



ALLOWABLE WEB CRIPPLING LOADS

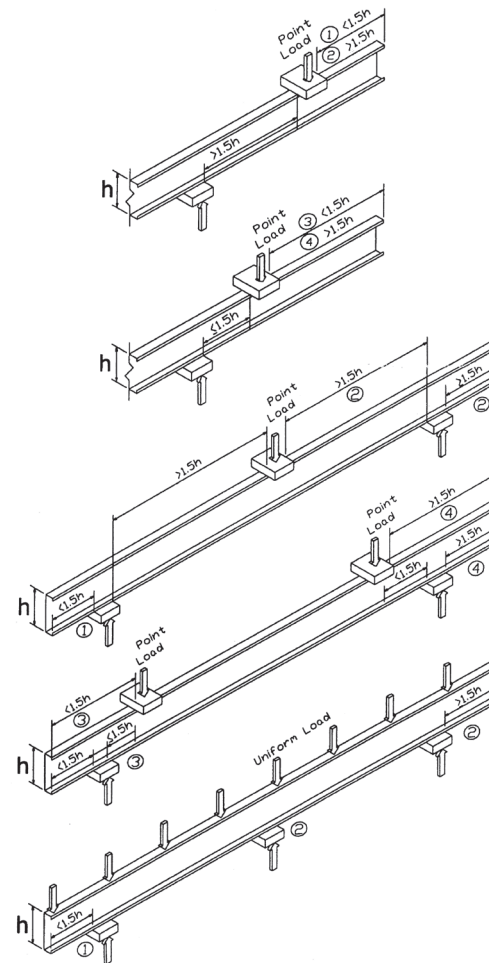
Overview

Web crippling

The tables that follow identify the loads that can be handled by the joist web under four different conditions without web stiffeners. Web crippling can occur at member ends or at interior points along the member. A point load is considered to be an interior point load if it is greater than 1-1/2 times the web depth (h) from the end. Web crippling also can occur either with point loading on one flange of the member or on both flanges. The following illustrations identify the four possible conditions.

General Notes:

- 1 Web crippling capacities have been calculated in conformance with AISI S100-16.
- 2 The tabulated values are for a single member. For multiple members, multiply the tabulated values by the number of members in the assembly.
- 3 All web crippling capacities listed are for studs/members with stiffened flanges (S-Sections).
- 4 Listed allowable capacities are based on members 'fastened to supports', except back-to-back members under two-flange loading (conditions 3 and 4), for which data for 'fastened to support' is unavailable in the AISI S100-16.
- 5 Listed allowable capacities are for unpunched webs. Capacity reductions for end and interior one-flange loading (Conditions 1 and 2) near punchouts may be calculated using Section G6 of AISI specification.



Load Conditions:

- 1 End one flange loading
- 2 Interior one flange loading
- 3 End two flange loading
- 4 Interior two flange loading

ALLOWABLE WEB CRIPPLING LOADS

For single members (lb)

