APPROVED BY
HAZARDOUS MATERIALS SYSTEMS
(BOE) ASSOCIATION OF AMERICAN
RAILROADS
J. H. Beakman
DATE 2/20/90

LOADING AND BRACING◑ WITH WOODEN DUNNAGE IN SIDE/END OPENING COMMERCIAL CONTAINERS OF PALLETIZED UNITS OF 20MM CARTRIDGE PACKED IN M548 METAL BOX

INDEX

◑ LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS. SEE GENERAL NOTE "J" ON PAGE 3.

DO NOT SCALE

REVISIONS			
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DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
GW	TM	LJW	RSH	

SMCAC - DEV	SMCAC - DED	SMCAC - DE
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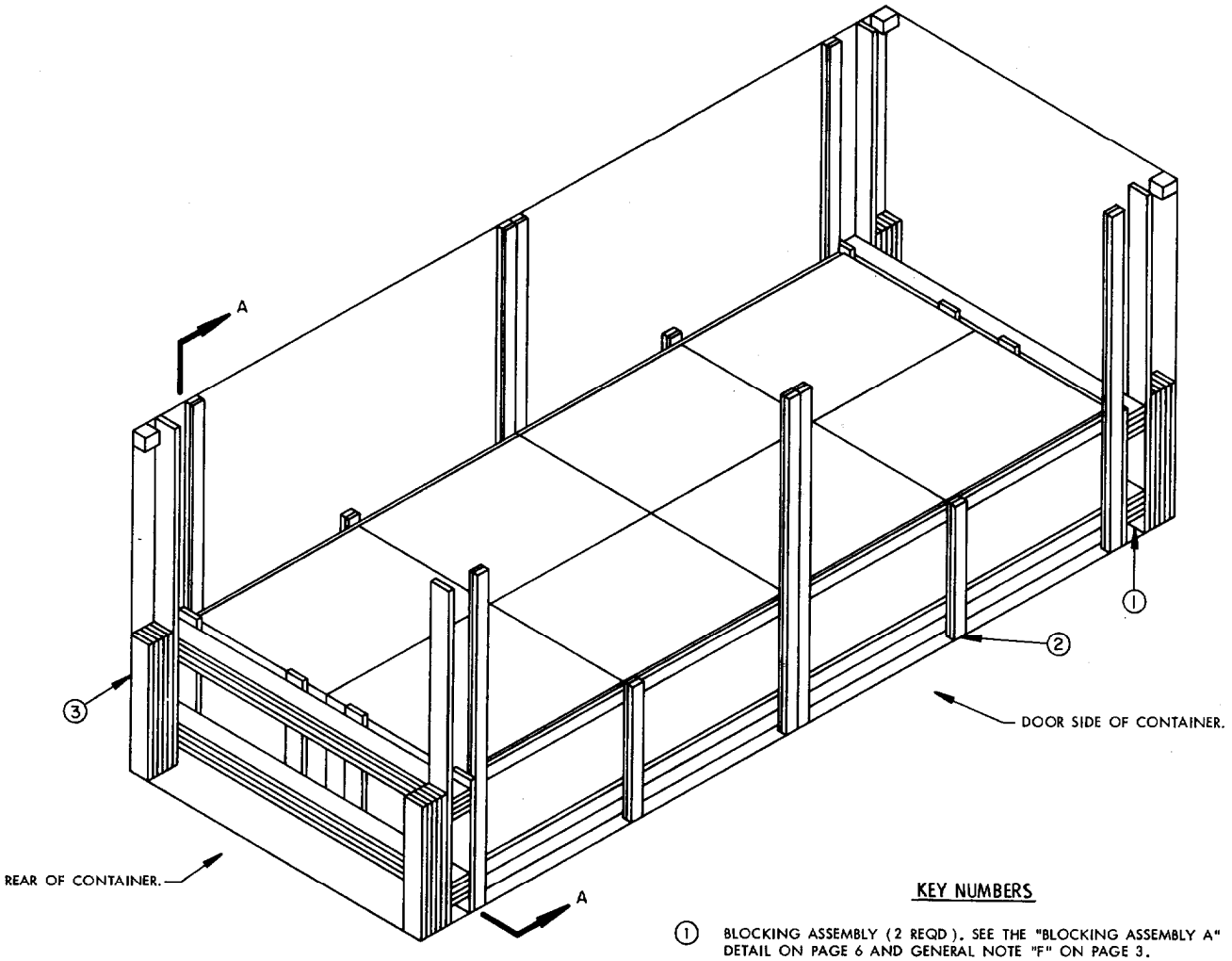
U.S. ARMY MATERIEL COMMAND
AUGUST 1990

