Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Roof Beam\RB01

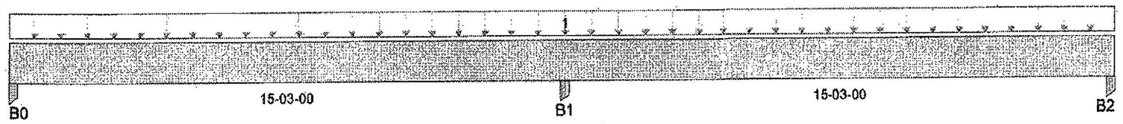
Dry | 2 spans | No cantilevers | 0/12 slope

October 24, 2017 08:04:36

BC CALC® Design Report

Build 6060
Job Name: STRUCTURAL RIDGE
Address: MONUMENT STREET
City, State, Zip: WINDHAM, ME
Customer: HANCOCK LUMBER
Code reports: ESR-1040

File Name: BC CALC Project
Description: Designs\RB01
Specifier:
Designer: GUY DOYON
Company: HANCOCK LUMBER COMPANY
Misc:



Total Horizontal Product Length = 30-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind	Roof Live
B0, 5-1/8"		577 / 0	3,815 / 0		
B1, 5-1/8"		1,806 / 0	11,071 / 0		
B2, 5-1/8"		577 / 0	3,815 / 0		

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Standard Load	Unf. Area (lb/ft^2)	L	00-00-00	30-06-00		10	70			08-06-00

Controls Summary

	Value	% Allowable	Duration	Case	Location
Pos. Moment	12,380 ft-lbs	50.6%	115%	7	06-03-05
Neg. Moment	-19,167 ft-lbs	78.3%	115%	9	15-03-00
End Shear	3,412 lbs	37.6%	115%	7	01-05-00
Cont. Shear	5,606 lbs	61.7%	115%	9	14-00-09
Total Load Defl.	L/425 (0.42")	42.4%	n/a	7	06-11-09
Live Load Defl.	L/476 (0.375")	50.4%	n/a	10	07-01-07
Total Neg. Defl.	L/999 (-0.028")	n/a	n/a	7	17-00-01
Max Defl.	0.42"	42%	n/a	7	06-11-09
Span / Depth	15	n/a	n/a	0	00-00-00
Squash Blocks	Valid				

Bearing Supports		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Post	5-1/8" x 3-1/2"	4,392 lbs	8.2%	32.6%	Versa-Lam 1.8
B1	Post	5-1/8" x 3-1/2"	12,877 lbs	23.9%	95.7%	Versa-Lam 1.8
B2	Post	5-1/8" x 3-1/2"	4,392 lbs	8.2%	32.6%	Versa-Lam 1.8

Cautions

For roof members with slope (1/4)/12 or less final design must ensure that ponding instability will not occur.
For roof members with slope (1/2)/12 or less final design must account for Rain-on-Snow surcharge load.

Notes

Design meets Code minimum (L/180) Total load deflection criteria.
Design meets Code minimum (L/240) Live load deflection criteria.
Design meets arbitrary (1") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Design based on Dry Service Condition.

Please send page 2.

Page 2 is the next page!

Boise Cascade

Double 1-3/4" x 11-7/8" VERSA-LAM® 2.0 3100 SP

Roof Beam\RB01

Dry | 2 spans | No cantilevers | 0/12 slope

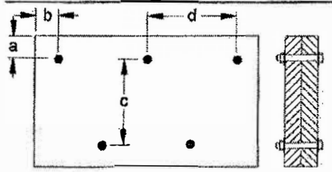
October 24, 2017 08:04:36

BC CALC® Design Report

Build 6080
Job Name: STRUCTURAL RIDGE
Address: MONUMENT STREET
City, State, Zip: WINDHAM, ME
Customer: HANCOCK LUMBER
Code reports: ESR-1040

File Name: BC CALC Project
Description: Designs\RB01
Specifier:
Designer: GUY DOYON
Company: HANCOCK LUMBER COMPANY
Misc:

Connection Diagram



a minimum = 2" c = 7-7/8"
b minimum = 2-1/2" d = 24"

Bolts are assumed to be Grade A307 or Grade 2 or higher.
Member has no side loads.
Connectors are: 1/2 in. Staggered Through Bolt

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER® , AJS™, ALLJOIST® , BC RIM BOARD™, BCI® , BOISE GLULAM™, SIMPLE FRAMING SYSTEM® , VERSA-LAM®, VERSA-RIM PLUS® , VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Cascade Wood Products L.L.C.

