APPROVED BY
BUREAU OF EXPLOSIVES

DATE 5/5/93

LOADING AND BRACING● WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF MAVERICK (AGM-65) MISSILES IN CNU-263/E SHIPPING AND STORAGE CONTAINERS

INDEX

● 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 ARMAMENT, MUNITIONS AND CHEMICAL COMMAND

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DO NOT SCALE

PROJECT SP 220-92

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 LOADS OF MAVERICK (AGM-65) MISSILES PACKED IN THE CNU-263/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-263/E CONTAINER WITH MISSILES INSTALLED. SEE PAGE 3 FOR DETAILS OF THE CONTAINER. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO 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 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 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 BEARING PIECES ON THE SPACER ASSEMBLIES. NAIL NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE BEARING PIECES ON THE SPACER ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE.

E. THE 12-UNIT, 2-LAYER LOAD DEPICTED ON PAGE 4 IS BASED ON THE CNU-263/E CONTAINER WITH DIMENSIONS AS SHOWN ON PAGE 3 AND AN 84-1/2" DOOR OPENING HEIGHT OF THE ISO CONTAINER. THE OVERALL HEIGHT OF THE 2-LAYER LOAD IS 57-1/2" AND CAN EASILY BE LOADED INTO THE ISO CONTAINER THRU THE 84-1/2" HIGH DOOR OPENING. HOWEVER, IF THE ISO CONTAINER HAS AN 86" OR MORE DOOR OPENING HEIGHT, IT MAY BE POSSIBLE TO LOAD AN 18-UNIT, 3-LAYER LOAD AS SHOWN ON PAGE 8 WITH AN OVERALL STACK HEIGHT OF 85-1/2". THEREFORE, PRIOR TO LOADING A 3-LAYER SHIPMENT, A FIELD CHECK SHOULD BE MADE TO DETERMINE THE ACTUAL OVERALL HEIGHT OF A 3-LAYER STACK AND THE ACTUAL DOOR OPENING HEIGHT OF THE SIDE OPENING ISO CONTAINER TO BE USED.

F. 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 4" MATERIAL IS ACTUALLY 1-1/2" BY 3-1/2" WIDE.

G. 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.

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.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (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.

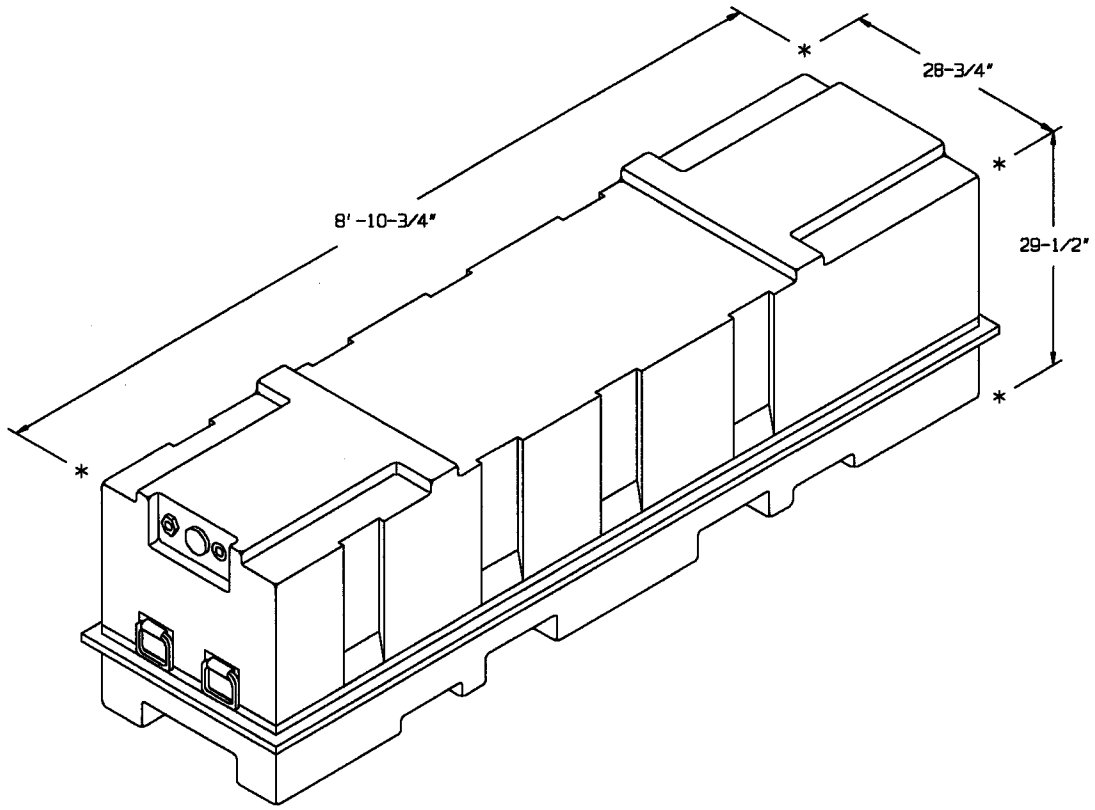
M. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

