October 26, 2021

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

Re: 1917 NE Catalina Ave., Lee's Summit, MO (Lot 308, 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 1917 NE Catalina Avenue:

1. The plans call for cantilevered joists from the garage/pantry to support the upper floor bedroom exterior wall. Joists were not cantilevered. Have engineer address this. *The joists above the laundry/mudroom area were not cantilevered; however, the joists above the back of the garage, between the steel beam and rear garage wall were installed as 2x10's instead of the 2x6's specified on the plans. Based on the attached calculations, the 2x10 joists that were installed between the garage door and the steel beam will adequately support all design loading. A partial plan showing the location of these joists is attached.*

2. The plan makes a mistake for joists under the bedroom 2 closet. The exterior wall is too far out from the bearing wall. It should be double 2x10. Have engineer check joist spacing below the closet. *Based on the attached calculations, the joists that were installed as specified on the city-approved plans will easily support the imposed design loading. It is not typical (nor fair for the builder and homeowner) for plan reviews to be conducted in the field by an inspector, after engineered plans have been approved by the city's plan review. This creates delays and adds cost to the project. We request that if the proposed and structure is going to be questioned, that it be done before before construction commences.*

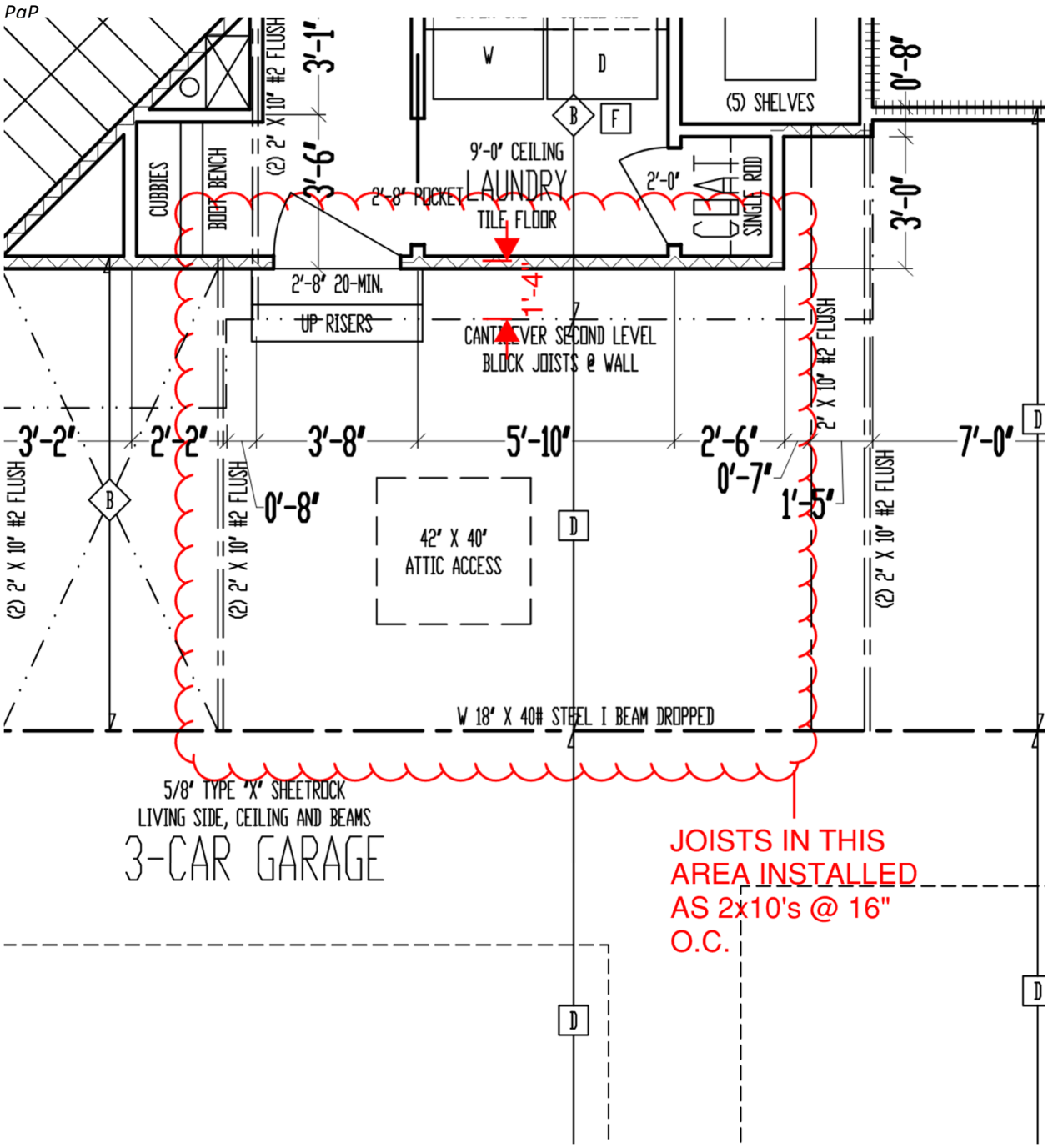
Our firm appreciates the opportunity to serve you. If you have any questions or if you need anything further, please feel free to contact us.

