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SUPERSEDING  
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## FEDERAL SPECIFICATION

### BOXES, WOOD, WIREBOUND PALLET TYPE

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

#### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers four types of fully enclosed wirebound demountable pallet boxes for maximum loads up to 2500 pounds; for intended use see paragraph 6.1.

#### 1.2 Classification.

1.2.1 Types, classes, and grades. The boxes shall be of the following types, classes, and grades, as specified (see 6.2).

Type I - Lumber, sheathed, maximum load 2500 lbs

Class 1 - Base, 4-way entry (partial) (see Figs 1 and 2)  
Class 2 - Base, 2-way entry (see Figs 1 and 2)

Type II - Lumber and veneer, sheathed, maximum load 1500 lbs

Class 1 - Base, 4-way entry (partial) (see Figs 2 and 3)  
Class 2 - Base, 2-way entry (see Figs 2 and 3)

Type III - Lumber and veneer, sheathed, maximum load 1500 lbs

Two different length sidewalls:

Class 3 - Base, 4-way entry (partial) (see Figs 4 and 5)  
Class 4 - Base, 2-way entry (see Figs 4 and 5)

Type IV - Plywood, sheathed, maximum load 2500 lbs

Class 1 - Base, 4-way entry (partial) (see Figs 2 and 6)  
Class 2 - Base, 2-way entry (see Figs 2 and 6)

Grades A and B - Treated (see 3.1.1.7)

Grade C - Untreated

Grade D - Fire Retardant

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DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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## 2. APPLICABLE DOCUMENTS

### 2.1 Government documents.

2.1.1 Specifications and standards. The following documents, of the issues 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, Brads, Staples and Spikes: Wire, Cut and Wrought
NN-P-530	Plywood, Flat Panel
QQ-S-781	Strapping, Steel, and Seals
TT-W-572	Wood Preservative: Water-Repellent
PPP-V-205	Veneer, Paper Overlaid, Container Grade

##### Military

MIL-L-19140	Lumber and Plywood, Fire-Retardant Treated
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#### STANDARDS

##### Federal

FED-STD-123	Marking for Shipment (Civil Agencies)
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##### Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-731	Quality of Wood Members for Containers and Pallets

(Copies of Military 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).

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402).

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(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, D.C.; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies).

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

American Society for Testing and Materials (ASTM):

ASTM D2016	Wood, Moisture Content of
ASTM E380	Metric Practice

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

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

### 3. REQUIREMENTS

3.1 Materials. Materials (see 6.4) shall conform to requirements as specified herein, or as specified by contract or purchase order. Metric conversion of physical properties of material are in accordance with ASTM E380 and are shown in Table V.

3.1.1 Wood. Wood used in the fabrication of boxes shall conform to requirements of MIL-STD-731 as applicable. Group I woods shall not be permitted for cleats. When specified, wood shall be fire-retardant treated in accordance with MIL-L-19140.

3.1.1.1 Quality of wood. Grain divergence (slope of grain), whether on the face or edge of a piece, shall not exceed 1 inch in a length of 10 inches for pallet base and box frame member, and shall not exceed 1 inch in a length of 8 inches for face

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boards. Pieces shall be free from decay and sufficiently smooth on the exterior surface to permit legible markings. Stains and discolorations not associated with decay will be permitted provided they are not so pronounced as to obscure markings. Pieces shall be free from all defects that will interfere with specified stapling and nailing. Each wood member shall be a single piece of wood without any joints.

3.1.1.2 Knots in cleats and battens. The width of any knot in cleats or battens shall not exceed  $1/4$  the width of the piece. No part of any knot shall be within  $1-1/4$  inches from the end of a piece. Any such knots shall be sound and tight. Loose knots and knot holes shall not be permitted in cleats and battens.

3.1.1.3 Knots in face boards, stringers, and deck boards. The width of any knot in face boards, stringers, and deck boards shall not exceed  $1-1/2$  inches nor  $1/3$  the width of the piece. Any such knots shall be sound and tight with no part of the knot less than 1 inch from the end of a piece. Loose knots or knot holes not more than 1 inch in width shall be permitted, provided they are not within 1 inch from the end of the piece.

3.1.1.4 Splits.

3.1.1.4.1 Splits extending entire length of board. Splits extending the entire length of the board shall be permitted for sides, top, bottom, and ends, provided the width of the narrowest piece of the board measured from the split is  $1-1/2$  inches or greater, and further provided that a staple holds each end of each piece in place.

3.1.1.4.2 Splits diverging to edge of board. Splits diverging to outer edge of box shall not be permitted. Splits extending less than the entire length of the board and not diverging to an edge of a board shall be permitted for sides, top, bottom and ends, provided that if the split were extended, the resulting boards would comply with the minimum requirements of 3.1.1.4.1.

3.1.1.4.3 Splits extending through staple or nail holes. Splits in the end of boards caused by the fastener which do not exceed 3 inches in length are acceptable provided the split does not terminate in the edge of the board.

3.1.1.5 Wane or bark. Wane along any one edge of a wood member will be permitted for the full length of the member provided it does not exceed  $3/8$  inch in either direction from the edge of the member. Bark shall not be permitted on any wood component.

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3.1.1.6 Moisture content. At the time of fabrication of the boxes, the moisture content of wood members shall be in accordance with ASTM D2016 except that there shall be no restriction on the moisture content of pallet base stringers.

3.1.1.7 Preservation treatment. When specified, grade A pallet boxes or the finished parts thereof, shall be completely immersed or flushed for a minimum of 3 minutes in a preservative complying with composition C or D of TT-W-572. Grade B pallet boxes or the finished parts thereof, shall be completely immersed or flooded for a period of one minute so as to cover all interior and exterior surfaces in any one of the following preservatives; a solution of PQ-56 reduced with water down to 1.8 percent copper-8-quinolinolate as solution; an emulsion of MGARD W550 (zinc naphthenate) reduced with water down to 3 percent zinc as metal; a solution of Cunapsol 5 (copper naphthenate) reduced down with water containing 2 percent copper as metal; or an emulsion of MGARD W510 (copper naphthenate) reduced with water down to 2 percent copper as metal.

3.1.2 Plywood. Plywood used in the fabrication of type IV boxes shall conform to NN-P-530. When specified, plywood shall be fire-retardant treated in accordance with MIL-L-19140.

3.1.3 Binding wire. Binding wire shall be minimum 13 gage, (0.091 inch) diameter, low carbon, annealed steel wire. The wire shall have the physical properties to permit satisfactory forming of the loop closures without fracturing the wire. The tensile strength of the wire shall be from 60,000 to 85,000 pounds per square inch (psi).

3.1.3.1 Coating. The surface of binding wires shall be galvanized. The galvanized coating shall be smooth and shall not flake nor peel when the wire is wound around a mandrel 3/16 inch in diameter (see 4.3.2).

3.1.4 Staples. Staples shall be made from low carbon steel wire. The tensile strength of the wire shall be from 95,000 to 125,000 psi.

3.1.4.1 Coating. The surface of stapling wire shall be galvanized. The galvanized coating shall be smooth and shall not flake nor peel when the wire is wound around a mandrel 3/16 inch in diameter (see 4.3.2).

3.1.5 Nails. Nails of the types specified shall conform to FF-N-105.

3.1.6 Veneer, paper overlaid. The paper overlaid veneer shall comply with the requirements of PPP-V-205.

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### 3.2 Design.

3.2.1 Type and class. Each type of box may be used with either a partial four-way entry base, or a two-way entry base as specified (see 6.2).

3.2.2 Type I boxes. Type I boxes shall conform to figure 1. Type I boxes shall be limited to a maximum inside depth (height of load) of 48 inches. The inside length or width shall not exceed 60 inches, and further, the inside length and width dimensions, when added together, shall not exceed 102 inches. Bases shall conform to figure 2.

3.2.3 Type II boxes. Type II boxes shall conform to figure 3. Type II boxes shall be limited to a maximum inside depth (height of load) of 40 inches, and further, the inside length and width dimensions, when added together, shall not exceed 96 inches. Bases shall conform to figure 2.

3.2.4 Type III boxes. Type III boxes shall conform to figure 5 and to the dimensional limitations of 3.2.3. Bases shall conform to figure 4.

3.2.5 Type IV boxes. Type IV boxes shall conform to figure 6. Base shall conform to figure 2. Type IV boxes shall be limited to a maximum inside depth (height of load) of 48 inches. The inside length shall not exceed 96 inches. The inside width shall not exceed 48 inches. Further, the inside length and width dimensions, when added together, shall not exceed 128 inches.

3.3 Construction. Nominal dimensions shall be as specified in 5.1 of MIL-STD-731.

#### 3.3.1 Wirebound blank.

3.3.1.1 Cleats. Cleats shall be made of group II, III, or IV woods, (see 3.1.1). The ends of all cleats, except the bottom cleats for type III boxes shall be mitered. The bottom cleats for type III boxes shall be butt end. The dimensions of the width and thickness of the cleats shall be as shown on the applicable figure with a tolerance of  $\pm 1/32$  inch on the width dimension. The minimum thickness shall be  $7/8$  inch.

3.3.1.2 Face boards. Face boards shall be made from any of the wood species permitted in MIL-STD-731. Face boards where required by the applicable figures shall be  $3/8$  inch thick  $\pm 1/32$  inch. The minimum width of a face board for type I boxes shall be  $2-1/2$  inches, except at the lead and trailing edge of a box blank which shall be 4 inches nominal width.

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3.3.1.3 Corner and intermediate face boards. All corner and intermediate face boards for type II and III boxes shall be nominal 4 inches in width and 3/8 inches thick. Wood veneer 7/32 inch thick shall be used between the face boards. The thickness of the veneer shall be not less than 95 percent of the specified thickness.

