Project Details

Design Code:	AISC 360-10 ASD
Provision:	ASD
Country:	United States
User Name:	Sam
Project Name:	Portal Frame LCs - 3D
Project ID:	12345678
Company:	XYZ Inc.
Designer:	Sam Carigliano
Client:	ABC Co.
Notes:	West Wing of new SkyCiv Headquarters Please confirm member 8 deflection limit
Unit System:	Imperial

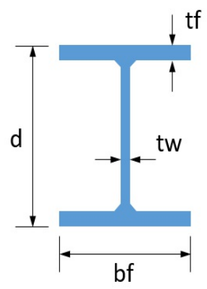
NOTE: The calculations for this design code are in **BETA** stage development. If you notice any irregularities or problems please contact support@skyciv.com.

Design Input Information

Design Factors			
Ωt	Ωc	Ωb	Ωv
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							
Member ID	Section ID	KzL (ft)	KyL (ft)	Cb	LST	LSC	LD
1	1	9	9	2.21,2.18,2.18	300	200	250
2	2	2.0706	2.0706	1.28,1.31,1.31	300	200	250
3	2	2.0706	2.0706	1.71,1.56,1.58	300	200	250
4	1	9	9	1.06,1.51,1.49	300	200	250
5	1	1	1	1.39,1.40,1.40	300	200	250
6	1	1	1	1.42,1.58,1.55	300	200	250
7	2	8.2822	8.2822	2.78,2.69,2.69	300	200	250
8	2	8.2822	8.2822	1.13,1.09,1.09	300	200	250
9	3	2.5217	2.5217	1.13,1.18,1.18	300	200	250
10	3	2.5217	2.5217	1.70,2.09,2.12	300	200	250
11	1	9	9	2.25,2.26,2.25	300	200	250
12	1	1	1	1.39,1.39,1.39	300	200	250
13	2	2.0706	2.0706	1.23,1.23,1.22	300	200	250
14	2	8.2822	8.2822	1.92,1.94,1.92	300	200	250
15	2	8.2822	8.2822	1.76,1.73,1.76	300	200	250
16	2	2.0706	2.0706	1.21,1.20,1.20	300	200	250
17	1	1	1	1.39,1.39,1.39	300	200	250
18	1	9	9	2.23,2.22,2.23	300	200	250
19	3	2.5217	2.5217	1.01,1.02,1.02	300	200	250
20	3	2.5217	2.5217	1.04,1.04,1.03	300	200	250
21	2	10	10	2.15,2.10,2.11	300	200	250
22	2	10	10	1.97,1.92,1.94	300	200	250
23	1	9	9	2.24,2.24,2.24	300	200	250
24	2	2.0706	2.0706	1.21,1.21,1.21	300	200	250
25	3	2.5217	2.5217	1.01,1.01,1.01	300	200	250
26	2	8.2822	8.2822	1.85,1.85,1.85	300	200	250
27	1	1	1	1.39,1.39,1.39	300	200	250
28	3	2.5217	2.5217	1.01,1.01,1.01	300	200	250
29	2	10	10	2.08,2.09,1.96	300	200	250
30	2	10	10	2.77,2.80,2.78	300	200	250
31	1	1	1	1.39,1.39,1.39	300	200	250
32	1	9	9	2.24,2.24,2.24	300	200	250
33	2	8.2822	8.2822	1.83,1.83,1.83	300	200	250
34	2	2.0706	2.0706	1.21,1.21,1.21	300	200	250
35	2	10	10	2.64,1.19,1.13	300	200	250
36	2	10	10	2.63,1.19,1.13	300	200	250

Member Design Capacity

Member ID	Pn/Ωt (kip)	Pn/Ωc (kip)	Mzn/Ωb (k–ft)	Myn/Ωb (k–ft)	Vyn/Ωv (kip)	Vzn/Ωv (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	13.26	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
11	161.10	125.37	43.80	16.25	29.53	70.99
12	161.10	160.60	43.80	16.25	29.53	70.99
13	67.35	64.16	16.82	3.15	20.39	22.05
14	67.35	30.96	16.82	3.15	20.39	22.05
15	67.35	30.96	16.82	3.15	20.39	22.05
16	67.35	64.16	16.82	3.15	20.39	22.05
17	161.10	160.60	43.80	16.25	29.53	70.99
18	161.10	125.37	43.80	16.25	29.53	70.99
19	57.34	53.76	10.87	2.96	15.06	20.98
20	57.34	53.76	10.87	2.96	15.06	20.98
21	67.35	21.82	16.82	3.15	20.39	22.05
22	67.35	21.82	16.82	3.15	20.39	22.05
23	161.10	125.37	43.80	16.25	29.53	70.99
24	67.35	64.16	16.82	3.15	20.39	22.05
25	57.34	53.76	10.87	2.96	15.06	20.98
26	67.35	30.96	16.82	3.15	20.39	22.05
27	161.10	160.60	43.80	16.25	29.53	70.99
28	57.34	53.76	10.87	2.96	15.06	20.98
29	67.35	21.82	16.82	3.15	20.39	22.05
30	67.35	21.82	16.82	3.15	20.39	22.05
31	161.10	160.60	43.80	16.25	29.53	70.99
32	161.10	125.37	43.80	16.25	29.53	70.99
33	67.35	30.96	16.82	3.15	20.39	22.05
34	67.35	64.16	16.82	3.15	20.39	22.05
35	67.35	21.82	11.89	3.15	20.39	22.05
36	67.35	21.82	11.89	3.15	20.39	22.05

