

APPROVED BY
BUREAU OF EXPLOSIVES

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DATE 1-4-95

LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF MK-82 (500 POUND) BOMBS, COMPLETE ROUND

- 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			
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DECEMBER 1994			
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	CLASS	DIVISION	DRAWING
	19	48	7106
			FILE
			SP15M2

DO NOT SCALE

PROJECT SP 154-88

GENERAL NOTES

(GENERAL NOTES CONTINUED)

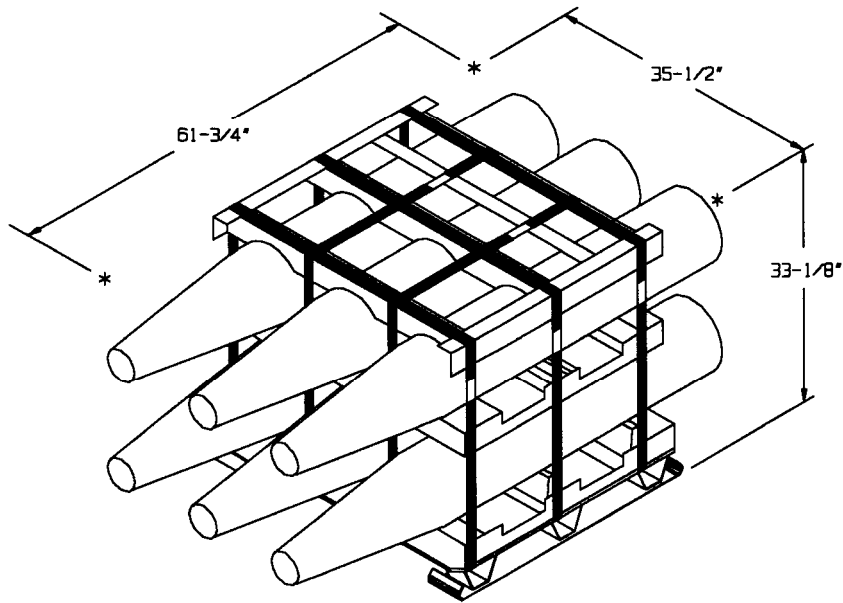
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF MK-82 (500 POUND) BOMBS, COMPLETE ROUND. SEE PAGE 3 FOR DETAILS OF THE ITEMS TO BE SHIPPED. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT. HOWEVER, THE LOAD AS DEPICTED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF 1-1/2" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS PERMITTED, LATERAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE HORIZONTAL PIECES ON THE CRIB FILL ASSEMBLY. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR QUANTITY OF THE VERTICAL AND HORIZONTAL PIECES IN THE CENTER GATE ASSEMBLY MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" 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". THIS PIECE IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT.
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

- K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
 2. 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. 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 25.4 MM AND ONE POUND EQUALS 0.454 KG.
- N. NOTICE: ALL LOADS SHIPPED IN ACCORDANCE WITH THE PROCEDURES DELINEATED HEREIN MUST CONFORM TO THE REQUIREMENTS SET FORTH WITHIN TITLE 49 CODE OF FEDERAL REGULATIONS FOR THE SHIPMENT OF HAZARDOUS MATERIALS. SHOULD THE LOAD TO BE SHIPPED CONSIST OF INCOMPATIBLE ITEMS, AND EXEMPTION OR WAIVER MUST BE OBTAINED FROM THE APPROPRIATE REGULATORY AGENCY OR AGENCIES.

(CONTINUED AT RIGHT)

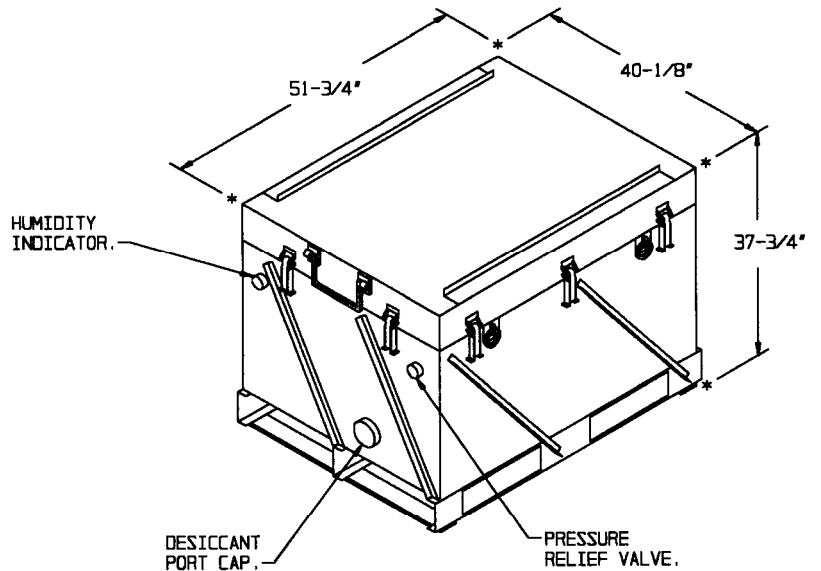
MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, TYPE A, CONSTRUCTION AND 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.