Member	Yield strength (ksi)	CONDITION 1: End One Flange Loading, Bearing Length (in)				CONDITION 2: Interior One Flange Loading, Bearing Length (in)				CONDITION 3: End Two Flange Loading, Bearing Length (in)				CONDITION 4: Interior Two Flange Loading, Bearing Length (in)			
		1	3.5	4	6	1	3.5	4	6	1	3.5	4	6	1	3.5	4	6
250Sxxx - 33	33	173	271	285	336 ¹	330	453	472	535 ¹	150	201	209	235 ¹	411	519	535	591 ¹
250Sxxx - 43	33	287	443	466	547 ¹	580	780	810	913 ¹	267	351	364	407 ¹	720	892	918	1006 ¹
250Sxxx - 54	50	656	996	1046	1222 ¹	1350	1785	1850	2075 ¹	652	842	870	968 ¹	1730	2109	2165	2361 ¹
250Sxxx - 68	50	990	1480	1552	1805 ¹	2073	2694	2786	3106 ¹	1049	1333	1375	1521 ¹	2750	3302	3384	3669 ¹
250Sxxx - 97	50	1872	2726	2852	3293 ¹	4025	5095	5254	5806 ¹	2167	2683	2760	3026 ¹	5598	6575	6720	7225 ¹
350Sxxx - 33	33	166	260	274	323	324	445	463	526	131	175	182	205	384	484	499	551
350Sxxx - 43	33	278	428	451	528	571	768	798	900	240	315	326	365	680	842	866	949
350Sxxx - 54	50	637	967	1016	1186	1331	1761	1825	2046	594	768	794	883	1645	2005	2059	2245
350Sxxx - 68	50	965	1441	1512	1758	2047	2661	2752	3068	970	1232	1271	1406	2631	3159	3238	3510
350Sxxx - 97	50	1831	2666	2790	3221	3983	5042	5199	5745	2035	2520	2592	2842	5397	6339	6479	6966
362Sxxx - 33	33	165	259	273	322	323	444	462	525	129	173	179	202	381	480	495	547
362Sxxx - 43	33	277	427	449	526	570	767	796	898	236	311	322	360	675	836	860	943
362Sxxx - 54	50	634	963	1012	1182	1329	1758	1822	2043	588	760	785	874	1635	1994	2047	2232
362Sxxx - 68	50	962	1437	1507	1753	2044	2657	2748	3064	961	1221	1259	1393	2618	3143	3221	3492
362Sxxx - 97	50	1827	2659	2783	3212	3979	5036	5192	5738	2020	2501	2573	2821	5374	6313	6452	6936
400Sxxx - 33	33	163	256	269	317	322	442	460	522	122	164	170	192	372	469	483	534
400Sxxx - 43	33	274	422	444	520	567	763	792	893	227	299	309	346	662	819	843	924
400Sxxx - 54	50	628	954	1002	1170	1323	1750	1813	2034	569	735	760	846	1607	1960	2012	2194
400Sxxx - 68	50	953	1424	1494	1737	2036	2646	2737	3051	936	1188	1226	1356	2579	3097	3173	3441
400Sxxx - 97	50	1814	2640	2762	3189	3965	5018	5175	5718	1978	2448	2518	2761	5309	6236	6374	6853
550Sxxx - 33	33	155	243	256	302	315	432	450	511	100	134	139	157	339	428	441	487
550Sxxx - 43	33	262	405	426	499	556	749	778	877	195	256	265	297	614	760	782	858
550Sxxx - 54	50	606	920	966	1128	1302	1722	1784	2001	502	649	671	746	1508	1838	1887	2058
550Sxxx - 68	50	923	1380	1447	1683	2007	2608	2697	3007	844	1071	1105	1223	2441	2931	3003	3256
550Sxxx - 97	50	1766	2571	2691	3106	3917	4957	5112	5649	1826	2261	2326	2550	5079	5966	6097	6555
600Sxxx - 33	33	153	240	253	297	313	430	447	507	93	125	130	146	330	416	429	473
600Sxxx - 43	33	259	400	420	493	553	745	773	872	185	243	252	282	600	743	764	838
600Sxxx - 54	50	599	909	956	1116	1295	1713	1775	1991	482	623	644	716	1478	1802	1850	2017
600Sxxx - 68	50	914	1366	1433	1666	1998	2596	2685	2994	816	1036	1069	1183	2399	2881	2952	3201
600Sxxx - 97	50	1752	2551	2669	3081	3902	4939	5093	5628	1781	2205	2268	2487	5010	5885	6014	6466
800Sxxx - 33	33	144	226	238	281	305	419	436	495	69	92	96	108	294	371	383	422
800Sxxx - 43	33	247	381	401	470	542	730	757	854	150	197	204	228	548	678	698	765
800Sxxx - 54	50	575	872	917	1070	1272	1682	1743	1955	409	529	547	608	1370	1670	1714	1869
800Sxxx - 68	50	882	1318	1382	1607	1966	2555	2642	2946	716	910	939	1038	2250	2701	2768	3001
800Sxxx - 97	50	1702	2477	2592	2992	3850	4873	5025	5553	1618	2003	2060	2259	4761	5593	5716	6146
1000Sxxx - 43	33	236	364	383	449	532	716	743	839	119	156	162	181	502	622	640	701
1000Sxxx - 54	50	553	840	882	1031	1251	1655	1715	1923	346	447	462	514	1275	1554	1595	1740
1000Sxxx - 68	50	854	1275	1338	1556	1938	2518	2604	2904	629	799	824	912	2119	2544	2607	2827
1000Sxxx - 97	50	1657	2413	2525	2914	3805	4816	4966	5488	1476	1827	1879	2060	4545	5338	5456	5866
1200Sxxx - 54	50	534	811	852	995	1233	1630	1689	1895	288	372	385	428	1189	1450	1488	1623
1200Sxxx - 68	50	828	1237	1298	1509	1913	2486	2571	2866	551	699	721	798	2001	2402	2462	2669
1200Sxxx - 97	50	1618	2355	2464	2844	3764	4764	4912	5429	1348	1668	1716	1882	4350	5109	5222	5614
1400Sxxx - 54	50	516	784	824	962	1216	1608	1666	1869	235	304	314	350	1111	1354	1390	1516
1400Sxxx - 68	50	805	1202	1261	1466	1890	2456	2540	2832	479	608	627	694	1892	2272	2329	2525
1400Sxxx - 97	50	1581	2302	2408	2780	3727	4717	4864	5375	1230	1523	1567	1718	4171	4900	5008	5384

¹Bearing length to web height ratio, N/h, exceeds limit of 1.0.

