

Wood Beam Calculator



www.constructioncalc.com

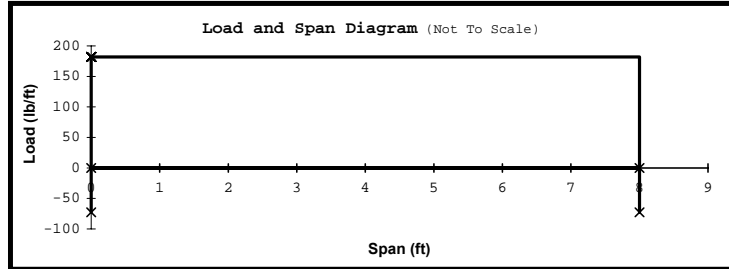
Assumptions: Beams are simple span (no overhangs, etc.). Full length of top of beam is laterally supported. No shear stress modifications. Bending in strong axis only. No wet use or high moisture content. No high temperature use. Dynamic loading not considered. Design values from 1997 National Design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

General Information

Span, L =
 Max. Allowed Live Deflection, L / = 0.27 in
 Max. Allowed Total Deflection, L / = 0.40 in
 Load Duration:
 Add Self Wt.? Yes No
 Loads Other Than Uniform Loads?



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)				-	-	-
Roof Snow (only)			0.00 ft	-	-	-
Floor 3 Loads				-	-	-
Floor 2 Loads				-	-	-
Floor Loads	125 psf	15 psf	1.30 ft	162.5 lb/ft	162.5 lb/ft	19.5 lb/ft
Wall Dead Load				-	-	-
Other 'psf' load and trib. width				-	-	-
Additional 'plf' Unif. Live Loads	Descrip'n, opt'l:					
Additional 'plf' Unif. Dead Loads	Descrip'n, opt'l:					
Load Subtotals				162.5 lb/ft	162.5 lb/ft	19.5 lb/ft
Total Uniform Loads				$w_L = 162.5$ lb/ft	$w_D = 19.5$ lb/ft	
Combined Total Uniform Load				$w_U = 182.0$ lb/ft		

