American National Standard SJI 100 - 2020

STANDARD ASD LOAD TABLE

LONGSPAN STEEL JOISTS, LH-SERIES

Based on a 50 ksi (345 MPa) Maximum Yield Strength
Adopted by the Steel Joist Institute May 1, 2000
Revised to April 27, 2010 – Effective July 1, 2020

The **BLACK** figures in the Load Table give the TOTAL safe uniformly distributed load-carrying capacities, in pounds per linear foot, of **ASD** LH-Series Steel Joists.

The approximate joist weights, in pounds per linear foot (kiloNewtons per meter), given in the Load Table may be added to the other building weights to determine the DEAD load. In all cases the DEAD load, including the joist self-weight, must be deducted from the TOTAL load to determine the LIVE load. The approximate joist weights do not include accessories.

The **RED** figures in the Load Table represent the uniform load, in pounds per linear foot (kiloNewtons per meter), which will produce an approximate joist deflection of 1/360 of the span. This load can be linearly prorated to obtain the uniform load for supplementary deflection criteria (i.e. a uniform load that will produce a joist deflection of 1/240 of the span may be obtained by multiplying the **RED** figures by 360/240). In no case shall the prorated load exceed the TOTAL load-carrying capacity of the joist.

User Note: For floor joists, the RED figures may control the joist selection, and for longer spans consideration shall be given to the effects of camber on slab thickness. If a deeper joist designation cannot be used, CJ-Series composite joists may also be considered to take advantage of increased stiffness available due to composite action.

The Load Table applies to joists with either parallel chords or pitched top chords. Joists can have a top chord pitch up to 1/2 inch per foot (42 mm per meter). If the pitch exceeds this limit, the Load Table does not apply. When top chords are pitched, the load-carrying capacities are determined by the nominal depth of the joists at the center of the span. Sloped parallel-chord joists shall use span as defined by the length along the slope.

Where the joist span is in the **RED SHADED** area of the Load Table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at chords and intersections. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed. The **RED SHADED** area extends up through 60'–0" (18288 mm).

Where the joist span is in the **BLUE SHADED** area of the Load Table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersections. Hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed. The **BLUE SHADED** area starts after 60'–0" (18288 mm) and extends up through 100'–0" (30175 mm).

The approximate gross moment of inertia (not adjusted for shear deformation) of a standard joist listed in the Load Table may be determined as follows:

$I_j = 26.767(W)(L^3)(10^{-6})$ in^4 or $2.6953(W)(L^3)(10^{-5})$ mm^4, where W= **RED** figure in the Load Table, and
L = (span – 0.33) in feet or (span – 102) in millimeters

Loads for span increments not explicitly given in the Load Table may be determined using linear interpolation between the load values given in adjacent span rows. For spans shorter than the first span listed in the Load Table, the capacity shall be equal to that of the shortest listed span.

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STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	18LH02	18LH03	18LH04	18LH05	18LH06	18LH07	18LH08	18LH09	18LH10	18LH11	18LH12	18LH13	18LH14	18LH15	18LH16	18LH17	18LH18	18LH19	18LH20
Depth (in.)	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Approx. Wt. (lbs./ft.)	10	11	12	14	15	17	19	21	23	25	28	33	36	39	44	50	57	62	83
Span (ft.) ↓																			
18	805	896	1039	1175	1438	1529	1728	1989	2231	2489	2751								
	805	896	1039	1175	1438	1529	1728	1889	2231	2489	2751								
19	748	833	966	1093	1329	1414	1598	1831	2054	2291	2533								
	748	833	966	1093	1329	1414	1500	1601	2054	2291	2533								
20	697	776	899	1018	1231	1310	1480	1688	1895	2114	2337	2805							
	696	774	896	1009	1169	1229	1283	1369	1816	2005	2226	2576							
21	649	723	838	949	1143	1216	1373	1562	1752	1955	2161	2587	2825						
	600	667	772	870	1008	1059	1105	1180	1565	1728	1918	2220	2413						
22	606	675	783	886	1063	1130	1277	1448	1624	1812	2003	2391	2612	2829					
	520	579	670	755	874	919	959	1024	1358	1500	1664	1926	2094	2276					
23	567	631	732	829	990	1053	1189	1345	1508	1683	1860	2216	2420	2622					
	454	505	585	659	764	803	838	894	1186	1310	1454	1683	1829	1987					
24	531	591	685	776	924	982	1110	1250	1403	1566	1732	2059	2248	2436	2811				
	399	444	514	579	671	705	736	786	1042	1151	1277	1478	1607	1746	1922				
25	497	554	643	728	863	918	1037	1167	1309	1461	1615	1916	2093	2268	2587	2950			
	353	392	454	511	593	623	650	694	920	1016	1128	1306	1419	1542	1697	1929			
26	468	521	604	684	809	840	876	936	1223	1365	1509	1788	1953	2115	2390	2725			
	313	348	403	454	526	553	577	616	817	902	1001	1159	1260	1369	1506	1712			
27	442	493	571	648	749	809	843	901	1145	1278	1413	1671	1825	1978	2214	2524	2916		
	284	317	367	414	469	513	534	571	728	804	893	1033	1123	1220	1343	1526	1739		
28	418	467	535	614	696	780	812	868	1074	1198	1325	1565	1710	1852	2057	2345	2709		
	259	289	329	378	419	476	496	527	652	720	799	925	1006	1093	1203	1367	1557		
29	391	438	500	581	648	726	784	838	1009	1126	1245	1469	1604	1738	1916	2184	2523	2811	
	234	262	296	345	377	428	462	491	586	647	718	832	904	982	1081	1229	1400	1538	
30	367	409	469	543	605	678	758	810	949	1059	1171	1380	1508	1634	1789	2039	2356	2624	
	212	236	266	311	340	386	427	458	529	584	648	750	816	886	975	1108	1263	1387	
31	345	382	440	508	566	635	717	783	894	996	1104	1300	1420	1538	1674	1909	2205	2456	
	193	213	242	282	307	349	387	418	479	529	587	679	738	802	883	1003	1143	1256	
32	324	359	413	476	531	595	680	759	844	934	1042	1226	1336	1451	1570	1790	2068	2303	2862
	175	194	219	256	280	317	351	380	435	480	533	617	671	729	802	911	1038	1141	1402
33	306	337	388	448	499	559	641	713	798	878	980	1157	1255	1370	1475	1682	1943	2164	2689
	160	177	200	233	254	288	320	346	396	437	485	562	611	664	731	830	946	1039	1277
34	289	317	365	421	470	526	604	671	754	826	923	1089	1182	1291	1389	1584	1829	2038	2532
	147	161	182	212	232	264	292	316	362	399	443	513	558	606	667	758	864	949	1167
35	273	299	344	397	443	496	571	633	711	779	870	1027	1114	1217	1310	1494	1725	1922	2388
	135	148	167	195	212	241	267	289	331	366	406	470	511	555	611	695	791	869	1068
36	259	283	325	375	418	469	540	598	672	736	822	970	1053	1150	1237	1411	1630	1816	2256
	124	136	153	179	195	222	246	266	304	336	373	432	469	510	561	638	727	798	981

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STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	20LH02	20LH03	20LH04	20LH05	20LH06	20LH07	20LH08	20LH09	20LH10	20LH11	20LH12	20LH13	20LH14	20LH15	20LH16	20LH17	20LH18	20LH19	20LH20
Depth (in.)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Approx. Wt. (lbs./ft.)	10	11	12	14	15	17	19	21	23	25	28	34	37	40	45	55	61	69	87
Span (ft.) ↓																			
20	712 680	827 749	910 910	1060 1020	1226 1226	1427 1427	1550 1487	1771 1620	1912 1747	2311 2311	2555 2555								
21	670 586	765 646	851 820	990 879	1146 1146	1327 1239	1442 1282	1641 1396	1772 1506	2141 2141	2367 2367	2847 2798							
22	627 509	715 560	796 712	927 763	1071 1007	1236 1076	1343 1112	1524 1212	1645 1307	1988 1885	2198 2093	2636 2428	2879 2640						
23	587 444	670 489	746 621	865 666	1005 880	1154 939	1254 971	1418 1058	1530 1141	1850 1647	2045 1828	2447 2121	2672 2306	2895 2507					
24	551 390	629 430	700 546	811 585	942 773	1079 825	1172 853	1322 930	1426 1003	1724 1447	1906 1606	2276 1863	2486 2026	2693 2202					
25	517 345	590 380	658 482	756 517	886 683	1011 729	1097 754	1234 821	1332 886	1610 1278	1780 1418	2121 1646	2317 1789	2510 1945	2914 2143				
26	442 306	469 337	574 428	616 459	822 606	878 647	908 669	990 729	1068 786	1506 1134	1665 1259	1981 1461	2164 1588	2344 1726	2691 1902				
27	437 303	463 333	566 406	609 437	791 561	845 599	873 619	953 675	1028 724	1411 1011	1561 1123	1853 1302	2025 1416	2194 1539	2493 1696	2846 1930			
28	431 298	458 317	558 386	602 416	763 521	814 556	842 575	918 626	991 673	1325 905	1465 1005	1737 1166	1898 1268	2056 1378	2316 1519	2644 1728			
29	410 274	452 302	528 352	595 395	723 477	786 518	813 536	886 581	956 626	1246 814	1378 904	1632 1048	1782 1140	1931 1239	2157 1365	2463 1554	2845 1771		
30	388 250	434 280	496 320	571 366	679 427	760 484	785 500	856 542	924 585	1173 734	1298 815	1535 946	1677 1028	1817 1118	2014 1232	2299 1402	2657 1598	2965 1759	
31	365 228	414 258	467 291	544 337	635 386	711 438	760 468	828 507	894 545	1107 665	1224 738	1446 856	1580 931	1712 1012	1885 1115	2152 1269	2486 1447	2775 1592	
32	344 208	395 238	440 265	513 308	596 351	667 398	722 428	802 475	865 510	1045 604	1156 670	1364 778	1491 846	1615 919	1768 1013	2018 1152	2332 1314	2602 1446	
33	325 190	372 218	416 243	484 281	560 320	627 362	687 395	778 437	839 479	986 550	1094 610	1289 708	1409 770	1526 837	1661 922	1896 1050	2191 1197	2446 1317	
34	307 174	352 200	393 223	458 258	527 292	590 331	654 365	755 399	814 448	928 502	1036 558	1220 647	1329 704	1444 765	1564 843	1785 959	2063 1093	2302 1203	2867 1483
35	291 160	333 184	372 205	434 238	497 267	556 303	621 336	712 366	791 411	875 460	977 511	1155 593	1254 644	1369 700	1475 772	1684 878	1946 1001	2171 1102	2704 1358
36	275 147	316 169	353 189	411 219	469 246	526 278	588 309	673 336	748 377	827 422	923 469	1091 544	1184 592	1294 643	1394 709	1591 806	1838 919	2051 1012	2554 1247
37	262 136	299 156	335 174	390 202	444 226	497 256	558 285	636 309	707 346	782 389	873 432	1033 501	1121 545	1224 592	1319 652	1505 742	1739 846	1941 931	2417 1148
38	249 126	283 143	318 161	371 187	421 209	471 236	530 262	603 285	670 320	741 359	828 398	979 462	1062 502	1160 546	1249 602	1426 685	1648 781	1839 859	2290 1059
39	237 117	269 133	303 149	353 173	399 192	447 218	503 242	572 264	636 296	703 331	785 368	929 427	1008 464	1101 505	1186 556	1353 633	1564 722	1745 794	2173 979
40	225 108	255 123	289 139	336 161	379 178	425 202	479 225	544 244	604 274	668 307	746 341	882 395	957 430	1046 467	1127 515	1286 586	1486 668	1658 735	2065 906

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STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	24LH03	24LH04	24LH05	24LH06	24LH07	24LH08	24LH09	24LH10	24LH11	24LH12	24LH13	24LH14	24LH15	24LH16	24LH17	24LH18	24LH19	24LH20	24LH21
Depth (in.)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Approx. Wt. (lbs./ft.)	11	12	13	16	17	18	21	23	25	27	32	35	38	42	49	57	62	79	88
Span (ft.) ▼																			
24	664 664	723 723	827 827	1041 1041	1214 1214	1287 1287	1661 1618	1784 1716	1948 1796	2235 2235	2688 2688	2936 2936							
25	626 598	681 681	779 779	981 981	1140 1140	1208 1208	1555 1429	1670 1515	1824 1587	2093 2093	2511 2445	2743 2660	2972 2893						
26	590 530	642 642	735 695	925 925	1072 1020	1136 1083	1458 1268	1565 1345	1710 1408	1962 1864	2350 2171	2567 2361	2782 2568						
27	557 473	606 580	694 620	874 827	1009 910	1069 966	1369 1131	1469 1199	1607 1256	1843 1662	2203 1935	2407 2105	2608 2290						
28	527 423	573 519	656 555	827 741	948 814	1008 865	1288 1013	1382 1074	1511 1124	1734 1488	2069 1733	2260 1885	2449 2050	2835 2263					
29	498 381	542 467	621 499	782 666	895 732	951 778	1216 910	1302 965	1423 1011	1633 1338	1946 1558	2126 1695	2304 1843	2641 2035					
30	472 343	514 421	588 450	741 601	848 661	899 702	1144 821	1228 871	1341 912	1540 1207	1833 1406	2002 1529	2170 1663	2466 1836	2819 2094				
31	448 311	487 381	555 408	703 544	800 598	850 635	1084 744	1160 789	1264 826	1455 1093	1729 1272	1889 1384	2047 1505	2308 1662	2638 1895				
32	425 282	462 346	521 370	667 494	748 543	806 577	1020 675	1072 716	1166 750	1376 993	1633 1156	1785 1257	1934 1367	2164 1509	2474 1721	2860 1964			
33	404 257	440 315	492 337	635 450	706 495	764 525	955 615	995 652	1054 683	1304 904	1545 1053	1689 1145	1830 1245	2034 1375	2325 1568	2688 1790			
34	342 235	419 288	449 308	604 411	665 452	707 480	832 562	882 596	927 624	1236 826	1464 962	1600 1046	1734 1138	1915 1256	2189 1432	2530 1635	2832 1804		
35	339 226	398 265	446 297	579 382	638 421	677 447	808 530	856 559	900 588	1174 756	1389 881	1517 958	1644 1042	1806 1150	2064 1312	2386 1497	2671 1653		
36	336 218	379 246	440 285	555 356	613 393	649 416	785 501	832 528	875 555	1115 695	1319 809	1441 880	1562 957	1706 1056	1950 1205	2255 1375	2523 1518		
37	323 204	360 227	419 264	530 331	588 367	622 388	764 460	809 500	851 525	1061 639	1254 744	1370 810	1485 881	1614 972	1845 1109	2133 1265	2387 1397	2982 1729	
38	307 188	343 210	399 244	504 306	565 343	597 362	731 424	788 474	829 498	1009 590	1193 687	1298 747	1413 812	1530 897	1749 1023	2021 1167	2262 1288	2826 1595	
39	293 175	327 195	380 226	480 284	541 320	572 338	696 393	768 439	807 472	957 545	1135 635	1232 690	1346 751	1451 829	1659 945	1918 1079	2147 1191	2682 1474	2993 1631
40	279 162	312 182	363 210	457 263	516 297	545 314	663 363	737 406	787 449	910 505	1078 588	1170 639	1279 695	1379 768	1577 876	1823 999	2040 1103	2548 1365	2844 1510
41	267 152	298 169	347 196	437 245	491 276	520 292	632 337	702 378	768 418	865 468	1026 545	1113 593	1217 645	1312 712	1500 813	1734 927	1941 1024	2424 1267	2706 1402
42	255 141	285 158	331 182	417 228	468 257	497 272	602 313	668 351	734 388	824 435	977 507	1061 552	1159 600	1250 662	1429 755	1652 862	1849 952	2309 1178	2578 1303
43	244 132	273 148	317 171	399 211	446 239	475 254	574 292	637 326	701 361	786 406	932 472	1011 514	1105 559	1192 617	1363 704	1575 803	1763 886	2202 1097	2458 1214
44	234 124	262 138	304 160	381 197	426 223	455 238	548 272	608 304	671 337	751 378	890 440	966 479	1055 521	1138 575	1301 656	1504 749	1683 827	2103 1023	2347 1132
45	224 116	251 130	291 150	364 184	407 208	435 222	524 254	582 285	642 315	717 353	850 412	923 448	1009 487	1088 538	1243 613	1437 700	1609 772	2009 956	2243 1058
46	215 109	241 122	280 141	348 172	389 195	417 208	501 238	556 266	616 294	686 331	813 385	883 419	965 456	1041 503	1190 574	1375 655	1539 723	1922 895	2146 990
47	207 102	231 114	269 132	334 161	373 182	400 196	480 223	533 249	590 276	657 310	779 361	845 393	924 427	996 471	1139 538	1317 614	1474 677	1841 838	2055 927
48	199 96	222 107	258 124	320 152	357 171	384 184	460 209	511 234	567 259	630 291	747 339	810 368	886 401	955 442	1092 504	1262 576	1412 636	1764 787	1969 870

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STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	28LH05	28LH06	28LH07	28LH08	28LH09	28LH10	28LH11	28LH12	28LH13	28LH14	28LH15	28LH16	28LH17	28LH18	28LH19	28LH20	28LH21	28LH22	28LH23
Depth (in.)	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Approx. Wt. (lbs./ft.)	13	16	17	18	21	23	25	27	30	35	38	42	49	56	63	79	88	102	111
Span (ft.) ↓																			
28	626	831	968	1036	1342	1438	1570	1839	2034	2459	2665								
	626	831	968	1036	1342	1438	1570	1839	1944	2459	2665								
29	596	791	920	983	1271	1362	1487	1741	1922	2324	2518	2962							
	596	791	920	983	1271	1362	1487	1674	1747	2324	2518	2839							
30	568	755	874	934	1204	1291	1409	1651	1818	2199	2383	2798							
	568	755	874	934	1186	1291	1380	1510	1576	2130	2317	2561							
31	542	720	831	889	1143	1225	1337	1566	1722	2083	2257	2647							
	542	720	818	873	1074	1169	1249	1367	1427	1928	2098	2319							
32	517	687	791	846	1085	1163	1270	1488	1633	1975	2140	2507	2888						
	499	658	743	793	975	1062	1134	1242	1296	1751	1905	2106	2406						
33	494	656	753	806	1032	1106	1207	1414	1550	1875	2032	2377	2738						
	454	600	677	722	888	967	1033	1131	1181	1595	1735	1918	2192						
34	472	627	718	768	982	1052	1149	1346	1474	1782	1931	2257	2592	2936					
	415	548	618	660	811	883	944	1033	1079	1457	1585	1752	2002	2286					
35	451	600	685	733	935	1002	1094	1282	1402	1695	1837	2137	2445	2791					
	380	502	566	604	743	809	865	946	988	1335	1452	1605	1834	2094					
36	432	574	654	700	892	956	1043	1223	1335	1614	1750	2018	2310	2655	2995				
	349	461	520	555	682	743	794	869	907	1226	1333	1474	1684	1923	2127				
37	414	550	625	669	851	912	996	1166	1272	1539	1668	1910	2186	2527	2833				
	321	424	478	511	628	684	731	800	835	1128	1227	1356	1550	1770	1958				
38	396	527	598	640	813	871	951	1113	1214	1468	1591	1810	2071	2395	2685				
	296	391	441	471	579	631	674	738	770	1040	1132	1251	1429	1632	1806				
39	380	505	573	612	777	833	909	1065	1160	1402	1520	1717	1965	2273	2548				
	274	362	408	435	536	583	623	682	712	962	1046	1157	1321	1509	1670				
40	365	485	549	587	743	797	870	1019	1108	1340	1453	1632	1867	2159	2421				
	254	335	378	403	496	540	577	632	659	891	969	1071	1224	1398	1546				
41	350	466	526	562	708	763	833	976	1060	1282	1390	1553	1777	2055	2303	2884			
	236	311	351	374	460	501	536	586	612	827	899	994	1136	1297	1435	1782			
42	337	448	505	540	667	729	780	857	895	1228	1331	1479	1692	1957	2194	2747			
	219	289	326	348	428	466	498	545	569	769	836	924	1056	1206	1334	1657			
43	323	429	484	517	639	704	762	837	874	1177	1275	1410	1614	1866	2092	2620	2925		
	205	270	305	325	400	439	475	520	543	716	779	861	983	1123	1243	1543	1708		
44	310	412	464	496	612	679	736	818	854	1129	1223	1346	1541	1782	1998	2501	2793		
	192	253	285	305	375	414	448	496	518	668	726	803	917	1048	1159	1439	1593		
45	297	395	445	475	586	651	711	800	835	1083	1174	1287	1473	1703	1909	2390	2669	2936	
	180	238	267	285	351	388	423	476	495	624	679	750	857	979	1083	1345	1489	1688	
46	286	379	427	456	563	625	682	782	816	1040	1128	1231	1409	1629	1827	2287	2553	2808	
	169	223	251	268	329	364	397	454	472	584	635	702	802	916	1013	1258	1393	1579	
47	275	364	410	438	540	600	655	766	799	999	1084	1179	1349	1560	1749	2190	2445	2689	
	159	209	236	252	309	342	373	435	452	547	595	658	751	858	950	1179	1305	1480	
48	265	350	394	420	519	576	629	737	782	958	1043	1130	1293	1495	1676	2099	2344	2578	2950
	150	197	222	236	291	322	351	408	433	513	558	617	705	805	891	1106	1225	1389	1510
49	255	337	379	403	499	554	605	709	766	919	1004	1084	1240	1434	1608	2014	2248	2473	2836
	142	186	209	222	274	303	331	383	415	482	525	580	663	757	837	1040	1151	1305	1419
50	245	324	365	387	481	533	582	682	751	882	964	1041	1191	1377	1544	1933	2159	2374	2727
	133	175	197	209	258	285	312	361	396	454	493	546	623	712	788	978	1083	1228	1335
51	237	313	352	371	463	513	561	656	722	848	926	1000	1144	1323	1484	1858	2074	2281	2625
	126	166	186	196	243	269	294	340	373	427	465	514	587	670	742	921	1020	1156	1257
52	228	301	339	357	446	495	540	632	694	815	891	962	1101	1273	1427	1786	1995	2194	2529
	119	156	176	185	228	255	278	321	352	403	438	485	554	632	700	869	962	1090	1186
53	220	291	327	344	430	477	521	609	668	784	857	925	1059	1225	1373	1719	1920	2111	2437
	113	148	166	175	216	241	263	303	332	380	414	457	523	597	660	820	908	1029	1119
54	213	281	319	331	415	460	502	587	643	755	826	891	1020	1180	1322	1656	1849	2033	2351
	107	140	158	165	204	228	249	285	314	359	391	432	494	564	624	775	858	973	1058
55	206	271	305	319	401	444	485	566	620	728	796	859	983	1137	1275	1596	1782	1960	2269
	102	133	150	156	193	215	236	270	297	340	370	409	467	534	591	733	812	921	1001
56	199	262	295	308	387	429	468	546	598	702	767	828	948	1096	1229	1539	1718	1890	2191
	97	126	142	148	183	204	223	256	281	322	350	387	443	505	559	695	769	872	948

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linerar Foot (plf)

Joist Designation	32LH06	32LH07	32LH08	32LH09	32LH10	32LH11	32LH12	32LH13	32LH14	32LH15	32LH16	32LH17	32LH18	32LH19	32LH20	32LH21	32LH22	32LH23	32LH24
Depth (in.)	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Approx. Wt. (lbs./ft.)	14	16	17	21	21	24	27	30	33	35	42	49	56	62	78	87	101	110	124
Span (ft.) ↓																			
32	655	735	829	1099	1184	1296	1522	1789	1916	2050	2691								
	655	735	829	1099	1184	1296	1522	1789	1916	2050	2691								
33	629	705	793	1049	1131	1238	1453	1705	1827	1954	2561	2951							
	629	705	793	1049	1131	1238	1453	1705	1827	1870	2553	2920							
34	605	678	760	1003	1080	1183	1388	1627	1742	1864	2440	2812							
	605	678	760	1003	1080	1183	1388	1605	1653	1708	2332	2668							
35	581	651	728	959	1033	1131	1328	1553	1663	1779	2326	2681							
	581	651	728	938	1033	1131	1323	1470	1514	1564	2136	2443							
36	559	626	698	917	989	1082	1271	1484	1589	1700	2220	2558	2890						
	559	626	689	861	950	1040	1215	1350	1391	1437	1961	2244	2563						
37	537	602	670	878	947	1036	1217	1419	1519	1626	2120	2443	2760						
	524	584	634	793	875	957	1118	1243	1280	1322	1805	2065	2359						
38	517	580	643	842	907	993	1166	1358	1454	1555	2026	2335	2638						
	484	539	585	731	807	883	1032	1146	1181	1220	1665	1905	2176						
39	498	558	617	807	870	952	1118	1300	1392	1490	1938	2234	2524	2890					
	447	498	540	676	746	816	954	1060	1091	1127	1539	1761	2012	2230					
40	479	538	593	774	834	913	1073	1246	1334	1427	1856	2139	2416	2763					
	414	461	501	626	691	756	883	981	1011	1044	1426	1631	1863	2066					
41	462	518	570	743	801	877	1030	1195	1279	1369	1778	2049	2315	2644					
	384	428	465	581	641	701	820	911	938	969	1323	1513	1729	1917					
42	445	499	549	714	770	842	989	1146	1228	1314	1705	1956	2220	2532					
	357	398	432	540	596	652	762	847	872	901	1230	1407	1608	1782					
43	430	482	528	687	740	810	951	1101	1179	1262	1629	1865	2130	2422					
	333	371	402	503	555	607	710	789	812	839	1146	1310	1497	1660					
44	414	465	509	660	712	779	915	1058	1133	1212	1555	1781	2046	2312	2900				
	310	346	375	469	518	567	662	736	758	783	1069	1222	1397	1548	1927				
45	400	449	490	636	685	750	880	1017	1089	1166	1486	1702	1966	2210	2771				
	290	323	351	439	484	529	619	687	708	731	998	1142	1305	1447	1801				
46	386	433	473	612	660	722	848	979	1048	1122	1422	1628	1883	2114	2651	2961			
	271	302	328	410	453	495	579	643	663	684	934	1069	1221	1354	1685	1866			
47	373	419	456	590	636	696	817	943	1009	1080	1361	1559	1803	2025	2539	2835			
	254	283	307	385	424	464	542	603	621	641	875	1001	1144	1268	1579	1749			
48	361	405	440	566	613	671	788	908	972	1040	1305	1494	1729	1940	2433	2718	2990		
	239	266	288	361	398	436	509	566	583	602	821	940	1074	1190	1482	1641	1862		
49	349	391	425	544	591	647	760	875	937	1003	1252	1434	1658	1862	2334	2607	2869		
	224	250	271	339	374	409	478	531	547	565	772	883	1009	1118	1392	1542	1750		
50	338	379	411	516	571	625	734	817	843	870	1202	1376	1592	1787	2241	2503	2754		
	211	235	255	319	352	385	450	500	515	532	726	831	949	1052	1310	1451	1646		
51	326	366	397	498	550	602	712	801	826	853	1155	1323	1530	1717	2154	2405	2647	2985	
	199	223	242	302	332	363	428	480	495	511	684	782	894	991	1234	1366	1550	1689	
52	315	353	383	480	531	580	688	785	810	837	1111	1272	1471	1652	2071	2313	2545	2877	
	189	211	229	285	315	343	406	461	476	492	645	738	843	935	1163	1288	1462	1593	
53	304	341	369	463	512	560	664	771	795	821	1069	1224	1416	1589	1993	2226	2449	2775	2921
	179	200	216	270	297	325	384	444	458	473	609	697	796	882	1098	1216	1380	1504	1628
54	294	329	357	447	495	541	641	742	780	805	1029	1179	1364	1531	1920	2144	2359	2679	2813
	169	189	205	256	282	308	364	420	440	454	575	658	752	834	1038	1150	1305	1421	1539
55	284	318	345	432	478	522	619	715	766	791	992	1136	1314	1475	1850	2066	2273	2587	2711
	161	179	194	243	267	292	345	397	417	438	544	623	712	789	982	1088	1234	1344	1456
56	275	308	333	418	462	505	598	690	738	776	957	1096	1267	1423	1784	1993	2192	2499	2614
	153	170	184	230	254	277	327	376	395	422	516	590	674	747	930	1030	1169	1273	1379
57	266	298	322	404	445	488	578	666	713	763	923	1057	1223	1373	1722	1923	2116	2416	2523
	145	162	175	219	240	263	311	354	374	407	489	559	639	708	882	977	1108	1207	1307
58	257	288	312	391	430	473	559	643	688	750	891	1021	1181	1326	1662	1857	2043	2337	2436
	138	154	167	208	228	251	295	336	355	393	464	531	606	672	837	927	1051	1145	1240
59	249	279	302	379	416	458	541	621	665	725	861	986	1141	1281	1606	1794	1974	2262	2354
	131	146	159	196	217	239	281	319	337	374	440	504	576	638	794	880	999	1088	1178
60	242	271	293	367	402	443	524	600	643	701	833	954	1103	1238	1553	1734	1908	2190	2275
	125	140	151	189	206	227	267	304	321	355	419	479	547	607	755	836	949	1034	1120
61	234	262	284	356	389	429	508	581	622	678	805	922	1067	1198	1502	1678	1846	2122	2201
	119	133	144	180	196	216	255	288	304	338	398	456	521	577	718	796	903	984	1065
62	227	254	275	345	376	416	492	562	602	656	779	893	1033	1159	1454	1624	1786	2057	2130
	114	127	137	172	186	206	243	275	290	322	379	434	496	549	684	758	860	937	1014
63	220	247	267	335	364	403	477	544	583	635	755	864	1000	1123	1408	1572	1730	1994	2063
	108	121	131	164	178	196	232	262	276	306	361	413	472	524	652	722	819	892	966
64	214	240	259	325	353	390	463	527	564	616	731	837	969	1088	1364	1523	1676	1934	1998
	104	116	125	157	169	187	221	249	264	292	344	394	450	499	622	688	781	851	922

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	36LH07	36LH08	36LH09	36LH10	36LH11	36LH12	36LH13	36LH14	36LH15	36LH16	36LH17	36LH18	36LH19	36LH20	36LH21	36LH22	36LH23	36LH24	36LH25
Depth (in.)	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Approx. Wt. (lbs./ft.)	16	18	21	21	23	25	30	36	36	44	49	58	64	81	92	100	122	130	149
Span (ft.) ↓																			
36	582	668	851	1006	1064	1273	1533	1689	1828	2341	2699								
	582	668	851	1006	1064	1273	1533	1689	1828	2341	2699								
37	562	644	820	967	1022	1224	1471	1621	1754	2243	2586	2921							
	562	644	820	967	1022	1224	1471	1621	1754	2243	2586	2921							
38	543	620	780	929	983	1177	1412	1556	1684	2150	2479	2800							
	543	620	780	929	983	1177	1412	1556	1684	2139	2449	2799							
39	525	598	762	894	946	1132	1357	1494	1617	2063	2378	2687							
	525	598	762	894	946	1132	1357	1494	1592	1977	2264	2587							
40	508	576	735	860	910	1090	1304	1436	1554	1980	2283	2579	2986						
	508	576	735	839	910	1088	1275	1401	1475	1831	2097	2396	2661						
41	491	556	710	829	876	1049	1254	1381	1494	1902	2193	2477	2863						
	491	553	704	778	847	1009	1183	1300	1369	1699	1946	2224	2469						
42	475	537	685	798	844	1011	1206	1329	1438	1828	2108	2381	2748						
	469	514	655	724	787	938	1100	1209	1272	1580	1809	2068	2295						
43	460	518	661	769	814	974	1161	1279	1384	1758	2027	2290	2638						
	437	479	610	674	733	874	1025	1126	1185	1471	1685	1926	2138						
44	445	500	639	742	785	940	1118	1232	1333	1692	1950	2204	2535						
	408	447	569	629	684	815	956	1050	1106	1372	1572	1796	1994						
45	431	484	618	716	757	907	1078	1187	1285	1629	1878	2122	2437						
	381	417	532	587	639	762	893	981	1033	1282	1468	1678	1863						
46	417	467	597	691	731	875	1039	1145	1239	1569	1809	2044	2345	2949					
	356	391	497	550	598	713	836	918	967	1200	1374	1570	1744	2174					
47	404	452	578	667	706	845	1002	1104	1195	1512	1744	1970	2258	2839					
	334	366	466	515	560	668	783	860	906	1124	1287	1472	1634	2038					
48	392	437	559	645	682	816	967	1066	1153	1459	1682	1900	2175	2735					
	313	344	437	483	526	627	735	807	850	1055	1208	1381	1533	1912					
49	380	423	541	623	659	789	934	1029	1114	1407	1623	1834	2096	2636	2902				
	294	323	411	454	494	589	690	759	799	991	1135	1297	1440	1797	1991				
50	368	410	524	602	637	763	903	994	1076	1359	1562	1771	2022	2542	2799				
	277	304	387	427	465	554	650	714	751	933	1068	1221	1355	1690	1873				
51	357	397	508	583	616	738	872	961	1040	1310	1501	1710	1951	2450	2701				
	261	286	364	403	438	522	612	672	708	878	1006	1150	1276	1592	1764				
52	347	384	492	564	597	715	844	930	1006	1259	1443	1653	1876	2356	2608	2896			
	246	270	343	380	413	492	577	634	667	828	949	1084	1204	1501	1664	1889			
53	337	373	477	546	578	692	816	890	973	1212	1389	1598	1806	2267	2519	2787			
	232	255	324	358	390	465	545	599	630	782	896	1024	1136	1417	1571	1783			
54	327	361	462	527	559	670	790	871	942	1167	1338	1546	1739	2183	2435	2684	2977		
	220	241	306	339	368	439	515	566	596	739	846	967	1074	1340	1484	1685	1838		
55	318	350	449	509	542	650	765	843	912	1125	1289	1491	1676	2104	2351	2587	2878		
	208	228	290	320	349	416	487	535	563	699	801	915	1016	1267	1404	1594	1739		
56	309	340	435	491	526	630	741	817	884	1085	1243	1438	1616	2029	2267	2495	2783	2981	
	197	216	275	303	330	394	461	507	534	662	758	867	962	1200	1330	1510	1647	1787	
57	300	330	423	474	510	611	718	792	857	1047	1200	1388	1560	1958	2188	2408	2692	2877	
	187	204	260	288	313	373	437	481	506	628	719	822	912	1138	1261	1431	1562	1694	
58	292	321	411	454	495	593	697	768	809	1011	1158	1340	1506	1891	2112	2325	2606	2778	
	177	194	247	273	297	354	415	456	480	596	682	780	866	1080	1196	1358	1482	1607	
59	283	311	398	440	480	575	675	755	795	977	1119	1295	1455	1827	2041	2246	2524	2684	
	168	185	235	260	283	338	395	434	464	566	648	740	822	1025	1136	1290	1407	1526	
60	274	302	386	426	465	557	654	729	781	944	1082	1252	1407	1766	1973	2172	2446	2595	
	160	176	224	248	269	322	376	412	448	538	616	704	781	975	1080	1226	1338	1451	
61	266	293	374	413	451	540	634	706	769	913	1047	1211	1361	1709	1909	2101	2371	2510	2971
	153	168	214	236	257	307	359	392	434	512	586	670	743	927	1027	1166	1273	1380	1608
62	258	284	363	401	438	523	615	683	744	884	1013	1172	1317	1654	1847	2033	2299	2429	2875
	146	160	204	225	246	292	342	373	413	487	558	638	708	883	978	1111	1212	1314	1531
63	251	276	352	389	425	508	596	661	721	856	981	1135	1275	1601	1789	1969	2230	2352	2784
	140	153	195	215	234	279	327	356	394	464	531	607	674	841	932	1058	1155	1252	1458
64	244	268	342	378	412	493	579	641	698	829	950	1099	1236	1551	1733	1907	2165	2279	2697
	134	146	186	206	224	267	312	339	375	443	507	579	643	802	889	1009	1101	1194	1391
65	237	260	333	367	401	478	562	621	677	804	921	1066	1198	1504	1680	1849	2102	2209	2615
	128	140	179	197	214	255	298	323	358	422	484	553	614	766	848	963	1051	1139	1327
66	230	253	323	357	389	464	546	602	656	779	893	1033	1161	1458	1629	1793	2042	2142	2536
	122	134	171	188	205	243	285	309	342	403	462	528	586	731	810	920	1003	1088	1268
67	224	246	314	347	378	450	531	584	637	756	867	1003	1127	1415	1580	1739	1984	2078	2460
	117	128	163	180	196	232	273	295	327	385	441	504	560	699	774	879	959	1040	1211
68	218	239	306	338	368	437	516	567	618	734	841	973	1094	1373	1534	1688	1929	2017	2388
	112	123	157	173	188	222	262	283	312	369	422	482	536	668	740	841	917	994	1158
69	212	233	297	328	358	424	502	551	600	713	817	945	1062	1334	1490	1640	1876	1959	2319
	107	118	150	165	180	213	251	270	299	353	404	462	513	639	708	804	877	952	1109
70	207	227	289	320	348	412	488	535	583	693	794	918	1032	1296	1447	1593	1825	1903	2253
	103	113	144	159	173	204	240	259	286	338	387	442	491	612	678	770	840	911	1061
71	201	221	282	311	339	400	475	520	567	673	771	892	1003	1259	1406	1548	1776	1850	2189
	99	109	138	152	166	195	231	247	274	323	370	423	470	587	650	738	805	873	1017
72	196	215	275	303	330	389	463	505	551	654	750	868	975	1224	1367	1505	1729	1799	2129
	95	104	133	146	159	187	222	237	263	310	355	406	451	562	623	707	772	837	975

LOAD TABLES
ASD - LH-SERIES

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linerar Foot (plf)

Joist Designation	40LH08	40LH09	40LH10	40LH11	40LH12	40LH13	40LH14	40LH15	40LH16	40LH17	40LH18	40LH19	40LH20	40LH21	40LH22	40LH23	40LH24	40LH25
Depth (in.)	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Approx. Wt. (lbs./ft.)	16	21	21	22	25	30	35	36	42	51	56	64	81	93	100	121	127	148
Span (ft.) ↓																		
40	519	705	839	879	1068	1297	1480	1655	1963	2377	2685							
	519	705	839	879	1068	1297	1480	1655	1963	2377	2685							
41	504	682	810	850	1032	1251	1427	1597	1891	2290	2586							
	504	682	810	850	1032	1251	1427	1597	1891	2290	2586							
42	490	660	783	821	997	1207	1377	1540	1822	2206	2492	2912						
	490	660	783	821	997	1207	1377	1540	1822	2206	2492	2874						
43	475	640	757	794	964	1165	1329	1487	1756	2127	2403	2802						
	475	640	757	794	964	1165	1329	1487	1756	2106	2403	2677						
44	462	620	732	767	932	1125	1284	1436	1694	2052	2318	2698						
	462	620	732	767	932	1125	1284	1436	1694	1965	2246	2497						
45	448	601	708	742	902	1087	1240	1387	1635	1980	2236	2599						
	448	601	686	742	902	1061	1217	1357	1490	1836	2099	2333						
46	435	582	685	718	873	1050	1198	1340	1578	1911	2159	2505						
	435	582	642	696	847	993	1139	1270	1394	1718	1964	2183						
47	423	564	663	695	845	1015	1159	1296	1524	1846	2086	2416						
	418	546	602	652	794	931	1067	1190	1307	1610	1840	2046						
48	411	547	642	673	818	982	1121	1254	1473	1784	2015	2331	2933					
	392	512	565	612	745	873	1001	1116	1226	1510	1727	1920	2398					
49	400	531	622	652	792	950	1084	1213	1424	1724	1948	2251	2832					
	368	482	531	575	700	821	941	1049	1152	1419	1623	1804	2253					
50	389	515	603	632	768	920	1050	1174	1377	1668	1884	2174	2735					
	347	453	499	541	659	772	885	987	1084	1335	1527	1697	2120					
51	378	500	584	613	744	891	1016	1137	1332	1614	1823	2101	2643	2910				
	327	427	470	509	620	727	834	930	1021	1258	1438	1598	1997	2213				
52	368	486	566	594	722	863	985	1101	1290	1562	1765	2031	2556	2814				
	308	402	443	480	585	686	786	877	963	1186	1356	1507	1883	2087				
53	358	472	549	576	700	836	954	1067	1249	1513	1709	1965	2472	2722				
	291	380	419	454	552	647	742	828	909	1120	1280	1423	1778	1970				
54	348	458	533	559	679	811	925	1035	1210	1465	1656	1901	2392	2634				
	275	359	396	429	522	612	702	782	859	1058	1210	1345	1680	1862				
55	339	446	518	543	659	786	897	1004	1172	1420	1605	1841	2316	2550	2901			
	260	340	374	406	494	579	664	740	813	1001	1145	1272	1590	1762	2001			
56	330	433	503	527	640	763	870	974	1137	1377	1556	1783	2243	2470	2797			
	246	322	355	384	468	548	629	701	770	948	1084	1205	1505	1668	1895			
57	322	421	488	512	622	740	845	945	1103	1336	1509	1728	2174	2394	2700	2940		
	233	305	336	364	444	520	596	664	730	899	1028	1142	1427	1582	1797	1962		
58	313	410	474	497	604	719	820	918	1070	1296	1465	1675	2107	2321	2607	2849		
	221	289	319	346	421	493	566	631	693	853	975	1084	1354	1501	1705	1862		
59	305	399	461	483	587	698	797	891	1038	1252	1422	1624	2044	2251	2519	2761		
	210	275	303	328	400	468	537	599	658	810	926	1029	1286	1425	1619	1768		
60	297	388	447	470	571	678	774	866	1008	1211	1381	1575	1980	2184	2435	2677	2914	
	200	261	288	312	380	445	511	569	625	770	880	979	1222	1355	1539	1681	1825	
61	290	378	433	457	555	659	752	842	980	1171	1341	1524	1915	2119	2355	2597	2819	
	190	249	274	297	361	424	486	542	595	732	837	931	1163	1289	1464	1599	1736	
62	283	368	419	445	540	641	731	818	952	1133	1303	1475	1853	2058	2279	2521	2728	
	181	237	261	283	344	403	462	516	566	697	797	886	1107	1227	1394	1523	1653	
63	276	358	406	433	526	623	711	796	925	1097	1267	1428	1795	1999	2207	2447	2642	
	173	226	249	269	328	384	441	491	540	664	760	845	1055	1169	1328	1451	1575	
64	269	349	394	421	512	606	692	774	900	1063	1230	1384	1739	1943	2138	2377	2560	
	165	215	237	257	313	366	420	469	515	634	724	805	1006	1115	1267	1383	1502	
65	262	340	382	410	498	590	673	753	875	1031	1192	1341	1685	1883	2073	2309	2481	2937
	157	205	226	245	298	350	401	447	491	605	691	769	960	1064	1209	1320	1434	1671
66	254	332	367	399	486	573	656	734	808	999	1156	1301	1634	1826	2010	2245	2406	2849
	150	196	216	234	285	334	383	427	469	577	660	734	917	1016	1154	1261	1369	1596
67	247	323	357	388	472	557	638	712	796	970	1122	1262	1586	1772	1950	2183	2334	2764
	144	188	207	224	273	320	367	408	455	552	631	701	876	971	1103	1205	1308	1525
68	241	315	347	378	459	542	620	691	784	941	1089	1225	1539	1720	1893	2123	2266	2683
	138	180	198	215	261	307	351	390	441	528	603	671	838	929	1055	1152	1251	1458
69	234	306	338	368	447	528	603	671	772	914	1057	1189	1495	1670	1838	2066	2200	2605
	132	173	190	207	251	295	336	373	428	505	577	642	802	889	1010	1103	1197	1396
70	228	298	329	358	435	514	587	652	761	888	1027	1155	1452	1622	1786	2011	2138	2531
	127	166	183	198	241	283	323	357	416	483	553	615	768	851	967	1056	1146	1336
71	222	291	321	349	424	500	571	633	751	863	998	1123	1411	1577	1736	1958	2078	2460
	122	160	176	190	231	271	309	342	404	463	530	589	736	815	926	1012	1098	1280
72	217	283	313	340	413	487	556	616	730	839	971	1092	1372	1533	1688	1907	2020	2391
	117	153	169	183	222	260	297	328	387	444	508	564	705	782	888	970	1053	1227
73	211	276	305	332	402	475	542	599	710	816	944	1062	1335	1491	1641	1858	1965	2326
	112	147	162	176	213	250	285	315	371	426	487	541	677	750	852	930	1010	1177
74	206	269	297	323	392	463	528	583	691	794	919	1033	1299	1451	1597	1811	1912	2263
	108	141	156	169	205	241	273	302	356	409	468	520	649	720	818	893	970	1130
75	201	263	290	315	382	451	515	567	673	773	894	1006	1264	1412	1555	1765	1861	2203
	104	136	150	163	197	231	263	290	342	393	449	499	624	691	785	858	931	1085
76	196	256	283	308	373	440	502	552	655	753	871	979	1231	1375	1514	1722	1812	2145
	100	131	144	157	189	223	252	279	329	377	431	480	599	664	754	824	895	1043
77	192	250	276	300	364	429	490	538	638	733	848	954	1199	1339	1475	1680	1765	2090
	97	126	139	151	182	214	243	268	316	363	415	461	576	638	725	792	860	1003
78	187	244	269	293	355	419	478	524	622	714	826	930	1168	1305	1437	1639	1720	2036
	93	122	134	145	176	207	233	258	304	349	399	443	554	614	698	762	827	964
79	183	239	262	286	346	409	466	511	606	696	806	906	1139	1272	1401	1600	1676	1985
	90	118	129	140	169	199	225	248	292	336	384	427	533	591	671	733	796	928
80	178	233	255	279	338	399	455	498	591	679	785	883	1110	1240	1366	1562	1635	1935
	86	113	124	135	163	192	216	239	282	323	370	411	513	569	646	706	767	893

