



**WoodWorks®**  
SOFTWARE FOR WOOD DESIGN

COMPANY

PROJECT

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McCartney Floor Girder.wwb

## Design Check Calculation Sheet

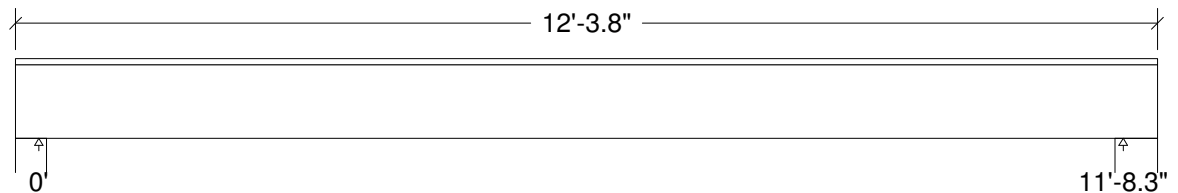
WoodWorks Sizer 9.14

### Loads:

Load	Type	Distribution	Pat- tern	Location [ft] Start End	Magnitude Start End	Unit
1st Flr DL	Dead	Full Area			12.00 (12.00) *	psf
2nd Flr DL	Dead	Full Area			12.00 (12.00) *	psf
1st Flr LL	Live	Full Area			30.00 (12.00) *	psf
2nd Flr LL	Live	Full Area			40.00 (12.00) *	psf
Wall DL	Dead	Full UDL			50.0	plf
Self-weight	Dead	Full UDL			19.2	plf

\*Tributary Width (ft)

### Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2173		2213
Live	5121		5222
Factored:			
Total	7293		7435
Bearing:			
Capacity			
Beam	21000		28875
Supports	14700		19250
Anal/Des			
Beam	0.35		0.26
Support	0.50		0.39
Load comb	#2		#2
Length	4.00		5.50
Min req'd	1.98**		2.12**
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.00		1.00
Fc sup	500		500

\*\*Minimum bearing length governed by the required width of the supporting member.

### LVL n-ply, 2.0E, 3100Fb, 1-3/4"x9-1/2", 4-ply (7"x9-1/2")

Supports: All - Timber-soft Column, S-P-F No.2

Total length: 12'-3.8";

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

### Analysis vs. Allowable Stress (psi) and Deflection (in) using NDS 2005 :

Criterion	Analysis Value	Design Value	Analysis/Design
Shear	$f_v = 134$	$F_v' = 285$	$f_v/F_v' = 0.47$
Bending(+)	$f_b = 2331$	$F_b' = 3199$	$f_b/F_b' = 0.73$
Live Defl'n	$0.35 = L/397$	$0.39 = L/360$	0.91
Total Defl'n	$0.58 = L/242$	$0.58 = L/240$	0.99

**Additional Data:**

FACTORS:	F/E (psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	285	1.00	-	1.00	-	-	-	-	1.00	-	1.00	2
Fb'+	3100	1.00	-	1.00	1.000	1.03	-	1.00	1.00	-	-	2
Fcp'	750	-	-	1.00	-	-	-	-	1.00	-	-	-
E'	2.0 million	-	-	1.00	-	-	-	-	1.00	-	-	2
Emin'	1.04 million	-	-	1.00	-	-	-	-	1.00	-	-	2

**CRITICAL LOAD COMBINATIONS:**

Shear : LC #2 = D+L, V = 6999, V design = 5951 lbs

Bending(+): LC #2 = D+L, M = 20457 lbs-ft

Deflection: LC #2 = D+L (live)

LC #2 = D+L (total)

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 7-05 / IBC 2009

**CALCULATIONS:**

Deflection: EI = 250e06 lb-in<sup>2</sup>/ply

"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 2009), the National Design Specification (NDS 2005), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. SCL-BEAMS (Structural Composite Lumber): the attached SCL selection is for preliminary design only. For final member design contact your local SCL manufacturer.
4. Size factors vary from one manufacturer to another for SCL materials. They can be changed in the database editor.
5. BUILT-UP SCL-BEAMS: contact manufacturer for connection details when loads are not applied equally to all plies.