
USACE / NAVFAC / AFCEC / NASA UFGS-05 21 23 (July 2007)
Change 1 - 05/13

Preparing Activity: NAVFAC UFGS-05 21 00.00 20 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2015

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SECTION 05 21 23

STEEL JOIST GIRDER FRAMING

07/07

NOTE: This guide specification covers the requirements for steel joist girder framing.

Use Section 05 21 13 for DEEP LONGSPAN STEEL JOIST FRAMING.

Use Section 05 21 16 for LONGSPAN STEEL JOIST FRAMING.

Use Section 05 21 19 for OPEN WEB STEEL JOIST FRAMING.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

NOTE: Show the following information on the project drawings:

1. Joist girder depth, spacing, and kg kip load on each panel point, span, and slope.
2. Design loads, including uplift and lateral forces in addition to gravity (dead and live) loads.
3. Method of anchoring, framing at openings, and

spacing.

4. Accessory details as applicable.

PART 1 GENERAL

1.1 REFERENCES

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1/B2.1M	(2014) Specification for Welding Procedure and Performance Qualification
AWS D1.1/D1.1M	(2010; Errata 2011) Structural Welding Code - Steel

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 15	(1999; E 2004) Steel Joist Shop Primer
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STEEL JOIST INSTITUTE (SJI)

SJI LOAD TABLES	(2005; Errata 1 2006; Errata 2 2007; Errata 3 2007) 42nd Edition Catalog of Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders
SJI MANUAL	(2009) 80 Years of Open Web Steel Joist Construction
SJI TD 11	(2007) Technical Digest No. 11 - Design Of Lateral Load Resisting Frames Using Steel

Joists And Joist Girders

SJI TD 9

(2008) Technical Digest No. 9 - Handling
and Erection of Steel Joists and Joist
Girders; 3rd Edition

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1200

Hazard Communication

29 CFR 1926

Safety and Health Regulations for
Construction

29 CFR 1926.757

Steel Erection; Open Web Steel Joists

1.2 SUBMITTALS

NOTE: Review Submittal Description (SD) definitions
in Section 01 33 00 SUBMITTAL PROCEDURES and edit
the following list to reflect only the submittals
required for the project.

The Guide Specification technical editors have
designated those items that require Government
approval, due to their complexity or criticality,
with a "G". Generally, other submittal items can be
reviewed by the Contractor's Quality Control
System. Only add a "G" to an item, if the
submittal is sufficiently important or complex in
context of the project.

For submittals requiring Government approval on Army
projects, a code of up to three characters within
the submittal tags may be used following the "G"
designation to indicate the approving authority.
Codes for Army projects using the Resident
Management System (RMS) are: "AE" for
Architect-Engineer; "DO" for District Office
(Engineering Division or other organization in the
District Office); "AO" for Area Office; "RO" for
Resident Office; and "PO" for Project Office. Codes
following the "G" typically are not used for Navy,
Air Force, and NASA projects.

An "S" following a submittal item indicates that the
submittal is required for the Sustainability
Notebook to fulfill federally mandated sustainable
requirements in accordance with Section 01 33 29
SUSTAINABILITY REPORTING.

Choose the first bracketed item for Navy, Air Force
and NASA projects, or choose the second bracketed
item for Army projects.

Government approval is required for submittals with a "G" designation;
submittals not having a "G" designation are [for Contractor Quality Control
approval.][for information only. When used, a designation following the

"G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Welder qualification

Material Safety Data Sheet (MSDS) per OSHA 29 CFR 1910.1200

SD-02 Shop Drawings

Steel joist girder framing; G[, [_____]]

SD-06 Test Reports

Erection inspection

Welding inspections

SD-07 Certificates

Accessories

Certification of Compliance

1.3 REGULATORY REQUIREMENT

All joist girder framing must conform to 29 CFR 1926.757. Secure all joist bridging and anchoring in place prior to the application of any construction loads. Distribute temporary loads so that joist capacity is not exceeded. Do not apply loads to bridging.

1.4 DELIVERY AND STORAGE

Handle, transport, and store joist girders in a manner to prevent damage affecting their structural integrity. Store all items off the ground in a well drained location protected from the weather and easily accessible for inspection and handling.

1.5 QUALITY ASSURANCE

All work must comply with the requirements set forth in 29 CFR 1926.

1.5.1 Drawing Requirements

Submit steel joist girder framing drawings. Show joist girder type and size, layout in plan, and erection details including methods of anchoring, framing at columns and/or bearing points, type and spacing of bridging, [requirements for field welding,] and details of accessories as applicable.

1.5.2 Certification of Compliance

Prior to construction commencement, submit Material Safety Data Sheet per 29 CFR 1910.1200 for steel joist girders, and certification for welder qualification, compliance with AWS B2.1/B2.1M, welding operation, and tacker, stating the type of welding and positions qualified for, the code

and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests.

**NOTE: Use the SJI MANUAL reference for projects
involving existing joist girder and joist systems.**

Submit certification of compliance for the following:

[SJI MANUAL]
SJI TD 9
SJI TD 11
29 CFR 1926
29 CFR 1926.757

PART 2 PRODUCTS

2.1 JOIST GIRDERS AND ACCESSORIES

**NOTE: When extra stiffness is desired, for comfort
or special material support, specify the allowable
deflection for that span.**

Provide design data from SJI LOAD TABLES for the joist girders series indicated.

2.2 PAINTING

2.2.1 Shop Painting

**NOTE: Omit bracketed text when field painting is
not required.**

Clean and prime joists in accordance with SSPC Paint 15. [Finish coat of paint is specified in Section 09 90 00 PAINTING AND COATING.]

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Handling and Erection

Conform to SJI LOAD TABLES for the joist girder series indicated.

3.1.2 Welding

All welding must conform to AWS B2.1/B2.1M and AWS D1.1/D1.1M.

[3.2 BEARING PLATES

**NOTE: Use this paragraph for masonry or
cast-in-place concrete applications only.**

Provide bearing plates to accept full bearing after the supporting members have been plumbed and properly positioned, but prior to placing superimposed loads. The area under the plate must be damp-packed solidly with bedding mortar, except where nonshrink grout is indicated on the drawings. Bedding mortar and grout must be as specified in Section 03 30 00.00 10 CAST-IN-PLACE CONCRETE.

]3.3 PAINTING

3.3.1 Touch-Up Painting

After erection of joist girders [and joists], touch-up connections and areas of abraded shop coat with paint of the same type used for the shop coat.

3.3.2 [Field Painting

NOTE: Omit bracketed text when field painting is not required.

Paint joists girders [and joists] requiring a finish coat in conformance with the requirements of Section 09 90 00 PAINTING AND COATING.

]3.4 VISUAL INSPECTIONS

3.4.1 Erection Inspection

AWS D1.1/D1.1M, Section 6. Perform erection inspection and field welding inspections with AWS certified welding inspectors. Welding inspectors must visually inspect and mark welds.

3.5 SCHEDULE

NOTE: Delete this paragraph for non-metric projects.

SI dimensioning in this section is based on a mathematical conversion of inch-pound dimensions following the SJI specification SJI LOAD TABLES. The SI and I-P units for the dimensions shown are as follows.

<u>Inch-Pound Units</u>	<u>SI Units</u>
20 feet	6096 mm
30 ksi	207 MPa

-- End of Section --