Timber Column-No Name

Element: C:/DCC/Timber12/Projects/CheckAllow.rtf
Description:
Date: 4/15/2020 11:25:22 AM
Company:
User:
Software: Timber Design 12.2

Input Data

Span	Horizontal Span Length	Vertical Span Length	Actual Length	Axial Unbraced Length X	Axial Unbraced Length Y
	ft	ft	ft	ft	ft
Span 1	0'	12'	12'	12'	12'
Overall Length	0'	12'	12'		

Notes:
- Lengths are to center line of bearing.
- Elevation Angle is 90.00 deg.
- Bottom is considered to be pinned.

User Defined Loads

Load Case	Load Type	Component	Distance(s) to Start	Load Length	Load at Start	Load at End	Offset X	Offset Y
			ft	ft	lb	lb	ft	ft
Description:	DL							
Dead	Concentrated	Axial	12'		15		0'	0'
Description:	Horizontal_Wind							
Wind in Pos X	Concentrated	Shear - In Plane	6'		350		0'	0'

Notes:
- Positive loads act down.
- Distances are measured along length of member.
- Live loads are patterned to 100%.
- Weight of members is included in the calculations.

Details of Major Axis Member Forces - Load Cases

Span	Load Case	Axial	Shear Left	Shear Right	Bending Left End	Bending Rigth End	Bending Max.	Dist. to Max.	Torsion	Defl.
		lb	lb	lb	ft-lb	ft-lb	ft-lb	ft	ft-lb	in
1	Dead	-64.0				-0.1				
	Wind in Pos X		175.0	-175.0			1050.0	6.0		-0.291

Reactions

Support	Load Case	Horizontal Major Axis	Horizontal Minor Axis	Vertical	Moment Major Axis	Moment Minor Axis
		lb	lb	lb	ft-lb	ft-lb
1	Dead	0.0	0.0	64.0	0.0	0.0
	Wind in Pos X	-175.0	0.0	0.0	0.0	0.0
2	Wind in Pos X	-175.0	0.0	0.0	0.0	0.0

Details of Major Axis Member Forces - Load Combinations

Span	Load Case	Axial	Shear Left	Shear Right	Bending Left End	Bending Rigth End	Bending Max.	Dist. to Max.	Torsion	Defl.
		lb	lb	lb	ft-lb	ft-lb	ft-lb	ft	ft-lb	in
1	Dead	-64.0								
	Dead+Wind in Pos X	-64.0	175.0	-175.0			1050.0	6.00		-0.291
	0.6*Dead+Wind in Pos X	-38.4	175.0	-175.0			1050.0	6.00		-0.291

Reactions

Support	Load Comb.	Horizontal	Horizontal	Vertical	Moment Major	Moment Minor

		Major Axis	Minor Axis		Axis	Axis
		lb	lb	lb	ft-lb	ft-lb
1	Dead	0.0	0.0	64.0	0.0	0.0
	Dead+Wind in Pos X	-175.0	0.0	64.0	0.0	0.0
	0.6*Dead+Wind in Pos X	-175.0	0.0	38.4	0.0	0.0
2	Dead	0.0	0.0	0.0	0.0	0.0
	Dead+Wind in Pos X	-175.0	0.0	0.0	0.0	0.0
	0.6*Dead+Wind in Pos X	-175.0	0.0	0.0	0.0	0.0

Timber Design 1 - Option 1 - Design of Member 1 - (2)2x6

Design Data

Design of Member 1 - (2)2x6		
Material type is Select Structural-Southern Pine-Dimensional		
Check for repetitive use? No	Top flange bracing is Fully Braced	E_{bx}: 1.80E+006 psi
Moist use? No	Bottom flange bracing is Braced At Inflection Points	E_{by}: 1.80E+006 psi
I_x= 41.6 in^4 S_x= 15.1 in^3	I_y= 12.4 in^4 S_y= 8.3 in^3	G assumed as .06E
Snow C_d= 1.15	This is not a spaced column	F_b: 2550 psi
Side loaded? No	K_x = 1	F_t: 1400 psi
Overstress factor = 1	L_x = 12'	F_c: 2000 psi
Allowable Floor live load deflection = L/360	K_y = 1	$F_{c\perp}$: 565 psi
Allowable Floor total load deflection = L/240 (3 in Maximum)	L_y = 12'	F_v: 175 psi
Member weight used in analysis = 4.08 plf	Area = 16.5 in^2	Actual density: 35.6 pcf

Critical Design Checks

	Critical reaction	Axial	Bending - X	Bending -Y	Shear	LL Defl.	TL Defl.
	lb	psi	psi	psi	psi	in	in
Span 1							
Value	175	-2.392	833.058	0	15.909	-0.291	-0.291
Allowable	2542.669	138.601	4080	5244	280	0.4	0.6
% of Allow.	7 ✓	2 ✓	20 ✓	0 ✓	6 ✓	72 ✓	48 ✓
Location	0'	6'	6'	6'	5-1/2"	6'	6'
Comb.	3	2	2	2	2	3	2

	C_d	C_t	C_L	C_v	C_{fu}	C_r	C_f	C_{Px}	C_{Py}	C_T	C_b
Span 1	1.600	1.000	1.000	1.000	1.000	1.000	1.000	0.232	0.043	1.000	1.000

	C_{Fb}	C_{Ft}	C_{Fc}	C_{Mb}	C_{Mt}	C_{My}	$C_{Mc\perp}$	C_{Mc}	C_{ME}	R_b
Span 1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.00

	L/d Limit	L_x/d	L_y/d	$F_{CE\,x}$	$F_{CE\,y}$	F_{bE}	K_{CE}	c	F^*_c
				psi	psi	psi			psi
Span 1	50	26.18	48	788.506	234.597	7.89E+009	0.30028	0.8	3200

Notes:

- Member has an actual/allowable ratio in span 1 of 72 ✓ %.
- Design is governed by live load deflection
- Governing load combination is 0.6*Dead+Wind in Pos X
- Axial capacity of member is 1980 lb.
- Maximum hanger forces: 175 lb (Left) and 175 lb (Right).

Minimum Bearing

Span	Actual Length	Left Support Min. Bearing	Right Support Min. Bearing
	ft	in	in
1	12'	1.5	1.5

Notes:

- Locations of maximum stress, moment, etc. are measured from the left end of the member.
- Bearing across full width of beam is required.
- Structural adequacy of supporting members must be confirmed.
- Bearing lengths required may be limited by bearing stress on supporting members.
- A negative reaction indicates that the beam must be fastened to the support to resist uplift.
- See manufacturer's literature for side loaded connection requirements.
- Cantilever deflection allowables are based on twice the span length.
- Timber design is governed by NDS 2005.