



May 16, 2022

Walker Custom Homes, LLC
Attn: Jason Walker & Ryan Hamilton

Re: 2034 Hook Farms Drive, Lee's Summit, MO (Lot 18, Homestead at Hook Farms 1st Plat)

Vista Structural Engineering, LLC, was asked to address the following city inspection comments for the house being built at 2034 Hook Farms Drive, in Lee's Summit, MO:

- **Address strap not being installed per detail 10/S3.2.** *An alternate option to achieve the connection portrayed in detail 10/S3.2 is to fasten the king studs to the wall top plate with two Simpson A34's, as shown on the following page.*
- **Rafters are bearing on a wall not shown as load-bearing** **This wall is shown on the third page of this report. Provide solution.** *Because the length of the joist under this wall is relatively short (9'-1"), and the rafter loading on the wall is minimal, there is no need to double the joist below this wall. We recommend approval of the single joist below the wall, based on the attached calculation.*

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.



VISTA STRUCTURAL ENGINEERING, LLC

14718 NW DELIA STREET
PORTLAND, OREGON 97229



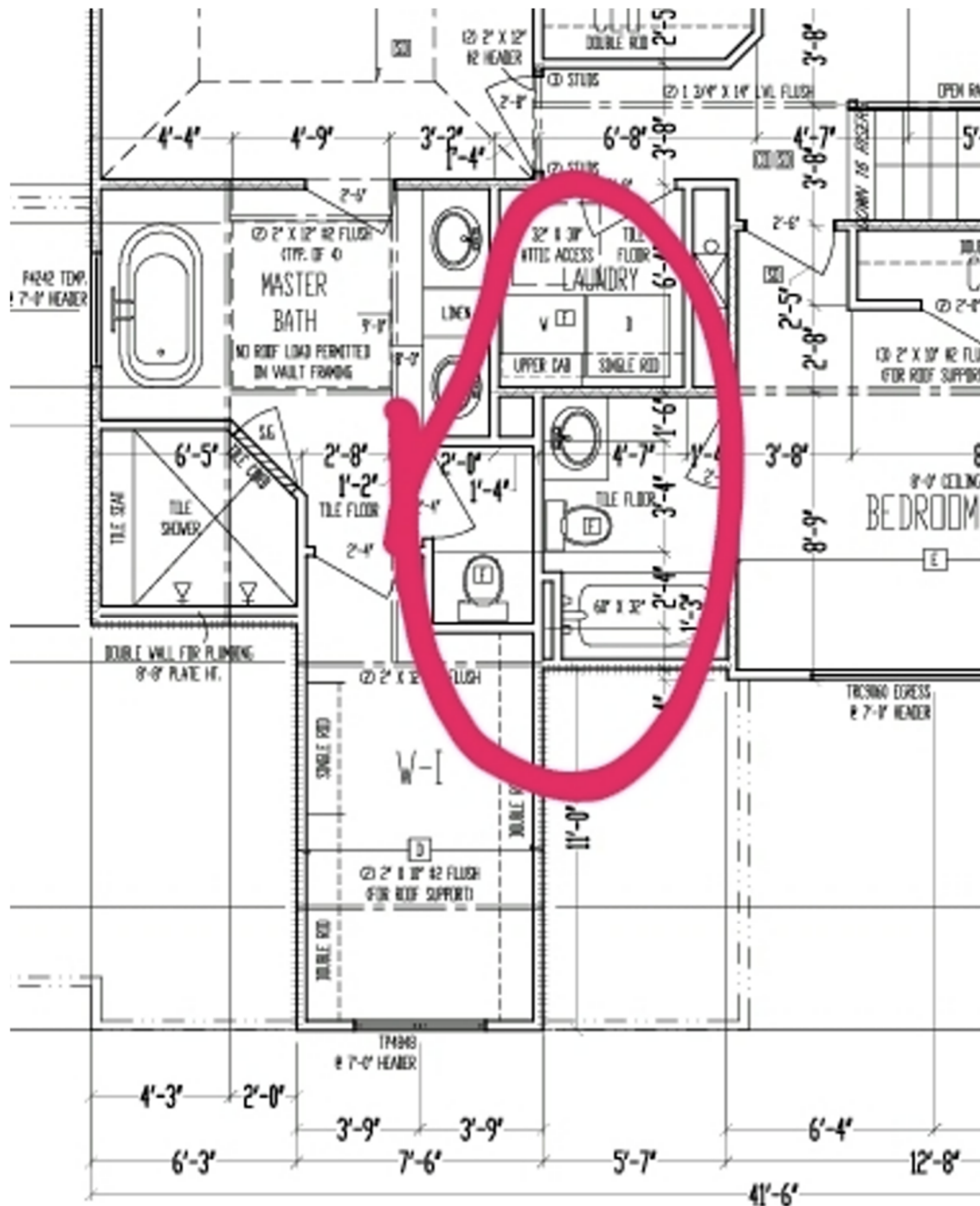
2034 Hook Farms Drive – alternate solution to strap shown on detail 10/S3.2

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2034 Hook Farms Drive – wall where rafters are bearing

