

# PREPARATION FOR SECUREMENT ON THE 463L (HCU-6/E) PALLET OF THE FILLED I-TON CONTAINERS

REVISIONS				DRAFTSMAN dh	PROJ ENG RBA/WRF
				CHECKER GRG	LOG ENGR/OFFICE RCC/NA
				APPROVED, U.S. ARMY ARMAMENT, BARRITONS AND CHEMICAL CORPS	
				<i>B. J. Thomson</i> APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)	
				<i>John L. Syrett</i> U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	
				U.S. ARMY AMC DRAWING	
				JULY 1985	
				CLASS	DIVISION
				19	48
				DRAWING	FILE
				4616	CB 20MI

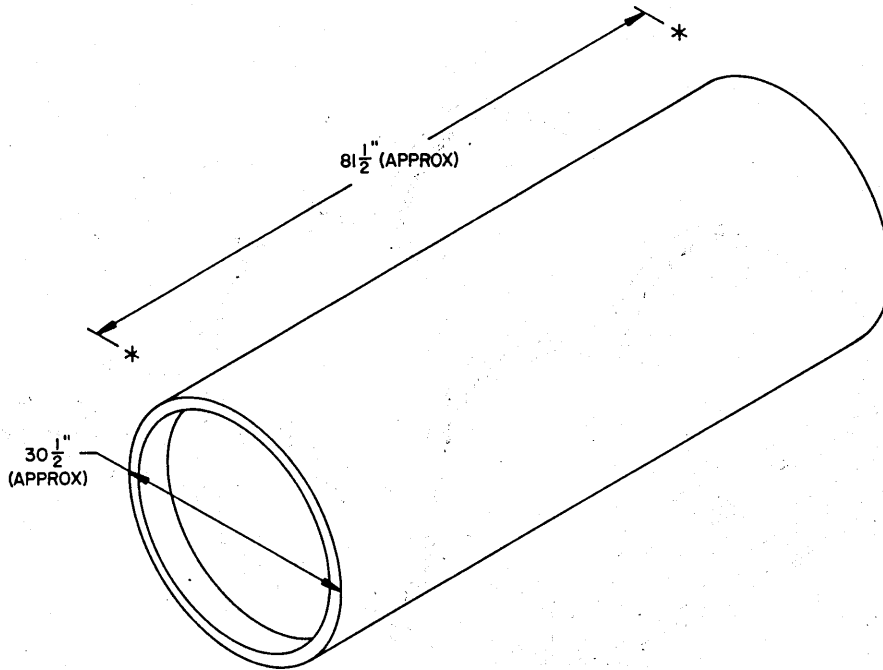
**DO NOT SCALE**

GENERAL NOTES

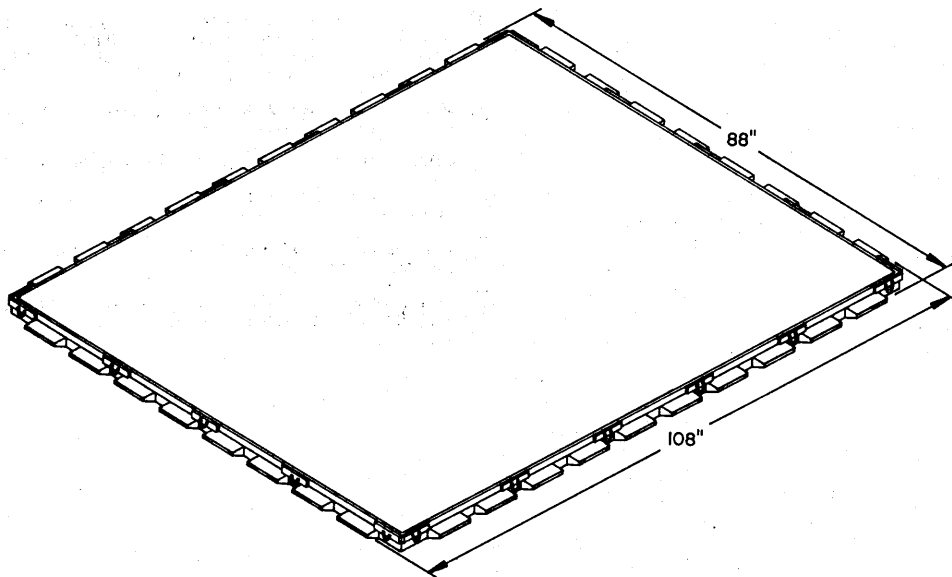
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AJUGMENTS TM 743-200-1 ( CHAPTER 5 ).
- B. FOR DETAILS OF THE 1-TON CONTAINER SEE TM 3-250 AND THE PICTORAL VIEW ON PAGE 3.
- C. THE PROCEDURES DEPICTED IN THIS DOCUMENT ARE APPLICABLE FOR THE PREPARATION FOR SECUREMENT ON THE 463L ( HCU-6/E ) PALLET OF THE FILLED 1-TON CONTAINER. A PLYWOOD PROTECTOR ASSEMBLY AND ONE OR TWO CRADLE ASSEMBLIES, AS APPLICABLE, IN CONJUNCTION WITH OTHER DUNNAGE MATERIAL ARE USED TO ACCOMPLISH THE PREPARATION. THE ACTUAL SECUREMENT TO THE 463L PALLET WILL BE IN ACCORDANCE WITH IC-141B-9.
- D. THE PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF EMPTY 1-TON CONTAINERS.
