

MIL-P-15943D
 30 March 1982
 SUPERSEDING
 MIL-P-15943C
 30 November 1967

MILITARY SPECIFICATION

PALLET, MATERIAL HANDLING, WOOD,
 SHIP CARGO, STEVEDORING, 48 INCHES LONG BY 72 INCHES
 WIDE, 2-WAY ENTRY.

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

1. SCOPE

1.1 Scope. This specification covers the design, materials, and fabrication of materials handling pallets for stevedoring and drum handling operations.

1.2 Classification. Pallets shall be wood, stringer type construction, two-way entry, double wing, 48 inches long by 72 inches wide and one of the following types, grades, and classes (see 6.2):

- Type I - Ship cargo (stevedoring).
- Type II - Drum handling (55 gallon).
- Grade A - Softwood components with all bolted construction (for Type I only).
- Grade B - Hardwood components with screw nails and bolt construction.
- Class 1 - Assembled.
- Class 2 - Unassembled (knocked-down) (for Type I only).

2. APPLICABLE DOCUMENTS

2.1 Issue of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

FF-N-105	-Nails, Wire Brads, Staples.
FF-B-571	-Bolts, Nuts, Studs, and Top Rivets (And Material For Same).
QQ-S-781	-Steel Strapping, Flat.
TT-W-572	-Wood-Preservative, Water-Repellant.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Fitting Out Supply Assistance Office, Bldg. 143, U. S. Naval Base, Norfolk, Virginia 23512 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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MILITARY

MIL-B-117

- Bags and Sleeves, Interior Packaging.

STANDARDS

FEDERAL

FED-STD-H28

- Screw Thread Standards for Federal Services

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 U. S. Military Property.

MIL-STD-731

- Quality of Wood Members for Containers and Pallets.

MIL-STD-1363

- Measurement of Wood Moisture Content.

(Copies of specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring 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. Unless otherwise indicated the issue in effect on date of invitations for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E-18-79 -Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

ASTM E-290-80 -Semi-Guided Bent Test for Ductility of Metallic Materials.

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

SOCIETY OF AUTOMOTIVE ENGINEERS

SAE Handbook

(Application for copies should be addressed to: Society of Automotive Engineers, 485 Lexington Avenue, New York City, New York 10017.)

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3. REQUIREMENTS

3.1 Standard product. Class 1 pallets shall be completely assembled and ready for use when presented for Government acceptance. Components for Class 2 pallets shall be sized and finished as specified herein and furnished with sufficient hardware to permit field assembly.

3.2 Preproduction model. Unless otherwise specified (see 6.2), the supplier shall furnish a pallet within the time frame specified in the contract or purchase order to prove, before production is commenced, that his production methods and choice of design detail will produce pallets that comply with the requirements of this specification. Examination and tests shall be those in accordance with Section 4 of this specification. Any changes or deviations from the preproduction model during production shall be subject to the approval of the contracting officer or his authorized representative. Approval of the preproduction model shall not relieve the supplier of his obligation to furnish pallets conforming to this specification.

3.3 Referenced documents. Where there is a conflict between this specification and any referenced document, this specification shall govern.

3.4 Materials. Materials shall be as specified herein and of the quality normally used in good commercial practice.

3.4.1 Wood. Wood for the deckboards and stringers for grade A and grade B pallets shall be selected from any of the species listed in Table I. Deckboards and stringers for any single pallet may be any species under the specified grade.

TABLE I. WOOD SPECIES

Softwoods - Grade A	
Alder, red Cedar Cypress (bald) Fir (white and Douglas) Hemlock	Larch Pine (Eastern white, red, Norway, southern yellow) Redwood Spruce
Hardwoods - Grade B	
Ash, white Beech Birch Elm (rock and white) Eucalyptus robusta	Hackberry Hard maple Hickory Oak (white and red) Pecan

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3.4.2 Moisture content. Moisture content describes the weight of water in the wood in percentage of the weight of the oven-dry wood and shall be as specified in 3.4.2.1 and 3.4.2.2 testing of wood components for moisture content shall be performed as specified in 4.5.1.

3.4.2.1 Grade A pallets. At the time of fabrication in the manufacturer's plant, the average moisture content for deckboards and stringers shall not be greater than 22 percent per pallet.

