



K-Series
LH-Series
DLH-Series
Joist Girders

42nd Edition

Standard Specifications

Load Tables and Weight Tables
for Steel Joists and Joist Girders

The information presented in this publication has been developed by the Steel Joist Institute and is produced in accordance with recognized engineering principles and is for general information only. The SJI and its committees have made a concerted effort to present accurate, reliable, and useful information on the design of steel joists and Joist Girders. Application of this information should not be used or relied upon for any specific project without competent professional assessment of its accuracy, suitability and applicability by a licensed professional engineer or architect. The publication of the material contained in this catalog is not intended as a representation or warranty on the part of the Steel Joist Institute. Any person making use of this information does so at one's own risk and assumes all liability arising from such use.

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

Standard Specifications for Open Web Steel Joists, **K-Series** and Load Tables (SJI-K-1.1)

Standard Specifications for Longspan Steel Joists, **LH-Series** and Deep Longspan Steel Joists, **DLH-Series** and Load Tables (SJI LH/DLH-1.1)

Standard Specifications for Joist Girders (SJI-JG-1.1)



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.

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

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 fabricate 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. Fabrication to Institute Specifications is the responsibility of the individual manufacturer.



STEEL JOIST INSTITUTE PUBLICATIONS

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 Seminars in your area.

- A. Catalog of Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders
- B. The following TECHNICAL DIGESTS are also available from the Institute:
 - No. 3 Structural Design of Steel Joist Roofs to Resist Ponding Loads (2006)
 - No. 5 Vibration of Steel Joist - Concrete Slab Floors (1988)
 - No. 6 Structural Design of Steel Joist Roofs to Resist Uplift Loads (2006)
 - No. 8 Welding of Open Web Steel Joists (1983)
 - No. 9 Handling and Erection of Steel Joists and Joist Girders (2006)
 - No. 10 Design of Fire Resistive Assemblies with Steel Joists (2003)
 - No. 11 Design of Joist Girder Frames (1999)
- C. 75-Year Steel Joist Manual (1928-2003)
- D. Computer Vibration Program
- E. SJI Video No. 1 – Introduction to Steel Joists
- F. 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 64 separate designations in the Load Tables, representing joist depths from 8 inches (203 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.

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 D, 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.

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 clear spans through 96 feet (29,260 mm).

Deep Longspan Series Joists have been standardized in depths from 52 inches (1321 mm) through 72 inches (1829 mm), for clear spans up through 144 feet (43,891 mm).



STANDARD TYPES

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 and 19.

All Longspan and Deep Longspan Steel Joists are fabricated with standardized camber as given in Table 103.6-1.



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 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 Specifications Section 1006 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.

$I_{JG} = 0.027 \text{ NPLd}$: 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,

$I_{JG} = 0.3296 \text{ NPLd}$: 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.

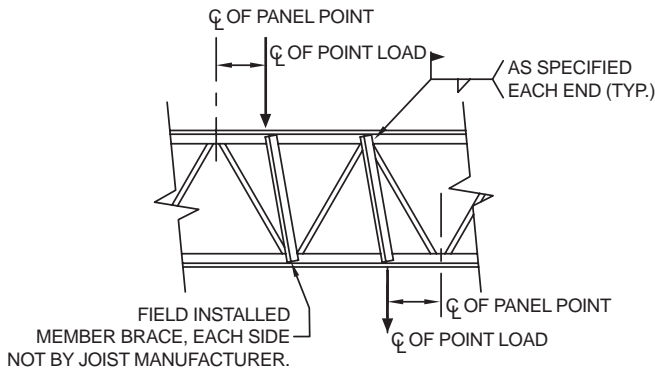
The Joist Girder manufacturer should be contacted when a more exact Joist Girder moment of inertia must be known.

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



ACCESSORIES AND DETAILS

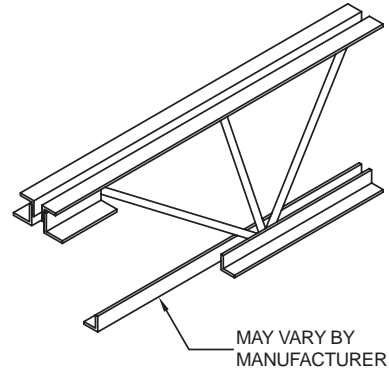
ADDED MEMBERS



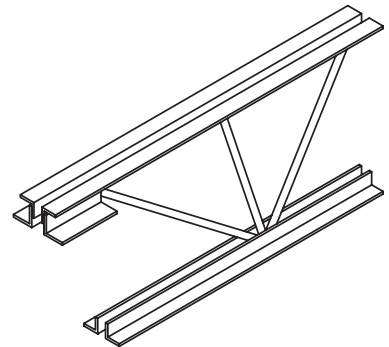
TYPICAL JOIST REINFORCEMENT AT CONCENTRATED LOADS

Standard joists, including KCS-Series, are not designed for localized bending from point loads. Concentrated loads must be applied at joist panel points or field strut members must be utilized as shown.

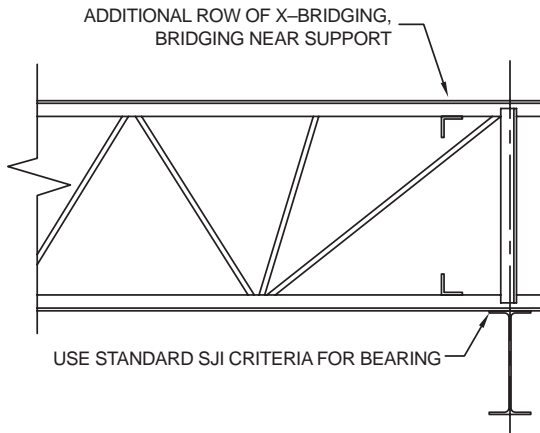
Joist manufacturers can provide a specially designed joist with the capability to take point loads without the added members if this requirement and the exact location and magnitude of the loads are clearly shown on the contract drawings. Also, the manufacturer can consider the worst case for both the 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.



CEILING EXTENSION



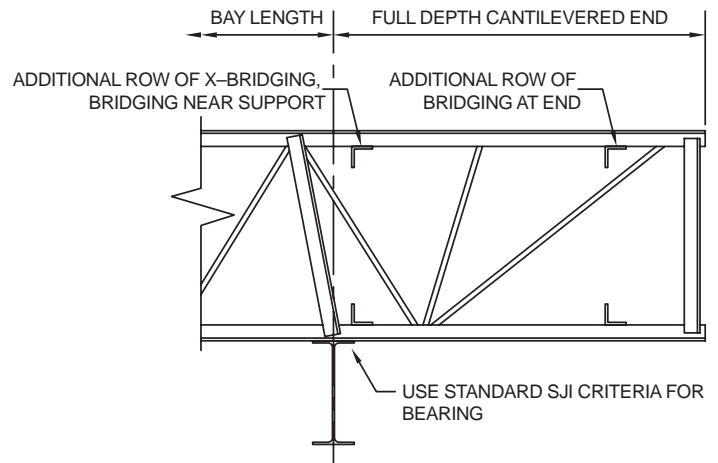
BOTTOM CHORD EXTENSION



SQUARE ENDED, BOTTOM BEARING

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

Note: Joist configuration and member sizes may vary.



CANTILEVERED, BOTTOM BEARING, SQUARE END

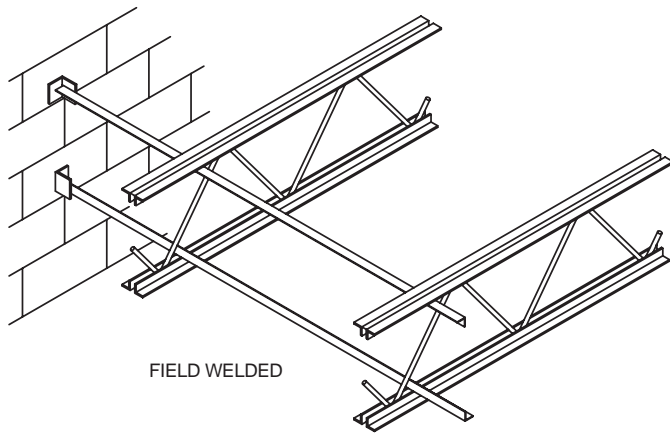
The weight of walls, signage, fascia, etc. supported at the end of a cantilever square end must be shown on the contract drawings to be properly considered in the joist design.

Note: Joist configuration and member sizes may vary.

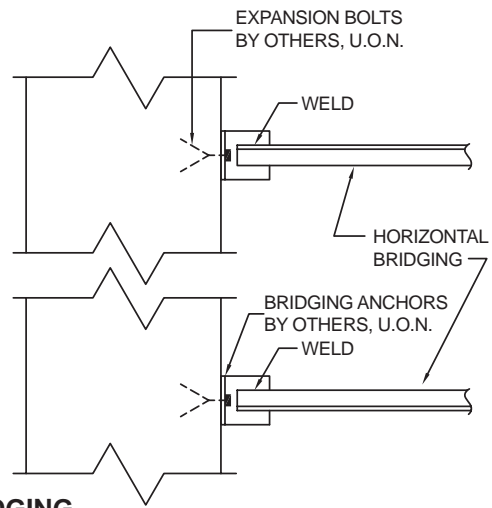


ACCESSORIES AND DETAILS

K-SERIES BRIDGING DETAILS

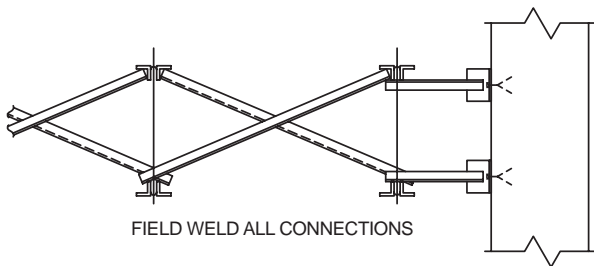


FIELD WELDED



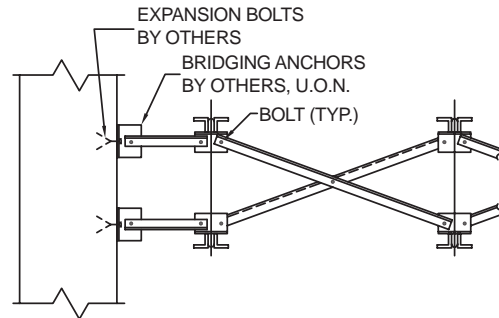
**HORIZONTAL BRIDGING
SEE SJI SPECIFICATIONS**

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



FIELD WELD ALL CONNECTIONS

**WELDED CROSS BRIDGING
SEE SJI SPECIFICATIONS**

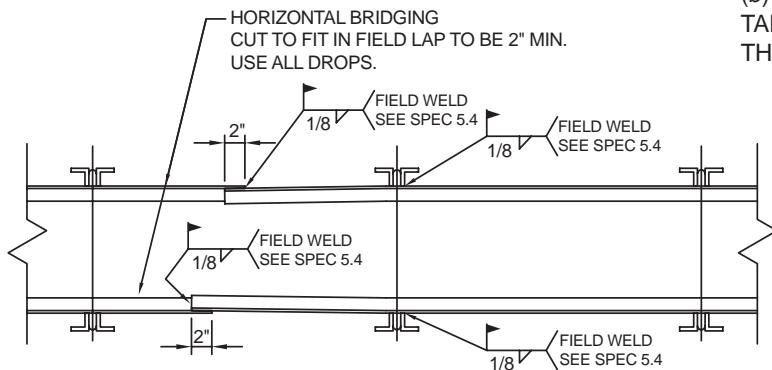


**BOLTED CROSS BRIDGING
SEE SJI SPECIFICATIONS**

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

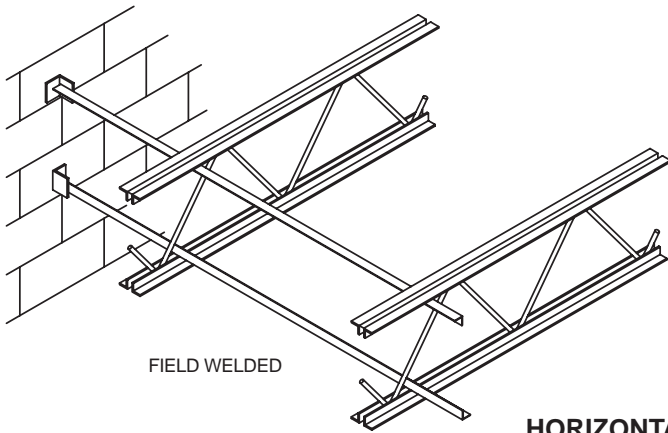
(a) HORIZONTAL BRIDGING UNITS SHALL BE USED IN THE SPACE ADJACENT TO THE WALL TO ALLOW FOR PROPER DEFLECTION OF THE JOIST NEAREST THE WALL.

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



ACCESSORIES AND DETAILS

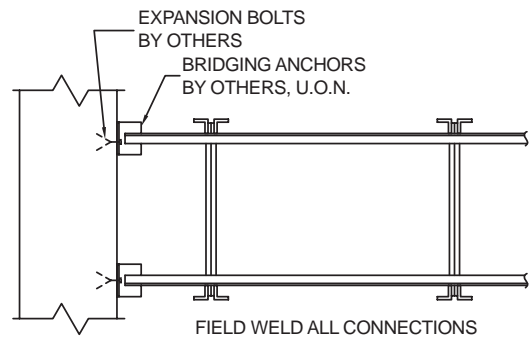
LH- AND DLH-SERIES BRIDGING DETAILS



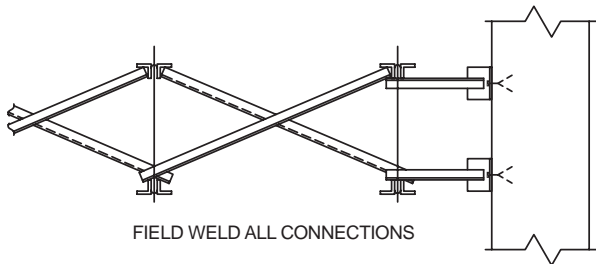
FIELD WELDED

HORIZONTAL BRIDGING SEE SJI SPECIFICATIONS

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



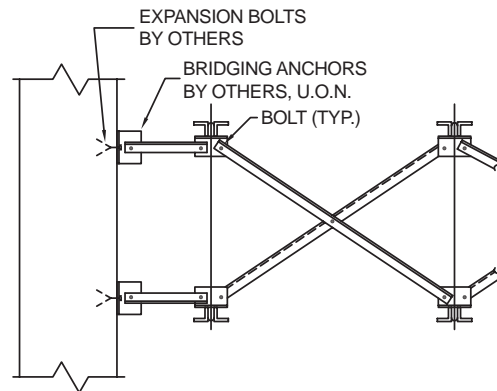
FIELD WELD ALL CONNECTIONS



FIELD WELD ALL CONNECTIONS

WELDED CROSS BRIDGING SEE SJI SPECIFICATIONS

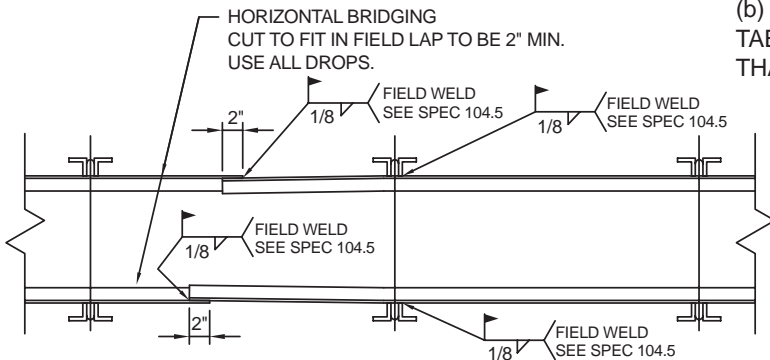
HORIZONTAL BRIDGING SHALL BE USED IN SPACE
ADJACENT TO THE WALL TO ALLOW FOR PROPER
DEFLECTION OF THE JOIST NEAREST THE WALL.



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 REQUIREMENTS FOR SLOPES 3/8: 12 AND GREATER

K-SERIES OPEN WEB STEEL JOISTS

LOW END		HIGH END		SLOPE RATE	HIGH END SEAT DEPTH d (MIN.)
NO TCX	<p>NO TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>2 1/2" MIN.</p> <p>4" STD.</p> <p>A</p>	NO TCX	<p>NO TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>12"</p> <p>SEE CHART d</p> <p>4" STD.</p> <p>C</p>		
WITH TCX	<p>WITH TCX</p> <p>E.O.B.</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>2 1/2"</p> <p>3"</p> <p>4" STD.</p> <p>E.O.B.: EDGE OF BEARING</p> <p>B</p>	WITH TCX	<p>WITH TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>12"</p> <p>SEE CHART d</p> <p>2 1/2"</p> <p>4" STD.</p> <p>D</p>		
				3/8: 12	3"
				1/2: 12	3"
				1: 12	3 1/2"
				1 1/2: 12	3 1/2"
				2: 12	4"
				2 1/2: 12	4"
				3: 12	4"
				3 1/2: 12	4 1/2"
				4: 12	4 1/2"
				4 1/2: 12	4 1/2"
				5: 12	5"
				6: 12 & OVER	SEE BELOW

NOTES:

- (1) Depths shown are the minimums required for manufacturing of sloped bearing seats. Depths may vary depending on actual bearing conditions.
- (2) $d = 1/2 + 2.5 / \cos \theta + 4 \tan \theta$
- (3) Clearance must be checked at outer edge of support as shown in Detail B. Increase bearing depth as required to permit passage of 2 1/2" deep extension.
- (4) If extension depth greater than 2 1/2" is required (see Details B and D) increase bearing depths accordingly.
- (5) If slope is 1/4: 12 or less, sloped seats are not required.



ACCESSORIES AND DETAILS

SLOPED SEAT REQUIREMENTS FOR SLOPES 3/8: 12 AND GREATER LH- AND DLH-SERIES STEEL JOISTS

LOW END		HIGH END		SLOPE RATE	HIGH END SEAT DEPTH d (MIN.)
NO TCX	<p>NO TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>5" MIN.</p> <p>6" STD.</p> <p>A</p>	NO TCX	<p>NO TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>θ</p> <p>SEE CHART d</p> <p>6" STD.</p> <p>C</p>		
WITH TCX	<p>WITH TCX</p> <p>E.O.B.</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>5"</p> <p>5 1/2"</p> <p>6" STD.</p> <p>E.O.B.: EDGE OF BEARING</p> <p>B</p>	WITH TCX	<p>WITH TCX</p> <p>END OF SEAT 12"</p> <p>SLOPE</p> <p>θ</p> <p>5"</p> <p>SEE CHART d</p> <p>6" STD.</p> <p>D</p>		
				3/8: 12	5 1/2"
				1/2: 12	6"
				1: 12	6"
				1 1/2: 12	6 1/2"
				2: 12	6 1/2"
				2 1/2: 12	7"
				3: 12	7"
				3 1/2: 12	7 1/2"
				4: 12	8"
				4 1/2: 12	8"
				5: 12	8 1/2"
				6: 12 & OVER	SEE BELOW

Notes:

- (1) Depths shown are the minimums required for manufacturing of sloped bearing seats.
- (2) $d = 1/2 + 5 / \cos \theta + 6 \tan \theta$
- (3) Clearance must be checked at outer edge of support as shown in Detail B. Increase bearing depth as required to permit passage of 5" deep extension.
- (4) If extension depth greater than 5" is required (see Details B and D) increase bearing depths accordingly.
- (5) Add 2 1/2" to seat depth at 18 and 19 chord section numbers. Consult manufacturer for information when TCX's are present.



ACCESSORIES AND DETAILS

APPROXIMATE DUCT OPENING SIZES

JOIST DEPTH	ROUND	SQUARE	RECTANGLE
8 INCHES	5 INCHES	4x4 INCHES	3x6 INCHES
10 INCHES	5 INCHES	4x4 INCHES	3x7 INCHES
12 INCHES	7 INCHES	5x5 INCHES	3x8 INCHES
14 INCHES	8 INCHES	6x6 INCHES	5x9 INCHES
16 INCHES	8 INCHES	6x6 INCHES	5x9 INCHES
18 INCHES	9 INCHES	7x7 INCHES	5x9 INCHES
20 INCHES	10 INCHES	8x8 INCHES	6x11 INCHES
22 INCHES	10 INCHES	9x9 INCHES	7x11 INCHES
24 INCHES	12 INCHES	10x10 INCHES	7x13 INCHES
26 INCHES	15 INCHES*	12x12 INCHES*	9x18 INCHES*
28 INCHES	16 INCHES*	13x13 INCHES*	9x18 INCHES*
30 INCHES	17 INCHES*	14x14 INCHES*	10x18 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.



STANDARD SPECIFICATIONS

FOR OPEN WEB STEEL JOISTS, K-SERIES

Adopted by the Steel Joist Institute November 4, 1985
Revised to November 10, 2003 - Effective March 01, 2005

SECTION 1. SCOPE

This specification covers the design, manufacture and use of Open Web Steel Joists, **K-Series**. Load and Resistance Factor Design (LRFD) and Allowable Strength Design (ASD) are included in this specification.

SECTION 2. DEFINITION

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

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

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

* The term "Yield Strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13.1 "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.

Standard Specifications and Load Tables, Open Web Steel Joists, **K-Series**,

Steel Joist Institute - Copyright, 2005

SECTION 3. MATERIALS

3.1 STEEL

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

- Carbon Structural Steel, ASTM A36/A36M.
- High-Strength, Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality, ASTM A529/A529M, Grade 50.
- High-Strength Low-Alloy Columbium-Vanadium Structural Steel, ASTM A572/A572M, Grade 42 and 50.
- High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (100 mm) Thick, ASTM A588/A588M.
- Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Corrosion Resistance, ASTM A606.
- Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, ASTM A1008/A1008M
- Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, 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

The yield strength used as a basis for the design stresses prescribed in Section 4 shall be either 36 ksi (250 MPa) or 50 ksi (345 MPa). Evidence that the steel furnished meets or exceeds the design yield strength shall, if requested, be provided in the form of an affidavit or by witnessed or certified test reports.

For material used without consideration of increase in yield strength resulting from cold forming, the specimens shall be taken from as-rolled material. In the case of material, the mechanical properties of which conform to the requirements of one of the listed specifications, 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, A529/A529M, A572/A572M, A588/A588M, whichever specification is applicable on the basis of design yield strength.

The number of tests shall be as prescribed in ASTM A6/A6M for plates, shapes, and bars; and ASTM A606, 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 6 percent greater than the yield strength of the section.
- c) Where compression tests are used for acceptance and control purposes, the specimen shall withstand a gross shortening of 2 percent of its original length without cracking. The length of the specimen shall be not greater than 20 times the least radius of gyration.
- d) If any test specimen fails to pass the requirements of the subparagraphs (a), (b), or (c) above, as applicable, two retests shall be made of specimens from the same lot. Failure of one of the retest specimens to meet such requirements shall be the cause for rejection of the lot represented by the specimens.

3.3 PAINT

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

- 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 that 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:

Designs shall be made according to the provisions in this Specification for either Load and Resistance Factor Design (LRFD) or for Allowable Strength Design (ASD).

Load Combinations:

LRFD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed for the factored loads based on the factors and load combinations as follows:

$$1.4D$$

$$1.2D + 1.6 (L, \text{ or } L_r, \text{ or } S, \text{ or } R)$$

ASD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed based on the load combinations as follows:

$$D$$

$$D + (L, \text{ or } L_r, \text{ or } S, \text{ or } R)$$

Where:

D = dead load due to the weight of the structural elements and the permanent features of the structure

L = live load due to occupancy and movable equipment

L_r = roof live load

S = snow load

R = load due to initial rainwater or ice exclusive of the ponding contribution

When special loads are specified and the specifying professional does not provide the load combinations, the provisions of ASCE 7, "Minimum Design Loads for Buildings and Other Structures" shall be used for LRFD and ASD load combinations.



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:

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

For Chords: $F_y = 50$ ksi (345 MPa)

For Webs: $F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

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

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

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

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

$$F_{cr} = Q \left[0.658 \left(\frac{QF_y}{F_e} \right) \right] F_y \quad (4.2-3)$$

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

$$F_{cr} = 0.877F_e \quad (4.2-4)$$

Where F_e = Elastic buckling stress determined in accordance with Equation 4.2-5.

$$F_e = \frac{\pi^2 E}{\left(\frac{\ell}{r} \right)^2} \quad (4.2-5)$$

For hot-rolled sections, "Q" is the full reduction factor for slender compression elements.

$$\text{Design Stress} = 0.9F_{cr} \text{ (LRFD)} \quad (4.2-6)$$

$$\text{Allowable Stress} = 0.6F_{cr} \text{ (ASD)} \quad (4.2-7)$$

In the above equations, ℓ is taken as the distance in inches (millimeters) between panel points for the chord mem-

bers 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).

Use $1.2 \ell/r_x$ for a crimped, first primary compression web member when a moment-resistant weld group is not used for this member; where r_x = member radius of gyration in the plane of the joist.

For cold-formed sections the method of calculating the nominal column 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:
 $F_y = 50$ ksi (345 MPa)

$$\text{Design Stress} = 0.9F_y \text{ (LRFD)} \quad (4.2-8)$$

$$\text{Allowable Stress} = 0.6F_y \text{ (ASD)} \quad (4.2-9)$$

For web members of solid round cross section:
 $F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

$$\text{Design Stress} = 1.45F_y \text{ (LRFD)} \quad (4.2-10)$$

$$\text{Allowable Stress} = 0.95F_y \text{ (ASD)} \quad (4.2-11)$$

For bearing plates:

$F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

$$\text{Design Stress} = 1.35F_y \text{ (LRFD)} \quad (4.2-12)$$

$$\text{Allowable Stress} = 0.90F_y \text{ (ASD)} \quad (4.2-13)$$

4.3 MAXIMUM SLENDERNESS RATIOS

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

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

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 $\ell/145$ where ℓ is the spacing in inches (millimeters) between lines of bridging as specified in Section 5.4(c).

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



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:

$$f_{au} + f_{bu} \leq 0.9F_y \quad (4.4-1)$$

at the mid panel: for $\frac{f_{au}}{\phi_c F_{cr}} \geq 0.2$,

$$\frac{f_{au}}{\phi_c F_{cr}} + \frac{8}{9} \left[\frac{C_m f_{bu}}{1 - \left(\frac{f_{au}}{\phi_c F_e} \right)} \right] Q \phi_b F_y \leq 1.0 \quad (4.4-2)$$

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

$$\left(\frac{f_{au}}{2\phi_c F_{cr}} \right) + \left[\frac{C_m f_{bu}}{1 - \left(\frac{f_{au}}{\phi_c F_e} \right)} \right] Q \phi_b F_y \leq 1.0 \quad (4.4-3)$$

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

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

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

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

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

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

$F_e = \frac{(\pi^2 E)}{(\ell/r_x)^2}$, 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 (mm²)

For ASD:

at the panel point:

$$f_a + f_b \leq 0.6F_y \quad (4.4-4)$$

at the mid panel: for $\frac{f_a}{F_a} \geq 0.2$,

$$\frac{f_a}{F_a} + \frac{8}{9} \left[\frac{C_m f_b}{1 - \left(\frac{1.67f_a}{F_e} \right)} \right] Q F_b \leq 1.0 \quad (4.4-5)$$

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

$$\left(\frac{f_a}{2F_a} \right) + \left[\frac{C_m f_b}{1 - \left(\frac{1.67f_a}{F_e} \right)} \right] Q F_b \leq 1.0 \quad (4.4-6)$$

$f_a = P/A =$ 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, kip-in. (N-mm)

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

$F_a =$ 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

(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 may be investigated using the provisions of Section 4.4(a), letting $C_m = 0.4$ when bending due to eccentricity produces reversed curvature.

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

(c) Extended Ends

The magnitude and location of the loads to be supported, deflection requirements, and proper bracing of extended



top chords or full depth cantilever ends 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 millimeters) for welds oriented parallel to the principal stress.
- f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 millimeters) in any 1 inch (25 millimeters) of design weld length.
- g) Weld spatter that does not interfere with paint coverage is acceptable.

(2) Welding Program

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

(3) Weld Inspection by Outside Agencies (See Section 5.12 of these specifications)

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

(b) Strength

- (1) Joint Connections - Joint connections shall be capable of withstanding forces due to an ultimate load equal to at least 1.35 times the LRFD, or 2.0 times the ASD load shown in the applicable Standard Load Table.
- (2) Shop Splices - Splices may occur at any point in chord or web members. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term "member" shall be defined as all component parts comprising the chord or web, at the point of the splice.

(c) Eccentricity

Members connected at a joint shall have their centroidal axes meet at a point if practical. Otherwise, due consideration shall be given to the effect of eccentricity. In no case shall eccentricity of any web member at a joint exceed 3/4 of the over-all dimension, measured in the plane of the web, of the largest member connected. The eccentricity of any web member shall be the perpendicular distance from the centroidal axis of that web member to the point on the centroidal axis of the chord which is vertically above or below the intersection of the centroidal axes of the web members forming the joint. Ends of joists shall be proportioned to resist bending produced by eccentricity at the support.

4.6 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 or other independent agency, 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 verify by shear tests on representative joints of typical joists that connections will meet the provision of Section 4.5(b). Chord and web members may be reinforced for such tests.



(d) In-Plant Inspections

Each manufacturer shall verify 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

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

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

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

5.2 SPAN

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

5.3 END SUPPORTS**(a) Masonry and Concrete**

K-Series Joists supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical or lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of K-Series Joists shall extend a distance of not less than 4 inches (102 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 6 inches (152 millimeters) 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.

Where it is deemed necessary to bear less than 4 inches (102 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 joists must bear a minimum of 2 1/2 inches (64 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 K-Series Joists shall extend a distance of not less than 2 1/2 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. Attachments to the joist chords shall be made by welding or mechanical means and shall be capable of resisting a nominal (unfactored) horizontal force of not less than 700 pounds (3114 Newtons).

The ratio of unbraced length to least radius of gyration, ℓ/r , of the bridging member shall not exceed 300, where ℓ is the distance in inches (millimeters) between attachments and r is the least radius of gyration of the bridging member.

(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. Connections to the chords of steel joists shall be made by positive mechanical means or by welding.

(c) Quantity and Spacing

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 Section 4.4(a). 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.

(d) 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.



TABLE 5.4-1

U. S. 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 Table.					
*Section Number	One Row	Two Rows	Three Rows	Four Rows	Five Rows
#1	Up thru 16	Over 16 thru 24	Over 24 thru 28		
#2	Up thru 17	Over 17 thru 25	Over 25 thru 32		
#3	Up thru 18	Over 18 thru 28	Over 28 thru 38	Over 38 thru 48	
#4	Up thru 19	Over 19 thru 28	Over 28 thru 38	Over 38 thru 48	
#5	Up thru 19	Over 19 thru 29	Over 29 thru 39	Over 39 thru 50	Over 50 thru 52
#6	Up thru 19	Over 19 thru 29	Over 29 thru 39	Over 39 thru 51	Over 51 thru 56
#7	Up thru 20	Over 20 thru 33	Over 33 thru 45	Over 45 thru 58	Over 58 thru 60
#8	Up thru 20	Over 20 thru 33	Over 33 thru 45	Over 45 thru 58	Over 58 thru 60
#9	Up thru 20	Over 20 thru 33	Over 33 thru 46	Over 46 thru 59	Over 59 thru 60
#10	Up thru 20	Over 20 thru 37	Over 37 thru 51	Over 51 thru 60	
#11	Up thru 20	Over 20 thru 38	Over 38 thru 53	Over 53 thru 60	
#12	Up thru 20	Over 20 thru 39	Over 39 thru 53	Over 53 thru 60	

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

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

TABLE 5.4-2

METRIC UNITS					
NUMBER OF ROWS OF TOP CHORD BRIDGING**					
Refer to the K-Series Metric Load Table and Specification Section 6 for required bolted diagonal bridging. Distances are Joist Span lengths in millimeters - See "Definition of Span" preceding Load Table.					
*Section Number	One Row	Two Rows	Three Rows	Four Rows	Five Rows
#1	up thru 4877	Over 4877 thru 7315	Over 7315 thru 8534		
#2	up thru 5182	Over 5182 thru 7620	Over 7620 thru 9754		
#3	up thru 5486	Over 5486 thru 8534	Over 8534 thru 11582	Over 11582 thru 12192	
#4	up thru 5791	Over 5791 thru 8534	Over 8534 thru 11582	Over 11582 thru 14630	
#5	up thru 5791	Over 5791 thru 8839	Over 8839 thru 11887	Over 11887 thru 15240	Over 15240 thru 15850
#6	up thru 5791	Over 5791 thru 8839	Over 8839 thru 11887	Over 11887 thru 15545	Over 15545 thru 17069
#7	up thru 6096	Over 6096 thru 10058	Over 10058 thru 13716	Over 13716 thru 17678	Over 17678 thru 18288
#8	up thru 6096	Over 6096 thru 10058	Over 10058 thru 13716	Over 13716 thru 17678	Over 17678 thru 18288
#9	up thru 6096	Over 6096 thru 10058	Over 10058 thru 14021	Over 14021 thru 17983	Over 17983 thru 18288
#10	up thru 6096	Over 6096 thru 11278	Over 11278 thru 15545	Over 15545 thru 18288	
#11	up thru 6096	Over 6096 thru 11582	Over 11582 thru 16154	Over 16154 thru 18288	
#12	up thru 6096	Over 6096 thru 11887	Over 11887 thru 16154	Over 16154 thru 18288	

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

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



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 END ANCHORAGE

(a) Masonry and Concrete

Ends of K-Series Joists resting on steel bearing plates on masonry or structural concrete shall be attached thereto with a minimum of two 1/8 inch (3 millimeters) fillet welds 1 inch (25 millimeters) long, or with two 1/2 inch (13 millimeters) 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 millimeters) fillet welds 1 inch (25 millimeters) long, or with two 1/2 inch (13 millimeters) 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 may consist of cast-in-place or precast concrete or gypsum, formed steel, wood, or other suitable material capable of supporting the required load at the specified joist spacing.

(b) Thickness

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

(c) Centering

Centering for cast-in-place slabs may be ribbed metal lath, corrugated steel sheets, paper-backed welded wire fabric, removable centering or any other suitable material capable of supporting the slab at the designated joist spacing. Centering shall not cause lateral displacement or damage to the top chord of joists during installation or removal of the centering or placing of the concrete.

(d) Bearing

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

(e) Attachments

The spacing for slab or deck attachments along the joist top chord shall not exceed 36 inches (914 millimeters), and shall be capable of resisting a nominal (unfactored) lateral force of not less than 300 pounds (1335 Newtons), 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

The stiffness and strength of standing-seam roof clips varies from one manufacturer to another. Therefore, some roof systems cannot be counted on to provide lateral stability to the joists which support the roof. Sufficient stability must be provided to brace the joists laterally under the full design load. The compression chord must 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). Out-of-plane strength may be achieved by adjusting the bridging spacing and/or increasing the compression chord area, the joist depth, 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 may not exceed that specified in Section 5.4(c).

Horizontal bridging members attached to the compression chords and their anchorage's must be designed for a compressive axial force of $0.0025nP$, 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 is $0.005P$. 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 AISC Specifications.

5.11 UPLIFT

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

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

5.12 INSPECTION

Joists shall be inspected by the manufacturer before shipment to 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 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 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 must 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 must 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 may 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.

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

- 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 must be restrained laterally per Section 5.4(d).
- 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⁾ are 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.
 - (1) See Appendix E for definition of “construction load”. A copy of the OSHA Steel Erection Standard §1926.757, Open Web Steel Joists, is included in Appendix E for reference purposes.
- 4) No bundle of deck may 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 decking shall be placed within 1 foot (0.30 meters) of the bearing surface of the joist end.
 - g) 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

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

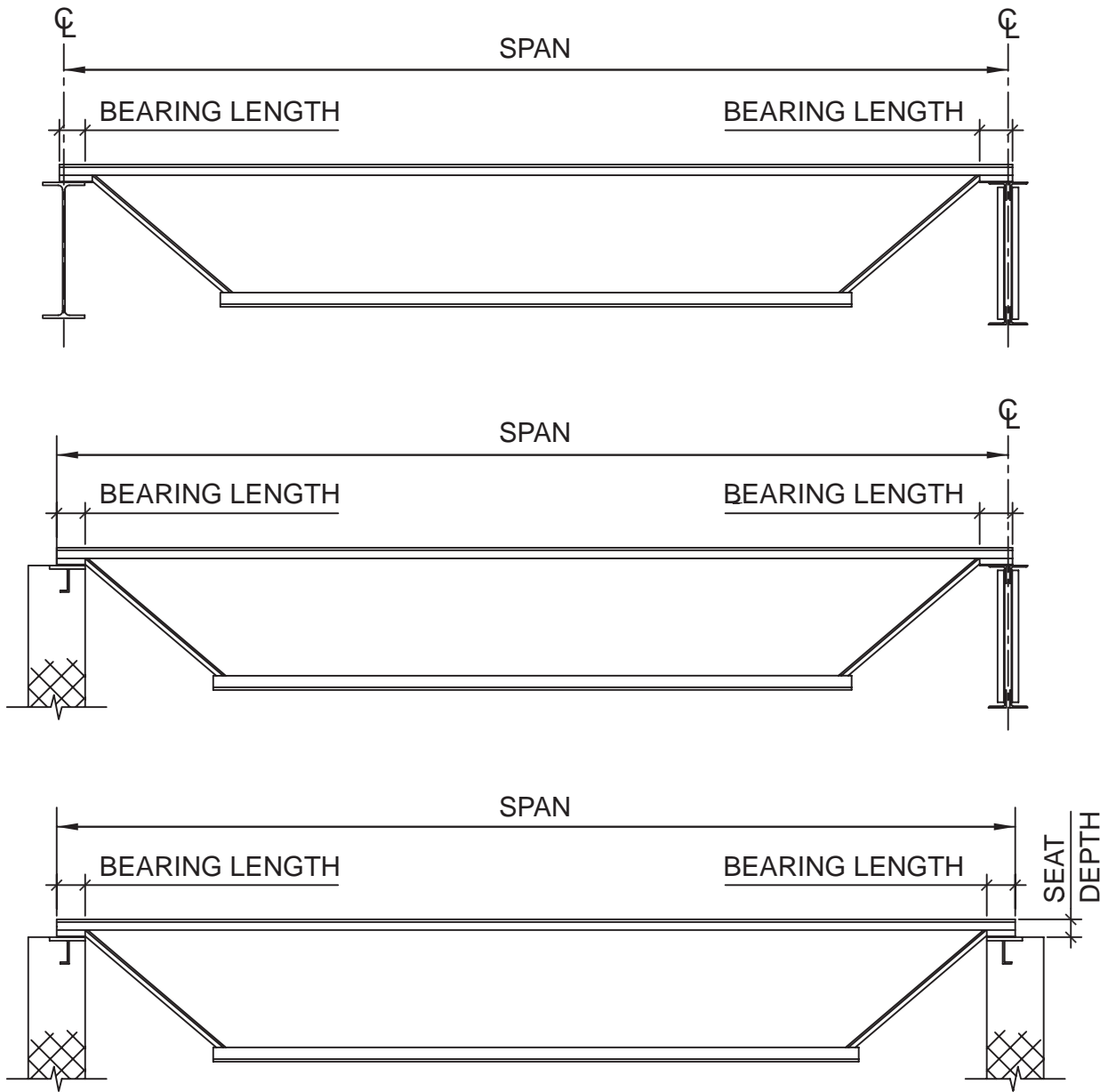
(e) Fall Arrest Systems

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⁾.

- (2) See Appendix E for OSHA 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 2 1/2 INCHES; FOR MASONRY AND CONCRETE NOT LESS THAN 4 INCHES.
 - 3) PARALLEL CHORD JOISTS INSTALLED TO A SLOPE GREATER THAN 1/2 INCH PER FOOT SHALL USE SPAN DEFINED BY THE LENGTH ALONG THE SLOPE.



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 November 10, 2003 – Effective March 01, 2005

The black figures in the following table give the TOTAL safe factored uniformly distributed load-carrying capacities, in pounds per linear foot, of **LRFD K-Series** Steel Joists. The weight of factored DEAD loads, including the joists, must be deducted to determine the factored LIVE load-carrying capacities of the joists. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

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

The approximate moment of inertia of the joist, in inches⁴ is;

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

For the proper handling of concentrated and/or varying loads, see Section 6.1 in the Code of Standard Practice for Steel Joists and Joist Girders.

Where the joist span exceeds the unshaded area of the Load Table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at the chords and intersections.

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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	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
Depth (in.)	8	10	12	12	12	14	14	14	14	16	16	16	16	16	16	16
Approx. Wt (lbs./ft.)	5.1	5.0	5.0	5.7	7.1	5.2	6.0	6.7	7.7	5.5	6.3	7.0	7.5	8.1	8.6	10.0
Span (ft.)																
8	825 550															
9	825 550															
10	825 480	825 550														
11	798 377	825 542														
12	666 288	825 455	825 550	825 550	825 550											
13	565 225	718 363	825 510	825 510	825 510											
14	486 179	618 289	750 425	825 463	825 463	825 550	825 550	825 550	825 550							
15	421 145	537 234	651 344	814 428	825 434	766 475	825 507	825 507	825 507							
16	369 119	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	387 124	466 147



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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.)	6.6	7.2	7.7	8.5	9	10.2	11.7	6.7	7.6	8.2	8.9	9.3	10.8	12.2	8	8.8	9.2	9.7	11.3	12.6	13.8
Span (ft.)																					
↓																					
18	825 550	825 550	825 550	825 550	825 550	825 550	825 550														
19	771 494	825 523	825 523	825 523	825 523	825 523	825 523														
20	694 423	825 490	825 490	825 490	825 490	825 490	825 490	775 517	825 550	825 550	825 550	825 550	825 550	825 550							
21	630 364	759 426	825 460	825 460	825 460	825 460	825 460	702 453	825 520	825 520	825 520	825 520	825 520	825 520							
22	573 316	690 370	777 414	825 438	825 438	825 438	825 438	639 393	771 461	825 490	825 490	825 490	825 490	825 490	825 548	825 548	825 548	825 548	825 548	825 548	825 548
23	523 276	630 323	709 362	774 393	825 418	825 418	825 418	583 344	703 402	793 451	825 468	825 468	825 468	825 468	777 491	825 518	825 518	825 518	825 518	825 518	825 518
24	480 242	577 284	651 318	709 345	789 382	825 396	825 396	535 302	645 353	727 396	792 430	825 448	825 448	825 448	712 431	804 483	825 495	825 495	825 495	825 495	825 495
25	441 214	532 250	600 281	652 305	727 377	825 377	825 377	493 266	594 312	669 350	729 380	811 421	825 426	825 426	657 381	739 427	805 464	825 474	825 474	825 474	825 474
26	408 190	492 222	553 249	603 271	672 299	807 354	825 361	456 236	549 277	618 310	673 337	750 373	825 405	825 405	606 338	682 379	744 411	825 454	825 454	825 454	825 454
27	378 169	454 198	513 222	558 241	622 267	747 315	825 347	421 211	508 247	573 277	624 301	694 333	825 389	825 389	561 301	633 337	688 367	768 406	825 432	825 432	825 432
28	351 151	423 177	477 199	519 216	577 239	694 282	822 331	391 189	472 221	532 248	579 269	645 298	775 353	825 375	522 270	588 302	640 328	712 364	825 413	825 413	825 413
29	327 136	394 159	444 179	483 194	538 215	646 254	766 298	364 170	439 199	495 223	540 242	601 268	723 317	825 359	486 242	547 272	597 295	664 327	798 387	825 399	825 399
30	304 123	367 144	414 161	451 175	502 194	603 229	715 269	340 153	411 179	462 201	504 218	561 242	675 286	799 336	453 219	511 245	556 266	619 295	745 349	825 385	825 385
31	285 111	343 130	387 146	421 158	469 175	564 207	669 243	318 138	384 162	433 182	471 198	525 219	631 259	748 304	424 198	478 222	520 241	580 267	697 316	825 369	825 369
32	267 101	322 118	363 132	396 144	441 159	529 188	627 221	298 126	360 147	406 165	442 179	492 199	592 235	702 276	397 180	448 201	489 219	544 242	654 287	775 337	823 355
33	252 92	303 108	342 121	372 131	414 145	498 171	589 201	280 114	339 134	381 150	415 163	463 181	556 214	660 251	373 164	421 183	459 199	511 221	615 261	729 307	798 334
34	237 84	285 98	321 110	349 120	390 132	468 156	555 184	264 105	318 122	358 137	391 149	435 165	523 195	621 229	352 149	397 167	448 182	489 202	544 239	654 280	775 314
35	223 77	268 90	303 101	330 110	367 121	441 143	523 168	249 96	300 112	339 136	369 137	411 151	493 179	585 210	331 137	373 153	408 167	454 185	546 219	648 257	741 292
36	211 70	253 82	286 92	312 101	348 111	417 132	495 154	235 88	283 103	319 115	348 125	388 139	466 164	553 193	313 126	354 141	385 153	429 169	516 201	612 236	700 269
37								222 81	268 95	303 106	330 115	367 128	441 151	523 178	297 116	334 130	364 141	406 156	487 185	579 217	663 247
38								211 74	255 87	286 98	312 106	348 118	418 139	496 164	280 107	316 119	345 130	384 144	462 170	549 200	628 228
39								199 69	241 81	271 90	297 98	330 109	397 129	471 151	267 98	300 110	327 120	364 133	438 157	520 185	595 211
40								190 64	229 75	258 84	282 91	313 101	376 119	447 140	253 91	285 102	310 111	346 123	417 146	495 171	565 195
41															241 85	271 95	295 103	330 114	396 135	471 159	538 181
42															229 79	259 88	282 96	313 106	378 126	448 148	513 168
43															219 73	247 82	268 89	300 99	360 117	427 138	489 157
44															208 68	235 76	256 83	286 92	343 109	408 128	466 146



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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.)	8.4	9.3	9.7	10.1	11.5	12.0	13.1	16.0	9.8	10.6	10.9	12.1	12.2	13.8	16.6
Span (ft.)															
24	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							
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 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.)	11.4	11.8	12.7	13.0	14.3	17.1	12.3	13.2	13.4	15.0	16.4	17.6
Span (ft.)												
↓												
28	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						
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



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 November 10, 2003 - Effective March 01, 2005

The black figures in the following table give the TOTAL safe uniformly distributed load-carrying capacities, in pounds per linear foot, of **ASD K-Series** Steel Joists. The weight of DEAD loads, including the joists, must be deducted to determine the LIVE load-carrying capacities of the joists. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

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

The approximate moment of inertia of the joist, in inches⁴ is;

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

For the proper handling of concentrated and/or varying loads, see Section 6.1 in the Code of Standard Practice for Steel Joists and Joist Girders.

Where the joist span exceeds the unshaded area of the Load Table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at the chords and intersections.

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



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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.)	6.6	7.2	7.7	8.5	9	10.2	11.7	6.7	7.6	8.2	8.9	9.3	10.8	12.2	8	8.8	9.2	9.7	11.3	12.6	13.8
Span (ft.)																					
18	550	550	550	550	550	550	550														
19	514	550	550	550	550	550	550														
20	463	550	550	550	550	550	550	517	550	550	550	550	550	550							
21	420	506	550	550	550	550	550	468	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
23	349	420	473	516	550	550	550	389	469	529	550	550	550	550	518	550	550	550	550	550	550
24	320	385	434	473	526	550	550	357	430	485	528	550	550	550	475	536	550	550	550	550	550
25	294	355	400	435	485	550	550	329	396	446	486	541	550	550	438	493	537	550	550	550	550
26	272	328	369	402	448	538	550	304	366	412	449	500	550	550	404	455	496	550	550	550	550
27	252	303	342	372	415	498	550	281	339	382	416	463	550	550	374	422	459	512	550	550	550
28	234	282	318	346	385	463	548	261	315	355	386	430	517	550	348	392	427	475	550	550	550
29	218	263	296	322	359	431	511	243	293	330	360	401	482	550	324	365	398	443	532	550	550
30	203	245	276	301	335	402	477	227	274	308	336	374	450	533	302	341	371	413	497	550	550
31	190	229	258	281	313	376	446	212	256	289	314	350	421	499	283	319	347	387	465	550	550
32	178	215	242	264	294	353	418	199	240	271	295	328	395	468	265	299	326	363	436	517	549
33	168	202	228	248	276	332	393	187	226	254	277	309	371	440	249	281	306	341	410	486	532
34	158	190	214	233	260	312	370	176	212	239	261	290	349	414	235	265	288	321	386	458	516
35	149	179	202	220	245	294	349	166	200	226	246	274	329	390	221	249	272	303	364	432	494
36	141	169	191	208	232	278	330	157	189	213	232	259	311	369	209	236	257	286	344	408	467
37								148	179	202	220	245	294	349	198	223	243	271	325	386	442
38								81	95	106	115	128	151	178	116	130	141	156	185	217	247
39								74	87	98	106	118	139	164	107	119	130	144	170	200	228
40								133	161	181	198	220	265	314	178	200	218	243	292	347	397
41								69	81	90	98	109	129	151	98	110	120	133	157	185	211
42								127	153	172	188	209	251	298	169	190	207	231	278	330	377
43								64	75	84	91	101	119	140	91	102	111	123	146	171	195
44															161	181	197	220	264	314	359
															85	95	103	114	135	159	181
															79	88	96	106	126	148	168
															146	165	179	200	240	285	326
															73	82	89	99	117	138	157
															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.)	8.4	9.3	9.7	10.1	11.5	12.0	13.1	16.0	9.8	10.6	10.9	12.1	12.2	13.8	16.6
Span (ft.)															
↓ 24	520 516	550 544	550 544	550 544	550 544	550 544	550 544	550 544							
25	479 456	540 511	550 520	550 520	550 520	550 520	550 520	550 520							
26	442 405	499 453	543 493	550 499	550 499	550 499	550 499	550 499	542 535	550 541	550 541	550 541	550 541	550 541	550 541
27	410 361	462 404	503 439	550 479	550 479	550 479	550 479	550 479	502 477	547 519	550 522	550 522	550 522	550 522	550 522
28	381 323	429 362	467 393	521 436	550 456	550 456	550 456	550 456	466 427	508 464	550 501	550 501	550 501	550 501	550 501
29	354 290	400 325	435 354	485 392	536 429	550 436	550 436	550 436	434 384	473 417	527 463	550 479	550 479	550 479	550 479
30	331 262	373 293	406 319	453 353	500 387	544 419	550 422	550 422	405 346	441 377	492 417	544 457	550 459	550 459	550 459
31	310 237	349 266	380 289	424 320	468 350	510 379	550 410	550 410	379 314	413 341	460 378	509 413	550 444	550 444	550 444
32	290 215	327 241	357 262	397 290	439 318	478 344	549 393	549 393	356 285	387 309	432 343	477 375	519 407	549 431	549 431
33	273 196	308 220	335 239	373 265	413 289	449 313	532 368	532 368	334 259	364 282	406 312	448 342	488 370	532 404	532 404
34	257 179	290 201	315 218	351 242	388 264	423 286	502 337	516 344	315 237	343 257	382 285	422 312	459 338	516 378	516 378
35	242 164	273 184	297 200	331 221	366 242	399 262	473 308	501 324	297 217	323 236	360 261	398 286	433 310	501 356	501 356
36	229 150	258 169	281 183	313 203	346 222	377 241	447 283	487 306	280 199	305 216	340 240	376 263	409 284	486 334	487 334
37	216 138	244 155	266 169	296 187	327 205	356 222	423 260	474 290	265 183	289 199	322 221	356 242	387 262	460 308	474 315
38	205 128	231 143	252 156	281 172	310 189	338 204	401 240	461 275	251 169	274 184	305 204	337 223	367 241	436 284	461 299
39	195 118	219 132	239 144	266 159	294 174	320 189	380 222	449 261	238 156	260 170	289 188	320 206	348 223	413 262	449 283
40	185 109	208 122	227 133	253 148	280 161	304 175	361 206	438 247	227 145	247 157	275 174	304 191	331 207	393 243	438 269
41	176 101	198 114	216 124	241 137	266 150	290 162	344 191	427 235	215 134	235 146	262 162	289 177	315 192	374 225	427 256
42	168 94	189 106	206 115	229 127	253 139	276 151	327 177	417 224	205 125	224 136	249 150	275 164	300 178	356 210	417 244
43	160 88	180 98	196 107	219 118	242 130	263 140	312 165	406 213	196 116	213 126	238 140	263 153	286 166	339 195	407 232
44	153 82	172 92	187 100	209 110	231 121	251 131	298 154	387 199	187 108	204 118	227 131	251 143	273 155	324 182	398 222
45	146 76	164 86	179 93	199 103	220 113	240 122	285 144	370 185	179 101	194 110	217 122	240 133	261 145	310 170	389 212
46	139 71	157 80	171 87	191 97	211 106	230 114	272 135	354 174	171 95	186 103	207 114	229 125	250 135	296 159	380 203
47	133 67	150 75	164 82	183 90	202 99	220 107	261 126	339 163	164 89	178 96	199 107	219 117	239 127	284 149	369 192
48	128 63	144 70	157 77	175 85	194 93	211 101	250 118	325 153	157 83	171 90	190 100	210 110	229 119	272 140	353 180
49									150 78	164 85	183 94	202 103	220 112	261 131	339 169
50									144 73	157 80	175 89	194 97	211 105	250 124	325 159
51									139 69	151 75	168 83	186 91	203 99	241 116	313 150
52									133 65	145 71	162 79	179 86	195 93	231 110	301 142



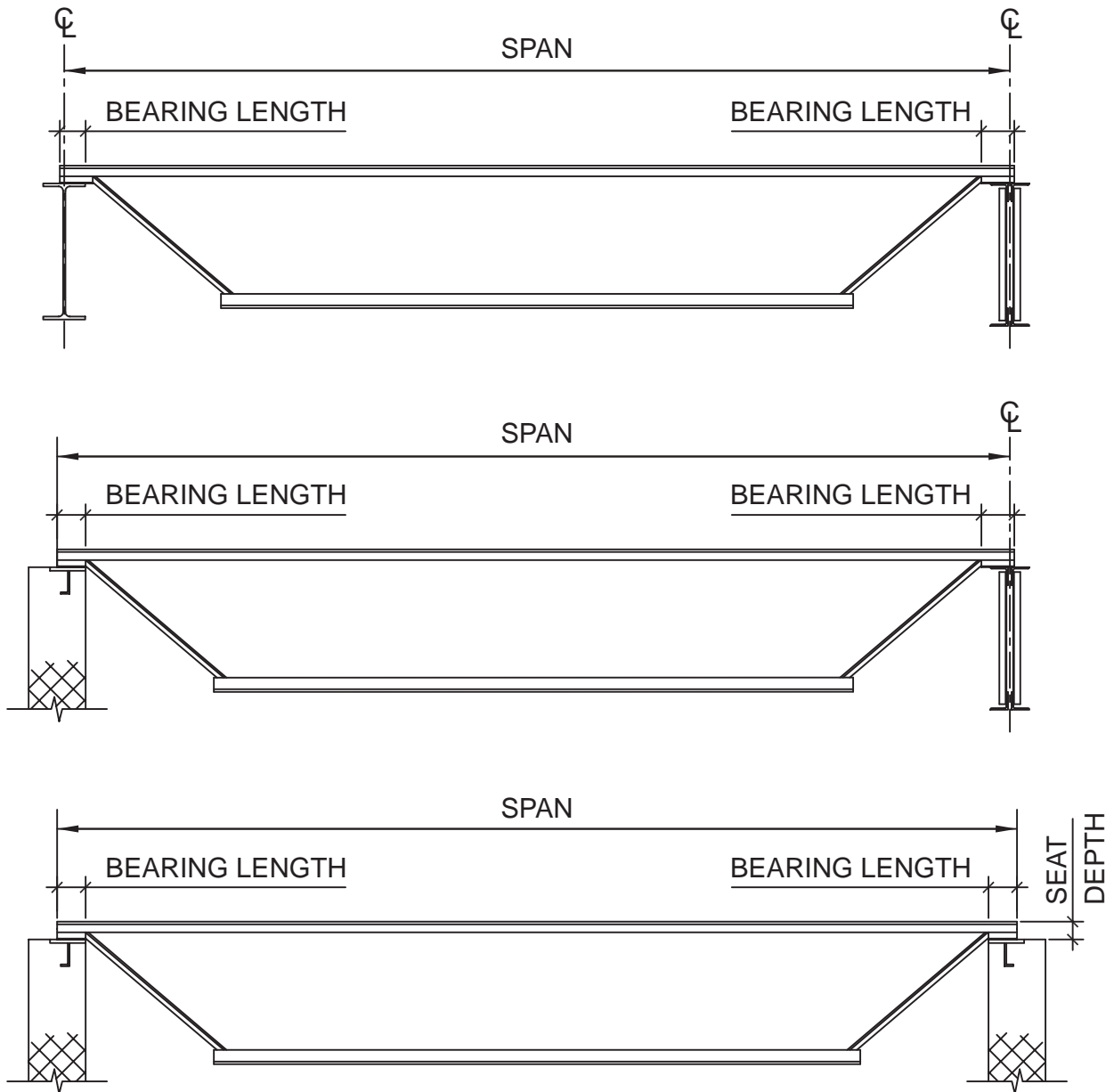
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STANDARD LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based on a 50 ksi Maximum Yield Strength - Loads Shown in Pounds per Linear Foot (plf)

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.)	11.4	11.8	12.7	13.0	14.3	17.1	12.3	13.2	13.4	15.0	16.4	17.6
Span (ft.)												
↓												
28	548 541	550 543	550 543	550 543	550 543	550 543						
29	511 486	550 522	550 522	550 522	550 522	550 522						
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



DEFINITION OF SPAN (Metric Units)



- NOTES:**
- 1) **DESIGN LENGTH = SPAN - 102 mm.**
 - 2) **BEARING LENGTH FOR STEEL SUPPORTS SHALL NOT BE LESS THAN 64 mm; FOR MASONRY AND CONCRETE NOT LESS THAN 102 mm.**
 - 3) **PARALLEL CHORD JOISTS INSTALLED TO A SLOPE GREATER THAN 1:24 SHALL USE SPAN DEFINED BY THE LENGTH ALONG THE SLOPE.**



METRIC LRFD LOAD TABLE

OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum 345 MPa Yield Strength
 Adopted by the Steel Joist Institute May 1, 2000
 Revised to November 10, 2003 - Effective March 01, 2005

The black figures in the following table give the TOTAL safe factored uniformly distributed load-carrying capacities, in kiloNewtons per meter (kN/m) of **LRFD K-Series** Steel Joists. The weight (kN/m) of the factored DEAD loads, including the joists, must be deducted to determine the factored LIVE load-carrying capacities of the joists. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

The approximate joist weights, in kiloNewtons per meter (kN/m), shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in mm⁴, is:

$$I_j = 2.6953(W_{LL})(L^3)(10^{-5}), \text{ where } W_{LL} = \text{RED figure in the load table:}$$

$$L = (\text{span} - 102) \text{ in millimeters.}$$

For the proper handling of concentrated and/or varying loads, see Section 6.1 in the Code of Standard Practice for Steel Joists and Joist Girders.

Where the joist span exceeds the unshaded area of the Load Table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at the chords and intersections.

