Residential Deck Information Sheet

Frost Footings
Required for any deck or porch that is attached or unattached serving as an exit from a dwelling that has frost footings. The minimum depth to the base of the footing is 48". SPS 321.16

Live Load
All decks shall be designed to support a live load of 40 pounds per square foot. SPS 321.02

Guardrails
Required on all decks more than 24" above grade. Rail must be 36" minimum in height. Open guardrails and stair railings must have intermediate rails or an ornamental pattern that a 4" sphere cannot pass through. SPS 321.04 (3) (c)

Handrails
Stair flights of more than 3 risers must have at least one handrail for the full length of the stair flight. SPS 321.04 (3). The top of the handrail shall be at least 30" but not more than 38" above the nosing of the treads SPS 321.04 (3) (b). Handrail size & configuration shall follow SPS 321.04 (3) (b) 5.

Stairs
Minimum width is 36" SPS 321.04(2) (a). Maximum rise is 8" SPS 321.04 (2) (b). Minimum tread depth is 9" SPS 321.04 (2) (c). The greatest tread depth may not exceed the smallest tread depth by more than 3/8". The greatest riser height may not exceed the smallest riser height by more than 3/8" SPS 321.04 (2) (e)

Ramps
SPS 321.045 Slope shall not exceed 1 foot of rise in 8' of run

Open Risers
SPS 321.04 (2) (f) Stairways with open risers shall be constructed to prevent the through-passage of a sphere with a diameter of 4 inches or larger between any two adjacent treads.

Cantilevers "Overhanging Joists & Beams"
Joists should not overhang beams by more than 2' SPS 321.22 (6) (b). Beams should not overhang support posts by more than 1' unless designed through structural analysis. SPS 321.22 (3).

Framing Details
Header beams more than 6' and floor joists more than 8' long that frame into beams shall be supported by joist hangers or framing anchors, floor joists may be supported on ledger strips of at least 2" by 2" nominal. SPS 321.22 (7).

Bridging
Bridging or solid blocking shall be provided on floor joists 2x10 and greater, that are 8 feet or longer in length. SPS 321.22 (9)

Wood Required
All exposed wood used in the construction of decks is required to be decay resistant. This includes posts, beams, joists, decking, and railings. SPS 321.10

Flashing
All connections between deck and dwelling shall be weatherproof. Any cuts in exterior finish shall be flashed. SPS 321.24 (3) (c) 5.

Nails & Screws
Use only stainless steel, high strength aluminum, or hot dipped galvanized. Approved nails must be used on joist hangers per manufacturers specs.

Special Design Note
Some deck designs may not be appropriate should the placement of a screen porch or 3 season porch on the deck platform be a future consideration.

