

STANDARD SPECIFICATION FOR LONGSPAN STEEL JOISTS, LH-SERIES AND DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Adopted by the Steel Joist Institute May 10, 2006
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SECTION 100. SCOPE AND DEFINITION

100.1 SCOPE

The *Standard Specification for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series*, hereafter referred to as the Specification, covers the design, manufacture, application, and erection stability and handling of Longspan Steel Joists **LH-Series**, and Deep Longspan Steel Joists, **DLH-Series** in buildings or other structures, where other structures are defined as those structures designed, manufactured, and erected in a manner similar to buildings.. **LH-** and **DLH-Series** joists shall be designed using Allowable Stress Design (ASD) or Load and Resistance Factor Design (LRFD) in accordance with this Specification. Steel joists shall be erected in accordance with the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, Code of Federal Regulations 29CFR Part 1926 Safety Standards for Steel Erection. The erection of **LH-** and **DLH-Series** joists 144 ft. (43.9 m) or less is governed by Section 1926.757 Open Web Steel Joists and joists over this length by Section 1926.756 Beams and Columns.

This Specification includes Sections 100 through 105.

100.2 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, suitable for the direct support of floors and roof slabs or decks. The **LH-Series** joists have been standardized in depths from 18 inches (457 mm) through 48 inches (1219 mm), for spans up through 96 feet (29260 mm). The **DLH-Series** joists have been standardized in depths from 52 inches (1321 mm) through 120 inches (3048 mm), for spans up through 240 feet (73150 mm).

The **LH-** and **DLH-Series** standard joist designations are determined by their nominal depth at the center of the span, followed by the letters **LH** or **DLH** as appropriate, and then by the chord size designation assigned. The chord size designations range from 02 to 25. Therefore, as a performance based specification, the **LH-** and **DLH-Series** standard joist designations listed in the following Standard Load Tables shall support the uniformly distributed loads as provided in the appropriate tables:

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

And the following Standard Load Tables published electronically at www.steeljoist.org/loadtables

Standard LRFD Load Table Longspan Steel Joists, **LH-Series** – S.I. Units
Standard ASD Load Table Longspan Steel Joists, **LH-Series** – S.I. Units
Standard LRFD Load Table Deep Longspan Steel Joists, **DLH-Series** – S.I. Units
Standard ASD Load Table Deep Longspan Steel Joists, **DLH-Series** – S.I. Units

An alternate method of specifying a standard **LH-Series** joist is to provide the designation in a “load/load” sequence. The format used is dd**LH**tl/ll where:

dd is the nominal depth of the joist in inches (mm)

tl is the total uniformly distributed load applied to the joist top chord, plf (kN/m)

ll is the uniform live load for which the deflection shall be checked and limited as required by the Specification, plf (kN/m)

The load/load **LH-Series** joists can be specified in depths from 14 inches (356 mm) through 120 inches (3048 mm) and spans from 14 feet (4267 mm) up through 240 feet (73152 mm). The maximum uniformly distributed load-carrying capacity of 2400 plf (35.03 kN/m) in ASD and 3600 plf (52.54 kN/m) in LRFD has been established for this alternate **LH-Series** format. The maximum capacity for any given load/load **LH-Series** joist is a function of span, depth and chord size.

Six standard types of **LH-** and **DLH-Series** joists are designed and manufactured. These types are underslung (top chord bearing) or square-ended (bottom chord bearing), with parallel chords or with single or double pitched top chords. A pitch of the joist top chord up to 1/2 inch per foot (1:24) is allowed. The standard joist designation depth shall be the depth at mid-span.

100.3 STRUCTURAL DESIGN DRAWINGS AND SPECIFICATIONS

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

SECTION 101. REFERENCED SPECIFICATIONS, CODES AND STANDARDS

101.1 REFERENCES

American Institute of Steel Construction, Inc. (AISC)

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

American Iron and Steel Institute (AISI)

ANSI/AISI S100-2007 *North American Specification for Design of Cold-Formed Steel Structural Members*

ANSI/AISI S100-07/S1-09 , *Supplement No. 1 to the North American Specification for the Design of Cold-Formed Steel Structural Members*, 2007 Edition

ANSI/AISI S100-07/S2-10 , *Supplement No. 2 to the North American Specification for the Design of Cold-Formed Steel Structural Members*, 2007 Edition

American Society of Testing and Materials, ASTM International (ASTM)

ASTM A6/A6M-09, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

ASTM A36/A36M-08, Standard Specification for Carbon Structural Steel

ASTM A242/242M-04 (2009), Standard Specification for High-Strength Low-Alloy Structural Steel

ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM A325/325M-09, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi [830 MPa] Minimum Tensile Strength

ASTM A370-09ae1, Standard Test Methods and Definitions for Mechanical Testing of Steel Products

ASTM A500/A500M-07, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

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

ASTM A572/A572M-07, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A588/A588M-05, Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance

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

ASTM A992/A992M-06a, Standard Specification for Structural Steel Shapes

ASTM A1008/A1008M-09, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

ASTM A1011/A1011M-09a, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

American Welding Society (AWS)

AWS A5.1/A5.1M-2004, Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding

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

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

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

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

AWS A5.23/A5.23M:2007, Specification for Low-Alloy Steel Electrodes and Fluxes for Submerged Arc Welding

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

AWS A5.29/A5.29M:2005, Specification for Low Alloy Steel Electrodes for Flux Cored Arc Welding

101.2 OTHER REFERENCES

The following references are non-ANSI Standard documents and as such, are provided solely as sources of commentary or additional information related to topics in this Specification:

American Society of Civil Engineers (ASCE)

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

Federal Register, Department of Labor, Occupational Safety and Health Administration (2001), 29 CFR Part 1926 Safety Standards for Steel Erection; Final Rule, §1926.757 Open Web Steel Joists - January 18, 2001, Washington, D.C.

Steel Joist Institute (SJI)

SJI-COSP-2010, *Code of Standard Practice for Steel Joists and Joist Girders*

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

Technical Digest No. 5 (1988), *Vibration of Steel Joist-Concrete Slab Floors*

Technical Digest No. 6 (2010), *Structural Design of Steel Joist Roofs to Resist Uplift Loads*

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

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

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

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

Steel Structures Painting Council (SSPC) (2000), *Steel Structures Painting Manual, Volume 2, Systems and Specifications*, Paint Specification No. 15, Steel Joist Shop Primer, May 1, 1999, Pittsburgh, PA.

SECTION 102. MATERIALS

102.1 STEEL

The steel used in the manufacture of **LH-** and **DLH-**Series joists shall conform to one of the following ASTM Specifications:

- Carbon Structural Steel, ASTM A36/A36M.
- High-Strength Low-Alloy Structural Steel, ASTM A242/A242M.
- Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes, ASTM A500/A500M.
- High-Strength Carbon-Manganese Steel of Structural Quality, ASTM A529/A529M.
- High-Strength Low-Alloy Columbium-Vanadium Structural Steel, ASTM A572/A572M.
- High-Strength Low-Alloy Structural Steel up to 50 ksi [345 MPa] Minimum Yield Point with Atmospheric Corrosion Resistance, ASTM A588/A588M.
- Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance, ASTM A606/A606M.
- Structural Steel Shapes, ASTM A992/A992M.
- Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable, ASTM A1008/A1008M.
- Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra High Strength, ASTM A1011/A1011M.

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

Steel used for **LH-** and **DLH-**Series joists shall have a minimum yield strength determined in accordance with one of the procedures specified in this section, which is equal to the yield strength* assumed in the design.

*The term "Yield Strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13.1 "Yield Point", and in paragraph 13.2 "Yield Strength", of ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*, or as specified in paragraph 102.2 of this specification.

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, the test specimens and procedures shall conform to those of such specifications and to ASTM A370.

In the case of material, the mechanical properties of which do not conform to the requirements of one of the listed specifications, the test specimens and procedures shall conform to the applicable requirements of ASTM A370, and the specimens shall exhibit a yield strength equal to or exceeding the design yield strength and an elongation of not less than (a) 20 percent in 2 inches (51 millimeters) for sheet and strip, or (b) 18 percent in 8 inches (203 millimeters) for plates, shapes and bars with adjustments for thickness for plates, shapes and bars as prescribed in ASTM A36/A36M, A242/A242M, A500/A500M, A529/A529M, A572/A572M, A588/A588M, A992/A992M whichever specification is applicable, on the basis of design yield strength.

The number of tests shall be as prescribed in ASTM A6/A6M for plates, shapes, and bars; and ASTM A606/A606M, A1008/A1008M and A1011/A1011M for sheet and strip.

If as-formed strength is utilized, the test reports shall show the results of tests performed on full section specimens in accordance with the provisions of the AISI North American Specifications for the Design of Cold-Formed Steel Structural Members. They shall also indicate compliance with these provisions and with the following additional requirements:

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

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: E70XX
 AWS A5.5: E70XX-X
 AWS A5.17: F7XX–EXXX, F7XX–ECXXX flux electrode combination
 AWS A5.18: ER70S-X, E70C-XC, E70C-XM
 AWS A5.20: E7XT-X, E7XT-XM

AWS A5.23: F7XX-EXXX-XX, F7XX-ECXXX-XX
AWS A5.28: ER70S-XXX, E70C-XXX
AWS A5.29: E7XTX-X, E7XTX-XM

- b) For connected members both having a specified minimum yield strength of 36 ksi (250 MPa) or one having a specified minimum yield strength of 36 ksi (250 MPa), and the other having a specified minimum yield strength greater than 36 ksi (250 MPa).

AWS A5.1: E60XX
AWS A5.17: F6XX-EXXX, F6XX-ECXXX flux electrode combination
AWS A5.20: E6XT-X, E6XT-XM
AWS A5.29: E6XTX-X, E6XTX-XM
or any of those listed in Section 102.3(a).

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

102.4 PAINT

The standard shop paint is 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, SSPC No. 15.
b) Or, shall be a shop paint which meets the minimum performance requirements of the above listed specification.

SECTION 103. DESIGN AND MANUFACTURE

103.1 METHOD

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

- a) Where the steel used consists of hot-rolled shapes, bars or plates, use the American Institute of Steel Construction, *Specification for Structural Steel Buildings*.
b) For members which are cold-formed from sheet or strip steel, use the American Iron and Steel Institute, *North American Specification for the Design of Cold-Formed Steel Structural Members*.

Design Basis:

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

Loads, Forces and Load Combinations:

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

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

103.2 DESIGN AND ALLOWABLE STRESSES

Design Using Load and Resistance Factor Design (LRFD)

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

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

Design Using Allowable Strength Design (ASD)

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

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

Stresses:

For Chords: The calculation of design or allowable stress shall be based on a yield strength, F_y , of the material used in manufacturing equal to 50 ksi (345 MPa).

For all other joist elements: The calculation of design or allowable stress shall be based on a yield strength, F_y , of the material used in manufacturing, but shall not be less than 36 ksi (250 MPa) or greater than 50 ksi (345 MPa).

Note: Yield strengths greater than 50 ksi shall not be used for the design of any joist members.

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

$$\text{Design Stress} = 0.9F_y \text{ (LRFD)} \tag{103.2-1}$$

$$\text{Allowable Stress} = 0.6F_y \text{ (ASD)} \tag{103.2-2}$$

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

$$\text{Design Stress} = 0.9F_{cr} \text{ (LRFD)} \tag{103.2-3}$$

$$\text{Allowable Stress} = 0.6F_{cr} \text{ (ASD)} \tag{103.2-4}$$

For members with $kl/r \leq 4.71\sqrt{E/QF_y}$

$$F_{cr} = Q \left[0.658 \left(\frac{QF_y}{F_e} \right) \right] F_y \tag{103.2-5}$$

For members with $kl/r > 4.71\sqrt{E/QF_y}$

$$F_{cr} = 0.877F_e \tag{103.2-6}$$

Where F_e = Elastic buckling stress determined in accordance with Equation 103.2-7

$$F_e = \frac{\pi^2 E}{\left(\frac{k\ell}{r}\right)^2} \quad (103.2-7)$$

In the above equations, ℓ is taken as the distance in inches (millimeters) between panel points for the chord members and the appropriate length for a compression or tension web member, and r is the corresponding least radius of gyration of the member or any component thereof. E is equal to 29,000 ksi (200,000 MPa).

For hot-rolled sections and cold formed angles, Q is the full reduction factor for slender compression members as defined in the AISC *Specification for Structural Steel Buildings*, except that when the first primary compression web member is a crimped-end angle member, whether hot-rolled or cold formed:

$$Q = [5.25/(w/t)] + t \leq 1.0 \quad (103.2-8)$$

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

or,

$$Q = [5.25/(w/t)] + (t/25.4) \leq 1.0 \quad (103.2-9)$$

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

For all other cold-formed sections the method of calculating the nominal compression strength is given in the AISI, *North American Specification for the Design of Cold-Formed Steel Structural Members*.

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

Bending calculations are to be based on using the elastic section modulus.

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

$$\text{Design Stress} = \phi_b F_n = 0.9F_y \quad (\text{LRFD}) \quad (103.2-10)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.6F_y \quad (\text{ASD}) \quad (103.2-11)$$

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

$$\text{Design Stress} = \phi_b F_n = 1.45F_y \quad (\text{LRFD}) \quad (103.2-12)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.95F_y \quad (\text{ASD}) \quad (103.2-13)$$

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

$$\text{Design Stress} = \phi_b F_n = 1.35F_y \text{ (LRFD)} \quad (103.2-14)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.90F_y \text{ (ASD)} \quad (103.2-15)$$

(d) Weld Strength:

Shear at throat of fillet welds, flare bevel groove welds, partial joint penetration groove welds, and plug/slot welds:

$$\text{Nominal Shear Stress} = F_{nw} = 0.6F_{exx} \quad (103.2-16)$$

LRFD: $\phi_w = 0.75$

$$\text{Design Shear Strength} = \phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A_w \quad (103.2-17)$$

ASD: $\Omega_w = 2.0$

$$\text{Allowable Shear Strength} = R_n/\Omega_w = F_{nw} A/\Omega_w = 0.3F_{exx} A_w \quad (103.2-18)$$

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

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

A_w = effective throat area, where:

For fillet welds, A_w = effective throat area, (other design methods demonstrated to provide sufficient strength by testing shall be permitted to be used);

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

$$T \text{ (inches)} = 0.12D + 0.11 \quad (103.2-19)$$

Where D = web diameter, inches

or,

$$T \text{ (mm)} = 0.12D + 2.8 \quad (103.2-20)$$

Where D = web diameter, mm

For plug/slot welds, A_w = cross-sectional area of the hole or slot in the plane of the faying surface provided that the hole or slot meets the requirements of the American Institute of Steel Construction *Specification for Structural Steel Buildings* (and as described in SJI Technical Digest No. 8, "Welding of Open-Web Steel Joists and Joist Girders").

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

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

$$\text{Design Stress} = 0.9 F_y \text{ (LRFD)} \quad (103.2-21)$$

$$\text{Allowable Stress} = 0.6 F_y \text{ (ASD)} \quad (103.2-22)$$

103.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$ of members as a whole or any component part shall not exceed the values given in Table 103.3-1, Parts A.

The effective slenderness ratio, $k\ell/r$ to be used in calculating the nominal stresses, F_{cr} and F'_e , is the largest value as determined from Table 103.3-1, Parts B and C.