3.4.2.2 Grade B pallets. At the time of fabrication in the manufacturer's plant, the average moisture content of deckboards shall not exceed 19 percent with no individual test reading more than 22 percent. For class 1 pallets the moisture content for stringers is unrestricted; for class 2 pallets the moisture content for stringers shall not exceed 22 percent.

3.4.3 Quality. All lumber shall be sound, square-edged, and free of decay, shake, spike knots, cup, and excessive warp. Slope of grain shall not exceed 1 in 10. Lumber shall be entirely and completely free of deterioration by lyctus powder-post beetle infestation and all pallets found to have such infestation shall be rejected. The following defects will be permitted: firm tight pitch; wane, on 1 non-exposed edge only, not exceeding 1/4 of the thickness nor 1/6 of the width or 1/3 the length of deckboards or stringers; sound knots whose average diameter does not exceed 1/3 the piece width; season checks not more than 2 times as long as the piece thickness; 1 split not longer than the width of the piece; chipped or torn grain not more than 1/16 inch in depth; not exceeding in area 1/6 of the surface of the piece when chipped or torn grain side is turned down; each piece shall contain no more than one 1/2 inch hole not extending through the piece; pin worm holes; streaks; and stains. No piece shall contain any other defect or combination of defects which will materially weaken the strength of the piece or hinder its proper fastening. To ensure that the pallet is completely free of oak wilt fungus, all hardwood and softwood component parts shall be absolutely free from bark.

3.4.4 Wood preservative. When specified (see 6.2), the assembled pallet, or the lumber components, shall be submerged and soaked for 3 minutes in wood preservative conforming to composition A, type II of TT-W-572. If the lumber is cut, shaped, bored, or trimmed after the preservative treatment, it shall be resubmerged for 3 minutes in the preservative, or if this is not possible, all the newly exposed surfaces such as ends, holes, joints, and new cuts shall be swabbed with the preservative. Treatment of class 2 pallets after bundling and strapping is not acceptable. (CAUTION: The carrier for the preservative is a kerosene base solvent. Personnel should be protected in accordance with TT-W-572. Treated lumber should be allowed to dry out-of-doors or in a well ventilated area to permit evaporation of flammable vapors).

3.5 Design and construction. Pallets shall be fabricated as specified herein and as shown in Figures 1 and 2, as applicable. Grade A pallets shall consist of softwood deckboards and stringers. Grade B pallets shall consist

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of hardwood deckboards and stringers. Deckboards for grade A pallets shall be 2 inches nominal, 1-5/8 inches minimum. Deckboards for grade B pallets shall be 1-1/4 inches nominal, 1-1/16 inches minimum. For grades A and B pallets, edge deckboards shall be 8 inches nominal, 7-1/2 inches minimum. Intermediate deckboards shall be of random width, at least 6 inches nominal, 5-5/8 inches minimum, and not exceeding 8 inches nominal, 7-1/2 inches minimum. Type I pallets shall have neither more than 4 nor less than 3 intermediate deckboards for the upper and lower faces. For grade A and B pallets, spacing between deckboards shall be 2-5/8 inches maximum, 2 inches average, except for type II pallets as shown in Figure 2. All deckboards shall be surfaced on two sides. Stringers shall be 4 by 4 inches nominal, 3-5/8 by 3-5/8 inches minimum and 48 inches long, and surfaced on top and bottom. Class 1 pallets shall be completely assembled by the manufacturer. Class 2 units shall be unassembled, but with all components finished and ready for field assembly. All drilled and countersunk holes shall be completed, and necessary hardware required for assembly shall be provided for class 2 pallets.

3.5.1 Tolerances. Except as specified herein, the overall length and width of the pallet shall be subject to a tolerance of 1/4 inch plus or minus. "Out-of-square" deviation shall not exceed 1 inch difference in diagonals. Minimum allowable thickness of softwood lumber shall be restricted to the dimensional limitations of MIL-STD-731.

3.6 Hardware. All bolts, torque washers, and Pallet nuts shall be cadmium or zinc coated and shall meet all dimensional requirements specified herein after coating has been applied. Threads on bolts and nuts shall be either NC-2 or UNC class 2 in accordance with FED-STD-H28.

3.6.1 Bolts. Bolts shall be of hardened commercial steel 3/8" dia with 16 threads per inch, square neck carriage bolts, 6-1/2 inches long for grade A pallets and 5-1/2 inches long for grade B pallets, conforming to class C2 of FF-B-571.

