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February 26, 2020

Mr. Kevin Perrin
McBee Custom Homes LLC
307 SE AA Hwy
Blue Springs, MO

Re: 1105 NE Goshen Ct
Lee's Summit, MO
Monticello Lot 82

Dear Mr. Perrin:

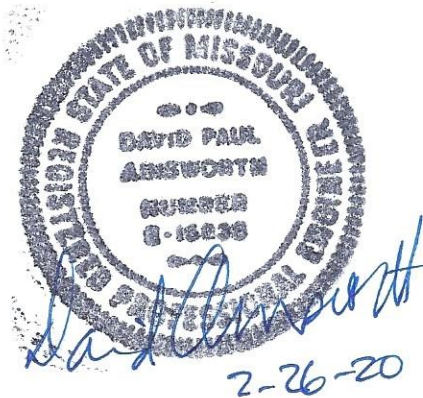
Attached are calculations as requested by the Building Inspector, Kahn, to show that the cantilever framing as installed at the above referenced property to support the roof framing at the hip roof above Bedroom 2 is adequate to support the imposed loads.

Cordially,

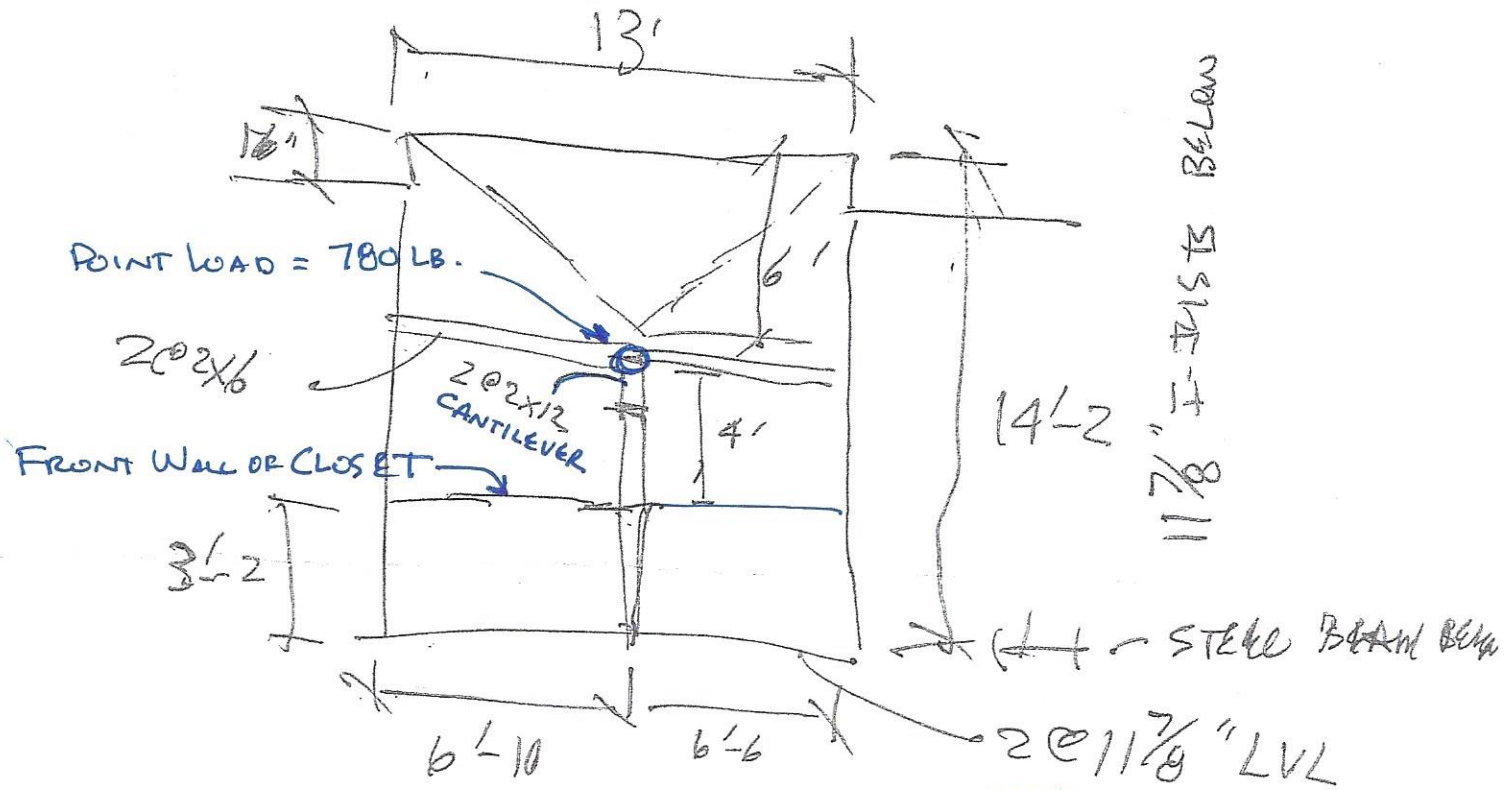


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Cc: Dan Harper @ City of Lee's Summit, MO