LRFD

METRIC LOAD TABLE FOR OPEN WEB STEEL JOISTS K-SERIES
 Based on a Maximum 345 MPa Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)

Joist Designation	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
Depth (mm)	203	254	305	305	305	356	356	356	356	406	406	406	406	406	406	406
Approx. Mass (kg/m)	7.6	7.4	7.4	8.5	10.6	7.7	8.9	10.0	11.5	8.2	9.4	10.4	11.2	12.1	12.8	14.9
Approx. Mass (kN/m)	0.07	0.07	0.07	0.08	0.10	0.08	0.09	0.10	0.11	0.08	0.09	0.10	0.11	0.12	0.13	0.15
Span (mm)																
2438	12.03 8.02															
2743	12.03 8.02															
3048	12.03 7.00	12.03 8.02														
3353	11.64 5.50	12.03 7.90														
3658	9.71 4.20	12.03 6.64	12.03 8.02	12.03 8.02	12.03 8.02											
3962	8.25 3.28	10.48 5.29	12.03 7.44	12.03 7.44	12.03 7.44											
4267	7.09 2.61	9.01 4.21	10.94 6.20	12.03 6.75	12.03 6.75	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02							
4572	6.15 2.11	7.83 3.41	9.50 5.02	11.88 6.24	12.03 6.33	11.18 6.93	12.03 7.39	12.03 7.39	12.03 7.39							
4877	5.38 1.73	6.85 2.80	8.31 4.11	10.42 5.12	12.03 5.77	9.80 5.69	12.03 6.81	12.03 6.81	12.03 6.81	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02
5182		6.06 2.32	7.35 3.41	9.19 4.24	12.03 5.34	8.64 4.72	10.83 5.89	12.03 6.46	12.03 6.46	11.20 7.12	12.03 7.67	12.03 7.67	12.03 7.67	12.03 7.67	12.03 7.67	12.03 7.67
5486		5.38 1.95	6.54 2.87	8.18 3.57	11.09 4.62	7.70 3.96	9.65 4.94	11.60 5.79	12.03 5.95	9.98 5.96	11.12 6.65	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15
5791		4.83 1.64	5.86 2.43	7.33 3.02	9.93 3.92	6.89 3.35	8.64 4.18	10.39 4.90	12.03 5.58	8.93 5.06	9.96 5.63	11.97 6.59	12.03 6.64	12.03 6.64	12.03 6.64	12.03 6.64
6096		4.35 1.41	5.27 2.07	6.61 2.58	8.95 3.35	6.21 2.87	7.79 3.59	9.36 4.18	11.49 5.06	8.05 4.33	8.97 4.81	10.79 5.63	12.03 6.21	12.03 6.21	12.03 6.21	12.03 6.21
6401			4.77 1.79	5.97 2.23	8.09 2.88	5.62 2.48	7.04 3.09	8.49 3.61	10.39 4.36	7.28 3.72	8.12 4.15	9.78 4.85	11.01 5.44	11.99 5.91	12.03 5.92	12.03 5.92
6706			4.35 1.54	5.45 1.92	7.37 2.51	5.12 2.14	6.41 2.68	7.72 3.13	9.45 3.77	6.63 3.23	7.37 3.60	8.88 4.21	10.02 4.71	10.90 5.12	12.03 5.61	12.03 5.61
7010			3.96 1.35	4.96 1.69	6.74 2.18	4.68 1.86	5.86 2.33	7.04 2.74	8.64 3.29	6.06 2.83	6.74 3.15	8.12 3.67	9.15 4.11	9.96 4.48	11.09 4.94	12.03 5.29
7315			3.63 1.18	4.55 1.47	6.17 1.92	4.29 1.64	5.36 2.05	6.45 2.40	7.92 2.90	5.56 2.48	6.19 2.75	7.44 3.22	8.40 3.61	9.15 3.92	10.17 4.34	12.03 5.04
7620						3.94 1.45	4.94 1.80	5.95 2.11	7.31 2.55	5.12 2.18	5.69 2.43	6.85 2.84	7.72 3.19	8.40 3.47	9.36 3.83	11.25 4.53
7925						3.63 1.28	4.57 1.60	5.49 1.88	6.74 2.27	4.72 1.94	5.25 2.15	6.32 2.52	7.13 2.83	7.77 3.07	8.64 3.40	10.37 4.02
8230						3.37 1.15	4.22 1.43	5.10 1.67	6.23 2.02	4.37 1.73	4.88 1.92	5.86 2.26	6.61 2.52	7.20 2.74	8.01 3.03	9.61 3.59
8534						3.13 1.02	3.94 1.28	4.72 1.50	5.80 1.80	4.07 1.54	4.53 1.72	5.45 2.01	6.15 2.26	6.69 2.45	7.44 2.71	8.93 3.21
8839										3.78 1.38	4.22 1.54	5.07 1.80	5.71 2.02	6.23 2.20	6.93 2.43	8.31 2.88
9144										3.52 1.25	3.94 1.40	4.72 1.63	5.34 1.83	5.82 1.99	6.47 2.20	7.77 2.59
9449										3.30 1.13	3.67 1.26	4.44 1.47	4.99 1.66	5.45 1.80	6.06 1.99	7.26 2.34
9754										3.10 1.03	3.45 1.15	4.15 1.34	4.68 1.50	5.10 1.63	5.66 1.80	6.80 2.14



LRFD

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

Joist Designation	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
Depth(mm)	457	457	457	457	457	457	457	508	508	508	508	508	508	508	559	559	559	559	559	559	559
Approx. Mass (kg/m)	9.8	10.7	11.5	12.6	13.4	15.2	17.4	10.0	11.3	12.2	13.2	13.8	16.1	18.2	11.9	13.1	13.7	14.4	16.8	18.8	20.5
Approx. Mass (kN/m)	0.10	0.11	0.11	0.12	0.13	0.15	0.17	0.10	0.11	0.12	0.13	0.14	0.16	0.18	0.12	0.13	0.13	0.14	0.16	0.18	0.20
Span (mm)																					
↓																					
5486	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02														
5791	11.25 7.20	12.03 7.63	12.03 7.63	12.03 7.63	12.03 7.63	12.03 7.63	12.03 7.63														
6096	10.13 6.17	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	11.31 7.54	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02							
6401	9.19 5.31	11.07 6.21	12.03 6.71	12.03 6.71	12.03 6.71	12.03 6.71	12.03 6.71	10.24 6.61	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58							
6706	8.36 4.61	10.06 5.39	11.33 6.04	12.03 6.39	12.03 6.39	12.03 6.39	12.03 6.39	9.32 5.73	11.25 6.72	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.15	12.03 7.99	12.03 7.99	12.03 7.99	12.03 7.99	12.03 7.99	12.03 7.99	12.03 7.99
7010	7.63 4.02	9.19 4.71	10.35 5.28	11.29 5.73	12.03 6.10	12.03 6.10	12.03 6.10	8.51 5.02	10.26 5.86	11.58 6.58	12.03 6.82	12.03 6.82	12.03 6.82	12.03 6.82	11.33 7.16	12.03 7.55	12.03 7.55	12.03 7.55	12.03 7.55	12.03 7.55	12.03 7.55
7315	7.00 3.53	8.42 4.14	9.50 4.64	10.75 5.03	11.51 5.57	12.03 5.77	12.03 5.77	7.81 4.40	9.41 5.15	10.61 5.77	11.55 6.27	12.03 6.53	12.03 6.53	12.03 6.53	10.39 6.28	11.73 7.04	12.03 7.22	12.03 7.22	12.03 7.22	12.03 7.22	12.03 7.22
7620	6.43 3.12	7.77 3.64	8.75 4.10	9.52 4.45	10.61 4.91	12.03 5.50	12.03 5.50	7.20 3.88	8.66 4.55	9.76 5.10	10.63 5.54	11.84 6.14	12.03 6.21	12.03 6.21	9.58 5.56	10.79 6.23	11.75 6.77	12.03 6.91	12.03 6.91	12.03 6.91	12.03 6.91
7925	5.95 2.77	7.18 3.23	8.07 3.63	8.80 3.95	9.80 4.36	11.77 5.16	12.03 5.26	6.65 3.44	8.01 4.04	9.01 4.52	9.82 4.91	10.94 5.44	12.03 5.91	12.03 5.91	8.84 4.93	9.96 5.53	10.85 5.99	12.03 6.62	12.03 6.62	12.03 6.62	12.03 6.62
8230	5.51 2.46	6.63 2.88	7.48 3.23	8.14 3.51	9.08 3.89	10.90 4.59	12.03 5.06	6.15 3.07	7.42 3.60	8.36 4.04	9.10 4.39	10.13 4.85	12.03 5.67	12.03 5.67	8.18 4.39	9.23 4.91	10.04 5.35	11.20 5.92	12.03 6.30	12.03 6.30	12.03 6.30
8534	5.12 2.20	6.17 2.58	6.96 2.90	7.57 3.15	8.42 3.48	10.13 4.11	11.99 4.83	5.71 2.75	6.89 3.22	7.77 3.61	8.44 3.92	9.41 4.34	11.31 5.15	12.03 5.47	7.61 3.94	8.58 4.40	9.34 4.78	10.39 5.31	12.03 6.02	12.03 6.02	12.03 6.02
8839	4.77 1.98	5.75 2.32	6.47 2.61	7.04 2.83	7.85 3.13	9.43 3.70	11.18 4.34	5.31 2.48	6.41 2.90	7.22 3.25	7.88 3.53	8.77 3.91	10.55 4.62	12.03 5.23	7.09 3.53	7.99 3.96	8.71 4.30	9.69 4.77	11.64 5.64	12.03 5.82	12.03 5.82
9144	4.44 1.79	5.36 2.10	6.04 2.34	6.58 2.55	7.33 2.83	8.80 3.34	10.44 3.92	4.96 2.23	5.99 2.61	6.74 2.93	7.35 3.18	8.18 3.53	9.85 4.17	11.66 4.90	6.61 3.19	7.46 3.57	8.12 3.88	9.04 4.30	10.87 5.09	12.03 5.61	12.03 5.61
9449	4.15 1.61	5.01 1.89	5.64 2.13	6.15 2.30	6.85 2.55	8.23 3.02	9.76 3.54	4.64 2.01	5.60 2.36	6.32 2.65	6.87 2.88	7.66 3.19	9.21 3.77	10.92 4.43	6.19 2.88	6.98 3.23	7.59 3.51	8.47 3.89	10.17 4.61	12.03 5.38	12.03 5.38
9754	3.89 1.47	4.70 1.72	5.29 1.92	5.77 2.10	6.43 2.32	7.72 2.74	9.15 3.22	4.35 1.83	5.25 2.14	5.93 2.40	6.45 2.61	7.18 2.90	8.64 3.42	10.24 4.02	5.80 2.62	6.54 2.93	7.13 3.19	7.94 3.53	9.54 4.18	11.31 4.91	12.01 5.18
10058	3.67 1.34	4.42 1.57	4.99 1.76	5.42 1.91	6.04 2.11	7.26 2.49	8.60 2.93	4.09 1.66	4.94 1.95	5.56 2.18	6.06 2.37	6.76 2.64	8.12 3.12	9.63 3.66	5.45 2.39	6.15 2.67	6.69 2.90	7.46 3.22	8.97 3.80	10.63 4.48	11.64 4.87
10363	3.45 1.22	4.15 1.43	4.68 1.60	5.10 1.75	5.69 1.92	6.82 2.27	8.09 2.68	3.85 1.53	4.64 1.78	5.23 1.99	5.71 2.17	6.34 2.40	7.63 2.84	9.06 3.34	5.14 2.17	5.80 2.43	6.30 2.65	7.02 2.94	8.44 3.48	10.02 4.08	11.29 4.58
10668	3.26 1.12	3.91 1.31	4.42 1.47	4.81 1.60	5.36 1.76	6.43 2.08	7.63 2.45	3.63 1.40	4.37 1.63	4.94 1.83	5.38 1.99	5.99 2.20	7.20 2.61	8.53 3.06	4.83 1.99	5.45 2.23	5.95 2.43	6.63 2.69	7.96 3.19	9.45 3.75	10.81 4.26
10973	3.08 1.02	3.69 1.19	4.18 1.34	4.55 1.47	5.07 1.61	6.08 1.92	7.22 2.24	3.43 1.28	4.13 1.50	4.66 1.67	5.07 1.82	5.66 2.02	6.80 2.39	8.07 2.81	4.57 1.83	5.16 2.05	5.62 2.23	6.26 2.46	7.53 2.93	8.93 3.44	10.22 3.92
11278								3.23 1.18	3.91 1.38	4.42 1.54	4.81 1.67	5.36 1.86	6.43 2.20	7.63 2.59	4.33 1.69	4.88 1.89	5.31 2.05	5.93 2.27	7.11 2.69	8.44 3.16	9.67 3.60
11582								3.08 1.07	3.72 1.26	4.18 1.43	4.55 1.54	5.07 1.72	6.10 2.02	7.24 2.39	4.09 1.56	4.61 1.73	5.03 1.89	5.60 2.10	6.74 2.48	8.01 2.91	9.17 3.32
11887								2.91 1.00	3.52 1.18	3.96 1.31	4.33 1.43	4.81 1.59	5.80 1.88	6.87 2.20	3.89 1.43	4.37 1.60	4.77 1.75	5.31 1.94	6.39 2.29	7.59 2.69	8.69 3.07
12192								2.78 0.93	3.34 1.09	3.76 1.22	4.11 1.32	4.57 1.47	5.49 1.73	6.52 2.04	3.69 1.32	4.15 1.48	4.53 1.61	5.05 1.79	6.08 2.13	7.22 2.49	8.25 2.84
12497															3.52 1.24	3.96 1.38	4.31 1.50	4.81 1.66	5.77 1.97	6.87 2.32	7.85 2.64
12802															3.34 1.15	3.78 1.28	4.11 1.40	4.57 1.54	5.51 1.83	6.54 2.15	7.48 2.45
13106															3.19 1.06	3.61 1.19	3.91 1.29	4.37 1.44	5.25 1.70	6.23 2.01	7.13 2.29
13411															3.04 0.99	3.43 1.10	3.74 1.21	4.18 1.34	5.01 1.59	5.95 1.86	6.80 2.13



LRFD

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

Joist Designation	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12
Depth (mm)	610	610	610	610	610	610	610	610	660	660	660	660	660	660	660
Approx. Mass (kg/m)	12.5	13.8	14.4	15.0	17.1	17.9	19.5	23.8	14.6	15.8	16.2	18.0	18.2	20.5	24.7
Approx. Mass (kN/m)	0.12	0.14	0.14	0.15	0.17	0.18	0.19	0.23	0.14	0.15	0.16	0.18	0.18	0.20	0.24
Span (mm)															
7315	11.38 7.53	12.03 7.93	12.03 7.93	12.03 7.93	12.03 7.93	12.03 7.93	12.03 7.93	12.03 7.93							
7620	10.48 6.65	11.82 7.45	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58							
7925	9.67 5.91	10.92 6.61	11.88 7.19	12.03 7.28	12.03 7.28	12.03 7.28	12.03 7.28	12.03 7.28	11.86 7.80	12.03 7.89	12.03 7.89	12.03 7.89	12.03 7.89	12.03 7.89	12.03 7.89
8230	8.97 5.26	10.11 5.89	11.01 6.40	12.03 6.99	12.03 6.99	12.03 6.99	12.03 6.99	12.03 6.99	10.98 6.96	11.97 7.57	12.03 7.61	12.03 7.61	12.03 7.61	12.03 7.61	12.03 7.61
8534	8.34 4.71	9.39 5.28	10.22 5.73	11.40 6.36	12.03 6.65	12.03 6.65	12.03 6.65	12.03 6.65	10.20 6.23	11.12 6.77	12.03 7.31	12.03 7.31	12.03 7.31	12.03 7.31	12.03 7.31
8839	7.74 4.23	8.75 4.74	9.52 5.16	10.61 5.72	11.73 6.26	12.03 6.36	12.03 6.36	12.03 6.36	9.50 5.60	10.35 6.08	11.53 6.75	12.03 6.99	12.03 6.99	12.03 6.99	12.03 6.99
9144	7.24 3.82	8.16 4.27	8.88 4.65	9.91 5.15	10.94 5.64	11.90 6.11	12.03 6.15	12.03 6.15	8.86 5.04	9.65 5.50	10.77 6.08	11.90 6.66	12.03 6.69	12.03 6.69	12.03 6.69
9449	6.78 3.45	7.63 3.88	8.31 4.21	9.28 4.67	10.24 5.10	11.16 5.53	12.03 5.98	12.03 5.98	8.29 4.58	9.04 4.97	10.06 5.51	11.14 6.02	12.03 6.47	12.03 6.47	12.03 6.47
9754	6.34 3.13	7.15 3.51	7.81 3.82	8.69 4.23	9.61 4.64	10.46 5.02	12.01 5.73	12.01 5.73	7.79 4.15	8.47 4.50	9.45 5.00	10.44 5.47	11.36 5.93	12.01 6.28	12.01 6.28
10058	5.97 2.86	6.74 3.21	7.33 3.48	8.16 3.86	9.04 4.21	9.82 4.56	11.64 5.37	11.64 5.37	7.31 3.77	7.96 4.11	8.88 4.55	9.80 4.99	10.68 5.39	11.64 5.89	11.64 5.89
10363	5.62 2.61	6.34 2.93	6.89 3.18	7.68 3.53	8.49 3.85	9.25 4.17	10.98 4.91	11.29 5.02	6.89 3.45	7.50 3.75	8.36 4.15	9.23 4.55	10.04 4.93	11.29 5.51	11.29 5.51
10668	5.29 2.39	5.97 2.68	6.50 2.91	7.24 3.22	8.01 3.53	8.73 3.82	10.35 4.49	10.96 4.72	6.50 3.16	7.07 3.44	7.88 3.80	8.71 4.17	9.47 4.52	10.96 5.19	10.96 5.19
10973	5.01 2.18	5.64 2.46	6.15 2.67	6.85 2.96	7.57 3.23	8.25 3.51	9.78 4.13	10.66 4.46	6.12 2.90	6.67 3.15	7.44 3.50	8.23 3.83	8.95 4.14	10.63 4.87	10.66 4.87
11278	4.72 2.01	5.34 2.26	5.82 2.46	6.47 2.72	7.15 2.99	7.79 3.23	9.25 3.79	10.37 4.23	5.80 2.67	6.32 2.90	7.04 3.22	7.79 3.53	8.47 3.82	10.06 4.49	10.37 4.59
11582	4.48 1.86	5.05 2.08	5.51 2.27	6.15 2.51	6.78 2.75	7.39 2.97	8.77 3.50	10.09 4.01	5.49 2.46	5.99 2.68	6.67 2.97	7.37 3.25	8.03 3.51	9.54 4.14	10.09 4.36
11887	4.26 1.72	4.79 1.92	5.23 2.10	5.82 2.32	6.43 2.53	7.00 2.75	8.31 3.23	9.82 3.80	5.21 2.27	5.69 2.48	6.32 2.74	7.00 3.00	7.61 3.25	9.04 3.82	9.82 4.13
12192	4.04 1.59	4.55 1.78	4.96 1.94	5.53 2.15	6.12 2.34	6.65 2.55	7.90 3.00	9.58 3.60	4.96 2.11	5.40 2.29	6.01 2.53	6.65 2.78	7.24 3.02	8.60 3.54	9.58 3.92
12497	3.85 1.47	4.33 1.66	4.72 1.80	5.27 1.99	5.82 2.18	6.34 2.36	7.53 2.78	9.34 3.42	4.70 1.95	5.14 2.13	5.73 2.36	6.32 2.58	6.89 2.80	8.18 3.28	9.34 3.73
12802	3.67 1.37	4.13 1.54	4.50 1.67	5.01 1.85	5.53 2.02	6.04 2.20	7.15 2.58	9.12 3.26	4.48 1.82	4.90 1.98	5.45 2.18	6.01 2.39	6.56 2.59	7.79 3.06	9.12 3.56
13106	3.50 1.28	3.94 1.43	4.29 1.56	4.79 1.72	5.29 1.89	5.75 2.04	6.82 2.40	8.88 3.10	4.29 1.69	4.66 1.83	5.21 2.04	5.75 2.23	6.26 2.42	7.42 2.84	8.90 3.38
13411	3.34 1.19	3.76 1.34	4.09 1.45	4.57 1.60	5.05 1.76	5.49 1.91	6.52 2.24	8.47 2.90	4.09 1.57	4.46 1.72	4.96 1.91	5.49 2.08	5.97 2.26	7.09 2.65	8.71 3.23
13716	3.19 1.10	3.59 1.25	3.91 1.35	4.35 1.50	4.81 1.64	5.25 1.78	6.23 2.10	8.09 2.69	3.91 1.47	4.24 1.60	4.75 1.78	5.25 1.94	5.71 2.11	6.78 2.48	8.51 3.09
14021	3.04 1.03	3.43 1.16	3.74 1.26	4.18 1.41	4.61 1.54	5.03 1.66	5.95 1.97	7.74 2.53	3.74 1.38	4.07 1.50	4.53 1.66	5.01 1.82	5.47 1.97	6.47 2.32	8.31 2.96
14326	2.91 0.97	3.28 1.09	3.59 1.19	4.00 1.31	4.42 1.44	4.81 1.56	5.71 1.83	7.42 2.37	3.59 1.29	3.89 1.40	4.35 1.56	4.79 1.70	5.23 1.85	6.21 2.17	8.07 2.80
14630	2.80 0.91	3.15 1.02	3.43 1.12	3.83 1.24	4.24 1.35	4.61 1.47	5.47 1.72	7.11 2.23	3.43 1.21	3.74 1.31	4.15 1.45	4.59 1.60	5.01 1.73	5.95 2.04	7.72 2.62
14935									3.28 1.13	3.59 1.24	4.00 1.37	4.42 1.50	4.81 1.63	5.71 1.91	7.42 2.46
15240									3.15 1.06	3.43 1.16	3.83 1.29	4.24 1.41	4.61 1.53	5.47 1.80	7.11 2.32
15545									3.04 1.00	3.30 1.09	3.67 1.21	4.07 1.32	4.44 1.44	5.27 1.69	6.85 2.18
15850									2.91 0.94	3.17 1.03	3.54 1.15	3.91 1.25	4.26 1.35	5.05 1.60	6.58 2.07



LRFD

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

Joist Designation	28K6	28K7	28K8	28K9	28K10	28K12	30K7	30K8	30K9	30K10	30K11	30K12
Depth (mm)	711	711	711	711	711	711	762	762	762	762	762	762
Approx. Mass (kg/m)	17.0	17.6	18.9	19.3	21.3	25.4	18.3	19.6	19.9	22.3	24.4	26.2
Approx. Mass (kN/m)	0.17	0.17	0.19	0.19	0.21	0.25	0.18	0.19	0.20	0.22	0.24	0.26
Span (mm)												
↓												
8534	11.99 7.89	12.03 7.92	12.03 7.92	12.03 7.92	12.03 7.92	12.03 7.92						
8839	11.18 7.09	12.03 7.61	12.03 7.61	12.03 7.61	12.03 7.61	12.03 7.61						
9144	10.44 6.40	11.62 7.09	12.03 7.29	12.03 7.29	12.03 7.29	12.03 7.29	12.03 7.92	12.03 7.92	12.03 7.92	12.03 7.92	12.03 7.92	12.03 7.92
9449	9.76 5.79	10.87 6.42	12.03 7.00	12.03 7.00	12.03 7.00	12.03 7.00	11.68 7.41	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58	12.03 7.58
9754	9.15 5.26	10.20 5.83	11.27 6.39	12.01 6.75	12.01 6.75	12.01 6.75	10.96 6.72	12.01 7.29	12.01 7.29	12.01 7.29	12.01 7.29	12.01 7.29
10058	8.60 4.80	9.58 5.31	10.59 5.82	11.53 6.30	11.64 6.34	11.64 6.34	10.31 6.12	11.38 6.71	11.64 6.82	11.64 6.82	11.64 6.82	11.64 6.82
10363	8.09 4.37	9.01 4.85	9.98 5.31	10.85 5.76	11.29 5.98	11.29 5.98	9.69 5.60	10.72 6.12	11.29 6.43	11.29 6.43	11.29 6.43	11.29 6.43
10668	7.63 4.01	8.51 4.45	9.41 4.85	10.24 5.26	10.96 5.67	10.96 5.67	9.15 5.12	10.11 5.60	10.96 6.05	10.96 6.05	10.96 6.05	10.96 6.05
10973	7.22 3.67	8.03 4.08	8.88 4.46	9.67 4.84	10.66 5.34	10.66 5.34	8.64 4.71	9.54 5.15	10.39 5.58	10.66 5.72	10.66 5.72	10.66 5.72
11278	6.82 3.38	7.61 3.75	8.40 4.11	9.15 4.45	10.37 5.02	10.37 5.02	8.16 4.33	9.04 4.74	9.82 5.13	10.37 5.45	10.37 5.45	10.37 5.45
11582	6.47 3.12	7.20 3.45	7.96 3.79	8.66 4.11	10.09 4.74	10.09 4.74	7.74 3.99	8.55 4.37	9.32 4.74	10.09 5.15	10.09 5.15	10.09 5.15
11887	6.12 2.88	6.85 3.19	7.57 3.50	8.23 3.79	9.78 4.46	9.82 4.49	7.35 3.69	8.12 4.04	8.84 4.37	9.82 4.85	9.82 4.85	9.82 4.85
12192	5.82 2.67	6.50 2.96	7.18 3.23	7.81 3.51	9.28 4.14	9.58 4.24	6.98 3.41	7.72 3.73	8.40 4.05	9.58 4.59	9.58 4.59	9.58 4.59
12497	5.53 2.48	6.19 2.75	6.82 3.00	7.44 3.26	8.84 3.83	9.34 4.04	6.63 3.16	7.33 3.47	7.99 3.76	9.34 4.37	9.34 4.37	9.34 4.37
12802	5.27 2.30	5.88 2.55	6.50 2.80	7.09 3.03	8.40 3.57	9.12 3.85	6.32 2.94	7.00 3.22	7.61 3.50	9.04 4.11	9.12 4.14	9.12 4.14
13106	5.03 2.14	5.62 2.37	6.21 2.61	6.76 2.83	8.03 3.32	8.90 3.67	6.04 2.74	6.67 3.00	7.26 3.25	8.62 3.83	8.90 3.94	8.90 3.94
13411	4.81 1.99	5.36 2.21	5.93 2.43	6.45 2.64	7.66 3.09	8.71 3.50	5.75 2.56	6.37 2.80	6.93 3.03	8.23 3.57	8.71 3.76	8.71 3.76
13716	4.59 1.86	5.12 2.07	5.66 2.27	6.17 2.46	7.31 2.88	8.51 3.34	5.49 2.39	6.08 2.61	6.63 2.84	7.85 3.34	8.51 3.59	8.51 3.59
14021	4.40 1.75	4.90 1.94	5.42 2.13	5.91 2.30	7.00 2.71	8.31 3.19	5.27 2.23	5.82 2.45	6.34 2.65	7.53 3.12	8.31 3.44	8.31 3.44
14326	4.20 1.63	4.68 1.82	5.18 1.98	5.64 2.15	6.69 2.53	8.14 3.06	5.03 2.10	5.58 2.29	6.06 2.49	7.20 2.93	8.14 3.29	8.14 3.29
14630	4.02 1.53	4.50 1.70	4.96 1.86	5.40 2.02	6.43 2.37	7.99 2.93	4.83 1.97	5.34 2.15	5.82 2.33	6.89 2.74	7.92 3.13	7.99 3.15
14935	3.87 1.44	4.31 1.60	4.77 1.75	5.18 1.89	6.17 2.23	7.81 2.81	4.64 1.85	5.12 2.02	5.58 2.18	6.63 2.58	7.59 2.94	7.81 3.02
15240	3.72 1.35	4.13 1.50	4.57 1.64	4.99 1.79	5.91 2.10	7.66 2.69	4.44 1.73	4.92 1.89	5.36 2.05	6.37 2.42	7.28 2.77	7.66 2.90
15545	3.56 1.28	3.98 1.41	4.40 1.54	4.79 1.67	5.69 1.98	7.39 2.55	4.26 1.63	4.72 1.79	5.14 1.94	6.10 2.29	7.00 2.61	7.50 2.80
15850	3.43 1.21	3.83 1.34	4.22 1.45	4.59 1.59	5.47 1.86	7.11 2.40	4.11 1.54	4.55 1.69	4.94 1.83	5.86 2.15	6.74 2.46	7.35 2.68
16154	3.30 1.13	3.67 1.26	4.07 1.38	4.44 1.50	5.25 1.76	6.85 2.27	3.96 1.45	4.37 1.59	4.77 1.73	5.64 2.04	6.47 2.32	7.22 2.58
16459	3.17 1.07	3.54 1.19	3.91 1.29	4.26 1.41	5.07 1.66	6.58 2.14	3.80 1.37	4.20 1.50	4.57 1.63	5.45 1.92	6.23 2.18	7.09 2.48
16764	3.06 1.02	3.41 1.12	3.78 1.24	4.11 1.34	4.88 1.57	6.34 2.02	3.67 1.29	4.04 1.43	4.42 1.54	5.25 1.82	6.01 2.07	6.82 2.34
17069	2.95 0.96	3.30 1.06	3.63 1.16	3.96 1.26	4.70 1.48	6.12 1.92	3.54 1.22	3.91 1.34	4.26 1.45	5.05 1.72	5.80 1.97	6.58 2.23
17374							3.41 1.16	3.78 1.28	4.11 1.38	4.88 1.63	5.60 1.86	6.34 2.11
17678							3.30 1.10	3.65 1.21	3.96 1.31	4.70 1.54	5.40 1.76	6.12 1.99
17983							3.19 1.05	3.52 1.15	3.83 1.25	4.55 1.47	5.23 1.67	5.93 1.89
18288							3.08 1.00	3.41 1.09	3.69 1.18	4.40 1.40	5.05 1.59	5.73 1.80



METRIC ASD LOAD TABLE

OPEN WEB STEEL JOISTS, K-SERIES

Based on a Maximum 345 MPa Yield Strength
 Adopted by the Steel Joist Institute May 2, 1994
 Revised to May 5, 2003 – Effective March 01, 2005

The black figures in the following table give the TOTAL safe uniformly distributed load-carrying capacities, in kiloNewtons per meter (kN/m) of **ASD K-Series** Steel Joists. The weight (kN/m) of the DEAD loads, including the joists, must be deducted to determine the LIVE load-carrying capacities of the joists. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

The approximate joist weights, in kiloNewtons per meter (kN/m), shown in these tables do not include accessories.

The approximate moment of inertia of the joist, in mm⁴ is:

$$I_j = 2.6953(W_{LL})(L^3)(10^{-5}), \text{ where } W_{LL} = \text{RED figure in the load table:}$$

$$L = (\text{span} - 102) \text{ in millimeters.}$$

For the proper handling of concentrated and/or varying loads, see Section 6.1 in the Code of Standard Practice for Steel Joists and Joist Girders.

Where the joist span exceeds the unshaded area of the Load Table, the row of bridging nearest the mid span shall be diagonal bridging with bolted connections at the chords and intersections.

ASD

METRIC LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
 Based on a 245 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)

Joist Designation	8K1	10K1	12K1	12K3	12K5	14K1	14K3	14K4	14K6	16K2	16K3	16K4	16K5	16K6	16K7	16K9
Depth (mm)	203	254	305	305	305	356	356	356	356	406	406	406	406	406	406	406
Approx. Mass (kg/m)	7.6	7.4	7.4	8.5	10.6	7.7	8.9	10.0	11.5	8.2	9.4	10.4	11.2	12.1	12.8	14.9
Approx. Mass (kN/m)	0.07	0.07	0.07	0.08	0.10	0.08	0.09	0.10	0.11	0.08	0.09	0.10	0.11	0.12	0.13	0.15
Span (mm)																
2438	8.02															
	8.02															
2743	8.02															
	8.02															
3048	8.02	8.02														
	7.00	8.02														
3353	7.76															
	5.50	7.90														
3658	6.47	8.02	8.02	8.02	8.02											
	4.20	6.64	8.02	8.02	8.02											
3962	5.50	6.99	8.02	8.02	8.02											
	3.28	5.29	7.44	7.44	7.44											
4267	4.72	6.01	7.29	8.02	8.02	8.02	8.02	8.02	8.02							
	2.61	4.21	6.20	6.75	6.75	8.02	8.02	8.02	8.02							
4572	4.10	5.22	6.33	7.92	8.02	7.45	8.02	8.02	8.02							
	2.11	3.41	5.02	6.24	6.33	6.93	7.39	7.39	7.39							
4877	3.59	4.56	5.54	6.94	8.02	6.53	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02
	1.73	2.80	4.11	5.12	5.77	5.69	6.81	6.81	6.81	8.02	8.02	8.02	8.02	8.02	8.02	8.02
5182		4.04	4.90	6.12	8.02	5.76	7.22	8.02	8.02	7.47	8.02	8.02	8.02	8.02	8.02	8.02
		2.32	3.41	4.24	5.34	4.72	5.89	6.46	6.46	7.12	7.67	7.67	7.67	7.67	7.67	7.67
5486		3.59	4.36	5.45	7.39	5.13	6.43	7.73	8.02	6.65	7.41	8.02	8.02	8.02	8.02	8.02
		1.95	2.87	3.57	4.62	3.96	4.94	5.79	5.95	5.96	6.65	7.15	7.15	7.15	7.15	7.15
5791		3.22	3.91	4.88	6.62	4.59	5.76	6.93	8.02	5.95	6.64	7.98	8.02	8.02	8.02	8.02
		1.64	2.43	3.02	3.92	3.35	4.18	4.90	5.58	5.06	5.63	6.59	6.64	6.64	6.64	6.64
6096		2.90	3.51	4.40	5.96	4.14	5.19	6.24	7.66	5.37	5.98	7.19	8.02	8.02	8.02	8.02
		1.41	2.07	2.58	3.35	2.87	3.59	4.18	5.06	4.33	4.81	5.63	6.21	6.21	6.21	6.21
6401			3.18	3.98	5.39	3.75	4.69	5.66	6.93	4.85	5.41	6.52	7.34	7.99	8.02	8.02
			1.79	2.23	2.88	2.48	3.09	3.61	4.36	3.72	4.15	4.85	5.44	5.91	5.92	5.92
6706			2.90	3.63	4.91	3.41	4.27	5.15	6.30	4.42	4.91	5.92	6.68	7.26	8.02	8.02
			1.54	1.92	2.51	2.14	2.68	3.13	3.77	3.23	3.60	4.21	4.71	5.12	5.61	5.61
7010			2.64	3.31	4.49	3.12	3.91	4.69	5.76	4.04	4.49	5.41	6.10	6.64	7.39	8.02
			1.35	1.69	2.18	1.86	2.33	2.74	3.29	2.83	3.15	3.67	4.11	4.48	4.94	5.29
7315			2.42	3.03	4.11	2.86	3.57	4.30	5.28	3.70	4.13	4.96	5.60	6.10	6.78	8.02
			1.18	1.47	1.92	1.64	2.05	2.40	2.90	2.48	2.75	3.22	3.61	3.92	4.34	5.04
7620						2.62	3.29	3.96	4.87	3.41	3.79	4.56	5.15	5.60	6.24	7.50
						1.45	1.80	2.11	2.55	2.18	2.43	2.84	3.19	3.47	3.83	4.53
7925						2.42	3.05	3.66	4.49	3.15	3.50	4.21	4.75	5.18	5.76	6.91
						1.28	1.60	1.88	2.27	1.94	2.15	2.52	2.83	3.07	3.40	4.02
8230						2.24	2.81	3.40	4.15	2.91	3.25	3.91	4.40	4.80	5.34	6.40
						1.15	1.43	1.67	2.02	1.73	1.92	2.26	2.52	2.74	3.03	3.59
8534						2.08	2.62	3.15	3.86	2.71	3.02	3.63	4.10	4.46	4.96	5.95
						1.02	1.28	1.50	1.80	1.54	1.72	2.01	2.26	2.45	2.71	3.21
8839										2.52	2.81	3.38	3.80	4.15	4.62	5.54
										1.38	1.54	1.80	2.02	2.20	2.43	2.88
9144										2.34	2.62	3.15	3.56	3.88	4.31	5.18
										1.25	1.40	1.63	1.83	1.99	2.20	2.59
9449										2.20	2.45	2.96	3.32	3.63	4.04	4.84
										1.13	1.26	1.47	1.66	1.80	1.99	2.34
9754										2.07	2.30	2.77	3.12	3.40	3.77	4.53
										1.03	1.15	1.34	1.50	1.63	1.80	2.14



ASD

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

Joist Designation	18K3	18K4	18K5	18K6	18K7	18K9	18K10	20K3	20K4	20K5	20K6	20K7	20K9	20K10	22K4	22K5	22K6	22K7	22K9	22K10	22K11
Depth(mm)	457	457	457	457	457	457	457	508	508	508	508	508	508	508	559	559	559	559	559	559	559
Approx. Mass (kg/m)	9.8	10.7	11.5	12.6	13.4	15.2	17.4	10.0	11.3	12.2	13.2	13.8	16.1	18.2	11.9	13.1	13.7	14.4	16.8	18.8	20.5
Approx. Mass (kN/m)	0.10	0.11	0.11	0.12	0.13	0.15	0.17	0.10	0.11	0.12	0.13	0.14	0.16	0.18	0.12	0.13	0.13	0.14	0.16	0.18	0.20
Span (mm)																					
5486	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02														
5791	7.50 7.20	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63	8.02 7.63														
6096	6.75 6.17	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	7.54 7.54	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02	8.02 8.02							
6401	6.12 5.31	7.38 6.21	8.02 6.71	8.02 6.71	8.02 6.71	8.02 6.71	8.02 6.71	6.82 6.61	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58							
6706	5.57 4.61	6.71 5.39	8.02 6.04	8.02 6.39	8.02 6.39	8.02 6.39	8.02 6.39	6.21 5.73	7.50 6.72	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.15	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99	8.02 7.99
7010	5.09 4.02	6.12 4.71	6.90 5.28	7.53 5.73	8.02 6.10	8.02 6.10	8.02 6.10	5.67 5.02	6.84 5.86	7.72 6.58	8.02 6.82	8.02 6.82	8.02 6.82	8.02 6.82	7.55 7.16	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55	8.02 7.55
7315	4.67 3.53	5.61 4.14	6.33 4.64	6.90 5.03	7.67 5.57	8.02 5.77	8.02 5.77	5.21 4.40	6.27 5.15	7.07 5.77	8.02 6.27	8.02 6.53	8.02 6.53	8.02 6.53	6.93 6.28	7.82 7.04	8.02 7.22	8.02 7.22	8.02 7.22	8.02 7.22	8.02 7.22
7620	4.29 3.12	5.18 3.64	5.83 4.10	6.34 4.45	7.07 4.91	8.02 5.50	8.02 5.50	4.80 3.88	5.77 4.55	6.50 5.10	7.09 5.54	7.89 6.14	8.02 6.21	8.02 6.21	6.39 5.56	7.19 6.23	7.83 6.77	8.02 6.91	8.02 6.91	8.02 6.91	8.02 6.91
7925	3.96 2.77	4.78 3.23	5.38 3.63	5.86 3.95	6.53 4.36	7.85 5.16	8.02 5.26	4.43 3.44	5.34 4.04	6.01 4.52	6.55 4.91	7.29 5.44	8.02 5.91	8.02 5.91	5.89 4.93	6.64 5.53	7.23 5.99	8.02 6.62	8.02 6.62	8.02 6.62	8.02 6.62
8230	3.67 2.46	4.42 2.88	4.99 3.23	5.42 3.51	6.05 3.89	7.26 4.59	8.02 5.06	4.10 3.07	4.94 3.60	5.57 4.04	6.07 4.39	6.75 4.85	8.02 5.67	8.02 5.67	5.45 4.39	6.15 4.91	6.69 5.35	7.47 5.92	8.02 6.30	8.02 6.30	8.02 6.30
8534	3.41 2.20	4.11 2.58	4.64 2.90	5.04 3.15	5.61 3.48	6.75 4.11	7.99 4.83	3.80 2.75	4.59 3.22	5.18 3.61	5.63 3.92	6.27 4.34	7.54 5.15	8.02 5.47	5.07 3.94	5.72 4.40	6.23 4.78	6.93 5.31	8.02 6.02	8.02 6.02	8.02 6.02
8839	3.18 1.98	3.83 2.32	4.31 2.61	4.69 2.83	5.23 3.13	6.28 3.70	7.45 4.34	3.54 2.48	4.27 2.90	4.81 3.25	5.25 3.53	5.85 3.91	7.03 4.62	8.02 5.23	4.72 3.53	5.32 3.96	5.80 4.30	6.46 4.77	7.76 5.64	8.02 5.82	8.02 5.82
9144	2.96 1.79	3.57 2.10	4.02 2.34	4.39 2.55	4.88 2.83	5.86 3.34	6.96 3.92	3.31 2.23	3.99 2.61	4.49 2.93	4.90 3.18	5.45 3.53	6.56 4.17	7.77 4.90	4.40 3.19	4.97 3.57	5.41 3.88	6.02 4.30	7.25 5.09	8.02 5.61	8.02 5.61
9449	2.77 1.61	3.34 1.89	3.76 2.13	4.10 2.30	4.56 2.55	5.48 3.02	6.50 3.54	3.09 2.01	3.73 2.36	4.21 2.65	4.58 2.88	5.10 3.19	6.14 3.77	7.28 4.43	4.13 2.88	4.65 3.23	5.06 3.51	5.64 3.89	6.78 4.61	8.02 4.61	8.02 5.38
9754	2.59 1.47	3.13 1.72	3.53 1.92	3.85 2.10	4.29 2.32	5.15 2.74	6.10 3.22	2.90 1.83	3.50 2.14	3.95 2.40	4.30 2.61	4.78 2.90	5.76 3.42	6.82 4.02	3.86 2.62	4.36 2.93	4.75 3.19	5.29 3.53	6.36 4.18	7.54 4.91	8.01 5.18
10058	2.45 1.34	2.94 1.57	3.32 1.76	3.61 1.91	4.02 2.11	4.84 2.49	5.73 2.93	2.72 1.66	3.29 1.95	3.70 2.18	4.04 2.37	4.50 2.64	5.41 3.12	6.42 3.66	3.63 2.39	4.10 2.67	4.46 2.90	4.97 3.22	5.98 3.80	7.09 4.48	7.76 4.87
10363	2.30 1.22	2.77 1.43	3.12 1.60	3.40 1.75	3.79 1.92	4.55 2.27	5.39 2.68	2.56 1.53	3.09 1.78	3.48 1.99	3.80 2.17	4.23 2.40	5.09 2.84	6.04 3.34	3.42 2.17	3.86 2.43	4.20 2.65	4.68 2.94	5.63 3.48	6.68 4.08	7.53 4.58
10668	2.17 1.12	2.61 1.31	2.94 1.47	3.21 1.60	3.57 1.76	4.29 2.08	5.09 2.45	2.42 1.40	2.91 1.63	3.29 1.83	3.59 1.99	3.99 2.20	4.80 2.61	5.69 3.06	3.22 1.99	3.63 2.23	3.96 2.43	4.42 2.69	5.31 3.19	6.30 3.75	7.20 4.26
10973	2.05 1.02	2.46 1.02	2.78 1.02	3.03 1.02	3.38 1.61	4.05 1.92	4.81 2.24	2.29 1.28	2.75 1.50	3.10 1.67	3.38 1.82	3.77 2.02	4.53 2.39	5.38 2.81	3.05 1.83	3.44 2.05	3.75 2.23	4.17 2.46	5.02 2.93	5.95 3.44	6.81 3.92
11278								2.15 1.18	2.61 1.38	2.94 1.54	3.21 1.67	3.57 1.86	4.29 2.20	5.09 2.59	2.88 1.69	3.25 1.89	3.54 2.05	3.95 2.27	4.74 2.69	5.63 3.16	6.45 3.60
11582								2.05 1.07	2.48 1.26	2.78 1.43	3.03 1.54	3.38 1.72	4.07 2.02	4.83 2.39	2.72 1.56	3.07 1.73	3.35 1.89	3.73 2.10	4.49 2.48	5.34 2.91	6.11 3.32
11887								1.94 1.00	2.34 1.18	2.64 1.31	2.88 1.43	3.21 1.59	3.86 1.88	4.58 2.20	2.59 1.43	2.91 1.60	3.18 1.75	3.54 1.94	4.26 2.29	5.06 2.69	5.79 3.07
12192								1.85 0.93	2.23 1.09	2.51 1.22	2.74 1.32	3.05 1.47	3.66 1.73	4.34 2.04	2.46 1.32	2.77 1.48	3.02 1.61	3.37 1.79	4.05 2.13	4.81 2.49	5.50 2.84
12497															2.34 1.24	2.64 1.38	2.87 1.50	3.21 1.66	3.85 1.97	4.58 2.32	5.23 2.64
12802															2.23 1.15	2.52 1.28	2.74 1.40	3.05 1.54	3.67 1.83	4.36 2.15	4.99 2.45
13106															2.13 1.06	2.40 1.19	2.61 1.29	2.91 1.44	3.50 1.70	4.15 2.01	4.75 2.29
13411															2.02 0.99	2.29 1.10	2.49 1.21	2.78 1.34	3.34 1.59	3.96 1.86	4.53 2.13



METRIC LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based on a 345 MPa Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)

Joist Designation	24K4	24K5	24K6	24K7	24K8	24K9	24K10	24K12	26K5	26K6	26K7	26K8	26K9	26K10	26K12
Depth (mm)	610	610	610	610	610	610	610	610	660	660	660	660	660	660	660
Approx. Mass (kg/m)	12.5	13.8	14.4	15.0	17.1	17.9	19.5	23.8	14.6	15.8	16.2	18.0	18.2	20.5	24.7
Approx. Mass (kN/m)	0.12	0.14	0.14	0.15	0.17	0.18	0.19	0.23	0.14	0.15	0.16	0.18	0.18	0.20	0.24
Span (mm)															
↓ 7315	7.58 7.53	8.02 7.93	8.02 7.93	8.02 7.93	8.02 7.93	8.02 7.93	8.02 7.93	8.02 7.93							
7620	6.99 6.65	7.88 7.45	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58							
7925	6.45 5.91	7.28 6.61	7.92 7.19	8.02 7.28	8.02 7.28	8.02 7.28	8.02 7.28	8.02 7.28	7.90 7.80	8.02 7.89	8.02 7.89	8.02 7.89	8.02 7.89	8.02 7.89	8.02 7.89
8230	5.98 5.26	6.74 5.89	7.34 6.40	8.02 6.99	8.02 6.99	8.02 6.99	8.02 6.99	8.02 6.99	7.32 6.96	7.98 7.57	8.02 7.61	8.02 7.61	8.02 7.61	8.02 7.61	8.02 7.61
8534	5.56 4.71	6.26 5.28	6.81 5.73	7.60 6.36	8.02 6.65	8.02 6.65	8.02 6.65	8.02 6.65	6.80 6.23	7.41 6.77	8.02 7.31	8.02 7.31	8.02 7.31	8.02 7.31	8.02 7.31
8839	5.16 4.23	5.83 4.74	6.34 5.16	7.07 5.72	7.82 6.26	8.02 6.36	8.02 6.36	8.02 6.36	6.33 5.60	6.90 6.08	7.69 6.75	8.02 6.99	8.02 6.99	8.02 6.99	8.02 6.99
9144	4.83 3.82	5.44 4.27	5.92 4.65	6.61 5.15	7.29 5.64	7.93 6.11	8.02 6.15	8.02 6.15	5.91 5.04	6.43 5.50	7.18 6.08	7.93 6.66	8.02 6.69	8.02 6.69	8.02 6.69
9449	4.52 3.45	5.09 3.88	5.54 4.21	6.18 4.67	6.82 5.10	7.44 5.53	8.02 5.98	8.02 5.98	5.53 4.58	6.02 4.97	6.71 5.51	7.42 6.02	8.02 6.47	8.02 6.47	8.02 6.47
9754	4.23 3.13	4.77 3.51	5.21 3.82	5.79 4.23	6.40 4.64	6.97 5.02	8.01 5.73	8.01 5.73	5.19 4.15	5.64 4.50	6.30 5.00	6.96 5.47	7.57 5.93	8.01 6.28	8.01 6.28
10058	3.98 2.86	4.49 3.21	4.88 3.48	5.44 3.86	6.02 4.21	6.55 4.56	7.76 5.37	7.76 5.37	4.87 3.77	5.31 4.11	5.92 4.55	6.53 4.99	7.12 5.39	7.76 5.89	7.76 5.89
10363	3.75 2.61	4.23 2.93	4.59 3.18	5.12 3.53	5.66 3.85	6.17 4.17	7.32 4.91	7.53 5.02	4.59 3.45	5.00 3.75	5.57 4.15	6.15 4.55	6.69 4.93	7.53 5.51	7.53 5.51
10668	3.53 2.39	3.98 2.68	4.33 2.91	4.83 3.22	5.34 3.53	5.82 3.82	6.90 4.49	7.31 4.72	4.33 3.16	4.71 3.44	5.25 3.80	5.80 4.17	6.31 4.52	7.31 5.19	7.31 5.19
10973	3.34 2.18	3.76 2.46	4.10 2.67	4.56 2.96	5.04 3.23	5.50 3.51	6.52 4.13	7.10 4.46	4.08 2.90	4.45 3.15	4.96 3.50	5.48 3.83	5.96 4.14	7.09 4.87	7.10 4.87
11278	3.15 2.01	3.56 2.26	3.88 2.46	4.31 2.72	4.77 2.99	5.19 3.23	6.17 3.79	6.91 4.23	3.86 2.67	4.21 2.90	4.69 3.22	5.19 3.53	5.64 3.82	6.71 4.49	6.91 4.59
11582	2.99 1.86	3.37 2.08	3.67 2.27	4.10 2.51	4.52 2.75	4.93 2.97	5.85 3.50	6.72 4.01	3.66 2.46	3.99 2.68	4.45 2.97	4.91 3.25	5.35 3.51	6.36 4.14	6.72 4.36
11887	2.84 1.72	3.19 1.92	3.48 2.10	3.88 2.32	4.29 2.53	4.67 2.75	5.54 3.23	6.55 3.80	3.47 2.27	3.79 2.48	4.21 2.74	4.67 3.00	5.07 3.25	6.02 3.82	6.55 4.13
12192	2.69 1.59	3.03 1.78	3.31 1.94	3.69 2.15	4.08 2.34	4.43 2.55	5.26 3.00	6.39 3.60	3.31 2.11	3.60 2.29	4.01 2.53	4.43 2.78	4.83 3.02	5.73 3.54	6.39 3.92
12497	2.56 1.47	2.88 1.66	3.15 1.80	3.51 1.99	3.88 2.18	4.23 2.36	5.02 2.78	6.23 3.42	3.13 1.95	3.42 2.13	3.82 2.36	4.21 2.58	4.59 2.80	5.45 3.28	6.23 3.73
12802	2.45 1.37	2.75 1.54	3.00 1.67	3.34 1.85	3.69 2.02	4.02 2.20	4.77 2.58	6.08 3.26	2.99 1.82	3.26 1.98	3.63 2.18	4.01 2.39	4.37 2.59	5.19 3.06	6.08 3.56
13106	2.33 1.28	2.62 1.43	2.86 1.56	3.19 1.72	3.53 1.89	3.83 2.04	4.55 2.40	5.92 3.10	2.86 1.69	3.10 1.83	3.47 2.04	3.83 2.23	4.17 2.42	4.94 2.84	5.93 3.38
13411	2.23 1.19	2.51 1.34	2.72 1.45	3.05 1.60	3.37 1.76	3.66 1.91	4.34 2.24	5.64 2.90	2.72 1.57	2.97 1.72	3.31 1.91	3.66 2.08	3.98 2.26	4.72 2.65	5.80 3.23
13716	2.13 1.10	2.39 1.25	2.61 1.35	2.90 1.50	3.21 1.64	3.50 1.78	4.15 2.10	5.39 2.69	2.61 1.47	2.83 1.60	3.16 1.78	3.50 1.94	3.80 2.11	4.52 2.48	5.67 3.09
14021	2.02 1.03	2.29 1.16	2.49 1.26	2.78 1.41	3.07 1.54	3.35 1.66	3.96 1.97	5.16 2.53	2.49 1.38	2.71 1.50	3.02 1.66	3.34 1.82	3.64 1.97	4.31 2.32	5.54 2.96
14326	1.94 0.97	2.18 1.09	2.39 1.19	2.67 1.31	2.94 1.44	3.21 1.56	3.80 1.83	4.94 2.37	2.39 1.29	2.59 1.40	2.90 1.56	3.19 1.70	3.48 1.85	4.14 2.17	5.38 2.80
14630	1.86 0.91	2.10 1.02	2.29 1.12	2.55 1.24	2.83 1.35	3.07 1.47	3.64 1.72	4.74 2.23	2.29 1.21	2.49 1.31	2.77 1.45	3.06 1.60	3.34 1.73	3.96 2.04	5.15 2.62
14935									2.18 1.13	2.39 1.24	2.67 1.37	2.94 1.50	3.21 1.63	3.80 1.91	4.94 2.46
15240									2.10 1.06	2.29 1.16	2.55 1.29	2.83 1.41	3.07 1.53	3.64 1.80	4.74 2.32
15545									2.02 1.00	2.20 1.09	2.45 1.21	2.71 1.32	2.96 1.44	3.51 1.69	4.56 2.18
15850									1.94 0.94	2.11 1.03	2.36 1.15	2.61 1.25	2.84 1.35	3.37 1.60	4.39 2.07



ASD

METRIC LOAD TABLE FOR OPEN WEB STEEL JOISTS, K-SERIES
Based on a 345 MPa Yield Strength - Load Shown in KiloNewtons per Meter (kN/m)

Joist Designation	28K6	28K7	28K8	28K9	28k10	28K12	30K7	30K8	30K9	30K10	30K11	30K12
Depth (mm)	711	711	711	711	711	711	762	762	762	762	762	762
Approx. Mass (kg/m)	17.0	17.6	18.9	19.3	21.3	25.5	18.3	19.6	19.9	22.3	24.4	26.2
Approx. Mass (kN/m)	0.17	0.17	0.19	0.19	0.21	0.25	0.18	0.19	0.20	0.22	0.24	0.26
Span (mm)												
↓ 8534	7.99 7.89	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92						
8839	7.45 7.09	8.02 7.61	8.02 7.61	8.02 7.61	8.02 7.61	8.02 7.61						
9144	6.96 6.40	7.74 7.09	8.02 7.29	8.02 7.29	8.02 7.29	8.02 7.29	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92	8.02 7.92
9449	6.50 5.79	7.25 6.42	8.02 7.00	8.02 7.00	8.02 7.00	8.02 7.00	7.79 7.41	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58	8.02 7.58
9754	6.10 5.26	6.80 5.83	7.51 6.39	8.01 6.75	8.01 6.75	8.01 6.75	7.31 6.72	8.01 7.29	8.01 7.29	8.01 7.29	8.01 7.29	8.01 7.29
10058	5.73 4.80	6.39 5.31	7.06 5.82	7.69 6.30	7.76 6.34	7.76 6.34	6.87 6.12	7.58 6.71	7.76 6.82	7.76 6.82	7.76 6.82	7.76 6.82
10363	5.39 4.37	6.01 4.85	6.65 5.31	7.23 5.76	7.53 5.98	7.53 5.98	6.46 5.60	7.15 6.12	7.53 6.43	7.53 6.43	7.53 6.43	7.53 6.43
10668	5.09 4.01	5.67 4.45	6.27 4.85	6.82 5.26	7.31 5.67	7.31 5.67	6.10 5.12	6.74 5.60	7.31 6.05	7.31 6.05	7.31 6.05	7.31 6.05
10973	4.81 3.67	5.35 4.08	5.92 4.46	6.45 4.84	7.10 5.34	7.10 5.34	5.76 4.71	6.36 5.15	6.93 5.58	7.10 5.72	7.10 5.72	7.10 5.72
11278	4.55 3.38	5.07 3.75	5.60 4.11	6.10 4.45	6.91 5.02	6.91 5.02	5.44 4.33	6.02 4.74	6.55 5.13	6.91 5.45	6.91 5.45	6.91 5.45
11582	4.31 3.12	4.80 3.45	5.31 3.79	5.77 4.11	6.72 4.74	6.72 4.74	5.16 3.99	5.70 4.37	6.21 4.74	6.72 5.15	6.72 5.15	6.72 5.15
11887	4.08 2.88	4.56 3.19	5.04 3.50	5.48 3.79	6.52 4.46	6.55 4.49	4.90 3.69	5.41 4.04	5.89 4.37	6.55 4.85	6.55 4.85	6.55 4.85
12192	3.88 2.67	4.33 2.96	4.78 3.23	5.21 3.51	6.18 4.14	6.39 4.24	4.65 3.41	5.15 3.73	5.60 4.05	6.39 4.59	6.39 4.59	6.39 4.59
12497	3.69 2.48	4.13 2.75	4.55 3.00	4.96 3.26	5.89 3.83	6.23 4.04	4.42 3.16	4.88 3.47	5.32 3.76	6.23 4.37	6.23 4.37	6.23 4.37
12802	3.51 2.30	3.92 2.55	4.33 2.80	4.72 3.03	5.60 3.57	6.08 3.85	4.21 2.94	4.67 3.22	5.07 3.50	6.02 4.11	6.08 4.14	6.08 4.14
13106	3.35 2.14	3.75 2.37	4.14 2.61	4.50 2.83	5.35 3.32	5.93 3.67	4.02 2.74	4.45 3.00	4.84 3.25	5.74 3.83	5.93 3.94	5.93 3.94
13411	3.21 1.99	3.57 2.21	3.95 2.43	4.30 2.64	5.10 3.09	5.80 3.50	3.83 2.56	4.24 2.80	4.62 3.03	5.48 3.57	5.80 3.76	5.80 3.76
13716	3.06 1.86	3.41 2.07	3.77 2.27	4.11 2.46	4.87 2.88	5.67 3.34	3.66 2.39	4.05 2.61	4.42 2.84	5.23 3.34	5.67 3.59	5.67 3.59
14021	2.93 1.75	3.26 1.94	3.61 2.13	3.94 2.30	4.67 2.71	5.54 3.19	3.51 2.23	3.88 2.45	4.23 2.65	5.02 3.12	5.54 3.44	5.54 3.44
14326	2.80 1.63	3.12 1.82	3.45 1.98	3.76 2.15	4.46 2.53	5.42 3.06	3.35 2.10	3.72 2.29	4.04 2.49	4.80 2.93	5.42 3.29	5.42 3.29
14630	2.68 1.53	3.00 1.70	3.31 1.86	3.60 2.02	4.29 2.37	5.32 2.93	3.22 1.97	3.56 2.15	3.88 2.33	4.59 2.74	5.28 3.13	5.32 3.15
14935	2.58 1.44	2.87 1.60	3.18 1.75	3.45 1.89	4.11 2.23	5.21 2.81	3.09 1.85	3.41 2.02	3.72 2.18	4.42 2.58	5.06 2.94	5.21 3.02
15240	2.48 1.35	2.75 1.50	3.05 1.64	3.32 1.79	3.94 2.10	5.10 2.69	2.96 1.73	3.28 1.89	3.57 2.05	4.24 2.42	4.85 2.77	5.10 2.90
15545	2.37 1.28	2.65 1.41	2.93 1.54	3.19 1.67	3.79 1.98	4.93 2.55	2.84 1.63	3.15 1.79	3.42 1.94	4.07 2.29	4.67 2.61	5.00 2.80
15850	2.29 1.21	2.55 1.34	2.81 1.45	3.06 1.59	3.64 1.86	4.74 2.40	2.74 1.54	3.03 1.69	3.29 1.83	3.91 2.15	4.49 2.46	4.90 2.68
16154	2.20 1.13	2.45 1.26	2.71 1.38	2.96 1.50	3.50 1.76	4.56 2.27	2.64 1.45	2.91 1.59	3.18 1.73	3.76 2.04	4.31 2.32	4.81 2.58
16459	2.11 1.07	2.36 1.19	2.61 1.29	2.84 1.41	3.38 1.66	4.39 2.14	2.53 1.37	2.80 1.50	3.05 1.63	3.63 1.92	4.15 2.18	4.72 2.48
16764	2.04 1.02	2.27 1.12	2.52 1.24	2.74 1.34	3.25 1.57	4.23 2.02	2.45 1.29	2.69 1.43	2.94 1.54	3.50 1.82	4.01 2.07	4.55 2.34
17069	1.97 0.96	2.20 1.06	2.42 1.16	2.64 1.26	3.13 1.48	4.08 1.92	2.36 1.22	2.61 1.34	2.84 1.45	3.37 1.72	3.86 1.97	4.39 2.23
17374							2.27 1.16	2.52 1.28	2.74 1.38	3.25 1.63	3.73 1.86	4.23 2.11
17678							2.20 1.10	2.43 1.21	2.64 1.31	3.13 1.54	3.60 1.76	4.08 1.99
17983							2.13 1.05	2.34 1.15	2.55 1.25	3.03 1.47	3.48 1.67	3.95 1.89
18288							2.05 1.00	2.27 1.09	2.46 1.18	2.93 1.40	3.37 1.59	3.82 1.80



OPEN WEB STEEL JOISTS, K-SERIES

KCS JOISTS

The KCS Joists:

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

KCS joists are designed in accordance with the Standard Specification for **K-Series** Joists.

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.

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

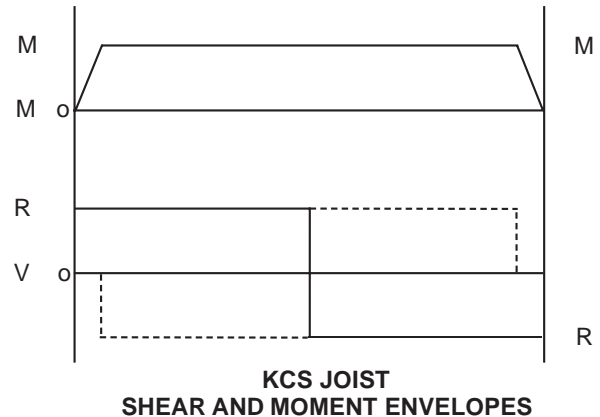
The web forces are determined based on a flat shear envelope. All webs are designed for a vertical shear equal to the specified shear capacity. Furthermore, all webs (except the first tension web which remains in tension under all simple span gravity loads) will be designed for 100% stress reversal.

Both LRFD and ASD KCS Joist load tables list the shear and moment capacity of each joist. The selection of a KCS Joist requires the specifying professional to calculate the maximum moment and shear imposed and select the appropriate KCS Joist. If a KCS Joist cannot be selected from the load table or if any uniform load exceeds 825 plf (12030 N/m) LRFD or 550 plf (8020 N/m) ASD or if the maximum concentrated load exceeds the shear capacity of the joist, use double KCS Joists or select an **LH-Series** Joist. For the **LH-Series** Joist, supply a load diagram. When net uplift loads, end moments or other external horizontal loads are a design consideration; these loads shall be provided to the joist manufacturer by the specifying professional.

As is the case with standard **K-**, **LH-** and **DLH-**Series Joists, chord bending due to concentrated loads must be addressed. In the case of concentrated loads, the specifying professional shall handle them in one of two ways: 1) specify on the structural drawings that an extra web must be field applied at all concentrated loads not occurring at joist panel points, or 2) provide exact locations of all concentrated loads for which the joist manufacturer shall provide necessary reinforcement.

Please reference SJI Technical Digest #9 "Handling and Erection of Steel Joists and Joist Girders" for further information.

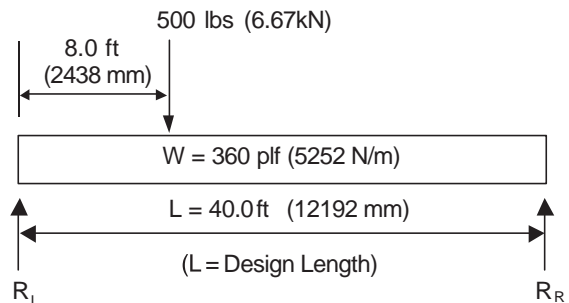
NOTE: In the following examples joist selection is based on minimum depth and minimum weight (plf, kg/m). Other selections may be more suitable for specific job conditions.



LRFD EXAMPLES

EXAMPLE 1

LRFD FACTORED LOADS



$$M = 938 \text{ in.-kip (105.9 kN-m)}$$

$$R_L = 8400 \text{ lbs (37.37 kN)}, R_R = 7500 \text{ lbs (33.36 kN)}$$

Select a 22KCS3, $M = 987 \text{ in.-kip (111.5 kN-m)}$

$$R = 9900 \text{ lbs (44.0 kN)}$$

Bridging section no. 9 for $L = 40 \text{ ft. (12192 mm)}$

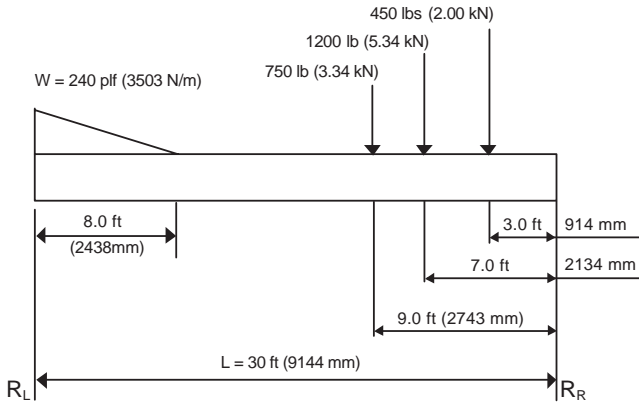
Use 22K9 to determine bridging and stability requirements.