3.3.1.4 Plywood face boards. Plywood face boards for sides and top of type IV boxes shall be 3/8 inch thick. Plywood for sides shall have the direction of the grain in the outer ply vertical to the base. The thickness of plywood shall not be less than 95 percent of the specified thickness. When the width of a box panel does not exceed 48 inches, the plywood used shall be one piece.

3.3.1.5 Binding wire. Each binding wire shall be continuous around the girth of the box. Wire shall conform to the requirements of 3.1.3. The minimum number of binding wires shall be as specified in table I. One binder wire shall be placed over each row of cleats. When possible, the remainder of all wires shall be uniformly spaced between the wires that are placed over each row of cleats (see figure 7). Splicing or welding of a binding wire during manufacture is permissible.

TABLE I. Minimum Number of Binding Wires.

Length of face boards in inches	Minimum number of binding wires
20 to 27-5/8	4
27-11/16 to 36	5
36-1/16 to 42-5/8	6
42-11/16 to 50	7

3.3.1.6 Staples. Staples shall conform to the requirements specified in 3.1.4 and table II. Staples shall be used for fastening binding wires to face boards, veneer, and cleats.

3.3.1.6.1 Stapling over binding wires into cleats. The staples shall pass through the face boards or veneer and into the cleats and shall not be deformed or protrude from the sides of the cleats. Any staple point that protrudes through a cleat shall be clinched. Staples shall be driven at a spacing not to exceed 1-3/4 inches. When the length of the cleats requires interruption of the nominal spacing, this interrupted space shall not exceed 2-1/2 inches. The minimum number of staples in any



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cleat shall be 3. At each corner of the box, the distance from the end of the cleat to the nearest staple shall not exceed 1-5/8 inches.

3.3.1.6.2 Stapling over binding wires into the face boards or veneer only. Staples driven over binding wires into face boards or veneer only shall penetrate the face board or veneer and the staple points shall be clinched. Spacing of staples shall conform to 3.3.1.6.1.

TABLE II. Minimum Length and Gage of Staples.

Thickness of boards or combined thickness of boards, cleats, or battens (Inches)	In boards only		In boards over wire	
	Length (Inches)	Gage	Length (Inches)	Gage
7/32	---	--	1/2	18
3/8	1/2	18	9/16	18
1-1/8 to 1-3/8	1-1/4	16	1-1/4	16

1 1-1/8 inch long, 16 gage staples permissible into group IV wood cleats.

3.3.1.7 Closures. Closures shall be either looped wire closures or twisted loop wire closures conforming to figure 8. The length of looped fasteners or girth wires shall be approximately 4-1/2 times the inside length of the box to make a satisfactory closure as detailed in figure 8. For looped wire closures each end of each girth wire shall be formed by bending the wire back in the opposite direction with the ends of the wire being driven through the boards and clinched.

3.3.1.8 Fire retardant. When specified, grade D boxes shall be constructed of wood treated in accordance with MIL-L-19140, type II.

### 3.3.2 Top.

3.3.2.1 Battens for top. Lumber for battens shall be as specified in 3.1.1. The top battens shall be 1-3/8 inches wide and 7/8 inch thick, minimum. The width and thickness of battens shall be not less than the specified dimension minus 1/16 inch. Top battens shall run parallel with the width dimension (see figure 7). There shall be a minimum of three top battens with the center or intermediate batten at the centerline of the top. When the length of the box exceeds 36 inches, an additional top batten shall be added with the intermediate battens uniformly spaced between the two outer battens.



3.3.2.2 Face boards and veneer. Face boards and veneer shall conform to 3.1.1, 3.1.6, 3.3.1.2, 3.3.1.3, and 3.3.1.4, respectively. The minimum width of any face board used in the construction of the top shall be nominal 4 inches. Unless otherwise specified, the face boards of the top shall project beyond the ends of the battens 1-1/4 inches. Openings between face boards or face boards and veneer shall not exceed 1/4 inch. Face boards and veneer shall be fastened to battens with not less than 16 gage staples or 14-1/2 gage cement-coated, or chemically-etched nails and shall protrude through the battens and shall be smooth clinched. The bearing surface of the staple crown shall be not less than 5/16 inch long. Face boards not exceeding 4 inches in width shall be fastened to each batten with not less than 2 nails or staples. The spacing of nails or staples shall not exceed 2-1/2 inches.

3.3.3 Pallet base. Pallet bases shall conform to figures 2 and 4 as applicable to the type of box specified. Lumber shall be as specified in 3.1.1.

3.3.3.1 Stringers. For types I, II, and IV boxes, the outside stringers shall be nominal 4 by 4 inch minimum lumber and the center stringers shall be nominal 2 by 4 inch minimum lumber. For type III boxes, all stringers shall be nominal 2 by 4 inch minimum lumber. For all types and classes of boxes, when the box width does not exceed 24 inches, the center stringer is not required. When the box width exceeds 50 inches, two intermediate stringers shall be used, uniformly spaced. Stringers for types I, II, and IV boxes shall be notched as shown in figure 2.

3.3.3.2 Riser battens. Riser battens shall be 1-3/4 inches wide and 7/8 inch thick, minimum. The width of the battens shall be not less than the specified dimension, minus 1/16 inch. The thickness of the battens shall allow the cleat to fit snugly in place when the box is assembled. Riser battens shall be fastened to each stringer with a minimum of 3 nails or at a nail spacing not to exceed 12 inches. Nails at the outer ends of battens shall be set back from the end 2 inches but not greater than 4 inches. Nails to secure riser battens shall be 2-1/2-inch long pallet nails, type II, style 18 conforming to FF-N-105. See 3.3.3.3 for alternate fabrication.

3.3.3.3 Deck boards. Top and bottom deck boards shall be 3/4 inch thick and 3-3/4 inch wide  $\pm 1/16$  inch. When specified, for type IV boxes, the deck boards may be one piece of 3/8 inch thick plywood. Openings between the top deck boards shall not exceed 1/4 inch. Top deck boards shall be attached by driving 3-1/2-inch long pallet nails through deck boards and riser battens into the stringers at an approximate spacing of 2-1/4 inches. There shall be a minimum of 2 nails through each deck

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board into each stringer for boards up to 4-5/8 inches wide. Alternately, the deck boards may first be fastened to the riser battens with 14 gage, 1-7/8- inch long staples or 2-inch long nails spaced not more than 2 inches apart. The above assembly shall then be attached to the stringers using pallet nails not less than 3-1/2 inches long at an average spacing of 4 inches between nails.

**3.4 Box manufacturer's identification.** Unless otherwise specified (see 6.2), each box shall be marked with the specification number, type, class, and grade of box, box manufacturer's name and address, and maximum capacity in pounds. Grade B treated boxes shall be annotated with the letters "PA" when treated with PQ-56 (copper-8-quinolinolate) preservative, "PB" when treated with MGARD W550 (zinc naphthenate) preservative, "PC" when treated with Cunapsol 5 (copper naphthenate) preservative, or "PD" when treated with MGARD W510 (copper naphthenate) preservative. Markings shall be permanent and legible and shall be limited to 15 square inches in area. The markings shall be located on a lower corner of one side panel in letters and numerals approximately 5/16 inch high except that the specification number shall be in letters and numerals approximately 3/4 inch high. When letters and numerals are indented the indentation shall be not more than 1/16 inch below the surface of the wood. Arrangement of the markings shall be as follows:

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 Type \_\_\_\_\_ Class \_\_\_\_\_ Grade \_\_\_\_\_  
 Box manufacturer's name \_\_\_\_\_  
 Plant location \_\_\_\_\_  
 Maximum box capacity \_\_\_\_\_ pounds

**3.5 Box sizes.** Box sizes shall be as specified (see 6.2). Box sizes shall be in terms of the inside dimensions of the box as specified herein (see figure 7) and shall be cited in sequence of length, width, and depth. The inside length and inside width shall be the inside dimensions of the cleats of the assembled box. Tolerance for the specified inside length or inside width shall be plus or minus 1/8 inch. The inside depth specified shall be the distance from the top of the decks boards of the pallet to the underside of the top cleat of the assembled box. Tolerance for the specified inside depth shall be plus or minus 1/4 inch. The inside width will normally be greater than the inside length (see figure 7).

**3.6 Interchangeability.** All like components of all boxes of the same type, class, grade, and size procured under a specific contract shall be interchangeable.

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3.7 Assembly, closure, and strapping of filled boxes. The assembly, closure, and strapping of filled boxes shall be in accordance with the appendix to this specification.

3.8 Workmanship. The boxes shall be free from slivers and any other handling hazards and any defects affecting appearance and serviceability.

#### 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 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 that supplies and services conform to prescribed requirements.

4.2 Sampling for inspection and acceptance. Sampling for inspection and acceptance shall be in accordance with the provisions of MIL-STD-105 except where otherwise indicated.

4.2.1 Component and material inspection. In accordance with 4.1, the contractor 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 the specification.

4.2.2 End item inspection. A lot shall consist of all boxes of the same type, class, grade, and size offered for inspection at one time. The sample unit shall be one completely fabricated box.

4.2.2.1 Visual examination. Examination of the end item shall be in accordance with the classification of defects listed in table III. The inspection level shall be level I with an acceptable quality level (AQL) of 2.5 for major defects and 6.5 for total defects expressed in terms of defects per hundred units.

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TABLE III. Classification of Defects.