In compression members when fillers or ties are used, they shall be spaced so that the ℓ_s/r_z ratio of each component does not exceed the governing ℓ/r ratio of the member as a whole. The terms used in Table 103.3-1 are defined as follows:

- ℓ = length center-to-center of panel points, except $\ell = 36$ inches (914 millimeters) for calculating ℓ/r_y of top chord member, in. (mm).
- ℓ_s = maximum length center-to-center between panel point and filler (tie), or between adjacent fillers (ties), in. (mm).
- r_x = member radius of gyration in the plane of the joist, in. (mm).
- r_y = member radius of gyration out of the plane of the joist, in. (mm).
- r_z = least radius of gyration of a member component, in. (mm).

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

Tension web members are those web members subject to tension axial loads under gravity loading, and which may be subject to compressive axial loads under alternate loading conditions, such as net uplift.

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

**TABLE 103.3-1
MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS**

	Description	kℓ/r _x	kℓ/r _y	kℓ/r _z	kℓ _s /r _z
I TOP CHORD INTERIOR PANELS					
	A. The slenderness ratios, 1.0ℓ/r and 1.0ℓ _s /r, of members as a whole or any component part shall not exceed 90.				
	B. The effective slenderness ratio, kℓ/r, to determine F _{cr} where k is:				
	1. With fillers or ties	0.75	0.94	---	1.0
	2. Without fillers or ties	---	---	0.75	---
	3. Single component members	0.75	0.94	---	---
	C. For bending, the effective slenderness ratio, kℓ/r, to determine F' _e where k is:	0.75	---	---	---
II TOP CHORD END PANELS, ALL BOTTOM CHORD PANELS					
	A. The slenderness ratios, 1.0ℓ/r and 1.0ℓ _s /r, of members as a whole or any component part shall not exceed 120 for Top Chords, or 240 for Bottom Chords.				
	B. The effective slenderness ratio, kℓ/r, to determine F _{cr} where k is:				
	1. With fillers or ties	1.0	0.94	---	1.0
	2. Without fillers or ties	---	---	1.0	---
	3. Single component members	1.0	0.94	---	---
	C. For bending, the effective slenderness ratio, kℓ/r, to determine F' _e where k is:	1.0	---	---	---
III TENSION WEB MEMBERS					
	A. The slenderness ratios, 1.0ℓ/r and 1.0ℓ _s /r, of members as a whole or any component part shall not exceed 240.				
	B. For end web members subject to compression, the effective slenderness ratio, kℓ/r, to determine F _{cr} where k is:				
	1. With fillers or ties	0.75	1.0	---	1.0
	2. Without fillers or ties	---	---	1.0	---
	3. Single component members	0.75	0.8	---	---
IV COMPRESSION WEB MEMBERS					
	A. The slenderness ratios, 1.0 and 1.0ℓ _s /r, of members as a whole or any component part shall not exceed 200.				
	B. The effective slenderness ratio, kℓ/r, to determine F _{cr} where k is:				
	1. With fillers or ties	0.75	1.0	---	1.0
	2. Without fillers or ties	---	---	1.0	---
	3. Single component members	0.75	1.0	---	---

103.4 MEMBERS

(a) Chords

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

The radius of gyration of the top chord about its vertical axis shall not be less than:

$$r_y \geq \ell_{br} / \left(124 + 0.67 d_j + 28 \frac{d_j}{L} \right), \text{ in.} \quad (103.4-1a)$$

$$r_y \geq \ell_{br} / \left(124 + 0.026 d_j + 0.34 \frac{d_j}{L} \right), \text{ mm} \quad (103.4-1b)$$

or,

$$r_y \geq \ell_{br} / 170 \quad (103.4-2)$$

Where:

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

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

r_y is the out-of-plane radius of gyration of the top chord, in. (mm)

ℓ_{br} is the spacing in inches (millimeters) between lines of bridging as specified in Section 104.5(d).

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

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

For **LRFD**:

at the panel point:

$$f_{au} + f_{bu} \leq 0.9F_y \quad (103.4-3)$$

at the mid panel:

$$\text{for, } \frac{f_{au}}{\phi_c F_{cr}} \geq 0.2,$$

$$\frac{f_{au}}{\phi_c F_{cr}} + \frac{8}{9} \left[\frac{C_m f_{bu}}{\left[1 - \left(\frac{f_{au}}{\phi_c F'_e} \right) \right] Q \phi_b F_y} \right] \leq 1.0 \quad (103.4-4)$$

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

$$\left(\frac{f_{au}}{2\phi_c F_{cr}} \right) + \left[\frac{C_m f_{bu}}{\left[1 - \left(\frac{f_{au}}{\phi_c F'_e} \right) \right] Q \phi_b F_y} \right] \leq 1.0 \quad (103.4-5)$$

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

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

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

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

S = Elastic Section Modulus, in.³ (mm³)

F_{cr} = Nominal axial compressive stress in ksi (MPa) based on ℓ/r as defined in Section 103.2(b),

C_m = $1 - 0.3 f_{au}/\phi F_e$ for end panels

C_m = $1 - 0.4 f_{au}/\phi F_e$ for interior panels

F_y = Specified minimum yield strength, ksi (MPa)

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

Where ℓ is the panel length, in inches (millimeters), as defined in Section 103.2(b) and r_x is the radius of gyration about the axis of bending.

Q = Form factor defined in Section 103.2(b)

A = Area of the top chord, in.² (mm²)

For **ASD**:

at the panel point:

$$f_a + f_b \leq 0.6F_y \quad (103.4-6)$$

at the mid panel:

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

$$\frac{f_a}{F_a} + \frac{8}{9} \left[\frac{C_m f_b}{\left[1 - \left(\frac{1.67f_a}{F'_e} \right) \right] Q F_b} \right] \leq 1.0 \quad (103.4-7)$$

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

$$\left(\frac{f_a}{2F_a}\right) + \left[\frac{C_m f_b}{\left[1 - \left(\frac{1.67f_a}{F'_e}\right)\right] QF_b} \right] \leq 1.0 \quad (103.4-8)$$

- f_a = P/A required compressive stress, ksi (MPa)
- P = Required axial strength using ASD load combinations, kips (N)
- f_b = M/S = required bending stress at the location under consideration, ksi (MPa)
- M = Required flexural strength using ASD load combinations, k-in. (N-mm)
- F_a = Allowable axial compressive stress based on ℓ/r as defined in Section 103.2(b), ksi (MPa)
- F_b = Allowable bending stress; $0.6F_y$, ksi (MPa)
- C_m = $1 - 0.50 f_a/F_e$ for end panels
- C_m = $1 - 0.67 f_a/F_e$ for interior panels

The top chord and bottom chord shall be designed such that at each joint:

$$f_{vmod} \leq \phi_v f_n \quad (\text{LRFD, } \phi = 1.00) \quad (103.4-9)$$

$$f_{vmod} \leq f_n / \Omega_v \quad (\text{ASD, } \Omega = 1.50) \quad (103.4-10)$$

- f_n = nominal shear stress = $0.6F_y$, ksi (MPa)
- f_t = axial stress = P/A, ksi (MPa)
- f_v = shear stress = V/bt, ksi (MPa)
- f_{vmod} = modified shear stress = $\left(\frac{1}{2}\right)(f_t^2 + 4f_v^2)^{1/2}$
- b = length of vertical part(s) of cross section, in. (mm)
- t = thickness of vertical part(s) of cross section, in. (mm)

It shall not be necessary to design the top chord and bottom chord for the modified shear stress when a round bar web member is continuous through a joint. The minimum required shear of section 103.4(b) 25 percent of the end reaction) shall not be required when evaluating Equation 103.4-9 or 103.4-10.

(b) Web

The vertical shears to be used in the design of the web members shall be determined from full uniform loading, but such vertical shears shall be not less than 25 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 an additional axial load of $\frac{1}{2}$ of 1.0 percent of the top chord axial force.

(c) Joist Extensions

Joist extensions are defined as one of three types, top chord extensions (TCX), extended ends, or full depth cantilevers.

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

- (1) A joist extension shall be designed for the load from the Standard Load Tables based on the design length and designation of the specified joist. In the absence of other design information, the joist manufacturer shall design the joist extension for this loading as a default.
- (2) A loading diagram shall be provided for the joist extension. The diagram shall include the magnitude and location of the loads to be supported, as well as the appropriate load combinations.

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

The joist manufacturer shall consider the effects of joist extension loading on the base span of the joist. This includes carrying the design bending moment due to the loading on the extension into the top chord end panel(s), and the effect on the overall joist chord and web axial forces.

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

103.5 CONNECTIONS**(a) Methods**

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

(1) Welded Connections

- a) Selected welds shall be inspected visually by the manufacturer. Prior to this inspection, weld slag shall be removed.
- b) Cracks are not acceptable and shall be repaired.
- c) Thorough fusion shall exist between weld and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.
- d) Unfilled weld craters shall not be included in the design length of the weld.
- e) Undercut shall not exceed 1/16 inch (2 mm) for welds oriented parallel to the principal stress.
- f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 mm) in any 1 inch (25 mm) of design weld length.
- g) Weld spatter that does not interfere with paint coverage is acceptable.

(2) Welded Connections for Crimped-End Angle Web Members

The connection of each end of a crimped angle web member to each side of the chord shall consist of a weld group made of more than a single line of weld. The design weld length shall include, at minimum, an end return of two times the nominal weld size.

(3) Welding Program

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

(4) Weld Inspection by Outside Agencies (See Section 104.13 of this specification)

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

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

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

(c) Field Splices

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

(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 shall be permitted to 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.

103.6 CAMBER

Joists shall have approximate camber in accordance with the following:

TABLE 103.6-1

<u>Top Chord Length</u>		<u>Approximate Camber</u>	
20'-0"	(6096 mm)	1/4"	(6 mm)
30'-0"	(9144 mm)	3/8"	(10 mm)
40'-0"	(12192 mm)	5/8"	(16 mm)
50'-0"	(15240 mm)	1"	(25 mm)
60'-0"	(18288 mm)	1 1/2"	(38 mm)
70'-0"	(21336 mm)	2"	(51 mm)
80'-0"	(24384 mm)	2 3/4"	(70 mm)
90'-0"	(27432 mm)	3 1/2"	(89 mm)
100'-0"	(30480 mm)	4 1/4"	(108 mm)

For joist lengths exceeding 100'-0" a camber equal to Span/300 shall be used. The specifying professional shall give consideration to coordinating joist camber with adjacent framing.

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. Design data shall be submitted in detail and in the format specified by the Institute.

(b) In-Plant Inspections

Each manufacturer shall verify his ability to manufacture **LH-** 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 guarantee of the quality of any specific joists; this responsibility lies fully and solely with the individual manufacturer.

SECTION 104. APPLICATION

104.1 USAGE

This specification shall apply to any type of structure where floors and roofs are to be supported directly by steel joists installed as hereinafter specified. Where joists are used other than on simple spans under uniformly distributed loading as prescribed in Section 103.1, they shall be investigated and modified when necessary to limit the required stresses to those listed in Section 103.2.

When a rigid connection of the bottom chord is to be made to a column or other structural support, the joist is then no longer simply supported, and the system shall be investigated for continuous frame action by the specifying professional. The magnitude and location of all loads and forces shall be provided on the structural drawings. The specifying professional shall design the supporting structure, including the design of columns, connections, and moment plates*. This design shall account for the stresses caused by lateral forces and the stresses due to connecting the bottom chord to the column or other structural support.

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

*For further reference, refer to Steel Joist Institute Technical Digest No. 11, "Design of Lateral Load Resisting Frames Using Steel Joists and Joist Girders"

104.2 SPAN

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

104.3 DEPTH

Joists shall have either parallel chords or a top chord pitch of up to 1/2 inch per foot (1:24). The joist designation depth shall be the depth at mid-span.

104.4 END SUPPORTS

(a) Masonry and Concrete

A **LH-** or **DLH-**Series Joist end supported by masonry or concrete shall bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical or lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of **LH-** and **DLH-**Series Joists shall extend a distance of not less than 6 inches (152 mm) over the masonry or concrete support unless it is deemed necessary to bear less than 6 inches (152 mm) over the support. Special consideration shall then be given to the design of the steel bearing plate and the masonry or concrete by the specifying professional. **LH-** and **DLH-**Series Joists shall be anchored to the steel bearing plate and shall bear a minimum of 4 inches (102 mm) on the plate.

The steel bearing plate shall be located not more than 1/2 inch (13 mm) from the face of the wall, otherwise special consideration shall be given to the design of the steel bearing plate and the masonry or concrete by the specifying professional. When the specifying professional requires the joist reaction to occur at or near the centerline of the wall or other support, then a note shall be placed on the contract drawings specifying this requirement and the specified bearing seat depth shall be increased accordingly. If the joist reaction is to occur more than 4 inches (102 mm) from the face of the wall or other support, the required bearing seat depth shall be the minimum seat depth plus a dimension at least equal to the distance the joist reaction is to occur beyond 4 inches (102 mm).

The steel bearing plate shall not be less than 9 inches (229 mm) wide perpendicular to the length of the joist. The plate is to be designed by the specifying professional and shall be furnished by other than the joist manufacturer.

(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-** and **DLH-**Series Joists shall extend a distance over the steel supports not less than that shown in Table 104.4-1.

TABLE 104.4-1

JOIST SECTION NUMBER*	MINIMUM BEARING LENGTH
02-06	2 ½" (64 mm)
07-17	4" (102 mm)
18-25	6" (152 mm)
*Last two digits of joist designation shown in Load Table.	

Where deemed necessary to butt opposite joists over a narrow steel support with bearing less than that noted above, special ends shall be specified, and such ends shall have positive attachment to the support, either by bolting or welding.

104.5 BRIDGING

Top and bottom chord bridging is required and shall consist of one or both of the following types:

(a) Horizontal

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

(b) Diagonal

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

(c) Bridging Lines

For spans up through 60 feet (18288 mm), welded horizontal bridging shall be permitted 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. When the joist spacing is less than 0.70 x joist depth, bolted horizontal bridging shall be used in addition to bolted diagonal bridging.

(d) Quantity and Spacing

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

$$\ell_{brmax} = \left(124 + 0.67 d_j + 28 \frac{d_j}{L} \right) r_y, \text{ in.} \tag{104.5-1a}$$

$$\ell_{brmax} = \left(124 + 0.026 d_j + 0.34 \frac{d_j}{L} \right) r_y, \text{ mm} \tag{104.5-1b}$$

or,
$$\ell_{brmax} = 170 r_y \tag{104.5-2}$$

Where:

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

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

r_y is the out-of-plane radius of gyration of the top chord, in. (mm)

The number of rows of top chord bridging shall not be less than as shown in Bridging Table 104.5-1 and the spacing shall meet the requirements of Equations 104.5-1 and 104.5-2. The number of rows of bottom chord bridging, including bridging required per Section 104.12, shall not be less than the number of top chord rows. Rows of bottom chord bridging are permitted to be spaced independently of rows of top chord bridging. The spacing of rows of bottom chord bridging shall meet the slenderness requirement of Section 103.4(a) and any specified strength requirements. For joist Section Number 21 and greater, bridging shall be installed near a bottom chord panel point or an extra web member shall be furnished to brace the bottom chord for the vertical component of the bridging force equal to the horizontal bracing force.

