

LONGSPAN AND DEEP LONGSPAN STEEL JOISTS, LH- AND DLH- SERIES

INTRODUCTION

Longspan and Deep Longspan Steel Joists are relatively lightweight shop-fabricated steel trusses. Longspan Steel Joists are used for the direct support of floor or roof slabs or decks between walls, beams, and main structural members. Deep Longspan Steel Joists are used for the direct support of roof slabs or decks between walls, beams and main structural members.

The LH- and DLH-Series have been designed for the purpose of extending the use of joists to spans in excess of those covered by Open Web Joists.

Longspan Series Joists have been standardized in depths from 18" (457 mm) through 48" (1219 mm), for clear spans through 96 feet (29260 mm).

Deep Longspan Series Joists have been standardized in depths from 52" (1320 mm) through 72" (1829 mm), for clear spans up through 144 feet (43891 mm).

STANDARD TYPES

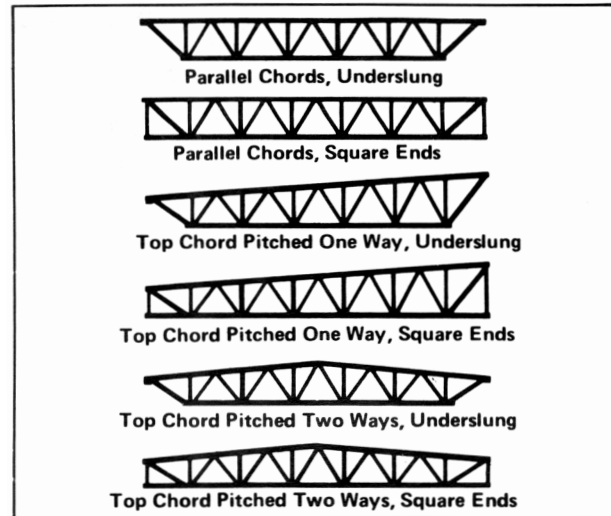
Longspan and Deep Longspan Steel Joists can be furnished with either underslung or square ends, with parallel chords or with single or double pitched top chords to provide sufficient slope for roof drainage. Square end joists are primarily intended for bottom chord bearing.

Standard pitch is $\frac{1}{8}$ " per foot (1:96). If pitch exceeds this standard, the load table does not apply. The joist designation is determined by its nominal depth at the center of the span and by the chord size designation.

To meet the demand for pitched top chord members (when necessary for roof drainage) a standard pitch of $\frac{1}{8}$ " per foot (1:96) has been established.

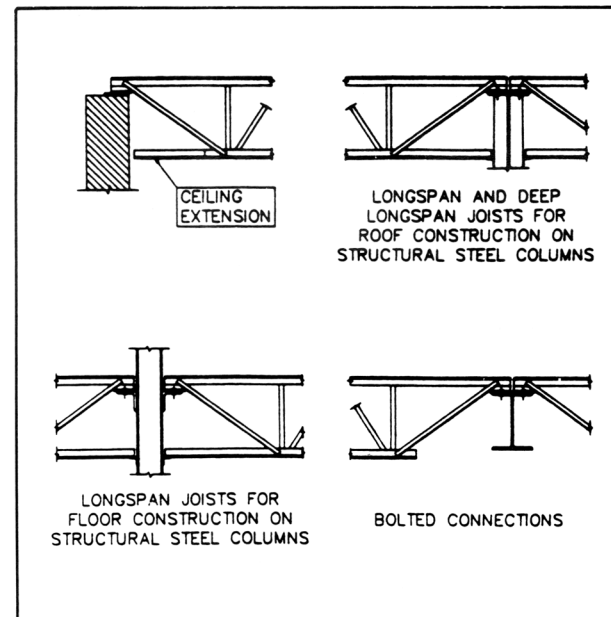
The depth of the bearing portion at the ends of underslung joists has been established at 5" (127 mm) for LH- Longspans, and 5" (127 mm) for chord sizes thru 17 and 7 $\frac{1}{2}$ " (191 mm) for chord sizes 18 and 19 for the DLH-Series.

All Longspan and Deep Longspan Steel Joists are fabricated with standardized camber as listed in paragraph 103.6.



The illustrations above indicate Longspan and Deep Longspan Steel Joists with modified WARREN type web systems. However, the web systems may be any type, whichever is standard with the manufacturer furnishing the product.

ACCESSORIES



WELDED OR BOLTED CONNECTIONS

Where Longspan or Deep Longspan Joists are supported on structural steel members, they are generally field welded. The number, size and length of welds should be specified. Where bolted connections are desired, slotted holes are provided in the bearing plates for this purpose.



STANDARD SPECIFICATIONS

FOR LONGSPAN STEEL JOISTS, **LH-SERIES** AND DEEP LONGSPAN STEEL JOISTS, **DLH-SERIES**

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 Steel Joists **DLH-Series**", 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. **LH-Series** are suitable for the direct support of floors and roof decks in buildings, and **DLH-Series** are suitable for 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 A370, "Mechanical Testing of Steel Products", or as specified in Section 102.2 of this Specification.

Standard Specifications and Load Tables, Longspan Steel Joists **LH-** Series and Deep Longspan Steel Joists **DLH-** Series, Copyright 1994.
Steel Joist Institute

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 Steels 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, which ever 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 Sections 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 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 subparagraphs 1, 2 and 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, E7OS-X or E7OU-1

AWS A5.20, E7OT-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, E6OT-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 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 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 Member, for members which are cold-formed from sheet or strip material.

103.2 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 F_y is the yield strength defined in Section 102.2:

(a) Tension:

All members $F_t = 0.6F_y$

(b) Compression:

For members with $K\ell/r$ less than C_c :

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

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; and where K is a length factor used to determine the effective slenderness ratio as shown in Table 103.3.1.

