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JOIST

43 EDITION

STANDARD SPECIFICATIONS

LOAD TABLES AND WEIGHT TABLES FOR STEEL JOIST AND JOIST GIRDERS

K-SERIES
LH-SERIES
DLH-SERIES
JOIST GRIDERS

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APPENDICES

The following documents contained in this catalog have been approved by the American National Standards Institute (ANSI):

Standard Specification for Open Web Steel Joists, **K-**Series and Load Tables (SJI-K-2010)

Standard Specifications for Longspan Steel Joists, **LH-**Series and Deep Longspan Steel Joists, **DLH-**Series and Load Tables (SJI-LH/DLH-2010)

Standard Specifications for Joist Girders, **JG-**Series (SJI-JG-2010)

STEEL JOIST INSTITUTE

HISTORY

Formed five years after the first open web steel joist was manufactured, the Institute has worked since 1928 to maintain sound engineering practice throughout our industry. As a non-profit organization of active manufacturers, the Institute cooperates with governmental and business agencies to establish steel joist standards. Continuing research and updating are included in its work.

The first joist in 1923 was a Warren truss type, with top and bottom chords of round bars and a web formed from a single continuous bent bar. Various other types were developed, but problems also followed because each manufacturer had their own design and fabrication standards. Architects, engineers and builders found it difficult to compare rated capacities and to use fully the economies of steel joist construction.

Members of the industry began to organize the Institute, and in 1928 the first standard specifications were adopted, followed in 1929 by the first load table. The joists covered by these early standards were later identified as open web steel joists, **SJ-**Series.

Other landmark adoptions by the Institute include the following:

1953
Introduction of Longspan Steel Joists, **L-**Series. Specifications and a standard load table, covering spans through 96 feet and depths through 48 inches, were jointly approved with the American Institute of Steel Construction.

1959
Introduction of the **S-**Series Joists, which replaced the **SJ-**Series Joists. The allowable tensile stress was increased from 18,000 to 20,000 psi, joist depths were expanded through 24 inches, and spans increased through 48 feet.

1961
(a) Introduction of the **J-**Series Joists, which replaced the **S-**Series Joists. The allowable tensile stress was increased from 20,000 psi to 22,000 psi, based on the use of steel with a minimum yield strength of 36,000 psi.

(b) Introduction of the **LA-**Series Joists, which replaced the **L-**Series Joists. The **LA-**Series Joists were designed to a maximum tensile stress of either 20,000 psi or 22,000 psi, depending on the yield strength of the steel.

(c) Introduction of the **H-**Series Joists, whose design was based on steel with a minimum yield strength of 50,000 psi, and an allowable tensile stress of 30,000 psi.

1962
Introduction of the **LH-**Series Joists, utilizing steel whose minimum yield strength was between 36,000 psi and 50,000 psi and an allowable tensile strength of 22,000 psi to 30,000 psi.

1965
Development of a single specification for both the **J-** and **H-**Series Joists by the Steel Joist Institute and the American Institute of Steel Construction.

1966
Development and introduction by the SJI and AISC of the **LJ-**Series Joists, which replaced the **LA-**Series Joists. Also, the development of a single specification for both the **LJ-** and the **LH-**Series Joists, with the use of 36,000 psi minimum yield strength steel for the **LJ-**Series, and 36,000 psi to 50,000 psi minimum yield strength steel for the **LH-**Series.

1970
Introduction of the **DLJ-** and **DLH-**Series Joists to include depths through 72 inches and spans through 144 feet.

1971
Elimination of chord section number 2 and the addition of joist designations 8J3 and 8H3 to the load tables.

1972
(a) Adoption by the SJI and AISC of a single specification for the **LJ-, LH-, DLJ-,** and **DLH-**Series Joists.

(b) Adoption by the SJI and AISC of the expanded specifications and load tables for Open Web Steel Joists with increased depths through 30 inches, and spans through 60 feet, plus adding chord section numbers 9, 10, and 11.

1978
(a) Elimination of the **J-, LJ-**, and **DLJ-**Series Joists because of the widespread acceptance of high strength steel joists.

(b) Introduction of Joist Girders, complete with specifications and weight tables, in response to the growing need for longer span primary structural members with highly efficient use of steel.

1986
Introduction of the **K-**Series Joists, which replaced the **H-**Series Joists. The reasons for developing the **K-**Series Joists were: (1) to achieve greater economies by utilizing the Load Span design concept; (2) to meet the demand for roofs with lighter loads at depths from 18 inches to 30 inches; (3) to offer joists whose load carrying capacities at frequently used spans are those most commonly required; (4) to eliminate the very heavy joists in medium depths for which there was little, if any, demand.

1994

(a) Introduction of the **KCS** Joists as a part of the **K-**Series Specification in response to the need for a joist with a constant moment and constant shear. The **KCS** Joist is an economical alternative joist that may be specified for special loading situations.

(b) Addition of metric nomenclature for all Joist and Joist Girder Series in compliance with government and industry standards.

(c) Addition of revised stability criteria.

2002

(a) Introduction of Joist Substitutes, **K-**Series.

(b) **K-**Series, **LH-** and **DLH-** Series and Joist Girder Specifications approved as American National Standards (ANSI).

(c) Revisions to **K-**Series Section 6, **LH-** and **DLH-**Series Section 105, and Recommended Code of Standard Practice for conformance to OSHA Steel Erection Standard § 1926.757.

(d) Addition of Standing Seam Roof requirements to the **K-**Series Specification Section 5.8(g) and the **LH-** and **DLH-**Series Specification Section 104.9(g).

(e) Addition of Definition for Parallel Chord Sloped Joists – **K-**Series Section 5.13 and **LH-** Series Section 104.14.

2005

(a) Major revision of **K-**Series, **LH-** and **DLH-**Series and Joist Girder Specifications to allow the design of joists and Joist Girders to be either in accordance with Load and Resistance Factor Design (LRFD) or Allowable Strength Design (ASD).

(b) Major revision of **K-**Series and **LH-** and **DLH-**Series Load Tables to be in both LRFD and ASD.

(c) Expansion of Joist Girder Weight Tables to spans through 120 feet.

(d) Code of Standard Practice was renamed.

2007

Introduction of the **CJ-**Series Composite Joists, complete with specifications, weight tables and bridging tables, in response to the growing need to have a standard design specification for all member companies producing composite steel joists.

2010

(a) Expanded Range of Products

Most significant is the extension of the **DLH-**Series joist range from a maximum of 72 inches deep and 144 feet long to a maximum now of 120 inches deep and 240 feet long. In conjunction with the increased range, the standard camber for spans over 100 feet has been reduced and the **LH-/DLH-**Series Load Tables have been converted from a "Clearspan" to "Span" basis. An alternate "load/load" method of specifying Longspan joists has been introduced. Changes were also made with regard to Joist Substitutes and Top Chord Extensions.

(b) Substantial changes were made to the criteria for the spacing of bridging rows and the design of bridging. The changes make the criteria more cohesive between **K-**Series and **LH-**Series joists.

(c) A number of changes were made relative to bearing seat and end anchorage conditions, primarily incremental criteria rather than one standard for **LH-/DLH-**Series joists due to the broad range. In addition, design responsibilities are better defined and additional options for masonry bearing conditions are permitted.

(d) Several design criteria or checks that were already being performed but had not been shown in the specifications, are now included. These include node shear, girder top chord transverse bending, and weld design criteria. Based on SJI research, new criteria for crimped end angle webs have been applied.

(e) The Code of Standard Practice is updated with more discussion of the options available when specifying joist for non-uniform loads.

POLICY

The manufacturers of any standard SJI products shall be required to submit design data for verification of compliance with Steel Joist Institute Specifications, undergo physical design verification tests (on **K-**Series only), and undergo an initial plant inspection and subsequent biennial in-plant inspections for all products for which they wish to be certified.

SJI Member companies complying with the above conditions shall be licensed to publish the appropriate copyrighted SJI Specifications, Load Tables and Weight Tables.

MEMBERSHIP

Membership is open to manufacturers who produce, on a continuing basis, joists of the **K-, LH-, and DLH**-Series, and/or Joist Girders, conforming to the Institute's Specifications and Load Tables. Membership requirements differ as described below.

APPLICANTS BASED ON K-SERIES JOISTS

The Institute's Consulting Engineer checks to see that designs conform to the Institute's Specifications and Load Tables. This comprises an examination of: (1) Complete engineering design details and calculations of all **K-**Series Joists, bridging and accessories for which standards have been adopted; (2) Data obtained from physical tests of a limited number of joists, conducted by an independent laboratory, to verify conclusions from analysis of the applicant's engineering design details and calculations.

An initial plant inspection and subsequent biennial inspections are required to ensure that the applicant/member possesses the facilities, equipment and personnel required to properly manufacture the **K-**Series Joists.

APPLICANTS BASED ON LH- OR DLH-SERIES JOISTS OR JOIST GIRDERS

Designs are checked by the Consulting Engineer. Biennial in-plant inspections (but no physical tests) are required.

RESPONSIBILITY FOR PRODUCT QUALITY

The plant inspections are not a guarantee of the quality of any specific joists or Joist Girders; this responsibility lies fully and solely with the individual manufacturer.

SERVICES TO NONMEMBERS

The Institute's facilities for checking the design of **K-**, **LH**-, and **DLH**-Series Joists or Joist Girders are available on a cost basis.

The Steel Joist Institute does not check joist designs for specific construction projects. Manufacturing to Institute Specifications is the responsibility of the individual manufacturer.

STEEL JOIST INSTITUTE PUBLICATION

Visit the SJI Web Site at <www.steeljoist.org> for a complete listing of SJI publications and a copy of the standard order form. Also, be sure to check the website for upcoming Education opportunities in your area.

A. Catalog of Standard Specifications, Load Tables and Weight Tables and Code of Standard Practice for Steel Joists and Joist Girders

B. Catalog of Standard Specifications for Composite Steel Joists, Weight Tables, Bridging Tables and Code of Standard Practice (**CJ-**Series)

C. The following **TECHNICAL DIGESTS** are also available from the Institute:

No. 3 Structural Design of Steel Joist Roofs to Resist Ponding Loads (2007)
No. 5 Vibration of Steel Joist - Concrete Slab Floors (1988)
No. 6 Structural Design of Steel Joist Roofs to Resist Uplift Loads (2011)
No. 8 Welding of Open Web Steel Joists (2008)
No. 9 Handling and Erection of Steel Joists and Joist Girders (2008)
No. 10 Design of Fire Resistive Assemblies (2003)
No. 11 Design of Joist Girder Frames (2007)
No. 12 Evaluation and Modification of Open Web Steel Joists and Joist Girders (2007)

D. 80-Year CD Open Web Steel Joist Construction (1928-2008)

E. Vibration Computer Program (upcoming in 2011)

F. SJI DVD – Design of Open Web Steel Joists (2010)

G. SJI Video No. 2 – The Safe Erection of Steel Joists and Joist Girders (2001)

INTRODUCTION TO K-SERIES

Open Web Steel Joists, **K-**Series, were primarily developed to provide structural support for floors and roofs of buildings. They possess the following advantages and features which have resulted in their wide use and acceptance throughout the United States and other countries.

First and foremost, they are economical. For many types of buildings, no other products or methods for supporting floors and roofs can compete with steel joists. The advantages listed in the following paragraphs all contribute to the overall economy of using Open Web Steel Joists.

K-Series are light in weight – they possess an exceptionally high strength-to-weight ratio in comparison with other building materials. Coupled with their low price per pound, they contribute significantly to lower building costs. An additional economy stemming from their light weight is the fact that the structural materials supporting the joists, such as beams and Joist Girders, columns, and the foundations themselves, can therefore be lighter, thus leading to even greater economies.

Open Web Steel Joists represent unitized construction. Upon arrival at the job site, the joists are ready immediately for proper installation. No forming, pouring, curing, or stripping is required. Furthermore, their light weight makes the erection procedure simple and fast.

K-Series Joists are standardized regarding depths, spans, and load-carrying capacities. There are 63 separate designations in the Load Tables, representing joist depths from 10 inches (254 mm) through 30 inches (762 mm) in 2 inch (51 mm) increments and spans through 60 feet (18,288 mm). Standard **K-**Series Joists have a 2 1/2 inch (64 mm) end bearing depth so that, regardless of the overall joist depths, the tops of the joists lie in the same plane. Seat depths deeper than 2 ½" (64 mm) can also be specified.

The open webs in the joists permit the ready passage and concealment of pipes, ducts and electric conduits within the depth of the floor. In high rise buildings this can result in a reduced overall building height, which translates into considerable cost savings. As soon as the joists are erected and bridged, with ends properly attached, a working platform is available for the immediate follow-up of allied trades; this allows field work to progress rapidly and efficiently.

In combination with other materials, joists can provide fire resistive assemblies for both floors and roofs of buildings for nearly any hourly rating required. Appendix A, Fire Resistance Ratings, provides detailed information on this subject.

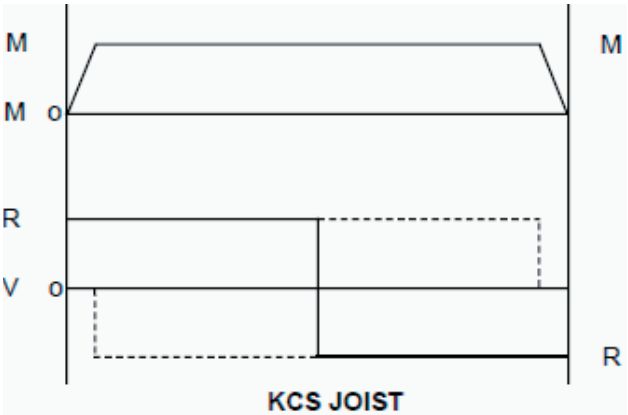
There are no restrictions on the types, sizes or heights of buildings in which joists can be used. They can be found in the roof of the neighborhood convenience store as well as in your local Lowe's, Home Depot, discount club, K-Mart, Target or Walmart.

Standard **K-**Series Joists are designed for simple span uniform loading which results in a parabolic moment diagram for chord forces and a linearly sloped shear diagram for web forces. When non-uniform and/or concentrated loads are encountered the shear and moment diagrams required may be shaped quite differently and may not be covered by the shear and moment design envelopes of a standard **K-**Series Joist. When conditions such as this arise, a **KCS**-Series (**K**-Series **C**onstant **S**hear) joist may be a good option. **KCS**-Series Joists are designed in accordance with the Standard Specification for **K-**Series Joists with a few unique advantages.

KCS- Series joist advantages:

1. Provides a versatile **K-**Series Joist that can be easily specified to support uniform and non-uniform loads plus concentrated loads applied at panel points.
2. Eliminate many repetitive load diagrams required on contract documents and allow some flexibility of load locations.

KCS-Series joist chords are designed for a flat positive moment envelope. The moment capacity is constant at all interior panels. All webs are designed for a vertical shear equal to the specified shear capacity and interior webs will be designed for 100% stress reversal.



KCS JOIST
SHEAR AND MOMENT ENVELOPES

Both LRFD and ASD **KCS**-Series joist load tables list the shear and moment capacity of each joist. The selection of a **KCS**-Series Joist requires the specifying professional to calculate the maximum moment and shear imposed and select the appropriate **KCS**- Series Joist.

For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joists and Joist Girders.

INTRODUCTION TO LH - and DLH - SERIES

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

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

Longspan Series Joists have been standardized in depths from 18 inches (457 mm) through 48 inches (1219 mm), for spans through 96 feet (29,260 mm).

Deep Longspan Series Joists have been standardized in depths from 52 inches (1321 mm) through 120 inches (3048 mm), for spans up through 240 feet (73,152 mm).

Longspan and Deep Longspan Steel Joists can be furnished with either under-slung or square ends, with parallel chords or with single or double pitched top chords to provide sufficient slope for roof drainage. Square end joists are primarily intended for bottom chord bearing.
Sloped parallel-chord joists shall use span as defined by the length along the slope. The joist designation is determined by its nominal depth at the center of the span and by the chord size designation.

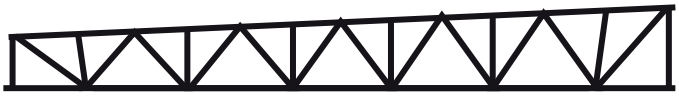
The depth of the bearing seat at the ends of underslung **LH-** and **DLH-**Series Longspan Joists has been established at 5 inches (127 mm) for chord section number 2 through 17. A bearing seat depth of 7 1/2 inches (191 mm) has been established for the DLH Series chord section number 18 through 25.

All Longspan and Deep Longspan Steel Joists are manufactured with standardized camber as given in Table 103.6-1. For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joists and Joist Girders.

Parallel Chords, Underslung

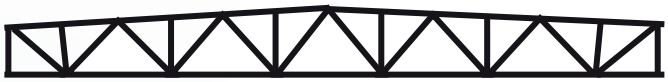
Parallel Chords, Square Ends

Top Chord Pitched One Way, Underslung



Top Chord Pitched One Way, Square Ends

Top Chord Pitched Two Ways, Underslung



Top Chord Pitched Two Ways, Square Ends

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

INTRODUCTION TO CJ-SERIES

Open Web Composite Steel Joists, **CJ**-Series, were developed to provide structural support for floors and roofs which incorporate an overlying concrete slab while also allowing the steel joist and slab to act together as an integral unit after the concrete has adequately cured.

The **CJ**-Series Joists are capable of supporting larger floor or roof loadings due to the attachment of the concrete slab to the top chord of the composite joist. Shear connection between the concrete slab and steel joist is typically made by the welding of shear studs thru the steel deck to the underlying **CJ**-Series Composite Steel Joist.

CJ-Series joists can provide an economical alternative to **K-**, **KCS-**, or **LH-**Series joists when taking into account overall costs. Some potential advantages may include those listed below:

1. Reductions in overall floor to floor height of the structure.
2. Maximum span-to-depth ratios of 30 permit the use of shallower joists for any given span.
3. Efficient composite design makes it possible to span greater distances. This results in larger column spacing, thus increasing the rental value of floor space.
4. Composite Steel Joists can be more efficient than other series dependent on loading and span due to a potential reduction in the joist weight for any given joist depth. Lighter weight joists translate into potentially lighter weight columns and reduced foundation costs.
5. Live load deflections are significantly reduced. With the overlying concrete slab locked to the steel joist, the resulting composite action provides a stiffer floor system.
6. Efficient erection of the **CJ-**Series joist system reduces construction time and permits early occupancy of the building. Wider joist spacing reduces the number of joists to be erected and fireproofed.

The composite joist designation is determined by its nominal depth, the letters "**CJ**", followed by the total uniform composite load, uniform composite live load, and finally the uniform composite dead load. Composite Steel Joists are furnished with parallel chords with either under-slung or square ends and act as pinned-pinned members. For specifications, load tables, and additional information to determine if **CJ-**Series may be suitable for your project, please refer to the latest edition of the *Steel Joist Institute Standard Specifications for Composite Steel Joists*.

INTRODUCTION TO JOIST GIRDERS

Joist Girders are open web steel trusses used as primary framing members. They are designed as simple spans supporting equally spaced concentrated loads for a floor or roof system. These concentrated loads are considered to act at the panel points of the Joist Girders. Joist Girders have been designed to allow for a growing need for longer span primary members, coupled with a need for more efficient steel usage.

These members have been standardized in the LRFD and ASD Weight Tables for depths from 20 inches (508 mm) to 120 inches (3048 mm), and spans to 120 feet (36,576 mm). Standardized camber is as shown in Table 1003.6-1 of the Specifications. Joist Girders are furnished with underslung ends and bottom chord extensions. The standard depth at the bearing ends has been established at 7 1/2 inches (191 mm) for all Joist Girders. Joist Girders are usually attached to the columns by bolting with two 3/4 inch diameter (19 mm) A325 bolts. A loose connection of the bottom chord to the column or other support is recommended during erection in order to stabilize the bottom chord laterally and to help brace the Joist Girder against possible overturning. A vertical stabilizer plate shall be provided on each column for the bottom chord of the Joist Girder. The stabilizer plate shall be furnished by other than the joist manufacturer.

"CAUTION": If a rigid connection of the bottom chord is to be made to the column or other support, it shall be made only after the application of the dead loads. The Joist Girder is then no longer simply supported and the system must be investigated for

continuous frame action by the specifying professional*. Bearing details of joists on perimeter Joist Girders, or interior Joist Girders with unbalanced loads, should be designed such that the joist reactions pass through the centroid of the Joist Girder.

The Weight Tables list the approximate weight in pounds per linear foot (kilograms per meter) for a Joist Girder supporting the concentrated panel point loads shown. Please note that the weight of the Joist Girder must be included in the panel point load (See Code of Standard Practice for Steel Joists and Joist Girders, Section 2.3 for examples).

For calculating the approximate deflection or checking for ponding, the following formulas in U. S. Customary Units and Metric Units may be used in determining the approximate moment of inertia of a Joist Girder.

I_{JG} = 0.027 NPLd: where N = number of joist spaces;

P = Total panel point load in kips (unfactored); L = Joist Girder length in feet; and d = effective depth of the Joist Girder in inches, or,

I_{JG} = 0.3296 NPLd: where N = number of joist spaces;

P = Total panel point load in kiloNewtons (unfactored); L = Joist Girder length in millimeters and d = effective depth of the Joist Girder in millimeters.

The Joist Girder manufacturer should be contacted when a more exact Joist Girder moment of inertia must be known.

* For further reference, refer to Steel Joist Institute Technical Digest Number 11, “Design of Joist Girder Frames”.

END ANCHORAGE FOR UPLIFT

For wind uplift conditions it is the responsibility of the **specifying professional** to specify the wind uplift forces and the attachment of the joist or Joist Girder seat to the supporting element. It is the responsibility of the joist manufacturer to design the joist seat for the specified uplift. See Section 6.1(b) of the SJI Code of Standard Practice.

Welded Anchorage

The strength of the joist bearing seat for an uplift loading combination is a function of both the joist seat thickness and length of the end anchorage welds. The minimum end anchorage welds from the SJI Specifications may not develop the full capacity of the joist seat assembly for the specified uplift resistance. Where appropriate, a longer end anchorage weld length aids the joist manufacturer in providing an economical design of the joist bearing seat. The joist manufacturer will provide a seat of sufficient thickness and strength to resist the specified uplift end reaction.

To aid in the design and efficiency of the joist bearing seat, it is suggested that the minimum weld lengths of the Specification be increased by one inch whenever there is a net uplift load case, and there is sufficient bearing length to place the longer weld.
For a **K-**Series joist, the minimum weld size and length is (2) 1/8" x 2" long, and the minimum required bearing length (on steel) is 2-1/2". Where uplift is present and the bearing length is at least 3", specifying a one inch longer anchorage weld, (2) 1/8" x 3", will allow the joist manufacturer to engage more of the seat length for uplift resistance and provide a more economical seat design. For an **LH/DLH-**Series joist, SJI recommends the same as **K-**Series, to increase the weld length by 1". The minimum bearing lengths for **LH/DLH-** joists are such that there should be sufficient bearing length for the longer weld. Table 1 below demonstrates these suggestions.

TABLE 1

JOIST SERIES and SECTION NUMBER	MINIMUM FILLET WELD	SUGGESTED INCREASED WELD LENGTH
K-Series	(2) 1/8" x 2"	(2) 1/8" x 3" *
LH-Series, 02-06	(2) 3/16" x 2"	(2) 3/16" x 3"
LH/DLH-Series, 07-17	(2) 1/4" x 2"	(2) 1/4" x 3"
DLH-Series, 18-25	(2) 1/4" x 4"	

* The minimum bearing length on steel for K-Series joists is 2 1/2", so weld length should be increased only where bearing length is available.

Bolted Anchorage

Typically, joists and Joist Girders with bolted end anchorage also require a final connection by welding in order to provide lateral stability to the supporting member. However, only the bolts are relied on to provide uplift anchorage. The bolt type and diameter designated by the **specifying professional** shall provide sufficient tensile strength to resist the specified uplift end reaction. Higher strength bolts than the minimums required by the SJI Specification may be required.

If the bearing seats are detailed for a bolted connection, bolts shall be installed. If the bolts are not installed, an equivalent welded connection may be permitted by the **specifying professional**, provided the weld is deposited in the slot on the side farthest from the edge of the seat. Additional weld required to meet that specified for the welded connection shall be placed at a location on the seat away from the outer edge of the slot as shown in Figure 1.

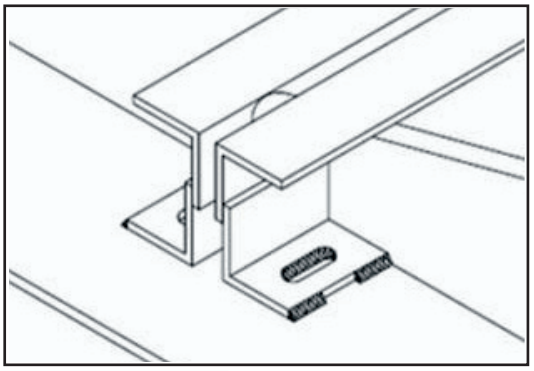


Figure 1

For additional information on uplift, see SJI Technical Digest 6.

JOIST MOMENT OF INERTIA AND DEFLECTION

The moment of inertia of **K-**Series and **LH/DLH-** series joists in the load table can be estimated using the following equations:

$I_J = 26.767\ (W)\ (L^3)\ (10^{-6})$ ASD, US Customary Units with W in plf and L = Span – 0.33 in feet

$I_J = 2.6953\ (W)\ (L^3)\ (10^{-5})$ ASD, Metric Units with W in kN/m and L = Span -102 in mm

The equations shown above provide an approximate "gross" moment of inertia, not including the effects of shear deformation. An open web steel joist can be expected to have approximately 15 percent more deformation than a solid web member. When a conventional beam formula is used to calculate joist deflection, a factor of 1.15 should be applied to account for the web shear deformation.

Example:

Find the Inertia for a 24K7 @ 40'-0":

SJI tables 253 / 148

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

$I_J = 26.767(148)\ (40 - 0.33)^3(10^{-6}) = 247\ in^4$

Compute Joist Deflection:

Increase deflection 15% to account for shear deformation in webs.

$(1.15)(5WL^4/384EI)$

$(1.15)(5)(148/12)\ [(40 - 0.33) \times 12)]^4\ /\ [(384)(29 \times 10^{-6})\ (247)] = 1.32"$

Verify the RED number represents the joist loading that produces L/360 deflection

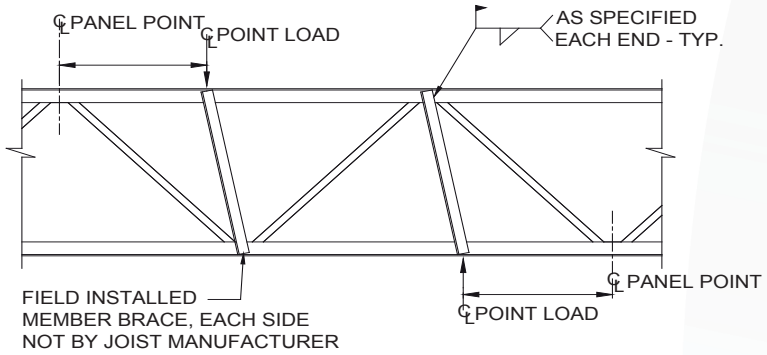
$L/360 = (40 - 0.33) \times 12/360 = 1.32"$

The 15 percent approximation also applies to the deflection equations when using the Joist Girder moment of Inertia equations.

For a Load/Load **LH-**Series joist type, the Weight Table includes an estimated moment of inertia value, so an equation is not needed for approximation.

CONCENTRATED LOADS AT JOIST CHORDS

TYPICAL JOIST REINFORCEMENT AT CONCENTRATED LOADS



For nominal concentrated loads between panel points, which have been accounted for in the specified uniform design loads, a "strut" to transfer the load to a panel point on the opposite chord shall not be required, provided the sum of the concentrated loads within a chord panel does not exceed 100 pounds and the attachments are concentric to the chord.

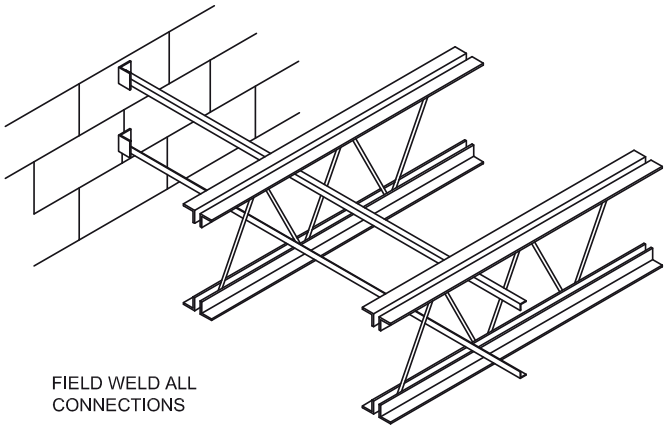
Although standard **K-**Series, including **KCS-**Series, and standard **LH-**Series joists are designed specifically to support uniformly distributed loads applied to the top chord, research conducted by the Steel Joist Institute, using second-order inelastic analysis, has demonstrated that the localized accumulation of uniform design loads of up to 100 pounds within any top or bottom chord panel has a negligible effect on the overall performance of the joist, provided that the load is applied to both chord angles in a manner which does not induce torsion on the chords.

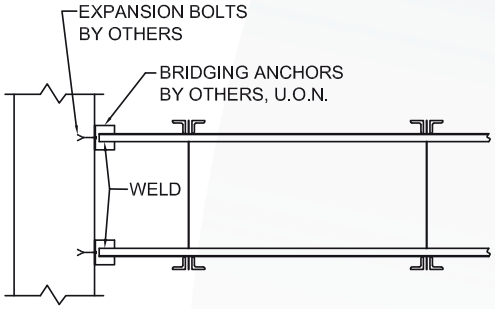
Concentrated loads in excess of 100 pounds or which do not meet the criteria outlined above must be applied at joist panel points or field strut members must be utilized as shown in the detail above.

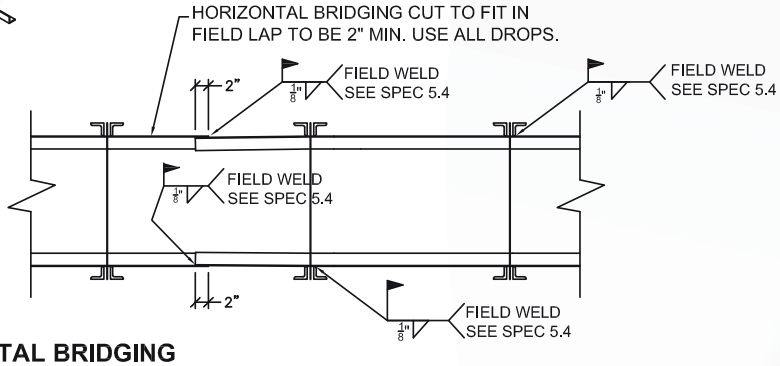
Joist manufacturers can provide a specially designed joist with the capability to take point loads without the added members if this requirement and the exact location and magnitude of the loads are shown on the contract drawings. Also, the manufacturer can consider the worst case for both the shear and bending moment for a traveling load with no specific location. When a traveling load is specified, the contract drawings should indicate whether the load is to be applied at the top or bottom chord, and at any panel point, or at any point with the local bending effects considered. For additional information see SJI Code of Standard Practice, Section 2.3 – Specifying Design Loads.

ACCESSORIES AND DETAILS

K-SERIES BRIDGING DETAILS

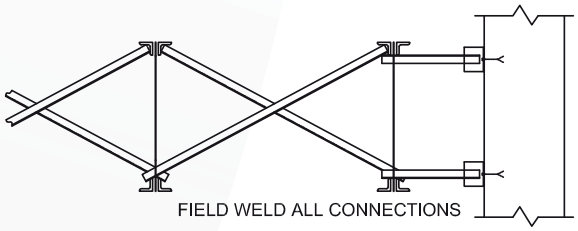






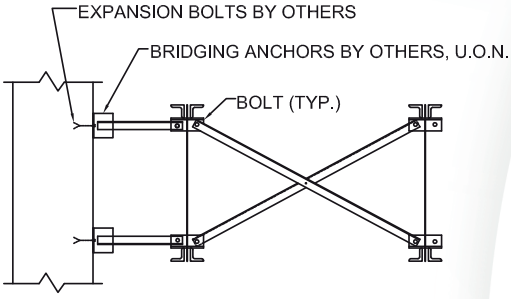
HORIZONTAL BRIDGING
SEE SJI SPECIFICATIONS

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



WELDED CROSS BRIDGING SEE SJI SPECIFICATIONS

HORIZONTAL BRIDGING SHALL BE USED IN SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST WALL.



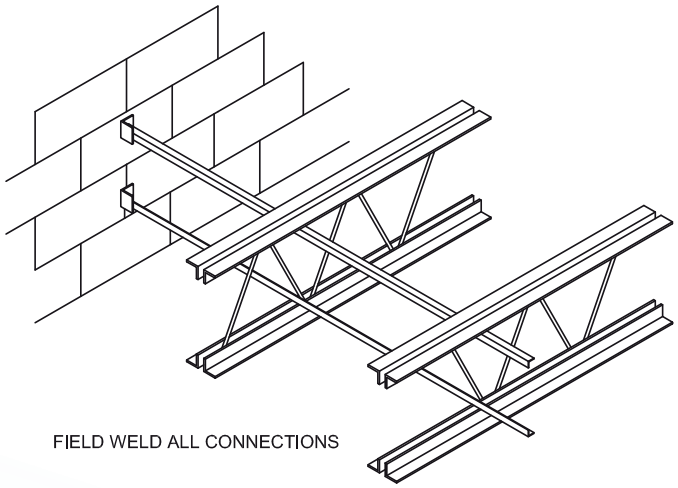
BOLTED CROSS BRIDGING SEE SJI SPECIFICATIONS

(a) HORIZONTAL BRIDGING UNITS SHALL BE USED IN THE SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST THE WALL.

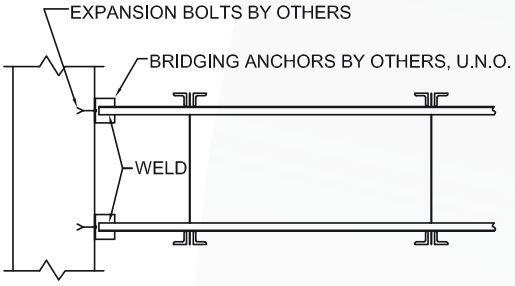
(b) FOR REQUIRED BOLT SIZE REFER TO BRIDGING TABLE.
NOTE: CLIP CONFIGURATION MAY VARY FROM THAT SHOWN.

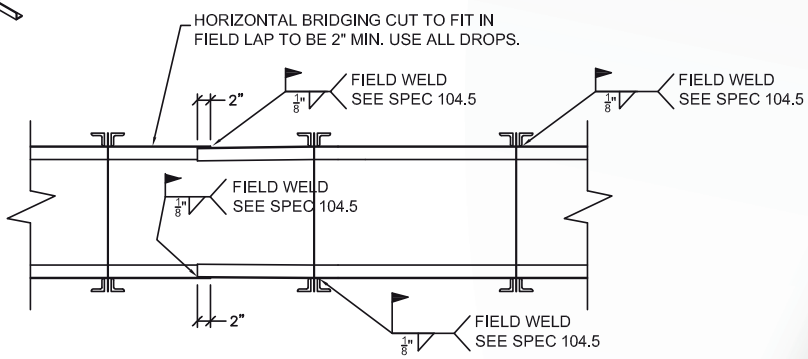
ACCESSORIES AND DETAILS

LH- AND DLH-SERIES BRIDGING DETAILS



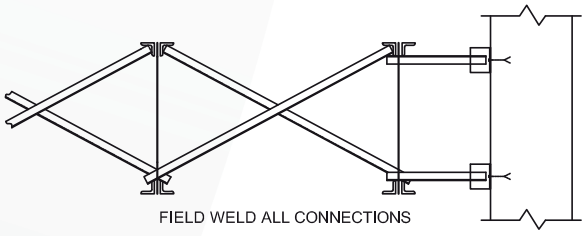
FIELD WELD ALL CONNECTIONS





HORIZONTAL BRIDGING
SEE SJI SPECIFICATIONS

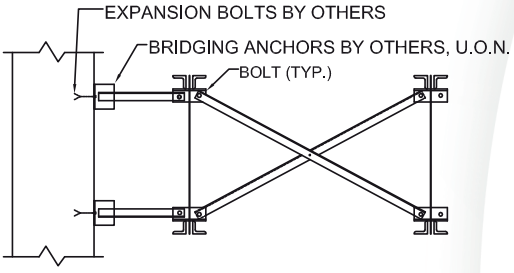
NOTE: DO NOT WELD BRIDGING TO WEB MEMBERS. DO NOT HANG ANY MECHANICAL, ELECTRICAL, ETC. FROM BRIDGING.



FIELD WELD ALL CONNECTIONS

WELDED CROSS BRIDGING
SEE SJI SPECIFICATIONS

HORIZONTAL BRIDGING SHALL BE USED IN SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST WALL.



BOLTED CROSS BRIDGING SEE SJI SPECIFICATIONS

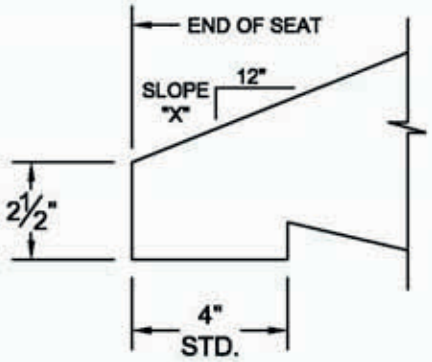
(a) HORIZONTAL BRIDGING UNITS SHALL BE USED IN THE SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST THE WALL.

(b) FOR REQUIRED BOLT SIZE REFER TO BRIDGING TABLE.
NOTE: CLIP CONFIGURATION MAY VARY FROM THAT SHOWN.

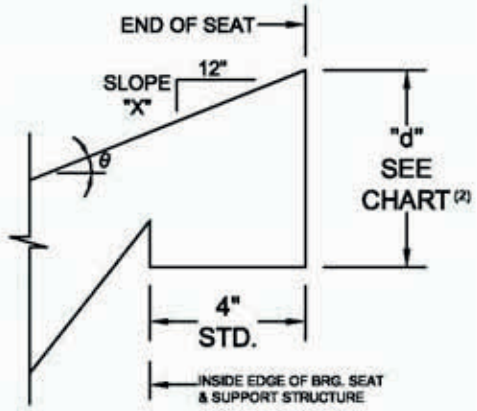
ACCESSORIES AND DETAILS

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

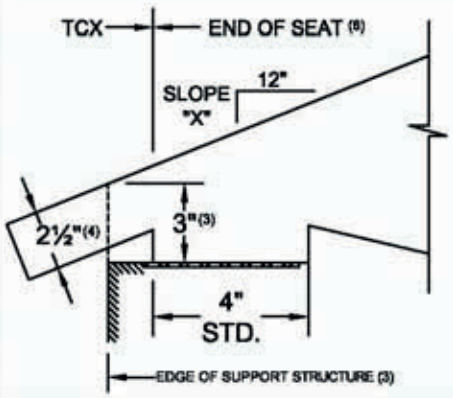
LOW END W/OUT TOP CHORD EXTENSIONS



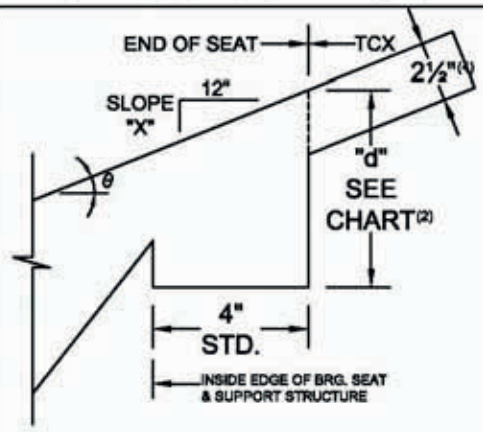
HIGH END W/OUT TOP CHORD EXTENSIONS



LOW END W/ TOP CHORD EXTENSIONS



HIGH END W/ TOP CHORD EXTENSIONS



SLOPE "X":12	MINIMUM HIGH END SEAT DEPTH "d"
3/8	3 1/2
1/2	3 1/2
1	3 1/2
1 1/2	4
2	4
2 1/2	4
3	4 1/2
3 1/2	4 1/2
4	4 1/2
4 1/2	5
5	5
5 1/2	5 1/2
6	5 1/2

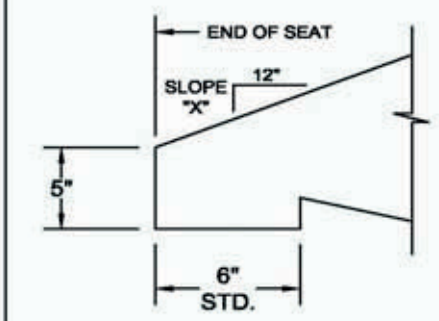
SEE NOTE (2) FOR SLOPE RATES GREATER THAN 6:12

Notes:
(1) Depths shown are the minimum required for manufacturing of sloped seats. Depths may vary depending on actual bearing conditions.
(2) $d = 1/2 + 2.5/\cos\theta + 4\tan\theta$ (Rounded up to the nearest 1/2".)
(3) Clearance must be checked at outer edge of support. Increase bearing depths as required to allow passage of 2 1/2" deep extension.
(4) If extension depth greater than 2 1/2" is required, increase bearing depths accordingly.
(5) If slope is 1/4 : 12 or less, sloped seats are not required.
(6) Required bearing seat depth is determined at END OF SEAT.
(7) Also refer to SJI Specification 5.3(a) for special considerations of joist end reaction location.

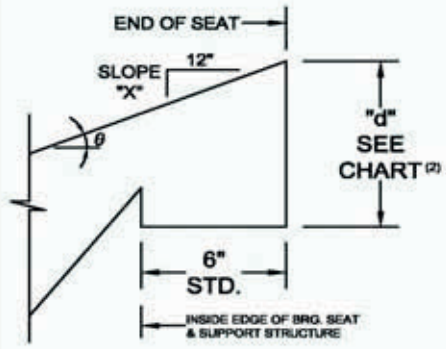
ACCESSORIES AND DETAILS

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

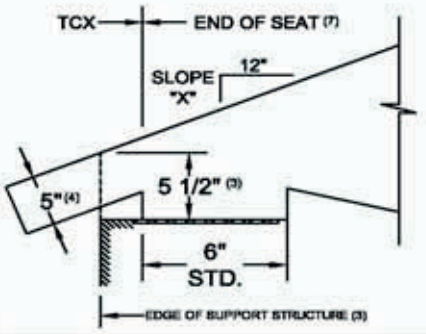
LOW END W/OUT TOP CHORD EXTENSIONS



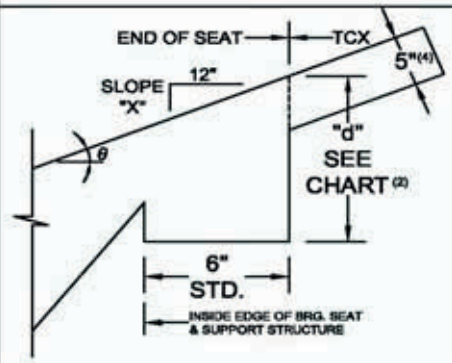
HIGH END W/OUT TOP CHORD EXTENSIONS



LOW END W/ TOP CHORD EXTENSIONS



HIGH END W/ TOP CHORD EXTENSIONS

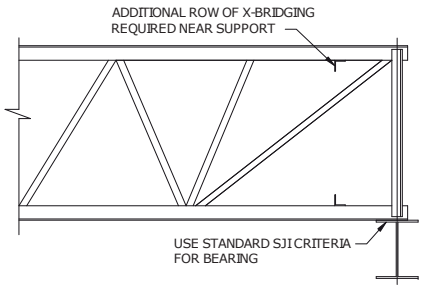


SLOPE "X" : 12	MINIMUM HIGH END SEAT DEPTH "d"
3/8	6
1/2	6
1	6 1/2
1 1/2	6 1/2
2	7
2 1/2	7
3	7 1/2
3 1/2	7 1/2
4	8
4 1/2	8 1/2
5	8 1/2
5 1/2	9
6	9 1/2
SEE NOTE (2) FOR SLOPE RATES GREATER THAN 6:12	

Notes:
(1) Depths shown are the minimum required for manufacturing of sloped seats. Depth may vary depending on actual bearing condition.
(2) $d = 1/2 + 5 / \cos\theta + 6 \tan\theta$
(3) Clearance must be checked at outer edge of support. Increase bearing seat depth as required to allow passage of 5" deep extension.
(4) If extension depth greater than 5" is required, increase bearing depths accordingly.
(5) Add 2 1/2" to seat depth at 18 thru 25 chord section numbers. Consult with joist manufacturer for information when TCXs are present.
(6) If slope is 1/4 : 12 or less, sloped seats may not required.
(7) Required bearing seat depth shall be determined at END OF SEAT.
(8) Also refer to SJI Specification 104.4(a) for special considerations of joist end reaction location.

ACCESSORIES AND DETAILS

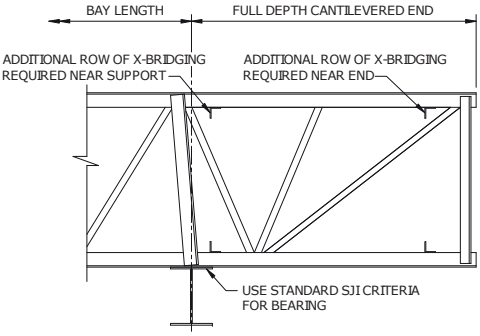
SQUARE ENDED, BOTTOM BEARING



Whenever joists are bottom chord bearing, diagonal cross bridging must be installed from joist to joist at or near the bearing location to provide additional lateral erection stability.

Note: Joist configuration and member size may vary

CANTILEVERED, BOTTOM BEARING SQUARE END



The weight of walls, signage, fascia, etc. supported at the end of a cantilever square end must be shown on the contract drawings to be properly considered in the joist design.

Note: Joist configuration and member size may vary.

ACCESSORIES AND DETAILS

APPROXIMATE DUCT OPENING SIZES

JOIST DEPTH	ROUND	SQUARE	RECTANGLE
10 INCHES	5 INCHES	4 x 4 INCHES	3 x 7 INCHES
12 INCHES	7 INCHES	5 x 5 INCHES	3 X 8 INCHES
14 INCHES	8 INCHES	6 X 6 INCHES	5 X 9 INCHES
16 INCHES	8 INCHES	6 X 6 INCHES	5 X 9 INCHES
18 INCHES	9 INCHES	7 X 7 INCHES	5 X 9 INCHES
20 INCHES	10 INCHES	8 X 8 INCHES	6 X 11 INCHES
22 INCHES	10 INCHES	9 X 9 INCHES	7 X 11 INCHES
24 INCHES	12 INCHES	10 X 10 INCHES	7 X 13 INCHES
28 INCHES	15 INCHES*	12 X 12 INCHES*	9 X 18 INCHES*
28 INCHES	16 INCHES*	13 X 13 INCHES*	9 X 18 INCHES*
30 INCHES	17 INCHES*	14 X 14 INCHES*	10 X 18 INCHES*

SPECIFYING PROFESSIONAL MUST INDICATE ON STRUCTURAL DRAWINGS SIZE AND LOCATION OF ANY DUCT THAT IS TO PASS THRU JOIST. THIS DOES NOT INCLUDE ANY FIREPROOFING ATTACHED TO JOIST. FOR DEEPER LH- AND DLH- SERIES JOISTS, CONSULT MANUFACTURER.

***FOR ROD WEB CONFIGURATION, THESE WILL BE REDUCED. CONSULT MANUFACTURER.**

Notes:

American National Standard SJI-K-2010

STANDARD SPECIFICATION
FOR OPEN WEB STEEL JOISTS, K-SERIES

Adopted by the Steel Joist Institute November 4, 1985
Revised to May 18, 2010, Effective December 31, 2010

SECTION 1.
SCOPE AND DEFINITIONS

1.1 SCOPE

The *Standard Specification for Open Web Steel Joists,* **K**-*Series*, hereafter referred to as the Specification, covers the design, manufacture, application, and erection stability and handling of Open Web Steel Joists **K**-Series in buildings or other structures, where other structures are defined as those structures designed, manufactured, and erected in a manner similar to buildings. **K**-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, Section 1926.757 Open Web Steel Joists. The KCS joists; Joist Substitutes, **K**-Series; and Top Chord Extensions and Extended Ends, **K**-Series are included as part of this Specification.

This Specification includes Sections 1 through 6.

1.2 DEFINITION

The term "Open Web Steel Joists **K**-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 deck.

The **K**-Series Joists have been standardized in depths from 10 inches (254 mm) through 30 inches (762 mm), for spans up through 60 feet (18288 mm). The maximum total safe uniformly distributed load-carrying capacity of a **K**-Series Joist is 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD.

The **K**-Series standard joist designations are determined by their nominal depth, followed by the letter **"K"**, and then by the chord size designation assigned. The chord size designations range from 01 to 12. Therefore, as a performance based specification, the **K**-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 Open Web Steel Joists, **K**-Series – U.S. Customary Units
Standard ASD Load Table Open Web Steel Joists, **K**-Series – U.S. Customary Units

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

Standard LRFD Load Table Open Web Steel Joists, **K**-Series – S.I. Units
Standard ASD Load Table Open Web Steel Joists, **K**-Series – S.I. Units

Two standard types of **K**-Series Joists are designed and manufactured. These types are underslung (top chord bearing) or square-ended (bottom chord bearing), with parallel chords.

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

The **KCS** Joists standard designations are determined by their nominal depth, followed by the letters **"KCS"**, and then by the chord size designation assigned. The chord size designations range from 1 to 5. Therefore, as a performance based specification, the **KCS** Joists standard designations listed in the following Standard Load Tables shall provide the moment capacity and shear capacity as listed in the appropriate tables:

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

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

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

A Joist Substitute, **K**-Series, shall be designed in accordance with this Specification to support uniform loads when the span is less than 10 feet (3048 mm) where an open web configuration becomes impractical. The Joist Substitutes, **K**-Series have been standardized as 2.5 inch (64 mm) deep sections for spans up through 10'-0" (3048 mm). The maximum total safe uniformly distributed load-carrying capacity of a Joist Substitute is 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD.

The Joist Substitutes, **K**-Series standard designations are determined by their nominal depth, i.e. **2.5**, followed by the letter **"K"** and then by the chord size designation assigned. The chord size designations range from 1 to 3. Therefore, as a performance based specification, the Joist Substitutes, **K**-Series standard designations listed in the following Load Tables shall support the uniformly distributed loads as provided in the appropriate tables:

LRFD Simple Span Load Table for 2.5 Inch **K**-Series Joist Substitutes – U.S. Customary Units
ASD Simple Span Load Table for 2.5 Inch **K**-Series Joist Substitutes – U.S. Customary Units

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

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

LRFD Simple Span Load Table for 64 mm **K**-Series Joist Substitutes – S.I. Units
ASD Simple Span Load Table for 64 mm **K**-Series Joist Substitutes – S.I. Units

LRFD Outriggers Load Table for 64 mm **K**-Series Joist Substitutes – S.I. Units
ASD Outriggers Load Table for 64 mm **K**-Series Joist Substitutes – S.I. Units

A Top Chord Extension or Extended End, **K-**Series, shall be a joist accessory that shall be designed in accordance with this Specification to support uniform loads when one or both ends of an underslung joist needs to be cantilevered beyond its bearing seat. The Top Chord Extensions and Extended Ends, **K**-Series have been standardized as an "S" Type (top chord angles extended only) and an "R" Type (top chord and bearing seat angles extended), respectively. The maximum total safe uniformly distributed load-carrying capacity of either an "R" or "S" Type extension is 550 plf (8.02 kN/m) in ASD or 825 plf (12.03 kN/m) in LRFD.

Standard designations for the "S" Type range from S1 to S12 for spans from 0'-6" to 4'-6" (152 to 1372 mm). Standard designations for the "R" Type range from R1 to R12 for spans from 0'-6" to 6'-0" (152 to 1829 mm). Therefore, as a performance based specification, the "S" Type Top Chord Extensions and "R" Type Extended Ends listed in the following Standard Load Tables shall support the uniformly distributed loads as provided in the appropriate tables:

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

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

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

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

1.3 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 2. REFERENCED SPECIFICATIONS, CODES AND STANDARDS

2.1 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 Atmoshperic 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

2.1 OTHER REFERENCES

The following are non-ANSI Standards 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 (2011), *Structural Design of Steel Joist Roofs to Resist Uplift Loads*

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

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

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

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

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

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 3.
MATERIALS

3.1 STEEL

The steel used in the manufacture of **K**-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 3.2.

3.2 MECHANICAL PROPERTIES

Steel used for **K-**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 3.2 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.

3.3 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 4.
DESIGN AND MANUFACTURE

4.1 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.

4.2 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)

$$\text{Design Stress} = 0.9F_y \text{ (LRFD)} \quad (4.2\text{-}1)$$

$$\text{Allowable Stress} = 0.6F_y \text{ (ASD)} \quad (4.2\text{-}2)$$

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

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

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

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

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

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

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

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

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

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:.

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

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

or,

$$Q = [5.25/(w/t)] + (t/25.4) \le 1.0 \qquad (4.2\text{-}9)$$

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: $F_n = F_y$

$$\text{Design Stress} = \phi_b F_n = 0.9F_y \text{ (LRFD)} \quad (4.2\text{-}10)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.6F_y \text{ (ASD)} \quad (4.2\text{-}11)$$

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

$$\text{Design Stress} = \phi_b F_n = 1.45F_y \text{ (LRFD)} \quad (4.2\text{-}12)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.95F_y \text{ (ASD)} \quad (4.2\text{-}13)$$

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

$$\text{Design Stress} = \phi_b F_n = 1.35F_y \text{ (LRFD)} \quad (4.2\text{-}14)$$

$$\text{Allowable Stress} = F_n/\Omega_b = 0.90F_y \text{ (ASD)} \quad (4.2\text{-}15)$$

(d) Weld Strength:

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

$$\text{Nominal Shear Stress} = F_{nw} = 0.6F_{exx} \quad (4.2\text{-}16)$$

LRFD: $\phi_w = 0.75$

$$\text{Design Shear Strength} = \phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A_w \quad (4.2\text{-}17)$$

ASD: $\Omega_w = 2.0$

$$\text{Allowable Shear Strength} = R_n/\Omega_w = F_{nw}A/\Omega_w = 0.3F_{exx} A_w \quad (4.2\text{-}18)$$

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:

$$T \text{ (inches)} = 0.12D + 0.11 \quad (4.2\text{-}19)$$

Where: D = web diameter, inches

or,

$$T \text{ (mm)} = 0.12D + 2.8 \quad (4.2\text{-}20)$$

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:

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

Design Stress = $0.9F_y$ (LRFD) (4.2-21)

Allowable Stress = $0.6F_y$ (ASD) (4.2-22)

4.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratios, 1.0 ℓ/r and 1.0 ℓ_s /r of members as a whole or any component part shall not exceed the values given in Table 4.3-1, Parts A.

The effective slenderness ratio, kℓ/r to be used in calculating the nominal stresses, F_{cr} and F'_e, is the largest value as determined from Table 4.3-1, 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 4.3-1 are defined as follows:

ℓ = length center-to-center of panel points, except ℓ = 36 inches (914 millimeters) for calculating ℓ/r_y of top chord member, in. (mm) or the appropriate length for a compression or tension web 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 4.3-1
MAXIMUM AND EFFECTIVE SLENDERNESS RATIOS

	Description	$k\ell/r_x$	$K\ell/r_y$	$k\ell/r_z$	$k\ell_s/r_z$
I	TOP CHORD INTERIOR PANELS				
	A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 90.				
	B. The effective slenderness ratio, $k\ell/r$, 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, $k\ell/r$, to determine F'_e where k is:				
		1.0	---	---	---
II	TOP CHORD END PANELS, ALL BOTTOM CHORD PANELS				
	A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 120 for Top Chords, or 240 for Bottom Chords.				
	B. The effective slenderness ratio, $k\ell/r$, 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, $k\ell/r$, to determine F'_e where k is:				
		1.0	---	---	---
III	TENSION WEB MEMBERS				
	A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 240.				
	B. For end web members subject to compression, the effective slenderness ratio, $k\ell/r$, to determine F_{cr} where k is:				
	1. With fillers or ties	1.0	1.0	---	1.0
	2. Without fillers or ties	---	---	1.0	---
	3. Single component members	0.8	0.8	---	---
IV	COMPRESSION WEB MEMBERS				
	A. The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 200.				
	B. The effective slenderness ratio, $k\ell/r$, to determine F_{cr} where k is:				
	1. With fillers or ties	1.0	1.0	---	1.0
	2. Without fillers or ties	---	---	1.0	---
	3. Single component members	1.0	1.0	---	---

4.4 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:

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

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

or,

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

Where:

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

L is the design length for the joist, 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 5.4(c).

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

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

For **LRFD**:

at the panel point:

$$f_{au} + f_{bu} \leq 0.9 F_y \qquad (4.4\text{-}3)$$

at the mid panel:

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

$$\frac{f_{au}}{\phi_c F_{cr}} + \frac{8}{9} \left[\frac{C_m f_{bu}}{\left[1 - \left(\dfrac{f_{au}}{\phi_c F'_e} \right) \right] Q \phi_b F_y} \right] \leq 1.0 \qquad (4.4\text{-}4)$$

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

$$\left(\frac{f_{au}}{2\phi_c F_{cr}}\right) + \left[\frac{C_m f_{bu}}{\left[1-\left(\frac{f_{au}}{\phi_c F'_e}\right)\right] Q\phi_b F_y}\right] \le 1.0 \qquad (4.4\text{-}5)$$

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, $in.^3$ (mm^3)
F_{cr} = Nominal axial compressive stress in ksi (MPa) based on ℓ/r as defined in Section 4.2(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)

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

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

Q = Form factor defined in Section 4.2(b)
A = Area of the top chord, $in.^2$ (mm^2)

For **ASD**:

at the panel point:

$$f_a + f_b \le 0.6F_y \qquad (4.4\text{-}6)$$

at the mid panel:

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

$$\frac{f_a}{F_a} + \frac{8}{9}\left[\frac{C_m f_b}{\left[1-\left(\frac{1.67f_a}{F'_e}\right)\right] QF_b}\right] \le 1.0 \qquad (4.4\text{-}7)$$

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

$$\left(\frac{f_a}{2F_a}\right) + \left[\frac{C_m f_b}{\left[1-\left(\frac{1.67 f_a}{F'_e}\right)\right] Q F_b}\right] \le 1.0 \qquad (4.4\text{-}8)$$

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 4.2(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:

$$f_{vmod} \le \phi_v f_n \qquad \text{(LRFD, } \phi = 1.00\text{)} \qquad (4.4\text{-}9)$$

$$f_{vmod} \le f_n/\Omega_v \qquad \text{(ASD, } \Omega = 1.50\text{)} \qquad (4.4\text{-}10)$$

Where:

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 = $\left(\frac{1}{2}\right)\left(f_t^2 + 4f_v^2\right)^{1/2}$
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 Section 4.4(b) (25 percent of the end reaction) shall not be required when evaluating Equation 4.4-9 or 4.4-10.

KCS Joist chords shall be designed for a flat positive bending moment envelope where the moment capacity is constant at all interior panels. The top chord end panel(s) is designed for an axial load based on the force in the first tension web resulting from the specified shear. A uniform load of 550 plf (8020 N/m) in ASD or 825 plf (12030 N/m) in LRFD shall be used to check bending in the end panel(s).

(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. Due consideration shall be given to the effect of eccentricity. The effect of combined axial compression and bending shall be investigated using the provisions of Section 4.4(a), letting C_m = 0.4 when bending due to eccentricity produces reversed curvature.

Interior vertical web members used in modified Warren type web systems shall be designed to resist the gravity loads supported by the member plus an additional axial load of ½ of 1.0 percent of the top chord axial force.

KCS Joist web forces shall be determined based on a flat shear envelope. All webs shall be designed for a vertical shear equal to the specified shear capacity. In addition, all webs shall be designed for 100 percent stress reversal except for the first tension web which will remain in tension under all simple span gravity loads.

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

(2) A loading diagram shall be provided for the top chord extension, extended end, or full depth cantilevered end. The diagram shall include the magnitude and location of the loads to be supported, as well as the appropriate load combinations.

(3) Joist extensions shall be specified using extension designations found in the Top Chord Extension Load Table (S Type) for TCXs or the Top Chord Extension Load Table (R Type) for extended ends.

Any deflection requirements or limits due to the accompanying loads and load combinations on the 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. In the case of a K-Series Standard Type 'R' Extended End or 'S' TCX, the design bending moment is defined as the tabulated extension section modulus (S) multiplied by the appropriate allowable (ASD) or design (LRFD) flexural stress.

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

4.5 CONNECTIONS

(a) Methods

Joist connections and splices shall be made by attaching the members to one another by arc or resistance welding or other 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 5.12 of this specification)

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 4.5(a)(1) above. Ultrasonic, X-Ray, and magnetic particle testing are inappropriate for joists due to the configurations of the components and welds.

(b) Strength

(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) Eccentricity

Members connected at a joint shall have their centroidal axes meet at a point whenever possible. Between joist ends where the eccentricity of a web member is less than 3/4 of the over-all dimension, measured in the plane of the web, of the largest member connected, the additional bending stress from this eccentricity shall be permitted to be neglected in the joist design. Otherwise, due consideration shall be given to the effect of eccentricity. The eccentricity of any web member shall be the perpendicular distance from the centroidal axis of that web member to the point on the centroidal axis of the chord which is vertically above or below the intersection of the centroidal axis of the web member(s) forming the joint. Joist ends shall be proportioned to resist bending produced by eccentricity at the support.

4.6 CAMBER

Joists shall have approximate camber in accordance with the following:

TABLE 4.6-1

Top Chord Length		Approximate Camber	
20'-0″	(6096 mm)	1/4″	(6 mm)
30'-0″	(9144 mm)	3/8″	(10 mm)
40'-0″	(12192 mm)	5/8″	(16 mm)
50'-0″	(15240 mm)	1″	(25 mm)
60'-0″	(18288 mm)	1 1/2″	(38 mm)

The **specifying professional** shall give consideration to coordinating joist camber with adjacent framing.

4.7 VERIFICATION OF DESIGN AND MANUFACTURE

(a) Design Calculations

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

(b) Tests of Chord and Web Members

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

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

(c) Tests of Joints and Connections

Each manufacturer shall, at the time of design review by the Steel Joist Institute, verify by shear tests on representative joints of typical joists that connections will meet the provision of Section 4.5(b). Chord and web members shall be permitted to be reinforced for such tests.

(d) In-Plant Inspections

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

SECTION 5.
APPLICATION

5.1 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 4.1, they shall be investigated and modified when necessary to limit the required stresses to those listed in Section 4.2.

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 11, "Design of Lateral Load Resisting Frames Using Steel Joists and Joist Girders."

5.2 SPAN

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

5.3 END SUPPORTS

(a) Masonry and Concrete

A **K-**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 **K**-Series Joists shall extend a distance of not less than 4 inches (102 mm) over the masonry or concrete support unless it is deemed necessary to bear less than 4 inches (102 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**. **K**-Series Joists shall be anchored to the steel bearing plate and shall bear a minimum of 2 1/2 inches (64 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 then 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 2 1/2 inches (64 mm) from the face of the wall or other support, the minimum seat depth shall be 2 1/2 inches (64 mm) plus a dimension equal to the distance the joist reaction is to occur beyond 2 1/2 inches (64 mm).

The steel bearing plate shall not be less than 6 inches (152 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 **K**-Series Joists shall extend a distance of not less than 2 ½ inches (64 millimeters) over the steel supports.

5.4 BRIDGING

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

(a) Horizontal

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

(b) Diagonal

Diagonal bridging 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 bracing members and the connections to the chord of the joists.

(c) 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,

$$\ell_{brmax} = \left(124 + 0.67\,d_j + 28\frac{d_j}{L}\right) r_y \text{, in.} \qquad (5.4\text{-}1a)$$

$$\ell_{brmax} = \left(124 + 0.026\,d_j + 0.34\frac{d_j}{L}\right) r_y \text{, mm} \qquad (5.4\text{-}1b)$$

or,

$$\ell_{brmax} = 170\,r_y \qquad (5.4\text{-}2)$$

Where:

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

L is the Joist Span length, ft. (m)

r_y is the 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 Tables 5.4-1 and 5.4-2 and the spacing shall meet the requirements of Equations 5.4-1 and 5.4-2. The number of rows of bottom chord bridging, including bridging required per Section 5.11, 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 4.3 and any specified strength requirements.

TABLE 5.4-1

U.S. CUSTOMARY UNITS

NUMBER OF ROWS OF TOP CHORD BRIDGING**

Refer to the K-Series Load Table and Specification Section 6 for required bolted diagonal bridging.

Distances are Joist Span lengths in feet – See "Definition of Span" preceding Load Tables.

Section Number*	Joist Depth	One Row	Two Rows	Three Rows	**Four Rows**
#1	All	Up thru 17	Over 17 thru 26	Over 26 thru 28	
#2	All	Up thru 21	Over 21 thru 30	Over 30 thru 32	
#3	All	Up thru 18	Over 18 thru 26	Over 26 thru 40	
#4	All	Up thru 20	Over 20 thru 30	Over 30 thru 41	Over 41 thru 48
#5	12K to 24K	Up thru 20	Over 20 thru 30	Over 30 thru 42	Over 42 thru 48
	26K	Up thru 28	Over 28 thru 41	Over 41 thru 52	
#6	14K to 24K	Up thru 20	Over 20 thru 31	Over 31 thru 42	Over 42 thru 48
	26K & 28K	UP thru 28	Over 28 thru 41	Over 41 thru 54	Over 54 thru 56
#7	16K to 24K	Up thru 23	Over 23 thru 34	Over 34 thru 48	
	26K to 30K	Up thru 29	Over 29 thru 44	Over 44 thru 60	
#8	24K	Up thru 25	Over 25 thru 39	Over 39 thru 48	
	26K to 30K	Up thru 29	Over 29 thru 44	Over 44 thru 60	
#9	16K to 24K	Up thru 22	Over 22 thru 34	Over 34 thru 48	
	26K to 30K	Up thru 29	Over 29 thru 44	Over 44 thru 60	
#10	18K to 24K	Up thru 22	Over 22 thru 38	Over 38 thru 48	
	26K to 30K	Up thru 29	Over 29 thru 48	Over 48 thru 60	
#11	22K	Up thru 24	Over 24 thru 39	Over 39 thru 44	
	30K	Up thru 34	Over 34 thru 49	Over 49 thru 60	
#12	24K	Up thru 25	Over 25 thru 43	Over 43 thru 48	
	26K to 30K	Up thru 29	Over 29 thru 47	Over 47 thru 60	

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

**See Section 5.11 for additional bridging required for uplift design.

TABLE 5.4-2

METRIC UNITS

NUMBER OF ROWS OF TOP CHORD BRIDGING**

Refer to the K-Series Load Table and Specification Section 6 for required bolted diagonal bridging.

Distances are Joist Span lengths in mm – See "Definition of Span" preceding Load Tables.