Examine	Defect	Classification	
		Major	Minor
Wood members	Not classes and groups of wood specified-----	x	
	Slope of grain exceeds 1 inch in a length of 10 inches in pallet base and box frame members-----	x	
	Slope of grain exceeds 1 inch in a length of 8 inches in face boards-----		x
	Decay in wood member-----	x	
	Applicable wood members not sufficiently smooth on exterior surface to permit legible markings-----		x
	Stains and discolorations on applicable wood members to the extent of obscuring markings--		x
	Wood member not one-piece length-----	x	
	Width of sound and tight knot in cleat or batten exceeds 1/4 the width of the piece or is less than 1-1/4 inches from the end of the piece-----	x	
	Loose knot or knot hole in cleat or batten-----	x	
	Width of sound and tight knot in face board, stringer, or deck board exceeds 1-1/2 inches or 1/3 the width of the piece; knot less than 1 inch from the end of the piece-----	x	
	Through splits are longer than the width of wood member-----	x	

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TABLE III. Classification of Defects (Cont'd).

Examine	Defect	Classification	
		Major	Minor
Wood members (cont'd)	Split full length of board and any piece is less than 1-1/2 inches wide measured from the split-----	x	
	Each end of each piece of board split full length not held in place with a staple-----	x	
	Split forming sliver at edge of board-----	x	
	Split full length (more than one for board 4 inches wide or less, or more than two for board greater than 4 inches wide)-----		x
	Partial splits (less than 1/3 length of board not more than 3 in a board)-----		x
	Wane along one edge of a wood member and extending the full length of the member, exceeds 3/8 inch in either direction from the end of the member----	x	
	Presence of bark-----	x	
	Wood members not treated for preservation when specified---	x	
Binding wire and stapling wire	Binding wire and stapling wire not galvanized-----		x
Wirebound blank	Inside length and inside width not as specified-----	x	
	Ends of cleats not mitered except type III bottom cleats-	x	
	Bottom cleats of type III not butt and-----	x	

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TABLE III. Classification of Defects (Cont'd).

Examine	Defect	Classification	
		Major	Minor
Wirebound blank (cont'd)	Direction of grain in outside ply of plywood face sides not vertical to the base-----		x
	Binding wire not continuous around the girth of the box---	x	
	Number of binding wires less than the specified minimum----	x	
	Deformed staples over binding wire-----		x
	Staple protrudes through side of cleat-----	x	
	Less than 3 staples in any cleat-----	x	
	Staples driven over binding wires do not penetrate the face board or veneer-----	x	
	Penetrating staple points not clinched-----	x	
	Length of looped fastener on girth wire insufficient to make a satisfactory closure---	x	
	Ends of wires in looped wire closure not bent back and driven through boards and clinched-----	x	
Box top	Top battens do not run parallel with the width dimensions of box-----		x
	Top contains less than 3 battens-----	x	
	Top for box exceeding 36 inches in length does not contain additional batten-----	x	



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TABLE III. Classification of Defects (Cont'd).

Examine	Defect	Classification	
		Major	Minor
Box top (cont'd)	Points of fastener protruding through a batten not clinched--	x	
	Face boards 4 inches or less width fastened to battens with less than 2 nails or staples--	x	
Pallet base	For boxes exceeding 50 inches in width, the pallet base does not contain 2 additional intermediate stringers-----	x	
	Deck boards fastened to riser battens or stringers with less than 2 nails or staples-----	x	
Marking	Omitted, illegible, incomplete, incorrect, wrong size, or location-----		x
Workmanship	Not free of slivers or other handling hazards-----	x	

4.2.2.2 Dimensional examination. Examination shall be made of the end item to determine compliance with dimensional requirements. Any dimension that is not within the specified requirements shall be classified a defect. The inspection level shall be S-2 with an AQL of 6.5 expressed in terms of defects per hundred units.

4.2.2.3 Preservative treatment examination. Examination of boxes and parts shall be in accordance with TT-W-572 or when Grade B boxes are specified examination shall be in accordance with 4.3.4.

#### 4.2.3 Intermediate tests.

4.2.3.1 Moisture content of wood members. Testing for moisture content of wood member shall be performed on each sample unit in accordance with 4.3.1. The sample unit shall be one piece of lumber. Sample units shall be obtained from each lot of lumber for each component, except pallet base

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stringers, to be used in constructing the boxes. The inspection level shall be S-1 with an AQL of 4.0 expressed in terms of defects per hundred units.

4.2.3.2 Adherence of coating on galvanized wire. Testing for adherence of coating on galvanized wire shall be performed on each sample unit in accordance with 4.3.2. The sample unit shall be one piece of wire of sufficient length to perform the test. Sample units shall be obtained from each lot of wire used for binding wires and from each lot of wire used for making staples. The inspection level shall be S-2 with an AQL of 4.0 expressed in terms of defects per hundred units.

#### 4.3 Tests.

4.3.1 Moisture content. Samples of lumber selected in accordance with 4.2.3.1 shall be tested for moisture content in accordance with ASTM D2016 to determine compliance with 3.1.1.6.

4.3.2 Adherence of coating on galvanized wire. Wire samples selected in accordance with 4.2.3.2 shall be tested for adherence of the galvanized coating to determine conformance to 3.1.3.1 and 3.1.4.1. The wire shall be wrapped in a closed helix for at least two complete turns around a mandrel 3/16 inch in diameter at a rate of not more than 15 turns per minute. The wrapped wire shall be observed for flaking of the coating and shall be rubbed with the bare fingers to determine whether or not the coating peels.

4.3.3 Tensile strength of wire. The contractor shall certify that binding wire specified in 3.1.3 and staple wire specified in 3.1.4 meet the required tensile strengths.

#### 4.3.4 Presence of water-based preservatives.

4.3.4.1 Presence of PQ-56 (copper-8-quinolinolate) preservative.

##### 4.3.4.1.1 Primary method.

4.3.4.1.1.1 Materials and equipment. The materials and equipment required are as follows:

a. PQ check (indicator): The formulation contains 10 parts by weight of sodium diethyldithiocarbamate trihydrate (see 6.2.1) and 90 parts by weight of distilled water.

b. Glass tube eye dropper.

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4.3.4.1.1.2 Test procedure. Two drops of PQ check (indicator) shall be applied to the wood surface. An immediate dark brown coloration and the spreading of the drops shall indicate PQ-56.

4.3.4.1.2 Alternate method.

4.3.4.1.2.1 Materials and equipment. The material and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams of chrome azural "S" concentrate (see 6.2.1) and 5.0 grams of sodium acetate in 80 ml of distilled water and then dilute further to 500 ml total with distilled water.

b. Common manual (fly) sprayer applicator.

4.3.4.1.2.2 Test procedure. Spray solution over surface of dried treated wood. A deep blue color reveals the presence of copper in the copper-8-quinolinolate.

4.3.4.2 Presence of MGARD W550 (zinc naphthenate) preservative.

4.3.4.2.1 Primary method.

4.3.4.2.1.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.1 grams of dithizone (diphenylthiocarbazone, see 6.2.1) in 100 ml of chloroform (NOTE: Solutions should be made up daily).

b. Common manual (fly) sprayer applicator.

4.3.4.2.1.2 Test procedure. Spray solution evenly over dried wood. The indicator will turn pink when zinc (MGARD W550) is present. The pink color fades with light.

4.3.4.2.2 Alternate method.

4.3.4.2.2.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagents (stock solutions):

(1) 1 gram of potassium ferricyanide dissolved in 100 ml of distilled water.

(2) 1 gram of potassium iodide dissolved in 100 ml of distilled water.

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(3) Starch indicator solution: Make a paste of 1 gram of soluble starch in 5 ml of distilled water, add 100 ml of distilled water and boil for 1 minute with constant stirring. Cool. (NOTE: This solution is subject to biodegradation and should not be used longer than 3 days before a new batch is prepared.)

b. Sprayer: A DeVilbiss No. 30 atomizer or equivalent.

4.3.4.2.2 Test procedure. Mix 10 ml each of the three stock solutions and pour into the sprayer (atomizer). Spray mixture evenly over the surface of the dried wood. The solution will cause the treated wood to instantly turn a deep blue, while the untreated part will retain its original color.

4.3.4.3 Presence of Cunapsol 5 or MGARD W510 (copper naphthenate) preservative.

4.3.4.3.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams chrome azural "S" concentrate (see 6.2.1) and 5.0 grams of sodium acetate in 80 ml of distilled water and then dilute further to 500 ml total with distilled water.

b. Common manual (fly) sprayer applicator.

4.3.4.3.2 Test procedure. Spray solution over surface of dried treated wood. A deep blue color reveals the presence of copper in the copper naphthenate.

4.4 Inspection of packaging. An inspection shall be made to determine that packing and marking comply with the requirements in section 5. Defects shall be scored in accordance with table IV. The sample unit for this inspection shall be one bundle of knocked-down boxes or one palletized unit load when unit loads are specified. The lot size shall be the number of bundles or unit loads in the end item inspection lot. The inspection level shall be S-2 with an AQL of 1.0 for major defects and 4.0 for total defects expressed in terms of defects per hundred units.

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TABLE IV. Classification of Packaging.