²Bearing length to thickness ratio, N/t, exceeds limit of 210.

For web crippling general notes, see page 90.

Complies with AISI S100-16 • IBC 2018

The technical content of this literature is effective 11/17/20 and supersedes all previous information.

ALLOWABLE WEB CRIPPLING LOADS

For built-up members (lbs)

Member	Yield strength (ksi)	CONDITION 1: End One Flange Loading, Bearing Length (in)				CONDITION 2: Interior One Flange Loading, Bearing Length (in)				CONDITION 3: End Two Flange Loading, Bearing Length (in)				CONDITION 4: Interior Two Flange Loading, Bearing Length (in)			
		1	3.5	4	6	1	3.5	4	6	1	3.5	4	6	1	3.5	4	6
250Sxxx - 33	33	389	592	622	727 ¹	546	723	749	840 ¹	256	323	333	368 ¹	544	686	708	781 ¹
250Sxxx - 43	33	637	952	999	1162 ¹	932	1209	1250	1393 ¹	455	563	580	636 ¹	982	1216	1251	1371 ¹
250Sxxx - 54	50	1435	2111	2212	2560 ¹	2159	2753	2842	3149 ¹	1106	1349	1385	1510 ¹	2393	2917	2995	3266 ¹
250Sxxx - 68	50	2145	3102	3244	3737 ¹	3311	4152	4277	4711 ¹	1778	2135	2188	2373 ¹	3846	4618	4733	5131 ¹
250Sxxx - 97	50	4006	5637	5878	6720 ¹	6423	7857	8070	8811 ¹	3671	4312	4407	4738 ¹	7940	9327	9532	10248 ¹
350Sxxx - 33	33	388	591	621	726 ¹	545	721	748	839 ¹	232	292	301	333 ¹	492	621	640	706 ¹
350Sxxx - 43	33	636	951	997	1160 ¹	931	1207	1248	1391 ¹	419	519	534	585 ¹	904	1119	1151	1263 ¹
350Sxxx - 54	50	1434	2109	2209	2557 ¹	2156	2750	2838	3144 ¹	1031	1257	1290	1407 ¹	2229	2718	2791	3043 ¹
350Sxxx - 68	50	2143	3098	3240	3733 ¹	3307	4147	4272	4706 ¹	1673	2009	2059	2232 ¹	3618	4345	4452	4827 ¹
350Sxxx - 97	50	4002	5631	5873	6713 ¹	6416	7850	8062	8802 ¹	3493	4103	4194	4508 ¹	7555	8874	9070	9751 ¹
362Sxxx - 33	33	388	591	621	726 ¹	545	721	747	839 ¹	229	289	298	329 ¹	486	613	632	698 ¹
362Sxxx - 43	33	636	950	997	1160 ¹	930	1207	1248	1391 ¹	415	514	528	579 ¹	895	1109	1140	1250 ¹
362Sxxx - 54	50	1433	2108	2208	2557 ¹	2156	2750	2838	3144 ¹	1022	1246	1280	1395 ¹	2211	2695	2767	3017 ¹
362Sxxx - 68	50	2143	3098	3239	3732 ¹	3307	4147	4271	4705 ¹	1661	1995	2044	2216 ¹	3592	4314	4421	4793 ¹
362Sxxx - 97	50	4001	5630	5872	6713 ¹	6416	7849	8061	8801 ¹	3473	4080	4170	4483 ¹	7511	8823	9018	9695 ¹
400Sxxx - 33	33	388	591	621	726 ¹	545	721	747	838 ¹	221	279	287	317 ¹	469	592	610	673 ¹
400Sxxx - 43	33	635	950	997	1159 ¹	930	1206	1247	1390 ¹	403	499	513	563 ¹	870	1077	1108	1215 ¹
400Sxxx - 54	50	1433	2107	2207	2556 ¹	2155	2748	2836	3143 ¹	998	1216	1249	1361 ¹	2157	2630	2700	2944 ¹
400Sxxx - 68	50	2142	3097	3238	3731 ¹	3305	4145	4270	4703 ¹	1627	1953	2002	2170 ¹	3518	4224	4329	4694 ¹
400Sxxx - 97	50	4000	5628	5870	6711 ¹	6414	7846	8059	8798 ¹	3415	4012	4100	4408 ¹	7386	8676	8868	9534 ¹
