

MIL-C-14500C(ME)
28 January 1985

SUPERSEDING
MIL-C-14500B(ME)
19 August 1969

MILITARY SPECIFICATION

CRADLES, BOAT: STEEL

This specification is approved for use by the Belvoir Research and Development Center, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers steel rigid type shipping and storage cradles for lifting, transporting, or storing boats.

1.2 Classification. Steel cradles shall be furnished to fit one of the following type boats as specified (see 6.2):

- | | |
|-----------|--|
| Type I- | For Boat Design 4003
(44 ft patrol and utility wood boat) |
| Type II- | For Boat Design 4002
(64 ft-11 inches picket wood boat) |
| Type III- | For Boat Design 320
(45 ft steel tug boat) |

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research and Development Center, ATTN: STRBE-DS, Fort Belvoir, VA 22060-5606, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.
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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

QQ-S-781	- Steel, Strapping, Flat.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.

MILITARY

MIL-P-116	- Preservation, Methods of.
MIL-T-704	- Treatment and Painting of Materiel.
MIL-G-20241	- Gasket Material, Wool Felt, Impregnated, Adhesive, Pressure-Sensitive.
MIL-S-81733	- Sealing and Coating Compound, Corrosion Inhibitive.

STANDARDS

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-130	- Identification Marking of US Military Property.
MIL-STD-889	- Dissimilar Metals.

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

DRAWINGS

ME

TA13217E7470	- Cradle, Steel, for Shipping and Stowage, Boat Design 4003.
TA13217E7471	- Cradle, Steel, for Shipping and Stowage, Boat Design 4002.

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TA13217E7472	- Cradle, Steel, for Shipping and Stowage, Boat Design 320.
13217E7473	- Sling, Steel, for Lifting Cradle, Boat Design 4003.
13217E7474	- Sling, Steel, for Lifting Cradle, Boat Design 4002.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASME Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.

ANSI/AWS D1.1 Structural Welding Code-Steel, Section 5, Qualification.

(Application for copies should be addressed to the American National Standards Institute Inc., 1430 Broadway, New York, NY 10018.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3951 - Standard Practices for Commercial Packaging

(Application for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Description. The boat cradles shall be in accordance with TA13217E7470 for Type I, TA13217E7471 for Type II, and TA13217E7472 for Type III. The cradle lifting slings shall be in accordance with 13217E7473 for the Type I cradle and 13217E7474 for the Type II cradle.

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3.1.1 Drawings. The drawings forming a part of this specification are end product drawings. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer. Where tolerances could cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed on the drawings to insure correct fit, assembly, and operation of the boat cradles. Any data (e.g. shop drawings, layouts, flow sheets, processing procedures, etc.) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or the designated representative.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.3 and 6.3).

3.3 Material. Material shall be as specified herein and as shown on the drawings. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Material deterioration and control. The boat cradle shall be fabricated from compatible materials, inherently corrosion and deterioration resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable storage and operating environment to which the item may be exposed.

3.3.1.1 Dissimilar metals. Dissimilar metals, as defined in MIL-STD-889, shall be electrically insulated from one another to minimize or prevent galvanic corrosion. Insulation may be provided by an insulating barrier such as a corrosion inhibiting sealant conforming to MIL-S-81733 or chromate tape conforming to MIL-G-20241. Protection against any galvanic corrosion could also be obtained by exclusion of the electrolyte if feasible.

3.3.1.2 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with components and sub-components, and shall make information available, upon request, to the contracting officer or designated representative.

3.3.2 Recovered materials. For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the boat cradle may be newly fabricated from recovered materials to the maximum extent practicable, provided the boat cradle produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the boat cradle.

3.4 Slings. When specified, the quantity of slings for type I and type II cradles shall be furnished (see 6.2).

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3.5 Treatment and painting. The cradle shall be cleaned, treated and painted as specified in 3.5.1 and 3.5.2.

3.5.1 Cleaning. All ferrous metal surfaces requiring painting shall be cleaned to the bare metal by sandblasting to remove all oil, grease, mill scale, products of erosion, dirt, welding slag or spatters, and other foreign substances that may be detrimental to the coating system.

3.5.2 Treatment and painting. The portions of the cradle required to be painted shall be cleaned, treated, and painted in accordance with MIL-T-704 Type B, color as specified (see 6.2).

3.6 Identification marking. The cradles shall be identified in accordance with MIL-STD-130 and as shown on the drawings.

3.7 Workmanship. All parts, components, and assemblies of the cradle including welded parts shall be clean and free from sand, dirt, fins, pits, sprues, scale, flux, and other harmful, extraneous material. External surfaces shall be free from burrs, sharp edges, and corners except when sharp edges and corners are required.

3.7.1 Steel fabrication. Steel used in the fabrication of the equipment shall provide original quality surface finish and shall be free from kinks and sharp bends. Steel having an eroded surface is not acceptable. The forming of material shall be done by methods that will not cause damage to the metal. Shearing and chipping shall be done neatly and accurately. Corners shall be square and true. Burned surfaces of flame-cut material shall be free of slag. Precautions shall be taken to avoid overheating, and heated metals should be allowed to cool slowly except where heat treatment is required. All bends of a major character shall be made with metal dies or jigs to insure uniformity of size and shape.

