EVERSTEAD
ENGINEERING & DESIGN

May 9, 2022

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

RE: Field Issue of overbored holes and holes within bottom 2" of floor joist and within 2" of each other and notched floor joists for steel beam bolts for Lot #20 Osage – Unit 1 and Unit 2 2003 and 2005 SW Osage Dr. Lee's Summit Mo 64082- Permit #PRRES20214080

Unit A:

- Holes are 1" - 2.5" diameter and within 2" of each other in floor joists

Unit B:

- Holes are 1" diameter and 1" apart and within 2" of bottom of floor joist in garage

Recommendations:

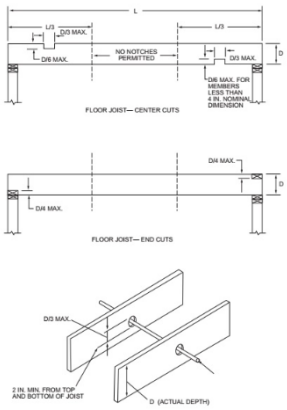
- **All holes that are not in compliance with the 2018 IRC per image below shall have a 24" - CS16 strap centered over the hole along the bottom of the floor joist. Install CS16 strap per manufacturers recommendations shown below.**

Unit B:

- Dining/great room floor joists are notched maximum 1"x1" at multiple locations for bolt connection of steel beam to wood plate.

Recommendations:

- **Header off notched floor joists with 32" length of Douglas Fir Larch #2 2x10 to adjacent floor joists.**
- **Install floor joist hangers to attach headered floor joist to adjacent floor joist.**
- **Header off floor joist within 1' of floor joist end by steel beam.**



For SI: 1 inch = 25.4 mm.

FIGURE R502.8CUTTING, NOTCHING AND DRILLING

R502.8.1 Sawn lumber.

Notches in solid lumber joists, rafters and beams shall not exceed one-sixth of the depth of the member, shall not be longer than one-third of 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.

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	I4, L3, FL
			(86) 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.

Sincerely,

Bradley Huxol, PE

STATE OF MISSOURI
BRADLEY HUXOL
NUMBER PE-2011000903
PROFESSIONAL ENGINEER