APPROVED BY
BUREAU OF EXPLOSIVES

DATE 6/11/02

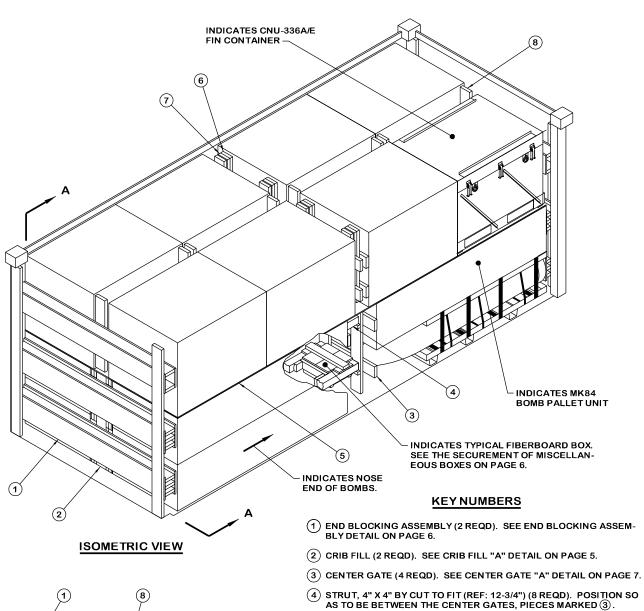
LOADING AND BRACING IN SIDE OPENING ISO CONTAINERS OF MK84 (2,000 POUND) HIGH DRAG BOMBS, COMPLETE ROUND

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■ LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

U.S. ARMY MATERIEL COMMAND DRAWING APPROVED, U.S. ARMY OPERATIONS SUPPORT COMMAND BASIC DO NOT SCALE ENGINEER REV. WEBSITE: HTTP://WWW.DAC.ARMY.MIL BASIC **PATRICK DOUGHERTY** TECHNICIAN REV. PATRICK DOUGHERTY **FEBRUARY 2001** BASIC DRAFTSMAN REV. **REVISION NO. 1 MARCH 2002** APPROVED BY ORDER OF COMMINDING GENERAL TRANSPORTATION ENGINEERING U.S. ARMY MATERIEL COMMAND Ausa(!, Aus SEE THE REVISION LISTING ON PAGE 3 NOISIVIO CLASS DIVISION DRAWING FILE VALIDATION ENGINEERING DIVISION 19 48 8715 **SP15M9 ENGINEERING** William & French DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER



- 4 STRUT, 4" X 4" BY CUT TO FIT (REF: 12-3/4") (8 REQD). POSITION SO AS TO BE BETWEEN THE CENTER GATES, PIECES MARKED 3 . TOENAIL TO THE CENTER GATES W/2-12d NAILS AT EACH END.
- (5) DECKING, PLYWOOD, 1/2" THICK BY 48" WIDE BY 7'-4" LONG (4 REQD) AND 1/2" THICK BY 22" WIDE BY 7'-4" LONG (1 REQD). POSITION ON TOP OF THE BOMB PALLET UNITS. NOTE THAT HOLES MAY BE DRILLED OR CUT TO ALLOW FOR THE PALLET STACKING
- (6) CENTER GATE (4 REQD). SEE CENTER GATE "B" DETAIL ON PAGE 7. POSITION BETWEEN THE CNU-336A/E CONTAINERS IN THE THIRD LAYER.
- (7) SOLID FILL, 6" WIDE MATERIAL BY 36" LONG BY THICKNESS AS REQUIRED SO AS TO PROVIDE FOR A TIGHT LOAD. SEE GENERAL NOTE "E" ON PAGE 2.
- (8) CRIB FILL (4 REQD). SEE THE CRIB FILL "B" DETAIL ON PAGE 5. PO-SITION BETWEEN THE CNU-336A/E CONTAINERS ON THE THIRD LAYER.

SECTION A-A

(GENERAL NOTES CONTINUED)

- 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 0.454 KG.
- K. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 - A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
 - THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- L. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- M. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.
- N. ANTI-CHAFING MATERIAL, CONSISTING OF NEUTRAL BARRIER MATERIAL, PLYWOOD, OR HARDBOARD, MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN THE LADING AND THE SIDE OPENING CONTAINER TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.