Since a standard KCS Joist can be selected from the load table a load diagram is not required.



EXAMPLE 2

LRFD FACTORED LOADS



$M = 664 \text{ in.-kip (75.03 kN-m)}$

$R_L = 7500 \text{ lbs (33.36 kN)}, R_R = 8010 \text{ lbs (35.63 kN)}$

Select a 22KCS2, $M = 732 \text{ in.-kip (82.64 kN-m)}$

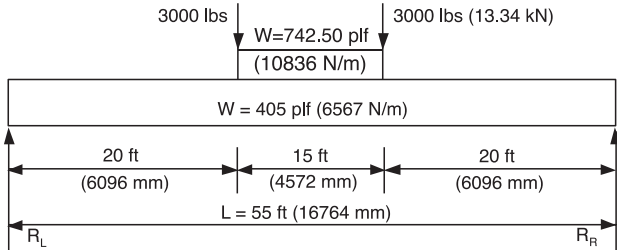
$R = 8850 \text{ lbs (39.38 kN)}$

Bridging section no. 6 for $L = 30 \text{ ft. (9144 mm)}$

Use 22K6 to determine bridging and stability requirements. Since the maximum *factored* uniform load of 639 plf (9318 N/m) (405 plf (5911 N/m) + 240 plf (3503 N/m)) does not exceed the maximum KCS Joist uniform load of 825 plf (12040 N/m) and a standard KCS Joist can be selected from the load table, a load diagram is not required.

EXAMPLE 3

LRFD FACTORED LOADS



$M = 4365 \text{ in.-kip (492.81 kN-m)}$

$R_L = R_R = 21000 \text{ lbs (93.41 kN)}$

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 $M = 2183 \text{ in.-kip (246.65 kN-m)}$ and $R = 10500 \text{ lbs (46.71 kN)}$ and a uniform load of 594 plf (8669 N/m).

Select two 28KCS5, $M = 2556 \text{ in.-kip (288.7 kN-m)}$, $R = 13800 \text{ lbs (61.3 kN)}$.

Bridging section no. 12 for $L = 55 \text{ ft. (16764 mm)}$ Use 28K12 to determine bridging and stability requirements.

OPTION B: Select an LH-Series Joist. Calculate an equivalent uniform load based on the maximum moment or shear:

$W_M = \frac{8M}{L^2} = 962 \text{ plf (14.04 kN/m)}$

$W_V = \frac{2R}{L} = 764 \text{ plf (11.14 kN/m)}$

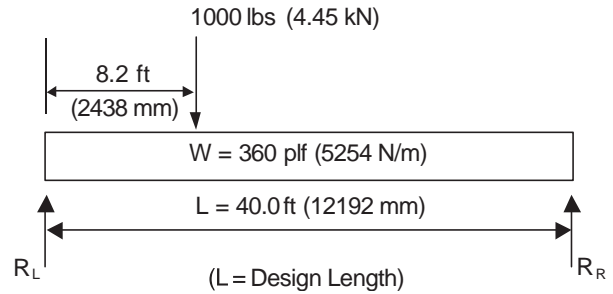
Use 962 plf (14.04 kN/m)

From the LH-Series LRFD Load Table select a 32LH13, $W = 1035 \text{ plf (15.10 kN/m)}$ for a 55 ft. (16764 mm) span. Specify a 32LH13SP and present a load diagram on the structural drawings with the following note:

JOIST MANUFACTURER SHALL DESIGN FOR THE LOADING SHOWN IN THE LOAD DIAGRAM.

ASD EXAMPLES

EXAMPLE 1



$M = 625 \text{ in.-kip (70.6 kN-m)}$

$R_L = 5600 \text{ lbs (24.9 kN)}, R_R = 5000 \text{ lbs (22.2 kN)}$

Select a 22KCS3, $M = 658 \text{ in.-kip (74.3 kN-m)}$

$R = 6600 \text{ lbs (29.3 kN)}$

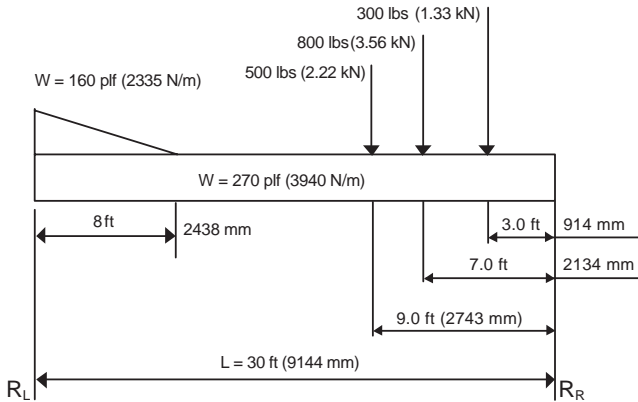
Bridging section no. 9 for $L = 40 \text{ ft. (12192 mm)}$

Use 22K9 to determine bridging and stability requirements.

Since a standard KCS Joist can be selected from the load table a load diagram is not required.



EXAMPLE 2



$M = 443 \text{ in.-kip (50.1 kN-m)}$

$R_L = 5000 \text{ lbs (22.24 kN)}, R_R = 5340 \text{ lbs (23.75 kN)}$

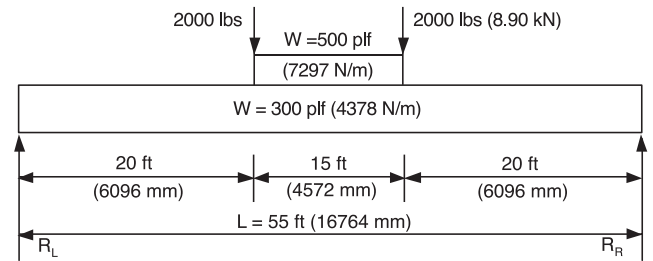
Select a 22KCS2, $M = 488 \text{ in.-kip (55.1 kN-m)}$

$R = 5900 \text{ lbs (26.2 kN)}$

Bridging section no. 6 for $L = 30 \text{ ft. (9144 mm)}$

Use 22K6 to determine bridging and stability requirements. Since the maximum uniform load of 430 plf [6275 N/m] (270 plf (3940 N/m) + 160 plf (2335 N/m)) does not exceed the maximum KCS Joist uniform load of 550 plf (8020 N/m) and a standard KCS Joist can be selected from the load table, a load diagram is not required.

EXAMPLE 3



$M = 2910 \text{ in.-kip (328.5 kN-m)}$

$R_L = R_R = 14000 \text{ lbs (62.28 kN)}$

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 $M = 1455 \text{ in.-kip (164.3 kN-m)}$ and $R = 7000 \text{ lbs (31.14 kN)}$ and a uniform load of 400 plf (5838 N/m).

Select two 28KCS5, $M = 1704 \text{ in.-kip (192.5 kN-m)}$, $R = 9200 \text{ lbs (40.9 kN)}$

Bridging section no. 12 for $L = 55 \text{ ft. (16764 mm)}$ Use 28K12 to determine bridging and stability requirements.

OPTION B: Select an LH-Series Joist. Calculate an equivalent uniform load based on the maximum moment or shear:

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

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

Use 641 plf (9.35 kN/m)

From the LH-Series ASD Load Table select a 32LH13, $W = 690 \text{ plf (10.06 kN/m)}$ for a 55 ft. (16764 mm) span. Specify a **32LH13SP** and present a load diagram on the structural drawings with the following note:

JOIST MANUFACTURER SHALL DESIGN FOR THE LOADING SHOWN IN THE LOAD DIAGRAM.



LRFD

STANDARD LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS
Based on a 50 ksi Maximum Yield Strength

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

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 825 PLF AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY

**DOES NOT INCLUDE ACCESSORIES



ASD

STANDARD LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS Based on a 50 ksi Maximum Yield Strength

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

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 550 PLF AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY

**DOES NOT INCLUDE ACCESSORIES



LRFD

METRIC LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS
Based on a 345 MPa Maximum Yield Strength

JOIST DESIGNATION	DEPTH (mm)	MOMENT CAPACITY (kN-m)	SHEAR CAPACITY* (kN)	APPROXIMATE WEIGHT**		GROSS MOMENT OF INERTIA (cm ⁴)	BRIDGING TABLE SECTION NUMBER
				(kN/m)	(kg/m)		
10KCS1	254	29.1	13.3	0.09	8.9	1200	1
10KCS2	254	38.1	16.6	0.11	11.2	1540	1
10KCS3	254	50.1	20.0	0.15	14.9	1950	1
12KCS1	305	35.4	16.0	0.09	8.9	1780	3
12KCS2	305	46.4	20.0	0.12	11.9	2280	5
12KCS3	305	61.3	23.3	0.15	14.9	2950	5
14KCS1	356	41.8	19.3	0.09	9.7	2450	4
14KCS2	356	54.9	22.6	0.12	11.9	3200	6
14KCS3	356	72.5	26.0	0.15	14.9	4120	6
16KCS2	406	59.1	26.6	0.12	12.6	4120	6
16KCS3	406	79.6	32.0	0.15	15.6	5320	9
16KCS4	406	122.0	35.3	0.21	21.6	7990	9
16KCS5	406	158.2	38.6	0.26	26.8	10190	9
18KCS2	457	66.9	31.3	0.13	13.4	5280	6
18KCS3	457	90.1	34.6	0.16	16.4	6820	9
18KCS4	457	138.4	38.0	0.22	22.3	10280	10
18KCS5	457	179.9	41.3	0.27	27.5	13150	10
20KCS2	508	74.9	34.6	0.14	14.1	6610	6
20KCS3	508	100.8	40.0	0.17	17.1	8530	9
20KCS4	508	154.9	52.7	0.24	24.6	12810	10
20KCS5	508	201.8	56.0	0.29	29.8	16480	10
22KCS2	559	82.7	39.3	0.15	14.9	8070	6
22KCS3	559	111.5	44.0	0.18	18.6	10440	9
22KCS4	559	171.5	52.7	0.24	24.6	15690	11
22KCS5	559	223.5	57.3	0.30	30.5	20180	11
24KCS2	610	90.5	42.0	0.15	14.9	9650	6
24KCS3	610	122.0	48.0	0.18	18.6	12520	9
24KCS4	610	187.7	56.0	0.24	24.6	18850	12
24KCS5	610	245.4	59.3	0.30	30.5	24300	12
26KCS2	660	98.2	44.0	0.15	14.9	11400	6
26KCS3	660	132.7	52.0	0.18	18.6	14770	9
26KCS4	660	204.3	56.7	0.24	24.6	22310	12
26KCS5	660	267.0	61.3	0.30	30.5	28760	12
28KCS2	711	106.0	46.0	0.15	15.6	13310	6
28KCS3	711	143.3	53.3	0.18	18.6	17230	9
28KCS4	711	220.8	56.7	0.24	24.6	26050	12
28KCS5	711	288.7	61.3	0.30	30.5	33630	12
30KCS3	762	153.8	53.3	0.19	19.3	19890	9
30KCS4	762	237.2	56.7	0.24	24.6	30050	12
30KCS5	762	310.6	61.3	0.31	31.3	38870	12

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 12030 NEWTONS/METER AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY

**DOES NOT INCLUDE ACCESSORIES



ASD

METRIC LOAD TABLE FOR KCS OPEN WEB STEEL JOISTS
Based on a 345 MPa Maximum Yield Strength

JOIST DESIGNATION	DEPTH (mm)	MOMENT CAPACITY* (kN-m)	SHEAR CAPACITY* (kN)	APPROX. WEIGHT**		GROSS MOMENT OF INERTIA (cm ⁴)	BRIDGING TABLE SECTION NUMBER
				(kN/m)	(kg/m)		
10KCS1	254	19.4	8.8	0.09	8.9	1200	1
10KCS2	254	25.4	11.1	0.11	11.2	1540	1
10KCS3	254	33.4	13.3	0.15	14.9	1950	1
12KCS1	305	23.6	10.6	0.09	8.9	1780	3
12KCS2	305	31.0	13.3	0.12	11.9	2280	5
12KCS3	305	40.9	15.5	0.15	14.9	2950	5
14KCS1	356	27.9	12.8	0.09	9.7	2450	4
14KCS2	356	36.6	15.1	0.12	11.9	3200	6
14KCS3	356	48.4	17.3	0.15	14.9	4120	6
16KCS2	406	39.4	17.7	0.12	12.6	4120	6
16KCS3	406	53.1	21.3	0.15	15.6	5320	9
16KCS4	406	81.3	23.5	0.21	21.6	7990	9
16KCS5	406	105.5	25.7	0.26	26.8	10190	9
18KCS2	457	44.6	20.9	0.13	13.4	5280	6
18KCS3	457	60.1	23.1	0.16	16.4	6820	9
18KCS4	457	92.3	25.3	0.22	22.3	10280	10
18KCS5	457	120.0	27.5	0.27	27.5	13150	10
20KCS2	508	49.9	23.1	0.14	14.1	6610	6
20KCS3	508	67.2	26.6	0.17	17.1	8530	9
20KCS4	508	103.3	35.1	0.24	24.6	12810	10
20KCS5	508	134.6	37.3	0.29	29.8	16480	10
22KCS2	559	55.1	26.2	0.15	14.9	8070	6
22KCS3	559	74.3	29.3	0.18	18.6	10440	9
22KCS4	559	114.3	35.1	0.24	24.6	15690	11
22KCS5	559	149.0	38.2	0.30	30.5	20180	11
24KCS2	610	60.3	28.0	0.15	14.9	9650	6
24KCS3	610	81.3	32.0	0.18	18.6	12520	9
24KCS4	610	125.2	37.3	0.24	24.6	18850	12
24KCS5	610	163.6	39.5	0.30	30.5	24300	12
26KCS2	660	65.5	29.3	0.15	14.9	11400	6
26KCS3	660	88.5	34.6	0.18	18.6	14770	9
26KCS4	660	136.3	37.8	0.24	24.6	22310	12
26KCS5	660	178.1	40.9	0.30	30.5	28760	12
28KCS2	711	70.7	30.6	0.15	15.6	13310	6
28KCS3	711	95.6	35.5	0.18	18.6	17230	9
28KCS4	711	147.2	37.8	0.24	24.6	26050	12
28KCS5	711	192.5	40.9	0.30	30.5	33630	12
30KCS3	762	102.6	35.5	0.19	19.3	19890	9
30KCS4	762	158.2	37.8	0.24	24.6	30050	12
30KCS5	762	207.1	40.9	0.31	31.3	38870	12

*MAXIMUM UNIFORMLY DISTRIBUTED LOAD CAPACITY IS 8020 NEWTONS/METER AND SINGLE CONCENTRATED LOAD CANNOT EXCEED SHEAR CAPACITY

**DOES NOT INCLUDE ACCESSORIES





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

Adopted by the Steel Joist Institute February 15, 1978
Revised to November 10, 2003 - Effective March 01, 2005

SECTION 100. SCOPE

This specification covers the design, manufacture and use of Longspan Steel Joists **LH-Series**, and Deep Longspan Steel Joists, **DLH-Series**. Load and Resistance Factor Design (LRFD) and Allowable Strength Design (ASD) are included in this specification.

SECTION 101. DEFINITION

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

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

* 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 Standard A370, "*Standard Test Methods and Definitions for Mechanical Testing of Steel Products*", or as specified in Section 102.2 of this Specification.

Standard Specifications and Load Tables, Longspan Steel Joists **LH-Series** And Deep Longspan Steel Joist **DLH-Series**

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SECTION 102. MATERIALS

102.1 STEEL

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

- Carbon Structural Steel, ASTM A36/A36M.
- High-Strength, Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality ASTM A529/A529M, Grade 50.
- High-Strength Low-Alloy Columbium-Vanadium Structural Steel, ASTM A572/A572M Grade 42 or 50.
- High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (100 mm) Thick, ASTM A588/A588M.
- Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Corrosion Resistance, ASTM A606.
- Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, ASTM A1008/A1008M
- Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, 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

The yield strength used as a basis for the design stresses prescribed in Section 103 shall be at least 36 ksi (250 MPa), but shall not be greater than 50 ksi (345 MPa). Evidence that the steel furnished meets or exceeds the design yield strength shall, if requested, be provided in the form of an affidavit or by witnessed or certified test reports.

For material used without consideration of increase in yield strength resulting from cold forming, the specimens shall be taken from as-rolled material. In the case of material, the mechanical properties of which conform to the requirements of one of the listed specifications, 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, A529/A529M, A572/A572M, A588/A588M, whichever specification is applicable on the basis of design yield strength.

The number of tests shall be as prescribed in ASTM A6/A6M for plates, shapes, and bars; and ASTM A606, 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 Specification 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 6 percent greater than the yield strength of the section.
- c) Where compression tests are used for acceptance and control purposes, the specimen shall withstand a gross shortening of 2 percent of its original length without cracking. The length of the specimen shall be not greater than 20 times its least radius of gyration.
- d) If any test specimen fails to pass the requirements of 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 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, may 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 these specifications as simply supported, uniformly loaded trusses supporting a floor or roof deck so constructed as to brace the top chord of the joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following specifications:

- 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 that 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:

Designs shall be made according to the provisions in this Specification for either Load and Resistance Factor Design (LRFD) or for Allowable Strength Design (ASD).

Load Combinations:

LRFD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed for the



factored loads based on the factors and load combinations as follows:

$$1.4D$$

$$1.2D + 1.6 (L, \text{ or } L_r, \text{ or } S, \text{ or } R)$$

ASD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed based on the load combinations as follows:

$$D$$

$$D + (L, \text{ or } L_r, \text{ or } S, \text{ or } R)$$

Where:

D = dead load due to the weight of the structural elements and the permanent features of the structure

L = live load due to occupancy and movable equipment

L_r = roof live load

S = snow load

R = load due to initial rainwater or ice exclusive of the ponding contribution

When special loads are specified and the specifying professional does not provide the load combinations, the provisions of ASCE 7, "Minimum Design Loads for Buildings and Other Structures" shall be used for LRFD and ASD load combinations.

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,

$$f_u = \text{required stress} \quad \text{ksi (MPa)}$$

$$F_n = \text{nominal stress} \quad \text{ksi (MPa)}$$

$$\phi = \text{resistance factor}$$

$$\phi F_n = \text{design stress}$$

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,

$$f = \text{required stress} \quad \text{ksi (MPa)}$$

$$F_n = \text{nominal stress} \quad \text{ksi (MPa)}$$

$$\Omega = \text{safety factor}$$

$$F_n / \Omega = \text{allowable stress}$$

Stresses:

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

For Chords: $F_y = 50$ ksi (345 MPa)

For Webs: $F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

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

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

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

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

$$F_{cr} = Q \left[0.658 \left(\frac{QF_y}{F_e} \right) \right] F_y \quad (103.2-3)$$

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

$$F_{cr} = 0.877F_e \quad (103.2-4)$$

Where, F_e = elastic buckling stress determined in accordance with Equation 103.2-5.

$$F_e = \frac{\pi^2 E}{\left(\frac{K\ell}{r} \right)^2} \quad (103.2-5)$$

For hot-rolled sections, "Q" is the full reduction factor for slender compression elements.

$$\text{Design Stress} = 0.9F_{cr} \text{ (LRFD)} \quad (103.2-6)$$

$$\text{Allowable Stress} = 0.6F_{cr} \text{ (ASD)} \quad (103.2-7)$$

In the above equations, ℓ is taken as the distance in inches (millimeters) between panel points for the chord members and the appropriate length for 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).

Use $1.2\ell/r_x$ for a crimped, first primary compression web member when a moment-resistant weld group is not used for this member; where r_x member radius of gyration in the plane of the joist.

For cold-formed sections the method of calculating the nominal column 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:
 $F_y = 50$ ksi (345 MPa)

Design Stress = $0.9F_y$ (LRFD) (103.2-8)

Allowable Stress = $0.6F_y$ (ASD) (103.2-9)

For web members of solid round cross section:
 $F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

Design Stress = $1.45F_y$ (LRFD) (103.2-10)

Allowable Stress = $0.95F_y$ (ASD) (103.2-11)

For bearing plates:

$F_y = 50$ ksi (345MPa), or $F_y = 36$ ksi (250MPa)

Design Stress = $1.35F_y$ (LRFD) (103.2-12)

Allowable Stress = $0.9F_y$ (ASD) (103.2-13)

(d) Weld Strength:

Shear at throat of fillet welds:

Nominal Shear Stress = $F_{nw} = 0.6F_{exx}$ (103.2-14)

LRFD: $\phi_w = 0.75$

Design Shear Strength =
 $\phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A$ (103.2-15)

ASD: $\Omega_w = 2.0$

Allowable Shear Strength =
 $R_n/\Omega_w = F_{nw}A/\Omega_w = 0.3F_{exx} A$ (103.2-16)

A = effective throat area

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)

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

103.3 MAXIMUM SLENDERNESS RATIOS

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

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

In compression members when fillers or ties are used, they shall be spaced so that the ℓ_s/r_z ratio of each component does not exceed the governing ℓ/r ratio of the member as a whole.

The terms used in Table 103.3-1 are defined as follows:

ℓ = Length center-to-center of panel points, except $\ell = 36$ in. (914 mm) for calculating ℓ/r_y of top chord member.

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

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

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

r_z = least radius of gyration of a member component.

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



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

I TOP CHORD INTERIOR PANEL

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

II TOP CHORD END PANEL

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

III TENSION MEMBERS - CHORDS AND WEBS

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

IV COMPRESSION WEB MEMBERS

- A. The slenderness ratios, $1.0 \ell/r$ and $1.0 \ell_s/r$, of members as a whole or any component part shall not exceed 200.
- B. *The effective slenderness ratio to determine "F_{cr}"*
- | | | | |
|-----------------------------|-------------------|----------------|------------------|
| 1. With fillers or ties | 0.75 ℓ/r_x | 1.0 ℓ/r_y | 1.0 ℓ_s/r_z |
| 2. Without fillers or ties | | | 1.0 ℓ/r_z |
| 3. Single component members | 0.75 ℓ/r_x^* | 1.0 ℓ/r_y | |

* Use $1.2 \ell/r_x$ for a crimped, first primary compression web member when a moment-resistant weld group is not used for this member.



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 $\ell/170$ where ℓ is the spacing in inches (millimeters) between lines of bridging as specified in Section 104.5(d)

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

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

For LRFD:

at the panel point:

$$f_{au} + f_{bu} \leq 0.9F_y \quad (103.4-1)$$

at the mid panel: for $\frac{f_{au}}{\phi_c F_{cr}} \geq 0.2$,

$$\frac{f_{au}}{\phi_c F_{cr}} + \frac{8}{9} \left[\frac{C_m f_{bu}}{1 - \left(\frac{f_{au}}{\phi_c F'_e} \right)} \right] Q \phi_b F_y \leq 1.0 \quad (103.4-2)$$

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

$$\left(\frac{f_{au}}{2\phi_c F_{cr}} \right) + \left[\frac{C_m f_{bu}}{1 - \left(\frac{f_{au}}{\phi_c F'_e} \right)} \right] Q \phi_b F_y \leq 1.0 \quad (103.4-3)$$

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

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

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

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

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

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

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

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

$F_y =$ Specified minimum yield strength, ksi (MPa)

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

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

$Q =$ Form factor defined in Section 103.2(b)

$A =$ Area of the top chord, in.², (mm²)

For ASD:

at the panel point:

$$f_a + f_b \leq 0.6F_y \quad (103.4-4)$$

at the mid panel: for $\frac{f_a}{F_a} \geq 0.2$,

$$\frac{f_a}{F_a} + \frac{8}{9} \left[\frac{C_m f_b}{1 - \left(\frac{1.67 f_a}{F'_e} \right)} \right] Q F_b \leq 1.0 \quad (103.4-5)$$

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

$$\left(\frac{f_a}{2F_a} \right) + \left[\frac{C_m f_b}{1 - \left(\frac{1.67 f_a}{F'_e} \right)} \right] Q F_b \leq 1.0 \quad (103.4-6)$$

$f_a = P/A =$ 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, kip-in. (N-mm)

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

$F_a =$ 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

(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 1/2 of 1.0 percent of the top chord axial force.



(c) Depth

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

(d) Eccentricity

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

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

(e) Extended Ends

Extended top chords or full depth cantilever ends require the special attention of the specifying professional. The magnitude and location of the loads to be supported, deflection requirements, and proper bracing 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 layers of weld metal and between weld metal and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.
- d) Unfilled weld craters shall not be included in the design length of the weld.
- e) Undercut shall not exceed 1/16 inch (2 millimeters) for welds oriented parallel to the principal stress.
- f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 millimeters) in any 1 inch (25 millimeters) of design weld length.
- g) Weld spatter that does not interfere with paint coverage is acceptable.

(2) Welding Program

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

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

The agency shall arrange for visual inspection to determine that welds meet the acceptance standards of Section 103.5(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 may occur at any point in chord or web members. Splices shall be designed for the member force but not less than 50 percent of the member strength. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term “member” shall be defined as all component parts comprising the chord or web, at the point of splice.

(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.

103.6 CAMBER

Joists shall have approximate cambers 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)
110'-0"	(33528 mm)	5"	(127 mm)
120'-0"	(36576 mm)	6"	(152 mm)
130'-0"	(39624 mm)	7"	(178 mm)
140'-0"	(42672 mm)	8"	(203 mm)
144'-0"	(43890 mm)	8 1/2"	(216 mm)

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.

(b) In-Plant Inspections

Each manufacturer shall verify their 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.

<p>SECTION 104. APPLICATION</p>

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 if necessary to limit the required stresses to those listed in Section 103.2.

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

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

104.2 SPAN

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

104.3 DEPTH

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

104.4 END SUPPORTS**(a) Masonry and Concrete**

LH- and DLH-Series Joists supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end

reactions and all other vertical and lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of LH- and DLH-Series Joists shall extend a distance of not less than 6 inches (152 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 joist. 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 joists must bear a minimum 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 LH- or DLH-Series Joists shall extend a distance of not less than 4 inches (102 millimeters) over the steel supports. Where it is deemed necessary to butt opposite joists over a narrow steel support with bearing less than that noted above, special ends must be specified, and such ends shall have positive attachment to the support, either by bolting or welding.

104.5 BRIDGING

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 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 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 bridging 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 chord of the joists.

(c) Bridging Lines

For spans up through 60 feet (18288 mm), welded horizontal bridging may be used except where the row of bridging



nearest the center is required to be bolted diagonal bridging as indicated by the **Red shaded area** in the Load Table. For spans over 60 feet (18288 mm) bolted diagonal bridging shall be used as indicated by the **Blue and Gray shaded areas** of the Load Table.

(d) Quantity and Spacing

The maximum spacing of lines of top chord bridging shall not exceed the values in Table 104.5-1. 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.

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

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

(e) Connections

Connections to the chords of the steel joists shall be made by positive mechanical means or by welding, and capable of resisting a horizontal force not less than that specified in Table 104.5-1.

(f) Bottom Chord Bearing Joists

Where bottom chord bearing joists are utilized, 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 to resist the nominal force shown in Table 104.5-1.

104.7 END ANCHORAGE

(a) Masonry and Concrete

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

(b) Steel

Ends of LH- and DLH-Series Joists 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. When LH/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.

(c) Uplift

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

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

(b) Thickness

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

(c) Centering

Centering for structural slabs may be ribbed metal lath, corrugated steel sheets, paper-backed welded wire fabric, removable centering or any other suitable material capable of supporting the slab at the designated joist spacing. Centering shall not cause lateral displacement or damage to the top chord of joists during installation or removal of the centering or placing of the concrete.

(d) Bearing

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



(e) Attachments

The spacing of attachments along the 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 following forces:

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)
* Last two digits of joist designation shown in the load table. ** Nominal 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

The stiffness and strength of standing-seam roof clips varies from one manufacturer to another. Therefore, some roof systems cannot be counted on to provide lateral stability to the joists which support the roof. Sufficient stability must be provided to brace the joists laterally under the full design load. The compression chord must 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). Out of plane strength may be achieved by adjusting the bridging spacing and/or increasing the compression chord area, the joist depth, 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 may not exceed that specified in Section 104.5(d).

Horizontal bridging members attached to the compression chords and their anchorages must be designed for a compressive axial force of $0.0025nP$, 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 is $0.005P$. 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 AISC Specifications.

104.12 UPLIFT

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

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

104.13 INSPECTION

Joists shall be inspected by the manufacturer before shipment to 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 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 shop 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 must 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 104.7 – End Anchorage.

When a bolted seat connection is used for erection purposes, as a minimum, the bolts must 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 may 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 Table, only one employee shall be allowed on the joist unless all bridging is installed and anchored.

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

- 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 must be restrained laterally per Section 104.5(f) 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⁾ are 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 joists shall be distributed so as not to exceed the capacity of the joists.
- 3) No bundle of deck may 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 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.



- g) 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 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.
 - (1) See Appendix E for definition of "construction load". A copy of the OSHA Steel Erection Standard §1926.757, Open Web Steel Joists, is included in Appendix E for reference purposes.

(d) Handling

Particular attention should be paid to the erection of Longspan and Deep Longspan Steel Joists. Care shall be exercised at all times to avoid damage to the joists and accessories.

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, must 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 approval to do so is obtained from a "qualified person" (2).

- (2) See Appendix E for OSHA definition of "qualified person".



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 November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. 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 midspan shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

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

The approximate moment of inertia of the joist, in inches⁴ is; $I_x = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = **RED** figure in the Load Table, and L = (clear span + 0.67) in feet.

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

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

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

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	SAFE LOAD* in Lbs. Between	CLEAR SPAN IN FEET															
				21-24															
				25	26	27	28	29	30	31	32	33	34	35	36				
18LH02	10	18	12000	702	663	627	586	550	517	486	459	433	409	388	367				
				313	284	259	234	212	193	175	160	147	135	124	114				
18LH03	11	18	13300	781	739	700	657	613	573	538	505	475	448	424	400				
				348	317	289	262	236	213	194	177	161	148	136	124				
18LH04	12	18	15500	906	856	802	750	703	660	619	582	547	516	487	462				
				403	367	329	296	266	242	219	200	182	167	153	141				
18LH05	15	18	17500	1026	972	921	871	814	762	714	672	631	595	562	532				
				454	414	378	345	311	282	256	233	212	195	179	164				
18LH06	15	18	20700	1213	1123	1044	972	907	849	796	748	705	664	627	594				
				526	469	419	377	340	307	280	254	232	212	195	180				
18LH07	17	18	21500	1260	1213	1170	1089	1017	952	892	838	789	744	703	666				
				553	513	476	428	386	349	317	288	264	241	222	204				
18LH08	19	18	22400	1314	1264	1218	1176	1137	1075	1020	961	906	856	810	768				
				577	534	496	462	427	387	351	320	292	267	246	226				
18LH09	21	18	24000	1404	1351	1302	1257	1215	1174	1138	1069	1006	949	897	849				
				616	571	527	491	458	418	380	346	316	289	266	245				
			22-24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
20LH02	10	20	11300	663	655	646	615	582	547	516	487	460	436	412	393	373	355	337	322
				306	303	298	274	250	228	208	190	174	160	147	136	126	117	108	101
20LH03	11	20	12000	703	694	687	678	651	621	592	558	528	499	474	448	424	403	382	364
				337	333	317	302	280	258	238	218	200	184	169	156	143	133	123	114
20LH04	12	20	14700	861	849	837	792	744	700	660	624	589	558	529	502	477	454	433	412
				428	406	386	352	320	291	265	243	223	205	189	174	161	149	139	129
20LH05	14	20	15800	924	913	903	892	856	816	769	726	687	651	616	585	556	529	504	481
				459	437	416	395	366	337	308	281	258	238	219	202	187	173	161	150
20LH06	15	20	21100	1233	1186	1144	1084	1018	952	894	840	790	745	703	666	631	598	568	541
				606	561	521	477	427	386	351	320	292	267	246	226	209	192	178	165
20LH07	17	20	22500	1317	1267	1221	1179	1140	1066	1000	940	885	834	789	745	706	670	637	606
				647	599	556	518	484	438	398	362	331	303	278	256	236	218	202	187
20LH08	19	20	23200	1362	1309	1263	1219	1177	1140	1083	1030	981	931	882	837	795	754	718	685
				669	619	575	536	500	468	428	395	365	336	309	285	262	242	225	209
20LH09	21	20	25400	1485	1429	1377	1329	1284	1242	1203	1167	1132	1068	1009	954	904	858	816	775
				729	675	626	581	542	507	475	437	399	366	336	309	285	264	244	227
20LH10	23	20	27400	1602	1542	1486	1434	1386	1341	1297	1258	1221	1186	1122	1060	1005	954	906	862
				786	724	673	626	585	545	510	479	448	411	377	346	320	296	274	254



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	SAFELOAD* in Lbs. Between	CLEAR SPAN IN FEET																
				28-32																
				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
24LH03	11	24	17250	513	508	504	484	460	439	418	400	382	366	351	336	322	310	298	286	
24LH04	12	24	21150	628	597	568	540	514	490	468	447	427	409	393	376	361	346	333	321	
24LH05	13	24	22650	673	669	660	628	598	570	544	520	496	475	456	436	420	403	387	372	
24LH06	16	24	30450	906	868	832	795	756	720	685	655	625	598	571	546	522	501	480	460	
24LH07	17	24	33450	997	957	919	882	847	811	774	736	702	669	639	610	583	559	535	514	
24LH08	18	24	35700	1060	1015	973	933	895	858	817	780	745	712	682	652	625	600	576	553	
24LH09	21	24	42000	1248	1212	1177	1146	1096	1044	994	948	903	861	822	786	751	720	690	661	
24LH10	23	24	44400	1323	1284	1248	1213	1182	1152	1105	1053	1002	955	912	873	834	799	766	736	
24LH11	25	24	46800	1390	1350	1312	1276	1243	1210	1180	1152	1101	1051	1006	963	924	885	850	816	
			33-40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
28LH05	13	28	21000	505	484	465	445	429	412	397	382	367	355	342	330	319	309	298	289	
28LH06	16	28	27900	672	643	618	592	568	546	525	505	486	469	451	436	421	406	393	379	
28LH07	17	28	31500	757	726	696	667	640	615	591	568	547	528	508	490	474	457	442	427	
28LH08	18	28	33750	810	775	744	712	684	657	630	604	580	556	535	516	496	478	462	445	
28LH09	21	28	41550	1000	958	918	879	844	810	778	748	721	694	669	645	622	601	580	561	
28LH10	23	28	45450	1093	1056	1018	976	937	900	864	831	799	769	742	715	690	666	643	622	
28LH11	25	28	48750	1170	1143	1104	1066	1023	982	943	907	873	841	810	781	753	727	702	679	
28LH12	27	28	53550	1285	1255	1227	1200	1173	1149	1105	1063	1023	984	948	913	880	849	819	790	
28LH13	30	28	55800	1342	1311	1281	1252	1224	1198	1173	1149	1126	1083	1041	1002	964	930	897	865	
			38-46	47-48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
32LH06	14	32	25050	25050	507	489	472	456	441	426	412	399	385	373	363	351	340	330	321	312
32LH07	16	32	28200	28200	568	549	529	511	493	477	462	447	432	418	406	393	381	370	360	349
32LH08	17	32	30600	30600	616	595	574	553	535	517	499	483	468	453	439	426	412	400	388	378
32LH09	21	32	38400	38400	774	747	720	694	670	648	627	606	586	568	550	534	517	502	487	472
32LH10	21	32	42450	42450	856	825	796	768	742	717	693	667	645	624	603	583	564	546	529	513
32LH11	24	32	46500	46500	937	903	870	840	811	783	757	730	709	687	664	643	624	604	585	567
32LH12	27	32	54600	54600	1101	1068	1032	996	961	928	897	867	838	811	786	762	738	715	694	673
32LH13	30	32	60900	60900	1225	1201	1177	1156	1113	1072	1035	999	964	931	900	871	843	816	790	766
32LH14	33	32	62700	62700	1264	1239	1215	1192	1170	1149	1107	1069	1032	997	964	933	903	874	846	820
32LH15	35	32	64800	64800	1305	1279	1255	1231	1207	1186	1164	1144	1125	1087	1051	1017	984	952	924	895
			42-46	47-56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
36LH07	16	36	25200	25200	438	424	411	399	387	376	366	355	345	336	327	318	310	301	294	286
36LH08	18	36	27750	27750	481	466	453	439	426	414	402	390	379	369	358	349	340	331	322	313
36LH09	21	36	35550	35550	616	597	579	561	544	528	513	499	484	471	459	445	433	423	412	400
36LH10	21	36	39150	39150	681	660	639	619	601	583	567	550	535	520	507	492	480	466	454	442
36LH11	23	36	42750	42750	742	720	697	676	657	637	618	601	583	567	552	537	522	508	495	483
36LH12	25	36	51150	51150	889	862	835	810	784	762	739	717	696	675	655	636	618	600	583	567
36LH13	30	36	60150	60150	1045	1012	981	951	922	894	868	843	819	796	774	753	732	712	694	676
36LH14	36	36	66300	66300	1152	1132	1093	1059	1024	991	961	931	903	876	850	826	802	780	757	738
36LH15	36	36	69900	69900	1213	1192	1171	1153	1116	1081	1047	1015	984	955	927	900	874	850	826	804



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	SAFELOAD* in Lbs. Between		CLEAR SPAN IN FEET																	
			47-59	60-64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80		
40LH08	16	40	24900	24900	381	370	361	351	342	333	325	316	309	301	294	288	280	274	267	261		
					150	144	138	132	127	122	117	112	108	104	100	97	93	90	86	83		
40LH09	21	40	32700	32700	498	484	472	459	447	436	424	414	403	394	384	375	366	358	349	342		
					196	188	180	173	166	160	153	147	141	136	131	126	122	118	113	109		
40LH10	21	40	36000	36000	550	535	520	507	493	481	469	457	445	435	424	414	403	393	382	373		
					216	207	198	190	183	176	169	162	156	150	144	139	134	129	124	119		
40LH11	22	40	39300	39300	598	582	567	552	537	523	510	498	484	472	462	450	439	429	418	409		
					234	224	215	207	198	190	183	176	169	163	157	151	145	140	135	130		
40LH12	25	40	47850	47850	729	708	688	670	652	636	619	603	588	573	559	546	532	519	507	495		
					285	273	261	251	241	231	222	213	205	197	189	182	176	169	163	157		
40LH13	30	40	56400	56400	859	835	813	792	771	750	730	712	694	676	660	643	628	613	598	585		
					334	320	307	295	283	271	260	250	241	231	223	214	207	199	192	185		
40LH14	35	40	64500	64500	984	957	930	904	880	856	834	813	792	772	753	735	717	699	682	666		
					383	367	351	336	323	309	297	285	273	263	252	243	233	225	216	209		
40LH15	36	40	72150	72150	1101	1068	1036	1006	978	949	924	898	874	850	828	807	786	766	747	729		
					427	408	390	373	357	342	328	315	302	290	279	268	258	248	239	230		
40LH16	42	40	79500	79500	1212	1194	1176	1158	1141	1126	1095	1065	1036	1009	982	957	933	909	886	864		
					469	455	441	428	416	404	387	371	356	342	329	316	304	292	282	271		
					52-59	60-72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
44LH09	19	44	30000	30000	408	397	388	379	370	363	354	346	339	331	324	316	310	303	297	291		
					158	152	146	141	136	131	127	122	118	114	110	106	103	99	96	93		
44LH10	21	44	33150	33150	450	439	429	418	408	399	390	381	373	364	357	349	342	334	327	321		
					174	168	162	155	150	144	139	134	130	125	121	117	113	110	106	103		
44LH11	22	44	35850	35850	487	475	465	453	442	433	423	414	403	396	387	378	370	363	354	348		
					188	181	175	168	162	157	151	146	140	136	131	127	123	119	115	111		
44LH12	25	44	44400	44400	603	589	574	561	547	534	520	508	496	484	472	462	450	439	430	420		
					232	224	215	207	200	192	185	179	172	166	160	155	149	144	139	134		
44LH13	30	44	52650	52650	715	699	681	666	649	634	619	606	592	579	565	553	541	529	519	507		
					275	265	254	246	236	228	220	212	205	198	191	185	179	173	167	161		
44LH14	31	44	60600	60600	823	801	780	759	739	721	703	685	669	654	637	622	609	594	580	568		
					315	302	291	279	268	259	249	240	231	223	215	207	200	193	187	181		
44LH15	36	44	70500	70500	958	934	912	889	868	847	826	805	786	768	750	732	714	699	682	667		
					366	352	339	326	314	303	292	281	271	261	252	243	234	227	219	211		
44LH16	42	44	81300	81300	1105	1078	1051	1026	1002	978	955	933	912	891	870	852	832	814	796	780		
					421	405	390	375	362	348	336	324	313	302	291	282	272	263	255	246		
44LH17	47	44	87300	87300	1185	1170	1153	1138	1125	1098	1072	1048	1024	1000	978	957	936	915	895	876		
					450	438	426	415	405	390	376	363	351	338	327	316	305	295	285	276		
					56-59	60-80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
48LH10	21	48	30000	30000	369	361	354	346	339	331	325	318	312	306	300	294	288	282	277	271		
					141	136	132	127	123	119	116	112	108	105	102	99	96	93	90	87		
48LH11	22	48	32550	32550	399	390	382	373	366	358	351	343	337	330	324	318	312	306	300	294		
					152	147	142	137	133	129	125	120	117	113	110	106	103	100	97	94		
48LH12	25	48	41100	41100	504	493	483	472	462	451	442	433	424	415	408	399	391	384	376	369		
					191	185	179	173	167	161	156	151	147	142	138	133	129	126	122	118		
48LH13	29	48	49200	49200	603	589	576	564	552	540	529	517	507	498	487	477	468	459	450	441		
					228	221	213	206	199	193	187	180	175	170	164	159	154	150	145	141		
48LH14	32	48	58050	58050	712	696	681	666	651	637	624	610	598	585	574	562	550	540	529	519		
					269	260	251	243	234	227	220	212	206	199	193	187	181	176	171	165		
48LH15	36	48	66750	66750	817	799	781	765	748	732	717	702	687	672	658	645	633	619	607	595		
					308	298	287	278	269	260	252	244	236	228	221	214	208	201	195	189		
48LH16	42	48	76950	76950	943	922	901	882	864	844	826	810	792	777	760	745	730	715	702	688		
					355	343	331	320	310	299	289	280	271	263	255	247	239	232	225	218		
48LH17	47	48	86400	86400	1059	1035	1012	990	969	948	928	909	889	871	853	837	820	804	787	772		
					397	383	371	358	346	335	324	314	304	294	285	276	268	260	252	245		

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

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

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



STANDARD 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 November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. 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 midspan shall be diagonal bridging with bolted connections at chords and intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

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

The approximate moment of inertia of the joist, in inches⁴ is; $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = **RED** figure in the Load Table, and L = (clear span + 0.67) in feet.

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

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

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

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	SAFE LOAD* in Lbs. Between	CLEAR SPAN IN FEET																	
				21-24	25	26	27	28	29	30	31	32	33	34	35	36					
18LH02	10	18	12000	468	442	418	391	367	345	324	306	289	273	259	245						
				313	284	259	234	212	193	175	160	147	135	124	114						
18LH03	11	18	13300	521	493	467	438	409	382	359	337	317	299	283	267						
				348	317	289	262	236	213	194	177	161	148	136	124						
18LH04	12	18	15500	604	571	535	500	469	440	413	388	365	344	325	308						
				403	367	329	296	266	242	219	200	182	167	153	141						
18LH05	15	18	17500	684	648	614	581	543	508	476	448	421	397	375	355						
				454	414	378	345	311	282	256	233	212	195	179	164						
18LH06	15	18	20700	809	749	696	648	605	566	531	499	470	443	418	396						
				526	469	419	377	340	307	280	254	232	212	195	180						
18LH07	17	18	21500	840	809	780	726	678	635	595	559	526	496	469	444						
				553	513	476	428	386	349	317	288	264	241	222	204						
18LH08	19	18	22400	876	843	812	784	758	717	680	641	604	571	540	512						
				577	534	496	462	427	387	351	320	292	267	246	226						
18LH09	21	18	24000	936	901	868	838	810	783	759	713	671	633	598	566						
				616	571	527	491	458	418	380	346	316	289	266	245						
			22-24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
20LH02	10	20	11300	442	437	431	410	388	365	344	325	307	291	275	262	249	237	225	215		
				306	303	298	274	250	228	208	190	174	160	147	136	126	117	108	101		
20LH03	11	20	12000	469	463	458	452	434	414	395	372	352	333	316	299	283	269	255	243		
				337	333	317	302	280	258	238	218	200	184	169	156	143	133	123	114		
20LH04	12	20	14700	574	566	558	528	496	467	440	416	393	372	353	335	318	303	289	275		
				428	406	386	352	320	291	265	243	223	205	189	174	161	149	139	129		
20LH05	14	20	15800	616	609	602	595	571	544	513	484	458	434	411	390	371	353	336	321		
				459	437	416	395	366	337	308	281	258	238	219	202	187	173	161	150		
20LH06	15	20	21100	822	791	763	723	679	635	596	560	527	497	469	444	421	399	379	361		
				606	561	521	477	427	386	351	320	292	267	246	226	209	192	178	165		
20LH07	17	20	22500	878	845	814	786	760	711	667	627	590	556	526	497	471	447	425	404		
				647	599	556	518	484	438	398	362	331	303	278	256	236	218	202	187		
20LH08	19	20	23200	908	873	842	813	785	760	722	687	654	621	588	558	530	503	479	457		
				669	619	575	536	500	468	428	395	365	336	309	285	262	242	225	209		
20LH09	21	20	25400	990	953	918	886	856	828	802	778	755	712	673	636	603	572	544	517		
				729	675	626	581	542	507	475	437	399	366	336	309	285	264	244	227		
20LH10	23	20	27400	1068	1028	991	956	924	894	865	839	814	791	748	707	670	636	604	575		
				786	724	673	626	585	545	510	479	448	411	377	346	320	296	274	254		



STANDARD LOAD TABLE 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	SAFELOAD* in Lbs. Between	CLEAR SPAN IN FEET																
				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
24LH03	11	24	11500	342	339	336	323	307	293	279	267	255	244	234	224	215	207	199	191	
24LH04	12	24	14100	419	398	379	360	343	327	312	298	285	273	262	251	241	231	222	214	
24LH05	13	24	15100	449	446	440	419	399	380	363	347	331	317	304	291	280	269	258	248	
24LH06	16	24	20300	604	579	555	530	504	480	457	437	417	399	381	364	348	334	320	307	
24LH07	17	24	22300	665	638	613	588	565	541	516	491	468	446	426	407	389	373	357	343	
24LH08	18	24	23800	707	677	649	622	597	572	545	520	497	475	455	435	417	400	384	369	
24LH09	21	24	28000	832	808	785	764	731	696	663	632	602	574	548	524	501	480	460	441	
24LH10	23	24	29600	882	856	832	809	788	768	737	702	668	637	608	582	556	533	511	490	
24LH11	25	24	31200	927	900	875	851	829	807	787	768	734	701	671	642	616	590	567	544	
			33-40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	
28LH05	13	28	14000	337	323	310	297	286	275	265	255	245	237	228	220	213	206	199	193	
28LH06	16	28	18600	448	429	412	395	379	364	350	337	324	313	301	291	281	271	262	253	
28LH07	17	28	21000	505	484	464	445	427	410	394	379	365	352	339	327	316	305	295	285	
28LH08	18	28	22500	540	517	496	475	456	438	420	403	387	371	357	344	331	319	308	297	
28LH09	21	28	27700	667	639	612	586	563	540	519	499	481	463	446	430	415	401	387	374	
28LH10	23	28	30300	729	704	679	651	625	600	576	554	533	513	495	477	460	444	429	415	
28LH11	25	28	32500	780	762	736	711	682	655	629	605	582	561	540	521	502	485	468	453	
28LH12	27	28	35700	857	837	818	800	782	766	737	709	682	656	632	609	587	566	546	527	
28LH13	30	28	37200	895	874	854	835	816	799	782	766	751	722	694	668	643	620	598	577	
			38-46	47-48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
32LH06	14	32	16700	16700	338	326	315	304	294	284	275	266	257	249	242	234	227	220	214	208
32LH07	16	32	18800	18800	379	366	353	341	329	318	308	298	288	279	271	262	254	247	240	233
32LH08	17	32	20400	20400	411	397	383	369	357	345	333	322	312	302	293	284	275	267	259	252
32LH09	21	32	25600	25600	516	498	480	463	447	432	418	404	391	379	367	356	345	335	325	315
32LH10	21	32	28300	28300	571	550	531	512	495	478	462	445	430	416	402	389	376	364	353	342
32LH11	24	32	31000	31000	625	602	580	560	541	522	505	488	473	458	443	429	416	403	390	378
32LH12	27	32	36400	36400	734	712	688	664	641	619	598	578	559	541	524	508	492	477	463	449
32LH13	30	32	40600	40600	817	801	785	771	742	715	690	666	643	621	600	581	562	544	527	511
32LH14	33	32	41800	41800	843	826	810	795	780	766	738	713	688	665	643	622	602	583	564	547
32LH15	35	32	43200	43200	870	853	837	821	805	791	776	763	750	725	701	678	656	635	616	597
			42-46	47-56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
36LH07	16	36	16800	16800	292	283	274	266	258	251	244	237	230	224	218	212	207	201	196	191
36LH08	18	36	18500	18500	321	311	302	293	284	276	268	260	253	246	239	233	227	221	215	209
36LH09	21	36	23700	23700	411	398	386	374	363	352	342	333	323	314	306	297	289	282	275	267
36LH10	21	36	26100	26100	454	440	426	413	401	389	378	367	357	347	338	328	320	311	303	295
36LH11	23	36	28500	28500	495	480	465	451	438	425	412	401	389	378	368	358	348	339	330	322
36LH12	25	36	34100	34100	593	575	557	540	523	508	493	478	464	450	437	424	412	400	389	378
36LH13	30	36	40100	40100	697	675	654	634	615	596	579	562	546	531	516	502	488	475	463	451
36LH14	36	36	44200	44200	768	755	729	706	683	661	641	621	602	584	567	551	535	520	505	492
36LH15	36	36	46600	46600	809	795	781	769	744	721	698	677	656	637	618	600	583	567	551	536



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	SAFELOAD* in Lbs. Between		CLEAR SPAN IN FEET															
			47-59	60-64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
			52-59	60-72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
40LH08	16	40	16600	16600	254	247	241	234	228	222	217	211	206	201	196	192	187	183	178	174
40LH09	21	40	21800	21800	332	323	315	306	298	291	283	276	269	263	256	250	244	239	233	228
40LH10	21	40	24000	24000	367	357	347	338	329	321	313	305	297	290	283	276	269	262	255	249
40LH11	22	40	26200	26200	399	388	378	368	358	349	340	332	323	315	308	300	293	286	279	273
40LH12	25	40	31900	31900	486	472	459	447	435	424	413	402	392	382	373	364	355	346	338	330
40LH13	30	40	37600	37600	573	557	542	528	514	500	487	475	463	451	440	429	419	409	399	390
40LH14	35	40	43000	43000	656	638	620	603	587	571	556	542	528	515	502	490	478	466	455	444
40LH15	36	40	48100	48100	734	712	691	671	652	633	616	599	583	567	552	538	524	511	498	486
40LH16	42	40	53000	53000	808	796	784	772	761	751	730	710	691	673	655	638	622	606	591	576
					469	455	441	428	416	404	387	371	356	342	329	316	304	292	282	271
					73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
44LH09	19	44	20000	20000	272	265	259	253	247	242	236	231	226	221	216	211	207	202	198	194
44LH10	21	44	22100	22100	300	293	286	279	272	266	260	254	249	243	238	233	228	223	218	214
44LH11	22	44	23900	23900	325	317	310	302	295	289	282	276	269	264	258	252	247	242	236	232
44LH12	25	44	29600	29600	402	393	383	374	365	356	347	339	331	323	315	308	300	293	287	280
44LH13	30	44	35100	35100	477	466	454	444	433	423	413	404	395	386	377	369	361	353	346	338
44LH14	31	44	40400	40400	549	534	520	506	493	481	469	457	446	436	425	415	406	396	387	379
44LH15	36	44	47000	47000	639	623	608	593	579	565	551	537	524	512	500	488	476	466	455	445
44LH16	42	44	54200	54200	737	719	701	684	668	652	637	622	608	594	580	568	555	543	531	520
44LH17	47	44	58200	58200	821	803	785	767	750	732	715	699	683	667	652	638	624	610	597	584
					450	438	426	415	405	390	376	363	351	338	327	316	305	295	285	276
					81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
48LH10	21	48	20000	20000	246	241	236	231	226	221	217	212	208	204	200	196	192	188	185	181
48LH11	22	48	21700	21700	266	260	255	249	244	239	234	229	225	220	216	212	208	204	200	196
48LH12	25	48	27400	27400	336	329	322	315	308	301	295	289	283	277	272	266	261	256	251	246
48LH13	29	48	32800	32800	402	393	384	376	368	360	353	345	338	332	325	318	312	306	300	294
48LH14	32	48	38700	38700	475	464	454	444	434	425	416	407	399	390	383	375	367	360	353	346
48LH15	36	48	44500	44500	545	533	521	510	499	488	478	468	458	448	439	430	422	413	405	397
48LH16	42	48	51300	51300	629	615	601	588	576	563	551	540	528	518	507	497	487	477	468	459
48LH17	47	48	57600	57600	706	690	675	660	646	632	619	606	593	581	569	558	547	536	525	515
					397	383	371	358	346	335	324	314	304	294	285	276	268	260	252	245

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

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

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



STANDARD LRFD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength
 Adopted by the Steel Joist Institute May 1, 2000
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

Where the joist span is in the **BLUE SHADED** area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

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

The approximate moment of inertia of the joist, in inches⁴ is; $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = **RED** figure in the Load Table, and L = (clear span + 0.67) in feet.

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

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

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

LRFD

STANDARD LOAD TABLE FOR DEEP 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	SAFELOAD* in Lbs. Between	CLEAR SPAN IN LINEAR FEET																
				61-88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
				66-96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
52DLH10	25	52	40050	447	436	427	418	409	400	391	384	376	369	361	354	346	340	334	327	
				171	165	159	154	150	145	140	136	132	128	124	120	116	114	110	107	
52DLH11	26	52	43950	490	480	469	459	448	439	430	421	412	405	396	388	381	373	366	360	
				187	181	174	169	164	158	153	149	144	140	135	132	128	124	120	117	
52DLH12	29	52	49050	547	535	523	513	501	490	480	471	460	451	442	433	426	417	409	402	
				204	197	191	185	179	173	168	163	158	153	149	144	140	135	132	128	
52DLH13	34	52	59550	664	649	636	621	609	595	583	571	559	549	537	526	516	507	496	487	
				247	239	231	224	216	209	203	197	191	185	180	174	170	164	159	155	
52DLH14	39	52	68100	760	745	729	714	699	685	670	657	645	631	619	607	595	585	573	562	
				276	266	258	249	242	234	227	220	213	207	201	194	189	184	178	173	
52DLH15	42	52	76500	853	835	817	799	783	766	750	735	720	705	691	676	664	651	639	627	
				311	301	291	282	272	264	256	247	240	233	226	219	213	207	201	195	
52DLH16	45	52	82500	921	901	882	862	844	826	810	792	777	760	745	730	717	702	688	676	
				346	335	324	314	304	294	285	276	267	260	252	245	237	230	224	217	
52DLH17	52	52	94950	1059	1036	1014	991	970	951	930	912	892	874	858	840	823	808	792	777	
				395	381	369	357	346	335	324	315	304	296	286	279	270	263	255	247	
			66-96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	
56DLH11	26	56	42150	432	424	415	408	400	393	385	379	372	366	358	352	346	340	334	328	
				169	163	158	153	149	145	140	136	133	129	125	122	118	115	113	110	
56DLH12	30	56	48450	496	486	477	468	459	450	442	433	426	417	409	402	394	388	381	373	
				184	178	173	168	163	158	153	150	145	141	137	133	130	126	123	119	
56DLH13	34	56	58650	601	591	579	568	558	547	537	526	516	507	496	487	478	471	462	454	
				223	216	209	204	197	191	186	181	175	171	166	161	157	152	149	145	
56DLH14	39	56	66300	679	666	652	640	628	616	604	594	582	571	562	552	541	532	523	514	
				249	242	234	228	221	214	209	202	196	190	186	181	175	171	167	162	
56DLH15	42	56	75750	777	762	747	732	717	703	690	676	664	651	639	628	616	604	594	583	
				281	272	264	256	248	242	234	228	221	215	209	204	198	192	188	182	
56DLH16	46	56	81750	838	822	805	789	774	759	744	730	717	703	690	678	666	654	642	630	
				313	304	294	285	277	269	262	254	247	240	233	227	221	214	209	204	
56DLH17	51	56	94200	964	945	927	907	891	873	856	840	823	808	793	780	765	751	738	724	
				356	345	335	325	316	306	298	289	281	273	266	258	251	245	238	231	



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	SAFE LOAD* in Lbs. Between		CLEAR SPAN IN LINEAR FEET															
			70-99	100-104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
			60DLH12	29	60	46650	46650	442	433	426	418	411	405	397	391	384	378	372	366	360
60DLH13	35	60	56700	56700	537	526	517	508	499	490	483	474	466	459	451	444	436	429	423	415
60DLH14	40	60	63000	63000	597	586	574	564	555	544	534	525	516	507	498	490	481	474	465	457
60DLH15	43	60	73950	73950	700	687	675	663	651	640	628	618	607	597	588	577	568	559	550	541
60DLH16	46	60	81300	81300	769	756	741	727	714	702	690	676	666	654	642	631	621	610	600	589
60DLH17	52	60	93450	93450	885	868	853	837	822	807	793	778	765	751	739	726	714	702	690	679
60DLH18	59	60	107850	107850	1021	1002	984	966	948	931	915	898	883	867	852	838	823	810	796	783
			75-99	100-112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
64DLH12	31	64	45000	45000	396	388	382	376	370	364	358	352	346	342	336	331	327	321	316	312
64DLH13	34	64	54600	54600	481	472	465	457	450	442	436	429	421	415	409	403	396	390	385	379
64DLH14	40	64	62550	62550	550	540	531	523	514	505	498	489	481	474	466	459	451	444	438	430
64DLH15	43	64	71700	71700	631	621	610	600	591	580	571	562	553	544	537	528	520	511	504	496
64DLH16	46	64	80700	80700	711	699	687	675	664	652	642	631	621	610	601	591	582	573	564	555
64DLH17	52	64	93000	93000	819	804	790	777	763	751	738	726	714	702	691	681	669	658	648	639
64DLH18	59	64	107400	107400	945	928	912	897	880	867	852	838	823	810	798	784	772	760	748	736
			80-99	100-120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
68DLH13	37	68	52500	52500	432	426	418	412	406	400	394	388	382	378	372	366	361	355	351	346
68DLH14	40	68	60450	60450	498	490	483	475	468	462	454	448	441	435	429	421	415	409	403	399
68DLH15	44	68	67800	67800	558	547	540	531	522	514	505	498	490	483	475	468	462	454	448	441
68DLH16	49	68	80400	80400	661	649	640	630	619	610	600	591	582	573	564	556	547	540	531	523
68DLH17	55	68	90600	90600	745	733	721	711	700	690	679	669	658	649	640	630	621	612	604	595
68DLH18	61	68	104850	104850	862	849	835	823	810	798	786	774	762	751	739	729	718	708	697	688
68DLH19	67	68	120750	120750	993	976	961	946	931	916	901	888	874	861	847	835	822	810	798	787
			84-99	100-128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
72DLH14	41	72	58800	58800	454	447	441	435	427	421	415	411	405	399	393	388	382	378	372	367
72DLH15	44	72	67350	67350	520	513	504	496	489	483	475	468	462	454	448	442	436	429	423	418
72DLH16	50	72	77850	77850	601	592	585	576	567	559	552	544	537	529	522	514	507	501	493	487
72DLH17	56	72	87600	87600	676	667	657	648	639	630	621	612	603	595	586	579	571	564	556	549
72DLH18	59	72	102600	102600	792	780	768	757	745	735	724	718	705	694	685	675	666	657	648	639
72DLH19	70	72	120300	120300	928	913	900	886	873	859	847	835	823	811	799	789	777	766	756	745

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

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

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



STANDARD ASD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 50 ksi Maximum Yield Strength
 Adopted by the Steel Joist Institute May 25, 1983
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joists at the center of the span. Standard top chord pitch is 1/8 inch per foot. If pitch exceeds this standard, the load table does not apply. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

Where the joist span is in the **BLUE SHADED** area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

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

The approximate moment of inertia of the joist, in inches⁴ is; $I_j = 26.767(W_{LL})(L^3)(10^{-6})$, where W_{LL} = **RED** figure in the Load Table, and L = (clear span + 0.67) in feet.

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

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

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

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



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	SAFE LOAD* in Lbs. Between		CLEAR SPAN IN FEET															
			70-99	100-104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
			60DLH12	29	60	31100	31100	295 168	289 163	284 158	279 154	274 150	270 146	265 142	261 138	256 134	252 131	248 128	244 124	240 121
60DLH13	35	60	37800	37800	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	277 135
60DLH14	40	60	42000	42000	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	305 145
60DLH15	43	60	49300	49300	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	361 171
60DLH16	46	60	54200	54200	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	399 196	393 190
60DLH17	52	60	62300	62300	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	453 217
60DLH18	59	60	71900	71900	681 366	668 357	656 346	644 337	632 327	621 319	610 310	599 303	589 294	578 286	568 279	559 272	549 266	540 259	531 252	522 246
			75-99	100-112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
64DLH12	31	64	30000	30000	264 153	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	208 106
64DLH13	34	64	36400	36400	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	253 128
64DLH14	40	64	41700	41700	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	287 136
64DLH15	43	64	47800	47800	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	331 161
64DLH16	46	64	53800	53800	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	370 180
64DLH17	52	64	62000	62000	546 298	536 290	527 283	518 275	509 268	501 262	492 255	484 248	476 241	468 237	461 231	454 226	446 220	439 215	432 210	426 205
64DLH18	59	64	71600	71600	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	491 232
			80-99	100-120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136
68DLH13	37	68	35000	35000	288 171	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	231 121
68DLH14	40	68	40300	40300	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	266 130
68DLH15	44	68	45200	45200	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	294 145
68DLH16	49	68	53600	53600	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	349 171
68DLH17	55	68	60400	60400	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	397 194
68DLH18	61	68	69900	69900	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	459 219
68DLH19	67	68	80500	80500	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	525 248
			84-99	100-128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
72DLH14	41	72	39200	39200	303 171	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	245 123
72DLH15	44	72	44900	44900	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	279 137
72DLH16	50	72	51900	51900	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	325 161
72DLH17	56	72	58400	58400	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	366 184
72DLH18	59	72	68400	68400	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	426 209
72DLH19	70	72	80200	80200	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	497 236

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

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

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



METRIC LRFD LOAD TABLE

LONGSPAN STEEL JOISTS, LH-SERIES

Based on a 345 MPa Yield Strength
 Adopted by the Steel Joist Institute May 1, 2000
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joist at center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table **does not** apply. 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 intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

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

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

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

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

The approximate moment of inertia of the joist, in mm⁴ is: $I_j = 2.6953(W_{LL})(L^3)(10^{-5})$, where W_{LL} = **RED** figure in the Load Table, and L = (span + 203) in millimeters.