Sincerely,

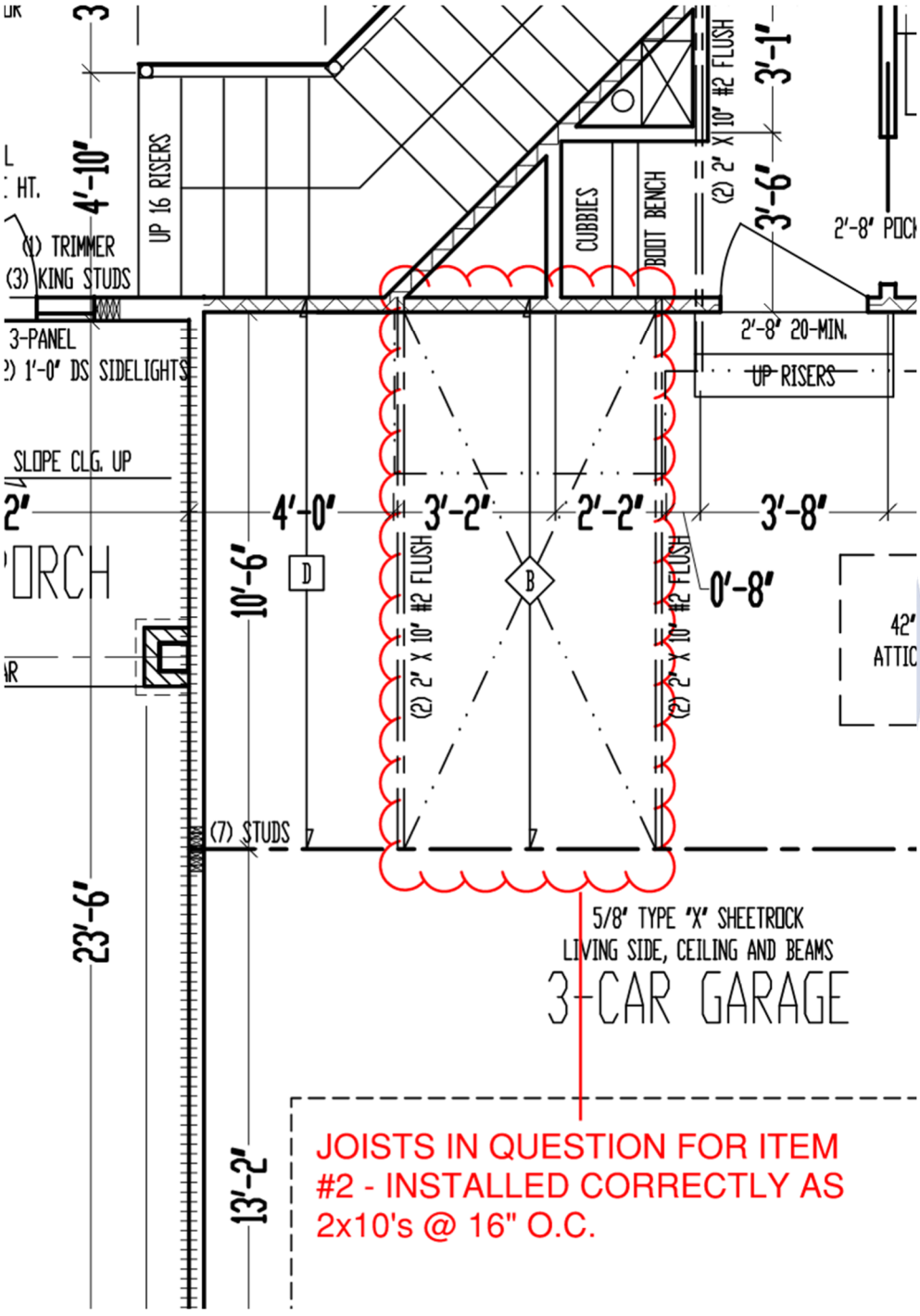
Vista Structural Engineering, LLC

Dennis Heier, P.E.

STATE OF MISSOURI
DENNIS HEIER
NUMBER
PE-2010001772
PROFESSIONAL ENGINEER
10/26/2021



Partial Main Floor Plan (Item #1)



Partial Main Floor Plan (Item #2)

Vista Structural Engineering, LLC
14718 NW Delia Street
Portland, OR 97229
(971) 233-6099
dennis@vistastructural.com

