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## Residential Decks

**Note:** I have made every effort to insure the accuracy of the information provided in this document. However, due to the possibility of errors or other aspects of electronic communication that is beyond my control, I do not guarantee the accuracy of this document and am not liable for reliance on this information. This document was created as basic plan submittal guide under the Code in effect at the time of creation. It is not intended to cover all circumstances. Portions of this information are courtesy of the Colorado Chapter of the International Code Council.

### Zoning Approval is required

Please contact the Green County Zoning and Land Use Office for further information.

Phone: (608) 328-9423

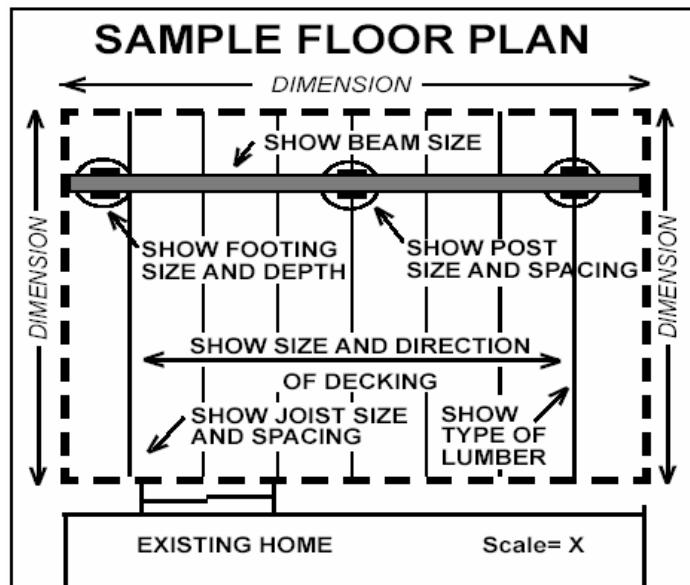
Email: [greenzone@tds.net](mailto:greenzone@tds.net)

Web: [www.co.green.wi.gov/](http://www.co.green.wi.gov/)

### Building and Trades Permit is required

Items needed for approval:

- Permit Application form completed.
- Two sets of Building plans. (Plans must be to scale.)
- Copy of Green County Zoning and Land Use Permit.



### Floor Plan

1. Proposed deck size.
2. Size and spacing of floor joists.
3. Size and type of decking material.
4. Size, type, location, and spacing of posts.
5. Size and type of beams.

### Permit Fees

Structural-	\$50.00
Electrical-	add \$50.00

### Inspections

**Footing/Floating Slab Inspection** is needed before any concrete is poured.

**Rough Construction and/or Final Inspection** is needed when framing is complete prior to any interior finished surfaces are applied. This inspection can be completed at the time of the final inspection if all parts of the framing will be visible and accessible.

### Other Information

- Important changes in pressure treated woods have resulted in the requirements for specific fasteners, such as bolts, screws, etc. Ask your lumber supplier for more information.
- Not all pressure treated (green or brown) lumber is rated for ground contact. Foundation posts must be suitable for ground contact.
- Guardrails are required for decks above two feet high. Such guardrails must be at least thirty-six inches above the surface of the deck floor, with intermediate rails spaced so you cannot pass a four-inch object between them. This also applies to open risers. The triangular area formed by the stair tread, riser, and railing must be constructed so you cannot pass a six-inch object between them. Handrails are also required if you have three or more steps from the deck.
- All construction related methods must comply with the current Chapter COMM 21 and 22 of the Wisconsin Administrative Code also known as the Wisconsin Uniform Dwelling Code.
- The Wisconsin Administrative Codes may be downloaded from the Department of Commerce Safety and Buildings Website:

<http://www.commerce.state.wi.us/SB/SB-HomePage.html>

- When locating a deck care must be given to the location of existing gas, electric and water meters. These may need to be relocated to allow for construction of the deck.



**(800) 242-8511**

<http://www.diggershotline.com/>

Plan ahead! Give Diggers Hotline a call at least three working days prior to the start date of your excavation. The call center is open 24 hours a day and 365 days a year, but the busiest times are Monday and Tuesday mornings.

## Joist span

Based on No. 2 or better wood grades.

