July 11, 2022

Walker Custom Homes
Attn: Ryan Hamilton

Re: Inspection Letter: RHF059 Spec Lot 59 The Retreat at Hook Farms 1st Plat – 2118 SW Red Barn Ln., Lee's Summit, Missouri

Vista Structural Engineering, LLC was asked to address the following rough-in inspection items for the project located at above referenced address. Please see the following responses w/ attached partial plan mark up, calculations, and site photos for reference.

1) **Inspection comment:** "Address hip rafters over notched at bearing ends in garage"

   Vista Structural's response: *Hip rafters at garage, and rafters/ceiling joist at master suite/bath are the governing cases with the biggest spans & bearing reactions. Available depth of notched rafters/ceiling joists are min. 5 ½" in depth at interior face of bearing wall. Design shear stresses are lower than allowable shear stresses per NDS 2018. Therefore, we recommend approval of the current framing, without repair. See attached partial plans, calculations, and ref. photos.*

2) **Inspection comment:** "Address hip rafter to top plate above pantry"

   Vista Structural's response: *See comment #1 response. We recommend approval of the current framing, without repair.*

3) **Inspection comment:** "Address over notched lvl rafter above dining area"

   Vista Structural's response: *Available depth of notched LVL hip rafter should be approximately 5 ½"-6" min. at (2) 2x12 beam bearing. Shear stress of reduced LVL hip rafter is okay. See attached partial plan, calculation, and ref. photo.*

4) **Inspection comment:** "Address ceiling joists and hip rafter in master bed over notched"

   Vista Structural's response: *See comment #1 response. We recommend approval of the current framing, without repair.*

5) **Inspection comment:** "Address over notched ceiling joist ends above master bath"

   Vista Structural's response: *See comment #1 response. We recommend approval of the current framing, without repair.*

6) **Inspection comment:** "Roof supports not to land on 2x12's in master bath per plans"

   Vista Structural's response: *(2) 2x12 supporting hip rafters in master bath will adequately support the design load as currently framed. See attached partial plan, calculation, and ref. photo.*

7) **Inspection comment:** "Address lvl above bed 2 over notched at bearing ends"

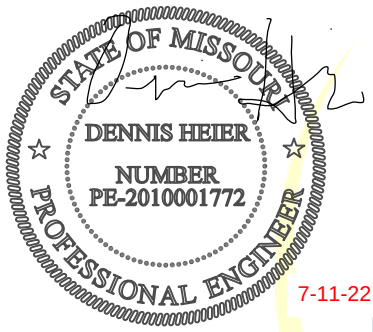
Vista Structural's response: *Available depth of notched dbl 1 3/4" x 11 7/8" LVL ceiling beam should be approximately 5 ½" min. at interior face of bearing wall. Design shear stresses are lower than allowable shear stresses per NDS 2018. Therefore, we recommend approval of the current framing, without repair. See attached calculation and ref. photo.*

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.