REVISION

REVISION NO. 1, DATED MARCH 2002, CONSISTS OF:

- 1. ADDING LOADING PROCEDURES FOR 12 COMPLETE ROUNDS.
- 2. ADDING PAGES 9 THROUGH 12.

LOAD AS SHOWN

<u>ITEM</u>	QUANTITY	WEIGHT (APPROX)
BOMB PALLET UNIT - CNU-336A/E CONTAINER	8	32,992 LBS
WITH BSU-50B FINS -		
G008 BOX		
FW26 BOX	2	52 LBS
G119 CAN		
DUNNAGE		1,227 LBS
CONTAINER		6,050 LBS
		44 002 + 26 (4222

TOTAL WEIGHT - - - - - - 44,982 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 4" 2" x 2" 2" x 4" 2" x 6" 4" x 4"	70 17 207 314 9	24 6 138 314 12
NAILS	NO. REQD	POUNDS
6d (2") 10d (3") 12d (3-1/4")	488 324 32	3 5 3/4
PLYWOOD, 1/2" 130.77 SQ FT REQD 119.87 LBS PLYWOOD, 3/4" 79.44 SQ FT REQD 109.23 LBS		

GENERAL NOTES

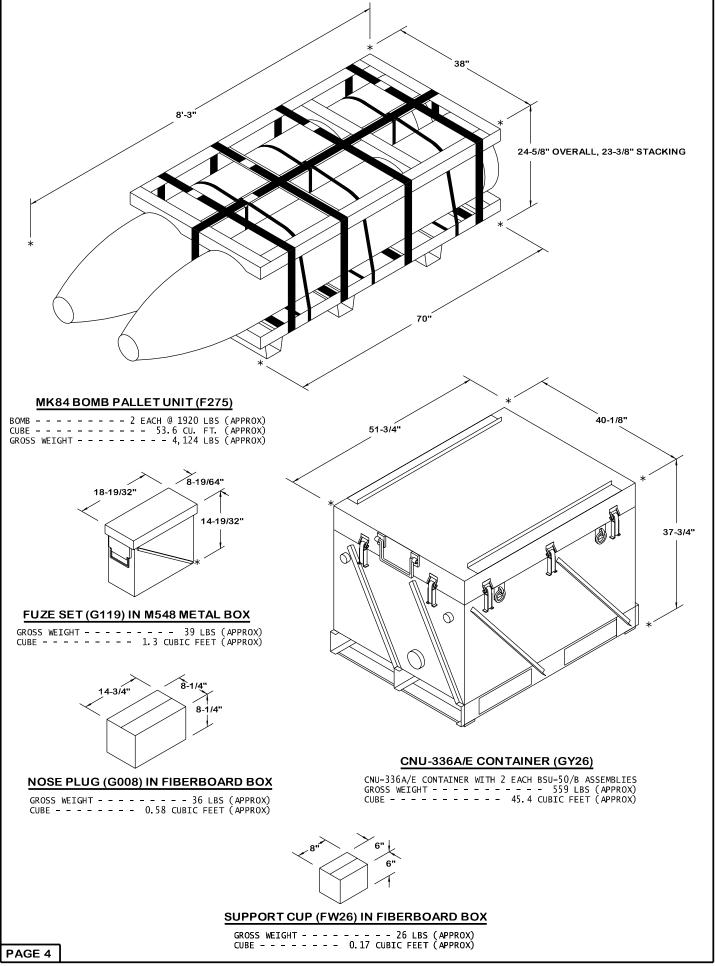
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO LOADS OF MK84 HIGH DRAG 2,000 LB BOMBS AND ASSOCIATED COMPONENTS IN A SIDE OPENING CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MK84 BOMBS AND COMPONENTS. SEE PAGE 4 FOR DETAILS OF THE COMPONENTS. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEPTED.
- C. THE LOAD AS SHOWN IS BASED ON 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH AND A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY MOTOR OR WATER CARRIERS. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED.
- D. WHEN LOADING THE UNITS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE SIDE FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE TO THE VERTICAL PIECE W1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUNNAGE LUMBER USED MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE CONTAINER.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAM-PLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, 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.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLIES TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER ENDWALLS, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR LONGITUDINAL BLOCKING.
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEW FOR CLARITY PURPOSES.

