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SEE IMPORTANT NOTICE REGARDING BRIDGING ON PAGE 1.

STEEL JOISTS AND JOIST GIRDERS

A Division of Nucor Corporation

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STEEL JOISTS
JOIST GIRDERS

****IMPORTANT NOTICE****

BASED UPON FINDINGS OF INDUSTRY SPONSORED RESEARCH, THE STEEL JOIST INSTITUTE HAS DEVELOPED NEW REQUIREMENTS FOR THE USE OF ERECTION STABILITY BRIDGING. THE NEW SJI SPECIFICATIONS REQUIRE BOLTED DIAGONAL BRIDGING TO BE INSTALLED FOR SOME K-SERIES AND LH-SERIES JOISTS BEFORE SLACKENING THE HOISTING LINES. THE JOIST SPANS REQUIRING THIS STABILITY BRIDGING ARE SHADED IN THE LOAD TABLES.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751 (c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

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FRONT COVER PICTURE:
Brown & Root Employee Center
Houston, Texas
General Contractor: Brown & Root
Steel Fabricator: Palmer Steel Supplies, Inc.

PAGE	SECTION	CHANGE
1		Added notice regarding bridging.
6	Vibration	Revised.
7	Concentrated Loads	Revised.
8	LRFD	Added.
9	K-Series	New bridging tables.
10-13	K-Series	Added shading and OSHA note for erection stability requirement.
14-17	KCS-Series	Change from CS-Series, added metric.
18-21	K-Series	Added metric load tables.
22-29	K-Series	Revised specifications to include metric and new bridging criteria.
31	Accessories & Details	Revised VS-Series.
35-36	Accessories & Details	New bridging requirements.
39	Accessories & Details	New top chord extension load table-metric.
40	Accessories & Details	Revised camber tables to include metric.
43	LH-DLH Series	New bridging tables.
44-46	LH-Series	Added shading and OSHA note for erection stability requirement.
47-48	DLH-Series	Added shading for erection stability requirement.
49-52	LH-Series	New metric tables.
53-54	DLH-Series	New metric tables.
55-62	LH-DLH Series	Revised specifications to include metric and new bridging criteria.
77	Joist Girders	Re-worded.
78	Joist Girders	Added detail "F".
80-88	Joist Girders	Enhanced weight tables and added stepped line to indicate when a 10 inch deep bearing should be used.
89-95	Joist Girders	New metric design example and metric weight tables.
96-102	Joist Girders	Revised specifications to include metric.
103-106	Fire Resistance Ratings	Revised stress limitations and revised some fire resistance ratings.
107-118	Economical Joist Guide	Added shading for erection stability requirements. Method of listing joists in order of economies has been revised.
119-126	Recommended Code of Standard Practice	Revised to include metric and new bridging criteria.

A WORD ABOUT QUALITY

In manufacturing steel joists, there can be no compromise on quality. Your business depends on it. Our reputation and success depends on it. As the largest manufacturer of steel joists in the United States, a lot of buildings and a lot of people depend on Vulcraft for consistently high standards of quality that are demonstrated in reliable performance.

In the manufacturing of steel joists and joist girders, Vulcraft uses high quality steel. Welding to exact specifications is the key to making structurally sound joists--and the most critical step in the entire process. This being the case, all Vulcraft welders are certified to American Welding Society standards. All welds are in accordance with the Steel Joist Institute's welding criteria and all Vulcraft joists are manufactured to meet the required design loads of the specifying professional.

To further insure the precision and quality of every weld, every Vulcraft quality assurance inspector is also certified to these same high standards. Furthermore Vulcraft's quality assurance supervisors report directly to the engineering manager. Vulcraft also employs an ongoing program of mechanical testing that includes full scale load tests at every facility.

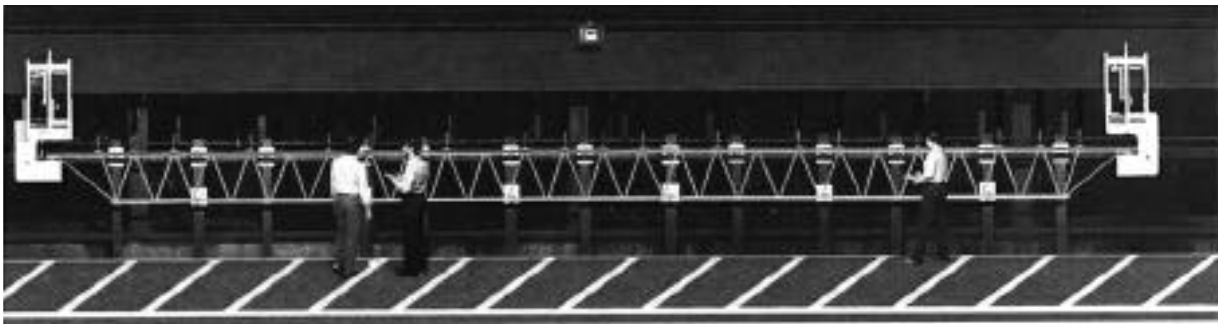
As the leading manufacturer of steel joists and joist girders in the United States, Vulcraft's reputation depends on successfully managed quality control programs. That's why quality is important at Vulcraft. You have our word on it.

NOTICE

Vulcraft, a Division of Nucor Corporation, has provided this catalog for use by engineers and architects in designing and using Vulcraft open web joists and open web girders. It includes all products available at the time of printing. Vulcraft reserves the right to change, revise or withdraw any Products or procedures without notice.

The information presented in this catalog has been prepared in accordance with recognized engineering principles and is for general information only. While it is believed to be accurate, this information should not be used or relied upon for any specific application without competent professional examination and verification of its accuracy, suitability and applicability by an engineer, architect or other licensed professional.

Vulcraft is a manufacturer of open web steel joists, joist girders, floor deck and roof deck. Vulcraft employs a staff of engineers for the design, manufacture and marketing of its products. Vulcraft does not accept the responsibility as the design professional of record for any structure. Vulcraft accepts the delegation of the engineering responsibility only for the products it manufactures, provided the application and applicable loading for these products are specified by the design professional of record. Vulcraft provides engineering for the design of its products and does not displace the need on any project for a design professional of record.



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FLOOR VIBRATION

Floor vibration occurs, in varying degrees, in all types of building construction. Unlike steady state vibration, which can be isolated, vibration due to human impact is inconsistent in amplitude and frequency and therefore, more difficult to control.

The Steel Joist Institute has studied this phenomenon for many years. Laboratory research has been performed and numerous buildings, exhibiting both good and bad characteristics, were tested using seismic recording instruments. The findings have been published by the SJI in Technical Digest #5.

The vast majority of structures, including those utilizing steel joists, do not exhibit floor vibrations severe enough to be considered objectionable. However, human sensitivity to vibratory motion varies, and a satisfactory framing solution is dependent upon the sound judgement of qualified structural engineers.

The following observations are in keeping with the research data for vibrational characteristics not objectionable to normal human response, and are recommended only as a guide.

DEFINITIONS

Floor vibration is measured in terms of amplitude and frequency. These two factors are not objectionable to all people at the same level since human sensitivity varies.

Amplitude is defined as the magnitude or total distance traveled by each oscillation of the vibration.

Frequency is the term used to describe the speed of the oscillations and is expressed in cycles per second or Hz.

Acceleration results from combining amplitude and frequency and is the only vibration factor which humans can sense.

Damping is defined as the rate of decay of amplitude.

OPEN FLOOR AREAS are most subject to vibrational problems. Objections occur most often when a 2 l/2" thick slab of lightweight concrete is used on spans in the range of 28 feet. As the spans both increase and decrease from this length, the likelihood of objectionable vibration tends to taper off. Partitions, file cabinets, book stacks, heavy furnishings and even crowds of people provide additional damping and minimize complaints.

THICKER FLOOR SLABS are an economical solution to floor vibration, when open floor areas are required. Additional thickness increases floor system stiffness transverse to the joists, thus reducing the amplitude. A slight increase in frequency will be offset by the additional mass of the system, producing a reduction of objectionable vibration.

WIDER JOIST SPACINGS improve vibrational characteristics only when combined with thicker floor slabs. The resulting increase in joist size does not contribute significantly to the composite section. When used with a thicker slab, greater resistance to vibration can be achieved, and, since fewer pieces must be installed, may be more economical.

PARTITIONS introduce damping and usually eliminate vibration problems. They will be effective either above or below a floor. Partitions below provide damping even though only attached to suspended ceilings and not in direct contact with joists.

SUPPORT FRAMING BEAMS sometimes greatly magnify floor vibration. If a floor vibration problem is judged to be imminent, one needs to calculate the natural frequency and amplitude for both the joist and supporting joist girders or beams. In this manner the resulting system amplitude and frequency can be determined from which the required system damping can be calculated. The damping provided in the system should be greater than the calculated required damping.

INCREASING JOIST STIFFNESS above that which is required by live load deflection is not a good solution. Increasing the stiffness of the steel joists themselves results in increasing the frequency and slightly decreasing the amplitude of the floor vibration.

BRIDGING of all standard types provide equal floor vibrational characteristics.

LONGER FLOOR SPANS have many advantages over shorter spans, both in construction cost and in vibrational response. Floor spans over 40 feet with a 2-1/2" thick concrete slab give a vibrational frequency in the 3-5 cycles per second range. A human can tolerate a larger amplitude at this reduced frequency without sensing it. Thus, there is minimal sensation of motion and the floor feels extremely stable.

ASSISTANCE can be given to architects and engineers on the subject of vibration and steel joist construction. Call the engineering manager at the nearest Vulcraft manufacturing facility.

PC based software to evaluate vibration of joist supported floor systems is available from the STEEL JOIST INSTITUTE, 3127 10th Ave. North Ext., Myrtle Beach, SC 29577, phone (843) 626-1995 and STRUCTURAL ENGINEERS, INC., 537 Wisteria Drive, Radford, VA 24141, Fax no. (703) 731-3330.

CONCLUSIONS:

Partitions eliminate vibration problems. When a floor area cannot have partitions, increasing the slab thickness is the most economical and effective way to prevent vibration objections. Steel joist and concrete slab open floor areas have generally not given objectionable vibration at spans less than 20 feet or greater than 40 feet even with only 2 l/2" slab. Due consideration should also be given to support framing beams as outlined above.

For more information refer to Steel Joist Institute Technical Digest No. 5 "Vibration of Steel Joist-Concrete Slab Floors."

DEFLECTION OF STEEL JOISTS

The deflection of a steel joist when loaded with a uniformly-distributed load depends upon the following factors:

w= uniformly-distributed load carried by the joist (plf)
L= (span of the joist -.33)(ft.)
E= modulus of elasticity of steel (29,000,000 psi)
I= 26.767 WLL (L3) (10^{-6}) where WLL=red figure in load table

Tests have shown that deflection at mid-span may be determined with reasonable accuracy using the following formula:

Deflection (inches)=

$$\frac{1.15x5wL^4\ (12^3)}{384EI} =$$

$$\frac{25.88wL^4}{E\ I}$$

Example: Determine the approximate total load deflection of a 24K8 for the following conditions:

W=280 plf L=40.0 ft
W_{LL}= 161 plf E=29,000,000 psi
I=26.767(161) $(40-.33)^3$ (10^{-6})= 269.0 $in.^4$

Deflection=

$$\frac{25.88(280)(40-.33)^4}{29,000,000(269)} = 2.30 \text{ in.}$$

HOW TO SPECIFY CONCENTRATED AND OTHER NON-UNIFORM LOADS ON STEEL JOISTS

K-SERIES

When working with K-series joists, the specifying professional has two means by which to handle concentrated loads. First, KCS joists may be chosen (see page 14). These new SJI joists are specifically designed to address the problems created by non-uniform loading and using KCS joists is the best alternative for a loading condition that cannot be located during the design phase.

Second, the design loads can be shown on the contract drawings. If this method is used all concentrated loads must be located and the magnitude of the loads must be given and any other non-uniform loading must include the location and magnitude. The best way to handle this is through a load diagram. The specifying professional must specifically instruct the joist manufacturer to provide special joists for these situations. **These joists are to be labeled "SP" on the plan.** A NOTE OF CAUTION IS DUE HERE. In no case should the required resisting moment or end reaction exceed the highest values tabulated for the KCS joists of the specified depth. Those values represent the practical upper limits for the respective joist depths.

The Steel Joist Institute has an example for each of these choices. They are reprinted in this catalog on page 14 for the KCS example and on page 124 for the special (SP) design example.

Whatever option is chosen, it is still possible the required shear and/or moment exceeds that which can be developed with a K-series joist. In the event this happens, the specifying professional can do one of two things:

1) Use double joists. Both joists would be KCS joists or "specials" (SP), but carrying half of the required loads.

2) Specifying a special (SP) LH-series joist. (NOTE: LH joists require deeper bearing seats.)

LH-SERIES

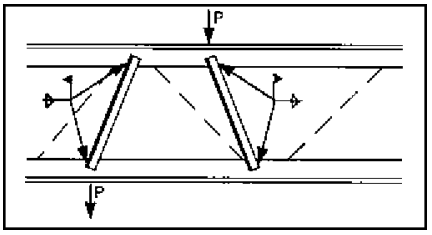
When it is necessary for LH-series joists to be specified to support concentrated loads, the specifying professional should provide the design requirements for these joists on the structural drawings. This must be done by giving both the uniform load and any non-uniform loads. If the non-uniform loads are concentrated the location and magnitude of each load must be provided. A load diagram of each joist should be provided. A specific note instructing the joist manufacturer to design a special (SP) joist should be given.

Regardless of whether K-series, KCS-series or LH-series joists are specified, it is important to note that even though sufficient shear and moment capacity are provided within the special joist, the localized bending of the chord members due to concentrated loading between panel points is not considered. The joist design generally presumes that all concentrated loads are to be applied at panel points. When this is not the case, the specifying professional must specify on the structural drawings of the contract documents one of the following methods:

1) A field installed member be located at all concentrated loads not occurring at panel points (see detail C1).

2) The magnitude and locations of all loads can be provided on the structural drawings and Vulcraft can shop install an additional web, thus eliminating the field labor.

The second alternative is the most economical.



DETAIL C1

VARYING UNIFORM LOADS ON STEEL JOISTS

The selection process of a joist for varying uniform loads such as drift loads or stepped uniform loads is essentially the same as that for concentrated loads. For K-series joists where the uniform load exceeds 550 pounds per lineal foot, the only options are: double joists or the use of special (SP) joists. Again a load diagram should be shown on the structural drawings.

LOAD AND RESISTANCE FACTOR DESIGN

The following method may be used to convert the Steel Joist Institute's Specifications for use in Load and Resistance Factor Design (LRFD)

Method:

WU = 1.65 Wsji, or Wsji = WU /1.65

Where, WU = ultimate joist capacity
Wsji = SJI Load Table Load (black figure)

Load tables for LRFD can be obtained directly from the current SJI Load Tables by using the formula:

Wn = Wsji x 0.9 x 1.65

Where, Wn = nominal joist capacity
0.9 = Resistance Factor (0)

"K" Series Example:

Given: WU = 1.2 WD + 1.6 WL
Problem: Select a joist from the current load tables for Wsji ≥ Wu/1.65(0)

L = 40 ft.
WD = 50 plf
WL = 150 plf
Use Roof Live load deflection ≤ L/240

WU = 1.2 x 50 + 1.6 x 150 = 300 plf

Wsji ≥ 300/(1.65 x 0.9) = 202 plf

Select 22K6: Wsji @ 40 ft. span = 207 plf > 202 plf. O'K'

Deflection Live Load ≤ L/240

WsjiLL = 1.5 x 111 = 166 plf > 150 plf O'K'

The above procedure outlines the specification of a "K" Series Joist to support a uniform gravity load utilizing LRFD. When loads other than uniform gravity loads (such as wind uplift loads, concentrated loads, end moments or non-uniform loads) are a design consideration, the Specifying Professional shall clearly indicate on the structural drawings whether these loads are factored or unfactored. To remain consistent with established LRFD design procedures it is recommended that factored loads be specified.

The above procedure is also applicable to the LH/DLH Series Joists and Joist Girders.

ECONOMICAL

HIGH STRENGTH

DESIGN - Vulcraft K Series open web steel joists are designed in accordance with specifications of the Steel Joist Institute.

ACCESSORIES see page 32.

FOR TOP CHORD EXTENSIONS AND EXTENDED ENDS see page 37.

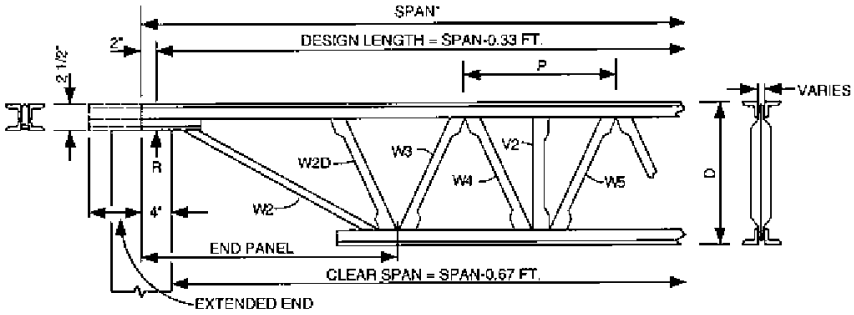
SJI SPANS TO 60'-0"

PAINT - Vulcraft joists receive a shop-coat of rust inhibitive primer whose performance characteristics conform to those of the Steel Joist Institute specifications 3.3.

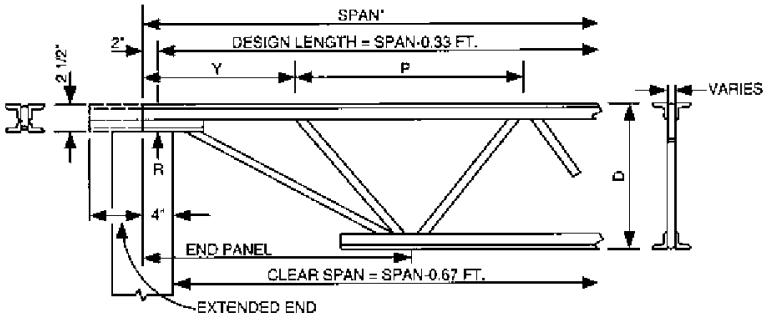
SPECIFICATIONS see page 22.

KCS SERIES JOIST see page 14.

ANGLE WEB



ROD WEB



* For Definition of Span, see page 30.
NOTE: Actual layout may vary from that shown.

MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING							
	BRIDGING MATERIAL SIZE						
	Round Rod	Equal Leg Angles					
SECTION NUMBER**	1/2"DIA (13mm) r = .13"	1 x 7/64 (25mm x 3mm) r = .25"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"	2x 1/8 (51mm x 3mm) r = .40"	2-1/2 x 5/32 (64mm x 4mm) r = .50"
1 thru 9	3'-3" (991mm)	5'-0" (1524mm)	6'-3" (1905mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)
10	3'-0" (914mm)	4'-8" (1422mm)	6'-3" (1905mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)
11 and 12	2'-7" (787mm)	4'-0" (1219mm)	5'-8" (1727mm)	7'-6" (2286mm)	8'-7" (2616mm)	10'-0" (3048mm)	12'-6" (3810mm)

*SECTION NUMBER REFERS TO THE LAST DIGITS OF JOIST DESIGNATION, CONNECTION TO JOIST MUST RESIST 700 POUNDS (3114 N)

MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING				
	BRIDGING ANGLE SIZE-EQUAL LEG ANGLES			
JOIST DEPTH	1 x 7/64 (25mm x 3mm) r = .20"	1 1/4 X7/64 (32mm x 3mm) r = .25"	1 1/2 X 7/64 (38mm x 3mm) r = .30"	1 3/4 x 7/64 (45mm x 3mm) r = .35"
12	6'-6" (1981mm)	8'-3" (2514mm)	9'-11" (3022mm)	11'-7" (3530mm)
14	6'-6" (1981mm)	8'-3" (2514mm)	9'-11" (3022mm)	11'-7" (3530mm)
16	6'-6" (1981mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
18	6'-6" (1981mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
20	6'-5" (1955mm)	8'-2" (2489mm)	9'-10" (2997mm)	11'-6" (3505mm)
22	6'-4" (1930mm)	8'-1" (2463mm)	9'-10" (2997mm)	11'-6" (3505mm)
24	6'-4" (1930mm)	8'-1" (2463mm)	9'-9" (2971mm)	11'-5" (3479mm)
26	6'-3" (1905mm)	8'-0" (2438mm)	9'-9" (2971mm)	11'-5" (3479mm)
28	6'-2" (1879mm)	8'-0" (2438mm)	9'-8" (2946mm)	11'-5" (3479mm)
30	6'-2" (1879mm)	7'-11" (2413mm)	9'-8" (2946mm)	11'-4" (3454mm)

K-series--all sections numbers use A307 bolt 3/8" (9mm) diameter.
See page 27 for number of rows of bridging required.

BRIDGING FOR STANDING SEAM ROOF SYSTEMS:

Generally, standing seam roof systems will not adequately brace the top chords of the joists with standard SJI bridging. We therefore, recommend that when a standing seam roof system is specified, the design professional specifically state that the joist manufacturer is to check the bridging requirements and provide bridging as required to adequately brace the top chord against lateral movement under full loading conditions.

UPLIFT BRIDGING:

Where uplift forces due to wind are a design requirement, these forces must be indicated on the structural drawings in terms of **net** uplift in pounds per square foot or pounds per linear foot. When these loads are specified, they must be considered in the design of joists and bridging. As a minimum, a single line of bottom chord bridging must be provided near the first bottom chord panel point, at each end of the joist, whenever uplift is a design consideration.*

*See Section 5.11 of the specifications.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

STANDARD LOAD TABLE

OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

Adopted by the Steel Joist Institute November 4, 1985; Revised to May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly distributed load-carrying capacities, in pounds per linear foot, of K-Series Steel Joists. The weight of DEAD loads, including the joists, must be deducted to determine the LIVE load-carrying capacities of the joists. The load table may be used for parallel chord joists installed to a maximum slope of 1/2 inch per foot.

The figures shown in RED in this load table are the LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the figures in RED by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

The approximate joist weights per linear foot shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in 4 inches is: $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = RED figure in the Load Table and L = (Span - .33) in feet.

For the proper handling of concentrated and/or varying loads, see Section 5.5 in the Recommended Code of Standard Practice.

Where the joist span is equal to or greater than the span corresponding to the RED shaded area shown in the load table, the row of bridging nearest the mid span of the joist shall be installed as bolted diagonal bridging. Hoisting cables shall not be released until this bolted diagonal bridging is completed installed.

JOIST DESIGNATION	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
DEPTH (IN.)	8	10	12	12	12	14	14	14	14	16	16	16	16	16	16	16
APPROX. WT. (lbs./ft.)	5.1	5.0	5.0	5.7	7.1	5.2	6.0	6.7	7.7	5.5	6.3	7.0	7.5	8.1	8.6	10.0
SPAN (ft.)																
8	550															
	550															
9	550															
	550															
10	550	550														
	480	550														
11	532	550														
	377	542														
12	444	550	550	550	550											
	288	455	550	550	550											
13	377	479	550	550	550											
	225	363	510	510	510											
14	324	412	500	550	550	550	550	550	550							
	179	289	425	463	463	550	550	550	550							
15	281	358	434	543	550	511	550	550	550							
	145	234	344	428	434	475	507	507	507							
16	246	313	380	476	550	448	550	550	550	550	550	550	550	550	550	550
	119	192	282	351	396	390	467	467	467	550	550	550	550	550	550	550
17		277	336	420	550	395	495	550	550	512	550	550	550	550	550	550
		159	234	291	366	324	404	443	443	488	526	526	526	526	526	526
18		246	299	374	507	352	441	530	550	456	508	550	550	550	550	550
		134	197	245	317	272	339	397	408	409	456	490	490	490	490	490
19		221	268	335	454	315	395	475	550	408	455	547	550	550	550	550
		113	167	207	269	230	287	336	383	347	386	452	455	455	455	455
20		199	241	302	409	284	356	428	525	368	410	493	550	550	550	550
		97	142	177	230	197	246	287	347	297	330	386	426	426	426	426
21			218	273	370	257	322	388	475	333	371	447	503	548	550	550
			123	153	198	170	212	248	299	255	285	333	373	405	406	406
22			199	249	337	234	293	353	432	303	337	406	458	498	550	550
			106	132	172	147	184	215	259	222	247	289	323	351	385	385
23			181	227	308	214	268	322	395	277	308	371	418	455	507	550
			93	116	150	128	160	188	226	194	216	252	282	307	339	363
24			166	208	282	196	245	295	362	254	283	340	384	418	465	550
			81	101	132	113	141	165	199	170	189	221	248	269	298	346
25						180	226	272	334	234	260	313	353	384	428	514
						100	124	145	175	150	167	195	219	238	263	311
26						166	209	251	308	216	240	289	326	355	395	474
						88	110	129	156	133	148	173	194	211	233	276
27						154	193	233	285	200	223	268	302	329	366	439
						79	98	115	139	119	132	155	173	188	208	246
28						143	180	216	265	186	207	249	281	306	340	408
						70	88	103	124	106	118	138	155	168	186	220
29										173	193	232	261	285	317	380
										95	106	124	139	151	167	198
30										161	180	216	244	266	296	355
										86	96	112	126	137	151	178
31										151	168	203	228	249	277	332
										78	87	101	114	124	137	161
32										142	158	190	214	233	259	311
										71	79	92	103	112	124	147

STANDARD LOAD TABLE / OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

JOIST DESIGNATION	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
DEPTH (IN.)	18	18	18	18	18	18	18	20	20	20	20	20	20	20	22	22	22	22	22	22	22
APPROX. WT. (lbs./ft.)	6.6	7.2	7.7	8.5	9.0	10.2	11.7	6.7	7.6	8.2	8.9	9.3	10.8	12.2	8.0	8.8	9.2	9.7	11.3	12.6	13.8
SPAN (ft.)																					
18	550	550	550	550	550	550	550														
	550	550	550	550	550	550	550														
19	514	550	550	550	550	550	550														
	494	523	523	523	523	523	523														
20	463	550	550	550	550	550	550	517	550	550	550	550	550	550							
	423	490	490	490	490	490	490	517	550	550	550	550	550	550							
21	420	506	550	550	550	550	550	468	550	550	550	550	550	550							
	364	426	460	460	460	460	460	453	520	520	520	520	520	520							
22	382	460	518	550	550	550	550	426	514	550	550	550	550	550	550	550	550	550	550	550	550
	316	370	414	438	438	438	438	393	461	490	490	490	490	490	548	548	548	548	548	548	548
23	349	420	473	516	550	550	550	389	469	529	550	550	550	550	518	550	550	550	550	550	550
	276	323	362	393	418	418	418	344	402	451	468	468	468	468	491	518	518	518	518	518	518
24	320	385	434	473	526	550	550	357	430	485	528	550	550	550	475	536	550	550	550	550	550
	242	284	318	345	382	396	396	302	353	396	410	448	448	448	431	483	495	495	495	495	495
25	294	355	400	435	485	550	550	329	396	446	486	541	550	550	438	493	537	550	550	550	550
	214	250	281	305	337	337	337	266	312	350	380	421	426	426	381	427	464	474	474	474	474
26	272	328	369	402	448	538	550	304	366	412	449	500	550	550	404	455	496	550	550	550	550
	190	222	249	271	299	354	361	236	277	310	337	373	405	405	338	379	411	454	454	454	454
27	252	303	342	372	415	498	550	281	339	382	416	463	550	550	374	422	459	512	550	550	550
	169	198	222	241	267	315	347	211	247	277	301	333	389	389	301	337	367	406	432	432	432
28	234	282	318	346	385	463	548	261	315	355	386	430	517	550	348	392	427	475	550	550	550
	151	177	199	216	239	282	331	189	221	248	269	298	353	375	270	302	328	364	413	413	413
29	218	263	296	322	359	431	511	243	293	330	360	401	482	550	324	365	398	443	532	550	550
	136	159	179	194	215	254	298	170	199	223	242	268	317	359	242	272	295	327	387	399	399
30	203	245	276	301	335	402	477	227	274	308	336	374	450	533	302	341	371	413	497	550	550
	123	144	161	175	194	229	269	153	179	201	218	242	286	336	219	245	266	295	349	385	385
31	190	229	258	281	313	376	446	212	256	289	314	350	421	499	283	319	347	387	465	550	550
	111	130	146	158	175	207	243	138	162	182	198	219	259	304	198	222	241	267	316	369	369
32	178	215	242	264	294	353	418	199	240	271	295	328	395	468	265	299	326	363	436	517	549
	101	118	132	144	159	188	221	126	147	165	179	199	235	276	180	201	219	242	287	337	355
33	168	202	228	248	276	332	393	187	226	254	277	309	371	440	249	281	306	341	410	486	532
	92	108	121	131	145	171	201	114	134	150	163	181	214	251	164	183	199	221	261	307	334
34	158	190	214	233	260	312	370	176	212	239	261	290	349	414	235	265	288	321	386	458	516
	84	98	110	120	132	156	184	105	122	137	149	165	195	229	149	167	182	202	239	280	314
35	149	179	202	220	245	294	349	166	200	226	246	274	329	390	221	249	272	303	364	432	494
	77	90	101	110	121	143	168	96	112	126	137	151	179	210	137	153	167	185	219	257	292
36	141	169	191	208	232	278	330	157	189	213	232	259	311	369	209	236	257	286	344	408	467
	70	82	92	101	111	132	154	88	103	115	125	139	164	193	126	141	153	169	201	236	269
37								148	179	202	220	245	294	349	198	223	243	271	325	386	442
								81	95	106	115	128	151	178	116	130	141	156	185	217	247
38								141	170	191	208	232	279	331	187	211	230	256	308	366	419
								74	87	98	106	118	139	164	107	119	130	144	170	200	228
39								133	161	181	198	220	265	314	178	200	218	243	292	347	397
								69	81	90	98	109	129	151	98	110	120	133	157	185	211
* 40								127	153	172	188	209	251	298	169	190	207	231	278	330	377
								64	75	84	91	101	119	140	91	102	111	123	146	171	195
41															161	181	197	220	264	314	359
															85	95	103	114	135	159	181
42															153	173	188	209	252	299	342
															79	83	96	106	126	148	168
43															146	165	179	200	240	285	326
															73	82	89	99	117	138	157
44															139	157	171	191	229	272	311
															68	76	83	92	109	128	146

***IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOIST LINES.**

STANDARD LOAD TABLE / OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

JOIST DESIGNATION	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12
DEPTH (IN.)	24	24	24	24	24	24	24	24	26	26	26	26	26	26	26
APPROX. WT. (lbs./ft.)	8.4	9.3	9.7	10.1	11.5	12.0	13.1	16.0	9.8	10.6	10.9	12.1	12.2	13.8	16.6
SPAN (ft.)															
24	520	550	550	550	550	550	550	550							
	516	544	544	544	544	544	544	544							
25	479	540	550	550	550	550	550	550							
	456	511	520	520	520	520	520	520							
26	442	499	543	550	550	550	550	550	542	550	550	550	550	550	550
	405	453	493	499	499	499	499	499	535	541	541	541	541	541	541
27	410	462	503	550	550	550	550	550	502	547	550	550	550	550	550
	361	404	439	479	479	479	479	479	477	519	522	522	522	522	522
28	381	429	467	521	550	550	550	550	466	508	550	550	550	550	550
	323	362	393	436	456	456	456	456	427	464	501	501	501	501	501
29	354	400	435	485	536	550	550	550	434	473	527	550	550	550	550
	290	325	354	392	429	436	436	436	384	417	463	479	479	479	479
30	331	373	406	453	500	544	550	550	405	441	492	544	550	550	550
	262	293	319	353	387	419	422	422	346	377	417	457	459	459	459
31	310	349	380	424	468	510	550	550	379	413	460	509	550	550	550
	237	266	289	320	350	379	410	410	314	341	378	413	444	444	444
32	290	327	357	397	439	478	549	549	356	387	432	477	519	549	549
	215	241	262	290	318	344	393	393	285	309	343	375	407	431	431
33	273	308	335	373	413	449	532	532	334	364	406	448	488	532	532
	196	220	239	265	289	313	368	368	259	282	312	342	370	404	404
34	257	290	315	351	388	423	502	516	315	343	382	422	459	516	516
	179	201	218	242	264	286	337	344	237	257	285	312	338	378	378
35	242	273	297	331	366	399	473	501	297	323	360	398	433	501	501
	164	184	200	221	242	262	308	324	217	236	261	286	310	356	356
36	229	258	281	313	346	377	447	487	280	305	340	376	409	486	487
	150	169	183	203	222	241	283	306	199	216	240	263	284	334	334
37	216	244	266	296	327	356	423	474	265	289	322	356	387	460	474
	138	155	169	187	205	222	260	290	183	199	221	242	262	308	315
38	205	231	252	281	310	338	401	461	251	274	305	337	367	436	461
	128	143	156	172	189	204	240	275	169	184	204	223	241	284	299
39	195	219	239	266	294	320	380	449	238	260	289	320	348	413	449
	118	132	144	159	174	189	222	261	156	170	188	206	223	262	283
* 40	185	208	227	253	280	304	361	438	227	247	275	304	331	393	438
	109	122	133	148	161	175	206	247	145	157	174	191	207	243	269
41	176	198	216	241	266	290	344	427	215	235	262	289	315	374	427
	101	114	124	137	150	162	191	235	134	146	162	177	192	225	256
42	168	189	206	229	253	276	327	417	205	224	249	275	300	356	417
	94	106	115	127	139	151	177	224	125	136	150	164	178	210	244
43	160	180	196	219	242	263	312	406	196	213	238	263	286	339	407
	88	98	107	118	130	140	165	213	116	126	140	153	166	195	232
44	153	172	187	209	231	251	298	387	187	204	227	251	273	324	398
	82	92	100	110	121	131	154	199	108	118	131	143	155	182	222
45	146	164	179	199	220	240	285	370	179	194	217	240	261	310	389
	76	86	93	103	113	122	144	185	101	110	122	133	145	170	212
46	139	157	171	191	211	230	272	354	171	186	207	229	250	296	380
	71	80	87	97	106	114	135	174	95	103	114	125	135	159	203
47	133	150	164	183	202	220	261	339	164	178	199	219	239	284	369
	67	75	82	90	99	107	126	163	89	96	107	117	127	149	192
48	128	144	157	175	194	211	250	325	157	171	190	210	229	272	353
	63	70	77	85	93	101	118	153	83	90	100	110	119	140	180
49									150	164	183	202	220	261	339
									78	85	94	103	112	131	169
50									144	157	175	194	211	250	325
									73	80	89	97	105	124	159
51									139	151	168	186	203	241	313
									69	75	83	91	99	116	150
52									133	145	162	179	195	231	301
									65	71	79	86	93	110	142

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STANDARD LOAD TABLE / OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

JOIST DESIGNATION		28K6	28K7	28K8	28K9	28K10	28K12	30K7	30K8	30K9	30K10	30K11	30K12
DEPTH (IN.)		28	28	28	28	28	28	30	30	30	30	30	30
APPROX. WT. (lbs./ft.)		11.4	11.8	12.7	13.0	14.3	17.1	12.3	13.2	13.4	15.0	16.4	17.6
SPAN (ft.) ↓													
28		548	550	550	550	550	550						
		541	543	543	543	543	543						
29		511	550	550	550	550	550						
		486	522	522	522	522	522						
30		477	531	550	550	550	550	550	550	550	550	550	550
		439	486	500	500	500	500	543	543	543	543	543	543
31		446	497	550	550	550	550	534	550	550	550	550	550
		397	440	480	480	480	480	508	520	520	520	520	520
32		418	466	515	549	549	549	501	549	549	549	549	549
		397	440	438	463	463	463	461	500	500	500	500	500
33		393	438	484	527	532	532	471	520	532	532	532	532
		329	364	399	432	435	435	420	460	468	468	468	468
34		370	412	456	496	516	516	443	490	516	516	516	516
		300	333	364	395	410	410	384	420	441	441	441	441
35		349	389	430	468	501	501	418	462	501	501	501	501
		275	305	333	361	389	389	351	384	415	415	415	415
36		330	367	406	442	487	487	395	436	475	487	487	487
		352	280	306	332	366	366	323	353	383	392	392	392
37		312	348	384	418	474	474	373	413	449	474	474	474
		232	257	282	305	344	344	297	325	352	374	374	374
38		296	329	364	396	461	461	354	391	426	461	461	461
		214	237	260	282	325	325	274	300	325	353	353	353
39		280	313	346	376	447	449	336	371	404	449	449	449
*		198	219	240	260	306	308	253	277	300	333	333	333
40		266	297	328	357	424	438	319	353	384	438	438	438
		183	203	222	241	284	291	234	256	278	315	315	315
41		253	283	312	340	404	427	303	335	365	427	427	427
		170	189	206	224	263	277	217	238	258	300	300	300
42		241	269	297	324	384	417	289	320	348	413	417	417
		158	175	192	208	245	264	202	221	240	282	284	284
43		230	257	284	309	367	407	276	305	332	394	407	407
		147	163	179	194	228	252	188	206	223	263	270	270
44		220	245	271	295	350	398	263	291	317	376	398	398
		137	152	167	181	212	240	176	192	208	245	258	258
45		210	234	259	282	334	389	251	278	303	359	389	389
		128	142	156	169	198	229	164	179	195	229	246	246
46		201	224	248	270	320	380	241	266	290	344	380	380
		120	133	146	158	186	219	153	168	182	214	236	236
47		192	214	237	258	306	372	230	255	277	329	372	372
		112	125	136	148	174	210	144	157	171	201	226	226
48		184	206	227	247	294	365	221	244	266	315	362	365
		105	117	128	139	163	201	135	148	160	188	215	216
49		177	197	218	237	282	357	212	234	255	303	347	357
		99	110	120	130	153	193	127	139	150	177	202	207
50		170	189	209	228	270	350	203	225	245	291	333	350
		93	103	113	123	144	185	119	130	141	166	190	199
51		163	182	201	219	260	338	195	216	235	279	320	343
		88	97	106	115	136	175	112	123	133	157	179	192
52		157	175	193	210	250	325	188	208	226	268	308	336
		83	92	100	109	128	165	106	116	126	148	169	184
53		151	168	186	203	240	313	181	200	218	258	296	330
		78	87	95	103	121	156	100	109	119	140	159	177
54		145	162	179	195	232	301	174	192	209	249	285	324
		74	82	89	97	114	147	94	103	112	132	150	170
55		140	156	173	188	223	290	168	185	202	240	275	312
		70	77	85	92	108	139	89	98	106	125	142	161
56		135	151	166	181	215	280	162	179	195	231	265	301
		66	73	80	87	102	132	84	92	100	118	135	153
57								156	173	188	223	256	290
								80	88	95	112	128	145
58								151	167	181	215	247	280
								76	83	90	106	121	137
59								146	161	175	208	239	271
								72	79	86	101	115	130
60								141	156	169	201	231	262
								69	75	81	96	109	124

***IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOIST LINES.**

KCS JOISTS

The KCS Joists:

1. Provide a versatile K-Series Joist that can be easily specified to support uniform loads plus concentrated and non-uniform loads.

2. Eliminate many repetitive load diagrams required on contract documents and allow some flexibility of load locations.

KCS Joists are designed in accordance with the Standard Specifications for K-Series Joists.

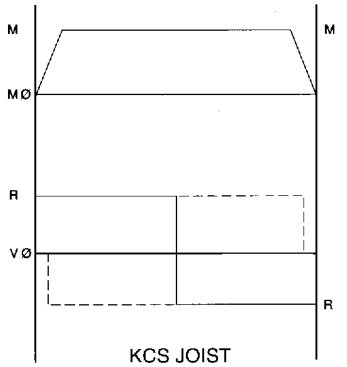
Standard K-Series Joists are designed for simple span uniform load which results in a parabolic moment diagram for chord forces and a linearly sloped shear diagram for web forces. When non-uniform and/or concentrated loads are encountered the shear and moment diagrams required may be shaped quite differently and may not be covered by the shear and moment design envelopes of a standard K-Series Joist.

KCS Joist chords are designed for a flat positive moment envelope. The moment capacity is constant at all interior panels. The top chord end panel is designed for axial load based on the force in the first tension web, which is based on the specified shear. A uniform load of 550 plf (8020 N/m) is used to check end panel bending.

The web forces are determined based on a flat shear envelope. All webs are designed for a vertical shear equal to the specified shear capacity. Furthermore, all webs (except the first tension web which remains in tension under all simple span gravity loads) will be designed for 100% stress reversal.

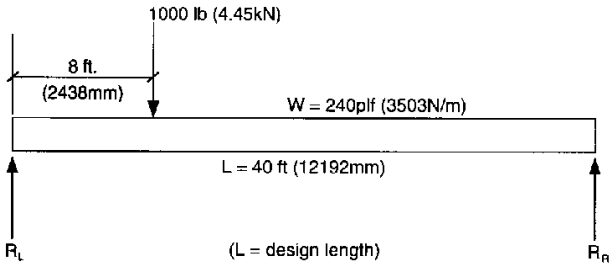
The KCS Joist load tables list the shear and moment capacity of each joist. The selection of a KCS Joist requires the specifying professional to calculate the maximum moment and shear imposed and select the appropriate KCS Joist. If a KCS Joist cannot be selected from the load table or if any uniform load exceeds 550 plf (8020 N/m) or if the maximum concentrated load exceeds the shear capacity of the joist, use double KCS Joists or select an LH-SERIES joist. For the LH-SERIES joist, supply a load diagram. When net uplift loads, end moments or other external horizontal loads are a design consideration, these loads shall be provided to the joist manufacturer by the specifying professional.

As is the case with standard **K**, **LH** and **DLH**-SERIES Joists, chord bending due to concentrated loads must be addressed. In the case of concentrated loads, the specifying professional shall handle them in one of two ways: 1) specify on the structural drawings that an extra web must be field applied at all concentrated loads not occurring at joist panel points, or 2) provide exact locations of all concentrated loads for which the joist manufacturer shall provide necessary reinforcement. Please reference Chapter VI of SJI Technical Digest No. 9 HANDLING AND ERECTION of steel joists and joist girders (July, 1987).



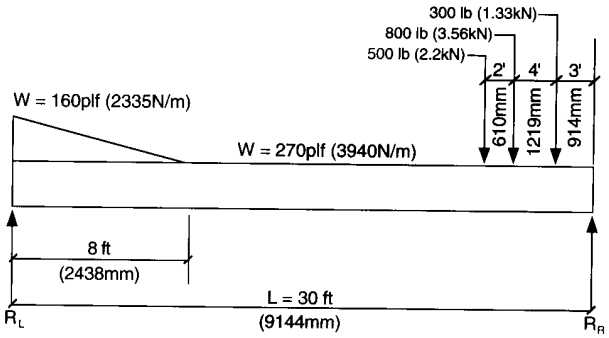
KCS JOIST
SHEAR AND MOMENT ENVELOPES

EXAMPLE 1



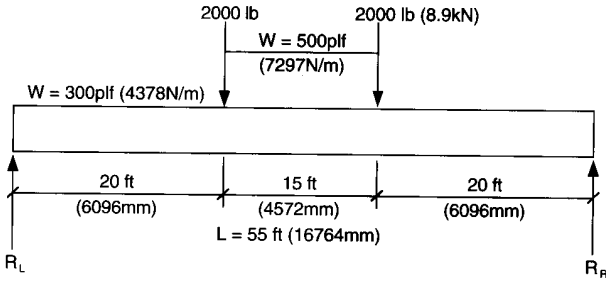
M = 625 in-kip (70.6 kN•m)
R_L = 5600 lbs. (24.9 kN), R_R = 5000 lbs. (22.2 kN)
Select A 22KCS3, M = 658 in-kip (74.3 kN•m)
R = 6600 lbs. (29.3 kN)
Bridging section no. 9 for L = 40 ft.(12192 mm)
Use 22K9 to determine bridging and stability requirements.
Since a standard KCS Joist can be selected from the load table a load diagram is not required.

EXAMPLE 2



M = 443 in-kip (50.1 kN•m)
R_L = 5000 lbs. (22.2 kN), R_R = 5340 lbs. (23.7 kN)
Select a 22KCS2, M = 488 in-kip (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.

EXAMPLE 3



M = 2910 in-kip (328.8 kN•m)
$R_L = R_R$ = 14000 lbs. (62.3 kN)
EXCEEDS CAPACITY OF 30KCS5 (MAXIMUM KCS JOIST) AND EXCEEDS MAX. UNIF. LOAD OF 550 plf (8020 kN).
OPTION A: Use double joists each having a min. M = 1455 in-kip (164.4 kN•m) and R = 7000 lbs. (31.1 kN) and a uniform load of 400 plf (5838 N/m).
Select two 28KCS5, M = 1704 in-kip (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 an LH-Series Joist. Calculate an equivalent uniform load based on the maximum moment or shear.

$$W_M = \frac{8M}{L^2} = 641 \text{ plf } (9.35 \text{ kN/m})$$

$$W_V = \frac{2R}{L} = 509 \text{ plf } (7.43 \text{ kN/m})$$

Use 641 plf (9.35 kN/m)
From the LH-Series Load Table select a 32LH13 - W=690 plf (10.06kN/m) for a 55 ft. (16764 mm) span. Specify a *32LH13SP* and present a load diagram on the structural drawings with the following note:
JOIST MANUFACTURER SHALL DESIGN FOR THE LOADING SHOWN IN THE LOAD DIAGRAM.

KCS JOIST LOAD TABLE

(U.S. CUSTOMARY)

JOIST DESIGNATION	DEPTH (inches)	MOMENT CAPACITY* (inch-kips)	SHEAR CAPACITY* (lbs)	APPROX. WEIGHT** (lbs/ft)	GROSS MOMENT OF INERTIA (in^4)	BRIDG. TABLE SECT. NO.
10KCS1	10	172	2000	6.0	29	1
10KCS2	10	225	2500	7.5	37	1
10KCS3	10	296	3000	10.0	47	1
12KCS1	12	209	2400	6.0	43	3
12KCS2	12	274	3000	8.0	55	5
12KCS3	12	362	3500	10.0	71	5
14KCS1	14	247	2900	6.5	59	4
14KCS2	14	324	3400	8.0	77	6
14KCS3	14	428	3900	10.0	99	6
16KCS2	16	349	4000	8.5	99	6
16KCS3	16	470	4800	10.5	128	9
16KCS4	16	720	5300	14.5	192	9
16KCS5	16	934	5800	18.0	245	9
18KCS2	18	395	4700	9.0	127	6
18KCS3	18	532	5200	11.0	164	9
18KCS4	18	817	5700	15.0	247	10
18KCS5	18	1062	6200	18.5	316	10
20KCS2	20	442	5200	9.5	159	6
20KCS3	20	595	6000	11.5	205	9
20KCS4	20	914	7900	16.5	308	10
20KCS5	20	1191	8400	20.0	396	10
22KCS2	22	488	5900	10.0	194	6
22KCS3	22	658	6600	12.5	251	9
22KCS4	22	1012	7900	16.5	377	11
22KCS5	22	1319	8600	20.5	485	11
24KCS2	24	534	6300	10.0	232	6
24KCS3	24	720	7200	12.5	301	9
24KCS4	24	1108	8400	16.5	453	12
24KCS5	24	1448	8900	20.5	584	12
26KCS2	26	580	6600	10.0	274	6
26KCS3	26	783	7800	12.5	355	9
26KCS4	26	1206	8500	16.5	536	12
26KCS5	26	1576	9200	20.5	691	12
28KCS2	28	626	6900	10.5	320	6
28KCS3	28	846	8000	12.5	414	9
28KCS4	28	1303	8500	16.5	626	12
28KCS5	28	1704	9200	20.5	808	12
30KCS3	30	908	8000	13.0	478	9
30KCS4	30	1400	8500	16.5	722	12
30KCS5	30	1833	9200	21.0	934	12

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 550 PLF AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY.
**DOES NOT INCLUDE ACCESSORIES

****IMPORTANT NOTICE****

BASED UPON FINDINGS OF INDUSTRY SPONSORED RESEARCH, THE STEEL JOIST INSTITUTE HAS DEVELOPED NEW REQUIREMENTS FOR THE USE OF ERECTION STABILITY BRIDGING. THE NEW SJI SPECIFICATIONS REQUIRE BOLTED DIAGONAL BRIDGING TO BE INSTALLED FOR SOME K-SERIES AND LH-SERIES JOISTS BEFORE SLACKENING THE HOISTING LINES. THE JOIST SPANS REQUIRING THIS STABILITY BRIDGING ARE SHADED IN THE LOAD TABLES.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

KCS JOIST LOAD TABLE

(SYSTEME INTERNATIONAL)

JOIST DESIGNATION	DEPTH (mm)	MOMENT CAPACITY* (kN-m)	SHEAR CAPACITY* (kN)	APPROXIMATE WEIGHT**		GROSS MOMENT OF INERTIA (cm^4)	BRDG. TABLE SECT. NO.
				(kg/m)	(N/m)		
10KCS1	254	19.4	8.8	9	90	1200	1
10KCS2	254	25.4	11.1	11	110	1540	1
10KCS3	254	33.4	13.3	15	150	1950	1
12KCS1	304	23.6	10.6	9	90	1780	3
12KCS2	304	31.0	13.3	12	120	2280	5
12KCS3	304	40.9	15.5	15	150	2950	5
14KCS1	355	27.9	12.8	9	90	2450	4
14KCS2	355	36.6	15.1	12	120	3200	6
14KCS3	355	48.4	17.3	15	150	4120	6
16KCS2	406	39.4	17.7	12	120	4120	6
16KCS3	406	53.1	21.3	15	150	5320	9
16KCS4	406	81.3	23.5	21	210	7990	9
16KCS5	406	105.5	25.7	27	260	10190	9
18KCS2	457	44.6	20.9	13	130	5280	6
18KCS3	457	60.1	23.1	16	160	6820	9
18KCS4	457	92.3	25.3	22	220	10280	10
18KCS5	457	120.0	27.5	28	270	13150	10
20KCS2	508	49.9	23.1	14	140	6610	6
20KCS3	508	67.2	26.6	17	170	8530	9
20KCS4	508	103.3	35.1	24	240	12810	10
20KCS5	508	134.6	37.3	30	290	16480	10
22KCS2	558	55.1	26.2	15	150	8070	6
22KCS3	558	74.3	29.3	18	180	10440	9
22KCS4	558	114.3	35.1	24	240	15690	11
22KCS5	558	149.0	38.2	31	300	20180	11
24KCS2	609	60.3	28.0	15	150	9650	6
24KCS3	609	81.3	32.0	18	180	12520	9
24KCS4	609	125.2	37.3	24	240	18850	12
24KCS5	609	163.6	39.5	31	300	24300	12
26KCS2	660	65.5	29.3	15	150	11400	6
26KCS3	660	88.5	34.6	18	180	14770	9
26KCS4	660	136.3	37.8	24	240	22310	12
26KCS5	660	178.1	40.9	31	300	28760	12
28KCS2	711	70.7	30.6	15	150	13310	6
28KCS3	711	95.6	35.5	18	180	17230	9
28KCS4	711	147.2	37.8	24	240	26050	12
28KCS5	711	192.5	40.9	31	300	33630	12
30KCS3	762	102.6	35.5	19	190	19890	9
30KCS4	762	158.2	37.8	24	240	30050	12
30KCS5	762	207.1	40.9	32	310	38870	12

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 8020 NEWTONS/METER AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY.
**DOES NOT INCLUDE ACCESSORIES.

****IMPORTANT NOTICE****

BASED UPON FINDINGS OF INDUSTRY SPONSORED RESEARCH, THE STEEL JOIST INSTITUTE HAS DEVELOPED NEW REQUIREMENTS FOR THE USE OF ERECTION STABILITY BRIDGING. THE NEW SJI SPECIFICATIONS REQUIRE BOLTED DIAGONAL BRIDGING TO BE INSTALLED FOR SOME K-SERIES AND LH-SERIES JOISTS BEFORE SLACKENING THE HOISTING LINES. THE JOIST SPANS REQUIRING THIS STABILITY BRIDGING ARE SHADED IN THE LOAD TABLES.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

METRIC LOAD TABLE
OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum Allowable Tensile Stress of 207 MPa

Adopted by the Steel Joist Institute May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly distributed load-carrying capacities, in kiloNewtons per meter (kN/m) of K-Series Steel Joists. The weight (kN/m) of the DEAD loads, including the joists, must be deducted to determine the LIVE load-carrying capacities of the joists. The load table may be used for parallel chord joists installed to a maximum slope of 1:24.

The figures shown RED in this load table are the LIVE loads per linear meter of joist which will produce an approximate deflection of L/360 of the span. LIVE loads which produce a deflection of L/240 of the span may be obtained by multiplying the figures in RED by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

The approximate weight of the joists, in kiloNewtons per meter (kN/m) shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in mm^4 is:

$I_j = 2.6953\ (W_{LL})(L^3)(10^{-5})$, where W_{LL} = RED figure in the Load Table: L = (span-102) in millimeters.

For the proper handling of concentrated and/or varying loads, see Section 5.5 in the Recommended Code of Standard Practice.

Where the joist span is equal to or greater than the span corresponding to the **RED** shaded area shown in the load table, the row of bridging nearest the mid span of the joist shall be installed as bolted diagonal bridging. Hoisting cables shall not be released until this bolted diagonal bridging is completely installed.

SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
Depth (mm)	203	254	305	305	305	356	356	356	356	406	406	406	406	406	406	406
Approx. Mass (kg/m)	7.6	7.4	7.4	8.5	10.6	7.7	8.9	10.0	11.5	8.2	9.4	10.4	11.2	12.1	12.8	14.9
Approx. Mass (kN/m)	0.07	0.07	0.07	0.08	0.10	0.08	0.09	0.10	0.11	0.08	0.09	0.10	0.11	0.12	0.13	0.15
Span (mm) ↓																
2438	8.02 8.02															
2743	8.02 8.02															
3048	8.02 7.00	8.02 8.02														
3352	7.76 5.50	8.02 7.90														
3657	6.47 4.20	8.02 6.64	8.02 8.02	8.02 8.02	8.02 8.02											
3962	5.50 3.28	6.99 5.29	8.02 7.44	8.02 7.44	8.02 7.44											
4267	4.72 2.61	6.01 4.21	7.29 6.20	8.02 6.75	8.02 6.75	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02							
4572	4.10 2.11	5.22 3.41	6.33 5.02	7.92 6.24	8.02 6.33	7.45 6.93	8.02 7.39	8.02 7.39	8.02 7.39							
4876	3.59 1.73	4.56 2.80	5.54 4.11	6.94 5.12	8.02 5.77	6.53 5.69	8.02 6.81	8.02 6.81	8.02 6.81	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02
5181		4.04 2.32	4.90 3.41	6.12 4.24	8.02 5.34	5.76 4.72	7.22 5.89	8.02 6.46	8.02 6.46	7.47 7.12	8.02 7.67	8.02 7.67	8.02 7.67	8.02 7.67	8.02 7.67	8.02 7.67
5486		3.59 1.95	4.36 2.87	5.45 3.57	7.39 4.62	5.13 3.96	6.43 4.94	7.73 5.79	8.02 5.95	6.65 5.96	7.41 6.65	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15
5791		3.22 1.64	3.91 2.43	4.88 3.02	6.62 3.92	4.59 3.35	5.76 4.18	6.93 4.90	8.02 5.58	5.95 5.06	6.64 5.63	7.98 6.59	8.02 6.64	8.02 6.64	8.02 6.64	8.02 6.64
6096		2.90 1.41	3.51 2.07	4.40 2.58	5.96 3.35	4.14 2.87	5.19 3.59	6.24 4.18	7.66 5.06	5.37 4.33	5.98 4.81	7.19 5.63	8.02 6.21	8.02 6.21	8.02 6.21	8.02 6.21
6400			3.18 1.79	3.98 2.23	5.39 2.88	3.75 2.48	4.69 3.09	5.66 3.61	6.93 4.36	4.85 3.72	5.41 4.15	6.52 4.85	7.34 5.44	7.99 5.91	8.02 5.92	8.02 5.92
6705			2.90 1.54	3.63 1.92	4.91 2.51	3.41 2.14	4.27 2.68	5.15 3.13	6.30 3.77	4.42 3.23	4.91 3.60	5.92 4.21	6.68 4.71	7.26 5.12	8.02 5.61	8.02 5.61
7010			2.64 1.35	3.31 1.69	4.49 2.18	3.12 1.86	3.91 2.33	4.69 2.74	5.76 3.29	4.04 2.83	4.49 3.15	5.41 3.67	6.10 4.11	6.64 4.48	7.39 4.94	8.02 5.29
7315			2.42 1.18	3.03 1.47	4.11 1.92	2.86 1.64	3.57 2.05	4.30 2.40	5.28 2.90	3.70 2.48	4.13 2.75	4.96 3.22	5.60 3.61	6.10 3.92	6.78 4.34	8.02 5.04
7619						2.62 1.45	3.29 1.80	3.96 2.11	4.87 2.55	3.41 2.18	3.79 2.43	4.56 2.84	5.15 3.19	5.60 3.47	6.24 3.83	7.50 4.53
7924						2.42 1.28	3.05 1.60	3.66 1.88	4.49 2.27	3.15 1.94	3.50 2.15	4.21 2.52	4.75 2.83	5.18 3.07	5.76 3.40	6.91 4.02
8229						2.24 1.15	2.81 1.43	3.40 1.67	4.15 2.02	2.91 1.73	3.25 1.92	3.91 2.26	4.40 2.52	4.80 2.74	5.34 3.03	6.40 3.59
8534						2.08 1.02	2.62 1.28	3.15 1.50	3.86 1.80	2.71 1.54	3.02 1.72	3.63 2.01	4.10 2.26	4.46 2.45	4.96 2.71	5.95 3.21
8839										2.52 1.38	2.81 1.54	3.38 1.80	3.80 2.02	4.15 2.20	4.62 2.43	5.54 2.88
9144										2.34 1.25	2.62 1.40	3.15 1.63	3.56 1.83	3.88 1.99	4.31 2.20	5.18 2.59
9448										2.20 1.13	2.45 1.26	2.96 1.47	3.32 1.66	3.63 1.80	4.04 1.99	4.84 2.34
9753										2.07 1.03	2.30 1.15	2.77 1.34	3.12 1.50	3.40 1.63	3.77 1.80	4.53 2.14

STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, K-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
Depth (mm)	457	457	457	457	457	457	457	508	508	508	508	508	508	508	559	559	559	559	559	559	559
Approx Mass (kg/m)	9.8	10.7	11.5	12.6	13.4	15.2	17.4	10.0	11.3	12.2	13.2	13.8	16.1	18.2	11.9	13.1	13.7	14.4	16.8	18.8	20.5
Approx Mass (kN/m)	0.10	0.11	0.11	0.12	0.13	0.15	0.17	0.10	0.11	0.12	0.13	0.14	0.16	0.18	0.12	0.13	0.13	0.14	0.16	0.18	0.20
Span (mm) ↓																					
5486	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02														
5791	7.50 7.20	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63														
6096	6.75 6.17	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	7.54 7.54	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02							
6400	6.12 5.31	7.38 6.21	8.02 6.71	8.02 6.71	8.02 6.71	8.02 6.71	8.02 6.71	6.82 6.61	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58							
6705	5.57 4.61	6.71 5.39	7.55 6.04	8.02 6.39	8.02 6.39	8.02 6.39	8.02 6.39	6.21 5.73	7.50 6.72	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99
7010	5.09 4.02	6.12 4.71	6.90 5.28	7.53 5.73	8.02 6.10	8.02 6.10	8.02 6.10	5.67 5.02	6.84 5.86	7.72 6.58	8.02 6.82	8.02 6.82	8.02 6.82	8.02 6.82	7.55 7.16	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55
7315	4.67 3.53	5.61 4.14	6.33 4.64	6.90 5.03	7.67 5.57	8.02 5.77	8.02 5.77	5.21 4.40	6.27 5.15	7.07 5.77	7.70 6.27	8.02 6.53	8.02 6.53	8.02 6.53	6.93 6.28	7.82 7.04	8.02 7.22	8.02 7.22	8.02 7.22	8.02 7.22	8.02 7.22
7619	4.29 3.12	5.18 3.64	5.83 4.10	6.34 4.45	7.07 4.91	8.02 5.50	8.02 5.50	4.80 3.88	5.77 4.55	6.50 5.10	7.09 5.54	7.89 6.14	8.02 6.21	8.02 6.21	6.39 5.56	7.19 6.23	7.83 6.77	8.02 6.91	8.02 6.91	8.02 6.91	8.02 6.91
7924	3.96 2.77	4.78 3.23	5.38 3.63	5.86 3.95	6.53 4.36	7.85 5.16	8.02 5.26	4.43 3.44	5.34 4.04	6.01 4.52	6.55 4.91	7.29 5.44	8.02 5.91	8.02 5.91	5.89 4.93	6.64 5.53	7.23 5.99	8.02 6.62	8.02 6.62	8.02 6.62	8.02 6.62
8229	3.67 2.46	4.42 2.88	4.99 3.23	5.42 3.51	6.05 3.89	7.26 4.59	8.02 5.06	4.10 3.07	4.94 3.60	5.57 4.04	6.07 4.39	6.75 4.85	8.02 5.67	8.02 5.67	5.45 4.39	6.15 4.91	6.69 5.35	7.47 5.92	8.02 6.30	8.02 6.30	8.02 6.30
8534	3.41 2.20	4.11 2.58	4.64 2.90	5.04 3.15	5.61 3.48	6.75 4.11	7.99 4.83	3.80 2.75	4.59 3.22	5.18 3.61	5.63 3.92	6.27 4.34	7.54 5.15	8.02 5.47	5.07 3.94	5.72 4.40	6.23 4.78	6.93 5.31	8.02 6.02	8.02 6.02	8.02 6.02
8839	3.18 1.98	3.83 2.32	4.31 2.61	4.69 2.83	5.23 3.13	6.28 3.70	7.45 4.34	3.54 2.48	4.27 2.90	4.81 3.25	5.25 3.53	5.85 3.91	7.03 4.62	8.02 5.23	4.72 3.53	5.32 3.96	5.80 4.30	6.46 4.77	7.76 5.64	8.02 5.82	8.02 5.82
9144	2.96 1.79	3.57 2.10	4.02 2.34	4.39 2.55	4.88 2.83	5.86 3.34	6.96 3.92	3.31 2.23	3.99 2.61	4.49 2.93	4.90 3.18	5.45 3.53	6.56 4.17	7.77 4.90	4.40 3.19	4.97 3.57	5.41 3.88	6.02 4.30	7.25 5.09	8.02 5.61	8.02 5.61
9448	2.77 1.61	3.34 1.89	3.76 2.13	4.10 2.30	4.56 2.55	5.48 3.02	6.50 3.54	3.09 2.01	3.73 2.36	4.21 2.65	4.58 2.88	5.10 3.19	6.14 3.77	7.28 4.43	4.13 2.88	4.65 3.23	5.06 3.51	5.64 3.89	6.78 4.61	8.02 5.38	8.02 5.38
9753	2.59 1.47	3.13 1.72	3.53 1.92	3.85 2.10	4.29 2.32	5.15 2.74	6.10 3.22	2.90 1.83	3.50 2.14	3.95 2.40	4.30 2.61	4.78 2.90	5.76 3.42	6.82 4.02	3.86 2.62	4.36 2.93	4.75 3.19	5.29 3.53	6.36 4.18	7.54 4.91	8.01 5.18
10058	2.45 1.34	2.94 1.57	3.32 1.76	3.61 1.91	4.02 2.11	4.84 2.49	5.73 2.93	2.72 1.66	3.29 1.95	3.70 2.18	4.04 2.37	4.50 2.64	5.41 3.12	6.42 3.66	3.63 2.39	4.10 2.67	4.46 2.90	4.97 3.22	5.98 3.80	7.09 4.48	7.76 4.87
10363	2.30 1.22	2.77 1.43	3.12 1.60	3.40 1.75	3.79 1.92	4.55 2.27	5.39 2.68	2.56 1.53	3.09 1.78	3.48 1.99	3.80 2.17	4.23 2.40	5.09 2.84	6.04 3.34	3.42 2.17	3.86 2.43	4.20 2.65	4.68 2.94	5.63 3.48	6.68 4.08	7.53 4.58
10668	2.17 1.12	2.61 1.31	2.94 1.47	3.21 1.60	3.57 1.76	4.29 2.08	5.09 2.45	2.42 1.40	2.91 1.63	3.29 1.83	3.59 1.99	3.99 2.20	4.80 2.61	5.69 3.06	3.22 1.99	3.63 2.23	3.96 2.43	4.42 2.69	5.31 3.19	6.30 3.75	7.20 4.26
10972	2.05 1.02	2.46 1.19	2.78 1.34	3.03 1.47	3.38 1.61	4.05 1.92	4.81 2.24	2.29 1.28	2.75 1.50	3.10 1.67	3.38 1.82	3.77 2.02	4.53 2.39	5.38 2.81	3.05 1.83	3.44 2.05	3.75 2.23	4.17 2.46	5.02 2.93	5.95 3.44	6.81 3.92
11277								2.15 1.18	2.61 1.38	2.94 1.54	3.21 1.67	3.57 1.86	4.29 2.20	5.09 2.59	2.88 1.69	3.25 1.89	3.54 2.05	3.95 2.27	4.74 2.69	5.63 3.16	6.45 3.60
11582								2.05 1.07	2.48 1.26	2.78 1.43	3.03 1.54	3.38 1.72	4.07 2.02	4.83 2.39	2.72 1.56	3.07 1.73	3.35 1.89	3.73 2.10	4.49 2.48	5.34 2.91	6.11 3.32
11887								1.94 1.00	2.34 1.18	2.64 1.31	2.88 1.43	3.21 1.59	3.86 1.88	4.58 2.20	2.59 1.43	2.91 1.60	3.18 1.75	3.54 1.94	4.26 2.29	5.06 2.69	5.79 3.07
* 12192								1.85 0.93	2.23 1.09	2.51 1.22	2.74 1.32	3.05 1.47	3.66 1.73	4.34 2.04	2.46 1.32	2.77 1.48	3.02 1.61	3.37 1.79	4.05 2.13	4.81 2.49	5.50 2.84
12496															2.34 1.24	2.64 1.38	2.87 1.50	3.21 1.66	3.85 1.97	4.58 2.32	5.23 2.64
12801															2.23 1.15	2.52 1.28	2.74 1.40	3.05 1.54	3.67 1.83	4.36 2.15	4.99 2.45
13106															2.13 1.06	2.40 1.19	2.61 1.29	2.91 1.44	3.50 1.70	4.15 2.01	4.75 2.29
13411															2.02 0.99	2.29 1.10	2.49 1.21	2.78 1.34	3.34 1.59	3.96 1.86	4.53 2.13

*IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOIST LINES.

STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, K-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12	28K6	28K7	28K8	28K9	28K10	28K12
Depth (mm)	610	610	610	610	610	610	610	610	660	660	660	660	660	660	660	711	711	711	711	711	711
Approx Mass (kg/m)	12.5	13.8	14.4	15.0	17.1	17.9	19.5	23.8	14.6	15.8	16.2	18.0	18.2	20.5	24.7	17.0	17.6	18.9	19.3	21.3	25.5
Approx Mass (kN/m)	0.12	0.14	0.14	0.15	0.17	0.18	0.19	0.23	0.14	0.15	0.16	0.18	0.18	0.20	0.24	0.17	0.17	0.19	0.19	0.21	0.25
Span (mm) ↓																					
7315	7.58	8.02	8.02	8.02	8.02	8.02	8.02	8.02													
	7.53	7.93	7.93	7.93	7.93	7.93	7.93	7.93													
7619	6.99	7.88	8.02	8.02	8.02	8.02	8.02	8.02													
	6.65	7.45	7.58	7.58	7.58	7.58	7.58	7.58													
7924	6.45	7.28	7.92	8.02	8.02	8.02	8.02	8.02	7.90	8.02	8.02	8.02	8.02	8.02	8.02						
	5.91	6.61	7.19	7.28	7.28	7.28	7.28	7.28	7.80	7.89	7.89	7.89	7.89	7.89	7.89						
8229	5.98	6.74	7.34	8.02	8.02	8.02	8.02	8.02	7.32	7.98	8.02	8.02	8.02	8.02	8.02						
	5.26	5.89	6.40	6.99	6.99	6.99	6.99	6.99	6.96	7.57	7.61	7.61	7.61	7.61	7.61						
8534	5.56	6.26	6.81	7.60	8.02	8.02	8.02	8.02	6.80	7.41	8.02	8.02	8.02	8.02	8.02	7.99	8.02	8.02	8.02	8.02	8.02
	4.71	5.28	5.73	6.36	6.65	6.65	6.65	6.65	6.23	6.77	7.31	7.31	7.31	7.31	7.31	7.89	7.92	7.92	7.92	7.92	7.92
8839	5.16	5.83	6.34	7.07	7.82	8.02	8.02	8.02	6.33	6.90	7.69	8.02	8.02	8.02	8.02	7.45	8.02	8.02	8.02	8.02	8.02
	4.23	4.74	5.16	5.72	6.26	6.36	6.36	6.36	5.60	6.08	6.75	6.99	6.99	6.99	6.99	7.09	7.61	7.61	7.61	7.61	7.61
9144	4.83	5.44	5.92	6.61	7.29	7.93	8.02	8.02	5.91	6.43	7.18	7.93	8.02	8.02	8.02	6.96	7.74	8.02	8.02	8.02	8.02
	3.82	4.27	4.65	5.15	5.64	6.11	6.15	6.15	5.04	5.50	6.08	6.66	6.69	6.69	6.69	6.40	7.09	7.29	7.29	7.29	7.29
9448	4.52	5.09	5.54	6.18	6.82	7.44	8.02	8.02	5.53	6.02	6.71	7.42	8.02	8.02	8.02	6.50	7.25	8.02	8.02	8.02	8.02
	3.45	3.88	4.21	4.67	5.10	5.53	5.98	5.98	4.58	4.97	5.51	6.02	6.47	6.47	6.47	5.79	6.42	7.00	7.00	7.00	7.00
9753	4.23	4.77	5.21	5.79	6.40	6.97	8.01	8.01	5.19	5.64	6.3	6.96	7.57	8.01	8.01	6.10	6.80	7.51	8.01	8.01	8.01
	3.13	3.51	3.82	4.23	4.64	5.02	5.73	5.73	4.15	4.50	5.00	5.47	5.93	6.28	6.28	5.26	5.83	6.39	6.75	6.75	6.75
10058	3.98	4.49	4.88	5.44	6.02	6.55	7.76	7.76	4.87	5.31	5.92	6.53	7.12	7.76	7.76	5.73	6.39	7.06	7.69	7.76	7.76
	2.86	3.21	3.48	3.86	4.21	4.56	5.37	5.37	3.77	4.11	4.55	4.99	5.39	5.89	5.89	4.80	5.31	5.82	6.30	6.34	6.34
10363	3.75	4.23	4.59	5.12	5.66	6.17	7.32	7.53	4.59	5.00	5.57	6.15	6.69	7.53	7.53	5.39	6.01	6.65	7.23	7.53	7.53
	2.61	2.93	3.18	3.53	3.85	4.17	4.91	5.02	3.45	3.75	4.15	4.55	4.93	5.51	5.51	4.37	4.85	5.31	5.76	5.98	5.98
10668	3.53	3.98	4.33	4.83	5.34	5.82	6.90	7.31	4.33	4.71	5.25	5.80	6.31	7.31	7.31	5.09	5.67	6.27	6.82	7.31	7.31
	2.39	2.68	2.91	3.22	3.53	3.82	4.49	4.72	3.16	3.44	3.80	4.17	4.52	5.19	5.19	4.01	4.45	4.85	5.26	5.67	5.67
10972	3.34	3.76	4.10	4.56	5.04	5.50	6.52	7.10	4.08	4.45	4.96	5.48	5.96	7.09	7.10	4.81	5.35	5.92	6.45	7.10	7.10
	2.18	2.46	2.67	2.96	3.23	3.51	4.13	4.46	2.90	3.15	3.50	3.83	4.14	4.87	4.87	3.67	4.08	4.46	4.84	5.34	5.34
11277	3.15	3.56	3.88	4.31	4.77	5.19	6.17	6.91	3.86	4.21	4.69	5.19	5.64	6.71	6.91	4.55	5.07	5.60	6.10	6.91	6.91
	2.01	2.26	2.46	2.72	2.99	3.23	3.79	4.23	2.67	2.90	3.22	3.53	3.82	4.49	4.59	3.38	3.75	4.11	4.45	5.02	5.02
11582	2.99	3.37	3.67	4.10	4.52	4.93	5.85	6.72	3.66	3.99	4.45	4.91	5.35	6.36	6.72	4.31	4.80	5.31	5.77	6.72	6.72
	1.86	2.08	2.27	2.51	2.75	2.97	3.50	4.01	2.46	2.68	2.97	3.25	3.51	4.14	4.36	3.12	3.45	3.79	4.11	4.74	4.74
11887	2.84	3.19	3.48	3.88	4.29	4.67	5.54	6.55	3.47	3.79	4.21	4.67	5.07	6.02	6.55	4.08	4.56	5.04	5.48	6.52	6.55
	1.72	1.92	2.10	2.32	2.53	2.75	3.23	3.80	2.27	2.48	2.74	3.00	3.25	3.82	4.13	2.88	3.19	3.50	3.79	4.46	4.49
* 12192	2.69	3.03	3.31	3.69	4.08	4.43	5.26	6.39	3.31	3.60	4.01	4.43	4.83	5.73	6.39	3.88	4.33	4.78	5.21	6.18	6.39
	1.59	1.78	1.94	2.15	2.34	2.55	3.00	3.60	2.11	2.29	2.53	2.78	3.02	3.54	3.92	2.67	2.96	3.23	3.51	4.14	4.24
12496	2.56	2.88	3.15	3.51	3.88	4.23	5.02	6.23	3.13	3.42	3.82	4.21	4.59	5.45	6.23	3.69	4.13	4.55	4.96	5.89	6.23
	1.47	1.66	1.80	1.99	2.18	2.36	2.78	3.42	1.95	2.13	2.36	2.58	2.80	3.28	3.73	2.48	2.75	3.00	3.26	3.83	4.04
12801	2.45	2.75	3.00	3.34	3.69	4.02	4.77	6.08	2.99	3.26	3.63	4.01	4.37	5.19	6.08	3.51	3.92	4.33	4.72	5.60	6.08
	1.37	1.54	1.67	1.85	2.02	2.20	2.58	3.26	1.82	1.98	2.18	2.39	2.59	3.06	3.56	2.30	2.55	2.80	3.03	3.57	3.85
13106	2.33	2.62	2.86	3.19	3.53	3.83	4.55	5.92	2.86	3.10	3.47	3.83	4.17	4.94	5.93	3.35	3.75	4.14	4.50	5.35	5.93
	1.28	1.43	1.56	1.72	1.89	2.04	2.40	3.10	1.69	1.83	2.04	2.23	2.42	2.84	3.38	2.14	2.37	2.61	2.83	3.32	3.67
13411	6.61	2.51	2.72	3.05	3.37	3.66	4.34	5.64	2.72	2.97	3.31	3.66	3.98	4.72	5.80	3.21	3.57	3.95	4.30	5.10	5.80
	1.19	1.34	1.45	1.60	1.76	1.91	2.24	2.90	1.57	1.72	1.91	2.08	2.26	2.65	3.23	1.99	2.21	2.43	2.64	3.09	3.50
13716	2.13	2.39	2.61	2.90	3.21	3.50	4.15	5.39	2.61	2.83	3.16	3.50	3.80	4.52	5.67	3.06	3.41	3.77	4.11	4.87	5.67
	1.10	1.25	1.35	1.50	1.64	1.78	2.10	2.69	1.47	1.60	1.78	1.94	2.11	2.48	3.09	1.86	2.07	2.27	2.46	2.88	3.34
14020	2.02	2.29	2.49	2.78	3.07	3.35	3.96	5.16	2.49	2.71	3.02	3.34	3.64	4.31	5.54	2.93	3.26	3.61	3.94	4.67	5.54
	1.03	1.16	1.26	1.41	1.54	1.66	1.97	2.53	1.38	1.50	1.66	1.82	1.97	2.32	2.96	1.75	1.94	2.13	2.30	2.71	3.19
14325	1.94	2.18	2.39	2.67	2.94	3.21	3.80	4.94	2.39	2.59	2.90	3.19	3.48	4.14	5.38	2.80	3.12	3.45	3.76	4.46	5.42
	0.97	1.09	1.19	1.31	1.44	1.56	1.83	2.37	1.29	1.40	1.56	1.70	1.85	2.17	2.80	1.63	1.82	1.98	2.15	2.53	3.06
14630	1.86	2.10	2.29	2.55	2.83	3.07	3.64	4.74	2.29	2.49	2.77	3.06	3.34	3.96	5.15	2.68	3.00	3.31	3.60	4.29	5.32
	0.91	1.02	1.12	1.24	1.35	1.47	1.72	2.23	1.21	1.31	1.45	1.60	1.73	2.04	2.62	1.53	1.70	1.86	2.02	2.37	2.93
14935									2.18	2.39	2.67	2.94	3.21	3.80	4.94	2.58	2.87	3.18	3.45	4.11	5.21
									1.13	1.24	1.37	1.50	1.63	1.91	2.46	1.44	1.60	1.75	1.89	2.23	2.81
15240									2.10	2.29	2.55	2.83	3.07	3.64	4.74	2.48	2.75	3.05	3.32	3.94	5.10
									1.06	1.16	1.29	1.41	1.53	1.80	2.32	1.35	1.50	1.64	1.79	2.10	2.69
15544									2.02	2.20	2.45	2.71	2.96	3.51	4.56	2.37	2.65	2.93	3.19	3.79	4.93
									1.00	1.09	1.21	1.32	1.44	1.69	2.18	1.28	1.41	1.54	1.67	1.98	2.55
15849									1.94	2.11	2.36	2.61	2.84	3.37	4.39	2.29	2.55	2.81	3.06	3.64	4.74
									0.94	1.03	1.15	1.25	1.35	1.60	2.07	1.21	1.34	1.45	1.59	1.86	2.40
16154																2.20	2.45	2.71	2.96	3.50	4.56
																1.13	1.26	1.38	1.50	1.76	2.27
16459																2.11	2.36	2.61	2.84	3.38	4.39
																1.07	1.19	1.29	1.41	1.66	2.14
16764																2.04	2.27	2.52	2.74	3.25	4.23
																1.02	1.12	1.24	1.34	1.57	2.02
17068																1.97	2.20	2.42	2.64	3.13	4.08
																0.96	1.06	1.16	1.26	1.48	1.92

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STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, K-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	30K7	30K8	30K9	30K10	30K11	30K12
Depth (mm)	762	762	762	762	762	762
Approx Mass (kg/m)	18.3	19.6	19.9	22.3	24.4	26.2
Approx Mass (kN/m)	0.18	0.19	0.20	0.22	0.24	0.26
Span (mm) ↓						
9144	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92
9448	7.79 7.41	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58
9753	7.31 6.72	8.01 7.29	8.01 7.29	8.01 7.29	8.01 7.29	8.01 7.29
10058	6.87 6.12	7.58 6.71	7.76 6.82	7.76 6.82	7.76 6.82	7.76 6.82
10363	6.46 5.60	7.15 6.12	7.53 6.43	7.53 6.43	7.53 6.43	7.53 6.43
10668	6.10 5.12	6.74 5.60	7.31 6.05	7.31 6.05	7.31 6.05	7.31 6.05
10972	5.76 4.71	6.36 5.15	6.93 5.58	7.10 5.72	7.10 5.72	7.10 5.72
11277	5.44 4.33	6.02 4.74	6.55 5.13	6.91 5.45	6.91 5.45	6.91 5.45
11582	5.16 3.99	5.70 4.37	6.21 4.74	6.72 5.15	6.72 5.15	6.72 5.15
11887	4.90 3.69	5.41 4.04	5.89 4.37	6.55 4.85	6.55 4.85	6.55 4.85
* 12192	4.65 3.41	5.15 3.73	5.60 4.05	6.39 4.59	6.39 4.59	6.39 4.59
12496	4.42 3.16	4.88 3.47	5.32 3.76	6.23 4.37	6.23 4.37	6.23 4.37
12801	4.21 2.94	4.67 3.22	5.07 3.50	6.02 4.11	6.08 4.14	6.08 4.14
13106	4.02 2.74	4.45 3.00	4.84 3.25	5.74 3.83	5.93 3.94	5.93 3.94
13411	3.83 2.56	4.24 2.80	4.62 3.03	5.48 3.57	5.80 3.76	5.80 3.76
13716	3.66 2.39	4.05 2.61	4.42 2.84	5.23 3.34	5.67 3.59	5.67 3.59
14020	3.51 2.23	3.88 2.45	4.23 2.65	5.02 3.12	5.54 3.44	5.54 3.44
14325	3.35 2.10	3.72 2.29	4.04 2.49	4.80 2.93	5.42 3.29	5.42 3.29
14630	3.22 1.97	3.56 2.15	3.88 2.33	4.59 2.74	5.28 3.13	5.32 3.15
14935	3.09 1.85	3.41 2.02	3.72 2.18	4.42 2.58	5.06 2.94	5.21 3.02
15240	2.96 1.73	3.28 1.89	3.57 2.05	4.24 2.42	4.85 2.77	5.12 2.90
15544	2.84 1.63	3.15 1.79	3.42 1.94	4.07 2.29	4.67 2.61	5.00 2.80
15849	2.74 1.54	3.03 1.69	3.29 1.83	3.91 2.15	4.49 2.46	4.90 2.68
16154	2.64 1.45	2.91 1.59	3.18 1.73	3.76 2.04	4.31 2.32	4.81 2.58
16459	2.53 1.37	2.80 1.50	3.05 1.63	3.63 1.92	4.15 2.18	4.72 2.48
16764	2.45 1.29	2.69 1.43	2.94 1.54	3.50 1.82	4.01 2.07	4.55 2.34
17068	2.36 1.22	2.61 1.34	2.84 1.45	3.37 1.72	3.86 1.97	4.39 2.23
17373	2.27 1.16	2.52 1.28	2.74 1.38	3.25 1.63	3.73 1.86	4.23 2.11
17678	2.20 1.10	2.43 1.21	2.64 1.31	3.13 1.54	3.60 1.76	4.08 1.99
17983	2.13 1.05	2.34 1.15	2.55 1.25	3.03 1.47	3.48 1.67	3.95 1.89
18288	2.05 1.00	2.27 1.09	2.46 1.18	2.93 1.40	3.37 1.59	3.82 1.80

Adopted by the Steel Joist Institute November 4, 1985 - Revised to May 2, 1994 - Effective September 1, 1994

SECTION 1. SCOPE

These specifications cover the design, manufacture and use of Open Web Steel Joists, **K-**Series.

SECTION 2. DEFINITION

The term "Open Web Steel Joists **K-**Series," as used herein, refers to open web, parallel chord, load-carrying members suitable for the direct support of floors and roof decks in buildings, utilizing hot-rolled or cold-formed steel, including cold-formed steel whose yield strength* has been attained by cold working. **K-**Series Joists shall be designed in accordance with these specifications to support the uniformly distributed loads given in the Standard Load Tables for Open Web Steel Joists, **K-**Series, attached hereto.

The KCS Joist is a **K-**Series Joist which is provided to address the problem faced by specifying professionals when trying to select joists to support uniform plus concentrated loads or other non uniform loads.

The design of chord sections for K-Series Joists shall be based on a yield strength of 50 ksi (345 MPa). The design of web sections for K-Series Joists shall be based on a yield strength of either 36 ksi (250 MPa) or 50 ksi (345 MPa). Steel used for K-Series Joists chord or web sections shall have a minimum yield strength determined in accordance with one of the procedures specified in Section 3.2 which is equal to the yield strength assumed in the design.

* The term "Yield Strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13 - "Yield Strength," or paragraph 12 - "Yield Point," of ASTM Standard A370, "Mechanical Testing of Steel Products," or as specified in Section 3.2 of this Specification.

SECTION 3. MATERIALS

3.1 STEEL

The steel used in the manufacture of chord and web sections shall conform to one of the following ASTM Specifications of latest adoption:

Structural Steel, ASTM A36/A36M.

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

High-Strength Carbon-Manganese Steel of Structural Quality ASTM A529/A529M, Grade 50.

Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality, ASTM A570/A570M.

High-Strength, Low-Alloy Columbium-Vanadium Steels of Structural Quality, ASTM A572/A572M, Grade 50.

High-Strength, Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (102mm) thick, ASTM A588/A588M.

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

Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, Columbium and/or Vanadium, ASTM A607, Grade 50.

Steel, Cold-Rolled Sheet, Carbon Structural, ASTM A611, Grade D.

or shall be of suitable quality ordered or produced to other than the listed specifications, provided that such material in the state used for final assembly and manufacture is weldable and is proved by tests performed by the producer or manufacturer to have the properties specified in Section 3.2.

3.2 MECHANICAL PROPERTIES

The yield strength used as a basis for the design stresses prescribed in Section 4 shall be either 36 ksi (250 MPa) or 50 ksi (345 MPa). 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 material, the mechanical properties of which conform to the requirements of one of the listed specifications, test specimens and procedure shall conform to those of such specifications and to ASTM A370.

In the case of material, the mechanical properties of which do not conform to the requirements of one of the listed specifications, the test specimens and procedures shall conform to the applicable requirements of ASTM A370, and the specimens shall exhibit a yield strength equal to or exceeding the design yield strength and an elongation of not less than (a) 20 percent in 2 inches (51 mm) for sheet and strip, or (b) 18 percent in 8 inches (203 mm) for plates, shapes and bars with adjustments for thickness for plates, shapes

and bars as prescribed in ASTM A36/A36M, A242/A242M, A529/A529M, A572/A572M, A588/A588M, whichever specification is applicable on the basis of design yield strength.

The number of tests shall be as prescribed in ASTM A6 for plates, shapes, and bars; and ASTM A570, A570M, A606, A607, and A611 for sheet and strip.

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 Section 3.1.1 and 6.3 of the AISI Specifications for the Design of Cold Formed Steel Structural Members and shall indicate compliance with these provisions and with the following additional requirements:

(a) The yield strength measured in the tests 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 6 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 PAINT

The standard shop paint is a primer coat intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating.

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

(a) Steel Structures Painting Council Specification 15-68T, Type 1 (red oxide).

(b) Federal Specification TT-P-636 (red oxide).

(c) Or, shall be a shop paint which meets the minimum performance requirements of one of the above listed specifications.

SECTION 4. DESIGN AND MANUFACTURE

4.1 METHOD

Joists shall be designed in accordance with these specifications as simply supported, uniformly loaded trusses supporting a floor or roof deck so constructed as to brace the top chord of the joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following specifications of latest adoption:

(a) American Institute of Steel Construction Specification for Design, Fabrication and Erection of Structural Steel for Buildings (Allowable Stress Design), where the material used consists of plates, shapes or bars.

(b) American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members, for members which are formed from sheet or strip material.

4.2 UNIT STRESSES

Joists shall have their components so proportioned that the unit stresses in kips per square inch (Mega Pascal) shall not exceed the following, where F_y is the yield strength defined in Section 3.2:

(a) Tension:

Chords
F_y = 50 ksi (345 MPa) . . . . F_t = 30 ksi (207 MPa)

Webs
F_y = 50 ksi (345 MPa) . . . . F_t = 30 ksi (207 MPa)
F_y = 36 ksi (250 MPa) . . . . F_t = 22 ksi (152 MPa)

(b) Compression
For members with l / r less than C_c:

$$F_a = \frac{\left[1 - \frac{(l/r)^2}{2C_c^2}\right] QF_y}{\frac{5}{3} + \frac{3}{8}\left(\frac{l/r}{C_c}\right) - \frac{1}{8}\left(\frac{l/r}{C_c}\right)^3}$$

$$\text{where } C_c = \sqrt{\frac{2\pi^2 E}{QF_y}} \text{ and}$$

where Q is a form factor equal to unity except when the width-thickness ratio of one or more elements of the profile exceeds the limits specified in the AISC Specifications, Section B5 (Allowable Stress Design) for hot-rolled sections, and in the AISI Specifications, Section 3, for cold formed sections.

For members with l/r greater than C_c:

$$F_a = \frac{12\pi^2 E}{23(l/r)^2}$$

In the above formulas, l is taken as the distance between panel points for the chord members and the unbraced length clear of attachments for web members, and r is the corresponding least radius of gyration of the member or any component thereof. E is equal to 29,000 ksi (200,000 MPa).

(c) Bending:

For chords

F_y = 50 ksi (345 MPa) . . . . . F_b = 30 ksi (207MPa)

For web members other than solid rounds

F_y = 50 ksi (345MPa). . . . . F_b = 30 ksi (207MPa)

F_y = 36 ksi (250MPa). . . . . F_b = 22 ksi (152MPa)

For web members of solid round cross-section

F_y = 50 ksi (345MPa). . . . . F_b = 45 ksi (310MPa)

F_y = 36 ksi (250MPa). . . . . F_b = 32 ksi (221MPa)

Forbearing plates

F_y = 50 ksi (345MPa). . . . . F_b = 37 ksi (255MPa)

F_y = 36 ksi (250MPa). . . . . F_b = 27 ksi (186MPa)

4.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratio, l/r, where l is as used in Section 4.2 (b) and r is the corresponding least radius of gyration, shall not exceed the following:

Top chord interior panels.	90
Top chord end panels	120
Compression members other than top chord .	200
Tension members	240

If moment-resistant weld groups are not used at the ends of a crimped, first primary compression web member, then 1.2 l/rx must be used. Where r_x = member radius of gyration in the plane of the joist.

4.4 MEMBERS

(a) Chords

The bottom chord shall be designed as an axially loaded tension member.

The top chord shall be designed for only axial compressive stress when the panel length, l, does not exceed 24 inches (609 mm). When the panel length exceeds 24 inches (609 mm), the top chord shall be designed as a continuous member subject to combined axial and bending stresses and shall be so proportioned that

$f_a + f_b \leq 0.6\ F_y$, at the panel point; and

$$\frac{f_a}{F_a} + \frac{C_m f_b}{\left(1 - \frac{f_a}{F'_e}\right) Q F_b} < 1.0, \text{ at mid-panel;}$$

in which

$C_m = 1\text{-}0.3 f_a/F'_e$ for end panels

$C_m = 1\text{-}0.4 f_a/F'_e$ for interior panels

f_a = Computed axial unit compressive stress

f_b = Computed bending unit compressive stress at the point under consideration

F_a = Permissible axial unit compressive stress based on l/r as defined in Section 4.2 (b).

f_b = Permissible bending unit stress

F_y = Specified minimum yield strength

$$F'_e = \frac{12\pi^2 E}{23\,(l/r_x)^2}$$

where l is the panel length as defined in Section 4.2 (b) and r_x is the radius of gyration about the axis of bending.

Q = Form factor as defined in Section 4.2(b).

In order to insure lateral stability during erection, the radius of gyration of the top chord about its vertical axis shall be not less than l/145 where l is the spacing in inches (millimeters) between lines of bridging as specified in Section. 5.4(c).

The top chord shall be considered as stayed laterally by the floor slab or roof deck when attachments are in accordance with the requirements of Section 5.8(e) of these specifications.

(b) Web

The vertical shears to be used in the design of the web members shall be determined from full uniform loading, but such vertical shears shall be not less than 25% of the end reaction. Due consideration shall be given to the effect of eccentricity. The effect of combined axial compression and bending may be investigated using the provisions of Section 4.4(a), letting C_m = 0.4 when bending due to eccentricity produces reversed curvature.

Interior vertical web members used in modified Warren type web systems shall be designed to resist the gravity loads supported by the member plus 1/2 of 1.0 percent of the top chord axial force.

(c) Extended Ends

Extended top chords or full depth cantilever ends require the special attention of the specifying professional.

The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

4.5 CONNECTIONS

(a) Methods

Joist connections and splices shall be made by attaching the members to one another by arc or resistance welding or other approved method.

1) Welded Connections
   a) Selected welds shall be inspected visually by the manufacturer. Prior to this inspection, weld slag shall be removed.
   b) Cracks are not acceptable and shall be repaired.
   c) Thorough fusion shall exist between weld and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.

d) Unfilled weld craters shall not be included in the design length of the weld.
e) Undercut shall not exceed 1/16 inch (2mm) for welds oriented parallel to the principal stress.
f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 mm) in any 1 inch (25mm) of design weld length.
g) Weld spatter that does not interfere with paint coverage is acceptable.

2) Welding Program
Manufacturers shall have a program for establishing weld procedures and operator qualification, and for weld sampling & testing. (See Technical Digest #8 - Welding of Open Web Steel Joists).

3) Weld Inspection by Outside Agencies (See Section 5.12 of these specifications) The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 4.5 (a) 1) above. Ultrasonic, X-Ray, and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

(b) Strength

Joint connections shall be capable of withstanding forces due to an ultimate load equal to at least two times the design load shown in the applicable Standard Load Table.

(c) Splices

Splices may occur at any point in chord or web members. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term “member” shall be defined as all component parts comprising the chord or web, at the point of splice.

(d) Eccentricity

Members connected at a joint shall have their centroidal axes meet at a point if practical. Otherwise, due consideration shall be given to the effect of eccentricity. In no case shall eccentricity of any web member at a joint exceed 3/4 of the over-all dimension, measured in the plane of the web, of the largest member connected.The eccentricity of any web member 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 axes of the web members forming the joint. Ends of joists shall be proportioned to resist bending produced by eccentricity at the support.

4.6 VERIFICATION OF DESIGN AND MANUFACTURE

(a) Design Calculations

Companies manufacturing **K**-Series Joists shall submit design data to the Steel Joist Institute (or an independent agency approved by the Steel Joist Institute) for verification of compliance with the SJI Specifications. Design Data shall be submitted in detail and in the format specified by the Institute.

(b) Tests of Chord and Web Members

Each manufacturer shall, at the time of design review by the Steel Joist Institute or other independent agency, verify by tests that his design, in accordance with Sections 4.1 through 4.5 of this specification, will provide a minimum factor of safety of 1.65 on the theoretical design capacity 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 on full sections.

(c) Tests of Joints and Connections

Each manufacturer shall verify by shear tests on representative joints of typical joists that connections will meet the provision of Section 4.5(b). Chord and web members may be reinforced for such tests.

(d) In-Plant Inspections

Each manufacturer shall verify his ability to manufacture **K**-Series Joists 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 are not a guaranty of the quality of any specific joists or Joist Girders; this responsibility lies fully and solely with the individual manufacturer.

4.7 CAMBER

Camber is optional with the manufacturer but, when provided, recommended approximate camber is as follows:

Top Chord Length	Approximate Camber
20 feet (6096 mm)	1/4 inch (6 mm)
30 feet (9144 mm)	3/8 inch (10 mm)
40 feet (12192 mm)	5/8 inch (16 mm)
50 feet (15240 mm)	1 inch (25 mm)
60 feet (18288 mm)	1 1/2 inches (38 mm)

In no case will joists be manufactured with negative camber.

SECTION 5. APPLICATION

5.1 USAGE

These specifications shall apply to any type of structure where floors and roofs are to be supported directly by steel joists installed as hereinafter specified. Where joists are used other than on simple spans under uniformly distributed loading as prescribed in Section 4.1, they shall be investigated and modified if necessary to limit the unit stresses to those listed in Section 4.2.

CAUTION: If a rigid connection of the bottom chord is to be made to the column or other support, it shall be made only after the application of the dead loads. The joist is then no longer simply supported, and the system must be investigated for continuous frame action by the specifying engineer or architect.

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.

5.2 SPAN

The span of a joist shall not exceed 24 times its depth.

5.3 END SUPPORTS

(a) Masonry and Concrete

K-Series Joists supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical or lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of **K-**Series Joists shall extend a distance of not less than 4 inches (102 mm) over the masonry or concrete support and be anchored to the steel bearing plate. The plate shall be located not more than 1/2 inch (13 mm) from the face of the wall and shall be not less than 6 inches(153 mm) wide perpendicular to the length of the joist. It is to be designed by the specifying professional in compliance with the allowable unit stresses in Section A5.1 (Allowable Stress Design) of the A.I.S.C. Specifications of latest adoption. The steel bearing plate shall be furnished by other than the joist manufacturer.

Where it is deemed necessary to bear less than 4 inches (102 mm) over the masonry or concrete support, special consideration is to be given to the design of the steel bearing plate and the masonry or concrete by the specifying engineer or architect. The joists must bear a minimum of 2 1/2 inches (64 mm) on the steel bearing plate.

(b) Steel

Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying professional in the design of the steel support. The ends of K-Series Joists shall extend a distance of not less than 2 1/2 inches (64 mm) over the steel supports.

5.4 BRIDGING

Bridging is required and shall consist of one of the following types.

(a) Horizontal

Horizontal bridging shall consist of two continuous horizontal steel members, one attached to the top chord and the other attached to the bottom chord. Each attachment to the joists shall be made by welding or mechanical means and shall be capable of resisting a horizontal force of not less than 700 pounds (3114 N).

The ratio of unbraced length to least radius of gyration (l/r) 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. If the bridging member is a round bar, the diameter shall be at least 1/2 inch (13 mm). The bridging member shall be designed for a compressive force of 0.24 times the joist top chord area.

(b) Diagonal

Diagonal bridging shall consist of cross-bracing with 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 bracing members and the connections to the chord of the joists. Connections to the chords of steel joists shall be made by positive mechanical means or by welding.

(c) Quantity

In no case shall the number of rows of bridging be less than shown in the bridging table. Spaces between rows shall be approximately uniform. See Section 5.11 for bridging required for uplift forces.

NUMBER OF ROWS OF BRIDGING**

Refer to the K-Series Load Table and Specification Section 6. for required bolted diagonal bridging.
Distances are Joist Span lengths - See "Definition of Span" page 30.

Section No.*	1 Row	2 Rows	3 Rows	4 Rows	5 Rows
#l	Up thru 16'	Over 16' thru 24'	Over 24' thru 28'		
#2	Up thru 17'	Over 17' thru 25'	Over 25' thru 32'		
#3	Up thru 18'	Over 18' thru 28'	Over 28' thru 38'	Over 38' thru 40'	
#4	Up thru 19'	Over 19' thru 28'	Over 28' thru 38'	Over 38' thru 48'	
#5	Up thru 19'	Over 19' thru 29'	Over 29' thru 39'	Over 39' thru 50'	Over 50' thru 52'
#6	Up thru 19'	Over 19' thru 29'	Over 29' thru 39'	Over 39' thru 51'	Over 51' thru 56'
#7	Up thru 20'	Over 20' thru 33'	Over 33' thru 45'	Over 45' thru 58'	Over 58' thru 60'
#8	Up thru 20'	Over 20' thru 33'	Over 33' thru 45'	Over 45' thru 58'	Over 58' thru 60'
#9	Up thru 20'	Over 20' thru 33'	Over 33' thru 46'	Over 46' thru 59'	Over 59' thru 60'
#10	Up thru 20'	Over 20' thru 37'	Over 37' thru 51'	Over 51' thru 60'	
#11	Up thru 20'	Over 20' thru 38'	Over 38' thru 53'	Over 53' thru 60'	
#12	Up thru 20'	Over 20' thru 39'	Over 39' thru 53'	Over 53' thru 60'	

* Last digit(s) of joist designation shown in Load Table.
** See Section 5.11 for additional bridging required for uplift design.

NUMBER OF ROWS OF BRIDGING**

METRIC Refer to the K-Series Metric Load Table and Specification Section 6. for required bolted diagonal bridging.
Distances are Joist Span lengths – See “Definition of Span” page 30.

Section No.*	One Row	Two Rows	Three Rows	Four Rows	Five Rows
#1	Thru 4877mm	Over 4877mm thru 7315mm	Over 7315mm thru 8534mm		
#2	Thru 5182mm	Over 5182mm thru 7620mm	Over 7620mm thru 9754mm		
#3	Thru 5486mm	Over 5486mm thru 8534mm	Over 8534mm thru 11582mm	Over 11582mm thru 12192mm	
#4	Thru 5791mm	Over 5791mm thru 8534mm	Over 8534mm thru 11582mm	Over 11582mm thru 14630mm	
#5	Thru 5791mm	Over 5791mm thru 8839mm	Over 8839mm thru 11887mm	Over 11887mm thru 15240mm	Over 15240mm thru 15850mm
#6	Thru 5791mm	Over 5791mm thru 8839mm	Over 8839mm thru 11887mm	Over 11887mm thru 15545mm	Over 15545mm thru 17069mm
#7	Thru 6096mm	Over 6096mm thru 10058mm	Over 10058mm thru 13716mm	Over 13716mm thru 17678mm	Over 17678mm thru 18288mm
#8	Thru 6096mm	Over 6096mm thru 10058mm	Over 10058mm thru 13716mm	Over 13716mm thru 17678mm	Over 17678mm thru 18288mm
#9	Thru 6096mm	Over 6096mm thru 10058mm	Over 10058mm thru 14021mm	Over 14021mm thru 17983mm	Over 17983mm thru 18288mm
#10	Thru 6096mm	Over 6096mm thru 11278mm	Over 11278mm thru 15545mm	Over 15545mm thru 18288mm	
#11	Thru 6096mm	Over 6096mm thru 11582mm	Over 11582mm thru 16154mm	Over 16154mm thru 18288mm	
#12	Thru 6096mm	Over 6096mm thru 11887mm	Over 11887mm thru 16154mm	Over 16154mm thru 18288mm	

* Last digit(s) of joist designation shown in Load Table
** See Section 5.11 for additional bridging required for uplift design.

(d) Bottom Chord Bearing Joists

Where bottom chord bearing joists are utilized, there shall be a row of diagonal bridging near the support to provide lateral stability. This bridging shall be installed as the joists are set in place.

5.5 INSTALLATION OF BRIDGING

All bridging and bridging anchors shall be completely installed before construction loads are placed on the joists.

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

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

5.6 END ANCHORAGE

(a) Masonry and Concrete

Ends of **K**-Series Joists resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two ⅛ inch (3 mm) fillet welds 1 inch (25 mm) long, or with two ½ inch (13 mm) bolts, or with the combination of one ½ inch (13 mm) bolt and one ⅛ inch (3 mm) fillet weld 1 inch (25 mm) long.

(b) Steel

Ends of **K**-Series Joists resting on steel supports shall be attached thereto with a minimum of two ⅛ inch (3 mm) fillet welds 1 inch (25 mm) long, or with two ½ inch (13 mm) bolts, or with the combination of one ½ inch (13 mm) bolt and one ⅛ inch (3 mm) fillet weld 1 inch (25 mm) long. In steel frames, where columns are not framed in at least two directions with structural steel members, joists at column lines shall be field bolted at the columns to provide lateral stability during construction.

(c) Uplift

Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces.

5.7 JOIST SPACING

Joists shall be spaced so that the loading on each joist does not exceed the allowable load for the particular joist designation.

5.8 FLOOR AND ROOF DECKS

(a) Material

Floors and roof decks may consist of cast-in-place or pre-cast concrete or gypsum, formed steel, wood, or other suitable material capable of supporting the required load at the specified joist spacing.

(b) Thickness

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

(c) Centering

Centering for cast-in-place slabs may 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.

(d) Bearing

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

(e) Attachments

Each attachment for slab or deck to top chords of joists shall be capable of resisting a lateral force of not less than 300 pounds (1335 N). The spacing shall not exceed 36 inches (914 mm) along the top chord.

(f) Wood Nailers

Where wood nailers are used, such nailers in conjunction with deck or slab shall be attached to the top chords of the joists in conformance with Section 5.8(e).

5.9 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.
1/240 of span for all other cases.

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

* For further reference, refer to Steel Joist Institute Technical Digest #5, “Vibration of Steel Joist-Concrete Slab Floors” and the Institute’s Computer Vibration Program.

5.10 PONDING

Unless a roof surface is provided with sufficient slope towards points of free drainage, or adequate individual drains to prevent the accumulation of rain water, the roof system shall be investigated to assure stability under ponding conditions in accordance with Section K2 of the AISC Specifications (Allowable Stress Design) of latest adoption.*

The ponding investigation shall be performed by the specifying professional.

* For further reference, refer to Steel Joist Institute Technical Digest #3, “Structural Design of Steel Joist Roofs to Resist Ponding Loads”.

5.11 UPLIFT

Where uplift forces due to wind are a design requirement, these forces must be indicated on the contract drawings in terms of net uplift in pounds per square foot (Pascals). When these forces are specified, they must be considered in the design of joists and/or bridging. A single line of **bottom chord** bridging must be provided near the first bottom chord panel points whenever uplift due to wind forces is a design consideration.*

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

5.12 INSPECTION

Joists shall be inspected by the manufacturer before shipment to insure compliance of materials and workmanship with the requirements of these specifications. If the purchaser wishes an inspection of the steel joists by someone other than the manufacturer's own inspectors, he may reserve the right to do so in his "Invitation to Bid" or the accompanying "Job Specifications".

Arrangements shall be made with the manufacturer for such inspection of the joists at the manufacturing shop by the purchaser's inspectors at purchaser's expense.

SECTION 6.*
ERECTION STABILITY AND HANDLING

When it is necessary for the erector to climb on the joists, extreme caution must be exercised since unbridged joists may exhibit some degree of instability under the erector's weight.

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

a) Stability Requirements

1) One end of all joists shall be attached to its support in accordance with Section 5.6 - End Anchorage, ***before allowing the weight of an erector on the joists.***

   When bolted connections are used, the bolts must be snug tightened.

2) Where the joist span is equal to or greater than the span corresponding to the RED shaded area shown in the load table, the row of bridging nearest the mid span of the joist shall be installed as bolted diagonal bridging.

   Hoisting cables shall not be released until this bolted diagonal bridging is completely installed.

3) No loads other than the weight of one erector are allowed on the joist until **all** bridging is completely installed and **all** joist ends are attached.

4) In the case of bottom chord bearing joists, the ends of the joist must be restrained laterally per Section 5.4(d) before releasing the hoisting cables.

5) 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 5.6 End Anchorage.

b) Field Welding

1) All field welding shall be performed in a workman-like manner to insure that the joists are not damaged by such welding.

2) On cold-formed 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.

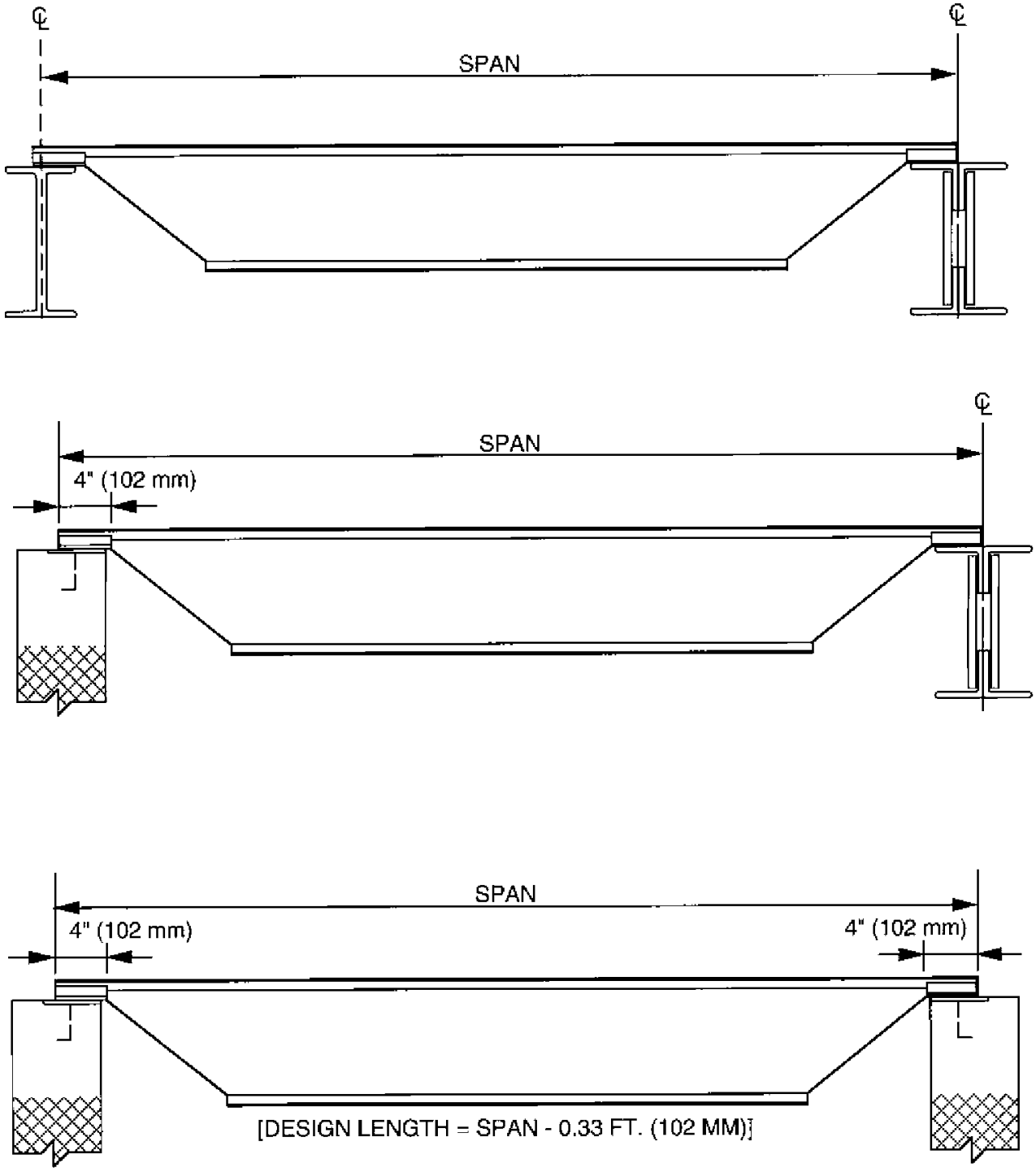
c) Handling

Care shall be exercised at all times to avoid damage to the joists and accessories through careless handling during unloading, storing and erecting.

* For a thorough coverage of this topic, refer to SJI Technical Digest #9, "Handling and Erection of Steel Joists and Joist Girders."

DEFINITION OF SPAN

U.S. CUSTOMARY UNITS
SYSTEME INTERNATIONAL



VS SERIES

VS SERIES are joist substitutes which are intended for use in very short spans (10ft or less) where open web steel joists are impractical. They are commonly specified to span over hallways and short spans in skewed bays.

FABRICATION

- Depth 2.5 in
- Maximum Length 10 ft
- Minimum Length 3 ft
- Contact your local Vulcraft Plant for sloped or pitched seat information.

STANDARD CONFIGURATION**

2.5VS1 Thru 2.5VS2	
2.5VS3 Thru 2.5VS5	or
2.5VS6 Thru 2.5VS7	or

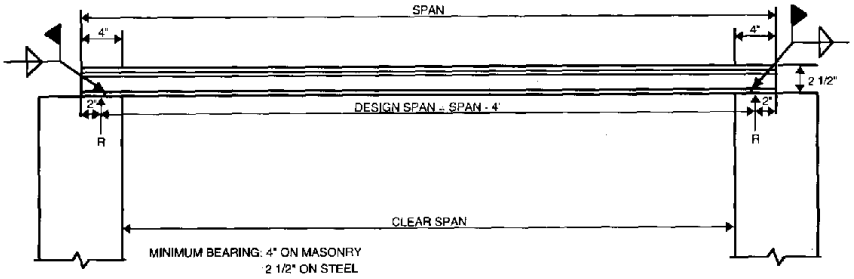
**Configuration may vary from that shown.

LOAD TABLE SPECIFICATIONS

Joist substitutes are fabricated from material conforming to the SJI specifications. F_y = 50 ksi; F_b = 30 ksi. Full lateral support to the compression flange is assumed to be provided by metal deck.

ERECTION STABILITY

Caution must be exercised since joist substitutes exhibit some degree of instability. After erection and before loads of any description are placed on the joist substitutes the ends must be welded to the supports per SJI specs and the metal deck installed and attached to the top flange.

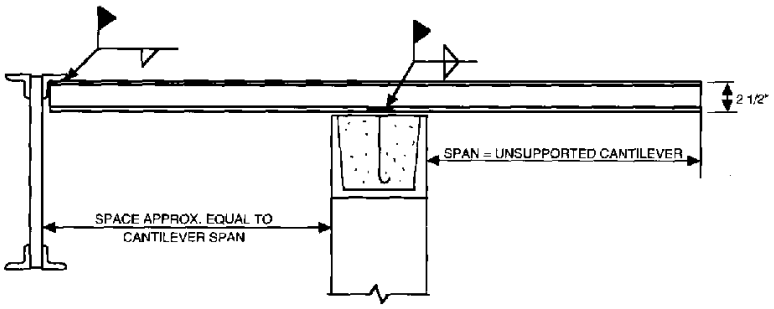


NOTE: VS SERIES NOT U.L. APPROVED.

VS SERIES SIMPLE SPAN LOAD TABLE

VS TYPE	2.5VS1	2.5VS2	2.5VS3	2.5VS4	2.5VS5	2.5VS6	2.5VS7
S IN ^3	0.52	0.62	0.72	0.84	0.97	1.2	1.7
I IN^4	0.65	0.78	.089	1.1	1.2	1.5	2.1
WTlbs/ft	2.5	3.0	3.6	4.2	4.9	6.4	8.2
SPAN ft	**ALLOWABLE UNIFORM LOAD (TOTAL/LIVE) PLF**						
4	550						
5	459/296	550/338	550/380	550/465	550	550	550
6	311/165	374/189	436/212	519/260	550/283	550/354	550/496
7	225/102	270/116	315/131	375/160	435/174	540/218	550/305
8	170/67	204/76	238/86	284/105	329/114	408/143	550/200
9				222/73	257/79	320/99	435/139
10				178/52	207/57	257/71	350/100

The figures shown in red in this load table are the live loads per linear foot which will produce an approximate deflection of 1/360 of the span. Live loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the figures in red by 1.5. In no case shall the total load capacity of the joist substitute be exceeded.



OUTRIGGER DETAIL

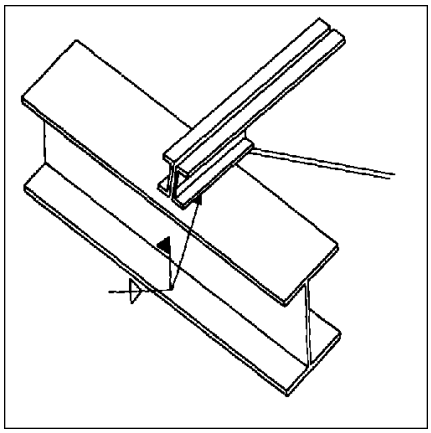
NOTE: VS SERIES NOT U.I. APPROVED.

LOAD TABLE FOR LOOSE OUTRIGGERS

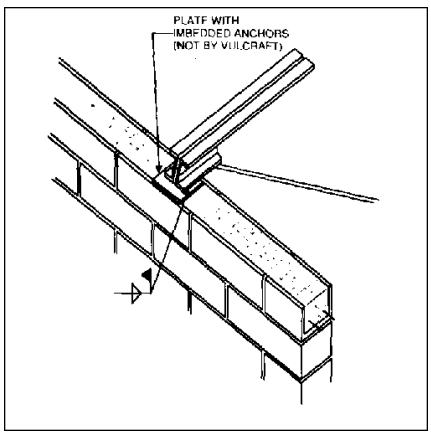
OUTRIGGER TYPE	TOTAL ALLOWABLE LOAD FOR UNSUPPORTED CANTILEVER PLF* SPAN ft-in									
	2'-0	2'-6	3'-0	3'-6	4'-0	4'-6	5'-0	5'-6	6'-0	6'-6
2.5VS1	550	416	289	212	163	128				
2.5VS2	550	499	346	254	195	154	125	103		
2.5VS3	550	550	402	295	226	179	145	120	100	
2.5VS4	550	550	465	341	261	207	167	138	116	
2.5VS5	550	550	537	395	302	239	193	160	134	114
2.5VS6	550	550	550	493	377	298	241	199	168	143
2.5VS7	550	550	550	550	517	409	331	274	230	196

**Serviceability requirements must be checked by the specifying professional.

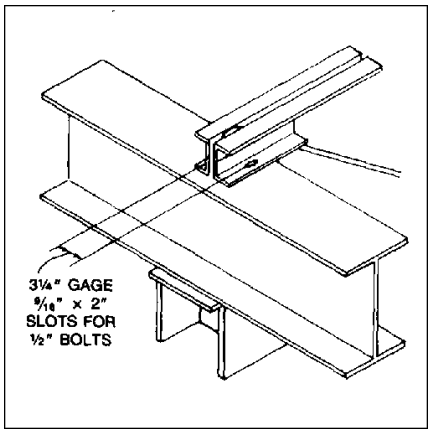
K SERIES OPEN WEB STEEL JOISTS



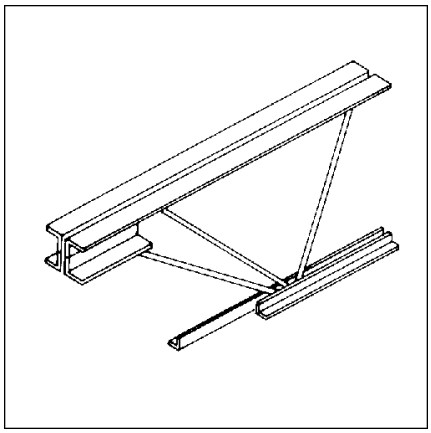
ANCHORAGE TO STEEL
SEE SJI SPECIFICATION 5.3 (b) AND 5.6



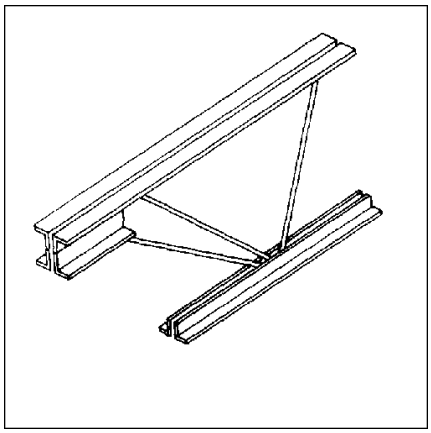
ANCHORAGE TO MASONARY
SEE SJI SPECIFICATION 5.3 (a) AND 5.6



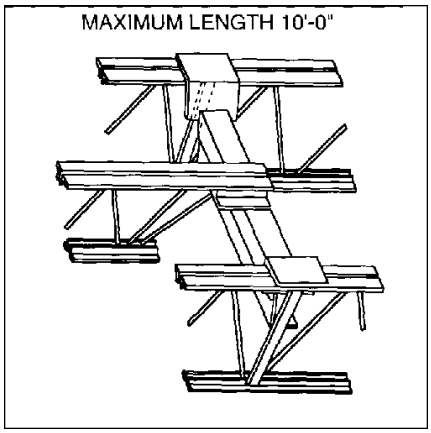
BOLTED CONNECTION*
TYPICALLY REQUIRED AT COLUMNS



CEILING EXTENSION



BOTTOM CHORD STRUT



HEADERS
Note: If header does not bear at a Joist Panel Point add extra web in field as shown.

MAXIMUM DUCT OPENING SIZES (K SERIES)*

JOIST DEPTH	ROUND	SQUARE	RECTANGLE
8 inches	5 inches	4x4 inches	3x8 inches
10 inches	6 inches	5x5 inches	3x8 inches
12 inches	7 inches	6x6 inches	4x9 inches
14 inches	8 inches	6x6 inches	5x9 inches
16 inches	9 inches	7 1/2x 71/2 inches	6X10 inches
18 inches	11 inches	8x8 inches	7x11 inches
20 inches	11 inches	9x9 inches	7x12 inches
22 inches	12 inches	9 1/2 x9 1/2 inches	8x12 inches
24 inches	13 inches	10x10 inches	8x13 inches
26 inches	151/2 inches	12x12 inches	9x18 inches
28 inches	16 inches	13x13 inches	9x18 inches
30 inches	17 inches	14x14 inches	10x18 inches
***FOR LH SERIES CONSULT WITH VULCRAFT**			

SPECIFYING PROFESSIONAL MUST INDICATE ON STRUCTURALDRAWINGS SIZE AND LOCATION OF ANY DUCT THAT IS TO PASS THRU JOIST.

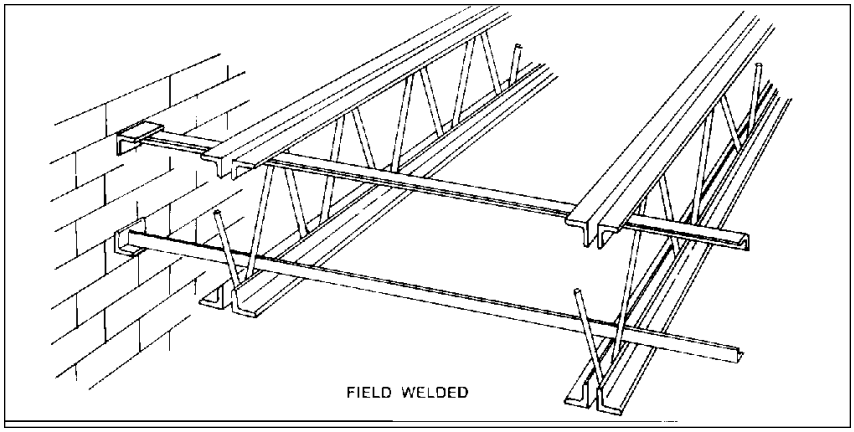
NOTE:

*The Occupational Safety and Health Administration Standards (OSHA), Paragraph 1910. 12 refers to Paragraph 1518.751 of "Construction Standards" which states:

"In steel, where bar joists are utilized, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction."

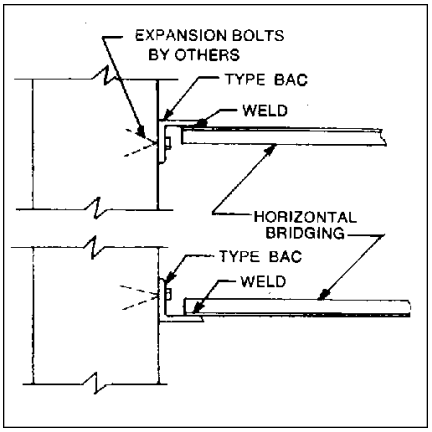
SEE SJI SPECIFICATION - SECTION 6. FOR HANDLING AND ERECTION OF K-SERIES OPEN WEB STEELJOISTS AND SJI TECHNICALDIGEST NO. 9.

K SERIES OPEN WEB STEEL JOISTS

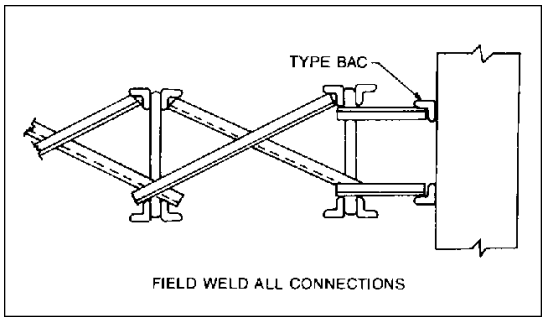


HORIZONTAL BRIDGING
SEE SJI SPECIFICATION 5.5 AND 6.

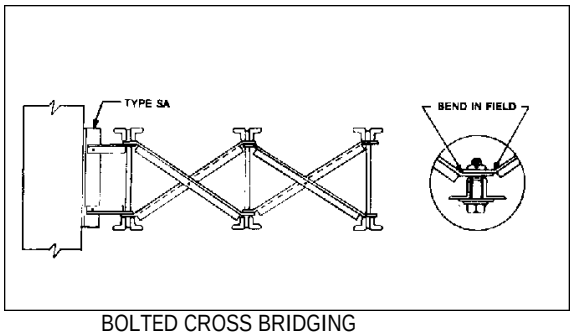
NOTE: DO NOT WELD BRIDGING TO JOIST WEB MEMBERS.
DO NOT HANG ANY MECHANICAL, ELECTRICAL, ETC. FROM BRIDGING.



BRIDGING ANCHORS
SEE SJI SPECIFICATION 5.5 AND 6.

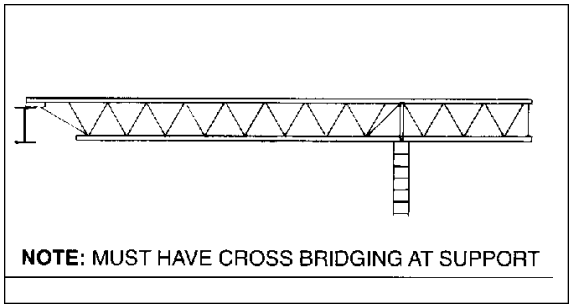


WELDED CROSS BRIDGING
SEE SJI SPECIFICATION 5.5 AND 6.
HORIZONTAL BRIDGING SHALL BE USED IN SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST THE WALL.

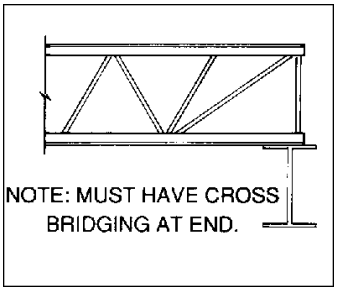


BOLTED CROSS BRIDGING
SEE SJI SPECIFICATION 5.5 AND 6.
USE ONLY FOR ROW NEAREST THE MIDSPAN OF THE JOIST WHEN FOUR OR FIVE ROWS OF BRIDGING ARE REQUIRED. SEE K SERIES SPECIFICATIOS SECTION 5.4 9 (c) AND SECTION 6.0. CROSS BRIDGING IS MORE EXPENSIVE TO INSTALL AND HAS NO ADVANTAGE OVER HORIZONTAL BRIDGING IN TRANSFERRING LOADS OR REDUCING VIBRATION.

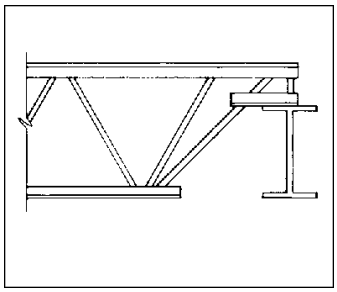
NOTE: IN LIEU OF ABOVE BOLTED CONNECTION JOISTS MAY BE SUPPLIED WITH A CLIP ANGLE FOR BOLTING BRIDGING.



FULL DEPTH CANTILEVER END
SEE SJI SPECIFICATION 5.4 (d) AND 5.5 FOR BRIDGING REQUIREMENTS.



SQUARE END
SEE SJI SPECIFICATION 5.4 (d) AND 5.5 FOR BRIDGING REQUIREMENTS.

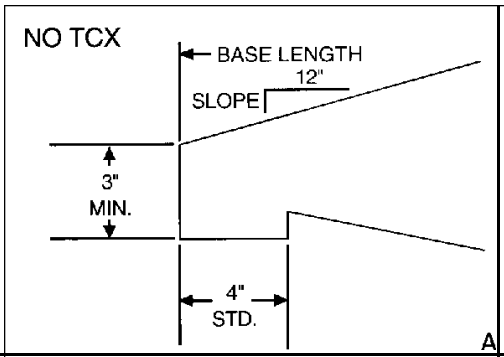


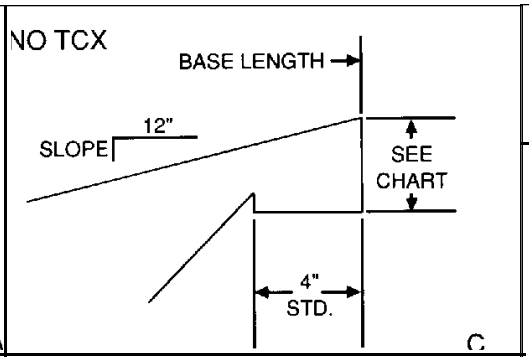
DEEP BEARINGS
CONFIGURATION MAY VARY

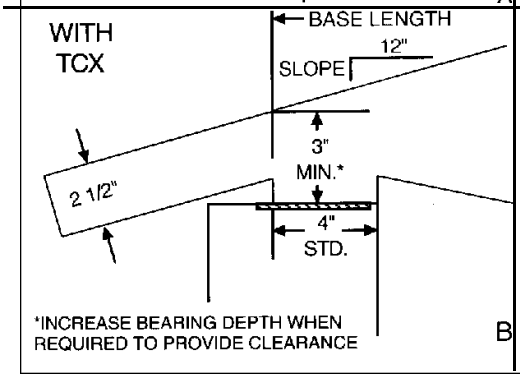
K SERIES OPEN WEB STEEL JOISTS

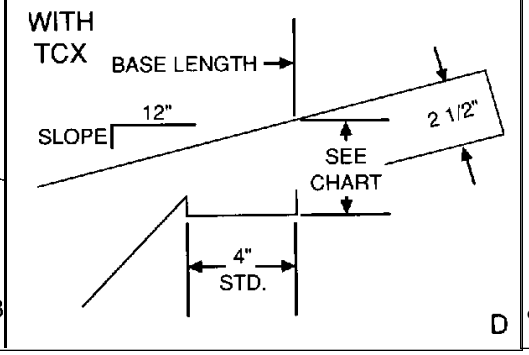
SLOPED SEAT REQUIREMENTS FOR SLOPES 3/8:12 AND GREATER

LOW END **HIGH END**









Slope Rate	High End Recommended Seat Depth
3/8:12	3"
1/2:12	3 1/4"
1:12	3 1/2"
1 1/2:12	3 3/4"
2:12	3 7/8"
2 1/2:12	4"
3:12	4 1/4"
3 1/2:12	4 3/8"
4:12	4 5/8"
4 1/2:12	5:
5 1/2"12	5 1/4"
6:12	5 1/2"
6:12 & OVER	CONTACT VULCRAFT

NOTES:
(1) Depths shown are the minimums required for fabrication of sloped bearing seats. Depths may vary depending on actual bearing conditions.
(2) Contact Vulcraft when required seat slope is greater than 6" in 12".
(3) Clearance must be checked at outer edge of support as shown in detail B. Increase bearing depth as required to permit passage of 2 1/2" deep extension.
(4) If extension depth greater than 2 1/2" is required (see details B and D) increase bearing depths accordingly.
(5) If slope is 1/4:12 or less sloped seats are not required.

BARTLE HALL CONVENTION CENTER

Kansas City, Missouri

Architect-Engineer: HNTB Corp.
General Contractor: Watson General Contractors, Inc.
Steel Fabricator: Havens Steel, Inc.
Steel Erector: Danny's Construction Co., Inc.

BRIDGING REQUIREMENTS FOR K-SERIES JOISTS

Number of Rows of Bridging***
Distances are Span Lengths
(see "Definition of Span" on page 30.)

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN A PLACE BEFORE SLACKENING OF HOISTING LINES.

Section Numbers*	ERECTION STABILITY SPANS (SJI Spec. Section 6) Depth	Span Less Than**	1 Row	2 Rows	3 Rows	4 Rows	5 Rows
1	8 10 12 14	17' 21' 23' 27'	Up thru 16'	Over 16' thru 24'	Over 24' thru 28'		
2	16	29'	Up thru 17'	Over 17' thru 25'	Over25'thru32'		
3	12 14 16 18 20	25' 29' 30' 31' 32'	Up thru 18'	Over 18' thru 28'	Over 28' thru 38'	Over 38' thru 40'	
4	14 16 18 20 22 24	29' 32' 32' 34' 34' 36'	Up thru 19'	Over 19' thru 28'	Over 28' thru 38'	Over 38' thru 48'	
5	12 16 18 20 22 24 26	25' 32' 33' 34' 35' 38' 38'	Up thru 19'	Over 19' thru 29'	Over 29' thru 39'	Over 39' thru 50'	Over 50' thru 52'
6	14 16 18 20 22 24 26 28	29' 33' 35' 36' 36' 39' 39' 40'	Up thru 19'	Over 19' thru 29'	Over 29' thru 39'	Over 39' thru 51'	Over 51' thru 56'
7	16 18 20 22 24 26 28 30	33' 37' 39' 40' 43' 43' 43' 44'	Up thru 20'	Over 20' thru 33'	Over 33' thru 45'	Over 45' thru 58'	Over 58' thru 60'
8	24 26 28 30	43' 44' 44' 45'	Up thru 20'	Over 20' thru 33'	Over 33' thru 45'	Over 45' thru 58'	Over 58' thru 60'
9	16 18 20 22 24 26 28 30	33' 37' 39' 40' 44' 44' 45' 45'	Up thru 20'	Over 20' thru 33'	Over 33' thru 46'	Over 46' thru 59'	Over 59' thru 60'
10	18 20 22 24 26 28 30	37' 41' 45' 49' 49' 49' 50'	Up thru 20'	Over 20' thru 37'	Over 37' thru 51'	Over 51' thru 60'	
11	22 30	45' 52'	Up thru 20'	Over 20' thru 38'	Over 38' thru 53'	Over 53' thru 60'	
12	24 26 28 30	49' 53' 53' 54'	Up thru 20'	Over 20' thru 39'	Over 39' thru 53'	Over 53' thru 60'	

* Last digit(s) of joist designation.
** For spans **EQUAL TO OR EXCEEDING t**hat shown above, one of the required rows, nearest mid-span, must be bolted diagonal type. Bolted diagonal bridging shall be installed and connected BEFORE releasing the hoisting lines. Refer to Specification Section 6 for handling and erection requirements.
*** See SJI Specifications 5.11 for uplift requirement, page 29.

K-Series Joist
Maximum Joist Spacing for Horizontal Bridging

*Bridging Material Size	Equal Leg Angles					
Section Numbers**	1x7/64 r =.20"	1-1/4x7/64 r =.25"	1-1/2x7/64 r =.30"	1-3/4x7/64 r =.35"	2x1/8 r =.40"	2-1/2x5/32 r =.50"
1 thru 9	5”-0"	6”-3"	7”-6"	8”-7"	10”-0"	12”-6"
10	4”-8"	6”-3"	7”-6"	8”-7"	10”-0"	12”-6"
11 & 12	4”-0"	5”-8"	7”-6"	8”-7"	10”-0"	12”-6"

* Connection to Joist must resist 700 pounds.
** Refer to last digit(s) of Joist Designation.

K, LH & DLH Series Joist
Maximum Joist Spacing for Diagonal Bridging

Bridging Angle Size					
Joist Depth	1x7/64 r =.20"	1-1/4x7/64 r =.25"	1-1/2x7/64 r =.30"	1-3/4x7/64 r =.35"	2x1/8 r =.40"
12	6”-6"	8”-3"	9”-11"	11”-7"	
14	6”-6"	8”-3"	9”-11"	11”-7"	
16	6”-6"	8”-2"	9”-10"	11”-6"	
18	6”-6"	8”-2"	9”-10"	11”-6"	
20	6”-5"	8”-2"	9”-10"	11”-6"	
22	6”-4"	8”-1"	9”-10"	11”-6"	
24	6”-4"	8”-1"	9”-9"	11”-5"	
26	6”-3"	8”-0"	9”-9"	11”-5"	
28	6”-2"	8”-0"	9”-8"	11”-5"	
30	6”-2"	7”-11"	9”-8"	11”-4"	
32	6”-1"	7”-10"	9”-7"	11”-4"	13”-0"
36		7”-9"	9”-6"	11”-3"	12”-11"
40		7”-7"	9”-5"	11”-2"	12”-10"
44		7”-5"	9”-3"	11”-0"	12”-9"
48		7”-3"	9”-2"	10”-11"	12”-8"
52			9”-0"	10”-9"	12”-7"
56			8”-10"	10”-8"	12”-5"
60			8”-7"	10”-6"	12”-4"
64			8”-5"	10”-4"	12”-2"
68			8”-2"	10”-2"	12”-0"
72			8”-0"	10”-0"	11”-10"

LH-Series Joist*
Maximum Joist Spacing for Horizontal Bridging

Bridging Angle Size						
Section Numbers**	1x7/64 r =.20"	1-1/4x7/64 r =.25"	1-1/2x7/64 r =.30"	1-3/4x7/64 r =.35"	2x1/8 r =.40"	2-1/2x5/32 r =.50"
02,03,04	4”-7"	6”-3"	7”-6"	8”-9"	10”-0"	12”-4"
05,06	4”-1"	5”-9"	7”-6"	8”-9"	10”-0"	12”-4"
07,08	3”-9"	5”-1"	6”-8"	8”-6"	10”-0"	12”-4"
09,10		4”-6"	6”-0"	7”-8"	10”-0"	12”-4"
11,12		4”-1"	5”-5"	6”-10"	8”-11"	12”-4"
13,14		3”-9"	4”-11"	6”-3"	8”-2"	12”-4"
15,16			4”-3"	5”-5"	7”-1"	11”-0"
17			4”-0"	5”-1"	6”-8"	10”-5"

* Connection to Joist must resist 700 pounds.
** Refer to last digit(s) of Joist Designation.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN A PLACE BEFORE SLACKENING OF HOISTING LINES.

Bridging Requirements for LH-Series and DLH-Series Joists***

Erection Stability Spans (SJI Spec. Section 105)		
Depth	Section Number	Spans less than **
18	02	33”
	03 thru 09	37”
20	02	33”
	03	38”
	04 thru 10	41”
24	03	35”
	04	39”
	05	40”
	06	45”
	07 thru 11	49”
28	05	42”
	06	46”
	07 thru 08	54”
	09 thru 13	57”
32	06 thru 07	47”
	08	55”
	09 thru 15	60”
36	07 thru 08	47”
	09	57”
	10 thru 15	60”
40	08 thru 16	47”
44	09 thru 17	52”
48	10 thru 17	56”

* Last two digits of joist designation.

** NOTE: Erection Stability Span = Clear span + 8". (See SJI Specifications Section 104.2) For spans EQUAL TO OR EXCEEDING that shown, one of the required rows, nearest mid-span, must be bolted diagonal type. For spans through 60 feet, the bolted diagonal bridging must be installed 60 BEFORE releasing the hoisting lines. FOR SPANS OVER 60 FEET, ALL BRIDGING ROWS MUST BE BOLTED DIAGONAL TYPE. Spans over 60 feet through 100 feet require two rows of bolted diagonal bridging to be installed, at one-third points, BEFORE releasing the hoisting lines. Spans over 100 feet require ALL rows of bolted diagonal bridging to be installed BEFORE releasing the hoisting lines.

*** All DLH-Series JOISTS REQUIRE ALL BRIDING ROWS TO BE BOLTED DIAGONALTYPE.

Bridging Spacing

LH-DLH Sect. Number*	Minimum Bolt Diameter**	Max.Spacing of Bridging Lines
02,03,04	3/8"	11”-0"
05,06	3/8"	12”-0"
07,08	3/8"	13”-0"
09,10	3/8"	14”-0"
11,12	3/8"	16”-0"
13,14	1/2"	16”-0"
15,16,17	1/2"	21”-0"
18,19	5/8"	26”-0"

* Last two digits of joist designation.

** Size required due to requirements as indicated for bolted diagonal bridging connections per SJI Specifications Section 104.5(e). Minimum A307 Bolt required for connection.

K SERIES OPEN WEB STEEL JOISTS
TOP CHORD EXTENSIONS AND EXTENDED ENDS

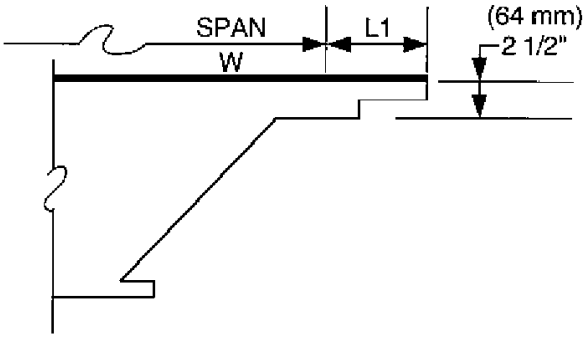
Joint extentions are commonly furnished to support a variety of overhang conditions. The two types are pictured below. The first is the **TOP CHORD EXTENSION** or **"S" TYPE**, which has only the top chord angles extended. The second is the **EXTENDED END** or **"R" TYPE** in which the standard 2½" (64 mm) end bearing depth is maintained over the entire length of the extension. The "S" TYPE extension is so designated because of its **S**imple nature whereas the "R" TYPE involves **R**einforcing the top chord angles. The specifying professional should be aware that an "S" TYPE is more economical and should be specified whenever possible.

The following load tables for K-Series TOP CHORD EXTENSIONS and EXTENDED ENDS have been developed as an aid to the specifying professional. The black number in the tables is the maximum allowable uniform load in pounds per linear foot (Newton/Meter). The red number is the uniform load which will produce an approximate deflection of L1/240, where L1 is the length of the extension. The load tables are applicable for uniform loads only. If there are concentrated loads and/or non-uniform loads, a loading diagram must be provided by the specifying professional on the structural drawings. In cases where it is not possible to meet specific job requirements with a 2-½" (64 mm) deep "R" type extension (refer to "S" and "I" values in the Extended End Load Table), the depth of the extension must be increased to provide greater load-carrying capacity. If the loading diagram for any condition is not shown, the joist manufacturer will design the extension to support the uniform load indicated in the K-Series Joist Load Table for the span of the joist.

When TOP CHORD EXTENSIONS or EXTENDED ENDS are specified, the allowable deflection and the bracing requirements must be considered by the specifying professional.

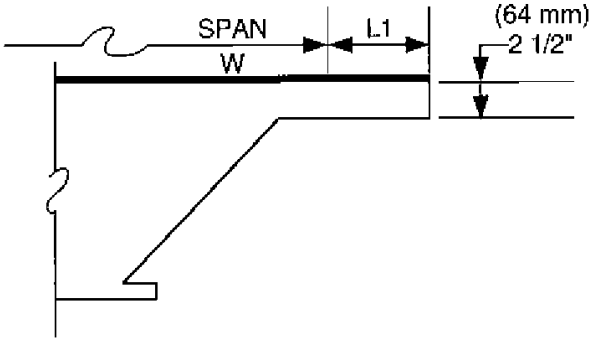
It should be noted that an "R" TYPE extension must be specified when building details dictate a 2-½" (64 mm) depth at the end of the extension. In the absence of specific instructions, the joist manufacturer may provide either type.

