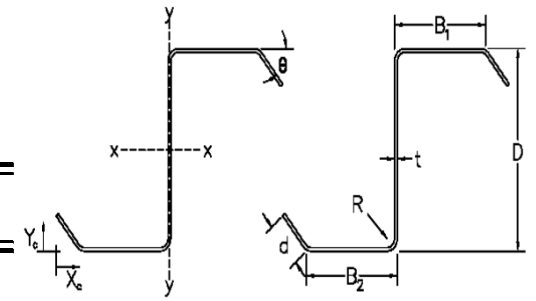


Zee Sections: Gross Section Properties



1. Section properties are calculated in accordance with the 2016 AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Material: A1011 HSLAS Grade 55 Class 1 Steel or A653 SS Grade 55 Steel
3. Strength Increase due to Cold Working has been applied where applicable

4. Web Crippling values are based on a 4 inch bearing length, one flange fastened to support
 5. Appropriate factors of safety have been applied for Allowable Stress Design (ASD)
 6. Strength calculations based on a fully braced condition
 7. Consult with an engineering professional before using the above design aids
- * Section meets geometric criteria listed in I6.2.1 of the 2016 Ed. AISI NAS for CFS Members

Member	Ga.	Dimensions							Gross Section Properties																			
		D (in)	B ₁ (in)	B ₂ (in)	d (in)	t _{design} (in)	R (in)	θ (deg)	Area (in ²)	Weight (lb/ft)	Axis X-X					Axis Y-Y				Centroid		Shear Center		Product of Inertia		Torsional Properties		
		I _x (in ⁴)	S _x TOP (in ³)	S _x BOT (in ³)	r _x (in)	I _y (in ⁴)	S _y LEFT (in ³)	S _y RIGHT (in ³)	r _y (in)	X _c (in)	Y _c (in)	X _o (in)	Y _o (in)	I _{xy} (in ⁴)	θ (deg)	J (in ⁴)	C _w (in ⁶)	j _x (in)	j _y (in)									
9 x 3	14	9	2.625	2.875	0.94	0.0689	0.1875	50	1.099	3.74	13.35	3.01	2.92	3.49	2.04	0.63	0.60	1.36	3.25	4.57	0.02	0.46	3.78	-16.9	0.0017	28.89	0.276	-0.579
9 x 3	16	9	2.625	2.875	0.92	0.0579	0.1875	50	0.924	3.14	11.25	2.54	2.46	3.49	1.70	0.52	0.50	1.36	3.24	4.57	0.02	0.46	3.17	-16.8	0.0010	24.14	0.279	-0.581
9 x 3.5	12	9	3.125	3.375	1.01	0.1016	0.1875	50	1.726	5.87	21.59	4.87	4.73	3.54	4.60	1.22	1.18	1.63	3.79	4.57	0.02	0.39	7.37	-20.5	0.0059	62.55	0.233	-0.512
9 x 3.5	14	9	3.125	3.375	0.94	0.0689	0.1875	50	1.168	3.97	14.73	3.32	3.23	3.55	3.05	0.81	0.78	1.61	3.75	4.57	0.02	0.40	4.95	-20.1	0.0018	41.52	0.239	-0.516
10 x 2.5	10	10	2.125	2.375	1.08	0.1337	0.1875	50	2.143	7.29	29.67	6.03	5.84	3.72	2.64	0.94	0.89	1.11	2.80	5.08	0.02	0.61	6.18	-12.3	0.0128	48.65	0.373	-0.724
10 x 2.5	12	10	2.125	2.375	1.01	0.1016	0.1875	50	1.624	5.52	22.64	4.60	4.46	3.73	1.94	0.70	0.66	1.09	2.77	5.08	0.02	0.61	4.63	-12.0	0.0056	35.97	0.385	-0.729