PALLET UNIT

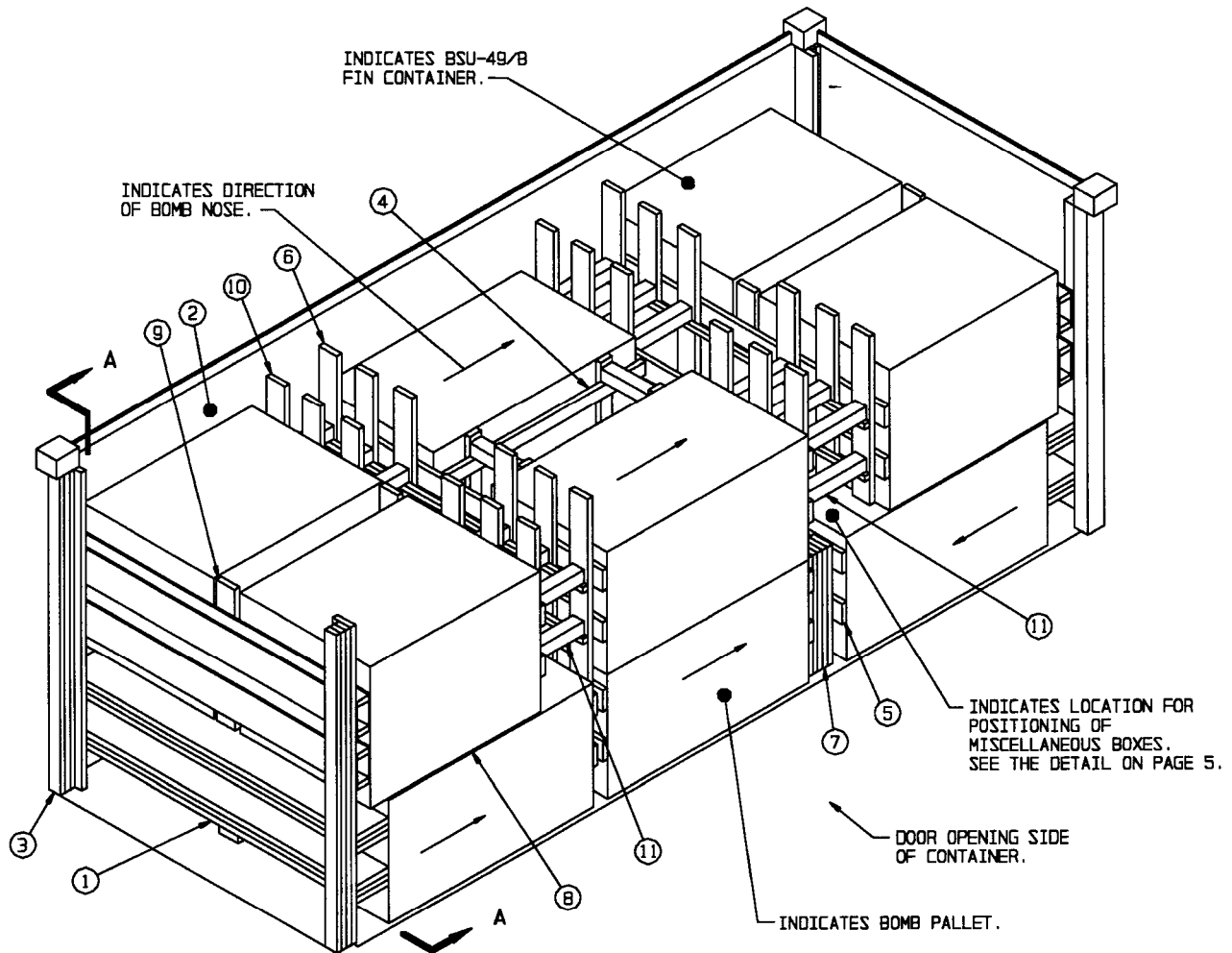
GROSS WEIGHT - - 3,035 LBS (APPROX)



