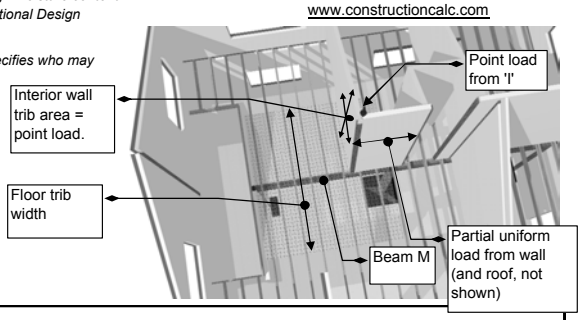
Wood Beam Calculator

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.*

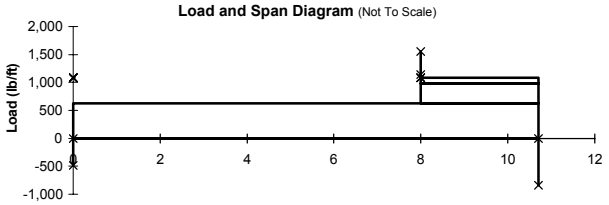
Job Name:	Two story wood framed example
Beam I.D.:	Floor Beam M
Other Info.:	



General Information

Span, L =	10.70 ft	
Max. Allowed Live Deflection, L /	360	= 0.36 in
Max. Allowed Total Deflection, L /	240	= 0.54 in
Load Duration	Two Months (Snow)	
Add Self Wt.?	(●) Yes ( ) No	
Loads Other Than Uniform Loads?	Yes	

Load and Span Diagram (Not To Scale)



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.
Floor Loads	40 psf	12 psf	12.00 ft	480.0 lb/ft	480.0 lb/ft	144.0 lb/ft
Load Subtotals				480.0 lb/ft	480.0 lb/ft	144.0 lb/ft
Total Uniform Loads			w_L =	480.0 lb/ft	w_D =	144.0 lb/ft
Combined Total Uniform Load			w_U =	624.0 lb/ft		

From int wall between kitchen and bathroom.

Concentrated (Point) Loads

	Live Load, psf	Dead Load, psf	Trib. Width, ft.	Trib. Length, ft.	Live, lbs	Dead, lbs	Location, ft.
Point Load A		7 psf	6.00 ft	13.00 ft	-	546 lb	x_A = 8.00 ft
Point Load C		Descrip'n, opt'l:	From l		3,059 lb	1,657 lb	x_C = 8.00 ft

Note: Location Measured From Left Support

Partial Uniform Loads

	Live Load, psf	Dead Load, psf	Tributary width, ft	Live Load, plf	Dead Load, plf	Comb'd Load, plf	Start Point, ft.	End Point, ft.
Partial Load A	30 psf	16 psf	7.75 ft	232.5 lb/ft	124.0 lb/ft	356.5 lb/ft	8.00 ft	10.70 ft
Partial Load B		7 psf	15.00 ft	-	105.0 lb/ft	105.0 lb/ft	8.00 ft	10.70 ft

Note: Start and End Points Measured From Left Support

4x And Smaller (Lumber)

Lumber Material: Douglas Fir-Larch
Lumber Grade: No. 2

Repetitive Member Use? No

-	-
-	-
-	

5x And Larger (Timbers)

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

-	12 x 14	-
6 x 20	14 x 14	-
8 x 16	16 x 16	-
10 x 14	-	

Glued Laminated Members

Glulam Grade: 24F-V4

2.5 x 19.5	5.125 x 10.5
3 x 16.5	6.75 x 9
3.125 x 16.5	8.75 x 9
5 x 10.5	

(Applies Only To Western Species Glued-Laminated Beams)

2.0E Parallam PSL

-	5-1/4" x 9-1/2"
2-11/16" x 14"	7" x 9-1/4"
3-1/2" x 11-1/4"	

Truss-Joist MacMillan I-Joists

-	-
-	-

Final Member: Parallam 2.0E PSL
Final Size: 5-1/4" x 9-1/2"
Minimum Bearing Length = 2.47 in
(Assuming Full-Width Bearing)

Final Member Selected: 5-1/4" x 9-1/2", Parallam 2.0E PSL

Reactions Including Self-Weight

	R_1	R_2
Live Load:	3,419 lb	5,404 lb
Dead Load:	1,488 lb	3,041 lb
Total Load:	**4,907 lb**	**8,445 lb**

Efficiency of Member:

Bending Overdesign: 19.4%
Shear Overdesign: 46.5%
Deflection Overdesign: 8.2%

This member makes it by: **8.2%**
Controlling criteria is: **Deflection**

Add'l Detail - Incl. Self Wt.

Max Moment: 18,865 ft-lb
Member Design Shear: 7,573 lb
Total Deflection: 0.494 in
Live Deflection: 0.330 in
Req'd EI, no self-weight added (in^2-lb): 6.890E+08
Approx. Self Weight 15.60 plf
Min. Calc'd Bearing Length 2.47 in