

STINGER

UNITIZATION PROCEDURES FOR GUIDED MISSILES IN TWO (2) SHIPPING AND STORAGE CONTAINERS

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REVISIONS				DESIGNER JDS/mms	FIELD USE JDS/mms
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DO NOT SCALE

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. A PALLETIZED UNIT OR A SKIDDED UNIT, SUCH AS THE LAST UNITS IN A LOT, CAN BE ASSEMBLED WITH LESS LAYERS THAN SPECIFIED. HOWEVER, PALLETIZED UNITS OR SKIDDED UNITS MUST NOT BE ASSEMBLED WITH A PARTIAL LAYER. EMPTY CONTAINERS OR "FILLER ASSEMBLIES" MUST BE USED TO ACHIEVE FULL-LAYER UNITS.
- C. FOR DETAILS OF THE WIREBOUND (WOODEN) BOX (MISSILE), SEE DRAWING NO. 11509503.

CONTAINER DIMENSIONS-- 67-1/4" LONG BY 13-1/8" WIDE BY 10-1/2" HIGH.
GROSS WEIGHT----- 77 POUNDS (APPROX).
- D. FOR DETAILS OF THE ALUMINUM CONTAINER (WEAPON), SEE DRAWING NO. 11486952.

CONTAINER DIMENSIONS-- 65-9/16" LONG BY 13" WIDE BY 13-3/8" HIGH.
GROSS WEIGHT----- 86 POUNDS (APPROX)
- E. DIMENSIONAL LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE UNLESS OTHERWISE SPECIFIED. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.
- F. IN ORDER TO OBTAIN COMPACT (SOUND) UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE DUNNAGE/ BOXES AND THE PALLET DECK. AFTER TENSIONING, ALL STRAPS WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PER SEAL.
- G. WHEN APPLYING ANY STRAP, CARE MUST BE EXERCISED TO ASSURE THAT THE END OF THE STRAP ON THE UNDERSIDE OF THE JOINT EXTENDS AT LEAST 6" BEYOND THE SEAL. THIS EXTRA MINIMUM LENGTH OF STRAP IS REQUIRED TO PERMIT SUBSEQUENT TIGHTENING OF LOOSENED STRAPPING. RETENSIONING CAN BE ACCOMPLISHED WITHOUT REPLACING STRAPPING OR SPLICING STRAPPING THROUGH THE USE OF A TENSIONING TOOL, AS MANUFACTURED BY SEVERAL COMPANIES, AND THE APPLICATION OF ONE ADDITIONAL SEAL.
- H. CAUTION: STRAPPING LESS THAN 3/4" WIDE OR LESS THAN .031" THICK WILL NOT BE USED. IF THE SPECIFIED STRAPPING IS NOT AVAILABLE, STRAPPING WIDER THAN SPECIFIED AND AT LEAST .031" THICK MAY BE USED ON AN INTERIM BASIS UNTIL THE SPECIFIED STRAPPING CAN BE ACQUIRED.
- J. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES.
- K. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM, AND ONE POUND EQUALS 0.454KG.
- L. FOR ADDITIONAL GUIDANCE ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION ON PAGES 5 AND 7.
- M. THE LETTERS "PA" DENOTING PQ56 (COPPER-B-QUINOLINOLATE) OR "PB" DENOTING M-GARD W550 (ZINC NAPHTHENATE EMULSIFIABLE) MUST BE APPLIED TO A CENTER POST OF A PRESERVATIVE TREATED PALLET OR TO A DUNNAGE PIECE OR ASSEMBLY IN LETTERS AT LEAST ONE-INCH HIGH.