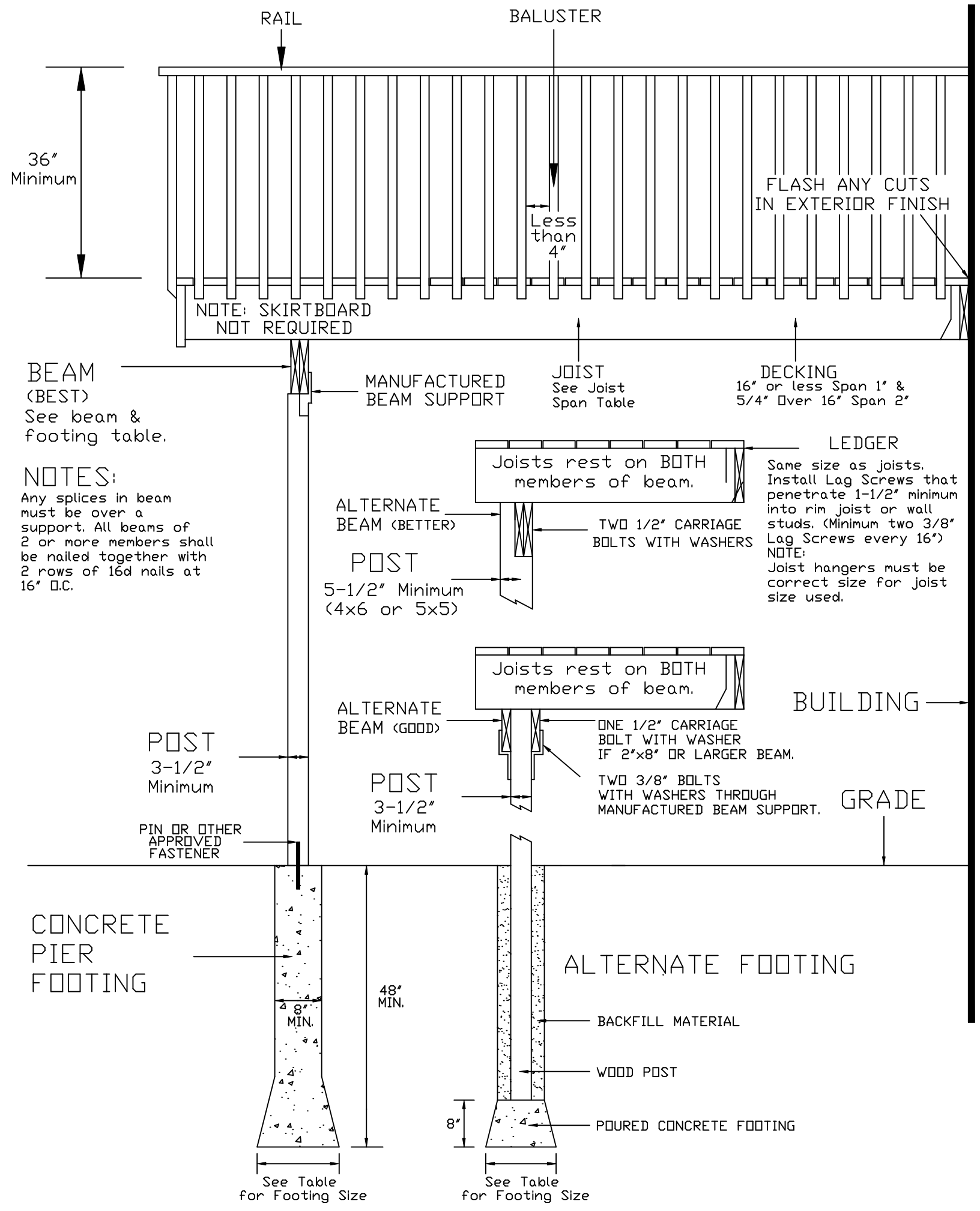
INSPECTIONS NEEDED

Footings need to be inspected before backfilling post or placement of concrete.

Construction Inspection required:

- **Footings need to be inspected before backfilling post or placement of concrete**
- **Prior to decking and after if deck is less than 2 feet from grade.**
- **After completion if deck is more than 2 feet from grade.**

Building Codes may be viewed at:
http://dsps.wi.gov/sb/SB-DivCodesListing.html
SPS 320-325 Uniform Dwelling (One and Two Family Dwelling)

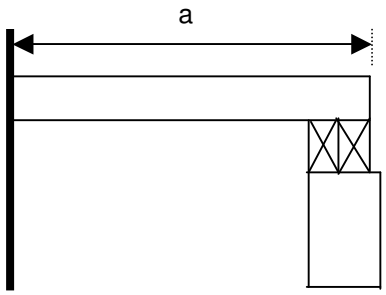

RAIL
BALUSTER
36″
Minimum
Less
than
4″
FLASH ANY CUTS
IN EXTERIOR FINISH
NOTE: SKIRTBOARD
NOT REQUIRED
BEAM
(BEST)
See beam &
footing table.
MANUFACTURED
BEAM SUPPORT
JOIST
See Joist
Span Table
DECKING
16″ or less Span 1″ &
5/4″ Over 16″ Span 2″
NOTES:
Any splices in beam
must be over a
support. All beams of
2 or more members shall
be nailed together with
2 rows of 16d nails at
16″ O.C.
Joists rest on BOTH
members of beam.
LEDGER
Same size as joists.
Install Lag Screws that
penetrate 1-1/2″ minimum
into rim joist or wall
studs. (Minimum two 3/8″
Lag Screws every 16″)
NOTE:
Joist hangers must be
correct size for joist
size used.
ALTERNATE
BEAM (BETTER)
TWO 1/2″ CARRIAGE
BOLTS WITH WASHERS
POST
5-1/2″ Minimum
(4x6 or 5x5)
Joists rest on BOTH
members of beam.
BUILDING
ALTERNATE
BEAM (GOOD)
ONE 1/2″ CARRIAGE
BOLT WITH WASHER
IF 2″x8″ OR LARGER BEAM.
POST
3-1/2″
Minimum
TWO 3/8″ BOLTS
WITH WASHERS THROUGH
MANUFACTURED BEAM SUPPORT.
POST
3-1/2″
Minimum
GRADE
PIN OR OTHER
APPROVED
FASTENER
CONCRETE
PIER
FOOTING
48″
MIN.
8″
MIN.
ALTERNATE FOOTING
BACKFILL MATERIAL
WOOD POST
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#LL + 10#DL, Deflections = L/360)