For members with $K\ell/r$ greater than C_c :

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

In the above formulas $K\ell/r$ 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 $F_b = 0.6F_y$

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 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.

103.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, $1.0 \ell/r$ and $1.0 \ell_y/r$ 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, $K\ell/r^*$, 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_y/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 $\ell = 36"$ (914 mm) for calculating ℓ/r_y of top chord member.

* 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.



ℓ_s = maximum length center-to-center between panel point and filler (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.

TABLE 103.3.1

MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS

I TOP CHORD INTERIOR PANEL

- A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 90.
- B. *The effective slenderness ratio to determine "F_a"*
- | | | | |
|-----------------------------|----------------|---------------|-----------------|
| 1. With fillers or ties | $0.75\ell/r_x$ | $1.0\ell/r_y$ | $1.0\ell_s/r_z$ |
| 2. Without fillers or ties | | | $0.75\ell/r_z$ |
| 3. Single component members | $0.75\ell/r_x$ | $1.0\ell/r_y$ | |
- C. *The effective slenderness ratio to determine "F'_e"*
- | | | | |
|-----------------------------|----------------|--|--|
| 1. With fillers or ties | $0.75\ell/r_x$ | | |
| 2. Without fillers or ties | $0.75\ell/r_x$ | | |
| 3. Single component members | $0.75\ell/r_x$ | | |

II TOP CHORD END PANEL

- A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 120.
- B. *The effective slenderness ratio to determine "F_a"*
- | | | | |
|-----------------------------|---------------|---------------|-----------------|
| 1. With fillers or ties | $1.0\ell/r_x$ | $1.0\ell/r_y$ | $1.0\ell_s/r_z$ |
| 2. Without fillers or ties | | | $1.0\ell/r_z$ |
| 3. Single component members | $1.0\ell/r_x$ | $1.0\ell/r_y$ | |
- C. *The effective slenderness ratio to determine "F'_e"*
- | | | | |
|-----------------------------|---------------|--|--|
| 1. With fillers or ties | $1.0\ell/r_x$ | | |
| 2. Without fillers or ties | $1.0\ell/r_x$ | | |
| 3. Single component members | $1.0\ell/r_x$ | | |

III TENSION MEMBERS—CHORDS AND WEBS

- A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 240.

IV COMPRESSION WEB MEMBERS

- A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 200.
- B. *The effective slenderness ratio to determine "F_a"*
- | | | | |
|-----------------------------|------------------|---------------|-----------------|
| 1. With fillers or ties | $0.75\ell/r_x$ | $1.0\ell/r_y$ | $1.0\ell_s/r_z$ |
| 2. Without fillers or ties | | | $1.0\ell/r_z$ |
| 3. Single component members | $0.75\ell/r_x^*$ | $1.0\ell/r_y$ | |
- *If moment-resistant weld groups are not used at the ends of a crimped, first primary compression web member, then $1.2\ell/r_x$ must be used.

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

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

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

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 the point under consideration

F_a = Permissible axial unit compressive stress based on $K\ell/r$.

F_b = Permissible bending unit stress; $0.6F_y$

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

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 $\ell/170$ where ℓ is the spacing in inches (millimeter) 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 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 1/2 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 $\frac{1}{16}$ 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 (393MPa) 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)	$\frac{1}{4}$ "	(6 mm)
30'-0"	(9144 mm)	$\frac{3}{8}$ "	(10 mm)
40'-0"	(12192 mm)	$\frac{5}{8}$ "	(16 mm)
50'-0"	(15240 mm)	1"	(25 mm)
60'-0"	(18288 mm)	1½"	(38 mm)
70'-0"	(21336 mm)	2"	(51 mm)
80'-0"	(24384 mm)	2¾"	(70 mm)
90'-0"	(27432 mm)	3½"	(89 mm)
100'-0"	(30480 mm)	4¼"	(108 mm)
110'-0"	(33528 mm)	5"	(127 mm)
120'-0"	(36576 mm)	6"	(152 mm)
130'-0"	(39624 mm)	7"	(178 mm)
140'-0"	(42672 mm)	8"	(203 mm)
144'-0"	(43890 mm)	8½"	(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 $\frac{1}{8}$ inch per foot (1:96).

104.4 END SUPPORTS

(a) Masonry and Concrete

LH- and 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- and 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 $\frac{1}{2}$ 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 professional 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 attachment 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 ℓ 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 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 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. 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 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- and DLH-Series Joists resting on steel bearing plates on masonry or structural concrete 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.

(b) Steel

Ends of LH- or DLH-Series Joists 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, 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 FLOORS 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:

*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: $\frac{1}{360}$ of span.
- Roofs: $\frac{1}{360}$ of span where a plaster ceiling is attached or suspended.
- $\frac{1}{240}$ 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. A maximum 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 following 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 (30480mm) as indicated by 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".



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 $\frac{1}{360}$ of the span. LIVE loads which will produce a deflection of $\frac{1}{240}$ 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 $\frac{1}{8}$ 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 $\frac{1}{2}$ inch per foot.