ISOMETRIC VIEW

BSU-48/B FINS
(CNU-335A/E CNTR) - - 1,038 LBS (APPROX)

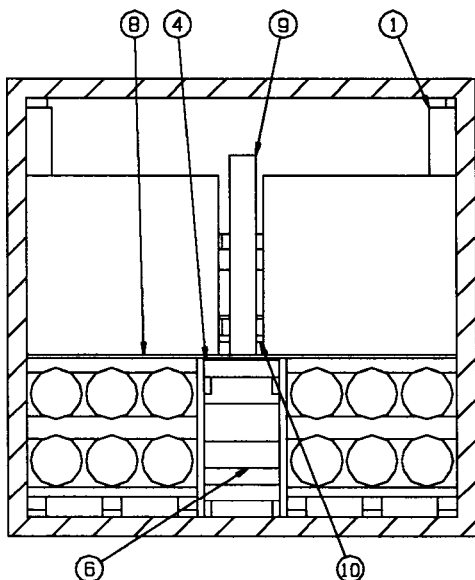
TYPICAL ITEMS AS DEPICTED WITHIN THIS DRAWING		
DODIC	NOMENCLATURE	QUANTITY
G119	FMU139 A/B FUZE	72
E485	MKB2 BOMB, 500 LB	36
GY25	BSU 48/B FIN	36
BY52	BASE PLUG	36
M187	CTG, ARD 446-1	36
M189	CTG, ARD 863-1	36



ISOMETRIC VIEW

KEY NUMBERS

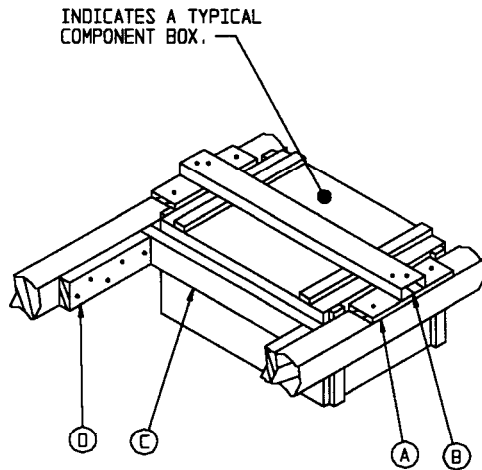
- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE "END BLOCKING ASSEMBLY" DETAIL ON PAGE 6, AND GENERAL NOTE "G" ON PAGE 2.
- ② SIDEWALL LINER, PLYWOOD, 3/8" THICK (AS REQD). POSITION SO AS TO BE BETWEEN THE LADING AND THE CONTAINER SIDEWALL AND THE CONTAINER DOORS.
- ③ FILL MATERIAL (AS REQD TO PROVIDE FOR A "SQUARE END"). SEE SPECIAL NOTE "2" ON PAGE 5.
- ④ CRIB FILL (4 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 7. POSITION BETWEEN THE PALLET UNITS OF BOMBS.
- ⑤ CENTER GATE (1 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 8.
- ⑥ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 8.
- ⑦ SOLID FILL, 6" WIDE MATERIAL BY 30' LONG BY THICKNESS AS REQUIRED SO AS TO PROVIDE FOR A TIGHT LOAD. SEE GENERAL NOTE "D" ON PAGE 2.
- ⑧ DECKING, 1/2" PLYWOOD, 48" BY INSIDE CONTAINER WIDTH MINUS 1" (2 REQD).
- ⑨ CRIB FILL (2 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 7.
- ⑩ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 9.
- ⑪ STRUT, 4" X 4" BY CUT TO FIT (REF: 18") (24 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑥ AND ⑩ W/2-16d NAILS AT EACH END.