MATERIAL SPECIFICATIONS FOR PALLETIZED ALUMINUM CONTAINERS

- PALLET ----- : 4-WAY ENTRY, STYLE I, TYPE I, CLASS 1, PRESERVATIVE TREATED, SEE THE TABLES ON PAGE 3, MIL SPEC MIL-P-15011.
- LUMBER ----- : SEE TM 743-200-1, DUNNAGE LUMBER, FED SPEC MM-L-751.
- NAILS ----- : FED SPEC FF-N-105; COMMON. ALT: ANNULAR-RING TYPE NAIL OR PALLET TYPE (MECHANICALLY DEFORMED) NAIL OF SAME SIZE.
- STRAPPING, STEEL ----- : CLASS I, TYPE I OR II, HEAVY DUTY, FINISH B (GRADE 2), FED SPEC QQ-S-781.
- SEAL, STRAP ----- : TYPE D, STYLE I, II, OR III, CLASS H, FINISH B (GRADE 2), FED SPEC QQ-S-781.
- STAPLE, STRAP ----- : FOR 3/4" STEEL STRAPPING, TYPE III, STYLE 3, FED SPEC FF-N-105.

REVISIONS

REVISION NO. 1 DATED FEBRUARY 1983, CONSISTS OF:

CHANGING THE DUNNAGE ASSEMBLIES AND STRAPPING ON THE PALLETIZED UNIT OF ALUMINUM CONTAINERS.

REVISION NO. 2, DATED AUGUST 1985, CONSISTS OF:

UPDATING MATERIAL SPECIFICATIONS.

MATERIAL SPECIFICATIONS FOR WIREBOUND WOODEN BOXES ON A SKIDDED BASE				
NAME OF PART	KEY NO.	MATERIAL		SPEC. NO.
		KIND	GRADE	
TOP DECK BOARD	3, 4	WOOD CLASS 2 STRUCTURAL	GROUP I, II, OR III (SEE TABLE 1)	MIL-STD-731
POST	1	"	GROUP II OR III (SEE TABLE 1)	MIL-STD-731
STRINGER	2	"	GROUP II OR III (SEE TABLE 1)	MIL-STD-731
RUNNER	5	"	GROUP III (SEE TABLE 1)	MIL-STD-731
NAILS	3, 4, 5	SEE KEY NO'S		FED SPEC FF-N-105
PRESERVATIVE		WOOD PRESERVATIVE, PQ56 (COPPER-8-QUINOLINOLATE) OR M-GARD W550 (ZINC NAPHTHENATE EMULSIFIABLE)		SEE GENERAL NOTE "M" ON PAGE 2.
NAME OF PART		MATERIAL		SPEC. NO.
		KIND	GRADE	
STRAPPING		STEEL, 3/4" X .035" OR .031"	CLASS 1, TYPE I OR II, HEAVY DUTY, FINISH B (GRADE 2)	FED SPEC QQ-S-781
SEAL, STRAP		STEEL	TYPE D, STYLE I, II OR III, CLASS H, FINISH B (GRADE 2)	FED SPEC QQ-S-781
STAPLE, STRAP		STEEL	TYPE III, STYLE 3	FED SPEC FF-N-105

