October 9, 2021

Walker Custom Homes, LLC
Attn: Jason Walker & Jeff Roberts

Re: 1913 NE Catalina Ave., Lee's Summit, MO (Lot 307, Park Ridge)

Vista Structural Engineering, LLC, was asked to address the following comments called out during the city's rough-in inspection for the house being built at 1913 NE Catalina Avenue:

1. Plan calls for 2 king studs between great room windows. Have engineer address this. *Based on the attached calculation, we recommend adding a Simpson CS16 or LSTA36 strap at the hinge locations labeled on the attached pictures. These straps should be installed in four locations – above and below the middle window, on both trimmers, on the two middle built-up studs. The straps shall be installed on the interior face of the studs.*

2. Have engineer address kitchen I-beam point load offset from I-beam below but supported by the triple joist. *Based on the attached calculation, the triple 2x10 floor joist will adequately transfer the beam kitchen beam point load to the W10x26 steel beam in the basement.*

Our firm appreciates the opportunity to serve you. If you have any questions or if you need anything further, please feel free to contact us.

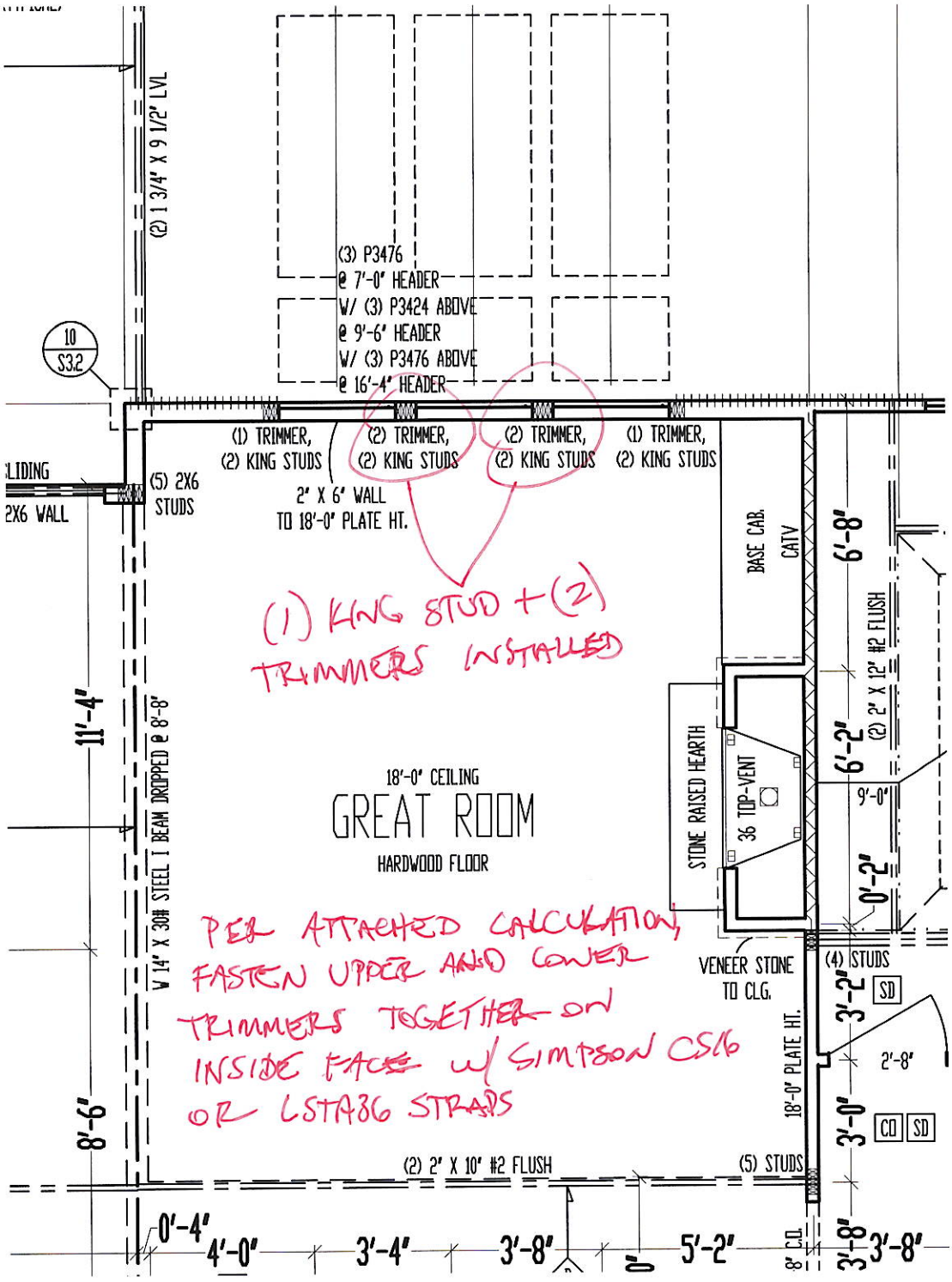
Sincerely,

Vista Structural Engineering, LLC

Dennis Heier, P.E.


