x10"	600
2"x12"	700

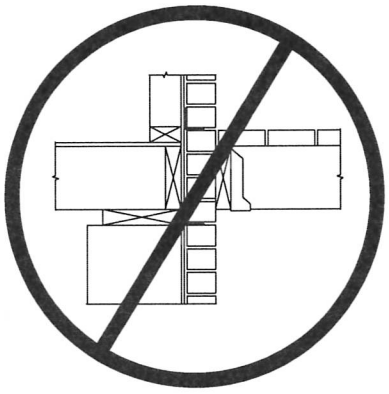
DO NOT DO'S



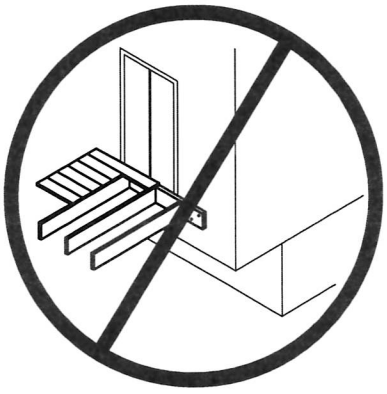
Prohibited Post–to–Beam Connection



Prohibited Ledger Attachment:
to open web trusses



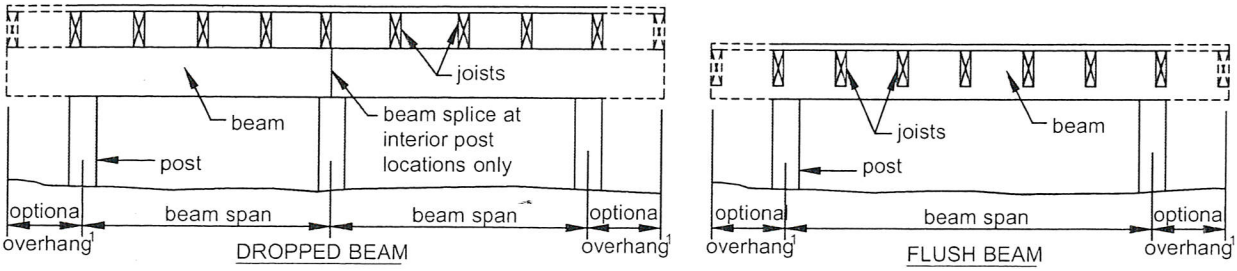
Prohibited Ledger Attachment:
to or thru brick veneer



Prohibited Ledger Attachment:
to house overhang

TYPICAL RESIDENTIAL DECK DESIGN

Figure 3
BEAM TYPES



[1]The maximum length of the overhang is equal to one–fourth of the actual beam span length (0.25 x beam span).

Table 3A
MAXIMUM BEAM–SPAN LENGTH[1] FOR DOUGLAS FIR/LARCH[3], HEM/FIR[3], SPRUCE/PINE/FIR (SPF)[3], WESTERN CEDAR, PONDEROSA PINE[4], AND RED PINE[4]

Joist Span	(Number of Plies) Beam Size[2] – Inches											
	3x6 (2)2x6	3x8 (2)2x8	3x10 (2)2x10	3x12 (2)2x12	4x6	4x8	4x10	4x12	(3)2x6	(3)2x8	(3)2x10	(3)2x12
≤ 6'	5'–5"	6'–10"	8'–4"	9'–8"	6'–5"	8'–5"	9'–11"	11'–5"	7'–4"	9'–8"	12'–0"	13'–11"
≤ 8'	4'–8"	5'–11"	7'–3"	8'–5"	5'–6"	7'–3"	8'–7"	9'–11"	6'–8"	8'–6"	10'–5"	12'–1"
≤ 10'	4'–2"	5'–4"	6'–6"	7'–6"	4'–11"	6'–6"	7'–8"	8'–10"	6'–0"	7'–7"	9'–4"	10'–9"
≤ 12'	3'–10"	4'–10"	5'–11"	6'–10"	4'–6"	5'–11"	7'–0"	8'–1"	5'–6"	6'–11"	8'–6"	9'–10"
≤ 14'	3'–6"	4'–6"	5'–6"	6'–4"	4'–2"	5'–6"	6'–6"	7'–6"	5'–1"	6'–5"	7'–10"	9'–1"
≤ 16'	3'–1"	4'–1"	5'–1"	5'–11"	3'–11"	5'–2"	6'–1"	7'–0"	4'–9"	6'–0"	7'–4"	8'–6"
≤ 18'	2'–9"	3'–8"	4'–8"	5'–7"	3'–8"	4'–10"	5'–8"	6'–7"	4'–6"	5'–8"	6'–11"	8'–1"

[1]Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions, and deflections of Δ =L/360 for main span and L/180 for overhang with a 220 lb. point load.

