Bradley County Building Inspections
Residential Deck Code Handout

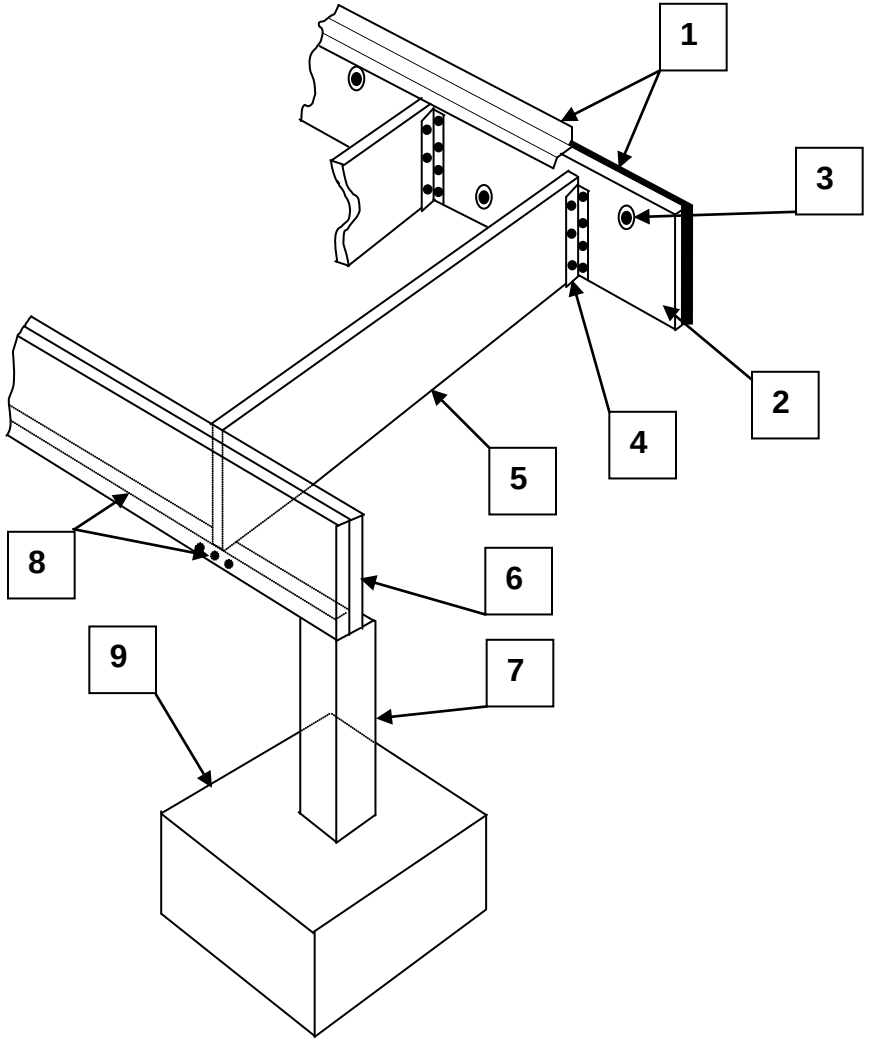
REV. 08242011

This handout is a guide and is not all-inclusive and all materials must be installed per the manufacturers' instructions and the 2006 International Residential Code IRC.

1. Flashing shall be installed at top of the ledger board and between the house wall. Flashing shall be continuous corrosion resistance type and installed per manufacturers instructions. This is usually stainless, double hot dipped galvanized, vinyl or copper. Aluminum flashing is not allowed.
2. The house wall ledger board shall be bolted to the house and be the same size as the floor joists (or larger if installing ledger strips).
3. **CRITICAL** - The house ledger board shall be bolted (staggered top to bottom) to the house with ½" dia. lag bolts***** with washers that are long enough to fully penetrate the structural member of the house. Bolt spacing shall be 24" o.c. if joist span is less than 10'; 16" o.c. if joist span is between 10' and 15'; 12" o.c. if joist span is 15' to 22'. Do not bolt to brick. *(For other ledger to house connections refer to American Wood Council Prescriptive Residential Wood Deck Construction Guide.)*
4. Joist hangers* shall be sized and anchored in accordance to the joist size and manufacturer's instructions.
5. Joists shall be sized per **Table *1***.
6. Deck girders shall be sized and supported in accordance with ***Table 4***. Girders must be fully supported by and structurally anchored to posts.
7. Posts shall be sized in accordance with ***Table 2***. All posts must be structurally anchored to the footing.
8. Ledger strips can be used in lieu of hangers or wall bearing. Ledger strips are to be 2" x 2" minimum and anchored with 3 - #16 nails* spaced 2" – 3" apart under each joist location.
9. Footings shall be sized in accordance with **T*able 3*.**

**** ALL FASTENERS, HANGERS, AND NAILS ARE TO BE DOUBLE HOT DIPPED GALVANIZED ZINC COATED OR STAINLESS STEEL.***

REFER TO BRADLEY COUNTY BUILDING INSPECTIONS 2006 IRC RESIDENTIAL STAIR INFORMATION HANDOUT FOR STAIRS, STAIR TREADS AND RISERS, LANDINGS, HANDRAILS AND GUARDRAILS.