Section Number*	Joist Depth	One Row	Two Rows	Three Rows	**Four Rows**
#1	All	Up thru 5182	Over 5182 thru 7925	Over 7925 thru 8534	
#2	All	Up thru 6401	Over 6401 thru 9144	Over 9144 thru 9754	
#3	All	Up thru 5486	Over 5486 thru 7925	Over 7925 thru 12192	
#4	All	Up thru 6096	Over 6096 thru 9144	Over 9144 thru 12497	Over 12497 thru 14630
#5	12K to 24K	Up thru 6096	Over 6096 thru 9144	Over 9144 thru 12802	Over 12802 thru 14630
	26K	Up thru 8534	Over 8534 thru 12497	Over 12497 thru 15850	
#6	14K to 24K	Up thru 6096	Over 6096 thru 9449	Over 9449 thru 12802	Over 12802 thru 14630
	26K & 28K	Up thru 8534	Over 8534 thru 12497	Over 12497 thru 16459	Over 16459 thru 17069
#7	16K to 24K	Up thru 7010	Over 7010 thru 10363	Over 10363 thru 14630	
	26K to 30K	Up thru 8839	Over 8839 thru 13411	Over 13411 thru 18288	
#8	24K	Up thru 7620	Over 7620 thru 11887	Over 11887 thru 14630	
	26K to 30K	Up thru 8839	Over 8839 thru 13411	Over 13411 thru 18288	
#9	16K to 24K	Up thru 6706	Over 6706 thru 10363	Over 10363 thru 14630	
	26K to 30K	Up thru 8839	Over 8839 thru 13411	Over 13411 thru 18288	
#10	18K to 24K	Up thru 6706	Over 6706 thru 11582	Over 11582 thru 14630	
	26K to 30K	Up thru 8839	Over 8839 thru 14630	Over 14630 thru 18288	
#11	22K	Up thru 7315	Over 7315 thru 11887	Over 11887 thru 13411	
	30K	Up thru 10363	Over 10363 thru 14935	Over 14935 thru 18288	
#12	24K	Up thru 7620	Over 7620 thru 13106	Over 13106 thru 14630	
	26K to 30K	UP thru 8839	Over 8839 thru 14326	Over 14326 thru 18288	

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

**See Section 5.11 for additional bridging required for uplift design.

(d) Sizing of Bridging

Horizontal and diagonal bridging shall be capable of resisting the nominal unfactored horizontal compressive force, P_{br} given in Equation 5.4-3.

$$P_{br} = 0.0025\, n\, A_t\, F_{construction}\text{, lbs (N)} \qquad (5.4\text{-}3)$$

Where:

n = 8 for horizontal bridging

n = 2 for diagonal bridging

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

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

$$F_{construction} = \left(\frac{\pi^2 E}{\left(\frac{0.9\,\ell_{brmax}}{r_y} \right)^2} \right) \geq 12.2\text{ksi} \qquad (5.4\text{-}4a)$$

$$F_{construction} = \left(\frac{\pi^2 E}{\left(\frac{0.9\,\ell_{brmax}}{r_y} \right)^2} \right) \geq 84.1\text{MPa} \qquad (5.4\text{-}4b)$$

Where: E = Modulus of Elasticity of steel = 29,000 ksi (200,000 MPa) and $\frac{\ell_{brmax}}{r_y}$ is determined from Equations 5.4-1a, 5.4-1b or 5.4-2

The bridging nominal unfactored horizontal compressive forces, P_{br}, are summarized in Table 5.4-3.

TABLE 5.4-3

*Section Number	Horizontal P_{br} (n=8)		Diagonal P_{br} (n=2)	
	lbs	(N)	lbs	(N)
#1 thru #8	340	(1512)	85	(378)
#9, #10	450	(2002)	113	(503)
#11, #12	560	(2491)	140	(623)
*Last digit(s) of joist designation shown in Load Table				

(e) Connections

Attachments 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 5.4-3, but not less 700 pounds (3114 N).

(f) Bottom Chord Bearing Joists

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

5.5 INSTALLATION OF BRIDGING

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

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

5.6 BEARING SEAT ATTACHMENTS

(a) Masonry and Concrete

Ends of **K-**Series Joists resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two 1/8 inch (3 mm) fillet welds 2 inches (51 mm) long, or with two 1/2 inch (13 mm) ASTM - A307 bolts, or the equivalent.

(b) Steel

Ends of **K-**Series Joists resting on steel supports shall be attached thereto with a minimum of two 1/8 inch (3 mm) fillet welds 2 inches (51 mm) long, or with two 1/2 inch (13 mm) ASTM – A307 bolts, or the equivalent. When **K-**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**.

(c) Uplift

Where uplift forces are a design consideration, roof joists shall be anchored to resist such forces (Refer to Section 5.11 Uplift).

5.7 JOIST SPACING

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

5.8 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 mm) 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 for slab or deck attachments along the joist top chord shall not exceed 36 inches (914 mm), and shall be capable of resisting a nominal (unfactored) lateral force of not less than 300 pounds (1335 N), i.e., 100 plf (1.46 kN/m).

(f) Wood Nailers

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

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

When the roof system does not provide lateral stability for the joists in accordance with Section 5.8 (e), (i.e. as may be the case with standing seam roofs or extended 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 5.8(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 5.4(c).

Horizontal bridging members attached to the compression chords and their anchorages shall be designed for a compressive axial force of $0.001nP + 0.004\ P\sqrt{n} \geq 0.0025nP$, 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.

5.9 DEFLECTION

The deflection due to the design nominal 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.

5.10 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.

5.11 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”.

5.12 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, he shall be permitted to reserve the right to do so in his "Invitation to Bid" or the accompanying "Job Specifications".

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

5.13 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 Standard Load Table capacity shall be the component normal to the joist.

SECTION 6.
ERECTION STABILITY AND HANDLING*

When it is necessary for the erector to climb on the joists, extreme caution shall be exercised since unbridged joists may 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 5.6 - 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 joists 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) When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide stability.

5) In the case of bottom chord bearing joists, the ends of the joist shall be restrained laterally per Section 5.4(f).

6) After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joists shall be fully connected to the supports in accordance with Section 5.6 - End Anchorage.

(b) Landing and Placing Loads

1) Except as stated in paragraphs 6(b)(3) and 6(b)(4) 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 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 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 (.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

Care shall be exercised at all times to avoid damage to the joists and accessories.

(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)].

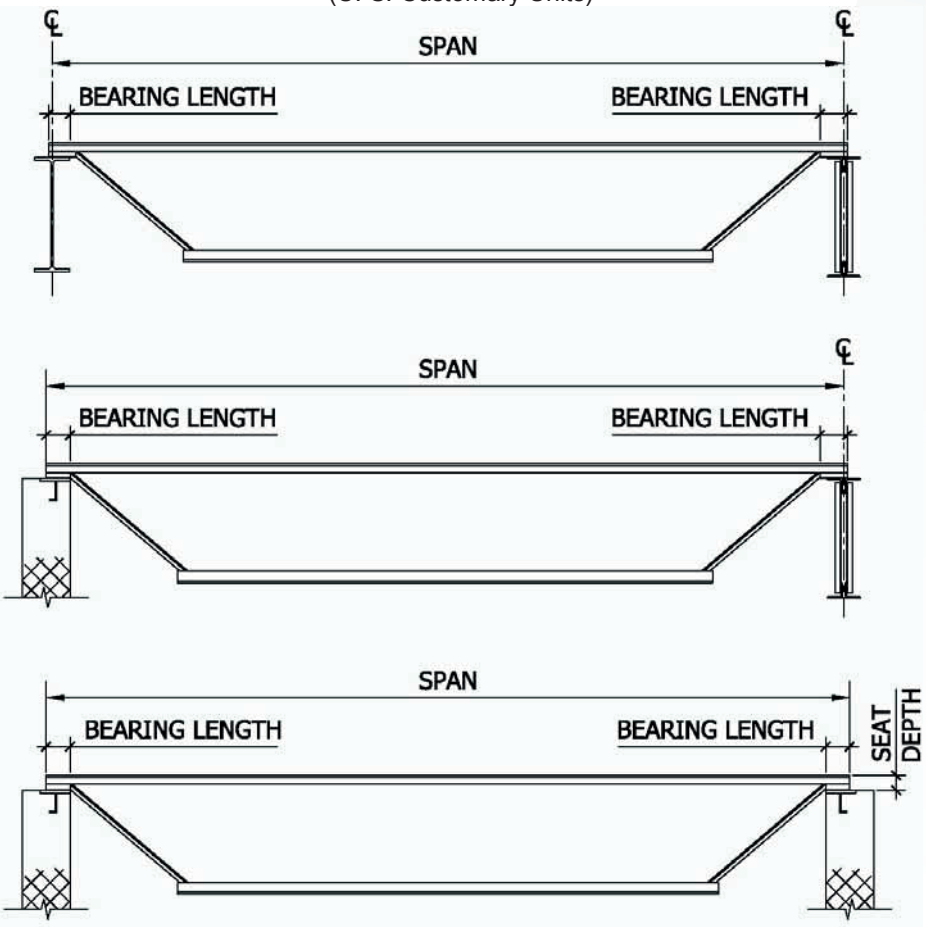
*For a thorough coverage of this topic, refer to SJI Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders."

[(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 2½ INCHES ; FOR MASONRY AND CONCRETE NOT LESS THAN 4 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.**

American National Standard SJI-K-2010

STANDARD LRFD LOAD TABLE

OPEN WEB STEEL JOISTS, K-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 K-**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 Open Web Steel Joists, **K**-Series.

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".

The approximate gross moment of inertia (not adjusted for shear deformation), in inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

The TOTAL safe factored uniformly distributed load-carrying capacities, in pounds per linear foot, of **LRFD K-**Series Steel Joists shall not exceed 825 plf for spans shorter than what is explicitly shown in the Load Table. The maximum prorated unfactored RED load shall not exceed 550 plf (the TOTAL load-carrying capacity of the joist as given in the Standard **ASD** Load Table for Open Web Steel Joists, **K**-Series).

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.

For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joist and Joist Girders.

LRFD

STANDARD LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based On A 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
Depth (in.)	10	12	12	12	14	14	14	14	16	16	16	16	16	16	16
Approx. Wt (lbs./ft.)	5.0	5.0	5.7	7.1	5.2	6.0	6.7	7.7	5.5	6.3	7.0	7.5	8.1	8.6	10.0
Span (ft.) ↓															
10	825 550														
11	825 542														
12	825 455	825 550	825 550	825 550											
13	718 363	825 510	825 510	825 510											
14	618 289	750 425	825 463	825 463	825 550	825 550	825 550	825 550							
15	537 234	651 344	814 428	825 434	766 475	825 507	825 507	825 507							
16	469 192	570 282	714 351	825 396	672 390	825 467	825 467	825 467	825 550	825 550	825 550	825 550	825 550	825 550	825 550
17	415 159	504 234	630 291	825 366	592 324	742 404	825 443	825 443	768 488	825 526	825 526	825 526	825 526	825 526	825 526
18	369 134	448 197	561 245	760 317	528 272	661 339	795 397	825 408	684 409	762 456	825 490	825 490	825 490	825 490	825 490
19	331 113	402 167	502 207	681 269	472 230	592 287	712 336	825 383	612 347	682 386	820 452	825 455	825 455	825 455	825 455
20	298 97	361 142	453 177	613 230	426 197	534 246	642 287	787 347	552 297	615 330	739 386	825 426	825 426	825 426	825 426
21		327 123	409 153	555 198	385 170	483 212	582 248	712 299	499 255	556 285	670 333	754 373	822 405	825 406	825 406
22		298 106	373 132	505 172	351 147	439 184	529 215	648 259	454 222	505 247	609 289	687 323	747 351	825 385	825 385
23		271 93	340 116	462 150	321 128	402 160	483 188	592 226	415 194	462 216	556 252	627 282	682 307	760 339	825 363
24		249 81	312 101	423 132	294 113	367 141	442 165	543 199	381 170	424 189	510 221	576 248	627 269	697 298	825 346
25					270 100	339 124	408 145	501 175	351 150	390 167	469 195	529 219	576 238	642 263	771 311
26					249 88	313 110	376 129	462 156	324 133	360 148	433 173	489 194	532 211	592 233	711 276
27					231 79	289 98	349 115	427 139	300 119	334 132	402 155	453 173	493 188	549 208	658 246
28					214 70	270 88	324 103	397 124	279 106	310 118	373 138	421 155	459 168	510 186	612 220
29									259 95	289 106	348 124	391 139	427 151	475 167	570 198
30									241 86	270 96	324 112	366 126	399 137	444 151	532 178
31									226 78	252 87	304 101	342 114	373 124	415 137	498 161
32									213 71	237 79	285 92	321 103	349 112	388 124	466 147

LRFD

STANDARD LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based On A 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
Depth (In.)	18	18	18	18	18	18	18	20	20	20	20	20	20	20	22	22	22	22	22	22	22
Approx. Wt. (lbs./ft.)	6.4	7.2	7.7	8.4	8.9	10.1	11.6	6.5	7.2	7.7	8.4	8.9	10.1	11.6	7.3	7.7	8.5	9.0	10.2	11.7	11.9
Span (ft.) ↓																					
18	825	825	825	825	825	825	825														
	550	550	550	550	550	550	550														
19	771	825	825	825	825	825	825	825	825	825	825	825	825	825							
	494	523	523	523	523	523	523	550	550	550	550	550	550	550							
20	694	825	825	825	825	825	825	775	825	825	825	825	825	825							
	423	490	490	490	490	490	490	517	550	550	550	550	550	550							
21	630	759	825	825	825	825	825	702	825	825	825	825	825	825	825	825	825	825	825	825	825
	364	426	460	460	460	460	460	453	520	520	520	520	520	520	550	550	550	550	550	550	550
22	573	690	777	825	825	825	825	639	771	825	825	825	825	825	825	825	825	825	825	825	825
	316	370	414	438	438	438	438	393	461	490	490	490	490	490	548	548	548	548	548	548	548
23	523	630	709	774	825	825	825	583	703	793	825	825	825	825	777	825	825	825	825	825	825
	276	323	362	393	418	418	418	344	402	451	468	468	468	468	491	518	518	518	518	518	518
24	480	577	651	709	789	825	825	535	645	727	792	825	825	825	712	804	825	825	825	825	825
	242	284	318	345	382	396	396	302	353	396	430	448	448	448	431	483	495	495	495	495	495
25	441	532	600	652	727	825	825	493	594	669	729	811	825	825	657	739	805	825	825	825	825
	214	250	281	305	337	377	377	266	312	350	380	421	426	426	381	427	464	474	474	474	474
26	408	492	553	603	672	807	825	456	549	618	673	750	825	825	606	682	744	825	825	825	825
	190	222	249	271	299	354	361	236	277	310	337	373	405	405	338	379	411	454	454	454	454
27	378	454	513	558	622	747	825	421	508	573	624	694	825	825	561	633	688	768	825	825	825
	169	198	222	241	267	315	347	211	247	277	301	333	389	389	301	337	367	406	432	432	432
28	351	423	477	519	577	694	822	391	472	532	579	645	775	825	522	588	640	712	825	825	825
	151	177	199	216	239	282	331	189	221	248	269	298	353	375	270	302	328	364	413	413	413
29	327	394	444	483	538	646	766	364	439	495	540	601	723	825	486	547	597	664	798	825	825
	136	159	179	194	215	254	298	170	199	223	242	268	317	359	242	272	295	327	387	399	399
30	304	367	414	451	502	603	715	340	411	462	504	561	675	799	453	511	556	619	745	825	825
	123	144	161	175	194	229	269	153	179	201	218	242	286	336	219	245	266	295	349	385	385
31	285	343	387	421	469	564	669	318	384	433	471	525	631	748	424	478	520	580	697	825	825
	111	130	146	158	175	207	243	138	162	182	198	219	259	304	198	222	241	267	316	369	369
32	267	322	363	396	441	529	627	298	360	406	442	492	592	702	397	448	489	544	654	775	823
	101	118	132	144	159	188	221	126	147	165	179	199	235	276	180	201	219	242	287	337	355
33	252	303	342	372	414	498	589	280	339	381	415	463	556	660	373	421	459	511	615	729	798
	92	108	121	131	145	171	201	114	134	150	163	181	214	251	164	183	199	221	261	307	334
34	237	285	321	349	390	468	555	264	318	358	391	435	523	621	352	397	432	481	579	687	774
	84	98	110	120	132	156	184	105	122	137	149	165	195	229	149	167	182	202	239	280	314
35	223	268	303	330	367	441	523	249	300	339	369	411	493	585	331	373	408	454	546	648	741
	77	90	101	110	121	143	168	96	112	126	137	151	179	210	137	153	167	185	219	257	292
36	211	253	286	312	348	417	495	235	283	319	348	388	466	553	313	354	385	429	516	612	700
	70	82	92	101	111	132	154	88	103	115	125	139	164	193	126	141	153	169	201	236	269
37								222	268	303	330	367	441	523	297	334	364	406	487	579	663
								81	95	106	115	128	151	178	116	130	141	156	185	217	247
38								211	255	286	312	348	418	496	280	316	345	384	462	549	628
								74	87	98	106	118	139	164	107	119	130	144	170	200	228
39								199	241	271	297	330	397	471	267	300	327	364	438	520	595
								69	81	90	98	109	129	151	98	110	120	133	157	185	211
40								190	229	258	282	313	376	447	253	285	310	346	417	495	565
								64	75	84	91	101	119	140	91	102	111	123	146	171	195
41															241	271	295	330	396	471	538
															85	95	103	114	135	159	181
42															229	259	282	313	378	448	513
															79	88	96	106	126	148	168
43															219	247	268	300	360	427	489
															73	82	89	99	117	138	157
44															208	235	256	286	343	408	466
															68	76	83	92	109	128	146

LRFD

STANDARD LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based On A 50 ksi Maximum Yield Strength - Loads Shown In Pounds Per Linear Foot (plf)

Joist Designation	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12
Depth (In.)	24	24	24	24	24	24	24	24	26	26	26	26	26	26	26
Approx. Wt. (lbs./ft.)	7.8	7.9	8.5	9.0	9.4	10.3	11.7	13.5	8.1	8.6	9.0	9.7	10.4	11.8	13.7
Span (ft.) ↓															
23	825 550	825 550	825 550	825 550	825 550	825 550	825 550	825 550							
24	780 516	825 544	825 544	825 544	825 544	825 544	825 544	825 544							
25	718 456	810 511	825 520	825 520	825 520	825 520	825 520	825 520	825 550	825 550	825 550	825 550	825 550	825 550	825 550
26	663 405	748 453	814 493	825 499	825 499	825 499	825 499	825 499	813 535	825 541	825 541	825 541	825 541	825 541	825 541
27	615 361	693 404	754 439	825 479	825 479	825 479	825 479	825 479	753 477	820 519	825 522	825 522	825 522	825 522	825 522
28	571 323	643 362	700 393	781 436	825 456	825 456	825 456	825 456	699 427	762 464	825 501	825 501	825 501	825 501	825 501
29	531 290	600 325	652 354	727 392	804 429	825 436	825 436	825 436	651 384	709 417	790 463	825 479	825 479	825 479	825 479
30	496 262	559 293	609 319	679 353	750 387	816 419	825 422	825 422	607 346	661 377	738 417	816 457	825 459	825 459	825 459
31	465 237	523 266	570 289	636 320	702 350	765 379	825 410	825 410	568 314	619 341	690 378	763 413	825 444	825 444	825 444
32	435 215	490 241	535 262	595 290	658 318	717 344	823 393	823 393	534 285	580 309	648 343	715 375	778 407	823 431	823 431
33	409 196	462 220	502 239	559 265	619 289	673 313	798 368	798 368	501 259	546 282	609 312	672 342	732 370	798 404	798 404
34	385 179	435 201	472 218	526 242	582 264	634 286	753 337	774 344	472 237	514 257	573 285	633 312	688 338	774 378	774 378
35	363 164	409 184	445 200	496 221	549 242	598 262	709 308	751 324	445 217	484 236	540 261	597 286	649 310	751 356	751 356
36	343 150	387 169	421 183	469 203	519 222	565 241	670 283	730 306	420 199	457 216	510 240	564 263	613 284	729 334	730 334
37	324 138	366 155	399 169	444 187	490 205	534 222	634 260	711 290	397 183	433 199	483 221	534 242	580 262	690 308	711 315
38	307 128	346 143	378 156	421 172	465 189	507 204	601 240	691 275	376 169	411 184	457 204	505 223	550 241	654 284	691 299
39	292 118	328 132	358 144	399 159	441 174	480 189	570 222	673 261	357 156	390 170	433 188	480 206	522 223	619 262	673 283
40	277 109	312 122	340 133	379 148	420 161	456 175	541 206	657 247	340 145	370 157	412 174	456 191	496 207	589 243	657 269
41	264 101	297 114	324 124	361 137	399 150	435 162	516 191	640 235	322 134	352 146	393 162	433 177	472 192	561 225	640 256
42	252 94	283 106	309 115	343 127	379 139	414 151	490 177	625 224	307 125	336 136	373 150	412 164	450 178	534 210	625 244
43	240 88	270 98	294 107	328 118	363 130	394 140	468 165	609 213	294 116	319 126	357 140	394 153	429 166	508 195	610 232
44	229 82	258 92	280 100	313 110	346 121	376 131	447 154	580 199	280 108	306 118	340 131	376 143	409 155	486 182	597 222
45	219 76	246 86	268 93	298 103	330 113	360 122	427 144	555 185	268 101	291 110	325 122	360 133	391 145	465 170	583 212
46	208 71	235 80	256 87	286 97	316 106	345 114	408 135	531 174	256 95	279 103	310 114	343 125	375 135	444 159	570 203
47	199 67	225 75	246 82	274 90	303 99	330 107	391 126	508 163	246 89	267 96	298 107	328 117	358 127	426 149	553 192
48	192 63	216 70	235 77	262 85	291 93	316 101	375 118	487 153	235 83	256 90	285 100	315 110	343 119	408 140	529 180
49									225 78	246 85	274 94	303 103	330 112	391 131	508 169
50									216 73	235 80	262 89	291 97	316 105	375 124	487 159
51									208 69	226 75	252 83	279 91	304 99	361 116	469 150
52									199 65	217 71	243 79	268 86	292 93	346 110	451 142

LRFD

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

Joist Designation	28K6	28K7	28K8	28K9	28K10	28K12	30K7	30K8	30K9	30K10	30K11	30K12
Depth (In.)	28	28	28	28	28	28	30	30	30	30	30	30
Approx. Wt. (lbs./ft.)	8.9	9.2	9.8	10.5	11.8	14.5	9.6	10.0	10.6	11.9	13.3	15.0
Span (ft.) ↓												
27	825 550	825 550	825 550	825 550	825 550	825 550						
28	822 541	825 543	825 543	825 543	825 543	825 543						
29	766 486	825 522	825 522	825 522	825 522	825 522	825 550	825 550	825 550	825 550	825 550	825 550
30	715 439	796 486	825 500	825 500	825 500	825 500	825 543	825 543	825 543	825 543	825 543	825 543
31	669 397	745 440	825 480	825 480	825 480	825 480	801 508	825 520	825 520	825 520	825 520	825 520
32	627 361	699 400	772 438	823 463	823 463	823 463	751 461	823 500	823 500	823 500	823 500	823 500
33	589 329	657 364	726 399	790 432	798 435	798 435	706 420	780 460	798 468	798 468	798 468	798 468
34	555 300	618 333	684 364	744 395	774 410	774 410	664 384	735 420	774 441	774 441	774 441	774 441
35	523 275	583 305	645 333	702 361	751 389	751 389	627 351	693 384	751 415	751 415	751 415	751 415
36	495 252	550 280	609 306	663 332	730 366	730 366	592 323	654 353	712 383	730 392	730 392	730 392
37	468 232	522 257	576 282	627 305	711 344	711 344	559 297	619 325	673 352	711 374	711 374	711 374
38	444 214	493 237	546 260	594 282	691 325	691 325	531 274	586 300	639 325	691 353	691 353	691 353
39	420 198	469 219	519 240	564 260	670 306	673 308	504 253	556 277	606 300	673 333	673 333	673 333
40	399 183	445 203	492 222	535 241	636 284	657 291	478 234	529 256	576 278	657 315	657 315	657 315
41	379 170	424 189	468 206	510 224	606 263	640 277	454 217	502 238	547 258	640 300	640 300	640 300
42	361 158	403 175	445 192	486 208	576 245	625 264	433 202	480 221	522 240	619 282	625 284	625 284
43	345 147	385 163	426 179	463 194	550 228	610 252	414 188	457 206	498 223	591 263	610 270	610 270
44	330 137	367 152	406 167	442 181	525 212	597 240	394 176	436 192	475 208	564 245	597 258	597 258
45	315 128	351 142	388 156	423 169	501 198	583 229	376 164	417 179	454 195	538 229	583 246	583 246
46	301 120	336 133	372 146	405 158	480 186	570 219	361 153	399 168	435 182	516 214	570 236	570 236
47	288 112	321 125	355 136	387 148	459 174	558 210	345 144	382 157	415 171	493 201	558 226	558 226
48	276 105	309 117	340 128	370 139	441 163	547 201	331 135	366 148	399 160	472 188	543 215	547 216
49	265 99	295 110	327 120	355 130	423 153	535 193	318 127	351 139	382 150	454 177	520 202	535 207
50	255 93	283 103	313 113	342 123	405 144	525 185	304 119	337 130	367 141	436 166	499 190	525 199
51	244 88	273 97	301 106	328 115	390 136	507 175	292 112	324 123	352 133	418 157	480 179	514 192
52	235 83	262 92	289 100	315 109	375 128	487 165	282 106	312 116	339 126	402 148	462 169	504 184
53	226 78	252 87	279 95	304 103	360 121	469 156	271 100	300 109	327 119	387 140	444 159	495 177
54	217 74	243 82	268 89	292 97	348 114	451 147	261 94	288 103	313 112	373 132	427 150	486 170
55	210 70	234 77	259 85	282 92	334 108	435 139	252 89	277 98	303 106	360 125	412 142	468 161
56	202 66	226 73	249 80	271 87	322 102	420 132	243 84	268 92	292 100	346 118	397 135	451 153
57							234 80	259 88	282 95	334 112	384 128	435 145
58							226 76	250 83	271 90	322 106	370 121	420 137
59							219 72	241 79	262 86	312 101	358 115	406 130
60							211 69	234 75	253 81	301 96	346 109	393 124

American National Standard SJI K-2010

STANDARD ASD LOAD TABLE

OPEN WEB STEEL JOISTS, K-SERIES

Based on a 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute November 4, 1985
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** **K-**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** figure by 360/240). In no case shall the prorated load exceed the TOTAL load-carrying capacity of the joist.

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".

The approximate gross moment of inertia (not adjusted for shear deformation), in inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

The TOTAL safe uniformly distributed load-carrying capacities, in pounds per linear foot, of **ASD** **K-**Series Steel Joists shall not exceed 550 plf for spans shorter than what is explicitly shown in the Load Table. The maximum prorated RED load shall not exceed 550 plf (the TOTAL load-carrying capacity of the joist as given in the Standard **ASD** Load Table for Open Web Steel Joists, **K**-Series).

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.

For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joist and Joist Girders.

ASD

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

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

ASD

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

Joist Designation	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
Depth (In.)	18	18	18	18	18	18	18	20	20	20	20	20	20	20	22	22	22	22	22	22	22
Approx. Wt. (lbs./ft.)	6.4	7.2	7.7	8.4	8.9	10.1	11.6	6.5	7.2	7.7	8.4	8.9	10.1	11.6	7.3	7.7	8.5	9.0	10.2	11.7	11.9
Span (ft.) ↓																					
18	550	550	550	550	550	550	550														
	550	550	550	550	550	550	550														
19	514	550	550	550	550	550	550	550	550	550	550	550	550	550							
	494	523	523	523	523	523	523	550	550	550	550	550	550	550							
20	463	550	550	550	550	550	550	517	550	550	550	550	550	550							
	423	490	490	490	490	490	490	517	550	550	550	550	550	550							
21	420	506	550	550	550	550	550	468	550	550	550	550	550	550	550	550	550	550	550	550	550
	364	426	460	460	460	460	460	453	520	520	520	520	520	520	550	550	550	550	550	550	550
22	382	460	518	550	550	550	550	426	514	550	550	550	550	550	550	550	550	550	550	550	550
	316	370	414	438	438	438	438	393	461	490	490	490	490	490	548	548	548	548	548	548	548
23	349	420	473	516	550	550	550	389	469	529	550	550	550	550	518	550	550	550	550	550	550
	276	323	362	393	418	418	418	344	402	451	468	468	468	468	491	518	518	518	518	518	518
24	320	385	434	473	526	550	550	357	430	485	528	550	550	550	475	536	550	550	550	550	550
	242	284	318	345	382	396	396	302	353	396	430	448	448	448	431	483	495	495	495	495	495
25	294	355	400	435	485	550	550	329	396	446	486	541	550	550	438	493	537	550	550	550	550
	214	250	281	305	337	377	377	266	312	350	380	421	426	426	381	427	464	474	474	474	474
26	272	328	369	402	448	538	550	304	366	412	449	500	550	550	404	455	496	550	550	550	550
	190	222	249	271	299	354	361	236	277	310	337	373	405	405	338	379	411	454	454	454	454
27	252	303	342	372	415	498	550	281	339	382	416	463	550	550	374	422	459	512	550	550	550
	169	198	222	241	267	315	347	211	247	277	301	333	389	389	301	337	367	406	432	432	432
28	234	282	318	346	385	463	548	261	315	355	386	430	517	550	348	392	427	475	550	550	550
	151	177	199	216	239	282	331	189	221	248	269	298	353	375	270	302	328	364	413	413	413
29	218	263	296	322	359	431	511	243	293	330	360	401	482	550	324	365	398	443	532	550	550
	136	159	179	194	215	254	298	170	199	223	242	268	317	359	242	272	295	327	387	399	399
30	203	245	276	301	335	402	477	227	274	308	336	374	450	533	302	341	371	413	497	550	550
	123	144	161	175	194	229	269	153	179	201	218	242	286	336	219	245	266	295	349	385	385
31	190	229	258	281	313	376	446	212	256	289	314	350	421	499	283	319	347	387	465	550	550
	111	130	146	158	175	207	243	138	162	182	198	219	259	304	198	222	241	267	316	369	369
32	178	215	242	264	294	353	418	199	240	271	295	328	395	468	265	299	326	363	436	517	549
	101	118	132	144	159	188	221	126	147	165	179	199	235	276	180	201	219	242	287	337	355
33	168	202	228	248	276	332	393	187	226	254	277	309	371	440	249	281	306	341	410	486	532
	92	108	121	131	145	171	201	114	134	150	163	181	214	251	164	183	199	221	261	307	334
34	158	190	214	233	260	312	370	176	212	239	261	290	349	414	235	265	288	321	386	458	516
	84	98	110	120	132	156	184	105	122	137	149	165	195	229	149	167	182	202	239	280	314
35	149	179	202	220	245	294	349	166	200	226	246	274	329	390	221	249	272	303	364	432	494
	77	90	101	110	121	143	168	96	112	126	137	151	179	210	137	153	167	185	219	257	292
36	141	169	191	208	232	278	330	157	189	213	232	259	311	369	209	236	257	286	344	408	467
	70	82	92	101	111	132	154	88	103	115	125	139	164	193	126	141	153	169	201	236	269
37								148	179	202	220	245	294	349	198	223	243	271	325	386	442
								81	95	106	115	128	151	178	116	130	141	156	185	217	247
38								141	170	191	208	232	279	331	187	211	230	256	308	366	419
								74	87	98	106	118	139	164	107	119	130	144	170	200	228
39								133	161	181	198	220	265	314	178	200	218	243	292	347	397
								69	81	90	98	109	129	151	98	110	120	133	157	185	211
40								127	153	172	188	209	251	298	169	190	207	231	278	330	377
								64	75	84	91	101	119	140	91	102	111	123	146	171	195
41															161	181	197	220	264	314	359
															85	95	103	114	135	159	181
42															153	173	188	209	252	299	342
															79	88	96	106	126	148	168
43															146	165	179	200	240	285	326
															73	82	89	99	117	138	157
44															139	157	171	191	229	272	311
															68	76	83	92	109	128	146

ASD

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

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

Joist Designation	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12
Depth (In.)	24	24	24	24	24	24	24	24	26	26	26	26	26	26	26
Approx. Wt. (lbs./ft.)	7.8	7.9	8.5	9.0	9.4	10.3	11.7	13.5	8.1	8.6	9.0	9.7	10.4	11.8	13.7
Span (ft.) ↓															
23	550	550	550	550	550	550	550	550							
	550	550	550	550	550	550	550	550							
24	520	550	550	550	550	550	550	550							
	516	544	544	544	544	544	544	544							
25	479	540	550	550	550	550	550	550	550	550	550	550	550	550	550
	456	511	520	520	520	520	520	520	550	550	550	550	550	550	550
26	442	499	543	550	550	550	550	550	542	550	550	550	550	550	550
	405	453	493	499	499	499	499	499	535	541	541	541	541	541	541
27	410	462	503	550	550	550	550	550	502	547	550	550	550	550	550
	361	404	439	479	479	479	479	479	477	519	522	522	522	522	522
28	381	429	467	521	550	550	550	550	466	508	550	550	550	550	550
	323	362	393	436	456	456	456	456	427	464	501	501	501	501	501
29	354	400	435	485	536	550	550	550	434	473	527	550	550	550	550
	290	325	354	392	429	436	436	436	384	417	463	479	479	479	479
30	331	373	406	453	500	544	550	550	405	441	492	544	550	550	550
	262	293	319	353	387	419	422	422	346	377	417	457	459	459	459
31	310	349	380	424	468	510	550	550	379	413	460	509	550	550	550
	237	266	289	320	350	379	410	410	314	341	378	413	444	444	444
32	290	327	357	397	439	478	549	549	356	387	432	477	519	549	549
	215	241	262	290	318	344	393	393	285	309	343	375	407	431	431
33	273	308	335	373	413	449	532	532	334	364	406	448	488	532	532
	196	220	239	265	289	313	368	368	259	282	312	342	370	404	404
34	257	290	315	351	388	423	502	516	315	343	382	422	459	516	516
	179	201	218	242	264	286	337	344	237	257	285	312	338	378	378
35	242	273	297	331	366	399	473	501	297	323	360	398	433	501	501
	164	184	200	221	242	262	308	324	217	236	261	286	310	356	356
36	229	258	281	313	346	377	447	487	280	305	340	376	409	486	487
	150	169	183	203	222	241	283	306	199	216	240	263	284	334	334
37	216	244	266	296	327	356	423	474	265	289	322	356	387	460	474
	138	155	169	187	205	222	260	290	183	199	221	242	262	308	315
38	205	231	252	281	310	338	401	461	251	274	305	337	367	436	461
	128	143	156	172	189	204	240	275	169	184	204	223	241	284	299
39	195	219	239	266	294	320	380	449	238	260	289	320	348	413	449
	118	132	144	159	174	189	222	261	156	170	188	206	223	262	283
40	185	208	227	253	280	304	361	438	227	247	275	304	331	393	438
	109	122	133	148	161	175	206	247	145	157	174	191	207	243	269
41	176	198	216	241	266	290	344	427	215	235	262	289	315	374	427
	101	114	124	137	150	162	191	235	134	146	162	177	192	225	256
42	168	189	206	229	253	276	327	417	205	224	249	275	300	356	417
	94	106	115	127	139	151	177	224	125	136	150	164	178	210	244
43	160	180	196	219	242	263	312	406	196	213	238	263	286	339	407
	88	98	107	118	130	140	165	213	116	126	140	153	166	195	232
44	153	172	187	209	231	251	298	387	187	204	227	251	273	324	398
	82	92	100	110	121	131	154	199	108	118	131	143	155	182	222
45	146	164	179	199	220	240	285	370	179	194	217	240	261	310	389
	76	86	93	103	113	122	144	185	101	110	122	133	145	170	212
46	139	157	171	191	211	230	272	354	171	186	207	229	250	296	380
	71	80	87	97	106	114	135	174	95	103	114	125	135	159	203
47	133	150	164	183	202	220	261	339	164	178	199	219	239	284	369
	67	75	82	90	99	107	126	163	89	96	107	117	127	149	192
48	128	144	157	175	194	211	250	325	157	171	190	210	229	272	353
	63	70	77	85	93	101	118	153	83	90	100	110	119	140	180
49									150	164	183	202	220	261	339
									78	85	94	103	112	131	169
50									144	157	175	194	211	250	325
									73	80	89	97	105	124	159
51									139	151	168	186	203	241	313
									69	75	83	91	99	116	150
52									133	145	162	179	195	231	301
									65	71	79	86	93	110	142

ASD

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

Joist Designation	28K6	28K7	28K8	28K9	28K10	28K12	30K7	30K8	30K9	30K10	30K11	30K12
Depth (In.)	28	28	28	28	28	28	30	30	30	30	30	30
Approx. Wt. (lbs./ft.)	8.9	9.2	9.8	10.5	11.8	14.5	9.6	10.0	10.6	11.9	13.3	15.0
Span (ft.) ↓												
27	550 550	550 550	550 550	550 550	550 550	550 550						
28	548 541	550 543	550 543	550 543	550 543	550 543						
29	511 486	550 522	550 522	550 522	550 522	550 522	550 550	550 550	550 550	550 550	550 550	550 550
30	477 439	531 486	550 500	550 500	550 500	550 500	550 543	550 543	550 543	550 543	550 543	550 543
31	446 397	497 440	550 480	550 480	550 480	550 480	534 508	550 520	550 520	550 520	550 520	550 520
32	418 361	466 400	515 438	549 463	549 463	549 463	501 461	549 500	549 500	549 500	549 500	549 500
33	393 329	438 364	484 399	527 432	532 435	532 435	471 420	520 460	532 468	532 468	532 468	532 468
34	370 300	412 333	456 364	496 395	516 410	516 410	443 384	490 420	516 441	516 441	516 441	516 441
35	349 275	389 305	430 333	468 361	501 389	501 389	418 351	462 384	501 415	501 415	501 415	501 415
36	330 252	367 280	406 306	442 332	487 366	487 366	395 323	436 353	475 383	487 392	487 392	487 392
37	312 232	348 257	384 282	418 305	474 344	474 344	373 297	413 325	449 352	474 374	474 374	474 374
38	296 214	329 237	364 260	396 282	461 325	461 325	354 274	391 300	426 325	461 353	461 353	461 353
39	280 198	313 219	346 240	376 260	447 306	449 308	336 253	371 277	404 300	449 333	449 333	449 333
40	266 183	297 203	328 222	357 241	424 284	438 291	319 234	353 256	384 278	438 315	438 315	438 315
41	253 170	283 189	312 206	340 224	404 263	427 277	303 217	335 238	365 258	427 300	427 300	427 300
42	241 158	269 175	297 192	324 208	384 245	417 264	289 202	320 221	348 240	413 282	417 284	417 284
43	230 147	257 163	284 179	309 194	367 228	407 252	276 188	305 206	332 223	394 263	407 270	407 270
44	220 137	245 152	271 167	295 181	350 212	398 240	263 176	291 192	317 208	376 245	398 258	398 258
45	210 128	234 142	259 156	282 169	334 198	389 229	251 164	278 179	303 195	359 229	389 246	389 246
46	201 120	224 133	248 146	270 158	320 186	380 219	241 153	266 168	290 182	344 214	380 236	380 236
47	192 112	214 125	237 136	258 148	306 174	372 210	230 144	255 157	277 171	329 201	372 226	372 226
48	184 105	206 117	227 128	247 139	294 163	365 201	221 135	244 148	266 160	315 188	362 215	365 216
49	177 99	197 110	218 120	237 130	282 153	357 193	212 127	234 139	255 150	303 177	347 202	357 207
50	170 93	189 103	209 113	228 123	270 144	350 185	203 119	225 130	245 141	291 166	333 190	350 199
51	163 88	182 97	201 106	219 115	260 136	338 175	195 112	216 123	235 133	279 157	320 179	343 192
52	157 83	175 92	193 100	210 109	250 128	325 165	188 106	208 116	226 126	268 148	308 169	336 184
53	151 78	168 87	186 95	203 103	240 121	313 156	181 100	200 109	218 119	258 140	296 159	330 177
54	145 74	162 82	179 89	195 97	232 114	301 147	174 94	192 103	209 112	249 132	285 150	324 170
55	140 70	156 77	173 85	188 92	223 108	290 139	168 89	185 98	202 106	240 125	275 142	312 161
56	135 66	151 73	166 80	181 87	215 102	280 132	162 84	179 92	195 100	231 118	265 135	301 153
57							156 80	173 88	188 95	223 112	256 128	290 145
58							151 76	167 83	181 90	215 106	247 121	280 137
59							146 72	161 79	175 86	208 101	239 115	271 130
60							141 69	156 75	169 81	201 96	231 109	262 124

STANDARD LRFD LOAD TABLE
FOR KCS JOISTS

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 figures in the following table give the Moment Capacity (kip-in.) and Shear Capacity (lbs). The maximum uniformly distributed load capacity in **LRFD** shall not exceed 825 plf and a single concentrated load cannot exceed the shear capacity. Sloped parallel-chord **KCS** Joists shall use the appropriate moment and shear capacity for the span as defined by the length along the slope.

The approximate **KCS** Joist weights per linear foot shown in this table do not include accessories.

The **KCS** Joist designation is not used to establish bridging requirements. The Bridging Table Section Numbers given in the **KCS** Standard Load Table indicate the equivalent **K**-Series joist of the same depth to be used for determination of the number of bridging rows, the size of horizontal bridging, and the need for erection stability bridging. While the need for erection stability bridging (diagonal bridging with bolted connections at the chords and intersections), can be determined from the **RED** shaded portion of the Standard Load Table, Open Web Steel Joists, **K**-Series, for convenience the **KCS** Load Table also includes a column for erection stability bridging. Where the span of the **KCS** Joist designation exceeds the length in ft. listed, the row of bridging nearest the joist midspan shall be erection stability bridging. Where "NA" is listed in the column, the **KCS** Joist designation does not require bolted diagonal erection bridging regardless of span.

For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joists and Joist Girders.

LRFD

STANDARD LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS

Based on a 50 ksi Maximum Yield Strength

JOIST DESIGNATION	DEPTH (in.)	MOMENT CAPACITY (k-in.)	SHEAR CAPACITY* (lbs)	APPROX. WEIGHT** (lbs/ft.)	GROSS MOMENT OF INERTIA ($in.^4$)	ERECTION STABILITY BRIDGING REQ'D (ft.)	BRIDGING TABLE SECTION NUMBER
10KCS1	10	258	3000	6.0	29	NA	1
10KCS2	10	337	3750	7.5	37	NA	1
10KCS3	10	444	4500	10.0	47	NA	1
12KCS1	12	313	3600	6.0	43	NA	3
12KCS2	12	411	4500	8.0	55	NA	5
12KCS3	12	543	5250	10.0	71	NA	5
14KCS1	14	370	4350	6.5	59	NA	4
14KCS2	14	486	5100	8.0	77	NA	6
14KCS3	14	642	5850	10.0	99	NA	6
16KCS2	16	523	6000	8.5	99	NA	6
16KCS3	16	705	7200	10.5	128	NA	9
16KCS4	16	1080	7950	14.5	192	NA	9
16KCS5	16	1401	8700	18.0	245	NA	9
18KCS2	18	592	7050	9.0	127	35-0	6
18KCS3	18	798	7800	11.0	164	NA	9
18KCS4	18	1225	8550	15.0	247	NA	10
18KCS5	18	1593	9300	18.5	316	NA	10
20KCS2	20	663	7800	9.5	159	36-0	6
20KCS3	20	892	9000	11.5	205	39-0	9
20KCS4	20	1371	11850	16.5	308	NA	10
20KCS5	20	1786	12600	20.0	396	NA	10
22KCS2	22	732	8850	10.0	194	36-0	6
22KCS3	22	987	9900	12.5	251	40-0	9
22KCS4	22	1518	11850	16.5	377	NA	11
22KCS5	22	1978	12900	20.5	485	NA	11
24KCS2	24	801	9450	10.0	232	39-0	6
24KCS3	24	1080	10800	12.5	301	44-0	9
24KCS4	24	1662	12600	16.5	453	NA	12
24KCS5	24	2172	13350	20.5	584	NA	12
26KCS2	26	870	9900	10.0	274	39-0	6
26KCS3	26	1174	11700	12.5	355	44-0	9
26KCS4	26	1809	12750	16.5	536	NA	12
26KCS5	26	2364	13800	20.5	691	NA	12
28KCS2	28	939	10350	10.5	320	40-0	6
28KCS3	28	1269	12000	12.5	414	45-0	9
28KCS4	28	1954	12750	16.5	626	53-0	12
28KCS5	28	2556	13800	20.5	808	53-0	12
30KCS3	30	1362	12000	13.0	478	45-0	9
30KCS4	30	2100	12750	16.5	722	54-0	12
30KCS5	30	2749	13800	21.0	934	54-0	12

*Maximum uniformly distributed load capacity is 825 plf and single concentrated load cannot exceed shear capacity

**Does not include accessories

STANDARD ASD LOAD TABLE

FOR KCS JOISTS

Based on a 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute May 2, 1994
Revised to May 18, 2010 – Effective December 31, 2010

The figures in the following table give the Moment Capacity (kip-in.) and Shear Capacity (lbs). The maximum uniformly distributed load capacity in **ASD** shall not exceed 550 plf and a single concentrated load cannot exceed the shear capacity. Sloped parallel-chord **KCS** Joists shall use the appropriate moment and shear capacity for the span as defined by the length along the slope.

The approximate **KCS** Joist weights per linear foot shown in the table do not include accessories.

The **KCS** Joist designation is not used to establish bridging requirements. The Bridging Table Section Numbers given in the **KCS** Standard Load Table indicate the equivalent **K**-Series joist of the same depth to be used for determination of the number of bridging rows, the size of horizontal bridging, and the need for erection stability bridging. While the need for erection stability bridging (diagonal bridging with bolted connections at the chords and intersections), can be determined from the **RED** shaded portion of the Standard Load Table, Open Web Steel Joists, **K**-Series, for convenience the **KCS** Load Table also includes a column for erection stability bridging. Where the span of the **KCS** Joist designation exceeds the length in ft. listed, the row of bridging nearest the joist midspan shall be erection stability bridging. Where "NA" is listed in the column, the **KCS** Joist designation does not require bolted diagonal erection bridging regardless of span.

For the proper handling of concentrated and/or varying loads, see Section 2.3 in the Code of Standard Practice for Steel Joists and Joist Girders.

ASD

STANDARD LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS

Based on a 50 ksi Maximum Yield Strength

JOIST DESIGNATION	DEPTH (in.)	MOMENT CAPACITY (k-in.)	SHEAR CAPACITY* (lbs)	APPROX. WEIGHT** (lbs/ft.)	GROSS MOMENT OF INERTIA ($in.^4$)	ERECTION STABILITY BRIDGING REQ'D (ft.)	BRIDGING TABLE SECTION NUMBER
10KCS1	10	172	2000	6.0	29	NA	1
10KCS2	10	225	2500	7.5	37	NA	1
10KCS3	10	296	3000	10.0	47	NA	1
12KCS1	12	209	2400	6.0	43	NA	3
12KCS2	12	274	3000	8.0	55	NA	5
12KCS3	12	362	3500	10.0	71	NA	5
14KCS1	14	247	2900	6.5	59	NA	4
14KCS2	14	324	3400	8.0	77	NA	6
14KCS3	14	428	3900	10.0	99	NA	6
16KCS2	16	349	4000	8.5	99	NA	6
16KCS3	16	470	4800	10.5	128	NA	9
16KCS4	16	720	5300	14.5	192	NA	9
16KCS5	16	934	5800	18.0	245	NA	9
18KCS2	18	395	4700	9.0	127	35-0	6
18KCS3	18	532	5200	11.0	164	NA	9
18KCS4	18	817	5700	15.0	247	NA	10
18KCS5	18	1062	6200	18.5	316	NA	10
20KCS2	20	442	5200	9.5	159	36-0	6
20KCS3	20	595	6000	11.5	205	39-0	9
20KCS4	20	914	7900	16.5	308	NA	10
20KCS5	20	1191	8400	20.0	396	NA	10
22KCS2	22	488	5900	10.0	194	36-0	6
22KCS3	22	658	6600	12.5	251	40-0	9
22KCS4	22	1012	7900	16.5	377	NA	11
22KCS5	22	1319	8600	20.5	485	NA	11
24KCS2	24	534	6300	10.0	232	39-0	6
24KCS3	24	720	7200	12.5	301	44-0	9
24KCS4	24	1108	8400	16.5	453	NA	12
24KCS5	24	1448	8900	20.5	584	NA	12
26KCS2	26	580	6600	10.0	274	39-0	6
26KCS3	26	783	7800	12.5	355	44-0	9
26KCS4	26	1206	8500	16.5	536	NA	12
26KCS5	26	1576	9200	20.5	691	NA	12
28KCS2	28	626	6900	10.5	320	40-0	6
28KCS3	28	846	8000	12.5	414	45-0	9
28KCS4	28	1303	8500	16.5	626	53-0	12
28KCS5	28	1704	9200	20.5	808	53-0	12
30KCS3	30	908	8000	13.0	478	45-0	9
30KCS4	30	1400	8500	16.5	722	54-0	12
30KCS5	30	1833	9200	21.0	934	54-0	12

*Maximum uniformly distributed load capacity is 550 plf and single concentrated load cannot exceed shear capacity

**Does not include accessories

ECONOMY LOAD TABLES

OPEN WEB STEEL JOISTS, K-SERIES

Based on a 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute November 4, 1985
Revised to May 18, 2010 – Effective December 31, 2010

The tables on the following pages are provided as an aid to the designer in selecting the most economical **K-**Series Joists for the loads and spans required. Although considerable care has been taken in developing this chart, it must be realized that each joist manufacturer has his own unique cost; consequently, the Steel Joist Institute cannot guaranty the accuracy of this Table.

The **K-**Series Joists are arranged in accordance with their weight per foot; where two or more joists weigh the same, they are arranged according to their depth.

To utilize these tables, determine the span (ft) and load (plf) required; go to the required span in the left hand column, then read across until a load equal to or greater than the required load is reached. The first joist that satisfies this loading is the most economical joist for those conditions. If this joist is too deep or too shallow, or does not satisfy the deflection limitations, continue on horizontally to the right until a joist is found that satisfies the depth requirements as well as the load and deflection requirements.

ASD EXAMPLE:

Floor joists @ 2'-6" on center, supporting a structural concrete slab. (Section 5.9 of the **K-**Series Specifications limits the deflection due to the design live load to 1/360 of the span).

Span = 30'- 0"

Maximum joist depth allowed = 20”

DL = 48 psf (includes joist weight)
LL = 100 psf
TL = 148 psf

W_{TL} = 148 x 2.5 = 370 plf
W_{LL} = 100 x 2.5 = 250 plf

A 22K6 at a span of 30 feet can carry 371 plf of Total Load and possesses a RED figure of 266 plf (RED figure load produces a deflection of approximately 1/360 of span). However, it exceeds the maximum depth limitation of 20 inches. A 20K7 fulfills the Total Load requirement but possesses a RED figure of only 242 plf**.** It is then found that a 20K9 is the most economical joist that satisfies all the requirements of Total Load, Live Load deflection, and maximum depth limitation.

Where the joist span exceeds the unshaded area of the table, the row of bridging nearest the midspan shall be diagonal bridging with bolted connections at chords and midspan.

LRFD EXAMPLE:

Floor joists @ 2'-6" on center, supporting a structural concrete slab. (Section 5.9 of the **K-**Series Specifications limits the deflection due to the design live load to 1/360 of the span).

Span = 30'- 0"

Load factors per ASCE 7-Minimum Design Loads for Buildings and Other Structures

Maximum joist depth allowed = 20"

Factored DL = 48 x 1.2 = 58 psf (includes joist weight)
Factored LL = 100 x 1.6 = 160 psf
Factored TL = 218 psf

Factored W_{TL} = 218 x 2.5 = 545 plf
Unfactored W_{LL} = 100 x 2.5 = 250 plf

A 22K6 at a span of 30 feet can carry 566 plf of Factored Total Load and possesses a RED figure of 266 plf (RED figure load produces a deflection of approximately of 1/360 of span). However, it exceeds the maximum depth limitation of 20 inches. A 20K7 fulfills the Factored Total Load requirement but possesses a RED figure of only 242 plf**.** It is then found that a 20K9 is the most economical joist that satisfies all the requirements of Factored Total Load, Live Load deflection, and maximum depth limitation.

Where the joist span exceeds the unshaded area of the table, the row of bridging nearest the midspan shall be diagonal bridging with bolted connections at chords and midspan.

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LRFD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	10K1	12K1	14K1	16K2	12K3	14K3	16K3	18K3	20K3	14K4	16K4	12K5	18K4	20K4	22K4	16K5
Depth (In.)	10	12	14	16	12	14	16	18	20	14	16	12	18	20	22	16
Approx. Wt. (lbs./ft)	5.0	5.0	5.2	5.5	5.7	6.0	6.3	6.4	6.5	6.7	7.0	7.1	7.2	7.2	7.3	7.5
Span (ft)																
10	825 550															
11	825 542															
12	825 455	825 550			825 550							825 550				
13	718 363	825 510			825 510							825 510				
14	618 289	750 425	825 550		825 463	825 550				825 550		825 463				
15	537 234	651 344	766 475		814 428	825 507				825 507		825 434				
16	469 192	570 282	672 390	825 550	714 351	825 467	825 550			825 467	825 550	825 396				825 550
17	415 159	504 234	592 324	768 488	630 291	742 404	825 526			825 443	825 526	825 366				825 526
18	369 134	448 197	528 272	684 409	561 245	661 339	762 456	825 550		795 397	825 490	760 317	825 550			825 490
19	331 113	402 167	472 230	612 347	502 207	592 287	682 386	771 494	825 550	712 336	820 452	681 269	825 523	825 550		825 455
20	298 97	361 142	426 197	552 297	453 177	534 246	615 330	694 423	775 517	642 287	739 386	613 230	825 490	825 550		825 426
21		327 123	385 170	499 255	409 153	483 212	556 285	630 364	702 453	582 248	670 333	555 198	759 426	825 520	825 550	754 373
22		298 106	351 147	454 222	373 132	439 184	505 247	573 316	639 393	529 215	609 289	505 172	690 370	771 461	825 548	687 323
23		271 93	321 128	415 194	340 116	402 160	462 216	523 276	583 344	483 188	556 252	462 150	630 323	703 402	777 491	627 282
24		249 81	294 113	381 170	312 101	367 141	424 189	480 242	535 302	442 165	510 221	423 132	577 284	645 353	712 431	576 248
25			270 100	351 150		339 124	390 167	441 214	493 266	408 145	469 195		532 250	594 312	657 381	529 219
26			249 88	324 133		313 110	360 148	408 190	456 236	376 129	433 173		492 222	549 277	606 338	489 194
27			231 79	300 119		289 98	334 132	378 169	421 211	349 115	402 155		454 198	508 247	561 301	453 173
28			214 70	279 106		270 88	310 118	351 151	391 189	324 103	373 138		423 177	472 221	522 270	421 155
29				259 95			289 106	327 136	364 170		232 124		394 159	439 199	486 242	391 139
30				241 86			270 96	304 123	340 153		216 112		367 144	411 179	453 219	366 126
31				226 78			252 87	285 111	318 138		203 101		343 130	384 162	424 198	342 114
32				213 71			237 79	267 101	298 126		190 92		322 118	360 147	397 180	321 103
33								252 92	280 114				303 108	339 134	373 164	
34								237 84	264 105				285 98	318 122	352 149	
35								223 77	249 96				268 90	300 112	331 137	
36								211 70	235 88				253 82	283 103	313 126	
37									222 81					268 95	297 116	
38									211 74					255 87	280 107	
39									199 69					241 81	267 98	
40									190 64					229 75	253 91	
41															241 85	
42															229 79	
43															219 73	
44															208 68	

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LRFD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	14K6	18K5	20K5	22K5	24K4	24K5	16K6	26K5	18K6	20K6	22K6	24K6	16K7	26K6	18K7	20K7
Depth (In).	14	18	20	22	24	24	16	26	18	20	22	24	16	26	18	20
Approx. Wt. (lbs./ft)	7.7	7.7	7.7	7.7	7.8	7.9	8.1	8.1	8.4	8.4	8.5	8.5	8.6	8.6	8.9	8.9
Span (ft)																
14	825 550															
15	825 507															
16	825 467						825 550						825 550			
17	825 443						825 526						825 526			
18	825 408	825 550					825 490		825 550				825 490		825 550	
19	825 383	825 523	825 550				825 455		825 523	825 550			825 455		825 523	825 550
20	787 347	825 490	825 550				825 426		825 490	825 550			825 426		825 490	825 550
21	712 299	825 460	825 520	825 550			822 405		825 460	825 520	825 550		825 406		825 460	825 520
22	648 259	777 414	825 490	825 548			747 351		825 438	825 490	825 548		825 385		825 438	825 490
23	592 226	709 362	793 451	825 518	825 550	825 550	682 307		774 393	825 468	825 518	825 550	760 339		825 418	825 468
24	543 199	651 318	727 396	804 483	780 516	825 544	627 269		709 345	792 430	825 495	825 544	697 298		789 382	825 448
25	501 175	600 281	669 350	739 427	718 456	810 511	576 238	825 550	652 305	729 380	805 464	825 520	642 263	825 550	727 337	811 421
26	462 156	553 249	618 310	682 379	663 405	748 453	532 211	813 535	603 271	673 337	744 411	814 493	592 233	825 541	672 299	750 373
27	427 139	513 222	573 277	633 337	615 361	693 404	493 188	753 477	558 241	624 301	688 367	754 439	549 208	820 519	622 267	694 333
28	397 124	477 199	532 248	588 302	571 323	643 362	459 168	699 427	519 216	579 269	640 328	700 393	510 186	762 464	577 239	645 298
29		444 179	495 223	547 272	531 290	600 325	427 151	651 384	483 194	540 242	597 295	652 354	475 167	709 417	538 215	601 268
30		414 161	462 201	511 245	496 262	559 293	399 137	607 346	451 175	504 218	556 266	609 319	444 151	661 377	502 194	561 242
31		387 146	433 182	478 222	465 237	523 266	373 124	568 314	421 158	471 198	520 241	570 289	415 137	619 341	469 175	525 219
32		363 132	406 165	448 201	435 215	490 241	349 112	534 285	396 144	442 179	489 219	535 262	388 124	580 309	441 159	492 199
33		342 121	381 150	421 183	409 196	462 220		501 259	248 131	415 163	459 199	502 239		546 282	414 145	463 181
34		321 110	358 137	397 167	385 179	435 201		472 237	233 120	391 149	432 182	472 218		514 257	390 132	435 165
35		303 101	339 126	373 153	363 164	409 184		445 217	330 110	369 137	408 167	445 200		484 236	367 121	411 151
36		286 92	319 115	354 141	343 150	387 169		420 199	312 101	348 125	385 153	421 183		457 216	348 111	388 139
37			303 106	334 130	324 138	366 155		397 183		330 115	364 141	399 169		433 199		367 128
38			286 98	316 119	307 128	346 143		376 169		312 106	345 130	378 156		411 184		348 118
39			271 90	300 110	292 118	328 132		357 156		297 98	327 120	358 144		390 170		330 109
40			258 84	285 102	277 109	312 122		340 145		282 91	310 111	340 133		370 157		313 101
41				271 95	264 101	297 114		322 134			295 103	324 124		352 146		
42				259 88	252 94	283 106		307 125			282 96	309 115		336 136		
43				247 82	240 88	270 98		294 116			268 89	294 107		319 126		
44				235 76	229 82	258 92		280 108			256 83	280 100		306 118		
45					219 76	246 86		268 101				268 93		291 110		
46					208 71	235 80		256 95				256 87		279 103		
47					199 67	225 75		246 89				246 82		267 96		
48					192 63	216 70		235 83				235 77		256 90		
49								225 78						246 85		
50								216 73						235 80		
51								208 69						226 75		
52								199 65						217 71		

LRFD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	28K6	22K7	24K7	26K7	28K7	24K8	30K7	26K8	28K8	16K9	30K8	18K9	20K9	22K9	24K9	26K9
Depth (In).	28	22	24	26	28	24	30	26	28	16	30	18	20	22	24	26
Approx. Wt (lbs./ft.)	8.9	9.0	9.0	9.0	9.2	9.4	9.6	9.7	9.8	10.0	10.0	10.1	10.1	10.2	10.3	10.4
Span (ft.)																
16										825 550						
17										825 526						
18										825 490		825 550				
19										825 455		825 523	825 550			
20										825 426		825 490	825 550			
21		825 550								825 406		825 460	825 520	825 550		
22		825 548								825 385		825 438	825 490	825 548		
23		825 518	825 550			825 550				825 363		825 418	825 468	825 518	825 550	
24		825 495	825 544			825 544				825 346		825 396	825 448	825 495	825 544	
25		825 474	825 520	825 550		825 520		825 550		771 311		825 377	825 426	825 474	825 520	825 550
26		825 454	825 499	825 541		825 499		825 541		711 276		807 354	825 405	825 454	825 499	825 541
27	825 550	768 406	825 479	825 522	825 550	825 479		825 522	825 550	658 246		747 315	825 389	825 432	825 479	825 522
28	822 541	712 364	781 436	825 501	825 543	825 456		825 501	825 543	612 220		694 282	775 353	825 413	825 456	825 501
29	766 486	664 327	727 392	790 463	825 522	804 429	825 550	825 479	825 522	570 198	825 550	646 254	723 317	798 387	825 436	825 479
30	715 439	619 295	679 353	738 417	796 486	750 387	825 543	816 457	825 500	532 178	825 543	603 229	675 286	745 349	816 419	825 459
31	669 397	580 267	636 320	690 378	745 440	702 350	801 508	763 413	825 480	498 161	825 520	564 207	631 259	697 316	765 379	825 444
32	627 361	544 242	595 290	648 343	699 400	658 318	751 461	715 375	772 438	466 147	823 500	529 188	592 235	654 287	717 344	778 407
33	589 329	511 221	559 265	609 312	657 364	619 289	706 420	672 342	726 399		780 460	498 171	556 214	615 261	673 313	732 370
34	555 300	481 202	526 242	573 285	618 333	582 264	664 384	633 312	684 364		735 420	468 156	523 195	579 239	634 286	688 338
35	523 275	454 185	496 221	540 261	583 305	549 242	627 351	597 286	645 333		693 384	441 143	493 179	546 219	598 262	649 310
36	495 252	429 169	469 203	510 240	550 280	519 222	592 323	564 263	609 306		654 353	417 132	466 164	516 201	565 241	613 284
37	468 232	406 156	444 187	483 221	522 257	490 205	559 297	534 242	576 282		619 325		441 151	487 185	534 222	580 262
38	444 214	384 144	421 172	457 204	493 237	465 189	531 274	505 223	546 260		586 300		418 139	462 170	507 204	550 241
39	420 198	364 133	399 159	433 188	469 219	441 174	504 253	480 206	519 240		556 277		397 129	438 157	480 189	522 223
40	399 183	346 123	379 148	412 174	445 203	420 161	478 234	456 191	492 222		529 256		376 119	417 146	456 175	496 207
41	379 170	330 114	361 137	393 162	424 189	399 150	454 217	433 177	468 206		502 238			396 135	435 162	472 192
42	361 158	313 106	343 127	373 150	403 175	379 139	433 202	412 164	445 192		480 221			378 126	414 151	450 178
43	345 147	300 99	328 118	357 140	385 163	363 130	414 188	394 153	426 179		457 206			360 117	394 140	429 166
44	330 137	286 92	313 110	340 131	367 152	346 121	394 176	376 143	406 167		436 192			343 109	376 131	409 155
45	315 128		298 103	325 122	351 142	330 113	376 164	360 133	388 156		417 179				360 122	391 145
46	301 120		286 97	310 114	336 133	316 106	361 153	343 125	372 146		399 168				345 114	375 135
47	288 112		274 90	298 107	321 125	303 99	345 144	328 117	355 136		382 157				330 107	358 127
48	276 105		262 85	285 100	309 117	291 93	331 135	315 110	340 128		366 148				316 101	343 119
49	265 99			274 94	295 110		318 127	303 103	327 120		351 139					330 112
50	255 93			262 89	283 103		304 119	291 97	313 113		337 130					316 105
51	244 88			252 83	273 97		292 112	279 91	301 106		324 123					304 99
52	235 83			243 79	262 92		282 106	268 86	289 100		312 116					292 93
53	226 78				252 87		271 100		279 95		300 109					
54	217 74				243 82		261 94		268 89		288 103					
55	210 70				234 77		252 89		259 85		277 98					
56	202 66				226 73		243 84		249 80		268 92					
57							234 80				259 88					
58							226 76				250 83					
59							219 72				241 79					
60							211 69				234 75					

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LRFD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	28K9	30K9	18K10	20K10	22K10	24K10	26K10	28K10	22K11	30K10	30K11	24K12	26K12	28K12	30K12
Depth (In.)	28	30	18	20	22	24	26	28	22	30	30	24	26	28	30
Approx. Wt. (lbs/ft)	10.5	10.6	11.6	11.6	11.7	11.7	11.8	11.8	11.9	11.9	13.3	13.5	13.7	14.5	15.0
Span (ft.)															
18			825 550												
19			825 523	825 550											
20			825 490	825 550											
21			825 460	825 520	825 550				825 550						
22			825 438	825 490	825 548				825 548						
23			825 418	825 468	825 518	825 550			825 518			825 550			
24			825 396	825 448	825 495	825 544			825 495			825 544			
25			825 377	825 426	825 474	825 520	825 550		825 474			825 520	825 550		
26			825 361	825 405	825 454	825 499	825 541		825 454			825 499	825 541		
27	825 550		825 347	825 389	825 432	825 479	825 522	825 550	825 432			825 479	825 522	825 550	
28	825 543		822 331	825 375	825 413	825 456	825 501	825 543	825 413			825 456	825 501	825 543	
29	825 522	825 550	766 298	825 359	825 399	825 436	825 479	825 522	825 399	825 550	825 550	825 436	825 479	825 522	825 550
30	825 500	825 543	715 269	799 336	825 385	825 422	825 459	825 500	825 385	825 543	825 543	825 422	825 459	825 500	825 543
31	825 480	825 520	669 243	748 304	825 369	825 410	825 444	825 480	825 369	825 520	825 520	825 410	825 444	825 480	825 520
32	823 463	823 500	627 221	702 276	775 337	823 393	823 431	823 463	823 355	823 500	823 500	823 393	823 431	823 463	823 500
33	790 432	798 468	589 201	660 251	729 307	798 368	798 404	798 435	798 334	798 468	798 468	798 368	798 404	798 435	798 468
34	744 395	774 441	555 184	621 229	687 280	753 337	774 378	774 410	774 314	774 441	774 441	774 344	774 378	774 410	774 441
35	702 361	751 415	523 168	585 210	648 257	709 308	751 356	751 389	741 292	751 415	751 415	751 324	751 356	751 389	751 415
36	663 332	712 383	495 154	553 193	612 236	670 283	729 334	730 366	700 269	730 392	730 392	730 306	730 334	730 366	730 392
37	627 305	673 352		523 178	579 217	634 260	690 308	711 344	663 247	711 374	711 374	711 290	711 315	711 344	711 374
38	594 282	639 325		496 164	549 200	601 240	654 284	691 325	628 228	691 353	691 353	691 275	691 299	691 325	691 353
39	564 260	606 300		471 151	520 185	570 222	619 262	670 306	595 211	673 333	673 333	673 261	673 283	673 308	673 333
40	535 241	576 278		447 140	495 171	541 206	589 243	636 284	565 195	657 315	657 315	657 247	657 269	657 291	657 315
41	510 224	547 258			471 159	516 191	561 225	606 263	538 181	640 300	640 300	640 235	640 256	640 277	640 300
42	486 208	522 240			448 148	490 177	534 210	576 245	513 168	619 282	625 284	625 224	625 244	625 264	625 284
43	463 194	498 223			427 138	468 165	508 195	550 228	489 157	591 263	610 270	609 213	610 232	610 252	610 270
44	442 181	475 208			408 128	447 154	486 182	525 212	466 146	564 245	597 258	580 199	597 222	597 240	597 258
45	423 169	454 195				427 144	465 170	501 198		538 229	583 246	555 185	583 212	583 229	583 246
46	405 158	435 182				408 135	444 159	480 186		516 214	570 236	531 174	570 203	570 219	570 236
47	387 148	415 171				391 126	426 149	459 174		493 201	558 226	508 163	553 192	558 210	558 226
48	370 139	399 160				375 118	408 140	441 163		472 188	543 215	487 153	529 180	547 201	547 216
49	355 130	382 150					391 131	423 153		454 177	520 202		508 169	535 193	535 207
50	342 123	367 141					375 124	405 144		436 166	499 190		487 159	525 185	525 199
51	328 115	352 133					361 116	390 136		418 157	480 179		469 150	507 175	514 192
52	315 109	339 126					346 110	375 128		402 148	462 169		451 142	487 165	504 184
53	304 103	327 119						360 121		387 140	444 159			469 156	495 177
54	292 97	313 112						348 114		373 132	427 150			451 147	486 170
55	282 92	303 106						334 108		360 125	412 142			435 139	468 161
56	271 87	292 100						322 102		346 118	397 135			420 132	451 153
57		282 95								334 112	384 128				435 145
58		271 90								322 106	370 121				420 137
59		262 86								312 101	358 115				406 130
60		253 81								301 96	346 109				393 124