- E. THE SPECIFIED BLOCKING AND BRACING, AS PROVIDED BY THE WOODEN DUNNAGE, IS DESIGNED FOR REUSE ON SUBSEQUENT SHIPMENTS, IF DESIRED. HOWEVER, BEFORE REUSE, THE PLYWOOD PROTECTOR ASSEMBLIES AND CRADLE ASSEMBLIES MUST BE INSPECTED. COMPONENTS OF THE ASSEMBLIES THAT SHOW DAMAGE MUST BE REPLACED OR REPAIRED.
- F. EXCEPT FOR PLYWOOD, DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 8" MATERIAL IS ACTUALLY 1-1/2" THICK BY 7-1/4" WIDE.
- G. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE PLYWOOD PROTECTOR ASSEMBLY, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- H. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- J. 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.

MATERIAL SPECIFICATIONS

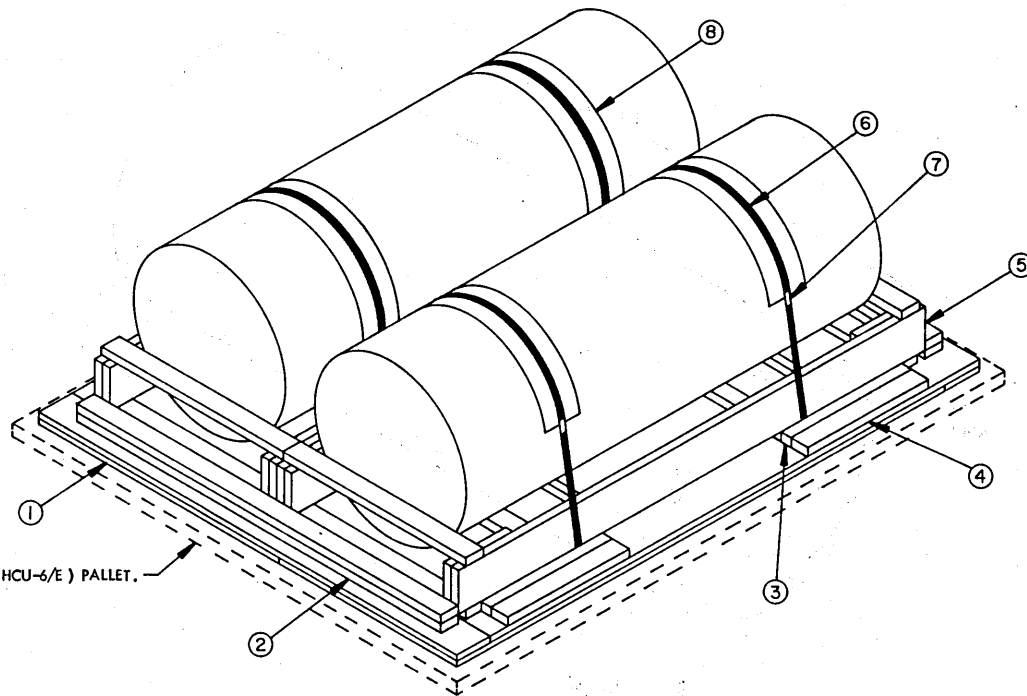
- LUMBER-----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS-----: COMMON, FED SPEC FF-N-105.
- STRAPPING, STEEL ---: CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C; FED SPEC QQ-S-781.
- SEAL, STRAP-----: TYPE D, STYLE I, II, OR IV, CLASS H, FED SPEC QQ-S-781.
- PLYWOOD-----: GROUP B OR C, GRADE C-D ( EXTERIOR ), FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER EXTERIOR GRADE MAY BE SUBSTITUTED.
- ANTI-CHAFING MATERIAL-----: NEUTRAL BARRIER MATERIAL, MIL-B-121 OR EQUAL.
- CREPE RUBBER-----: COMMERCIAL GRADE.