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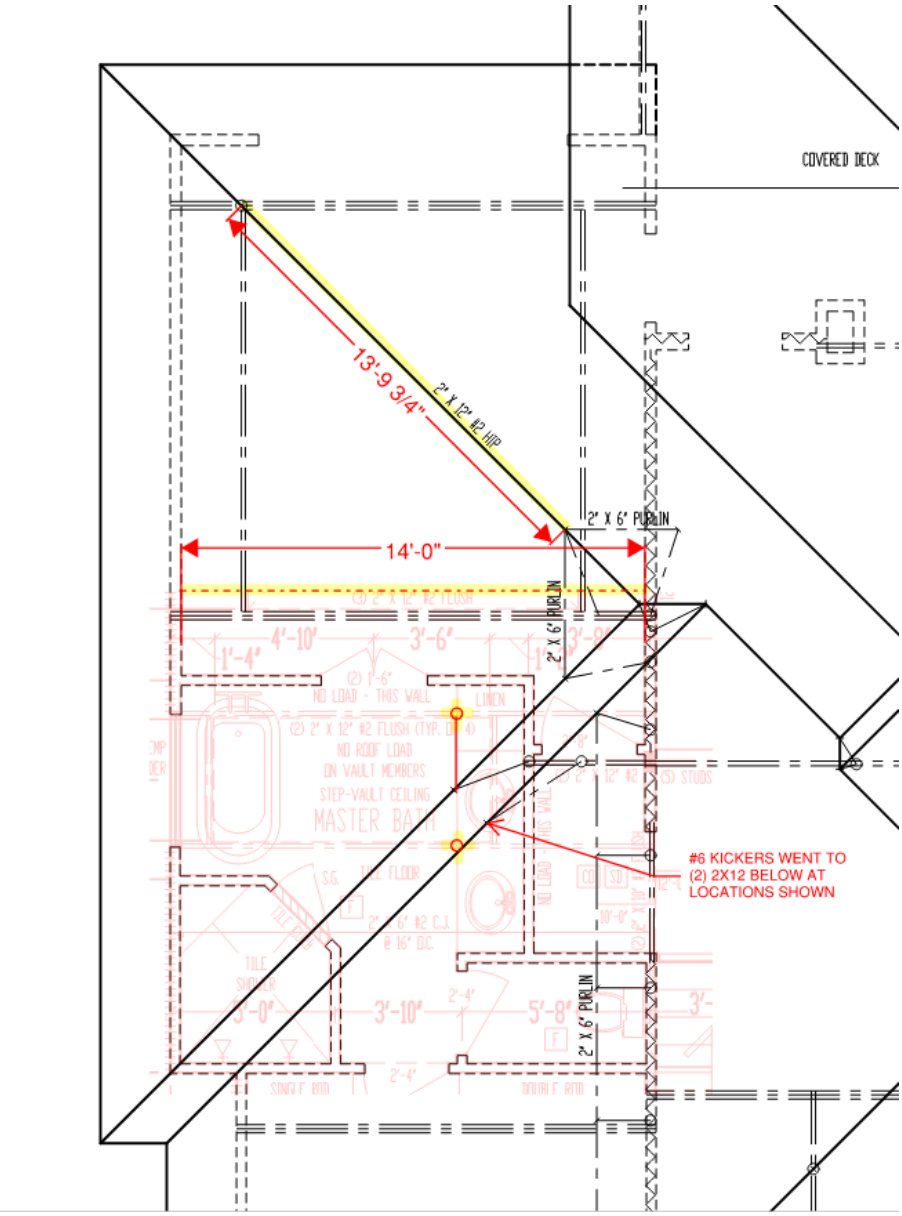
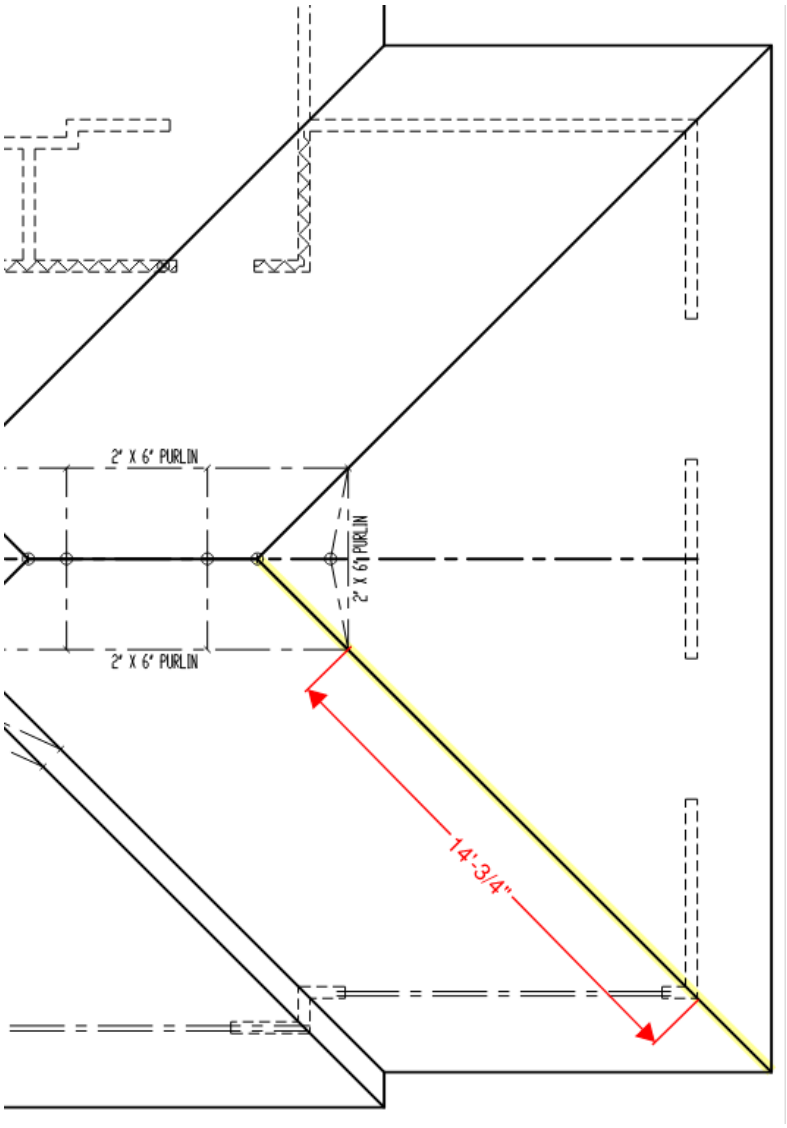
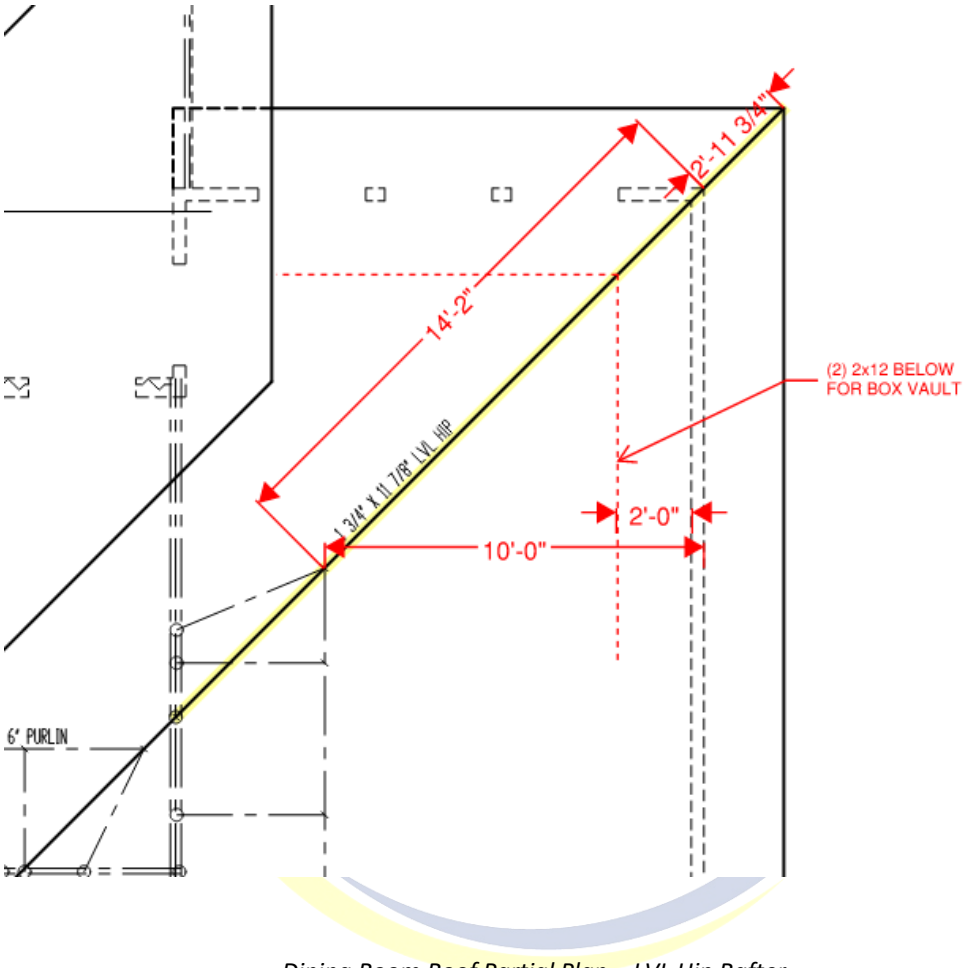