ASD

ASD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	10K1	12K1	14K1	16K2	12K3	14K3	16K3	18K3	20K3	14K4	16K4	12K5	18K4	20K4	22K4	16K5
Depth (In.)	10	12	14	16	12	14	16	18	20	14	16	12	18	20	22	16
Approx. Wt. (lbs./ft)	5.0	5.0	5.2	5.5	5.7	6.0	6.3	6.4	6.5	6.7	7.0	7.1	7.2	7.2	7.3	7.5
Span (ft)																
10	550 550															
11	550 542															
12	550 455	550 550			550 550							550 550				
13	479 363	550 510			550 510							550 510				
14	412 289	500 425	550 550		550 463	550 550				550 550		550 463				
15	358 234	434 344	511 475		543 428	550 507				550 507		550 434				
16	313 192	380 282	448 390	550 550	476 351	550 467	550 550			550 467	550 550	550 396				550 550
17	277 159	336 234	395 324	512 488	420 291	495 404	550 526			550 443	550 526	550 366				550 526
18	246 134	299 197	352 272	456 409	374 245	441 339	508 456	550 550		530 397	550 490	507 317	550 550			550 490
19	221 113	268 167	315 230	408 347	335 207	395 287	455 386	514 494	550 550	475 336	547 452	454 269	550 523	550 550		550 455
20	199 97	241 142	284 197	368 297	302 177	356 246	410 330	463 423	517 517	428 287	493 386	409 230	550 490	550 550		550 426
21		218 123	257 170	333 255	273 153	322 212	371 285	420 364	468 453	388 248	447 333	370 198	506 426	550 520	550 550	503 373
22		199 106	234 147	303 222	249 132	293 184	337 247	382 316	426 393	353 215	406 289	337 172	460 370	514 461	550 548	458 323
23		181 93	214 128	277 194	227 116	268 160	308 216	349 276	389 344	322 188	371 252	308 150	420 323	469 402	518 491	418 282
24		166 81	196 113	254 170	208 101	245 141	283 189	320 242	357 302	295 165	340 221	282 132	385 284	430 353	475 431	384 248
25			180 100	234 150		226 124	260 167	294 214	329 266	272 145	313 195		355 250	396 312	438 381	353 219
26			166 88	216 133		209 110	240 148	272 190	304 236	251 129	289 173		328 222	366 277	404 338	326 194
27			154 79	200 119		193 98	223 132	252 169	281 211	233 115	268 155		303 198	339 247	374 301	302 173
28			143 70	186 106		180 88	207 118	234 151	261 189	216 103	249 138		282 177	315 221	348 270	281 155
29				173 95			193 106	218 136	243 170		232 124		263 159	293 199	324 242	261 139
30				161 86			180 96	203 123	227 153		216 112		245 144	274 179	302 219	244 126
31				151 78			168 87	190 111	212 138		203 101		229 130	256 162	283 198	228 114
32				142 71			158 79	178 101	199 126		190 92		215 118	240 147	265 180	214 103
33								168 92	187 114				202 108	226 134	249 164	
34								158 84	176 105				190 98	212 122	235 149	
35								149 77	166 96				179 90	200 112	221 137	
36								141 70	157 88				169 82	189 103	209 126	
37									148 81					179 95	198 116	
38									141 74					170 87	187 107	
39									133 69					161 81	178 98	
40									127 64					153 75	169 91	
41															161 85	
42															153 79	
43															146 73	
44															139 68	

ASD

ASD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	14K6	18K5	20K5	22K5	24K4	24K5	16K6	26K5	18K6	20K6	22K6	24K6	16K7	26K6	18K7	20K7
Depth (In).	14	18	20	22	24	24	16	26	18	20	22	24	16	26	18	20
Approx. Wt. (lbs./ft)	7.7	7.7	7.7	7.7	7.8	7.9	8.1	8.1	8.4	8.4	8.5	8.5	8.6	8.6	8.9	8.9
Span (ft)																
14	550 550															
15	550 507															
16	550 467						550 550						550 550			
17	550 443						550 526						550 526			
18	550 408	550 550					550 490		550 550				550 490		550 550	
19	550 383	550 523	550 550				550 455		550 523	550 550			550 455		550 523	550 550
20	525 347	550 490	550 550				550 426		550 490	550 550			550 426		550 490	550 550
21	475 299	550 460	550 520	550 550			548 405		550 460	550 520	550 550		550 406		550 460	550 520
22	432 259	518 414	550 490	550 548			498 351		550 438	550 490	550 548		550 385		550 438	550 490
23	395 226	473 362	529 451	550 518	550 550	550 550	455 307		516 393	550 468	550 518	550 550	507 339		550 418	550 468
24	362 199	434 318	485 396	536 483	520 516	550 544	418 269		473 345	528 430	550 495	550 544	465 298		526 382	550 448
25	334 175	400 281	446 350	493 427	479 456	540 511	384 238	550 550	435 305	486 380	537 464	550 520	428 263	550 550	485 337	541 421
26	308 156	369 249	412 310	455 379	442 405	499 453	355 211	542 535	402 271	449 337	496 411	543 493	395 233	550 541	448 299	500 373
27	285 139	342 222	382 277	422 337	410 361	462 404	329 188	502 477	372 241	416 301	459 367	503 439	366 208	547 519	415 267	463 333
28	265 124	318 199	355 248	392 302	381 323	429 362	306 168	466 427	346 216	386 269	427 328	467 393	340 186	508 464	385 239	430 298
29		296 179	330 223	365 272	354 290	400 325	285 151	434 384	322 194	360 242	398 295	435 354	317 167	473 417	359 215	401 268
30		276 161	308 201	341 245	331 262	373 293	266 137	405 346	301 175	336 218	371 266	406 319	296 151	441 377	335 194	374 242
31		258 146	289 182	319 222	310 237	349 266	249 124	379 314	281 158	314 198	347 241	380 289	277 137	413 341	313 175	350 219
32		242 132	271 165	299 201	290 215	327 241	233 112	356 285	264 144	295 179	326 219	357 262	259 124	387 309	294 159	328 199
33		228 121	254 150	281 183	273 196	308 220		334 259	248 131	277 163	306 199	335 239		364 282	276 145	309 181
34		214 110	239 137	265 167	257 179	290 201		315 237	233 120	261 149	288 182	315 218		343 257	260 132	290 165
35		202 101	226 126	249 153	242 164	273 184		297 217	220 110	246 137	272 167	297 200		323 236	245 121	274 151
36		191 92	213 115	236 141	229 150	258 169		280 199	208 101	232 125	257 153	281 183		305 216	232 111	259 139
37			202 106	223 130	216 138	244 155		265 183		220 115	243 141	266 169		289 199		245 128
38			191 98	211 119	205 128	231 143		251 169		208 106	230 130	252 156		274 184		232 118
39			181 90	200 110	195 118	219 132		238 156		198 98	218 120	239 144		260 170		220 109
40			172 84	190 102	185 109	208 122		227 145		188 91	207 111	227 133		247 157		209 101
41				181 95	176 101	198 114		215 134			197 103	216 124		235 146		
42				173 88	168 94	189 106		205 125			188 96	206 115		224 136		
43				165 82	160 88	180 98		196 116			179 89	196 107		213 126		
44				157 76	153 82	172 92		187 108			171 83	187 100		204 118		
45					146 76	164 86		179 101				179 93		194 110		
46					139 71	157 80		171 95				171 87		186 103		
47					133 67	150 75		164 89				164 82		178 96		
48					128 63	144 70		157 83				157 77		171 90		
49								150 78						164 85		
50								144 73						157 80		
51								139 69						151 75		
52								133 65						145 71		

ASD

ASD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	28K6	22K7	24K7	26K7	28K7	24K8	30K7	26K8	28K8	16K9	30K8	18K9	20K9	22K9	24K9	26K9
Depth (In).	28	22	24	26	28	24	30	26	28	16	30	18	20	22	24	26
Approx. Wt (lbs./ft.)	8.9	9.0	9.0	9.0	9.2	9.4	9.6	9.7	9.8	10.0	10.0	10.1	10.1	10.2	10.3	10.4
Span (ft.)																
16										550 550						
17										550 526						
18										550 490		550 550				
19										550 455		550 523	550 550			
20										550 426		550 490	550 550			
21		550 550								550 406		550 460	550 520	550 550		
22		550 548								550 385		550 438	550 490	550 548		
23		550 518	550 550			550 550				550 363		550 418	550 468	550 518	550 550	
24		550 495	550 544			550 544				550 346		550 396	550 448	550 495	550 544	
25		550 474	550 520	550 550		550 520		550 550		514 311		550 377	550 426	550 474	550 520	550 550
26		550 454	550 499	550 541		550 499		550 541		474 276		538 354	550 405	550 454	550 499	550 541
27	550 550	512 406	550 479	550 522	550 550	550 479		550 522	550 550	439 246		498 315	550 389	550 432	550 479	550 522
28	548 541	475 364	521 436	550 501	550 543	550 456		550 501	550 543	408 220		463 282	517 353	550 413	550 456	550 501
29	511 486	443 327	485 392	527 463	550 522	536 429	550 550	550 479	550 522	380 198	550 550	431 254	482 317	532 387	550 436	550 479
30	477 439	413 295	453 353	492 417	531 486	500 387	550 543	544 457	550 500	355 178	550 543	402 229	450 286	497 349	544 419	550 459
31	446 397	387 267	424 320	460 378	497 440	468 350	534 508	509 413	550 480	332 161	550 520	376 207	421 259	465 316	510 379	550 444
32	418 361	363 242	397 290	432 343	466 400	439 318	501 461	477 375	515 438	311 147	549 500	353 188	395 235	436 287	478 344	519 407
33	393 329	341 221	373 265	406 312	438 364	413 289	471 420	448 342	484 399		520 460	332 171	371 214	410 261	449 313	488 370
34	370 300	321 202	351 242	382 285	412 333	388 264	443 384	422 312	456 364		490 420	312 156	349 195	386 239	423 286	459 338
35	349 275	303 185	331 221	360 261	389 305	366 242	418 351	398 286	430 333		462 384	294 143	329 179	364 219	399 262	433 310
36	330 252	286 169	313 203	340 240	367 280	346 222	395 323	376 263	406 306		436 353	278 132	311 164	344 201	377 241	409 284
37	312 232	271 156	296 187	322 221	348 257	327 205	373 297	356 242	384 282		413 325		294 151	325 185	356 222	387 262
38	296 214	256 144	281 172	305 204	329 237	310 189	354 274	337 223	364 260		391 300		279 139	308 170	338 204	367 241
39	280 198	243 133	266 159	289 188	313 219	294 174	336 253	320 206	346 240		371 277		265 129	292 157	320 189	348 223
40	266 183	231 123	253 148	275 174	297 203	280 161	319 234	304 191	328 222		353 256		251 119	278 146	304 175	331 207
41	253 170	220 114	241 137	262 162	283 189	266 150	303 217	289 177	312 206		335 238			264 135	290 162	315 192
42	241 158	209 106	229 127	249 150	269 175	253 139	289 202	275 164	297 192		320 221			252 126	276 151	300 178
43	230 147	200 99	219 118	238 140	257 163	242 130	276 188	263 153	284 179		305 206			240 117	263 140	286 166
44	220 137	191 92	209 110	227 131	245 152	231 121	263 176	251 143	271 167		291 192			229 109	251 131	273 155
45	210 128		199 103	217 122	234 142	220 113	251 164	240 133	259 156		278 179				240 122	261 145
46	201 120		191 97	207 114	224 133	211 106	241 153	229 125	248 146		266 168				230 114	250 135
47	192 112		183 90	199 107	214 125	202 99	230 144	219 117	237 136		255 157				220 107	239 127
48	184 105		175 85	190 100	206 117	194 93	221 135	210 110	227 128		244 148				211 101	229 119
49	177 99			183 94	197 110		212 127	202 103	218 120		234 139					220 112
50	170 93			175 89	189 103		203 119	194 97	209 113		225 130					211 105
51	163 88			168 83	182 97		195 112	186 91	201 106		216 123					203 99
52	157 83			162 79	175 92		188 106	179 86	193 100		208 116					195 93
53	151 78				168 87		181 100		186 95		200 109					
54	145 74				162 82		174 94		179 89		192 103					
55	140 70				156 77		168 89		173 85		185 98					
56	135 66				151 73		162 84		166 80		179 92					
57							156 80				173 88					
58							151 76				167 83					
59							146 72				161 79					
60							141 69				156 75					

ASD

ASD K-SERIES ECONOMY TABLE - STANDARD UNITS

Joist Designation	28K9	30K9	18K10	20K10	22K10	24K10	26K10	28K10	22K11	30K10	30K11	24K12	26K12	28K12	30K12
Depth (In.)	28	30	18	20	22	24	26	28	22	30	30	24	26	28	30
Approx. Wt. (lbs/ft)	10.5	10.6	11.6	11.6	11.7	11.7	11.8	11.8	11.9	11.9	13.3	13.5	13.7	14.5	15.0
Span (ft.)															
18			550 550												
19			550 523	550 550											
20			550 490	550 550											
21			550 460	550 520	550 550				550 550						
22			550 438	550 490	550 548				550 548						
23			550 418	550 468	550 518	550 550			550 518			550 550			
24			550 396	550 448	550 495	550 544			550 495			550 544			
25			550 377	550 426	550 474	550 520	550 550		550 474			550 520	550 550		
26			550 361	550 405	550 454	550 499	550 541		550 454			550 499	550 541		
27	550 550		550 347	550 389	550 432	550 479	550 522	550 550	550 432			550 479	550 522	550 550	
28	550 543		548 331	550 375	550 413	550 456	550 501	550 543	550 413			550 456	550 501	550 543	
29	550 522	550 550	511 298	550 359	550 399	550 436	550 479	550 522	550 399	550 550	550 550	550 436	550 479	550 522	550 550
30	550 500	550 543	477 269	533 336	550 385	550 422	550 459	550 500	550 385	550 543	550 543	550 422	550 459	550 500	550 543
31	550 480	550 520	446 243	499 304	550 369	550 410	550 444	550 480	550 369	550 520	550 520	550 410	550 444	550 480	550 520
32	549 463	549 500	418 221	468 276	517 337	549 393	549 431	549 463	549 355	549 500	549 500	549 393	549 431	549 463	549 500
33	527 432	532 468	393 201	440 251	486 307	532 368	532 404	532 435	532 334	532 468	532 468	532 368	532 404	532 435	532 468
34	496 395	516 441	370 184	414 229	458 280	502 337	516 378	516 410	516 314	516 441	516 441	516 344	516 378	516 410	516 441
35	468 361	501 415	349 168	390 210	432 257	473 308	501 356	501 389	494 292	501 415	501 415	501 324	501 356	501 389	501 415
36	442 332	475 383	330 154	369 193	408 236	447 283	486 334	487 366	467 269	487 392	487 392	487 306	487 334	487 366	487 392
37	418 305	449 352		349 178	386 217	423 260	460 308	474 344	442 247	474 374	474 374	474 290	474 315	474 344	474 374
38	396 282	426 325		331 164	366 200	401 240	436 284	461 325	419 228	461 353	461 353	461 275	461 299	461 325	461 353
39	376 260	404 300		314 151	347 185	380 222	413 262	447 306	397 211	449 333	449 333	449 261	449 283	449 308	449 333
40	357 241	384 278		298 140	330 171	361 206	393 243	424 284	377 195	438 315	438 315	438 247	438 269	438 291	438 315
41	340 224	365 258			314 159	344 191	374 225	404 263	359 181	427 300	427 300	427 235	427 256	427 277	427 300
42	324 208	348 240			299 148	327 177	356 210	384 245	342 168	413 282	417 284	417 224	417 244	417 264	417 284
43	309 194	332 223			285 138	312 165	339 195	367 228	326 157	394 263	407 270	406 213	407 232	407 252	407 270
44	295 181	317 208			272 128	298 154	324 182	350 212	311 146	376 245	398 258	387 199	398 222	398 240	398 258
45	282 169	303 195				285 144	310 170	334 198		359 229	389 246	370 185	389 212	389 229	389 246
46	270 158	290 182				272 135	296 159	320 186		344 214	380 236	354 174	380 203	380 219	380 236
47	258 148	277 171				261 126	284 149	306 174		329 201	372 226	339 163	369 192	372 210	372 226
48	247 139	266 160				250 118	272 140	294 163		315 188	362 215	325 153	353 180	365 201	365 216
49	237 130	255 150					261 131	282 153		303 177	347 202		339 169	357 193	357 207
50	228 123	245 141					250 124	270 144		291 166	333 190		325 159	350 185	350 199
51	219 115	235 133					241 116	260 136		279 157	320 179		313 150	338 175	343 192
52	210 109	226 126					231 110	250 128		268 148	308 169		301 142	325 165	336 184
53	203 103	218 119						240 121		258 140	296 159			313 156	330 177
54	195 97	209 112						232 114		249 132	285 150			301 147	324 170
55	188 92	202 106						223 108		240 125	275 142			290 139	312 161
56	181 87	195 100						215 102		231 118	265 135			280 132	301 153
57		188 95								223 112	256 128				290 145
58		181 90								215 106	247 121				280 137
59		175 86								208 101	239 115				271 130
60		169 81								201 96	231 109				262 124

STANDARD ASD LOAD TABLE
STANDARD LRFD LOAD TABLE
FOR TOP CHORD EXTENSIONS (S TYPE) and (R TYPE)

Based on a 50 ksi Maximum Yield Strength
ASD Load Table adopted by the Steel Joist Institute November 15, 1989
LRFD Load Table adopted by the Steel Joist Institute May 1, 2000
Revised to May 18, 2010 – Effective December 31, 2010

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

The following load tables are for K-Series TOP CHORD EXTENSIONS and EXTENDED ENDS for **ASD** and **LRFD** methods of design. The tabulated values are the maximum allowable uniform load in pounds per linear foot (kiloNewton/meter). The "S" and "I" numbers shown in the load tables are the Elastic Section Modulus and Moment of Inertia of the extension (Section) number with which they are associated.

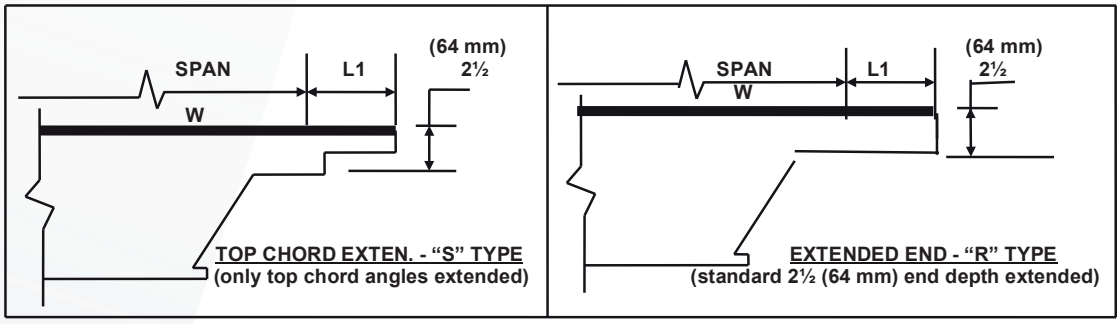
In cases where it is not possible to meet specific job requirements with a 2½" (64 mm) deep "R" type extension (refer to "S" and "I" values in the Extended End Load Table), the depth of the extension must be increased to provide greater load-carrying capacity.

The "S" and "R" extension numbers are intended to be associated with Standard K-Series Joist Sizes of matching Section Number. When possible, the extension number should be limited to no more than the Standard K-Series Joist Section Number, for optimum economy.

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

It should be noted that an "R" TYPE extension must be specified when building details dictate a 2½, (64 mm) depth at the end of the extension. In the absence of specific instructions. the joist manufacturer may provide either type.

TOP CHORD EXTENSION **EXTENDED END**



W = Uniform Load L1= Length of Extension SPAN = See **K**-Series Standard Specification for Definition of Span

ASD

TOP CHORD EXTENSION LOAD TABLE (R TYPE)
Based on a Yield Strength of 50 ksi
Pounds Per Linear Foot

TYPE	"S" ($in.^3$)	"I" ($in.^4$)	LENGTH (L1)											
			0'-6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"
R1	0.895	1.119	550	550	550	550	550	446	332	257	205	167	139	117
R2	0.923	1.157	550	466	228	550	550	460	343	265	211	172	143	121
R3	1.039	1.299	550	550	550	550	550	518	386	299	238	194	161	136
R4	1.147	1.433	550	550	550	550	550	550	426	330	263	214	178	150
R5	1.249	1.561	550	550	550	550	550	550	464	359	286	233	194	164
R6	1.352	1.690	550	550	550	550	550	550	502	389	310	253	210	177
R7	1.422	1.802	550	550	550	550	550	550	528	409	326	266	221	186
R8	1.558	1.948	550	550	550	550	550	550	550	448	357	291	242	204
R9	1.673	2.091	550	550	550	550	550	550	550	481	384	313	260	219
R10	1.931	2.414	550	550	550	550	550	550	550	550	443	361	300	253
R11	2.183	2.729	550	550	550	550	550	550	550	550	501	408	339	287
R12	2.413	3.016	550	550	550	550	550	550	550	550	550	451	375	317

ASD

TOP CHORD EXTENSION LOAD TABLE (S TYPE)
Based on a Maximum Yield Strength of 50 ksi
Pounds Per Linear Foot

TYPE	"S" ($in.^3$)	"I" ($in.^4$)	LENGTH (L1)								
			0'-6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
S1	0.099	0.088	550	363	178	105					
S2	0.127	0.138	550	466	228	135					
S3	0.144	0.156	550	529	259	153					
S4	0.160	0.172	550	550	288	170	112				
S5	0.176	0.188	550	550	316	187	123				
S6	0.192	0.204	550	550	345	204	135				
S7	0.241	0.306	550	550	433	256	169	120			
S8	0.266	0.332	550	550	478	283	187	132			
S9	0.288	0.358	550	550	518	306	202	143	107		
S10	0.380	0.544	550	550	550	404	267	189	141	109	
S11	0.438	0.622	550	550	550	466	307	218	162	126	100
S12	0.494	0.696	550	550	550	526	347	246	183	142	113

LRFD

TOP CHORD EXTENSION LOAD TABLE (R TYPE)
Based on a Yield Strength of 50 ksi
Pounds Per Linear Foot

TYPE	"S" ($in.^3$)	"I" ($in.^4$)	LENGTH (L1)											
			0'-6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"
R1	0.895	1.119	825	544	825	157	825	669	498	385	307	250	208	175
R2	0.923	1.157	825	700	343	202	825	690	514	399	318	259	216	181
R3	1.039	1.299	825	793	388	229	825	777	579	448	358	292	243	205
R4	1.147	1.433	825	825	825	825	825	825	639	495	394	321	267	225
R5	1.249	1.561	825	825	825	280	184	825	696	538	429	349	291	246
R6	1.352	1.690	825	825	517	825	202	825	753	583	465	379	315	265
R7	1.422	1.802	825	825	649	825	253	825	792	613	489	399	331	279
R8	1.558	1.948	825	825	825	424	280	825	825	672	535	436	363	306
R9	1.673	2.091	825	825	825	825	825	214	160	721	576	469	390	328
R10	1.931	2.414	825	825	825	825	400	283	211	163	664	541	450	379
R11	2.183	2.729	825	825	825	825	460	825	825	825	751	612	508	430
R12	2.413	3.016	825	825	825	825	520	825	274	825	169	676	562	475

LRFD

TOP CHORD EXTENSION LOAD TABLE (S TYPE)
Based on a Yield Strength of 50 ksi
Pounds Per Linear Foot

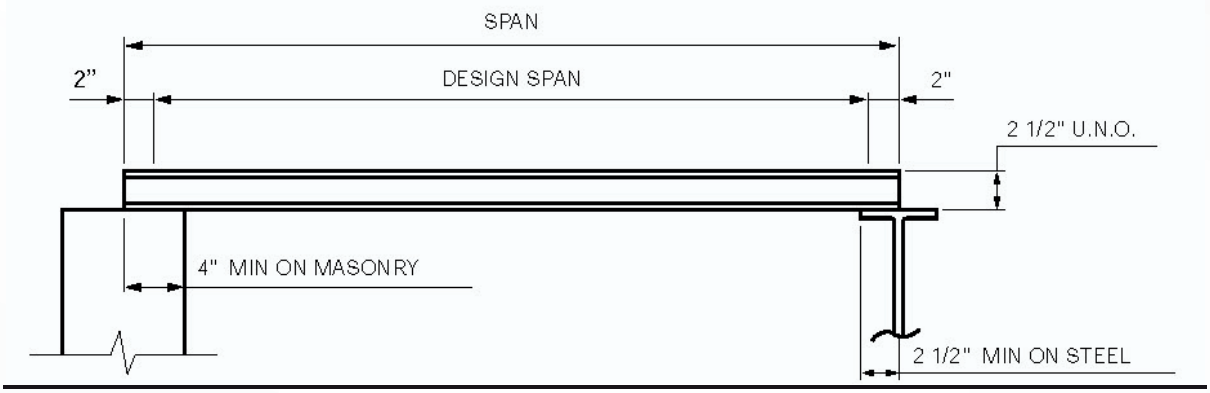
TYPE	"S" ($in.^3$)	"I" ($in.^4$)	LENGTH (L1)								
			0'-6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
S1	0.099	0.088	825	544	267	157					
S2	0.127	0.138	825	700	343	202					
S3	0.144	0.156	825	793	388	229					
S4	0.160	0.172	825	825	432	255	168				
S5	0.176	0.188	825	825	474	280	184				
S6	0.192	0.204	825	825	517	306	202				
S7	0.241	0.306	825	825	649	384	253	180			
S8	0.266	0.332	825	825	717	424	280	198			
S9	0.288	0.358	825	825	777	459	303	214	160		
S10	0.380	0.544	825	825	825	606	400	283	211	163	
S11	0.438	0.622	825	825	825	699	460	327	243	189	150
S12	0.494	0.696	825	825	825	789	520	369	274	213	169

STANDARD ASD LOAD TABLE
STANDARD LRFD LOAD TABLE
FOR JOIST SUBSTITUTES AND OUTRIGGERS

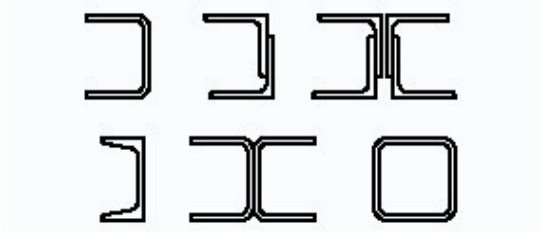
Based on a 50 ksi Maximum Yield Strength
LRFD Load Table adopted by the Steel Joist Institute May 1, 2001
Revised to May 18, 2010 – Effective December 31, 2010

JOIST SUBSTITUTES, SIMPLE SPAN LOAD TABLES

Joist substitutes are 2.5 inch (64 mm) deep sections intended for use in very short spans (less than 10 feet (3.05 m)) where Open Web Steel Joists are impractical. They are commonly specified to span over hallways and short spans in skewed bays.



Joist substitutes are solid members that can be manufactured from material conforming to the Steel Joist Institute Standard Specifications and can be made of hot rolled or cold-formed channels or HSS as shown below.



Full lateral support to the compressive flange is provided by attachments to the deck. Caution must be exercised during erection since joist substitutes exhibit some degree of instability. After erection and before loads of any description are placed on the joist substitutes, the ends must be attached to the supports per the SJI Standard Specification for Open Web Steel Joists, **K**-Series and the deck installed and attached to the top flange.

The Simple Span Joist Substitutes Load Tables list uniform loads based on **LRFD** and **ASD** methods of design and are shown in U.S. Customary Units.

The **BLACK** figures in the **LRFD** Load Table gives the TOTAL safe factored uniformly distributed load-carrying capacity in pounds per linear foot, of 2.5 Inch Joist Substitutes. The **BLACK** figures in the **ASD** Load Table gives the TOTAL safe uniformly distributed load-carrying capacity in pounds per linear foot, of 2.5 Inch Joist Substitutes.

The **RED** figures in the Load Table represent the unfactored, uniform load, in pounds per linear foot, which will produce an approximate joist substitute 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 substitute deflection of 1/240 of the span may be obtained by multiplying the **RED** figure by 360/240). In no case shall the prorated, unfactored load exceed the unfactored TOTAL load-carrying capacity of the joist substitute as given in the **ASD** Load Table for 2.5 Inch Simple Span Joist Substitutes, **K**-Series.

Minimum section properties shall be provided for the particular 2.5K type specified even at shorter spans where the developed load capacity may exceed 550 plf (**ASD**) or 825 plf (**LRFD**).

2.5K JOIST SUBSTITUTES PROPERTIES			
2.5K TYPE	**2.5K1**	**2.5K2**	**2.5K3**
S in^3	0.62	0.86	1.20
I in^4	0.77	1.07	1.50
Approximate weight (lbs/ft)	3.0	4.2	6.4

LRFD

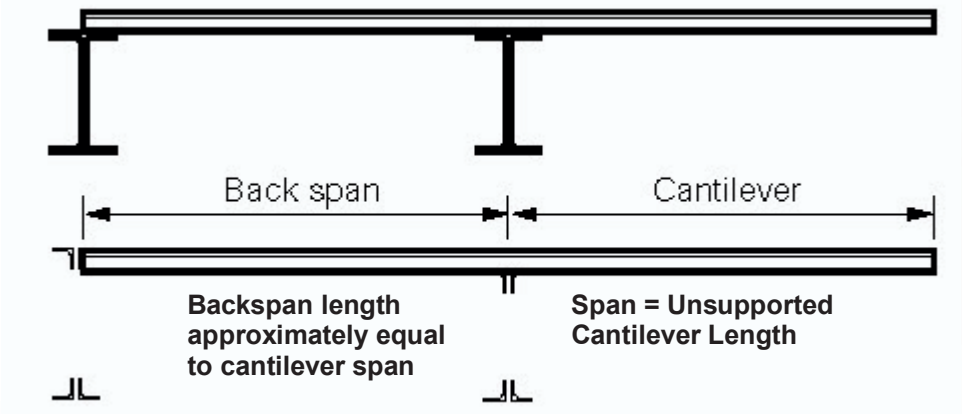
LOAD TABLES FOR 2.5 INCH SIMPLE SPAN JOIST SUBSTITUTES, K-SERIES Based on a Maximum Yield Strength of 50 ksi			
Designation	**2.5K1**	**2.5K2**	**2.5K3**
Span (ft-in)	**Pounds per Linear foot**		
4'-0"	825	825	825
	550	550	550
5'-0"	825	825	825
	326	452	550
6'-0"	579	804	825
	182	253	354
7'-0"	418	580	810
	112	155	218
8'-0"	316	439	612
	73	102	143
9'-0"	0	343	480
	0	71	99
10'-0"	0	0	385
	0	0	71

ASD

LOAD TABLES FOR 2.5 INCH SIMPLE SPAN JOIST SUBSTITUTES, K-SERIES Based on a Maximum Yield Strength of 50 ksi			
Designation	**2.5K1**	**2.5K2**	**2.5K3**
Span (ft-in)	**Pounds per Linear Foot**		
4'-0"	550	550	550
	550	550	550
5'-0"	550	550	550
	326	452	550
6'-0"	386	536	550
	182	253	354
7'-0"	279	387	540
	112	155	218
8'-0"	211	293	408
	73	102	143
9'-0"	0	229	320
	0	71	99
10'-0"	0	0	257
	0	0	71

JOIST SUBSTITUTES, OUTRIGGERS LOAD TABLES

Joist substitutes may be used in an outrigger condition where the member is overhanging one support as illustrated below where a portion is the back span and the remainder is the cantilever span or outrigger. Joist substitutes used in this configuration are 2.5 inch (64 mm) deep sections.



The Joist Outriggers Load Tables list uniform loads based on **LRFD** and **ASD** methods of design and are shown in U.S. Customary

The **BLACK** figures in the **LRFD** Load Table gives the TOTAL safe factored uniformly distributed load-carrying capacity in pounds per linear foot, of 2.5 Inch Joist Outriggers. The **BLACK** figures in the **ASD** Load Table gives the TOTAL safe uniformly distributed load-carrying capacity in pounds per linear foot, of 2.5 Inch Joist Outriggers.

Serviceability requirements must be checked by the specifying professional. When calculating the actual live load deflection at the end of the cantilever it is necessary to consider the length of the back span.

Minimum section properties shall be provided for the particular 2.5K type specified even at shorter spans where the developed load capacity may exceed 550 plf (**ASD**) or 825 plf (**LRFD**).

LRFD

LOAD TABLES FOR 2.5 INCH JOIST OUTRIGGERS, K-SERIES									
OUTRIGGER TYPE	TOTAL ALLOWABLE LOAD FOR UNSUPPORTED CANTILEVER PLF SPAN ft-in								
	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"
2.5K1	825	744	516	379	291	229	186	153	129
2.5K2	825	825	717	526	403	318	258	213	179
2.5K3	825	825	825	735	562	444	360	297	250

ASD

LOAD TABLES FOR 2.5 INCH JOIST OUTRIGGERS, K-SERIES									
OUTRIGGER TYPE	TOTAL ALLOWABLE LOAD FOR UNSUPPORTED CANTILEVER PLF SPAN ft-in								
	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"
2.5K1	550	496	344	253	194	153	124	102	86
2.5K2	550	550	478	351	269	212	172	142	119
2.5K3	550	550	550	490	375	296	240	198	167

Notes:

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

Adopted by the Steel Joist Institute May 10, 2006
Revised to May 18, 2010, Effective December 31, 2010

SECTION 100.
SCOPE AND DEFINITIONS

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 (2011), *Structural Design of Steel Joist Roofs to Resist Uplift Loads*

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

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

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

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

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

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: ϕ_t = 0.90 (LRFD), Ω_t = 1.67 (ASD)

Design Stress = $0.9F_y$ (LRFD) (103.2-1)

Allowable Stress = $0.6F_y$ (ASD) (103.2-2)

(b) Compression: ϕ_c = 0.90 (LRFD), Ω_c = 1.67 (ASD)

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

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

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

$$F_{cr} = Q\left[0.658^{\left(QF_y/F_e\right)}\right]F_y \qquad (103.2\text{-}5)$$

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

$$F_{cr} = 0.877F_e \quad (103.2\text{-}6)$$

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

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

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:.

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

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

or,

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

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: $F_n = F_y$

Design Stress = $\phi_b F_n = 0.9F_y$ (LRFD) (103.2-10)

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

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

Design Stress = $\phi_b F_n = 1.45F_y$ (LRFD) (103.2-12)

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

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

Design Stress = $\phi_b F_n = 1.35F_y$ (LRFD) (103.2-14)

Allowable Stress = $F_n/\Omega_b = 0.90F_y$ (ASD) (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:

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

LRFD: $\phi_w = 0.75$

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

ASD: $\Omega_w = 2.0$

Allowable Shear Strength = $R_n/\Omega_w = F_{nw}A/\Omega_w = 0.3F_{exx} A_w$ (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 (inches) = 0.12D + 0.11 (103.2-19)

Where: D = web diameter, inches

or,

T (mm) = 0.12D + 2.8 (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:

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

Design Stress = $0.9\ F_y$ (LRFD) (103.2-21)

Allowable Stress = $0.6\ F_y$ (ASD) (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 ℓ = 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			$k\ell/r_x$	$k\ell/r_y$	$k\ell/r_z$	$k\ell_s/r_z$
I	TOP CHORD INTERIOR PANELS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 90.				
	B.	The effective slenderness ratio, $k\ell/r$, 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, $k\ell/r$, to determine F'_e where k is:				
			0.75	---	---	---
II	TOP CHORD END PANELS, ALL BOTTOM CHORD PANELS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 120 for Top Chords, or 240 for Bottom Chords.				
	B.	The effective slenderness ratio, $k\ell/r$, 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, $k\ell/r$, to determine F'_e where k is:				
			1.0	---	---	---
III	TENSION WEB MEMBERS					
	A.	The slenderness ratios, $1.0\ell/r$ and $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 240.				
	B.	For end web members subject to compression, the effective slenderness ratio, $k\ell/r$, 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 $1.0\ell_s/r$, of members as a whole or any component part shall not exceed 200.				
	B.	The effective slenderness ratio, $k\ell/r$, 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:

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

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

or,

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

Where:

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

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

r_y is the 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:

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

at the mid panel:

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

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

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

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

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, $in.^3$ (mm^3)
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 = $\frac{\pi^2 E}{(K\ell/r_x)^2}$, 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, $in.^2$ (mm^2)

For **ASD**:

at the panel point:

$$f_a + f_b \le 0.6F_y \qquad (103.4\text{-}6)$$

at the mid panel:

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

$$\frac{f_a}{F_a} + \frac{8}{9}\left[\frac{C_m f_b}{\left[1-\left(\frac{1.67f_a}{F'_e}\right)\right] QF_b}\right] \le 1.0 \qquad (103.4\text{-}7)$$

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

$$\left(\frac{f_a}{2F_a}\right) + \left[\frac{C_m f_b}{\left[1-\left(\frac{1.67 f_a}{F'_e}\right)\right] Q F_b}\right] \le 1.0 \qquad (103.4\text{-}8)$$

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:

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

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

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 = $\left(\frac{1}{2}\right)\left(f_t^2 + 4f_v^2\right)^{1/2}$
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 ½ 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

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

For 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 to 06 incl	2 ½" (64 mm)
07 to 17 incl	4" (102 mm)
18 to 25 incl	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,

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

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

or,

$$\ell_{brmax} = 170\,r_y \qquad (104.5\text{-}2)$$

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.

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

Where:

n = 8 for horizontal bridging

n = 2 for diagonal bridging

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

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

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

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

Where:

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

and $\frac{\ell_{brmax}}{r_y}$ 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 to 03 incl	10'-0″ (3048 mm)	400	(1779)
04 to 05 incl	11'-0″ (3353 mm)	550	(2447)
06 to 08 incl	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 to 17 incl	22'-0″ (6706 mm) up to 66'-0" (20.12 m), then 25'-0" (7620 mm)	1850	(8229)
18 to 20 incl	26'-0" (7924 mm)	2000	(8896)
21 to 22 incl	30'-0" (9144 mm)	2500	(11120)
23 to 24 incl	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 to 06 incl.	2– 3/16" x 2" (5 x 51 mm)	2– 3/4" (19 mm) A307
07 to 17 incl	2– 1/4" x 2" (6 x 51 mm)	2– 3/4" (19 mm) A307
18 to 25 incl	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 $0.001nP + 0.004P\sqrt{n} \geq 0.0025nP$, 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].

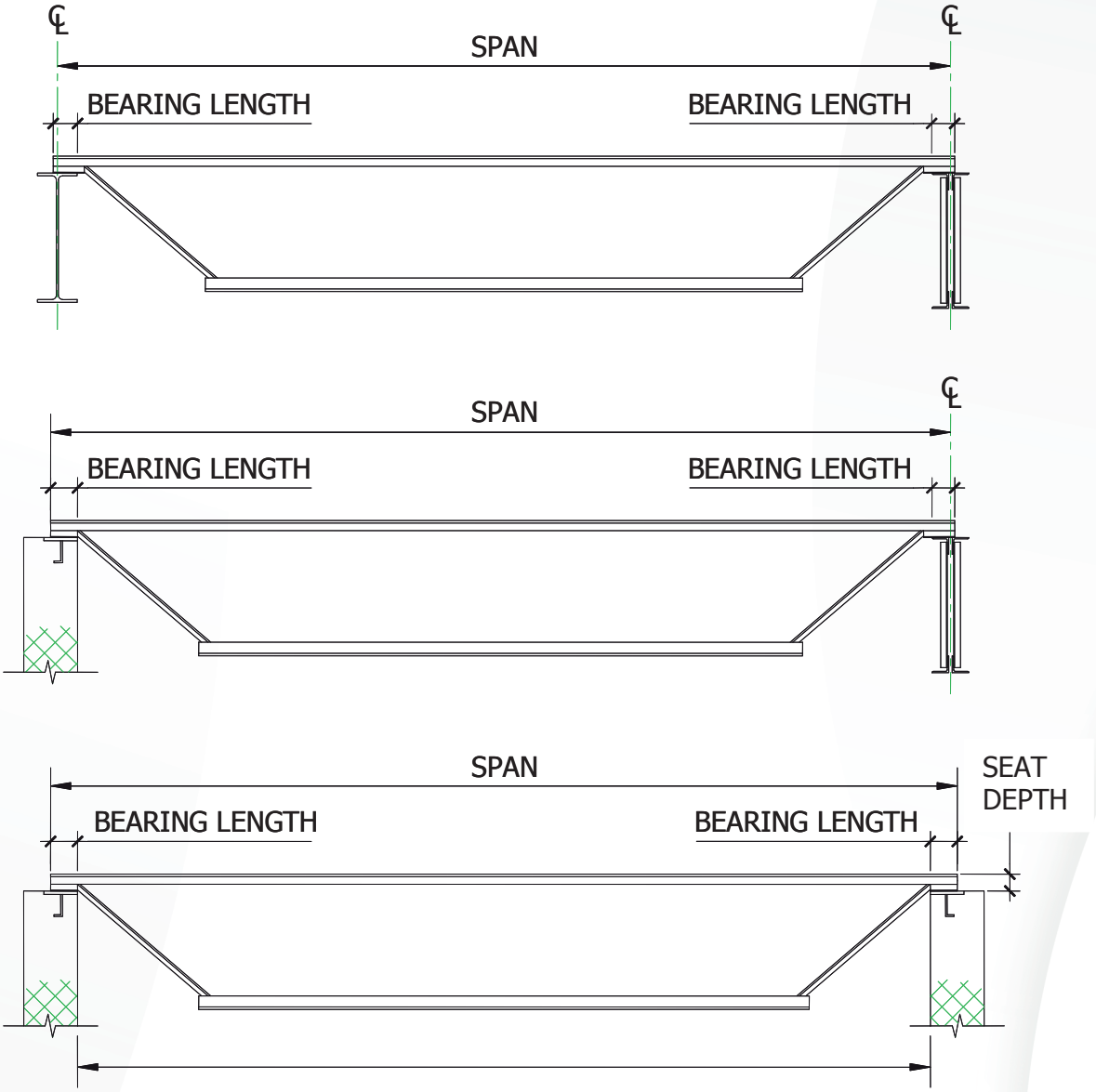
*For further reference, refer to Steel Joist Institute Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders."

[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.**

American National Standard SJI-LH/DLH-2010

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 inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

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)	SAFELOAD* in Lbs. Between		SPAN IN FEET														
			< 29	29-33		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
						235	226	218	204	188	175	162	152	141	132	124	116	109	102	96
24LH04	12	24	737	21360		628	597	568	540	514	490	468	447	427	409	393	376	361	346	333
						288	265	246	227	210	195	182	169	158	148	138	130	122	114	107
24LH05	13	24	789	22890		673	669	660	628	598	570	544	520	496	475	456	436	420	403	387
						308	297	285	264	244	226	210	196	182	171	160	150	141	132	124
24LH06	16	24	1061	30780		906	868	832	795	756	720	685	655	625	598	571	546	522	501	480
						411	382	356	331	306	284	263	245	228	211	197	184	172	161	152
24LH07	17	24	1166	33810		997	957	919	882	847	811	774	736	702	669	639	610	583	559	535
						452	421	393	367	343	320	297	276	257	239	223	208	195	182	171
24LH08	18	24	1243	36060		1060	1015	973	933	895	858	817	780	745	712	682	652	625	600	576
						480	447	416	388	362	338	314	292	272	254	238	222	208	196	184
24LH09	21	24	1464	42450		1248	1212	1177	1146	1096	1044	994	948	903	861	822	786	751	720	690
						562	530	501	460	424	393	363	337	313	292	272	254	238	223	209
24LH10	23	24	1547	44850		1323	1284	1248	1213	1182	1152	1105	1053	1002	955	912	873	834	799	766
						596	559	528	500	474	439	406	378	351	326	304	285	266	249	234
24LH11	25	24	1630	47280		1390	1350	1312	1276	1243	1210	1180	1152	1101	1051	1006	963	924	885	850
						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	623	21180		505	484	465	445	429	412	397	382	367	355	342	330	319	309	298
						219	205	192	180	169	159	150	142	133	126	119	113	107	102	97
28LH06	16	28	828	28140		672	643	618	592	568	546	525	505	486	469	451	436	421	406	393
						289	270	253	238	223	209	197	186	175	166	156	148	140	133	126
28LH07	17	28	934	31770		757	726	696	667	640	615	591	568	547	528	508	490	474	457	442
						326	305	285	267	251	236	222	209	197	186	176	166	158	150	142
28LH08	18	28	1001	34020		810	775	744	712	684	657	630	604	580	556	535	516	496	478	462
						348	325	305	285	268	252	236	222	209	196	185	175	165	156	148
28LH09	21	28	1232	41880		1000	958	918	879	844	810	778	748	721	694	669	645	622	601	580
						428	400	375	351	329	309	291	274	258	243	228	216	204	193	183
28LH10	23	28	1347	45810		1093	1056	1018	976	937	900	864	831	799	769	742	715	690	666	643
						466	439	414	388	364	342	322	303	285	269	255	241	228	215	204
28LH11	25	28	1445	49140		1170	1143	1104	1066	1023	982	943	907	873	841	810	781	753	727	702
						498	475	448	423	397	373	351	331	312	294	278	263	249	236	223
28LH12	27	28	1587	53970		1285	1255	1227	1200	1173	1149	1105	1063	1023	984	948	913	880	849	819
						545	520	496	476	454	435	408	383	361	340	321	303	285	270	256
28LH13	30	28	1654	56250		1342	1311	1281	1252	1224	1198	1173	1149	1126	1083	1041	1002	964	930	897
						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	647	25230	25230	507	489	472	456	441	426	412	399	385	373	363	351	340	330	321
						211	199	189	179	169	161	153	145	138	131	125	119	114	108	104
32LH07	16	32	728	28380	28380	568	549	529	511	493	477	462	447	432	418	406	393	381	370	360
						235	223	211	200	189	179	170	162	154	146	140	133	127	121	116
32LH08	17	32	790	30810	30810	616	595	574	553	535	517	499	483	468	453	439	426	412	400	388
						255	242	229	216	205	194	184	175	167	159	151	144	137	131	125
32LH09	21	32	992	38670	38670	774	747	720	694	670	648	627	606	586	568	550	534	517	502	487
						319	302	285	270	256	243	230	219	208	198	189	180	172	164	157
32LH10	21	32	1096	42750	42750	856	825	796	768	742	717	693	667	645	624	603	583	564	546	529
						352	332	315	297	282	267	254	240	228	217	206	196	186	178	169
32LH11	24	32	1201	46830	46830	937	903	870	840	811	783	757	732	709	687	664	643	624	604	585
						385	363	343	325	308	292	277	263	251	239	227	216	206	196	187
32LH12	27	32	1409	54960	54960	1101	1068	1032	996	961	928	897	867	838	811	786	762	738	715	694
						450	428	406	384	364	345	327	311	295	281	267	255	243	232	221
32LH13	30	32	1572	61320	61320	1225	1201	1177	1156	1113	1072	1035	999	964	931	900	871	843	816	790
						500	480	461	444	420	397	376	354	336	319	304	288	275	262	249
32LH14	33	32	1618	63120	63120	1264	1239	1215	1192	1170	1149	1107	1069	1032	997	964	933	903	874	846
						515	495	476	458	440	417	395	374	355	337	321	304	290	276	264
32LH15	35	32	1673	65250	65250	1305	1279	1255	1231	1207	1186	1164	1144	1125	1087	1051	1017	984	952	924
						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	590	25350	25350	438	424	411	399	387	376	366	355	345	336	327	318	310	301	294
						177	168	160	153	146	140	134	128	122	117	112	107	103	99	95
36LH08	18	36	649	27900	27900	481	466	453	439	426	414	402	390	379	369	358	349	340	331	322
						194	185	176	168	160	153	146	140	134	128	123	118	113	109	104
36LH09	21	36	832	35760	35760	616	597	579	561	544	528	513	499	484	471	459	445	433	423	412
						247	235	224	214	204	196	186	179	171	163	157	150	144	138	133
36LH10	21	36	916	39390	39390	681	660	639	619	601	583	567	550	535	520	507	492	480	466	454
						273	260	248	236	225	215	206	197	188	180	173	165	159	152	146
36LH11	23	36	1000	42990	42990	742	720	697	676	657	637	618	601	583	567	552	537	522	508	495
						297	283	269	257	246	234	224	214	205	196	188	180	173	166	159
36LH12	25	36	1197	51450	51450	889	862	835	810	784	762	739	717	696	675	655	636	618	600	583
						354	338	322	307	292	279	267	255	243	232	222	213	204	195	187
36LH13	30	36	1407	60510	60510	1045	1012	981	951	922	894	868	843	819	796	774	753	732	712	694
						415	395	376	359	342	327	312	298	285	273	262	251	240	231	222
36LH14	36	36	1551	66690	66690	1152	1132	1093	1059	1024	991	961	931	903	876	850	826	802	780	757
						456	434	412	392	373	356	339	323	309	295	283	270	259	247	237
36LH15	36	36	1635	70320	70320	1213	1192	1171	1153	1116	1081	1047	1015	984	955	927	900	874	850	826
						480	464	448	434	419	394	375	358	342	327	312	299	286	274	263

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

American National Standard SJI-LH/DLH-2010

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 inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

ASD

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

ASD

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)	SAFELOAD* in Lbs. Between		SPAN IN FEET														
			< 29	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	36	667	28660	28660	495	480	465	451	438	425	412	401	389	378	368	358	348	339	330
						297	283	269	257	246	234	224	214	205	196	188	180	173	166	159
36LH12	25	36	798	34300	34300	593	575	557	540	523	508	493	478	464	450	437	424	412	400	389
						354	338	322	307	292	279	267	255	243	232	222	213	204	195	187
36LH13	30	36	938	40340	40340	697	675	654	634	615	596	579	562	546	531	516	502	488	475	463
						415	395	376	359	342	327	312	298	285	273	262	251	240	231	222
36LH14	36	36	1034	44460	44460	768	755	729	706	683	661	641	621	602	584	567	551	535	520	505
						456	434	412	392	373	356	339	323	309	295	283	270	259	247	237
36LH15	36	36	1090	46880	46880	809	795	781	769	744	721	698	677	656	637	618	600	583	567	551
						480	464	448	434	413	394	375	358	342	327	312	299	286	274	263

ASD

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

American National Standard SJI-LH/DLH-2010

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 inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

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
52DLH10	25	52	648	40200		447 171	436 165	427 159	418 154	409 150	400 145	391 140	384 136	376 132	369 128	361 124	354 120	346 116	340 114	334 110
52DLH11	26	52	712	44130		490 187	480 181	469 174	459 169	448 164	439 158	430 153	421 149	412 144	405 140	396 135	388 132	381 128	373 124	366 120
52DLH12	29	52	794	49230		547 204	535 197	523 191	513 185	501 179	490 173	480 168	471 163	460 158	451 153	442 149	433 144	426 140	417 135	409 132
52DLH13	34	52	964	59760		664 247	649 239	636 231	621 224	609 216	595 209	583 203	571 197	559 191	549 185	537 180	526 174	516 170	507 164	496 159
52DLH14	39	52	1103	68370		760 276	745 266	729 258	714 249	699 242	685 234	670 227	657 220	645 213	631 207	619 201	607 194	595 189	585 184	573 178
52DLH15	42	52	1239	76800		853 311	835 301	817 291	799 282	783 272	766 264	750 256	735 247	720 240	705 233	691 226	676 219	664 213	651 207	639 201
52DLH16	45	52	1335	82800		921 346	901 335	882 324	862 314	844 304	826 294	810 285	792 276	777 267	760 260	745 252	730 245	717 237	702 230	688 224
52DLH17	52	52	1537	95310		1059 395	1036 381	1014 369	991 357	970 346	951 335	930 324	912 315	892 304	874 296	858 286	840 279	823 270	808 263	792 255
			<67	67-97		98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
56DLH11	26	56	631	42300		432 169	424 163	415 158	408 153	400 149	393 145	385 140	379 136	372 133	366 129	358 125	352 122	346 118	340 115	334 113
56DLH12	30	56	725	48600		496 184	486 178	477 173	468 168	459 163	450 158	442 153	433 150	426 145	417 141	409 137	402 133	394 130	388 126	381 123
56DLH13	34	56	879	58860		601 223	591 216	579 209	568 204	558 197	547 191	537 186	526 181	516 175	507 171	496 166	487 161	478 157	471 152	462 149
56DLH14	39	56	993	66540		679 249	666 242	652 234	640 228	628 221	616 214	604 209	594 202	582 196	571 190	562 186	552 181	541 175	532 171	523 167
56DLH15	42	56	1135	76020		777 281	762 272	747 264	732 256	717 248	703 242	690 234	676 228	664 221	651 215	639 209	628 204	616 198	604 192	594 188
56DLH16	46	56	1224	82020		838 313	822 304	805 294	789 285	774 277	759 269	744 262	730 254	717 247	703 240	690 233	678 227	666 221	654 214	642 209
56DLH17	51	56	1411	94530		964 356	945 345	927 335	907 325	891 316	873 306	856 298	840 289	823 281	808 273	793 266	780 258	765 251	751 245	738 238
			< 71	71-99	100-105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
60DLH12	29	60	659	46800	46800	442 168	433 163	426 158	418 154	411 150	405 146	397 142	391 138	384 134	378 131	372 128	366 124	360 121	354 118	348 115
60DLH13	35	60	801	56880	56880	537 203	526 197	517 191	508 187	499 181	490 176	483 171	474 167	466 163	459 158	451 154	444 151	436 147	429 143	423 139
60DLH14	40	60	890	63210	63210	597 216	586 210	574 205	564 199	555 193	544 189	534 183	525 178	516 173	507 170	498 165	490 161	481 156	474 152	465 149
60DLH15	43	60	1045	74190	74190	700 255	687 248	675 242	663 235	651 228	640 223	628 216	618 210	607 205	597 200	588 194	577 190	568 185	559 180	550 175
60DLH16	46	60	1149	81570	81570	769 285	756 277	741 269	727 262	714 255	702 247	690 241	676 235	666 228	654 223	642 217	631 211	621 206	610 201	600 196
60DLH17	52	60	1320	93750	93750	885 324	868 315	853 306	837 298	822 290	807 283	793 275	778 267	765 261	751 254	739 247	726 241	714 235	702 228	690 223
60DLH18	59	60	1524	108180	108180	1021 366	1002 357	984 346	966 337	948 327	931 319	915 310	898 303	883 294	867 286	852 279	838 272	823 266	810 259	796 252
			<76	76-99	100-113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
64DLH12	31	64	594	45120	45120	396 153	388 150	382 146	376 142	370 138	364 135	358 132	352 129	346 125	342 122	336 119	331 116	327 114	321 111	316 109
64DLH13	34	64	720	54750	54750	481 186	472 181	465 176	457 171	450 168	442 163	436 159	429 155	421 152	415 148	409 144	403 141	396 137	390 134	385 131
64DLH14	40	64	825	62730	62730	550 199	540 193	531 189	523 184	514 179	505 174	498 171	489 166	481 162	474 158	466 154	459 151	451 147	444 143	438 140
64DLH15	43	64	946	71910	71910	631 234	621 228	610 223	600 217	591 211	580 206	571 201	562 196	553 191	544 187	537 182	528 177	520 173	511 170	504 165
64DLH16	46	64	1065	80940	80940	711 262	699 254	687 248	675 242	664 235	652 229	642 224	631 218	621 213	610 208	601 203	591 198	582 193	573 189	564 184
64DLH17	52	64	1227	93270	93270	819 298	804 290	790 283	777 275	763 268	751 262	738 255	726 248	714 243	702 237	691 231	681 226	669 220	658 215	648 210
64DLH18	59	64	1417	107700	107700	945 337	928 328	912 320	897 311	880 304	867 296	852 288	838 282	823 274	810 267	798 261	784 255	772 249	760 243	748 237
			< 81	81-99	100-121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
68DLH13	37	68	650	52650	52650	432 171	426 168	418 164	412 159	406 155	400 152	394 149	388 145	382 142	378 138	372 135	366 133	361 130	355 127	351 124
68DLH14	40	68	749	60630	60630	498 184	490 179	483 175	475 171	468 167	462 163	454 159	448 155	441 152	435 148	429 145	421 141	415 138	409 135	403 133
68DLH15	44	68	839	67980	67980	558 206	547 201	540 196	531 191	522 187	514 182	505 178	498 174	490 170	483 166	475 162	468 158	462 155	454 152	448 148
68DLH16	49	68	995	80610	80610	661 242	649 236	640 230	630 225	619 219	610 214	600 209	591 204	582 199	573 195	564 190	556 186	547 182	540 178	531 174
68DLH17	55	68	1121	90840	90840	745 275	733 268	721 262	711 256	700 249	690 244	679 238	669 232	658 228	649 222	640 217	630 212	621 208	612 203	604 198
68DLH18	61	68	1298	105150	105150	862 311	849 304	835 297	823 289	810 283	798 276	786 269	774 263	762 257	751 251	739 246	729 240	718 234	708 230	697 225
68DLH19	67	68	1495	121080	121080	993 353	976 344	961 336	946 328	931 320	916 313	901 305	888 298	874 291	861 285	847 278	835 272	822 266	810 260	798 254
			< 85	85-99	100-129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
72DLH14	41	72	694	58950	58950	454 171	447 167	441 163	435 159	427 155	421 152	415 149	411 146	405 143	399 139	393 136	388 133	382 131	378 128	372 125
72DLH15	44	72	794	67530	67530	520 191	513 187	504 183	496 178	489 174	483 171	475 167	468 163	462 160	454 156	448 152	442 150	436 147	429 143	423 140
72DLH16	50	72	918	78060	78060	601 225	592 219	585 214	576 209	567 205	559 200	552 196	544 191	537 188	529 183	522 179	514 175	507 171	501 169	493 165
72DLH17	56	72	1033	87810	87810	676 256	667 250	657 245	648 239	639 233	630 228	621 224	612 218	603 213	595 209	586 205	579 200	571 196	564 191	556 188
72DLH18	59	72	1210	102870	102870	792 289	780 283	768 276	757 270	745 265	735 258	724 252	718 247	705 242	694 236	685 231	675 227	666 222	657 217	648 212
72DLH19	70	72	1419	120600	120600	928 328	913 321	900 313	886 306	873 300	859 293	847 286	835 280	823 274	811 268	799 263	789 257	777 251	766 247	756 241

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	371	347
						321	296	275	255	236	220	205	192	179	167	157	147	139	130	120	109
80DLH16	46	80	1161	94020	94020	840	802	763	727	691	658	628	600	574	549	525	504	483	463	439	411
						375	347	321	297	276	257	240	224	209	196	184	172	162	152	141	128
80DLH17	53	80	1341	108630	108630	971	926	881	839	800	765	731	699	669	641	615	590	567	545	517	485
						451	416	386	358	332	309	288	269	252	235	221	207	195	183	169	154
80DLH18	60	80	1518	122760	122760	1097	1044	993	947	903	863	825	789	756	723	695	666	641	615	584	548
						516	477	441	409	380	354	330	308	288	270	253	237	223	210	194	176
80DLH19	67	80	1768	143220	143220	1280	1218	1160	1104	1052	1005	960	918	878	840	806	774	743	714	677	635
						578	533	493	458	425	396	369	344	322	301	283	266	250	235	217	197
80DLH20	75	80	1987	160980	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	477	448	422	398	376
						361	336	313	291	272	254	238	223	210	197	186	172	156	143	130	119
88DLH17	51	88	1185	105450	105450	871	830	789	753	719	687	659	630	605	579	557	528	495	465	437	412
						404	375	349	325	304	284	266	249	234	220	207	191	173	159	146	133
88DLH18	58	88	1359	120930	120930	1001	953	908	866	827	791	756	725	695	666	639	607	569	535	503	474
						460	427	397	370	346	323	303	284	267	250	236	218	199	181	165	152
88DLH19	65	88	1572	139890	139890	1157	1101	1049	999	954	912	873	836	801	770	738	701	657	617	580	547
						521	484	450	420	392	367	343	322	302	284	267	248	225	205	187	172
88DLH20	76	88	1808	160950	160950	1334	1281	1232	1184	1133	1085	1041	998	959	921	885	841	790	743	700	660
						623	579	539	502	469	438	410	385	361	340	320	296	269	246	224	206
88DLH21	89	88	2231	198540	198540	1649	1568	1494	1425	1361	1301	1244	1191	1143	1097	1053	999	936	880	827	779
						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	1085	105270	105270	810	776	744	711	684	657	632	608	578	542	509	480	452	427	404	382
						389	363	339	318	298	280	263	247	229	208	190	173	159	146	134	124
96DLH18	58	96	1222	118500	118500	912	875	839	803	770	740	713	686	653	615	579	546	516	488	463	438
						443	413	386	362	340	319	300	282	261	237	216	198	181	166	153	141
96DLH19	66	96	1460	141660	141660	1091	1046	1001	957	917	878	842	809	768	720	676	636	601	566	536	507
						502	469	438	410	385	361	340	320	296	269	246	224	206	189	174	161
96DLH20	74	96	1644	159420	159420	1236	1184	1131	1083	1037	993	952	915	868	815	766	721	680	642	607	574
						569	531	496	465	436	409	385	362	336	305	277	254	233	214	196	181
96DLH21	90	96	2062	200010	200010	1541	1473	1410	1350	1296	1243	1196	1149	1093	1026	965	908	856	809	765	724
						698	652	610	571	535	503	473	445	412	374	341	312	286	263	242	224
96DLH22	102	96	2310	224070	224070	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	115470		831	798	768	734	708	674	635	601	568	537	508	482	458	435	414	394
						426	400	375	353	332	307	279	255	233	213	195	180	167	154	142	132
104DLH19	67	104	1337	140430		1011	971	933	897	861	819	770	727	686	648	613	581	552	524	497	473
						484	453	426	401	377	349	317	289	265	242	222	204	189	175	162	150
104DLH20	75	104	1504	157890		1146	1107	1071	1032	992	944	886	833	784	739	698	660	626	593	563	535
						548	513	483	453	427	395	359	327	299	274	251	232	214	198	184	170
104DLH21	90	104	1890	198480		1434	1376	1322	1271	1220	1160	1091	1028	970	917	866	821	779	740	703	668
						673	632	593	558	525	486	442	403	368	337	307	284	263	244	226	209
104DLH22	104	104	2119	222540		1607	1551	1499	1449	1401	1340	1261	1189	1121	1059	1001	949	901	855	812	774
						783	734	689	648	610	564	513	468	428	392	359	331	306	283	262	244
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
			< 113	**113-147**		**148**	**151**	**155**	**160**	**165**	**170**	**175**	**180**	**185**	**190**	**195**	**200**	**205**	**210**	**215**	**220**
112DLH19	67	112	1223	138150		935	900	857	805	759	716	677	643	610	579	549	523	498	476	454	433
						466	439	406	369	336	308	281	259	238	220	203	189	175	162	151	142
112DLH20	76	112	1384	156360		1065	1032	985	927	873	824	780	740	702	667	632	603	574	547	522	500
						528	497	459	418	381	348	319	293	270	249	231	213	198	184	171	160
112DLH21	91	112	1743	196950		1337	1287	1223	1150	1083	1022	966	915	867	823	782	744	709	676	645	616
						650	612	566	514	469	429	393	361	333	306	283	263	244	227	211	198
112DLH22	104	112	1956	221010		1499	1451	1392	1321	1250	1181	1117	1057	1002	952	904	860	820	782	745	712
						755	711	657	598	545	498	457	419	386	356	329	306	283	264	246	229
112DLH23	110	112	2155	243540		1653	1601	1535	1454	1369	1288	1214	1147	1086	1030	977	928	882	839	800	763
						790	744	688	625	571	522	478	439	404	373	345	320	297	276	257	239
112DLH24	131	112	2555	286660		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	**121-165**		**166**	**170**	**175**	**180**	**185**	**190**	**195**	**200**	**205**	**210**	**215**	**220**	**225**	**230**	**235**	**240**
120DLH20	77	120	1229	148650		896	856	808	766	726	691	658	627	598	570	544	521	498	477	457	439
						430	400	367	338	311	287	265	246	228	212	198	185	172	161	151	142
120DLH21	92	120	1528	184860		1122	1072	1012	959	908	864	821	782	745	710	678	648	620	593	569	545
						530	494	452	416	383	353	326	303	281	262	244	227	212	199	186	173
120DLH22	104	120	1751	211920		1283	1235	1169	1106	1049	997	949	903	860	821	783	749	716	686	657	629
						616	574	526	483	445	411	380	352	327	304	283	265	247	231	217	204
120DLH23	111	120	1938	234480		1415	1361	1287	1219	1157	1099	1046	995	948	903	862	822	786	751	719	689
						644	601	551	506	466	430	397	369	341	318	296	276	258	241	227	213
120DLH24	132	120	2298	278070		1676	1610	1522	1441	1367	1300	1237	1177	1122	1070	1022	977	934	894	857	821
						781	728	667	613	565	521	482	447	414	386	359	335	313	293	275	258
120DLH25	152	120	2633	318630		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

Notes:

American National Standard SJI-LH/DLH-2010

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 inches^4, of a standard joist listed in the Load Table may be determined as follows:

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

ASD

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
52DLH10	25	52	432	26800		298 171	291 165	285 159	279 154	273 150	267 145	261 140	256 136	251 132	246 128	241 124	236 120	231 116	227 114	223 110
52DLH11	26	52	475	29420		327 187	320 181	313 174	306 169	299 164	293 158	287 153	281 149	275 144	270 140	264 135	259 132	254 128	249 124	244 120
52DLH12	29	52	529	32820		365 204	357 197	349 191	342 185	334 179	327 173	320 168	314 163	307 158	301 153	295 149	289 144	284 140	278 135	273 132
52DLH13	34	52	643	39840		443 247	433 239	424 231	414 224	406 216	397 209	389 203	381 197	373 191	366 185	358 180	351 174	344 170	338 164	331 159
52DLH14	39	52	735	45580		507 276	497 266	486 258	476 249	466 242	457 234	447 227	438 220	430 213	421 207	413 201	405 194	397 189	390 184	382 178
52DLH15	42	52	826	51200		569 311	557 301	545 291	533 282	522 272	511 264	500 256	490 247	480 240	470 233	461 226	451 219	443 213	434 207	426 201
52DLH16	45	52	890	55200		614 346	601 335	588 324	575 314	563 304	551 294	540 285	528 276	518 267	507 260	497 252	487 245	478 237	468 230	459 224
52DLH17	52	52	1025	63540		706 395	691 381	676 369	661 357	647 346	634 335	620 324	608 315	595 304	583 296	572 286	560 279	549 270	539 263	528 255
			<67	67-97		98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
56DLH11	26	56	421	28200		288 169	283 163	277 158	272 153	267 149	262 145	257 140	253 136	248 133	244 129	239 125	235 122	231 118	227 115	223 113
56DLH12	30	56	484	32400		331 184	324 178	318 173	312 168	306 163	300 158	295 153	289 150	284 145	278 141	273 137	268 133	263 130	259 126	254 123
56DLH13	34	56	586	39240		401 223	394 216	386 209	379 204	372 197	365 191	358 186	351 181	344 175	338 171	331 166	325 161	319 157	314 152	308 149
56DLH14	39	56	662	44360		453 249	444 242	435 234	427 228	419 221	411 214	403 209	396 202	388 196	381 190	375 186	368 181	361 175	355 171	349 167
56DLH15	42	56	756	50680		518 281	508 272	498 264	488 256	478 248	469 242	460 234	451 228	443 221	434 215	426 209	419 204	411 198	403 192	396 188
56DLH16	46	56	816	54680		559 313	548 304	537 294	526 285	516 277	506 269	496 262	487 254	478 247	469 240	460 233	452 227	444 221	436 214	428 209
56DLH17	51	56	941	63020		643 356	630 345	618 335	605 325	594 316	582 306	571 298	560 289	549 281	539 273	529 266	520 258	510 251	501 245	492 238
			< 71	71-99	100-105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
60DLH12	29	60	439	31200	31200	295 168	289 163	284 158	279 154	274 150	270 146	265 142	261 138	256 134	252 131	248 128	244 124	240 121	236 118	232 115
60DLH13	35	60	534	37920	37920	358 203	351 197	345 191	339 187	333 181	327 176	322 171	316 167	311 163	306 158	301 154	296 151	291 147	286 143	282 139
60DLH14	40	60	594	42140	42140	398 216	391 210	383 205	376 199	370 193	363 189	356 183	350 178	344 173	338 170	332 165	327 161	321 156	316 152	310 149
60DLH15	43	60	697	49460	49460	467 255	458 248	450 242	442 235	434 228	427 223	419 216	412 210	405 205	398 200	392 194	385 190	379 185	373 180	367 175
60DLH16	46	60	766	54380	54380	513 285	504 277	494 269	485 262	476 255	468 247	460 241	451 235	444 228	436 223	428 217	421 211	414 206	407 201	400 196
60DLH17	52	60	880	62500	62500	590 324	579 315	569 306	558 298	548 290	538 283	529 275	519 267	510 261	501 254	493 247	484 241	476 235	468 228	460 223
60DLH18	59	60	1016	72120	72120	681 366	668 357	656 348	644 337	632 327	621 319	610 310	599 303	589 294	578 286	568 279	559 272	549 266	540 259	531 252
			<76	76-99	100-113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
64DLH12	31	64	396	30080	30080	264 153	259 150	255 146	251 142	247 138	243 135	239 132	235 129	231 125	228 122	224 119	221 116	218 114	214 111	211 109
64DLH13	34	64	480	36500	36500	321 186	315 181	310 176	305 171	300 168	295 163	291 159	286 155	281 152	277 148	273 144	269 141	264 137	260 134	257 131
64DLH14	40	64	550	41820	41820	367 199	360 193	354 189	349 184	343 179	337 174	332 171	326 166	321 162	316 158	311 154	306 151	301 147	296 143	292 140
64DLH15	43	64	631	47940	47940	421 234	414 228	407 223	400 217	394 211	387 206	381 201	375 196	369 191	363 187	358 182	352 177	347 173	341 170	336 165
64DLH16	46	64	710	53960	53960	474 262	466 254	458 248	450 242	443 235	435 229	428 224	421 218	414 213	407 208	401 203	394 198	388 193	382 189	376 184
64DLH17	52	64	818	62180	62180	546 298	536 290	527 283	518 275	509 268	501 262	492 255	484 248	476 243	468 237	461 231	454 226	446 220	439 215	432 210
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
			< 81	81-99	100-121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
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
72DLH15	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

ASD

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	100-111	112	115	118	121	124	127	130	133	136	139	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	155	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	132340	132340	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
			< 113	113-147		148	151	155	160	165	170	175	180	185	190	195	200	205	210	215	220
112DLH19	67	112	815	92100		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	104240		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	131300		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	147340		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	162360		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	192440		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	99100		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	123240		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	141280		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	156320		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	185380		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	212420		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 WEIGHT TABLES FOR LOAD/LOAD LH-SERIES JOISTS

Based on 50 ksi Maximum Yield Strength
Adopted by the Steel Joist Institute December 31, 2010

The joists presented in the following tables are based on the Steel Joist Institute Standard Specifications for Longspan Steel Joist LH-Series and Deep Longspan Steel Joists, DLH-Series adopted February 15, 1978 – revised December 31, 2010 and all the requirements contained therein shall be followed.