Examine	Defect	Classification	
		Major	Minor
Bundle	Not securely bundled-----		x
Unit loads (when specified)	Not palletized as specified-----	x	
Strapping	Unit load secured with less than 3 straps-----	x	
	Not flat steel strapping-----	x	
	Straps less than 5/8 inch wide or less than 0.020 inch thick-----	x	
	Strapping loose or not securely sealed-----	x	
	Markings omitted, incomplete, incorrect, illegible, of improper size, location sequence, or method of application-----	x	

## 5. PACKAGING

5.1 Packing. Unless otherwise specified in the contract or order (see 6.2), packing shall be level C.

5.1.1 Level C. Wirebound pallet boxes shall be shipped knocked-down and shall be securely bundled with a minimum of two 5/8 inch by 0.020 inch flat steel straps conforming to QQ-S-781, type I, Finish B, grade 2. Like items, i.e., tops, sides, and pallet bases, shall be nested and bundled together to occupy a minimum amount of space. When practicable, tops and sides may be unitized on one of the pallet bases of the box specified. The number of units per bundle shall be at the manufacturer's option to most effectively utilize space, provide for mechanical handling, and comply with the regulations applicable to the mode of transportation.

5.1.2 Unit loads. When the size of components do not lend themselves to shipping on the pallet base of the box specified, the manufacturer shall provide an expendable pallet adequate to

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support the load the load and provide for mechanical handling. The loads shall be strapped to the pallet with a minimum of three flat straps. Strapping shall conform to the requirements of 5.1.1. Unit loads shall be sized to most effectively utilize shipping space, but shall not exceed 3000 pounds.

## 5.2 Marking.

5.2.1 Civilian agencies. In addition to any markings required by the contract or order (see 6.2), shipments shall be marked in accordance with FED-STD-123.

5.2.2 Military agencies. In addition to any markings required by the contract or order (see 6.2), shipments shall be marked in accordance with MIL-STD-129.

5.3 Preservation. Care shall be exercised to assure complete coverage of all surfaces of the board. After the Grade B dip treatment, the boxes must be air dried or dried for an appropriate time in a kiln (or oven) for a minimum of 24 hours in a well ventilated area, allowing full air circulation around all surfaces of the wood box. The boxes must be dried prior to shipment. The box manufacturer will be required to obtain and provide all available safety, health and environmental data, i.e. EPA Hazard Data Sheets, OSHA Safety Data Sheets, etc. Of specific interest are the acute, subchronic and chronic toxicity data. Also, the manufacturer will obtain and provide any special safety, health and/or environmental information (apparatus and procedures) to be used throughout the treated box duty life and disposal.

## 6. NOTES

6.1 Intended use. The boxes covered by this specification are intended for use in domestic and overseas shipment of general material and supplies such as batteries in cartons, chests, kits, boxed instruments, hardware in cartons, goods in metal cans, and machine parts. Items irregular in shape or which require special protection should be subject to an intermediate stage of packing, wrapping, or bolting to the base to prevent movement of the item within the box. These boxes can be used interchangeably; however, in humid areas, grade A and B treated boxes shall be specified for prolonged outdoor storage.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- a. Title, number, and date of this specification.



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- b. Quantity and size box required, specified in order of length by width by depth (see 3.1 and figure 7).
- c. Type, class, and grade of box according to this specification and drawing when applicable (see 1.2.1 and 3.2.1).
- d. Whether fire-retardant materials are required (see 3.1).
- e. Box marking if different from 3.4.
- f. Packing instructions if different from 5.1.1 and 5.1.2.
- g. Additional marking if required (see 5.2.1 and 5.2.2).
- h. Whether a preservative treatment is required (see 3.1.1.7).

#### 6.2.1 Ordering data for testing materials and Grade B preservatives.

- a. Sodium diethyldithiocarbamate trihydrate may be obtained from J.T. Baker Chemical Co., Phillipsburg NJ 08865 or equivalent facility (see 4.3.4.1.1.1).
- b. Chrome azural "S" may be obtained from Eastman Chemical Co., Rochester NY or equivalent facility (see 4.3.4.1.2.1 and 4.3.4.3.1).
- c. Dithizone (diphenylthiocarbazone) may be obtained from the Matheson, Coleman and Bell Co., Cincinnati OH or equivalent facility (see 4.3.4.2.1.1).
- d. MGARD W510 (copper naphthenate), for 2 percent as metal, may be obtained from Mooney Chemicals Inc., 2301 Scranton Rd., Cleveland OH 44113-9988 or equivalent facility (see 3.1.1.7 and 5.3).
- e. Cunapsol 5 (copper naphthenate), for 2 percent as metal, may be obtained from Chapman Chemical Co., PO Box 9158, Memphis TN 38019 or equivalent facility (see 3.1.1.7 and 5.3).

**6.3 Disposability.** One or more of the following methods shown in order of their preference shall be used to accomplish disposal of bailing: incineration, sanitary landfill, reuse, recycling, pyrolysis, composting, or sea disposal.

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6.4 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification (see 3.1).

6.5 Metric conversion table. Metric conversions are compiled in Table V, which conforms to ASTM E380.

TABLE V. Metric Conversions.

English	Metric	Reference
2500 lbs	1134 kg	1.1, 1.2.1
1500 lbs	680 kg	1.2.1
1 in	2.5 cm	3.1.1.1, 3.1.1.3, Table III, Figs 2 & 4
10 in	25 cm	3.1.1.1, Table III
8 in	20 cm	3.1.1.1, Table III
1-1/4 in	3.18 cm	3.1.1.2, Tables II & III, 3.3.2.2, Figs 1, 2, & 4
1-1/2 in	3.8 cm	3.1.1.3, 3.1.1.4.1, Table III
3 in	7.6 cm	3.1.1.4.3
3/8 in	0.95 cm	3.1.1.5, 3.3.1.2, 3.3.1.3, 3.3.1.4, Tables II & III, 3.3.3.3, Fig 6
13 gage, 0.091 in	0.231 cm	3.1.3
60,000 psi	4.14 x 10 Pascals	3.1.3
85,000 psi	5.86 x 10 Pascals	3.1.3
3/16 in	0.48 cm	3.1.3.1, 3.1.4.1, 4.3.2
95,000 psi	6.55 x 10 Pascals	3.1.4
125,000 psi	8.62 x 10 Pascals	3.1.4
48 in	122 cm	3.2.2, 3.2.5, 3.3.1.4, 20.2.3
60 in	152 cm	3.2.2
102 in	259 cm	3.2.2
40 in	102 cm	3.2.3
96 in	244 cm	3.2.3, 3.2.5, 20.2.3
128 in	325 cm	3.2.5
1/32 in	0.08 cm	3.3.1.1, 3.3.1.2
1/16 in	0.16 cm	3.3.2.1, 3.3.3.2, 3.3.3.3, 3.4
7/8 in	2.22 cm	3.3.1.1, 3.3.2.1, 3.3.3.2, Figs 1-7
1/2 in	1.3 cm	Table II
2-1/2 in	6.4 cm	3.3.1.2, 3.3.1.6.1, 3.3.2.2, 3.3.3.2, 20.1.1, 20.1.2
4 in	10 cm	3.3.1.2, 3.3.1.3, 3.3.2.2, 3.3.3.1, 3.3.3.2, 3.3.3.3, Table III, Fig 4
7/32 in	0.56 cm	3.3.1.3, Table II, Figs 3 & 5
20 in	51 cm	Table I
27-5/8 in	70.2 cm	Table I

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TABLE V. Metric Conversions (Cont'd).

English	Metric	Reference
27-11/16 in	70.3 cm	Table I
36 in	91 cm	Tables I & III, 3.3.2.1
36-1/16 in	91.6 cm	Table I
42-5/8 in	108 cm	Table I
42-11/16 in	108 cm	Table I
50 in	127 cm	Tables I & III, 3.3.3.1
1-3/4 in	4.45 cm	3.3.1.6.1, 3.3.3.2, Fig 2
1-5/8 in	4.13 cm	3.3.1.6.1, Fig 5
9/16 in	1.43 cm	Table II
1-1/8 in	2.86 cm	Table II
1-3/8 in	3.49 cm	Table II, 3.3.2.1, Figs 1, 3, 5, 6, & 7
1/4 in	0.64 cm	3.3.2.2, 3.3.3.3, 3.5, Figs 2, 4
14.5 gage, 0.084 in	0.21 cm	3.3.2.2
5/16 in	0.79 cm	3.3.2.2, 3.4
2 in	5 cm	3.3.3.1, 3.3.3.2, 3.3.3.3
24 in	61 cm	3.3.3.1
12 in	31 cm	3.3.3.2
3-3/4 in	9.53 cm	3.3.3.3
3-1/2 in	8.9 cm	3.3.3.3
2-1/4 in	5.72 cm	3.3.3.3
4-5/8 in	11.8 cm	3.3.3.3
14 gage, 0.080 in	0.02 cm	3.3.3.3
1-7/8 in	4.76 cm	3.3.3.3
15 sq in	97 sq cm	3.4
3/4 in	1.91 cm	3.3.3.3, 3.4, 20.2.1, Figs 2, 4
1/8 in	0.32 cm	3.5, 20.2.2
5/8 in	1.59 cm	Table IV, 5.1.1
0.020 in	0.05 cm	Table IV, 5.1.1
3000 lbs	1360 kg	5.1.2
0.023 in	0.06 cm	20.2.1
16 gage, 0.062 in	0.16 cm	Tables II & III, 3.3.2.2
18 gage, 0.047 in	0.12 cm	Table II
7 in	18 cm	Figs 2 & 4
28 in	71 cm	Figs 2 & 4
13/16 in	2.06 cm	Figs 1, 3, 5, 6 & 7

6.6 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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## APPENDIX

## 10. SCOPE

10.1 This appendix covers requirements for assembly, and closure and steel strapping of wirebound pallet boxes.

## 20. REQUIREMENTS

20.1 Assembly of wirebound pallet boxes. A partial assembly operation would normally precede, but may follow, the operation of packing the wirebound pallet box according to the nature of the contents; i.e., carton loads could be stacked evenly on the base and the blank applied around the load.

