UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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USACE / NAVFAC / AFCEC / NASA | **UFGS-35 20 14 (April 2008)**

Preparing Activity: USACE | **Superseding UFGS-35 20 14 (April 2006)**

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SECTION 35 20 14

STOPLOGS
04/08

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NOTE: This guide specification covers the requirements for fabricating, assembling, delivering, and installing stoplogs. This section was originally developed for USACE Civil Works projects.

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 item(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).

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PART 1 GENERAL

1.1 LUMP SUM PRICES

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NOTE: If Section 01 20 00 PRICE AND PAYMENT PROCEDURES is included in the project specifications, this paragraph title (LUMP SUM PRICES) should be deleted from this section and the remaining appropriately edited subparagraphs below should be inserted into Section 01 20 00.

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1.1.1 Stoplogs Payment

Payment shall constitute full compensation for furnishing all plant,

labor, materials and equipment and performing all operations necessary for installing the stoplogs as specified.

1.1.2 Unit of Measure

Unit of measure: lump sum.

1.2 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 Reference Identifier (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.

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A242/A242M	(2013; R 2018) Standard Specification for High-Strength Low-Alloy Structural Steel
ASTM A307	(2014; E 2017) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A320/A320M	(2017b) Standard Specification for Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service
ASTM A325	(2014) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A325M	(2014) Standard Specification for

	Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength (Metric)
ASTM A490	(2014a) Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A490M	(2014a) Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)
ASTM A529/A529M	(2019) Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality
ASTM A572/A572M	(2018) Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A588/A588M	(2019) Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance
ASTM B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B308/B308M	(2010; R 2020) Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM D395	(2016; E 2017) Standard Test Methods for Rubber Property - Compression Set
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D413	(1998; R 2017) Standard Test Methods for Rubber Property - Adhesion to Flexible Substrate
ASTM D471	(2016a) Standard Test Method for Rubber Property - Effect of Liquids
ASTM D572	(2004; R 2019) Rubber Deterioration by Heat and Oxygen
ASTM D2240	(2015; E 2017) Standard Test Method for Rubber Property - Durometer Hardness

1.3 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified 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 Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

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" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings; G[, [_____]]

SD-03 Product Data

Sequencing and Scheduling; G[, [_____]]

Welding

Materials

Identification System

SD-06 Test Reports

Tests, Inspections, and Verifications

1.4 QUALIFICATION OF WELDERS AND WELDING OPERATORS

Qualification of welders and welding operators shall conform to the requirements of Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

1.5 DELIVERY, STORAGE, AND HANDLING

Delivery, handling and storage of materials and fabricated items shall conform to the requirements specified [herein and] in Section 05 50 14 STRUCTURAL METAL FABRICATIONS. [Materials and equipment delivered to the site by the Contracting Officer shall be unloaded by the Contractor. Verify the condition and quantity of the items delivered by the Contracting Officer and acknowledge receipt and condition thereof in writing to the Contracting Officer. If delivered items are damaged or a shortage is determined, notify the Contracting Officer of such in writing within 24 hours after delivery.]

1.5.1 Rubber Seals

Store rubber seals in a place which permits free circulation of air, maintains a temperature of 20 degrees C 70 degrees F or less, and prevents the rubber from being exposed to the direct rays of the sun. Rubber seals shall be kept free of oils, grease, and other materials which would deteriorate the rubber. Rubber seals shall not be distorted during handling.

1.5.2 Identification System

Submit an Identification System which shows the disposition of specific lots of approved materials and fabricated items in the work, before completion of the contract.

[1.6 SEQUENCING AND SCHEDULING

****
NOTE: The name of the appropriate railroad company or roadway agency should be inserted as indicated.
****

Before the work is commenced, submit the approved sequencing and scheduling plan which illustrates that work affecting [railroads] [roadways] has been coordinated with [_____]. The plan shall include schedules, lists of labor or materials to be provided to the affected [company] [agency], and any other aspects of the work that may impact on the operations of these entities. The plan shall clearly demonstrate how all [railroad tracks] [public or private roads, streets, or highways] will be kept open to traffic at all times during the construction period, except as otherwise specified or directed.