SIMPSON
CS16 OR
LSTA36 @
BOTH HINGE
POINTS, BOTH
SIDES OF
MIDDLE
WINDOW

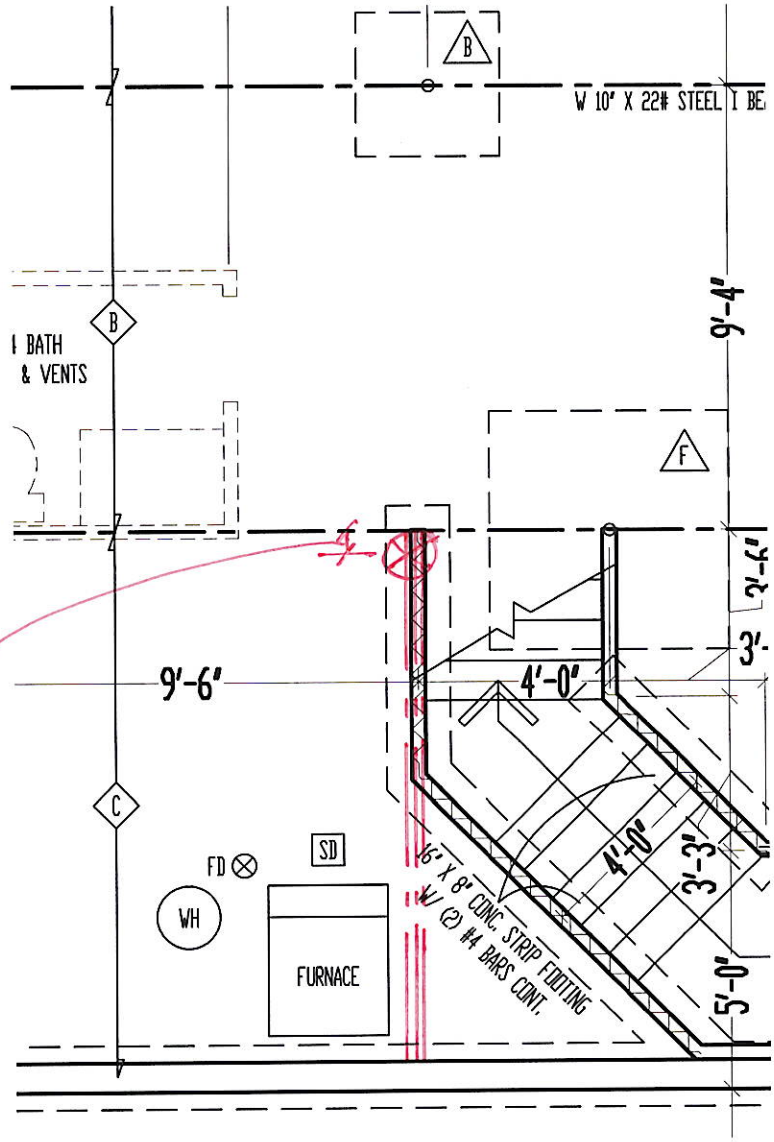

(2) STRAPS
(2) STRAPS
(2) STRAPS
(2) STRAPS


(2) 1 3/4" X 9 1/2" LVL
(3) P3476
@ 7'-0" HEADER
W/ (3) P3424 ABOVE
@ 9'-6" HEADER
W/ (3) P3476 ABOVE
@ 16'-4" HEADER
10
S32
(1) TRIMMER,
(2) KING STUDS
(2) TRIMMER,
(2) KING STUDS
(2) TRIMMER,
(2) KING STUDS
(1) TRIMMER,
(2) KING STUDS
2" X 6" WALL
TO 18'-0" PLATE HT.
(5) 2X6
STUDS
2X6 WALL
BASE CAB.
CATV
6'-8"
(1) KING STUD + (2) TRIMMERS INSTALLED
18'-0" CEILING
GREAT ROOM
HARDWOOD FLOOR
STONE RAISED HEARTH
36 TOP-VENT
(2) 2" X 12" #2 FLUSH
6'-2"
9'-0"
0'-2"
11'-4"
W 14" X 30# STEEL I BEAM DROPPED @ 8'-8"