CLASS	DIVISION	DRAWING	FILE
19	48	7111	SP 15PM1

PROJECT SP 159-88



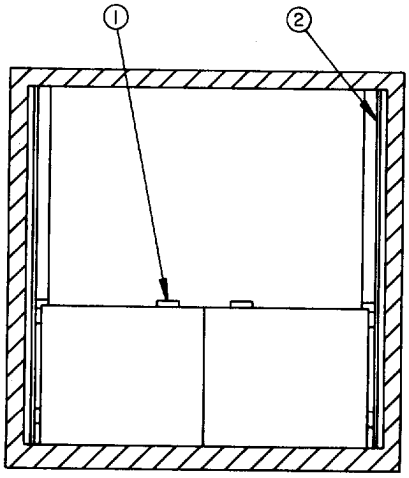
ISOMETRIC VIEW

KEY NUMBERS

(1) BLOCKING ASSEMBLY (2 REQD). SEE THE "BLOCKING ASSEMBLY A" DETAIL ON PAGE 6 AND GENERAL NOTE "F" ON PAGE 3.

(2) SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 7 AND GENERAL NOTE "D" ON PAGE 3.

(3) FILL MATERIAL, 6" WIDE BY 36" LONG MATERIAL (AS REQD). NAIL EACH PIECE TO THE BLOCKING ASSEMBLY AND/OR LAMINATE TOGETHER W/4 NAILS OF SUITABLE SIZE (10d NAILS FOR 2" MATERIAL 6d NAILS FOR 1" THICK MATERIAL).



SECTION A-A

(GENERAL NOTES CONTINUED)

N. NOTICE: LONGITUDINAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. NO MORE THAN ONE INCH (1") OF UNBLOCKED SPACE IS PERMITTED THROUGHOUT THE LENGTH OF THE LOAD. EXCESS SPACE CAN BE ELIMINATED BY ADDING ADDITIONAL FILL MATERIAL AT EITHER END OF THE LOAD OR BY INSERTING A PIECE OR PIECES OF PLYWOOD OR HARDBOARD (LOAD-WIDTH BY LOAD-HEIGHT) BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS.

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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO THE 20MM CARTRIDGE PACKED IN M548 METAL BOX. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE UNIT WITH AMMUNITION ITEMS . SEE PAGE 8 FOR DETAIL OF THE PALLET UNIT. CAUTION: REGARDLESS OF THE QUANTITY OF PALLET UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE CONTAINER MUST NOT BE EXCEEDED.

C. THE LOAD AS SHOWN IS BASED ON A 6,215 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 90" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.

D. WHEN LOADING THE UNITS THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE END AND SIDE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF ONE AND ONE-HALF INCHES (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 VERTICAL PIECES ON THE SIDE FILL ASSEMBLIES ON ONE OR BOTH SIDES OF THE CONTAINER. NAIL EACH ADDITIONAL PIECE TO THE VERTICAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE VERTICAL PIECES ON ONE OR BOTH SIDES OF THE CONTAINER MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE UNIT.

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. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.

H. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

J. 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.

K. 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.

L. 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.

M. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE TWO BLOCKING ASSEMBLIES AND FOURSIDE FILL ASSEMBLIES.
2. INSTALL ONE BLOCKING ASSEMBLY WITH FILL MATERIAL AND TWO SIDE FILL ASSEMBLIES.
3. LOAD EIGHT PALLET UNITS.
4. REPEAT STEP 2.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4" 2" X 6"	71 137 232	24 92 232
NAILS	**NO. REQD**	**POUNDS**
6d (2") 10d (3")	68 356	1/2 5-1/2

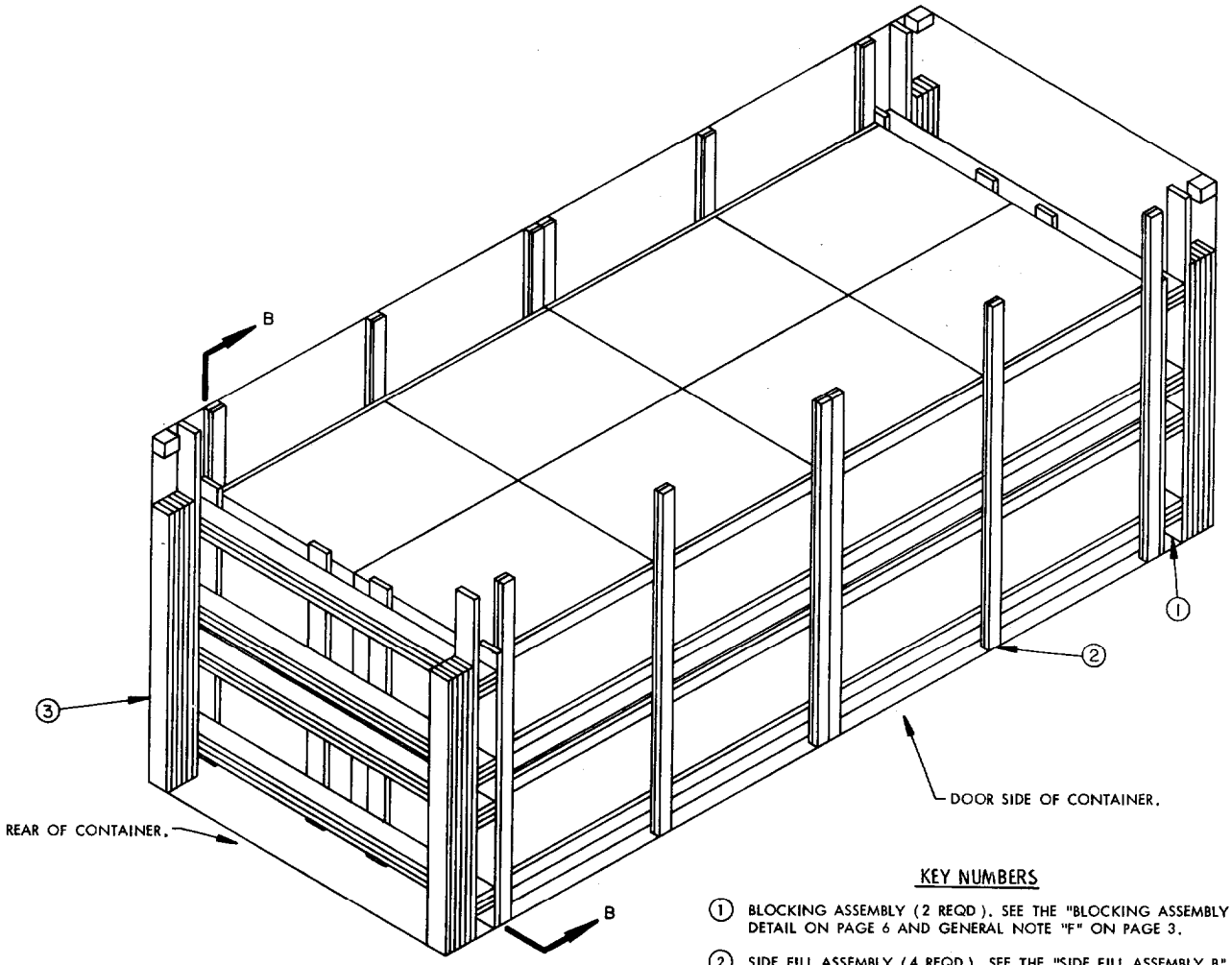
MATERIAL SPECIFICATIONS

LUMBER --------: TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.