LRFD

METRIC LOAD TABLE FOR LONGSPAN STEEL JOISTS, LH-SERIES																				
Based on a 345 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)																				
Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (mm)															
					6401-7315	7620	7925	8230	8534	8839	9144	9449	9754	10058	10363	10668	10973			
18LH02	0.15	15	457	80.0	10.24 4.56	9.67 4.14	9.15 3.77	8.55 3.41	8.03 3.09	7.55 2.81	7.09 2.55	6.69 2.33	6.32 2.14	5.97 1.97	5.66 1.80	5.36 1.66				
18LH03	0.16	16	457	88.7	11.40 5.07	10.79 4.62	10.22 4.21	9.58 3.82	8.95 3.44	8.36 3.10	7.85 2.83	7.37 2.58	6.93 2.34	6.54 2.15	6.19 1.98	5.84 1.80				
18LH04	0.18	18	457	103.4	13.22 5.88	12.49 5.35	11.71 4.80	10.94 4.31	10.26 3.88	9.63 3.53	9.04 3.19	8.49 2.91	7.99 2.65	7.53 2.43	7.11 2.23	6.74 2.05				
18LH05	0.22	22	457	116.7	14.97 6.62	14.18 6.04	13.44 5.51	12.71 5.03	11.88 4.53	11.12 4.11	10.42 3.73	9.80 3.40	9.21 3.09	8.69 2.84	8.20 2.61	7.77 2.39				
18LH06	0.22	22	457	138.1	17.70 7.67	16.39 6.84	15.23 6.11	14.18 5.50	13.24 4.96	12.39 4.48	11.62 4.08	10.92 3.70	10.28 3.38	9.69 3.09	9.15 2.84	8.66 2.62				
18LH07	0.25	25	457	143.4	18.38 8.07	17.70 7.48	17.07 6.94	15.89 6.24	14.84 5.63	13.90 5.09	13.02 4.62	12.23 4.20	11.51 3.85	10.85 3.51	10.26 3.23	9.71 2.97				
18LH08	0.28	28	457	149.4	19.17 8.42	18.45 7.79	17.77 7.23	17.16 6.74	16.59 6.23	15.69 5.64	14.88 5.12	14.03 4.67	13.22 4.26	12.49 3.89	11.82 3.59	11.20 3.29				
18LH09	0.31	31	457	160.1	20.48 8.98	19.72 8.33	19.00 7.69	18.34 7.16	17.73 6.68	17.14 6.10	16.61 5.54	15.60 5.04	14.68 4.61	13.85 4.21	13.09 3.88	12.39 3.57				
					6706-7315	7620	7925	8230	8534	8839	9144	9449	9754	10058	10363	10668	10973			
20LH02	0.15	15	508	75.3	9.67 4.46	9.56 4.42	9.43 4.34	8.97 3.99	8.49 3.64	7.99 3.32	7.53 3.03	7.11 2.77	6.72 2.53	6.37 2.33	6.01 2.14	5.73 1.98	5.45 1.83	5.18 1.70	4.92 1.57	4.70 1.47
20LH03	0.16	16	508	80.0	10.26 4.91	10.13 4.85	10.02 4.62	9.89 4.40	9.50 4.08	9.06 3.76	8.64 3.47	8.14 3.18	7.70 2.91	7.28 2.68	6.91 2.46	6.54 2.27	6.19 2.08	5.88 1.94	5.58 1.79	5.31 1.66
20LH04	0.18	18	508	98.0	12.56 6.24	12.39 5.92	12.21 5.63	11.55 5.13	10.85 4.67	10.22 4.24	9.63 3.86	9.10 3.54	8.60 3.25	8.14 2.99	7.72 2.75	7.33 2.53	6.96 2.34	6.63 2.17	6.32 2.02	6.01 1.88
20LH05	0.20	21	508	105.4	13.48 6.69	13.33 6.37	13.17 6.07	13.02 5.76	12.49 5.34	11.90 4.91	11.23 4.49	10.59 4.10	10.02 3.76	9.50 3.47	8.99 3.19	8.53 2.94	8.12 2.72	7.72 2.52	7.35 2.34	7.02 2.18
20LH06	0.22	22	508	140.7	17.99 8.84	17.31 8.18	16.70 7.60	15.82 6.96	14.86 6.23	13.90 5.63	13.04 5.12	12.25 4.67	11.53 4.26	10.87 3.89	10.26 3.59	9.71 3.29	9.21 3.05	8.73 2.80	8.29 2.59	7.90 2.40
20LH07	0.25	25	508	150.1	19.22 9.44	18.49 8.74	17.81 8.11	17.20 7.55	16.63 7.06	15.56 6.39	14.60 5.80	13.72 5.28	12.91 4.83	12.17 4.42	11.51 4.05	10.87 3.73	10.31 3.44	9.78 3.18	9.30 2.94	8.84 2.72
20LH08	0.28	28	508	154.7	19.87 9.76	19.11 9.03	18.43 8.39	17.79 7.82	17.18 7.29	16.63 6.82	15.80 6.24	15.03 5.76	14.31 5.32	13.59 4.90	12.87 4.50	12.21 4.15	11.60 3.82	11.01 3.53	10.48 3.28	10.00 3.05
20LH09	0.31	31	508	169.4	21.67 10.63	20.86 9.85	20.09 9.13	19.39 8.47	18.73 7.90	18.12 7.39	17.55 6.93	17.03 6.37	16.52 5.82	15.58 5.34	14.73 4.90	13.92 4.50	13.20 4.15	12.52 3.85	11.90 3.56	11.31 3.31
20LH10	0.34	34	508	182.8	23.37 11.47	22.50 10.56	21.69 9.82	20.92 9.13	20.22 8.53	19.57 7.95	18.93 7.44	18.36 6.99	17.81 6.53	17.31 5.99	16.37 5.50	15.47 5.04	14.66 4.67	13.92 4.31	13.22 3.99	12.58 3.70



LRFD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (mm)																	
					8534-9754																	
					10058	10363	10668	10973	11278	11582	11887	12192	12497	12802	13106	13411	13716	14021	14326	14630		
24LH03	0.16	16	610	76.7	7.48	7.42	7.35	7.07	6.72	6.41	6.10	5.84	5.58	5.34	5.12	4.90	4.70	4.53	4.35	4.18		
24LH04	0.18	18	610	94.4	3.42	3.29	3.18	2.97	2.74	2.55	2.36	2.21	2.05	1.92	1.80	1.69	1.59	1.48	1.40	1.31		
24LH05	0.19	19	610	100.7	9.17	8.71	8.29	7.88	7.50	7.15	6.82	6.52	6.23	5.97	5.73	5.49	5.27	5.05	4.85	4.68		
24LH06	0.23	24	610	135.4	4.20	3.86	3.59	3.31	3.06	2.84	2.65	2.46	2.30	2.15	2.01	1.89	1.78	1.66	1.56	1.47		
24LH07	0.25	25	610	148.7	9.82	9.76	9.63	9.17	8.73	8.31	7.94	7.59	7.24	6.93	6.65	6.37	6.12	5.88	5.64	5.42		
24LH08	0.26	27	610	158.8	4.49	4.33	4.15	3.85	3.56	3.29	3.06	2.86	2.65	2.49	2.33	2.18	2.05	1.92	1.80	1.70		
24LH09	0.31	31	610	186.8	13.22	12.67	12.14	11.60	11.03	10.50	10.00	9.56	9.12	8.73	8.34	7.96	7.61	7.31	7.00	6.72		
24LH10	0.34	34	610	197.5	5.99	5.57	5.19	4.83	4.46	4.14	3.83	3.57	3.32	3.07	2.87	2.68	2.51	2.34	2.21	2.07		
24LH11	0.36	37	610	208.1	14.55	13.96	13.41	12.87	12.36	11.84	11.29	10.74	10.24	9.76	9.32	8.90	8.51	8.16	7.81	7.50		
					6.59	6.14	5.73	5.35	5.00	4.67	4.33	4.02	3.75	3.48	3.25	3.03	2.84	2.65	2.49	2.34		
					7.00	6.52	6.07	5.66	5.28	4.93	4.58	4.26	3.96	3.70	3.47	3.23	3.03	2.86	2.68	2.52		
					18.21	17.68	17.18	16.72	16.00	15.23	14.51	13.83	13.17	12.56	11.99	11.47	10.96	10.50	10.06	9.65		
					8.20	7.73	7.31	6.71	6.18	5.73	5.29	4.91	4.56	4.26	3.96	3.70	3.47	3.25	3.05	2.86		
					19.30	18.73	18.21	17.70	17.24	16.81	16.13	15.36	14.62	13.94	13.30	12.74	12.17	11.66	11.18	10.72		
					8.69	8.15	7.70	7.29	6.91	6.40	5.92	5.51	5.12	4.75	4.43	4.15	3.88	3.63	3.41	3.21		
					20.29	19.70	19.15	18.62	18.14	17.66	17.22	16.81	16.06	15.34	14.68	14.05	13.48	12.91	12.41	11.90		
					9.10	8.58	8.09	7.66	7.26	6.88	6.55	6.10	5.66	5.26	4.91	4.59	4.29	4.02	3.77	3.54		
					10058-12192	12497	12802	13106	13411	13716	14021	14326	14630	14935	15240	15545	15850	16154	16459	16764	17069	
28LH05	0.19	19	711	93.4	7.37	7.07	6.78	6.50	6.26	6.01	5.80	5.58	5.36	5.18	4.99	4.81	4.66	4.50	4.35	4.22		
28LH06	0.23	24	711	124.1	3.19	2.99	2.80	2.62	2.46	2.32	2.18	2.07	1.94	1.83	1.73	1.64	1.56	1.48	1.41	1.34		
28LH07	0.25	25	711	140.1	4.21	3.94	3.69	3.47	3.25	3.05	2.87	2.71	2.55	2.42	2.27	2.15	2.04	1.94	1.83	1.75		
28LH08	0.26	27	711	150.1	11.05	10.59	10.15	9.74	9.34	8.97	8.62	8.29	7.99	7.70	7.42	7.15	6.91	6.67	6.45	6.23		
28LH09	0.31	31	711	184.8	4.75	4.45	4.15	3.89	3.66	3.44	3.23	3.05	2.87	2.71	2.56	2.42	2.30	2.18	2.07	1.97		
28LH10	0.34	34	711	202.1	11.82	11.31	10.85	10.39	9.98	9.58	9.19	8.82	8.47	8.12	7.81	7.53	7.24	6.98	6.74	6.50		
28LH11	0.36	37	711	216.8	5.07	4.74	4.45	4.15	3.91	3.67	3.44	3.23	3.05	2.86	2.69	2.55	2.40	2.27	2.15	2.04		
28LH12	0.39	40	711	238.2	14.60	13.98	13.39	12.82	12.32	11.82	11.36	10.92	10.52	10.13	9.76	9.41	9.08	8.77	8.47	8.18		
28LH13	0.44	45	711	248.2	6.24	5.83	5.47	5.12	4.80	4.50	4.24	3.99	3.76	3.54	3.32	3.15	2.97	2.81	2.67	2.52		
					15.95	15.41	14.86	14.25	13.68	13.13	12.60	12.12	11.66	11.23	10.83	10.44	10.06	9.71	9.39	9.08		
					6.80	6.40	6.04	5.66	5.31	4.99	4.69	4.42	4.15	3.92	3.72	3.51	3.32	3.13	2.97	2.81		
					17.07	16.68	16.11	15.56	14.92	14.33	13.76	13.24	12.74	12.28	11.82	11.40	10.98	10.61	10.24	9.91		
					7.26	6.93	6.53	6.17	5.79	5.44	5.12	4.83	4.55	4.29	4.05	3.83	3.63	3.44	3.25	3.09		
					18.76	18.32	17.90	17.51	17.11	16.76	16.13	15.52	14.92	14.36	13.83	13.33	12.84	12.39	11.95	11.53		
					7.95	7.58	7.23	6.94	6.62	6.34	5.95	5.58	5.26	4.96	4.68	4.42	4.15	3.94	3.73	3.54		
					19.59	19.13	18.69	18.27	17.86	17.49	17.11	16.76	16.44	15.80	15.19	14.62	14.07	13.57	13.09	12.63		
					8.30	7.92	7.55	7.22	6.88	6.59	6.31	6.05	5.77	5.44	5.13	4.84	4.58	4.33	4.10	3.88		
					11582-14021	14326-14630	14935	15240	15545	15850	16154	16459	16764	17069	17374	17678	17983	18288	18593	18898	19202	19507
32LH06	0.20	21	813	112.0	7.39	7.13	6.89	6.65	6.43	6.21	6.01	5.82	5.62	5.45	5.29	5.12	4.96	4.81	4.68	4.55		
32LH07	0.23	24	813	123.4	3.07	2.90	2.75	2.61	2.46	2.34	2.23	2.11	2.01	1.91	1.82	1.73	1.66	1.57	1.51	1.44		
32LH08	0.25	25	813	158.1	8.29	8.01	7.72	7.46	7.20	6.96	6.74	6.52	6.30	6.10	5.93	5.73	5.56	5.40	5.25	5.10		
32LH09	0.31	31	813	174.1	3.42	3.25	3.07	2.91	2.75	2.61	2.48	2.36	2.24	2.13	2.04	1.94	1.85	1.76	1.69	1.61		
32LH10	0.31	31	813	190.1	8.99	8.69	8.38	8.07	7.81	7.55	7.28	7.04	6.82	6.61	6.41	6.21	6.01	5.84	5.66	5.51		
32LH11	0.35	36	813	227.5	3.72	3.53	3.34	3.15	2.99	2.83	2.68	2.55	2.43	2.32	2.20	2.10	1.99	1.91	1.82	1.75		
32LH12	0.39	40	813	267.5	11.29	10.90	10.50	10.13	9.78	9.45	9.15	8.84	8.55	8.29	8.03	7.79	7.55	7.33	7.11	6.89		
32LH13	0.44	45	813	294.9	4.65	4.40	4.15	3.94	3.73	3.54	3.35	3.19	3.03	2.88	2.75	2.62	2.51	2.39	2.29	2.17		
32LH14	0.48	49	813	310.9	12.49	12.03	11.62	11.20	10.83	10.46	10.11	9.74	9.41	9.10	8.80	8.51	8.23	7.96	7.72	7.48		
32LH15	0.51	52	813	288.2	5.13	4.84	4.59	4.33	4.11	3.89	3.70	3.50	3.32	3.16	3.00	2.86	2.71	2.59	2.46	2.36		
					13.68	13.17	12.69	12.25	11.84	11.42	11.05	10.68	10.35	10.02	9.69	9.39	9.10	8.82	8.53	8.27		
					5.61	5.29	5.00	4.74	4.49	4.26	4.04	3.83	3.66	3.48	3.31	3.15	3.00	2.86	2.72	2.61		
					16.06	15.58	15.06	14.53	14.03	13.55	13.09	12.65	12.23	11.84	11.47	11.12	10.77	10.44	10.13	9.82		
					6.56	6.24	5.92	5.60	5.31	5.03	4.77	4.53	4.30	4.10	3.89	3.72	3.54	3.38	3.22	3.07		
					17.88	17.53	17.18	16.87	16.24	15.65	15.10	14.57	14.07	13.59	13.13	12.71	12.30	11.90	11.53	11.18		
					7.29	7.00	6.72	6.47	6.12	5.79	5.48	5.16	4.90	4.65	4.43	4.20	4.01	3.82	3.63	3.47		
					18.45	18.08	17.73	17.40	17.07	16.76	16.15	15.60	15.06	14.55	14.07	13.61	13.17	12.76	12.34	11.97		
					7.51	7.22	6.94	6.68	6.42	6.08	5.76	5.45	5.18	4.91	4.68	4.43	4.23	4.02	3.85	3.66		
					19.04	18.67	18.32	17.97	17.62	17.31	16.98	16.70	16.41	15.87	15.34	14.84	14.36	13.90	13.48	13.06		
					7.76	7.45	7.18	6.90	6.62	6.39	6.15	5.93	5.73	5.45	5.18	4.93	4.69	4.46	4.26	4.07		
					12802-14021	14326-17069	17374	17678	17983	18288	18593	18898	19202	19507	19812	20117	20422	20726	21031	21336	21641	21946
36LH07	0.23	24	914	112.0	6.39	6.19	5.99	5.82	5.98	5.82	5.66	5.49	5.33	5.19	5.05	4.91	4.80	4.66	4.54	4.43		
36LH08	0.26	27	914	123.4	2.58	2.45	2.33	2.23	2.13	2.04	1.95	1.86	1.78	1.70	1.63	1.56	1.50	1.44	1.38	1.32		
36LH09	0.31	31	914	158.1	7.02	6.80	6.61	6.41	6.21	6.04	5.86	5.69	5.53	5.38	5.23	5.10	4.96	4.83	4.70	4.57		
36LH10	0.31	31	914	174.1	2.83	2.69	2.56	2.45	2.33	2.23	2.13	2.04	1.95	1.86	1.79	1.72	1.64	1.59	1.51	1.45		
36LH11	0.34	34	914	190.1	8.99	8.71	8.44	8.18	7.94	7.70	7.48	7.28	7.07	6.87	6.69	6.50	6.32	6.17	6.01	5.84		
36LH12	0.36	37	914	227.5</																		

LRFD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN		CLEAR SPAN (mm)																	
				Between		19812	20117	20422	20726	21031	21336	21641	21946	22250	22555	22860	23165	23470	23774	24079	24384		
				14326-17983	18288-19507																		
40LH08	0.23	24	1016	110.7	110.7	5.56	5.40	5.27	5.12	4.99	4.85	4.75	4.61	4.50	4.40	4.29	4.20	4.09	4.00	3.89	3.80		
40LH09	0.31	31	1016	145.4	145.4	7.26	7.07	6.89	6.69	6.52	6.37	6.19	6.04	5.88	5.75	5.60	5.47	5.34	5.23	5.10	4.99		
40LH10	0.31	31	1016	160.1	160.1	8.03	7.81	7.59	7.39	7.20	7.02	6.85	6.67	6.50	6.34	6.19	6.04	5.88	5.73	5.58	5.45		
40LH11	0.32	33	1016	174.8	174.8	8.73	8.49	8.27	8.05	7.83	7.63	7.44	7.26	7.07	6.89	6.74	6.56	6.41	6.26	6.10	5.97		
40LH12	0.36	37	1016	212.8	212.8	10.63	10.33	10.04	9.78	9.52	9.28	9.04	8.80	8.58	8.36	8.16	7.96	7.77	7.57	7.39	7.22		
40LH13	0.44	45	1016	250.8	250.8	12.54	12.19	11.86	11.55	11.25	10.94	10.66	10.39	10.13	9.87	9.63	9.39	9.17	8.95	8.73	8.53		
40LH14	0.51	52	1016	286.9	286.9	14.36	13.96	13.57	13.20	12.84	12.49	12.17	11.86	11.55	11.27	10.98	10.72	10.46	10.20	9.96	9.71		
40LH15	0.53	54	1016	320.9	320.9	16.06	15.58	15.12	14.68	14.27	13.85	13.48	13.11	12.76	12.41	12.08	11.77	11.47	11.18	10.90	10.63		
40LH16	0.61	63	1016	353.6	353.6	17.68	17.42	17.16	16.89	16.65	16.44	15.98	15.54	15.12	14.73	14.33	13.96	13.61	13.26	12.93	12.60		
						6.84	6.64	6.43	6.24	6.07	5.89	5.64	5.41	5.19	4.99	4.80	4.61	4.43	4.26	4.11	3.95		
						15850-17983	18288-21946	22250	22555	22860	23165	23470	23774	24079	24384	24689	24994	25298	25603	25908	26213	26518	26822
44LH09	0.28	28	1118	133.4	133.4	5.95	5.80	5.66	5.53	5.40	5.29	5.16	5.05	4.94	4.83	4.72	4.61	4.53	4.42	4.33	4.24		
44LH10	0.31	31	1118	147.4	147.4	6.56	6.41	6.26	6.10	5.95	5.82	5.69	5.56	5.45	5.31	5.21	5.10	4.99	4.88	4.77	4.68		
44LH11	0.32	33	1118	159.4	159.4	7.11	6.93	6.78	6.61	6.45	6.32	6.17	6.04	5.88	5.77	5.64	5.51	5.40	5.29	5.16	5.07		
44LH12	0.36	37	1118	197.5	197.5	8.80	8.60	8.38	8.18	7.99	7.79	7.59	7.42	7.24	7.07	6.89	6.74	6.56	6.41	6.28	6.12		
44LH13	0.44	45	1118	234.1	234.1	10.44	10.20	9.93	9.71	9.47	9.25	9.04	8.84	8.64	8.44	8.25	8.07	7.90	7.72	7.57	7.39		
44LH14	0.45	46	1118	269.5	269.5	12.01	11.68	11.38	11.07	10.79	10.52	10.26	10.00	9.76	9.54	9.30	9.08	8.88	8.66	8.47	8.29		
44LH15	0.53	54	1118	313.5	313.5	13.98	13.63	13.30	12.98	12.67	12.36	12.06	11.75	11.47	11.20	10.94	10.68	10.42	10.20	9.96	9.74		
44LH16	0.61	63	1118	361.6	361.6	16.13	15.73	15.34	14.97	14.62	14.27	13.94	13.61	13.30	13.00	12.69	12.43	12.14	11.88	11.62	11.38		
44LH17	0.69	70	1118	388.3	388.3	17.29	17.07	16.83	16.61	16.41	16.02	15.65	15.30	14.95	14.60	14.27	13.96	13.65	13.35	13.06	12.78		
						6.56	6.39	6.21	6.05	5.91	5.69	5.48	5.29	5.12	4.93	4.77	4.61	4.45	4.30	4.15	4.02		
						17069-17983	18288-24384	24689	24994	25298	25603	25908	26213	26518	26822	27127	27432	27737	28042	28346	28651	28956	29261
48LH10	0.31	31	1219	133.4	133.4	5.38	5.27	5.16	5.05	4.94	4.83	4.75	4.64	4.55	4.46	4.37	4.29	4.20	4.11	4.04	3.96		
48LH11	0.32	33	1219	144.7	144.7	5.82	5.69	5.58	5.45	5.34	5.23	5.12	5.01	4.92	4.81	4.72	4.64	4.55	4.46	4.37	4.29		
48LH12	0.36	37	1219	182.8	182.8	7.35	7.20	7.04	6.89	6.74	6.58	6.45	6.32	6.19	6.06	5.95	5.82	5.71	5.60	5.49	5.38		
48LH13	0.42	43	1219	218.8	218.8	8.80	8.60	8.40	8.23	8.05	7.88	7.72	7.55	7.39	7.26	7.11	6.96	6.82	6.69	6.56	6.43		
48LH14	0.47	48	1219	258.2	258.2	10.39	10.15	9.93	9.71	9.50	9.30	9.10	8.90	8.73	8.53	8.38	8.20	8.03	7.88	7.72	7.57		
48LH15	0.53	54	1219	296.9	296.9	11.93	11.66	11.40	11.16	10.92	10.68	10.46	10.24	10.02	9.80	9.61	9.41	9.23	9.04	8.86	8.69		
48LH16	0.61	63	1219	342.2	342.2	13.76	13.46	13.15	12.87	12.60	12.32	12.06	11.82	11.55	11.33	11.09	10.87	10.66	10.44	10.24	10.04		
48LH17	0.69	70	1219	384.3	384.3	15.45	15.10	14.77	14.44	14.14	13.83	13.55	13.26	12.98	12.71	12.45	12.21	11.97	11.73	11.49	11.27		
						5.79	5.58	5.41	5.22	5.04	4.88	4.72	4.58	4.43	4.29	4.15	4.02	3.91	3.79	3.67	3.57		

* The safe factored uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load) / (Clear span + 203). (The added 203 millimeters is required to obtain the proper length on which the Load Tables were developed).

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

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by the (the shortest clear span shown in the Load Table + 203 mm)² and divide by (the actual clear span + 203 mm)². The live load shall *not* exceed the safe uniform load.



METRIC ASD LOAD TABLE

LONGSPAN STEEL JOISTS, LH-SERIES

Based on a 345 MPa Maximum Yield Strength
 Adopted by the Steel Joist Institute May 2, 1994
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joist at center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table **does not** apply. 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 intersection. Hoisting cables shall not be released until this row of bolted diagonal bridging is completely installed.

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

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

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

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

The approximate moment of inertia of the joist, in mm⁴ is: $I_j = 2.6953(W_{LL})(L^3)10^{-5}$, where W_{LL} = **RED** figure in the Load Table, and L = (span + 203) in millimeters.

ASD

METRIC LOAD TABLE FOR LONGSPAN STEEL JOISTS, LH-SERIES																					
Based on a 345 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)																					
Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (mm)																
					6401-7315	7620	7925	8230	8534	8839	9144	9449	9754	10058	10363	10668	10973				
18LH02	0.15	15	457	80.0	6.82 4.56	6.45 4.14	6.10 3.77	5.70 3.41	5.35 3.09	5.03 2.81	4.72 2.55	4.46 2.33	4.21 2.14	3.98 1.97	3.77 1.80	3.57 1.66					
18LH03	0.16	16	457	88.7	7.60 5.07	7.19 4.62	6.81 4.21	6.39 3.82	5.96 3.44	5.57 3.10	5.23 2.83	4.91 2.58	4.62 2.34	4.36 2.15	4.13 1.98	3.89 1.80					
18LH04	0.18	18	457	103.4	8.81 5.88	8.33 5.35	7.80 4.80	7.29 4.31	6.84 3.88	6.42 3.53	6.02 3.19	5.66 2.91	5.32 2.65	5.02 2.43	4.74 2.23	4.49 2.05					
18LH05	0.22	22	457	116.7	9.98 6.62	9.45 6.04	8.96 5.51	8.47 5.03	7.92 4.53	7.41 4.11	6.94 3.73	6.53 3.40	6.14 3.09	5.79 2.84	5.47 2.61	5.18 2.39					
18LH06	0.22	22	457	138.1	11.80 7.67	10.93 6.84	10.15 6.11	9.45 5.50	8.82 4.96	8.26 4.48	7.74 4.08	7.28 3.70	6.85 3.38	6.46 3.09	6.10 2.84	5.77 2.62					
18LH07	0.25	25	457	143.4	12.25 8.07	11.80 7.48	11.38 6.94	10.59 6.24	9.89 5.63	9.26 5.09	8.68 4.62	8.15 4.20	7.67 3.85	7.23 3.51	6.84 3.23	6.47 2.97					
18LH08	0.28	28	457	149.4	12.78 8.42	12.30 7.79	11.85 7.23	11.44 6.74	11.06 6.23	10.46 5.64	9.92 5.12	9.35 4.67	8.81 4.26	8.33 3.89	7.88 3.59	7.47 3.29					
18LH09	0.31	31	457	160.1	13.65 8.98	13.14 8.33	12.66 7.69	12.22 7.16	11.82 6.68	11.42 6.10	11.07 5.54	10.40 5.04	9.79 4.61	9.23 4.21	8.72 3.88	8.26 3.57					
					6706-7315	7620	7925	8230	8534	8839	9144	9449	9754	10058	10363	10668	10973	11278	11582	11887	12192
20LH02	0.15	15	508	75.3	6.45 4.46	6.37 4.42	6.28 4.34	5.98 3.99	5.66 3.64	5.32 3.32	5.02 3.03	4.74 2.77	4.48 2.53	4.24 2.33	4.01 2.14	3.82 1.98	3.63 1.83	3.45 1.70	3.28 1.57	3.13 1.47	
20LH03	0.16	16	508	80.0	6.84 4.91	6.75 4.85	6.68 4.62	6.59 4.40	6.33 4.08	6.04 3.76	5.76 3.47	5.42 3.18	5.13 2.91	4.85 2.68	4.61 2.46	4.36 2.27	4.13 2.08	3.92 1.94	3.72 1.79	3.54 1.66	
20LH04	0.18	18	508	98.0	8.37 6.24	8.26 5.92	8.14 5.63	7.70 5.13	7.23 4.67	6.81 4.24	6.42 3.86	6.07 3.54	5.73 3.25	5.42 2.99	5.15 2.75	4.88 2.53	4.64 2.34	4.42 2.17	4.21 2.02	4.01 1.88	
20LH05	0.20	21	508	105.4	8.98 6.69	8.88 6.37	8.78 6.07	8.68 5.76	8.33 5.34	7.93 4.91	7.48 4.49	7.06 4.10	6.68 3.76	6.33 3.47	5.99 3.19	5.69 2.94	5.41 2.72	5.15 2.52	4.90 2.34	4.68 2.18	
20LH06	0.22	22	508	140.7	11.99 8.84	11.54 8.18	11.13 7.60	10.55 6.96	9.90 6.23	9.26 5.63	8.69 5.12	8.17 4.67	7.69 4.26	7.25 3.89	6.84 3.59	6.47 3.29	6.14 3.05	5.82 2.80	5.53 2.59	5.26 2.40	
20LH07	0.25	25	508	150.1	12.81 9.44	12.33 8.74	11.87 8.11	11.47 7.55	11.09 7.06	10.37 6.39	9.73 5.80	9.15 5.28	8.61 4.83	8.11 4.42	7.67 4.05	7.25 3.73	6.87 3.44	6.52 3.18	6.20 2.94	5.89 2.72	
20LH08	0.28	28	508	154.7	13.25 9.76	12.74 9.03	12.28 8.39	11.86 7.82	11.45 7.29	11.09 6.82	10.53 6.24	10.02 5.76	9.54 5.32	9.06 4.90	8.58 4.50	8.14 4.15	7.73 3.82	7.34 3.53	7.34 3.28	6.99 3.05	6.66 3.05
20LH09	0.31	31	508	169.4	14.44 10.63	13.90 9.85	13.39 9.13	12.93 8.47	12.49 7.90	12.08 7.39	11.70 6.93	11.35 6.37	11.01 5.82	10.39 5.34	9.82 4.90	9.28 4.50	8.80 4.15	8.34 3.85	7.93 3.56	7.54 3.31	
20LH10	0.34	34	508	182.8	15.58 11.47	15.00 10.56	14.46 9.82	13.95 9.13	13.48 8.53	13.04 7.95	12.62 7.44	12.24 6.99	11.87 6.53	11.54 5.99	10.91 5.50	10.31 5.04	9.77 4.67	9.28 4.31	8.81 3.99	8.39 3.70	



ASD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (mm)																		
					8534-9754																		
					10058	10363	10668	10973	11278	11582	11887	12192	12497	12802	13106	13411	13716	14021	14326	14630			
24LH03	0.16	16	610	51.1	4.99	4.94	4.90	4.71	4.48	4.27	4.07	3.89	3.72	3.56	3.41	3.26	3.13	3.02	2.90	2.78			
24LH04	0.18	18	610	62.7	6.11	5.80	5.53	5.25	5.00	4.77	4.55	4.34	4.15	3.98	3.82	3.66	3.51	3.37	3.23	3.12			
24LH05	0.19	19	610	67.1	6.55	6.50	6.42	6.11	5.82	5.54	5.29	5.06	4.83	4.62	4.43	4.24	4.08	3.92	3.76	3.61			
24LH06	0.23	24	610	90.2	8.81	8.44	8.05	7.73	7.35	7.00	6.66	6.37	6.08	5.82	5.56	5.31	5.07	4.87	4.67	4.48			
24LH07	0.25	25	610	99.1	9.70	9.31	8.94	8.58	8.24	7.89	7.53	7.16	6.82	6.50	6.21	5.93	5.67	5.44	5.21	5.00			
24LH08	0.26	27	610	105.8	10.31	9.88	9.47	9.07	8.71	8.34	7.95	7.58	7.25	6.93	6.64	6.34	6.08	5.83	5.60	5.38			
24LH09	0.31	31	610	124.5	12.14	11.79	11.45	11.14	10.66	10.15	9.67	9.22	8.78	8.37	7.99	7.64	7.31	7.00	6.71	6.43			
24LH10	0.34	34	610	131.6	12.87	12.49	12.14	11.80	11.49	11.20	10.75	10.24	9.74	9.29	8.87	8.49	8.11	7.77	7.45	7.15			
24LH11	0.36	37	610	138.7	13.52	13.13	12.76	12.41	12.09	11.77	11.48	11.20	10.71	10.23	9.79	9.36	8.98	8.61	8.27	7.93			
					10058-12192	12497	12802	13106	13411	13716	14021	14326	14630	14935	15240	15545	15850	16154	16459	16764	17069		
28LH05	0.19	19	711	62.2	4.91	4.71	4.52	4.33	4.17	4.01	3.86	3.72	3.57	3.45	3.32	3.21	3.10	3.00	2.90	2.81			
28LH06	0.23	24	711	82.7	6.53	6.26	6.01	5.76	5.46	5.32	5.10	4.91	4.72	4.56	4.39	4.24	4.10	3.95	3.82	3.69			
28LH07	0.25	25	711	93.4	7.36	7.06	6.77	6.49	6.23	5.98	5.74	5.53	5.32	5.13	4.94	4.77	4.61	4.45	4.30	4.15			
28LH08	0.26	27	711	100.0	7.88	7.54	7.23	6.93	6.65	6.39	6.12	5.88	5.64	5.41	5.21	5.02	4.83	4.65	4.49	4.33			
28LH09	0.31	31	711	123.2	9.73	9.32	8.93	8.55	8.21	7.88	7.57	7.28	7.01	6.75	6.50	6.27	6.05	5.85	5.64	5.45			
28LH10	0.34	34	711	134.7	10.63	10.27	9.90	9.50	9.12	8.75	8.40	8.08	7.77	7.48	7.22	6.96	6.71	6.47	6.26	6.05			
28LH11	0.36	37	711	144.5	11.38	11.12	10.74	10.37	9.95	9.55	9.17	8.82	8.49	8.18	7.88	7.60	7.32	7.07	6.82	6.61			
28LH12	0.39	40	711	158.8	12.50	12.21	11.93	11.67	11.41	11.14	10.75	10.34	9.95	9.57	9.22	8.88	8.56	8.26	7.96	7.69			
28LH13	0.44	45	711	165.4	13.06	12.75	12.46	12.18	11.90	11.61	11.17	10.96	10.56	10.18	9.74	9.38	9.04	8.72	8.42	8.28			
					11582-14021	14326-14630	14935	15240	15545	15850	16154	16459	16764	17069	17374	17678	17983	18288	18593	18898	19202	19507	
32LH06	0.20	21	813	74.2	4.93	4.75	4.59	4.43	4.29	4.14	4.01	3.88	3.75	3.63	3.53	3.41	3.31	3.21	3.12	3.03			
32LH07	0.23	24	813	83.5	5.53	5.34	5.15	4.97	4.80	4.64	4.49	4.34	4.20	4.07	3.95	3.82	3.70	3.60	3.50	3.40			
32LH08	0.25	25	813	90.7	5.99	5.79	5.58	5.38	5.21	5.03	4.85	4.69	4.55	4.40	4.27	4.14	4.01	3.89	3.77	3.67			
32LH09	0.31	31	813	113.8	7.53	7.26	7.00	6.75	6.52	6.30	6.10	5.89	5.70	5.53	5.35	5.19	5.03	4.88	4.74	4.59			
32LH10	0.31	31	813	125.8	8.33	8.02	7.74	7.47	7.22	6.97	6.74	6.49	6.27	6.07	5.86	5.67	5.48	5.31	5.15	4.99			
32LH11	0.35	36	813	137.8	9.12	8.78	8.46	8.17	7.89	7.61	7.36	7.12	6.90	6.68	6.46	6.26	6.07	5.88	5.69	5.51			
32LH12	0.39	40	813	161.9	10.71	10.39	10.04	9.69	9.35	9.03	8.72	8.43	8.15	7.89	7.64	7.41	7.18	6.96	6.75	6.55			
32LH13	0.44	45	813	180.5	11.92	11.68	11.45	11.25	10.82	10.43	10.06	9.71	9.38	9.06	8.75	8.47	8.20	7.93	7.69	7.45			
32LH14	0.48	49	813	185.9	12.30	12.05	11.82	11.60	11.38	11.17	10.77	10.40	10.04	9.70	9.38	9.07	8.78	8.50	8.23	7.98			
32LH15	0.51	52	813	192.1	12.69	12.44	12.21	11.98	11.74	11.54	11.32	11.13	10.94	10.58	10.23	9.89	9.57	9.26	8.98	8.71			
					12802-14021	14326-17069	17374	17678	17983	18288	18593	18898	19202	19507	19812	20117	20422	20726	21031	21336	21641	21946	
36LH07	0.23	24	914	74.7	4.26	4.13	3.99	3.88	3.76	3.66	3.56	3.45	3.35	3.26	3.18	3.09	3.02	2.93	2.86	2.78			
36LH08	0.26	27	914	82.2	4.68	4.53	4.40	4.27	4.14	4.02	3.91	3.79	3.69	3.59	3.48	3.40	3.31	3.22	3.13	3.05			
36LH09	0.31	31	914	105.4	5.99	5.80	5.63	5.45	5.29	5.13	4.99	4.85	4.71	4.58	4.46	4.33	4.21	4.11	4.01	3.89			
36LH10	0.31	31	914	116.0	6.62	6.42	6.21	6.02	5.85	5.67	5.51	5.35	5.21	5.06	4.93	4.78	4.67	4.53	4.42	4.30			
36LH11	0.34	34	914	126.7	7.22	7.00	6.78	6.58	6.39	6.20	6.01	5.85	5.67	5.51	5.37	5.22	5.07	4.94	4.81	4.69			
36LH12	0.36	37	914	151.6	8.65	8.39	8.12	7.88	7.63	7.41	7.19	6.97	6.77	6.56	6.37	6.18	6.01	5.83	5.67	5.51			
36LH13	0.44	45	914	178.3	10.17	9.85	9.54	9.25	8.97	8.69	8.44	8.20	7.96	7.74	7.53	7.32	7.12	6.93	6.75	6.58			
36LH14	0.53	54	914	196.6	11.20	11.01	10.63	10.30	9.96	9.64	9.35	9.06	8.78	8.52	8.27	8.04	7.80	7.58	7.36	7.18			
36LH15	0.53	54	914	207.2	11.80	11.60	11.39	11.22	10.85	10.52	10.18	9.88	9.57	9.29	9.03	8.75	8.50	8.27	8.04	7.82			



ASD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between		CLEAR SPAN (mm)																	
				14326-17983	18288-19507	19812	20117	20422	20726	21031	21336	21641	21946	22250	22555	22860	23165	23470	23774	24079	24384		
				73.8	73.8	3.70	3.60	3.51	3.41	3.32	3.23	3.16	3.07	3.00	2.93	2.86	2.80	2.72	2.67	2.59	2.53		
40LH08	0.23	24	1016	73.8	73.8	2.18	2.10	2.01	1.92	1.85	1.78	1.70	1.63	1.57	1.51	1.45	1.41	1.35	1.31	1.25	1.21		
40LH09	0.31	31	1016	96.9	96.9	2.86	2.74	2.62	2.52	2.42	2.33	2.23	2.14	2.05	1.98	1.91	1.83	1.78	1.72	1.64	1.59		
40LH10	0.31	31	1016	106.7	106.7	3.15	3.02	2.88	2.77	2.67	2.56	2.46	2.36	2.27	2.18	2.10	2.02	1.95	1.88	1.80	1.73		
40LH11	0.32	33	1016	116.5	116.5	3.41	3.26	3.13	3.02	2.88	2.77	2.67	2.56	2.46	2.37	2.29	2.20	2.11	2.04	1.97	1.89		
40LH12	0.36	37	1016	141.8	141.8	4.15	3.98	3.80	3.66	3.51	3.37	3.23	3.10	2.99	2.92	2.87	2.75	2.65	2.56	2.46	2.37		
40LH13	0.44	45	1016	167.2	167.2	4.87	4.67	4.48	4.30	4.13	3.95	3.79	3.64	3.51	3.37	3.25	3.12	3.02	2.90	2.80	2.69		
40LH14	0.51	52	1016	191.2	191.2	5.58	5.35	5.12	4.90	4.71	4.50	4.33	4.15	3.98	3.83	3.67	3.54	3.40	3.28	3.15	3.05		
40LH15	0.53	54	1016	213.9	213.9	6.23	5.95	5.69	5.44	5.21	4.99	4.78	4.59	4.40	4.23	4.07	3.91	3.76	3.61	3.48	3.35		
40LH16	0.61	63	1016	235.7	235.7	6.84	6.64	6.43	6.24	6.07	5.89	5.64	5.41	5.19	4.99	4.80	4.61	4.43	4.26	4.11	3.95		
				15850-17983	18288-21946	22250	22555	22860	23165	23470	23774	24079	24384	24689	24994	25298	25603	25908	26213	26518	26822		
44LH09	0.28	28	1118	88.9	88.9	2.30	2.21	2.13	2.05	1.98	1.91	1.85	1.78	1.72	1.66	1.60	1.54	1.50	1.44	1.40	1.35		
44LH10	0.31	31	1118	98.3	98.3	2.53	2.45	2.36	2.26	2.18	2.10	2.02	1.95	1.89	1.82	1.76	1.70	1.64	1.60	1.54	1.50		
44LH11	0.32	33	1118	106.3	106.3	2.74	2.64	2.55	2.45	2.36	2.29	2.20	2.13	2.04	1.98	1.91	1.85	1.79	1.73	1.67	1.61		
44LH12	0.36	37	1118	131.6	131.6	3.38	3.26	3.13	3.02	2.91	2.80	2.69	2.61	2.51	2.42	2.33	2.26	2.17	2.10	2.02	1.95		
44LH13	0.44	45	1118	156.1	156.1	4.01	3.86	3.70	3.59	3.44	3.32	3.21	3.09	2.99	2.88	2.78	2.69	2.61	2.52	2.43	2.34		
44LH14	0.45	46	1118	179.7	179.7	4.59	4.40	4.24	4.07	3.91	3.77	3.63	3.50	3.37	3.25	3.13	3.02	2.91	2.81	2.72	2.64		
44LH15	0.53	54	1118	209.0	209.0	5.34	5.13	4.94	4.75	4.58	4.42	4.26	4.10	3.95	3.80	3.67	3.54	3.41	3.31	3.19	3.07		
44LH16	0.61	63	1118	241.0	241.0	6.14	5.91	5.69	5.47	5.28	5.07	4.90	4.72	4.56	4.40	4.24	4.11	3.96	3.83	3.72	3.58		
44LH17	0.69	70	1118	258.8	258.8	6.56	6.39	6.21	6.05	5.91	5.69	5.48	5.29	5.12	4.93	4.77	4.61	4.45	4.30	4.15	4.02		
				17068-17983	18288-24384	24689	24994	25298	25603	25908	26213	26518	26822	27127	27432	27737	28042	28346	28651	28956	29261		
48LH10	0.31	31	1219	88.9	88.9	2.05	1.98	1.92	1.85	1.79	1.73	1.69	1.63	1.57	1.53	1.48	1.44	1.40	1.35	1.31	1.26		
48LH11	0.32	33	1219	96.5	96.5	2.21	2.14	2.07	1.99	1.94	1.88	1.82	1.75	1.70	1.64	1.60	1.54	1.50	1.45	1.41	1.37		
48LH12	0.36	37	1219	121.8	121.8	2.78	2.69	2.61	2.52	2.43	2.34	2.27	2.20	2.14	2.07	2.01	1.94	1.88	1.83	1.78	1.72		
48LH13	0.42	43	1219	145.9	145.9	3.32	3.22	3.10	3.00	2.90	2.81	2.72	2.62	2.55	2.48	2.39	2.32	2.24	2.18	2.11	2.05		
48LH14	0.47	48	1219	172.1	172.1	3.92	3.79	3.66	3.54	3.41	3.31	3.21	3.09	3.00	2.90	2.81	2.72	2.64	2.56	2.49	2.40		
48LH15	0.53	54	1219	197.9	197.9	4.49	4.34	4.18	4.05	3.92	3.79	3.67	3.56	3.44	3.32	3.22	3.12	3.03	2.93	2.84	2.75		
48LH16	0.61	63	1219	228.1	228.1	5.18	5.00	4.83	4.67	4.52	4.36	4.21	4.08	3.95	3.83	3.72	3.60	3.48	3.38	3.28	3.18		
48LH17	0.69	70	1219	256.2	256.2	5.79	5.58	5.41	5.22	5.04	4.88	4.72	4.58	4.43	4.29	4.15	4.02	3.91	3.79	3.67	3.57		

* The safe uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load) / (Clear span + 203). (The added 203 millimeters is required to obtain the proper length on which the Load Tables were developed).

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

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by the (the shortest clear span shown in the Load Table + 203 mm)² and divide by (the actual clear span + 203 mm)². The live load shall *not* exceed the safe uniform load.



METRIC LRFD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 345 MPa Maximum Yield Strength.
 Adopted by the Steel Joist Institute May 1, 2000
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joist at center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table **does not** apply. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

Where the joist span is in the **BLUE SHADED** area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

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

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

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

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

The approximate moment of inertia of the joist, in mm⁴ is: $I_j = 2.6953(W_{LL})(L^3)(10^{-5})$, where W_{LL} = **RED** figure in the Load Table; and L = (span + 203) in millimeters.

LRFD

METRIC LOAD TABLE FOR DEEP LONGSPAN STEEL JOISTS, DLH-SERIES																					
Based on a 345 MPa Maximum Yield Strength - Loads shown in KiloNewtons per Meter (kN/m)																					
Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (MM)																
					18593-26822	27127	27432	27737	28042	28346	28651	28956	29261	29566	29870	30175	30480	30785	31090	31394	31699
					52DLH10	0.36	37	1321	178.1	6.52	6.37	6.23	6.10	5.97	5.84	5.71	5.60	5.49	5.38	5.27	5.16
52DLH11	0.38	39	1321	195.4	7.15	7.00	6.85	6.69	6.54	6.41	6.28	6.15	6.01	5.91	5.77	5.66	5.56	5.45	5.34	5.25	
52DLH12	0.42	43	1321	218.1	7.99	7.81	7.63	7.48	7.31	7.15	7.00	6.87	6.72	6.58	6.45	6.32	6.21	6.08	5.97	5.86	
52DLH13	0.50	51	1321	264.8	9.69	9.47	9.28	9.06	8.88	8.69	8.51	8.34	8.16	8.01	7.83	7.68	7.53	7.39	7.24	7.11	
52DLH14	0.57	58	1321	302.9	11.09	10.87	10.63	10.42	10.20	10.00	9.78	9.58	9.41	9.21	9.04	8.86	8.69	8.53	8.36	8.20	
52DLH15	0.61	63	1321	340.2	12.45	12.19	11.93	11.66	11.42	11.18	10.94	10.72	10.50	10.28	10.09	9.87	9.69	9.50	9.32	9.15	
52DLH16	0.66	67	1321	366.9	13.44	13.15	12.87	12.58	12.32	12.06	11.82	11.55	11.33	11.09	10.87	10.66	10.46	10.24	10.04	9.87	
52DLH17	0.76	77	1321	422.3	15.45	15.12	14.79	14.46	14.16	13.87	13.57	13.30	13.02	12.76	12.52	12.25	12.01	11.79	11.55	11.33	
					5.76	5.56	5.38	5.21	5.04	4.88	4.72	4.59	4.43	4.31	4.17	4.07	3.94	3.83	3.72	3.60	
					20117-29261	29566	29870	30175	30480	30785	31090	31394	31699	32004	32309	32614	32918	33223	33528	33833	34138
56DLH11	0.38	39	1422	187.4	6.30	6.19	6.06	5.95	5.84	5.73	5.62	5.53	5.42	5.34	5.23	5.14	5.05	4.96	4.88	4.79	
56DLH12	0.44	45	1422	215.5	7.24	7.09	6.96	6.82	6.69	6.56	6.45	6.32	6.21	6.08	5.97	5.86	5.75	5.66	5.56	5.45	
56DLH13	0.50	51	1422	260.8	8.77	8.62	8.44	8.29	8.14	7.99	7.83	7.68	7.53	7.39	7.24	7.11	6.98	6.87	6.74	6.63	
56DLH14	0.57	58	1422	294.9	9.91	9.71	9.52	9.34	9.17	8.99	8.82	8.66	8.49	8.34	8.20	8.05	7.90	7.77	7.63	7.50	
56DLH15	0.61	63	1422	336.9	11.33	11.12	10.90	10.68	10.46	10.26	10.06	9.87	9.69	9.50	9.32	9.17	8.99	8.82	8.66	8.51	
56DLH16	0.67	68	1422	363.6	12.23	11.99	11.75	11.51	11.29	11.07	10.85	10.66	10.46	10.26	10.06	9.89	9.71	9.54	9.36	9.19	
56DLH17	0.74	76	1422	419.0	14.07	13.79	13.52	13.24	13.00	12.74	12.49	12.25	12.01	11.79	11.58	11.38	11.16	10.96	10.77	10.57	
					5.19	5.03	4.88	4.74	4.61	4.46	4.34	4.21	4.10	3.98	3.88	3.76	3.66	3.57	3.47	3.37	



LRFD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN		CLEAR SPAN (mm)																		
				Between		21336-30175	30480-31699	32004	32309	32614	32918	33223	33528	33833	34138	34442	34747	35052	35357	35662	35966	36271	36576	
				207.5	207.5	6.45	6.32	6.21	6.10	5.99	5.91	5.80	5.71	5.60	5.51	5.42	5.34	5.25	5.16	5.07	4.99			
60DLH12	0.42	43	1524	207.5	207.5	2.45	2.37	2.30	2.24	2.18	2.13	2.07	2.01	1.95	1.91	1.86	1.80	1.76	1.72	1.67	1.64			
60DLH13	0.51	52	1524	252.2	252.2	2.96	2.87	2.78	2.72	2.64	2.56	2.49	2.43	2.37	2.30	2.24	2.20	2.14	2.08	2.02	1.97			
60DLH14	0.58	60	1524	280.2	280.2	3.15	3.06	2.98	2.90	2.81	2.75	2.79	2.76	2.73	2.70	2.66	2.62	2.58	2.54	2.50	2.46			
60DLH15	0.63	64	1524	328.9	328.9	3.72	3.61	3.53	3.42	3.32	3.25	3.15	3.06	2.99	2.91	2.83	2.77	2.72	2.67	2.62	2.55			
60DLH16	0.67	68	1524	361.6	361.6	4.15	4.04	3.92	3.82	3.72	3.60	3.51	3.42	3.32	3.25	3.16	3.07	3.00	2.93	2.86	2.77			
60DLH17	0.76	77	1524	415.6	415.6	4.72	4.59	4.46	4.34	4.23	4.13	4.01	3.89	3.80	3.70	3.60	3.51	3.42	3.32	3.25	3.16			
60DLH18	0.86	88	1524	479.7	479.7	5.34	5.21	5.04	4.91	4.77	4.65	4.52	4.42	4.29	4.17	4.07	3.96	3.88	3.77	3.67	3.59			
				22860-30175	30480-34138	34442	34747	35052	35357	35662	35966	36271	36576	36881	37186	37490	37795	38100	38405	38710	39014			
64DLH12	0.45	46	1626	200.1	200.1	2.23	2.18	2.13	2.07	2.01	1.97	1.92	1.88	1.82	1.78	1.73	1.69	1.66	1.61	1.59	1.54			
64DLH13	0.50	51	1626	242.8	242.8	2.71	2.64	2.56	2.49	2.45	2.37	2.32	2.26	2.21	2.15	2.10	2.05	1.99	1.95	1.91	1.86			
64DLH14	0.58	60	1626	278.2	278.2	2.90	2.81	2.74	2.68	2.61	2.53	2.46	2.42	2.36	2.30	2.24	2.20	2.14	2.08	2.04	1.98			
64DLH15	0.63	64	1626	318.9	318.9	3.41	3.32	3.25	3.16	3.07	3.00	2.93	2.86	2.78	2.72	2.65	2.58	2.52	2.48	2.40	2.34			
64DLH16	0.67	68	1626	358.9	358.9	3.82	3.70	3.62	3.53	3.42	3.34	3.26	3.18	3.10	3.03	2.96	2.88	2.81	2.75	2.68	2.62			
64DLH17	0.76	77	1626	413.6	413.6	4.34	4.23	4.13	4.01	3.91	3.82	3.72	3.61	3.54	3.45	3.37	3.29	3.21	3.13	3.06	2.99			
64DLH18	0.86	88	1626	477.7	477.7	4.91	4.78	4.67	4.53	4.43	4.31	4.20	4.11	3.99	3.89	3.80	3.72	3.63	3.54	3.45	3.38			
				24384-30175	30480-36576	36881	37186	37490	37795	38100	38405	38710	39014	39319	39624	39929	40234	40538	40843	41148	41453			
68DLH13	0.54	55	1727	233.5	233.5	2.49	2.45	2.39	2.32	2.26	2.21	2.17	2.11	2.07	2.01	1.97	1.94	1.89	1.85	1.80	1.76			
68DLH14	0.58	60	1727	268.8	268.8	2.68	2.61	2.55	2.49	2.43	2.37	2.32	2.26	2.21	2.15	2.11	2.05	2.01	1.97	1.94	1.89			
68DLH15	0.64	65	1727	301.5	301.5	3.00	2.93	2.86	2.78	2.72	2.65	2.59	2.53	2.48	2.42	2.36	2.30	2.26	2.21	2.15	2.11			
68DLH16	0.72	73	1727	357.6	357.6	3.53	3.44	3.35	3.28	3.19	3.12	3.05	2.97	2.90	2.84	2.77	2.71	2.65	2.59	2.53	2.49			
68DLH17	0.80	82	1727	403.0	403.0	4.01	3.91	3.82	3.73	3.63	3.56	3.47	3.38	3.32	3.23	3.16	3.09	3.03	2.96	2.88	2.83			
68DLH18	0.89	91	1727	466.3	466.3	4.53	4.43	4.33	4.21	4.13	4.02	3.92	3.83	3.75	3.66	3.59	3.50	3.41	3.35	3.28	3.19			
68DLH19	0.98	100	1727	537.1	537.1	5.15	5.02	4.90	4.78	4.67	4.56	4.45	4.34	4.24	4.15	4.05	3.96	3.88	3.79	3.70	3.61			
				25603-30175	30480-39014	39319	39624	39929	40234	40538	40843	41148	41453	41758	42062	42367	42672	42977	43282	43586	43891			
72DLH14	0.60	61	1829	261.5	261.5	2.49	2.43	2.37	2.32	2.26	2.21	2.17	2.13	2.08	2.02	1.98	1.94	1.91	1.86	1.82	1.79			
72DLH15	0.64	65	1829	299.5	299.5	2.78	2.72	2.67	2.59	2.53	2.49	2.43	2.37	2.33	2.27	2.21	2.18	2.14	2.08	2.04	1.99			
72DLH16	0.73	74	1829	346.2	346.2	3.28	3.19	3.12	3.05	2.99	2.91	2.86	2.78	2.74	2.67	2.61	2.55	2.49	2.46	2.40	2.34			
72DLH17	0.82	83	1829	389.6	389.6	3.73	3.64	3.57	3.48	3.40	3.32	3.26	3.18	3.10	3.05	2.99	2.91	2.86	2.78	2.74	2.68			
72DLH18	0.86	88	1829	456.3	456.3	4.21	4.13	4.02	3.94	3.86	3.76	3.67	3.60	3.53	3.44	3.37	3.31	3.23	3.16	3.09	3.05			
72DLH19	1.02	104	1829	535.1	535.1	4.78	4.68	4.56	4.46	4.37	4.27	4.17	4.08	3.99	3.91	3.83	3.75	3.66	3.60	3.51	3.44			

* The safe factored uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load) / (Clear span + 203). (The added 203 millimeters is required to obtain the proper length on which the Load Tables were developed).

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

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 203 mm)² and divide by (the actual clear span + 203 mm)². The live load shall *not* exceed the safe uniform load.



METRIC ASD LOAD TABLE

DEEP LONGSPAN STEEL JOISTS, DLH-SERIES

Based on a 345 MPa Maximum Yield Strength.
 Adopted by the Steel Joist Institute May 2, 1994
 Revised to November 10, 2003 - Effective March 01, 2005

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

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

This load table applies to joists with either parallel chords or standard pitched top chords. When top chords are pitched, the carrying capacities are determined by the nominal depth of the joist at center of the span. Standard top chord pitch is 1:96. If pitch exceeds this standard, the load table **does not** apply. Sloped parallel-chord joists shall use span as defined by the length along the slope.

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

Where the joist span is in the **BLUE SHADED** area of the load table hoisting cables shall not be released until the two rows of bridging nearest the third points are completely installed.

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

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

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

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

The approximate moment of inertia of the joist, in mm⁴ is: $I_j = 2.6953(W_{LL})(L^3)(10^{-5})$, where W_{LL} = **RED** figure in the Load Table, and L = (span + 203) in millimeters.