(e) Sizing of Bridging

Horizontal and diagonal bridging shall be capable of resisting the nominal unfactored horizontal compressive force, P_{br} given in Equation 104.5-3.

$$P_{br} = 0.0025 n A_t F_{construction}, \text{ lbs (N)} \tag{104.5-3}$$

Where

$n = 8$ for horizontal bridging

$n = 2$ for diagonal bridging

A_t = cross sectional area of joist top chord, in.² (mm²)

$F_{\text{construction}}$ = assumed ultimate stress in top chord to resist construction loads

$$F_{\text{construction}} = \left(\frac{\pi^2 E}{\left(\frac{0.9 \ell_{br \max}}{r_y} \right)^2} \right) \geq 12.2 \text{ksi} \quad (104.5-4a)$$

$$F_{\text{construction}} = \left(\frac{\pi^2 E}{\left(\frac{0.9 \ell_{br \max}}{r_y} \right)^2} \right) \geq 84.1 \text{MPa} \quad (104.5-4b)$$

Where

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

and $\frac{\ell_{br \max}}{r_y}$ is determined from Equations 104.5-1a, 104.5-1b or 104.5-2

The bridging nominal horizontal unfactored compressive forces, P_{br} , are summarized in Table 104.5-1.

TABLE 104.5-1

JOIST SECTION NUMBER*	MAXIMUM SPACING OF LINES OF TOP CHORD BRIDGING	NOMINAL HORIZONTAL BRACING FORCE**	
		lbs	(N)
02, 03	10'-0" (3048 mm)	400	(1779)
04, 05	11'-0" (3353 mm)	550	(2447)
06, 07, 08	13'-0" (3962 mm) up to 39'-0" (11.89 m), then 15'-0" (4572 mm)	750	(3336)
09	13'-0" (3962 mm) up to 39'-0" (11.89 m), then 16'-0" (4877 mm)	850	(3781)
10	14'-0" (4267 mm) up to 42'-0" (12.80 m), then 18'-0" (5486 mm)	900	(4003)
11	15'-0" (4572 mm) up to 45'-0" (13.72 m), then 18'-0" (5486 mm)	950	(4226)
12	17'-0" (5182 mm) up to 51'-0" (15.54 m), then 18'-6" (5639 mm)	1100	(4893)
13	18'-0" (5486 mm) up to 54'-0" (16.46 m), then 21'-0" (6400 mm)	1200	(5338)
14	19'-0" (5791 mm) up to 57'-0" (17.37 m), then 21'-6" (6553 mm)	1300	(5783)
15	21'-0" (6400 mm) up to 63'-0" (19.20 m), then 24'-6" (7468 mm)	1450	(6450)
16, 17	22'-0" (6706 mm) up to 66'-0" (20.12 m), then 25'-0" (7620 mm)	1850	(8229)
18,19, 20	26'-0" (7924 mm)	2000	(8896)
21, 22	30'-0" (9144 mm)	2500	(11120)
23, 24	30'-0" (9144 mm)	3100	(13789)
25	30'-0" (9144 mm)	3500	(15569)

Number of lines of bridging is based on joist span dimensions.
 *Last two digits of joist designation shown in load table.
 **Nominal bracing force is unfactored and shown value is for horizontal bridging only. For horizontal bracing force for X bridging divide value shown by 4.

(f) Connections

Connections to the joist chords shall be made by welding or mechanical means and shall be capable of resisting the nominal (unfactored) horizontal force, P_{br} , of Equation 104.5-3.

(g) Bottom Chord Bearing Joists

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

104.6 INSTALLATION OF BRIDGING

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

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

104.7 BEARING SEAT ATTACHMENTS

(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, as shown in Table 104.7-1, with a minimum of two fillet welds, or with two bolts, or the equivalent.

(b) Steel

Ends of **LH-** and **DLH-**Series Joists resting on steel supports shall be attached thereto, as shown in Table 104.7-1, with two fillet welds, or with two 3/4 inch (19 mm) bolts, or the equivalent. When **LH-** and **DLH-**Series Joists are used to provide lateral stability to the supporting member, the final connection shall be made by welding or as designated by the specifying professional.

TABLE 104.7-1

JOIST SECTION NUMBER*	FILLET WELD	BEARING SEAT BOLTS FOR ERECTION
02-06	2– 3/16" x 2" (5 x 51 mm)	2– 3/4" (19 mm) A307
07-17	2– 1/4" x 2" (6 x 51 mm)	2– 3/4" (19 mm) A307
18-25	2– 1/4" x 4" (6 x 102 mm)	2– 3/4" (19 mm) A325
*Last two digits of joist designation shown in load table.		

(c) Uplift

Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces (Refer to Section 104.12 Uplift).

104.8 JOIST SPACING

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

104.9 FLOOR AND ROOF DECKS

(a) Material

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

(b) Thickness

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

(c) Centering

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

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

(d) Bearing

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

(e) Attachments

The spacing of attachments along the joist top chord shall not exceed 36 inches (914 millimeters). Such attachments of the slab or deck to the top chords of joists shall be capable of resisting the forces given in Table 104.9-1.

TABLE 104.9-1

JOIST SECTION NUMBER*	NOMINAL 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)
20 and 21	300 lbs/ft. (4.38 kN/m)
22 to 24 incl.	420 lbs/ft. (6.13 kN/m)
25	520 lbs/ft. (7.59 kN/m)
*Last two digits of joist designation shown in Load Table.	
**Nominal bracing force is unfactored.	

(f) Wood Nailers

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

(g) Joist With Standing Seam Roofing or Laterally Unbraced Top Chords

When the roof systems do not provide lateral stability for the joists in accordance with Section 104.9(e), i.e. as may be the case with standing seam roofs or skylights and openings, sufficient stability shall be provided to brace the joists laterally under the full design load. The compression chord shall resist the chord axial design force in the plane of the joist (i.e., x-x axis buckling) and out of the plane of the joist (i.e., y-y axis buckling). In any case where the attachment requirement of Section 104.9(e) is not achieved, out-of-plane strength shall be achieved by adjusting the bridging spacing and/or increasing the compression chord area and the y-axis radius of gyration. The effective slenderness ratio in the y-direction equals $0.94 L/r_y$; where L is the bridging spacing in inches (millimeters). The maximum bridging spacing shall not exceed that specified in Section 104.5(d).

Horizontal bridging members attached to the compression chords and their anchorages shall be designed for a compressive axial force of $0.001nP + 0.004P/n \geq 0.0025nP$, where n is the number of joists between end anchors and P is the chord design force in kips (Newtons). The attachment force between the horizontal bridging member and the compression chord shall be 0.01P. Horizontal bridging attached to the tension chords shall be proportioned so that the slenderness ratio between attachments does not exceed 300. Diagonal bridging shall be proportioned so that the slenderness ratio between attachments does not exceed 200.

104.10 DEFLECTION

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

Floors: 1/360 of span.

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

The specifying professional shall give 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

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" and the AISC Specification for Structural Steel Buildings.

104.12 UPLIFT

Where uplift forces due to wind are a design requirement, these forces shall be indicated on the contract drawings in terms of NET uplift in pounds per square foot (Pascals). The contract documents shall indicate if the net uplift is based upon LRFD or ASD. When these forces are specified, they shall be considered in the design of joists and/or bridging. A single line of **bottom chord** bridging shall 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 verify 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, they shall be permitted to reserve the right to do so in their "Invitation to Bid" or the accompanying "Job Specifications".

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

104.14 PARALLEL CHORD SLOPED JOISTS

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

SECTION 105. ERECTION STABILITY AND HANDLING

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

(a) Stability Requirements

- 1) Before an employee is allowed on the steel joist: BOTH ends of joists at columns (or joists designated as column joists) shall be attached to its supports. For all other joists a minimum of one end shall be attached before the employee is allowed on the joist. The attachment shall be in accordance with Section 104.7 – End Anchorage.

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

- 2) On steel joists that do not require erection bridging as shown by the unshaded area of the Load Tables, only one employee shall be allowed on the steel joist unless all bridging is installed and anchored.
- 3) Where the span of the steel joist is within the Red shaded area of the Load Table, the following shall apply:
 - a) The row of bridging nearest the mid span of the steel joist shall be bolted diagonal erection bridging; and
 - b) Hoisting cables shall not be released until this bolted diagonal erection bridging is installed and anchored, unless an alternate method of stabilizing the joist has been provided; and
 - c) No more than one employee shall be allowed on these spans until all other bridging is installed and anchored.
- 4) Where the span of the steel joist is within the Blue shaded area of the Load Table, the following shall apply:
 - a) All rows of bridging shall be bolted diagonal bridging; and
 - b) Hoisting cables shall not be released until the two rows of bolted diagonal erection bridging nearest the third points of the steel joist are installed and anchored; and
 - c) No more than two employees shall be allowed on these spans until all other bridging is installed and anchored.
- 5) Where the span of the steel joist is in the Gray shaded area of the Load Table, the following shall apply:
 - a) All rows of bridging shall be bolted diagonal bridging; and
 - b) Hoisting cables shall not be released until all bridging is installed and anchored; and
 - c) No more than two employees shall be allowed on these spans until all other bridging is installed and anchored.
- 6) When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide lateral stability.
- 7) In the case of bottom chord bearing joists, the ends of the joist shall be restrained laterally per Section 104.5(g) before releasing the hoisting cables.
- 8) After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joists shall be fully connected to the supports in accordance with Section 104.7 - End Anchorage.

(b) Landing and Placing Loads

- 1) Except as stated in paragraph 105(b)(3) of this section, no "construction loads"⁽¹⁾ shall be allowed on the steel joists until all bridging is installed and anchored, and all joist bearing ends are attached.
- 2) During the construction period, loads placed on the steel joists shall be distributed so as not to exceed the capacity of the steel joists.
- 3) The weight of a bundle of joist bridging shall not exceed a total of 1000 pounds (454 kilograms). The bundle of joist bridging shall be placed on a minimum of 3 steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within 1 foot (0.30 m) of the secured end.
- 4) No bundle of deck shall be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless the following conditions are met:
 - a) The contractor has first determined from a "qualified person"⁽²⁾ and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load;
 - b) The bundle of decking is placed on a minimum of 3 steel joists;
 - c) The joists supporting the bundle of decking are attached at both ends;
 - d) At least one row of bridging is installed and anchored;
 - e) The total weight of the decking does not exceed 4000 pounds (1816 kilograms); and
 - f) The edge of the bundle of decking shall be placed within 1 foot (0.30 meters) of the bearing surface of the joist end.
- 5) The edge of the construction load shall be placed within 1 foot (0.30 meters) of the bearing surface of the joist end.

(c) Field Welding

- 1) All field welding shall be performed in accordance with the contract documents. Field welding shall not damage the joists.
- 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.

(d) Handling

Particular attention shall be considered for the handling and erection of **LH-** and **DLH-**Series steel joists. Care shall be exercised at all times to avoid damage to the joists and accessories. Hoisting cables shall be attached at panel point locations and those locations shall be selected to minimize erection stresses.

Each joist shall be adequately braced laterally before any loads are applied. If lateral support is provided by bridging, the bridging lines as defined in Section 105(a), paragraphs 2, 3, 4 and 5 shall be anchored to prevent lateral movement.

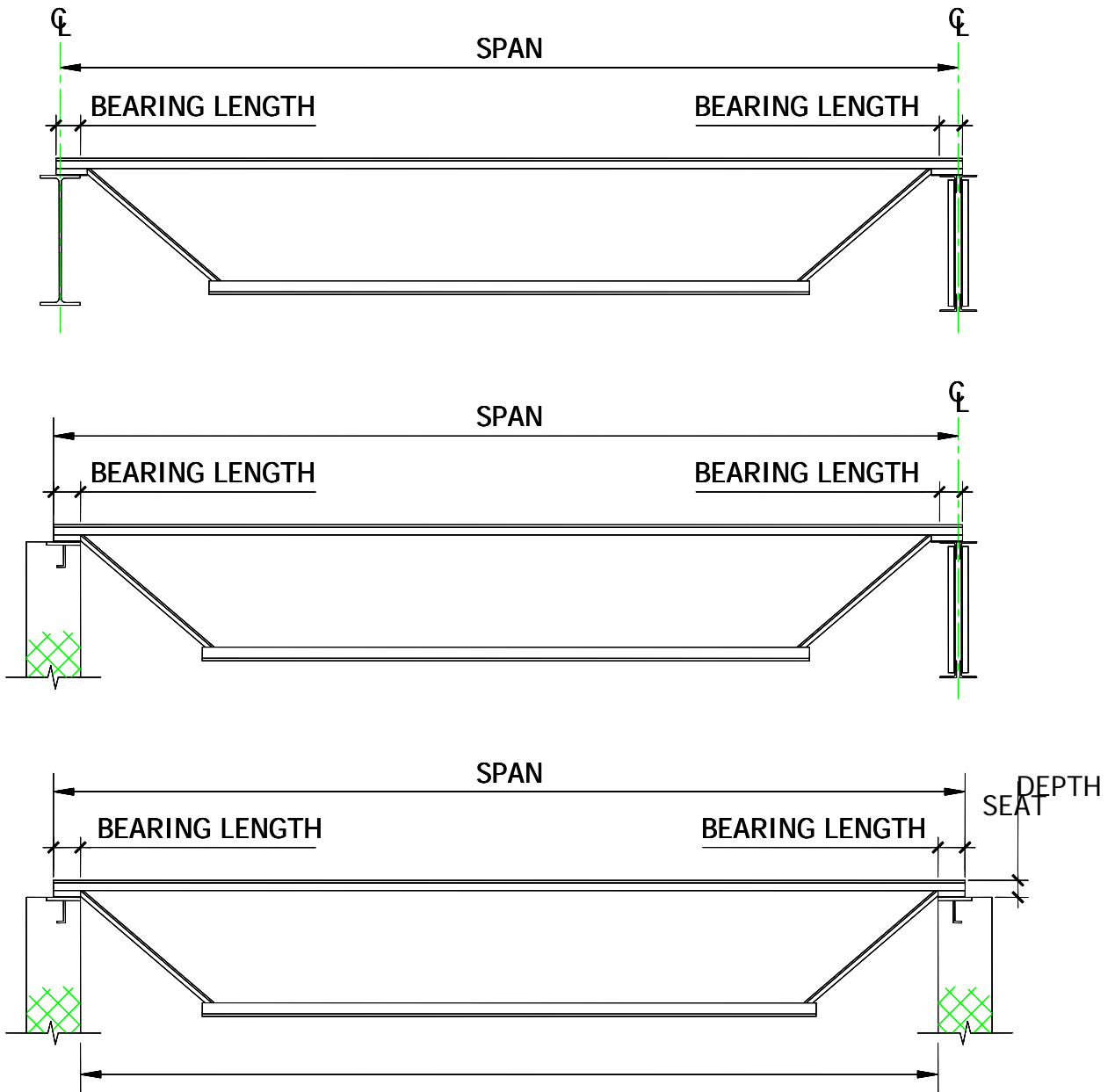
(e) Fall Arrest Systems

Steel joists shall not be used as anchorage points for a fall arrest system unless written direction to do so is obtained from a "qualified person"⁽²⁾.

*For further reference, refer to Steel Joist Institute Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders."

- ⁽¹⁾ See Federal Register, Department of Labor, Occupational Safety and Health Administration (2001), 29 CFR Part 1926 Safety Standards for Steel Erection; Final Rule, §1926.757 Open Web Steel Joists - January 18, 2001, Washington, D.C. for definition of “construction load”.
- ⁽²⁾ See Federal Register, Department of Labor, Occupational Safety and Health Administration (2001), 29 CFR Part 1926 Safety Standards for Steel Erection; Final Rule, §1926.757 Open Web Steel Joists - January 18, 2001, Washington, D.C. for definition of “qualified person”.

DEFINITION OF SPAN (U. S. Customary Units)



- NOTES:
- 1) DESIGN LENGTH = SPAN - 0.33 FT
 - 2) BEARING LENGTH FOR STEEL SUPPORTS SHALL NOT BE LESS THAN SHOWN IN TABLE 104.4-1; FOR MASONRY AND CONCRETE NOT LESS THAN 6 INCHES
 - 3) PARALLEL CHORD JOISTS INSTALLED TO A SLOPE GREATER THAN ½ INCH PER FOOT SHALL USE SPAN DEFINED BY THE LENGTH ALONG THE SLOPE.