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Beam

File: calcs.ec6

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

DESCRIPTION: 1917 NE Catalina Ave - joists under bedroom #2 closet

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 : DouglasFir-Larch
Wood Grade : No.2

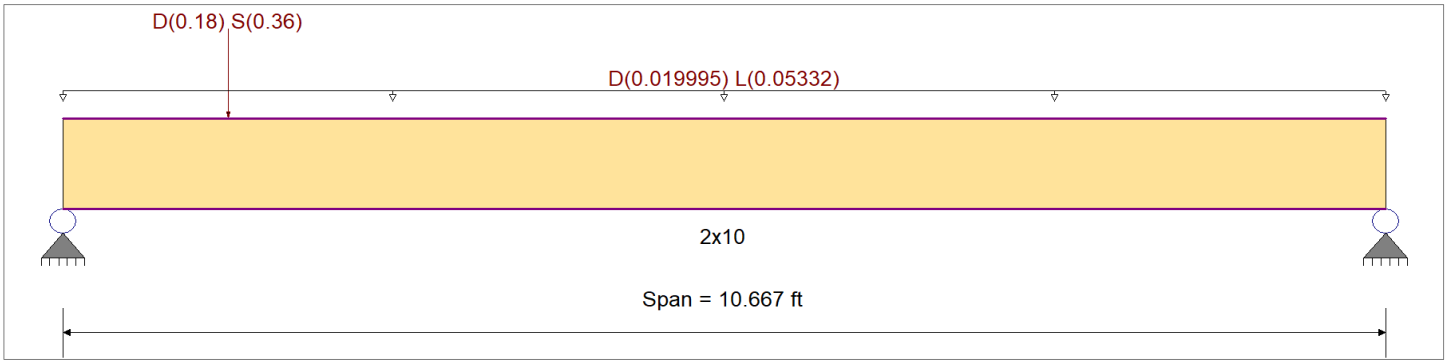
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