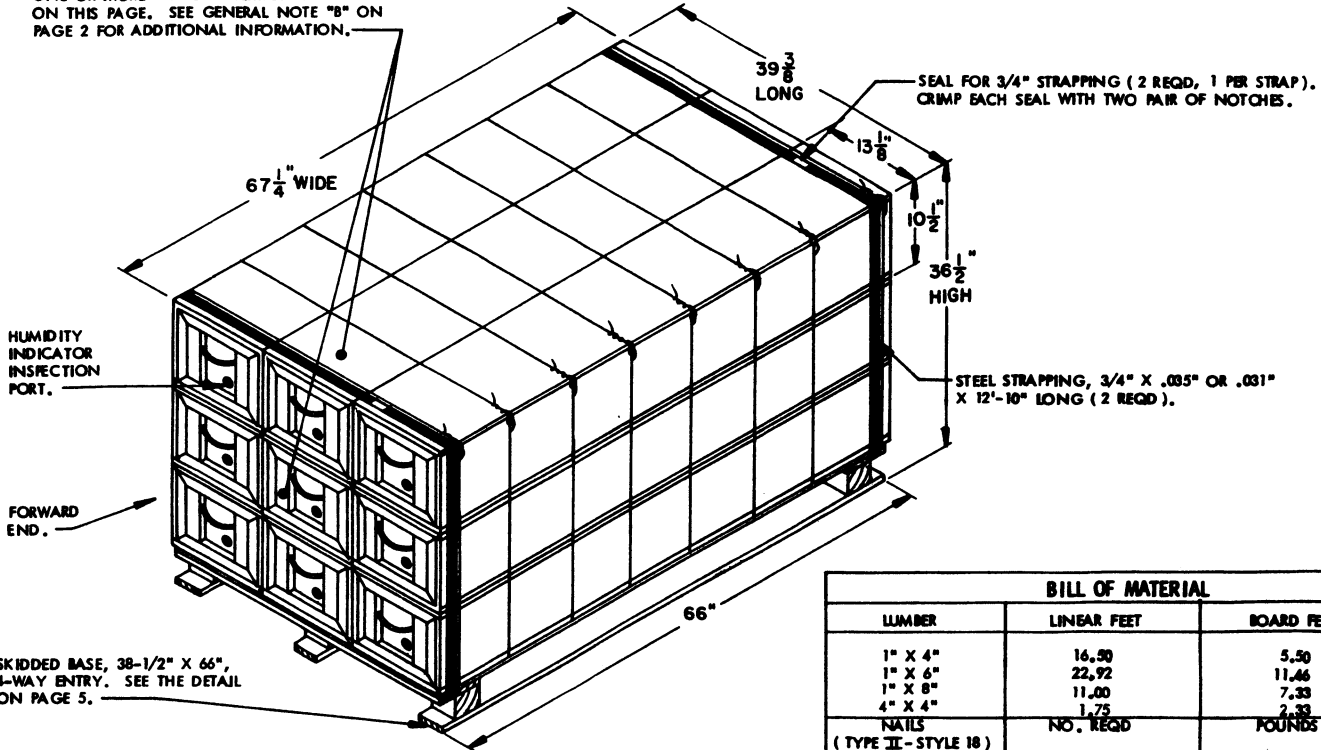
TABLE 1 WOOD GROUPS *

GROUP I	GROUP II	GROUP III
TAMARACK HEMLOCK, WESTERN FIR, SILVER PINE, ALASKA FIR, DOUGLAS HEMLOCK, EASTERN MAGNOLIA CEDAR ASPEN LARCH, WESTERN SPRUCE CHESTNUT COTTONWOOD FIR, WHITE PINE, PONDBROSA	ELM, AMERICAN ASH (EXCEPT WHITE) PINE, SOUTHERN YELLOW GUM MAPLE, SOFT LARCH, WESTERN FIR, DOUGLAS (COAST) SYCAMORE TUPELO, WATER	HICKORY PECAN ELM, ROCK BIRCH, SWEET OR YELLOW GUM HACKBERRY MAPLE, HARD ASH, WHITE BEECH LOCLIST OAK

FILLER ASSEMBLY A (SEE PAGE 4)		
MATERIAL		
KIND	GRADE	SPEC. NO.
LUMBER NAILS	SEE TM 743-200-1, DUNNAGE LUMBER COMMON. ALT: ANNULAR-RING TYPE OR PALLET TYPE (MECHANICALLY DEFORMED).	FED SPEC MM-L-751 FED SPEC FF-N-105

* THE WOOD GROUPS AS IDENTIFIED IN TABLE 1 ARE ONLY APPLICABLE TO THE FABRICATION OF THE SKIDDED BASE.

IF IT IS NECESSARY TO OMIT ONE OR MORE BOXES FROM THE SKIDDED UNIT, OMIT ONE OR MORE OF THE BOXES IN THE TOP LAYER OR LAYERS OF THE CENTER STACK OR STACKS WITHIN THE UNIT LENGTH AND REPLACE WITH ONE OR MORE "FILLER ASSEMBLY A" AS SHOWN ON THIS PAGE. SEE GENERAL NOTE "B" ON PAGE 2 FOR ADDITIONAL INFORMATION.



