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USACE / NAVFAC / AFCEA / NASA           UFGS-05 21 00.00 20 (April 2006)  
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Preparing Activity:   NAVFAC           Replacing without change  
                                  UFGS-05210N (September 2000)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 1 April 2006

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### SECTION 05 21 00.00 20

#### STEEL JOISTS [AND JOIST GIRDERS] 04/06

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NOTE: This guide specification covers the requirements for steel joists and joist girders.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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NOTE: The following information shall be shown on the project drawings:

1. Joist series and size, joist girder depth, joist 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 and type of bridging.
4. Accessory details as applicable.

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## PART 1   GENERAL

### 1.1   REFERENCES

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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.

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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 D1.1/D1.1M (2006) Structural Welding Code - Steel

STEEL JOIST INSTITUTE (SJI)

SJI Specs & Tables (August 2002) Standard Specifications and Load Tables for Steel Joists and Joist Girders

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PS 14.01 (1982; R 2004) Steel Joist Shop Painting System

## 1.2 SUBMITTALS

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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. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" 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.

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

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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.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

Steel joist structure; G

#### SD-06 Test Reports

Erection inspection

Welding inspections

#### SD-07 Certificates

Accessories

Welder qualification

### 1.3 REGULATORY REQUIREMENT

All joists 12192 mm 40 feet and over shall have a row of bolted bridging in place before slackening of hoisting lines. 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 joists [and 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

#### 1.5.1 Drawing Requirements

Submit steel joist structure drawings. Show joist type and size, layout in

plan, and erection details including methods of anchoring, framing at openings, type and spacing of bridging, [requirements for field welding,] and details of accessories as applicable.

#### 1.5.2 Certifications: Requirements

Prior to welding, submit certification for welder qualification, 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.

### PART 2 PRODUCTS

#### 2.1 JOISTS[, JOIST GIRDERS,] AND ACCESSORIES

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NOTE: When extra stiffness is desired, for comfort  
or special material support, specify the allowable  
deflection for that span.  
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SJI Specs & Tables for the joist [and joist girders] series indicated.

#### 2.2 PAINTING

##### 2.2.1 Shop Painting

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NOTE: Omit bracketed text when field painting is  
not required.  
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Clean and prime joists in accordance with SSPC PS 14.01, Steel Joist Shop Painting System, using only Type I, "Red Oxide Paint." [Finish coat of paint is specified in Section 09 90 00 PAINTS AND COATINGS.]

### PART 3 EXECUTION

#### 3.1 INSTALLATION

##### 3.1.1 Handling and Erection

SJI Specs & Tables for the joist [and joist girder] series indicated.

##### 3.1.2 Welding

AWS D1.1/D1.1M.

#### 3.2 PAINTING

##### 3.2.1 Touch-Up Painting

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

##### [3.2.2 Field Painting

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

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

### ]3.3 VISUAL INSPECTIONS

#### 3.3.1 Erection Inspection

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

### 3.4 SCHEDULE

SI dimensioning in this section is based on a mathematical conversion of  
inch-pound dimensions following the SJI specification SJI Specs & 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

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