3.6.2 Torque washers. Carriage bolt torque washers shall be made from 0.050 inch thick SAE-1010 carbon steel strip and formed from circular blanks, with an outside diameter of not less than 1-1/16 inch. Four prongs, each not less than 9/32 inch deep, shall be formed from washer blanks and shall be perpendicular to them. A square hole shall be blanked out of the central portion of the washer to accommodate the shank of a 3/8-16 inch carriage bolt. Torque washers shall have a parkerized finish not less than 0.0002 inch thick.

3.6.3 Pallet nuts. Pallet nuts (see 6.3) shall be 3/8-16 inch and shall be made from 0.075 inch thick, SAE 1010, cold rolled steel stock. The flange shall be either circular, with a 1-3/16 inch diameter, or hexagonal, 1-3/16 across the flats, shall be formed between the flange and the threaded portion of the barrel to permit insertion of Allen wrenches or power operated setting tools. Overall nut depth shall be 13/16 inch. At least a 3/8 inch thread length shall be provided inside the barrel. An impact friction lock shall be

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incorporated in the nut barrel, 5/16 inch from its open end, which shall provide 14 to 30 pounds of torque upon first insertion of the carriage bolt.

3.6.4 Nails. Nails shall be hardened (heat-treated and tempered) steel having a minimum Rockwell hardness of C42 when tested in accordance with 4.5.3. The nails shall withstand, without fracture, bending through 90 degrees over a radius not greater than the diameter of the nail when tested as specified in 4.5.4. Nails shall comply with the following requirements in accordance with FF-N-105, type II, style 18; length, 4 inches + 3/32 inch; wire diameter, 0.177 inch +.002 inch steel wire gauge; head diameter, 7/16 inch +1/32 inch; head thickness, 0.072 inch +0.002 inch; threaded portion shall extend from the point to a minimum of two thirds up the shank; diameter over thread after threading, 0.200 inch +.005 inch; diamond point, 1/4 inch long +1/16 inch. Thread shall be spiral, with a minimum of 4 flutes. Helical angle of thread at pitch diameter shall be 60 degrees $\pm 5^\circ$ with a plane perpendicular to the axis.

3.7 Assembly.

3.7.1 Type I, grade A, class 1 pallets. Type I, grade A, class 1 units shall be of all bolted construction and shall be assembled in accordance with Figure 1. Each pair of deckboards shall be attached to the center stringer by a single, round head carriage bolt. The bolts shall be centrally located in the deckboards and center stringer. At each outside stringer, each pair of deckboards shall be attached by two round head carriage bolts. Bolts shall be as specified in 3.6.1. Outer edges of outside stringers shall be set inboard 6 inches from outer edges of deckboard ends. Each pair of carriage bolts running through outer stringers shall be offset so that their centerlines are 1-1/4 inches in from stringer edges and 1-1/2 inches in from deckboards edges. Deckboards having pallet nuts shall be drilled with 1/2 inch hole concentric with a 7/16 inch diameter hole through the stringers and opposite deckboard. Nut ends of bolt holes shall have counterbores 1-3/8 inch diameter, 1/8 inch deep, and 3/4 inch diameter, 1/4 inch deep. Bolt holes shall be blown out clean by compressed air, or a similar means. All bolts shall be provided with specified torque washers at their head ends. All bolts shall be driven to countersink the torque washers. End boards shall have 2 inch, 45 degree bevels at their outer corners.

3.7.2 Type I or type II, grade B, class 1 pallets. Type I or type II, grade B, class 1 units in accordance with Figure 1 and Figure 2 respectively, shall be bolted and screwnailed construction. Each pair of end deckboards shall be of bolted and screwnailed construction. Each pair of end deckboards shall be attached to the center stringer and the outside stringers by carriage bolts, torque washers, and pallet nuts in the manner described for type I, grade A, class 1 units, except that nut ends of bolt holes shall have only a 3/4 inch diameter, 1/4 inch deep counterbore, and the pallet nut flanges shall not be countersunk. Bolts shall be as specified in 3.6.1. All center boards shall

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be nailed, with the specified screwnails, in accordance with Table II.

TABLE II. Nailing schedule for center boards

Board width in inches	Number of nails at each bearing point
5 5/8 - 6 3/4	3
6 7/8 - 8	4

3.7.3 Type I, grade A, class 2 pallets. Except for final assembly, type I, grade A, class 2 pallets shall conform to all requirements listed in 3.7.1. Deckboards and stringers shall be predrilled as specified in 3.7.1. All hardware required shall be furnished with the pallets. The units shall be capable of easy field assembly without finishing adjustments, using hand tools. When assembled, the units shall meet all requirements of this specification and Figure 1.