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

Where the joist span is in the BLUE SHADED area of the 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 inches⁴ 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 Designation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFE LOAD* in Lbs. Between	CLEAR SPAN IN FEET																
				21-24	25	26	27	28	29	30	31	32	33	34	35	36				
18LH02	10	18	12000	468	442	418	391	367	345	324	306	289	273	259	245					
18LH03	11	18	13300	313	284	259	234	212	193	175	160	147	135	124	114					
18LH04	12	18	15500	604	571	535	500	469	440	413	388	365	344	325	308					
18LH05	15	18	17500	403	367	329	296	266	242	219	200	182	167	153	141					
18LH06	15	18	20700	684	648	614	581	543	508	476	448	421	397	375	355					
18LH07	17	18	21500	454	414	378	345	311	282	256	233	212	195	179	164					
18LH08	19	18	22400	809	749	696	648	605	566	531	499	470	443	418	396					
18LH09	21	18	24000	526	469	419	377	340	307	280	254	232	212	195	180					
				840	809	780	726	678	635	595	559	526	496	469	444					
				553	513	476	428	386	349	317	288	264	241	222	204					
				876	843	812	784	758	717	680	641	604	571	540	512					
				577	534	496	462	427	387	351	320	292	267	246	226					
				936	901	868	838	810	783	759	713	671	633	598	566					
				616	571	527	491	458	418	380	346	316	289	266	245					
				22-24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
20LH02	10	20	11300	442	437	431	410	388	365	344	325	307	291	275	262	249	237	225	215	
20LH03	11	20	12000	306	303	298	274	250	228	208	190	174	160	147	136	126	117	108	101	
20LH04	12	20	14700	469	463	458	452	434	414	395	372	352	333	316	299	283	269	255	243	
20LH05	14	20	15800	337	333	317	302	280	258	238	218	200	184	169	156	143	133	123	114	
20LH06	15	20	21100	574	566	558	528	496	467	440	416	393	372	353	335	318	303	289	275	
20LH07	17	20	22500	428	406	386	352	320	291	265	243	223	205	189	174	161	149	139	129	
20LH08	19	20	23200	616	609	602	595	571	544	513	484	458	434	411	390	371	353	336	321	
20LH09	21	20	25400	459	437	416	395	366	337	308	281	258	238	219	202	187	173	161	150	
20LH10	23	20	27400	822	791	763	723	679	635	596	560	527	497	469	444	421	399	379	361	
				606	561	521	477	427	386	351	320	292	267	246	226	209	192	178	165	
				878	845	814	786	760	711	667	627	590	556	526	497	471	447	425	404	
				647	599	556	518	484	438	398	362	331	303	278	256	236	218	202	187	
				908	873	842	813	785	760	722	687	654	621	588	558	530	503	479	457	
				669	619	575	536	500	468	428	395	365	336	309	285	262	242	225	209	
				990	953	918	886	856	828	802	778	755	712	673	636	603	572	544	517	
				729	675	626	581	542	507	475	437	399	366	336	309	285	264	244	227	
				1068	1028	991	956	924	894	865	839	814	791	748	707	670	636	604	575	
				786	724	673	626	585	545	510	479	448	411	377	346	320	296	274	254	



STANDARD LOAD TABLE/LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 30 ksi

Joist Designation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFE LOAD* 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	
				28	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
24LH03	11	24	11500	342	339	336	323	307	293	279	267	255	244	234	224	215	207	199	191			
24LH04	12	24	14100	235	226	218	204	188	175	162	152	141	132	124	116	109	102	96	90			
24LH05	13	24	15100	419	398	379	360	343	327	312	298	285	273	262	251	241	231	222	214			
24LH06	16	24	20300	288	265	246	227	210	195	182	169	158	148	138	130	122	114	107	101			
24LH07	17	24	22300	449	446	440	419	399	380	363	347	331	317	304	291	280	269	258	248			
24LH08	18	24	23800	308	297	285	264	244	226	210	196	182	171	160	150	141	132	124	117			
24LH09	21	24	28000	604	579	555	530	504	480	457	437	417	399	381	364	348	334	320	307			
24LH10	23	24	29600	411	382	356	331	306	284	263	245	228	211	197	184	172	161	152	142			
24LH11	25	24	31200	665	638	613	588	565	541	516	491	468	446	426	407	389	373	357	343			
				452	421	393	367	343	320	297	276	257	239	223	208	195	182	171	161			
				707	677	649	622	597	572	545	520	497	475	455	435	417	400	384	369			
				480	447	416	388	362	338	314	292	272	254	238	222	208	196	184	173			
				832	808	785	764	731	696	663	632	602	574	548	524	501	480	460	441			
				562	530	501	460	424	393	363	337	313	292	272	254	238	223	209	196			
				882	856	832	809	788	768	737	702	668	637	608	582	556	533	511	490			
				596	559	528	500	474	439	406	378	351	326	304	285	266	249	234	220			
				927	900	875	851	829	807	787	768	734	701	671	642	616	590	567	544			
				624	588	555	525	498	472	449	418	388	361	337	315	294	276	259	243			
				33-40		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
28LH05	13	28	14000	337	323	310	297	286	275	265	255	245	237	228	220	213	206	199	193			
28LH06	16	28	18600	219	205	192	180	169	159	150	142	133	126	119	113	107	102	97	92			
28LH07	17	28	21000	448	429	412	395	379	364	350	337	324	313	301	291	281	271	262	253			
28LH08	18	28	22500	289	270	253	238	223	209	197	186	175	166	156	148	140	133	126	120			
28LH09	21	28	27700	505	484	464	445	427	410	394	379	365	352	339	327	316	305	295	285			
28LH10	23	28	30300	326	305	285	267	251	236	222	209	197	186	176	166	158	150	142	135			
28LH11	25	28	32500	540	517	496	475	456	438	420	403	387	371	357	344	331	319	308	297			
28LH12	27	28	35700	348	325	305	285	268	252	236	222	209	196	185	175	165	156	148	140			
28LH13	30	28	37200	667	639	612	586	563	540	519	499	481	463	446	430	415	401	387	374			
				428	400	375	351	329	309	291	274	258	243	228	216	204	193	183	173			
				729	704	679	651	625	600	576	554	533	513	495	477	460	444	429	415			
				466	439	414	388	364	342	322	303	285	269	255	241	228	215	204	193			
				780	762	736	711	682	655	629	605	582	561	540	521	502	485	468	453			
				498	475	448	423	397	373	351	331	312	294	278	263	249	236	223	212			
				857	837	818	800	782	766	737	709	682	656	632	609	587	566	546	527			
				545	520	496	476	454	435	408	383	361	340	321	303	285	270	256	243			
				895	874	854	835	816	799	782	766	751	722	694	668	643	620	598	577			
				569	543	518	495	472	452	433	415	396	373	352	332	314	297	281	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	338	326	315	304	294	284	275	266	257	249	242	234	227	220	214	208			
32LH07	16	32	18800	211	199	189	179	169	161	153	145	138	131	125	119	114	108	104	99			
32LH08	17	32	20400	379	366	353	341	329	318	308	298	288	279	271	262	254	247	240	233			
32LH09	21	32	25600	235	223	211	200	189	179	170	162	154	146	140	133	127	121	116	111			
32LH10	21	32	28300	411	397	383	369	357	345	333	322	312	302	293	284	275	267	259	252			
32LH11	24	32	31000	255	242	229	216	205	194	184	175	167	159	151	144	137	131	125	120			
32LH12	27	32	36400	516	498	480	463	447	432	418	404	391	379	367	356	345	335	325	315			
32LH13	30	32	40600	319	302	285	270	256	243	230	219	208	198	189	180	172	164	157	149			
32LH14	33	32	41800	571	550	531	512	495	478	462	445	430	416	402	389	376	364	353	342			
32LH15	35	32	43200	352	332	315	297	282	267	254	240	228	217	206	196	186	178	169	162			
				625	602	580	560	541	522	505	488	473	458	443	429	416	403	390	378			
				385	363	343	325	308	292	277	263	251	239	227	216	206	196	187	179			
				734	712	688	664	641	619	598	578	559	541	524	508	492	477	463	449			
				450	428	406	384	364	345	327	311	295	281	267	255	243	232	221	211			
				817	801	785	771	742	715	690	666	643	621	600	581	562	544	527	511			
				500	480	461	444	420	397	376	354	336	319	304	288	275	262	249	238			
				843	826	810	795	780	766	738	713	688	665	643	622	602	583	564	547			
				515	495	476	458	440	417	395	374	355	337	321	304	290	276	264	251			
				870	853	837	821	805	791	776	763	750	725	701	678	656	635	616	597			
				532	511	492	473	454	438	422	407	393	374	355	338	322	306	292	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	292	283	274	266	258	251	244	237	230	224	218	212	207	201	196	191			
36LH08	18	36	18500	177	168	160	153	146	140	134	128	122	117	112	107	103	99	95	91			
36LH09	21	36	23700	321	311	302	293	284	276	268	260	253	246	239	233	227	221	215	209			
36LH10	21	36	26100	194	185	176	168	160	153	146	140	134	128	123	118	113	109	104	100			
36LH11	23	36	28500	411	398	386	374	363	352	342	333	323	314	306	297	289	282	275	267			
36LH12	25	36	34100	247	235	224	214	204	195	186	179	171	163	157	150	144	138	133	127			
36LH13	30	36	40100	454	440	426	413															