TOP CHORD EXTENSION



TOP CHORD EXTENSION - "S" TYPE
(only top chord angles extended)

EXTENDED ROD



EXTENDED END - "R" TYPE
(standard 2 1/2" (64 mm) end depth extended)

W = Uniform Load
L1 = Length of Extension beyond standard bearing
SPAN = See page 30 for definition of Span

TOP CHORD EXTENSION LOAD TABLE (S TYPE)

TYPE	S in3	I in4	LENGTH (L1)								
			0"6	1"0	1"6	2"0	2"6	3"0	3"6	4"0	4"6
S1	0.099	0.088	550 550	363 363	178 127	105 58					
S2	0.115	0.138	550 550	422 422	207 200	122 91					
S3	0.139	0.159	550 550	510 510	250 230	148 104					
S4	0.160	0.172	550 550	550 550	288 249	170 113	112 60				
S5	0.176	0.188	550 550	550 550	316 272	187 124	123 66				
S6	0.192	0.204	550 550	550 550	345 295	204 134	135 72				
S7	0.241	0.306	550 550	550 550	433 433	256 201	169 108	120 64			
S8	0.266	0.332	550 550	550 550	478 478	283 219	187 117	132 70			
S9	0.288	0.358	550 550	550 550	518 518	306 236	202 126	143 75	107 48		
S10	0.380	0.544	550 550	550 550	550 550	404 359	267 192	189 115	141 74	109 50	
S11	0.438	0.622	550 550	550 550	550 550	466 410	307 220	218 131	162 84	126 57	100 41
S12	0.494	0.696	550 550	550 550	550 550	526 459	347 246	246 147	183 94	142 64	113 45

TOP CHORD EXTENSION LOAD TABLE (R TYPE)

TYPE	S	I	LENGTH (L1)											
	(in3)	(in4)	0"6	1"0	1"6	2"0	2"6	3"0	3"6	4"0	4"6	5"0	5"6	6"0
R1	0.895	1.119	550 550	550 550	550 550	550 550	550 396	446 236	332 152	257 103	205 73	167 54	139 41	17 32
R2	0.839	1.157	550 550	550 550	550 550	550 550	550 409	418 244	312 157	241 107	192 76	157 56	130 42	110 33
R3	0.998	1.299	550 550	550 550	550 550	550 550	550 459	497 271	371 176	287 120	229 85	186 63	155 47	131 37
R4	1.147	1.433	550 550	550 550	550 550	550 550	550 507	550 302	426 195	330 132	263 94	214 69	178 52	150 41
R5	1.249	1.561	550 550	550 550	550 550	550 550	550 550	550 329	464 212	359 144	286 103	233 75	194 57	164 44
R6	1.352	1.690	550 550	550 550	550 550	550 550	550 550	550 357	502 230	389 156	310 111	253 82	210 62	177 48
R7	1.422	1.802	550 550	550 550	550 550	550 550	550 550	550 380	528 245	409 167	326 119	266 87	221 66	186 51
R8	1.558	1.948	550 550	550 550	550 550	550 550	550 550	550 411	550 265	448 180	357 128	291 94	242 71	204 55
R9	1.673	2.091	550 550	550 550	550 550	550 550	550 550	550 442	550 284	481 194	384 138	313 101	260 77	219 59
R10	1.931	2.414	550 550	550 550	550 550	550 550	550 550	550 510	550 328	550 224	443 159	361 117	300 89	253 69
R11	2.183	2.729	550 550	550 550	550 550	550 550	550 550	550 550	550 371	550 253	501 180	408 132	339 100	287 78
R12	2.413	3.016	550 550	550 550	550 550	550 550	550 550	550 550	550 410	550 279	550 199	451 146	375 111	317 86

TOP CHORD EXTENSION LOAD TABLE (S TYPE)

kiloNewtons per Meter (kN/m)

TYPE	S	I	LENGTH (L1) In Millimeters								
	mm3	mm4	152	305	457	610	762	914	1067	1219	1372
S1	1622	36628	8.02 8.02	5.29 5.42	2.59 1.85	1.53 .84					
S2	1884	57340	8.02 8.02	6.15 8.02	3.02 2.91	1.78 1.32					
S3	2278	66181	8.02 8.02	7.44 8.02	3.64 3.35	2.15 1.51					
S4	2622	71592	8.02 8.02	8.02 8.02	4.20 3.63	2.48 1.64	1.63 .87				
S5	2884	78251	8.02 8.02	8.02 8.02	4.61 3.96	2.72 1.80	1.79 .96				
S6	3146	84911	8.02 8.02	8.02 8.02	5.03 4.30	2.97 1.95	1.97 1.05				
S7	3949	127367	8.02 8.02	8.02 8.02	6.31 6.46	3.73 2.93	2.46 1.57	1.75 .93			
S8	4359	138188	8.02 8.02	8.02 8.02	6.97 7.01	4.13 3.19	2.72 1.70	1.92 1.02			
S9	4719	149010	8.02 8.02	8.02 8.02	7.55 7.57	4.46 3.44	2.94 1.83	2.08 1.09	1.56 .70		
S10	6227	226430	8.02 8.02	8.02 8.02	8.02 8.02	5.89 5.23	3.89 2.80	2.75 1.67	2.05 1.07	1.59 .72	
S11	7177	258895	8.02 8.02	8.02 8.02	8.02 8.02	6.80 5.98	4.48 3.21	3.18 1.91	2.36 1.22	1.83 .83	1.45 .59
S12	8095	289697	8.02 8.02	8.02 8.02	8.02 8.02	7.67 6.69	5.06 3.59	3.59 2.14	2.67 1.37	2.07 .93	1.64 .65

TOP CHORD EXTENSION LOAD TABLE (R TYPE)

kiloNewtons per Meter (kN/m)

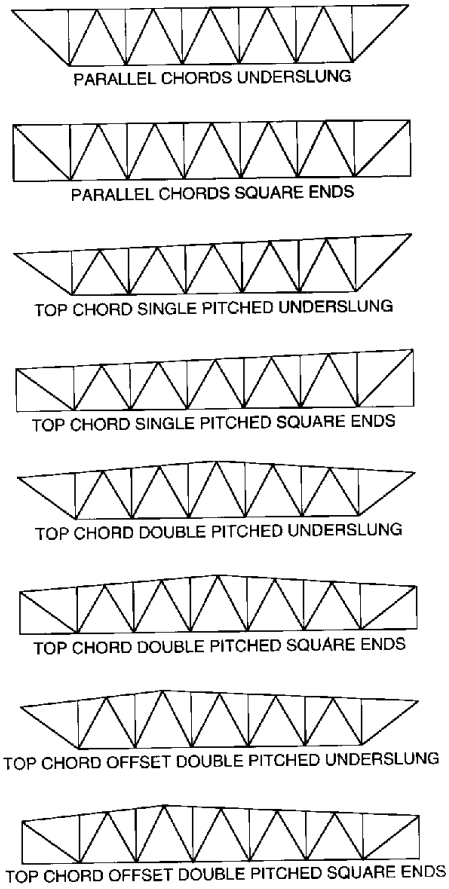
TYPE	S	I	LENGTH (L1) IN MILLIMETERS											
	mm3	mm4	152	305	457	610	762	914	1,067	1,219	1,372	1,524	1,676	1,829
R1	14666	465762	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.77	6.50 3.44	4.84 2.21	3.75 1.50	2.99 1.06	2.43 0.78	2.02 0.59	1.70 0.46
R2	13748	481579	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.96	6.10 3.56	4.55 2.29	3.51 1.56	2.80 1.10	2.29 0.81	1.89 0.61	1.60 0.48
R3	16354	540684	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 6.69	7.23 3.99	5.41 2.56	4.18 1.75	3.34 1.24	2.71 0.91	2.26 0.68	1.91 0.53
R4	18796	596459	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 7.39	8.02 4.40	6.24 2.84	4.81 1.92	3.83 1.37	3.12 1.00	2.59 0.75	2.18 0.59
R5	20467	649763	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 4.80	6.77 3.09	5.23 2.10	4.17 1.50	3.40 1.09	2.83 0.83	2.39 0.64
R6	22155	703430	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.21	7.32 3.35	5.67 2.27	4.52 1.61	3.69 1.19	3.06 0.90	2.58 0.70
R7	23300	750048	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.54	7.70 3.57	5.96 2.43	4.75 1.73	3.88 1.26	3.22 0.96	2.71 0.74
R8	25531	810818	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.99	8.02 3.86	6.53 2.62	5.21 1.86	4.24 1.37	3.53 1.03	2.97 0.80
R9	27415	870339	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 6.45	8.02 4.14	7.01 2.83	5.60 2.01	4.56 1.47	3.79 1.12	3.19 0.86
R10	31643	1004782	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 7.44	8.02 4.78	8.02 3.26	6.46 2.32	5.26 1.70	4.37 1.29	3.69 1.00
R11	35773	1135894	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.41	8.02 3.69	7.31 2.62	5.95 1.92	4.94 1.45	4.18 1.13
R12	39542	1255353	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 5.98	8.02 4.07	8.02 2.90	6.58 2.13	5.47 1.61	4.62 1.25

STANDARD TYPES

Longspan steel joists can be furnished with either underslung or square ends, with parallel chords or with single or double pitched top chords to provide sufficient slope for roof drainage.

The Longspan joist designation is determined by its nominal depth at the center of the span, except for offset double pitched joists, where the depth should be given at the ridge. A part of the designation should be either the section number or the total design load over the design live load (TL/LL given in plf).

All pitched joists will be cambered in addition to the pitch unless specified otherwise.



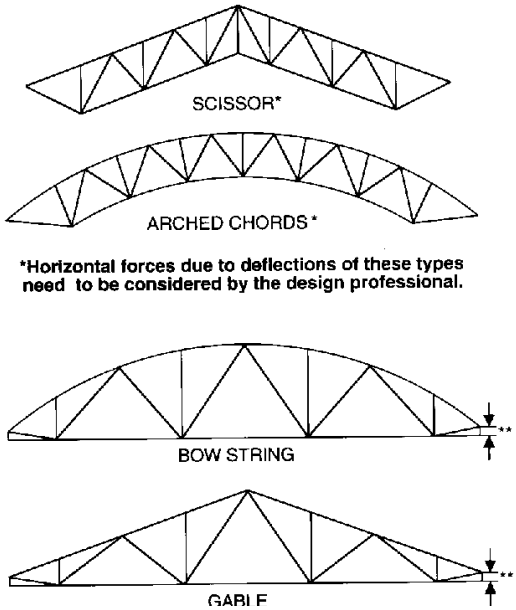
CAMBER

Non-Standard Types: The design professional shall provide on the structural drawings the amount of camber desired as a percent of live load and as a percent of dead load.

Standard Types: The camber listed in the table will be fabricated into the joists unless the design professional specifically states otherwise on the structural drawings.

NON-STANDARD TYPES

The following joists can also be supplied by Vulcraft, however, **THE DISTRICT SALES OFFICE OR MANUFACTURING FACILITY NEAREST YOU SHOULD BE CONTACTED FOR ANY LIMITATIONS IN DEPTH OR LENGTH.**



*Horizontal forces due to deflections of these types need to be considered by the design professional.

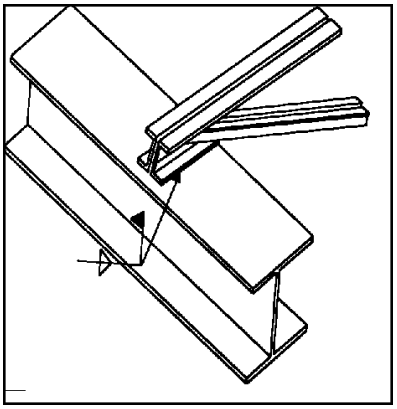
**Contact Vulcraft for minimum depth at ends.

CAMBER FOR STANDARD TYPES

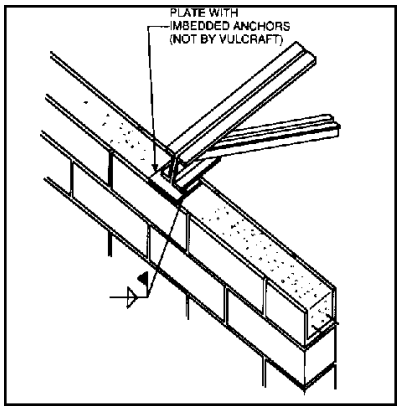
LH &DLH series joists shall have camber in accordance with the following table:***

Top Chord Length	Approx. 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)
110”-0" (33528 mm)	5" (127 mm)
120”-0" (36576 mm)	6" (152 mm)
130”-0" (39621 mm)	7" (178 mm)
140”-0" (42672 mm)	8" (203 mm)
144”-0" (43890 mm)	8 1/2" (216 mm)

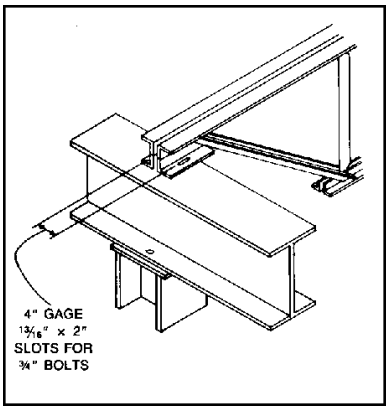
*** NOTE: If full camber is not desired near walls or other structural members please note on the structural drawings.



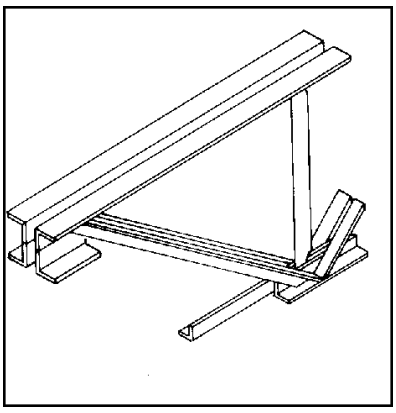
ANCHORAGE TO STEEL
SEE SJI SPECIFICATION
104.4 (b) AND 104.7 (b)



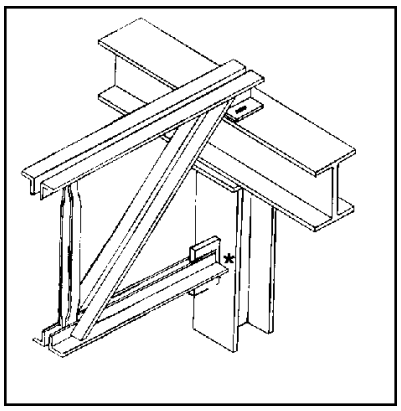
ANCHORAGE TO MASONRY
SEE SJI SPECIFICATION
104.4 (a) AND 104.7 (a)



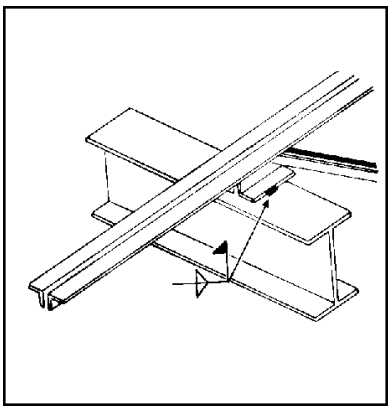
BOLTED CONNECTION
See Note (c)
Typically required at columns



CEILING EXTENSION



BOTTOM CHORD EXTENSION
*If bottom chord extension is to be bolted or welded the specifiying professional must provide axial loads on strutural drawings.



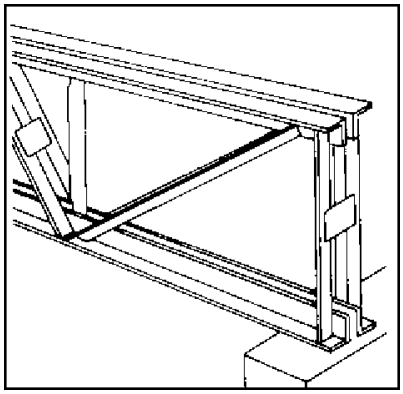
TOP CHORD EXTENSION
See Note (a)

(a) Extended top chords or full depth cantilever ends require the special attention of the specifying professional.
The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

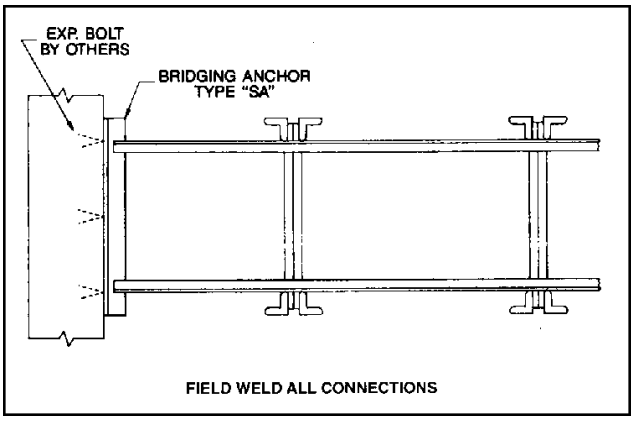
(b) See SJI Specification - Section 105 for Handling and Erection of LH and DLH joists.

(c) The Occupational Safety and Health Administration Standards (OSHA), Paragraph 1910.12 refers to Paragraph 1518.751 of "Construction Standards" which states:
"In steel framing, where bar joists are utilized, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction."

NOTE: Configurations may vary from that shown.



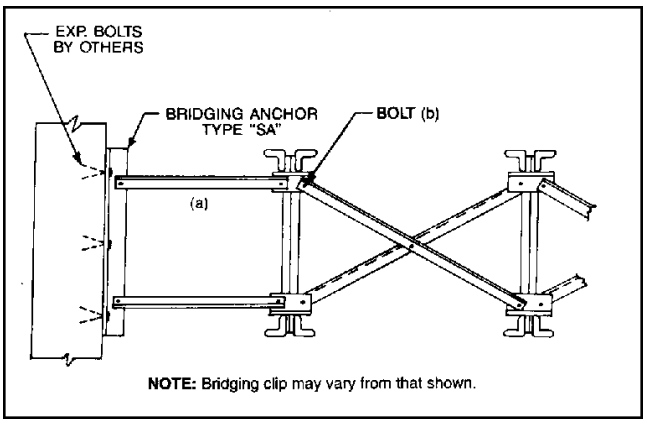
SQUARE END
See SJI Specification 104.5 (f).
Cross bridging required at end of bottom bearing joist.



HORIZONTAL BRIDGING

For the proper use of horizontal bridging refer to sections 104.5(a) and 105.

NOTE: Do not weld bridging to web members. Do not hang <u>any</u> mechanical, electrical, etc. from bridging.



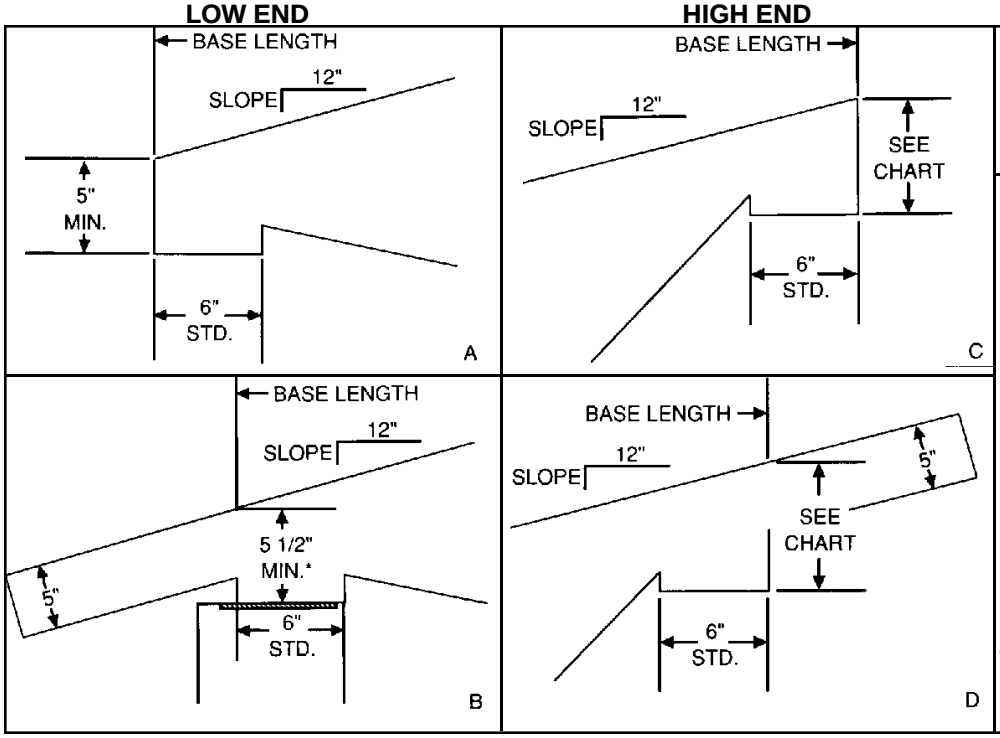
CROSS BRIDGING

(a) Horizontal Bridging units shall be used in the space adjacent to the wall to allow for proper deflection of the joist nearest the wall.

(b) For required bolt size refer to bridging spacing table on page 121.

LH & DLH SERIES OPEN WEB STEEL JOISTS SLOPED SEAT REQUIREMENTS

LOW END **HIGH END**



SLOPE RATE	HIGH END MINIMUM **SEAT DEPTH
1/4:12	5 1/2”
3/8:12	5 1/2”
1/2:12	5 3/4”
1:12	6”
1 1/2:12	6 1/4”
2:12	6 1/2”
2 1/2:12	6 3/4”
3:12	7”
3 1/2:12	7 1/4”
4:12	7 1/2”
4 1/2:12	7 3/4”
5:12	8”
6:12 & OVER	CONTACT VULCRAFT

* 7 1/2 at 18 and 19 chord section numbers. Consult Vulcraft for information when TCX’s are present.
** Add 2 1/2 to seat depths at 18 and 19 chord section numbers.

NOTES:
(1) Depths shown are the minimums required for fabrication of sloped bearing seats.
(2) Contact Vulcraft when required seat slope is greater then 6" in 12".
(3) Clearance must be checked at outer edge of support as shown in detail B. Increase bearing depth as required to permit passage of 5" deep extension.
(4) If extension depth greater than 5" is required (see detail B and D) increase bearing depths accordingly.

HIGH STRENGTH

ECONOMICAL

DESIGN – Vulcraft LH & DLH Series long span steel joists are designed in accordance with the specifications of the Steel Joist Institute.

ACCESSORIES see page 41.

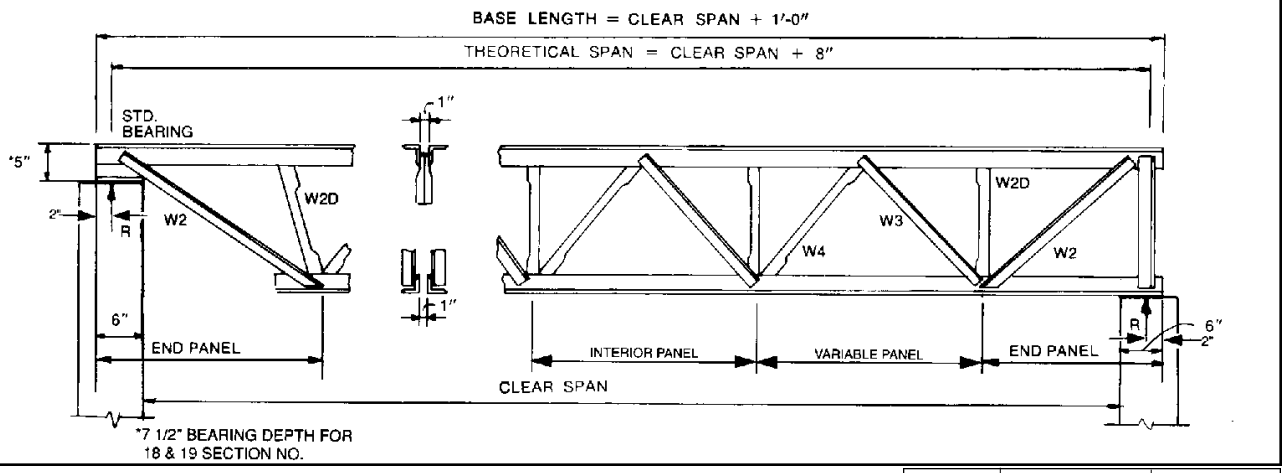
ROOF SPANS TO 144'-0

FLOOR SPANS TO 120'-0

PAINT – Vulcraft joists receive a shop-coat of rust inhibitive primer whose performance characteristics conform to those of the Steel Joist Institute specification 102.4.

SPECIFICATIONS see page 55.

LH & DLH SERIES DETAILS



MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING					
BRIDGING ANGLE SIZE-EQUALLEG ANGLES					
JOIST DEPTH	1x7/64 (25mm x 3mm) r =.20"	1-1/4x7/64 (32mm x 3mm) r =.25"	1-1/2x7/64 (38mm x 3mm) r =.30"	1-3/4x7/64 (45mm x 3mm) r =.35"	2x1/8 (51mm x 3mm) r =.40"
32	6'-1"(1854mm)	7'-10"(2387mm)	9'-7"(2921mm)	11'-4"(3454mm)	13'-0"(3962mm)
36		7'-9"(2362mm)	9'-6"(2895 mm)	11'-3"(3429mm)	12'-11"(3973mm)
40		7'-7"(2311mm)	9'-5"(2870 mm)	11'-2"(3403mm)	12'-10"(3911mm)
44		7'-5"(2260mm)	9'-3"(2819 mm)	11'-0"(3352mm)	12'-9"(3886mm)
48		7'-3"(2209mm)	9'-2"(2794 mm)	10'-11"(3327mm)	12'-8"(3860mm)
52			9'-0"(2743 mm)	10'-9"(3276mm)	12'-7"(3835mm)
56			8'-10"(2692 mm)	10'-8"(3251mm)	12'-5"(3784mm)
60			8'-7"(2616 mm)	10'-6"(3200mm)	12'-4"(3759mm)
64			8'-5"(2565 mm)	10'-4"(3149mm)	12'-2"(3708mm)
68			8'-2"(2489 mm)	10'-2"(3098mm)	12'-0"(3657mm)
72			8'-0"(2438 mm)	10'-0"(3048mm)	11'-10"(3606mm)

MAXIMUM JOIST SPACING FOR HORIZONTALBRIDGING SPANS OVER 60' REQUIRE BOLTED DIAGONAL BRIDGING						
BRIDGING ANGLE SIZE-EQUALLEG ANGLES						
SECTION NUMBER*	1x7/64 (25mm x 3mm) r = .20"	1-1/4x7/64 (32mm x 3mm) r = .25"	1-1/2x7/64 (38mm x 3mm) r = .30"	1-3/4x7/64 (45mm x 3mm) r = .35"	2x1/8 (51mm x 3mm) r = .40"	2-1/2x5/32 (64mm x 4mm) r = .50"
02, 03, 04	4'-7"(1397mm)	6'-3"(1905mm)	7'-6"(2286mm)	8'-9"(2667mm)	10'-0"(3048mm)	12'-4"(3759mm)
05 - 06	4'-1"(1245mm)	5'-9"(1753mm)	7'-6"(2286mm)	8'-9"(2667mm)	10'-0"(3048mm)	12'-4"(3759mm)
07 - 08	3'-9"(1143mm)	5'-1"(1549mm)	6'-8"(2032mm)	8'-6"(2590mm)	10'-0"(3048mm)	12'-4"(3759mm)
09 - 10		4'-6"(1372mm)	6'-0"(1829mm)	7'-8"(2337mm)	10'-0"(3048mm)	12'-4"(3759mm)
11 - 12		4'-1"(1245mm)	5'-5"(1651mm)	6'-10"(2083mm)	8'-11"(2118mm)	12'-4"(3759mm)
13 - 14		3'-9"(1143mm)	4'-11"(1499mm)	6'-3"(1905mm)	8'-2"(2489mm)	12'-4"(3759mm)
15 - 16			4'-3"(1295mm)	5'-5"(1651mm)	7'-1"(2159mm)	11'-0"(3353mm)
17			4'-0"(1219mm)	5'-1"(1549mm)	6'-8"(2032mm)	10'-5"(3175mm)

*REFER TO THE LASTDIGITS OF JOIST DESIGNATION CONNECTION TO JOIST MUSTRESIST FORCES LISTED IN TABLE 104.5.1.

SECTION NUMBER*	MAX. SPACING OF LINES OF BRIDGING	HORIZONTAL BRACING FORCE	
		lbs.	(N)
02, 03, 04	11'-0" (3352mm)	400	(1779)
05 - 06	12'-0" (3657mm)	500	(2224)
07 - 08	13'-0" (3962mm)	650	(2891)
09 - 10	14'-0" (4267mm)	800	(3558)
11 - 12	16'-0" (4876mm)	1000	(4448)
13 - 14	16'-0" (4876mm)	1200	(5337)
15 - 16	21'-0" (6400mm)	1600	(7117)
17	21'-0' (6400mm)	1800	(8006)
18 - 19	26'-0" (7924mm)	2000	(8896)

NUMBER OF LINES OF BRIDGING BASED ON CLEAR SPAN.
*LAST TWO DIGITS OF JOIST DESIGNATION.

MIN. A307 BOLTREQ'D FOR CONNECTION		
SERIES	SECTION NUMBER*	A307 BOLT DIAMETER
LH/DLH	2 - 12	3/8"(9mm)
LH/DLH	13 - 17	1/2" (12mm)
DLH	18 & 19	5/8" (15mm)

*LAST TWO DIGITS OF JOIST DESIGNATION.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

NOTES: 1. Special designed LH and DLH can be supplied in longer lengths. See SLH Series Page 63.

2. Additional bridging may be required when joists support standing seam roof decks. The specifying professional should require that the joist manufacturer check the system and provide bridging as required to adequately brace the joists against lateral movement. For bridging requirements due to uplift pressures refer to sect. 104.12.

STANDARD LOAD TABLE
LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 30 ksi

Adopted by the Steel Joist Institute May 25, 1983; Revised to May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly-distributed load-carrying capacities in pounds per linear foot, of **LH** Series joists. The weight of DEAD loads, including the joists, must in all cases be deducted to determine the LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights per linear foot shown in the tables.

The RED figures in this load table are the LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the RED figures by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. This load table may be used for parallel chord joists installed to a maximum slope of 1/2 inch per foot.

Where the joist span is equal to or greater than the span corresponding to 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 intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

Where the joist span is equal to or greater than the span corresponding to the BLUE SHADED area of the load table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

The approximate moment of inertia of the joist, in inches^4 is: $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = RED figure in the Load Table, and L = (clear span + .67) in feet.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to the reduction of chord areas.

The top chords are considered as being stayed laterally by floor slab or roof deck.

The approximate joist weights per linear foot shown in these tables do not include accessories.

Joist Deisignation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFELOAD* in Lbs. Between	CLEAR SPAN IN FEET																	
			21-24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**						
18LH**02**	10	18	12000	468 313	442 284	418 259	391 234	367 212	345 193	324 175	306 160	289 147	273 135	259 124	245 114						
18LH**03**	11	18	13300	521 348	493 317	467 289	438 262	409 236	382 213	359 194	337 177	317 161	299 148	283 136	267 124						
18LH**04**	12	18	15500	604 403	571 367	535 329	500 296	469 266	440 242	413 219	388 200	3965 182	344 167	325 153	308 141						
18LH**05**	15	18	17500	684 454	648 414	614 378	581 345	543 311	508 282	476 256	448 233	421 212	397 195	375 179	355 164						
18LH**06**	15	18	20700	809 526	749 469	696 419	648 377	605 3740	566 307	531 280	499 254	470 323	443 212	418 195	396 180						
18LH**07**	17	18	21500	840 553	809 513	780 476	726 428	678 386	635 349	595 317	559 288	526 264	496 241	469 222	444 204						
18LH**08**	19	18	22400	876 577	843 534	812 496	784 462	758 427	717 387	680 351	641 320	604 292	571 267	540 246	512 226						
18LH**09**	21	18	24000	936 616	901 571	868 527	838 491	810 458	783 418	759 380	713 346	671 316	633 289	598 266	566 245						
			22-24	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**		
20LH**02**	10	20	11300	442 306	437 303	431 298	410 274	388 250	365 228	344 208	325 190	307 174	291 160	275 147	262 136	249 126	237 117	225 108	215 101		
20LH**03**	11	20	12000	469 337	463 333	458 317	452 302	434 280	414 258	395 238	372 218	352 200	333 184	316 169	299 156	283 143	269 133	255 123	243 114		
20LH**04**	12	20	14700	574 428	566 406	558 386	528 352	496 320	467 291	440 265	416 243	393 223	372 205	353 189	335 174	318 161	303 149	289 139	275 129		
20LH**05**	14	20	15800	616 459	609 437	602 416	595 395	571 366	544 337	513 308	484 281	458 258	434 238	411 219	390 202	371 187	353 173	336 161	321 150		
20LH**06**	15	20	21100	822 606	791 561	763 521	723 477	679 427	635 386	596 351	560 320	527 292	497 267	469 246	444 226	421 209	399 192	379 178	361 165		
20LH**07**	17	20	22500	878 647	845 599	814 556	786 518	760 484	711 438	667 398	627 362	590 331	556 303	526 278	497 256	471 236	447 218	425 202	404 187		
20LH**08**	19	20	23200	908 669	873 619	842 575	813 536	785 500	760 468	722 428	687 395	654 365	621 336	588 309	558 285	530 262	503 242	479 225	457 209		
20LH**09**	21	20	25400	990 729	953 675	918 626	886 581	856 542	828 507	802 475	778 437	755 399	712 366	673 336	636 309	603 285	572 264	544 244	517 227		
20LH**10**	23	20	27400	1068 786	1028 724	991 673	956 626	924 585	894 545	865 510	839 479	814 448	791 411	748 377	707 346	670 320	636 296	604 274	575 254		

STANDARD LOAD TABLE/LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 30 ksi

Joist Deisignation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFELOAD* in Lbs. Between	CLEAR SPAN IN FEET																
			28-32	**33**	**34**	**35**	**36**	**37**	**38**	**39** **	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**
24LH03	11	24	11500	342 235	339 226	336 218	323 204	307 188	293 175	279 162	267 152	255 141	244 132	234 124	224 116	215 109	207 102	199 96	191 90
24LH04	12	24	14100	419 288	398 265	379 246	360 227	343 210	327 195	312 182	298 169	285 158	273 148	262 138	251 130	241 122	231 114	222 107	214 101
24LH05	13	24	15100	449 308	446 297	440 285	419 264	399 244	380 226	363 210	347 196	331 182	317 171	304 160	291 150	280 141	269 132	258 124	248 117
24LH06	16	24	20300	604 411	579 382	555 356	530 331	504 306	480 284	457 263	437 245	417 228	399 211	381 197	364 184	348 172	334 161	320 152	307 142
24LH07	17	24	22300	665 452	638 421	613 393	588 367	565 343	541 320	516 297	491 276	468 257	446 239	426 223	407 208	389 195	373 182	357 171	343 161
24LH08	18	24	23800	707 480	677 447	649 416	622 388	597 362	572 338	545 314	520 292	497 272	475 254	455 238	435 222	417 208	400 196	384 184	369 173
24LH09	21	24	28000	832 562	808 530	785 501	764 460	731 424	696 393	663 363	632 337	602 313	574 292	548 272	524 254	501 238	480 223	460 209	441 196
24LH10	23	24	29600	882 596	856 559	832 528	809 500	788 474	768 439	737 406	702 378	668 351	637 326	608 304	582 285	556 266	533 249	511 234	490 220
24LH11	25	24	31200 **	927 624	900 588	875 555	851 525	829 498	807 472	787 449	768 418	734 388	701 361	671 337	642 315	616 294	590 276	567 259	544 243
			33-40	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**
28LH05	13	28	14000	337 219	323 205	310 192	297 180	286 169	275 159	265 150	255 142	245 133	237 126	228 119	220 113	213 107	206 102	199 97	193 92
28LH06	16	28	18600	448 289	429 270	412 253	395 238	379 223	364 209	350 197	337 186	324 175	313 166	301 156	291 148	281 140	271 133	262 126	25 120
28LH07	17	28	21000	505 326	484 305	464 285	445 267	427 251	410 236	394 222	379 209	365 197	352 186	339 176	327 166	319 158	305 150	295 142	285 135
28LH08	18	28	22500	540 348	517 325	496 305	475 285	456 268	438 252	420 236	403 222	387 209	371 196	357 185	344 175	331 165	319 156	308 148	297 140
28LH09	21	28	27700	667 428	639 400	612 375	586 351	563 329	540 309	519 291	499 274	481 258	463 243	446 228	430 216	415 204	401 193	387 183	374 173
28LH10	23	28	30300	729 466	704 439	679 414	651 388	625 364	600 342	576 322	554 303	533 285	513 269	495 255	477 241	460 228	444 215	429 204	415 193
28LH11	25	28	32500	780 498	762 475	736 448	711 423	682 397	655 373	629 351	605 331	582 312	561 294	540 278	521 263	502 249	485 236	468 223	453 212
28LH12	27	28	35700	857 545	837 520	818 496	800 476	782 454	766 435	737 408	709 383	682 361	656 340	632 321	609 303	587 285	566 270	546 256	527 243
28LH13	30	28	37200 **	895 569	874 543	854 518	835 495	816 472	799 452	782 433	766 415	751 396	722 373	694 352	668 332	643 314	620 297	598 281	577 266
			38-46	**47-48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**
32LH06	14	32	16700	16700	338 211	326 199	315 189	304 179	294 169	284 161	275 153	266 145	257 138	249 131	242 125	234 119	227 114	220 108	214 104	208 99
32LH07	16	32	18800	18800	379 235	366 223	353 211	341 200	329 189	318 179	308 170	298 162	288 154	279 146	271 140	262 133	254 127	247 121	240 116	233 111
32LH08	17	32	20400	20400	411 255	397 242	383 229	369 216	357 205	345 194	333 184	322 175	312 167	302 159	293 151	284 144	275 137	267 131	259 125	252 120
32LH09	21	32	25600	25600	516 319	498 302	480 285	463 270	447 256	432 243	418 230	404 219	391 208	379 198	367 189	356 180	345 172	335 164	325 157	315 149
32LH10	21	32	28300	28300	571 352	550 332	531 315	512 297	495 282	478 267	462 254	445 240	430 228	416 217	402 206	389 196	376 189	364 178	353 169	342 162
32LH11	24	32	31000	31000	625 385	602 363	580 343	560 325	541 308	522 292	505 277	488 263	473 251	458 239	443 227	429 216	416 206	403 196	390 187	378 179
32LH12	27	32	36400	36400	734 450	712 428	688 406	664 384	641 364	619 345	598 327	578 311	559 295	541 281	524 267	508 255	492 243	477 232	463 221	449 211
32LH13	30	32	40600	40600	817 500	801 480	785 461	771 444	742 420	715 397	690 376	666 354	643 336	621 319	600 304	581 288	562 275	544 262	527 249	511 238
32LH14	33	32	41800	41800	843 515	826 495	810 476	795 458	780 440	766 417	738 395	713 374	688 355	665 337	643 321	622 304	602 290	583 276	564 264	547 251
32LH15	35	32	43200	43200	870 532	853 511	837 492	821 473	805 454	791 438	776 422	763 407	750 393	725 374	701 355	678 338	656 322	635 306	616 292	597 279
			42-46	**47-56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**
36LH07	16	36	16800	16800	292 177	283 168	274 160	266 153	258 146	251 140	244 134	237 128	230 122	224 117	218 112	212 107	207 103	201 99	196 95	191 91
36LH08	18	36	18500	18500	321 194	311 185	302 176	293 168	284 160	276 153	268 146	260 140	253 134	246 128	239 123	233 118	227 113	221 109	215 104	209 100
36LH09	21	36	23700	23700	411 247	398 235	386 224	374 214	363 204	352 195	342 186	333 179	323 171	314 163	306 157	297 150	289 144	282 138	275 133	267 127
36LH10	21	36	26100	26100	454 273	440 260	426 248	413 236	401 225	389 215	378 206	367 197	357 188	347 180	338 173	328 165	320 159	311 152	303 146	295 140
36LH11	23	36	28500	28500	495 297	480 283	465 269	451 257	438 246	425 234	412 224	401 214	389 205	378 196	368 188	358 180	348 173	339 166	330 159	322 153
36LH12	25	36	34100	34100	593 354	575 338	557 322	540 307	523 292	508 279	493 267	478 255	464 243	450 232	437 222	424 213	412 204	400 195	389 187	378 179
36LH13	30	36	40100	40100	697 415	675 395	654 376	634 359	615 342	596 327	579 312	562 298	546 285	531 273	516 262	502 251	488 240	475 231	463 222	451 213
36LH14	36	36	44200	44200	768 456	755 434	729 412	706 392	683 373	661 356	641 339	621 323	602 309	584 295	567 283	551 270	535 259	520 247	505 237	492 228
36LH15	36	36	46600	46600	809 480	795 464	781 448	769 434	744 413	721 394	698 375	677 358	656 342	637 327	618 312	600 299	583 286	567 274	551 263	536 252

STANDARD LOAD TABLE/LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 30 ksi

Joist Deisignation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFELOAD* in Lbs. Between		CLEAR SPAN IN FEET															
			47-59	60-64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
40LH08	16	40	16600	16600	254 150	247 144	241 138	234 132	228 127	222 122	217 117	211 112	206 108	201 104	196 100	192 97	187 93	183 90	178 86	174 83
40LH09	21	40	21800	21800	332 196	323 188	315 180	306 173	298 166	291 160	283 153	276 147	269 141	263 136	256 131	250 126	244 122	239 116	233 113	228 109
40LH10	21	40	24000	24000	367 216	357 207	347 198	338 190	329 183	321 176	313 169	305 162	297 156	290 150	283 144	276 139	269 134	262 129	255 124	249 119
40LH11	22	40	26200	26200	399 234	388 224	378 215	368 207	358 198	349 190	340 183	332 176	323 169	315 163	308 157	300 151	293 145	286 140	279 135	273 130
40LH12	25	40	31900	31900	486 285	472 273	459 261	447 251	435 241	424 231	413 222	402 213	392 205	382 197	373 189	364 182	355 176	346 169	338 163	330 157
40LH13	30	40	37600	37600	573 334	557 320	542 307	528 295	514 283	500 271	487 260	475 250	463 241	451 231	440 223	429 214	419 207	409 199	399 192	390 185
40LH14	35	40	43000	43000	656 383	638 367	620 351	603 336	587 323	571 309	556 297	542 285	528 273	515 263	502 252	490 243	478 233	466 225	455 216	444 209
40LH15	36	40	48100	48100	734 427	712 408	691 390	671 373	652 357	633 342	616 328	599 315	583 302	567 290	552 279	538 268	524 258	511 248	498 239	486 230
40LH16	42	40	53000	53000	808 469	796 455	784 441	772 428	761 416	751 404	730 387	710 371	691 356	673 342	655 329	638 316	622 304	606 292	591 282	576 271
			52-59	**60-72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**
44LH09	19	44	20000	20000	272 158	265 152	259 146	253 141	247 136	242 131	236 127	231 122	226 118	221 114	216 110	211 106	207 103	202 99	198 96	194 93
44LH10	21	44	22100	22100	300 174	293 168	286 162	279 155	272 150	266 144	260 139	254 134	249 130	243 125	238 121	233 117	228 113	223 110	218 106	214 103
44LH11	22	44	23900	23900	325 188	317 181	310 175	302 168	295 162	289 157	282 151	276 146	269 140	264 136	258 131	252 127	247 123	242 119	236 115	232 111
44LH12	25	44	29600	29600	402 232	393 224	383 215	374 207	365 200	356 192	347 185	339 179	331 172	323 166	315 160	308 155	300 149	293 144	287 139	280 134
44LH13	30	44	35100	35100	477 275	466 265	454 254	444 246	433 236	423 228	413 220	404 212	395 205	386 198	377 191	369 185	361 179	353 173	346 167	338 161
44LH14	31	44	40400	40400	549 315	534 302	520 291	506 279	493 268	481 259	469 249	457 240	446 231	436 223	425 215	415 207	406 200	396 193	387 187	379 187
44LH15	36	44	47000	47000	639 366	623 352	608 339	593 326	579 314	565 303	551 292	537 281	524 271	512 261	500 252	488 243	476 234	466 227	455 219	445 211
44LH16	42	44	54200	54200	737 421	719 405	701 390	684 375	668 362	652 348	637 336	622 324	608 313	594 302	580 291	568 282	555 272	543 263	531 255	520 246
44LH17	47	44	58200	58200	790 450	780 438	769 426	759 415	750 405	732 390	715 376	699 363	683 351	667 338	652 327	638 316	624 305	610 295	597 285	584 276
			56-59	**60-80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**
48LH10	21	48	20000	20000	246 141	241 136	236 132	231 127	226 123	221 119	217 116	212 112	208 108	204 105	200 102	196 99	192 96	188 93	185 90	181 87
48LH11	22	48	21700	21700	266 152	260 147	255 142	249 137	244 133	239 129	234 125	229 120	225 117	220 113	216 110	212 106	208 103	204 100	200 97	196 94
48LH12	25	48	27400	27400	336 191	329 185	322 179	315 173	308 167	301 161	295 156	289 151	283 147	277 142	272 138	266 133	261 129	256 126	251 122	246 118
48LH13	29	48	32800	32800	402 228	393 221	384 213	376 206	368 199	360 193	353 187	345 180	338 175	332 170	325 164	318 159	312 154	306 150	300 145	294 141
48LH14	32	48	38700	38700	475 269	464 260	454 251	444 243	434 234	425 227	416 220	407 212	399 206	390 199	383 193	375 187	367 181	360 176	353 171	346 165
48LH15	36	48	44500	44500	545 308	533 298	521 287	510 278	499 269	488 260	478 252	468 244	458 236	448 228	439 221	430 214	422 208	413 201	405 195	397 189
48LH16	42	48	51300	51300	629 355	615 343	601 331	588 320	576 310	563 299	551 289	540 280	528 271	518 263	507 255	497 247	487 239	477 232	468 225	459 218
48LH17	47	48	57600	57600	706 397	690 383	675 371	660 358	646 346	632 335	619 324	606 314	593 304	581 294	569 285	558 276	547 268	536 260	525 252	515 245

* The safe uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load)/(Clear span + 0.67). (The added 0.67 feet (8 inches) is required to obtain the proper length on which the Load Tables were developed).

In no case shall the safe uniform load, for clear spans less than the minimum clear span shown in the Safe Load Column, exceed the uniform load calculated for the minimum clear span listed in the Safe Load Column.

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 0.67 feet)^2 and divide by (the actual clear span + 0.67 feet)^2. The live load shall *not* exceed the safe uniform load.

****IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.75(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.**

STANDARD LOAD TABLE
DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

Adopted by the Steel Joist Institute May 25, 1983; Revised to May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly-distributed load-carrying capacities in pounds per linear foot, of **DLH-Series** joists. The weight of DEAD loads, including the joists, must in all cases be deducted to determine the LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights per linear foot shown in the tables. All loads shown are for roof construction only.

The RED figures in this load table are the LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the RED figures by 1.5. In no case shall the TOTAL load capacity of the joist be exceeded.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at center of the span. Standard top chord pitch is l/8 inch per foot. If pitch exceeds this standard, the load table does not apply. This load table may be used for parallel chord joists installed to a maximum slope of l/2 inch per foot.

All rows of bridging shall be diagonal bridging with bolted connections at the chords and intersections.

Where the span of the joist is equal to or greater than the span corresponding to the BLUE SHADED area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

Where the span of the joist is equal to or greater than the span corresponding to the GRAY SHADED area of the load table hoisting cables shall not be released until all rows of bridging are completely installed.

The approximate moment of inertia of the joist, in inches^4 $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = RED figure in the Load Table, and L= (clear span + .67) in feet.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to the reduction of chord areas.

The top chords are considered as being stayed laterally by the roof deck.

The approximate joist weights per linear foot shown in these tables do not include accessories.

Joist Deisignation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFELOAD* in Lbs. Between	CLEAR SPAN IN FEET															
			61-88	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**	**101**	**102**	**103**	**104**
52DLH10	25	52	26700	298 171	291 165	285 159	279 154	273 150	267 1475	261 140	256 136	251 132	246 128	241 124	236 120	231 116	227 114	223 110	218 107
52DLH11	26	52	29300	327 187	320 181	313 174	306 169	299 164	293 158	287 153	281 149	275 144	270 140	264 135	259 132	254 128	249 124	244 120	240 117
52DLH12	29	52	32700	365 204	357 197	349 191	342 185	334 179	327 173	320 168	314 163	307 158	301 153	295 149	289 144	284 140	278 135	273 132	268 128
52DLH13	34	52	39700	443 247	433 239	424 231	414 224	406 216	397 209	389 203	381 197	373 191	366 185	358 180	351 174	344 170	338 164	331 159	325 155
52DLH14	39	52	45400	507 276	497 266	486 258	476 249	466 242	457 234	447 227	438 220	430 213	421 207	413 201	405 194	397 189	390 184	382 178	375 173
52DLH15	42	52	51000	569 311	557 301	545 291	533 282	522 272	511 264	500 256	490 247	480 240	470 233	461 226	451 219	443 213	434 207	426 201	418 195
52DLH16	45	52	55000	614 346	601 335	588 324	575 314	563 304	551 294	540 285	528 276	518 267	507 260	497 252	487 245	478 237	468 230	459 224	451 217
52DLH17	52	52	63300	706 395	691 381	676 369	661 357	647 346	634 335	620 324	608 315	595 304	583 296	572 286	560 279	549 270	539 263	528 255	518 247
			66-96	**97**	**98**	**99**	**100**	**101**	**102**	**103**	**104**	**105**	**106**	**107**	**108**	**109**	**110**	**111**	**112**
56DLH11	26	56	28100	288 169	283 163	277 158	272 153	267 149	262 145	257 140	253 136	248 133	244 129	239 125	235 122	231 118	227 115	223 113	219 110
56DLH12	30	56	32300	331 184	324 178	318 173	312 168	306 163	300 158	295 153	289 150	284 145	278 141	273 137	268 133	263 130	259 126	254 123	249 119
56DLH13	34	56	39100	401 223	394 216	386 209	379 204	372 197	365 191	358 186	351 181	344 175	338 171	331 166	325 161	319 157	314 152	308 149	303 145
56DLH14	39	56	44200	453 249	444 242	435 234	427 228	419 221	411 214	403 209	396 202	388 196	381 190	375 186	368 181	361 175	355 171	349 167	343 162
56DLH15	42	56	50500	518 281	508 272	498 264	488 256	478 248	469 242	460 234	451 228	443 221	434 215	426 209	419 204	411 198	403 192	396 188	389 182
56DLH16	46	56	54500	559 313	548 304	537 294	526 285	516 277	506 269	496 262	487 254	478 247	469 240	460 233	452 227	444 221	436 214	428 209	420 204
56DLH17	51	56	62800	643 356	630 345	618 335	605 325	594 316	582 306	571 298	560 289	549 281	539 273	529 266	520 258	510 251	501 245	492 238	483 231

Joist Designation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFELOAD* in Lbs. Between		CLEAR SPAN IN FEET															
			70-99	**100-104**	**105**	**106**	**107**	**108**	**109**	**110**	**111**	**112**	**113**	**114**	**115**	**116**	**117**	**118**	**119**	**120**
60DLH12	29	60	31100	31100	295	289	284	279	274	270	265	261	256	252	248	244	240	236	232	228
					168	163	158	154	150	146	142	138	134	131	128	124	121	118	115	113
60DLH13	35	60	37800	37800	358	351	345	339	333	327	322	316	311	306	301	296	291	286	282	277
					203	197	191	187	181	176	171	167	163	158	154	151	147	143	139	135
60DLH14	40	60	42000	42000	398	391	383	376	370	363	356	350	344	338	332	327	321	316	310	305
					216	210	205	199	193	189	183	178	173	170	165	161	156	152	149	145
60DLH15	43	60	49300	49300	467	458	450	442	434	427	419	412	405	398	392	385	379	373	367	361
					255	248	242	235	228	223	216	210	205	200	194	190	185	180	175	171
60DLH16	46	60	54200	54200	513	504	494	485	476	468	460	451	444	436	428	421	414	407	400	393
					285	277	269	262	255	247	241	235	228	223	217	211	206	201	196	190
60DLH17	52	60	62300	62300	590	579	569	558	548	538	529	519	510	501	493	484	476	468	460	453
					324	315	306	298	290	283	275	267	261	254	247	241	235	228	223	217
60DLH18	59	60	71900	71900	681	668	656	644	632	621	610	599	589	578	568	559	549	540	531	522
					366	357	346	337	327	319	310	303	294	286	279	272	266	259	252	246
			75-99	**100-112**	**113**	**114**	**115**	**116**	**117**	**118**	**119**	**120**	**121**	**122**	**123**	**124**	**125**	**126**	**127**	**128**
64DLH12	31	64	30000	30000	264	259	255	251	247	243	239	235	231	228	224	221	218	214	211	208
					153	150	146	142	138	135	132	129	125	122	119	116	114	111	109	106
64DLH13	34	64	36400	36400	321	315	310	305	300	295	291	286	281	277	273	269	264	260	257	253
					186	181	176	171	168	163	159	155	152	148	144	141	137	134	131	128
64DLH14	40	64	41700	41700	367	360	354	349	343	337	332	326	321	316	311	306	301	296	292	287
					199	193	189	184	179	174	171	166	162	158	154	151	147	143	140	136
64DLH15	43	64	47800	47800	421	414	407	400	394	387	381	375	369	363	358	352	347	341	336	331
					234	228	223	217	211	206	201	196	191	187	182	177	173	170	165	161
64DLH16	46	64	53800	53800	474	466	458	450	443	435	428	421	414	407	401	394	388	382	376	370
					262	254	248	242	235	229	224	218	213	208	203	198	193	189	184	180
64DLH17	52	64	62000	62000	546	536	527	518	509	501	492	484	476	468	461	454	446	439	432	426
					298	290	283	275	268	262	255	248	243	237	231	226	220	215	210	205
64DLH18	59	64	71600	71600	630	619	608	598	587	578	568	559	549	540	532	523	515	507	499	491
					337	328	320	311	304	296	288	282	274	267	261	255	249	243	237	232
			80-99	**100-120**	**121**	**122**	**123**	**124**	**125**	**126**	**127**	**128**	**129**	**130**	**131**	**132**	**133**	**134**	**135**	**136**
68DLH13	37	68	35000	35000	288	284	279	275	271	267	263	259	255	252	248	244	241	237	234	231
					171	168	164	159	155	152	149	145	142	138	135	133	130	127	124	121
68DLH14	40	68	40300	40300	332	327	322	317	312	308	303	299	294	290	286	281	277	273	269	266
					184	179	175	171	167	163	159	155	152	148	145	141	138	135	133	130
68DLH15	40	68	45200	45200	372	365	360	354	348	343	337	332	327	322	317	312	308	303	299	294
					206	201	196	191	187	182	178	174	170	166	162	158	155	152	148	145
68DLH16	49	68	53600	53600	441	433	427	420	413	407	400	394	388	382	376	371	365	360	354	349
					242	236	230	225	219	214	209	204	199	195	190	186	182	178	174	171
68DLH17	55	68	60400	60400	497	489	481	474	467	460	453	446	439	433	427	420	414	408	403	397
					275	268	262	256	249	244	238	232	228	222	217	212	208	203	198	194
68DLH18	61	68	69900	69900	575	566	557	549	540	532	524	516	508	501	493	486	479	472	465	459
					311	304	297	289	283	276	269	263	257	251	246	240	234	230	225	219
68DLH19	67	68	80500	80500	662	651	641	631	621	611	601	592	583	574	565	557	548	540	532	525
					353	344	336	328	320	313	305	298	291	285	278	272	266	260	254	248
			84-99	**100-128**	**129**	**130**	**131**	**132**	**133**	**134**	**135**	**136**	**137**	**138**	**139**	**140**	**141**	**142**	**143**	**144**
72DLH14	41	72	39200	39200	303	298	294	290	285	281	277	274	270	266	262	259	255	252	248	245
					171	167	163	159	155	152	149	146	143	139	136	133	131	128	128	129
72DLH15	44	72	44900	44900	347	342	336	331	326	322	317	312	308	303	299	295	291	286	282	279
					191	187	183	178	174	171	167	163	160	156	152	150	147	143	140	137
72DLH16	50	72	51900	51900	401	395	390	384	378	373	368	363	358	353	348	343	338	334	329	325
					225	219	214	209	205	200	196	191	188	183	179	175	171	169	165	161
72DLH17	56	72	58400	58400	451	445	438	432	426	420	414	408	402	397	391	386	381	376	371	366
					256	250	245	239	233	228	224	218	213	209	205	200	196	191	188	184
72DLH18	59	72	68400	68400	528	520	512	505	497	490	483	479	470	463	457	450	444	438	432	426
					289	283	276	270	265	258	252	247	242	236	231	227	222	217	212	209
72DLH19	70	72	80200	80200	619	609	600	591	582	573	565	557	549	541	533	526	518	511	504	497
					328	321	313	306	300	293	286	280	274	268	263	257	251	247	241	236

*The safe uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load)/(Clear span + 0.67). (The added 0.67 feet (8 inches) is required to obtain the proper length on which the Load Tables were developed).

In no case shall the safe uniform load, for clear spans less than the minimum clear span shown in the Safe Load Column, exceed the uniform load calculated for the minimum clear span listed in the Safe Load Column.

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 0.67 feet)^2 and divide by (the actual clear span + 0.67 feet)^2. The live load shall *not* exceed the safe uniform load.

METRIC LOAD TABLE
LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 207 MPa

Adopted by the Steel Joist Institute May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly-distributed load-carrying capacities, in kilonewton per meter, of **LH**-Series Joists. The weight (kn/m) of DEAD loads, including the joists, must in all cases be deducted to determine the LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights per linear foot shown in the tables.

The RED figures in this load table are the LIVE loads (kiloNewtons per meter) of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the RED figures by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table does not apply. This load table may be used for parallel chord joists installed to a maximum slope of 1:24.

Where the joist span is equal to or greater than the span corresponding to 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 intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

Where the joist span is equal to or greater than the span corresponding to the BLUE SHADED area of the load table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to reduction of chord areas.

The top chords are considered as being stayed laterally by floor slab or roof deck.

The approximate joist weights (kg/m) and mass (kN/m) shown in these tables do **not** include accessories.

The approximate moment of inertia of the joist, in(mm^4) is:

$I_J = 2.6953\ (W_{LL})(L^3)(10^{-5})$, where W_{LL} = RED figure in the Load Table; L = (Span + 204) in millimeters.

**** IMPORTANT NOTICE****

BASED UPON FINDINGS OF INDUSTRY SPONSORED RESEARCH, THE STEEL JOIST INSTITUTE HAS DEVELOPED NEW REQUIREMENTS FOR THE USE OF ERECTION STABILITY BRIDGING. THE NEW SJI SPECIFICATIONS REQUIRE BOLTED DIAGONAL BRIDGING TO BE INSTALLED FOR SOME K-SERIES AND LH-SERIES JOISTS BEFORE SLACKENING THE HOISTING LINES. THE JOIST SPANS REQUIRING THIS STABILITY BRIDGING ARE SHADED IN THE LOAD TABLES.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926 (c)2 TO MEAN ALL FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, LH-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	Approx. Mass (kN / m)	Approx. Mass (kg / m)	Depth (mm)	SAFE LOAD* In kN Between	CLEAR SPAN (mm)															
				6400-7315	**7619**	**7924**	**8229**	**8534**	**8839**	**9144**	**9448**	**9753**	**10058**	**10363**	**10668**	**10972**				
18LH02	0.15	15	457	53.3	6.82	6.45	6.10	5.70	5.35	5.03	4.72	4.46	4.21	3.98	3.77	3.57				
					4.56	4.14	3.77	3.41	3.09	2.81	2.55	2.33	2.14	1.97	1.80	1.66				
18LH03	0.16	16	457	59.1	7.60	7.19	6.81	6.39	5.96	5.57	5.23	4.91	4.62	4.36	4.13	3.89				
					5.07	4.62	4.21	3.82	3.44	3.10	2.83	2.58	2.34	2.15	1.98	1.80				
18LH04	0.18	18	457	68.9	8.81	8.33	7.80	7.29	6.84	6.42	6.02	5.66	5.32	5.02	4.74	4.49				
					5.88	5.35	4.80	4.31	3.88	3.53	3.19	2.91	2.65	2.43	2.23	2.05				
18LH05	0.22	22	457	77.8	9.98	9.45	8.96	8.47	7.92	7.41	6.94	6.53	6.14	5.79	5.47	5.18				
					6.62	6.04	5.51	5.03	4.53	4.11	3.73	3.40	3.09	2.84	2.61	2.39				
18LH06	0.22	22	457	92.0	11.80	10.93	10.15	9.45	8.82	8.26	7.74	7.28	6.85	6.46	6.10	5.77				
					7.67	6.84	6.11	5.50	4.96	4.48	4.08	3.70	3.38	3.09	2.84	2.62				
18LH07	0.25	25	457	95.6	12.25	11.8	11.38	10.59	9.89	9.26	8.68	8.15	7.67	7.23	6.84	6.47				
					8.07	7.48	6.94	6.24	5.63	5.09	4.62	4.20	3.85	3.51	3.23	2.97				
18LH08	0.28	28	457	99.6	12.78	12.3	11.85	11.44	11.06	10.46	9.92	9.35	8.81	8.33	7.88	7.47				
					8.42	7.79	7.23	6.74	6.23	5.64	5.12	4.67	4.26	3.89	3.59	3.29				
18LH09	0.31	31	457	106.7	13.65	13.14	12.66	12.22	11.82	11.42	11.07	10.4	9.79	9.23	8.72	8.26				
					8.98	8.33	7.69	7.16	6.68	6.10	5.54	5.04	4.61	4.21	3.88	3.57				******
				6705-7315	**7619**	**7924**	**8229**	**8534**	**8839**	**9144**	**9448**	**9753**	**10058**	**10363**	**10668**	**10972**	**11277**	**11582**	**11887**	**12192**
20LH02	0.15	15	508	50.2	6.45	6.37	6.28	5.98	5.66	5.32	5.02	4.74	4.48	4.24	4.01	3.82	3.63	3.45	3.28	3.13
					4.46	4.42	4.34	3.99	3.64	3.32	3.03	2.77	2.53	2.33	2.14	1.98	1.83	1.70	1.57	1.47
20LH03	0.16	16	508	53.3	6.84	6.75	6.68	6.59	6.33	6.04	5.76	5.42	5.13	4.85	4.61	4.36	4.13	3.92	3.72	3.54
					4.91	4.85	4.62	4.40	4.08	3.76	3.47	3.18	2.91	2.68	2.46	2.27	2.08	1.94	1.79	1.66
20LH04	0.18	18	508	65.3	8.37	8.26	8.14	7.70	7.23	6.81	6.42	6.07	5.73	5.42	5.15	4.88	4.64	4.42	4.21	4.01
					6.24	5.92	5.63	5.13	4.67	4.24	3.86	3.54	3.25	2.99	2.75	2.53	2.34	2.17	2.02	1.88
20LH05	0.20	21	508	70.2	8.98	8.88	8.78	8.68	8.33	7.93	7.48	7.06	6.68	6.33	5.99	5.69	5.41	5.15	4.90	4.68
					6.69	6.37	6.07	5.76	5.34	4.91	4.49	4.10	3.76	3.47	3.19	2.94	2.72	2.52	2.34	2.18
20LH06	0.22	22	508	93.8	11.99	11.54	11.13	10.55	9.90	9.26	8.69	8.17	7.69	7.25	6.84	6.47	6.14	5.82	5.53	5.26
					8.84	8.18	7.60	6.96	6.23	5.63	5.12	4.67	4.26	3.89	3.59	3.29	3.05	2.80	2.59	2.40
20LH07	0.25	25	508	100.0	12.81	12.33	11.87	11.47	11.09	10.37	9.73	9.15	8.61	8.11	7.67	7.25	6.87	6.52	6.20	5.89
					9.44	8.74	8.11	7.55	7.06	6.39	5.80	5.28	4.83	4.42	4.05	3.73	3.44	3.18	2.94	2.72
20LH08	0.28	28	508	103.1	13.25	12.74	12.28	11.86	11.45	11.09	10.53	10.02	9.54	9.06	8.58	8.14	7.73	7.34	6.99	6.66
					9.76	9.03	8.39	7.82	7.29	6.82	6.24	5.76	5.32	4.90	4.50	4.15	3.82	3.53	3.28	3.05
20LH09	0.31	31	508	112.9	14.44	13.9	13.39	12.93	12.49	12.08	11.7	11.35	11.01	10.39	9.82	9.28	8.80	8.34	7.93	7.54
					10.63	9.85	9.13	8.47	7.90	7.39	6.93	6.37	5.82	5.34	4.90	4.50	4.15	3.85	3.56	3.31
20LH10	0.34	34	508	121.8	15.58	15.00	14.46	13.95	13.48	13.04	12.62	12.24	11.87	11.54	10.91	10.31	9.77	9.28	8.81	8.39
					11.47	10.56	9.82	9.13	8.53	7.95	7.44	6.99	6.53	5.99	5.50	5.04	4.67	4.31	3.99	3.70
				8534-9753	**10058**	**10363**	**10668**	**10972**	**11277**	**11582**	**11887**	**12192**	**12496**	**12801**	**13106**	**13411**	**13715**	**14020**	**14325**	**14630**
24LH03	0.16	16	610	51.1	4.99	4.94	4.90	4.71	4.48	4.27	4.07	3.89	3.72	3.56	3.41	3.26	3.13	3.02	2.90	2.78
					3.42	3.29	3.18	2.97	2.74	2.55	2.36	2.21	2.05	1.92	1.80	1.69	1.59	1.48	1.40	1.31
24LH04	0.18	18	610	62.7	6.11	5.80	5.53	5.25	5.00	4.77	4.55	4.34	4.15	3.98	3.82	3.66	3.51	3.37	3.23	3.12
					4.20	3.86	3.59	3.31	3.06	2.84	2.65	2.46	2.30	2.15	2.01	1.89	1.78	1.66	1.56	1.47
24LH05	0.19	19	610	67.1	6.55	6.50	6.42	6.11	5.82	5.54	5.29	5.06	4.83	4.62	4.43	4.24	4.08	3.92	3.76	3.61
					4.49	4.33	4.15	3.85	3.56	3.29	3.06	2.86	2.65	2.49	2.33	2.18	2.05	1.92	1.80	1.70
24LH06	0.23	24	610	90.2	8.81	8.44	8.09	7.73	7.35	7.00	6.66	6.37	6.08	5.82	5.56	5.31	5.07	4.87	4.67	4.48
					5.99	5.57	5.19	4.83	4.46	4.14	3.83	3.57	3.32	3.07	2.87	2.68	2.51	2.34	2.21	2.07
24LH07	0.25	25	610	99.1	9.70	9.31	8.94	8.58	8.24	7.89	7.53	7.16	6.82	6.50	6.21	5.93	5.67	5.44	5.21	5.00
					6.59	6.14	5.73	5.35	5.00	4.67	4.33	4.02	3.75	3.48	3.25	3.03	2.84	2.65	2.49	2.34
24LH08	0.26	27	610	105.8	10.31	9.88	9.47	9.07	8.71	8.34	7.95	7.58	7.25	6.93	6.64	6.34	6.08	5.83	5.60	5.38
					7.00	6.52	6.07	5.66	5.28	4.93	4.58	4.26	3.96	3.70	3.47	3.23	3.03	2.86	2.68	2.52
24LH09	0.31	31	610	124.5	12.14	11.79	11.45	11.14	10.66	10.15	9.67	9.22	8.78	8.37	7.99	7.64	7.31	7.00	6.71	6.43
					8.20	7.73	7.31	6.71	6.18	5.73	5.29	4.91	4.56	4.26	3.96	3.70	3.47	3.25	3.05	2.86
24LH10	0.34	34	610	131.6	12.87	12.49	12.14	11.80	11.49	11.2	10.75	10.24	9.74	9.29	8.87	8.49	8.11	7.77	7.45	7.15
					8.69	8.15	7.70	7.29	6.91	6.40	5.92	5.51	5.12	4.75	4.43	4.15	3.88	3.63	3.41	3.21
24LH11	0.36	37	610	138.7	13.52	13.13	12.76	12.41	12.09	11.77	11.48	11.20	10.71	10.23	9.79	9.36	8.98	8.61	8.27	7.93
					9.10	8.58	8.09	7.66	7.26	6.88	6.55	6.10	5.66	5.26	4.91	4.59	4.29	4.02	3.77	3.54

**** IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.**

STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, LH-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	Approx. Mass (kN / m)	Approx. Mass (kg / m)	Depth (mm)	SAFE LOAD* In kN Between **		CLEAR SPAN (mm)														
				10058-12192		12496	12801	13106	13411	13715	14020	14325	14630	14935	15239	15544	15849	16154	16459	16764	17068
28LH05	0.19	19	711	62.2		4.91	4.71	4.52	4.33	4.17	4.01	3.86	3.72	3.57	3.45	3.32	3.21	3.10	3.00	2.90	2.81
						3.19	2.99	2.80	2.62	2.46	2.32	2.18	2.07	1.94	1.83	1.73	1.64	1.56	1.48	1.41	1.34
28LH06	0.23	24	711	82.7		6.53	6.26	6.01	5.76	5.53	5.31	5.10	4.91	4.72	4.56	4.39	4.24	4.10	3.95	3.82	3.69
						4.21	3.94	3.69	3.47	3.25	3.05	2.87	2.71	2.55	2.42	2.27	2.15	2.04	1.94	1.83	1.75
28LH07	0.25	25	711	93.4		7.36	7.06	6.77	6.49	6.23	5.98	5.74	5.53	5.32	5.13	4.94	4.77	4.61	4.45	4.30	4.15
						4.75	4.45	4.15	3.89	3.66	3.44	3.23	3.05	2.87	2.71	2.56	2.42	2.30	2.18	2.07	1.97
28LH08	0.26	27	711	100.0		7.88	7.54	7.23	6.93	6.65	6.39	6.12	5.88	5.64	5.41	5.21	5.02	4.83	4.65	4.49	4.33
						5.07	4.74	4.45	4.15	3.91	3.67	3.44	3.23	3.05	2.86	2.69	2.55	2.40	2.27	2.15	2.04
28LH09	0.31	31	711	123.2		9.73	9.32	8.93	8.55	8.21	7.88	7.57	7.28	7.01	6.75	6.50	6.27	6.05	5.85	5.64	5.45
						6.24	5.83	5.47	5.12	4.80	4.50	4.24	3.99	3.76	3.54	3.32	3.15	2.97	2.81	2.67	2.52
28LH10	0.34	34	711	134.7		10.63	10.27	9.90	9.50	9.12	8.75	8.40	8.08	7.77	7.48	7.22	6.96	6.71	6.47	6.26	6.05
						6.80	6.40	6.04	5.66	5.31	4.99	4.69	4.42	4.15	3.92	3.72	3.51	3.32	3.13	2.97	2.81
28LH11	0.36	37	711	144.5		11.38	11.12	10.74	10.37	9.95	9.55	9.17	8.82	8.49	8.18	7.88	7.60	7.32	7.07	6.82	6.61
						7.26	6.93	6.53	6.17	5.79	5.44	5.12	4.83	4.55	4.29	4.05	3.83	3.63	3.44	3.25	3.09
28LH12	0.39	40	711	158.8		12.50	12.21	11.93	11.67	11.41	11.17	10.75	10.34	9.95	9.57	9.22	8.88	8.56	8.26	7.96	7.69
						7.95	7.58	7.23	6.94	6.62	6.34	5.95	5.58	5.26	4.96	4.68	4.42	4.15	3.94	3.73	3.54
28LH13	0.44	45	711	165.4		13.06	12.75	12.46	12.18	11.90	11.66	11.41	11.17	10.96	10.53	10.12	9.74	9.38	9.04	8.72	8.42
				**		8.30	7.92	7.55	7.22	6.88	6.59	6.31	6.05	5.77	5.44	5.13	4.84	4.58	4.33	4.10	3.88
				11582-14021	14326-14630	14935	15239	15544	15849	16154	16459	16764	17068	17373	17678	17983	18288	18592	18897	19202	19507
32LH06	0.20	21	813	74.2	74.2	4.93	4.75	4.59	4.43	4.29	4.14	4.01	3.88	3.75	3.63	3.53	3.41	3.31	3.21	3.12	3.03
						3.07	2.9	2.75	2.61	2.46	2.34	2.23	2.11	2.01	1.91	1.82	1.73	1.66	1.57	1.51	1.44
32LH07	0.23	24	813	83.6	83.6	5.53	5.34	5.15	4.97	4.8	4.64	4.49	4.34	4.2	4.07	3.95	3.82	3.7	3.6	3.50	3.40
						3.42	3.25	3.07	2.91	2.75	2.61	2.48	2.36	2.24	2.13	2.04	1.94	1.85	1.76	1.69	1.61
32LH08	0.25	25	813	90.7	90.7	5.99	5.79	5.58	5.38	5.21	5.03	4.85	4.69	4.55	4.40	4.27	4.14	4.01	3.89	3.77	3.67
						3.72	3.53	3.34	3.15	2.99	2.83	2.68	2.55	2.43	2.32	2.20	2.10	1.99	1.91	1.82	1.75
32LH09	0.31	31	813	113.8	113.8	7.53	7.26	7.00	6.75	6.52	6.30	6.10	5.89	5.70	5.53	5.35	5.19	5.03	4.88	4.74	4.59
						4.65	4.40	4.15	3.94	3.73	3.54	3.35	3.19	3.03	2.88	2.75	2.62	2.51	2.39	2.29	2.17
32LH10	0.31	31	813	125.8	125.8	8.33	8.02	7.74	7.47	7.22	6.97	6.74	6.49	6.27	6.07	5.86	5.67	5.48	5.31	5.15	4.99
						5.13	4.84	4.59	4.33	4.11	3.89	3.70	3.50	3.32	3.16	3.00	2.86	2.71	2.59	2.46	2.36
32LH11	0.35	36	813	137.8	137.8	9.12	8.78	8.46	8.17	7.89	7.61	7.36	7.12	6.90	6.68	6.46	6.26	6.07	5.88	5.69	5.51
						5.61	5.29	5.00	4.74	4.49	4.26	4.04	3.83	3.66	3.48	3.31	3.15	3.00	2.86	2.72	2.61
32LH12	0.39	40	813	161.9	161.9	10.71	10.39	10.04	9.69	9.35	9.03	8.72	8.43	8.15	7.89	7.64	7.41	7.18	6.96	6.75	6.55
						6.56	6.24	5.92	5.60	5.31	5.03	4.77	4.53	4.30	4.10	3.89	3.72	3.54	3.38	3.22	3.07
32LH13	0.44	45	813	180.5	180.5	11.92	11.68	11.45	11.25	10.82	10.43	10.06	9.71	9.38	9.06	8.75	8.47	8.20	7.93	7.69	7.45
						7.29	7.00	6.72	6.47	6.12	5.79	5.48	5.16	4.90	4.65	4.43	4.20	4.01	3.82	3.63	3.47
32LH14	0.48	49	813	185.9	185.9	12.30	12.05	11.82	11.60	11.38	11.17	10.77	10.4	10.04	9.70	9.38	9.07	8.78	8.50	8.23	7.98
						7.51	7.22	6.94	6.68	6.42	6.08	5.76	5.45	5.18	4.91	4.68	4.43	4.23	4.02	3.85	3.66
32LH15	0.51	52	813	192.1	192.1	12.69	12.44	12.21	11.98	11.74	11.54	11.32	11.13	10.94	10.58	10.23	9.89	9.57	9.26	8.98	8.71
						7.76	7.45	7.18	6.90	6.62	6.39	6.15	5.93	5.73	5.45	5.18	4.93	4.69	4.46	4.26	4.07
				12802-14021	14326-17069	17373	17678	17983	18288	18592	18897	19202	19507	19812	20116	20421	20726	21031	21336	21640	21945
36LH07	0.23	24	914	74.7	74.7	4.26	4.13	3.99	3.88	3.76	3.66	3.56	3.45	3.35	3.26	3.18	3.09	3.02	2.93	2.86	2.78
						2.58	2.45	2.33	2.23	2.13	2.04	1.95	1.86	1.78	1.70	1.63	1.56	1.50	1.44	1.38	1.32
36LH08	0.26	27	914	82.2	82.2	4.68	4.53	4.40	4.27	4.14	4.02	3.91	3.79	3.69	3.59	3.48	3.40	3.31	3.22	3.13	3.05
						2.83	2.69	2.56	2.45	2.33	2.23	2.13	2.04	1.95	1.86	1.79	1.72	1.64	1.59	1.51	1.45
36LH09	0.31	31	914	105.4	105.4	5.99	5.80	5.63	5.45	5.29	5.13	4.99	4.85	4.71	4.58	4.46	4.33	4.21	4.11	4.01	3.89
						3.60	3.42	3.26	3.12	2.97	2.84	2.71	2.61	2.49	2.37	2.29	2.18	2.10	2.01	1.94	1.85
36LH10	0.31	31	914	116.0	116.0	6.62	6.42	6.21	6.02	5.85	5.67	5.51	5.35	5.21	5.06	4.93	4.78	4.67	4.53	4.42	4.30
						3.98	3.79	3.61	3.44	3.28	3.13	3.00	2.87	2.74	2.62	2.52	2.40	2.32	2.21	2.13	2.04
36LH11	0.34	34	914	126.7	126.7	7.22	7.00	6.78	6.58	6.39	6.20	6.01	5.85	5.67	5.51	5.37	5.22	5.07	4.94	4.81	4.69
						4.33	4.13	3.92	3.75	3.59	3.41	3.26	3.12	2.99	2.86	2.74	2.62	2.52	2.42	2.32	2.23
36LH12	0.36	37	914	151.6	151.6	8.65	8.39	8.12	7.88	7.63	7.41	7.19	6.97	6.77	6.56	6.37	6.18	6.01	5.83	5.67	5.51
						5.16	4.93	4.69	4.48	4.26	4.07	3.89	3.72	3.54	3.38	3.23	3.10	2.97	2.84	2.72	2.61
36LH13	0.44	45	914	178.3	178.3	10.17	9.85	9.54	9.25	8.97	8.69	8.44	8.20	7.96	7.74	7.53	7.32	7.12	6.93	6.75	6.58
						6.05	5.76	5.48	5.23	4.99	4.77	4.55	4.34	4.15	3.98	3.82	3.66	3.50	3.37	3.23	3.10
36LH14	0.53	54	914	196.6	196.6	11.20	11.01	10.63	10.3	9.96	9.64	9.35	9.06	8.78	8.52	8.27	8.04	7.80	7.58	7.36	7.18
						6.65	6.33	6.01	5.72	5.44	5.19	4.94	4.71	4.50	4.30	4.13	3.94	3.77	3.60	3.45	3.32
36LH15	0.53	54	914	207.2	207.2	11.80	11.6	11.39	11.22	10.85	10.52	10.18	9.88	9.57	9.29	9.01	8.75	8.50	8.27	8.04	7.82
						7.00	6.77	6.53	6.33	6.02	5.74	5.47	5.22	4.99	4.77	4.55	4.36	4.17	3.99	3.83	3.67