]PART 2 PRODUCTS

2.1 MATERIALS

Materials orders, materials lists and materials shipping bills shall

conform to the requirements of Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.1.1 Metals

Structural steel[, structural aluminum,] and other metal materials sections and standard articles shall be as shown and as specified herein and in Section 05 50 15 CIVIL WORKS FABRICATIONS.

2.1.1.1 Structural Steel

Structural steel shall conform to [ASTM A36/A36M][ASTM A242/A242M][ASTM A529/A529M][ASTM A572/A572M, Grade [42,] [50,] [60,] [or] [65]] [ASTM A588/A588M].

2.1.1.2 [Structural Aluminum

Structural aluminum shall conform to [ASTM B221M ASTM B221,] [ASTM B308/B308M,] [Alloy 6061, Temper T6].]

2.1.2 Rubber Seals

****
NOTE: If fluorocarbon (Teflon) clad seals are not used, omit paragraphs FABRICATION and ZINC FILLER.
****

2.1.2.1 General Requirements

Rubber seals shall be [fluorocarbon (Teflon) clad rubber seals of the mold type only, shall be] compounded of natural rubber, synthetic polyisoprene, or a blend of both, and shall contain reinforcing carbon black, zinc oxide, accelerators, antioxidants, vulcanizing agents, and plasticizers. Physical characteristics of the seals shall meet the following requirements:

PHYSICAL TEST	TEST VALUE	TEST METHOD SPECIFICATION
Tensile Strength	17.2 MPa2,500 psi (min.)	ASTM D412
Elongation at Break	450 percent (min.)	ASTM D412
300 percent Modulus	6.2 MPa900 psi (min.)	ASTM D412
Durometer Hardness (Shore Type A)	60 to 70	ASTM D2240
*Water Absorption	5 percent by weight (max.)	ASTM D471
Compression Set	30 percent (max.)	ASTM D395
Tensile Strength (after aging 48 hrs)	80 percent tensile strength (min.)	ASTM D572

The "Water Absorption" test shall be performed with distilled water. The washed specimen shall be blotted dry with filter paper or other absorbent material and suspended by means of small glass rods in the oven at a temperature of 70 degrees plus/minus 2 degrees C for 22 plus/minus 1/4

hour. The specimen shall be removed, allowed to cool to room temperature in air, and weighed. The weight shall be recorded to the nearest 1 mg as W1 (W1 is defined in ASTM D471). The immersion temperature shall be 70 degrees plus/minus 1 degree C and the duration of immersion shall be 166 hours.

2.1.2.2 [Fabrication

Rubber seals shall have a fluorocarbon film vulcanized and bonded to the sealing surface of the bulb. The film shall be [0.762] [1.524] mm [0.030] [0.060] inch thick Huntington Abrasion Resistant Fluorocarbon Film No. 4508, or equal, and shall have the following physical properties:

Tensile strength	13.8 MPa2,000 psi (min.)
Elongation	250 percent (min.)

The outside surface of the bonded film shall be flush with the surface of the rubber seal and shall be free of adhering or bonded rubber. Strips and corner seals shall be molded in lengths suitable for obtaining the finish lengths shown and with sufficient excess length to provide test specimens for testing the adequacy of the adhesion bond between the film and bulb of the seal. At one end of each strip or corner seal to be tested, the fluorocarbon film shall be masked during bonding to prevent a bond for a length sufficient to hold the film securely during testing.]

2.2 MANUFACTURED UNITS

Bolts, nuts, washers, screws and other manufactured units shall conform to the requirements specified and in Section 05 50 15 CIVIL WORKS FABRICATIONS.