1-TON CONTAINER



463L PALLET  
HCU-6/E

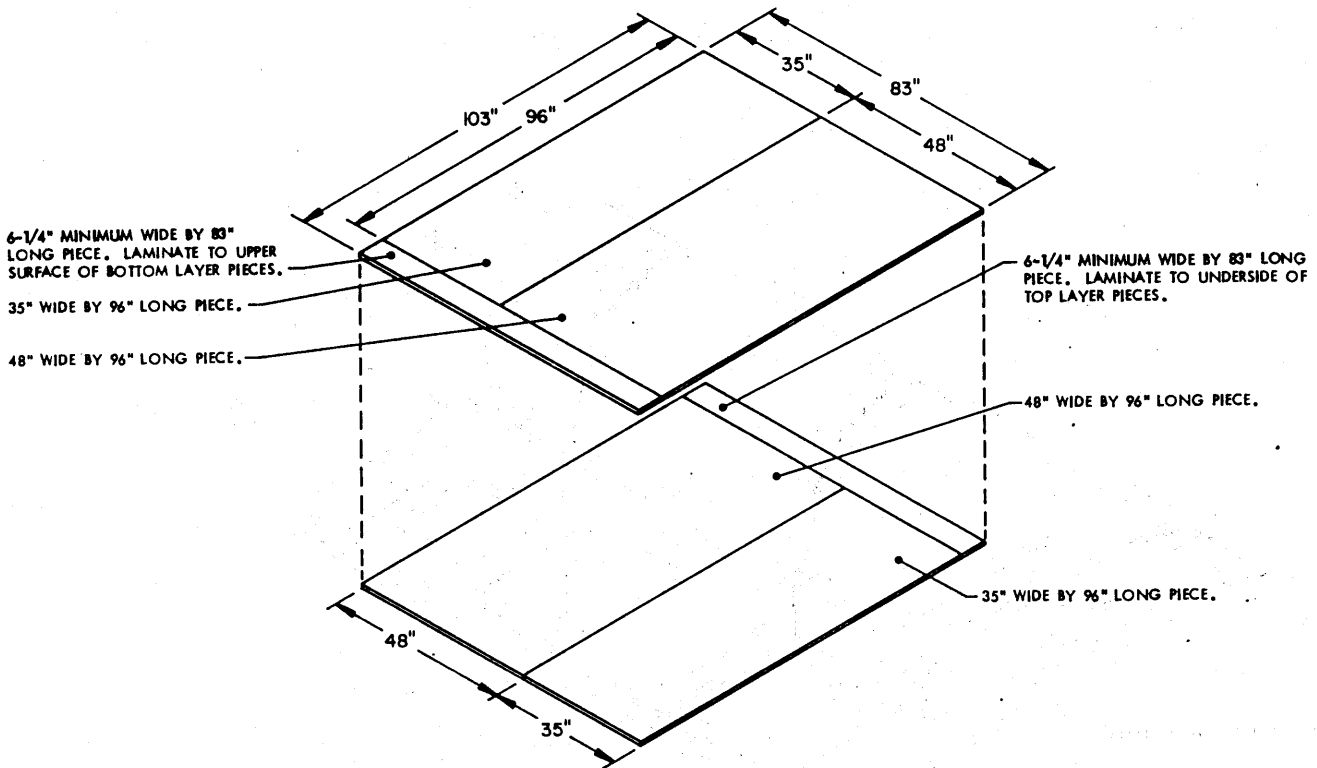


INDICATES 463L (HCU-6/E) PALLET.

