Wood Beam

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ENERCALC, INC. 1983-2018, Build:10.18.1.31, Ver:10.18.1.31

Lic. # : KW-06012131 — Licensee : Katerra, Inc.

Description : --None--

CODE REFERENCES

Calculations per
Load Combination Set : IBC 2015

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2015

Wood Species : Spruce - Pine - Fir
Wood Grade : No. 1/No. 2

Beam Bracing : Beam bracing is defined as a set spacing over all spans

Fb +	875 psi
Fb -	875 psi
Fc - Prll	1150 psi
Fc - Perp	425 psi
Fv	135 psi
Ft	450 psi

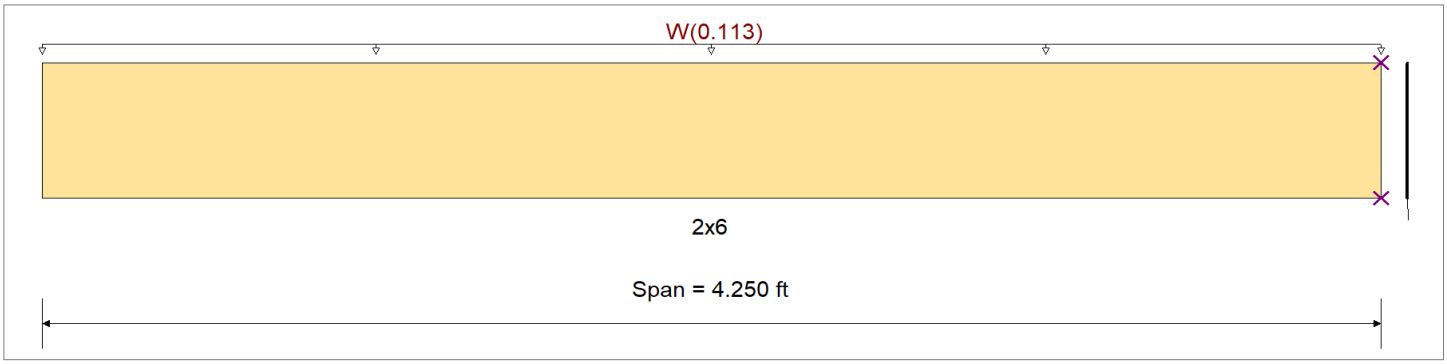
E : Modulus of Elasticity

Ebend- xx	1400 ksi
Eminbend - xx	510 ksi
Density	26.21 pcf

Repetitive Member Stress Increase

Unbraced Lengths

First Brace starts at 2.0 ft from Left-Most support
Regular spacing of lateral supports on length of beam = 2.0 ft



Applied Loads

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

Uniform Load : W = 0.1130 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.466 : 1	Maximum Shear Stress Ratio	=	0.217 : 1
Section used for this span		2x6	Section used for this span		2x6
fb : Actual	=	971.61 psi	fv : Actual	=	46.85 psi
FB : Allowable	=	2,087.00 psi	Fv : Allowable	=	216.00 psi
Load Combination		+D+0.60W+H	Load Combination		+D+0.60W+H
Location of maximum on span	=	4.250 ft	Location of maximum on span	=	3.800 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.274 in	Ratio =	372 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.164 in	Ratio =	620 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.300	1.00	1.15	1.00	1.00	0.99			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			0.90	1.300	1.00	1.15	1.00	1.00	0.99			1160.23	0.00	0.00	121.50
Length = 2.001 ft	1			0.90	1.300	1.00	1.15	1.00	1.00	0.99			1160.07	0.00	0.00	121.50
Length = 0.2637 ft	1			0.90	1.300	1.00	1.15	1.00	1.00	1.00			1175.46	0.00	0.00	121.50
+D+L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.00	1.300	1.00	1.15	1.00	1.00	0.98			1286.43	0.00	0.00	135.00
Length = 2.001 ft	1			1.00	1.300	1.00	1.15	1.00	1.00	0.98			1286.22	0.00	0.00	135.00

