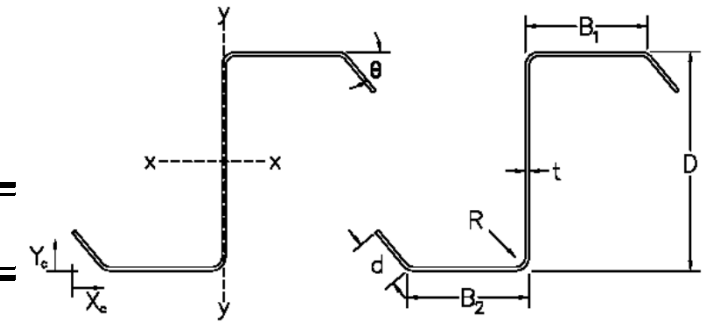




Zee Sections: Effective Section Properties



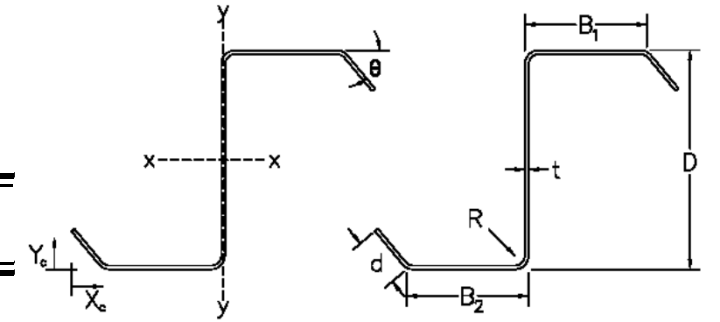
Member	Ga.	Effective Section Properties																				Web Crippling		
		Compression		Tension	Shear		Positive Moment (X Axis)				Negative Moment (X Axis)				Positive Moment (Y Axis)				Negative Moment (Y Axis)				End	Interior
		A <sub>e</sub> (in <sup>2</sup> )	P <sub>a</sub> (kip)	T <sub>a</sub> (kip)	V <sub>ay</sub> (kip)	V <sub>ax</sub> (kip)	M <sub>ax</sub> (kip-in)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>e</sub> TOP (in <sup>3</sup> )	S <sub>e</sub> BOT (in <sup>3</sup> )	M <sub>ax</sub> (kip-in)	I <sub>x</sub> (in <sup>4</sup> )	S <sub>e</sub> TOP (in <sup>3</sup> )	S <sub>e</sub> BOT (in <sup>3</sup> )	M <sub>ay</sub> (kip-in)	I <sub>y</sub> (in <sup>4</sup> )	S <sub>e</sub> LEFT (in <sup>3</sup> )	S <sub>e</sub> RIGHT (in <sup>3</sup> )	M <sub>ay</sub> (kip-in)	I <sub>y</sub> (in <sup>4</sup> )	S <sub>e</sub> LEFT (in <sup>3</sup> )	S <sub>e</sub> RIGHT (in <sup>3</sup> )	P <sub>a</sub> (kip)	P <sub>a</sub> (kip)
3.5 x 1.5	16	0.389	11.89	14.96	3.66	2.77	16.80	0.843	0.482	0.482	16.80	0.843	0.482	0.482	5.92	0.344	0.180	0.180	5.92	0.344	0.180	0.180	1.09	1.78
4 x 2	12	0.973	29.74	33.75	7.40	6.80	43.64	2.467	1.233	1.233	43.64	2.467	1.233	1.233	19.18	1.505	0.582	0.582	19.18	1.505	0.582	0.582	3.15	5.82
4 x 2	14	0.578	17.67	22.28	5.03	4.68	27.73	1.685	0.842	0.843	27.73	1.685	0.843	0.842	12.20	0.956	0.376	0.370	12.20	0.956	0.370	0.376	1.49	2.53
4 x 2	16	0.443	13.52	18.72	3.84	3.99	22.40	1.389	0.680	0.709	22.40	1.389	0.709	0.680	9.83	0.775	0.308	0.299	9.83	0.775	0.299	0.308	1.08	1.77
4 x 2.5	12	1.026	31.34	35.48	7.40	7.89	45.82	2.663	1.365	1.300	45.82	2.663	1.365	1.300	22.47	1.965	0.705	0.682	22.47	1.965	0.705	0.682	3.15	5.82
4 x 2.5	14	0.587	17.92	23.44	5.03	5.41	28.81	1.755	0.875	0.880	28.96	1.809	0.931	0.879	14.31	1.251	0.455	0.434	14.55	1.256	0.451	0.442	1.49	2.53
4 x 2.5	16	0.454	13.86	19.69	3.84	4.60	23.47	1.453	0.713	0.741	23.32	1.488	0.783	0.708	11.34	1.003	0.371	0.344	11.91	1.016	0.362	0.362	1.08	1.77
4 x 3.5	12	1.078	32.93	42.39	7.40	12.22	50.88	3.216	1.545	1.676	51.89	3.326	1.761	1.576	32.59	3.982	1.093	0.989	37.19	4.363	1.129	1.147	3.15	5.82
