INCH-POUND

MIL-A-52679B
30 September 1992
SUPERSEDING
MIL-A-52679A
25 October 1983

# MILITARY SPECIFICATION

## ANCHOR, SURFACING MEMBRANE: 12 INCH

This specification is approved for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers a steel picket type anchor to be used with membrane surfacing material for military airfields.

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

| | |
|---|---|
| TT-E-529 | - Enamel, Alkyd, Semigloss, Low VOC Content. |
| TT-P-664 | - Primer Coating, Synthetic, Rust-Inhibiting, Lacquer-Resisting. |
| PPP-B-601 | - Boxes, Wood, Cleated-Plywood. |

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, Development, and Engineering Center, ATTN: SATBE-TSE, Fort Belvoir, VA 22060-5606 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 5680

MILITARY

MIL-T-704 - Treatment and Painting of Materiel.
MIL-P-3627 - Penetrometers, Soil, Dial Indicating (Two Cones) and Spring Indicating (Airfield Cone).

STANDARDS

MILITARY

DOD-STD-100 - Engineering Drawing Practices.
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.

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

Y14.5 - Dimensioning and Tolerancing.

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

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Boiler and Pressure Vessel Code IX, Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators.

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 109 - Steel, Carbon, Cold Rolled Strip.
A 615 - Deformed and Plain-Rolled-Steel Bars for Concrete Reinforcement.
D 3953 - Strapping, Flat Steel and Seals.
D 4675 - Selection and Use of Flat Strapping Materials.

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

AMERICAN WELDING SOCIETY (AWS)

A2.4 - Symbols for Welding, Brazing, and Nondestructive Testing.
A5.1 - Covered Carbon Steel Arc Welding Electrodes.
A5.18 - Carbon Steel Filler Metals for Gas Shielded Arc Welding.
D1.1 - Structural Welding Code - Steel.

(Application for copies should be addressed to the American Welding Society, 555 NW 42nd Street, Miami, FL 33126.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION INC. (NMFTA)

National Motor Freight Classification Rules.

(Application for copies should be addressed to the American Trucking Association, Inc., ATTN: Traffic Order Section, 2200 Mill Road, Alexandria, VA 22314.)

UNIFORM CLASSIFICATION COMMITTEE (UCC)

Uniform Freight Classification Rules.

(Application for copies should be addressed to Uniform Classification Committee, ATTN: Tariff Publishing Officer, Room 1106, 222 S. Riverside Plaza, Chicago, IL 60606.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Description. The anchor shall be as shown in figure 1 and as specified herein. An anchor set shall consist of 26 anchors.

3.1.1 Interchangeability. All items shall be functionally and dimensionally interchangeable. The identification of part number and changes thereto shall be in accordance with the item identification and part number requirements of DOD-STD-100.

3.2 First article. Unless otherwise specified (see 6.2) a sample anchor shall be subjected to first article inspection (6.3) in accordance with 4.3.

3.3 Materials. Materials shall be as specified herein and as shown on figure 1. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

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

3.3.1.1 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion. Dissimilar metals and methods of protection are defined and detailed in MIL-STD-889.

3.3.1.2 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, 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 anchor may be newly fabricated from recovered materials to the maximum extent practicable, provided the anchor produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces, and parts shall not be incorporated in the anchor.

3.3.3 Disc. The disc shall be steel conforming to ASTM A 109, temper No. 2, edge condition and finish optional.

3.3.4 Bar. The bar shall be steel conforming to ASTM A 615, grade 40.

3.3.5 Welding electrodes. Welding electrodes shall conform to AWS A5.1, class E, 7015, 7016, or 7018 as required for type of welding performed. Metal inert gas filled core shall conform to AWS A5.18, class ER70S-G.

3.4 Identification marking. The anchors shall be identified in accordance with MIL-STD-130 and shall be metal die stamped as shown in figure 1.