PER ATTACHED CALCULATION, FASTEN UPPER AND LOWER TRIMMERS TOGETHER ON INSIDE FACE W/ SIMPSON CS16 OR LSTA36 STRAPS
VENEER STONE
TO CLG.
(4) STUDS
SD
3'-2"
2'-8"
18'-0" PLATE HT.
3'-0"
CD
SD
8'-6"
(2) 2" X 10" #2 FLUSH
(5) STUDS
0'-4"
4'-0"
3'-4"
3'-8"
5'-2"
8" CJ.
3'-8"
3'-8"

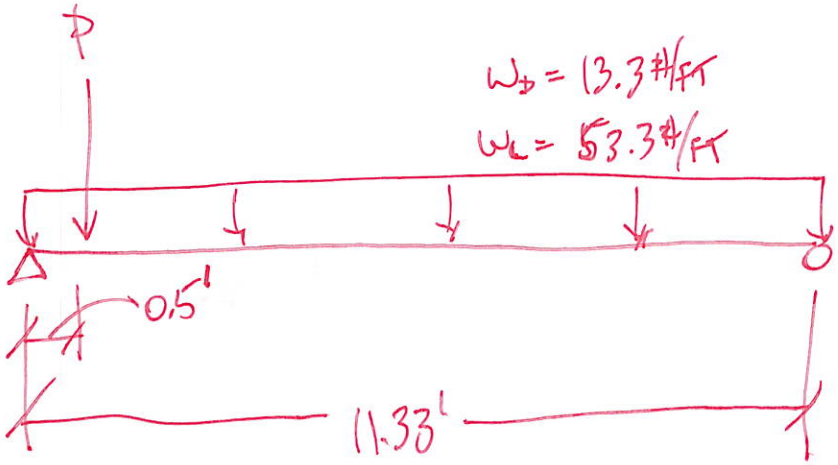
$$P_D = \frac{21' \times 13.5'}{4} \times 35psf + \frac{17}{21}\left[\frac{16' \times 34'}{4} \times 20psf\right] = 4683\#$$

$$P_L = \frac{21' \times 13.5'}{4} \times 60psf + \frac{17}{21}\left[\frac{16' \times 34'}{4} \times 20psf\right] = 6454\#$$

$$P_S = \frac{21' \times 13.5'}{4} \times 20psf + \frac{17}{21}\left[\frac{16' \times 34'}{4} \times 20psf\right] = 3619\#$$