SKIDDED UNIT

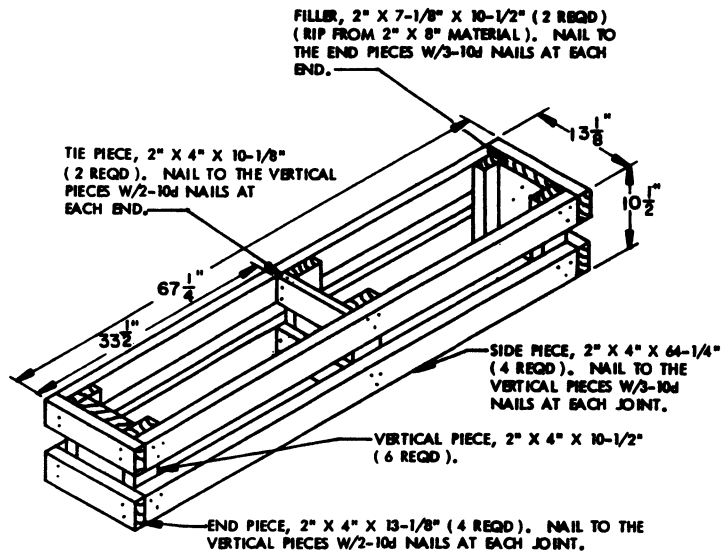
UNIT DATA

WIREBOUND (WOODEN) BOX - 9 EACH @ 77 POUNDS	-----	693 LBS
DUNNAGE (STRAPPING ONLY)	-----	2 LBS
SKIDDED BASE	-----	54 LBS
TOTAL WEIGHT	-----	749 LBS (APPROX)
CUBE	-----	55.9 CU FT (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	16.50	5.50
1" X 6"	22.92	11.46
1" X 8"	11.00	7.33
4" X 4"	1.75	2.33
NAILS (TYPE II - STYLE 18)	NO. REQD	POUNDS
1-1/2" LONG	12	0.01
2-1/4" LONG	18	0.14
3" TO 3-1/4" LONG	18	0.27
STEEL STRAPPING, 3/4"	25.67' REQD	1.83 LBS
SEAL FOR 3/4" STRAPPING	2 REQD	NIL

UNITIZING PROCEDURES

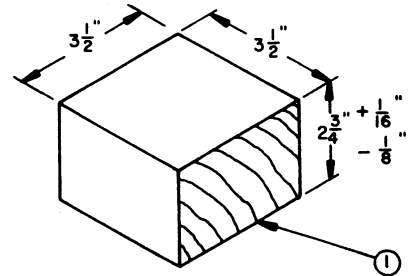
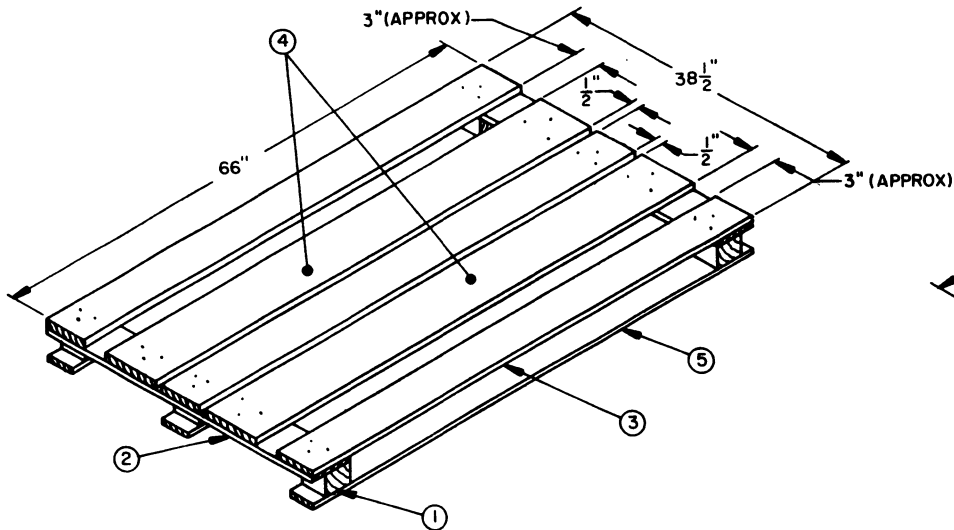
- STEP 1. POSITION THE SKIDDED BASE WITH THE TOP DECK UP.
- STEP 2. POSITION THE FIRST LAYER OF WIREBOUND BOXES ON THE SKIDDED BASE, THREE WIDE, AND CENTER THE 67-1/4" LENGTH ON THE 66" LENGTH OF THE SKIDDED BASE WITH EQUAL OVERHANG AT EACH END.
- STEP 3. POSITION THE SECOND AND THIRD LAYER OF BOXES ON TOP OF AND IN VERTICAL ALIGNMENT WITH THE FIRST LAYER.
- STEP 4. POSITION THE STRAPPING UNDER THE TOP DECK OF THE SKIDDED BASE AND AROUND ALL NINE WOODEN BOXES. KEEP THE STRAPPING IN VERTICAL ALIGNMENT AND SEAL ON TOP, AS SHOWN ABOVE.