SECTION A-A

SPECIAL NOTES:

1. THE LOAD AS SHOWN ON PAGE 4 DEPICTS EIGHT PALLET UNITS OF MK-82 500 POUND BOMB COMPLETE ROUND, INCLUDING FOUR CONTAINERS OF BSU 49/B FINS AND OR OTHER REQUIRED COMPONENTS.
2. CONSTRUCTION STYLES OF SOME SIDE OPENING CONTAINERS MAY REQUIRE THE USE OF ADDITIONAL FILL MATERIAL ON ONE SIDE OF THE END BLOCKING ASSEMBLY. THIS FILL MATERIAL MAY BE THINNER THAN THAT MATERIAL USED IN CONSTRUCTION OF THE ASSEMBLY AND SHALL BE PLACED SO AS TO FIT AGAINST THE CORNER POST OF THE CONTAINER END WALL. NOTE THAT FILL MATERIAL IS NOT TO CONTACT THE ENDWALL CORRUGATED METAL, ONLY THE FLAT SURFACES OF THE CORNER POSTS OF THE CONTAINER.
3. MISCELLANEOUS BOXES OF COMPONENTS MAY BE SHIPPED BY POSITIONING THEM BETWEEN THE STRUTS IN THE LOAD AS SHOWN ON PAGE 4. WHEN INSTALLING THE DUNNAGE THAT APPLIES THE MISCELLANEOUS BOXES, ADJUSTMENTS TO THE QUANTITY AND SIZE OF MATERIAL WILL BE MADE AS APPROPRIATE TO INSURE SECUREMENT OF THE BOXES AS DEPICTED AT LEFT.



SECUREMENT OF MISCELLANEOUS BOXES

SEE SPECIAL NOTE 3 ON THIS PAGE.