3.5 Treatment and painting. The anchors shall be cleaned, treated, and painted in accordance with MIL-T-704, type C. Paint shall conform to TT-P-664 as primer and TT-E-529 as topcoat.

3.6 Workmanship. All parts of the anchor including stamping, machined surfaces, and welded parts shall be clean and free from dirt, fins, pits, 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.

3.6.1 Welders and welding.

3.6.1.1 Welders and welding operators. Before assigning any welder or welding operator to welding work covered by this specification, the contractor shall provide the contracting officer with certification that the welder or welding operator has passed qualification tests as prescribed by either of the following listed codes for the materials joined and type of welding operations to be

performed and that such qualification is effective as defined by the particular code: ASME - Boiler and Pressure Vessel Code, Section IX, and AWS D1.1 - Structural Welding Code - Steel.

Contractors who make only horizontal welds need not qualify welders for "all position welding". In the event of evidence of poor welds, the Government reserves the right to require retesting of any welder or welding operator. The test results shall be made available for review by the contracting officer or the contracting officer's representative.

3.6.1.2 Welding. The surfaces of parts to be welded shall be free from rust, scale, paint, grease, and other foreign matter. Welds shall transmit stress without permanent deformation or failure when the parts connected by the welds are subjected to proof and service loading. Weld spatter and slag shall be removed prior to treatment and painting. Welding procedures shall be qualified in accordance with applicable ASME or AWS code.

3.6.1.2.1 Weld criteria. Welding shall be performed as follows.

3.6.1.2.1.1 Cracks and other defects. There shall be no cracks. Undercut shall not exceed 5 percent of material thickness. Overlap shall not exceed .25-inch in any .75-inch of weld length.

3.6.1.2.1.2 Weld size. Fillet welds shall not exceed the next .625 larger size. Fillet welds shall not be undersize.

3.6.1.2.1.3 Weld contour. Flush contour of plug welds may be obtained by mechanical means.

3.6.2 Steel fabrication. Steel used in the fabrication of the anchor 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. 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. All bends of a major character shall be made with metal dies or fixtures to ensure uniformity of size and shape.

## 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 (examinations and tests) 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 ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The

absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. The contractor is responsible for ensuring that the materials used are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

4.2 Classification of inspection. Inspections 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 Examination. The first article anchor set shall be examined as specified in 4.5.1. Presence of one or more defects on any of the anchors shall be cause for rejection.

4.3.2 Tests. The first article anchor set shall be tested as specified in 4.5.2.1. Failure of any test shall be cause for rejection.

4.4 Quality conformance inspection.

4.4.1 Sampling. Sampling for examination and tests shall be in accordance with MIL-STD-105. Sample size shall be determined by using MIL-STD-105, table I and table IIa. A lot shall be accepted when 0 defects are found and rejected when 1 or more defects are found.

4.4.2 Examination.

4.4.2.1 Samples. Samples selected in accordance with 4.4.1 shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.4.3 Tests.

4.4.3.1 Samples. Samples selected in accordance with 4.4.1 shall be tested as specified in 4.5.2.

4.5 Inspection procedure.

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

101. Materials not as specified (see 3.3).
102. Materials are not resistant to corrosion and deterioration or treated to be resistant to corrosion and deterioration for the applicable storage and operating environment (see 3.3.1).
103. Dissimilar metals as defined in MIL-STD-889 are not effectively insulated from each other (see 3.3.1.1).
104. Contractor does not have documentation available for identification of material, material finishes, or treatments (see 3.3.1.2).
105. Used, rebuilt or remanufactured components, pieces, or parts incorporated in the anchor (see 3.3.2).
106. Dimensions not as specified.
107. Identification markings not as specified, or illegible (see 3.4).
108. Treatment and painting not as specified (see 3.5).
109. Workmanship not as specified (see 3.6).
110. Welding and Welds not as specified (see 3.6.1.2).
111. Welders and welding operators not certified as specified (see 3.6.1.1).