2.2.1 Bolts, Nuts and Washers

[High-strength bolts, nuts, and washers shall conform to [ASTM A325M ASTM A325,] Type [_____], [hot-dip galvanized] or [ASTM A490M ASTM A490,] Type [_____].] [Bolts, nuts, studs, stud bolts and bolting materials other than high-strength shall conform to ASTM A307, Grade A, [hot-dip galvanized] or ASTM A320/A320M, [Ferritic Steel, Grade [_____]] [Austenitic Steel, Grade [_____], Class [_____]].] Bolts 13 mm 1/2 inch and larger shall have hexagon heads. The finished shank of bolts shall be long enough to provide full bearing. Washers for use with bolts shall conform to the requirements specified in the applicable specification for bolts.

2.2.2 Screws

Screws shall be of the type indicated.

2.2.3 [Clips and Clip Bolts for [Aluminum] [Steel] Panels

Clips and clip bolts for [aluminum] [steel] panels shall be approved standard manufactured stock items.]

2.3 FABRICATION

2.3.1 Detail Drawings

Detail drawings of stoplogs and appurtenant shop fabricated items, including fabrication drawings, shop assembly drawings, delivery drawings, and field installation drawings, shall conform to the requirements specified and in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.3.1.1 Fabrication Drawings

Show on the fabrication drawings complete details of materials, tolerances, connections, and proposed welding sequences which clearly differentiate shop welds and field welds.

2.3.1.2 Shop Assembly Drawings

Show on the shop assembly drawings details for connecting the adjoining fabricated components in the shop to assure satisfactory field installation.

2.3.1.3 Delivery Drawings

Show on the delivery drawings descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.

2.3.1.4 Field Installation Drawings

Show on the field installation drawings a detailed description of the field installation procedures. The description shall include the location and method of support of installation and handling equipment; provisions to be taken to protect concrete and other work during installation; method of maintaining components in correct alignment; and methods for installing appurtenant items.

2.3.2 Structural Fabrication

Structural fabrication shall conform to the requirements specified and in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.3.3 Welding

Submit schedules of welding procedures for structural steel [and welding processes for aluminum]. Welding shall conform to the requirements specified in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.3.4 Bolted Connections

Bolted connections shall conform to the requirements specified in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.3.5 Machine Work

Machine work shall conform to the requirements specified in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

2.3.6 Miscellaneous Provisions

Miscellaneous provisions for fabrication shall conform to the requirements specified and in Section 05 50 14 STRUCTURAL METAL FABRICATIONS. [Zinc coating of hardware items shall conform to ASTM A153/A153M.]

2.3.7 Fabrications

2.3.7.1 Stoplogs [and Posts]

****
NOTE: Stoplogs and posts shall be fabricated of structural steel or aluminum. Where aluminum is specified, include the requirements for aluminum stoplogs and posts to be furnished by the Contractor, or aluminum materials and extrusion dies for fabricating stoplogs and posts to be furnished by the Government to the Contractor for fabricating aluminum stoplogs and posts if such is the practice in the Command.
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[Stoplogs [and posts] shall be fabricated of [structural steel conforming to [ASTM A36/A36M] [ASTM A242/A242M] [ASTM A529/A529M] [ASTM A572/A572M, Grade [42,] [50,] [60,] [or] [65]] [ASTM A588/A588M]] [extruded aluminum conforming to [ASTM B221M ASTM B221,] [ASTM B308/B308M,] [Alloy 6061, Temper T6]].] [Steel items shall be galvanized where indicated.] [Stoplogs [and posts] shall be fabricated with the aluminum materials and extrusion dies provided to the Contractor by the Contracting Officer. Furnish all other materials and equipment as required for fabrication.]

2.3.7.2 Stoplog Guides [and Post Pockets]

Stoplog guides [and post pockets] shall be fabricated of structural steel conforming to [ASTM A36/A36M] [ASTM A242/A242M] [ASTM A529/A529M] [ASTM A572/A572M, Grade [42,] [50,] [60,] [or] [65]] [ASTM A588/A588M].

2.3.7.3 Miscellaneous Embedded Metals

Corner protection angles, frames, base plates, and other embedded metal items required for complete installation shall conform to the details shown.

