

MILITARY SPECIFICATION

BOXES, AMMUNITION PACKING: WOOD, (W/PLYWOOD TOP & BOTTOM) NAILED

1. SCOPE

1.1 Scope.-This specification covers two types and eight classes of basic box designs having two exterior vertical cleats on each end as shown in figure 1. Also, it shows closing and strapping requirements for filled boxes (see Appendix). The box may or may not have hardware, rope handles or double end construction.

1.2 Classification.-The basic box design and modifications thereof shall be of the following types, classes and grades:

Type I Top opening without rope handles.

Class 1 - Without hardware, with two cover cleats. See figure 2.

Class 2 - With hardware, with two cover cleats. See figure 3.

Class 3 - Without hardware, with two cover cleats, light construction. See figure 2.

Type II Top opening with two rope handles.

Class 1 - Without hardware, with two cover cleats. See figure 4.

Class 2 - With hardware, with two cover cleats. See figure 5.

Class 3 - With hardware, with three cover cleats. See figure 6.

Class 4 - With hardware, with rope handles on cover cleats, with double end construction. See figure 7.

Class 5 - With hardware, with double end construction. See Figure 8.

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Grade A - Boxes for field service storage or issue of service ammunition for shipment to unknown destination.

Grade B - Boxes for field service storage or shipment and storage of practice or nonissue ammunition.

Grade C - Boxes for interplant CONUS shipment and storage of ammunition or components.

2. APPLICABLE DOCUMENTS

2.1 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; and Staples
FF-S-107 - Screws, Tapping and Drive
MMM-A-125 - Adhesive, Casein-Type: Water and Mold Resistant
CCC-T-191 - Textile Test Methods
NN-P-530 - Plywood, Flat Panel
TT-W-572 - Wood preservative, Water Repellent
T-R-650 - Rope, Yarn and Twine, Bast Fiber
QQ-S-781 - Strapping, Flat, Steel

MILITARY

MIL-A-2550 - Ammunition and Special Weapons, General Specification for.
MIL-W-6110 - Wood; Determination of Moisture Content of.

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105).
MIL-STD-109 - Quality Assurance Terms and Definitions.
MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-1168 - Lot Numbering of Ammunition.
MIL-STD-1235 - Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes.

DRAWINGS

ARMY

8796520 - Swivel Assembly
 8797512 - Swivel Assembly
 9266797 - Hasp
 9266798 - Hinge, Pinless (Tang and Receiver)
 MS35492 - Screw, Wood, Flat Head, Cross Recessed
 MS35494 - Screw, Wood, Flat Head
 MS51862 - Screw, Tapping - Thread Forming, Type AB,
 Flat 82° CSK HD, Cross Recessed

PUBLICATIONS

DEPARTMENT OF COMMERCE

PS-1 - Softwood, Construction and Industrial
 CS-157- Pine Plywood (Ponderosa Pine, Sugar Pine,
 and Idaho White Pine)

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

3. REQUIREMENTS

3.1 Material

3.1.1 Wood.-The species of wood acceptable under this specification are classified in groups as follows. When a group is specified, any wood in that group may be used unless otherwise specified by the procuring activity. If a group is not specified, woods from any group may be used.

GROUP I

Alder, red	Cucumbertree
Aspen (Poplar)	Cypress
Basswood	Fir (Abies sp.)
Buckeye	Pine (except Southern yellow)
Butternut	Spruce
Cedar ^a	Willow ^a
Chestnut	Yellow Poplar
Cottonwood	

GROUP II

Douglas Fir
Hemlock

Larch (Tamarack)
Pine, Southern Yellow

GROUP III

Ash (Cabinet texture)^b
Cherry
Elm, soft
Gum, red or black

Magnolia
Maple, soft
Sycamore
Tupelo, water

GROUP IV

Ash (tough texture)^c
Beech
Birch
Elm, hard
Hackberry

Hickory
Locust
Maple, hard
Oak
Pecan

- NOTE: a. For Group I woods, when lumber 5/8 inch in thickness or less is specified on the applicable drawing or specification Cedar and Willow shall not be used.
b. Average weight 2800 pounds per 1000 board feet.
c. Average weight over 3500 pounds per 1000 board feet.

3.1.1.1 Moisture content.-The moisture content of the lumber after seasoning and prior to the application of preservative treatment, shall not be greater than 18 percent nor less than 12 percent of its oven dry weight as evidenced by test specified in 4.4.2.

3.1.1.2 Finish.-Lumber shall be cut to length and surfaced on two sides. Edges shall be straight and square with the surface of the lumber. Unless otherwise specified by the procuring activity, lumber may be surfaced on one side, and resawn on the other side; the resawn surface shall face to inside of the box.

3.1.2 Plywood.-Group B or C, container grade standard interior with exterior glue shall be used. If specified grade is not available, a better exterior grade may be substituted.

3.1.2.1 Grades A, B and C Boxes: Top and bottom panels.-Plywood utilized for top and bottom panels shall meet the standard requirements outlined in Department of Commerce Publication PS-1 for Group B plywoods and CS-157 for Group C plywoods after cutting to size.

3.2 Defects standards.-The following defects standards shall apply to lumber as cut to size as assembled in the box.

3.2.1 Season check.-Slight season checks occurring in the center portion of a piece in a finished box shall be permitted provided they do not extend through the piece in which they occur. Season checks which extend through the piece shall be considered as splits (3.2.2) except that when adjacent to a knot they will be considered a component part of an incased knot defect (3.2.3.2). Season checks occurring at the end of the pieces shall be cause for rejection unless repaired by corrugated fasteners and by additional nailing in accordance with the procedure outlined for splits.

3.2.2 Splits (6.3).

3.2.2.1 Splits extending entire length of piece.-Splits extending the entire length of the piece shall be permitted for sides, provided the width of the piece measured from the split is 1-1/2 inches or greater. Fasteners shall have a length and location to provide a minimum of two complete corrugations on each side of the split and shall be spaced 3 inches minimum on centers. Corrugated fasteners shall be flush with the surface of the board into which they are driven, and shall not be driven into the countersinks provided on the inner surface of boxes for receiving or protection of ammunition components. When the width measured from the split to the edge is 2-1/2 inches or greater, the resulting unjointed member may be considered a board as defined in 3.8.2.

3.2.2.2 Splits diverging to edge of piece.-Splits diverging to an edge of a piece shall not be permitted. Splits extending less than the entire length of the piece and not diverging to an edge of a piece shall be permitted for sides and ends provided that if the split were extended the resulting pieces would comply with minimum requirements of 3.2.2.1. Splits exceeding three inches in length shall be repaired with corrugated fasteners, as required in 3.2.2.1.

3.2.2.3 Splits extending through nail holes.-Splits in the ends of boards which extend through a nail hole and comply with the requirements of 3.2.2.1 and 3.2.2.2 shall be corrected by additional nailing. Splits which pass through a nail hole and do not exceed three inches in length are acceptable provided the split does not terminate in the edge of the board and correction is made by additional nailing. Splits adjacent to the edge of a board which extend through a nail hole are acceptable provided the split does not exceed one inch in length and does not terminate in the edge of the board.

3.2.3 Knots and holes.

3.2.3.1 Sound, tight knots shall be permitted provided the dimension measured across the board is not greater than one-third the width of the boards in Grade A boxes, nor more than 1/2 the width of the board in Grade B boxes, nor more than 2/3 the width of the board in Grade C boxes. Knots which occur in nailed edges or underneath hardware, shall be cause for rejection of the boxes if they crack or break out.

3.2.3.2 Knot holes, loose knots or worm holes larger than 5/8 inch across the largest dimension shall be cause for rejection unless repaired in accordance with 3.2.3.4. Small holes less than 1/16 inch in diameter shall be permitted in any piece provided no concentration of such holes exceeds five in any square inch of surface in Grade A boxes, or ten in Grade B boxes. Individual knot holes, loose knots or worm holes, ranging in size from 1/16 inch to 5/8 inch across the largest dimension shall be permitted provided they are spaced not less than 12 inches apart in Grade A boxes, six inches in Grade B boxes or three inches in Grade C boxes.

3.2.3.3 A knot extending through the thickness of the board which is encased (separated for more than 1/2 of the circumference from the surrounding wood by hard pitch or checks) shall be considered a loose knot. If a portion of a knot has been removed from an edge of a board or piece in manufacture, the basis for judging the knot for encasement shall be 1/2 the remaining circumference. Season checks extending through the thickness of the wood and so placed as to cause breaking out of a portion of a knot which would result in a hole larger than 5/8 inch across the largest dimension, shall be cause for rejection.

3.2.3.4 Repair of holes and knots.-Holes and loose knots may be repaired with solid wooden plugs or plywood disks, except that the application of a nail, screw, or corrugated fastener in a plug or disk utilized in a finished box shall be cause for rejection. Plywood utilized in disks shall comply with Federal Specification NN-P-530. The plugs shall be snug fit and disks shall be from a snug fit to 1/64 inch maximum clearance. Plugs shall be of the same thickness as the board or piece in which inserted. Counterbores for disks shall be drilled only to a depth necessary to accomodate thickness of the disk. Plugs and disks shall be glued on all butting surfaces with glue conforming with Federal Specification MMM-A-125. Holes plugged with a solid plug of

the same thickness as the piece shall be cause for rejection if the plug diameter measures more than 1-1/2 inches, or if the diameter is greater than half the width of the piece. Plywood disks which partially extend through the thickness of the piece shall be cause for rejection if any of the following conditions exist:

- a. The knot covered, measures more than two inches across its greatest diameter.
- b. The diameter of the disks exceeds 2-1/2 inches.
- c. The disk has a bearing on solid wood of less than 1/8 inch at any point on its circumference.
- d. The disk thickness is less than 1/4 inch or more than one-half the thickness of the piece.

Holes or loose knots may be considered plugged if covered by a cleat, providing that any portion not covered measures no more than 5/8 inch in any direction. If a nail in the cleat enters such a hole or knot, the box shall be rejected unless corrected by additional nailing. As an alternate material to the plywood, for the manufacture of disks, lumber of the same species as that repaired is acceptable provided that the direction of grain in the disks is not parallel to the axis of the disk.

3.2.3.5 Other defects (see 6.4).-At least one surface on each piece; i.e., the surface to be placed on the outside of the box, shall be sufficiently smooth and free of stain to permit legible marking. Wane (see 4.3.2.1.11) shall not exceed 1/2 inch in width on the surface on which it appears for one-sixth the length or one-half the thickness. Evidence of decay in which the disintergration is readily recognizable shall be cause for rejection.

3.2.4 Box cleats.

3.2.4.1 Grade A box end cleats.- The divergence of the grain in each end cleat shall not exceed one inch in 10 inches of length. In the end cleats when handles are used, the type number and size of knots in the area defined by the width of the end cleat and the lengthwise limits of the groove will be as follows:

- a. A maximum (max.) of 10, less intergrown knots, not larger than 1/16 inch wide by 1/8 inch long spaced 1/2 inch minimum (min.), center to center.
- b. A single well intergrown knot not more than 1/4 inch across the widest dimensions.

When knots as specified in "a" are present, a knot as specified in "b" shall not be permitted. In other areas of such cleats or when handles are not used, solid, well intergrown knots, not more than one-fourth the width of the pieces across the widest dimension shall be permitted provided that if there is more than one such knot, they shall not be closer together than five inches. Knots of any type, whether loose or solid, in the ends of any cleats, shall be permitted, provided they are entirely contained within an area extending not more than 1 inch from the end of the cleat.

3.2.4.1.1 The exposed edge at the bottom end of vertical end cleats may be beveled approximately 1/4 inch at a 45 degree angle at the option of the procuring activity.

3.2.4.2 Grades B and C box end cleats.-All restrictions of Grade A box cleats (3.2.4.1) apply to Grades B and C box cleats except that in areas not grooved for a handle, solid, well intergrown knots shall be permitted with diameters not exceeding half the width of the cleat.

3.2.4.3 Grades A, B, & C box top cleats.-Plywood utilized for top cleats shall meet the standard requirements outlined in Department of Commerce Publication PS-1 for Group B Plywoods and CS-157 for Group C Plywoods after cutting to size and attaching.

