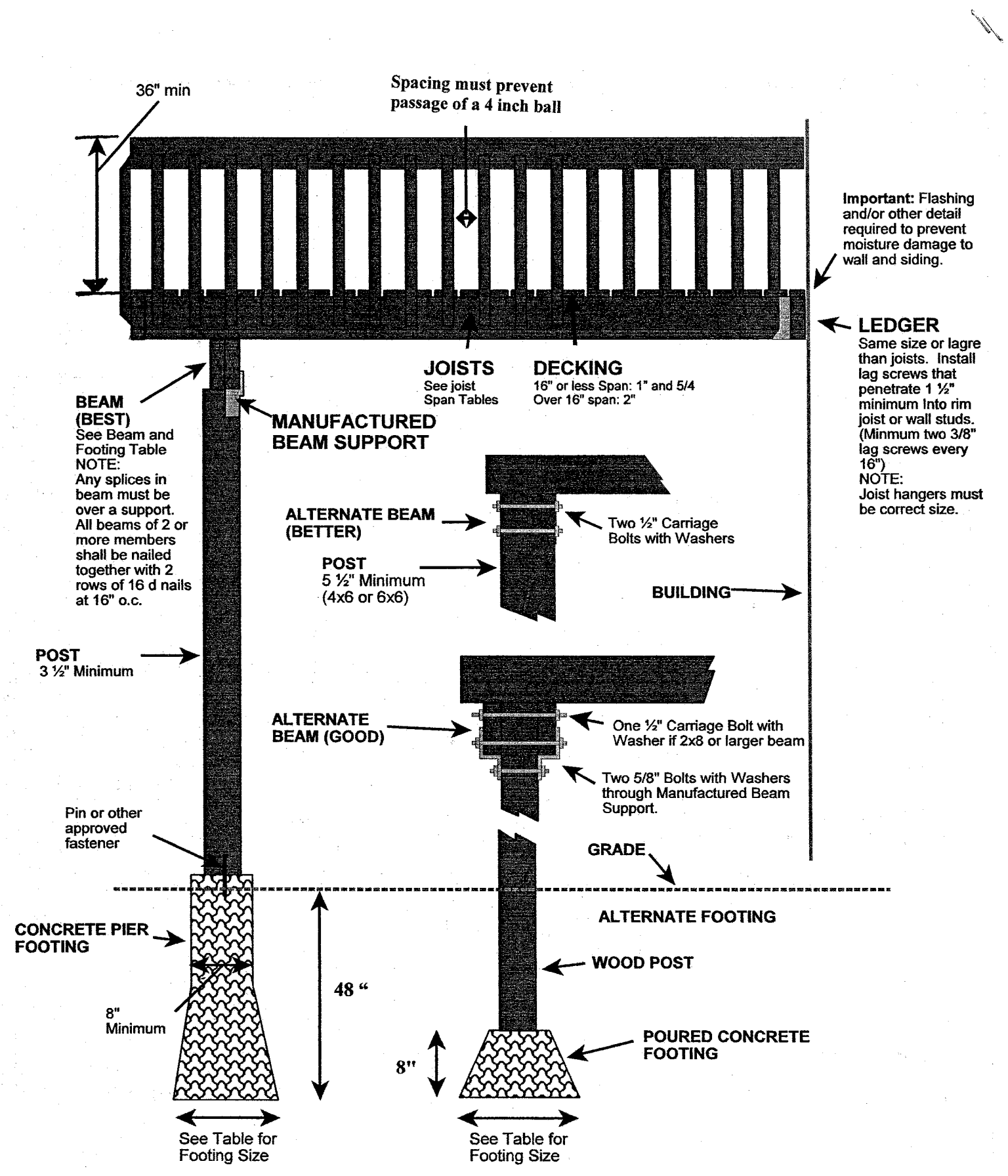
RESIDENTIAL DECKS
Information Sheet

Frost Footings	Required for any deck attached to a dwelling, porch or garage that has frost footings. The minimum depth to the base of the footing is 48 inches.
Live Load	All decks shall be designed to support a live load of 40 pounds per square foot.
Guardrails	Required on all decks more than 24 inches above grade or lower deck. Rail MUST be 36 inches minimum in height. Open guardrails and stair railings MUST have intermediate rails or an ornamental pattern that a 4 inch ball CANNOT pass through.
Cantilevers "Overhanging Joists and Beams"	Joists should not overhang beams more than 2 feet, nor should beams overhang post more than 1 foot unless a special design is approved.
Flashing	All connections between deck and dwelling shall be weatherproof and constructed in a manner to prevent moisture damage.
Framing Details	Enter beams and joists framed into ledgers or beams shall be supported by approved framing anchors such as joists hangers approved for new green treated wood (Double Dipped Galvanized).
Nails and Screws	Use only stainless steel or hot dipped galvanized nails, or approved deck screws.
Wood Required	All exposed wood used in the construction of decks is required to be of approved wood of natural resistance to decay (redwood, cedar, etc) or approved treated wood. This includes posts, beams, joists, checking and railings.
Stairs	Minimum width is 36 inches. Maximum rise is 8 inches. Minimum rise is 4 inches. Minimum run is 9 inches. Largest tread width or rise height shall not exceed the smallest by more than 3/16 inch. Stair risers shall not allow the passage of a 4 inch ball.
Handrails	The top shall be placed not less than 30 inches or more than 38 inches above the nosing of the treads. Stairways having more than three risers shall have at least one handrail. The handgrips shall not be less than 1 ½ inches or more than 2 inches and cross-sectional dimension or the shape shall provide an equivalent symmetrical gripping surface. The handgrip shall have a smooth surface with no sharp corners.