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2034 Hook Farms Drive – rafters bearing on wall not shown as load-bearing on plans

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Wood Beam

File: HHF018.ec6
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Vista Structural Engineering, LLC

Lic. #: KW-06010523

DESCRIPTION: 2034 Hook Farms Drive - joist under wall supporting rafters (not shown as load-bearing wall)

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
Load Combination IBC 2018

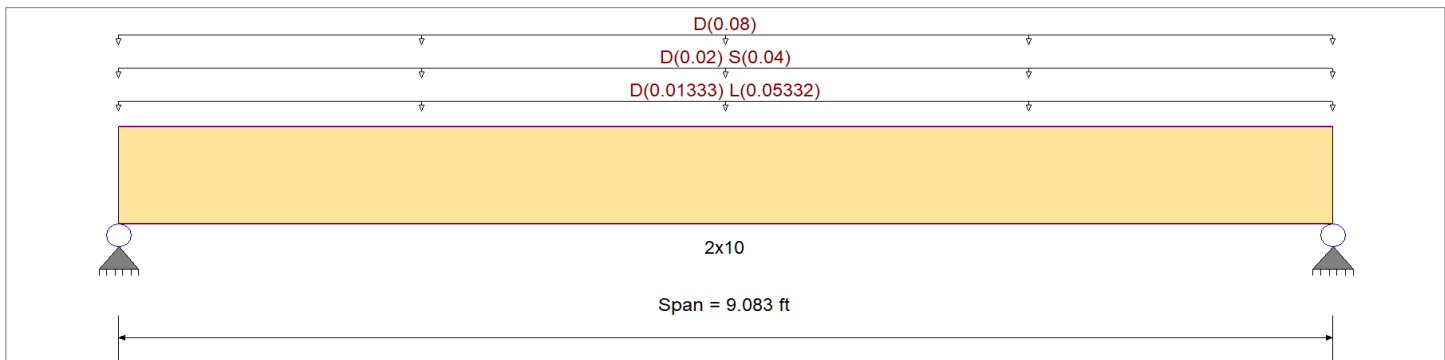
Wood Species : DouglasFir-Larch
Wood Grade : No.2

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

Fb + 900.0 psi
Fb - 900.0 psi
Fc - Prll 1,350.0 psi
Fc - Perp 625.0 psi
Fv 180.0 psi
Ft 575.0 psi

E : Modulus of Elasticity
Ebend- xx 1,600.0 ksi
Eminbend - xx 580.0 ksi

Density 31.210 pcf
Repetitive Member Stress Increase



Applied Loads

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

Uniform Load : D = 0.010, L = 0.040 ksf, Tributary Width = 1.333 ft

Uniform Load : D = 0.010, S = 0.020 ksf, Tributary Width = 2.0 ft, (roof load)

Uniform Load : D = 0.010 ksf, Tributary Width = 8.0 ft, (wall dead load)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.847	1	Maximum Shear Stress Ratio	=	0.378	1
Section used for this span		2x10		Section used for this span		2x10	
fb: Actual	=	964.12	psi	fv: Actual	=	68.08	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	=	4.542	ft	Location of maximum on span	=	8.321	ft
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.052	in	Ratio =		2100	>=360
Max Upward Transient Deflection		0.000	in	Ratio =		0	<360
Max Downward Total Deflection		0.178	in	Ratio =		610	>=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									Moment Values			Shear Values		
		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 = 9.083 ft	1	0.640	0.286	0.90	1.100	1.00	1.15	1.00	1.00	1.00	1.17	655.65	1024.65	0.43	46.30	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 = 9.083 ft	1	0.847	0.378	1.00	1.100	1.00	1.15	1.00	1.00	1.00	1.72	964.12	1138.50	0.63	68.08	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 = 9.083 ft	1	0.678	0.303	1.15	1.100	1.00	1.15	1.00	1.00	1.00	1.58	887.06	1309.28	0.58	62.64	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 = 9.083 ft	1	0.623	0.278	1.25	1.100	1.00	1.15	1.00	1.00	1.00	1.58	887.00	1423.13	0.58	62.64	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 = 9.083 ft	1	0.810	0.362	1.15	1.100	1.00	1.15	1.00	1.00	1.00	1.89	1,060.56	1309.28	0.69	74.89	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 = 9.083 ft	1	0.216	0.096	1.60	1.100	1.00	1.15	1.00	1.00	1.00	0.70	393.39	1821.60	0.26	27.78	288.00

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Project Title:
Engineer:
Project ID:
Project Descr:

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Wood Beam

File: HHF018.ec6
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DESCRIPTION: 2034 Hook Farms Drive - joist under wall supporting rafters (not shown as load-bearing wall)

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	0.1784	4.575		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.833	0.833
Overall MINimum	0.182	0.182
D Only	0.515	0.515
+D+L	0.757	0.757
+D+S	0.696	0.696
+D+0.750L	0.696	0.696
+D+0.750L+0.750S	0.833	0.833
+0.60D	0.309	0.309
L Only	0.242	0.242
S Only	0.182	0.182