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STANDARD LOAD TABLE IN METRIC UNITS/OPEN WEB STEEL JOISTS, LH-SERIES
SAFE UNIFORMLY DISTRIBUTED LOAD IN KILONEWTONS/METER

Joist Designation	Approx. Mass (kN / m)	Approx. Mass (kg / m)	Depth (mm)	SAFE LOAD* In kN Between		CLEAR SPAN (mm)														
				14326-17983	**18288-19507**	**19812**	**20116**	**20421**	**20726**	**21031**	**21336**	**21640**	**21945**	**22250**	**22555**	**22860**	**23164**	**23469**	**23774**	**24079**	**24384**
40LH08	0.23	24	1016	73.8	73.8	3.70	3.60	3.51	3.41	3.32	3.23	3.16	3.07	3.00	2.93	2.86	2.80	2.72	2.67	2.59	2.53
						2.18	2.10	2.01	1.92	1.85	1.78	1.70	1.63	1.57	1.51	1.45	1.41	1.35	1.31	1.25	1.21
40LH09	0.31	31	1016	96.9	96.9	4.84	4.71	4.59	4.46	4.34	4.24	4.13	4.02	3.92	3.83	3.73	3.64	3.56	3.48	3.40	3.32
						2.86	2.74	2.62	2.52	2.42	2.33	2.23	2.14	2.05	1.98	1.91	1.83	1.78	1.72	1.64	1.59
40LH10	0.31	31	1016	106.7	106.7	5.35	5.21	5.06	4.93	4.80	4.68	4.56	4.45	4.33	4.23	4.13	4.02	3.92	3.82	3.72	3.63
						3.15	3.02	2.88	2.77	2.67	2.56	2.46	2.36	2.27	2.18	2.10	2.02	1.95	1.88	1.80	1.73
40LH11	0.32	33	1016	116.5	116.5	5.82	5.66	5.51	5.37	5.22	5.09	4.96	4.84	4.71	4.59	4.49	4.37	4.27	4.17	4.07	3.98
						3.41	3.26	3.13	3.02	2.88	2.77	2.67	2.56	2.46	2.37	2.29	2.20	2.11	2.04	1.97	1.89
40LH12	0.36	37	1016	141.8	141.8	7.09	6.88	6.69	6.52	6.34	6.18	6.02	5.86	5.72	5.57	5.44	5.31	5.18	5.04	4.93	4.81
						4.15	3.98	3.80	3.66	3.51	3.37	3.23	3.10	2.99	2.87	2.75	2.65	2.56	2.46	2.37	2.29
40LH13	0.44	45	1016	167.2	167.2	8.36	8.12	7.90	7.70	7.50	7.29	7.10	6.93	6.75	6.58	6.42	6.26	6.11	5.96	5.82	5.69
						4.87	4.67	4.48	4.30	4.13	3.95	3.79	3.64	3.51	3.37	3.25	3.12	3.02	2.90	2.80	2.69
40LH14	0.51	52	1016	191.2	191.2	9.57	9.31	9.04	8.80	8.56	8.33	8.11	7.90	7.70	7.51	7.32	7.15	6.97	6.80	6.64	6.47
						5.58	5.35	5.12	4.90	4.71	4.50	4.33	4.15	3.98	3.83	3.67	3.54	3.40	3.28	3.15	3.05
40LH15	0.53	54	1016	213.9	213.9	10.71	10.39	10.08	9.79	9.51	9.23	8.98	8.74	8.50	8.27	8.05	7.85	7.64	7.45	7.26	7.09
						6.23	5.95	5.69	5.44	5.21	4.99	4.78	4.59	4.40	4.23	4.07	3.91	3.76	3.61	3.48	3.35
40LH16	0.61	63	1016	235.7	235.7	11.79	11.61	11.44	11.26	11.10	10.96	10.65	10.36	10.08	9.82	9.55	9.31	9.07	8.84	8.62	8.40
						6.84	6.64	6.43	6.24	6.07	5.89	5.64	5.41	5.19	4.99	4.80	4.61	4.43	4.26	4.11	3.95
				15849-17983	**18288-21945**	**22250**	**22555**	**22860**	**23164**	**23469**	**23774**	**24079**	**24384**	**24688**	**24993**	**25298**	**25603**	**25907**	**26212**	**26517**	**26822**
44LH09	0.28	28	1118	88.9	88.9	3.96	3.86	3.77	3.69	3.60	3.53	3.44	3.37	3.29	3.22	3.15	3.07	3.02	2.94	2.88	2.83
						2.30	2.21	2.13	2.05	1.98	1.91	1.85	1.78	1.72	1.66	1.60	1.54	1.50	1.44	1.40	1.35
44LH10	0.31	31	1118	98.3	98.3	4.37	4.27	4.17	4.07	3.96	3.88	3.79	3.7	3.63	3.54	3.47	3.40	3.32	3.25	3.18	3.12
						2.53	2.45	2.36	2.26	2.18	2.10	2.02	1.95	1.89	1.82	1.76	1.70	1.64	1.60	1.54	1.50
44LH11	0.32	33	1118	106.3	106.3	4.74	4.62	4.52	4.40	4.30	4.21	4.11	4.02	3.92	3.85	3.76	3.67	3.60	3.53	3.44	3.38
						2.74	2.64	2.55	2.45	2.36	2.29	2.20	2.13	2.04	1.98	1.91	1.85	1.79	1.73	1.67	1.61
44LH12	0.36	37	1118	131.6	131.6	5.86	5.73	5.58	5.45	5.32	5.19	5.06	4.94	4.83	4.71	4.59	4.49	4.37	4.27	4.18	4.08
						3.38	3.26	3.13	3.02	2.91	2.80	2.69	2.61	2.51	2.42	2.33	2.26	2.17	2.10	2.02	1.95
44LH13	0.44	45	1118	156.1	156.1	6.96	6.80	6.62	6.47	6.31	6.17	6.02	5.89	5.76	5.63	5.50	5.38	5.26	5.15	5.04	4.93
						4.01	3.86	3.70	3.59	3.44	3.32	3.21	3.09	2.99	2.88	2.78	2.69	2.61	2.52	2.43	2.34
44LH14	0.45	46	1118	179.7	179.7	8.01	7.79	7.58	7.38	7.19	7.01	6.84	6.66	6.50	6.36	6.20	6.05	5.92	5.77	5.64	5.53
						4.59	4.40	4.24	4.07	3.91	3.77	3.63	3.50	3.37	3.25	3.13	3.02	2.91	2.81	2.72	2.64
44LH15	0.53	54	1118	209.0	209.0	9.32	9.09	8.87	8.65	8.44	8.24	8.04	7.83	7.64	7.47	7.29	7.12	6.94	6.80	6.64	6.49
						5.34	5.13	4.94	4.75	4.58	4.42	4.26	4.10	3.95	3.80	3.67	3.54	3.41	3.31	3.19	3.07
44LH16	0.61	63	1118	241.0	241.0	10.75	10.49	10.23	9.98	9.74	9.51	9.29	9.07	8.87	8.66	8.46	8.28	8.09	7.92	7.74	7.58
						6.14	5.91	5.69	5.47	5.28	5.07	4.90	4.72	4.56	4.40	4.24	4.11	3.96	3.83	3.72	3.59
44LH17	0.69	70	1118	258.8	258.8	11.52	11.38	11.22	11.07	10.94	10.68	10.43	10.20	9.96	9.73	9.51	9.31	9.10	8.90	8.71	8.52
						6.56	6.39	6.21	6.05	5.91	5.69	5.48	5.29	5.12	4.93	4.77	4.61	4.45	4.30	4.15	4.02
				17068-17983	**18288-24384**	**24688**	**24993**	**25298**	**25603**	**25907**	**26212**	**26517**	**26822**	**27127**	**27431**	**27736**	**28041**	**28346**	**28651**	**28955**	**29260**
48LH10	0.31	31	1219	88.9	88.9	3.59	3.51	3.44	3.37	3.29	3.22	3.16	3.09	3.03	2.97	2.91	2.86	2.80	2.74	2.69	2.64
						2.05	1.98	1.92	1.85	1.79	1.73	1.69	1.63	1.57	1.53	1.48	1.44	1.40	1.35	1.31	1.26
48LH11	0.32	33	1219	96.5	96.5	3.88	3.79	3.72	3.63	3.56	3.48	3.41	3.34	3.28	3.21	3.15	3.09	3.03	2.97	2.91	2.86
						2.21	2.14	2.07	1.99	1.94	1.88	1.82	1.75	1.70	1.64	1.60	1.54	1.50	1.45	1.41	1.37
48LH12	0.36	37	1219	121.8	121.8	4.90	4.80	4.69	4.59	4.49	4.39	4.30	4.21	4.13	4.04	3.96	3.88	3.80	3.73	3.66	3.59
						2.78	2.69	2.61	2.52	2.43	2.34	2.27	2.20	2.14	2.07	2.01	1.94	1.88	1.83	1.78	1.72
48LH13	0.42	43	1219	145.9	145.9	5.86	5.73	5.60	5.48	5.37	5.25	5.15	5.03	4.93	4.84	4.74	4.64	4.55	4.46	4.37	4.29
						3.32	3.22	3.10	3.00	2.90	2.81	2.72	2.62	2.55	2.48	2.39	2.32	2.24	2.18	2.11	2.05
48LH14	0.47	48	1219	172.1	172.1	6.93	6.77	6.62	6.47	6.33	6.20	6.07	5.93	5.82	5.69	5.58	5.47	5.35	5.25	5.15	5.04
						3.92	3.79	3.66	3.54	3.41	3.31	3.21	3.09	3.00	2.90	2.81	2.72	2.64	2.56	2.49	2.40
48LH15	0.53	54	1219	197.9	197.9	7.95	7.77	7.60	7.44	7.28	7.12	6.97	6.82	6.68	6.53	6.40	6.27	6.15	6.02	5.91	5.79
						4.49	4.34	4.18	4.05	3.92	3.79	3.67	3.56	3.44	3.32	3.22	3.12	3.03	2.93	2.84	2.75
48LH16	0.61	63	1219	228.1	228.1	9.17	8.97	8.77	8.58	8.40	8.21	8.04	7.88	7.70	7.55	7.39	7.25	7.10	6.96	6.82	6.69
						5.18	5.00	4.83	4.67	4.52	4.36	4.21	4.08	3.95	3.83	3.72	3.60	3.48	3.38	3.28	3.18
48LH17	0.69	70	1219	256.2	256.2	10.30	10.06	9.85	9.63	9.42	9.22	9.03	8.84	8.65	8.47	8.30	8.14	7.98	7.82	7.66	7.51
						5.79	5.58	5.41	5.22	5.04	4.88	4.72	4.58	4.43	4.29	4.15	4.02	3.91	3.79	3.67	3.57

*The safe uniform load for the clear spans shown in the Safe Load column is equal to (Safe Load)/(Clear span + 204). (The added 0.67 feet (204 millimeters) is required to obtain the proper length on which the Load Tables were developed).

In no case shall the safe uniform load, for clear spans less than the minimum clear span shown in the Safe Load column, exceed the uniform load calculated for the minimum clear span listed in the Safe Load column.

To solve for *live* loads for clear spans shown in the Safe Load column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 204 mm)^2 and divide by (the actual clear span + 204mm)^2. The live load shall *not* exceed the safe uniform load.

METRIC LOAD TABLE
LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a Maximum Allowable Tensile Stress of 207 MPa

Adopted by the Steel Joist Institute May 2, 1994 - Effective September 1, 1994

The black figures in the following table give the TOTAL safe uniformly-distributed load-carrying capacities, in kiloNewtons per meter, of DLH-Series Joists. The weight (kN/m) of DEAD loads, including the joists, must in all cases be deducted to determine the LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights shown in the tables. All loads shown are for roof construction only.

The **RED** figures in this load table are the LIVE loads (kiloNewtons per meter) of joist which will produce an approximate deflection of l/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the **RED** figures by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table does not apply. This load table may be used for parallel chord joists installed to a maximum slope of 1:24. All rows of bridging shall be diagonal bridging with bolted connections at the chords and intersections.

Where the span of the joist is equal to or greater than the span corresnonding to the **BLUE** SHADED area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completelv installed.

Where the span of the joists is equal to or greater than the span corresponding to the **GRAY** SHADED area of the load table hoisting cables shall not be released until all rows of bridging are comnletelv installed.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to reduction of chord areas.

The top chords are considered as being stayed laterally by the roof deck.

The approximate joist weights (kN/m) and mass (kg/m) shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in (mm^4) is:

$I_j = 2.6953\ (W_{LL})(L^3)(10^{-5})$, where W_{LL}= **RED** figure in the Load Table; L = (Span + 204) in millimeters.

Joist Designation	Approx. Mass (kN / m)	Approx. Mass (kg / m)	Depth (mm)	SAFE LOAD* In kN Between	CLEAR SPAN (mm)														
				18592-26822	**27127**	**27431**	**27736**	**28041**	**28346**	**28651**	**28955**	**29260**	**29565**	**29870**	**30175**	**30479**	**30784**	**31089**	**31394**	**31699**
52DLH10	0.36	37	1321	118.7	4.34	4.24	4.15	4.07	3.98	3.89	3.80	3.73	3.66	3.59	3.51	3.44	3.37	3.31	3.25	3.18
					2.49	2.40	2.32	2.24	2.18	2.11	2.04	1.98	1.92	1.86	1.80	1.75	1.69	1.66	1.60	1.56
52DLH11	0.38	39	1321	130.3	4.77	4.67	4.56	4.46	4.36	4.27	4.18	4.10	4.01	3.94	3.85	3.77	3.70	3.63	3.56	3.50
					2.72	2.64	2.53	2.46	2.39	2.30	2.23	2.17	2.10	2.04	1.97	1.92	1.86	1.80	1.75	1.70
52DLH12	0.42	43	1321	145.4	5.32	5.21	5.09	4.99	4.87	4.77	4.67	4.58	4.48	4.39	4.30	4.21	4.14	4.05	3.98	3.91
					2.97	2.87	2.78	2.69	2.61	2.52	2.45	2.37	2.30	2.23	2.17	2.10	2.04	1.97	1.92	1.86
52DLH13	0.50	51	1321	176.5	6.46	6.31	6.18	6.04	5.92	5.79	5.67	5.56	5.44	5.34	5.22	5.12	5.02	4.93	4.83	4.74
					3.60	3.48	3.37	3.26	3.15	3.05	2.96	2.87	2.78	2.69	2.62	2.53	2.48	2.39	2.32	2.26
52DLH14	0.57	58	1321	201.9	7.39	7.25	7.09	6.94	6.8	6.66	6.52	6.39	6.27	6.14	6.02	5.91	5.79	5.69	5.57	5.47
					4.02	3.88	3.76	3.63	3.53	3.41	3.31	3.21	3.10	3.02	2.93	2.83	2.75	2.68	2.59	2.52
52DLH15	0.61	63	1321	226.8	8.30	8.12	7.95	7.77	7.61	7.45	7.29	7.15	7.00	6.85	6.72	6.58	6.46	6.33	6.21	6.10
					4.53	4.39	4.24	4.11	3.96	3.85	3.73	3.60	3.50	3.40	3.29	3.19	3.10	3.02	2.93	2.84
52DLH16	0.66	67	1321	244.6	8.96	8.77	8.58	8.39	8.21	8.04	7.88	7.70	7.55	7.39	7.25	7.10	6.97	6.82	6.69	6.58
					5.04	4.88	4.72	4.58	4.43	4.29	4.15	4.02	3.89	3.79	3.67	3.57	3.45	3.35	3.26	3.16
52DLH17	0.76	77	1321	281.5	10.3	10.08	9.86	9.64	9.44	9.25	9.04	8.87	8.68	8.50	8.34	8.17	8.01	7.86	7.70	7.55
					5.76	5.56	5.38	5.21	5.04	4.88	4.72	4.59	4.43	4.31	4.17	4.07	3.94	3.83	3.72	3.60
				20116-29260	**29565**	**29870**	**30175**	**30479**	**30784**	**31089**	**31394**	**31699**	**32003**	**32308**	**32613**	**32918**	**33223**	**33528**	**33832**	**34137**
56DLH11	0.38	39	1422	124.9	4.20	4.13	4.04	3.96	3.89	3.82	3.75	3.69	3.61	3.56	3.48	3.42	3.37	3.31	3.25	3.19
					2.46	2.37	2.30	2.23	2.17	2.11	2.04	1.98	1.94	1.88	1.82	1.78	1.72	1.67	1.64	1.60
56DLH12	0.44	45	1422	143.6	4.83	4.72	4.64	4.55	4.46	4.37	4.30	4.21	4.14	4.05	3.98	3.91	3.83	3.77	3.70	3.63
					2.68	2.59	2.52	2.45	2.37	2.30	2.23	2.18	2.11	2.05	1.99	1.94	1.89	1.83	1.79	1.73
56DLH13	0.50	51	1422	173.9	5.85	5.74	5.63	5.53	5.42	5.32	5.22	5.12	5.02	4.93	4.83	4.74	4.65	4.58	4.49	4.42
					3.25	3.15	3.05	2.97	2.87	2.78	2.71	2.64	2.55	2.49	2.42	2.34	2.29	2.21	2.17	2.11
56DLH14	0.57	58	1422	196.6	6.61	6.47	6.34	6.23	6.11	5.99	5.88	5.77	5.66	5.56	5.47	5.37	5.26	5.18	5.09	5.00
					3.63	3.53	3.41	3.32	3.22	3.12	3.05	2.94	2.86	2.77	2.71	2.64	2.55	2.49	2.43	2.36
56DLH15	0.61	63	1422	224.6	7.55	7.41	7.26	7.12	6.97	6.84	6.71	6.58	6.46	6.33	6.21	6.11	5.99	5.88	5.77	5.67
					4.10	3.96	3.85	3.73	3.61	3.53	3.41	3.32	3.22	3.13	3.05	2.97	2.88	2.80	2.74	2.65
56DLH16	0.67	68	1422	242.4	8.15	7.99	7.83	7.67	7.53	7.38	7.23	7.10	6.97	6.84	6.71	6.59	6.47	6.36	6.24	6.12
					4.56	4.43	4.29	4.15	4.04	3.92	3.82	3.70	3.60	3.50	3.40	3.31	3.22	3.12	3.05	2.97
56DLH17	0.74	76	1422	279.3	9.38	9.19	9.01	8.82	8.66	8.49	8.33	8.17	8.01	7.86	7.72	7.58	7.44	7.31	7.18	7.04
					5.19	5.03	4.88	4.74	4.61	4.46	4.34	4.21	4.10	3.98	3.88	3.76	3.66	3.57	3.47	3.37

Joist Designation	Approx. Mass (kN / m)	Approx. Mass (kg / m)	Depth (mm)	SAFE LOAD* In kN Between		CLEAR SPAN (mm)															
				21336-30175	**30480-31699**	**32003**	**32308**	**32613**	**32918**	**33223**	**33528**	**33832**	**34137**	**34442**	**34747**	**35052**	**35356**	**35661**	**35966**	**36271**	**36576**
60DLH12	0.42	43	1524	138.3	138.3	4.30	4.21	4.14	4.07	3.99	3.94	3.86	3.80	3.73	3.67	3.61	3.56	3.50	3.44	3.38	3.32
						2.45	2.37	2.30	2.24	2.18	2.13	2.07	2.01	1.95	1.91	1.86	1.80	1.76	1.72	1.67	1.64
60DLH13	0.51	52	1524	168.1	168.1	5.22	5.12	5.03	4.94	4.85	4.77	4.69	4.61	4.53	4.46	4.39	4.31	4.24	4.17	4.11	4.04
						2.96	2.87	2.78	2.72	2.64	2.56	2.49	2.43	2.37	2.30	2.24	2.20	2.14	2.08	2.02	1.97
60DLH14	0.58	60	1524	186.8	186.8	5.80	5.70	5.58	5.48	5.39	5.29	5.19	5.10	5.02	4.93	4.84	4.77	4.68	4.61	4.52	4.45
						3.15	3.06	2.99	2.90	2.81	2.75	2.67	2.59	2.52	2.48	2.40	2.34	2.27	2.21	2.17	2.11
60DLH15	0.63	64	1524	219.2	219.2	6.81	6.68	6.56	6.45	6.33	6.23	6.11	6.01	5.91	5.80	5.72	5.61	5.53	5.44	5.35	5.26
						3.72	3.61	3.53	3.42	3.32	3.25	3.15	3.06	2.99	2.91	2.83	2.77	2.69	2.62	2.55	2.49
60DLH16	0.67	68	1524	241.0	241.0	7.48	7.35	7.20	7.07	6.94	6.82	6.71	6.58	6.47	6.36	6.24	6.14	6.04	5.93	5.83	5.73
						4.15	4.04	3.92	3.82	3.72	3.60	3.51	3.42	3.32	3.25	3.16	3.07	3.00	2.93	2.86	2.77
60DLH17	0.76	77	1524	277.1	277.1	8.61	8.44	8.3	8.14	7.99	7.85	7.72	7.57	7.44	7.31	7.19	7.06	6.94	6.82	6.71	6.61
						4.72	4.59	4.46	4.34	4.23	4.13	4.01	3.89	3.8	3.70	3.60	3.51	3.42	3.32	3.25	3.16
60DLH18	0.86	88	1524	319.8	319.8	9.93	9.74	9.57	9.39	9.22	9.06	8.9	8.74	8.59	8.43	8.28	8.15	8.01	7.88	7.74	7.61
						5.34	5.21	5.04	4.91	4.77	4.65	4.52	4.42	4.29	4.17	4.07	3.96	3.88	3.77	3.67	3.59
				22860-30175	**30480-34137**	**34442**	**34747**	**35052**	**35356**	**35661**	**35966**	**36271**	**36576**	**36880**	**37185**	**37490**	**37795**	**38100**	**38404**	**38709**	**39014**
64DLH12	0.45	46	1626	133.4	133.4	3.85	3.77	3.72	3.66	3.6	3.54	3.48	3.42	3.37	3.32	3.26	3.22	3.18	3.12	3.07	3.03
						2.23	2.18	2.13	2.07	2.01	1.97	1.92	1.88	1.82	1.78	1.73	1.69	1.66	1.61	1.59	1.54
64DLH13	0.50	51	1626	161.9	161.9	4.68	4.59	4.52	4.45	4.37	4.3	4.24	4.17	4.10	4.04	3.98	3.92	3.85	3.79	3.75	3.69
						2.71	2.64	2.56	2.49	2.45	2.37	2.32	2.26	2.21	2.15	2.10	2.05	1.99	1.95	1.91	1.86
64DLH14	0.58	60	1626	185.4	185.4	5.35	5.25	5.16	5.09	5.00	4.91	4.84	4.75	4.68	4.61	4.53	4.46	4.39	4.31	4.26	4.18
						2.90	2.81	2.75	2.68	2.61	2.53	2.49	2.42	2.36	2.30	2.24	2.20	2.14	2.08	2.04	1.98
64DLH15	0.63	64	1626	212.6	212.6	6.14	6.04	5.93	5.83	5.74	5.64	5.56	5.47	5.38	5.29	5.22	5.13	5.06	4.97	4.90	4.83
						3.41	3.32	3.25	3.16	3.07	3.00	2.93	2.86	2.78	2.72	2.65	2.58	2.52	2.48	2.40	2.34
64DLH16	0.67	68	1626	239.3	239.3	6.91	6.8	6.68	6.56	6.46	6.34	6.24	6.14	6.04	5.93	5.85	5.74	5.66	5.57	5.48	5.39
						3.82	3.7	3.61	3.53	3.42	3.34	3.26	3.18	3.10	3.03	2.96	2.88	2.81	2.75	2.68	2.62
64DLH17	0.76	77	1626	275.7	275.7	7.96	7.82	7.69	7.55	7.42	7.31	7.18	7.06	6.94	6.82	6.72	6.62	6.50	6.40	6.30	6.21
						4.34	4.23	4.13	4.01	3.91	3.82	3.72	3.61	3.54	3.45	3.37	3.29	3.21	3.13	3.06	2.99
64DLH18	0.86	88	1626	318.4	318.4	9.19	9.03	8.87	8.72	8.56	8.43	8.28	8.15	8.01	7.88	7.76	7.63	7.51	7.39	7.28	7.16
						4.91	4.78	4.67	4.53	4.43	4.310	4.20	4.11	3.99	3.89	3.80	3.72	3.63	3.54	3.45	3.38
				24384-30175	**30480-36576**	**36880**	**37185**	**37490**	**37795**	**38100**	**38404**	**38709**	**39014**	**39319**	**39624**	**39928**	**40233**	**40538**	**40843**	**41148**	**41452**
68DLH**13**	0.54	55	1727	155.6	155.6	4.20	4.14	4.07	4.01	3.95	3.89	3.83	3.77	3.72	3.67	3.61	3.56	3.51	3.45	3.41	3.37
						2.49	2.45	2.39	2.32	2.26	2.21	2.17	2.11	2.07	2.01	1.97	1.94	1.89	1.85	1.80	1.76
68DLH**14**	0.58	60	1727	179.2	179.2	4.84	4.77	4.69	4.62	4.55	4.49	4.42	4.36	4.29	4.23	4.17	4.10	4.04	3.98	3.92	3.88
						2.68	2.61	2.55	2.49	2.43	2.37	2.32	2.26	2.21	2.15	2.11	2.05	2.01	1.97	1.94	1.89
68DLH**15**	0.64	65	1727	201.0	201.0	5.42	5.32	5.25	5.16	5.07	5.00	4.91	4.84	4.77	4.69	4.62	4.55	4.49	4.42	4.36	4.29
						3.00	2.93	2.86	2.78	2.72	2.65	2.59	2.53	2.48	2.42	2.36	2.30	2.26	2.21	2.15	2.11
68DLH**16**	0.72	73	1727	238.4	238.4	6.43	6.31	6.23	6.12	6.02	5.93	5.83	5.74	5.66	5.57	5.48	5.41	5.32	5.25	5.16	5.09
						3.53	3.44	3.35	3.28	3.19	3.12	3.05	2.97	2.90	2.84	2.77	2.71	2.65	2.59	2.53	2.49
68DLH**17**	0.80	82	1727	268.6	268.6	7.25	7.13	7.01	6.91	6.81	6.71	6.61	6.50	6.40	6.31	6.23	6.12	6.04	5.95	5.88	5.79
						4.01	3.91	3.82	3.73	3.63	3.56	3.47	3.38	3.32	3.23	3.16	3.09	3.03	2.96	2.88	2.83
68DLH**18**	0.89	91	1727	310.9	310.9	8.39	8.26	8.12	8.01	7.88	7.76	7.64	7.53	7.41	7.31	7.19	7.09	6.99	6.88	6.78	6.69
						4.53	4.43	4.33	4.21	4.13	4.02	3.92	3.83	3.75	3.66	3.59	3.50	3.41	3.35	3.28	3.19
68DLH**19**	0.98	100	1727	358.0	358.0	9.66	9.50	9.35	9.20	9.06	8.91	8.77	8.63	8.50	8.37	8.24	8.12	7.99	7.88	7.76	7.66
						5.15	5.02	4.90	4.78	4.67	4.56	4.45	4.34	4.24	4.15	4.05	3.96	3.88	3.79	3.70	3.61
				25603-30175	**30480-39014**	**39319**	**39624**	**39928**	**40233**	**40538**	**40843**	**41148**	**41452**	**41757**	**42062**	**42367**	**42672**	**42976**	**43281**	**43586**	**43891**
72DLH**14**	0.60	61	1829	174.3	174.3	4.42	4.34	4.29	4.23	4.15	4.10	4.04	3.99	3.94	3.88	3.82	3.77	3.72	3.67	3.61	3.57
						2.49	2.43	2.37	2.32	2.26	2.21	2.17	2.13	2.08	2.02	1.98	1.94	1.91	1.86	1.82	1.79
72DLH**15**	0.64	65	1829	199.7	199.7	5.06	4.99	4.90	4.83	4.75	4.69	4.62	4.55	4.49	4.42	4.36	4.30	4.24	4.17	4.11	4.07
						2.78	2.72	2.67	2.59	2.53	2.49	2.43	2.37	2.33	2.27	2.21	2.18	2.14	2.08	2.04	1.99
72DLH**16**	0.73	74	1829	230.8	230.8	5.85	5.76	5.69	5.60	5.51	5.44	5.37	5.29	5.22	5.15	5.07	5.00	4.93	4.87	4.80	4.74
						3.28	3.19	3.12	3.05	2.99	2.91	2.86	2.78	2.74	2.67	2.61	2.55	2.49	2.46	2.40	2.34
72DLH**17**	0.82	83	1829	259.7	259.7	6.58	6.49	6.39	6.30	6.21	6.12	6.04	5.95	5.86	5.79	5.70	5.63	5.56	5.48	5.41	5.34
						3.73	3.64	3.57	3.48	3.40	3.32	3.26	3.18	3.10	3.05	2.99	2.91	2.86	2.78	2.74	2.68
72DLH**18**	0.86	88	1829	304.2	304.2	7.70	7.58	7.47	7.36	7.25	7.15	7.04	6.99	6.85	6.75	6.66	6.56	6.47	6.39	6.30	6.21
						4.21	4.13	4.02	3.94	3.86	3.76	3.67	3.60	3.53	3.44	3.37	3.31	3.23	3.16	3.09	3.05
72DLH**19**	1.02	104	1829	356.7	356.7	9.03	8.88	8.75	8.62	8.49	8.36	8.24	8.12	8.01	7.89	7.77	7.67	7.55	7.45	7.35	7.25
						4.78	4.68	4.56	4.46	4.37	4.27	4.17	4.08	3.99	3.91	3.83	3.75	3.66	3.60	3.51	3.44

The safe uniform load for the clear spans shown in the Safe Load column is equal to (Safe Load)/(Clear span + 204) (The added 0.67 feet (204 millimeters) is required to obtain the proper length on which the Load Tables were developed).

In no case shall the safe uniform load, for clear spans less than the minimum clear span shown in the Safe Load column, exceed the uniform load calculated for the minimum clear span listed in the Safe Load column.

To solve for *live* loads for clear spans shown in the Safe Load column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 204 mm)^2 and divide by (the actual clear span + 204mm)^2. The live load shall *not* exceed the safe uniform load.

Adopted by the Steel Joist Institute February 15, 1978 - Revised to May 2, 1994 - Effective September 1, 1994

SECTION 100. SCOPE

These specifications cover the design, manufacture and use of Longspan Steel Joists **LH-**Series, and Deep Longspan Steel Joists, **DLH-**Series.

SECTION 101. DEFINITION

The term "Longspan Steel Joists **LH-**Series and Deep Longspan Joists **DLH-**Series," as used herein, refers to open web, load-carrying members utilizing hotrolled or cold-formed steel, including cold-formed steel whose yield strength* has been attained by cold working. **LH-**Series are suitable for the direct support of floors and roof decks in buildings, and **DLH-**Series are suitable for the direct support of roof decks in buildings.

The design of **LH-** and **DLH-**Series joist chord or web sections shall be based on a yield strength of at least 36 ksi (250 MPa), but not greater than 50 ksi (345 MPa). Steel used for **LH-** and **DLH-**Series joist chord or web sections shall have a minimum yield strength determined in accordance with one of the procedures specified in Section 102.2, which is equal to the yield strength assumed in the design. **LH-** and **DLH-**Series joists shall be designed in accordance with these specifications to support the loads given in the attached Standard Load Tables for **LH-** and **DLH** Series joists.

*The term "yield strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13 - "Yield Strength," or paragraph 12 - "Yield Point," of ASTM Standard A370, "Mechanical Testing of Steel Products," or as specified in Section 102.2 of this Specification.

SECTION 102. MATERIALS

102.1 STEEL

The steel used in the manufacture of chord and web sections shall conform to one of the following ASTM Specifications of latest adoption:

- Structural Steel, ASTM A36/A36M.
- High-Strength Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality ASTM A529/A529M, Grade 50.
- Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality ASTM A570/A570M.
- High-Strength Low-Alloy Columbium-Vanadium Steel of Structural Quality ASTM A572/A572M, Grades 42,45, and 50.
- High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (102 mm) thick, ASTM A588/A588M.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, with Improved Corrosion Resistance, ASTM A606.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, Columbium and/or Vanadium, ASTM A607. Grades 45 and 50.
- Steel, Cold-Rolled Sheet, Carbon Structural, ASTM A611. Grade D.

or shall be of suitable quality ordered or produced to other than the listed specifications, provided that such material in the state used for final assembly and manufacture is weldable and is proved by tests performed by the producer or manufacturer to have the properties specified in Section 102.2.

102.2 MECHANICAL PROPERTIES

The yield strength used as a basis for the design stresses prescribed in Section 103 shall be at least 36 ksi (250 MPa), but shall not be greater than 50 ksi (345 MPa). 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 material the mechanical properties of which conform to the requirements of one of the listed specifications, test specimens and procedure shall conform to those of such specifications and to ASTM A370.

In the case of material the mechanical properties of which do not conform to the requirements of one of the listed specifications, the test specimens and procedure shall conform to the applicable requirements of ASTM A370 and the specimens shall exhibit a yield strength equal to or exceeding the design yield strength and an elongation of not less than (a) 20 percent in 2 inches (51 mm) for sheet and strip or (b) 18 percent in 8 inches (203 mm) for plates, shapes and bars with adjustments for thickness for plates, shapes and bars as prescribed in ASTM A36/A36M, A242/A242M, A529/A529M, A572/A572M,

and A588/A588M, whichever specification is applicable on the basis of design yield strength.
The number of tests shall be as prescribed in ASTM A6 for plates, shapes, and bars; and ASTM A570/A570M, A606, A607, and A611 for sheet and strip.

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 Section 3.1.1 and 6.3 of the AISI Specification for the Design of Cold-Formed Steel Structural Members, and shall indicate compliance with these provisions and with the following additional requirements:

1. The yield strength measured in the tests equal or exceed the design yield strength.
2. Where tension tests are made for acceptance and control purposes the tensile strength shall be at least 6 percent greater than the yield strength of the section.
3. 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 specimen shall be not greater than 20 times its least radius
4. If any test specimen fails to pass the requirements of subparagraphs 1, 2 or 3 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 cause for rejection of the lot represented by the specimens.

102.3 WELDING ELECTRODES

The following electrodes shall be used for arc welding:

(a) For connected members both having a specified minimum yield strength greater than 36 ksi (250 MPa).
AWS A5.1 or A5.5, E70XX
AWS A5.17, F7X, EXXX flux electrode combination
AWS A5.18, E70S-X or E70U-1
AWS A5.20, E70T-X

(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).
AWS A5. 1, E60XX
AWS A5.17, F6X-EXXX flux electrode combination
AWS A5.20, E60T-X

or any of those listed in Section 102.3(a)

Other welding methods, providing equivalent strength as demonstrated by tests, may be used.

102.4 PAINT

The standard shop paint is a primer coat intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating.
When specified, the Standard shop paint shall conform to one of the following:

(a) Steel Structures Painting Council Specification 15-68T, Type I (red oxide)

(b) Federal Specification TT-P-636 (red oxide)

(c) Or, shall be a shop paint which meets the minimum performance requirements of one of the above listed specifications.

SECTION 103. DESIGN AND MANUFACTURE

103.1 METHOD

Joists shall be designed in accordance with these specifications as simply supported uniformly loaded trusses supporting a floor or roof deck so constructed as to brace the top chord of the joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following specifications of latest adoption:

(a) American Institute of Steel Construction Specification for the Design, Fabrication and Erection of Structural Steel, for Buildings (Allowable Stress Design), where the material used consists of plates, shapes or bars.

(b) American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members, for members which are cold-formed from sheet or strip material.

102.2 UNIT STRESSES

Joists shall have their components so proportioned that the unit stresses in kips per square inch (Mega Pascals) shall not exceed the following where FY is the yield strength defined in Section 102.2:

(a) Tension:
All members $F_t=0.6F_y$

(b) Compression:
For all members with Kl/r less than C_c:

$$F_a=\frac{\left[1-\frac{(Kl/r)^2}{2C_c^2}\right]QF_y}{\frac{5}{3}+\frac{3}{8}\left[\frac{Kl/r}{C_c}\right]-\frac{1}{8}\left[\frac{Kl/r}{C_c}\right]^3}$$

where $C_c=\sqrt{\frac{2\pi^2E}{QF_y}}$ and

where Q is a form factor equal to unity except when the width-thickness ratio of one or more elements of the profile exceeds the limits specified in the AISC Specification, Section B5 (Allowable Stress Design) for hot-rolled sections and in the AISI Specification, Section 3., for cold-formed sections; and where K is a length factor used to determine the effective slenderness ratio as shown in Table 103.3.1.

For members with Kl/r greater than Cc:

$$F_a = \frac{12\pi^2 E}{23(Kl/r)^2}$$

In the above formulas Kl/r is the appropriate effective slenderness ratio as determined from Section 103.3, and "E" is equal to 29,000 ksi (200,000 MPa).

(c) Bending:

For chords, and for web members other than solid rounds . . . . . $F_b=0.6\ F_y$
For web members of solid round cross section . . . . . $F_b=0.9\ F_y$
For bearing plates . . . . . $F_b=0.75\ F_y$

(d) Weld Stresses:
Shear at throat of fillet welds:
Made with E70 series electrodes or F7X-EXXX flux-electrode combinations . . . 21 ksi (145 MPa)
Made with E60 series electrodes or F6X-EXXX flux-electrode combinations . . . 18 ksi (124 MPa)

Tension or compression on groove or butt welds shall be the same as those specified for the connected material.

TABLE 103.3.1 MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS

I TOP CHORD INTERIOR PANEL

A. The slenderness ratios, 1.0l/r and 1.0l_s/r, of members as a whole or any component part shall not exceed 90.

B. *The effective slenderness ratio to determine* "F_a"

1. With fillers or ties	$0.75l/r_x$	$1.0l/r_y$		$1.0l_s/r_z$
2. Without fillers or ties			$0.75l/r_z$	
3. Single component members	$0.75l/r_x$	$1.0l/r_y$		

C. *The effective slenderness ratio to determine* "F'_e"

1. With fillers or ties	$0.75l/r_x$
2. Without fillers or ties	$0.75l/r_x$
3. Single component members	$0.75l/r_x$

II TOP CHORD END PANEL

A. The slenderness ratios, 1.0l/r and 1.0l_s/r, of members as a whole or any component part shall not exceed 120.

B. *The effective slenderness ratio to determine* "F_a"

1. With fillers or ties	$1.0l/r_x$	$1.0l/ry$		$1.0l_s/r_z$
2. Without fillers or ties			$1.0l/r_z$	
3. Single component members	$1.0l/r_x$	$1.0l/r_y$		

C. *The effective slenderness ratio to determine* "F'_e"

1. With fillers or ties	$1.0l/r_x$
2. Without fillers or ties	$1.0l/r_x$
3. Single component members	$1.0l/r_x$

III TENSION MEMBERS - CHORDS AND WEBS

A. The slenderness ratios, 1.0l/r and 1.0l_s/r, of members as a whole or any component part shall not exceed 240.

IV COMPRESSIONS WEB MEMBERS

A. The slenderness ratios, 1.0l/r and 1.0l_s/r, of members as a whole or any component part shall not exceed 200.

B. *The effective slenderness ratio to determine* "F_a"

1. With fillers or ties	$0.75l/r_x$	$1.0l/r_y$		$1.0l_s/r_z$
2. Without fillers or ties			$1.0l/r_z$	
3. Single component members	$0.75l/r_x$*	$1.0l/r_y$		

*If moment-resistant weld groups are not used at the ends of a crimped, first primary compression web member, then $1.2l/r_x$ must be used.

103.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, 1.0l/r and 1.0l/r, of members as a whole or any component part shall not exceed the values given in Table 103.3.1, Parts A.
The effective slenderness ratio, Kl/r*, to be used in calculating the allowable stresses F_a and F'_e, is the largest value as determined from Table 103.3.1, Parts B and C.

In compression members when 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 are defined as follows:

l = length center-to-center of panel points, except l=36" for calculating l/r_y of top chord member.

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

r_x = member radius of gyration in the plane of the joist.

r_y = member radius of gyration out of the plane of the joist.

r_z = least radius of gyration of a member component.

*See AISC Specification Section C2.1 and P.N. Chod and T.V. Galambos, Compression Chords Without Fillers in Longspan Steel Joists, Research Report No. 36, June 1975 Structural Division, Civil Engineering Department, Washington University, St. Louis, Mo.

103.4 MEMBERS

(a) Chords

The bottom chord shall be designed as an axially loaded tension member.
The top chord shall be designed as a continuous member subject to combined axial and bending stresses and shall be so proportioned that

$f_a + f_b \leq 0.6\ F_y$, at the panel point; and

$$\frac{f_a}{F_a} + \frac{C_m f_b}{\left(1 - \frac{f_a}{F'_e}\right) Q F_b} \leq 1.0, \text{ at mid-panel;}$$

in which

$C_m = 1\text{-}0.3\ f_a/F'_e$ for end panels

$C_m = 1\text{-}0.4\ f_a/F'_e$ for interiorpanels

f_a = Computed axial unit compressive stress

f_b = Computed bending unit compressive stress at the point under consideration

F_a = Permissible axial unit compressive stress based on Kl/r.

F_b = Permissible bending unit stress; 0.6FY

$$F'_e = \frac{12\pi^2 E}{23(Kl/r_x)^2}$$

r_x = Radius of gyration about the axis of bending

Q = Form factor as defined in Section 103.2(b).

The radius of gyration of the top chord about its vertical axis shall be not less than l/170 where l is the spacing in inches (millimeters) between lines of bridging as specified in section 104.5 (d).

The top chord shall be considered as stayed laterally by the floor or roof deck provided the requirements of Section 104.9 (e) of these specifications are met.

(b) Web

The vertical shears to be used in the design of the web members shall be determined from full uniform loading but such vertical shear shall be not less than 25 percent of the end reaction.

Interior vertical web members used in modified Warren type web systems shall be designed to resist the gravity loads supported by the member plus 1/2 of 1.0 percent of the top chord axial force.

(c) Depth

Joists may have either parallel chords or a top chord slope of 1/8 inch per foot (1:96). The depth, for the purpose of design, in all cases shall be the depth at mid-span.

(d) Eccentricity

Members connected at a joint shall have their center of gravity lines meet at a point, if practical. Eccentricity on either side of the neutral axis of chord members may be neglected when it does not exceed the distance between the neutral axis and the back of the chord. Otherwise, provision shall be made for the stresses due to eccentricity. Ends of joists shall be proportioned to resist bending produced by eccentricity at the support.

In those cases where a single angle compression member is attached to the outside of the stem of a tee or double angle chord, due consideration shall be given to eccentricity.

(e) Extended Ends

Extended top chords or full depth cantilever ends require the special attention of the specifying professional. The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

103.5 CONNECTIONS

(a) Methods

Joint connections and splices shall be made by attaching the members to one another by arc or resistance welding or other approved method.

(1) Welded Connections

a) Selected welds shall be inspected visually by the manufacturer. Prior to this inspection, weld slag shall be removed.

b) Cracks are not acceptable and shall be repaired.

c) Thorough fusion shall exist between layers of weld metal and between weld metal and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.

d) Unfilled weld craters shall not be included in the design length of the weld.

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

f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 mm) in any 1 inch (25 mm) of design weld length.

g) Weld spatter that does not interfere with paint coverage is acceptable.

2) Welding Program.

Manufacturers shall have a program for establishing weld procedures and operator qualification and for weld sampling and testing.

3) Weld inspection by Outside Agencies (See Section 104.13 of these specifications).

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 103.5 a.1) above. Ultrasonic, X-Ray and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

(b) Strength

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

(c) Shop Splices

Shop splices may 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 allowable member strength. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term "member" shall be defined as all component parts, comprising the chord or web, at the point of splice.

(d) Field Splices

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

103.6 CAMBER

Joists shall have approximate cambers in accordance with the following:

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)
110'-0" (33528 mm)	5" (127 mm)
120'-0" (36576 mm)	6" (152 mm)
130'-0" (39621 mm)	7" (178 mm)
140'-0" (42672 mm)	8" (203 mm)
144'-0" (43890 mm)	8 1/2" (216 mm)

103.7 VERIFICATION OF DESIGN AND MANUFACTURE

(a) Design Calculations

Companies manufacturing any **LH-** or **DLH-**Series Joists shall submit design data to the Steel Joist Institute (or an independent agency approved by the Steel Joist Institute) for verification of compliance with the SJI Specifications.

(b) In-Plant Inspections

Each manufacturer shall verify his ability to manufacture **LH-**Series and **DLH-**Series Joists 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 are not a guaranty of the quality of any specific joists; this responsibility lies fully and solely with the individual manufacturer.

SECTION 104. APPLICATION

104.1 USAGE

These specifications shall apply to any type of structure where floor and roof decks are to be supported directly by steel joists installed as hereinafter specified. Where joists are used other than on simple spans under uniformly distributed loading, as prescribed in Section 103.1, they shall be investigated and modified if necessary to limit the unit stresses to those listed in Section 103.2.

CAUTION: If a rigid connection of the bottom chord is to be made to the column or other support, it shall be made only after the application of the dead loads. The joist is then no longer simply supported and the system must be investigated for continuous frame action by the specifying professional.
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.

104.2 SPAN

The clear span of a joist shall not exceed 24 times its depth. The term "Span" as used herein is defined as the clearspan plus 8 inches (203 mm).

104.3 DEPTH

The nominal depth of sloping chord joists shall be the depth at mid-span. The standard slope of the top chord shall be 1/8 inch per foot (1:96).

104.4 END SUPPORTS

(a) Masonry and Concrete

LH- & **DLH-**Series Joists supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of **LH-** & **DLH-**Series Joists shall extend a distance of not less than 6 inches (152 mm) over the masonry or concrete support and be anchored to the steel bearing plate. The plate shall be located not more than 1/2 inch (13 mm) from the face of the wall and shall be not less than 9 inches (229 mm) wide perpendicular to the length of the joist. It is to be designed by the specifying professional in compliance with the allowable unit stresses in Section A5.1 (Allowable Stress Design) of the A.I.S.C. Specifications of latest adoption. The steel bearing plate shall be furnished by other than the joist manufacturer.

Where it is deemed necessary to bear less than 6 inches (152 mm) over the masonry or concrete support, special consideration is to be given to the design of the steel bearing plate and the masonry or concrete by the specifying professional. The joists must bear a minimum of 4 inches (102 mm) on the steel bearing plate.

(b) Steel

Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying engineer or architect in the design of the steel support.

The ends of **LH-** or **DLH-**Series joists shall extend a distance of not less than 4 inches (102 mm) over the steel supports. Where it is deemed necessary to butt opposite joists over a narrow steel support with bearing less than that noted above, special ends must be specified, and such ends shall have positive attachments to the support, either by bolting or welding.

104.5 BRIDGING

(a) Horizontal

Horizontal bridging lines shall consist of two continuous horizontal steel members, one attached to the top chord and the other attached to the bottom chord. The l/r ratio of the bridging member shall not exceed 300, where I is the distance in inches (millimeters) between attachments and r is the least radius of gyration of the bridging member. The bridging member shall be designed for a compressive force of 0.24 times the joist top chord area.

(b) Diagonal

Diagonal bridging lines shall consist of crossbracing with l/r ratio of not more than 200, where I 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 I distance shall be taken as the distance in inches (millimeters) between connections at the point of intersection of the bracing members and the connections to the chords of the joists.

(c) Bridging Lines

For spans up through 60 feet (18288 mm), welded horizontal bridging may be used except where the row of bridging nearest the center is required to be bolted diagonal bridging as indicated by the *Red* shaded area in the load table.

For spans over 60 feet (18288 mm) bolted diagonal bridging shall be used as indicated by the Blue and Gray shaded areas of the load table.

(d) Spacing

The maximum spacing of lines of bridging shall not exceed the values in Table 104.5.1. See Section 104.12 for bridging required for uplift forces.

TABLE 104.5.1

LH-DLH *Section Number	Max. Spac. of Lines of Bridging	Horizontal Bracing Force	
		lbs	(N)
02, 03, 04	11'-0" (3352 mm)	400	(1779)
05, 06	12'-0" (3657 mm)	500	(2224)
07, 08	13'-0" (3962 mm)	650	(2891)
09, 10	14'-0" (4267 mm)	800	(3558)
11, 12	16'-0" (4876 mm)	1000	(4448)
13, 14	16'-0" (4876 mm)	1200	(5337)
15, 16	21'-0" (6400 mm)	1600	(7117)
17	21'-0" (6400 mm)	1800	(8006)
18, 19	26'-0" (7924 mm)	2000	(8896)

Number of lines of bridging is based on joist clear span dimensions. *Last two digits of joist designation shown in load table.

(e) Connections:

Connections to the chords of the steel joists shall be made by positive mechanical means or by welding, and capable of resisting a horizontal force not less than that specified in Table 104.5.1.

(f) Bottom Chord Bearing Joists

Where bottom chord bearing joists are utilized, there shall be a row of diagonal bridging near the

support to provide lateral stability. This bridging shall be installed as the joists are set in place.

104.6 INSTALLATION OF BRIDGING

All bridging and bridging anchors shall be completely installed before construction loads are placed on the joists. 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 plans.

The ends of all bridging lines terminating at walls or beams shall be anchored to resist the force shown in Table 104.5.1.

104.7 END ANCHORAGE

(a) Masonry and Concrete

Ends of LH- or DLH-Series Joists resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two 1/4 inch (6 mm) fillet welds 2 inches (51 mm) long, or with two 3/4 inch (19 mm) bolts.

(b) Steel

Ends of LH- or DLH-Series Joists resting on steel supports shall be attached thereto with a minimum of two 1/4 inch (6 mm) fillet welds 2 inches (51 mm) long, or with two 3/4 inch (19 mm) bolts. In steel frames, where columns are not framed in at least two directions with structural steel members, joists at column lines shall be field bolted at the columns to provide lateral stability during construction.

(c) Uplift

Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces.

104.8 JOIST SPACING

Joists shall be spaced so that the loading on each joist does not exceed the allowable load given for the particular designation and clearspan in the Load Table.

104.9 FLOOR AND ROOF DECKS

(a) Material

Floors and roof decks may consist of cast-in-place or precast concrete or gypsum, formed steel, wood or other suitable material capable of supporting the required load at the specified joist spacing.

(b) Thickness

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

(c) Centering

Centering for structural slabs may be ribbed metal lath, corrugated steel sheets, paper-back 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.

(d) Bearing

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

(e) Attachments

The spacing of attachments along the 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 following forces:

TABLE 104.9.1

*Section Number	Equivalent Force Required
02 to 04 incl.	120 lbs./ft. (1.75 kN/m)
05 to 09 incl.	150 lbs./ft. (2.19 kN/m)
10 to 17 incl.	200 lbs./ft. (2.92 kN/m)
18 and 19	250 lbs./ft. (3.65 kN/m)

*Last two digits of joist designation shown in Load Table.

(f) Wood Nailers

Where wood nailers are used, such nailers in conjunction with the deck or slab shall be firmly attached to the top chords of the joists in conformance with Section 104.9(e).

104.10 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.
1/240 of span for all other cases.

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

* For further reference, refer to Steel Joist Institute Technical Digest #5, "Vibration of Steel Joist - Concrete Slab Floors" and the Institute's Computer Vibration Program.

104.11 PONDING

Unless a roof surface is provided with sufficient slope toward points of free drainage or adequate individual drains to prevent the accumulation of rain water, the roof system shall be investigated to assure stability under ponding conditions in accordance with Section K2 (Allowable Stress Design) of the AISC Specifications.* The ponding investigation shall be performed by the specifying professional.

* For further reference, refer to Steel Joist Institute Technical Digest #3 "Structural Design of Steel Joist Roofs to Resist Ponding Loads."

104.12 UPLIFT

Where uplift forces due to wind are a design

requirement, these forces must be indicated on the contract drawings in terms of net uplift in pounds per square foot (Pascals). When these forces are specified, they must be considered in the design of joists and/or bridging. A single line of bottom chord bridging must be provided near the first bottom chord panel points whenever uplift due to wind forces is a design consideration.*

* For further reference, refer to Steel Joist Institute Technical Digest #6, "Structural design of Steel Joist Roofs to Resist Uplift Loads."

104.13 INSPECTION

Joists shall be inspected by the manufacturer before shipment to insure compliance of materials and workmanship with the requirements of these specifications. If the purchaser wishes an inspection of the steel joists by someone other than the manufacturer's own inspectors, he may reserve the right to do so in his "Invitation to Bid" or the accompanying "Job Specifications." Arrangements shall be made with the manufacturing shop by the purchaser's inspectors at purchaser's expense.

SECTION 105.*
ERECTION STABILITY AND HANDLING

When it is necessary for the erector to climb on the joists, extreme caution must be exercised since unbridged joists may exhibit some degree of instability under the erector's weight.

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

A. Stability Requirements

1. Where the joist span does not exceed the erection stability span (as indicated by the shaded areas of the load table) one end of all joists shall be attached to its support in accordance with Section 104.7 - End Anchorage, or the joist shall be stabilized by the hoisting cable(s) ***before allowing the weight of an erector on the joists.***

   When bolted connections are used the bolts must be snug tightened.
2. Amaximum weight of two erectors shall be allowed on any unbridged joist if: 1) the joist is stabilized by the hoisting cable(s), or 2) one end of the joist is attached to its support in the manner prescribed in Section 104.7 - End Anchorage and the bolted diagonal bridging required for erection stability is completely installed.

   Where the span of the joist exceeds the erection stability span as indicated by the shaded area of the load table, hoisting cables shall not be released until the followina conditions are met.

   a. **One line of bolted diagonal bridging** is completely installed near the mid span for joist spans included in the RED shaded area of the load table.
   b. **Two lines of bolted diagonal bridging** nearest the third points of the span are completely installed for spans of over 60 feet (18288 mm) through 100 feet (30480 mm) as indicated by the BLUE **shaded area** in the LH and DLH Series Joist Load Tables.
   c. **All lines of bolted diagonal bridging** are completely installed for spans over 100 feet (30480 mm) as indicated by the iray shaded area in the Gray **shaded area** in the DLH Load Table.

3. No loads other than the weight of the erector are allowed on the joist until ***all*** bridging is completely installed and ***all*** joist ends are attached.

4. In the case of bottom chord bearing joists, the ends of the joist must be restrained laterally per Section 104.5 (f) before releasing the hoisting cables.

5. After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joist shall be fully connected to the supports in accordance with Section 104.7 - End Anchorage.

B. Field Welding

1. All field welding shall be performed in a workman-like manner to insure that the joists are not damaged by such welding.

2. On cold-formed 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.

C. Handling

Particular attention should be paid to the erection of Longspan and Deep Longspan Steel Joists. Care shall be exercised at all times to avoid damage to the joists and accessories through careless handling during unloading, storing and erecting.

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 105, 2(a), (b), or (c) must be anchored to prevent lateral movement.

* For a thorough coverage of this topic, refer to SJI Technical Digest #9, "Handling and Erection of Steel Joists and Joist Girders".

HIGH STRENGTH STEEL

ECONOMICAL

DESIGN - Vulcraft SLH Series long span steel joists are designed in accordance with the specifications included in this section.

ACCESSORIES see page 64.

PAINT - Vulcraft SLH Series joists receive a shop-coat of rust inhibitive primer that conforms to specification 202.4.

SPECIFICATIONS - see page 68.

TABLE 1

SLH- SERIES BRIDGING SPACING

JOIST SECTION NUMBER*	MINIMUM BOLT DIAMETER	MAXIMUM SPACING OF BRIDGING LINES
SLH 15-18	5/8" dia A325	21'-0
SLH 19-20	5/8" dia A325	26'-0
SLH 21-22	5/8" dia A325	30'-0
SLH 23-25	3/4" dia A325	30'-0

*LAST TWO DIGITS OF JOIST DESIGNATION SHOWN IN LOAD TABLE.

TABLE 2

SLH-SERIES BEARING DATA

JOIST SECTION NUMBER*	BEARING DEPTH	MINIMUM BEARING LENGTH	BEARING SEAT FILLET WELD (1)	BEARING SEAT BOLTS FOR ERECTION (1)
SLH 15-18	5"	4"	2-1/4" x 2"	2-3/4" dia A325
SLH 19-25	7 1/2"	6"	2-1/4" x 4"	2-3/4" dia A325

(1) BEARING SEATS MUST BE WELDED IN ADDITION TO BEING BOLTED.

TABLE 3

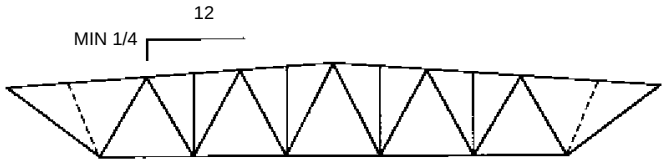
JOIST DEPTH	HORIZONTAL PLUS DIAGONAL BRIDGING*		DIAGONAL ONLY BRIDGING				
	.66 X DEPTH*	HORIZONTAL AND DIAGONAL ANGLE SIZE	MIN. JOIST SPACE FOR DIAGONAL ONLY BRIDGING	MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING SIZE			
				2" x 2" x 1/8"	2 1/2" x 2 1/2" x 3/16"	3" x 3" x 3/16"	3 1/2" x 3 1/2" x 1/4"
80"	4'-4"	1 3/4" x 1 3/4" x 1/8"	4'-5"	9'-11"	15'-1"	18'-8"	22'-1"
88"	4'-9"	1 3/4" x 1 3/4" x 1/8"	4'-10"	7'-3"	14'-9"	18'-5"	21'-11"
96"	5'-3"	2" x 2" x 1/8"	5'-4"		14'-5"	18'-2"	21'-8"
104"	5'-8"	2 1/2" x 2 1/2" x 3/16"	5'-9"		14'-0"	17'-10"	21'-5"
112"	6'-1"	2 1/2" x 2 1/2" x 3/16"	6'-2"		11'-11"	17'-6"	21'-1"
120"	6'-7"	2 1/2" x 2 1/2" x 3/16"	6'-8"			17'-0"	20'-10"

***NOTE: WHEN THE JOIST SPACING IS LESS THAN 0.66 x JOIST DEPTH, BOLTED HORIZONTAL BRIDGING SHALL BE USED IN ADDITION TO THE DIAGONAL BRIDGING.**

NOTES: 1. For lengths and depths greater than those shown in the load tables contact Vulcraft.

2. Additional bridging may be required when joists support a standing seam roof. The specifying professional should require the joist manufacturer to check the system and provide bridging as required to adequately brace the joists against lateral movement. For bridging requirements due to uplift loading refer to specification section 204.13.

ACCESSORIES AND DETAILS
SLH SERIES LONGSPAN STEEL JOISTS.

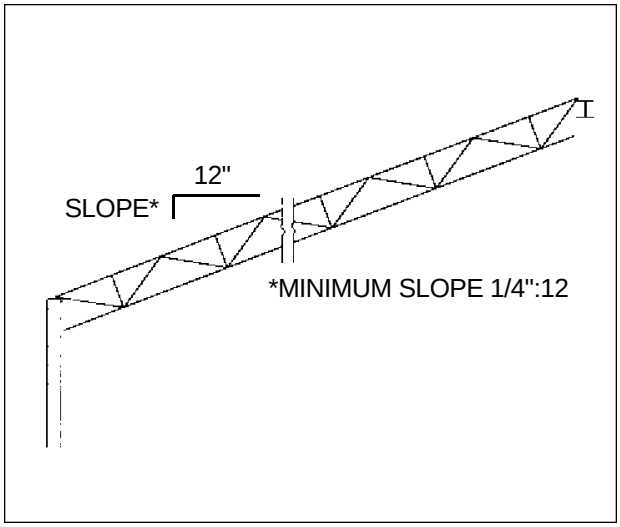


THE STANDARD CONFIGURATION FOR SLH-SERIES JOISTS IS A DOUBLE PITCHED TOP CHORD WITH A MINIMUM PITCH OF 1/4 INCH PER FOOT. THE DEPTH OF THE JOIST SHALL BE THAT AT THE RIDGE OF THE JOIST. FOR OTHER CONFIGURATIONS CONTACT VULCRAFT. WEB LAYOUT MAY VARY FROM THAT SHOWN.

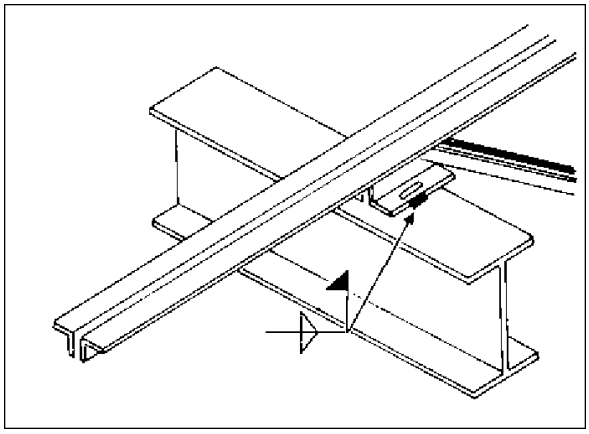
SLH-SERIES CAMBER*		
TOP CHORD LENGTH	DOUBLE PITCH JOISTS**	PARALLEL CHORD JOISTS
111'-0"	3 1/4"	5 1/4"
120'-0"	3 1/2"	6"
130'-0"	3 7/8"	7"
140'-0"	4 1/8"	8"
150'-0"	4 3/8"	8 3/4"
160'-0"	4 3/4"	9 1/2"
180'-0"	5 1/4"	10 1/2"
200'-0"	5 7/8"	11 3/4"
220'-0"	6 1/2"	13"
240'-0"	7"	14"
**JOISTS WITH TOP CHORD PITCH OF 1/4" PER FOOT OR GREATER.		

*For walls or other structural members near SLH-Series Joists provisions need to be made to match top chord elevation.

Specifying professional must provide camber requirements as a percentage of live load and dead load if camber is different from that shown.



PARALLEL CHORD JOISTS
SEE SPECIFICATION 203.4 (c)

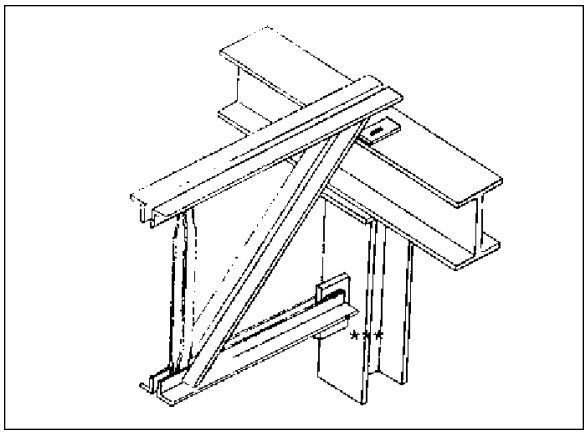


TOP CHORD EXTENSION (a)
SEE TABLE 204.8.1

(a) Extend top chords require the special attention of the specifying engineer.

The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

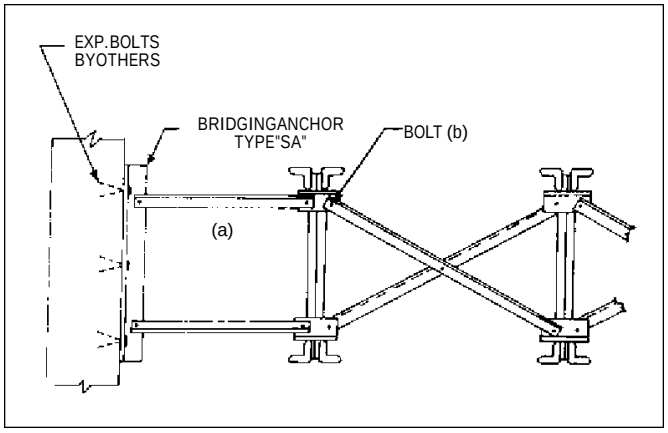
NOTE:
FOR ANY CONCENTRATED LOADS SUCH AS BASKETBALL GOALS, CURTAINS, SCORE BOARDS, HVAC UNITS, ETC. IT IS ESSENTIAL THAT THE SPECIFYING ENGINEER PROVIDE THE MAGNITUDE AND LOCATION OF ALL LOADS ON THE STRUCTURAL DRAWINGS.



BOTTOM CHORD STRUT
(SEE SPECFICATION 204.1)

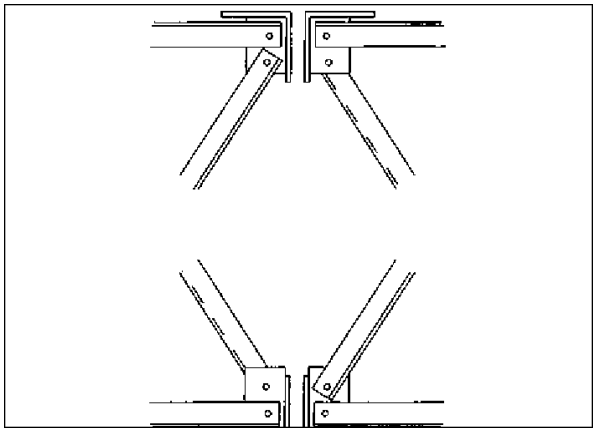
*** If bottom chord is to be bolted or welded the specifying professional must provide axial loads on structural drawings.

ACCESSORIES AND DETAILS
SLH SERIES LONGSPAN STEEL JOISTS



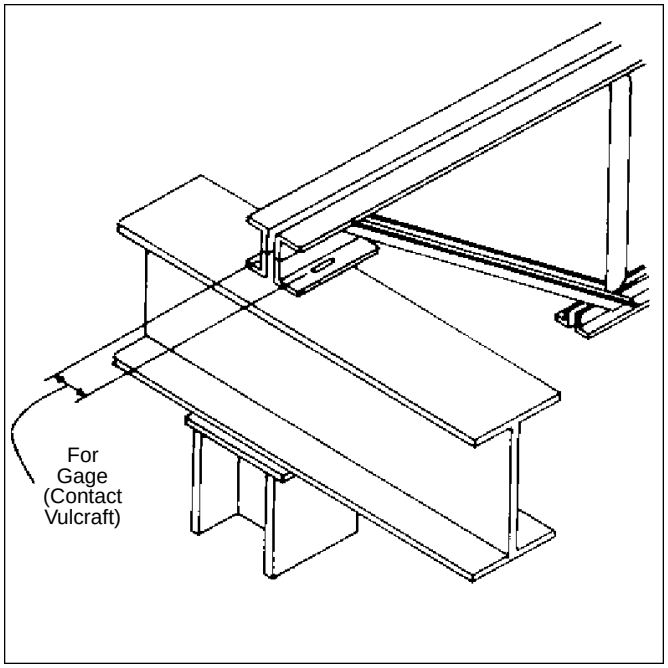
CROSS BRIDGING

HORIZONTAL BRIDGING IS TO BE USED IN THE SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST THE WALL. SEE TABLES 1 AND 3 PAGE 63.



BOLTED, HORIZONTAL PLUS DIAGONAL, BRIDGING

SEE TABLE 3, PAGE 63 AND SPECIFICATION 204.6.
NOTE: CLIP CONFIGURATION MAY VARY FROM THAT SHOWN.
NOTE: DO NOT HANG ANY MECHANICAL, ELECTRICAL, ETC. FROM BRIDGING.

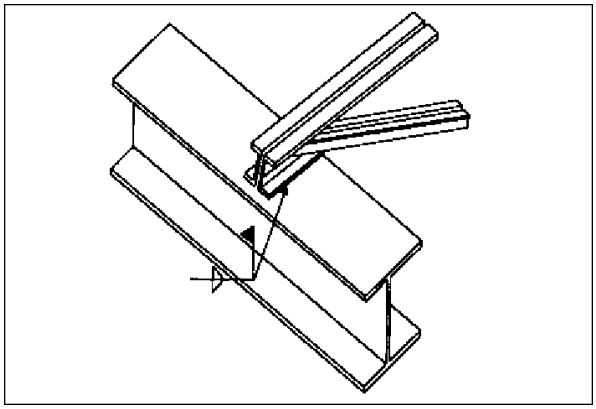


BOLTED CONNECTION (b)

SEE TABLE 2, PAGE 63.
TYPICALLY USED AT COLUMNS

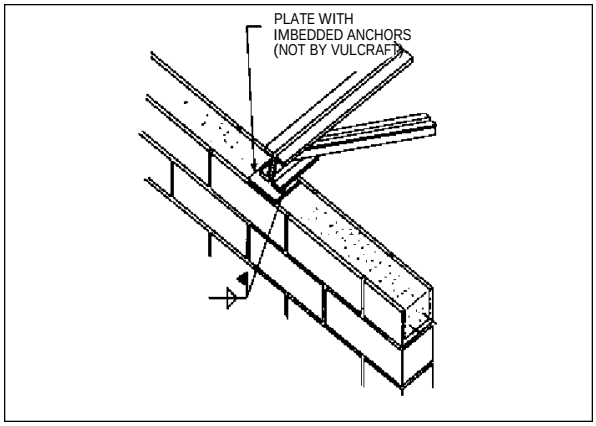
The Occupation Safety and Health Administration Standards (OSHA), Paragraph 1910.12 refers to Paragraph 1518.751 of "Construction Standards" which states:

"In steel framing, where bar joists are utilized, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction."



ANCHORAGE TO STEEL

SEE TABLE 2, PAGE 63.



ANCHORAGE TO MASONRY

SEE SPECIFICATION 204.5 (a)
SEE TABLE 2, PAGE 63.

VULCRAFT LOAD TABLE
SUPER LONGSPAN STEEL JOISTS, SLH-SERIES

JANUARY 1, 1991

Based on a Maximum Allowable Tensile Stress of 30,000 psi

The black figures in the following table give the TOTAL safe uniformly-distributed load-carrying capacities, in pounds per linear foot, of SLH-Series Joists. The weight of DEAD loads, including the joists, must in all cases be deducted to determine the LIVE load-carrying capacities of the joists. The approximate DEAD load of the joists may be determined from the weights per linear foot shown in the tables. All loads shown are for roof construction only.

The red figures in this table are the LIVE loads per linear foot of joist which will produce an approximate deflection of 1/360 of the span. LIVE loads which will produce a deflection of 1/240 of the span may be obtained by multiplying the red figures by 1.5. In no case shall the TOTAL load capacity of the joists be exceeded.

*The safe load for the clear spans shown in the shaded section is equal to (Safe Load) / (Clear Span + 0.67). [The added 0.67 feet (8 inches) is required to obtain the proper length on which the Load Tables were developed.]
In no case shall the safe uniform load, for clear spans less than the minimum clear span shown in the shaded area, exceed the uniform load calculated for the minimum clear span listed in the shaded area.

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the design capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/4 inch per foot. If pitch exceeds this standard, the load table does not apply. This load table may be used for parallel chord joists installed to a maximum slope of 1/2 inch per foot.

When holes are required in top or bottom chords, the carrying capacities must be reduced in proportion to reduction of chord areas.

The top chords are considered as being stayed laterally by the roof deck.

The approximate joist weights per linear foot shown in these table do not include accessories.

When erecting SLH joists, hoisting cables shall not be released until all rows of bridging are completely installed.

To solve for **live** loads for clear spans shown in the shaded area (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load tables by (the shortest clear span shown in the Load table + 0.67 feet)^2 and divide by (the actual clear span +.067 feet)^2. The live load shall **not** exceed the safe uniform load.