3.3 Nails.-Nails shall be mechanically deformed Type II, Style 10 or Style 18 to comply with the requirements of Federal Specification FF-N-105. Uncoated, cement-coated, or chemically etched nails may be used when the nails pass through both pieces and are clinched. Alternatively, for Group II wood only, blunt pointed or truncated nails may be used in lieu of diamond pointed nails as specified above, provided the blunt or truncated nail is the same length as specified for the diamond pointed nail, when the nail passed through both pieces of wood and is clinched.

3.4 Rope handles.-Rope handles shall be made from rope as specified in 3.4.1, 3.4.2 or 3.4.3. The rope shall be attached as shown in figure 1. The length of the rope used shall be determined in accordance with figure 1A. Rope handles shall show no evidence of fraying or excessive strain and shall be capable of supporting a static load equal to twice the gross weight of the box as prepared for actual shipment. Neither the rope nor the handle assembly, including cleats, shall fail when tested in accordance with 4.4.1.

3.4.1 Jute rope handles.-Jute rope handles shall comply with Type I, Class 2, of Specification T-R-650. Unless otherwise specified, 1/2 inch diameter rope shall be used with 11/16 min thick cleats (fig. 4, 5, 6) and 5/8 inch diameter rope shall be used with 1 inch min. cleats (see fig. 7, 8, 9).

3.4.2 Polyethylene rope handles.-Polyethylene rope for all handle applications shall meet the following requirements:

Rope size.....	7/16 inch diameter
Color.....	Black
Filament size.....	600 Denier
Yarn.....	3-ply, balance ply yarn
Rope weight.....	.042 lbs/foot, maximum (4.3.3.3)
Rope lay.....	1.31 inches plus/minus 5%
Breaking strength.....	3000 minimum average (4.3.3.4)

3.4.3 Polypropylene rope handles.-Polypropylene rope for all handle applications shall meet the following requirements:

Rope size.....	7/16 inch diameter
Color.....	Black
Yarn.....	Single ply (3 yarns/strand)
Rope weight.....	.033 lbs/foot max.(4.3.3.3)
Rope lay.....	1.7 inches plus/minus 5%
Breaking strength.....	2500 lbs min. average (4.3.3.4)

3.5 Metal fittings.-Metal fittings shall be manufactured in accordance with the following drawings:

8796520	- Swivel Assembly
8797512	- Swivel Assembly
9266797	- Hasp
9266798	- Hinge, Pinless (Tang & Receiver)
MS35492	- Screw, Wood, Flat Head, Cross Recessed, Part Number (No.) MS-35492-41
MS35494	- Screw, Wood, Flat Head, Part Number (No.) MS-35494-46
MS51862	- Screw, Tapping - Thread Forming, Type AB, Flat 82° Countersunk Head, Cross Recessed, Part Number (No.) MS51862-24.

Any box, for which hardware is specified, shall have one hasp and one pinless hinge regardless of box length.

One swivel assembly, in accordance with either drawing specified above, shall be used with the hasp. The number of screws required shall be determined by the number of screw holes provided in each part used. Improperly driven screws may be removed and reseated, provided that the screw holes are suitably plugged using any species of wood listed in 3.1.1.

Alternatively screws of the following description may be used:

No. 7 x 3/4, Type A, flat countersunk head, unhardened, zinc plated. in accordance with Specification FF-S-107 for screws Part No's. MS-35492-41 or MS-35494-46.

No. 7 (.151" dia.) x 1/2, Type A, flat countersunk head, unhardened, zinc plated in accordance with Specification FF-S-107 for screws Part No. MS-51862-24.

The length of the screw to be used with each part shall be determined by the thickness of the material in which it is to be used. The 1/2 inch screws shall be used in material 1/2 inches thick and the 3/4 inch screws shall be used in material 3/4 inches thick or thicker.

3.6 Corrugated fasteners.-The size of corrugated fasteners used shall conform to the requirements of Table 1.

TABLE I

Size of Corrugated Fasteners for Boards

Thickness of box parts (Inches)	Size of corrugated fasteners (Inches)
3/8 to 27/64, inclusive (incl)	1/4 by 1
7/16 to 31/64, incl.	5/16 by 1
1/2 to 39/64, incl.	3/8 by 1
5/8 to 51/64, incl.	1/2 by 1
13/16 to 55/64, incl.	5/8 by 1
7/8 and up	3/4 by 1

3.7 Box identification.-Each box shall be marked on the bottom by the box manufacturer with the manufacturer's name and address, month and year of manufacture, and the drawing number, including the letter or number of the revision. The letter "P" shall be annotated on all boxes subjected to the preservative treatment in accordance with paragraph 3.12. The letter shall be not less than 1 inch min. in height. All other letters and figures shall be 1/4 inch min. in height.

3.8 Thickness and width of lumber.

3.8.1 Thickness.-Unless otherwise specified, the wood thickness requirement depicted on the applicable figure in the specification shall apply. Also for any board or piece, a tolerance of plus or minus 1/32 inch shall apply to thickness specified on the drawings. Occasional variations in thickness due to mismanufacture shall be permitted for not more than 10 per cent of the surface area of the box.

3.8.2 Width.-The minimum width of any unjointed board or any piece assembled in accordance with paragraph 3.8.2.1 used in the construction of any side, or end of a box shall be 2-1/2 inches. The minimum width of any piece assembled in accordance with paragraph 3.8.2.2 used in the construction of any side of a box of any type shall be three inches. Plywood used in the construction of top and bottom panels shall be unjointed and of a width to extend flush with the box sides.

One board shall be considered a single unjointed length of lumber. One piece shall be considered two or more boards jointed in accordance with paragraph 3.8.2.1 and tongue and grooved jointed pieces in accordance with paragraph 3.8.2.2 shall be regarded as single boards insofar as the knot size limitation (3.2.3.1) is concerned. Pieces constructed by butt joining in accordance with paragraph 3.8.2.2 shall not be regarded as single boards insofar as the knot size limitation is concerned but shall be graded in accordance with the individual boards comprising the pieces.

The width of a single tongue and groove board shall be determined as the width across the face plus the width of the tongue. The width of a piece constructed by tongue and groove jointing in accordance with paragraph 3.8.2.2 shall be determined as the combined width across the face and the tongue on the outer edge of the piece.

3.8.2.1 Two or more boards that are Linderman jointed and glued shall be considered one piece provided the width of the piece is not less than 2 1/2 inches. Pieces so constructed, 2 1/2 inches or greater in width, may be used for any side or end, except that where double end-cleat construction is employed in the fabrication of the box, the outer end shall be one unjointed piece. Linderman joints consist of a projection along the edge of one piece extending into a corresponding recess in the edge of the adjoining part, the projection and recess extending the length of the pieces. Linderman joints differ from tongue and grooved joints in that a cross section of the joint is a dovetail; i.e., the outer edge of the projection is thicker than the inner edge. Linderman jointed pieces are assembled by sliding the projection longitudinally into the recess from the end. The glue used in Linderman-jointed pieces shall be water-resistant and toxic treated.

3.8.2.2 A butt or tongue and groove joint of narrow boards fastened with corrugated fasteners to make a single piece shall not be permitted on the ends of any style box. Fasteners shall be spaced not more than 8 inches apart. Corrugated fasteners shall be driven from the outside of the box.

3.9 Nailing

3.9.1 Size.-The size of nails for fastening sides, to ends and cleats as determined by the species of wood and shall be as follows unless otherwise specified on the drawings:

- Group I.....7d nails
- Group II and III woods.....7d nails
- Group IV woods.....6d nails

The size of nails for fastening bottoms to sides and ends is determined by the species of wood in the sides and ends and shall be as follows unless otherwise specified on the drawing:

- Group I.....6d nails
- Group II and III woods.....5d nails
- Group IV woods.....4d nails

When a nail size is specified on the drawing for securing boards or pieces in applications where clinching is not required, the specified nail size shall apply for Group I woods and a corresponding reduced nail size shall apply for other group woods. When nailing 1/2 inch thick sides, 6d nails shall be used.

Unless otherwise specified, the size of nails shall be six penny for fastening end cleats to end and two penny for fastening top cleats to top. When a nail size is specified for securing boards or pieces in applications where clinching is required, nail size may be reduced provided that all requirements relative to clinching, overdriving and minimum thickness of lumber are maintained.

3.9.2 Spacing.-The average spacing of nails holding the sides, top or bottom to the ends and cleats or battens shall be not greater than the value shown in Table II and shall be located as shown in figure 1 and 8. Nailing of sides to end and end cleats shall be in accordance with figure 8 for class 5 boxes. In the event that it is necessary to exceed this spacing because of the small knots or checks in the nailing end or because of the location of joints between boards, the distance between any two adjacent nails shall not be greater than 1 1/2 times the spacing given in Table II.

3.9.3 To determine the number of nails to drive, divide the width of the part by the required spacing. For cleats, the length of the part will be considered the width; Example: An 11-inch width divided by two inch spacing equals 5.5; therefore use six nails spaced not more than two inches apart. Each piece in the sides, shall have at least two nails at each nailing end.

For top cleats fabricated of 4 inch wide plywood, use two extra nails per cleat; place two nails at each end of the cleat on opposite sides, the second nail being the same distance from the end and the sides as the corresponding nail on the opposite side.

3.9.4 Lengthwise pieces forming sides shall be secured to the edge of the end piece of the end assembly by not more than one-half of the total required number of nails driven into the end and the remaining one-half or greater into the cleat. Nails shall be located as shown in figures 1 and 8.

3.9.5 The nails holding the bottom to the sides shall be spaced between six and eight inches apart. When the top is not fastened with hardware, the nails holding it to the side shall be spaced as for the bottom.

3.9.6 The nails for fastening ends, sides, tops or bottoms to cleats (or battens) shall pass through both parts and be clinched not less than 1/8 inch. The nails in each cleat shall be driven in two rows spaced as given in Table II and located as shown on figures 1 and 8. Each piece of an end shall be nailed to each end cleat with not less than two nails. The nailing location for top, bottom or side cleats will be as specified for end cleats.

TABLE II

Average Spacing of Nails

(Except for nailing top and bottom to sides)

Size of Nails	Average spacing for nailing cleats to the ends (or side, top or bottom) and for nailing top and bottom to ends and cleats (Inches)	Average spacing for nailing sides to ends and cleats (Inches)
6d or smaller	1 3/4	1 1/2
7d	2	1 3/4
8d	2 1/4	2
9d when specified on drawings (dwgs.)	2 1/2	2 1/4
10d when specified on dwgs.	3	2 1/2
12d when specified on dwgs.	3 1/2	2 3/4
16d when specified on dwgs.	4	3 1/4
20d when specified on dwgs.	4 1/2	3 3/4

3.9.7 Top cleats shall be secured to the plywood cover by nailing in accordance with the pattern specified in Table II and as follows: At least two nails shall enter through each top cleat into the plywood cover.

3.9.7.1 Staples may be used as an alternative to nails for fastening cover cleats to cover boards. The number of staples used shall be equal to the number of nails required. Staples may be driven in a single row and from the boards into the cleats. Staple legs shall be spread and the points clinched. Staples shall be made from 14-gauge wire.

3.9.8 Cover cleats and end cleats may be fastened with automatically driven wire having a knurled or screw type surface in lieu of the nails specified above. The fasteners shall be headed and clinched. The wire used shall be 13-gauge. The number of fasteners used shall be 1 1/2 times the number of nails required. Basic nailing requirements shall be followed except that the spacing shall be decreased to provide a uniform pattern (see 6.5).

3.10 Fabrication

3.10.1 All parts of the box shall be cut square to size. The grain of the wood on sides shall run lengthwise with the box. Grain of wood in ends shall run crosswise with the box or as shown in figure 8 for double ends. The thickness of adjacent pieces in any panel of a box shall not vary more than 1/16 inch.

3.10.2 Nails shall be driven so that neither the head nor the point will project above the surface of the wood. Occasional overdriving of nails will be permitted but no nail shall be overdriven more than 1/8 the thickness of the piece. Clinched nails shall be flush or below the interior surface of the box.

3.10.3 Metal fittings.-A tolerance of plus or minus 1/8 inch shall apply to locating dimensions of metal fittings unless otherwise specified.