STANDARD ASD LOAD TABLE

LONGSPAN STEEL JOISTS, LH-SERIES

Based on a 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute May 25, 1983
Revised to May 18, 2010 – Effective December 31, 2010

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

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

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

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

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

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

The approximate gross moment of inertia (not adjusted for shear deformation), in inches⁴, of a standard joist listed in the Load Table may be determined as follows:

$$I_j = 26.767(W)(L^3)(10^{-6}), \text{ where } W = \text{RED figure in the Load Table, and}$$
$$L = (\text{span} - 0.33) \text{ in feet.}$$

Loads for span increments not explicitly given in the Load Table may be determined using linear interpolation between the load values given in adjacent span columns.

*The safe uniform load for the spans shown in the SAFE LOAD Column is equal to (SAFE LOAD) / (span). The TOTAL safe uniformly distributed load-carrying capacity, for spans less than those shown in the SAFE LOAD Column are given in the MAX LOAD Column.

To solve for a RED figure for spans shown in the SAFE LOAD Column (or lesser spans), multiply the RED figure of the shortest span shown in the Load Table by (the shortest span shown in the Load Table – 0.33 feet)² and divide by (the actual span – 0.33 feet)². In no case shall the calculated load exceed the TOTAL load-carrying capacity of the joist.



STANDARD LOAD TABLE FOR LONGSPAN STEEL JOISTS, LH-SERIES
 Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds Per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists only)	Depth in inches	Max Load (plf) < 22	SAFE LOAD* in Lbs. Between	SPAN IN FEET															
					22-25	26	27	28	29	30	31	32	33	34	35	36				
18LH02	10	18	553	12160	468 313	442 284	418 259	391 234	367 212	345 193	324 175	306 160	289 147	273 135	259 124					
18LH03	11	18	613	13480	521 348	493 317	467 289	438 262	409 236	382 213	359 194	337 177	317 161	299 148	283 136					
18LH04	12	18	714	15700	604 403	571 367	535 329	500 296	469 266	440 242	413 219	388 200	365 182	344 167	325 153					
18LH05	15	18	806	17740	684 454	648 414	614 378	581 345	543 311	508 282	476 256	448 233	421 212	397 195	375 179					
18LH06	15	18	954	20980	809 526	749 469	696 419	648 377	605 340	566 307	531 280	499 254	470 232	443 212	418 195					
18LH07	17	18	990	21780	840 553	809 513	780 476	726 428	678 386	635 349	595 317	559 288	526 264	496 241	469 222					
18LH08	19	18	1032	22700	876 577	843 534	812 496	784 462	758 427	717 387	680 351	641 320	604 292	571 267	540 246					
18LH09	21	18	1105	24320	936 616	901 571	868 527	838 491	810 458	783 418	759 380	713 346	671 316	633 289	598 266					
			< 23	23-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
20LH02	10	20	498	11460	442 306	437 303	431 298	410 274	388 250	365 228	344 208	325 190	307 174	291 160	275 147	262 136	249 126	237 117	225 108	
20LH03	11	20	529	12160	469 337	463 333	458 317	452 302	434 280	414 258	395 238	372 218	352 200	333 184	316 169	299 156	283 143	269 133	255 123	
20LH04	12	20	648	14900	574 428	566 406	558 386	528 352	496 320	467 291	440 265	416 243	393 223	372 205	353 189	335 174	318 161	303 149	289 139	
20LH05	14	20	697	16020	616 459	609 437	602 416	595 395	571 366	544 337	513 308	484 281	458 258	434 238	411 219	390 202	371 187	353 173	336 161	
20LH06	15	20	930	21380	822 606	791 561	763 521	723 477	679 427	635 386	596 351	560 320	527 292	497 267	469 246	444 226	421 209	399 192	379 178	
20LH07	17	20	991	22800	878 647	845 599	814 556	786 518	760 484	711 438	667 398	627 362	590 331	556 303	526 278	497 256	471 236	447 218	425 202	
20LH08	19	20	1023	23520	908 669	873 619	842 575	813 536	785 500	760 468	722 428	687 395	654 365	621 336	588 309	558 285	530 262	503 242	479 225	
20LH09	21	20	1119	25740	990 729	953 675	918 626	886 581	856 542	828 507	802 475	778 437	755 399	712 366	673 336	636 309	603 285	572 264	544 244	
20LH10	23	20	1207	27760	1068 786	1028 724	991 673	956 626	924 585	894 545	865 510	839 479	814 448	791 411	748 377	707 346	670 320	636 296	604 274	



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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists only)	Depth in inches	Max Load (plf) < 29	SAFELOAD* in Lbs. Between	SPAN IN FEET																
					29-33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
24LH03	11	24	401	11620	342	339	336	323	307	293	279	267	255	244	234	224	215	207	199		
					235	226	218	204	188	175	162	152	141	132	124	116	109	102	96		
24LH04	12	24	491	14240	419	398	379	360	343	327	312	298	285	273	262	251	241	231	222		
					288	265	246	227	210	195	182	169	158	148	138	130	122	114	107		
24LH05	13	24	526	15260	449	446	440	419	399	380	363	347	331	317	304	291	280	269	258		
					308	297	285	264	244	226	210	196	182	171	160	150	141	132	124		
24LH06	16	24	708	20520	604	579	555	530	504	480	457	437	417	399	381	364	348	334	320		
					411	382	356	331	306	284	263	245	228	211	197	184	172	161	152		
24LH07	17	24	777	22540	665	638	613	588	565	541	516	491	468	446	426	407	389	373	357		
					452	421	393	367	343	320	297	276	257	239	223	208	195	182	171		
24LH08	18	24	829	24040	707	677	649	622	597	572	545	520	497	475	455	435	417	400	384		
					480	447	416	388	362	338	314	292	272	254	238	222	208	196	184		
24LH09	21	24	976	28300	832	808	785	764	731	696	663	632	602	574	548	524	501	480	460		
					562	530	501	460	424	393	363	337	313	292	272	254	238	223	209		
24LH10	23	24	1031	29900	882	856	832	809	788	768	737	702	668	637	608	582	556	533	511		
					596	559	528	500	474	439	406	378	351	326	304	285	266	249	234		
24LH11	25	24	1087	31520	927	900	875	851	829	807	787	768	734	701	671	642	616	590	567		
					624	588	555	525	498	472	449	418	388	361	337	315	294	276	259		
			< 34	34-41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56		
28LH05	13	28	415	14120	337	323	310	297	286	275	265	255	245	237	228	220	213	206	199		
					219	205	192	180	169	159	150	142	133	126	119	113	107	102	97		
28LH06	16	28	552	18760	448	429	412	395	379	364	350	337	324	313	301	291	281	271	262		
					289	270	253	238	223	209	197	186	175	166	156	148	140	133	126		
28LH07	17	28	623	21180	505	484	464	445	427	410	394	379	365	352	339	327	316	305	295		
					326	305	285	267	251	236	222	209	197	186	176	166	158	150	142		
28LH08	18	28	667	22680	540	517	496	475	456	438	420	403	387	371	357	344	331	319	308		
					348	325	305	285	268	252	236	222	209	196	185	175	165	156	148		
28LH09	21	28	821	27920	667	639	612	586	563	540	519	499	481	463	446	430	415	401	387		
					428	400	375	351	329	309	291	274	258	243	228	216	204	193	183		
28LH10	23	28	898	30540	729	704	679	651	625	600	576	554	533	513	495	477	460	444	429		
					466	439	414	388	364	342	322	303	285	269	255	241	228	215	204		
28LH11	25	28	964	32760	780	762	736	711	682	655	629	605	582	561	540	521	502	485	468		
					498	475	448	423	397	373	351	331	312	294	278	263	249	236	223		
28LH12	27	28	1058	35980	857	837	818	800	782	766	737	709	682	656	632	609	587	566	546		
					545	520	496	476	454	435	408	383	361	340	321	303	285	270	256		
28LH13	30	28	1103	37500	895	874	854	835	816	799	782	766	751	722	694	668	643	620	598		
					569	543	518	495	472	452	433	415	396	373	352	332	314	297	281		
			< 39	39-46	47-49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	
32LH06	14	32	431	16820	338	326	315	304	294	284	275	266	257	249	242	234	227	220	214		
					211	199	189	179	169	161	153	145	138	131	125	119	114	108	104		
32LH07	16	32	485	18920	379	366	353	341	329	318	308	298	288	279	271	262	254	247	240		
					235	223	211	200	189	179	170	162	154	146	140	133	127	121	116		
32LH08	17	32	527	20540	411	397	383	369	357	345	333	322	312	302	293	284	275	267	259		
					255	242	229	216	205	194	184	175	167	159	151	144	137	131	125		
32LH09	21	32	661	25780	516	498	480	463	447	432	418	404	391	379	367	356	345	335	325		
					319	302	285	270	256	243	230	219	208	198	189	180	172	164	157		
32LH10	21	32	731	28500	571	550	531	512	495	478	462	445	430	416	402	389	376	364	353		
					352	332	315	297	282	267	254	240	228	217	206	196	186	178	169		
32LH11	24	32	801	31220	625	602	580	560	541	522	505	488	473	458	443	429	416	403	390		
					385	363	343	325	308	292	277	263	251	239	227	216	206	196	187		
32LH12	27	32	939	36640	734	712	688	664	641	619	598	578	559	541	524	508	492	477	463		
					450	428	406	384	364	345	327	311	295	281	267	255	243	232	221		
32LH13	30	32	1048	40880	817	801	785	771	742	715	690	666	643	621	600	581	562	544	527		
					500	480	461	444	420	397	376	354	336	319	304	288	275	262	249		
32LH14	33	32	1079	42080	843	826	810	795	780	766	738	713	688	665	643	622	602	583	564		
					515	495	476	458	440	417	395	374	355	337	321	304	290	276	264		
32LH15	35	32	1115	43500	870	853	837	821	805	791	776	763	750	725	701	678	656	635	616		
					532	511	492	473	454	438	422	407	393	374	355	338	322	306	292		
			< 43	43-46	47-56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
36LH07	16	36	393	16900	292	283	274	266	258	251	244	237	230	224	218	212	207	201	196		
					177	168	160	153	146	140	134	128	122	117	112	107	103	99	95		
36LH08	18	36	433	18600	321	311	302	293	284	276	268	260	253	246	239	233	227	221	215		
					194	185	176	168	160	153	146	140	134	128	123	118	113	109	104		
36LH09	21	36	554	23840	411	398	386	374	363	352	342	333	323	314	306	297	289	282	275		
					247	235	224	214	204	195	186	179	171	163	157	150	144	138	133		
36LH10	21	36	611	26260	454	440	426	413	401	389	378	367	357	347	338	328	320	311	303		
					273	260	248	236	225	215	206	197	188	180	173	165	159	152	146		



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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists Only)	Depth in inches	Max Load (plf) < 48	SAFELOAD* in Lbs. Between		SPAN IN FEET														
				48-59	60-65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
40LH08	16	40	348	16680	16680	254	247	241	234	228	222	217	211	206	201	196	192	187	183	178
						150	144	138	132	127	122	117	112	108	104	100	97	93	90	86
40LH09	21	40	457	21920	21920	332	323	315	306	298	291	283	276	269	263	256	250	244	239	233
						196	188	180	173	166	160	153	147	141	136	131	126	122	118	113
40LH10	21	40	503	24120	24120	367	357	347	338	329	321	313	305	297	290	283	276	269	262	255
						216	207	198	190	183	176	169	162	156	150	144	139	134	129	124
40LH11	22	40	549	26340	26340	399	388	378	368	358	349	340	332	323	315	308	300	293	286	279
						234	224	215	207	198	190	183	176	169	163	157	151	145	140	135
40LH12	25	40	668	32060	32060	486	472	459	447	435	424	413	402	392	382	373	364	355	346	338
						285	273	261	251	241	231	222	213	205	197	189	182	176	169	163
40LH13	30	40	788	37800	37800	573	557	542	528	514	500	487	475	463	451	440	429	419	409	399
						334	320	307	295	283	271	260	250	241	231	223	214	207	199	192
40LH14	35	40	900	43220	43220	656	638	620	603	587	571	556	542	528	515	502	490	478	466	455
						383	367	351	336	323	309	297	285	273	263	252	243	233	225	216
40LH15	36	40	1007	48340	48340	734	712	691	671	652	633	616	599	583	567	552	538	524	511	498
						427	408	390	373	357	342	328	315	302	290	279	268	258	248	239
40LH16	42	40	1110	53280	53280	808	796	784	772	761	751	730	710	691	673	655	638	622	606	591
						469	455	441	428	416	404	387	371	356	342	329	316	304	292	282
			< 53	53-59	60-73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
44LH09	19	44	379	20100	20100	272	265	259	253	247	242	236	231	226	221	216	211	207	202	198
						158	152	146	141	136	131	127	122	118	114	110	106	103	99	96
44LH10	21	44	419	22200	22200	300	293	286	279	272	266	260	254	249	243	238	233	228	223	218
						174	168	162	155	150	144	139	134	130	125	121	117	113	110	106
44LH11	22	44	453	24000	24000	325	317	310	302	295	289	282	276	269	264	258	252	247	242	236
						188	181	175	168	162	157	151	146	140	136	131	127	123	119	115
44LH12	25	44	561	29740	29740	402	393	383	374	365	356	347	339	331	323	315	308	300	293	287
						232	224	215	207	200	192	185	179	172	166	160	155	149	144	139
44LH13	30	44	665	35260	35260	477	466	454	444	433	423	413	404	395	386	377	369	361	353	346
						275	265	254	246	236	228	220	212	205	198	191	185	179	173	167
44LH14	31	44	766	40580	40580	549	534	520	506	493	481	469	457	446	436	425	415	406	396	387
						315	302	291	279	268	259	249	240	231	223	215	207	200	193	187
44LH15	36	44	891	47220	47220	639	623	608	593	579	565	551	537	524	512	500	488	476	466	455
						366	352	339	326	314	303	292	281	271	261	252	243	234	227	219
44LH16	42	44	1027	54440	54440	737	719	701	684	668	652	637	622	608	594	580	568	555	543	531
						421	405	390	375	362	348	336	324	313	302	291	282	272	263	255
44LH17	47	44	1103	58460	58460	790	780	769	759	750	732	715	699	683	667	652	638	624	610	597
						450	438	426	415	405	390	376	363	351	338	327	316	305	295	285
			< 57	57-59	60-81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
48LH10	21	48	352	20080	20080	246	241	236	231	226	221	217	212	208	204	200	196	192	188	185
						141	136	132	127	123	119	116	112	108	105	102	99	96	93	90
48LH11	22	48	382	21780	21780	266	260	255	249	244	239	234	229	225	220	216	212	208	204	200
						152	147	142	137	133	129	125	120	117	113	110	106	103	100	97
48LH12	25	48	482	27500	27500	336	329	322	315	308	301	295	289	283	277	272	266	261	256	251
						191	185	179	173	167	161	156	151	147	142	138	133	129	126	122
48LH13	29	48	578	32940	32940	402	393	384	376	368	360	353	345	338	332	325	318	312	306	300
						228	221	213	206	199	193	187	180	175	170	164	159	154	150	145
48LH14	32	48	682	38860	38860	475	464	454	444	434	425	416	407	399	390	383	375	367	360	353
						269	260	251	243	234	227	220	212	206	199	193	187	181	176	171
48LH15	36	48	784	44680	44680	545	533	521	510	499	488	478	468	458	448	439	430	422	413	405
						308	298	287	278	269	260	252	244	236	228	221	214	208	201	195
48LH16	42	48	904	51500	51500	629	615	601	588	576	563	551	540	528	518	507	497	487	477	468
						355	343	331	320	310	299	289	280	271	263	255	247	239	232	225
48LH17	47	48	1015	57840	57840	706	690	675	660	646	632	619	606	593	581	569	558	547	536	525
						397	383	371	358	346	335	324	314	304	294	285	276	268	260	252



