

1. General Information

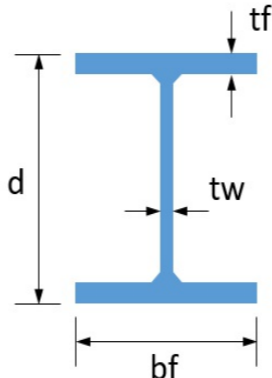
Code: AISC 360-10 ASD
 Provision: ASD
 Country: United States
 Ownership:

User Name: Sam
 Name: Portal Frame LCs
 ID:
 Company:
 Designer:
 Client:
 Notes:
 Unit System: imperial

2. Design Input Information

Design Factors			
Ω_t	Ω_c	Ω_b	Ω_v
1.67	1.67	1.67	1.67

Design Materials			
ID	E (ksi)	Fy (ksi)	Fu (ksi)
1	29000	38	60

Section Dimensions					
					
ID	Name	d (in)	tw (in)	bf (in)	tf (in)
1	W8x24	7.930e+0	2.450e-1	6.500e+0	4.000e-1
2	W8x10	7.890e+0	1.700e-1	3.940e+0	2.050e-1
3	W6x8.5	5.830e+0	1.700e-1	3.940e+0	1.950e-1

Section Properties								
ID	Name	A (in ²)	J (in ⁴)	Iyp (in ⁴)	Izp (in ⁴)	Iw (in ⁶)	Syp (in ³)	Szp (in ³)
1	W8x24	7.0800e+0	3.4600e-1	1.8300e+1	8.2700e+1	2.5900e+2	8.5700e+0	2.3100e+1
2	W8x10	2.9600e+0	4.2600e-2	2.0900e+0	3.0800e+1	3.0900e+1	1.6600e+0	8.8700e+0
3	W6x8.5	2.5200e+0	3.3300e-2	1.9900e+0	1.4900e+1	1.5800e+1	1.5600e+0	5.7300e+0

Member Properties								
ID	Member ID	Section ID	KzL (ft)	KyL (ft)	Cb	LST	LSC	LD
1	1	1	9	9	2.23,2.21,2.21	300	200	250
2	2	2	2.0706	2.0706	1.25,1.28,1.28	300	200	250
3	3	2	2.0706	2.0706	1.12,1.45,1.44	300	200	250
4	4	1	9	9	1.91,1.21,1.22	300	200	250
5	5	1	1	1	1.39,1.39,1.39	300	200	250
6	6	1	1	1	1.40,1.41,1.41	300	200	250
7	7	2	8.2822	8.2822	2.36,2.70,2.69	300	200	250
8	8	2	8.2822	8.2822	1.27,1.14,1.15	300	200	250
9	9	3	2.5217	2.5217	1.08,1.12,1.12	300	200	250
10	10	3	2.5217	2.5217	1.19,1.52,1.52	300	200	250

3. Member Design Capacity

Member ID	P_n/Ω_t (kip)	P_n/Ω_c (kip)	M_{zn}/Ω_b (k-ft)	M_{yn}/Ω_b (k-ft)	V_{yn}/Ω_v (kip)	V_{zn}/Ω_v (kip)
1	161.10	125.37	43.80	16.25	29.53	70.99
2	67.35	64.16	16.82	3.15	20.39	22.05
3	67.35	64.16	16.82	3.15	20.39	22.05
4	161.10	125.37	43.80	16.25	29.53	70.99
5	161.10	160.60	43.80	16.25	29.53	70.99
6	161.10	160.60	43.80	16.25	29.53	70.99
7	67.35	30.96	16.82	3.15	20.39	22.05
8	67.35	30.96	13.86	3.15	20.39	22.05
9	57.34	53.76	10.87	2.96	15.06	20.98
10	57.34	53.76	10.87	2.96	15.06	20.98

4. Design Ratio

Member ID	P	Mz	My	Vy	Vz	(P,Mz,My)	KL/r	δ	Status
1	0.04	0.32	0.00	0.09	0.00	0.34	0.34	0.35	OK
2	0.06	0.30	0.00	0.07	0.00	0.35	0.10	0.09	OK
3	0.00	0.12	0.00	0.03	0.00	0.14	0.10	0.53	OK
4	0.04	0.17	0.18	0.03	0.00	0.25	0.34	0.19	OK
5	0.01	0.22	0.00	0.22	0.00	0.22	0.02	0.23	OK
6	0.00	0.14	0.02	0.15	0.00	0.16	0.02	0.47	OK
7	0.12	0.43	0.00	0.14	0.00	0.49	0.59	0.29	OK
8	0.11	0.26	0.00	0.11	0.00	0.31	0.59	0.35	OK
9	0.22	0.20	0.00	0.01	0.00	0.39	0.17	0.12	OK
10	0.13	0.11	0.00	0.02	0.00	0.18	0.17	0.50	OK

5. Definition

Ω_t	Safety factor for tensile
Ω_c	Safety factor for compression
Ω_b	Safety factor for flexure
Ω_v	Safety factor for shear
E	Modulus of elasticity
F_y	Specified minimum yield stress
F_u	Specified minimum tensile strength
A	Cross-sectional area
J	Torsional constant
I_{yp}	Moment of inertia about the Y axes
I_{zp}	Moment of inertia about the Z axes
I _w	Warping constant
S_{yp}	Plastic section modulus about the Y axis
S_{zp}	Plastic section modulus about the Z axis
KL	Effective length
C_b	Buckling modification factor (from all load combinations)
LST	Limited slenderness for tension
LSC	Limited slenderness for compression
LD	Limited deflection
P_n	Nominal axial strength (tension/compression)
M_n	Nominal flexural strength (about Z/Y axis)
V_n	Nominal shear strength (along Z/Y axis)
P	Design ratio in case of axial force
M_z	Design ratio in case of bending about Z axis
M_y	Design ratio in case of bending about Y axis
V_y	Design ratio in case of shear along Y axis
V_z	Design ratio in case of shear along Z axis
(P, M_z , M_y)	Design ratio in case of axial force and bending action
KL/r	Design ratio in case of section slenderness
δ	Design ratio in case of member deflection
OK	Capacity is provided
NG	Capacity is not provided