FILLER ASSEMBLY A

THE FILLER ASSEMBLY SHOWN ABOVE IS FOR USE WHEN ONE OR MORE WIREBOUND (WOODEN) BOXES ARE OMITTED FROM A SKIDDED UNIT.

**SKIDDED UNIT OF NINE (9) GUIDED MISSILES,
PACKED ONE (1) PER WIREBOUND (WOODEN) BOX**



SKIDDED BASE

REFERENCE: U. S. ARMY DARCOM DRAWING
19-48-4138-20PA1000.

POST

SPECIAL NOTES:

1. THE SKIDDED BASE SHOWN ABOVE IS TO BE USED FOR THE WIREBOUND BOXES ONLY. SEE THE "MATERIAL SPECIFICATIONS FOR WIREBOUND (WOODEN) BOXES ON A SKIDDED BASE" ON PAGE 3.
2. THE LETTERS "PA" DENOTING PQ56 (COPPER-8-QUINOLINOLATE) OR "PB" DENOTING M-GARD W550 (ZINC NAPHTHENATE EMULSIFIABLE) MUST BE APPLIED TO THE OUTSIDE OF THE CENTER POSTS OF THE SKIDDED BASE IN LETTERS AT LEAST ONE-INCH HIGH.
3. SKID BASES THAT ARE PROCURED FROM A MANUFACTURER WILL HAVE THE BOTTOM OF ONE OUTER DECK BOARD STENCILED IN 1/2" (ONE-HALF INCH) MINIMUM LETTERS AS FOLLOWS:
 - A. MANUFACTURER'S NAME.
 - B. MANUFACTURER'S ADDRESS.
 - C. DATE (MONTH AND YEAR) OF MANUFACTURE.
 - D. MANUFACTURER'S LOT NUMBER.
4. FOR SECURING TOP DECK BOARDS TO STRINGERS, IT IS PERMISSIBLE TO USE NAIL, BOX, TYPE II, STYLE 4A, 1-3/4" LONG, .080 DIAMETER (14 GAGE) AND/OR STAPLE, GALVANIZED, 1-5/8" LONG BY 3/4" CROWN, 14 GAGE, CLINCHED (UTILIZING 30° - 50° STITCHES) AS ALTERNATES TO THE NAIL SPECIFIED.

KEY NUMBERS

- ① POST, 4" WIDE X 2-3/4" HIGH X 3-1/2" LONG (6 REQD). SEE THE "POST" DETAIL AND SPECIAL NOTE 2 ON THIS PAGE.
- ② STRINGER, 1" X 6" X 38-1/2" (2 REQD).
- ③ TOP DECK BOARD, 1" X 6" X 66" (3 REQD). NAIL THE CENTER BOARD AND THE TWO END BOARDS, THROUGH THE STRINGER, INTO THE POST W/3 NAILS (TYPE II - STYLE 18), 3" TO 3-1/4" LONG BY .135" DIAMETER, AT EACH JOINT. SEE GENERAL NOTE "J" ON PAGE 2.
- ④ TOP DECK BOARD, 1" X 8" X 66" (2 REQD). NAIL TO THE STRINGER W/3 NAILS (TYPE II - STYLE 18), 1-1/2" LONG BY .120" DIAMETER, AT EACH JOINT. SEE GENERAL NOTE "J" ON PAGE 2 AND SPECIAL NOTE 5 ON THIS PAGE.
- ⑤ RUNNER, 1" X 4" X 66" (3 REQD). POSITION AS SHOWN AND NAIL TO THE POST W/3 NAILS (TYPE II - STYLE 18), 2-1/4" LONG BY .120" DIAMETER, AT EACH JOINT. SEE GENERAL NOTE "J" ON PAGE 2.