[2]Beam depth must be equal to or greater than joist depth if joist hangers are used (see Figure 8, Option 3).

[3]Incising is assumed.

[4]Design values based on northern species with no incising assumed.

Table 3B
MAXIMUM BEAM–SPAN LENGTH FOR SOUTHERN PINE[1]

Joist Span	(Number of Plies) Beam Size[2] – Inches							
	(2) 2x6	(2) 2x8	(2) 2x10	(2) 2x12	(3) 2x6	(3) 2x8	(3) 2x10	(3) 2x12
≤ 6'	6'–11"	8'–9"	10'–4"	12'–2"	8'–2"	10'–10"	13'–0"	15'–3"
≤ 8'	5'–11"	7'–7"	9'–0"	10'–7"	7'–5"	9'–6"	11'–3"	13'–3"
≤ 10'	5'–4"	6'–9"	8'–0"	9'–5"	6'–8"	8'–6"	10'–0"	11'–10"
≤ 12'	4'–10"	6'–2"	7'–4"	8'–7"	6'–1"	7'–9"	9'–2"	10'–9"
≤ 14'	4'–6"	5'–9"	6'–9"	8'–0"	5'–8"	7'–2"	8'–6"	10'–0"
≤ 16'	4'–3"	5'–4"	6'–4"	7'–6"	5'–3"	6'–8"	7'–11"	9'–4"
≤ 18'	4'–0"	5'–0"	6'–0"	7'–0"	5'–0"	6'–4"	7'–6"	8'–10"

[1]Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions, and deflections of Δ =L/360 for main span and L/180 for overhang with a 220 lb. point load.

[2]Beam depth must be equal to or greater than joist depth if joist hangers are used (see Figure 8, Option 3).

