

UNITED STATES COAST GUARD  
OCEAN ENGINEERING DIVISION  
WASHINGTON, D.C.

AUGUST 2002

SPECIFICATION FOR FABRICATION  
OF  
BUOY MOORING PINS

SPECIFICATION NO. 418

REVISION A

## 1. SCOPE

1.1 General. This specification describes the requirements for buoy mooring pins used as fittings on aids to navigation buoys in the coastal and inland waters of the United States.

1.2 Precedence. In the event of a conflict between the requirements of this specification, the drawings, the contract, and the applicable documents, the order of precedence is as follows:

- a. The contract
- b. This specification
- c. The drawings listed in paragraph 2.4
- d. The applicable documents listed in paragraph 2

1.3 Classification.

1.3.1 Mooring Pins. Buoy mooring pins are classified by size as listed below. The class of an item is based on the item's size, which is defined as the nominal diameter of the bar stock used in the manufacture of the item.

Class	Pin Diameter	Used with buoy classes (Reference)	Associated Split Key width (Reference)
A	1-3/4"	1st and 2nd	1-1/4"
B	1"	3rd	7/8"

1.4 Definitions.

1.4.1 Batch. A batch consists of all items of the same class, made from the same heat of steel, and submitted for inspection at the same time.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are referenced in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification, which are recommended for additional information or used as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements cited in sections 3 and 4 of this specification, whether or not the referenced documents are listed here.

2.2 Industry Publications. The following documents of the issues specified form a part of this specification to the extent referenced herein. Suffixes denoting the specific issue of each document will be omitted from future references to the document in this specification.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A36/A3M-01            -        Standard Specification for Carbon Structural Steel  
10 Sept 2001

AWS D1.1/D1.1M       -        American Welding Society (AWS), Structural Welding  
1 Jan 2002                                Codes-Steel

2.3 Source of Documents. Documents may be obtained from the following sources:

2.3.1 Industry Publications.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)  
1916 Race Street  
Philadelphia, PA 19103-1187

AMERICAN WELDING SOCIETY (AWS)  
550 NW Le Jeune Road  
Miami, Florida 33126

2.4 Drawing. The latest revision of the following U.S. Coast Guard Ocean Engineering drawing forms a part of this specification and is referred to hereafter as "the drawing":

<u>Number</u>	<u>Title</u>
121078	Buoy Mooring Pin

**3. REQUIREMENTS**

3.1 General. Buoy mooring pins shall be manufactured of carbon steel and shall be electrically welded. The slot in the pin shall have a uniform rectangular shape. The design of this item shall be in accordance with the drawing.

3.2 Batch Number. The Contractor shall assign a unique sequential number to each batch submitted under this specification.

3.3 Materials.

3.3.1 Steel Bars and Plates. The body of the buoy mooring pin shall be a continuous, unwelded, round carbon steel bar of uniform quality. The head shall be carbon steel plate. All steel bars and plates shall meet the requirements of ASTM A36.

3.3.2 Design, Dimensions, and Dimensional Tolerances. All items shall conform to the design, dimensions, and tolerances shown on the drawing.

3.3.3 Welding. The plates and bars of the mooring pins shall be fitted and faired prior to being welded in place. All welds shall be performed as indicated on the drawing. Shielded Metal Arc Welding (SMAW), Flux-Cored Arc Welding (FCAW), or Gas Metal Arc Welding (GMAW) shall be used to weld all steel parts. All welding procedures and weld quality shall meet the requirements of AWS D1.1. All welders employed for welding under this specification shall be qualified by the Contractor using procedures which meet the requirements of AWS D1.1.

3.3.4 Finish. Buoy mooring pins shall be submitted in natural color and finish. Varnish or other coatings shall not be used.

3.3.5 Surfaces. Buoy mooring pins shall be free from cracks, mill defects, burrs, flaws, rough surfaces, or other defects, which might adversely affect their serviceability and handling.

3.4 Identification Marking. Each item offered under this specification shall be identified by an identification marking. The marking shall be stamped, engraved, or otherwise permanently affixed to each pin. The marking shall consist of ½ inch tall block alphanumeric characters and be clearly visible. The marking shall be of the form 02-XX. The first two digits are the last two digits of the calendar year built and the last two letters are the manufacturer's name or trademark.

3.4.1 Serial Number. The Contractor shall assign a unique sequential serial number to each pin. The serial number shall be stamped, engraved, or otherwise permanently affixed to each pin. The serial number shall consist of ½ inch tall block alphanumeric characters and be clearly visible. The serial number shall be traceable to the heat of steel bar from which the pin was fabricated.

3.5 Quality Assurance Inspection Form. The Contractor shall develop and provide a Quality Assurance Inspection Form (QAIF). The QAIF shall be used to document the inspections and tests performed on every item throughout its fabrication process. The form shall be printed on standard (i.e., 8½ x 11 inch) white paper. Inspection results may be handwritten on the form. The form shall be prepared in the Contractor's format and shall be legible, in English, and suitable for reproduction. The form shall be made available to the Contracting Officer's Technical Representative (COTR) for review.

3.5.1 QAIF Content. At a minimum the QAIF shall include:

- a) Item serial number (paragraph 3.4.1)
- b) Batch number (paragraph 3.2)
- c) Date of test or inspection
- d) Test or inspection to be performed (list every test and inspection required by paragraph 4.6)
- e) Result of test or inspection
- f) Accept/Reject criteria for each test or inspection
- g) Corrective action taken (if any)
- h) Notes
- i) Initials or signatures of Contractor's test personnel

3.6 Material Certifications. When requested by the COTR, the Contractor shall furnish material certifications, either from the material manufacturers or an independent testing laboratory, to the effect that all of the material described in paragraph 3.3.1 has been tested and found to meet the requirements of the applicable sections of this specification. The material certifications shall be maintained by the Contractor for the life of the contract.