1105 NE GOSTENCT LSMO



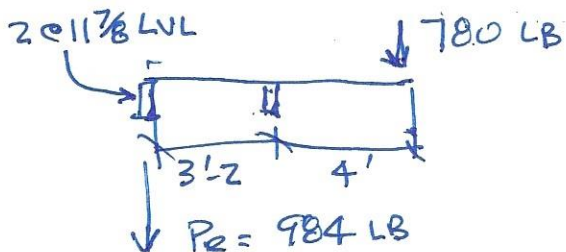
$$\text{LOAD ON CANTILEVER} = \frac{6}{2} \times \frac{13}{2} \times (10 + 10 + 20) = 780 \text{ LBS.}$$

$$M_{\text{CANTILEVER}} = 4' \times 780 \text{ LB} = 3,120 \text{ FT-LB} = 37,440 \text{ IN-LB}$$

$$S_{\text{REQ}} = \frac{M}{f_b} = \frac{37,440 \text{ IN-LB}}{1,400 \text{ PSI}} = 26.74 \text{ IN}^3$$

$$S_{2@2x12} = 2(31.64 \text{ IN}^3) = 63.28 \text{ IN}^3 > 26.74 \text{ IN}^3 \therefore 2@2x12 \text{ OK}$$

CHECK UPLIFT ON OPPOSITE END OF CANTILEVER



$$M = 4' \times 780 \text{ LB} = 3,120 \text{ FT-LB}$$

$$\text{RESISTING } M = 3,120 \text{ FT-LB} = 3.17' \times P_R$$

$$P_R = 984 \text{ LB}$$

STRAP DOUBLE 2x12'S TO 2@11 7/8" LVL WITH SIMPSON

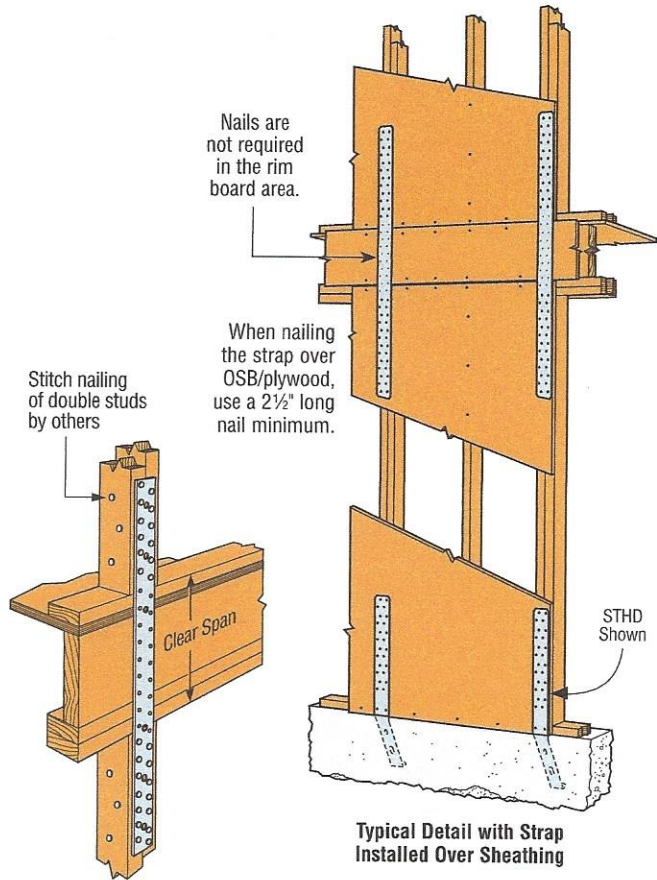
STRONG TIE MSTC 40 OR EQUAL - ALLOWABLE TENSILE LOAD = 1,985 LB

CODES: See page 12 for Code Reference Key Chart.

These products are approved for installation with the Strong-Drive® SD Connector screw. See page 27 for more information.

Floor-to-Floor Clear Span Table

Model No.	Clear Span	Fasteners (Total)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)
			(160)	(160)
MSTA49	18	26-10d	2020	2020
	16	26-10d	2020	2020
MSTC28	18	12-16d sinkers	1155	995
	16	16-16d sinkers	1540	1325
MSTC40	24	20-16d sinkers	2310	1985
	18	28-16d sinkers	2695	2320
MSTC52	16	32-16d sinkers	3080	2650
	24	36-16d sinkers	3465	2980
MSTC66	18	44-16d sinkers	4235	3645
	16	48-16d sinkers	4620	3975
MSTC78	30	48-16d sinkers	4780	4120
	24	54-16d sinkers	5380	4640
	18	64-16d sinkers	5860	5495
MST37	16	68-16d sinkers	5860	5840
	30	64-16d sinkers	5860	5495
MST48	24	72-16d sinkers	5860	5860
	18	76-16d sinkers	5860	5860
MST60	24	14-16d	1725	1495
	18	20-16d	2465	2135
	16	22-16d	2710	2345
MST72	24	26-16d	3215	2780
	18	32-16d	3960	3425
	16	34-16d	4205	3640
MST72	30	34-16d	4605	3995
	24	40-16d	5240	4700
	18	46-16d	6235	5405
MST72	30	48-16d	6505	5640
	24	54-16d	6730	6345
	18	62-16d	6730	6475



Floor-to-Floor Tie Installation showing a Clear Span

These products are available with additional corrosion protection. Additional products on this page may also be available with this option, check with Simpson Strong-Tie for details.