Master Suite/Bath Partial Plan – Governing Typ. Rafter/Ceiling Joist & Hip Rafter Support at (2) 2x12 Ceiling Beams



Garage Roof Partial Plan – Governing Hip Rafter



Dining Room Roof Partial Plan – LVL Hip Rafter

HIP RAFTER AT GARAGE

RAFTER/CEILING JOIST AT MASTER SUITE

CEILING JOIST/BM AT MASTER BATH

HIP RAFTER ROOF SUPPORTS AT (2) 2x12 CEILING BM

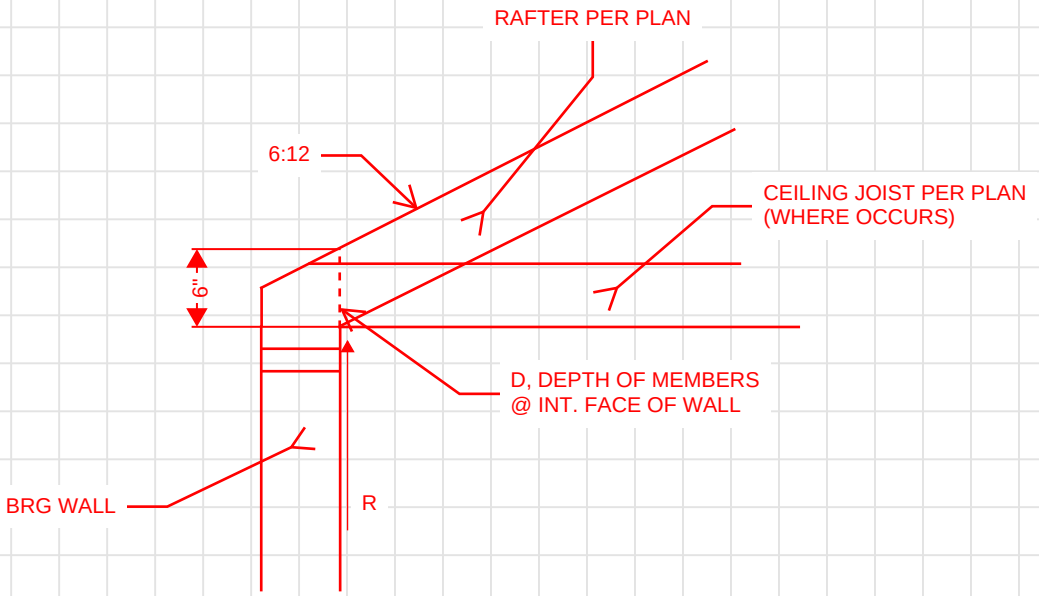
NOTCHED (2) LVL CEILING BM AT BEDROOM 2

PROJ:	
DATE:	
PROJ #:	
ENGR:	