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Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
Length = 0.2637 ft	1			1.00	1.300	1.00	1.15	1.00	1.00	1.00			1305.83	0.00	0.00	135.00
+D+Lr+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	0.98			1598.67	0.00	0.00	168.75
Length = 2.001 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	0.98			1598.28	0.00	0.00	168.75
Length = 0.2637 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	1.00			1631.54	0.00	0.00	168.75
+D+S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	0.98			1474.38	0.00	0.00	155.25
Length = 2.001 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	0.98			1474.06	0.00	0.00	155.25
Length = 0.2637 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	1.00			1501.29	0.00	0.00	155.25
+D+0.750Lr+0.750L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	0.98			1598.67	0.00	0.00	168.75
Length = 2.001 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	0.98			1598.28	0.00	0.00	168.75
Length = 0.2637 ft	1			1.25	1.300	1.00	1.15	1.00	1.00	1.00			1631.54	0.00	0.00	168.75
+D+0.750L+0.750S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	0.98			1474.38	0.00	0.00	155.25
Length = 2.001 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	0.98			1474.06	0.00	0.00	155.25
Length = 0.2637 ft	1			1.15	1.300	1.00	1.15	1.00	1.00	1.00			1501.29	0.00	0.00	155.25
+D+0.60W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1	0.105	0.113	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.13	212.04	2026.24	0.13	24.47	216.00
Length = 2.001 ft	1	0.422	0.217	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.54	854.79	2025.44	0.26	46.85	216.00
Length = 0.2637 ft	1	0.466	0.217	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.61	971.61	2087.00	0.26	46.85	216.00
+D+0.70E+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2026.24	0.00	0.00	216.00
Length = 2.001 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2025.44	0.00	0.00	216.00
Length = 0.2637 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	1.00			2087.00	0.00	0.00	216.00
+D+0.750Lr+0.750L+0.450W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1	0.078	0.085	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.10	159.03	2026.24	0.10	18.36	216.00
Length = 2.001 ft	1	0.317	0.163	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.40	641.09	2025.44	0.19	35.13	216.00
Length = 0.2637 ft	1	0.349	0.163	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.46	728.71	2087.00	0.19	35.13	216.00
+D+0.750L+0.750S+0.450W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1	0.078	0.085	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.10	159.03	2026.24	0.10	18.36	216.00
Length = 2.001 ft	1	0.317	0.163	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.40	641.09	2025.44	0.19	35.13	216.00
Length = 0.2637 ft	1	0.349	0.163	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.46	728.71	2087.00	0.19	35.13	216.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2026.24	0.00	0.00	216.00
Length = 2.001 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2025.44	0.00	0.00	216.00
Length = 0.2637 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	1.00			2087.00	0.00	0.00	216.00
+0.60D+0.60W+0.60H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1	0.105	0.113	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.13	212.04	2026.24	0.13	24.47	216.00
Length = 2.001 ft	1	0.422	0.217	1.60	1.300	1.00	1.15	1.00	1.00	0.97	0.54	854.79	2025.44	0.26	46.85	216.00
Length = 0.2637 ft	1	0.466	0.217	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.61	971.61	2087.00	0.26	46.85	216.00
+0.60D+0.70E+0.60H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.985 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2026.24	0.00	0.00	216.00
Length = 2.001 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	0.97			2025.44	0.00	0.00	216.00
Length = 0.2637 ft	1			1.60	1.300	1.00	1.15	1.00	1.00	1.00			2087.00	0.00	0.00	216.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
W Only	1	0.2742	0.000		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum		0.480
Overall MINimum		0.480
+D+H		
+D+L+H		
+D+Lr+H		
+D+S+H		
+D+0.750Lr+0.750L+H		
+D+0.750L+0.750S+H		

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Description : --None--

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
+D+0.60W+H		0.288
+D+0.70E+H		
+D+0.750Lr+0.750L+0.450W+H		0.216
+D+0.750L+0.750S+0.450W+H		0.216
+D+0.750L+0.750S+0.5250E+H		
+0.60D+0.60W+0.60H		0.288
+0.60D+0.70E+0.60H		
D Only		
Lr Only		
L Only		
S Only		
W Only		0.480
E Only		
H Only		