3.7 Material Inspection and Receiving Report (DD Form 250). A form DD-250 shall be used as a certification of product quality assurance, as a packing list, and as a certification of acceptance. The Contractor shall prepare a separate DD-250 for each shipping lot. Three copies of the signed DD-250 shall be delivered with each lot. Prior to shipment, the DD-250 must be signed by the COTR.

## 4. QUALITY ASSURANCE

4.1 General. The Contractor's quality assurance program shall meet the requirements of ANSI/ASQC Q9002. However, the Contractor does not have to be Q9002 certified.

4.2 Classification of Inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (paragraph 4.3)
- b. Contractor production inspection (paragraph 4.4)
- c. Coast Guard production inspection (paragraph 4.5)

4.3 First Article Inspection. The type and quantity of first articles required will be listed in the Contract. A first article inspection shall be performed by the Contractor and at the Contractor's facility. The first articles shall meet the requirements of this specification and shall pass all the tests and inspections listed in paragraph 4.6.

4.3.1 First Article Tests and Inspections Notification. The Contractor shall notify the Contracting Officer in writing at least 7 calendar days prior to the scheduled commencement of any inspections and tests required by this specification.

4.3.2 Waiver of First Article Requirements. The Contracting Officer reserves the right to waive all or part of the first article requirements specified herein.

4.3.3 Rejection Criteria. The results of the first article inspection will be reviewed by the Contracting Officer to determine compliance with the requirements of this specification. Failure of any of the tests or inspections described herein will be cause for rejection of the first article. If the first article is rejected, the Contractor will be notified in writing by the Contracting Officer and allowed 14 calendar days to fix or resubmit a new first article. Repair or replacement of the first article shall be by the Contractor at the Contractor's expense.

4.3.4 Authorization to Proceed. Upon successful completion of the first article inspection, the Contracting Officer will provide the Contractor with written authorization to begin fabricating production quantities.

4.3.5 Standardization. Materials, parts, design, and fabrication methods used in the production quantities shall be identical to those used in the first articles, unless otherwise authorized in writing by the Contracting Officer.

4.4 Contractor Production Inspection. The tests and inspections required by this specification are not intended to supplant any controls, examinations, inspections, or tests normally employed by the Contractor to assure product quality. The Contractor shall perform the tests and inspections specified in paragraph 4.6 to ensure conformance to this specification. The Contractor shall provide space, personnel, and test equipment to conduct all inspection and test requirements. The Contractor shall submit a Certificate of Conformance (Appendix A) for each batch offered to certify that all items conform to the requirements of this specification.

4.5 Coast Guard Production Inspection. The Coast Guard reserves the right to observe, verify, or perform the tests and inspections outlined in paragraph 4.6.

4.6 Tests and Inspections. The following tests and inspections shall be conducted for each first article unit and subsequent production units:

- a. Visual inspection
- b. Weld inspection
- c. Documentation review

4.6.1 Visual Inspection. Each item shall be visually inspected for quality of workmanship and conformance to this specification and the drawings. The inspection shall include checks of dimensional conformance, mechanical fit, alignment of parts, and marking.

4.6.2 Weld Inspection. All welds shall be visually inspected for quality in accordance with AWS D1.1.

4.6.3 Documentation Review. The documentation required by paragraph 3.6 shall be reviewed for conformance with this specification and provided to the COTR upon request.

4.7 Rejection for Defects. The Coast Guard will reject all items which do not conform to the requirements of this specification. Repair or replacement of the rejected items shall be by the Contractor at the Contractor's expense. All rejected items shall be resubmitted for inspection only when they conform to the requirements of this specification. Resubmitted items shall be identified as such, and shall be kept separate from new items. If defective items are found, no further items will be accepted by the Coast Guard until the Contractor has demonstrated that the defects have been corrected and that the cause of the defects has been eliminated from the production process.

## 5. PACKAGING AND MARKING

5.1 Packaging. Buoy mooring pins shall be bundled in groups of five each. Each bundle shall be limited to a single National Stock Number as shown below. Bundles shall be secured with wire rope or chain sufficient in strength to withstand the lifting and handling of the bundle without breaking. Bundles shall be palletized, and each pallet shall be limited to a single National Stock Number.

<u>NSN</u>	<u>PART</u>
5315-00-243-2570	Class A Mooring Pin
5315-00-243-2587	Class B Mooring Pin

5.2 Marking. Each bundle shall have a securely attached waterproof tag containing the following information:

National Stock Number  
 Item Description  
 Quantity  
 Contract/Purchase Order Number  
 Date of Manufacture  
 Contractor's Name

APPENDIX A  
CERTIFICATE OF CONFORMANCE

Contract No. \_\_\_\_\_

Class \_\_\_\_\_

Batch No. \_\_\_\_\_

Heat/Melt No. \_\_\_\_\_

I hereby certify that all items in the above numbered batch submitted for the above numbered contract meet the requirements of U.S. Coast Guard Specification No. 418, Revision A.

Signed \_\_\_\_\_

Date \_\_\_\_\_

Title \_\_\_\_\_

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SPECIFICATION NO. 418 Revision A

AUGUST 2002

PREPARED BY:

REVIEWED BY:

***SIGNATURE ON FILE***

***SIGNATURE ON FILE***

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James Jones, CWO2  
Buoy and Structures Team

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APPROVED BY:

***SIGNATURE ON FILE***

***8/6/02***

\_\_\_\_\_  
Harley R. Cleveland  
Chief, Ocean Engineering Division

\_\_\_\_\_  
Date