The weight tables apply only to joists with parallel chords. The joist top chords are considered as being laterally supported by the deck and/or slab in accordance with the aforementioned specifications.

The top row of figures provides the total uniform design load in pounds per linear foot applied to the joist for LRFD or ASD loading. The row labeled "wt." is the approximate weight of the joist in pounds per linear foot. "w360" is the uniform load in pounds per linear foot that will produce an approximate deflection of 1/360 of the span. Where the w360 load is equal to the Total Load, the actual w360 load is greater than the Total Load. The row "Ix" provides the approximate Moment of Inertia for the joist. "P_{brg}" is the nominal horizontal force in pounds to be used to determine the required bridging angle size.

These weight tables are intended to be a tool to assist in the preliminary design and estimate for joists used in floors and roofs with high capacity loading requirements. All of the values are approximate and intended as a guide for the **specifying professional**. The joist manufacturer will design for the specific loads of the designation at the required span, and the values for self weight, moment of inertia, and w360 load may vary from the tabulated values – the tabulated values are not design minimums or maximums. Load/Load joist designations are not limited to only the combinations of load, depth, and span as shown in these tables. Interpolation can be used for approximate values when needed between the columns and rows of the table.

Consult with a joist manufacturer for information regarding web openings for duct passage through the joists; the table given in the Accessories and Details Section of the catalog does not apply to these joists. Unless noted in the following, all joists require one (1) row of horizontal erection bridging and shall have a 5 inch minimum bearing seat depth (height). Joists to the right of the heavy black line require a 7½ inch minimum bearing seat depth (height).

Joists in the red shaded areas require one (1) row of bolted-cross, erection bridging and one (1) row of horizontal erection bridging.

Joists in the blue shaded areas require a minimum two (2) rows of horizontal erection bridging.

Joists in the green shaded areas require a 7½ inch minimum bearing seat depth (height) and two (2) rows of horizontal erection bridging.

Example

Joist Geometry

1) Joist Depth 26"
2) Joist Span 32'-0"
3) Joist Spacing 10'-0"

Design Loads (ASD)

1) Dead Load 80 psf or 800 plf
2) Live Load 100 psf or 1000 plf (No LL reduction is assumed)
3) Total Load 1800 plf

For this example the joist designation will be 26**LH1800/1000.**

Entering the weight tables for a joist span of 32'-0", joist depth of 26", and a total load of 1800 plf (ASD), the joist will have the following approximate design values:

Wt = 31.8 plf
w360 = 1606 plf
Ix = 1271 in^4

One (1) row of horizontal erection bridging designed for a bridging force P_{brg} = 1178 pounds.
Minimum required bearing seat depth = 5".

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span [ft]	Joist Depth [in]		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
14	14	Wt.	7.3	7.6	8.1	8.8	9.4	10.6	11.3	12.0	12.3	12.4	13.4	14.2	15.4	15.6	16.0	17.1	17.6	18.8	19.2	19.4
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	71	73	77	80	83	96	98	108	108	114	122	131	137	144	149	161	168	174	182	182
		Pbrg	266	293	332	373	421	484	520	563	563	563	608	658	726	726	726	797	797	891	891	891
16	14	Wt.	6.9	7.4	7.5	8.4	9.3	9.9	10.9	11.9	12.5	13.4	14.0	15.0	15.8	16.2	17.4	18.1	19.4	19.5	21.3	21.5
		w360	500	600	700	800	900	1000	1100	1200	1286	1395	1462	1586	1622	1717	1821	1894	2007	2032	2190	2218
		Ix	67	71	71	81	92	97	107	119	125	133	142	153	158	164	176	181	197	197	215	215
		Pbrg	247	281	284	327	366	418	479	512	549	595	595	643	696	696	768	768	842	842	941	941
	16	Wt.	7.0	7.0	7.6	7.9	8.8	9.3	9.9	11.2	11.6	12.5	13.2	13.6	14.1	15.0	16.1	16.5	17.8	17.8	18.2	19.3
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	89	89	94	97	112	117	129	143	152	162	170	177	183	196	211	220	235	235	243	252
		Pbrg	228	228	259	286	324	363	385	441	472	506	548	548	548	592	641	641	708	708	708	776
18	14	Wt.	7.2	7.9	9.1	10.1	11.3	12.8	13.2	13.7	14.7	15.8	17.1	17.7	19.2	19.8	21.1	21.8	23.8	23.9	27.2	27.3
		w360	500	552	639	720	836	909	976	1046	1109	1188	1259	1312	1421	1481	1550	1637	1774	1774	1951	1985
		Ix	71	75	88	99	114	127	133	142	153	164	176	181	197	205	215	224	246	246	276	276
		Pbrg	297	342	412	465	535	622	622	622	672	727	803	803	880	880	984	984	1090	1090	1282	1282
	16	Wt.	7.3	7.7	8.8	9.4	10.5	11.7	12.7	13.1	13.5	14.4	15.6	16.9	17.4	17.8	19.2	19.3	21.1	21.3	23.3	23.3
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1775	1900	1904	2079	2105	2266	2300
		Ix	94	97	113	119	136	150	165	177	183	196	211	226	235	243	264	264	289	289	314	314
		Pbrg	272	300	355	404	463	531	575	575	575	622	673	743	743	743	815	815	911	911	1009	1009
	18	Wt.	7.3	7.8	8.4	9.2	9.9	11.0	11.8	12.7	13.0	13.9	14.9	15.5	16.8	17.2	17.7	18.7	18.9	20.6	20.8	22.6
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	120	125	131	150	157	178	193	204	218	235	251	261	280	291	303	315	326	356	256	388
		Pbrg	253	278	315	354	400	460	493	534	534	577	625	625	690	690	690	756	756	846	846	937
20	14	Wt.	7.6	8.9	10.0	11.3	12.5	13.7	14.7	15.8	17.5	18.2	19.6	20.9	21.7	23.7	26.1	27.2	27.3	28.4	30.0	31.8
		w360	390	479	542	607	686	759	822	872	953	1003	1089	1139	1203	1288	1381	1441	1474	1532	1604	1706
		Ix	73	90	102	116	130	142	153	164	181	189	205	215	224	246	260	276	276	292	303	326
		Pbrg	331	381	453	519	595	644	697	754	832	832	913	1020	1020	1130	1329	1329	1329	1329	1454	1454
	16	Wt.	7.3	8.3	9.1	10.1	11.2	12.4	13.5	14.5	15.6	17.3	17.6	19.1	19.3	21.0	21.9	23.3	24.0	26.3	27.5	27.6
		w360	496	571	650	717	795	897	981	1053	1123	1237	1290	1383	1401	1529	1573	1671	1730	1856	1939	1985
		Ix	94	108	122	135	148	167	183	196	211	235	243	264	264	289	301	314	330	349	372	372
		Pbrg	283	330	369	421	482	553	599	647	700	773	773	848	848	948	948	1050	1050	1235	1235	1235
	18	Wt.	7.0	7.8	8.7	9.5	10.5	11.7	12.5	13.4	14.0	15.3	16.3	17.6	17.9	18.8	19.4	21.1	21.3	23.4	23.6	26.5
		w360	500	600	700	800	900	1000	1100	1200	11300	1400	1500	1600	1665	1751	1826	1980	2003	2157	2180	2364
		Ix	114	125	143	162	178	195	209	228	245	264	283	303	314	326	340	373	373	406	406	453
		Pbrg	232	286	329	370	418	480	515	558	558	603	652	720	720	790	790	883	883	978	978	1150
	20	Wt.	7.0	7.6	7.9	9.0	10.0	11.0	11.9	12.6	13.6	14.1	15.1	16.2	17.5	18.1	18.1	19.2	19.8	21.2	21.7	23.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	142	150	156	182	207	223	244	261	286	296	316	341	365	380	393	409	427	447	468	511
		Pbrg	216	246	271	321	366	390	448	481	521	521	563	609	672	672	672	737	737	824	824	913
22	14	Wt.	8.7	9.8	11.2	12.7	14.0	15.9	17.4	18.9	19.5	21.6	23.6	26.8	27.0	28.1	28.3	31.5	32.6	35.8	37.1	37.3
		w360	358	412	476	545	597	678	723	782	825	904	964	1080	1096	1147	1170	1278	1305	1428	1479	1485
		Ix	90	102	118	135	148	171	181	197	205	224	246	276	276	292	292	326	329	354	372	372
		Pbrg	392	467	535	613	664	777	858	941	941	1052	1165	1370	1370	1370	1370	1498	1574	1871	1871	1871
	16	Wt.	8.0	9.0	10.3	11.7	12.8	14.0	15.0	17.1	17.5	19.1	20.7	21.7	23.7	23.8	27.0	27.2	28.4	29.7	31.7	32.8
		w360	421	487	561	653	715	796	844	935	978	1050	1145	1197	1295	1331	1453	1487	1562	1618	1724	1760
		Ix	106	122	139	162	180	198	212	235	243	264	289	301	330	330	372	372	393	408	439	444
		Pbrg	323	381	463	533	572	619	669	799	799	876	980	980	1085	1085	1276	1276	1276	1396	1396	1467
	18	Wt.	7.4	8.6	9.5	10.5	11.6	13.2	13.8	14.8	16.1	17.7	18.2	19.2	21.0	21.9	23.2	24.0	27.1	27.4	27.5	28.5
		w360	481	577	645	738	814	911	978	1060	1139	1248	1301	1371	1480	1547	1618	1702	1882	1897	1927	2025
		Ix	120	143	162	184	203	228	245	264	283	314	327	340	373	389	406	428	482	482	482	509
		Pbrg	276	341	383	433	498	578	578	625	676	746	746	819	915	915	1014	1014	1192	1192	1192	1192
	20	Wt.	7.3	8.0	9.2	10.2	11.4	12.4	13.3	13.9	15.1	16.2	17.5	17.8	19.2	19.4	21.2	21.9	23.4	24.2	26.6	27.5
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1564	1678	1723	1886	1972	2036	2139	2267	2388
		Ix	150	159	187	212	244	261	286	306	330	354	380	393	427	427	468	489	511	538	570	607
		Pbrg	258	298	359	405	466	500	541	541	585	633	699	699	766	766	857	857	949	949	1116	1116
	22	Wt.	7.5	8.3	9.5	10.6	11.5	12.7	13.0	14.0	15.3	16.7	17.2	17.4	18.8	19.0	20.9	21.3	22.7	23.6	25.9	26.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	183	199	233	266	287	312	326	360	384	430	447	447	483	502	549	574	598	627	663	701
		Pbrg	242	280	357	409	437	508	508	549	594	656	656	656	719	719	804	804	890	890	1047	1047

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span [ft]	Joist Depth [in]		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																					
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
24	14	Wt.	9.8	11.5	13.0	14.3	16.4	18.5	20.1	22.1	24.4	24.6	28.0	30.0	31.5	31.7	36.9	38.0	40.5	40.9	44.0	44.5
		w360	312	380	431	474	537	602	651	717	785	796	881	942	994	1008	1136	1151	1254	1254	1341	1341
		Ix	102	123	140	154	176	197	213	235	261	261	292	312	326	326	372	377	410	410	439	439
		Pbrg	452	549	629	681	797	880	965	1079	1195	1195	1405	1405	1537	1537	1919	1919	1919	1919	2223	2223
	16	Wt.	8.9	10.3	11.6	13.0	14.4	16.5	17.9	19.4	20.4	22.5	24.7	24.8	28.2	28.3	31.6	31.9	34.0	37.2	38.2	40.8
		w360	370	440	506	575	633	718	773	840	888	965	1070	1078	1187	1201	1309	1342	1415	1537	1559	1669
		Ix	120	145	164	186	205	235	253	275	286	316	350	350	393	393	439	439	465	503	510	556
		Pbrg	376	447	513	588	636	745	822	901	901	1008	1116	1116	1312	1312	1436	1436	1509	1793	1793	1793
	18	Wt.	8.1	9.5	10.8	12.1	13.8	14.6	16.3	17.6	18.2	19.8	21.8	22.6	24.9	27.3	28.3	28.5	30.5	32.1	32.2	34.3
		w360	418	506	592	663	751	815	898	971	1016	1085	1189	1267	1386	1457	1538	1556	1651	1722	1743	1836
		Ix	136	164	192	217	245	264	294	314	327	355	389	409	454	482	509	509	547	571	571	605
		Pbrg	311	367	446	513	596	596	697	769	769	844	944	944	1045	1229	1229	1229	1229	1344	1344	1413
	20	Wt.	8.1	9.0	9.9	11.3	12.4	13.9	14.6	16.6	17.7	18.3	19.9	21.9	22.1	24.1	25.1	27.5	27.8	29.0	29.0	32.3
		w360	500	582	651	767	836	940	991	1125	1202	1253	1363	1494	1518	1644	1742	1835	1864	1959	1979	2169
		Ix	169	192	212	247	271	306	319	368	393	410	446	489	489	538	570	607	607	641	641	719
		Pbrg	287	330	371	450	482	559	559	654	722	722	792	885	885	981	981	1153	1153	1153	1153	1261
	22	Wt.	8.4	9.7	11.3	12.4	12.6	14.3	15.8	16.4	16.9	18.3	19.8	20.3	22.2	25.1	25.4	26.3	26.3	27.4	28.8	29.1
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2380
		Ix	202	239	279	300	326	371	411	430	447	483	524	549	598	663	663	701	701	746	774	774
		Pbrg	324	394	486	526	526	615	679	679	679	745	832	832	922	1084	1084	1084	1084	1084	1186	1186
	24	Wt.	8.4	9.3	10.6	12.0	12.5	13.5	14.6	16.3	16.7	18.0	18.6	19.9	21.7	21.9	24.7	25.4	25.6	26.5	26.5	28.9
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	242	259	300	341	375	403	445	494	517	557	581	631	687	687	759	800	800	845	845	934
		Pbrg	306	372	427	496	496	537	581	641	641	703	703	786	871	871	1024	1024	1024	1024	1024	1120
26	14	Wt.	11.0	13.2	15.2	16.9	19.2	22.0	24.3	24.5	27.8	29.8	31.5	36.7	37.6	40.3	40.6	43.8	46.5	46.7	50.1	52.7
		w360	286	347	391	438	492	563	617	635	692	739	782	868	904	984	984	1053	1130	1130	1196	1271
		Ix	119	145	165	183	205	235	261	261	292	312	326	372	377	410	410	439	472	472	499	530
		Pbrg	521	643	752	815	986	1102	1221	1221	1436	1436	1570	1961	1961	1961	1961	2272	2272	2272	2572	2572
	16	Wt.	9.8	11.5	13.4	15.3	16.4	18.5	20.3	22.3	24.5	27.8	28.1	30.0	31.6	33.6	36.9	37.9	40.5	40.8	44.0	44.3
		w360	328	397	459	528	564	641	686	758	840	911	942	997	1053	1111	1205	1233	1333	1333	1427	1454
		Ix	136	164	193	220	235	264	286	316	350	393	393	421	439	465	503	510	556	556	595	595
		Pbrg	432	525	602	705	763	842	923	1032	1143	1344	1344	1344	1471	1545	1837	1837	1837	1837	2127	2127
	18	Wt.	9.0	10.7	12.3	14.0	15.4	16.5	18.1	20.3	21.7	22.5	24.7	28.1	28.3	30.2	31.8	31.9	34.1	37.3	38.2	40.9
		w360	372	465	537	618	681	727	784	888	933	995	1088	1207	1207	1296	1369	1385	1450	1568	1592	1706
		Ix	154	192	224	255	284	303	327	370	389	409	454	509	509	547	571	571	605	654	664	724
		Pbrg	361	458	527	612	661	716	790	866	969	969	1073	1262	1262	1262	1380	1380	1450	1724	1724	1724
	20	Wt.	8.6	9.7	11.3	12.8	14.0	15.0	16.6	18.0	19.6	21.6	22.5	23.8	25.0	28.2	28.4	30.3	31.8	32.0	34.1	37.5
		w360	447	507	603	693	774	830	912	984	1070	1173	1233	1290	1367	1520	1538	1653	1699	1744	1829	1979
		Ix	186	212	253	289	319	342	380	410	446	489	514	538	570	641	641	689	719	719	763	825
		Pbrg	317	381	463	531	575	622	673	743	815	911	911	1009	1009	1186	1186	1186	1298	1298	1364	1621
	22	Wt.	8.1	9.5	10.7	12.2	13.5	14.4	15.5	16.9	18.2	19.7	20.6	22.0	24.0	25.1	27.4	28.5	28.8	30.5	32.2	32.3
		w360	496	587	680	786	861	947	1005	1130	1206	1312	1392	1441	1583	1681	1771	1870	1892	2035	2097	2149
		Ix	207	247	282	332	362	390	419	466	503	547	571	601	660	701	746	789	789	849	886	886
		Pbrg	282	359	406	467	542	542	586	634	700	767	767	858	950	950	1117	1117	1117	1117	1222	1222
	24	Wt.	7.8	9.2	10.2	11.5	12.9	14.0	14.7	15.8	16.9	18.4	19.5	20.2	22.2	23.0	24.4	25.5	27.9	28.8	29.1	29.2
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1580	1700	1800	1900	2000	2100	2200	2281	2310
		Ix	228	287	318	363	410	451	469	504	542	606	631	659	724	760	796	844	900	951	951	951
		Pbrg	266	315	359	412	472	511	511	553	598	660	724	724	810	810	897	897	1054	1054	1054	1054
	26	Wt.	8.4	9.8	11.0	12.5	12.9	13.9	15.2	16.7	17.2	18.6	20.0	20.5	22.5	22.7	25.5	25.7	26.6	26.7	27.8	29.5
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	286	338	386	425	463	512	546	611	637	688	747	783	854	854	949	949	1003	1003	1069	1109
		Pbrg	306	372	427	496	496	537	581	641	641	703	786	786	626	871	1024	1024	1024	1024	1024	1120

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span [ft]	Joist Depth [in]		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
28	14	Wt.	12.4	15.0	17.6	19.9	22.0	24.4	27.7	29.8	31.3	36.6	37.5	40.3	43.8	43.9	49.8	50.1	52.8	56.2	56.3	63.3
		w360	260	312	358	408	451	499	553	590	624	713	738	786	842	859	940	956	1015	1051	1057	1142
		Ix	135	165	189	213	235	261	292	312	326	372	377	410	439	439	499	499	530	546	546	596
		Pbrg	611	767	916	1005	1123	1244	1463	1463	1600	1999	1999	1999	2315	2315	2621	2621	2621	2927	2927	3320
	16	Wt.	11.1	12.9	15.1	17.6	19.3	21.4	23.4	26.8	27.9	30.0	31.5	36.8	37.0	40.5	40.9	44.0	44.4	50.0	50.4	50.5
		w360	304	358	422	480	527	585	635	700	753	797	842	948	968	1047	1066	1140	1164	1276	1297	1322
		Ix	158	186	220	253	275	301	330	372	393	421	439	503	503	556	556	595	595	677	677	677
		Pbrg	536	615	719	860	943	1054	1167	1373	1373	1373	1502	1875	1875	1875	1875	2172	2172	2460	2460	2460
	18	Wt.	10.1	12.0	14.0	15.3	17.4	19.4	21.5	22.4	24.7	28.0	28.2	31.6	31.8	37.0	37.2	38.2	40.9	44.3	44.4	44.7
		w360	345	420	494	544	609	681	746	784	870	965	976	1080	1093	1233	1252	1283	1388	1486	1486	1517
		Ix	179	217	255	284	314	355	389	409	545	509	509	571	571	654	654	664	724	775	775	775
		Pbrg	440	539	626	676	808	886	991	991	1098	1291	1291	1412	1412	1763	1763	1763	1763	2042	2042	2042
	20	Wt.	9.4	10.9	12.9	14.1	15.5	17.6	19.5	21.6	22.5	23.8	27.2	28.4	28.5	31.9	32.1	33.3	37.5	37.8	38.6	44.4
		w360	396	465	554	619	681	763	855	938	985	1050	1151	1215	1230	1361	1379	1427	1581	1603	1642	1879
		Ix	205	240	289	319	355	393	446	489	514	538	607	641	641	719	719	729	825	825	839	980
		Pbrg	363	441	544	590	637	761	835	933	933	1034	1216	1216	1216	1330	1330	1397	1661	1661	1661	1924
	22	Wt.	9.3	10.9	12.9	13.6	15.0	17.1	17.9	18.6	20.4	21.8	23.8	24.8	27.2	28.4	30.1	31.7	32.0	33.9	37.4	37.5
		w360	470	548	660	716	795	884	964	1019	1094	1152	1265	1343	1437	1512	1606	1676	1698	1789	1949	1976
		Ix	247	290	350	375	419	466	503	525	571	601	660	701	746	789	849	886	886	940	1017	1017
		Pbrg	369	448	556	556	601	718	718	718	788	881	975	975	1147	1147	1147	1255	1255	1318	1567	1567
	24	Wt.	9.1	10.7	12.0	13.3	14.5	16.0	17.4	17.7	19.6	21.0	21.9	23.9	27.1	27.4	28.4	28.7	30.5	31.9	32.3	33.2
		w360	500	600	700	792	887	988	1063	1128	1263	1306	1387	1526	1693	1706	1802	1823	1940	2023	2050	2094
		Ix	274	336	383	420	465	521	560	581	659	691	724	796	900	900	951	951	1025	1069	1069	1085
		Pbrg	349	423	486	526	568	615	679	679	744	832	832	922	1084	1084	1084	1084	1084	1186	1186	1246
	26	Wt.	10.1	11.4	12.3	13.5	15.7	16.0	18.0	18.4	19.9	21.6	24.4	25.1	25.4	26.2	28.5	28.8	30.7	30.8	31.1	36.1
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2269	2400
		Ix	347	395	425	476	562	585	660	688	747	814	901	949	949	1003	1109	1109	1191	1191	1191	1391
		Pbrg	401	460	498	538	642	642	705	705	788	873	1026	1026	1026	1026	1122	1122	1179	1179	1179	1402
	28	Wt.	9.5	11.2	12.5	13.6	14.7	15.9	16.8	18.3	20.0	21.2	21.8	24.4	25.2	25.5	26.2	27.9	28.9	30.0	30.9	31.3
		w360	500	600	700	800	900	1000	1100	11200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	357	423	497	556	615	656	715	771	838	907	952	1054	1112	1112	1174	1216	1299	1316	1396	1396
		Pbrg	372	459	496	537	581	641	641	703	786	871	871	1024	1024	1024	1024	1120	1120	1177	1177	1177
30	16	Wt.	12.4	14.2	16.9	19.2	22.1	24.4	27.7	29.8	31.4	36.5	37.6	40.3	43.7	43.9	46.7	50.0	50.1	56.0	56.2	63.0
		w360	282	323	381	433	491	545	604	647	683	770	800	865	925	947	996	1053	1073	1144	1154	1265
		Ix	180	205	245	275	316	350	393	421	439	503	510	556	595	595	640	677	677	742	742	813
		Pbrg	584	678	793	960	1073	1189	1398	1398	1529	1910	1910	1910	2212	2212	2212	2505	2505	2797	2797	3173
	18	Wt.	11.5	13.3	15.3	17.8	19.3	22.2	24.6	26.8	28.0	31.4	31.5	36.7	37.7	40.6	43.9	44.0	46.9	50.0	50.3	50.4
		w360	326	384	442	509	560	636	706	754	792	866	888	1001	1032	1107	1182	1206	1297	1350	1373	1401
		Ix	211	249	284	327	355	409	454	482	509	571	571	654	664	724	775	775	834	883	883	883
		Pbrg	514	590	690	824	904	1011	1120	1317	1317	1440	1440	1799	1799	1799	2083	2083	2083	2359	2359	2359
	20	Wt.	10.3	12.2	13.9	15.4	17.8	19.4	21.5	23.6	24.7	27.9	28.1	31.5	32.6	37.0	37.3	40.5	40.8	44.0	44.3	46.9
		w360	365	436	502	553	638	694	773	837	887	986	1007	1119	1134	1263	1291	1399	1424	1525	1525	1642
		Ix	233	280	319	355	410	446	489	538	570	641	641	719	729	825	825	916	916	980	980	1055
		Pbrg	423	519	602	651	778	853	954	1056	1056	1242	1242	1359	1428	1697	1697	1697	1697	1965	1965	1965
	22	Wt.	9.6	11.5	13.2	14.5	16.3	17.9	19.6	21.6	23.6	24.7	27.1	28.3	30.2	31.9	33.1	37.2	37.6	38.4	41.2	44.3
		w360	408	484	571	630	709	783	851	935	1027	1090	1167	1227	1304	1378	1397	1557	1582	1623	1758	1882
		Ix	259	309	366	405	451	503	547	601	660	701	746	789	849	886	898	1017	1017	1035	1130	1210
		Pbrg	377	458	526	569	666	735	806	901	998	998	1174	1174	1174	1284	1349	1603	1603	1603	1603	1857
	24	Wt.	9.0	10.9	12.4	13.8	15.4	16.7	18.2	19.7	21.8	22.7	24.9	27.3	28.5	28.9	31.9	32.3	33.4	37.5	37.9	38.7
		w360	441	553	619	704	784	873	943	1025	1126	1182	1313	1385	1463	1480	1642	1664	1688	1912	1912	1963
		Ix	282	352	398	451	504	561	606	659	724	760	844	900	951	951	1069	1069	1085	1229	1229	1252
		Pbrg	318	403	464	539	582	630	695	763	853	853	945	1111	1111	1111	1215	1215	1277	1517	1517	1517
	26	Wt.	9.1	10.5	12.0	13.6	15.1	16.5	17.7	19.2	19.8	21.9	24.0	24.2	27.4	28.6	28.8	32.0	32.3	33.4	37.6	37.9
		w360	500	600	700	793	894	987	1070	1149	1215	1335	1449	1497	1640	1737	1757	1951	1951	2021	2240	2275
		Ix	339	387	452	514	574	641	688	748	781	858	944	944	1069	1129	1129	1271	1271	1290	1462	1462
		Pbrg	315	382	440	511	552	597	659	723	723	808	895	895	1053	1053	1053	1152	1152	1210	1438	1438
	28	Wt.	8.6	10.2	11.8	13.4	14.1	15.3	16.9	18.0	19.5	21.3	22.3	24.1	24.3	27.6	27.9	29.1	30.6	32.4	33.4	33.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2370
		Ix	361	438	514	580	623	670	749	805	874	958	1005	1105	1105	1251	1251	1323	1376	1489	1513	1513
		Pbrg	293	349	427	496	496	537	581	641	703	786	786	871	871	1024	1024	1024	1120	1120	1177	1177
	30	Wt.	10.4	11.9	12.5	14.1	15.4	16.4	17.8	19.9	21.2	24.0	24.6	25.4	25.8	28.0	28.3	30.0	30.8	35.2	35.3	36.3
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	477	542	573	659	730	789	854	969	1049	1159	1219	1287	1287	1408	1408	1524	1524	1732	1732	1891
		Pbrg	427	496	496	581	641	641	703	786	871	1024	1024	1024	1024	1120	1120	1177	1177	1399	1399	1399

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
32	16	Wt.	14.1	16.7	20.0	22.1	24.4	27.8	29.9	32.6	37.6	40.3	40.6	46.5	46.8	50.0	52.8	56.2	59.1	63.3	66.7	67.2
		w360	262	314	366	405	448	503	546	588	648	712	727	819	819	866	920	950	982	1041	1106	1133
		Ix	205	245	286	316	350	393	421	459	510	556	556	640	640	677	719	742	767	813	864	864
		Pbrg	689	806	976	1091	1208	1421	1421	1554	1941	1941	1941	2248	2248	2545	2545	2843	2843	3224	3224	3224
	18	Wt.	12.5	14.7	17.0	20.1	22.3	24.5	27.9	30.0	31.6	36.8	37.8	40.7	40.8	44.2	47.1	50.3	53.0	53.2	56.6	59.4
		w360	298	351	405	474	523	581	644	692	731	824	857	927	927	992	1068	1131	1202	1202	1241	1286
		Ix	232	274	316	370	409	454	509	547	571	654	664	724	724	775	834	883	939	939	970	1005
		Pbrg	560	650	760	920	1029	1140	1340	1340	1466	1831	1831	1831	1831	2120	2120	2401	2401	2401	2681	2681
	20	Wt.	11.6	13.5	15.4	17.9	20.3	22.4	24.7	28.0	28.3	31.7	32.0	37.2	38.1	40.8	41.2	44.4	47.3	50.4	50.8	53.3
		w360	341	406	455	525	595	658	730	811	829	921	921	1039	1073	1173	1173	1255	1351	1431	1431	1521
		Ix	264	311	355	410	465	514	570	641	641	719	719	825	839	916	916	980	1055	1118	1118	1188
		Pbrg	494	567	663	793	869	972	1077	1266	1266	1385	1385	1729	1729	1729	1729	2003	2003	2268	2268	2268
	22	Wt.	10.7	12.3	14.3	16.4	17.9	20.2	22.2	24.5	26.8	27.9	29.9	31.5	32.6	37.1	37.9	40.6	43.8	44.2	44.3	50.0
		w360	379	445	518	597	644	731	808	897	945	1010	1073	1134	1166	1302	1324	1446	1549	1549	1585	1767
		Ix	293	343	405	466	503	571	631	701	746	789	849	886	898	1017	1035	1130	1210	1210	1210	1380
		Pbrg	435	500	581	680	750	823	920	1019	1198	1198	1198	1310	1377	1636	1636	1636	1895	1895	1895	2146
	24	Wt.	10.1	12.0	13.8	15.1	16.6	18.1	20.3	22.4	23.8	27.0	28.2	28.4	31.8	31.8	37.1	37.4	38.1	40.9	44.0	44.5
		w360	419	510	580	652	718	795	881	973	1038	1140	1204	1230	1351	1385	1536	1573	1602	1750	1836	1874
		Ix	329	398	451	504	561	606	688	760	796	900	951	951	1069	1069	1229	1229	1252	1367	1464	1464
		Pbrg	387	474	550	595	644	711	779	871	965	1135	1135	1135	1241	1241	1551	1551	1551	1551	1796	1796
	26	Wt.	10.7	12.1	13.6	14.9	17.4	17.7	19.7	21.6	22.5	24.0	27.1	28.2	28.5	31.8	32.9	33.1	37.5	37.6	38.6	44.2
		w360	491	571	653	735	831	893	1000	1082	1155	1209	1353	1429	1446	1606	1644	1663	1871	1897	1922	2186
		Ix	397	453	514	574	663	688	781	858	902	944	1069	1129	1129	1271	1290	1290	1462	1462	1490	1743
		Pbrg	421	482	522	564	674	674	740	827	827	916	1077	1077	1077	1178	1238	1238	1471	1471	1471	1704
	28	Wt.	10.2	12.0	13.4	14.6	16.3	17.7	18.3	19.8	21.9	23.9	24.0	27.3	28.3	28.7	32.0	32.1	33.3	37.6	38.1	38.6
		w360	500	600	700	800	900	973	1075	1169	1286	1395	1415	1585	1674	1694	1859	1882	1937	2158	2195	2255
		Ix	428	506	580	643	720	755	840	913	1005	1105	1105	1251	1323	1323	1489	1489	1513	1715	1715	1748
		Pbrg	372	459	496	537	581	641	641	703	786	871	871	1024	1024	1024	1120	1120	1177	1399	1399	1399
	30	Wt.	11.5	13.0	14.9	15.7	17.2	19.2	20.8	23.7	24.3	25.1	26.8	28.3	29.4	29.7	33.8	34.5	35.7	39.3	39.4	39.9
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	496	588	676	758	815	927	1004	1159	1219	1287	1330	1425	1524	1524	1732	1732	1891	2004	2004	2004
		Pbrg	496	537	641	641	703	786	871	1024	1024	1024	1120	1177	1177	1177	1399	1399	1399	1620	1620	1620
34	18	Wt.	14.1	16.8	20.0	22.1	24.5	27.9	30.0	32.7	37.6	40.4	40.6	43.9	46.9	50.1	52.8	56.1	59.3	63.2	66.6	67.0
		w360	281	337	394	436	484	543	583	636	694	758	772	846	889	941	1000	1034	1071	1135	1208	1208
		Ix	264	316	370	409	454	509	547	597	664	724	724	775	834	883	939	970	1005	1065	1133	1133
		Pbrg	660	772	935	1045	1158	1361	1361	1489	1859	1859	1859	2154	2154	2439	2439	2723	2723	3089	3089	3089
	20	Wt.	12.5	14.7	16.9	20.0	22.1	24.5	27.9	29.9	31.5	36.8	37.7	40.4	43.8	44.1	46.8	50.1	52.8	53.1	56.2	59.3
		w360	310	370	427	496	548	608	676	726	767	866	902	976	1045	1069	1125	1192	1266	1280	1311	1360
		Ix	290	343	396	465	514	570	641	689	719	825	839	916	980	980	1055	1188	1188	1188	1230	1276
		Pbrg	538	624	730	884	988	1095	1287	1287	1408	1759	1759	1759	2037	2037	2037	2307	2307	2307	2576	2576
	22	Wt.	11.6	14.0	15.8	18.5	20.3	22.2	24.6	27.9	29.9	31.5	32.9	37.1	40.4	40.6	44.0	44.5	47.1	50.1	50.6	53.0
		w360	347	421	479	560	609	673	747	831	894	944	999	1067	1204	1204	1264	1290	1388	1471	1500	1565
		Ix	322	390	449	525	571	631	701	789	849	886	926	1017	1130	1130	1210	1210	1302	1380	1380	1468
		Pbrg	476	591	639	764	838	936	1037	1220	1220	1334	1334	1666	1666	1666	1930	1930	1930	2185	2185	2185
	24	Wt.	11.0	13.3	14.6	16.7	18.7	20.5	22.6	24.9	28.1	28.4	31.8	32.1	37.3	38.2	40.9	41.2	44.4	44.8	47.3	50.9
		w360	385	470	518	598	682	734	810	900	1003	1014	1125	1140	1280	1345	1457	1457	1561	1561	1680	1781
		Ix	360	439	486	561	632	688	760	844	951	951	1068	1068	1229	1252	1367	1367	1464	1464	1576	1671
		Pbrg	420	518	561	656	724	795	888	984	1157	1157	1266	1266	1581	1581	1581	1581	1831	1831	1831	2073
	26	Wt.	10.6	12.7	14.1	16.4	17.7	19.5	21.7	23.8	27.1	27.5	28.7	31.8	32.9	36.3	37.7	38.4	41.2	44.4	44.9	45.1
		w360	424	517	598	676	743	833	915	993	1118	1145	1204	1337	1376	1480	1558	1600	1734	1858	1858	1858
		Ix	400	485	555	641	688	781	858	944	1069	1069	1129	1271	1290	1391	1462	1490	1627	1743	1743	1743
		Pbrg	399	492	533	624	688	755	844	935	1099	1099	1099	1202	1263	1502	1502	1502	1502	1739	1739	1739
	28	Wt.	10.2	12.0	13.9	15.5	17.5	18.3	19.9	22.0	24.2	27.4	27.8	28.9	32.0	32.4	33.4	37.8	38.2	39.1	44.6	44.8
		w360	470	560	661	734	827	895	973	1071	1162	1308	1341	1410	1567	1588	1613	1797	1828	1877	2135	2181
		Ix	438	527	623	696	775	840	913	1005	1105	1251	1251	1323	1489	1489	1513	1715	1715	1748	2046	2046
		Pbrg	356	437	507	548	655	655	718	803	889	1045	1045	1045	1144	1144	1202	1428	1428	1428	1654	1654
	30	Wt.	10.9	12.4	13.6	15.3	17.6	17.9	19.5	21.3	23.5	24.5	27.5	27.9	29.1	32.4	33.3	33.7	37.7	38.3	39.1	44.8
		w360	500	600	700	800	900	981	1065	1164	1277	1363	1500	1528	1584	1675	1835	1882	2070	2119	2161	2400
		Ix	534	610	693	774	895	930	1011	1108	1214	1279	1449	1449	1449	1532	1726	1754	1988	1988	2028	2374
		Pbrg	400	459	496	537	641	641	703	786	871	871	1024	1024	1024	1120	1177	1177	1399	1399	1399	1620
	32	Wt.	10.3	12.2	13.4	15.0	17.3	18.0	19.1	21.3	22.3	23.8	26.9	28.0	28.2	29.3	31.8	33.4	33.9	37.1	38.6	38.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	564	668	766	849	984	1025	1107	1269	1332	1391	1558	1661	1661	1756	1827	2013	2013	2170	2281	2281
		Pbrg	372	459	496	537	641	641	703	786	786	871	1024	1024	1024	1024	1120	1177	1177	1399	1399	1399

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																				
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
36	18	Wt.	15.2	19.2	22.1	24.5	27.9	31.3	36.6	37.6	40.6	43.9	46.7	50.0	52.8	56.3	59.1	63.3	66.7	74.0	80.6	80.9
		w360	257	319	367	407	457	512	577	601	650	695	748	792	842	870	901	955	1016	1097	1175	1194
		Ix	284	355	409	454	509	571	654	664	724	775	834	883	939	970	1005	1065	1133	1214	1310	1310
		Pbrg	723	948	1060	1174	1380	1510	1886	1886	1886	2184	2184	2473	2473	2762	2762	3132	3132	3792	3792	3792
	20	Wt.	14.2	16.4	19.3	22.2	24.6	28.0	30.0	31.7	37.0	40.6	40.8	44.1	46.9	50.3	53.1	56.4	59.2	63.4	63.6	67.4
		w360	305	345	405	461	511	575	611	654	728	806	821	879	947	1003	1065	1103	1144	1213	1213	1291
		Ix	331	380	446	514	570	641	689	719	825	916	916	980	1055	1118	1188	1230	1276	1352	1352	1439
		Pbrg	634	742	898	1004	1112	1307	1307	1430	1786	1786	1786	2068	2068	2342	2342	2615	2615	2966	2966	2966
	22	Wt.	12.6	15.2	17.7	20.0	22.2	24.5	27.8	29.8	31.5	36.6	37.6	40.4	43.6	46.4	46.8	50.0	52.5	55.9	56.0	59.2
		w360	322	390	451	512	566	629	699	752	795	898	936	1013	1086	1168	1168	1238	1316	1364	1364	1444
		Ix	354	435	503	571	631	701	789	849	886	1017	1035	1130	1210	1302	1302	1380	1468	1521	1521	1580
		Pbrg	518	650	776	851	952	1054	1240	1240	1356	1693	1693	1693	1961	1961	1961	2221	2221	2480	2480	2480
	24	Wt.	11.9	14.4	16.4	18.5	20.3	22.4	24.7	28.0	30.1	31.6	33.8	37.9	40.6	40.8	44.2	46.7	47.2	50.3	53.1	56.3
		w360	361	436	503	574	617	682	757	844	908	959	1027	1132	1226	1226	1314	1414	1414	1499	1593	1654
		Ix	399	486	561	632	688	760	844	951	1025	1069	1136	1252	1367	1367	1464	1576	1576	1671	1777	1844
		Pbrg	460	571	668	737	808	904	1001	1177	1177	1288	1353	1608	1608	1608	1863	1863	1863	2109	2109	2355
	26	Wt.	11.5	13.6	15.5	17.4	19.5	21.6	23.6	26.9	28.2	31.4	31.7	35.9	37.3	38.2	40.8	44.2	44.4	47.2	50.3	50.9
		w360	396	476	555	618	701	770	847	940	1001	1112	1140	1245	1311	1347	1459	1563	1563	1684	1754	1784
		Ix	439	533	619	688	781	858	944	1069	1129	1271	1271	1391	1462	1490	1627	1743	1743	1877	1989	1989
		Pbrg	437	543	587	701	769	859	952	1119	1119	1224	1224	1529	1529	1529	1529	1771	1771	1771	2005	2005
	28	Wt.	10.9	13.1	14.3	16.6	18.2	19.7	21.8	23.9	27.3	28.3	29.9	31.9	33.0	37.4	37.5	38.6	44.4	44.6	45.0	50.6
		w360	434	520	588	679	754	830	915	1010	1101	1173	1232	1336	1357	1512	1539	1580	1798	1835	1835	2059
		Ix	485	585	648	749	840	913	1005	1105	1251	1323	1376	1489	1513	1715	1715	1748	2046	2046	2046	2336
		Pbrg	387	477	517	605	667	732	818	906	1066	1066	1166	1166	1225	1456	1456	1456	1686	1686	1686	1909
	30	Wt.	12.3	13.2	15.4	17.3	18.6	20.9	23.0	26.0	27.0	27.3	29.9	31.7	32.9	33.1	37.5	37.6	38.7	44.2	44.6	44.8
		w360	500	591	698	787	848	967	1059	1182	1274	1285	1397	1510	1545	1566	1742	1783	1819	2086	2130	2130
		Ix	597	670	800	895	967	1108	1214	1360	1449	1449	1594	1726	1754	1754	1988	1988	2028	2374	2374	2374
		Pbrg	496	496	581	641	703	786	871	1024	1024	1024	1120	1120	1177	1177	1399	1399	1399	1620	1620	1620
	32	Wt.	11.7	12.9	15.2	17.0	17.7	20.4	21.1	23.1	26.1	27.2	27.7	30.0	32.8	33.1	36.4	37.7	37.8	38.9	44.4	44.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1473	1600	1700	1782	1900	1998	2046	2089	2300	2400
		Ix	642	733	876	984	1025	1212	1269	1391	1558	1661	1661	1827	2013	2013	2170	2281	2281	2328	2726	2726
		Pbrg	459	496	581	641	641	786	786	871	1024	1024	1024	1120	1177	1177	1399	1399	1399	1399	1620	1620
	36	Wt.	12.7	14.8	15.5	18.5	20.2	23.1	23.3	23.9	25.9	27.7	28.5	32.6	33.1	34.0	38.3	39.2	39.6	43.2	43.3	47.3
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	810	942	1068	1237	1341	1540	1615	1700	1845	1977	2096	2391	2391	2548	2686	2954	2954	3090	3090	3365
		Pbrg	537	641	641	786	871	1024	1024	1024	1120	1177	1177	1399	1399	1399	1620	1620	1620	1834	1834	2048
38	20	Wt.	15.2	19.1	22	24.4	27.8	31.2	36.5	37.4	40.4	43.7	46.5	49.8	52.5	55.9	58.9	62.9	66.6	66.7	74.1	80.4
		w360	274	340	392	434	488	548	619	644	698	747	804	852	905	937	972	1030	1097	1097	1176	1293
		Ix	355	446	514	570	641	719	825	839	916	980	1055	1118	1188	1230	1276	1352	1439	1439	1545	1671
		Pbrg	694	910	1017	1127	1325	1449	1810	1810	1810	2097	2097	2374	2374	2651	2651	3007	3007	3007	3640	3640
	22	Wt.	14.2	16.4	20.1	22.2	24.5	27.8	29.9	31.6	36.8	40.3	40.6	44.1	46.7	50.1	52.7	56.1	58.8	63.2	63.3	66.6
		w360	309	360	435	481	534	601	655	684	762	845	880	922	1019	1052	1119	1159	1204	1277	1277	1359
		Ix	405	466	571	631	701	789	849	886	1017	1130	1130	1210	1302	1380	1468	1521	1580	1676	1676	1784
		Pbrg	610	714	864	966	1070	1258	1258	1376	1718	1718	1718	1990	1990	2254	2254	2517	2517	2854	2854	2854
	24	Wt.	13.4	15.4	18.0	20.3	22.4	24.7	28.1	30.2	31.9	37.1	38.1	40.9	44.2	47.0	50.2	50.6	53.1	56.4	56.6	63.6
		w360	345	399	462	524	579	643	725	771	815	921	962	1042	1115	1201	1251	1273	1354	1405	1405	1551
		Ix	456	523	606	688	760	844	951	1025	1069	1229	1252	1367	1464	1576	1671	1671	1777	1844	1844	2035
		Pbrg	535	627	749	821	918	1017	1196	1196	1308	1633	1633	1633	1892	1892	2142	2142	2142	2392	2392	2713
	26	Wt.	12.5	14.6	16.8	19.6	21.8	24.7	27.2	28.4	31.8	32.1	37.3	38.3	41.2	44.4	44.7	47.7	50.8	51.0	56.8	57.0
		w360	370	438	506	595	654	763	799	860	945	969	1095	1144	1240	1328	1328	1430	1516	1516	1656	1676
		Ix	486	575	664	781	858	1002	1069	1129	1271	1271	1462	1490	1627	1743	1743	1877	1989	1989	2199	2199
		Pbrg	475	552	646	781	874	968	1138	1138	1245	1245	1554	1554	1554	1800	1800	1800	2039	2039	2277	2277
	28	Wt.	11.9	14.3	16.0	18.2	20.5	22.6	25.1	28.5	28.7	32.1	32.3	37.6	38.6	41.3	44.6	45.1	47.6	51.1	51.3	51.7
		w360	410	499	551	640	728	804	893	996	1008	1107	1135	1285	1324	1427	1527	1559	1642	1749	1780	1780
		Ix	534	648	723	840	955	1055	1172	1323	1323	1489	1489	1715	1748	1909	2046	2046	2204	2336	2336	2336
		Pbrg	423	526	568	679	745	832	922	1084	1084	1186	1186	1481	1481	1481	1716	1716	1716	1942	1942	1942
	30	Wt.	13.0	15.0	16.8	18.4	20.6	25.0	25.7	26.9	29.4	30.5	32.4	35.9	37.1	37.5	43.6	44.1	44.2	47.7	50.1	50.9
		w360	474	570	635	721	822	938	1004	1083	1186	1212	1313	1403	1480	1515	1728	1772	1809	1879	2030	2066
		Ix	641	766	860	967	1108	1287	1360	1449	1594	1617	1754	1891	1988	1988	2374	2374	2374	2506	2711	2711
		Pbrg	502	587	648	710	794	1034	1034	1034	1131	1189	1189	1413	1413	1413	1636	1636	1636	1853	1853	1853
	32	Wt.	12.8	14.8	16.4	18.3	20.2	22.2	25.1	26.0	27.1	29.6	30.8	32.8	36.3	37.3	37.7	41.6	44.3	44.4	47.9	48.1
		w360	500	600	700	791	900	981	1090	1165	1252	1353	1390	1506	1617	1712	1739	1854	2035	2078	2158	2193
		Ix	714	843	945	1063	1212	1323	1475	1558	1661	1827	1854	2013	2170	2281	2281	2480	2726	2726	2878	2878
		Pbrg	496	581	641	703	786	871	1024	1024	1024	1120	1177	1177	1399	1399	1399	1620	1620	1620	1834	1834
	36	Wt.	12.0	13.3	14.6	17.2	18.1	19.7	21.6	23.7	26.7	27.9	28.3	30.7	31.8	33.5	37.1	37.3	38.9	39.0	43.2	45.5
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	818	936	1044	1207	1310	1481	1623	1781	1997	2129	2129	2342	2342	2584	2786	2786	2930	2930	3187	3504
		Pbrg	459	496	537	641	641	703	786	871	1024	1024	1024	1120	1120	1177	1399	1399	1399	1399	1620	1620

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
40	20	Wt.	16.9	20.1	23.2	27.8	30.0	32.8	40.3	40.6	46.6	46.9	50.2	53.1	59.0	63.2	66.6	67.1	80.5	80.7	80.9	81.8
		w360	259	312	360	419	456	497	587	598	689	689	744	784	833	882	940	966	1090	1107	1090	1126
		Ix	396	465	543	641	689	752	916	916	1055	1055	1118	1188	1276	1352	1439	1439	1670	1670	1670	1712
		Pbrg	761	921	1030	1341	1341	1467	1833	1833	2123	2123	2404	2404	2684	3044	3044	3044	3685	3685	3685	3756
	22	Wt.	15.2	19.1	22.0	24.4	27.7	31.0	36.3	37.4	40.2	43.6	46.3	49.7	52.5	55.6	58.7	62.6	66.4	66.5	73.5	79.8
		w360	287	357	412	458	515	578	653	681	737	790	850	901	958	993	1031	1094	1164	1164	1252	1375
		Ix	435	547	631	701	789	886	1017	1035	1130	1210	1302	1380	1468	1521	1580	1676	1784	1784	1917	2075
		Pbrg	668	875	979	1084	1275	1394	1741	1741	1741	2017	2017	2284	2284	2550	2550	2893	2893	2893	3502	3502
	24	Wt.	14.3	16.9	20.1	22.2	24.6	28.0	31.3	33.6	37.6	40.4	43.7	44.0	46.9	50.1	52.9	56.0	59.0	63.0	66.7	66.9
		w360	317	381	449	496	551	621	698	747	824	892	956	978	1029	1091	1160	1204	1251	1328	1414	1414
		Ix	486	584	688	760	844	951	1069	1136	1252	1367	1464	1464	1576	1671	1777	1844	1918	2035	2166	2166
		Pbrg	588	688	833	931	1031	1212	1326	1394	1657	1657	1919	1919	1919	2172	2172	2426	2426	2752	2752	2752
	26	Wt.	14.0	16.5	18.5	21.5	24.5	27.9	28.2	31.7	33.8	37.1	40.7	44.0	44.3	47.1	50.2	50.6	56.3	56.7	59.5	63.9
		w360	363	429	495	560	644	712	737	830	888	938	1042	1115	1138	1225	1299	1299	1419	1435	1495	1586
		Ix	555	664	748	858	1002	1129	1129	1271	1351	1462	1627	1743	1743	1877	1989	1989	2199	2199	2290	2429
		Pbrg	560	655	723	887	982	1155	1155	1263	1328	1578	1578	1827	1827	1827	2069	2069	2311	2311	2311	2621
	28	Wt.	13.1	15.5	18.0	19.6	22.4	24.8	28.2	30.3	31.9	34.0	37.4	40.8	41.2	44.5	47.3	50.5	50.9	53.6	57.0	57.1
		w360	393	467	542	596	689	765	854	920	972	1042	1101	1223	1246	1336	1407	1498	1525	1623	1687	1687
		Ix	606	723	840	913	1055	1172	1323	1427	1489	1585	1715	1909	1909	2046	2204	2336	2336	2486	2585	2585
		Pbrg	493	577	690	756	846	937	1101	1101	1205	1266	1505	1505	1505	1743	1743	1973	1973	1973	2204	2204
	30	Wt.	12.8	14.8	17.3	19.0	21.7	23.8	27.2	28.4	30.0	32.7	36.2	37.3	38.4	44.3	44.3	44.9	50.4	51.1	54.3	56.6
		w360	427	505	578	652	747	823	927	988	1039	1139	1214	1276	1324	1518	1550	1550	1739	1770	1816	1937
		Ix	653	774	895	1011	1162	1279	1449	1532	1594	1754	1891	1988	2028	2374	2374	2374	2711	2711	2813	3003
		Pbrg	471	551	568	722	807	894	1051	1051	1150	1208	1436	1436	1436	1664	1664	1664	1884	1884	2104	2104
	32	Wt.	12.1	13.9	16.2	17.8	20.0	22.0	24.2	27.4	28.6	30.3	33.0	36.4	37.6	38.6	44.5	44.7	45.2	48.3	50.8	51.6
		w360	460	544	621	704	789	869	956	1072	1146	1205	1307	1385	1490	1520	1743	1780	1780	1890	2034	2034
		Ix	695	822	951	1065	1209	1332	1465	1661	1756	1827	2013	2170	2281	2328	2726	2726	2726	2878	3115	3115
		Pbrg	427	496	581	641	703	786	871	1024	1024	1120	1177	1399	1399	1399	1620	1620	1620	1834	1834	1834
	36	Wt.	12.9	14.9	16.9	18.6	20.4	22.4	25.4	26.5	27.7	29.3	31.2	33.2	36.5	36.8	38.0	42.2	44.6	45.2	48.2	49.0
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1789	1900	2000	2100	2200	2300	2376
		Ix	912	1076	1207	1359	1550	1692	1890	1997	2129	2210	2379	2584	2786	2786	2930	3187	3504	3504	3700	3700
		Pbrg	496	581	641	703	786	871	1024	1024	1024	1120	1177	1177	1399	1399	1399	1620	1620	1620	1834	1834
	40	Wt.	14.8	16.2	18.2	20.1	23.0	23.3	25.7	27.4	27.9	31.7	32.9	36.4	38.4	42.3	42.7	43.2	47.3	47.4	48.5	50.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1119	1301	1473	1669	1917	2012	2298	2466	2466	2777	2984	3135	3352	3860	3860	3860	4208	4208	4319	4795
		Pbrg	641	703	786	871	1024	1024	1120	1177	1177	1399	1399	1620	1620	1834	1834	1834	2048	2048	2048	2048
42	22	Wt.	16.9	20.1	23.0	27.7	29.8	32.5	37.5	40.3	43.8	46.6	49.9	52.9	58.5	62.8	66.5	66.7	79.6	80.1	80.3	81.1
		w360	273	322	376	439	478	528	588	637	682	734	778	827	891	944	1005	1005	1142	1187	1169	1207
		Ix	485	571	667	789	849	926	1035	1130	1210	1302	1380	1468	1580	1676	1784	1784	2075	2075	2075	2126
		Pbrg	732	886	990	1290	1290	1411	1762	1762	2041	2041	2311	2311	2581	2928	2928	2928	3544	3544	3544	3612
	24	Wt.	15.8	19.3	22.2	24.6	28.0	30.1	32.8	37.7	40.6	43.9	46.8	50.2	52.9	56.2	59.2	63.2	67.0	67.2	74.2	80.5
		w360	304	371	428	476	536	585	638	711	770	825	888	941	1002	1039	1081	1146	1220	1220	1314	1441
		Ix	540	659	760	844	951	1025	1118	1252	1367	1464	1576	1671	1777	1844	1918	2035	2166	2166	2331	2527
		Pbrg	644	844	943	1045	1228	1228	1343	1678	1678	1943	1943	2200	2200	2458	2458	2787	2787	2787	3374	3374
	26	Wt.	14.6	17.9	20.2	22.4	24.7	28.0	31.4	36.7	37.8	40.6	43.9	46.8	50.1	50.2	53.2	56.4	59.4	63.4	67.1	67.4
		w360	324	400	460	508	564	643	716	810	846	917	982	1057	1121	1121	1192	1239	1290	1368	1457	1457
		Ix	575	718	816	902	1002	1129	1271	1462	1490	1627	1743	1877	1989	1989	2117	2199	2290	2429	2587	2587
		Pbrg	568	733	804	899	996	1171	1281	1599	1599	1599	1852	1852	2097	2097	2097	2342	2342	2657	2657	2657
	28	Wt.	14.0	16.6	19.5	21.6	24.6	28.0	30.1	31.7	37.1	28.0	40.9	44.1	44.5	47.4	50.5	53.5	56.6	57.0	59.8	64.2
		w360	366	432	515	566	660	737	794	839	950	992	1076	1153	1153	1242	1316	1401	1456	1456	1519	1611
		Ix	648	776	913	1005	1172	1323	1427	1489	1715	1748	1909	2046	2046	2204	2336	2486	2585	2585	2695	2859
		Pbrg	542	634	767	858	950	1117	1117	1222	1526	1526	1526	1768	1768	1768	2001	2001	2235	2235	2235	2535
	30	Wt.	13.7	16.3	18.0	21.3	23.5	26.8	28.1	31.3	32.6	36.8	37.2	40.6	44.1	44.2	50.0	50.2	51.0	56.3	56.5	56.8
		w360	399	482	547	645	711	801	853	948	983	1101	1135	1224	1310	1337	1501	1527	1527	1672	1692	1714
		Ix	719	865	971	1162	1279	1449	1532	1726	1754	1988	1988	2215	2374	2374	2711	2711	2711	3003	3003	3003
		Pbrg	517	605	668	819	908	1067	1067	1167	1227	1458	1458	1458	1689	1689	1912	1912	1912	2135	2135	2135
	32	Wt.	13.4	15.2	17.5	19.6	21.6	23.8	27.2	28.4	31.7	32.8	37.3	37.4	40.8	44.4	44.5	47.7	50.6	50.7	54.5	56.8
		w360	443	517	593	681	750	825	925	989	1101	1128	1285	1293	1433	1536	1536	1631	1754	1754	1835	1946
		Ix	793	919	1065	1209	1332	1465	1661	1756	1979	2013	2281	2281	2544	2726	2726	2878	3115	3115	3233	3453
		Pbrg	496	537	641	703	786	871	1024	1024	1120	1177	1399	1399	1399	1620	1620	1834	1834	1834	2048	2048
	36	Wt.	14.3	16.1	18.0	19.9	22.0	25.2	26.1	28.6	30.6	30.9	35.9	36.3	40.8	41.0	44.4	47.5	48.1	48.2	54.2	54.3
		w360	500	600	700	800	900	1000	1100	1200	1300	1318	1500	1544	1700	1746	1900	2000	2051	2051	2300	2318
		Ix	990	1154	1303	1480	1692	1890	1997	2210	2379	2379	2786	2786	3115	3115	3504	3700	3700	3700	4163	4163
		Pbrg	581	641	703	786	871	1024	1024	1120	1177	1177	1399	1399	1620	1620	1620	1834	1834	1834	2048	2048
	40	Wt.	13.0	14.5	17.3	18.3	20.5	23.0	26.0	27.1	28.2	30.1	31.0	33.7	37.4	37.5	39.0	42.3	43.4	45.7	49.5	49.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1084	1253	1502	1629	1843	2109	2356	2490	2655	2756	2921	3227	3480	3480	3659	3892	3984	4381	4626	4626
		Pbrg	496	537	641	641	786	871	1024	1024	1024	1120	1120	1177	1399	1399	1399	1620	1620	1620	1834	1834