20.1.1 Types I, II, and IV pallet boxes. The front, back, and sides of the wirebound blank are in a preassembled form consisting of four sections which fold around the base forming the four sidewalls. Apply the blank to the base (see figure 7). The bottom cleat of the blank fits on top of the stringer and into the channel-shaped opening between the top of the stringer and the bottom of the deck boards. Secure the two outside loops temporarily by hand. Square the sidewalls with the base and drive two equally spaced 2-1/2-inch pallet nails, adjacent to the wire, through each side bottom cleat into the riser batten of the base. Toenail one 2-1/2-inch pallet nail through the center of the rear bottom cleat into the center stringer. The front section may be left open to pack through, if desired. When packed, thread all loops and partially bend the loops by hand. Toenail one 2-1/2-inch pallet nail through the center of the front bottom cleat into the center stringer. Insert the top and drive two equally spaced 2-1/2-inch pallet nails through each upper cleat of the wirebound blank into the adjacent battens of the top and one 2-1/2-inch pallet nail into each center batten. When strapping is required, the strapping shall be applied before the loops at the closing edge of the blank are finally closed. This eliminates occasional slack which may develop when strapping is applied after closure is made. For best performance, a tight loop closure is essential. Final closure of loops shall be made with the handtool as illustrated (see figure 8).

20.1.2 Type III pallet boxes. The wide cleat of type III boxes is at the top of the box when assembled. To apply the sidewalls to the base, offset the sections as shown in figure 5. Bottom cleats of the sides lock under overhanging deckboards of the pallet base. Drive a minimum of two 2-1/2-inch long pallet nails, adjacent to the bottom wire of each side, through the cleat into the stringer. A minimum of two 2-1/2-inch long pallet nails shall be driven through each of the top cleats which are

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backed up by the braten, or the top. Type of box, configuration, and weight of contents should be considered when determining strapping requirements.

## 20.2 Strapping requirements.

20.2.1 Strapping shall be performed by the packing activity. All strapping shall be 3/4 by 0.023 inch conforming to Type I, Finish B, grade 2 of QQ-S-781.

20.2.2 Strapping shall be tensioned to sink into the edges of the box not more than 1/3 inch. It is possible for over-tensioned strapping to cause bowing or sidewalls due to forces greater than stacking loads to be encountered. This should be avoided.

20.2.3 Unless otherwise specified, wirebound pallet boxes shall be strapped as shown in figure 9. When the longest box dimension falls between 48 and 96 inches, additional nails shall be driven through the side bottom cleats into the riser battens of the base and additional straps shall be added to maintain equivalent spans between fasteners as required by 20.1.1.

## 30. INSPECTION AND TEST PROCEDURES

30.1 Inspection. The assembly, closure, and strapping of filled boxes shall be inspected to determine compliance with the requirements of this appendix. Sampling shall be conducted in accordance with the provisions of MIL-STD-105.

30.1.1 Inspection for assembly, closure, and steel strapping. Classification of defects for assembly closure and steel strapping shall be as specified in table Ia. The sample unit shall be one completely assembled, closed, and strapped wirebound pallet box. The sample size shall be as indicated by inspection level S-4. The acceptable quality levels (AQLs) expressed as defects per 100 units shall be 4.0 for major defects and 10.0 for total defects. The application of the inspection level and the AQL shall be in accordance with MIL-STD-105.

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TABLE 1a. Classification of Defects for Assembly Closure, and Steel Strapping.

Examine	Defects	Classification	
		Major	Minor
Assembly	Bottom cleats of front, back and sides of blank not fastened to pallet base as specified----	x	
	Top not fastened as specified--	x	
	Size and type of nail not as specified-----	x	
Closure	Not closed-----	x	
	Not closed as specified-----		x
	Insecure closure-----	x	
Strapping	Size, type, class, or grade of strapping not as specified----	x	
	Strapping not placed as specified-----	x	
	Strap, torn, cut, or missing---	x	
	Loose strap-----	x	

## 40. NOTES

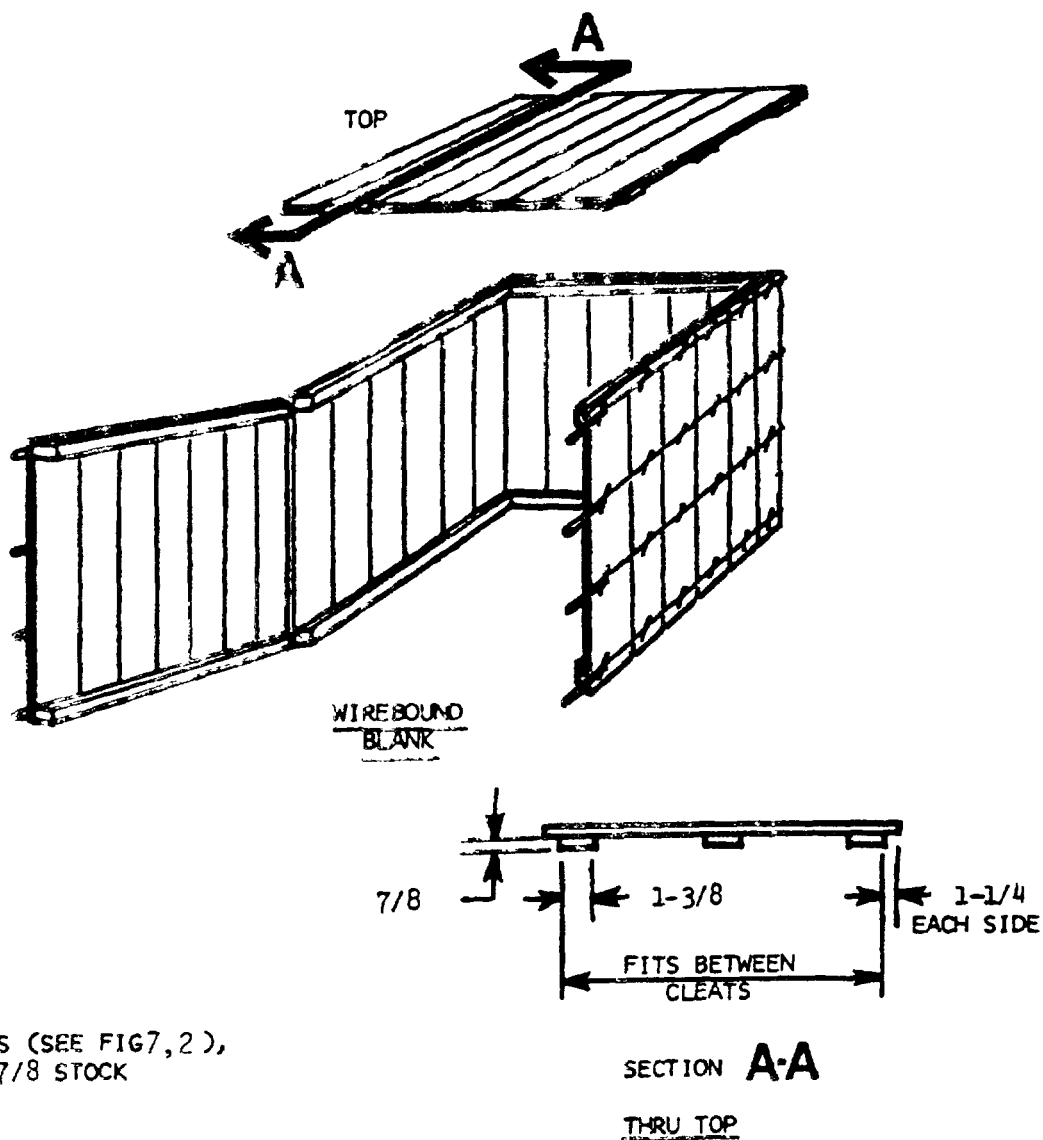
40.1 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

a. Furnishing of strapping materials if different from 20.2.1.

b. Strapping if different from 20.2.3.



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**NOTE:**  
ALL CLEATS (SEE FIG 7, 2),  
13/16 BY 7/8 STOCK