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

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

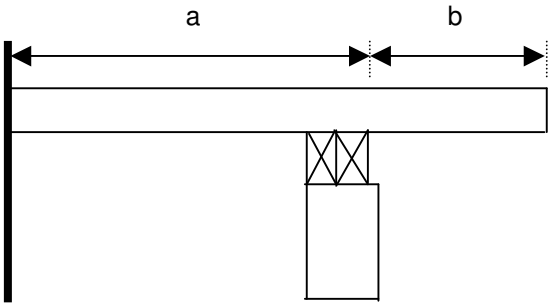


Refer to tables for joist, beam, and footing size requirements.
Example: a = 12' ; Post spacing = 8'

Use the **Joist Span** table to find the acceptable joist sizes for a 12' span, 2x8's at 12" OC; 2x10's at 16" OC; or 2x12's at 24" OC.

Use the **Beam & Footing Sizes** table and find the 8' post spacing column. With a 12' deck span, the beam may be either two 2x8's or two 2x10's, 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 post and 17", 14", or 12" for all intermediate posts.

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

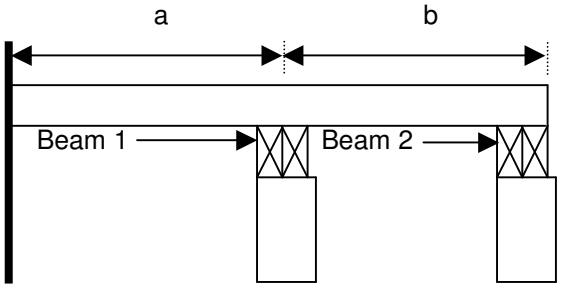


Example: a = 8', b = 2', Post Spacing = 10'

Refer to the **Joist Span** table. For an 8' span, either 2x8's at 24" OC. Or 2x6's at 16" OC are acceptable.

For sizing the beam, use a joist length of 10' (8' + 2') and a post spacing of 10'. The **Beam and Footing Sizes** table indicates that the beam may be either two 2x10's or two 2x12's, depending on the wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 13", 11", or 10" for the corner post and 18", 15", or 13" for all intermediate posts. Note that because of the 2' cantilever all footing sizes were increased by 1" as required by footnote 2 at the end of the table.

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



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

Joist size is determined by using the longest span joist (7'). The **Joist Span** table indicates that 2x6's at 24" OC would be adequate for this span.

For Beam 1 and footings, use a joist length of 13' (6' + 7') and a post spacing of 9'. The **Beam & Footing Size** table indicates that a beam may be two 2x10's or two 2x12's, depending on the wood used. Depending on the type of soil, the footing diameters for Beam 1 posts shall be 13", 11", or 9" for the corner (outside) post and 19", 15" or 13" for all intermediate posts. For Beam 2 and footings use a joist length of 7' and post spacing of 9'. The beam may be two 2x8's or two 2x10's depending on wood used. Depending on the type of soil, the footing diameters for Beam 2 shall be 10", 8", or 7" for the corner posts, and 14", 11" or 10" for all intermediate posts.