Figure 4
BEAM ASSEMBLY

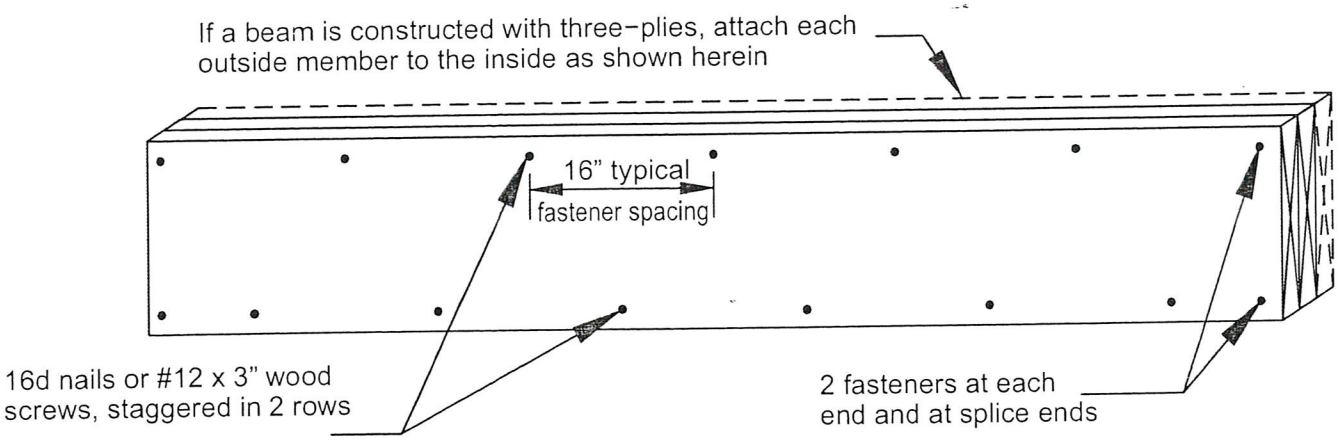
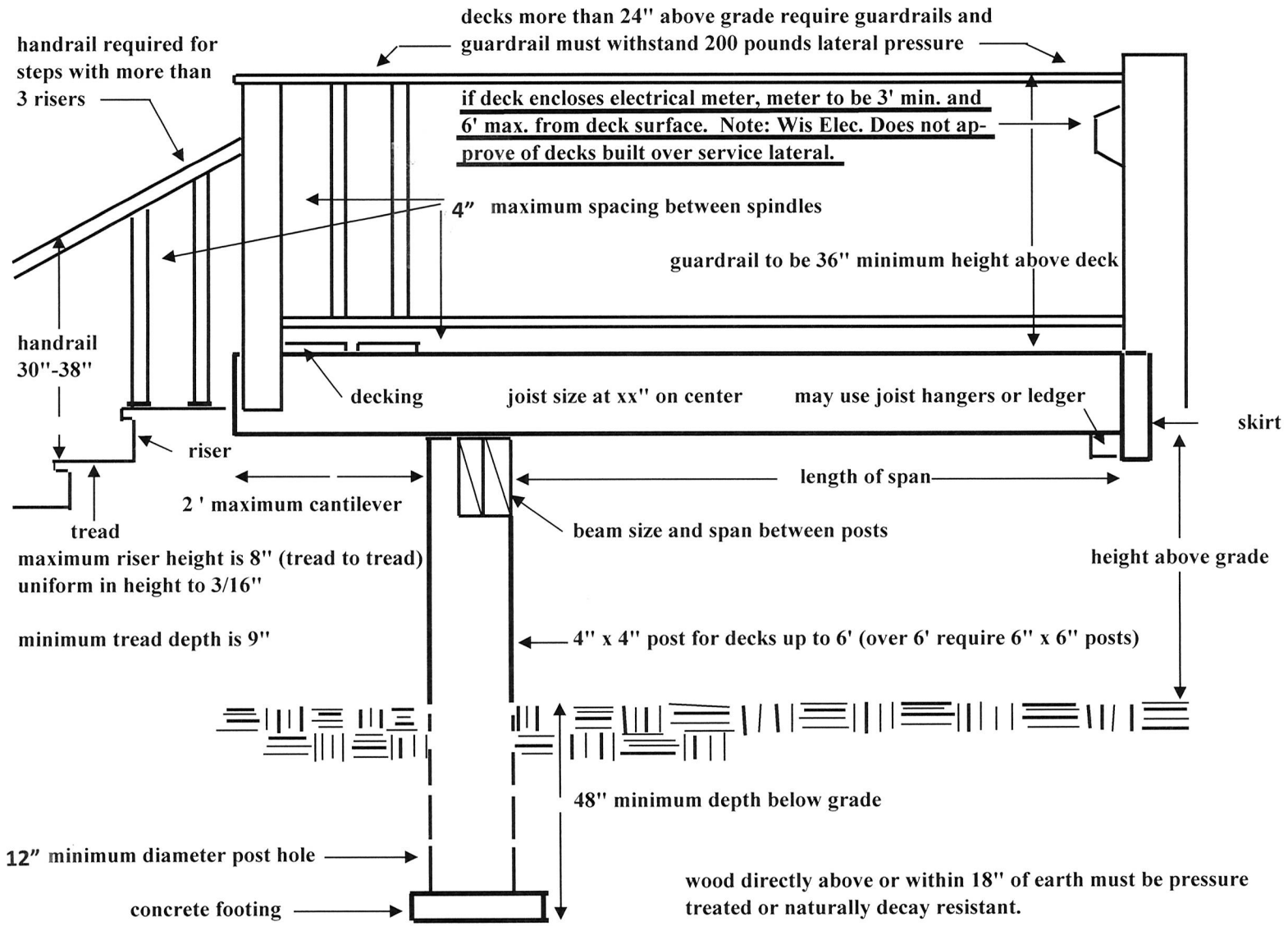


Table 4
MAXIMUM JOIST-SPAN LENGTH[1]

Joist Spacing (on center)	Joist Size	Douglas Fir/Larch, Hem/Fir, SPF[2]		Southern Pine	
		Without Overhang	With Over-hangs	Without Overhang	With Over-hangs
12"	2"x6"	9'-1"	8'-1"	9'-6"	8'-7"
	2"x8"	12'-6"	9'-5"	13'-1"	10'-1"
	2"x10"	15'-8"	13'-7"	16'-2"	14'-6"
	2"x12"	18'-0"	18'-0"	18'-0"	18'-0"
16"	2"x6"	8'-3"	8'-0"	8'-7"	8'-7"
	2"x8"	11'-1"	9'-5"	11'-10"	10'-1"
	2"x10"	13'-7"	13'-7"	14'-0"	14'-0"
	2"x12"	15'-9"	15'-9"	16'-6"	16'-6"
24"	2"x6"	6'-9"	6'-9"	7'-6"	7'-6"
	2"x8"	9'-1"	9'-1"	9'-8"	9'-8"
	2"x10"	11'-1"	11'-1"	11'-5"	11'-5"
	2"x12"	12'-10"	12'-10"	13'-6"	13'-6"

[1]Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions, and deflections of $\Delta = L/360$ for main span and L/180 for overhang with a 220 lb. point load.

[2]Incising is assumed.



DECK- CROSS SECTION VIEW