

Wood Beam Calculator

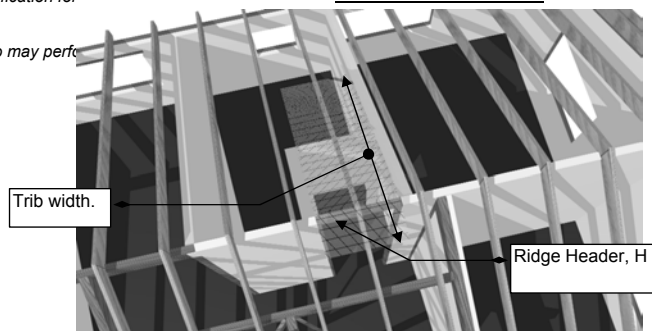


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Assumptions: Beams are simple span (no overhangs, etc.). Full length of top of beam is laterally supported. No shear stress modifications. Bending in strong axis only. No wet use or high moisture content. No high temperature use. Dynamic loading not considered. Design values from 1997 National Design Specification for Wood Construction.

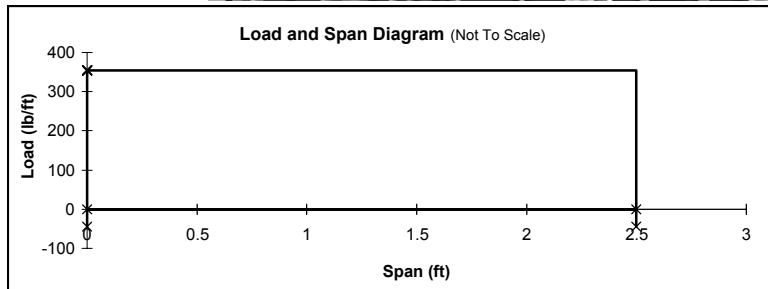
Disclaimer: All users of this software shall comply with State Engineering Law, which specifies who may perform engineering, and defines the practice of engineering.

Job Name: Two story wood framed example
Beam I.D.: Ridge H
Other Info.:



General Information

Span, L = 2.50 ft
 Max. Allowed Live Deflection, L / 360 = 0.08 in
 Max. Allowed Total Deflection, L / 240 = 0.13 in
 Load Duration: Two Months (Snow)
 Add Self Wt.? Yes No
 Loads Other Than Uniform Loads? No



Uniform Loads Over Full Length of Member

	Live, psf	Dead, psf	Tributary width, ft	Uniform Live Load, plf	Reduced Live Load, plf	Unif. Dead Load, plf
Roof Loads (not including snow)	16 psf	16 psf	7.70 ft	-	-	123.2 lb/ft
Roof Snow (only)	30 psf		7.70 ft	231.0 lb/ft	231.0 lb/ft	
Load Subtotals				231.0 lb/ft	231.0 lb/ft	123.2 lb/ft
Total Uniform Loads				$W_L = 231.0$ lb/ft		$W_D = 123.2$ lb/ft
Combined Total Uniform Load				$W_U = 354.2$ lb/ft		

4x And Smaller (Lumber)

Lumber Material: Douglas Fir-Larch
 Lumber Grade: No. 2
 Repetitive Member Use? No

2 x 4	3 x 4
(2) 2 x 3	4 x 4
(3) 2 x 3	

5x And Larger (Timbers)

Timber Material: Douglas Fir - Larch
 Timber Grade: WCLIB - No. 2

5 x 5	-	-
-	-	-
-	-	-
-	-	-

Glued Laminated Members

Glulam Grade: 24F-V4

2.5 x 6	5.125 x 6
3 x 6	6.75 x 7.5
3.125 x 6	8.75 x 9
5 x 6	

(Applies Only To Western Species Glued-Laminated Beams)

2.0E Parallam PSL

1-3/4" x 9-1/4"	5-1/4" x 9-1/4"
2-11/16" x 9-1/4"	7" x 9-1/4"
3-1/2" x 9-1/4"	

Truss-Joist MacMillan I-Joists

9-1/2" TJI / Pro 150	11-7/8" TJI / Pro 350
9-1/2" TJI / Pro 250	11-7/8" TJI / Pro 550

Final Member: Sawn Wood
Final Size: 4 x 4
Minimum Bearing Length = 1.50 in
 (Assuming Full-Width Bearing)

Reactions Including Self-Weight

	R ₁	R ₂
Live Load:	289 lb	289 lb
Dead Load:	158 lb	158 lb
Total Load:	447 lb	447 lb

Efficiency of Member:
 Bending Overdesign: 231.2%
 Shear Overdesign: 160.5%
 Deflection Overdesign: 696.4%

Add'l Detail - Incl. Self Wt.

Max Moment: 279 ft-lb
 Member Design Shear: 342 lb
 Total Deflection: 0.016 in
 Live Deflection: 0.010 in
 Req'd EI, no self-weight added 2.490E+06 (in²-lb)
 Approx. Self Weight 3.13 plf
 Min. Calc'd Bearing Length 0.20 in

Final Member Selected: 4 x 4, Douglas Fir-Larch, No. 2

This member makes it by: **160.5%**
 Controlling criteria is: **Shear**