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linerar Foot (plf)

Joist Designation	44LH09	44LH10	44LH11	44LH12	44LH13	44LH14	44LH15	44LH16	44LH17	44LH18	44LH19	44LH20	44LH21	44LH22	44LH23	44LH24	44LH25
Depth (in.)	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Approx. Wt. (lbs./ft.)	19	21	22	25	30	31	36	42	47	57	64	82	93	101	118	127	147
Span (ft.) ↓																	
44	585	645	760	897	1058	1260	1466	1730	1929	2388	2816						
	585	645	760	897	1058	1260	1466	1730	1929	2388	2816						
45	568	627	738	870	1026	1220	1420	1673	1866	2310	2718						
	568	627	738	870	1026	1220	1420	1673	1866	2310	2718						
46	552	609	716	844	995	1182	1375	1619	1806	2235	2625						
	552	609	716	844	995	1182	1375	1619	1806	2235	2625						
47	537	592	695	819	966	1146	1333	1567	1748	2164	2537						
	537	592	695	819	966	1146	1333	1567	1748	2164	2504						
48	522	576	674	795	938	1111	1292	1518	1693	2095	2452						
	522	576	674	795	938	1111	1292	1518	1661	2095	2350						
49	508	560	655	772	910	1077	1253	1470	1640	2030	2371	2985					
	508	560	652	772	910	1077	1253	1460	1561	1984	2208	2762					
50	494	545	636	750	884	1045	1215	1424	1589	1967	2294	2888					
	494	545	613	750	884	1028	1194	1374	1468	1867	2077	2598					
51	481	530	618	728	859	1013	1179	1381	1540	1907	2220	2796					
	481	530	578	713	845	968	1125	1294	1383	1758	1957	2447					
52	468	516	600	708	835	984	1145	1339	1493	1849	2150	2707	2980				
	458	504	545	672	797	913	1061	1220	1304	1658	1845	2308	2559				
53	455	502	583	688	811	955	1111	1299	1448	1793	2083	2622	2887				
	432	476	514	635	753	862	1002	1152	1231	1566	1742	2179	2416				
54	443	489	567	669	789	927	1079	1260	1406	1740	2018	2541	2798				
	409	450	486	600	711	815	947	1089	1164	1480	1646	2059	2283				
55	432	476	551	650	767	901	1048	1223	1364	1689	1956	2463	2712				
	387	426	460	568	673	771	896	1030	1101	1400	1558	1948	2160				
56	421	464	536	633	746	876	1019	1188	1325	1640	1897	2389	2630				
	366	403	436	538	637	730	848	976	1043	1326	1475	1845	2046				
57	410	452	522	616	726	851	990	1154	1287	1593	1841	2318	2552	2991			
	347	382	413	510	604	692	804	925	989	1257	1398	1749	1939	2203			
58	399	440	508	599	708	828	963	1121	1250	1548	1787	2249	2477	2889			
	329	363	392	484	573	657	763	878	938	1192	1327	1660	1840	2091			
59	389	429	494	583	688	805	937	1089	1215	1505	1735	2184	2405	2791	2970		
	313	344	372	459	544	624	725	834	891	1133	1260	1576	1748	1986	2171		
60	379	418	481	568	670	783	911	1059	1181	1463	1685	2121	2336	2698	2883		
	297	327	354	437	518	593	689	792	847	1077	1198	1498	1661	1887	2064		
61	370	408	469	553	652	762	887	1030	1149	1423	1637	2061	2270	2610	2799		
	283	312	337	415	492	564	655	754	806	1024	1140	1425	1580	1796	1963		
62	361	398	457	539	636	742	863	1002	1118	1384	1591	2003	2206	2526	2718		
	269	297	320	396	469	537	624	718	767	975	1085	1357	1505	1710	1869		
63	352	388	445	525	619	722	841	975	1088	1347	1547	1948	2145	2446	2641	2932	
	257	283	305	377	447	512	595	684	731	929	1034	1293	1434	1629	1781	1936	
64	343	379	434	512	604	704	819	949	1059	1311	1504	1894	2086	2370	2567	2840	
	245	270	291	359	426	488	567	652	697	886	986	1233	1367	1554	1699	1846	
65	335	370	423	499	589	685	798	924	1031	1277	1464	1843	2029	2297	2496	2753	
	234	257	278	343	407	466	541	622	665	846	941	1177	1305	1483	1621	1762	
66	327	361	411	487	574	668	777	900	1004	1244	1424	1794	1975	2228	2428	2670	
	223	246	265	328	388	445	517	594	635	807	898	1124	1246	1416	1548	1683	
67	319	352	399	475	560	651	758	877	978	1212	1387	1746	1923	2161	2363	2590	
	213	235	254	313	371	425	494	568	607	772	859	1074	1191	1353	1479	1608	
68	312	344	388	463	546	635	739	855	954	1181	1350	1700	1873	2098	2300	2514	2977
	204	225	243	299	355	406	472	543	581	738	821	1027	1139	1294	1415	1538	1793
69	304	336	377	452	533	619	721	833	930	1151	1315	1656	1824	2037	2239	2442	2891
	195	215	232	286	340	389	452	520	556	706	786	983	1090	1238	1354	1471	1716
70	297	328	366	441	521	604	703	813	906	1123	1279	1609	1778	1979	2181	2372	2809
	187	206	222	274	325	372	433	498	532	676	752	941	1043	1186	1296	1409	1643
71	291	321	356	431	508	589	686	792	884	1095	1243	1563	1733	1923	2125	2305	2730
	179	197	213	263	312	357	415	477	510	648	721	902	1000	1136	1242	1350	1574
72	284	313	347	421	496	575	670	773	863	1068	1209	1520	1689	1870	2070	2241	2654
	172	189	204	252	299	342	398	457	489	621	691	864	958	1089	1191	1294	1509
73	278	306	338	411	485	562	654	754	842	1043	1176	1479	1648	1819	2018	2180	2582
	165	181	196	242	287	328	381	439	469	596	663	829	919	1045	1142	1242	1448
74	272	300	325	402	477	549	639	737	790	1016	1144	1439	1607	1770	1968	2121	2512
	158	174	188	232	275	315	366	421	450	572	636	796	882	1003	1096	1192	1390
75	265	293	317	393	466	534	623	719	780	989	1113	1400	1565	1723	1920	2065	2445
	152	168	181	224	265	302	352	405	438	549	611	764	847	963	1053	1144	1335
76	259	286	310	383	454	520	608	701	769	963	1084	1364	1524	1678	1873	2011	2381
	146	162	175	215	254	291	339	390	426	528	587	734	814	925	1012	1100	1282
77	253	279	302	374	444	506	593	684	759	938	1056	1328	1484	1634	1828	1959	2319
	141	155	168	207	246	279	326	375	415	507	564	706	783	889	973	1057	1233
78	247	272	295	365	433	493	579	668	750	914	1029	1294	1446	1592	1785	1908	2260
	136	150	162	200	236	268	314	362	405	488	543	679	753	856	935	1017	1186
79	242	266	289	356	423	481	565	652	732	891	1003	1262	1410	1552	1743	1860	2203
	131	144	157	192	228	259	303	348	390	469	522	654	725	823	900	978	1141
80	236	260	282	347	413	469	551	637	715	869	978	1230	1374	1513	1702	1814	2148
	127	139	151	185	220	249	292	336	376	452	503	629	698	793	867	942	1099
81	231	254	276	339	404	457	537	622	699	848	954	1200	1341	1476	1663	1769	2095
	122	134	146	179	212	240	281	324	363	435	484	606	672	764	835	907	1058
82	226	249	269	331	395	446	524	608	683	827	931	1171	1308	1440	1625	1726	2044
	118	130	140	172	205	231	271	313	351	420	467	584	648	736	805	875	1020
83	221	243	264	323	386	436	512	594	667	807	908	1142	1276	1405	1588	1684	1995
	114	125	136	166	198	223	261	302	338	404	450	563	624	709	776	843	983
84	216	238	258	315	377	425	500	580	652	788	887	1115	1246	1372	1553	1644	1947
	110	121	131	160	191	215	252	291	327	390	434	543	602	684	748	813	948
85	211	233	252	308	369	415	488	568	638	769	866	1089	1217	1340	1519	1606	1902
	106	117	127	155	185	207	243	282	316	376	419	524	581	660	722	785	915
86	207	228	247	300	361	406	476	555	624	751	846	1064	1189	1309	1485	1569	1858
	103	113	123	149	179	200	234	272	305	363	404	506	561	637	697	758	884
87	202	223	242	293	353	396	466	543	610	734	826	1039	1161	1279	1453	1533	1815
	99	110	119	144	173	193	227	263	295	351	391	489	542	616	673	732	853
88	198	218	236	287	346	387	455	531	597	718	808	1016	1135	1250	1422	1498	1774
	96	106	115	139	167	187	219	255	285	339	377	472	523	595	650	707	824

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linerar Foot (plf)

Joist Designation	48LH10	48LH11	48LH12	48LH13	48LH14	48LH15	48LH16	48LH17	48LH18	48LH19	48LH20	48LH21	48LH22	48LH23	48LH24	48LH25
Depth (in.)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Approx. Wt. (lbs./ft.)	21	22	25	29	32	36	42	47	57	62	79	87	101	109	124	144
Span (ft.) ▼																
48	538	581	756	905	1102	1264	1495	1678	2141	2537						
	538	581	756	905	1102	1264	1495	1678	2141	2537						
49	525	566	736	880	1071	1229	1452	1629	2079	2458						
	525	566	736	880	1071	1229	1452	1629	2079	2458						
50	512	552	717	857	1041	1194	1409	1581	2019	2382						
	512	552	717	857	1041	1194	1409	1581	2019	2382						
51	499	538	698	835	1013	1161	1369	1536	1961	2310	2909					
	499	538	698	835	1013	1161	1369	1536	1961	2310	2909					
52	487	525	680	813	985	1129	1330	1492	1905	2240	2821					
	487	525	680	813	985	1129	1330	1492	1905	2217	2776					
53	475	512	662	792	958	1099	1292	1450	1851	2173	2737					
	475	512	662	792	958	1099	1292	1450	1851	2093	2621					
54	463	500	645	771	932	1069	1256	1409	1799	2109	2656	2925				
	463	500	645	771	932	1069	1251	1399	1776	1978	2477	2747				
55	452	488	628	751	907	1040	1221	1370	1749	2047	2579	2840				
	452	488	628	751	897	1027	1184	1324	1681	1872	2344	2599				
56	441	476	612	732	883	1013	1188	1333	1701	1988	2505	2758				
	441	476	603	720	849	973	1121	1254	1592	1773	2220	2461				
57	431	465	597	714	860	986	1155	1296	1655	1932	2433	2679				
	422	455	572	682	805	922	1063	1188	1509	1680	2104	2333				
58	420	454	582	696	837	960	1124	1261	1611	1877	2365	2604				
	400	432	542	648	764	875	1008	1128	1432	1595	1997	2214				
59	410	443	567	679	815	935	1094	1228	1568	1825	2299	2531	2989			
	380	410	515	615	726	831	958	1071	1360	1514	1896	2103	2390			
60	401	433	553	662	795	911	1065	1195	1526	1774	2235	2461	2906			
	362	390	490	585	690	790	910	1018	1293	1439	1803	1999	2272			
61	392	423	540	646	774	888	1037	1164	1486	1726	2174	2394	2827	2972		
	344	371	466	556	656	751	866	968	1230	1369	1715	1901	2161	2365		
62	382	413	527	630	755	866	1010	1134	1448	1679	2115	2329	2751	2890		
	327	353	444	530	625	715	825	922	1171	1304	1633	1810	2058	2252		
63	374	403	514	615	736	844	984	1105	1411	1634	2059	2267	2678	2810		
	312	336	423	505	595	682	786	879	1116	1242	1556	1725	1961	2146		
64	365	394	502	600	718	823	959	1077	1375	1591	2004	2207	2601	2734		
	298	321	403	481	568	650	749	838	1064	1185	1484	1645	1870	2046		
65	357	385	490	586	700	803	935	1050	1340	1549	1952	2150	2521	2661		
	284	306	385	459	542	620	715	800	1015	1131	1416	1570	1784	1953		
66	349	377	478	572	683	784	912	1024	1307	1509	1902	2094	2445	2590	2934	
	271	292	367	439	517	592	683	764	970	1080	1352	1499	1704	1865	2029	
67	341	368	467	559	667	765	889	998	1275	1471	1853	2040	2372	2522	2846	
	259	279	351	419	494	566	653	730	927	1032	1292	1433	1629	1782	1939	
68	334	360	456	546	651	747	868	974	1244	1433	1806	1989	2303	2457	2763	
	248	267	336	401	473	541	624	698	886	987	1236	1370	1557	1704	1854	
69	326	352	446	533	635	729	847	950	1214	1398	1761	1939	2236	2394	2683	
	237	256	321	384	453	518	597	668	848	944	1182	1311	1490	1631	1774	
70	319	344	436	521	621	712	826	928	1185	1363	1717	1891	2172	2333	2606	
	227	245	308	367	433	496	572	640	812	904	1132	1255	1427	1562	1699	
71	312	337	426	510	606	695	807	906	1157	1329	1675	1845	2111	2274	2533	3000
	218	235	295	352	415	475	548	613	778	866	1085	1203	1367	1496	1628	1899
72	305	330	416	498	592	679	788	884	1129	1297	1634	1800	2053	2218	2463	2917
	209	225	283	337	398	456	525	587	746	831	1040	1153	1311	1434	1560	1821

ASD

STANDARD LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linerar Foot (plf)

Joist Designation	48LH10	48LH11	48LH12	48LH13	48LH14	48LH15	48LH16	48LH17	48LH18	48LH19	48LH20	48LH21	48LH22	48LH23	48LH24	48LH25
Depth (in.)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Approx. Wt. (lbs./ft.)	21	22	25	29	32	36	42	47	57	62	79	87	101	109	124	144
Span (ft.) ↓																
73	299	323	407	487	579	664	769	864	1103	1266	1595	1757	1997	2163	2396	2837
	200	216	271	324	382	437	504	564	715	797	998	1106	1257	1376	1497	1746
74	293	316	398	476	566	649	752	844	1078	1236	1557	1715	1943	2111	2331	2761
	192	207	260	311	367	420	484	541	687	765	958	1062	1207	1321	1437	1676
75	286	309	389	466	553	634	734	824	1053	1207	1520	1675	1891	2060	2269	2687
	184	199	250	298	352	403	464	519	659	734	920	1020	1159	1268	1380	1610
76	281	303	381	456	541	620	718	806	1029	1179	1485	1636	1841	2011	2209	2617
	177	191	240	287	338	387	446	499	634	706	884	980	1114	1219	1326	1547
77	275	297	373	446	529	607	702	788	1006	1151	1451	1598	1794	1964	2152	2549
	170	184	231	276	325	372	429	480	609	678	849	942	1071	1172	1275	1487
78	269	290	365	437	517	594	686	770	984	1125	1418	1561	1748	1918	2097	2484
	164	177	222	265	313	358	413	462	586	652	817	906	1030	1127	1226	1430
79	264	284	357	428	506	581	671	753	962	1100	1384	1526	1704	1874	2044	2421
	158	170	214	255	301	345	397	444	564	628	786	872	991	1084	1180	1376
80	258	279	350	419	495	568	656	737	941	1073	1350	1492	1661	1831	1993	2361
	152	164	206	246	290	332	382	428	543	604	757	839	954	1044	1136	1325
81	253	273	343	410	485	556	642	721	921	1046	1317	1459	1620	1790	1944	2302
	146	158	198	237	279	320	368	412	523	582	729	809	919	1006	1094	1277
82	246	266	336	402	475	545	629	706	901	1021	1284	1427	1581	1750	1897	2246
	141	152	191	228	269	308	355	397	504	561	703	779	886	969	1054	1230
83	241	260	329	393	464	533	615	690	882	996	1254	1396	1543	1711	1851	2192
	136	147	185	221	260	298	343	383	486	541	677	751	854	934	1017	1186
84	236	255	322	384	454	521	601	675	864	972	1224	1366	1506	1674	1807	2140
	132	142	179	213	251	287	331	371	468	522	653	725	824	901	981	1144
85	231	249	315	376	444	510	588	660	843	950	1195	1335	1471	1638	1765	2090
	127	137	173	206	243	278	320	358	452	504	631	699	795	870	946	1104
86	226	244	308	368	434	499	576	646	824	927	1167	1304	1436	1602	1724	2041
	123	133	167	199	234	269	310	346	436	486	609	675	767	840	913	1066
87	221	239	301	360	425	488	563	632	805	906	1140	1274	1403	1568	1684	1995
	119	129	161	193	227	260	299	335	421	469	588	652	741	811	882	1029
88	217	234	295	353	416	478	551	619	786	886	1115	1246	1372	1535	1646	1949
	116	125	156	187	220	252	289	324	407	454	568	630	716	783	852	994
89	212	229	289	345	407	468	540	606	769	866	1090	1218	1341	1503	1609	1906
	112	120	151	180	212	244	280	314	394	438	549	609	692	757	824	961
90	208	225	283	338	399	458	528	593	752	847	1065	1191	1311	1472	1573	1863
	108	117	147	175	206	236	271	304	381	424	531	589	669	732	797	929
91	204	220	277	332	390	448	518	581	735	828	1042	1164	1282	1442	1539	1822
	105	113	142	170	199	228	263	294	368	410	513	569	647	708	770	899
92	200	216	272	325	383	439	507	569	719	810	1019	1139	1254	1413	1505	1783
	102	110	138	164	193	221	255	285	356	397	497	551	626	685	745	870
93	196	212	266	318	375	430	497	558	704	793	998	1115	1228	1385	1473	1745
	99	106	133	159	187	214	247	276	345	384	481	533	606	663	722	842
94	192	208	261	312	367	422	487	547	689	776	976	1091	1201	1357	1442	1708
	96	103	129	154	181	208	239	268	334	372	466	516	587	642	699	815
95	188	204	256	306	360	413	477	536	674	759	956	1068	1176	1330	1411	1672
	93	100	126	150	176	201	232	260	323	360	451	500	568	622	677	790
96	185	200	251	300	353	405	468	525	660	744	936	1046	1152	1304	1382	1637
	90	97	122	145	171	195	225	252	313	349	437	485	551	603	656	765

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	18LH02	18LH03	18LH04	18LH05	18LH06	18LH07	18LH08	18LH09	18LH10	18LH11	18LH12	18LH13	18LH14	18LH15	18LH16	18LH17	18LH18	18LH19	18LH20
Depth (mm)	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457
Approx. Wt. (kN/m)	0.15	0.16	0.18	0.21	0.22	0.25	0.28	0.31	0.34	0.37	0.42	0.49	0.54	0.58	0.65	0.74	0.85	0.92	1.24
Span (mm) ↓																			
5486	11.74 11.74	13.07 13.07	15.16 15.16	17.14 17.14	20.98 20.98	22.31 22.31	25.21 25.21	29.02 27.56	32.55 32.55	36.32 36.32	40.14 40.14								
5791	10.91 10.91	12.15 12.15	14.09 14.09	15.95 15.95	19.39 19.39	20.63 20.63	23.32 21.89	26.72 23.36	29.97 29.97	33.43 33.43	36.96 36.96								
6096	10.17 10.15	11.32 11.29	13.11 13.07	14.85 14.72	17.96 17.06	19.11 17.93	21.59 18.72	24.63 19.97	27.65 26.50	30.85 29.26	34.10 32.48	40.93 37.59							
6401	9.47 8.75	10.55 9.73	12.22 11.26	13.84 12.69	16.68 14.71	17.74 15.45	20.03 16.12	22.79 17.22	25.56 22.83	28.53 25.21	31.53 27.99	37.75 32.39	41.22 35.21						
6706	8.84 7.58	9.85 8.44	11.42 9.77	12.93 11.01	15.51 12.75	16.49 13.41	18.63 13.99	21.13 14.94	23.70 19.81	26.44 21.89	29.23 24.28	34.89 28.10	38.11 30.55	41.28 33.21					
7010	8.27 6.62	9.20 7.36	10.68 8.53	12.09 9.61	14.44 11.14	15.36 11.71	17.35 12.22	19.62 13.04	22.00 17.30	24.56 19.11	27.14 21.21	32.34 24.56	35.31 26.69	38.26 28.99					
7315	7.74 5.82	8.62 6.47	9.99 7.50	11.32 8.44	13.48 9.79	14.33 10.28	16.19 10.74	18.24 11.47	20.47 15.20	22.85 16.79	25.27 18.63	30.04 21.56	32.80 23.45	35.55 25.48	41.02 28.04				
7620	7.25 5.15	8.08 5.72	9.38 6.62	10.62 7.45	12.59 8.65	13.39 9.09	15.13 9.48	17.03 10.12	19.10 13.42	21.32 14.82	23.56 16.46	27.96 19.05	30.54 20.70	33.09 22.50	37.75 24.76	43.05 28.15			
7925	6.82 4.56	7.60 5.07	8.81 5.88	9.98 6.62	11.80 7.67	12.25 8.07	12.78 8.42	13.65 8.98	17.84 11.92	19.92 13.16	22.02 14.60	26.09 16.91	28.50 18.38	30.86 19.97	34.87 21.97	39.76 24.98			
8230	6.45 4.14	7.19 4.62	8.33 5.35	9.45 6.04	10.93 6.84	11.80 7.48	12.30 7.79	13.14 8.33	16.71 10.62	18.65 11.73	20.62 13.03	24.38 15.07	26.63 16.38	28.86 17.80	32.31 19.59	36.83 22.27	42.55 25.37		
8534	6.10 3.77	6.81 4.21	7.80 4.80	8.96 5.51	10.15 6.11	11.38 6.94	11.85 7.23	12.66 7.69	15.67 9.51	17.48 10.50	19.33 11.66	22.83 13.49	24.95 14.68	27.02 15.95	30.01 17.55	34.22 19.94	39.53 22.72		
8839	5.70 3.41	6.39 3.82	7.29 4.31	8.47 5.03	9.45 5.50	10.59 6.24	11.44 6.74	12.22 7.16	14.72 8.55	16.43 9.44	18.16 10.47	21.43 12.14	23.40 13.19	25.36 14.33	27.96 15.77	31.87 17.93	36.82 20.43	41.02 22.44	
9144	5.35 3.09	5.96 3.44	6.84 3.88	7.92 4.53	8.82 4.96	9.89 5.63	11.06 6.23	11.82 6.68	13.84 7.72	15.45 8.52	17.08 9.45	20.13 10.94	22.00 11.90	23.84 12.93	26.10 14.22	29.75 16.17	34.38 18.43	38.29 20.24	
9449	5.03 2.81	5.57 3.10	6.42 3.53	7.41 4.11	8.26 4.48	9.26 5.09	10.46 5.64	11.42 6.10	13.04 6.99	14.53 7.72	16.11 8.56	18.97 9.90	20.72 10.77	22.44 11.70	24.43 12.88	27.85 14.63	32.17 16.68	35.84 18.32	
9754	4.72 2.55	5.23 2.83	6.02 3.19	6.94 3.73	7.74 4.08	8.68 4.62	9.92 5.12	11.07 5.54	12.31 6.34	13.63 7.00	15.20 7.77	17.89 9.00	19.49 9.79	21.17 10.63	22.91 11.70	26.12 13.29	30.18 15.14	33.60 16.65	41.76 20.46
10058	4.46 2.33	4.91 2.58	5.66 2.91	6.53 3.40	7.28 3.70	8.15 4.20	9.35 4.67	10.40 5.04	11.64 5.77	12.81 6.37	14.30 7.07	16.88 8.20	18.31 8.91	19.99 9.69	21.52 10.66	24.54 12.11	28.35 13.80	31.58 15.16	39.24 18.63
10363	4.21 2.14	4.62 2.34	5.32 2.65	6.14 3.09	6.85 3.38	7.67 3.85	8.81 4.26	9.79 4.61	11.00 5.28	12.05 5.82	13.47 6.46	15.89 7.48	17.24 8.14	18.84 8.84	20.27 9.73	23.11 11.06	26.69 12.60	29.74 13.84	36.95 17.03
10668	3.98 1.97	4.36 2.15	5.02 2.43	5.79 2.84	6.46 3.09	7.23 3.51	8.33 3.89	9.23 4.21	10.37 4.83	11.36 5.34	12.69 5.92	14.98 6.85	16.25 7.45	17.76 8.09	19.11 8.91	21.80 10.14	25.17 11.54	28.04 12.68	34.85 15.58
10973	3.77 1.80	4.13 1.98	4.74 2.23	5.47 2.61	6.10 2.84	6.84 3.23	7.88 3.59	8.72 3.88	9.80 4.43	10.74 4.90	11.99 5.44	14.15 6.30	15.36 6.84	16.78 7.44	18.05 8.18	20.59 9.31	23.78 10.60	26.50 11.64	32.92 14.31

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	20LH02	20LH03	20LH04	20LH05	20LH06	20LH07	20LH08	20LH09	20LH10	20LH11	20LH12	20LH13	20LH14	20LH15	20LH16	20LH17	20LH18	20LH19	20LH20
Depth (mm)	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508	508
Approx. Wt. (kN/m)	0.15	0.16	0.18	0.20	0.22	0.25	0.28	0.31	0.34	0.36	0.41	0.50	0.54	0.58	0.66	0.80	0.89	1.01	1.27
Span (mm) ▼																			
6096	10.39	12.06	13.28	15.46	17.89	20.82	22.62	25.84	27.90	33.72	37.28								
	9.92	10.93	13.28	14.88	17.89	20.82	21.70	23.64	25.49	33.72	37.28								
6401	9.77	11.16	12.41	14.44	16.72	19.36	21.04	23.94	25.86	31.24	34.54	41.54							
	8.55	9.42	11.96	12.82	16.72	18.08	18.70	20.37	21.97	31.24	34.54	40.83							
6706	9.15	10.43	11.61	13.52	15.63	18.03	19.59	22.24	24.00	29.01	32.07	38.46	42.01						
	7.42	8.17	10.39	11.13	14.69	15.70	16.22	17.68	19.07	27.50	30.54	35.43	38.52						
7010	8.56	9.77	10.88	12.62	14.66	16.84	18.30	20.69	22.32	26.99	29.84	35.71	38.99	42.24					
	6.47	7.13	9.06	9.71	12.84	13.70	14.17	15.44	16.65	24.03	26.67	30.95	33.65	36.58					
7315	8.04	9.17	10.21	11.83	13.74	15.74	17.10	19.29	20.81	25.15	27.81	33.21	36.28	39.30					
	5.69	6.27	7.96	8.53	11.28	12.03	12.44	13.57	14.63	21.11	23.43	27.18	29.56	32.13					
7620	7.54	8.61	9.60	11.03	12.93	14.75	16.00	18.00	19.43	23.49	25.97	30.95	33.81	36.63	42.52				
	5.03	5.54	7.03	7.54	9.96	10.63	11.00	11.98	12.93	18.65	20.69	24.02	26.10	28.38	31.27				
7925	6.45	6.84	8.37	8.98	11.99	12.81	13.25	14.44	15.58	21.97	24.29	28.91	31.58	34.20	39.27				
	4.46	4.91	6.24	6.69	8.84	9.44	9.76	10.63	11.47	16.54	18.37	21.32	23.17	25.18	27.75				
8230	6.37	6.75	8.26	8.88	11.54	12.33	12.74	13.90	15.00	20.59	22.78	27.04	29.55	32.01	36.38	41.53			
	4.42	4.85	5.92	6.37	8.18	8.74	9.03	9.85	10.56	14.75	16.38	19.00	20.66	22.46	24.75	28.16			
8534	6.28	6.68	8.14	8.78	11.13	11.87	12.28	13.39	14.46	19.33	21.38	25.34	27.69	30.00	33.79	38.58			
	4.34	4.62	5.63	6.07	7.60	8.11	8.39	9.13	9.82	13.20	14.66	17.01	18.50	20.11	22.16	25.21			
8839	5.98	6.59	7.70	8.68	10.55	11.47	11.86	12.93	13.95	18.18	20.11	23.81	26.00	28.18	31.47	35.94	41.51		
	3.99	4.40	5.13	5.76	6.96	7.55	7.82	8.47	9.13	11.87	13.19	15.29	16.63	18.08	19.92	22.67	25.84		
9144	5.66	6.33	7.23	8.33	9.90	11.09	11.45	12.49	13.48	17.11	18.94	22.40	24.47	26.51	29.39	33.55	38.77	43.27	
	3.64	4.08	4.67	5.34	6.23	7.06	7.29	7.90	8.53	10.71	11.89	13.80	15.00	16.31	17.97	20.46	23.32	25.67	
9449	5.32	6.04	6.81	7.93	9.26	10.37	11.09	12.08	13.04	16.15	17.86	21.10	23.05	24.98	27.50	31.40	36.28	40.49	
	3.32	3.76	4.24	4.91	5.63	6.39	6.82	7.39	7.95	9.70	10.77	12.49	13.58	14.76	16.27	18.51	21.11	23.23	
9754	5.02	5.76	6.42	7.48	8.69	9.73	10.53	11.70	12.62	15.25	16.87	19.90	21.75	23.56	25.80	29.45	34.03	37.97	
	3.03	3.47	3.86	4.49	5.12	5.80	6.24	6.93	7.44	8.81	9.77	11.35	12.34	13.41	14.78	16.81	19.17	21.10	
10058	4.74	5.42	6.07	7.06	8.17	9.15	10.02	11.35	12.24	14.38	15.96	18.81	20.56	22.27	24.24	27.67	31.97	35.69	
	2.77	3.18	3.54	4.10	4.67	5.28	5.76	6.37	6.99	8.02	8.90	10.33	11.23	12.21	13.45	15.32	17.46	19.22	
10363	4.48	5.13	5.73	6.68	7.69	8.61	9.54	11.01	11.87	13.54	15.11	17.80	19.39	21.07	22.82	26.05	30.10	33.59	41.84
	2.53	2.91	3.25	3.76	4.26	4.83	5.32	5.82	6.53	7.32	8.14	9.44	10.27	11.16	12.30	13.99	15.95	17.55	21.64
10668	4.24	4.85	5.42	6.33	7.25	8.11	9.06	10.39	11.54	12.76	14.25	16.85	18.30	19.97	21.52	24.57	28.39	31.68	39.46
	2.33	2.68	2.99	3.47	3.89	4.42	4.90	5.34	5.99	6.71	7.45	8.65	9.39	10.21	11.26	12.81	14.60	16.08	19.81
10973	4.01	4.61	5.15	5.99	6.84	7.67	8.58	9.82	10.91	12.06	13.47	15.92	17.27	18.88	20.34	23.21	26.82	29.93	37.27
	2.14	2.46	2.75	3.19	3.59	4.05	4.50	4.90	5.50	6.15	6.84	7.93	8.63	9.38	10.34	11.76	13.41	14.76	18.19
11278	3.82	4.36	4.88	5.69	6.47	7.25	8.14	9.28	10.31	11.41	12.74	15.07	16.35	17.86	19.24	21.96	25.37	28.32	35.27
	1.98	2.27	2.53	2.94	3.29	3.73	4.15	4.50	5.04	5.67	6.30	7.31	7.95	8.63	9.51	10.82	12.34	13.58	16.75
11582	3.63	4.13	4.64	5.41	6.14	6.87	7.73	8.80	9.77	10.81	12.08	14.28	15.49	16.92	18.22	20.81	24.05	26.83	33.42
	1.83	2.08	2.34	2.72	3.05	3.44	3.82	4.15	4.67	5.23	5.80	6.74	7.32	7.96	8.78	9.99	11.39	12.53	15.45
11887	3.45	3.92	4.42	5.15	5.82	6.52	7.34	8.34	9.28	10.25	11.45	13.55	14.71	16.06	17.30	19.74	22.82	25.46	31.71
	1.70	1.94	2.17	2.52	2.80	3.18	3.53	3.85	4.31	4.83	5.37	6.23	6.77	7.36	8.11	9.23	10.53	11.58	14.28
12192	3.28	3.72	4.21	4.90	5.53	6.20	6.99	7.93	8.81	9.74	10.88	12.87	13.96	15.26	16.44	18.76	21.68	24.19	30.13
	1.57	1.79	2.02	2.34	2.59	2.94	3.28	3.56	3.99	4.48	4.97	5.76	6.27	6.81	7.51	8.55	9.74	10.72	13.22

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	24LH03	24LH04	24LH05	24LH06	24LH07	24LH08	24LH09	24LH10	24LH11	24LH12	24LH13	24LH14	24LH15	24LH16	24LH17	24LH18	24LH19	24LH20	24LH21
Depth (mm)	610	610	610	610	610	610	610	610	610	610	610	610	610	610	610	610	610	610	610
Approx. Wt. (kN/m)	0.16	0.18	0.19	0.23	0.25	0.26	0.31	0.34	0.36	0.39	0.47	0.51	0.55	0.61	0.72	0.83	0.90	1.15	1.28
Span (mm) ▼																			
7315	9.69	10.55	12.06	15.19	17.71	18.78	24.24	26.03	28.42	32.61	39.22	42.84							
	9.69	10.55	12.06	15.19	17.71	18.78	23.61	25.04	26.21	32.61	39.22	42.84							
7620	9.13	9.93	11.36	14.31	16.63	17.62	22.69	24.37	26.61	30.54	36.64	40.03	43.37						
	8.72	9.93	11.36	14.31	16.63	17.62	20.85	22.10	23.16	30.54	35.68	38.81	42.22						
7925	8.61	9.36	10.72	13.49	15.64	16.57	21.27	22.83	24.95	28.63	34.29	37.46	40.60						
	7.73	9.36	10.14	13.49	14.88	15.80	18.50	19.62	20.54	27.20	31.68	34.45	37.47						
8230	8.12	8.84	10.12	12.75	14.72	15.60	19.97	21.43	23.45	26.89	32.15	35.12	38.06						
	6.90	8.46	9.04	12.06	13.28	14.09	16.50	17.49	18.32	24.25	28.23	30.72	33.42						
8534	7.69	8.36	9.57	12.06	13.83	14.71	18.79	20.16	22.05	25.30	30.19	32.98	35.74	41.37					
	6.17	7.57	8.09	10.81	11.87	12.62	14.78	15.67	16.40	21.71	25.29	27.50	29.91	33.02					
8839	7.26	7.90	9.06	11.41	13.06	13.87	17.74	19.00	20.76	23.83	28.39	31.02	33.62	38.54					
	5.56	6.81	7.28	9.71	10.68	11.35	13.28	14.08	14.75	19.52	22.73	24.73	26.89	29.69					
9144	6.88	7.50	8.58	10.81	12.37	13.11	16.69	17.92	19.57	22.47	26.75	29.21	31.66	35.98	41.14				
	5.00	6.14	6.56	8.77	9.64	10.24	11.98	12.71	13.30	17.61	20.51	22.31	24.26	26.79	30.55				
9449	6.53	7.10	8.09	10.25	11.67	12.40	15.81	16.92	18.44	21.23	25.23	27.56	29.87	33.68	38.49				
	4.53	5.56	5.95	7.93	8.72	9.26	10.85	11.51	12.05	15.95	18.56	20.19	21.96	24.25	27.65				
9754	6.20	6.74	7.60	9.73	10.91	11.76	14.88	15.64	17.01	20.08	23.83	26.05	28.22	31.58	36.10	41.73			
	4.11	5.04	5.39	7.20	7.92	8.42	9.85	10.44	10.94	14.49	16.87	18.34	19.94	22.02	25.11	28.66			
10058	5.89	6.42	7.18	9.26	10.30	11.14	13.93	14.52	15.38	19.03	22.54	24.64	26.70	29.68	33.93	39.22			
	3.75	4.59	4.91	6.56	7.22	7.66	8.97	9.51	9.96	13.19	15.36	16.71	18.16	20.06	22.88	26.12			
10363	4.99	6.11	6.55	8.81	9.70	10.31	12.14	12.87	13.52	18.03	21.36	23.35	25.30	27.94	31.94	36.92	41.32		
	3.42	4.20	4.49	5.99	6.59	7.00	8.20	8.69	9.10	12.05	14.03	15.26	16.60	18.32	20.89	23.86	26.32		
10668	4.94	5.80	6.50	8.44	9.31	9.88	11.79	12.49	13.13	17.13	20.27	22.13	23.99	26.35	30.12	34.82	38.98		
	3.29	3.86	4.33	5.57	6.14	6.52	7.73	8.15	8.58	11.03	12.85	13.98	15.20	16.78	19.14	21.84	24.12		
10973	4.90	5.53	6.42	8.09	8.94	9.47	11.45	12.14	12.76	16.27	19.24	21.02	22.79	24.89	28.45	32.90	36.82		
	3.18	3.59	4.15	5.19	5.73	6.07	7.31	7.70	8.09	10.14	11.80	12.84	13.96	15.41	17.58	20.06	22.15		
11278	4.71	5.25	6.11	7.73	8.58	9.07	11.14	11.80	12.41	15.48	18.30	19.99	21.67	23.55	26.92	31.12	34.83	43.51	
	2.97	3.31	3.85	4.83	5.35	5.66	6.71	7.29	7.66	9.32	10.85	11.82	12.85	14.18	16.18	18.46	20.38	25.23	
11582	4.48	5.00	5.82	7.35	8.24	8.71	10.66	11.49	12.09	14.72	17.41	18.94	20.62	22.32	25.52	29.49	33.01	41.24	
	2.74	3.06	3.56	4.46	5.00	5.28	6.18	6.91	7.26	8.61	10.02	10.90	11.85	13.09	14.92	17.03	18.79	23.27	
11887	4.27	4.77	5.54	7.00	7.89	8.34	10.15	11.20	11.77	13.96	16.56	17.97	19.64	21.17	24.21	27.99	31.33	39.14	43.67
	2.55	2.84	3.29	4.14	4.67	4.93	5.73	6.40	6.88	7.95	9.26	10.06	10.96	12.09	13.79	15.74	17.38	21.51	23.80
12192	4.07	4.55	5.29	6.66	7.53	7.95	9.67	10.75	11.48	13.28	15.73	17.07	18.66	20.12	23.01	26.60	29.77	37.18	41.50
	2.36	2.65	3.06	3.83	4.33	4.58	5.29	5.92	6.55	7.36	8.58	9.32	10.14	11.20	12.78	14.57	16.09	19.92	22.03
12497	3.89	4.34	5.06	6.37	7.16	7.58	9.22	10.24	11.20	12.62	14.97	16.24	17.76	19.14	21.89	25.30	28.32	35.37	39.49
	2.21	2.46	2.86	3.57	4.02	4.26	4.91	5.51	6.10	6.82	7.95	8.65	9.41	10.39	11.86	13.52	14.94	18.49	20.46
12802	3.72	4.15	4.83	6.08	6.82	7.25	8.78	9.74	10.71	12.02	14.25	15.48	16.91	18.24	20.85	24.10	26.98	33.69	37.62
	2.05	2.30	2.65	3.32	3.75	3.96	4.56	5.12	5.66	6.34	7.39	8.05	8.75	9.66	11.01	12.57	13.89	17.19	19.01
13106	3.56	3.98	4.62	5.82	6.50	6.93	8.37	9.29	10.23	11.47	13.60	14.75	16.12	17.39	19.89	22.98	25.72	32.13	35.87
	1.92	2.15	2.49	3.07	3.48	3.70	4.26	4.75	5.26	5.92	6.88	7.50	8.15	9.00	10.27	11.71	12.93	16.00	17.71
13411	3.41	3.82	4.43	5.56	6.21	6.64	7.99	8.87	9.79	10.96	12.98	14.09	15.39	16.60	18.98	21.94	24.56	30.69	34.25
	1.80	2.01	2.33	2.87	3.25	3.47	3.96	4.43	4.91	5.51	6.42	6.99	7.60	8.39	9.57	10.93	12.06	14.92	16.52
13716	3.26	3.66	4.24	5.31	5.93	6.34	7.64	8.49	9.36	10.46	12.40	13.47	14.72	15.87	18.14	20.97	23.48	29.31	32.73
	1.69	1.89	2.18	2.68	3.03	3.23	3.70	4.15	4.59	5.15	6.01	6.53	7.10	7.85	8.94	10.21	11.26	13.95	15.44
14021	3.13	3.51	4.08	5.07	5.67	6.08	7.31	8.11	8.98	10.01	11.86	12.88	14.08	15.19	17.36	20.06	22.46	28.04	31.31
	1.59	1.78	2.05	2.51	2.84	3.03	3.47	3.88	4.29	4.83	5.61	6.11	6.65	7.34	8.37	9.55	10.55	13.06	14.44
14326	3.02	3.37	3.92	4.87	5.44	5.83	7.00	7.77	8.61	9.58	11.36	12.33	13.48	14.53	16.62	19.22	21.51	26.86	29.99
	1.48	1.66	1.92	2.34	2.65	2.86	3.25	3.63	4.02	4.52	5.26	5.73	6.23	6.87	7.85	8.96	9.88	12.22	13.52
14630	2.90	3.23	3.76	4.67	5.21	5.60	6.71	7.45	8.27	9.19	10.90	11.82	12.93	13.93	15.93	18.41	20.60	25.74	28.73
	1.40	1.56	1.80	2.21	2.49	2.68	3.05	3.41	3.77	4.24	4.94	5.37	5.85	6.45	7.35	8.40	9.28	11.48	12.69