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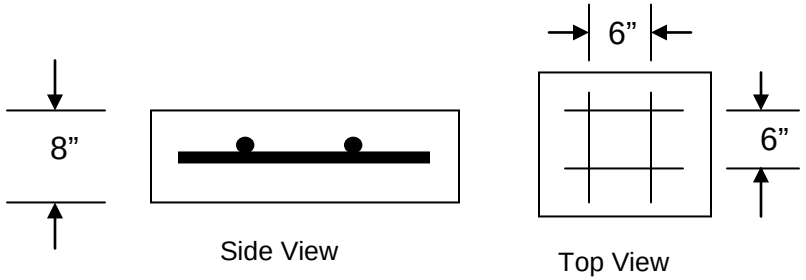
Based on the 2006 International Residential Code. Other materials, configurations, or engineered designs may be utilized that fall within the guidelines of this code.

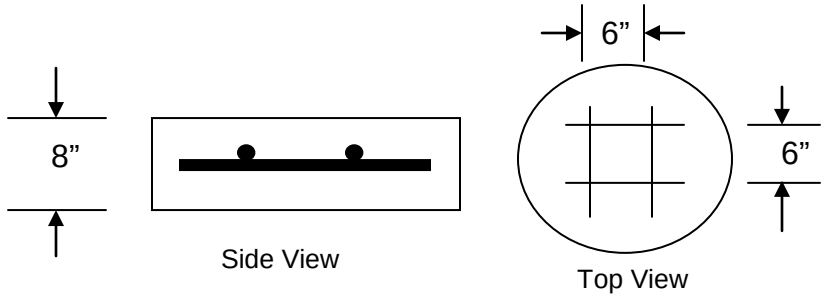
TABLE 1: Joist Span Chart				
	Spacing of Joists o.c.			
Joist Size	**12”**	**16”**	**19.2”**	**24”**
2” x 6”	10’-9”	9’-9”	9’-2”	8’-6”
2” x 8”	14’-2”	12’-10”	12’-1”	11’-0”
2” x 10”	18’-0”	16’-1”	14’-8”	13’-1”
2” x 12”	21’-9”	18’-10”	17’-2”	15’-5”
Note: Above span length are clear span dimensions between bearing points. (Based on No. 2 pine)				

TABLE 2: Deck Post Sizing		
Post Height	Wood Post Size	Round Metal (Sch. 40)
0’ to 8’-0”	4” x 4”	3” Dia.
8’ to 12’	6” x 6”	3” Dia.
Note: Call the Codes office if your posts are greater than 12 feet in height or provide an engineered design.		

TABLE 3: Deck Pier Footing Chart				
Header Size	2 @ 2”x6” or a single Member	2 @ 2”x8”	2 @ 2”x10”	2 @ 2”x12”
Square Footing Size	12” x 12”	17” x 17”	20” x 20”	24” x 24”
Round Footing Size	14”	19”	23”	27”
Note: Minimum thickness of concrete = 8”, minimum frost line depth = 12”. Install two (2) #4 rebar in each direction spaced 6” on center.				