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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists Only)	Depth in inches	Max Load (plf) < 48	SAFELOAD* in Lbs. Between		SPAN IN FEET														
				48-59	60-65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
				60-73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	
40LH08	16	40	348	16680	16680	254	247	241	234	228	222	217	211	206	201	196	192	187	183	178
40LH09	21	40	457	21920	21920	332	323	315	306	298	291	283	276	269	263	256	250	244	239	233
40LH10	21	40	503	24120	24120	367	357	347	338	329	321	313	305	297	290	283	276	269	262	255
40LH11	22	40	549	26340	26340	399	388	378	368	358	349	340	332	323	315	308	300	293	286	279
40LH12	25	40	668	32060	32060	486	472	459	447	435	424	413	402	392	382	373	364	355	346	338
40LH13	30	40	788	37800	37800	573	557	542	528	514	500	487	475	463	451	440	429	419	409	399
40LH14	35	40	900	43220	43220	656	638	620	603	587	571	556	542	528	515	502	490	478	466	455
40LH15	36	40	1007	48340	48340	734	712	691	671	652	633	616	599	583	567	552	538	524	511	498
40LH16	42	40	1110	53280	53280	808	796	784	772	761	751	730	710	691	673	655	638	622	606	591
			< 53	53-59	60-73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
44LH09	19	44	379	20100	20100	272	265	259	253	247	242	236	231	226	221	216	211	207	202	198
44LH10	21	44	419	22200	22200	300	293	286	279	272	266	260	254	249	243	238	233	228	223	218
44LH11	22	44	453	24000	24000	325	317	310	302	295	289	282	276	269	264	258	252	247	242	236
44LH12	25	44	561	29740	29740	402	393	383	374	365	356	347	339	331	323	315	308	300	293	287
44LH13	30	44	665	35260	35260	477	466	454	444	433	423	413	404	395	386	377	369	361	353	346
44LH14	31	44	766	40580	40580	549	534	520	506	493	481	469	457	446	436	425	415	406	396	387
44LH15	36	44	891	47220	47220	639	623	608	593	579	565	551	537	524	512	500	488	476	466	455
44LH16	42	44	1027	54440	54440	737	719	701	684	668	652	637	622	608	594	580	568	555	543	531
44LH17	47	44	1103	58460	58460	790	780	769	759	750	732	715	699	683	667	652	638	624	610	597
			< 57	57-59	60-81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
48LH10	21	48	352	20080	20080	246	241	236	231	226	221	217	212	208	204	200	196	192	188	185
48LH11	22	48	382	21780	21780	266	260	255	249	244	239	234	229	225	220	216	212	208	204	200
48LH12	25	48	482	27500	27500	336	329	322	315	308	301	295	289	283	277	272	266	261	256	251
48LH13	29	48	578	32940	32940	402	393	384	376	368	360	353	345	338	332	325	318	312	306	300
48LH14	32	48	682	38860	38860	475	464	454	444	434	425	416	407	399	390	383	375	367	360	353
48LH15	36	48	784	44680	44680	545	533	521	510	499	488	478	468	458	448	439	430	422	413	405
48LH16	42	48	904	51500	51500	629	615	601	588	576	563	551	540	528	518	507	497	487	477	468
48LH17	47	48	1015	57840	57840	706	690	675	660	646	632	619	606	593	581	569	558	547	536	525



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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists only)	Depth in inches	Max Load (plf) < 29	SAFELOAD* in Lbs. Between	SPAN IN FEET																
					29-33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
24LH03	11	24	401	11620	342	339	336	323	307	293	279	267	255	244	234	224	215	207	199		
					235	226	218	204	188	175	162	152	141	132	124	116	109	102	96		
24LH04	12	24	491	14240	419	398	379	360	343	327	312	298	285	273	262	251	241	231	222		
					288	265	246	227	210	195	182	169	158	148	138	130	122	114	107		
24LH05	13	24	526	15260	449	446	440	419	399	380	363	347	331	317	304	291	280	269	258		
					308	297	285	264	244	226	210	196	182	171	160	150	141	132	124		
24LH06	16	24	708	20520	604	579	555	530	504	480	457	437	417	399	381	364	348	334	320		
					411	382	356	331	306	284	263	245	228	211	197	184	172	161	152		
24LH07	17	24	777	22540	665	638	613	588	565	541	516	491	468	446	426	407	389	373	357		
					452	421	393	367	343	320	297	276	257	239	223	208	195	182	171		
24LH08	18	24	829	24040	707	677	649	622	597	572	545	520	497	475	455	435	417	400	384		
					480	447	416	388	362	338	314	292	272	254	238	222	208	196	184		
24LH09	21	24	976	28300	832	808	785	764	731	696	663	632	602	574	548	524	501	480	460		
					562	530	501	460	424	393	363	337	313	292	272	254	238	223	209		
24LH10	23	24	1031	29900	882	856	832	809	788	768	737	702	668	637	608	582	556	533	511		
					596	559	528	500	474	439	406	378	351	326	304	285	266	249	234		
24LH11	25	24	1087	31520	927	900	875	851	829	807	787	768	734	701	671	642	616	590	567		
					624	588	555	525	498	472	449	418	388	361	337	315	294	276	259		
			< 34	34-41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56		
28LH05	13	28	415	14120	337	323	310	297	286	275	265	255	245	237	228	220	213	206	199		
					219	205	192	180	169	159	150	142	133	126	119	113	107	102	97		
28LH06	16	28	552	18760	448	429	412	395	379	364	350	337	324	313	301	291	281	271	262		
					289	270	253	238	223	209	197	186	175	166	156	148	140	133	126		
28LH07	17	28	623	21180	505	484	464	445	427	410	394	379	365	352	339	327	316	305	295		
					326	305	285	267	251	236	222	209	197	186	176	166	158	150	142		
28LH08	18	28	667	22680	540	517	496	475	456	438	420	403	387	371	357	344	331	319	308		
					348	325	305	285	268	252	236	222	209	196	185	175	165	156	148		
28LH09	21	28	821	27920	667	639	612	586	563	540	519	499	481	463	446	430	415	401	387		
					428	400	375	351	329	309	291	274	258	243	228	216	204	193	183		
28LH10	23	28	898	30540	729	704	679	651	625	600	576	554	533	513	495	477	460	444	429		
					466	439	414	388	364	342	322	303	285	269	255	241	228	215	204		
28LH11	25	28	964	32760	780	762	736	711	682	655	629	605	582	561	540	521	502	485	468		
					498	475	448	423	397	373	351	331	312	294	278	263	249	236	223		
28LH12	27	28	1058	35980	857	837	818	800	782	766	737	709	682	656	632	609	587	566	546		
					545	520	496	476	454	435	408	383	361	340	321	303	285	270	256		
28LH13	30	28	1103	37500	895	874	854	835	816	799	782	766	751	722	694	668	643	620	598		
					569	543	518	495	472	452	433	415	396	373	352	332	314	297	281		
			< 39	39-46	47-49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		
32LH06	14	32	431	16820	338	326	315	304	294	284	275	266	257	249	242	234	227	220	214		
					211	199	189	179	169	161	153	145	138	131	125	119	114	108	104		
32LH07	16	32	485	18920	379	366	353	341	329	318	308	298	288	279	271	262	254	247	240		
					235	223	211	200	189	179	170	162	154	146	140	133	127	121	116		
32LH08	17	32	527	20540	411	397	383	369	357	345	333	322	312	302	293	284	275	267	259		
					255	242	229	216	205	194	184	175	167	159	151	144	137	131	125		
32LH09	21	32	661	25780	516	498	480	463	447	432	418	404	391	379	367	356	345	335	325		
					319	302	285	270	256	243	230	219	208	198	189	180	172	164	157		
32LH10	21	32	731	28500	571	550	531	512	495	478	462	445	430	416	402	389	376	364	353		
					352	332	315	297	282	267	254	240	228	217	206	196	186	178	169		
32LH11	24	32	801	31220	625	602	580	560	541	522	505	488	473	458	443	429	416	403	390		
					385	363	343	325	308	292	277	263	251	239	227	216	206	196	187		
32LH12	27	32	939	36640	734	712	688	664	641	619	598	578	559	541	524	508	492	477	463		
					450	428	406	384	364	345	327	311	295	281	267	255	243	232	221		
32LH13	30	32	1048	40880	817	801	785	771	742	715	690	666	643	621	600	581	562	544	527		
					500	480	461	444	420	397	376	354	336	319	304	288	275	262	249		
32LH14	33	32	1079	42080	843	826	810	795	780	766	738	713	688	665	643	622	602	583	564		
					515	495	476	458	440	417	395	374	355	337	321	304	290	276	264		
32LH15	35	32	1115	43500	870	853	837	821	805	791	776	763	750	725	701	678	656	635	616		
					532	511	492	473	454	438	422	407	393	374	355	338	322	306	292		
			< 43	43-46	47-56	57	58	59	60	61	62	63	64	65	66	67	68	69	70		
36LH07	16	36	393	16900	292	283	274	266	258	251	244	237	230	224	218	212	207	201	196		
					177	168	160	153	146	140	134	128	122	117	112	107	103	99	95		
36LH08	18	36	433	18600	321	311	302	293	284	276	268	260	253	246	239	233	227	221	215		
					194	185	176	168	160	153	146	140	134	128	123	118	113	109	104		
36LH09	21	36	554	23840	411	398	386	374	363	352	342	333	323	314	306	297	289	282	275		
					247	235	224	214	204	195	186	179	171	163	157	150	144	138	133		
36LH10	21	36	611	26260	454	440	426	413	401	389	378	367	357	347	338	328	320	311	303		
					273	260	248	236	225	215	206	197	188	180	173	165	159	152	146		
36LH11	23</																				

STANDARD LRFD LOAD TABLE

LONGSPAN STEEL JOISTS, LH-SERIES

Based on a 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute May 1, 2000
Revised to May 18, 2010 – Effective December 31, 2010

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

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

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

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

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

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

The approximate gross moment of inertia (not adjusted for shear deformation), in inches⁴, of a standard joist listed in the Load Table may be determined as follows:

$$I_j = 26.767(W)(L^3)(10^{-6}), \text{ where } W = \text{RED figure in the Load Table, and} \\ L = (\text{span} - 0.33) \text{ in feet.}$$

Loads for span increments not explicitly given in the Load Table may be determined using linear interpolation between the load values given in adjacent span columns.

*The safe factored uniform load for the spans shown in the SAFE LOAD Column is equal to (SAFE LOAD) / (span). The TOTAL safe factored uniformly distributed load-carrying capacity, for spans less than those shown in the SAFE LOAD Column are given in the MAX LOAD Column.

To solve for an unfactored RED figure for spans shown in the SAFE LOAD Column (or lesser spans), multiply the unfactored RED figure of the shortest span shown in the Load Table by (the shortest span shown in the Load Table – 0.33 feet)² and divide by (the actual span – 0.33 feet)². In no case shall the calculated unfactored load exceed the unfactored TOTAL load-carrying capacity of the joist as determined from the Standard **ASD** Load Table for Longspan Steel Joists, **LH-Series**.

LRFD

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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists only)	Depth in inches	Max Load (plf)	SAFE LOAD* in Lbs. Between	SPAN IN FEET															
					< 22	22-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
18LH02	10	18	829	18240	702	663	627	586	550	517	486	459	433	409	388					
					313	284	259	234	212	193	175	160	147	135	124					
18LH03	11	18	919	20220	781	739	700	657	613	573	538	505	475	448	424					
					348	317	289	262	236	213	194	177	161	148	136					
18LH04	12	18	1070	23550	906	856	802	750	703	660	619	582	547	516	487					
					403	367	329	296	266	242	219	200	182	167	153					
18LH05	15	18	1210	26610	1026	972	921	871	814	762	714	672	631	595	562					
					454	414	378	345	311	282	256	233	212	195	179					
18LH06	15	18	1430	31470	1213	1123	1044	972	907	849	796	748	705	664	627					
					526	469	419	377	340	307	280	254	232	212	195					
18LH07	17	18	1485	32670	1260	1213	1170	1089	1017	952	892	838	789	744	703					
					553	513	476	428	386	349	317	288	264	241	222					
18LH08	19	18	1548	34050	1314	1264	1218	1176	1137	1075	1020	961	906	856	810					
					577	534	496	462	427	387	351	320	292	267	246					
18LH09	21	18	1658	36480	1404	1351	1302	1257	1215	1174	1138	1069	1006	949	897					
					616	571	527	491	458	418	380	346	316	289	266					
			< 23	23-25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
20LH02	10	20	747	17190	663	655	646	615	582	547	516	487	460	436	412	393	373	355	337	
					306	303	298	274	250	228	208	190	174	160	147	136	126	117	108	
20LH03	11	20	793	18240	703	694	687	678	651	621	592	558	528	499	474	448	424	403	382	
					337	333	317	302	280	258	238	218	200	184	169	156	143	133	123	
20LH04	12	20	972	22350	861	849	837	792	744	700	660	624	589	558	529	502	477	454	433	
					428	406	386	352	320	291	265	243	223	205	189	174	161	149	139	
20LH05	14	20	1045	24030	924	913	903	892	856	816	769	726	687	651	616	585	556	529	504	
					459	437	416	395	366	337	308	281	258	238	219	202	187	173	161	
20LH06	15	20	1394	32070	1233	1186	1144	1084	1018	952	894	840	790	745	703	666	631	598	568	
					606	561	521	477	427	386	351	320	292	267	246	226	209	192	178	
20LH07	17	20	1487	34200	1317	1267	1221	1179	1140	1066	1000	940	885	834	789	745	706	670	637	
					647	599	556	518	484	438	398	362	331	303	278	256	236	218	202	
20LH08	19	20	1534	35280	1362	1309	1263	1219	1177	1140	1083	1030	981	931	882	837	795	754	718	
					669	619	575	536	500	468	428	395	365	336	309	285	262	242	225	
20LH09	21	20	1679	38610	1485	1429	1377	1329	1284	1242	1203	1167	1132	1068	1009	954	904	858	816	
					729	675	626	581	542	507	475	437	399	366	336	309	285	264	244	
20LH10	23	20	1810	41640	1602	1542	1486	1434	1386	1341	1297	1258	1221	1186	1122	1060	1005	954	906	
					786	724	673	626	585	545	510	479	448	411	377	346	320	296	274	