N. THE QUANTITY OF CONTAINERS SHOWN IN THE LOADS ON PAGES 4 AND 8 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "OMITTED CONTAINER PROCEDURE" DETAIL AND SPECIAL NOTE ON PAGE 12. WHEN A CONTAINER IS TO BE 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.

MATERIAL SPECIFICATIONS

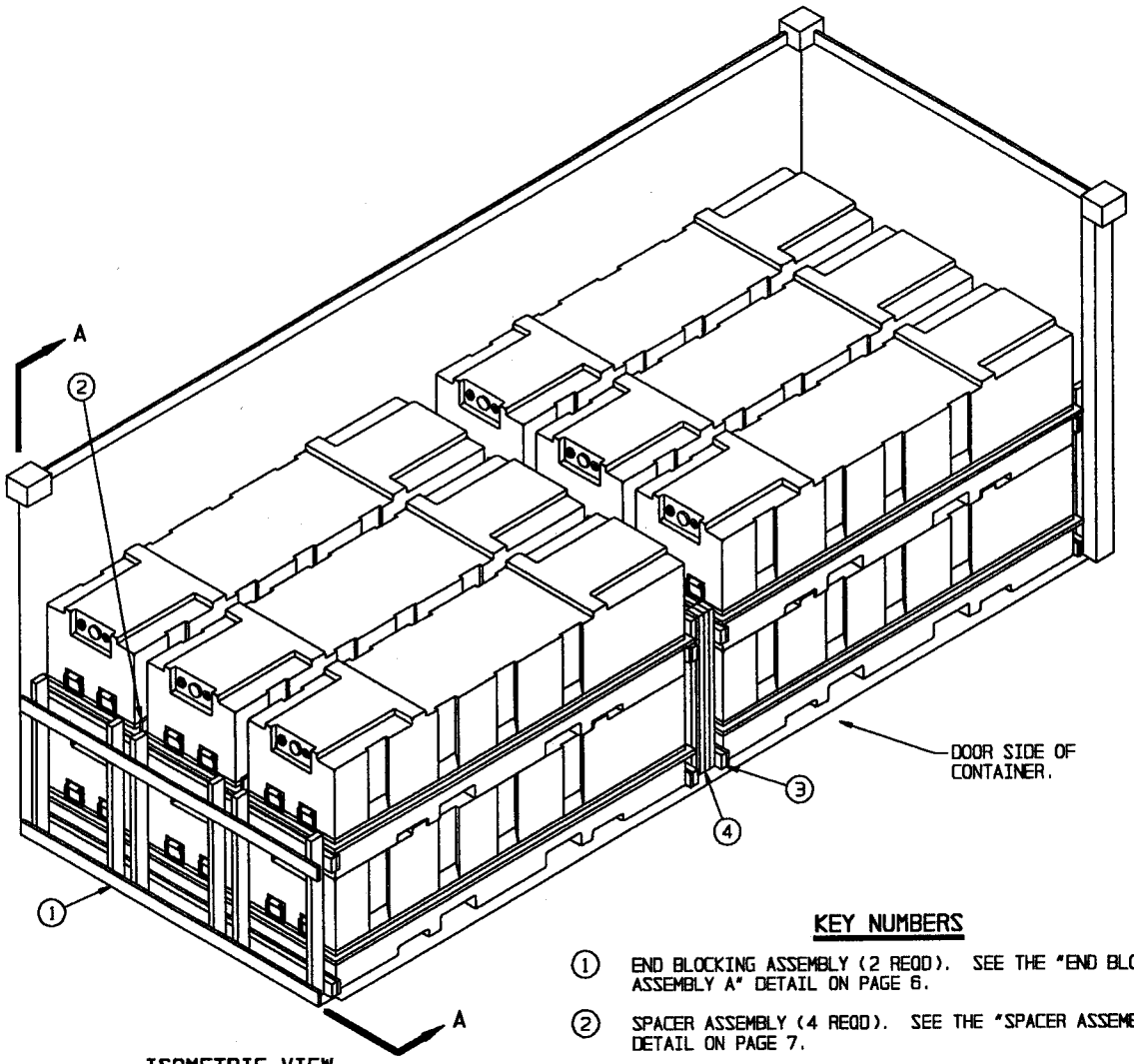
LUMBER - - - - - - - -: SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.