3.7.4 Type I, grade B, class 2 pallets. Except for final assembly, type I, grade B, class 2 pallets shall conform to all requirements listed in 3.7.2. Bolted joints shall be predrilled and counterbored as specified in 3.7.2 for easy field assembly. Nailed joints shall have only the deckboards predrilled, using a 13/64 (0.203) inch diameter drill. All hardware required shall be furnished with the pallets. The units shall be capable of easy field assembly without finishing adjustments, using only hand tools. When assembled, the units shall meet all requirements of this specification and Figure 1.

3.7.5 Positioning of components. Assembled pallets shall form a rectangle (see 3.5.1). All intermediate deckboards shall be parallel to the edges within the tolerances specified in Figure 1 and Figure 2. Stringers shall not protrude on any side.

3.7.6 Accessories. Unless otherwise specified (see 6.2), no accessories shall be required.

3.8 Bolts, nuts, and nails. All bolts and nuts shall be tightly drawn and nails shall be driven flush with the face of the pallet on class 1 pallets.

3.9 Marking. Unless otherwise specified (see 6.2), class 1 pallets shall be marked in accordance with MIL-STD-130. "U. S." shall be branded in letters 1 inch to 1-1/2 inches high on the outside face of one of the outside stringers. The manufacturer's identification shall be neatly stenciled on the same stringer in letters not over 1/2 inch high.

3.10 Workmanship. Assembled pallets shall be clean and properly assembled. Surfaces shall be smooth and free of splinters or damage. In addition, unassembled pallets shall be free of defects which may affect field assembly.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 that supplies and services conform to prescribed requirements.

4.2 Preproduction sample. The preproduction sample(s) shall be inspected for all defects listed in Table III and tested in accordance with 4.5.1 and 4.5.2, as applicable. Any evidence of non-compliance with specified requirements shall be cause for rejection.

4.3 Sampling. Sampling inspection shall be performed in accordance with MIL-STD-105. The lot size shall be expressed in units of like components (e.g. deckboards or stringers) or pallets, as applicable. The sample unit shall be one pallet or the components necessary to assemble one pallet as applicable. The inspection level shall be II and the acceptable quality level (AQL) shall be 6.5 defects per hundred units for total defects and 2.5 defects per hundred units for major defects.

4.4 Quality conformance inspection.

4.4.1 Component and material inspection. The supplier is responsible for insuring that materials and components used were manufactured, tested and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified herein, or if none, in accordance with this specification.

4.4.2 End item inspection. Inspection shall be performed to determine compliance with the specified requirements as listed in Table III.

4.4.3 End item testing. The components of each sample end item shall be selected and tested as specified in 4.5.1. Components necessary for the assembly of one class 2 pallet shall be selected from each lot and be tested as specified in 4.5.2.

TABLE III

<u>Item</u>	<u>Major Defects</u>	<u>Requirement Paragraph</u>	
101	Wood components	Evidence of insect infestation.	3.4.3
102		Not sound and free of decay.	3.4.3
103		Excessive warp.	3.4.3
104		Not free of cup or shakes.	3.4.3

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<u>Item</u>	<u>Major Defects</u>	<u>REQUIREMENT Paragraph</u>
105 Wood components	Species not as specified.	3.4.1
106	More than one split.	3.4.3
107	Any split longer than the width of the piece.	3.4.3
108	Any split extending from nail or bolt hole.	3.7.1, 3.7.2
109	Slope of grain is greater than 1 in 10.	3.4.3
	Any allowable defect or combination of defects occurring in a position that impairs the strength of the pallet.	3.4.3
111	All wood components not absolutely free from bark.	3.4.3
112 Hardware	Type, size, or length of hardware not as specified.	3.6
113	Any item of hardware missing.	3.6
114	Pallet nuts not drawn to proper torque.	3.6.3
115	Pallet nuts and carriage bolts, not zinc or chromium plated.	3.6
116 Preservative	No preservative (if specified).	3.4.4
201 Wood components	Pith not firm and tight.	3.4.3
202	Wane (wane on one non-exposed edge exceeding one-fourth of the thickness or one-sixth of the width or one-third the length of the piece).	3.4.3
203	Season checks exceeding twice the thickness of the piece.	3.4.3
204	Sound, tight knots or knot clusters in average diameter exceeding one-third of the width of the piece.	3.4.3
205	Holes (occasional 1/2 inch holes not extending through the piece).	3.4.3
206	Surfaces not dressed as specified.	3.5
207	Components not square and of uniform thickness.	3.4.3, 3.5.1
208 Deckboards	Chipped or torn grain over 1/16 inch deep or exceeding an aggregate area of one-sixth the surface of the piece when chipped or torn grain side is turned down.	3.4.3
209 Assembly	Spacing of top and bottom deckboards not as specified.	3.5, Figures 1 and 2
210	Assembled pallet does not form 90 degree rectangle with all boards parallel to the side.	3.5.1, 3.7.5