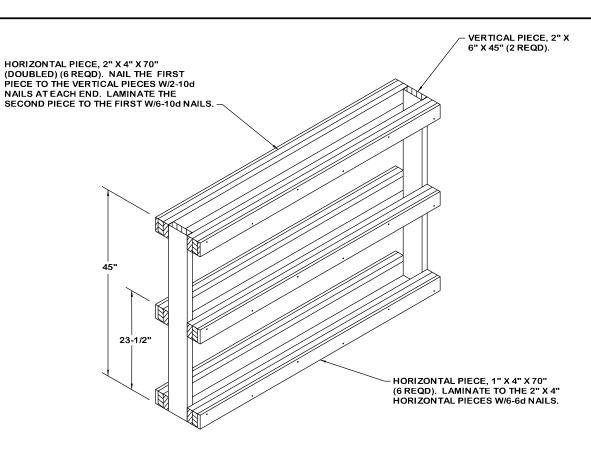
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MATERIAL SPECIFICATIONS

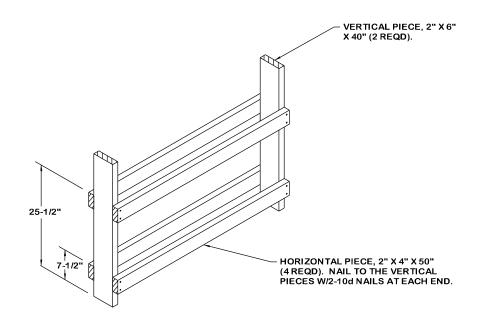
<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
<u>NAILS</u> :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
<u>PLYWOOD</u> :	COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
ANTI-CHAFING MATERIAL:	MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

HARDBOARD - - - - -: ANSI/AHA A135.4, CLASS 1.