NAILS --------: FED SPEC FF-N-105; COMMON.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	8	31,848 LBS
DUNNAGE		702 LBS
CONTAINER		6,215 LBS
TOTAL WEIGHT		38,765 LBS



ISOMETRIC VIEW

KEY NUMBERS

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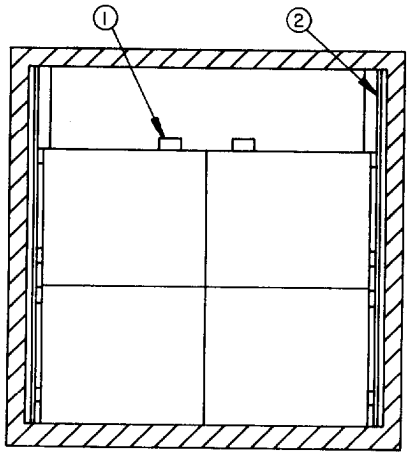


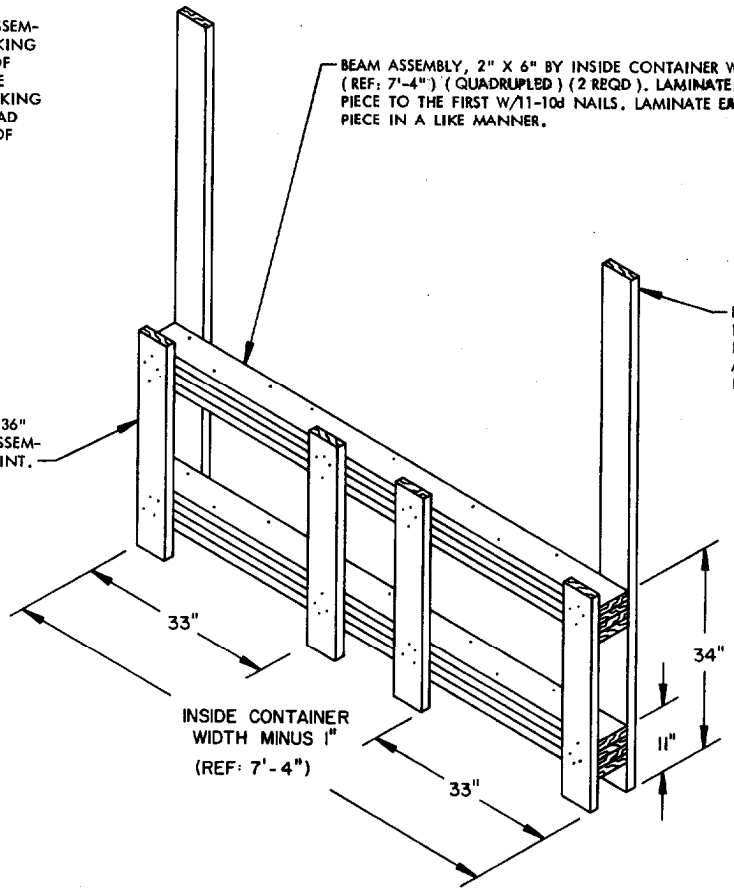
SECTION B-B

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4" 2" X 6"	88 220 373	30 147 373
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	84 672	1/2 10-1/2