3.11 Cleats

3.11.1 End cleats.-The end cleats shall be positioned across the grain of the end pieces and shall extend within 1/8 inch of the outside surface of the top and bottom. Only the sides shall extend over the cleats.

3.11.2 Top cleats.-The top cleats shall extend within 1/8 inch of the cover edges. A tolerance of plus or minus 1/8 inch shall apply for the width and locating dimensions of the top cleats.

3.12 Preservative treatment.-Grade A or Grade B or the finished wood parts thereof, shall be completely immersed for a minimum of one minute in a water repellent wood preservative complying with Composition A or B of Federal Specification TT-W-572. Alternatively Grade A or Grade B boxes or the finished wood parts thereof shall be completely flooded for a minimum of one minute in a water repellent wood preservative complying with Composition A or B of Federal Specification TT-W-572, so as to inundate all interior and exterior surfaces. When finished wood parts are dipped, care should be exercised to assure complete coverage of all surfaces of the board.

3.12.1 Freedom from solvent.-The box shall be solvent free as evidenced by absence of discoloration of the red oil soluble dye when tested as specified in 4.4.5.

3.12.2 Presence of pentachlorophenol preservative.-When treated with pentachlorophenol, the box shall show evidence of discoloration when tested as specified in 4.4.6.

3.13 First article inspection.-This specification makes provisions for first article inspection. Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

4. QUALITY ASSURANCE PROVISIONS

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4.1 General quality assurance provisions.-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 supplies and services conform to prescribed requirements. Reference shall be made to Standard MIL-STD-109 in order to define terms used herein. The provisions of Specification MIL-A-2550 shall apply.

4.1.1 Submission of product.-At the time the completed lot of product is submitted to the Government for acceptance, the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

- a. A statement that the lot complies with all of the quality assurance provisions specified within this specification.
- b. Number of units of product inspected.
- c. Results obtained, by defect code, for all inspections performed.
- d. Drawing, specification number and date, together with an identification and date of changes.
- e. Certificates of conformance on all material purchased by the contractor when such material is controlled by Government or commercial specifications referenced in any of the contractual documents.
- f. Number of items in the lot.
- g. Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

4.2 First Article Inspection

4.2.1 Submission.-The contractor shall submit a first article sample as designated by the contracting officer for evaluation in accordance with the provisions of 4.2.2. The first article sample shall consist of three consecutively produced boxes of one grade, type, and style, which have been produced by the production process which the contractor will use in fulfilling the contract, to a Government-approved facility

designated by the contracting officer. (1) When polyethylene or polypropylene rope is used, continuous length of rope sufficient to perform the tests specified herein shall also be furnished. The first article quantity shall be submitted prior to initiation of production and whenever a change occurs in manufacturing process, material used, drawing or specification, such as to significantly affect product uniformity as determined by the Government.

(1) The "Government-approved facility" may be the contractor's plant when his facilities have been specifically approved by the contracting officer for first article inspection.

4.2.2 Inspections to be performed.-Each box, and the polyethylene or polypropylene rope samples, if pertinent, shall be inspected for all of the inspections specified in 4.3 and 4.4

4.2.3 Rejection.-If any box assembly, or the polyethylene or polypropylene rope samples, if pertinent, fail to comply with the applicable requirements, the first article quantity shall be rejected and the contractor shall take the necessary corrective action and submit a new first article quantity. The contractor shall continue to submit new quantities until such time as a quantity successfully complies with the inspections specified or until other directed by the procuring activity.

4.3 Inspection provisions

4.3.1 Lot formation.-The term "lot" as used throughout this specification refers to an inspection lot which is defined as an essentially homogeneous collection of units of product from which a representative sample is drawn and inspected to determine conformance of the lot with applicable requirements. The sample selected shall represent only that quantity of units from which the sample was drawn and shall not be construed to represent any prior or subsequent quantities presented for inspection. Homogeneity shall be considered to exist provided the lot has been produced by one manufacturer, in one unchanged process, in accordance with the same drawing, same drawing revision, same specification and same specification revision. Changes to the process, specification, or drawing not affecting safety, performance, interchangeability, or storage, as determined by the Government shall not be deemed to alter the homogeneity of the lot. Inspection lots shall comply with MIL-STD-105 and shall be

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numbered in accordance with MIL-STD-1168. Unless otherwise approved by the contracting officer, the inspection lot size of end items deliverable under the contract shall be not less than the smallest weekly estimate of quantities contractually scheduled for production during the contract period nor more than the largest monthly quantity contractually scheduled for delivery during the contract period. Inspection lots shall be homogeneous and of a size mutually convenient to both the contractor and the Government inspector.

4.3.2 Examination.--Sampling plans and procedures for Major and Minor defects shall be in accordance with Standard MIL-STD-105, except that continuous sampling plans in accordance with Standard MIL-STD-1235 may be used if approved by the procuring activity. Also, at the option of the procuring activity, AQL's and sampling plans may be applied to individual characteristics listed using an AQL of 0.65 percent for each Minor defect and an AQL of 0.40 percent for each Major defect.

4.3.2.1 Assembly (see drawing indicated by contract)

Grade	Categories	Defects	Method of Inspection	Code No. (see 6.7)
A	B&C			
	Major:	Grade A - AQL 2.50 percent		
		Grades B&C - AQL 1.50 percent		
X	X	101. Inside height, min.....	Scale	01001
X	X	102. Inside length, min.....	Scale	01002
X	X	103. Inside width, min.....	Scale	01003
X	X	104. Location of separator (when required).....	Scale	01004
X	X	105. Location of knot in end cleat (batten) (4.3.2.1.1).....	Scale	01005
X	X	106. Grain in end cleat not straight (4.3.2.1.2).....	Scale	01006
X	X	107. Width of knot excessive (4.3.2.1.1).....	Scale	01007
X		108. Hole, loose knot or knot surrounded by checking (4.3.2.1.2).....	Scale	01008

X		109.	Acceptable holes, loose knots or knots surrounded by checking not sufficiently separated (4.3.2.1.4).....Scale	01009
X		110.	Plugged hole too large (4.3.2.1.5).Scale	01010
X	X	111.	Improper use of board or piece (4.3.2.1.6).....Scale	01011
X	X	112.	Knot holes less than 12 inches apart.....Scale	01012
X		113.	Solid knot in nailing edge or under hardware split by nail screw or milling operation (4.3.2.1.7).....Visual	01013
X	X	114.	Nail protruding inside box.....Visual	01014
X	X	115.	Grain of wood in wrong direction (4.3.2.1.8).....Visual	01015
X		116.	Nails not in pattern shown on drawing or as required by the specification.....Visual	01016
X		117.	Split terminating in edge of board (4.3.2.1.9).....Visual	01017
X		118.	Marking misleading or unidentifiable.....Visual	01018
X	X	119.	Repair plug above surface.....Visual	01019
X	X	120.	Nails not clinched (4.3.2.1.18)....Visual	01020
		Minor:	AQL 6.50 percent	
X	X	201.	Inside height, max.....Scale	01021
X	X	202.	Inside length, max.....Scale	01022
X	X	203.	Inside width, max.....Scale	01023
X	X	204.	Thickness of wood.....Scale	01024
X	X	205.	Width of cleats.....Scale	01025
X	X	206.	Worm holes (4.3.2.1.10).....Scale	01026
		207.	Hole, loose knot or knot surrounded by checking (4.3.2.1.3).Scale	01027
	X	208.	Acceptable holes, loose knots or knots surrounded by checking not sufficiently separated (4.3.2.1.3).....Scale	01028
	X	209.	Plugged hole too large (4.3.2.1.5).Scale	01029
X	X	210.	Wane on surface of board excessive (4.3.2.1.11).....Scale	01030

X	X	211.	Cleat extending beyond box surface.....Visual	01031
X	X	212.	Separator improperly assembled.....Visual	01032
X	X	213.	Separator of incorrect pattern.....Visual	01033
X	X	214.	Nail protruding outside box.....Visual	01034
X	X	215.	Split in board (4.3.2.1.14).....Visual	01035
X	X	216.	Screw in split or joint between boards (4.3.2.1.15).....Visual	01036
X	X	217.	Handle missing, not properly located, or of wrong pattern.....Visual	01037
X	X	218.	Nail missing.....Visual	01038
X	X	219.	Nail bent on box surface.....Visual	01039
X	X	220.	Protective coating damaged (4.3.2.1.16).....Visual	01040
	X	221.	Marking misleading or unidentifiable.....Visual	01041
	X	222.	Solid knot in nailing edge or under hardware split by nail screw, or milling operation (4.3.2.1.7).....Visual	01042
	X	223.	Nails, not in pattern shown on drawing or as required by the specification.....Visual	01043
	X	224.	Split terminating in edge of board (4.3.2.1.9).....Visual	01044
X	X	225.	Stain on surface of board excessive (4.3.2.1.17).....Visual	01045
X	X	226.	Incorrect seating or operation of top.....Visual- Manual	01046
X	X	227.	Loose screw or screw not properly seated (4.3.2.1.12).....Visual- Manual	01047
X	X	228.	Hardware insecure (4.3.2.1.13).....Manual	01048

4.3.2.1.1 A box shall be classed defective if any cleat, piece or board in the box contains a knot larger in width or if the knot in an end cleat is located in an area other than that permitted by this specification.

4.3.2.1.2 If the divergence of the grain in any cleat exceeds the limit as permitted by this specification, the box shall be classed defective.

4.3.2.1.3 A box that contains a hole, loose knot, or a knot surrounded by season checking which if only a portion was broken out would leave a hole larger than that permitted by this specification, shall be classed defective.

4.3.2.1.4 A box shall be classed defective if more than one acceptable hole occurs in any individual board, or piece unless the holes are separated as permitted by this specification.

4.3.2.1.5 A box with a hole or loose knot repaired with a solid plug or disk or partially covered by a cleat will be classed defective if the requirements of this specification as to their use has been exceeded. When holes are repaired by plugging, the cylindrical surface of the plug must be at a right angle with the surface of the board.

4.3.2.1.6 A box containing a board or piece which is narrower in width or is constructed, repaired or used in the side or end in a manner other than that permitted by this specification shall be classed defective.

4.3.2.1.7 Knots in nailing edges or underneath hardware require particular attention. When nails are driven through them, knots may crack or break out, appreciably weakening the construction. This sometimes can be corrected by extra nailing if nails can be placed in a proper location in solid wood. When such a successful repair is presented, the box should be considered acceptable. If the attempted repair results in further cracking, however, the box shall be classed defective. Knots in the place of attachment of hardware often crack sufficiently to loosen the hardware when screws are tightened. Milling operations necessary for the inseting of hardware also often cause such knots to crack, making proper attachment of the hardware impossible. These two conditions cannot be repaired and the box shall be classed defective.

4.3.2.1.8 A box shall be classed defective if the grain of the wood in the sides does not run lengthwise with the box; also, if the grain in the ends does not run crosswise with the box, unless otherwise specified in the applicable drawing.

4.3.2.1.9 A box containing a board or piece with a split which terminates in the edge or the projection of which would terminate in the edge of the board or piece will be classed defective.

4.3.2.1.10 A box with worm holes larger than 5/8 inch in diameter even if found singly, will be classed defective unless like knot holes they are repaired.

4.3.2.1.11 Wane is bark, or lack of wood, on the edge or corner of a board. When wane is present on a board or piece and exceeds the limits as permitted by this specification, the box shall be classed defective.

4.3.2.1.12 A box shall be classed defective if more than one screw in any hasp, tang or receiver; or either screw in the swivel, is not fully seated or is fully seated but can be continuously rotated with a screw driver using normal hand pressure. The practice of hammering screws to seat them should not be permitted, and evidence that this has occurred is sufficient cause for classing the box defective.

4.3.2.1.13 When the hardware can be moved by the application of finger pressure, the box shall be classed defective.

4.3.2.1.14 A box shall be classed defective, if a split in any board or piece exceeds the limitations as permitted by this specification.

4.3.2.1.15 Hardware screws occurring in a split or in the joint between two boards will have less holding power than screws in a solid board. Screws in splits, whether caused by the screw or not, and in joints between boards shall be cause to class the box defective. No repairs are permitted since there is no way to replace the holding power lost by reason of the defect.