Beam & Footing Sizes

Based on No.2 or better Ponderosa Pine and Southern Pine
(Treated for weather and/or ground exposure)

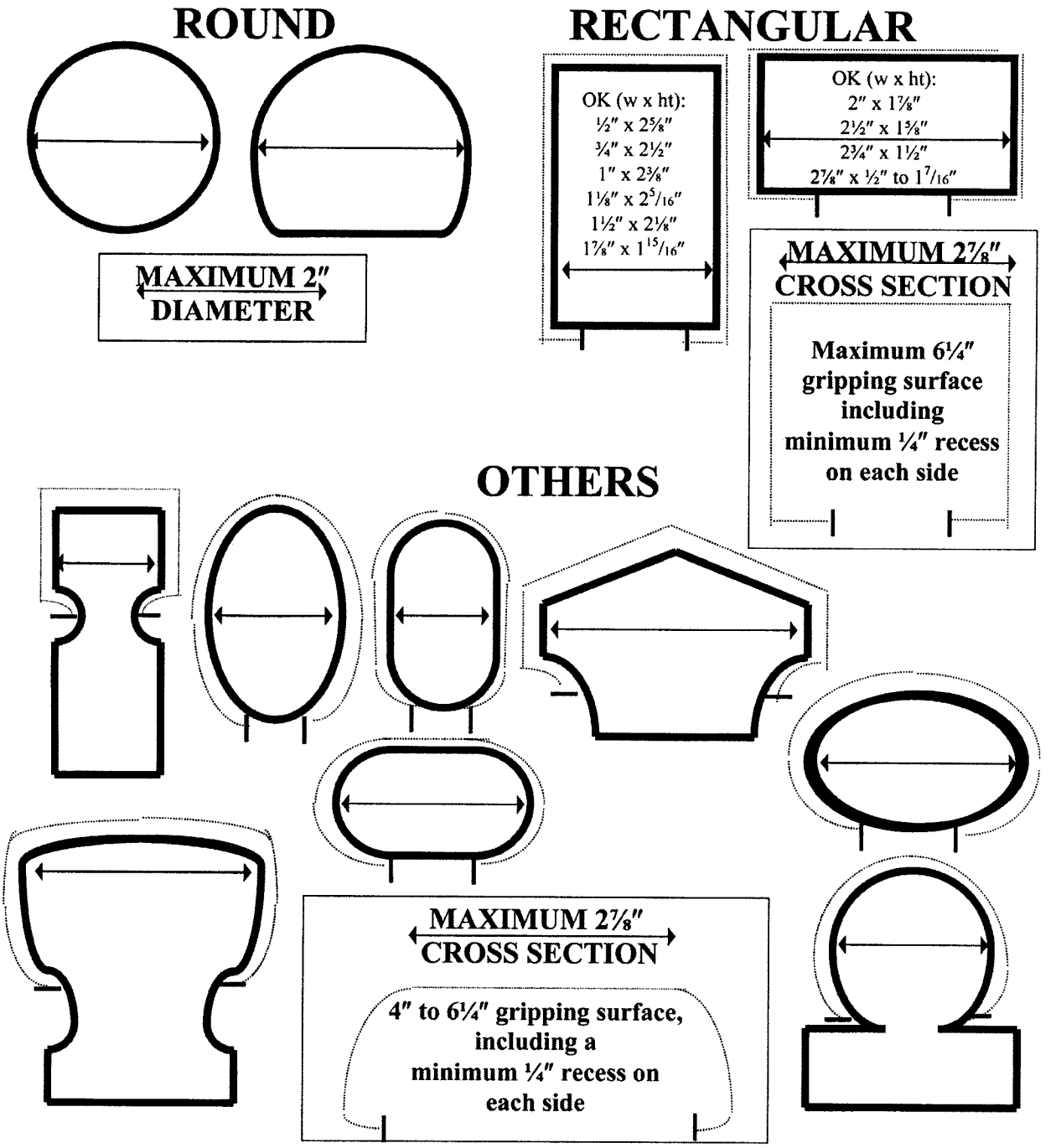
JOIST LENGTH			Post Spacing										
			4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
	6'	Southern Pine Beam	1 - 2x6	1 - 2x6	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 -2x10	2 - 2x10	2 - 2x10
		Ponderosa Pine Beam	1 - 2x6	1 - 2x6	1 - 2x8	2 - 2x8	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 -2x12	2 - 2x12	3 - 2x10
		Corner Footing	6 5 4	7 6 5	7 6 5	8 7 6	9 7 6	9 7 6	10 8 7	10 8 7	10 9 7	11 9 8	11 9 8
		Intermediate Footing	9 8 7	10 8 7	10 9 7	11 9 8	12 10 9	13 0 9	14 11 10	14 12 10	15 12 10	15 13 11	16 13 11
	7'	Southern Pine Beam	1 - 2x6	1 - 2x6	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 -2x10	2 - 2x10	2 - 2x12
		Ponderosa Pine Beam	1 - 2x6	1 - 2x6	1 - 2x8	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x10	2 -2x12	3 - 2x10	3 - 2x10
		Corner Footing	7 5 5	7 6 5	8 7 6	9 7 6	9 8 7	10 8 7	10 8 7	11 9 8	11 9 8	12 10 9	12 10 9
		Intermediate Footing	9 8 7	10 8 7	11 9 8	12 10 9	13 11 9	14 11 10	15 12 10	15 13 11	16 13 11	17 14 12	17 14 12
	8'	Southern Pine Beam	1 - 2x6	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x8	2 - 2x10	2 -2x10	2 - 2x12	2 - 2x12
		Ponderosa Pine Beam	1 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x10	3 -2x10	3 - 2x10	3 - 2x12
		Corner Footing	7 6 5	8 6 6	9 7 6	9 8 7	10 8 7	10 8 7	11 9 8	11 9 8	12 10 9	13 10 9	13 11 9
		Intermediate Footing	10 8 7	11 9 8	12 10 9	13 11 9	14 11 10	15 12 10	16 13 11	16 13 11	17 14 12	18 15 13	18 15 13
	9'	Southern Pine Beam	1 - 2x6	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 -2x12	2 - 2x12	3 - 2x10
		Ponderosa Pine Beam	1 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x10	3 - 2x10	3 -2x10	3 - 2x12	3 - 2x12
		Corner Footing	7 6 5	8 7 6	9 7 6	10 8 7	10 9 7	11 9 8	12 10 8	12 10 9	13 10 9	13 11 9	14 11 10
		Intermediate Footing	10 9 7	12 10 8	13 10 9	14 11 10	15 12 10	16 13 11	17 14 12	17 14 12	18 15 13	19 15 13	20 16 14
	10'	Southern Pine Beam	1 - 2x6	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x12	2 -2x12	3 - 2x10	3 - 2x10
