



August 20, 2024

Walker Custom Homes
Attn: Tyler Lockler

RE: 2805 SW Heartland Rd., Lee’s Summit, MO – Inspection Letter: Double Joist at Rec Room

Per contractor’s request, Vista Structural Engineering, LLC, was asked to address the following inspection comment for the project address referenced above:

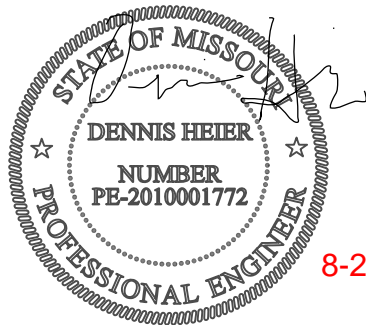
Inspection Comment #1: There are four single floor 2x10 joists located at the Rec Room ceiling that are not doubled per plan.

VSE’s Response:

- Yes, floor joists (spanning 17’-4”) above the Rec Room are required to be doubled 2x10 joists @ 16” o.c. per plan. GC to provide additional 2x10 joists at this location where there are currently single joists. Ref. partial plan markup on pg. 2.
- Where the gas line penetration occurs at a single joist (penetration located approx. 12” from steel beam bearing end), GC to sister a 2x10 joist to the existing single joist with (2) rows of 10d @ 12” o.c.; GC may terminate sister 6” beyond penetration. Ref. partial plan markup on pg. 2 and calculations on pg. 3 & 4.

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.



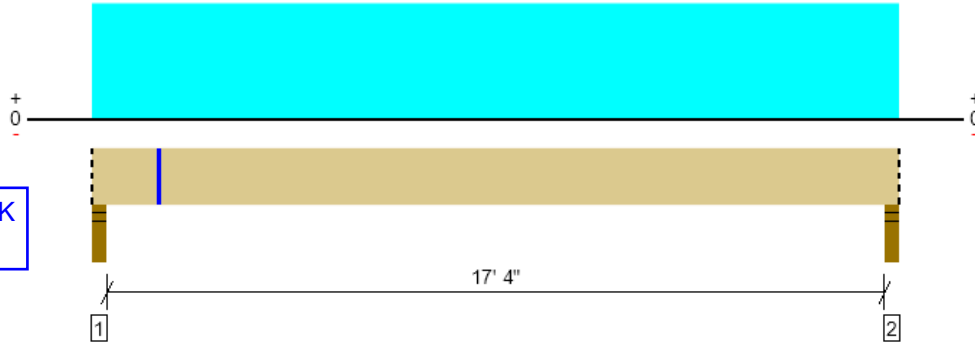
8-20-24

RHF185 JOIST, REC ROOM JOIST

1 piece(s) 2 x 10 DF No.2 @ 16" OC

(FOR DESIGN CHECK ONLY)

Overall Length: 17' 11"



SEE DBL JOIST CHECK NEXT PG.

Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	657 @ 2 1/2"	2231 (3.50")	Passed (29%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	579 @ 1' 3/4"	1665	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2807 @ 8' 11 1/2"	2029	Failed (138%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.711 @ 8' 11 1/2"	0.438	Failed (L/295)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.978 @ 8' 11 1/2"	0.875	Failed (L/215)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 17' 11"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	179	478	657	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	179	478	657	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6" o/c	
Bottom Edge (Lu)	17' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 11"	16"	15.0	40.0	FLOOR

SISTER OK TO TERMINATE 16" FROM BEARING END

Location Analysis	Shear (lbs)			Moment (Ft-lbs)			Deflection (in)		Comments
	Actual	Allowed	LDF	Actual	Allowed	LDF	Live Load	Total	
1 - 1' 6"	547	1665	1.00	768	2029	1.00	0.166	0.228	

Weyerhaeuser Notes

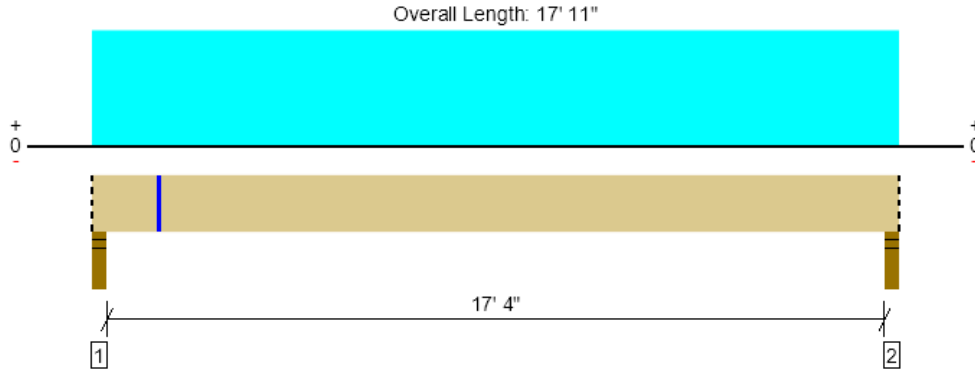
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Dennis Nguyen Vista Structural Engineering LLC (503) 515-1124 dn@vistastructural.com	



RHF185 JOIST, SISTER REC ROOM JOIST
2 piece(s) 2 x 10 DF No.2 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal (typ.).

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	657 @ 2 1/2"	4463 (3.50")	Passed (15%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	579 @ 1' 3/4"	3330	Passed (17%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2807 @ 8' 11 1/2"	4059	Passed (69%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.356 @ 8' 11 1/2"	0.438	Passed (L/591)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.489 @ 8' 11 1/2"	0.875	Passed (L/430)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	N/A	N/A	N/A	--	N/A

Member Length : 17' 11"
 System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2018
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.
- No composite action between deck and joist was considered in analysis.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Factored	
1 - Stud wall - SPF	3.50"	3.50"	1.50"	179	478	657	Blocking
2 - Stud wall - SPF	3.50"	3.50"	1.50"	179	478	657	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	13' 11" o/c	
Bottom Edge (Lu)	17' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 11"	16"	15.0	40.0	FLOOR

Location Analysis	Shear (lbs)			Moment (Ft-lbs)			Deflection (in)		Comments
	Actual	Allowed	LDF	Actual	Allowed	LDF	Live Load	Total	
1 - 1' 6"	547	3330	1.00	768	4059	1.00	0.083	0.114	

Weyerhaeuser Notes

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