ISOMETRIC VIEW

KEY NUMBERS

- ① PLYWOOD PROTECTOR (1 REQD). SEE THE "PLYWOOD PROTECTOR FABRICATION AND LAMINATION" DETAIL ON PAGE 5.
- ② TIE/STOP PIECE, 2" X 4" X 72" (DOUBLED) (2 REQD). NAIL THE FIRST TO THE PLYWOOD PROTECTOR W/1-10d NAIL EVERY 6" AND CLINCH. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "2-UNIT PLYWOOD PROTECTOR ASSEMBLY" DETAIL ON PAGE 8 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 1 ON PAGE 5.
- ③ SIDE RETAINER BOARD, 2" X 2-1/4" (ACTUAL) X 24" (4 REQD). NAIL TO THE PLYWOOD PROTECTOR W/4-10d NAILS AND CLINCH. SEE THE "2-UNIT PLYWOOD PROTECTOR ASSEMBLY" DETAIL ON PAGE 8 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 2 ON PAGE 5.
- ④ SIDE RETAINER BOARD, 2" X 4" X 24" (4 REQD). NAIL TO THE PLYWOOD PROTECTOR W/4-10d NAILS AND CLINCH.
- ⑤ CRADLE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 8.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-6" LONG STEEL STRAPPING (4 REQD).
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, ONE PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ⑧ ANTI-CHAFING MATERIAL (AS REQD). POSITION UNDER STRAPPING TO PREVENT METAL TO METAL CONTACT WITH THE 1-TON CONTAINER.



**PLYWOOD PROTECTOR FABRICATION AND LAMINATION**

**SPECIAL NOTES:**

1. THE 5-1/2" DIMENSION FOR THE LOCATION OF THE TIE/STOP PIECES, PIECE MARKED ②, ON THE 103" DIMENSION OF THE PLYWOOD PROTECTOR MUST BE FIELD CHECKED TO ENSURE THAT THE DISTANCE BETWEEN THE PIECES IS ADEQUATE TO ACCEPT THE PLACEMENT OF THE CRADLE ASSEMBLIES.
2. THE 5-3/4" DIMENSION FOR THE LOCATION OF THE SIDE RETAINER BOARD, PIECE MARKED ③, MUST BE FIELD CHECKED TO ENSURE THAT THE DISTANCE BETWEEN THE PIECES IS ADEQUATE TO ACCEPT THE PLACEMENT OF TWO CRADLE ASSEMBLIES. IF ADDITIONAL SPACE IS REQUIRED, THE WIDTH OF PIECES MARKED ③ MAY BE REDUCED, OR PIECES MARKED ④ MAY BE REDUCED IN WIDTH, AS NECESSARY.