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	28LH05	28LH06	28LH07	28LH08	28LH09	28LH10	28LH11	28LH12	28LH13	28LH14	28LH15	28LH16	28LH17	28LH18	28LH19	28LH20	28LH21	28LH22	28LH23
Depth (mm)	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711	711
Approx. Wt. (kN/m)	0.19	0.23	0.25	0.26	0.31	0.34	0.36	0.39	0.44	0.51	0.55	0.61	0.72	0.82	0.92	1.15	1.28	1.49	1.62
Span (mm) ↓																			
8534	9.13	12.12	14.12	15.11	19.58	20.98	22.91	26.83	29.68	35.88	38.89								
	9.13	12.12	14.12	15.11	19.58	20.98	22.91	26.83	28.37	35.88	38.89								
8839	8.69	11.54	13.42	14.34	18.54	19.87	21.70	25.40	28.04	33.91	36.74	43.22							
	8.69	11.54	13.42	14.34	18.54	19.87	21.70	24.43	25.49	33.91	36.74	41.43							
9144	8.28	11.01	12.75	13.63	17.57	18.84	20.56	24.09	26.53	32.09	34.77	40.83							
	8.28	11.01	12.75	13.63	17.30	18.84	20.13	22.03	22.99	31.08	33.81	37.37							
9449	7.90	10.50	12.12	12.97	16.68	17.87	19.51	22.85	25.13	30.39	32.93	38.63							
	7.90	10.50	11.93	12.74	15.67	17.06	18.22	19.94	20.82	28.13	30.61	33.84							
9754	7.54	10.02	11.54	12.34	15.83	16.97	18.53	21.71	23.83	28.82	31.23	36.58	42.14						
	7.28	9.60	10.84	11.57	14.22	15.49	16.54	18.12	18.91	25.55	27.80	30.73	35.11						
10058	7.20	9.57	10.98	11.76	15.06	16.14	17.61	20.63	22.62	27.36	29.65	34.68	39.95						
	6.62	8.75	9.88	10.53	12.95	14.11	15.07	16.50	17.23	23.27	25.32	27.99	31.98						
10363	6.88	9.15	10.47	11.20	14.33	15.35	16.76	19.64	21.51	26.00	28.18	32.93	37.82	42.84					
	6.05	7.99	9.01	9.63	11.83	12.88	13.77	15.07	15.74	21.26	23.13	25.56	29.21	33.36					
10668	6.58	8.75	9.99	10.69	13.64	14.62	15.96	18.70	20.46	24.73	26.80	31.18	35.68	40.73					
	5.54	7.32	8.26	8.81	10.84	11.80	12.62	13.80	14.41	19.48	21.19	23.42	26.76	30.55					
10973	6.30	8.37	9.54	10.21	13.01	13.95	15.22	17.84	19.48	23.55	25.53	29.45	33.71	38.74	43.70				
	5.09	6.72	7.58	8.09	9.95	10.84	11.58	12.68	13.23	17.89	19.45	21.51	24.57	28.06	31.04				
11278	6.04	8.02	9.12	9.76	12.41	13.30	14.53	17.01	18.56	22.46	24.34	27.87	31.90	36.87	41.34				
	4.68	6.18	6.97	7.45	9.16	9.98	10.66	11.67	12.18	16.46	17.90	19.78	22.62	25.83	28.57				
11582	5.77	7.69	8.72	9.34	11.86	12.71	13.87	16.24	17.71	21.42	23.21	26.41	30.22	34.95	39.18				
	4.31	5.70	6.43	6.87	8.44	9.20	9.83	10.77	11.23	15.17	16.52	18.25	20.85	23.81	26.35				
11887	5.54	7.36	8.36	8.93	11.33	12.15	13.26	15.54	16.92	20.46	22.18	25.05	28.67	33.17	37.18				
	3.99	5.28	5.95	6.34	7.82	8.50	9.09	9.95	10.39	14.03	15.26	16.88	19.27	22.02	24.37				
12192	5.32	7.07	8.01	8.56	10.84	11.63	12.69	14.87	16.17	19.55	21.20	23.81	27.24	31.50	35.33				
	3.70	4.88	5.51	5.88	7.23	7.88	8.42	9.22	9.61	13.00	14.14	15.63	17.86	20.40	22.56				
12497	5.10	6.80	7.67	8.20	10.33	11.13	12.15	14.24	15.46	18.70	20.28	22.66	25.93	29.99	33.60	42.08			
	3.44	4.53	5.12	5.45	6.71	7.31	7.82	8.55	8.93	12.06	13.11	14.50	16.57	18.92	20.94	26.00			
12802	4.91	6.53	7.36	7.88	9.73	10.63	11.38	12.50	13.06	17.92	19.42	21.58	24.69	28.56	32.01	40.08			
	3.19	4.21	4.75	5.07	6.24	6.80	7.26	7.95	8.30	11.22	12.20	13.48	15.41	17.60	19.46	24.18			
13106	4.71	6.26	7.06	7.54	9.32	10.27	11.12	12.21	12.75	17.17	18.60	20.57	23.55	27.23	30.53	38.23	42.68		
	2.99	3.94	4.45	4.74	5.83	6.40	6.93	7.58	7.92	10.44	11.36	12.56	14.34	16.38	18.14	22.51	24.92		
13411	4.52	6.01	6.77	7.23	8.93	9.90	10.74	11.93	12.46	16.47	17.84	19.64	22.48	26.00	29.15	36.49	40.76		
	2.80	3.69	4.15	4.45	5.47	6.04	6.53	7.23	7.55	9.74	10.59	11.71	13.38	15.29	16.91	21.00	23.24		
13716	4.33	5.76	6.49	6.93	8.55	9.50	10.37	11.67	12.18	15.80	17.13	18.78	21.49	24.85	27.85	34.87	38.95	42.84	
	2.62	3.47	3.89	4.15	5.12	5.66	6.17	6.94	7.22	9.10	9.90	10.94	12.50	14.28	15.80	19.62	21.73	24.63	
14021	4.17	5.53	6.23	6.65	8.21	9.12	9.95	11.41	11.90	15.17	16.46	17.96	20.56	23.77	26.66	33.37	37.25	40.97	
	2.46	3.25	3.66	3.91	4.80	5.31	5.79	6.62	6.88	8.52	9.26	10.24	11.70	13.36	14.78	18.35	20.32	23.04	
14326	4.01	5.31	5.98	6.39	7.88	8.75	9.55	11.17	11.66	14.57	15.81	17.20	19.68	22.76	25.52	31.96	35.68	39.24	
	2.32	3.05	3.44	3.67	4.50	4.99	5.44	6.34	6.59	7.98	8.68	9.60	10.96	12.52	13.86	17.20	19.04	21.59	
14630	3.86	5.10	5.74	6.12	7.57	8.40	9.17	10.75	11.41	13.98	15.22	16.49	18.86	21.81	24.45	30.63	34.20	37.62	43.05
	2.18	2.87	3.23	3.44	4.24	4.69	5.12	5.95	6.31	7.48	8.14	9.00	10.28	11.74	13.00	16.14	17.87	20.27	22.03
14935	3.72	4.91	5.53	5.88	7.28	8.08	8.82	10.34	11.17	13.41	14.65	15.81	18.09	20.92	23.46	29.39	32.80	36.09	41.38
	2.07	2.71	3.05	3.23	3.99	4.42	4.83	5.58	6.05	7.03	7.66	8.46	9.67	11.04	12.21	15.17	16.79	19.04	20.70
15240	3.57	4.72	5.32	5.64	7.01	7.77	8.49	9.95	10.96	12.87	14.06	15.19	17.38	20.09	22.53	28.21	31.50	34.64	39.79
	1.94	2.55	2.87	3.05	3.76	4.15	4.55	5.26	5.77	6.62	7.19	7.96	9.09	10.39	11.49	14.27	15.80	17.92	19.48
15545	3.45	4.56	5.13	5.41	6.75	7.48	8.18	9.57	10.53	12.37	13.51	14.59	16.69	19.30	21.65	27.11	30.26	33.28	38.30
	1.83	2.42	2.71	2.86	3.54	3.92	4.29	4.96	5.44	6.23	6.78	7.50	8.56	9.77	10.82	13.44	14.88	16.87	18.34
15850	3.32	4.39	4.94	5.21	6.50	7.22	7.88	9.22	10.12	11.89	13.00	14.03	16.06	18.57	20.82	26.06	29.11	32.01	36.90
	1.73	2.27	2.56	2.69	3.32	3.72	4.05	4.68	5.13	5.88	6.39	7.07	8.08	9.22	10.21	12.68	14.03	15.90	17.30
16154	3.21	4.24	4.77	5.02	6.27	6.96	7.60	8.88	9.74	11.44	12.50	13.49	15.45	17.87	20.03	25.08	28.02	30.80	35.56
	1.64	2.15	2.42	2.55	3.15	3.51	3.83	4.42	4.84	5.54	6.04	6.66	7.63	8.71	9.63	11.96	13.25	15.01	16.33
16459	3.10	4.10	4.65	4.83	6.05	6.71	7.32	8.56	9.38	11.01	12.05	13.00	14.88	17.22	19.29	24.16	26.98	29.66	34.31
	1.56	2.04	2.30	2.40	2.97	3.32	3.63	4.15	4.58	5.23	5.70	6.30	7.20	8.23	9.10	11.31	12.52	14.19	15.44
16764	3.00	3.95	4.45	4.65	5.85	6.47	7.07	8.26	9.04	10.62	11.61	12.53	14.34	16.59	18.60	23.29	26.00	28.60	33.11
	1.48	1.94	2.18	2.27	2.81	3.13	3.44	3.94	4.33	4.96	5.39	5.96	6.81	7.79	8.62	10.69	11.85	13.44	14.60
17069	2.90	3.82	4.30	4.49	5.64	6.26	6.82	7.96	8.72	10.24	11.19	12.08	13.83	15.99	17.93	22.46	25.07	27.58	31.97
	1.41	1.83	2.07	2.15	2.67	2.97	3.25	3.73	4.10	4.69	5.10	5.64	6.46	7.36	8.15	10.14	11.22	12.72	13.83

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	32LH06	32LH07	32LH08	32LH09	32LH10	32LH11	32LH12	32LH13	32LH14	32LH15	32LH16	32LH17	32LH18	32LH19	32LH20	32LH21	32LH22	32LH23	32LH24
Depth (mm)	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813
Approx. Wt. (kN/m)	0.20	0.23	0.25	0.31	0.31	0.35	0.39	0.44	0.48	0.51	0.61	0.72	0.82	0.90	1.14	1.27	1.47	1.61	1.81
Span (mm) ↓																			
9754	9.55	10.72	12.09	16.03	17.27	18.91	22.21	26.10	27.96	29.91	39.27								
	9.55	10.72	12.09	16.03	17.27	18.91	22.21	26.10	27.96	29.91	39.27								
10058	9.17	10.28	11.57	15.30	16.50	18.06	21.20	24.88	26.66	28.51	37.37	43.06							
	9.17	10.28	11.57	15.30	16.50	18.06	21.20	24.88	26.66	27.29	37.25	42.61							
10363	8.82	9.89	11.09	14.63	15.76	17.26	20.25	23.74	25.42	27.20	35.60	41.03							
	8.82	9.89	11.09	14.63	15.76	17.26	20.25	23.42	24.12	24.92	34.03	38.93							
10668	8.47	9.50	10.62	13.99	15.07	16.50	19.38	22.66	24.26	25.96	33.94	39.12							
	8.47	9.50	10.62	13.68	15.07	16.50	19.30	21.45	22.09	22.82	31.17	35.65							
10973	8.15	9.13	10.18	13.38	14.43	15.79	18.54	21.65	23.18	24.80	32.39	37.33	42.17						
	8.15	9.13	10.05	12.56	13.86	15.17	17.73	19.70	20.30	20.97	28.61	32.74	37.40						
11278	7.83	8.78	9.77	12.81	13.82	15.11	17.76	20.70	22.16	23.72	30.93	35.65	40.27						
	7.64	8.52	9.25	11.57	12.76	13.96	16.31	18.14	18.68	19.29	26.34	30.13	34.42						
11582	7.54	8.46	9.38	12.28	13.23	14.49	17.01	19.81	21.21	22.69	29.56	34.07	38.49						
	7.06	7.86	8.53	10.66	11.77	12.88	15.06	16.72	17.23	17.80	24.29	27.80	31.75						
11887	7.26	8.14	9.00	11.77	12.69	13.89	16.31	18.97	20.31	21.74	28.28	32.60	36.83	42.17					
	6.52	7.26	7.88	9.86	10.88	11.90	13.92	15.46	15.92	16.44	22.46	25.69	29.36	32.54					
12192	6.99	7.85	8.65	11.29	12.17	13.32	15.65	18.18	19.46	20.82	27.08	31.21	35.25	40.32					
	6.04	6.72	7.31	9.13	10.08	11.03	12.88	14.31	14.75	15.23	20.81	23.80	27.18	30.15					
12497	6.74	7.55	8.31	10.84	11.68	12.79	15.03	17.43	18.66	19.97	25.94	29.90	33.78	38.58					
	5.60	6.24	6.78	8.47	9.35	10.23	11.96	13.29	13.68	14.14	19.30	22.08	25.23	27.97					
12802	6.49	7.28	8.01	10.42	11.23	12.28	14.43	16.72	17.92	19.17	24.88	28.54	32.39	36.95					
	5.21	5.80	6.30	7.88	8.69	9.51	11.12	12.36	12.72	13.14	17.95	20.53	23.46	26.00					
13106	6.27	7.03	7.70	10.02	10.79	11.82	13.87	16.06	17.20	18.41	23.77	27.21	31.08	35.34					
	4.85	5.41	5.86	7.34	8.09	8.85	10.36	11.51	11.85	12.24	16.72	19.11	21.84	24.22					
13411	6.04	6.78	7.42	9.63	10.39	11.36	13.35	15.44	16.53	17.68	22.69	25.99	29.85	33.74	42.32				
	4.52	5.04	5.47	6.84	7.55	8.27	9.66	10.74	11.06	11.42	15.60	17.83	20.38	22.59	28.12				
13716	5.83	6.55	7.15	9.28	9.99	10.94	12.84	14.84	15.89	17.01	21.68	24.83	28.69	32.25	40.43				
	4.23	4.71	5.12	6.40	7.06	7.72	9.03	10.02	10.33	10.66	14.56	16.66	19.04	21.11	26.28				
14021	5.63	6.31	6.90	8.93	9.63	10.53	12.37	14.28	15.29	16.37	20.75	23.75	27.48	30.85	38.68	43.21			
	3.95	4.40	4.78	5.98	6.61	7.22	8.44	9.38	9.67	9.98	13.63	15.60	17.81	19.76	24.59	27.23			
14326	5.44	6.11	6.65	8.61	9.28	10.15	11.92	13.76	14.72	15.76	19.86	22.75	26.31	29.55	37.05	41.37			
	3.70	4.13	4.48	5.61	6.18	6.77	7.90	8.80	9.06	9.35	12.76	14.60	16.69	18.50	23.04	25.52			
14630	5.26	5.91	6.42	8.26	8.94	9.79	11.49	13.25	14.18	15.17	19.04	21.80	25.23	28.31	35.50	39.66	43.63		
	3.48	3.88	4.20	5.26	5.80	6.36	7.42	8.26	8.50	8.78	11.98	13.71	15.67	17.36	21.62	23.94	27.17		
14935	5.09	5.70	6.20	7.93	8.62	9.44	11.09	12.76	13.67	14.63	18.27	20.92	24.19	27.17	34.06	38.04	41.86		
	3.26	3.64	3.95	4.94	5.45	5.96	6.97	7.74	7.98	8.24	11.26	12.88	14.72	16.31	20.31	22.50	25.53		
15240	4.93	5.53	5.99	7.53	8.33	9.12	10.71	11.92	12.30	12.69	17.54	20.08	23.23	26.07	32.70	36.52	40.19		
	3.07	3.42	3.72	4.65	5.13	5.61	6.56	7.29	7.51	7.76	10.59	12.12	13.84	15.35	19.11	21.17	24.02		
15545	4.75	5.34	5.79	7.26	8.02	8.78	10.39	11.68	12.05	12.44	16.85	19.30	22.32	25.05	31.43	35.09	38.63	43.56	
	2.90	3.25	3.53	4.40	4.84	5.29	6.24	7.00	7.22	7.45	9.98	11.41	13.04	14.46	18.00	19.93	22.62	24.64	
15850	4.59	5.15	5.58	7.00	7.74	8.46	10.04	11.45	11.82	12.21	16.21	18.56	21.46	24.10	30.22	33.75	37.14	41.98	
	2.75	3.07	3.34	4.15	4.59	5.00	5.92	6.72	6.94	7.18	9.41	10.77	12.30	13.64	16.97	18.79	21.33	23.24	
16154	4.43	4.97	5.38	6.75	7.47	8.17	9.69	11.25	11.60	11.98	15.60	17.86	20.66	23.18	29.08	32.48	35.74	40.49	42.62
	2.61	2.91	3.15	3.94	4.33	4.74	5.60	6.47	6.68	6.90	8.88	10.17	11.61	12.87	16.02	17.74	20.13	21.94	23.75
16459	4.29	4.80	5.21	6.52	7.22	7.89	9.35	10.82	11.38	11.74	15.01	17.20	19.90	22.34	28.02	31.28	34.42	39.09	41.05
	2.46	2.75	2.99	3.73	4.11	4.49	5.31	6.12	6.42	6.62	8.39	9.60	10.97	12.17	15.14	16.78	19.04	20.73	22.46
16764	4.14	4.64	5.03	6.30	6.97	7.61	9.03	10.43	11.17	11.54	14.47	16.57	19.17	21.52	26.99	30.15	33.17	37.75	39.56
	2.34	2.61	2.83	3.54	3.89	4.26	5.03	5.79	6.08	6.39	7.93	9.09	10.39	11.51	14.33	15.87	18.00	19.61	21.24
17069	4.01	4.49	4.85	6.10	6.74	7.36	8.72	10.06	10.77	11.32	13.96	15.99	18.49	20.76	26.03	29.08	31.98	36.47	38.14
	2.23	2.48	2.68	3.35	3.70	4.04	4.77	5.48	5.76	6.15	7.53	8.61	9.83	10.90	13.57	15.03	17.06	18.57	20.12
17374	3.88	4.34	4.69	5.89	6.49	7.12	8.43	9.71	10.40	11.13	13.47	15.42	17.84	20.03	25.13	28.06	30.88	35.25	36.82
	2.11	2.36	2.55	3.19	3.50	3.83	4.53	5.16	5.45	5.93	7.13	8.15	9.32	10.33	12.87	14.25	16.17	17.61	19.07
17678	3.75	4.20	4.55	5.70	6.27	6.90	8.15	9.38	10.04	10.94	13.00	14.90	17.23	19.35	24.25	27.10	29.81	34.10	35.55
	2.01	2.24	2.43	3.03	3.32	3.66	4.30	4.90	5.18	5.73	6.77	7.74	8.84	9.80	12.21	13.52	15.33	16.71	18.09
17983	3.63	4.07	4.40	5.53	6.07	6.68	7.89	9.06	9.70	10.58	12.56	14.38	16.65	18.69	23.43	26.18	28.80	33.01	34.35
	1.91	2.13	2.32	2.86	3.16	3.48	4.10	4.65	4.91	5.45	6.42	7.35	8.40	9.31	11.58	12.84	14.57	15.87	17.19
18288	3.53	3.95	4.27	5.35	5.86	6.46	7.64	8.75	9.38	10.23	12.15	13.92	16.09	18.06	22.66	25.30	27.84	31.96	33.20
	1.82	2.04	2.20	2.75	3.00	3.31	3.89	4.43	4.68	5.18	6.11	6.99	7.98	8.85	11.01	12.20	13.84	15.09	16.34
18593	3.41	3.82	4.14	5.19	5.67	6.26	7.41	8.47	9.07	9.89	11.74	13.45	15.57	17.48	21.92	24.48	26.94	30.96	32.12
	1.73	1.94	2.10	2.62	2.86	3.15	3.72	4.20	4.43	4.93	5.80	6.65	7.60	8.42	10.47	11.61	13.17	14.36	15.54
18898	3.31	3.70	4.01	5.03	5.48	6.07	7.18	8.20	8.78	9.57	11.36	13.03	15.07	16.91	21.21	23.70	26.06	30.01	31.08
	1.66	1.85	1.99	2.51	2.71	3.00	3.54	4.01	4.23	4.69	5.53	6.33	7.23	8.01	9.98	11.06	12.55	13.67	14.79
19202	3.21	3.60	3.89	4.88	5.31	5.88	6.96	7.93	8.50	9.26	11.01	12.60	14.59	16.38	20.54	22.94	25.24	29.10	30.10
	1.57	1.76	1.91	2.39	2.59	2.86	3.38	3.82	4.02	4.46	5.26	6.02	6.88	7.64	9.51	10.53	11.95	13.01	14.09
19507	3.12	3.50	3.77	4.74	5.15	5.69	6.75	7.69	8.23	8.98	10.66	12.21	14.14	15.87	19.90	22.22	24.45	28.22	29.15
	1.51	1.69	1.82	2.29	2.46	2.72	3.22	3.63	3.85	4.26	5.02	5.74	6.56	7.28	9.07	10.04	11.39	12.41	13.45

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	36LH07	36LH08	36LH09	36LH10	36LH11	36LH12	36LH13	36LH14	36LH15	36LH16	36LH17	36LH18	36LH19	36LH20	36LH21	36LH22	36LH23	36LH24	36LH25
Depth (mm)	914	914	914	914	914	914	914	914	914	914	914	914	914	914	914	914	914	914	914
Approx. Wt. (kN/m)	0.23	0.26	0.31	0.31	0.34	0.36	0.44	0.53	0.53	0.64	0.72	0.85	0.93	1.18	1.34	1.46	1.78	1.90	2.17
Span (mm) ↓																			
10973	8.49	9.74	12.41	14.68	15.52	18.57	22.37	24.64	26.67	34.16	39.38								
	8.49	9.74	12.41	14.68	15.52	18.57	22.37	24.64	26.67	34.16	39.38								
11278	8.20	9.39	11.96	14.11	14.91	17.86	21.46	23.65	25.59	32.73	37.73	42.62							
	8.20	9.39	11.96	14.11	14.91	17.86	21.46	23.65	25.59	32.73	37.73	42.62							
11582	7.92	9.04	11.38	13.55	14.34	17.17	20.60	22.70	24.57	31.37	36.17	40.86							
	7.92	9.04	11.38	13.55	14.34	17.17	20.60	22.70	24.57	31.21	35.74	40.84							
11887	7.66	8.72	11.12	13.04	13.80	16.52	19.80	21.80	23.59	30.10	34.70	39.21							
	7.66	8.72	11.12	13.04	13.80	16.52	19.80	21.80	23.23	28.85	33.04	37.75							
12192	7.41	8.40	10.72	12.55	13.28	15.90	19.03	20.95	22.67	28.89	33.31	37.63	43.57						
	7.41	8.40	10.72	12.24	13.28	15.87	18.60	20.44	21.52	26.72	30.60	34.96	38.83						
12497	7.16	8.11	10.36	12.09	12.78	15.30	18.30	20.15	21.80	27.75	32.00	36.14	41.78						
	7.16	8.07	10.27	11.35	12.36	14.72	17.26	18.97	19.97	24.79	28.39	32.45	36.03						
12802	6.93	7.83	9.99	11.64	12.31	14.75	17.60	19.39	20.98	26.67	30.76	34.74	40.10						
	6.84	7.50	9.55	10.56	11.48	13.68	16.05	17.64	18.56	23.05	26.40	30.18	33.49						
13106	6.71	7.55	9.64	11.22	11.87	14.21	16.94	18.66	20.19	25.65	29.58	33.42	38.49						
	6.37	6.99	8.90	9.83	10.69	12.75	14.95	16.43	17.29	21.46	24.59	28.10	31.20						
13411	6.49	7.29	9.32	10.82	11.45	13.71	16.31	17.97	19.45	24.69	28.45	32.16	36.99						
	5.95	6.52	8.30	9.17	9.98	11.89	13.95	15.32	16.14	20.02	22.94	26.21	29.10						
13716	6.28	7.06	9.01	10.44	11.04	13.23	15.73	17.32	18.75	23.77	27.40	30.96	35.56						
	5.56	6.08	7.76	8.56	9.32	11.12	13.03	14.31	15.07	18.70	21.42	24.48	27.18						
14021	6.08	6.81	8.71	10.08	10.66	12.76	15.16	16.71	18.08	22.89	26.40	29.82	34.22	43.03					
	5.19	5.70	7.25	8.02	8.72	10.40	12.20	13.39	14.11	17.51	20.05	22.91	25.45	31.72					
14326	5.89	6.59	8.43	9.73	10.30	12.33	14.62	16.11	17.43	22.06	25.45	28.74	32.95	41.43					
	4.87	5.34	6.80	7.51	8.17	9.74	11.42	12.55	13.22	16.40	18.78	21.48	23.84	29.74					
14630	5.72	6.37	8.15	9.41	9.95	11.90	14.11	15.55	16.82	21.29	24.54	27.72	31.74	39.91					
	4.56	5.02	6.37	7.04	7.67	9.15	10.72	11.77	12.40	15.39	17.62	20.15	22.37	27.90					
14935	5.54	6.17	7.89	9.09	9.61	11.51	13.63	15.01	16.25	20.53	23.68	26.76	30.58	38.46	42.35				
	4.29	4.71	5.99	6.62	7.20	8.59	10.06	11.07	11.66	14.46	16.56	18.92	21.01	26.22	29.05				
15240	5.37	5.98	7.64	8.78	9.29	11.13	13.17	14.50	15.70	19.83	22.79	25.84	29.50	37.09	40.84				
	4.04	4.43	5.64	6.23	6.78	8.08	9.48	10.42	10.96	13.61	15.58	17.81	19.77	24.66	27.33				
15545	5.21	5.79	7.41	8.50	8.98	10.77	12.72	14.02	15.17	19.11	21.90	24.95	28.47	35.75	39.41				
	3.80	4.17	5.31	5.88	6.39	7.61	8.93	9.80	10.33	12.81	14.68	16.78	18.62	23.23	25.74				
15850	5.06	5.60	7.18	8.23	8.71	10.43	12.31	13.57	14.68	18.37	21.05	24.12	27.37	34.38	38.06	42.26			
	3.59	3.94	5.00	5.54	6.02	7.18	8.42	9.25	9.73	12.08	13.84	15.81	17.57	21.90	24.28	27.56			
16154	4.91	5.44	6.96	7.96	8.43	10.09	11.90	12.98	14.19	17.68	20.27	23.32	26.35	33.08	36.76	40.67			
	3.38	3.72	4.72	5.22	5.69	6.78	7.95	8.74	9.19	11.41	13.07	14.94	16.57	20.67	22.92	26.02			
16459	4.77	5.26	6.74	7.69	8.15	9.77	11.52	12.71	13.74	17.03	19.52	22.56	25.37	31.85	35.53	39.17	43.44		
	3.21	3.51	4.46	4.94	5.37	6.40	7.51	8.26	8.69	10.78	12.34	14.11	15.67	19.55	21.65	24.59	26.82		
16764	4.64	5.10	6.55	7.42	7.90	9.48	11.16	12.30	13.30	16.41	18.81	21.75	24.45	30.70	34.31	37.75	42.00		
	3.03	3.32	4.23	4.67	5.09	6.07	7.10	7.80	8.21	10.20	11.68	13.35	14.82	18.49	20.48	23.26	25.37		
17069	4.50	4.96	6.34	7.16	7.67	9.19	10.81	11.92	12.90	15.83	18.14	20.98	23.58	29.61	33.08	36.41	40.61	43.50	
	2.87	3.15	4.01	4.42	4.81	5.74	6.72	7.39	7.79	9.66	11.06	12.65	14.03	17.51	19.40	22.03	24.03	26.07	
17374	4.37	4.81	6.17	6.91	7.44	8.91	10.47	11.55	12.50	15.27	17.51	20.25	22.76	28.57	31.93	35.14	39.28	41.98	
	2.72	2.97	3.79	4.20	4.56	5.44	6.37	7.01	7.38	9.16	10.49	11.99	13.30	16.60	18.40	20.88	22.79	24.72	
17678	4.26	4.68	5.99	6.62	7.22	8.65	10.17	11.20	11.80	14.75	16.89	19.55	21.97	27.59	30.82	33.93	38.03	40.54	
	2.58	2.83	3.60	3.98	4.33	5.16	6.05	6.65	7.00	8.69	9.95	11.38	12.63	15.76	17.45	19.81	21.62	23.45	
17983	4.13	4.53	5.80	6.42	7.00	8.39	9.85	11.01	11.60	14.25	16.33	18.89	21.23	26.66	29.78	32.77	36.83	39.17	
	2.45	2.69	3.42	3.79	4.13	4.93	5.76	6.33	6.77	8.26	9.45	10.79	11.99	14.95	16.57	18.82	20.53	22.27	
18288	3.99	4.40	5.63	6.21	6.78	8.12	9.54	10.63	11.39	13.77	15.79	18.27	20.53	25.77	28.79	31.69	35.69	37.87	
	2.33	2.56	3.26	3.61	3.92	4.69	5.48	6.01	6.53	7.85	8.98	10.27	11.39	14.22	15.76	17.89	19.52	21.17	
18593	3.88	4.27	5.45	6.02	6.58	7.88	9.25	10.30	11.22	13.32	15.27	17.67	19.86	24.94	27.85	30.66	34.60	36.63	43.35
	2.23	2.45	3.12	3.44	3.75	4.48	5.23	5.72	6.33	7.47	8.55	9.77	10.84	13.52	14.98	17.01	18.57	20.13	23.46
18898	3.76	4.14	5.29	5.85	6.39	7.63	8.97	9.96	10.85	12.90	14.78	17.10	19.22	24.13	26.95	29.66	33.55	35.44	41.95
	2.13	2.33	2.97	3.28	3.59	4.26	4.99	5.44	6.02	7.10	8.14	9.31	10.33	12.88	14.27	16.21	17.68	19.17	22.34
19202	3.66	4.02	5.13	5.67	6.20	7.41	8.69	9.64	10.52	12.49	14.31	16.56	18.60	23.36	26.10	28.73	32.54	34.32	40.62
	2.04	2.23	2.84	3.13	3.41	4.07	4.77	5.19	5.74	6.77	7.74	8.85	9.83	12.27	13.60	15.44	16.85	18.27	21.27
19507	3.56	3.91	4.99	5.51	6.01	7.19	8.44	9.35	10.18	12.09	13.86	16.03	18.03	22.63	25.29	27.83	31.59	33.25	39.35
	1.95	2.13	2.71	3.00	3.26	3.89	4.55	4.94	5.47	6.46	7.39	8.44	9.38	11.70	12.97	14.72	16.06	17.42	20.30
19812	3.45	3.79	4.85	5.35	5.85	6.97	8.20	9.06	9.88	11.73	13.44	15.55	17.48	21.94	24.51	26.98	30.67	32.23	38.16
	1.86	2.04	2.61	2.87	3.12	3.72	4.34	4.71	5.22	6.15	7.06	8.07	8.96	11.17	12.37	14.05	15.33	16.62	19.36
20117	3.35	3.69	4.71	5.21	5.67	6.77	7.96	8.78	9.57	11.36	13.03	15.07	16.94	21.27	23.77	26.16	29.80	31.26	37.01
	1.78	1.95	2.49	2.74	2.99	3.54	4.15	4.50	4.99	5.88	6.74	7.70	8.55	10.66	11.82	13.42	14.63	15.87	18.50
20422	3.26	3.59	4.58	5.06	5.51	6.56	7.74	8.52	9.29	11.03	12.65	14.63	16.44	20.65	23.05	25.37	28.95	30.32	35.90
	1.70	1.86	2.37	2.62	2.86	3.38	3.98	4.30	4.77	5.61	6.43	7.35	8.17	10.20	11.29	12.82	13.99	15.17	17.67
20726	3.18	3.48	4.46	4.93	5.37	6.37	7.53	8.27	9.01	10.71	12.27	14.19	15.96	20.03	22.38	24.63	28.15	29.43	34.85
	1.63	1.79	2.29	2.52	2.74	3.23	3.82	4.13	4.55	5.38	6.15	7.03	7.82	9.74	10.79	12.27	13.38	14.50	16.89
21031	3.09	3.40	4.33	4.78	5.22	6.18	7.32	8.04	8.75	10.40	11.92	13.79	15.49	19.46	21.74	23.93	27.37	28.58	33.84
	1.56	1.72	2.18	2.40	2.62	3.10	3.66	3.94	4.36	5.15	5.89	6.74	7.48	9.32	10.33	11.73	12.79	13.89	16.18
21336	3.02	3.31	4.21	4.67	5.07	6.01	7.12	7.80	8.50	10.11	11.58	13.39	15.06	18.91	21.11	23.24	26.63	27.77	32.88
	1.50	1.64	2.10	2.32	2.52	2.97	3.50	3.77	4.17	4.93	5.64	6.45	7.16	8.93	9.89	11.23	12.25	13.29	15.48
21641	2.93	3.22	4.11	4.53	4.94	5.83	6.93	7.58	8.27	9.82	11.25	13.01	14.63	18.37	20.51	22.59	25.91	26.99	31.94
	1.44	1.59	2.01	2.21	2.42	2.84	3.37	3.60	3.99	4.71	5.39	6.17	6.85	8.56	9.48	10.77	11.74	12.74	14.84
21946	2.86	3.13	4.01	4.42	4.81	5.67	6.75	7.36	8.04	9.54	10.94	12.66	14.22	17.86	19.94	21.96	25.23	26.25	31.07
	1.38	1.51	1.94	2.13	2.32	2.72	3.23	3.45	3.83	4.52	5.18	5.92	6.58	8.20	9.09	10.31	11.26	12.21	14.22

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	40LH08	40LH09	40LH10	40LH11	40LH12	40LH13	40LH14	40LH15	40LH16	40LH17	40LH18	40LH19	40LH20	40LH21	40LH22	40LH23	40LH24	40LH25
Depth (mm)	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016
Approx. Wt. (kN/m)	0.23	0.31	0.31	0.32	0.36	0.44	0.51	0.53	0.61	0.74	0.82	0.93	1.18	1.36	1.46	1.77	1.85	2.16
Span (mm) ↓																		
12192	7.57	10.28	12.24	12.82	15.58	18.92	21.59	24.15	28.64	34.68	39.18							
	7.57	10.28	12.24	12.82	15.58	18.92	21.59	24.15	28.64	34.68	39.18							
12497	7.35	9.95	11.82	12.40	15.06	18.25	20.82	23.30	27.59	33.42	37.73							
	7.35	9.95	11.82	12.40	15.06	18.25	20.82	23.30	27.59	33.42	37.73							
12802	7.15	9.63	11.42	11.98	14.55	17.61	20.09	22.47	26.59	32.19	36.36	42.49						
	7.15	9.63	11.42	11.98	14.55	17.61	20.09	22.47	26.59	32.19	36.36	41.94						
13106	6.93	9.34	11.04	11.58	14.06	17.00	19.39	21.70	25.62	31.04	35.06	40.89						
	6.93	9.34	11.04	11.58	14.06	17.00	19.39	21.70	25.62	30.73	35.06	39.06						
13411	6.74	9.04	10.68	11.19	13.60	16.41	18.73	20.95	24.72	29.94	33.82	39.37						
	6.74	9.04	10.68	11.19	13.60	16.41	18.73	20.95	24.72	28.67	32.77	36.44						
13716	6.53	8.77	10.33	10.82	13.16	15.86	18.09	20.24	23.86	28.89	32.63	37.92						
	6.53	8.77	10.01	10.82	13.16	15.48	17.76	19.80	21.74	26.79	30.63	34.04						
14021	6.34	8.49	9.99	10.47	12.74	15.32	17.48	19.55	23.02	27.88	31.50	36.55						
	6.34	8.49	9.36	10.15	12.36	14.49	16.62	18.53	20.34	25.07	28.66	31.85						
14326	6.17	8.23	9.67	10.14	12.33	14.81	16.91	18.91	22.24	26.94	30.44	35.25						
	6.10	7.96	8.78	9.51	11.58	13.58	15.57	17.36	19.07	23.49	26.85	29.85						
14630	5.99	7.98	9.36	9.82	11.93	14.33	16.35	18.30	21.49	26.03	29.40	34.01	42.80					
	5.72	7.47	8.24	8.93	10.87	12.74	14.60	16.28	17.89	22.03	25.20	28.02	34.99					
14935	5.83	7.74	9.07	9.51	11.55	13.86	15.81	17.70	20.78	25.15	28.42	32.85	41.32					
	5.37	7.03	7.74	8.39	10.21	11.98	13.73	15.30	16.81	20.70	23.68	26.32	32.88					
15240	5.67	7.51	8.80	9.22	11.20	13.42	15.32	17.13	20.09	24.34	27.49	31.72	39.91					
	5.06	6.61	7.28	7.89	9.61	11.26	12.91	14.40	15.81	19.48	22.28	24.76	30.93					
15545	5.51	7.29	8.52	8.94	10.85	13.00	14.82	16.59	19.43	23.55	26.60	30.66	38.57	42.46				
	4.77	6.23	6.85	7.42	9.04	10.60	12.17	13.57	14.90	18.35	20.98	23.32	29.14	32.29				
15850	5.37	7.09	8.26	8.66	10.53	12.59	14.37	16.06	18.82	22.79	25.75	29.64	37.30	41.06				
	4.49	5.86	6.46	7.00	8.53	10.01	11.47	12.79	14.05	17.30	19.78	21.99	27.48	30.45				
16154	5.22	6.88	8.01	8.40	10.21	12.20	13.92	15.57	18.22	22.08	24.94	28.67	36.07	39.72				
	4.24	5.54	6.11	6.62	8.05	9.44	10.82	12.08	13.26	16.34	18.68	20.76	25.94	28.74				
16459	5.07	6.68	7.77	8.15	9.90	11.83	13.49	15.10	17.65	21.38	24.16	27.74	34.90	38.44				
	4.01	5.23	5.77	6.26	7.61	8.93	10.24	11.41	12.53	15.44	17.65	19.62	24.51	27.17				
16764	4.94	6.50	7.55	7.92	9.61	11.47	13.09	14.65	17.10	20.72	23.42	26.86	33.79	37.21	42.33			
	3.79	4.96	5.45	5.92	7.20	8.44	9.69	10.79	11.86	14.60	16.71	18.56	23.20	25.71	29.20			
17069	4.81	6.31	7.34	7.69	9.34	11.13	12.69	14.21	16.59	20.09	22.70	26.02	32.73	36.04	40.81			
	3.59	4.69	5.18	5.60	6.82	7.99	9.17	10.23	11.23	13.83	15.81	17.58	21.96	24.34	27.65			
17374	4.69	6.14	7.12	7.47	9.07	10.79	12.33	13.79	16.09	19.49	22.02	25.21	31.72	34.93	39.40	42.90		
	3.40	4.45	4.90	5.31	6.47	7.58	8.69	9.69	10.65	13.11	15.00	16.66	20.82	23.08	26.22	28.63		
17678	4.56	5.98	6.91	7.25	8.81	10.49	11.96	13.39	15.61	18.91	21.38	24.44	30.74	33.87	38.04	41.57		
	3.22	4.21	4.65	5.04	6.14	7.19	8.26	9.20	10.11	12.44	14.22	15.81	19.76	21.90	24.88	27.17		
17983	4.45	5.82	6.72	7.04	8.56	10.18	11.63	13.00	15.14	18.27	20.75	23.70	29.82	32.85	36.76	40.29		
	3.06	4.01	4.42	4.78	5.83	6.82	7.83	8.74	9.60	11.82	13.51	15.01	18.76	20.79	23.62	25.80		
18288	4.33	5.66	6.52	6.85	8.33	9.89	11.29	12.63	14.71	17.67	20.15	22.98	28.89	31.87	35.53	39.06	42.52	
	2.91	3.80	4.20	4.55	5.54	6.49	7.45	8.30	9.12	11.23	12.84	14.28	17.83	19.77	22.46	24.53	26.63	
18593	4.23	5.51	6.31	6.66	8.09	9.61	10.97	12.28	14.30	17.08	19.57	22.24	27.94	30.92	34.36	37.90	41.14	
	2.77	3.63	3.99	4.33	5.26	6.18	7.09	7.90	8.68	10.68	12.21	13.58	16.97	18.81	21.36	23.33	25.33	
18898	4.13	5.37	6.11	6.49	7.88	9.35	10.66	11.93	13.89	16.53	19.01	21.52	27.04	30.03	33.25	36.79	39.81	
	2.64	3.45	3.80	4.13	5.02	5.88	6.74	7.53	8.26	10.17	11.63	12.93	16.15	17.90	20.34	22.22	24.12	
19202	4.02	5.22	5.92	6.31	7.67	9.09	10.37	11.61	13.49	16.00	18.49	20.84	26.19	29.17	32.20	35.71	38.55	
	2.52	3.29	3.63	3.92	4.78	5.60	6.43	7.16	7.88	9.69	11.09	12.33	15.39	17.06	19.38	21.17	22.98	
19507	3.92	5.09	5.74	6.14	7.47	8.84	10.09	11.29	13.13	15.51	17.95	20.19	25.37	28.35	31.20	34.68	37.36	
	2.40	3.13	3.45	3.75	4.56	5.34	6.12	6.84	7.51	9.25	10.56	11.74	14.68	16.27	18.49	20.18	21.92	
19812	3.82	4.96	5.57	5.98	7.26	8.61	9.82	10.98	12.76	15.04	17.39	19.57	24.59	27.48	30.25	33.69	36.20	42.86
	2.29	2.99	3.29	3.57	4.34	5.10	5.85	6.52	7.16	8.82	10.08	11.22	14.01	15.52	17.64	19.26	20.92	24.38
20117	3.70	4.84	5.35	5.82	7.09	8.36	9.57	10.71	11.79	14.57	16.87	18.98	23.84	26.64	29.33	32.76	35.11	41.57
	2.18	2.86	3.15	3.41	4.15	4.87	5.58	6.23	6.84	8.42	9.63	10.71	13.38	14.82	16.84	18.40	19.97	23.29
20422	3.60	4.71	5.21	5.66	6.88	8.12	9.31	10.39	11.61	14.15	16.37	18.41	23.14	25.86	28.45	31.85	34.06	40.33
	2.10	2.74	3.02	3.26	3.98	4.67	5.35	5.95	6.64	8.05	9.20	10.23	12.78	14.17	16.09	17.58	19.08	22.25
20726	3.51	4.59	5.06	5.51	6.69	7.90	9.04	10.08	11.44	13.73	15.89	17.87	22.46	25.10	27.62	30.98	33.06	39.15
	2.01	2.62	2.88	3.13	3.80	4.48	5.12	5.69	6.43	7.70	8.80	9.79	12.22	13.55	15.39	16.81	18.25	21.27
21031	3.41	4.46	4.93	5.37	6.52	7.70	8.80	9.79	11.26	13.33	15.42	17.35	21.81	24.37	26.82	30.15	32.10	38.01
	1.92	2.52	2.77	3.02	3.66	4.30	4.90	5.44	6.24	7.36	8.42	9.36	11.70	12.97	14.73	16.09	17.46	20.37
21336	3.32	4.34	4.80	5.22	6.34	7.50	8.56	9.51	11.10	12.95	14.98	16.85	21.19	23.67	26.06	29.34	31.20	36.93
	1.85	2.42	2.67	2.88	3.51	4.13	4.71	5.21	6.07	7.04	8.07	8.97	11.20	12.41	14.11	15.41	16.72	19.49
21641	3.23	4.24	4.68	5.09	6.18	7.29	8.33	9.23	10.96	12.59	14.56	16.38	20.59	23.01	25.33	28.57	30.32	35.90
	1.78	2.33	2.56	2.77	3.37	3.95	4.50	4.99	5.89	6.75	7.73	8.59	10.74	11.89	13.51	14.76	16.02	18.68
21946	3.16	4.13	4.56	4.96	6.02	7.10	8.11	8.98	10.65	12.24	14.17	15.93	20.02	22.37	24.63	27.83	29.47	34.89
	1.70	2.23	2.46	2.67	3.23	3.79	4.33	4.78	5.64	6.47	7.41	8.23	10.28	11.41	12.95	14.15	15.36	17.90
22250	3.07	4.02	4.45	4.84	5.86	6.93	7.90	8.74	10.36	11.90	13.77	15.49	19.48	21.75	23.94	27.11	28.67	33.94
	1.63	2.14	2.36	2.56	3.10	3.64	4.15	4.59	5.41	6.21	7.10	7.89	9.88	10.94	12.43	13.57	14.73	17.17
22555	3.00	3.92	4.33	4.71	5.72	6.75	7.70	8.50	10.08	11.58	13.41	15.07	18.95	21.17	23.30	26.42	27.90	33.02
	1.57	2.05	2.27	2.46	2.99	3.51	3.98	4.40	5.19	5.96	6.82	7.58	9.47	10.50	11.93	13.03	14.15	16.49
22860	2.93	3.83	4.23	4.59	5.57	6.58	7.51	8.27	9.82	11.28	13.04	14.68	18.44	20.60	22.69	25.75	27.15	32.15
	1.51	1.98	2.18	2.37	2.87	3.37	3.83	4.23	4.99	5.73	6.55	7.28	9.10	10.08	11.45	12.52	13.58	15.83
23165	2.86	3.73	4.13	4.49	5.44	6.42	7.32	8.05	9.55	10.98	12.71	14.28	17.96	20.06	22.09	25.13	26.44	31.30
	1.45	1.91	2.10	2.29	2.75	3.25	3.67	4.07	4.80	5.50	6.28	7.00	8.74	9.69	11.00	12.02	13.06	15.22
23470	2.80	3.64	4.02	4.37	5.31	6.26	7.15	7.85	9.31	10.69	12.37	13.92	17.49	19.54	21.52	24.51	25.75	30.50
	1.41	1.83	2.02	2.20	2.65	3.12	3.54	3.91	4.61	5.29	6.05	6.72	8.40	9.31	10.58	11.55	12.55	14.63
23774	2.72	3.56	3.92	4.27	5.18	6.11	6.97	7.64	9.07	10.42	12.05	13.57	17.04	19.04	20.97	23.91	25.10	29.71
	1.35	1.78	1.95	2.11	2.56	3.02	3.40	3.76	4.43	5.09	5.82	6.46	8.08	8.96	10.18	11.12	12.06	14.06
24079	2.67	3.48	3.82	4.17	5.04	5.96	6.80	7.45	8.84	10.15	11.76	13.22	16.62	18.56	20.44	23.35	24.45	28.96
	1.31	1.72	1.88	2.04	2.46	2.90	3.28	3.61	4.26	4.90	5.60	6.23	7.77	8.62	9.79	10.69	11.61	13.54
24384	2.59	3.40	3.72	4.07	4.93	5.82	6.64	7.26	8.62	9.90	11.45	12.88	16.19	18.09	19.93	22.79	23.86	28.23
	1.25	1.64	1.80	1.97	2.37	2.80	3.15	3.48	4.11	4.71	5.39	5.99	7.48	8.30	9.42	10.30	11.19	13.03

