

LORAC DESIGN GROUP, LLC
Structural Engineers

March 24, 2022

Mr. Jeff Boehm, Owner
Zvacek Construction Company
Lee's Summit, Missouri

VIA ELECTRONIC TRANSMISSION

Re: **Structural Review of Slider Header**
4717 NE Freehold Drive, Lee's Summit, Missouri, PERMIT # PRRES 2021-2715

Jeff,

We have reviewed the condition shown in your drawings stating that a slider has been installed instead of planned windows. Further, you have described the header as triple 9 1/2" LVL's over this area. Based on these conditions we have evaluated that condition and have attached the calculations to this letter.

Our analysis indicates that the stresses and deflections are within code allowances and the substitution is acceptable. If you have any further questions, please ask.

For the Firm,
LORAC Design Group, LLC



Joseph A. Towns, R.A., P.E., SE., AIA, NCARB, LEED AP, BD+C
Managing Principal
Missouri Professional Engineer, #E-22017 (Structural)



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Design Calculations

Lot 112

Lee's Summit, Missouri

Misc. Calcs - Slider Header Beam

Supporting - Roof

Beam Designation None

Beam Span	Max. Typical	12 feet	Re: Plan Drawings
Uniform Load Width		5.00 feet	Re: Plan Drawings
Uniform Load (total load LL+DL)	$1.6 \cdot .020 + 1.4 \cdot .015$	0.053 ksf	Load & Codes
Beam Loading		0.2650 klf	By Calculation
Point Load 1		0.0 kips	
Point Load 1 Location		6.0 feet	
Point Load 2		0.0 kips	By Design
Point Load 2 Location		6.0 feet	
Point Load 3		0.0 kips	
Point Load 3 Location		6.0 feet	

For Conservatism All Moments Consider at Midspan !!
All beams considered continually braced at top flange !!

Moments	Uniform Load	4.770 k-ft	By Calculation
	Point Load 1	0.00 k-ft	By Calculation
	Point Load 2	0.00 k-ft	By Calculation
	Point Load 2	0.00 k-ft	By Calculation
	Total	4.77 k-ft	By Calculation
Allow Deflection	L 360	0.40 inches	By Calculation
Reaction		1.59 kips	By Calculation

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Size Beam

By Design

b =	4.5 inches
d =	9.3 inches
Ixx =	296.8 inches ⁴
E =	1800 ksi
Deflection, Uniform	0.2314 inches
Deflection, PL 1	0.0000 inches
Deflection, PL 2	0.0000 inches
Deflection, PL 3	0.0000 inches
Deflection Total	0.2314 inches
	OK
Shear Stress	0.038 ksi

Check Bending Stresses

Sxx=	64.2 inches ³
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Adjustment Factors

Cd	0.95	Section 2.3.2 Duration
Cm	1.00	ASD Wood Design Manual
Ct	1.00	ASD Wood Design Manual
Cl	Braced	Section 4.4.1 Stability
Cf	1.00	ASD Wood Design Manual
Cv	1.05	Table 5A Wood Supplement page 57
Adjusted Cv	1.00	Max Value from Suppl.page 57
Cfu	1.00	ASD Wood Design Manual
Cr	1.15	ASD Rep Factor, NDS Section 4.3.9
		Ref: Page 30
Fb=	1800	Glulam

F'b=	2062.16 psi
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Actual fb=	891.98 psi
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OK