3.7.2 Welders and welding. Before assigning any welder to manual welding work covered by this specification, the contractor shall obtain certification that the welder has passed qualification tests as prescribed by either of the following listed codes for the type of welding operations to be performed and that such qualification is effective as defined by the particular code:

ANSI/ASME	Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.
ANSI/AWS D1.1	Structural Welding Code-Steel, Section 5, Qualification.

Certification shall be made available for review by the contracting officer or designated representative upon request. Contractors who make only horizontal welds need not qualify welders for "all position welding". Subject to approval by the Government, the contractor's standard welder qualification may be substituted in lieu of the above codes provided that the contractor's procedure

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is equivalent to the above codes. The contractor shall be responsible for determining that automatic welding equipment operators are capable of producing quality welds in accordance with AWS or ASME codes.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. The contractor is responsible for insuring that components and materials are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection of packaging (see 4.6).

4.3 First article inspection.

4.3.1 First article examination. The first article cradle shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.4 Quality conformance inspection.

4.4.1 Examination. Each cradle shall be examined for the defects specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.5 Inspection procedure.

4.5.1 Examination. The cradle shall be examined as specified herein for the following defects:

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Major

- 101. Materials not as specified.
- 102. Materials are not resistant to corrosion and deterioration or treated to be resistant to corrosion and deterioration for the applicable storage and operating environments.
- 103. Dissimilar metals as defined in MIL-STD-889 are not effectively insulated from each other.
- 104. Contractor does not have documentation available for identification of material, material finishes or treatment.
- 105. Used, rebuilt or remanufactured components, pieces or parts incorporated in the cradle.
- 106. Cradle not true to dimensions, lines, contains twists, bends, or other imperfections.
- 107. Assembly defects, nonuniformity of parts, fittings for field erection.
- 108. Workmanship not as specified.
- 109. Steel fabrication not as specified.
- 110. Welding and weldments not in accordance with requirements.
- 111. Slings not as specified.

Minor

- 201. Cleaning, treatment and painting not as specified.
- 202. Marking illegible, incorrect, incomplete, or missing.

4.6 Inspection of packaging.4.6.1 Quality conformance inspection.

4.6.1.1 Unit of product. For inspection purposes, a completed cradle prepared for shipment shall be considered a unit of product.

4.6.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

- 111. Disassembly not as specified for level A.
- 112. Unprotected surfaces not protected as specified for level A or commercial.
- 113. Consolidation not as specified for level A.
- 114. Packing not as specified for level A, level B, or commercial.
- 115. Marking missing, illegible or incorrect for level A, level B, or commercial.

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5. PACKAGING

5.1 Preservation. Preservation shall be level A or commercial, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Disassembly (types I and II cradles). The steel hold-down rods and wooden cross-pieces shall be disassembled from the cradle. Removed fasteners shall be reinstalled in one of the mating parts and secured.

5.1.1.2 Unprotected surfaces. Unprotected surfaces requiring the application of a contact preservative in accordance with the criteria of MIL-P-116 shall be coated with P-1 preservative as specified in MIL-P-116.

5.1.1.3 Consolidation (types I and II cradles). The disassembled hold down rods and cross-pieces and the slings when furnished (see 3.4 and 6.2) shall be placed in a wooden box conforming to PPP-B-601, overseas type.

5.1.2 Commercial. The cradles and slings when furnished (see 3.4 and 6.2) shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, level B or commercial as specified (see 6.2).

5.2.1 Level A. Each cradle shall be packed for shipment unboxed. The consolidated box shall be secured to the cradle in such a manner as not to increase cube or interfere with lifting and tiedown. Securement shall be accomplished by steel strapping conforming to QQ-S-781, type I or IV, finish B.

5.2.2 Level B. Each cradle shall be packed as specified in 5.2.1 except boxes shall be domestic type and strapping need not be finish B.

5.2.3 Commercial. The cradles and slings shall be packed in accordance with ASTM D 3951.

5.3 Marking.

5.3.1 Military. Marking for level A and B military shipments shall be in accordance with MIL-STD-129.

5.3.2 Commercial. Marking for commercial preservation and packing shall be in accordance with ASTM D 3951. In addition the shipping cube and weight shall be marked on the cradle.

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6. NOTES

6.1 Intended use. The cradle is intended for either transporting or storing the boat for which the cradle is manufactured. The cradle is designed for maneuvering and for lifting with the use of a lifting sling.

6.2 Ordering data.

6.2.1 Acquisition data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type of cradle required (see 1.2).
- c. When a first article is required for inspection and approval and the number of units required (see 3.2 and 6.3).
- d. Number of slings required (see 3.4).
- e. Color as required (see 3.5.2).
- f. Degree of preservation and packing required (see 5.1 and 5.2).

6.2.2 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1644) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DAR 7-104.9 (n) (2) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs.

Paragraph No.	Data requirements	Applicable DID No.	Options
3.7.2	Certification, welder qualification	DI-H-24029	

6.3 First article. When a first article inspection is required, the item will be tested and should be an initial production model. The first article should consist of one or more units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, test and approval of the first article.

Custodian:
Army - ME

Preparing activity:
Army - ME

Review activity:
Army - MI

Project 2090-A089

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1. DOCUMENT NUMBER MIL-C-14500C(ME)	2. DOCUMENT TITLE Cradles, Boat: Steel
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