**For spans between those listed use a linear interpolation.

Joist Designation	Approx. Wt. In Lbs. per Linear Ft. (Joists Only)	Depth In Inches	Safe Load* In Lbs. Between	CLEAR SPAN IN FEET**															
			80-110	**111**	**114**	**117**	**120**	**123**	**126**	**129**	**132**	**135**	**138**	**141**	**144**	**147**	**150**	**155**	**160**
80SLH**15**	40	80	52,000	466	442	421	401	383	366	350	335	321	307	295	283	272	261	244	228
				321	296	275	255	236	220	205	192	179	167	157	147	139	130	118	107
80SLH**16**	46	80	62,500	560	535	509	485	461	439	419	400	383	366	350	336	322	309	289	271
				375	347	321	297	276	257	240	224	209	196	184	172	162	162	138	126
80SLH**17**	53	80	72,200	647	617	587	559	533	510	487	466	446	427	410	393	378	363	340	319
				451	416	386	358	332	309	288	269	252	235	221	207	195	183	166	151
80SLH**18**	60	80	81,600	731	696	662	631	602	575	550	526	504	482	463	444	427	410	384	361
				516	477	441	409	380	354	330	308	288	270	253	237	223	210	190	173
80SLH**19**	67	80	95,200	853	812	773	736	701	670	640	612	585	560	537	516	495	476	445	418
				578	533	493	458	425	396	369	344	322	301	283	266	250	235	213	193
80SLH**20**	75	80	107,000	964	921	882	845	807	771	736	704	674	645	618	594	570	547	513	481
				646	596	552	512	475	443	412	385	360	337	316	297	279	263	238	216
			88-119	**120**	**123**	**126**	**129**	**132**	**135**	**138**	**141**	**144**	**147**	**150**	**155**	**160**	**165**	**170**	**175**
88SLH**16**	46	88	62,000	514	490	467	447	428	410	394	378	363	349	335	314	295	278	262	248
				361	336	313	291	272	254	238	223	210	197	186	168	153	140	127	117
88SLH**17**	51	88	70,100	581	553	526	502	479	458	439	420	403	386	371	347	326	306	288	271
				404	375	349	325	304	284	266	249	234	220	207	187	170	156	143	130
88SLH**18**	58	88	80,400	667	635	605	577	551	527	504	483	463	444	426	399	374	352	331	312
				460	427	397	370	346	323	303	284	267	250	236	214	195	177	162	149
88SLH**19**	65	88	93,000	771	734	699	666	636	608	582	557	534	513	492	461	432	406	382	360
				521	484	450	420	392	367	343	322	302	284	267	243	221	201	184	169
88SLH**20**	76	88	107,000	889	854	821	789	755	723	694	665	639	614	590	553	520	489	461	435
				623	579	539	502	469	438	410	385	361	340	320	290	264	241	220	202
88SLH**21**	89	88	132,000	1099	1045	996	950	907	867	829	794	762	731	702	657	616	579	544	513
				724	673	626	584	545	509	477	447	420	395	372	337	307	280	256	235

VULCRAFT LOAD TABLE
SUPER LONGSPAN STEEL JOISTS, SLH-SERIES

Based on a Maximum Allowable Tensile Stress of 30,000 psi

Joist Designation	Approx. Wt. In Lbs. per Linear Ft. (Joists Only)	Depth In Inches	Safe Load* In Lbs. Between	CLEAR SPAN IN FEET**															
			96-128	**129**	**132**	**135**	**138**	**141**	**144**	**147**	**150**	**155**	**160**	**165**	**170**	**175**	**180**	**185**	**190**
96SLH**17**	52	96	70,000	540	517	496	474	456	438	421	405	380	357	335	316	298	281	266	252
				389	363	339	318	298	280	263	247	224	204	186	170	156	143	132	122
96SLH**18**	58	96	78,800	608	583	559	535	513	493	475	457	430	405	381	360	340	322	305	289
				443	413	386	362	340	319	300	282	256	232	212	194	178	163	150	139
96SLH**19**	66	96	94,200	727	697	667	638	611	585	561	539	505	474	445	419	396	373	353	334
				502	469	438	410	385	361	340	320	290	264	241	220	202	186	171	158
96SLH**20**	74	96	106,000	824	789	754	722	691	662	635	610	571	536	504	475	448	423	400	378
				569	531	496	465	436	409	385	362	329	299	272	249	229	210	193	178
96SLH**21**	90	96	133,000	1027	982	940	900	864	829	797	766	719	675	635	598	564	533	504	477
				698	652	610	571	535	503	473	445	404	367	335	306	281	258	238	220
96SLH**22**	102	96	149,000	1150	1108	1067	1028	991	957	921	886	832	782	736	694	656	620	587	556
				811	757	708	663	622	584	549	517	469	426	389	355	326	300	276	255
			104-137	**138**	**141**	**144**	**147**	**150**	**155**	**160**	**165**	**170**	**175**	**180**	**185**	**190**	**195**	**200**	**205**
104SLH**18**	59	104	76,800	554	532	512	489	172	444	418	396	374	354	335	318	302	287	273	260
				426	400	375	353	332	301	274	250	229	209	192	177	164	152	140	130
104SLH**19**	67	104	93,400	674	647	622	598	574	539	507	479	452	427	404	383	364	346	325	312
				484	453	426	401	377	342	311	284	260	238	218	201	186	172	160	148
104SLH**20**	75	104	105,000	764	738	714	688	661	621	583	548	516	487	460	435	413	391	371	353
				548	513	483	453	427	387	352	321	293	269	247	228	210	195	181	167
104SLH**21**	90	104	132,000	956	917	881	847	813	763	718	677	639	604	571	541	514	488	464	441
				673	632	593	558	525	476	433	395	361	331	301	280	259	240	222	206
104SLH**22**	104	104	148,000	1071	1034	999	966	934	883	830	783	738	698	660	626	594	564	536	511
				783	734	689	648	610	553	503	459	420	385	353	326	301	278	258	240
104SLH**23**	109	104	163,000	1181	1141	1096	1052	1009	945	887	834	785	741	700	662	628	595	565	537
				819	768	721	678	638	578	526	480	439	403	370	341	315	291	270	250
			112-146	**147**	**150**	**155**	**160**	**165**	**170**	**175**	**180**	**185**	**190**	**195**	**200**	**205**	**210**	**215**	**220**
112LSH**19**	67	112	91,900	623	600	564	530	500	472	446	424	402	382	362	345	329	314	300	286
				466	439	398	362	330	302	276	255	234	216	200	186	172	160	149	140
112SLH**20**	76	112	104,000	710	688	649	610	575	543	514	488	463	440	417	398	379	361	345	330
				528	497	450	410	374	342	313	288	266	245	227	210	195	181	169	158
112SLH**21**	91	112	131,000	891	858	805	757	713	673	637	603	572	543	516	491	468	446	426	407
				650	612	555	504	460	421	386	355	327	301	279	259	240	224	208	195
112SLH**22**	104	112	147,000	999	967	918	871	824	778	736	697	661	628	596	568	541	516	492	470
				755	711	644	586	535	489	449	412	380	350	324	301	279	260	242	226
112SLH**23**	110	112	162,000	1102	1067	1012	959	901	848	800	756	716	679	644	612	582	554	528	504
				790	744	674	613	560	512	469	431	397	367	340	315	292	272	253	236
112SLH**24**	131	112	192,000	1304	1263	1199	1139	1074	1014	959	909	862	819	778	741	706	673	642	613
				957	901	817	743	678	620	569	523	481	444	411	381	354	329	307	287
			102-164	**165**	**170**	**175**	**180**	**185**	**190**	**195**	**200**	**205**	**210**	**215**	**220**	**230**	**235**	**240**	
120SLH**20**	77	120	98,900	597	564	532	505	479	456	434	414	395	376	359	344	329	315	302	290
				430	393	361	332	306	282	261	242	225	209	195	182	170	159	149	140
120SLH**21**	92	120	123,000	748	706	667	632	599	570	542	516	492	469	448	428	410	392	376	360
				530	485	444	409	376	347	321	298	277	258	240	224	209	196	184	173
120SLH**22**	104	120	141,000	855	815	770	729	692	658	626	596	568	542	517	495	473	453	434	416
				616	564	516	475	438	404	374	347	322	300	279	261	244	228	214	201
120SLH**23**	111	120	156,000	943	898	848	804	763	725	690	657	626	596	569	543	519	496	475	455
				644	590	541	497	458	423	391	363	336	313	292	272	255	238	224	210
120SLH**24**	132	120	185,000	1117	1062	1003	950	902	858	816	777	741	706	675	645	617	591	566	543
				781	715	655	603	555	512	474	440	408	380	354	330	309	289	271	255
120SLH**25**	152	120	212,000	1284	1218	1152	1092	1036	984	936	891	850	811	775	741	709	678	650	623
				915	837	768	706	650	600	555	515	478	445	415	387	362	339	318	298

SECTION 200.
SCOPE

These specifications cover the design, manufacture and use of Super Longspan Steel Joists SLH Series.

SECTION 201.
DEFINITION

The term "Super Longspan Steel Joists SLH Series" as used herein, refers to open web, load-carrying members utilizing hot-rolled steel. SLH series are suitable for the direct support of roof decks in buildings.
The design for SLH Series joist chord or web sections shall be based on a yield strength of at least 36,000 psi, but not greater than 50,000 psi. Steel used for SLH Series joist chord or web sections shall have a minimum yield strength determined in accordance with one of the procedures specified in Section 202.2, which is equal to the yield strength assumed in the design. SLH Series joists shall be designed in accordance with these specifications to support the loads given in the attached Standard Load Tables for SLH Series joists.

SECTION 202.
MATERIALS

202.1 STEEL

The steel used in the manufacture of chord and web sections shall conform to one of the following ASTM Specifications of latest adoption:

- Structural Steel, ASTM A36/A36M.
- High-Strength Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality ASTM A529/A529M. Grade 50.
- Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality ASTM A570/A570M.
- High-Strength Low-Alloy Columbium-Vanadium Steel of Structural Quality ASTM A572/A572M. Grades 42,45, and 50.
- High-Strength Low-Alloy Structural Steel with 50,000 psi Minimum Yield Point to 4 inches thick, ASTM A588/A588M.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, with Improved Corrosion Resistance, ASTM A606.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, Columbium and/or Vanadium, ASTM A607. Grades 45 and 50.
- Steel, Cold-Rolled Sheet, Carbon Structural ASTM A611, Grade.

*The term "yield strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13 "Yield Strength," or paragraph 12 "Yield Point," or ASTM A370, "Mechanical Testing of Steel Products," or as specified in Section 202.2 of this Specification, or shall be of suitable quality ordered or produced to other than the listed specifications, provided that such material in the state used for final assembly and fabrication is weldable and is proved by tests performed by the producer or fabricator to have the properties specified in Section 202.2.

202.2 MECHANICAL PROPERTIES

The yield strength used as a basis for the design stresses prescribed in Section 203 shall be at least 36,000 psi, but shall not be greater than 50,000 psi. 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.

In the case of material, the mechanical properties of which conform to the requirements of one of the listed specifications, test specimens and procedure shall conform to those of such specifications and to ASTM A370.

In the case of material, the mechanical properties of which do not conform to the requirements of one of the listed specifications, the test specimens and procedure shall conform to the applicable requirements of ASTM A370 and the specimens shall exhibit a yield strength equal to or exceeding the design yield strength and an elongation of not less than (a) 20 percent in 2 inches for sheet and strip or (b) 18 percent in 8 inches for plates, shapes and bars with adjustments for thickness for plates, shapes, and bars as prescribed in ASTM A36/A36M, A242/A242M, A529/A529M, A572/A572M, and A588/A588M whichever specification is applicable on the basis of design yield strength. The number of tests shall be as prescribed in ASTM A6 for plates, shapes, and bars; and ASTM A570/A570M, A606, AND A607 for the sheet and strip.

202.3 WELDING ELECTRODES

The following electrodes shall be used for arc welding:
(a) For connected members both having a specified minimum yield strength greater than 36,000 psi
AWS A5.1 or A5.5, E70XX
AWS A5.17, F7X, EXXX flux electrode combination
AWS A5.18. E70S-X or E70U-1
AWS A5.20, E70T-X

(b) For connected members both having a specified minimum yield strength of 36,000 psi or one having a specified minimum yield strength of 36,000 psi and the other having a specified minimum yield strength greater than 36,000 psi
AWS A5.1, E60XX
AWS A5.17, F6X-EXXX flux electrode combination
AWS A5.20, E6O0T-X
or any of those listed in Section 202.3 (a)
Other welding methods, providing equivalent strength as demonstrated by tests, may be used.

202.4 PAINT

The Standard shop paint is a **primer coat** intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating. The Standard shop paint shall conform to one of the following:
(a) Steel Structures Painting Council Specification 15-68T, Type 1 (red oxide).
(b) Federal Specification TT-P-636 (red oxide).
(c) Or, shall be a shop paint which meets the minimum performance requirements of one of the above listed specifications.

SECTION 203.
DESIGN AND MANUFACTURE

203.1 METHOD

Joists shall be designed in accordance with these

specifications as simply supported uniformly loaded trusses supporting a roof deck so constructed as to brace the top chord of the joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the American Institute of Steel Construction Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, latest adoption, where the material used consists of plates, shapes or bars.

203.2 UNIT STRESSES

Joists shall have their components so proportioned that the unit stresses in pounds per square inch shall not exceed the following, where F_y is the yield strength defined in Section 202.2:

(a) Tension: All members . . . . . $F_t = 0.6\ F_y$

(b) Compression: For all members with Kl/r less than C_c:

$$F_a = \frac{\left[1 - \frac{(Kl/r)^2}{2C_c^2}\right] QF_y}{\frac{5}{3} + \frac{3}{8}\left(\frac{Kl/r}{C_c}\right) - \frac{1}{8}\left(\frac{Kl/r}{C_c}\right)^3}$$

where $C_c = \sqrt{\frac{2\pi^2 E}{Q\,F_y}}$ and

where Q is a form factor equal to unity except when the width-thickness ratio of one or more elements of the profile exceeds the limits specified in the AISC Specifications, Section B5 (Allowable Stress Design), and where K is a length factor used to determine the effective slenderness ratio as shown in Table 203.3.1.

For rnembers with $K\,l/r$ greater than C_c,:

$$F_a = \frac{12\pi^2 E}{23\,(Kl/r)^2}$$

l =Length center-to-center of panel points, except l= 36" for calculating l/r_y of top chord member

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

In the previous formulas $K\,l/r$ is the appropriate effective slenderness ratio as determined from Section 203.3, and "E" is equal to 29,000,000 psi.

c) Bending:
For chords, and for web members other than solid rounds . . . . . $F_b = 0.6F_y$
For web members of solid round cross section . . . . . $F_b = 0.9F_y$
For bearing plates . . . . . $F_b = 0.75F_y$

d) Weld Stresses:
Shear at throat of fillet welds:
Made with E70 series electrodes or F7X-EXXX flux-electrode combinations . . . . . 21,000 psi
Made with E60 series electrodes or F6X-XXX flux-electrode combination . . . . . 18,000 psi
Tension or compression on groove or butt welds shall be the same as those specified for the connected material.

203.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, $1.0l/r$ and $1.0\ l_s/r$, of members as a whole or any component part shall not exceed the values given in Table 203.3.1, Parts A.

The effective slenderness ratio, Kl/r*, to be used in calculating the allowable stresses F_a and F'_e, is the largest value as determined from Table 203.3.1, Parts B and C.

In compression members when 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 members as a whole. The terms are defined as follows.

'See AISC Specification Section C2.1 and P.N. Chod and T.V. Galambos, Compression Chords Without Fillers in Longspan Steel Joists, Research Report No. 36, June 1975 Structural Division, Civil Engineering Department. Washington University, St. Louis, MO.

r_x= Member radius of gyration in the plane of the joist.

r_y = Member radius of gyration out of plane of the joist.

r_z = Least radius of gyration of a member component.

TABLE 203.3.1 MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS

I.	TOP CHORD INTERIOR PANEL			
	A. The slenderness ratios, $1.0\ l/r$ and $1.0\ l_s/r$, of members as a whole or any component part shall not exceed 90.			
	B. The effective slenderness ratio to determine "F_a"			
	1. With fillers or ties	$0.75\ l/r_x$	$1.0\ l/r_y$	$1.0\ l_s/r_z$
	2. Without fillers or ties	$0.75\ l/r_z$		
	3. Single component members	$0.75\ l/r_x$	$1.0\ l/r_y$	
	C. The effective slenderness ratio to determine "F'_e"			
	1. With fillers or ties	$0.75\ l/r_x$		
	2. Without fillers or ties	$0.75\ l/r_x$		
	3. Single component members	$0.75\ l/r_x$		
II.	TOP CHORD END PANEL			
	A. The slenderness ratios, $1.0\ l/r$and $1.0\ l_s/r$, of members as a whole or any component part shall not exceed 120.			
	B. The effective slenderness ratio to determine "F_a"			
	1. With fillers or ties	$1.0\ l/r_x$	$1.0\ l/r_y$	$1.0\ l_s/r_z$
	2. Without fillers or ties	$1.0\ l/r_z$		
	3. Single component members	$1.0\ l/r_x$	$1.0\ l/r_y$	
	C.The effective slenderness ratio to determine "F'_e"			
	1. With fillers or ties	$1.0\ l/r_x$		
	2. Without fillers or ties	$1.0\ l/r_x$		
	3. Single component members	$1.0\ l/r_x$		
III.	TENSION MEMBERS - CHORDS AND WEBS			
	A. The slenderness ratios, $1.0\ l/r$ and $1.0\ l_s/r$, of members as a whole or any component patt shall not exceed 240.			
IV.	COMPRESSION WEB MEMBERS			
	A. The slenderness ratios, $1.0\ l/r$ and $1.0\ l_s/r$, of members as a whole or any component part shall not exceed 200.			
	B. The effective slenderness ratio to determine "F_a'			
	1. With fillers or ties	$0.75\ l/r_x$	$1.0\ l/r_y$	$1.0\ l_s/r_z$
	2. Without fillers or ties	$1.0\ l/r_z$		
	3. Single component members	$0.75\ l/r_x$	$1.0\ l/r_y$	

203.4 MEMBERS

(a) Chords

The bottom chord shall be designed as an axially loaded tension member.

The top chord shall be designed as a continuous member subject to combined axial and bending stresses and shall be so proportioned that

$f_a + f_b \leq 0.6F_y$, at the panel point; and

$$\frac{f_a}{F_a} + \frac{C_m f_b}{\left(1 - \frac{f_a}{F'_e}\right) QF_b} \leq 1.0, \text{ at mid-panel; in which}$$

$C_m = 1 - 0.3f_a/F'_e$ for end panels
$C_m = 1 - 0.4f_a/F'_e$ for interior panels
f_a = Computed axial unit compressive stress
f_b = Computed bending unit compressive stress at point under consideration
F_a = Permissible axial unit compressive stress based on K l/r
F_b = Permissible bending unit stress; $0.6F_y$

$$F'_e = \frac{12\pi^2 E}{23\,(Kl/r_x)^2}$$

r_x = Radius of gyration about the axis of bending
Q = Form factor as defined in Section 203.2 (b)

The radius of gyration of the top chord about its vertical axis shall be not less than $l/170$ where l is the spacing in inches between lines of bridging as specified in Section 204.6.

The top chord shall be considered as stayed laterally by the roof deck provided the requirements of Section 204.10 (d) of these specifications are met.

(b) Web

The vertical shears to be used in the design of the web members shall be determined from full uniform loading, but such vertical shear shall not be less than 25 percent of the end reaction.

Interior vertical web members used in modified Warren type web systems shall be designed to resist the gravity loads supported by the member plus 1 1/2 percent of the top chord axial force.

(c) Depth

Joists can have either a top chord pitch of l/4 inch per foot or parallel chords. The depth, for the purpose of design, in all cases shall be the depth at mid-span. Parallel chord joists must be installed with a minimum slope of l/4 inch per foot.

(d) Eccentricity

Members connected at a joint shall have their center of gravity lines meet at a point, if practical. Eccentricity on either side of the neutral axis of chord members may be neglected when it does not exceed the distance between the neutral axis and the back of the chord. Otherwise, provision shall be made for the stresses due to eccentricity. Ends of joists shall be proportioned to resist bending produced by eccentricity at the support.

(e) Extended Ends

Extended top chords or full depth cantilever ends require the special attention of the specifying engineer or architect.

The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

203.5 CONNECTIONS

(a) Method

Joint connections and splices shall be made by attaching the members to one another by arc or resistance welding or other approved method.

1) Welded Connections

(a) Selected welds shall be inspected visually by the manufacturer. Prior to this inspection, weld slag shall be removed.

(b) Cracks are not acceptable and shall be repaired.

(c) Thorough fusion shall exist between layers of weld metal and between weld metal and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.

(d) Unfilled weld craters shall not be included in the design length of the weld.

(e) Undercut shall not exceed l/16 inch for welds oriented parallel to the principal stress.

(f) The sum of surface (piping) porosity diameters shall not exceed l/16 inch in any 1 inch of design weld length.

(g) Weld spatter that does not interfere with paint coverage is acceptable.

2) Welding Program

Manufacturers shall have a program for establishing weld procedures and operator qualification and for weld sampling and testing.

3) Weld inspection by Outside Agencies (See Section 204.14 of these specifications).

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 203.5 a. 1) above. Ultrasonic X-Ray, and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

(b) Strength

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

(c) Shop Splices

Shop splices may 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 allowable member strength. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57,000 psi times the full design area of the

chord or web. The term "member" shall be defined as all component parts, comprising the chord or web, at the point of splice.

(d) Field Splices
Field splices shall be bolted connections designed by the manufacturer. Splices shall be designed for the member shear and moment forces, but not less than 50 percent of the allowable member strength.

(e) Bridging Clips
Where double angles, separated by a nominal gap, are used as chord members, the two angles must be tied together with a filler or tie at all bridging clip locations. These fillers and their connections must be capable of developing the bridging forces indicated by Section 204.6 (d).

203.6 CAMBER

Joists shall have approximate cambers in accordance with the following:

TABLE 203.6.1

Top Chord Length	Double Pitch Joists*	Parallel Chord Joists
111'-0"	3 1/4"	5 1/4"
120'-0"	3 1/2"	6"
130'-0"	3 7/8"	7"
140'-0"	4 1/8"	8"
150'-0"	4 3/8"	8 3/4"
160'-0"	4 3/4"	9 1/2"
180'-0"	5 1/4"	10 1/2"
200'-0"	5 7/8"	11 3/4"
220'-0"	6 1/2"	13"
240'-0"	7"	14"

* Pitched 1 1/4 in 12" or greater

203.7 SHOP PAINTING

Joists and accessories shall receive one shop coat of protective paint as specified in Section 202.4.

203.8 VERIFICATION OF DESIGN

Design data on SLH series joists will be supplied to the specifying engineer upon request.

SECTION 204. APPLICATION

204.1 USAGE

These specifications shall apply to any type of structure where roof decks are to be supported directly by steel joists installed as herein specified. Where joists are used other than on simple spans under uniformly distributed loading, as prescribed in Section 203.1, they shall be investigated and modified if necessary to limit the unit stresses to those listed in Section 203.2.

CAUTION: If a rigid connection of the bottom chord is to be made to the column or other support, it shall be made only after the application of the dead loads. The joist is then no longer simply supported and the system must be investigated for continuous frame action by the specifying professional.

204.2 SPAN

The clear span of joists shall not exceed 24 times their nominal depth.

204.3 DEPTH

The nominal depth of pitched chord joists shall be the depth at mid-span. The standard pitch of the top chord shall be 1/4 inch per foot.

204.4 PITCH

The standard configuration for SLH Series Joists is a double pitched top chord with a pitch of 1/4 inch per foot. The double pitched design was selected for economy and positive roof drainage.

204.5 END SUPPORTS

(a) Masonry and Concrete

SLH Series Joists supported by masonry or concrete are to bear on steel bearing plates, and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying engineer or architect in the design of the steel bearing plate and the masonry or concrete. The ends of SLH Series Joists shall extend over the masonry or concrete support not less than the distance shown in Table 204.5.1. The plate shall be located not more than l/2 inch from the face of the wall and shall be not less than 9 inches wide perpendicular to the length of the joist. It is to be designed by the specifying engineer or architect in compliance with the allowable unit stresses in Section A5.1 (Allowable Stress Design) of the AISC Specifications, of latest adoption. The steel bearing plate shall be furnished by other than the joist manufacturer.

(b) Steel
Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying engineer or architect in the design of the steel support. The end of SLH Series Joists shall extend over the steel support a distance not less than that shown in Table 204.5.1.

TABLE 204.5.1

Joist Section Number	Minimum Bearing Length*
SLH 15-18	4"
SLH 19-25	6"

*Excluding extension

204.6 BRIDGING

(a) Horizontal
Horizontal bridging lines shall consist of two continuous horizontal steel members, one attached to the top chord and the other attached to the bottom chord. The *l/r* ratio of the bridging member shall not

exceed 300, where l is the distance in inches between attachments and r is the least radius of gyration of the briding member.

(b) Diagonal
Diagonal bridging lines shall consist of cross-bracing with l/r ratio of not more than 200, where l is the distance in inches 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 between connections at the point of intersection of the bracing members and the connections to the chords of the joists.

(c) Bridging Lines
Bolted diagonal bridging shall be used except when the joist spacing is less than .66 x joist depth, then bolted horizontal bridging shall be used in addition to diagonal bridging.

(d) Spacing
The maximum spacing of lines of bridging shall not exceed the values in Table 204.6.1. 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. See Section 204.13 for bridging required for uplift forces.

TABLE 204.6.1

Joist-Section Number*	Max. Spac. Of Lines Of Bridging	Horizontal Bracing Force**
15 to 17	21 '-0"	2,700 lbs
18	21'-0"	3,400 lbs
19	26'-0"	3,400 lbs
20	26'-0"	3,700 lbs
21	30'-0"	4,200 lbs
22	30'-0"	5,000 lbs
23	30'-0"	5,500 lbs
24	30'-0"	6,300 lbs
25	30'-0"	7,100 lbs

The number of lines of bridging is based on the joists clear span dimensions.

* Last two digits of designation shown in load table.

** Each connection to the chord shall resist one-half of this force.

(e) Connections
Connections to the chords of the steel joists and bridging anchors shall be made by positive mechanical means and capable of resisting a horizontal force not less than that specified in Table 204.6.1.

(f) Bottom Chord Bearing Joists
It is not recommended that SLH-Series joists be used in bottom chord bearing configuration.

204.7 INSTALLATION OF BRIDGING

All bridging and bridging anchors shall be completely installed before construction loads are placed on the joists. 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 plans.

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

204.8 END ANCHORAGE

(a) Masonry and Concrete
Ends of SLH Series Joists resting on steel bearing plates on masonry or structural concrete shall be attached thereto as shown Table 204.8.1.

(b) Steel
Ends of SLH Series Joists resting on steel supports shall be attached thereto as shown in Table 204.8.1. In steel frames, where columns are not framed in at least two directions with structural steel members, joists at column lines shall be field bolted at the columns to provide lateral stability during construction.

TABLE 204.8.1 END ANCHORAGE

Joist Section No.*	Fillet Weld	Bearing Seat Bolts For Erection
SLH 15-18	2 - l/4" x 2"	2 - 314" A325
SLH 19-25	2 - l/4" x 4"	2 - 314" A325

*Last two digits of designation shown in load table.

(c) Uplift
Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces.

204.9 JOIST SPACING

Joists shall be spaced so that the loading on each joist does not exceed the allowable load given for the particular designation and span in the Load Table.

204.10 ROOF DECKS

(a) Material
Decks may consist of cast-in-place or precast concrete or gypsum, formed steel, wood or other suitable material capable of supporting the required load at the specified joist spacing.

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

(c) Bearing
Slabs or decks shall bear uniformly along the top chords of the joist.

(d) Attachments
The spacing of attachments along the top chord shall not exceed 36 inches. Such attachments of the slab or deck to the top chords of joists shall be capable of resisting the following forces:

TABLE 204.10.1

Joist Section Number*	Equivalent Force Required
15 - 16 incl.	300 lbs./ft.
17 - 19 incl.	300 lbs./ft.
20 - 21 incl.	300 lbs./ft.
22 - 24 incl	420 lbs./ft.
25	520 lbs./ft.

*Last two digits of designation shown in load table.

(e) Wood Nailers
It is not recommended that SLH-Series joists be used in conjunction with wood nailers.

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

Roofs

l/360 of span where plaster ceiling is attached or suspended.

l/240 of span for all other cases.

The specifying engineer or architect shall give due consideration to the effects of deflection in selection of joists.

204.12 PONDING
Unless a roof surface is provided with sufficient slope toward points of free drainage or adequate individual drains to prevent the accumulation of rain water, the roof system shall be investigated to assure stability under ponding conditions in accordance with Section K2 (Allowable Stress Design) of the AISC Specifications.*

A top chord pitch of 1/4" or more per foot is recommended to minimize ponding.

The ponding investigation shall be performed by the specifying engineer or architect.

* For further information, refer to Steel Joist Institute Technical Digest #3, "Structural Design of Steel Joist Roofs to Resist Ponding Loads".

204.13 UPLIFT
Where uplift forces due to wind are a design requirement, these forces must be indicated on the structural drawings in terms of net uplift in pounds per square foot. When these forces are specified, they must be considered in the design of joists and bridging. A single line of bottom chord bridging must be provided near the first bottom chord panel points, whenever uplift due to wind forces is a design consideration.**

** For further information, refer to Steel Joist Institute Technical Digest #6, "Structural Design of Steel Joist Roofs to Resist Uplift Loads".

204.14 INSPECTION
Joists shall be inspected by the manufacturer before shipment to insure compliance of materials and workmanship with the requirements of these specifications. If the purchaser wishes an inspection of the steel joists by someone other than the manufacturer's own inspectors, he may reserve the right to do so in the "Invitation to Bid" or the accompanying "Job Specifications". Arrangements shall be made with the manufacturer for such inspection of the joists at the manufacturing facility by the purchaser's inspectors at purchaser's expense.

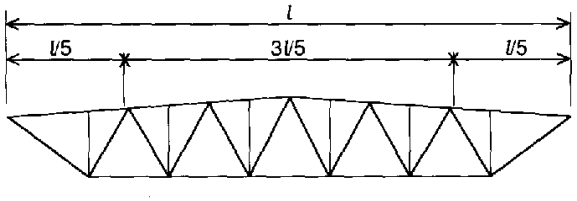
SECTION 205.
HANDLING AND ERECTION*

Particular attention should be paid to the erection of Super Longspan Steel Joists.

Care shall be exercised at all times to avoid damage through careless handling during unloading, storing, and erecting. Dropping of joists shall not be permitted.

Each joist shall be adequately braced laterally before any loads are applied. If lateral support is provided by bridging, the bridging lines must be anchored to prevent lateral movement.

Hoisting cables attached at a panel point approximately 1/5 of the span from each end will minimize erection stresses in the steel joist. **The angle of the hoisting cables from the vertical shall not exceed 30 degrees.** Two cranes are recommended for spans greater than 150 feet.



Hoisting cables shall not be released until all bridging lines are installed. For ease of alignment, anchorage of joist ends in accordance with Section 204.8 should follow the installation of bridging. During the construction period, the contractor shall provide means for the adequate distribution of concentrated loads so the carrying capacity of any joist is not exceeded.

* For thorough coverage of this topic, refer to the Steel Joist Institute Technical Digest #9, "Handling and Erection of Steel Joists and Girders.

WHAT ARE JOIST GIRDERS?
Joist girders are primary framing members. The design is simple span, supporting equally spaced concentrated loads from open web steel joists. These concentrated loads are considered to act at the panel points of the joist girder.

Joist girders are designed to allow for the efficient use of steel in longer spans for primary framing members.

The following weight tables list joist girders from 20" to 96" deep and spans up to 100 feet. (For depths and lengths not listed contact Vulcraft.) The depth designation is determined by the nominal depth at the center of the span, except for offset double pitched girders, where the depth is determined at the ridge.

The standard configuration of a joist girder is parallel chord with underslung ends and bottom chord extensions. (Joist girders can be furnished in other configurations, see below.) The standard depth of bearing for joist girders is $7^1/_2$ inches at the end of the bearing seat.

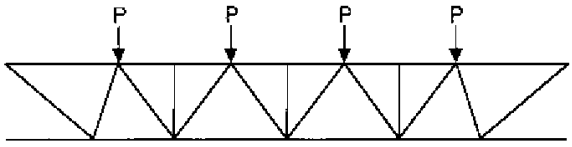
The standard method of connecting girders to columns is two 3/4" diameter A325 bolts. A loose connection of the lower chord to the column or other support is required during erection in order to stabilize the lower chord laterally and to help brace the joist girder against overturning. **CAUTION: IF A RIGID CONNECTION OF THE BOTTOM CHORD IS TO BE MADE TO COLUMN OR OTHER SUPPORT, IT IS TO BE MADE ONLY AFTER THE APPLICATION OF THE DEAD LOADS. THE JOIST GIRDER IS THEN NO LONGER SIMPLY SUPPORTED AND THE SYSTEM MUST BE INVESTIGATED FOR CONTINUOUS FRAME ACTION BY THE SPECIFYING PROFESSIONAL.**

Joist girders along the perimeter, with joists coming in from one side only, and those with unbalanced loads must be designed such that the reactions pass through the center of the joist girder.

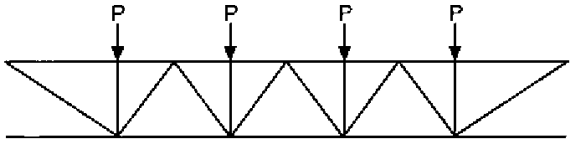
The weight tables list the approximate weight per linear foot for a joist girder supporting the panel point loads given by the specifying engineer. **NOTE: THE WEIGHT OF THE JOIST GIRDER MUST BE INCLUDED IN THE PANEL POINT LOAD. (SEE THE EXAMPLE ON PAGE 79).**

For calculating the approximate deflection or checking ponding the following formula may be used in determining the approximate moment of inertia of the joist girder. $I_{JG} = 0.027\ NPLd$
Where N = number of joist spaces, P = panel point load in kips, L = joist girder length in feet and d = effective depth of the joist girder in inches. Contact Vulcraft if a more exact joist girder moment of inertia must be known.

*Increase seat depth to 10" if weight of joist girder appears to the right of the stepped blue lines in the weight tables.



G TYPE



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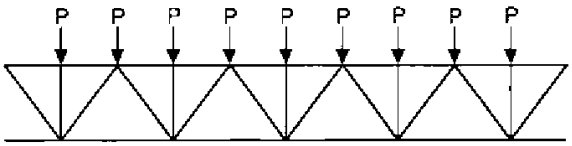


BG TYPE

OTHER CONFIGURATIONS AVAILABLE ARE:

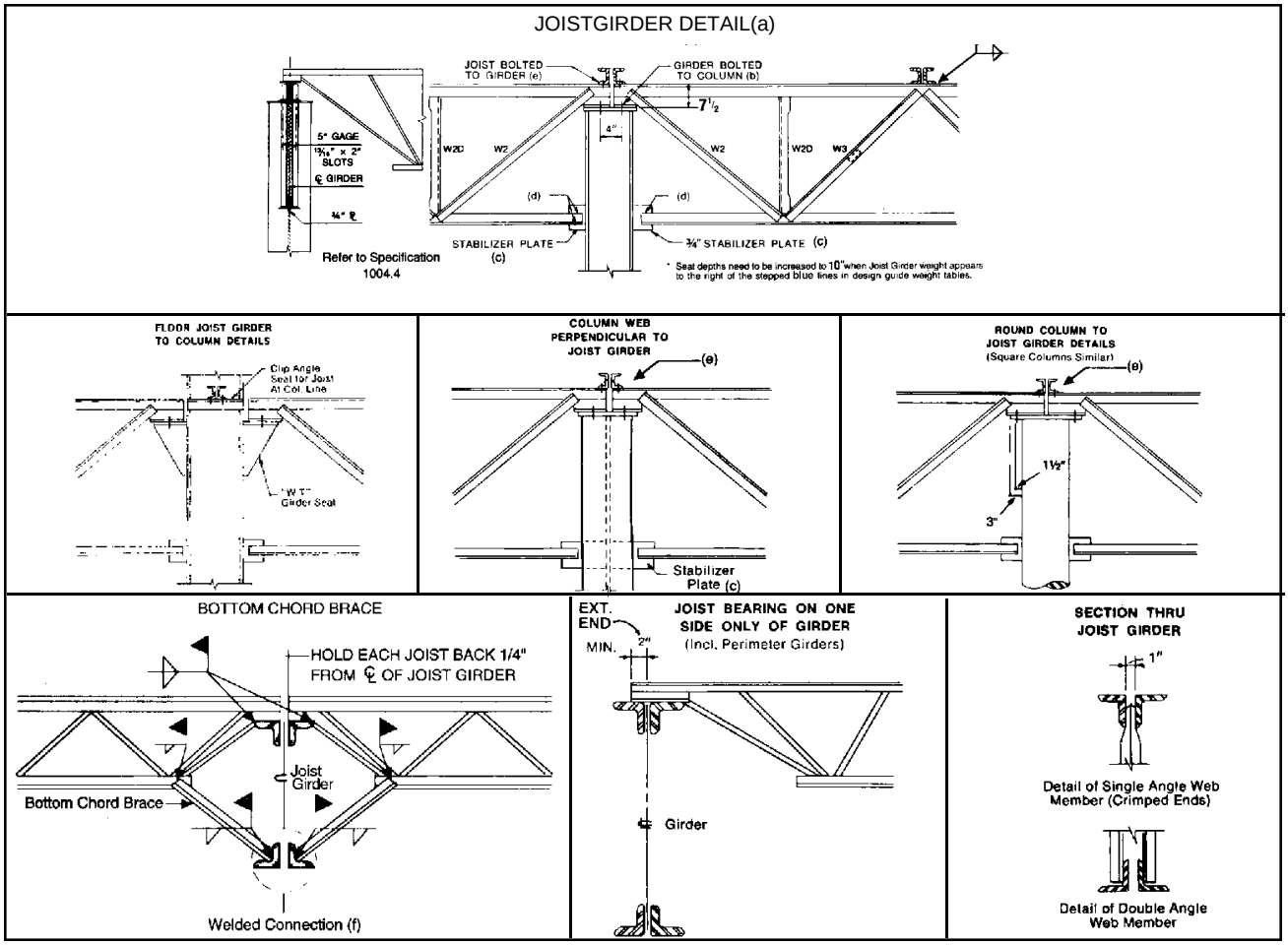
DOUBLE PITCH TC, UNDERSLUNG

SINGLE PITCH TC, UNDERSLUNG

OFFSET DOUBLE PITCH TC, UNDERSLUNG

SEE PAGE 79
FOR DESIGN EXAMPLE

NOTE: JOIST GIRDER WEB CONFIGURATION MAY VARY FROM THAT SHOWN. IF EXACT CONFIGURATION IS REQUIRED CONTACT VULCRAFT.



SEE PAGE 78 FOR MOMENT CONNECTION DETAILS

JOIST GIRDER NOTES

(a) All Joist Girder dimensions shown are subject to change when required by the physical size of large Joist Girders. If changes are necessary Vulcraft will so note on the placing plans,

(b) The standard connection for Joist Girders to columns is 13/16 inch slots for 3/4 inch bolts in girder bearings. **The girder erection bolts are by others.** If the specifying professional wishes to use the Joist Girder bearing to transmit horizontal loads, the required amount of weld to connect the Joist Girder seat to the column should be specified. For additional information see the section of this catalog "JOIST GIRDERS IN MOMENT RESISTIVE FRAMES." (page 78)

(c) Stabilizer plates between bottom chord angles stabilize the bottom chord laterally and brace the Joist Girder against overturning during erection. (Refer to 1004.4)

(d) Joist Girder bottom chord struts do not require welding to the stabilizer plate unless required by design to transmit horizontal forces. When welding is required, the amount of weld should be specified by the specifying professional. UNLESS OTHERWISE SPECIFIED, BOTTOM CHORD STRUTS SHOULD NOT BE WELDED.

(e) Joists are connected to the girder by welding except that the joists at (or nearest) the column shall be bolted (O.S.H.A. Sec. 1910.12 Construction Standards Sec 1518.751).

(f) The *l*/ry of the bottom chord of the Joist Girder cannot exceed 240. For STANDARD Joist Girders, the specifying engineer can use the "Joist Girder Bottom Chord Brace Chart" in conjunction with the "Design Guide Weight Table/Joist Girders, G Series" to select the correct number of bottom chord braces. Joist Girders which must resist uplift, end moments, or axial bottom chord forces may require additional braces.

JOIST GIRDER NOTES

If fixed end moments or uplift are present, the specifying professional should also specify bottom chord braces to be designed and furnished by the joist girder manufacturer. If any additional braces are required due to the compression load in the bottom chord, Vulcraft will indicate their location on the erection drawings. Bottom chord braces may be either welded or bolted to the girder, but are typically welded to the joist.

JOIST GIRDER BOTTOM CHORD BRACE CHART*

	SPAN IN FEET		
JOIST GIRDER WEIGHT/FT	NO BC BRACES	ONE BC BRACE @ CENTERLINE	TWO BC BRACES @ l/3 POINTS
0-22	0' to 24'	>24' to 49'	>49' to 73'
23-31	0' to 28'	>28' to 57	>57' to 85'
31-45	0' to 32'	>32' to 65'	>65' to 97'
46-66	0' to 36'	>36 to 73'	>73'to 110'
67-87	0' to 41'	>41' to 82'	>82' to 123'
88-l 35	0' to 49'	>49' to 98'	>98' to 147'
136-173	0' to 57'	>57' to 114'	>114'to 171'

* The bottom chords must be restrained in accordance with Section 1004.5 of The SJI Specifications.

ECONOMY TIPS

1. Designate Joist Girder with exact load required, such as 60G8N11.2K.
2. If Joist Girder depth is limited below the optimum depth as shown in the weight tables, use the maximum depth permitted by the building system: such as 53G8N12K (odd depths can be designed and furnished).
3. The Joist Girder designations shown in the weight guide are typical types included only as a guide. The specifying professional is encouraged to specify the exact depth, span and loading that best suits the building.
4. A Joist Girder depth in inches approximately equal to the span in feet is often a good combination for economy.
5. The specifying professional is urged to investigate several combinations of bay sizes and joist spaces to find the most economical combination.
6. The following table illustrates the economy possible using this system.

Table G-1 ROOF SYSTEM WEIGHT FOR RECOMMENDED BAY SIZES

BAY SIZE		Weight of joists* + Girders** = Total (PSF)***					
Joist Span	Girder Span	Design Load (PSF) 35 (PSF)	40(PSF)	45 (PSF)	50 (PSF)	Joist Space (Ft.)	Girder Depth (In.)
40'	40'	1.69 + .75 = 2.44	1.78 + .83 = 2.61	1.90 + .90 = 2.80	2.07 + 1.03 = 3.10	6.67	48
40'	50'	1.73 + .95 = 2.68	1.90 + 1.08 = 2.98	2.02 + 1.18 = 3.20	2.13 + 1.28 = 3.41	6.25	60
40'	60'	1.69 + 1.13 = 2.82	1.78 + 1.30 = 3.08	1.90 + 1.40 = 3.30	2.07 + 1.53 = 3.60	6.67	72
45'	40'	1.89 + .71 = 2.60	2.04 + .80 = 2.84	2.14 + .89 = 3.03	2.41 + .96 = 3.37	6.67	48
45'	50'	1.98 + .96 = 2.94	2.11 + 1.09 = 3.20	2.22 + 1.16 = 3.38	2.40 + 1.29 = 3.69	6.25	60
45'	60'	1.89 + 1.16 = 3.05	2.04 + 1.24 = 3.28	2.14 + 1.38 = 3.52	2.41 + 1.49 = 3.90	6.67	72
50'	40'	2.19 + .72 = 2.91	2.28 + .80 = 3.08	2.53 + .86 = 3.39	2.80 + 1.06 = 3.86	6.67	48
50'	50'	2.21 + .92 = 3.13	2.43 + 1.00 = 3.43	2.61 + 1.12 = 3.73	2.70 + 1.20 = 3.90	6.25	60
50'	60'	2.19 + 1.12 = 3.31	2.28 + 1.22 = 3.50	2.53 + 1.34 = 3.87	2.80 + 1.50 = 4.30	6.67	72

* Weight of joists in pounds per square foot.
** Weight of the joist girders in pounds per square foot.
*** Total weight of joists and joist girders in pounds per square foot.

The larger bay sizes become more economical as the column heights increase and in localities with high erection labor costs. Larger bays speed construction by reducing the number of pieces and therefore the number of crane lifts. Encasing the columns for fire proofing or decoration also makes the larger bays more attractive.

JOIST GIRDERS IN MOMENT RESISTANT FRAMES

When a Joist Girder is used as a component of a moment resistive frame, both the design wind moment and any continuity (usually live load) moment must be specified for each end of each affected Joist Girder. Provided this information, Vulcraft will design the Joist Girder as a simply supported truss for full gravity loading. The "fixed end" moments are then applied to the Joist Girder. Using the appropriate combinations of the gravity loads, the wind moments, and/or the continuity moments, the critical member stresses are identified and the Joist Girder members are sized accordingly.

A one-third increase in allowable stresses is permitted in all load combinations involving wind. **(Vulcraft does not design the Joist Girder for any dead load moments unless specifically instructed to do so on the structural drawings.)** For this reason it is very important that on the structural drawings the specifying professional specify that all dead loads be applied to the Joist Girders before the bottom chord struts are welded to the stabilizer plates.

One of the most important considerations of using a Joist Girder in a moment resistive frame is the connection of the Joist Girder to the column. As with a beam connection, special provisions must be made to develop the required moment capacity. As can be readily seen in Figure 1, the use of a standard Joist Girder seat results in an eccentric moment due to the depth of the seat. This moment must be resisted by the weld group connecting the Joist Girder seat to the cap plate of the column.

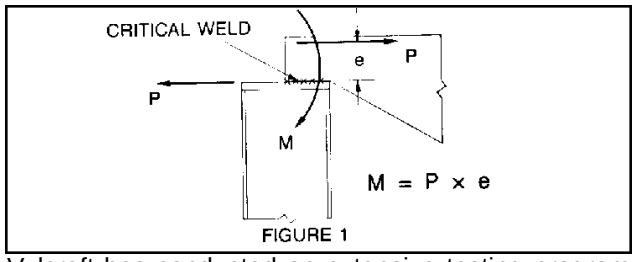


FIGURE 1

Vulcraft has conducted an extensive testing program to determine the maximum capacity of this connection. Table 1 gives the maximum capacity of a Joist Girder with a six inch deep bearing seat sitting atop the support. To achieve these strengths, both A325 erection bolts must be installed and tightened "snug tight" (ref. AISC for definition) in the Joist Girder seat. In addition, the Joist Girder seats must be welded to the support with a minimum of two 1/4" fillet welds 5 inches long. The bottom chord extensions of the Joist Girder must be welded to the column stabilizer plate as required.

Table 1

JOISTGIRDER WGHT PER FOOT	MAXIMUM AXIAL LOAD CAPACITY FOR 6" DEEP JOIST GIRDER SEATS
0-30	8 Kips
30.1 * Up	16 Kips

The capacities in Table 1 can be increased by one-third for all load cases involving wind.

If the axial load due only to the wind moment does not exceed the values in Table 1 (after increasing them by one-third), a strap angle connecting the Joist Girders together as shown in Figure 2 can be used to resist the continuity moments, By tying the Joist Girder ends together, the Joist Girder-to-cap plate connection need only resist the wind loads, **the strap angles do not transfer wind moments**. The design of such a strap angle to resist the continuity moments is the responsibility of the specifying professional.

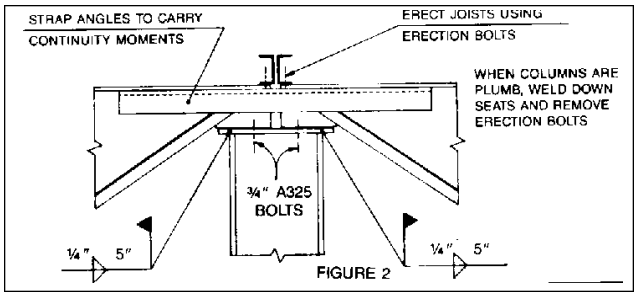


FIGURE 2

When the end moments on the Joist Girders are too large for the seat to resist, it is necessary to utilize a moment plate as shown in Details A-F. The use of this simple moment plate virtually eliminates all eccentricity problems.

By using the equations and Table 2 below, the specifying professional can determine the minimum Joist Girder top chord width for most Joist Girders. If the end moments are very large, the Joist Girder loads and/or spacings vary, or other special conditions exist, a more exact analysis is required. Once the Joist Girder top chord width is known, the specifying professional can easily size the moment plate and its weld requirements to complete the connection detail.

EQUATION 1 (ODD NO. OF JOIST SPACES)

$$A = \frac{.028P}{D}(N^2S - .67N + .67 - S)$$

EQUATION 2 (EVEN NO. OF JOIST SPACES)

$$A = \frac{.028P}{D}(N^2S - .67N + .67)$$

Where:
P = Panel point load (kips)
N = No. of joist spaces
S = Joist spacing (ft.)
D = Joist Girder depth (in.)

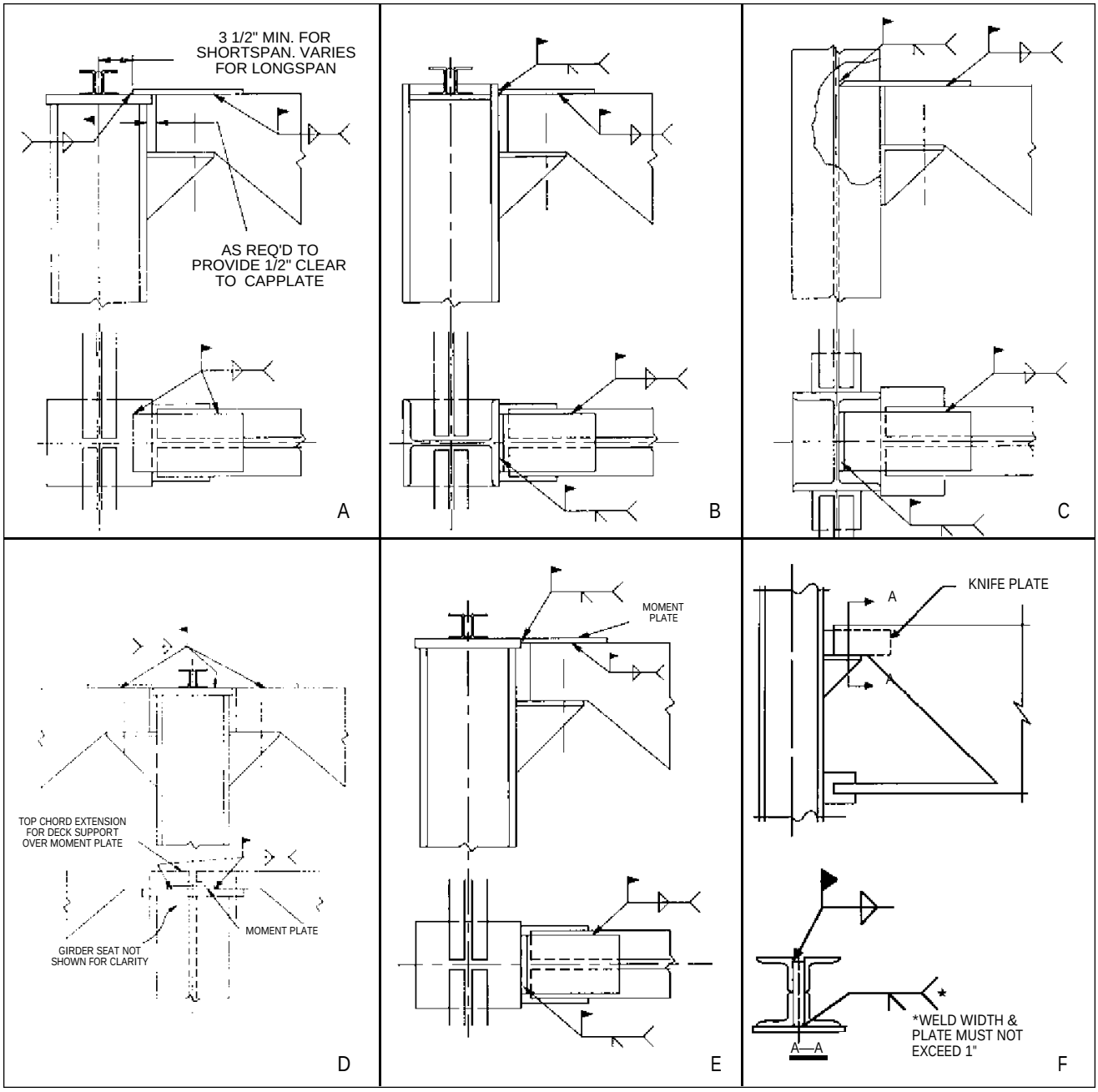
Table 2*

A	Minimum Top Chord Width
0.95 - 1.19	6"
1.20 - 1.78	7"
1.79 - 2.48	8"
2.49 - 3.75	9"
3.76 - 4.76	11"
4.78 - 8.44	13"
Greater than 8.44	Consult Vulcraft

Please note that this chart is to be used only for designing moment plates. It is not intended for use as a general detailing aid.

*The bearing seat width may be larger than the top chord width. Contact Vulcraft if seat width is needed for determining column plate sizes.

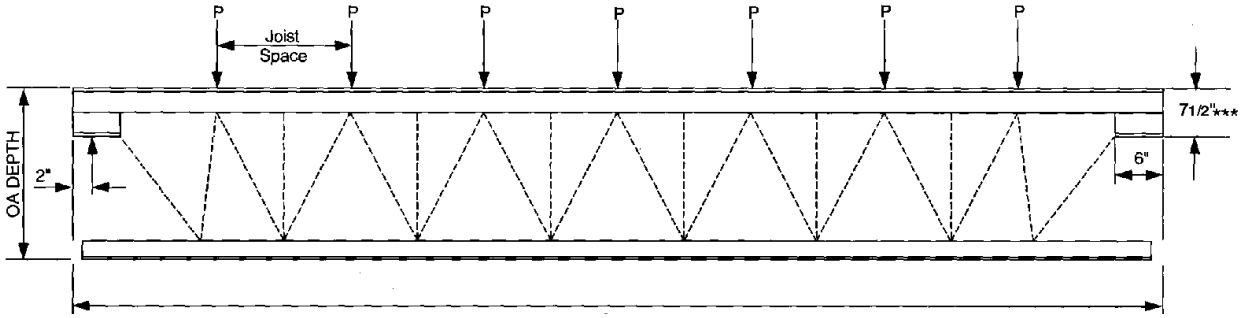
Presented below are six suggested detailed for a moment resistive connection involving roof Joist Girders. Similar details should be utilized for longspan joists with end moments. In all cases, the bottom chord is to be connected to the column with a vertical stabilizer plate which is to be sized to carry the required load and obtain required weld (use 6 x 6 x 3/4 plate minimum for Joist Girders).



N O T E S :
(1) Connections type B & C would also be recommended for floor girder details.
(2) Where a backer bar is required for groove welds, additional clearance must be provided when determining girder hold back dimension.
(3) Similar details would apply at other types of columns.
(4) Additional stiffener plates as required not shown for clarity.
(5) In all details, moment plate design and material is not by Vulcraft.

HOW TO SPECIFY VULCRAFT JOIST GIRDERS

For a given joist girder span, the designer first determines the number of joist spaces, Then the panel point loads are calculated and a depth is selected. The following tables gives the Joist Girder weight per linear foot for various depths and loads.



JOIST GIRDER SPAN (℄COLUMN TO ℄ COLUMN)

STANDARD DESIGNATION

48G**	8N	8.8K
Depth in Inches	Number of Joist Spaces	Kip Load on Each Panel Point (One Kip = 1000 lbs.)

Example: Given : 50'-0 x 40'-0 bay Joists spaced on 6'-3 centers

Live Load = 20 psf
Dead Load = 15 psf *
Total Load = 35 psf

Note: Web configuration may vary from that shown. Contact Vulcraft if exact layout must be known.

* Includes the approximate Joist Girder weight in panel point loads.
** See page 74 for other Girder Types.
*** Increase to 10" if to the right of the stepped blue lines in the weight tables.

1. Determine number of actual joist spaces (N).
   In this example, N = 8
2. Joist Selection
   a) Span = 40'-0
   b) T.L. = 6.25 x 35 = 219 plf
   c) from K-Series load tables select a 22K7 (T.L. = 231 > 219; L.L. = 185 > 125) 123 x 1.5 = 185 (l/240 limit applies since ceiling is not plastered)
3. Joist Girder Selection
   a) compute the concentrated load at top chord panel points P = 219 x 40 = 8,760 lbs. = 8.8 kips (use 9K for depth selection) Live load deflection rarely governs in Joist Girder selection because of their depth.
   b) Select girder depth
   The 50'-0 span 8 panel Joist Girder table on page 85 indicates that the rule of about one inch of depth for each foot of span is a good compromise of limited depth and economy. Therefore select depth of 48 inches.
   c) the Joist Girder will then be designated 48G8N8.8K
   d) the Joist Girder table shows the weight for a 48G8N9K is 40 pounds per lineal foot
   e) total weight of this Joist Girder system per square foot is:
   Joists 9.7 plf/6.25 = 1.55
   Girder 40 plf/40 = 1.00
   2.55 psf
4. For rectangular bays check economy with joists and girders spanning the opposite way
   Joists (26K10) 13.8 plf/6.67 = 2.07
   Girder (40G6N12K) 47 plf/50 = .94
   3.01 psf

NOTES:
1. When it is required to have joists bear only at vertical web members to gain space for duct work, the Joist Girder should be labeled as a "VG" in lieu of a "G".
2. The following tables serve as a design guide only. Odd size joist girder lengths, depths, kip loadings, and panel lengths are available.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS
U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
		16	16	16	16	16	16	16	16	17	18	21	23	26	30	35	41	47	54	69	83	100	108	140
	2N@	20	16	16	16	16	16	16	16	16	16	17	19	22	24	31	35	39	44	56	64	76	85	104
	10.00	24	16	16	16	16	16	16	17	17	17	17	17	19	20	26	29	34	37	48	57	66	73	88
		16	16	16	16	16	16	18	20	22	24	27	31	35	38	48	54	69	79	101	114	141	152	187
	3N@	20	16	16	16	16	16	16	17	19	21	23	26	28	31	38	47	56	64	78	95	109	117	156
	6.67	24	16	16	17	17	17	17	17	18	19	23	25	26	31	34	38	45	51	67	80	97	109	122
		16	16	16	18	20	22	26	28	29	32	38	42	50	54	66	83	100	108	140	162	188	209	314
20	4N@	20	16	16	16	17	20	20	21	23	26	30	34	39	43	52	60	76	85	105	124	145	169	238
	5.00	24	16	16	16	16	17	19	20	21	22	25	28	32	38	44	54	61	75	89	107	126	149	189
		16	16	18	19	24	26	29	33	37	39	47	54	59	66	83	101	113	140	172	212	247	296	
	5N@	20	16	16	17	19	21	26	28	29	32	37	41	49	53	65	80	95	104	134	167	198	221	296
	4.00	24	16	16	17	19	20	22	24	28	28	31	35	39	45	55	67	78	88	109	128	152	183	244
		16	28	33	39	47	54	62	72	78	83	101	109	131	141	195	226	247	358					
	10N@	20	23	29	31	37	43	49	56	61	64	77	86	104	108	145	179	203	236	317				
	2.00	24	21	25	28	32	39	43	46	55	54	66	80	84	89	119	141	171		197	250	313		
		16	18	18	18	18	18	18	19	20	20	23	26	29	32	39	46	53	61	77	98	107	119	158
	2N@	20	18	18	18	18	18	18	18	19	19	20	21	23	27	33	37	46	48	62	70	83	101	121
	11	24	19	19	19	19	19	19	19	19	19	19	20	21	24	29	33	36	42	49	63	72	81	103
		16	15	15	15	16	17	19	23	24	25	29	33	37	40	53	61	73	90	103	129	149	170	207
	3N@	20	16	16	16	16	16	17	19	20	23	24	27	30	34	42	48	55	67	80	102	115	132	165
	7.33	24	16	16	16	16	16	16	17	18	19	24	24	27	28	36	43	48	57	70	82	97	111	137
		16	16	17	18	21	24	28	30	33	36	40	46	53	58	77	98	100	119	159	179	206	235	
22	4N@	20	16	16	17	18	20	22	25	27	28	33	37	42	48	60	71	84	102	115	143	165	187	244
	5.5	24	16	16	16	17	19	20	20	21	26	27	31	34	40	47	61	69	76	104	113	145	148	206
		16	17	21	26	29	35	39	42	49	50	58	73	82	99	107	139	160	180	237				
	6N@	20	17	19	21	26	28	31	34	38	42	51	59	60	68	85	103	122	143	175	222	252	322	
	3.67	24	16	17	19	21	25	27	30	32	34	40	47	54	61	75	87	106	113	148	178	202	240	330
		16	32	39	49	57	64	77	82	99	100	113	140	150	162	222	256							
	11N@	20	26	31	37	43	52	59	64	76	80	94	103	116	133	168	203	235	289					
	2.00	24	24	28	32	38	43	50	54	62	65	78	90	108	110	138	182	205	238	301				
		20	18	18	18	18	18	18	18	19	19	21	24	27	30	36	44	47	54	68	78	99	103	131
	2N@	24	18	18	18	18	18	18	18	18	19	20	21	22	26	32	34	40	46	55	67	79	93	106
	12.00	28	19	19	19	19	19	19	19	19	19	19	20	21	23	28	32	35	41	48	57	69	72	95
		20	16	16	16	16	16	18	20	22	23	26	29	33	36	45	54	62	74	92	105	130	151	175
	3N@	24	16	16	16	16	16	16	17	19	21	24	27	29	31	38	47	55	64	78	94	108	117	156
	8.00	28	16	16	16	16	17	17	17	18	18	24	26	26	30	35	40	48	55	67	86	97	108	122
		20	16	16	17	19	21	25	27	28	31	36	39	47	50	63	78	100	101	130	161	183	192	246
	4N@	24	17	17	17	18	19	22	24	25	28	32	35	38	43	54	65	76	85	107	124	147	168	225
	6.00	28	16	16	16	16	17	20	20	21	25	27	30	36	38	44	53	62	74	88	108	126	149	187
24		20	16	17	20	22	25	28	31	35	36	43	51	55	62	78	100	105	131	164	196	225	282	
	5N@	24	16	16	18	20	21	26	28	29	32	36	41	49	53	65	80	94	104	134	157	186	218	285
	4.8	28	16	16	17	19	20	22	25	27	29	32	36	42	46	58	66	82	97	115	138	168	180	231
		20	17	20	23	27	30	33	38	41	44	51	59	69	74	101	109	141	163	192	245	294		
	6N@	24	16	17	20	23	26	29	32	34	38	43	53	60	61	76	103	106	124	172	196	232	267	
	4.00	28	17	17	20	22	25	28	29	31	33	39	44	49	55	76	84	106	112	129	177	202	240	289
		20	29	38	45	51	59	70	75	84	101	103	122	143	166	196	265	320						
	12N@	24	27	31	38	45	53	61	62	72	77	87	105	113	126	175	199	249	288					
	2.00	28	25	29	33	40	45	54	56	69	71	79	91	113	114	144	183	215	234	305				
		20	22	22	22	22	22	22	23	24	24	26	27	29	32	37	45	53	60	68	90	99	112	140
	2N@	24	23	23	23	23	23	23	23	23	24	25	25	27	29	32	38	44	51	61	70	83	101	115
	13.00	28	23	23	23	23	23	23	23	23	23	24	25	26	27	31	34	39	45	52	62	71	81	103
		20	15	15	16	16	17	19	22	23	25	28	33	36	39	50	57	68	78	99	113	140	151	196
	3N@	24	16	16	16	16	16	17	19	21	23	25	28	31	34	40	51	58	67	80	102	113	132	155
	8.67	28	16	16	16	16	16	17	17	19	20	25	25	28	29	38	45	48	56	69	81	97	110	136
		20	16	16	18	21	24	27	28	30	33	39	42	50	54	69	82	100	107	140	161	186	213	284
	4N@	24	16	16	17	18	20	23	25	27	28	33	37	40	48	60	71	79	101	110	143	166	188	223
	6.5	28	16	16	16	17	19	20	20	22	26	29	32	35	39	50	60	69	76	104	112	145	149	204
26		20	17	18	21	25	28	31	35	39	40	48	54	62	69	91	100	114	140	172	200	239	275	
	5N@	24	16	16	19	21	24	27	28	31	34	38	43	51	55	71	84	103	108	143	166	201	225	310
	5.2	28	16	16	17	19	21	23	27	28	29	34	39	43	50	61	80	86	104	118	147	178	200	249
		20	20	24	28	33	36	42	47	54	58	65	78	91	100	119	140	162	192	238	308			
	7N@	24	17	20	26	28	31	35	40	44	49	56	64	71	80	103	116	143	166	198	242	293		
	3.71	28	17	20	22	27	29	32	35	38	42	50	58	62	70	86	106	114	137	178	212	253	292	
		20	42	50	58	70	86	91	103	109	110	131	152	173	202	252								
	13N@	24	35	43	50	62	66	76	88	93	97	112	127	154	166	225	248							
	2.00	28	32	40	48	55	64	68	74	90	90	100	115	130	148	177	232	283						
Bearing Depth			7 1/2 in.													10 in.								

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
28	2N@ 14.00	24	29	29	29	29	29	29	29	30	31	31	33	34	37	39	42	49	57	65	77	91	103	129
		28	29	29	30	30	30	30	30	30	30	31	32	34	34	38	40	43	46	58	66	78	93	106
		32	30	30	30	30	30	30	30	30	30	31	32	33	34	37	39	40	44	52	60	68	76	95
	3N@ 9.33	24	16	16	16	16	16	18	21	22	23	26	29	33	36	44	54	61	70	91	105	124	133	174
		28	16	16	16	16	16	16	18	19	21	23	26	29	31	39	47	52	61	77	94	107	115	156
		32	16	16	16	16	17	17	17	18	19	24	24	27	29	36	42	47	54	70	80	97	110	131
	4N@ 7.00	24	16	16	17	19	21	24	27	28	31	35	39	45	50	62	74	91	101	121	143	165	190	244
		28	17	17	17	18	20	23	24	25	28	32	36	39	44	57	64	76	85	109	124	151	170	206
		32	16	16	16	18	19	20	21	22	24	27	31	37	39	46	54	62	74	88	108	126	149	185
	5N@ 5.6	24	16	17	19	22	24	28	31	33	35	41	47	55	62	78	92	105	114	152	176	215	244	
		28	16	16	17	20	21	26	28	29	32	35	40	47	52	64	80	94	104	134	156	186	213	260
		32	16	16	17	19	20	22	26	27	29	32	38	42	46	58	66	82	97	111	136	162	190	232
	6N@ 4.67	24	17	19	21	25	29	32	36	39	43	50	59	66	73	100	109	121	142	191	219	254	314	
		28	16	19	21	22	26	29	32	34	37	44	52	57	60	76	103	105	123	149	194	223	253	
		32	17	17	20	22	24	27	30	31	34	38	45	51	54	71	87	105	108	148	177	201	230	301
	7N@ 4.00	24	18	22	26	31	33	37	43	48	51	59	67	79	84	103	131	144	166	219	261			
		28	17	20	24	26	29	32	36	41	45	53	61	65	74	95	109	125	147	184	224	272	312	
		32	17	20	23	25	27	30	33	37	40	47	55	60	67	83	106	115	127	169	202	240	277	
	14N@ 2.00	24	33	43	51	59	66	79	84	102	103	121	143	155	173	221	281							
		28	30	38	45	53	61	70	75	82	88	106	114	137	149	198	235	274	332					
		32	28	33	40	47	54	63	72	76	79	100	113	118	132	172	206	244	284					
30	2N@ 15.00	24	29	29	29	29	29	29	30	30	31	32	33	35	37	40	46	53	60	72	85	102	103	139
		28	29	29	29	29	29	30	30	30	30	32	32	34	36	38	41	44	49	65	74	86	92	115
		32	30	30	30	30	30	30	30	30	30	31	32	33	34	37	40	41	45	55	66	75	89	106
		36	30	30	30	30	30	30	30	30	30	31	32	32	33	36	38	41	42	51	60	68	76	95
	3N@ 10.00	24	15	16	16	16	18	19	22	24	25	29	31	34	38	48	57	65	74	91	109	130	151	176
		28	16	16	16	16	16	17	20	21	24	25	28	31	33	43	50	58	67	79	94	108	126	156
		32	16	16	16	16	16	17	18	19	21	25	26	29	30	38	45	51	60	69	89	96	110	136
		36	16	17	17	17	17	17	17	18	20	24	26	27	30	34	42	46	55	70	80	92	99	122
	4N@ 7.5	24	16	16	17	20	24	26	27	30	32	37	42	47	54	66	78	99	104	140	161	183	210	265
		28	16	16	17	18	21	23	25	27	28	33	37	42	46	56	71	79	93	110	143	156	179	223
		32	16	16	16	18	19	20	21	23	27	29	32	36	41	50	60	69	76	104	112	146	149	202
		36	16	16	17	17	18	19	21	22	24	27	30	35	38	45	54	62	71	87	106	115	147	184
	5N@ 6.00	24	16	17	20	23	26	29	32	34	38	45	53	58	62	78	100	108	131	162	193	231	262	
		28	16	16	19	21	24	27	28	31	34	38	46	49	56	71	79	102	107	143	166	195	224	285
		32	16	16	17	19	21	25	26	28	31	36	39	44	50	64	73	85	104	118	147	177	198	248
		36	16	17	17	19	21	22	25	27	29	31	38	40	44	58	66	76	88	108	127	151	179	220
	6N@ 5.00	24	17	19	24	28	31	34	39	42	47	54	62	69	78	100	109	140	161	190	237	288		
		28	16	19	20	26	28	31	34	37	40	46	52	60	67	84	102	111	143	167	195	222	289	
		32	16	17	20	22	26	28	31	32	35	41	47	53	60	74	87	106	113	148	175	200	237	304
		36	17	18	19	21	24	28	28	30	33	38	44	49	55	67	79	90	108	129	154	180	206	275
	8N@ 3.75	24	21	25	31	36	41	47	50	58	62	73	83	100	102	131	162	188	216	255				
		28	20	23	29	32	37	40	44	49	53	61	72	81	86	111	144	147	175	224	281			
		32	19	22	26	30	32	36	41	45	50	57	65	75	82	105	114	147	159	204	242	308	343	
		36	19	21	24	28	30	35	38	39	43	53	59	69	74	89	111	118	152	185	218	256	314	
	15N@ 2.00	24	40	50	58	66	78	92	101	106	115	142	165	181	196	257	326							
		28	34	41	52	60	68	76	85	103	105	113	137	152	176	216	265	329						
		32	30	39	47	54	62	73	77	83	91	111	117	133	159	195	242	275	325					
		36	29	35	42	49	56	66	72	79	82	103	117	127	142	183	222	260	290					
32	3N@ 10.67	24	15	15	15	17	19	21	23	25	26	31	34	37	42	50	63	72	86	102	123	130	150	197
		28	16	16	16	16	17	19	21	22	24	27	29	32	35	44	51	64	67	87	105	114	132	173
		32	16	16	16	16	16	17	19	21	22	25	27	30	32	39	45	52	60	77	93	107	115	156
		36	16	16	17	17	17	17	18	19	21	25	25	28	30	37	44	51	54	69	79	97	110	131
	4N@ 8.00	24	16	16	18	22	24	26	29	31	34	40	45	53	58	69	89	99	107	139	161	187	222	273
		28	16	16	17	19	22	24	26	27	30	35	38	46	48	62	70	83	101	115	143	165	187	243
		32	17	17	17	18	20	24	25	25	28	32	36	39	46	56	65	73	85	109	124	151	172	203
		36	16	16	18	18	19	20	22	23	26	28	34	37	39	50	57	66	75	88	107	125	149	184
	5N@ 6.4	24	16	19	22	26	29	31	34	38	41	47	54	61	68	91	103	113	140	172	200	237	275	
		28	16	17	19	22	24	27	29	32	35	41	47	54	62	71	92	102	114	143	175	209	233	305
		32	16	16	18	20	22	26	27	30	33	36	42	47	55	64	80	94	103	133	156	187	203	258
		36	16	17	17	19	20	23	25	28	29	35	37	43	48	58	72	82	96	111	137	162	189	230
	6N@ 5.33	24	18	21	25	29	33	36	40	46	49	57	65	73	82	100	119	141	161	214	242	307		
		28	17	19	21	26	28	31	36	39	43	50	59	62	70	92	102	121	142	171	219	249	290	
		32	16	19	20	24	26	28	32	34	37	44	52	57	60	76	103	105	123	149	194	223	253	321
		36	17	17	20	21	25	27	30	32	35	39	46	51	57	74	87	105	108	148	176	200	229	299
	8N@ 4.00	24	23	28	33	39	42	50	57	58	65	77	91	100	108	140	162	188	216	282				
		28	21	26	28	33	37	42	48	51	59	67	75	85	101	111	143	167	192	241	292			
		32	20	23	27	30	34	38	42	46	52	61	69	76	86	109	125	149	176	207	258	304		
		36	19	22	26	29	32	36	39	43	46	54	62	74	76	97	116	129	152	195	241	277	316	
Bearing Depth			7 1/2 in.																10 in.					

