



**WoodWorks®**  
SOFTWARE FOR WOOD DESIGN

COMPANY

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PROJECT

Stud.www

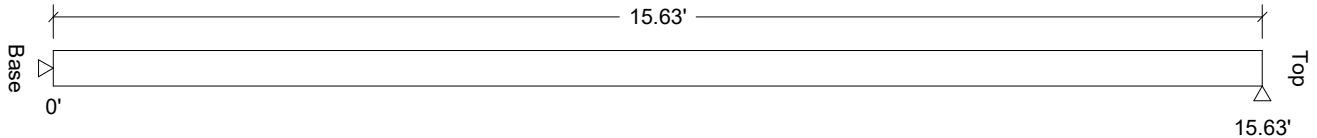
### Design Check Calculation Sheet

WoodWorks Sizer 11.1

#### Loads:

Load	Type	Distribution	Location [ft] Start End	Magnitude Start End	Unit
Roof	Dead	Axial UDL	(Ecc. = 0.00")	500	plf
Snow	Snow	Axial UDL	(Ecc. = 0.00")	1050	plf
C&C	Wind	Full Area		-27.00 (16.0")	psf

#### Lateral Reactions (lbs):



Unfactored:			
Dead			
Snow			
Wind			
Factored:			
R->L	-281		-281
Load comb			
L->R	-169		-169
	#4		#4

#### Exterior Wall Stud

##### Lumber Stud, S-P-F, No.1/No.2, 2x6 (1-1/2"x5-1/2")

Support: Lumber Stud Bottom plate, S-P-F No.1/No.2; Bearing length = stud thickness; continuous lower support

Spaced at 16.0" c/c; Total length: 15.63'; Clear span: 15.505'; volume = 0.9 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 [ft]; Ke x Ld: 1.0 x 15.63 = 15.63 [ft]; Repetitive factor: applied where permitted (refer to online help);

#### This section FAILS the design check

**WARNING: This section violates the following design criteria: Axial+Bending**

#### Analysis vs. Allowable Stress and Deflection using NDS 2015 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 31	Fv' = 216	psi	fv/Fv' = 0.14
Bending(-)	fb = 1047	Fb' = 2093	psi	fb/Fb' = 0.50
Axial	fc = 251	Fc' = 340	psi	fc/Fc' = 0.74
Axial Bearing	fc = 251	Fc* = 1455	psi	fc/Fc* = 0.17
Support Bearing	fc = 251	Fcp = 531	psi	fc/Fcp = 0.47
Combined (axial compression + side load bending)				Eq. 3.9-3 = 1.25
Live Defl'n	-1.00 = L/188	1.56 = L/120	in	0.64
Total Defl'n	-1.00 = L/188	1.56 = L/120	in	0.64

**Additional Data:**

FACTORS:	F/E (psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	135	1.60	1.00	1.00	-	-	-	-	1.00	1.00	4
Fb'-	875	1.60	1.00	1.00	1.000	1.300	1.00	1.15	1.00	1.00	4
Fc'	1150	1.15	1.00	1.00	0.234	1.100	-	-	1.00	1.00	2
Fc'comb	1150	1.60	-	-	0.171	-	-	-	-	-	3
E'	1.4 million	1.00	1.00	1.00	-	-	-	-	1.00	1.00	4
Emin'	0.51 million	1.00	1.00	1.00	-	-	-	-	1.00	1.00	4
Fc*	1150	1.15	1.00	1.00	-	1.100	-	-	1.00	1.00	2
Fcp sup	425	-	1.00	1.00	-	-	-	-	1.00	1.00	2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #4 = .6D+.6W, V max = 169, V design = 169 lbs  
 Bending(-): LC #4 = .6D+.6W, M = 660 lbs-ft  
 Deflection: LC #4 = .6D+.6W (live)  
                   LC #4 = .6D+.6W (total)  
 Axial : LC #2 = D+S, P = 2067 lbs  
 Combined : LC #3 = D+.75(S+.6W); (1 - fc/FcE) = 0.42  
 Support : LC #2 = D+S; R = 2067 lbs, Cap = 4383, Lb = 1.50", Cb = 1.25  
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake  
 All LC's are listed in the Analysis output  
 Load combinations: ASCE 7-10 / IBC 2015

**CALCULATIONS:**

Deflection: EI = 29.1e06 lb-in<sup>2</sup>  
 "Live" deflection = Deflection from all non-dead loads (live, wind, snow...)  
 Total Deflection = 1.50(Dead Load Deflection) + Live Load Deflection.

**Design Notes:**

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2015), the National Design Specification (NDS 2015), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.