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
44	22	Wt.	19.1	21.9	25.4	29.6	32.3	37.4	40.2	46.2	46.4	52.3	55.6	58.5	65.9	66.1	73.6	79.6	80.0	81.0	90.1	97.8
		w360	268	309	361	410	453	511	553	638	638	719	745	774	857	873	938	1032	1017	1049	1177	1210
		Ix	547	631	737	849	926	1035	1130	1302	1302	1468	1521	1580	1784	1784	1917	2075	2074	2126	2344	2540
		Pbrg	896	1001	1109	1304	1427	1782	1782	2064	2064	2337	2610	2610	2960	2960	3583	3583	3583	3652	4431	4431
	24	Wt.	17.0	20.1	23.2	27.8	29.9	32.6	37.6	40.4	43.8	46.7	50.0	52.8	56.2	62.8	66.3	67.0	74.0	80.0	80.5	81.5
		w360	286	337	394	460	502	554	618	669	717	772	818	870	904	996	1061	1061	1141	1255	1237	1276
		Ix	584	688	804	951	1025	1118	1252	1367	1464	1576	1671	1777	1844	2035	2166	2166	2331	2527	2527	2587
		Pbrg	705	853	954	1243	1243	1359	1698	1698	1966	1966	2226	2226	2487	2820	2820	2820	3414	3414	3414	3479
	26	Wt.	15.8	19.4	22.2	24.6	28.0	31.5	36.7	37.8	40.7	44.0	46.8	50.3	52.9	56.3	59.3	63.4	67.2	74.2	74.4	80.7
		w360	313	382	442	491	553	622	704	735	797	853	919	974	1036	1077	1121	1189	1267	1335	1364	1502
		Ix	640	781	902	1002	1129	1271	1462	1490	1627	1743	1877	1989	2117	2199	2290	2429	2587	2786	2786	3024
		Pbrg	621	814	910	1008	1185	1297	1619	1619	1619	1876	1876	2124	2124	2372	2372	2690	2690	3256	3256	3256
	28	Wt.	15.1	18.0	20.4	23.7	27.0	30.1	31.8	37.2	38.2	41.1	44.4	47.2	50.5	50.6	56.5	56.8	63.7	63.9	67.6	74.8
		w360	341	407	468	534	610	690	729	826	863	935	1002	1079	1144	1166	1266	1266	1400	1400	1491	1618
		Ix	696	840	955	1105	1251	1427	1489	1715	1748	1909	2046	2204	2336	2336	2585	2585	2859	2859	3045	3283
		Pbrg	593	709	777	963	1132	1132	1238	1546	1546	1546	1791	1791	2028	2028	2265	2265	2569	2569	2569	3109
	30	Wt.	15.3	17.3	19.4	22.0	26.7	27.8	31.3	32.4	36.8	37.8	43.7	43.9	44.3	49.9	50.4	56.4	56.5	56.8	63.0	63.6
		w360	388	450	517	598	696	741	824	855	957	1000	1139	1162	1190	1304	1327	1453	1471	1490	1628	1628
		Ix	800	930	1056	1221	1449	1532	1726	1754	1988	2028	2374	2374	2374	2711	2711	3003	3003	3003	3325	3325
		Pbrg	614	677	743	831	1082	1082	1183	1244	1478	1478	1712	1712	1712	1938	1938	2165	2165	2165	2455	2455
	32	Wt.	14.5	17.2	18.8	21.4	23.5	27.0	28.2	31.5	32.6	37.1	38.1	44.0	44.1	44.6	50.2	50.7	56.1	56.8	57.0	63.3
		w360	417	491	560	657	717	805	860	956	986	1118	1140	1307	1335	1366	1526	1526	1670	1691	1691	1873
		Ix	849	1025	1157	1332	1465	1661	1756	1979	2013	2281	2328	2726	2726	2726	3115	3115	3453	3453	3453	3826
		Pbrg	543	648	711	795	880	1035	1035	1132	1190	1414	1414	1638	1638	1638	1855	1855	2071	2071	2071	2349
	36	Wt.	13.5	15.3	17.9	19.5	22.0	24.3	27.6	28.8	30.4	33.2	36.6	38.1	38.9	44.8	45.4	48.6	51.1	51.9	55.0	57.9
		w360	476	554	659	725	835	919	1031	1090	1160	1259	1342	1435	1465	1716	1716	1782	1961	1961	2038	2177
		Ix	978	1131	1362	1481	1705	1876	2129	2251	2342	2584	2786	2930	2992	3504	3504	3700	4005	4005	4163	4447
		Pbrg	496	537	641	703	786	871	1024	1024	1120	1177	1399	1399	1399	1620	1620	1834	1834	1834	2048	2048
	40	Wt.	13.8	16.3	18.4	20.2	22.5	25.6	26.6	29.0	31.0	31.5	36.5	37.1	38.2	41.7	42.5	48.2	48.6	49.2	54.5	54.7
		w360	500	600	700	880	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1197	1436	1621	1843	2107	2356	2490	2756	2968	2968	3480	3480	3659	3892	3984	4626	4626	4626	5212	5212
		Pbrg	537	641	703	786	871	1024	1024	1120	1177	1177	1399	1399	1399	1620	1620	1834	1834	1834	2048	2048
	44	Wt.	14.9	17.6	22.2	22.8	24.7	26.6	27.6	31.8	32.2	36.4	38.5	41.5	42.7	46.3	47.4	47.5	48.6	50.9	55.6	55.8
		w360	500	600	400	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1426	1723	2122	2225	2523	2836	3010	3389	3389	3827	4093	4263	4716	4855	5146	5146	5284	5868	6158	6158
		Pbrg	553	786	1024	1024	1120	1177	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2048	2323	2323
46	24	Wt.	19.2	22.1	25.6	29.8	32.6	37.5	40.5	44.0	46.9	50.1	55.9	59.0	63.2	66.7	74.1	80.2	80.4	81.6	90.3	98.5
		w360	282	326	381	434	479	540	585	627	675	729	790	821	871	928	998	1098	1082	1116	1191	1289
		Ix	659	760	889	1025	1118	1252	1367	1464	1576	1671	1844	1918	2035	2166	2331	2527	2527	2587	2782	3096
		Pbrg	863	964	1068	1256	1374	1716	1716	1988	1988	2251	2514	2514	2851	2851	3451	3451	3451	3517	4267	4267
	26	Wt.	17.1	21.3	24.4	27.8	31.3	36.5	37.6	40.5	43.9	46.8	50.0	55.8	56.3	62.9	66.6	66.7	74.2	80.3	80.5	81.7
		w360	296	362	423	478	537	616	643	697	746	804	852	931	942	1040	1108	1108	1193	1314	1296	1334
		Ix	691	858	1002	1129	1271	1462	1490	1627	1743	1877	1989	2199	2199	2429	2587	2587	2786	3024	3024	3094
		Pbrg	680	921	1020	1199	1311	1638	1638	1638	1897	1897	2148	2399	2399	2721	2721	2721	3294	3294	3294	3356
	28	Wt.	16.5	19.4	22.3	24.8	28.0	31.5	36.9	37.9	40.8	44.2	47.2	50.3	53.2	56.6	59.4	63.7	67.0	74.5	74.7	80.8
		w360	329	391	452	502	567	638	722	754	818	876	944	1000	1065	1107	1154	1225	1304	1375	1406	1549
		Ix	776	913	1055	1172	1323	1489	1715	1748	1909	2046	2204	2336	2486	2585	2695	2859	3045	3283	3283	3568
		Pbrg	650	787	879	974	1145	1253	1565	1565	1565	1813	1813	2052	2052	2292	2292	2600	2600	3147	3147	3147
	30	Wt.	15.4	18.0	21.5	24.6	28.0	30.2	31.8	37.0	40.4	44.0	44.2	47.0	50.6	53.0	56.7	59.3	63.3	63.9	67.0	74.3
		w360	358	416	490	573	648	699	739	837	930	996	1017	1095	1161	1236	1287	1342	1424	1424	1517	1647
		Ix	835	971	1162	1357	1532	1653	1726	1988	2215	2374	2374	2557	2711	2886	3003	3133	3325	3325	3542	3821
		Pbrg	574	686	841	932	1096	1096	1198	1497	1497	1734	1734	1734	1963	1963	2192	2192	2486	2486	2486	3010
	32	Wt.	14.5	18.0	19.7	22.6	25.0	28.4	31.7	32.8	37.3	40.8	44.2	44.4	47.4	50.8	51.0	57.0	57.3	63.7	63.9	67.4
		w360	384	476	518	599	666	752	837	862	977	1083	1167	1167	1258	1334	1334	1478	1478	1638	1638	1746
		Ix	888	1111	1209	1399	1555	1756	1979	2013	2281	2544	2726	2726	2937	3115	3115	3453	3453	3826	3826	4076
		Pbrg	509	657	720	805	892	1049	1147	1206	1433	1433	1660	1660	1660	1879	1879	2099	2099	2380	2380	2380
	36	Wt.	14.0	17.4	18.4	21.1	24.0	27.2	28.5	31.8	32.8	37.4	37.8	44.0	44.6	44.8	50.6	50.8	54.6	56.9	57.5	61.6
		w360	451	549	609	695	792	894	953	1060	1101	1233	1272	1443	1501	1501	1715	1715	1783	1904	1904	1981
		Ix	1050	1310	1422	1623	1876	2129	2251	2539	2584	2930	2930	3504	3504	3504	4008	4005	4163	4447	4447	4704
		Pbrg	496	641	641	786	871	1024	1024	1120	1177	1399	1399	1620	1620	1620	1834	1834	2048	2048	2048	2323
	40	Wt.	15.6	17.7	19.8	23.8	25.3	26.2	28.7	30.9	34.4	36.4	36.5	41.1	42.2	47.5	48.0	51.2	54.2	54.4	54.7	55.2
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1466	1600	1674	1800	1900	2000	2100	2200	2232	2279
		Ix	1328	1554	1764	2118	2356	2490	2756	2968	3180	3480	3480	3892	3984	4626	4626	4795	5212	5212	5212	5212
		Pbrg	641	703	786	1024	1024	1024	1120	1177	1399	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2048
	44	Wt.	14.3	17.1	18.0	20.8	22.8	26.3	27.3	28.5	30.4	33.2	37.2	37.6	39.1	42.4	43.5	45.8	49.7	50.0	55.2	55.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1456	1748	1904	2245	2448	2874	3038	3239	3362	3623	4251	4251	4470	4755	4870	5356	5656	5656	6378	6378
		Pbrg	537	641	641	786	871	1024	1024	1024	1120	1177	1399	1399	1399	1620	1620	1620	1834	1834	2048	2048

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																			
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
48	24	Wt.	20.0	24.4	27.7	31.2	37.3	40.3	43.7	46.5	52.4	55.8	62.7	66.1	66.6	80.0	80.1	81.1	90.1	98.2	98.5	99.3
		w360	259	318	358	403	467	515	552	594	669	695	767	816	816	966	952	981	1052	1134	1166	1166
		Ix	688	844	951	1069	1252	1367	1464	1576	1777	1844	2035	2166	2166	2527	2527	2587	2782	3096	3096	3096
		Pbrg	871	1079	1269	1388	1733	1733	2008	2008	2273	2539	2879	2879	2879	3485	3485	3552	4310	4310	4310	4310
	26	Wt.	19.3	22.2	25.8	30.0	32.9	37.7	40.7	44.2	47.1	52.8	56.1	59.2	63.3	66.9	74.4	80.5	80.7	81.9	90.7	98.9
		w360	294	340	397	453	501	566	613	657	707	797	828	863	915	974	1049	1155	1140	1174	1254	1359
		Ix	781	902	1055	1217	1329	1490	1627	1743	1877	2117	2199	2290	2429	2587	2786	3024	3024	3094	3331	3709
		Pbrg	832	930	1030	1212	1325	1655	1655	1917	1917	2171	2424	2424	2750	2750	3329	3329	3329	3392	4116	4116
	28	Wt.	17.1	21.5	24.7	28.2	31.7	36.9	38.1	41.1	44.4	47.3	50.6	53.4	59.5	63.6	67.3	67.5	74.9	81.1	81.3	82.5
		w360	304	379	441	563	561	635	664	719	771	830	880	937	1015	1077	1147	1147	1236	1362	1345	1383
		Ix	808	1005	1172	1823	1489	1715	1748	1909	2046	2204	2336	2486	2695	2859	3045	3045	3283	3568	3568	3647
		Pbrg	657	889	985	1158	1267	1582	1582	1582	1833	1833	2075	2075	2318	2629	2629	2629	3182	3182	3182	3243
	30	Wt.	16.5	19.4	22.3	26.9	29.8	31.5	36.7	40.2	43.6	44.0	49.9	50.1	55.9	56.6	63.1	63.4	66.8	73.9	79.8	80.7
		w360	334	403	460	535	615	650	736	818	876	894	1004	1021	1131	1131	1253	1253	1334	1448	1566	1587
		Ix	897	1056	1221	1449	1653	1726	1988	2215	2374	2374	2711	2711	3003	3003	3325	3325	3542	3821	4157	4157
		Pbrg	629	761	851	1108	1108	1212	1514	1514	1754	1754	1986	1986	2218	2218	2515	2515	2515	3045	3045	3045
	32	Wt.	15.6	19.4	21.6	24.7	28.0	31.4	32.6	37.2	40.6	43.9	44.3	50.2	50.4	56.3	56.5	59.7	63.7	66.8	74.2	74.3
		w360	359	455	502	586	654	736	758	866	958	1027	1027	1173	1173	1301	1301	1357	1441	1536	1658	1658
		Ix	955	1209	1332	1555	1756	1979	2013	2281	2544	2726	2726	3115	3115	3453	3453	3605	3826	4076	4402	4402
		Pbrg	556	729	815	903	1062	1161	1220	1450	1450	1680	1680	1902	1902	2124	2124	2124	2409	2409	2916	2916
	36	Wt.	15.5	17.6	20.8	22.9	26.8	28.2	31.5	32.7	37.0	37.4	44.0	44.5	47.7	50.5	50.8	54.5	56.9	61.2	63.8	64.0
		w360	436	507	603	672	786	838	933	968	1084	1119	1293	1320	1394	1509	1509	1601	1675	1743	1859	1859
		Ix	1168	1362	1623	1781	2129	2251	2539	2584	2930	2930	3504	3504	3700	4005	4005	4163	4447	4704	4936	4936
		Pbrg	581	641	786	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	1834	2048	2048	2323	2323	2323
	40	Wt.	15.8	19.3	23.5	24.3	27.3	29.5	30.7	34.1	36.1	39.6	41.1	44.9	47.7	51.1	51.2	54.3	54.4	58.4	61.1	61.5
		w360	500	600	700	800	900	1000	1100	1168	1275	1344	1439	1535	1594	1759	1787	1940	1962	2078	2182	2182
		Ix	1436	1764	2118	2228	2579	2797	2968	3180	3480	3689	3892	4185	4626	4795	4795	5212	5212	5493	5891	5891
		Pbrg	641	786	1024	1024	1120	1177	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2323	2323	2323
	44	Wt.	15.8	17.3	20.4	22.3	25.6	26.7	29.3	30.5	34.9	36.8	37.2	41.4	42.0	48.3	48.4	52.3	52.5	55.0	55.4	55.6
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1617	1829	2148	2448	2874	3038	3362	3414	3882	4251	4251	4755	4755	5656	5656	5868	5868	6378	6378	6378
		Pbrg	641	641	786	871	1024	1024	1120	1177	1399	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2048
	48	Wt.	17.3	21.8	22.7	24.8	26.4	30.8	31.9	36.2	36.5	41.5	45.4	45.9	46.4	47.5	48.2	54.6	55.6	62.5	62.7	65.4
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	1957	2410	2664	3021	3222	3819	4063	4589	4589	5112	5828	5828	5828	6178	6178	7398	7398	7844	7844	8620
		Pbrg	786	1024	1024	1120	1177	1399	1399	1620	1620	1834	2048	2048	2048	2048	2048	2323	2323	2812	2812	2812
50	26	Wt.	20.1	24.4	27.9	31.4	37.4	40.4	43.8	46.8	52.6	56.0	59.1	66.3	66.8	80.3	80.5	81.4	90.1	98.5	98.9	99.1
		w360	272	334	376	423	491	542	580	625	705	733	777	862	862	1022	1007	1038	1109	1201	1235	1235
		Ix	816	1002	1129	1271	1490	1627	1743	1877	2117	2199	2290	2587	2587	3024	3024	3094	3331	3709	3709	3709
		Pbrg	840	1040	1223	1338	1671	1671	1936	1936	2192	2448	2448	2777	2777	3361	3361	3425	4156	4156	4156	4156
	28	Wt.	19.4	22.3	25.7	30.0	32.8	37.7	40.8	44.1	47.1	52.9	56.3	59.4	63.4	67.2	74.2	80.8	81.1	81.9	91.0	99.0
		w360	304	352	411	469	519	587	636	682	734	826	861	898	952	1014	1093	1205	1188	1223	1310	1418
		Ix	913	1055	1234	1427	1558	1748	1909	2046	2204	2486	2585	2695	2859	3045	3283	3568	3568	3647	3931	4378
		Pbrg	804	898	995	1170	1280	1599	1599	1852	1852	2097	2341	2341	2656	2656	3215	3215	3215	3276	3975	3975
	30	Wt.	17.9	21.4	24.7	28.1	31.5	36.9	38.0	43.9	44.3	50.2	50.3	56.3	57.0	63.5	66.8	74.1	74.3	80.3	81.3	90.7
		w360	320	387	452	510	585	651	680	774	809	888	921	1000	1014	1108	1180	1244	1307	1403	1385	1502
		Ix	387	1162	1357	1532	1726	1988	2028	2374	2374	2711	2711	3003	3003	3325	3542	3821	3821	4157	4157	4582
		Pbrg	610	860	953	1120	1225	1531	1531	1773	1773	2007	2007	2242	2242	2542	2542	3078	3078	3078	3078	3805
	32	Wt.	16.7	20.3	23.7	27.2	30.3	32.0	37.2	40.7	44.1	44.6	50.5	50.7	56.6	57.4	63.8	64.1	74.5	74.7	80.7	81.7
		w360	342	421	481	547	623	659	760	847	908	908	1037	1037	1150	1150	1274	1274	1433	1467	1596	1596
		Ix	1026	1265	1465	1661	1896	1979	2281	2544	2726	2726	3115	3115	3453	3453	3826	3826	4402	4402	4793	4793
		Pbrg	609	737	913	1074	1074	1174	1467	1467	1699	1699	1923	1923	2148	2148	2436	2436	2949	2949	2949	2949
	36	Wt.	15.9	18.4	21.9	24.2	28.4	30.5	33.1	37.5	38.6	44.6	45.0	47.7	51.2	51.4	57.5	57.7	64.1	64.7	67.8	75.0
		w360	406	474	559	625	741	800	856	959	1004	1143	1167	1258	1334	1334	1481	1481	1644	1644	1752	1955
		Ix	1219	1422	1705	1876	2251	2432	2584	2930	2992	3504	3504	3777	4005	4005	4447	4447	4936	4936	5259	5687
		Pbrg	537	641	786	871	1024	1024	1177	1399	1399	1620	1620	1620	1834	1834	2048	2048	2323	2323	2323	2812
	40	Wt.	15.2	17.8	19.5	23.3	26.5	27.7	30.3	33.1	36.6	38.1	42.0	44.9	48.4	50.9	51.7	54.9	57.8	61.8	63.1	64.7
		w360	469	543	622	730	829	875	967	1069	1156	1219	1311	1459	1656	1668	1668	1715	1855	1929	1961	2061
		Ix	1406	1629	1843	2220	2490	2655	2971	3227	3480	3659	3984	4381	5626	5009	5009	5212	5568	5891	5891	6187
		Pbrg	537	641	703	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	1834	2048	2048	2323	2323	2323
	44	Wt.	16.3	19.6	21.4	24.8	25.8	28.8	30.3	34.6	36.6	39.9	41.2	45.3	47.7	51.3	51.5	54.6	54.7	55.3	61.4	62.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2125	2300	2362
		Ix	1748	2055	2332	2717	2874	3362	3414	3882	4251	4507	4755	5116	5656	5868	5868	6378	6378	6378	7211	7211
		Pbrg	641	786	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2048	2323	2323
	48	Wt.	18.7	22.2	24.5	26.1	30.0	31.1	35.1	39.3	40.5	45.4	46.0	46.6	47.6	52.6	54.8	62.4	62.6	64.9	65.5	65.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2122	2540	2871	3222	3583	3819	4254	4767	5112	5828	5828	5828	6178	6628	7398	7844	7844	8620	8620	8620
		Pbrg	871	1024	1120	1177	1399	1399	1620	1834	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																					
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
52	26	Wt.	22.1	25.7	30.0	36.7	40.4	43.8	46.9	52.8	56.2	63.2	66.7	74.0	80.5	80.8	81.8	91.0	99.0	99.4	100.2	109.4
		w360	267	312	360	425	482	516	555	626	651	719	766	830	896	908	938	997	1098	1098	1098	1187
		Ix	902	1055	1217	1462	1627	1743	1877	2117	2199	2429	2587	2786	3024	3024	3094	3412	3709	3709	3709	4009
		Pbrg	948	1050	1235	1687	1687	1954	1954	2212	2470	2802	2802	3392	3392	3392	3456	4193	4193	4193	4193	4977
	28	Wt.	20.3	24.6	28.1	31.6	37.1	40.8	44.3	47.2	53.1	56.6	59.7	63.7	67.5	74.6	81.2	82.1	90.9	91.8	99.6	100.0
		w360	283	347	391	441	505	565	605	652	736	765	846	863	901	978	1057	1087	1164	1198	1296	1296
		Ix	955	1172	1323	1489	1715	1909	2046	2204	2486	2585	2859	2859	3045	3283	3568	3647	3931	4024	4378	4378
		Pbrg	811	1005	1181	1292	1614	1614	1869	1869	2117	2364	2681	2681	2681	3245	3245	3307	4013	4013	4013	4013
	30	Wt.	19.3	22.2	27.7	29.8	36.6	37.5	43.5	43.9	49.8	50.2	56.0	62.5	63.3	66.6	73.9	79.8	80.2	81.7	90.5	98.2
		w360	313	361	444	483	572	604	688	719	789	818	889	967	984	1048	1132	1247	1230	1265	1355	1469
		Ix	1056	1221	1532	1653	1988	2028	2374	2374	2711	2711	3003	3325	3325	3542	3821	4157	4157	4247	4582	5104
		Pbrg	777	8696	1132	1132	1546	1546	1791	1791	2027	2027	2264	2568	2568	2568	3109	3109	3109	3168	3844	3844
	32	Wt.	18.0	21.5	24.6	28.0	31.6	36.8	40.4	44.0	46.8	50.0	50.5	56.4	59.1	63.6	66.9	73.9	80.2	80.5	81.4	90.9
		w360	329	394	460	519	586	675	753	807	869	921	940	1022	1067	1132	1207	1303	1419	1419	1439	1564
		Ix	1111	1332	1555	1756	1979	2281	2544	2726	2937	3115	3115	3453	3605	3826	4076	4402	4793	4793	4893	5283
		Pbrg	679	833	923	1085	1187	1482	1482	1717	1717	1944	1944	2171	2171	2462	2462	2980	2980	2980	3037	3685
	36	Wt.	16.8	19.7	22.6	27.2	28.5	31.7	37.3	38.4	44.0	44.6	50.3	50.9	56.4	57.2	59.9	63.8	64.3	74.5	74.7	81.2
		w360	388	458	530	618	666	752	852	892	1016	1037	1165	1186	1316	1316	1375	1461	1461	1645	1682	1858
		Ix	1311	1547	1791	2129	2251	2539	2930	2992	3504	3504	4005	4005	4447	4447	4650	4936	4936	5687	5687	6202
		Pbrg	581	703	786	1024	1024	1120	1399	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2812	2812	2812
	40	Wt.	17.0	18.7	21.2	26.1	27.3	29.9	32.7	36.2	37.6	44.1	44.6	47.8	50.7	54.5	54.7	57.5	61.6	64.2	64.5	75.3
		w360	453	522	598	723	777	854	938	1013	1083	1246	1297	1347	1483	1524	1575	1648	1744	1831	1831	2064
		Ix	1564	1763	2021	2490	2655	2921	3227	3480	3659	4381	4381	4626	5009	5212	5212	5568	5891	6187	6187	7139
		Pbrg	553	703	786	1024	1024	1120	1910	1399	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2323	2812
	44	Wt.	17.3	21.0	23.9	25.6	28.5	29.9	34.3	39.3	39.7	44.2	45.3	50.7	51.3	53.7	54.4	58.5	61.2	61.4	69.7	71.1
		w360	500	600	700	800	900	984	1100	1200	1290	1400	1474	1600	1700	1800	1865	1959	2099	2099	2242	2365
		Ix	1892	2227	2582	2874	3191	3414	3882	4507	4507	4988	5116	5868	5868	6378	6378	6723	7211	7211	7731	8168
		Pbrg	703	871	1024	1024	1177	1177	1399	1620	1620	1834	1834	2048	2048	2048	2048	2323	2323	2323	2812	2812
	48	Wt.	16.4	20.1	21.6	25.2	26.2	28.7	30.7	35.0	36.9	40.5	42.0	45.8	48.5	51.9	52.5	54.8	55.6	55.8	63.4	64.7
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2008	2458	2791	3254	3444	3770	4093	4654	5099	5407	5704	6141	6790	7049	7049	7663	7663	7663	8666	8666
		Pbrg	641	786	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2048	2323	2323
54	28	Wt.	22.1	25.8	30.1	36.8	40.5	43.9	47.0	50.3	56.2	63.0	66.8	73.9	80.3	81.0	81.9	91.1	99.2	99.4	99.8	109.6
		w360	279	326	372	446	504	541	582	629	683	755	804	848	942	955	986	1049	1156	1140	1156	1251
		Ix	1055	1234	1427	1715	1909	2046	2204	2336	2585	2859	3045	3283	3568	3568	3647	4024	4378	4378	4378	4735
		Pbrg	915	1014	1192	1628	1628	1886	1886	2135	2385	2705	2705	3274	3274	3274	3337	4048	4048	4048	4048	4805
	30	Wt.	212	24.4	27.8	31.3	36.6	40.3	43.8	49.6	52.6	55.7	62.5	63.2	73.4	73.6	79.8	80.8	90.4	91.1	98.4	98.6
		w360	302	358	405	456	523	585	627	704	763	793	878	896	987	1016	1098	1129	1210	1221	1348	1348
		Ix	1162	1357	1532	1726	1988	2215	2374	2711	2886	3003	3325	3325	3821	3821	4157	4247	4582	4686	5104	5104
		Pbrg	877	971	1142	1249	1560	1560	1807	2046	2046	2285	2592	2592	3138	3138	3138	3197	3879	3879	3879	3879
	32	Wt.	19.4	22.3	27.8	31.3	33.7	37.7	43.6	44.0	50.0	52.9	56.1	62.9	63.5	67.0	74.0	80.1	80.4	81.6	91.0	98.7
		w360	319	369	459	516	603	615	705	737	823	876	912	992	1010	1077	1163	1266	1266	1324	1395	1544
		Ix	1209	1399	1756	1979	2281	2328	2726	2726	3115	3315	3453	3826	3826	4076	4402	4793	4793	4893	5283	5887
		Pbrg	752	841	1095	1198	1496	1496	1733	1733	1963	1963	2192	2486	2486	2486	3009	3009	3009	3066	3721	3721
	36	Wt.	18.0	21.6	24.7	28.1	31.5	36.9	37.9	40.9	44.4	50.3	50.5	56.3	56.5	63.5	63.8	67.3	74.3	80.3	81.1	81.4
		w360	376	444	526	588	654	761	796	864	926	1040	1058	1160	1175	1281	1304	1389	1502	1605	1639	1658
		Ix	1422	1705	1991	2251	2539	2930	2992	3269	3504	4005	4005	4447	4447	4936	4936	5259	5687	6202	6202	6202
		Pbrg	641	786	871	1024	1120	1399	1399	1399	1620	1834	1834	2048	2048	2323	2323	2323	2812	2812	2812	2812
	40	Wt.	17.3	20.2	25.0	27.0	29.6	32.4	36.1	37.5	44.0	44.3	47.8	50.6	53.8	56.8	57.1	63.4	64.1	71.1	74.4	75.5
		w360	426	510	604	687	762	837	904	966	1112	1157	1202	1323	1377	1471	1471	1634	1634	1754	1886	1896
		Ix	1629	1931	2356	2655	2921	3227	3480	3659	4381	4381	4626	5009	5212	5568	5568	6187	6187	6660	7139	7139
		Pbrg	641	786	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2812	2812	2812
	44	Wt.	16.7	19.2	21.5	26.6	27.7	30.6	33.3	36.9	38.4	42.7	45.1	48.7	49.0	55.1	55.3	58.2	63.3	63.6	72.6	72.9
		w360	480	561	650	787	846	930	1022	1104	1181	1270	1415	1470	1494	1664	1685	1800	1905	1935	2111	2111
		Ix	1838	2148	2463	3038	3239	3564	3941	4251	4470	4870	5356	5656	5656	6378	6378	6815	7211	7211	8168	8168
		Pbrg	581	703	786	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2812	2812
	48	Wt.	18.1	21.4	24.2	25.8	28.3	30.2	34.7	36.7	39.9	41.4	45.5	51.3	51.6	52.3	54.7	59.2	59.4	63.0	71.1	72.5
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2264	2664	3092	3444	3770	4093	4654	5099	5407	5704	6141	7049	7049	7049	7663	8079	8079	8666	9297	9832
		Pbrg	703	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	2048	2048	2048	2048	2323	2323	2323	2812	2812
	52	Wt.	21.5	22.9	25.8	30.2	31.1	35.3	39.5	43.6	45.6	46.2	47.6	51.5	52.6	61.6	62.6	62.8	65.7	65.8	67.3	79.9
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2712	3141	3604	4230	4509	5024	5630	6200	6891	6891	7305	7618	7841	9285	9285	9285	10205	10205	10205	11890
		Pbrg	1024	1024	1177	1399	1399	1620	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	2812	3477

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																				
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
56	28	Wt.	23.3	27.8	31.4	37.5	40.6	46.7	50.1	56.0	63.0	66.6	73.8	80.3	80.6	82.0	91.2	99.0	99.5	109	117.1	117.8
		w360	273	313	352	417	452	522	553	612	688	721	782	856	844	870	979	1021	1037	1121	1221	1221
		Ix	1116	1323	1489	1748	1909	2204	2336	2585	2859	3045	3283	3568	3568	3647	4024	4378	4378	4735	5157	5157
		Pbrg	923	1202	1315	1642	1642	1902	2153	2405	2727	2727	3301	3301	3301	3364	4082	4082	4082	4844	4844	4844
	30	Wt.	22.1	27.7	31.2	36.6	40.3	43.8	46.7	52.5	55.9	62.9	66.7	73.8	79.8	80.2	81.4	91.2	98.7	98.9	99.3	109.1
		w360	299	355	398	463	515	562	605	683	711	787	838	884	984	998	1029	1095	1208	1191	1208	1307
		Ix	1221	1532	1726	1988	2215	2374	2557	2886	3003	3325	3542	3821	4157	4157	4247	4686	5104	5104	5104	5522
		Pbrg	884	1152	1260	1574	1574	1823	1823	2064	2305	2614	2614	3165	3165	3165	3225	3913	3913	3913	3913	4644
	32	Wt.	21.4	24.7	30.0	31.8	37.8	40.9	44.2	50.1	53.1	56.4	63.2	67.1	67.4	80.1	80.7	81.6	90.6	99.0	99.3	99.6
		w360	326	368	443	469	551	602	645	724	785	817	906	964	988	1135	1135	1187	1251	1394	1394	1394
		Ix	1332	1555	1896	1979	2328	2544	2726	3115	3315	3453	3826	4076	4076	4793	4793	4893	5283	5887	5887	5887
		Pbrg	849	940	1105	1209	1510	1510	1749	1980	1980	2212	2508	2508	2508	3036	3036	3094	3754	3754	3754	3754
	36	Wt.	19.6	22.7	27.3	28.5	32.9	37.4	41.1	44.6	50.2	50.7	56.6	56.9	63.9	64.2	74.6	74.9	80.8	81.9	91.4	91.7
		w360	378	438	494	539	609	682	774	830	932	948	1039	1053	1169	1169	1346	1354	1469	1486	1620	1607
		Ix	1547	1791	2129	2251	2584	2930	3269	3504	4005	4005	4447	4447	4936	4936	5687	5687	6202	6202	6839	6839
		Pbrg	703	786	1024	1024	1177	1399	1399	1620	1834	1834	2048	2048	2323	2323	2812	2812	2812	2812	3477	3477
	40	Wt.	18.0	21.9	24.1	28.5	31.9	33.2	38.0	41.2	44.8	45.3	51.2	54.5	57.6	57.7	64.2	64.9	74.9	76.0	81.6	81.9
		w360	401	495	553	657	732	769	866	948	1037	1037	1186	1219	1318	1318	1465	1465	1694	1700	1845	1867
		Ix	1696	2124	2338	2807	3169	3227	3659	4086	4381	4381	5009	5212	5568	5568	6187	6187	7139	7139	7795	7795
		Pbrg	641	786	871	1024	1120	1177	1399	1399	1620	1620	1834	2048	2048	2048	2323	2323	2812	2812	2812	2812
	44	Wt.	17.7	20.8	23.3	26.4	28.6	32.8	36.3	37.8	42.1	44.8	48.0	50.9	54.8	55.1	57.9	61.9	64.4	71.5	75.5	75.7
		w360	465	549	632	718	811	916	990	1058	1139	1268	1317	1450	1509	1542	1613	1679	1795	1892	2072	2084
		Ix	1984	2352	2706	3038	3425	3941	4251	4470	4870	5356	5656	6125	6378	6378	6815	7211	7582	8168	8757	8757
		Pbrg	641	786	871	1024	1024	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2812	2812	2812
	48	Wt.	19.3	23.4	24.8	28.6	29.8	34.3	39.4	39.7	44.2	45.5	50.8	51.6	53.9	58.4	58.7	61.4	69.7	70.9	72.5	72.6
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1883	2000	2100	2156	2276	2276
		Ix	2458	2938	3254	3825	4093	4654	5407	5407	5985	6141	7049	7049	7663	8079	8079	8666	9297	9297	9832	9832
		Pbrg	786	1024	1024	1177	1177	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2323	2812	2812	2812	2812
	52	Wt.	18.4	21.8	24.9	26.5	28.8	30.8	35.1	37.0	40.7	42.2	45.8	48.6	52.6	53.0	55.2	56.0	61.4	64.6	71.7	71.9
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2547	3141	3648	4065	4451	4834	5496	6025	6389	6740	7259	8028	8339	8339	9067	9067	9559	10254	11009	11009
		Pbrg	703	871	1024	1024	1120	1177	1399	1399	1620	1620	1834	1834	2048	2048	2048	2048	2323	2323	2812	2812
	56	Wt.	21.9	24.6	26.0	30.3	34.5	35.5	39.8	44.8	45.8	46.1	47.7	52.1	52.9	62.6	62.7	62.9	65.6	67.4	68.9	80.2
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	3158	3752	4200	4930	5489	5858	6566	7233	8043	8043	8527	8893	9155	10849	10849	10849	11925	11925	11925	13897
		Pbrg	1024	1120	1177	1399	1620	1620	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	2812	3477
58	30	Wt.	23.1	27.8	31.3	37.4	40.3	46.5	49.9	55.8	62.3	66.1	73.7	79.7	80.3	81.1	90.5	98.5	98.8	99.1	116.5	116.8
		w360	284	326	368	435	472	545	577	640	708	754	819	897	885	911	1026	1057	1087	1087	1281	1281
		Ix	1292	1532	1726	2028	2215	2557	2711	3003	3325	3542	3821	4157	4157	4247	4686	5104	5104	5104	6016	6016
		Pbrg	892	1161	1270	1587	1587	1838	2081	2324	2636	2636	3190	3190	3190	3251	3945	3945	3945	3945	4682	4682
	32	Wt.	22.2	27.8	31.4	36.7	40.4	43.8	46.9	52.6	56.1	63.0	66.4	73.9	80.0	80.5	81.5	90.8	98.9	99.1	99.4	108.8
		w360	308	370	415	486	542	581	625	706	735	815	868	938	1021	1021	1067	1182	1254	1254	1253	1357
		Ix	1399	1756	1979	2281	2544	2726	2937	3315	3453	3826	4076	4402	4793	4793	4893	5400	5887	5887	5887	6370
		Pbrg	856	1115	1219	1523	1523	1764	1764	1997	2230	2530	2530	3062	3062	3062	3121	3786	3786	3786	3786	4494
	36	Wt.	19.6	23.8	28.2	31.6	36.9	40.6	44.1	47.0	50.4	56	56.6	63.7	63.9	74.1	74.6	80.6	82.3	91.1	91.3	99.1
		w360	341	401	474	541	613	683	747	805	853	935	947	1052	1073	1218	1244	1377	1381	1432	1457	1579
		Ix	1547	1876	2251	2539	2930	3269	3504	3777	4005	4447	4447	4936	4936	5687	5687	6202	6325	6839	6839	7624
		Pbrg	707	875	1029	1126	1406	1406	1629	1629	1844	2060	2060	2336	2336	2828	2828	2828	2882	3497	3497	3497
	40	Wt.	19.2	21.9	27.1	28.5	32.0	37.4	38.5	44.5	45.1	50.6	54.1	57.2	57.5	63.9	67.5	74.6	74.9	81.4	81.7	91.1
		w360	406	468	554	598	675	766	802	933	933	1067	1097	1186	1203	1318	1405	1529	1562	1680	1660	1799
		Ix	1843	2124	2655	2807	3169	3659	3739	4381	4381	5009	5212	5568	5568	6187	6594	7139	7139	7795	7795	8598
		Pbrg	703	786	1024	1024	1120	1399	1399	1620	1620	1834	2048	2048	2048	2323	2323	2812	2812	2812	2812	3477
	44	Wt.	18.6	22.2	26.0	27.3	30	32.9	37.5	41.7	44.3	47.8	50.6	53.9	57.1	57.7	61.7	64.3	71.5	75.4	75.7	81.1
		w360	452	533	635	682	750	845	952	1024	1141	1185	1305	1342	1452	1452	1536	1615	1740	1875	1919	2062
		Ix	2148	2568	3038	3239	3564	3941	4470	4870	5356	5656	6125	6378	6815	6815	7211	7582	8168	8757	8757	9572
		Pbrg	703	871	1024	1024	1120	1177	1399	1620	1620	1834	1834	2048	2048	2048	2323	2323	2812	2812	2812	2812
	48	Wt.	23.1	24.0	26.9	28.8	34.1	39.1	39.6	43.9	48.0	50.8	51.3	53.8	58.5	58.7	68.4	68.5	71.1	71.6	75.4	75.8
		w360	500	600	700	788	900	1000	1100	1200	1300	1400	1461	1600	1694	1694	1900	1908	2019	2048	2200	2257
		Ix	2796	3092	3560	3825	4654	5407	5407	5985	6347	7049	7049	7663	8079	8079	9297	9297	9832	9832	10541	10541
		Pbrg	1024	1024	1120	1177	1399	1620	1620	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	2812
	52	Wt.	19.4	23.9	25.2	28.2	30.4	34.6	36.5	40.1	44.5	45.7	51.3	51.6	52.6	55.1	59.6	63.3	71.1	71.4	72.6	72.9
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	2774	3466	3839	4451	4834	5496	6025	6389	7072	7259	8339	8339	8339	9067	9559	10254	11009	11009	11650	11650
		Pbrg	786	1024	1024	1120	1177	1399	1399	1620	1834	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812
	56	Wt.	22.3	25.8	29.7	30.6	35.2	39.6	43.9	45.8	46.1	51.4	51.5	61.7	62.5	62.8	65.3	65.9	76.6	80.1	80.2	80.4
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	3310	3985	4660	4930	5858	6566	7233	8043	8043	8893	8893	10849	10849	10849	11925	11925	12804	13897	13897	13897
		Pbrg	1024	1177	1399	1399	1620	1834	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	3477	3477	3477	3477

STANDARD WEIGHT TABLE FOR LOAD/LOAD LH-SERIES JOISTS

Based on a 50 ksi Maximum Yield Strength

Joist Span (ft)	Joist Depth (in)		Total Uniformly Distributed Joist Load in Pounds per Linear Foot																				
		LRFD	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
		ASD	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
60	30	Wt.	24.4	29.7	36.4	40.0	46.2	49.6	52.6	58.6	66.1	73.6	79.7	80.0	89.7	97.8	98.7	98.9	108.3	116	116.9	117.3
		w360	270	329	376	426	492	522	555	603	681	739	810	810	881	954	982	982	1061	1157	1157	1157
		Ix	1357	1653	1988	2215	2557	2711	2886	3133	3542	3821	4157	4157	4582	5104	5104	5104	5522	6016	6016	6016
		Pbrg	995	1170	1599	1599	1852	2097	2097	2341	2656	3215	3215	3215	3975	3975	3975	3975	4717	4717	4717	4717
	32	Wt.	23.1	27.8	31.4	37.5	40.6	46.6	49.9	55.8	62.7	66.4	73.9	80.0	80.3	81.6	90.8	99.0	99.3	99.6	116.3	117.2
		w360	294	338	381	448	489	565	599	663	736	784	847	922	922	964	1067	1132	1132	1161	1336	1336
		Ix	1480	1756	1979	2328	2544	2937	3115	3453	3826	4076	4402	4793	4793	4893	5400	5887	5887	5887	6942	6942
		Pbrg	863	1124	1229	1535	1535	1778	2013	2248	2550	2550	3087	3087	3087	3145	3816	3816	3816	3816	4529	4529
	36	Wt.	21.6	24.7	29.8	35.4	37.7	43.8	44.2	50.1	55.9	56.5	63.1	66.9	73.9	80.1	80.4	81.5	90.9	98.8	99.0	100.0
		w360	339	396	484	522	579	660	690	770	845	855	949	1012	1094	1208	1193	1224	1315	1425	1466	1466
		Ix	1705	1991	2432	2786	2992	3504	3504	4005	4447	4447	4936	5259	5687	6202	6202	6325	6839	7624	7624	7624
		Pbrg	797	883	1038	1418	1418	1643	1643	1860	2077	2077	2356	2356	2852	2852	2852	2907	3527	3527	3527	3527
	40	Wt.	19.7	23.8	28.1	31.6	37.1	38.1	44.1	44.6	50.5	51.1	56.6	59.8	63.9	67.0	74.5	80.3	81.4	82.3	91.1	91.7
		w360	383	465	634	694	682	724	826	843	963	963	1071	1121	1190	1268	1374	1517	1499	1537	1653	1664
		Ix	1926	2338	2807	3169	3659	3739	4381	4381	5009	5009	5568	5829	6187	6594	7139	7795	7795	7943	8598	8771
		Pbrg	703	871	1024	1120	1399	1399	1620	1620	1834	1834	2048	2048	2323	2323	2812	2812	2812	2866	3477	3477
	44	Wt.	20.2	25.1	27.1	30.6	32.6	36.3	40.7	44.3	47.9	53.3	53.8	56.9	57.3	63.6	64.2	74.4	74.7	75.7	81.3	90.7
		w360	441	536	610	685	744	815	910	1030	1070	1212	1212	1311	1311	1458	1458	1693	1685	1693	1841	1994
		Ix	2352	2874	3239	3623	3941	4251	4755	5356	5656	6378	6378	6815	6815	7582	7582	8757	8757	8757	9572	10560
		Pbrg	786	1024	1024	1177	1177	1399	1620	1620	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	3477
	48	Wt.	18.3	21.4	26.3	27.8	30.6	36.5	37.0	41.6	45.0	48.3	49.0	55.1	55.2	61.9	63.3	64.7	72.7	75.8	76.0	76.4
		w360	457	559	578	738	812	942	978	1091	1237	1285	1339	1456	1483	1639	1666	1754	1891	2038	2028	2036
		Ix	2374	2948	3640	3881	4271	5099	5099	5704	6429	6790	6790	7663	7663	8666	8666	9119	9832	10541	10541	10541
		Pbrg	641	786	1024	1024	1120	1399	1399	1620	1620	1834	1834	2048	2048	2323	2323	2323	2812	2812	2812	2812
	52	Wt.	21.0	24.3	27.3	29.1	33.5	37.9	39.9	44.5	48.6	51.0	51.5	52.4	58.6	58.9	68.5	70.1	71.5	72.7	72.8	75.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2241	2400
		Ix	3000	3648	4202	4517	5157	5796	6389	7072	7508	8339	8339	8339	9559	9559	11009	11009	11650	11650	11650	12493
		Pbrg	871	1024	1120	1177	1399	1620	1620	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	2812
	56	Wt.	20.0	24.6	26.0	28.1	30.6	35.2	37.2	40.7	45.3	46.2	51.8	52.9	53.2	56.0	60.1	61.7	71.8	72.1	73.4	73.8
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	3230	4038	4473	4898	5636	6409	7028	7453	8251	8472	9738	9738	9738	10589	11164	11164	12866	12866	13624	13624
		Pbrg	786	1024	1024	1120	1177	1399	1399	1620	1834	1834	2048	2048	2048	2048	2323	2323	2812	2812	2812	2812
	60	Wt.	22.7	26.2	29.9	34.4	35.6	39.7	44.8	45.7	46.3	51.7	52.4	61.8	62.8	63.1	66.0	66.1	77.2	78.6	80.7	81.1
		w360	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
		Ix	3813	4593	5373	6331	6756	7573	8347	9285	9285	10267	10267	12535	12535	12535	13780	13780	14797	14797	16061	16061
		Pbrg	1024	1177	1399	1620	1620	1834	2048	2048	2048	2323	2323	2812	2812	2812	2812	2812	3477	3477	3477	3477

Notes:

American National Standard SJI-JG-2010

STANDARD SPECIFICATION
FOR JOIST GIRDERS

Adopted by the Steel Joist Institute November 4, 1985
Revised to May 18, 2010, Effective December 31, 2010

SECTION 1000.
SCOPE AND DEFINITION

1000.1 SCOPE

The *Standard Specification for Joist Girders*, hereafter referred to as the Specification, covers the design, manufacture, application, and handling and erection of Joist Girders in buildings or other structures, where other structures are defined as those structures designed, manufactured, and erected in a manner similar to buildings. Joist Girders shall be designed using Allowable Stress Design (ASD) or Load and Resistance Factor Design (LRFD) in accordance with this Specification. Joist Girders 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, Section 1926.757 Open Web Steel Joists.

This Specification includes Sections 1000 through 1005.

1000.2 DEFINITION

The term "Joist Girders", as used herein, refers to open web, load-carrying members utilizing hot-rolled or cold-formed steel, including cold-formed steel whose yield strength has been attained by cold working. Joist Girders are open web steel trusses used as primary framing members. They are designed as simple spans supporting concentrated loads for a floor or roof system. These concentrated loads are normally considered to act at the top chord panel points of the Joist Girders. Joist Girders have been standardized in depths from 20 inches (508 mm) through 120 inches (3048 mm), for spans from 20 feet (6096 mm) through 120 feet (36576 mm).

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

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

A pitch of the Joist Girder top chord up to 1/2 inch per foot (1:24) is allowed. The standard Joist Girder designation depth shall be the depth at mid-span.

1000.3 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 1001. REFERENCED SPECIFICATIONS, CODES AND STANDARDS

1001.1 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

1001.2 OTHER REFERENCES

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

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.

American Society of Civil Engineers (ASCE)

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

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 (2011), *Structural Design of Steel Joist Roofs to Resist Uplift Loads*

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

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

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

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

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

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 1002.
MATERIALS

1002.1 STEEL

The steel used in the manufacture of Joist Girders 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 1002.2.

1002.2 MECHANICAL PROPERTIES

Steel used for Joist Girders 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 1002.2 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.

1002.3 WELDING ELECTRODES

The following electrodes shall be used for arc welding:

a) For connected members both having a specified minimum yield strength greater than 36 ksi (250 MPa).

AWS A5.1: 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.

1002.4 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 1003.
DESIGN AND MANUFACTURE

1003.1 METHOD

Joist Girders shall be designed in accordance with these specifications as simply-supported primary load-carrying members. All loads shall be applied through steel joists, and placed along the Joist Girder top chord. 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:

Joist Girder 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 Joist Girder 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.

1003.2 DESIGN AND ALLOWABLE STRESSES

Design Using Load and Resistance Factor Design (LRFD)

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

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

Design Using Allowable Strength Design (ASD)

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

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

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 Girder 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 Girder members.

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

Design Stress = $0.9F_y$ (LRFD) (1003.2-1)

Allowable Stress = $0.6F_y$ (ASD) (1003.2-2)

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

Design Stress = $0.9F_{cr}$ (LRFD) (1003.2-3)

Allowable Stress = $0.6F_{cr}$ (ASD) (1003.2-4)

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

$$F_{cr} = Q\left[0.658^{\left(QF_y/F_e\right)}\right]F_y \qquad (1003.2\text{-}5)$$

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

$$F_{cr} = 0.877F_e \qquad (1003.2\text{-}6)$$

Where F_e = Elastic buckling stress determined in accordance with Equation 1003.2-7

$$F_e = \frac{\pi^2 E}{\left(\ell/r\right)^2} \qquad (1003.2\text{-}7)$$

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 web members, and r is the corresponding least radius of gyration of the member or any component thereof. E is equal to 29,000 ksi (200,000 MPa).

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.

$$Q = [5.25/(w/t)] + t \leq 1.0 \qquad (1003.2\text{-}8)$$

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

or,

$$Q = [5.25/(w/t)] + (t/25.4) \leq 1.0 \qquad (1003.2\text{-}9)$$

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: $F_n = F_y$

Design Stress = $\phi_b F_n = 0.9F_y$ (LRFD) (1003.2-10)

Allowable Stress = $F_n/\Omega_b = 0.6F_y$ (ASD) (1003.2-11)

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

Design Stress = $\phi_b F_n = 1.45F_y$ (LRFD) (1003.2-12)

Allowable Stress = $F_n/\Omega_b = 0.95F_y$ (ASD) (1003.2-13)

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

Design Stress = $\phi_b F_n = 1.35F_y$ (LRFD) (1003.2-14)

Allowable Stress = $F_n/\Omega_b = 0.90F_y$ (ASD) (1003.2-15)

(d) Weld Strength:

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

Nominal Shear Stress = $F_{nw} = 0.6F_{exx}$ (1003.2-16)

LRFD: $\phi_w = 0.75$

Design Shear Strength = $\phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A_w$ (1003.2-17)

ASD: $\Omega_w = 2.0$

Allowable Shear Strength = $R_n/\Omega_w = F_{nw}A/\Omega_w = 0.3F_{exx} A_w$ (1003.2-18)

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 may be used);

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

T (inches) = 0.12D + 0.11 (1003.2-19)

Where D = web diameter, inches

or,

T (mm) = 0.12D + 2.8 (1003.2-20)

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:

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

Design Stress = $0.9F_y$ (LRFD) (1003.2-21)

Allowable Stress = $0.6F_y$ (ASD) (1003.2-22)

1003.3 MAXIMUM SLENDERNESS RATIOS

The slenderness ratio ℓ/r , where ℓ is the length center-to-center of support points and r is the corresponding least radius of gyration, shall not exceed the following:

Top chord interior panels.....90

Top chord end panels.....120

Compression members other than top chord 200

Tension members.....240

1003.4 MEMBERS

(a) Chords

The bottom chord shall be designed as an axially loaded tension member. The radius of gyration of the bottom chord about its vertical axis shall not be less than $\ell/240$ where ℓ is the distance between lines of bracing.

The top chord shall be designed as an axial loaded compression member. The radius of gyration of the top chord about the vertical axis shall not be less than Span/575.

The top chord shall be considered as stayed laterally by the steel joists provided positive attachment is made. The outstanding part of the top chord member shall be designed such that the allowable reaction from a single joist is the lesser of:

$$\phi P_p \text{ and } \phi P_p (1.6 - f_{au}/\phi Q F_y) \quad \text{(LRFD, } \phi = 0.9) \qquad (1003.4\text{-}1)$$

$$0.6P_p \text{ and } 0.6P_p(1.6 - f_a/\Omega Q F_y) \quad \text{(ASD, } \Omega = 0.6) \qquad (1003.4\text{-}2)$$

Where:

F_y = Specified minimum yield strength, ksi (MPa)
P_p = Plastic failure mode = $[(t^2F_y)/[2(b\text{-}k)]][g+5.66(b\text{-}k)]$
Q = Form factor defined in Section 1003.2(b)
b = width of the outstanding part of the top chord member, in. (mm)
$f_{au} = P_u/A$ = Required compressive stress, ksi (MPa)
$f_a = P/A$ = Required compressive stress, ksi (MPa)
g = width of bearing seat, in. (mm)
k = value from angle properties or similar dimension for other members
t = thickness of the outstanding part of the top chord member, in. (mm)

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

$$f_{vmod} \le \phi_v f_n \quad \text{(LRFD, } \phi = 1.00) \qquad (1003.4\text{-}3)$$

$$f_{vmod} \le f_n/\Omega_v \quad \text{(ASD, } \Omega = 1.50) \qquad (1003.4\text{-}4)$$

Where:

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 = $(1/2)\left(f_t^2 + 4f_v^2\right)^{1/2}$
b = length of vertical part(s) of cross section, in. (mm)
t = thickness of vertical part(s) of cross section, in. (mm)

It is not 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 25 percent of the end reaction is not required when evaluating Equation 1003.4-3 or 1003.4-4.

(b) Web

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

Interior vertical web members used in modified Warren type web systems that do not support the direct loads through steel joists shall be designed to resist an axial load of 2 percent of the top chord axial force.

Tension members shall be designed to resist at least 25 percent of their axial force in compression.

(c) Joist Girder Extensions

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

Joist Girder extensions shall be designed based on the following:

(1) A loading diagram shall be provided for the Joist Girder 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 Girder extension shall be provided by the **specifying professional**. Unless otherwise specified, the joist manufacturer shall check the extension for the specified deflection limit under live load acting simultaneously on both the Joist Girder base span and the extension.

The joist manufacturer shall consider the effects of Joist Girder extension loading on the base span of the Joist Girder. 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 Girder chord and web axial forces.

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

(d) Fillers and Ties

In compression members composed of two components, (when fillers, ties or welds are used) they shall be spaced so the ℓ/r ratio for each component does not exceed the ℓ/r ratio of the member as a whole. In tension members composed of two components (when fillers, ties or welds are used), they shall be spaced so that the ℓ/r ratio of each component does not exceed 240. The least radius of gyration shall be used in computing the ℓ/r ratio of a component.

1003.5 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 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 1004.10 of this specification).

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 1003.5(a)(1). 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 shall be less than the design (LRFD) or allowable (ASD) stress.

(c) Field Splices

Field Splices shall be designed by the manufacturer and may be either bolted or welded. Splices shall be designed for the member force, but not less than 50 percent of the 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 centroid and the back of the chord. Otherwise, provision shall be made for the stresses due to eccentricity. Ends of Joist Girders shall be proportioned to resist bending produced by eccentricity at the support.

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

1003.6 CAMBER

Joist Girders shall have approximate cambers in accordance with the following:

TABLE 1003.6-1

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

For Joist Girder lengths exceeding 100’-0” a camber equal to Span/300 shall be used.

The **specifying professional** shall give consideration to coordinating Joist Girder camber with adjacent framing.

1003.7 VERIFICATION OF DESIGN AND MANUFACTURE

(a) Design Calculations

Companies manufacturing Joist Girders shall submit design data to the Steel Joist Institute (or an independent agency approved by the Steel Joist Institute) for verification of compliance with the SJI Specifications. 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 Joist Girders through periodic In-Plant Inspections. Inspections shall be performed by an independent agency approved by the Steel Joist Institute. The frequency, manner of inspection, and manner of reporting shall be determined by the Steel Joist Institute. The plant inspections are not a guarantee of the quality of any specific joists; this responsibility lies fully and solely with the individual manufacturer.

SECTION 1004.
APPLICATION

1004.1 USAGE

This specification shall apply to any type of structure where steel joists are to be supported directly by Joist Girders installed as hereinafter specified. Where Joist Girders are used other than on simple spans under equal concentrated gravity loading, as prescribed in Section 1003.1, they shall be investigated and modified when necessary to limit the unit stresses to those listed in Section 1003.2. The magnitude and location of all loads and forces, other than equal concentrated gravity loading, 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 11, "Design of Lateral Load Resisting Frames Using Steel Joists and Joist Girders."

1004.2 SPAN

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

1004.3 DEPTH

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

1004.4 END SUPPORTS

(a) Masonry and Concrete

A Joist Girder 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 Joist Girders shall extend a distance of not less than 6 inches (152 millimeters) over the masonry or concrete support and be anchored to the steel bearing plate. The plate shall be located not more than 1/2 inch (13 millimeters) from the face of the wall and shall be not less than 9 inches (229 millimeters) wide perpendicular to the length of the girder. The plate is to be designed by the **specifying professional** and shall be furnished by other than the joist manufacturer.

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

(b) Steel

Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the **specifying professional** in the design of the steel support. The ends of Joist Girders shall extend a distance of not less than 4 inches (102 millimeters) over the steel supports and shall have positive attachment to the support, either by bolting or welding.

1004.5 BRACING

Joist Girders shall be proportioned such that they can be erected without bridging (See Section 1004.9 for bracing required for uplift forces). Therefore, the following requirements shall be met:

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

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

1004.6 BEARING SEAT ATTACHMENTS

(a) Masonry and Concrete

Ends of Joist Girders resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two 1/4 inch (6 millimeters) fillet welds 2 inches (51 millimeters) long, or with two 3/4 inch (19 millmeters) ASTM - A307 bolts (minimum), or the equivalent.

(b) Steel

Ends of Joist Girders resting on steel supports shall be attached thereto with a minimum of two 1/4 inch (6 millimeters) fillet welds 2 inches (51 millimeters) long, or with two 3/4 inch (19 millimeters) ASTM - A307 bolts, or the equivalent. In steel frames, bearing seats for Joist Girders shall be fabricated to allow for field bolting.

(c) Uplift

Where uplift forces are a design consideration, roof Joist Girders shall be anchored to resist such forces (Refer to Section 1004.9).

1004.7 DEFLECTION

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

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

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

*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.

1004.8 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 AISC Specification for Structural Steel Buildings.

1004.9 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 drawings shall indicate if the net uplift is based on ASD or LRFD. When these forces are specified, they shall be considered in the design of Joist Girders and/or bracing. If the ends of the bottom chord are not strutted, bracing 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.”

1004.10 INSPECTION

Joist Girders shall be inspected by the manufacturer before shipment to verify compliance of materials and workmanship with the requirements of this specification. If the purchaser wishes an inspection of the Joist Girders by someone other than the manufacturer's own inspectors, they may 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 Joist Girders at the manufacturing shop by the purchaser's inspectors at purchaser's expense.

SECTION 1005.
HANDLING AND ERECTION*

Particular attention shall be paid to the erection of Joist Girders.

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

In steel framing, where Joist Girders are utilized at column lines, the Joist Girder shall be field-bolted at the column. Before hoisting cables are released and before an employee is allowed on the Joist Girder the following conditions shall be met:

a) The seat at each end of the Joist Girder is attached in accordance with Section 1004.6.

   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.

b) Where stabilizer plates are required the Joist Girder bottom chord shall engage the stabilizer plate.

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

Joist Girders shall not be used as anchorage points for a fall arrest system unless written direction to do so is obtained from a “qualified person”. [1]

Field welding shall not damage the Joist Girder. The total length of weld at any one cross-section on cold formed members whose yield strength has been attained by cold working and whose as-formed strength is used in the design, shall not exceed 50 percent of the overall developed width of the cold-formed section.

*For a thorough coverage of this topic, refer to SJI 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 “qualified person”.

DESIGN GUIDE LRFD WEIGHT TABLE

FOR JOIST GIRDERS

Based on a 50 ksi Maximum Yield Strength

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT -- KIPS																	
			6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	84.0
20	2N@ 10.00	20	16	19	19	19	19	20	24	24	25	30	37	41	46	50	56	62	70	75
		24	16	19	19	19	19	20	21	21	25	28	32	36	41	42	49	52	53	66
		28	16	19	19	19	19	20	20	21	23	26	28	32	39	40	42	46	48	49
	3N@ 6.67	20	15	15	19	19	20	23	24	27	31	36	44	48	54	74	75	81	84	89
		24	15	16	16	16	19	20	23	26	27	33	36	45	47	53	56	68	79	82
		28	15	16	16	16	17	20	24	24	26	31	36	44	46	49	53	57	68	80
	4N@ 5.00	20	15	15	19	21	25	29	33	38	41	50	57	65	71	88	97	100	107	120
		24	15	16	17	20	23	26	29	32	35	44	50	55	62	71	85	90	100	102
		28	16	16	17	19	22	25	28	30	34	39	49	50	59	63	72	86	91	91
	5N@ 4.00	20	15	17	21	26	31	36	39	48	51	62	71	82	99	99	109	120	141	142
		24	16	16	20	23	26	30	35	39	43	53	60	68	80	91	101	103	110	120
		28	16	16	18	22	27	28	33	37	39	48	55	64	68	77	93	95	107	111
	6N@ 3.33	20	16	19	25	29	36	41	50	57	58	72	82	99	107	118	138	141		
		24	16	18	22	28	31	37	43	46	53	61	70	85	102	102	111	123	144	147
		28	17	18	22	26	30	33	40	42	47	58	68	76	83	96	109	112	119	130
	8N@ 2.50	20	19	25	32	41	51	58	65	72	82	99	118	139	142					
		24	17	22	29	36	42	50	54	61	69	86	103	107	128	149	153			
		28	18	22	29	34	40	47	54	61	67	76	88	107	112	124	135	155	166	
22	2N@ 11.00	20	21	21	21	22	22	23	24	24	25	34	39	43	49	55	62	69	76	78
		24	18	21	21	22	22	22	23	24	24	30	33	41	41	45	51	55	61	73
		28	18	21	21	21	22	22	22	23	24	37	30	33	41	42	46	48	51	58
	3N@ 7.33	20	15	18	18	19	22	24	26	29	33	42	45	53	68	70	76	84	88	94
		24	15	15	19	19	20	23	24	26	30	35	40	45	48	55	61	74	81	84
		28	15	16	16	16	19	20	23	24	27	32	36	45	47	52	54	59	74	82
	4N@ 5.50	20	15	16	19	23	26	30	36	39	44	55	62	71	82	95	96	106	119	134
		24	15	15	17	20	25	27	29	34	38	48	52	58	71	79	89	98	101	107
		28	16	16	16	19	22	25	28	32	35	40	49	54	60	72	79	87	90	97
	5N@ 4.40	20	15	17	24	27	34	38	42	49	55	65	75	96	98	111	126	137		
		24	16	16	20	24	28	33	38	40	48	56	62	73	85	100	101	110	116	133
		28	16	16	18	22	26	30	32	38	41	51	57	65	73	86	92	102	105	111
	6N@ 3.67	20	16	21	27	33	39	49	56	57	65	79	97	106	118	137				
		24	16	19	23	28	32	39	45	51	58	66	82	98	101	109	120	142	144	
		28	16	18	22	26	30	34	39	44	50	61	70	76	89	102	104	113	127	148
	8N@ 2.75	20	19	27	36	43	56	64	71	80	96	106	135	138						
		24	18	24	31	38	46	53	60	68	75	101	105	125	145	149				
		28	18	22	28	34	40	47	54	62	69	79	87	106	118	131	152	164		
25	3N@ 8.33	20	18	18	19	22	26	27	30	37	41	49	59	66	70	76	86	89	97	102
		24	15	18	19	20	22	25	26	28	32	39	43	51	59	67	71	81	84	89
		28	15	15	19	19	20	23	24	27	29	34	39	45	47	55	59	67	81	82
		32	15	16	16	16	20	21	23	24	27	32	36	44	46	52	54	58	74	81
		36	16	16	16	17	17	20	24	24	26	32	36	40	45	48	53	54	68	79
	4N@ 6.25	20	15	18	20	25	29	35	39	42	49	55	70	78	93	99	109	119	134	135
		24	15	16	19	21	26	29	33	37	40	50	57	64	72	88	97	100	106	120
		28	15	15	17	20	24	25	29	34	37	43	51	58	66	72	89	90	101	102
		32	16	16	17	19	21	25	28	32	35	40	49	54	60	69	79	86	91	96
		36	16	16	17	19	21	26	26	29	34	38	49	50	56	63	73	85	88	92
	5N@ 5.00	20	15	18	25	31	38	43	51	55	58	73	93	100	109	125	134			
		24	15	17	23	26	32	36	42	47	53	61	75	81	98	102	112	129	140	
		28	16	16	20	24	28	31	37	41	47	56	62	72	79	93	101	106	117	125
		32	16	16	19	23	26	30	33	38	41	51	57	65	73	83	93	102	105	111
		36	16	17	18	22	26	28	31	36	39	48	54	64	69	75	88	96	101	108
	6N@ 4.17	20	16	24	29	38	45	55	58	69	78	94	104	116	134					
		24	16	20	25	31	37	44	50	56	64	75	97	99	107	118	138			
		28	16	18	23	28	32	38	44	51	55	67	73	87	101	104	120	134	143	145
		32	16	18	22	26	30	34	39	44	50	61	69	77	89	102	105	113	127	148
		36	16	18	24	25	30	36	39	43	49	58	67	74	84	98	108	116	117	129
	8N@ 3.12	20	21	29	39	48	58	70	78	94	99	115	134							
		24	19	26	33	41	50	57	65	75	81	99	118	138						
		28	18	23	30	38	44	53	60	67	75	86	103	116	127	147				
		32	18	24	28	34	39	47	54	65	71	78	87	105	117	129	152	154		
		36	18	22	29	34	40	46	52	61	63	76	87	101	114	121	136	148	166	167
	10N@ 2.50	20	26	38	49	63	78	94	100	115	134									
		24	23	33	42	54	65	75	89	99	104	130								
		28	21	30	38	48	56	64	74	84	101	109	134	147						
		32	21	28	36	43	52	62	69	76	87	107	118	130	153					
		36	22	28	37	44	52	64	71	77	85	100	116	130	151	157				

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT -- KIPS																	
			6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	84.0
28	3N@ 9.33	24	18	18	19	22	24	27	29	36	39	43	53	62	70	71	78	85	89	98
		28	18	18	19	20	22	25	26	28	31	39	43	46	55	61	66	76	83	86
		32	15	18	19	19	21	23	24	27	28	34	39	45	48	53	58	66	80	81
	4N@ 7.00	24	15	16	20	24	27	32	38	40	48	55	62	71	82	95	104	106	120	135
		28	15	15	18	21	25	28	32	36	39	49	56	64	71	79	96	97	106	107
		32	15	15	17	20	23	25	29	33	37	43	50	58	62	70	85	90	99	102
	5N@ 5.60	24	15	18	24	29	34	39	46	52	58	66	78	96	102	111	126	136		
		28	15	17	21	26	30	35	39	46	50	61	68	77	90	99	107	114	130	142
		32	16	17	20	24	27	32	37	41	44	56	62	70	80	93	102	107	112	119
	6N@ 4.67	24	16	21	28	35	41	49	55	63	70	79	96	106	134	137				
		28	15	20	24	30	36	42	50	54	58	71	82	99	107	118	138	142		
		32	16	19	23	28	32	37	43	49	53	64	74	84	101	102	111	123	144	146
	7N@ 4.00	24	18	24	32	41	49	56	64	74	79	96	110	135						
		28	17	22	27	35	43	51	57	62	69	82	99	108	129	140				
		32	16	21	27	31	38	44	52	55	63	74	85	102	108	123	143	146		
	8N@ 3.50	24	20	28	37	48	55	64	74	79	95	105	134							
		28	18	25	32	39	50	58	65	72	81	99	108	129	141					
		32	17	24	29	38	43	53	60	64	70	86	103	113	127	147	149			
	10N@ 2.80	24	24	36	46	57	70	79	96	102	117	137								
		28	23	30	41	50	60	69	82	99	100	120	141							
		32	21	30	38	46	55	66	71	80	93	109	126	147						
30	3N@ 10.00	24	18	18	21	24	27	31	35	38	40	48	58	66	71	80	92	98	117	119
		28	18	18	19	22	25	27	30	35	37	42	49	56	63	70	79	82	93	99
		32	18	18	19	20	22	26	28	31	32	39	46	51	57	64	71	73	83	84
		36	16	19	19	19	21	23	26	28	31	35	39	46	52	57	64	65	73	75
	4N@ 7.50	24	16	18	23	29	33	37	42	49	53	64	76	85	101	104	126	127	149	150
		28	15	16	21	25	30	33	37	42	45	53	61	73	81	86	103	104	126	128
		32	15	16	18	22	26	30	34	37	43	51	55	62	70	77	87	103	105	116
		36	16	16	17	22	24	27	31	34	36	46	52	59	64	74	78	88	91	105
	5N@ 6.00	24	15	19	25	30	37	43	51	55	58	73	86	96	109	125	134			
		28	15	17	23	27	32	37	44	47	53	61	75	88	97	102	112	128	138	
		32	16	17	21	24	29	35	39	43	48	56	63	77	90	100	101	107	117	133
		36	16	17	20	24	27	31	36	40	43	51	60	70	80	86	94	103	110	118
	6N@ 5.00	24	16	24	29	37	45	52	58	66	73	94	104	116	134					
		28	16	20	27	32	38	44	50	57	65	75	97	99	107	137	140			
		32	16	19	24	29	34	40	45	51	58	65	82	98	100	109	121	142	144	
		36	16	18	23	26	31	37	41	46	52	61	70	84	101	102	111	123	126	148
	8N@ 3.75	24	21	32	40	51	63	73	83	99	111	124	146							
		28	20	30	37	44	53	61	73	80	86	114	126	149						
		32	18	26	34	42	49	55	63	71	79	104	117	130	154	161				
		36	17	23	32	39	46	54	61	69	76	89	108	121	134	154	169			
	10N@ 3.00	24	25	38	51	66	78	99	111	123	134									
		28	24	36	47	57	69	80	94	113	116	138								
		32	22	31	39	52	58	74	82	95	105	129	142							
		36	22	30	39	48	54	68	79	84	91	119	132	151						
32	3N@ 10.67	24	18	19	21	26	27	34	38	40	42	54	61	70	75	84	88	102	102	113
		28	16	17	18	24	26	28	31	34	37	43	55	60	69	70	76	85	89	93
		32	17	17	18	21	25	26	28	32	34	39	44	54	61	62	67	77	80	86
		36	15	17	19	20	23	25	26	28	30	38	40	45	51	53	58	67	81	77
	4N@ 8.00	24	18	19	23	26	32	37	40	47	55	61	72	86	94	103	114	133	134	
		28	15	18	20	24	28	32	37	40	45	55	62	70	78	94	96	105	121	135
		32	15	15	20	22	25	29	32	36	39	49	56	64	71	83	82	97	102	107
		36	15	16	17	21	24	26	30	34	36	43	50	58	65	70	85	90	99	102
	5N@ 6.40	24	15	20	27	33	39	44	51	57	65	77	93	100	123	133				
		28	15	18	24	28	34	39	46	52	58	66	74	96	101	110	126	137		
		32	15	17	22	26	32	35	41	46	53	61	68	77	90	99	105	114	130	142
		36	16	17	21	24	27	33	37	42	47	56	62	70	79	93	102	106	117	120
	6N@ 5.33	24	17	24	31	39	47	55	61	69	76	94	103	133	134					
		28	16	21	27	35	40	48	55	60	67	79	96	105	117	137				
		32	16	20	25	30	36	42	50	54	58	71	82	99	103	118	139	142		
		36	16	19	24	28	34	38	44	49	55	66	73	84	101	102	111	123	144	146
	8N@ 4.00	24	22	32	40	54	61	72	86	93	103	133								
		28	19	27	35	45	55	63	70	80	95	105	134	137						
		32	18	25	32	39	50	58	65	71	81	99	109	120	141					
		36	18	24	31	38	43	53	59	67	71	86	103	113	127	147				