**PROTECTOR FABRICATION NOTES**

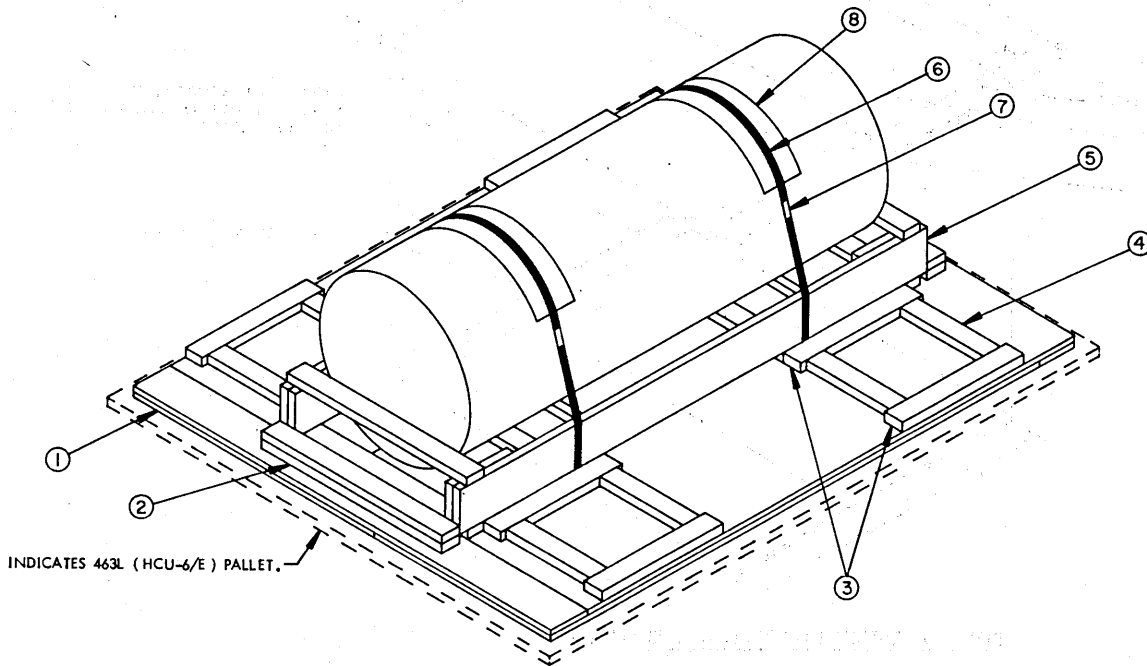
1. EACH PROTECTOR WILL BE FABRICATED FROM 4 SHEETS OF 1/2" THICK X 48" WIDE X 96" LONG PLYWOOD AND WILL CONSIST OF TWO LAYERS. EACH LAYER WILL CONSIST OF 3 PIECES (ONE PIECE 48" WIDE X 96" LONG, ONE PIECE 35" WIDE X 96" LONG, AND ONE PIECE 6-1/4" MINIMUM WIDE X 83" LONG).
2. ONE OF THE 13" WIDE X 96" LONG PIECES REMAINING FROM CUTTING THE 35" WIDE X 96" LONG PIECES MAY BE CUT IN HALF LONGITUDINALLY TO PROVIDE THE TWO 6-1/4" MINIMUM WIDE X 83" LONG PIECES.
3. JOINTS OF THE TOP LAYER PIECES WILL BE OFFSET FROM THOSE OF THE BOTTOM LAYER AS SHOWN.
4. THE 6-1/4" MINIMUM WIDE X 83" LONG PIECE OF THE TOP LAYER WILL BE LAMINATED TO THE UPPER SURFACE OF THE TWO LARGER PIECES OF THE BOTTOM LAYER. LIKEWISE THE 6-1/4" MINIMUM WIDE X 83" LONG PIECE OF THE BOTTOM LAYER WILL BE LAMINATED TO THE UNDERSIDE OF THE TWO LARGER PIECES OF THE TOP LAYER.
5. LAMINATING WILL BE ACCOMPLISHED WITH STAPLES HAVING 7/8" LONG LEGS AND SUITABLE FOR PENETRATING PLYWOOD. STAPLES WILL BE APPLIED 6" APART ALONG BOTH 83" LONG EDGES OF THE 6-1/4" MINIMUM WIDE PIECE. A LINE OF STAPLES WILL ALSO BE APPLIED EVERY 6" ACROSS THE WIDTH OF THE PROTECTOR (EITHER TOP OR BOTTOM) APPROXIMATELY 48" FROM ONE END, AS WELL AS EVERY 6" ALONG THE 48" AND 35" ENDS OF THE LARGER PIECES, BOTH TOP AND BOTTOM, WHICH ARE ADJACENT TO THE 6-1/4" WIDE PIECES. IN LIEU OF STAPLES, 1-1/2" LONG BOX NAILS MAY BE USED AND CLINCHED.

BILL OF MATERIAL*		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	88	59
2" X 8"	61	82
NAILS	NO. REQD	POUNDS
6d (2")	24	1/4
10d (3")	176	2-3/4
16d (3-1/2")	72	1-3/4
PLYWOOD, 1/2" X 48" X 96" ----- 4 SHEETS----- 88 LBS		
STEEL STRAPPING, 1-1/4" X .035" OR .031" --46' REQD----- 7 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD----- NIL		

\* INCLUDES MATERIAL FOR THE CRADLES AND THE PLYWOOD PROTECTOR ASSEMBLY.