Boise Cascade

Quadruple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP

Floor Beam\FB02

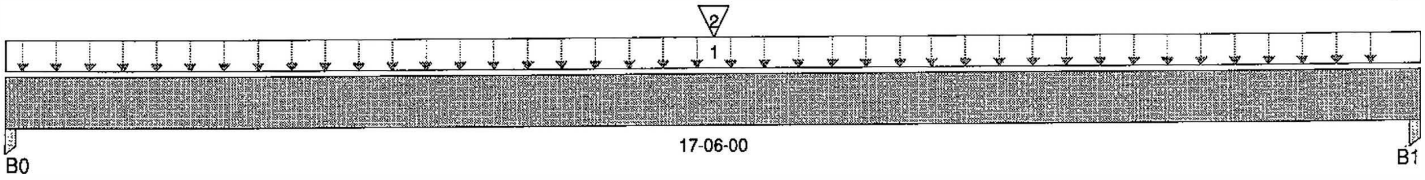
Dry | 1 span | No cantilevers | 0/12 slope

October 25, 2017 12:00:38

BC CALC® Design Report

Build 6080
Job Name: 1st floor ceiling beam, supports ridge
Address: MONUMENT STREET
City, State, Zip: WINDHAM, ME
Customer: HANCOCK LUMBER
Code reports: ESR-1040

File Name: adler-monument st
Description: Designs\FB02
Specifier:
Designer: GUY DOYON
Company: HANCOCK LUMBER COMPANY
Misc:



Total Horizontal Product Length = 17-06-00

Reaction Summary (Down / Uplift) (lbs)

Bearing	Live	Dead	Snow	Wind	Roof Live
B0, 3-1/2"	4,419 / 0	1,268 / 0			
B1, 3-1/2"	4,419 / 0	1,267 / 0			

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Standard Load	Unf. Area (lb/ft^2)	L	00-00-00	17-06-00	40	10				01-03-15
2	ridge support column	Conc. Pt. (lbs)	L	08-09-00	08-09-00	7,908	1,806				n/a

Controls Summary

	Value	% Allowable	Duration	Case	Location
Pos. Moment	44,829 ft-lbs	77.2%	100%	1	08-09-00
End Shear	5,548 lbs	29.8%	100%	1	01-05-08
Total Load Defl.	L/343 (0.597")	70%	n/a	1	08-09-00
Live Load Defl.	L/434 (0.472")	83%	n/a	2	08-09-00
Max Defl.	0.597"	95.5%	n/a	1	08-09-00
Span / Depth	14.6	n/a	n/a	0	00-00-00
Squash Blocks	Valid				

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Post	3-1/2" x 3-1/2"	5,687 lbs	n/a	61.9%	Unspecified
B1	Post	3-1/2" x 3-1/2"	5,686 lbs	n/a	61.9%	Unspecified

Cautions

Member is not fully supported at post B0. A connector is required at this bearing.
Member is not fully supported at post B1. A connector is required at this bearing.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets arbitrary (0.625") Maximum Total load deflection criteria.
Calculations assume member is fully braced.
Design based on Dry Service Condition.