ASD

METRIC LOAD TABLE FOR DEEP LONGSPAN STEEL JOISTS, DLH-SERIES																					
Based on a 345 MPa Maximum Yield Strength - Loads Shown in KiloNewtons per Meter (kN/m)																					
Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN Between	CLEAR SPAN (MM)																
					18593-26822	27127	27432	27737	28042	28346	28651	28956	29261	29566	29870	30175	30480	30785	31090	31394	31699
52DLH10	0.36	37	1321	118.8	4.34 2.49	4.24 2.40	4.15 2.32	4.07 2.24	3.98 2.18	3.89 2.11	3.80 2.04	3.73 1.98	3.66 1.92	3.59 1.86	3.51 1.80	3.44 1.75	3.37 1.69	3.31 1.66	3.25 1.60	3.18 1.56	
52DLH11	0.38	39	1321	130.3	4.77 2.72	4.67 3.96	4.56 3.80	4.46 3.69	4.36 3.59	4.27 3.45	4.18 3.34	4.10 3.26	4.01 3.15	3.94 3.06	3.85 2.95	3.77 2.88	3.70 2.80	3.63 2.71	3.56 2.62	3.50 2.56	
52DLH12	0.42	43	1321	145.5	5.32 2.97	5.21 2.87	5.09 2.78	4.99 2.69	4.87 2.61	4.77 2.52	4.67 2.45	4.58 2.37	4.48 2.30	4.39 2.23	4.30 2.17	4.21 2.10	4.14 2.04	4.05 1.97	3.98 1.92	3.91 1.86	
52DLH13	0.50	51	1321	176.6	6.46 3.60	6.31 3.48	6.18 3.37	6.04 3.26	5.92 3.15	5.79 3.05	5.67 2.96	5.56 2.87	5.44 2.78	5.34 2.69	5.22 2.62	5.12 2.53	5.02 2.48	4.93 2.39	4.83 2.32	4.74 2.26	
52DLH14	0.57	58	1321	201.9	7.39 4.02	7.25 3.88	7.09 3.76	6.94 3.63	6.80 3.53	6.66 3.41	6.52 3.31	6.39 3.21	6.27 3.10	6.14 3.02	6.02 2.93	5.91 2.83	5.79 2.75	5.69 2.68	5.57 2.59	5.47 2.52	
52DLH15	0.61	63	1321	226.9	8.30 4.53	8.12 4.39	7.95 4.24	7.77 4.11	7.61 3.96	7.45 3.85	7.29 3.73	7.15 3.60	7.00 3.50	6.85 3.40	6.72 3.29	6.58 3.19	6.46 3.10	6.33 3.02	6.21 2.93	6.10 2.84	
52DLH16	0.66	67	1321	244.7	8.96 5.04	8.77 4.88	8.58 4.72	8.39 4.58	8.21 4.43	8.04 4.29	7.88 4.15	7.70 4.02	7.55 3.89	7.39 3.79	7.25 3.67	7.10 3.57	6.97 3.45	6.82 3.35	6.69 3.26	6.58 3.16	
52DLH17	0.76	77	1321	281.6	10.30 5.76	10.08 5.56	9.86 5.38	9.64 5.21	9.44 5.04	9.25 4.88	9.04 4.72	8.87 4.59	8.68 4.43	8.50 4.31	8.34 4.17	8.17 4.07	8.01 3.94	7.86 3.83	7.70 3.72	7.55 3.60	
					20117-29261	29566	29870	30175	30480	30785	31090	31394	31699	32004	32309	32614	32918	33223	33528	33833	34138
56DLH11	0.38	39	1422	125.0	4.20 2.46	4.13 2.37	4.04 2.30	3.96 2.23	3.89 2.17	3.82 2.11	3.75 2.04	3.69 1.98	3.61 1.94	3.56 1.88	3.48 1.82	3.42 1.78	3.37 1.72	3.31 1.67	3.25 1.64	3.19 1.60	
56DLH12	0.44	45	1422	143.7	4.83 2.68	4.72 2.59	4.64 2.52	4.55 2.45	4.46 2.37	4.37 2.30	4.30 2.23	4.21 2.18	4.14 2.11	4.05 2.05	3.98 1.99	3.91 1.94	3.83 1.89	3.77 1.83	3.70 1.79	3.63 1.73	
56DLH13	0.50	51	1422	173.9	5.85 3.25	5.74 3.15	5.63 3.05	5.53 2.97	5.42 2.87	5.32 2.78	5.22 2.71	5.12 2.64	5.02 2.55	4.93 2.49	4.83 2.42	4.74 2.34	4.65 2.29	4.58 2.21	4.49 2.17	4.42 2.11	
56DLH14	0.57	58	1422	196.6	6.61 3.63	6.47 3.53	6.34 3.41	6.23 3.32	6.11 3.22	5.99 3.12	5.88 3.05	5.77 2.94	5.66 2.86	5.56 2.77	5.47 2.71	5.37 2.64	5.26 2.55	5.18 2.49	5.09 2.43	5.00 2.36	
56DLH15	0.61	63	1422	224.6	7.55 4.10	7.41 3.96	7.26 3.85	7.12 3.73	6.97 3.61	6.84 3.53	6.71 3.41	6.58 3.32	6.46 3.22	6.33 3.13	6.21 3.05	6.11 2.97	5.99 2.88	5.88 2.80	5.77 2.74	5.67 2.65	
56DLH16	0.67	68	1422	242.4	8.15 4.56	7.99 4.43	7.83 4.29	7.67 4.15	7.53 4.04	7.38 3.92	7.23 3.82	7.10 3.70	6.97 3.60	6.84 3.50	6.71 3.40	6.59 3.31	6.47 3.22	6.36 3.12	6.24 3.05	6.12 2.97	
56DLH17	0.74	76	1422	279.3	9.38 5.19	9.19 5.03	9.01 4.88	8.82 4.74	8.66 4.61	8.49 4.46	8.33 4.34	8.17 4.21	8.01 4.10	7.86 3.98	7.72 3.88	7.58 3.76	7.44 3.66	7.31 3.57	7.18 3.47	7.04 3.37	



ASD

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

Joist Designation	Approx Mass (kN/m) (Joists only)	Approx Mass (kg/m) (Joists only)	Depth in (mm)	SAFELOAD* in kN		CLEAR SPAN (mm)																	
				Between																			
				21336-30175	30480-31699	32004	32309	32614	32918	33223	33528	33833	34138	34442	34747	35052	35357	35662	35966	36271	36576		
60DLH12	0.42	43	1524	138.3	138.3	4.30	4.21	4.14	4.07	3.99	3.94	3.86	3.80	3.73	3.67	3.61	3.56	3.50	3.44	3.38	3.32		
60DLH13	0.51	52	1524	168.1	168.1	5.22	5.12	5.03	4.94	4.85	4.77	4.69	4.61	4.53	4.46	4.39	4.31	4.24	4.17	4.11	4.04		
60DLH14	0.58	60	1524	186.8	186.8	5.80	5.70	5.58	5.48	5.39	5.29	5.19	5.10	5.02	4.93	4.84	4.77	4.68	4.61	4.52	4.45		
60DLH15	0.63	64	1524	219.2	219.2	6.81	6.68	6.56	6.45	6.33	6.23	6.11	6.01	5.91	5.80	5.72	5.61	5.53	5.44	5.35	5.26		
60DLH16	0.67	68	1524	241.0	241.0	7.48	7.35	7.20	7.07	6.94	6.82	6.71	6.58	6.47	6.36	6.24	6.14	6.04	5.93	5.83	5.73		
60DLH17	0.76	77	1524	277.1	277.1	8.61	8.44	8.30	8.14	7.99	7.85	7.72	7.57	7.44	7.31	7.19	7.06	6.94	6.82	6.71	6.61		
60DLH18	0.86	88	1524	319.8	319.8	9.93	9.74	9.57	9.39	9.22	9.06	8.90	8.74	8.59	8.43	8.28	8.15	8.01	7.88	7.74	7.61		
						5.34	5.21	5.04	4.91	4.77	4.62	4.52	4.42	4.29	4.17	4.07	3.96	3.88	3.77	3.67	3.59		
				22860-30175	30480-34138	34442	34747	35052	35357	35662	35966	36271	36576	36881	37186	37490	37795	38100	38405	38710	39014		
64DLH12	0.45	46	1626	133.4	133.4	3.85	3.77	3.72	3.66	3.60	3.54	3.48	3.42	3.37	3.32	3.26	3.22	3.18	3.12	3.07	3.03		
64DLH13	0.50	51	1626	161.9	161.9	4.68	4.59	4.52	4.45	4.37	4.30	4.24	4.17	4.10	4.04	3.98	3.92	3.85	3.79	3.75	3.69		
64DLH14	0.58	60	1626	185.4	185.4	5.35	5.25	5.16	5.09	5.00	4.91	4.84	4.75	4.68	4.61	4.53	4.46	4.39	4.31	4.26	4.18		
64DLH15	0.63	64	1626	212.6	212.6	6.14	6.04	5.93	5.83	5.74	5.64	5.56	5.47	5.38	5.29	5.22	5.13	5.06	4.97	4.90	4.83		
64DLH16	0.67	68	1626	239.3	239.3	6.91	6.80	6.68	6.56	6.46	6.34	6.24	6.14	6.04	5.93	5.85	5.74	5.66	5.57	5.48	5.39		
64DLH17	0.76	77	1626	275.7	275.7	7.96	7.82	7.69	7.55	7.42	7.31	7.18	7.06	6.94	6.82	6.72	6.62	6.51	6.40	6.30	6.21		
64DLH18	0.86	88	1626	318.4	318.4	9.19	9.03	8.87	8.72	8.56	8.43	8.28	8.15	8.01	7.88	7.76	7.63	7.51	7.39	7.28	7.19		
						4.91	4.78	4.67	4.53	4.43	4.31	4.20	4.11	3.99	3.89	3.80	3.72	3.63	3.54	3.45	3.38		
				24384-30175	30480-36576	36881	37186	37490	37795	38100	38405	38710	39014	39319	39624	39929	40234	40538	40843	41148	41453		
68DLH13	0.54	55	1727	155.6	155.6	4.20	4.14	4.07	4.01	3.95	3.89	3.83	3.77	3.72	3.67	3.61	3.56	3.51	3.45	3.41	3.37		
68DLH14	0.58	60	1727	179.2	179.2	4.84	4.77	4.69	4.62	4.55	4.49	4.42	4.36	4.29	4.23	4.17	4.10	4.04	3.98	3.92	3.88		
68DLH15	0.64	65	1727	201.0	201.0	5.42	5.32	5.25	5.16	5.07	5.00	4.91	4.84	4.77	4.69	4.62	4.55	4.49	4.42	4.36	4.29		
68DLH16	0.72	73	1727	238.4	238.4	6.43	6.31	6.23	6.12	6.02	5.93	5.83	5.74	5.66	5.57	5.48	5.41	5.32	5.25	5.16	5.09		
68DLH17	0.80	82	1727	268.6	268.6	7.25	7.13	7.01	6.91	6.81	6.71	6.61	6.50	6.40	6.31	6.23	6.16	6.04	5.95	5.88	5.79		
68DLH18	0.89	91	1727	310.9	310.9	8.39	8.26	8.12	8.01	7.88	7.76	7.64	7.53	7.41	7.31	7.19	7.09	6.99	6.88	6.78	6.69		
68DLH19	0.98	100	1727	358.0	358.0	9.66	9.50	9.35	9.20	9.06	8.91	8.77	8.63	8.50	8.37	8.24	8.12	7.99	7.88	7.76	7.66		
						5.15	5.02	4.90	4.78	4.67	4.56	4.45	4.34	4.24	4.15	4.05	3.96	3.88	3.79	3.70	3.61		
				25603-30175	30480-39014	39319	39624	39929	40234	40538	40843	41148	41453	41758	42062	42367	42672	42977	43282	43586	43891		
72DLH14	0.60	61	1829	174.3	174.3	4.42	4.34	4.29	4.23	4.15	4.10	4.04	3.99	3.94	3.88	3.82	3.77	3.72	3.67	3.61	3.57		
72DLH15	0.64	65	1829	199.7	199.7	5.06	4.99	4.90	4.83	4.75	4.69	4.62	4.55	4.49	4.42	4.36	4.30	4.24	4.17	4.11	4.07		
72DLH16	0.73	74	1829	230.8	230.8	5.85	5.76	5.69	5.60	5.51	5.44	5.37	5.29	5.22	5.15	5.07	5.00	4.93	4.87	4.80	4.74		
72DLH17	0.82	83	1829	259.7	259.7	6.58	6.49	6.39	6.30	6.21	6.12	6.04	5.95	5.86	5.79	5.70	5.63	5.56	5.48	5.41	5.34		
72DLH18	0.86	88	1829	304.2	304.2	7.70	7.58	7.47	7.36	7.25	7.15	7.04	6.99	6.85	6.75	6.66	6.56	6.47	6.39	6.30	6.21		
72DLH19	1.02	104	1829	356.7	356.7	9.03	8.88	8.75	8.62	8.49	8.36	8.24	8.12	8.01	7.89	7.77	7.67	7.55	7.45	7.35	7.25		
						4.78	4.68	4.56	4.46	4.37	4.27	4.17	4.08	3.99	3.91	3.83	3.75	3.66	3.60	3.51	3.44		

* The safe uniform load for the clear spans shown in the Safe Load Column is equal to (Safe Load) / (Clear span + 203). (The added 203 millimeters is required to obtain the proper length on which the Load Tables were developed).

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

To solve for *live* loads for clear spans shown in the Safe Load Column (or lesser clear spans), multiply the live load of the shortest clear span shown in the Load Table by (the shortest clear span shown in the Load Table + 203 mm)² and divide by (the actual clear span + 203 mm)². The live load shall *not* exceed the safe uniform load.



STANDARD SPECIFICATIONS FOR JOIST GIRDERS

Adopted by the Steel Joist Institute November 4, 1985
Revised to November 10, 2003 - Effective March 01, 2005

SECTION 1000. SCOPE

This specification covers the design, manufacture and use of Joist Girders. Load and Resistance Factor Design (LRFD) and Allowable Strength Design (ASD) are included in this specification.

SECTION 1001. DEFINITION

The term "Joist Girders", as used herein, refers to open web, load-carrying members utilizing hot-rolled or cold-formed steel, including cold-formed steel whose yield strength* has been attained by cold working.

The design of Joist Girder chord and web sections shall be based on a yield strength of at least 36 ksi (250 MPa), but not greater than 50 ksi (345 MPa). Steel used for Joist Girder chord or web sections shall have a minimum yield strength determined in accordance with one of the procedures specified in Section 1002.2, which is equal to the yield strength assumed in the design. Joist Girders shall be designed in accordance with this specification to support panel point loadings.

* The term "Yield Strength" as used herein shall designate the yield level of a material as determined by the applicable method outlined in paragraph 13.1, "Yield Point" and in paragraph 13.2, "Yield Strength", of ASTM Standard A370, "Standard Test Methods and Definitions for Mechanical Testing of Steel Products", or as specified in Section 1002.2 of this Specification.

Standard Specifications and Weight Tables for Joist Girders

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SECTION 1002. MATERIALS

1002.1 STEEL

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

- Carbon Structural Steel, ASTM A36/A36M.
- High-Strength, Low-Alloy Structural Steel, ASTM A242/A242M.
- High-Strength Carbon-Manganese Steel of Structural Quality ASTM A529/A529M, Grade 50.
- High-Strength Low-Alloy Columbium-Vanadium Structural Steel, ASTM A572/A572M Grade 42 and 50.
- High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (100 mm) Thick, ASTM A588/A588M.
- Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Corrosion Resistance, ASTM A606.
- Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, ASTM A1008/A1008M.
- Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, 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

The yield strength used as a basis for the design stresses prescribed in Section 1003 shall be at least 36 ksi (250 MPa), but shall not be greater than 50 ksi (345 MPa). Evidence that the steel furnished meets or exceeds the design yield strength shall, if requested, be provided in the form of an affidavit or by witnessed or certified test reports.

For material used without consideration of increase in yield strength resulting from cold forming, the specimens shall be taken from as-rolled material. In the case of material 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, A529/A529M, A572/A572M, A588/A588M, whichever specification is applicable on the basis of design yield strength.

The number of tests shall be as prescribed in ASTM A6/A6M for plates, shapes, and bars; and ASTM A606, 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 Specifications for the Design of Cold-Formed Steel Structural Members and shall indicate compliance with these provisions and with the following additional requirements:

- a) The yield strength 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 6 percent greater than the yield strength of the section.
- c) Where compression tests are used for acceptance and control purposes, the specimen shall withstand a gross shortening of 2 percent of its original length without cracking. The length of the specimen shall not be greater than 20 times its 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 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 1002.3(a).

Other welding methods, providing equivalent strength as demonstrated by tests, may 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 this specification as simply supported primary members. All loads shall be applied through steel joists, and will be equal in magnitude and evenly spaced 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 that 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:

Designs shall be made according to the provisions in this Specification for either Load and Resistance Factor Design (LRFD) or for Allowable Strength Design (ASD).



Load Combinations:

LRFD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed for the factored loads based on the factors and load combinations as follows:

- 1.4D
- 1.2D + 1.6 (L, or L_r, or S, or R)

ASD:

When load combinations are not specified to the joist manufacturer, the required stress shall be computed based on the load combinations as follows:

- D
- D + (L, or L_r, or S, or R)

Where:

- D = dead load due to the weight of the structural elements and the permanent features of the structure
- L = live load due to occupancy and movable equipment
- L_r = roof live load
- S = snow load
- R = load due to initial rainwater or ice exclusive of the ponding contribution

When special loads are specified and the specifying professional does not provide the load combinations, the provisions of ASCE 7, "Minimum Design Loads for Buildings and Other Structures" shall be used for LRFD and ASD load combinations.

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:

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

For Chords: $F_y = 50$ ksi (345 MPa)

For Webs: $F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

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)

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

$$F_{cr} = Q \left[0.658 \left(\frac{QF_y}{F_e} \right) \right] F_y \quad (1003.2-3)$$

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

$$F_{cr} = 0.877F_e \quad (1003.2-4)$$

Where F_e = Elastic bucking stress determined in accordance with Equation 1003.2-5.

$$F_e = \frac{\pi^2 E}{\left(\frac{\ell}{r} \right)^2} \quad (1003.2-5)$$

For hot-rolled sections, "Q" is the full reduction factor for slender compression elements.

Design Stress = $0.9F_{cr}$ (LRFD) (1003.2-6)

Allowable Stress = $0.6F_{cr}$ (ASD) (1003.2-7)

In the above equations, ℓ is taken as the distance, in inches (millimeters), between panel points for the chord members and the appropriate length for 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).

Use $1.2 \ell/r_x$ for a crimped, first primary compression web member when a moment-resistant weld group is not used for this member; where r_x = member radius of gyration in the plane of the joist.

For cold-formed sections, the method of calculating the nominal column 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:
 $F_y = 50$ ksi (345 MPa)

Design Stress = $0.90F_y$ (LRFD) (1003.2-8)

Allowable Stress = $0.60F_y$ (ASD) (1003.2-9)

For web members of solid round cross section:

$F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

Design Stress = $1.45F_y$ (LRFD) (1003.2-10)

Allowable Stress = $0.95F_y$ (ASD) (1003.2-11)

For bearing plates:

$F_y = 50$ ksi (345 MPa), or $F_y = 36$ ksi (250 MPa)

Design Stress = $1.35F_y$ (LRFD) (1003.2-12)

Allowable Stress = $0.90F_y$ (ASD) (1003.2-13)

(d) Weld Strength:

Shear at throat of fillet welds:

Nominal Shear Stress = $F_{nw} = 0.6F_{exx}$ (1003.2-14)

LRFD: $\phi_w = 0.75$

Design Shear Strength =
 $\phi R_n = \phi_w F_{nw} A = 0.45F_{exx} A$ (1003.2-15)

ASD: $\Omega_w = 2.0$

Allowable Shear Strength = (1003.2-16)

$R_n / \Omega_w = F_{nw} A / \Omega_w = 0.3F_{exx} A$

A = effective throat area

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)

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

1003.3 MAXIMUM SLENDERNESS RATIOS

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

Top chord end 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 $\text{Span}/575$.

The top chord shall be considered as stayed laterally by the steel joists provided positive attachment is made.

(b) Web

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

Interior vertical web members used in modified Warren type web systems that do not support the direct loads through steel joists shall be designed to resist 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) 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.

(d) Eccentricity

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

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

(e) Extended Ends

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



1003.5 CONNECTIONS

(a) Methods

Joint connections and splices shall be made by attaching the members to one another by arc or resistance welding or other 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 layers of weld metal and between weld metal and base metal for the required design length of the weld; such fusion shall be verified by visual inspection.
- d) Unfilled weld craters shall not be included in the design length of the weld.
- e) Undercut shall not exceed 1/16 inch (2 millimeters) for welds oriented parallel to the principal stress.
- f) The sum of surface (piping) porosity diameters shall not exceed 1/16 inch (2 millimeters) in any 1 inch (25 millimeters) of design weld length.
- g) Weld spatter that does not interfere with paint coverage is acceptable.

(2) Welding Program

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

(3) Weld Inspection by Outside Agencies (See Section 1004.10 of 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 Girders 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 may occur at any point in chord or web members. Splices shall be designed for the member force but not less than 50 percent of the member strength. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57 ksi (393 MPa) times the full design area of the chord or web. The term “member” shall be defined as all component parts comprising the chord or web, at the point of splice.

(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.

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" (27342 mm)	3 1/2" (89 mm)
100'-0" (30480 mm)	4 1/4" (108 mm)
110'-0" (33528 mm)	5" (127 mm)
120'-0" (36576 mm)	6" (152 mm)

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.

(b) In-Plant Inspections

Each manufacturer shall verify their ability to manufacture Joist Girders through periodic In-Plant Inspections. Inspections shall be performed by an independent agency approved by the Steel Joist Institute. The frequency, manner of inspection, and manner of reporting shall be determined by the Steel Joist Institute. The In-Plant Inspections are not a guarantee of the quality of any specific Joist Girder; 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 if necessary to limit the unit stresses to those listed in Section 1003.2. The magnitude and location of all loads and forces, other than equal concentrated gravity 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 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 Joist-Girder Frames"

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 top chords or a top chord slope of 1/8 inch per foot (1:96). The nominal depth of sloping chord Joist Girders shall be the depth at mid-span.

1004.4 END SUPPORTS

(a) Masonry and Concrete

Joist Girders supported by masonry or concrete are to bear on steel bearing plates and shall be designed as steel bearing. Due consideration of the end reactions and all other vertical and lateral forces shall be taken by the specifying professional in the design of the steel bearing plate and the masonry or concrete. The ends of 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 must 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 must 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 END ANCHORAGE

(a) Masonry and Concrete

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

1004.9 UPLIFT

Where uplift forces due to wind are a design requirement, these forces must be indicated on the contract drawings in terms of NET uplift in pounds per square foot (Pascals). The contract drawings must indicate if the net uplift is based on ASD or LRFD. When these forces are specified, they must be considered in the design of Joist Girders and/or bracing. If the ends of the bottom chord are not strutted, bracing must be provided near the first bottom chord panel points whenever uplift due to wind forces is a design consideration.*

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

1004.10 INSPECTION

Joist Girders shall be inspected by the manufacturer before shipment to 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 should be paid to the erection of Joist Girders.

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

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 must 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 must 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 may 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 must 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 Appendix E for OSHA definition of "qualified person".

**SECTION 1006.
HOW TO SPECIFY
JOIST GIRDERS**

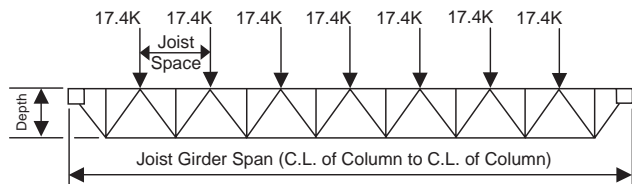
For a given Joist Girder span, the specifying professional first determines the number of joist spaces. Then the panel point loads are calculated and a depth is selected. The following tables give the Joist Girder weight in pounds per linear foot (kiloNewtons per meter) for various depths and loads.

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 must be considered by both the specifying professional and the Joist Girder Manufacturer. The sizes and locations of such holes shall be clearly indicated on the structural drawings.



JOIST GIRDERS

Example using **Load and Resistance Factor Design (LRFD)** and U. S. Customary units:



STANDARD DESIGNATION

44G	8N	17.4F
Depth in Inches	Number of Joist Spaces	Factored Load in Kips at Each Panel Point

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 Girder manufacturer if exact layout must be known.

- Determine number of actual joist spaces (N).
In this example, N = 8
- Compute total factored load:
Total load = 5.25 x 66 psf = 346.5 plf
- Joist Girder Section: (Interior)
 - Compute the factored concentrated load at top chord panel points
 $P = 346.5 \times 50 = 17,325 \text{ lbs} = 17.4 \text{ kips}$
(use 18K for depth selection).
 - 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.
 - The Joist Girder will 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.
 - The LRFD Joist Girder Design Guide Weight Table shows the weight for a 44G8N17.4K 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

$$= 0.018 \text{ NPLd}$$

$$= 0.018 \times 8 \times 17.4 \times 42 \times 44 = 4630 \text{ in.}^4$$

Allowable deflection for plastered ceilings

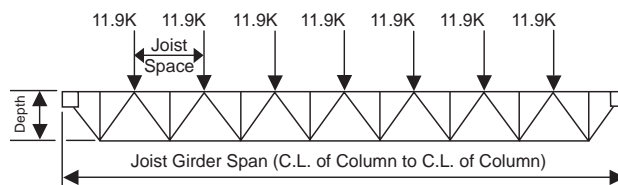
$$= L/360 = \frac{42(12)}{360} = 1.40 \text{ in.}$$

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

$$= 0.90 \text{ in.} < 1.40 \text{ in.}, \text{ Okay}$$

Live load deflection rarely governs because of the relatively small span-depth ratios of Joist Girders.

Example using **Allowable Strength Design (ASD)** and U. S. Customary units:



STANDARD DESIGNATION

44G	8N	11.9K
Depth in Inches	Number of Joist Spaces	Load in Kips at Each Panel Point

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

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

- Determine number of actual joist spaces (N).
In this example, N = 8
- Compute total load:
Total load = 5.25 x 45 psf = 236.25 plf
- Joist Girder Section: (Interior)
 - Compute the concentrated load at top chord panel points
 $P = 236.25 \times 50 = 11,813 \text{ lbs} = 11.9 \text{ kips}$
(use 12K for depth selection).
 - 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.

- c) The Joist Girder will then be designated 44G8N11.9K.
- 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.
- 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

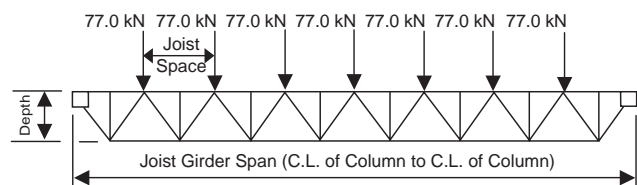
Allowable deflection for plastered ceilings
 = L/360 = $\frac{42(12)}{360}$ = 1.40 in.

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

= 0.88 in. < 1.40 in., Okay

Live load deflection rarely governs because of the relatively small span-depth ratios of Joist Girders.

Joist Girder design example using Load and Resistance Factor Design (LRFD) and Metric Units:



STANDARD DESIGNATION

1118G	8N	77.0F
Depth in mm	Number of Joist Spaces	Factored Load in kN at Each Panel Point

Given 12.80 m x 15.24 m bay. Joists spaced on 1.600 m centers.

Live Load = 1.436 kN/m² x 1.6

Dead Load = 0.718 kN/m² x 1.2
 (includes approximate Joist Girder weight)

Total Load = 3.160 kN/m² (Factored)

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

- 1. Determine number of actual joist spaces (N).

In this example N = 8

- 2. Compute total load:

Total Load = 1.600 m x 3.160 kN/m² = 5.055 kN/m

3. Joist Girder Selection: (Interior)

- a) Compute the factored concentrated load at top chord panel points

P = 5.055 kN/m x 15.24 m = 77.0 kN (use 80.0 kN).

- b) Select Joist Girder depth:

Refer to the LRFD Metric Joist Girder Design Guide Weight Table for the 12800 mm span, 8 panel, 80.0 kN Joist Girder. The rule of about one millimeter of depth for each 12 millimeters of span is a good compromise of limited depth and economy. Therefore, select a depth of 1118 mm.

- c) The Joist Girder will then be designated 1118G8N77.0F. Note that the letter "F" is included at the end of the designation to clearly indicate that this is a factored load.

- d) The LRFD Metric Joist Girder Design Guide Weight Table shows the weight for a 1118G8N80F as 73 kg/m. To convert the mass to a force multiply 73 kg/m x 0.0098 = 0.715 kN/m. The designer should verify that the weight is not greater than the weight assumed in the Dead Load above.

- e) Check live load deflection:

Live load = 1.436 kN/m² x 15.24 m = 21.88 kN/m

Approximate Joist Girder moment of inertia:

I_{JG} = 0.2197NPLd where d = effective depth
 = 0.2197 x 8 x 77.0 x 12800 x 1118
 = 1937 x 10⁶ mm⁴

Allowable deflection for plastered ceilings

= L/360 = $\frac{12800}{360}$ = 35.56 mm

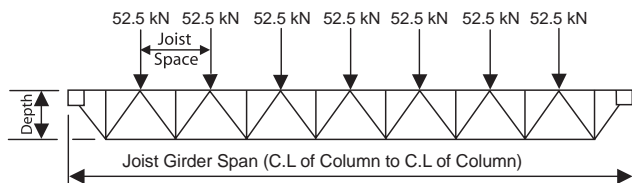
Deflection = 1.15 $\left[\frac{5wL^4}{384EI} \right]$ = $\frac{1.15(5)(21.88)(12800)^4}{384(200000)(1937 \times 10^6)}$

= 27.7 mm < 35.56 mm, Okay



JOIST GIRDERS

Joist Girder design example using Allowable Strength Design (ASD) and Metric Units:



STANDARD DESIGNATION

1118G	8N	52.5 kN
Depth in mm	Number of Joist Spaces	kN Load on Each Panel Point

Given 12.80 m x 15.24 m bay. Joists spaced on 1.600 m centers.

Live Load = 1.436 kN/m²

Dead Load 0.718 kN/m²

(includes approximate Joist Girder weight)

Total Load 2.155 kN/m²

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

1. Determine number of actual joist spaces (N).

In this example N = 8

2. Compute total load:

Total Load = 1.600 m x 2.155 kN/m² = 3.44 kN/m

3. Joist Girder Selection: (Interior)

a) Compute the concentrated load at top chord panel points

P = 3.44 kN/m x 15.24 m = 52.5 kN (use 54.0 kN).

b) Select Joist Girder depth:

Refer to the ASD Metric Joist Girder Design Guide Weight Table for the 12800 mm span, 8 panel, 54.0 kN Joist Girder. The rule of about one millimeter of depth for each 12 millimeters of span is a good compromise of limited depth and economy. Therefore, select a depth of 1118 mm from the table.

c) The Joist Girder will then be designated 1118G8N52.5 kN.

d) The ASD Metric Joist Girder Design Guide Weight Table shows the weight for a 1118G8N52.5K as 73 kg/m. To convert the mass to a force multiply 73 kg/m by 0.0098 = 0.715 kN/m. The designer should verify that the weight is not greater than the weight assumed in the dead load above.

e) Check live load deflection:

Live load = 1.436 kN/m² x 15.24 m = 21.88 kN/m

Approximate Joist Girder moment of inertia:

$$\begin{aligned} I_{JG} &= 0.3296NPLd \text{ where } d = \text{effective depth} \\ &= 0.3296 \times 8 \times 52.5 \times 12800 \times 1118 \\ &= 1981 \times 10^6 \text{ mm}^4 \end{aligned}$$

Allowable deflection for plastered ceilings = L/360 = 12800/360 = 35.56 mm

$$\begin{aligned} \text{Deflection} &= 1.15 \left[\frac{5wL^4}{384EI} \right] = \frac{1.15(5)(21.88)(12800)^4}{384(200000)(1981 \times 10^6)} \\ &= 22.20 \text{ mm} < 35.56 \text{ mm, Okay} \end{aligned}$$



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	144	147	
	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	149	153				
	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	30	33	41	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
	4N@ 6.25	36	16	16	16	17	17	20	24	24	26	32	36	40	45	48	53	54	68	79
		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
	5N@ 5.00	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
		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	
	6N@ 4.17	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	
20		16	24	29	38	45	55	58	69	78	94	104	116	134						
8N@ 3.12	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	
10N@ 2.50	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	166	167	
	36	18	22	29	34	40	46	52	61	63	76	87	101	114	121	136	148			
	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
	4N@ 7.00	32	15	18	19	19	21	23	24	27	28	34	39	45	48	53	58	66	80	81
		24	15	16	20	24	27	32	38	40	48	55	62	71	82	95	104	106	120	135
	5N@ 5.60	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	80	93	102	107
	6N@ 4.67	24	15	18	24	29	34	39	46	52	58	66	78	96	102	111	126	136	130	142
28		15	17	21	26	30	35	39	46	50	61	68	77	90	99	107	114	114	119	
30	3N@ 10.00	32	16	19	19	21	23	26	28	31	35	39	46	51	57	64	65	73	75	
		24	16	18	23	29	33	37	42	49	53	64	76	85	101	104	126	127	149	150
	4N@ 7.50	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
	5N@ 6.00	36	16	16	17	22	24	27	31	34	36	46	52	59	64	74	78	88	91	105
		24	15	19	25	30	37	43	51	55	58	73	86	96	109	125	134	128	138	133
	6N@ 5.00	28	15	17	23	27	32	37	44	47	53	61	75	88	97	102	112	107	117	118
32		16	17	21	24	29	35	39	43	48	56	63	77	90	100	101	107	117	118	
32	3N@ 10.67	36	16	18	23	26	31	37	41	46	52	61	70	84	101	102	111	123	126	148
		24	21	32	40	51	63	73	83	99	111	124	146	149	154	161	169	154	161	169
	4N@ 8.00	28	20	30	37	44	53	61	73	80	86	114	126	149	134	154	169	154	161	169
		32	18	26	34	42	49	55	63	71	79	104	117	130	154	161	169	154	161	169
	5N@ 6.40	36	17	23	32	39	46	54	61	69	76	89	108	121	134	154	169	154	161	169
		24	25	38	51	66	78	99	111	123	134	138	151	151	151	151	151	151	151	151
	6N@ 5.33	28	24	36	47	57	69	80	94	113	116	138	142	151	151	151	151	151	151	151
32		22	31	39	52	58	74	82	95	105	129	142	151	151	151	151	151	151	151	
8N@ 4.00	36	22	30	39	48	54	68	79	84	91	119	132	151	151	151	151	151	151	151	
	24	18	19	21	26	27	34	38	40	42	54	61	70	75	84	88	102	102	113	
32	4N@ 8.00	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
	5N@ 6.40	36	15	17	19	20	23	25	26	28	30	38	40	45	51	53	58	67	81	77
		24	18	19	23	26	32	37	40	47	55	61	72	86	94	103	114	133	134	135
	6N@ 5.33	28	15	18	20	24	28	32	37	40	45	55	62	70	78	94	96	105	121	107
		32	15	15	20	22	25	29	32	36	39	49	56	64	71	83	82	97	102	107
	8N@ 4.00	36	15	16	17	21	24	26	30	34	36	43	50	58	65	70	85	90	99	102
24		15	20	27	33	39	44	51	57	65	77	93	100	123	133	126	137	130	142	
32	3N@ 10.67	28	15	17	22	26	32	35	41	46	53	61	68	77	90	99	105	114	130	142
		32	15	17	22	26	32	35	41	46	53	61	68	77	90	99	105	114	130	142
	4N@ 8.00	36	16	17	21	24	27	33	37	42	47	56	62	70	79	93	102	106	117	120
		24	17	24	31	39	47	55	61	69	76	94	103	133	134	134	137	139	142	146
	5N@ 6.40	28	16	21	27	35	40	48	55	60	67	79	96	105	117	137	139	142	144	146
		32	16	20	25	30	36	42	50	54	58	71	82	99	103	118	139	142	144	146
	6N@ 5.33	36	16	19	24	28	34	38	44	49	55	66	73	84	101	102	111	123	144	146
24		22	32	40	54	61	72	86	93	103	133	137	137	141	147	147	147	147	147	
8N@ 4.00	28	19	27	35	45	55	63	70	80	95	105	134	137	141	147	147	147	147	147	
	32	18	25	32	39	50	58	65	71	81	99	109	120	141	147	147	147	147	147	
8N@ 4.00	36	18	24	31	38	43	53	59	67	71	86	103	113	127	147	147	147	147	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
	5N@ 7.00	40	15	16	17	21	26	27	30	37	38	46	52	61	64	75	90	95	96	108
		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	
	6N@ 5.83	36	16	17	23	27	29	35	40	46	48	62	68	77	90	100	104	107	115	133
		40	16	17	22	25	27	33	37	43	47	56	63	70	80	95	102	107	115	125
		28	17	24	30	37	44	52	58	65	73	93	103	115	134					
	7N@ 5.00	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
8N@ 4.38	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				
38	4N@ 9.50	40	17	22	27	32	39	44	50	55	63	73	86	102	107	118	133	147		
		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						
	5N@ 7.60	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			
		32	15	20	25	31	36	42	46	52	59	70	86	96	101	111	126	137		
	6N@ 6.33	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
	8N@ 4.75	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	
40	4N@ 10.00	44	17	20	24	29	33	38	44	49	55	64	77	84	102	104	115	123	145	147
		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					
	5N@ 8.00	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			
		32	15	21	26	32	38	43	52	55	62	73	86	101	109	124	134			
	6N@ 6.67	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
	7N@ 5.71	48	17	20	23	26	31	34	40	41	50	57	68	75	85	95	100	119	120	132
		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			
8N@ 5.00	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	
10N@ 4.00	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		
	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	170				
	48	20	25	32	42	47	55	62	69	80	90	104	122	136	155					
	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	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	145	147
	7N@ 6.00	32	20	28	36	45	52	65	72	85	93	102	125	138						
		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	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	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	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	139
		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	34	40	42	44	50	52	61	65	69	77	84	85	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	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	155
		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	81	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	153	
		60	26	32	38	42	48	51	58	63	70	75	80	92	97	116	118	130	142		144
		66	27	32	35	41	44	51	53	60	64	69	72	82	98	99	118	120	132		134
		72	26	32	34	41	43	46	52	58	61	66	71	79	87	100	101	121	122		134
	10N@ 7.50	78	27	29	34	37	43	45	54	54	61	64	69	77	81	89	103	105	123	125	
		60	32	39	42	50	59	67	69	76	83	89	98	117	129	131	154	138	152	156	
		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				
	78	31	35	39	46	48	56	63	66	74	75	82	91	105	114	127	139				143
	12N@ 6.25	84	31	36	39	45	49	55	59	65	69	77	78	94	95	110	128	131	143	156	
		60	38	43	51	59	68	76	84	90	98	106	118	131	144	148	154	163	171		
		66	35	42	50	55	62	70	79	87	90	100	110	122	135						
		72	36	41	46	54	63	65	73	81	90	91	104	124	126						141
	78	35	42	47	54	61	68	76	78	86	90	98	105	126	139						152
	14N@ 5.36	84	34	39	46	52	56	64	70	78	79	90	92	106	126	139	141	164	171		
		66	41	48	56	63	72	80	89	102	111	122	125	137	148	151	171	176			
		72	41	46	52	61	70	75	84	95	101	110	121	134							
		78	37	44	53	61	68	76	80	89	98	103	107	125							139
	84	38	44	52	57	64	71	79	86	92	100	108	127	130							153
	15N@ 5.00	90	37	42	50	58	66	73	77	87	94	94	110	119	142	144	173	176			
66		41	52	60	69	77	85	98	106	118	120	132	146	160	169	174	177				
72		42	52	59	67	74	84	87	99	110	121	123	146								
78		41	47	54	65	73	77	88	91	104	112	124	139							152	
84	39	46	55	63	67	76	86	92	93	109	116	131	143								
80	8N@ 10.00	90	38	46	52	60	69	74	81	90	95	103	118	133	145	146	177				
		60	28	31	37	42	45	51	56	63	64	72	75	88	97	103	112	127	137	131	
		66	30	31	35	38	45	47	52	57	62	65	70	77	90	103	105	113	129		129
		72	29	32	33	38	41	46	48	53	59	63	68	76	87	92	106	108	116		126
	10N@ 8.00	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	
		60	31	35	41	47	53	60	68	75	76	88	97	103	112	129	139	142	131	136	
	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	130				
	78	32	36	42	46	51	56	63	68	71	76	86	90	100	112	122	130				
	12N@ 6.67	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		
		66	36	44	50	57	65	70	73	86	90	103	103	115	130	133	136	140	149	156	
		72	34	42	47	54	59	67	72	77	86	92	101	107	125						
	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
	14N@ 5.71	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		
		66	39	47	57	64	73	77	89	98	103	109	113	129	143	149	146	152			
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							
16N@ 5.00	90	36	41	48	53	61	68	74	82	86	95	100	115	121	136	146	152				
	96	37	40	47	53	61	67	74	79	84	88	100	108	118	127	145					
	66	42	53	62	70	78	90	101	105	113	129	130	145	149	155	164					
	72	41	50	57	69	76	81	93	102	109	116	118									
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			
	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	150									
120	77	84	90	96	102	107	121	124	133	148											
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 Strength

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	30	33	41	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
	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
	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
	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	
8N@ 3.12	20	16	18	24	25	30	36	39	43	49	58	67	74	84	98	108	116	117	129	
	24	21	29	39	48	58	70	78	94	99	115	134								
	28	19	26	33	41	50	57	65	75	81	99	118	138							
	32	18	24	28	34	44	53	60	67	75	86	103	116	127	147					
10N@ 2.50	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	44	53	60	67	75	86	103	116	127	147					
	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
	4N@ 7.00	32	15	18	19	19	21	23	24	27	28	34	39	45	48	53	58	66	80	81
		24	15	16	20	24	27	32	38	40	48	55	62	71	82	95	104	106	120	135
	5N@ 5.60	32	15	17	20	24	27	32	37	41	44	56	62	70	80	93	102	107	114	129
		24	15	17	21	26	30	35	39	46	50	61	68	77	90	99	107	114	130	142
	6N@ 4.67	32	16	17	20	24	27	32	37	41	44	56	62	70	80	93	102	107	112	129
24		16	21	28	35	41	49	55	63	70	79	96	106	134	137	138	142	144	146	
30	3N@ 10.00	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
	4N@ 7.50	36	16	19	19	21	23	26	28	31	35	39	46	52	57	64	65	73	75	84
		24	16	18	23	29	33	37	42	49	53	64	76	85	101	104	126	127	149	150
	5N@ 6.00	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
	6N@ 5.00	24	15	19	25	30	37	43	51	55	58	73	86	96	109	125	134	138	138	138
28		15	17	23	27	32	37	44	47	53	61	75	88	97	102	112	128	138	138	
8N@ 3.75	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	
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
	4N@ 8.00	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
	5N@ 6.40	24	18	19	23	26	32	37	40	47	55	61	72	86	94	103	114	133	134	135
		28	15	18	20	24	28	32	37	40	45	55	62	70	78	94	96	105	121	135
	6N@ 5.33	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	
8N@ 4.00	24	15	20	27	33	39	44	51	57	65	77	93	100	123	133	133	137	142	142	
	28	15	18	24	28	34	39	46	52	58	66	74	96	101	110	126	137	137	137	
32	3N@ 10.67	32	15	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	135
		28	15	18	20	24	28	32	37	40	45	55	62	70	78	94	96	105	121	135
	5N@ 6.40	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
	6N@ 5.33	24	17	24	31	39	47	55	61	69	76	94	103	133	134	134	134	137	142	142
28		16	21	27	35	40	48	55	60	67	79	96	105	117	137	137	139	142	142	
8N@ 4.00	32	16	20	25	30	36	42	50	54	58	71	82	99	103	118	139	142	144	146	
	36	16	19	24	28	34	38	44	49	55	66	73	84	101	102	111	123	144	146	



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	56	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
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	
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	
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				
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					
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
	5N@ 8.40	48	16	19	21	24	26	29	32	36	39	47	54	62	65	75	90	95	97	108
		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	
	6N@ 7.00	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
		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				
	7N@ 6.00	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
		32	20	28	36	45	52	65	72	85	93	102	125	127	138					
	8N@ 5.25	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		
	10N@ 4.20	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				
45	4N@ 11.25	48	21	26	32	41	48	56	63	67	74	93	103	112	128	148				
		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								
	5N@ 9.00	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						
		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
	6N@ 7.50	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
		36	16	22	27	33	38	44	52	55	63	74	86	101	109	125	136			
	7N@ 6.43	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
	8N@ 5.62	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	
	9N@ 5.00	52	20	21	25	29	34	39	44	50	56	64	77	85	102	102	116	124	136	148
		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				
10N@ 4.50	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			
	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							
10N@ 4.50	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					
	36	24	34	45	55	66	74	88	98	104	135									
10N@ 4.50	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								
10N@ 4.50	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	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	34	40	42	44	50	52	61	65	69	77	84	85	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	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
	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
	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	
	10N@ 8.00	90	53	54	56	56	57	57	58	60	63	67	70	79	79	90	95	103	105	118		
		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	
	12N@ 6.67	90	34	36	40	44	49	53	60	65	68	72	77	87	92	102	111	118	132	136		
		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
	14N@ 5.71	96	34	37	43	50	54	60	68	71	75	79	85	98	104	117	120	130	147	156		
		66	39	47	57	64	73	77	89	98	103	109	113	129	143							
		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							
16N@ 5.00	96	37	40	47	53	61	67	74	79	84	88	100	108	118	127	145	152					
	66	42	53	62	70	78	90	101	105	113	129	130	145									
	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	138							
		96	55	56	57	57	58	59	64	65	69	74	80	91	98	107	110	128	131	142	142						
	102	55	57	57	58	59	60	62	65	69	74	75	87	95	105	112	130	133	149	149							
	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	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	84	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	150								
120	77	84	90	96	102	107	121	124	133	148										
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 LFRD METRIC WEIGHT TABLE FOR JOIST GIRDERS

Based on a 345 MPa Maximum Yield Strength

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	40	53	67	80	93	107	120	133	160	187	214	240	267	294	320	347	374
6096	2N@ 3048	508	24	28	28	28	28	30	36	36	37	45	55	61	68	74	83	92	104	112
		610	24	28	28	28	28	30	31	31	37	42	48	54	61	62	73	77	79	98
		711	24	28	28	28	28	30	30	30	31	34	39	42	48	58	62	68	71	73
	3N@ 2032	508	22	22	28	28	30	34	36	40	46	54	65	71	80	110	112	121	125	132
		610	22	24	24	24	28	30	34	39	40	49	54	67	70	79	83	101	118	122
		711	22	24	24	24	25	30	36	36	39	46	54	65	68	73	79	85	101	119
	4N@ 1524	508	22	22	28	31	37	43	49	57	61	74	85	97	106	131	144	149	159	179
610		22	24	25	30	34	39	43	48	52	65	74	82	92	106	126	134	149	152	
711		24	24	25	28	33	37	42	45	51	58	73	74	88	94	107	128	135	135	
5N@ 1219	508	22	25	31	39	46	54	58	71	76	92	106	122	147	147	162	179	210	211	
	610	24	24	30	34	39	45	52	58	64	79	89	101	119	135	150	153	164	179	
	711	24	24	27	33	40	42	49	55	58	71	82	95	101	115	138	141	159	165	
6N@ 1016	508	24	28	37	43	54	61	74	85	86	107	122	147	159	176	205	210			
	610	24	27	33	42	46	55	64	68	79	91	104	126	152	152	165	183	214	219	
	711	25	27	33	39	45	49	60	62	70	86	101	113	124	143	162	167	177	193	
8N@ 762	508	28	37	48	61	76	86	97	107	122	147	176	207	211						
	610	25	33	43	54	62	74	80	91	103	128	153	159	190	222	228				
	711	27	33	43	51	60	70	80	91	100	113	131	159	167	185	201	231	247		
6706	2N@ 3353	508	31	31	31	33	33	34	36	36	37	51	58	64	73	82	92	103	113	116
		610	27	31	31	33	33	33	34	36	36	45	49	61	61	67	76	82	91	109
		711	27	31	31	31	33	33	33	34	36	55	45	49	61	62	68	71	76	86
	3N@ 2234	508	22	27	27	28	33	36	39	43	49	62	67	79	101	104	113	125	131	140
		610	22	22	28	28	30	34	36	39	45	52	60	67	71	82	91	110	121	125
		711	22	24	24	24	28	30	34	36	40	48	54	67	70	77	80	88	110	122
	4N@ 1676	508	22	24	28	34	39	45	54	58	65	82	92	106	122	141	143	158	177	199
610		22	22	25	30	37	40	43	51	57	71	77	86	106	118	132	146	150	159	
711		24	24	24	28	33	37	42	48	52	60	73	80	89	107	118	129	134	144	
5N@ 1341	508	22	25	36	40	51	57	62	73	82	97	112	143	146	165	187	204			
	610	24	24	30	36	42	49	57	60	71	83	92	109	126	149	150	164	173	198	
	711	24	24	27	33	39	45	48	57	61	76	85	97	109	128	137	152	156	165	
6N@ 1119	508	24	31	40	49	58	73	83	85	97	118	144	158	176	204					
	610	24	28	34	42	48	58	67	76	86	98	122	146	150	162	179	211	214		
	711	24	27	33	39	45	51	58	65	74	91	104	113	132	152	155	168	189	220	
8N@ 838	508	28	40	54	64	83	95	106	119	143	158	201	205							
	610	27	36	46	57	68	79	89	101	112	150	156	186	216	222					
	711	27	33	42	51	60	70	80	92	103	118	129	158	176	195	226	244			
7620	3N@ 2539	508	27	27	28	33	39	40	45	55	61	73	88	98	104	113	128	132	144	152
		610	22	27	28	30	33	37	39	42	48	58	64	76	88	100	106	121	125	132
		711	22	22	28	28	30	34	36	40	43	51	58	67	70	82	88	100	121	122
	4N@ 1905	813	22	24	24	24	30	31	34	36	40	48	54	65	68	77	80	86	110	121
		914	24	24	24	25	25	30	36	36	39	48	54	60	67	71	79	80	101	118
		508	22	27	30	37	43	52	58	62	73	82	104	116	138	147	162	177	199	201
	5N@ 1524	610	22	24	28	31	39	43	49	55	60	74	85	95	107	131	144	149	158	179
711		22	22	25	30	36	37	43	51	55	64	76	86	98	107	132	134	150	152	
813		24	24	25	28	31	37	42	48	52	60	73	80	89	103	118	128	135	143	
6N@ 1271	914	24	24	25	28	31	39	39	43	51	57	73	74	83	94	109	126	131	137	
	508	22	27	37	46	57	64	76	82	86	109	138	149	162	186	199				
	610	22	25	34	39	48	54	62	70	79	91	112	121	146	152	167	192	208		
8N@ 951	711	24	24	30	36	42	46	55	61	70	83	92	107	118	138	150	158	174	186	
	813	24	24	28	34	39	45	49	57	61	76	85	97	109	124	138	152	156	165	
	914	24	25	27	33	39	42	46	54	58	71	80	95	103	112	131	143	150	161	
10N@ 762	508	24	36	43	57	67	82	86	103	116	140	155	173	199						
	610	24	30	37	46	55	65	74	83	95	112	144	147	159	176	205				
	711	24	27	34	42	48	57	65	76	82	100	109	129	150	155	179	199	213	216	
	813	24	27	33	39	45	51	58	65	74	91	103	115	132	152	156	168	189	220	
	914	24	27	36	37	45	54	58	64	73	86	100	110	125	146	161	173	174	192	
	508	31	43	58	71	86	104	116	140	147	171	199								
	610	28	39	49	61	74	85	97	112	121	147	176	205							
	711	27	34	45	57	65	79	89	100	112	128	153	173	189	219					
	813	27	36	42	51	58	70	80	97	106	116	129	156	174	192	226	229			
	914	27	33	43	51	60	68	77	91	94	113	129	150	170	180	202	220	247	248	
	508	39	57	73	94	116	140	149	171	199										
	610	34	49	62	80	97	112	132	147	155	193									
	711	31	45	57	71	83	95	110	125	150	162	199	219							
	813	31	42	54	64	77	92	103	113	129	159	176	193	228						
	914	33	42	55	65	77	95	106	115	126	149	173	193	225	234					



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	40	53	67	80	93	107	120	133	160	187	214	240	267	294	320	347	374
8534	3N@ 2844	610	27	27	28	33	36	40	43	54	58	64	79	92	104	106	116	126	132	146
		711	27	27	28	30	33	37	39	42	46	58	64	68	82	91	98	113	124	128
		813	22	27	28	28	31	34	36	40	42	51	58	67	71	79	86	98	119	121
	4N@ 2134	610	22	24	30	36	40	48	57	60	71	82	92	106	122	141	155	158	179	201
		711	22	22	27	31	37	42	48	54	58	73	83	95	106	118	143	144	158	159
		813	22	22	25	30	34	37	43	49	55	64	74	86	92	104	126	134	147	152
	5N@ 1707	610	22	27	36	43	51	58	68	77	86	98	116	143	152	165	187	202		
711		22	25	31	39	45	52	58	68	74	91	101	115	134	147	159	170	193	211	
813		24	25	30	36	40	48	55	61	65	83	92	104	119	138	152	159	167	177	
6N@ 1423	610	24	31	42	52	61	73	82	94	104	118	143	158	199	204					
	711	22	30	36	45	54	62	74	80	86	106	122	147	159	176	205	211			
	813	24	28	34	42	48	55	64	73	79	95	110	125	150	152	165	183	214	217	
7N@ 1219	610	27	36	48	61	73	83	95	110	118	143	164	201							
	711	25	33	40	52	64	76	85	92	103	122	147	161	192	208					
	813	24	31	40	46	57	65	77	82	94	110	126	152	161	183	213	217			
8N@ 1067	610	30	42	55	71	82	95	110	118	141	156	199								
	711	27	37	48	58	74	86	97	107	121	147	161	192	210						
	813	25	36	43	57	64	79	89	95	104	128	153	162	189	219	222				
10N@ 853	610	36	54	68	85	104	118	143	152	174	204									
	711	34	45	61	74	89	103	122	147	149	179	210								
	813	31	45	57	68	82	98	106	119	138	162	187	219							
9144	3N@ 3048	610	27	27	31	36	40	46	52	57	60	71	86	98	106	119	137	146	174	177
		711	27	27	28	33	37	40	45	52	55	62	73	83	94	104	118	122	138	147
		813	27	27	28	30	33	39	42	46	48	58	68	76	85	95	106	109	124	125
		914	24	28	28	28	31	34	39	42	46	52	58	68	77	85	95	97	109	112
	4N@ 2286	610	24	27	34	43	49	55	62	73	79	95	113	126	150	155	187	189	222	223
		711	22	24	31	37	45	49	55	62	67	79	91	109	121	128	153	155	187	190
		813	22	24	27	33	39	45	51	55	64	76	82	92	104	115	129	153	156	173
5N@ 1829	610	24	24	25	33	36	40	46	51	54	68	77	88	95	110	116	131	135	156	
	711	22	28	37	45	55	64	76	82	86	109	128	143	162	186	199				
	813	24	25	31	36	43	52	58	64	71	83	94	115	134	149	150	159	174	198	
6N@ 1524	610	24	36	43	55	67	77	86	98	109	140	155	173	199						
	711	24	30	40	48	57	65	74	85	97	112	144	147	159	204	208				
	813	24	28	36	43	51	60	67	76	86	97	122	146	149	162	180	211	214		
8N@ 1143	610	31	48	60	76	94	109	124	147	165	185	217								
	711	30	45	55	65	79	91	109	119	128	170	187	222							
	813	27	39	51	62	73	82	94	106	118	155	174	193	229	240					
10N@ 914	610	37	57	76	98	116	147	165	183	199										
	711	36	54	70	85	103	119	140	168	173	205									
	813	33	46	58	77	86	110	122	141	156	192	211								
9754	3N@ 3252	610	27	28	31	39	40	51	57	60	62	80	91	104	112	125	131	152	152	168
		711	24	25	27	36	39	42	46	51	55	64	82	89	103	104	113	126	132	138
		813	25	25	27	31	37	39	42	48	51	58	65	80	91	92	100	115	119	128
		914	22	25	28	30	34	37	39	42	45	57	60	67	76	79	86	100	121	115
	4N@ 2438	610	27	28	34	39	48	55	60	70	82	91	107	128	140	153	170	198	199	
		711	22	27	30	36	42	48	55	60	67	82	92	104	116	140	143	156	180	201
		813	22	22	30	33	37	43	48	54	58	73	83	95	106	124	122	144	152	159
5N@ 1951	610	22	30	40	49	58	65	76	85	97	115	138	149	183	198					
	711	22	27	36	42	51	58	68	77	86	98	110	143	150	164	187	204			
	813	22	25	33	39	48	52	61	68	79	91	101	115	134	147	156	170	193	211	
6N@ 1625	610	24	25	31	36	40	49	55	62	70	83	92	104	118	138	152	158	174	179	
	711	25	36	46	58	70	82	91	103	113	140	153	198	199						
	813	24	30	37	45	54	62	74	80	86	106	122	147	153	176	207	211			
8N@ 1219	610	33	48	60	80	91	107	128	138	153	198									
	711	28	40	52	67	82	94	104	119	141	156	199	204							
	813	27	37	48	58	74	86	97	106	121	147	162	179	210						
		914	27	36	46	57	64	79	88	100	106	128	153	168	189	219				



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																		
			FACTORED LOAD ON EACH PANEL POINT – kN																		
			27	40	53	67	80	93	107	120	133	160	187	214	240	267	294	320	347	374	
10668	4N@ 2667	711	24	28	34	40	46	54	61	68	77	89	110	118	140	149	165	174	204	205	
		813	22	27	31	36	42	49	55	58	67	79	89	109	119	137	149	158	167	189	
		914	22	24	30	34	40	45	49	55	61	835	82	92	110	124	140	144	159	168	
		1016	22	24	25	31	39	40	45	55	57	68	77	91	95	112	134	141	143	161	
	5N@ 2134	711	22	30	39	48	55	64	77	85	88	109	128	149	162	187	202				
		813	22	27	36	43	51	55	67	74	79	98	112	131	149	152	167	190	205		
		914	24	25	34	40	43	52	60	68	71	92	101	115	134	149	155	171	195	198	
		1016	24	25	33	37	40	49	55	64	70	83	94	104	119	141	152	159	171	186	
	6N@ 1777	711	25	36	45	55	65	77	86	97	109	138	153	171	199						
		813	24	31	40	49	57	68	79	85	97	118	143	149	174	207	208				
		914	24	30	37	46	54	61	71	80	86	104	121	147	152	168	180	211	214		
		1016	24	30	36	42	51	57	65	73	82	95	115	125	150	155	171	183	216	217	
	7N@ 1524	711	28	40	51	64	77	88	98	110	128	150	171	201							
		813	25	36	45	58	70	79	91	100	112	144	153	176	204						
		914	25	34	42	52	62	71	82	92	103	122	147	156	179	210	214				
		1016	25	33	40	48	58	65	74	82	94	109	128	152	159	176	198	219			
	8N@ 1335	711	31	45	58	71	88	103	116	140	146	171	202								
		813	30	40	54	62	79	91	103	118	131	150	176	205							
		914	28	39	48	58	71	82	92	106	115	147	162	180	210						
		1016	27	36	45	55	65	80	89	97	109	128	152	168	189	219	222				
11582	4N@ 2896	813	24	28	31	39	46	51	58	64	71	86	100	110	129	149	150	165	189	205	
		914	22	25	31	36	42	49	52	58	65	79	89	110	112	138	144	158	167	183	
		1016	22	24	30	34	40	45	51	55	61	76	82	92	110	124	140	146	159	162	
		1118	24	24	30	33	39	42	45	52	57	68	77	86	97	112	134	141	141	161	
	5N@ 2316	813	22	30	37	46	54	62	68	77	88	104	128	143	150	165	187	204			
		914	24	30	36	42	49	57	67	70	79	95	110	132	146	153	167	192	205		
		1016	24	30	34	39	46	52	60	68	71	88	104	116	135	150	156	168	174	199	
		1118	25	30	33	37	45	49	58	61	71	83	94	112	119	138	152	159	165	176	
	6N@ 1929	813	25	36	45	52	61	73	82	92	104	128	146	156	186	202					
		914	24	31	40	49	58	70	74	85	91	112	132	149	159	176	210	211			
		1016	24	31	37	46	54	60	71	82	88	106	122	147	152	162	180	213	211		
		1118	25	30	36	43	49	57	65	73	82	95	115	125	152	155	171	183	216	219	
	8N@ 1448	813	30	43	57	70	83	95	110	128	141	156	201								
		914	28	42	52	62	74	85	97	113	121	150	168	205	208						
		1016	28	39	48	60	71	82	92	100	116	149	153	180	211	214					
		1118	30	36	45	58	70	76	85	95	106	128	152	168	189	219	222				
	12192	4N@ 3048	813	25	30	34	43	55	60	70	74	83	95	109	128	153	170	187	190	222	225
			914	25	28	33	43	46	55	60	65	76	85	97	110	129	153	155	186	189	190
			1016	25	27	33	37	43	49	55	60	70	77	92	109	115	129	143	155	174	189
			1118	24	25	30	36	43	46	54	57	61	73	88	98	110	116	125	143	158	158
1219			25	25	30	36	37	45	48	55	58	71	79	88	100	116	116	126	147	158	
5N@ 2438		813	22	31	39	48	57	64	77	82	92	109	128	150	162	185	199				
		914	24	30	36	45	51	58	67	79	82	98	110	131	152	152	167	190	205		
		1016	24	30	36	40	48	55	61	68	76	92	101	115	134	149	156	171	193	211	
		1118	25	30	34	43	48	55	61	73	74	86	104	122	125	147	173	176	193	210	
		1219	25	30	34	39	46	51	60	61	74	85	101	112	126	141	149	177	179	196	
6N@ 2033		813	24	36	45	57	65	77	86	97	107	138	149	171	198						
		914	25	33	40	51	58	70	79	89	100	118	144	152	174	204	210				
		1016	24	31	39	45	54	64	71	80	92	106	122	147	153	170	193	211			
		1118	25	31	36	42	54	60	70	76	82	98	116	135	152	159	173	199	211	217	
		1219	25	31	36	46	54	62	68	79	85	103	118	128	149	162	196	198	201	244	
7N@ 1740		813	27	39	49	64	77	86	98	110	128	150	171	201							
		914	25	36	46	58	70	79	91	100	112	144	153	174	202						
		1016	25	36	43	52	64	73	82	92	103	122	147	156	177	208					
		1118	30	33	42	49	58	71	82	88	95	116	137	152	165	182	213				
		1219	30	34	42	54	61	71	80	91	98	119	128	161	182	199	202	244	248		
8N@ 1524	813	31	43	57	71	86	100	116	140	143	171	201									
	914	28	40	54	68	79	89	101	119	131	152	176	204								
	1016	28	37	51	58	73	86	97	107	122	147	162	179	210							
	1118	31	40	49	58	70	83	94	104	112	138	153	179	202	219						
	1219	30	37	48	62	70	82	92	103	119	134	155	182	202	231	253					
10N@ 1219	813	43	58	76	95	118	137	167	183	186	222										
	914	37	54	70	89	103	121	140	153	186	223										
	1016	36	54	67	83	98	112	122	143	171	192	226									
	1118	34	48	61	76	89	106	122	125	147	177	213	240								
1219	34	48	61	77	86	101	113	126	140	180	199	226									



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	40	53	67	80	93	107	120	133	160	187	214	240	267	294	320	347	374
12802	4N@ 3200	813	24	31	37	43	51	57	64	73	79	100	110	128	147	150	167	186	199	205
		914	24	28	33	39	48	52	58	65	70	86	100	109	129	141	150	167	176	192
		1016	24	28	31	36	42	51	54	61	67	79	91	109	113	138	144	144	168	182
		1118	24	28	30	34	40	46	51	57	62	76	82	92	110	125	140	144	161	162
	5N@ 2560	1219	24	28	31	36	39	43	48	54	58	70	80	92	97	112	134	141	144	161
		813	24	33	42	52	61	67	77	85	98	110	131	149	164	186				
		914	22	31	37	46	54	62	68	77	88	104	126	143	152	165	187	204		
		1016	24	31	36	42	49	58	65	76	80	95	110	132	146	153	168	192	193	
	6N@ 2134	1118	24	30	36	40	46	55	60	68	77	88	103	116	135	150	156	168	187	199
		1219	25	30	34	40	45	52	58	62	71	85	94	112	121	141	152	159	171	176
		813	27	37	48	58	67	82	91	103	115	138	153	185	201					
		914	25	34	45	52	61	73	83	89	100	118	143	156	174	204				
	7N@ 1829	1016	25	31	39	49	58	68	80	85	91	112	132	149	161	177	210	211		
		1118	24	31	36	46	52	61	71	80	88	106	121	149	152	162	180	213	211	
		1219	30	30	37	43	49	58	65	73	83	95	115	129	152	155	171	185	216	219
		813	30	42	54	67	77	97	107	126	138	152	186							
	8N@ 1600	914	28	39	51	60	73	83	100	110	118	146	164	189	205					
		1016	27	36	46	57	68	80	91	101	112	134	150	168	192	211				
		1118	30	34	43	52	61	73	82	94	104	116	149	158	173	196	216			
		1219	37	34	42	51	58	65	74	83	95	109	137	152	161	176	202	222		
	10N@ 1280	813	33	48	60	76	92	107	116	140	149	185	201							
		914	30	40	57	68	83	95	110	118	143	156	187	205						
		1016	30	39	52	62	76	85	97	113	121	150	168	205	210					
		1118	30	37	48	58	73	82	94	104	116	147	159	180	211	219				
13716	1219	31	39	48	61	71	83	94	100	110	138	153	167	190	220					
	813	40	57	77	92	115	140	150	170	199										
	914	37	54	68	89	104	128	144	152	167	208									
	1016	36	51	67	80	95	112	132	147	155	192									
4N@ 3429	1118	34	46	61	77	91	104	118	135	149	170	213								
	1219	34	45	58	73	83	98	107	119	138	159	186	217							
	914	27	31	37	42	49	57	62	68	77	92	107	118	141	149	167	174	190	205	
	1016	28	31	33	40	46	52	58	65	70	82	95	112	129	141	150	167	168	190	
5N@ 2743	1118	28	31	33	36	43	49	55	58	67	79	91	110	113	132	141	152	161	170	
	1219	27	31	33	36	42	46	51	57	60	76	82	94	112	124	140	141	159	162	
	1321	27	33	34	36	40	43	49	55	58	70	77	89	98	113	135	141	143	162	
	914	24	33	40	49	57	65	77	82	94	110	128	150	162	186	202				
6N@ 2286	1016	24	31	37	45	54	62	67	79	83	101	112	131	152	165	182	190			
	1118	24	31	36	43	51	57	65	68	80	97	110	126	134	153	164	183	193	211	
	1219	30	31	36	40	48	54	61	67	77	88	100	112	135	141	158	167	176	199	
	1321	30	31	36	40	45	52	58	62	71	85	95	112	121	140	146	159	174	177	
7N@ 1960	914	28	36	46	57	67	77	86	98	110	138	149	171	199						
	1016	28	34	42	51	60	70	79	89	100	118	144	153	174	204	208				
	1118	28	31	40	48	57	68	74	80	92	113	134	149	159	176	207	211			
	1219	30	31	39	45	54	62	71	82	88	103	116	137	152	164	182	213	213		
8N@ 1713	1321	30	31	37	43	51	58	65	74	83	95	115	126	152	152	173	185	202	220	
	914	30	40	52	65	77	86	98	110	128	150	171	201							
	1016	30	39	49	60	70	80	91	100	112	144	156	189	205						
	1118	30	36	45	58	68	80	91	92	103	134	149	168	192	213					
9N@ 1524	1219	30	34	43	54	61	73	82	94	104	118	137	159	174	198	216				
	1321	27	34	42	51	58	67	74	83	97	109	138	152	162	176	202	222			
	914	31	45	57	71	86	100	116	140	146	170	201								
	1016	30	42	54	68	79	91	101	119	132	156	176	204							
10N@ 1372	1118	30	40	51	61	76	86	98	109	121	147	162	193	210						
	1219	31	39	48	58	70	82	94	101	110	137	155	173	211	217					
	1321	33	42	49	62	71	80	88	100	106	140	152	167	189	220					
	914	36	51	67	82	98	110	131	146	155	201									
10N@ 1372	1016	33	46	58	73	91	103	119	132	149	168	205								
	1118	34	46	58	71	86	98	113	132	147	161	196								
	1219	34	43	55	70	82	94	104	118	135	158	174	198							
	1321	34	42	54	68	82	89	104	109	125	152	167	201	220						
10N@ 1372	914	39	57	73	89	109	128	146	156	173	204									
	1016	37	52	70	89	98	113	134	152	167	208									
	1118	36	49	68	80	95	107	132	147	155	193	211								
	1219	36	46	60	73	92	106	116	135	149	170	199								
1321	34	46	58	74	83	100	107	119	138	159	183	219								