4.3.2.1.16 When the base metal of the hardware has been exposed or if the action of a corrosive agent has impaired the effectiveness of the protective coating, the box shall be classed defective.

4.3.2.1.17 Stain is a discoloration, occurring on or in the lumber, of any color other than the natural color of the board on which it appears. A box shall be classed defective if it contains any boards or piece on which at least one surface is not sufficiently smooth and free of stain to permit legible marking.

4.3.2.1.18 The clinched nails must be flush or below, or the box will be classed defective.

4.3.3 Testing

4.3.3.1 Load test of rope handle (3.4) - Major defect - Code No. 02001.-A sample of 15 boxes shall be selected at random from each lot and subjected to this test (see applicable paragraph in 4.4). If any box fails to comply with the applicable requirement, the lot shall be rejected.

4.3.3.2 Moisture content (3.1.1.1) - Major defect - Code No. 03001.-A sample of 15 boxes shall be selected at random from each lot and subjected to this test (see applicable paragraph in 4.4). If more than three boards or pieces of the total tested fail to comply with the applicable requirements, the lot shall be rejected.

4.3.3.2.1 Retest.-If one or two boxes fail to comply with the requirements, the lot shall be considered eligible for retest, if requested by the contractor. A sample of 15 additional boxes shall be selected and subjected to the same test. If one or more boards or pieces of the total tested fails to comply with the requirements of 3.1.2, the lot shall be rejected.

4.3.3.3 Rope weight (3.4) .-This test is applicable to first article inspection lots (see 4.2.1) when polyethylene or polypropylene rope handles are to be supplied. A 12-yard sample of polyethylene or polypropylene rope shall be furnished. If the rope fails to comply with the requirement of 3.4 when subjected to the test of 4.4.3 the first article lot shall not be approved.

4.3.3.4 Rope breaking strength (3.4).-This test is applicable to first article lots (see 4.2.1) when polyethylene or polypropylene rope handles are to be supplied. A 75 foot sample of polyethylene or polypropylene rope shall be supplied, cut into five pieces approximately equal in length. The five pieces shall be subjected to the test in 4.4.4. If average breaking strength does not comply with the requirement of 3.4 the first article sample shall not be approved.

4.3.3.5 Freedom from solvent - Major defect - Code No. 06001.-A sample of 15 boxes shall be selected at random from each lot and subjected to this test. If one or more boxes fail to comply with the applicable requirement the lot shall be rejected (see 4.3.3.5.1).

4.3.3.5.1 Retest.-In the event the original test fails to satisfactorily pass the red oil soluble dye test, the contractor will be required to additionally dry the rejected lot. Upon completion of the drying period retest may be performed using double the quantity specified in 4.3.3.5. Failure of one or more boxes to comply with the applicable requirement shall be cause for rejection of the lot.

4.3.3.6 Presence of pentachlorophenol preservative - Major defect - Code No. 07001.-A sample of 15 boxes shall be selected at random for this test. Four individual boards of each box shall be subjected to the test specified in 4.4.6. If one or more boards fail to meet the applicable requirement additional boards shall be tested. The box will be considered acceptable when a total of four individual boards (including at least one end cleat) meet the requirement of 4.4.6. Failure of any box to comply hereto shall be cause for rejection of the lot.

4.3.4 Measurements.-Measurements shall be made utilizing an acceptable scale capable of determining the length, height, etc. of the finished product.

4.4 Test methods and procedures.

4.4.1 Load test or rope handle.-The ammunition box shall be packed with any suitable material until its gross weight is twice as great as its gross weight when packed with the ammunition for which it is intended. The ammunition box shall be suspended freely for approximately one minute from each rope handle in turn.

4.4.2 Moisture content.-The ammunition box shall be tested in accordance with Specification MIL-W-6110, except that three readings (e.g. side and end cleat) shall be taken on each box selected.

4.4.3 Rope weight.-To measure length of polyethylene or polypropylene rope for the purpose of determining rope weight per foot, the sample of rope submitted shall be stretched with a load equal to 200 pounds multiplied by the nominal diameter in inches squared. While the rope is under load a 30 foot length shall be marked off, cut out, and weighed by any method of acceptable accuracy, using the length measurement determined under load. Weight in pounds per foot shall be computed.

4.4.4 Rope breaking strength.-The breaking strength of the five samples of polyethylene or polypropylene rope submitted shall be determined in accordance with Method 4106 of Specification CCC-T-191. The average breaking strength shall be computed.

4.4.5 Freedom from solvent.-A box shall be placed on either end with cover opened. A red oil soluble dye mixture known in the wood preservative trade as "Penta-tration" shall be applied continuously as a thin line approximately 1/16 inch in depth. The dye mixture shall be applied along the interior juncture lines of sides and bottom with the end panels of the box as depicted in Figure 9. Observation shall be made for discoloration of the mixture (red or deep pink discoloration) within 5 minutes from the time of application when tested at 50 degrees (°) Fahrenheit(F) or above. Formula for the dye mixture is as follows (see 6.6).

Material	Parts by Weight
Red oil soluble dye	5
Borax (60/200)	95

4.4.6 Presence of pentachlorophenol preservative.-Two drops of testing solution (Penta-check) shall be applied to the cut end areas of the individual board. The drops shall be permitted to stand for a period of 2 minutes minimum. Upon completion of the standing period, the remaining solution shall be spread out utilizing a small clean brush. Sufficient time shall be permitted for any surface gloss to be observed. Examination shall be conducted in the test area for a deep brown or reddish brown coloration. Formula for test solution is as follows:

PART A

Material	Parts by Weight
Cupric Acetate	4.0
Tergitol XD	0.5
Distilled Water	100.0

PART B

Material	Parts by Weight
Silver Acetate	0.4
Distilled water	100.0

Mix parts A and B to prepare "Penta-check".

5. PREPARATION FOR DELIVERY

5.1 Boxes shall be shipped with the lids attached unless otherwise specified. When specified, boxes may be shipped in shook form with cleated panels assembled. Box parts shall be bundled, crated, or palletized as specified in contract or order (6.1). Lids for assembled boxes shall normally be shipped with hardware up and the hinged part of the hasp folded back onto the lid. Individual lids shall be stacked on one another as described in the previous sentence with the tangs pointing in the same direction until the height of the stack is equal to or less than the height of the box without a lid. The top lid of the bundle shall be turned over so that its hardware is located between it and the lid beneath it. These stacks shall then be secured as a bundle using 2 straps or 2 wires around the diameter of the bundle. These straps shall be placed generally within the areas on the lids where the cleats are located.

5.2 Level B (pallets).-Boxes shall be palletized, when specified by the procuring activity, on pallets not exceeding 40 by 48 inches. The loaded pallet shall not exceed 6 feet in height.

5.2.1 Pallets shall consist of 2 inches by 4 inches (nominal) skids placed on edge with a partial decking of minimum 1 inch by 4 inch (nominal) members. The skids shall be beveled at the lower edges of the ends, and they shall be placed parallel to the shorter dimension of the pallet. The two outer deck boards shall be flush with the edges of the skids. Additional deck boards shall be used to support the box edges in the interior of the pallet. Deck boards may be centered to support two adjacent box edges. When the pallet width is equal to one box length only two skids will be required; otherwise a third skid centered between the outer skids shall be used. The outer skids shall be centered under the box cover cleats. Deck boards shall be fastened to skids with cement coated 8d nails; not less than three nails shall be used in each joint. Light gage box nails shall not be used. Lumber shall be free of gross defects which will cause defective nail joints or failure under load.

5.2.2 Boxes shall be stacked on the pallet with all ends containing the swivel assembly pointing in the same direction. Stacks of lids containing a sufficient number of lids to provide one lid for each box on the pallet shall be placed in the next to top layer of boxes at the ends or adjacent to the ends (if there are more than enough bundles to substitute for the end boxes). The top layer of boxes shall be inverted. The pallet shall be strapped with a minimum of two straps placed inside and adjacent to the skids, when the box length and pallet width are equal.

When more than one box is placed along the width of the pallet two additional straps shall be placed at right angles to the first two straps around the outside stacks of boxes. These straps may pass between the deck and bottom layer of boxes. Strapping shall be a minimum of 3/4 inch wide by .028 inch thick, Type 1, Class A or B of specification QQ-S-781. Corner irons shall be used wherever strapping bears directly on the boxes. Each corner iron shall be held in place with one nail no more than 3/4 inch in length.

5.3 Marking.-The marking for shipment shall be in accordance with Standard MIL-STD-129.

6. NOTES

6.1 Ordering data.-Procurement documents shall specify the following:

- a. Title, number and date of this specification.
- b. Type, class and grade of box.
- c. Drawing number of box.
- d. Gross weight of packed box.
- e. Unassembled boxes, if required.
- f. Type of packing for unassembled boxes, if required.
- g. Provisions for submission of first article samples.

6.2 Packing boxes covered by this specification are intended for shipment by common carrier, of munitions and munition components.

6.3 Splits shall be construed to apply to the entire side, top, bottom, or end when the piece is constructed of a single board. When the piece consists of two or more boards, as permitted in 3.8, splits shall be construed to apply to each board from which the piece is made.

6.4 Decay is disintegration of wood due to action of fungi. In the shop, decay can be best detected and differentiated from harmless stains and discoloration by use of the pick test. The pick test is performed with a knife or chisel by lifting some of the grain or fibers in suspicious looking areas. If the material is punky or more brash (breaks without splintering) than healthy wood of the same species, it is probably decayed. Suspicious areas are usually abnormally brown, bleached looking or mottled and indicated by the absence of luster that is present in normal wood.

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6.5 One source of a satisfactory type of knurled or screen type wire with driving equipment is Auto-nailer Company, 267 Mariette N.W., Atlanta, Ga.

6.6 Red Oil Soluble Dye may be obtained from Keystone Aniline and Chemical Company (known as 7WB Concentrate) located at 321 North Loomis Avenue, Chicago, Illinois 60607, or equivalent facility.

6.7 Inspection code numbers.-The five digit code numbers assigned to the inspections herein are to facilitate future data collection and analysis by the Government.

Custodian:
Army-MU

Preparing activity:
Army-MU

Project Number: 8140

APPENDIX
(PART I)

BOXES, AMMUNITION PACKING: WOOD (W/PLYWOOD TOP
AND BOTTOM) NAILED

10. SCOPE.-This appendix covers closing and strapping requirements and inspection provisions for filled nailed wood ammunition packing boxes.

20. APPLICABLE SPECIFICATION AND DRAWINGS

20.1 Specifications

PPP-S-760 - Strapping, Nonmetallic and Connectors
 QQ-S-781 - Strapping, Flat, Steel
 QQ-S-790 - Steel Strapping, Round (Bare and
 Zinc-coated)

20.2 Drawings

8794342 - Seal, Metallic
 8796522 - Marking Diagram and Sealing for Wood
 Packing Boxes

20.3 Standards

Federal Test - Metals, Test Methods
 Method
 Std. No. 151
 MIL-STD-105 - Sampling Procedures and Tables for
 Inspection by Attributes
 MIL-STD-1235 - Single and Multilevel Continuous
 Sampling Procedures and Tables for
 Inspection by Attributes

30. REQUIREMENTS

30.1 Closing

30.1.1 Boxes without hardware.-For overseas (Level A) use boxes without hardware shall have the lids nailed in place. Nailing shall be the same as that required for the bottom. For domestic (Level B or C) use nailing of the covers is not required. Two nails, placed in diagonally opposite corners, may be used to locate and hold the cover while the strapping is applied.

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30.1.2 Boxes with hardware.-Boxes with hardware shall be closed in accordance with Sealing Instructions on Drawing 8796522 using metallic seals complying with Drawing 8794342. Metallic seals are required on all overseas (Level A) packs. Metallic seals are not required for domestic (Level B or C) use except for LCL and LTL shipments. However, hasps and swivels shall be secured with wire when metallic seals are not used.

30.1.3 Interplant Reuse.-When boxes without hardware are specified for domestic (Level B or C) use and reuse is intended boxes with hardware may be substituted. Strapping of individual boxes is not required for full carload or truckload shipments.