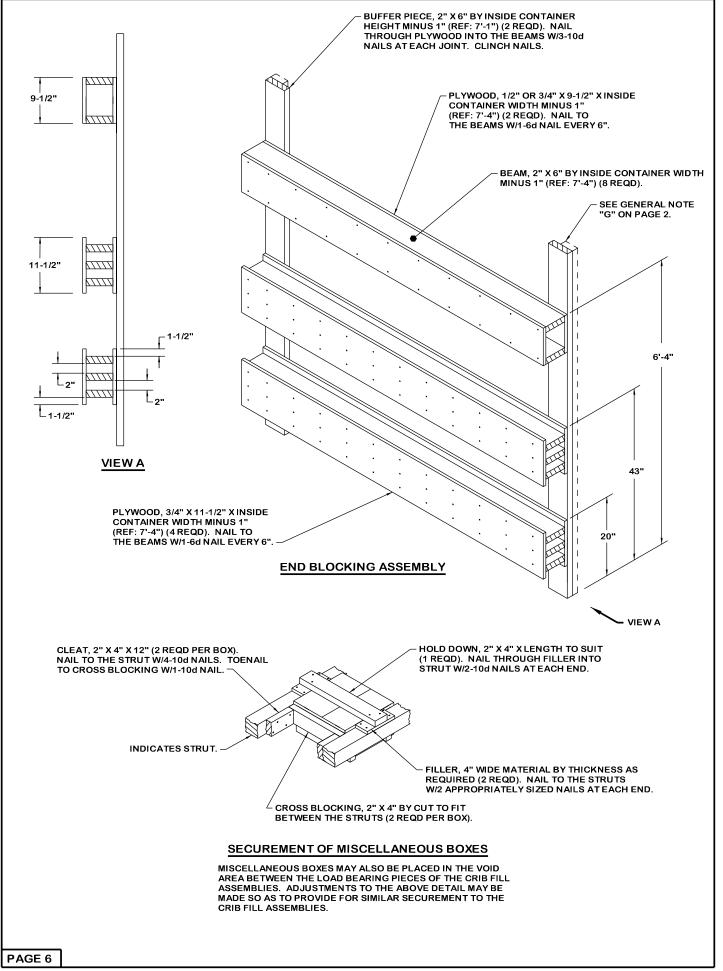


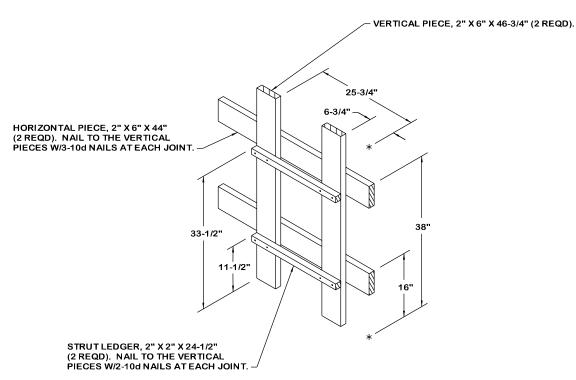


CRIB FILL A



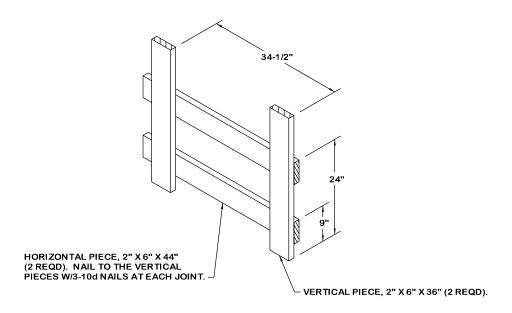
CRIB FILL B





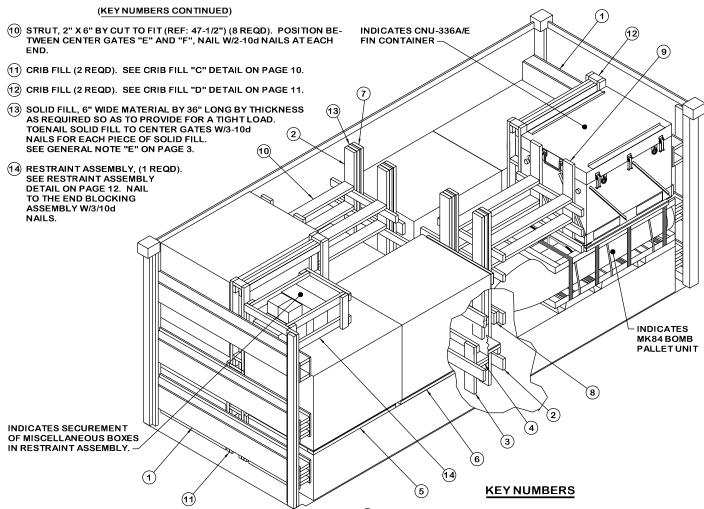
CENTER GATE A

A RIGHT HAND GATE IS SHOWN. THE LOAD AS SHOWN ON PAGE 2 REQUIRES TWO RIGHT HAND AND TWO LEFT HAND GATES. <u>NOTE</u>: THE VERTICAL PIECES MUST BE IN ALIGNMENT WITH THE NOSE END OF THE BOMBS.



CENTER GATE B

A RIGHT HAND GATE IS SHOWN. THE LOAD AS SHOWN ON PAGE 2 REQUIRES TWO RIGHT HAND AND TWO LEFT HAND GATES.