STANDARD LOAD TABLE FOR LONGSPAN STEEL JOISTS, LH-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds Per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists only)	Depth in inches	Max Load (plf) < 29	SAFELOAD* in Lbs. Between	SPAN IN FEET																		
					29-33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48			
					< 29	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48			
24LH03	11	24	601	17430	513	508	504	484	460	439	418	400	382	366	351	336	322	310	298				
24LH04	12	24	737	21360	628	597	568	540	514	490	468	447	427	409	393	376	361	346	333				
24LH05	13	24	789	22890	673	669	660	628	598	570	544	520	496	475	456	436	420	403	387				
24LH06	16	24	1061	30780	906	868	832	795	756	720	685	655	625	598	571	546	522	501	480				
24LH07	17	24	1166	33810	997	957	916	882	847	811	774	736	702	669	639	610	583	559	535				
24LH08	18	24	1243	36060	1060	1015	973	933	895	858	817	780	745	712	682	652	625	600	576				
24LH09	21	24	1464	42450	1248	1212	1177	1146	1096	1044	994	948	903	861	822	786	751	720	690				
24LH10	23	24	1547	44850	1323	1284	1248	1213	1182	1152	1105	1053	1002	955	912	873	834	799	766				
24LH11	25	24	1630	47280	1390	1350	1312	1276	1243	1210	1180	1152	1101	1051	1006	963	924	885	850				
			< 34	34-41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56				
28LH05	13	28	623	21180	505	484	465	445	429	412	397	382	367	355	342	330	319	309	298				
28LH06	16	28	828	28140	672	643	618	592	568	546	525	505	486	469	451	436	421	406	393				
28LH07	17	28	934	31770	757	726	696	667	640	615	591	568	547	528	508	490	474	457	442				
28LH08	18	28	1001	34020	810	775	744	712	684	657	630	604	580	556	535	516	498	478	462				
28LH09	21	28	1232	41880	1000	958	918	879	844	810	778	748	721	694	669	645	622	601	580				
28LH10	23	28	1347	45810	1093	1056	1018	976	937	900	864	831	799	769	742	715	690	666	643				
28LH11	25	28	1445	49140	1170	1143	1104	1066	1023	982	943	907	873	841	810	781	753	727	702				
28LH12	27	28	1587	53970	1285	1255	1227	1200	1173	1149	1105	1063	1023	984	948	913	880	849	819				
28LH13	30	28	1654	56250	1342	1311	1281	1252	1224	1198	1173	1149	1126	1083	1041	1002	964	930	897				
			< 39	39-46	47-49	50	51	52	53	54	55	56	57	58	59	60	61	62	63				
32LH06	14	32	647	25230	507	489	472	456	441	426	412	399	385	373	363	351	340	330	321				
32LH07	16	32	728	28380	568	549	529	511	493	477	462	447	432	418	406	393	381	370	360				
32LH08	17	32	790	30810	616	595	574	553	535	517	499	483	468	453	439	426	412	400	388				
32LH09	21	32	992	38670	774	747	720	694	670	648	627	606	586	568	550	534	517	502	487				
32LH10	21	32	1096	42750	856	825	796	768	742	717	693	667	645	624	603	583	564	546	529				
32LH11	24	32	1201	46830	937	903	870	840	811	783	757	732	709	687	664	643	624	604	585				
32LH12	27	32	1409	54960	1101	1068	1032	996	961	928	897	867	838	811	786	762	738	715	694				
32LH13	30	32	1572	61320	1225	1201	1177	1156	1113	1072	1035	999	964	931	900	871	843	816	790				
32LH14	33	32	1618	63120	1264	1239	1215	1192	1170	1149	1107	1069	1032	997	964	933	903	874	846				
32LH15	35	32	1673	65250	1305	1279	1255	1231	1207	1186	1164	1144	1125	1087	1051	1017	984	952	924				
			< 43	43-46	47-56	57	58	59	60	61	62	63	64	65	66	67	68	69	70				
36LH07	16	36	590	25350	438	424	411	399	387	376	366	355	345	336	327	318	310	301	294				
36LH08	18	36	649	27900	481	466	453	439	426	414	402	390	379	369	358	349	340	331	322				
36LH09	21	36	832	35760	616	597	579	561	544	528	513	499	484	471	459	445	433	423	412				
36LH10	21	36	916	39390	681	660	639	619	601	583	567	550	535	520	507	492	480	466	454				
36LH11	23	36	1000	42990	742	720	697	676	657	637	618	601	583	567	552	537	522	508	495				
36LH12	25	36	1197	51450	889	862	835	810	784	762	739	717	696	675	655	636	618	600	583				
36LH13	30	36	1407	60510	1045	1012	981	951	922	894	868	843	819	796	774	753	732	712	694				
36LH14	36	36	1551	66690	1152	1132	1093	1059	1024	991	961	931	903	876	850	826	802	780	757				
36LH15	36	36	1635	70320	1213	1192	1171	1153	1116	1081	1047	1015	984	955	927	900	874	850	826				

LRFD

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

Joist Designation	Approx. Wt in Lbs. Per Linear Ft. (Joists Only)	Depth in inches	Max Load (plf) < 48	SAFELOAD* in Lbs. Between		SPAN IN FEET																
				48-59	60-65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80		
40LH08	16	40	521	25020	25020	381	370	361	351	342	333	325	316	309	301	294	288	280	274	267		
						150	144	138	132	127	122	117	112	108	104	100	97	93	90	86		
40LH09	21	40	685	32880	32880	498	484	472	459	447	436	424	414	403	394	384	375	366	358	349		
						196	188	180	173	166	160	153	147	141	136	131	126	122	118	113		
40LH10	21	40	754	36180	36180	550	535	520	507	493	481	469	457	445	435	424	414	403	393	382		
						216	207	198	190	183	176	169	162	156	150	144	139	134	129	124		
40LH11	22	40	823	39510	39510	598	582	567	552	537	523	510	498	484	472	462	450	439	429	418		
						234	224	215	207	198	190	183	176	169	163	157	151	145	140	135		
40LH12	25	40	1002	48090	48090	729	708	688	670	652	636	619	603	588	573	559	546	532	519	507		
						285	273	261	251	241	231	222	213	205	197	189	182	176	169	163		
40LH13	30	40	1181	56700	56700	859	835	813	792	771	750	730	712	694	676	660	643	628	613	598		
						334	320	307	295	283	271	260	250	241	231	223	214	207	199	192		
40LH14	35	40	1351	64830	64830	984	957	930	904	880	856	834	813	792	772	753	735	717	699	682		
						383	367	351	336	323	309	297	285	273	263	252	243	233	225	216		
40LH15	36	40	1511	72510	72510	1101	1068	1036	1006	978	949	924	898	874	850	828	807	786	766	747		
						427	408	390	373	357	342	328	315	302	290	279	268	258	248	239		
40LH16	42	40	1665	79920	79920	1212	1194	1176	1158	1141	1126	1095	1065	1036	1009	982	957	933	909	886		
						469	455	441	428	416	404	387	371	356	342	329	316	304	292	282		
			< 53	53-59	60-73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88		
44LH09	19	44	569	30150	30150	408	397	388	379	370	363	354	346	339	331	324	316	310	303	297		
						158	152	146	141	136	131	127	122	118	114	110	106	103	99	96		
44LH10	21	44	628	33300	33300	450	439	429	418	408	399	390	381	373	364	357	349	342	334	327		
						174	168	162	155	150	144	139	134	130	125	121	117	113	110	106		
44LH11	22	44	679	36000	36000	487	475	465	453	442	433	423	414	403	396	387	378	370	363	354		
						188	181	175	168	162	157	151	146	140	136	131	127	123	119	115		
44LH12	25	44	842	44610	44610	603	589	574	561	547	534	520	508	496	484	472	462	450	439	430		
						232	224	215	207	200	192	185	179	172	166	160	155	149	144	139		
44LH13	30	44	998	52890	52890	715	699	681	666	649	634	619	606	592	579	565	553	541	529	519		
						275	265	254	246	236	228	220	212	205	198	191	185	179	173	167		
44LH14	31	44	1148	60870	60870	823	801	780	759	739	721	703	685	669	654	637	622	609	594	580		
						315	302	291	279	268	259	249	240	231	223	215	207	200	193	187		
44LH15	36	44	1336	70830	70830	958	934	912	889	868	847	826	805	786	768	750	732	714	699	682		
						366	352	339	326	314	303	292	281	271	261	252	243	234	227	219		
44LH16	42	44	1541	81660	81660	1105	1078	1051	1026	1002	978	955	933	912	891	870	852	832	814	796		
						421	405	390	375	362	348	336	324	313	302	291	282	272	263	255		
44LH17	47	44	1655	87690	87690	1185	1170	1153	1138	1125	1098	1072	1048	1024	1000	978	957	936	915	895		
						450	438	426	415	405	390	376	363	351	338	327	316	305	295	285		
			< 57	57-59	60-81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96		
48LH10	21	48	528	30120	30120	369	361	354	346	339	331	325	318	312	306	300	294	288	282	277		
						141	136	132	127	123	119	116	112	108	105	102	99	96	93	90		
48LH11	22	48	573	32670	32670	399	390	382	373	366	358	351	343	337	330	324	318	312	306	300		
						152	147	142	137	133	129	125	120	117	113	110	106	103	100	97		
48LH12	25	48	724	41250	41250	504	493	483	472	462	451	442	433	424	415	408	399	391	384	376		
						191	185	179	173	167	161	156	151	147	142	138	133	129	126	122		
48LH13	29	48	867	49410	49410	603	589	576	564	552	540	529	517	507	498	487	477	468	459	450		
						228	221	213	206	199	193	187	180	175	170	164	159	154	150	145		
48LH14	32	48	1023	58290	58290	712	696	681	666	651	637	624	610	598	585	574	562	550	540	529		
						269	260	251	243	234	227	220	212	206	199	193	187	181	176	171		
48LH15	36	48	1176	67020	67020	817	799	781	765	748	732	717	702	687	672	658	645	633	619	607		
						308	298	287	278	269	260	252	244	236	228	221	214	208	201	195		
48LH16	42	48	1355	77250	77250	943	922	901	882	864	844	826	810	792	777	760	745	730	715	702		
						355	343	331	320	310	299	289	280	271	263	255	247	239	232	225		
48LH17	47	48	1522	86760	86760	1059	1035	1012	990	969	948	928	909	889	871	853	837	820	804	787		
						397	383	371	358	346	335	324	314	304	294	285	276	268	260	252		

STANDARD ASD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength
Spans up to and including 144 ft. adopted by the Steel Joist Institute May 25, 1983
Spans greater than 144 ft. up to and including 240 ft. adopted by the Steel Joist Institute May 18, 2010
Revised to May 18, 2010 – Effective December 31, 2010

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

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

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

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

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

Where the joist span is in the **GRAY SHADED** area of the Load Table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersections. Hoisting cables shall not be released until all rows of bridging are completely installed. The **GRAY SHADED** area starts after 100'-0" and extends up through 240'-0".

The approximate gross moment of inertia (not adjusted for shear deformation), in inches⁴, of a standard joist listed in the Load Table may be determined as follows:

$$I_j = 26.767(W)(L^3)(10^{-6}), \text{ where } W = \text{RED figure in the Load Table, and} \\ L = (\text{span} - 0.33) \text{ in feet.}$$

Loads for span increments not explicitly given in the Load Table may be determined using linear interpolation between the load values given in adjacent span columns.

*The safe uniform load for the spans shown in the SAFE LOAD Column is equal to (SAFE LOAD) / (span). The TOTAL safe uniformly distributed load-carrying capacity, for spans less than those shown in the SAFE LOAD Column are given in the MAX LOAD Column.

To solve for a RED figure for spans shown in the SAFE LOAD Column (or lesser spans), multiply the RED figure of the shortest span shown in the Load Table by (the shortest span shown in the Load Table - 0.33 feet)² and divide by (the actual span - 0.33 feet)². In no case shall the calculated load exceed the TOTAL load-carrying capacity of the joist.



STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists only)	Depth in inches	Max Load plf	SAFE LOAD* in Lbs. Between	SPAN IN FEET																		
					< 62	62-89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104		
					<67	67-97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112		
52DLH10	25	52	432	26800	298	291	285	279	273	267	261	256	251	246	241	236	231	227	223				
					171	165	159	154	150	145	140	136	132	128	124	120	116	114	110				
52DLH11	26	52	475	29420	327	320	313	306	299	293	287	281	275	270	264	259	254	249	244				
					187	181	174	169	164	158	153	149	144	140	135	132	128	124	120				
52DLH12	29	52	529	32820	365	357	349	342	334	327	320	314	307	301	295	289	284	278	273				
					204	197	191	185	179	173	168	163	158	153	149	144	140	135	132				
52DLH13	34	52	643	39840	443	433	424	414	406	397	389	381	373	366	358	351	344	338	331				
					247	239	231	224	216	209	203	197	191	185	180	174	170	164	159				
52DLH14	39	52	735	45580	507	497	486	476	466	457	447	438	430	421	413	405	397	390	382				
					276	266	258	249	242	234	227	220	213	207	201	194	189	184	178				
52DLH15	42	52	826	51200	569	557	545	533	522	511	500	490	480	470	461	451	443	434	426				
					311	301	291	282	272	264	256	247	240	233	226	219	213	207	201				
52DLH16	45	52	890	55200	614	601	588	575	563	551	540	528	518	507	497	487	478	468	459				
					346	335	324	314	304	294	285	276	267	260	252	245	237	230	224				
52DLH17	52	52	1025	63540	706	691	676	661	647	634	620	608	595	583	572	560	549	539	528				
					395	381	369	357	346	335	324	315	304	296	286	279	270	263	255				
					<67	67-97	98	99	100	101	102	103	104	105	106	107	108	109	110				
56DLH11	26	56	421	28200	288	283	277	272	267	262	257	253	248	244	239	235	231	227	223				
					169	163	158	153	149	145	140	136	133	129	125	122	118	115	113				
56DLH12	30	56	484	32400	331	324	318	312	306	300	295	289	284	278	273	268	263	259	254				
					184	178	173	168	163	158	153	150	145	141	137	133	130	126	123				
56DLH13	34	56	586	39240	401	394	386	379	372	365	358	351	344	338	331	325	319	314	308				
					223	216	209	204	197	191	186	181	175	171	166	161	157	152	149				
56DLH14	39	56	662	44360	453	444	435	427	419	411	403	396	388	381	375	368	361	355	349				
					249	242	234	228	221	214	209	202	196	190	186	181	175	171	167				
56DLH15	42	56	756	50680	518	508	498	488	478	469	460	451	443	434	426	419	411	403	396				
					281	272	264	256	248	242	234	228	221	215	209	204	198	192	188				
56DLH16	46	56	816	54680	559	548	537	526	516	506	496	487	478	469	460	452	444	436	428				
					313	304	294	285	277	269	262	254	247	240	233	227	221	214	209				
56DLH17	51	56	941	63020	643	630	618	605	594	582	571	560	549	539	529	520	510	501	492				
					356	345	335	325	316	306	298	289	281	273	266	258	251	245	238				
					< 71	71-99	100-105	106	107	108	109	110	111	112	113	114	115	116	117				
60DLH12	29	60	439	31200	31200	295	289	284	279	274	270	265	261	256	252	248	244	240	236				
						168	163	158	154	150	146	142	138	134	131	128	124	121	118				
60DLH13	35	60	534	37920	37920	358	351	345	339	333	327	322	316	311	306	301	296	291	286				
						203	197	191	187	181	176	171	167	163	158	154	151	147	143				
60DLH14	40	60	594	42140	42140	398	391	383	376	370	363	356	350	344	338	332	327	321	316				
						216	210	205	199	193	189	183	178	173	170	165	161	156	152				
60DLH15	43	60	697	49460	49460	467	458	450	442	434	427	419	412	405	398	392	385	379	373				
						255	248	242	235	228	223	216	210	205	200	194	190	185	180				
60DLH16	46	60	766	54380	54380	513	504	494	485	476	468	460	451	444	436	428	421	414	407				
						285	277	269	262	255	247	241	235	228	223	217	211	206	201				
60DLH17	52	60	880	62500	62500	590	579	569	558	548	538	529	519	510	501	493	484	476	468				
						324	315	306	298	290	283	275	267	261	254	247	241	235	228				
60DLH18	59	60	1016	72120	72120	681	668	656	644	632	621	610	599	589	578	568	559	549	540				
						366	357	346	337	327	319	310	303	294	286	279	272	266	259				
					<76	76-99	100-113	114	115	116	117	118	119	120	121	122	123	124	125				
64DLH12	31	64	396	30080	30080	264	259	255	251	247	243	239	235	231	228	224	221	218	214				
						153	150	146	142	138	135	132	129	125	122	119	116	114	111				
64DLH13	34	64	480	36500	36500	321	315	310	305	300	295	291	286	281	277	273	269	264	260				
						186	181	176	171	168	163	159	155	152	148	144	141	137	134				
64DLH14	40	64	550	41820	41820	367	360	354	349	343	337	332	326	321	316	311	306	301	296				
						199	193	189	184	179	174	171	166	162	158	154	151	147	143				
64DLH15	43	64	631	47940	47940	421	414	407	400	394	387	381	375	369	363	358	352	347	341				
						234	228	223	217	211	206	201	196	191	187	182	177	173	170				
64DLH16	46	64	710	53960	53960	474	466	458	450	443	435	428	421	414	407	401	394	388	382				
						262	254	248	242	235	229	224	218	213	208	203	198	193	189				
64DLH17	52	64	818	62180	62180	546	536	527	518	509	501	492	484	476	468	461	454	446	439				
						298	290	283	275	268	262	255	248	243	237	231	226	220	215				