<h3>4x And Smaller (Lumber)</h3> <p>Lumber Material: <input type="text" value="Hem-Fir"/> Lumber Grade: <input type="text" value="No. 2"/> Repetitive Member Use? <input type="text" value="Yes"/> <table border="1"> <tr> <td><input type="text" value="2 x 10"/></td> <td><input type="text" value="3 x 8"/></td> </tr> <tr> <td><input type="text" value="(2) 2 x 8"/></td> <td><input type="text" value="4 x 6"/></td> </tr> <tr> <td><input type="text" value="(3) 2 x 6"/></td> <td></td> </tr> </table> </p>	<input type="text" value="2 x 10"/>	<input type="text" value="3 x 8"/>	<input type="text" value="(2) 2 x 8"/>	<input type="text" value="4 x 6"/>	<input type="text" value="(3) 2 x 6"/>		<h3>5x And Larger (Timbers)</h3> <p>Timber Material: <input type="text" value="Hem - Fir"/> Timber Grade: <input type="text" value="WWPA - No. 2"/> <table border="1"> <tr> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> </tr> <tr> <td><input type="text" value="6 x 8"/></td> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> </tr> <tr> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> </tr> <tr> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> <td><input type="text" value="-"/></td> </tr> </table> </p>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="6 x 8"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>	<input type="text" value="-"/>
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<h3>Glued Laminated Members</h3> <p>Glulam Grade: <input type="text" value="24F-V4"/> <table border="1"> <tr> <td><input type="text" value="2.5 x 6"/></td> <td><input type="text" value="5.125 x 6"/></td> </tr> <tr> <td><input type="text" value="3 x 6"/></td> <td><input type="text" value="6.75 x 7.5"/></td> </tr> <tr> <td><input type="text" value="3.125 x 6"/></td> <td><input type="text" value="8.75 x 9"/></td> </tr> <tr> <td><input type="text" value="5 x 6"/></td> <td></td> </tr> </table> <p>(Applies Only To Western Species Glued-Laminated Beams)</p> </p>	<input type="text" value="2.5 x 6"/>	<input type="text" value="5.125 x 6"/>	<input type="text" value="3 x 6"/>	<input type="text" value="6.75 x 7.5"/>	<input type="text" value="3.125 x 6"/>	<input type="text" value="8.75 x 9"/>	<input type="text" value="5 x 6"/>		<h3>2.0E Parallam PSL</h3> <table border="1"> <tr> <td><input 4"<="" 9-1="" td="" type="text" value="1-3/4" x=""/> <td><input 4"<="" 9-1="" td="" type="text" value="5-1/4" x=""/> </td></td></tr> <tr> <td><input 4"<="" 9-1="" td="" type="text" value="2-11/16" x=""/> <td><input 4"<="" 9-1="" td="" type="text" value="7" x=""/> </td></td></tr> <tr> <td><input 4"<="" 9-1="" td="" type="text" value="3-1/2" x=""/> <td></td> </td></tr> </table> <h3>Truss-Joist MacMillan I-Joists</h3> <table border="1"> <tr> <td><input 150"="" pro="" tji="" type="text" value="9-1/2"/></td> <td><input 350"="" pro="" tji="" type="text" value="11-7/8"/></td> </tr> <tr> <td><input 250"="" pro="" tji="" type="text" value="9-1/2"/></td> <td><input 550"="" pro="" tji="" type="text" value="11-7/8"/></td> </tr> </table>	<input 4"<="" 9-1="" td="" type="text" value="1-3/4" x=""/> <td><input 4"<="" 9-1="" td="" type="text" value="5-1/4" x=""/> </td>	<input 4"<="" 9-1="" td="" type="text" value="5-1/4" x=""/>	<input 4"<="" 9-1="" td="" type="text" value="2-11/16" x=""/> <td><input 4"<="" 9-1="" td="" type="text" value="7" x=""/> </td>	<input 4"<="" 9-1="" td="" type="text" value="7" x=""/>	<input 4"<="" 9-1="" td="" type="text" value="3-1/2" x=""/> <td></td>		<input 150"="" pro="" tji="" type="text" value="9-1/2"/>	<input 350"="" pro="" tji="" type="text" value="11-7/8"/>	<input 250"="" pro="" tji="" type="text" value="9-1/2"/>	<input 550"="" pro="" tji="" type="text" value="11-7/8"/>
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<p>Final Member: <input type="text" value="Sawn Wood"/> Final Size: <input type="text" value="2 x 10"/> Minimum Bearing Length = 1.50 in (Assuming Full-Width Bearing)</p>	<p>Reactions - Not Incl. Self Wt.</p> <table border="1"> <tr> <td></td> <td>R_1</td> <td>R_2</td> </tr> <tr> <td>Live Load:</td> <td>650 lb</td> <td>650 lb</td> </tr> <tr> <td>Dead Load:</td> <td><u>78 lb</u></td> <td><u>78 lb</u></td> </tr> <tr> <td>Total Load:</td> <td>728 lb</td> <td>728 lb</td> </tr> </table> <p>Efficiency of Member: Bending Overdesign: 31.6% Shear Overdesign: 18.0% Deflection Overdesign: 129.0%</p>		R_1	R_2	Live Load:	650 lb	650 lb	Dead Load:	<u>78 lb</u>	<u>78 lb</u>	Total Load:	728 lb	728 lb	<p>Add'l Detail - Not Incl. Self Wt.</p> <p>Max Moment: 1,456 ft-lb Member Design Shear: 588 lb Total Deflection: 0.130 in Live Deflection: 0.116 in</p> <p>Req'd EI, no self-weight added 5.616E+07 (in⁴-lb) Approx. Self Weight 0.00 plf Min. Calc'd Bearing Length 1.20 in</p>
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<p>Final Member Selected: 2 x 10, Hem-Fir, No. 2</p>														
<p>This member makes it by: 18.0% Controlling criteria is: Shear</p>														