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<u>Item</u>	<u>Major Defects</u>	<u>Requirement Paragraph</u>
211 Assembly	Defects or imperfections that interfere with the prescribed assembly.	3.4.3
212	Intermediary deckboards not parallel to sides.	3.7.5
213	Incorrect fastener pattern.	3.7.1, Figures 1 and 2
214 Dimensions	Any dimension not in accordance with specified requirements.	3.5, Figures 1 and 2
215 Preservative	Incorrectly applied or incorrect preservative.	3.4.4
216 Marking	Type, size, and locations not as specified; not legible and not permanent.	5.3

4.4.4 Examination of preparation for delivery. An examination shall be made to determine compliance with the requirements specified in Section 5 for packing and marking, as applicable. The sample unit shall be units or packs or pallets, as applicable. The inspection level shall be S-2 and the acceptable quality level 4.0 defects per 100 units. Defects are as follows:

- 116. Improper stacking.
- 117. Improper strapping.
- 118. Improper or poor marking.
- 119. Contents per shipping unit is not correct.

4.5 Test methods.

4.5.1 Moisture content. Moisture content testing for pallet components shall be accomplished using any method of MIL-STD-1363. The lot size shall be expressed in units of deckboards and stringers. The sample unit shall be one deckboard or stringer. Three determinations shall be made on each deckboard and stringer, two near the ends and one at the center. The average shall represent the moisture content of the component. Excessive moisture content shall be classed as a major defect (see 3.4.2). The inspection level shall be S-2 and the acceptable quality level (AQL) for individual requirements shall be 4.0 defects per hundred units. When wood preservative is specified (see 3.4.4), testing for moisture content shall be performed prior to preservative treatment.

4.5.2 Assembly (class 2). The sample pallet selected in accordance with 4.4.3 shall be examined as specified in 4.5.1. If the pallet cannot be easily assembled under field conditions with hand tools, the lot shall be rejected.

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4.5.3 Hardness. Tests for hardness of bolts or nails shall be in accordance with the applicable requirements of ASTM E-18.

4.5.4 Bending. Tests for bending of bolts or nails shall be in accordance with the applicable requirements of ASTM E-290.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Not applicable.

5.2 Packing. The pallet shall be packed level A, B, or C as specified (see 6.2). Shipments shall be made in carload or truckload lots when possible. The loading of class 1 pallets shall be in such a manner as to facilitate unloading by use of forklift equipment. Hardware (bolts, pallet nuts, washers, and nails) shall be shipped in the required quantities with class 2 pallets. As allowance to cover loss or damage, a 10 percent increase in the quantity of hardware items shall be provided, and they shall be packaged in bags and placed in the space provided in accordance with Figure 3. Hardware shall be packaged in bags conforming to type I, class B of MIL-B-117 and placed in the space provided in accordance with Figure 3.

5.2.1 Level A.

5.2.1.1 Class 1 pallets shall be evenly stacked in quantities not to exceed 54 inches in height and shall have two straps. Each strap shall pass through the fork entry opening adjacent to the outer stringers of the base pallet. The straps shall encircle the outside surfaces of the load. Strapping shall be 1-1/4 inches by .035 inches in accordance with type I, class E, grade 2 of QQ-S-781.

5.2.1.2 Class 2 pallets shall be arranged and strapped in accordance with Figure 3. For packing one pallet, termed a unit pack, strapping shall conform to type I, class B, grade 2 of QQ-S-781. Ten (10) softwood or twelve (12) hardwood pallets, bundled in accordance with Figure 3, shall be packed on one assembled pallet. The bundled pallets shall be strapped with two (2) 1-1/4 inch x .035 inch steel straps conforming to type I, class B, grade 2 of QQ-S-781. Straps are positioned in the fork entry opening of the assembled pallet adjacent to the outer stringers as depicted in Figure 3.