Design Ratio

Member ID	P	Mz	My	Vy	Vz	(P,Mz,My)	KL/r	δ	Status
1	0.02	0.22	0.00	0.06	0.00	0.24	0.34	0.00	OK
2	0.04	0.18	0.04	0.05	0.00	0.24	0.10	0.01	OK
3	0.03	0.05	0.04	0.03	0.00	0.09	0.15	0.00	OK
4	0.02	0.11	0.03	0.02	0.00	0.15	0.34	0.00	OK
5	0.01	0.12	0.00	0.13	0.00	0.13	0.02	0.00	OK
6	0.01	0.05	0.02	0.06	0.00	0.06	0.04	0.00	OK
7	0.07	0.26	0.03	0.08	0.00	0.32	0.59	0.01	OK
8	0.07	0.17	0.04	0.05	0.00	0.21	0.59	0.08	OK
9	0.13	0.12	0.00	0.01	0.00	0.19	0.17	0.01	OK
10	0.04	0.04	0.00	0.02	0.00	0.07	0.17	0.00	OK
11	0.02	0.08	0.01	0.02	0.00	0.08	0.34	0.00	OK
12	0.00	0.06	0.01	0.07	0.00	0.07	0.02	0.00	OK
13	0.03	0.08	0.03	0.02	0.00	0.11	0.10	0.00	OK
14	0.03	0.11	0.03	0.04	0.00	0.15	0.59	0.00	OK
15	0.02	0.10	0.03	0.04	0.00	0.13	0.59	0.00	OK
16	0.03	0.07	0.03	0.02	0.00	0.10	0.10	0.00	OK
17	0.00	0.06	0.03	0.06	0.00	0.08	0.02	0.00	OK
18	0.01	0.07	0.03	0.02	0.00	0.10	0.34	0.01	OK
19	0.06	0.05	0.00	0.00	0.00	0.08	0.17	0.00	OK
20	0.06	0.05	0.00	0.00	0.00	0.08	0.17	0.00	OK
21	0.00	0.01	0.05	0.00	0.00	0.06	0.71	0.00	OK
22	0.01	0.02	0.05	0.01	0.00	0.08	0.71	0.01	OK
23	0.01	0.07	0.01	0.02	0.00	0.08	0.34	0.01	OK
24	0.03	0.07	0.00	0.01	0.00	0.08	0.10	0.00	OK
25	0.05	0.04	0.00	0.00	0.00	0.07	0.17	0.00	OK
26	0.02	0.10	0.00	0.04	0.00	0.11	0.59	0.00	OK
27	0.00	0.06	0.02	0.06	0.00	0.07	0.02	0.00	OK
28	0.05	0.04	0.00	0.00	0.00	0.07	0.17	0.00	OK
29	0.00	0.01	0.01	0.00	0.00	0.02	0.71	0.00	OK
30	0.00	0.02	0.02	0.01	0.00	0.03	0.71	0.00	OK
31	0.00	0.06	0.01	0.06	0.00	0.06	0.02	0.00	OK
32	0.01	0.07	0.03	0.02	0.00	0.09	0.34	0.01	OK
33	0.03	0.09	0.00	0.04	0.00	0.11	0.59	0.00	OK
34	0.03	0.07	0.00	0.01	0.00	0.08	0.10	0.00	OK
35	0.00	0.02	0.01	0.01	0.00	0.02	0.48	0.01	OK
36	0.00	0.02	0.07	0.01	0.00	0.07	0.48	0.00	OK

Definitions

Ωt	Safety factor for tensile
Ωc	Safety factor for compression
Ωb	Safety factor for flexure
Ωv	Safety factor for shear
E	Modulus of elasticity
Fy	Specified minimum yield stress
Fu	Specified minimum tensile strength
A	Cross-sectional area
J	Torsional constant
Iyp	Moment of inertia about the Y axes
Izp	Moment of inertia about the Z axes
Iw	Warping constant
Syp	Plastic section modulus about the Y axis
Szp	Plastic section modulus about the Z axis
KL	Effective length
Cb	Buckling modification factor (from all load combinations)
Lb	Length between braced points
LST	Limited slenderness for tension
LSC	Limited slenderness for compression
LD	Limited deflection
Pn	Nominal axial strength (tension/comression)
Mn	Nominal flexural strength (about Z/Y axis)
Vn	Nominal shear strength (along Z/Y axis)
P	Design ratio in case of axial force
Mz	Design ratio in case of bending about Z axis
My	Design ratio in case of bending about Y axis
Vy	Design ratio in case of shear along Y axis
Vz	Design ratio in case of shear along Z axis
(P,Mz,My)	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