VISTA STRUCTURAL ENGINEERING, LLC

CHECKLIST ITEM #1, 2, 4, & 5: NOTCH HIP RAFTER, RAFTER/CEILING JOIST DESIGN SHEAR CAPACITY CHECK FOR REDUCED DEPTH:

GOVERNING CASE FOR CEILING JOIST/RAFTER SPAN/LOADING IS AT MASTER SUITE AND BATH. GOVERNING CASE FOR HIP RAFTER SPAN/LOADING IS AT XX. SEE FOR PARTIAL PLANS ATTACHED FOR REFERENCE.



GOVERNING RAFTER/CEILING JOIST SPAN (MASTER SUITE/BATH): L = 14'-0", OVERHANG = 2'-0"
GOVERNING HIP RAFTER SPAN (GARAGE): L = 14'-0"

A (CEILING JOIST) = 1.5*5.5 = 8.25 SI

A (2x6 RAFTER OR 2x12 HIP RAFTER) = 1.5*6 = 9 SI

F'v = 180*1.15 = 207 PSI

NOTCHED RAFTER CHECK:

R (D+S, #) = (15+25)(14/2+2)(2) = 720#

fv = 3/2 * R/A = 3/2*720/9 = **120 psi < F'v, OK**

NOTCHED HIP RAFTER CHECK:

R (D+S, #) = 919# (SEE HIP RAFTER RXN CALC)

fv = 3/2 * R/A = 3/2*919/9 = **153 psi < F'v, OK**

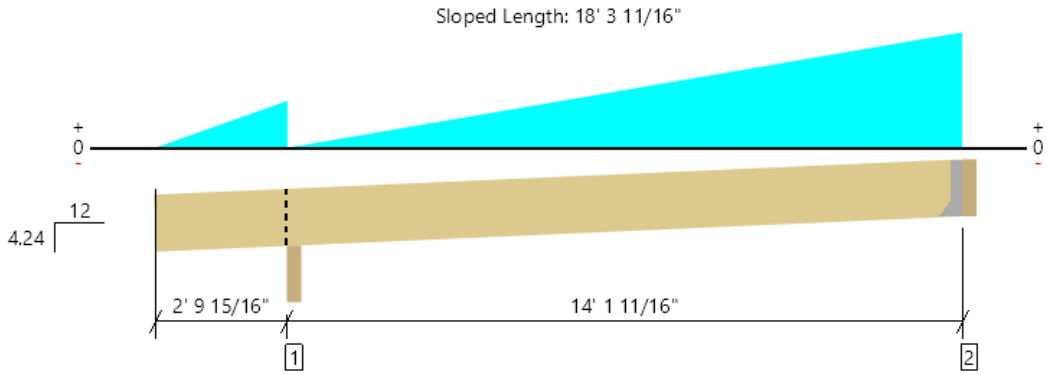
NOTCHED CEILING JOIST CHECK:

R (D+S, #) = (15)(14/2)(4/2+1.33/2) = 280#

fv = 3/2 * R/A = 3/2*280/8.25 = **51 psi < F'v, OK**

ROOF, 2X12 HIP RAFTER (FOR RXN LOAD ONLY)

1 piece(s) 2 x 12 DF No.2



Member Length : 18' 3 15/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

R

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	390	529	919	Blocking
2 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	559	825	1384	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 11 5/8"	N/A	4.3	--	
1 - Tapered (PLF)	0 to 2' 9 15/16"	N/A	0.0 to 44.7	0.0 to 70.7	Generated from Roof Geometry
2 - Tapered (PLF)	2' 9 15/16" to 16' 11 5/8"	N/A	0.0 to 107.3	0.0 to 176.8	Generated from Roof Geometry

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	

Weyerhaeuser

7/8/2022 9:59:08 PM UTC
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File Name: RED BARN - WALKER

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VISTA STRUCTURAL ENGINEERING, LLC

CHECKLIST ITEM# 3: NOTCH HIP LVL RAFTER DESIGN SHEAR CAPACITY CHECK FOR REDUCED DEPTH:

A (REDUCED) = 1.5*6 = 9 SI

F'v = 285*1.15 = 328 PSI

NOTCHED LVL HIP RAFTER CHECK:

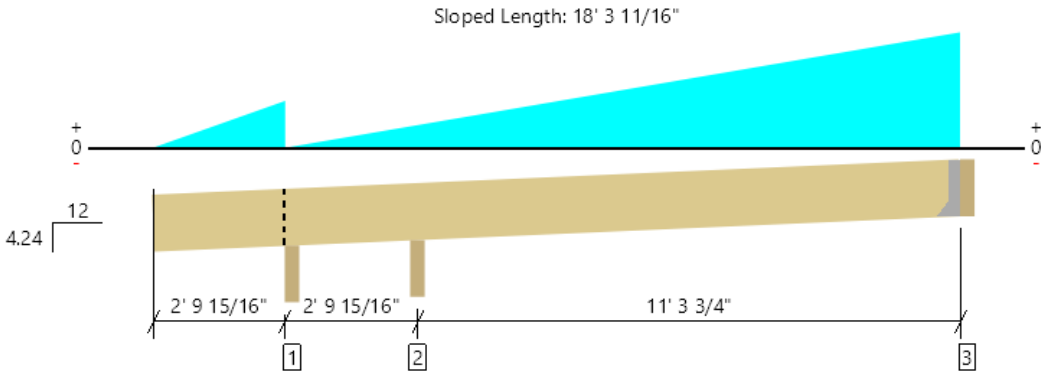
R (D+S, #) = 1814# (SEE LVL HIP RAFTER RXN CALC)

fv = 3/2 * R/A = 3/2*1814/9 = **302 psi < F'v, OK**

FORTE WEB

MEMBER REPORT

ROOF, LVL HIP RAFTER (FOR RXN LOAD ONLY)
1 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



Member Length : 18' 4 3/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

R

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	-199	-400	-599	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	2.33"	753	1082	1835	None
3 - Hanger on 11 7/8" SPF beam	3.50"	Hanger[1]	1.50"	427	618	1045	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 16' 11 5/8"	N/A	6.1	--	
1 - Tapered (PLF)	0 to 2' 9 15/16"	N/A	0.0 to 44.7	0.0 to 70.7	Generated from Roof Geometry
2 - Tapered (PLF)	2' 9 15/16" to 16' 11 5/8"	N/A	0.0 to 107.3	0.0 to 176.8	Generated from Roof Geometry

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

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DATE:	
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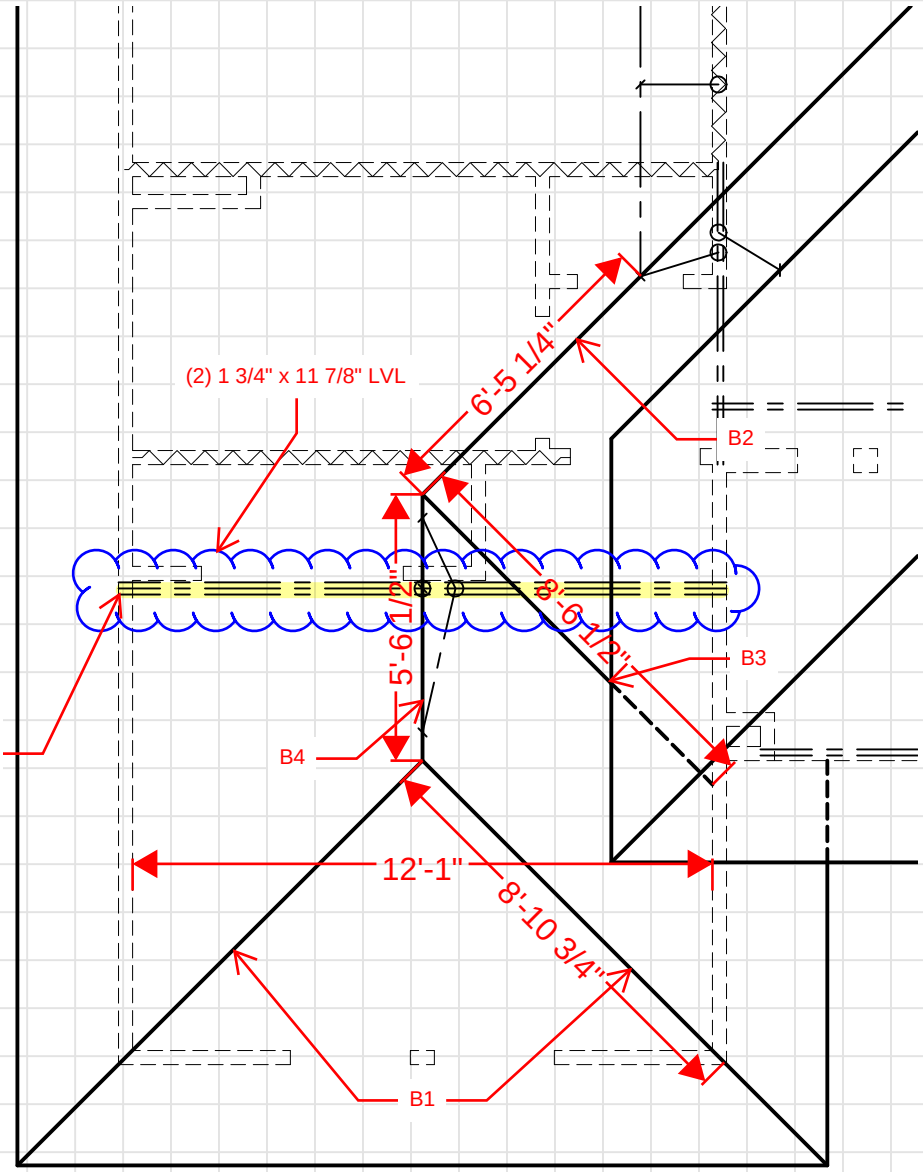
VISTA STRUCTURAL ENGINEERING, LLC