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	44LH09	44LH10	44LH11	44LH12	44LH13	44LH14	44LH15	44LH16	44LH17	44LH18	44LH19	44LH20	44LH21	44LH22	44LH23	44LH24	44LH25
Depth (mm)	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118	1118
Approx. Wt. (kN/m)	0.28	0.31	0.32	0.36	0.44	0.45	0.53	0.61	0.69	0.83	0.93	1.20	1.36	1.47	1.72	1.85	2.15
Span (mm) ↓																	
13411	8.53	9.41	11.09	13.09	15.44	18.38	21.39	25.24	28.15	34.85	41.09						
	8.53	9.41	11.09	13.09	15.44	18.38	21.39	25.24	28.15	34.85	41.09						
13716	8.28	9.15	10.77	12.69	14.97	17.80	20.72	24.41	27.23	33.71	39.66						
	8.28	9.15	10.77	12.69	14.97	17.80	20.72	24.41	27.23	33.71	39.66						
14021	8.05	8.88	10.44	12.31	14.52	17.24	20.06	23.62	26.35	32.61	38.30						
	8.05	8.88	10.44	12.31	14.52	17.24	20.06	23.62	26.35	32.61	38.30						
14326	7.83	8.63	10.14	11.95	14.09	16.72	19.45	22.86	25.51	31.58	37.02						
	7.83	8.63	10.14	11.95	14.09	16.72	19.45	22.86	25.51	31.58	36.54						
14630	7.61	8.40	9.83	11.60	13.68	16.21	18.85	22.15	24.70	30.57	35.78						
	7.61	8.40	9.83	11.60	13.68	16.21	18.85	22.15	24.24	30.57	34.29						
14935	7.41	8.17	9.55	11.26	13.28	15.71	18.28	21.45	23.93	29.62	34.60	43.56					
	7.41	8.17	9.51	11.26	13.28	15.71	18.28	21.30	22.78	28.95	32.22	40.30					
15240	7.20	7.95	9.28	10.94	12.90	15.25	17.73	20.78	23.18	28.70	33.47	42.14					
	7.20	7.95	8.94	10.94	12.90	15.00	17.42	20.05	21.42	27.24	30.31	37.91					
15545	7.01	7.73	9.01	10.62	12.53	14.78	17.20	20.15	22.47	27.83	32.39	40.80					
	7.01	7.73	8.43	10.40	12.33	14.12	16.41	18.88	20.18	25.65	28.56	35.71					
15850	6.82	7.53	8.75	10.33	12.18	14.36	16.71	19.54	21.78	26.98	31.37	39.50	43.48				
	6.68	7.35	7.95	9.80	11.63	13.32	15.48	17.80	19.03	24.19	26.92	33.68	37.34				
16154	6.64	7.32	8.50	10.04	11.83	13.93	16.21	18.95	21.13	26.16	30.39	38.26	42.13				
	6.30	6.94	7.50	9.26	10.98	12.57	14.62	16.81	17.96	22.85	25.42	31.80	35.25				
16459	6.46	7.13	8.27	9.76	11.51	13.52	15.74	18.38	20.51	25.39	29.45	37.08	40.83				
	5.96	6.56	7.09	8.75	10.37	11.89	13.82	15.89	16.98	21.59	24.02	30.04	33.31				
16764	6.30	6.94	8.04	9.48	11.19	13.14	15.29	17.84	19.90	24.64	28.54	35.94	39.57				
	5.64	6.21	6.71	8.28	9.82	11.25	13.07	15.03	16.06	20.43	22.73	28.42	31.52				
17069	6.14	6.77	7.82	9.23	10.88	12.78	14.87	17.33	19.33	23.93	27.68	34.86	38.38				
	5.34	5.88	6.36	7.85	9.29	10.65	12.37	14.24	15.22	19.35	21.52	26.92	29.85				
17374	5.98	6.59	7.61	8.98	10.59	12.41	14.44	16.84	18.78	23.24	26.86	33.82	37.24	43.65			
	5.06	5.57	6.02	7.44	8.81	10.09	11.73	13.49	14.43	18.34	20.40	25.52	28.29	32.15			
17678	5.82	6.42	7.41	8.74	10.33	12.08	14.05	16.35	18.24	22.59	26.07	32.82	36.14	42.16			
	4.80	5.29	5.72	7.06	8.36	9.58	11.13	12.81	13.68	17.39	19.36	24.22	26.85	30.51			
17983	5.67	6.26	7.20	8.50	10.04	11.74	13.67	15.89	17.73	21.96	25.32	31.87	35.09	40.73	43.34		
	4.56	5.02	5.42	6.69	7.93	9.10	10.58	12.17	13.00	16.53	18.38	22.99	25.51	28.98	31.68		
18288	5.53	6.10	7.01	8.28	9.77	11.42	13.29	15.45	17.23	21.35	24.59	30.95	34.09	39.37	42.07		
	4.33	4.77	5.16	6.37	7.55	8.65	10.05	11.55	12.36	15.71	17.48	21.86	24.24	27.53	30.12		
18593	5.39	5.95	6.84	8.07	9.51	11.12	12.94	15.03	16.76	20.76	23.89	30.07	33.12	38.09	40.84		
	4.13	4.55	4.91	6.05	7.18	8.23	9.55	11.00	11.76	14.94	16.63	20.79	23.05	26.21	28.64		
18898	5.26	5.80	6.66	7.86	9.28	10.82	12.59	14.62	16.31	20.19	23.21	29.23	32.19	36.86	39.66		
	3.92	4.33	4.67	5.77	6.84	7.83	9.10	10.47	11.19	14.22	15.83	19.80	21.96	24.95	27.27		
19202	5.13	5.66	6.49	7.66	9.03	10.53	12.27	14.22	15.87	19.65	22.57	28.42	31.30	35.69	38.54	42.78	
	3.75	4.13	4.45	5.50	6.52	7.47	8.68	9.98	10.66	13.55	15.09	18.86	20.92	23.77	25.99	28.25	
19507	5.00	5.53	6.33	7.47	8.81	10.27	11.95	13.84	15.45	19.13	21.94	27.64	30.44	34.58	37.46	41.44	
	3.57	3.94	4.24	5.23	6.21	7.12	8.27	9.51	10.17	12.93	14.38	17.99	19.94	22.67	24.79	26.94	
19812	4.88	5.39	6.17	7.28	8.59	9.99	11.64	13.48	15.04	18.63	21.36	26.89	29.61	33.52	36.42	40.17	
	3.41	3.75	4.05	5.00	5.93	6.80	7.89	9.07	9.70	12.34	13.73	17.17	19.04	21.64	23.65	25.71	
20117	4.77	5.26	5.99	7.10	8.37	9.74	11.33	13.13	14.65	18.15	20.78	26.18	28.82	32.51	35.43	38.96	
	3.25	3.59	3.86	4.78	5.66	6.49	7.54	8.66	9.26	11.77	13.10	16.40	18.18	20.66	22.59	24.56	
20422	4.65	5.13	5.82	6.93	8.17	9.50	11.06	12.79	14.27	17.68	20.24	25.48	28.06	31.53	34.48	37.79	
	3.10	3.42	3.70	4.56	5.41	6.20	7.20	8.28	8.85	11.26	12.53	15.67	17.38	19.74	21.58	23.46	
20726	4.55	5.02	5.66	6.75	7.96	9.26	10.78	12.47	13.92	17.23	19.70	24.80	27.33	30.61	33.56	36.68	43.44
	2.97	3.28	3.54	4.36	5.18	5.92	6.88	7.92	8.47	10.77	11.98	14.98	16.62	18.88	20.65	22.44	26.16
21031	4.43	4.90	5.50	6.59	7.77	9.03	10.52	12.15	13.57	16.79	19.19	24.16	26.61	29.72	32.67	35.63	42.19
	2.84	3.13	3.38	4.17	4.96	5.67	6.59	7.58	8.11	10.30	11.47	14.34	15.90	18.06	19.76	21.46	25.04
21336	4.33	4.78	5.34	6.43	7.60	8.81	10.25	11.86	13.22	16.38	18.66	23.48	25.94	28.88	31.82	34.61	40.99
	2.72	3.00	3.23	3.99	4.74	5.42	6.31	7.26	7.76	9.86	10.97	13.73	15.22	17.30	18.91	20.56	23.97
21641	4.24	4.68	5.19	6.28	7.41	8.59	10.01	11.55	12.90	15.98	18.14	22.81	25.29	28.06	31.01	33.63	39.84
	2.61	2.87	3.10	3.83	4.55	5.21	6.05	6.96	7.44	9.45	10.52	13.16	14.59	16.57	18.12	19.70	22.97
21946	4.14	4.56	5.06	6.14	7.23	8.39	9.77	11.28	12.59	15.58	17.64	22.18	24.64	27.29	30.20	32.70	38.73
	2.51	2.75	2.97	3.67	4.36	4.99	5.80	6.66	7.13	9.06	10.08	12.60	13.98	15.89	17.38	18.88	22.02
22250	4.05	4.46	4.93	5.99	7.07	8.20	9.54	11.00	12.28	15.22	17.16	21.58	24.05	26.54	29.45	31.81	37.68
	2.40	2.64	2.86	3.53	4.18	4.78	5.56	6.40	6.84	8.69	9.67	12.09	13.41	15.25	16.66	18.12	21.13
22555	3.96	4.37	4.74	5.86	6.96	8.01	9.32	10.75	11.52	14.82	16.69	21.00	23.45	25.83	28.72	30.95	36.65
	2.30	2.53	2.74	3.38	4.01	4.59	5.34	6.14	6.56	8.34	9.28	11.61	12.87	14.63	15.99	17.39	20.28
22860	3.86	4.27	4.62	5.73	6.80	7.79	9.09	10.49	11.38	14.43	16.24	20.43	22.83	25.14	28.02	30.13	35.68
	2.21	2.45	2.64	3.26	3.86	4.40	5.13	5.91	6.39	8.01	8.91	11.14	12.36	14.05	15.36	16.69	19.48
23165	3.77	4.17	4.52	5.58	6.62	7.58	8.87	10.23	11.22	14.05	15.81	19.90	22.24	24.48	27.33	29.34	34.74
	2.13	2.36	2.55	3.13	3.70	4.24	4.94	5.69	6.21	7.70	8.56	10.71	11.87	13.49	14.76	16.05	18.70
23470	3.69	4.07	4.40	5.45	6.47	7.38	8.65	9.98	11.07	13.68	15.41	19.38	21.65	23.84	26.67	28.58	33.84
	2.05	2.26	2.45	3.02	3.59	4.07	4.75	5.47	6.05	7.39	8.23	10.30	11.42	12.97	14.19	15.42	17.99
23774	3.60	3.96	4.30	5.32	6.31	7.19	8.44	9.74	10.94	13.33	15.01	18.88	21.10	23.23	26.05	27.84	32.98
	1.98	2.18	2.36	2.91	3.44	3.91	4.58	5.28	5.91	7.12	7.92	9.90	10.98	12.49	13.64	14.84	17.30
24079	3.53	3.88	4.21	5.19	6.17	7.01	8.24	9.51	10.68	13.00	14.63	18.41	20.57	22.64	25.43	27.14	32.15
	1.91	2.10	2.29	2.80	3.32	3.77	4.42	5.07	5.69	6.84	7.61	9.54	10.58	12.01	13.13	14.27	16.65
24384	3.44	3.79	4.11	5.06	6.02	6.84	8.04	9.29	10.43	12.68	14.27	17.95	20.05	22.08	24.83	26.47	31.34
	1.85	2.02	2.20	2.69	3.21	3.63	4.26	4.90	5.48	6.59	7.34	9.17	10.18	11.57	12.65	13.74	16.03
24689	3.37	3.70	4.02	4.94	5.89	6.66	7.83	9.07	10.20	12.37	13.92	17.51	19.57	21.54	24.26	25.81	30.57
	1.78	1.95	2.13	2.61	3.09	3.50	4.10	4.72	5.29	6.34	7.06	8.84	9.80	11.14	12.18	13.23	15.44
24994	3.29	3.63	3.92	4.83	5.76	6.50	7.64	8.87	9.96	12.06	13.58	17.08	19.08	21.01	23.71	25.18	29.82
	1.72	1.89	2.04	2.51	2.99	3.37	3.95	4.56	5.12	6.12	6.81	8.52	9.45	10.74	11.74	12.76	14.88
25298	3.22	3.54	3.85	4.71	5.63	6.36	7.47	8.66	9.73	11.77	13.25	16.66	18.62	20.50	23.17	24.57	29.11
	1.66	1.82	1.98	2.42	2.88	3.25	3.80	4.40	4.93	5.89	6.56	8.21	9.10	10.34	11.32	12.30	14.34
25603	3.15	3.47	3.76	4.59	5.50	6.20	7.29	8.46	9.51	11.49	12.94	16.27	18.18	20.02	22.66	23.99	28.41
	1.60	1.76	1.91	2.33	2.78	3.13	3.67	4.24	4.77	5.69	6.33	7.92	8.78	9.98	10.91	11.86	13.83
25908	3.07	3.40	3.67	4.49	5.38	6.05	7.12	8.28	9.31	11.22	12.63	15.89	17.76	19.55	22.16	23.43	27.75
	1.54	1.70	1.85	2.26	2.69	3.02	3.54	4.11	4.61	5.48	6.11	7.64	8.47	9.63	10.53	11.45	13.35
26213	3.02	3.32	3.60	4.37	5.26	5.92	6.94	8.09	9.10	10.96	12.34	15.52	17.35	19.10	21.67	22.89	27.11
	1.50	1.64	1.79	2.17	2.61	2.91	3.41	3.96	4.45	5.29	5.89	7.38	8.18	9.29	10.17	11.06	12.90
26518	2.94	3.25	3.53	4.27	5.15	5.77	6.80	7.92	8.90	10.71	12.05	15.16	16.94	18.66	21.20	22.37	26.48
	1.44	1.60	1.73	2.10	2.52	2.81	3.31	3.83	4.30	5.12	5.70	7.13	7.90	8.98	9.82	10.68	12.44
26822	2.88	3.18	3.44	4.18	5.04	5.64	6.64	7.74	8.71	10.47	11.79	14.82	16.56	18.24	20.75	21.86	25.88
	1.40	1.54	1.67	2.02	2.43	2.72	3.19	3.72	4.15	4.94	5.50	6.88	7.63	8.68	9.48	10.31	12.02

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	48LH10	48LH11	48LH12	48LH13	48LH14	48LH15	48LH16	48LH17	48LH18	48LH19	48LH20	48LH21	48LH22	48LH23	48LH24	48LH25
Depth (mm)	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219
Approx. Wt. (kN/m)	0.31	0.32	0.36	0.42	0.47	0.53	0.61	0.69	0.83	0.90	1.15	1.27	1.47	1.59	1.81	2.10
Span (mm) ↓																
14630	7.85	8.47	11.03	13.20	16.08	18.44	21.81	24.48	31.24	37.02						
	7.85	8.47	11.03	13.20	16.08	18.44	21.81	24.48	31.24	37.02						
14935	7.66	8.26	10.74	12.84	15.63	17.93	21.19	23.77	30.34	35.87						
	7.66	8.26	10.74	12.84	15.63	17.93	21.19	23.77	30.34	35.87						
15240	7.47	8.05	10.46	12.50	15.19	17.42	20.56	23.07	29.46	34.76						
	7.47	8.05	10.46	12.50	15.19	17.42	20.56	23.07	29.46	34.76						
15545	7.28	7.85	10.18	12.18	14.78	16.94	19.97	22.41	28.61	33.71	42.45					
	7.28	7.85	10.18	12.18	14.78	16.94	19.97	22.41	28.61	33.71	42.45					
15850	7.10	7.66	9.92	11.86	14.37	16.47	19.40	21.77	27.80	32.69	41.16					
	7.10	7.66	9.92	11.86	14.37	16.47	19.40	21.77	27.80	32.35	40.51					
16154	6.93	7.47	9.66	11.55	13.98	16.03	18.85	21.16	27.01	31.71	39.94					
	6.93	7.47	9.66	11.55	13.98	16.03	18.85	21.16	27.01	30.54	38.25					
16459	6.75	7.29	9.41	11.25	13.60	15.60	18.32	20.56	26.25	30.77	38.76	42.68				
	6.75	7.29	9.41	11.25	13.60	15.60	18.25	20.41	25.91	28.86	36.14	40.08				
16764	6.59	7.12	9.16	10.96	13.23	15.17	17.81	19.99	25.52	29.87	37.63	41.44				
	6.59	7.12	9.16	10.96	13.09	14.98	17.27	19.32	24.53	27.31	34.20	37.92				
17069	6.43	6.94	8.93	10.68	12.88	14.78	17.33	19.45	24.82	29.01	36.55	40.24				
	6.43	6.94	8.80	10.50	12.39	14.19	16.35	18.30	23.23	25.87	32.39	35.91				
17374	6.28	6.78	8.71	10.42	12.55	14.38	16.85	18.91	24.15	28.19	35.50	39.09				
	6.15	6.64	8.34	9.95	11.74	13.45	15.51	17.33	22.02	24.51	30.70	34.04				
17678	6.12	6.62	8.49	10.15	12.21	14.01	16.40	18.40	23.51	27.39	34.51	38.00				
	5.83	6.30	7.90	9.45	11.14	12.76	14.71	16.46	20.89	23.27	29.14	32.31				
17983	5.98	6.46	8.27	9.90	11.89	13.64	15.96	17.92	22.88	26.63	33.55	36.93	43.62			
	5.54	5.98	7.51	8.97	10.59	12.12	13.98	15.63	19.84	22.09	27.67	30.69	34.87			
18288	5.85	6.31	8.07	9.66	11.60	13.29	15.54	17.43	22.27	25.88	32.61	35.91	42.40			
	5.28	5.69	7.15	8.53	10.06	11.52	13.28	14.85	18.86	21.00	26.31	29.17	33.15			
18593	5.72	6.17	7.88	9.42	11.29	12.95	15.13	16.98	21.68	25.18	31.72	34.93	41.25	43.37		
	5.02	5.41	6.80	8.11	9.57	10.96	12.63	14.12	17.95	19.97	25.02	27.74	31.53	34.51		
18898	5.57	6.02	7.69	9.19	11.01	12.63	14.73	16.54	21.13	24.50	30.86	33.98	40.14	42.17		
	4.77	5.15	6.47	7.73	9.12	10.43	12.03	13.45	17.08	19.03	23.83	26.41	30.03	32.86		
19202	5.45	5.88	7.50	8.97	10.74	12.31	14.36	16.12	20.59	23.84	30.04	33.08	39.08	41.00		
	4.55	4.90	6.17	7.36	8.68	9.95	11.47	12.82	16.28	18.12	22.70	25.17	28.61	31.31		
19507	5.32	5.74	7.32	8.75	10.47	12.01	13.99	15.71	20.06	23.21	29.24	32.20	37.95	39.89		
	4.34	4.68	5.88	7.01	8.28	9.48	10.93	12.22	15.52	17.29	21.65	24.00	27.29	29.85		
19812	5.21	5.61	7.15	8.55	10.21	11.71	13.64	15.32	19.55	22.60	28.48	31.37	36.79	38.83		
	4.14	4.46	5.61	6.69	7.90	9.04	10.43	11.67	14.81	16.50	20.66	22.91	26.03	28.50		
20117	5.09	5.50	6.97	8.34	9.96	11.44	13.30	14.94	19.07	22.02	27.75	30.55	35.68	37.79	42.81	
	3.95	4.26	5.35	6.40	7.54	8.63	9.96	11.14	14.15	15.76	19.73	21.87	24.86	27.21	29.61	
20422	4.97	5.37	6.81	8.15	9.73	11.16	12.97	14.56	18.60	21.46	27.04	29.77	34.61	36.80	41.53	
	3.77	4.07	5.12	6.11	7.20	8.26	9.52	10.65	13.52	15.06	18.85	20.91	23.77	26.00	28.29	
20726	4.87	5.25	6.65	7.96	9.50	10.90	12.66	14.21	18.15	20.91	26.35	29.02	33.60	35.85	40.32	
	3.61	3.89	4.90	5.85	6.90	7.89	9.10	10.18	12.93	14.40	18.03	19.99	22.72	24.86	27.05	
21031	4.75	5.13	6.50	7.77	9.26	10.63	12.36	13.86	17.71	20.40	25.69	28.29	32.63	34.93	39.15	
	3.45	3.73	4.68	5.60	6.61	7.55	8.71	9.74	12.37	13.77	17.24	19.13	21.74	23.80	25.88	
21336	4.65	5.02	6.36	7.60	9.06	10.39	12.05	13.54	17.29	19.89	25.05	27.59	31.69	34.04	38.03	
	3.31	3.57	4.49	5.35	6.31	7.23	8.34	9.34	11.85	13.19	16.52	18.31	20.82	22.79	24.79	
21641	4.55	4.91	6.21	7.44	8.84	10.14	11.77	13.22	16.88	19.39	24.44	26.92	30.80	33.18	36.96	43.78
	3.18	3.42	4.30	5.13	6.05	6.93	7.99	8.94	11.35	12.63	15.83	17.55	19.94	21.83	23.75	27.71
21946	4.45	4.81	6.07	7.26	8.63	9.90	11.49	12.90	16.47	18.92	23.84	26.26	29.96	32.36	35.94	42.57
	3.05	3.28	4.13	4.91	5.80	6.65	7.66	8.56	10.88	12.12	15.17	16.82	19.13	20.92	22.76	26.57

ASD

METRIC LOAD TABLE/OPEN WEB STEEL JOISTS, LH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown In Kilonewtons Per Meter (kN/m)

Joist Designation	48LH10	48LH11	48LH12	48LH13	48LH14	48LH15	48LH16	48LH17	48LH18	48LH19	48LH20	48LH21	48LH22	48LH23	48LH24	48LH25
Depth (mm)	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219	1219
Approx. Wt. (kN/m)	0.31	0.32	0.36	0.42	0.47	0.53	0.61	0.69	0.83	0.90	1.15	1.27	1.47	1.59	1.81	2.10
Span (mm) ↓																
22250	4.36	4.71	5.93	7.10	8.44	9.69	11.22	12.60	16.09	18.47	23.27	25.64	29.14	31.56	34.96	41.40
	2.91	3.15	3.95	4.72	5.57	6.37	7.35	8.23	10.43	11.63	14.56	16.14	18.34	20.08	21.84	25.48
22555	4.27	4.61	5.80	6.94	8.26	9.47	10.97	12.31	15.73	18.03	22.72	25.02	28.35	30.80	34.01	40.29
	2.80	3.02	3.79	4.53	5.35	6.12	7.06	7.89	10.02	11.16	13.98	15.49	17.61	19.27	20.97	24.45
22860	4.17	4.50	5.67	6.80	8.07	9.25	10.71	12.02	15.36	17.61	22.18	24.44	27.59	30.06	33.11	39.21
	2.68	2.90	3.64	4.34	5.13	5.88	6.77	7.57	9.61	10.71	13.42	14.88	16.91	18.50	20.13	23.49
23165	4.10	4.42	5.56	6.65	7.89	9.04	10.47	11.76	15.01	17.20	21.67	23.87	26.86	29.34	32.23	38.19
	2.58	2.78	3.50	4.18	4.93	5.64	6.50	7.28	9.25	10.30	12.90	14.30	16.25	17.78	19.35	22.57
23470	4.01	4.33	5.44	6.50	7.72	8.85	10.24	11.49	14.68	16.79	21.17	23.32	26.18	28.66	31.40	37.19
	2.48	2.68	3.37	4.02	4.74	5.42	6.26	7.00	8.88	9.89	12.39	13.74	15.63	17.10	18.60	21.70
23774	3.92	4.23	5.32	6.37	7.54	8.66	10.01	11.23	14.36	16.41	20.69	22.78	25.51	27.99	30.60	36.25
	2.39	2.58	3.23	3.86	4.56	5.22	6.02	6.74	8.55	9.51	11.92	13.22	15.03	16.44	17.89	20.86
24079	3.85	4.14	5.21	6.24	7.38	8.47	9.79	10.98	14.03	16.05	20.19	22.27	24.86	27.34	29.82	35.33
	2.30	2.48	3.12	3.72	4.39	5.03	5.79	6.47	8.23	9.16	11.47	12.72	14.46	15.81	17.22	20.08
24384	3.76	4.07	5.10	6.11	7.22	8.28	9.57	10.75	13.73	15.65	19.70	21.77	24.24	26.72	29.08	34.45
	2.21	2.39	3.00	3.59	4.23	4.84	5.57	6.24	7.92	8.81	11.04	12.24	13.92	15.23	16.57	19.33
24689	3.69	3.98	5.00	5.98	7.07	8.11	9.36	10.52	13.44	15.26	19.22	21.29	23.64	26.12	28.37	33.59
	2.13	2.30	2.88	3.45	4.07	4.67	5.37	6.01	7.63	8.49	10.63	11.80	13.41	14.68	15.96	18.63
24994	3.59	3.88	4.90	5.86	6.93	7.95	9.17	10.30	13.14	14.90	18.73	20.82	23.07	25.53	27.68	32.77
	2.05	2.21	2.78	3.32	3.92	4.49	5.18	5.79	7.35	8.18	10.25	11.36	12.93	14.14	15.38	17.95
25298	3.51	3.79	4.80	5.73	6.77	7.77	8.97	10.06	12.87	14.53	18.30	20.37	22.51	24.97	27.01	31.98
	1.98	2.14	2.69	3.22	3.79	4.34	5.00	5.58	7.09	7.89	9.88	10.96	12.46	13.63	14.84	17.30
25603	3.44	3.72	4.69	5.60	6.62	7.60	8.77	9.85	12.60	14.18	17.86	19.93	21.97	24.43	26.37	31.23
	1.92	2.07	2.61	3.10	3.66	4.18	4.83	5.41	6.82	7.61	9.52	10.58	12.02	13.14	14.31	16.69
25908	3.37	3.63	4.59	5.48	6.47	7.44	8.58	9.63	12.30	13.86	17.43	19.48	21.46	23.90	25.75	30.50
	1.85	1.99	2.52	3.00	3.54	4.05	4.67	5.22	6.59	7.35	9.20	10.20	11.60	12.69	13.80	16.11
26213	3.29	3.56	4.49	5.37	6.33	7.28	8.40	9.42	12.02	13.52	17.03	19.03	20.95	23.37	25.15	29.78
	1.79	1.94	2.43	2.90	3.41	3.92	4.52	5.04	6.36	7.09	8.88	9.85	11.19	12.25	13.32	15.55
26518	3.22	3.48	4.39	5.25	6.20	7.12	8.21	9.22	11.74	13.22	16.63	18.59	20.47	22.88	24.57	29.11
	1.73	1.88	2.34	2.81	3.31	3.79	4.36	4.88	6.14	6.84	8.58	9.51	10.81	11.83	12.87	15.01
26822	3.16	3.41	4.30	5.15	6.07	6.97	8.04	9.03	11.47	12.93	16.27	18.18	20.02	22.40	24.02	28.44
	1.69	1.82	2.27	2.72	3.21	3.67	4.21	4.72	5.93	6.62	8.28	9.19	10.44	11.42	12.43	14.50
27127	3.09	3.34	4.21	5.03	5.93	6.82	7.88	8.84	11.22	12.63	15.90	17.77	19.57	21.93	23.48	27.81
	1.63	1.75	2.20	2.62	3.09	3.56	4.08	4.58	5.74	6.39	8.01	8.88	10.09	11.04	12.02	14.02
27432	3.03	3.28	4.13	4.93	5.82	6.68	7.70	8.65	10.97	12.36	15.54	17.38	19.13	21.48	22.95	27.18
	1.57	1.70	2.14	2.55	3.00	3.44	3.95	4.43	5.56	6.18	7.74	8.59	9.76	10.68	11.63	13.55
27737	2.97	3.21	4.04	4.84	5.69	6.53	7.55	8.47	10.72	12.08	15.20	16.98	18.70	21.04	22.46	26.59
	1.53	1.64	2.07	2.48	2.90	3.32	3.83	4.29	5.37	5.98	7.48	8.30	9.44	10.33	11.23	13.11
28042	2.91	3.15	3.96	4.74	5.58	6.40	7.39	8.30	10.49	11.82	14.87	16.62	18.30	20.62	21.96	26.02
	1.48	1.60	2.01	2.39	2.81	3.22	3.72	4.15	5.19	5.79	7.25	8.04	9.13	9.99	10.87	12.69
28346	2.86	3.09	3.88	4.64	5.47	6.27	7.25	8.14	10.27	11.57	14.56	16.27	17.92	20.21	21.49	25.46
	1.44	1.54	1.94	2.32	2.72	3.12	3.60	4.02	5.03	5.60	7.01	7.77	8.84	9.67	10.53	12.28
28651	2.80	3.03	3.80	4.55	5.35	6.15	7.10	7.98	10.05	11.32	14.24	15.92	17.52	19.80	21.04	24.92
	1.40	1.50	1.88	2.24	2.64	3.03	3.48	3.91	4.87	5.42	6.80	7.53	8.56	9.36	10.20	11.89
28956	2.74	2.97	3.73	4.46	5.25	6.02	6.96	7.82	9.83	11.07	13.95	15.58	17.16	19.40	20.59	24.40
	1.35	1.45	1.83	2.18	2.56	2.93	3.38	3.79	4.71	5.25	6.58	7.29	8.28	9.07	9.88	11.52
29261	2.69	2.91	3.66	4.37	5.15	5.91	6.82	7.66	9.63	10.85	13.65	15.26	16.81	19.03	20.16	23.89
	1.31	1.41	1.78	2.11	2.49	2.84	3.28	3.67	4.56	5.09	6.37	7.07	8.04	8.80	9.57	11.16

Steel Joist Institute – SJI COSP - 2020

CODE OF STANDARD PRACTICE
FOR STEEL JOISTS AND JOIST GIRDERS

Adopted by the Steel Joist Institute April 7, 1931
Revised to Nov. 10, 2014 - Effective Jan.1, 2015

SECTION 1.
GENERAL

1.1 SCOPE

The practices and customs set forth herein are in accordance with good engineering practice, tend to ensure safety in steel joist and Joist Girder construction, and are standard within the industry. There shall be no conflict between this code and any legal building regulation. This code shall only supplement and amplify such laws. Unless specific provisions to the contrary are made in a contract for the purchase of steel joists or Joist Girders, this code is understood to govern the interpretation of such a contract.

1.2 APPLICATION

This Code of Standard Practice is to govern as a standard unless otherwise covered in the architects' and engineers' plans and specifications.

1.3 DEFINITIONS

Add-Load. A single vertical concentrated load that occurs at any one panel point along the joist chord. This load is in addition to any other gravity loads specified.

Bend-Check Load. A vertical concentrated load used to design the joist chord for the additional bending stresses resulting from this load being applied at any location between the joist panel points. This load shall already be accounted for in the specified joist designation load, uniform load, or Add-Load and is used only for the additional bending check in the chord and does not contribute to the overall axial forces within the joist. An ideal use of this is for incidental loads which have already been accounted for in the design loading but may induce additional bending stress due to this load occurring at any location along the chord.

Buyer. The entity that has agreed to purchase Material from the manufacturer and has also agreed to the terms of sale.

Erector. The entity that is responsible for the safe and proper erection of the materials in accordance with all applicable codes and regulations.

Material. Steel joists, Joist Girders and accessories as provided by the seller.

Owner. The entity that is identified as such in the contract documents.

Placement Plans. Drawings that are prepared depicting the interpretation of the contract document's requirements for the Material to be supplied by the Seller. These floor or roof plans are approved by the Specifying Professional, Buyer, or Owner for conformance with the design requirements. The Seller uses the information contained on these drawings for final material design. A unique piece mark number is typically shown for the individual placement of the steel joists, Joist Girders and accessories along with sections that describe the end bearing conditions and minimum attachment required so that material is placed in the proper location in the field.

Seller. A company certified by the Steel Joist Institute engaged in the manufacture and distribution of steel joists, Joist Girders and accessories.

Specifying Professional. The licensed professional who is responsible for sealing the building contract documents, that indicates that he or she has performed or supervised the analysis, design and document preparation for the structure and has knowledge of the load-carrying structural system.

Structural Drawings. The graphic or pictorial portions of the contract documents showing the design, location and dimensions of the work. These documents generally include plans, elevations, sections, details, connections, all loads, schedules, diagrams and notes.

1.4 DESIGN

In the absence of ordinances or specifications to the contrary, all designs prepared by the Specifying Professional shall be in accordance with the Steel Joist Institute Standard Specifications of latest adoption.

1.5 RESPONSIBILITY FOR DESIGN AND ERECTION

When material requirements are specified, the seller shall assume no responsibility other than to furnish the items listed in Section 5.2(a). When material requirements are not specified, the seller shall furnish the items listed in Section 5.2(a) in accordance with Steel Joist Institute Standard Specifications of latest adoption, and this code. Pertinent design information shall be provided to the seller as stipulated in Section 6.1. The seller shall identify material by showing size and type. In no case shall the seller assume any responsibility for the erection of the item furnished.

1.6 PERFORMANCE TESTS FOR OPEN WEB STEEL JOIST CONSTRUCTION

When a performance test on a joist is required, the following criteria shall be used:

a) The performance test load shall be the maximum factored uniformly distributed downward design load for the selected joist.

   (1) The TOTAL safe factored uniformly distributed load-carrying capacity tabulated in the Standard LRFD Load Table for the specific joist designation and span.

   (2) For a joist with factored loading conditions other than those found in the Standard LRFD Load Table, this is the LRFD Load Combination resulting in the highest uniformly distributed downward factored design load.

   (3) For a joist with loading conditions other than those found in the Standard ASD Load Table, this is the ASD Load Combination resulting in the highest uniformly distributed downward design load multiplied times 1.50.

b) Joist self-weight and the weight of all test materials shall be included in the calculation of applied performance test loading as appropriate for the joist during testing.

c) Loading shall be uniformly distributed across the full length of the joist top chord, and the load application shall maintain uniform distribution throughout the test. At any stage during the application of the test loading, the test load shall not be distributed in such a manner as to result in any joist component being subjected to a higher proportion of force than intended by the joist design.

d) If tested as a panel assembly, the joists shall be tested in pairs with deck, deck attachments, and bridging installed per the approved joist and deck Placement Plans. All bottom chord horizontal bridging rows shall be terminated by bracing back to the top chord of the adjacent joist or by a lateral restraint system which does not inhibit the vertical deflection of the test joist.

e) If tested singly in a load test machine apparatus, the joist chords shall be braced to prevent lateral movement, without inhibiting vertical displacement. The joist top chord shall have lateral braces located at equal spacing of no more than 36 inches (914 mm) on center. The joist bottom chord shall have lateral braces located, at a minimum, per the bottom chord bridging locations shown on the approved joist placement plan.

f) The performance test loading shall be applied at a rate of no greater than 25 plf per minute and shall be sustained for no less than 15 minutes. After the maximum test load has been removed for a minimum of 10 minutes, the remaining vertical displacement at midspan shall not exceed 20% of the vertical midspan deflection sustained under the full performance test load.

g) All costs associated with such testing shall be borne by the purchaser.

h) Joists that have been designed and manufactured and have satisfied the above performance test criteria shall be considered to satisfy the intent of the Steel Joist Institute Standard Specifications, and shall be considered acceptable for use in construction. No further proof of strength of individual joist components or connections is required.

SECTION 2.
JOISTS, JOIST GIRDERS, AND ACCESSORIES

2.1 STEEL JOISTS AND JOIST GIRDERS

Steel joists and Joist Girders shall carry the designations and meet the requirements of the Steel Joist Institute Standard Specifications of latest adoption.

K-Series, LH-Series, DLH-Series joists, and Joist Girders are furnished either underslung or square ended, with top chords either parallel, pitched one way or pitched two ways. It is not recommended that any Joist Girder, or any DLH-Series joist that exceeds 72 inches (1829 mm) in depth and has a span greater than 80 feet (24384 mm), be used in a bottom bearing configuration.

The steel joist or Joist Girder designation depth or nominal depth shall be the depth at midspan, except for double pitched joists which shall be the depth at the ridge. K-Series, LH-Series, DLH-Series joists, and Joist Girders shall be permitted to have either parallel chords or a top chord pitch of up to 1/2 inch per foot (1:24).

2.2 BEARING SEATS

Underslung types are furnished with minimum end bearing depths as shown in Table 2.2-1. A standard maximum joist bearing seat width (perpendicular to the joist length) is provided. This width shall be permitted to vary based on the joist design and joist manufacturer.