IF IT IS NECESSARY TO OMIT ONE OR MORE BOXES FROM THE PALLETIZED UNIT, OMIT ONE OR MORE OF THE BOXES IN THE TOP LAYER OR LAYERS OF THE CENTER STACK WITHIN THE UNIT LENGTH AND REPLACE WITH ONE OR MORE "FILLER ASSEMBLIES" AS SHOWN ON PAGE 8. SEE GENERAL NOTE "B" ON PAGE 2 FOR ADDITIONAL INFORMATION.

SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7 AND THE "POSITIONING OF DUNNAGE" DETAIL ON PAGE 8.

STEEL STRAPPING, 3/4" X .035" OR .031" BY 14'-10" LONG (2 REQD). ENCIRCLE ALL NINE CONTAINERS, TOP DECK OF PALLET, AND SIDE ASSEMBLY. STAPLE TO EACH SIDE ASSEMBLY W/4 STAPLES.

FORWARD END OF CONTAINERS.

67 1/16" WIDE

42" LONG

13"

13 3/8"

45 5/8" HIGH

SIDE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7 AND THE "POSITIONING OF DUNNAGE" DETAIL ON PAGE 8.

STEEL STRAPPING, 3/4" X .035" OR .031" BY 19'-2" LONG (2 REQD). ENCIRCLE CONTAINERS, SIDE ASSEMBLY, AND END ASSEMBLY. STAPLE TO EACH SIDE ASSEMBLY AND EACH END ASSEMBLY W/4 STAPLES.

END ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7.

STAPLE, FOR 3/4" STRAPPING (48 REQD).

SEAL FOR 3/4" STRAPPING (4 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

PALLET, 40" X 48", 4-WAY ENTRY. SEE THE "MATERIAL SPECIFICATIONS FOR PALLETIZED ALUMINUM CONTAINERS" ON PAGE 2.

48"

PALLETIZED UNIT

UNIT DATA

ALUMINUM CONTAINER - 9 EACH @ 86 LBS	774 LBS
DUNNAGE	98 LBS
PALLET	80 LBS
TOTAL WEIGHT	952 LBS (APPROX)
CUBE	73.8 CU FT (APPROX)