ISOMETRIC VIEW

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
BOMB PALLET UNIT - CNU-336A/E CONTAINER		24, 744 LBS
WITH BSU-50B FINS -		3,354 LBS
G008 BOX		
Fw26 BOX		
G119 CAN		
		1,518 LBS
CONTAINER		6,050 LBS

TOTAL WEIGHT - - - - - - 35,868 LBS (APPROX)

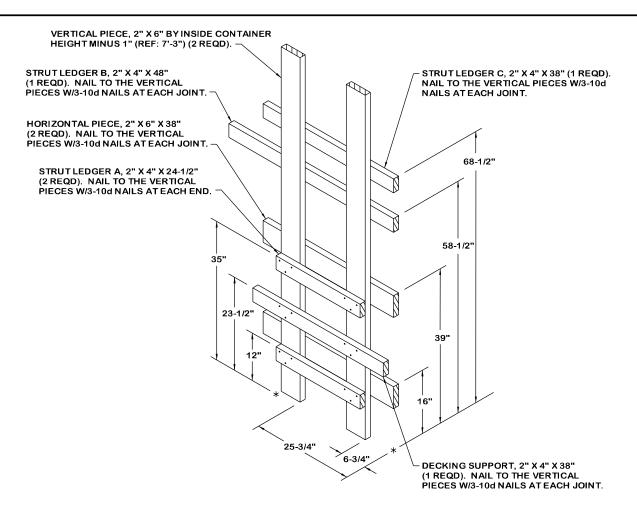
BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" x 4" 2" x 6"	445 317	297 317	
NAILS	NO. REQD	POUNDS	
6d (2") 10d (3")	540 694	3-1/4 10-1/2	
PLYWOOD, 1/2" - PLYWOOD, 3/4" -		EQD 111.78 LBS EQD 163.87 LBS	

- 1 END BLOCKING ASSEMBLY (2 REQD). SEE END BLOCKING ASSEMBLY DETAIL ON PAGE 6.
- (2) CENTER GATE (2 REQD). SEE CENTER GATE "C" DETAIL ON PAGE 9.
- (3) CENTER GATE (2 REQD). SEE CENTER GATE "D" DETAIL ON PAGE 9.
- (4) STRUT, 2" X 6" BY CUT TO FIT (REF: 10") (4 REQD) (DOUBLED). POSITION BETWEEN CENTER GATES "C" AND "D", NAIL THE FIRST PIECE TO THE STRUT LEDGER BOARDS W/2-10d NAILS AT EACH END. LAMINATE THE SECOND BOARD TO THE FIRST W/3-10d NAILS.
- (5) DECKING ASSEMBLY (4 REQD). SEE DECKING ASSEMBLY "A" DETAIL ON PAGE 11. PLACE THE DECKING ASSEMBLY "A" ON TOP OF THE ONE HIGH AND TWO HIGH BOMB PALLET UNITS TOWARDS THE END WALL. NOTE: DRILL HOLES THROUGH THE DECKING ASSEMBLY AS REQUIRED FOR ALIGNMENT PINS ON TOP OF THE MK79 BOMB PALLET UNITS.
- (6) DECKING ASSEMBLY (2 REQD). SEE DECKING ASSEMBLY "B" DETAIL ON PAGE 11. PLACE THE DECKING ASSEMBLY "B" ON TOP OF THE ONE HIGH BOMB PALLET UNITS WITH ONE END ON TOP OF CENTER GATE "D" DECKING SUPPORT PIECE. NAIL THROUGH THE PLYWOOD AND STRINGERS INTO THE DECKING SUPPORT PIECE WI3-12d NAILS. NOTE: DRILL HOLES THROUGH THE DECKING ASSEMBLY AS REQUIRED FOR ALIGNMENT PINS ON TOP OF THE MK79 BOMB PALLET UNITS.
- (7) CENTER GATE (2 REQD). SEE CENTER GATE "E" DETAIL ON PAGE 10. POSITION THE GATE ON TOP OF THE ONE HIGH BOMB PALLET UNIT AGAINST THE CNU-336A/E CONTAINER.
- 8 SOLID FILL, 6" WIDE MATERIAL BY 36" LONG BY THICKNESS AS REQUIRED SO AS TO PROVIDE FOR A TIGHT LOAD. POSITION SOLID FILL BETWEEN THE CENTER GATES "C" AND "E" IN ALIGNMENT WITH THE NOSE END OF THE BOMBS ON THE TWO HIGH LAYER. TOENAIL SOLID FILL TO CENTER GATES W/3-10d NAILS FOR EACH PIECE OF SOLID FILL. SEE GENERAL NOTE "E" ON PAGE 3.
- (9) CENTER GATE (2 REQD). SEE CENTER GATE "F" DETAIL ON PAGE 10. POSITION THE GATE ON TOP OF THE TWO HIGH BOMB PALLET UNITS AGAINST THE CNU-336A/E CONTAINERS.