4.5.2 Tests.

4.5.2.1 Dynamic. Emplace each anchor in a soil having an average airfield index of 12-14 as determined by a Government-loaned penetrometer conforming to MIL-P-3627, type II, (see 6.5). The anchor shall be driven into the ground until bottom of the head is flush with the ground. Remove and examine. Weld failure or evidence of weld cracking shall constitute failure of this test.

4.6 Inspection of packaging.

4.6.1 Quality conformance inspection of pack.

4.6.1.1 Unit of product. For the purpose of inspection, a completed pack 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. Sample size shall be determined by using MIL-STD-105, table I and table IIa. A lot shall be accepted when 0 defects are found and rejected when 1 or more defects are found.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. Presence of one or more defects shall be cause for rejection.

112. Container not as specified for level A in accordance with figure 2 (see 5.1.1).
113. Arrangement in container not as specified for level A (see 5.1.1).
114. Strapping not as specified for level A (see 5.1.1).
115. Packing not in accordance with the referenced document as specified or level C (see 5.1.2).
116. Marking missing, illegible, incorrect, or incomplete for level A or level C (see 5.2).

5. PACKAGING

5.1 Packing. Packing shall be level A or level C as specified (see 6.2 and 6.4).

5.1.1 Level A. The anchors shall be arranged and packed in accordance with figure 2.

5.1.2 Level C. The anchors shall be packed to assure carrier acceptance and safe delivery to destination at lowest ratings in compliance with Uniform Freight Classification Rules or National Motor Freight Classification Rules.

5.2 Marking. In addition to any special marking specified in the contract or purchase order (see 6.2) marking shall be in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The anchors are intended to be used to hold down airfield membrane surfacing material for tactical military airfields.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
c. When first article inspection is required for inspection and approval and the number of units required (see 3.2, 4.3 and 6.3).
d. When first article inspection is required and number of anchor sets to be furnished, (see 3.1 and 4.3).
e. Level of packing required (see 5.1).
f. Any special marking required (see 5.2).

6.3 First article. When a first article inspection is required, the item(s) should be a 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, approval of the first article test results, and disposition of the first articles. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.4 Levels of preservation. Levels of preservation have not been included as the anchors do not require additional preservation. For purposes of preservation/packing level marking the preservation should be designated as level A/A.

6.5 Government-loaned property. The contracting officer should arrange to loan the property specified in 4.5.2.1.

6.6 Determination of airfield index.

6.6.1 Description, use and maintenance of instrument.

6.6.1.1 Description. The airfield cone penetrometer is a probe-type instrument designed to measure soil strength. It consists of a right circular cone with a base diameter of .50 inch mounted on a graduated staff; on the opposite end of the staff are a spring, a load indicator, and a handle. The overall length of the assembled penetrometer is about 36.125 inches. For ease in carrying, the penetrometer can be dissembled into three main pieces: Two extension staffs, each 12.625 inches long, and one piece 14.750 inches long containing the cone, handle, spring, and load indicator.

6.6.1.2 Use. Before the penetrometer is used, the instrument should be inspected to see that all joints are tight and that the load indicator reads 0. To operate the penetrometer, the hands are placed symmetrically on the handle, palms down. Force is applied to the handle (with the operator's arms steadied against his thighs) until a slow, steady, downward movement of the instrument occurs. The load indicator is read at the moment the base of the cone enters the ground (surface reading) and at desired depths at the moment the corresponding depth mark on the shaft reaches the soil surface. The reading is made by shifting the line of vision from the soil surface to the indicator just a moment before the desired depth is reached. Maximum efficiency is obtained with a two-man team in which one man operates and reads the instrument while the other acts as recorder. It is possible for one man to operate the instrument and record the measurements by stopping the penetration at any intermediate depth, recording previous readings, and then resuming penetration. Observance of the following rules is important in obtaining accurate data:

a. The instrument should read 0 when suspended by the handle and 15 when a 150-pound load is applied.
b. The instrument should be kept in a vertical position while it is in use.
c. The rate of penetration should be about .50 to 1.00 inch per second; however, slightly faster or slower rates will not materially affect the readings.
d. If it is suspected that the cone is encountering a stone or other foreign body at the depth where a reading is desired, another penetration should be made nearby.
e. The readings should be taken at the proper depths. Carelessness in determining depth is one significant source of error in the use of the penetrometer.