TABLE 2.2-1

STANDARD END BEARING SEAT DEPTH AND STANDARD MAXIMUM SEAT WIDTH		
JOIST SECTION NUMBER[1]	**MINIMUM BEARING DEPTH**	**MAXIMUM SEAT WIDTH[2]**
K1-12	2 ½" (64 mm)	6" (152 mm)
LH02-06	5" (127 mm)	6" (152 mm)
LH07-17, DLH10-17	5" (127 mm)	8" (203 mm)
JG	7 ½" (191 mm)	8" (203 mm)
LH/DLH18-25, JG[3]	7 ½" (191 mm)	13" (330 mm)
JG[4]	10" (254 mm)	13" (330 mm)

(1) **Last two digits of joist designation shown in Load Table.**
(2) **THE SEAT WIDTH MAY VARY BASED ON DESIGN.**
(3) **Joist Girders** with a self weight greater than 50 plf (0.73 kN/m).
(4) **Joist Girders** with a self weight equal to or greater than 150 plf (2.19 kN/m).

Joist Girder bearing seat widths vary depending on the Joist Girder size and shall be permitted to be up to 13" (330 mm) wide. The supporting structural member shall be made wide enough to accommodate the seat widths.

Where steel joists or Joist Girders are sloped, sloped end bearings may be provided where the slope exceeds 1/4 inch per foot (1:48). When sloped end bearings are required, the seat depths shall be adjusted to maintain the standard height at the shallow end of the sloped bearing. For Open Web Steel Joists, K-Series, bearing ends shall be permitted to not be beveled for slopes of 1/4 inch or less per foot (1:48). For sloped joist bearing seats refer to the sloped seat depth requirements of Table 2.2-2 and Table 2.2-3.

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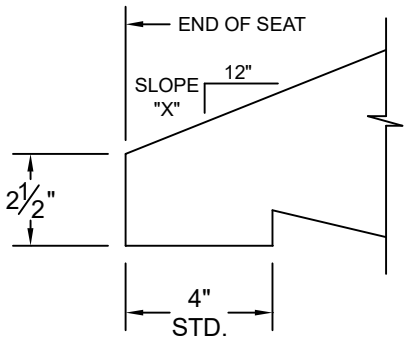
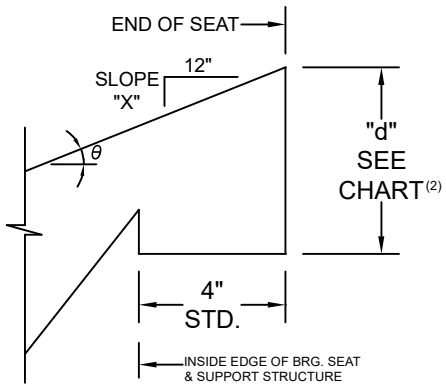
TABLE 2.2-2

SLOPED SEAT REQUIRMENTS FOR SLOPES 3/8":12 AND GREATER
K-SERIES OPEN WEB STEEL JOISTS

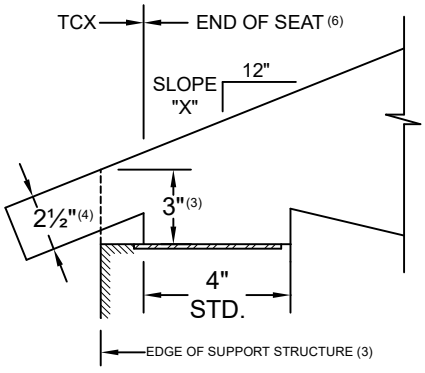
LOW END W/OUT TOP CHORD EXTENSIONS



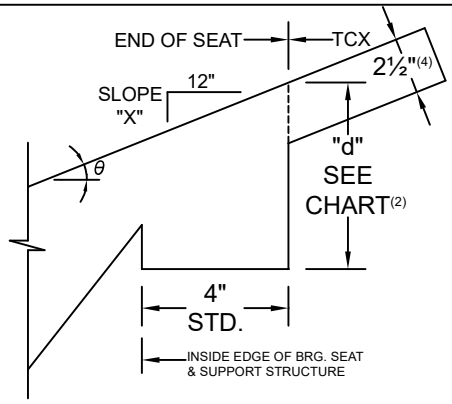
HIGH END W/OUT TOP CHORD EXTENSIONS



LOW END W/ TOP CHORD EXTENSIONS



HIGH END W/ TOP CHORD EXTENSIONS



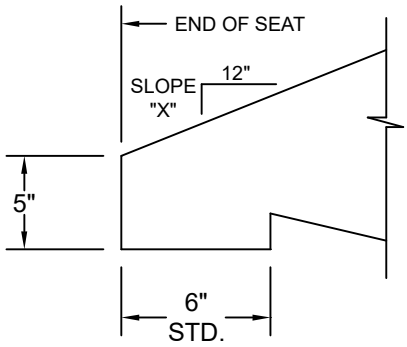
SLOPE "X":12	MINIMUM HIGH END SEAT DEPTH "d"
3/8	3 1/2
1/2	3 1/2
1	3 1/2
1 1/2	4
2	4
2 1/2	4
3	4 1/2
3 1/2	4 1/2
4	4 1/2
4 1/2	5
5	5
5 1/2	5 1/2
6	5 1/2
SEE NOTE (2) FOR SLOPE RATES GREATER THAN 6:12	

Notes:
(1) Depths shown are the minimum required for manufacturing of sloped seats. Depths may vary depending on actual bearing conditions.
(2) $d = 1/2 + 2.5/\cos\theta + 4\tan\theta$ (Rounded up to the nearest 1/2".)
(3) Clearance must be checked at outer edge of support. Increase bearing depths as required to allow passage of 2 1/2" deep extension.
(4) If extension depth greater than 2 1/2" is required, increase bearing depths accordingly.
(5) If slope is 1/4 : 12 or less, sloped seats are not required.
(6) Required bearing seat depth is determined at END OF SEAT.
(7) Also refer to SJI Specification 5.4 for special considerations of joist end reaction location.

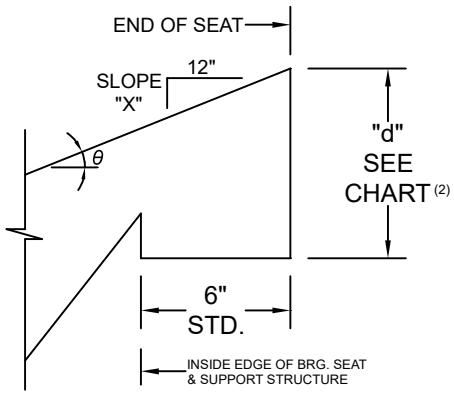
TABLE 2.2-3

SLOPED SEAT REQUIRMENTS FOR SLOPES 3/8":12 AND GREATER
LH- AND DLH-SERIES OPEN WEB STEEL JOISTS

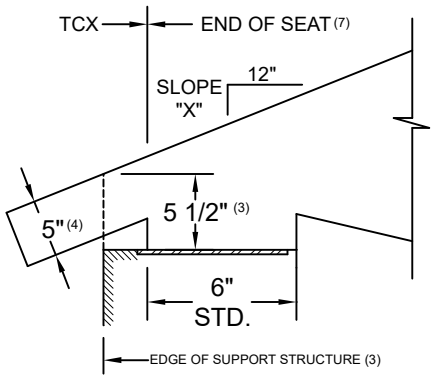
LOW END W/OUT TOP CHORD EXTENSIONS



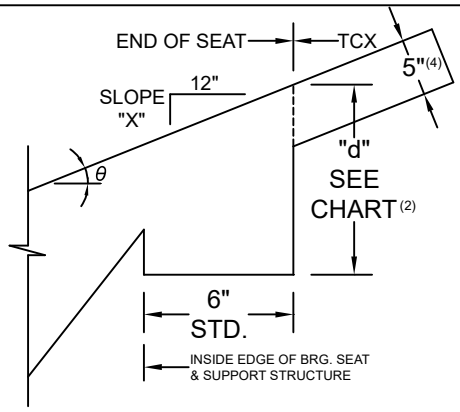
HIGH END W/OUT TOP CHORD EXTENSIONS



LOW END W/ TOP CHORD EXTENSIONS



HIGH END W/ TOP CHORD EXTENSIONS



SLOPE "X" : 12	MINIMUM HIGH END SEAT DEPTH "d"
3/8	6
1/2	6
1	6 1/2
1 1/2	6 1/2
2	7
2 1/2	7
3	7 1/2
3 1/2	7 1/2
4	8
4 1/2	8 1/2
5	8 1/2
5 1/2	9
6	9 1/2
SEE NOTE (2) FOR SLOPE RATES GREATER THAN 6:12	

Notes:
(1) Depths shown are the minimum required for manufacturing of sloped seats. Depth may vary depending on actual bearing condition.
(2) $d = 1/2 + 5 / \cos\theta + 6 \tan\theta$
(3) Clearance must be checked at outer edge of support. Increase bearing seat depth as required to allow passage of 5" deep extension.
(4) If extension depth greater than 5" is required, increase bearing depths accordingly.
(5) Add 2 1/2" to seat depth at 18 thru 25 chord section numbers. Consult with joist manufacturer for information when TCXs are present.
(6) If slope is 1/4 : 12 or less, sloped seats may not required.
(7) Required bearing seat depth shall be determined at END OF SEAT.
(8) Also refer to SJI Specification 5.4 for special considerations of joist end reaction location.

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2.3 JOIST LOCATION AND SPACING

The uniform loads as shown in the Standard Specifications Load Tables & Weight Tables of latest adoption shall be used to determine maximum joist spacing.

Where sidewalls, wall beams or tie beams are capable of supporting the floor slab or roof deck, the first adjacent joists should be placed one full space from these members. Joists are provided with camber and may have a significant difference in elevation with respect to the adjacent structure because of this camber. This difference in elevation shall be given consideration when locating the first joist adjacent to a side wall, wall beam, or tie beam.

K-Series Joists should be placed no closer than 6 inches (152 mm) to adjacent walls or structural members. LH-Series and DLH-Series Joists should be placed no closer than 12 inches (305 mm) to adjacent walls or structural members. Where partition walls are supported by parallel floor joists, there shall be at least one joist provided under each such partition, and more than one such joist shall be provided if necessary to safely support the weight of such partition and the adjacent floor. When partitions occur perpendicular to the joists, they shall be treated as concentrated loads on the supporting joists.

2.4 SPECIFYING DESIGN LOADS

Neither the Steel Joist Institute nor the joist manufacturer establishes the loading requirements for which structures are designed.

The *specifying professional* shall provide the nominal loads and load combinations as stipulated by the applicable code under which the structure is designed and shall provide the design basis (ASD or LRFD).

The *specifying professional* shall calculate and provide the magnitude and location of ALL JOIST and JOIST GIRDER LOADS. This includes all special loads (drift loads, mechanical units, net uplift, axial loads, moments, structural bracing loads, or other applied loads) which are to be incorporated into the joist or Joist Girder design. For Joist Girders, reactions from supported members shall be clearly denoted as point loads on the Joist Girder. When necessary to clearly convey the information, a load diagram or load schedule shall be provided.

The *specifying professional* shall give due consideration to the following loads and load effects:

- Ponded rain water.
- Accumulation of snow in the vicinity of obstructions such as penthouses, signs, parapets, adjacent buildings, etc.
- Wind and seismic forces. Indicate wind NET uplift in pounds per square foot (Pascals) and any other wind or seismic forces required to be incorporated into the joist or Joist Girder design. If applicable, make clear if loads specified are reduced (i.e. for ASD 0.6W=, 0.7E=) and provide any pertinent S_{DS} values. Connection details shall be designed by the *specifying professional*.
- Movable partitions. Convey any special deflection requirements as well as any stacked loading conditions.
- Type and magnitude of end moments and/or axial forces at the joist and Joist Girder end supports shall be shown on the Structural Drawings. For moment resisting joists or Joist Girders framing at or near the top of a column, due consideration shall be given to extend the column length to allow a plate type connection between the top of the joist or Joist Girder top chord and the column.
  Avoid transferring joist or Joist Girder end moments and axial forces through the bearing seat connection.
  A note shall be provided on the structural drawings stating that all moment resisting joists shall have all dead loads applied to the joist before the bottom chord struts are welded to the supporting connection whenever the design moments provided do not include dead load.
  The top and bottom chord moment connection details shall be designed by the *specifying professional*. The joist designer shall furnish the *specifying professional* with the joist detail information if requested. Additional design tools and details are available at the Steel Joist Institute's website, www.steeljoist.org.
- Joist chords shall not carry out-of-plane or torsional loads, such as from horizontal components of concentrated loads applied to laterally sloped joists, braces, screen walls, posts, etc. The structural contract drawings shall show the required structural bracing to resolve these forces.

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Where concentrated loads occur, the magnitude and location of these concentrated loads shall be shown on the structural drawings when, in the opinion of the *specifying professional*, they shall require consideration by the joist manufacturer. For nominal concentrated loads, which have been accounted for in the specified uniform design loads, a "strut" to transfer the load to a panel point on the opposite chord shall not be required provided that the sum of the concentrated loads within a chord panel does not exceed 100 pounds (445 N) and the attachments are concentric to the chord. When exact dimensional locations for concentrated loads which do not meet the above criteria are provided by the *specifying professional,* the joist shall be designed for the loads and load locations provided without the need for additional field applied web members at the specified locations.

(a) Specifying Joist Design Loads

The Steel Joist Institute Load Tables are based on uniform loading conditions and are valid for use in selecting joist sizes for gravity loads that can be expressed in terms of "pounds per linear foot" (kiloNewtons per meter) of joist.

For other loads, the Specifying Professional shall use one of the five options described below that allows:

- The estimator to price the joists.
- The joist manufacturer to design the joists in accordance with the Standard Specifications of latest adoption.
- The owner to obtain the most economical joists.

Option 1: Select a joist designation from the Standard Load Table (or specify a joist type using a uniform load in the designation) which has been determined to be adequate for all design loads. The shear and moment envelope resulting from the selected uniform load shall meet the actual shear and moment requirements. Thus, this option alone may not be adequate if large concentrated loads need to be designed for.

Option 2: Select a joist designation from the Standard Load Table (or specify a joist type using a uniform load in the designation) and also provide the load and location of any additional loads on the structural plan with a note "Joist manufacturer shall design joists for additional loads at locations shown." This option works well for a few added loads per joist with known magnitude and locations.

Option 3: For additional point loads with exact locations not known along the joist or for incidental loads, any one, or both, of the following can be specified on the structural plan in addition to option 1 or 2 above:

a) "**Design for a (__) lb. concentrated load located at any one panel point along the joist**". This is referred to as an *Add-Load*.

b) "**Design for additional bending stresses resulting from a (__) lb. concentrated load located at any location along (____) chord**". This is referred to as a *Bend-Check* and can be specified on the **top** chord, **bottom** chord, or **both top and bottom** chords. This can be used when the concentrated load is already accounted for in the joist designation, uniform load, or specified *Add-Load* yet this specified amount of load shall be permitted to also be located at any location between panel points. The additional bending stresses as a result of this load are then designed for. A *Bend-Check* load shall not exceed (*Add-Load* + 400 lbs.) A *Bend-Check* load can be specified by itself without an *Add-Load*.

c) Both (a) and (b) above can be specified with equal concentrated loads for each; or simply denote **"Design joist for a (__) lb. concentrated load at any location along the (___) chord."**

Example uses:

- *Specifying professional* selects a standard joist capable of carrying a 500 lb. RTU. However, the location and exact frame size is not yet known but the frame load shall result in two- 250 lb. point loads at least 5'-0" apart. **Specify a 250 lb. *Bend-Check.***
- Standard joist specified but not selected for 500 lb. RTU load, location not known. **Specify a 500 lb. *Add-Load* and 250 lb. *Bend-Check*.**
- Standard SJI joist selected to carry collateral load of 3 psf. *Specifying professional* wants bending from 150 lb. incidental loads to also be designed for. **Specify a 150 lb. *Bend-Check*.**

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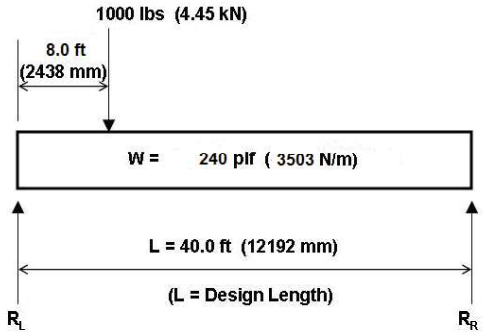
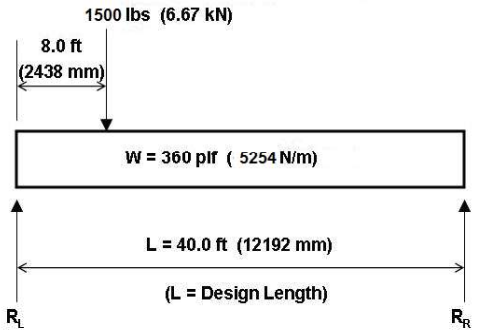
Option 4: Select a KCS joist using moment and end reaction without specifying added loads or diagrams. This option works well for concentrated loads for which exact locations are not known or for multiple loading.

a) Determine the maximum moment.

b) Determine the maximum end reaction (shear).

c) Select the required KCS joist that provides the required moment and end reaction (shear). Note that the top chord end panel is designed for axial load based on the force in the first tension web, that is based on the specified end reaction. A uniform load of 825 plf (12030 N/m) LRFD or 550 plf (8020 N/m) ASD is used to check end panel bending. If the end panel loading exceeds this, reduce the joist spacing or go to Option 5.

d) Specify on the structural drawings that an extra web shall be field applied at all concentrated loads not occurring at panel points.

OPTION 4 - ASD EXAMPLE 1:	**OPTION 4 - LRFD EXAMPLE 1:**
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	**U.S. CUSTOMARY UNITS AND (METRIC UNITS)**
	
M = 625 k-in. (70.6 kN-m) R_L = 5600 lbs (24.9 kN), R_R = 5000 lbs (22.2 kN) Select a 22KCS3, M = 658 k-in. (74.3 kN-m) R = 6600 lbs (29.3 kN) Bridging section no. 9 for L = 40 ft. (12192 mm) Use 22K9 to determine bridging and stability requirements. Since a standard KCS Joist can be selected from the load table a load diagram is not required.	M = 938 k-in. (105.9 kN-m) R_L = 8400 lbs (37.37 kN), R_R = 7500 lbs (33.36 kN) Select a 22KCS3, M = 987 k-in. (111.5 kN-m) R = 9900 lbs (44.0 kN) Bridging section no. 9 for L = 40 ft. (12192 mm) Use 22K9 to determine bridging and stability requirements. Since a standard KCS Joist can be selected from the load table a load diagram is not required.

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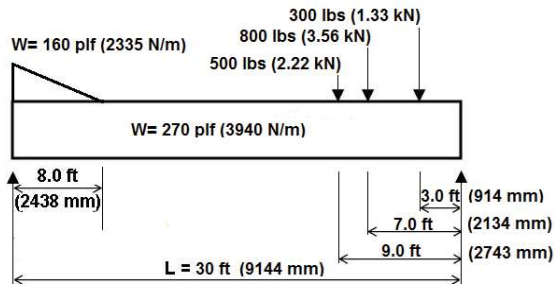
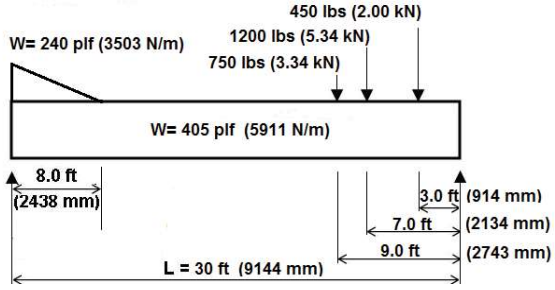
OPTION 4 - ASD EXAMPLE 2:	OPTION 4 - LRFD EXAMPLE 2:
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	**U.S. CUSTOMARY UNITS AND (METRIC UNITS)**
	
M = 443 k-in. (50.1 kN-m) R_L = 5000 lbs (22.24 kN), R_R = 5340 lbs (23.75 kN) Select a 22KCS2, M = 488 k-in. (55.1 kN-m) R = 5900 lbs (26.2 kN) Bridging section no. 6 for L = 30 ft. (9144 mm) Use 22K6 to determine bridging and stability requirements. Since the maximum uniform load of 430 plf [6275 N/m) (270 plf (3940 N/m) + 160 plf (2335 N/m)] does not exceed the maximum KCS Joist uniform load of 550 plf (8020 N/m) and a standard KCS Joist can be selected from the load table, a load diagram is not required.	M = 664 k-in. (75.03 kN-m) R_L = 7500 lbs (33.36 kN), R_R = 8010 lbs (35.63 kN) Select a 22KCS2, M = 732 k-in. (82.64 kN-m) R = 8850 lbs (39.3 kN) Bridging section no. 6 for L = 30 ft. (9144mm) Use 22K6 to determine bridging and stability requirements. Since the maximum ***factored*** uniform load of 645 plf (9413 N/m) (405 plf (5911 N/m) + 240 plf (3503 N/m)) does not exceed the maximum KCS Joist uniform load of 825 plf (12030 N/m) and a standard KCS Joist can be selected from the load table, a load diagram is not required.

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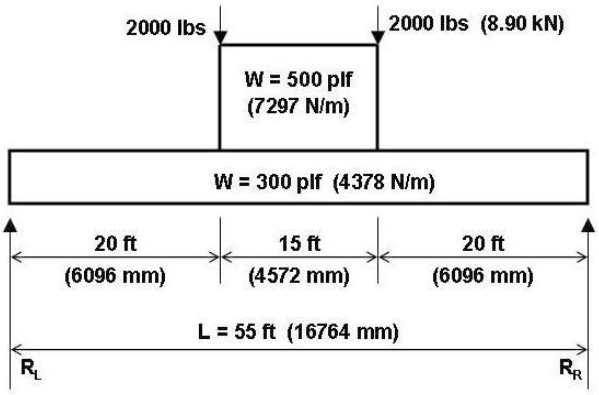
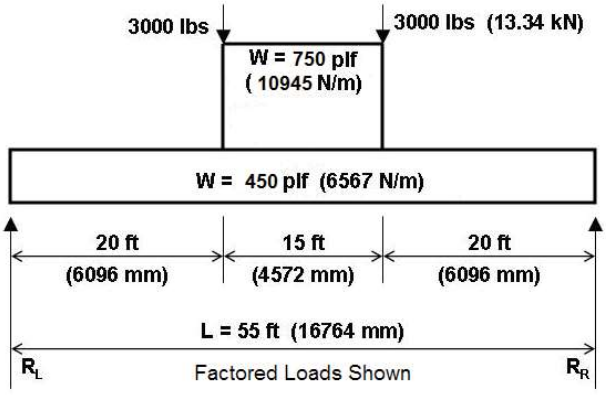
OPTION 4 - ASD EXAMPLE 3:	OPTION 4 - LRFD EXAMPLE 3:
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	**U.S. CUSTOMARY UNITS AND (METRIC UNITS)**
	
M = 2910 k-in. (328.8 kN-m) $R_L = R_R$ = 14000 lbs (62.28 kN) EXCEEDS CAPACITY OF 30KCS5 (MAXIMUM KCS JOIST) AND EXCEEDS MAXIMUM UNIFORM LOAD OF 550 plf (8027 N/m). **OPTION A:** Use double joists each having a minimum moment capacity, M = 1455 k-in. (164.4 kN-m) and shear capacity, R = 7000 lbs (31.14 kN) and a uniform load of 400 plf (5838 N/m). Select two 28KCS5, M = 1704 k-in. (192.5 kN-m), R = 9200 lbs (40.9 kN). Bridging section no. 12 for L = 55 ft. (16764 mm). Use 28K12 to determine bridging and stability requirements. **OPTION B:** Select a LH-Series Joist. See OPTION 5.	M = 4365 k-in. (493.2 kN-m) $R_L = R_R$ = 21000 lbs (93.41 kN) EXCEEDS CAPACITY OF 30KCS5 (MAXIMUM KCS JOIST AND EXCEEDS MAXIMUM ***FACTORED*** UNIFORM LOAD OF 825 plf (12040 N/m). **OPTION A:** Use double joists each having a minimum moment capacity, M = 2183 k-in. (246.65 kN-m) and shear capacity, R = 10500 lbs (46.71 kN) and a uniform load of 600 plf (8756 N/m). Select two 28KCS5, M = 2556 k-in. (288.7 kN-m), R = 13800 lbs (61.3 kN). Bridging section no. 12 for L = 55 ft. (16764 mm) Use 28K12 to determine bridging and stability requirements. **OPTION B:** Select a LH-Series Joist. See OPTION 5.

Option 5: Specify a SPECIAL joist designation when the joist includes more complex loading or for conditions which need consideration of multiple potentially controlling load combinations.

a) Provide a load diagram and/or enough information on the drawings to clearly define ALL loads.

b) If the loading criteria are too complex to adequately communicate on the drawings or with a simple load diagram, then the *specifying professional* shall provide a load schedule along with the appropriate load combinations. Regardless of where the loads are shown, unfactored design loads broken down by load categories shall be provided in order to design the joists correctly with applicable load combinations.

Place the designation (e.g. 28K SP or 28LH SP) with the following note: "Joist manufacturer to design joist to support loads as shown."

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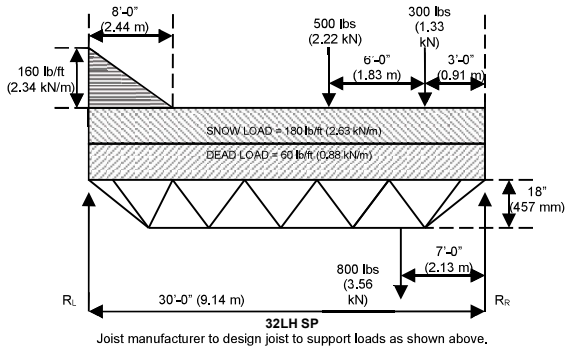
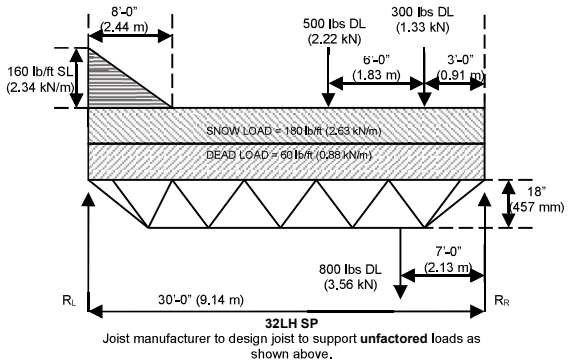
OPTION 5 - ASD EXAMPLE:	OPTION 5 - LRFD EXAMPLE:
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	U.S. CUSTOMARY UNITS AND (METRIC UNITS)
Load diagram per ASCE 7 2.4.1(3), D + S	Unfactored Load diagram per ASCE 7 2.3.2(3), 1.2D+1.6S
 Joist manufacturer to design joist to support loads as shown above.	 Joist manufacturer to design joist to support **unfactored** loads as shown above.
PLEASE NOTE THE LOAD COMBINATIONS SHOWN ARE FOR REFERENCE EXAMPLES ONLY.	

CAUTION FOR OPTIONS 1 thru 5 ABOVE:

If a K-Series joist is being specified, the Specifying Professional shall compare the equivalent uniform loads derived from the maximum moment and shear to the uniform loads tabulated in the K-Series Load Table. An equivalent unfactored uniform load in excess of 550 plf (8020 N/m) or a maximum unfactored end reaction exceeding 9200 lbs. (40.9 kN) indicates that the *specifying professiona*l shall use additional joists to reduce the loading or use an LH-Series joist and make provisions for 5 inch (127 mm) deep bearing seats.

If the joist has not been designed for localized accumulation of loads that results in a point or concentrated load, this load attachment shall be made at top or bottom chord panel points. Therefore, specify on the structural drawings, "Where concentrated loads do not occur at panel points, an extra web shall be field applied from the point of attachment to a panel point on the opposite chord", and indicate the extra web size and weld requirements. When exact dimensional locations for concentrated loads are provided by the *specifying professional*, the joist shall be designed for the loads and load locations provided without the need for additional field applied web members at the specified locations.

(b) Specifying Joist Girder Design Loads

The Steel Joist Institute's Design Guide ASD or LRFD Weight Tables for Joist Girders are based on uniformly spaced panel point loading conditions and are valid for use in selecting Joist Girder sizes for gravity conditions that can be expressed in kips (kiloNewtons) per panel point on the Joist Girder. Note that anything other than point loads shall be shown unfactored or in a Load Schedule. For a given Joist Girder span, the *specifying professional* first determines the number of joist spaces. Then the panel point loads are calculated and a depth is selected. The information provided in the tables gives the Joist Girder weight in pounds per linear foot (kiloNewtons per meter) for various depths and loads.

1. The purpose of the Joist Girder Design Guide Weight Table is to assist the *specifying professional* in the selection of a roof or floor support system.
2. It is not necessary to use only the depths, spans, or loads shown in the tables.
3. Holes in chord elements present special problems that shall be considered by both the *specifying professional* and the Joist Girder Manufacturer. The sizes and locations of such holes shall be clearly indicated on the structural drawings.
4. Live load deflection rarely governs because of the relatively small span to depth ratios of Joist Girders. However, it is recommended that a breakdown of the point loads, by load category (i.e. TL/LL), be provided so specified deflection requirements and load combinations can be properly accounted for in design.

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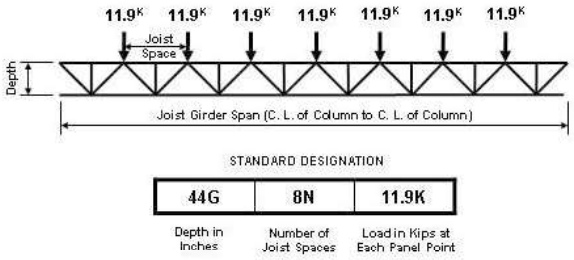
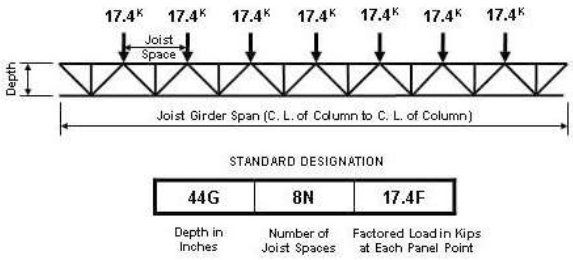
Example using *Allowable Strength Design (ASD)* and U. S. Customary units:	**Example using *Load and Resistance Factor Design (LRFD)* and U. S. Customary units:**
	
Given 42'-0" x 50'-0" bay. Joists spaced on 5'-3" centers Live Load = 30 psf Dead Load = 15 psf (includes the approximate Joist Girder weight) Total Load = 45 psf Note: Web configuration may vary from that shown. Contact joist manufacturer if exact layout must be known.	Given 42'-0" x 50'-0" bay. Joists spaced on 5'-3" centers Live Load = 30 psf x 1.6 Dead Load = 15 psf x 1.2 (includes the approximate Joist Girder weight) Total Load = 66 psf (factored) Note: Web configuration may vary from that shown. Contact joist manufacturer if exact layout must be known.
1. Determine number of actual joist spaces (N). In this example, N = 8. 2. Compute total load: Total load = 5.25 x 45 psf = 236.25 plf 3. Joist Girder Section: (Interior) a) Compute the concentrated load at top chord panel points P = 236.25 x 50 = 11,813 lbs = 11.9 kips (use 12K for depth selection). b) Select Joist Girder depth: Refer to the ASD Joist Girder Design Guide Weight Table for the 42'-0" span, 8 panel, 12.0K Joist Girder. The rule of about one inch of depth for each foot of span is a good compromise of limited depth and economy. Therefore, select a depth of 44 inches. c) The Joist Girder shall then be designated 44G8N11.9K. d) The ASD Joist Girder Design Guide Weight Table shows the weight for a 44G8N12K as 49 pounds per linear foot. The designer should verify that the weight is not greater than the weight assumed in the Dead Load above.	1. Determine number of actual joist spaces (N). In this example, N = 8. 2. Compute total factored load: Total load = 5.25 x 66 psf = 346.50 plf 3. Joist Girder Section: (Interior) a) Compute the factored concentrated load at top chord panel points P = 346.5 x 50 = 17,325 lbs = 17.4 kips (use 18K for depth selection). b) Select Joist Girder depth: Refer to the LRFD Joist Girder Design Guide Weight Table for the 42'-0" span, 8 panel, 18.0K Joist Girder. The rule of about one inch of depth for each foot of span is a good compromise of limited depth and economy. Therefore, select a depth of 44 inches. c) The Joist Girder shall then be designated 44G8N17.4F. Note that the letter "F" is included at the end of the designation to clearly indicate that this is a factored load. d) The LRFD Joist Girder Design Guide Weight Table shows the weight for a 44G8N18.0F as 49 pounds per linear foot. The designer should verify that the weight is not greater than the weight assumed in the Dead Load above.

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e) Check live load deflection:

Live load = 30 psf x 50 ft. = 1500 plf

Approximate Joist Girder moment of inertia

= 0.027 NPLd

= 0.027 x 8 x 11.9 x 42 x 44 = 4750 in.^{4}

Allowable deflection for plastered ceilings

$= L/360 = \frac{42(12)}{360} = 1.40$ in.

$$\Delta = 1.15\left[\frac{5wL^4}{384EI}\right] = \frac{1.15(5)(1.500/12)[(42)(12)]^4}{384(29000)(4750)}$$

= 0.88 in. <1.40 in., Okay

e) Check live load deflection:

Live load = 30 psf x 50 ft. = 1500 plf

Approximate Joist Girder moment of inertia

= 0.018 NPLd

= 0.018 x 8 x 17.4 x 42 x 44 = 4630 in.^{4}

Allowable deflection for plastered ceilings

$= L/360 = \frac{42(12)}{360} = 1.40$ in.

$$\Delta = 1.15\left[\frac{5wL^4}{384EI}\right] = \frac{1.15(5)(1.500/12)[(42)(12)]^4}{384(29000)(4630)}$$

= 0.90 in. <1.40 in., Okay

(c) Load Schedule Example

LOAD SCHEDULE (all loads are to be shown as unfactored)

MARK	DESIGNATION(1) (TL/LL) Joists: (plf) Girders: (kips)	LOADING(2) DL(3) (plf)	LOADING(2) LL(4) or L_r/S/R (plf)	W WIND DOWN WARD (plf)	W WIND NET(5) UPLIFT (plf)	ADD-LOAD(6) TL/LL (kips/kips)	BEND-CHECK(7) D TC (kips)	BEND-CHECK(7) D BC (kips)	REMARKS
J1	18KSP	120	185		180	1.0/0.6		0.3	Axial Loads
J2	24K7SP	85	155						Wind Moments
J3	28LHSP	110	355	95	175	0.5			Drift Loads, see diagram
G1	36G5N6.5K/3.5K				360				End Moments

(1) Joist designation loads include all uniform gravity loads. **Provide both Total and Live loads.**

(2) Loading values are not required if designation loading values are correct for deflection and load combinations.

(3) When standard SJI designations are used, the design Dead Load is required for load combinations with Wind or Seismic.

(4) The Floor or Roof Live load, Snow, or Rain load.

(5) When Net Uplift is specified for simple loading, it shall already take into account possible reduced Dead Loading present in order to create the largest Net uplift load combination. For more complex loading or when the Dead Load varies greatly for use in load combinations below, ***Gross*** uplift should be specified with the minimum and maximum Dead Loading values clearly defined. If the uplift cannot be assigned in pounds per lineal foot, a diagram can be shown for joist loading using pounds per square foot.

(6) A concentrated load applied at any panel point on both the top chord and bottom chord.

(7) Chord members shall be designed for additional bending stresses created by this concentrated Total load.

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When in-plane moments (wind load, seismic load) are specified, continuity moments (live load) **shall** also be specified. A Load Schedule that shows a complete breakdown of all loads by Load Category may be required.

AXIAL and END MOMENT LOAD SCHEDULE

MARK	DESIGNATION (TL/LL) Joists: (plf) Girders: (kips)	MIN. I (in.^{4})	AXIAL			END MOMENTS								TRANSFER DETAILS @ GRIDS
			W WIND (kips)	E SEISMIC (kips)	E_m (kips)	LIVE LOAD CONTINUITY MOMENTS (k-ft.)		LATERAL MOMENTS (k-ft.)						
								W WIND		E		E_m		
						LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
J1	18KSP		W=18.0	E=21.8										9/S8 @ 4
J2	24K7SP					40	40	35	35					
G1	36G5N6.5K/3.5K	985				75	95	55	60					11/S8 @ B,C

When special loads as shown in the tables above are specified, the load combinations to be used for joist and Joist Girder design **shall** be provided. Two examples showing how to list load combinations are shown below:

LRFD example- Basic Load Combinations	**ASD example -** Basic Load Combinations
1. 1.4D	1. D
2. 1.2D + 1.6L + 0.5(L_r or S or R)	2. D + L
3. 1.2D + 1.6(L_r or S or R) + (1.0L or 0.5W)	3. D + (L_r or S or R)
4. 1.2D + 1.0W + 1.0L + 0.5(L_r or S or R)	4. D + 0.75L + 0.75(L_r or S or R)
5. 1.2D + 1.0E + 1.0L + 0.2S	5. D + (0.6W or 0.7E)
6. 0.9D + 1.0W	6a. D + 0.75L + 0.75(0.6W) + 0.75(L_r or S or R)
7. 0.9D + 1.0E	6b. D + 0.75L + 0.75(0.7E) +0.75S
	7. 0.6D + 0.6W
	8. 0.6D + 0.7E
Special Seismic Load Combinations	Special Seismic Load Combinations
8. (1.2 + 0.2S_{DS})D + E_h + L + 0.2S	9. (1.0 + 0.14S_{DS})D + 0.7E_h
9. (0.9 – 0.2S_{DS})D + E_h	10. (1.0 + 0.105S_{DS})D + 0.525E_h + 0.75L + 0.75(L_r or S or R)
	11. (0.6 – 0.14S_{DS})D + 0.7E_h

2.5 JOIST AND JOIST GIRDER EXTENSIONS

Steel joist and Joist Girder extensions shall be specified and designed in accordance with the requirements of the Steel Joist Institute Standard Specifications of latest adoption.

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2.6 CEILING EXTENSIONS

Ceiling extensions shall be furnished to support ceilings that are to be attached directly to the bottom of the joists. They are not furnished for the support of suspended ceilings. The ceiling extension shall be either an extended bottom chord element or a loose unit, whichever is standard with the manufacturer, and shall be of sufficient strength to properly support any specified ceiling loads.

2.7 BRIDGING AND BRIDGING ANCHORS

(a) Bridging standard with the manufacturer and complying with the Steel Joist Institute Standard Specifications of latest adoption shall be used for bridging all joists furnished by the joist manufacturer. Positive anchorage shall be provided at the ends of each bridging row at both top and bottom chords.

(b) For K-Series and LH-Series joists, horizontal bridging is recommended for spans up to and including 60 feet (18288 mm) except where the Steel Joist Institute Standard Specifications Load Tables & Weight Tables require bolted diagonal bridging for erection stability.

LH-Series and DLH-Series joists exceeding 60 feet (18288 mm) in length shall have bolted diagonal bridging for all rows.

Refer to Section 5.5 in the Steel Joist Institute Standard Specification for erection stability requirements.

Refer to Appendix B for OSHA steel joist erection stability requirements.

Horizontal bridging shall consist of continuous horizontal steel members designed per Section 5.5 in the Steel Joist Institute Standard Specifications. The material sizes listed in Table 2.7-1 meet the requirements of the specifications. Alternately, or for “load/length” designation joists, Table 2.7-2 provides the maximum horizontal bridging force, P_{br}, for various combinations of joist spacing and bridging angle size.

(c) Diagonal cross bridging consisting of angles or other shapes connected to the top and bottom chords of K-Series, LH-Series, and DLH-Series joists shall be used when required by the Steel Joist Institute Standard Specifications of latest adoption.

Diagonal bridging, when used, shall be designed per Section 5.5 in the Steel Joist Institute Standard Specifications.

When the bridging members are connected at their point of intersection, the material sizes listed in Table 2.7-3 and Table 2.7-4 meet the requirements of the specifications.

For LH-Series and DLH-Series joists, where the joist spacing is less than 70 percent of the joist depth, bolted horizontal bridging shall be provided in addition to the diagonal bridging, as shown in Table 2.7-4.

(d) When bolted diagonal erection bridging is required, the following shall apply:

1. The bridging shall be indicated on the joist placement plans.
2. The joist placement plans shall be the exclusive indicator for the proper placement of this bridging.
3. Shop installed bridging clips, or functional equivalents, shall be provided where the bridging bolts to the steel joist.
4. When two pieces of bridging are attached to a steel joist by a common bolt, the nut that secures the first piece of bridging shall not be removed from the bolt for the attachment of the second piece.
5. Bridging attachments shall not protrude above the top chord of the steel joists.
6. See Table 2.7-5 for bolt sizes that meet the connection requirements of the Steel Joist Institute Standard Specifications Section 5.5.