30.2 Strapping.-All boxes shall be strapped with the strapping being applied over the sides, top and bottom in accordance with Drawing 8796522. Unless otherwise specified boxes 18 inches or less in overall length shall have one strap, boxes 18 to 36 inches in length shall have two straps and boxes over 36 inches in length shall have 3 straps. Strapping shall be either round wire or flat steel as specified below. Boxes requiring one strap shall have the strap placed at the center of the box. Boxes requiring two straps shall have the straps placed adjacent to the top cleat between the cleat and the end and shall be between the hardware and the cleat when hardware is used. Boxes requiring three straps shall have two straps placed as described for the two-strap box and the third strap placed as described for a one-strap box. When a center cover cleat is required, the third strap shall be placed adjacent to either side of the third cleat.

30.2.1 Flat steel strapping.-Flat steel strapping shall comply with Type I or IV of Specification QQ-S-781. Class A or B finish shall be used for overseas shipment (Level A); Class C may be used for domestic shipment (Level B or C). The size of strapping shall be 5/8 inch by .020 inch for all boxes except Type I, Class 3. Not less than two straps, 3/8 inch by .015 inch, shall be used for Type I, Class 3 boxes. Alternatively, for domestic use (Level B or C), non-metallic strapping, 1/2 inch by .020 inch, complying with Type II of Specification PPP-S-760, may be used on all boxes. Strapping shall be joined with commercial connectors of the size and kind designed for the strapping being used.

TABLE I

Gage	Diameter	Breaking strength lbs minimum (min.)			Ultimate tensile strength pounds per square inch (psi) min.		Percent Elongation 10 inch min. (see note)	
		Class A ²	Class B ³	Class B	Class A	Class B	Class A	Class B
12	Plus or Minus (+)							
	.1055 ± .0025	500	342	39,000	57,000	14	18	
13	.0915 ± .0025	500	342	52,000	77,000	12.5	16	
14	.0800 ± .0025	500	342	68,000	100,000	10	13	
15	.0720 ± .0015	500	342	85,000	125,000	8	11.5	

Notes:

1. When wire of greater tensile strength than that specified in Table I is supplied, the elongation shall be decreased proportionately to the increase of tensile strength above the listed values. In no case shall the elongation for Class A wire be less than 6 percent or more than 10 percent for Class B.
2. Class A is to be used for overseas (Level A) shipment.
3. Class B is to be used for domestic (Level B or C) shipment.
4. Values are for reference only.

30.2.2 Round Wire Strapping-Wire strapping for all boxes except Type I, Class 3 boxes shall comply with Finish 2 of Specification QQ-S-790 for overseas (Level A) use and Finish 1 or 2 for domestic (Level B or C) use, except that wire of any gages listed in Table I and meeting the requirements of the table may be used. Not less than two wire straps complying with No. 16, Class A, Finish as above, of Specification QQ-S-790 shall be used on Type I, Class 3 boxes.

40. Inspection Provisions

40.1 Round wire strapping.-The strapping used will have passed the following inspections and tests, authenticated by proper certification from the ammunition packing and packaging facility.

40.1.1 Sampling.-One coil from each lot will be selected for test. When the condition of the outer turns of the coil does not appear to be representative of the condition of the rest of the wire in the coil, one or more turns shall be removed prior to taking the sample. Samples shall be approximately 20 feet long. When wire is in cut-lengths, one or more pieces shall be selected from each 500 pounds or fraction thereof for test, except five pieces may be taken to represent any lot of more than 2500 pounds of wire of the same gage and finish.

40.1.2 Diameter measurement test.-Major defect - Code No. 11001.-The diameter of the wire will be measured at two or more points along the length of each sample of wire. The wire at the points of measurement shall be straight. All measurements must conform to the pertinent requirement of Table I (30.2.2).

40.1.3 Breaking strength test.-Major defect - Code No. 12001.-One or more test specimens, 15 inches plus or minus 1 inch from each sample of wire selected for test, will be subjected to a tensile test as specified in Method 211.1, Federal Test Method Std. No. 151, Metals, Test Methods, to determine that the breaking strength complies with the applicable requirements of Table I (30.2.2). The distance between the jaws of the testing machine, with the test specimen ready for testing, shall be not less than 11 inches.

40.1.4 Percentage elongation test.-Major defect - Code No. 13001.-The specimens used to determine the breaking strength (40.1.3) shall be used to determine the percent elongation as specified in Method 211.1, Federal Test Method Std. No. 151, Metals, Test Methods, Percentage elongation shall be the permanent increase in length, in percentage, due to the breaking of the wire in tension, measured between gage marks, upon the wire, originally 10 inches apart. Percentage elongation must comply with the applicable requirement of Table I (30.2.2).

40.2 Packed boxes

40.2.1 Lot formation.-A lot will consist of packed, strapped, marked and sealed ammunition boxes produced by one manufacturer in one unchanged process in accordance with the same drawing and same drawing revision. Lot size shall coincide with lot size of the ammunition being packed.

40.2.2 Examination.-Sampling plans and procedures for Major and Minor defects shall be in accordance with Standard MIL-STD-105 except that continuous sampling plans in accordance with Standard MIL-STD-1235 may be used if approved by the procuring activity. Also, at the option of the procuring activity, AQL's and sampling plans may be applied to individual characteristics listed using an AQL of 0.65 percent for each Minor defect and an AQL of 0.40 percent for each Major defect.

40.2.2.1 Marked, sealed and strapped wooden packing box (see dwg. 8796522 and pertinent packed ammunition item dwg.).

Categories	Defects	Method of Inspection	Code No.
Major:	AQL 1.00 percent		
101.	Box damaged.....	Visual	10001
102.	Strapping, missing, broken, loose, or improperly fastened.....	Visual/ Manual	10002
103.	Metallic seal missing; or improperly attached (when specified).....	Visual	10003
104.	Hasps, tangs and swivels improperly secured (when specified).....	Visual	10004
105.	Handles missing, broken or loose, (when specified).....	Visual	10005
106.	Hardware missing, broken or loose, (when specified).....	Visual/ Manual	10006
107.	Missing, incorrect or unidentifiable ammunition lot number or FSN.	Visual	10007
Minor:	AQL 2.50 percent		
201.	Contents loose.....	Manual	10008
202.	Lid nailing pattern incorrect.....	Visual	10009
203.	Marking (other than ammunition lot number or FSN) missing, incomplete or unidentifiable.....	Visual	10010
204.	Strapping improperly located.....	Visual	10011
205.	Handles improperly assembled (when specified).....	Visual	10012
206.	Hardware improperly assembled (when specified).....	Visual	10013

APPENDIX
(PART 2)

BOXES, AMMUNITION PACKING: WOOD, (W/PLYWOOD TOP
AND BOTTOM) NAILED (GOVERNMENT FURNISHED)

10. SCOPE

10.1 This appendix prescribes the criteria to be utilized to determine the serviceability of Government furnished boxes.

20. CLASSIFICATION

20.1 Types, classes and grades.-This appendix covers the following types, classes and grades of box designs:

Type I	<u>Top opening without rope handles</u>
Class 1	Without hardware, with two cover cleats. See Figure 2.
Class 2	With hardware, with two cover cleats. See Figure 3.
Class 3	Without hardware, with two cover cleats, light construction. See Figure 2.
Type II	<u>Top opening with two rope handles</u>
Class 1	Without hardware, with two cover cleats. See Figure 4.
Class 2	With hardware, with two cover cleats. See Figure 5.
Class 3	With hardware, with three cover cleats. See Figure 6.
Class 4	With hardware, with rop handles on cover cleats, with double end construction. See Figure 7.
Class 5	With hardware, with double end construction. See Figure 8.

Grade A	Boxes for field service storage or issue of service ammunition for shipment to unknown destination.
Grade B	Boxes for field service storage or shipment and storage of practice or nonissue ammunition
Grade C	Boxes for interplant OCONUS shipment and storage of ammunition or components.

30. APPLICABLE DOCUMENTS

30.1 Specifications

MILITARY

MIL-A-2550 - Ammunition and Special Weapons; General Specification for.

30.2 Standards

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105)

40. REQUIREMENTS

40.1 Workmanship.-Boxes shall be free of imperfections which may affect their utility. In addition, the boxes shall be free of excessive splinters, metal projections, or sharp edges which may cause injury when manually handled. (See 60.1).

50. INSPECTION PROVISIONS

50.1 Lot formation.-The term "lot" as used throughout this specification refers to an inspection lot, which is defined as an essentially homogeneous collection of units of product from which a representative sample is drawn and inspected to determine conformance of the lot with applicable requirements. Inspection lots shall comply with MIL-STD-105.

50.2 Examination.-Inspection for critical defects, (and major defects, when so specified), shall be 100 percent. Sampling plans and procedures for major and minor defects shall be in accordance with Standard MIL-STD-105.

50.2.1 Assembly (see applicable drawing).

Categories Defects Method of Inspection

Grade Major: AQL 1.0 percent for each defect

A B&C

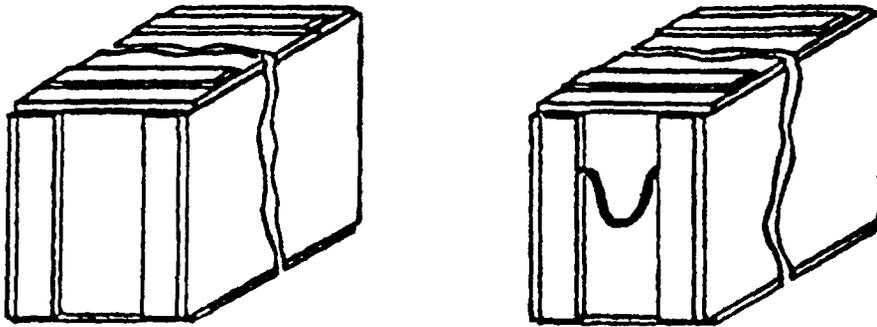
x	x	101.	Nail protruding inside box.....	Visual
x		102.	Split terminating in edge of board (see 4.3.2.1.9).....	Visual
x	x	103.	Nail not clinched (see 4.3.2.1.18).....	Visual
x	x	104.	Box deformed.....	Visual
x	x	105.	Holes not sufficiently separated (see 4.3.2.1.4).....	Visual
x	x	106.	Evidence of contamination or grease on interior surface.....	Visual

Minor: AQL 1.5 percent for each defect

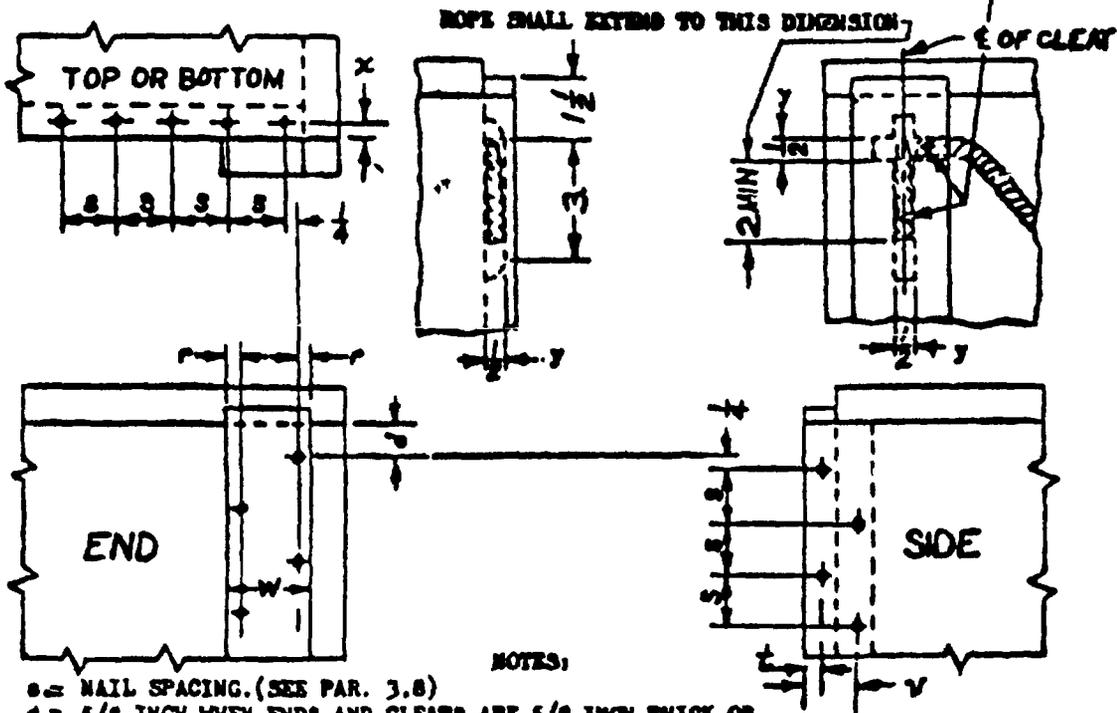
x	x	201.	Hardware insecure (see 4.3.2.1.13).....	Manual
x	x	202.	Loose screw or screw not properly seated (see 4.3.2.1.12).....	Visual/Manual
x	x	203.	Incorrect seating or operation of top.....	Visual/Manual
x	x	204.	Handle missing, broken, or loose.....	Visual/Manual
x	x	205.	Nail protruding outside box.....	Visual
x	x	206.	Split in board (see 4.3.2.1.14).....	Visual
x	x	207.	Nail missing.....	Visual
x	x	208.	Nail bent on box surface.....	Visual
x		209.	Protective coating damaged (see 4.3.2.1.16).....	Visual
x		210.	Split terminating in edge of board (see 4.3.2.1.9).....	Visual
x		211.	Hardware rusted.....	Visual

60. NOTES

60.1 Reworked boxes.-If economically repairable, and only under specific direction from the procuring contracting officer, boxes shall be reworked to comply with the applicable requirements of this document.