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (In.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	84.0
35	4N@ 8.75	28	16	19	23	27	31	36	41	46	52	60	74	79	94	100	111	117	137	138
		32	15	18	21	24	28	33	37	39	45	53	60	73	80	92	100	106	112	127
		36	15	16	20	23	27	30	33	37	41	561	55	62	74	83	94	97	107	113
		40	15	16	17	21	26	27	30	37	38	46	52	61	64	75	90	95	96	108
	5N@ 7.00	28	15	20	26	32	37	43	52	57	59	73	86	100	109	126	136			
		32	15	18	24	29	34	37	45	50	53	66	75	88	100	102	112	128	138	
		36	16	17	23	27	29	35	40	46	48	62	68	77	90	100	104	115	131	133
		40	16	17	22	25	27	33	37	43	47	56	63	70	80	95	102	107	115	125
	6N@ 5.83	28	17	24	30	37	44	52	58	65	73	93	103	115	134					
		32	16	21	27	33	38	46	53	57	65	79	96	100	117	139	140			
		36	16	20	25	31	36	41	48	54	58	70	81	99	102	113	121	142	144	
		40	16	20	24	28	34	38	44	49	55	64	77	84	101	104	115	123	145	146
	7N@ 5.00	28	19	27	34	43	52	59	66	74	86	101	115	135						
		32	17	24	30	39	47	53	61	67	75	97	103	118	137					
		36	17	23	28	35	42	48	55	62	69	82	99	105	120	141	144			
		40	17	22	27	32	39	44	50	55	63	73	86	102	107	118	133	147		
	8N@ 4.38	28	21	30	39	48	59	69	78	94	98	115	136							
		32	20	27	36	42	53	61	69	79	88	101	118	138						
		36	19	26	32	39	48	55	62	71	77	99	109	121	141					
		40	18	24	30	37	44	54	60	65	73	86	102	113	127	147	149			
38	4N@ 9.50	32	16	19	21	26	31	34	39	43	48	58	67	74	87	100	101	111	127	138
		36	15	17	21	24	28	33	35	39	44	53	60	74	75	93	97	106	112	123
		40	15	16	20	23	27	30	34	37	41	51	55	62	74	83	94	98	107	109
		44	16	16	20	22	26	28	30	35	38	46	52	58	65	75	90	95	95	108
	5N@ 7.60	32	15	20	25	31	36	42	46	52	59	70	86	96	101	111	126	137		
		36	16	20	24	28	33	38	45	47	53	64	74	89	98	103	112	129	138	
		40	16	20	23	26	31	35	40	46	48	59	70	78	91	101	105	113	117	134
		44	17	20	22	25	30	33	39	41	48	56	63	75	80	93	102	107	111	118
	6N@ 6.33	32	17	24	30	35	41	49	55	62	70	86	98	105	125	136				
		36	16	21	27	33	39	47	50	57	61	75	89	100	107	118	141	142		
		40	16	21	25	31	36	40	48	55	59	71	82	99	102	109	121	143	142	
		44	17	20	24	29	33	38	44	49	55	64	77	84	102	104	115	123	145	147
	8N@ 4.75	32	20	29	38	47	56	64	74	86	95	105	135							
		36	19	28	35	42	50	57	65	76	81	101	113	138	140					
		40	19	26	32	40	48	55	62	67	78	100	103	121	142	144				
		44	20	24	30	39	47	51	57	64	71	86	102	113	127	147	149			
40	4N@ 10.00	32	17	20	23	29	37	40	47	50	56	64	73	86	103	114	126	128	149	151
		36	17	19	22	29	31	37	40	44	51	57	65	74	87	103	104	125	127	128
		40	17	18	22	25	29	33	37	40	47	52	62	73	77	87	96	104	117	127
		44	16	17	20	24	29	31	36	38	41	49	59	66	74	78	84	96	106	106
		48	17	17	20	24	25	30	32	37	39	48	53	59	67	78	78	85	99	106
	5N@ 8.00	32	15	21	26	32	38	43	52	55	62	73	86	101	109	124	134			
		36	16	20	24	30	34	39	45	53	55	66	74	88	102	102	112	128	138	
		40	16	20	24	27	32	37	41	46	51	62	68	77	90	100	105	115	130	142
		44	17	20	23	29	32	37	41	49	50	58	70	82	84	99	116	118	130	141
		48	17	20	23	26	31	34	40	41	50	57	68	75	85	95	100	119	120	132
	6N@ 6.67	32	16	24	30	38	44	52	58	65	72	93	100	115	133					
		36	17	22	27	34	39	47	53	60	67	79	97	102	117	137	141			
		40	16	21	26	30	36	43	48	54	62	71	82	99	103	114	130	142		
		44	17	21	24	28	36	40	47	51	55	66	78	91	102	107	116	134	142	146
		48	17	21	24	31	36	42	46	53	57	69	79	86	100	109	132	133	135	164
	7N@ 5.71	32	18	26	33	43	52	58	66	74	86	101	115	135						
		36	17	24	31	39	47	53	61	67	75	97	103	117	136					
		40	17	24	29	35	43	49	55	62	69	82	99	105	119	140				
		44	20	22	28	33	39	48	55	59	64	78	92	102	111	122	143			
		48	20	23	28	36	41	48	54	61	66	80	86	108	122	134	136	164	167	
	8N@ 5.00	32	21	29	38	48	58	67	78	94	96	115	135							
		36	19	27	36	46	53	60	68	80	88	102	118	137						
		40	19	25	34	39	49	58	65	72	82	99	109	120	141					
		44	21	27	33	39	47	56	63	70	75	93	103	120	136	147				
		48	20	25	32	42	47	55	62	69	80	90	104	122	136	155	170			
	10N@ 4.00	32	29	39	51	64	79	92	112	123	125	149								
		36	25	36	47	60	69	81	94	103	125	150								
		40	24	36	45	56	66	75	82	96	115	129	152							
		44	23	32	41	51	60	71	82	84	99	119	143	161						
		48	23	32	41	52	58	68	76	85	94	121	134	152						

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (In.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	84.0
42	4N@ 10.50	32	16	21	25	29	34	38	43	49	53	67	74	86	99	101	112	125	134	138
		36	16	19	22	26	32	35	39	44	47	58	67	73	87	95	101	112	118	129
		40	16	19	21	24	28	34	36	41	45	53	61	73	76	93	97	97	113	122
		44	16	19	20	23	27	31	34	38	42	51	55	62	74	84	94	97	108	109
		48	16	19	21	24	26	29	32	36	39	47	54	62	65	75	90	95	97	108
	5N@ 8.40	32	16	22	28	35	41	45	52	57	66	74	88	100	110	125				
		36	15	21	25	31	36	42	46	52	59	70	85	96	102	111	126	137		
		40	16	21	24	28	33	39	44	51	54	64	74	89	98	103	113	129	130	
		44	16	20	24	27	31	37	40	46	52	59	69	78	91	101	105	113	126	134
		48	17	20	23	27	30	35	39	42	48	57	63	75	81	95	102	107	115	118
	6N@ 7.00	32	18	25	32	39	45	55	61	69	77	93	103	124	135					
		36	17	23	30	35	41	49	56	60	67	79	96	105	117	137				
		40	17	21	26	33	39	46	54	57	61	75	89	100	108	119	141	142		
		44	16	21	24	31	35	41	48	54	59	71	81	100	102	109	121	143	142	
		48	20	20	25	29	33	39	44	49	56	64	77	85	102	104	115	124	145	147
	7N@ 6.00	32	20	28	36	45	52	65	72	85	93	102	125							
		36	19	26	34	40	49	56	67	74	79	98	110	127	138					
		40	18	24	31	38	46	54	61	68	75	90	101	113	129	142				
		44	20	23	29	35	41	49	55	63	70	78	100	106	116	132	145			
		48	18	23	28	34	39	44	50	56	64	73	92	102	108	118	136	149		
	8N@ 5.25	32	22	32	40	51	62	72	78	94	100	124	135							
		36	20	27	38	46	56	64	74	79	96	105	126	138						
		40	20	26	35	42	51	57	65	76	81	101	113	138	141					
		44	20	25	32	39	49	55	63	70	78	99	107	121	142	147				
		48	21	26	32	41	48	56	63	67	74	93	103	112	128	148				
	10N@ 4.20	32	27	38	52	62	77	94	101	114	134									
		36	25	36	46	60	70	86	97	102	112	140								
		40	24	34	45	54	64	75	89	99	104	129								
		44	23	31	41	52	61	70	79	91	100	114	143							
		48	23	30	39	49	56	66	72	80	93	107	125	146						
45	4N@ 11.25	36	18	21	25	28	33	38	42	46	52	62	72	79	95	100	112	117	128	138
		40	19	21	22	27	31	35	39	44	47	55	64	75	87	95	101	112	113	128
		44	19	21	22	24	29	33	37	39	45	53	61	74	76	89	95	102	108	114
		48	18	21	22	24	28	31	34	38	40	51	55	63	75	83	94	95	107	109
		52	18	22	23	24	27	29	33	37	39	47	52	60	66	76	91	95	96	109
	5N@ 9.00	36	16	22	27	33	38	44	52	55	63	74	86	101	109	125	136			
		40	16	21	25	30	36	42	45	53	56	68	75	88	102	111	122	128		
		44	16	21	24	29	34	38	44	46	54	65	74	85	90	103	110	123	130	142
		48	20	21	24	27	32	36	41	45	52	59	67	75	91	95	106	112	118	134
		52	20	21	24	27	30	35	39	42	48	57	64	75	81	94	98	107	117	119
	6N@ 7.50	36	19	24	31	38	45	52	58	66	74	93	100	115	134					
		40	19	23	28	34	40	47	53	60	67	79	97	103	117	137	140			
		44	19	21	27	32	38	46	50	54	62	76	90	100	107	118	139	142		
		48	20	21	26	30	36	42	48	55	59	69	78	92	102	110	122	143	143	
		52	20	21	25	29	34	39	44	50	56	64	77	85	102	102	116	124	136	148
	7N@ 6.43	36	20	27	35	44	52	58	66	74	86	101	115	135						
		40	20	26	33	40	47	54	61	67	75	97	105	127	138					
		44	20	24	30	39	46	54	61	62	69	90	100	113	129	143				
		48	20	23	29	36	41	49	55	63	70	79	92	107	117	133	145			
		52	18	23	28	34	39	45	50	56	65	73	93	102	109	118	136	149		
	8N@ 5.62	36	21	30	38	48	58	67	78	94	98	114	135							
		40	20	28	36	46	53	61	68	80	89	105	118	137						
		44	20	27	34	41	51	58	66	73	81	99	109	130	141					
		48	21	26	32	39	47	55	63	68	74	92	104	116	142	146				
		52	22	28	33	42	48	54	59	67	71	94	102	112	127	148				
	9N@ 5.00	36	24	34	45	55	66	74	88	98	104	135								
		40	22	31	39	49	61	69	80	89	100	113	138							
		44	23	31	39	48	58	66	76	89	99	108	132							
		48	23	29	37	47	55	63	70	79	91	106	117	133						
		52	23	28	36	46	55	60	70	73	84	102	112	135	148					
	10N@ 4.50	36	26	38	49	60	73	86	98	105	116	137								
		40	25	35	47	60	66	76	90	102	112	140								
		44	24	33	46	54	64	72	89	99	104	130	142							
		48	24	31	40	49	62	71	78	91	100	114	134							
		52	23	31	39	50	56	67	72	80	93	107	123	147						

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0	84.0
48	5N@ 9.60	36	19	26	31	37	45	52	59	66	71	87	111	113	135	136				
		40	19	23	29	35	41	46	52	59	68	77	92	112	114	136	138			
		44	19	22	27	32	37	44	48	54	61	69	80	93	113	116	126	139	150	
		48	19	21	25	30	36	40	48	48	55	69	78	90	96	115	116	128	140	142
		52	20	21	25	29	33	39	42	50	54	62	71	82	92	99	117	118	130	141
		56	20	21	24	29	33	38	40	46	50	59	71	79	85	100	100	119	120	133
	6N@ 8.00	36	20	28	35	42	51	62	70	78	83	100	122	134	147					
		40	19	25	33	39	47	56	64	71	79	93	112	124	137	148				
		44	19	24	31	36	45	50	57	65	73	81	102	115	127	138	151			
		48	19	23	30	35	40	48	52	59	67	78	95	105	116	129	141	160		
		52	20	23	27	32	38	46	51	59	60	75	83	97	107	130	131	144	162	
		56	20	22	27	31	37	42	48	54	61	69	80	91	107	120	132	134	153	165
	8N@ 6.00	36	30	36	45	56	64	78	91	100	122	134								
		40	28	33	42	51	59	70	80	92	101	124	148							
		44	27	32	39	49	55	65	74	82	95	114	127	150						
		48	26	30	37	47	53	60	68	76	84	105	129	131	154					
		52	26	30	36	44	51	59	65	71	80	99	119	132	146	164				
		56	25	28	36	43	49	57	63	69	78	90	109	123	136	155				
	9N@ 5.33	36	35	44	55	70	79	91	99	121	122	146								
		40	34	42	52	63	74	88	93	101	113	136								
		44	33	39	50	59	69	83	91	94	103	126	150							
		48	33	37	46	56	66	76	85	94	97	118	130							
		52	31	36	46	54	63	72	80	95	101	108	132	152						
		56	31	35	44	53	62	69	80	89	98	103	123	137	165					
	12N@ 4.00	36	35	52	71	84	100	123	135	148										
		40	34	48	65	76	93	113	125	137	149									
		44	31	44	57	73	82	102	115	126	139									
		48	30	41	53	67	76	88	104	117	130	153								
		52	30	39	52	61	76	84	97	107	131	144								
		56	27	38	49	61	70	81	91	108	122	135	165							
50	5N@ 10.00	40	18	23	30	38	44	47	56	60	68	79	93	113	124	136	138			
		44	17	22	29	34	40	46	51	56	61	76	89	94	113	126	137	139		
		48	19	22	28	31	38	42	48	55	61	69	78	94	96	115	127	139	141	
		52	20	22	25	31	35	40	45	49	55	62	74	82	96	116	117	129	141	142
		56	20	22	25	30	32	40	43	50	51	63	71	83	92	99	117	119	131	142
		60	20	20	24	30	33	36	42	46	51	58	65	76	86	96	101	120	121	133
	6N@ 8.33	40	20	28	34	42	48	56	64	71	80	100	112	124	147					
		44	19	24	31	38	47	50	57	65	73	85	102	124	127	149				
		48	19	23	30	37	40	49	57	65	67	82	95	115	127	129	151			
		52	20	23	30	36	40	46	52	59	67	75	84	105	117	129	131	153	162	
		56	20	23	26	33	39	42	51	54	60	72	84	98	107	120	132	144	163	164
		60	21	23	27	33	38	43	49	53	61	70	80	87	102	110	123	134	154	165
	8N@ 6.25	40	22	31	39	51	59	67	78	86	96	110	135							
		44	21	29	37	47	53	61	70	80	96	103	118	139						
		48	21	27	35	42	51	58	69	76	81	99	114	130	142					
		52	21	25	33	40	49	55	63	70	78	99	107	121	141					
		56	24	29	36	42	47	56	64	68	78	94	108	118	137	148				
		60	24	27	35	40	47	55	61	69	74	83	103	110	123	139	149			
	9N@ 5.56	40	24	34	44	55	66	74	86	96	104	134								
		44	23	32	40	53	61	69	80	88	98	113	138							
		48	24	32	42	52	58	69	77	90	99	111	133							
		52	24	31	40	47	58	66	74	79	92	106	126	143						
		56	24	30	38	46	55	60	68	77	89	102	116	135						
		60	24	32	38	49	53	61	70	75	83	97	111	125	141					
	10N@ 5.00	40	26	38	49	60	74	87	96	104	116	136								
		44	25	36	47	60	68	84	96	102	112	140								
		48	24	34	46	54	65	76	89	99	103	130								
		52	24	34	45	52	62	70	79	91	100	114	134							
		56	23	32	41	48	60	70	76	87	93	107	134	146						
		60	24	31	40	49	57	66	73	81	94	109	119	138						
	12N@ 4.17	40	34	49	65	80	100	112	125	147										
		44	31	44	57	73	86	102	126	127	149									
		48	30	41	58	67	82	96	115	127	130	154								
		52	30	39	53	68	76	84	105	118	130	154								
		56	27	40	52	61	70	85	99	108	122	135	164							
		60	27	39	49	61	70	82	88	104	112	135	166							

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT -- KIPS																		
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
55	5N@ 11.00	44	21	21	24	25	29	32	35	38	41	43	47	53	59	63	71	82	83	86
		48	21	21	23	24	28	30	32	35	38	41	43	49	56	60	64	71	73	83
		52	20	22	23	25	27	29	32	33	36	39	42	44	52	57	65	66	74	74
		56	20	21	24	24	26	28	31	33	36	37	39	44	51	53	58	66	66	74
		60	23	24	24	24	27	27	31	33	35	38	38	45	47	52	60	61	67	68
		66	24	24	24	25	26	28	28	33	34	37	37	42	47	48	55	56	62	69
	6N@ 9.17	44	19	22	26	29	33	36	38	43	45	51	52	59	66	75	86	86	98	101
		48	20	22	24	28	31	33	36	40	44	46	50	56	64	68	75	87	89	98
		52	20	22	24	26	29	33	35	37	41	59	59	66	74	86	93	99	109	110
		56	18	21	24	25	28	31	35	36	39	42	47	52	55	63	70	71	78	91
		60	20	21	24	25	29	30	33	35	38	39	43	48	55	60	64	71	75	80
		66	19	20	22	24	28	30	31	33	36	39	40	47	50	56	62	65	73	73
	7N@ 7.86	44	21	24	28	33	36	39	44	50	53	59	59	70	75	87	97	102	111	120
		48	21	24	27	31	34	38	43	45	51	54	56	65	72	76	89	98	103	110
		52	21	23	26	29	33	36	39	44	46	52	55	62	69	74	86	91	100	105
		56	20	22	25	28	31	35	38	40	46	48	53	55	64	70	79	87	92	101
		60	21	22	24	27	30	33	36	39	41	47	49	56	64	68	72	81	93	94
		66	22	22	24	26	30	32	36	37	40	43	48	52	58	65	70	74	83	84
	9N@ 6.11	44	24	29	34	39	46	52	55	60	67	74	74	87	98	105	116	135	137	
		48	24	28	32	38	40	47	53	57	61	68	69	81	97	103	107	118	129	139
		52	25	30	33	39	43	47	52	57	65	65	73	77	90	104	105	114	125	133
		56	24	29	32	38	43	46	51	53	59	66	67	75	87	92	105	107	117	128
		60	24	27	32	36	40	45	47	52	56	60	67	71	80	93	95	108	109	118
		66	24	27	31	35	39	42	46	49	54	58	61	71	78	83	91	97	111	113
	11N@ 5.00	44	30	36	43	49	55	63	67	74	87	88	97	106	126	137				
		48	28	33	39	45	54	61	65	69	76	87	89	103	112	128	139			
		52	27	34	37	44	52	55	62	66	73	77	88	99	105	115	131	142		
		56	27	33	39	42	48	54	60	64	68	77	80	93	102	107	118	134	146	
		60	26	31	37	40	47	49	58	64	67	72	77	82	95	108	110	121	137	148
		66	26	31	36	39	45	50	54	60	65	68	74	82	97	98	113	117	126	141
60	5N@ 12.00	48	21	23	27	29	33	35	39	43	44	49	51	57	63	69	76	87	89	94
		52	21	22	27	28	31	33	36	40	44	45	47	52	60	65	69	77	85	90
		56	22	23	24	28	30	31	34	36	41	44	45	52	59	63	69	74	78	87
		60	22	23	24	28	29	32	34	35	40	42	45	49	53	60	66	70	75	80
		66	24	24	24	26	30	30	33	35	36	38	42	47	51	56	61	67	72	73
		72	25	25	25	25	27	30	31	35	36	37	39	45	48	56	56	63	69	70
	6N@ 10.00	48	20	24	29	32	36	38	41	47	49	56	60	67	72	80	93	93	112	113
		52	20	23	28	30	33	37	39	46	48	50	57	62	69	78	80	94	94	113
		56	19	24	25	30	33	38	39	42	48	49	51	58	66	69	79	83	95	96
		60	19	23	24	29	32	34	39	40	43	49	50	57	63	70	75	83	83	96
		66	19	23	24	27	32	32	34	40	42	44	50	52	61	65	69	77	84	85
		72	22	22	24	27	28	33	34	36	41	43	44	52	54	63	68	71	75	87
	8N@ 7.50	48	24	29	34	39	43	49	56	57	64	72	72	80	93	112	123	125	136	148
		52	23	29	31	37	40	48	50	57	58	66	72	81	94	103	114	125	127	139
		56	23	26	31	36	38	44	49	51	58	60	66	75	83	96	104	116	127	129
		60	23	26	32	33	39	42	47	50	53	59	61	69	77	85	98	106	118	129
		66	28	30	33	34	41	43	46	48	53	57	62	70	78	82	90	100	108	120
		72	29	30	31	34	36	41	46	47	52	58	59	66	73	80	90	92	104	110
	10N@ 6.00	48	26	32	37	44	49	55	60	67	74	79	87	97	105	118	137	138		
		52	28	34	38	44	50	56	64	65	71	75	88	97	103	113	130	138		
		56	27	33	37	43	46	51	58	66	65	72	76	90	104	105	123	131	143	
		60	25	31	37	39	45	51	57	60	66	70	73	86	93	104	111	126	134	
		66	27	32	37	42	49	51	56	62	65	72	74	85	95	102	120	122	134	145
		72	26	32	33	38	42	47	50	55	59	66	69	74	83	96	98	111	111	121
	12N@ 5.00	48	33	39	46	53	59	68	75	86	87	97	102	111	135					
		52	31	37	45	51	57	65	69	76	88	89	98	104	118	139				
		56	29	36	41	48	55	62	66	72	77	89	91	104	113	129	140			
		60	30	35	39	47	54	56	64	73	74	79	91	102	106	116	133	145		
		66	32	35	41	48	53	61	62	70	77	80	87	100	110	122	134	147	164	
		72	29	33	38	42	50	52	60	61	69	72	77	86	100	110	114	127	142	151
	15N@ 4.00	48	40	49	64	72	80	93	102	113	124	126	136							
		52	39	48	57	66	74	81	94	103	114	126	127	150						
		56	38	46	53	67	71	80	83	96	104	116	127	140	153					
		60	38	42	51	60	68	76	83	89	98	106	118	132	144					
		66	35	41	49	55	62	70	81	87	87	103	110	123	136	153	167			
		72	35	44	46	55	64	66	77	85	90	93	106	125	139	142	160	171		

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT -- KIPS																	
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
65	6N@ 10.83	52	22	28	30	33	39	41	45	49	54	58	61	69	78	83	95	97	115	116
		56	21	25	29	33	35	40	42	48	49	55	58	63	70	80	84	97	97	117
		60	23	24	29	32	34	39	41	44	50	50	56	64	71	76	82	92	98	99
		66	22	24	26	31	33	35	40	42	45	51	51	58	65	73	78	83	87	100
		72	24	25	27	31	32	35	37	42	43	47	49	54	60	68	76	80	87	89
	8N@ 8.12	52	25	31	38	40	44	51	58	62	66	74	74	83	97	115	127	129	141	153
		56	24	30	34	39	43	50	52	59	63	68	74	83	97	105	118	129	131	143
		60	23	28	33	39	41	47	51	53	60	68	69	77	85	99	108	119	130	133
		66	24	28	33	35	42	44	49	52	56	63	63	75	80	89	101	110	122	124
		72	38	39	39	39	42	45	47	52	56	58	65	73	78	89	92	104	113	125
	9N@ 7.22	52	30	32	38	44	49	58	62	67	74	79	83	97	116	128	129	142	153	
		56	26	32	39	42	48	53	59	68	68	76	81	98	106	118	130	142	144	155
		60	25	32	38	40	47	51	58	60	69	70	78	86	100	109	120	132	145	146
		66	28	32	37	41	44	50	53	60	64	71	72	81	89	103	112	124	136	138
		72	29	30	35	38	44	46	52	57	62	66	71	79	91	91	108	115	127	140
	10N@ 6.50	52	31	36	41	49	58	62	67	75	82	89	97	116	128	131	154	155		
		56	31	36	40	46	52	60	68	69	77	85	91	107	119	132	144			
		60	29	34	40	44	51	57	61	70	74	78	87	100	109	122	134	146		
		66	27	34	39	43	50	54	60	65	72	74	82	90	103	113	125	138	140	163
		72	27	33	37	44	47	52	56	62	67	75	76	87	93	110	127	129	141	143
	11N@ 5.91	52	33	39	45	52	59	67	75	83	89	98	106	118	131	153				
		56	32	39	44	51	60	64	69	77	85	91	99	119	132	144	156			
		60	33	38	44	49	55	63	70	74	79	86	92	109	122	134	147			
		66	30	37	42	46	54	57	64	72	73	81	90	104	113	125	139	147	164	
		72	30	36	41	47	51	57	62	67	77	77	88	93	110	118	131	144	156	173
	13N@ 5.00	52	37	45	55	64	72	79	89	98	106	117	130	142						
		56	37	43	53	61	69	77	86	91	99	108	120	133	146					
		60	35	41	50	58	64	71	77	85	93	100	108	131	134	158				
		66	34	41	49	53	62	70	75	80	87	93	102	122	134	137	161			
		72	34	41	46	53	58	64	72	78	85	90	90	113	127	138	141	170		
70	7N@ 10.00	56	24	25	30	35	39	43	46	51	56	57	64	71	83	88	102	102	110	121
		60	23	26	30	33	37	43	44	50	52	57	61	66	73	85	90	102	105	111
		66	24	27	30	32	35	39	44	46	51	53	58	67	73	75	87	93	104	106
		72	24	25	29	32	34	38	42	46	47	53	54	60	69	76	78	89	94	102
		78	25	26	28	31	34	37	40	43	47	49	50	58	63	71	78	83	90	96
		84	24	27	29	31	35	37	39	42	44	49	51	57	65	69	72	80	85	94
	9N@ 7.78	56	26	31	37	40	45	53	56	61	67	72	75	88	102	110	122	128		
		60	25	30	35	39	45	47	54	61	65	70	73	89	99	105	114	129	131	
		66	31	34	38	43	48	51	56	63	67	70	74	86	92	106	112	122	127	
		72	32	33	37	43	45	51	56	58	64	67	69	77	89	100	108	114	124	131
		78	32	34	36	39	45	48	53	59	60	66	66	76	87	93	102	110	116	118
		84	33	34	35	38	45	47	50	55	59	63	67	72	81	94	95	103	113	118
	10N@ 7.00	56	27	34	38	45	53	57	60	68	75	80	88	100	106	118	137			
		60	30	36	41	48	55	60	65	69	71	84	88	102	109	122	130			
		66	29	35	42	44	51	55	62	66	70	73	85	91	105	109	123	132		
		72	30	34	38	43	47	52	59	63	66	69	78	88	94	106	112	127	133	
		78	30	33	37	40	46	51	55	61	65	71	71	79	94	96	108	115	130	137
		84	31	33	36	40	47	49	55	57	63	70	72	80	92	98	109	112	121	133
	11N@ 6.36	56	32	41	45	51	60	64	71	83	87	89	102	108	127	138				
		60	30	39	44	50	57	65	66	73	85	89	90	104	114	129				
		66	31	38	43	46	53	59	67	67	76	86	88	105	106	117	132			
		72	32	37	42	48	55	57	62	70	70	78	82	94	108	109	119	136	148	
		78	29	35	40	47	50	55	61	65	73	72	80	92	98	110	118	124	140	141
		84	30	36	39	45	49	52	59	66	68	73	78	84	97	102	116	124	129	144
	12N@ 5.83	56	34	41	50	56	63	68	76	87	88	102	103	113	129					
		60	33	39	46	55	58	65	74	76	89	90	103	112	128	139				
		66	32	37	45	48	55	63	67	76	78	90	92	105	115	130	143			
		72	32	37	42	48	55	61	65	69	77	80	89	102	107	119	135	148		
		78	30	36	42	48	51	56	64	70	72	80	84	97	106	113	123	141	151	
		84	30	36	40	45	51	53	61	68	73	77	83	89	102	115	118	128	144	151
	14N@ 5.00	56	36	44	53	63	71	75	87	96	102	111	120	137						
		60	37	43	54	61	69	75	88	89	99	103	112	128						
		66	35	42	48	55	64	70	77	90	92	102	106	115	132					
		72	34	40	49	55	61	69	73	81	91	95	103	110	120	138				
		78	33	39	44	52	58	67	72	76	84	92	97	111	120	138	141			
		84	33	40	44	51	58	62	69	78	79	86	97	106	116	127	143	155		

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
75	8N@ 9.38	56	29	33	40	43	49	55	61	65	73	79	82	95	115	116	128	140	152	
		60	26	32	38	42	48	51	58	63	70	75	80	92	97	116	118	130	142	153
		66	27	32	35	41	44	51	53	60	64	69	72	82	98	99	118	120	132	144
		72	26	32	34	41	43	46	52	58	61	66	71	79	87	100	101	121	122	134
		78	27	29	34	37	43	45	54	54	61	64	69	77	81	89	103	105	123	125
	10N@ 7.50	60	32	39	42	50	59	67	69	76	83	89	98	117	129	131	154			
		66	32	37	42	49	55	62	69	70	78	86	87	100	119	132	134			
		72	30	36	42	45	54	57	63	72	73	81	86	101	111	123	136	138		
		78	31	35	39	46	48	56	63	66	74	75	82	91	105	114	127	139	152	
		84	31	36	39	45	49	55	59	65	69	77	78	94	95	110	128	131	143	156
	12N@ 6.25	60	38	43	51	59	68	76	84	90	98	106	118	131	144					
		66	35	42	50	55	62	70	79	87	90	100	110	122	135	148				
		72	36	41	46	54	63	65	73	81	90	91	104	124	126	141	154			
		78	35	42	47	54	61	68	76	78	86	90	98	105	126	139	152	163		
		84	34	39	46	52	56	64	70	78	79	90	92	106	126	139	141	164	171	
	14N@ 5.36	66	41	48	56	63	72	80	89	102	111	122	125	137						
		72	41	46	52	61	70	75	84	95	101	110	121	134	148					
		78	37	44	53	61	68	76	80	89	98	103	107	125	139	151				
		84	38	44	52	57	64	71	79	86	92	100	108	127	130	153	171			
		90	37	42	50	58	66	73	77	87	94	94	110	119	142	144	173	176		
	15N@ 5.00	66	41	52	60	69	77	85	98	106	118	120	132	146						
		72	42	52	59	67	74	84	87	99	110	121	123	146	160					
		78	41	47	54	65	73	77	88	91	104	112	124	139	152	169				
		84	39	46	55	63	67	76	86	92	93	109	116	131	143	171	174			
		90	38	46	52	60	69	74	81	90	95	103	118	133	145	146	177			
80	8N@ 10.00	60	28	31	37	42	45	51	56	63	64	72	75	88	97	103	112	127	137	
		66	30	31	35	38	45	47	52	57	62	65	70	77	90	103	105	113	129	131
		72	29	32	33	38	41	46	48	53	59	63	68	76	87	92	106	108	116	126
		78	30	31	33	37	41	42	47	53	56	60	64	73	81	88	94	109	111	118
		84	30	32	35	37	39	43	48	52	56	59	63	71	79	83	96	98	112	114
		90	53	54	56	56	57	57	58	60	63	67	70	79	79	90	95	103	105	118
	10N@ 8.00	60	31	35	41	47	53	60	68	75	76	88	97	103	112	129	139			
		66	31	35	39	46	52	55	62	70	75	78	90	100	107	115	132	142		
		72	33	37	43	50	55	62	63	70	74	83	87	97	106	120	127			
		78	32	36	42	46	51	56	63	68	71	76	86	90	100	112	122	130		
		84	33	37	42	45	51	57	61	65	70	77	78	91	100	109	115	125	131	
		90	34	36	40	44	49	53	60	65	68	72	77	87	92	102	111	118	132	136
	12N@ 6.67	66	36	44	50	57	65	70	73	86	90	103	103	115	130					
		72	34	42	47	54	59	67	72	77	86	92	101	107	125	133				
		78	33	39	46	53	60	65	69	79	80	88	94	108	114	129	136			
		84	34	38	47	49	56	63	70	72	79	83	92	99	111	121	138	140		
		90	36	39	44	50	56	59	66	72	74	82	86	101	113	116	125	143	149	
		96	34	37	43	50	54	60	68	71	75	79	85	98	104	117	120	130	147	156
	14N@ 5.71	66	39	47	57	64	73	77	89	98	103	109	113	129						
		72	38	46	54	59	67	76	79	91	101	106	106	125	143					
		78	36	43	50	58	66	70	78	90	95	96	109	118	136	149				
		84	36	42	50	56	64	71	74	80	92	98	99	112	124	143				
		90	36	41	48	53	61	68	74	82	86	95	100	115	121	136	146			
		96	37	40	47	53	61	67	74	79	84	88	100	108	118	127	145	152		
	16N@ 5.00	66	42	53	62	70	78	90	101	105	113	129	130							
		72	41	50	57	69	76	81	93	102	109	116	118	145						
		78	41	49	58	66	73	83	91	96	104	112	120	137	149					
		84	39	45	54	61	69	76	84	97	100	109	115	126	143					
		90	39	46	54	62	70	74	80	86	101	102	114	119	144	155				
		96	40	46	55	58	68	73	81	88	94	106	110	121	133	155	164			

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
90	9N@ 10.00	72	40	42	46	49	55	60	64	72	81	82	92	98	117	119	141	143		
		84	41	44	48	48	50	54	60	67	75	76	84	88	102	121	124	135	148	149
		90	54	55	56	56	57	59	62	65	72	77	85	88	99	105	125	128	138	
		96	55	56	57	57	58	59	64	65	69	74	80	91	98	107	110	128	131	142
		102	55	57	57	58	59	60	62	65	69	74	75	87	95	105	112	130	133	134
	10N@ 9.00	72	42	46	48	52	61	64	72	78	85	93	99	118	130	142	155			
		84	42	45	49	51	58	62	69	73	81	94	97	115	117	137	148			
		90	42	46	50	51	56	60	66	71	79	81	89	100	107	126	129	141		
		96	43	46	48	53	56	59	66	70	74	82	87	95	108	113	129	133	153	
		102	43	45	48	53	57	60	65	69	76	77	84	97	105	115	124	131	137	155
	11N@ 8.18	72	43	47	51	59	65	73	78	86	99	100	119	120	143					
		84	43	49	50	55	62	67	74	78	87	91	100	113	126	138	150			
		90	45	48	51	53	59	66	72	77	85	90	93	107	128	129	142			
		96	47	48	53	56	60	63	71	75	81	87	95	105	113	132	134	148		
		102	48	49	57	58	61	64	70	73	82	86	94	101	116	124	138	150	163	
	12N@ 7.50	78	44	49	53	60	68	72	79	88	102	103	111	124	149					
		84	45	49	52	56	65	75	79	84	91	103	105	125	137	149				
		90	46	50	52	60	68	75	79	88	89	100	106	126	128	151	152			
		96	46	48	52	58	63	72	76	82	90	93	103	110	129	132	153	156		
		108	45	49	55	56	64	66	76	81	85	92	97	107	115	135	137	160	168	
	15N@ 6.00	78	47	54	66	75	82	94	99	120	121	133	145	148						
		84	49	54	62	68	76	86	97	103	122	124	125	149						
		90	50	52	60	69	78	82	90	99	106	125	127	140	153					
		96	48	53	58	66	72	80	93	95	108	112	129	131	154	173				
		108	51	57	59	64	72	78	87	99	101	109	115	136	139	168	172			
	18N@ 5.00	78	51	62	74	84	99	102	120	133	145	148	159							
		84	51	61	73	80	89	104	113	124	137	150	151							
		90	52	58	70	79	90	93	106	126	129	142	153	166						
		96	53	58	68	78	87	95	108	113	131	133	144	158						
		108	57	59	64	76	85	95	103	113	120	127	139	151	172					
100	10N@ 10.00	78	45	49	52	55	58	62	68	75	79	91	92	106	115	131	140			
		84	47	50	53	55	58	61	69	72	77	81	93	102	109	118	133	143		
		96	55	56	56	57	62	64	68	74	84	86	87	102	116	125	126			
		102	55	56	57	58	61	64	66	73	77	86	89	100	106	121	127	133		
		108	56	57	58	59	61	64	67	70	76	80	87	92	106	107	127	130		
	12N@ 8.33	78	48	53	56	62	70	74	86	92	97	105	112	124						
		84	48	52	55	63	68	72	84	88	98	99	107	126	133					
		96	47	51	55	58	66	67	75	81	91	93	102	111	116	131				
		102	48	52	55	58	62	69	73	79	90	94	95	113	118	133	141			
		108	48	51	55	59	62	70	72	76	85	92	97	106	117	123	139	149		
	15N@ 6.67	78	53	56	67	75	86	91	104	106	115	125	133							
		84	53	56	61	69	78	88	94	107	113	118	128							
		96	52	56	61	68	72	82	93	99	105	114	118	133						
		102	53	56	60	66	74	83	85	97	102	116	117	125	144					
		108	53	56	59	65	73	77	87	99	103	104	118	123	140	149				
	16N@ 6.25	84	53	58	69	72	80	92	106	107	117	127	133							
		96	53	57	63	71	75	85	98	100	115	115	124	140						
		102	53	57	62	66	74	84	97	102	111	117	118	136	154					
		108	54	58	62	67	76	82	87	100	104	117	118	129	148					
		120	56	61	64	70	76	83	86	93	104	109	116	128	140	161				
	17N@ 5.88	84	55	61	70	77	88	94	107	114	127	133	145							
		96	54	59	65	72	80	93	99	113	115	121	135	151						
		102	55	59	66	73	79	87	98	102	118	118	127	144						
		108	55	60	65	69	78	87	91	105	107	119	120	140	160					
		120	56	62	67	71	78	87	93	100	110	112	125	133	149	168				
	18N@ 5.56	84	55	61	70	81	94	102	109	118	134	144								
		96	55	60	65	72	84	97	100	114	120	124	140							
		102	56	61	66	73	84	89	102	112	118	125	137	154						
		108	57	60	68	73	82	91	104	106	119	121	130	148						
		120	59	64	69	75	84	88	98	108	113	122	129	142	163					
	20N@ 5.00	84	58	66	77	94	103	109	118	134	146									
		96	60	65	73	83	99	108	115	123	125	144	153							
		102	59	65	71	80	89	103	114	121	129	147	147							
		108	60	67	71	80	89	106	110	123	126	134	149	164						
		120	68	73	90	101	108	113	123	133	152	155	166	182	200					

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT – KIPS																	
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
110	10N@ 11.00	84	54	58	61	65	69	73	82	83	94	99	100	120	143	144				
		96	62	62	63	65	69	72	81	82	91	97	98	107	125					
		108	63	63	64	67	69	72	75	82	86	91	95	105	113	131	133			
		114	63	64	67	68	72	73	76	79	86	88	96	108	115	133	136			
		120	64	64	66	69	72	74	76	81	83	88	90	100	111	128	137	140		
	12N@ 9.17	84	58	62	66	70	74	84	88	101	109	120	122	144						
		96	57	62	66	70	74	79	88	92	101	107	125	127	151					
		108	58	64	68	72	75	79	84	90	95	106	111	132	136	158				
		114	59	65	66	71	75	79	84	89	102	106	107	126	134	156	158			
		120	59	62	67	72	74	79	82	91	96	107	109	126	135	158	161			
	14N@ 7.86	84	60	66	71	76	84	97	102	122	123	134	147							
		96	60	65	69	74	83	95	100	105	124	125	136	150						
		108	60	64	69	72	78	87	99	103	108	120	128	142	155					
		114	61	65	69	74	79	84	93	103	105	111	124	133	157					
		120	60	66	69	74	80	82	90	96	106	109	126	135	158	160				
	16N@ 6.88	96	62	68	72	79	89	104	106	125	126	147	149							
		102	63	67	74	80	89	103	108	125	127	128	152	156						
		108	64	68	73	81	83	95	104	110	127	130	142	158						
		114	65	70	74	80	86	95	105	111	114	132	135	161	162					
		120	66	69	75	81	88	97	99	109	117	135	138	152	165					
	18N@ 6.11	96	64	71	77	87	99	106	125	127	148	151								
		102	66	70	80	89	101	109	127	128	139	152	153							
		108	66	71	77	83	94	106	111	129	131	144	157							
		114	67	73	79	85	97	107	113	132	134	137	159	163						
		120	68	74	79	88	91	101	110	118	136	139	152	166						
	20N@ 5.50	96	68	77	82	99	106	125	139	152	154									
		102	69	75	81	94	109	129	130	142	154	155								
		108	69	77	83	94	106	114	132	133	145	157	169							
		114	69	77	86	91	101	115	134	135	147	160	161							
		120	66	72	77	83	93	106	113	126	128	137	154	167						
120	10N@ 12.00	96	63	66	69	72	76	78	82	86	89	89	94	108	115	129				
		102	64	67	69	71	75	79	83	83	86	91	92	110	117	131	137			
		108	78	79	82	83	83	83	86	91	95	94	100	108	126					
		114	78	79	82	83	83	84	86	91	90	95	95	109	127	128				
		120	79	81	83	84	84	85	86	88	92	92	97	102	113	133				
	12N@ 10.00	96	68	69	71	77	82	86	90	99	100	113	125	130						
		102	68	69	72	78	80	85	88	96	101	102	116	130						
		108	69	70	72	75	81	86	90	91	99	103	105	128	134					
		114	70	70	71	75	82	86	87	92	95	100	130	121	135					
		120	70	71	72	76	80	84	88	92	93	102	107	123	133	138				
	15N@ 8.00	96	69	74	77	82	90	96	109	115	125	129	134							
		102	70	73	78	84	88	93	103	113	118	129	132							
		108	70	73	80	85	90	95	101	106	115	119	133							
		114	70	73	78	83	88	93	98	107	117	121	122	137						
		120	72	74	78	84	89	94	99	100	110	118	124	140						
	16N@ 7.50	96	70	76	80	85	90	100	109	114	128	134								
		102	70	74	78	86	92	97	110	112	120	131	137							
		108	70	74	80	85	90	95	100	114	120	124	133							
		114	70	73	81	86	91	96	101	107	117	122	135	145						
		120	70	75	79	85	90	94	99	103	118	119	126	147						
	18N@ 6.67	96	71	77	85	89	95	109	116	129	136									
		102	72	78	83	87	97	111	113	121	138	138								
		108	72	79	84	88	94	101	115	121	156	157								
		114	72	76	85	90	96	102	116	117	123	136	143							
		120	73	77	84	89	95	99	105	118	125	129	140							
	20N@ 6.00	96	76	82	89	94	110	116	130	136										
		102	75	83	87	92	105	114	123	140	150									
		108	75	81	88	94	101	115	121	135	142	152								
		114	77	82	87	93	103	113	119	128	138	146								
		120	77	84	90	96	102	107	121	124	133	148	150							
	24N@ 5.00	96	83	90	96	111	121	136												
		102	81	88	99	108	118	140	151											
		108	83	91	96	103	119	129	147	157										
		114	86	96	109	121	141	143	152	160										
		120	86	97	107	117	143	146	152	163	165									

LRFD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT FACTORED LOAD ON EACH PANEL POINT -- KIPS																	
			6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
110	10N@ 11.00	84	54	58	61	65	69	73	82	83	94	99	100	120	143	144				
		96	62	62	63	65	69	72	81	82	91	97	98	107	125					
		108	63	63	64	67	69	72	75	82	86	91	95	105	113	131	133			
		114	63	64	67	68	72	73	76	79	86	88	96	108	115	133	136			
		120	64	64	66	69	72	74	76	81	83	88	90	100	111	128	137	140		
	12N@ 9.17	84	58	62	66	70	74	84	88	101	109	120	122	144						
		96	57	62	66	70	74	79	88	92	101	107	125	127	151					
		108	58	64	68	72	75	79	84	90	95	106	111	132	136	158				
		114	59	65	66	71	75	79	84	89	102	106	107	126	134	156	158			
		120	59	62	67	72	74	79	82	91	96	107	109	126	135	158	161			
	14N@ 7.86	84	60	66	71	76	84	97	102	122	123	134	147							
		96	60	65	69	74	83	95	100	105	124	125	136	150						
		108	60	64	69	72	78	87	99	103	108	120	128	142	155					
		114	61	65	69	74	79	84	93	103	105	111	124	133	157					
		120	60	66	69	74	80	82	90	96	106	109	126	135	158	160				
	16N@ 6.88	96	62	68	72	79	89	104	106	125	126	147	149							
		102	63	67	74	80	89	103	108	125	127	128	152	156						
		108	64	68	73	81	83	95	104	110	127	130	142	158						
		114	65	70	74	80	86	95	105	111	114	132	135	161	162					
		120	66	69	75	81	88	97	99	109	117	135	138	152	165					
	18N@ 6.11	96	64	71	77	87	99	106	125	127	148	151								
		102	66	70	80	89	101	109	127	128	139	152	153							
		108	66	71	77	83	94	106	111	129	131	144	157							
		114	67	73	79	85	97	107	113	132	134	137	159	163						
		120	68	74	79	88	91	101	110	118	136	139	152	166						
	20N@ 5.50	96	68	77	82	99	106	125	139	152	154									
		102	69	75	81	94	109	129	130	142	154	155								
		108	69	77	83	94	106	114	132	133	145	157	169							
		114	69	77	86	91	101	115	134	135	147	160	161							
		120	66	72	77	83	93	106	113	126	128	137	154	167						
120	10N@ 12.00	96	63	66	69	72	76	78	82	86	89	89	94	108	115	129				
		102	64	67	69	71	75	79	83	83	86	91	92	110	117	131	137			
		108	78	79	82	83	83	83	86	91	95	94	100	108	126					
		114	78	79	82	83	83	84	86	91	90	95	95	109	127	128				
		120	79	81	83	84	84	85	86	88	92	92	97	102	113	133				
	12N@ 10.00	96	68	69	71	77	82	86	90	99	100	113	125	130						
		102	68	69	72	78	80	85	88	96	101	102	116	130						
		108	69	70	72	75	81	86	90	91	99	103	105	128	134					
		114	70	70	71	75	82	86	87	92	95	100	130	121	135					
		120	70	71	72	76	80	84	88	92	93	102	107	123	133	138				
	15N@ 8.00	96	69	74	77	82	90	96	109	115	125	129	134							
		102	70	73	78	84	88	93	103	113	118	129	132							
		108	70	73	80	85	90	95	101	106	115	119	133							
		114	70	73	78	83	88	93	98	107	117	121	122	137						
		120	72	74	78	84	89	94	99	100	110	118	124	140						
	16N@ 7.50	96	70	76	80	85	90	100	109	114	128	134								
		102	70	74	78	86	92	97	110	112	120	131	137							
		108	70	74	80	85	90	95	100	114	120	124	133							
		114	70	73	81	86	91	96	101	107	117	122	135	145						
		120	70	75	79	85	90	94	99	103	118	119	126	147						
	18N@ 6.67	96	71	77	85	89	95	109	116	129	136									
		102	72	78	83	87	97	111	113	121	138	138								
		108	72	79	84	88	94	101	115	121	156	157								
		114	72	76	85	90	96	102	116	117	123	136	143							
		120	73	77	84	89	95	99	105	118	125	129	140							
	20N@ 6.00	96	76	82	89	94	110	116	130	136										
		102	75	83	87	92	105	114	123	140	150									
		108	75	81	88	94	101	115	121	135	142	152								
		114	77	82	87	93	103	113	119	128	138	146								
		120	77	84	90	96	102	107	121	124	133	148	150							
	24N@ 5.00	96	83	90	96	111	121	136												
		102	81	88	99	108	118	140	151											
		108	83	91	96	103	119	129	147	157										
		114	86	96	109	121	141	143	152	160										
		120	86	97	107	117	143	146	152	163	165									

DESIGN GUIDE ASD WEIGHT TABLE

FOR JOIST GIRDERS

Based on a 50 ksi Maximum Yield Strengrh

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT – KIPS																	
			4	6	8	10	12	14	16	18	20	24	28	32	36	40	44	48	52	56
20	2N@ 10.00	20	16	19	19	19	19	20	24	24	25	30	37	41	46	50	56	62	70	75
		24	16	19	19	19	19	20	21	21	25	28	32	36	41	42	49	52	53	66
		28	16	19	19	19	19	20	20	21	23	26	28	32	39	40	42	46	48	49
	3N@ 6.67	20	15	15	19	19	20	23	24	27	31	36	44	48	54	74	75	81	84	89
		24	15	16	16	16	19	20	23	26	27	33	36	45	47	53	56	68	79	82
		28	15	16	16	16	17	20	24	24	26	31	36	44	46	49	53	57	68	80
	4N@ 5.00	20	15	15	19	21	25	29	33	38	41	50	57	65	71	88	97	100	107	120
		24	15	16	17	20	23	26	29	32	35	44	50	55	62	71	85	90	100	102
		28	16	16	17	19	22	25	28	30	34	39	49	50	59	63	72	86	91	91
	5N@ 4.00	20	15	17	21	26	31	36	39	48	51	62	71	82	99	99	109	120	141	142
		24	16	16	20	23	26	30	35	39	43	53	60	68	80	91	101	103	110	120
		28	16	16	18	22	27	28	33	37	39	48	55	64	68	77	93	95	107	111
	6N@ 3.33	20	16	19	25	29	36	41	50	57	58	72	82	99	107	118	138	141		
		24	16	18	22	28	31	37	43	46	53	61	70	85	102	102	111	123	144	147
		28	17	18	22	26	30	33	40	42	47	58	68	76	83	96	109	112	119	130
	8N@ 2.50	20	19	25	32	41	51	58	65	72	82	99	118	139	142					
		24	17	22	29	36	42	50	54	61	69	86	103	107	128	149	153			
		28	18	22	29	34	40	47	54	61	67	76	88	107	112	124	135	155	166	
22	2N@ 11.00	20	21	21	21	22	22	23	24	24	25	34	39	43	49	55	62	69	76	78
		24	18	21	21	22	22	22	23	24	24	30	33	41	41	45	51	55	61	73
		28	18	21	21	21	22	22	22	23	24	37	30	33	41	42	46	48	51	58
	3N@ 7.33	20	15	18	18	19	22	24	26	29	33	42	45	53	68	70	76	84	88	94
		24	15	15	19	19	20	23	24	26	30	35	40	45	48	55	61	74	81	84
		28	15	16	16	16	19	20	23	24	27	32	36	45	47	52	54	59	74	82
	4N@ 5.50	20	15	16	19	23	26	30	36	39	44	55	62	71	82	95	96	106	119	134
		24	15	15	17	20	25	27	29	34	38	48	52	58	71	79	89	98	101	107
		28	16	16	16	19	22	25	28	32	35	40	49	54	60	72	79	87	90	97
	5N@ 4.40	20	15	17	24	27	34	38	42	49	55	65	75	96	98	111	126	137		
		24	16	16	20	24	28	33	38	40	48	56	62	73	85	100	101	110	116	133
		28	16	16	18	22	26	30	32	38	41	51	57	65	73	86	92	102	105	111
	6N@ 3.67	20	16	21	27	33	39	49	56	57	65	79	97	106	118	137				
		24	16	19	23	28	32	39	45	51	58	66	82	98	101	109	120	142	144	
		28	16	18	22	26	30	34	39	44	50	61	70	76	89	102	104	113	127	148
	8N@ 2.75	20	19	27	36	43	56	64	71	80	96	106	135	138						
		24	18	24	31	38	46	53	60	68	75	101	105	125	145	149				
		28	18	22	28	34	40	47	54	62	69	79	87	106	118	131	152	164		
25	3N@ 8.33	20	18	18	19	22	26	27	30	37	41	49	59	66	70	76	86	89	97	102
		24	15	18	19	20	22	25	26	28	32	39	43	51	59	67	71	81	84	89
		28	15	15	19	19	20	23	24	27	29	34	39	45	47	55	59	67	81	82
		32	15	16	16	16	20	21	23	24	27	32	36	44	46	52	54	58	74	81
		36	16	16	16	17	17	20	24	24	26	32	36	40	45	48	53	54	68	79
	4N@ 6.25	20	15	18	20	25	29	35	39	42	49	55	70	78	93	99	109	119	134	135
		24	15	16	19	21	26	29	33	37	40	50	57	64	72	88	97	100	106	120
		28	15	15	17	20	24	25	29	34	37	43	51	58	66	72	89	90	101	102
		32	16	16	17	19	21	25	28	32	35	40	49	54	60	69	79	86	91	96
		36	16	16	17	19	21	26	26	29	34	38	49	50	56	63	73	85	88	92
	5N@ 5.00	20	15	18	25	31	38	43	51	55	58	73	93	100	109	125	134			
		24	15	17	23	26	32	36	42	47	53	61	75	81	98	102	112	129	140	
		28	16	16	20	24	28	31	37	41	47	56	62	72	79	93	101	106	117	125
		32	16	16	19	23	26	30	33	38	41	51	57	65	73	83	93	102	105	111
		36	16	17	18	22	26	28	31	36	39	48	54	64	69	75	88	96	101	108
	6N@ 4.17	20	16	24	29	38	45	55	58	69	78	94	104	116	134					
		24	16	20	25	31	37	44	50	56	64	75	97	99	107	118	138			
		28	16	18	23	28	32	38	44	51	55	67	73	87	101	104	120	134	143	145
		32	16	18	22	26	30	34	39	44	50	61	69	77	89	102	105	113	127	148
		36	16	18	24	25	30	36	39	43	49	58	67	74	84	98	108	116	117	129
	8N@ 3.12	20	21	29	39	48	58	70	78	94	99	115	134							
		24	19	26	33	41	50	57	65	75	81	99	118	138						
		28	18	23	30	38	44	53	60	67	75	86	103	116	127	147				
		32	18	24	28	34	39	47	54	65	71	78	87	105	117	129	152	154		
		36	18	22	29	34	40	46	52	61	63	76	87	101	114	121	136	148	166	167
	10N@ 2.50	20	26	38	49	63	78	94	100	115	134									
		24	23	33	42	54	65	75	89	99	104	130								
		28	21	30	38	48	56	64	74	84	101	109	134	147						
		32	21	28	36	43	52	62	69	76	87	107	118	130	153					
		36	22	28	37	44	52	64	71	77	85	100	116	130	151	157				

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT -- KIPS																	
			4	6	8	10	12	14	16	18	20	24	28	32	36	40	44	48	52	56
28	3N@ 9.33	24	18	18	19	22	24	27	29	36	39	43	53	62	70	71	78	85	89	98
		28	18	18	19	20	22	25	26	28	31	39	43	46	55	61	66	76	83	86
		32	15	18	19	19	21	23	24	27	28	34	39	45	48	53	58	66	80	81
	4N@ 7.00	24	15	16	20	24	27	32	38	40	48	55	62	71	82	95	104	106	120	135
		28	15	15	18	21	25	28	32	36	39	49	56	64	71	79	96	97	106	107
		32	15	15	17	20	23	25	29	33	37	43	50	58	62	70	85	90	99	102
	5N@ 5.60	24	15	18	24	29	34	39	46	52	58	66	78	96	102	111	126	136		
		28	15	17	21	26	30	35	39	46	50	61	68	77	90	99	107	114	130	142
		32	16	17	20	24	27	32	37	41	44	56	62	70	80	93	102	107	112	119
	6N@ 4.67	24	16	21	28	35	41	49	55	63	70	79	96	106	134	137				
		28	15	20	24	30	36	42	50	54	58	71	82	99	107	118	138	142		
		32	16	19	23	28	32	37	43	49	53	64	74	84	101	102	111	123	144	146
	7N@ 4.00	24	18	24	32	41	49	56	64	74	79	96	110	135						
		28	17	22	27	35	43	51	57	62	69	82	99	108	129	140				
		32	16	21	27	31	38	44	52	55	63	74	85	102	108	123	143	146		
	8N@ 3.50	24	20	28	37	48	55	64	74	79	95	105	134							
		28	18	25	32	39	50	58	65	72	81	99	108	129	141					
		32	17	24	29	38	43	53	60	64	70	86	103	113	127	147	149			
	10N@ 2.80	24	24	36	46	57	70	79	96	102	117	137								
		28	23	30	41	50	60	69	82	99	100	120	141							
		32	21	30	38	46	55	66	71	80	93	109	126	147						
30	3N@ 10.00	24	18	18	21	24	27	31	35	38	40	48	58	66	71	80	92	98	117	119
		28	18	18	19	22	25	27	30	35	37	42	49	56	63	70	79	82	93	99
		32	18	18	19	20	22	26	28	31	32	39	46	51	57	64	71	73	83	84
		36	16	19	19	19	21	23	26	28	31	35	39	46	52	57	64	65	73	75
	4N@ 7.50	24	16	18	23	29	33	37	42	49	53	64	76	85	101	104	126	127	149	150
		28	15	16	21	25	30	33	37	42	45	53	61	73	81	86	103	104	126	128
		32	15	16	18	22	26	30	34	37	43	51	55	62	70	77	87	103	105	116
		36	16	16	17	22	24	27	31	34	36	46	52	59	64	74	78	88	91	105
	5N@ 6.00	24	15	19	25	30	37	43	51	55	58	73	86	96	109	125	134			
		28	15	17	23	27	32	37	44	47	53	61	75	88	97	102	112	128	138	
		32	16	17	21	24	29	35	39	43	48	56	63	77	90	100	101	107	117	133
		36	16	17	20	24	27	31	36	40	43	51	60	70	80	86	94	103	110	118
	6N@ 5.00	24	16	24	29	37	45	52	58	66	73	94	104	116	134					
		28	16	20	27	32	38	44	50	57	65	75	97	99	107	137	140			
		32	16	19	24	29	34	40	45	51	58	65	82	98	100	109	121	142	144	
		36	16	18	23	26	31	37	41	46	52	61	70	84	101	102	111	123	126	148
	8N@ 3.75	24	21	32	40	51	63	73	83	99	111	124	146							
		28	20	30	37	44	53	61	73	80	86	114	126	149						
		32	18	26	34	42	49	55	63	71	79	104	117	130	154	161				
		36	17	23	32	39	46	54	61	69	76	89	108	121	134	154	169			
	10N@ 3.00	24	25	38	51	66	78	99	111	123	134									
		28	24	36	47	57	69	80	94	113	116	138								
		32	22	31	39	52	58	74	82	95	105	129	142							
		36	22	30	39	48	54	68	79	84	91	119	132	151						
32	3N@ 10.67	24	18	19	21	26	27	34	38	40	42	54	61	70	75	84	88	102	102	113
		28	16	17	18	24	26	28	31	34	37	43	55	60	69	70	76	85	89	93
		32	17	17	18	21	25	26	28	32	34	39	44	54	61	62	67	77	80	86
		36	15	17	19	20	23	25	26	28	30	38	40	45	51	53	58	67	81	77
	4N@ 8.00	24	18	19	23	26	32	37	40	47	55	61	72	86	94	103	114	133	134	
		28	15	18	20	24	28	32	37	40	45	55	62	70	78	94	96	105	121	135
		32	15	15	20	22	25	29	32	36	39	49	56	64	71	83	82	97	102	107
		36	15	16	17	21	24	26	30	34	36	43	50	58	65	70	85	90	99	102
	5N@ 6.40	24	15	20	27	33	39	44	51	57	65	77	93	100	123	133				
		28	15	18	24	28	34	39	46	52	58	66	74	96	101	110	126	137		
		32	15	17	22	26	32	35	41	46	53	61	68	77	90	99	105	114	130	142
		36	16	17	21	24	27	33	37	42	47	56	62	70	79	93	102	106	117	120
	6N@ 5.33	24	17	24	31	39	47	55	61	69	76	94	103	133	134					
		28	16	21	27	35	40	48	55	60	67	79	96	105	117	137				
		32	16	20	25	30	36	42	50	54	58	71	82	99	103	118	139	142		
		36	16	19	24	28	34	38	44	49	55	66	73	84	101	102	111	123	144	146
	8N@ 4.00	24	22	32	40	54	61	72	86	93	103	133								
		28	19	27	35	45	55	63	70	80	95	105	134	137						
		32	18	25	32	39	50	58	65	71	81	99	109	120	141					
		36	18	24	31	38	43	53	59	67	71	86	103	113	127	147				

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT -- KIPS																		
			4	6	8	10	12	14	16	18	20	24	28	32	36	40	44	48	52	56
35	4N@ 8.75	28	16	19	23	27	31	36	41	46	52	60	74	79	94	100	111	117	137	138
		32	15	18	21	24	28	33	37	39	45	53	60	73	80	92	100	106	112	127
		36	15	16	20	23	27	30	33	37	41	561	55	62	74	83	94	97	107	113
		40	15	16	17	21	26	27	30	37	38	46	52	61	64	75	90	95	96	108
	5N@ 7.00	28	15	20	26	32	37	43	52	57	59	73	86	100	109	126	136			
		32	15	18	24	29	34	37	45	50	53	66	75	88	100	102	112	128	138	
		36	16	17	23	27	29	35	40	46	48	62	68	77	90	100	104	115	131	133
		40	16	17	22	25	27	33	37	43	47	56	63	70	80	95	102	107	115	125
	6N@ 5.83	28	17	24	30	37	44	52	58	65	73	93	103	115	134					
		32	16	21	27	33	38	46	53	57	65	79	96	100	117	139	140			
		36	16	20	25	31	36	41	48	54	58	70	81	99	102	113	121	142	144	
		40	16	20	24	28	34	38	44	49	55	64	77	84	101	104	115	123	145	146
	7N@ 5.00	28	19	27	34	43	52	59	66	74	86	101	115	135						
		32	17	24	30	39	47	53	61	67	75	97	103	118	137					
		36	17	23	28	35	42	48	55	62	69	82	99	105	120	141	144			
		40	17	22	27	32	39	44	50	55	63	73	86	102	107	118	133	147		
	8N@ 4.38	28	21	30	39	48	59	69	78	94	98	115	136							
		32	20	27	36	42	53	61	69	79	88	101	118	138						
		36	19	26	32	39	48	55	62	71	77	99	109	121	141					
		40	18	24	30	37	44	54	60	65	73	86	102	113	127	147	149			
38	4N@ 9.50	32	16	19	21	26	31	34	39	43	48	58	67	74	87	100	101	111	127	138
		36	15	17	21	24	28	33	35	39	44	53	60	74	75	93	97	106	112	123
		40	15	16	20	23	27	30	34	37	41	51	55	62	74	83	94	98	107	109
		44	16	16	20	22	26	28	30	35	38	46	52	58	65	75	90	95	95	108
	5N@ 7.60	32	15	20	25	31	36	42	46	52	59	70	86	96	101	111	126	137		
		36	16	20	24	28	33	38	45	47	53	64	74	89	98	103	112	129	138	
		40	16	20	23	26	31	35	40	46	48	59	70	78	91	101	105	113	117	134
		44	17	20	22	25	30	33	39	41	48	56	63	75	80	93	102	107	111	118
	6N@ 6.33	32	17	24	30	35	41	49	55	62	70	86	98	105	125	136				
		36	16	21	27	33	39	47	50	57	61	75	89	100	107	118	141	142		
		40	16	21	25	31	36	40	48	55	59	71	82	99	102	109	121	143	142	
		44	17	20	24	29	33	38	44	49	55	64	77	84	102	104	115	123	145	147
	8N@ 4.75	32	20	29	38	47	56	64	74	86	95	105	135							
		36	19	28	35	42	50	57	65	76	81	101	113	138	140					
		40	19	26	32	40	48	55	62	67	78	100	103	121	142	144				
		44	20	24	30	39	47	51	57	64	71	86	102	113	127	147	149			
40	4N@ 10.00	32	17	20	23	29	37	40	47	50	56	64	73	86	103	114	126	128	149	151
		36	17	19	22	29	31	37	40	44	51	57	65	74	87	103	104	125	127	128
		40	17	18	22	25	29	33	37	40	47	52	62	73	77	87	96	104	117	127
		44	16	17	20	24	29	31	36	38	41	49	59	66	74	78	84	96	106	106
		48	17	17	20	24	25	30	32	37	39	48	53	59	67	78	78	85	99	106
	5N@ 8.00	32	15	21	26	32	38	43	52	55	62	73	86	101	109	124	134			
		36	16	20	24	30	34	39	45	53	55	66	74	88	102	102	112	128	138	
		40	16	20	24	27	32	37	41	46	51	62	68	77	90	100	105	115	130	142
		44	17	20	23	29	32	37	41	49	50	58	70	82	84	99	116	118	130	141
		48	17	20	23	26	31	34	40	41	50	57	68	75	85	95	100	119	120	132
	6N@ 6.67	32	16	24	30	38	44	52	58	65	72	93	100	115	133					
		36	17	22	27	34	39	47	53	60	67	79	97	102	117	137	141			
		40	16	21	26	30	36	43	48	54	62	71	82	99	103	114	130	142		
		44	17	21	24	28	36	40	47	51	55	66	78	91	102	107	116	134	142	146
		48	17	21	24	31	36	42	46	53	57	69	79	86	100	109	132	133	135	164
	7N@ 5.71	32	18	26	33	43	52	58	66	74	86	101	115	135						
		36	17	24	31	39	47	53	61	67	75	97	103	117	136					
		40	17	24	29	35	43	49	55	62	69	82	99	105	119	140				
		44	20	22	28	33	39	48	55	59	64	78	92	102	111	122	143			
		48	20	23	28	36	41	48	54	61	66	80	86	108	122	134	136	164	167	
	8N@ 5.00	32	21	29	38	48	58	67	78	94	96	115	135							
		36	19	27	36	46	53	60	68	80	88	102	118	137						
		40	19	25	34	39	49	58	65	72	82	99	109	120	141					
		44	21	27	33	39	47	56	63	70	75	93	103	120	136	147				
		48	20	25	32	42	47	55	62	69	80	90	104	122	136	155	170			
	10N@ 4.00	32	29	39	51	64	79	92	112	123	125	149								
		36	25	36	47	60	69	81	94	103	125	150								
		40	24	36	45	56	66	75	82	96	115	129	152							
		44	23	32	41	51	60	71	82	84	99	119	143	161						
		48	23	32	41	52	58	68	76	85	94	121	134	152						