STANDARD LOAD TABLE/LONGSPAN STEEL JOISTS, LH-SERIES

Based on a Maximum Allowable Tensile Stress of 30 ksi

Joist Designation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFE LOAD* 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		
			52-59	60-72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88		
40LH08	16	40	16600	16600	254	247	241	234	228	222	217	211	206	201	196	192	187	183	178	174		
40LH09	21	40	21800	21800	332	323	315	306	298	291	283	276	269	263	256	250	244	239	233	228		
40LH10	21	40	24000	24000	367	357	347	338	329	321	313	305	297	290	283	276	269	262	255	249		
40LH11	22	40	26200	26200	399	388	378	368	358	349	340	332	323	315	308	300	293	286	279	273		
40LH12	25	40	31900	31900	486	472	459	447	435	424	413	402	392	382	373	364	355	346	338	330		
40LH13	30	40	37600	37600	573	557	542	528	514	500	487	475	463	451	440	429	419	409	399	390		
40LH14	35	40	43000	43000	656	638	620	603	587	571	556	542	528	515	502	490	478	466	455	444		
40LH15	36	40	48100	48100	734	712	691	671	652	633	616	599	583	567	552	538	524	511	498	486		
40LH16	42	40	53000	53000	808	796	784	772	761	751	730	710	691	673	655	638	622	606	591	576		
					469	455	441	428	416	404	387	371	356	342	329	316	304	292	282	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	265	259	253	247	242	236	231	226	221	216	211	207	202	198	194		
44LH10	21	44	22100	22100	300	293	286	279	272	266	260	254	249	243	238	233	228	223	218	214		
44LH11	22	44	23900	23900	325	317	310	302	295	289	282	276	269	264	258	252	247	242	236	232		
44LH12	25	44	29600	29600	402	393	383	374	365	356	347	339	331	323	315	308	300	293	287	280		
44LH13	30	44	35100	35100	477	466	454	444	433	423	413	404	395	386	377	369	361	353	346	338		
44LH14	31	44	40400	40400	549	534	520	506	493	481	469	457	446	436	425	415	406	396	387	379		
44LH15	36	44	47000	47000	639	623	608	593	579	565	551	537	524	512	500	488	476	466	455	445		
44LH16	42	44	54200	54200	737	719	701	684	668	652	637	622	608	594	580	568	555	543	531	520		
44LH17	47	44	58200	58200	821	805	789	775	760	745	730	715	699	683	667	652	638	624	610	597		
					450	438	426	415	405	390	376	363	351	338	327	316	305	295	285	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	241	236	231	226	221	217	212	208	204	200	196	192	188	185	181		
48LH11	22	48	21700	21700	266	260	255	249	244	239	234	229	225	220	216	212	208	204	200	196		
48LH12	25	48	27400	27400	336	329	322	315	308	301	295	289	283	277	272	266	261	256	251	246		
48LH13	29	48	32800	32800	402	393	384	376	368	360	353	345	338	332	325	318	312	306	300	294		
48LH14	32	48	38700	38700	475	464	454	444	434	425	416	407	399	390	383	375	367	360	353	346		
48LH15	36	48	44500	44500	545	533	521	510	499	488	478	468	458	448	439	430	422	413	405	397		
48LH16	42	48	51300	51300	629	615	601	588	576	563	551	540	528	518	507	497	487	477	468	459		
48LH17	47	48	57600	57600	706	690	675	660	646	632	619	606	593	581	569	558	547	536	525	515		
					397	383	371	358	346	335	324	314	304	294	285	276	268	260	252	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.