TWO NAILS OF SIZE HOLDING CLEAT TO END SHALL PASS THROUGH CENTER OF ROPE AS SHOWN



NOTES:

- s = NAIL SPACING. (SEE PAR. 3.8)
- d = 5/8 INCH WHEN ENDS AND CLEATS ARE 5/8 INCH THICK OR LESS, FOR THICKER LUMBER d = 3/4 INCH
- r = 3/8 INCH WHEN W = 2 INCHES OR LESS, FOR GREATER WIDTHS, r = 1/2 INCH.
- NAILING PATTERN SHOWN FOR SECURING CLEATS TO ENDS MAY BE MODIFIED BY LOCATING TOP NAIL IN OPPOSITE ROW PROVIDED THAT NAILS ARE ALTERNATED AS SHOWN. BOTTOM NAIL MAY BE LOCATED IN INNER OR OUTER ROW AS REQUIRED.
- t = 1/2 THICKNESS OF CLEAT
- v = THICKNESS OF CLEAT PLUS 1/2 THICKNESS OF END PANEL
- w = 1/2 THICKNESS OF END PANEL
- y = ROUTING DIMENSIONS SHALL BE 5/8 INCH. WHEN 5/8 INCH DIAMETER ROPE IS REQUIRED. ROUTING DIMENSIONS SHALL BE 7/16 INCH WHEN 7/16 INCH DIAMETER ROPE IS USED.

FIGURE 1. Wood box with exterior vertical cleats.

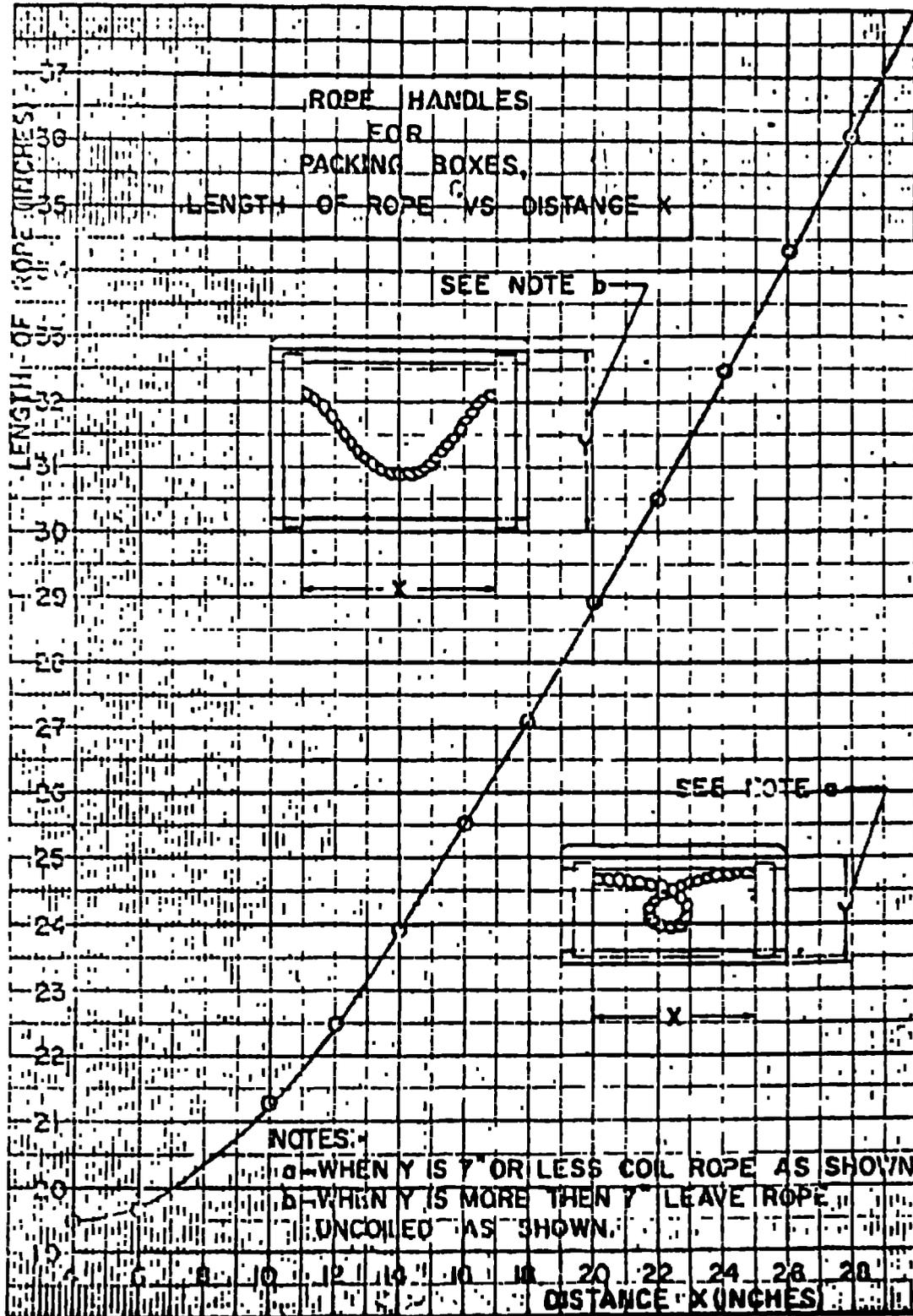
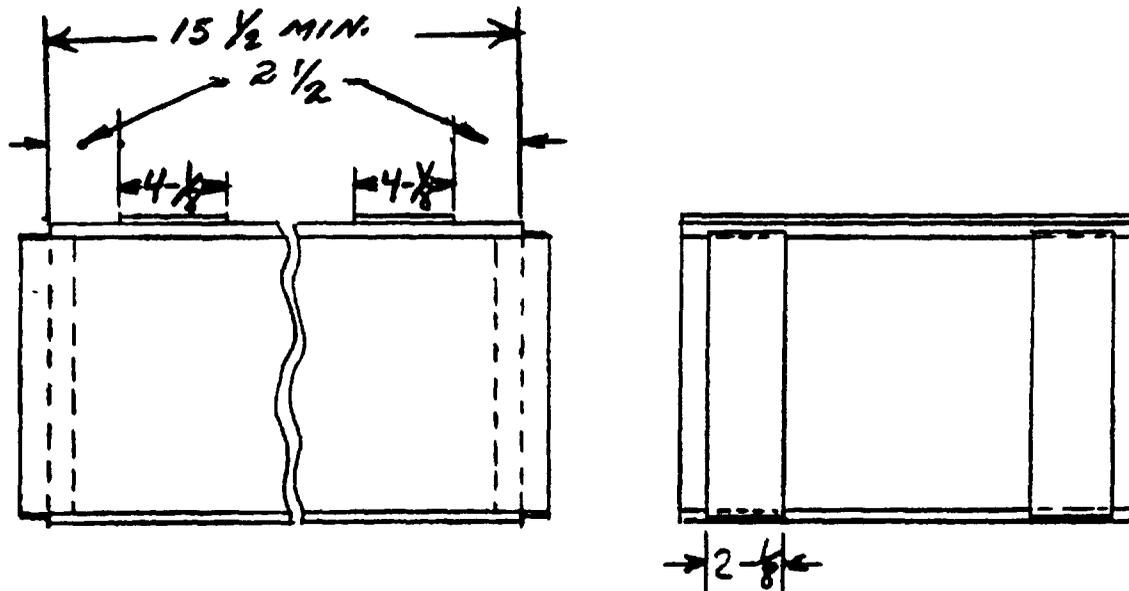


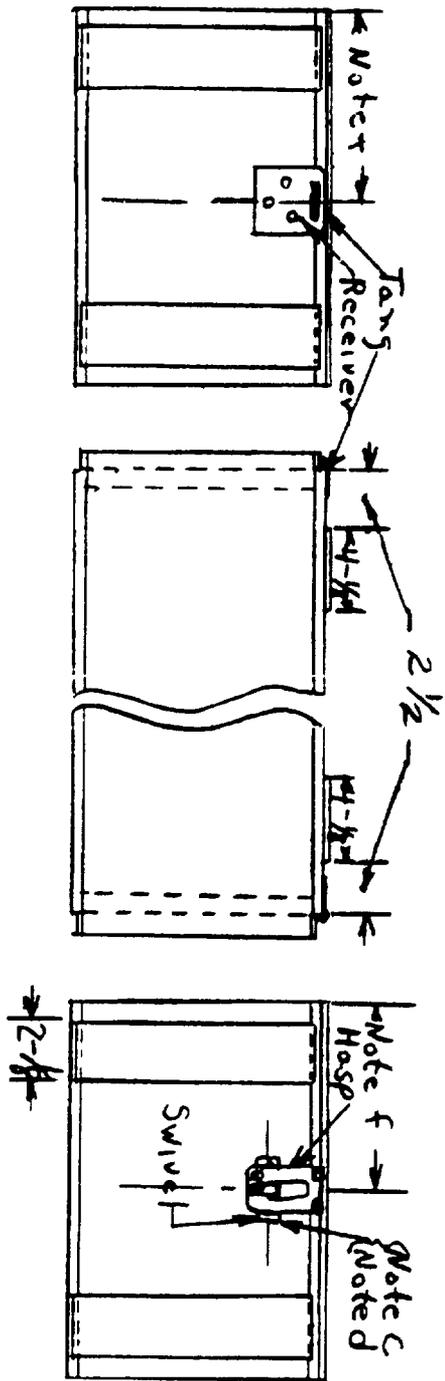
FIGURE 1A.



NOTES:

- a. SEE FIGURE 1 FOR CONSTRUCTION OF BOX.
- b. TYPE 1, CLASS 1, TOP SHALL BE $\frac{1}{2}$ INCH 5 PLY PLYWOOD; TOP CLEATS SHALL BE $\frac{5}{16}$ INCH PLYWOOD; BOTTOM SHALL BE $\frac{3}{8}$ INCH PLYWOOD; SIDES, ENDS AND END CLEATS SHALL BE $\frac{11}{16}$ INCH THICK WOOD.
- c. TYPE 1, CLASS 3, ALL MATERIAL SHALL BE AS SPECIFIED FOR TYPE 1, CLASS 1 EXCEPT THAT THE SIDES SHALL BE $\frac{1}{2}$ INCH THICK WOOD.