**TYPE I WIREBOUND BOX**  
(SELECT CLASS 1 OR 2 BASE FROM FIGURE 2)

FIGURE 1

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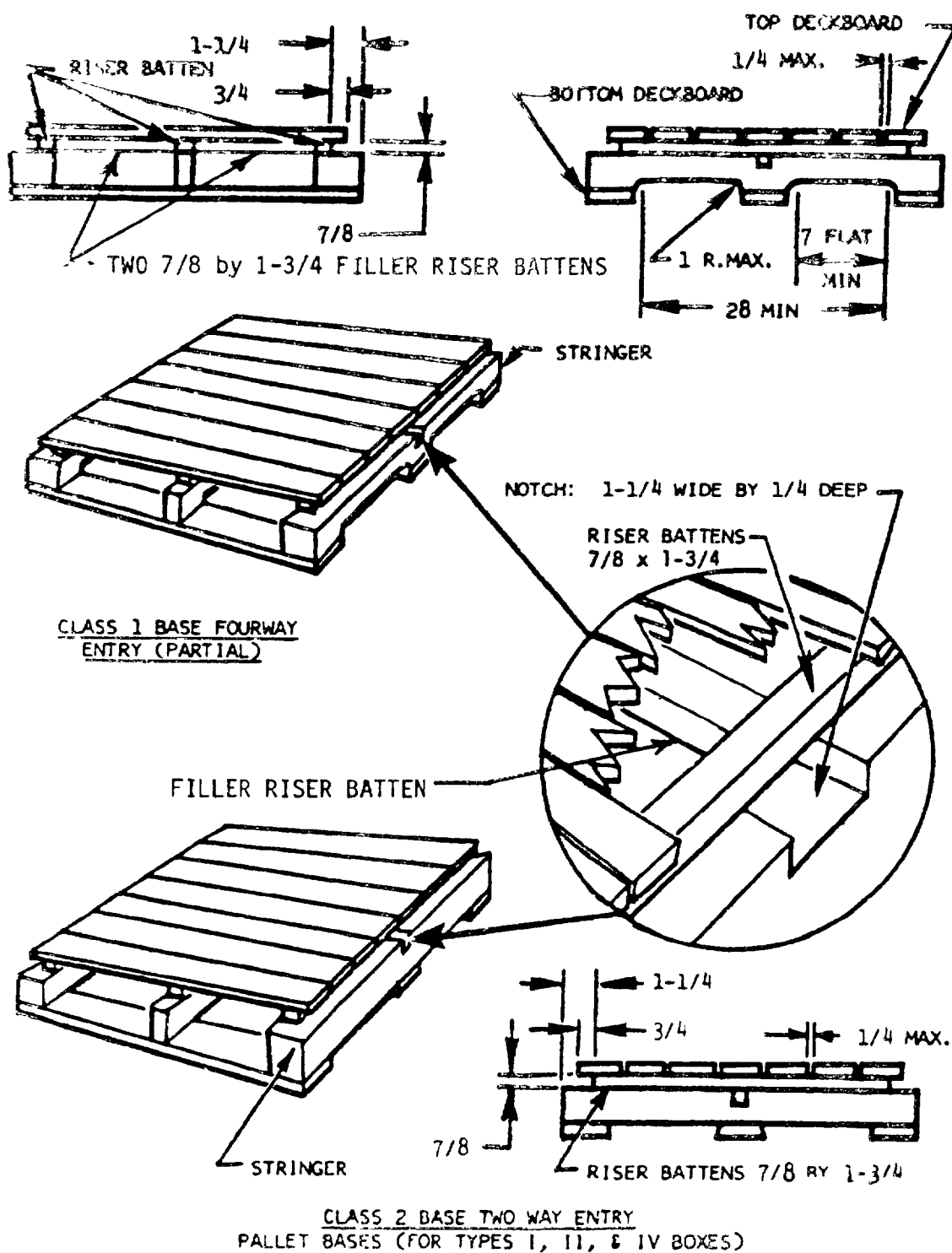
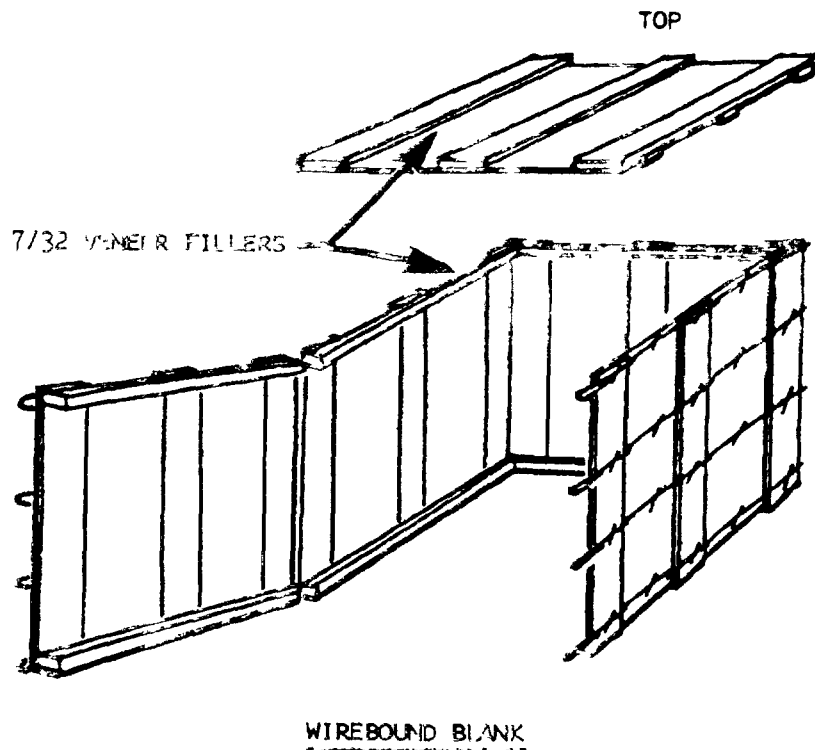


FIGURE 2

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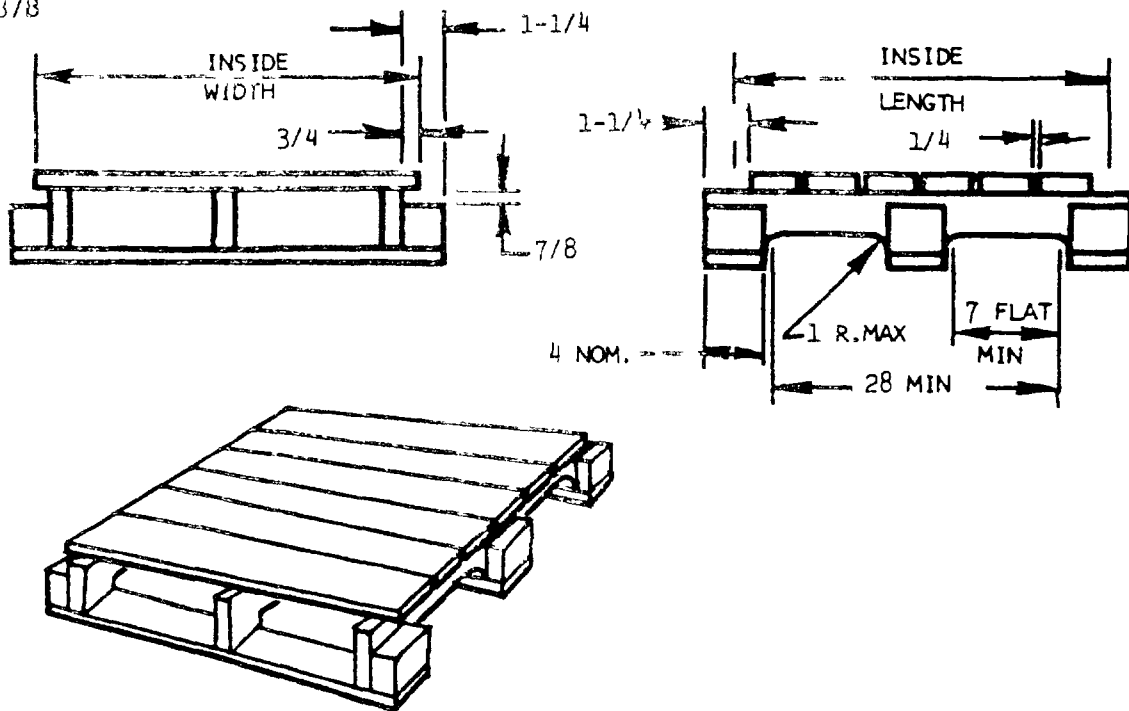
NOTE:

TOP BATTENS (SEE FIG 7,3) 7/8 BY 1-3/8 STOCK  
ALL CLEAT (SEE FIG 7,2) 13/16 BY 7/8 STOCK

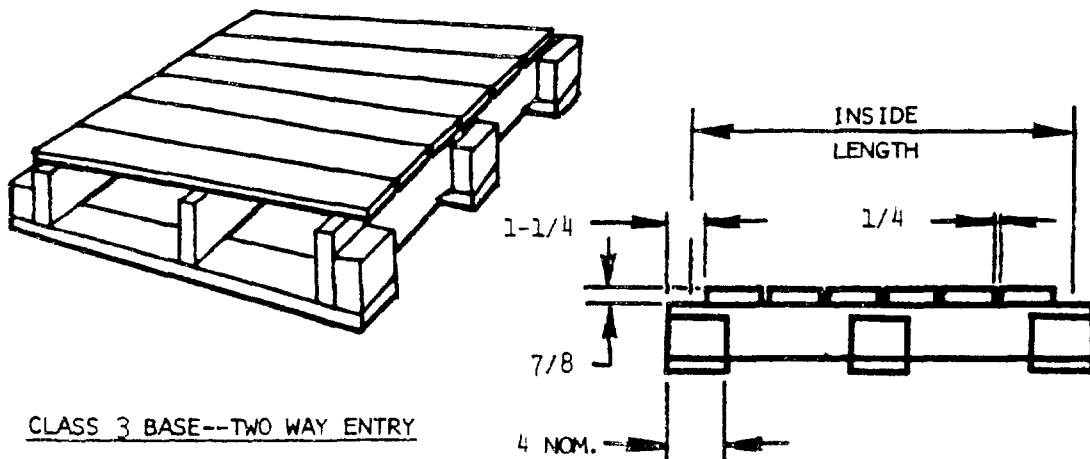
TYPE II WIREBOUND BOX  
(SELECT CLASS 1 OR 2 BASE FROM FIGURE 2)

FIGURE 3

3 1378



CLASS 3 BASE--FOURWAY ENTRY (PARTIAL)