4 x 3.5	14	0.591	18.07	28.05	5.03	8.29	30.95	2.042	0.940	1.118	30.92	2.085	1.172	0.939	18.58	2.340	0.673	0.564	20.35	2.478	0.618	0.686	1.49	2.53
4 x 3.5	16	0.464	14.17	23.58	3.84	7.03	25.25	1.690	0.767	0.941	25.32	1.728	0.986	0.769	15.92	2.004	0.578	0.483	17.42	2.119	0.529	0.588	1.08	1.77
6 x 2.5	12	1.079	32.97	42.39	11.73	7.89	79.34	6.891	2.345	2.251	79.34	6.891	2.345	2.251	22.38	1.967	0.709	0.680	22.38	1.967	0.709	0.680	3.05	5.73
6 x 2.5	14	0.602	18.39	28.05	5.41	5.41	48.88	4.483	1.484	1.505	49.52	4.627	1.583	1.504	14.26	1.251	0.457	0.433	14.49	1.258	0.455	0.440	1.42	2.48
6 x 2.5	16	0.463	14.14	23.58	3.32	4.60	40.00	3.715	1.215	1.263	39.96	3.803	1.327	1.213	1.33	1.003	0.372	0.344	11.86	1.020	0.367	0.360	1.03	1.73
6 x 3	12	1.157	35.34	45.85	11.73	10.05	88.58	7.633	2.546	2.543	88.92	7.803	2.651	2.553	30.44	3.133	0.955	0.924	30.44	3.133	0.955	0.924	3.05	5.73
6 x 3	14	0.596	18.22	30.35	5.41	6.85	50.41	4.803	1.531	1.678	50.32	4.901	1.756	1.528	15.88	1.693	0.544	0.482	18.26	1.851	0.555	0.563	1.42	2.48
6 x 3	16	0.469	14.34	25.52	3.32	5.81	41.60	3.998	1.263	1.411	41.73	4.092	1.477	1.267	13.73	1.460	0.470	0.417	15.19	1.544	0.461	0.473	1.03	1.73
6 x 3.5	12	1.131	34.56	49.31	11.73	12.22	85.13	8.064	2.585	2.800	86.90	8.330	2.930	2.639	32.69	3.984	1.091	0.993	37.48	4.371	1.138	1.142	3.05	5.73
6 x 3.5	14	0.607	18.53	32.66	5.41	8.29	52.20	5.125	1.585	1.852	52.27	5.228	1.932	1.587	18.78	2.346	0.668	0.570	20.72	2.492	0.629	0.680	1.42	2.48
6 x 3.5	16	0.473	14.45	27.46	3.32	7.03	42.76	4.246	1.298	1.555	42.96	4.340	1.624	1.305	16.10	2.009	0.574	0.489	17.74	2.131	0.539	0.583	1.03	1.73
7 x 2.5	12	1.093	33.41	45.85	12.17	7.89	98.03	9.918	2.889	2.781	98.03	9.918	2.889	2.781	22.35	1.967	0.710	0.679	22.35	1.967	0.710	0.679	3.00	5.69
7 x 2.5	14	0.606	18.52	30.35	4.71	5.41	60.08	6.433	1.824	1.852	60.99	6.639	1.944	1.852	14.25	1.251	0.458	0.433	14.47	1.259	0.456	0.439	1.40	2.46
7 x 2.5	16	0.465	14.21	25.52	2.81	4.60	49.26	5.335	1.496	1.554	49.28	5.458	1.628	1.496	11.32	1.003	0.372	0.344	11.84	1.021	0.368	0.360	1.01	1.71
7 x 3	12	1.171	35.78	49.31	12.17	10.05	108.41	10.902	3.112	3.118	109.21	11.167	3.248	3.135	30.40	3.133	0.957	0.923	30.40	3.133	0.957	0.923	3.00	5.69
7 x 3	14	0.601	18.35	32.66	4.71	6.85	61.91	6.867	1.880	2.052	61.87	7.004	2.141	1.879	15.91	1.694	0.543	0.483	18.35	1.854	0.557	0.562	1.40	2.46
