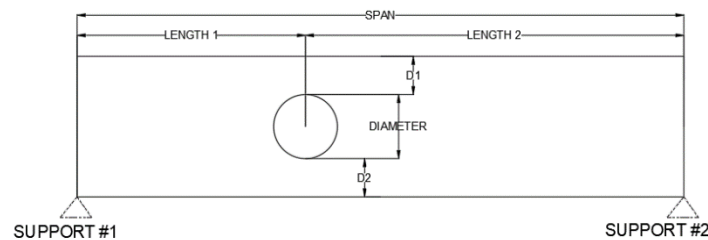July 15, 2022

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

RE: **Field Issues for Lot # 110 Manor at Stoney Creek – 4405 SW Grindstone Cir**
Lee's Summit, MO 64082 – Permit # PRRES20215682

1. Overbored holes/holes within 2" of each other in floor joists:

- D1 – 2.25"
- D2 – 3"
- Diameter of hole – 4"
- Length 1 – 10'
- Length 2 – 5'
- Span – 15'
- Support #1 – Rear garage foundation wall
- Support #2 – Foundation wall at rear of structure
- Location – Under powder room in basement
- Loading -
    - Dead = 10 psf @ 16" oc
    - Live = 40 psf @ 16" oc

- D1 – 4"
- D2 – 4.25"
- Diameter of hole – 1"
- Length 1 – 11.5'
- Length 2 – 4.5'
- Span – 16'
- Support #1 – W16 X 36 steel beam
- Support #2 – LBW at rear of garage
- Location – Garage under bath #2
- Loading -
    - Dead = 10 psf @ 16" oc double every other
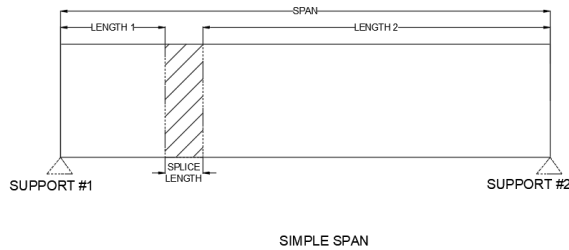   - Live = 40 psf @ 16" oc double every other

- D1 – at least 2"
- D2 – at least 2"
- Diameter of hole – two drilled holes at 1"
- Length 1 – 5'
- Length 2 – 2'
- Span – 7'
- Support #1 – Rear garage foundation wall
- Support #2 – 2x10 header
- Location – Under powder room in basement
- Loading -
    - Dead = 10 psf @ 16" oc
    - Live = 40 psf @ 16" oc

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	
			(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	I4, L3, FL
			(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:

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

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

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

Recommended modifications:
- **Install 24" length of CS-16 centered under overbored hole along bottom of floor joist per manufacturer's specifications.**
- **Install 24" length of CS-16 centered under multiple holes along bottom of floor joist per manufacturer's specifications.**

Spliced Floor joist with holes bored closer than 2" together:

SIMPLE SPAN

- Splice length – 9"
- Length 1 – 4.5'
- Length 2 – 11'
- Span – 15.5' with a 1' cantilever
- Support #1 – Rear garage load bearing wall
- Support #2 – W16x36 steel garage beam
- Location – Under bath #2
- Loading –
  - Dead = 10 psf @ 16" oc double every other
  - Live = 40 psf @ 16" oc double every other

- D1 – at least 2"
- D2 – at least 2"
- Diameter of hole – 1"
- Length 1 – 4.5'
- Length 2 – 11'
- Span – 15.5' with a 1' cantilever
- Support #1 – Rear garage load bearing wall
- Support #2 – W16x36 steel garage beam
- Location – Under bath #2
- Loading -
  - Dead = 10 psf @ 16" oc double every other
  - Live = 40 psf @ 16" oc double every other

Recommended modifications:
- **Install 24" length of CS-16 centered under hole along bottom of each sistered floor joist per manufacturer's specifications.**
- **Sister (2) Douglas Fir Larch #2 2x10 full length to spliced double joist.**
- **Install 4 fasteners per linear ft in a "W" pattern for span length.**

Sincerely,

Bradley Huxol, PE