(Design Load = 40#LL + 10#DL, Deflection= L/360)

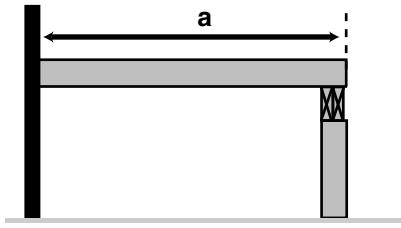
	Ponderosa pine			Southern pine			Western cedar		
	12"OC	16"OC	24"OC	12"OC	16"OC	24"OC	12"OC	16"OC	24"OC
2x6	9-2	8-4	7-0	10-9	9-9	8-6	9-2	8-4	7-3
2x8	12-1	10-10	8-10	14-2	12-10	11-0	12-1	11-0	9-2
2x10	15-4	13-3	10-10	18-0	16-1	13-5	15-5	13-9	11-3
2x12	17-9	15-5	12-7	21-9	19-0	15-4	18-5	16-0	13-0

### Sample calculations for using joist span, beam size and footing size tables

#### Case I solution:

Refer to tables for joist, beam and footing size requirements.

Example: a = 12 feet; Post spacing = 8 feet



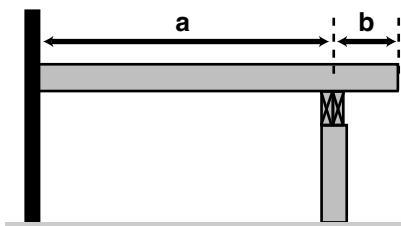
Use the **joist span** table to find the acceptable joist sizes for a 12 foot span, 2x8s at 12 inches O.C., 2x10s at 16 inches O.C. or 2x12s at 24 inches O.C.

Use the **Beam and footing sizes** table and find the 8 foot post spacing column. With a 12 foot deck span, the beam may be either two 2x8s or two 2x10s, depending on wood used. Depending on the type of soil, the footing diameter at the base must be a minimum of 12 inches, 10 inches or 9 inches for the corner post and 17 inches, 14 inches or 12 inches for all intermediate posts.

#### Case II solution:

Use "a" to determine joist 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.

Example: a = 8 feet, b = 2 feet, Post spacing = 10 feet



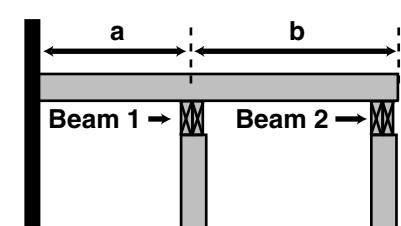
Refer to the **joist span** table. For an 8 foot joist span, either 2x8s at 24 inches O.C. or 2x6s at 16 inches O.C are acceptable.

For sizing the beam, use a joist length of 12 feet (8 feet + 4 feet) and a post spacing of 10 feet. 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 inches, 12 inches or 11 inches for the corner post and 20 inches, 17 inches or 15 inches for all intermediate posts. Note that because of the 2 foot cantilever all footing sizes were increased by 1 inches as required by footnote 2 at the end of the table.

#### Case III solution:

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 feet, b = 7 feet, Post spacing = 9 feet



Joist size is determined by using the longest span joist (7 feet). The **joist span** table indicates that 2x6s at 24" O.C. would be adequate for this span.

For Beam 1 and footings, use a joist length of 13 feet (6 feet + 7 feet) and a post spacing of 9 feet. 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 diameters for Beam 1 posts shall be 13 inches, 11 inches or 9 inches for the corner (outside) post and 19 inches, 15 inches or 13 inches for all intermediate posts. For Beam 2 and footings use a joist length of 7 feet and post spacing of 9 feet. The beam may be two 2x8s or two 2x10s, depending on wood used. Depending on the type of soil, the footing diameters for Beam 2 shall be 10 inches, 8 inches or 7 inches for the corner posts, and 14 inches, 11 inches or 10 inches for all intermediate posts.

## Beam and footing sizes

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

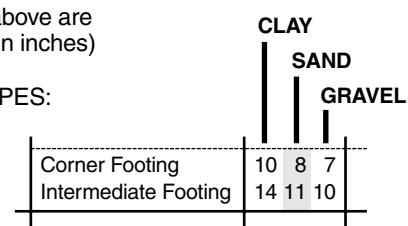
		Post spacing											
		4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	
6'	Southern Pine Beam	1-2x6	1-2x6	1-2x6	2-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x10	
	Ponderosa Pine Beam	1-2x6	1-2x6	1-2x8	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12	3-2x10	
7'	Corner Footing	6 5 4 9 8 7	7 6 5 10 8 7	7 6 5 10 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 15 13 11	11 9 8 16 13 11
	Intermediate Footing												
8'	Southern Pine Beam	1-2x6	1-2x6	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12	
	Ponderosa Pine Beam	1-2x6	1-2x6	1-2x8	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x10	
9'	Corner Footing	7 5 5 9 8 7	7 6 5 10 8 7	7 6 5 11 9 8	8 7 6 12 10 9	9 7 6 13 11 9	9 8 7 14 11 10	10 8 7 15 12 10	10 8 7 15 12 10	11 9 8 15 13 11	11 9 8 16 13 11	12 10 9 17 14 12	12 10 9 17 14 12
	Intermediate Footing												
10'	Southern Pine Beam	1-2x6	1-2x6	2-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x12	3-2x10	3-2x10	
	Ponderosa Pine Beam	1-2x6	1-2x6	1-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	3-2x10	
11'	Corner Footing	8 6 6 11 9 8	9 7 6 12 10 9	9 7 6 14 11 10	10 8 7 15 12 10	10 8 7 16 13 11	11 9 8 17 14 12	12 10 8 17 14 12	12 10 9 17 14 12	13 11 9 18 15 13	13 11 9 18 15 13	14 11 10 19 16 14	14 11 10 19 16 14
	Intermediate Footing												
12'	Southern Pine Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	
	Ponderosa Pine Beam	2-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x12	3-2x10	3-2x12	
13'	Corner 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	13 10 9 18 15 13	14 11 10 19 16 14	14 12 10 19 16 14	15 12 10 20 16 14	15 13 11 20 16 14	15 13 11 21 17 15
	Intermediate Footing												
14'	Southern Pine Beam	1-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	
	Ponderosa Pine Beam	2-2x6	2-2x6	2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	2-2x12	3-2x12	3-2x10	3-2x12	
15'	Corner 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	13 11 9 18 15 13	14 11 10 19 16 14	14 11 10 19 16 14	15 12 10 20 16 14	15 13 11 21 17 15	16 13 11 22 18 15	17 14 12 23 19 16
	Intermediate Footing												
16'	Southern Pine Beam	2-2x6	2-2x6	2-2x6	2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	
	Ponderosa Pine Beam	2-2x6	2-2x6	2-2x8	2-2x10	2-2x10	2-2x12	2-2x12	2-2x12	3-2x12	3-2x10	3-2x12	
17'	Corner 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	18 15 13 26 21 18
	Intermediate Footing												

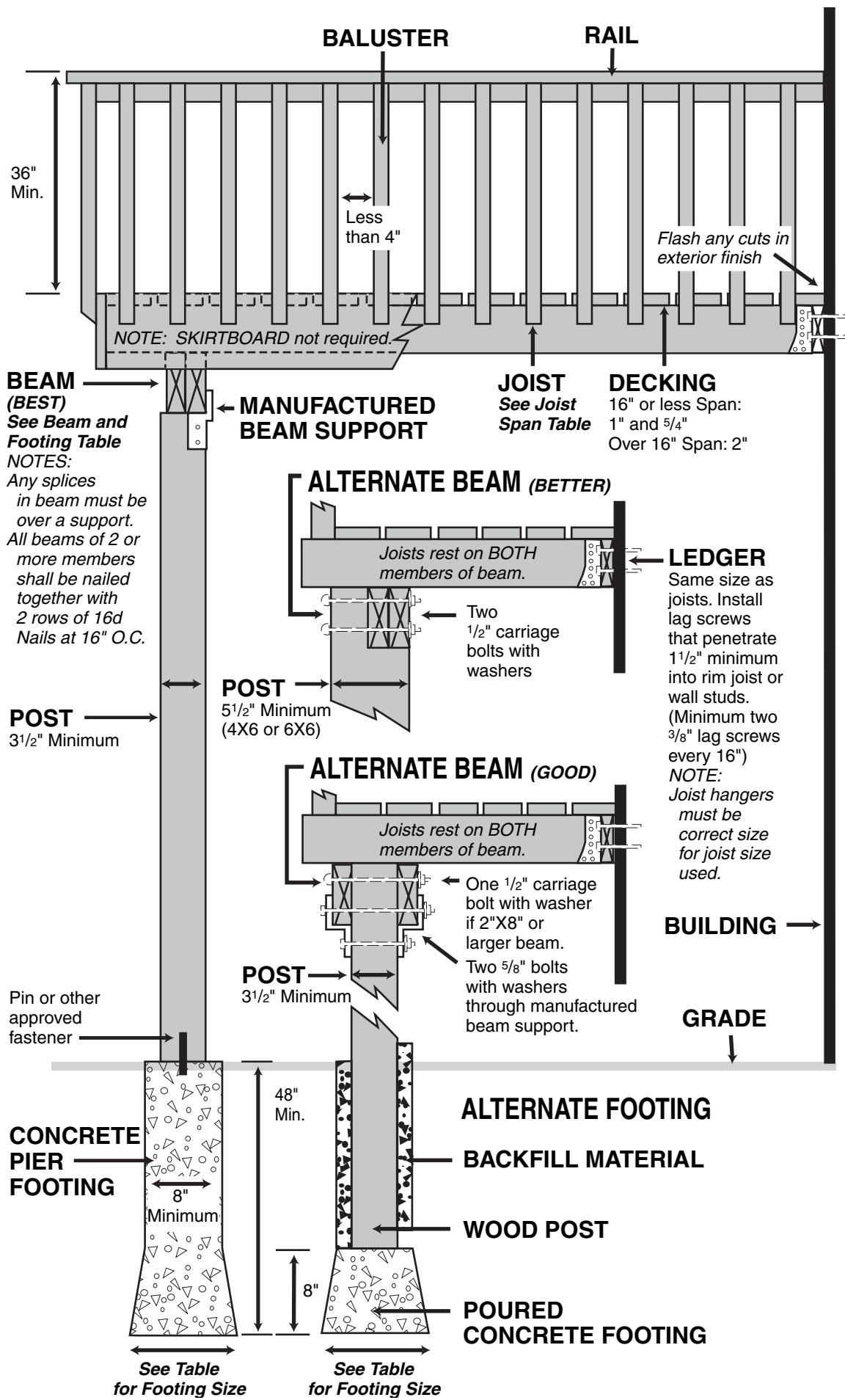
### Notes:

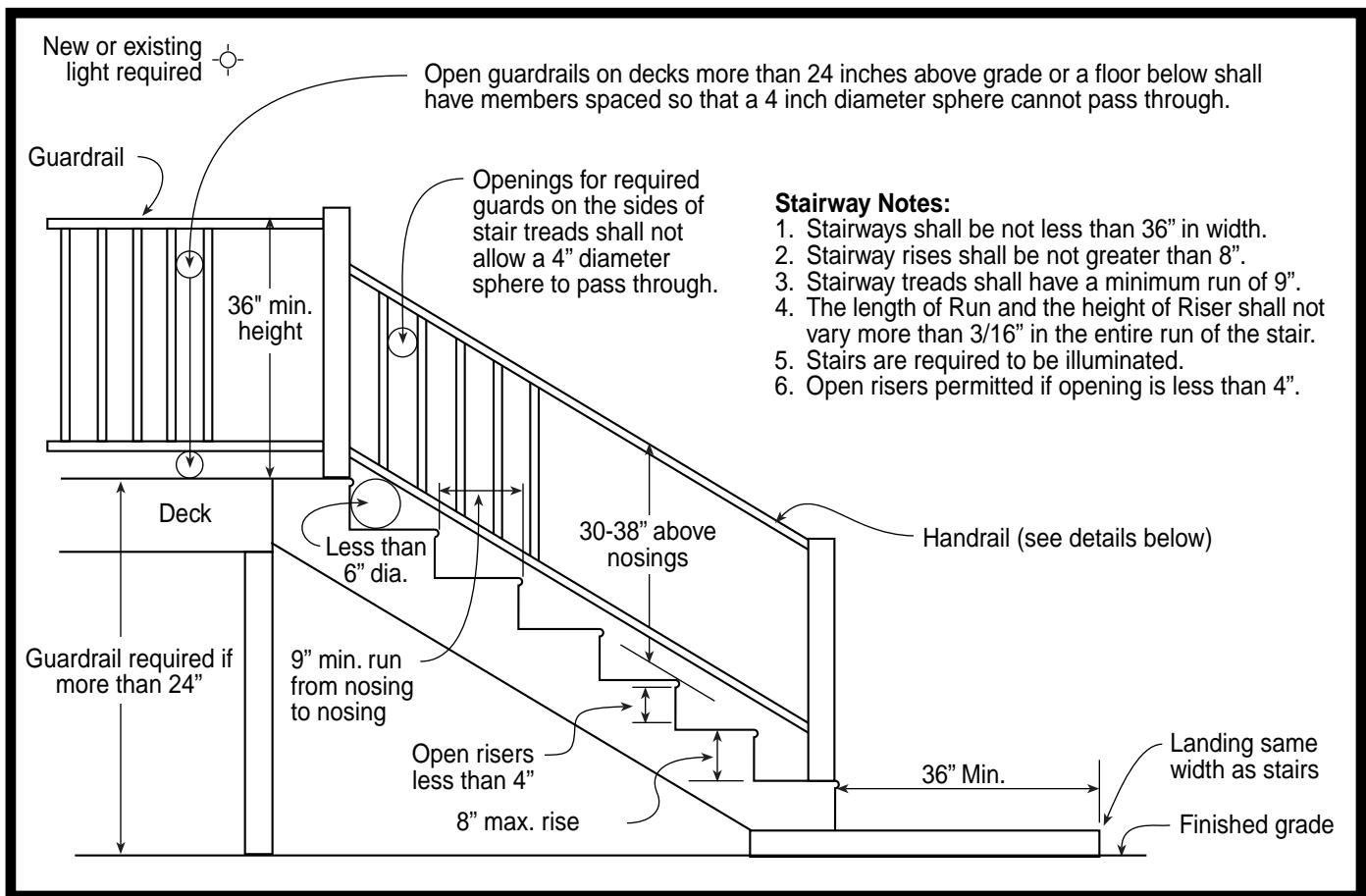
1. Joist length is total length of joist, **including** any cantilevers.
2. When joist extends (cantilevers) beyond support beam by 18 inches or more, add 1 inches to footing dimensions shown.
3. Requirements for future 3-season porches or screen porches:
  - a. Increase corner footing size shown by 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:



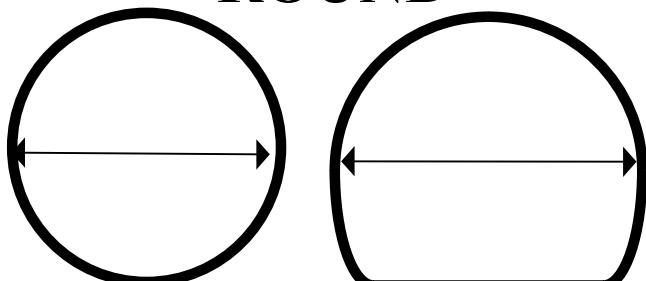




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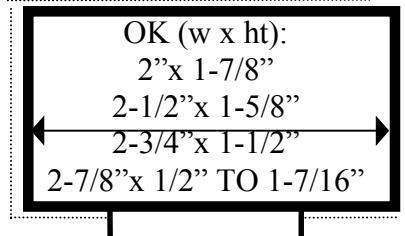
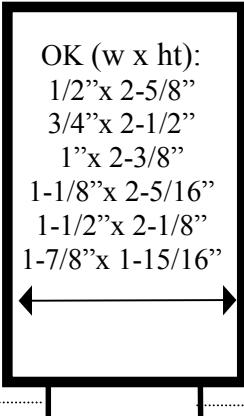
### HANDRAIL SHAPES

#### ROUND



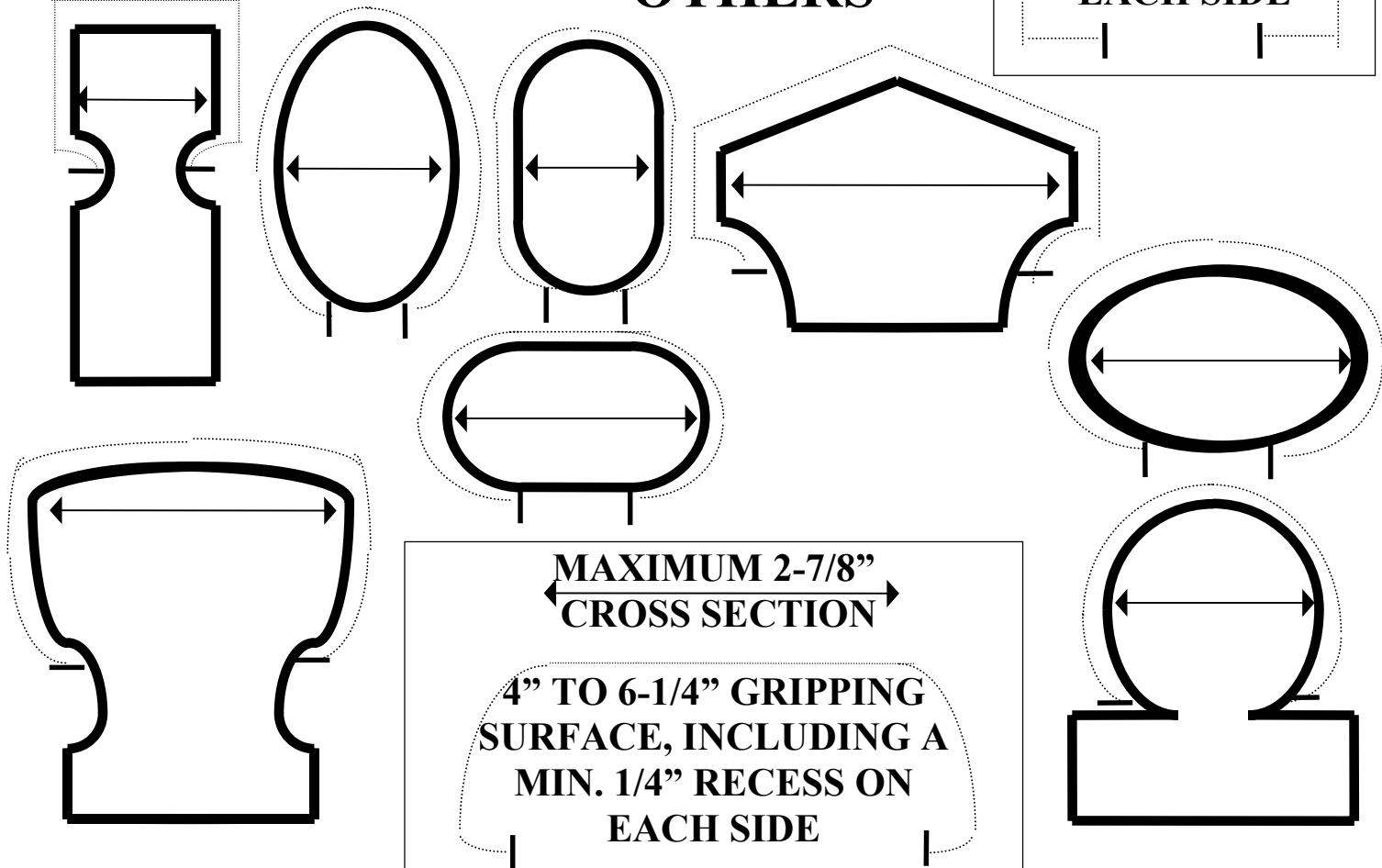
**MAXIMUM 2"**  
**DIAMETER**

#### RECTANGULAR



**MAXIMUM 2-7/8"**  
**CROSS SECTION**  
**MAX. 6-1/4"**  
**GRIPPING**  
**SURFACE INCL.**  
**MIN. 1/4"**  
**RECESS ON**  
**EACH SIDE**

#### OTHERS



**MAXIMUM 2-7/8"**  
**CROSS SECTION**  
**4" TO 6-1/4" GRIPPING**  
**SURFACE, INCLUDING A**  
**MIN. 1/4" RECESS ON**  
**EACH SIDE**