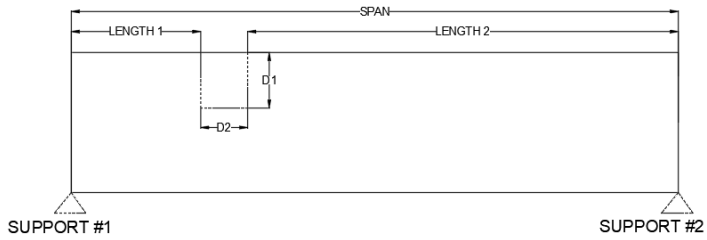
EVERSTEAD
ENGINEERING & DESIGN

May 23, 2022

Summit Homes
120 SE 30th St.
Lee's Summit, MO 64082

RE: Field Issue of overbored and over notched floor joists and spliced top plates for Lot #130 Manor at Stoney Creek –1913 SW Merryman Dr. Lee's Summit, MO 64082 – Permit # PRRES20214474

Notched floor joists:



SIMPLE SPAN

- D1 – 7"
- D2 – 5"
- Length 1 – 1'
- Length 2 – 14'-4"
- Span – 15'-4"
- Support #1 – exterior pantry wall
- Support #2 – rear load bearing garage wall
- Location – above pantry
- Loading -
    - Dead = 15 psf @ 16" oc
    - Live = 40 psf @ 16" oc

Recommended modifications:

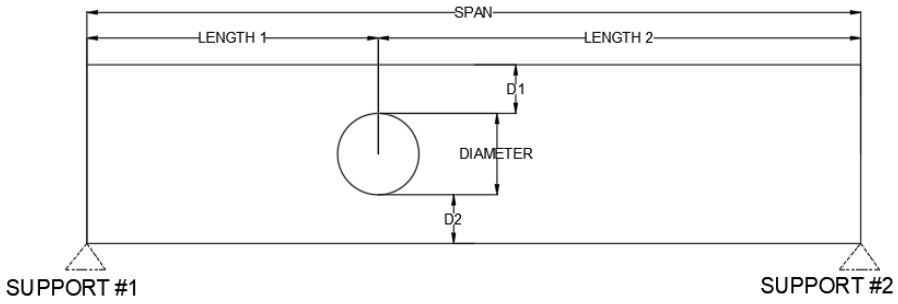
- **Install Douglas Fir Larch #2 2x10 as close as possible to notched floor joist.**
- **Double joist shall span approx. 4' from exterior wall to 2x10 header.**

- D1 – 5"
- D2 – 4.5"
- Length 1 – 6'
- Length 2 – 9'-4"
- Span – 15'-4"
- Support #1 – exterior daylight wall
- Support #2 – rear load bearing garage wall
- Location – in basement under powder room
- Loading -
    - Dead = 15 psf @ 16" oc
    - Live = 40 psf @ 16" oc

Recommended modifications:

- **Install Simpson CTS218 strap flush to floor joist at top of floor joist per manufacturer's spec's over notch.**

Over bored hole in floor joist:



- D1 – at least 2"
- D2 – at least 2"
- Diameter of hole – 3.5"
- Length 1 – 1'
- Length 2 – 14'-4"
- Span – 15'-4"
- Support #1 – exterior pantry load bearing wall
- Support #2 – rear garage load bearing wall
- Location – above pantry
- Loading -
    - Dead = 10 psf @ 16" oc
    - Live = 40 psf @ 16" oc

Recommended modifications:

- **Install 3' length of CS-16 strap centered under the hole per manufacturer's spec's.**

Top plate splices not staggered thoughout:

Recommended modifications:

- **Install 24" CS-16 strap per manufacturer's specs at each top plate with splice staggered less than 24" oc.**

Model No.	Strap Qty.	Installation	Fasteners (Per Strap) (in.)	Allowable Loads DF/SP		Allowable Loads SPF/HF	
				Compression (160)	Tension (160)	Compression (160)	Tension (160)
CTS218	1	One sided	(24) 0.148 x 1½	1,125	2,270	970	1,970
	2	One sided		2,250	4,535	1,935	3,900
	2	Two sided		2,515	4,535	2,165	3,900
	3	Two sided		3,310	6,805	2,845	5,850
	4	Two sided		5,035	9,070	4,330	7,800
	1	One sided	(24) #9 x 1½" SD	1,175	2,510	1,010	2,160
	2	One sided		2,350	5,020	2,020	4,315
	2	Two sided		2,735	5,020	2,350	4,315
	3	Two sided		4,130	7,530	3,550	6,475
	4	Two sided		5,470	10,040	4,700	8,635

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