10 x 2.5	14	10	2.125	2.375	0.94	0.0689	0.1875	50	1.099	3.74	15.42	3.13	3.04	3.75	1.28	0.47	0.44	1.08	2.74	5.08	0.02	0.61	3.10	-11.8	0.0017	23.77	0.397	-0.735
10 x 2.5	16	10	2.125	2.375	0.92	0.0579	0.1875	50	0.924	3.14	12.99	2.64	2.56	3.75	1.07	0.39	0.37	1.07	2.73	5.08	0.02	0.62	2.59	-11.8	0.0010	19.85	0.400	-0.736
10 x 3	12	10	2.625	2.875	1.01	0.1016	0.1875	50	1.726	5.87	25.13	5.10	4.95	3.82	3.09	0.94	0.90	1.34	3.28	5.07	0.02	0.51	6.30	-14.9	0.0059	54.98	0.312	-0.630
10 x 3	12	10	2.625	2.875	1.01	0.1016	0.1875	50	1.726	5.87	25.14	5.10	4.95	3.82	3.09	0.94	0.90	1.34	3.28	5.07	0.02	0.51	6.30	-14.9	0.0059	55.05	0.312	-0.630
10 x 3	14	10	2.625	2.875	0.94	0.0689	0.1875	50	1.168	3.97	17.12	3.48	3.38	3.83	2.04	0.63	0.60	1.32	3.25	5.07	0.02	0.52	4.22	-14.6	0.0018	36.45	0.320	-0.635
10 x 3.5	10	10	3.125	3.375	1.08	0.1337	0.1875	50	2.410	8.19	36.18	7.34	7.14	3.87	6.20	1.63	1.57	1.60	3.81	5.07	0.02	0.44	10.93	-18.1	0.0144	106.24	0.259	-0.555
10 x 3.5	12	10	3.125	3.375	1.01	0.1016	0.1875	50	1.828	6.21	27.62	5.60	5.45	3.89	4.60	1.22	1.17	1.59	3.78	5.07	0.02	0.44	8.22	-17.8	0.0063	78.99	0.266	-0.559
10 x 3.5	14	10	3.125	3.375	0.94	0.0689	0.1875	50	1.237	4.21	18.82	3.82	3.71	3.90	3.05	0.81	0.78	1.57	3.75	5.07	0.02	0.44	5.52	-17.5	0.0020	52.49	0.272	-0.563
10 x 4	12	10	3.625	3.875	1.01	0.1016	0.1875	50	1.929	6.56	30.11	6.10	5.94	3.95	6.53	1.52	1.48	1.84	4.28	5.07	0.02	0.39	10.39	-20.7	0.0066	108.36	0.234	-0.506
10 x 4.5	10	10	4.125	4.375	1.08	0.1337	0.1875	50	2.678	9.10	42.68	8.64	8.43	3.99	12.01	2.49	2.43	2.12	4.82	5.06	0.02	0.34	17.00	-24.0	0.0160	192.24	0.208	-0.462
10 x 4.5	12	10	4.125	4.375	1.09	0.1016	0.1875	50	2.047	6.96	32.88	6.66	6.50	4.01	9.32	1.93	1.88	2.13	4.84	5.06	0.02	0.34	13.14	-24.1	0.0070	150.30	0.207	-0.460
12 x 2.5	10	12	2.125	2.375	1.08	0.1337	0.1875	50	2.410	8.19	46.30	7.82	7.61	4.38	2.64	0.94	0.89	1.05	2.80	6.08	0.02	0.73	7.49	-9.5	0.0144	72.45	0.508	-0.855
12 x 2.5	12	12	2.125	2.375	1.01	0.1016	0.1875	50	1.828	6.21	35.28	5.96	5.80	4.39	1.94	0.70	0.66	1.03	2.77	6.08	0.02	0.74	5.60	-9.3	0.0063	53.55	0.523	-0.862
12 x 2.5	14	12	2.125	2.375	0.94	0.0689	0.1875	50	1.237	4.21	24.00	4.06	3.95	4.40	1.28	0.47	0.44	1.02	2.74	6.08	0.02	0.74	3.74	-9.1	0.0020	35.38	0.538	-0.868
12 x 3	12	12	2.625	2.875	1.01	0.1016	0.1875	50	1.929	6.56	38.88	6.56	6.40	4.49	3.09	0.94	0.90	1.26	3.27	6.08	0.02	0.62	7.62	-11.5	0.0066	82.17	0.413	-0.742
