

May 18, 2022

Clover & Hive
 120 SE 30th St.
 Lee's Summit, MO 64082

RE: Field Issue of holes bored within 2" of each other above breaker box and notched floor joist for Lot #16 Osage – 3744 and 3746 SW Maryville Place Lee's Summit, MO 64082 – Permit # PRRES20213817

Unit 3744: Holes bored within 2" of each other in floor joist:

- Holes for electrical bored within 2" of each other above breaker box in basement.
- Holes are approx. 1" and 2" diameter and 1" apart from each other for electrical lines.

Recommended modifications:

- Install 36" length of CS-16 per manufacturer's spec's centered underneath holes along bottom of floor joist.

Model No.	Total L	Ga.	DF/SP		SPF/HF		Allowable Tension Loads (160)	Code Ref.
			Fasteners	End Length	Fasteners	End Length		
CMST12	40'	12	(74) 16d	33"	(84) 16d	38"	9,215	14, L3, FL
			(96) 10d	39"	(98) 10d	44"	9,215	
CMST14	52½'	14	(56) 16d	26"	(66) 16d	30"	6,490	
			(66) 10d	30"	(76) 10d	34"	6,490	
CMSTC16	54'	16	(50) 16d sinker	20"	(58) 16d sinker	25"	4,585	
CS14	100'	14	(26) 10d	15"	(30) 10d	16"	2,490	
			(30) 8d	16"	(36) 8d	19"	2,490	
CS16	150'	16	(20) 10d	11"	(22) 10d	13"	1,705	
			(22) 8d	13"	(26) 8d	14"	1,705	
CS18	200'	18	(16) 10d	9"	(18) 10d	11"	1,370	
			(18) 8d	11"	(22) 8d	12"	1,370	
CS20	250'	20	(12) 10d	6"	(14) 10d	9"	1,030	
			(14) 8d	9"	(16) 8d	9"	1,030	
CS22	300'	22	(10) 10d	7"	(12) 10d	7"	845	
			(12) 8d	7"	(14) 8d	8"	845	

1. Fastener quantities and end lengths are calculated using an increase for wind or seismic loading.
 2. Use half of the required nails in each member being connected to achieve the listed loads.
 3. Calculate the connector value for a reduced number of nails as follows:

$$\text{Allowable Load} = \frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Load}$$

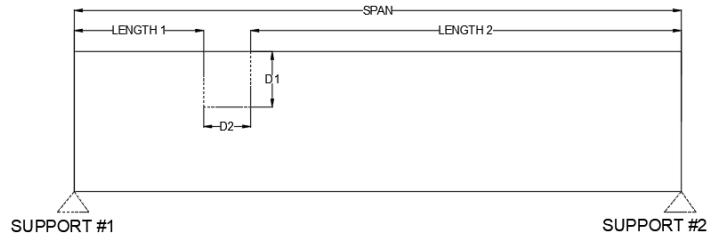
Example: CMSTC16 in DF/SP with 40 nails total.
 (Half of the nails in each member being connected)

$$\text{Allowable Load} = \frac{40 \text{ Nails (Used)}}{50 \text{ Nails (Table)}} \times 4,585 \text{ lb.} = 3,668 \text{ lb.}$$

4. Tension loads apply for uplift when installed vertically.
 5. Nails: 16d = 0.162" dia. x 3½" long. 16d sinker = 0.148" dia. x 3¼" long.
 10d = 0.148" dia. x 3" long. See pp. 26-27 for other nail sizes and information.



Unit 3746: notched floor joist:



SIMPLE SPAN

- D1 – 6.25"
- D2 – 5.5"
- Length 1 – 1'
- Length 2 – 13.5'
- Span – 14.5'
- Support #1 – foundation wall
- Support #2 – W8x13 Steel beam
- Location – under powder room
- Loading -
 - Dead = 15 psf @ 16" oc
 - Live = 40 psf @ 16" oc

Recommendations:

Add additional support to existing 2x10 notched floor joist. Sister Douglas Fir Larch #2 2x10 joist for 4' length with glue and 4 fasteners per linear ft in "W" pattern. Notch sistered floor joist a maximum notch allowed by 2018 IRC.

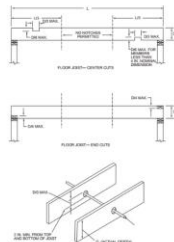


FIGURE R502.CUTTING, NOTCHING AND DRILLING

For SI: 1 inch = 25.4 mm

REMARKS See notes:

Notches in solid timber joists, rafters and beams shall not exceed one-sixth the depth of the member, shall not be longer than one-third the depth of the member and shall not be located in the middle one-third of the span. Notches at the ends of the member shall not exceed one-fourth the depth of the member. The tension side of members 4 inches (102 mm) or greater in nominal thickness shall not be notched except at the ends of the members. The diameter of holes bored or cut into members shall not exceed one-third the depth of the member. Holes shall not be closer than 2 inches (51 mm) to the top or bottom of the member, or to any other hole located in the member. Where the member is notched, the hole shall not be closer than 2 inches (51 mm) to the notch.

Sincerely,

Bradley Huxol, PE