5.2.2 Level B.

5.2.2.1 Class 1 pallets shall be packed in accordance with 5.2.1.1 except that steel strapping shall conform to type I, class A of QQ-S-781.

5.2.2.2 Class 2 pallets shall be packed in accordance with 5.2.1.1 except that steel strapping shall conform to type I, class A of QQ-S-781.

5.2.3 Level C.

5.2.3.1 Class 1 pallets shall be packed in accordance with 5.2.1.1 except

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that steel strapping shall conform to type I, class C of QQ-S-781.

5.2.3.2 Class 2 pallets shall be packed in accordance with 5.2.1.2 except that steel strapping shall conform to type I, class C of QQ-S-781.

5.3 Marking. In addition to any special marking required by the contract or order (see 6.2), each palletized load shall be marked for shipment in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Type I pallets described herein are intended for use in loading and unloading sea-going vessels, and for storage of materials on piers, transit sheds, and other ship loading and unloading areas. Type II units are intended for the handling operation of 55 gallon drums. Class 2 pallets are intended primarily for overseas use.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type, grade, and class required (see 1.2).
- (c) When preproduction model is not required (see 3.2).
- (d) When preservative or other protection is required (see 3.4.4).
- (e) When accessories are required (see 3.7.6).
- (f) Special markings required (see 3.9).
- (g) Level of packing required (see 5.2).

6.3 Fasteners. The special nut type fasteners are available as "Painuts", "Teenuts" and "Kwik-Nuts" from various sources including United-Carr Supply Division of TRW inc., Newtonville, Mass. 02160 and Ace Engineering Company, San Francisco, CA 94124. Any equivalent fasteners conforming to 3.6.3 is an acceptable substitute.

Custodians:

Army - ME
Navy - SA
Air Force - 99

Preparing activity:

Navy - SA

Project 3990-0172

Review activities:

DLA - GS
Army - ME, SM
Navy - SA, AS, SH, OS
Air Force - 99

User activities:

Army
Navy - SA, YD, SH, OS
Air Force

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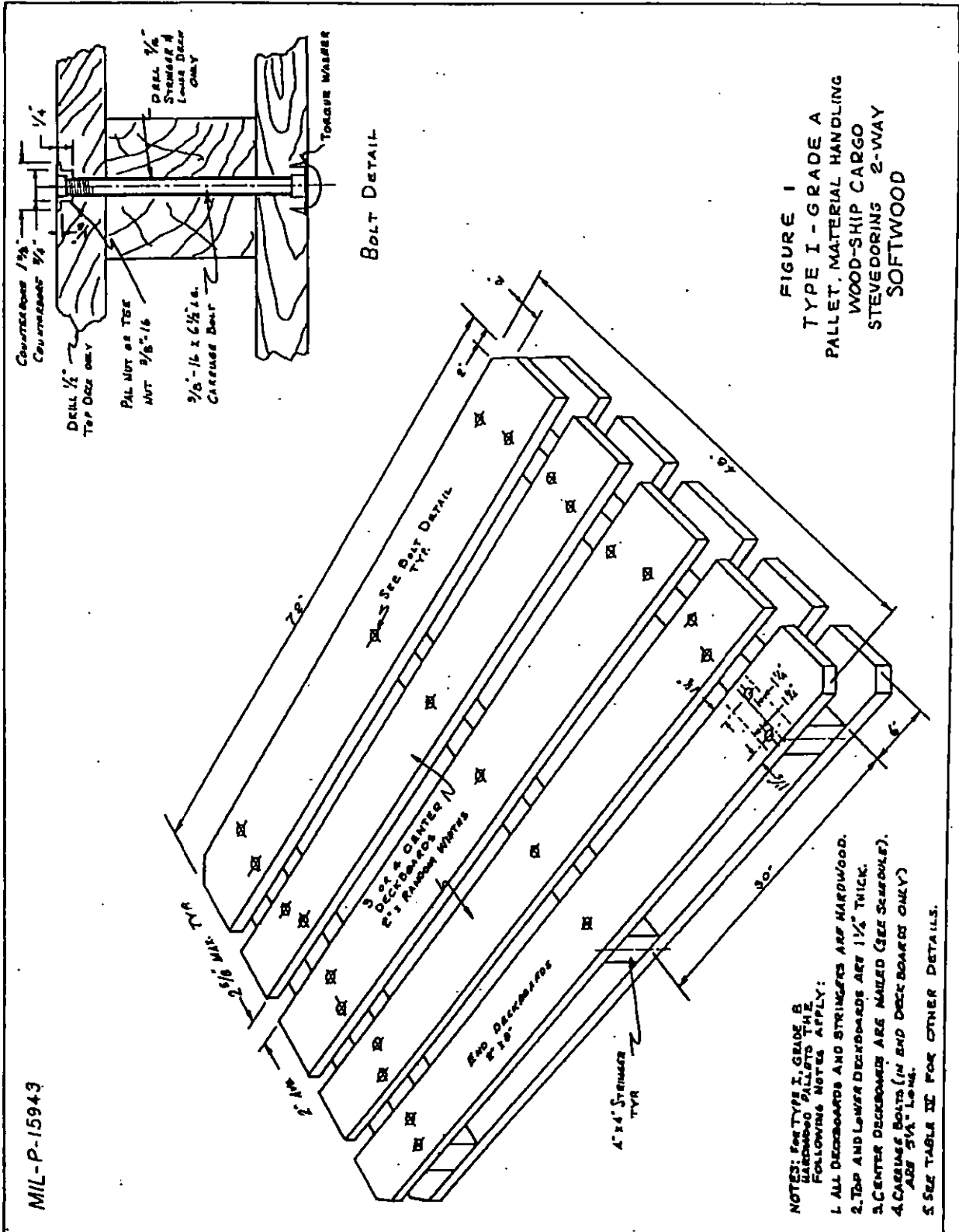