2.3.8 Seal Assemblies

Seal assemblies shall consist of rubber seals, stainless steel retainer and spacer bars, and fasteners. Rubber seals shall be continuous over the full length. Seals shall be accurately fitted and drilled for proper installation. Bolt holes shall be drilled in the rubber seals by using prepared templates or the retainer bars as templates. Splices in seals shall be fully molded, develop a minimum tensile strength of 50 percent of the unspliced seal, and occur only at locations shown. All vulcanizing of splices shall be done in the shop. The vulcanized splices between molded corners and straight lengths shall be located as close to the corners as practicable. Splices shall be on a 45 degree bevel related to the "thickness" of the seal. The surfaces of finished splices shall be smooth and free of irregularities. Stainless steel retainer bars shall be field-spliced only where shown and machine-finished after splicing.

2.4 TESTS, INSPECTIONS, AND VERIFICATIONS

2.4.1 General

Tests, inspections, and verifications for materials shall conform to the requirements specified in Section 05 50 14 STRUCTURAL METAL FABRICATIONS. Submit certified test reports for material tests, with all materials delivered to the site.

2.4.2 [Testing of Rubber Seals

The fluorocarbon film of rubber seals shall be tested for adhesion bond in accordance with ASTM D413 using either the machine method or the deadweight method. A 25 mm 1 inch long piece of seal shall be cut from the end of the seal which has been masked and subjected to tension at an angle approximately 90 degrees to the rubber surface. There shall be no separation between the fluorocarbon film and the rubber when subjected to the following loads:

THICKNESS OF FLUOROCARBON FILM	MACHINE METHOD AT 50 MM2 INCHES PER MINUTE	DEADWEIGHT METHOD
0.762 mm0.030 inch	13.6 kg per 25 mm30 pounds per inch width	13.6 kg per 25 mm30 pounds per inch width
1.524 mm0.060 inch	13.6 kg per 25 mm30 pounds per inch width	13.6 kg per 25 mm30 pounds per inch width

Failure of any specimen to meet the requirements of the test used will be cause for rejection of the piece from which the test specimen was taken.]

PART 3 EXECUTION

3.1 INSTALLATION

Installation shall conform to the requirements specified and in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

3.1.1 Embedded Metals

Corner protection angles, frames, base plates, and other embedded metal items required for complete installation shall be accurately installed to the alignment and grade required to ensure accurate fitting and matching of components. Embedded metals shall be given a primer coat of the required paint on all surfaces prior to installation in concrete forms. Anchors for embedded metals shall be installed as shown. Items requiring two concrete pours for installation shall be attached to the embedded anchors after the initial pour, adjusted to the proper alignment, and concreted in place with the second pour.

3.1.2 Seal Assemblies

Rubber seal assemblies shall be installed after the embedded metal components have been concreted in place and the gate installation, including painting, completed. Rubber seals shall be fastened securely to metal retainers. Before operating the gate[s], a suitable lubricant shall be applied to the rubber seal rubbing plates to protect the rubber.

3.1.3 Painting

Exposed parts of stoplogs and appurtenances except machined surfaces,

corrosion-resistant surfaces, surfaces of anchorages embedded in concrete, rubber seals, and other specified surfaces shall be painted as specified in Section 09 97 02 PAINTING: HYDRAULIC STRUCTURES.

3.2 PROTECTION OF FINISHED WORK

Protection of finished work shall conform to the requirements specified in Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

3.3 ACCEPTANCE TRIAL OPERATION

After completion of installation, the Contracting Officer will examine the stoplog installation for final acceptance. The individual components of the stoplog installation will be examined first to determine whether or not the workmanship conforms to the specification requirements. The Contractor will be required to place the stoplogs [and posts] in the guides [and post pockets] a sufficient number of times to demonstrate that the stoplogs fit properly and seat uniformly. Required repairs or replacements to correct defects, shall be made at no cost to the Government. The trial operation shall be repeated after defects are corrected.

-- End of Section --