7 x 3	16	0.472	14.42	27.46	2.81	5.81	51.15	5.719	1.553	1.724	51.36	5.851	1.801	1.559	13.75	1.461	0.469	0.418	15.27	1.546	0.464	0.472	1.01	1.71
7 x 3.5	12	1.145	35.00	52.77	12.17	12.22	104.07	11.487	3.160	3.414	106.24	11.855	3.565	3.226	32.73	3.985	1.090	0.994	37.58	4.380	1.144	1.141	3.00	5.69
7 x 3.5	14	0.611	18.66	34.96	4.71	8.29	64.06	7.308	1.945	2.253	64.20	7.452	2.345	1.949	18.86	2.349	0.667	0.573	20.87	2.498	0.634	0.678	1.40	2.46
7 x 3.5	16	0.475	14.53	29.41	2.81	7.03	52.56	6.058	1.596	1.891	52.79	6.186	1.970	1.603	16.17	2.012	0.572	0.491	17.87	2.136	0.543	0.581	1.01	1.71
8 x 2.5	12	1.104	33.73	49.31	12.17	7.89	117.99	13.625	3.468	3.347	117.99	13.625	3.468	3.347	22.32	1.968	0.712	0.678	22.32	1.968	0.712	0.678	2.96	5.65
8 x 2.5	14	0.609	18.61	32.66	4.08	5.41	72.07	8.821	2.188	2.223	73.23	9.100	2.329	2.224	14.23	1.251	0.458	0.432	14.45	1.260	0.457	0.439	1.37	2.44
8 x 2.5	16	0.467	14.27	27.46	2.44	4.60	59.18	7.319	1.797	1.864	58.92	7.460	1.948	1.789	11.32	1.003	0.372	0.344	11.82	1.022	0.370	0.359	0.99	1.70
8 x 3	12	1.181	36.10	52.77	12.17	10.05	129.49	14.892	3.717	3.729	130.75	15.261	3.879	3.753	30.37	3.134	0.958	0.922	30.37	3.134	0.958	0.922	2.96	5.65
8 x 3	14	0.604	18.44	34.96	4.08	6.85	74.21	9.386	2.253	2.448	74.22	9.570	2.549	2.254	15.93	1.695	0.543	0.484	18.43	1.856	0.560	0.561	1.37	2.44
8 x 3	16	0.474	14.47	29.41	2.44	5.81	60.49	7.760	1.837	2.056	59.82	7.866	2.144	1.816	13.78	1.461	0.468	0.418	15.33	1.547	0.466	0.471	0.99	1.70
8 x 3.5	12	1.156	35.32	56.22	12.17	12.22	124.20	15.645	3.771	4.062	126.78	16.133	4.235	3.850	32.76	3.986	1.089	0.995	37.62	4.395	1.151	1.142	2.96	5.65

- Section properties are calculated in accordance with the 2007 AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
- Material: A1011 HSLAS Grade 55 Class 1 Steel or A653 SS Grade 55 Steel
- Strength Increase due to Cold Working has been applied where applicable

- Web Crippling values are based on a 4 inch bearing length, one flange fastened to support
- Appropriate factors of safety have been applied for Allowable Stress Design (ASD)
- Strength calculations based on a fully braced condition
- Consult with an engineering professional before using the above design aids



Zee Sections: Effective Section Properties



Member	Ga.	Effective Section Properties																				Web Crippling		