FIGURE 1
 TYPE I - GRADE A
 PALLET, MATERIAL HANDLING
 WOOD-SHIP CARGO
 STEVEDORING 2-WAY
 SOFTWOOD

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- NOTES: FOR TYPE I, GRADE A
 SOFTWOOD PALLET THE
 FOLLOWING NOTES APPLY:
1. ALL DECKBOARDS AND STRINGERS ARE HARDWOOD.
 2. TOP AND LOWER DECKBOARDS ARE 1 1/2" THICK.
 3. CENTER DECKBOARDS ARE MAILED (SEE SCRAMBLE).
 4. CARRIAGE BOLTS (IN END DECKBOARDS ONLY) ARE 5 1/4" LONG.
 5. SEE TABLE III FOR OTHER DETAILS.

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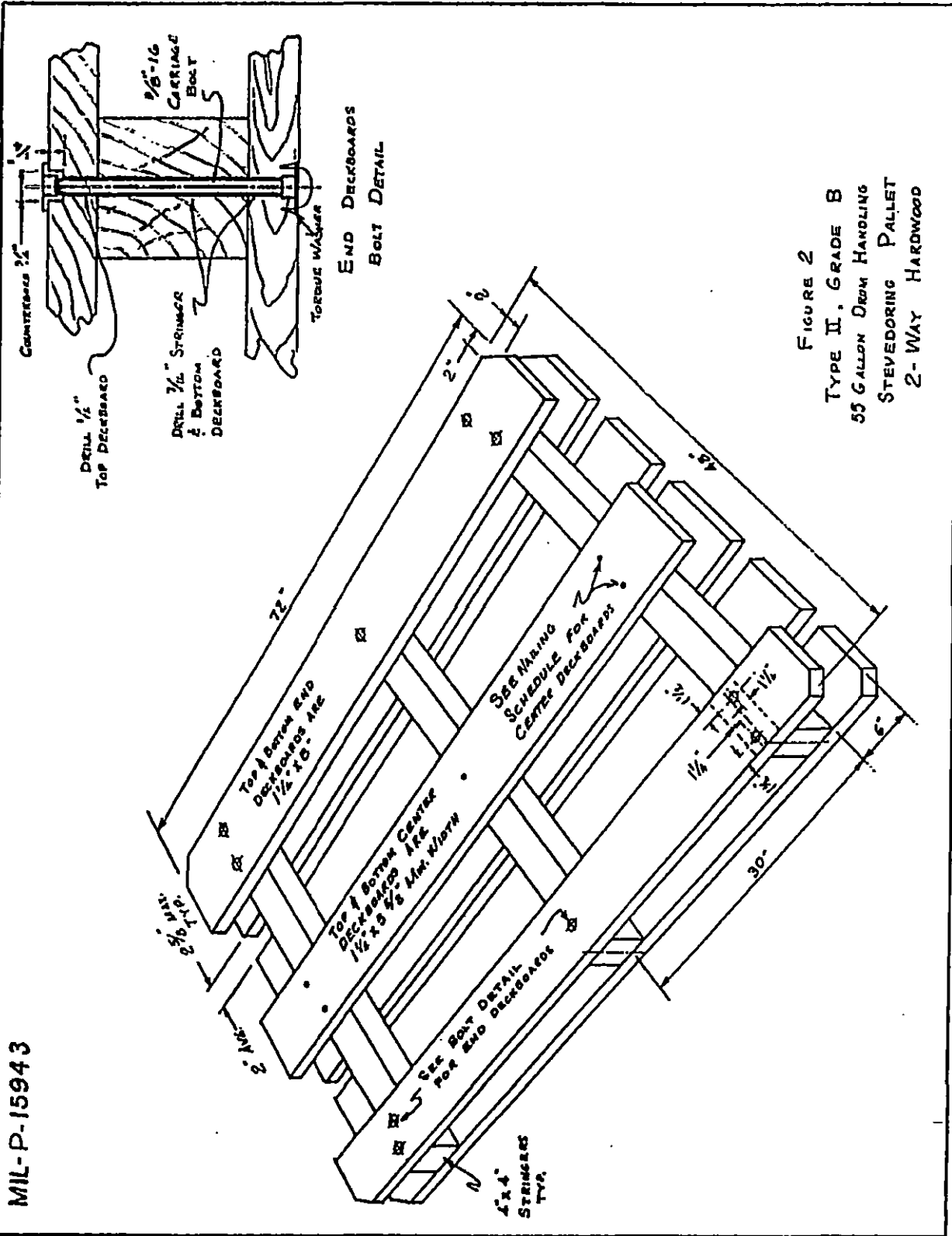