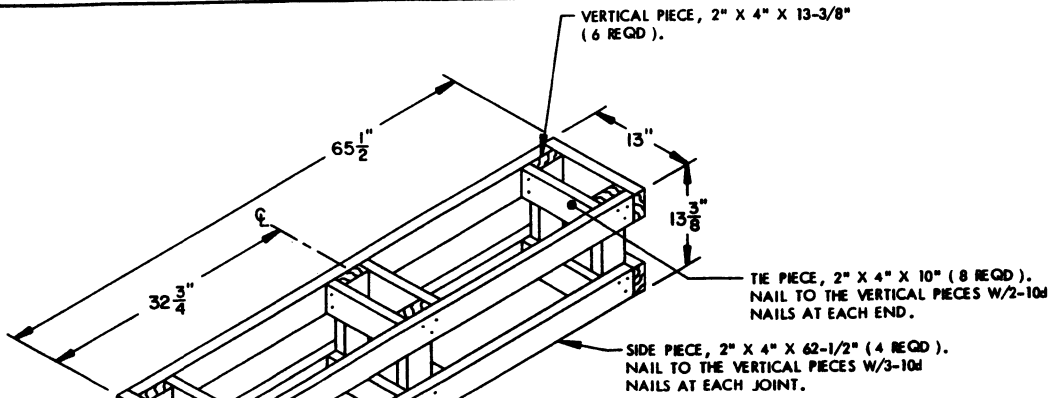
PALLETIZING PROCEDURES

- STEP 1. POSITION THE PALLET WITH THE TOP DECK UP.
- STEP 2. POSITION THE CENTER STACK OF THREE HIGH ALUMINUM CONTAINERS ON THE PALLET, CENTER THE 65-9/16" LENGTH ON THE 48" LENGTH OF THE PALLET WITH EQUAL OVERHANG AT EACH END. THE HUMIDITY INDICATORS MUST ALL BE ON THE SAME END OF THE PALLETIZED UNIT.
- STEP 3. POSITION THE TWO SPACER ASSEMBLIES AGAINST THE SIDES OF THE CENTER STACK OF THREE HIGH ALUMINUM CONTAINERS MAKING SURE THAT THE TIE PIECE IS IN THE VOID SPACE AND NOT AGAINST THE FLANGE. DO NOT POSITION THE HORIZONTAL PIECE AGAINST THE PRESSURE RELIEF VALVE ON SIDE OF CONTAINER. SEE THE "POSITIONING OF DUNNAGE" DETAIL ON PAGE 8.
- STEP 4. POSITION THE TWO OUTSIDE STACKS OF THREE HIGH ALUMINUM CONTAINERS ON THE PALLET, IN LINE WITH THE CENTER STACK AND WITH THE FLANGES TIGHT AGAINST THE SPACER PIECES ON THE SPACER ASSEMBLY. THE HUMIDITY INDICATORS MUST ALL BE ON THE SAME END OF THE PALLETIZED UNIT.
- STEP 5. POSITION ONE SIDE ASSEMBLY ON EACH SIDE OF THE PALLETIZED UNIT, AS SHOWN ABOVE, MAKING SURE THAT THE HORIZONTAL PIECES ARE CENTERED ON THE JOINTS BETWEEN CONTAINERS AND THE VERTICAL PIECES CONTACT THE CONTAINER FLANGE AT BOTH ENDS. SEE THE "POSITIONING OF DUNNAGE" DETAIL ON PAGE 8.
- STEP 6. POSITION THE TWO VERTICAL PIECES OF STRAPPING UNDER THE TOP DECK OF THE PALLET AND AROUND ALL NINE OF THE ALUMINUM CONTAINERS MAKING SURE THAT THE STRAPS ARE CENTERED ON THE VERTICAL PIECES OF THE SIDE ASSEMBLY. KEEP THE STRAPPING IN VERTICAL ALIGNMENT AND SEAL ON THE SIDE, AS SHOWN ABOVE. STAPLE IN PLACE WITH 3/4" STAPLES.
- STEP 7. POSITION ONE END ASSEMBLY ON EACH END OF THE PALLETIZED UNIT, AS SHOWN ABOVE, MAKING SURE THAT THE HORIZONTAL PIECES AND THE VERTICAL PIECES ARE CENTERED ON THE JOINTS BETWEEN CONTAINERS. SEE THE "POSITIONING OF DUNNAGE" DETAIL ON PAGE 8.
- STEP 8. POSITION THE TWO HORIZONTAL PIECES OF STRAPPING AROUND THE ALUMINUM CONTAINERS, AS SHOWN ABOVE, MAKING SURE THAT THE STRAPS ARE CENTERED ON THE HORIZONTAL PIECES OF THE END ASSEMBLY AND THE SIDE ASSEMBLY. KEEP THE STRAPPING IN HORIZONTAL ALIGNMENT AND SEAL ON THE SIDE, AS SHOWN ABOVE, STAPLE IN PLACE WITH 3/4" STAPLES.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	21.00	7.00
1" X 4"	70.80	23.60
1" X 6"	31.17	15.58
NAILS	NO. REQD	POUNDS
6d	196	1.12
PALLET, 40" X 48"	1 REQD	80 LBS
STEEL STRAPPING, 3/4"	68.0' REQD	4 LBS
SEAL FOR 3/4" STRAPPING	4 REQD	NIL
STAPLE	48 REQD	NIL