64DLH18	59	64	945	71800	71800	630 337	619 328	608 320	598 311	587 304	578 296	568 288	559 282	549 274	540 267	532 261	523 255	515 249	507 243	499 237
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STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists Only)	Depth in inches	Max Load plf	SAFE LOAD* in Lbs. Between		SPAN IN FEET															
				< 81	81-99	100-121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
						100-129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
68DLH13	37	68	433	35100	35100	288 171	284 168	279 164	275 159	271 155	267 152	263 149	259 145	255 142	252 138	248 135	244 133	241 130	237 127	234 124	
68DLH14	40	68	499	40420	40420	332 184	327 179	322 175	317 171	312 167	308 163	303 159	299 155	294 152	290 148	286 145	281 141	277 138	273 135	269 133	
68DLH15	44	68	560	45320	45320	372 206	365 201	360 196	354 191	348 187	343 182	337 178	332 174	327 170	322 166	317 162	312 158	308 155	303 152	299 148	
68DLH16	49	68	663	53740	53740	441 242	433 236	427 230	420 225	413 219	407 214	400 209	394 204	388 199	382 195	376 190	371 186	365 182	360 178	354 174	
68DLH17	55	68	748	60560	60560	497 275	489 268	481 262	474 256	467 249	460 244	453 238	446 232	439 228	433 222	427 217	420 212	414 208	408 203	403 198	
68DLH18	61	68	865	70100	70100	575 311	566 304	557 297	549 289	540 283	532 276	524 269	516 263	508 257	501 251	493 246	486 240	479 234	472 230	465 225	
68DLH19	67	68	997	80720	80720	662 353	651 344	641 336	631 328	621 320	611 313	601 305	592 298	583 291	574 285	565 278	557 272	548 266	540 260	532 254	
				< 85	85-99	100-129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
72DLH14	41	72	462	39300	39300	303 171	298 167	294 163	290 159	285 155	281 152	277 149	274 146	270 143	266 139	262 136	259 133	255 131	252 128	248 125	
72DLH14	44	72	530	45020	45020	347 191	342 187	336 183	331 178	326 174	322 171	317 167	312 163	308 160	303 156	299 152	295 150	291 147	286 143	282 140	
72DLH16	50	72	612	52040	52040	401 225	395 219	390 214	384 209	378 205	373 200	368 196	363 191	358 188	353 183	348 179	343 175	338 171	334 169	329 165	
72DLH17	56	72	689	58540	58540	451 256	445 250	438 245	432 239	426 233	420 228	414 224	408 218	402 213	397 209	391 205	386 200	381 196	376 191	371 188	
72DLH18	59	72	807	68580	68580	528 289	520 283	512 276	505 270	497 265	490 258	483 252	479 247	470 242	463 236	457 231	450 227	444 222	438 217	432 212	
72DLH19	70	72	946	80400	80400	619 328	609 321	600 313	591 306	582 300	573 293	565 286	557 280	549 274	541 268	533 263	526 257	518 251	511 247	504 241	



STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists only)	Depth in inches	Max Load plf	SAFE LOAD* in Lbs.																				
				SPAN IN FEET																				
				< 81	81-99	100-111	112	115	118	121	124	127	130	133	136	141	142	145	148	151	155	160		
80DLH15	40	80	644	52160	52160	466	442	421	401	383	366	350	335	321	307	295	283	272	261	247	231			
						321	296	275	255	236	220	205	192	179	167	157	147	139	130	120	109			
80DLH16	46	80	774	62680	62680	560	535	509	485	461	439	419	400	383	366	350	336	322	309	293	275			
						375	347	321	297	276	257	240	224	209	196	184	172	162	152	141	128			
80DLH17	53	80	894	72420	72420	647	617	587	559	533	510	487	466	446	427	410	393	378	363	345	323			
						451	416	386	358	332	309	288	269	252	235	221	207	195	183	169	154			
80DLH18	60	80	1010	81840	81840	731	696	662	631	602	575	550	526	504	482	463	444	427	410	389	366			
						516	477	441	409	380	354	330	308	288	270	253	237	223	210	194	176			
80DLH19	67	80	1179	95480	95480	853	812	773	736	701	670	640	612	585	560	537	516	495	476	451	423			
						578	533	493	458	425	396	369	344	322	301	283	266	250	235	217	197			
80DLH20	75	80	1325	107320	107320	964	921	882	845	807	771	736	704	674	645	618	594	570	547	520	487			
						646	596	552	512	475	443	412	385	360	337	316	297	279	263	243	220			
						< 89	89-99	100-120	121	124	127	130	133	136	139	142	145	148	151	156	160	165	170	175
88DLH16	46	88	699	62180	62180	514	490	467	447	428	410	394	378	363	349	335	318	299	281	265	251			
						361	336	313	291	272	254	238	223	210	197	186	172	156	143	130	119			
88DLH17	51	88	790	70300	70300	581	553	526	502	479	458	439	420	403	386	371	352	330	310	292	274			
						404	375	349	325	304	284	266	249	234	220	207	191	173	159	146	133			
88DLH18	58	88	906	80620	80620	667	635	605	577	551	527	504	483	463	444	426	404	379	356	335	316			
						460	427	397	370	346	323	303	284	267	250	236	218	199	181	165	152			
88DLH19	65	88	1048	93260	93260	771	734	699	666	636	608	582	557	534	513	492	467	438	411	387	364			
						521	484	450	420	392	367	343	322	302	284	267	248	225	205	187	172			
88DLH20	76	88	1206	107300	107300	889	854	821	789	755	723	694	665	639	614	590	560	527	495	467	440			
						623	579	539	502	469	438	410	385	361	340	320	296	269	246	224	206			
88DLH21	89	88	1487	132260	132260	1099	1045	996	950	907	867	829	794	762	731	702	666	624	586	551	519			
						724	673	626	584	545	509	477	447	420	395	372	344	313	285	261	239			
						< 97	97-99	100-129	130	133	136	139	142	145	148	151	155	160	165	170	175	180	185	190
96DLH17	52	96	724	70180	70180	540	517	496	474	456	438	421	405	385	362	339	320	302	284	269	255			
						389	363	339	318	298	280	263	247	229	208	190	173	159	146	134	124			
96DLH18	58	96	814	79000	79000	608	583	559	535	513	493	475	457	435	410	386	364	344	326	308	292			
						443	413	386	362	340	319	300	282	261	237	216	198	181	166	153	141			
96DLH19	66	96	974	94440	94440	727	697	667	638	611	585	561	539	512	480	451	424	401	378	357	338			
						502	469	438	410	385	361	340	320	296	269	246	224	206	189	174	161			
96DLH20	74	96	1096	106280	106280	824	789	754	722	691	662	635	610	579	543	510	481	453	428	405	382			
						569	531	496	465	436	409	385	362	336	305	277	254	233	214	196	181			
96DLH21	90	96	1375	133340	133340	1027	982	940	900	864	829	797	766	728	684	643	605	571	539	510	482			
						698	652	610	571	535	503	473	445	412	374	341	312	286	263	242	224			
96DLH22	102	96	1540	149380	149380	1150	1108	1067	1028	991	957	921	886	843	792	745	702	664	627	594	562			
						811	757	708	663	622	584	549	517	479	435	396	362	332	305	281	259			
						< 105	105-138	139	142	145	148	151	155	160	165	170	175	180	185	190	195	200	205	
104DLH18	59	104	733	76980		554	532	512	489	472	450	423	400	378	358	339	321	305	290	276	263			
						426	400	375	353	332	307	279	255	233	213	195	180	167	154	142	132			
104DLH19	67	104	892	93620		674	647	622	598	574	546	513	485	457	432	409	387	368	350	332	315			
						484	453	426	401	377	349	317	289	265	242	222	204	189	175	162	150			
104DLH20	75	104	1002	105260		764	738	714	688	661	629	591	555	522	493	465	440	417	395	375	357			
						548	513	483	453	427	395	359	327	299	274	251	232	214	198	184	170			
104DLH21	90	104	1260	132320		956	917	881	847	813	773	727	685	647	611	578	547	519	493	469	446			
						673	632	593	558	525	486	442	403	368	337	307	284	263	244	226	209			
104DLH22	104	104	1413	148360		1071	1034	999	966	934	893	841	792	747	706	668	633	600	570	542	516			
						783	734	689	648	610	564	513	468	428	392	359	331	306	283	262	244			
104DLH23	109	104	1556	163400		1181	1141	1096	1052	1009	956	899	845	795	750	708	670	635	602	571	543			
						819	768	721	678	638	590	536	489	447	410	377	347	320	296	274	254			



STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists Only)	Depth in inches	Max Load plf	SAFE LOAD* in Lbs. Between	SPAN IN FEET																	
					< 113	113-147	148	151	155	160	165	170	175	180	185	190	195	200	205	210	215	220
					112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112
112DLH19	67	112	815	91900	623	600	571	537	506	478	451	428	406	386	366	348	332	317	303	289		
					466	439	406	369	336	308	281	259	238	220	203	189	175	162	151	142		
112DLH20	76	112	922	104000	710	688	657	618	582	549	520	493	468	445	422	402	383	365	348	333		
					528	497	459	418	381	348	319	293	270	249	231	213	198	184	171	160		
112DLH21	91	112	1162	131000	891	858	816	767	722	681	644	610	578	549	521	496	473	450	430	411		
					650	612	566	514	469	429	393	361	333	306	283	263	244	227	211	198		
112DLH22	104	112	1304	147000	999	967	928	880	833	787	744	705	668	635	602	574	546	521	497	474		
					755	711	657	598	545	498	457	419	386	356	329	306	283	264	246	229		
112DLH23	110	112	1437	162000	1102	1067	1023	970	913	859	810	765	724	686	651	618	588	560	533	509		
					790	744	688	625	571	522	478	439	404	373	345	320	297	276	257	239		
112DLH24	131	112	1703	192000	1304	1263	1212	1151	1087	1026	970	919	871	828	786	748	713	680	648	619		
					957	901	834	758	691	632	579	532	489	451	418	387	359	334	311	291		
			< 121	121-165	166	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
120DLH20	77	120	819	98900	597	571	538	510	484	461	438	418	399	380	362	347	332	318	305	292		
					430	400	367	338	311	287	265	246	228	212	198	185	172	161	151	142		
120DLH21	92	120	1019	123000	748	714	675	639	606	576	548	521	497	474	452	432	414	396	379	363		
					530	494	452	416	383	353	326	303	281	262	244	227	212	199	186	175		
120DLH22	104	120	1168	141000	855	823	779	737	699	665	632	602	574	547	522	499	477	457	438	420		
					616	574	526	483	445	411	380	352	327	304	283	265	247	231	217	204		
120DLH23	111	120	1292	156000	943	907	858	813	771	733	697	664	632	602	574	548	524	501	479	459		
					644	601	551	506	466	430	397	369	341	318	296	276	258	241	227	213		
120DLH24	132	120	1532	185000	1117	1073	1015	961	912	867	824	785	748	713	681	651	623	596	571	548		
					781	728	667	613	565	521	482	447	414	386	359	335	313	293	275	258		
120DLH25	152	120	1756	212000	1284	1231	1165	1104	1047	994	946	900	858	819	782	748	715	684	656	628		
					915	853	782	718	661	610	564	523	485	452	421	393	367	344	322	302		

STANDARD LRFD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength
Spans up to and including 144 ft. adopted by the Steel Joist Institute May 1, 2000
Spans greater than 144 ft. up to and including 240 ft. adopted by the Steel Joist Institute May 18, 2010
Revised to May 18, 2010 – Effective December, 31, 2010

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

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

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

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

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

Where the joist span is in the **GRAY SHADED** area of the Load Table, all rows of bridging shall be diagonal bridging with bolted connections at chords and intersections. Hoisting cables shall not be released until all rows of bridging are completely installed. The **GRAY SHADED** area starts after 100'-0" and extends up through 240'-0".

The approximate gross moment of inertia (not adjusted for shear deformation), in inches⁴, of a standard joist listed in the Load Table may be determined as follows:

$$I_j = 26.767(W)(L^3)(10^{-6}), \text{ where } W = \text{RED figure in the Load Table, and} \\ L = (\text{span} - 0.33) \text{ in feet.}$$

Loads for span increments not explicitly given in the Load Table may be determined using linear interpolation between the load values given in adjacent span columns.

*The safe factored uniform load for the spans shown in the SAFE LOAD Column is equal to (SAFE LOAD) / (span). The TOTAL safe factored uniformly distributed load-carrying capacity, for spans less than those shown in the SAFE LOAD Column are given in the MAX LOAD Column.

To solve for an unfactored RED figure for spans shown in the SAFE LOAD Column (or lesser spans), multiply the unfactored RED figure of the shortest span shown in the Load Table by (the shortest span shown in the Load Table - 0.33 feet)² and divide by (the actual span - 0.33 feet)². In no case shall the calculated unfactored load exceed the unfactored TOTAL load-carrying capacity of the joist as determined from the Standard **ASD** Load Table for Deep Longspan Steel Joists, **DLH-Series**.



