

Wood Beam Calculator

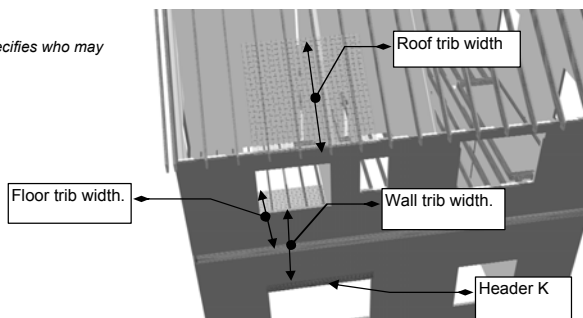


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Assumptions: Beams are simple span (no overhangs, etc.). Full length of top of beam is laterally supported. No shear stress modifications. Bending in strong axis only. No wet use or high moisture content. No high temperature use. Dynamic loading not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

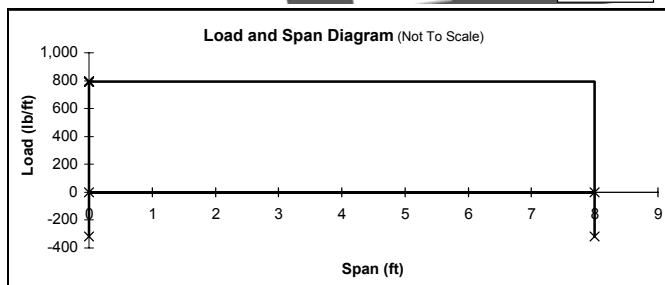
Disclaimer: All users of this software shall comply with State Engineering Law, which specifies who may perform engineering, and defines the practice of engineering.

Job Name: Two story wood framed example
Beam I.D.: 1st fir header, K
Other Info.: Worst case header



General Information

Span, L = 8.00 ft
 Max. Allowed Live Deflection, L / 360 = 0.27 in
 Max. Allowed Total Deflection, L / 240 = 0.40 in
 Load Duration: Two Months (Snow)
 Add Self Wt.? Yes No
 Loads Other Than Uniform Loads? No



Uniform Loads Over Full Length of Member

A significant amount of load comes from snow.

We've approximated all loads as uniform loads (roof and wall loads tend to be distributed through rim joist and wall above the window).

	Live, psf	Dead, psf	Tributary width, ft	Uniform Live Load, plf	Reduced Live Load, plf.	Unif. Dead Load, plf.
Roof (not including snow)	16 psf	16 psf	6.50 ft	-	-	104.0 lb/ft
Roof Snow (only)	38 psf		6.50 ft	247.0 lb/ft	247.0 lb/ft	
Floor Loads	40 psf	12 psf	6.00 ft	240.0 lb/ft	240.0 lb/ft	72.0 lb/ft
Wall Dead Load		10 psf	13.00 ft			130.0 lb/ft
Load Subtotals				487.0 lb/ft	487.0 lb/ft	306.0 lb/ft
Total Uniform Loads				$w_L = 487.0$ lb/ft		$w_D = 306.0$ lb/ft
Combined Total Uniform Load				$w_U = 793.0$ lb/ft		

Smaller (Lumber)

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

-	3 x 16
(2) 2 x 14	4 x 12
(3) 2 x 10	

5x And Larger (Timbers)

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

-	-	-
6 x 10	-	-
8 x 10	-	-
-	-	-

Glued Laminated Members

Any time three members together are shown, repetitive member credit is automatically included, even if 'No' is selected above.

24F-V4

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

(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

-	-
-	-

Final Member: Sawn Wood
Final Size: 6 x 10
Minimum Bearing Length = 1.50 in
 (Assuming Full-Width Bearing)

Reactions Including Self-Weight

	R ₁	R ₂
Live Load:	1,948 lb	1,948 lb
Dead Load:	1,276 lb	1,276 lb
Total Load:	3,224 lb	3,224 lb

Efficiency of Member:

Bending Overdesign: 2.0%
 Shear Overdesign: 27.4%
 Deflection Overdesign: 153.9%

Add'l Detail - Incl. Self Wt.

Max Moment: 6,448 ft-lb
 Member Design Shear: 2,603 lb
 Total Deflection: 0.158 in
 Live Deflection: 0.097 in
 Req'd EI, no self-weight added 1,827E+08 (in⁴-lb)
 Approx. Self Weight 13.01 plf
 Min. Calc'd Bearing Length 0.94 in

Final Member Selected: 6 x 10, Douglas Fir - Larch, WCLIB - No. 2

This member makes it by: **2.0%**
 Controlling criteria is: **Bending**

This member just makes it. Very efficient.