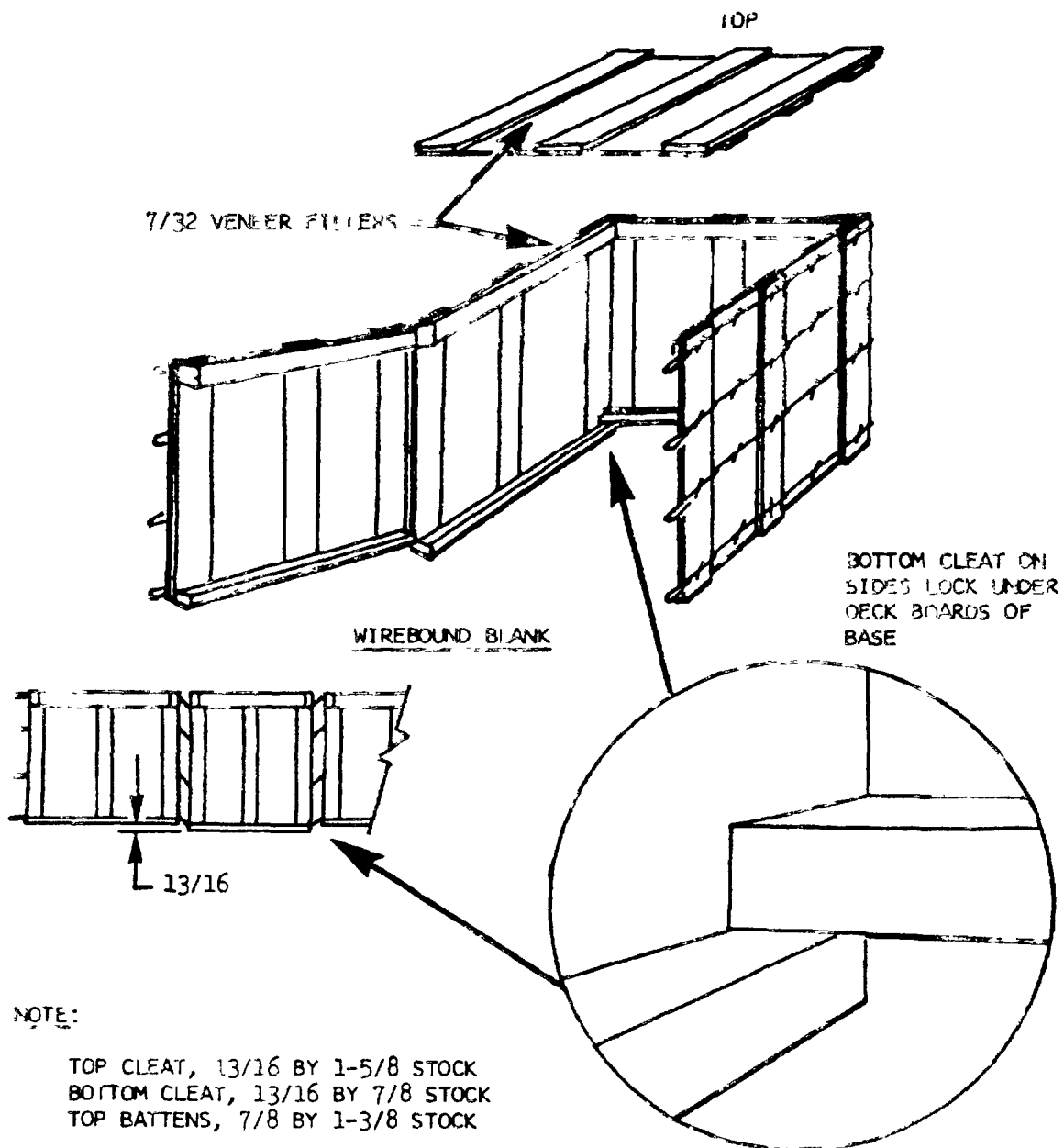


CLASS 3 BASE--TWO WAY ENTRY

PALLET BASES (FOR TYPE III BOXES)

FIGURE 4

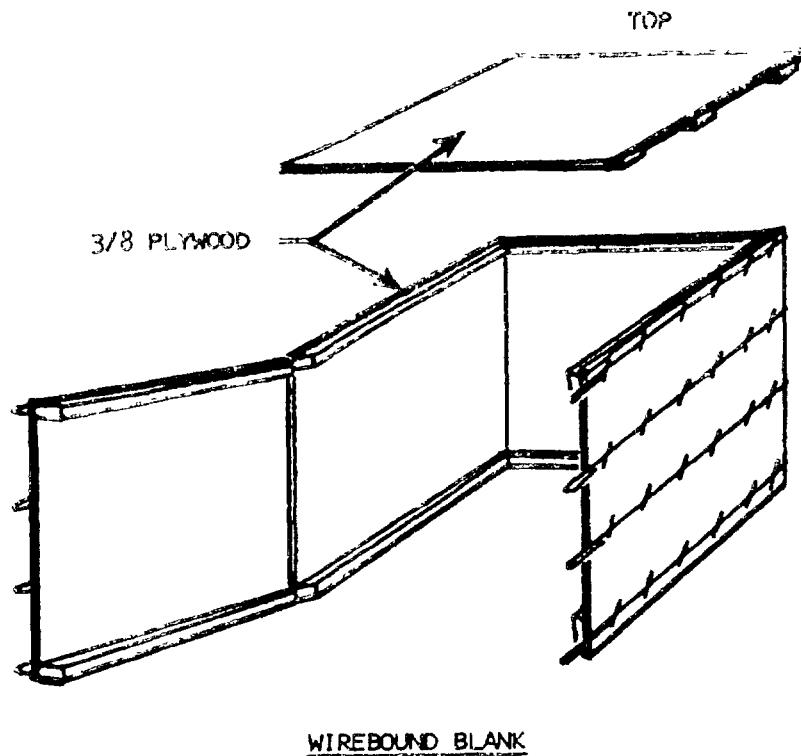
FIGURE 5



TYPE III WIREBOUND BOX  
 (SELECT CLASS 3 OR 4 BASE FROM FIGURE 4)

FIGURE 5

APP 3 3 3



NOTE:

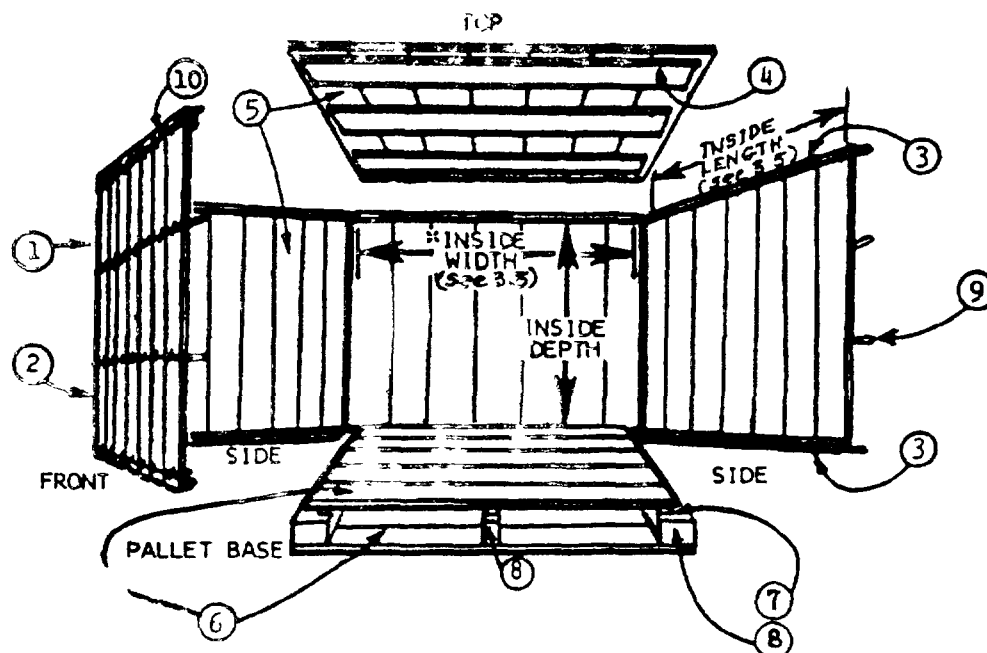
TOP BATTENS (SEE FIG 7, 3) 7/8 BY 1-3/8 STOCK  
ALL CLEATS (SEE FIG 7, 2) 13/16 BY 7/8 STOCK

TYPE IV WIREBOUND BOX  
(SELECT CLASS I OR 2 BASE FROM FIGURE 2)

FIGURE 6



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\* INSIDE WIDTH IS NORMALLY GREATER THAN INSIDE LENGTH

#### WIREBOUND PALLET BOX NOMENCLATURE

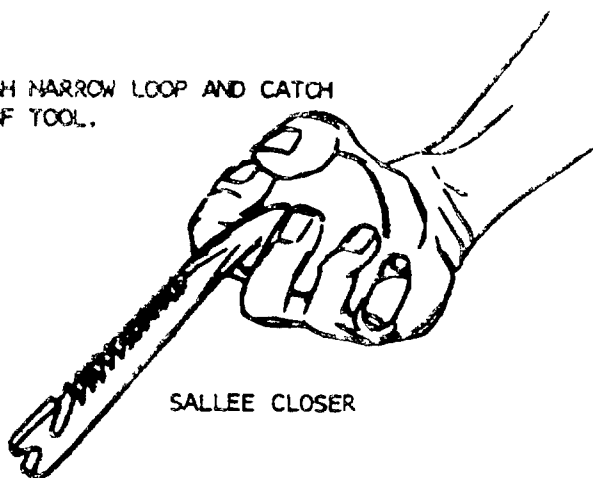
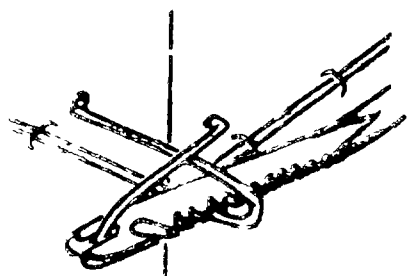
Note: See para 3.5 for definitions of inside dimensions.