550Sxxx - 33	33	387	590	620	724 ¹	544	720	746	836 ¹	192	242	250	276 ¹	407	514	530	585 ¹
550Sxxx - 43	33	634	948	995	1157 ¹	928	1204	1245	1388 ¹	361	447	459	504 ¹	778	964	991	1087 ¹
550Sxxx - 54	50	1431	2104	2204	2552 ¹	2152	2744	2832	3138 ¹	909	1108	1138	1241 ¹	1966	2397	2461	2683 ¹
550Sxxx - 68	50	2139	3092	3234	3726 ¹	3301	4139	4264	4697 ¹	1504	1806	1851	2007 ¹	3253	3906	4003	4340 ¹
550Sxxx - 97	50	3995	5622	5863	6703 ¹	6406	7837	8049	8788 ¹	3211	3771	3855	4144 ¹	6944	8157	8337	8963 ¹
600Sxxx - 33	33	387	589	619	724 ¹	543	719	745	836 ¹	183	231	238	263 ¹	389	491	506	559 ¹
600Sxxx - 43	33	634	948	995	1157 ¹	928	1204	1245	1387 ¹	348	431	443	486 ¹	751	930	956	1048 ¹
600Sxxx - 54	50	1430	2103	2203	2551 ¹	2151	2743	2831	3136 ¹	883	1076	1105	1205 ¹	1909	2327	2389	2605 ¹
600Sxxx - 68	50	2138	3091	3233	3724 ¹	3299	4138	4262	4695 ¹	1467	1762	1806	1958 ¹	3173	3811	3905	4234 ¹
600Sxxx - 97	50	3994	5620	5861	6701 ¹	6404	7834	8046	8785 ¹	3150	3700	3781	4065 ¹	6812	8001	8178	8792 ¹
800Sxxx - 33	33	386	588	618	722	542	718	744	834	152	192	197	218	322	407	419	463
800Sxxx - 43	33	633	946	993	1154	926	1202	1242	1384	302	374	384	421	651	806	829	909
800Sxxx - 54	50	1428	2100	2200	2546	2147	2738	2826	3131	787	959	985	1074	1701	2074	2129	2322
800Sxxx - 68	50	2135	3087	3228	3719	3295	4132	4256	4688	1335	1602	1642	1780	2886	3466	3552	3851
800Sxxx - 97	50	3989	5613	5854	6692	6396	7825	8036	8774	2929	3441	3517	3781	6335	7442	7606	8177
1000Sxxx - 43	33	632	945	991	1153	925	1200	1240	1382	261	324	333	365	564	698	718	787
1000Sxxx - 54	50	1426	2097	2196	2543	2144	2735	2822	3127	702	856	879	959	1519	1852	1901	2073
1000Sxxx - 68	50	2132	3083	3224	3714	3290	4126	4250	4682	1218	1463	1499	1625	2635	3164	3242	3515
1000Sxxx - 97	50	3985	5607	5848	6685	6389	7816	8028	8764	2737	3215	3286	3533	5919	6953	7107	7640
1200Sxxx - 54	50	1424	2094	2193	2539	2141	2731	2818	3123	627	764	784	855	1355	1652	1696	1849
1200Sxxx - 68	50	2130	3079	3220	3710	3287	4122	4245	4676	1114	1337	1370	1486	2408	2892	2964	3213
1200Sxxx - 97	50	3981	5601	5842	6678	6383	7808	8020	8756	2564	3012	3078	3309	5545	6514	6658	7158
1400Sxxx - 54	50	1422	2092	2191	2536	2139	2728	2815	3119	557	679	697	760	1204	1468	1507	1644
1400Sxxx - 68	50	2127	3076	3216	3706	3283	4117	4241	4671	1018	1222	1252	1358	2201	2642	2708	2936
1400Sxxx - 97	50	3977	5596	5837	6672	6377	7801	8013	8748	2406	2826	2888	3105	5203	6111	6246	6715

¹Bearing length to web height ratio, N/h, exceeds limit of 1.0.

²Bearing length to thickness ratio, N/t, exceeds limit of 210.

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