METRIC LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)

Joist Designation	Approx. Mass (kN/m) (Joists only)	Approx. Mass (kg/m) (Joists only)	Depth in (mm)	Max Load kN/m	SAFE LOAD* in kN Between	SPAN IN MM																			
						< 18998	18998-27127	27432	27737	28042	28346	28651	28956	29261	29566	29870	30175	30480	30785	31090	31394	31699			
52DLH10	0.36	37	1321	9.46	178.8	6.52	6.36	6.23	6.10	5.97	5.84	5.71	5.60	5.49	5.39	5.27	5.17	5.05	4.96	4.87					
52DLH11	0.38	39	1321	10.39	196.3	7.15	7.01	6.84	6.70	6.54	6.41	6.28	6.14	6.01	5.91	5.78	5.66	5.56	5.44	5.34					
52DLH12	0.42	43	1321	11.59	219.0	7.98	7.81	7.63	7.49	7.31	7.15	7.01	6.87	6.71	6.58	6.45	6.32	6.22	6.09	5.97					
52DLH13	0.5	51	1321	14.07	265.8	9.69	9.47	9.28	9.06	8.89	8.68	8.51	8.33	8.16	8.01	7.84	7.68	7.53	7.40	7.24					
52DLH14	0.57	58	1321	16.10	304.1	11.09	10.87	10.64	10.42	10.20	10.00	9.78	9.59	9.41	9.21	9.03	8.86	8.68	8.54	8.36					
52DLH15	0.61	63	1321	18.08	341.6	12.45	12.19	11.92	11.66	11.43	11.18	10.95	10.73	10.51	10.29	10.08	9.87	9.69	9.50	9.33					
52DLH16	0.66	67	1321	19.48	368.3	13.44	13.15	12.87	12.58	12.32	12.05	11.82	11.56	11.34	11.09	10.87	10.65	10.46	10.24	10.04					
52DLH17	0.76	77	1321	22.43	424.0	15.45	15.12	14.80	14.46	14.16	13.88	13.57	13.31	13.02	12.76	12.52	12.26	12.01	11.79	11.56					
						< 20422	20422-29566	29870	30175	30480	30785	31090	31394	31699	32004	32309	32614	32918	33223	33528	33833	34138			
56DLH11	0.38	39	1422	9.21	188.2	6.30	6.19	6.06	5.95	5.84	5.74	5.62	5.53	5.43	5.34	5.22	5.14	5.05	4.96	4.87					
56DLH12	0.44	45	1422	10.58	216.2	7.24	7.09	6.96	6.83	6.70	6.57	6.45	6.32	6.22	6.09	5.97	5.87	5.75	5.66	5.56					
56DLH13	0.5	51	1422	12.83	261.8	8.77	8.62	8.45	8.29	8.14	7.98	7.84	7.68	7.53	7.40	7.24	7.11	6.98	6.87	6.74					
56DLH14	0.57	58	1422	14.49	296.0	9.91	9.72	9.52	9.34	9.16	8.99	8.81	8.67	8.49	8.33	8.20	8.06	7.90	7.76	7.63					
56DLH15	0.61	63	1422	16.56	338.2	11.34	11.12	10.90	10.68	10.46	10.26	10.07	9.87	9.69	9.50	9.33	9.16	8.99	8.81	8.67					
56DLH16	0.67	68	1422	17.86	364.8	12.23	12.00	11.75	11.51	11.30	11.08	10.86	10.65	10.46	10.26	10.07	9.89	9.73	9.54	9.37					
56DLH17	0.74	76	1422	20.59	420.5	14.07	13.79	13.53	13.24	13.00	12.74	12.49	12.26	12.01	11.79	11.57	11.38	11.16	10.96	10.77					
						< 21641	21641-30175	30480-33904	32309	32614	32918	33223	33528	33833	34138	34442	34747	35052	35357	35662	35966	36271	36576		
60DLH12	0.42	43	1524	9.62	208.2	6.45	6.32	6.22	6.10	6.00	5.91	5.79	5.71	5.60	5.52	5.43	5.34	5.25	5.17	5.08					
60DLH13	0.51	52	1524	11.69	253.0	7.84	7.68	7.55	7.41	7.28	7.15	7.05	6.92	6.80	6.70	6.58	6.48	6.36	6.26	6.17					
60DLH14	0.58	60	1524	12.99	281.2	8.71	8.55	8.38	8.23	8.10	7.94	7.79	7.66	7.53	7.40	7.27	7.15	7.02	6.92	6.79					
60DLH15	0.63	64	1524	15.25	330.0	10.22	10.03	9.85	9.68	9.50	9.34	9.16	9.02	8.86	8.71	8.58	8.42	8.29	8.16	8.03					
60DLH16	0.67	68	1524	16.77	362.8	11.22	11.03	10.81	10.61	10.42	10.24	10.07	9.87	9.72	9.54	9.37	9.21	9.06	8.90	8.76					
60DLH17	0.76	77	1524	19.26	417.0	12.92	12.67	12.45	12.22	12.00	11.78	11.57	11.35	11.16	10.96	10.78	10.60	10.42	10.24	10.07					
60DLH18	0.86	88	1524	22.24	481.2	14.90	14.62	14.36	14.10	13.84	13.59	13.35	13.11	12.89	12.65	12.43	12.23	12.01	11.82	11.62					
						< 23165	23165-30175	30480-34442	34747	35052	35357	35662	35966	36271	36576	36881	37186	37490	37795	38100	38405	38710	39014		
64DLH12	0.45	46	1626	8.67	200.7	6.78	6.66	6.57	6.45	6.32	6.22	6.10	6.00	5.91	5.82	5.74	5.65	5.57	5.48	5.40					
64DLH13	0.5	51	1626	10.51	243.5	7.02	6.89	6.79	6.67	6.57	6.45	6.36	6.26	6.14	6.06	5.97	5.88	5.78	5.69	5.62					
64DLH14	0.58	60	1626	12.04	279.0	8.03	7.88	7.75	7.63	7.50	7.37	7.27	7.14	7.02	6.92	6.80	6.70	6.58	6.48	6.39					
64DLH15	0.63	64	1626	13.81	319.9	9.21	9.06	8.90	8.76	8.62	8.46	8.33	8.20	8.07	7.94	7.84	7.71	7.59	7.46	7.36					
64DLH16	0.67	68	1626	15.54	360.0	10.38	10.20	10.03	9.85	9.69	9.52	9.37	9.21	9.06	8.90	8.77	8.62	8.49	8.36	8.23					
64DLH17	0.86	88	1626	17.91	479.1	11.95	11.73	11.53	11.34	11.14	10.96	10.77	10.60	10.42	10.24	10.08	9.94	9.76	9.60	9.46					
64DLH18	0.86	88	1626	20.68	479.1	13.79	13.54	13.31	13.09	12.84	12.65	12.43	12.23	12.01	11.82	11.65	11.44	11.27	11.09	10.92					



METRIC LOAD TABLE LONGSPAN STEEL JOISTS, DLH-SERIES
Based on a 345 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)

Joist Designation	Approx. Mass (kN/m) (Joists Only)	Approx. Mass (kg/m) (Joists Only)	Depth in (mm)	Max Load kN/m	SAFE LOAD* in kN Between	SPAN IN MM																			
						< 24689	24689-30175	30480-36881	37186	37490	37795	38100	38405	38710	39014	39319	39624	39929	40234	40538	40843	41148	41453		
68DLH13	0.54	55	1727	9.49	234.2	6.30	6.22	6.10	6.01	5.93	5.84	5.75	5.66	5.57	5.52	5.43	5.34	5.27	5.18	5.12					
68DLH14	0.58	60	1727	10.93	269.7	7.27	7.15	7.05	6.93	6.83	6.74	6.63	6.54	6.44	6.35	6.26	6.14	6.06	5.97	5.88					
68DLH15	0.64	65	1727	12.24	302.4	8.14	7.98	7.88	7.75	7.62	7.50	7.37	7.27	7.15	7.05	6.93	6.83	6.74	6.63	6.54					
68DLH16	0.72	73	1727	14.52	358.6	9.65	9.47	9.34	9.19	9.03	8.90	8.76	8.62	8.49	8.36	8.23	8.11	7.98	7.88	7.75					
68DLH17	0.8	82	1727	16.36	404.1	10.87	10.70	10.52	10.38	10.22	10.07	9.91	9.76	9.60	9.47	9.34	9.19	9.06	8.93	8.81					
68DLH18	0.89	91	1727	18.94	467.7	12.58	12.39	12.19	12.01	11.82	11.65	11.47	11.30	11.12	10.96	10.78	10.64	10.48	10.33	10.17					
68DLH19	0.98	100	1727	21.82	538.6	14.49	14.24	14.02	13.81	13.59	13.37	13.15	12.96	12.76	12.57	12.36	12.19	12.00	11.82	11.65					
						< 25908	25908-30175	30480-39319	39624	39929	40234	40538	40843	41148	41453	41758	42062	42367	42672	42977	43282	43586	43891		
72DLH14	0.6	61	1829	10.13	262.2	6.63	6.52	6.44	6.35	6.23	6.14	6.06	6.00	5.91	5.82	5.74	5.65	5.57	5.52	5.43					
72DLH14	0.64	65	1829	11.59	300.4	7.59	7.49	7.36	7.24	7.14	7.05	6.93	6.83	6.74	6.63	6.54	6.45	6.36	6.26	6.17					
72DLH16	0.73	74	1829	13.40	347.2	8.77	8.64	8.54	8.41	8.27	8.16	8.06	7.94	7.84	7.72	7.62	7.50	7.40	7.31	7.19					
72DLH17	0.82	83	1829	15.08	390.6	9.87	9.73	9.59	9.46	9.33	9.19	9.06	8.93	8.80	8.68	8.55	8.45	8.33	8.23	8.11					
72DLH18	0.86	88	1829	17.66	457.6	11.56	11.38	11.21	11.05	10.87	10.73	10.57	10.48	10.29	10.13	10.00	9.85	9.72	9.59	9.46					
72DLH19	1.02	104	1829	20.71	536.5	13.54	13.32	13.13	12.93	12.74	12.54	12.36	12.19	12.01	11.84	11.66	11.51	11.34	11.18	11.03					

LRFD

STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, LRFD DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists Only)	Depth in inches	Max Load (plf)	SAFE LOAD* in Lbs. Between	SPAN IN FEET																			
					< 81	81-99	100-111	112	115	118	121	124	127	130	133	136	139	142	145	148	151	155	160	
					80DLH15	40	80	966	78240	78240	699	663	632	602	575	549	525	503	482	461	443	425	408	392
80DLH16	46	80	1161	94020	94020	840	802	763	727	691	658	628	600	574	549	525	504	483	463	439	411			
80DLH17	53	80	1341	108630	#####	971	926	881	839	800	765	731	699	669	641	615	590	567	545	517	485			
80DLH18	60	80	1518	122760	#####	1097	1044	993	947	903	863	825	789	756	723	695	666	641	615	584	548			
80DLH19	67	80	1768	143220	#####	1280	1218	1160	1104	1052	1005	960	918	878	840	806	774	743	714	677	635			
80DLH20	75	80	1987	160980	#####	1446	1382	1323	1268	1211	1157	1104	1056	1011	968	927	891	855	821	780	731			
						646	596	552	512	475	443	412	385	360	337	316	297	279	263	243	220			
						< 89	89-99	100-120	121	124	127	130	133	136	139	142	145	148	151	155	160	165	170	175
88DLH16	46	88	1048	93270	93270	771	735	701	671	642	615	591	567	545	524	503	471	443	417	398	376			
88DLH17	51	88	1185	105450	1E+05	871	830	789	753	719	687	659	630	605	579	557	521	489	459	437	412			
88DLH18	58	88	1359	120930	1E+05	1001	953	908	866	827	791	756	725	695	666	639	599	561	528	503	474			
88DLH19	65	88	1572	139890	1E+05	1157	1101	1049	999	954	912	873	836	801	770	738	692	648	609	580	547			
88DLH20	76	88	1808	160950	2E+05	1334	1281	1232	1184	1133	1085	1041	998	959	921	885	830	780	734	700	660			
88DLH21	89	88	2231	198540	2E+05	1649	1568	1494	1425	1361	1301	1244	1191	1143	1097	1053	986	924	869	827	779			
						724	673	626	584	545	509	477	447	420	395	372	337	307	280	261	239			
						< 97	97-99	100-129	130	133	136	139	142	145	148	151	155	160	165	170	175	180	185	190
96DLH17	52	96	1085	105270	1E+05	810	776	744	711	684	657	632	608	578	542	509	480	452	427	404	382			
96DLH18	58	96	1222	118500	1E+05	912	875	839	803	770	740	713	686	653	615	579	546	516	488	463	438			
96DLH19	66	96	1460	141660	1E+05	1091	1046	1001	957	917	878	842	809	768	720	676	636	601	566	536	507			
96DLH20	74	96	1644	159420	2E+05	1236	1184	1131	1083	1037	993	952	915	868	815	766	721	680	642	607	574			
96DLH21	90	96	2062	200010	2E+05	1541	1473	1410	1350	1296	1243	1196	1149	1093	1026	965	908	856	809	765	724			
96DLH22	102	96	2310	224070	2E+05	1725	1662	1601	1542	1487	1436	1382	1329	1264	1188	1118	1054	995	941	890	843			
						811	757	708	663	622	584	549	517	479	435	396	362	332	305	281	259			
						< 105	105-138	139	142	145	148	151	155	160	165	170	175	180	185	190	195	200	205	
104DLH18	59	104	1100	115200		831	798	768	734	708	674	635	601	568	537	508	482	458	435	414	394			
104DLH19	67	104	1337	140430		1011	971	933	897	861	819	770	727	686	648	613	581	552	524	497	473			
104DLH20	75	104	1504	157890		1146	1107	1071	1032	992	944	886	833	784	739	698	660	626	593	563	535			
104DLH21	90	104	1890	198480		1434	1376	1322	1271	1220	1160	1091	1028	970	917	866	821	779	740	703	668			
104DLH22	104	104	2119	222540		1607	1551	1499	1449	1401	1340	1261	1189	1121	1059	1001	949	901	855	812	774			
104DLH23	109	104	2334	245100		1772	1712	1644	1578	1514	1437	1348	1267	1192	1125	1062	1004	952	902	857	814			
						819	768	721	678	638	590	536	489	447	410	377	347	320	296	274	254			

LRFD

STANDARD LOAD TABLE LONGSPAN STEEL JOISTS, LRFD DLH-SERIES

Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

Joist Designation	Approx. Wt in Lbs. Per Linear Ft (Joists Only)	Depth in inches	Max Load (plf)	SAFE LOAD* in Lbs. Between	SPAN IN FEET																	
					< 113	113-147	148	151	155	160	165	170	175	180	185	190	195	200	205	210	215	220
					112DLH19	67	112	1223	137850	935	900	857	805	759	716	677	643	610	579	549	523	498
112DLH20	76	112	1384	156000	1065	1032	985	927	873	824	780	740	702	667	632	603	574	547	522	500		
112DLH21	91	112	1743	196500	1337	1287	1223	1150	1083	1022	966	915	867	823	782	744	709	676	645	616		
112DLH22	104	112	1956	220500	1499	1451	1392	1321	1250	1181	1117	1057	1002	952	904	860	820	782	745	712		
112DLH23	110	112	2155	243000	1653	1601	1535	1454	1369	1288	1214	1147	1086	1030	977	928	882	839	800	763		
112DLH24	131	112	2555	288000	1956	1895	1818	1727	1631	1539	1455	1379	1307	1241	1179	1123	1070	1019	972	928		
					957	901	834	758	691	632	579	532	489	451	418	387	359	334	311	291		
					< 121	102-164	166	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
120DLH20	77	120	1229	148350	896	856	808	766	726	691	658	627	598	570	544	521	498	477	457	439		
120DLH21	92	120	1528	184500	1122	1072	1012	959	908	864	821	782	745	710	678	648	620	593	569	545		
120DLH22	104	120	1751	211500	1283	1235	1169	1106	1049	997	949	903	860	821	783	749	716	686	657	629		
120DLH23	111	120	1938	234000	1415	1361	1287	1219	1157	1099	1046	995	948	903	862	822	786	751	719	689		
120DLH24	132	120	2298	277500	1676	1610	1522	1441	1367	1300	1237	1177	1122	1070	1022	977	934	894	857	821		
120DLH25	152	120	2633	318000	1926	1847	1748	1656	1571	1492	1418	1350	1287	1228	1173	1122	1073	1026	983	943		
					915	853	782	718	661	610	564	523	485	452	421	393	367	344	322	302		