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT -- KIPS																		
			4	6	8	10	12	14	16	18	20	24	28	32	36	40	44	48	52	56
42	4N@ 10.50	32	16	21	25	29	34	38	43	49	53	67	74	86	99	101	112	125	134	138
		36	16	19	22	26	32	35	39	44	47	58	67	73	87	95	101	112	118	129
		40	16	19	21	24	28	34	36	41	45	53	61	73	76	93	97	97	113	122
		44	16	19	20	23	27	31	34	38	42	51	55	62	74	84	94	97	108	109
		48	16	19	21	24	26	29	32	36	39	47	54	62	65	75	90	95	97	108
	5N@ 8.40	32	16	22	28	35	41	45	52	57	66	74	88	100	110	125				
		36	15	21	25	31	36	42	46	52	59	70	85	96	102	111	126	137		
		40	16	21	24	28	33	39	44	51	54	64	74	89	98	103	113	129	130	
		44	16	20	24	27	31	37	40	46	52	59	69	78	91	101	105	113	126	134
		48	17	20	23	27	30	35	39	42	48	57	63	75	81	95	102	107	115	118
	6N@ 7.00	32	18	25	32	39	45	55	61	69	77	93	103	124	135					
		36	17	23	30	35	41	49	56	60	67	79	96	105	117	137				
		40	17	21	26	33	39	46	54	57	61	75	89	100	108	119	141	142		
		44	16	21	24	31	35	41	48	54	59	71	81	100	102	109	121	143	142	
		48	20	20	25	29	33	39	44	49	56	64	77	85	102	104	115	124	145	147
	7N@ 6.00	32	20	28	36	45	52	65	72	85	93	102	125							
		36	19	26	34	40	49	56	67	74	79	98	110	127	138					
		40	18	24	31	38	46	54	61	68	75	90	101	113	129	142				
		44	20	23	29	35	41	49	55	63	70	78	100	106	116	132	145			
		48	18	23	28	34	39	44	50	56	64	73	92	102	108	118	136	149		
	8N@ 5.25	32	22	32	40	51	62	72	78	94	100	124	135							
		36	20	27	38	46	56	64	74	79	96	105	126	138						
		40	20	26	35	42	51	57	65	76	81	101	113	138	141					
		44	20	25	32	39	49	55	63	70	78	99	107	121	142	147				
		48	21	26	32	41	48	56	63	67	74	93	103	112	128	148				
	10N@ 4.20	32	27	38	52	62	77	94	101	114	134									
		36	25	36	46	60	70	86	97	102	112	140								
		40	24	34	45	54	64	75	89	99	104	129								
		44	23	31	41	52	61	70	79	91	100	114	143							
		48	23	30	39	49	56	66	72	80	93	107	125	146						
45	4N@ 11.25	36	18	21	25	28	33	38	42	46	52	62	72	79	95	100	112	117	128	138
		40	19	21	22	27	31	35	39	44	47	55	64	75	87	95	101	112	113	128
		44	19	21	22	24	29	33	37	39	45	53	61	74	76	89	95	102	108	114
		48	18	21	22	24	28	31	34	38	40	51	55	63	75	83	94	95	107	109
		52	18	22	23	24	27	29	33	37	39	47	52	60	66	76	91	95	96	109
	5N@ 9.00	36	16	22	27	33	38	44	52	55	63	74	86	101	109	125	136			
		40	16	21	25	30	36	42	45	53	56	68	75	88	102	111	122	128		
		44	16	21	24	29	34	38	44	46	54	65	74	85	90	103	110	123	130	142
		48	20	21	24	27	32	36	41	45	52	59	67	75	91	95	106	112	118	134
		52	20	21	24	27	30	35	39	42	48	57	64	75	81	94	98	107	117	119
	6N@ 7.50	36	19	24	31	38	45	52	58	66	74	93	100	115	134					
		40	19	23	28	34	40	47	53	60	67	79	97	103	117	137	140			
		44	19	21	27	32	38	46	50	54	62	76	90	100	107	118	139	142		
		48	20	21	26	30	36	42	48	55	59	69	78	92	102	110	122	143	143	
		52	20	21	25	29	34	39	44	50	56	64	77	85	102	102	116	124	136	148
	7N@ 6.43	36	20	27	35	44	52	58	66	74	86	101	115	135						
		40	20	26	33	40	47	54	61	67	75	97	105	127	138					
		44	20	24	30	39	46	54	61	62	69	90	100	113	129	143				
		48	20	23	29	36	41	49	55	63	70	79	92	107	117	133	145			
		52	18	23	28	34	39	45	50	56	65	73	93	102	109	118	136	149		
	8N@ 5.62	36	21	30	38	48	58	67	78	94	98	114	135							
		40	20	28	36	46	53	61	68	80	89	105	118	137						
		44	20	27	34	41	51	58	66	73	81	99	109	130	141					
		48	21	26	32	39	47	55	63	68	74	92	104	116	142	146				
		52	22	28	33	42	48	54	59	67	71	94	102	112	127	148				
	9N@ 5.00	36	24	34	45	55	66	74	88	98	104	135								
		40	22	31	39	49	61	69	80	89	100	113	138							
		44	23	31	39	48	58	66	76	89	99	108	132							
		48	23	29	37	47	55	63	70	79	91	106	117	133						
		52	23	28	36	46	55	60	70	73	84	102	112	135	148					
	10N@ 4.50	36	26	38	49	60	73	86	98	105	116	137								
		40	25	35	47	60	66	76	90	102	112	140								
		44	24	33	46	54	64	72	89	99	104	130	142							
		48	24	31	40	49	62	71	78	91	100	114	134							
		52	23	31	39	50	56	67	72	80	93	107	123	147						

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT – KIPS																	
			4	6	8	10	12	14	16	18	20	24	28	32	36	40	44	48	52	56
48	5N@ 9.60	36	19	26	31	37	45	52	59	66	71	87	111	113	135	136				
		40	19	23	29	35	41	46	52	59	68	77	92	112	114	136	138			
		44	19	22	27	32	37	44	48	54	61	69	80	93	113	116	126	139	150	
		48	19	21	25	30	36	40	48	48	55	69	78	90	96	115	116	128	140	142
		52	20	21	25	29	33	39	42	50	54	62	71	82	92	99	117	118	130	141
		56	20	21	24	29	33	38	40	46	50	59	71	79	85	100	100	119	120	133
	6N@ 8.00	36	20	28	35	42	51	62	70	78	83	100	122	134	147					
		40	19	25	33	39	47	56	64	71	79	93	112	124	137	148				
		44	19	24	31	36	45	50	57	65	73	81	102	115	127	138	151			
		48	19	23	30	35	40	48	52	59	67	78	95	105	116	129	141	160		
		52	20	23	27	32	38	46	51	59	60	75	83	97	107	130	131	144	162	
		56	20	22	27	31	37	42	48	54	61	69	80	91	107	120	132	134	153	165
	8N@ 6.00	36	30	36	45	56	64	78	91	100	122	134								
		40	28	33	42	51	59	70	80	92	101	124	148							
		44	27	32	39	49	55	65	74	82	95	114	127	150						
		48	26	30	37	47	53	60	68	76	84	105	129	131	154					
		52	26	30	36	44	51	59	65	71	80	99	119	132	146	164				
		56	25	28	36	43	49	57	63	69	78	90	109	123	136	155				
	9N@ 5.33	36	35	44	55	70	79	91	99	121	122	146								
		40	34	42	52	63	74	88	93	101	113	136								
		44	33	39	50	59	69	83	91	94	103	126	150							
		48	33	37	46	56	66	76	85	94	97	118	130							
		52	31	36	46	54	63	72	80	95	101	108	132	152						
		56	31	35	44	53	62	69	80	89	98	103	123	137	165					
	12N@ 4.00	36	35	52	71	84	100	123	135	148										
		40	34	48	65	76	93	113	125	137	149									
		44	31	44	57	73	82	102	115	126	139									
		48	30	41	53	67	76	88	104	117	130	153								
		52	30	39	52	61	76	84	97	107	131	144								
		56	27	38	49	61	70	81	91	108	122	135	165							
50	5N@ 10.00	40	18	23	30	38	44	47	56	60	68	79	93	113	124	136	138			
		44	17	22	29	34	40	46	51	56	61	76	89	94	113	126	137	139		
		48	19	22	28	31	38	42	48	55	61	69	78	94	96	115	127	139	141	
		52	20	22	25	31	35	40	45	49	55	62	74	82	96	116	117	129	141	142
		56	20	22	25	30	32	40	43	50	51	63	71	83	92	99	117	119	131	142
		60	20	20	24	30	33	36	42	46	51	58	65	76	86	96	101	120	121	133
	6N@ 8.33	40	20	28	34	42	48	56	64	71	80	100	112	124	147					
		44	19	24	31	38	47	50	57	65	73	85	102	124	127	149				
		48	19	23	30	37	40	49	57	65	67	82	95	115	127	129	151			
		52	20	23	30	36	40	46	52	59	67	75	84	105	117	129	131	153	162	
		56	20	23	26	33	39	42	51	54	60	72	84	98	107	120	132	144	163	164
		60	21	23	27	33	38	43	49	53	61	70	80	87	102	110	123	134	154	165
	8N@ 6.25	40	22	31	39	51	59	67	78	86	96	110	135							
		44	21	29	37	47	53	61	70	80	96	103	118	139						
		48	21	27	35	42	51	58	69	76	81	99	114	130	142					
		52	21	25	33	40	49	55	63	70	78	99	107	121	141					
		56	24	29	36	42	47	56	64	68	78	94	108	118	137	148				
		60	24	27	35	40	47	55	61	69	74	83	103	110	123	139	149			
	9N@ 5.56	40	24	34	44	55	66	74	86	96	104	134								
		44	23	32	40	53	61	69	80	88	98	113	138							
		48	24	32	42	52	58	69	77	90	99	111	133							
		52	24	31	40	47	58	66	74	79	92	106	126	143						
		56	24	30	38	46	55	60	68	77	89	102	116	135						
		60	24	32	38	49	53	61	70	75	83	97	111	125	141					
	10N@ 5.00	40	26	38	49	60	74	87	96	104	116	136								
		44	25	36	47	60	68	84	96	102	112	140								
		48	24	34	46	54	65	76	89	99	103	130								
		52	24	34	45	52	62	70	79	91	100	114	134							
		56	23	32	41	48	60	70	76	87	93	107	134	146						
		60	24	31	40	49	57	66	73	81	94	109	119	138						
	12N@ 4.17	40	34	49	65	80	100	112	125	147										
		44	31	44	57	73	86	102	126	127	149									
		48	30	41	58	67	82	96	115	127	130	154								
		52	30	39	53	68	76	84	105	118	130	154								
		56	27	40	52	61	70	85	99	108	122	135	164							
		60	27	39	49	61	70	82	88	104	112	135	166							

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT – KIPS																	
			4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24	26	28
55	5N@ 11.00	44	21	21	24	25	29	32	35	38	41	43	47	53	59	63	71	82	83	86
		48	21	21	23	24	28	30	32	35	38	41	43	49	56	60	64	71	73	83
		52	20	22	23	25	27	29	32	33	36	39	42	44	52	57	65	66	74	74
		56	20	21	24	24	26	28	31	33	36	37	39	44	51	53	58	66	66	74
		60	23	24	24	24	27	27	31	33	35	38	38	45	47	52	60	61	67	68
		66	24	24	24	25	26	28	28	33	34	37	37	42	47	48	55	56	62	69
	6N@ 9.17	44	19	22	26	29	33	36	38	43	45	51	52	59	66	75	86	86	98	101
		48	20	22	24	28	31	33	36	40	44	46	50	56	64	68	75	87	89	98
		52	20	22	24	26	29	33	35	37	41	59	59	66	74	86	93	99	109	110
		56	18	21	24	25	28	31	35	36	39	42	47	52	55	63	70	71	78	91
		60	20	21	24	25	29	30	33	35	38	39	43	48	55	60	64	71	75	80
		66	19	20	22	24	28	30	31	33	36	39	40	47	50	56	62	65	73	73
	7N@ 7.86	44	21	24	28	33	36	39	44	50	53	59	59	70	75	87	97	102	111	120
		48	21	24	27	31	34	38	43	45	51	54	56	65	72	76	89	98	103	110
		52	21	23	26	29	33	36	39	44	46	52	55	62	69	74	86	91	100	105
		56	20	22	25	28	31	35	38	40	46	48	53	55	64	70	79	87	92	101
		60	21	22	24	27	30	33	36	39	41	47	49	56	64	68	72	81	93	94
		66	22	22	24	26	30	32	36	37	40	43	48	52	58	65	70	74	83	84
	9N@ 6.11	44	24	29	34	39	46	52	55	60	67	74	74	87	98	105	116	135	137	
		48	24	28	32	38	40	47	53	57	61	68	69	81	97	103	107	118	129	139
		52	25	30	33	39	43	47	52	57	65	65	73	77	90	104	105	114	125	133
		56	24	29	32	38	43	46	51	53	59	66	67	75	87	92	105	107	117	128
		60	24	27	32	36	40	45	47	52	56	60	67	71	80	93	95	108	109	118
		66	24	27	31	35	39	42	46	49	54	58	61	71	78	83	91	97	111	113
	11N@ 5.00	44	30	36	43	49	55	63	67	74	87	88	97	106	126	137				
		48	28	33	39	45	54	61	65	69	76	87	89	103	112	128	139			
		52	27	34	37	44	52	55	62	66	73	77	88	99	105	115	131	142		
		56	27	33	39	42	48	54	60	64	68	77	80	93	102	107	118	134	146	
		60	26	31	37	40	47	49	58	64	67	72	77	82	95	108	110	121	137	148
		66	26	31	36	39	45	50	54	60	65	68	74	82	97	98	113	117	126	141
60	5N@ 12.00	48	21	23	27	29	33	35	39	43	44	49	51	57	63	69	76	87	89	94
		52	21	22	27	28	31	33	36	40	44	45	47	52	60	65	69	77	85	90
		56	22	23	24	28	30	31	34	36	41	44	45	52	59	63	69	74	78	87
		60	22	23	24	28	29	32	34	35	40	42	45	49	53	60	66	70	75	80
		66	24	24	24	26	30	30	33	35	36	38	42	47	51	56	61	67	72	73
		72	25	25	25	25	27	30	31	35	36	37	39	45	48	56	56	63	69	70
	6N@ 10.00	48	20	24	29	32	36	38	41	47	49	56	60	67	72	80	93	93	112	113
		52	20	23	28	30	33	37	39	46	48	50	57	62	69	78	80	94	94	113
		56	19	24	25	30	33	38	39	42	48	49	51	58	66	69	79	83	95	96
		60	19	23	24	29	32	34	39	40	43	49	50	57	63	70	75	83	83	96
		66	19	23	24	27	32	32	34	40	42	44	50	52	61	65	69	77	84	85
		72	22	22	24	27	28	33	34	36	41	43	44	52	54	63	68	71	75	87
	8N@ 7.50	48	24	29	34	39	43	49	56	57	64	72	72	80	93	112	123	125	136	148
		52	23	29	31	37	40	48	50	57	58	66	72	81	94	103	114	125	127	139
		56	23	26	31	36	38	44	49	51	58	60	66	75	83	96	104	116	127	129
		60	23	26	32	33	39	42	47	50	53	59	61	69	77	85	98	106	118	129
		66	28	30	33	34	41	43	46	48	53	57	62	70	78	82	90	100	108	120
		72	29	30	31	34	36	41	46	47	52	58	59	66	73	80	90	92	104	110
	10N@ 6.00	48	26	32	37	44	49	55	60	67	74	79	87	97	105	118	137	138		
		52	28	34	38	44	50	56	64	65	71	75	88	97	103	113	130	138		
		56	27	33	37	43	46	51	58	66	65	72	76	90	104	105	123	131	143	
		60	25	31	37	39	45	51	57	60	66	70	73	86	93	104	111	126	134	
		66	27	32	37	42	49	51	56	62	65	72	74	85	95	102	120	122	134	145
		72	26	32	33	38	42	47	50	55	59	66	69	74	83	96	98	111	111	121
	12N@ 5.00	48	33	39	46	53	59	68	75	86	87	97	102	111	135					
		52	31	37	45	51	57	65	69	76	88	89	98	104	118	139				
		56	29	36	41	48	55	62	66	72	77	89	91	104	113	129	140			
		60	30	35	39	47	54	56	64	73	74	79	91	102	106	116	133	145		
		66	32	35	41	48	53	61	62	70	77	80	87	100	110	122	134	147	164	
		72	29	33	38	42	50	52	60	61	69	72	77	86	100	110	114	127	142	151
	15N@ 4.00	48	40	49	64	72	80	93	102	113	124	126	136							
		52	39	48	57	66	74	81	94	103	114	126	127	150						
		56	38	46	53	67	71	80	83	96	104	116	127	140	153					
		60	38	42	51	60	68	76	83	89	98	106	118	132	144					
		66	35	41	49	55	62	70	81	87	87	103	110	123	136	153	167			
		72	35	44	46	55	64	66	77	85	90	93	106	125	139	142	160	171		

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT – KIPS																	
			4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24	26	28
65	6N@ 10.83	52	22	28	30	33	39	41	45	49	54	58	61	69	78	83	95	97	115	116
		56	21	25	29	33	35	40	42	48	49	55	58	63	70	80	84	97	97	117
		60	23	24	29	32	34	39	41	44	50	50	56	64	71	76	82	92	98	99
		66	22	24	26	31	33	35	40	42	45	51	51	58	65	73	78	83	87	100
		72	24	25	27	31	32	35	37	42	43	47	49	54	60	68	76	80	87	89
	8N@ 8.12	52	25	31	38	40	44	51	58	62	66	74	74	83	97	115	127	129	141	153
		56	24	30	34	39	43	50	52	59	63	68	74	83	97	105	118	129	131	143
		60	23	28	33	39	41	47	51	53	60	68	69	77	85	99	108	119	130	133
		66	24	28	33	35	42	44	49	52	56	63	63	75	80	89	101	110	122	124
		72	38	39	39	39	42	45	47	52	56	58	65	73	78	89	92	104	113	125
	9N@ 7.22	52	30	32	38	44	49	58	62	67	74	79	83	97	116	128	129	142	153	
		56	26	32	39	42	48	53	59	68	68	76	81	98	106	118	130	142	144	155
		60	25	32	38	40	47	51	58	60	69	70	78	86	100	109	120	132	145	146
		66	28	32	37	41	44	50	53	60	64	71	72	81	89	103	112	124	136	138
		72	29	30	35	38	44	46	52	57	62	66	71	79	91	91	108	115	127	140
	10N@ 6.50	52	31	36	41	49	58	62	67	75	82	89	97	116	128	131	154	155		
		56	31	36	40	46	52	60	68	69	77	85	91	107	119	132	144			
		60	29	34	40	44	51	57	61	70	74	78	87	100	109	122	134	146		
		66	27	34	39	43	50	54	60	65	72	74	82	90	103	113	125	138	140	163
		72	27	33	37	44	47	52	56	62	67	75	76	87	93	110	127	129	141	143
	11N@ 5.91	52	33	39	45	52	59	67	75	83	89	98	106	118	131	153				
		56	32	39	44	51	60	64	69	77	85	91	99	119	132	144	156			
		60	33	38	44	49	55	63	70	74	79	86	92	109	122	134	147			
		66	30	37	42	46	54	57	64	72	73	81	90	104	113	125	139	147	164	
		72	30	36	41	47	51	57	62	67	77	77	88	93	110	118	131	144	156	173
	13N@ 5.00	52	37	45	55	64	72	79	89	98	106	117	130	142						
		56	37	43	53	61	69	77	86	91	99	108	120	133	146					
		60	35	41	50	58	64	71	77	85	93	100	108	131	134	158				
		66	34	41	49	53	62	70	75	80	87	93	102	122	134	137	161			
		72	34	41	46	53	58	64	72	78	85	90	90	113	127	138	141	170		
70	7N@ 10.00	56	24	25	30	35	39	43	46	51	56	57	64	71	83	88	102	102	110	121
		60	23	26	30	33	37	43	44	50	52	57	61	66	73	85	90	102	105	111
		66	24	27	30	32	35	39	44	46	51	53	58	67	73	75	87	93	104	106
		72	24	25	29	32	34	38	42	46	47	53	54	60	69	76	78	89	94	102
		78	25	26	28	31	34	37	40	43	47	49	50	58	63	71	78	83	90	96
		84	24	27	29	31	35	37	39	42	44	49	51	57	65	69	72	80	85	94
	9N@ 7.78	56	26	31	37	40	45	53	56	61	67	72	75	88	102	110	122	128		
		60	25	30	35	39	45	47	54	61	65	70	73	89	99	105	114	129	131	
		66	31	34	38	43	48	51	56	63	67	70	74	86	92	106	112	122	127	
		72	32	33	37	43	45	51	56	58	64	67	69	77	89	100	108	114	124	131
		78	32	34	36	39	45	48	53	59	60	66	66	76	87	93	102	110	116	118
		84	33	34	35	38	45	47	50	55	59	63	67	72	81	94	95	103	113	118
	10N@ 7.00	56	27	34	38	45	53	57	60	68	75	80	88	100	106	118	137			
		60	30	36	41	48	55	60	65	69	71	84	88	102	109	122	130			
		66	29	35	42	44	51	55	62	66	70	73	85	91	105	109	123	132		
		72	30	34	38	43	47	52	59	63	66	69	78	88	94	106	112	127	133	
		78	30	33	37	40	46	51	55	61	65	71	71	79	94	96	108	115	130	137
		84	31	33	36	40	47	49	55	57	63	70	72	80	92	98	109	112	121	133
	11N@ 6.36	56	32	41	45	51	60	64	71	83	87	89	102	108	127	138				
		60	30	39	44	50	57	65	66	73	85	89	90	104	114	129				
		66	31	38	43	46	53	59	67	67	76	86	88	105	106	117	132			
		72	32	37	42	48	55	57	62	70	70	78	82	94	108	109	119	136	148	
		78	29	35	40	47	50	55	61	65	73	72	80	92	98	110	118	124	140	141
		84	30	36	39	45	49	52	59	66	68	73	78	84	97	102	116	124	129	144
	12N@ 5.83	56	34	41	50	56	63	68	76	87	88	102	103	113	129					
		60	33	39	46	55	58	65	74	76	89	90	103	112	128	139				
		66	32	37	45	48	55	63	67	76	78	90	92	105	115	130	143			
		72	32	37	42	48	55	61	65	69	77	80	89	102	107	119	135	148		
		78	30	36	42	48	51	56	64	70	72	80	84	97	106	113	123	141	151	
		84	30	36	40	45	51	53	61	68	73	77	83	89	102	115	118	128	144	151
	14N@ 5.00	56	36	44	53	63	71	75	87	96	102	111	120	137						
		60	37	43	54	61	69	75	88	89	99	103	112	128						
		66	35	42	48	55	64	70	77	90	92	102	106	115	132					
		72	34	40	49	55	61	69	73	81	91	95	103	110	120	138				
		78	33	39	44	52	58	67	72	76	84	92	97	111	120	138	141			
		84	33	40	44	51	58	62	69	78	79	86	97	106	116	127	143	155		

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT -- KIPS																	
			4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24	26	28
75	8N@ 9.38	56	29	33	40	43	49	55	61	65	73	79	82	95	115	116	128	140	152	
		60	26	32	38	42	48	51	58	63	70	75	80	92	97	116	118	130	142	153
		66	27	32	35	41	44	51	53	60	64	69	72	82	98	99	118	120	132	144
		72	26	32	34	41	43	46	52	58	61	66	71	79	87	100	101	121	122	134
		78	27	29	34	37	43	45	54	54	61	64	69	77	81	89	103	105	123	125
	10N@ 7.50	60	32	39	42	50	59	67	69	76	83	89	98	117	129	131	154			
		66	32	37	42	49	55	62	69	70	78	86	87	100	119	132	134			
		72	30	36	42	45	54	57	63	72	73	81	86	101	111	123	136	138		
		78	31	35	39	46	48	56	63	66	74	75	82	91	105	114	127	139	152	
		84	31	36	39	45	49	55	59	65	69	77	78	94	95	110	128	131	143	156
	12N@ 6.25	60	38	43	51	59	68	76	84	90	98	106	118	131	144					
		66	35	42	50	55	62	70	79	87	90	100	110	122	135	148				
		72	36	41	46	54	63	65	73	81	90	91	104	124	126	141	154			
		78	35	42	47	54	61	68	76	78	86	90	98	105	126	139	152	163		
		84	34	39	46	52	56	64	70	78	79	90	92	106	126	139	141	164	171	
	14N@ 5.36	66	41	48	56	63	72	80	89	102	111	122	125	137						
		72	41	46	52	61	70	75	84	95	101	110	121	134	148					
		78	37	44	53	61	68	76	80	89	98	103	107	125	139	151				
		84	38	44	52	57	64	71	79	86	92	100	108	127	130	153	171			
		90	37	42	50	58	66	73	77	87	94	94	110	119	142	144	173	176		
	15N@ 5.00	66	41	52	60	69	77	85	98	106	118	120	132	146						
		72	42	52	59	67	74	84	87	99	110	121	123	146	160					
		78	41	47	54	65	73	77	88	91	104	112	124	139	152	169				
		84	39	46	55	63	67	76	86	92	93	109	116	131	143	171	174			
		90	38	46	52	60	69	74	81	90	95	103	118	133	145	146	177			
80	8N@ 10.00	60	28	31	37	42	45	51	56	63	64	72	75	88	97	103	112	127	137	
		66	30	31	35	38	45	47	52	57	62	65	70	77	90	103	105	113	129	131
		72	29	32	33	38	41	46	48	53	59	63	68	76	87	92	106	108	116	126
		78	30	31	33	37	41	42	47	53	56	60	64	73	81	88	94	109	111	118
		84	30	32	35	37	39	43	48	52	56	59	63	71	79	83	96	98	112	114
		90	53	54	56	56	57	57	58	60	63	67	70	79	79	90	95	103	105	118
	10N@ 8.00	60	31	35	41	47	53	60	68	75	76	88	97	103	112	129	139			
		66	31	35	39	46	52	55	62	70	75	78	90	100	107	115	132	142		
		72	33	37	43	50	55	62	63	70	74	83	87	97	106	120	127			
		78	32	36	42	46	51	56	63	68	71	76	86	90	100	112	122	130		
		84	33	37	42	45	51	57	61	65	70	77	78	91	100	109	115	125	131	
		90	34	36	40	44	49	53	60	65	68	72	77	87	92	102	111	118	132	136
	12N@ 6.67	66	36	44	50	57	65	70	73	86	90	103	103	115	130					
		72	34	42	47	54	59	67	72	77	86	92	101	107	125	133				
		78	33	39	46	53	60	65	69	79	80	88	94	108	114	129	136			
		84	34	38	47	49	56	63	70	72	79	83	92	99	111	121	138	140		
		90	36	39	44	50	56	59	66	72	74	82	86	101	113	116	125	143	149	
		96	34	37	43	50	54	60	68	71	75	79	85	98	104	117	120	130	147	156
	14N@ 5.71	66	39	47	57	64	73	77	89	98	103	109	113	129						
		72	38	46	54	59	67	76	79	91	101	106	106	125	143					
		78	36	43	50	58	66	70	78	90	95	96	109	118	136	149				
		84	36	42	50	56	64	71	74	80	92	98	99	112	124	143				
		90	36	41	48	53	61	68	74	82	86	95	100	115	121	136	146			
		96	37	40	47	53	61	67	74	79	84	88	100	108	118	127	145	152		
	16N@ 5.00	66	42	53	62	70	78	90	101	105	113	129	130							
		72	41	50	57	69	76	81	93	102	109	116	118	145						
		78	41	49	58	66	73	83	91	96	104	112	120	137	149					
		84	39	45	54	61	69	76	84	97	100	109	115	126	143					
		90	39	46	54	62	70	74	80	86	101	102	114	119	144	155				
		96	40	46	55	58	68	73	81	88	94	106	110	121	133	155	164			

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT – POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT – KIPS																	
			4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24	26	28
90	9N@ 10.00	72	40	42	46	49	55	60	64	72	81	82	92	98	117	119	141	143		
		84	41	44	48	48	50	54	60	67	75	76	84	88	102	121	124	135	148	149
		90	54	55	56	56	57	59	62	65	72	77	85	88	99	105	125	128	138	
		96	55	56	57	57	58	59	64	65	69	74	80	91	98	107	110	128	131	142
		102	55	57	57	58	59	60	62	65	69	74	75	87	95	105	112	130	133	134
	10N@ 9.00	72	42	46	48	52	61	64	72	78	85	93	99	118	130	142	155			
		84	42	45	49	51	58	62	69	73	81	94	97	115	117	137	148			
		90	42	46	50	51	56	60	66	71	79	81	89	100	107	126	129	141		
		96	43	46	48	53	56	59	66	70	74	82	87	95	108	113	129	133	153	
		102	43	45	48	53	57	60	65	69	76	77	84	97	105	115	124	131	137	155
	11N@ 8.18	72	43	47	51	59	65	73	78	86	99	100	119	120	143					
		84	43	49	50	55	62	67	74	78	87	91	100	113	126	138	150			
		90	45	48	51	53	59	66	72	77	85	90	93	107	128	129	142			
		96	47	48	53	56	60	63	71	75	81	87	95	105	113	132	134	148		
		102	48	49	57	58	61	64	70	73	82	86	94	101	116	124	138	150	163	
	12N@ 7.50	78	44	49	53	60	68	72	79	88	102	103	111	124	149					
		84	45	49	52	56	65	75	79	84	91	103	105	125	137	149				
		90	46	50	52	60	68	75	79	88	89	100	106	126	128	151	152			
		96	46	48	52	58	63	72	76	82	90	93	103	110	129	132	153	156		
		108	45	49	55	56	64	66	76	81	85	92	97	107	115	135	137	160	168	
	15N@ 6.00	78	47	54	66	75	82	94	99	120	121	133	145	148						
		84	49	54	62	68	76	86	97	103	122	124	125	149						
		90	50	52	60	69	78	82	90	99	106	125	127	140	153					
		96	48	53	58	66	72	80	93	95	108	112	129	131	154	173				
		108	51	57	59	64	72	78	87	99	101	109	115	136	139	168	172			
	18N@ 5.00	78	51	62	74	84	99	102	120	133	145	148	159							
		84	51	61	73	80	89	104	113	124	137	150	151							
		90	52	58	70	79	90	93	106	126	129	142	153	166						
		96	53	58	68	78	87	95	108	113	131	133	144	158						
		108	57	59	64	76	85	95	103	113	120	127	139	151	172					
100	10N@ 10.00	78	45	49	52	55	58	62	68	75	79	91	92	106	115	131	140			
		84	47	50	53	55	58	61	69	72	77	81	93	102	109	118	133	143		
		96	55	56	56	57	62	64	68	74	84	86	87	102	116	125	126			
		102	55	56	57	58	61	64	66	73	77	86	89	100	106	121	127	133		
		108	56	57	58	59	61	64	67	70	76	80	87	92	106	107	127	130		
	12N@ 8.33	78	48	53	56	62	70	74	86	92	97	105	112	124						
		84	48	52	55	63	68	72	84	88	98	99	107	126	133					
		96	47	51	55	58	66	67	75	81	91	93	102	111	116	131				
		102	48	52	55	58	62	69	73	79	90	94	95	113	118	133	141			
		108	48	51	55	59	62	70	72	76	85	92	97	106	117	123	139	149		
	15N@ 6.67	78	53	56	67	75	86	91	104	106	115	125	133							
		84	53	56	61	69	78	88	94	107	113	118	128							
		96	52	56	61	68	72	82	93	99	105	114	118	133						
		102	53	56	60	66	74	83	85	97	102	116	117	125	144					
		108	53	56	59	65	73	77	87	99	103	104	118	123	140	149				
	16N@ 6.25	84	53	58	69	72	80	92	106	107	117	127	133							
		96	53	57	63	71	75	85	98	100	115	115	124	140						
		102	53	57	62	66	74	84	97	102	111	117	118	136	154					
		108	54	58	62	67	76	82	87	100	104	117	118	129	148					
		120	56	61	64	70	76	83	86	93	104	109	116	128	140	161				
	17N@ 5.88	84	55	61	70	77	88	94	107	114	127	133	145							
		96	54	59	65	72	80	93	99	113	115	121	135	151						
		102	55	59	66	73	79	87	98	102	118	118	127	144						
		108	55	60	65	69	78	87	91	105	107	119	120	140	160					
		120	56	62	67	71	78	87	93	100	110	112	125	133	149	168				
	18N@ 5.56	84	55	61	70	81	94	102	109	118	134	144								
		96	55	60	65	72	84	97	100	114	120	124	140							
		102	56	61	66	73	84	89	102	112	118	125	137	154						
		108	57	60	68	73	82	91	104	106	119	121	130	148						
		120	59	64	69	75	84	88	98	108	113	122	129	142	163					
	20N@ 5.00	84	58	66	77	94	103	109	118	134	146									
		96	60	65	73	83	99	108	115	123	125	144	153							
		102	59	65	71	80	89	103	114	121	129	147	147							
		108	60	67	71	80	89	106	110	123	126	134	149	164						
		120	68	73	90	101	108	113	123	133	152	155	166	182	200					

ASD

GIRDER SPAN (ft.)	JOIST SPACES (ft.)	GIRDER DEPTH (in.)	JOIST GIRDER WEIGHT -- POUNDS PER LINEAR FOOT LOAD ON EACH PANEL POINT -- KIPS																
			4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24	26	28
110	10N@ 11.00	84	54	58	61	65	69	73	82	83	94	99	100	120	143	144				
		96	62	62	63	65	69	72	81	82	91	97	98	107	125					
		108	63	63	64	67	69	72	75	82	86	91	95	105	113	131	133			
		114	63	64	67	68	72	73	76	79	86	88	96	108	115	133	136			
		120	64	64	66	69	72	74	76	81	83	88	90	100	111	128	137	140		
	12N@ 9.17	84	58	62	66	70	74	84	88	101	109	120	122	144						
		96	57	62	66	70	74	79	88	92	101	107	125	127	151					
		108	58	64	68	72	75	79	84	90	95	106	111	132	136	158				
		114	59	65	66	71	75	79	84	89	102	106	107	126	134	156	158			
		120	59	62	67	72	74	79	82	91	96	107	109	126	135	158	161			
	14N@ 7.86	84	60	66	71	76	84	97	102	122	123	134	147							
		96	60	65	69	74	83	95	100	105	124	125	136	150						
		108	60	64	69	72	78	87	99	103	108	120	128	142	155					
		114	61	65	69	74	79	84	93	103	105	111	124	133	157					
		120	60	66	69	74	80	82	90	96	106	109	126	135	158	160				
	16N@ 6.88	96	62	68	72	79	89	104	106	125	126	147	149							
		102	63	67	74	80	89	103	108	125	127	128	152	156						
		108	64	68	73	81	83	95	104	110	127	130	142	158						
		114	65	70	74	80	86	95	105	111	114	132	135	161	162					
		120	66	69	75	81	88	97	99	109	117	135	138	152	165					
	18N@ 6.11	96	64	71	77	87	99	106	125	127	148	151								
		102	66	70	80	89	101	109	127	128	139	152	153							
		108	66	71	77	83	94	106	111	129	131	144	157							
		114	67	73	79	85	97	107	113	132	134	137	159	163						
		120	68	74	79	88	91	101	110	118	136	139	152	166						
	20N@ 5.50	96	68	77	82	99	106	125	139	152	154									
		102	69	75	81	94	109	129	130	142	154	155								
		108	69	77	83	94	106	114	132	133	145	157	169							
		114	69	77	86	91	101	115	134	135	147	160	161							
		120	66	72	77	83	93	106	113	126	128	137	154	167						
120	10N@ 12.00	96	63	66	69	72	76	78	82	86	89	89	94	108	115	129				
		102	64	67	69	71	75	79	83	83	86	91	92	110	117	131	137			
		108	78	79	82	83	83	83	86	91	95	94	100	108	126					
		114	78	79	82	83	83	84	86	91	90	95	95	109	127	128				
		120	79	81	83	84	84	85	86	88	92	92	97	102	113	133				
	12N@ 10.00	96	68	69	71	77	82	86	90	99	100	113	125	130						
		102	68	69	72	78	80	85	88	96	101	102	116	130						
		108	69	70	72	75	81	86	90	91	99	103	105	128	134					
		114	70	70	71	75	82	86	87	92	95	100	130	121	135					
		120	70	71	72	76	80	84	88	92	93	102	107	123	133	138				
	15N@ 8.00	96	69	74	77	82	90	96	109	115	125	129	134							
		102	70	73	78	84	88	93	103	113	118	129	132							
		108	70	73	80	85	90	95	101	106	115	119	133							
		114	70	73	78	83	88	93	98	107	117	121	122	137						
		120	72	74	78	84	89	94	99	100	110	118	124	140						
	16N@ 7.50	96	70	76	80	85	90	100	109	114	128	134								
		102	70	74	78	86	92	97	110	112	120	131	137							
		108	70	74	80	85	90	95	100	114	120	124	133							
		114	70	73	81	86	91	96	101	107	117	122	135	145						
		120	70	75	79	85	90	94	99	103	118	119	126	147						
	18N@ 6.67	96	71	77	85	89	95	109	116	129	136									
		102	72	78	83	87	97	111	113	121	138	138								
		108	72	79	84	88	94	101	115	121	156	157								
		114	72	76	85	90	96	102	116	117	123	136	143							
		120	73	77	84	89	95	99	105	118	125	129	140							
	20N@ 6.00	96	76	82	89	94	110	116	130	136										
		102	75	83	87	92	105	114	123	140	150									
		108	75	81	88	94	101	115	121	135	142	152								
		114	77	82	87	93	103	113	119	128	138	146								
		120	77	84	90	96	102	107	121	124	133	148	150							
	24N@ 5.00	96	83	90	96	111	121	136												
		102	81	88	99	108	118	140	151											
		108	83	91	96	103	119	129	147	157										
		114	86	96	109	121	141	143	152	160										
		120	86	97	107	117	143	146	152	163	165									

Notes:

CODE OF STANDARD PRACTICE
FOR STEEL JOISTS AND JOIST GIRDERS

Adopted by the Steel Joist Institute April 7, 1931
Revised to May 18, 2010 - Effective December 31, 2010

SECTION 1
GENERAL

1.1 SCOPE

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

1.2 APPLICATION

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

1.3 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

1.4 DESIGN

In the absence of ordinances or specifications to the contrary, all designs prepared by the **specifying professional** shall be in accordance with the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption.

1.5 RESPONSIBILITY FOR DESIGN AND ERECTION

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

1.6 PERFORMANCE TESTS FOR K-SERIES STEEL JOIST CONSTRUCTION

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

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

   (1) For a **K**-Series joist, this is the TOTAL safe factored uniformly distributed load-carrying capacity tabulated in the Standard LRFD Load Table for the specific joist size and span.

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

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

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

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

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

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

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

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

h) Joists that have been designed and manufactured and have satisfied the above performance test criteria shall be considered to satisfy the intent of the **K**-Series Standard Specification, and shall be considered safe for use in construction. No further proof of strength of individual joist components or connections is required.

SECTION 2
JOISTS, JOIST GIRDERS, AND ACCESSORIES

2.1 STEEL JOISTS AND JOIST GIRDERS

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

K-Series joists are furnished with parallel chords only and with a standard end bearing depth of 2 1/2 inches (64 mm). Joist bearing seat depths greater than 2 1/2 inches (64 mm) are available when requirements warrant deeper bearing seats. Conditions where a bearing seat depth of more than 2-1/2 inches (64 mm) may be required include:

- Sloped joists;
- Mixing **K**-Series and **LH**-Series products at a common interior support;
- Masonry supports with a steel bearing plate more than 1/2 inch (13 mm) from the face of the wall.

LH- and **DLH**-Series joists are furnished either underslung or square ended, with top chords either parallel, pitched one way or pitched two ways.

Underslung types are furnished with minimum end bearing depths as shown in Table 2-1. A standard maximum joist bearing seat width (perpendicular to the joist length) is provided. This width shall be permitted to vary based on the joist design and manufacturer. For sloped joist bearing seats refer to the sloped seat requirements tables in the Accessories and Details section of this catalog.

Because **LH**- and **DLH**-Series joists may have exceptionally large end reactions, it is recommended that the supporting structure be designed to provide a nominal minimum unit bearing pressure of 750 pounds per square inch (5171 kilo Pascals).

It is not recommended that a **DLH**-Series joist that exceeds 72 inches (1829 mm) deep and has a span greater than 80 feet (24384 mm) be used in a bottom bearing configuration.

TABLE 2-1

STANDARD END BEARING SEAT DEPTH AND STANDARD MAXIMUM SEAT WIDTH			
JOIST SERIES	**SECTION NUMBER***	**MINIMUM BEARING DEPTH**	**MAXIMUM SEAT WIDTH****
K	ALL	2 ½" (64 mm)	6" (152 mm)
LH/DLH	2 to 17, incl.	5" (127 mm)	8" (229 mm)
DLH	18 to 20, incl.	7 ½" (191 mm)	12" (305 mm)
DLH	21 to 25, incl.	7 ½" (191 mm)	13" (330 mm)
***REFER TO LAST DIGIT(S) OF JOIST DESIGNATION **THE SEAT WIDTH MAY VARY BASED ON DESIGN			

Joist Girders are furnished either underslung or square ended with top chords either parallel, pitched one way or pitched two ways. Underslung types are furnished with a standard end bearing depth of 7 1/2 inches (191 mm). Joist Girders shall be permitted to have either parallel chords or a top chord pitch of up to 1/2 inch per foot (1:24). The nominal depth of a pitched Joist Girder is taken at the center of the span.

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

2.2 JOIST LOCATION AND SPACING

The maximum joist spacing shall be in accordance with the requirements of the Standard Specifications Load Tables & Weight Tables of latest adoption.

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

Open Web Steel Joists, **K**-Series, should be placed no closer than 6 inches (152 mm) to supporting walls or members. Where partitions occur parallel to joists, there shall be at least one joist provided under each such partition, and more than one such joist shall be provided if necessary to safely support the weight of such partition and the adjacent floor, less the live load, on a strip of floor one foot (305 mm) in width. When partitions occur perpendicular to the joists, they shall be treated as concentrated loads, and joists shall be investigated as indicated in Section 6.1.

SPECIFYING DESIGN LOADS

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

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

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

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

1. Ponded rain water.
2. Accumulation of snow in the vicinity of obstructions such as penthouses, signs, parapets, adjacent buildings, etc.
3. Wind.
4. Type and magnitude of end moments and/or axial forces at the joist and Joist Girder end supports shall be shown on the structural drawings. For moment resisting joists or Joist Girders framing at or near the top of a column, due consideration shall be given to extend the column length to allow a plate type connection between the top of the joist or Joist Girder top chord and the column.

   Avoid transferring joist or Joist Girder end moments and axial forces through the bearing seat connection.

   A note shall be provided on the structural drawings stating that all moment resisting joists shall have all dead loads applied to the joist before the bottom chord struts are welded to the supporting connection whenever the moments provided do not include dead load.

   The top and bottom chord moment connection details shall be designed by the specifying professional. The joist designer shall furnish the specifying professional with the joist detail information if requested.

The nominal loads, as determined by the specifying professional, shall not be less than that specified in the applicable building codes.

Where concentrated loads occur, the magnitude and location of these concentrated loads shall be shown on the structural drawings when, in the opinion of the specifying professional**,** they shall require consideration by the joist manufacturer. For nominal concentrated loads, which have been accounted for in the specified uniform design loads, a “strut” to transfer the load to a panel point on the opposite chord shall not be required provided that the sum of the concentrated loads within a chord panel does not exceed 100 pounds and the attachments are concentric to the chord.

(a) Specifying Joist Design Loads

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

The specifying professional shall use one of the five options described below that allows:

- The estimator to price the joists.
- The joist manufacturer to design the joists properly.
- The owner to obtain the most economical joists.

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

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

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

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

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

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

Example uses:

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

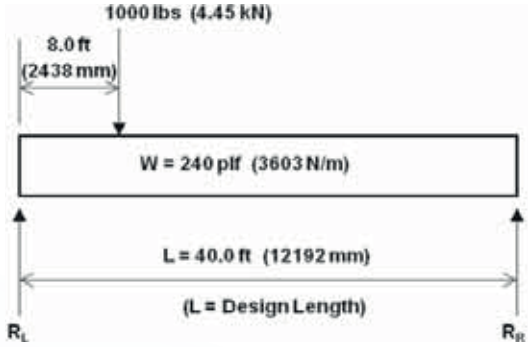
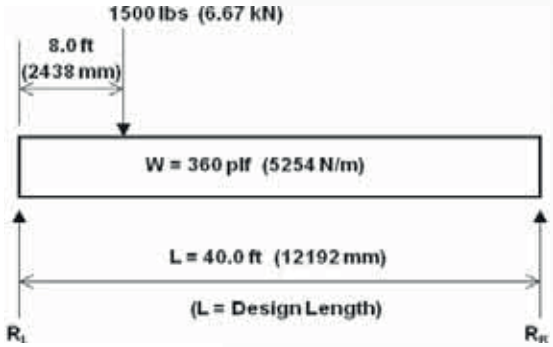
Option 4: Select a KCS joist using moment and end reaction without specifying added loads or diagrams. This option works well for concentrated loads for which exact locations are not known or for multiple loading.

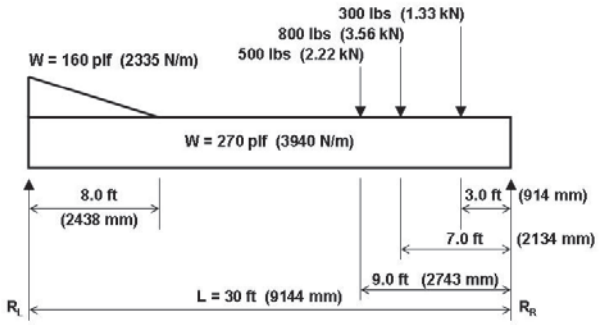
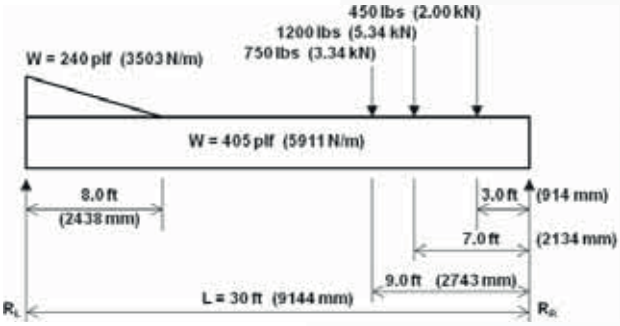
a) Determine the maximum moment.

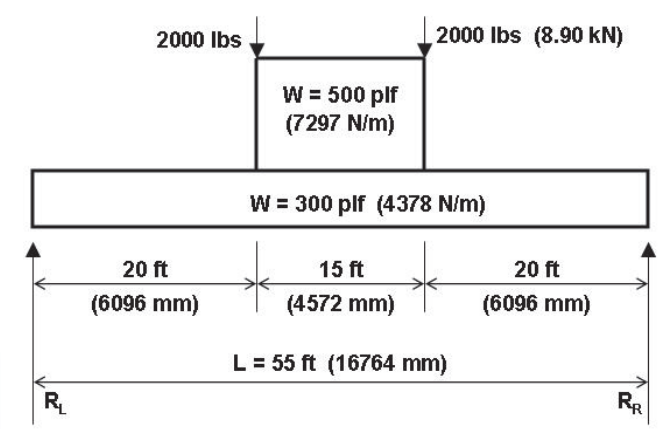
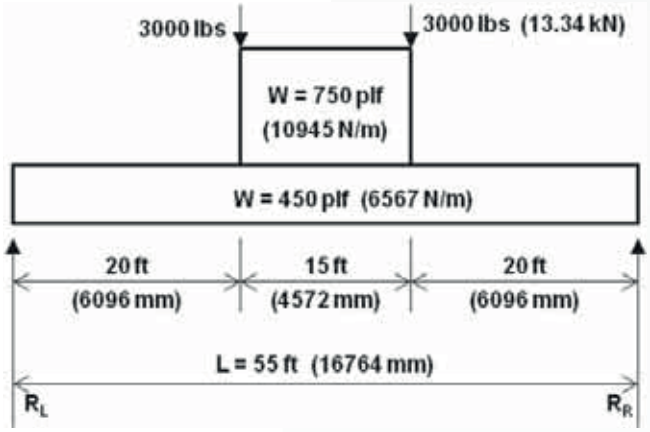
b) Determine the maximum end reaction (shear).

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

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

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

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

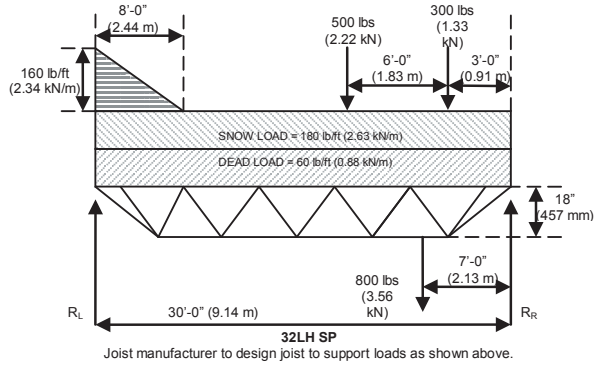
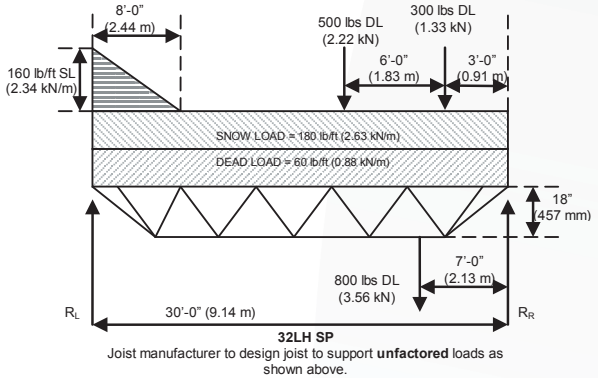
OPTION 4 - ASD EXAMPLE 3:	**OPTION 4 - LRFD EXAMPLE 3:**
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	**U.S. CUSTOMARY UNITS AND (METRIC UNITS)**
	
M = 2910 k-in. (328.8 kN-m) $R_L = R_R$ = 14000 lbs (62.28 kN) EXCEEDS CAPACITY OF 30KCS5 (MAXIMUM KCS JOIST) AND EXCEEDS MAXIMUM UNIFORM LOAD OF 550 plf (8027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

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

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

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

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

OPTION 5 - ASD EXAMPLE:	**OPTION 5 - LRFD EXAMPLE:**
U.S. CUSTOMARY UNITS AND (METRIC UNITS)	**U.S. CUSTOMARY UNITS AND (METRIC UNITS)**
Load diagram per ASCE 7 2.4.1(3), D + S	**Unfactored Load diagram per ASCE 7 2.3.2(3), 1.2D+1.6S**
 **32LH SP** Joist manufacturer to design joist to support loads as shown above.	 **32LH SP** Joist manufacturer to design joist to support **unfactored** loads as shown above.
PLEASE NOTE THE LOAD COMBINATIONS SHOWN ARE FOR REFERENCE EXAMPLES ONLY.	

CAUTION FOR OPTIONS 1 thru 5 ABOVE:

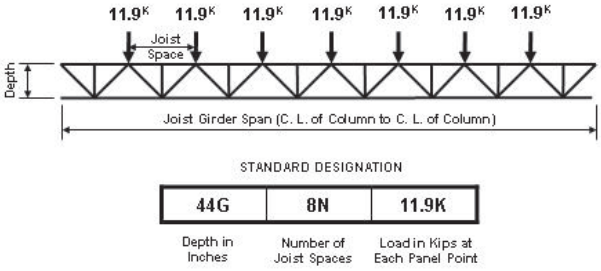
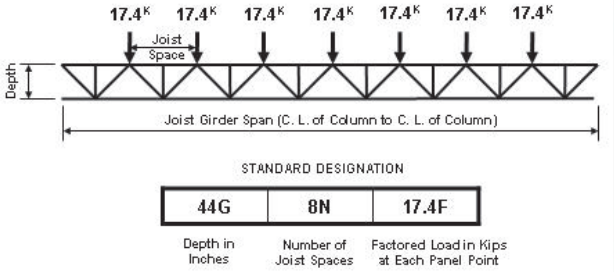
1. If a K-Series joist is being specified, the specifying professional shall compare the equivalent uniform loads derived from the maximum moment and shear to the uniform loads tabulated in the **K**-Series Load Table. An equivalent unfactored uniform load in excess of 550 plf (8020 N/m) or a maximum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

2. If the joist has not been designed for localized accumulation of loads which results in a point or concentrated load, this load attachment shall be made at top or bottom chord panel points. Therefore, specify on the structural drawings, "Where concentrated loads do not occur at panel points, an extra web shall be field applied from the point of attachment to a panel point on the opposite chord".

(b) Specifying Joist Girder Design Loads

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

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

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

e) Check live load deflection:

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

Approximate Joist Girder moment of inertia

= 0.027 NPLd

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

Allowable deflection for plastered ceilings

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

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

= 0.88 in. <1.40 in., Okay

e) Check live load deflection:

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

Approximate Joist Girder moment of inertia

= 0.018 NPLd

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

Allowable deflection for plastered ceilings

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

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

= 0.90 in. <1.40 in., Okay

(c) **Load Schedule Example**

LOAD SCHEDULE (All Loads are to be shown as unfactored)

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

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

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

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

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

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

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

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

MARK	DESIGNATION [1] (TL/LL) Joists: (plf) Girders: (kips)	MIN. I (in.*4)	AXIAL			END MOMENTS								TRANSFER DETAILS @ GRIDS
			W WIND (kips)	E SEISMIC (kips)	E_m (kips)	LIVE LOAD CONTINUITY MOMENTS (k-ft.)		LATERAL MOMENTS (k-ft.)						
								W WIND		E		E_m		
						LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
J1	18KSP		W=18.0	E=21.8										9/S8 @ 4
J2	24K7SP					40	40	35	35					
G1	36G5N6.5K/3.5K	985				75	95	55	60					11/S8 @ B,C

When lateral moments are specified, continuity moments **shall** also be specified. A Load Schedule which shows a complete breakdown of all loads by Load Category may be required.

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

ASD example- Basic Load Combinations	**LRFD example** - Basic Load Combinations
1. D	1. 1.4D
2. D + L	2. 1.2D + 1.6L + 0.5(L_r or S or R)
3. D + (L_r or S or R)	3. 1.2D + 1.6(L_r or S or R) + (1.0L or 0.8W)
4. D + 0.75L + 0.75(L_r or S or R)	4. 1.2D + 1.6W + 1.0L + 0.5(L_r or S or R)
5. D + (W or 0.7E)	5. 1.2D + 1.0E + 1.0L + 0.2S
6. D + 0.75(W or 0.7E) + 0.75L + 0.75(L_r or S or R)	6. 0.9D + 1.6W
7. 0.6D + W	7. 0.9D + 1.0E
8. 0.6D + 0.7E	
Special Seismic Load Combinations	Special Seismic Load Combinations
9. D + 0.7E_m	8. 1.2D + 1.0L + E_m
10. D + 0.525E_m + 0.75L + 0.75(L_r or S or R)	9. 0.9D + E_m
11. 0.6D + 0.7E_m	

2.4 SLOPED END BEARINGS

Where steel joists or Joist Girders are sloped, beveled ends or sloped end bearings may be provided where the slope exceeds 1/4 inch in 12 inches (1:48). When sloped end bearings are required, the seat depths shall be adjusted to maintain the standard height at the shallow end of the sloped bearing. For Open Web Steel Joists, **K**-Series, bearing ends shall be permitted to not be beveled for slopes of 1/4 inch or less in 12 inches (1:48).

2.5 JOIST AND JOIST GIRDER EXTENSIONS

Steel joist and Joist Girder extensions shall be in accordance with the requirements of the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption.

The magnitude and location of the loads to be supported, deflection requirements, and proper bracing of joist or Joist Girder Top Chord Extensions (S Type), Extended Ends (R Type) or full depth cantilever ends shall be clearly indicated on the structural drawings.

2.6 CEILING EXTENSIONS

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

2.7 BRIDGING AND BRIDGING ANCHORS

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

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

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

Refer to Section 6 in the **K-**Series Standard Specification and Section 105 in the **LH/DLH**-Series Standard Specification for erection stability requirements.

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

Horizontal bridging shall consist of continuous horizontal steel members designed per the applicable **K**-Series Standard Specification Section 5 or Section 104 in the **LH/DLH**-Series Standard Specification. The material sizes shown in Tables 2.7-1a and 2.7-1b meet the criteria. Alternately, or for "load/load" designation joists, Table 2.7-1c provides the maximum horizontal bridging force, P_{br}, for various combinations of joist spacing and bridging angle size.

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

Diagonal bridging, when used, shall be designed per the applicable **K**-Series Standard Specification Section 5 or Section 104 in the **LH/DLH**-Series Standard Specification.

When the bridging members are connected at their point of intersection, the material sizes listed in Table 2.7-2 and Table 2.7-3 shall meet the above specifications.

For **LH/DLH**-Series joists, where the joist spacing is less than 70 percent of the joist depth, bolted horizontal bridging shall be provided in addition to the diagonal bridging, as shown in Table 2.7-3.

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

1. The bridging shall be indicated on the joist placement plan.
2. The joist placement plan shall be the exclusive indicator for the proper placement of this bridging.
3. Shop installed bridging clips, or functional equivalents, shall be provided where the bridging bolts to the steel joist.
4. When two pieces of bridging are attached to the steel joist by a common bolt, the nut that secures the first piece of bridging shall not be removed from the bolt for the attachment of the second piece.
5. Bridging attachments shall not protrude above the top chord of the steel joists.
6. See Table 2.7-4 for bolt sizes that meet the connection requirements of the **K**-Series Standard Specification Section 5 and the **LH/DLH**-Series Standard Specification Section 104.

TABLE 2.7-1a

K-SERIES JOISTS
MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING

JOIST SECTION NUMBER*	Bridging Force P_{br}	BRIDGING MATERIAL SIZE** Equal Leg Angles					
		1 x 7/64 (25 x 3 mm) r = 0.20" (5.08 mm)	**1-1/4 x 7/64 (32 x 3 mm) r = 0.25" (6.35 mm)**	**1-1/2 x 7/64 (38 x 3 mm) r = 0.30" (7.62 mm)**	**1-3/4 x 7/64 (45 x 3 mm) r = 0.35" (8.89 mm)**	**2 x 1/8 (52 x 3 mm) r = 0.40" (10.16 mm)**	**2-1/2 x 5/32 (64 x 4 mm) r = 0.50" (12.70 mm)**
	lbs (N)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)
1 to 8, incl.	340 (1512)	5'- 0" (1524)	6'- 3" (1905)	7'- 6" (2286)	8'- 7" (2616)	10'- 0" (3048)	12'- 6" (3810)
9 to 10, incl.	450 (2002)	4'- 4" (1321)	6'- 1" (1854)	7'- 6" (2286)	8'- 7" (2616)	10'- 0" (3048)	12'- 6" (3810)
11 to 12, incl	560 (2491)	3'- 11" (1194)	5'- 6" (1676)	7'- 3" (2210)	8'- 7" (2616)	10'- 0" (3048)	12'- 6" (3810)

*Refer to last digit(s) of Joist Designation
**Connection to joist shall resist a nominal unfactored 700 pound force (3114 N)

TABLE 2.7-1b

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

Joist Section Number*	Force P_{br} lbs (N)	BRIDGING MATERIAL SIZE** Equal Leg Angles					
		1 x 7/64 (25 x 3 mm) r = 0.20" (5.08 mm)	**1-1/4 x 7/64 (32 x 3 mm) r = 0.25" (6.35 mm)**	**1-1/2 x 7/64 (38 x 3 mm) r = 0.30" (7.62 mm)**	**1-3/4 x 7/64 (45 x 3 mm) r = 0.35" (8.89 mm)**	**2 x 1/8 (52 x 3 mm) r = 0.40" (10.16 mm)**	**2-1/2 x 5/32 (64 x 4 mm) r = 0.50" (12.70 mm)**
		ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)	ft.-in. (mm)
02 to 03, incl.	400 (1779)	4'–7" (1397)	6'–3" (1905)	7'–6" (2286)	8'–9" (2667)	10'–0" (3048)	12'–6" (3810)
04 to 05, incl.	550 (2447)	3'–11"(1194)	5'–6" (1676)	7'–4" (2235)	8'–9" (2667)	10'–0" (3048)	12'–6" (3810)
06 to 08, incl.	750 (3336)		4'–9" (1448)	6'–3" (1905)	7'–11" (2413)	10'–0" (3048)	12'–6" (3810)
09	850 (3781)		4'–5" (1346)	5'–10" (1778)	7'–5" (2261)	9'–9" (2972)	12'–6" (3810)
10	900 (4003)		4'–4" (1321)	5'–8" (1727)	7'–3" (2210)	9'–5" (2870)	12'–6" (3810)
11	950 (4226)		4'–2" (1270)	5'–7" (1702)	7'–0" (2134)	9'–2" (2794)	12'–6" (3810)
12	1100 (4893)		3'-11" (1194)	5'–2" (1575)	6'–8" (2032)	8'–6" (2591)	12'-6" (3810)
13	1200 (5338)		3'-9" (1143)	4'–11" (1499)	6'–3" (1905)	8'-2" (2489)	12-6" (3810)
14	1300 (5783)			4'-9" (1448)	6'-0" (1829)	7'-10" (2388)	12'-4" (3759)
15	1450 (6450)			4'-6" (1372)	5'-8" (1727)	7'-5" (2261)	11'-8" (3556)
16 to 17, incl.	1850 (8229)			4'-0" (1219)	5'-0" (1524)	6'-7"(2007)	10'-4" (3150)
18 to 20, incl.	2000 (8896)			3'-10" (1168)	4'-10" (1473)	6'-4" (1930)	9'-11" (3023)
21 to 22, incl.	2500 (11120)				4'-4" (1321)	5'-8" (1727)	8'-10" (2692)
23 to 24, incl.	3100 (13789)				3'-10" (1168)	5'-1" (1549)	7'-11" (2413)
25	3500 (15569)					4'-9"(1448)	7'-6" (2286)

* Refer to last two digit(s) of Joist Designation
** Connection to joist shall resist force listed in Table 104.5-1

TABLE 2.7-1c

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

TABLE 2.7-2

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

JOIST DEPTH	BRIDGING ANGLE SIZE – (EQUAL LEG ANGLE)							
	1 x 7/64 (25 x 3 mm) **r = 0.20"** (5.08 mm)	**1-1/4 x 7/64** (32 x 3 mm) **r = 0.25"** (6.35 mm)	**1-1/2 x 7/64** (38 x 3 mm) **r = 0.30"** (7.62 mm)	**1-3/4 x 7/64** (45 x 3 mm) **r = 0.35"** (8.89 mm)	**2 x 1/8** (50 x 3 mm) **r = 0.40"** (10.16 mm)	**2 ½ x 5/32** (64x 4 mm) **r=0.50"** (12.70 mm)	**3 x 3/16** (76 x 5 mm) **r = 0.60"** (15.24 mm)	**3 ½ x 1/4** (89 x 6 mm) **r = 0.70"** (17.78 mm)
in. (mm)	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**	**ft.-in. (mm)**
12" (305)	6'-7" (2007)	8'-3" (2514)	9'-11"(3022)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
14" (356)	6'-6" (1981)	8'-3" (2514)	9'-11"(3022)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
16" (406)	6'-6" (1981)	8'-2" (2489)	9'-10"(2997)	11'-7" (3530)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
18" (457)	6'-6" (1981)	8'-2" (2489)	9'-10"(2997)	11'-6" (3505)	13'-3"(4038)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
20" (508)	6'-5" (1955)	8'-2" (2489)	9'-10"(2997)	11'-6" (3505)	13'-2"(4013)	16'-7"(5055)	19'-11"(6070)	23'-3"(7086)
22" (559)	6'-4" (1930)	8'-1" (2463)	9'-10"(2997)	11'-6" (3505)	13'-2"(4013)	16'-6"(5029)	19'-11"(6070)	23'-3"(7086)
24" (610)	6'-4" (1930)	8'-1" (2463)	9'-9" (2971)	11'-5" (3479)	13'-2"(4013)	16'-6"(5029)	19'-10"(6045)	23'-3"(7086)
26" (660)	6'-3" (1905)	8'-0" (2438)	9'-9" (2971)	11'-5" (3479)	13'-1"(3987)	16'-6"(5029)	19'-10"(6045)	23'-2"(7061)
28" (711)	6'-3" (1905)	8'-0" (2438)	9'-8" (2946)	11'-5" (3479)	13'-1"(3987)	16'-6"(5029)	19'-10"(6045)	23'-2"(7061)
30" (762)	6'-2" (1879)	7'-11 (2413)	9'-8" (2946)	11'-4" (3454)	13'-1"(3987)	16'-5"(5004)	19'-10"(6045)	23'-2"(7061)
32" (813)	6'-1" (1854)	7'-10"(2387)	9'-7" (2921)	11'-4" (3454)	13'-0" (3962)	16'-5"(5004)	19'-9"(6020)	23'-2"(7061)
36" (914)	5'-11"(1803)	7'-9" (2362)	9'-6" (2895)	11'-3" (3429)	12'-11"(3973)	16'-4"(4979)	19'-9"(6020)	23'-1"(7035)
40" (1016)	5'-9"(1753)	7'-7" (2311)	9'-5" (2870)	11'-2" (3403)	12'-10"(3911)	16'-4"(4979)	19'-8"(5994)	23'-1"(7035)
44" (1118)	5'-6"(1676)	7'-5" (2260)	9'-3" (2819)	11'-0" (3352)	12'-9" (3886)	16'-3"(4953)	19'-7"(5969)	23'-0"(7010)
48" (1219)	5'-4"(1626)	7'-3" (2209)	9'-2" (2794)	10'-11"(3327)	12'-8" (3860)	16'-2"(4928)	19'-7"(5969)	22'-11"(6985)
52" (1321)	5'-0"(1524)	7'-1"(2159)	9'-0" (2743)	10'-10" (3302)	12'-7" (3835)	16'-1"(4902)	19'-6"(5943)	22'-11"(6985)
56" (1422)	4'-9"(1448)	6'-10"(2083)	8'-10"(2692)	10'-8" (3251)	12'-5" (3784)	16'-0"(4877)	19'-5"(5918)	22'-10"(6960)
60" (1524)	4'-4"(1321)	6'-8"(2032)	8'-7" (2616)	10'-6" (3200)	12'-4" (3759)	15'-10"(4826)	19'-4"(5893)	22'-9"(6935)
64" (1626)	**	6'-4"(1931)	8 -5" (2565)	10'-4" (3149)	12'-2" (3708)	15'-9" (4801)	19'-3"(5867)	22'-8"(6909)
68" (1727)	**	6'-1"(1854)	8'-2" (2489)	10'-2" (3098)	12'-0" (3657)	15'-8" (4775)	19'-2"(5842)	22'-7"(6884)
72" (1829)	**	5'-9"(1753)	8'-0" (2438)	10'-0" (3048)	11'-10"(3606)	15'-6" (4724)	19'-1" (5816)	22'-6" (6858)
80" (2032)	**	5'-0"(1524)	7'-5"(2260)	9'-6" (2895)	11'-6" (3505)	15'-3" (4648)	18'-10"(5740)	22'-4" (6807)
88" (2235)		**	6'-9"(2058)	9'-0" (2743)	11'-1" (3378)	14'-11"(4546)	18'-7" (5664)	22'-1" (6731)
96" (2438)		**	6'-0"(1829)	8'-5" (2565)	10'-8"(3251)	14'-7" (4445)	18'-4" (5588)	21'-11"(6680)
104" (2642)			**	7'-9" (2362)	10'-1"(3073)	14'-2" (4318)	18'-0" (5486)	21'-8" (6604)
112" (2845)			**	7'-0" (2134)	9'-6"(2895)	13'-9" (4191)	17'-8" (5385)	21'-4" (6503)
120" (3048)				**	8'-9"(2667)	13'-4"(4064)	17'-3" (5258)	21'-1" (6426)

****INTERPOLATION BELOW THE MINIMUM VALUES SHOWN IS NOT ALLOWED.**
SEE TABLE 2.7-3 FOR MINIMUM JOIST SPACE FOR DIAGONAL ONLY BRIDGING.