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TABLE 2.7-1

MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING
SPANS OVER 60 ft. (18.3 m) REQUIRE BOLTED DIAGONAL BRIDGING

JOIST SECTION NUMBER[1]	Nominal Unfactored Force P_{br} lbs (N)	BRIDGING MATERIAL SIZE[2] Equal Leg Angles					
		1 x 7/64 (25 x 3 mm) r = 0.20" (5.08 mm)	**1-1/4 x 7/64 (32 x 3 mm) r = 0.25" (6.35 mm)**	**1-1/2 x 7/64 (38 x 3 mm) r = 0.30" (7.62 mm)**	**1-3/4 x 7/64 (45 x 3 mm) r = 0.35" (8.89 mm)**	**2 x 1/8 (52 x 3 mm) r = 0.40" (10.16 mm)**	**2-1/2 x 5/32 (64 x 4 mm) r = 0.50" (12.70 mm)**
		ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)
K1 – 8	340 (1512)	5'-0" (1524)	6'–3" (1905)	7'–6" (2286)	8'-9" (2667)	10'–0" (3048)	12'–6" (3810)
K9-10, LH02-03	450 (2002)	4'-4" (1321)	6'-1" (1854)	7'–6" (2286)	8'–9" (2667)	10'–0" (3048)	12'–6" (3810)
K11-12, LH04-05	560 (2491)	3'–11"(1194)	5'–6" (1676)	7'–4" (2235)	8'–9" (2667)	10'–0" (3048)	12'–6" (3810)
LH06-08	750 (3336)		4'–9" (1448)	6'–3" (1905)	7'–11" (2413)	10'–0" (3048)	12'–6" (3810)
LH09	850 (3781)		4'–5" (1346)	5'–10" (1778)	7'–5" (2261)	9'–9" (2972)	12'–6" (3810)
LH/DLH10	900 (4003)		4'–4" (1321)	5'–8" (1727)	7'–3" (2210)	9'–5" (2870)	12'–6" (3810)
LH/DLH11	950 (4226)		4'–2" (1270)	5'–7" (1702)	7'–0" (2134)	9'–2" (2794)	12'–6" (3810)
LH/DLH12	1100 (4893)		3'-11" (1194)	5'–2" (1575)	6'–8" (2032)	8'–6" (2591)	12'-6" (3810)
LH/DLH13	1200 (5338)		3'-9" (1143)	4'–11" (1499)	6'–3" (1905)	8'-2" (2489)	12-6" (3810)
LH/DLH14	1300 (5783)			4'-9" (1448)	6'-0" (1829)	7'-10" (2388)	12'-4" (3759)
LH/DLH15	1450 (6450)			4'-6" (1372)	5'-8" (1727)	7'-5" (2261)	11'-8" (3556)
LH/DLH16–17	1850 (8229)			4'-0" (1219)	5'-0" (1524)	6'-7"(2007)	10'-4" (3150)
LH/DLH18–20	2350 (10453)			3'-7" (1067)	4'-4" (1321)	5'-10" (1778)	9'-1" (2769)
LH/DLH21–22	3150 (14012)				3'-10" (1168)	5'-0" (1524)	7'-11" (2413)
LH/DLH23–24	4130 (18371)				3'-4" (1016)	4'-5" (1346)	6'-11" (2108)
LH/DLH25	4770 (21218)					4'-1"(1245)	6'-5" (1956)

(1) Refer to last two digit(s) of Joist Designation
(2) Connection to joist shall resist force listed in the Steel Joist Institute Standard Specifications Table 5.5-2

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TABLE 2.7-2

MAXIMUM BRIDGING FORCE (P_{br}) FOR HORIZONTAL BRIDGING (lbs)							
JOIST SPACING (ft.-in.)	BRIDGING ANGLE SIZE (EQUAL LEG ANGLE)						
	1 x 7/64 r = 0.20"	1¼ x 7/64 r = 0.25"	1½ x7/64 r = 0.30"	1¾ x 7/64 r = 0.35"	2 x 1/8 r = 0.40"	2½ x 5/32 r = 0.50"	3 x 3/16 r = 0.60"
2'-0"	2150	3960	5600				
2'-6"	1370	2730	4410	5910			
3'-0"	950	1890	3290	4850			
3'-6"	700	1390	2420	3840	6180		
4'-0"	530	1060	1850	2960	5030		
4'-6"	420	840	1460	2340	4000		
5'-0"	340	680	1180	1890	3240		
5'-6"	-	560	980	1560	2670		
6'-0"	-	470	820	1310	2250	5490	
6'-6"	-	-	700	1120	1910	4680	
7'-0"	-	-	600	960	1650	4030	
7'-6"	-	-	520	840	1440	3510	
8'-0"	-	-	-	740	1260	3090	
8'-6"	-	-	-	650	1120	2740	5680
9'-0"	-	-	-	-	1000	2440	5060
9'-6"	-	-	-	-	890	2190	4540
10'-0"	-	-	-	-	810	1970	4100
10'-6"	-	-	-	-	-	1790	3720
11'-0"	-	-	-	-	-	1630	3390
11'-6"	-	-	-	-	-	1490	3100
12'-0"	-	-	-	-	-	1370	2850

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TABLE 2.7-3

K, LH, and DLH SERIES JOISTS
MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING[1]

JOIST DEPTH	BRIDGING ANGLE SIZE – (EQUAL LEG ANGLE)[2]							
	1 x 7/64 (25 x 3 mm) **r = 0.20"** (5.08 mm)	**1-1/4 x 7/64** (32 x 3 mm) **r = 0.25"** (6.35 mm)	**1-1/2 x 7/64** (38 x 3 mm) **r = 0.30"** (7.62 mm)	**1-3/4 x 7/64** (45 x 3 mm) **r = 0.35"** (8.89 mm)	**2 x 1/8** (50 x 3 mm) **r = 0.40"** (10.16 mm)	**2 ½ x 5/32** (64x 4 mm) **r=0.50"** (12.70 mm)	**3 x 3/16** (76 x 5 mm) **r = 0.60"** (15.24 mm)	**3 ½ x 1/4** (89 x 6 mm) **r = 0.70"** (17.78 mm)
in. (mm)	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**
12" (305)	6'-7" (2007)	8'-3" (2514)	9'-11"(3022)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
14" (356)	6'-6" (1981)	8'-3" (2514)	9'-11"(3022)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
16" (406)	6'-6" (1981)	8'-2" (2489)	9'-10"(2997)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
18" (457)	6'-6" (1981)	8'-2" (2489)	9'-10"(2997)	11'-6" (3505)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
20" (508)	6'-5" (1955)	8'-2" (2489)	9'-10"(2997)	11'-6" (3505)	13'-2"(4013)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
22" (559)	6'-4" (1930)	8'-1" (2463)	9'-10"(2997)	11'-6" (3505)	13'-2"(4013)	16'-6"(5029)	19'-11"(6070)	23'-3"(7086)
24" (610)	6'-4" (1930)	8'-1" (2463)	9'-9" (2971)	11'-5" (3479)	13'-2"(4013)	16'-6"(5029)	19'-10"(6045)	23'-3"(7086)
26" (660)	6'-3" (1905)	8'-0" (2438)	9'-9" (2971)	11'-5" (3479)	13'-1"(3987)	16'-6"(5029)	19'-10"(6045)	23'-2"(7061)
28" (711)	6'-3" (1905)	8'-0" (2438)	9'-8" (2946)	11'-5" (3479)	13'-1"(3987)	16'-6"(5029)	19'-10"(6045)	23'-2"(7061)
30" (762)	6'-2" (1879)	7'-11 (2413)	9'-8" (2946)	11'-4" (3454)	13'-1"(3987)	16'-5"(5004)	19'-10"(6045)	23'-2"(7061)
32" (813)	6'-1" (1854)	7'-10"(2387)	9'-7" (2921)	11'-4" (3454)	13'-0" (3962)	16'-5"(5004)	19'-9"(6020)	23'-2"(7061)
36" (914)	5'-11"(1803)	7'-9" (2362)	9'-6" (2895)	11'-3" (3429)	12'-11"(3973)	16'-4"(4979)	19'-9"(6020)	23'-1"(7035)
40" (1016)	5'-9"(1753)	7'-7" (2311)	9'-5" (2870)	11'-2" (3403)	12'-10"(3911)	16'-4"(4979)	19'-8"(5994)	23'-1"(7035)
44" (1118)	5'-6"(1676)	7'-5" (2260)	9'-3" (2819)	11'-0" (3352)	12'-9" (3886)	16'-3"(4953)	19'-7"(5969)	23'-0"(7010)
48" (1219)	5'-4"(1626)	7'-3" (2209)	9'-2" (2794)	10'-11"(3327)	12'-8" (3860)	16'-2"(4928)	19'-7"(5969)	22'-11"(6985)
52" (1321)	5'-0"(1524)	7'-1"(2159)	9'-0" (2743)	10'-10" (3302)	12'-7" (3835)	16'-1"(4902)	19'-6"(5943)	22'-11"(6985)
56" (1422)	4'-9"(1448)	6'-10"(2083)	8'-10"(2692)	10'-8" (3251)	12'-5" (3784)	16'-0"(4877)	19'-5"(5918)	22'-10"(6960)
60" (1524)	4'-4"(1321)	6'-8"(2032)	8'-7" (2616)	10'-6" (3200)	12'-4" (3759)	15'-10"(4826)	19'-4"(5893)	22'-9"(6935)
64" (1626)	**	6'-4"(1931)	8 -5" (2565)	10'-4" (3149)	12'-2" (3708)	15'-9" (4801)	19'-3"(5867)	22'-8"(6909)
68" (1727)	**	6'-1"(1854)	8'-2" (2489)	10'-2" (3098)	12'-0" (3657)	15'-8" (4775)	19'-2"(5842)	22'-7"(6884)
72" (1829)	**	5'-9"(1753)	8'-0" (2438)	10'-0" (3048)	11'-10"(3606)	15'-6" (4724)	19'-1" (5816)	22'-6" (6858)
80" (2032)	**	5'-0"(1524)	7'-5"(2260)	9'-6" (2895)	11'-6" (3505)	15'-3" (4648)	18'-10"(5740)	22'-4" (6808)
88" (2235)		**	6'-9"(2058)	9'-0" (2743)	11'-1" (3378)	14'-11"(4546)	18'-7" (5664)	22'-1" (6731)
96" (2438)		**	6'-0"(1829)	8'-5" (2565)	10'-8"(3251)	14'-7" (4445)	18'-4" (5588)	21'-11"(6680)
104" (2642)			**	7'-9" (2362)	10'-1"(3073)	14'-2" (4318)	18'-0" (5486)	21'-8" (6604)
112" (2845)			**	7'-0" (2134)	9'-6"(2895)	13'-9" (4191)	17'-8" (5385)	21'-4" (6503)
120" (3048)				**	8'-9"(2667)	13'-4"(4064)	17'-3" (5258)	21'-1" (6426)

**** INTERPOLATION BELOW THE MINIMUM VALUES SHOWN IS NOT ALLOWED.**

1) SEE TABLE 2.7-4 FOR MINIMUM JOIST SPACE FOR DIAGONAL ONLY BRIDGING.
2) In the shaded range of the Table, for LH23, 24,and 25, compressive strength requirements may control, reducing the maximum joist spacing shown. Either select a larger bridging angle size (outside of the shaded area) or check compression strength (Ref. Section 2.7(c)) for LH23, 24, and 25.

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TABLE 2.7-4

LH AND DLH SERIES JOISTS HORIZONTAL PLUS DIAGONAL BRIDGING REQUIREMENTS		
JOIST DEPTH	**MINIMUM JOIST SPACE FOR DIAGONAL ONLY BRIDGING** **(0.70 x DEPTH)***	**HORIZONTAL AND DIAGONAL MINIMUM ANGLE SIZE REQUIRED** FOR JOIST SPACING < (0.70 X DEPTH) AND JOIST SPANS > 60'-0" (18.3 m)
in. (mm)	**ft.-in. (mm)**	**in. (mm)**
52" (1321)	3'- 0" (914)	1" x 1" x 7/64" (25 x 3)
56" (1422)	3'- 3" (990)	1" x 1" x 7/64" (25 x 3)
60" (1524)	3'- 6" (1066)	1" x 1" x 7/64" (25 x 3)
64" (1626)	3'- 8" (1117)	1¼" x 1¼" x 7/64" (32 x 3)
68" (1727)	3'-11" (1193)	1¼" x 1¼" x 7/64" (32 x 3)
72" (1829)	4'- 2" (1270)	1¼" x 1¼" x 7/64" (32 x 3)
80" (2032)	4'- 8" (1422)	1¼" x 1¼" x 7/64" (32 x 3)
88" (2235)	5'- 1" (1549)	1 ½" x 1 ½" x 7/64" (38 x 3)
96" (2438)	5'- 7" (1702)	1 ½" x 1 ½" x 7/64" (38 x 3)
104" (2642)	6'- 0" (1829)	1 ¾" x 1 ¾" x 7/64" (44 x 3)
112" (2845)	6'- 6" (1981)	1 ¾" x 1 ¾" x 7/64" (44 x 3)
120" (3048)	7'- 0" (2134)	2" x 2" x1/8" (51 x 3)
*NOTE: WHEN THE JOIST SPACING IS LESS THAN 0.70 x JOIST DEPTH, BOLTED HORIZONTAL BRIDGING SHALL BE USED IN ADDITION TO DIAGONAL BRIDGING.		

TABLE 2.7-5

BOLT SIZES WHICH MEET BOLTED BRIDGING CONNECTION REQUIREMENTS		
JOIST SERIES	**SECTION NUMBER***	**BOLT DIAMETER**
K	ALL	3/8" (10 mm) A307
LH/DLH	2 – 12	3/8" (10 mm) A307
LH/DLH	13 – 17	1/2" (13 mm) A307
LH/DLH	18 – 20	5/8" (16 mm) A307
LH/DLH	21 – 22	5/8" (16 mm) A325
LH/DLH	23 – 25	3/4" (19 mm) A325
*REFER TO LAST DIGIT(S) OF JOIST DESIGNATION NOTE: WASHERS SHALL BE USED WITH SLOTTED OR OVERSIZED HOLES. BOLTS SHALL BE TIGHTENED TO A MINIMUM SNUG TIGHT CONDITION.		

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2.8 HEADERS

Where the end reaction of a steel joist is supported by a header, as outlined and defined in Section 5.2(a), and is not more than 10,000 pounds (44482 N), the header shall be furnished by the Seller. Such headers shall be any type standard with the joist manufacturer. Conditions involving headers shall be investigated during erection and, if necessary, provisions made to provide a safe condition. Headers are not provided for steel joists with end reactions greater than 10,000 pounds (44482 N).

2.9 BOTTOM CHORD LATERAL BRACING FOR JOIST GIRDERS

Bottom chord lateral bracing shall be furnished as required to prevent lateral movement of the bottom chord of the Joist Girder and to prevent the ratio of chord length to chord radius of gyration from exceeding that specified in the Steel Joist Institute Standard Specifications of latest adoption. The lateral bracing shall be that which is standard with the joist manufacturer, and shall be sufficient to properly brace the bottom chord of the Joist Girder.

2.10 CONNECTIONS

The adequacy of the end anchorage connection (bolted or welded) between the joist or Joist Girder bearing seat and the supporting structure is the responsibility of the *specifying professional*. The contract documents shall clearly illustrate the end anchorage connection. Forces to be considered include end moments, axial loads, and diaphragm boundaries. Particular attention is required where there is net uplift.

Welded End Anchorage for Uplift
The strength of the joist bearing seat for an uplift loading combination is a function of both the joist seat thickness and length of the end anchorage welds. The minimum end anchorage welds as shown in the Steel Joist Institute Standard Specifications Table 5.7-1 may not develop the full capacity of the joist seat assembly for the specified uplift resistance. When the support dimensions allow, it is recommended the *specifying professional* use a small fillet weld thickness in conjunction with a longer weld length for the connection design to facilitate the design of the joist bearing seat. The joist manufacturer will provide a seat of sufficient thickness and strength to resist the uplift end reaction resulting from the specified uplift. For additional information, including tables for welded end anchorage uplift capacities, refer to Steel Joist Institute Technical Digest 6, “Structural Design of Steel Joist Roofs to Resist Uplift Loads”

Bolted End Anchorage for Uplift
Typically, joists and Joist Girders with bolted end anchorage also require a final connection by welding in order to provide lateral stability to the supporting member. However, only the bolts are relied on to provide uplift anchorage. The bolt type and diameter designed by the *specifying professional* shall provide sufficient tensile strength to resist the uplift end reaction resulting from the specified uplift. Bolts of higher strength than the minimum required by the Steel Joist Institute Standard Specifications may be required.

When the bearing seats are detailed for a bolted connection, bolts shall be installed. If the bolts are not installed, an equivalent welded connection may be permitted by the *specifying professional*, provided the weld is deposited in the slot on the side farthest from the edge of the seat. Additional weld required to meet that specified for the welded connection shall be placed at a location on the seat away from the outer edge of the slot as shown in Figure 2.10-1.
For additional information, including tables for bolted end anchorage uplift capacities, refer to Steel Joist Institute Technical Digest 6, “Structural Design of Steel Joist Roofs to Resist Uplift Loads”

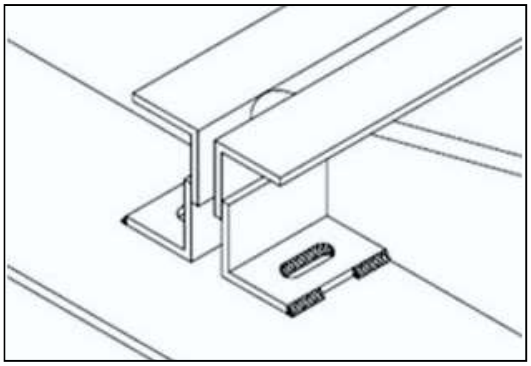

Figure 2.10-1

SECTION 3.
MATERIALS

3.1 STEEL

The steel used in the manufacture of joists and Joist Girders shall comply with the Steel Joist Institute Standard Specifications of latest adoption.

3.2 PAINT

(a) Standard Shop Paint - The shop coat of paint, when specified, shall comply with the Steel Joist Institute Standard Specifications of latest adoption.

(b) Disclaimer - The typical shop applied paint that is used to coat steel joists and Joist Girders is a dip applied, air dried paint. The paint is intended to be an impermanent and provisional coating which shall protect the steel for only a short period of exposure in ordinary atmospheric conditions.

Since most joists and Joist Girders are painted using a standard dip coating, the coating shall be permitted to not be uniform and shall be permitted to include drips, runs, and sags. Compatibility of any coating including fire protective coatings applied over the standard shop paint shall be the responsibility of the specifier and/or painting contractor.

The shop applied paint may require field touch-up/repair as a result of, but not limited to, the following:

1. Abrasions from: Bundling, banding, loading and unloading, chains, dunnage during shipping, cables and chains during erection, bridging, installation, and other handling at the jobsite.
   NOTE: Rusting should be expected at any abrasion.
2. Dirt.
3. Diesel smoke.
4. Road salt.
5. Weather conditions during storage.

The joist manufacturer shall not be responsible for the condition of the paint if it is not properly protected after delivery.

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SECTION 4.
INSPECTION

Inspections shall be made in accordance with Section 5.14 of the Steel Joist Institute Standard Specifications of latest adoption.

SECTION 5.
ESTIMATING

5.1 PLANS FOR BIDDING

Plans to serve as the basis for bids shall show the character of the work with sufficient clarity to permit making an accurate estimate and shall show the following:

- Designation and location of Materials [see Section 5.2(a)], including any special design or configuration requirements
- Locations and elevations of all steel and concrete supporting members and bearing walls
- Location and length of joist extended ends
- Location and size of all openings in floors and roofs
- Location of all partitions
- Loads and their locations as defined in Section 6.1
- Construction and thickness of floor slabs, roof deck, ceilings and partitions
- Joists or Joist Girders requiring extended bottom chords
- Paint, if other than manufacturer's standard

5.2 SCOPE OF ESTIMATE

(a) Unless otherwise specified, the following items shall be included in the estimate, and requirements shall be determined as outlined in Section 6.1:

- Steel Joists
- Joist Girders
- Joist Substitutes
- Joist Extended Ends
- Ceiling Extensions
- Extended bottom chord used as strut
- Bridging
- Joist Girder bottom chord bracing
- Headers which are defined as members supported by and carrying Open Web Steel Joists with end reactions of no more than 10,000 lbs. (44482 N)
- One shop coat of paint, when specified, shall be in accordance with Section 3.2

(b) The following items shall not be included in the estimate but shall be permitted to be quoted and identified by the joist manufacturer as separate items:

- Headers carrying Open Web Steel Joists with end reactions greater than 10,000 lbs. (44482 N)
- Headers for Deep Longspan Steel Joists, **DLH-**Series

- Reinforcement in slabs over joists
- Centering material, decking, and attachments
- Miscellaneous framing between joists for openings at ducts, dumbwaiters, ventilators, skylights, etc.
- Loose individual or continuous bearing plates and bolts or anchors for such plates
- Erection bolts for joist and Joist Girder end anchorage
- Horizontal bracing in the plane of the top and bottom chords from joist to joist or joist to structural framing and walls
- Bridging anchors and anchorage
- Wood nailers
- Moment plates
- Special joist configuration or bridging layouts for ductwork or sprinkler systems
- Shear studs

SECTION 6.
PLANS AND SPECIFICATIONS

6.1 PLANS FURNISHED BY BUYER

The Buyer shall furnish the Seller plans and specifications as prepared by the *specifying professional* showing all Material requirements and steel joist and/or steel Joist Girder designations, the layout of walls, columns, beams, girders and other supports, as well as floor and roof openings and partitions correctly dimensioned. The elevation of finished floors, roofs, and bearings shall be shown.

(a) Loads

The *specifying professional* shall clearly provide all design loads as described in Section 2.4 This includes the live loads to be used, the wind uplift if any, the weights of partitions and the location and amount of any special loads, such as monorails, fans, blowers, tanks, etc.

(b) Connections

Minimum end anchorage for simple span gravity loading shall be in accordance with Steel Joist Institute Standard Specifications of latest adoption, Section 5.7. The end anchorage of a steel joist or Joist Girder is the connection of the joist or Joist Girder bearing seat to the support of the joist or Joist Girder.

The adequacy of the end anchorage connection (bolted or welded) between the joist or Joist Girder bearing seat and the supporting structure is the responsibility of the *specifying professional*. The contract documents shall clearly illustrate the end anchorage connection.

The joist manufacturer is responsible for the design of the bearing seats of joists or Joist Girders for the loads designated by the *specifying professional* in the contract documents.

The *specifying professional* is responsible for bridging termination connections. The contract documents shall clearly illustrate these termination connections.

(c) Special Considerations

The *specifying professional* shall indicate on the construction documents special considerations including:

1) Profiles for non-standard joist and Joist Girder configurations (Standard joist and Joist Girder configurations are as indicated in the Steel Joist Institute Standard Specifications of latest adoption).
2) Oversized or other non-standard web openings
3) Extended Ends

4) Deflection criteria for live and total loads for non-SJI standard joists
5) Non-SJI standard bridging

6.2 PLANS FURNISHED BY SELLER

The Seller shall furnish the buyer with steel joist placement plans to show the material as specified on the construction documents and are to be utilized for field installation in accordance with specific project requirements as stated in Section 6.1. Steel placement plans shall include, at a minimum, the following:

a) Listing of all applicable loads as stated in Section 6.1 and used in the design of the steel joists and Joist Girders as specified in the construction documents.

b) Profiles for non-standard joist and Joist Girder configurations (standard joist and Joist Girder configurations are as indicated in the Steel Joist Institute Standard Specifications of latest adoption).

c) Connection requirements for:

1) Joist supports
2) Joist Girder supports
3) Field splices
4) Bridging attachments

d) Deflection criteria for live load and total loads for non-SJI standard joists.

e) Size, location, and connections for all bridging

f) Joist headers

All Material shall be identified with its mark which also appears on the Bill of Materials. The shop paint shall be as noted on the joist placement plans. **Steel joist placement plans do not require the seal and signature of the joist manufacturer's registered design professional.**

6.3 DISCREPANCIES

The *specifying professional's* bid plans and specifications shall be assumed to be correct in the absence of written notice from the Buyer to the contrary. When plans are furnished by the Buyer that do not agree with the Architect's bid plans, such detailed plans shall be considered as a written notice of change of plans. However, it shall be the Buyer's responsibility to advise the Seller of those changes which affect the joists or Joist Girders.

6.4 APPROVAL

When joist placement plans are furnished by the Seller, they are submitted to the Buyer and owner for examination and approval. The Seller allows a maximum of fourteen (14) calendar days in their schedule for the return of placement plans noted with the owner's and customer's approval, or approval subject to corrections as noted. The Seller makes the corrections, furnishes corrected prints for field use to the owner/customer and is released by the owner/customer to start joist manufacture.

Approval by the owner/customer of the placement plans, sections, notes and joist schedule prepared by the Seller indicates that the Seller has correctly interpreted the contract requirements, and is released by the owner/customer to start joist manufacture. This approval constitutes the owner's/customer's acceptance of all responsibility for the design adequacy of any detail configuration of joist support conditions shown by the Seller as part of the preparation of these placement plans.

Approval does not relieve the Seller of the responsibility for accuracy of detail dimensions on the plans, nor the general fit-up of joists to be placed in the field.

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6.5 CHANGES

When any changes in plans are made by the Buyer (or the buyer's representative) either prior to or after approval of detailed plans, or when any Material is required and was not shown on the plans used as the basis of the bid, the cost of such changes and/or extra Material shall be paid by the Buyer at a price to be agreed upon between Buyer and Seller.

6.6 CALCULATIONS

The Seller shall design the steel joists and/or steel Joist Girders in accordance with the current Steel Joist Institute Standard Specifications of latest adoption to support the load requirements of Section 6.1. The *specifying professional* may require submission of the steel joist and Joist Girder calculations as prepared by a registered design professional responsible for the product design. If requested by the *specifying professional*, the steel joist manufacturer shall submit design calculations with a cover letter bearing the seal and signature of the joist manufacturer's registered design professional. In addition to standard calculations under this seal and signature, submittal of the following shall be included:

a) Non-SJI standard bridging details (e.g. for cantilevered conditions, net uplift, etc.)

b) Connection details for:

   1) Non-SJI standard connections (e.g. flush framed or framed connections)
   2) Field splices
   3) Joist headers

SECTION 7.
HANDLING AND ERECTION

The Buyer and Erector shall comply with the requirements of the Steel Joist Institute Standard Specifications of latest adoption in the handling and erection of Material. For additional coverage of this topic, refer to the Steel Joist Institute's Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders".

The Buyer and/or Erector shall check all materials on arrival at job site and promptly report to Seller any discrepancies and/or damages.

When joists cannot be delivered as a single piece, they shall be permitted to be delivered in several pieces therefore requiring the pieces to be spliced together in the field. The manufacturer's instructions SHALL be followed to ensure matching pieces are joined, proper bolts are used, and any required bolt tensioning is incorporated.

All joists shall be handled by methods which avoid damage to any part of the joist. For long **LH-**Series joists, **DLH-**Series joists, or Joist Girders this may require the use of spreader bars, multiple hoisting cables, or multiple cranes as necessary to safely handle the joist. Hoisting cables shall be attached at panel points and shall be at panel point locations selected to minimize erection stresses.

The current OSHA, 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R- Steel Erection, refers to certain joists at or near columns to be designed with sufficient strength to allow one employee to release the hoisting cable without the need for erection bridging. **This STANDARD shall not be interpreted that any joist at or near a column line is safe to support an employee without bridging installed.** Many limitations exist that prevent these joists from being designed to safely allow an employee on an un-bridged joist. Because of these limitations these joists shall be erected by incorporating erection methods ensuring joist stability and either:

1) Installing bridging or otherwise stabilizing the joist prior to releasing the hoisting cable, or
2) Releasing the hoisting cable without having a worker on the joist.

A steel joist or Joist Girder shall not be placed on any support structure unless such structure is stabilized. When steel joists or Joist Girders are landed on a structure, they shall be secured to prevent unintentional displacement prior to installation.

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A bridging terminus point shall be established before joist bridging is installed.

Steel joist and Joist Girders shall not be used as anchorage points for a fall arrest system unless written directions to do so is obtained from a "qualified person". (For definition of "qualified person" see Code of Federal Regulations (CFR), Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R- Steel Erection, §1926.751 Definitions, January 18, 2001, Washington, D.C.)

No modification that affects the strength of a steel joist or Joist Girder shall be made without the written approval of the project engineer of record.

The Seller shall not be responsible for the condition of paint finish on Material if it is not properly protected after delivery.

The Seller shall not be responsible for improper fit of Material due to inaccurate construction work.

SECTION 8.
BUSINESS RELATIONS

8.1 PRESENTATION OF PROPOSALS

All proposals for furnishing Material shall be made on a sales contract form. After acceptance by the Buyer, these proposals shall be approved or executed by a qualified official of the Seller. Upon such approval the proposal becomes a contract.

8.2 ACCEPTANCE OF PROPOSALS

All proposals are intended for prompt acceptance and are subject to change without notice.

8.3 BILLING

Contracts on a lump sum basis are to be billed proportionately as shipments are made.

8.4 PAYMENT

Payments shall be made in full on each invoice without retention.

8.5 ARBITRATION

All business controversies which cannot be settled by direct negotiations between Buyer and Seller shall be submitted to arbitration. Both parties shall sign a submission to arbitration and if possible agree upon an arbitrator. If they are unable to agree, each shall appoint an arbitrator and these two shall appoint a third arbitrator. The expenses of the arbitration shall be divided equally between the parties, unless otherwise provided for in the agreements to submit to arbitration. The arbitrators shall pass final judgment upon all questions, both of law and fact, and their findings shall be conclusive.

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STANDARD SPECIFICATION

FOR K-SERIES, LH-SERIES, AND DLH-SERIES OPEN WEB STEEL JOISTS AND FOR JOIST GIRDERS.

K-Series Adopted by the Steel Joist Institute November 4, 1985
LH/DLH-Series Adopted by the Steel Joist Institute May 10, 2006
Joist Girders Adopted by the Steel Joist Institute November 4, 1985
Revised to April 27, 2020, Effective July 1, 2020

SECTION 1.
SCOPE AND DEFINITIONS

1.1 SCOPE

The *Standard Specification for* K-*Series*, LH-*Series,* DLH-*Series Open Web Steel Joists and for Joist Girders*, hereafter referred to as the Specification, covers the design, manufacture, application, and erection stability and handling of Joist Girders and Open Web Steel Joists K-Series, LH-Series, and DLH-Series in buildings or other structures, where other structures are defined as those structures designed, manufactured, and erected in a manner similar to buildings. Joist Girders and K-Series, LH-Series, and DLH-Series joists shall be designed using Allowable Stress Design (ASD) or Load and Resistance Factor Design (LRFD) in accordance with this Specification. Included as part of this Specification are KCS joists, K-Series; Joist Substitutes, K-Series; and Top Chord Extensions and Extended Ends, K-Series.

1.2 OTHER REGULATIONS

Joist Girders and K-Series, LH-Series, and DLH-Series joists shall be erected in accordance with the Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection, Subpart R – Steel Erection. The erection of Joist Girders and K-Series, LH-Series, and DLH-Series joists 144 ft. (43.9 m) or less in length shall be in accordance with the requirements of Section 1926.757, Open Web Steel Joists. Joist Girders and DLH–Series joists greater than 144 ft. (43.9 m) in length shall be in accordance with the requirements of Section 1926.756 Beams and Columns.

1.3 APPLICATION

This Specification includes Section 1 through Section 6. The user notes shall not be part of the Specification.

User Note: User notes are intended to provide practical guidance in the use and application of this Specification.

1.4 DEFINITIONS

The following terms shall, for the purposes of this Specification, have the meanings shown in this Section. Where terms are not defined in this Section, those terms shall have their ordinary accepted meanings in the context in which it applies.

Joist Girders, K-Series, LH-Series, and DLH-Series shall be open web, in-plane load-carrying steel members utilizing hot-rolled or cold-formed steel, including cold-formed steel whose yield strength has been attained by cold working.

Joist Girders shall be open web steel trusses used as primary framing members designed as simple spans supporting in-plane concentrated loads for a floor or roof system. These concentrated loads shall be considered to act at the top chord panel points of the Joist Girders unless otherwise specified.

The Joist Girder standard designation in ASD shall be established by its nominal depth in inches (mm), the letter "G", followed by the number of joist spaces, the letter "N", the load in kips (kN) at each panel point, and the letter "K". The Joist Girder standard designation in LRFD shall be established by its nominal depth in inches (mm), the letter "G", followed by the number of joist spaces, the letter "N", the factored load in kips (kN) at each panel point, and the letter "F". Joist Girders shall be designed in accordance with this Specification to support the loads defined by the specifying professional.

Joist Girders shall be designed and manufactured as either simple framing members with underslung ends and bottom chord extensions or as part of an ordinary steel moment frame (OMF). Where used as part of an OMF the specifying professional shall be responsible for carrying out all the required frame analyses (i.e. first-order and second-order), provide all the required load information and stiffness data to the joist manufacturer, and indicate the type of **Joist Girder** to column connections that are being designed on the structural drawings.

User Note: Joist Girders have been standardized in depths from 20 inches (508 mm) through 120 inches (3048 mm), for spans from 20 feet (6096 mm) through 120 feet (36576 mm).

Where this Specification refers to "steel joists", this shall mean the K-Series, LH-Series, and DLH-Series joists.

User Note: Joists are suitable for the direct support of floors and roof slabs or decks. The K-Series joists are standardized in depths from 10 inches (254 mm) through 30 inches (762 mm), for spans up through 60 feet (18288 mm). The LH-Series joists are standardized in depths from 18 inches (457 mm) through 48 inches (1219 mm), for spans up through 96 feet (29261 mm). The DLH-Series joists are standardized in depths from 52 inches (1321 mm) through 120 inches (3048 mm), for spans up through 240 feet (73152 mm).

The K-Series, LH-Series and DLH-Series standard joist designations shall be established by their nominal depth, followed by the letters K, LH or DLH as appropriate, and then by the Section Number designation assigned. The Section Number designations shall range from 01 to 25. The K-Series, LH-Series and DLH-Series standard joist designations listed in the following Standard Load Tables shall support the uniformly distributed loads as provided in the applicable tables:

Standard LRFD Load Table Open Web Steel Joists, K-Series – U.S. Customary Units
Standard ASD Load Table Open Web Steel Joists, K-Series – U.S. Customary Units
Standard LRFD Load Table Longspan Steel Joists, LH-Series – U.S. Customary Units
Standard ASD Load Table Longspan Steel Joists, LH-Series – U.S. Customary Units
Standard LRFD Load Table Deep Longspan Steel Joists, DLH-Series – U.S. Customary Units
Standard ASD Load Table Deep Longspan Steel Joists, DLH-Series – U.S. Customary Units
Standard LRFD Load Table Open Web Steel Joists, K-Series – S.I. Units
Standard ASD Load Table Open Web Steel Joists, K-Series – S.I. Units
Standard LRFD Load Table Longspan Steel Joists, LH-Series – S.I. Units
Standard ASD Load Table Longspan Steel Joists, LH-Series – S.I. Units
Standard LRFD Load Table Deep Longspan Steel Joists, DLH-Series – S.I. Units
Standard ASD Load Table Deep Longspan Steel Joists, DLH-Series – S.I. Units

Wherever a standard SJI Section Number is specified in the joist designation (e.g. 18K4, 32LH10) and other design load cases are also specified for the joist, the steel joist shall be designed for the corresponding total load as shown in the Standard Load Tables as a minimum.

User Note: Six standard types of K-Series, LH-Series and DLH-Series joists are designed and manufactured. These types are underslung (top chord bearing) or square-ended (bottom chord bearing), with parallel chords or with single or double pitched top chords. The Standard Load Tables apply for a pitched top chord up to 1/2 inch per foot (1:24).

The steel joist or Joist Girder designation depth shall be the depth at mid-span.

An alternate method of specifying a standard K-Series, LH-Series, or DLH-Series joist shall be permitted by providing the designation in a "load/load" sequence. The format used shall be ddKtl/ll, ddLHtl/ll, or ddDLHtl/ll where:

dd is the nominal depth of the joist in inches (mm)
tl is the total uniformly distributed load applied to the joist top chord, plf (kN/m)
ll is the uniform live load for which the deflection shall be checked and limited as required by this Specification, plf (kN/m)

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User Note: The load/load K-Series, LH-Series, or DLH-Series joists can be specified in depths from 10 inches (254 mm) through 120 inches (3048 mm) and spans up through 240 feet (73152 mm). The maximum uniformly distributed load-carrying capacity of 2400 plf (35.03 kN/m) in ASD and 3600 plf (52.54 kN/m) in LRFD has been established for this alternate K-Series, LH-Series, or DLH-Series format. The maximum capacity for any given load/load joist designation is a function of span, depth and chord member size. When requirements exceed the standard K-Series load table limitations for loading, span, and depth, an LH-Series designation is recommended to facilitate the proper determination of minimum seat depth, end anchorage, bridging size, deck attachment, etc. Thus, any joist exceeding a 30 inch depth, a span of 60 feet, an in-kip moment of Depth x 61 kips in ASD or Depth x 91.5 kips in LRFD, or an end reaction of 9.2 kips in ASD or 13.8 kips in LRFD should be designated as an LH-Series which allows for a cross-reference with a standard LH designation as listed in this Specification for seat, end anchorage, bridging, attachment tables, etc.

A KCS Joist is a particular type of K-Series joist, and shall be designed in accordance with this Specification based on an envelope of moment and shear capacity, rather than uniform load capacity, to support uniform plus concentrated loads or other non-uniform loads. The KCS Joists shall be selected from standardized depths from 10 inches (254 mm) through 30 inches (762 mm), for spans up through 60 feet (18288 mm). The maximum total safe uniformly distributed load-carrying capacity of a KCS Joist, K-Series, shall be 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD. A KCS Joist shall be parallel chord only and shall be permitted to be underslung or bottom chord bearing.

The KCS Joists, K-Series, standard designations shall be established by their nominal depth, followed by the letters “KCS”, and then by the Section Number designation assigned. The Section Number designations shall range from 1 to 5. A KCS Joist shall not be designated using the alternate “load/load” method. The KCS Joists, K-Series, standard designations listed in the following Standard Load Tables shall provide the moment capacity and shear capacity as listed in the applicable tables:

Standard LRFD Load Table for KCS Open Web Steel Joists – U.S. Customary Units
Standard ASD Load Table for KCS Open Web Steel Joists – U.S. Customary Units
Standard LRFD Load Table for KCS Open Web Steel Joists – S.I. Units
Standard ASD Load Table for KCS Open Web Steel Joists – S.I. Units

Where an open web configuration becomes impractical, a Joist Substitute, K-Series, shall be designed in accordance with this Specification to support uniform loads when the span is less than 10 feet (3048 mm). The maximum total safe uniformly distributed load-carrying capacity of a Joist Substitute shall be 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD.

The Joist Substitutes, K-Series, standard designations shall be established by their nominal depth, e.g. 2.5, followed by the letter “K” and then by the chord size designation assigned. The chord size designations shall range from 1 to 3. The Joist Substitutes, K-Series, standard designations listed in the following Load Tables shall support the uniformly distributed loads as provided in the applicable tables:

User Note: The Joist Substitutes, K-Series, are standardized as 2.5 inch (64 mm) deep sections for spans up through 10’-0” (3048 mm).

LRFD Simple Span Load Table for 2.5 Inch K–Series Joist Substitutes – U.S. Customary Units
ASD Simple Span Load Table for 2.5 Inch K–Series Joist Substitutes – U.S. Customary Units
LRFD Simple Span Load Table for 64 mm K–Series Joist Substitutes – S.I. Units
ASD Simple Span Load Table for 64 mm K–Series Joist Substitutes – S.I. Units

LRFD Outriggers Load Table for 2.5 Inch K–Series Joist Substitutes – U.S. Customary Units
ASD Outriggers Load Table for 2.5 Inch K–Series Joist Substitutes – U.S. Customary Units
LRFD Outriggers Load Table for 64 mm K–Series Joist Substitutes – S.I. Units
ASD Outriggers Load Table for 64 mm K–Series Joist Substitutes – S.I. Units

A Top Chord Extension or Extended End, K-series, shall be a joist accessory that shall be designed in accordance with this Specification to support uniform loads when one or both ends of an underslung joist needs to be cantilevered beyond its bearing seat.

User Note: The Top Chord Extensions and Extended Ends are standardized as an “S” Type (top chord angles extended only) and an “R” Type (top chord and bearing seat angles extended), respectively.

Standard designations for the "S" Type shall range from S1 to S12 for spans from 0'-6" to 4'-6" (152 to 1372 mm). Standard designations for the "R" Type shall range from R1 to R12 for spans from 0'-6" to 6'-0" (152 to 1829 mm). The maximum total safe uniformly distributed load-carrying capacity of either an "R" or "S" Type extension shall be 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD. The "S" Type Top Chord Extensions and "R" Type Extended Ends listed in the following Standard Load Tables shall support the uniformly distributed loads as provided in the applicable tables:

LRFD Top Chord Extension Load Table (S Type) – U.S. Customary Units
ASD Top Chord Extension Load Table (S Type) – U.S. Customary Units
LRFD Top Chord Extension Load Table (R Type) – U.S. Customary Units
ASD Top Chord Extension Load Table (R Type) – U.S. Customary Units
LRFD Top Chord Extension Load Table (S Type) – S.I. Units
ASD Top Chord Extension Load Table (S Type) – S.I. Units
LRFD Top Chord Extension Load Table (R Type) – S.I. Units
ASD Top Chord Extension Load Table (R Type) – S.I. Units

1.5 STRUCTURAL DESIGN DRAWINGS AND SPECIFICATIONS

The structural design drawings and specifications shall meet the requirements in the *Code of Standard Practice for Steel Joists and Joist Girders*, except for deviations specifically identified in the design drawings and/or specifications.

SECTION 2.
REFERENCED SPECIFICATIONS, CODES AND STANDARDS

2.1 REFERENCES

The standards listed below shall be considered as part of the requirements of this Specification. Where conflicts occur between this Specification and a referenced standard, the provisions of this Specification shall take precedence unless otherwise stated. This section lists the standards that are referenced in this Specification. The standards are listed in alphabetical order by name of standards developer organization, with the specific standard designations, title and dates of each of the referenced standards below.

American Institute of Steel Construction, Inc. (AISC), Chicago, IL

ANSI/AISC 360-10 *Specification for Structural Steel Buildings*

American Iron and Steel Institute (AISI), Washington, DC

ANSI/AISI S100-2012 *North American Specification for the Design of Cold-Formed Steel Structural Members*

American Society of Civil Engineers (ASCE), Reston, VA

SEI/ASCE 7-10 *Minimum Design Loads for Buildings and Other Structures*

American Society of Testing and Materials, ASTM International (ASTM), West Conshohocken, PA

ASTM A6/A6M-13A, *Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling*

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ASTM A36/A36M-12, *Standard Specification for Carbon Structural Steel*

ASTM A242/242M-13, *Standard Specification for High-Strength Low-Alloy Structural Steel*

ASTM A307-12a, *Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength*

ASTM A325/325M-13, *Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi [830 MPa] Minimum Tensile Strength*

ASTM A370-12a, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A500/A500M-13, *Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes*

ASTM A501-07 *Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing* ASTM

A529/A529M-05(2009), *Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality* ASTM

A572/A572M-13a, *Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel*

ASTM A588/A588M-10, *Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance*

ASTM A606/A606M-09a, *Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance*

ASTM A992/A992M-11, *Standard Specification for Structural Steel Shapes*

ASTM A1008/A1008M-13, *Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable*

ASTM A1011/A1011M-13, *Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength*

ASTM A1065/A1065M-09(2014) *Standard Specification for Cold-Formed Electric-Fusion (ARC) Welded High-Strength Low-Alloy Structural Tubing in Shapes with 50 ksi (345 MPA) Minimum Yield Point*

ASTM A1085-13 *Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)*

American Welding Society (AWS), Miami, FL

AWS A5.1/A5.1M-2012, *Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding*

AWS A5.5/A5.5M:2006, *Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding*

AWS A5.17/A5.17M-97:R2007, *Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding*

AWS A5.18/A5.18M:2005, *Specification for Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding*

AWS A5.20/A5.20M:2005, *Specification for Carbon Steel Electrodes for Flux Cored Arc Welding*

AWS A5.23/A5.23M:2011, *Specification for Low-Alloy Steel Electrodes and Fluxes for Submerged Arc Welding*

AWS A5.28/A5.28M:2005, *Specification for Low-Alloy Steel Electrodes and Rods for Gas Shielded Arc Welding*

AWS A5.29/A5.29M:2010, *Specification for Low-Alloy Steel Electrodes for Flux Cored Arc Welding*

AWS D1.1/D1.1M:2015, *Structural Welding Code - Steel*

AWS D1.3/D1.3M:2008, *Structural Welding Code Sheet Steel*

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User Note: The following informative references provide practical guidance in the use and application of this Specification:

Code of Federal Regulations (CFR), Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R - Steel Erection; January 18, 2001, Washington, D.C.