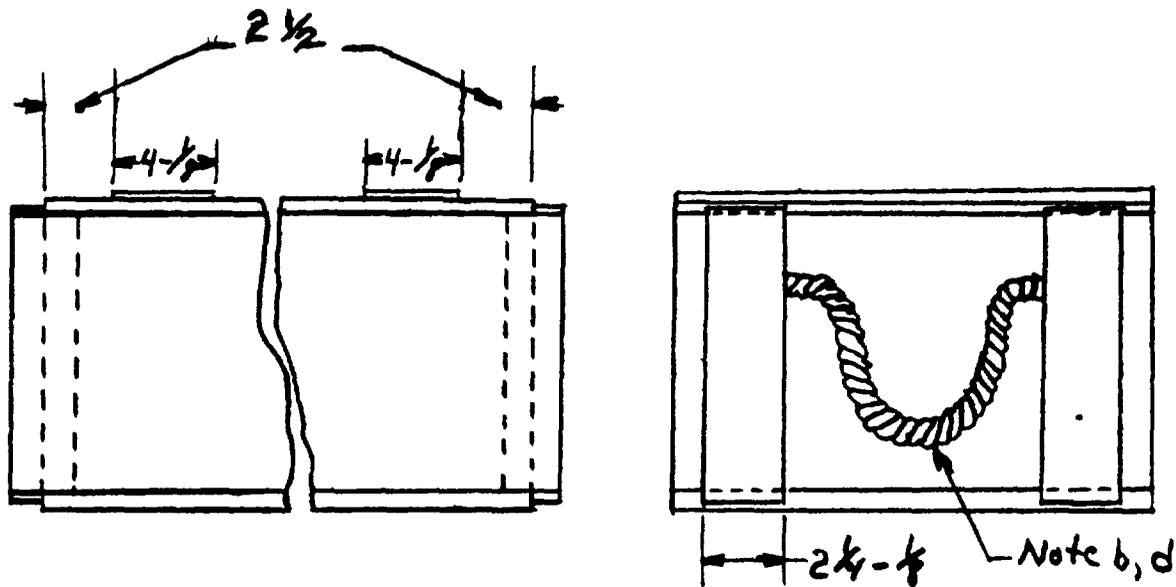
FIGURE 2. TYPE I, CLASS 1 BOX.



NOTES

- a SEE PARA 3 5 FOR HARDWARE REQUIREMENTS
- b UNLESS OTHERWISE SPECIFIED ALL SIDES, ENDS AND END CLEATS SHALL BE 11/16 INCH THICK WOOD THE LID SHALL BE 1/2 INCH 5 PLY PLYWOOD, THE BOTTOM SHALL BE 3/8 INCH PLYWOOD AND THE TOP CLEATS SHALL BE 5/16 INCH PLYWOOD
- c SWIVEL ASSEMBLY SHALL BE PARALLEL WITH GRAIN OF WOOD IN END
- d CENTER LINE OF SWIVEL LOCATED SO THAT HASP PASSES TIGHTLY OVER SWIVEL
- e SEE FIGURE 1 FOR CONSTRUCTION OF BOX
- f LOCATED AT CENTER LINE OF BOX

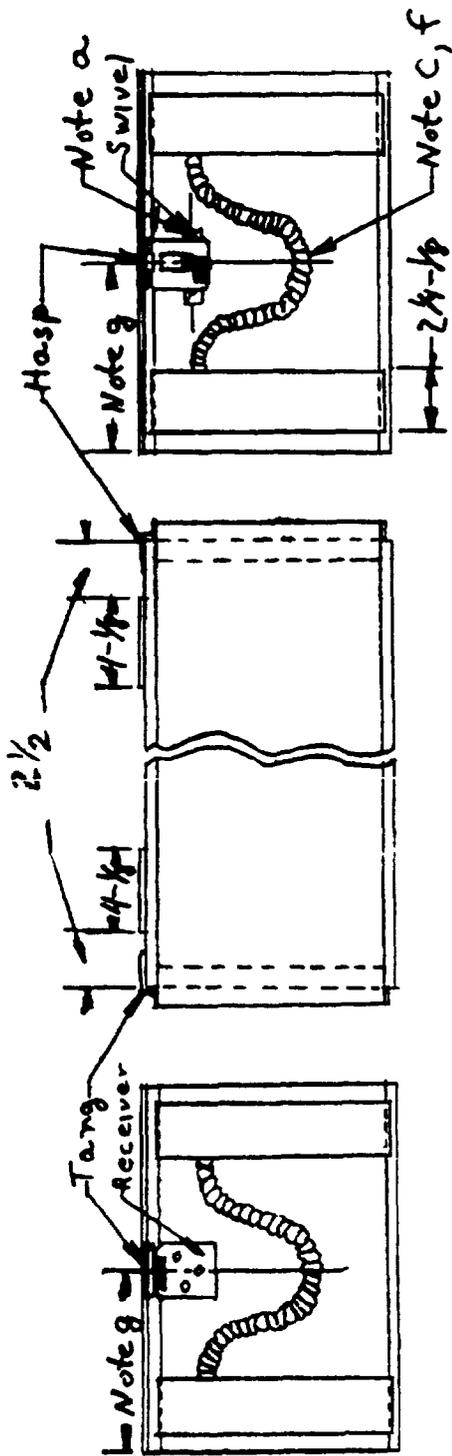
FIGURE 3 TYPE I, CLASS 2 BOX



NOTES:

- a. SEE FIGURE 1 FOR CONSTRUCTION OF BOX.
- b. SEE FIGURE 1 FOR VIEW OF ROPE HANDLE.
- c. UNLESS OTHERWISE SPECIFIED THE SIDES, ENDS AND END CLEATS SHALL BE $11/16$ INCH THICK WOOD. THE LID SHALL BE $1/2$ INCH 5 PLY PLYWOOD, THE BOTTOM SHALL BE $3/8$ INCH PLYWOOD AND THE TOP CLEATS SHALL BE $5/16$ INCH PLYWOOD.
- d. SEE PARA. 3.4 FOR ROPE HANDLE REQUIREMENTS. SEE FIGURE 1A FOR LENGTH OF ROPE HANDLE.

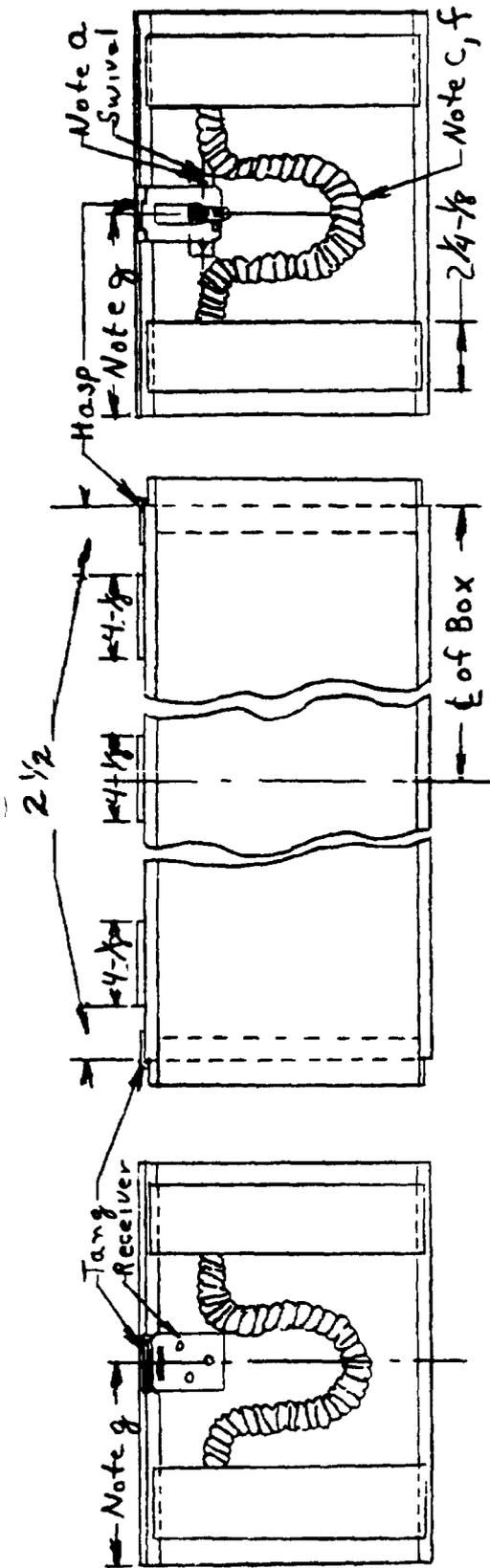
FIGURE 4: TYPE II CLASS I BOX.



NOTES

- a CENTER LINE OF SWIVEL LOCATED SO THAT HASP PASSES TIGHTLY OVER SWIVEL
- b SEE FIGURE 1 FOR CONSTRUCTION OF BOX
- c SEE FIGURE 1 FOR VIEW OF ROPE HANDLE
- d SEE PARA 3 5 FOR HARDWARE REQUIREMENTS
- e UNLESS OTHERWISE SPECIFIED ALL SIDES, ENDS AND END CLEATS SHALL BE 1 1/16 INCH THICK WOOD THE LID SHALL BE 1/2 INCH 5 PLY PLYWOOD, THE BOTTOM SHALL BE 3/8 INCH PLYWOOD AND THE TOP CLEATS SHALL BE 5/16 INCH PLYWOOD
- f SEE PARA. 3 4 FOR ROPE HANDLE REQUIREMENTS. SEE FIGURE 1A FOR LENGTH OF ROPE HANDLE
- g LOCATED AT CENTERLINE OF BOX.