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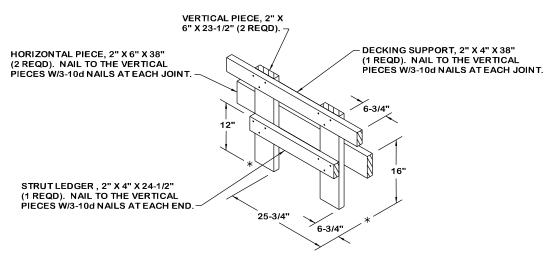
12 COMPLETE ROUND LOAD

PAGE 8



CENTER GATE C

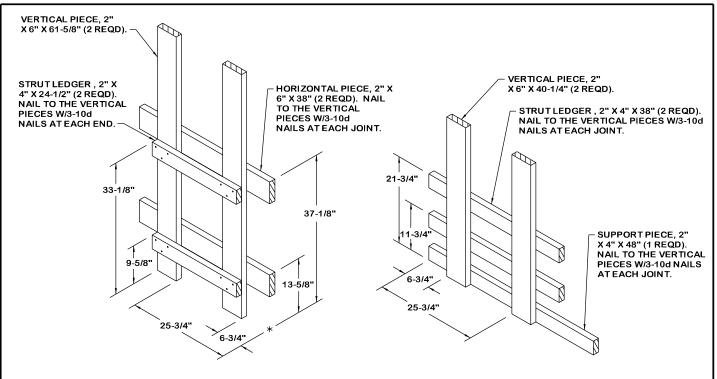
 $\underline{\text{NOTE}}\textsc{:}$ THE VERTICAL PIECES MUST BE IN ALIGNMENT WITH THE NOSE END OF THE BOMBS.



CENTER GATE D

 $\underline{\text{NOTE}};$ THE VERTICAL PIECES MUST BE IN ALIGNMENT WITH THE NOSE END OF THE BOMBS.

PAGE 9

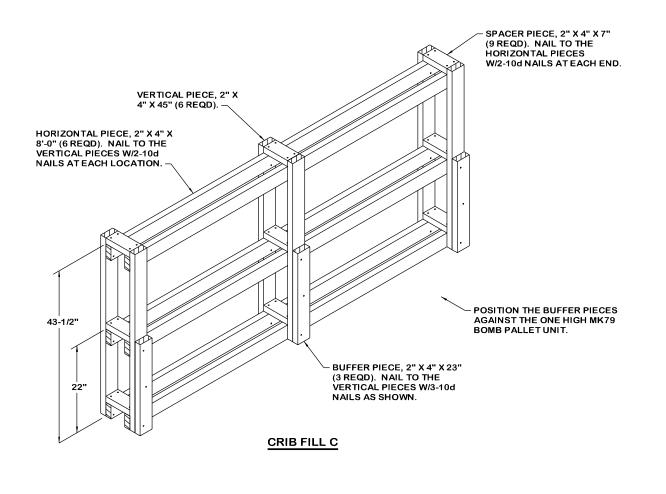


CENTER GATE E

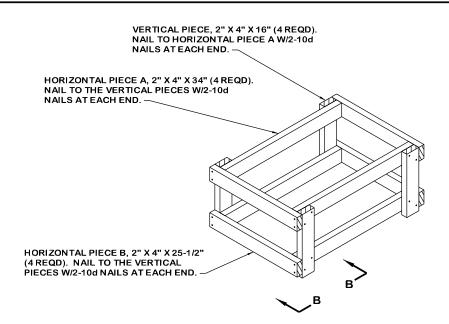
NOTE: THE VERTICAL PIECES MUST BE IN ALIGNMENT WITH THE NOSE END OF THE BOMBS.

CENTER GATE F

NOTE: THE VERTICAL PIECES MUST BE POSITIONED AGAINST THE CNU-336A/E CONTAINERS.



PAGE 10



RESTRAINT ASSEMBLY