Typical Square Footing Rebar Placement



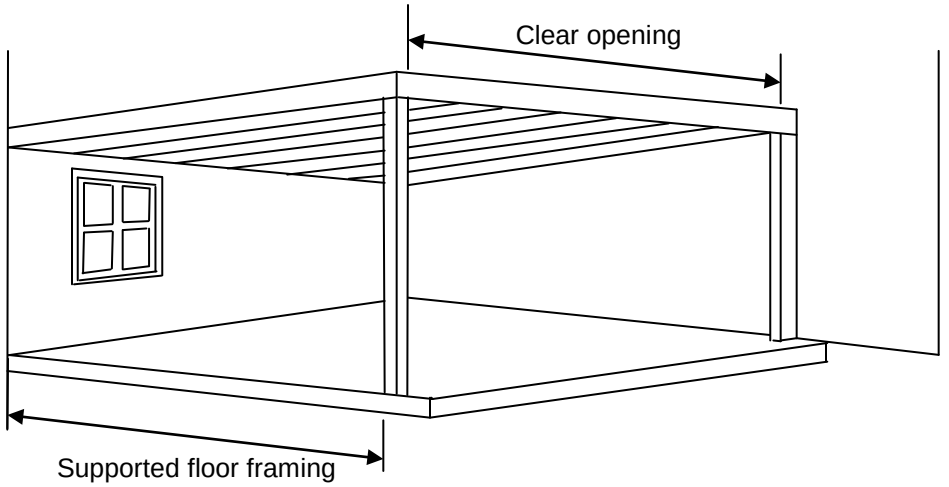
Typical Round Footing Rebar Placement

Table 4: Girder Sizing – 40 psf Live Load, 10 psf Dead Load, 1.00 Load Duration Factor										
	Span of Supported Floor Framing									
CLEAR OPENING	4’	6’	8’	10’	12’	14’	16’	18’	20’	22’
4’	(1) 2x6	(1) 2x6	(1) 2x6	(1) 2x6	(1) 2x8	(1) 2x8	(1) 2x10	(1) 2x12	(1) 2x12	(2) 2x12
5’	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x10
6’	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x6	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x10
7’	(2) 2x8	(2) 2x8	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(2) 2x12
8’	(2) 2x8	(2) 2x8	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(2) 2x12
9’	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(2) 2x12	(2) 2x12	(3) 2x12
10’	(2) 2x8	(2) 2x8	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(3) 2x10	(3) 2x10	(3) 2x12	(3) 2x12
11’	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(2) 2x12	(3) 2x10	(3) 2x10	(3) 2x12	(3) 2x12	(3) 2x12
12’	(2) 2x10	(2) 2x10	(2) 2x12	(2) 2x12	(3) 2x10	(3) 2x12	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12
13’	(2) 2x12	(2) 2x12	(2) 2x12	(3) 2x10	(3) 2x12	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 11*
14’	(2) 2x12	(2) 2x12	(3) 2x10	(3) 2x10	(3) 2x12	(4) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
15’	(2) 2x12	(3) 2x10	(3) 2x10	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
16’	(3) 2x10	(3) 2x10	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
17’	(3) 2x12	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
18’	(3) 2x12	(3) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 16*	*3-1/2 x 17-7/8*
19’	(3) 2x12	(4) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
20’	(4) 2x12	(4) 2x12	(4) 2x12	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 17-7/8*	*3-1/2 x 19-1/4*	*3-1/2 x 22*	*3-1/2 x 23-3/8*

Southern Pine lumber sizes for No. 2 grade are shown in regular type, with number of plies given in parentheses. Southern Pine glued laminated timber sizes for 24F-1.8E combination are shown in italics when (4) 2x12’s no longer meet design conditions. A 3.0” bearing length is assumed on girder ends.

Steps in Using this Table:

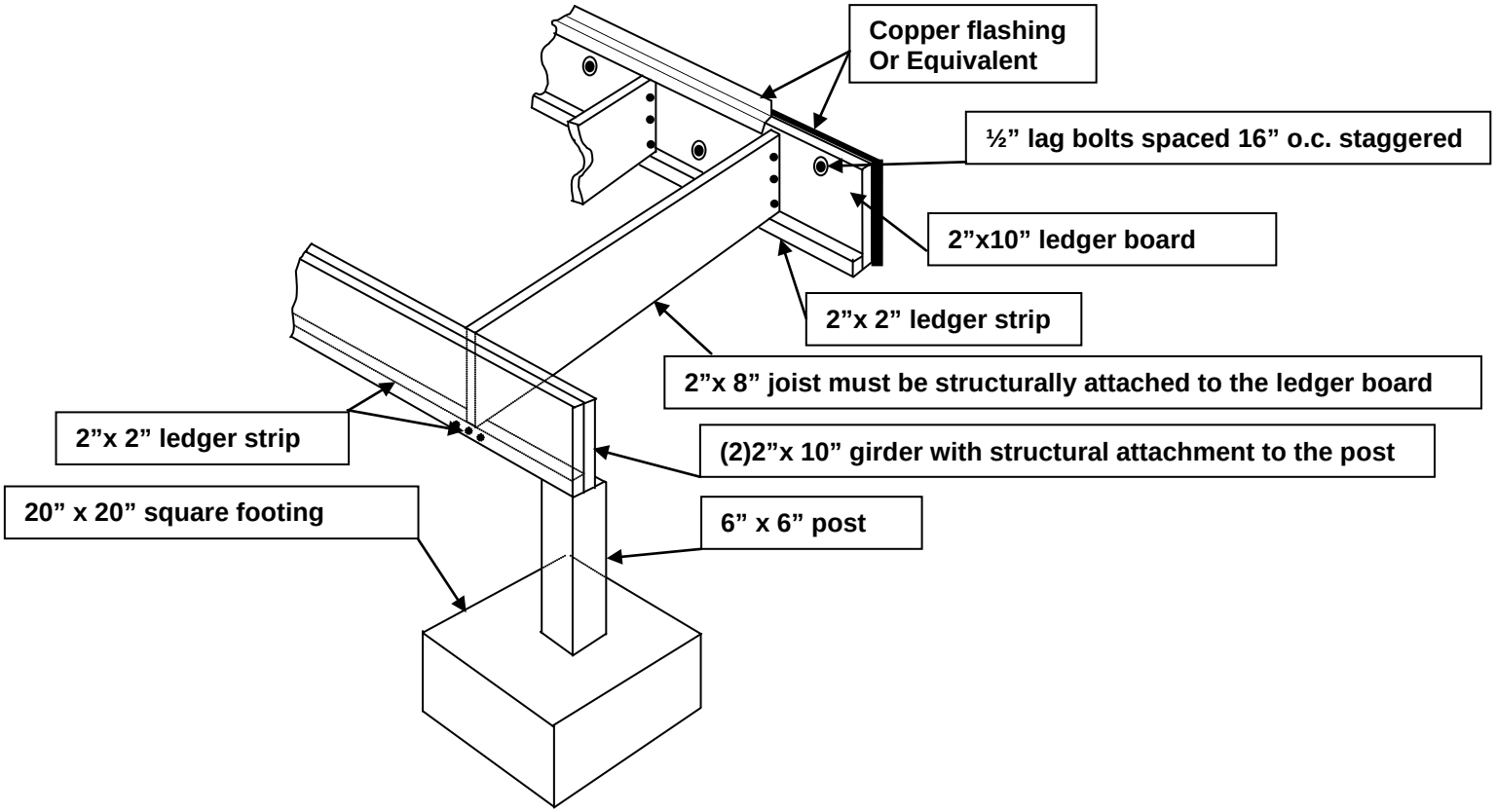
1. Verify the applicability of this table’s design loads in pounds per square foot (psf) and corresponding load duration factor.
2. Find the span of supported floor framing. (i.e. span of joists or trusses that frame into the beam).
3. Find the clear opening required in feet.
4. Select the number of plies and size or the Southern Pine 24F-1.8E glued laminated timber.
5. Beams supporting face mounted joists cannot be smaller than joist and top flange hangers are required.
6. Member sizes were designed assuming beams were braced continuously to prevent lateral compression buckling.