		Compression		Tension	Shear		Positive Moment (X Axis)				Negative Moment (X Axis)				Positive Moment (Y Axis)				Negative Moment (Y Axis)				End	Interior
		A <sub>e</sub>	P <sub>a</sub>	T <sub>a</sub>	V <sub>ay</sub>	V <sub>ax</sub>	M <sub>ax</sub>	I <sub>x</sub>	S <sub>e</sub> TOP	S <sub>e</sub> BOT	M <sub>ax</sub>	I <sub>x</sub>	S <sub>e</sub> TOP	S <sub>e</sub> BOT	M <sub>ay</sub>	I <sub>y</sub>	S <sub>e</sub> LEFT	S <sub>e</sub> RIGHT	M <sub>ay</sub>	I <sub>y</sub>	S <sub>e</sub> LEFT	S <sub>e</sub> RIGHT	P <sub>a</sub>	P <sub>a</sub>
(in <sup>2</sup> )	(kip)	(kip)	(kip)	(kip)	(kip-in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>3</sup> )	(kip-in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>3</sup> )	(kip-in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>3</sup> )	(kip-in)	(in <sup>4</sup> )	(in <sup>3</sup> )	(in <sup>3</sup> )	(kip)	(kip)		
8 x 3.5 14		0.614	18.75	37.27	4.08	8.29	76.73	9.965	2.330	2.676	76.94	10.157	2.781	2.336	18.93	2.351	0.665	0.575	21.00	2.502	0.638	0.676	1.37	2.44
8 x 3.5 16		0.477	14.58	31.35	2.44	7.03	60.60	8.092	1.840	2.246	60.20	8.206	2.337	1.828	16.23	2.013	0.571	0.493	17.96	2.139	0.545	0.580	0.99	1.70
9 x 2.5 12		1.112	33.97	52.77	12.17	7.89	139.20	18.063	4.082	3.949	128.42	17.958	4.087	3.899	22.30	1.968	0.713	0.677	22.30	1.968	0.713	0.677	2.92	5.62
9 x 2.5 14		0.611	18.68	34.96	3.60	5.41	84.83	11.681	2.576	2.616	78.76	11.533	2.761	2.392	14.22	1.251	0.459	0.432	14.44	1.261	0.458	0.438	1.35	2.43
9 x 2.5 16		0.468	14.31	29.41	2.15	4.60	66.89	9.484	2.031	2.190	60.92	9.256	2.316	1.850	11.32	1.003	0.372	0.344	11.81	1.023	0.371	0.359	0.97	1.69
9 x 3 12		1.189	36.34	56.23	12.17	10.05	151.81	19.647	4.358	4.374	153.53	20.140	4.546	4.407	30.34	3.134	0.960	0.921	30.34	3.134	0.960	0.921	2.92	5.62
9 x 3 14		0.606	18.51	37.27	3.60	6.85	87.29	12.396	2.650	2.867	87.07	12.609	2.980	2.644	15.96	1.695	0.542	0.485	18.49	1.863	0.564	0.561	1.35	2.43
9 x 3 16		0.475	14.51	31.35	2.15	5.81	67.61	9.970	2.053	2.407	67.01	10.106	2.506	2.035	13.80	1.461	0.468	0.419	15.39	1.549	0.467	0.470	0.97	1.69
9 x 3.5 12		1.164	35.56	59.68	12.17	12.22	145.52	20.590	4.419	4.744	148.51	21.215	4.939	4.509	32.79	3.987	1.088	0.996	37.65	4.408	1.157	1.143	2.92	5.62