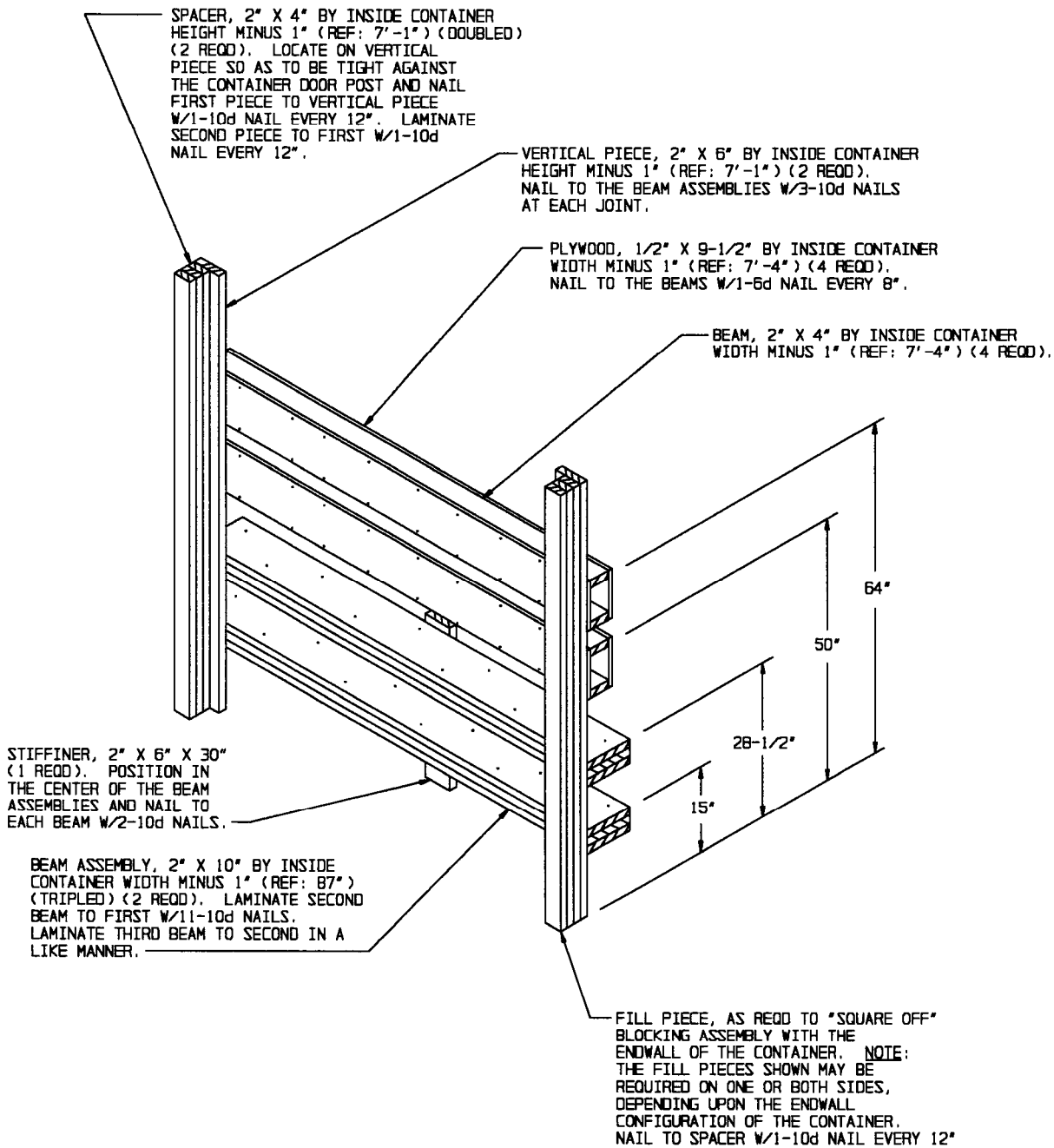
KEY LETTERS

- (A) FILLER, 1" X 4" X 12" (AS REQD). POSITION ON TOP OF AND NAIL TO THE STRUT W/2-6d NAILS. SEE SPECIAL NOTE 3 ABOVE.
- (B) HOLD DOWN, 2" X 4" BY LENGTH TO SUIT (AS REQD, 1 PER BOX). CENTER ON BOX AND NAIL THROUGH PIECE MARKED (A) INTO STRUT W/2-10d NAILS AT EACH END.
- (C) CROSS BRACING, 2" X 4" BY CUT TO FIT BETWEEN STRUTS (1 REQD PER BOX).
- (D) CLEAT, 2" X 4" X 12" (2 REQD PER BOX). POSITION AS SHOWN AND NAIL TO THE STRUT W/4-10d NAILS. TOENAIL TO CROSS BRACING W/1-12d NAIL.

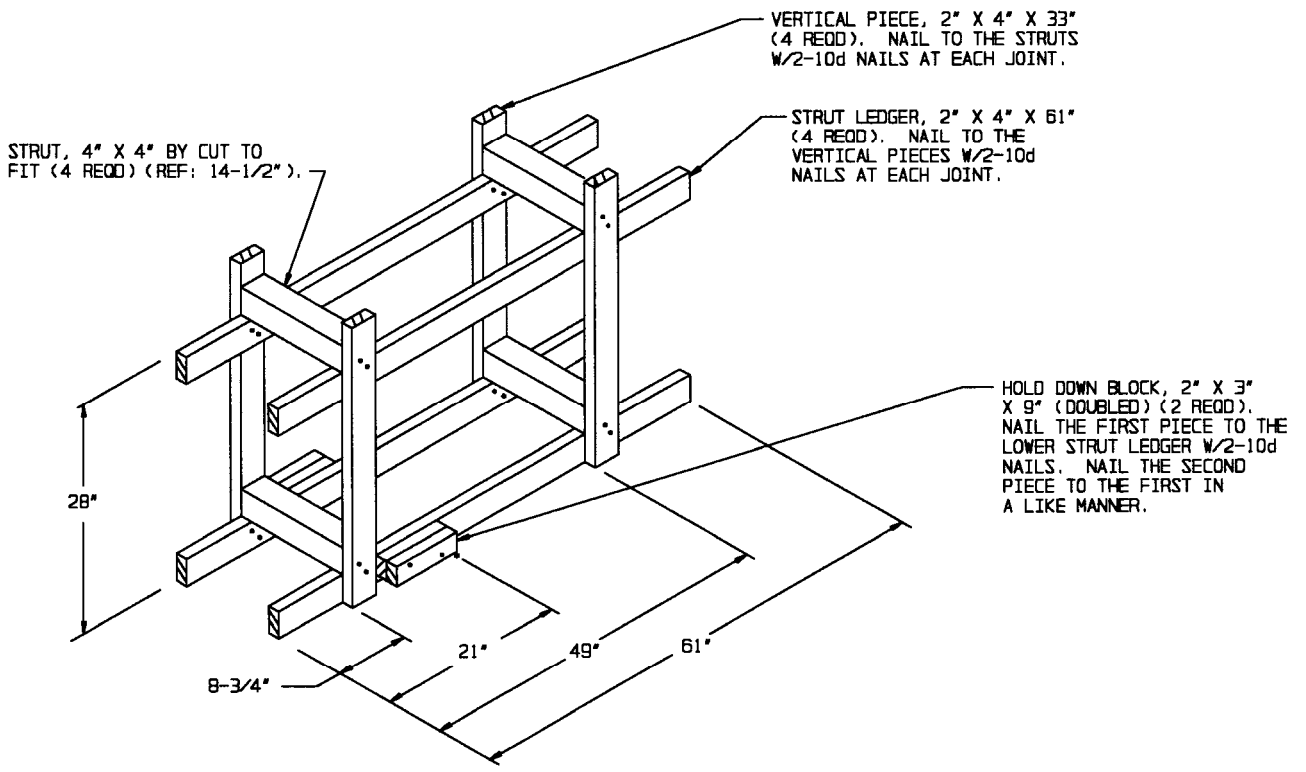
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	32	11
2" X 2"	55	18
2" X 3"	12	6
2" X 4"	333	222
2" X 6"	481	481
2" X 10"	88	147
4" X 4"	55	73
NAILS	NO. REQD	POUNDS
6d (2")	576	3-1/2
10d (3")	1042	16
16d (3-1/2")	96	2
PLYWOOD, 1/2"	106 SQ FT REQD	146 LBS
PLYWOOD, 3/8"	320 SQ FT REQD	330 LBS