STANDARD LOAD TABLE

FOR DEEP LONGSPAN STEEL JOISTS, DLH-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 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 $\frac{1}{360}$ of the span. LIVE loads which will produce a deflection of $\frac{1}{240}$ 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 $\frac{1}{8}$ 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 $\frac{1}{2}$ 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 in 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 in 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 inches⁴ 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 the roof deck.

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

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



DEEP LONGSPAN STEEL JOISTS, DLH-SERIES
Based on a Maximum Allowable Tensile Stress of 30 ksi

Joist Designation	Approx. Wt. in Lbs. per Linear Ft. (Joists Only)	Depth in Inches	SAFE LOAD* 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		
60DLH13	35	60	37800	37800	168	163	158	154	150	146	142	138	134	131	128	124	121	118	115	113		
60DLH14	40	60	42000	42000	358	351	345	339	333	327	322	316	311	306	301	296	291	286	282	277		
60DLH15	43	60	49300	49300	203	197	191	187	181	176	171	167	163	158	154	151	147	143	139	135		
60DLH16	46	60	54200	54200	398	391	383	376	370	363	356	350	344	338	332	327	321	316	310	305		
60DLH17	52	60	62300	62300	216	210	205	199	193	189	183	178	173	170	165	161	156	152	149	145		
60DLH18	59	60	71900	71900	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		
					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		
					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		
					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		
64DLH13	34	64	36400	36400	153	150	146	142	138	135	132	129	125	122	119	116	114	111	109	106		
64DLH14	40	64	41700	41700	321	315	310	305	300	295	291	286	281	277	273	269	264	260	257	253		
64DLH15	43	64	47800	47800	186	181	176	171	168	163	159	155	152	148	144	141	137	134	131	128		
64DLH16	46	64	53800	53800	367	360	354	349	343	337	332	326	321	316	311	306	301	296	292	287		
64DLH17	52	64	62000	62000	199	193	189	184	179	174	171	166	162	158	154	151	147	143	140	136		
64DLH18	59	64	71600	71600	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		
					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		
					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		
					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		
68DLH14	40	68	40300	40300	171	168	164	159	155	152	149	145	142	138	135	133	130	127	124	121		
68DLH15	40	68	45200	45200	332	327	322	317	312	308	303	299	294	290	286	281	277	273	269	266		
68DLH16	49	68	53600	53600	184	179	175	171	167	163	159	155	152	148	145	141	138	135	133	130		
68DLH17	55	68	60400	60400	372	365	360	354	348	343	337	332	327	322	317	312	308	303	299	294		
68DLH18	61	68	69900	69900	206	201	196	191	187	182	178	174	170	166	162	158	155	152	148	145		
68DLH19	67	68	80500	80500	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		
					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		
					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		
					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		
72DLH15	44	72	44900	44900	171	167	163	159	155	152	149	146	143	139	136	133	131	128	125	123		
72DLH16	50	72	51900	51900	347	342	336	331	326	322	317	312	308	303	299	295	291	286	282	279		
72DLH17	56	72	58400	58400	191	187	183	178	174	171	167	163	160	156	152	150	147	143	140	137		
72DLH18	59	72	68400	68400	401	395	390	384	378	373	368	363	358	353	348	343	338	334	329	325		
72DLH19	70	72	80200	80200	225	219	214	209	205	200	196	191	188	183	179	175	171	169	165	161		
					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		
					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		
					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 kiloNewtons 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 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 $\frac{1}{360}$ of the span. LIVE loads which will produce a deflection of $\frac{1}{240}$ 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.

Where the joist span is in the RED SHADED area of

the load table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

Where the joist span is in the BLUE SHADED area of the 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(mm⁴) is:

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



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



**STANDARD LOAD TABLE IN METRIC UNITS / LONGSPAN 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 3.19	4.71 2.99	4.52 2.80	4.33 2.62	4.17 2.46	4.01 2.32	3.86 2.18	3.72 2.07	3.57 1.94	3.45 1.83	3.32 1.73	3.21 1.64	3.10 1.56	3.00 1.48	2.90 1.41	2.81 1.34	
28LH06	0.23	24	711	82.7	6.53 4.21	6.26 3.94	6.01 3.69	5.76 3.47	5.53 3.25	5.31 3.05	5.10 2.87	4.91 2.71	4.72 2.55	4.56 2.42	4.39 2.27	4.24 2.15	4.10 2.04	3.95 1.94	3.82 1.83	3.69 1.75	
28LH07	0.25	25	711	93.4	7.36 4.75	7.06 4.45	6.77 4.15	6.49 3.86	6.23 3.66	5.98 3.44	5.74 3.23	5.53 3.05	5.32 2.87	5.13 2.71	4.94 2.57	4.77 2.42	4.61 2.30	4.45 2.20	4.30 2.15	4.15 2.04	
28LH08	0.26	27	711	100.0	7.88 5.07	7.54 4.74	7.23 4.45	6.93 4.15	6.65 3.91	6.39 3.67	6.12 3.44	5.88 3.23	5.64 3.05	5.41 2.86	5.21 2.69	5.02 2.55	4.83 2.40	4.65 2.27	4.49 2.15	4.33 2.04	
28LH09	0.31	31	711	123.2	9.73 6.24	9.32 5.83	8.93 5.47	8.55 5.12	8.21 4.81	7.88 4.50	7.57 4.24	7.28 3.99	7.01 3.76	6.75 3.54	6.50 3.32	6.27 3.15	6.05 2.97	5.85 2.81	5.64 2.67	5.45 2.52	
28LH10	0.34	34	711	134.7	10.63 6.80	10.27 6.40	9.90 6.04	9.50 5.66	9.12 5.31	8.75 4.99	8.40 4.69	8.08 4.42	7.77 4.15	7.48 3.92	7.22 3.72	6.96 3.51	6.71 3.32	6.47 3.13	6.26 2.97	6.05 2.81	
28LH11	0.36	37	711	144.5	11.38 7.26	11.12 6.93	10.74 6.53	10.37 6.17	9.95 5.95	9.55 5.44	9.17 5.12	8.82 4.83	8.49 4.55	8.18 4.29	7.88 4.08	7.60 3.83	7.32 3.63	7.07 3.44	6.82 3.25	6.61 3.09	
28LH12	0.39	40	711	158.8	12.50 7.95	12.21 7.58	11.93 7.23	11.67 6.94	11.41 6.62	11.17 6.34	10.75 5.95	10.34 5.58	9.95 5.26	9.57 4.96	9.22 4.68	8.88 4.42	8.56 4.15	8.26 3.94	7.96 3.73	7.69 3.54	
28LH13	0.44	45	711	165.4	13.06 8.30	12.75 7.92	12.46 7.55	12.18 7.22	11.90 6.88	11.66 6.59	11.41 6.31	11.17 6.05	10.96 5.77	10.53 5.44	10.12 5.13	9.74 4.84	9.38 4.58	9.04 4.33	8.72 4.10	8.42 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	4.93 3.07	4.75 2.9	4.59 2.75	4.43 2.61	4.29 2.46	4.14 2.34	4.01 2.23	3.88 2.11	3.75 2.01	3.63 1.91	3.53 1.82	3.41 1.73	3.31 1.66	3.21 1.57	3.12 1.51	3.03 1.44	
32LH07	0.23	24	813	83.6	5.53 3.42	5.34 3.25	5.15 3.07	4.97 2.91	4.8 2.75	4.64 2.61	4.49 2.48	4.34 2.36	4.2 2.24	4.07 2.13	3.95 2.04	3.82 1.94	3.7 1.85	3.6 1.76	3.5 1.69	3.40 1.61	
32LH08	0.25	25	813	90.7	5.99 3.72	5.79 3.53	5.58 3.34	5.38 3.15	5.21 2.99	5.03 2.83	4.85 2.68	4.69 2.55	4.55 2.43	4.40 2.32	4.27 2.20	4.14 2.10	4.01 1.99	3.89 1.91	3.77 1.82	3.67 1.75	
32LH09	0.31	31	813	113.8	7.53 4.65	7.26 4.40	7.00 4.15	6.75 3.94	6.52 3.73	6.30 3.54	6.10 3.35	5.89 3.19	5.70 3.03	5.53 2.88	5.35 2.75	5.19 2.62	5.03 2.51	4.88 2.39	4.74 2.29	4.59 2.17	
32LH10	0.31	31	813	125.8	8.33 5.13	8.02 4.84	7.74 4.59	7.47 4.33	7.22 4.11	6.97 3.89	6.74 3.70	6.49 3.50	6.27 3.32	6.07 3.16	5.86 3.00	5.67 2.86	5.48 2.71	5.31 2.59	5.15 2.46	4.99 2.36	
32LH11	0.35	36	813	137.8	9.12 5.61	8.78 5.29	8.46 5.00	8.17 4.74	7.89 4.49	7.61 4.26	7.36 4.04	7.12 3.83	6.90 3.66	6.68 3.48	6.46 3.31	6.26 3.15	6.07 3.00	5.88 2.86	5.69 2.72	5.51 2.61	
32LH12	0.39	40	813	161.9	10.71 6.56	10.39 6.24	10.04 5.92	9.69 5.60	9.35 5.31	9.03 5.03	8.72 4.77	8.43 4.53	8.15 4.30	7.89 4.10	7.64 3.89	7.41 3.72	7.18 3.54	6.96 3.38	6.75 3.22	6.55 3.07	
32LH13	0.44	45	813	180.5	11.92 7.29	11.68 7.00	11.45 6.72	11.25 6.47	10.82 6.12	10.43 5.79	10.06 5.48	9.71 5.16	9.38 4.90	9.06 4.65	8.75 4.43	8.47 4.20	8.20 4.01	7.93 3.82	7.69 3.63	7.45 3.47	
32LH14	0.48	49	813	185.9	12.30 7.51	12.05 7.22	11.82 6.94	11.60 6.68	11.38 6.42	11.17 6.08	10.77 5.76	10.4 5.45	10.04 5.18	9.70 4.91	9.38 4.68	9.07 4.43	8.78 4.23	8.50 4.02	8.23 3.85	7.98 3.66	
32LH15	0.51	52	813	192.1	12.69 7.76	12.44 7.45	12.21 7.18	11.98 6.90	11.74 6.62	11.52 6.39	11.32 6.15	11.13 5.93	10.94 5.73	10.58 5.45	10.23 5.18	9.89 4.93	9.57 4.69	9.26 4.46	8.98 4.26	8.71 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	4.26 2.58	4.13 2.45	3.99 2.33	3.88 2.23	3.76 2.13	3.66 2.04	3.56 1.95	3.45 1.86	3.35 1.78	3.26 1.70	3.18 1.63	3.09 1.56	3.02 1.50	2.93 1.44	2.86 1.38	2.78 1.32	
36LH08	0.26	27	914	82.2	4.68 2.83	4.53 2.69	4.40 2.56	4.27 2.45	4.14 2.33	4.02 2.23	3.91 2.13	3.79 2.04	3.69 1.95	3.59 1.86	3.48 1.79	3.40 1.72	3.31 1.64	3.22 1.59	3.13 1.51	3.05 1.45	
36LH09	0.31	31	914	105.4	5.99 3.60	5.80 3.42	5.63 3.26	5.45 3.12	5.29 2.97	5.13 2.84	4.99 2.71	4.85 2.61	4.71 2.49	4.58 2.37	4.46 2.29	4.33 2.18	4.21 2.10	4.11 2.01	4.01 1.94	3.89 1.85	
36LH10	0.31	31	914	116.0	6.62 3.98	6.42 3.79	6.21 3.61	6.02 3.44	5.85 3.28	5.67 3.13	5.51 3.00	5.35 2.87	5.21 2.74	5.06 2.62	4.93 2.52	4.78 2.40	4.67 2.32	4.53 2.21	4.42 2.13	4.30 2.04	
36LH11	0.34	34	914	126.7	7.22 4.33	7.00 4.13	6.78 3.92	6.58 3.75	6.39 3.59	6.20 3.41	6.01 3.26	5.85 3.12	5.67 2.99	5.51 2.86	5.37 2.74	5.22 2.62	5.07 2.52	4.94 2.42	4.81 2.32	4.69 2.23	
36LH12	0.36	37	914	151.6	8.65 5.16	8.39 4.93	8.12 4.69	7.88 4.48	7.63 4.26	7.41 4.07	7.19 3.89	6.97 3.72	6.77 3.54	6.56 3.38	6.37 3.23	6.18 3.10	6.01 2.97	5.83 2.84	5.67 2.72	5.51 2.61	
36LH13	0.44	45	914	178.3	10.17 6.05	9.85 5.76	9.54 5.48	9.25 5.23	8.97 4.99	8.69 4.77	8.44 4.55	8.20 4.34	7.96 4.15	7.74 3.98	7.53 3.82	7.32 3.66	7.12 3.50	6.93 3.37	6.75 3.23	6.58 3.10	
36LH14	0.53	54	914	196.6	11.20 6.65	11.01 6.33	10.63 6.01	10.3 5.72	9.96 5.44	9.64 5.19	9.35 4.94	9.06 4.71	8.78 4.50	8.52 4.30	8.27 4.13	8.04 3.94	7.80 3.77	7.58 3.60	7.36 3.45	7.18 3.32	
36LH15	0.53	54	914	207.2	11.80 7.00	11.6 6.77	11.39 6.53	11.22 6.33	10.85 6.02	10.52 5.74	10.18 5.47	9.88 5.22	9.57 4.99	9.29 4.77	9.01 4.55	8.75 4.36	8.50 4.17	8.27 3.99	8.04 3.83	7.82 3.67	