EXAMPLE 1A:

An owner wishes to attach a deck 15' long to the back of his house. The deck will extend 12' from the back of the house and will be 10' above finished grade when complete. Two methods of construction will be considered to demonstrate the use of the above tables. It should be noted that the methods described here are not the only methods which could be used to construct this particular deck.

The first method of construction to be considered is to have the deck boards running parallel to the house with the floor joists running perpendicular. This allows a girder loaded on one side with joists spanning 12'. Using **Table 1** above and a joist spacing of 16" on center, 2x8 joists will be required. The house wall ledger board shall be 2x8 minimum if hangers are used on the joists or 2x10 minimum if a 2x2 ledger strip is used. For ease of installation, we will use a 2x10 ledger board with 2x2 ledger strips. The house wall ledger board is anchored to the house using ½" diameter lag bolts with washers spaced 16" o.c, staggered spaced. Copper flashing is used between the house and the ledger board. **Table 4** requires the girder to be 2-2x10 minimum having a maximum span of 7'-0" between posts or a single 2x8 girder having a maximum span of 4' between posts. However, since we are using 2x2 ledger strips in lieu of hangers we will use a 2-2x10 girder just as we did with the house ledger board. When 2-member girders are used, both members must be supported by the posts at each end and at splice points. From **Table 2**, a deck height of 10' requires the use of 6" x 6" wood posts or 3" diameter metal posts. Finally, using **Table 3,** a 2-2x10 girder requires a footing size of 20" x 20" square or 23" diameter round dug a minimum of 12" deep and poured a minimum of 8" thick concrete. Install 2 #4 rebar in the footing each direction for reinforcement. **Note: The house rim / band board must be structurally attached to the house frame.**



EXAMPLE 1B: A second method of construction is to have the deck boards running perpendicular to the house with floor joists running parallel. This method uses a girder loaded on both sides to allow joist spans of 7'6". Using **Table 1** and a joist spacing of 24" on center, 2x6 joists can be used. The house wall ledger board in this case is not required providing posts are installed at the house to support the girders. However, to eliminate the added posts, we will attach a 2x8 ledger board at the house wall using ½" diameter lag bolts with washers spaced 16" o.c. The girders will now run perpendicular to the house attached to the house ledger board using galvanized girder hangers. **Table 4** shows us that 2-2x8 girders will span 8'-0" between posts. This means that for a 12' girder beam a post will be required mid-span of the girder and another at the end of the girder. Again, **Table 2** requires 6" x 6" posts for a deck height of 10' and **Table 3** shows footings of 17" x 17" square or 19" diameter round when using 2-2x8 girders.

Note: The house rim / band board must be structurally attached to the house frame.