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 = 0.0150, L = 0.040 ksf, Tributary Width = 1.333 ft
Point Load : D = 0.180, S = 0.360 k @ 1.333 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.575 : 1	Maximum Shear Stress Ratio	=	0.350 : 1
Section used for this span		2x10	Section used for this span		2x10
fb: Actual	=	654.22 psi	fv: Actual	=	72.36 psi
Fb: Allowable	=	1,138.50 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+L	Load Combination		+D+0.750L+0.750S
Location of maximum on span	=	5.022 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.099 in	Ratio =	1296 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.157 in	Ratio =	813 >=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	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 10.667 ft	1	0.228	0.166	0.90	1.100	1.00	1.15	1.00	1.00	1.00	0.42	233.94	1024.65	0.25	26.96	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 = 10.667 ft	1	0.575	0.297	1.00	1.100	1.00	1.15	1.00	1.00	1.00	1.17	654.22	1138.50	0.49	53.44	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 = 10.667 ft	1	0.325	0.295	1.15	1.100	1.00	1.15	1.00	1.00	1.00	0.76	425.33	1309.28	0.56	61.01	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 = 10.667 ft	1	0.385	0.208	1.25	1.100	1.00	1.15	1.00	1.00	1.00	0.98	548.29	1423.13	0.43	46.82	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 = 10.667 ft	1	0.505	0.350	1.15	1.100	1.00	1.15	1.00	1.00	1.00	1.18	661.67	1309.28	0.67	72.36	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 = 10.667 ft	1	0.077	0.056	1.60	1.100	1.00	1.15	1.00	1.00	1.00	0.25	140.37	1821.60	0.15	16.17	288.00

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Wood Beam

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Lic. # : KW-06010523

Vista Structural Engineering, LLC

DESCRIPTION: 1917 NE Catalina Ave - joists under bedroom #2 closet

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	0.1573	5.139		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.714	0.414
Overall MINimum	0.315	0.045
D Only	0.264	0.129
+D+L	0.549	0.414
+D+S	0.579	0.174
+D+0.750L	0.477	0.342
+D+0.750L+0.750S	0.714	0.376
+0.60D	0.158	0.077
L Only	0.284	0.284
S Only	0.315	0.045

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DESCRIPTION: 1917 NE Catalina Ave - joists above back of garage

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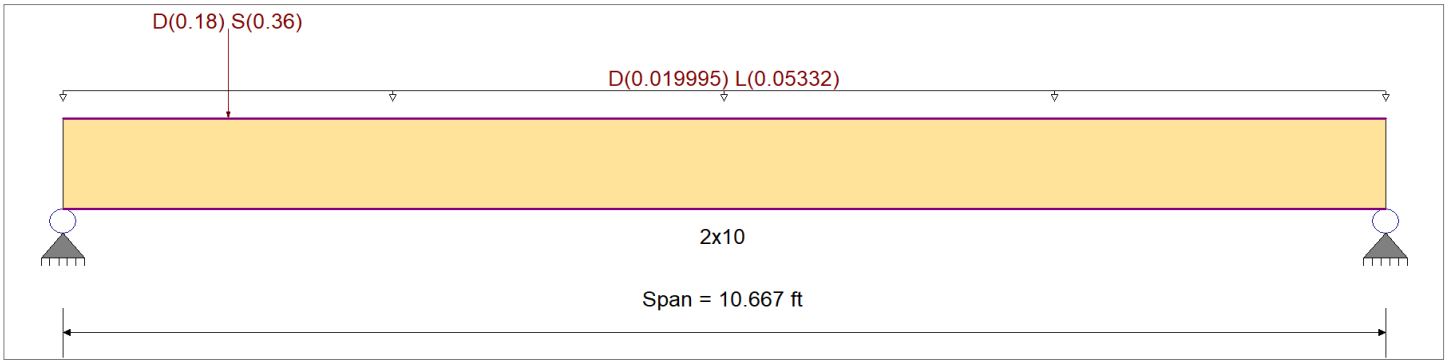

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+D+L					1.100	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
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Length = 10.667 ft	1	0.505	0.350	1.15	1.100	1.00	1.15	1.00	1.00	1.00	1.18	661.67	1309.28	0.67	72.36	207.00
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