CHECKLIST ITEM# 7: NOTCH CEILING DBL LVL BM DESIGN SHEAR CAPACITY CHECK FOR REDUCED DEPTH:

F'v = 285*1.15 = 328 PSI

R = 1918# (SEE LVL CEILING BM RXN CALC)

e > de, fv = 3V/2bde = 3*1918/(2*1.75*6) = **274 psi < F'v, OK**



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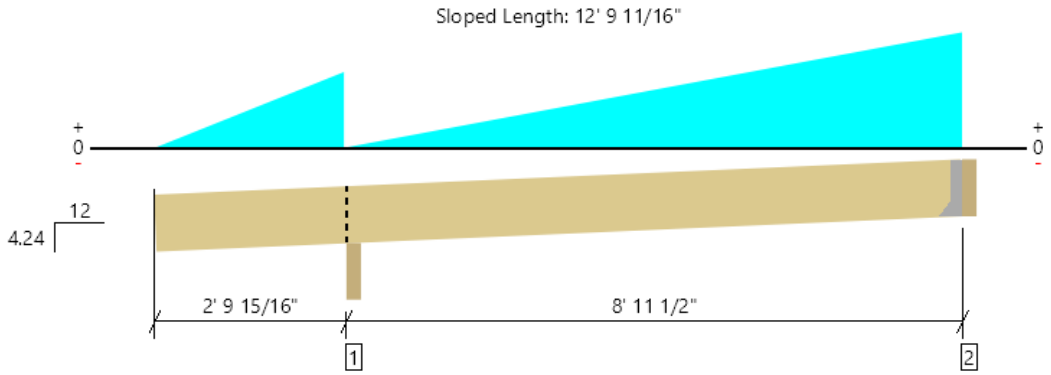
MEMBER REPORT

ROOF, B1

1 piece(s) 2 x 12 DF No.2



Member Length : 12' 9 15/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	214	282	496	Blocking
2 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	210	325	535	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 11' 9 7/16"	N/A	4.3	--	
1 - Tapered (PLF)	0 to 2' 9 15/16"	N/A	0.0 to 44.7	0.0 to 70.7	Generated from Roof Geometry
2 - Tapered (PLF)	2' 9 15/16" to 11' 9 7/16"	N/A	0.0 to 63.7	0.0 to 112.0	Generated from Roof Geometry

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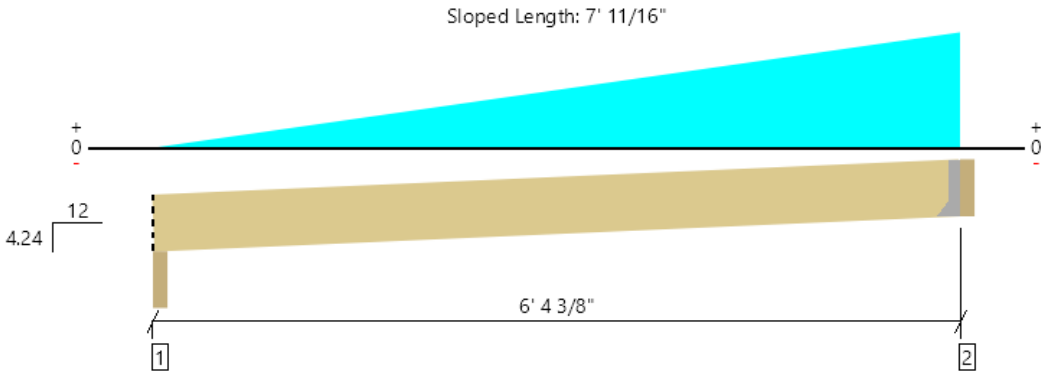
MEMBER REPORT

ROOF, B2

1 piece(s) 2 x 12 DF No.2



Member Length : 7' 1"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	73	87	160	Blocking
2 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	126	166	292	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 4 3/8"	N/A	4.3	--	
1 - Tapered (PLF)	0 to 6' 4 3/8"	N/A	0.0 to 50.3	0.0 to 79.5	Generated from Roof Geometry

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Dennis Nguyen Vista Structural Engineering LLC (503) 515-1124 dn@vistastructural.com	

