

## Wood Beam

LIC# : KW-06015579, Build:20.22.3.31

HD Engineering & Design

Project: Full beam analysis  
 05/11/2022  
 GENERAL INC. 333022

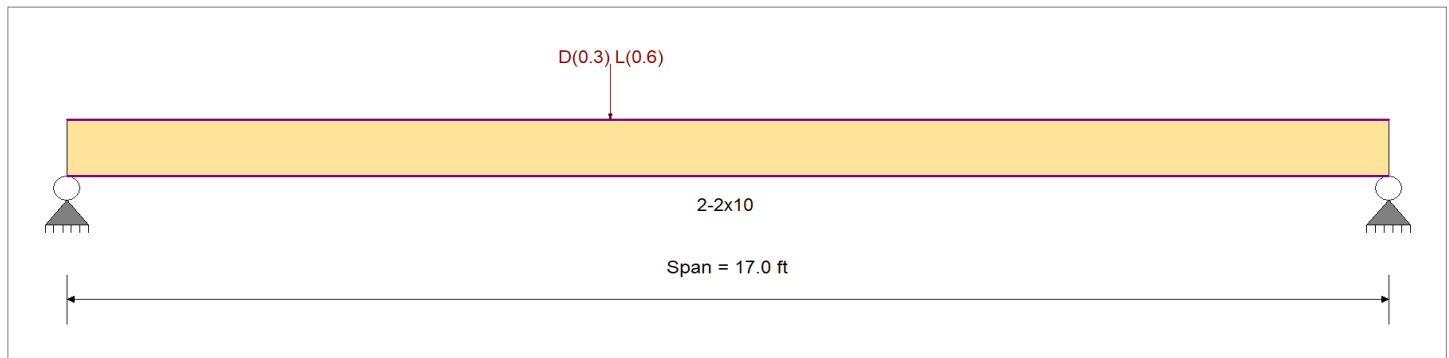
**DESCRIPTION:** DBL JOIST

### CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16  
 Load Combination Set : ASCE 7-05

### Material Properties

Analysis Method : Allowable Stress Design	Fb +	900 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-05	Fb -	900 psi	Ebend- xx	1600ksi
	Fc - Prll	1350 psi	Eminbend - xx	580ksi
Wood Species : Douglas Fir-Larch	Fc - Perp	625 psi		
Wood Grade : No.2	Fv	180 psi		
	Ft	575 psi	Density	31.21pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling			Repetitive Member Stress Increase	



### Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added  
 Point Load : D = 0.30, L = 0.60 k @ 7.0 ft, (POINTLOAD1)

### DESIGN SUMMARY

**Design OK**

<b>Maximum Bending Stress Ratio</b>	=	<b>0.912</b>	<b>1</b>	<b>Maximum Shear Stress Ratio</b>	=	<b>0.159</b>	<b>: 1</b>
Section used for this span		<b>2-2x10</b>		Section used for this span		<b>2-2x10</b>	
fb: Actual	=	1,038.35psi		fv: Actual	=	28.62 psi	
Fb: Allowable	=	1,138.50psi		Fv: Allowable	=	180.00 psi	
Load Combination		+D+L		Load Combination		+D+L	
Location of maximum on span	=	7.011 ft		Location of maximum on span	=	0.000 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
<b>Maximum Deflection</b>							
Max Downward Transient Deflection		0.324 in	Ratio =	<b>630</b>	>=360	Span: 1 : L Only	
Max Upward Transient Deflection		0 in	Ratio =	<b>0</b>	<360	n/a	
Max Downward Total Deflection		0.485 in	Ratio =	<b>420</b>	>=180	Span: 1 : +D+L	
Max Upward Total Deflection		0 in	Ratio =	<b>0</b>	<180	n/a	

### Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values					
			M	V	C <sub>d</sub>	C <sub>F/V</sub>	C <sub>i</sub>	C <sub>r</sub>	C <sub>m</sub>	C <sub>t</sub>	C <sub>L</sub>	M	fb	F'b	V	fv	F'v			
D Only	Length = 17.0 ft	1	0.338	0.059	0.90	1.100	1.00	1.15	1.00	1.00	1.00	1.23	346.12	1024.65	0.00	0.00	0.00	0.00	0.00	162.00
+D+L	Length = 17.0 ft	1	0.912	0.159	1.00	1.100	1.00	1.15	1.00	1.00	1.00	3.70	1,038.35	1138.50	0.00	0.00	0.00	0.00	0.00	0.00
+D+0.750L	Length = 17.0 ft	1	0.608	0.106	1.25	1.100	1.00	1.15	1.00	1.00	1.00	3.08	865.29	1423.13	0.00	0.00	0.00	0.00	0.00	0.00
+0.60D	Length = 17.0 ft	1	0.114	0.020	1.60	1.100	1.00	1.15	1.00	1.00	1.00	0.74	207.67	1821.60	0.00	0.00	0.00	0.00	0.00	0.00

### Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.4853	8.066		0.0000	0.000

## Wood Beam

Project File: beams and girders.ec6

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### Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.529	0.371
Overall MINimum	0.353	0.247
D Only	0.176	0.124
+D+L	0.529	0.371
+D+0.750L	0.441	0.309
+0.60D	0.106	0.074
L Only	0.353	0.247