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																			
			FACTORED LOAD ON EACH PANEL POINT – kN																			
			27	40	53	67	80	93	107	120	133	160	187	214	240	267	294	320	347	374		
14630	5N@ 2926	914	28	39	46	55	67	77	88	98	106	129	165	168	201	202						
		1016	28	34	43	52	61	68	77	88	101	115	137	167	170	202	205					
		1118	28	33	40	48	55	65	71	80	91	103	119	138	168	173	187	207	223			
		1219	28	31	37	45	54	60	71	71	82	103	116	134	143	171	173	190	208	211		
		1321	30	31	37	43	49	58	62	74	80	92	106	122	137	147	174	176	193	210		
	1422	30	31	36	43	49	57	60	68	74	88	106	118	126	149	149	177					198
	6N@ 2438	914	30	42	52	62	76	92	104	116	124	149	182	199	219							
		1016	28	37	49	58	70	83	95	106	118	138	167	185	204	220						
		1118	28	36	46	54	67	74	85	97	109	121	152	171	189	205	225					
		1219	28	34	45	52	60	71	77	88	100	116	141	156	173	192	210	238				
		1321	30	34	40	48	57	68	76	88	89	112	124	144	159	193	195	214	241			
	1422	30	33	40	46	55	62	71	80	91	103	119	135	159	179	196	196	219	228	246		
	8N@ 1829	914	45	54	67	83	95	116	135	149	182	199										
		1016	42	49	62	76	88	104	119	137	150	185	220									
		1118	40	48	58	73	82	97	110	122	141	170	189	223								
		1219	39	45	55	70	79	89	101	113	125	156	192	195	229							
		1321	39	45	54	65	76	88	97	106	119	147	177	196	217	244						
	1422	37	42	54	64	73	85	94	103	116	134	162	183	202	231							
	9N@ 1625	914	52	65	82	104	118	135	147	180	182	217										
		1016	51	62	77	94	110	131	138	150	168	202										
		1118	49	58	74	88	103	124	135	140	153	187	223									
		1219	49	55	68	83	98	113	126	140	144	176	193									
		1321	46	54	68	80	94	107	119	141	150	161	196	226								
	1422	46	52	65	79	92	103	119	132	146	153	183	204	246								
	12N@ 1219	914	52	77	106	125	149	183	201	220												
		1016	51	71	97	113	138	168	186	204	222											
		1118	46	65	85	109	122	152	171	187	207											
		1219	45	61	79	100	113	131	155	174	193	228										
		1321	45	58	77	91	113	125	144	159	195	214										
	1422	40	57	73	91	104	121	135	161	182	201	246										
15240	5N@ 3048	1016	27	34	45	57	65	70	83	89	101	118	138	168	185	202	205					
		1118	25	33	43	51	60	68	76	83	91	113	132	140	168	187	204	207				
		1219	28	33	42	46	57	62	71	82	91	103	116	140	143	171	189	207	210			
		1321	30	33	37	46	52	60	67	73	82	92	110	122	143	173	174	192	210	211		
		1422	30	33	37	45	48	60	64	74	76	94	106	124	137	147	174	177	195	211		
	1524	30	30	36	45	49	54	62	68	76	86	97	113	128	143	150	179	180	198			
	6N@ 2539	1016	30	42	51	62	71	83	95	106	119	149	167	185	219							
		1118	28	36	46	57	70	74	85	97	109	126	152	185	189	222						
		1219	28	34	45	55	60	73	85	97	100	122	141	171	189	192	225					
		1321	30	34	45	54	60	68	77	88	100	112	125	156	174	192	195	228	241			
		1422	30	34	39	49	58	62	76	80	89	107	125	146	159	179	196	214	243	244		
	1524	31	34	40	49	57	64	73	79	91	104	119	129	152	164	183	199	229	246			
	8N@ 1905	1016	33	46	58	76	88	100	116	128	143	164	201									
		1118	31	43	55	70	79	91	104	119	143	153	176	207								
		1219	31	40	52	62	76	86	103	113	121	147	170	193	211							
		1321	31	37	49	60	73	82	94	104	116	147	159	180	210							
		1422	36	43	54	62	70	83	95	101	116	140	161	176	204	220						
	1524	36	40	52	60	70	82	91	103	110	124	153	164	183	207	222						
	9N@ 1695	1016	36	51	65	82	98	110	128	143	155	199										
		1118	34	48	60	79	91	103	119	131	146	168	205									
		1219	36	48	62	77	86	103	115	134	147	165	198									
		1321	36	46	60	70	86	98	110	118	137	158	187	213								
		1422	36	45	57	68	82	89	101	115	132	152	173	201								
	1524	36	48	57	73	79	91	104	112	124	144	165	186	210								
	10N@ 1524	1016	39	57	73	89	110	129	143	155	173	202										
		1118	37	54	70	89	101	125	143	152	167	208										
		1219	36	51	68	80	97	113	132	147	153	193										
		1321	36	51	67	77	92	104	118	135	149	170										
		1422	34	48	61	71	89	104	113	129	138	159	199	217								
	1524	36	46	60	73	85	98	109	121	140	162	177	205									
12N@ 1271	1016	51	73	97	119	149	167	186	219													
	1118	46	65	85	109	128	152	187	189	222												
	1219	45	61	86	100	122	143	171	189	193	229											
	1321	45	58	79	101	113	125	156	176	193	229											
	1422	40	60	77	91	104	126	147	161	182	201	244										
1524	40	58	73	91	104	122	131	155	167	201	247											



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	33	41	47	54	60	66	74	80	87	93	107	120	134	147	161	174	188
16764	5N@ 3353	1118	31	31	36	37	43	48	52	57	61	64	70	79	88	94	106	122	124	128
		1219	31	31	34	36	42	45	48	52	57	61	64	73	83	89	95	106	109	124
		1321	30	33	34	37	40	43	48	49	54	58	62	65	77	85	97	98	110	110
		1422	30	31	36	36	39	42	46	49	54	55	58	65	76	79	86	98	98	110
		1524	34	36	36	36	40	40	46	49	52	57	57	67	70	77	89	91	100	101
	1676	36	36	36	37	39	42	42	49	51	55	55	62	70	71	82	83	92	92	103
	6N@ 2795	1118	28	33	39	43	49	54	57	64	67	76	77	88	98	112	128	128	146	150
		1219	30	33	36	42	46	49	54	60	65	68	74	83	95	101	112	129	132	146
		1321	30	33	36	39	43	49	52	55	61	88	88	98	110	128	138	147	162	164
		1422	27	31	36	37	42	46	52	54	58	62	70	77	82	94	104	106	116	135
		1524	30	31	36	37	43	45	49	52	57	58	64	71	82	89	95	106	112	119
	1676	28	30	33	36	42	45	46	49	54	58	60	70	74	83	92	97	109	109	109
	7N@ 2396	1118	31	36	42	49	54	58	65	74	79	88	88	104	112	129	144	152	165	179
		1219	31	36	40	46	51	57	64	67	76	80	83	97	107	113	132	146	153	164
		1321	31	34	39	43	49	54	58	65	68	77	82	92	103	110	128	135	149	156
		1422	30	33	37	42	46	52	57	60	68	71	79	82	95	104	118	129	137	150
		1524	31	33	36	40	45	49	54	58	61	70	73	83	95	101	107	121	138	140
	1676	33	33	36	39	45	48	54	55	60	64	71	77	86	97	104	110	124	125	125
	9N@ 1862	1118	36	43	51	58	68	77	82	89	100	110	110	129	146	156	173	201	204	204
		1219	36	42	48	57	60	70	79	85	91	101	103	121	144	153	159	176	192	207
1321		37	45	49	58	64	70	77	85	97	97	109	115	134	155	156	170	186	198	
1422		36	43	48	57	64	68	76	79	88	98	100	112	129	137	156	159	174	190	
1524		36	40	48	54	60	67	70	77	83	89	100	106	119	138	141	161	162	176	
1676	36	40	46	52	58	62	68	73	80	86	91	106	116	124	135	144	165	168	168	
11N@ 1524	1118	45	54	64	73	82	94	100	110	129	131	144	158	187	204					
	1219	42	49	58	67	80	91	97	103	113	129	132	153	167	190	207				
	1321	40	51	55	65	77	82	92	98	109	115	131	147	156	171	195	211			
	1422	40	49	58	62	71	80	89	95	101	115	119	138	152	159	176	199	217		
	1524	39	46	55	60	70	73	86	95	100	107	115	122	141	161	164	180	204	220	
1676	39	46	54	58	67	74	80	89	97	101	110	122	144	146	168	174	187	210	210	
18288	5N@ 3658	1219	31	34	40	43	49	52	58	64	65	73	76	85	94	103	113	129	132	140
		1321	31	33	40	42	46	49	54	60	65	67	70	77	89	97	103	115	126	134
		1422	33	34	36	42	45	46	51	54	61	65	67	77	88	94	103	110	116	129
		1524	33	34	36	42	43	48	51	52	60	62	67	73	79	89	98	104	112	119
		1676	36	36	36	39	45	45	49	52	54	57	62	70	76	83	91	100	107	109
	1829	37	37	37	37	40	45	46	52	54	55	58	67	71	83	83	94	103	104	104
	6N@ 3048	1219	30	36	43	48	54	57	61	70	73	83	89	100	107	119	138	138	167	168
		1321	30	34	42	45	49	55	58	68	71	74	85	92	103	116	119	140	140	168
		1422	28	36	37	45	49	57	58	62	71	73	76	86	98	103	118	124	141	143
		1524	28	34	36	43	48	51	58	60	64	73	74	85	94	104	112	124	124	143
		1676	28	34	36	40	48	48	51	60	62	65	74	77	91	97	103	115	125	126
	1829	33	33	36	40	42	49	51	54	61	64	65	77	80	94	101	106	112	129	129
	8N@ 2286	1219	36	43	51	58	64	73	83	85	95	107	107	119	138	167	183	186	202	220
		1321	34	43	46	55	60	71	74	85	86	98	107	121	140	153	170	186	189	207
		1422	34	39	46	54	57	65	73	76	86	89	98	112	124	143	155	173	189	192
		1524	34	39	48	49	58	62	70	74	79	88	91	103	115	126	146	158	176	192
		1676	42	45	49	51	61	64	68	71	79	85	92	104	116	122	134	149	161	179
	1829	43	45	46	51	54	61	68	70	77	86	88	98	109	119	134	137	155	164	164
	10N@ 1829	1219	39	48	55	65	73	82	89	100	110	118	129	144	156	176	204	205		
		1321	42	51	57	65	74	83	95	97	106	112	131	144	153	168	193	205		
		1422	40	49	55	64	68	76	86	98	97	107	113	134	155	156	183	195	213	
		1524	37	46	55	58	67	76	85	89	98	104	109	128	138	155	165	187	199	
		1676	40	48	55	62	73	76	83	92	97	107	110	126	141	152	179	182	199	216
	1829	39	48	49	57	62	70	74	82	88	98	103	110	124	143	146	165	165	180	180
12N@ 1524	1219	49	58	68	79	88	101	112	128	129	144	152	165	201						
	1321	46	55	67	76	85	97	103	113	131	132	146	155	176	207					
	1422	43	54	61	71	82	92	98	107	115	132	135	155	168	192	208				
	1524	45	52	58	70	80	83	95	109	110	118	135	152	158	173	198	216			
	1676	48	52	61	71	79	91	92	104	115	119	129	149	164	182	199	219	244		
1829	43	49	57	62	74	77	89	91	103	107	115	128	149	164	170	189	211	225	225	
15N@ 1219	1219	60	73	95	107	119	138	152	168	185	187	202								
	1321	58	71	85	98	110	121	140	153	170	187	189	223							
	1422	57	68	79	100	106	119	124	143	155	173	189	208	228						
	1524	57	62	76	89	101	113	124	132	146	158	176	196	214	228					
	1676	52	61	73	82	92	104	121	129	129	153	164	183	202	228	248				
1829	52	65	68	82	95	98	115	126	134	138	158	186	207	211	238	254				



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	33	41	47	54	60	66	74	80	87	93	107	120	134	147	161	174	188
19812	6N@ 3301	1321	33	42	45	49	58	61	67	73	80	86	91	103	116	124	141	144	171	173
		1422	31	37	43	49	52	60	62	71	73	82	86	94	104	119	125	144	144	174
		1524	34	36	43	48	51	58	61	65	74	74	83	95	106	113	122	137	146	147
		1676	33	36	39	46	49	52	60	62	67	76	76	86	97	109	116	124	129	149
	1829	36	37	40	46	48	52	55	62	64	70	73	80	89	101	113	119	129	132	
	1321	37	46	57	60	65	76	86	92	98	110	110	124	144	171	189	192	210	228	
	1422	36	45	51	58	64	74	77	88	94	101	110	124	144	156	176	192	195	213	
	1524	34	42	49	58	61	70	76	79	89	101	103	115	126	147	161	177	193	198	
	1676	36	42	49	52	62	65	73	77	83	94	94	112	119	132	150	164	182	185	
	1829	57	58	58	58	62	67	70	77	83	86	97	109	116	132	137	155	168	186	
	1321	45	48	57	65	73	86	92	100	110	118	124	144	173	190	192	211	228		
	1422	39	48	58	62	71	79	88	101	101	113	121	146	158	176	193	211	214	231	
	1524	37	48	57	60	70	76	86	89	103	104	116	128	149	162	179	196	216	217	
	1676	42	48	55	61	65	74	79	89	95	106	107	121	132	153	167	185	202	205	
	1829	43	45	52	57	65	68	77	85	92	98	106	118	135	151	161	171	189	208	208
	1321	46	54	61	73	86	92	100	112	122	132	144	173	190	195	229	231			
	1422	46	54	60	68	77	89	101	103	115	126	135	159	177	196	214				
	1524	43	51	60	65	76	85	91	104	110	116	129	149	162	182	199	217			
	1676	40	51	58	64	74	80	89	97	107	110	122	134	153	168	186	205	208	243	
	1829	40	49	55	65	70	77	83	92	100	112	113	129	138	164	189	192	210	213	
	1321	49	58	67	77	88	100	112	124	132	146	158	176	195	228					
	1422	48	58	65	76	89	95	103	115	126	135	147	177	196	214	232				
	1524	49	57	65	73	82	94	104	110	118	128	137	162	182	199	219				
	1676	45	55	62	68	80	85	95	107	109	121	134	155	168	186	207	219	244		
1829	45	54	61	70	76	85	92	100	115	115	131	138	164	176	195	214	232	257		
1321	55	67	82	95	107	118	132	146	158	174	193	211								
1422	55	64	79	91	103	115	128	135	147	161	179	198	217							
1524	52	61	74	86	95	106	115	126	138	149	161	195	199	235						
1676	51	61	73	79	92	104	112	119	129	138	152	182	199	204	240					
1829	51	61	68	79	86	95	107	116	126	134	134	168	189	205	210	253				
21336	7N@ 3048	1422	36	37	45	52	58	64	68	76	83	85	95	106	124	131	152	152	164	180
		1524	34	39	45	49	55	64	65	74	77	85	91	98	109	126	134	152	156	165
		1676	36	40	45	48	52	58	65	68	76	79	86	100	109	112	129	138	155	158
		1829	36	37	43	48	51	57	62	68	70	79	80	89	103	113	116	132	140	152
	1981	37	39	42	46	51	55	60	64	70	73	74	86	94	106	116	124	134	143	
	2134	36	40	43	46	52	55	58	62	65	73	76	85	97	103	107	119	126	140	
	1422	39	46	55	60	67	79	83	91	100	107	112	131	152	164	182	190			
	1524	37	45	52	58	67	70	80	91	97	104	109	132	147	156	170	192	195		
	1676	46	51	57	64	71	76	83	94	100	104	110	128	137	158	167	182	189		
	1829	48	49	55	64	67	76	83	86	95	100	103	115	132	149	161	170	185	195	
	1981	48	51	54	58	67	71	79	88	89	98	98	113	129	138	152	164	173	176	
	2134	49	51	52	57	67	70	74	82	88	94	100	107	121	140	141	153	168	176	
	1422	40	51	57	67	79	85	89	101	112	119	131	149	158	176	204				
	1524	45	54	61	71	82	89	97	103	106	125	131	152	162	182	193				
	1676	43	52	62	65	76	82	92	98	104	109	126	135	156	162	183	196			
	1829	45	51	57	64	70	77	88	94	98	103	116	131	140	158	167	189	198		
	1981	45	49	55	60	68	76	82	91	97	106	106	118	140	143	161	171	193	204	
	2134	46	49	54	60	70	73	82	85	94	104	107	119	137	146	162	167	180	198	
	1422	48	61	67	76	89	95	106	124	129	132	152	161	189	205					
	1524	45	58	65	74	85	97	98	109	126	132	134	155	170	192					
	1676	46	57	64	68	79	88	100	100	113	128	131	156	158	174	196				
	1829	48	55	62	71	82	85	92	104	104	116	122	140	161	162	177	202	220		
	1981	43	52	60	70	74	82	91	97	109	107	119	137	146	164	176	185	208	210	
	2134	45	54	58	67	73	77	88	98	101	109	116	125	144	152	173	185	192	214	
	1422	51	61	74	83	94	101	113	129	131	152	153	168	192						
	1524	49	58	68	82	86	97	110	113	132	134	153	167	190	207					
	1676	48	55	67	71	82	94	100	113	116	134	137	156	171	193	213				
	1829	48	55	62	71	82	91	97	103	115	119	132	152	159	177	201	220			
	1981	45	54	62	71	76	83	95	104	107	119	125	144	158	168	183	210	225		
	2134	45	54	60	67	76	79	91	101	109	115	124	132	152	171	176	190	214	225	
	1422	54	65	79	94	106	112	129	143	152	165	179	204							
	1524	55	64	80	91	103	112	131	132	147	153	167	190							
1676	52	62	71	82	95	104	115	134	137	152	158	171	196							
1829	51	60	73	82	91	103	109	121	135	141	153	164	179	205						
1981	49	58	65	77	86	100	107	113	125	137	144	165	179	205	210					
2134	49	60	65	76	86	92	103	116	118	128	144	158	173	189	213	231				



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	33	41	47	54	60	66	74	80	87	93	107	120	134	147	161	174	188
22860	8N@ 2859	1422	43	49	60	64	73	82	91	97	109	118	122	141	171	173	190	208	226	
		1524	39	48	57	62	71	76	86	94	104	112	119	137	144	173	176	193	211	228
		1676	40	48	52	61	65	76	79	89	95	103	107	122	146	147	176	179	196	214
		1829	39	48	51	61	64	68	77	86	91	98	106	118	129	149	150	180	182	199
		1981	40	43	51	55	64	67	80	80	91	95	103	115	121	132	153	156	183	186
	10N@ 2286	1524	48	58	62	74	88	100	103	113	124	132	146	174	192	195	229			
		1676	48	55	62	73	82	92	103	104	116	128	129	149	177	196	199			
		1829	45	54	62	67	80	85	94	107	109	121	128	150	165	183	202	205		
		1981	46	52	58	68	71	83	94	98	110	112	122	135	156	170	189	207	226	
		2134	46	54	58	67	73	82	88	97	103	115	116	140	141	164	190	195	213	232
	12N@ 1905	1524	57	64	76	88	101	113	125	134	146	158	176	195	214					
		1676	52	62	74	82	92	104	118	129	134	149	164	182	201	220				
		1829	54	61	68	80	94	97	109	121	134	135	155	185	187	210	229			
		1981	52	62	70	80	91	101	113	116	128	134	146	156	187	207	226	243		
		2134	51	58	68	77	83	95	104	116	118	134	137	158	187	207	210	244	254	
	14N@ 1634	1676	61	71	83	94	107	119	132	152	165	182	186	204						
		1829	61	68	77	91	104	112	125	141	150	164	180	199	220					
		1981	55	65	79	91	101	113	119	132	146	153	159	186	207	225				
		2134	57	65	77	85	95	106	118	128	137	149	161	189	193	228	254			
		2286	55	62	74	86	98	109	115	129	140	140	164	177	211	214	257	262		
15N@ 1524	1676	61	77	89	103	115	126	146	158	176	179	196	217							
	1829	62	77	88	100	110	125	129	147	164	180	183	217	238						
	1981	61	70	80	97	109	115	131	135	155	167	185	207	226	251					
	2134	58	68	82	94	100	113	128	137	138	162	173	195	213	254	259				
	2286	57	68	77	89	103	110	121	134	141	153	176	198	216	217	263				
24384	8N@ 3048	1524	42	46	55	62	67	76	83	94	95	107	112	131	144	153	167	189	204	
		1676	45	46	52	57	67	70	77	85	92	97	104	115	134	153	156	168	192	195
		1829	43	48	49	57	61	68	71	79	88	94	101	113	129	137	158	161	173	187
		1981	45	46	49	55	61	62	70	79	83	89	95	109	121	131	140	162	165	176
		2134	45	48	52	55	58	64	71	77	83	88	94	106	118	124	143	146	167	170
		2286	79	80	83	83	85	85	86	89	94	100	104	118	118	134	141	153	156	176
	10N@ 2438	1524	46	52	61	70	79	89	101	112	113	131	144	153	167	192	207			
		1676	46	52	58	68	77	82	92	104	112	116	134	149	159	171	196	211		
		1829	49	55	64	74	82	92	94	104	110	124	129	144	158	179	189			
		1981	48	54	62	68	76	83	94	101	106	113	128	134	149	167	182	193		
		2134	49	55	62	67	76	85	91	97	104	115	116	135	149	162	171	186	195	
		2286	51	54	60	65	73	79	89	97	101	107	115	129	137	152	165	176	196	202
	12N@ 2033	1676	54	65	74	85	97	104	109	128	134	153	153	171	193					
		1829	51	62	70	80	88	100	107	115	128	137	150	159	186	198				
		1981	49	58	68	79	89	97	103	118	119	131	140	161	170	192	202			
		2134	51	57	70	73	83	94	104	107	118	124	137	147	165	180	205	208		
		2286	54	58	65	74	83	88	98	107	110	122	128	150	168	173	186	213	222	
		2438	51	55	64	74	80	89	101	106	112	118	126	146	155	174	179	193	219	232
	14N@ 1740	1676	58	70	85	95	109	115	132	146	153	162	168	192						
		1829	57	68	80	88	100	113	118	135	150	158	158	186	213					
1981		54	64	74	86	98	104	116	134	141	143	162	176	202	222					
2134		54	62	74	83	95	106	110	119	137	146	147	167	185	213					
	2286	54	61	71	79	91	101	110	122	128	141	149	171	180	202	217				
	2438	55	60	70	79	91	100	110	118	125	131	149	161	176	189	216	226			
16N@ 1524	1676	62	79	92	104	116	134	150	156	168	192	193								
	1829	61	74	85	103	113	121	138	152	162	173	176	216							
	1981	61	73	86	98	109	124	135	143	155	167	179	204	222						
	2134	58	67	80	91	103	113	125	144	149	162	171	187	213						
	2286	58	68	80	92	104	110	119	128	150	152	170	177	214	231					
	2438	60	68	82	86	101	109	121	131	140	158	164	180	198	231	244				



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			FACTORED LOAD ON EACH PANEL POINT – kN																	
			27	33	41	47	54	60	66	74	80	87	93	107	120	134	147	161	174	188
27432	9N@ 3048	1829	60	62	68	73	82	89	95	107	121	122	137	146	174	177	210	213	220	
		2134	61	65	71	71	74	80	89	100	112	113	125	131	152	180	185	201		205
		2286	80	82	83	83	85	88	92	97	107	115	126	131	147	156	186	190		195
		2438	82	83	85	85	86	88	95	97	103	110	119	135	146	159	164	190		195
	10N@ 2743	2591	82	85	85	86	88	89	92	97	103	110	112	129	141	156	167	193	198	
		1829	62	68	71	77	91	95	107	116	126	138	147	176	193	211	231	210		
		2134	62	67	73	76	86	92	103	109	121	140	144	171	174	204	220		198	
		2286	62	68	74	76	83	89	98	106	118	121	132	149	159	187	192		192	
	2438	64	68	71	79	83	88	98	104	110	122	129	141	161	168	192	192			
	11N@ 2493	2591	64	67	71	79	85	89	97	103	113	115	125	144	156	171	185	195	204	
		1829	64	70	76	88	97	109	116	128	147	149	177	179	213	205				
		2134	64	73	74	82	92	100	110	116	129	135	149	168	187		223			
		2286	67	71	76	79	88	98	107	115	126	134	138	159	190		192			
	2438	70	71	79	83	89	94	106	112	121	129	141	156	168	196					
	12N@ 2286	2591	71	73	85	86	91	95	104	109	122	128	140	150	173	185	205	220		
		1981	65	73	79	89	101	107	118	131	152	153	165	185	222	222				
		2134	67	73	77	83	97	112	118	125	135	153	156	186	204					
		2286	68	74	77	89	101	112	118	131	132	149	158	187	190					
	2438	68	71	77	86	94	107	113	122	134	138	153	164	192						
	15N@ 1829	2743	67	73	82	83	95	98	113	121	126	137	144	159	171	201	204	238		
		1981	70	80	98	112	122	140	147	179	180	198	216	220	228					
		2134	73	80	92	101	113	128	144	153	182	185	186	222						
		2286	74	77	89	103	116	122	134	147	158	186	189	208						
	2438	71	79	86	98	107	119	138	141	161	167	192	195							
18N@ 1524	2743	76	85	88	95	107	116	129	147	150	162	171	202	207	250	256	232			
	1981	76	92	110	125	147	152	179	198	216	220	237	247							
	2134	76	91	109	119	132	155	168	185	204	223	225								
	2286	77	86	104	118	134	138	158	187	192	211	228								
30480	10N@ 3048	2438	79	86	101	116	129	141	161	168	195	198		214	235	235				
		2743	85	88	95	113	126	141	153	168	179	189	207	225						
		1981	67	73	77	82	86	92	101	112	118	135	137	158	171		195	208		
		2134	70	74	79	82	86	91	103	107	115	121	138	152	162		176	198		
	12N@ 2539	2438	82	83	83	85	92	95	101	110	125	128	129	152	173	186	187	213		
		2591	82	83	85	86	91	95	98	109	115	128	132	149	158	180	189	198		
		2743	83	85	86	88	91	95	100	104	113	119	129	137	158	159	189	193		
		1981	71	79	83	92	104	110	128	137	144	156	167	185	198					
	2134	71	77	82	94	101	107	125	131	146	147	159	187							
	2438	70	76	82	86	98	100	112	121	135	138	152	165	173		195				
	2591	71	77	82	86	92	103	109	118	134	140	141	168	176		198				
	15N@ 2033	2743	71	76	82	88	92	104	107	113	126	137	144	158	174	183	210	222		
		1981	79	83	100	112	128	135	155	158	171	186	198	198						
		2134	79	83	91	103	116	131	140	159	168	176	190							
		2438	77	83	91	101	107	122	138	147	156	170	176							
	2591	79	83	89	98	110	124	126	144	152	173	174	186		214					
	16N@ 1905	2743	79	83	88	97	109	115	129	147	153	155	176	183	208	222	208			
		2134	79	86	103	107	119	137	158	159	174	189	198							
		2438	79	85	94	106	112	126	146	149	171	171	185	208						
		2591	79	85	92	98	110	125	144	152	165	174	176	202	229					
	17N@ 1792	2743	80	86	92	100	113	122	129	149	155	174	176	202	220	220				
		3048	83	91	95	104	113	124	128	138	155	162	173	190	208		240			
		2134	82	91	104	115	131	140	159	170	189	198	216	225						
		2438	80	88	97	107	119	138	147	168	171	180	201							
2591	82	88	98	109	118	129	146	152	176	176	189	214								
2743	82	89	97	103	116	129	135	156	159	177	179	208								
18N@ 1695	3048	83	92	100	106	116	129	138	149	164	167	186	198	238	222	250				
	2134	82	91	104	121	140	152	162	176	199	214	208								
	2438	82	89	97	107	125	144	149	170	179	185		208							
	2591	83	91	98	109	125	132	152	167	176	186		204							
20N@ 1524	2743	85	89	101	109	122	135	155	158	177	180		193	220	243					
	3048	88	95	103	112	125	131	146	161	168	182	192	211							
	2134	86	98	115	140	153	162	176	199	217	214									
	2438	89	97	109	124	147	161	171	183	186		214	228							
2591	88	97	106	119	132	153	170	180	192	219		219								
2743	89	100	106	119	132	158	164	183	187	199		222	244							
3048	101	109	134	150	161	168	183	198	226	231	247	271	298							



LRFD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																		
			FACTORED LOAD ON EACH PANEL POINT – kN																		
			27	33	41	47	54	60	66	74	80	87	93	107	120	134	147	161	174	188	
33528	10N@ 3353	2134	80	86	91	97	103	109	122	124	140	147	149	179	213	214					
		2438	92	92	94	97	103	107	121	122	135	144	146	159	186						
		2743	94	94	95	100	103	107	112	122	128	135	141	156	168	195	198				
		2896	94	95	100	101	107	109	113	118	128	131	143	161	171	198	202				
	3048	95	95	98	103	107	110	113	121	124	131	134	149	165	190	204	208				
	12N@ 2795	2134	86	92	98	104	110	118	125	131	150	162	179	182	214						
		2438	85	92	98	104	110	118	131	137	150	159	186	189	225						
		2743	86	95	101	107	112	118	125	134	141	158	165	196	202	235					
		2896	88	97	98	106	112	118	125	132	152	158	159	187	199	232	235				
	3048	88	92	100	107	110	118	122	135	143	159	162	187	201	235	240					
	14N@ 2396	2134	89	98	106	113	125	144	152	182	183	199	219								
		2438	89	97	103	110	124	141	149	156	185	186	202	223							
		2743	89	95	103	107	116	129	147	153	161	179	190	211	231						
		2896	91	97	103	110	118	125	138	153	156	165	185	198	234						
	3048	89	98	103	110	119	122	134	143	158	162	187	201	235	238						
	16N@ 2097	2438	92	101	107	118	132	155	158	186	187	219	222								
		2591	94	100	110	119	132	153	161	186	189	190	226	232							
		2743	95	101	109	121	124	141	155	164	189	193	211	235							
2896		97	104	110	119	128	141	156	165	170	196	201	240	241							
3048	98	103	112	121	131	144	147	162	174	201	205	226	246								
18N@ 1862	2438	95	106	115	129	147	158	186	189	220	225										
	2591	98	104	119	132	150	162	189	190	207	226	228									
	2743	98	106	115	124	140	158	165	192	195	214	234									
	2896	100	109	118	126	144	159	168	196	199	204	237	243								
3048	101	110	118	131	135	150	164	176	202	207	226	247									
20N@ 1676	2438	101	115	122	147	158	186	207	226	229											
	2591	103	112	121	140	162	192	193	211	229	231										
	2743	103	115	124	140	158	170	196	198	216	234	251									
	2896	103	115	128	135	150	171	199	201	219	238	240									
3048	98	107	115	124	138	158	168	187	190	204	229	248									
36576	10N@ 3658	2438	94	98	103	107	113	116	122	128	132	132	140	161	171	192					
		2591	95	100	103	106	112	118	124	124	128	135	137	164	174	195	204				
		2743	116	118	122	124	124	124	128	135	141	140	149	161	187	190					
		2896	116	118	122	124	124	125	128	135	134	141	141	162	189	190					
	3048	118	121	124	125	125	126	128	131	137	137	144	152	168	198						
	12N@ 3048	2438	101	103	106	115	122	128	134	147	149	168	186	193							
		2591	101	103	107	116	119	126	131	143	150	152	173	193							
		2743	103	104	107	112	121	128	134	135	147	153	156	190	199						
		2896	104	104	106	112	122	128	129	137	141	149	193	180	201						
	3048	104	106	107	113	119	125	131	137	138	152	159	183	198	205						
	15N@ 2438	2438	103	110	115	122	134	143	162	171	186	192	199								
		2591	104	109	116	125	131	138	153	168	176	192	196								
		2743	104	109	119	126	134	141	150	158	171	177	198								
		2896	104	109	116	124	131	138	146	159	174	180	182	204							
	3048	107	110	116	125	132	140	147	149	164	176	185	208								
	16N@ 2286	2438	104	113	119	126	134	149	162	170	190	199									
		2591	104	110	116	128	137	144	164	167	179	195	204								
		2743	104	110	119	126	134	141	149	170	179	185	198								
2896		104	109	121	128	135	143	150	159	174	182	201	216								
3048	104	112	118	126	134	140	147	153	176	177	187	219									
18N@ 2033	2438	106	115	126	132	141	162	173	192	202											
	2591	107	116	124	129	144	165	168	180	205	205										
	2743	107	118	125	131	140	150	171	180	232	234										
	2896	107	113	126	134	143	152	173	174	183	202	213									
3048	109	115	125	132	141	147	156	176	186	192	208										
20N@ 1829	2438	113	122	132	140	164	173	193	202												
	2591	112	124	129	137	156	170	183	208	223											
	2743	112	121	131	140	150	171	180	201	211	226										
	2896	115	122	129	138	153	168	177	190	205	217										
3048	115	125	134	143	152	159	180	185	198	220	223										
24N@ 1524	2438	124	134	143	165	180	202														
	2591	121	131	147	161	176	208	225													
	2743	124	135	143	153	177	192	219	234												
	2896	128	143	162	180	210	213	226	238												
3048	128	144	159	174	213	217	226	243	246												



DESIGN GUIDE ASD METRIC WEIGHT TABLE FOR JOIST GIRDERS

Based on a 345 MPa Maximum Yield Strength

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	27	36	44	53	62	71	80	89	107	125	142	160	178	196	214	231	249
6096	2N@ 3048	508	24	28	28	28	28	30	36	36	37	45	55	61	68	74	83	92	104	112
		610	24	28	28	28	28	30	31	31	37	42	48	54	61	62	73	77	79	98
		711	24	28	28	28	28	30	30	31	34	39	42	48	58	60	62	68	71	73
	3N@ 2032	508	22	22	28	28	30	34	36	40	46	54	65	71	80	110	112	121	125	132
		610	22	24	24	24	28	30	34	39	40	49	54	67	70	79	83	101	118	122
		711	22	24	24	24	25	30	36	36	39	46	54	65	68	73	79	85	101	119
	4N@ 1524	508	22	22	28	31	37	43	49	57	61	74	85	97	106	131	144	149	159	179
		610	22	24	25	30	34	39	43	48	52	65	74	82	92	106	126	134	149	152
		711	24	24	25	28	33	37	42	45	51	58	73	74	88	94	107	128	135	135
	5N@ 1219	508	22	25	31	39	46	54	58	71	76	92	106	122	147	147	162	179	210	211
		610	24	24	30	34	39	45	52	58	64	79	89	101	119	135	150	153	164	179
		711	24	24	27	33	40	42	49	55	58	71	82	95	101	115	138	141	159	165
	6N@ 1016	508	24	28	37	43	54	61	74	85	86	107	122	147	159	176	205	210		
		610	24	27	33	42	46	55	64	68	79	91	104	126	152	152	165	183	214	219
		711	25	27	33	39	45	49	60	62	70	86	101	113	124	143	162	167	177	193
	8N@ 762	508	28	37	48	61	76	86	97	107	122	147	176	207	211					
		610	25	33	43	54	62	74	80	91	103	128	153	159	190	222	228			
		711	27	33	43	51	60	70	80	91	100	113	131	159	167	185	201	231	247	
6706	2N@ 3353	508	31	31	31	33	33	34	36	36	37	51	58	64	73	82	92	103	113	116
		610	27	31	31	33	33	33	34	36	36	45	49	61	61	67	76	82	91	109
		711	27	31	31	31	33	33	33	34	36	45	49	61	61	62	68	71	76	86
	3N@ 2234	508	22	27	27	28	33	36	39	43	49	62	67	79	101	104	113	125	131	140
		610	22	22	28	28	30	34	36	39	45	52	60	67	71	82	91	110	121	125
		711	22	24	24	24	28	30	34	36	40	48	54	67	70	77	80	88	110	122
	4N@ 1676	508	22	24	28	34	39	45	54	58	65	82	92	106	122	141	143	158	177	199
		610	22	22	25	30	37	40	43	51	57	71	77	86	106	118	132	146	150	159
		711	24	24	24	28	33	37	42	48	52	60	73	80	89	107	118	129	134	144
	5N@ 1341	508	22	25	36	40	51	57	62	73	82	97	112	143	146	165	187	204		
		610	24	24	30	36	42	49	57	60	71	83	92	109	126	149	150	164	173	198
		711	24	24	27	33	39	45	48	57	61	76	85	97	109	128	137	152	156	165
	6N@ 1119	508	24	31	40	49	58	73	83	85	97	118	144	158	176	204				
		610	24	28	34	42	48	58	67	76	86	98	122	146	150	162	179	211	214	
		711	24	27	33	39	45	51	58	65	74	91	104	113	132	152	155	168	189	220
	8N@ 838	508	28	40	54	64	83	95	106	119	143	158	201	205						
		610	27	36	46	57	68	79	89	101	112	150	156	186	216	222				
		711	27	33	42	51	60	70	80	92	103	118	129	158	176	195	226	244		
7620	3N@ 2539	508	27	27	28	33	39	40	45	55	61	73	88	98	104	113	128	132	144	152
		610	22	27	28	30	33	37	39	42	48	58	64	76	88	100	106	121	125	132
		711	22	22	28	28	30	34	36	40	43	51	58	67	70	82	88	100	121	122
		813	22	24	24	24	30	31	34	36	40	48	54	65	68	77	80	86	110	121
	4N@ 1905	914	24	24	24	25	25	30	36	36	39	48	54	60	67	71	79	80	101	118
		508	22	27	30	37	43	52	58	62	73	82	104	116	138	147	162	177	199	201
		610	22	24	28	31	39	43	49	55	60	74	85	95	107	131	144	149	158	179
		711	22	22	25	30	36	37	43	51	55	64	76	86	98	107	132	134	150	152
	5N@ 1524	813	24	24	25	28	31	37	42	48	52	60	73	80	89	103	118	128	135	143
		914	24	24	25	28	31	39	39	43	51	57	73	74	83	94	109	126	131	137
		508	22	27	37	46	57	64	76	82	86	109	138	149	162	186	199			
		610	22	25	34	39	48	54	62	70	79	91	112	121	146	152	167	192	208	
	6N@ 1271	711	24	24	30	36	42	46	55	61	70	83	92	107	118	138	150	158	174	186
		813	24	24	28	34	39	45	49	57	61	76	85	97	109	124	138	152	156	165
		914	24	25	27	33	39	42	46	54	58	71	80	95	103	112	131	143	150	161
		508	24	36	43	57	67	82	86	103	116	140	155	173	199					
	8N@ 951	610	24	30	37	46	55	65	74	83	95	112	144	147	159	176	205			
		711	24	27	34	42	48	57	65	76	82	100	109	129	150	155	179	199	213	216
813		24	27	33	39	45	51	58	65	74	91	103	115	132	152	156	168	189	220	
914		24	27	36	37	45	54	58	64	73	86	100	110	125	146	161	173	174	192	
10N@ 762	508	31	43	58	71	86	104	116	140	147	171	199								
	610	28	39	49	61	74	85	97	112	121	147	176	205							
	711	27	34	45	57	65	79	89	100	112	128	153	173	189	219					
	813	27	36	42	51	58	70	80	97	106	116	129	156	174	192	226	229			
	914	27	33	43	51	60	68	77	91	94	113	129	150	170	180	202	220	247	248	
	508	39	57	73	94	116	140	149	171	199										
	610	34	49	62	80	97	112	132	147	155										
	711	31	45	57	71	83	95	110	125	150	162	199	219							
	813	31	42	54	64	77	92	103	113	129	159	176	193	228						
	914	33	42	55	65	77	95	106	115	126	149	173	193	225	234					



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	27	36	44	53	62	71	80	89	107	125	142	160	178	196	214	231	249
8534	3N@ 2844	610	27	27	28	33	36	40	43	54	58	64	79	92	104	106	116	126	132	146
		711	27	27	28	30	33	37	39	42	46	58	64	68	82	91	98	113	124	128
		813	22	27	28	28	31	34	36	40	42	51	58	67	71	79	86	98	119	121
	4N@ 2134	610	22	24	30	36	40	48	57	60	71	82	92	106	122	141	155	158	179	201
		711	22	22	27	31	37	42	48	54	58	73	83	95	106	118	143	144	158	159
		813	22	22	25	30	34	37	43	49	55	64	74	86	92	104	126	134	147	152
	5N@ 1707	610	22	27	36	43	51	58	68	77	86	98	116	143	152	165	187	202		
711		22	25	31	39	45	52	58	68	74	91	101	115	134	147	159	170	193	211	
813		24	25	30	36	40	48	55	61	65	83	92	104	119	138	152	159	167	177	
6N@ 1423	610	24	31	42	52	61	73	82	94	104	118	143	158	199	204					
	711	22	30	36	45	54	62	74	80	86	106	122	147	159	176	205	211			
	813	24	28	34	42	48	55	64	73	79	95	110	125	150	152	165	183	214	217	
7N@ 1219	610	27	36	48	61	73	83	95	110	118	143	164	201							
	711	25	33	40	52	64	76	85	92	103	122	147	161	192	208					
	813	24	31	40	46	57	65	77	82	94	110	126	152	161	183	213	217			
8N@ 1067	610	30	42	55	71	82	95	110	118	141	156	199								
	711	27	37	48	58	74	86	97	107	121	147	161	192	210						
	813	25	36	43	57	64	79	89	95	104	128	153	168	189	219	222				
10N@ 853	610	36	54	68	85	104	118	143	152	174	204									
	711	34	45	61	74	89	103	122	147	149	179	210								
	813	31	45	57	68	82	98	106	119	138	162	187	219							
9144	3N@ 3048	610	27	27	31	36	40	46	52	57	60	71	86	98	106	119	137	146	174	177
		711	27	27	28	33	37	40	45	52	55	62	73	83	94	104	118	122	138	147
		813	27	27	28	30	33	39	42	46	48	58	68	76	85	95	106	109	124	125
		914	24	28	28	28	31	34	39	42	46	52	58	68	77	85	95	97	109	112
	4N@ 2286	610	24	27	34	43	49	55	62	73	79	95	113	126	150	155	187	189	222	223
		711	22	24	31	37	45	49	55	62	67	79	91	109	121	128	153	155	187	190
		813	22	24	27	33	39	45	51	55	64	76	82	92	104	115	129	153	156	173
	5N@ 1829	610	22	28	37	45	55	64	76	82	86	109	128	143	162	186	199			
		711	22	25	34	40	48	55	65	70	79	91	112	131	144	152	167	190	205	
		813	24	25	31	36	43	52	58	64	71	83	94	115	134	149	150	159	174	198
	6N@ 1524	610	24	36	43	55	67	77	86	98	109	140	155	173	199					
		711	24	30	40	48	57	65	74	85	97	112	144	147	159	204	208			
		813	24	28	36	43	51	60	67	76	86	97	122	146	149	162	180	211	214	
	8N@ 1143	610	31	48	60	76	94	109	124	147	165	185	217							
		711	30	45	55	65	79	91	109	119	128	170	187	222						
813		27	39	51	62	73	82	94	106	118	155	174	193	229	240					
10N@ 914	610	37	57	76	98	116	147	165	183	199										
	711	36	54	70	85	103	119	140	168	173	205									
	813	33	46	58	77	86	110	122	141	156	192	211								
9754	3N@ 3252	610	27	28	31	39	40	51	57	60	62	80	91	104	112	125	131	152	152	168
		711	24	25	27	36	39	42	46	51	55	64	82	89	103	104	113	126	132	138
		813	25	25	27	31	37	39	42	48	51	58	65	80	91	92	100	115	119	128
		914	22	25	28	30	34	37	39	42	45	57	60	67	76	79	86	100	121	115
	4N@ 2438	610	27	28	34	39	48	55	60	70	82	91	107	128	140	153	170	198	199	
		711	22	27	30	36	42	48	55	60	67	82	92	104	116	140	143	156	180	201
		813	22	22	30	33	37	43	48	54	58	73	83	95	106	124	122	144	152	159
	5N@ 1951	610	22	30	40	49	58	65	76	85	97	115	138	149	183	198				
		711	22	27	36	42	51	58	68	77	86	98	110	143	150	164	187	204		
		813	22	25	33	39	48	52	61	68	79	91	101	115	134	147	156	170	193	211
	6N@ 1625	610	25	36	46	58	70	82	91	103	113	140	153	198	199					
		711	24	31	40	52	60	71	82	89	100	118	143	156	174	204				
		813	24	30	37	45	54	62	74	80	86	106	122	147	153	176	207	211		
	8N@ 1219	610	33	48	60	80	91	107	128	138	153	198								
		711	28	40	52	67	82	94	104	119	141	156	199	204						
813		27	37	48	58	74	86	97	106	121	147	162	179	210						
		914	27	36	46	57	64	79	88	100	106	128	153	168	189	219				



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	27	36	44	53	62	71	80	89	107	125	142	160	178	196	214	231	249
10668	4N@ 2667	711	24	28	34	40	46	54	61	68	77	89	110	118	140	149	165	174	204	205
		813	22	27	31	36	42	49	55	58	67	79	89	109	119	137	149	158	167	189
		914	22	24	30	34	40	45	49	55	61	835	82	92	110	124	140	144	159	168
		1016	22	24	25	31	39	40	45	55	57	68	77	91	95	112	134	141	143	161
	5N@ 2134	711	22	30	39	48	55	64	77	85	88	109	128	149	162	187	202	190	205	
		813	22	27	36	43	51	55	67	74	79	98	112	131	149	152	167	171	195	198
		914	24	25	34	40	43	52	60	68	71	92	101	115	134	149	155	171	195	
		1016	24	25	33	37	40	49	55	64	70	83	94	104	119	141	152	159	171	186
	6N@ 1777	711	25	36	45	55	65	77	86	97	109	138	153	171	199					
		813	24	31	40	49	57	68	79	85	97	118	143	149	174	207	208	211	214	
		914	24	30	37	46	54	61	71	80	86	104	121	147	152	168	180	183	216	217
		1016	24	30	36	42	51	57	65	73	82	95	115	125	150	155	171			
7N@ 1524	711	28	40	51	64	77	88	98	110	128	150	171	201							
	813	25	36	45	58	70	79	91	100	112	144	153	176	204						
	914	25	34	42	52	62	71	82	92	103	122	147	156	179	210	214				
	1016	25	33	40	48	58	65	74	82	94	109	128	152	159	176	198	219			
8N@ 1335	711	31	45	58	71	88	103	116	140	146	171	202								
	813	30	40	54	62	79	91	103	118	131	150	176	205							
	914	28	39	48	58	71	82	92	106	115	147	162	180	210						
	1016	27	36	45	55	65	80	89	97	109	128	152	168	189	219	222				
11582	4N@ 2896	813	24	28	31	39	46	51	58	64	71	86	100	110	129	149	150	165	189	205
		914	22	25	31	36	42	49	52	58	65	79	89	110	112	138	144	158	167	183
		1016	22	24	30	34	40	45	51	55	61	76	82	92	110	124	140	146	159	162
		1118	24	24	30	33	39	42	45	52	57	68	77	86	97	112	134	141	141	161
	5N@ 2316	813	22	30	37	46	54	62	68	77	88	104	128	143	150	165	187	204	205	
		914	24	30	36	42	49	57	67	70	79	95	110	132	146	153	167	192	205	
		1016	24	30	34	39	46	52	60	68	71	88	104	116	135	150	156	168	174	199
		1118	25	30	33	37	45	49	58	61	71	83	94	112	119	138	152	159	165	176
	6N@ 1929	813	25	36	45	52	61	73	82	92	104	128	146	156	186	202				
		914	24	31	40	49	58	70	74	85	91	112	132	149	159	176	210	211		
		1016	24	31	37	46	54	60	71	82	88	106	122	147	152	162	180	213	211	
		1118	25	30	36	43	49	57	65	73	82	95	115	125	152	155	171	183	216	219
8N@ 1448	813	30	43	57	70	83	95	110	128	141	156	201								
	914	28	42	52	62	74	85	97	113	121	150	168	205	208						
	1016	28	39	48	60	71	82	92	100	116	149	153	180	211	214					
	1118	30	36	45	58	70	76	85	95	106	128	152	168	189	219	222				
12192	4N@ 3048	813	25	30	34	43	55	60	70	74	83	95	109	128	153	170	187	190	222	225
		914	25	28	33	43	46	55	60	65	76	85	97	110	129	153	155	186	189	190
		1016	25	27	33	37	43	49	55	60	70	77	92	109	115	129	143	155	174	189
		1118	24	25	30	36	43	46	54	57	61	73	88	98	110	116	125	143	158	158
	5N@ 2438	813	22	31	39	48	57	64	77	82	92	109	128	150	162	185	199			
		914	24	30	36	45	51	58	67	79	82	98	110	131	152	152	167	190	205	
		1016	24	30	36	40	48	55	61	68	76	92	101	115	134	149	156	171	193	211
		1118	25	30	34	43	48	55	61	73	74	86	104	122	125	147	173	176	193	210
	6N@ 2033	813	24	36	45	57	65	77	86	97	107	138	149	171	198					
		914	25	33	40	51	58	70	79	89	100	118	144	152	174	204	210			
		1016	24	31	39	45	54	64	71	80	92	106	122	147	153	170	193	211		
		1118	25	31	36	42	54	60	70	76	82	98	116	135	152	159	173	199	211	217
7N@ 1740	813	27	39	49	64	77	86	98	110	128	150	171	201							
	914	25	36	46	58	70	79	91	100	112	144	153	174	202						
	1016	25	36	43	52	64	73	82	92	103	122	147	156	177	208					
	1118	30	33	42	49	58	71	82	88	95	116	137	152	165	182	213				
8N@ 1524	813	31	43	57	71	86	100	116	140	143	171	201								
	914	28	40	54	68	79	89	101	119	131	152	176	204							
	1016	28	37	51	58	73	86	97	107	122	147	162	179	210						
	1118	31	40	49	58	70	83	94	104	112	138	153	179	202	219					
10N@ 1219	813	43	58	76	95	118	137	167	183	186	222									
	914	37	54	70	89	103	121	140	153	186	223									
	1016	36	54	67	83	98	112	122	143	171	192	226								
	1118	34	48	61	76	89	106	122	125	147	177	213	240							
		1219	34	48	61	77	86	101	113	126	140	180	199	226						



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	27	36	44	53	62	71	80	89	107	125	142	160	178	196	214	231	249
12802	4N@ 3200	813	24	31	37	43	51	57	64	73	79	100	110	128	147	150	167	186	199	205
		914	24	28	33	39	48	52	58	65	70	86	100	109	129	141	150	167	176	192
		1016	24	28	31	36	42	51	54	61	67	79	91	109	113	138	144	144	168	182
		1118	24	28	30	34	40	46	51	57	62	76	82	92	110	125	140	144	161	162
	5N@ 2560	1219	24	28	31	36	39	43	48	54	58	70	80	92	97	112	134	141	144	161
		813	24	33	42	52	61	67	77	85	98	110	131	149	164	186				
		914	22	31	37	46	54	62	68	77	88	104	126	143	152	165	187	204		
		1016	24	31	36	42	49	58	65	76	80	95	110	132	146	153	168	192	193	
	6N@ 2134	1118	24	30	36	40	46	55	60	68	77	88	103	116	135	150	156	168	187	199
		1219	25	30	34	40	45	52	58	62	71	85	94	112	121	141	152	159	171	176
		813	27	37	48	58	67	82	91	103	115	138	153	185	201					
		914	25	34	45	52	61	73	83	89	100	118	143	156	174	204				
	7N@ 1829	1016	25	31	39	49	58	68	80	85	91	112	132	149	161	177	210	211		
		1118	24	31	36	46	52	61	71	80	88	106	121	149	152	162	180	213	211	
		1219	30	30	37	43	49	58	65	73	83	95	115	126	152	155	171	185	216	219
		813	30	42	54	67	77	97	107	126	138	152	186							
	8N@ 1600	914	28	39	51	60	73	83	100	110	118	146	164	189	205					
		1016	27	36	46	57	68	80	91	101	112	134	150	168	192	211				
		1118	30	34	43	52	61	73	82	94	104	116	149	158	173	196	216			
		1219	27	34	42	51	58	65	74	83	95	109	137	152	161	176	202	222		
	10N@ 1280	813	33	48	60	76	92	107	116	140	149	185	201							
		914	30	40	57	68	83	95	110	118	143	156	187	205						
		1016	30	39	52	62	76	85	97	113	121	150	168	205	210					
		1118	30	37	48	58	73	82	94	104	116	147	159	180	211	219				
13716	1219	31	39	48	61	71	83	94	100	110	138	153	167	190	220					
	813	40	57	77	92	115	140	150	170	199										
	914	37	54	68	89	104	128	144	152	167	208									
	1016	36	51	67	80	95	112	132	147	155	192									
4N@ 3429	1118	34	46	61	77	91	104	118	135	149	170	213								
	1219	34	45	58	73	83	98	107	119	138	159	186	217							
	914	27	31	37	42	49	57	62	68	77	92	107	118	141	149	167	174	190	205	
	1016	28	31	33	40	46	52	58	65	70	82	95	112	129	141	150	167	168	190	
5N@ 2743	1118	28	31	33	36	43	49	55	58	67	79	91	110	113	132	141	152	161	170	
	1219	27	31	33	36	42	46	51	57	60	76	82	94	112	124	140	141	159	162	
	1321	27	33	34	36	40	43	49	55	58	70	77	89	98	113	135	141	143	162	
	914	24	33	40	49	57	65	77	82	94	110	128	150	162	186	202				
6N@ 2286	1016	24	31	37	45	54	62	67	79	83	101	112	131	152	165	182	190			
	1118	24	31	36	43	51	57	65	68	80	97	110	126	134	153	164	183	193	211	
	1219	30	31	36	40	48	54	61	67	77	88	100	112	135	141	158	167	176	199	
	1321	30	31	36	40	45	52	58	62	71	85	95	112	121	140	146	159	174	177	
7N@ 1960	914	28	36	46	57	67	77	86	98	110	138	149	171	199						
	1016	28	34	42	51	60	70	79	89	100	118	144	153	174	204	208				
	1118	28	31	40	48	57	68	74	80	92	113	134	149	159	176	207	211			
	1219	30	31	39	45	54	62	71	82	88	103	116	137	152	164	182	213	213		
8N@ 1713	1321	30	31	37	43	51	58	65	74	83	95	115	126	152	152	173	185	202	220	
	914	30	40	52	65	77	86	98	110	128	150	171	201							
	1016	30	39	49	60	70	80	91	100	112	144	156	189	205						
	1118	30	36	45	58	68	80	91	92	103	134	149	168	192	213					
9N@ 1524	1219	30	34	43	54	61	73	82	94	104	118	137	159	174	198	216				
	1321	27	34	42	51	58	67	74	83	97	109	138	152	162	176	202	222			
	914	31	45	57	71	86	100	116	140	146	170	201								
	1016	30	42	54	68	79	91	101	119	132	156	176	204							
10N@ 1372	1118	30	40	51	61	76	86	98	109	121	147	162	193	210						
	1219	31	39	48	58	70	82	94	101	110	137	155	173	211	217					
	1321	33	42	49	62	71	80	88	100	106	140	152	167	189	220					
	914	36	51	67	82	98	110	131	146	155	201									
10N@ 1372	1016	33	46	58	73	91	103	119	132	149	168	205								
	1118	34	46	58	71	86	98	113	132	147	161	196								
	1219	34	43	55	70	82	94	104	118	135	158	174	198	201	220					
	1321	34	42	54	68	82	89	104	109	125	152	167	201	220						
10N@ 1372	914	39	57	73	89	109	128	146	156	173	204									
	1016	37	52	70	89	98	113	134	152	167	208									
	1118	36	49	68	80	95	107	132	147	155	193	211								
	1219	36	46	60	73	92	106	116	135	149	170	199								
1321	34	46	58	74	83	100	107	119	138	159	183	219								



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																		
			LOAD ON EACH PANEL POINT – kN																		
			18	27	36	44	53	62	71	80	89	107	125	142	160	178	196	214	231	249	
14630	5N@ 2926	914	28	39	46	55	67	77	88	98	106	129	165	168	201	202					
		1016	19	34	43	52	61	68	77	88	101	115	137	167	170	202	205				
		1118	19	33	40	48	55	65	71	80	91	103	119	138	168	173	187	207	223		
		1219	19	31	37	45	54	60	71	71	82	103	116	134	143	171	173	190	208	211	
		1321	20	31	37	43	49	58	62	74	80	92	106	122	137	147	174	176	193	210	
	1422	20	31	36	43	49	57	60	68	74	88	106	118	126	149	149	177	199	198		
	6N@ 2438	914	19	42	52	62	76	92	104	116	124	149	182	199	219						
		1016	19	37	49	58	70	83	95	106	118	138	167	185	204	220					
		1118	19	36	46	54	67	74	85	97	109	121	152	171	189	205	225				
		1219	19	34	45	52	60	71	77	88	100	116	141	156	173	192	210	238			
		1321	20	34	40	48	57	68	76	88	89	112	124	144	159	193	195	214	241		
	1422	20	33	40	46	55	62	71	80	91	103	119	135	159	179	196	199	228	246		
	8N@ 1829	914	23	54	67	83	95	116	135	149	182	199									
		1016	21	49	62	76	88	104	119	137	150	185	220								
		1118	20	48	58	73	82	97	110	122	141	170	189	223							
		1219	20	45	55	70	79	89	101	113	125	156	192	195	229						
		1321	23	45	54	65	76	88	97	106	119	147	177	196	217	244					
	1422	24	42	54	64	73	85	94	103	116	134	162	183	202	231						
	9N@ 1625	914	25	65	82	104	118	135	147	180	182	217									
		1016	24	62	77	94	110	131	138	150	168	202									
1118		21	58	74	88	103	124	135	140	153	187	223									
1219		24	55	68	83	98	113	126	140	144	176	193									
1321		23	54	68	80	94	107	119	141	150	161	196	226								
1422	24	52	65	79	92	103	119	132	146	153	183	204	246								
12N@ 1219	914	33	77	106	125	149	183	201	220												
	1016	30	71	97	113	138	168	186	204	222											
	1118	28	65	85	109	122	152	171	187	207											
	1219	27	61	79	100	113	131	155	174	193	228										
	1321	25	58	77	91	113	125	144	159	195	214										
1422	26	57	73	91	104	121	135	161	182	201	246										
15240	5N@ 3048	1016	18	34	45	57	65	70	83	89	101	118	138	168	185	202	205				
		1118	17	33	43	51	60	68	76	83	91	113	132	140	168	187	204	207			
		1219	19	33	42	46	57	62	71	82	91	103	116	140	143	171	189	207	210		
		1321	20	33	37	46	52	60	67	73	82	92	110	122	143	173	174	192	210	211	
		1422	20	33	37	45	48	60	64	74	76	94	106	124	137	147	174	177	195	211	
	1524	20	30	36	45	49	54	62	68	76	86	97	113	128	143	150	179	180	198		
	6N@ 2539	1016	19	42	51	62	71	83	95	106	119	149	167	185	219						
		1118	19	36	46	57	70	74	85	97	109	126	152	185	189	222					
		1219	19	34	45	55	60	73	85	97	100	122	141	171	189	192	225				
		1321	20	34	45	54	60	68	77	88	100	112	125	156	174	192	195	228	241		
		1422	20	34	39	49	58	62	76	80	89	107	125	146	159	179	196	214	243	244	
	1524	21	34	40	49	57	64	73	79	91	104	119	129	152	164	183	199	229	246		
	8N@ 1905	1016	22	46	58	76	88	100	116	128	143	164	201								
		1118	21	43	55	70	79	91	104	119	143	153	176	207							
		1219	21	40	52	62	76	86	103	113	121	147	170	193	211						
		1321	21	37	49	60	73	82	94	104	116	147	159	180	210						
		1422	24	43	54	62	70	83	95	101	116	140	161	176	204	220					
	1524	24	40	52	60	70	82	91	103	110	124	153	164	183	207	222					
	9N@ 1695	1016	24	51	65	82	98	110	128	143	155	199									
		1118	23	48	60	79	91	103	119	131	146	168	205								
1219		24	48	62	77	86	103	115	134	147	165	198									
1321		24	46	60	70	86	98	110	118	137	158	187	213								
1422		24	45	57	68	82	89	101	115	132	152	173	201								
1524	24	48	57	73	79	91	104	112	124	144	165	186	210								
10N@ 1524	1016	26	57	73	89	110	129	143	155	173	202										
	1118	25	54	70	89	101	125	143	152	167	208										
	1219	24	51	68	80	97	113	132	147	153	193										
	1321	24	51	67	77	92	104	118	135	149	170	199									
	1422	23	48	61	71	89	104	113	129	138	159	199	217								
1524	24	46	60	73	85	98	109	121	140	162	177	205									
12N@ 1271	1016	30	73	97	119	149	167	186	219												
	1118	28	65	85	109	128	152	187	189	222											
	1219	27	61	86	100	122	143	171	189	193	229										
	1321	26	58	79	101	113	125	156	176	193	229										
	1422	25	60	77	91	104	126	147	161	182	201	244									
1524	25	58	73	91	104	122	131	155	167	201	247										