36" min
Spacing must prevent passage of a 4 inch ball
Important: Flashing and/or other detail required to prevent moisture damage to wall and siding.
LEDGER
Same size or lagre than joists. Install lag screws that penetrate 1 ½" minimum Into rim joist or wall studs. (Minmum two 3/8" lag screws every 16")
NOTE:
Joist hangers must be correct size.
JOISTS
See joist Span Tables
DECKING
16" or less Span: 1" and 5/4
Over 16" span: 2"
BEAM (BEST)
See Beam and Footing Table
NOTE:
Any splices in beam must be over a support.
All beams of 2 or more members shall be nailed together with 2 rows of 16 d nails at 16" o.c.
MANUFACTURED BEAM SUPPORT
ALTERNATE BEAM (BETTER)
Two ½" Carriage Bolts with Washers
POST
5 ½" Minimum
(4x6 or 6x6)
BUILDING
POST
3 ½" Minimum
ALTERNATE BEAM (GOOD)
One ½" Carriage Bolt with Washer if 2x8 or larger beam
Two 5/8" Bolts with Washers through Manufactured Beam Support.
Pin or other approved fastener
GRADE
ALTERNATE FOOTING
CONCRETE PIER FOOTING
WOOD POST
48 "
8" Minimum
8"
POURED CONCRETE FOOTING
See Table for Footing Size
See Table for Footing Size

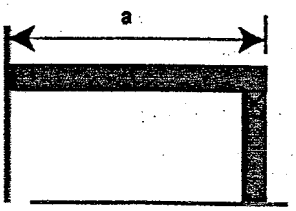
Joist Span

Based on No. 2 or better wood grades.
(Design Load = 40#Live Load + 10#Dead Load, Deflection = L/360)

	Redwood			Southern Pine			Western Cedar		
	12" OC	16" OC	24" OC	12" OC	16" OC	24" OC	12" OC	16" OC	24" OC
2x6	9-9	8-10	7-9	10-9	9-9	8-6	9-2	8-4	7-3
2x8	12-10	11-8	10-2	14-2	12-10	11-0	12-1	11-0	9-3
2x10	16-5	14-11	12-8	18-0	16-0	14-0	15-5	13-6	11-0
2x12	19-11	18-1	15-4	21-6	19-6	17-0	18-1	15-10	13-0

Sample Calculations for Using Joist Span, Beam Size and Footing Size Tables

Case 1 Solution



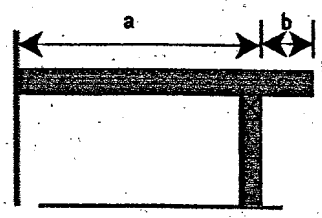
Example: a = 12'; Posted Spacing = 8'

Use the **Joist Span Table** to find acceptable joists sizes for a 12' span,2x8s at 12"o.c.,2x10s at 16"o.c. or 2x12s 24 o.c.