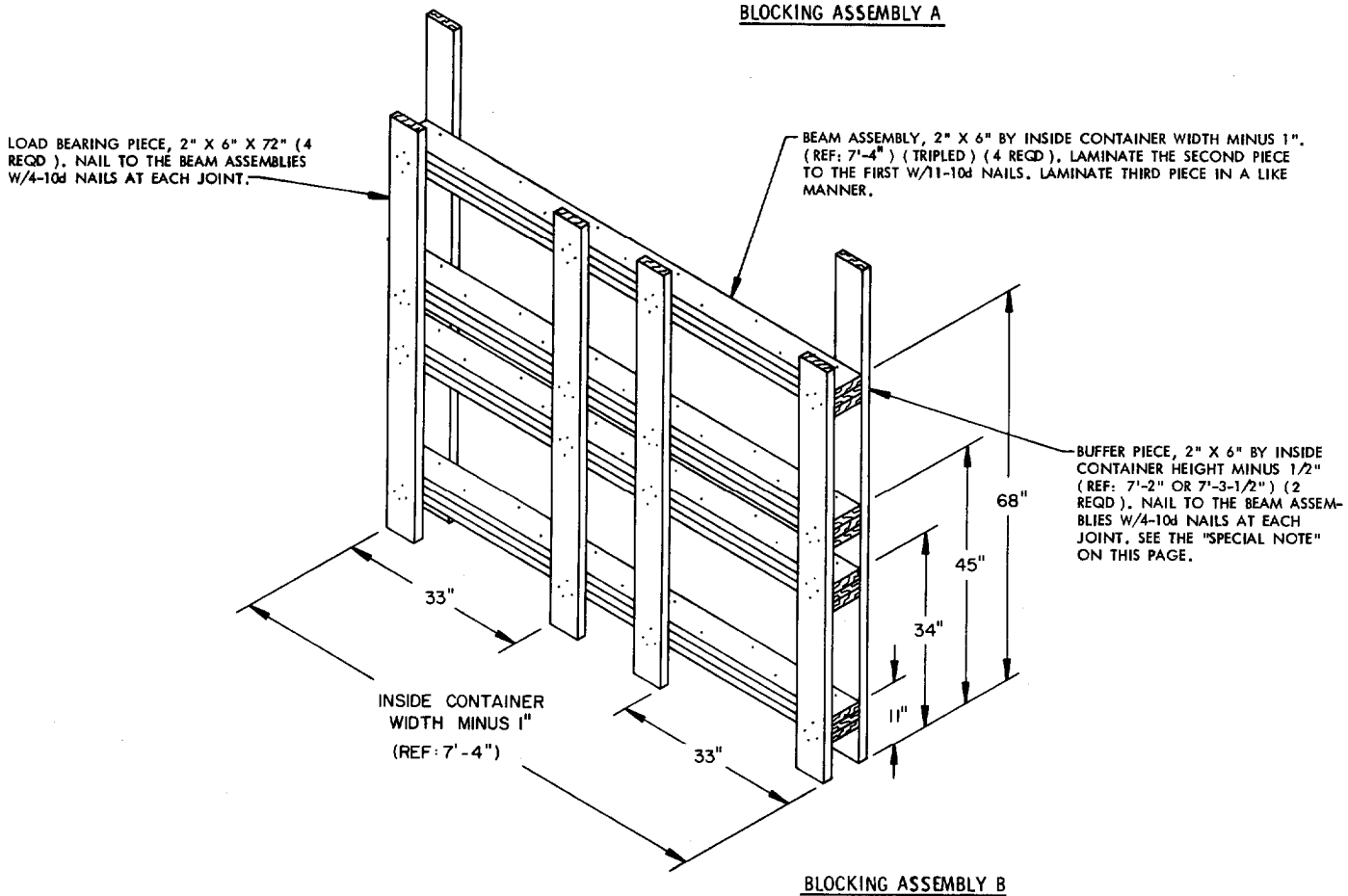
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	16	35,568 LBS
DUNNAGE		1,111 LBS
CONTAINER		6,215 LBS
TOTAL WEIGHT		42,894 LBS