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	22	27	31	36	40	44	49	53	58	62	71	80	89	98	107	116	125
16764	5N@ 3353	1118	31	31	36	37	43	48	52	57	61	64	70	79	88	94	106	122	124	128
		1219	31	31	34	36	42	45	48	52	57	61	64	73	83	89	95	106	109	124
		1321	30	33	34	37	40	43	48	49	54	58	62	65	77	85	97	98	110	110
		1422	30	31	36	36	39	42	46	49	54	55	58	65	76	79	86	98	98	110
		1524	34	36	36	36	40	40	46	49	52	57	57	67	77	89	91	100	100	101
	1676	36	36	36	37	39	42	42	49	51	55	55	62	70	71	82	83	92	92	103
	6N@ 2795	1118	28	33	39	43	49	54	57	64	67	76	77	88	98	112	128	128	146	150
		1219	30	33	36	42	46	49	54	60	65	68	74	83	95	101	112	129	132	146
		1321	30	33	36	39	43	49	52	55	61	88	88	98	110	128	138	147	162	164
		1422	27	31	36	37	42	46	52	54	58	62	70	77	82	94	104	106	116	135
		1524	30	31	36	37	43	45	49	52	57	58	64	71	82	89	95	106	112	119
	1676	28	30	33	36	42	45	46	49	54	58	60	70	74	83	92	97	109	109	109
	7N@ 2396	1118	31	36	42	49	54	58	65	74	79	88	88	104	112	129	144	152	165	179
		1219	31	36	40	46	51	57	64	67	76	80	83	97	107	113	132	146	153	164
		1321	31	34	39	43	49	54	58	65	68	77	82	92	103	110	128	135	149	156
		1422	30	33	37	42	46	52	57	60	68	71	79	82	95	104	118	129	137	150
		1524	31	33	36	40	45	49	54	58	61	70	73	83	95	101	107	121	138	140
	1676	33	33	36	39	45	48	54	55	60	64	71	77	86	97	104	110	124	124	125
	9N@ 1862	1118	36	43	51	58	68	77	82	89	100	110	110	129	146	156	173	201	204	204
		1219	36	42	48	57	60	70	79	85	91	101	103	121	144	153	159	176	192	207
1321		37	45	49	58	64	70	77	85	97	97	109	115	134	155	156	170	186	198	
1422		36	43	48	57	64	68	76	79	88	98	100	112	129	137	156	159	174	190	
1524		36	40	48	54	60	67	70	77	83	89	100	106	119	138	141	161	162	176	
1676	36	40	46	52	58	62	68	73	80	86	91	106	116	124	135	144	165	168	168	
11N@ 1524	1118	45	54	64	73	82	94	100	110	129	131	144	158	187	204					
	1219	42	49	58	67	80	91	97	103	113	129	132	153	167	190	207				
	1321	40	51	55	65	77	82	92	98	109	115	131	147	156	171	195	211			
	1422	40	49	58	62	71	80	89	95	101	115	119	138	152	159	176	199	217		
	1524	39	46	55	60	70	73	86	95	100	107	115	122	141	161	164	180	204	220	
1676	39	46	54	58	67	74	80	89	97	101	110	122	144	146	168	174	187	210	210	
18288	5N@ 3658	1219	31	34	40	43	49	52	58	64	65	73	76	85	94	103	113	129	132	140
		1321	31	33	40	42	46	49	54	60	65	67	70	77	89	97	103	115	126	134
		1422	33	34	36	42	45	46	51	54	61	65	67	77	88	94	103	110	116	129
		1524	33	34	36	42	43	48	51	52	60	62	67	73	79	89	98	104	112	119
		1676	36	36	36	39	45	45	49	52	54	57	62	70	76	83	91	100	107	109
	1829	37	37	37	37	40	45	46	52	54	55	58	67	71	83	83	94	103	104	104
	6N@ 3048	1219	30	36	43	48	54	57	61	70	73	83	89	100	107	119	138	138	167	168
		1321	30	34	42	45	49	55	58	68	71	74	85	92	103	116	119	140	140	168
		1422	28	36	37	45	49	57	58	62	71	73	76	86	98	103	118	124	141	143
		1524	28	34	36	43	48	51	58	60	64	73	74	85	94	104	112	124	124	143
		1676	28	34	36	40	48	48	51	60	62	65	74	77	91	97	103	115	125	126
	1829	33	33	36	40	42	49	51	54	61	64	65	77	80	94	101	106	112	129	129
	8N@ 2286	1219	36	43	51	58	64	73	83	85	95	107	107	119	138	167	183	186	202	220
		1321	34	43	46	55	60	71	74	85	86	98	107	121	140	153	170	186	189	207
		1422	34	39	46	54	57	65	73	76	86	89	98	112	124	143	155	173	189	192
		1524	34	39	48	49	58	62	70	74	79	88	91	103	115	126	146	158	176	192
		1676	42	45	49	51	61	64	68	71	79	85	92	104	116	122	134	149	161	179
	1829	43	45	46	51	54	61	68	70	77	86	88	98	109	119	134	137	155	164	164
	10N@ 1829	1219	39	48	55	65	73	82	89	100	110	118	129	144	156	176	204	205		
		1321	42	51	57	65	74	83	95	97	106	112	131	144	153	168	193	205		
1422		40	49	55	64	68	76	86	98	97	107	113	134	155	156	183	195	213		
1524		37	46	55	58	67	76	85	89	98	104	109	128	138	155	165	187	199		
1676		40	48	55	62	73	76	83	92	97	107	110	126	141	152	179	182	199	216	
1829	39	48	49	57	62	70	74	82	88	98	103	110	124	143	146	165	165	180	180	
12N@ 1524	1219	49	58	68	79	88	101	112	128	129	144	152	165	201						
	1321	46	55	67	76	85	97	103	113	131	132	146	155	176	207					
	1422	43	54	61	71	82	92	98	107	115	132	135	155	168	192	208				
	1524	45	52	58	70	80	83	95	109	110	118	135	152	158	173	198	216			
	1676	48	52	61	71	79	91	92	104	115	119	129	149	164	182	199	219	244		
1829	43	49	57	62	74	77	89	91	103	107	115	128	149	164	170	189	211	225		
15N@ 1219	1219	60	73	95	107	119	138	152	168	185	187	202								
	1321	58	71	85	98	110	121	140	153	170	187	189	223							
	1422	57	68	79	100	106	119	124	143	155	173	189	208	228						
	1524	57	62	76	89	101	113	124	132	146	158	176	196	214						
	1676	52	61	73	82	92	104	121	129	129	153	164	183	202	228	248				
1829	52	65	68	82	95	98	115	126	134	138	158	186	207	211	238	254				



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																		
			LOAD ON EACH PANEL POINT – kN																		
			18	22	27	31	36	40	44	49	53	58	62	71	80	89	98	107	116	125	
19812	6N@ 3301	1321	33	42	45	49	58	61	67	73	80	86	91	103	116	124	141	144	171	173	
		1422	31	37	43	49	52	60	62	71	73	82	86	94	104	119	125	144	144	174	174
		1524	34	36	43	48	51	58	61	65	74	74	83	95	106	113	122	137	146	147	147
		1676	33	36	39	46	49	52	60	62	67	76	76	86	97	109	116	124	129	149	149
	1829	36	37	40	46	48	52	55	62	64	70	73	80	89	101	113	119	119	129	132	132
	8N@ 2475	1321	37	46	57	60	65	76	86	92	98	110	110	124	144	171	189	192	210	228	228
		1422	36	45	51	58	64	74	77	88	94	101	110	124	144	156	176	192	195	213	213
		1524	34	42	49	58	61	70	76	79	89	101	103	115	126	147	161	177	193	198	198
		1676	36	42	49	52	62	65	73	77	83	94	94	112	119	132	150	164	182	185	185
	1829	57	58	58	58	62	67	70	77	83	86	97	109	116	132	137	155	168	186	186	186
	9N@ 2201	1321	45	48	57	65	73	86	92	100	110	118	124	144	173	190	192	211	228	231	231
		1422	39	48	58	62	71	79	88	101	101	113	121	146	158	176	193	211	214	231	231
		1524	37	48	57	60	70	76	86	89	103	104	116	128	149	162	179	196	216	217	217
		1676	42	48	55	61	65	74	79	89	95	106	107	121	132	153	167	185	202	205	205
	1829	43	45	52	57	65	68	77	85	92	98	106	118	135	135	161	171	189	208	208	208
	10N@ 1981	1321	46	54	61	73	86	92	100	112	122	132	144	173	190	195	229	231	243	243	243
		1422	46	54	60	68	77	89	101	103	115	126	135	159	177	196	214	214	231	243	243
		1524	43	51	60	65	76	85	91	104	110	116	129	149	162	199	217	217	231	243	243
		1676	40	51	58	64	74	80	89	97	107	110	122	134	153	168	186	205	208	243	243
	1829	40	49	55	65	70	77	83	92	100	112	113	129	138	164	189	192	210	213	213	213
11N@ 1801	1321	49	58	67	77	88	100	112	124	132	146	158	176	195	228	232	244	257	257	257	
	1422	48	58	65	76	89	95	103	115	126	135	147	177	196	214	232	244	257	257	257	
	1524	49	57	65	73	82	94	104	110	118	128	137	162	182	199	219	219	244	257	257	
	1676	45	55	62	68	80	85	95	107	109	121	134	155	168	186	207	219	244	257	257	
1829	45	54	61	70	76	85	92	100	115	115	131	138	164	176	195	214	232	257	257	257	
13N@ 1524	1321	55	67	82	95	107	118	132	146	158	174	193	211	217	235	240	253	253	253	253	
	1422	55	64	79	91	103	115	128	135	147	161	179	198	217	204	240	253	253	253	253	
	1524	52	61	74	86	95	106	115	126	138	149	161	195	199	235	240	253	253	253	253	
	1676	51	61	73	79	92	104	112	119	129	138	152	182	199	204	240	253	253	253	253	
1829	51	61	68	79	86	95	107	116	126	134	134	168	189	205	210	253	253	253	253	253	
21336	7N@ 3048	1422	36	37	45	52	58	64	68	76	83	85	95	106	124	131	152	152	164	180	
		1524	34	39	45	49	55	64	65	74	77	85	91	98	109	126	134	152	156	165	165
		1676	36	40	45	48	52	58	65	68	76	79	86	100	109	112	129	138	155	158	158
		1829	36	37	43	48	51	57	62	68	70	79	80	89	103	113	116	132	140	152	152
	1981	37	39	42	46	51	55	60	64	70	73	74	86	94	106	116	124	134	143	143	143
	2134	36	40	43	46	52	55	58	62	65	73	76	85	97	103	107	119	126	140	140	140
	9N@ 2371	1422	39	46	55	60	67	79	83	91	100	107	112	131	152	164	182	190	195	195	195
		1524	37	45	52	58	67	70	80	91	97	104	109	132	147	156	170	192	189	195	195
		1676	46	51	57	64	71	76	83	94	100	104	110	128	137	158	167	182	189	189	189
		1829	48	49	55	64	67	76	83	86	95	100	103	115	132	149	161	170	185	185	195
	1981	48	51	54	58	67	71	79	88	89	98	98	113	129	138	152	164	173	176	176	176
	2134	49	51	52	57	67	70	74	82	88	94	100	107	121	140	141	153	168	176	176	176
	10N@ 2134	1422	40	51	57	67	79	85	89	101	112	119	131	149	158	176	204	196	198	204	204
		1524	45	54	61	71	82	89	97	103	106	125	131	152	162	182	193	196	198	204	204
		1676	43	52	62	65	76	82	92	98	104	109	126	135	156	162	183	189	198	198	198
		1829	45	51	57	64	70	77	88	94	98	103	116	131	140	158	167	189	193	204	204
	1981	45	49	55	60	68	76	82	91	97	106	106	118	140	143	161	171	193	204	204	204
	2134	46	49	54	60	70	73	82	85	94	104	107	119	137	146	162	167	180	198	198	198
	11N@ 1939	1422	48	61	67	76	89	95	106	124	129	132	152	161	189	205	196	202	220	214	214
		1524	45	58	65	74	85	97	98	109	126	132	134	155	170	192	196	202	220	214	214
1676		46	57	64	68	79	88	100	100	113	128	131	156	158	174	196	202	220	214	214	
1829		48	55	62	71	82	85	92	104	104	116	122	140	161	162	177	202	220	214	214	
1981	43	52	60	70	74	82	91	97	109	107	119	137	146	164	176	185	208	214	214	214	
2134	45	54	58	67	73	77	88	98	101	109	116	125	144	152	173	185	192	214	214	214	
12N@ 1777	1422	51	61	74	83	94	101	113	129	131	152	153	168	192	207	213	220	225	225	225	
	1524	49	58	68	82	86	97	110	113	132	134	153	167	190	207	213	220	225	225	225	
	1676	48	55	67	71	82	94	100	113	116	134	137	156	171	193	201	220	225	225	225	
	1829	48	55	62	71	82	91	97	103	115	119	132	152	159	177	193	201	220	225	225	
1981	45	54	62	71	76	83	95	104	107	119	125	144	158	168	183	210	225	225	225	225	
2134	45	54	60	67	76	79	91	101	109	115	124	132	152	171	176	190	214	225	225	225	
14N@ 1524	1422	54	65	79	94	106	112	129	143	152	165	179	204	196	205	210	231	231	231	231	
	1524	55	64	80	91	103	112	131	132	147	153	167	190	196	205	210	231	231	231	231	
	1676	52	62	71	82	95	104	115	134	137	152	158	171	196	205	210	231	231	231	231	
	1829	51	60	73	82	91	103	109	121	135	141	153	164	179	205	210	231	231	231	231	
1981	49	58	65	77	86	100	107	113	125	137	144	165	179	205	210	231	231	231	231	231	
2134	49	60	65	76	86	92	103	116	118	128	144	158	173	189	213	231	231	231	231	231	



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	22	27	31	36	40	44	49	53	58	62	71	80	89	98	107	116	125
22860	8N@ 2859	1422	43	49	60	64	73	82	91	97	109	118	122	141	171	173	190	208	226	
		1524	39	48	57	62	71	76	86	94	104	112	119	137	144	173	176	193	211	228
		1676	40	48	52	61	65	76	79	89	95	103	107	122	146	147	176	179	196	214
		1829	39	48	51	61	64	68	77	86	91	98	106	118	129	149	150	180	182	199
	10N@ 2286	1981	40	43	51	55	64	67	80	80	91	95	103	115	121	132	153	156	183	186
		1524	48	58	62	74	88	100	103	113	124	132	146	174	192	195	229			
		1676	48	55	62	73	82	92	103	104	116	128	129	149	177	196	199			
		1829	45	54	62	67	80	85	94	107	109	121	128	150	165	183	202	205		
	12N@ 1905	1981	46	52	58	68	71	83	94	98	110	112	122	135	156	170	189	207	226	
		2134	46	54	58	67	73	82	88	97	103	115	116	140	141	164	190	195	213	232
		1524	57	64	76	88	101	113	125	134	146	158	176	195	214					
		1676	52	62	74	82	92	104	118	129	134	149	164	182	201	220				
	14N@ 1634	1829	54	61	68	80	94	97	109	121	134	135	155	185	187	210	229			
		1981	52	62	70	80	91	101	113	116	128	134	146	156	187	207	226	243		
		2134	51	58	68	77	83	95	104	116	118	134	137	158	187	207	210	244	254	
		1676	61	71	83	94	107	119	132	152	165	182	186	204						
	15N@ 1524	1829	61	68	77	91	104	112	125	141	150	164	180	199	220					
		1981	55	65	79	91	101	113	119	132	146	153	159	186	207	225				
		2134	57	65	77	85	95	106	118	128	137	149	161	189	193	228	254			
		2286	55	62	74	86	98	109	115	129	140	140	164	177	211	214	257	262		
24384	8N@ 3048	1676	61	77	89	103	115	126	146	158	176	179	196	217						
		1829	62	77	88	100	110	125	129	147	164	180	183	217	238					
		1981	61	70	80	97	109	115	131	135	155	167	185	207	226	251				
		2134	58	68	82	94	100	113	128	137	138	162	173	195	213	254	259			
	10N@ 2438	2286	57	68	77	89	103	110	121	134	141	153	176	198	216	217	263			
		1524	42	46	55	62	67	76	83	94	95	107	112	131	144	153	167	189	204	
		1676	45	46	52	57	67	70	77	85	92	97	104	115	134	153	156	168	192	195
		1829	43	48	49	57	61	68	71	79	88	94	101	113	129	137	158	161	173	187
	12N@ 2033	1981	45	46	49	55	61	62	70	79	83	89	95	109	121	131	140	162	165	176
		2134	45	48	52	55	58	64	71	77	83	88	94	106	118	124	143	146	167	170
		2286	79	80	83	83	85	85	86	89	94	100	104	118	118	134	141	153	156	176
		1524	46	52	61	70	79	89	101	112	113	131	144	153	167	192	207			
	14N@ 1740	1676	46	52	58	68	77	82	92	104	112	116	134	149	159	171	196	211		
		1829	49	55	64	74	82	92	94	104	110	124	129	144	158	179	189			
		1981	48	54	62	68	76	83	94	101	106	113	128	134	149	167	182	193		
		2134	49	55	62	67	76	85	91	97	104	115	116	135	149	162	171	186	195	
	16N@ 1524	2286	51	54	60	65	73	79	89	97	101	107	115	129	137	152	165	176	196	202
		1676	54	65	74	85	97	104	109	128	134	153	153	171	193					
		1829	51	62	70	80	88	100	107	115	128	137	150	159	186	198				
		1981	49	58	68	79	89	97	103	118	119	131	140	161	170	192	202			
16N@ 1524	2134	51	57	70	73	83	94	104	107	118	124	137	147	165	180	205	208			
	2286	54	58	65	74	83	88	98	107	110	122	128	150	168	173	186	213	222		
	2438	51	55	64	74	80	89	101	106	112	118	126	146	155	174	179	193	219	232	
	1676	58	70	85	95	109	115	132	146	153	162	168	192	213						
16N@ 1524	1829	57	68	80	88	100	113	118	135	150	158	158	186	213						
	1981	54	64	74	86	98	104	116	134	141	143	162	176	202	222					
	2134	54	62	74	83	95	106	110	119	137	146	147	167	185	213					
	2286	54	61	71	79	91	101	110	122	128	141	149	171	180	202	217				
16N@ 1524	2438	55	60	70	79	91	100	110	118	125	131	149	161	176	189	216	226			
	1676	62	79	92	104	116	134	150	156	168	192	193								
	1829	61	74	85	103	113	121	138	152	162	173	176	216							
	1981	61	73	86	98	109	124	135	143	155	167	179	204	222						
16N@ 1524	2134	58	67	80	91	103	113	125	144	149	162	171	187	213						
	2286	58	68	80	92	104	110	119	128	150	152	170	177	214	231					
	2438	60	68	82	86	101	109	121	131	140	158	164	180	198	231	244				



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																		
			LOAD ON EACH PANEL POINT – kN																		
			18	22	27	31	36	40	44	49	53	58	62	71	80	89	98	107	116	125	
27432	9N@ 3048	1829	60	62	68	73	82	89	95	107	121	122	137	146	174	177	210	213			
		2134	61	65	71	71	74	80	89	100	112	113	125	131	152	180	185	201	220	222	
		2286	80	82	83	83	85	88	92	97	107	115	126	131	147	156	186	190	205		
		2438	82	83	85	85	86	88	95	97	103	110	119	135	146	159	164	190	195	211	
	2591	82	85	85	86	88	89	92	97	103	110	112	129	141	156	167	193	198	219		
	10N@ 2743	1829	62	68	71	77	91	95	107	116	126	138	147	176	193	211	231				
		2134	62	67	73	76	86	92	103	109	121	140	144	171	174	204	220				
		2286	62	68	74	76	83	89	98	106	118	121	132	149	159	187	192	210			
		2438	64	68	71	79	83	88	98	104	110	122	129	141	161	168	192	198	228		
	2591	64	67	71	79	85	89	97	103	113	115	125	144	156	171	185	195	204	231		
	11N@ 2493	1829	64	70	76	88	97	109	116	128	147	149	177	179	213						
		2134	64	73	74	82	92	100	110	116	129	135	149	168	187	205	223				
		2286	67	71	76	79	88	98	107	115	126	134	138	159	190	192	211				
		2438	70	71	79	83	89	94	106	112	121	129	141	156	168	196	199	220			
	2591	71	73	85	86	91	95	104	109	122	128	140	150	173	185	205	223	243			
	12N@ 2286	1981	65	73	79	89	101	107	118	131	152	153	165	185	222						
		2134	67	73	77	83	97	112	118	125	135	153	156	186	204	222					
		2286	68	74	77	89	101	112	118	131	132	149	158	187	190	225	226				
		2438	68	71	77	86	94	107	113	122	134	138	153	164	192	196	228	232			
	2743	67	73	82	83	95	98	113	121	126	137	144	159	171	201	204	238	250			
	15N@ 1829	1981	70	80	98	112	122	140	147	179	180	198	216	220							
		2134	73	80	92	101	113	128	144	153	182	185	186	222							
		2286	74	77	89	103	116	122	134	147	158	186	189	208	228						
		2438	71	79	86	98	107	119	138	141	161	167	192	195	229	257					
2743	76	85	88	95	107	116	129	147	150	162	171	202	207	250	256						
18N@ 1524	1981	76	92	110	125	147	152	179	198	216	220	237									
	2134	76	91	109	119	132	155	168	185	204	223	225									
	2286	77	86	104	118	134	138	158	187	192	211	228	247								
	2438	79	86	101	116	129	141	161	168	195	198	214	235								
2743	85	88	95	113	126	141	153	168	179	189	207	225	256								
30480	10N@ 3048	1981	67	73	77	82	86	92	101	112	118	135	137	158	171	195	208				
		2134	70	74	79	82	86	91	103	107	115	121	138	152	162	176	198	213			
		2438	82	83	83	85	92	95	101	110	125	128	129	152	173	186	187				
		2591	82	83	85	86	91	95	98	109	115	128	132	149	158	180	189	198			
	2743	83	85	86	88	91	95	100	104	113	119	129	137	158	159	189	193				
	12N@ 2539	1981	71	79	83	92	104	110	128	137	144	156	167	185							
		2134	71	77	82	94	101	107	125	131	146	147	159	187	198						
		2438	70	76	82	86	98	100	112	121	135	138	152	165	173	195					
		2591	71	77	82	86	92	103	109	118	134	140	141	168	176	198	210				
	2743	71	76	82	88	92	104	107	113	126	137	144	158	174	183	207	222				
	15N@ 2033	1981	79	83	100	112	128	135	155	158	171	186	198								
		2134	79	83	91	103	116	131	140	159	168	176	190								
		2438	77	83	91	101	107	122	138	147	156	170	176	198							
		2591	79	83	89	98	110	124	126	144	152	173	174	186	214						
	2743	79	83	88	97	109	115	129	147	153	155	176	183	208	222						
	16N@ 1905	2134	79	86	103	107	119	137	158	159	174	189	198								
		2438	79	85	94	106	112	126	146	149	171	171	185	208							
		2591	79	85	92	98	110	125	144	152	165	174	176	202	229						
		2743	80	86	92	100	113	122	129	149	155	174	176	192	220						
	3048	83	91	95	104	113	124	128	138	155	162	173	190	208	240						
	17N@ 1792	2134	82	91	104	115	131	140	159	170	189	198	216								
		2438	80	88	97	107	119	138	147	168	171	180	201	225							
		2591	82	88	98	109	118	129	146	152	176	176	189	214							
		2743	82	89	97	103	116	129	135	156	159	177	179	208	238						
3048	83	92	100	106	116	129	138	149	164	167	186	198	222	250							
18N@ 1695	2134	82	91	104	121	140	152	162	176	199	214										
	2438	82	89	97	107	125	144	149	170	179	185	208									
	2591	83	91	98	109	125	132	152	167	176	186	204	229								
	2743	85	89	101	109	122	135	155	158	177	180	193	220								
3048	88	95	103	112	125	131	146	161	168	182	192	211	243								
20N@ 1524	2134	86	98	115	140	153	162	176	199	217											
	2438	89	97	109	124	147	161	171	183	186	214	228									
	2591	88	97	106	119	132	153	170	180	192	219	219									
	2743	89	100	106	119	132	158	164	183	187	199	222	244								
3048	101	109	134	150	161	168	183	198	226	231	247	298									



ASD

GIRDER SPAN (mm)	JOIST SPACES (mm)	GIRDER DEPTH (mm)	JOIST GIRDER WEIGHT – KILOGRAM-FORCE/METER																	
			LOAD ON EACH PANEL POINT – kN																	
			18	22	27	31	36	40	44	49	53	58	62	71	80	89	98	107	116	125
33528	10N@ 3353	2134	80	86	91	97	103	109	122	124	140	147	149	179	213	214				
		2438	92	92	94	97	103	107	121	122	135	144	146	159	186					
		2743	94	94	95	100	103	107	112	122	128	135	141	156	168	195	198			
		2896	94	95	100	101	107	109	113	118	128	131	143	161	171	198	202			
		3048	95	95	98	103	107	110	113	121	124	131	134	149	165	190	204	208		
	12N@ 2795	2134	86	92	98	104	110	118	125	131	150	162	179	182	214					
		2438	85	92	98	104	110	118	131	137	150	159	186	189	225					
		2743	86	95	101	107	112	118	125	134	141	158	165	196	202	235				
		2896	88	97	98	106	112	118	125	132	152	158	159	187	199	232	235			
		3048	88	92	100	107	110	118	122	135	143	159	162	187	201	235	240			
	14N@ 2396	2134	89	98	106	113	125	144	152	182	183	199	219							
		2438	89	97	103	110	124	141	149	156	185	186	202	223						
		2743	89	95	103	107	116	129	147	153	161	179	190	211	231					
		2896	91	97	103	110	118	125	138	153	156	165	185	198	234					
		3048	89	98	103	110	119	122	134	143	158	162	187	201	235	238				
	16N@ 2097	2438	92	101	107	118	132	155	158	186	187	219	222							
		2591	94	100	110	119	132	153	161	186	189	190	226	232						
		2743	95	101	109	121	124	141	155	164	189	193	211	235						
		2896	97	104	110	119	128	141	156	165	170	196	201	240	241					
		3048	98	103	112	121	131	144	147	162	174	201	205	226	246					
	18N@ 1862	2438	95	106	115	129	147	158	186	189	220	225								
		2591	98	104	119	132	150	162	189	190	207	226	228							
		2743	98	106	115	124	140	158	165	192	195	214	234							
		2896	100	109	118	126	144	159	168	196	199	204	237	243						
	3048	101	110	118	131	135	150	164	176	202	207	226	247							
20N@ 1676	2438	101	115	122	147	158	186	207	226	229										
	2591	103	112	121	140	162	192	193	211	229										
	2743	103	115	124	140	158	170	196	198	216	234	251								
	2896	103	115	128	135	150	171	199	201	219	238	240								
	3048	98	107	115	124	138	158	168	187	190	204	229	248							
36576	10N@ 3658	2438	94	98	103	107	113	116	122	128	132	132	140	161	171	192				
		2591	95	100	103	106	112	118	124	124	128	135	137	164	174	195	204			
		2743	116	118	122	124	124	124	128	135	141	140	149	161	187					
		2896	116	118	122	124	124	125	128	135	134	141	141	162	189	190				
		3048	118	121	124	125	125	126	128	131	137	137	144	152	168	198				
	12N@ 3048	2438	101	103	106	115	122	128	134	147	149	168	186	193						
		2591	101	103	107	116	119	126	131	143	150	152	173	193						
		2743	103	104	107	112	121	128	134	135	147	153	156	190	199					
		2896	104	104	106	112	122	128	129	137	141	149	193	180	201					
		3048	104	106	107	113	119	125	131	137	138	152	159	183	198	205				
	15N@ 2438	2438	103	110	115	122	134	143	162	171	186	192	199							
		2591	104	109	116	125	131	138	153	168	176	192	196							
		2743	104	109	119	126	134	141	150	158	171	177	198							
		2896	104	109	116	124	131	138	146	159	174	180	182	204						
		3048	107	110	116	125	132	140	147	149	164	176	185	208						
	16N@ 2286	2438	104	113	119	126	134	149	162	170	190	199								
		2591	104	110	116	128	137	144	164	167	179	195	204							
		2743	104	110	119	126	134	141	149	170	179	185	198							
		2896	104	109	121	128	135	143	150	159	174	182	201	216						
		3048	104	112	118	126	134	140	147	153	176	177	187	219						
	18N@ 2033	2438	106	115	126	132	141	162	173	192	202									
		2591	107	116	124	129	144	165	168	180	205	205								
		2743	107	118	125	131	140	150	171	180	232	234								
		2896	107	113	126	134	143	152	173	174	183	202	213							
	3048	109	115	125	132	141	147	156	176	186	192	208								
20N@ 1829	2438	113	122	132	140	164	173	193	202											
	2591	112	124	129	137	156	170	183	208	223										
	2743	112	121	131	140	150	171	180	201	211	226									
	2896	115	122	129	138	153	168	177	190	205	217									
	3048	115	125	134	143	152	159	180	185	198	220	223								
24N@ 1524	2438	124	134	143	165	180	202													
	2591	121	131	147	161	176	208	225												
	2743	124	135	143	153	177	192	219	234											
	2896	128	143	162	180	210	213	226	238											
	3048	128	144	159	174	213	217	226	243	246										



REFERENCED SPECIFICATIONS, CODES AND STANDARDS

The following documents are referenced in the Open Web Steel Joists, K-Series, Longspan and Deep Longspan Steel Joists, LH-and DLH-Series and Joist Girder Specifications:

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American Society of Civil Engineers (ASCE) (2002), *Minimum Design Loads for Buildings and Other Structures*, ASCE 7-02, Reston, VA.

American Society of Testing and Materials (2004), ASTM A6/A6M-04b, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling, West Conshohocken, PA.

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American Society of Testing and Materials (2004), ASTM A606-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance, West Conshohocken, PA.

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American Welding Society, AWS A5.1-2004, Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding, Miami, FL.

American Welding Society, AWS A5.5-96, Specification for Low Alloy Steel Electrodes for Shielded Metal Arc Welding, Miami, FL.

American Welding Society, AWS A5.17-97, Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding, Miami, FL.

American Welding Society, AWS A5.18-2001, Specification for Carbon Steel Electrodes and Rods for Gas Shielded Arc Welding, Miami, FL.

American Welding Society, AWS A5.20-95, Specification for Carbon Steel Electrodes for Flux Cored Arc Welding, Miami, FL.



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American Welding Society, AWS A5.23-97, Specification for Low Alloy Steel Electrodes and Fluxes for Submerged Arc Welding, Miami, FL.

American Welding Society, AWS A5.28-96, Specification for Low Alloy Steel Filler Metals for Gas Shielded Arc Welding, Miami, FL.

American Welding Society, AWS A5.29-98, Specification for Low Alloy Steel Electrodes for Flux Cored Arc Welding, Miami, FL.

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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.



CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS

Adopted by the Steel Joist Institute April 7, 1931
Revised to May 1, 2000 - Effective May 03, 2005

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

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

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

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

Owner. The entity that is identified as such in the Contract Documents.

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

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.

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 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.

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 TEST FOR K-SERIES STEEL JOIST CONSTRUCTION

When performance tests on a structure are required, joists in the test panel shall have bridging and top deck applied as used. In addition to the full dead load, the test panel shall sustain for one hour a test load of 1.65 times the nominal live load. After this test load has been removed for a minimum of 30 minutes, the remaining deflection shall not exceed 20% of the deflection caused by the test load. The weight of the test panel itself shall constitute the dead load of the construction and shall include the weight of the joists, bridging, top deck, slab, ceiling materials, etc. The nominal live load shall be the live load specified and in no case shall it be more than the published joist capacity less the dead load. The cost of such tests shall be borne by the purchaser.

SECTION 2. JOISTS AND ACCESSORIES

2.1 STEEL JOISTS AND JOIST GIRDERS

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

K-Series joists are furnished with parallel chords only, and with minimum standard end bearing depth of 2 1/2 inches (64 mm).

LH- and **DLH-**Series joists are furnished either underslung or square ended, with top chords either parallel, pitched one way or pitched two ways. Underslung types are furnished with standard end bearing depth of 5 inches (127 mm) for



LH-Series. **DLH-Series** are furnished with standard end bearing depths of 5 inches (127 mm) for section numbers thru 17 and 7 1/2 inches (191 mm) for section numbers 18 and 19. The standard pitch is 1/8 inch in 12 inches (1:96). The nominal depth of a pitched Longspan Joist is taken at the center of the span.

Joist Girders are furnished either underslung or square ended with top chords either parallel, pitched one way or pitched two ways. Underslung types are furnished with a standard end bearing depth of 7 1/2 inches (191 mm). The standard pitch is 1/8 inch in 12 inches (1:96). The nominal depth of a pitched Joist Girder is taken at the center of the span.

Because **LH-** and **DLH-Series** joists may have exceptionally high 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 Pascal).

2.2 JOIST LOCATION AND SPACING

The maximum joist spacing shall be in accordance with the requirements of the Steel Joist Institute 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.

2.3 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 will not be beveled for slopes of 1/4 inch or less in 12 inches (1:48).

2.4 EXTENDED ENDS

Steel joist extended ends shall be in accordance with Manufacturer's Standard and shall meet the requirements of — Appendix B.

2.5 CEILING EXTENSIONS

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

**TABLE 2.6-1a
K-SERIES JOISTS
MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING**

SECTION NUMBER*	**BRIDGING MATERIAL SIZE						
	Round Rod		Equal Leg Angles				
	1/2" round (13 mm) r = 0.13" (3.30 mm)	1 x 7/64 (25 mm x 3 mm) r = 0.20" (5.08 mm)	1-1/4 x 7/64 (32 mm x 3 mm) r = 0.25" (6.35 mm)	1-1/2 x 7/64 (38 mm x 3 mm) r = 0.30" (7.62 mm)	1-3/4 x 7/64 (45 mm x 3 mm) r = 0.35" (8.89 mm)	2 x 1/8 (52 mm x 3 mm) r = 0.40" (10.16 mm)	2-1/2 x 5/32 (64 mm x 4 mm) r = 0.50" (12.70 mm)
1 – 9	3'- 3" (991 mm)	5'- 0" (1524 mm)	6'- 3" (1905 mm)	7'- 6" (2286 mm)	8'- 7" (2616 mm)	10'- 0" (3048 mm)	12'- 6" (3810 mm)
10	3'- 0" (914 mm)	4'- 8" (1422 mm)	6'- 3" (1905 mm)	7'- 6" (2286 mm)	8'- 7" (2616 mm)	10'- 0" (3048 mm)	12'- 6" (3810 mm)
11–12	2'- 7" (787 mm)	4'- 0" (1219 mm)	5'- 8" (1727 mm)	7'- 6" (2286 mm)	8'- 7" (2616 mm)	10'- 0" (3048 mm)	12'- 6" (3810 mm)

* Refer to last digit(s) of Joist Designation

** Connection to Joist must resist a nominal unfactored 700 pound force (3114 N)



TABLE 2.6-1b
LH-SERIES JOISTS
MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING
SPANS OVER 60 ft. (18.3 m) REQUIRE BOLTED DIAGONAL BRIDGING

SECTION NUMBER*	**BRIDGING ANGLE SIZE – (EQUAL LEG ANGLE)					
	1 x 7/64 (25 mm x 3 mm) r = 0.20" (5.08 mm)	1-1/4 x 7/64 (32 mm x 3 mm) r = 0.25" (6.35 mm)	1-1/2 x 7/64 (38 mm x 3 mm) r = 0.30" (7.62 mm)	1-3/4 x 7/64 (45 mm x 3 mm) r = 0.35" (8.89 mm)	2 x 1/8 (52 mm x 3 mm) r = 0.40" (10.16 mm)	2-1/2 x 5/32 (64 mm x 4 mm) r = 0.50" (12.70 mm)
02, 03, 04	4' – 7" (1397 mm)	6' – 3" (1905 mm)	7' – 6" (2286 mm)	8' – 9" (2667 mm)	10' – 0" (3048 mm)	12' – 4" (3759 mm)
05 – 06	4' – 1" (1245 mm)	5' – 9" (1753 mm)	7' – 6" (2286 mm)	8' – 9" (2667 mm)	10' – 0" (3048 mm)	12' – 4" (3759 mm)
07 – 08	3' – 9" (1143 mm)	5' – 1" (1549 mm)	6' – 8" (2032 mm)	8' – 6" (2590 mm)	10' – 0" (3048 mm)	12' – 4" (3759 mm)
09 – 10		4' – 6" (1372 mm)	6' – 0" (1829 mm)	7' – 8" (2337 mm)	10' – 0" (3048 mm)	12' – 4" (3759 mm)
11 – 12		4' – 1" (1245 mm)	5' – 5" (1651 mm)	6' – 10" (2083 mm)	8' – 11" (2718 mm)	12' – 4" (3759 mm)
13 – 14		3' – 9" (1143 mm)	4' – 11" (1499 mm)	6' – 3" (1905 mm)	8' – 2" (2489 mm)	12' – 4" (3759 mm)
15 – 16			4' – 3" (1295 mm)	5' – 5" (1651 mm)	7' – 1" (2159 mm)	11' – 0" (3353 mm)
17			4' – 0" (1219 mm)	5' – 1" (1549 mm)	6' – 8" (2032 mm)	10' – 5" (3175 mm)

* Refer to last two digits of Joist Designation

** Connection to Joist must resist force listed in Table 104.5-1

2.6 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 (18.3 m) 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 (18.3 m) in length shall have bolted diagonal bridging for all rows.

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

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

Horizontal bridging shall consist of continuous horizontal steel members. The ℓ/r ratio for horizontal bridging shall not exceed 300. The material sizes shown in Tables 2.6-1a and 2.6-1b meet the criteria.

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

Diagonal bridging, when used, shall have an ℓ/r ratio not exceeding 200.

When the bridging members are connected at their point of intersection, the material sizes listed in Table 2.6-2 will meet the above specification.



CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS

- (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.

TABLE 2.6-2
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 mm x 3 mm) r = 0.20" (5.08 mm)	1-1/4 x 7/64 (32 mm x 3 mm) r = 0.25" (6.35 mm)	1-1/2 x 7/64 (38 mm x 3 mm) r = 0.30" (7.62 mm)	1-3/4 x 7/64 (45 mm x 3 mm) r = 0.35" (8.89 mm)	2 x 1/8 (50 mm x 3 mm) r = 0.40" (10.16 mm)
12" (305 mm)	6' – 6" (1981 mm)	8' – 3" (2514 mm)	9' – 11" (3022 mm)	11' – 7" (3530 mm)	
14" (356 mm)	6' – 6" (1981 mm)	8' – 3" (2514 mm)	9' – 11" (3022 mm)	11' – 7" (3530 mm)	
16" (406 mm)	6' – 6" (1981 mm)	8' – 2" (2489 mm)	9' – 10" (2997 mm)	11' – 6" (3505 mm)	
18" (457 mm)	6' – 6" (1981 mm)	8' – 2" (2489 mm)	9' – 10" (2997 mm)	11' – 6" (3505 mm)	
20" (508 mm)	6' – 5" (1955 mm)	8' – 2" (2489 mm)	9' – 10" (2997 mm)	11' – 6" (3505 mm)	
22" (559 mm)	6' – 4" (1930 mm)	8' – 1" (2463 mm)	9' – 10" (2997 mm)	11' – 6" (3505 mm)	
24" (610 mm)	6' – 4" (1930 mm)	8' – 1" (2463 mm)	9' – 9" (2971 mm)	11' – 5" (3479 mm)	
26" (660 mm)	6' – 3" (1905 mm)	8' – 0" (2438 mm)	9' – 9" (2971 mm)	11' – 5" (3479 mm)	
28" (711 mm)	6' – 2" (1879 mm)	8' – 0" (2438 mm)	9' – 8" (2946 mm)	11' – 5" (3479 mm)	
30" (762 mm)	6' – 2" (1879 mm)	7' – 11" (2413 mm)	9' – 8" (2946 mm)	11' – 4" (3454 mm)	
32" (813 mm)	6' – 1" (1854 mm)	7' – 10" (2387 mm)	9' – 7" (2921 mm)	11' – 4" (3454 mm)	13' – 0" (3962 mm)
36" (914 mm)		7' – 9" (2362 mm)	9' – 6" (2895 mm)	11' – 3" (3429 mm)	12' – 11" (3973 mm)
40" (1016 mm)		7' – 7" (2311 mm)	9' – 5" (2870 mm)	11' – 2" (3403 mm)	12' – 10" (3911 mm)
44" (1118 mm)		7' – 5" (2260 mm)	9' – 3" (2819 mm)	11' – 0" (3352 mm)	12' – 9" (3886 mm)
48" (1219 mm)		7' – 3" (2209 mm)	9' – 2" (2794 mm)	10' – 11" (3327 mm)	12' – 8" (3860 mm)
52" (1321 mm)			9' – 0" (2743 mm)	10' – 9" (3276 mm)	12' – 7" (3835 mm)
56" (1422 mm)			8' – 10" (2692 mm)	10' – 8" (3251 mm)	12' – 5" (3784 mm)
60" (1524 mm)			8' – 7" (2616 mm)	10' – 6" (3200 mm)	12' – 4" (3759 mm)
64" (1626 mm)			8' – 5" (2565 mm)	10' – 4" (3149 mm)	12' – 2" (3708 mm)
68" (1727 mm)			8' – 2" (2489 mm)	10' – 2" (3098 mm)	12' – 0" (3657 mm)
72" (1829 mm)			8' – 0" (2438 mm)	10' – 0" (3048 mm)	11' – 10" (3606 mm)

MINIMUM A307 BOLT REQUIRED FOR CONNECTION		
SERIES	*SECTION NUMBER	BOLT DIAMETER
K	ALL	3/8" (10 mm)
LH, DLH	2 - 12	3/8" (10 mm)
LH, DLH	13 - 17	1/2" (13 mm)
DLH	18 and 19	5/8" (16 mm)

*Refer to last digit(s) of Joist Designation



2.7 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**.

2.8 BOTTOM CHORD LATERAL BRACING FOR JOIST GIRDERS

Bottom chord lateral bracing may be furnished to prevent lateral movement of the bottom chord of the Joist Girder and to prevent the ratio of chord length to 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 will 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 may not be uniform and may include drips, runs, and sags. Compatibility of any coating including fire protective coatings applied over a 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 may 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 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 mono-rails, fans, blowers, tanks, etc., shall be indicated. 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 Steel Joist Institute does not presume to establish the loading requirements for which structures are designed.

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 Steel Joist Institute Joist Girder Weight Tables are based on uniformly spaced panel point loading conditions and are valid for use in selecting Joist Girder sizes for gravity conditions that can be expressed in kips (kiloNewtons) per panel point on the Joist Girder.

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 near the end of a column, due consideration shall be given to extend the column length to allow a plate type connection between the top of the joist or Joist Girder top chord and the column.

Avoid resolving 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 may require consideration by the joist manufacturer.

The **specifying professional** shall use one of the following options that allows the:

- Estimator to price the joists.
- Joist manufacturer to design the joists properly.
- Owner to obtain the most economical joists.

Option 1: Select a Standard Steel Joist Institute joist for the uniform design loading and provide the load and location of any additional loads on the structural plan with a note "Joist manufacturer shall design joists for additional loads as shown". This option works well for a few added loads per joist with known locations.



Option 2: Select a KCS joist using moment and end reaction. This option works well for concentrated loads for which exact locations are not known or for multiple loading. See examples and limitations on the pages accompanying the KCS Joist Load Tables.

- Determine the maximum moment
- Determine the maximum end reaction (shear)
- Select the required KCS joist that provides the required moment and end reaction (shear).

Option 3: Specify a SPECIAL joist with load diagrams. This option is preferred when the joist includes loading that cannot clearly be denoted on the structural drawings.

- Provide a load diagram to clearly define ALL loads
- Place the designation (i.e. 18K SP or 18LH SP) under the load diagram with the following note: "Joist manufacturer to design joist to support loads as shown above".

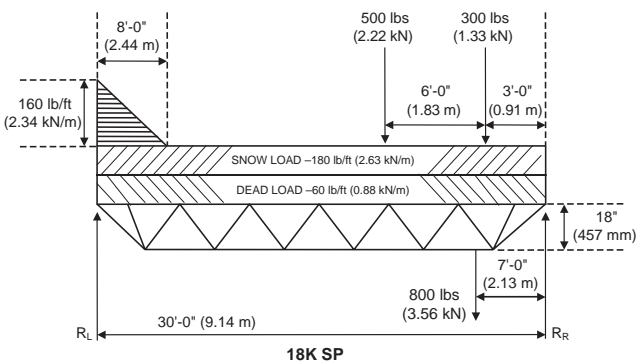
CAUTION: The **specifying professional** shall compare the equivalent uniform loads derived from the maximum moment and shear to the uniform loads tabulated in the **K-Series Load Table**. An equivalent unfactored uniform load in excess of 550 plf (8020 N/m) or a maximum unfactored end reaction exceeding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

SPECIAL LOADING : Please note the load combinations shown are for referenced examples only and it is not to be presumed that the joist designer is responsible for the applicable building code load combinations. If the loading criteria are too complex to adequately communicate in a simple load diagram, then the **specifying professional** shall provide a load schedule showing the specified design loads, load categories, and required load combinations with applicable load factors.

ASD EXAMPLE:

U.S. CUSTOMARY UNITS AND (METRIC UNITS)

Load diagram per ASCE 7 2.4.1(3) **D + S**

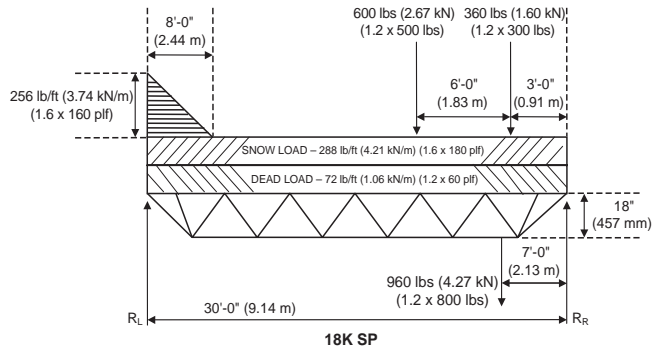


Joist manufacturer to design joist to support loads as shown above.

LRFD EXAMPLE:

U.S. CUSTOMARY UNITS AND (METRIC UNITS)

Factored Load diagram per ASCE 7 2.3.2(3) **1.2D + 1.6S**



Joist manufacturer to design joist to support factored loads as shown.

(b) Connections -

Minimum End Anchorage for simple span gravity loading shall be in accordance with Steel Joist Institute Standard Specifications Load Tables & Weight Tables Section 5.6 for **K-Series**, Section 104.4 for **LH-** and **DLH-Series**, and Section 1004.6 for Joist Girders. The **specifying professional** is responsible for the design of the joist and Joist Girder connection when it is subject to any loads other than simple span gravity loading including uplift and lateral loads. The **specifying professional** is also responsible for bridging termination connections. The contract documents must clearly illustrate these connections.

(c) Special Considerations

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

- 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).
- Oversized or other non-standard web openings
- Extended ends
- Deflection criteria for live and total loads for non-SJI standard joists
- 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:

- 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) Joists 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. Joists 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 will be assumed to be correct in the absence of written notice from the Buyer to the contrary. When plans are furnished by the Buyer which do not agree with the Architect's bid plans, such detailed plans shall be considered as a written notice of change of plans. However, it shall be the Buyer's responsibility to advise the Seller of those changes which affect the joists or Joist Girders.

6.4 APPROVAL

When joist placement plans are furnished by the Seller, prints thereof are submitted to the Buyer and owner for examination and approval. The Seller allows a maximum of fourteen (14) calendar days in 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 buyers 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 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 must 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⁾.



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 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.

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 Appendix E for OSHA definition of a 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 must be approved or executed by a qualified official of the Seller. Upon such approval the proposal becomes a contract.

8.2 ACCEPTANCE OF PROPOSALS

All proposals are intended for prompt acceptance and are subject to change without notice.

8.3 BILLING

Contracts on a lump sum basis are to be billed proportionately as shipments are made.

8.4 PAYMENT

Payments shall be made in full on each invoice without retention.

8.5 ARBITRATION

All business controversies which cannot be settled by direct negotiations between Buyer and Seller shall be submitted to arbitration. Both parties shall sign a submission to arbitration and if possible agree upon an arbitrator. If they are unable to agree, each shall appoint an arbitrator and these two shall appoint a third arbitrator. The expenses of the arbitration shall be divided equally between the parties, unless otherwise provided for in the agreements to submit to arbitration. The arbitrators shall pass final judgment upon all questions, both of law and fact, and their findings shall be conclusive.



GLOSSARY

NOTES:

Terms in **Bold** and their definitions come from the AISC AND AISI STANDARD Standard Definitions for Use in the Design of Steel Structures, 2004 Edition, First Printing April 2005.

* 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.

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.

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 whose 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, ϕ . Factor that accounts for unavoidable deviations of the *nominal strength* from the actual strength and for the manner and consequences of failure.

Safety Factor, Ω . 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-1.1 Standard Specifications for Open Web Steel Joists, **K-Series**; ANSI/SJI-LH/DLH-1.1 Standard Specifications for Longspan Steel Joists, **LH-Series** and Deep Longspan Steel Joists, **DLH-Series**; and ANSI/SJI-JG-1.1 Standard Specifications for **Joist Girders**.

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.





APPENDIX A - JOIST SUBSTITUTES K-SERIES

Joist substitutes are 2.5 inch (64 mm) deep sections intended for use in very short spans (less than 8 feet (2.4 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 fabricated from material conforming to Steel Joist Institute Specifications. Full lateral support to the compressive flange is provided by attachments to the deck. Caution must be exercised during erection since joist sub-

stitutes 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 SJI K-Series specifications and the deck installed and attached to the top flange.

Tables below list uniform loads based on **LRFD** and **ASD** methods of design and listed in U.S. Customary and Metric units:

LRFD

2.5 Inch K-Series Joist Substitutes			
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
5'-0"	825 338	825 465	825
6'-0"	561 189	778.5 260	825 354
7'-0"	405 116	562.5 160	810 218
8'-0"	306 76	426 105	612 143

LRFD

64 mm K-Series Joist Substitute			
Based on a Maximum Yield Strength of 345 MPa			
Designation	2.5K1	2.5K2	2.5K3
Span (mm)	KiloNewtons per Meter (kN/m)		
1219	12.03	12.03	12.03
1524	12.03 4.93	12.03 6.78	12.03
1828	8.18 2.75	11.36 3.79	12.03 5.16
2133	5.91 1.69	8.21 2.33	11.82 3.18
2438	4.46 1.10	6.21 1.53	8.93 2.08

ASD

2.5 Inch K-Series Joist Substitutes			
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
5'-0"	550 338	550 465	550
6'-0"	374 189	519 260	550 354
7'-0"	270 116	375 160	540 218
8'-0"	204 76	284 105	408 143

ASD

64 mm K-Series Joist Substitutes			
Based on a Maximum Yield Strength of 345 MPa			
Designation	2.5K1	2.5K2	2.5K3
Span (mm)	KiloNewtons per Meter (kN/m)		
1219	8.02	8.02	8.02
1524	8.02 4.93	8.02 6.78	8.02
1828	5.45 2.75	7.57 3.79	8.02 5.16
2133	3.94 1.69	5.47 2.33	7.88 3.18
2438	2.97 1.10	4.14 1.53	5.95 2.08

The figures shown in red are the uniform live loads which produce an approximate deflection of 1/360 of the span.





APPENDIX B - TOP CHORD EXTENSIONS AND EXTENDED ENDS, K-SERIES

Joist extensions are commonly furnished to support a variety of overhang conditions. The two types are pictured below. The first is the TOP CHORD EXTENSION or "S" TYPE, which has only the top chord angles extended. The second is the EXTENDED END or "R" TYPE in which the standard 2 1/2 in., (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 for K-Series TOP CHORD EXTENSIONS and EXTENDED ENDS for LRFD and ASD methods of design and listed in U.S. Customary and Metric units, have been developed as an aid to the **specifying professional**. The black number in the tables is the maximum allowable uniform load in pounds per linear foot (kiloNewton/Meter). The red number is the uniform load which will produce an approximate deflection of L1/240, where L1 is the length of the extension. The load tables are

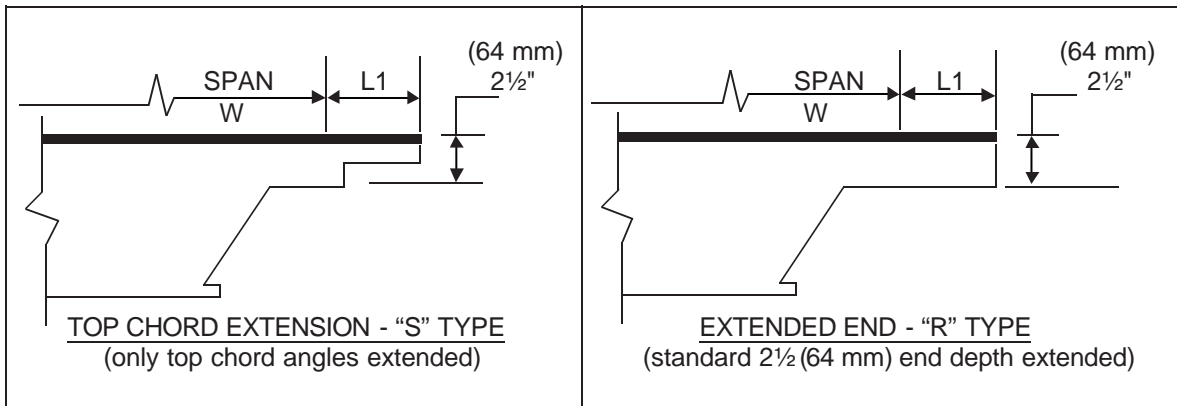
applicable for uniform loads only. If there are concentrated loads and/or non-uniform loads, a loading diagram must be provided by the **specifying professional** on the structural drawings. In cases where it is not possible to meet specific job requirements with a 2 1/2 in. (64 mm) deep "R" type extension (refer to "S" and "I" values in the Extended End Load Table), the depth of the extension must be increased to provide greater load-carrying capacity. If the loading diagram for any condition is not shown, the joist manufacturer will design the extension to support the uniform load indicated in the K-Series Joist Load Table for the span of the joist.