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS
U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
34	3N@ 11.33	28	18	18	18	18	19	20	22	23	25	28	31	34	40	48	57	65	73	91	109	124	150	173
		32	18	18	18	19	19	19	20	22	23	26	28	32	35	42	49	58	66	87	91	112	126	156
		36	18	19	19	19	19	19	20	20	22	26	27	29	31	39	45	51	60	73	89	99	115	136
		40	19	19	19	19	19	19	20	20	21	25	27	28	32	37	44	46	54	70	79	92	110	132
	4N@ 8.50	28	16	16	18	20	23	26	27	29	32	36	40	47	54	62	78	91	100	130	152	174	199	243
		32	16	16	17	19	20	24	24	27	30	32	37	42	47	56	71	79	92	108	134	155	177	223
		36	16	17	18	18	19	21	23	26	27	29	33	38	41	50	61	69	76	104	113	146	149	200
		40	16	18	18	18	19	20	21	23	26	28	33	35	39	45	54	62	74	87	106	115	148	182
	5N@ 6.80	28	16	17	21	23	26	29	32	35	38	45	47	54	62	77	99	106	120	153	185	212	248	
		32	16	17	18	21	24	27	30	32	34	39	46	48	55	70	79	101	107	133	156	197	214	267
		36	16	16	17	20	21	25	28	28	33	36	39	47	50	64	73	85	104	119	146	170	198	241
		40	17	17	18	19	21	23	26	29	29	35	38	40	48	58	66	80	96	111	137	151	181	227
	6N@ 5.67	28	17	20	24	28	30	33	36	41	44	54	58	65	73	100	108	130	142	190	220	248	307	
		32	17	19	21	25	28	31	34	37	40	48	52	59	67	83	102	110	123	167	193	224	252	
		36	17	18	20	22	26	28	31	32	36	41	50	53	60	74	86	105	113	148	177	199	228	298
		40	17	18	19	22	24	27	29	30	33	39	42	51	54	67	83	97	108	128	153	187	216	269
36	7N@ 4.86	28	19	23	27	31	34	39	43	47	54	62	70	78	91	105	131	152	175	219	255			
		32	18	20	26	27	31	35	38	42	47	56	64	71	79	102	111	134	155	193	223	268		
		36	17	20	22	27	29	32	36	38	42	50	57	65	69	86	105	118	136	176	203	241	285	
		40	17	20	23	25	28	30	33	36	39	45	53	59	63	79	99	109	122	154	196	225	258	332
	9N@ 3.78	28	25	28	34	39	43	51	58	63	67	78	92	101	109	142	164	194	220	284				
		32	21	26	30	35	40	44	49	56	60	70	80	95	103	124	148	175	198	265	325			
		36	20	25	28	32	36	41	45	50	53	62	72	81	88	113	127	150	178	227	275	330		
		40	19	23	28	30	34	38	43	46	51	59	68	76	84	107	116	142	159	206	250	299		
	3N@ 12.00	28	18	18	18	18	19	21	23	25	27	30	33	40	41	48	60	69	81	94	109	130	151	186
		32	18	18	18	18	18	19	21	23	25	27	30	33	36	44	54	61	71	87	104	112	132	164
		36	18	18	19	19	19	19	20	21	22	26	28	31	34	43	48	55	63	76	93	107	115	156
		40	19	19	19	19	19	19	19	20	22	26	26	29	32	40	44	51	57	69	89	97	110	131
	4N@ 9.00	28	16	16	19	21	23	27	29	31	34	39	45	50	54	69	81	99	104	140	161	183	211	265
		32	16	16	17	20	23	24	26	28	31	35	40	46	48	62	70	83	101	115	143	165	188	230
		36	17	17	17	18	21	24	25	27	28	33	37	40	46	57	65	73	85	109	125	150	172	212
		40	16	18	18	18	19	21	23	23	26	28	32	38	40	50	58	66	76	96	111	126	149	183
	5N@ 7.20	28	16	18	21	25	26	31	34	36	40	45	54	61	68	81	100	114	130	162	196	231	262	
		32	16	17	20	22	24	27	30	34	35	41	46	54	59	70	91	101	112	143	177	199	233	300
		36	16	16	18	21	23	26	28	30	33	37	42	47	55	63	79	93	104	133	156	186	200	258
		40	17	17	17	20	21	24	26	28	31	36	39	43	49	57	73	81	95	111	137	162	188	230
	6N@ 6.00	28	18	20	25	27	33	36	39	42	47	57	62	69	77	99	113	140	160	191	236	282		
		32	17	20	23	25	28	31	35	39	42	48	55	62	70	83	102	121	142	167	199	241	285	
		36	16	18	21	24	26	29	32	36	37	44	52	56	63	80	102	106	123	147	193	214	252	317
		40	17	18	20	22	26	27	30	33	35	41	46	53	58	71	86	105	111	148	177	200	228	296
	7N@ 5.14	28	19	24	28	33	37	40	47	50	54	62	77	82	99	113	140	162	188	225	291			
		32	18	21	26	28	32	37	40	43	49	56	64	71	80	102	116	143	166	196	246	297		
		36	18	20	25	28	31	33	36	41	44	53	57	65	73	94	109	125	147	183	213	256	306	
		40	17	20	24	26	29	31	34	37	41	49	55	62	66	82	106	113	127	167	200	231	274	
	9N@ 4.00	28	24	31	36	41	46	54	57	65	69	82	99	104	113	141	173	205	236	293				
		32	23	27	31	37	40	48	52	59	63	73	84	102	103	133	157	185	215	268				
		36	21	26	29	33	37	41	50	52	56	65	74	85	95	113	146	160	187	236	298			
		40	20	24	27	30	35	39	43	46	51	62	68	76	87	107	121	151	178	207	270	307		
38	3N@ 12.67	32	22	23	23	23	23	24	25	26	26	29	33	36	40	47	57	65	74	91	109	124	142	173
		36	23	23	23	23	23	24	25	26	26	27	28	32	36	43	50	61	67	85	97	112	126	156
		40	23	23	23	23	24	24	24	25	26	29	28	31	33	43	48	55	63	73	89	99	115	145
		44	23	24	24	24	24	24	24	25	26	28	29	29	33	39	44	50	58	70	88	96	110	131
	4N@ 9.50	32	16	16	18	21	23	26	28	30	32	36	41	46	54	62	78	91	100	120	152	175	190	244
		36	16	17	17	19	23	24	26	26	29	34	38	42	47	56	71	79	93	108	134	155	177	223
		40	17	17	18	18	20	23	24	26	28	31	35	38	41	51	61	72	80	104	113	146	149	199
		44	18	18	18	19	21	23	24	27	29	34	36	39	48	58	66	74	88	106	121	148	182	
	5N@ 7.60	32	16	17	20	23	26	29	32	35	37	44	47	55	62	77	91	105	115	152	177	207	233	
		36	16	17	18	22	24	27	29	31	34	38	46	49	56	71	79	93	107	134	158	184	213	274
		40	16	16	17	20	22	25	28	30	33	37	41	47	50	63	74	93	104	118	147	171	197	239
		44	17	17	18	20	21	23	26	28	30	35	39	42	49	57	69	81	96	111	137	161	188	221
	6N@ 6.33	32	17	20	23	27	31	34	36	39	43	51	58	65	73	99	106	121	142	189	218	251	305	
		36	17	19	21	26	28	32	34	37	40	48	52	59	64	83	102	110	123	167	192	222	260	
		40	17	18	20	23	26	29	32	33	36	42	50	56	61	73	86	105	113	148	176	199	228	298
		44	17	18	20	22	26	28	30	33	34	39	46	51	58	70	82	97	108	127	163	189	210	272
	8N@ 4.75	32	20	26	30	35	39	43	49	55	59	67	79	92	101	121	143	167	191	239	309			
		36	20	24	28	32	36	41	44	50	53	61	69	81	86	106	125	147	175	224	258	325		
		40	20	25	28	31	34	37	43	48	51	58	66	74	82	106	115	139	168	202	240	292	333	
		44	19	23	27	29	32	36	39	43	49	54	60	72	76	98	111	123	153	184	222	272	309	
	10N@ 3.80	32	27	32	38	45	48	55	62	70	78	91	102	107	121	155	191	212	260					
		36	25	30	35	39	47	49	56	64	71	79	93	103	108	145	173	196	214	282				
		40	23	28	33	37	42	48	50	57	64	76	81	95	106	120	150	176	203	264	314			
		44	22	26	31	35	38	44	49	53	58	67	76	83	97	113	139	168	192	239	288			
Bearing Depth			7 1/2 in.															10 in.						

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
40	3N@ 13.33	32	22	23	23	23	24	24	25	26	27	30	34	38	40	51	60	69	81	94	108	124	150	185
		36	23	23	23	23	23	24	25	25	27	27	32	34	39	46	54	61	70	87	104	111	126	164
		40	23	23	23	23	23	23	24	25	27	27	28	32	35	43	49	55	62	84	93	107	125	156
		44	23	23	23	24	24	24	24	26	26	28	28	32	33	42	47	55	63	73	89	99	115	131
		48	23	24	24	24	24	24	24	26	26	29	29	29	32	38	44	51	57	70	80	92	102	131
	4N@ 10.00	32	16	16	19	22	25	26	28	30	33	39	45	50	53	68	77	90	104	129	152	173	202	252
		36	16	17	18	21	25	25	26	29	31	34	40	44	48	62	71	79	93	115	143	166	179	230
		40	17	17	17	19	23	25	26	27	29	32	38	41	46	56	68	77	93	109	119	150	172	212
		44	16	16	18	18	20	21	23	24	28	30	34	37	40	51	57	66	76	104	111	126	150	189
		48	17	17	18	18	19	20	23	25	26	28	32	34	37	49	58	66	74	87	108	116	139	178
	5N@ 8.00	32	16	18	22	25	28	31	34	37	40	46	54	58	65	78	100	106	130	157	188	227	255	
		36	16	17	20	23	25	27	31	34	35	41	46	54	59	71	91	102	107	143	167	196	230	298
		40	16	16	18	21	23	27	28	30	33	37	42	47	53	64	80	93	104	128	159	182	210	262
		44	17	17	17	20	23	24	28	29	31	35	39	46	49	60	73	81	96	116	138	161	186	245
		48	17	17	17	19	23	25	25	28	29	33	37	41	47	57	67	80	93	111	122	152	178	217
	6N@ 6.67	32	17	20	24	28	32	35	39	42	47	54	62	69	77	99	108	140	151	189	220	266		
		36	17	20	23	26	28	31	35	38	41	48	55	62	70	83	102	115	142	167	197	232	275	
		40	17	18	21	25	28	29	32	36	38	44	49	56	64	79	94	105	118	147	185	215	245	313
		44	17	18	21	22	27	29	30	33	36	42	49	53	58	74	86	105	111	148	177	199	227	294
		48	17	18	20	24	25	28	29	31	33	40	44	52	55	72	79	98	108	130	156	180	204	271
	7N@ 5.71	32	19	24	28	32	34	40	45	47	54	62	70	77	91	105	130	152	175	218	255			
		36	18	21	26	28	32	35	40	43	48	56	63	71	79	102	115	143	155	197	232	276		
		40	18	20	25	28	31	33	36	41	45	51	57	65	72	94	108	118	145	184	214	255	300	
		44	18	21	23	27	29	31	34	37	41	50	58	63	67	82	106	113	127	167	199	237	272	
		48	18	22	24	27	30	33	37	39	42	48	57	63	71	81	99	114	125	169	195	234	267	
	8N@ 5.00	32	21	27	31	36	39	47	50	58	62	70	83	100	101	121	152	175	197	241				
		36	21	25	29	32	37	40	48	51	56	64	72	84	93	111	144	156	182	222	277			
		40	20	23	27	30	35	38	41	46	51	61	69	76	86	105	119	148	171	203	257	294		
		44	20	24	29	30	34	38	41	45	50	58	66	75	78	98	113	129	153	193	240	278	320	
		48	19	24	26	29	32	35	40	43	46	55	60	72	76	90	111	118	144	183	218	261	295	
	10N@ 4.00	32	27	33	40	43	51	58	63	70	78	92	103	110	122	168	190	218	246					
		36	27	30	35	41	48	55	62	64	72	79	94	107	116	145	181	199	240	306				
		40	25	28	33	39	43	50	56	57	65	74	86	95	109	134	160	186	212	277				
		44	23	28	31	37	40	48	51	57	59	74	81	88	98	120	150	175	190	255	302			
		48	22	26	29	34	38	42	50	54	59	67	76	83	98	114	140	157	182	230	277	324		
42	3N@ 14.00	32	29	29	29	30	31	31	32	33	34	35	38	40	45	53	60	69	81	94	118	140	160	185
		36	29	29	30	30	30	31	32	34	33	35	36	38	40	47	57	64	70	87	109	122	141	173
		40	30	30	30	30	30	30	31	34	34	34	35	37	39	46	53	61	71	85	97	112	126	156
		44	30	30	30	30	30	30	32	32	33	35	35	36	37	43	48	56	63	73	89	99	115	146
		48	30	30	30	30	31	31	32	32	33	35	35	36	39	43	48	53	61	74	88	99	110	132
	4N@ 10.50	32	16	17	20	23	25	28	30	33	35	42	45	50	57	68	89	99	104	140	161	186	214	274
		36	16	16	18	21	23	25	28	30	33	37	44	46	52	66	75	91	101	115	143	175	191	240
		40	17	17	18	21	22	24	26	28	30	34	38	45	47	59	68	79	94	109	134	159	177	214
		44	17	17	18	19	21	25	25	27	29	32	36	42	46	54	65	74	82	106	120	138	164	202
		48	18	18	18	18	20	25	27	25	28	31	35	39	43	50	63	71	81	98	114	139	153	192
	5N@ 8.40	32	17	20	23	26	28	33	36	39	44	47	54	61	68	90	103	113	130	172	197	225	256	
		36	16	17	21	23	26	28	32	34	37	44	48	54	62	74	91	105	115	152	177	207	233	
		40	16	18	20	22	24	27	29	32	34	40	45	52	55	67	79	93	107	133	156	186	210	266
		44	16	18	19	21	25	26	28	30	32	38	41	47	53	64	77	93	104	119	148	171	200	238
		48	17	18	18	20	24	24	27	29	30	36	39	43	49	57	70	81	96	111	137	162	187	220
	6N@ 7.00	32	18	21	26	29	33	37	40	45	47	57	65	73	81	99	119	140	160	190	236	289		
		36	17	20	24	27	30	34	36	39	43	51	58	62	70	91	106	121	142	177	209	240	293	
		40	17	19	21	26	28	32	34	36	40	47	55	59	64	79	103	109	123	167	192	222	253	
		44	17	18	21	24	26	29	32	34	36	43	50	57	60	76	95	105	113	148	176	202	227	303
		48	17	18	21	24	26	29	30	33	35	41	46	52	58	70	83	106	108	139	163	188	208	270
	7N@ 6.00	32	20	24	29	34	37	42	47	53	54	68	77	90	99	113	140	162	187	226	289			
		36	20	23	27	30	35	38	41	46	51	59	70	78	83	102	122	142	166	205	248	292		
		40	18	22	25	28	32	35	39	42	47	56	63	71	79	95	109	134	147	182	222	272	303	
		44	18	21	24	27	30	32	36	40	43	51	57	65	73	87	106	119	137	176	202	246	283	
		48	18	20	24	26	29	32	34	37	41	47	52	59	67	83	98	113	122	164	191	220	255	
	8N@ 5.25	32	22	28	33	38	43	47	54	58	65	77	83	100	105	140	163	188	216	268				
		36	20	26	29	34	40	43	49	55	59	67	79	84	101	116	143	167	190	231	290			
		40	20	24	28	33	36	41	45	50	53	61	69	81	86	107	126	151	175	215	264	326		
		44	21	23	28	31	34	37	43	47	52	58	66	79	83	107	116	141	157	201	239	291	333	
		48	21	25	28	29	32	35	39	44	48	56	64	69	78	100	111	130	156	182	214	278	315	
	11N@ 3.82	32	31	37	45	53	61	69	77	82	91	104	114	130	151	189	218	267						
		36	27	35	41	48	55	62	70	72	79	92	106	115	132	166	197	232	270					
		40	27	32	37	42	49	56	64	65	73	84	103	108	117	149	182	209	243	310				
		44	25	31	35	40	48	51	58	65	66	81	95	106	111	139	167	190	218	281				
		48	24	29	34	38	45	50	54	60	67	76	84	98	108	122	154	180	205	259	318			
Bearing Depth			7 1/2 in.																10 in.					

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
45	3N@ 15.00	36	30	30	30	30	31	31	32	34	35	36	38	39	44	52	60	69	81	95	120	134	151	187
		40	30	30	30	30	31	31	32	33	35	35	37	38	39	51	59	62	70	88	110	122	141	166
		44	30	30	30	31	31	31	32	33	34	34	36	37	38	46	53	59	67	85	98	113	126	157
		48	30	30	30	31	31	31	32	32	33	36	36	38	37	41	48	58	63	82	90	101	117	148
		54	30	30	30	32	32	32	32	32	33	36	36	37	39	41	48	53	60	71	89	97	104	132
	4N@ 11.25	36	18	19	20	23	25	27	29	31	34	42	43	50	57	65	77	90	104	130	152	174	199	252
		40	19	19	20	21	24	25	28	30	32	37	43	46	51	65	75	87	101	115	143	165	178	230
		44	19	19	20	21	23	26	26	28	30	34	40	44	47	59	68	76	93	109	134	156	178	211
		48	19	20	20	21	22	25	25	26	29	32	35	40	42	54	64	73	81	104	114	136	151	198
		54	20	20	20	21	22	24	25	26	27	30	33	38	41	50	58	66	74	97	108	116	140	176
	5N@ 9.00	36	16	18	23	25	28	30	33	36	39	46	54	58	65	78	99	110	131	152	194	228	254	
		40	16	18	21	23	26	28	31	34	37	44	46	54	58	75	91	105	112	143	176	206	231	295
		44	16	17	20	23	24	27	29	32	34	39	45	48	56	67	79	94	107	133	156	182	209	265
		48	17	18	19	24	25	26	28	30	32	37	41	46	53	64	78	89	96	118	148	162	186	238
		54	17	18	18	21	24	26	26	29	31	33	40	43	47	58	70	79	92	112	131	153	166	217
	6N@ 7.50	36	17	22	24	29	32	35	39	43	47	54	62	69	78	99	109	140	151	189	217	261		
		40	17	20	24	27	30	33	35	38	42	49	55	62	71	92	102	116	142	168	196	246	281	
		44	17	19	23	26	28	31	33	36	39	47	52	56	64	80	103	109	123	159	192	222	250	
		48	17	19	22	24	27	29	31	34	37	43	50	57	61	74	87	105	113	148	175	199	227	295
		54	17	18	21	24	25	28	30	33	35	38	45	52	55	68	83	98	108	128	155	178	202	266
	7N@ 6.43	36	20	24	28	32	36	40	46	47	54	62	70	77	91	105	130	152	175	217	255			
		40	19	22	27	30	34	38	41	46	49	56	63	71	79	102	116	143	155	196	231	290		
		44	18	22	25	28	31	36	39	42	47	56	63	65	72	94	109	123	147	182	213	257	299	
		48	18	21	24	27	29	33	37	40	43	50	57	65	73	82	105	119	136	175	201	238	278	
		54	24	24	26	30	32	35	39	41	45	49	57	63	72	83	100	114	125	165	195	231	263	
	9N@ 5.00	36	25	30	35	39	47	54	58	63	70	78	92	101	109	141	164	194	226	282				
		40	22	28	32	37	42	48	52	56	64	72	84	93	103	123	156	179	197	250				
		44	23	28	31	36	39	45	50	53	57	66	76	86	130	113	146	175	187	244	295			
		48	22	26	29	34	37	41	46	51	54	63	74	81	88	109	129	152	177	226	269	313		
		54	21	24	28	31	35	39	43	46	51	60	69	76	84	108	116	144	159	193	243	280	321	
	12N@ 3.75	36	32	39	48	55	62	70	78	83	100	106	121	142	155	191	225	272						
		40	30	35	42	49	56	64	71	79	84	103	108	123	145	171	198	246	294					
		44	28	33	40	48	53	57	65	74	81	95	105	111	125	163	196	216	264					
		48	27	31	37	43	52	58	63	68	75	83	97	108	116	153	179	201	240	301				
		54	25	30	36	40	47	52	58	62	73	79	86	101	112	133	158	184	218	274	333			
48	4N@ 12.00	36	18	19	21	24	26	29	31	34	37	43	48	56	57	73	89	102	109	139	171	195	221	273
		40	19	19	20	22	24	27	29	32	35	41	44	49	57	65	77	91	104	130	152	174	200	253
		44	19	19	20	21	25	27	29	30	32	36	43	45	50	63	75	87	93	113	134	155	177	231
		48	19	20	20	20	24	27	27	30	31	33	40	44	46	60	68	77	89	109	129	157	172	212
		54	20	20	21	21	24	25	26	26	29	32	37	41	43	49	61	70	79	97	112	128	149	188
	5N@ 9.60	36	17	21	24	27	30	33	36	39	44	50	57	64	68	90	103	113	130	171	197	228	266	
		40	17	19	24	25	27	31	33	37	39	44	51	57	65	77	91	106	125	153	177	206	234	
		44	17	18	23	25	26	29	31	34	36	43	47	52	59	71	87	101	107	133	156	195	222	278
		48	17	17	22	24	24	27	30	32	35	39	45	47	53	67	78	90	108	128	157	184	207	266
		54	18	18	21	22	24	26	28	30	32	37	41	46	49	61	70	81	96	116	137	163	185	229
	6N@ 8.00	36	18	23	26	30	34	37	40	45	50	61	68	76	81	99	119	140	160	201	236	288		
		40	17	22	24	27	32	35	38	41	46	54	62	69	77	92	106	130	143	176	218	250	292	
		44	17	20	24	27	30	33	36	39	42	48	55	63	71	84	103	111	132	168	195	231	265	
		48	17	20	24	25	28	31	34	36	39	47	50	57	64	80	94	108	118	148	182	213	251	313
		54	17	20	22	24	27	29	32	35	38	40	49	52	58	74	83	106	111	139	163	195	216	279
	8N@ 6.00	36	24	28	33	39	43	50	54	61	65	77	91	100	105	140	163	188	216	278				
		40	21	27	31	35	40	46	49	55	59	71	79	92	101	116	143	167	191	246	300			
		44	21	27	29	33	37	41	47	50	56	64	72	81	94	109	135	159	174	223	280			
		48	21	24	29	32	36	39	43	49	51	61	67	76	82	107	120	150	175	203	249	301		
		54	23	26	28	33	37	40	43	49	51	59	67	75	81	98	114	130	154	191	229	268	314	
	9N@ 5.33	36	27	31	37	42	47	54	61	69	70	91	99	105	114	151	174	206	237					
		40	24	29	35	38	43	49	55	63	67	78	92	101	107	142	165	191	219	266				
		44	25	28	33	36	42	48	52	57	64	73	80	94	104	118	147	175	199	235	284			
		48	23	28	31	35	40	43	49	53	57	66	74	82	96	111	138	161	186	235	284			
		54	23	26	29	33	37	41	45	50	52	60	68	76	84	108	122	153	165	204	254	301		
	12N@ 4.00	36	34	41	50	58	68	76	82	91	100	109	130	142	164	192	243	294						
		40	32	38	46	55	62	70	74	79	92	102	116	132	144	180	219	258	301					
		44	30	35	42	50	56	64	71	73	81	103	108	117	134	173	198	239	276	288				
		48	29	34	40	46	51	57	66	72	75	86	105	111	120	151	187	215	248	318				
		54	27	32	38	42	51	54	61	68	73	84	98	108	114	141	167	201	227	288				
Bearing Depth			7 1/2 in.																		10 in.			

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
50	4N@ 12.50	40	23	24	24	27	27	28	31	33	36	42	44	50	56	65	85	90	104	130	152	173	199	252
		44	23	24	24	26	28	28	29	31	34	38	43	49	51	66	74	87	104	115	153	174	180	230
		48	23	24	24	26	28	28	29	30	32	36	42	44	50	60	68	79	93	108	133	156	178	213
		54	27	27	27	28	28	28	28	30	31	33	38	42	45	55	62	73	82	106	112	137	159	197
		60	27	28	28	28	28	29	29	30	31	32	36	40	43	51	59	69	76	97	113	122	138	178
	5N@ 10.00	40	17	21	24	25	29	32	35	38	42	46	54	58	65	86	100	110	125	152	184	219	253	
		44	16	19	23	24	28	30	33	36	39	44	50	54	58	75	91	105	113	152	177	205	230	294
		48	17	19	22	25	25	29	31	33	36	40	46	53	59	68	88	94	107	134	159	183	209	269
		54	18	18	21	24	26	27	30	31	33	38	42	46	52	61	78	90	96	117	138	162	184	238
		60	18	20	20	22	25	27	28	31	31	35	41	46	48	62	70	79	93	112	133	163	166	217
	6N@ 8.33	40	18	22	26	29	32	36	41	46	47	54	62	70	78	100	109	131	151	188	226	260		
		44	17	22	24	27	30	34	37	40	46	49	55	63	71	92	106	116	142	168	205	246	281	
		48	17	22	23	26	28	32	35	38	39	47	56	63	65	80	103	109	123	159	191	222	258	
		54	18	20	23	25	29	29	32	35	37	43	49	57	58	73	87	105	112	148	174	197	226	293
		60	18	21	22	25	27	31	31	33	35	41	45	51	59	68	83	98	109	129	155	178	205	265
	8N@ 6.25	40	23	27	31	37	41	48	54	55	62	71	83	92	102	122	153	176	195	248				
		44	22	27	31	34	39	44	49	52	56	65	75	84	102	111	144	167	182	222	288			
		48	22	25	29	33	37	40	45	50	53	61	73	81	86	107	126	149	175	214	263	310		
		54	25	26	31	34	37	41	46	48	51	58	70	76	83	106	114	141	163	193	239	283	315	
		60	24	25	28	32	35	39	42	47	49	57	64	72	77	99	115	125	146	178	215	258	291	
	10N@ 5.00	40	28	33	41	46	55	62	66	74	78	92	105	115	131	156	193	229	267					
		44	27	32	37	44	49	56	63	67	72	88	102	107	116	155	180	208	239	302				
		48	27	32	35	41	48	54	57	64	68	80	94	103	109	135	160	186	214	274				
		54	26	29	33	40	43	50	55	58	62	74	82	96	106	121	152	173	188	251	306			
		60	25	28	32	38	41	45	51	54	58	68	77	84	98	114	142	167	180	225	275	317		
	13N@ 3.85	40	35	41	51	59	67	74	83	92	102	111	132	144	169	196	252	303						
		44	32	39	48	56	61	69	75	85	95	105	117	134	148	194	228	260	313					
		48	30	36	44	51	57	66	74	77	87	105	111	120	138	174	200	248	288					
		54	29	34	40	48	53	60	68	74	78	90	108	114	125	157	191	216	256	326				
		60	28	33	40	45	50	57	64	71	73	83	94	113	115	148	174	216	235	297				
55	5N@ 11.00	44	19	22	25	27	30	32	35	38	43	49	54	61	66	85	95	111	125	153	180	219	253	
		48	19	21	24	25	29	30	33	36	39	45	50	58	62	75	91	106	112	153	177	205	230	
		54	20	21	23	25	26	29	31	34	36	44	46	52	60	67	88	94	108	128	158	182	207	265
		60	20	22	22	24	27	27	31	32	34	39	45	47	53	64	77	90	97	116	137	162	185	237
		66	21	22	23	24	26	28	29	32	33	37	42	46	49	62	71	80	93	112	133	164	176	217
	6N@ 9.17	44	18	23	26	29	33	37	40	46	47	54	62	70	77	100	114	131	151	188	226	261		
		48	18	23	24	29	31	34	37	42	46	52	59	66	71	92	106	116	143	177	205	246	279	
		54	19	22	24	27	30	33	35	39	41	47	56	60	65	80	95	109	119	160	181	211	251	
		60	19	20	23	25	30	31	34	37	40	44	50	58	61	77	96	105	112	149	174	197	226	279
		66	20	20	23	26	29	32	32	35	37	41	49	52	59	72	84	99	110	130	156	187	205	269
	7N@ 7.86	44	22	25	28	33	36	41	46	51	54	62	71	78	91	105	131	153	176	216	263			
		48	21	24	28	31	34	39	45	46	52	59	68	77	79	106	117	143	158	205	237	291		
		54	19	24	26	29	32	36	39	43	48	57	64	69	78	95	109	129	148	182	213	259	301	
		60	20	23	25	29	31	34	37	41	43	50	59	67	70	84	406	113	138	166	199	235	277	
		66	20	23	25	29	32	33	37	38	43	50	54	60	68	82	100	114	124	157	194	219	261	317
	9N@ 6.11	44	25	30	35	41	46	54	58	63	70	78	92	101	110	143	166	195	228	282				
		48	25	28	33	39	43	49	55	60	64	72	84	102	108	134	157	182	205	266				
		54	25	28	33	38	42	46	51	57	58	69	79	87	97	114	148	164	187	243	282			
		60	24	28	33	37	40	43	48	50	58	67	79	83	89	108	124	154	174	202	264	309		
		66	24	27	31	35	39	42	45	50	52	61	70	77	85	101	117	145	159	194	242	286	319	
	11N@ 5.00	44	31	37	46	52	58	66	70	78	91	101	107	131	142	179	205	253	297					
		48	29	34	41	47	55	63	67	72	79	93	106	116	113	158	195	231	269					
		54	28	33	39	46	49	57	62	69	73	81	96	109	116	150	181	199	241	302				
		60	26	32	37	41	48	51	59	64	68	80	84	98	112	140	166	189	214	269				
		66	27	31	36	39	46	50	55	62	65	74	84	100	102	124	147	170	194	261	293			
	14N@ 3.93	44	39	46	55	63	71	79	92	102	107	121	144	157	179	218	269							
		48	36	43	50	63	71	77	80	94	104	112	134	148	172	206	254	302						
		54	34	41	49	57	66	71	75	83	97	107	120	138	152	187	215	263	307					
		60	31	39	46	52	61	68	77	78	85	101	114	123	142	168	202	241	284					
		66	32	38	44	50	57	63	71	75	80	96	113	119	130	163	197	223	262	321				
Bearing Depth			7 1/2 in.													10 in.								

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
60	5N@ 12.00	48	21	23	26	28	31	34	37	42	43	50	55	62	66	85	96	111	125	153	189	218	252	
		54	21	21	24	27	30	32	35	38	42	44	51	56	62	75	88	106	112	144	168	204	221	281
		60	21	22	23	26	28	30	33	35	38	44	46	51	57	68	86	95	108	128	158	182	208	256
		66	22	22	23	25	28	29	33	34	36	40	46	47	53	65	78	91	97	117	139	162	188	228
		72	22	23	23	24	27	29	31	34	35	38	44	47	52	62	72	81	93	113	135	164	177	217
	6N@ 10.00	48	21	23	26	31	34	38	40	46	47	58	66	70	77	100	114	131	152	188	227	262		
		54	19	23	25	29	32	35	38	41	45	53	59	67	71	92	106	117	119	169	204	229	269	
		60	19	22	26	28	31	34	36	39	42	48	55	61	68	81	95	110	134	160	181	209	242	
		66	20	22	25	27	30	32	34	67	41	47	50	58	62	77	96	106	112	140	175	198	216	278
		72	20	21	24	27	29	32	33	35	38	43	50	52	60	72	84	99	114	142	166	188	206	266
	8N@ 7.50	48	24	28	32	38	41	48	54	55	62	70	78	92	101	121	152	176	192	241				
		54	23	26	31	35	39	43	47	55	56	64	72	81	94	109	134	158	180	221	268			
		60	23	26	29	32	38	41	44	49	52	59	66	76	83	106	120	149	163	199	239	290		
		66	29	31	34	36	40	46	48	50	56	64	72	76	82	101	116	142	165	191	230	280	313	
		72	30	31	33	34	38	43	47	49	51	59	69	74	83	102	118	126	147	190	228	255	191	
	10N@ 6.00	48	30	36	43	50	58	65	66	75	78	92	106	116	132	157	193	229	265					
		54	29	34	40	46	51	59	60	68	76	88	95	107	144	147	180	205	232	296				
		60	27	33	38	41	47	53	61	61	70	79	90	97	110	136	162	183	210	272				
		66	27	32	36	40	46	49	55	62	64	75	81	97	99	120	143	165	190	254	296			
		72	27	32	35	39	43	48	53	58	61	73	77	86	100	116	137	169	191	225	283			
	12N@ 5.00	48	35	41	49	55	63	71	79	92	93	107	116	142	156	191	229	266						
		54	33	39	46	50	57	65	73	80	81	104	109	118	135	172	197	238	274					
		60	32	37	41	50	56	59	67	74	79	96	107	112	121	163	187	219	247	316				
		66	31	36	40	47	53	60	61	68	76	85	99	110	115	145	177	201	228	288				
		72	30	35	40	44	52	54	63	64	75	80	89	104	114	130	160	194	219	273	319			
	15N@ 4.00	48	39	49	62	70	78	92	101	106	110	132	155	167	189	228	289							
		54	37	47	56	64	73	81	94	95	105	118	135	158	171	208	254	298						
		60	35	42	51	59	68	76	83	88	98	112	122	141	164	197	229	276	307					
		66	36	44	54	57	65	73	80	88	94	113	118	130	158	193	221	261	294					
		72	36	43	49	57	67	75	77	84	91	107	121	126	143	178	219	240	283					
65	6N@ 10.83	54	22	25	28	31	34	38	43	45	47	55	66	69	75	92	107	132	152	177	207	250	288	
		60	22	24	26	31	32	36	38	42	46	53	60	67	71	92	107	116	133	169	195	231	262	
		66	22	24	26	29	31	34	36	40	43	49	54	61	68	80	96	110	119	159	184	209	236	
		72	23	24	26	29	30	33	35	39	43	47	50	56	63	75	92	107	113	141	166	196	218	276
	8N@ 8.13	54	24	28	33	38	42	47	52	55	63	70	78	92	101	116	143	166	192	229	284			
		60	23	26	32	36	39	43	48	50	57	65	72	80	94	109	135	158	180	210	259			
		66	32	34	41	43	44	48	53	55	61	68	73	81	93	114	133	151	167	212	246	296		
		72	32	34	34	42	45	47	49	54	57	69	74	82	83	106	121	143	167	194	241	277		
	10N@ 6.50	54	31	37	44	50	56	63	67	75	76	92	107	113	127	156	182	220	243					
		60	30	35	41	46	52	58	64	68	77	88	95	109	115	136	180	196	222	283				
		66	28	34	39	44	47	54	61	65	70	82	91	98	112	132	163	184	210	263				
		72	28	34	37	41	47	50	56	63	63	72	81	94	100	120	143	168	193	247	295			
	11N@ 5.91	54	32	39	45	52	59	66	71	77	87	101	107	126	133	176	205	230	264					
		60	32	36	45	48	54	61	69	73	78	94	108	110	118	160	181	208	243					
		66	30	36	41	46	50	56	62	70	71	83	97	111	113	141	166	200	215	287				
		72	29	34	39	43	50	55	60	65	73	81	93	100	114	167	166	187	214	257				
	13N@ 5.00	54	36	42	50	57	65	72	80	92	102	108	123	144	158	192	229	269						
		60	34	40	49	57	61	70	74	81	94	105	111	125	148	182	209	252	286					
		66	33	38	45	52	60	67	72	75	83	99	109	116	129	167	199	234	263					
		72	32	38	43	51	55	62	70	77	78	88	110	116	120	158	182	210	253	309				
Bearing Depth			7 1/2 in.													10 in.								

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
70	7N@ 10.00	54	24	28	32	36	40	44	50	54	58	65	73	86	91	111	131	153	175	226	263			
		60	23	26	31	33	38	44	46	51	53	63	67	75	87	106	126	153	165	204	242	284		
		66	23	27	31	32	36	39	45	47	52	59	67	71	78	94	114	135	156	184	222	260		
		72	23	26	29	33	35	39	42	47	48	55	62	70	78	96	111	121	140	183	211	145	286	
		84	26	28	30	32	35	37	40	44	47	51	59	66	71	83	102	117	125	170	192	220	254	313
	9N@ 7.78	54	27	33	37	44	48	54	61	66	70	90	100	105	114	151	174	202	225	276				
		60	25	31	35	40	47	49	56	64	67	76	93	102	107	134	156	180	205	256				
		66	25	31	35	40	47	49	56	62	69	74	82	96	106	121	149	174	200	244	300			
		72	25	31	35	40	46	49	56	57	63	72	81	93	99	115	141	163	185	216	273			
		84	25	31	35	40	43	49	51	53	58	67	76	80	89	104	119	145	171	195	234	287	317	
	11N@ 6.36	54	33	43	50	58	66	67	75	86	92	106	115	132	153	177	217	250	258					
		60	32	40	46	51	59	67	68	76	87	94	108	118	134	167	205	231	236					
		66	32	38	44	47	55	61	68	40	78	91	97	110	120	160	183	207	221	290				
		72	31	36	41	47	54	57	63	72	73	83	98	112	114	142	166	191	196	256	300			
		84	31	35	39	45	50	53	58	68	68	76	87	99	106	126	149	172						
	12N@ 5.83	54	36	45	52	59	67	75	78	92	101	107	132	142	154	192	229	268	287					
		60	34	41	48	56	60	68	77	80	93	107	115	133	145	180	205	245	267					
		66	32	39	47	50	58	65	70	78	82	96	110	120	136	163	198	224	246	304				
		72	33	38	44	50	57	63	69	73	71	94	108	117	124	156	188	214						
		84	31	37	42	47	53	55	65	69	80	86	91	106	119	142	170	196	221	277	318			
	14N@ 5.00	54	40	48	58	66	75	90	92	105	106	131	152	164	177	225	266							
		60	38	46	56	64	71	79	92	93	104	117	133	155	169	205	244	288						
		66	36	43	50	58	65	74	81	94	96	110	120	136	160	184	233	267						
		72	36	42	51	58	65	72	76	84	95	110	115	126	145	189	223	251	285					
		84	34	43	47	54	62	66	74	78	83	101	108	122	134	166	199	234	262	320				
80	8N@ 10.00	60	29	32	38	43	47	52	58	65	66	78	91	100	105	131	153	189	205	253				
		66	29	32	36	40	46	48	53	59	63	71	79	93	105	126	154	177	192	233	284			
		72	30	32	34	38	43	47	79	54	61	69	78	89	95	115	136	159	182	260	258			
		84	30	32	34	38	43	47	48	54	61	69	78	89	95	115	134	157	179	217	264			
		96	30	32	34	38	43	47	49	54	61	69	78	89	95	115	126	141	163	199	225	272	301	
	10N@ 8.00	60	32	37	42	49	55	62	70	78	78	100	105	115	132	164	191	226	252					
		66	35	42	46	55	61	64	72	77	86	98	109	114	129	169	194	219	250					
		72	34	38	46	51	57	64	65	74	78	91	101	110	126	159	183	207	235					
		84	34	37	46	48	53	59	61	67	72	82	95	104	113	135	166	185	212	256				
		96	35	36	42	48	50	55	58	64	72	78	86	98	104	125	143	171	192	239	281			
	13N@ 6.15	60	40	47	59	66	71	78	92	101	106	116	143	155	175	206	252							
		66	38	47	54	60	68	77	80	94	103	109	134	145	157	195	231	261						
		72	37	44	50	59	67	71	79	83	96	111	120	137	152	186	213	253	298					
		84	36	43	50	54	59	67	75	79	84	101	112	119	128	170	193	229	255					
		96	37	42	47	53	57	66	72	81	79	94	109	118	124	155	177	201	235	294				
	16N@ 5.00	60	47	55	67	78	92	101	107	115	132	153	175	192	206	252								
		66	44	55	65	72	80	94	104	109	117	134	158	180	194	232	287							
		72	43	51	59	70	79	83	97	107	111	121	149	162	185	225	268							
		84	42	49	57	64	74	81	90	104	106	120	131	152	174	207	253	287						
		96	44	48	58	64	70	81	86	92	97	114	128	140	159	196	231	268	298					
90	9N@ 10.00	72	38	40	44	47	52	57	61	68	76	88	94	108	115	145	178	205	228	278				
		84	38	40	44	47	52	57	61	69	73	82	94	104	114	134	162	187	212	258				
		96	38	40	44	47	52	57	61	67	71	77	85	98	108	125	139	170	190	221	278			
		108	38	40	44	47	52	57	61	67	70	75	80	89	99	114	129	152	176	205	247	286		
	11N@ 8.18	72	41	46	51	61	64	73	78	89	94	108	115	131	146	181	216	246						
		84	41	45	47	53	61	67	72	78	90	94	113	120	133	161	190	220	250					
		96	44	45	47	50	56	64	70	72	80	94	98	107	123	146	180	196	235	286				
		108	45	46	48	51	57	60	66	75	76	84	98	104	113	140	164	186	204	262				
	15N@ 6.00	72	45	55	61	72	80	94	103	109	114	134	156	179	184	233	285							
		84	47	50	58	65	73	81	93	98	112	121	140	163	166	210	242	295						
		96	48	50	57	64	71	81	87	92	106	121	128	144	163	199	232	261	302					
		108	49	53	57	62	70	75	83	93	97	113	126	134	152	182	210	249	277					
	18N@ 5.00	72	49	62	73	80	94	108	115	128	135	157	181	205	229	280								
		84	49	62	74	82	91	107	117	122	130	149	174	195	210	256	306							
		96	49	60	69	77	86	95	111	121	126	139	156	181	199	233	285							
		108	49	61	66	74	87	92	101	115	118	132	145	165	184	223	267	298						
Bearing Depth			7 1/2 in.											10 in.										

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

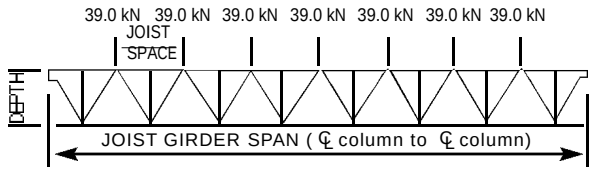
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS
U. S. CUSTOMARY

Based on an allowable tensile stress of 30ksi

Girder Span (ft)	Joist Spaces (ft)	Girder Depth (in)	Joist Girder Weight – Pounds Per Linear Foot Load on Each Panel Point																					
			4K	5K	6K	7K	8K	9K	10K	11K	12K	14K	16K	18K	20K	25K	30K	35K	40K	50K	60K	70K	80K	100K
100	10N@ 10.00	84	56	57	58	62	64	72	76	88	90	103	118	129	142	172	200	225	257					
		96	58	58	59	61	64	67	70	78	88	94	106	120	131	152	180	204	228					
		108	58	60	60	61	63	68	70	73	77	93	96	111	111	139	170	188	209	258				
		120	60	60	62	64	66	67	68	71	74	85	99	108	113	139	157	188	201	242	289			
	12N@ 8.33	84	50	54	58	66	70	75	89	92	101	112	129	138	159	187	221	257						
		96	50	54	57	61	68	70	80	84	96	106	116	123	137	179	205	228	271					
		108	52	54	58	62	65	72	74	79	89	101	110	121	128	164	193	221	246	299				
		120	54	57	60	62	66	69	77	79	86	92	107	117	126	151	178	206	239	283				
	16N@ 6.25	84	55	60	71	76	83	96	110	112	119	139	161	184	199	235	288							
		96	56	60	67	75	79	88	102	105	119	128	145	168	191	218	265	301						
		108	58	63	67	72	81	87	93	106	111	125	136	157	180	204	251	292	304					
		120	60	65	68	74	79	90	93	98	110	117	134	147	166	208	248	275						
	17N@ 5.88	84	57	65	73	82	92	98	112	114	123	151	164	187	203	250								
		96	60	65	72	81	89	103	110	123	123	145	177	179	198	256	285							
		108	64	67	72	76	86	96	108	113	123	135	158	172	182	231	264	308	330					
		120	67	68	73	80	85	90	99	112	119	133	143	167	178	214	250	281						
	20N@ 5.00	84	67	77	87	105	115	122	132	148	159	193	208	226	246									
		96	67	73	82	95	111	120	126	135	152	177	199	211	227	279								
		108	66	72	79	91	101	116	125	130	131	162	184	197	207	267	316							
		120	71	75	82	88	96	106	120	123	136	149	170	193	205	246	289	332						
Bearing Depth			7 1/2 in.						10 in.															

Joist Girder weights to the right of the heavy blue line have 10 inch bearing depths. Check with Vulcraft for material availablity.

Joist Girder design example using Metric Units:



STANDARD DESIGNATION

1219G	8N	39.0 kN
DEPTH IN mm	NUMBER OF JOIST SPACES	kN LOAD ON EACH PANEL POINT

Given 15.24 m x 12.19m bay. Joists spaced on 1.905m centers.

Live Load = .958 kN/m^2
Dead Load = .718 kN/m^2 Includes approximate
Total Load = 1.676 kN/m^2 Joist Girder Weight.

NOTE: Web configuration may vary from that shown. Contact Joist Girder manufacturer if exact layout must be known.

1. Determine number of actual joist spaces (N)
   In this example N = 8
2. Compute the total load:
   T. L. = 1.905 m x 1.676 kN/m^2 = 3.193 kN/m
3. Joist Girder Selection (Interior):
   (a) Compute the concentrated load at top chord panel points P = 3.193 kN/m x 12.19 m = 38.92 kN (use 39.0 kN).
   (b) Select Joist Girder depth:
   Refer to the Joist Girder Design Guide Weight Table for the 15240mm span, 8 panel, 40.0kN Joist Girder. The rule of about one millimeter of depth for each 12 millimeters of span is a good compromise of limited depth and economy. Therefore, select a depth of 1219mm from the table.
   (c) The Joist Girder will be designated 1219G8N39.0 kN.
   (d) The Joist Girder table shows the weight for a 1219G8N40K as 64 kg/m. To convert mass multiply 64 x .0098 = .627 kN/m. The designer should verify that the weight is not greater than the weight assumed in the dead load above.
   (e) Check live load deflection:
   Live load = .958 kN/m^2 x 12.19m = 11.68 kN/m
   Approximate Joist Girder moment of inertia:

I_{JG} = 0.3296NPLd where d = effective depth
= 0.3296 x 8 x 39.0 x 15240 x 1219
= 1910 x 10^6 mm^4

Allowable deflection
for plaster ceilings = L/360 = 15240/360 = 42.33 mm

$$\text{Deflection} = 1.15\left[\frac{5wL^4}{384EI}\right] =$$

$$= \frac{1.15 \times 5 \times 11.68 \times (15.24 \times 1000)^4}{384\ (200{,}000)\ 1910 \times 10^6}$$

= 24.70 mm < 42.33 mm O'K'

1. The purpose of the Design Guide Weight Table for Joist Girders is to assist the specifying professional in their 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 which must 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.

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads																
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
6096	3N@ 2033	508	19	19	21	24	25	30	33	34	37	40	43	45	46	51	54	58	60
		610	19	21	21	21	22	25	28	31	33	36	37	37	43	43	45	48	49
		711	19	21	21	21	22	25	25	25	31	33	34	36	36	39	40	45	46
	4N@ 1524	508	21	21	22	25	27	31	34	36	39	42	46	49	51	55	57	61	64
		610	21	22	22	22	24	27	30	33	34	37	40	42	48	48	48	51	52
		711	21	22	22	22	24	27	27	27	33	34	37	39	39	42	43	48	49
6705	4N@ 1676	508	25	25	25	27	30	34	36	40	42	45	49	51	58	60	64	68	68
		610	25	25	25	25	27	28	31	34	36	40	43	43	49	51	51	60	60
		711	25	25	25	25	25	27	28	30	31	36	37	40	42	43	45	51	52
7315	4N@ 1828	508	22	22	25	28	33	36	39	43	48	51	54	55	61	67	68	73	76
		610	22	22	22	25	28	31	34	37	40	45	46	49	51	55	57	60	64
		711	22	22	22	24	25	27	31	36	36	39	42	43	46	49	51	52	55
		813	22	22	22	24	24	28	28	33	33	37	37	40	43	45	46	46	51
	5N@ 1463	508	25	27	27	34	39	42	43	49	58	58	63	67	73	77	77	83	89
		610	25	25	27	28	30	36	39	43	45	51	51	60	60	64	70	70	74
		711	25	25	27	27	28	31	36	37	42	43	46	51	52	57	61	61	67
		813	27	27	27	27	27	28	30	33	37	39	43	46	48	49	55	55	64
7620	4N@ 1904	508	24	24	27	30	33	37	40	46	48	52	55	58	63	65	68	71	77
		610	22	22	25	25	30	33	36	39	40	45	48	51	52	57	60	63	67
		711	22	22	22	24	27	30	33	34	39	42	42	46	49	51	52	55	58
		813	22	22	24	24	25	28	30	33	36	37	40	42	43	46	49	51	52
	5N@ 1524	508	27	27	33	37	40	46	34	54	60	64	67	71	77	82	85	89	94
		610	24	24	28	31	36	39	43	48	51	55	60	61	65	70	74	79	82
		711	22	22	25	28	31	36	40	42	46	49	51	57	58	63	65	68	71
		813	22	22	24	28	30	33	36	39	42	43	48	51	51	55	60	63	65
7924	4N@ 1981	508	24	24	28	33	36	39	43	48	49	55	58	63	65	70	74	77	79
		610	22	22	24	28	31	33	37	40	45	48	49	52	57	60	61	64	67
		711	22	22	22	25	27	30	34	36	40	42	45	49	49	52	54	57	60
		813	22	22	24	24	25	27	30	34	36	39	40	42	46	49	51	52	54
	5N@ 1584	508	28	28	31	37	42	46	54	58	63	64	71	74	82	86	91	97	101
		610	24	24	28	33	39	40	46	48	52	57	61	63	68	71	74	79	83
		711	22	22	25	28	31	36	40	43	48	49	54	57	60	64	67	70	73
		813	22	22	25	28	30	34	36	42	42	46	49	51	54	57	60	64	67
8534	4N@ 2133	508	25	25	30	33	37	43	46	51	55	58	65	65	70	74	77	82	86
		610	24	24	25	31	33	37	39	43	48	49	52	57	61	64	65	70	73
		711	22	22	25	25	30	33	36	40	40	45	49	49	54	55	58	63	67
		813	22	22	22	25	27	30	33	36	37	40	42	46	49	51	51	55	60
		914	24	24	24	24	27	28	30	34	36	37	43	43	43	46	49	51	52
	5N@ 1706	508	30	30	36	40	45	54	58	63	65	71	77	82	88	92	97	100	104
		610	27	27	31	34	39	43	48	54	55	61	63	68	73	79	83	86	89
		711	25	25	28	31	34	39	43	46	49	55	55	60	64	67	70	73	76
		813	24	24	25	28	33	36	40	42	45	49	51	57	57	61	65	68	71
		914	24	24	24	28	30	34	37	40	42	46	49	49	54	57	61	63	64
	6N@ 1428	508	30	34	39	43	52	57	65	70	76	82	86	95	101	109	113		
		610	27	28	34	39	43	49	54	58	63	67	77	77	83	88	94	98	110
		711	25	27	30	34	40	43	45	51	58	60	64	70	74	79	85	86	91
		813	25	27	28	30	36	40	43	46	52	52	61	61	67	73	73	77	82
		914	27	27	28	28	33	37	39	45	48	48	55	58	64	65	70	74	74
9144	5N@ 1828	610	27	28	33	37	42	46	51	55	58	63	67	71	77	82	86	91	
		711	25	25	28	33	39	42	46	48	54	55	60	64	68	71	74	80	85
		813	25	25	25	31	33	37	42	45	48	51	55	57	61	64	67	71	76
		914	24	24	27	30	33	34	40	42	46	49	49	52	58	60	63	65	68
		1016	24	24	25	27	30	36	36	40	43	45	46	51	52	57	61	63	65
	6N@ 1524	610	25	30	34	42	48	52	57	61	67	76	77	86	88	97			
		711	25	27	30	36	40	45	51	58	58	64	68	73	79	83	89	91	
		813	25	27	28	31	37	42	43	49	52	60	60	65	71	74	80	82	86
		914	27	27	28	30	36	39	43	45	48	52	57	63	64	68	73	73	82
		1016	27	27	28	30	31	37	40	45	48	49	54	57	64	65	67	70	74
9753	6N@ 1950	610	30	30	36	37	45	49	54	58	63	67	71	77	82	88	94	100	104
		711	27	27	31	36	39	45	46	54	55	60	64	68	73	76	80	85	89
		813	25	25	28	31	36	40	45	48	51	54	55	61	64	68	73	77	80
		914	24	24	27	30	33	39	42	45	49	49	52	57	58	63	67	70	73
		1016	24	24	27	28	33	36	39	42	45	48	49	52	58	61	64	65	68
	6N@ 1624	610	33	33	39	45	51	55	63	67	71	77	82	88	94	100			
		711	30	30	33	39	45	49	55	60	64	68	73	77	83	89	95	100	103
		813	28	28	31	36	40	45	49	54	58	63	67	70	76	79	83	86	91
		914	27	27	30	36	39	43	48	51	55	57	60	64	71	74	76	82	86
		1016	25	25	28	33	37	42	43	48	52	52	58	61	64	68	73	76	79
10363	5N@ 2072	610	30	30	37	43	45	54	58	63	67	71	77	82	91	95	101	106	110
		711	30	30	31	36	42	46	49	55	58	63	68	73	73	77	83	89	95
		813	25	25	30	31	39	42	46	51	54	55	63	64	70	73	74	80	85
		914	25	25	28	31	36	39	43	46	48	52	57	60	64	67	71	74	77
		1016	24	24	27	30	34	39	40	43	48	49	52	57	58	61	65	70	73

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads																	
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
		610	36	36	40	46	54	60	64	71	76	82	88	94	104	110	116	125	
		711	33	33	37	42	48	54	58	63	65	73	77	83	86	92	97	101	106
10363	6N@ 1728	813	28	28	34	40	43	49	52	55	61	67	68	76	76	83	89	94	97
		914	27	27	31	36	40	45	48	51	57	58	64	68	73	76	79	83	88
		1016	27	27	30	34	37	42	46	49	51	55	61	63	68	73	77	80	82
		711	30	30	34	37	43	46	52	57	61	64	70	73	79	85	89	92	95
	5N@ 2133	813	27	27	30	34	40	43	48	49	55	58	63	65	70	73	77	80	85
		914	25	25	28	31	37	40	45	48	48	55	57	61	65	68	71	74	77
		1016	25	25	27	33	33	40	42	45	48	49	52	57	58	63	67	70	73
		711	33	33	37	43	48	54	58	65	68	73	77	83	89	95	101	110	118
10668	6N@ 1777	813	30	30	34	39	45	49	55	57	61	67	71	76	79	85	89	94	98
		914	28	28	33	37	42	46	51	52	57	61	65	68	74	79	82	86	91
		1016	27	27	30	36	39	42	48	51	54	58	60	65	71	74	77	80	85
		711	37	37	43	48	55	63	67	74	80	86	94	101					
	7N@ 1524	813	33	33	39	45	49	55	63	67	71	76	85	88	97				
		914	31	31	37	42	46	51	57	61	67	71	77	82	88	94			
		1016	31	31	34	40	45	49	52	60	64	67	71	77	80	86	91	94	98
		711	33	33	37	45	52	54	61	65	71	74	82	86	95	100	104	110	116
		813	31	31	34	40	48	49	55	60	64	68	74	76	85	89	94	98	103
	6N@ 1828	914	28	28	33	37	42	48	51	57	58	63	68	71	77	82	85	89	92
		1016	27	27	31	36	42	43	48	51	55	58	63	67	71	76	79	83	86
10972		1118	28	28	31	34	39	43	46	49	52	57	61	61	67	70	73	77	95
		711	37	37	45	51	58	63	70	74	82	88	94	104	116				
		813	33	33	39	46	51	58	64	68	74	79	85	91	97	103	107		
	7N@ 1566	914	33	33	37	43	48	52	57	64	68	73	79	85	88	94	98	104	110
		1016	31	31	37	42	46	49	55	60	63	68	74	79	82	88	92	97	101
		1118	28	28	33	39	43	48	52	57	61	65	71	74	79	83	86	91	95
		711	36	36	42	46	54	58	63	67	74	82	85	94	97	104			
		813	31	31	37	42	48	55	57	63	65	73	74	83	88	92	97	103	107
	6N@ 1929	914	30	30	34	40	45	48	54	55	61	65	70	76	77	83	89	94	97
		1016	30	30	33	39	42	45	49	52	58	63	67	70	73	77	82	86	91
11582		1118	28	28	31	34	39	42	46	51	54	60	61	65	70	73	77	82	85
		711	39	39	46	54	60	67	71	82	86	94	104	106					
		813	36	36	42	48	55	60	65	73	79	83	89	95	103	110			
	7N@ 1655	914	33	33	40	45	49	57	61	65	71	76	80	86	92	100	106	113	119
		1016	31	31	37	42	48	51	58	63	67	70	79	80	86	91	94	101	107
		1118	31	31	34	42	45	51	52	61	61	68	73	76	80	86	91	94	97
		711	37	37	43	48	54	63	67	71	77	82	91	94	101	109			
		813	33	33	37	46	49	55	58	64	68	73	82	83	92	98	103		
	6N@ 2033	914	31	31	36	40	48	51	55	60	65	70	74	76	85	89	94	101	107
		1016	30	30	33	39	45	48	51	57	61	65	68	71	77	82	86	89	92
		1118	28	28	34	37	42	46	51	52	58	60	64	67	74	76	79	83	89
		711	40	40	48	57	63	71	76	85	92	100	104						
		813	37	37	45	51	55	63	68	73	83	86	95	103	106	112			
12192	7N@ 1740	914	34	34	40	48	52	57	64	70	76	79	86	91	98	103	107	113	119
		1016	34	34	39	45	49	54	58	64	70	74	77	85	88	94	98	106	112
		1118	31	31	37	43	46	51	55	60	64	70	74	79	85	89	94	98	103
		711	46	46	54	63	70	76	85	92	104								
		813	42	42	48	55	64	68	76	83	89	98	106						
	8N@ 1524	914	39	39	45	51	58	64	71	76	83	89	98	101	109	115			
		1016	36	36	42	49	54	60	65	71	77	83	89	94	100	106	112	118	
		1118	34	34	43	48	54	58	63	67	73	79	82	88	94	100	104	112	118
		813	36	36	42	46	54	58	63	68	73	79	83	92	95	101	106	112	
		914	31	31	37	43	48	55	55	64	67	71	74	82	85	91	97	103	107
	6N@ 2133	1016	31	31	34	40	45	48	57	57	64	65	71	77	80	83	86	92	98
		1118	30	30	34	40	42	48	49	57	58	63	67	71	76	80	83	88	92
		1219	28	28	33	36	40	45	51	54	55	60	64	68	71	76	80	83	85
		1321	30	30	33	36	40	46	49	52	54	57	61	65	70	74	77	80	82
		813	37	37	45	54	58	65	71	77	83	94	101	106					
		914	37	37	43	49	55	60	64	70	76	85	91	97	104				
12801	7N@ 1828	1016	33	33	42	45	49	57	61	65	71	77	82	88	92	100	106	113	121
		1118	34	34	39	42	49	54	58	64	68	73	79	83	88	94	98	104	109
		1219	31	31	36	43	48	52	55	61	64	70	73	80	82	88	92	97	101
		1321	33	33	37	42	46	49	54	57	63	67	71	74	79	85	89	92	95
		813	34	42	49	57	67	71	76	86	92	98	109	115	122	134	138	146	
		914	31	39	43	51	58	63	68	79	83	89	100	100	112	118	128	135	144
	8N@ 1600	1016	30	36	42	46	52	60	65	70	80	82	91	92	101	103	113	121	131
		1118	28	33	39	45	51	54	61	67	73	77	83	89	94	100	104	116	116
		1219	28	31	39	45	48	54	58	64	70	76	80	85	91	95	97	107	109
		1321	30	31	36	42	46	51	58	63	67	73	77	79	88	88	94	100	106

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads															
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
		813	42	42	48	54	63	67	73	82	91	94	104	116	116	126			
		914	39	39	45	49	55	64	68	74	79	85	94	97	106	113	119	128	
	7N@ 1917	1016	36	36	40	48	52	57	65	70	76	80	86	91	98	103	109	115	121
		1118	34	34	40	46	49	57	58	67	70	76	77	85	88	94	100	106	112
		1219	34	34	39	43	48	52	58	61	67	70	74	80	85	91	97	100	103
		1321	33	33	37	43	46	54	55	63	64	68	71	77	83	88	92	95	98
		813	45	45	54	61	68	74	82	94	101	106	116	124					
		914	42	42	49	55	63	68	74	85	89	97	104	107	118	128			
13411	8N@ 1676	1016	40	40	46	51	57	65	71	76	82	89	98	101	109	115	121	131	
		1118	36	36	43	51	55	61	68	74	79	83	89	95	101	107	113	119	124
		1219	36	36	45	48	54	60	63	70	73	80	83	92	95	100	104	112	118
		1321	36	36	40	46	52	57	63	67	73	76	83	86	92	97	100	106	110
		813	40	48	57	67	71	80	86	97	107	115							
		914	36	43	51	60	68	73	79	89	100	100	112	118					
	9N@ 1490	1016	31	42	46	52	61	70	74	80	91	97	103	113	113	121	128		
		1118	30	39	45	52	57	63	73	77	83	89	94	104	106	115	122		
		1219	30	37	43	48	55	63	65	76	79	86	91	97	103	107	119	121	126
		1321	31	36	42	48	52	58	67	73	77	82	88	94	100	100	110	112	122
		813	33	40	46	52	57	65	76	77	86	95	97	107	109	128			
		914	28	36	42	48	57	58	67	67	77	86	88	98	98	110	110		
		1016	28	34	40	43	49	58	60	68	70	79	79	89	91	100	100	112	113
	7N@ 1959	1118	28	30	36	42	45	52	60	61	70	70	79	80	91	91	92	101	103
		1219	27	30	36	37	45	51	54	61	63	71	73	74	82	83	92	94	104
		1321	28	30	33	37	43	46	52	55	63	64	73	74	74	83	85	95	95
		1422	28	30	33	37	40	46	49	54	58	65	67	71	76	76	86	86	88
		813	45	45	54	63	68	77	85	94	101	116	116						
		914	43	43	49	55	64	68	76	85	89	97	107	118	119				
		1016	40	40	48	54	58	65	71	77	86	89	98	106	109	113	122		
13716	8N@ 1716	1118	37	37	45	49	58	63	68	73	79	83	92	98	101	106	113	119	124
		1219	37	37	45	49	54	61	65	70	76	80	85	92	97	100	110	116	125
		1321	37	37	42	46	54	58	64	67	71	77	83	88	94	97	106	110	115
		1422	36	36	42	48	52	57	61	65	70	76	80	86	88	92	100	106	110
		813	51	51	61	70	77	86	94	104	116	124							
		914	46	46	55	64	71	79	86	95	107	118	119						
		1016	43	43	51	60	65	73	79	86	95	101	110	121	128				
	9N@ 1524	1118	42	42	51	57	63	71	76	80	89	95	103	113	118	125	131		
		1219	42	42	49	54	63	65	74	79	83	92	95	106	113	121	126	131	
		1321	42	42	46	52	58	64	71	76	82	86	94	98	107	113	119	126	132
		1422	40	40	48	52	60	64	68	74	79	85	89	95	101	107	112	119	125
		813	43	43	49	58	63	71	77	85	94	101	104	116	122				
		914	39	39	46	54	60	64	71	79	83	92	95	103	112	119	125		
		1016	37	37	43	48	57	61	65	73	76	83	88	94	103	109	115	118	121
	7N@ 2002	1118	34	34	42	48	52	58	63	67	73	77	82	88	97	101	107	113	118
		1219	34	34	40	45	51	54	60	64	68	73	79	83	89	94	98	103	109
		1321	33	33	36	45	49	52	55	61	65	70	76	82	83	88	92	98	103
		1422	33	33	37	43	48	52	54	61	64	67	73	79	82	86	89	94	98
		813	46	46	55	63	71	77	85	94	104	116	122						
		914	42	42	51	57	64	73	79	85	95	103	107	118	125				
		1016	40	40	48	52	61	65	73	77	86	92	98	106	109	118	128		
14020	8N@ 1752	1118	39	39	45	51	58	63	71	76	80	88	92	100	107	115	122	125	129
		1219	37	37	43	49	54	61	65	71	77	82	88	94	100	106	110	118	125
		1321	37	37	45	49	54	58	63	68	74	77	83	88	94	100	104	112	118
		1422	37	37	42	48	54	57	64	67	71	77	80	86	91	94	98	104	110
		813	40	49	57	67	76	86	92	101	109								
		914	36	45	51	58	67	77	83	89	98	110	118						
		1016	36	42	49	60	64	70	79	85	91	101	106	113	119				
	9N@ 1557	1118	33	39	45	54	61	65	73	82	88	94	98	104	115	116	122		
		1219	31	37	45	49	55	63	70	74	85	85	95	97	106	107	119	125	
		1321	31	34	45	48	54	60	67	71	77	86	88	98	98	109	110	121	121
		1422	31	34	42	48	52	60	68	70	77	80	89	91	97	103	107	112	113
		813	45	45	52	60	67	71	82	91	98	104	115	116					
		914	42	42	46	55	61	68	73	80	88	95	101	106	118	126			
		1016	37	37	45	49	57	63	70	74	79	85	94	97	104	112	119		
	7N@ 2090	1118	37	37	43	49	55	58	64	70	76	80	86	92	98	104	110	118	121
		1219	34	34	40	46	51	57	61	67	73	76	79	86	89	95	101	107	112
		1321	34	34	40	45	49	55	58	64	68	74	77	80	88	92	97	103	107
		1422	34	34	37	43	49	52	57	63	65	71	76	80	83	89	94	100	103
14630		1524	33	33	37	45	48	52	54	58	65	68	73	74	82	86	91	92	95
		813	48	48	58	65	71	52	91	101	104	116	0						
		914	45	45	54	60	67	73	83	89	95	106	116	118					
		1016	42	42	49	57	63	70	76	80	88	97	104	107	119				
	8N@ 1828	1118	40	40	48	52	58	67	73	77	82	88	97	100	110	116	122		
		1219	39	39	45	51	55	61	70	74	79	83	89	97	101	107	113	119	125
		1321	39	39	45	49	54	63	65	71	76	82	88	92	97	101	106	113	119
		1422	37	37	42	49	54	58	64	68	73	79	85	89	94	98	103	110	116
		1524	36	36	43	49	52	55	61	67	71	76	82	86	88	95	101	107	112

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads																
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
14630	9N@ 1624	813	54	54	65	71	82	92	103	115	122								
		914	48	48	60	67	74	83	95	103	107	118							
		1016	46	46	57	61	70	77	85	92	100	109	119	126					
		1118	45	45	52	58	67	73	80	88	94	100	112	122	124				
		1219	45	45	51	55	63	70	76	82	89	94	103	110	115	121	126		
		1321	42	42	49	55	63	67	73	79	85	94	97	106	109	119	128	132	137
		1422	42	42	48	54	60	65	71	77	83	88	94	100	109	115	121	126	132
		1524	40	40	49	54	58	63	68	74	80	85	89	97	103	109	113	119	125
15240	8N@ 1904	813	51	51	58	67	76	85	92	103	115	122							
		914	46	46	55	64	68	77	83	94	101	106	116	124	135				
		1016	43	43	51	57	64	70	80	85	94	97	107	118	119				
		1118	40	40	49	55	61	67	73	79	86	92	98	106	110	116	122	131	
		1219	40	40	46	52	60	64	68	76	80	88	95	101	107	115	124	126	131
		1321	39	39	43	52	57	61	65	73	80	83	91	95	100	106	112	119	126
		1422	37	37	45	49	54	61	64	71	76	83	85	92	94	101	107	113	119
		1524	37	37	43	49	55	58	65	70	74	77	85	86	91	97	103	107	112
	9N@ 1694	813	57	57	65	76	85	92	103	116									
		914	51	51	60	68	77	86	94	106	116	124							
		1016	48	48	57	65	73	80	88	97	104	119	119						
		1118	46	46	52	61	67	77	82	91	98	107	110	122	128	137	144		
		1219	43	43	51	60	64	71	80	85	91	101	104	113	124	128	132	141	
		1321	45	45	49	55	63	70	74	82	86	94	101	106	116	122	128	138	
		1422	42	42	49	55	60	68	73	79	85	89	95	101	107	115	121	126	132
		1524	42	42	48	55	60	67	70	76	82	88	92	98	104	112	119	125	131
	10N@ 1524	813	65	65	76	91	101	113											
		914	63	63	70	82	92	101	115	119									
		1016	55	55	65	73	83	94	103	118	121								
		1118	52	52	61	68	77	85	97	104	112	122							
		1219	51	51	58	65	74	82	89	98	107	113	124	126					
		1321	49	49	55	64	71	77	83	91	101	109	112	122	128	137			
		1422	49	49	55	61	68	73	80	86	95	103	110	113	124	132	141	146	149
		1524	49	49	52	58	68	70	79	83	92	97	104	113	115	124	131	141	152
15850	8N@ 1981	914	48	48	55	63	73	80	88	94	104								
		1016	45	45	52	60	67	74	82	89	95	103	113						
		1118	43	43	49	57	63	70	76	80	86	95	106	109	121				
		1219	42	42	48	54	60	67	73	77	83	89	98	100	107	115	122		
		1321	39	39	46	51	58	64	70	74	79	85	91	100	103	109	113	119	125
		1422	39	39	45	52	55	63	67	71	77	82	88	92	98	106	113	119	125
		1524	37	37	45	51	54	58	65	68	73	79	85	89	95	101	107	112	116
	9N@ 2371	914	55	55	64	73	82	88	101	106									
		1016	49	49	57	64	74	83	91	97	107								
		1118	48	48	55	61	68	77	86	92	98	109	121						
		1219	46	46	52	60	68	74	79	89	94	101	109	113					
		1321	45	45	52	57	65	71	76	82	91	97	103	112	115	122			
		1422	43	43	51	57	64	68	76	79	85	94	100	107	115	121	129	134	137
		1524	42	42	48	55	61	67	74	77	85	91	97	100	109	115	121	126	134
	10N@ 1584	914	45	57	67	76	86	97	107	115	125	137							
		1016	43	51	60	68	77	88	98	110	112	129	137	147					
		1118	40	46	55	64	70	80	91	97	103	113	119	129	146				
		1219	39	46	54	61	71	76	83	94	100	104	115	124	138	152			
		1321	37	45	49	60	64	74	79	85	97	101	107	119	119	138	150		
		1422	36	42	49	57	65	71	77	86	89	98	104	110	122	122	128	140	
		1524	34	42	49	54	60	68	79	82	91	97	103	107	113	124	125	134	150
16459	8N@ 2057	914	49	49	58	67	58	83	91	101	112	116							
		1016	46	46	55	61	68	74	85	92	100	106	118	119					
		1118	43	43	51	57	65	71	76	85	94	97	106	115	121				
		1219	42	42	49	57	63	67	74	79	86	94	100	107	110	116	122		
		1321	40	40	46	52	60	64	70	76	83	89	95	101	109	115	121	122	125
		1422	40	40	45	52	57	63	68	74	80	86	92	97	100	106	112	119	126
		1524	37	37	46	51	54	61	67	73	77	83	88	94	97	103	107	113	119
		1626	40	40	46	52	55	60	65	70	74	80	85	91	97	101	106	112	118
	9N@ 1828	914	55	55	63	73	82	94	104	116	122	135							
		1016	51	51	60	68	76	85	95	103	118	118	137						
		1118	48	48	57	65	71	80	86	97	104	109	121	128					
		1219	46	46	52	63	68	77	83	88	100	107	112	122	124				
		1321	43	43	51	60	64	73	80	85	91	100	104	113	125	128	132		
		1422	45	45	52	57	63	71	76	82	88	94	101	106	116	122	128	138	
		1524	43	43	51	55	64	68	74	79	85	89	95	104	109	115	121	126	132
		1626	43	43	51	57	61	67	71	76	82	88	98	98	109	113	119	126	135

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads																
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
16459	10N@ 1645	914	67	67	76	86	100	113	119										
		1016	60	60	70	79	91	101	115	119									
		1118	60	60	65	74	83	92	104	116	122								
		1219	51	51	61	70	80	85	97	106	116	124							
		1321	52	52	63	67	74	83	89	100	107	110	121	126					
		1422	51	51	58	65	71	79	85	94	101	110	113	122	128				
		1524	51	51	55	65	68	74	83	91	95	107	112	115	125				
		1626	51	51	57	60	68	74	82	89	94	98	110	113	116	125	132		
16764	8N@ 2097	914	51	51	60	67	76	83	94	101	116	116							
		1016	46	46	55	64	68	79	83	92	103	106	118	125					
		1118	46	46	51	60	65	73	80	85	94	103	109	119	119				
		1219	42	42	49	57	63	67	74	82	88	97	100	107	116	119	122		
		1321	40	40	48	54	60	65	73	79	83	89	98	101	107	116	124		
		1422	39	39	48	52	58	64	70	76	80	85	91	97	103	109	115	121	126
		1524	37	37	46	52	55	63	68	73	77	83	89	92	100	106	110	116	121
		1626	39	39	46	52	55	60	65	71	74	80	85	91	97	101	106	112	118
		1727	40	40	46	51	55	60	65	71	76	79	85	88	94	100	104	109	112
	9N@ 1862	914	55	55	65	74	82	94	104	116									
		1016	51	51	60	68	79	88	95	106	118	125							
		1118	48	48	57	65	73	80	89	97	104	119	121						
		1219	48	48	54	63	67	77	83	91	100	107	112	122	129				
		1321	46	46	52	61	67	74	80	86	94	103	109	113	125				
		1422	45	45	52	57	63	71	76	82	92	95	104	112	116	122	128		
		1524	45	45	52	57	64	68	74	79	86	94	98	107	116	121	129	134	138
		1626	43	43	51	57	61	67	74	79	86	92	98	101	110	116	122	129	135
		1727	43	43	51	55	61	68	73	77	83	89	94	100	107	112	115	122	128
	10N@ 1676	914	67	67	76	89	100	113	131										
		1016	61	61	71	82	94	101	115	121									
		1118	60	60	68	74	83	95	104	118	122								
		1219	55	55	64	70	80	88	97	106	119	124							
		1321	52	52	61	68	76	83	92	104	107	119	125						
		1422	54	54	58	67	71	79	88	94	106	110	122	128	131				
		1524	52	52	55	65	70	77	85	91	100	109	112	125	129				
		1626	51	51	55	60	70	76	82	89	95	101	110	115	126	129	132		
		1727	52	52	55	57	70	73	79	86	95	100	106	115	116	125	132		
	11N@ 1524	914	68	68	80	97	106	119											
		1016	67	67	74	86	101	109	121										
		1118	61	61	70	79	89	104	110	122									
		1219	57	57	65	76	86	97	106	119	122								
		1321	55	55	63	71	83	88	100	107	121	125							
		1422	54	54	64	68	76	85	94	103	110	122	128						
		1524	54	54	60	68	74	82	91	97	109	115	125	129	131				
		1626	52	52	58	68	71	80	89	94	106	113	116	126	132				
		1727	52	52	58	65	71	79	86	94	100	109	116	119	131				
17068	8N@ 2133	914	52	52	60	67	77	83	94	104	116	116							
		1016	46	46	55	64	71	79	83	95	103	113	118						
		1118	46	46	52	61	65	74	80	85	94	104	109	119	121				
		1219	45	45	49	58	64	71	77	83	88	97	104	110	116				
		1321	42	42	48	54	60	68	73	79	86	89	98	101	109	116	124		
		1422	40	40	48	52	58	65	70	76	80	88	91	100	103	109	115	121	126
		1524	39	39	46	52	57	63	68	71	77	83	89	94	103	107	112	119	125
		1626	39	39	46	52	55	63	65	71	76	82	85	92	97	103	107	113	118
		1727	40	40	48	51	57	61	67	70	76	82	85	88	95	101	107	112	118
	9N@ 1895	914	58	58	67	77	85	94	104	116									
		1016	54	54	64	68	79	89	95	106	118	124							
		1118	49	49	57	65	76	80	91	97	107	119	121						
		1219	48	48	57	63	70	77	88	92	100	107	121	122					
		1321	46	46	54	61	68	74	79	89	95	101	109	113	124				
		1422	45	45	52	60	65	71	76	83	92	97	104	112	116	122	128		
		1524	45	45	51	57	64	68	76	83	88	95	100	107	115	121	129	134	138
		1626	46	46	51	57	61	67	74	80	86	91	98	103	110	116	122	129	135
		1727	43	43	51	57	61	68	71	77	83	89	94	100	107	115	122	128	132
	10N@ 1706	914	67	67	77	89	101	113	131										
		1016	63	63	71	82	94	101	115	132									
		1118	60	60	68	79	86	100	104	118	122								
		1219	55	55	64	71	80	89	103	107	119	124							
		1321	52	52	63	70	76	86	95	103	110	121	125						
		1422	54	54	58	67	71	82	88	97	106	112	122	128					
		1524	52	52	55	65	70	80	85	94	100	112	113	124	129				
		1626	52	52	57	63	70	76	82	91	97	104	113	116	126				
		1727	52	52	57	61	70	74	79	89	94	100	107	116	118	126	134		

JOIST GIRDERS
DESIGN GUIDE WEIGHT TABLE FOR JOIST GIRDERS

Based on Allowable Tensile Stress of 207 MPa
Joist Girder Weight – kilogram/meter (kg/m).