SPECIAL NOTE: THE HEIGHT OF THE BUFFER PIECE USED IN THE BLOCKING ASSEMBLY DEPENDS ON WHERE IN THE CONTAINER THE BLOCKING ASSEMBLY IS TO BE LOCATED. THE BLOCKING ASSEMBLY AT THE FORWARD END OF THE LOAD REQUIRES A BUFFER PIECE HEIGHT OF 7'-2", WHILE THE BLOCKING ASSEMBLY AT THE REAR OF THE LOAD REQUIRES A BUFFER PIECE HEIGHT OF 7'-3-1/2".

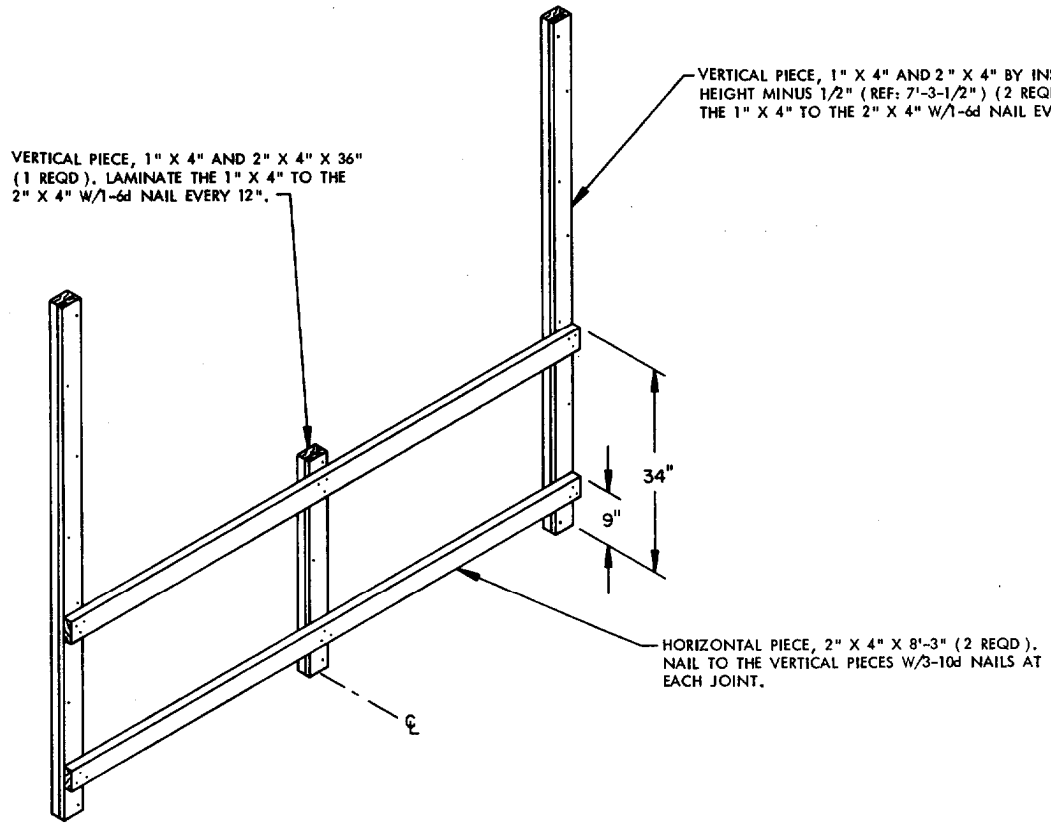


BLOCKING ASSEMBLY A

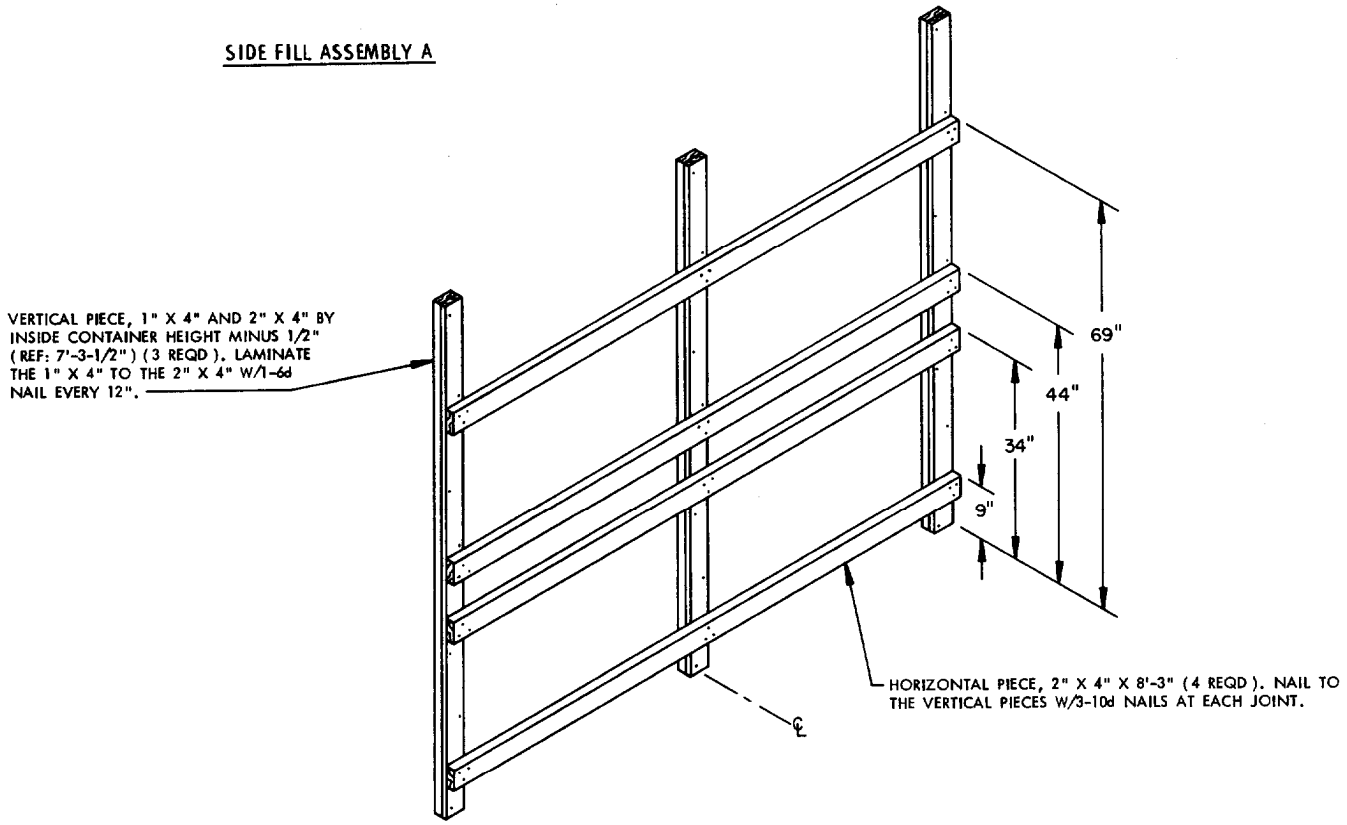


BLOCKING ASSEMBLY B

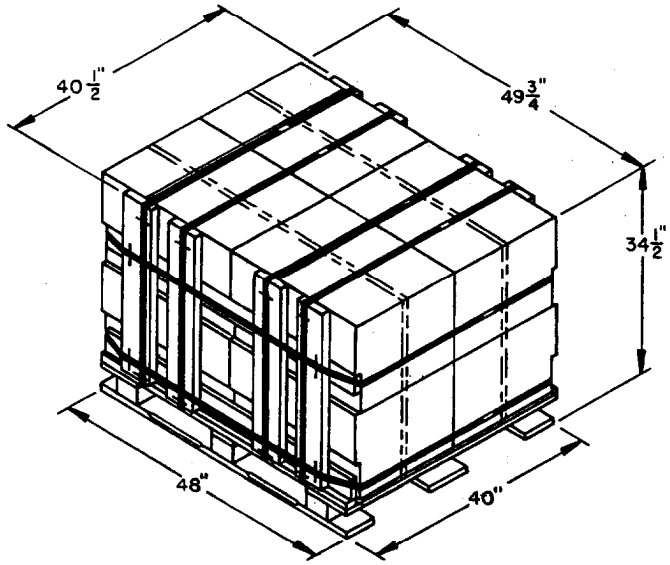
DETAILS



SIDE FILL ASSEMBLY A



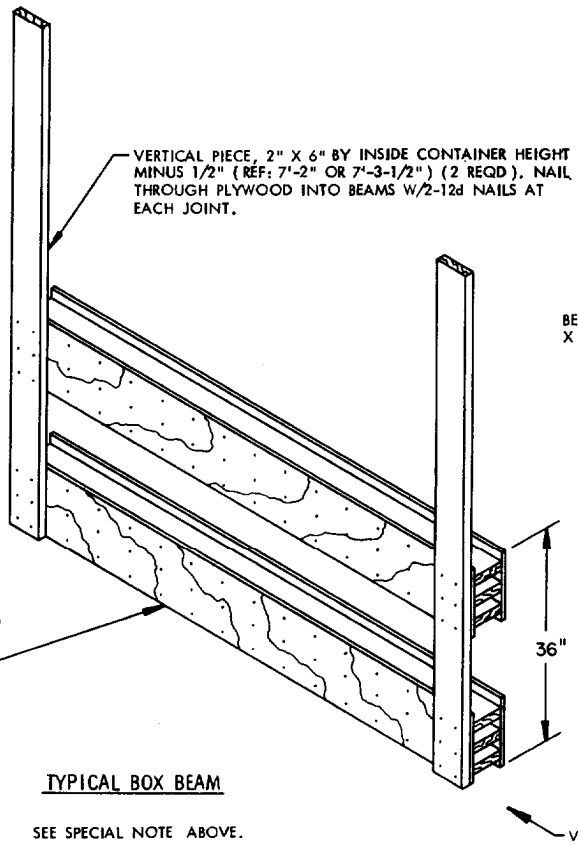
SIDE FILL ASSEMBLY B



PALLET UNIT

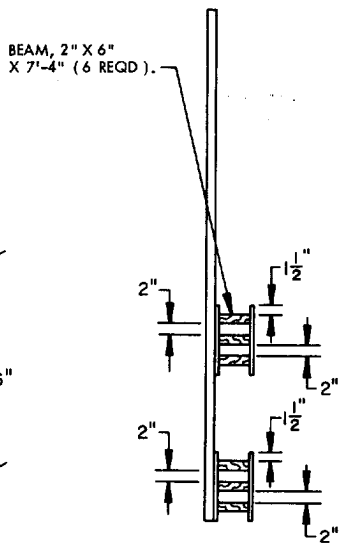
UNIT WEIGHT ---------- 2,223 LBS TO 3,981 LBS (APPROX)
CUBE ---------- 40.0 CUFT (APPROX)

SPECIAL NOTE: IF DESIRED, A BOX BEAM, AS SHOWN, MAY BE SUBSTITUTED FOR "BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 6. WITH APPROPRIATE MODIFICATIONS, THE BOX BEAM MAY BE CONSTRUCTED TO SUBSTITUTE FOR "BLOCKING ASSEMBLY B", AS SHOWN IN THE ISOMETRIC VIEW ON PAGE 4.



TYPICAL BOX BEAM

SEE SPECIAL NOTE ABOVE.



VIEW A