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

It should be noted that an "R" TYPE extension must be specified when building details dictate a 2 1/2 in., (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 Load Table for definition of Span



LRFD

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	825 550	544 363	267 127	157 58							
S2	0.127	0.138	825 550	700 422	343 200	202 91							
S3	0.144	0.156	825 550	793 550	388 226	229 104							
S4	0.160	0.172	825 550	825 550	432 249	255 113	168 60						
S5	0.176	0.188	825 550	825 550	474 272	280 124	184 66						
S6	0.192	0.204	825 550	825 550	517 295	306 134	202 72						
S7	0.241	0.306	825 550	825 550	649 443	384 201	253 108	180 64					
S8	0.266	0.332	825 550	825 550	717 481	424 219	280 117	198 70					
S9	0.288	0.358	825 550	825 550	777 519	459 236	303 126	214 75	160 48				
S10	0.380	0.544	825 550	825 550	825 550	606 359	400 192	283 115	211 74	163 50			
S11	0.438	0.622	825 550	825 550	825 550	699 410	460 220	327 131	243 84	189 57	150 41		
S12	0.494	0.696	825 550	825 550	825 550	789 459	520 246	369 147	274 94	213 64	169 45		

LRFD

TOP CHORD EXTENSION LOAD TABLE (R 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"	5'-0"	5'-6"	6'-0"
R1	0.895	1.119	825 550	825 550	825 550	825 550	825 396	669 236	498 152	385 103	307 73	250 54	208 41	175 32
R2	0.923	1.157	825 550	825 550	825 550	825 550	825 409	690 244	514 157	399 107	318 76	259 56	216 42	181 33
R3	1.039	1.299	825 550	825 550	825 550	825 550	825 459	777 274	579 176	448 120	358 85	292 63	243 47	205 37
R4	1.147	1.433	825 550	825 550	825 550	825 550	825 507	825 302	639 195	495 132	394 94	321 69	267 52	225 41
R5	1.249	1.561	825 550	825 550	825 550	825 550	825 550	825 329	696 212	538 144	429 103	349 75	291 57	246 44
R6	1.352	1.690	825 550	825 550	825 550	825 550	825 550	825 357	753 230	583 156	465 111	379 82	315 62	265 48
R7	1.422	1.802	825 550	825 550	825 550	825 550	825 550	825 380	792 245	613 167	489 119	399 87	331 66	279 51
R8	1.558	1.948	825 550	825 550	825 550	825 550	825 550	825 411	825 265	672 180	535 128	436 94	363 71	306 55
R9	1.673	2.091	825 550	825 550	825 550	825 550	825 550	825 442	825 284	721 194	576 138	469 101	390 77	328 59
R10	1.931	2.414	825 550	825 550	825 550	825 550	825 550	825 510	825 328	825 224	664 159	541 117	450 89	379 69
R11	2.183	2.729	825 550	825 550	825 550	825 550	825 550	825 550	825 371	825 253	751 180	612 132	508 100	430 78
R12	2.413	3.016	825 550	825 550	825 550	825 550	825 550	825 550	825 410	825 279	825 199	676 146	562 111	475 86



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						
			550	363	127	58						
S2	0.127	0.138	550	467	229	135						
			550	422	200	91						
S3	0.144	0.156	550	529	259	153						
			550	510	226	104						
S4	0.160	0.172	550	550	288	170	112					
			550	550	249	113	60					
S5	0.176	0.188	550	550	316	187	123					
			550	550	272	124	66					
S6	0.192	0.204	550	550	345	204	135					
			550	550	295	134	72					
S7	0.241	0.306	550	550	433	256	169	120				
			550	550	433	201	108	64				
S8	0.266	0.332	550	550	478	283	187	132				
			550	550	481	219	117	70				
S9	0.288	0.358	550	550	518	306	202	143	107			
			550	550	518	236	126	75	48			
S10	0.380	0.544	550	550	550	404	267	189	141	109		
			550	550	550	359	192	115	74	50		
S11	0.438	0.622	550	550	550	466	307	218	162	126	100	
			550	550	550	410	220	131	84	57	41	
S12	0.494	0.696	550	550	550	526	347	246	183	142	113	
			550	550	550	459	246	147	94	64	45	

ASD

TOP CHORD EXTENSION LOAD TABLE (R 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"	5'-0"	5'-6"	6'-0"
R1	0.895	1.119	550	550	550	550	550	446	332	257	205	167	139	117
			550	550	550	550	396	236	152	103	73	54	41	32
R2	0.923	1.157	550	550	550	550	550	460	343	266	212	173	144	121
			550	550	550	550	409	244	157	107	76	56	42	33
R3	1.039	1.299	550	550	550	550	550	518	386	299	239	195	162	137
			550	550	550	550	459	274	176	120	85	63	47	37
R4	1.147	1.433	550	550	550	550	550	550	426	330	263	214	178	150
			550	550	550	550	507	302	195	132	94	69	52	41
R5	1.249	1.561	550	550	550	550	550	550	464	359	286	233	194	164
			550	550	550	550	550	329	212	144	103	75	57	44
R6	1.352	1.690	550	550	550	550	550	550	502	389	310	253	210	177
			550	550	550	550	550	357	230	156	111	82	62	48
R7	1.422	1.802	550	550	550	550	550	550	528	409	326	266	221	186
			550	550	550	550	550	380	245	167	119	87	66	51
R8	1.558	1.948	550	550	550	550	550	550	550	448	357	291	242	204
			550	550	550	550	550	411	265	180	128	94	71	55
R9	1.673	2.091	550	550	550	550	550	550	550	481	384	313	260	219
			550	550	550	550	550	442	284	194	138	101	77	59
R10	1.931	2.414	550	550	550	550	550	550	550	550	443	361	300	253
			550	550	550	550	550	510	328	224	159	117	89	69
R11	2.183	2.729	550	550	550	550	550	550	550	550	501	408	339	287
			550	550	550	550	550	550	371	253	180	132	100	78
R12	2.413	3.016	550	550	550	550	550	550	550	550	550	451	375	317
			550	550	550	550	550	550	410	279	199	146	111	86



LRFD

TOP CHORD EXTENSION LOAD TABLE (S TYPE)											
Based on a Maximum Yield Strength of 345 MPa											
KiloNewtons per Meter (kN/m)											
TYPE	"S" (mm ³)	"I" (mm ⁴)	LENGTH (L1) in Millimeters								
			152	305	457	610	762	914	1067	1219	1372
S1	1622	36628	12.03 8.02	7.94 5.42	3.89 1.85	2.30 0.84					
S2	2081	57340	12.03 8.02	10.19 8.02	5.00 2.91	2.96 1.32					
S3	2359	64932	12.03 8.02	11.55 8.02	5.66 3.30	3.35 1.51					
S4	2622	71592	12.03 8.02	12.03 8.02	6.30 3.63	3.72 1.64	2.45 0.87				
S5	2884	78251	12.03 8.02	12.03 8.02	6.99 3.96	4.08 1.80	2.69 0.96				
S6	3146	84911	12.03 8.02	12.03 8.02	7.55 4.30	4.46 1.95	2.96 1.05				
S7	3949	127367	12.03 8.02	12.03 8.02	9.47 6.46	5.60 2.93	3.69 1.57	2.63 0.93			
S8	4359	138188	12.03 8.02	12.03 8.02	10.46 7.01	6.20 3.19	4.08 1.70	2.88 1.02			
S9	4719	149010	12.03 8.02	12.03 8.02	11.325 7.57	6.69 3.44	4.41 1.83	3.12 1.09	2.34 0.70		
S10	6227	226430	12.03 8.02	12.03 8.02	12.03 8.02	8.835 5.23	5.835 2.80	4.125 1.67	3.075 1.07	2.385 0.72	
S11	7177	258895	12.03 8.02	12.03 8.02	12.03 8.02	10.20 5.98	6.72 3.21	4.77 1.91	3.54 1.22	2.745 0.83	2.175 0.59
S12	8095	289697	12.03 8.02	12.03 8.02	12.03 8.02	11.505 6.69	7.59 3.59	5.385 2.14	4.005 1.37	3.105 0.93	2.46 0.65

LRFD

TOP CHORD EXTENSION LOAD TABLE (R TYPE)														
Based on a Maximum Yield Strength of 345 MPa														
KiloNewtons per Meter (kN/m)														
TYPE	"S" (mm ³)	"I" (mm ⁴)	LENGTH (L1) in Millimeters											
			152	305	457	610	762	914	1067	1219	1372	1524	1676	1829
R1	14666	465762	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.77	9.75 3.44	7.26 2.21	5.63 1.50	4.49 1.06	3.65 0.78	3.03 0.59	2.55 0.46
R2	15174	481579	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.96	10.10 3.56	7.53 2.29	5.82 1.56	4.64 1.10	3.78 0.81	3.15 0.61	2.66 0.48
R3	17026	540684	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 6.69	11.34 3.99	8.45 2.56	6.54 1.75	5.21 1.24	4.25 0.91	3.53 0.68	2.97 0.53
R4	18796	596459	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 7.39	12.03 4.40	9.36 2.84	7.22 1.92	5.75 1.37	4.68 1.00	3.89 0.75	3.27 0.59
R5	20467	649763	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 4.80	10.16 3.09	7.85 2.10	6.26 1.50	5.10 1.09	4.25 0.83	3.59 0.64
R6	22155	703430	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.21	10.98 3.35	8.51 2.27	6.78 1.61	5.54 1.19	4.59 0.90	3.87 0.70
R7	23300	750048	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.54	11.55 3.57	8.94 2.43	7.13 1.73	5.82 1.26	4.83 0.96	4.07 0.74
R8	25531	810818	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.99	12.03 3.86	9.80 2.62	7.82 1.86	6.36 1.37	5.30 1.03	4.46 0.80
R9	27415	870339	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 6.45	12.03 4.14	10.52 2.83	8.40 2.01	6.84 1.47	5.69 1.12	4.79 0.86
R10	31643	1E+06	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 7.44	12.03 4.76	12.03 3.26	12.03 2.32	9.69 1.70	7.89 1.29	6.56 1.00
R11	35773	1E+06	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.41	12.03 3.69	12.03 2.62	10.97 1.92	8.93 1.45	7.41 1.13
R12	39542	1E+06	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 8.02	12.03 5.98	12.03 4.07	12.03 2.90	12.03 2.13	9.87 1.61	8.21 1.25



ASD

TOP CHORD EXTENSION LOAD TABLE (S TYPE)											
Based on a Maximum Yield Strength of 345 MPa KiloNewtons per Meter (kN/m)											
TYPE	"S" (mm ³)	"I" (mm ⁴)	LENGTH (L1) in Millimeters								
			152	305	457	610	762	914	1067	1219	1372
S1	1622	36628	8.02	5.29	2.59	1.53					
			8.02	5.42	1.85	0.84					
S2	2081	57340	8.02	6.79	3.33	1.97					
			8.02	8.02	2.91	1.32					
S3	2359	64932	8.02	7.70	3.77	2.23					
			8.02	8.02	3.30	1.51					
S4	2622	71592	8.02	8.02	4.20	2.48	1.63				
			8.02	8.02	3.63	1.64	0.87				
S5	2884	78251	8.02	8.02	4.61	2.72	1.79				
			8.02	8.02	3.96	1.80	0.96				
S6	3146	84911	8.02	8.02	5.03	2.97	1.97				
			8.02	8.02	4.30	1.95	1.05				
S7	3949	127367	8.02	8.02	6.31	3.73	2.46	1.75			
			8.02	8.02	6.46	2.93	1.57	0.93			
S8	4359	138188	8.02	8.02	6.97	4.13	2.72	1.92			
			8.02	8.02	7.01	3.19	1.70	1.02			
S9	4719	149010	8.02	8.02	7.55	4.46	2.94	2.08	1.56		
			8.02	8.02	7.57	3.44	1.83	1.09	0.70		
S10	6227	226430	8.02	8.02	8.02	5.89	3.89	2.75	2.05	1.59	
			8.02	8.02	8.02	5.23	2.80	1.67	1.07	0.72	
S11	7177	258895	8.02	8.02	8.02	6.80	4.48	3.18	2.36	1.83	1.45
			8.02	8.02	8.02	5.98	3.21	1.91	1.22	0.83	0.59
S12	8095	289697	8.02	8.02	8.02	7.67	5.06	3.59	2.67	2.07	1.64
			8.02	8.02	8.02	6.69	3.59	2.14	1.37	0.93	0.65

ASD

TOP CHORD EXTENSION LOAD TABLE (R TYPE)														
Based on a Maximum Yield Strength of 345 MPa KiloNewtons per Meter (kN/m)														
TYPE	"S" (mm ³)	"I" (mm ⁴)	LENGTH (L1) in Millimeters											
			152	305	457	610	762	914	1067	1219	1372	1524	1676	1829
R1	14666	465762	8.02	8.02	8.02	8.02	8.02	6.50	4.84	3.75	2.99	2.43	2.02	1.70
			8.02	8.02	8.02	8.02	5.77	3.44	2.21	1.50	1.06	0.78	0.59	0.46
R2	15174	481579	8.02	8.02	8.02	8.02	8.02	6.73	5.02	3.88	3.09	2.52	2.10	1.77
			8.02	8.02	8.02	8.02	5.96	3.56	2.29	1.56	1.10	0.81	0.61	0.48
R3	17026	540684	8.02	8.02	8.02	8.02	8.02	7.56	5.63	4.36	3.47	2.83	2.35	1.98
			8.02	8.02	8.02	8.02	6.69	3.99	2.56	1.75	1.24	0.91	0.68	0.53
R4	18796	596459	8.02	8.02	8.02	8.02	8.02	8.02	6.24	4.81	3.83	3.12	2.59	2.18
			8.02	8.02	8.02	8.02	7.39	4.40	2.84	1.92	1.37	1.00	0.75	0.59
R5	20467	649763	8.02	8.02	8.02	8.02	8.02	8.02	6.77	5.23	4.17	3.40	2.83	2.39
			8.02	8.02	8.02	8.02	8.02	4.80	3.09	2.10	1.50	1.09	0.83	0.64
R6	22155	703430	8.02	8.02	8.02	8.02	8.02	8.02	7.32	5.67	4.52	3.69	3.06	2.58
			8.02	8.02	8.02	8.02	8.02	5.21	3.35	2.27	1.61	1.19	0.90	0.70
R7	23300	750048	8.02	8.02	8.02	8.02	8.02	8.02	7.70	5.96	4.75	3.88	3.22	2.71
			8.02	8.02	8.02	8.02	8.02	5.54	3.57	2.43	1.73	1.26	0.96	0.74
R8	25531	810818	8.02	8.02	8.02	8.02	8.02	8.02	8.02	6.53	5.21	4.24	3.53	2.97
			8.02	8.02	8.02	8.02	8.02	5.99	3.86	2.62	1.86	1.37	1.03	0.80
R9	27415	870339	8.02	8.02	8.02	8.02	8.02	8.02	8.02	7.01	5.60	4.56	3.79	3.19
			8.02	8.02	8.02	8.02	8.02	6.45	4.14	2.83	2.01	1.47	1.12	0.86
R10	31643	1004782	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	6.46	5.26	4.37	3.69
			8.02	8.02	8.02	8.02	8.02	7.44	4.78	3.26	2.32	1.70	1.29	1.00
R11	35773	1135894	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	7.31	5.95	4.94	4.18
			8.02	8.02	8.02	8.02	8.02	8.02	5.41	3.69	2.62	1.92	1.45	1.13
R12	39542	1255353	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	8.02	6.58	5.47	4.62
			8.02	8.02	8.02	8.02	8.02	8.02	5.98	4.07	2.90	2.13	1.61	1.25





APPENDIX C - ECONOMY TABLES

K-SERIES

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 their own unique cost; consequently, the Steel Joist Institute cannot guarantee 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

$$W_{TL} = 148 \times 2.5 = 370 \text{ plf}$$

$$W_{LL} = 100 \times 2.5 = 250 \text{ plf}$$

A 22K6 at a span of 30 feet can carry 371 plf of Total Load and possesses a Live Load deflection figure of 266 plf. However, it exceeds the maximum depth limitation of 20 inches. A 20K7 fulfills the Total Load requirement but possesses a Live Load deflection 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 = $48 \times 1.2 = 58$ psf (includes joist weight)

Factored LL = $100 \times 1.6 = 160$ psf

Factored TL = 218 psf

$$\text{Factored } W_{TL} = 218 \times 2.5 = 545 \text{ plf}$$

$$W_{LL} = 100 \times 2.5 = 250 \text{ plf}$$

A 22K6 at a span of 30 feet can carry 566 plf of Factored Total Load and possesses a Live Load deflection figure of 266 plf. However, it exceeds the maximum depth limitation of 20 inches. A 20K7 fulfills the Factored Total Load requirement but possesses a Live Load deflection 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.



LRFD

ECONOMY 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	8K1	14K1	16K2	12K3	14K3	16K3	18K3	14K4	20K3	16K4	12K5	18K4	16K5	20K4
Depth (In.)	10	12	8	14	16	12	14	16	18	14	20	16	12	18	16	20
Approx. Wt. (lbs/ft.)	5.0	5.0	5.1	5.2	5.5	5.7	6.0	6.3	6.6	6.7	6.7	7.0	7.1	7.2	7.5	7.6
Span (ft.)																
8			825 550													
9			825 550													
10	825 550		825 480													
11	825 542		798 377													
12	825 455	825 550	666 288			825 550							825 550			
13	718 363	825 510	565 225			825 510							825 510			
14	618 289	750 425	486 179	825 550		825 463	825 550			825 550			825 463			
15	537 234	651 344	421 145	766 475		814 428	825 507			825 507			825 434			
16	469 192	570 282	369 119	672 390	825 550	714 351	825 467	825 550		825 467		825 550	825 396		550 550	
17	415 159	504 234		592 324	768 488	630 291	742 404	825 526		825 443		825 526	825 366		550 526	
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	712 336		820 452	681 269	825 523	825 455	
20	298 97	361 142		426 197	552 297	453 177	534 246	615 330	694 423	642 287	775 517	739 386	613 230	825 490	825 426	825 550
21		327 123		385 170	499 255	409 153	483 212	556 285	630 364	582 248	702 453	670 333	555 198	759 426	754 373	825 520
22		298 106		351 147	454 222	373 132	439 184	505 247	573 316	529 215	639 393	609 289	505 172	690 370	687 323	771 461
23		271 93		321 128	415 194	340 116	402 160	462 216	523 276	483 188	583 344	556 252	462 150	630 323	627 282	703 402
24		249 81		294 113	381 170	312 101	367 141	424 189	480 242	442 165	535 302	510 221	423 132	577 284	576 248	645 353
25				270 100	351 150		339 124	390 167	441 214	408 145	493 266	469 195		532 250	529 219	594 312
26				249 88	324 133		313 110	360 148	408 190	376 129	456 236	433 173		492 222	489 194	549 277
27				231 79	300 119		289 98	334 132	378 169	349 115	421 211	402 155		454 198	453 173	508 247
28				214 70	279 106		270 88	310 118	351 151	324 103	391 189	373 138		423 177	421 155	472 221
29					259 95			289 106	327 136		243 170	232 124		394 159	391 139	439 199
30					241 86			270 96	304 123		227 153	216 112		367 144	366 126	411 179
31					226 78			252 87	285 111		212 138	203 101		343 130	342 114	384 162
32					213 71			237 79	267 101		199 126	190 92		322 118	321 103	360 147
33									252 92		187 114			303 108		339 134
34									237 84		176 105			285 98		318 122
35									223 77		166 96			268 90		300 112
36									211 70		157 88			253 82		283 103
37											148 81					268 95
38											141 74					255 87
39											133 69					241 81
40											127 64					229 75



LRFD

ECONOMY 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	14K6	18K5	22K4	16K6	20K5	24K4	18K6	16K7	22K5	20K6	18K7	22K6	20K7	24K5	22K7	24K6
Depth (In.)	14	18	22	16	20	24	18	16	22	20	18	22	20	24	22	24
Approx. Wt. (lbs/ft.)	7.7	7.7	8.0	8.1	8.2	8.4	8.5	8.6	8.8	8.9	9.0	9.2	9.3	9.3	9.7	9.7
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		825 455			825 523	825 455			825 523					
20	787 347	825 490		825 426	825 550		825 490	825 426		825 550	825 490		825 550			
21	712 299	825 460		822 405	825 520		825 460	825 406		825 520	825 460		825 520			
22	648 259	777 414	825 548	747 351	825 490		825 438	825 385	825 548	825 490	825 438	825 548	825 490		825 548	
23	592 226	709 362	777 491	682 307	793 451		774 393	760 339	825 518	825 468	825 418	825 518	825 468		825 518	
24	543 199	651 318	712 431	627 269	727 396	780 516	709 345	697 298	804 483	792 430	789 382	825 495	825 448	825 544	825 495	825 544
25	501 175	600 281	657 381	576 238	669 350	718 456	652 305	642 263	739 427	729 380	727 337	805 464	811 421	810 511	825 474	825 520
26	462 156	553 249	606 338	532 211	618 310	663 405	603 271	592 233	682 379	673 337	672 299	744 411	750 373	748 453	825 454	814 493
27	427 139	513 222	561 301	493 188	573 277	615 361	558 241	549 208	633 337	624 301	622 267	688 367	694 333	693 404	768 406	754 439
28	397 124	477 199	522 270	459 168	532 248	571 323	519 216	510 186	588 302	579 269	577 239	640 328	645 298	643 362	712 364	700 393
29		444 179	486 242	427 151	495 223	531 290	483 194	475 167	547 272	540 242	538 215	597 295	601 268	600 325	664 327	652 354
30		414 161	453 219	399 137	462 201	496 262	451 175	444 151	511 245	504 218	502 194	556 266	561 242	559 293	619 295	609 319
31		387 146	424 198	373 124	433 182	465 237	421 158	415 137	478 222	471 198	469 175	520 241	525 219	523 266	580 267	570 289
32		363 132	397 180	349 112	406 165	435 215	396 144	388 124	448 201	442 179	441 159	489 219	492 199	490 241	544 242	535 262
33		342 121	373 164		254 150	273 196	248 131		421 183	415 163	414 145	459 199	463 181	462 220	511 221	502 239
34		321 110	352 149		358 137	257 179	233 120		397 167	391 149	390 132	432 182	435 165	435 201	481 202	472 218
35		303 101	331 137		339 126	363 164	330 110		373 153	369 137	367 121	408 167	411 151	409 184	454 185	445 200
36		286 92	313 126		319 115	343 150	312 101		354 141	348 125	348 111	385 153	388 139	387 169	429 169	421 183
37			297 116		303 106	324 138			334 130	330 115		364 141	367 128	366 155	406 156	399 169
38			280 107		286 98	307 128			316 119	312 106		345 130	348 118	346 143	384 144	378 156
39			267 98		271 90	292 118			300 110	297 98		327 120	330 109	328 132	364 133	358 144
40			253 91		258 84	277 109			285 102	282 91		310 111	313 101	312 122	346 123	340 133
41			241 85			264 101			271 95			295 103		297 114	330 114	324 124
42			229 79			252 94			259 88			282 96		283 106	313 106	309 115
43			219 73			240 88			247 82			268 89		270 98	300 99	294 107
44			208 68			229 82			235 76			256 83		258 92	286 92	280 100
45						219 76								246 86		268 93
46						208 71								235 80		256 87
47						199 67								225 75		246 82
48						192 63								216 70		235 77



LRFD

ECONOMY 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	26K5	16K9	24K7	18K9	26K6	20K9	26K7	22K9	28K6	24K8	18K10	28K7	24K9	26K8	20K10	26K9
Depth (In.)	26	16	24	18	26	20	26	22	28	24	18	28	24	26	20	26
Approx. Wt (lbs/ft.)	9.8	10	10.1	10.2	10.6	10.8	10.9	11.3	11.4	11.5	11.7	11.8	12	12.1	12.2	12.2
Span (ft.)																
16		825 550														
17		825 526														
18		825 490		825 550							825 550					
19		825 455		825 523							825 523					
20		825 426		825 490		825 550					825 490				825 550	
21		825 406		825 460		825 520					825 460				825 520	
22		825 385		825 438		825 490		825 548			825 438				825 490	
23		825 363		825 418		825 468		825 518			825 418				825 468	
24		825 346	825 544	825 396		825 448		825 495		825 544	825 396		825 544		825 448	
25		771 311	825 520	825 377		825 426		825 474		825 520	825 377		825 520		825 426	
26	813 535	711 276	825 499	807 354	825 541	825 405	825 541	825 454		825 499	825 361		825 499	825 541	825 405	825 541
27	753 477	658 246	825 479	747 315	820 519	825 389	825 522	825 432		825 479	825 347		825 479	825 522	825 389	825 522
28	699 427	612 220	781 436	694 282	762 464	775 353	825 501	825 413	822 541	825 456	822 331	825 543	825 456	825 501	825 375	825 501
29	651 384	570 198	727 392	646 254	709 417	723 317	790 463	798 387	766 486	804 429	766 298	825 522	825 436	825 479	825 359	825 479
30	607 346	532 178	679 353	603 229	661 377	675 286	738 417	745 349	715 439	750 387	715 269	796 486	816 419	816 457	799 336	825 459
31	568 314	498 161	636 320	564 207	619 341	631 259	690 378	697 316	669 397	702 350	669 243	745 440	765 379	763 413	748 304	825 444
32	534 285	466 147	595 290	529 188	580 309	592 235	648 343	654 287	627 361	658 318	627 221	699 400	717 344	715 375	702 276	778 407
33	501 259		559 265	498 171	546 282	556 214	609 312	615 261	589 329	589 289	589 201	657 364	673 313	672 342	660 251	732 370
34	472 237		526 242	468 156	514 257	523 195	573 285	579 239	555 300	582 264	555 184	618 333	634 286	633 312	621 229	688 338
35	445 217		496 221	441 143	484 236	493 179	540 261	546 219	523 275	549 242	523 168	583 305	598 262	597 286	585 210	649 310
36	420 199		469 203	417 132	457 216	466 164	510 240	516 201	495 252	519 222	495 154	550 280	565 241	564 263	553 193	613 284
37	397 183		444 187		433 199	441 151	483 221	487 185	468 232	490 205		522 257	534 222	534 242	523 178	580 262
38	376 169		421 172		411 184	418 139	457 204	462 170	444 214	465 189		493 237	507 204	505 223	496 164	550 241
39	357 156		399 159		390 170	397 129	433 188	438 157	420 198	441 174		469 219	480 189	480 206	471 151	522 223
40	340 145		379 149		370 157	376 119	412 174	417 146	399 183	420 161		445 203	456 175	456 191	447 140	496 207
41	322 134		361 137		352 146		393 162	396 135	379 170	399 150		424 189	435 162	433 177		472 192
42	307 125		343 127		336 136		373 150	378 126	361 158	379 139		403 175	414 151	412 164		450 178
43	294 116		328 118		319 126		357 140	360 117	345 147	363 130		385 163	394 140	394 153		429 166
44	280 108		313 110		306 118		340 131	343 109	330 137	346 121		367 152	376 131	376 143		409 155
45	268 101		298 103		291 110		325 122		315 128	330 113		351 142	360 122	360 133		391 145
46	256 95		286 97		279 103		310 114		301 120	316 106		336 133	345 114	343 125		375 135
47	246 89		274 90		267 96		298 107		288 112	303 99		321 125	330 107	328 117		358 127
48	235 83		262 85		256 90		285 100		276 105	291 93		309 117	316 101	315 110		343 119
49	225 78				246 85		274 94		265 99			295 110		303 103		330 112
50	216 73				235 80		262 89		255 93			283 103		291 97		316 105
51	208 69				226 75		252 83		244 88			273 97		279 91		304 99
52	199 65				217 71		243 79		235 83			262 92		268 86		292 93
53									226 78			252 87				
54									217 74			243 82				
55									210 70			234 77				
56									202 66			226 73				



LRFD

ECONOMY 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	30K7	22K10	28K8	28K9	24K10	30K8	30K9	22K11	26K10	28K10	30K10	24K12	30K11	26K12	28K12	30K12
Depth (In.)	30	22	28	28	24	30	30	22	26	28	30	24	30	26	28	30
Approx. Wt. (lbs/ft.)	12.3	12.6	12.7	13	13.1	13.2	13.4	13.8	13.8	14.3	15	16	16.4	16.6	17.1	17.6
Span (ft.)																
22		825 548						825 548								
23		825 518						825 518								
24		825 495			825 544			825 495				825 544				
25		825 474			825 520			825 474				825 520				
26		825 454			825 499			825 454	825 541			825 499		825 541		
27		825 432			825 479			825 432	825 522			825 479		825 522		
28		825 413	825 543	825 543	825 456			825 413	825 501	825 543		825 456		825 501	825 543	
29		825 399	825 522	825 522	825 436			825 399	825 479	825 522		825 436		825 479	825 522	
30	825 543	825 385	825 500	825 500	825 422	825 543	825 543	825 385	825 459	825 500	825 543	825 422	825 543	825 459	825 500	825 543
31	801 508	825 369	825 480	825 480	825 410	825 520	825 520	825 369	825 444	825 480	825 520	825 410	825 520	825 444	825 480	825 520
32	751 461	775 337	772 438	823 463	823 393	823 500	823 500	823 355	823 431	823 463	823 500	823 393	823 500	823 431	823 463	823 500
33	706 420	729 307	726 399	790 432	798 368	780 460	798 468	798 334	798 404	798 435	798 468	798 368	798 468	798 404	798 435	798 468
34	664 384	687 280	684 364	744 395	753 337	735 420	774 441	774 314	774 378	774 410	774 441	774 344	774 441	774 378	774 410	774 441
35	627 351	648 257	645 333	702 361	709 308	693 384	751 415	741 292	751 356	751 389	751 415	751 324	751 415	751 356	751 389	751 415
36	592 323	612 236	609 306	663 332	670 283	654 353	712 383	700 269	729 334	730 366	730 392	730 306	730 392	730 334	730 366	730 392
37	559 297	579 217	576 282	627 305	634 260	619 325	673 352	663 247	690 308	711 344	711 374	711 290	711 374	711 315	711 344	711 374
38	531 274	549 200	546 260	594 282	601 240	586 300	639 325	628 228	654 284	691 325	691 353	691 275	691 353	691 299	691 325	691 353
39	504 253	520 185	519 240	564 260	570 222	556 277	606 300	595 211	619 262	670 306	673 333	673 261	673 333	673 283	673 308	673 333
40	478 234	495 171	492 222	535 241	541 206	529 256	576 278	565 195	589 243	636 284	657 315	657 247	657 315	657 269	657 291	657 315
41	454 217	471 159	468 206	510 224	516 191	502 238	547 258	538 181	561 225	606 263	640 300	640 235	640 300	640 256	640 277	640 300
42	433 202	448 148	445 192	486 208	490 177	480 221	522 240	513 168	534 210	576 245	619 282	625 224	625 284	625 244	625 264	625 284
43	414 188	427 138	426 179	463 194	468 165	457 206	498 223	489 157	508 195	550 228	591 263	609 213	610 270	610 232	610 252	610 270
44	394 176	408 128	406 167	442 181	447 154	436 192	475 208	466 146	486 182	525 212	564 245	580 199	597 258	597 222	597 240	597 258
45	376 164		388 156	423 169	427 144	417 179	454 195		465 170	501 198	538 229	555 185	583 246	583 212	583 229	583 246
46	361 153		372 146	405 158	408 135	399 168	435 182		444 159	480 186	516 214	531 174	570 236	570 203	570 219	570 236
47	345 144		355 136	387 148	391 126	382 157	415 171		426 149	459 174	493 201	508 163	558 226	553 192	558 210	558 226
48	331 135		340 128	370 139	375 118	366 148	399 160		408 140	441 163	472 188	487 153	543 215	529 180	547 201	547 216
49	318 127		327 120	355 130		351 139	382 150		391 131	423 153	454 177		520 202	508 169	535 193	535 207
50	304 119		313 113	342 123		337 130	367 141		375 124	405 144	436 166		499 190	487 159	525 185	525 199
51	292 112		301 106	328 115		324 123	352 133		361 116	390 136	418 157		480 179	469 150	507 175	514 192
52	282 106		289 100	315 109		312 116	339 126		346 110	375 128	402 148		462 169	451 142	487 165	504 184
53	271 100		279 95	304 103		300 109	327 119			360 121	387 140		444 159		469 156	495 177
54	261 94		268 89	292 97		288 103	313 112			348 114	373 132		427 150		451 147	486 170
55	252 89		259 85	282 92		277 98	303 106			334 108	360 125		412 142		435 139	468 161
56	243 84		249 80	271 87		268 92	292 100			322 102	346 118		397 135		420 132	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



ASD

ECONOMY 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	8K1	14K1	16K2	12K3	14K3	16K3	18K3	14K4	20K3	16K4	12K5	18K4	16K5	20K4
Depth (In.)	10	12	8	14	16	12	14	16	18	14	20	16	12	18	16	20
Approx. Wt. (lbs/ft.)	5.0	5.0	5.1	5.2	5.5	5.7	6.0	6.3	6.6	6.7	6.7	7.0	7.1	7.2	7.5	7.6
Span (ft.)																
8			550 550													
9			550 550													
10	550 550		550 480													
11	550 542		532 377													
12	550 455	550 550	444 288			550 550							550 550			
13	479 363	550 510	377 225			550 510							550 510			
14	412 289	500 425	324 179	550 550		550 463	550 550			550 550			550 463			
15	358 234	434 344	281 145	511 475		543 428	550 507			550 507			550 434			
16	313 192	380 282	246 119	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	475 336		547 452	454 269	550 523	550 455	
20	199 97	241 142		284 197	368 297	302 177	356 246	410 330	463 423	428 287	517 517	493 386	409 230	550 490	550 426	550 550
21		218 123		257 170	333 255	273 153	322 212	371 285	420 364	388 248	468 453	447 333	370 198	506 426	503 373	550 520
22		199 106		234 147	303 222	249 132	293 184	337 247	382 316	353 215	426 393	406 289	337 172	460 370	458 323	514 461
23		181 93		214 128	277 194	227 116	268 160	308 216	349 276	322 188	389 344	371 252	308 150	420 323	418 282	469 402
24		166 81		196 113	254 170	208 101	245 141	283 189	320 242	295 165	357 302	340 221	282 132	385 284	384 248	430 353
25				180 100	234 150		226 124	260 167	294 214	272 145	329 266	313 195		355 250	353 219	396 312
26				166 88	216 133		209 110	240 148	272 190	251 129	304 236	289 173		328 222	326 194	366 277
27				154 79	200 119		193 98	223 132	252 169	233 115	281 211	268 155		303 198	302 173	339 247
28				143 70	186 106		180 88	207 118	234 151	216 103	261 189	249 138		282 177	281 155	315 221
29					173 95			193 106	218 136		243 170	232 124		263 159	261 139	293 199
30					161 86			180 96	203 123		227 153	216 112		245 144	244 126	274 179
31					151 78			168 87	190 111		212 138	203 101		229 130	228 114	256 162
32					142 71			158 79	178 101		199 126	190 92		215 118	214 103	240 147
33									168 92		187 114			202 108		226 134
34									158 84		176 105			190 98		212 122
35									149 77		166 96			179 90		200 112
36									141 70		157 88			169 82		189 103
37											148 81					179 95
38											141 74					170 87
39											133 69					161 81
40											127 64					153 75



ASD

ECONOMY 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	14K6	18K5	22K4	16K6	20K5	24K4	18K6	16K7	22K5	20K6	18K7	22K6	20K7	24K5	22K7	24K6
Depth (In.)	14	18	22	16	20	24	18	16	22	20	18	22	20	24	22	24
Approx. Wt. (lbs/ft.)	7.7	7.7	8.0	8.1	8.2	8.4	8.5	8.6	8.8	8.9	9.0	9.2	9.3	9.3	9.7	9.7
Span (ft.)																
14	550															
	550															
	507															
16	550			550				550								
	467			550				550								
17	550			550				550								
	443			526				526								
18	550	550		550			550	550			550					
	408	550		490			550	490			550					
19	550	550		550			550	550			550					
	383	523		455			523	455			523					
20	525	550		550	550		550	550		550	550		550			
	347	490		426	550		490	426		550	490		550			
21	475	550		548	550		550	550		550	550		550			
	299	460		405	520		460	406		520	460		520			
22	432	518	550	498	550		550	550	550	550	550	550	550		550	
	259	414	548	351	490		438	385	548	490	438	548	490		548	
23	395	473	518	455	529		516	507	550	550	550	550	550		550	
	226	362	491	307	451		393	339	518	468	418	518	468		518	
24	362	434	475	418	485	520	473	465	536	528	526	550	550	550	550	550
	199	318	431	269	396	516	345	298	483	430	382	495	448	544	495	544
25	334	400	438	384	446	479	435	428	493	486	485	537	541	540	550	550
	175	281	381	238	350	456	305	263	427	380	337	464	421	511	474	520
26	308	369	404	355	412	442	402	395	455	449	448	496	500	499	550	543
	156	249	338	211	310	405	271	233	379	337	299	411	373	453	454	493
27	285	342	374	329	382	410	372	366	422	416	415	459	463	462	512	503
	139	222	301	188	277	361	241	208	337	301	267	367	333	404	406	439
28	265	318	348	306	355	381	346	340	392	386	385	427	430	429	475	467
	124	199	270	168	248	323	216	186	302	269	239	328	298	362	364	393
29		296	324	285	330	354	322	317	365	360	359	398	401	400	443	435
		179	242	151	223	290	194	167	272	242	215	295	268	325	327	354
30		276	302	266	308	331	301	296	341	336	335	371	374	373	413	406
		161	219	137	201	262	175	151	245	218	194	266	242	293	295	319
31		258	283	249	289	310	281	277	319	314	313	347	350	349	387	380
		146	198	124	182	237	158	137	222	198	175	241	219	266	267	289
32		242	265	233	271	290	264	259	299	295	294	326	328	327	363	357
		132	180	112	165	215	144	124	201	179	159	219	199	241	242	262
33		228	249		254	273	248		281	277	276	306	309	308	341	335
		121	164		150	196	131		183	163	145	199	181	220	221	239
34		214	235		239	257	233		265	261	260	288	290	290	321	315
		110	149		137	179	120		167	149	132	182	165	201	202	218
35		202	221		226	242	220		249	246	245	272	274	273	303	297
		101	137		126	164	110		153	137	121	167	151	184	185	200
36		191	209		213	229	208		236	232	232	257	259	258	286	281
		92	126		115	150	101		141	125	111	153	139	169	169	183
37			198		202	216			223	220		243	245	244	271	266
			116		106	138			130	115		141	128	155	156	169
38			187		191	205			211	208		230	232	231	256	252
			107		98	128			119	106		130	118	143	144	156
39			178		181	195			200	198		218	220	219	243	239
			98		90	118			110	98		120	109	132	133	144
40			169		172	185			190	188		207	209	208	231	227
			91		84	109			102	91		111	101	122	123	133
41			161		176				181			197		198	220	216
			85		101				95			103		114	114	124
42			153		168				173			188		189	209	206
			79		94				88			96		106	106	115
43			146		160				165			179		180	200	196
			73		88				82			89		98	99	107
44			139		153				157			171		172	191	187
			68		82				76			83		92	92	100
45					146									164		179
					76									86		93
46					139									157		171
					71									80		87
47					133									150		164
					67									75		82
48					128									144		157
					63									70		77



ASD

ECONOMY 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	26K5	16K9	24K7	18K9	26K6	20K9	26K7	22K9	28K6	24K8	18K10	28K7	24K9	26K8	20K10	26K9
Depth (In.)	26	16	24	18	26	20	26	22	28	24	18	28	24	26	20	26
Approx. Wt (lbs/ft.)	9.8	10	10.1	10.2	10.6	10.8	10.9	11.3	11.4	11.5	11.7	11.8	12	12.1	12.2	12.2
Span (ft.)																
16		550 550														
17		550 526														
18		550 490		550 550							550 550					
19		550 455		550 523							550 523					
20		550 426		550 490		550 550					550 490				550 550	
21		550 406		550 460		550 520					550 460				550 520	
22		550 385		550 438		550 490		550 548			550 438				550 490	
23		550 363		550 418		550 468		550 518			550 418				550 468	
24		550 346	550 544	550 396		550 448		550 495		550 544	550 396		550 544		550 448	
25			514 311	550 520	550 377		550 426	550 474		550 520	550 377		550 520		550 426	
26	542 535	474 276	550 499	538 354	550 541	550 405	550 541	550 454		550 499	550 361		550 499	550 541	550 405	550 541
27	502 477	439 246	550 479	498 315	547 519	550 389	550 522	550 432		550 479	550 347		550 479	550 522	550 389	550 522
28	466 427	408 220	521 436	463 282	508 464	517 353	550 501	550 413	548 541	550 456	548 331	550 543	550 456	550 501	550 375	550 501
29	434 384	380 198	485 392	431 254	473 417	482 317	527 463	532 387	511 486	536 429	511 298	550 522	550 436	550 479	550 359	550 479
30	405 346	355 178	453 353	402 229	441 377	450 286	492 417	497 349	477 439	500 387	477 269	531 486	544 419	544 457	533 336	550 459
31	379 314	332 161	424 320	376 207	413 341	421 259	460 378	465 316	446 397	468 350	446 243	497 440	510 379	509 413	499 304	550 444
32	356 285	311 147	397 290	353 188	387 309	395 235	432 343	436 287	418 361	439 318	418 221	466 400	478 344	477 375	468 276	519 407
33	334 259		373 265	332 171	364 282	371 214	406 312	410 261	393 329	413 289	393 201	438 364	449 313	448 342	440 251	488 370
34	315 237		351 242	312 156	343 257	349 195	382 285	386 239	370 300	388 264	370 184	412 333	423 286	422 312	414 229	459 338
35	297 217		331 221	294 143	323 236	329 179	360 261	364 219	349 275	366 242	366 168	389 305	399 262	398 286	390 210	433 310
36	280 199		313 203	278 132	305 216	311 164	340 240	344 201	330 252	346 222	330 154	367 280	377 241	376 263	369 193	409 284
37	265 183		296 187		289 199	294 151	322 221	325 185	312 232	327 205		348 257	356 222	356 242	349 178	387 262
38	251 169		281 172		274 184	279 139	305 204	308 170	296 214	310 189		329 237	338 204	337 223	331 164	367 241
39	238 156		266 159		260 170	265 129	289 188	292 157	280 198	294 174		313 219	320 189	320 206	314 151	348 223
40	227 145		253 148		247 157	251 119	275 174	278 146	266 183	280 161		297 203	304 175	304 191	298 140	331 207
41	215 134		241 137		235 146		262 162	264 135	253 170	266 150		283 189	290 162	289 177		315 192
42	205 125		229 127		224 136		249 150	252 126	241 158	253 139		269 175	276 151	275 164		300 178
43	196 116		219 118		213 126		238 140	240 117	230 147	242 130		257 163	263 140	263 153		286 166
44	187 108		209 110		204 118		227 131	229 109	220 137	231 121		245 152	251 131	251 143		273 155
45	179 101		199 103		194 110		217 122		210 128	220 113		234 142	240 122	240 133		261 145
46	171 95		191 97		186 103		207 114		201 120	211 106		224 133	230 114	229 125		250 135
47	164 89		183 90		178 96		199 107		192 112	202 99		214 125	220 107	219 117		239 127
48	157 83		175 85		171 90		190 100		184 105	194 93		206 117	211 101	210 110		229 119
49	150 78				164 85		183 94		177 99			197 110		202 103		220 112
50	144 73				157 80		175 89		170 93			189 103		194 97		211 105
51	139 69				151 75		168 83		163 88			182 97		186 91		203 99
52	133 65				145 71		162 79		157 83			175 92		179 86		195 93
53									151 78			168 87				
54									145 74			162 82				
55									140 70			156 77				
56									135 66			151 73				



ASD

ECONOMY 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	30K7	22K10	28K8	28K9	24K10	30K8	30K9	22K11	26K10	28K10	30K10	24K12	30K11	26K12	28K12	30K12
Depth (In.)	30	22	28	28	24	30	30	22	26	28	30	24	30	26	28	30
Approx. Wt. (lbs/ft.)	12.3	12.6	12.7	13	13.1	13.2	13.4	13.8	13.8	14.3	15	16	16.4	16.6	17.1	17.6
Span (ft.)																
22		550 548						550 548								
23		550 518						550 518								
24		550 495			550 544			550 495				550 544				
25		550 474			550 520			550 474				550 520				
26		550 454			550 499			550 454	550 541			550 499		550 541		
27		550 432			550 479			550 432	550 522			550 479		550 522		
28		550 413	550 543	550 543	550 456			550 413	550 501	550 543		550 456		550 501	550 543	
29		550 399	550 522	550 522	550 436			550 399	550 479	550 522		550 436		550 479	550 522	
30	550 543	550 385	550 500	550 500	550 422	550 543	550 543	550 385	550 459	550 500	550 543	550 422	550 543	550 459	550 500	550 543
31	534 508	550 369	550 480	550 480	550 410	550 520	550 520	550 369	550 444	550 480	550 520	550 410	550 520	550 444	550 480	550 520
32	501 461	517 337	515 438	549 463	549 393	549 500	549 500	549 355	549 431	549 463	549 500	549 393	549 500	549 431	549 463	549 500
33	471 420	486 307	484 399	527 432	532 368	520 460	532 468	532 334	532 404	532 435	532 468	532 368	532 468	532 404	532 435	532 468
34	443 384	458 280	456 364	496 395	502 337	490 420	516 441	516 314	516 378	516 410	516 441	516 344	516 441	516 378	516 410	516 441
35	418 351	432 257	430 333	468 361	442 308	473 384	462 415	501 292	494 267	501 356	501 389	501 415	501 324	501 415	501 356	501 389
36	395 323	408 236	406 306	442 332	447 283	436 353	475 383	467 269	486 334	487 366	487 392	487 306	487 392	487 334	487 366	487 392
37	373 297	386 217	384 282	418 305	423 260	413 325	449 352	442 247	460 308	474 344	474 374	474 290	474 374	474 315	474 344	474 374
38	354 274	366 200	364 260	396 282	401 240	391 300	426 325	419 228	436 284	461 325	461 353	461 275	461 353	461 299	461 325	461 353
39	336 253	347 185	346 240	376 260	380 222	371 300	404 211	397 262	413 306	447 333	449 261	449 261	449 333	449 283	449 308	449 333
40	319 234	330 171	328 222	357 241	361 206	353 256	384 278	377 195	393 243	424 284	438 315	438 247	438 315	438 269	438 291	438 315
41	303 217	314 159	312 206	340 224	344 191	335 238	365 258	359 181	374 225	404 263	427 300	427 235	427 300	427 256	427 277	427 300
42	289 202	299 148	297 192	324 208	327 177	320 221	348 240	342 168	356 210	384 245	417 282	417 224	417 284	417 244	417 264	417 284
43	276 188	285 138	284 179	309 194	312 165	305 206	332 223	326 157	339 195	367 228	394 263	406 213	407 270	407 232	407 252	407 270
44	263 176	272 128	271 167	295 181	298 154	291 192	317 208	311 146	324 182	350 212	376 245	387 199	398 258	398 222	398 240	398 258
45	251 164		259 156	282 169	285 144	278 179	303 195		310 170	334 198	359 229	370 185	389 246	389 212	389 229	389 246
46	241 153		248 146	270 158	272 135	266 168	290 182		296 159	320 186	344 214	354 174	380 236	380 203	380 219	380 236
47	230 144		237 136	258 148	261 126	255 157	277 171		284 149	306 174	329 201	339 163	372 226	369 192	372 210	372 226
48	221 135		227 128	247 139	250 118	244 148	266 160		272 140	294 163	315 188	325 153	362 215	353 180	365 201	365 216
49	212 127		218 120	237 130		234 139	255 150		261 131	282 153	303 177		347 202	339 169	357 193	357 207
50	203 119		209 113	228 123		225 130	245 141		250 124	270 144	291 166		333 190	325 159	350 185	350 199
51	195 112		201 106	219 115		216 123	235 133		241 116	260 136	279 157		320 179	313 150	338 175	343 192
52	188 106		193 100	210 109		208 116	226 126		231 110	250 128	268 148		308 169	301 142	325 165	336 184
53	181 100		186 95	203 103		200 109	218 119			240 121	258 140		296 159		313 156	330 177
54	174 94		179 89	195 97		192 103	209 112			232 114	249 132		285 150		301 147	324 170
55	168 89		173 85	188 92		185 98	202 106			223 108	240 125		275 142		290 139	312 161
56	162 84		166 80	181 87		179 92	195 100			215 102	231 118		265 135		280 132	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





APPENDIX D - 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.



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	72	20G@14plf* W6 x 12	G205	
		10K1	2		72	W6 x 12	G208	
		10K1	2.5		72	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		72	20G@14plf* W6 x 12	G205	
		10K1	2		72	W6 x 12	G208	
		10K1	2.5		24 (48)	W6 x 12	G213	
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G228	
		10K1	2		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	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		72	20G@14plf* W6 x 12	G205	
		10K1	2.5		72	W6 x 12	G208	
		10K1	2.5		24 (48)	W6 x 12	G213	
		10K1	2.5		24 (48)	W8 x 31	G227	
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G228	

(Continued Next Page)



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			
2 Hr.	Exposed Grid	10K1	2.5	NW	24 (48)	20G@13plf W8 x 24	G229
		10K1	2.5		24 (48)	20G@13plf W6 x 12	G243
		10K1	2.5		72	20G@14plf* W6 x 12	G256
		10K1	2.5		24 (48)	20G@13plf W8 x 31	G268
	Gypsum Board	10K1	2	NW	24 (48)	NS	G505
		10K1	2.5		24 (48)	20G@14plf* 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
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	20G@14plf* W6 x 12	G256
		10K1 (22 ksi max.)	2.63		24 (48)	20G@13plf W8 x 31	G268
Gypsum Board		10K1	3	NW	24 (48)	20G@13plf W10 x 21	G523
		10K1	2.75		24 (48)	20G@13plf W8 x 24	G529
		10K1	3		24 (48)	20G@13plf W10 x 21	G547

* Special Area Requirements

NL = Not Listed

NS = Not Specified



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	LW	50.5	NS	G702
			3.75	NW			
		16K6*	2.5	LW, NW	42	NS	G705
		16K6	3	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	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	LW			D925
			4	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					

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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			
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	LW	50.5	NS	G702
			5.25	NW			
		16K6*	2.5	LW,NW	42	NS	G705
		16K6	4	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	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

NL = Not Listed

NS = Not Specified



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	20G@14plf* 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 W8 x 13	P510	
		10K1	20 MSG Min.	Fiber Board	48	NS	P519	

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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 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

NL = Not Listed

NS = Not Specified



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

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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., 1-1/2 Hr. and 2 Hr.	SAFRM	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

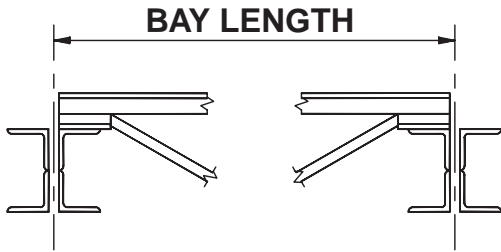
*Special Area Requirements
NS = Not Specified



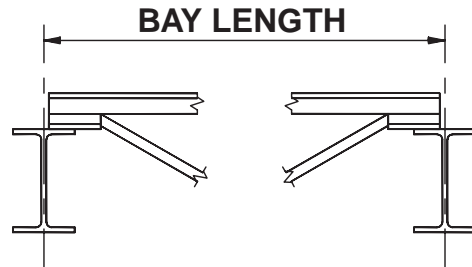


APPENDIX E - OSHA SAFETY STANDARDS FOR STEEL ERECTION

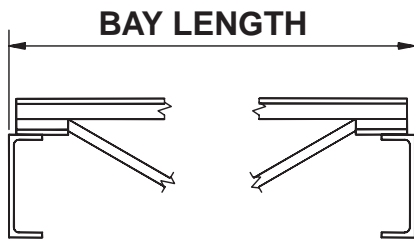
BAY LENGTH DEFINITIONS



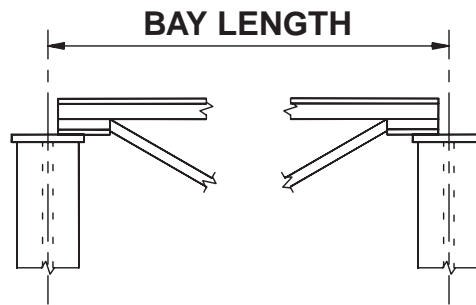
JOIST GIRDERS



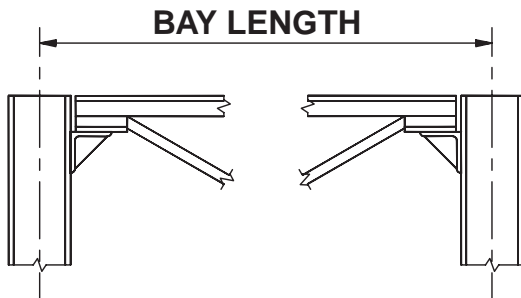
STEEL BEAM



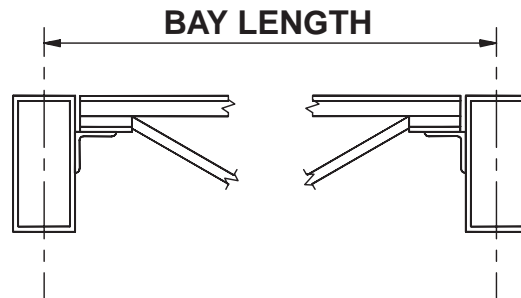
STEEL CHANNEL



STEEL COLUMN

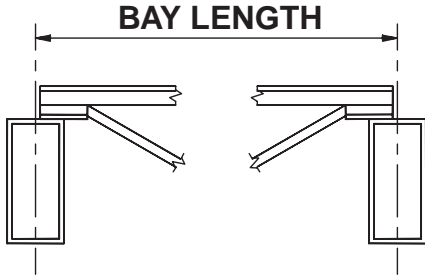


STEEL COLUMN

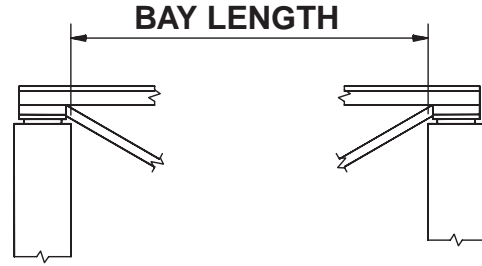


STEEL TUBE

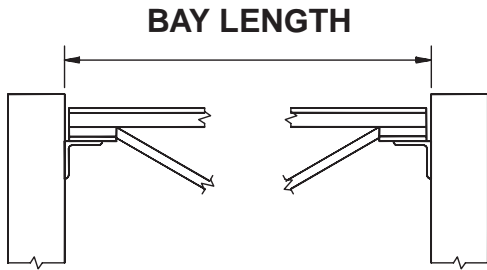




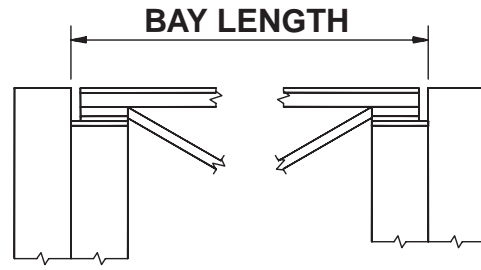
STEEL TUBE



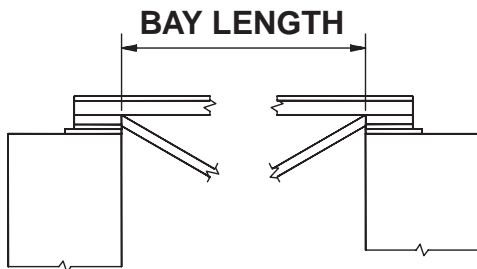
MASONRY OR TILT-UP



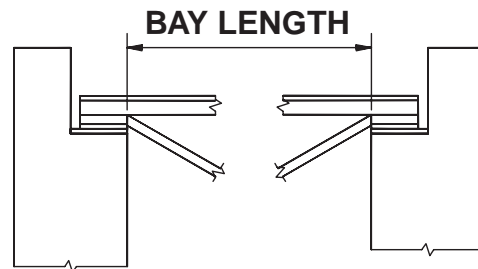
MASONRY OR TILT-UP



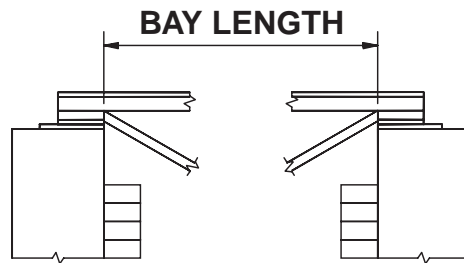
MASONRY WITH PILASTER



MASONRY OR TILT-UP



MASONRY OR TILT-UP



MASONRY WITH FACE BRICK



§ 1926.751 DEFINITIONS (Selected items only).

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
8L4 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

NM = diagonal bolted bridging not mandatory for joists under 40 feet.



► **TABLE A. — ERECTION BRIDGING FOR SHORT SPAN JOISTS (continued)**

Joist	Span
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
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
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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
30KCS3 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:

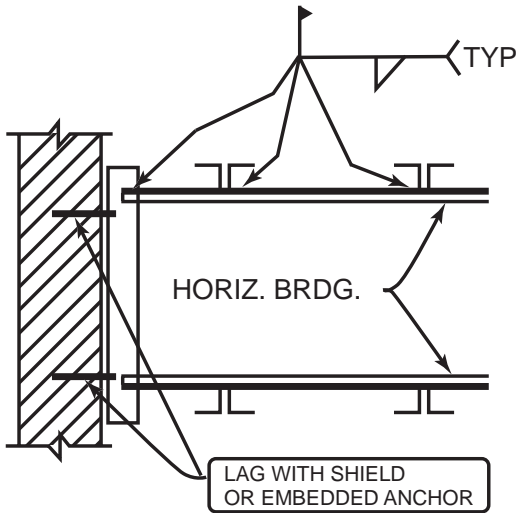
- (i) The employer has first determined from a qualified person and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load;
- (ii) The bundle of decking is placed on a minimum of three steel joists;
- (iii) The joists supporting the 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.

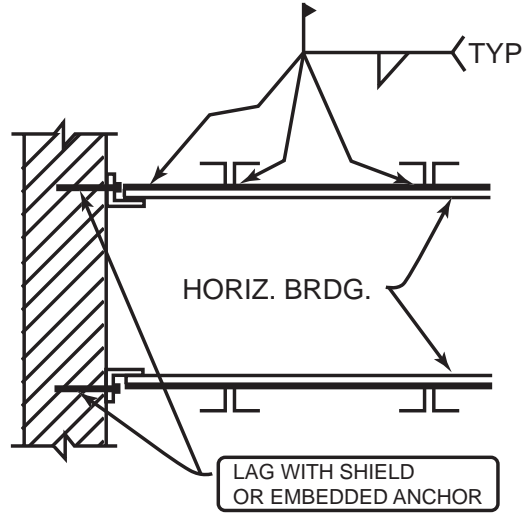


ILLUSTRATIONS OF OSHA BRIDGING TERMINUS POINTS (NON-MANDATORY)

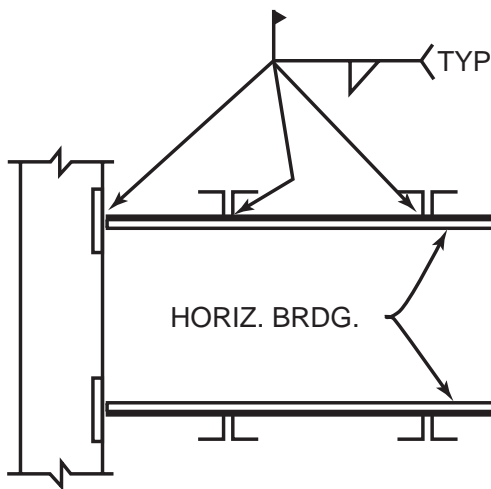
Guidelines for Complying with OSHA Steel Erection Standard, Paragraph §1926.757(a)(10) and §1926.757(c)(5).



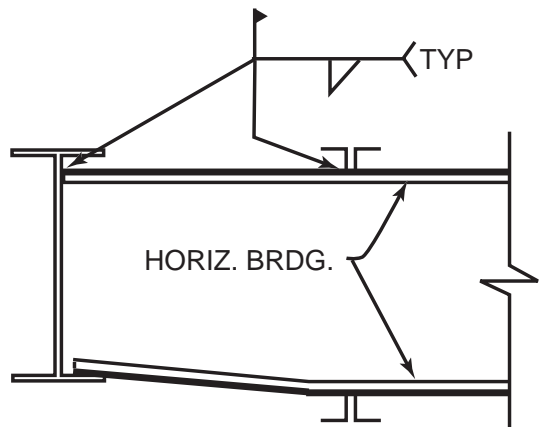
HORIZONTAL BRIDGING
TERMINUS AT WALL



HORIZONTAL BRIDGING
TERMINUS AT WALL

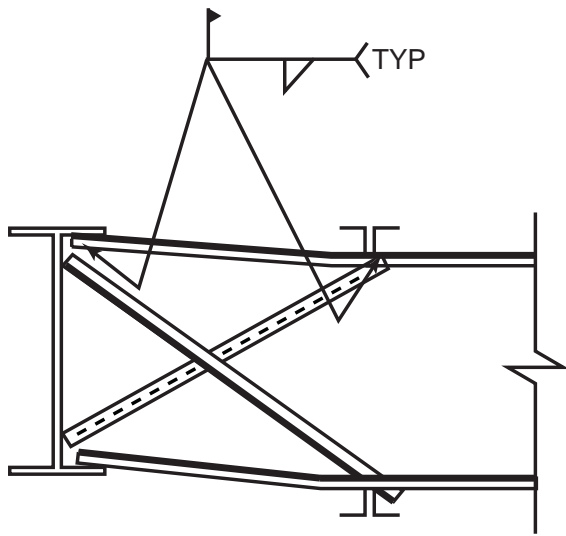


HORIZONTAL BRIDGING
TERMINUS AT PANEL WALL

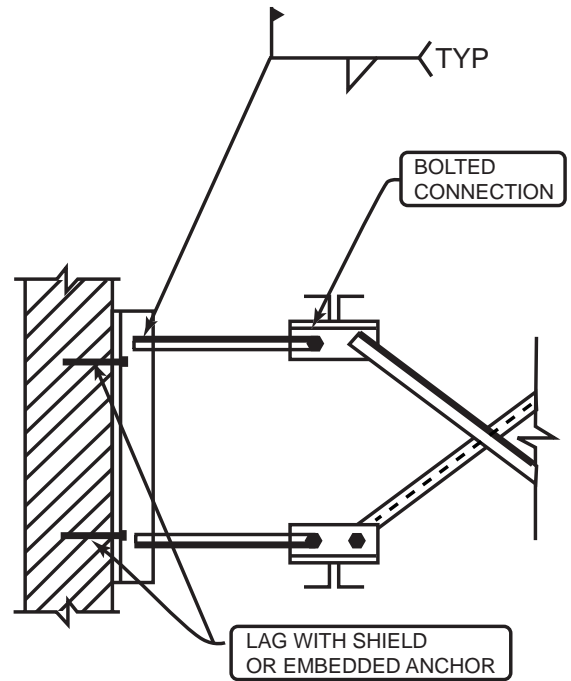


HORIZONTAL BRIDGING
TERMINUS AT
STRUCTURAL SHAPE

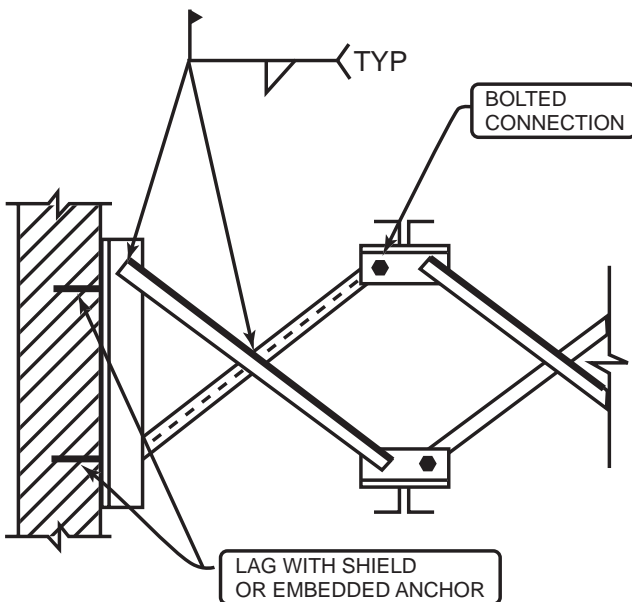




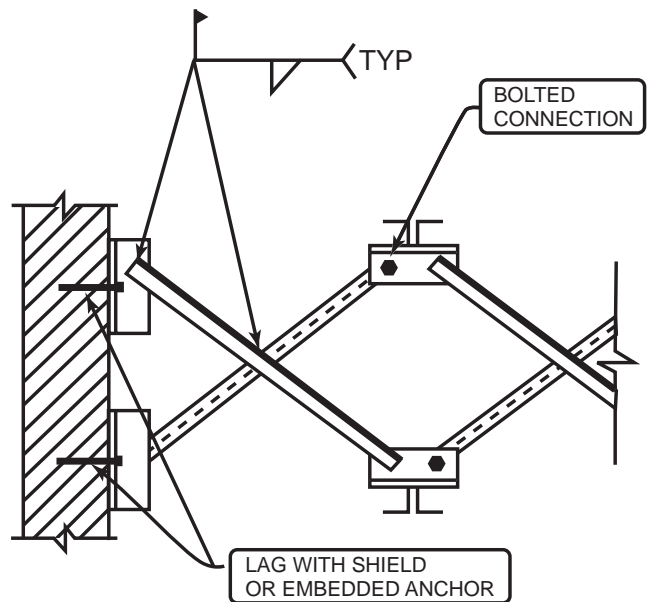
HORIZONTAL BRIDGING
TERMINUS AT STRUCTURAL
SHAPE WITH OPTIONAL
"X-BRIDGING"



BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL

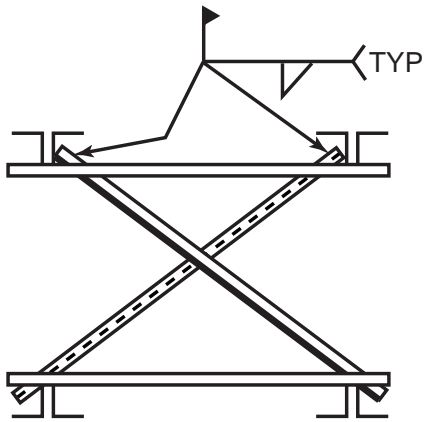


BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL

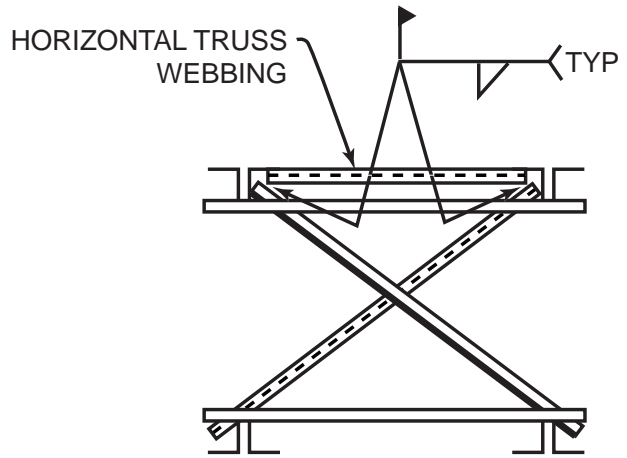


BOLTED DIAGONAL BRIDGING
TERMINUS AT WALL

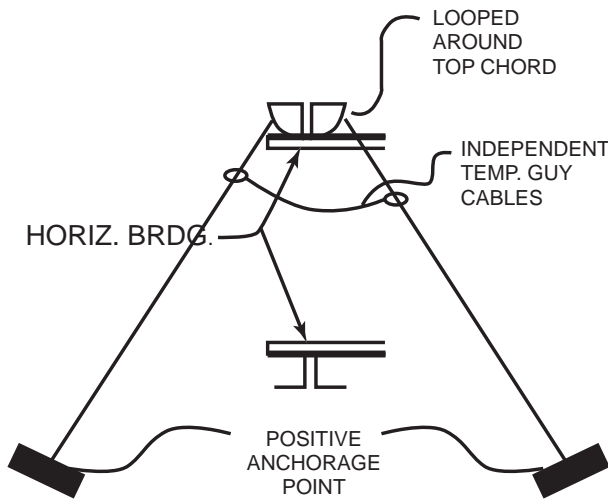




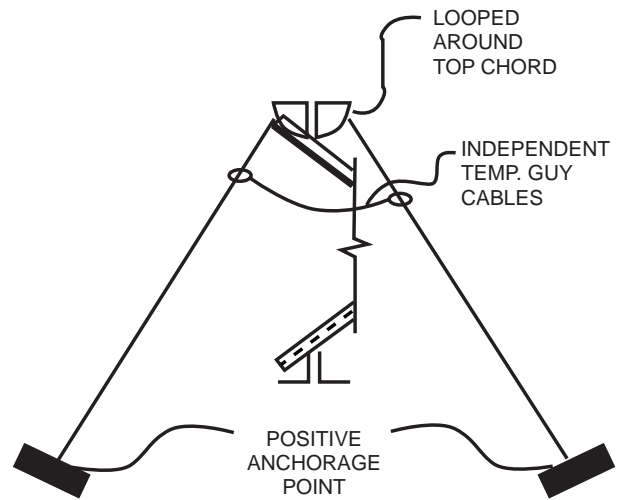
JOISTS PAIR BRIDGING
TERMINUS POINT



JOISTS PAIR BRIDGING
TERMINUS POINT



HORIZONTAL BRIDGING
TERMINUS POINT
SECURED BY TEMP.
GUY CABLES



DIAGONAL BRIDGING
TERMINUS POINT
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