Steel Joist Institute (SJI), Florence, SC

SJI-COSP-2015, *Code of Standard Practice for Steel Joists and Joist Girders*

Technical Digest No. 3 (2007), *Structural Design of Steel Joist Roofs to Resist Ponding Loads*

Technical Digest No. 5 (2015), *Vibration of Steel Joist-Concrete Slab Floors*

Technical Digest No. 6 (2012), *Structural Design of Steel Joist Roofs to Resist Uplift Loads*

Technical Digest No. 8 (2008), *Welding of Open Web Steel Joists and Joist Girders*

Technical Digest No. 9 (2008), *Handling and Erection of Steel Joists and Joist Girders*

Technical Digest No. 10 (2003), *Design of Fire Resistive Assemblies with Steel Joists*

Technical Digest No. 11 (2007), *Design of Lateral Load Resisting Frames Using Steel Joists and Joist Girders*

Technical Digest No. 12 (2007), *Evaluation and Modification of Open-Web Steel Joists and Joist Girders*

The Society for Protective Coatings (SSPC), *Steel Structures Painting Manual, Volume 2, Systems and Specifications*, Paint Specification No. 15, Steel Joist Shop Primer, May 1, 1999, Pittsburgh, PA.

Van Malssen, S.H. (1984), *The Effects of Arc Strikes on Steel Used in Nuclear Construction,* Welding Journal, American Welding Society, Miami, FL, July 1984.

SECTION 3.
MATERIALS

3.1 STEEL

The steel used in the manufacture of Joist Girders and K-Series, LH-Series, and DLH-Series joists shall conform to one of the following ASTM specifications:

ASTM A36/A36M, Carbon Structural Steel

ASTM A242/A242M, High-Strength Low-Alloy Structural Steel

ASTM A500/A500M, Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A529/A529M, High-Strength Carbon-Manganese Steel of Structural Quality

ASTM A572/A572M, High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A588/A588M, High-Strength Low-Alloy Structural Steel up to 50 ksi [345 MPa] Minimum Yield Point with Atmospheric Corrosion Resistance

ASTM A606/A606M, Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance

ASTM A992/A992M, Structural Steel Shapes

ASTM A1008/A1008M, Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

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ASTM A1011/A1011M, Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

ASTM A1018/A1018M, Steel, Sheet and Strip, Heavy Thickness Coils, Hot Rolled, Carbon, Structural, High-Strength Low-Alloy, Columbium or Vanadium, and High-Strength Low-Alloy with Improved Formability and Ultra-High Strength

EXCEPTION: Steel used in the manufacture of Joist Girders and K-Series, LH-Series, and DLH-Series joists shall be permitted to be of suitable quality ordered or produced to other than the listed ASTM specifications, provided that such material in the state used for final assembly and manufacture is weldable and is proven by tests performed by the producer or manufacturer to have properties, in accordance with Section 3.2.

3.2 MECHANICAL PROPERTIES

3.2.1 Minimum Yield Strength: Steel used for Joist Girders and K-Series, LH-Series, and DLH-Series joists shall have a minimum yield strength determined in accordance with one of the procedures specified in this section, which is equal to the yield strength assumed in the design.

User note: The term "Yield Strength" as used herein designates the yield level of a material as determined by the applicable method outlined in paragraph 13.1 “Yield Point”, and in paragraph 13.2 “Yield Strength”, of ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*, or as specified in Section 3.2.3.

Evidence that the steel furnished meets or exceeds the design yield strength shall, if requested, be provided in the form of an affidavit or by witnessed or certified test reports.

For material used without consideration of increase in yield strength resulting from cold forming, the specimens shall be taken from as-rolled material. In the case of such material, the mechanical properties of which conform to the requirements of one of the listed ASTM specifications in Section 3.1, the test specimens and procedures shall conform to those of the applicable ASTM specification and to ASTM A370.

3.2.2 Other Materials: For materials where the mechanical properties do not conform to the requirements of one of the ASTM specifications listed in Section 3.1, these materials shall conform to the following requirements:

a) The specimens shall comply with ASTM A370,
b) The specimens shall exhibit a yield strength equal to or exceeding the design yield strength,
c) The specimens shall have an elongation of not less than 20 percent in 2 inches (51 mm) for sheet strip, or 18 percent in 8 inches (203 mm) for plates, shapes and bars with adjustments for thickness for plates, shapes and bars as prescribed in either ASTM A36/A36M, A242/A242M, A500/A500M, A529/A529M, A572/A572M, A588/A588M, or A992/A992M, whichever ASTM specification is applicable, on the basis of design yield strength.
d) The number of tests for a), b), and c) above shall be as prescribed in ASTM A6/A6M for plates, shapes, and bars; and ASTM A606/A606M, A1008/A1008M and A1011/A1011M for sheet and strip.

3.2.3 As-Formed Strength: If as-formed strength is utilized, the test reports shall show the results of tests performed on full section specimens in accordance with the provisions of the AISI S100. The reports shall also indicate compliance with the following additional requirements:

a) The yield strength calculated from the test data shall equal or exceed the design yield strength.
b) Where tension tests are made for acceptance and control purposes, the tensile strength shall be at least 8 percent greater than the yield strength of the section.
c) Where compression tests are used for acceptance and control purposes, the specimen shall withstand a gross shortening of 2 percent of its original length without cracking. The length of the specimen shall be not greater than 20 times the least radius of gyration.
d) If any test specimen fails to pass the requirements of the subparagraphs (a), (b), or (c) above, as applicable, two retests shall be made of specimens from the same lot. Failure of one of the retest specimens to meet such requirements shall be the cause for rejection of the lot represented by the specimens.

3.3 WELDING ELECTRODES

3.3.1 Welding Electrodes: The welding electrodes used for arc welding shall be in accordance with the following:

a) For connected members both having a specified minimum yield strength greater than 36 ksi (250 MPa), one of the following electrodes shall be used:

AWS A5.1: E70XX
AWS A5.5: E70XX-X
AWS A5.17: F7XX–EXXX, F7XX–ECXXX flux electrode combination
AWS A5.18: ER70S-X, E70C-XC, E70C-XM
AWS A5.20: E7XT-X, E7XT-XM
AWS A5.23: F7XX–EXXX-XX, F7XX–ECXXX-XX
AWS A5.28: ER70S-XXX, E70C-XXX
AWS A5.29: E7XTX-X, E7XTX-XM

b) For connected members both having a specified minimum yield strength of 36 ksi (250 MPa) or one having a specified minimum yield strength of 36 ksi (250 MPa), and the other having a specified minimum yield strength greater than 36 ksi (250 MPa), one of the following electrodes shall be used:

AWS A5.1: E60XX
AWS A5.17: F6XX-EXXX, F6XX-ECXXX flux electrode combination
AWS A5.20: E6XT-X, E6XT-XM
AWS A5.29: E6XTX-X, E6XTX-XM
or any of those listed in Section 3.3.1(a).

3.3.2 Other Welding Methods: Other welding methods, providing equivalent strength as demonstrated by tests, shall be permitted to be used.

3.4 PAINT

The standard shop paint shall be considered an impermanent and provisional coating.

User Note: The standard shop paint is intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions.

When specified, the standard shop paint shall conform to one of the following:

a) The Society for Protective Coatings, SSPC Paint Specification No. 15.

b) Or, shall be a shop paint which meets the minimum performance requirements of SSPC Paint Specification No. 15.

SECTION 4.
DESIGN AND MANUFACTURE

4.1 METHOD

Joist Girders support steel joists or other secondary members and shall be designed in accordance with this Specification as simply-supported primary load-carrying members for in-plane loading. Steel joists shall be designed in accordance with this Specification as simply-supported trusses supporting a floor or roof deck so constructed as to brace the top chord of the steel joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following Specifications:

a) Where the steel used consists of hot-rolled shapes, bars or plates, AISC 360.

b) For members which are cold-formed from sheet or strip steel, AISI S100.

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4.1.1 Design Basis:

Steel joist and Joist Girder designs shall be in accordance with the provisions in this Specification using Load and Resistance Factor Design (LRFD) or Allowable Strength Design (ASD) as specified by the specifying professional for the project.

4.1.2 Loads, Forces and Load Combinations:

The loads and forces used for the steel joist and Joist Girder design shall be calculated by the specifying professional in accordance with the applicable building code and specified and provided on the structural drawings.

For nominal concentrated loads, which have been accounted for in the specified uniform loads, the addition of chord bending moments or an added shop or field web member due to these nominal concentrated loads shall not be required provided that the sum of the concentrated loads within a chord panel does not exceed 100 pounds and the attachments are concentric to the chord. When exact dimensional locations for concentrated loads which do not meet the above criteria are provided by the specifying professional, the joist shall be designed for the loads and load locations provided without the need for additional field applied web members at the specified locations.

The load combinations shall be specified by the specifying professional on the structural drawings in accordance with the applicable building code. In the absence of an applicable building code, the load combinations shall be those stipulated in SEI/ASCE 7 Section 2.3 and Section 2.4 as appropriate. For LRFD designs, the load combinations in SEI/ASCE 7, Section 2.3 shall apply. For ASD designs, the load combinations in SEI/ASCE 7, Section 2.4 shall apply.

4.2 DESIGN AND ALLOWABLE STRESSES

4.2.1 Design Using Load and Resistance Factor Design (LRFD)

Joists and Joist Girders shall have their components so proportioned that the required stresses, f_u, shall not exceed ϕF_n where

f_u	= required stress	ksi (MPa)
F_n	= nominal stress	ksi (MPa)
ϕ	= resistance factor	
ϕF_n	= design stress	ksi (MPa)

4.2.2 Design Using Allowable Strength Design (ASD)

Joists and Joist Girders shall have their components so proportioned that the required stresses, f, shall not exceed F_n / Ω where

f	= required stress	ksi (MPa)
F_n	= nominal stress	ksi (MPa)
Ω	= safety factor	
F_n/Ω	= allowable stress	ksi (MPa)

4.2.3 Stresses:

The calculation of design stress or allowable stress for chords shall be based on a yield strength, F_y, of the material used in manufacturing equal to 50 ksi (345 MPa). The calculation of design stress or allowable stress for all other joist elements shall be based on a yield strength, F_y, of the material used in manufacturing, but shall not be less than 36 ksi (250 MPa) nor greater than 50 ksi (345 MPa).Yield strengths greater than 50 ksi shall not be used for the design of any members.

4.2.3.1 Tension: $\phi_t = 0.90$ (LRFD), $\Omega_t = 1.67$ (ASD)

Design Stress = $0.9F_y$ (LRFD) (4.2-1)

Allowable Stress = $0.6F_y$ (ASD) (4.2-2)

4.2.3.2 Compression: $\phi_c = 0.90$ (LRFD), $\Omega_c = 1.67$ (ASD)

Design Stress = $0.9F_{cr}$ (LRFD) (4.2-3)

Allowable Stress = $0.6F_{cr}$ (ASD) (4.2-4)

Where:

For members with $\frac{k\ell}{r} \le 4.71\sqrt{\frac{E}{QF_y}}$

$$F_{cr} = Q\left[0.658^{\left(QF_y/F_e\right)}\right]F_y \quad (4.2\text{-}5)$$

For members with $\frac{k\ell}{r} > 4.71\sqrt{\frac{E}{QF_y}}$

$$F_{cr} = 0.877F_e \quad (4.2\text{-}6)$$

Where F_e = Elastic buckling stress determined in accordance with Equation 4.2-7

$$F_e = \frac{\pi^2 E}{\left(k\ell/r\right)^2} \quad (4.2\text{-}7)$$

In the above equations, ℓ is the length, k is the effective length factor, and r is the corresponding radius of gyration of the member as defined in Section 4.3. E is equal to 29,000 ksi (200,000 MPa).

For hot-rolled sections and cold-formed angles, Q shall be taken as the full reduction factor for slender compression members as determined in accordance with AISC 360-10.

Exception: Where a compression web member is a crimped-end angle member intersecting at the first bottom chord panel point, whether hot-rolled or cold-formed, then Q shall be determined as follows:

$$Q = [5.25/(w/t)] + t \le 1.0 \quad (4.2\text{-}8a)$$

Where: w = angle leg length, inches
t = angle leg thickness, inches

or,

$$Q = [5.25/(w/t)] + (t/25.4) \le 1.0 \quad (4.2\text{-}8b)$$

Where: w = angle leg length, millimeters
t = angle leg thickness, millimeters

For all other cold-formed sections the method of calculating the nominal compression strength shall be in accordance with AISI S100.

4.2.3.3 Bending: $\phi_b = 0.90$ (LRFD), $\Omega_b = 1.67$ (ASD)

Bending calculations shall be based on the elastic section modulus.

For chords and web members other than solid rounds: $F_n = F_y$

Design Stress = $\phi_b F_n = 0.9F_y$ (LRFD) (4.2-9)

Allowable Stress = $F_n/\Omega_b = 0.6F_y$ (ASD) (4.2-10)

For web members of solid round cross section: $F_n = 1.6\ F_y$

Design Stress = $\phi_b F_n = 1.45F_y$ (LRFD) (4.2-11)

Allowable Stress = $F_n/\Omega_b = 0.95F_y$ (ASD) (4.2-12)

For bearing plates used in joist seats: $F_n = 1.5\ F_y$

Design Stress = $\phi_b F_n = 1.35F_y$ (LRFD) (4.2-13)

Allowable Stress = $F_n/\Omega_b = 0.90F_y$ (ASD) (4.2-14)

4.2.3.4 Weld Strength:

Shear at throat of fillet welds, flare bevel groove welds, partial joint penetration groove welds, and plug/slot welds shall be determined as follows:

Nominal Shear Stress = $F_{nw} = 0.6F_{exx}$ (4.2-15)

LRFD: $\phi_w = 0.75$

Design Shear Strength = $\phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A_w$ (4.2-16)

ASD: $\Omega_w = 2.0$

Allowable Shear Strength = $R_n/\Omega_w = F_{nw}A/\Omega_w = 0.3F_{exx} A_w$ (4.2-17)

Where:

F_{exx} is determined as follows:

E70 series electrodes or F7XX-EXXX flux-electrode combinations F_{exx} = 70 ksi (483 MPa)

E60 series electrodes or F6XX-EXXX flux-electrode combinations F_{exx} = 60 ksi (414 MPa)

A_w = effective throat area, where:

For fillet welds, A_w = effective throat area

Other design methods demonstrated to provide sufficient strength by testing shall be permitted to be used.

For flare bevel groove welds, the effective weld area is based on a weld throat width, T, where:

T (inches) = 0.12D + 0.11 (4.2-18a)

Where D = web diameter, inches

or,

T (mm) = 0.12D + 2.8 (4.2-18b)

Where D = web diameter, mm

For plug/slot welds, A_w = cross-sectional area of the hole or slot in the plane of the faying surface provided that the hole or slot meets the requirements of AISC 360.

User Note: For more on plugs/slot welds see Steel Joist Institute Technical Digest No. 8, "Welding of Open-Web Steel Joists and Joist Girders".

Strength of resistance welds and complete-joint-penetration groove or butt welds in tension or compression (only where the stress is normal to the weld axis) shall be equal to the base metal strength:

$\phi_t = \phi_c = 0.90$ (LRFD) $\quad \Omega_t = \Omega_c = 1.67$ (ASD)

Design Stress = $0.9 F_y$ (LRFD) (4.2-19)

Allowable Stress = $0.6 F_y$ (ASD) (4.2-20)

4.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$ of members as a whole or any component part shall not exceed the values given in Table 4.3-1, Part A.

4.3.1 Effective Slenderness Ratios: The effective slenderness ratio, $k\ell/r$ to be used in calculating the nominal stresses, F_{cr} and F'_e, is the largest value as determined from Table 4.3-1, Part B and Part C, and modified where required with equation 4.3-1. The effective length k shall be taken as 1.0 for all components in Joist Girders.

4.3.2 Compressive Members: In compression members where fillers or ties are used, they shall be spaced so that the ℓ_s/r_z ratio of each component does not exceed the governing ℓ/r ratio of the member as a whole. The terms used in Table 4.3-1 shall be defined as follows:

ℓ = length center-to-center of panel points, except ℓ = 36 inches (914 millimeters) for calculating ℓ/r_y of the top chord member for joists, and for Joist Girders this distance shall be the unbraced length between joists which are positively attached to the top chord, in. (mm).

ℓ_s = maximum length center-to-center between panel point and filler (tie), or between adjacent fillers (ties), in. (mm).

r_x = member radius of gyration about the horizontal axis of the joist or Joist Girder cross section, in. (mm).

r_y = member radius of gyration about the vertical axis of the joist or Joist Girder cross section, in. (mm).

r_z = least radius of gyration of a member component, in. (mm).

Compression web members shall be those web members subject to compressive axial loads under gravity loading.

4.3.3 Tension Members: Tension web members shall be those web members subject to tension axial loads under gravity loading, and which shall be permitted to be subject to compressive axial loads under alternate loading conditions

User Note: An example of a non-gravity alternate loading condition is net uplift.

4.3.4 Top Chords: For top chords, the end panel(s) shall be the panels between the bearing seat and the first primary interior panel point comprised of at least two intersecting web members.

4.3.5 Built-Up Web Members: For built-up web members composed of two interconnected shapes, where $\ell_s/r_z > 40$,

a modified slenderness ratio $\left(\frac{k\ell}{r_y}\right)_m$ shall replace $\frac{k\ell}{r_y}$ in equations 4.2-5, 4.2-6, and 4.2-7, where:

$$\left(\frac{k\ell}{r_y}\right)_m = \sqrt{\left(\frac{k\ell}{r_y}\right)^2 + \left(\frac{k_i \ell_s}{r_z}\right)^2} \qquad (4.3\text{-}1)$$

and,

k_i = 0.50 for angles back-to-back
= 0.75 for channels back-to-back

TABLE 4.3-1
MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS[1]

Description			$k\ell/r_x$	$k\ell/r_y$	$k\ell/r_z$	$k\ell_s/r_z$
I.	TOP CHORD INTERIOR PANELS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 90.				
	B.	The effective slenderness ratio for joists, $k\ell/r$, to determine F_{cr} where k is:				
		1. Two shapes with fillers or ties	0.75	0.94	---	1.0
		2. Two shapes without fillers or ties	---	---	0.75	---
		3. Single component members	0.75	0.94	---	---
	C.	For bending, the effective slenderness ratio, $k\ell/r$, to determine F'_e where k is:	0.75	---	---	---
II.	TOP CHORD END PANELS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 120.				
	B.	The effective slenderness ratio for joists, $k\ell/r$, to determine F_{cr} where k is:				
		1. Two shapes with fillers or ties	1.0	0.94	---	1.0
		2. Two shapes without fillers or ties	---	---	1.0	---
		3. Single component members	1.0	0.94	---	---
	C.	For bending, the effective slenderness ratio, $k\ell/r$, to determine F'_e where k is:	1.0	---	---	---
III.	ALL BOTTOM CHORD PANELS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 240.				
	B.	For members subject to compression, the effective slenderness ratio for joists, $k\ell/r$, to determine F_{cr} where k is:				
		1. Two shapes with fillers or ties	0.9	0.94	---	1.0
		2. Two shapes without fillers or ties	---	---	0.9	---
		3. Single component members	0.9	0.94	---	---
	C.	For bending, the effective slenderness ratio, $k\ell/r$, to determine F'_e where k is:	0.9	---	---	---
IV.	WEB MEMBERS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 240 for a tension member or 200 for a compression member.				
	B.	For members subject to compression, the effective slenderness ratio for joists, $k\ell/r$, to determine F_{cr} where k is:				
		1. Two shapes with fillers or ties	0.75	1.0	---	1.0
		2. Two shapes without fillers or ties	---	---	1.0	---
		3. Single component members	0.75	0.9*	---	---
		*For end tension web members subject to compression, k shall equal 0.8				

(1) The effective length k shall equal 1.0 for all components of Joist Girders.

4.4 MEMBERS

4.4.1 Chords

The joist and Joist Girder bottom chord shall be designed as an axially loaded tension member.

For Joist Girders, the radius of gyration of the bottom chord about its vertical axis shall not be less than ℓ/240 where ℓ is the distance between lines of bracing. The radius of gyration of a Joist Girder top chord about the vertical axis shall not be less than Span/575.

For steel joists, the radius of gyration of the top chord about its vertical axis shall not be less than the results of equation 4.4-1 or 4.4-2:

$$r_y \geq \ell_{br} \Big/ \left(124+0.67\, d_j+28 \frac{d_j}{L} \right), \text{ in.} \qquad (4.4\text{-}1a)$$

$$r_y \geq \ell_{br} \Big/ \left(124+0.026\, d_j+0.34 \frac{d_j}{L} \right), \text{ mm} \qquad (4.4\text{-}1b)$$

or,

$$r_y \geq \ell_{br} / 170 \qquad (4.4\text{-}2)$$

Where:

d_j is the steel joist depth, in. (mm)

L is the joist span length, ft. (m)

r_y is the radius of gyration of the top chord about the vertical axis of the joist cross section, in. (mm)

ℓ_{br} is the spacing in inches (millimeters) between lines of bridging as specified in Section 5.5.3.1.

A steel joist top chord shall be considered as laterally braced by the floor slab or roof deck provided the requirements of Section 5.9 are met.

A Joist Girder top chord shall be considered as laterally braced by the steel joists provided positive attachment is made. The outstanding part of the top chord member shall be designed such that the allowable reaction from a single joist shall not exceed equation 4.4-3 or 4.4-4:

$$\phi P_p \text{ and } \phi P_p\,(1.6 - f_{au}/\phi Q F_y) \quad \text{(LRFD, } \phi = 0.9) \qquad (4.4\text{-}3)$$

$$P_p/\Omega \text{ and } P_p/\Omega\,(1.6 - \Omega f_a/Q F_y) \quad \text{(ASD, } \Omega = 1.67) \qquad (4.4\text{-}4)$$

Where:

F_y = Specified minimum yield strength, ksi (MPa)

P_p = Plastic failure mode = $[(t^2 F_y)/[2(b\text{-}k)]][g+5.66(b\text{-}k)]$, kips (N)

Q = Form factor defined in Section 4.2.3.2

b = width of the outstanding part of the top chord member, in. (mm)

f_{au} = P_u/A = Required compressive stress, ksi (MPa)

f_a = P/A = Required compressive stress, ksi (MPa)

g = width of bearing seat, in. (mm)

k = value from angle properties or similar dimension for other members, in (mm)

t = thickness of the outstanding part of the top chord member, in. (mm)

The top chord of a steel joist or Joist Girder shall be designed as a continuous member subject to combined axial and bending stresses, except a Joist Girder loaded only at panel points shall be designed as an axial loaded compression member. For combined stresses the top chord shall be so proportioned that:

For **LRFD**:

at the panel point:

$$f_{au} + f_{bu} \le 0.9F_y \qquad (4.4\text{-}5)$$

at the mid panel:

for, $\dfrac{f_{au}}{\phi_c F_{cr}} \ge 0.2$,

$$\frac{f_{au}}{\phi_c F_{cr}} + \frac{8}{9}\left[\frac{C_m f_{bu}}{\left[1-\left(\dfrac{f_{au}}{\phi_c F'_e}\right)\right] Q \phi_b F_y}\right] \le 1.0 \qquad (4.4\text{-}6)$$

for, $\dfrac{f_{au}}{\phi_c F_{cr}} < 0.2$,

$$\frac{f_{au}}{2\phi_c F_{cr}} + \left[\frac{C_m f_{bu}}{\left[1-\left(\dfrac{f_{au}}{\phi_c F'_e}\right)\right] Q \phi_b F_y}\right] \le 1.0 \qquad (4.4\text{-}7)$$

f_{au} = P_u/A = Required compressive stress using LRFD load combinations, ksi (MPa)

P_u = Required axial strength using LRFD load combinations, kips (N)

A = Area of the top chord, in.^{2} (mm^2)

f_{bu} = M_u/S = Required bending stress at the location under consideration using LRFD load combinations, ksi (MPa)

M_u = Required flexural strength using LRFD load combinations, kip-in. (N-mm)

S = Elastic Section Modulus, in.^{3} (mm^3)

F_{cr} = Nominal axial compressive stress in ksi (MPa) based on $k\ell/r$ as defined in Section 4.3

C_m = 1 - 0.3 $f_{au}/\phi_c F'_e$ for end panels

C_m = 1 - 0.4 $f_{au}/\phi_c F'_e$ for interior panels

Q = Form factor defined in Section 4.2.3.2

ϕ_c = Resistance factor for compression = 0.9

ϕ_b = Resistance factor for flexure = 0.9

F_y = Specified minimum yield strength, ksi (MPa)

$F'_e = \dfrac{\pi^2 E}{(k\ell/r_x)^2}$, ksi (MPa),

where ℓ is the length, k is the effective length factor, and r_x is the corresponding radius of gyration of the member as defined in Section 4.3

E = Modulus of elasticity, 29,000 ksi (200,000 MPa)

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For **ASD**:

at the panel point:

$$f_a + f_b \le 0.6F_y \qquad (4.4\text{-}8)$$

at the mid panel:

for, $\frac{f_a}{F_a} \ge 0.2$,

$$\frac{f_a}{F_a} + \frac{8}{9}\left[\frac{C_m f_b}{\left[1-\left(\frac{1.67f_a}{F'_e}\right)\right]QF_b}\right] \le 1.0 \qquad (4.4\text{-}9)$$

for $\frac{f_a}{F_a} < 0.2$,

$$\left(\frac{f_a}{2F_a}\right) + \left[\frac{C_m f_b}{\left[1-\left(\frac{1.67f_a}{F'_e}\right)\right]QF_b}\right] \le 1.0 \qquad (4.4\text{-}10)$$

f_a = P/A required compressive stress using ASD load combinations, ksi (MPa)

A = Area of the top chord, in.^{2} (mm^2)

P = Required axial strength using ASD load combinations, kips (N)

f_b = M/S = required bending stress at the location under consideration using ASD load combinations, ksi (MPa)

S = Elastic Section Modulus, in.^{3} (mm^3)

M = Required flexural strength using ASD load combinations, k-in. (N-mm)

F_a = Allowable axial compressive stress based on $k\ell/r$ as defined in Section 4.3; $0.6F_{cr}$, ksi (MPa)

F_b = Allowable bending stress; $0.6F_y$, ksi (MPa)

C_m = 1 - 0.50 f_a/F'_e for end panels

C_m = 1 - 0.67 f_a/F'_e for interior panels

Q = Form factor defined in Section 4.2.3.2

$F'_e = \frac{\pi^2 E}{(k\ell/r_x)^2}$, ksi (MPa),

where ℓ is the length, *k* is the effective length factor, and r_x is the corresponding radius of gyration of the member as defined in Section 4.3

E = Modulus of elasticity, 29,000 ksi (200,000 MPa)

The top chord and bottom chord shall be designed such that at each joint complies with equation 4.4-11 or 4.4-12:

$$f_{vmod} \le \phi_v F_n \qquad \text{(LRFD, } \phi_v = 1.00\text{)} \qquad (4.4\text{-}11)$$

$$f_{vmod} \le F_n/\Omega_v \qquad \text{(ASD, } \Omega_v = 1.50\text{)} \qquad (4.4\text{-}12)$$

F_n = nominal shear stress = $0.6F_y$, ksi (MPa)

f_t = axial stress = P/A, ksi (MPa)

f_v = shear stress = V/bt, ksi (MPa)

f_{vmod} = modified shear stress = $\left(\frac{1}{2}\right)\sqrt{f_t^2+4f_v^2}$

b = length of vertical part(s) of cross section, in. (mm)

t = thickness of vertical part(s) of cross section, in. (mm)

It shall not be necessary to design the top chord and bottom chord for the modified shear stress, f_{vmod}, where a round bar web member is continuous through a joint. The minimum required shear of section 4.4.2 (25 percent of the maximum end reaction) shall not be required when evaluating Equation 4.4-11 or 4.4-12.

KCS Joist, K-Series, chords shall be designed for a flat positive bending moment envelope where the moment capacity is constant at all interior panels. The top chord end panel(s) shall be designed for an axial load based on the force in the first tension web resulting from the specified shear. A uniform load of 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD shall be used to check bending in the end panel(s). The top chord interior panels shall be designed for an axial stress resulting from the constant moment capacity plus the bending stress. The bending stress shall be determined from the smaller uniform load derived from the constant moment and constant shear, not to exceed 550 plf (ASD) or 825 plf (LRFD). The constant moment and shear shall be those values as listed in the Standard Load Table for KCS Steel Joists.

4.4.2 Web

The vertical shears to be used in the design of the web members shall be determined by including all loads, but such vertical shears shall be not less than 25 percent of the maximum end reaction from the design load combinations.

4.4.2.1 Redundant Web Members: Redundant web members used in modified Warren type web systems shall be designed to resist the gravity loads supported by the member plus an additional axial load of ½ of 1.0 percent of the top chord axial force. For a **Joist Girder**, this total axial load shall not be less than 2 percent of the top chord axial force.

4.4.2.2 Joist Girders: For Joist Girders, the tension web members shall be designed to resist at least 25 percent of their axial force in compression.

4.4.2.3 KCS Joist Web Forces: KCS Joist web forces shall be determined based on a flat shear envelope, and the following:

a) All webs shall be designed for a vertical shear equal to the specified shear capacity.
b) All webs shall be designed for 100 percent stress reversal except for the first tension web which remains in tension under all simple span gravity loads.

4.4.2.4 Single Component Web Member: In those cases where a single component web member is attached to the outside of the stem of a tee or double angle chord or any other orientation of a single web member which creates an out-of-plane moment, the web member design shall account for the stresses due to eccentricity.

4.4.2.4.1 Uncrimped Single Angle Web Members

For 1 inch uncrimped single angle web members where one leg is placed flat against one chord member in the gap, the resulting eccentricities and the effects in loading shall be considered in the design. A minimum of 50 percent of the required weld shall be deposited to each chord angle.

For angles subjected to tensile loading, the following requirements shall be met:

For **LRFD**: combined axial and bending stresses shall be proportioned in accordance with Eq. 4.4-5.

For **ASD**: combined axial and bending stresses shall be proportioned in accordance with Eq. 4.4-8.

For angles subjected to compression loading, the following requirements shall be met:

For **LRFD**:

at the panel point, combined axial and bending stresses shall be proportioned in accordance with Eq. 4.4-5.

at the mid length, the strength shall meet Eqs. 4.4-6 or 4.4-7, and 4.4-13:

$$\frac{f_{au}}{\phi_c F_{crz}} \le 1.0 \qquad (4.4\text{-}13)$$

where

f_{au} = P_u/A = Required tensile or compressive stress, ksi (MPa)

P_u = Required axial strength using LRFD load combinations, kips (N)

A = Area of the uncrimped angle web, in.^{2}, (mm^2)

f_{bu} = M_u/S = required bending stress, ksi (MPa)

M_u = Required flexural strength = $0.5 P_u \left(\frac{\text{chord gap}}{2} - \bar{y} \right)$, kip-in. (N-mm)

S = Minimum Elastic Section Modulus, in.^{3} (mm^3)

F_{cr} = F_{crx}, ksi (MPa)

F_{crx} = Nominal axial compressive stress in ksi (MPa) based on $k\ell/r_x$, where ℓ is the length, k is the effective length factor, and r_x is the corresponding radius of gyration of the member as defined in Section 4.3

F_{crz} = Nominal axial compressive stress in ksi (MPa) based on $k\ell/r_z$ where k = 1.0

C_m = 1.0

F_y = Specified minimum yield strength, ksi (MPa)

$F'_e = \frac{\pi^2 E}{\left(k\ell/r_x\right)^2}$, ksi (MPa)

Q = Form factor defined in Section 4.2.3.2

For **ASD**:

at the panel point, combined axial and bending stresses shall be proportioned in accordance with Eq. 4.4-8.

at the mid length the strength shall meet Eqs. 4.4-9 or 4.4-10, and 4.4-14:

$$\frac{f_a}{F_{az}} \le 1.0 \qquad (4.4\text{-}14)$$

where

f_a = P/A = Required tensile or compressive stress, ksi (MPa)

P = Required axial strength using ASD load combinations, kips (N)

A = Area of the uncrimped angle web, in.^{2}, (mm^2)

f_b = M/S = required bending stress, ksi (MPa)

S = Minimum Elastic Section Modulus, in.^{3} (mm^3)

M = Required flexural strength = $0.5P\left(\frac{\text{chord gap}}{2} - \bar{y}\right)$, kip-in. (N-mm)

F_a = F_{ax}, ksi (MPa)

F_{ax} = Nominal axial compressive stress in ksi (MPa) based on $k\ell/r_x$, where ℓ is the length, k is the effective length factor, and r_x is the corresponding radius of gyration of the member as defined in Section 4.3

F_{az} = Nominal axial compressive stress in ksi (MPa) based on $K\ell/r_z$, where k = 1.0

F_b = Allowable bending stress; $0.6F_y$, ksi (MPa)

Alternate methods of design shall be permitted provided they provide strength equal to or greater than those given. Alternate design procedures shall be submitted to the Steel Joist Institute's consulting engineer for approval.

4.4.3 Fillers and Ties

Fillers or ties added on chord or web compression members shall be designed and connected for a force equal to 2 percent of the required member axial force.

4.4.4 Joist and Joist Girder Extensions

Joist and Joist Girder extensions shall be designated as one of three extension types, as follows: top chord extensions (TCX), extended ends, or full depth cantilevers.

Design criteria for joist extensions shall be specified using one of the following methods:

a) A joist top chord extension (TCX), extended end, or full depth cantilevered end shall be designed for the load from the Standard Load Tables based on the design length and designation of the specified joist. In the absence of other design information, the joist manufacturer shall design the joist extension for this loading as a default.

b) A loading diagram shall be provided for the joist extension, extended end, or full depth cantilevered end. The diagram shall include the magnitude and location of the loads to be supported, as well as the applicable load combinations.

c) 2½" deep steel joist extensions shall be permitted to be specified using extension designations found in the Top Chord Extension Load Table (S Type) for TCXs or the Top Chord Extension Load Table (R Type) for extended ends.

Any deflection requirements or limits due to the accompanying loads and load combinations on the steel joist or Joist Girder extension shall be provided by the specifying professional, regardless of the method used to specify the extension. Unless otherwise specified, the joist manufacturer shall check the extension for the specified deflection limit under uniform live load acting simultaneously on both the joist base span and the extension.

The joist manufacturer shall consider the effects of steel joist or Joist Girder extension loading on the base span of the steel joist or Joist Girder. This shall include carrying the design bending moment due to the loading on the extension into the top chord end panel(s), and the effect on the overall steel joist or Joist Girder chord and web axial forces. In the case of a K-Series Standard Type 'R' Extended End or 'S' TCX, the design bending moment shall be determined by the tabulated extension section modulus (S) multiplied by the appropriate allowable (ASD) or design (LRFD) flexural stress.

Bracing of extensions shall be clearly indicated on the structural drawings.

4.5 CONNECTIONS

4.5.1 Methods

Member connections and splices shall be made by attaching the members to one another by arc or resistance welding or other accredited methods in accordance with the following:

a) Steel joist and Joist Girder arc welded joints shall be in accordance with the American Welding Society, "Structural Welding Code-Steel", D1.1, and/or the "Structural Welding Code Sheet Steel", D1.3 with the following seven modified acceptance criteria as permitted by AWS D1.1 Clause 6.8:

1) Undercut shall not exceed 1/16 inch (2 mm) for welds oriented parallel to the principal stress.

User Note: The typical diagonal web member connection to one leg of a chord angle is considered to be parallel to the principal stress.

2) Discontinuities outside of the weld design length shall be permitted provided no cracks exist and undercut does not exceed the limits of item 1).

User Note: The weld design length is the minimum weld length needed for the connection force and weld thickness. Portions of the actual weld length with imperfections or discontinuities such as porosity or lack of a full profile are not included when comparing the actual weld length to the weld design length.

3) One unrepaired arc strike shall be permitted per joint provided it does not result in other unacceptable defects.

User Note: Minor arc strikes do not reduce the strength of AWS Group II materials (refer to Van Malssen, 1984).

4) The effective throat for flare bevel groove welds shall be calculated in accordance with equation 4.2-18.

User Note: The effective weld throat used by the SJI with round bars is based on SJI research and is more conservative than AWS D1.1 for GMAW for round bars in excess of 9/16" (14 mm). See Steel Joist Institute Technical Digest 8, "Welding of Open Web Steel Joists and Joist Girders".

5) Tack welds that are discontinuous from other welds shall meet the criteria for undercut, but shall be exempt from all other acceptance criteria.

User Note: Joist manufacturers use tack welds in the assembly process, and so long as they do not diminish the strength of the base metal and are not incorporated into the final weld for strength, they are not required to meet other inspection criteria.

6) The weld profile shall be considered acceptable provided neither the weld leg nor the weld throat is undersized less than AWS D1.1 limits within the weld design length.

7) For material with thickness less than 1/8", AWS D1.1 or D1.3 shall be considered appropriate.

User Note: AWS D1.1 does not address thicknesses less than 1/8" for hot rolled material and AWS D1.3 does not address hot rolled material, thus SJI has extended the ranges to include these material thicknesses.

b) Steel joist and Joist Girder resistance welded joints shall follow a preproduction validation procedure and a production checking procedure and shall meet the strength requirements of this Specification.

User Note: Spot, flash or upset resistance welds should have a written welding procedure qualification record and a systematic quality plan. For further information, see Steel Joist Institute Technical Digest 8, "Welding of Open Web Steel Joists and Joist Girders".

c) Welded Connections for Crimped-End Angle Web Members

1) The connection of each end of a crimped angle web member to each side of the chord shall consist of a weld group made of more than a single line of weld. The design weld length shall include an end return of no less than two times the nominal weld size.

d) Welding Program

1) The manufacturer's welders shall be qualified in accordance with either AWS D1.1 or AWS D1.3 for the applicable weld type, position, and material.

2) Manufacturers shall have a program for establishing weld procedures and operator qualification, and for weld sampling and testing. Each manufacturing facility shall have trained inspectors, and an engineer responsible for all welding procedures.

e) Weld Inspection by Outside Agencies (See Section 5.14)

1) The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 4.5.1.

User Note: Ultrasonic, X-ray, and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

4.5.2 Strength

4.5.2.1 Joint Connections: Joint connections shall develop the maximum force due to any of the design loads, but not less than 50 percent of the strength of the member in tension or compression, whichever force is the controlling factor in the selection of the member.

4.5.2.2 Shop Splices: Shop splices shall be permitted to occur at any point in chord or web members. Splices shall be designed for the member force, but not less than 50 percent of the member strength. All component parts comprising the cross section of the chord or web member (including reinforcing plates, rods, etc.) at the point of the splice shall develop a nominal tensile strength of at least 1.2 times the product of the yield strength and the full design area of the chord or web. The "full design area" shall be defined as the minimum required area such that the required stress will be less than the design (LRFD) or allowable (ASD) stress.

User Note: For more information on welding, see Steel Joist Institute Technical Digest 8, "Welding of Open Web Steel Joists and Joist Girders".

4.5.3 Field Splices

Field Splices shall be designed by the manufacturer and shall be either bolted or welded. Splices shall be designed for the member force, but not less than 50 percent of the member strength.

4.5.4 Eccentricity

Members connected at a joint shall have their center of gravity lines meet at a point, where practical. Ends of joists or Joist Girders shall be proportioned to resist bending produced by eccentricity at the support.

For a single component web member, the eccentricity shall be permitted to be neglected where it does not exceed the lesser of three-quarters of the over-all dimension of the chord or 2" (51 mm). This eccentricity, measured in the plane of the joist, shall be the perpendicular distance from the centroidal axis of that web member to the point on the centroidal axis of the chord which is vertically above or below the intersection of the centroidal axis of the web member(s) forming the joint in accordance with Figure 4.5-1.

For a web member composed of at least two shapes, the eccentricity on either side of the neutral axis of chord members, measured in the plane of the joist at the joint work point, shall be permitted to be neglected where the web intersect point does not exceed one and one-half times the distance between the neutral axis and the back of the chord in accordance with Figure 4.5-2.

If these limits are exceeded, provision shall be made for the stresses due to eccentricity.

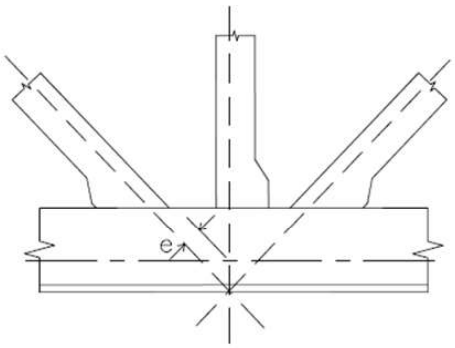

FIGURE 4.5-1

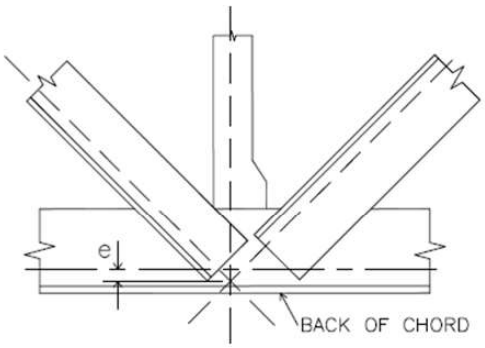

FIGURE 4.5-2

4.6 CAMBER

Steel joists and Joist Girders 100'-0" or less shall have a manufactured camber in accordance with Table 4.6-1:

TABLE 4.6-1

TOP CHORD LENGTH		APPROXIMATE CAMBER	
20'-0″	(6096 mm)	1/4″	(6 mm)
30'-0″	(9144 mm)	3/8″	(10 mm)
40'-0″	(12192 mm)	5/8″	(16 mm)
50'-0″	(15240 mm)	1″	(25 mm)
60'-0″	(18288 mm)	1 1/2″	(38 mm)
70'-0″	(21336 mm)	2″	(51 mm)
80'-0″	(24384 mm)	2 3/4″	(70 mm)
90'-0″	(27432 mm)	3 1/2″	(89 mm)
100'-0″	(30480 mm)	4 1/4″	(108 mm)

For lengths exceeding 100'-0", manufactured camber equal to Span/300 shall be used.