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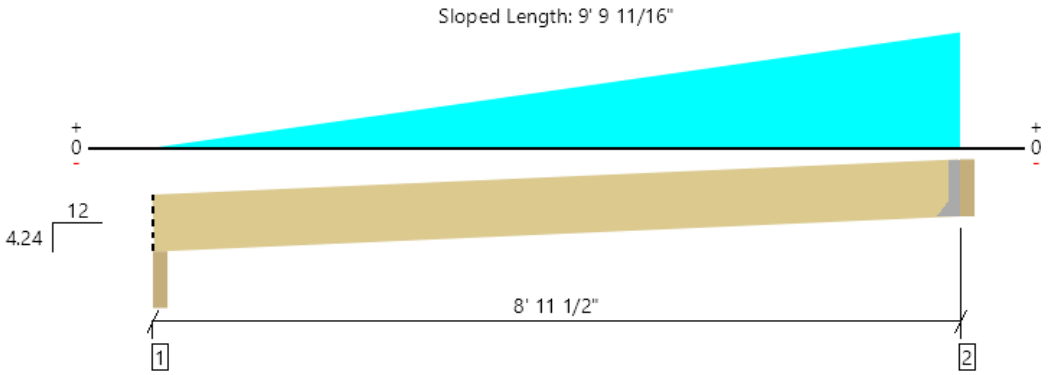
MEMBER REPORT

ROOF, B3

1 piece(s) 2 x 12 DF No.2



Member Length : 9' 9 15/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	135	170	305	Blocking
2 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	242	331	573	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 8' 11 1/2"	N/A	4.3	--	
1 - Tapered (PLF)	0 to 8' 11 1/2"	N/A	0.0 to 70.8	0.0 to 112.0	Generated from Roof Geometry

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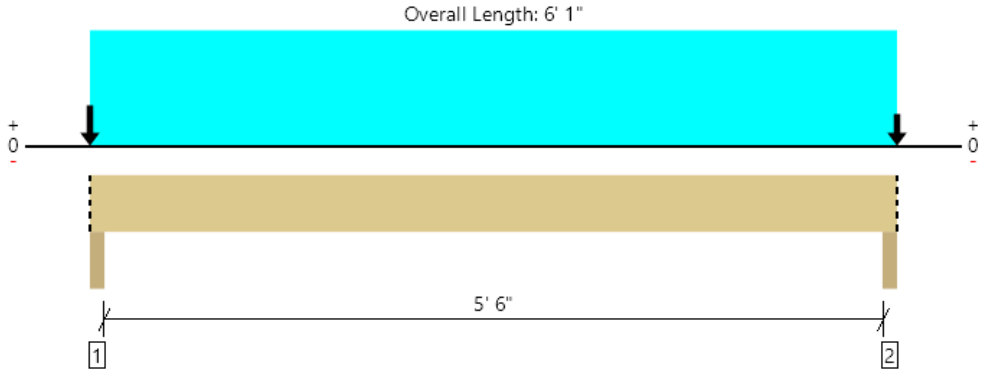
ROOF, B4

1 piece(s) 2 x 12 DF No.2



System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beam - DF	3.50"	3.50"	1.93"	707	1106	1813	Blocking
2 - Beam - DF	3.50"	3.50"	1.72"	655	953	1608	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 6' 1"	N/A	4.3	--	
1 - Uniform (PSF)	0 to 6' 1" (Front)	6'	15.0	25.0	ROOF
2 - Point (lb)	0 (Top)	N/A	210	325	Linked from: B1, Support 2
3 - Point (lb)	0 (Top)	N/A	210	325	Linked from: B1, Support 2
4 - Point (lb)	6' 1" (Top)	N/A	126	166	Linked from: B2, Support 2
5 - Point (lb)	6' 1" (Top)	N/A	242	331	Linked from: B3, Support 2

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

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7/11/2022 4:32:36 PM UTC
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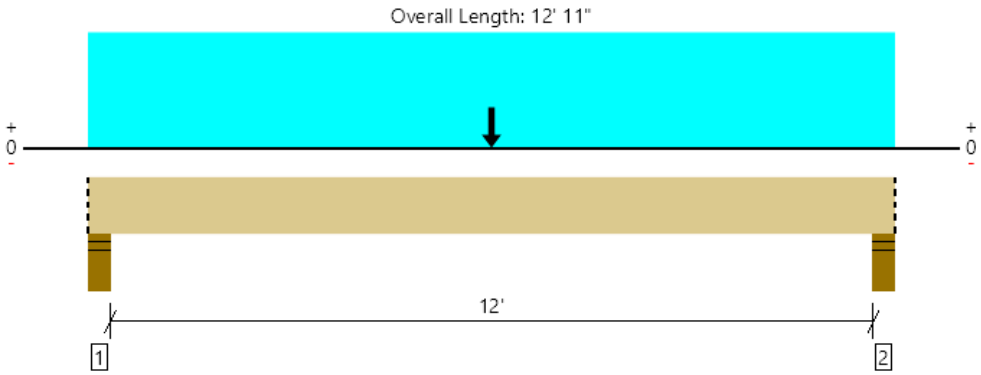
MEMBER REPORT

ROOF, DBL LVL CEILING BM (FOR RXN LOAD ONLY)

2 piece(s) 1 3/4" x 11 7/8" 2.0E Microllam® LVL



System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD

R

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	802	86	1030	1918	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.50"	802	86	1030	1918	Blocking