Use the Beam and Footing Sizes table and find the 8' post spacing column. With a 12' tax span, the payment may be either two 2x8s ortwo2x10s, depending on wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 12 ", 10" or 9" for the corner posts and 17", 14" or 12" for all intermediate posts.

Use "a" to determine joists size and "a" + "2b" to determine Beam and footing sizes. The length of "b" is restricted by both the length of "a" and the size of the joists.

Case 2 Solution



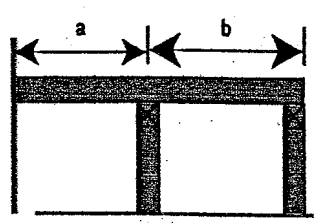
Example: a = 8', b = 2', Post Spacing = 10'

Refer to the **Joists Span Table.** For an 8' joist span, either 2x8s at 24"o.c. Or 2x6s at 16"o.c. are acceptable.

For size in the Beam, use a joist length of 12' (8' + 4') and a post spacing of 10'. The **Beam and Footing Sizes Table** indicates that the Beam may be either two 2x10s or two 2x12s, depending on wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 15", 12" or 11" for the corner posts and 20", 17" or 15" for all intermediate posts. Note that because of the 2" cantilevered all footing sizes were increased by one inch as required by footnote to at the end of the table.

Use "a" or "b", whichever is greater, to determine joists size. Use "a" + "b" to determine the size of Beam 1 and the post footing size for posts supporting Beam 1. Use a joist length "b" to determine both the size of Beam to and the post footing size for the posts supporting Beam 2.

Case 3 Solution



Example: a = 6',b = 7' Post Spacing = 9'

joists sizes determined by using the longest span joist (7'). The **Joist Span Table** indicates that 2x6s at 24"o.c. Would be adequate for the span.

For Beam 1 and footing's, use a joist length of 13' (6' + 7') and a post spacing of 9'. The **Beam and Footing Sizes Table** indicates that the Beam may be two 2x10s or two 2x12s, depending on the wood used. Depending on the type of soil, the footing diameter for Beam 1 posts shall be 13", 11" or 9" for the corner (outside) posts and 19", 15" or 13" for all intermediate posts. For Beam 2 and footing is use a joist length of 7' and post spacing of 9'. The Beam may be two 2x8s or two 2x10s, depending on wood used. Depending on the type of soil, the footing diameter is for Beam 2 shall be 10", 8" or 7" for the corner posts, and 14", 11" or 10" for all intermediate posts.

Beam and Footing Sizes based on No. 2 or better Southern Pine. (Treated for whether and/or ground exposure)