9 x 3.5 14		0.616	18.82	39.58	3.60	8.29	89.27	13.058	2.711	3.122	88.24	13.196	3.238	2.679	18.99	2.353	0.664	0.577	21.12	2.506	0.641	0.674	1.35	2.43
10 x 2.5 12		1.118	34.16	56.23	10.94	7.89	151.35	23.041	4.621	4.596	146.05	22.920	4.744	4.435	22.28	1.968	0.714	0.676	22.28	1.968	0.714	0.676	2.89	5.58
10 x 2.5 14		0.613	18.73	37.27	3.22	5.41	87.43	14.218	2.655	3.062	88.61	14.614	3.199	2.690	14.21	1.252	0.459	0.431	14.42	1.261	0.459	0.438	1.33	2.41
10 x 2.5 16		0.469	14.34	31.35	1.92	4.60	68.78	11.526	2.088	2.572	68.34	11.697	2.681	2.075	11.31	1.003	0.372	0.344	11.80	1.024	0.372	0.358	0.95	1.67
10 x 3 12		1.195	36.53	59.68	10.94	10.05	175.35	25.222	5.034	5.055	177.55	25.856	5.248	5.097	30.31	3.135	0.961	0.920	30.31	3.135	0.961	0.920	2.89	5.58
10 x 3 14		0.608	18.57	39.58	3.22	6.85	97.60	15.626	2.964	3.305	96.07	15.764	3.430	2.917	15.98	1.695	0.541	0.485	18.53	1.873	0.568	0.563	1.33	2.41
10 x 3.5 12		1.170	35.75	63.14	10.94	12.22	168.02	26.377	5.102	5.461	171.43	27.156	5.678	5.205	32.82	3.988	1.088	0.997	37.67	4.419	1.162	1.144	2.89	5.58
10 x 3.5 14		0.618	18.88	41.88	3.22	8.29	98.58	16.319	2.993	3.588	97.59	16.491	3.719	2.963	19.04	2.354	0.663	0.578	21.19	2.509	0.643	0.673	1.33	2.41
12 x 2.5 12		1.127	34.44	63.14	9.02	7.89	188.86	35.166	5.734	5.993	181.35	34.902	6.165	5.507	22.24	1.969	0.715	0.675	22.24	1.969	0.715	0.675	2.82	5.53
12 x 2.5 14		0.616	18.82	41.88	2.66	5.41	106.74	21.417	3.241	3.972	108.26	21.985	4.139	3.287	14.19	1.252	0.460	0.431	14.40	1.262	0.461	0.437	1.29	2.38
12 x 3 12		1.205	36.81	66.60	9.02	10.05	201.77	38.057	6.126	6.575	201.50	38.642	6.798	6.118	30.27	3.135	0.963	0.919	30.27	3.135	0.963	0.919	2.82	5.53
12 x 3 14		0.610	18.65	44.19	2.66	6.85	108.44	22.407	3.293	4.314	107.70	22.658	4.468	3.270	16.01	1.696	0.541	0.486	18.59	1.888	0.576	0.565	1.29	2.38
12 x 3.5 12		1.179	36.03	70.06	9.02	12.22	216.55	40.683	6.575	6.999	220.81	41.821	7.258	6.705	32.87	3.989	1.087	0.998	37.72	4.439	1.170	1.145	2.82	5.53

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 2. Material: A1011 HSLAS Grade 55 Class 1 Steel or A653 SS Grade 55 Steel  
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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)  
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 7. Consult with an engineering professional before using the above design aids