FIGURE 2
TYPE II, GRADE B
55 GALLON DRUM HANDLING
STEVEDORING PALLET
2-WAY HARDWOOD

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TABLE IV - PALLET COMPONENT DETAILS

PALLET CLASSIFICATION		STRINGERS				END BOARDS				CENTER BOARDS					
TYPE	GRADE	CLASS	FASTENERS	SIZE INCHES		WOOD TYPE	FINISH (MINIMUM)	SIZE INCHES		WOOD TYPE	FINISH (MINIMUM)	SIZE INCHES		WOOD TYPE	FINISH (MINIMUM)
				NOMINAL	MINIMUM			NOMINAL	MINIMUM			NOMINAL	MINIMUM		
I	A	1	① Bolts	4"x4"	3 5/8 x 3 5/8	Soft	Top & Bottom	2x8	1 3/8 x 7 1/2	Soft	Two Sides	2 x Random	1 5/8 x 5 5/8	Soft	Two Sides
I	B	1	② Nails & ③ Bolts	4"x4"	3 5/8 x 3 5/8	Hard	Top & Bottom	1 1/4 x 8	1 1/16 x 7 1/2	Hard	Two Sides	1 1/4 x Random	1 1/16 x 5 5/8	Hard	Two Sides
I	A	2	① Bolts	4"x4"	3 5/8 x 3 5/8	Soft	Top & Bottom	2 x 8	1 3/8 x 7 1/2	Soft	Two Sides	2 x Random	1 5/8 x 5 5/8	Soft	Two Sides
I	B	2	② Nails & ③ Bolts	4"x4"	3 5/8 x 3 5/8	Hard	Top & Bottom	1 1/4 x 8	1 1/16 x 7 1/2	Hard	Two Sides	1 1/4 x Random	1 1/16 x 5 5/8	Hard	Two Sides
II	B	1	② Nails & ① Bolts	4"x4"	3 5/8 x 3 5/8	Hard	Top & Bottom	1 1/4 x 8	1 1/16 x 7 1/2	Hard	Two Sides	1 1/4 x Random	1 1/16 x 5 5/8	Hard	Two Sides

NOTE: ① - Carriage Bolts for Grade A Pallets are to be 3/8" - 16 x 6 1/2" Lg.

② - Carriage Bolts for Grade B Pallets are to be 3/8" - 16 x 5 1/2" Lg.

③ - All Carriage Bolts are to be equipped with Torque washer United Carr P/N 98398 or Equal, and 3/8" - 16 Pal nut United Carr P/N 58009L or equal.

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