**LOAD AS SHOWN**

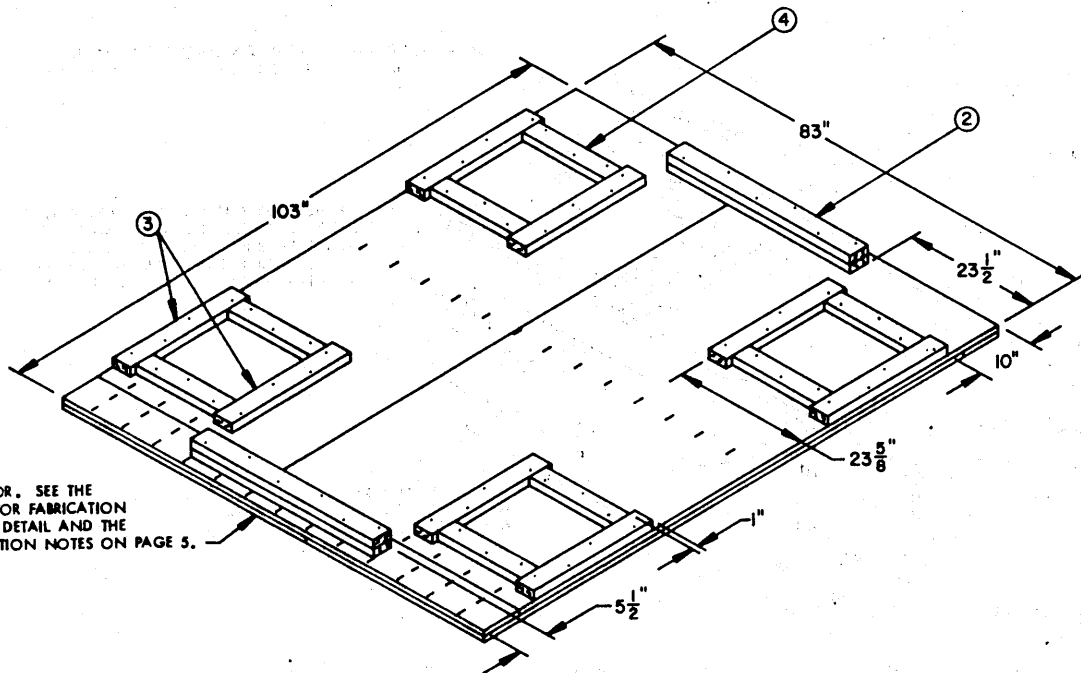
ITEM	QUANTITY	WEIGHT (APPROX)
1-TON CONTAINER	2	7,000 LBS
CRADLE ASSEMBLY	2	222 LBS
PROTECTOR ASSEMBLY	1	170 LBS
STEEL STRAPPING	7	7 LBS
463L PALLET	1	600 LBS
<b>TOTAL WEIGHT</b>		<b>7,999 LBS</b>



ISOMETRIC VIEW

KEY NUMBERS

- ① PLYWOOD PROTECTOR ( 1 REQD ). SEE THE "PLYWOOD PROTECTOR FABRICATION AND LAMINATION" DETAIL ON PAGE 5.
- ② TIE/STOP PIECE, 2" X 4" X 36" ( DOUBLED ) ( 2 REQD ). NAIL THE FIRST PIECE TO THE PLYWOOD PROTECTOR W/6-10d NAILS AND CLINCH. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "1-UNIT PLYWOOD PROTECTOR ASSEMBLY" DETAIL ON PAGE 7 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 1 ON PAGE 7.
- ③ SIDE RETAINER BOARD, 2" X 4" X 24" ( 8 REQD ). NAIL TO THE PLYWOOD PROTECTOR W/4-10d NAILS AND CLINCH. SEE THE "1-UNIT PLYWOOD PROTECTOR ASSEMBLY" DETAIL ON PAGE 7 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 2 ON PAGE 7.
- ④ SIDE RETAINER SPACER, 2" X 4" BY CUT TO FIT ( 8 REQD ). NAIL TO THE PLYWOOD PROTECTOR W/3-10d NAILS AND CLINCH. SEE THE "1-UNIT PLYWOOD PROTECTOR ASSEMBLY" DETAIL ON PAGE 7 FOR LOCATION GUIDANCE.
- ⑤ CRADLE ASSEMBLY ( 1 REQD ). SEE THE DETAIL ON PAGE 8.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-6" LONG STEEL STRAPPING ( 2 REQD ).
- ⑦ SEAL FOR 1-1/4" STRAPPING ( 2 REQD, ONE PER STRAP ). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ⑧ ANTI-CHAFING MATERIAL ( AS REQD ). POSITION UNDER STRAPPING TO PREVENT METAL TO METAL CONTACT WITH THE 1-TON CONTAINER.



PLYWOOD PROTECTOR. SEE THE "PLYWOOD PROTECTOR FABRICATION AND LAMINATION" DETAIL AND THE PROTECTOR FABRICATION NOTES ON PAGE 5.

### 1-UNIT PLYWOOD PROTECTOR ASSEMBLY

REFER TO THE KEY NUMBERS ON PAGE 6 FOR SIZE AND NAILING OF DUNNAGE PIECES.