6.6.1.3 Maintenance. The airfield cone penetrometer is simply constructed of durable metals and needs little care other than cleaning and oiling. The calibration should be checked occasionally. As noted earlier, the load indicator should read "0" when the instrument is suspended by the handle and 15 when a 150-pound load is placed on the handle. If an error in excess of about 5 percent is noted, the penetrometer should be recalibrated.

6.7 Consideration of data requirements. The following data requirements should be considered when this document is applied on a contract. The applicable Data Item Description (DIDs) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and are tailored to reflect the requirements of the specific acquisition. To ensure correct contractural application of the data requirements, a Contract Data

Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

| Reference paragraph | DID Number | DID Title |
|---|---|---|
| 3.7.1.1 | DI-H-2429A | Certification, Welding Qualification |

The above DIDs were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DIDs are cited on the DD Form 1423.

6.8 Subject term (key word) listing.

Anchor, hold down
Anchor, steel picket
Anchor, surfacing
Picket anchor
Steel anchor

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify change with respect to the previous issue due to the extensiveness of the changes.

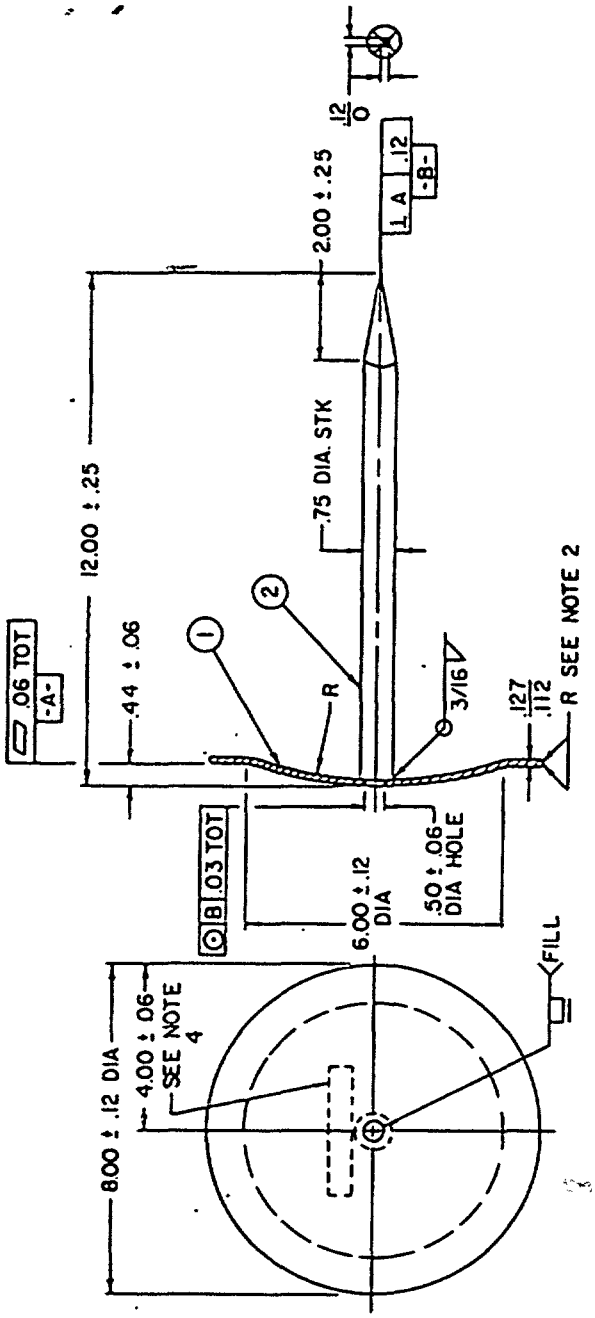
Custodians:
Army - ME
Navy - YD
Air Force - 99