Span (mm)	No. Of Joist Spaces	Depth (mm)	Panel Point Loads															
			18 kN	22 kN	27 kN	31 kN	36 kN	40 kN	44 kN	49 kN	53 kN	58 kN	62 kN	67 kN	71 kN	76 kN	80 kN	85 kN	89 kN
17068	11N@ 1554	914	52	70	79	89	100	110											
		1016	51	61	71	80	91	101	113										
		1118	46	58	67	77	88	94	104	115	122								
		1219	46	55	64	74	83	91	97	107	118	125							
		1321	45	52	63	71	77	86	98	104	110	121	128						
		1422	43	51	60	68	79	83	91	101	107	112	124	131					
		1524	43	51	57	65	71	82	92	94	104	110	116	126	132				
		1626	42	51	57	64	73	80	86	95	101	107	118	119	129	132			
		1727	40	49	58	64	70	77	88	92	98	104	110	122	124	134	135	143	
17678	9N@ 1962	914	58	58	67	79	91	100	115	122									
		1016	55	55	64	73	83	92	101	112	118								
		1118	51	51	61	67	76	85	94	104	107	119							
		1219	48	48	57	64	71	79	86	95	106	110	121	128					
		1321	48	48	54	63	68	77	83	89	98	107	112	124	124				
		1422	45	45	52	61	65	73	80	86	92	100	109	115	126	137			
		1524	46	46	52	58	64	71	77	82	91	94	103	112	118	124	129	140	
		1626	46	46	54	57	65	70	74	79	86	92	100	106	113	122	129	132	134
		1727	48	48	51	57	63	67	73	79	88	92	98	101	109	115	121	128	135
		1829	46	46	52	58	63	70	73	79	85	91	95	101	109	113	116	122	128
	10N@ 1767	914	71	71	82	97	103	118											
		1016	65	65	74	85	98	104	119										
		1118	60	60	68	79	91	103	112	121									
		1219	58	58	67	74	85	94	104	115	122								
		1321	55	55	64	70	79	88	98	106	116	121							
		1422	54	54	63	68	77	83	91	104	109	119	122	131					
		1524	55	55	60	67	71	79	89	95	107	110	121	124	132				
		1626	54	54	55	65	71	74	88	92	100	109	113	122	126	138			
		1727	54	54	57	60	71	76	83	91	95	101	112	115	125	129	132		
		1829	52	52	57	60	70	74	80	89	95	98	107	115	118	125	132	140	
	11N@ 1606	914	61	70	80	91	101	118											
		1016	54	63	73	86	97	107	119										
		1118	49	63	73	83	94	100	115	116									
		1219	49	57	65	74	85	95	106	118	119								
		1321	48	57	67	71	82	88	98	110	121	121							
		1422	45	52	61	68	80	89	97	103	113	122	125						
		1524	45	54	60	70	76	83	94	98	106	115	126	128	135				
		1626	45	54	58	65	74	85	89	95	107	109	118	129	131	138			
		1727	43	51	58	67	76	83	89	97	100	110	116	122	132	135	143		
		1829	43	52	58	67	73	80	91	92	101	109	115	119	126	137	138	146	
18288	9N@ 2033	1016	57	60	65	73	83	92	101	112	119								
		1118	57	57	63	70	79	85	95	104	119	119							
		1219	55	57	58	67	74	82	89	97	106	116	121						
		1321	54	55	57	65	70	74	80	91	94	103	109	115					
		1422	54	54	54	63	68	73	80	86	94	101	104	113	116	122			
		1524	52	52	54	60	67	73	80	86	92	101	104	113	116	116	129		
		1626	52	52	52	55	64	70	76	77	88	89	97	100	109	109	121	122	
		1727	51	51	51	55	64	70	74	79	86	88	97	101	109	112	121	124	138
		1829	49	49	51	57	64	68	74	79	86	89	97	101	110	116	122	131	138
	10N@ 1828	1016	48	63	73	82	92	103	116										
		1118	46	61	73	82	91	103	116	122	140	143							
		1219	45	55	67	77	86	101	104	119	122	141	144						
		1321	43	52	63	71	77	86	97	107	112	119	129	137					
		1422	42	51	63	70	74	85	95	100	110	116	126	132	143				
		1524	42	49	61	68	73	82	92	98	107	113	124	129	141				
		1626	37	48	58	64	71	77	86	95	98	110	116	119	126	126			
		1727	36	45	58	63	71	76	86	94	97	107	115	113	124	125	134	134	
		1829	36	57	58	61	71	76	85	91	95	104	113	116	119	125	134	134	
	11N@ 1661	1016	49	63	76	86	97	109	115										
		1118	49	60	68	79	89	100	110	118									
		1219	45	54	65	71	82	92	103	113	121								
		1321	45	52	63	71	82	88	97	106	116	122							
		1422	43	51	60	68	76	85	97	98	109	118	126						
		1524	42	49	58	67	76	82	89	98	106	113	122	128					
		1626	42	49	58	67	70	82	89	95	103	113	116	125	132				
		1727	42	49	55	63	71	82	83	92	100	106	116	118	129	135			
		1829	42	48	57	63	73	76	86	91	97	107	109	121	122	132	140		
	12N@ 1524	1016	58	70	79	95	109	121											
		1118	57	70	79	95	104	121	138	140									
		1219	55	64	76	86	98	110	122	140	143								
		1321	48	58	68	77	85	95	106	118	125								
		1422	46	57	65	77	85	92	101	112	124	128							
		1524	46	57	65	77	85	92	101	112	124	128	147						
		1626	45	52	60	70	80	86	97	104	115	116	126	135					
		1727	45	52	61	71	79	85	95	101	109	119	129	132	138				
		1829	45	55	61	71	79	86	92	98	109	118	125	135	137				

Adopted by the Steel Joist Institute November 4, 1985 – Revised to May 2, 1994 – Effective September 1, 1994

SECTION 1000. SCOPE

These specifications cover the design, manufacture and use of Joist Girders.

SECTION 1001. DEFINITION

The term "Joist Girders", as used herein, refers to open web, load- carrying members utilizing hot-rolled or cold-formed steel, including cold-formed steel whose yield strength* has been attained by cold working.
The design of Joist Girder chord or web sections shall be based on a yield strength of at least 36 ksi (250 MPa) but not greater than 50 ksi (345 MPa) Steel used for Joist Girder chord or web sections shall have a minimum yield strength determined in accordance with one of the procedures specified in Section 1002.2, which is equal to the yield strength assumed in the design. Joist Girders shall be designed in accordance with these specifications to support panel point loadings.

* The term "yield strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13 - "Yield Strength", or paragraph 12 - "Yield Point", of ASTM A370, "Mechanical Testing of Steel Products", or as specified in Section 1002.2 of this Specification.

SECTION 1002. MATERIALS

1002.1 STEEL

The steel used in the manufacture of chord and web sections shall conform to one of the following ASTM Specifications of latest adoption:

- Structural Steel, ASTM A36/A36M.
- High-Strength Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality, ASTM A529/A529M, Grade 50.
- Hot-Rolled Carbon Steel Sheets and Strip, Structural Quality, ASTM A570/A570M.
- High-Strength Low-Allow Columbium-Vanadium Steel of Structural Quality, ASTM A572/A572M Grades 42, 45, and 50.
- High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (102 mm) thick, ASTM A588/A588M.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High- Strength, Low-Alloy, with Improved Corrosion Resistance, ASTM A606.
- Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, Columbium and/ or Vanadium, ASTM A607, Grades 45 and 50.
- Steel, Cold-Rolled Sheet, Carbon Structural, ASTM A611, Grade D.

or shall be of suitable quality ordered or produced to other than the listed specifications, provided that such material in the state used for final assembly and manufacture is weldable and is proved by tests performed by the producer or manufacturer to have the properties specified in Section 1002.2.

1002.2 MECHANICAL PROPERTIES

The yield strength used as a basis for the design stresses prescribed in Section 1003 shall be at least 36 ksi (250 MPa) but shall be not greater than 50 ksi (345 MPa). 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 material properties of which conform to the requirements of one of the listed specifications, test specimens and procedure shall conform to those of such specifications and to ASTM A370.

In the case of material the mechanical properties of which do not conform to the requirements of one of the listed specifications, the test specimens and procedure shall conform to the applicable requirements of ASTM A370

and the specimens shall exhibit a yield strength equal to or exceeding the design yield strength and an elongation of not less than (a) 20 percent in 2 inches (51 mm) for sheet and strip or (b) 18 percent in 8 inches (203 mm) for plates, shapes and bars with adjustments for thickness for plates, shapes and bars as prescribed in ASTM A36/A36M, A242/A242M, A529/A529M, A572/A572M, and A588/A588M, whichever specification is applicable on the basis of design yield strength.

The number of tests shall be the same as prescribed in ASTM A6 for plates, shapes and bars; and ASTM A570, A570M, A606, A607, and A611 for sheet and strip.

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 Sections 3.1.1 and 6.3 of the AISI Specifications for the Design of Cold-Formed Steel Structural Members, and shall indicate compliance with these provisions and with the following additional requirements:

1. The yield strength measured in the tests shall equal or exceed the design yield strength.

2. Where tension tests are made for acceptance and control purposes, the tensile strength shall be at least 6 percent greater than the yield strength of the section.

3. 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 specimen shall not be greater than 20 times its least radius of gyration.

4. If any test specimen fails to pass the requirements of subparagraph 1, 2, or 3 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 cause for rejection of the lot represented by the specimens.

1002.3 WELDING ELECTRODES

The following electrodes shall be used for arc welding:

a) For connected members both having a specified minimum yield strength greater than 36 ksi (250 MPa).
AWS A5.1 or A5.5, E70XX
AWS A5.17 F7X EXXX flux electrode combination
AWS A5.18, E70S-X or E7OU-1
AWS A5.20, E70T-X

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).

AWS A5.1, E60XX
AWS A5.17, F6X-EXXX flux electrode combination
AWS A5.20, E60T-X
or any of those listed in Section 1002.3(a).

Other welding methods, providing equivalent strength as demonstrated by tests, may be used.

1002.4 PAINT

The standard shop paint is a primer coat intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating.

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

a) Steel Structures Painting Council Specification 15-68T, Type 1 (red oxide).

b) Federal Specification TT-P-636 (red oxide).

c) Or, shall be a shop paint which meets the minimum performance requirements of one of the above listed specifications.

SECTION 1003.
DESIGN AND MANUFACTURE

1003.1 METHOD

Joist Girders shall be designed in accordance with these specifications as simply supported primary members. All loads will be applied through steel joists, and will be equal in magnitude and evenly spaced along joist girder top chord. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following specifications of latest adoption:

a) American Institute of Steel Construction Specification for the Design, Fabrication and Erection of Structural Steel for Buildings (Allowable Stress Design), where the material used consists of plates, shapes or bars.

b) American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members, for members which are cold-formed from sheet or strip material.

1003.2 UNIT STRESSES

Joist Girders shall have their components so proportioned that the unit stresses in kips per square inch (Mega Pascals) shall not exceed the following, where F_y is the yield strength defined in Section 1002.2:

a) Tension:
All Members . . . . . $F_t = 0.6F_y$

b) Compression:
For Members with l/r less than C_c:

$$F_a = \frac{\left[1 - \frac{(l/r)^2}{2C_c^2}\right] QF_y}{\frac{5}{3} + \frac{3}{8}\left(\frac{l/r}{C_c}\right) - \frac{1}{8}\left(\frac{l/r}{C_c}\right)^3}$$

where $C_c = \sqrt{\frac{2\pi^2 E}{QF_y}}$ and

where Q is a form factor equal to unity except when the width-thickness ratio of one or more elements of the profile exceeds the limits specified in the AISC Specification, Section B5 (Allowable Stress Design), for hot-rolled sections and in the AISI Specification, Section 3., for cold-formed sections. For members with l/r greater than C_c:

$$F_a = \frac{12\pi^2 E}{23\,(l/r)^2}$$

In the above formula l is the length center-to-center of panel points, and r is the corresponding least radius of gyration of the member or any component thereof, both in inches (millimeters) and E is equal to 29,000 ksi (200,000 MPa).

c) Bending:

For chords, and for web members other than solid rounds.....$F_b = 0.6F_y$

For web members of solid round cross section.....$F_b = 0.9F_y$

For outstanding legs of top chord angles at points of loading.....$F_b = 0.75F_y$

For bearing plates.....$F_b = 0.75F_y$

d) Weld Stresses:

Shear at throat of fillet welds:

Made with E70 series electrodes or F7X-EXXX flux-electrode combinations . . . .21 ksi (145 MPa)
Made with E60 series electrodes or F6X-EXXX flux-electrode combinations . . . . 18 ksi (124 MPa)

Tension or compression on groove or butt welds shall be the same as those specified for the connected material.

1003.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratio, l/r, where l is the length center-to-center of support points and r is the corresponding least radius of gyration, shall not exceed the following:

Top chord interior panels.....90
Top chord end panels.....120
Compression members other than top chord 200
Tension members.....240

If moment-resistant weld groups are not used at the ends of a crimped, first primary compression web member, then 1.2 l/r_x must be used. Where r_x = member radius of gyration in the plane of the joist.

1003.4 MEMBERS

a) Chords

The bottom chord shall be designed as an axially loaded tension member. The radius of gyration of the bottom chord about its vertical axis shall be not less than l/240 where l is the distance between lines of bracing.

The top chord shall be designed as an axially loaded compression member. The radius of gyration of the top chord about the vertical axis shall be not less than Span/575.

The top chord shall be considered as stayed laterally by the steel joists provided positive attachment is made.

b) Web

The vertical shears to be used in the design of the web members shall be determined from full loading but such vertical shear shall be not less than 25 percent of the end reaction.

Interior vertical web members used in modified Warren type web systems that do not support the direct loads through steel joists shall be designed to resist 2 percent of the top chord axial force.

Tension members shall be designed to resist, in compression, at least 25 percent of their axial force.

c) Fillers and Ties

Chord and web members in compression, composed of two components, shall have fillers, ties or welds spaced so that the l/r ratio for each component shall not exceed the l/r ratio of the whole member.

Chord and web members in tension, composed of two components, shall have fillers, ties or welds spaced so that the *l*/r ratio of each component shall not exceed 240. The least r shall be used in computing the *l*/r ratio of a component.

d) Eccentricity

Members connected at a joint shall have their center of gravity lines meet at a point, if practical. Eccentricity on either side of the centroid of chord members may be neglected when it does not exceed the distance between the centroid and the back of the chord. Otherwise, provision shall be made for the stresses due to eccentricity. Ends of Joist Girders shall be proportioned to resist bending produced by eccentricity at the support. In those cases where a single angle compression member is attached to the outside of the stem of a tee or double angle chord, due consideration shall be given to eccentricity.

e) Extended Ends

Extended top chords or full depth cantilever ends require the special attention of the specifying professional.

The magnitude and location of the design loads to be supported, the deflection requirements, and the proper bracing shall be clearly indicated on the structural drawings.

1003.5 CONNECTIONS

a) Methods

Joint connections and splices shall be made by attaching the members to one another by arc or resistance welding or other approved method.

1) Welded Connections

(a) Selected welds shall be inspected visually by the manufacturer. Prior to this inspection, weld slag shall be removed.

(b) Cracks are not acceptable and shall be removed.

(c) Thorough fusion shall exist between layers of weld metal and between weld metal and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.

(d) Unfilled weld craters shall not be included in the design length of the weld.

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

(f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 mm) in any 1 inch (25 mm) of design weld length.

(g) Weld spatter that does not interfere with paint coverage is acceptable.

2. Welding Program

Manufacturers shall have a program for establishing weld procedures and operator qualification, and for weld sampling and testing.

3. Weld inspection by Outside Agencies (See Section 1004.10 of these specifications).

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 1003.5.1) above. Ultrasonic, X-Ray, and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

b) Strength

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

c) Shop Splices

Shop splices may 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 allowable member strength. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term “member” shall be defined as all component parts, comprising the chord or web, at the point of splice.

d) Field Splices

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

1003.6 CAMBER

Joist Girders shall have approximate cambers in accordance with the following:

Top Chord Length	Approximate Camber
20'-0" (6096 mm)	¼" (6 mm)
30'-0" (9144 mm)	⅜" (10 mm)
40'-0" (12192 mm)	⅝" (16 mm)
50'-0" (15240 mm)	1" (25 mm)
60'-0" (18288 mm)	1½" (38 mm)

1003.7 VERIFICATION OF DESIGN AND MANUFACTURE

a) Design Calculations

Companies manufacturing 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 the SJI Specifications.

b) In-Plant Inspections

Each manufacturer shall verify his ability to manufacture 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 In-Plant Inspections are not a guaranty of the quality of any specific Joist Girders; this responsibility lies fully and solely with the individual manufacturer.

SECTION 1004. APPLICATION

1004.1 USAGE

These specifications shall apply to any type of structure where steel joists are to be supported directly by Joist Girders installed as hereinafter specified. Where Joist Girders are used other than on simple spans under equal concentrated gravity loading, as prescribed in Section 1003.1, they shall be investigated and modified if necessary to limit the unit stresses to those listed in Section 1003.2. The magnitude and location of all loads and forces, other than equal concentrated gravity loadings, shall be provided on the structural drawings. 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 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.

1004.2 SPAN

The span of a Joist Girder shall not exceed 24 times its depth.

1004.3 DEPTH

The nominal depth of sloping chord Joist Girders shall be the depth at mid-span.

1004.4 END SUPPORTS

a) Masonry and Concrete

Joist Girders supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical or lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of the Joist Girders shall extend a distance of not less than 6 inches (152 mm) over the masonry or concrete support and be anchored to the steel bearing plate. The plate shall be located not more than ½ inch (13 mm) from the face of the wall and shall be not less than 9 inches (229 mm) wide perpendicular to the length of the girder. It is to be designed by the specifying professional in compliance with the allowable unit stresses in Section A5.1 (Allowable Stress Design) of the A.I.S.C. Specifications of latest adoption. The steel bearing plate shall be furnished by other than the joist manufacturer.

Where it is deemed necessary to bear less than 6 inches (152 mm) over the masonry or concrete support, special consideration is to be given to the design of the steel bearing plate and the masonry or concrete by the specifying professional. The girders must bear a minimum of 4 inches (102 mm) on the steel bearing plate.

b) Steel

Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying professional in the design of the steel support. The ends of Joist Girders shall extend a distance of not less than 4 inches (102 mm) over the steel supports and shall have positive attachment to the support, either by bolting or welding.

1004.5 BRACING

Joist Girders shall be proportioned such that they can be erected without bridging (See Section 1004.9 for bracing required for uplift forces). Therefore, the following requirements must be met:

a) The ends of the bottom chord are restrained from lateral movement to brace the girder from overturning.

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

1004.6 END ANCHORAGE

a) Masonry and Concrete

Ends of Joist Girders resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two ¼ inch (6mm) fillet welds 2 inches (51 mm) long, or with two ¾ inch (19 mm) bolts.

b) Steel

Ends of Joist Girders resting on steel supports shall be attached thereto with a minimum of two ¼ inch (6 mm) fillet welds 2 inches (51 mm) long, or with two ¾ inch (19 mm) bolts. In steel frames, Joist Girders at column lines shall be field bolted to the columns to provide lateral stability during construction.

c) Uplift

Where uplift forces are a design consideration, roof Joist Girders shall be anchored to resist such forces.

1004.7 DEFLECTION

The deflections 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.
1/240 of span for all other cases

.

The specifying professional shall give due consideration to the effects of deflection and vibration* in the selection of Joist Girders.

* For further reference, refer to Steel Joist Institute Technical Digest No 5, “Vibration of Steel Joist-Concrete Slab Floors” and Computer Vibration program.

1004.8 PONDING

Unless a roof surface is provided with sufficient slope toward points of free drainage or adequate individual drains to prevent the accumulation of rain water, the roof system shall be investigated to assure stability under ponding conditions in accordance with Section K2 (Allowable Stress Design) of the AISC Specifications.*

The ponding investigation shall be performed by the specifying professional.

* For further reference, refer to the Steel Joist Institute Technical Digest #3, “Structural Design of Steel Joist Roofs to Resist Ponding Loads”.

1004.9 UPLIFT

Where uplift forces due to wind are a design requirement, these forces must be indicated on the contract drawings in terms of net uplift in pounds per square foot (Pascals). When these forces are specified, they must be considered in the design of the Joist Girders and/or bracing. If the ends of the bottom chord are not strutted, bracing must be provided near the first bottom chord panel points whenever uplift due to wind forces is a design consideration.*

* For further reference, refer to Steel Joist Institute Technical Digest #6, “Structural Design of Steel Joist Roofs to Resist Uplift Loads”.

1004.10 INSPECTION

Joist Girders shall be inspected by the manufacturer before shipment to insure compliance of materials and workmanship with the requirements of these specifications. If the purchaser wishes an inspection of the Joist Girders by someone other than the manufacturer’s own inspectors, he may reserve the right to do so in his “Invitation to Bid” or the accompanying “Job Specifica-tions”. Arrangements shall be made with the manufacturer for such inspection of the Joist Girders at the manufacturing shop by the purchaser’s inspectors at purchaser’s expense.

SECTION 1005.*
HANDLING AND ERECTION

Particular attention should be paid to the erection of Joist Girders.

Care shall be exercised at all times to avoid damage through careless handling during unloading, storing and erecting. Dropping of Joist Girders shall not be permitted.

During the construction period, the contractor shall provide means for the adequate distribution of concentrated loads so that the carrying capacity of any

Joist Girder is not exceeded.

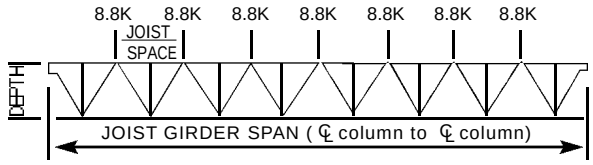
Field welding shall not damage the Joist Girder. The total length of weld at any one cross-section on cold-formed members whose yield strength has been attained by cold working and whose as-formed strength is used in the design, shall not exceed 50 percent of the overall developed width of the cold-formed section.

* For thorough coverage of this topic, refer to SJI Technical Digest #9, "Handling and Erection of Steel Joists and Joist Girders".

SECTION 1006.
How To Specify Joist Girders

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 following tables give the Joist Girder weight per linear foot (Kilograms/Meter) for various depths and loads.

Example using English units:



STANDARD DESIGNATION

48G	8N	8.8K
DEPTH IN INCHES	NUMBER OF JOIST SPACES	KIP LOAD ON EACH PANEL POINT

Given 50'-0" x 40'-0" bay. Joists spaced on 6'-3" centers
Live Load = 20 psf
Dead Load = 15 psf (includes the approximate
Total Load = 35 psf Joist Girder weight)

NOTE: Web configuration may vary from that shown. Contact Joist Girder 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 = 6.25 x 35 psf = 218.75 plf

3. Joist Girder Section: (Interior)

   a) Compute the concentrated load at top chord panel points P = 218.75 x 40 = 8,750 lbs = 8.8 kips (use 9K for depth selection).

   b) Select Joist Girder depth:

      Refer to the Joist Girder Design Guide Weight Table for the 50'-0" span, 8 panel, 9.0K 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 48 inches.

   c) The Joist Girder will then be designated 48G8N8.8K.

   d) The Joist Girder table shows the weight for a 48G8N9K as 43 pounds per linear foot. The designer should verify that the weight is not greater than the weight assumed in the dead load above.

   e) Check live load deflection:

      Live load = 20 psf x 40 ft. = 800 plf Approximate Joist Girder moment of inertia = 0.027 NPLd = 0.027 x 8 x 9 x 50 x 48 = 4666in^4

Allowable deflection
for plastered ceilings = L/360 = $\frac{50 \times 12}{360}$ = 1.67 in.

$$\text{Deflection} = 1.15\left[\frac{5wL^4}{384EI}\right] = \frac{1.15 \times 5\,(^{0.800}/_{12})\,(50 \times 12)^4}{384 \times 29{,}000 \times 4666}$$

$$= 0.96 \text{ in} < 1.67 \text{ in., O'K'}$$

Live load deflection rarely governs because of the relatively small span-depth ratios of Joist Girders.

1. The purpose of the Design Guide Weight Table for Joist Girders 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 which must 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.

FIRE-RESISTANCE RATINGS WITH STEEL JOISTS

Hundreds of fire tests on steel joist-supported assemblies have been conducted at nationally recognized testing laboratories in accordance with ASTM Standard E119, ANSI A2.1/UL 263, and NFPA 251. Because of practical loading restrictions and limitations of furnace dimensions, the vast majority of these tests were run using lightweight joists - normally from 8 inches to 14 inches deep. This practice was advantageous in that it established the *minimum* acceptable joists at the shallow and lightweight end of the joist load tables.

The specified minimum size joist as listed in **Underwriters Laboratories (U.L.) Fire Resistance Designs** is the joist which combines the required minimum depth and minimum weight per foot. Joists, of the same series, which meet, or exceed the specified minimums may be used provided the accessories are compatible. The dimension from the bottom chord of joists to the ceiling, whether given or calculated, is a minimum.

K-Series Joists, LH Series Joists and Joist Girders specified in floor- or roof-ceiling assemblies, shall be designed and manufactured in accordance with the Steel Joist Institute's Specifications adopted November 4, 1985 revised November 12, 1991.

Many of U.L.'s Fire Rated Assemblies now specifically list **K-Series Joists.** When a **K-Series Joist** is specified in a particular U.L. assembly the **K-Series Joist** shall have its design stress limited only if the assembly specifically limits the design stress of the **K-Series Joist.**

K-Series Joists may be substituted for S-, J-, and/or H-Series Joists specified in U.L. floor-, or roof-ceiling designs as follows:

Floor-Ceiling Assemblies:

K-Series Steel Joists of equal or greater depth and weight per foot *may be substituted* for any S-, J-, and/or H-Series Joist in any floor-ceiling design, which employs a structural concrete floor and suspended membrane ceiling.

Roof-Ceiling Assemblies:

K-Series Steel Joists of equal or greater depth and weight per foot *may be substituted* for any S-, J-, and/or H-Series Joists in any roof-ceiling design with the following restrictions:

a) Minimum Nominal Depth = 10 inches (254mm)
b) Maximum Tensile Stress = 26 KSI (179 MPa)

Any stress limitation specified in a U.L. floor or roof fire rated assembly containing S, J and/or H Series Joists shall remain applicable when a **K-Series Joist** is substituted. Also, certain U.L. assembly designs contain restrictions regarding minimum allowable joist member sizes, areas of steel, and/or bridging material sizes. These restrictions remain applicable when a K-Series Joist is substituted and it is the responsibility of the specifying professional to list all such restrictions on the contract drawings.

The following procedure may be used to substitute the proper **K-Series Joist** for any S-, J-, and/or H-Series Joist listed in a U.L. design assembly.

1. Determine the uniform load per foot the joist is required to support.
2. Select a design from the U.L. "Fire Resistance Directory" that matches the building construction and has the required fire rating.
3. a) Floor Assemblies:
   Adjust the design load per foot calculated in step #1 for any required reduction in stress level by multiplying the load by a factor of 30 ksi (207 MPa) divided by the specified stress level, i.e. [30/24 (207/165), 30/22 (207/152). etc.].

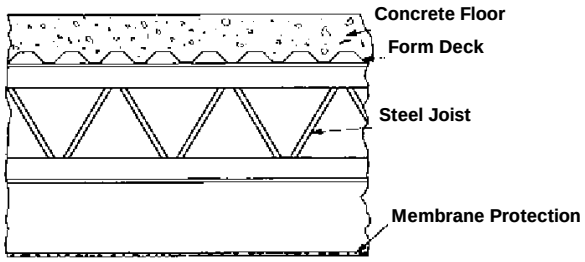
   b) Roof Assemblies:
   Adjust the design load per foot calculated in step #1 by multiplying by the factor of 30/26 (207/179), or a greater factor if the particular assembly design requires a lessor stress level.
4. Enter the K-Series Economy Table and select the proper joist for the calculated load requirement.
5. Insure that the **K-Series Joist** selected has a depth and load table weight per foot equal to, or greater than, the S-, J- and/or H-Series joist listed in the U.L. Design. Joists used in roof assemblies must have a minimum depth of 10 inches (254mm).

So that the proper **K-Series Joist** can be selected for U.L. Designs not presently containing a K-Series designation the weights of various S-, J-, and H-Series Joists used in the U.L. Fire Resistance Designs are listed below:

Joist Designation	Load Table Weight lbs./ft.	Joist Designation	Load Table Weight lbs./ft.
8S2	4.0	14J5	7.3
10S3	5.0	14J7	9.7
8J2	4.2	8H2	4.2
10J2	4.2	8H3	5.0
10J3	4.8	10H2	4.2
10J4	6.0	10H3	5.0
12J2	4.5	10H4	6.1
12J3	5.1	12H4	6.2
12J4	6.0	12H5	7.1
12J5	7.0		
12J6	8.1		

FIRE-RESISTANCE RATINGS WITH STEEL JOISTS

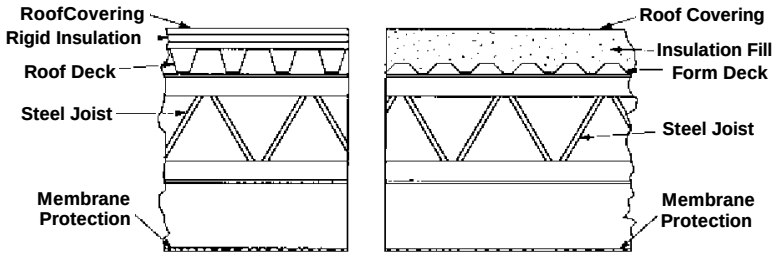
FLOOR-CEILING ASSEMBLIES WITH MEMBRANE PROTECTION



Restrained Assembly Rating	Type of Protection System	Concrete		Minimum Joist Size See Note #3 & #4	Maximum Joist Spacing See Note #2	Primary Support Member Min. Depth & Wt. See Note #3	U.L. Design Number
		Thickness Above Deck	Type				
1 Hr.	Exposed Grid	2 1/2”	NW	10K1	72”	20g @14.0 plf. Min. Area Top & Bottom Chord 1.12 Sq. Inch	G256
		2 1/2”	NW	12K1,18LH02	Unrestricted	—	D216
1 1/2 Hr.	Exposed Grid	2 1/2” 2” 2 1/2”	NW NW NW	10K1 10K1 10K1	48” 48” 48”	20G @13.0 plf. 20G @13.0 plf. 20g @13.0 plf.	G228 G229 G243
	Gypsum Brd.	2”	NW	12K1	48”	—	G502
	Cementitious	2 1/2”	LW NW	16K6 Min. 3/4” dia. web	Unrestricted	20G @20.0 plf.	G701
	Sprayed Fiber	2 1/2”	LW NW	16K6 Min. 3/4” dia. web	Unrestricted	20G @20.0 plf.	G801
2 Hr.	Concealed Grid	2 1/4”	NW	10K1	48”	20G @13.0 plf.	G023
		2 1/2”	NW	8K1,10K1	48”	20G @13.0 plf.	G031
		2 1/2”	NW	10K1	48”	20G @13.0 plf.	G036
	Exposed Grid	2 1/2”	NW	10K1	48”	W6x12	G213
		2 1/2”	NW	10K1	48”	W8x31	G227
		2 1/2”	NW	10K1	48”	20G @13.0 plf.	G228
		2 1/2”	NW	10K1	48”	20G @13.0 plf.	G243
		2 1/2”	NW	10K1	48”	—	G256
		2 1/2”	NW	12K1,18LH02	Unrestricted	—	D216
	Gypsum Board	2”	NW	10K1	48”	—	G505
		2 1/2”	NW	10K1	48”	20G @14.0 plf. Min. Area Top & Bottom Chord 1.12 Sq. inch	G514
		2 1/2”	NW	10K1	48”	20G @13.0 plf.	G253
		2 1/2”	LW NW	10K1	48”	20G @13.0 plf.	G529
	Cementitious	2 1/2”	NW	12K1	Unrestricted	20G @20.0 plf.	D502
		2 1/2”	LW NW	16K6 Min. 3/4” dia. web	Unrestricted	20G @20.0 plf.	D701
	Sprayed Fiber	2 1/2”	LW NW	16K6 Min. 3/4” dia. web	Unrestricted	20G @20.0 plf.	D801
3 Hr.	Concealed Grid	3 1/2”	NW	10K1	48”	20G @13.0 plf.	G033
		3 1/4”	NW	10K1	48”	20G @13.0 plf.	G036
	Exposed Grid	3 1/2”	NW	10K1	48”	W6x12	G213
		3 1/4”	NW	10K1	48”	20G @13.0 plf.	G229
		3 1/2”	NW	10K1	48”	20G @14.0 plf. Min. Area Top & Bottom Chord 1.12 Sq. inch	G256
		3 1/2”	NW	12K1, 18LH02	Unrestricted	—	D216
	Gypsum Board	3”	NW	10K1	48”	20G @13.0 plf.	G523
		2 3/4”	LW, NW	10K1	48”	20G @13.0 plf.	G529

FIRE-RESISTANCE RATINGS WITH STEEL JOISTS

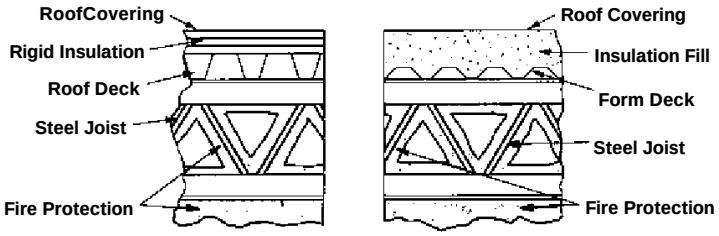
ROOF-CEILING ASSEMBLIES WITH MEMBRANE PROTECTION



Restrained Assembly Rating	Type of Protection System	Built Up Roof		Minimum Joist Size See Note #3 & #4	Maximum Joist Spacing See Note #3	Primary Support Member Min. Depth & Wt. Number	U.L. Design
		Type of Insulation	Metal Deck Min. Size				
1 Hr.	Exposed Grid	Rigid Insulation	26 Ga.	10K1	48”	20G @20.00 plf.	P211
			22 Ga. 28 Ga.	12K3 12K3	72” 48”	20G @13.0 plf. or W8x18	P214
			26 Ga. 24,22 Ga.	12K1 12K1	60” 72”	—	P224
			26,24,22 Ga.	12K1	72”	20G @13.0 plf.	P225
			24 Ga.	12K3	48”	—	P227
			26 Ga.	12K3	72”	20G @13.0 plf.	P230
			26 Ga.	12K5 or 14K4	48”	W6x12	P250
			22 Ga.	10K1	48”	W6x12	P254
		Insulating Fill	26,22Ga.	12K1	72”	20G @14.0 plf.	P231
			28 Ga.	10K1	72”	20G @13.0 plf.	P246
			28,26 Ga.	12K1	72”	20G @13.0 plf.	P251
			28 Ga.	10K1	72”	W8x15	P255
			28,26 GA.	12K1	72”	20g @13.0 plf.	P261
	Gypsum	Insulating Fill	26 Ga. 24 Ga.	12K3 12K3	48” 60”	W8x24	P509
1 1/2 Hr.	Exposed Grid	Rigid Insulation	26,24,22GA.	12K1	72”	20G @13.0 plf.	P225
			24 Ga.	12K3	48”	—	P227
			26 Ga.	12K5, 14K4	48”	W6x12	P250
		Insulating Fill	26,22 Ga.	12K1	72”	20G @14.0 plf.	P231
			28,26 Ga.	12K1	72”	20G @13.0 plf.	P251
	Metal Lathe	Rigid Insulation	22 Ga.	12K5 14k3	72”	—	P404
2 Hr.	Exposed Grid	Insulating Fill	18,16 Ga.	12K1	72”	20G @13.0 plf.	P251
		Rigid Insulation	24 Ga.	10K1	72”	W6x12	P237
	Metal Lathe	Rigid Insulation	22 Ga.	12K5,14K3	72”	—	P404
	Gypsum Board	Rigid Insulation	22 Ga.	10K1	48”	—	P514
3 Hr.	Metal Lathe	Insulating Fill	28,22 Ga.	10K1	48”	—	P405

FIRE-RESISTANCE RATINGS WITH STEEL JOISTS

ROOF-CEILING ASSEMBLIES WITH DIRECT APPLIED PROTECTION



Restrained Assembly Rating	Type of Protection System	Built Up Roof		Minimum Joist Size See Note #3 & #4	Maximum Joist Spacing See Note #5	Primary Support Member Min. Depth & Wt.	U.L. Design Number
		Type of Insulation	Metal Deck Min. Size				
1 Hr. 1 1/2 Hr. 2 Hr.	Cementitious	Rigid Insulation	22 Ga.	14K4 or LH	Unrestricted	20G @13.0 plf.	P701
			22 Ga.	14K4	Unrestricted	20G @13.0 plf.	P711
	Sprayed Fiber	Rigid Insulation	22 Ga	16K6	Unrestricted	–	P801
			22 Ga	10K1	Unrestricted	20G @13.0 plf.	P815
			22 Ga.	12K3	Unrestricted	–	P816
			22 Ga.	12K3	Unrestricted	20G @13.0 plf.	P817
			22 Ga.	12K1	Unrestricted	20G @13.0 plf.	P818
	Cementitious and Sprayed Fiber	Insulating Fill	22 Ga.	14K4	96"	20G @13.0 plf.	P902
			24 Ga.	12K5, 14K3	96"	–	P907
			28 Ga.	12K5, 14K3	96"	–	P920
			24 Ga.	12K5	96"	20G @13.0 plf.	P921
			24 Ga.	12K3	96"	–	P922
			22 Ga	12K3	96"	20G @13.0 plf.	P923

NOTES:

1. The **UNDERWRITERS LABORATORY FIRE RESISTANCE DIRECTORY** lists hundreds of assemblies and their fire ratings. As a convenience a selected number of assemblies are listed on 3 preceding pages. This listing is intended as a guide only and the *specifying professional* must refer to the U.L. Directory for complete design information.
2. The maximum joist spacing shown for Floor-Ceiling Assemblies may be increased from the spacing listed in the U.L. Directory to a maximum of 48 inches on center, provided the floor slab meets the structural requirements and the spacing of hanger wires supporting the ceiling is not increased.
3. Some U.L. Design Assemblies stipulate minimum size materials for Steel Joist and Joist Girder components, and/or bridging. It is the responsibility of the *specifying professional* to show all special requirements on the Structural Drawings.
4. Some *U.L. Fire Assembly Designs* stipulate an allowable maximum joist design stress level less than the 30 ksi (207MPa) used in the K-Series Joist Specifications.

   It is the *responsibility of the specifying professional* to apply the proper stress level reductions (if required) when selecting Joists and/or Joist Girders.

   To adjust the stress level of K-Series Joists or Joist Girders multiply the design load by the required factor [30/26 (207/179), 30/24 (207/165), 30/22 (207/1520)], and then using this increased load select a Joist or Joist Girder from the load and/or weight tables.
5. Some U.L. Roof-Ceiling Design assemblies using direct applied protection limit the spacing of the joists for certain types and gages of metal decking – refer to the U.L. Directory for this information.

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.**

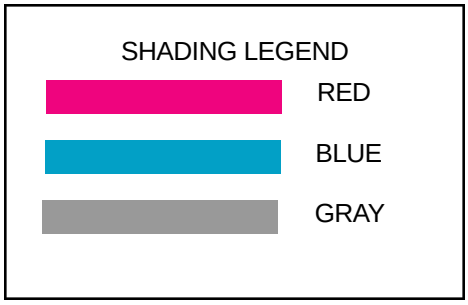
You will note that the tables have been shaded to match the load tables. This shading indicates when bolted cross bridging needs to be installed per the Steel Joist Institute specification for a particular joist series.

IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.

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 diagional 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.



ECONOMICAL JOIST GUIDE
Combined K, VS, LH & DLH Series Load Table

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
10' LENGTH			
10K 1	550	550	5.0
11' LENGTH			
10K 1	550	542	5.0
12' LENGTH			
10K 1	550	455	5.0
13' LENGTH			
10K 1	479	363	5.0
12K 1	550	510	5.0
14' LENGTH			
10K 1	412	289	5.0
14K 1	550	550	5.2
15' LENGTH			
10K 1	358	234	5.0
12K 1	434	344	5.0
14K 1	511	475	5.2
14K 3	550	507	5.9
16' LENGTH			
10K 1	313	192	5.0
12K 1	380	282	5.0
14K 1	448	390	5.2
12K 3	476	351	5.7
14K 3	550	467	5.9
17' LENGTH			
10K 1	277	159	5.0
12K 1	336	234	5.0
14K 1	395	324	5.2
12K 3	420	291	5.7
16K 2	512	488	5.5
16K 3	550	526	6.3
18' LENGTH			
10K 1	246	134	5.0
12K 1	299	197	5.0
14K 1	352	272	5.2
12K 3	374	245	5.5
14K 3	441	339	5.8
16K 2	456	409	5.5
16K 3	508	456	6.3
14K 4	530	397	6.7
14K 6	550	408	6.9
19' LENGTH			
10K1	221	113	5.0
12K1	268	167	5.0
14K1	315	230	5.2
12K3	335	207	5.6
16K2	408	347	5.5
16K3	455	386	6.3
18K3	514	494	6.6
16K4	547	452	7.0
16K5	550	455	7.2
20' LENGTH			
12K 1	241	142	5.0
14K 1	284	197	5.2
12K 3	302	177	5.5

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
20' LENGTH (Cont.)			
16K2	368	297	5.5
16K3	410	330	6.2
18K3	463	423	6.5
16K4	493	386	7.0
16K5	550	426	7.5
21' LENGTH			
12K1	218	123	5.0
14K1	257	170	5.2
12K3	273	153	5.5
14K3	322	212	5.7
16K2	333	255	5.5
16K3	371	285	6.3
18K3	420	364	6.6
16K4	447	333	7.0
20K3	468	453	6.7
16K5	503	373	7.5
18K4	506	426	7.2
20K4	550	520	7.6
22' LENGTH			
12K1	199	106	5.0
14K1	234	147	5.1
12K3	249	132	5.5
14K3	293	184	5.6
16K2	303	222	5.5
16K3	337	247	6.2
18K3	382	316	6.5
16K4	406	289	6.9
20K3	426	393	6.7
18K4	460	370	7.2
20K4	514	461	7.6
18K5	518	414	7.7
22K6	550	548	7.5
18LH2	554	439	8.8
18LH3	614	488	10
18LH4	715	566	11
18LH5	808	637	12
18LH6	955	738	14
18LH7	992	776	15
18LH8	1034	810	15
18LH9	1108	864	16
23' LENGTH			
14K1	214	128	5.1
12K3	227	116	5.5
16K2	277	194	5.5
16K3	308	216	6.0
18K3	349	276	6.6
16K4	371	252	7.0
20K3	389	344	6.7
18K4	420	323	7.2
20K4	469	402	7.6
18K5	473	362	7.7
22K6	550	518	7.7
18LH3	587	446	10
18LH4	684	517	11
20LH5	697	589	11
18LH5	772	582	13
18LH6	913	674	15
18LH7	949	709	15
20LH8	1024	858	15
18LH9	1059	790	16
20LH9	1121	935	16
20LH10	1209	1008	17
24' LENGTH			
14K1	196	113	5.1
12K3	208	101	5.6

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
24'LENGTH (Cont.)			
16K2	254	170	5.5
16K3	283	189	6.1
18K3	320	242	6.5
16K4	340	221	6.9
20K3	357	302	6.7
18K4	385	284	7.2
20K4	430	353	7.6
18K5	434	318	7.7
18K6	473	345	8.5
20K5	485	396	8.2
24K6	550	544	7.7
18LH3	562	409	10
20LH4	621	503	10
18LH4	655	474	11
20LH5	668	540	11
18LH5	739	534	12
18LH6	875	619	15
20LH6	892	713	15
18LH7	908	650	15
18LH8	946	679	16
20LH7	951	761	15
20LH8	980	787	16
18LH9	1014	725	17
20LH9	1073	857	16
20LH10	1158	924	17
25' LENGTH			
14K1	180	100	5.1
16K2	234	150	5.5
16K3	260	167	5.9
18K3	294	214	6.3
16K4	313	195	6.9
20K3	329	266	6.7
18K4	355	250	7.1
16K6	384	238	8.1
18K5	400	281	7.7
16K7	428	263	8.6
18K6	435	305	8.5
20K5	446	350	8.2
18K7	485	337	9.0
20K6	486	380	8.9
16K9	514	311	10
24K6	550	520	8.6
20LH4	596	463	10
18LH4	628	436	11
20LH5	641	497	11
19LH5	709	492	13
20LH6	855	656	15
18LH7	872	599	16
18LH8	908	625	16
20LH7	912	701	16
20LH8	941	724	16
18LH9	973	667	17
20LH9	1030	789	17
20LH10	1111	851	18
26' LENGTH			
14K1	166	83	5.1
16K2	216	133	5.5
16K3	240	148	5.9
18K3	272	190	6.4
16K4	289	173	6.8
20K3	304	236	6.7
18K4	328	222	7.2
20K4	366	277	7.6
18K5	369	249	7.7
22K4	404	338	8.0
20K5	412	310	8.2
20K6	449	337	8.9
22K5	455	379	8.8
26K5	542	535	8.8

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
26' LENGTH (Cont.)			
24K6	543	493	8.9
24K7	550	499	9.2
20LH4	574	428	11
18LH4	604	403	12
20LH5	616	459	11
18LH5	684	454	13
20LH6	822	606	15
18LH7	840	553	16
18LH8	876	577	16
20LH7	878	647	16
18LH9	936	616	17
20LH9	990	729	17
20LH10	1068	786	18
27' LENGTH			
14K1	154	79	5.1
16K2	200	119	5.5
16K3	223	132	5.9
18K3	252	169	6.3
16K4	268	155	6.8
20K3	281	211	6.6
18K4	303	198	7.0
20K4	339	247	7.4
18K5	342	222	7.7
22K4	374	301	8.0
20K5	382	277	8.2
20K6	416	301	8.8
22K5	422	337	8.7
24K6	503	439	8.6
26K6	547	519	8.9
26K7	550	522	9.1
20LH4	566	406	11
18LH4	571	367	12
20LH5	609	437	12
18LH5	648	414	14
20LH6	791	561	15
20LH7	845	599	16
20LH8	873	619	16
20LH9	953	675	17
20LH10	1028	724	19
28' LENGTH			
14K1	143	70	5.1
16K2	186	106	5.5
16K3	207	118	5.8
18K3	234	151	6.2
16K4	249	138	6.6
20K3	261	189	6.7
16K5	281	155	7.4
18K4	282	177	7.2
20K4	315	221	7.5
18K5	318	199	7.7
18K6	346	216	8.5
20K5	355	248	8.2
22K5	392	302	8.8
26K5	466	427	8.1
24K6	467	393	8.5
22K7	475	364	9.2
26K6	508	464	8.9
28K6	548	541	9.2
28K7	550	543	9.2
20LH4	558	386	12
20LH5	602	416	13
18LH5	614	378	14
20LH6	763	521	15
20LH7	814	556	16
20LH8	842	575	17
20LH9	918	626	18
20LH10	991	673	20

ECONOMICAL JOIST GUIDE
Combined K, VS, LH & DLH Series Load Table

29' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
16K3	193	106	5.9
18K3	218	136	6.2
16K4	232	124	6.7
20K3	243	170	6.6
18K4	263	159	7.0
20K4	293	199	7.4
18K5	296	179	7.7
22K4	324	242	7.8
20K5	330	223	8.1
22K5	365	272	8.7
26K5	434	384	8.0
24K6	435	354	8.4
28K6	511	486	9.1
28K7	550	522	9.5
18LH5	581	345	14
20LH5	595	395	13
18LH6	648	377	15
24LH6	708	567	14
24LH7	778	623	15
20LH7	786	518	16
24LH8	830	662	16
24LH9	977	775	18
24LH10	1033	822	19
24LH11	1088	861	20

30' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
18K3	203	123	6.1
16K4	216	112	6.6
20K3	227	153	6.5
18K4	245	144	6.9
20K4	274	179	7.3
18K5	276	161	7.7
20K5	308	201	8.0
20K6	336	218	8.7
22K6	371	266	8.2
26K5	405	346	8.0
24K6	406	319	8.4
26K6	441	377	8.8
28K6	477	439	9.0
26K7	492	417	9.2
28K7	531	486	9.5
26K8	544	457	10
26K9	550	459	10
20LH5	571	366	13
18LH6	605	340	15
24LH6	684	529	14
24LH7	752	582	15
24LH8	802	618	16
24LH9	944	724	18
24LH10	998	768	19
24LH11	1052	804	21

31' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
16K4	203	101	6.6
20K3	212	138	6.6
18K4	229	130	6.9
20K4	256	162	7.4
18K5	258	146	7.7
22K4	283	198	7.8
20K5	289	182	8.1
24K4	310	237	8.4
20K6	314	198	8.8
22K5	319	222	8.7
22K6	347	241	8.3
26K5	379	314	8.1
24K6	380	289	8.6
22K7	387	267	8.8
28K6	446	397	9.0
22K9	465	316	10
28K8	550	480	10
24LH6	662	495	14

31' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
24LH7	727	545	15
24LH8	776	579	16
24LH9	913	677	19
24LH10	965	718	20
24LH11	1017	752	21

32' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
16K2	142	71	5.5
16K3	158	79	5.8
18K3	178	101	6.1
20K4	240	147	7.2
18K5	242	132	7.6
20K5	271	165	7.9
24K4	290	215	8.1
22K5	299	201	8.4
22K6	326	219	8.4
26K5	356	285	8.0
24K6	357	262	8.5
26K6	387	309	8.6
28K6	418	361	8.9
22K9	436	287	10
28K7	466	400	9.5
26K8	477	375	9.9
28K8	515	433	10
28K9	549	463	11
24LH6	641	465	14
24LH7	704	511	15
24LH8	752	543	16
24LH9	884	635	19
24LH10	935	674	20
24LH11	985	705	20

33' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
18K3	168	92	6.1
20K4	226	134	7.3
22K4	249	164	7.9
20K5	254	150	8.1
24K4	273	196	8.3
20K6	277	163	8.7
22K5	281	183	8.5
26K5	334	259	8.0
24K6	335	239	8.3
26K6	364	282	8.6
28K6	393	329	8.8
26K7	406	312	9.1
28K7	438	364	9.4
28K8	484	399	10
26K9	488	370	11
28K9	527	432	11
28K10	532	435	11
24LH6	621	437	15
24LH7	683	480	16
24LH8	729	510	16
24LH9	857	597	19
24LH10	906	633	20
24LH11	955	663	22

34' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
18K3	158	84	6.1
20K3	176	105	6.4
18K4	190	98	6.9
18K6	233	120	8.2
24K4	257	179	8.1
20K6	261	149	8.6
22K5	265	167	8.4
26K5	315	237	7.9
26K6	343	257	8.5
28K6	370	300	8.8
26K7	382	285	9.1
28K7	412	333	9.4

34' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
24K9	423	286	10
28K8	456	364	10
28K9	496	395	11
28K10	516	410	11
28LH6	552	443	13
28LH7	624	499	14
28LH8	668	533	15
24LH8	707	480	17
28LH9	823	656	17
24LH9	832	562	20
28LH10	900	714	19
28LH11	965	763	20
28LH12	1060	835	23
28LH13	1105	872	23

35' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
18K3	149	77	6.1
20K3	166	96	6.5
18K4	179	90	6.9
20K4	200	112	7.3
20K6	246	137	8.7
26K5	297	217	7.9
26K6	323	236	8.5
28K6	349	275	8.7
26K7	360	261	9.0
28K7	389	305	9.4
28K8	430	333	9.9
26K9	433	310	10
28K9	468	361	11
28K10	501	389	11
28LH6	537	417	13
28LH7	606	471	14
28LH8	649	503	15
24LH8	677	447	17
28LH9	799	618	18
28LH10	874	673	20
28LH11	938	719	21
28LH12	1030	787	23
28LH13	1073	822	24

36' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
8K3	141	70	6.1
20K3	157	88	6.4
18K4	169	82	6.9
20K4	189	103	7.2
18K5	191	92	7.5
24K6	281	183	8.3
22K7	286	169	8.7
24K7	313	203	8.8
28K6	330	252	8.8
26K7	340	240	9.1
24K8	346	222	9.5
28K7	367	280	9.4
26K8	376	263	9.8
30K7	395	323	9.6
28K9	442	332	11
28K10	487	366	12
28LH6	521	394	13
28LH7	589	445	14
28LH8	631	475	15
24LH8	649	416	17
28LH9	777	584	18
28LH10	850	636	19
28LH11	911	680	21
28LH12	1001	744	23
28LH13	1043	777	24

37'LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
20K3	148	81	6.4
20K4	179	95	7.3

37' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
26K5	265	183	7.9
24K6	266	169	8.3
28K6	312	232	8.7
26K7	322	221	9.1
28K7	348	257	9.3
30K7	373	297	9.5
28K8	384	282	9.9
26K9	387	262	10
30K8	413	325	10
28K9	418	305	11
30K9	449	352	11
30K10	474	374	12
28LH6	507	373	13
24LH6	530	331	15
28LH7	573	421	15
24LH7	588	367	16
28LH8	614	449	16
24LH8	622	388	17
28LH9	755	553	18
28LH10	826	602	21
28LH11	886	643	21
28LH12	974	704	23
28LH13	1015	735	25

38' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
20K3	141	74	6.3
20K4	170	87	7.2
24K6	252	156	8.3
28K6	296	214	8.6
26K7	305	204	9.0
28K7	329	237	9.2
30K7	354	274	9.5
28K8	364	260	9.9
26K9	367	241	10
30K8	391	300	10
28K9	396	282	11
30K9	426	325	11
30K10	461	353	11
28LH6	494	354	13
24LH6	504	306	15
28LH7	558	399	15
24LH7	565	343	16
28LH8	597	426	16
28LH9	735	524	19
28LH10	804	570	20
28LH11	863	609	22
28LH12	948	667	23
28LH13	988	696	26

39' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
20K3	133	69	6.4
20K4	161	81	7.3
20K5	181	90	7.9
28K6	280	198	8.6
26K7	289	188	9.0
28K7	313	219	9.1
30K7	336	253	9.5
28K8	346	240	9.9
26K9	348	223	10
30K8	371	277	10
28K9	376	260	11
30K9	404	300	11
26K10	413	262	12
30K10	449	333	12
32LH7	486	388	13
23LH8	528	421	14
28LH7	543	379	15
32LH9	662	526	17
32LH10	732	581	18
32LH11	802	635	20
28LH11	841	578	22

ECONOMICAL JOIST GUIDE
Combined K, VS, LH & DLH Series Load Table

*** IT IS VERY IMPORTANT FOR JOIST SPECIFIERS AND ERECTORS TO KNOW THAT OSHA IS INTERPRETING 29CFR-1926.751(c)2 TO MEAN ALL JOIST FORTY (40) FEET (12192MM) AND LONGER TO REQUIRE A ROW OF BOLTED BRIDGING TO BE IN PLACE BEFORE SLACKENING OF HOISTING LINES.**

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
39' LENGTH (Cont.)			
32LH12	941	742	23
28LH13	962	661	26
32LH13	1050	825	25
32LH14	1081	850	26
32LH15	1117	878	26
40' LENGTH*			
20K3	127	64	6.4
20K4	153	75	7.2
22K4	169	91	7.6
20K5	172	84	7.9
24K7	253	148	8.9
26K7	275	174	9.0
28K7	297	203	9.1
30K7	319	234	9.4
28K8	328	222	9.9
26K9	331	207	10
28K9	357	241	11
30K9	384	278	11
26K10	393	243	12
30K10	438	315	12
32LH7	474	368	13
32LH8	514	400	14
28LH7	529	360	15
32LH9	645	500	16
32LH10	713	552	18
32LH11	782	604	20
32LH12	918	705	23
32LH13	1024	784	26
32LH14	1054	807	26
32LH15	1089	834	27
41' LENGTH*			
22K4	161	85	7.6
24K4	176	101	8.0
24K7	241	137	8.9
26K7	262	162	9.0
24K8	266	150	9.5
24K9	290	162	10
30K7	303	217	9.5
26K9	315	192	10
28K9	340	224	11
30K9	365	258	11
26K10	374	225	12
30K10	427	300	12
32LH7	462	351	13
32LH8	502	380	14
28LH7	516	342	16
32LH9	630	476	17
32LH10	696	525	19
32LH11	762	574	21
28LH11	799	523	23
32LH12	895	671	23
32LH13	998	746	26
32LH14	1028	768	26
32LH15	1062	794	28
42'LENGTH*			
22K4	153	79	7.6
24K7	229	127	8.9
26K7	249	150	9.0
24K8	253	139	9.6
28K7	269	175	9.2
26K8	275	164	9.7
30K7	289	202	9.5
26K9	300	178	10
30K8	320	221	10
28K9	324	208	11
30K9	348	240	11
26K10	356	210	12

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
42' LENGTH (Cont.)			
28K10	384	245	12
30K10	413	282	12
30K11	417	284	12
32LH7	451	334	14
32LH8	490	362	15
28LH7	505	326	16
28LH8	540	348	16
32LH9	614	453	17
32LH10	679	500	19
32LH11	744	547	21
32LH12	874	639	24
32LH13	974	710	26
32LH14	1003	732	27
32LH15	1037	756	28
43' LENGTH*			
22K4	146	73	7.5
24K4	160	88	8.0
26K5	196	116	7.9
30K7	276	188	9.3
26K9	286	166	10
30K8	305	206	10
28K9	309	194	11
30K9	332	223	11
26K10	339	195	12
28K10	367	228	12
30K10	394	263	12
30K11	407	270	13
36LH8	434	354	13
32LH7	441	318	14
32LH8	478	346	15
36LH9	555	451	16
36LH10	612	499	17
36LH11	668	543	18
32LH11	727	522	21
36LH12	799	647	21
32LH12	853	610	25
36LH13	940	758	25
32LH13	952	678	27
36LH14	1036	833	28
36LH15	1092	877	29
44' LENGTH*			
22K4	139	68	7.5
24K4	153	82	8.1
22K5	157	76	8.3
26K5	187	108	7.9
26K6	204	118	8.5
24K7	209	110	8.9
28K6	220	137	8.6
30K8	291	192	10
28K9	295	181	11
30K9	317	208	11
26K10	324	182	12
28K10	350	212	12
30K10	376	245	12
30K11	398	258	13
36LH8	424	338	13
32LH7	431	304	14
32LH8	467	330	15
36LH9	543	431	16
36LH10	598	476	17
36LH11	653	518	18
36LH12	781	617	21
32LH12	834	582	25
36LH13	918	724	25
36LH14	1012	795	28
36LH15	1067	837	29

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
45' LENGTH*			
24K4	146	76	7.8
26K5	179	101	7.9
26K6	194	110	8.5
28K6	210	128	8.6
26K7	217	122	9.0
24K8	220	113	9.5
28K7	234	142	9.2
24K10	285	144	12
26K10	310	170	12
28K10	334	198	12
30K10	359	229	12
30K11	389	246	13
36LH8	414	323	13
32LH7	421	291	14
32LH8	457	315	15
36LH9	531	412	16
36LH10	584	455	17
36LH11	638	495	19
36LH12	763	590	21
32LH12	815	556	26
36LH13	898	692	25
36LH14	990	760	28
36LH15	1043	800	29
46' LENGTH*			
24K4	139	71	7.9
26K5	171	95	7.9
26K6	186	103	8.5
28K6	201	120	8.6
26K7	207	114	9.1
24K8	211	106	9.6
26K8	229	125	9.7
26K10	296	159	12
28K10	320	186	12
30K10	344	214	12
30K11	380	236	14
36LH8	405	309	13
32LH7	412	278	14
28LH7	427	251	16
32LH8	447	302	16
36LH9	519	394	16
36LH10	572	435	18
36LH11	624	474	19
32LH11	679	455	22
36LH12	747	564	23
32LH12	797	532	26
36LH13	878	662	26
36LH14	968	727	28
36LH15	1020	765	30
47' LENGTH*			
24K4	133	67	7.9
26K5	164	89	7.9
26K6	178	96	8.5
28K6	192	112	8.6
24K8	202	99	9.6
24K10	261	126	12
26K10	284	149	12
28K10	306	174	12
30K10	329	201	12
36LH7	360	270	12
30K11	372	226	14
36LH8	396	296	13
32LH7	403	266	15
28LH7	410	236	16
32LH8	437	289	16
28LH8	438	525	17
36LH9	508	377	17
36LH10	559	417	18
36LH11	611	454	20
32LH11	664	436	22

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
47' LENGTH (Cont.)			
36LH12	731	541	23
32LH12	780	510	26
36LH13	859	634	26
32LH13	870	566	28
36LH14	947	696	29
36LH15	999	733	30
48' LENGTH*			
24K4	128	63	7.9
26K5	157	83	7.8
26K6	171	90	8.4
24K7	175	85	8.9
28K6	184	105	8.6
24K6	194	93	9.6
24K10	250	118	12
26K10	272	140	12
28K10	294	163	12
30K10	315	188	12
30K12	365	216	14
36LH8	388	284	14
28LH7	394	222	16
32LH8	428	277	16
36LH9	497	362	17
36LH10	548	400	18
36LH11	598	435	20
32LH11	650	418	23
36LH12	715	518	23
32LH12	764	489	27
36LH13	841	607	26
36LH14	927	667	29
36LH15	978	703	31
40LH15	1009	810	31
40LH16	1112	890	34
49'LENGTH*			
26K5	150	78	7.9
26K6	164	85	8.4
28K6	177	99	8.6
26K7	183	94	9.1
28K7	197	110	9.3
26K8	202	103	9.7
30K7	212	127	9.4
28K8	218	120	9.9
26K9	220	112	10
30K8	234	139	10
30K10	303	177	12
30K11	347	202	14
30K12	357	207	14
28LH7	379	209	16
32LH8	419	266	16
36LH9	487	347	17
36LH10	536	383	18
36LH11	586	417	20
32LH11	637	401	23
36LH12	701	497	24
32LH12	748	469	27
36LH13	824	583	28
32LH13	834	521	30
32LH14	859	536	31
36LH14	908	640	30
36LH15	958	674	31
40LH15	988	777	31
40LH16	1089	854	34
50' LENGTH*			
26K5	144	73	7.9
26K6	157	80	8.5
26K7	175	89	9.1
28K7	189	103	9.3
26K8	194	97	9.7

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Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
50' LENGTH* (Cont.)			
30K7	203	119	9.4
26K9	211	105	10
28K9	228	123	11
30K9	245	141	11
26K10	250	124	12
28K10	270	144	12
30K11	333	190	14
30K12	350	199	14
36LH8	372	262	14
32LH8	411	255	16
36LH9	477	333	17
36LH10	526	368	18
36LH11	574	400	21
32LH11	625	385	23
36LH12	687	477	23
36LH13	807	559	28
36LH14	890	615	30
36LH15	938	647	32
40LH15	968	746	31
40LH16	1067	820	34
51' LENGTH*			
26K5	139	69	7.9
26K6	151	75	8.5
28K6	163	88	8.6
26K7	168	83	9.1
28K7	182	97	9.3
26K8	186	91	9.8
26K9	203	99	10
28K9	219	115	11
30K9	235	133	11
26K10	241	116	12
28K10	260	136	12
30K10	279	157	12
30K11	320	179	14
30K12	343	192	15
28LH7	352	186	16
36LH8	365	251	14
32LH8	397	242	16
36LH9	468	320	17
36LH10	515	354	19
36LH11	563	385	21
32LH11	602	363	23
36LH12	673	459	24
36LH13	791	538	28
32LH13	801	480	30
36LH14	872	591	31
36LH15	920	622	33
40LH15	949	717	31
40LH16	1046	788	33
52' LENGTH*			
26K5	133	65	7.9
26K6	145	71	8.4
28K6	157	83	8.6
26K7	162	79	9.1
28K7	175	92	9.3
26K8	179	86	9.7
26K9	195	93	10
28K9	210	109	11
30K9	226	126	11
26K10	231	110	12
28K10	250	128	12
30K10	268	148	12
28K12	325	165	15
30K12	336	184	15
28LH7	339	176	16
32LH8	383	229	16
36LH9	459	308	18
36LH10	505	340	19
36LH11	552	370	21

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52' LENGTH (Cont.)			
32LH11	580	343	23
36LH12	660	441	25
36LH13	776	517	28
36LH14	855	568	31
36LH15	902	598	33
40LH15	931	690	31
40LH16	1026	758	34
53' LENGTH*			
28K6	151	78	8.6
28K7	168	87	9.2
30K7	181	100	9.4
28K8	186	95	9.9
28K9	203	103	11
30K9	218	119	11
28K10	240	121	12
30K10	258	140	12
40LH8	315	233	12
30K12	330	177	16
44LH9	380	309	14
36LH9	450	296	18
44LH11	454	368	16
32LH9	463	270	19
36LH10	496	327	19
36LH11	541	356	21
44LH12	562	454	19
36LH12	647	424	25
36LH13	761	498	28
44LH14	767	616	26
36LH14	839	547	31
36LH15	885	575	34
44LH15	892	716	31
40LH15	913	664	32
44LH16	1029	824	34
44LH17	1105	880	37
54' LENGTH*			
28K6	145	74	8.7
28K7	162	82	9.2
30K7	174	94	9.4
28K8	179	89	9.9
28K9	195	97	11
30K9	209	112	11
28K10	232	114	12
30K10	249	132	12
30K11	285	150	14
40LH8	309	225	13
36LH7	313	204	13
30K12	324	170	16
44LH9	373	298	14
36LH9	442	285	18
44LH11	445	354	16
32LH9	447	256	19
36LH10	486	315	19
40LH11	488	350	18
36LH11	531	343	22
44LH12	552	437	19
36LH12	635	409	25
44LH13	654	518	23
36LH13	747	479	29
44LH14	753	594	26
36LH14	824	527	32
36LH15	868	554	34
44LH15	876	690	31
40LH15	896	639	33
44LH16	1010	793	34
44LH17	1084	848	37
55' LENGTH*			
28K6	140	70	8.6

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
55' LENGTH (Cont.)			
28K7	156	77	9.3
30K7	168	89	9.4
28K8	173	85	9.9
30K8	185	98	10
28K9	188	92	11
30K9	202	106	11
28K10	223	108	12
30K10	240	125	12
40LH8	304	216	13
36LH7	307	197	13
30K12	312	161	16
44LH9	366	287	15
36LH9	434	275	18
40LH10	439	312	17
36LH10	477	304	20
36LH11	521	330	22
32LH11	522	292	24
44LH12	541	421	20
36LH12	624	394	25
44LH13	642	499	23
36LH13	734	462	29
44LH14	739	572	26
36LH14	809	507	32
36LH15	852	534	34
44LH15	860	665	31
40LH15	880	616	33
44LH16	991	765	34
44LH17	1065	817	36
56' LENGTH*			
28K6	135	66	8.6
28K7	151	73	9.2
30K7	162	84	9.4
28K8	166	80	9.9
30K8	179	92	10
28K9	181	87	11
30K9	195	100	11
28K10	215	102	12
30K10	231	118	12
30K11	265	135	14
40LH8	298	209	13
30K12	301	153	16
44LH9	359	277	15
36LH9	426	265	18
44LH11	429	329	17
40LH10	431	301	17
36LH10	469	293	21
40LH11	471	326	19
36LH11	512	319	23
44LH12	532	406	20
36LH12	613	380	25
44LH13	631	482	23
40LH13	675	465	26
36LH13	720	445	30
44LH14	726	552	27
32LH14	738	395	33
36LH14	794	489	34
36LH15	837	515	35
44LH15	844	641	30
40LH15	864	594	33
44LH16	974	737	35
44LH17	1046	788	37
57' LENGTH*			
30K7	156	80	9.4
30K8	173	88	10
30K9	188	95	11
30K10	223	112	12
30K11	256	128	14
40LH8	293	201	13
48LH10	353	293	15