LOAD AS SHOWN

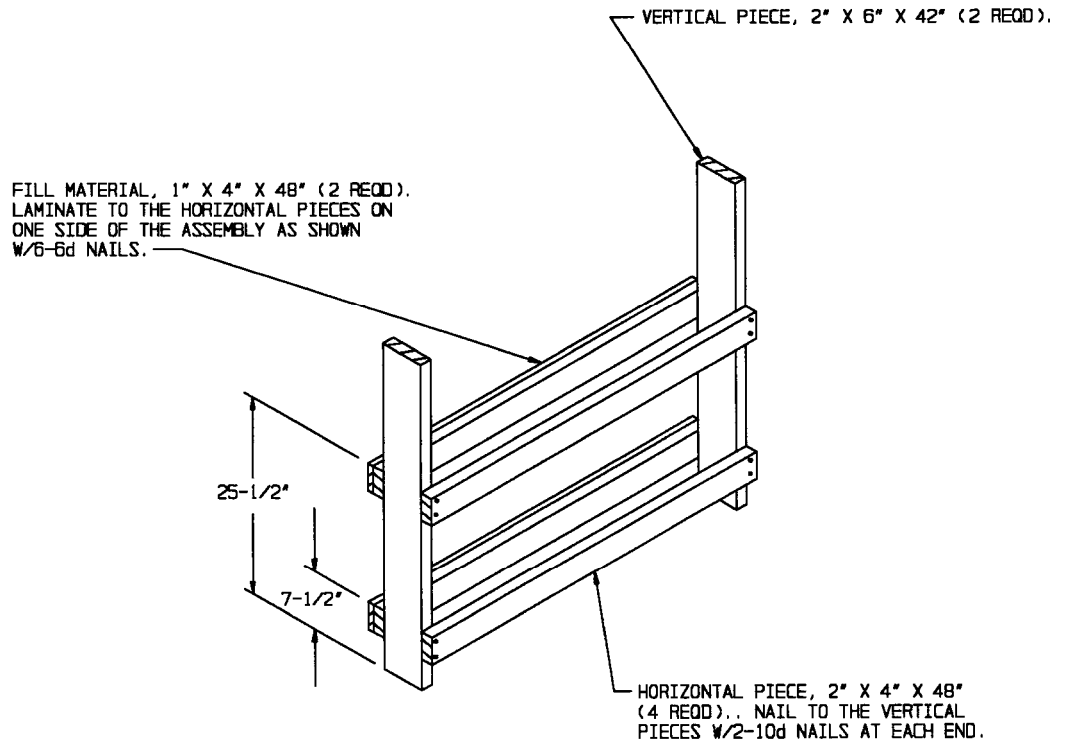
ITEM	QUANTITY	WEIGHT (APPROX)
BOMB PALLET UNIT	8	24,280 LBS
BSU 49/B FIN	4	4,152 LBS
MISCELLANEOUS BOXES		100 LBS
DUNNAGE		2,414 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		36,996 LBS (APPROX)