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



CNU-263/E CONTAINER

GROSS WEIGHT - - - - - - - - - 710 POUNDS (APPROX)
CUBE - - - - - - - - - - - - - 52.4 CUBIC FEET (APPROX)



ISOMETRIC VIEW

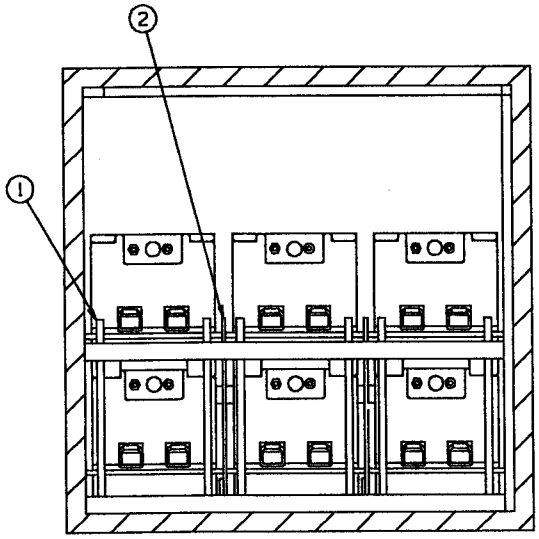
KEY NUMBERS

(1) END BLOCKING ASSEMBLY (2 REQD). SEE THE "END BLOCKING ASSEMBLY A" DETAIL ON PAGE 6.

(2) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 7.

(3) CENTER GATE (6 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 6.

(4) SOLID FILL, 4" WIDE BY 40" LONG BY THICKNESS (ES) REQUIRED TO PROVIDE FOR A TIGHT FIT BETWEEN THE VERTICAL PIECES OF THE CENTER GATES "A" (REQUIRED AT SIX PLACES). NAIL TOGETHER AND TO THE GATE VERTICALS W/4 APPROPRIATELY SIZED NAILS (10d FOR 2" THICK MATERIAL).



SECTION A-A

12-CONTAINER LOAD

PROJECT SP 220-92

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES "A", FOUR SPACER ASSEMBLIES "A" AND SIX CENTER GATES "A".
2. INSTALL ONE END BLOCKING ASSEMBLY AND LOAD ONE STACK OF TWO CONTAINERS.
3. REPEAT STEP 2.
4. INSTALL TWO CENTER GATES WITH FILL MATERIAL.
5. INSTALL ONE SPACER ASSEMBLY AND LOAD ONE STACK OF TWO CONTAINERS.
6. REPEAT STEP 5
7. REPEAT STEP 4.
8. REPEAT STEP 5 TWICE.
9. REPEAT STEP 4.

SPECIAL NOTES:

1. IF A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF CNU-263/E CONTAINERS, SEE THE "OMITTED CONTAINER PROCEDURE" DETAIL AND SPECIAL NOTE ON PAGE 12.
2. IT MAY BE POSSIBLE TO SHIP AN 18-CONTAINER, 3-LAYER LOAD IN A SIDE OPENING ISO CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2 AND THE DETAILS ON PAGES 8 THRU 11.