TABLE 2.7-3

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

TABLE 2.7-4

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

2.8 HEADERS

Headers for Open Web Steel Joists, **K**-Series as outlined and defined in Section 5.2(a) shall be furnished by the seller. Such headers shall be any type standard with the manufacturer. Conditions involving headers shall be investigated and, if necessary, provisions made to provide a safe condition. Headers are not provided for Longspan Steel Joists, **LH**-Series, and Deep Longspan Steel Joists, **DLH**-Series.

2.9 BOTTOM CHORD LATERAL BRACING FOR JOIST GIRDERS

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

SECTION 3
MATERIALS

3.1 STEEL

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

3.2 PAINT

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

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

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

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

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

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

SECTION 4
INSPECTION

Inspections shall be made in accordance with the Steel Joist Institute Standard Specifications Load Tables & Weight Tables Section 5.12 for **K**-Series, Section 104.13 for **LH-** and **DLH**-Series, and Section 1004.10 for Joist Girders.

SECTION 5
ESTIMATING

5.1 PLANS FOR BIDDING

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

Designation and location of materials [see Section 5.2(a)], including any special design or configuration requirements.

Locations and elevations of all steel and concrete supporting members and bearing walls.

Location and length of joist extended ends.

Location and size of all openings in floors and roofs.

Location of all partitions.

Loads and their locations as defined in Section 6.1.

Construction and thickness of floor slabs, roof deck, ceilings and partitions.

Joists or Joist Girders requiring extended bottom chords.

Paint, if other than manufacturer's standard.

5.2 SCOPE OF ESTIMATE

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

Steel Joists.
Joist Girders.
Joist Substitutes.
Joist Extended Ends.
Ceiling Extensions.
Extended bottom chord used as strut.
Bridging and bridging anchors.
Joist Girder bottom chord bracing.
Headers which are defined as members supported by and carrying Open Web Steel Joists, **K**-Series.
One shop coat of paint, when specified, shall be in accordance with Section 3.2.

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

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

SECTION 6
PLANS AND SPECIFICATIONS

6.1 PLANS FURNISHED BY BUYER

The buyer shall furnish the seller plans and specifications as prepared by the **specifying professional** showing all material requirements and steel joist and/or steel Joist Girder designations, the layout of walls, columns, beams, girders and other supports, as well as floor and roof openings and partitions correctly dimensioned. The elevation of finished floors, roofs, and bearings shall be shown with due consideration taken for the effects of dead load deflections.

(a) Loads

The **specifying professional** shall clearly provide all design loads as described in Section 2.3 This includes the live loads to be used, the wind uplift if any, the weights of partitions and the location and amount of any special loads, such as monorails, fans, blowers, tanks, etc.

(b) Connections

Minimum End Anchorage for simple span gravity loading shall be in accordance with Steel Joist Institute Standard Specifications; Section 5.6 for **K-**Series, Section 104.4 for **LH-** and **DLH-**Series, and Section 1004.6 for Joist Girders. The end anchorage of a steel joist or Joist Girder is the connection of the joist or Joist Girder bearing seat to the support of the joist or Joist Girder.

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

When the end anchorage is welded, it is recommended that the **specifying professional** consider a smaller fillet weld thickness in conjunction with a longer weld length.

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

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

(c) Special Considerations

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

a) Profiles for non-standard joist and Joist Girder configurations (Standard joist and Joist Girder configurations are as indicated in the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption).
b) Oversized or other non-standard web openings
c) Extended Ends
d) Deflection criteria for live and total loads for non-SJI standard joists
e) Non-SJI standard bridging

6.2 PLANS FURNISHED BY SELLER

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

1. Listing of all applicable loads as stated in Section 6.1 and used in the design of the steel joists and Joist Girders as specified in the construction documents.
2. Profiles for non-standard joist and Joist Girder configurations (standard joist and Joist Girder configurations are as indicated in the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption).
3. Connection requirements for:
    a) Joist supports
    b) Joist Girder supports
    c) Field splices
    d) Bridging attachments
4. Deflection criteria for live load and total loads for non-SJI standard joists.
5. Size, location, and connections for all bridging
6. Joist headers

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

6.3 DISCREPANCIES

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

6.4 APPROVAL

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

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

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

6.5 CHANGES

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

6.6 CALCULATIONS

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

1. Non-SJI standard bridging details (e.g. for cantilevered conditions, net uplift, etc.)
2. Connection details for:
    a) Non-SJI standard connections (e.g. flush framed or framed connections)
    b) Field splices
    c) Joist headers

SECTION 7
HANDLING AND ERECTION*

The buyer and/or erector shall check all materials on arrival at job site and promptly report to seller any discrepancies and/or damages. The buyer and/or erector shall comply with the requirements of the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption in the handling and erection of material. To comply with these requirements, the Steel Joist Institute's Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders," shall also be followed.

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

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

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

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

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

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

Steel joist and Joist Girders shall not be used as anchorage points for a fall arrest system unless written directions to do so is obtained from a "qualified person"[1].

The buyer and/or erector shall check all materials on arrival at job site and promptly report to seller any discrepancies and/or damages. The buyer and/or erector shall comply with the requirements of the Steel Joist Institute Standard Specifications Load Tables & Weight Tables of latest adoption in the handling and erection of material.

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

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

The seller shall not be responsible for improper fit of material due to inaccurate construction work.

*For thorough coverage of this topic, refer to SJI 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 "qualified person".

SECTION 8

BUSINESS RELATIONS

8.1 PRESENTATION OF PROPOSALS

All proposals for furnishing material shall be made on a Sales Contract Form. After acceptance by the buyer, these proposals shall be approved or executed by a qualified official of the seller. Upon such approval the proposal becomes a contract.

8.2 ACCEPTANCE OF PROPOSALS

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

8.3 BILLING

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

8.4 PAYMENT

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

8.5 ARBITRATION

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

GLOSSARY

Accessories. Structural components related to the design, fabrication and erection of *joists* and *Joist Girders* including, but not limited to sloped *end bearings*, *extended ends*, *ceiling extensions*, *bridging* and bridging anchors, *headers* and bottom chord lateral bracing for *Joist Girders*.

ASD (Allowable Strength Design). Method of proportioning structural components such that the *allowable strength* equals or exceeds the *required strength* of the component under the action of the *ASD load combinations*.

ASD Load Combination. *Load* combination in the *applicable building code* intended for allowable *strength design* (allowable stress design).

Allowable Strength*. *Nominal strength* divided by the *safety factor*, R_n/Ω.

Applicable Building Code. Building code under which the structure is designed.

Available Strength*. *Design strength* or *allowable strength* as appropriate.

Bay. The distance between the main structural frames or walls of a building.

Bearing. The distance that the bearing shoe or seat of a *joist* or *Joist Girder* extends over its masonry, concrete or steel support.

Bearing Plate. The steel plate used for a *joist* or *Joist Girder* to bear on when it is supported by masonry or concrete supports. The plate is designed by the *Specifying Professional* to carry the *joist* reaction to the supporting structure.

Bottom Chord Extension (BCX). The two angle extended part of a *joist* bottom chord from the first bottom chord panel point towards the end of the joist.

Bridging. In general, a member connected to a joist to brace it from lateral movement.See also Diagonal Bridging and Horizontal Bridging

Buckling. *Limit state* of sudden change in the geometry of a structure or any of its elements under a critical loading condition.

Buckling Strength. *Nominal strength* for *buckling* or instability *limit states*.

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

Camber. An upward curvature of the chords of a *joist* or *Joist Girder* induced during shop fabrication. Note, this is in addition to the pitch of the top chord.

Ceiling Extension. A *bottom chord extension* except that only one angle of the *joist* bottom chord is extended from the first bottom chord panel point towards the end of the joist.

Chords. The top and bottom members of a *joist* or *Joist Girder*. When a chord is comprised of two angles there is usually a gap between the members.

Clear Span. The actual clear distance or opening between supports for a *joist*, that is the distance between walls or the distance between the edges of flanges of beams.

Cold-Formed Steel Structural Member. Shape manufactured by press-braking blanks sheared from sheets, cut lengths of coils or plates, or by roll forming cold- or hot-rolled coils or sheets; both forming operations being performed at ambient room temperature, that is, without manifest addition of heat such as would be required for hot forming.

Collateral Load. All additional dead loads other than the weight of the building, such as sprinklers, pipes, ceilings, and mechanical or electrical components.

Connection. Combination of structural elements and *joints* used to transmit forces between two or more members. See also Splice.

Deck. A floor or roof covering made out of gage metal attached by welding or mechanical means to *joists*, beams, *purlins*, or other structural members and can be galvanized, painted, or unpainted.

Design Load. Applied *load* determined in accordance with either *LRFD load combinations* or *ASD load combinations*, whichever is applicable.

Design Strength*. *Resistance factor* multiplied by the *nominal strength*, ϕR_n.

Diagonal Bridging. Two angles or other structural shapes connected from the top chord of one *joist* to the bottom chord of the next joist to form an 'X' shape. These members are almost always connected at their point of intersection.

Diaphragm. Roof, floor or other membrane or bracing system that transfers in-plane forces to the lateral force resisting system.

Effective Length. Length of an otherwise identical column with the same strength when analyzed with pin-ended boundary conditions.

Elastic Analysis. *Structural analysis* based on the assumption that the structure returns to its original geometry on removal of the *load*.

End Diagonal or Web. The first web member on either end of a *joist* or *Joist Girder* which begins at the top chord at the seat and ends at the first bottom chord panel point.

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

Extended End. The extended part of a *joist* top chord with the seat angles also being extended from the end of the joist extension back into the joist and maintaining the standard end *bearing* depth over the entire length of the extension.

Factored Load. Product of a *load factor* and the *nominal load*.

Filler. A rod, plate or angle welded between a two angle web member or between a top or bottom chord panel to tie them together, usually located at the middle of the member.

Flexural Buckling. Buckling mode in which a compression member deflects laterally without twist or change in cross-sectional shape.

Flexural-Torsional Buckling. Buckling mode in which a compression member bends and twists simultaneously without change in cross-sectional shape.

Girt. Horizontal structural member that supports wall panels and is primarily subjected to bending under horizontal loads, such as wind load.

Gravity Load. *Load*, such as that produced by dead and live loads, acting in the downward direction.

Header. A structural member located between two *joists* or between a joist and a wall which carries another joist or joists. It is usually made up of an angle, channel, or beam with saddle angle connections on each end for bearing.

Horizontal Bridging. A continuous angle or other structural shape connected to the top and bottom chord of a joist.

Inelastic Analysis. *Structural analysis* that takes into account inelastic material behavior, including plastic analysis.

Instability. *Limit state* reached in the loading of a *structural component*, frame or structure in which a slight disturbance in the *loads* or geometry produces large displacements.

Joint. Area where two or more ends, surfaces or edges are attached. Categorized by type of fastener or weld used and the method of force transfer.

Joist. A structural load-carrying member with an open web system which supports floors and roofs utilizing hot-rolled or cold-formed steel and is designed as a simple span member. Currently, the SJI has the following joist designations: **K-**Series including **KCS**, **LH-**Series and **DLH-**Series, and **CJ-**Series.

Joist Girder. A primary structural load-carrying member with an open web system designed as a simple span supporting equally spaced concentrated loads of a floor or roof system acting at the panel points of the member and utilizing hot-rolled or cold-formed steel.

Joist Substitute. A structural member who's intended use is for very short spans (10 feet or less) where open web steel joists are impractical. They are usually used for short spans in skewed bays, over corridors or for outriggers. It can be made up of two or four angles to form channel sections or box sections.

Lateral Buckling. Buckling mode of a flexural member involving deflection normal to the plane of bending.

Lateral-Torsional Buckling. Buckling mode of a flexural member involving deflection normal to the plane of bending occurring simultaneously with twist about the shear center of the cross section.

Limit State. Condition in which a structure or component becomes unfit for service and is judged either to be no longer useful for its intended function (*serviceability limit state*) or to have reached its ultimate load-carrying capacity (*strength limit state*).

Load. Force or other action that results from the weight of building materials, occupants and their possessions, environmental effects, differential movement, or restrained dimensional changes.

Load Effect. Forces, stresses, and deformations produced in a *structural component* by the applied *loads*.

Load Factor. Factor that accounts for deviations of the *nominal load* from the actual *load*, for uncertainties in the analysis that transforms the *load* into a *load effect*, and for the probability that more than one extreme *load* will occur simultaneously.

Local Buckling**. *Limit state* of *buckling* of a compression element within a cross section.

LRFD (Load and Resistance Factor Design). Method of proportioning *structural components* such that the *design strength* equals or exceeds the *required strength* of the component under the action of the *LRFD load combinations*.

LRFD Load Combination. *Load* combination in the *applicable building code* intended for strength design (*Load and Resistance Factor Design*).

Material. *Joists*, *Joist Girders* and *accessories* as provided by the *Seller*.

Nailers. Strips of lumber attached to the top chord of a *joist* so plywood or other flooring can be nailed directly to the *joist*.

Nominal Load. Magnitude of the *load* specified by the *applicable building code*.

Nominal Strength*. Strength of a structure or component (without the *resistance factor* or *safety factor* applied) to resist the *load effects*, as determined in accordance with these *Standard Specifications*.

Owner. The entity that is identified as such in the Contract Documents.

Permanent Load. *Load* in which variations over time are rare or of small magnitude. All other *loads* are *variable loads*.

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

Ponding. Retention of water at low or irregular areas on a roof due solely to the deflection of flat roof framing.

Purlin. Horizontal structural member that supports roof deck and is primarily subjected to bending under vertical loads such as dead, snow or wind loads.

Quality Assurance. System of shop and field activities and controls implemented by the *owner* or his/her designated representative to provide confidence to the *owner* and the building authority that quality requirements are implemented.

Quality Control. System of shop and field controls implemented by the *seller* and *erector* to ensure that contract and company fabrication and erection requirements are met.

Required Strength*. Forces, stress, and deformations produced in a *structural component*, determined by either *structural analysis*, for the *LRFD* or *ASD load combinations*, as appropriate, or as specified by these *Standard Specifications*.

Resistance Factor, ☐. Factor that accounts for unavoidable deviations of the*nominal strength* from the actual strength and for the manner and consequences of failure.

Safety Factor, ☐. Factor that accounts for deviations of the actual strength from the*nominal strength*, deviations of the actual *load* from the *nominal load*, uncertainties in the analysis that transforms the *load* into a *load effect* and for the manner and consequences of failure.

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

Service Load. *Load* under which serviceability limit states are evaluated.

Serviceability Limit State. Limiting condition affecting the ability of a structure to preserve its appearance, maintainability, durability, or the comfort of its occupants or function of machinery, under normal usage.

Slenderness Ratio. The ratio of the effective length of a column to the radius of gyration of the column about the same axis of bending.

Span. The centerline-to-centerline distance between structural steel supports such as a beam, column or *Joist Girder* or the *clear span* distance plus four inches onto a masonry or concrete wall.

Specified Minimum Yield Stress. Lower limit of *yield stress* specified for a material as defined by ASTM.

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

Splice. *Connection* between two structural members joined at their ends by either bolting or welding to form a single, longer member.

Stability. Condition reached in the loading of a *structural component*, frame or structure in which a slight disturbance in the *loads* or geometry does not produce large displacements.

Stabilizer Plate. A steel plate at a column or wall inserted between the end of a bottom *chord* of a *joist* or *Joist Girder*.

Standard Specifications. Documents developed and maintained by the Steel Joist Institute for the design and manufacture of open web steel joists and Joist Girders. The term “SJI Standard Specifications” encompass by reference the following:

> ANSI/SJI-**K-**2010 Standard Specification for Open Web Steel Joists, **K-**Series; ANSI/SJI-**LH/DLH-**2010 Standard Specifications for Longspan Steel Joists, **LH-**Series and Deep Longspan Steel Joists, **DLH-**Series; ANSI/SJI-**JG-**2010 Standard Specifications for Joist Girders and ANSI/**CJ-**2010 Standard Specifications for Composite Steel Joists.

Strength Limit State. Limiting condition affecting the safety of the structure, in which the ultimate load-carrying capacity is reached.

Structural Analysis. Determination of *load effects* on members and connections based on principles of structural mechanics.

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

Tagged End. The end of a *joist* or *Joist Girder* where an identification or piece mark is shown by a metal tag. The member must be erected with this tagged end in the same position as the tagged end noted on the *placement plan*.

Tensile Strength (of material). Maximum tensile stress that a material is capable of sustaining as defined by ASTM.

Tie Joist. A *joist* that is bolted at a column.

Top Chord Extension (TCX). The extended part of a *joist* top chord. This type of extension only has the two top chord angles extended past the joist seat.

Torsional Buckling. *Buckling* mode in which a compression member twists about its shear center axis.

Unbraced Length. Distance between braced points of a member, measured between the centers of gravity of the bracing members.

Variable Load. *Load* not classified as *permanent load*.

Webs. The vertical or diagonal members joined at the top and bottom *chords* of a *joist* or *Joist Girder* to form triangular patterns.

Yield Point. First stress in a material at which an increase in strain occurs without an increase in stress as defined by ASTM.

Yield Strength. Stress at which a material exhibits a specified limiting deviation from the proportionality of stress to strain as defined by ASTM.

Yield Stress. Generic term to denote either *yield point* or *yield strength*, as appropriate for the material.

NOTES:

* These terms are usually qualified by the type of *load effect*, e.g., nominal tensile strength, available compressive strength, design flexural strength.

**Term usually qualified by the type of component, e.g. local web buckling, local flange buckling, etc.

APPENDIX A - FIRE-RESISTANCE RATINGS WITH STEEL JOISTS

The Underwriters Laboratories (U.L.) Fire Resistance Directory lists hundreds of assemblies and their fire resistance ratings. The Specifying Professional can choose between numerous Floor-Ceiling and Roof-Ceiling assemblies that include steel joists and Joist Girders.

As a convenience, a selected number of assemblies are listed on the following pages. In addition, the Steel Joist Institute's Technical Digest #10 "Design of Fire Resistive Assemblies with Steel Joists" has a complete listing of steel joist assemblies and additional information about fire ratings. However, the listing that follows and the Technical Digest are intended as a guide only, and the Specifying Professional must refer to the current U.L. Fire Resistance Directory for complete design requirements.

Hundreds of fire tests on steel joist-supported assemblies have been conducted at nationally recognized testing laboratories in accordance with ASTM Standard E119, ANSI A2.1/UL 263, and NFPA 251. Because of practical loading restrictions and limitations of furnace dimensions, the vast majority of these tests were run using lightweight joists – normally from 8 inches to 14 inches (203 mm to 356 mm) deep. This practice was advantageous in that it established the *minimum* acceptable joists at the shallow and lightweight end of the joist load tables. This also resulted in a specified minimum joist designation being listed in the U.L. Fire Resistance Assembly, which is the joist that combines the required minimum depth and minimum weight per foot. Joists of the same series which equal or exceed the specified minimum joist depth and joist weight per foot may be used provided the accessories are compatible. The dimension from the bottom chord of the joists to the ceiling, whether given or calculated, is a minimum.

Where a U.L. Fire Resistance Assembly is being utilized, the Specifying Professional shall indicate the assembly number being used on the structural contract drawings. In addition, the Specifying Professional shall consider the following, as applicable:

- Joist designations specified on the structural contract drawings shall not be less than the minimum size for that assembly. The assembly may also require a minimum bridging size that may be larger than required by the SJI Specifications for the particular designation and joist spacing.
- Some assemblies stipulate minimum size materials or minimum cross sectional areas for individual joist and Joist Girder components. It is the responsibility of the Specifying Professional to show all special requirements on the contract drawings.
- Note that the maximum joist spacing shown for Floor-Ceiling Assemblies may be increased from the spacing listed in the U.L. Fire Resistance Directory to a maximum of 48 inches on center, provided the floor slab meets the structural requirements and the spacing of hanger wires supporting the ceiling is not increased.

- Some assemblies stipulate an allowable maximum joist design stress level less than the 30 ksi (207 MPa) used in the joist and Joist Girder specifications. It is the responsibility of the Specifying Professional to apply the proper stress level reductions (when applicable) when selecting joists and/or Joist Girders. This is accomplished by prorating the joist and/or Joist Girder capacities. To adjust the stress level of joists or Joist Girders, multiply the design load by the ratio of the joist design stress to the required maximum [e.g. 30/26 (207/179), 30/24 (207/165), 30/22 (207/152)], and then using this increased load, select a joist or Joist Girder from the load and/or weight tables.
- Some U.L. Roof-Ceiling Assemblies using direct applied protection limit the spacing of the joists for certain types and gages of metal decking – refer to the U.L. Fire Resistance Directory for this information.
- Where fire protective materials are to be applied directly to the steel joists or Joist Girders, it is often desired to have the joist furnished as unpainted. The Specifying Professional should indicate on the structural contract drawings if the joists or Joist Girders are to be painted or not.
- Certain older U.L. fire rated assemblies may refer to joist series that predate the K-series joists. Where one of these assemblies is selected, refer to the U.L Fire Resistance Directory for special provisions for substituting a K-Series joist in lieu of an S-, J-, and/or H-Series joist.

ROOF – CEILING ASSEMBLIES WITH MEMBRANE PROTECTION

Restrained Assembly Rating	Protection Material	Minimum Joist Size	Built Up Roof		Maximum Joist Spacing (in.)	Minimum Primary Support Member	UL Design Number
			Deck Material Description	Insulation			
1 Hr.	Exposed Grid	12K1	22 MSG Min.	Fiber Board	84	W8 x 17	P201
		10K1	26 MSG Min.		48	W6 x 12	P202
		10K1	26 MSG Min.		48	20G@13plf	P211
		12K3	28 MSG Min.		72	20G@13plf W8 x 17	P214
		12K1	26 MSG Min.		72	20G@13plf W6 x 12	P225
		12K3	24 MSG Min.	Building Units	48	NS	P227
		12K3	26 MSG Min.	Fiber Board	72	20G@13plf W6 x 12	P230
		12K1	26 MSG Min.	Insulating Concrete	48	20G@14plf* W8 x 15	P231
		12K3	24 MSG Min.	Foamed Plastic	72	W8 x 15	P235
		10K1	28 MSG Min.	Insulating Concrete	72	20G@13plf W8 x 15	P246
		12K5	26 MSG Min.	Fiber Board	48	W6 x 12	P250
		12K1	28 MSG Min.	Insulating Concrete	72	20G@13plf W6 x 12	P251
		10K1	22 MSG Min.	Fiber Board	72	W6 x 12	P254
		10K1	28 MSG Min.	Insulating Concrete	72	W8 x 15	P255
		10K1	24 MSG Min.	Fiber Board	72	NS	P259
		12K1	28 MSG Min.	Insulating Concrete	72	20G@13plf W6 x 12	P261
		12K1	26 MSG Min.	Insulating Concrete	72	W8 x 15	P264
		10K1	Metal Roof Deck Panels	Batts and Blankets	60	NS	P265
		10K1	26 MSG Min.	Fiber Board	48	W6 x 16	P267
		10K1	Metal Roof Deck Panels	Batts and Blankets	60	NS	P268
		12K1	26 MSG Min.	Insulating Concrete	72	20G@14plf* W8 x 15	P269
	Fiber Board	10K1	24 MSG Min.	Fiber Board	NS	W6 x 16	P301
		10K1	22 MSG Min.		48	NS	P302
		10K1	22 MSG Min.		NS	W6 x 16	P303
	Gypsum Board	12K3	26 MSG Min.	Insulating Concrete	60	W8 x 24	P509
		12K3	24 MSG Min.	Fiber Board	72	20G@13plf	P510

						W8 x 13	
		10K1	22 MSG Min.	Fiber Board	72	20G@13plf	P514
		10K1	20 MSG Min.	Fiber Board	48	NS	P519
1 1/2 Hr.	Exposed Grid	12K1	26 MSG Min.	Fiber Board	72	20G@13plf W6 x 12	P225
		12K3	24 MSG Min.	Building Units	48	NS	P227
		12K3	26 MSG Min.	Fiber Board	48	20G@13plf W6 x 12	P230
		12K1	26 MSG Min.	Insulating Concrete	48	20G@14plf* W8 x 24	P231
		12K5	26 MSG Min.	Fiber Board	48	W6 x 12	P250
		12K1	28 MSG Min.	Insulating Concrete	72	20G@13plf W6 x 12	P251
		10K1	24 MSG Min.	Fiber Board	72	NS	P259
		10K1	Metal Roof Deck Panels	Batts and Blankets	60	NS	P265
		10K1	20 MSG Min.	Fiber Board	48	NS	P266
		10K1	Metal Roof Deck Panels	Batts and Blankets	60	NS	P268
		12K1	26 MSG Min.	Insulating Concrete	72	20G@14plf* W8 x 24	P269
	Fiber Board	10K1	24 MSG Min.	Fiber Board	NS	W6 x 16	P301
	Metal Lath	12K5	22 MSG Min.	Fiber Board	72	NS	P404
	Gypsum Board	12K3	24 MSG Min.	Fiber Board	72	20G@13plf W8 x 13	P510
2 Hr.	Exposed Grid	10K1	24 MSG Min.	Fiber Board	72	W6 x 12	P237
		12K1	28 MSG Min.	Insulating Concrete	72	20G@13plf W6 x 12	P251
		10K1	20 MSG Min.	Fiber Board	48	NS	P266
	Fiber Board	10K1	24 MSG Min.	Fiber Board	NS	W6 x 16	P301
	Metal Lath	12K5	22 MSG Min.	Fiber Board	72	NS	P404
	Gypsum Board	10K1	22 MSG Min.	Fiber Board	72	20G@13plf	P514
			20 MSG Min.		48	NS	P519
		14K1	26 MSG Min.	Insulating Concrete	66	NS	P520
3 Hr.	Metal Lath	10K1	28 MSG Min.	Insulating Concrete	48	NS	P405

***Special Area Requirements**

ROOF – CEILING ASSEMBLIES WITH SPRAY APPLIED FIRE RESISTIVE MATERIALS

Restrained Assembly Rating	Protection Material	Minimum Joist Size	Built Up Roof		Maximum Joist Spacing (in.)	Minimum Primary Support Member	UL Design Number
			Deck Material Description	Insulation			
1 Hr.	SAFRM	10K1	22 MSG Min.	Building Units	NS	NS	P822
		12K3	22 MSG Min.	Fiber Board	NS	W8 x 20	P824
1 Hr. and 1-1/2 Hr.	SAFRM	12K5	28 MSG Min.	Insulating Concrete	96	W6 x 16	P919
1-1/2 Hr. and 2 Hr.	SAFRM	10K1	22 MSG Min.	Building Units	NS	W6 x 16	P728
1 Hr., 1-1/2 Hr. and 2 Hr.	SAFRM	14K4	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P701
		14K4	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P711
		12K3	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P717
		10K1	22 MSG Min.	Foamed Plastic	NS	20G@13plf W8 x 28	P725
		10K1	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P726
		14K4	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P734
		14K4	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P736
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P739
		10K1	22 MSG Min.	Fiber Board	NS	W6 x 16	P740
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P743
		12K3	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P801
		10K1	22 MSG Min.	Fiber Board	NS	20G@13plf W6 x 16	P815
		10K1	22 MSG Min.	Fiber Board	NS	W6 x 16	P816
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P819
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P825
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P827
		12K1	22 MSG Min.	Fiber Board	NS	20G@13plf W8 x 20	P828
		10K1	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P902

		10K1	28 MSG Min.	Insulating Concrete	NS	W8 x 10	P907
		10K1	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P908
		10K1	28 MSG Min.	Insulating Concrete	NS	W8 x 10	P920
		12K5	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P921
		10K1	28 MSG Min.	Insulating Concrete	NS	W6 x 16	P922
		10K1	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P923
		10K1	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P925
		12K5	28 MSG Min.	Insulating Concrete	NS	W8 x 10	P926
		14K4	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P927
		12K5	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P928
		12K3	28 MSG Min.	Insulating Concrete	NS	20G@13plf W8 x 10	P929
		10K1	28 MSG Min.	Insulating Concrete	NS	W6 x 16	P936
2 Hr.	SAFRM	12K3	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P718
		12K3	22 MSG Min.	Foamed Plastic	NS	20G@13plf W6 x 16	P720
		12K3	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P729
1 Hr., 1-1/2 Hr. 2 Hr. and 3 Hr.	SAFRM	10K1	22 MSG Min.	Foamed Plastic	NS	20G@13plf W6 x 16	P719
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P722
		10K1	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P723
		10K1	22 MSG Min.	Foamed Plastic	NS	W8 x 28	P732
		10K1*,16K2	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P733
		10K1*	22 MSG Min.	Foamed Plastic	NS	W6 x 16	P826

*** Special Area Requirements**

FLOOR – CEILING ASSEMBLIES WITH MEMBRANE PROTECTION

Restrained Assembly Rating	Protection Material	Minimum Joist Size	Concrete		Maximum Joist Spacing (in.)	Minimum Primary Support Member	UL Design Number
			Minimum Thickness (in.)	Type			
1 Hr.	Acoustical	12K1, 18LH02	2.5	LW, NW	NL	20G@13plf W8 x 15	D216
							D219
	Exposed Grid	10K1	2.5	NW	48*	20G@14plf W6 x 12	G205
		10K1	2.0		72	W6 x 12	G208
		10K1	2.5		48*	20G@14plf W6 x 12	G256
	Gypsum Board	10K1	2.5	NW	48	W8 x 24	G548
1 1/2 Hr.	Acoustical	12K1, 18LH02	2.5	LW, NW	NL	20G@13plf W8 x 15	D216
							D219
	Gypsum Board			NW		20G@20plf W8 x 28	D502
	Exposed Grid	10K1	2.5	NW	24 (48)	20G@13plf W6 x 12	G203
		10K1	2.5		48*	20G@14plf W6 x 12	G205
		10K1	2.0		72	W6 x 12	G208
		10K1	2.5		24 (48)		G213
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G228
		10K1	2.0		24 (48)	20G@13plf W8 x 24	G229
		10K1	2.5		24 (48)	20G@13plf W6 x 12	G243
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G268
	Gypsum Board	12K1	2.0	NW	24 (48)	NS	G502
2 Hr.	Acoustical	12K1, 18LH02	2.5	LW, NW	NL	20G@13plf W8 x 15	D216
							D219
	Gypsum Board			NW		20G@20plf W8 x 28	D502
	Concealed Grid	10K1	2.25	NW	24 (48)	W6 x 25	G023
		8K1	2.5		24 (48)	20G@13plf W8 x 20	G031
		10K1			30 (48)	20G@13plf W10 x 21	G036
	Exposed Grid	10K1	2.5	NW	24 (48)	20G@13plf W6 x 12	G203
		10K1	2.5		48*	20G@14plf W6 x 12	G205
		10K1	2.5		72	W6 x 12	G208

		10K1	2.5		24 (48)		G213
		10K1	2.5		24 (48)	W8 x 31	G227
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G228
		10K1	2.5		24 (48)	20G@13plf W8 x 24	G229
		10K1	2.5		24 (48)	20G@13plf W6 x 12	G243
		10K1	2.5		48*	20G@14plf W6 x 12	G256
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G268
	Gypsum Board	10K1	2.0	NW	24 (48)	NS	G505
		10K1	2.5		24 (48)	20G14plf W8 x 31	G514
		10K1	2.5		24 (48)	20G@13plf W10 x 21	G523
		10K1	2.5		24 (48)	20G@13plf W8 x 24	G529
		10K1	2.5		24 (48)	20G@13plf W10 x 21	G547
3 Hr.	Acoustical	12K1, 18LH02	3.25	LW, NW	NL	20G@13plf W8 x 15	D216
							D219
	Concealed Grid	10K1	3.5	NW	24 (48)	20G@13plf W8 x 20	G033
		10K1	3.25		30 (48)	20G@13plf W10 x 21	G036
	Exposed Grid	10K1	3.5	NW	48*	20G@14plf W6 x 12	G205
		10K1	3.5		24 (48)	W6 x 12	G213
		10K1	3.25		24 (48)	20G@13plf W8 x 24	G229
		10K1	3.5		48*	W6 x 12	G256
		10K1 (22 ksi max.)	2.63		24 (48)	20G@13plf W8 x 31	G268
	Gypsum Board	10K1	3.0	NW	24 (48)	20G@13plf W10 x 21	G523
		10K1	2.75		24 (48)	20G@13plf W8 x 24	G529
		10K1	3.0		24 (48)	20G@13plf W10 x 21	G547

FLOOR – CEILING ASSEMBLIES WITH SPRAY APPLIED FIRE RESISTIVE MATERIALS

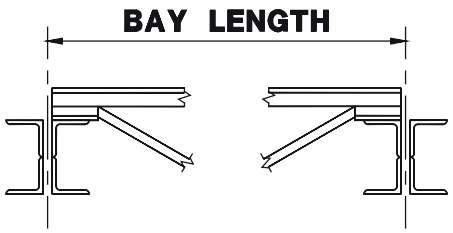
Restrained Assembly Rating	Protection Material	Minimum Joist Size	Concrete		Maximum Joist Spacing	Minimum Primary Support Member	UL Design Number
			Minimum Thickness (in.)	Type			
1 Hr.	SAFRM	NS	2.5	LW, NW	NL	W8 x 28	D759
		10K1	2.5				D779
		10K1	2.5				D780
		NS	3.25	LW			D782
		10K1*	2.5	LW			D925
			3.5	NW			
		16K6*	NS	LW, NW	42	20G@20plf W8 x 28	G701
		16K6	3.0	LW	50.5	NS	G702
			3.75	NW			
		16K6*	2.5	LW, NW	42	NS	G705
		16K6	3.0	LW	50.5	NS	G706
			3.75	NW			
		16K6*	2.5	LW, NW	42	20G@20plf W8 x 28	G708
		NS	2.5		42	W8 x 28	G709
		16K6*	2.5		42	20g@20plf W8 x 24	G801
		12K1	3.0	LW	50.5	NS	G802
			3.75	NW			
1 1/2 Hr.	SAFRM	NS	2.5	LW, NW	NL	W8 x 28	D759
		10K1	2.5				D779
		10K1	2.5				D780
		NS	3.25	LW			D782
		10K1*	3.0	LW			D925
			4.0	NW			
		16K6*	2.5	LW, NW	42	20G@20plf W8 x 28	G701
		16K6	3.5	LW	50.5	NS	G702
			4.5	NW			
		16K6*	2.5	LW, NW	42	NS	G705
		16K6	3.5	LW	50.5	NS	G706
			4.5	NW			
		16K6*	2.5	LW, NW	42	20G@20plf W8 x 28	G708
		NS	2.5		42	W8 x 28	G709
		16K6*	2.5		42	20G@20plf W8 x 24	G801
		12K5	3.5	LW	50.5	NS	G802
			4.5	NW			

2 Hr.	SAFRM	NS	2.5	LW, NW	NL	W8 x 28	D759
		10K1	2.5				D779
		10K1	2.5				D780
		NS	3.25	LW			D782
		10K1*	3.25	LW			D925
			4.5	NW			
		16K6*	2.5	LW, NW	42	20G@20plf W8 x 28	G701
		16K6	4.0	LW	50.5	NS	G702
			5.25	NW			
		16K6*	2.5	LW,NW	42	NS	G705
		16K6	4.0	LW	50.5	NS	G706
			5.25	NW			
		16K6*	2.5	LW, NW	42	20G@20plf W8 x 28	G708
		NS	2.5		42	W8 x 28	G709
		16K6*	2.5		42	20G@20plf W8 x 24	G801
		12K5	4.0	LW	50.5	NS	G802
			5.25	NW			
3 Hr.	SAFRM	NS	2.5	LW, NW	NL	W8 x 28	D759
		10K1	2.5				D779
		10K1	2.5				D780
		NS	3.25	LW			D782
		10K1*	4.19	LW			D925
			5.25	NW			
		16K6*	NS	LW, NW	42	20G@20plf W8 x 28	G701
		16K6*	2.75		42	NS	G705
		16K6*	2.75		42	20G@20plf W8 x 28	G708
		NS	2.75		42	W8 x 28	G709
		16K6*	2.75		42	20G@20plf W8 x 24	G801
4 Hr.	SAFRM	10K1	2.5	LW, NW	NL	W8 x 28	D779
		NS	3.25	LW			D782

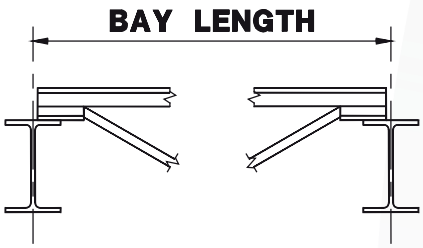
*** Special Area Requirements**

APPENDIX B – OSHA ERECTION STANDARDS AND BRIDGING ILLUSTRATIONS

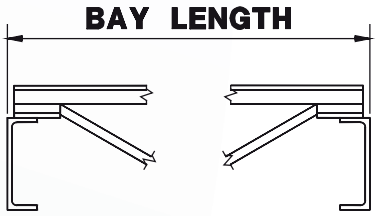
Bay Length Definitions



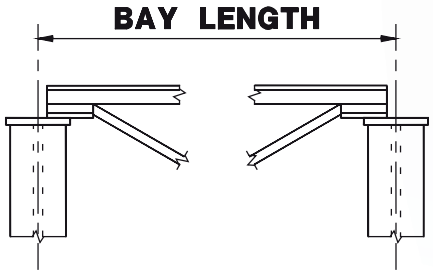
JOIST GIRDERS



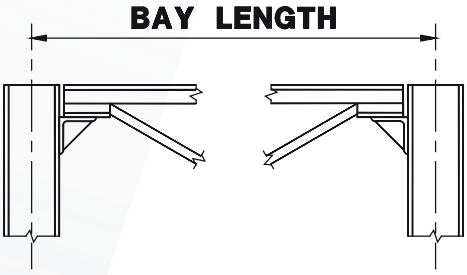
STEEL BEAM



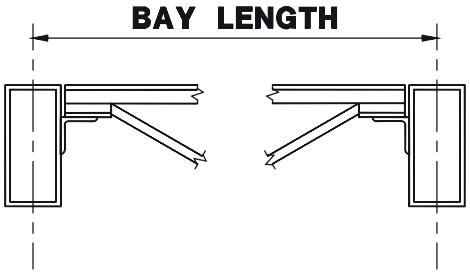
STEEL CHANNEL



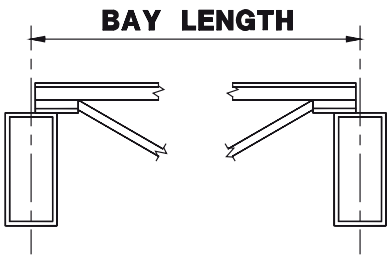
STEEL COLUMN



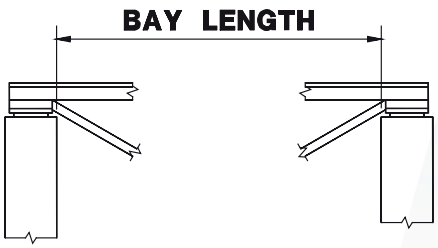
STEEL COLUMN



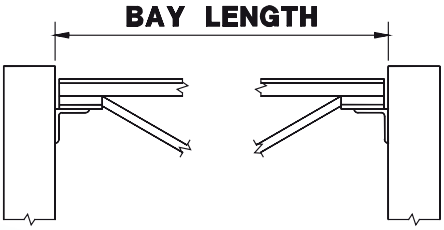
STEEL TUBE



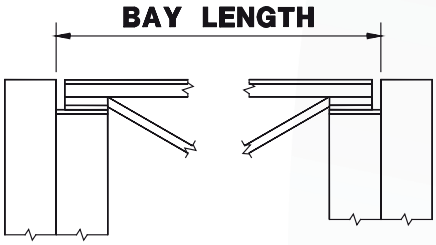
STEEL TUBE



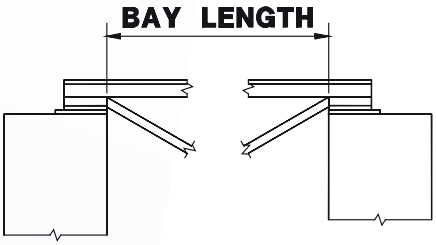
MASONRY OR TILT-UP



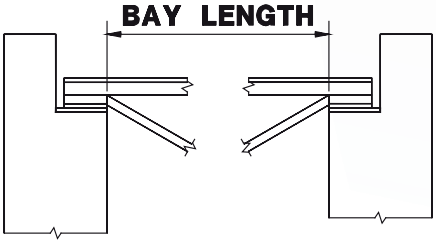
MASONRY OR TILT-UP



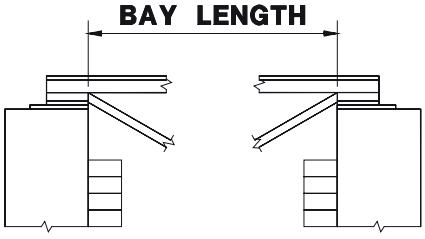
MASONRY WITH PILASTER



MASONRY OR TILT-UP



MASONRY OR TILT-UP



MASONRY WITH FACE BRICK

OSHA STEEL ERECTION STANDARD PARTS §1926.751 and §1926.757 OPEN WEB STEEL JOISTS

§ 1926.751 Definitions.

Anchored bridging means that the steel joist bridging is connected to a bridging terminus point.

Bolted diagonal bridging means diagonal bridging that is bolted to a steel joist or joists.

Bridging clip means a device that is attached to the steel joist to allow the bolting of the bridging to the steel joist.

Bridging terminus point means a wall, a beam, tandem joists (with all bridging installed and a horizontal truss in the plane of the top chord) or other element at an end or intermediate point(s) of a line of bridging that provides an anchor point for the steel joist bridging.

Column means a load-carrying vertical member that is part of the primary skeletal framing system. Columns do not include posts.

Constructibility means the ability to erect structural steel members in accordance with subpart R without having to alter the over-all structural design.

Construction load (for joist erection) means any load other than the weight of the employee(s), the joists and the bridging bundle.

Erection bridging means the bolted diagonal bridging that is required to be installed prior to releasing the hoisting cables from the steel joists.

Personal fall arrest system means a system used to arrest an employee in a fall from a working level. A personal fall arrest system consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these. The use of a body belt for fall arrest is prohibited.

Project structural engineer means the registered, licensed professional responsible for the design of structural steel framing and whose seal appears on the structural contract documents.

Qualified person (also defined in § 1926.32) means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

Steel joist means an open web, secondary load-carrying member of 144 feet (43.9 m) or less, designed by the manufacturer, used for the support of floors and roofs. This does not include structural steel trusses or cold-formed joists.

Steel joist girder means an open web, primary load-carrying member, designed by the manufacturer, used for the support of floors and roofs. This does not include structural steel trusses.

Structural steel means a steel member, or a member made of a substitute material (such as, but not limited to, fiberglass, aluminum or composite members). These members include, but are not limited to, steel joists, joist girders, purlins, columns, beams, trusses, splices, seats, metal decking, girts, and all bridging, and cold formed metal framing which is integrated with the structural steel framing of a building.

§ 1926.757 Open web steel joists.

(a) *General.* (1) Except as provided in paragraph (a)(2) of this section, where steel joists are used and columns are not framed in at least two directions with solid web structural steel members, a steel joist shall be field-bolted at the column to provide lateral stability to the column during erection. For the installation of this joist:

(i) A vertical stabilizer plate shall be provided on each column for steel joists. The plate shall be a minimum of 6 inch by 6 inch (152 mm by 152 mm) and shall extend at least 3 inches (76 mm) below the bottom chord of the joist with a 13/16 inch (21 mm) hole to provide an attachment point for guying or plumbing cables.

(ii) The bottom chords of steel joists at columns shall be stabilized to prevent rotation during erection.

(iii) Hoisting cables shall not be released until the seat at each end of the steel joist is field-bolted, and each end of the bottom chord is restrained by the column stabilizer plate.

(2) Where constructibility does not allow a steel joist to be installed at the column:

(i) an alternate means of stabilizing joists shall be installed on both sides near the column and shall:

(A) provide stability equivalent to paragraph (a)(1) of this section;

(B) be designed by a qualified person;

(C) be shop installed; and

(D) be included in the erection drawings.

(ii) hoisting cables shall not be released until the seat at each end of the steel joist is field-bolted and the joist is stabilized.

(3) Where steel joists at or near columns span 60 feet (18.3 m) or less, the joist shall be designed with sufficient strength to allow one employee to release the hoisting cable without the need for erection bridging.

(4) Where steel joists at or near columns span more than 60 feet (18.3 m), the joists shall be set in tandem with all bridging installed unless an alternative method of erection, which provides equivalent stability to the steel joist, is designed by a qualified person and is included in the site-specific erection plan.

(5) A steel joist or steel joist girder shall not be placed on any support structure unless such structure is stabilized.

(6) When steel joist(s) are landed on a structure, they shall be secured to prevent unintentional displacement prior to installation.

(7) No modification that affects the strength of a steel joist or steel joist girder shall be made without the approval of the project structural engineer of record.

(8) *Field-bolted joists.* (i) Except for steel joists that have been pre-assembled into panels, connections of individual steel joists to steel structures in bays of 40 feet (12.2 m) or more shall be fabricated to allow for field bolting during erection.

(ii) These connections shall be field-bolted unless constructibility does not allow.

(9) Steel joists and steel joist girders shall not be used as anchorage points for a fall arrest system unless written approval to do so is obtained from a qualified person.

(10) A bridging terminus point shall be established before bridging is installed. (See Appendix C to this subpart.)

(b) ***Attachment of steel joists and steel joist girders.*** (1) Each end of ''K'' series steel joists shall be attached to the support structure with a minimum of two 1/8-inch (3 mm) fillet welds 1 inch (25 mm) long or with two 1/2-inch (13 mm) bolts, or the equivalent.

(2) Each end of ''LH'' and ''DLH'' series steel joists and steel joist girders shall be attached to the support structure with a minimum of two 1/4-inch (6 mm) fillet welds 2 inches (51 mm) long, or with two 3/4-inch (19 mm) bolts, or the equivalent.

(3) Except as provided in paragraph (b)(4) of this section, each steel joist shall be attached to the support structure, at least at one end on both sides of the seat, immediately upon placement in the final erection position and before additional joists are placed.

(4) Panels that have been pre-assembled from steel joists with bridging shall be attached to the structure at each corner before the hoisting cables are released.

(c) ***Erection of steel joists***. (1) Both sides of the seat of one end of each steel joist that requires bridging under Tables A and B shall be attached to the support structure before hoisting cables are released.
(2) For joists over 60 feet, both ends of the joist shall be attached as specified in paragraph (b) of this section and the provisions of paragraph (d) of this section met before the hoisting cables are released.
(3) On steel joists that do not require erection bridging under Tables A and B, only one employee shall be allowed on the joist until all bridging is installed and anchored.

►NOTE: TABLES "A" & "B" HAVE BEEN EDITED TO CONFORM WITH STEEL JOIST INSTITUTE BOLTED DIAGONAL BRIDGING REQUIREMENTS. EDITED ITEMS ARE SHOWN WITH A STRIKE THROUGH NOTATION.

►TABLE **A.**—ERECTION BRIDGING FOR SHORT SPAN JOISTS

Joist	Span
~~8L1~~ 8K1	NM
10K1	NM
12K1	23–0
12K3	NM
12K5	NM
14K1	27–0
14K3	NM
14K4	NM
14K6	NM
16K2	29–0
16K3	30–0
16K4	32–0
16K5	32–0
16K6	NM
16K7	NM
16K9	NM
18K3	31–0
18K4	32–0
18K5	33–0
18K6	35–0
18K7	NM
18K9	NM
18K10	NM
20K3	32–0
20K4	34–0
20K5	34–0
20K6	36–0
20K7	39–0
20K9	39–0
20K10	NM
22K4	34–0
22K5	35–0
22K6	36–0
22K7	40–0
22K9	40–0
22K10	~~40–0~~ NM
22K11	~~40–0~~ NM
24K4	36–0
24K5	38–0
24K6	39–0
24K7	43–0
24K8	43–0
24K9	44–0
24K10	NM
24K12	NM
26K5	38–0
26K6	39–0
26K7	43–0
26K8	44–0
26K9	~~45–0~~ 44-0
26K10	49–0
26K12	NM
28K6	40–0
28K7	43–0
28K8	44–0
28K9	45–0
28K10	49–0
28K12	53–0
30K7	44–0
30K8	45–0
30K9	45–0
30K10	50–0
30K11	52–0
30K12	54–0

NM = diagonal bolted bridging not mandatory ~~for joists under 40 feet~~.

►TABLE **A.**—ERECTION BRIDGING FOR SHORT SPAN JOISTS-[Continued]

Joist	Span
10KCS1	NM
10KCS2	NM
10KCS3	NM
12KCS1	NM
12KCS2	NM
12KCS3	NM
14KCS1	NM
14KCS2	NM
14KCS3	NM
16KCS2	NM
16KCS3	NM
16KCS4	NM
16KCS5	NM
18KCS2	35–0
18KCS3	NM
18KCS4	NM
18KCS5	NM
20KCS2	36–0
20KCS3	39–0
20KCS4	NM
20KCS5	NM
22KCS2	36–0
22KCS3	40–0
22KCS4	NM
22KCS5	NM
24KCS2	39–0
24KCS3	44–0
24KCS4	NM
24KCS5	NM
26KCS2	39–0
26KCS3	44–0
26KCS4	NM
26KCS5	NM
28KCS2	40–0
28KCS3	45–0
28KCS4	53–0
28KCS5	53–0
~~30KC53~~ 30KCS3	45–0
30KCS4	54–0
30KCS5	54–0

NM = diagonal bolted bridging not mandatory ~~for joists under 40 feet~~.

►TABLE **B.**—ERECTION BRIDGING FOR LONG SPAN JOISTS

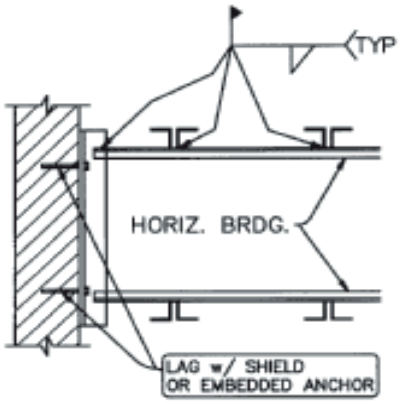
Joist	Span
18LH02	33–0
18LH03	NM.
18LH04	NM.
18LH05	NM.
18LH06	NM.
18LH07	NM.
18LH08	NM.
18LH09	NM.
20LH02	33–0
20LH03	38–0
20LH04	NM.
20LH05	NM.
20LH06	NM.
20LH07	NM.
20LH08	NM.
20LH09	NM.
20LH10	NM.
24LH03	35–0
24LH04	39–0
24LH05	40–0
24LH06	45–0
24LH07	NM.
24LH08	NM.
24LH09	NM.
24LH10	NM.
24LH11	NM.
28LH05	42–0
28LH06	~~42–0~~ 46-0
28LH07	~~NM~~. 54-0
28LH08	~~NM~~. 54-0
28LH09	NM.
28LH10	NM.
28LH11	NM.
28LH12	NM.
28LH13	NM.
32LH06	47–0 through 60–0
32LH07	47–0 through 60–0
32LH08	55–0 through 60–0
32LH09	NM through 60–0
32LH10	NM through 60–0
32LH11	NM through 60–0
32LH12	NM through 60–0
32LH13	NM through 60–0
32LH14	NM through 60–0
32LH15	NM through 60–0
36LH07	47–0 through 60–0
36LH08	47–0 through 60–0
36LH09	57–0 through 60–0
36LH10	NM through 60–0
36LH11	NM through 60–0
36LH12	NM through 60–0
36LH13	NM through 60–0
36LH14	NM through 60–0
36LH15	NM through 60–0

NM = diagonal bolted bridging not mandatory ~~for joists under 40 feet~~.

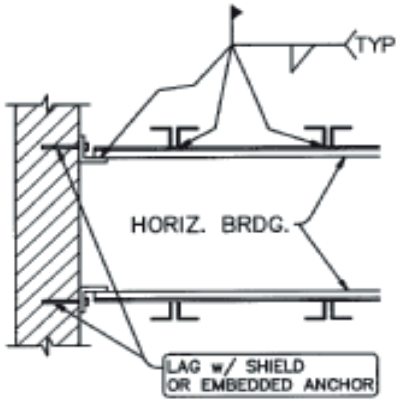
(4) Employees shall not be allowed on steel joists where the span of the steel joist is equal to or greater than the span shown in Tables A and B except in accordance with § 1926.757(d).
(5) When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide stability. (See appendix C of this subpart.)
(d) ***Erection bridging***. (1) Where the span of the steel joist is equal to or greater than the span shown in Tables A and B, the following shall apply:
(i) A row of bolted diagonal erection bridging shall be installed near the midspan of the steel joist;
(ii) Hoisting cables shall not be released until this bolted diagonal erection bridging is installed and anchored; and
(iii) No more than one employee shall be allowed on these spans until all other bridging is installed and anchored.
(2) Where the span of the steel joist is over 60 feet (18.3 m) through 100 feet (30.5 m), the following shall apply:
(i) All rows of bridging shall be bolted diagonal bridging;
(ii) Two rows of bolted diagonal erection bridging shall be installed near the third points of the steel joist;
(iii) Hoisting cables shall not be released until this bolted diagonal erection bridging is installed and anchored; and
(iv) No more than two employees shall be allowed on these spans until all other bridging is installed and anchored.
(3) Where the span of the steel joist is over 100 feet (30.5 m) through 144 feet (43.9 m), the following shall apply:
(i) All rows of bridging shall be bolted diagonal bridging;
(ii) Hoisting cables shall not be released until all bridging is installed and anchored; and
(iii) No more than two employees shall be allowed on these spans until all bridging is installed and anchored.
(4) For steel members spanning over 144 feet (43.9 m), the erection methods used shall be in accordance with § 1926.756.
(5) Where any steel joist specified in paragraphs (c)(2) and (d)(1), (d)(2), and (d)(3) of this section is a bottom chord bearing joist, a row of bolted diagonal bridging shall be provided near the support(s). This bridging shall be installed and anchored before the hoisting cable(s) is released.
(6) When bolted diagonal erection bridging is required by this section, the following shall apply:
(i) The bridging shall be indicated on the erection drawing;
(ii) The erection drawing shall be the exclusive indicator of the proper placement of this bridging;
(iii) Shop-installed bridging clips, or functional equivalents, shall be used where the bridging bolts to the steel joists;
(iv) When two pieces of bridging are attached to the steel joist by a common bolt, the nut that secures the first piece of bridging shall not be removed from the bolt for the attachment of the second; and
(v) Bridging attachments shall not protrude above the top chord of the steel joist.
(e) ***Landing and placing loads***. (1) During the construction period, the employer placing a load on steel joists shall ensure that the load is distributed so as not to exceed the carrying capacity of any steel joist.
(2) Except for paragraph (e)(4) of this section, no construction loads are allowed on the steel joists until all bridging is installed and anchored and all joist-bearing ends are attached.
(3) The weight of a bundle of joist bridging shall not exceed a total of 1,000 pounds (454 kg). A bundle of joist bridging shall be placed on a minimum of three steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within 1 foot (.30 m) of the secured end.
(4) No bundle of decking may be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless all of the following conditions are met:
(i) The employer has first determined from a qualified person and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load;
(ii) The bundle of decking is placed on a minimum of three steel joists;
(iii) The joists supporting the bundle of decking are attached at both ends;
(iv) At least one row of bridging is installed and anchored;
(v) The total weight of the bundle of decking does not exceed 4,000 pounds (1816 kg); and
(vi) Placement of the bundle of decking shall be in accordance with paragraph (e)(5) of this section.
(5) The edge of the construction load shall be placed within 1 foot (.30 m) of the bearing surface of the joist end.

ILLUSTRATIONS OF OSHA BRIDGING TERMINUS POINTS (NON-MANDATORY)

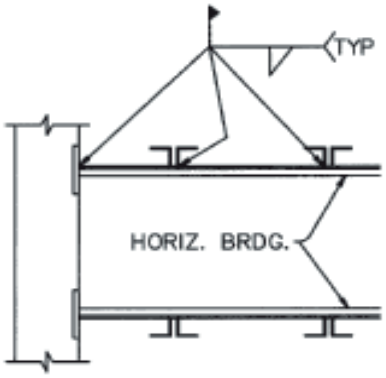
Guidelines for Complying with OSHA Steel Erection Standard, Paragraph §1926.757(a)(10) and §1926.757(c)(5).



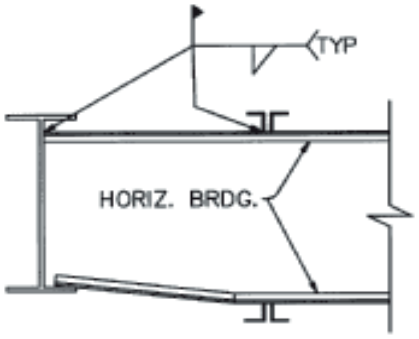
HORIZONTAL BRIDGING
TERMINUS AT WALL



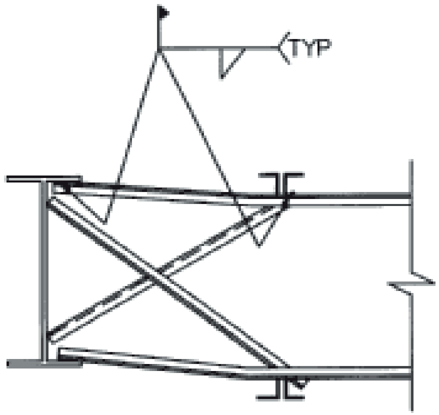
HORIZONTAL BRIDGING
TERMINUS AT WALL



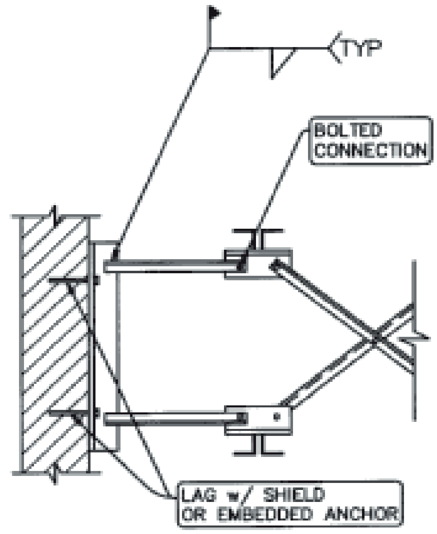
HORIZONTAL BRIDGING
TERMINUS AT PANEL WALL



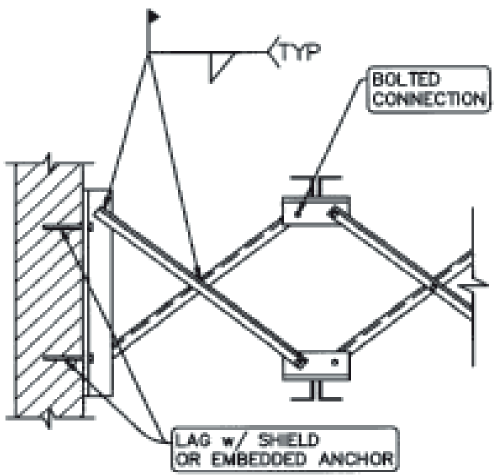
HORIZONTAL BRIDGING
TERMINUS AT
STRUCTURAL SHAPE



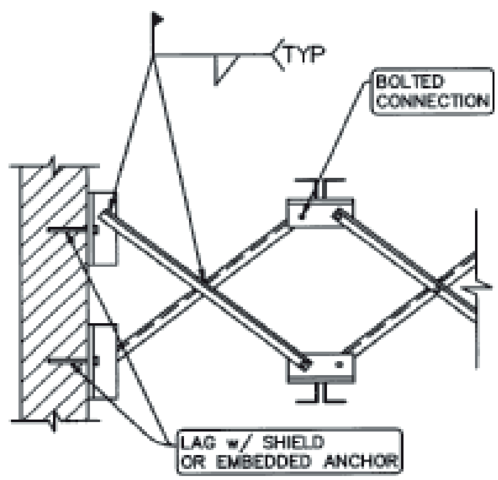
HORIZONTAL BRIDGING
TERMINUS AT STRUCTURAL
SHAPE WITH OPTIONAL
"X-BRIDGING"



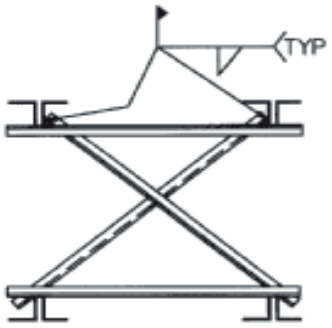
BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL



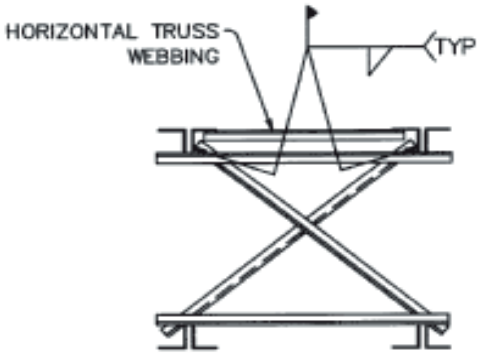
BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL



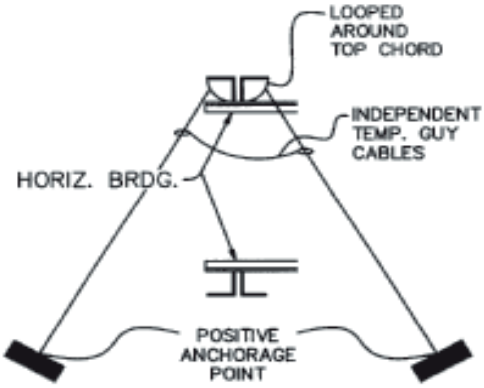
BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL



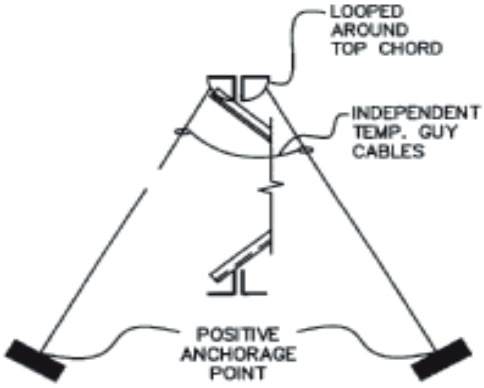
JOISTS PAIR BRIDGING
TERMINUS POINT



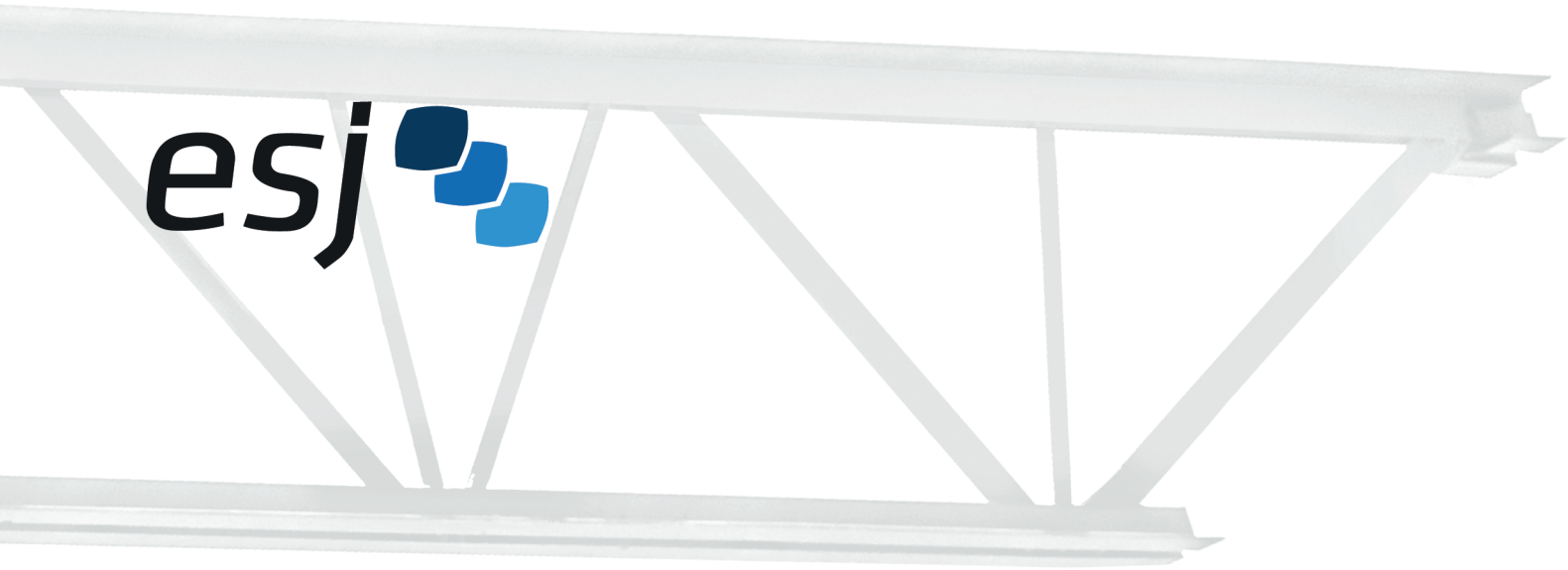
JOISTS PAIR BRIDGING
TERMINUS POINT



HORIZONTAL BRIDGING
TERMINUS POINT
SECURED BY TEMP.
GUY CABLES



DIAGONAL BRIDGING
TERMINUS POINT
SECURED BY TEMP.
GUY CABLES



Centro ejecutivo Punto Alto
Valle Escondido #5700 C.P. 31125
Fracc. Desarrollo El Saucito
Chihuahua, Chih. México

Tel. +52 (614) 4 29 92 00
01 800 523 0789

servclientes@esj.mx

esj.mx