		Ponderosa Pine Beam	1 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	3 - 2x10	3 -2x12	3 - 2x12	Eng. Bm.
		Corner Footing	8 6 6	9 7 6	10 8 7	10 8 7	11 9 8	12 10 8	12 10 9	13 11 9	14 11 10	14 12 10	15 12 10
		Intermediate Footing	11 9 8	12 10 9	14 11 10	15 12 10	16 13 11	17 14 12	17 14 12	18 15 13	19 16 14	20 16 14	21 17 15
	11'	Southern Pine Beam	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	2 -2x12	3 - 2x10	3 - 2x12
		Ponderosa Pine 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	8 7 6	9 7 6	10 8 7	11 9 8	12 9 8	12 10 9	13 11 9	14 11 10	14 12 10	15 12 10	15 13 11
		Intermediate Footing	12 9 8	13 11 9	14 12 10	15 12 10	16 13 11	17 14 12	17 14 12	18 15 13	19 16 14	20 16 14	21 17 15
	12'	Southern Pine Beam	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	3 -2x10	3 - 2x10	3 - 2x12
		Ponderosa Pine Beam	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	2 - 2x12	3 - 2x12	3 -2x12	Eng. Bm.	Eng. Bm.
		Corner Footing	9 7 6	9 7 6	10 9 7	11 9 8	12 10 9	13 10 9	14 11 10	14 12 10	15 12 10	15 13 11	16 13 11
		Intermediate Footing	12 10 9	14 11 10	15 12 10	16 13 11	17 14 12	18 15 13	19 16 14	20 16 14	21 17 15	22 18 15	23 18 16
	13'	Southern Pine Beam	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	3 -2x10	3 - 2x12	3 - 2x12
		Ponderosa Pine Beam	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x10	2 - 2x12	2 - 2x12	2 - 2x12	3 - 2x12	3 -2x12	Eng. Bm.	Eng. Bm.
		Corner Footing	9 7 6	10 8 7	11 9 8	12 10 8	13 10 9	13 11 9	14 12 10	15 12 10	15 13 11	16 13 11	17 14 12
		Intermediate Footing	13 10 9	14 12 10	15 13 11	17 14 12	18 15 13	19 15 13	20 16 14	21 17 15	22 18 15	23 19 16	24 19 17
	14'	Southern Pine Beam	1 - 2x6	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x10	2 - 2x10	2 - 2x12	3 - 2x10	3 -2x12	3 - 2x12	3 - 2x12
		Ponderosa Pine Beam	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x12	3 - 2x12	3 - 2x12	3 - 2x12	Eng. Bm.	Eng. Bm.	Eng. Bm.
		Corner Footing	9 8 7	10 8 7	11 9 8	12 10 9	13 11 9	14 11 10	15 12 10	15 13 11	16 13 11	17 14 12	17 14 12
		Intermediate Footing	13 11 9	15 12 10	16 13 11	17 14 12	18 15 13	20 16 14	21 17 15	22 18 15	23 18 16	24 19 17	24 20 17