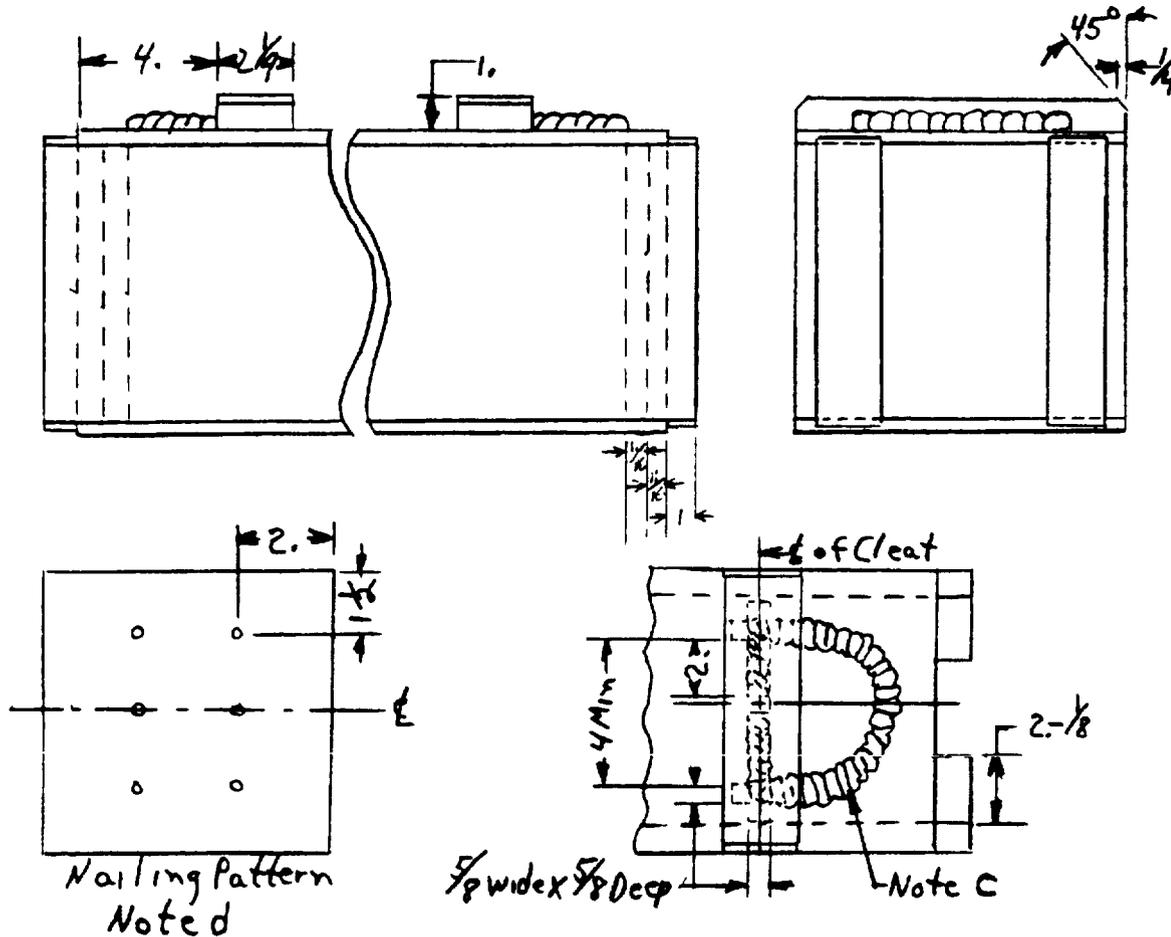
FIGURE 5 TYPE II CLASS 2 BOX



NOTES

- a CENTER LINE OF SWIVEL LOCATED SO THAT HASP PASSES TIGHTLY OVER SWIVEL
- b SEE FIGURE 1 FOR CONSTRUCTION OF BOX
- c SEE FIGURE 1 FOR VIEW OF ROPE HANDLE.
- d. SEE PARA 3.5 FOR HARDWARE REQUIREMENTS
- e UNLESS OTHERWISE SPECIFIED ALL SIDES, ENDS AND END CLEATS SHALL BE 1/16 INCH THICK WOOD THE LID SHALL BE 1/2 INCH 5 PLY PLYWOOD, THE BOTTOM SHALL BE 3/8 INCH PLYWOOD AND THE TOP CLEATS SHALL BE 5/16 INCH PLYWOOD
- f SEE PARA 3.4 FOR ROPE HANDLE REQUIREMENTS SEE FIGURE 1A FOR LENGTH OF ROPE HANDLE
- g LOCATED AT CENTER LINE OF BOX

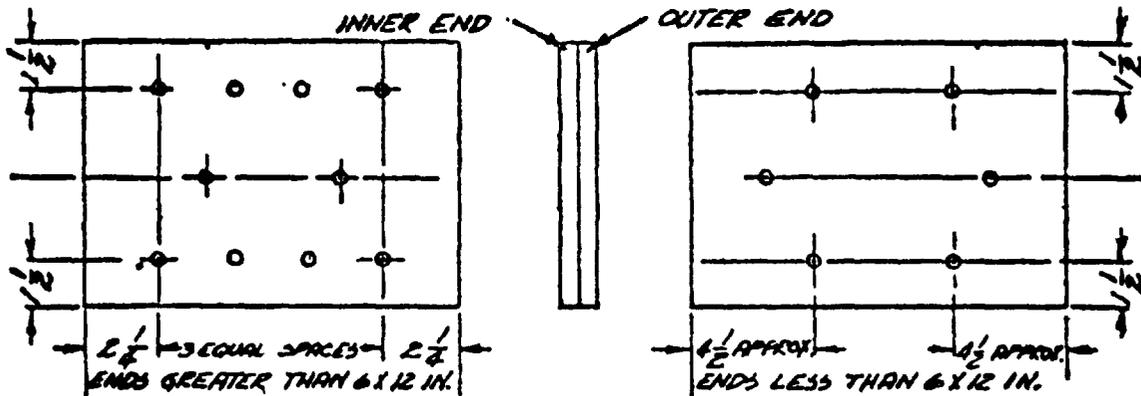
FIGURE 6 TYPE II CLASS 3 BOX



NOTES

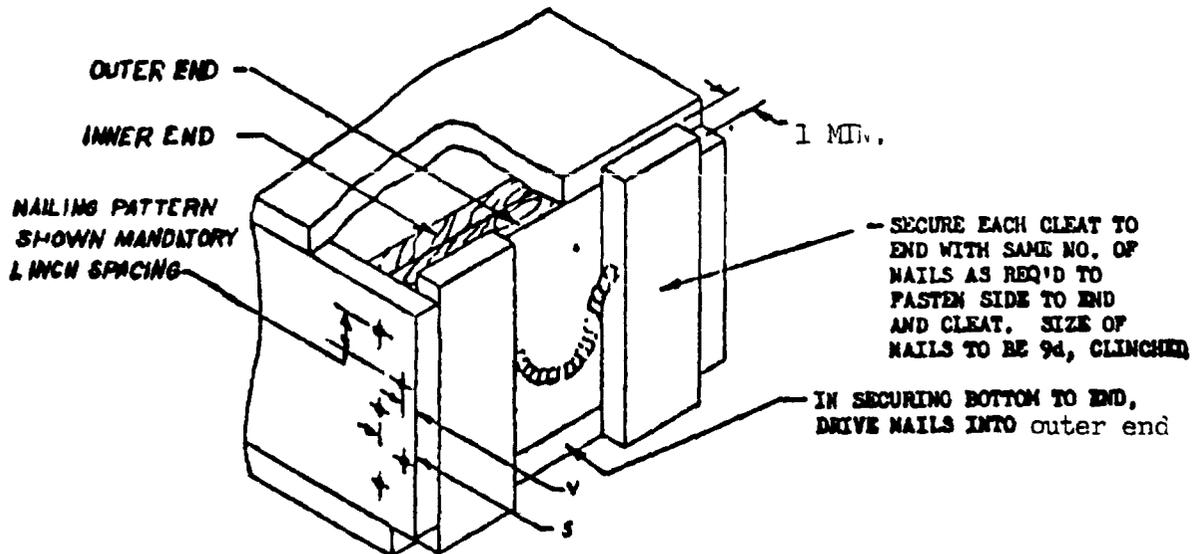
- a SIDE LUMBER SHALL BE 11/16 TOP SHALL BE 1/2 INCH 5 PLY PLYWOOD AND BOTTOM SHALL BE 3/8 INCH PLYWOOD. OTHER LUMBER SHALL BE AS NOTED
- b ATTACH HARDWARE AS SHOWN ON FIGURE 5 (SEE PARA 3 5 FOR HARDWARE REQUIREMENTS)
- c LENGTH 17-1/2 (SEE PARA. 3 4 AND FIGURE 1 FOR ADDITIONAL DETAILS)
- d FOR ADDITIONAL DETAILS OF DOUBLE END CONSTRUCTION SEE FIGURE 8

FIGURE 7 TYPE II CLASS 4 BOX



NOTE A: - outer END SHALL BE ONE PIECE; UNJOINTED WITH GRAIN PARALLEL WITH WIDTH OF BOX. Inner END SHALL BE NOT MORE THAN 2 PIECES OF APPROXIMATELY EQUAL WIDTH, WITH GRAIN PARALLEL WITH DEPTH OF BOX. NAILS SHALL BE DRIVEN THROUGH OUTER END AND CLINCHED ON INNER END. NAIL SIZE SHALL BE 6d. LOCATION OF NAILS IS APPROXIMATE; STAGGER OFF CENTERS TO PREVENT SPLITTING.

NAILING PATTERN FOR DOUBLE END-CLEAR CONSTRUCTION



NOTES: -

b - FOR ADDITIONAL DETAILS OR CONSTRUCTION, SEE FIGURES 1 AND 6. WHEN COVER IS 29 INCHES OR MORE IN LENGTH THREE COVER CLEATS SHALL BE USED, OTHERWISE TWO COVER CLEATS SHALL BE USED.

c - See Para. 3.3 Figures 1 and 1A for rope handle requirements.

y - 1/2 Thickness of Cleat.

s - THICKNESS OF CLEAT PLUS THICKNESS OF OUTER END PANEL PLUS 1/2 THICKNESS OF INNER END PANEL

FIGURE 2. Type II class 5 box.

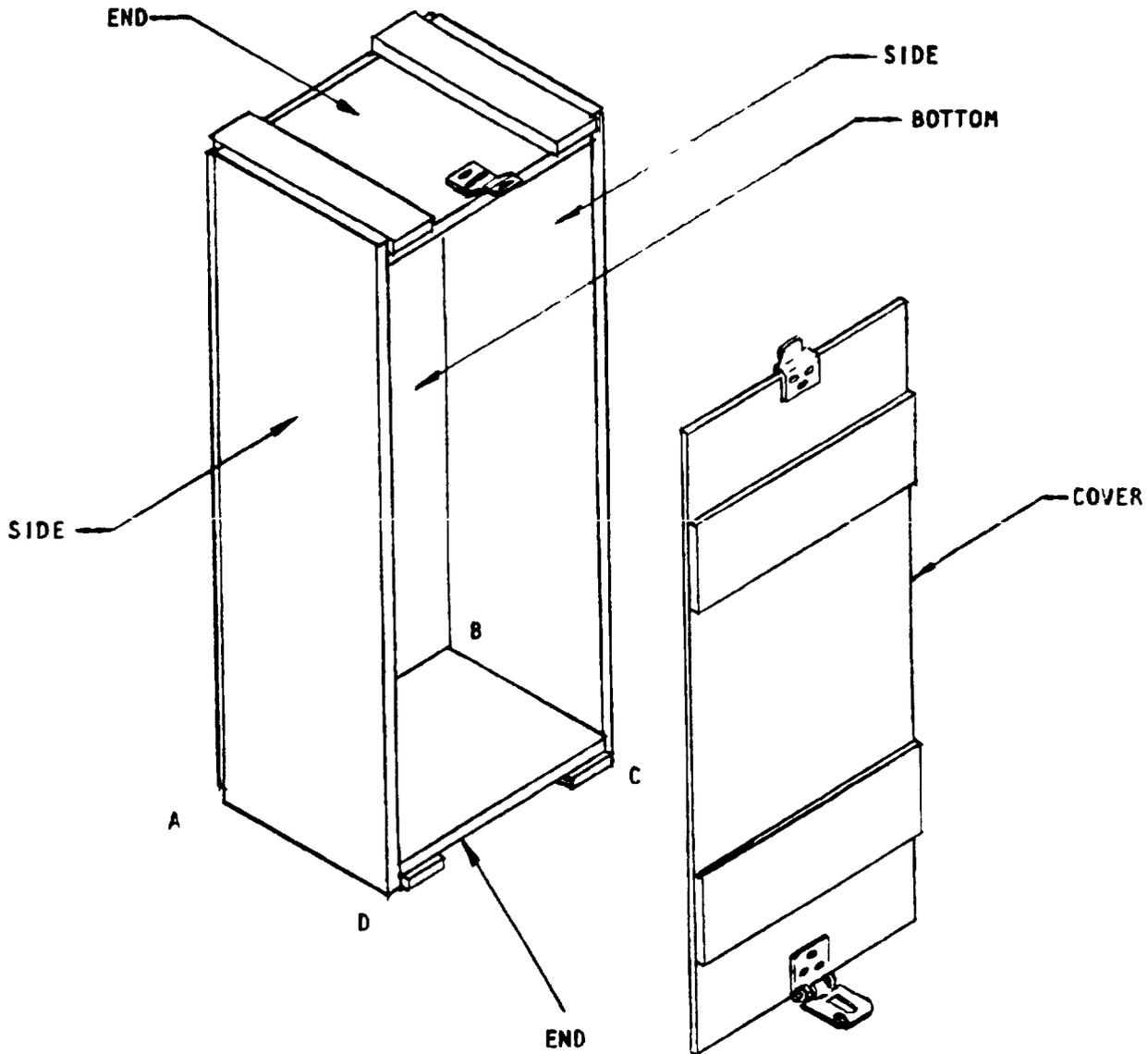


FIGURE 9

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SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 22-R255
<p>INSTRUCTIONS This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p>		
<p>SPECIFICATION MIL-B-48034 (MU)</p>		
<p>ORGANIZATION</p>		
<p>CITY AND STATE</p>		<p>CONTRACT NUMBER</p>
<p>MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT</p>		
<p>1 HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A GIVE PARAGRAPH NUMBER AND WORDING</p>		
<p>B RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p>		
<p>2 COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID</p>		
<p>3 IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?)</p>		
<p>4 REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.)</p>		
<p>SUBMITTED BY (Printed or typed name and activity - Optional)</p>		<p>DATE</p>

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