Boise Cascade

Quadruple 1-3/4" x 14" VERSA-LAM® 2.0 3100 SP — Floor Beam\FB02

Dry | 1 span | No cantilevers | 0/12 slope

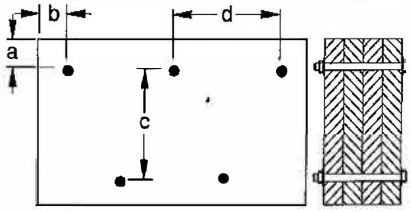
October 25, 2017 12:00:38

BC CALC® Design Report

Build 6080
Job Name: 1st floor ceiling beam, supports ridge
Address: MONUMENT STREET
City, State, Zip: WINDHAM, ME
Customer: HANCOCK LUMBER
Code reports: ESR-1040

File Name: adler-monument st
Description: Designs\FB02
Specifier:
Designer: GUY DOYON
Company: HANCOCK LUMBER COMPANY
Misc:

Connection Diagram



a minimum = 2" c = 10"
b minimum = 2-1/2" d = 24"

Connection design assumes point load is top-loaded. For connection design of side-loaded point loads, please consult a technical representative or professional of Record.
Beams 7 inches wide will be assumed to be either top-loaded only, or equally loaded from each side.
Bolts are assumed to be Grade A307 or Grade 2 or higher.
Member has no side loads.
Connectors are: 1/2 in. Staggered Through Bolt

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of Boise Cascade engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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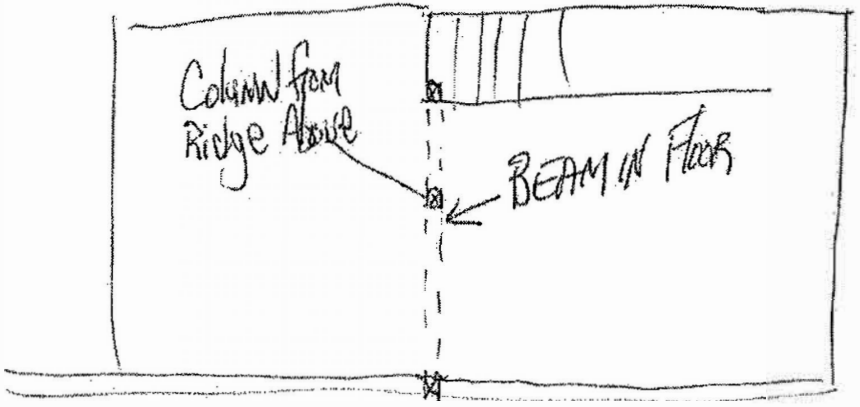
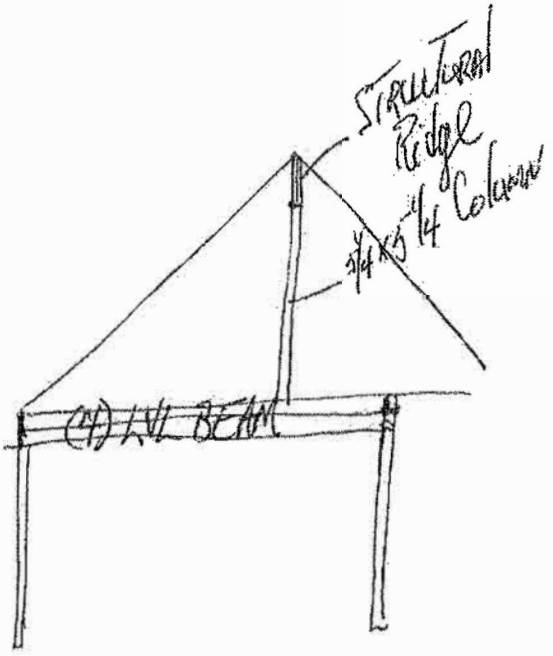

Column from
Ridge Above
BEAM in Floor


Structural
Ridge
(4) LVL BEAM

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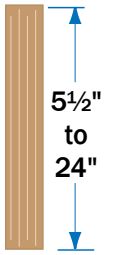
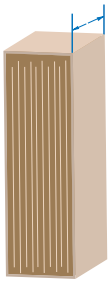
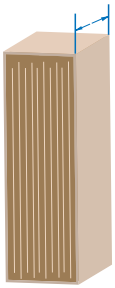
PRODUCT PROFILE



