

January 20, 2022

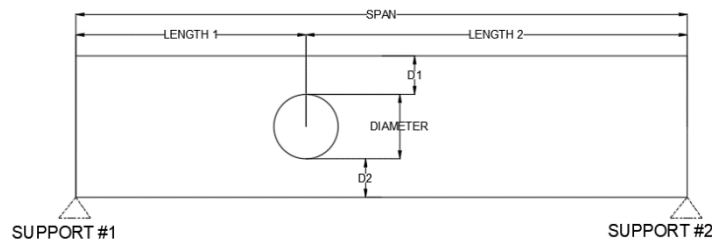
Summit Homes  
 120 SE 30<sup>th</sup> St.  
 Lee's Summit, MO 64082

**RE: Field Issue of Over notched and drilled floor joists.**  
**for Lot # – 38 Osage**  
**2114 SW Rutherford Dr. Lee's Summit, MO 64081**  
**Permit # PRRES20212885**

This letter addresses the drilled holes in multiple floor joists under bed #2/bath #2 and over notched and drilled floor joist for bath 1 for Lot #38.

### **Drilled holes (multiple joists) under bed #2/bath #2**

There are multiple joists with 1" diameter holes to allow for electrical wiring. The distance from the bottom of the joists to edge of hole are within 1.5" of the bottom and are located at different positions along the joist span. The joists are located throughout the first floor floor system under Bed #2 and Bath #2. Additional information is given below.



- D1 – 6.75"
- D2 – 1.5"
- Diameter of hole – 1"
- Length 1 – middle 1/3
- Length 2 – middle 1/3
- Span – 14' 7"
- Support #1 – W8 x 18 Steel Beam
- Support #2 – W8 x 10 Steel Beam
- Location – Bed 2/bath 2
- Loading -
  - Dead = 15 psf @ 16" oc
  - Live = 40 psf @ 16" oc

- Install 30" length of CS-14 centered under each hole along bottom of floor joist per manufacturer's spec's.
- Minimum of 30 (10d) nails required.

| 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    | 52 1/2' | 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:  

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

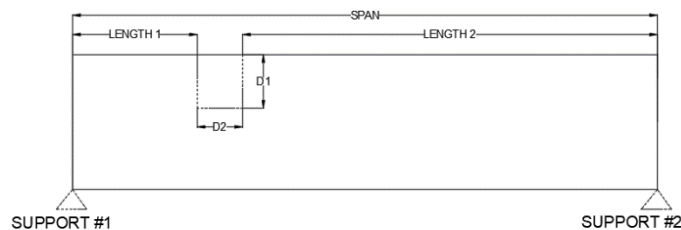
**Example:** CMSTC16 in DF/SP with 40 nails total.  
(Half of the nails in each member being connected)

$$\text{Allowable Load} = \frac{40 \text{ Nails (Used)}}{50 \text{ Nails (Table)}} \times 4,585 \text{ lb.} = 3,668 \text{ lb.}$$
4. Tension loads apply for uplift when installed vertically.
5. **Nails:** 16d = 0.162" dia. x 3 1/4" long, 16d sinker = 0.148" dia. x 3 1/4" long, 10d = 0.148" dia. x 3" long. See pp. 26-27 for other nail sizes and information.



## Over-notched/drilled joist under Bath #1.

Floor joist was drilled/ over-notched to allow for pex and DWV lines for bath #1. Joist has one notch and one hole. Additional information is given below.



SIMPLE SPAN

- D1 – 5.5"
- D2 – 5"
- Length 1 – 5.5'
- Length 2 – 10'
- Span – 15' 6"
- Support #1 – W8 x 15 Steel Beam
- Support #2 – W8 x 10 Steel Beam
- Location – Under bath #1
- Loading -
  - Dead = 15 psf @ 16" oc
  - Live = 40 psf @ 16" oc

- Install 30" length of CS-14 centered under drilled hole along bottom of floor joist per manufacturer's spec's.
- Minimum of 30 (10d) nails required.
- Remove blocking and pex lines if needed and install joist adjacent to the existing notched joist.
- Joist shall be installed as close as possible existing notched joist.

Sincerely,



Bradley Huxol, PE