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

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 12' 11"	N/A	12.1	--	--	
1 - Uniform (PSF)	0 to 12' 11" (Top)	1' 4"	5.0	10.0	-	CEILING
2 - Point (lb)	6' 5 1/2" (Top)	N/A	707	-	1106	Linked from: B4, Support 1
3 - Point (lb)	6' 5 1/2" (Top)	N/A	655	-	953	Linked from: B4, Support 2

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

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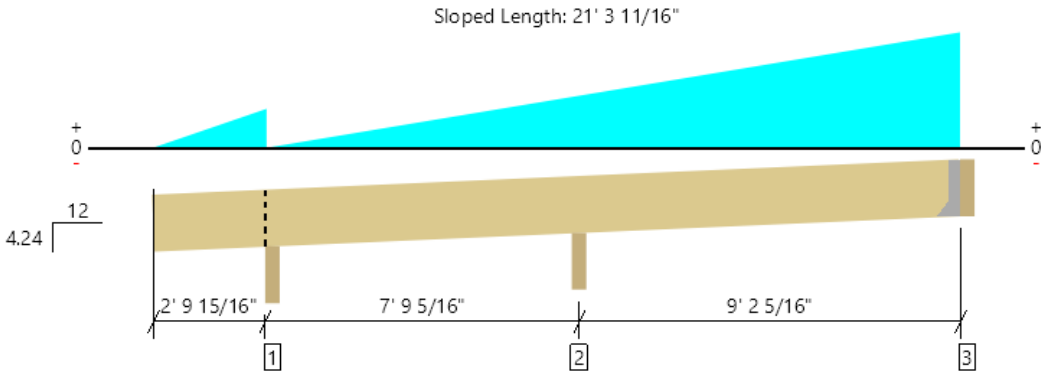
File Name: RED BARN - WALKER

MEMBER REPORT

ROOF, HIP RAFTERS AT MASTER BATH (FOR RXN LOAD ONLY)

1 piece(s) 2 x 12 DF No.2



Member Length : 21' 3 15/16"

System : Roof
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 4.24/12

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	102	166	268	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	2.77"	763	1113	1876	None
3 - Hanger on 11 1/4" SPF beam	3.50"	Hanger[1]	1.50"	466	697	1163	See note [1]

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 19' 9 9/16"	N/A	4.3	--	
1 - Tapered (PLF)	0 to 2' 9 15/16"	N/A	0.0 to 44.7	0.0 to 70.7	Generated from Roof Geometry
2 - Tapered (PLF)	2' 9 15/16" to 19' 9 9/16"	N/A	0.0 to 130.4	0.0 to 212.1	Generated from Roof Geometry

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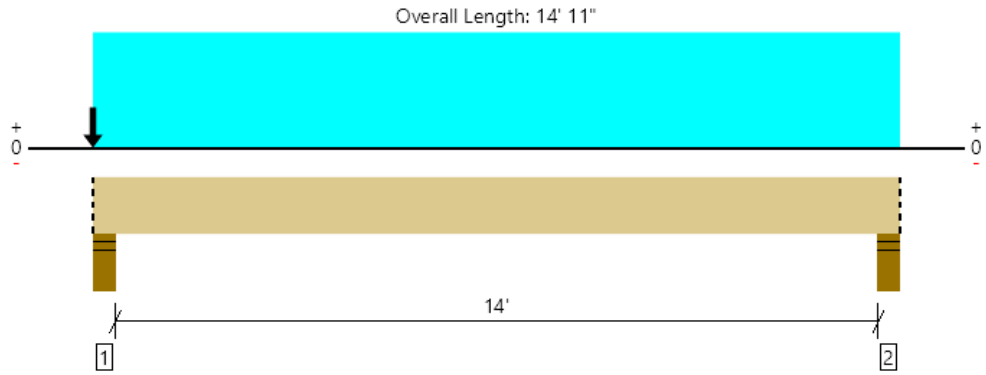
FORTE WEB

MEMBER REPORT

PASSED

ROOF, DBL 2x12 CEILING JOIST CHECK (MASTER BATH)

2 piece(s) 2 x 12 DF No.2



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

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2014 @ 4"	10313 (5.50")	Passed (20%)	--	1.0 D + 1.0 S (All Spans)
Shear (lbs)	234 @ 1' 4 3/4"	4050	Passed (6%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	979 @ 7' 5 1/2"	4746	Passed (21%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.033 @ 7' 5 1/2"	0.356	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.063 @ 7' 5 1/2"	0.712	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
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.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Floor Live	Snow	Total	
1 - Stud wall - DF	5.50"	5.50"	1.50"	901	149	1113	2163	Blocking
2 - Stud wall - DF	5.50"	5.50"	1.50"	138	149	-	287	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)	14' 11" o/c	
Bottom Edge (Lu)	14' 11" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Snow (1.15)	Comments
0 - Self Weight (PLF)	0 to 14' 11"	N/A	8.6	--	--	
1 - Uniform (PSF)	0 to 14' 11" (Top)	2'	5.0	10.0	-	CEILING
2 - Point (lb)	0 (Top)	N/A	763	-	1113	Linked from: HIP RAFTERS AT MASTER BATH (FOR RXN LOAD ONLY), Support 2

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