	15'	Southern Pine Beam	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x12	2 - 2x12	3 - 2x10	3 -2x12	3 - 2x12	Eng. Bm.
		Ponderosa Pine Beam	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	3 - 2x10	3 - 2x10	3 - 2x12	3 - 2x12	Eng. Bm.	Eng. Bm.	Eng. Bm.
		Corner Footing	10 8 7	11 9 7	12 10 8	13 10 9	14 11 10	14 12 10	15 12 11	16 13 11	17 14 12	17 14 12	18 15 13
		Intermediate Footing	14 11 10	15 12 11	17 14 12	18 15 13	19 16 14	20 17 14	21 17 15	22 18 16	23 19 17	24 20 17	25 21 18
	16'	Southern Pine Beam	2 - 2x6	2 - 2x6	2 - 2x8	2 - 2x8	2 - 2x10	2 - 2x12	2 - 2x12	3 - 2x10	3 -2x12	3 - 2x12	Eng. Bm.
		Ponderosa Pine Beam	2 - 2x6	2 - 2x8	2 - 2x10	3 - 2x10	3 - 2x10	3 - 2x12	3 - 2x12	3 - 2x12	Eng. Bm.	Eng. Bm.	Eng. Bm.
		Corner Footing	10 8 7	12 9 8	12 10 9	13 11 9	14 11 10	15 12 10	16 13 11	16 13 12	17 14 12	18 15 13	18 15 13
		Intermediate Footing	14 11 10	16 13 11	17 14 12	18 15 13	20 16 14	21 17 15	22 18 16	23 19 16	24 20 17	25 21 18	26 21 18

Notes:

1. Joist length is total length of joist, including 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. Increase corner footing size shown by 90%
   b. Increase center footing size shown by 55%.
   c. Locate all footings at extremities of deck (no cantilevers).
   d. Beam sizes indicated need not be altered.
4. All footing sizes above are base diameters (in inches) and are listed for THREE SOIL TYPES:

	CLAY	SAND	GRAVEL
Corner Footing	10	8	7
Intermediate Footing	14	11	10

21.04 (3) (b) 5.
HANDRAIL SHAPES



RESIDENTIAL DECK SPECIFICATION

Floor Joist Clear Span: _____ Floor Joist Spacing: _____

Floor Joist Size: _____ Floor Joist Species of Lumber: _____

Floor Joist Grade of Lumber:_____ Deck Floor Material:_____

Girder Beam Size: _____ Number of Members: _____

Beam Species of Lumber: _____ Beam Grade of Lumber: _____

Is the Deck Attached to the House? _____ Yes _____ No

Are the footings of the House _____ more _____ less than 48 inches below grade?

Support Post Size: _____ Post Spacing: _____ Feet _____ Inches

Footing Depth Below Grade: _____ inches

Footings: Width _____ Height _____

Use space below or the back of the sheet to draw a scale plan view of the deck.