Model No.	Ga	Dimensions		Fasteners (Total)			Allowable Tension Loads (DF/SP)		Allowable Tension Loads (SPF/HF)		Code Ref.
		W	L	Nails	Bolts		Nails (160)	Bolts (160)	Nails (160)	Bolts (160)	
					Qty	Dia					
MST27	12	2 1/16	27	30-16d	4	1/2	3700	2165	3200	2000	I4, L3, F2
MST37		2 1/16	37 1/2	42-16d	6	1/2	5080	3025	4480	2805	
MST48		2 1/16	48	50-16d	8	1/2	5310	3675	5190	3410	
MST60	10	2 1/16	60	68-16d	10	1/2	6730	4485	6475	4175	
MST72		2 1/16	72	68-16d	10	1/2	6730	4485	6475	4175	
HST2	7	2 1/2	21 1/4	—	6	3/8	—	5220	—	4835	
HST5		5	21 1/4	—	12	3/8	—	10650	—	9870	
HST3		3	3	25 1/2	—	6	3/4	—	7680	—	
HST6	6		25 1/2	—	12	3/4	—	15470	—	13320	

1. Loads include a 60% load duration increase on the fasteners for wind or earthquake loading.
2. Install bolts or nails as specified by Designer. Bolt and nail values may not be combined.
3. Allowable bolt loads are based on parallel-to-grain loading and these minimum member thicknesses: MST-2 1/2"; HST2 and HST5-4"; HST3 and HST6-4 1/2".
4. Use half of the required nails in each member being connected to achieve the listed loads.
5. When installing strap over wood structural panel sheathing, use 2 1/2" long nail minimum.
6. Tension loads apply for uplift as well when installed vertically.
7. **NAILS:** 16d = 0.162" dia. x 3 1/2" long, 16d Sinker = 0.148" dia. x 3 1/4" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pages 22-23 for other nail sizes and information.

Allowable Uniform Floor Load

(in pounds per lineal foot [PLF])

100% Load Duration

Span Length	BCI® 5000 1.7 Series 2" Flange Width						BCI® 6000 1.8 Series 2 ⁵ / ₁₆ " Flange Width								
	9 ¹ / ₂ " BCI® 5000 1.7		11 ⁷ / ₈ " BCI® 5000 1.7		14" BCI® 5000 1.7		16" BCI® 6000 1.8		9 ¹ / ₂ " BCI® 6000 1.8		11 ⁷ / ₈ " BCI® 6000 1.8		14" BCI® 6000 1.8		
	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	
6	-	280	-	300	-	313	-	320	-	333	-	346	-	353	
7	-	240	-	257	-	268	-	274	-	285	-	297	-	302	
8	-	210	-	225	-	235	-	240	-	250	-	260	-	265	
9	-	186	-	200	-	208	-	213	-	222	-	231	-	235	
10	151	168	-	180	-	188	175	192	-	200	-	208	-	212	
11	117	152	-	163	-	170	135	174	-	181	-	189	-	192	
12	91	136	146	150	-	156	107	160	-	166	-	173	-	176	
13	73	116	117	138	-	144	85	147	138	153	-	160	-	163	
14	59	100	95	128	-	134	69	129	113	142	-	148	-	151	
15	48	87	78	112	115	125	57	112	93	133	135	138	-	141	
16	40	76	65	98	96	116	47	95	78	125	113	130	-	132	
17			55	87	80	103	40	80	65	112	95	122	-	124	
18			47	77	68	92			56	100	81	115	108	117	
19			40	69	58	82			48	89	70	106	93	111	
20					50	74			41	81	60	96	80	106	
21					44	67					52	87	70	99	
22	FRONT WALL OF CLOSET LOAD BEARING ON I-JOISTS BELOW						79	61	90						
23	LOAD CAPACITY OF I-JOIST = 150 PLF														
24	ACTUAL LOAD = (3040) x 1.33 = 53.2 PLF														
25															

- Total Load values are limited by shear, moment, or deflection equal to L/240.
- Live Load values are limited by deflection equal to L/480. For deflection limits of L/360 and L/960, multiply the Live Load values by 1.33 and 0.50 respectively.
- Both the Total Load and Live Load columns must be checked. Where a Live Load value is not shown, the Total Load value will control.
- Table values apply to either simple or multiple span joists. Span is measured center to center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).
- Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16 inches and less. 18 and 20 inch joists require web stiffeners.
- For assistance with floor design, consult the section *About Floor Performance* on page 4.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.