

Post-Simple Column

Digital Canal
Project: unnamed
Job:
Client:

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Designed by: auderer
Checked by: _____

Input Data

Span	Horizontal Span Length ft	Vertical Span Length ft	Actual Length ft	Axial Unbraced Length X ft	Axial Unbraced Length Y ft
Span 1	0	10	10	10	10
Overall Length	0	10	10		

Notes:

- Lengths are to center line of bearing.
- Elevation Angle is 90 deg.
- Bottom is considered to be fixed.

User Defined Loads

Load Case	Load Type	Component	Distance(s) to Start ft	Load Length ft	Load at Start lb plf	Load at End lb plf	Offset X ft	Offset Y ft
Description: Dead	Column Load Concentrated	Axial	10		4800		0	0
Description: Wind in Pos X	Wind Linear	Shear - In Plane	0	10	104	104	0	0

Notes:

- Positive loads act down.
- Distances are measured along length of member.
- Live loads are patterned to 100%.
- Weight of members is not included in the calculations.

Summary of Member Forces - Load Combinations

Span	Axial lb	Shear Major Axis lb	Shear Minor Axis lb	Bending Major Axis ft-lb	Bending Minor Axis ft-lb	Torsion ft-lb	Deflection Major Axis in	Deflection Minor Axis in
1	-4800.0	650.0		-1300.0			-0.098	

Reactions

Support	Load Comb.	Horizontal Major Axis lb	Horizontal Minor Axis lb	Vertical lb	Moment Major Axis ft-lb	Moment Minor Axis ft-lb
1	Dead	-650.0	0.0	4800.0	1300.0	0.0
2	Dead	-390.0	0.0	0.0	0.0	0.0

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Timber Design 1 - Option 1 - Check of Member 1 - 6x6 ✓

Design Data

Check of Member 1 - 6x6 ✓		
Material type is No. 2-Posts -Douglas Fir-Larch -Heavy Timber		
Check for repetitive use? No	Top flange bracing is Braced At Supports	E_{bx} : 1.3e+006 psi
Moist use? No	Bottom flange bracing is Braced At Supports	E_{by} : 1.3e+006 psi
$I_x = 76.3 \text{ in}^4$ $S_x = 27.7 \text{ in}^3$	$I_y = 76.3 \text{ in}^4$ $S_y = 27.7 \text{ in}^3$	G assumed as .06E
Snow $C_d = 1.15$	This is not a spaced column	F_b : 750 psi
Side loaded? No	$K_x = 1$	F_t : 475 psi
Overstress factor = 1	$L_x = 10$	F_c : 700 psi
Allowable Floor live load deflection = L/360	$K_y = 1$	F_{cL} : 625 psi
Allowable Floor total load deflection = L/240 (3 in Maximum)	$L_y = 10$	F_v : 170 psi
Member weight used in analysis = 0 plf	Area = 30.25 in ²	Actual density: 31.2 pcf

Critical Design Checks

	Critical Reaction lb	Axial psi	Bending - X psi	Bending - Y psi	Shear psi	LL Defl. in	TL Defl. in
Span 1 Value	650	-158.678	-562.585	0	29.868	-0.098	-0.098
Allowable	5156.59	644.936	1194.51	1200	272	0.3333	0.5
% of Allow.	13 ✓	25 ✓	47 ✓	0 ✓	11 ✓	29 ✓	19 ✓
Location	0	0	0	0	0.458333	5.78465	5.78465
Comb.	2	2	2	2	2	2	3

	C_D	C_t	C_L	C_V	C_{Fu}	C_T	C_r	C_{P_x}	C_{P_y}	C_T	C_b
Span 1	1.600	1.000	0.995	1.000	1.000	1.000	1.000	0.576	0.576	1.000	1.000

	C_{Fb}	C_{Ft}	C_{Fc}	C_{Mb}	C_{Mt}	C_{Mv}	C_{McL}	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	6.34

	L/d Limit	L_x/d	L_y/d	F_{CE_x} psi	F_{CE_y} psi	F_{bE} psi	K_{CE}	c	F_c^* psi
Span 1	50	21.82	21.82	820.046	820.046	1.42e+004	0.300284	0.8	1120

Notes:

- Member has an actual/allowable ratio in span 1 of 64 ✓%.
- Design is governed by combined stress NDS 3.9-3.
- Governing load combination is Dead+Wind in Pos X.
- Axial capacity of member is 9468.25 lb.
- Maximum hanger forces: 650 lb (Left) and 390 lb (Right).

Minimum Bearing

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<i>Span</i>	<i>Actual Length ft</i>	<i>Left Support Min. Bearing in</i>	<i>Right Support Min. Bearing in</i>
Span 1	10	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.