User Note: The specifying professional shall give consideration to coordinating this approximate camber with adjacent framing.

4.7 VERIFICATION OF DESIGN AND MANUFACTURE

User Note: This Section is included as part of this Specification since the verification of design and manufacture is a requirement of any Steel Joist Institute member company in order to be in compliance with this Specification. This Section applies only to a Steel Joist Institute member manufacturer.

4.7.1 Design Calculations

Companies manufacturing any K-Series, LH-Series, DLH-Series Joists or Joist Girders shall submit design data to the Steel Joist Institute, or an independent agency approved by the Steel Joist Institute, for verification of compliance with this Specification. Design data shall be submitted in detail and in the format specified by the Steel Joist Institute.

4.7.2 Tests of Chord and Web Members

Each manufacturer shall, at the time of design review by the Steel Joist Institute, verify by tests that the design, in accordance with Section 4.1 through Section 4.5, provides the theoretical strength of critical members. Such tests shall be evaluated considering the actual yield strength of the members of the test joists.

Material tests for determining mechanical properties of component members shall be conducted.

4.7.3 Tests of Joints and Connections

Each manufacturer shall, at the time of design review by the Steel Joist Institute, verify by shear tests on representative joints of typical joists that connections will meet the provision of Section 4.5.2. Chord and web members shall be permitted to be reinforced for such tests.

4.7.4 In-Plant Inspections

Each manufacturer shall verify their ability to manufacture K-Series, LH-Series, DLH-Series Joists and Joist Girders through periodic In-Plant Inspections. Inspections shall be performed by an independent agency approved by the Steel Joist Institute. The frequency, manner of inspection, and manner of reporting shall be determined by the Steel Joist Institute. The plant inspections shall not represent a guarantee of the quality of any specific joists; this responsibility shall lie fully and solely with the individual manufacturer.

SECTION 5.
APPLICATION

5.1 USAGE

5.1.1 Scope: This Specification shall apply to any type of structure where floors or roofs are to be supported directly by steel joists installed as hereinafter specified or where steel joists are to be supported directly by Joist Girders installed as hereinafter specified. Where joists or Joist Girders are used other than on simple spans under uniformly distributed loading for joists, or under equal concentrated gravity loading for Joist Girders, as prescribed in Section 4.1, they shall be designed to limit the required stresses to those listed in Section 4.2. The magnitude and location of all loads and forces to be considered in the joist or Joist Girder design shall be provided on the structural drawings.

5.1.2 Continuous Frame Action: Where a rigid connection of the bottom chord is to be made to a column or other structural support, the steel joist or Joist Girder is then no longer simply-supported, and the system shall be investigated for continuous frame action by the specifying professional. The specifying professional shall design the supporting structure, including the design of columns, connections, and moment plates. This design shall account for the stresses caused by lateral forces and the stresses due to connecting the bottom chord to the column or other structural support.

The designed detail of a rigid type connection and moment plates shall be shown on the structural drawings by the specifying professional. The moment plates shall be furnished by other than the joist manufacturer.

User Note: For further reference concerning continuous frame action and their connections, refer to Steel Joist Institute Technical Digest No. 11, “Design of Lateral Load Resisting Frames Using Steel Joists and Joist Girders”.

5.2 SPAN

Except for joist substitutes, the span of a joist or Joist Girder shall not exceed 24 times the depth. Design length shall equal the span minus 4 inches (102 mm) as shown in Figure 5.2-1 “Definition of Span”.

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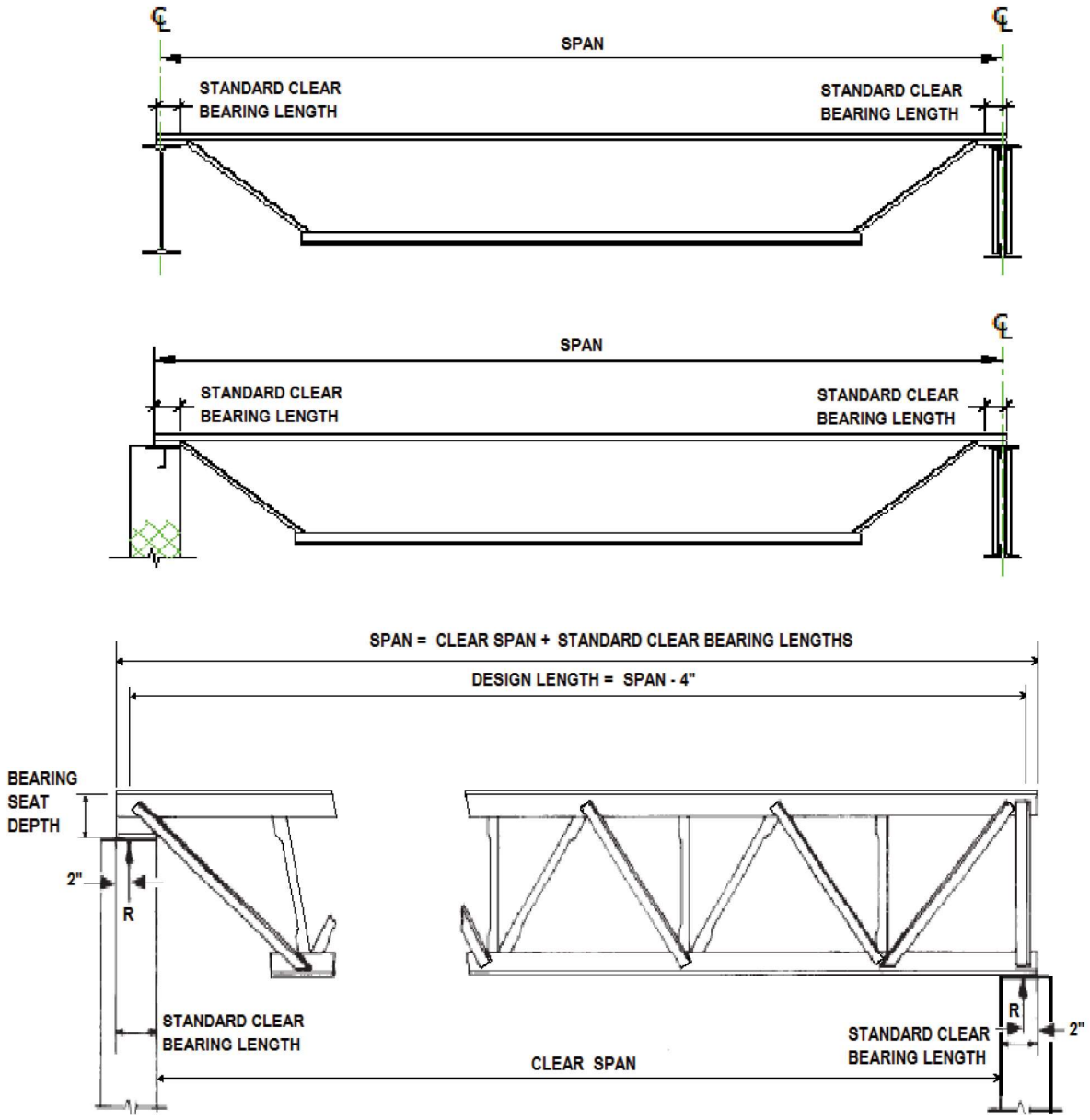
Figure 5.2-1
DEFINITION OF SPAN
(U. S. Customary Units)



NOTES:
1) DESIGN LENGTH = SPAN - 4"
2) MINIMUM BEARING LENGTHS SHALL MEET THE REQUIREMENTS OF SECTION 5.4. BEARING LENGTHS SHOWN MAY VARY BETWEEN STANDARD CLEAR BEARING AND MINIMUM BEARING LENGTH.
3) PARALLEL CHORD JOISTS INSTALLED TO A SLOPE GREATER THAN 1/2 INCH PER FOOT SHALL USE A SPAN DEFINED BY THE LENGTH ALONG THE SLOPE.

5.3 DEPTH

Steel joists or Joist Girders shall have either parallel chords or a top chord pitch of up to 1/2 inch per foot (1:24). The steel joist or Joist Girder designation depth or nominal depth shall be the depth at mid-span, except for double pitched joists which shall be the depth at the ridge.

5.4 END SUPPORTS

Consideration of the reactions, vertical and lateral, shall be taken by the specifying professional in the design of the steel support, or the steel bearing plate on masonry or concrete. The standard location of the end reaction shall be 2" (51 mm) from the end of the span (exclusive of extensions) at each end of the steel joist or Joist Girder as shown in Figure 5.2-1 "Definition of Span". The standard end reaction location shall require the minimum bearing lengths shown in Table 5.4-1.

TABLE 5.4-1

JOIST SECTION NUMBER[1]	STANDARD CLEAR BEARING LENGTH	MINIMUM BEARING LENGTH ON STEEL
K1-12	4" (102 mm)	2 ½" (64 mm)
LH02-06	6" (152 mm)	2 ½" (64 mm)
LH07-17, DLH10-17, JG	6" (152 mm)	4" (102 mm)
LH/DLH18-25, JG[2]	6" (152 mm)	6" (152 mm)

(1) Last digit(s) of joist designation shown in Load Table.
(2) **Joist Girders** with a self weight greater than 50 plf (0.73 kN/m).

If the specifying professional requires the end reaction to be located at a distance from the face of support more than the standard clear bearing length values shown in Table 5.4-1 minus 2" (51 mm), the structural drawings shall indicate the required special location of the end reaction. The seat depth shall also be increased to the special minimum bearing seat depth per Table 5.4-3.

5.4.1 Masonry and Concrete

5.4.1.1 Scope: A K-Series, LH-Series, DLH-Series Joist or Joist Girder end supported by masonry or concrete shall bear on steel bearing plates and shall be designed as steel bearing.

5.4.1.2 Bearing Length: The ends of K-Series Joists shall extend a distance of not less than 4 inches (102 mm) over the face of masonry or concrete support unless it is deemed necessary to bear less than 4 inches (102 mm) over the support. The ends of LH-Series, DLH-Series Joists and Joist Girders shall extend a distance of not less than 6 inches (152 mm) over the face of masonry or concrete support unless it is deemed necessary to bear less than 6 inches (152 mm) over the support.

5.4.1.3 Anchorage: **K**-Series, **LH**-Series, **DLH**-Series Joists and **Joist Girders** shall be anchored to the steel bearing plate per Section 5.7.

The steel bearing plate shall be located not more than 1/2 inch (13 mm) from the face of the wall. If the steel bearing plate is located more than 1/2 inch (13 mm) from the face of the wall, or the minimum bearing over the masonry or concrete support cannot be provided as shown in Table 5.4-1, special consideration shall be given to the design of the steel bearing plate and the masonry or concrete by the specifying professional.

The steel bearing plate width shall not be less than that shown in Table 5.4-2 perpendicular to the length of the joist. The plate is to be designed by the specifying professional and shall be furnished by other than the joist manufacturer.

TABLE 5.4-2

JOIST SECTION NUMBER[1]	MINIMUM BEARING PLATE WIDTH
K1-12, LH02-06	7" (178 mm)
LH07-17, DLH10-17, JG	9" (229 mm)
LH/DLH18-25, JG[2]	14" (356 mm)

(1) Last digit(s) of joist designation shown in Load Table.
(2) Joist Girders with a self weight greater than 50 plf (0.73 kN/m).

5.4.2 Steel

The ends of K-Series, LH-Series, DLH-Series Joists and Joist Girders shall be anchored to the support per Section 5.7.

5.4.3 Bearing Depth

The standard non-sloping bearing seat depths shall be as shown in Table 5.4-3. If the steel joist slopes 3/8 inch per foot or greater, the high end bearing seat shall require additional depth due to the slope.

User Note: The Steel Joist Institute Code of Standard Practice provides guidance for determining additional seat depth requirements for sloped joists.

TABLE 5.4-3

JOIST SECTION NUMBER[1]	STANDARD BEARING SEAT DEPTH	STANDARD CLEAR BEARING LENGTH	SPECIAL MINIMUM BEARING SEAT DEPTH[2]
K1-12	2 ½" (64 mm)	4" (102 mm)	0.6 x (RP + 2 ½" (64 mm))
LH02-17, DLH10-17	5" (127 mm)	6" (152 mm)	0.6 x (RP + 4" (102 mm))
LH/DLH18-25	7 ½" (191 mm)	6" (152 mm)	0.6 x (RP + 4" (102 mm)) + 2 ½" (64 mm)
JG	7 ½" (191 mm)	6" (152 mm)	RP + 4" (102 mm)

(1) Last digit(s) of joist designation shown in Load Table.
(2) RP is equal to the distance the reaction is to occur from the face of the wall or leading edge of support member. The equation is not applicable for the high end of a sloped joist or Joist Girder.

When the specifying professional requires the steel joist or Joist Girder reaction to occur at or near the centerline of the wall or other support, a special bearing seat depth shall be required and a note shall be placed on the structural drawings identifying where the reaction is to occur. The specified bearing seat depth shall be increased according to Table 5.4-3 to allow for this special requirement.

5.5 BRIDGING or BRACING

Joist Girders shall be proportioned such that they can be erected without bridging. Therefore, the following requirements shall be met:

a) The ends of the bottom chord shall be restrained from lateral movement to brace the girder from overturning. For Joist Girders at columns in steel frames, restraint shall be provided by a stabilizer plate on the column.

b) No other loads shall be placed on the Joist Girder until the steel joists bearing on the Joist Girder are in place and positively attached to the Joist Girder.

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User Note: See Section 5.12 for bridging or bracing required for uplift forces.

Steel joist top and bottom chord bridging shall be required and shall consist of one or both of either horizontal or diagonal bridging.

5.5.1 Horizontal Bridging

Horizontal bridging lines shall consist of continuous horizontal steel members. The ℓ/r ratio of the bridging member shall not exceed 300, where ℓ is the distance in inches (millimeters) between attachments and r is the least radius of gyration of the bridging member.

5.5.2 Diagonal Bridging

Diagonal bridging lines shall consist of cross-bracing with a ℓ/r ratio of not more than 200, where ℓ is the distance in inches (millimeters) between connections and r is the least radius of gyration of the bracing member. Where cross-bracing members are connected at their point of intersection, the ℓ distance shall be taken as the distance in inches (millimeters) between connections at the point of intersection of the bridging members and the connections to the chords of the joists.

5.5.2.1 Diagonal Erection Bridging

User Note: Joists exhibit varying degrees of stability dependent upon the span, depth, member sizes, self weight and other parameters. Bolted diagonal Erection Bridging which must be installed prior to releasing hoisting cables may be required.

Where required as identified below, bolted diagonal Erection Bridging shall be required and shall be in accordance with the following:

(a) For joist spans up through and including 60 feet (18288 mm) in length;

Welded horizontal bridging shall be permitted except where the row of bridging nearest the center is required to be bolted diagonal Erection Bridging as indicated by the **Red** shaded area in the Load Tables. Hoisting cables shall not be released until this row of bolted diagonal Erection Bridging is completely installed and anchored.

Bolted diagonal Erection Bridging shall be provided as required in the SJI Load Tables wherever a standard SJI Section Number designation is specified. For spans 60 feet (18288mm) or less, in the absence of a standard SJI Section Number designation, minimum bolted diagonal Erection Bridging requirements shall be determined by:

1) Matching the joist design to an equivalent standard SJI Section Number designation to determine the span at which Erection Bridging is needed as designated in the tables; or
2) Using Equation 5.5-1 to determine the joist stability and the need for Erection Bridging.

$$W = \frac{-b + \sqrt{b^2 - 4 \cdot a \cdot c}}{2 \cdot a} \quad ; \qquad \text{If , } \frac{w_u}{w_{actual}} > 1.00 \text{ Erection Bridging is not required.} \qquad (5.5\text{-}1)$$

$$a = \left(\frac{\pi^2 + 3}{24} \right)^2$$

$$b = P \cdot \frac{\pi^2 + 3}{12} \cdot \frac{\pi^2 + 4}{16} - \frac{\pi^4 \cdot E \cdot I_y}{2 \cdot (k \cdot L)^3} \cdot \left[\beta_x \cdot \left(\frac{\pi^2 - 3}{24} \right) - \frac{y_o}{2} \right]$$

$$c = (P)^2 \left(\frac{\pi^2 + 4}{16} \right)^2 - \frac{\pi^4 \cdot E \cdot I_y}{2 \cdot (k \cdot L)^3} \cdot \left[P \cdot \left(\beta_x \cdot \frac{\pi^2 - 4}{16} - a_e \right) + \frac{\pi^4 \cdot E \cdot C_w}{2 \cdot (k \cdot L)^3} + \frac{\pi^2 \cdot G \cdot J}{2 \cdot k \cdot L} \right]$$

Where:

P = Factored weight of erector = 1.2 x (assumed weight of 250 lbs.) = 300 lbs. (1334 N)

E = Modulus of elasticity= 29,000,000 psi (200,000 MPa)

I_y = Joist moment of inertia about y-axis, in.^{4} (mm^4) $\quad I_y = I_{yt} + I_{yb}$

I_{yt} = Top chord moment of inertia about y-axis, in.^{4} (mm^4)

I_{yb} = Bottom chord moment of inertia about y-axis, in.^{4} (mm^4)

L = Joist Span, in. (mm)

k = Effective length factor = 0.85

β_x = Cross-Sectional parameter $\quad \beta_x = \frac{1}{I_x}\left[A_b \cdot (d_e - y)^3 - A_t \cdot y^3 \right] - 2 \cdot y_o$

A_b = Area of bottom chord, in.^{2} (mm^2)

A_t = Area of top chord, in.^{2} (mm^2)

d_e = Joist effective depth, in.(mm) $\quad d_e = d - y_t - y_b$

y_t = Neutral axis of top chord, in. (mm)

y_b = Neutral axis of bottom chord, in. (mm)

y = Distance from centroid of top chord to centroid of cross section, in. (mm) $\quad y = \frac{A_b \cdot d_e}{A_t + A_b}$

I_x = Joist moment of inertia about x-axis, in.^{4} (mm^4) $\quad I_x = A_t y^2 + A_b (d_e - y)^2$

y_o = Distance from centroid of cross section to shear center, in. (mm) $\quad y_o = -y + \frac{I_{yb} \cdot d_e}{I_y}$

a_e = Vertical location of load P from shear center (locate at joist center of gravity), in. (mm), where $a_e = y_o$

C_w = Warping constant $\quad C_w = \frac{d_e^{\,2} \cdot I_{yb} \cdot I_{yt}}{I_y}$

G = Shear modulus, psi (MPa) $\quad G = 0.385E$

J = St. Venant torsion constant, in.^{4} (mm^4) $\quad J = \frac{1}{3}\left(A_t \cdot t_t^{\,2} + A_b \cdot t_b^{\,2} \right)$

t_t = Thickness of top chord, in. (mm)

t_b = Thickness of top chord, in. (mm)

w_u = Ultimate lateral buckling load $\quad w_u = \frac{W \cdot 12}{L}$, plf $\quad w_u = \frac{W}{L}$, (kN/m)

w_{actual} = Joist self-weight, plf (kN/m)

b) For joist spans greater than 60 feet (18288 mm) in length;
Bolted diagonal Erection Bridging shall be used as indicated by the **Blue** and Gray shaded areas of the Load Tables. Hoisting cables shall not be released until all rows of bolted diagonal Erection Bridging are completely installed and anchored. Where the joist spacing is less than 0.70 x joist depth, bolted horizontal bridging shall be used in addition to bolted diagonal Erection Bridging.

c) The bolted diagonal Erection Bridging determined by Section 5.5.2.1a and Section 5.5.2.1b shall be considered a minimum. This bolted diagonal Erection Bridging shall be indicated on the placement plans.

User Note: Joists with special profiles having a higher center of gravity as compared to a parallel chord joist, joists which are canted, or joists having any condition which may create instability, may require additional bridging and/or special erection methods.

5.5.3 Quantity and Spacing of Bridging

5.5.3.1 Scope: Bridging shall be properly spaced and anchored to support the decking and the employees prior to the attachment of the deck to the top chord. The maximum spacing between lines of bridging, ℓ_{brmax} shall be the lesser of,

$$\ell_{brmax} = \left(124 + 0.67\, d_j + 28\frac{d_j}{L}\right) r_y \text{, in.} \qquad (5.5\text{-}2a)$$

$$\ell_{brmax} = \left(124 + 0.026\, d_j + 0.34\frac{d_j}{L}\right) r_y \text{, mm} \qquad (5.5\text{-}2b)$$

or,

$$\ell_{brmax} = 170\ r_y \qquad (5.5\text{-}3)$$

Where:

d_j is the steel joist depth, in. (mm)

L is the joist span length, ft. (m)

r_y is the radius of gyration of the top chord about the vertical axis of the joist cross section, in. (mm)

5.5.3.2 Number of Rows: The number of rows of top chord bridging shall not be less than as shown in Table 5.5-1 and the spacing shall meet the requirements of Equations 5.5-2 and 5.5-3. The number of rows of bottom chord bridging, including bridging required per Section 5.12, shall not be less than the number of top chord rows. Rows of bottom chord bridging shall be permitted to be spaced independently of rows of top chord bridging. The spacing of rows of bottom chord bridging shall meet the slenderness requirement of Section 4.3 and any specified strength requirements.

5.5.3.3 DLH Joist Section 21 and Greater: For DLH-Series joist Section Number 21 and greater, bridging shall be installed near a bottom chord panel point or an extra web member shall be furnished to brace the bottom chord for the vertical component of the bridging force equal to the horizontal bracing force.

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TABLE 5.5-1

U.S. CUSTOMARY UNITS

NUMBER OF ROWS OF TOP CHORD BRIDGING[2]

Section Number[1]	Joist Depth	1 Row	2 Rows	3 Rows	4 Rows	5 Rows	6 Rows	7 Rows	8 Rows	9 Rows
K1	All	17	>17 to 26	>26 to 28						
K2	All	21	>21 to 30	>30 to 32						
K3	All	18	>18 to 26	>26 to 40						
K4	All	20	>20 to 30	>30 to 41	>41 to 48					
K5	12K to 24K	20	>20 to 30	>30 to 42	>42 to 48					
	26K	28	>28 to 41	> 41 to 52						
K6	14K to 24K	20	>20 to 31	>31 to 42	>42 to 48					
	26K & 28K	28	>28 to 41	>41 to 54	>54 to 56					
K7	16K to 24K	23	>23 to 34	>34 to 48						
	26K to 30K	29	>29 to 44	>44 to 60						
K8	24K	25	>25 to 39	>39 to 48						
	26K to 30K	29	>29 to 44	>44 to 60						
K9	16K to 24K	22	>22 to 34	>34 to 48						
	26K to 30K	29	>29 to 44	>44 to 60						
K10	18K to 24K	22	>22 to 38	>38 to 48						
	26K to 30K	29	>29 to 48	>48 to 60						
K11	22K	24	>24 to 39	>39 to 44						
	30K	34	>34 to 49	>49 to 60						
K12	24K	25	>25 to 43	>43 to 48						
	26K to 30K	29	>29 to 47	>47 to 60						
LH02-03	All	20	>20 to 30	>30 to 40	>40					
LH04-05	All	22	>22 to 33	>33 to 44	>44 to 55	>55				
LH06-08	All	26	>26 to 45	>45 to 60	>60 to 75	>75				
LH09	All	26	>26 to 48	>48 to 64	>64 to 80	>80				
LH/DLH10	All	28	>28 to 54	>54 to 72	>72 to 90	>90				
LH/DLH11	All	30	>30 to 54	>54 to 72	>72 to 90	>90 to 108	>108			
LH/DLH12	All	34	>34 to 55	>55 to 74	>74 to 92	>92 to 111	>111			
LH/DLH13	All	36	>36 to 63	>63 to 84	>84 to 105	>105 to 126	>126			
LH/DLH14	All	38	>38 to 64	>64 to 86	>86 to 107	>107 to 129	>129			
LH/DLH15	All	42	>42 to 73	>73 to 98	>98 to 122	>122 to 147	>147			
LH/DLH 16-17	All	44	>44 to 75	>75 to 100	>100 to 125	>125 to 150	>150 to 175	>175		
LH/DLH 18-20	All	52	>52 to 78	>78 to 104	>104 to 130	>130 to 156	>156 to 182	>182 to 208	>208 to 234	>234
LH/DLH 21-25	All	60	>60 to 90	>90 to 120	>120 to 150	>150 to 180	>180 to 210	>210		

(1) Last digit(s) of joist designation shown in Load Table.

(2) Distances are Joist Span lengths in feet – See "Definition of Span" Figure 5.2-1. Refer to the Joist Load Table and Specification Section 6 for required bolted diagonal bridging and additional stability requirements. See Section 5.12 for additional bridging required for uplift design.

5.5.4 Sizing of Bridging

Horizontal and diagonal bridging shall be capable of resisting the nominal unfactored horizontal compressive force, P_{br} given in Equation 5.5-4.

$$P_{br} = 0.0025\ n\ A_t\ F_{construction}\ ,\ \text{kips (N)} \qquad (5.5\text{-}4)$$

Where:

n = 8 for horizontal bridging

n = 2 for diagonal bridging

A_t = cross sectional area of joist top chord, in.^2 (mm^2)

$F_{construction}$ = assumed ultimate stress in top chord to resist construction loads, determined in accordance with the following:

$$F_{construction} = \left(\frac{\pi^2 E}{\left(\frac{0.9\,\ell_{brmax}}{r_y} \right)^2} \right) \geq 12.2\ \text{ksi} \qquad (5.5\text{-}5a)$$

$$F_{construction} = \left(\frac{\pi^2 E}{\left(\frac{0.9\,\ell_{brmax}}{r_y} \right)^2} \right) \geq 84.1\ \text{MPa} \qquad (5.5\text{-}5b)$$

Where:

E = Modulus of Elasticity of steel = 29,000 ksi (200,000 MPa)

and $\frac{\ell_{brmax}}{r_y}$ is determined from Equations 5.5-2 or 5.5-3

The bridging nominal horizontal unfactored compressive forces, P_{br}, shall be in accordance with Table 5.5-2.

TABLE 5.5-2

BRIDGING NOMINAL HORIZONTAL UNFACTORED COMPRESSIVE FORCE					
JOIST SECTION NUMBER[1]	HORIZONTAL BRIDGING P_{br} (n=8)		REQUIRED BRIDGING CONNECTION WELD[2]	DIAGONAL BRIDGING P_{br} (n=2)	
	Lbs.	(N)	In.	Lbs.	(N)
K1-8	340	(1512)	1/8" x 1" (3mm x 25mm)	85	(378)
K9-10, LH02-03	450	(2002)		113	(503)
K11-12, LH04-05	560	(2491)		140	(623)
LH06-08	750	(3336)		188	(836)
LH09	850	(3781)		213	(945)
LH/DLH10	900	(4003)		225	(1001)
LH/DLH11	950	(4226)		238	(1056)
LH/DLH12	1100	(4893)		275	(1223)
LH/DLH13	1200	(5338)		300	(1334)
LH/DLH14	1300	(5783)		325	(1446)
LH/DLH15	1450	(6450)		363	(1612)
LH/DLH16-17	1850	(8229)	1/8" x 1 ½ " (3mm x 38mm)	463	(2057)
LH/DLH18-20	2350	(10453)		585	(2602)
LH/DLH21-22	3150	(14012)	1/8" x 2" (3mm x 51mm)	790	(3514)
LH/DLH23-24	4130	(18371)	1/8" x 3" (3mm x 76mm)	1035	(4604)
LH/DLH25	4770	(21218)		1195	(5316)

(1) Last digit(s) of joist designation shown in Load Table.
(2) Or other connection type designed for the required force.

5.5.5 Connections

Connections to the joist chords shall be made by welding or mechanical means and shall be capable of resisting the unfactored or nominal horizontal force, P_{br}, of Equation 5.5-4 but not less than 700 pounds (3114 N).

5.5.6 Bottom Chord Bearing Joists

Where bottom chord bearing joists are utilized, a row of diagonal bridging shall be provided near the support(s). This bridging shall be installed and anchored before the hoisting cable(s) is released.

5.6 INSTALLATION OF BRIDGING

Bridging shall support the top and bottom chords against lateral movement during the construction period and shall hold the steel joists in the approximate position as shown on the joist placement plans.

The ends of all bridging lines terminating at walls or beams shall be anchored thereto.

5.7 BEARING SEAT ATTACHMENTS

5.7.1 Masonry and Concrete

Ends of K-Series, LH-Series, and DLH-Series Joists and Joist Girders resting on steel bearing plates on masonry or structural concrete shall be attached thereto, as shown in Table 5.7-1, with a minimum of two fillet welds, or with two bolts, or the equivalent.

5.7.2 Steel

Ends of K-Series, LH-Series, and DLH-Series Joists and Joist Girders resting on steel supports shall be attached thereto, as shown in Table 5.7-1, with a minimum of two fillet welds, or with two bolts, or the equivalent. Where K-Series, LH-Series and DLH-Series Joists and Joist Girders are used to provide lateral stability to the supporting member, the final connection shall be made by welding or as designated by the specifying professional.

TABLE 5.7-1

JOIST SECTION NUMBER [1]	MINIMUM FILLET WELD	MINIMUM BEARING SEAT BOLTS FOR ERECTION
K1-12	2– 1/8" x 2 1/2" (3 x 64 mm)	2– 1/2" (13 mm) A307
LH02-06	2– 3/16" x 2 1/2" (5 x 64 mm)	
LH07-17, DLH10-17, JG	2– 1/4" x 2 1/2" (6 x 64 mm)	2– 3/4" (19 mm) A307
LH/ DLH18-25, JG[2]	2– 1/4" x 4" (6 x 102 mm)	2– 3/4" (19 mm) A325

(1) Last digit(s) of joist designation shown in load table.
(2) Joist Girders with a self weight greater than 50 plf (0.73 kN/m).

5.7.3 Uplift

Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces and shall meet the requirements of Section 5.12.

5.8 JOIST SPACING

Joists shall be spaced so that the loading on each joist does not exceed the design load (LRFD or ASD) for the particular joist designation and span as shown in the applicable load tables.

5.9 FLOOR AND ROOF DECKS

5.9.1 Material

Floor and roof decks shall be permitted to consist of cast-in-place or pre-cast concrete or gypsum, cold-formed steel, wood, or other suitable material capable of supporting the required load at the specified joist spacing.

5.9.2 Thickness

Cast-in-place slabs shall be not less than 2 inches (51 mm) thick.

5.9.3 Centering

Centering for cast-in-place slabs shall be permitted to be ribbed metal lath, corrugated steel sheets, paper-backed welded wire fabric, removable centering or any other suitable material capable of supporting the slab at the designated joist spacing.

Centering shall not cause lateral displacement or damage to the top chord of joists during installation or removal of the centering or placing of the concrete.

5.9.4 Bearing

Slabs or decks shall bear uniformly along the top chords of the joists.

5.9.5 Attachments

The spacing of attachments along the joist top chord shall not exceed 36 inches (914 mm). Such attachments of the slab or deck to the top chords of joists shall be capable of resisting the forces given in Table 5.9-1.

TABLE 5.9-1

JOIST SECTION NUMBER[1]	NOMINAL FORCE REQUIRED[2]
K1-12	100 lbs/ft. (1.46 kN/m)
LH02-04	120 lbs/ft. (1.75 kN/m)
LH05-09	150 lbs/ft. (2.19 kN/m)
LH/DLH10-17	200 lbs/ft. (2.92 kN/m)
LH/DLH18-19	250 lbs/ft. (3.65 kN/m)
LH/DLH20-21	300 lbs/ft. (4.38 kN/m)
LH/DLH22-24	420 lbs/ft. (6.13 kN/m)
LH/DLH25	520 lbs/ft. (7.59 kN/m)
(1) Last digit(s) of joist designation shown in Load Table. (2) Nominal bracing force is unfactored.	

5.9.6 Wood Nailers

Where wood nailers are used, such nailers in conjunction with deck or slab shall be firmly attached to the top chords of the joists in conformance with Section 5.9.5.

5.9.7 Joist With Standing Seam Roofing or Laterally Unbraced Top Chords

Where the roof systems do not provide lateral stability for the steel joists in accordance with Section 5.9.5 sufficient stability shall be provided to brace the steel joists laterally under the full design load. For this condition, the compression chord design shall include the effects of both the in-plane and out-of-plane buckling of the steel joist (e.g., buckling about the vertical axis of the steel joist cross section). In any case where the attachment requirement of Section 5.9.5 is not achieved, out-of-plane strength shall be achieved by adjusting the bridging spacing and/or increasing the compression chord area and the y-axis radius of gyration. The effective slenderness ratio about the vertical axis equals $0.94\ L/r_y$; where L is the bridging spacing in inches (millimeters) and r_y is the radius of gyration of the top chord in inches (millimeters). The maximum bridging spacing shall not exceed that specified in Section 5.5.3.

User Note: Some examples of roof systems which may not provide adequate top chord lateral stability may be standing seam roofs, skylights, or other openings which do not provide top chord attachments per Section 5.9.5.

Horizontal bridging members attached to the compression chords and their anchorages shall be designed for a compressive axial force, P_{br}, given in Equation 5.9-1.

$$P_{br} = 0.001nP + 0.004P\sqrt{n} \geq 0.0025nP, \text{ kips (N)} \quad (5.9\text{-}1)$$

Where n is the number of joists between end anchors and P is the chord design force in kips (N)

The attachment force between the horizontal bridging member and the compression chord shall be 0.01P. Horizontal bridging attached to the tension chords shall be proportioned so that the slenderness ratio between attachments does not exceed 300. Diagonal bridging shall be proportioned so that the slenderness ratio between attachments does not exceed 200.

5.10 DEFLECTION

The deflection due to the design live load shall not exceed the following:

Floors: 1/360 of span.
Roofs: 1/360 of span where a plaster ceiling is attached or suspended, or
1/240 of span for all other cases.

The specifying professional shall give consideration to the effects of deflection and vibration in the selection of joists.

User Note: For further information on vibration, refer to Steel Joist Institute Technical Digest 5, "Vibration of Steel Joist-Concrete Slab Floors".

5.11 PONDING

The ponding investigation shall be performed by the specifying professional.

User Note: For further reference, refer to Steel Joist Institute Technical Digest 3, "Structural Design of Steel Joist Roofs to Resist Ponding Loads" and AISC 360.

5.12 UPLIFT

Where uplift forces due to wind are a design requirement, these forces shall be indicated on the structural drawings in terms of NET uplift in pounds per square foot (Pascals). The structural drawings shall indicate if the net uplift is based upon an LRFD or ASD load combination. When these forces are specified, they shall be considered in the design of joists, Joist Girders, and required bridging or bracing. Wherever uplift due to wind forces is a design consideration, the following shall be required:

a) For joists, a single line of **bottom chord** bridging shall be provided near the first bottom chord panel points.

b) For **Joist Girders**, if the ends of the bottom chord are not strutted and extended to column stabilizer plates, bracing shall be provided near the first bottom chord panel points.

User Note: For further reference, refer to Steel Joist Institute Technical Digest 6, "Structural Design of Steel Joist Roofs to Resist Uplift Loads".

5.13 DIAPHRAGMS AND COLLECTORS

Where diaphragm collector forces due to wind or seismic forces are a design requirement, these forces shall be indicated on the structural drawings. The structural drawings shall indicate the nominal (unfactored) forces. The structural drawings shall also indicate the Seismic Design Category, and the Seismic Force Resisting System type, and applicable seismic design coefficients. When this data is specified, joist collectors or chords in horizontal diaphragm systems, shall be designed in conformance with the provisions of Section 4 through Section 6. End connections and splices in joists incorporated into Seismic Force Resisting System (SFRS) as horizontal diaphragms as collectors or chords shall adhere to the requirements stipulated by the applicable building code.

5.14 INSPECTION

Joists shall be inspected by the manufacturer before shipment to verify compliance of materials and workmanship with the requirements of this Specification.

User Note: If the purchaser requires an inspection of the steel joists or Joist Girders by someone other than the manufacturer's own inspectors, they shall be permitted to reserve the right to do so in their "Invitation to Bid" or the accompanying "Job Specifications". Arrangements shall be made with the manufacturer for such inspection of the joists or Joist Girders at the manufacturing shop by the purchaser's inspectors at purchaser's expense.

5.15 PARALLEL CHORD SLOPED JOISTS AND JOIST GIRDERS

The span of a parallel chord sloped joist or Joist Girder shall be defined by the length along the slope. Minimum depth, load-carrying capacity, and bridging requirements shall be determined by the sloped definition of span. The Load Table capacity shall be the component normal to the joist.

SECTION 6
ERECTION STABILITY AND HANDLING

As a minimum, erection stability and handling of joists and Joist Girders shall meet the requirements of this Section 6.

User Note: Additional requirements for erection of steel joists and Joist Girders can be found in Steel Joist Institute Technical Digest No. 9, “Handling and Erection of Steel Joists and Joist Girders”.

6.1 STABILITY REQUIREMENTS

User Note: It is not recommended that an erector climb on unbridged joists, extreme caution shall be exercised since unbridged joists exhibit some degree of instability under the erector's weight.

a) In steel framing, where joists/Joist Girders are utilized at column lines, the joist/Joist Girder shall be field-bolted at the column. Before hoisting cables are released and before an employee is allowed on the joists/Joist Girder the following conditions shall be met:
   1) The seat at each end of the joist/Joist Girder is attached in accordance with Section 5.7. Where a bolted seat connection is used for erection purposes, as a minimum, the bolts shall be snug tightened. The snug tight condition shall be defined as the tightness that exists where all plies of a joint are in firm contact. This shall be attained by a few impacts of an impact wrench or the full effort of an employee using an ordinary spud wrench.
   2) Where stabilizer plates are required the joist/Joist Girder bottom chord shall engage the stabilizer plate.

   During the construction period, the contractor shall provide means for the adequate distribution of loads so that the carrying capacity of any joist or Joist Girder is not exceeded.

b) Before an employee is allowed on the steel joist: BOTH ends of joists at columns (or joists designated as column joists) shall be attached to its supports. For all other joists a minimum of one end shall be attached before the employee is allowed on the joist. The attachment shall be in accordance with Section 5.7.

   Where a bolted seat connection is used for erection purposes, as a minimum, the bolts shall be snug tightened. The snug tight condition shall be defined as the tightness that exists where all plies of a joint are in firm contact. This shall be attained by a few impacts of an impact wrench or the full effort of an employee using an ordinary spud wrench.

c) On steel joists that do not require erection bridging as shown by either the unshaded area of the Load Tables or as determined by Section 5.5.2.1, only one employee shall be allowed on the steel joist until all bridging is installed and anchored.

d) Where the span of the steel joist is within the Red shaded area of the Load Table, or in the absence of a standard SJI Section Number designation and Erection Bridging is required in accordance with Section 5.5.2.1, the following shall apply:

1) The row of bridging nearest the midspan of the steel joist shall be bolted diagonal Erection Bridging; and
2) Hoisting cables shall not be released until this bolted diagonal Erection Bridging is installed and anchored, unless an alternate method of stabilizing the joist has been provided; and
3) No more than one employee shall be allowed on these spans until all other bridging is installed and anchored.

e) Where the span of the steel joist is within the Blue shaded area of the Load Table, the following shall apply:

1) All rows of bridging shall be bolted diagonal bridging; and
2) Hoisting cables shall not be released until the two rows of bolted diagonal Erection Bridging nearest the third points of the steel joist are installed and anchored; and
3) No more than two employees shall be allowed on these spans until all bridging is installed and anchored.

f) Where the span of the steel joist is in the Gray shaded area of the Load Table, the following shall apply:

1) All rows of bridging shall be bolted diagonal bridging; and
2) Hoisting cables shall not be released until all bridging is installed and anchored; and
3) No more than two employees shall be allowed on these spans until all other bridging is installed and anchored.

g) Where permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points shall be required to provide lateral stability.

h) In the case of bottom chord bearing joists, the ends of the joist shall be restrained laterally per Section 5.5.6 before releasing the hoisting cables.

i) After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joists shall be fully connected to the supports in accordance with Section 5.7.

6.2 LANDING AND PLACING LOADS

a) Except as stated in Section 6.2(d), no "construction loads" shall be allowed on the steel joists until all bridging is installed and anchored, and all joist bearing ends are attached.

User Note: For definition of "construction load" see Code of Federal Regulations (CFR), Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R - Steel Erection, §1926.751 Definitions; January 18, 2001, Washington, D.C.

b) During the construction period, loads placed on the steel joists shall be distributed so as not to exceed the capacity of the steel joists.

c) The weight of a bundle of joist bridging shall not exceed a total of 1000 pounds (454 kilograms). The bundle of joist bridging shall be placed on a minimum of three steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within 1 foot (0.30 m) of the secured end.

d) No bundle of deck shall be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless the following conditions are met:

1) The contractor has first determined from a "qualified person" and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load;
2) The bundle of decking is placed on a minimum of three steel joists;

3) The joists supporting the bundle of decking are attached at both ends;
4) At least one row of bridging is installed and anchored;
5) The total weight of the decking does not exceed 4000 pounds (1816 kilograms); and
6) The edge of the bundle of decking is placed within 1 foot (0.30 meters) of the bearing surface of the joist end.

User Note: For definition of "qualified person" see Code of Federal Regulations (CFR), Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R - Steel Erection, §1926.751 Definitions; January 18, 2001, Washington, D.C.

e) The edge of the construction load shall be placed within 1 foot (0.30 meters) of the bearing surface of the joist end.

6.3 FIELD WELDING

All field welding shall be performed in accordance with the structural drawings. Field welding shall not damage the joists or Joist Girders.

On cold-formed steel members whose yield strength has been attained by cold working, and whose as-formed strength is used in the design, the total length of weld at any one point shall not exceed 50 percent of the overall developed width of the cold-formed section.

6.4 HANDLING

Particular attention shall be considered for the handling and erection of K-Series, LH-Series, DLH-Series steel joists and Joist Girders. Damage to the joists and accessories shall be avoided. Hoisting cables shall be attached at panel point locations and those locations shall be selected to minimize erection stresses.

Each joist shall be adequately braced laterally before any loads are applied. If lateral support is provided by bridging, the bridging lines as defined in Section 6.1(c), 6.1(d), 6.1(e), and 6.1(f) shall be anchored to prevent lateral movement.

6.5 FALL ARREST SYSYTEMS

Steel joists and Joist Girders shall not be used as anchorage points for a fall arrest system unless written direction to do so is obtained from a "qualified person".

User Note: For definition of "qualified person" see Code of Federal Regulations (CFR), Occupational Safety and Health Administration (OSHA), 29 CFR Part 1926, Safety Standards for Steel Erection; Subpart R - Steel Erection, §1926.751 Definitions; January 18, 2001, Washington, D.C.