#### SPECIAL NOTES:

1. THE 5-1/2" DIMENSION FOR THE LOCATION OF THE TIE/STOP PIECES, PIECE MARKED ②, ON THE 103" DIMENSION OF THE PLYWOOD PROTECTOR MUST BE FIELD CHECKED TO ENSURE THAT THE DISTANCE BETWEEN THE PIECES IS ADEQUATE TO ACCEPT THE PLACEMENT OF THE CRADLE ASSEMBLY.
2. THE 23-5/8" DIMENSION FOR THE LOCATION OF THE INBOARD SIDE RETAINER BOARD, PIECE MARKED ③, MUST BE FIELD CHECKED TO ENSURE THAT THE DISTANCE BETWEEN THE PIECES IS ADEQUATE TO ACCEPT THE PLACEMENT OF THE CRADLE ASSEMBLY. ADJUST THE LENGTH OF PIECES MARKED ④ AS NECESSARY.

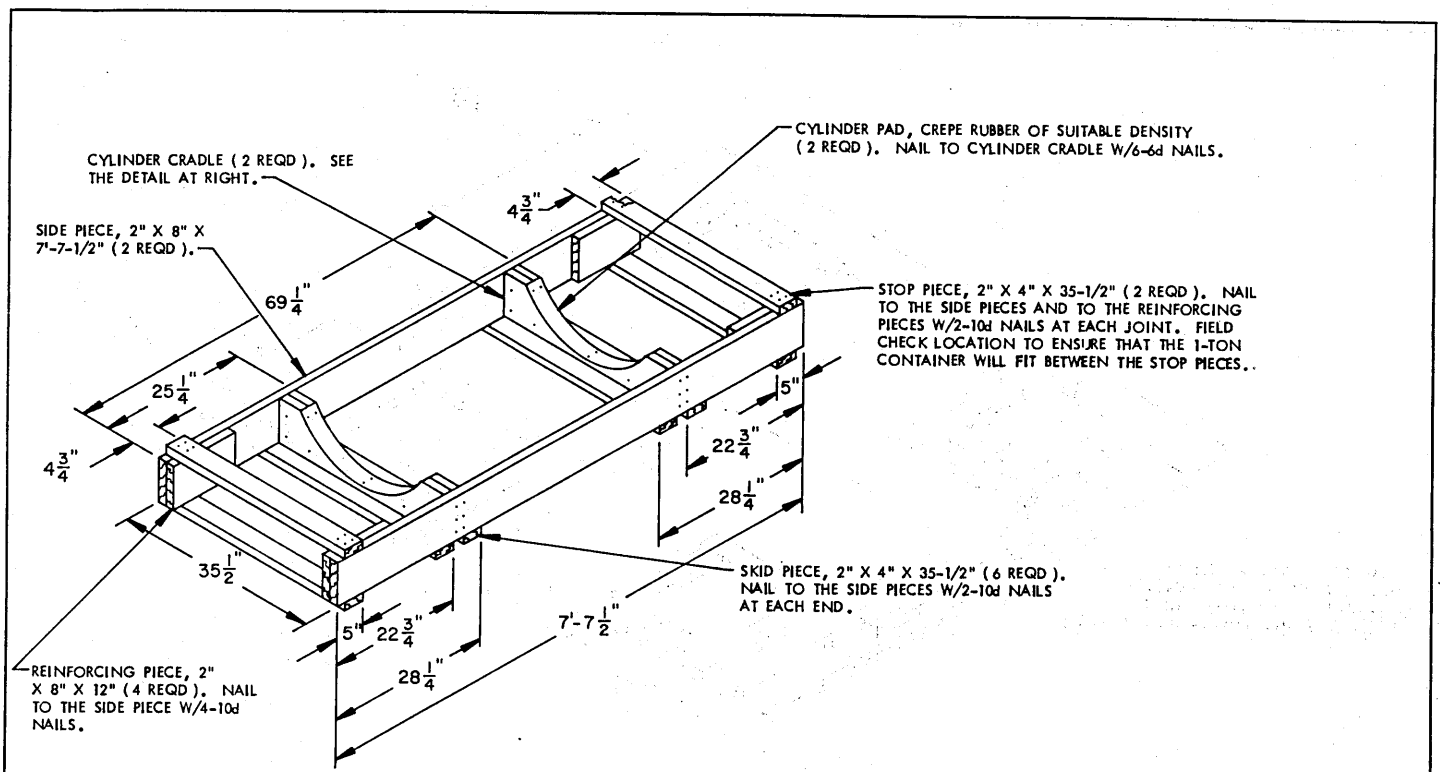
#### BILL OF MATERIAL \*

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	64	43
2" X 8"	31	42
NAILS	NO. REQD	POUNDS
6d (2")	12	NIL
10d (3")	128	2
16d (3-1/2")	36	1
PLYWOOD, 1/2" X 48" X 96" ----- 4 SHEETS--- 88 LBS		
STEEL STRAPPING, 1-1/4" X .035" OR .031" ---23' REQD- 3-1/2 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 2 REQD----- NIL		

