



WoodWorks®
SOFTWARE FOR WOOD DESIGN

COMPANY

PROJECT

Mar. 5, 2025 11:06

Load_Input_Assignment1.wwbc

Design Check Calculation Sheet

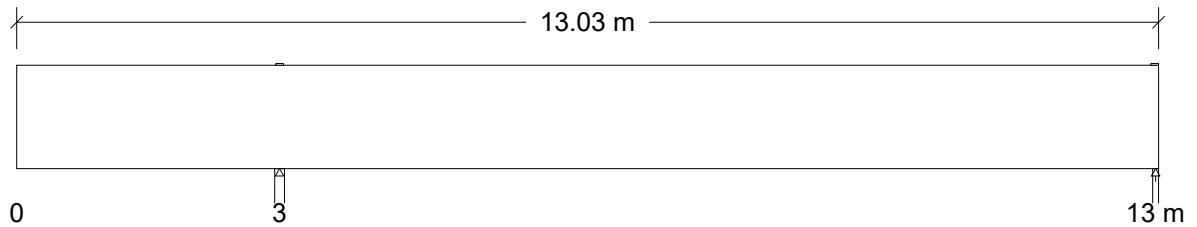
WoodWorks Sizer 11.5

Loads:

Load	Type	Distribution	Pat-tern	Location [m] Start End	Magnitude Start End	Unit
Load1	Dead	Full UDL	No		6.00	kN/m
Load2	Snow	Full UDL	Yes		10.00	kN/m
Self-weight	Dead	Full UDL	No		1.50	kN/m

Load magnitude does not include Normal Importance factor from NBC Tables 4.1.6.2, 4.1.7.3, 4.1.8.2 which is applied during analysis.

Maximum Reactions (kN), Bearing Resistances (kN) and Bearing Lengths (mm) :



Unfactored:					
Dead			63.36		34.32
Snow			84.50		48.09
Factored:					
Total			205.95		115.03
Bearing:					
Capacity					
Beam			205.95		115.03
Support			711.66		431.54
Des ratio					
Beam			1.00		1.00
Support			0.29		0.27
Load comb			#2		#5
Length			111		67
Min req'd			111		67
KB			1.09		1.00
KB min			1.09		1.00
KD			1.00		1.00
KB support			-		-
fc sup			30.20		30.20
Kzcp sup			-		-

Glulam-EX, D. Fir-L, 20f-EX, 265x1178 mm

Supports: All - Glulam-c Column, D. Fir-L 16c-E

Total length: 13.034 m; Clear span: 2.9, 9.9 m; Volume = 4.069 m³; 180 mm max lam width

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Force vs. Resistance and Deflection using CSA O86-19:

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear 7.5.7.2b	n/a (volume >	2.0 m ³)		
Shear 7.5.7.3a	Wf = 316.85	Wr = 996.27	kN	Wf/Wr = 0.32
Moment(+)	Mf = 267.88	Mr = 1190.93	kN-m	Mf/Mr = 0.22
Moment(-)	Mf = 109.68	Mr = 1190.93	kN-m	Mf/Mr = 0.09
Deflection:				
Interior Perm	1.7 = < L/999	27.8 = L/360	mm	0.06
Live	2.3 = < L/999	27.8 = L/360	mm	0.08
Total	4.0 = < L/999	55.6 = L/180	mm	0.07
Cantil. Perm	-1.2 = < L/999	16.7 = L/180	mm	0.07
Live	-2.0 = < L/999	16.7 = L/180	mm	0.12
Total	-3.1 = L/958	33.3 = L/90	mm	0.09

Additional Data:

FACTORS:	f/E(MPa)	KD	KH	KZ	KL	KT	KS	KN	Cv	LC#
Fv	2.0	1.00	1.00	1.000	-	1.00	1.00	-	4.753	#2
Fb+	25.6	1.00	1.00	0.903	0.843	1.00	1.00	-	-	#5
Fb-	25.6	1.00	1.00	0.976	0.843	1.00	1.00	-	-	#4
Fcp	7.0	-	-	1.150	-	1.00	1.00	-	-	#-
Es	12400	-	-	-	-	1.00	1.00	-	-	#5

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = 1.25D + (1.0)1.5S

Moment(+) : LC #5 = 1.25D + (1.0)1.5S (pattern: sS)

Moment(-) : LC #4 = 1.25D + (1.0)1.5S (pattern: sS)

Deflection: LC #1 = 1.0D (permanent)

LC #5 = 1.0D + (0.9)1.0S (pattern: sS) (live)

LC #5 = 1.0D + (0.9)1.0S (pattern: sS) (total)

Bearing : Support 1 - LC #2 = 1.25D + (1.0)1.5S

Support 2 - LC #5 = 1.25D + (1.0)1.5S (pattern: sS)

Load Types: D=dead S=snow

Load Patterns: s=S/2 L=L+Ls _=no pattern load in this span

Load combinations from NBC 2015; code references and LC's listed in the Analysis report

CALCULATIONS:

Shear Wr : O86 7.5.7.3(a)used; Wf = sum of all loads

EI = 447633e06 kN-mm²

"Live" deflection is due to all non-dead loads (live, wind, snow...)

Lateral stability(+): Lu = 10.00 m Le = 19.20 m CB = 17.9; Lu based on full span

Lateral stability(-): Lu = 10.00 m Le = 19.20 m CB = 17.9; Lu based on full span

Design Notes:

1. WoodWorks analysis and design are in accordance with the 2015 National Building Code of Canada (NBC), Division B, Part 4, and the CSA O86 - 19 Engineering Design in Wood standard.
2. Please verify that the default deflection limits are appropriate for your application.
3. EX grades should be considered when negative bending moment exceeds 75% of the negative bending capacity.
4. BEAMS require restraint against lateral displacement and rotation at points of bearing (O86 7.5.6.3.1).