1. **Pallet Box:** A container with minimum openings on any face of the blank and having a pallet base to facilitate handling with mechanical equipment.
2. **Blank:** A flat unassembled pallet box exclusive of pallet base and top.
3. **Cleat:** One of the pieces of lumber (13/16 by 7/8 stock, except type III) which forms the framework of a wirebound container and to which the faceboards are stapled.
4. **Batten, Top:** Boards (7/8 by 1-3/8 stock) to which the faceboards of the top are attached.
5. **Faceboard:** The material used for the faces of the container.
6. **Deckboards:** The material used to make up the top and bottom surfaces of the pallet base referred to as top deckboards and bottom deckboards.
7. **Riser Batten:** A stringer board (7/8 by 1-3/8 stock) to which the deckboards are attached and which serves as a spacer between the deckboards and the stringers to raise the deckboards and provide a channel in which to engage the bottom row of cleats of the blank.
8. **Stringer:** A runner to which the riser batten and deckboards are attached and which serves as a spacer between top and bottom deckboards to permit entry of mechanical handling equipment. Sometimes referred to as runner or skid. For any given box length or width, the stringer length shall be the lesser dimension when possible.
9. **Binding Wire:** Round steel wire stapled to the faceboards which ends in a loop, the prong of which is firmly anchored in a board or twisted to form a loop.
10. **Staple:** A U-shaped piece of wire with pointed ends, driven astride the binding wires in fabricating the blank or attaching boards to battens.

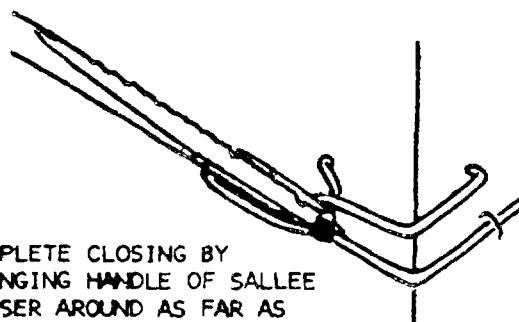
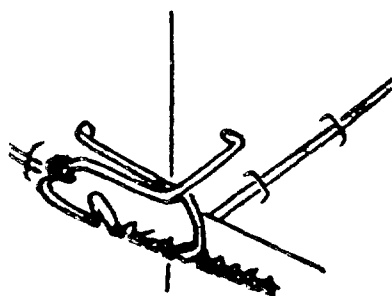
FIGURE 1

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

1. INSERT SALLEE CLOSER THROUGH NARROW LOOP AND CATCH WIDE LOOP IN NOTCH ON END OF TOOL.

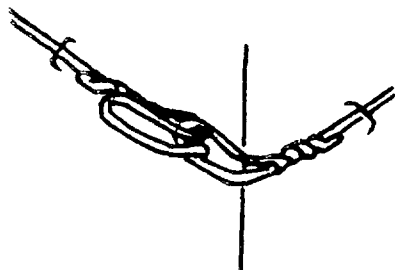


2. PUSH WIDE LOOP AGAINST SURFACE OF BOX FACE, ENGAGE NARROW LOOP IN TEETH OF TOOL AND START SWING.

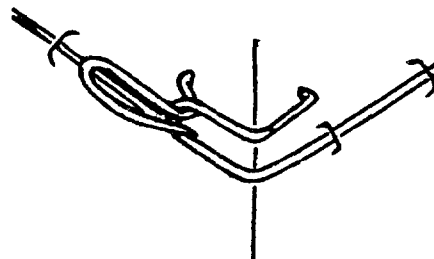


3. COMPLETE CLOSING BY SWINGING HANDLE OF SALLEE CLOSER AROUND AS FAR AS POSSIBLE.

#### METHOD OF CLOSING LOOPS



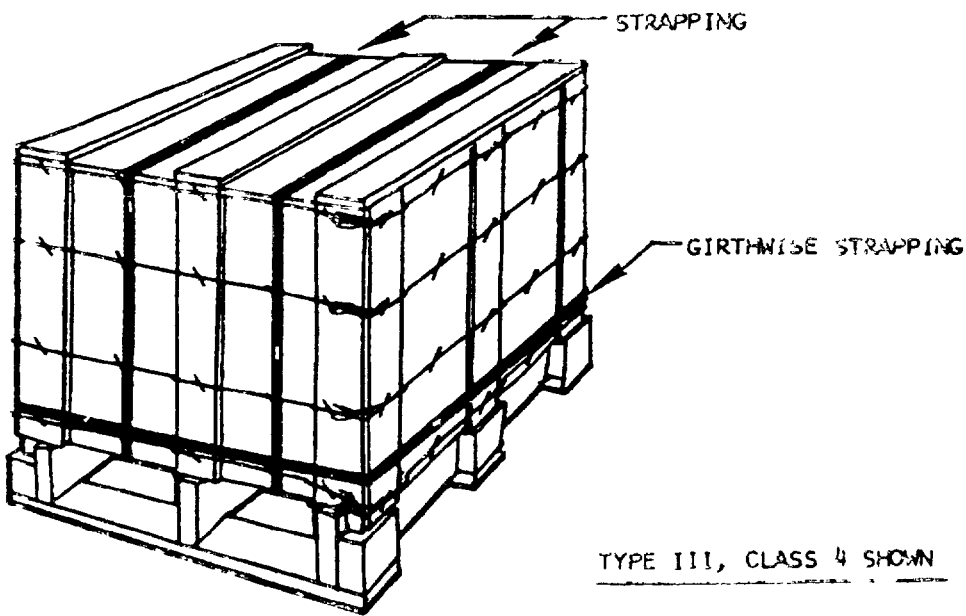
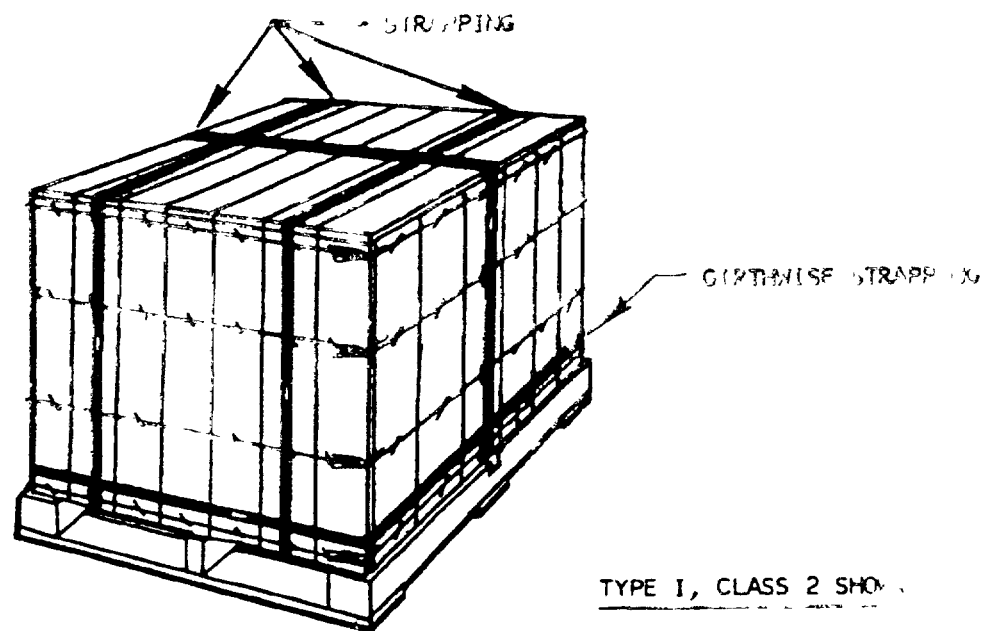
TWISTED LOOP CLOSURE



LOOPED WIRE CLOSURE

FIGURE 8

2003-1-1



STRAPPING DETAILS

FIGURE 9

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MILITARY CUSTODIANS:

Army - GU  
Navy - SA  
Air Force - 69

Review activities:

Army - EA, ME, SM  
Navy - SA, SH  
Air Force - 70, 71, 80, 99

User activities:

Army - CE, ME  
Navy - SH  
DLA - DM

Preparing activity:

Air Force - 69

CIVIL AGENCIES INTEREST:

GSA-FSS  
HHS-NIH  
USDA-APS

Project No. 8115-0459

**INSTRUCTIONS** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be data bled, folded along the lines indicated, kept flat or folded along the top edge (DO NOT STAPLE), and mailed. In block 6, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was not compatible, and give proposed wording changes which would alleviate the problems. Enter in block 8 any remarks related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

**NOTE** This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification 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.

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## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1 DOCUMENT NUMBER  
PPP-8-58782 DOCUMENT TITLE  
Boxes, Wood, Wirebound Pallet Type

3a NAME OF SUBMITTING ORGANIZATION

b ADDRESS (Street City State, ZIP Code)

4 TYPE OF ORGANIZATION (Mark one)

☐ VENDOR☐ USER☐ MANUFACTURER☐ OTHER (Specify) \_\_\_\_\_

## 5 PROBLEM AREAS

a. Paragraph Number and Wording

b. Recommended Wording

Reason/Rationale for Recommendation

REMARKS

NAME OF SUBMITTER (Last First MI) - Optional

b WORK TELEPHONE NUMBER (Include Area Code) - Optional

MAILING ADDRESS (Street City State ZIP Code) - Optional

8 DATE OF SUBMISSION (YY MM DD)

0 1428

PREVIOUS EDITION IS OBSOLETE