Review activity:
Air Force - 84

User activity:
Navy - MC

Preparing activity:
Army - ME

Project 5680-0194

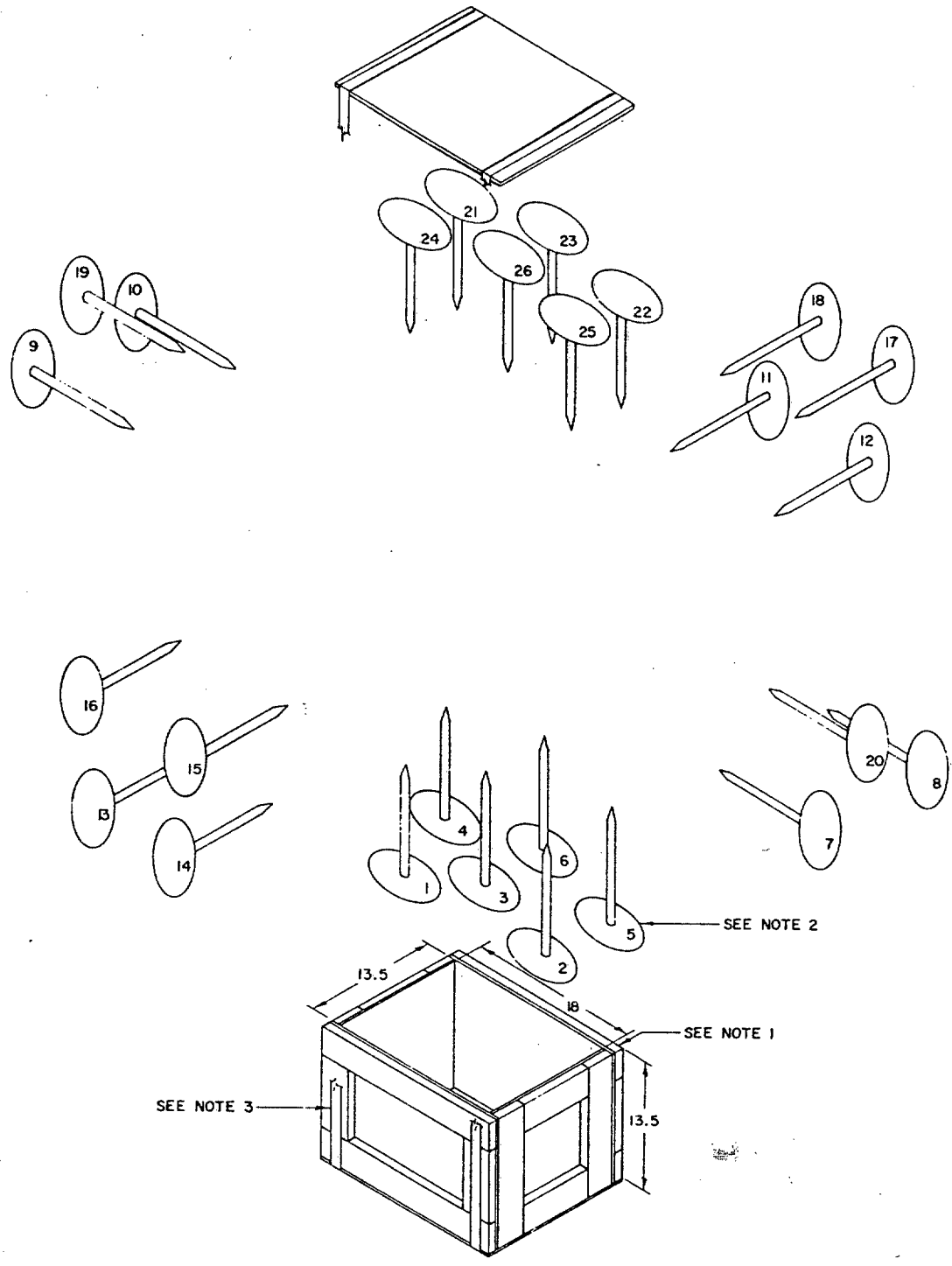



| FND NO | SYM | CODE IDENT | DWG SIZE | PART OR IDENTIFYING NO | QTY REQD | NOMENCLATURE OR DESCRIPTION | SPECIFICATION | MATERIAL |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | TEMP. 2 EDGE AND FINISH OPTL | 1 | DISC .125 STK NOM. | ANSI/ASTM A109 | STL |
| 2 | | | | GR 40 | 1 | BAR, REINFORCING NO. 6. | ANSI/ASTM A615 | STL |
| 3 | B | | | | AR | ELECTRODE, WELDING | SEE NOTE 3 | STL |

NOTES:
1. TREATMENT AND PAINTING, PER MIL-T-704 TYPE C. FINISH COAT PAINT PER TT-P-38.
2. GRIND ROUND AND DEBURR.
3. WELDING ELECTRODE.ANSI/AWS A5.1 CL E7015, E7016, E7018 OR ANSI/AWS A5.18 CL ER70S-G.
4. METAL DIE STAMP LETTERS .25" HIGH. (A) FEDERAL STOCK NO. (B) NOMENCLATURE (C) CONTRACT NUMBER (D) MFGR NAME (E) U.S.
5. FOR INTERPRETATION OF: WELD SYMBOLS SEE ANSI/AWS A2.4 DIMENSIONS AND TOL. SEE ANSI Y14.5
6. DIMENSIONS ARE IN INCHES.

FIGURE 1. Anchor, surfacing membrane, 12 inch.

X-1902B




NOTES:

1. BOX IN ACCORDANCE WITH PPP-B-601, OVERSEAS TYPE, STYLE I.
2. ANCHORS MUST BE ARRANGED IN BOX BY SEQUENCE NUMBER 1 THRU 26.
