December 12, 2024

Walker Custom Homes, LLC
Attn: Tyler Lockler

Re: 2317 SW Morris Drive – city inspection items

Vista Structural Engineering, LLC, was asked to address city inspection structural items for the new house to be built at 2317 SW Morris Drive. The following are the inspection comments and our responses.
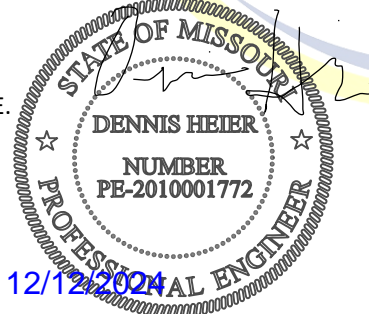
- **Address overnotched LVL hip at bearing point above bedroom #2.** *The remaining section at the interior face of the wall of the LVL hip is 4 ½". Based on the attached calculations, the remaining section is adequate for support of the hip. Additionally, the screws that have been installed provide additional support as shown in the calculations.*
- **Address multiple top plates in bedroom #2.** *The multiple top plates shall have fasteners and connections installed as shown on the attached picture. The multiple top plates shall be fastened together with Simpson SDWC15600 screws @ 16" o.c., installed vertically through the lowest ply. The multiple top plates shall then be fastened to the ceiling ledger below with a vertical 2x4 fastened to the top plates and ceiling ledger with a minimum of (3) 10d nails at each end.*
- **Address topplates not tied together at exterior wall corner, bedroom #2.** *The vertical members in the attached picture shall be confirmed to be fastened to the rafters and ceiling joists with a minimum of (3) 10d nails. Additionally, the lower top plate shall be fastened to the ceiling joists by installing Simpson SDCW15600 screws up through the plate and into the bottom of the ceiling joists.*

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.

12/12/2024

Figure 1 - Overnotched LVL hip

VISTA STRUCTURAL ENGINEERING, LLC

Figure 2 – Mutliple top plates

Figure 3 – Top plates not tied together

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

Lic. # : KW-06010523

Vista Structural Engineering, LLC

DESCRIPTION: LVL hip over bedroom #2

CODE REFERENCES

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10
Load Combination Set : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design		$F_b +$	2600 psi	*E : Modulus of Elasticity*	
Load Combination : IBC 2018		$F_b -$	2600 psi	Ebend- xx	1900 ksi
		Fc - Prll	2510 psi	Eminbend - xx	965.71 ksi
Wood Species : iLevel Truss Joist		Fc - Perp	750 psi		
Wood Grade : MicroLam LVL 1.9 E		Fv	285 psi		
		Ft	1555 psi	Density	42.01 pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling					

D(0.015,0.105) S(0.03,0.21)

1.75x9.5

Span = 13.0 ft
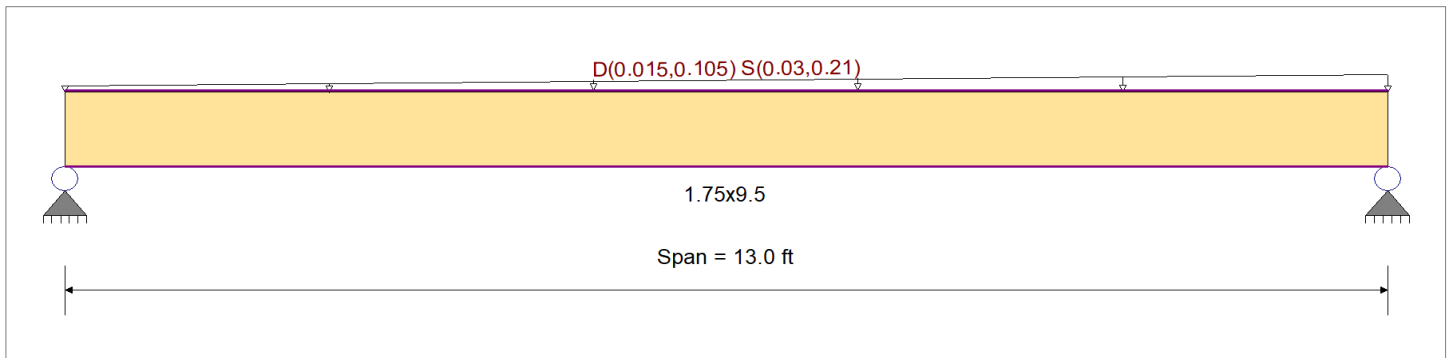
Applied Loads

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

Load for Span Number 1
Varying Uniform Load : D= 0.010->0.010, S= 0.020->0.020 ksf, Extent = 0.0 -->> 13.0 ft, Trib Width = 1.50->10.50 ft

DESIGN SUMMARY

					Design OK	
Maximum Bending Stress Ratio	=	**0.589** : 1	Maximum Shear Stress Ratio	=	**0.338** : 1	
Section used for this span		**1.75x9.5**	Section used for this span		**1.75x9.5**	
fb: Actual	=	1,759.75 psi	fv: Actual	=	110.92 psi	
Fb: Allowable	=	2,990.00 psi	Fv: Allowable	=	327.75 psi	
Load Combination		+D+S	Load Combination		+D+S	
Location of maximum on span	=	7.259 ft	Location of maximum on span	=	12.241 ft	
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1	

Maximum Deflection
Max Downward Transient Deflection	0.327 in	Ratio =	477 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.490 in	Ratio =	318 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios								Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 13.0 ft	1	0.251	0.144	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.29	586.58	2340.00	0.41	36.97	256.50
+D+S					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 13.0 ft	1	0.589	0.338	1.15	1.000	1.00	1.00	1.00	1.00	1.00	3.86	1,759.75	2990.00	1.23	110.92	327.75
+D+0.750S					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 13.0 ft	1	0.490	0.282	1.15	1.000	1.00	1.00	1.00	1.00	1.00	3.22	1,466.46	2990.00	1.02	92.43	327.75
+0.60D					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 13.0 ft	1	0.085	0.049	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.77	351.95	4160.00	0.25	22.18	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S	1	0.4901	6.690		0.0000	0.000

Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 12 DEC 2024, 10:55AM

Wood Beam

File: SVF092.ec6
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Lic. # : KW-06010523 | Vista Structural Engineering, LLC

DESCRIPTION: LVL hip over bedroom #2

Vertical Reactions

Support notation : Far left is #1   Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.878	1.463
Overall MINimum	0.585	0.975
D Only	0.293	0.488
+D+S	0.878	1.463
+D+0.750S	0.731	1.219
+0.60D	0.176	0.293
S Only	0.585	0.975

REACTION AT WALL BEARING:
V = 878#
REMAINING SECTION AT INTERIOR FACE OF WALL: 4 1/2"

Fv = 1.5V/(bd) = 1.5 (878#) / (1.75" x 4.5") = 167 psi

fv = 265 psi

THUS, REMAINING LVL SECTION IS ADEQUATE.

ADDITIONALLY, SHEAR VALUE OF EACH OF THE THREE SIMPSON SCREWS INSTALLED IS 215#/SCREW.
GIVEN THREE SCREWS, SCREWS PROVIDE AN ADDITIONAL 645# OF SUPPORT AT END BEARING.