Ce479
Assignment #8
Fall 06

Name:_____

Design of Steel Joists

Select and check economical LH series joists for a 76 ft clear span roof. The joists are spaced 6 ft apart and must support a 40 psf live load plus a 15 psf superimposed dead load. To control ponding the live load deflection is limited to L/300. Determine the required bridging. Estimate the maximum service load tension force in the bottom chord of the joist.

ECONOMICAL JOIST GUIDE

Combined K, VS, LH & DLH Series Load Table

The following table is an economy guide with the Joists listed in sequence of increasing relative cost. That is, the most economical joist for given length is listed first. The economies were based on production costs and do not include bridging requirements or erection costs.

HOW TO USE THE ECONOMICAL JOIST GUIDE: The specifying professional simply turns to the length required and proceeds down the allowable loads column until the first joist type in the list that will carry the required load is found. (However, additional bridging due to erection stability requirements should be taken into consideration.) This will then be the most economical joist type for the combination of length and required load. The approximate weight per foot of the joist is listed to the right of the live load.

EXAMPLE: Given 40'-0" length and a required load of 300 plf. On page 110 of the table under 40', it is found that a 30K7 at 40'-" will carry 319 plf TL. (page 110)

The figures shown in red are the live loads per lineal foot of joist which will produce an approximate deflection of 1/360 of the length. If a deflection limitation of 1/240 is required multiply the figures in red by 1.5. In no case shall the total load capacity of the joist be exceeded.

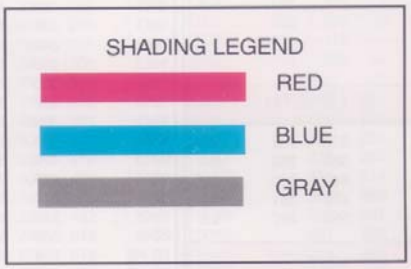
NOTE: Length as used in the economical joist guide means: **clear span + 8" for K Series and clear span + 12" for LH and DLH Series joists.**

You will note that the tables have been shaded to match the load tables. This shading indicates when bolted cross bridging needs to be installed per the Steel Joist Institute specification for a particular joist series.

Where the joist span is in the RED **SHADED** area of the table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

Where the joist span is in the BLUE **SHADED** area of the table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersection. Hoist cables shall not be released until the two rows of bridging nearest the third points are completely installed.

Where the joist span is in the GRAY **SHADED** area of the table hoisting cables shall not be released until all rows of bridging are completely installed.



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56DLH11	398	323	21
44LH12	419	252	24
40LH12	424	231	25
52DLH12	463	328	24
48LH13	464	305	26
44LH13	497	299	28
40LH13	500	271	30
52DLH13	562	398	28
44LH14	572	342	31
52DLH14	642	444	31
44LH15	665	398	31
52DLH15	722	501	35
52DLH16	778	557	37
48LH17	815	530	41
44LH17	824	489	45
56DLH17	889	680	40
52DLH17	896	636	44
60DLH18	1017	818	46

72' LENGTH

36LH7	196	95	15
36LH8	215	104	16
40LH8	217	117	16
44LH9	279	167	17
40LH9	283	153	18
44LH10	308	184	18
40LH10	313	169	20
44LH11	333	199	19
56DLH11	392	314	20
44LH12	413	245	25
52DLH12	456	319	24
48LH13	458	296	26
44LH13	490	291	29
52DLH13	554	387	28
44LH14	564	333	31
52DLH14	633	432	31
44LH15	656	387	31
52DLH15	712	487	35
48LH16	716	461	38
52DLH16	767	542	38
44LH17	812	475	45
52DLH17	883	618	44
60DLH18	1003	796	46

73' LENGTH

40LH8	211	112	15
44LH9	275	162	17
40LH9	276	147	18
44LH10	304	179	18
40LH10	305	162	20
44LH11	329	193	19
56DLH11	387	305	20
44LH12	407	238	25
52DLH12	450	311	24

44LH10	300	174	19
56DLH11	381	297	21
44LH12	402	232	25
52DLH12	444	302	24
48LH13	445	280	25
44LH13	477	275	29
48LH14	525	331	29
52DLH13	539	366	29
44LH14	549	315	31
52DLH14	616	409	32
44LH15	639	366	31
60DLH15	669	525	32
52DLH15	692	461	37
52DLH16	747	513	38
48LH17	782	488	45
44LH17	790	450	47
60DLH17	846	667	40
52DLH17	859	585	45
60DLH18	976	753	46

75' LENGTH

40LH8	201	104	15
44LH9	265	152	18
40LH10	290	150	20
44LH10	293	168	19
56DLH11	376	289	21
44LH12	393	224	25
48LH13	439	273	25
44LH13	466	265	28
48LH14	518	322	29
56DLH13	532	356	29
44LH14	534	302	31
52DLH14	608	398	33
44LH15	623	352	31
60DLH15	660	511	32
52DLH15	683	449	37
48LH16	687	425	39
60DLH16	726	571	35
52DLH16	737	499	40
48LH17	771	475	45
44LH17	780	438	47
60DLH17	834	649	40
52DLH17	848	570	45
60DLH18	963	733	47

76' LENGTH

40LH8	196	100	15
44LH9	259	146	17
40LH10	283	144	20
44LH10	286	162	19
48LH11	287	177	18
44LH11	310	175	21
52DLH10	353	240	21
44LH12	383	215	25

77' LENGTH

40LH8	192	97	16
44LH9	253	141	18
44LH10	279	155	19
48LH11	283	172	18
44LH11	302	168	21
44LH12	374	207	25
52DLH11	382	256	24
52DLH12	427	279	26
48LH13	428	259	27
44LH13	444	246	28
52DLH13	518	338	30
40LH15	538	268	36
56DLH14	577	404	32
52DLH14	592	378	34
44LH15	593	326	31
60DLH15	643	484	34
52DLH15	665	425	38
60DLH16	707	541	36
56DLH16	711	508	37
52DLH16	717	473	40
48LH17	751	450	45
52DLH17	826	540	46
60DLH18	938	695	47

78' LENGTH

40LH8	187	93	16
44LH9	247	136	18
44LH10	272	150	19
48LH11	279	168	18
44LH11	295	162	21
44LH12	365	200	25
52DLH11	377	249	24
52DLH12	421	272	26
48LH13	422	252	26
44LH13	433	236	28
52DLH13	511	329	30
40LH15	524	258	36
56DLH14	569	394	32
52DLH14	585	368	34
52DLH15	657	415	38
48LH16	661	393	40
60DLH16	698	528	38
56DLH16	702	495	38
52DLH16	708	461	41
48LH17	742	439	45
52DLH17	815	526	45
60DLH18	926	677	46

79' LENGTH

40LH8	183	90	15
44LH9	242	131	18

Instructor: J. Ramirez