**STANDARD LOAD TABLE IN METRIC UNITS / LONGSPAN 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 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 + 204 mm)². The live load shall not exceed the safe uniform load.

METRIC LOAD TABLE

DEEP 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 $\frac{1}{360}$ of the span. LIVE loads which will produce a deflection of $\frac{1}{240}$ 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 in 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 joists is in the GRAY SHADED area of the load table hoisting cables shall not be released until all rows of bridging 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 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.



STANDARD LOAD TABLE IN METRIC UNITS / LONGSPAN STEEL JOISTS, DLH-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)																
					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	
				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	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	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	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	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	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	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	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	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	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	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	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	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	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	6.4			

**STANDARD LOAD TABLE IN METRIC UNITS / LONGSPAN STEEL JOISTS, DLH-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)															
				24384-30175	30480-36576	36880	37185	37490	37795	38100	38404	38709	39014	39319	39624	39928	40233	40538	40843	41148	41452
68DLH13	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
68DLH14	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
68DLH15	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
68DLH16	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
68DLH17	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
68DLH18	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
68DLH19	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
72DLH14	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
72DLH15	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
72DLH16	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
72DLH17	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
72DLH18	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
72DLH19	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 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.



RECOMMENDED 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 2½ 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 7½ inches (191 mm) for section numbers 18 and 19. The standard pitch is ⅛ inch in 12 inches (1:96). The nom-



RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS

inal 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 7½ inches (191mm) for Joist Girders weighing 60 pounds per lineal foot (89 kg/m) or more. The standard pitch is ⅛ 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 ¼ inch in 12 inches (1:48). For Open Web Steel Joists, K-Series, bearing ends will not be beveled for slopes of ¼ 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

TABLE 2.5.1a							
K - SERIES JOIST							
MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING							
SECTION NUMBER*	**BRIDGING MATERIAL SIZE						
	Round Rod	Equal leg Angles					
	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" (2626mm)	10'- 0" (3048mm)	12'- 6" (3810mm)
11 and 12	2'- 7" (787mm)	4'- 0" (1219mm)	5'- 8" (1727mm)	7'- 6" (2286mm)	8'- 7" (2626mm)	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						
Section Number*	**BRIDGING ANGLE SIZE - (EQUAL LEG ANGLE)					
	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" (2289mm)	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

RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS

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.

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 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 88).

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 FOR BIDDING

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

Designation and location of Materials (See Section 5.2 [a]).