1¾", 3½", 5¼"
VERSA-LAM®
3100SP 2.0E



3½", 5¼"
VERSA-LAM® Column
2750 1.8E



7"
VERSA-LAM® Column
2650 1.7E

DESIGN PROPERTIES

Width	Depth	Size factor	Weight	Factored Shear Resistance (Joist), V_r	Factored Bending Resistance (Joist), M_r	Stiffness, EI	Modulus of Elasticity, E	Specified Bending Strength (Joist), f_b	Specified Shear Strength (Joist), f_v	Specified Compression Parallel to Grain, f_c	Specified Compression Perpendicular to Grain, f_{cp}
(in)	(in)		(lb/ft)	(lb)	(lb-ft)	(x10⁶ lb-in²)	(x10⁶ psi)	(psi)	(psi)	(psi)	(psi)
VERSA-LAM® COLUMN 2750F$_b$ 1.8E DESIGN PROPERTIES											
3½	3½	1.15	3.5	4 263	3 451	23	1.8	5 615	580	5 300	1 525
3½	5¼	1.10	5.3	6 395	7 422	76					
3½	7	1.06	7.1	8 526	12 780	180					
5¼	5¼	1.10	7.9	9 592	11 133	114					
5¼	7	1.06	10.6	12 789	19 170	270					
VERSA-LAM® COLUMN 2650F$_b$ 1.7E DESIGN PROPERTIES											
7	7	1.06	12.6	17 052	24 040	340	1.7	5 281	580	4396	1525
VERSA-LAM® 3100F$_b$ 2.0E DESIGN PROPERTIES											
1¾	5½	1.09	2.8	3350	4252	49	2.0	6 270	580	5 300	1 525
	7¼	1.06	3.7	4 415	7 624	111					
	9¼	1.03	4.7	5 633	12 080	231					
	9½	1.03	4.8	5 786	12 704	250					
	11¼	1.01	5.7	6 851	17 484	415					
	11⅞	1.00	6.1	7 232	19 364	488					
	14	0.98	7.1	8 526	26 426	800					
	16	0.97	8.2	9 744	34 007	1 195					
	18	0.96	9.2	10 962	42 481	1 701					
	20	0.94	10.2	12 180	51 835	2 333					
3½	5½	1.09	5.6	6 699	9 049	97	2.0	6 270	580	5 300	1 525
	7¼	1.06	7.4	8 831	15 249	222					
	9¼	1.03	9.4	11 267	24 160	462					
	9½	1.03	9.7	11 571	25 408	500					
	11¼	1.01	11.5	13 703	34 968	831					
	11⅞	1.00	12.1	14 464	38 727	977					
	14	0.98	14.3	17 052	52 852	1 601					
	16	0.97	16.3	19 488	68 015	2 389					
	18	0.96	18.4	21 924	84 962	3 402					
	20	0.94	20.4	24 360	103 671	4 667					
5¼	5½	1.09	8.4	10 049	13 574	146	2.0	6 270	580	5 300	1 525
	7¼	1.06	11.1	13 246	22 873	333					
	9¼	1.03	14.2	16 900	36 239	692					
	9½	1.03	14.5	17 357	38 112	750					
	11¼	1.01	17.2	20 554	52 451	1 246					
	11⅞	1.00	18.2	21 696	58 091	1 465					
	14	0.98	21.4	25 578	79 278	2 401					
	16	0.97	24.5	29 232	102 022	3 584					
	18	0.96	27.6	32 886	127 443	5 103					
	20	0.94	30.6	36 540	155 506	7 000					

NOTES:

- Repetitive member factor has not been applied to the Factored Bending Resitance.
- Size factors have been applied to the Factored Bending Resistance.
- VERSA-LAM® Specific Gravity for fasteners design = 0.5
- Specified compression perpendicular to grain on plank orientation (plate) is 809 psi.

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