POINT LOAD OFFSET APPROXIMATELY 6" FROM BEAM WEB



$W_D = 13.3\#/FT$

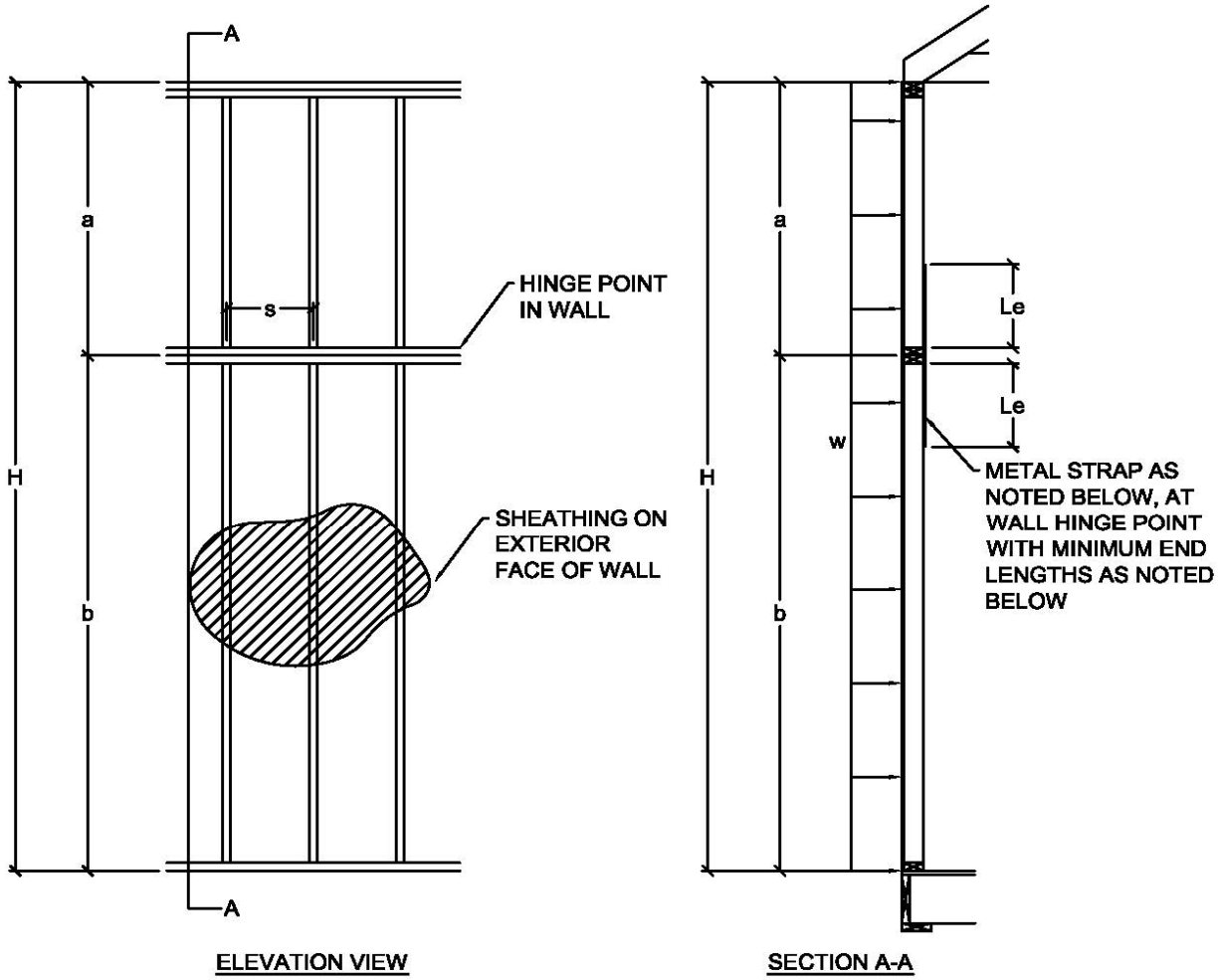
$W_L = 53.3\#/FT$

SEE ATTACHED ENERCALC OUTPUT

TRIPLE FLOOR JOIST OK

Vista Structural Engineering, LLC
14718 NW Delia Street
Portland, Oregon 97229
(971) 233 - 6099

Client:	Walker Custom Homes
Job Description:	Lot 307, Park Ridge
Jurisdiction:	Lee's Summit, MO



ELEVATION VIEW SECTION A-A

STUD WALL WITH HINGE AT MID-HEIGHT

Wall height, H	18	ft	=	216	inches
a	9	ft	=	108	inches
b	9	ft	=	108	inches
Wind pressure	14	psf		(per ASCE7-10)	
Stud spacing, s	12	inches o.c.		<---(3 studs at 3'-0" o.c. = equiv of 12" o.c. spacing)	
Maximum Moment, M	6804	in-lbs			
Moment at Hinge, M_h	6804	in-lbs			
Depth of stud	5.5	inches			
Tension force of strap	1237	pounds			

Use Simpson steel strap or equivalent, model number:	***CS18***	
With the following end lengths above and below hinge, Le:	***12***	inches
With the following quantity and size of nails in each end length	***(9) 8d***	

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Portland, OR 97229
(971) 233-6099
dennis@vistastructural.com