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
57' LENGTH (Cont.)			
48LH11	383	316	15
36LH9	418	256	18
44LH11	422	318	17
40LH10	424	290	17
36LH10	461	283	21
36LH11	503	308	22
36LH12	602	367	25
44LH13	619	465	23
40LH13	664	449	26
36LH13	708	430	30
32LH14	713	374	33
36LH14	780	472	34
36LH15	822	497	36
44LH14	829	619	31
40LH15	849	573	33
48LH16	905	737	31
44LH16	956	711	36
44LH17	1027	761	38
58' LENGTH*			
30K7	151	76	9.4
30K8	167	83	10
30K9	181	90	11
30K10	215	106	12
30K11	247	121	14
40LH8	288	195	13
44LH9	347	258	15
48LH11	376	305	15
40LH9	378	254	17
44LH10	383	284	16
32LH9	391	208	19
44LH11	414	307	17
40LH10	416	280	18
36LH10	454	273	21
36LH11	495	297	22
36LH12	593	354	25
44LH13	609	449	23
36LH13	697	415	30
44LH14	701	514	28
36LH14	768	456	35
36LH15	809	480	36
44LH15	815	597	31
48LH16	890	712	31
40LH16	919	608	37
44LH16	940	687	37
48LH17	999	796	37
44LH17	1009	734	40
59' LENGTH*			
30K7	146	72	9.4
30K8	161	79	10
30K9	175	86	11
30K10	208	101	12
40LH8	283	188	13
48LH10	341	273	14
44LH10	377	274	16
32LH9	379	198	19
44LH11	407	296	17
36LH10	440	260	20
36LH11	480	283	23
36LH12	575	338	25
44LH13	598	434	24
36LH13	675	395	30
44LH14	689	497	28
36LH14	755	434	35
36LH15	795	464	36
44LH15	801	577	31
40LH15	820	535	34
48LH16	874	688	32
40LH16	903	588	37
44LH16	924	664	37

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Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
59' LENGTH* (Cont.)			
48LH17	982	769	37
44LH17	992	710	39
60' LENGTH*			
30K7	141	69	9.4
30K8	156	75	10
30K9	169	81	11
30K10	201	96	12
30K11	231	109	14
40LH8	278	182	13
48LH10	335	264	15
44LH10	370	265	16
44LH11	401	287	17
36LH10	426	248	20
40LH11	439	283	19
36LH11	465	269	23
36LH12	557	322	25
44LH13	588	419	25
36LH13	654	376	30
44LH14	677	480	28
36LH14	729	412	34
48LH15	746	577	28
36LH15	781	448	36
44LH15	788	558	31
48LH16	860	665	32
44LH16	908	642	36
48LH17	965	744	37
44LH17	975	686	39
61' LENGTH			
40LH8	274	176	13
48LH10	330	256	15
44LH10	364	257	16
44LH11	394	277	17
40LH10	396	253	18
36LH10	413	236	21
40LH11	432	274	21
36LH11	451	257	23
44LH12	488	342	21
40LH12	526	334	25
44LH13	579	405	25
40LH13	620	391	28
48LH14	638	487	26
44LH14	666	464	28
48LH15	734	558	29
44LH15	775	540	31
40LH15	793	500	36
48LH16	846	643	33
44LH16	893	621	37
48LH17	949	719	37
44LH17	959	664	39
62' LENGTH			
40LH8	269	170	14
48LH10	324	247	15
44LH10	358	248	17
44LH11	388	268	18
40LH10	389	245	19
36LH10	401	225	21
40LH11	425	265	21
36LH11	438	246	23
44LH12	480	331	21
40LH12	517	323	25
44LH13	569	392	25
40LH13	610	379	29
48LH14	628	472	26
44LH14	655	450	29
52DLH14	736	584	29
44LH15	762	522	31
52DLH15	827	658	32

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
62' LENGTH (Cont.)			
48LH16	832	623	33
44LH16	879	601	37
52DLH16	892	732	34
48LH17	934	696	37
44LH17	944	642	41
52DLH17	1026	835	40
63' LENGTH			
40LH8	265	165	14
48LH10	319	239	15
40LH9	348	215	18
44LH10	353	240	17
44LH11	381	260	18
40LH10	383	237	19
36LH10	389	215	21
40LH11	418	257	21
36LH11	425	234	23
44LH12	472	321	22
40LH12	509	313	25
44LH13	560	380	25
40LH13	600	367	28
52DLH13	634	506	26
44LH14	645	435	29
52DLH14	724	565	29
44LH15	750	506	31
52DLH15	814	637	32
48LH16	819	603	33
44LH16	865	582	37
52DLH16	878	708	35
48LH17	919	674	38
44LH17	929	622	40
52DLH17	1010	809	40
64' LENGTH			
40LH8	261	160	15
48LH10	314	232	15
40LH9	342	209	18
44LH10	347	233	17
44LH11	375	252	18
40LH10	377	230	19
36LH10	378	206	21
40LH11	412	249	21
48LH12	430	314	19
44LH12	465	311	22
36LH12	493	267	25
44LH13	551	368	25
40LH13	591	355	28
52DLH13	625	490	26
44LH14	635	422	29
52DLH14	713	547	29
44LH15	738	490	31
52DLH15	801	617	32
48LH16	806	584	34
52DLH16	864	686	35
48LH17	905	653	39
44LH17	914	602	43
52DLH17	994	783	40
65' LENGTH			
40LH8	257	155	15
48LH10	309	225	15
44LH10	342	226	17
44LH11	370	244	18
40LH10	371	223	19
40LH11	405	241	21
48LH12	424	305	20
44LH12	458	301	23
36LH12	478	255	25
40LH12	493	294	25
52DLH12	506	392	22

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
65' LENGTH (Cont.)			
44LH13	543	357	26
40LH13	581	344	28
52DLH13	614	475	26
44LH14	625	409	29
52DLH14	702	531	30
44LH15	727	475	31
52DLH15	789	598	33
52DLH16	851	665	34
44LH17	900	584	43
52DLH17	979	759	40
66' LENGTH			
40LH8	254	150	15
48LH10	305	216	16
44LH10	337	219	17
44LH11	364	237	18
40LH10	367	216	20
40LH11	399	234	22
48LH12	417	295	20
44LH12	451	292	23
40LH12	486	285	25
52DLH12	498	380	23
44LH13	535	346	26
52DLH13	605	461	26
44LH14	615	396	31
52DLH14	691	515	30
44LH15	716	461	31
40LH15	734	427	36
52DLH15	777	580	34
48LH16	781	549	35
52DLH16	838	645	37
44LH17	886	566	43
52DLH17	964	736	40
67' LENGTH			
40LH8	247	144	15
44LH9	300	193	16
40LH9	323	188	18
44LH10	332	212	18
44LH11	359	230	18
56DLH11	422	363	20
44LH12	444	283	23
36LH12	450	232	25
40LH12	472	273	25
52DLH12	491	369	23
44LH13	527	336	26
48LH14	581	404	27
52DLH13	596	447	27
44LH14	606	385	30
40LH14	638	367	34
48LH15	668	462	31
52DLH14	681	499	31
44LH15	705	447	31
40LH15	712	408	36
52DLH15	765	563	34
48LH16	770	533	35
52DLH16	825	626	37
48LH17	864	596	40
44LH17	873	549	44
52DLH17	950	715	40
68' LENGTH			
40LH8	241	138	15
44LH9	296	187	17
40LH9	315	180	18
44LH10	327	206	18
56DLH11	415	352	20
44LH12	437	275	23
40LH12	459	261	25
44LH13	519	326	26

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
68' LENGTH (Cont.)			
48LH14	572	392	28
52DLH13	587	434	27
44LH14	597	373	30
48LH15	658	449	32
52DLH14	671	485	31
44LH15	695	434	31
52DLH15	754	546	34
48LH16	758	517	36
52DLH16	813	608	37
48LH17	851	578	41
44LH17	860	533	45
52DLH17	935	694	42
69' LENGTH			
40LH8	234	132	15
4LH9	291	182	17
40LH9	306	173	18
44LH10	322	200	18
40LH10	338	190	20
44LH11	348	216	20
56DLH11	409	342	21
44LH12	431	267	23
40LH12	447	251	25
48LH13	478	323	24
44LH13	511	317	29
52DLH13	578	421	27
44LH14	588	363	31
48LH15	648	436	32
52DLH14	661	471	31
44LH15	684	421	31
56DLH15	735	568	32
52DLH15	743	530	34
48LH16	747	502	36
52DLH16	801	590	38
48LH17	839	562	41
44LH17	848	518	45
52DLH17	922	674	44
70' LENGTH			
40LH8	228	127	15
40LH9	298	166	18
44LH10	317	195	18
40LH10	329	183	20
44LH11	343	210	20
36LH11	348	173	23
40LH11	358	198	22
56DLH11	403	332	21
44LH12	425	259	24
40LH12	435	241	25
52DLH12	469	338	24
48LH13	471	313	24
44LH13	504	307	27
48LH14	556	370	29
52DLH13	570	409	29
44LH14	580	352	31
48LH15	639	423	32
52DLH14	652	457	31
44LH15	675	409	31
52DLH15	732	515	34
48LH16	736	488	36
52DLH16	789	573	37
48LH17	827	546	41
44LH17	835	503	45
56DLH17	901	700	40
52DLH17	909	654	44
71' LENGTH			
40LH8	222	122	15
44LH9	283	172	17
40LH9	291	160	18

ECONOMICAL JOIST GUIDE

Combined K, VS, LH & DLH Series Load Table

71' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
44LH10	313	189	18
40LH10	321	176	20
44LH11	338	204	20
40LH11	349	190	22
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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
48LH13	451	288	26
44LH13	483	283	29
52DLH13	546	376	28
44LH14	556	324	31
52DLH14	625	420	32
44LH15	647	376	31
52DLH15	702	474	37
48LH16	706	448	37
52DLH16	757	527	38
44LH17	801	462	47
52DLH17	871	601	44
60DLH18	989	774	46

74' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
40LH8	206	108	15
40LH9	269	141	18
44LH9	272	158	18
40LH10	297	156	20
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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
52DLH	387	263	23
52DLH12	432	286	26
48LH13	433	266	26
44LH13	454	254	28
48LH14	511	313	30
52DLH13	525	347	30
52DLH14	600	388	34
44LH15	608	339	31
60DLH15	652	497	32
52DLH15	674	437	37
60DLH16	716	556	36
52DLH16	727	486	40
48LH17	761	462	45

76' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
44LH17	769	428	47
60DLH17	823	632	41
52DLH17	837	555	45
60DLH18	950	714	47

77' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
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

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
40LH8	183	90	15
44LH9	242	131	18
44LH10	266	144	19
48LH11	276	164	18
44LH11	289	157	21
52DLH10	339	222	22
44LH12	356	192	25
52DLH11	372	243	24
52DLH12	416	265	26
48LH13	417	246	26
44LH13	423	228	29
52DLH13	505	321	30
56DLH14	562	384	31
52DLH14	577	359	34
52DLH15	648	404	38

79' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
48LH16	652	383	40
60DLH16	689	514	38
56DLH16	693	482	38
52DLH16	699	450	41
48LH17	732	428	45
64DLH17	788	622	41
60DLH17	792	585	44
52DLH17	805	513	48
60DLH18	914	660	47

80' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
40LH8	178	86	15
40LH9	233	113	18
44LH9	236	127	18
40LH10	255	124	20
44LH10	260	139	19
48LH11	272	160	18
44LH11	282	151	21
52DLH10	335	217	22
44LH12	347	185	25
52DLH11	368	237	24
52DLH12	410	258	26
48LH13	412	240	26
44LH13	413	220	29
48LH14	486	283	32
52DLH13	498	313	31
60DLH14	527	380	30
56DLH14	555	374	32
52DLH14	570	350	35
52DLH15	640	394	38
64DLH16	675	533	35
60DLH16	680	501	38
56DLH16	684	470	38
52DLH16	690	438	41
48LH17	723	417	47
60DLH17	782	570	44
52DLH17	795	500	48
60DLH18	903	644	48

81' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
44LH9	231	122	18
44LH10	254	134	19
48LH11	269	156	18
44LH11	276	146	21
52DLH10	331	211	22
44LH12	339	179	25
48LH12	340	196	23
52DLH11	363	231	23
52DLH12	405	252	26
48LH13	407	234	27
48LH14	480	276	32
52DLH13	492	305	31
56DLH14	548	365	32
52DLH14	563	341	35
52DLH15	632	384	38
64DLH16	667	520	36
60DLH16	672	489	38
52DLH16	682	428	42
48LH17	714	407	47
64DLH17	769	592	41
52DLH17	785	488	48
64DLH18	888	669	47
60DLH18	891	628	53
68DLH19	998	803	52

82' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
44LH9	226	118	18
44LH10	249	130	19
44LH11	269	140	21
44LH12	331	172	25

ECONOMICAL JOIST GUIDE
Combined K, VS, LH & DLH Series Load Table

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
82' LENGTH (Cont.)			
52DLH11	359	225	24
52DLH12	400	246	27
48LH13	402	228	28
44LH14	446	231	31
52DLH13	486	298	31
60DLH14	514	362	31
44LH15	524	271	31
52DLH14	556	333	35
60DLH15	604	427	34
52DLH15	624	375	39
64DLH16	659	508	36
60DLH16	664	477	38
52DLH16	673	417	44
48LH17	706	397	47
52DLH17	775	476	48
64DLH18	877	653	46
60DLH18	880	613	53
68DLH19	986	783	52
83' LENGTH			
44LH9	221	114	18
44LH10	243	125	19
44LH11	264	136	21
44LH12	323	166	25
48LH12	329	185	24
52DLH11	354	220	25
52DLH12	396	240	27
44LH14	436	223	31
60DLH13	457	332	28
56DLH13	473	311	30
52DLH13	480	291	32
60DLH14	508	353	30
44LH15	512	261	31
52DLH14	549	325	35
60DLH15	596	417	34
56DLH15	611	392	37
60DLH16	656	466	38
52DLH16	665	407	44
48LH690	383	47	
60DLH17	754	529	45
52DLH17	766	465	48
64DLH18	866	637	48
60DLH	18	870	598
53			
68DLH19	974	**765**	**54**
84' LENGTH			
44LH9	216	110	18
44LH10	238	121	19
44LH11	258	131	21
44LH12	315	160	25
52DLH10	319	196	23
48LH12	322	179	24
52DLH11	350	215	25
52DLH12	391	234	27
44LH14	425	215	31
56DLH13	467	304	30
52DLH13	475	284	32
44LH15	500	252	31
60DLH14	502	345	31
48LH15	521	287	36
52DLH14	543	317	37
60DLH15	589	407	34
56DLH15	604	383	38
60DLH16	648	455	39
52DLH16	657	397	44
48LH17	675	371	47
60DLH17	745	517	45
56DLH17	751	485	46
52DLH17	757	454	52
64DLH18	856	622	48
60DLH18	859	584	53

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
84' LENGTH (Cont.)			
68DLH19	962	746	54
85' LENGTH			
44LH9	211	108	18
44LH10	233	117	19
44LH11	252	127	21
44LH12	308	155	25
52DLH10	315	192	24
52DLH11	346	210	25
52DLH12	386	229	27
44LH14	415	207	31
56DLH13	462	297	30
52DLH13	469	277	32
44LH15	488	243	31
60DLH14	496	336	31
48LH15	510	278	36
52DLH14	536	310	37
60DLH15	582	397	34
56DLH15	596	374	38
60DLH16	640	444	39
56DLH16	644	416	41
52DLH16	650	388	45
48LH17	660	358	47
72DLH17	690	564	38
60DLH17	736	505	45
56DLH17	742	474	46
52DLH17	748	443	52
64DLH18	846	607	47
60DLH18	849	570	53
68DLH19	951	729	54
86' LENGTH			
44LH9	207	103	18
44LH10	228	113	19
44LH11	247	123	21
44LH12	300	149	25
52DLH10	312	187	24
52DLH11	342	205	26
52DLH12	382	223	27
44LH14	406	200	31
56DLH13	456	290	30
52DLH13	463	271	33
60DLH14	490	329	32
48LH15	499	269	36
52DLH14	530	302	37
60DLH15	575	388	36
56DLH15	589	365	38
52DLH15	595	341	41
68DLH16	626	488	37
64DLH16	628	461	38
60DLH16	633	434	40
56DLH16	636	407	41
52DLH16	642	379	45
48LH17	646	346	47
72DLH17	682	551	38
60DLH17	727	493	45
56DLH17	733	463	48
52DLH17	739	433	52
68DLH18	816	627	46
60DLH18	839	557	53
68DLH19	940	712	54
87' LENGTH			
44LH9	202	99	18
44LH10	223	110	19
44LH11	242	119	21
44LH12	293	144	25
52DLH10	308	183	24
52DLH11	338	200	26
52DLH12	377	218	27

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
\87' LENGTH (Cont.)			
44LH14	396	193	31
48LH14	425	227	32
56DLH13	451	283	31
52DLH13	458	264	33
44LH15	466	227	31
60DLH14	485	321	32
48LH15	488	260	36
52DLH14	524	295	37
64DLH15	552	403	35
56DLH15	583	357	38
52DLH15	588	333	41
64DLH16	621	451	38
56DLH16	629	397	41
52DLH16	635	370	45
72DLH17	674	538	39
60DLH17	719	482	46
56DLH17	725	452	48
52DLH17	730	423	52
68DLH18	807	613	46
60DLH18	830	544	53
68DLH19	929	696	54
88' LENGTH			
44LH9	198	96	18
44LH10	218	106	19
44LH11	236	115	21
44LH12	287	139	25
52DLH10	305	179	23
52DLH11	334	196	26
52DLH12	373	213	27
44LH14	387	187	31
48LH14	416	220	32
56DLH13	446	277	31
52DLH13	453	258	33
44LH15	455	219	31
60DLH14	479	314	32
52DLH14	518	289	37
64DLH15	545	393	35
60DLH15	562	370	37
56DLH15	582	325	41
64DLH16	614	440	38
52DLH16	627	362	45
72DLH17	666	526	41
60DLH17	711	471	46
56DLH17	716	442	48
52DLH17	722	413	52
72DLH18	780	594	47
68DLH18	797	599	48
60DLH18	820	532	53
72DLH19	915	674	54
68DLH19	918	680	56
89' LENGTH			
48LH10	212	112	18
48LH11	229	120	20
52DLH10	301	175	23
52DLH11	330	191	26
52DLH12	369	209	28
48LH14	407	212	32
52DLH13	448	253	33
60DLH14	474	307	32
52DLH14	512	282	38
64DLH15	539	385	34
60DLH15	556	362	37
52DLH15	575	318	41
64DLH16	607	431	38
60DLH16	611	405	40
52DLH16	620	354	45
72DLH17	659	514	41
60DLH17	703	460	46
56DLH17	708	432	49

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
89' LENGTH (Cont.)			
52DLH17	714	404	52
72DLH18	771	581	47
68DLH18	788	586	48
60DLH18	811	520	53
72DLH19	905	659	54
68DLH19	908	665	55
90' LENGTH			
48LH10	208	108	18
48LH11	225	117	20
52DLH10	298	171	24
52DLH11	327	187	26
48LH13	338	175	29
52DLH12	365	204	29
48LH14	399	206	32
60DLH13	422	282	30
56DLH13	436	265	31
52DLH13	443	247	34
60DLH14	468	300	32
52DLH14	507	276	38
64DLH15	533	376	34
60DLH15	550	354	37
64DLH16	600	421	39
60DLH16	604	396	40
52DLH16	614	346	45
72DLH17	651	503	40
60DLH17	695	450	46
72DLH18	763	568	46
68DLH18	780	573	48
60DLH18	802	508	53
72DLH19	894	644	54
68DLH19	898	650	55
91' LENGTH			
48LH10	204	105	18
48LH11	220	113	20
52DLH10	291	165	24
52DLH11	320	181	26
48LH13	332	170	29
52DLH12	357	197	29
48LH14	390	199	32
60DLH13	417	276	30
52DLH13	433	239	33
48LH15	448	228	36
64DLH14	460	313	32
60DLH14	463	293	34
52DLH14	497	266	38
64DLH15	527	368	35
60DLH15	544	346	37
64DLH16	593	412	39
60DLH16	598	387	42
52DLH16	601	335	45
60DLH17	687	440	46
72DLH18	754	555	46
67DLH18	771	560	48
60DLH18	793	497	53
72DLH19	885	630	54
68DLH19	888	636	55
92' LENGTH			
48LH10	200	102	18
48LH11	216	110	20
52DLH10	285	159	24
52DLH11	313	174	26
48LH13	325	164	29
52DLH12	349	191	29
56DLH12	352	209	27
48LH14	383	193	32
60DLH13	412	270	30
52DLH13	424	231	33

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Combined K, VS, LH & DLH Series Load Table

92' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
56DLH13	427	253	32
48LH15	439	221	36
60DLH14	458	287	34
52DLH14	486	258	38
64DLH15	521	360	35
60DLH15	538	339	38
52DLH15	545	291	42
56DLH15	551	319	41
60DLH16	591	379	42
56DLH16	595	355	45
60DLH17	680	431	46
72DLH18	746	543	46
68DLH18	763	548	48
60DLH18	784	486	53
68DLH19	878	622	55

93' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
48LH10	196	99	18
48LH11	212	106	20
52DLH10	279	154	23
52DLH11	306	169	26
48LH13	318	159	29
52DLH12	342	185	29
56DLH12	349	204	27
48LH14	375	187	32
52DLH13	414	224	33
48LH15	430	214	36
60DLH14	453	281	34
52DLH14	476	249	38
56DLH14	477	277	37
60DLH15	532	332	38
52DLH15	533	282	42
56DLH15	545	312	41
68DLH16	578	417	38
60DLH16	585	371	42
56DLH16	588	348	45
64DLH17	669	448	46
60DLH17	672	421	49
56DLH17	678	395	51
68DLH18	754	536	48
64DLH18	773	507	53
60DLH18	776	476	56
68DLH19	869	609	54

94' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
48LH10	192	96	18
48LH11	208	103	20
52DLH10	273	150	23
52DLH11	299	164	26
48LH13	312	154	29
52DLH12	334	179	29
56DLH12	345	200	27
48LH14	367	181	32
52DLH13	406	216	33
48LH15	422	208	36
60DLH14	448	275	34
52DLH14	466	242	37
52DLH14	472	271	37
60DLH15	526	325	38
56DLH15	539	306	41
68DLH16	572	408	38
60DLH16	579	363	41
56DLH16	582	340	45
72DLH17	623	461	42
60DLH17	665	412	49
56DLH17	670	387	51
72DLH18	730	520	47
60DLH18	768	466	55
72DLH19	856	590	55
68DLH19	859	596	58

95' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
48LH10	188	93	18
48LH11	204	100	20
52DLH10	267	145	23
52DLH11	293	158	26
52DLH12	327	173	29
56DLH12	341	196	27
48LH14	360	176	32
52DLH13	397	209	33
60DLH13	399	253	31
48LH15	413	201	36
60DLH14	444	269	34
52DLH14	457	234	37
56DLH14	467	265	37
68DLH15	477	340	34
60DLH15	521	318	38
56DLH15	533	299	41
68DLH16	566	400	38
64DLH16	568	378	41
60DLH16	573	355	44
56DLH16	576	333	45
72DLH17	617	451	42
60DLH17	658	404	48
56DLH17	663	379	51
72DLH18	723	509	48
60DLH18	760	456	56
72DLH19	847	578	55
68DLH19	850	583	60

96' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
48LH10	185	90	18
48LH11	200	91	20
52DLH10	261	140	24
52DLH11	287	153	26
48LH13	300	145	29
52DLH12	320	168	29
60DLH12	325	205	27
56DLH12	338	192	29
48LH14	353	171	32
52DLH13	389	203	33
60DLH13	395	248	32
48LH15	405	195	36
64DLH14	436	281	32
60DLH14	439	264	34
52DLH14	447	227	38
56DLH14	462	260	38
60DLH15	515	311	38
48LH17	525	252	47
64DLH16	562	370	41
60DLH16	567	348	44
56DLH16	570	326	45
72DLH17	610	442	42
64DLH17	648	421	46
60DLH17	651	395	49
56DLH17	656	371	51
72DLH18	715	499	48
64DLH18	748	476	53
60DLH18	752	447	57
72DLH19	838	566	55
68DLH19	841	571	60

97' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	256	136	24
52DLH11	281	149	26
52DLH12	314	163	29
60DLH12	322	201	27
56DLH12	334	188	28
52DLH13	381	197	33
60DLH13	391	243	32
60DLH14	434	258	34
52DLH14	438	220	38
56DLH14	457	254	38

97' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
64DLH15	494	324	37
60DLH15	510	305	40
72DLH16	537	380	38
64DLH16	557	362	42
60DLH16	561	341	44
72DLH17	604	433	42
64DLH17	641	412	46
56DLH17	650	363	51
72DLH18	708	488	48
64DLH18	741	466	53
60DLH18	744	437	59
72DLH19	830	554	55
68DLH19	833	559	60

98' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	251	132	24
52DLH11	275	144	26
52DLH12	307	158	29
60DLH12	318	197	27
56DLH12	331	184	30
52DLH13	373	191	33
60DLH13	387	238	32
56DLH13	401	223	34
60DLH14	430	253	34
56DLH14	453	249	38
64DLH15	489	317	37
60DLH15	505	298	40
72DLH16	531	373	39
64DLH16	551	355	42
60DLH16	555	334	44
56DLH16	559	313	46
72DLH17	598	424	43
64DLH17	635	404	46
56DLH17	643	356	51
72DLH18	700	478	48
64DLH18	733	456	53
60DLH18	736	428	59
72DLH19	821	543	55
68DLH19	824	548	60

99' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	246	128	24
52DLH11	270	140	26
52DLH12	301	153	29
60DLH12	315	193	27
56DLH12	324	178	29
52DLH13	366	185	33
60DLH13	383	233	33
56DLH13	394	216	33
60DLH14	426	248	34
56DLH14	444	242	38
64DLH15	484	311	37
60DLH15	500	292	40
64DLH16	545	348	42
60DLH16	549	327	44
72DLH17	592	415	43
64DLH17	628	395	46
56DLH17	630	345	51
72DLH18	693	469	48
64DLH18	726	447	53
60DLH18	729	420	59
72DLH19	813	532	58
68DLH19	816	537	61

100' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	241	124	24
52DLH11	264	135	26
52DLH12	295	149	29
60DLH12	312	189	27
56DLH12	318	173	29

100' LENGTH (Cont.)

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH13	358	180	33
60DLH13	379	228	32
56DLH13	386	209	33
52DLH14	413	201	37
60DLH14	421	243	35
56DLH14	435	234	38
64DLH15	480	304	37
60DLH15	495	287	41
72DLH16	521	358	39
60DLH16	544	320	45
72DLH17	586	407	44
64DLH17	622	388	49
72DLH18	686	459	48
64DLH18	718	438	55
60DLH18	721	411	59
72DLH19	805	521	58
68DLH19	808	526	61

101' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	236	120	23
52DLH11	259	132	26
56DLH12	289	144	29
60DLH12	309	185	27
56DLH12	312	168	29
52DLH13	351	174	33
60DLH13	375	224	32
56DLH13	379	204	33
52DLH14	405	194	37
60DLH14	417	238	35
56DLH14	427	228	37
68DLH15	449	301	35
64DLH15	475	298	39
60DLH15	490	281	41
60DLH16	538	314	46
72DLH17	580	399	44
64DLH17	616	380	49
60DLH17	619	357	52
72DLH18	679	450	51
64DLH18	711	430	56
60DLH18	714	403	59
72DLH19	797	511	60
68DLH19	800	516	61

102' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	231	116	23
52DLH11	254	128	26
52DLH12	284	140	29
56DLH12	306	163	29
52DLH13	344	170	33
64DLH13	358	232	31
60DLH13	372	219	34
52DLH14	397	189	37
60DLH14	413	233	35
56DLH14	419	221	38
68DLH15	445	295	35
64DLH15	470	292	39
60DLH15	485	275	41
60DLH16	533	308	46
72DLH17	574	391	45
64DLH17	610	372	49
60DLH17	613	350	52
72DLH18	673	442	51
60DLH18	707	395	59
72DLH19	789	501	60
68DLH19	792	506	61

103' LENGTH

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
52DLH10	227	114	24
52DLH11	249	124	26
52DLH12	278	135	29

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Combined K, VS, LH & DLH Series Load Table

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
103' LENGTH (Cont.)			
60DLH12	303	178	28
52DLH13	338	164	33
64DLH13	355	228	32
60DLH13	368	215	34
52DLH14	390	184	38
64DLH14	406	244	34
60DLH14	409	229	37
56DLH14	411	214	38
68DLH15	440	289	35
64DLH15	466	287	39
60DLH15	480	270	41
68DLH16	522	340	41
60DLH16	528	302	46
72DLH17	569	384	45
68DLH17	588	386	47
60DLH17	607	343	52
64DLH18	697	413	56
60DLH18	700	388	59
72DLH19	781	491	60
68DLH19	784	496	61
104' LENGTH			
52DLH10	223	110	24
52DLH11	244	120	26
52DLH12	273	132	29
56DLH12	295	153	30
60DLH12	300	175	29
52DLH13	331	159	33
64DLH13	351	224	32
56DLH13	358	186	34
60DLH13	365	211	34
52DLH14	382	178	38
64DLH14	402	239	34
60DLH14	405	224	37
64DLH15	461	281	39
60DLH15	476	265	43
72DLH16	501	331	40
68DLH16	517	333	41
60DLH16	523	296	46
72DLH17	563	376	45
68DLH17	583	379	46
60DLH17	601	337	52
72DLH18	660	425	53
68DLH18	674	428	53
60DLH18	694	380	59
68DLH19	777	486	61
105' LENGTH			
56DLH11	253	136	26
56DLH12	289	150	29
60DLH12	297	171	29
64DLH13	348	219	32
56DLH13	351	181	34
60DLH13	361	207	34
64DLH14	398	235	34
60DLH14	401	220	37
68DLH15	432	278	37
64DLH15	457	276	40
60DLH15	471	260	43
72DLH16	496	324	40
68DLH16	512	327	42
60DLH16	518	290	45
68DLH17	577	372	46
60DLH17	595	330	52
68DLH18	668	420	53
60DLH18	687	373	59
68DLH19	769	477	61
106' LENGTH			
56DLH11	248	133	26

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
106' LENGTH (Cont.)			
56DLH12	284	145	29
60DLH12	295	168	29
56DLH13	344	175	34
60DLH13	358	203	34
64DLH14	395	230	34
60DLH14	398	216	37
68DLH15	428	273	37
64DLH15	452	271	40
60DLH15	467	255	43
72DLH16	491	318	41
64DLH16	509	303	45
60DLH16	513	285	46
68DLH17	572	365	46
60DLH17	590	324	52
68DLH18	662	412	53
60DLH18	681	366	59
68DLH19	762	468	60
107' LENGTH			
56DLH11	244	129	36
56DLH12	278	141	29
60DLH12	289	163	29
60DLH13	351	197	34
64DLH14	391	226	34
68DLH15	424	268	38
64DLH15	448	266	40
60DLH15	458	248	43
72DLH16	487	312	41
64DLH16	504	298	46
72DLH17	548	355	46
68DLH17	566	358	49
60DLH17	579	315	52
64DLH17	581	338	52
68DLH18	655	405	53
60DLH18	668	357	59
64DLH18	671	383	59
68DLH19	755	459	61
108' LENGTH			
56DLH11	239	125	26
56DLH12	273	137	29
60DLH12	284	158	29
60DLH13	345	191	34
60DLH14	383	205	37
64DLH14	387	222	36
72DLH15	417	260	36
68DLH15	420	263	38
64DLH15	444	261	40
60DLH15	450	242	43
72DLH16	482	307	41
64DLH16	500	292	46
72DLH17	542	349	46
60DLH17	569	306	52
64DLH17	576	332	52
60DLH18	656	346	59
64DLH18	665	376	59
72DLH19	745	447	61
68DLH19	748	451	61
109' LENGTH			
56DLH11	235	122	26
56DLH12	268	133	29
60DLH12	279	154	29
56DLH13	325	161	33
60DLH13	339	187	34
60DLH14	376	199	37
64DLH14	384	218	37
72DLH15	413	255	36
68DLH15	416	258	38
64DLH15	440	256	41

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
109' LENGTH (Cont.)			
60DLH15	442	235	43
72DLH16	478	301	41
64DLH16	495	287	46
72DLH17	537	342	47
60DLH17	558	298	52
64DLH17	571	326	52
60DLH18	644	337	59
64DLH18	659	369	59
72DLH19	738	439	61
68DLH19	741	443	67
110' LENGTH			
56DLH11	231	118	26
60DLH12	274	150	29
60DLH13	333	181	34
60DLH14	370	193	37
64DLH14	380	214	37
72DLH15	409	251	36
68DLH15	412	254	38
60DLH15	434	228	43
64DLH15	436	251	41
72DLH16	473	295	41
60DLH16	476	255	46
64DLH16	491	281	46
72DLH17	533	336	47
60DLH17	548	290	52
68DLH17	551	338	49
64DLH17	565	320	52
60DLH18	632	327	59
68DLH18	637	383	56
64DLH18	653	362	59
72DLH19	731	431	61
68DLH19	734	434	67
111' LENGTH			
56 DLH11	227	115	26
56 DLH12	259	126	30
60 DLH12	270	146	29
64 DLH12	271	161	28
56 DLH13	314	152	34
60 DLH13	327	176	34
64 DLH13	329	196	33
60 DLH14	363	189	37
64 DLH14	377	210	37
68 DLH15	408	249	38
64 DLH15	432	247	41
56 DLH16	436	214	46
64 DLH16	486	276	46
72 DLH17	528	330	47
68 DLH17	546	332	49
64 DLH17	560	314	52
72 DLH18	618	373	53
60 DLH18	621	319	59
64 DLH18	647	356	59
72 DLH19	725	423	61
68 DLH19	727	427	67
112' LENGTH			
56 DLH11	223	113	26
56 DLH12	254	123	29
60 DLH12	265	142	29
64 DLH12	269	159	29
56 DLH13	308	149	33
60 DLH13	322	171	34
64 DLH13	326	193	34
60 DLH14	356	183	37
64 DLH14	373	206	37
68 DLH15	405	245	38
64 DLH15	428	242	41
64 DLH16	482	271	46

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
112' LENGTH (Cont.)			
72 DLH17	523	324	47
64 DLH17	555	309	52
72 DLH18	613	366	53
64 DLH18	641	349	59
72 DLH19	718	415	61
68 DLH19	721	419	67
113' LENGTH			
60 DLH12	261	138	29
64 DLH12	266	156	29
60 DLH13	316	167	34
64 DLH13	323	189	34
60 DLH14	350	178	37
64 DLH14	370	203	37
68 DLH15	401	240	39
64 DLH15	424	238	41
60 DLH16	451	235	46
72 DLH16	461	280	43
68 DLH16	476	282	45
72 DLH17	518	318	47
60 DLH17	519	267	52
64 DLH17	550	303	52
72 DLH18	607	360	53
64 DLH18	636	343	59
72 DLH19	712	408	62
68 DLH19	714	412	67
114' LENGTH			
60 DLH12	256	134	29
64 DLH12	264	153	29
60 DLH13	311	163	34
64 DLH13	321	186	34
60 DLH14	344	173	37
64 DLH14	367	199	37
68 DLH15	398	236	39
60 DLH15	405	205	43
64 DLH15	421	234	43
60 DLH16	444	228	46
72 DLH16	457	275	43
68 DLH16	472	277	46
64 DLH16	474	262	46
72 DLH 17	514	313	50
64 DLH17	546	298	52
60 DLH18	589	394	59
64 DLH18	630	337	59
72 DLH19	706	401	64
68 DLH19	708	404	67
115' LENGTH			
60 DLH12	252	131	29
64 DLH12	259	150	29
60 DLH13	306	158	34
64 DLH13	315	181	34
60 DLH14	338	170	37
64 DLH14	360	193	37
68 DLH15	394	232	39
60 DLH15	398	200	43
64 DLH15	414	228	43
72 DLH16	453	270	43
68 DLH16	467	272	46
72 DLH17	509	307	50
64 DLH17	536	290	52
60 DLH18	578	286	59
72 DLH18	597	347	54
64 DLH18	619	328	59
68 DLH19	702	397	66
116' LENGTH			
60 DLH12	248	128	29

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Combined K, VS, LH & DLH Series Load Table

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
116' LENGTH (Cont.)			
64DLH12	255	146	29
60DLH13	301	154	34
64DLH13	310	176	34
60DLH14	332	165	37
64DLH14	354	189	37
68DLH15	391	228	39
60DLH15	392	194	43
64DLH15	407	223	43
60DLH16	428	217	46
68DLH16	463	268	46
60DLH17	493	247	52
72DLH17	505	302	50
64DLH17	527	283	52
60DLH18	568	279	59
64DLH18	608	320	59
68DLH19	696	391	66
117' LENGTH			
60DLH12	244	124	29
64DLH12	251	142	29
60DLH13	296	151	34
64DLH13	305	171	34
60DLH14	327	161	37
64DLH14	349	184	37
72DLH15	385	222	38
68DLH15	387	224	41
64DLH15	400	217	43
60DLH16	421	211	46
64DLH16	450	242	46
68DLH16	459	263	46
60DLH17	484	241	52
72DLH17	501	297	50
64DLH17	518	275	52
60DLH18	559	272	59
64DLH18	598	311	59
68DLH18	599	388	60
72DLH19	687	381	67
68DLH19	690	384	67
118' LENGTH			
60DLH12	240	121	29
64DLH12	247	138	29
60DLH13	291	147	34
60DLH14	321	156	37
64DLH14	343	179	37
72DLH15	382	218	38
68DLH15	384	220	41
64DLH15	394	211	43
60DLH16	414	206	46
72DLH16	441	257	45
68DLH16	456	259	46
72DLH17	496	292	50
64DLH17	509	268	52
68DLH17	513	294	53
60DLH18	549	266	59
64DLH18	587	304	59
68DLH18	594	333	60
72DLH19	682	374	67
68DLH19	684	377	67
119' LENGTH			
60DLH12	236	118	29
64DLH12	243	135	29
60DLH13	286	143	34
64DLH13	295	163	34
60DLH14	316	152	37
64DLH14	337	174	37
68DLH14	340	193	38
72DLH15	378	214	38
68DLH15	381	217	40

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
119' LENGTH (Cont.)			
64DLH15	387	206	43
60DLH16	407	201	46
72DLH16	437	252	45
68DLH16	452	254	46
72DLH17	492	287	49
64DLH17	501	262	52
68DLH17	509	289	53
60DLH18	540	259	59
64DLH18	578	296	59
68DLH18	589	327	60
72DLH19	676	368	67
68DLH19	678	371	67
120' LENGTH			
60DLH12	232	115	29
64DLH12	239	132	29
60DLH13	282	139	34
64DLH13	291	159	34
60DLH14	310	149	37
64DLH14	332	171	37
68DLH14	337	190	38
72DLH15	375	211	38
68DLH15	378	213	40
64DLH15	381	201	43
60DLH16	400	196	46
72DLH16	434	248	45
68DLH16	448	250	46
72DLH17	488	282	49
64DLH17	492	255	52
68DLH17	505	284	53
60DLH18	531	252	59
64DLH18	568	288	59
68DLH18	584	321	60
68DLH19	673	365	67
121' LENGTH			
64DLH12	235	129	29
64DLH13	286	155	34
64DLH14	326	166	37
68DLH14	334	187	38
72DLH15	372	207	40
68DLH15	375	209	40
72DLH16	430	244	45
68DLH16	444	246	49
72DLH17	484	278	49
68DLH17	501	280	53
64DLH18	559	282	59
68DLH18	579	316	60
68DLH19	667	359	67
122' LENGTH			
64DLH12	231	125	29
64DLH13	281	152	34
68DLH13	288	171	35
64DLH14	321	162	37
68DLH14	332	185	38
72DLH15	369	204	40
68DLH15	372	206	42
72DLH16	427	240	45
68DLH16	441	242	49
64DLH17	476	243	52
68DLH17	497	275	53
64DLH18	549	274	59
68DLH18	575	311	60
72DLH19	659	350	67
68DLH19	662	353	67
123' LENGTH			
64dlh12	228	122	29

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
123' LENGTH (Cont.)			
64DLH13	277	148	34
68DLH13	284	168	35
64DLH14	316	158	37
68DLH14	327	179	38
68DLH15	365	201	42
72DLH15	366	200	41
72DLH16	423	236	45
68DLH16	433	236	49
64DLH17	468	237	52
68DLH17	489	268	53
64DLH18	540	267	59
68DLH18	566	304	60
72DLH19	654	344	67
124' LENGTH			
64DLH12	224	119	29
64DLH13	273	144	34
68DLH13	279	164	35
64DLH14	311	154	37
68DLH14	322	175	38
68DLH15	360	196	42
72DLH15	363	197	41
64DLH16	401	203	46
72DLH16	420	232	47
68DLH16	427	230	49
64DLH17	461	231	52
68DLH17	481	262	53
64DLH18	532	261	59
68DLH18	557	297	60
72DLH19	649	339	68
125' LENGTH			
64DLH12	221	216	29
64DLH13	269	141	34
64DLH14	306	151	37
68DLH14	317	171	38
68DLH15	354	191	41
72DLH15	360	194	41
64DLH16	394	198	46
72DLH16	416	229	47
68DLH16	420	225	49
64DLH17	454	226	52
68DLH17	474	256	53
64DLH18	523	255	59
68DLH18	549	289	60
72DLH19	643	333	67
126' LENGTH			
64DLH12	218	114	29
64DLH13	264	131	34
64DLH14	301	147	37
68DLH14	312	167	38
72DLH15	357	191	41
64DLH16	388	193	46
72DLH16	413	225	47
64DLH17	446	220	52
68DLH17	467	249	53
64DLH18	515	249	59
68DLH18	540	283	60
72DLH18	544	289	59
72DLH19	638	328	67
127' LENGTH			
64DLH12	214	111	29
64DLH13	260	134	34
64DLH14	296	143	37
68DLH14	308	163	38
72DLH14	309	168	37
68DLH15	343	182	41

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
127' LENGTH (Cont.)			
72DLH15	354	188	41
64DLH16	382	189	46
72DLH16	410	221	47
64DLH17	439	215	52
72DLH17	461	252	53
64DLH18	507	243	59
68DLH18	532	276	60
72DLH18	540	284	59
72DLH19	633	323	67
128' LENGTH			
64DLH12	211	109	29
64DLH13	257	131	34
64DLH14	292	140	37
68DLH14	303	159	38
72DLH14	307	166	37
68DLH15	337	178	41
72DLH15	352	185	41
64DLH16	376	185	46
72DLH16	407	218	47
64DLH17	432	210	52
68DLH17	453	238	53
72DLH17	457	248	53
64DLH18	499	237	59
68DLH18	524	269	60
72DLH18	536	280	59
68DLH19	601	305	67
72DLH19	628	318	67
129' LENGTH			
68DLH13	259	145	35
68DLH14	299	155	38
72DLH14	305	163	38
72DLH15	349	182	41
72DLH16	403	215	49
68DLH17	446	232	53
72DLH17	454	244	53
68DLH18	516	263	60
72DLH18	532	276	59
72DLH19	623	313	67
130' LENGTH			
68DLH13	255	142	35
68DLH14	294	152	38
72DLH14	303	171	38
72DLH15	347	191	41
72DLH16	401	225	49
68DLH17	439	228	55
72DLH17	451	256	56
68DLH18	508	257	60
72DLH18	528	289	59
68DLH19	583	291	67
72DLH19	619	328	70
131' LENGTH			
68DLH13	**252**	**138**	**35**
68DLH14	**290**	**148**	**38**
72DLH14	**298**	**167**	**38**
68DLH15	**322**	**166**	**41**
72DLH15	**342**	**187**	**43**
72DLH16	**395**	**219**	**49**
68DLH17	**433**	**222**	**53**
72DLH17	**445**	**250**	**53**
68DLH18	**501**	**251**	**59**
72DLH18	**520**	**283**	**59**
68DLH19	**574**	**285**	**67**
72DLH19	**609**	**321**	**70**

ECONOMICAL JOIST GUIDE
Combined K, VS, LH & DLH Series Load Table

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
132' LENGTH			
68DLH13	248	135	35
68DLH14	286	145	38
72DLH14	294	163	38
68DLH15	317	162	41
72DLH15	336	183	43
68DLH16	376	190	49
72DLH16	390	214	49
68DLH17	427	217	53
72DLH17	438	245	56
68DLH18	493	246	59
72DLH18	512	276	59
68DLH19	565	278	67
72DLH19	600	313	70
133' LENGTH			
68DLH13	244	133	35
68DLH14	281	141	38
72OLH14	290	159	38
68DLH15	312	158	41
72DLH15	331	178	41
68DLH16	371	186	49
72DLH16	384	209	49
68DLH17	420	212	53
72DLH17	432	239	56
68DLH18	486	240	59
72DLH18	505	270	59
68DLH19	557	272	67
72DLH19	591	306	70
134' LENGTH			
68DLH13	241	130	35
68DLH14	277	138	38
72DLH14	285	155	38
68DLH15	308	155	41
72DLH15	326	174	41
68DLH16	365	182	49
72DLH16	378	205	49
72DLH17	426	233	53
68DLH18	479	234	60
72DLH18	497	265	59
68DLH19	548	266	67
72DLH19	582	300	70
135' LENGTH			
68DLH13	**237**	**127**	**35**
68DLH14	**273**	**135**	**38**
72DLH14	**281**	**152**	**38**
68DLH15	**303**	**152**	**42**
72DLH15	**322**	**171**	**42**
68DLH16	**360**	**178**	**49**
72DLH16	**373**	**200**	**49**
68DLH17	**408**	**203**	**53**
72DLH17	**420**	**228**	**53**
68DLH18	**472**	**230**	**60**
72DLH18	**490**	**258**	**59**
68DLH19	**540**	**260**	**67**
72DLH19	**573**	**293**	**70**
136' LENGTH			
68DLH13	234	124	35
68DLH14	269	133	38
72DLH14	277	149	38
68DLH15	299	148	41
72DLH15	317	167	42
68DLH16	354	174	49
72DLH16	368	196	49
68DLH17	403	198	53
72DLH17	414	224	56
68DLH18	465	225	60

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
136' LENGTH (Cont.)			
72DLH18	483	252	59
68DLH19	532	254	67
72DLH19	565	286	70
137' LENGTH			
72DLH14	274	146	38
72DLH15	312	163	41
72DLH16	363	191	49
72DLH17	408	218	53
72DLH18	479	247	59
72DLH19	557	280	70
138' LENGTH			
72DLH14	270	143	38
72DLH15	308	160	42
72DLH16	358	188	49
72DLH17	402	213	53
72DLH18	470	242	59
72DLH19	549	274	70
139' LENGTH (Cont.)			
72DLH14	266	139	38
72DLH15	303	156	41
72DLH16	353	183	49
72DLH17	397	209	53
72DLH18	463	236	59
72DLH19	541	541	70
140' LENGTH			
72DLH14	262	136	38
72DLH15	299	152	41
72DLH16	348	179	49
72DLH17	391	205	53
72DLH18	457	231	59
72DLH19	533	263	70
141' LENGTH			
72DLH14	259	133	38
72DLH15	295	150	42
72DLH16	343	175	49
72DLH17	386	200	53
72DLH18	450	227	59
72DLH19	526	257	70
142' LENGTH			
72DLH14	255	131	38
72DLH15	291	147	42
72DLH16	338	171	49
72DLH17	381	196	53
72DLH18	444	222	59
72DLH19	518	251	70
143' LENGTH			
72DLH14	**252**	**128**	**38**
72DLH15	**286**	**143**	**41**
72DLH16	**334**	**169**	**49**
72DLH17	**376**	**191**	**53**
72DLH18	**438**	**217**	**59**
72DLH19	**511**	**247**	**70**
144' LENGTH			
72DLH14	248	125	38
72DLH15	282	140	41
72DLH16	329	165	49
72DLH17	371	188	53

Joist Type	Allowable Loads (PLF) Total	Live	Joist Weight (lbs./ft.)
144' LENGTH (Cont.)			
72DLH 18	432	212	59
72DLH19	504	241	70

REC0MMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS

Adopted by the Steel Joist Institute April 7, 1931 - Revised to May 2, 1994 - Effective September 1, 1994.

SECTION 1. GENERAL

1.1 SCOPE

The practices and customs set forth herein are in accordance with good engineering practice, tend to insure 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 DEFINITION

The term Seller as used herein is defined as a company engaged in the manufacture and distribution of steel joists, Joist Girders and accessories. The term Material as used herein is defined as steel joists, Joist Girders and accessories.

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 applicable Steel Joist Institute specifications and table 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 applicable Steel Joist Institute Specifications of latest adoption, and this code. 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 TEST FOR K-SERIES STEEL JOIST CONSTRUCTION

When job tests on a structure are required, joists shall have bridging and top deck applied as used. In addition to the full dead load, the test panel shall sustain for one hour a test load of 1.65 times the design live load. After this test load has been removed for a minimum of 30 minutes, the remaining deflection shall not exceed 20% of the deflection caused by the test load. The weight of the test panel itself shall constitute the dead load of the construction and shall include the weight of the joists, bridging, top deck, slab, ceiling materials, etc. The design live load shall be the live load specified and in no case shall it be more than the published joist capacity less the dead load. The cost of such tests shall be borne by the purchaser.

SECTION 2. JOISTS AND ACCESSORIES

2.1 STEEL JOISTS AND JOIST GIRDERS

Steel joists and Joist Girders shall carry the designations and meet the requirements of the applicable Steel Joist Institute Specification and Table of latest adoption.

K-Series joists are furnished with parallel chords only, and with minimum standard end bearing depth of 21/2 inches (64 mm).

LH- and **DLH-**Series joists are furnished either underslung or square ended, with top chords either parallel, pitched one way or pitched two ways. Underslung types are furnished with standard end bearing depth of 5 inches (127 mm) for LH-Series. **DLH-**Series are furnished with standard end bearing depths of 5 inches (127 mm) for section numbers thru 17 and 7 1/2 inches (191 mm) for section numbers 18 and 19. The standard pitch is 1/8 inch in 12 inches (1:96). The nominal depth of a pitched Longspan Joist is taken at the center of the span

Joist Girders are furnished either underslung or square ended with top chords either parallel, pitched one way or pitched two ways. Under-slung types are furnished with a standard end bearing depth of 6 inches (152 mm) for Joist Girders weighing less than 60 pounds per lineal foot (89 kg/m), and 7 1/2 inches (191mm) for Joist Girders weighing 60 pounds per lineal foot (89 kg/m) or more.

The standard pitch is 1/8 inch in 12 inches (1:96). The nominal depth of a pitched Joist Girder is taken at the center of the span.

Because Longspan and Deep Long Span Joists may have exceptionally high end reactions, it is recommended that the supporting structure be designed to provide a minimum unit bearing pressure of 750 pounds per square inch (5171 Kilo Pascal).

2.2 SLOPED END BEARINGS

Where steel joists or Joist Girders are sloped, beveled ends or sloped shoes may be provided where the slope exceeds 1/4 inch in 12 inches (1:48). For Open Web Steel Joists, K-Series, bearing ends will not be beveled for slopes of 1/4 inch or less in 12 inches (1:48).

2.3 EXTENDED ENDS

Steel joist extended ends shall be in accordance with Manufacturer's Standard and shall meet the requirements of the Steel Joist Institute specification of latest adoption.

2.4 CEILING EXTENSIONS

Ceiling extensions shall be furnished to support ceilings which are to be attached 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 the ceiling.

TABLE 2.5.1a

K - SERIES JOIST

MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING

	**BRIDGING MATERIAL SIZE						
	Round Rod	Equal leg Angles					
SECTION NUMBER*	1/2" round (13mm) r = .13"	1 x 7/64 (25mm x 3mm) r = .20"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x 7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"	2 x 1/8 (51mm x 3mm) r = .40"	2-1/2 x 5/32 (64mm x 4mm) r = .50"
1 thru 9	3'- 3" (991mm)	5'- 0" (1524mm)	6'- 3" (1905mm)	7'- 6" (2286mm)	8'- 7" (2616mm)	10'- 0" (3048mm)	12'- 6" (3810mm)
10	3'- 0" (914mm)	4'- 8" (1422mm)	6'- 3" (1905mm)	7'- 6" (2286mm)	8'- 7" (2616mm)	10'- 0" (3048mm)	12'- 6" (3810mm)
11 and 12	2'- 7" (787mm)	4'- 0" (1219mm)	5'- 8" (1727mm)	7'- 6" (2286mm)	8'- 7" (2616mm)	10'- 0" (3048mm)	12'- 6" (3810mm)

* Refer to last digit(s) of Joist Designation
** Connection to Joist must resist 700 pounds (3114 N)

TABLE 2.5.1b

LH SERIES JOISTS

MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING
SPANS OVER 60' REQUIRE BOLTED DIAGONAL BRIDGING

	**BRIDGING ANGLE SIZE - (EQUAL LEG ANGLE)					
Section Number*	1 x 7/64 (25mm x 3mm) r = .20"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x 7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"	2 x 1/8 (52mm x 3mm) r = .40"	2-1/2 x 5/32 (64mm x 4mm) r = .50"
02, 03, 04	4'- 7" (1397mm)	6'- 3" (1905mm)	7'- 6" (2286mm)	8'- 9" (2667mm)	10'- 0" (3048mm)	12'- 4" (3759mm)
05 - 06	4'- 1" (1245mm)	5'- 9" (1753mm)	7'- 6" (2286mm)	8'- 9" (2667mm)	10'- 0" (3048mm)	12'- 4" (3759mm)
07 - 08	3'- 9" (1143mm)	5'- 1" (1549mm)	6'- 8" (2032mm)	8'- 6" (2590mm)	10'- 0" (3048mm)	12'- 4" (3759mm)
09 - 10		4'- 6" (1372mm)	6'- 0" (1829mm)	7'- 8" (2337mm)	10'- 0" (3048mm)	12'- 4" (3759mm)
11 - 12		4'- 1" (1245mm)	5'- 5" (1651mm)	6'- 10" (2083mm)	8'- 11" (2118mm)	12'- 4" (3759mm)
13 - 14		3' - 9" (1143mm)	4'- 1" (1245mm)	6'- 3" (1905mm)	8'- 2" (2489mm)	12'- 4" (3759mm)
15 - 16			4'- 3" (1295mm)	5'- 5" (1651mm)	7'- 1" (2159mm)	11'- 0" (3353mm)
17			4'- 0" (1219mm)	5'- 1" (1549mm)	6'- 8" (2032mm)	10'- 5" (3175mm)

* Refer to last two digits of Joist Designation
** Connection to Joist must resist force listed in Table 104.5.1

2.5 BRIDGING AND BRIDGING ANCHORS

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

(b) For the **K-** and **LH-**Series Joists horizontal bridging is recommended for spans up to and including 60 feet (18288 mm) except where Code or OSHA requirements for *erection stability* and/or the Steel Joist Institute Specifications require bolted diagonal bridging.

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

Refer to Section #5 in the **K-**Series Specifications and Section #105 in the **LH/DLH-** Specifications for Erection Stability requirements.

The ***l***/r ratio for horizontal bridging shall not exceed 300. The material sizes shown in TABLES 2.5.1a and 2.5.1b meet the criteria (page 120).

Horizontal bridging shall consist of two continuous steel members, one of which is attached to the top chord and the other attached to the bottom chord.

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

Diagonal bridging, when used, shall have an ***l***/r ratio not exceeding 200.

When the bridging members are connected at their point of intersection, the following table will meet the above specification.

TABLE 2.5.2

K, LH & DLH SERIES JOISTS

MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING

JOIST DEPTH	BRIDGING ANGLE SIZE - (EQUAL LEG ANGLES)				
	1 X 7/64 (25mm x 3mm) r = .20"	1-1/4 x 7/64 (32mm x 3mm) r = .25"	1-1/2 x 7/64 (38mm x 3mm) r = .30"	1-3/4 x 7/64 (45mm x 3mm) r = .35"	2x1/8 (51mm x 3mm) r = .40"
12	6'- 6" (1981mm)	8'- 3" (2514mm)	9'- 11" (3022mm)	11'- 7" (3530mm)	
14	6'- 6" (1981mm)	8'- 3" (2514mm)	9'- 11" (3022mm)	11'- 7" (3530mm)	
16	6'- 6" (1981mm)	8'- 2" (2489mm)	9'- 10" (2997mm)	11'- 6" (3505mm)	
18	6'- 6" (1981mm)	8'- 2" (2489mm)	9'- 10" (2997mm)	11'- 6" (3505mm)	
20	6'- 5" (1955mm)	8'- 2" (2489mm)	9'- 10" (2997mm)	11'- 6" (3505mm)	
22	6'- 4" (1930mm)	8'- 1" (2463mm)	9'- 10" (2997mm)	11'- 6" (3505mm)	
24	6'- 4" (1930mm)	8'- 1" (2463mm)	9'- 9" (2971mm)	11'- 5" (3479mm)	
26	6'- 3" (1905mm)	8'- 0" (2438mm)	9'- 9" (2971mm)	11'- 5" (3479mm)	
28	6'- 2" (1879mm)	8'- 0" (2438mm)	9'- 8" (2946mm)	11'- 5" (3479mm)	
30	6'- 2" (1879mm)	7'- 11" (2413mm)	9'- 8" (2946mm)	11'- 4" (3454mm)	
32	6'- 1" (1854mm)	7'- 10"(2387mm)	9'- 7" (2921mm)	11'- 4" (3454mm)	13'- 0 " (3962mm)
36		7'- 9" (2362mm)	9'- 6" (2895mm)	11'- 3" (3429mm)	12'- 11" (3973mm)
40		7'- 7" (2311mm)	9'- 5" (2870mm)	11'- 2" (3403mm)	12'- 10" (3911mm)
44		7'- 5" (2260mm)	9'- 3" (2819mm)	11'- 0" (3352mm)	12'- 9" (3886mm)
48		7'- 3" (2209mm)	9'- 2" (2794mm)	10'- 11" (3327mm)	12'- 8" (3860mm)
52			9'- 0" (2743mm)	10'- 9" (3276mm)	12'- 7" (3835mm)
56			8 - 10" (2692mm)	10'- 8" (3251mm)	12'- 5" (3784mm)
60			8'- 7" (2616mm)	10'- 6" (3200mm)	12'- 4" (3759mm)
64			8'- 5" (2565mm)	10'- 4" (3149mm)	12'- 2" (3708mm)
68			8'- 2" (2489mm)	10'- 2" (3098mm)	12'- 0" (3657mm)
72			8'- 0" (2438mm)	10'- 0" (3048mm)	11'-10" (3606mm)

MINIMUM A307 BOLT REQUIRED FOR CONNECTION

SERIES	*SECTION NUMBER	A307 BOLT DIAMETER
K	ALL	3/8" (9mm)
LH/DLH	2 - 12	3/8" (9mm)
LH/DLH	13 - 17	1/2" (12mm)
DLH	18 & 19	5/8" (15mm)

* Refer to last digit(s) of joist designation

2.6 HEADERS

Headers for Open Web Steel Joists, **K**-Series as outlined and defined in Section 5.2 (a) shall be furnished by the Seller. Such headers shall be any type standard with the manufacturer. Conditions involving headers shall be investigated and, if necessary, provisions made to provide a safe condition. Headers are not provided for Longspan Steel Joists, **LH**-Series, and Deep Longspan Steel Joists, **DLH**-Series.

2.7 BOTTOM CHORD LATERAL BRACING FOR JOIST GIRDERS

Bottom chord lateral bracing may be furnished to prevent lateral movement of the bottom chord of the Joist Girder and to prevent the ratio of chord length to radius of gyration from exceeding that specified. The lateral bracing shall be that which is standard with the manufacturer, and shall be of sufficient strength to properly resist any lateral force exerted by the bottom chord of the Joist Girder.

SECTION 3. MATERIALS

3.1 STEEL

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

3.2 PAINT

The shop coat of paint, when specified, shall comply with the applicable Steel Joist Institute specification of latest adoption.

SECTION 4. INSPECTION

All joist and Joist Girder inspections shall be made in accordance with the provision for inspection in the applicable Steel Joist Institute specification of latest adoption.

SECTION 5. ESTIMATING

5.1 PLANS FORBIDDING

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]).

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.

Location and magnitude of concentrated loads as defined in Section 5.5.

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 5.3 through 5.5.

Steel Joists

Joist Girders

Joist Extended Ends

Ceiling Extensions.

Extended bottom chord used as strut.

Bridging and bridging anchors.

Joist Girder bottom chord bracing.

Headers which are defined as members supported by and carrying Open Web Steel Joists, K-Series.

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 may be quoted and identified as separate items:

Headers for Longspan Steel Joists, **LH-**Series.

Headers for Deep Longspan Steel Joists, **DLH-**Series.

Reinforcement in slabs over joists.

Centering material 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.

Wood nailers.

Moment plates.

5.3 JOIST LOCATION AND SPACING

The maximum joist spacing shall be in accordance with the requirements of the applicable SJI specification and load table of latest adoption.

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

Open Web Steel Joists, **K-**Series, should be no closer than 6 inches (152 mm) to these supporting walls or members. Where partitions occur parallel to joists, there shall be at least one typical 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, less the live load, on a strip of floor one foot (305 mm) in width. Where such partitions extend less than one-third (1/3) of the span from the support, special spacing or additional joists shall not be required provided the loads do not exceed those in Section 5.5. When partitions occur normal to the joists, they shall be treated as concentrated loads, and joists shall be investigated as indicated in Section 5.5.

5.4 ACCESSORIES

Joist accessories standard with the manufacturer shall comply with applicable Steel Joist Institute specifications of latest adoption and shall be in accordance with Section 2 of this Code.

5.5 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 lineal foot" (Newtons per Meter) of joist. The Steel Joist Institute Weight Tables 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 (Kilo Newton) per panel point on the Joist Girder. When Joist Girders are required to support unequal panel point loads or other special loads, a load diagram should be provided on the structural drawings.

Loads such as Bulb "T"s, purlins, partitions, heavy pipes, monorail or tramrail type carrier, etc., running normal to the length of the joist, or a mechanical unit mounted on the joist, are concentrated loads. Where concentrated loads occur, the joist must be selected to carry the full combination of uniform load plus concentrated load. The magnitude and location of these concentrated loads shall be shown on the structural drawings when, in the opinion of the specifying professional, they may require special consideration by the manufacturer. Such joists shall be labeled "Special" on the structural drawings.

When Steel Joists are subjected to concentrated and/or varying loads, the specifying professional shall use the following procedure which will allow the:

1. Estimator to price the joists.
2. Joist manufacturer to design the joists properly.
3. Owner to obtain the most economical joists.

A. Sketch the joist(s) on the structural drawings showing <u>all</u> loads to be supported.

B. Determine the maximum moment in the joist and derive the <u>uniform</u> load that will produce that moment.

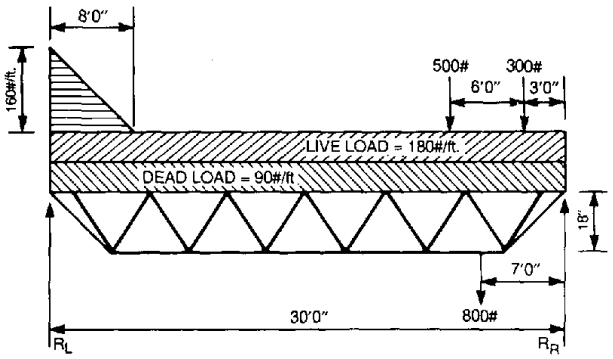
C. Determine the maximum end reaction and derive the <u>uniform</u> load that will produce that reaction.

D. Determine the maximum end reaction and derive the <u>uniform</u> load that will produce that reaction.

E. Place the designation under the sketch with the following note: "Joist supplier to design joist to support loads as shown above."

ESTIMATING JOIST SIZE FOR SPECIAL LOADINGS

EXAMPLE: U.S. CUSTOMARY UNITS



18K9 SP

(See Method of Joist Selection Below)
Joist supplier to design joist to support loads as shown above.

Total Load = $\frac{160}{2}$ (8) + (180 + 90)30 + 500
+ 800 + 300 = **10,300** lbs.

$R_L = \frac{160(8)}{2} + \left[\frac{30-8/3}{30}\right] \frac{(180+90)(30)}{2} + 500\left[\frac{9}{30}\right]$
$+ 800\left[\frac{7}{30}\right] + 300\left[\frac{3}{30}\right]$ =

R_L = **5000 llbs.**

R_R = **5340 lbs** Assume $R_R = \frac{W_{e1}(L)}{2}$, $W_{e1} = \frac{2(5340)}{30}$ = **356 lbs/ft.**

Point of Max. Mom. = Point of Zero Shear(V) = L_1
(dist. from rt. end of Jst.)

V = Zero = 5340 - (300+ 500+ 800) - (180+90) (L_1)

L_1 = 13.85 ft.

M @ L_1 = 5340 (13.85) - 300(10.85) -
800(6.86) - 500(4.85) - $\frac{(180+90)(13.85)^2}{2}$

M = **36,903 ft. lbs.**

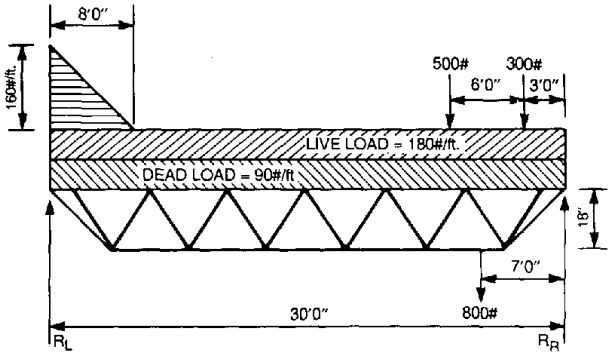
Assume $M = \frac{W_{e2}(L)^2}{8}$, $W_{e2} = \frac{8(36,903)}{(30)^2}$ **= 328 lbs/ft.**

Using W_{e1} = 356 lb/ft. @ SPAN = 30',
and D = 18"

Select 18K9 for total load (402) and live load (229) and call it: **18K9SP**

The specifying professional shall compare the equivalent uniform loads W_{e1}, & W_{e2} to the uniform loads tabulated in the **K**-Series Load Table. Loads in excess of the load table loads indicate that the specifying professional shall consider using additional joists to reduce the loading, or use the **LH**-Series Joist and make provisions for 5" deep bearing seats.

EXAMPLE: METRIC



18K9 SP

(See Method of Joist Selection Below)
Joist supplier to design joist to support loads as shown above.

Total Load = $\left[\frac{2.34}{2}\right]$ (2.44) + (2.63 + 1.31)9.14 + 2.22
+ 3.56 + 1.33 =

Total Load = 2.86 + 36.01 + 2.22 + 3.56
+ 1.33 = **45.98 kN**

$R_L = \frac{2.34(2.44)}{2} \times \frac{9.14-(2.44/3)}{9.14} + \frac{(2.63+1.31)9.14}{2}$
$+ 2.22\left[\frac{2.74}{9.14}\right] + 3.56\left[\frac{2.13}{9.14}\right] + 1.33\left[\frac{.91}{9.14}\right]$ =

R_L = (2.86 x .91) + 18.01 + .67 +.83 +.13 = **22.24 kN**

R_R = 45.98 - 22.24 = **23.74 kN**

Assume $R_R = \frac{W_{e1}(L)}{2}$, $W_{e1} = \frac{2(23.75)}{9.14}$ = **5.20 kN/m**

Point of Max. Mom. = Zero Shear(V) = L_1 (dist. from right end of joist)

V = Zero = 23.75 - (1.31+2.22+3.56) - (2.63+1.31)(L_1)

L_1 = **4.23 m**

M @ L_1 = 23.75 (4.23) - 1.33(3.32) -
2.22(l.49) - 3.56(2.10) - $\frac{(2.63+1.31)(4.23)^2}{2}$ =

Moment @ L_1= **50.01 kN-m**

Assume $M = \frac{W_{e2}(L)^2}{8}$, $W_{e2} = \frac{8(50.01)}{(9.14)^2}$ **= 4.79 N/m**

Using W_{e1} = 5.20 kN/m @ SPAN 9.14 m,
and D = 457 mm

Select 18K9 for total load (5.86 kN/m) and live load of (3.34 kN/m) and call it: **18K9SP**

The specifying professional shall compare the equivalent uniform loads W_{e1}& W_{e2} to the uniform loads tabulated in the **K**-Series Load Table. Loads in excess of the load table loads indicate that the specifying professional shall consider using additional joists to reduce the loading, or use the **LH-**Series Joist and make provisions for 127 mm deep bearing seats.

Due consideration by the specifying professional shall be given to live loads due to:

1. Ponded rain water.
2. Excessive accumulation of snow in the vicinity of obstructions such as penthouses, signs, parapets, adjacent buildings, etc.
3. Wind uplift.
4. End moments at the joist end supports due to live and/or wind/seismic loads shall be shown on the structural drawings by the specifying professional.

   For moment resisting joists framing near the end 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 top chord and the column. Preferably, avoid resolving joist end moment forces through the joist bearing seat connection.

   The structural drawings shall specify that all moment resisting joists shall have all dead loads applied to the joist before the bottom chord struts are welding to the column connection.

   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.

The design loads, as determined by the specifying professional, shall not be less than that specified in the applicable building codes.

SECTION 6.
PLANS AND SPECIFICATIONS

6.1 PLANS FURNISHED BY BUYER

The Buyer shall furnish the Seller plans and specifications showing all Material requirements, the layout of walls, columns, beams, girders and other supports, as well as floor and roof openings and partitions correctly dimensioned. 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., shall be indicated. The elevation of finished floors and roofs and bearings shall be shown.

6.2 PLANS FURNISHED BY SELLER

The Seller shall furnish the Buyer with detailed plans and lists showing the number, type, locations, spacing, anchorage and mark of all Material as may be required for proper installation. All Material shall be identified with its mark which also appears on the bill of material. The type of shop paint, when required, shall be indicated on the drawings.

6.3 DISCREPANCIES

The specifying professional's bid plans and specifications will be assumed to be correct in the absence of written notice from the Buyer to the contrary. When plans are furnished by the Buyer which 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, prints thereof are submitted to the Buyer and owner for examination and approval. The Seller allows a maximum of fourteen (14) calendar days in his 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 his 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.

6.5 CHANGES

When any changes in plans are made by the buyer (or Architect) either prior to or after approval of detailed plans, or when any Material is required and was not shown on 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.

SECTION 7.*
HANDLING AND ERECTION

The Buyer and/or Erector shall check all materials on arrival at job site and promptly report to Seller any discrepancies and/or damages. The Buyer and/or Erector shall comply with the requirements of the applicable Steel Joist Institute specification of latest adoption in the handling and erection of Material.

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 in the case in inaccurate finish dimensions of field construction work.

* For thorough coverage of this topic, refer to SJI Technical Digest #9, "Handling and Erection of Steel Joists and Joist Girders".

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 must 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 finally upon all questions, both of law and fact, and their findings shall be conclusive.

PUBLICATIONS

Vulcraft (Refer to back cover for address and telephone number of division nearest you)

STEEL JOISTS AND JOIST GIRDERS 1995

VULCRAFT COMPOSITE AND NONCOMPOSITE FLOOR JOISTS 1996

DESIGNING WITH JOIST, JOIST GIRDERS AND STEEL DECK
James Fisher, Ph.D., P.E., Michael West, P.E., AIA, Juius P. Van de Pas, P.E.
(A 289 page book provided to engineers and architects for help in designing with steel joists, joist girders and steel deck)

STEEL DECK INSTITUTE - P.O. Box 25, Fox River Grove, IL60021-0025 (847) 462-1930 Fax (847) 462-940 • www.sdi.org

DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, ROOF DECKS AND CELLULAR METAL FLOOR DECK WITH ELECTRICAL DISTRIBUTION. NO. 30

DIAPHRAGM DESIGN MANUAL - (THIRD EDITION). NO. DDMO3

MANUAL OF COSTRUCTION WITH STEEL DECK NO. MOC2

LRFD DESIGN MANUAL for Composite Beans and Girders with Steel Deck. No. LRFD1

COMPOSITE DECK DESIGN HANDBOOK. NO. CDD2

STANDARD PRACTICE DETAILS. NO. SPD1

BINDER FILE

DECK DAMAGE & PENETRATIONS

METAL DECK & CONCRETE QUANTITIES

A RATIONAL APPROACH TO STEELDECK CORROSION PROTECTION

BRAND NEW FLOOR DESIGN SOFTWARE LRFD*SOFT*

Steel Joist Institute - 3127 10th Ave. North Ext., Myrtle Beach, SC 29577-6760
(843) 626-1995 Fax: 843-626-5565

STANDARD SPECIFICATIONS, LOAD TABLES AND WEIGHTTABLES FOR STEELJOISTS AND JOIST GIRDERS 40TH Edition (1994)

SIXTY-YEAR MANUAL. (1992)

TECHNICAL DIGEST #3 - Ponding (1971)

TECHNICAL DIGEST #5 - Vibration (1988)

TECHNICAL DIGEST #6 - Uplift Loading (1998)

TECHNICAL DIGEST #8 - Welding of Open Web Steel Joist (1983)

TECHNICAL DIGEST #9 - Handling and Erection (1987)

TECHNICAL DIGEST #11 - Design of Joist - Girder Frames (1999)

NEW LRFD GUIDE (2000)

COMPUTER VIBRATION PROGRAM Ver1.2 (Used in Conjunction with Technical Digest #5)

SJI VIDEO - Introduction to Steel Joists

NOTES

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