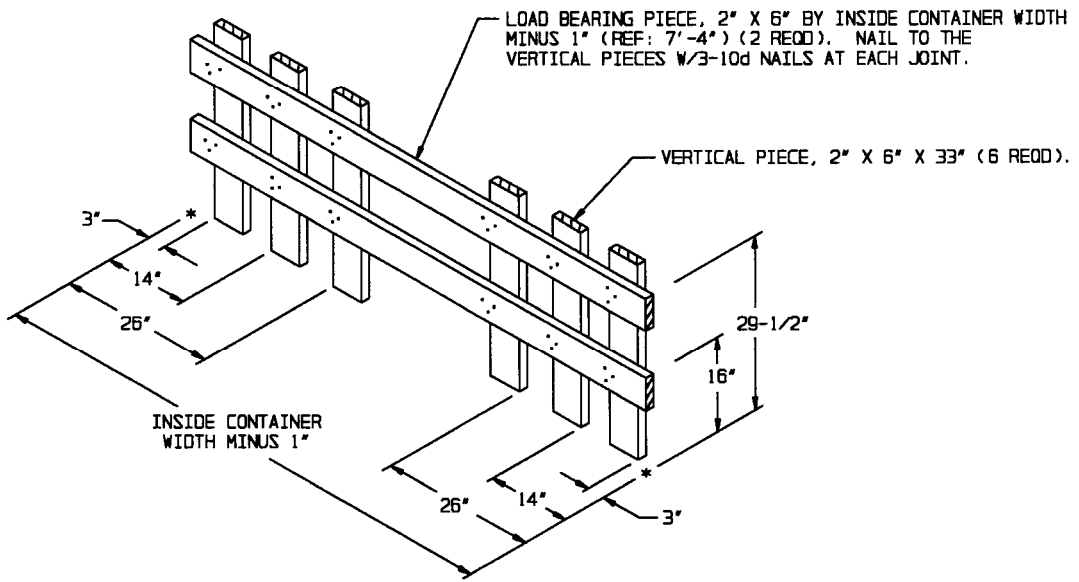
END BLOCKING ASSEMBLY



CRIB FILL A

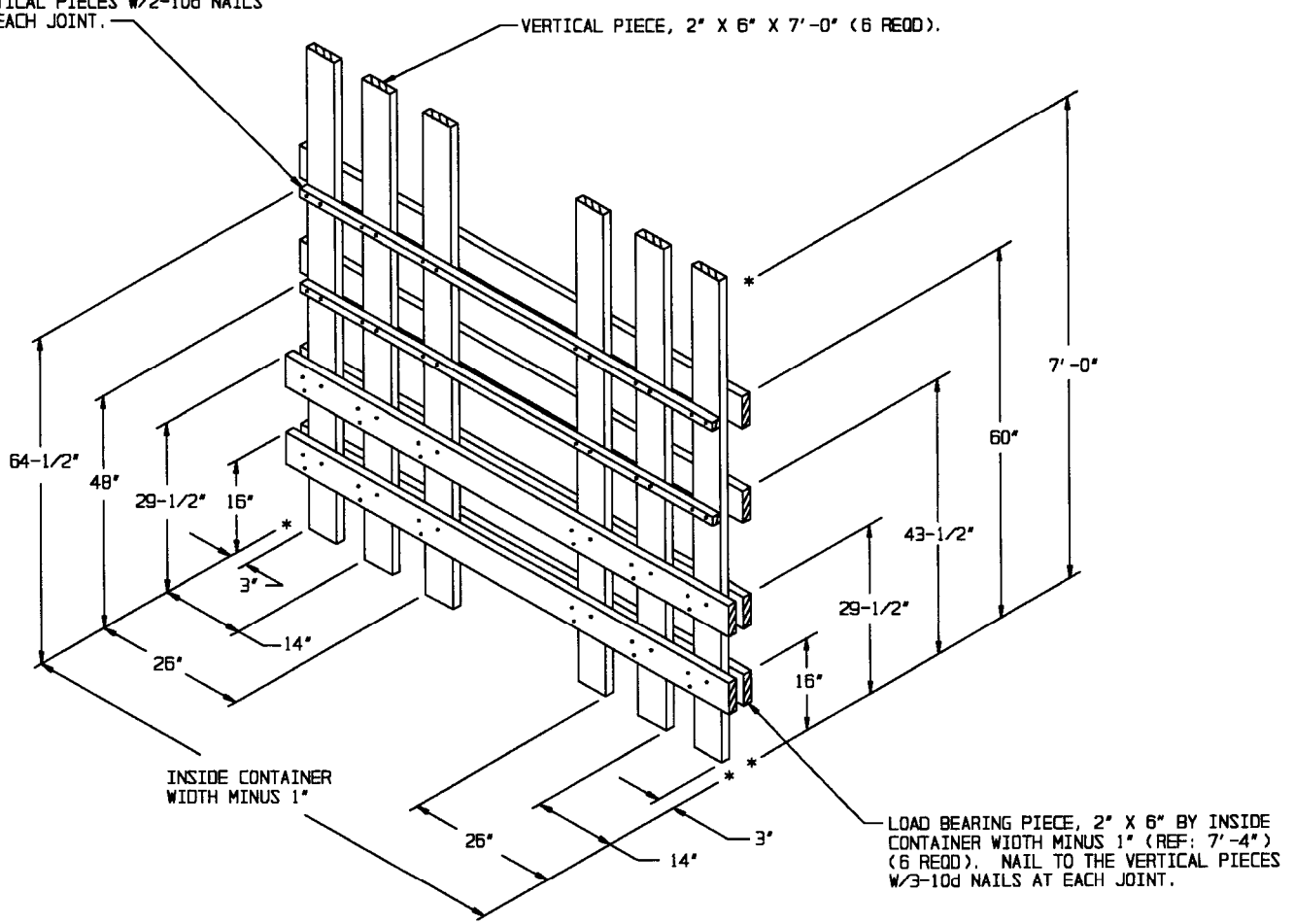


CRIB FILL B



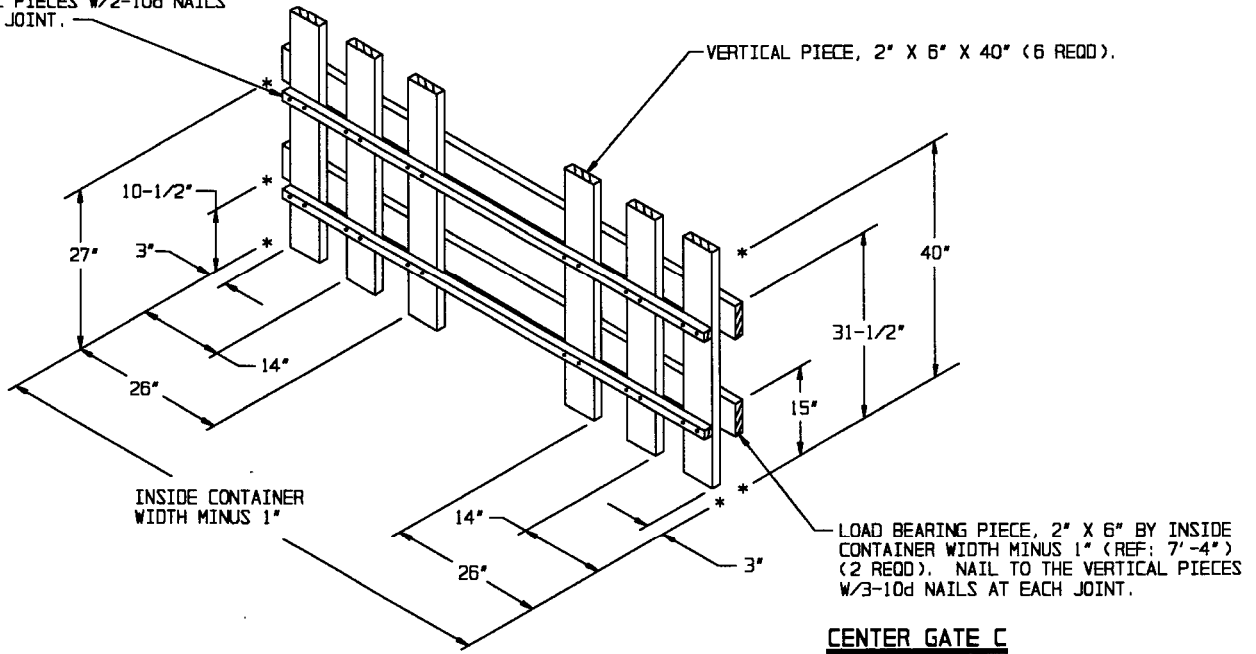
CENTER GATE A

STRUT LEDGER, 2" X 2" BY LENGTH TO SUIT (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



CENTER GATE B

STRUT LEDGER, 2" X 2" BY LENGTH TO SUIT (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



CENTER GATE C