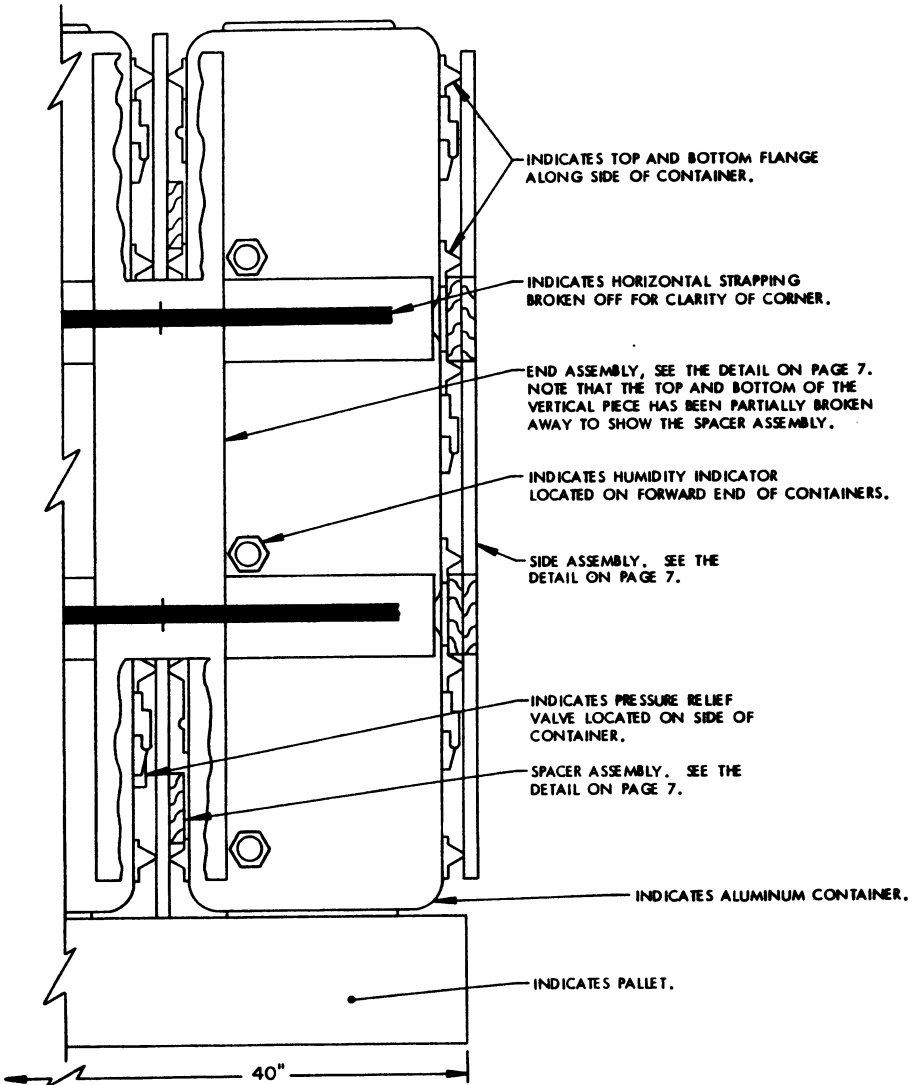
PALLETIZED UNIT OF NINE (9) GUIDED MISSILES,
PACKED ONE (1) PER ALUMINUM CONTAINER



FILLER ASSEMBLY B

THE FILLER ASSEMBLY SHOWN ABOVE IS FOR USE WHEN ONE OR MORE ALUMINUM CONTAINERS ARE OMITTED FROM A PALLETIZED UNIT. SEE THE PALLETIZED UNIT DETAIL ON PAGE 6 FOR LOCATION OF A FILLER ASSEMBLY WITHIN A PALLETIZED UNIT.

END PIECE, 2" X 4" X 13" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



POSITIONING OF DUNNAGE

A PARTIAL END VIEW OF THE PALLETIZED UNIT DEPICTING THE POSITION OF THE SPACER ASSEMBLY, THE SIDE ASSEMBLY, AND THE END ASSEMBLY IS SHOWN ABOVE.