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

File: pkr307.ec6

Lic. # : KW-06010523
Vista Structural Engineering, LLC

DESCRIPTION: triple joist transferring kitchen beam load to W10x26 beam

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

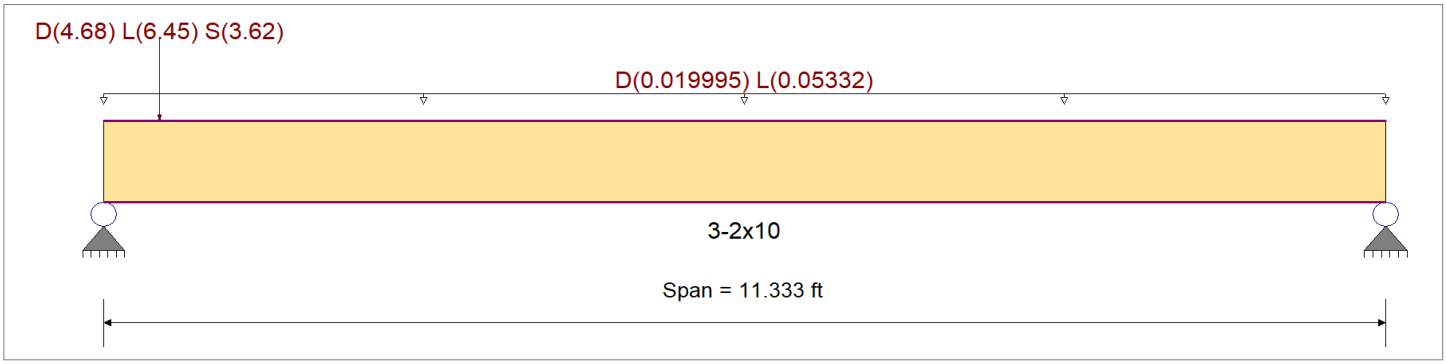
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	900 psi
Fb -	900 psi
Fc - Prll	1350 psi
Fc - Perp	625 psi
Fv	180 psi
Ft	575 psi

E : Modulus of Elasticity

Ebend- xx	1600 ksi
Eminbend - xx	580 ksi
Density	31.21 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 1.333 ft
Point Load : D = 4.680, L = 6.450, S = 3.620 k @ 0.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.906 : 1	Maximum Shear Stress Ratio	=	0.171 : 1
Section used for this span		3-2x10	Section used for this span		3-2x10
fb: Actual	=	1,031.06 psi	fv: Actual	=	30.70 psi
Fb: Allowable	=	1,138.50 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L	Load Combination		+D+L
Location of maximum on span	=	0.538 ft	Location of maximum on span	=	10.588 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.138 in	Ratio =	982 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.231 in	Ratio =	589 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
D Only													0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.417	0.068	0.90	1.100	1.00	1.15	1.00	1.00	1.00	2.29	427.67	1024.65	0.30	10.99	162.00
+D+L					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.906	0.171	1.00	1.100	1.00	1.15	1.00	1.00	1.00	5.51	1,031.06	1138.50	0.85	30.70	180.00
+D+S					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.573	0.081	1.15	1.100	1.00	1.15	1.00	1.00	1.00	4.01	750.07	1309.28	0.46	16.74	207.00
+D+0.750L					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.619	0.115	1.25	1.100	1.00	1.15	1.00	1.00	1.00	4.71	880.21	1423.13	0.72	25.77	225.00
+D+0.750L+0.750S					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.857	0.145	1.15	1.100	1.00	1.15	1.00	1.00	1.00	6.00	1,122.02	1309.28	0.83	30.09	207.00
+0.60D					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.333 ft	1	0.141	0.023	1.60	1.100	1.00	1.15	1.00	1.00	1.00	1.37	256.60	1821.60	0.18	6.59	288.00

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Vista Structural Engineering, LLC

DESCRIPTION: triple joist transferring kitchen beam load to W10x26 beam

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	0.2306	5.005		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	12.033	0.906
Overall MINimum	3.460	0.160
D Only	4.587	0.320
+D+L	11.054	0.906
+D+S	8.047	0.479
+D+0.750L	9.438	0.760
+D+0.750L+0.750S	12.033	0.880
+0.60D	2.752	0.192
L Only	6.468	0.587
S Only	3.460	0.160