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 ($\frac{1}{3}$) 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.**

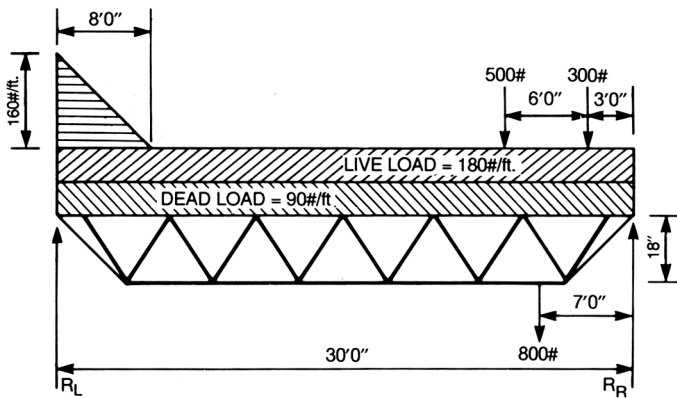
Loads such as Bulb "T"s, purlins, partitions, heavy pipes, monorail or tramrail type carrier, etc., running normal to the length of the joist, or a mechanical unit mounted on the joist, are concentrated loads. Where concentrated loads occur, the joist must be selected to carry the full combination of 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 **all** loads to be supported.
 - B. Determine the maximum moment in the joist and derive the **uniform** load that will produce that moment.
 - C. Determine the maximum end reaction and derive the **uniform** load that will produce that reaction.
 - D. Using the largest of the 2 uniform loads in B and C, select a joist from the load table and add an "SP" after the joist designation.
 - 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.

$$\text{Total Load} = \frac{160}{2} (8) + (180 + 90)30 + 500 + 800 + 300 = 10,300 \text{ lbs.}$$

$$R_L = \frac{160(8)}{2} \left[\frac{30 - \frac{8}{3}}{30} \right] + \frac{(180+90)(30)}{2} + 500 \left[\frac{9}{30} \right] + 800 \left[\frac{7}{30} \right] + 300 \left[\frac{3}{30} \right] =$$

$$R_L = 5000 \text{ lbs.}$$

$$R_R = 5340 \text{ lbs.}$$

$$\text{Assume } R_R = \frac{W_{e1}(L)}{2}, W_{e1} = \frac{2(5340)}{30} = 356 \text{ lbs/ft.}$$

Point of Max. Mom. = Point of Zero Shear (V) = L_1
 (dist. from rt. end of Jst.)

$$V = \text{Zero} = 5340 - (300+500+800) - (180+90)(L_1)$$

$$L_1 = 13.85 \text{ ft.}$$

$$M @ L_1 = 5340 (13.85) - 300(10.85) -$$

$$800(6.86) - 500(4.85) - \frac{(180+90)(13.85)^2}{2}$$

$$M = 36,903 \text{ ft. lbs.}$$

$$\text{Assume } M = \frac{W_{e2}(L)^2}{8}, W_{e2} = \frac{8(36,903)}{(30)^2} = 328 \text{ lbs/ft.}$$

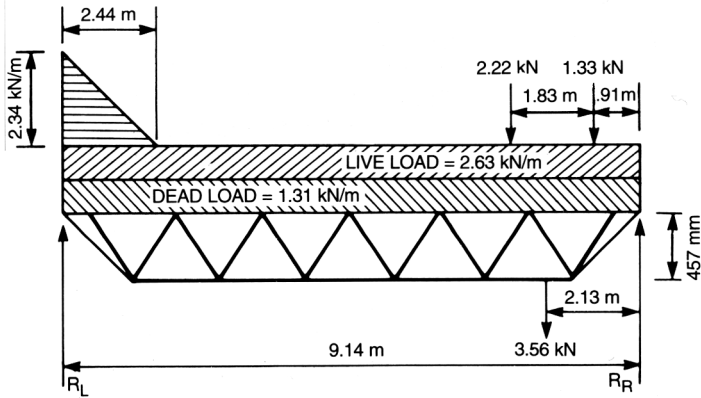
Using $W_{e1} = 356 \text{ lb/ft. @ SPAN} = 30'$,
 and $D = 18''$

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.



METRIC EXAMPLE:



18K9 SP

(See Method of Joist Selection Below)

Joist supplier to design joist to support loads as shown above.

$$\text{Total Load} = \left[\frac{2.34}{2} \right] (2.44) + (2.63 + 1.31)9.14 + 2.22 + 3.56 + 1.33 =$$

$$\text{Total Load} = 2.86 + 36.01 + 2.22 + 3.56 + 1.33 = 45.98 \text{ kN}$$

$$R_L = \frac{2.34(2.44)}{2} \times \frac{9.14 - (2.44/3)}{9.14} + \frac{(2.63 + 1.31)9.14}{2} + 2.22 \left[\frac{2.74}{9.14} \right] + 3.56 \left[\frac{2.13}{9.14} \right] + 1.33 \left[\frac{.91}{9.14} \right] =$$

$$R_L = (2.86 \times .91) + 18.01 + .67 + .83 + .13 = 22.24 \text{ kN}$$

$$R_R = 45.98 - 22.24 = 23.74 \text{ kN}$$

$$\text{Assume } R_R = \frac{W_{e1}(L)}{2}, W_{e1} = \frac{2(23.75)}{9.14} = 5.20 \text{ kN/m}$$

Point of Max. Mom. = zero Shear (V) = L_1 (dist. from right end of joist)

$$V = \text{Zero} = 23.75 - (1.31 + 2.22 + 3.56) - (2.63 + 1.31)(L_1)$$

$$L_1 = 4.23 \text{ m}$$

$$M @ L_1 = 23.75(4.23) - 1.33(3.32) -$$

$$2.22(1.49) - 3.56(2.10) - \frac{(2.63 + 1.31)(4.23)^2}{2} =$$

$$\text{Moment @ } L_1 = 50.01 \text{ kN-m}$$

$$\text{Assume } M = \frac{W_{e2}(L)^2}{8}, \text{ where } W_{e2} = \frac{8(50.01)}{(9.14)^2} = 4.79 \text{ N/m}$$

Using $W_{e1} = 5.20 \text{ kN/m}$ @ SPAN = 9.14 m, and $d = 457 \text{ mm}$

Select 18K9 for total load (5.86 kN/m) and live load of (3.34 kN/m)

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 an 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 welded 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.