3. STRAPPING IN ACCORDANCE WITH ASTM D3953 AND ASTM D4675, TYPE 1 OR 2, ZINC COATED, SIZE .035 X .75.
4. DIMENSIONS ARE IN INCHES.

X-1903B

FIGURE 2. Packing arrangement and detail.

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

| RECOMMEND A CHANGE: | 1. DOCUMENT NUMBER<br>MIL-A-526798 | 2. DOCUMENT DATE (YYMMDD)<br>920930 |
|---|---|---|

3. DOCUMENT TITLE
Anchor, Surfacing Membrane: 12 Inch

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

| a. NAME (Last, First, Middle Initial) | b. ORGANIZATION | |
|---|---|---|
| c. ADDRESS (Include Zip Code) | d. TELEPHONE (Include Area Code)<br>(1) Commercial<br>(if applicable)<br>(2) AUTOVON | 7. DATE SUBMITTED |

8. PREPARING ACTIVITY

| a. NAME<br>Carolyn B. Johnson | b. TELEPHONE (Include Area Code)<br>(1) Commercial<br>(703) 704-3468<br>(2) AUTOVON<br>654-3468 |
|---|---|
| c. ADDRESS (Include Zip Code)<br>US Army Belvoir RDE Center<br>ATTN: SATBE-TSE<br>Fort Belvoir, VA 22060-5606 | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:<br>Defense Quality and Standardization Office<br>5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466<br>Telephone (703) 756-2340 AUTOVON 289-2340 |