Joist Length			Post Spacing										
			4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
	6'	Beam	1-2x6	1-2x6	1-2x6	2-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x10
		Corner Footing Intermediate Footing	6 5 4 9 8 7	7 6 5 10 8 7	7 6 5 10 9 7	8 7 6 11 9 8	9 7 6 12 10 9	9 7 6 13 10 9	10 8 7 14 11 10	10 8 7 14 12 10	10 9 7 15 12 10	11 9 8 15 13 11	11 9 8 16 13 11
	7'	Beam	1-2x6	1-2x6	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x10	2-2x12
		Corner Footing Intermediate Footing	7 5 5 9 8 7	8 7 6 11 9 8	9 7 6 12 10 9	9 8 7 13 11 9	10 8 7 14 11 10	10 8 7 15 12 10	11 9 8 15 13 11	11 9 8 16 13 11	11 9 8 16 13 11	12 10 9 17 14 12	12 10 9 17 14 12
	8'	Beam	1-2x6	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12
		Corner Footing Intermediate Footing	7 6 5 10 8 7	8 6 6 11 9 8	9 7 6 12 10 9	9 8 7 13 11 9	10 8 7 14 11 10	10 8 7 15 12 10	11 9 8 16 13 11	11 9 8 16 13 12	12 10 9 17 14 12	13 10 9 18 15 13	13 11 9 18 15 13
	9'	Beam	1-2x6	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12	3-2x10
		Corner Footing Intermediate Footing	7 6 5 10 9 7	8 7 6 12 10 8	9 7 6 13 10 9	10 8 7 14 11 10	10 9 7 15 12 10	11 9 8 16 13 11	12 10 8 17 14 12	12 10 9 17 14 12	13 10 9 18 15 13	13 11 9 19 15 13	14 11 10 20 16 14
	10'	Beam	1-2x6	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	3-2x10	3-2x10
		Corner Footing Intermediate Footing	8 6 6 11 9 8	9 7 6 12 10 9	10 8 7 14 11 10	10 8 7 15 12 10	11 9 8 16 13 11	12 10 8 17 14 12	12 10 9 17 14 12	13 11 9 18 15 13	14 11 10 19 16 14	14 12 10 20 16 14	15 12 10 21 17 15
	11'	Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12	3-2x10	3-2x12
		Corner Footing Intermediate Footing	8 7 6 12 9 8	9 7 6 13 11 9	10 8 7 14 12 10	11 9 8 15 12 10	12 9 8 16 13 11	12 10 9 17 14 12	13 11 9 17 14 12	14 11 10 18 15 13	14 12 10 19 16 14	15 12 10 20 16 14	15 13 11 21 17 15
	12'	Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x10	3-2x12
		Corner Footing Intermediate Footing	9 7 6 12 10 9	10 8 7 14 11 10	10 9 7 15 12 10	11 9 8 16 13 11	12 10 9 17 14 12	13 10 9 18 15 13	14 11 10 19 16 14	14 12 10 20 16 14	15 12 10 21 17 15	15 13 11 22 18 15	16 13 11 23 18 16
	13'	Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x10	3-2x12
		Corner Footing Intermediate Footing	9 7 6 13 10 9	10 8 7 14 12 10	11 9 8 15 13 11	12 10 8 17 14 12	13 10 9 18 15 13	13 11 9 19 15 13	14 12 10 10 16 14	15 12 10 21 17 15	15 13 11 22 18 15	16 13 11 23 19 16	17 14 12 24 19 17
	14'	Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	3-2x12	3-2x12
		Corner Footing Intermediate Footing	9 8 7 13 11 9	10 8 7 15 12 10	11 9 8 16 13 11	12 10 9 17 14 12	13 11 9 18 15 13	14 11 10 20 16 14	15 12 10 21 17 15	15 13 11 22 18 15	16 13 11 23 18 16	17 14 12 24 19 17	17 14 12 24 20 17
	15'	Beam	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	3-2x10	3-2x12	3-2x12	Eng Bm
		Corner Footing Intermediate Footing	10 8 7 14 11 10	11 9 8 15 12 11	12 10 8 17 14 12	13 10 9 18 15 13	14 11 10 19 16 14	14 12 10 20 17 14	15 12 11 21 17 15	16 13 11 22 18 16	17 14 12 23 19 17	17 14 12 24 20 17	18 15 13 25 21 18
	16'	Beam	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	3-2x10	3-2x12	3-2x12	Eng Bm
		Corner Footing Intermediate Footing	10 8 7 14 11 10	11 9 8 16 13 11	12 10 9 17 14 12	13 11 9 18 15 13	14 11 10 20 16 14	15 12 10 21 17 15	16 13 11 22 18 16	16 13 12 23 19 16	17 14 12 24 20 17	18 15 13 25 21 18	18 15 13 26 21 18

Notes:

1. Joist length is totally the joist, including any cantilevers.
2. When joist extends (cantilevers) beyond support Beam by 18" or more, add 1" to footing dimensions shown.
3. Requirements for future 3-season porches or screen porches:
   a. Increased corner footing size shown by 90 percent.
   b. Increase center footing size by 55 percent.
   c. Locate all footings at extremities of deck (no cantilevers).
   d. Beam sizes indicated need not be altered.
4. All footings sizes above are base diameters (in inches)

and are listed for THREE SOIL TYPES: