

Deck Permit Guide & Permit Application

Use Building Permit & Zoning Permit Applications

Town of Clayton Town Hall

8348 Hickory Ave
Larsen, WI 54947
Phone: 920-836-2007
Email: buildinsp@claytonwinnebago.wi.gov
Website: <https://www.townofclayton.net/>



This guide was developed to help direct you through the permit application process. Following the steps below will help to expedite the issuance of your building permit.

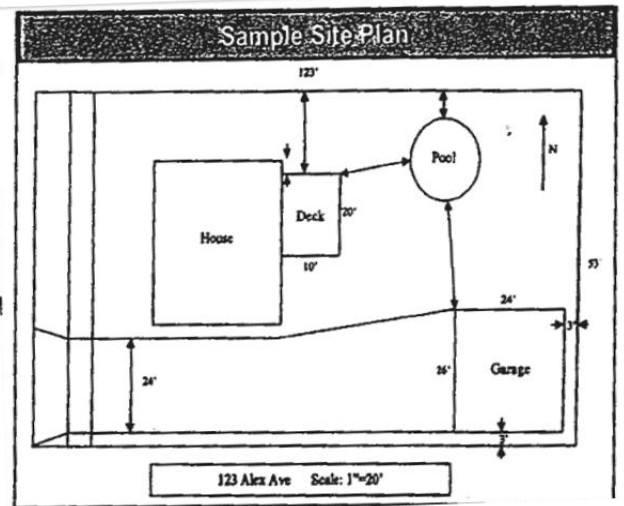
1. Completely fill out the Attached Build/Zoning Permit Applications

Provide a detailed description of all proposed work. Owners may obtain permits for construction projects if the house is owner occupied. All contractors shall include their Dwelling Contractor Certification and Dwelling Contractor Qualifier Certification numbers from the State of Wisconsin Safety and Buildings Division. Our office is required by the State of Wisconsin to verify these certifications prior to issuing permits to contractors performing work on one and two family dwellings.

2. Provide 1 Site Plans

The plans shall be drawn at 1 inch = 20 ft. or larger scale and shall include the following (see the sample site plan):

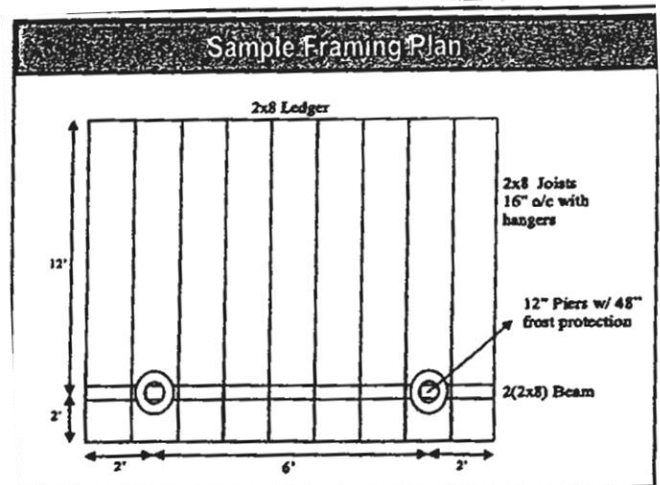
- ☐ All Streets, North arrow and graphic scale
- ☐ Exterior boundaries of the property including dimensions of property lines
- ☐ Location of existing and proposed structures
- ☐ Dimensions of setbacks from property lines and between structures
- ☐ Location, dimension and purpose (i.e. water, sewer, etc.) of all easements



3. Provide 1 sets of Framing Plans

The plans shall be drawn at 1/8 inch = 1 ft. or larger and shall include the following information (see *Typical Deck Framing Plan* page for minimum requirements):

- ☐ Footing size, thickness and locations
- ☐ Floor joist size, span, spacing
- ☐ Beam sizes and locations
- ☐ Height of the deck above grade
- ☐ Guardrail heights and intermediate rail spacing
- ☐ Ledger size, connection and flashing details
- ☐ Lateral support information



Underground Utilities: Call Diggers Hotline 3 Work Days Before You Dig! #1-800-242-8511

Building Code Requirements:

Town of Clayton Town Hall

8348 Hickory Ave

Larsen, WI 54947

Phone: 920-836-2007

Email:

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Effective January 1, 2016 The WI Department of Safety and Professional Services adopted Appendix B and C in the Uniform Dwelling Code. Please note that the following building code requirements are not all inclusive. To view Appendix B and C, please follow this link: <http://dsps.wi.gov/Programs?Industry-Services/Industry-Services-Programs/One-and-Two-Family-UDC/UDC-Admin-Code/>

All decks will need to comply with these requirements or be designed by a structural engineer.

General Deck Requirements:

- All lumber must be pressure preservative treated unless it's a naturally durable species such as cedar. The lumber must also be graded and stamped.
- Nails must be threaded, which included ring-shanked and spiral-grooved.
- All fasteners must be galvanized steel, stainless steel, or approved for use with treated wood.
- All hardware, hangers and anchors must be galvanized steel with 1.85 ounces of zinc per square foot or stainless steel.
- A deck that has concentrated loads that exceed 40 pounds per square foot (planters, hot tubs, multi-level decks, etc.) will require engineering analysis.

Footings:

- Minimum compressive strength of 3,000 pounds per square inch
- Footing size and thickness must be in accordance with the below chart
- Each post must bear directly over the middle one-third of a footing
- Footings must bear on solid ground at least 48 inches below finished grade. Bearing onto unprepared fill material, organic soil, alluvial soil, or mud is prohibited
- If the edge of a deck footing is closer than 5 feet to an existing house wall, the footing must bear at the same elevation as the existing footing for that wall

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'	15'
6'	Corner Footing	8	9	10	11	11	12	12	13	14	14	15	15
	Intermediate Footing	10	11	12	13	14	15	15	16	17	17	18	18
	Footing Thickness	6	6	6	6	6	6	6	6	6	6	6	6
7'	Corner Footing	9	10	11	11	12	13	13	14	15	15	16	16
	Intermediate Footing	11	12	13	14	15	16	17	17	18	19	19	19
	Footing Thickness	6	6	6	6	6	6	6	6	8	8	8	8
8'	Corner Footing	10	10	11	12	13	14	14	15	15	16	17	17
	Intermediate Footing	12	13	14	15	16	17	18	19	19	20	21	21
	Footing Thickness	6	6	6	6	6	8	8	8	8	8	8	8
9'	Corner Footing	10	11	12	13	14	14	15	16	16	17	18	18
	Intermediate Footing	12	14	15	16	17	18	19	20	20	21	22	22
	Footing Thickness	6	6	6	6	6	8	8	8	8	8	8	8
10'	Corner Footing	10	12	12	13	14	15	16	16	17	18	18	18
	Intermediate Footing	13	14	15	17	18	19	20	21	21	22	23	23
	Footing Thickness	6	6	6	6	8	8	8	8	8	8	10	10
11'	Corner Footing	11	12	13	14	15	16	16	17	18	19	19	19
	Intermediate Footing	13	15	16	17	19	20	21	22	22	23	24	24
	Footing Thickness	6	6	6	6	8	8	8	8	8	10	10	10
12'	Corner Footing	11	12	14	15	15	16	17	18	19	19	20	20
	Intermediate Footing	14	15	17	18	19	20	21	22	23	24	25	25
	Footing Thickness	6	6	6	8	8	8	8	8	10	10	10	10
13'	Corner Footing	12	13	14	15	16	17	18	19	19	20	21	21
	Intermediate Footing	14	16	17	19	20	21	22	23	24	25	26	26
	Footing Thickness	6	6	6	8	8	8	8	10	10	10	10	10
14'	Corner Footing	12	13	15	16	17	18	18	19	20	21	22	22
	Intermediate Footing	15	17	18	19	21	22	23	24	25	26	27	27
	Footing Thickness	6	6	8	8	8	8	10	10	10	10	10	10
15'	Corner Footing	12	14	15	16	17	18	19	20	21	22	22	22
	Intermediate Footing	15	17	19	20	21	23	24	25	26	27	28	28
	Footing Thickness	6	6	8	8	8	10	10	10	10	10	12	12
16'	Corner Footing	13	14	15	17	18	19	20	20	21	22	23	23
	Intermediate Footing	16	18	19	21	22	23	25	26	27	28	29	29
	Footing Thickness	6	8	8	8	8	10	10	10	10	12	12	12

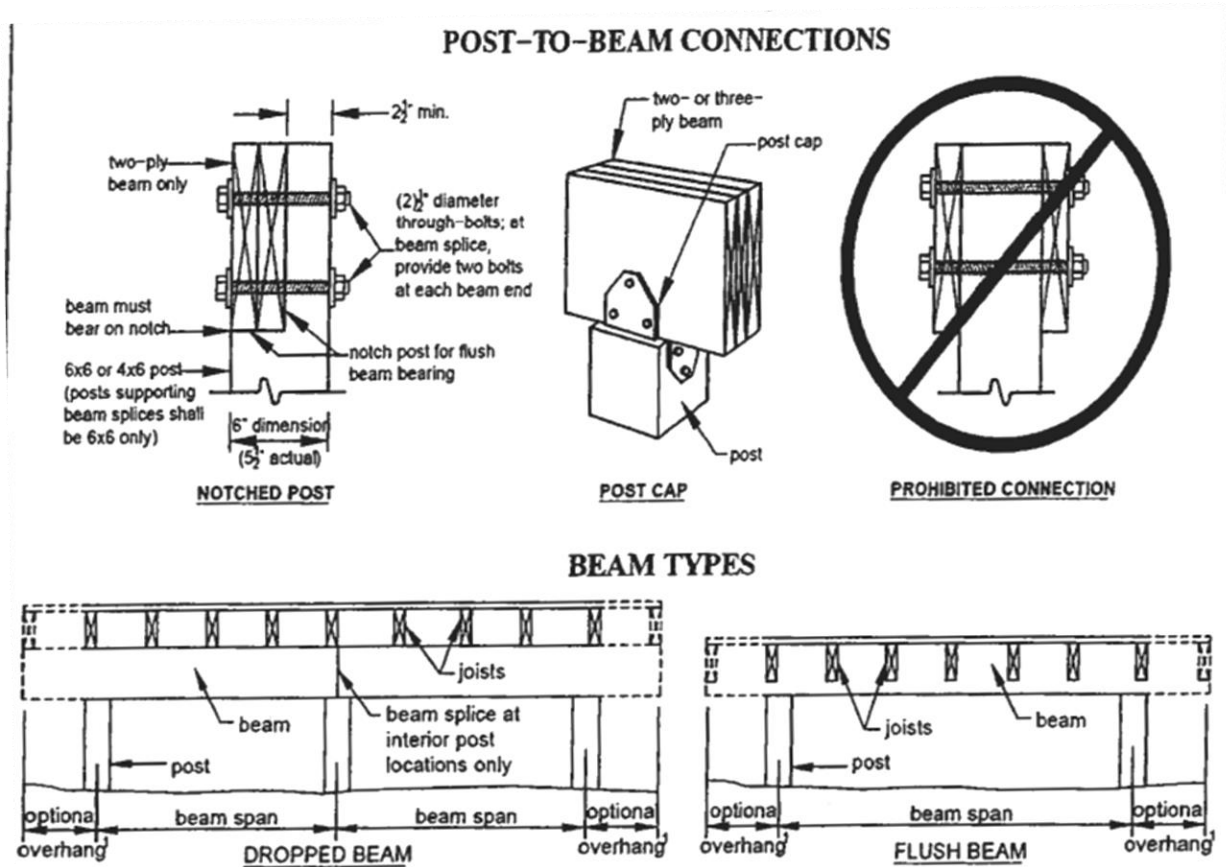
¹ All footing sizes are base diameters².

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.

Posts & Beams:

- Maximum post height for a 4" x 4" post is 6' (measured from the top of the footing to the underside of the beam).
- Any post supporting a beam splice must be a 6" x 6"
- Posts must be properly attached to the beams per the below diagrams.



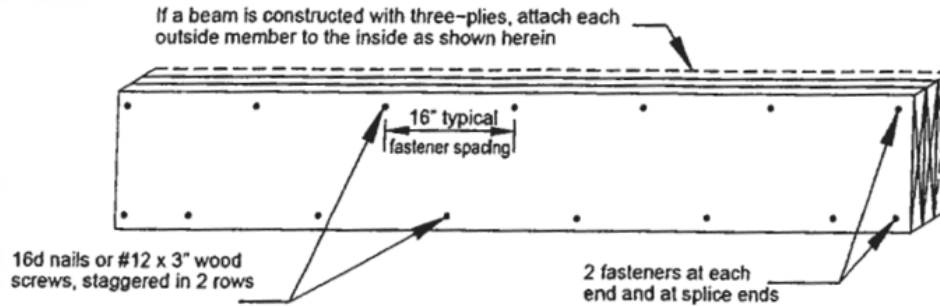
¹ The maximum length of the overhang is equal to one-fourth of the actual beam span length ($0.25 \times \text{beam span}$).

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 $\Delta = L/360$ for main span and $L/180$ for overhang with a 220 lb. point load.

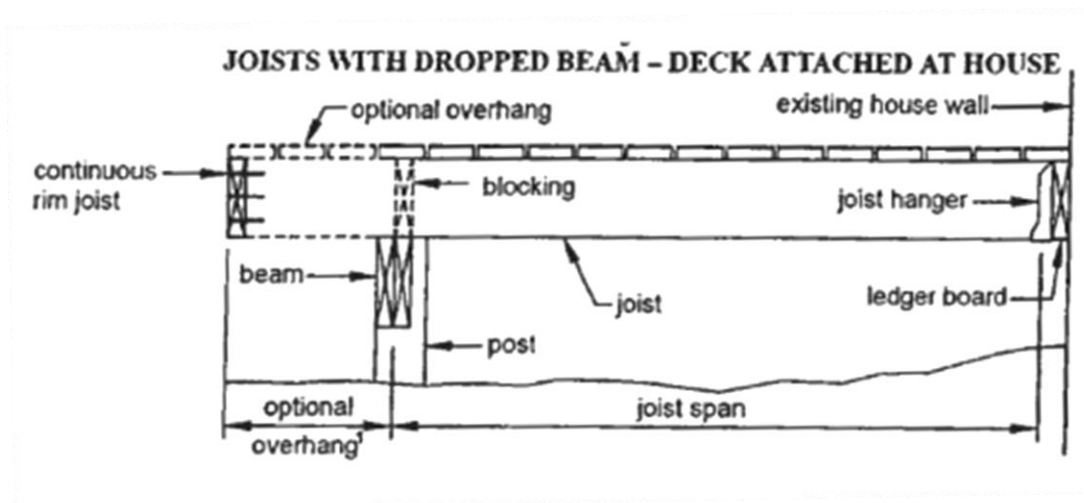
² Beam depth must be equal to or greater than joist depth if joist hangers are used (see Figure 8. Option 3).

BEAM ASSEMBLY



Joists:

- Joists must bear at least 3" onto beams unless joist hangers are used.
- Joists may overhang past the center of the beam up to one-fourth of the joist span.
- Full depth blocking of bridging is required for 2" x 10" or deeper joists at intervals not exceeding 8' with (3) 10 d toe-nails at each end.



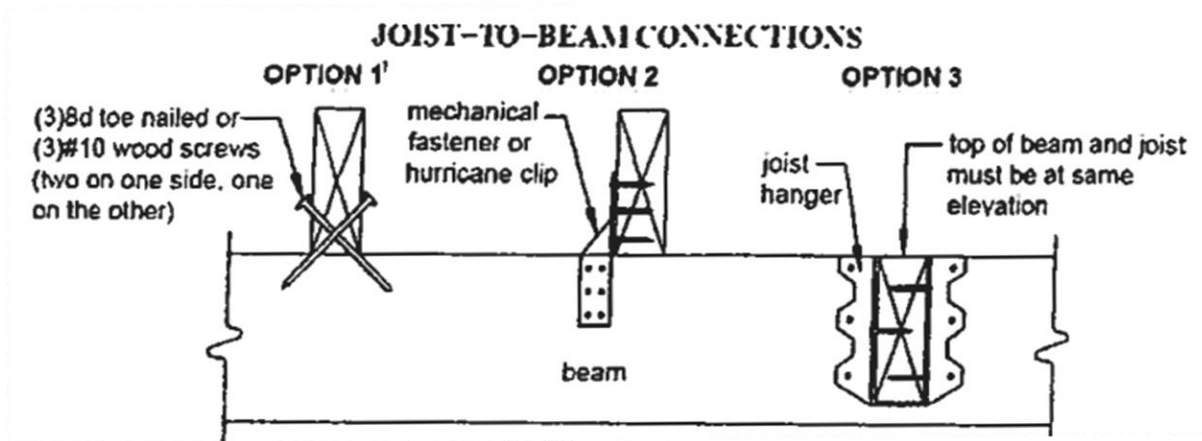
¹ The maximum length of the overhang is equal to one-fourth of the actual joist span length (0.25 x joist span).

MAXIMUM JOIST SPAN LENGTH

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

¹Spans 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.

²Incising is assumed.



¹Option 1 is not allowed on free standing decks

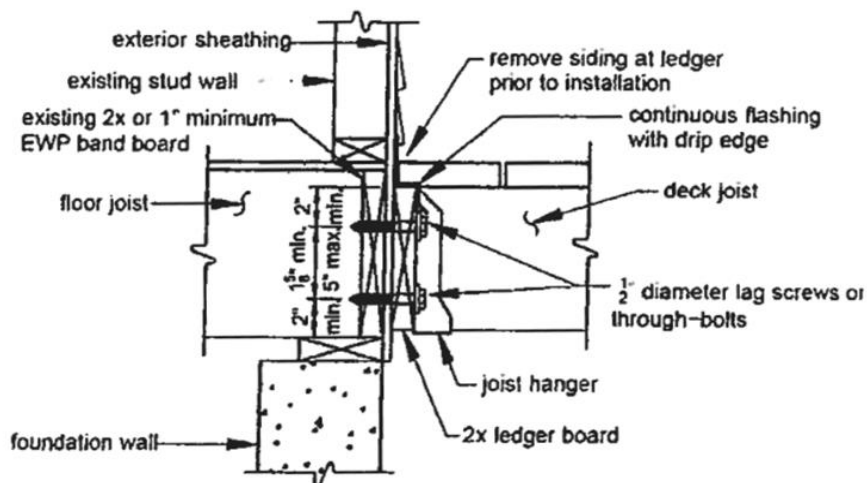
Joist Hangers:

- The joist hanger depth must be at least 60% of the joist depth
- The joist hanger must accommodate the number of plies being carried
- Do not bend hanger flanges to accommodate field conditions
- Screw are not allowed unless recommended by the manufacturer of the hanger

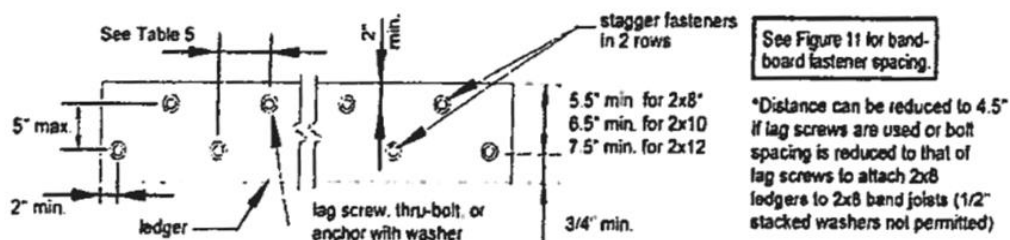
Ledger Attachments:

- Ledgers must be greater than the depth of the joist but never less than a 2" x 8"
- Ledgers can not be attached to the house when I joints or floor trusses are installed unless manufacturer approval is granted. A free standing deck would be required
- The top of the ledger board and the top of the deck joists must be at the same elevation
- Siding must be removed in the area of the ledger and flashing must be installed
- Ledgers can not be attached through an exterior veneer such as brick, stone or to a house overhang

ATTACHMENT OF LEDGER BOARD TO BAND BOARD OR BAND JOIST

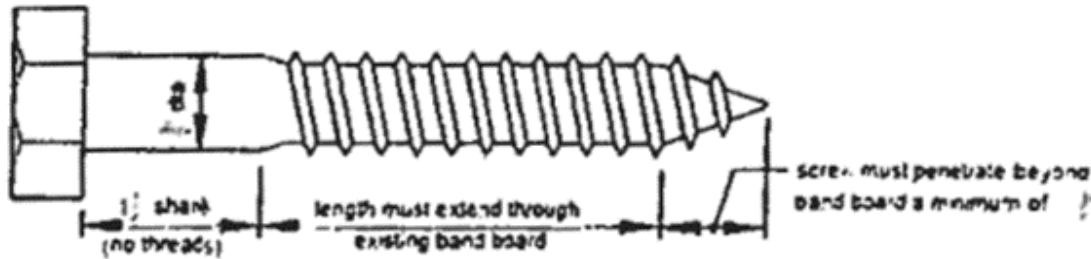


LEDGER BOARD FASTENER SPACING AND CLEARANCES



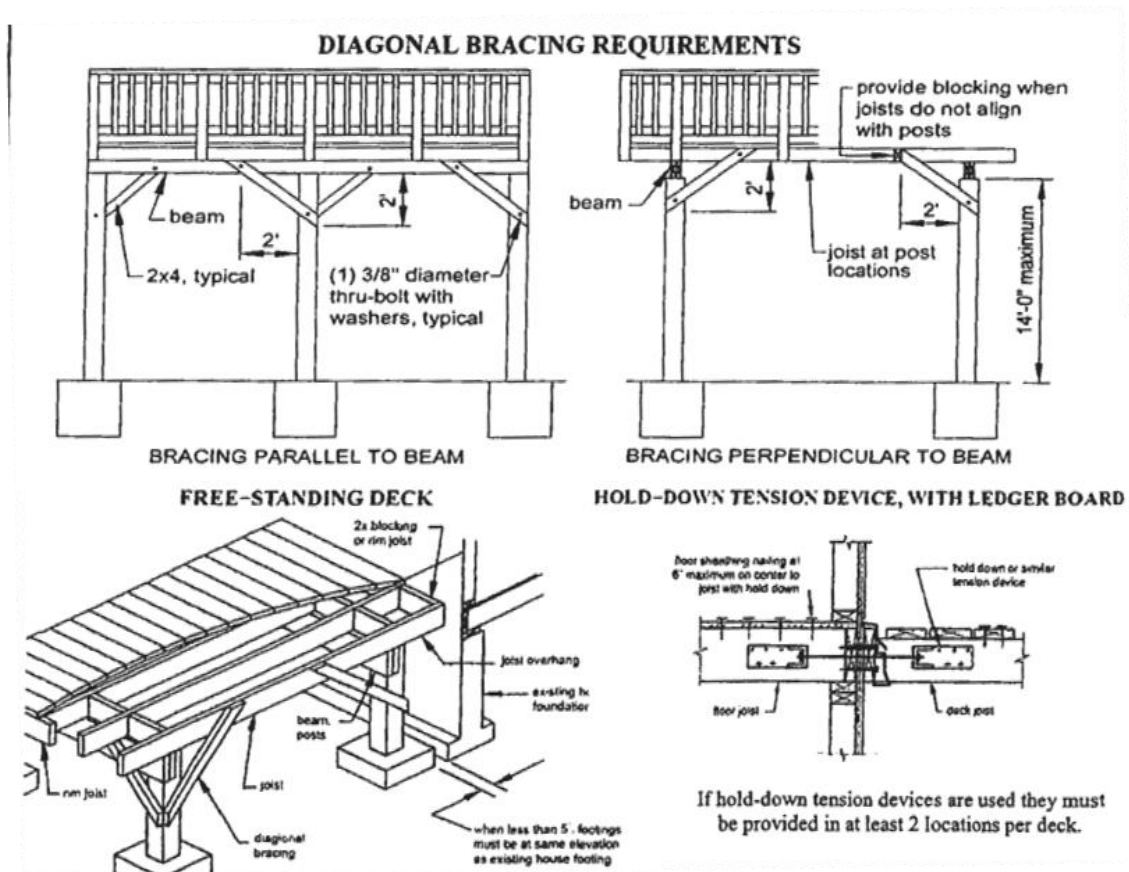
Fastener	Band Board	Joist Span: less than or equal to						
		6'	8'	10'	12'	14'	16'	18'
Lag Screws	1" EWP	24"	18"	14"	12"	10"	9"	8"
	1 1/8" EWP	28"	21"	36"	14"	12"	10"	9"
	2x Lumber	30"	23"	48"	15"	13"	11"	10"

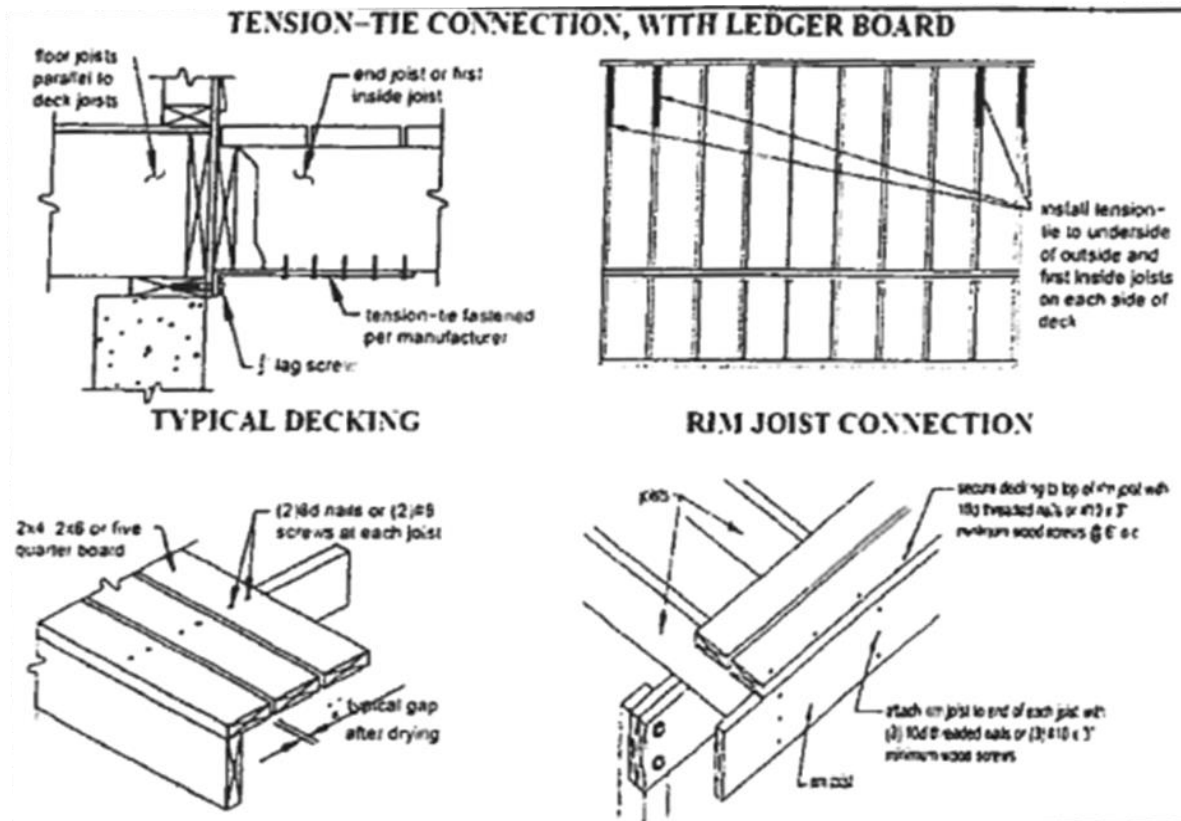
LAG SCREW



Lateral Support:

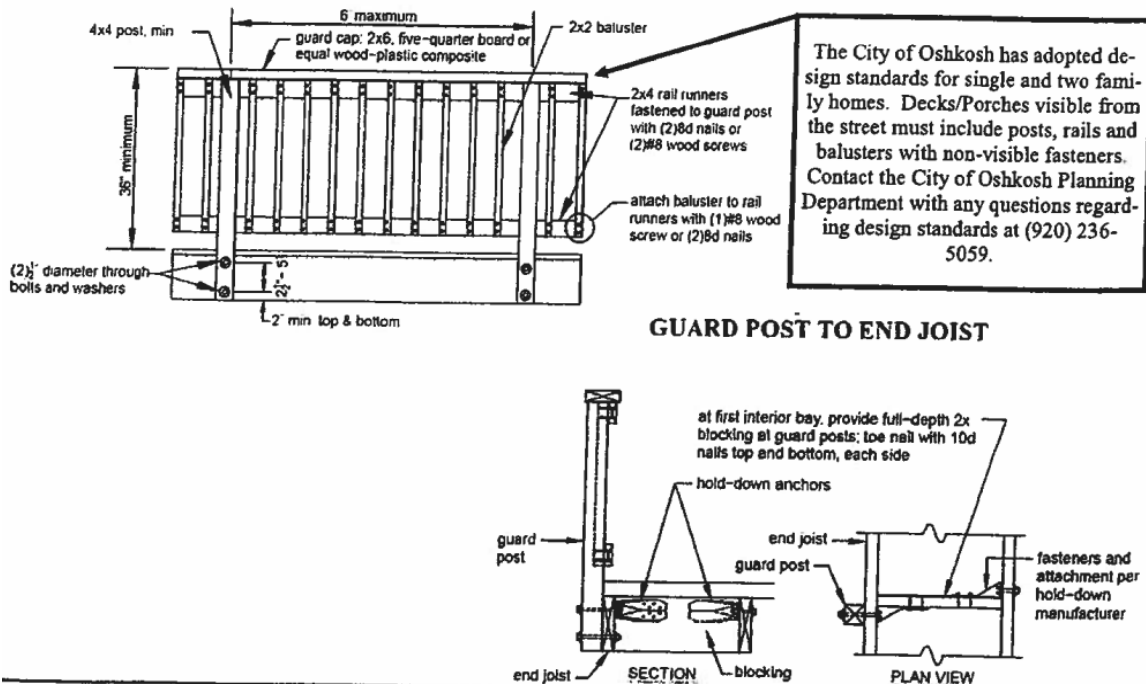
- Diagonal bracing shall be provided both parallel and perpendicular to the beam at each post. Where parallel to the beam, the bracing must be bolted to the post at one end and to the beam at the other. Where perpendicular to the beam, the bracing must be bolted to the post at one end and to a joist or blocking between the joists at the other. Where a joist does not align with the bracing location, provide blocking between the adjacent joists.
- Bracing is not required perpendicular to the house for a deck that is attached to the house with both a ledger and a tension tie to hold down tension device.
- All bracing may be omitted for a deck which is attached to the house and which has all of its decking installed at a 45 degree angle to the deck joists.





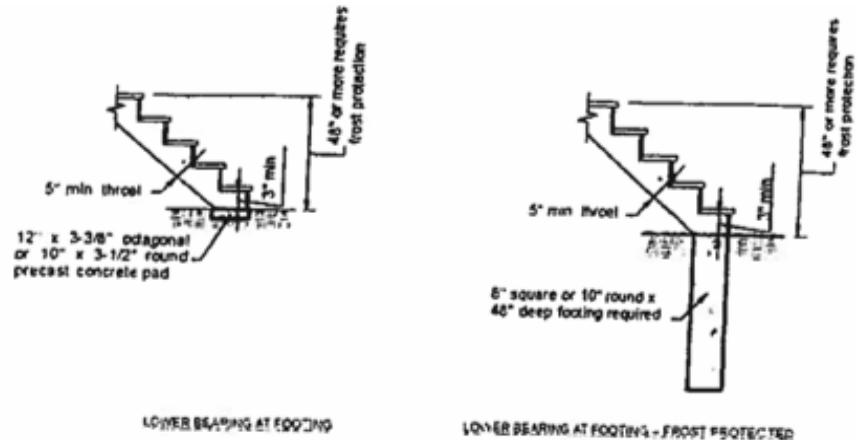
Guards:

- Guards are required on all open sides of decks that are more than 24 inches above grade
- Openings in guards can not allow passage of a sphere 4 3/8 inches in diameter
- The triangular opening formed at steps can not allow passage of a sphere 6 inches in diameter
- Rope, cables, etc. can be used if it's strung with a maximum opening of 3 1/2 inches and vertical supports no more than 4 feet apart
- Guard posts can not be notched
- Hold-down anchors must be used to attach the guard post to the end joist and rim joist

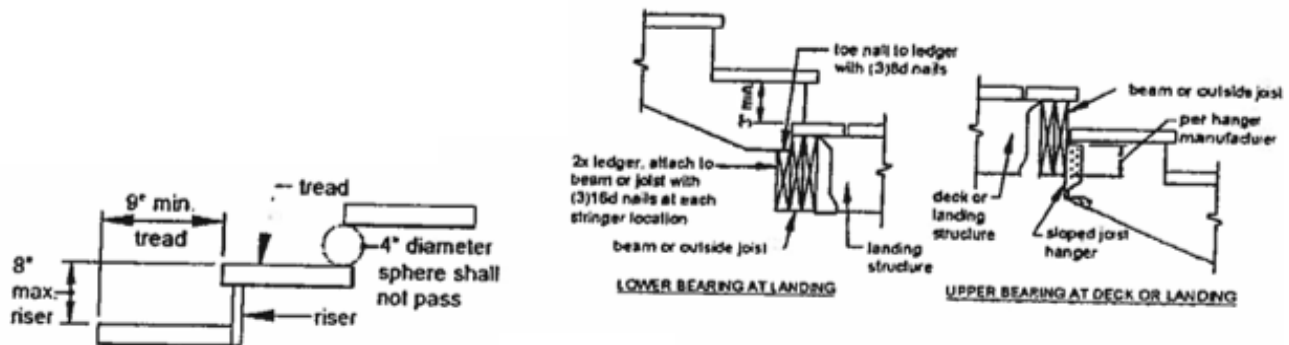


Stairs:

- Minimum width of a stairway is 36 inches. A level landing 3' x 3' is required at the top and base of stair flights.
- Treads minimum 9 inches; Risers maximum 8 inches.
- Treads and risers can not vary within a stair flight by more than 3/8 inches.
- Level Landings must equal the width of the stairway.
- Stringers must be solid 2" x 12"s and can not be spaced more than 18 inches on center.
- Stringers must bear on a solid surface and may require frost protection (see diagram).
- The span length of a cut string can not exceed 6 feet and the throat must not be less than 5 inches.

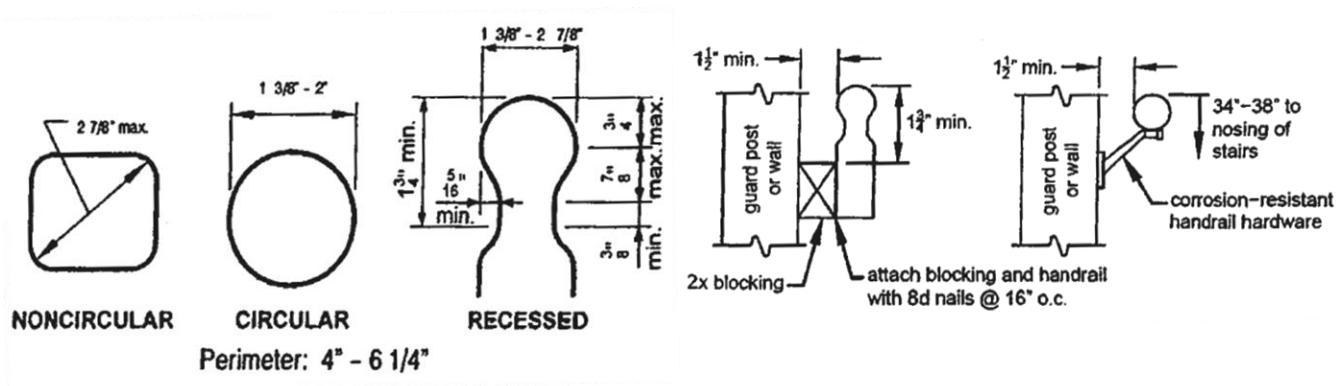


STRINGER BEARING



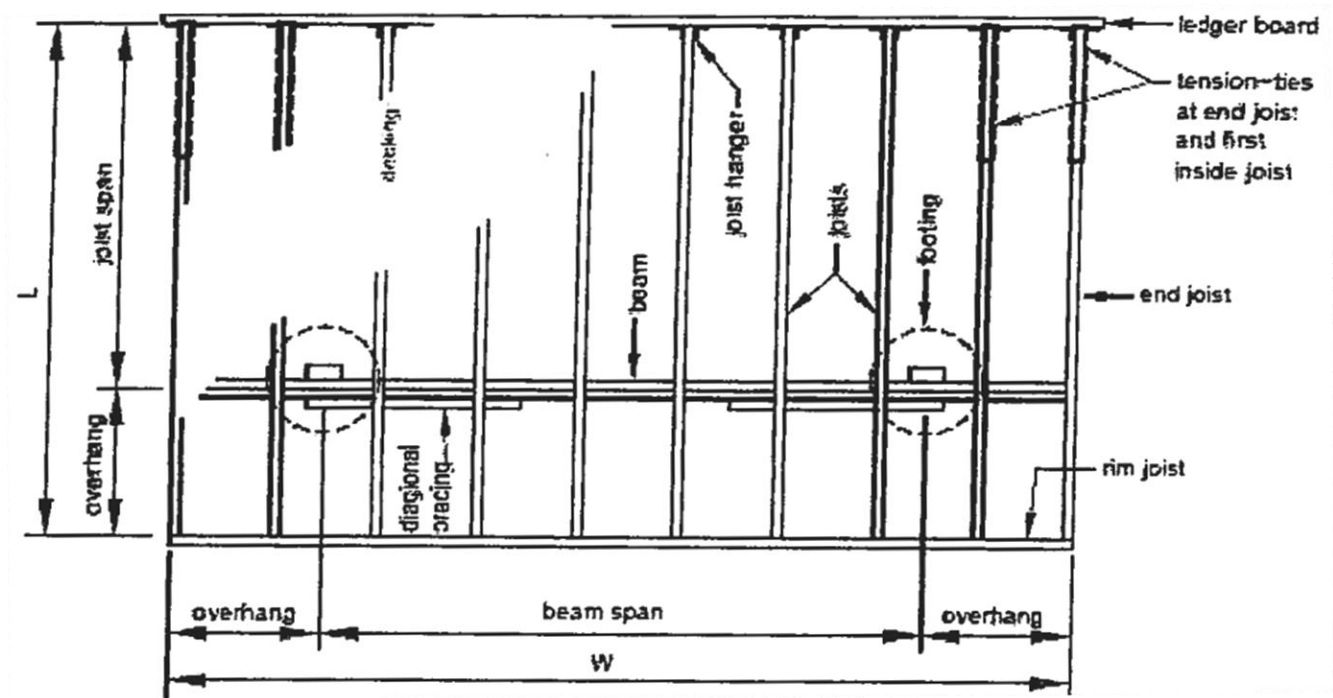
Handrails:

- A flight of stairs with more than 3 risers must be provided with at least one handrail.
- The handrail must be located at least 30 inches but not more than 38 inches above the nosing of the tread.
- The handrail must be graspable.
- Handrails must be continuous from the lower riser to the highest riser/landing.



Typical Deck Framing Plan

*All information is required to be filled out. This plan can only be used for simple decks that are square/rectangle.



Decking:

☐ 2 x 4 ☐ 2 x 6 ☐ five-quarter board ☐ wood-plastic composite (per ASTM D 7032)
☐ Other decking, evaluation report number: _____

size: ☐ 2 x 6 ☐ 2 x 8 ☐ 2 x 10 ☐ 2 x 12 spacing: ☐ 12 inches ☐ 16 inches ☐ 24 inches

Joists:

joist span dimension: _____ ft - _____ in rim joist: ☐ 2 x 6 ☐ 2 x 8 ☐ 2 x 10 ☐ 2 x 12

overhang: ☐ Yes ☐ No overhang dimension: _____ ft - _____ in

Beam(s):

number of plies: ☐ 2 ☐ 3 size: ☐ 2 x 6 ☐ 2 x 8 ☐ 2 x 10 ☐ 2 x 12

overhang: ☐ Yes ☐ No overhang dimension: _____ ft - _____ in

Posts:

size: ☐ 4 x 4 ☐ 4 x 6 ☐ 6 x 6 height: _____ ft - _____ in

Footings:

size: _____ inches ☐ square ☐ round ☐ thickness: _____ inches

Ledger:

ledger board size: ☐ 2 x 8 ☐ 2 x 10 ☐ 2 x 12 ☐ Not applicable (free standing deck)

fastener: ☐ through bolt ☐ lag screw ☐ wood screw ☐ expansion anchor
☐ adhesive anchor

Lateral Support:

☐ tension-tie ☐ diagonal bracing, size: ☐ 2x
(not permitted for free standing deck)

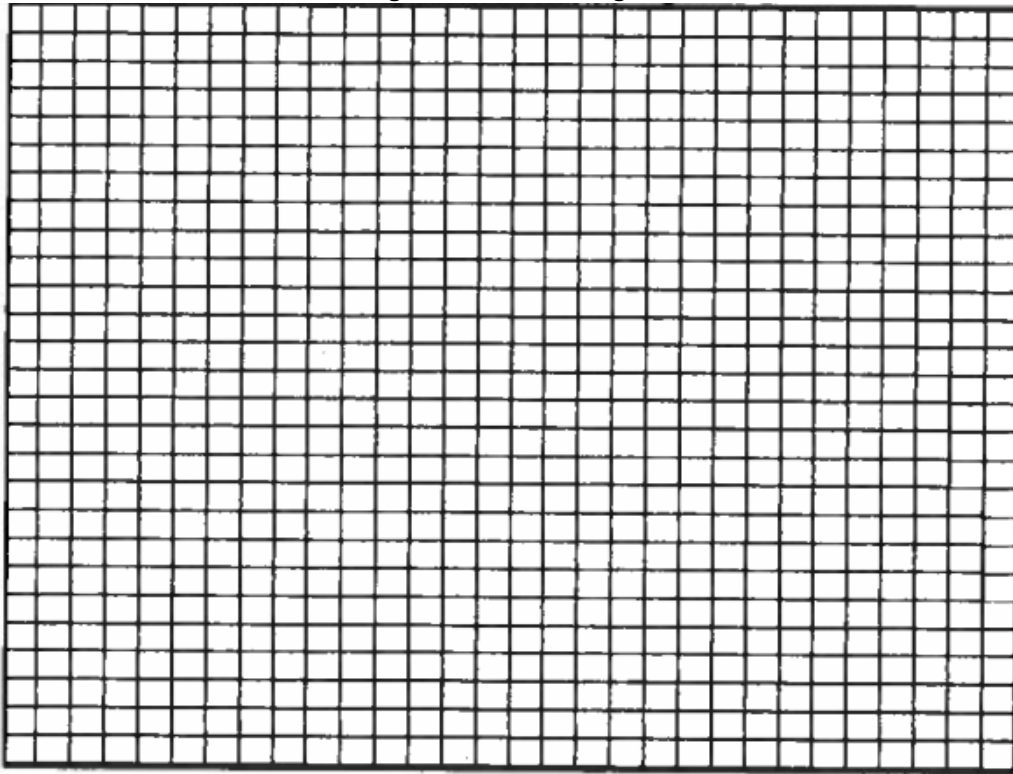
Deck size:

L: _____ ft - _____ in W: _____ ft - _____ in

Footing Size

Deck Layout

Locate footings, beams, overhangs & dimension



Loading

Live load = 40 PSF
 Dead load = 10 PSF
 Other = _____ PSF
 Total load = _____ PSF

Soil Bearing = _____ PSF*

*soils greater than 2,000 PSF must be verified

PSF=pounds per square foot

Tributary Area

(See Example on Right)

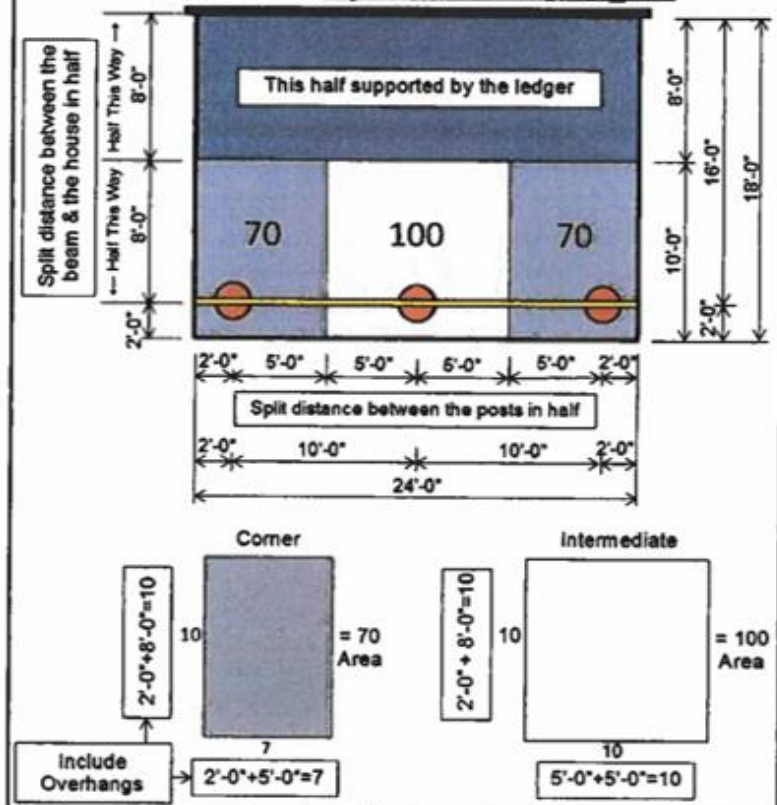
Corner Footing

_____ X _____ = _____

Intermediate Footing

_____ X _____ = _____

Tributary Area Example



Tributary load

Tributary area x total load = tributary load

Use this formula for tube forms, I.e. Sonotubes®

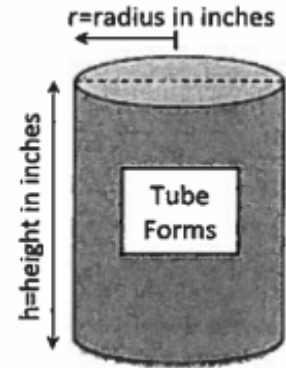
$$\text{Tributary area} \times \text{total load} + \left(150 \left(\frac{\pi r^2 h}{1728}\right)\right) = \text{tributary load}$$

Corner footing

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} + \left(150 \left(\frac{\pi \underline{\hspace{1cm}}^2 \underline{\hspace{1cm}}}{1728}\right)\right) = \underline{\hspace{2cm}}$$

Intermediate footing

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} + \left(150 \left(\frac{\pi \underline{\hspace{1cm}}^2 \underline{\hspace{1cm}}}{1728}\right)\right) = \underline{\hspace{2cm}}$$

**Footing Area**In² = inches squaredTributary load ÷ Soil bearing = Load PSF × 144 (change to square inches) = Area in In²

Corner footing

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \times 144 = \underline{\hspace{2cm}} \text{ Area in In}^2$$

Intermediate footing

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \times 144 = \underline{\hspace{2cm}} \text{ Area in In}^2$$

Round footings $\pi = 3.1416$

$$2 \times \sqrt{\text{area} \div \pi} = \text{diameter of footing}$$

(round to nearest inch)

Corner

$$2 \times \sqrt{\underline{\hspace{1cm}} \div \pi} = \underline{\hspace{1cm}} \text{ inches}$$

Intermediate

$$2 \times \sqrt{\underline{\hspace{1cm}} \div \pi} = \underline{\hspace{1cm}} \text{ inches}$$

Square footings

$$\sqrt{\text{area}} = \text{length of each side}$$

(round to nearest inch)

Corner

$$\sqrt{\underline{\hspace{1cm}}} = \underline{\hspace{1cm}} \text{ inches}$$

Intermediate

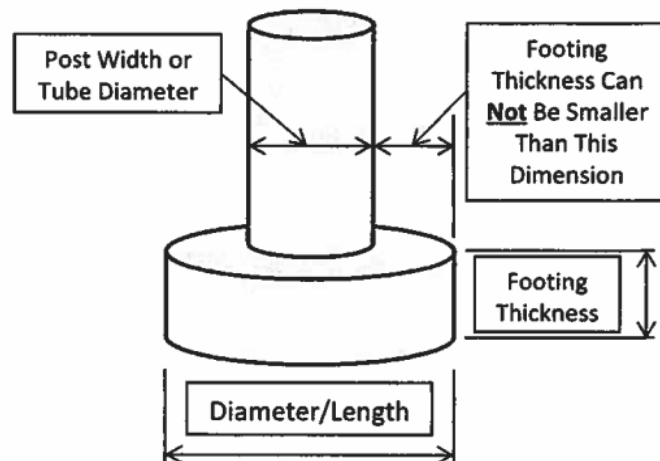
$$\sqrt{\underline{\hspace{1cm}}} = \underline{\hspace{1cm}} \text{ inches}$$

Footing thickness²

$$(\text{Diameter or length} - \text{post width}) \div 2 = \text{thickness}$$

(in inches)

$$(\underline{\hspace{1cm}} - \underline{\hspace{1cm}}) \div 2 = \underline{\hspace{1cm}} \text{ inches}$$

Note: Footings may not be less than 8" thick

²Footing thickness formula from American Wood Council.
Prescriptive Residential Wood Deck Construction Guide, 2015.