12 x 3.3	12	12	2.875	3.125	1.01	0.1016	0.1875	50	1.930	6.56	38.88	6.57	6.40	4.49	3.09	0.94	0.90	1.27	3.27	6.08	0.02	0.62	7.62	-11.5	0.0066	82.27	0.412	-0.742
12 x 3	14	12	2.625	2.875	0.94	0.0689	0.1875	50	1.306	4.44	26.45	4.47	4.35	4.50	2.04	0.63	0.60	1.25	3.24	6.08	0.02	0.62	5.10	-11.3	0.0021	54.46	0.423	-0.747
12 x 3.5	10	12	3.125	3.375	1.08	0.1337	0.1875	50	2.678	9.10	55.72	9.40	9.17	4.56	6.20	1.63	1.57	1.52	3.81	6.07	0.02	0.53	13.23	-14.1	0.0160	159.28	0.334	-0.651
12 x 3.5	12	12	3.125	3.375	1.01	0.1016	0.1875	50	2.031	6.90	42.47	7.17	6.99	4.57	4.60	1.22	1.17	1.50	3.78	6.07	0.02	0.53	9.94	-13.8	0.0070	118.42	0.342	-0.655
12 x 4	12	12	3.625	3.875	1.01	0.1016	0.1875	50	2.132	7.25	46.07	7.77	7.59	4.65	6.53	1.53	1.48	1.75	4.28	6.07	0.02	0.47	12.56	-16.2	0.0073	162.91	0.294	-0.589
12 x 4.5	10	12	4.125	4.375	1.08	0.1337	0.1875	50	2.945	10.01	65.13	10.98	10.73	4.70	12.01	2.49	2.43	2.02	4.81	6.07	0.02	0.41	20.56	-18.9	0.0175	289.70	0.256	-0.534
14 x 2.5	10	14	2.125	2.375	1.08	0.1337	0.1875	50	2.678	9.10	67.75	9.80	9.56	5.03	2.64	0.94	0.89	0.99	2.79	7.09	0.02	0.86	8.81	-7.6	0.0160	101.29	0.669	-0.987
14 x 2.5	12	14	2.125	2.375	1.01	0.1016	0.1875	50	2.031	6.90	51.57	7.46	7.28	5.04	1.94	0.70	0.66	0.98	2.76	7.09	0.02	0.86	6.58	-7.4	0.0070	74.85	0.689	-0.993
14 x 3	12	14	2.625	2.875	1.01	0.1016	0.1875	50	2.132	7.25	56.48	8.17	7.97	5.15	3.09	0.94	0.90	1.20	3.27	7.08	0.02	0.73	8.94	-9.3	0.0073	115.22	0.533	-0.854
14 x 3.5	10	14	3.125	3.375	1.08	0.1337	0.1875	50	2.945	10.01	80.61	11.65	11.39	5.23	6.20	1.63	1.57	1.45	3.80	7.08	0.02	0.62	15.53	-11.3	0.0175	224.03	0.424	-0.747
16 x 2.5	10	16	2.125	2.375	1.08	0.1337	0.1875	50	2.945	10.01	94.56	11.95	11.69	5.67	2.64	0.95	0.89	0.95	2.79	8.09	0.02	0.98	10.12	-6.2	0.0175	135.21	0.858	-1.117
16 x 4	10	16	3.625	3.875	0.8	0.1337	0.1875	50	3.271	11.12	115.88	14.63	14.34	5.95	7.45	1.81	1.74	1.51	4.12	8.08	0.02	0.66	20.18	-10.2	0.0195	349.26	0.489	-0.786
16 x 4	12	16	3.625	3.875	0.73	0.1016	0.1875	50	2.482	8.44	88.16	11.13	10.91	5.96	5.52	1.35	1.30	1.49	4.09	8.08	0.02	0.66	15.13	-10.1	0.0085	259.86	0.499	-0.791
20 x 4	10	20	3.625	3.875	0.8	0.1337	0.1875	50	3.806	12.94	199.56	20.13	19.78	7.24	7.45	1.81	1.74	1.40	4.11	10.09	0.02	0.83	25.33	-7.4	0.0227	572.42	0.712	-0.965