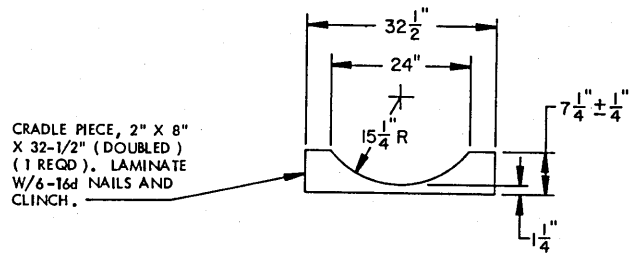
\* INCLUDES MATERIAL FOR THE CRADLE AND THE PLYWOOD PROTECTOR ASSEMBLY.

#### LOAD AS SHOWN

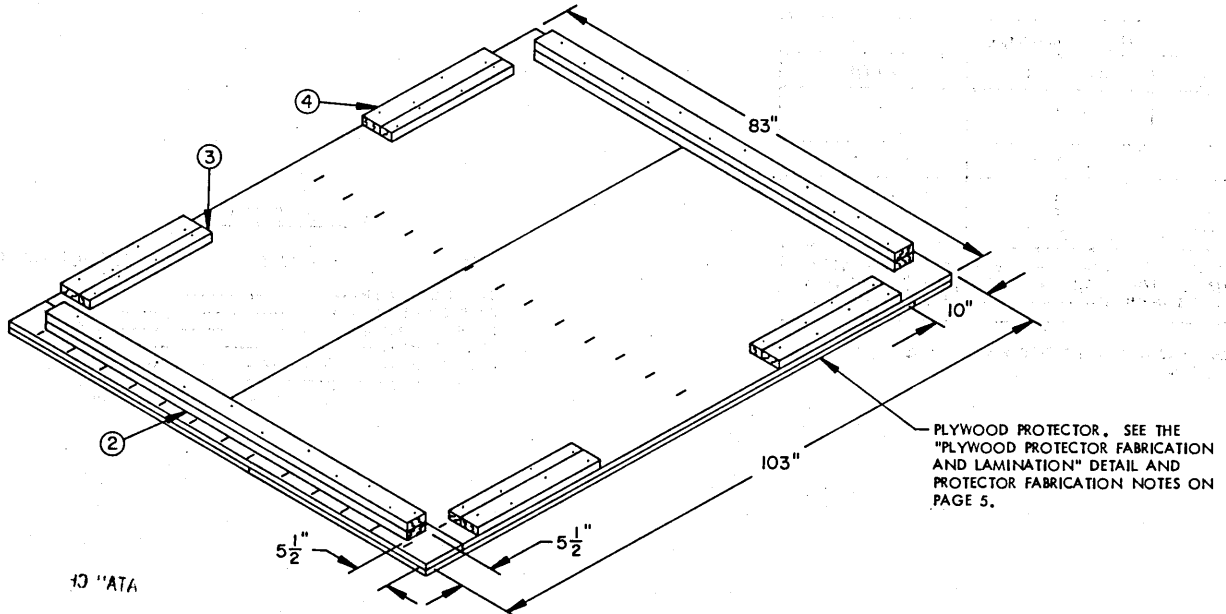
ITEM	QUANTITY	WEIGHT (APPROX)
1-TON CONTAINER	1	3,500 LBS
CRADLE ASSEMBLY	1	118 LBS
PROTECTOR ASSEMBLY	1	170 LBS
STEEL STRAPPING		4 LBS
463L PALLET		600 LBS
TOTAL WEIGHT		4,392 LBS



CRADLE ASSEMBLY



CYLINDER CRADLE  
2" X 8" MATERIAL



2-UNIT PLYWOOD PROTECTOR ASSEMBLY  
REFER TO THE KEY NUMBERS ON PAGE 4 FOR SIZE AND NAILING OF DUNNAGE PIECES.