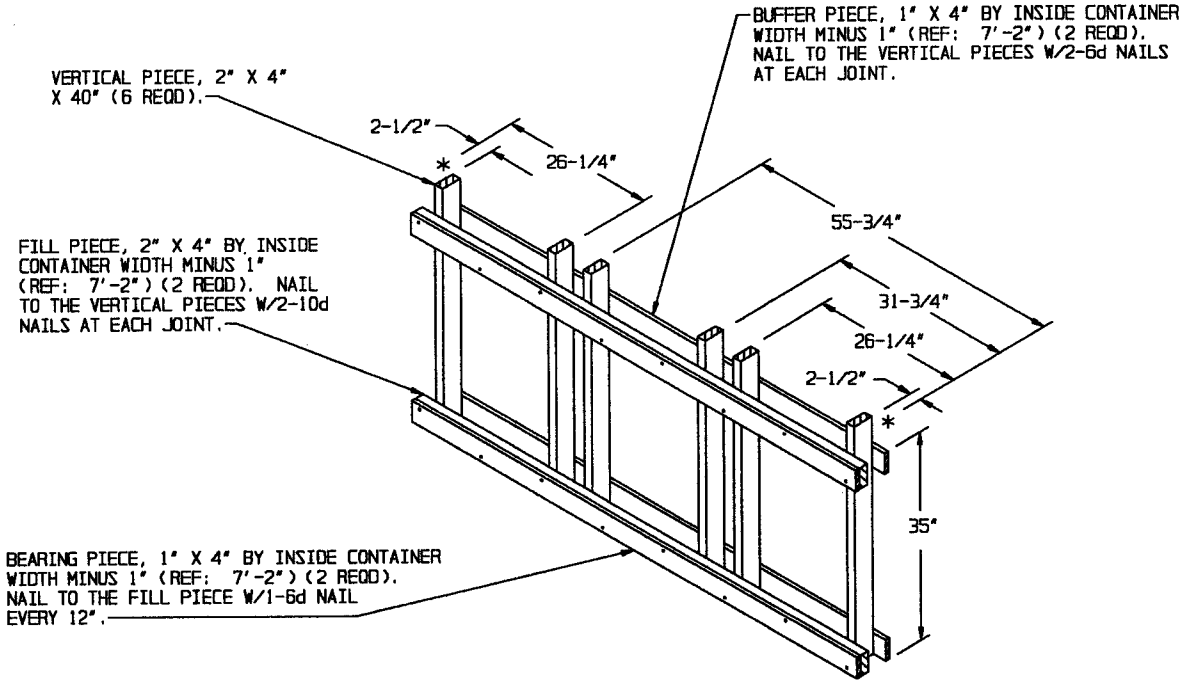
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	180 246	60 164
NAILS	NO. REQD	POUNDS
6d (2") 8d (2-1/2") 10d (3")	164 72 192	1 3/4 3

LOAD AS SHOWN

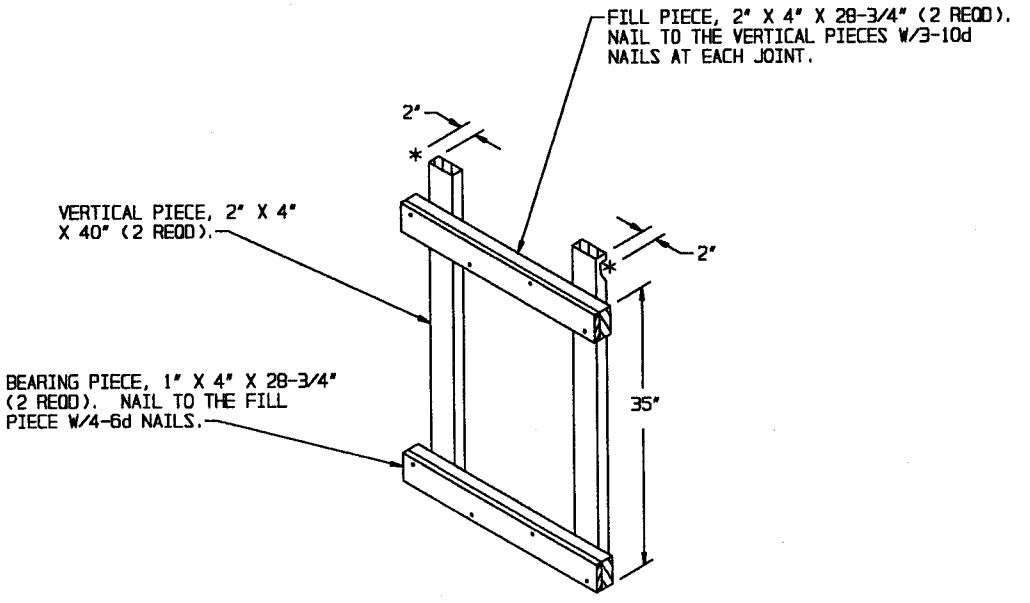
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-263/E	12	8,520 LBS
DUNNAGE		453 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		15,023 LBS (APPROX)

12-CONTAINER LOAD

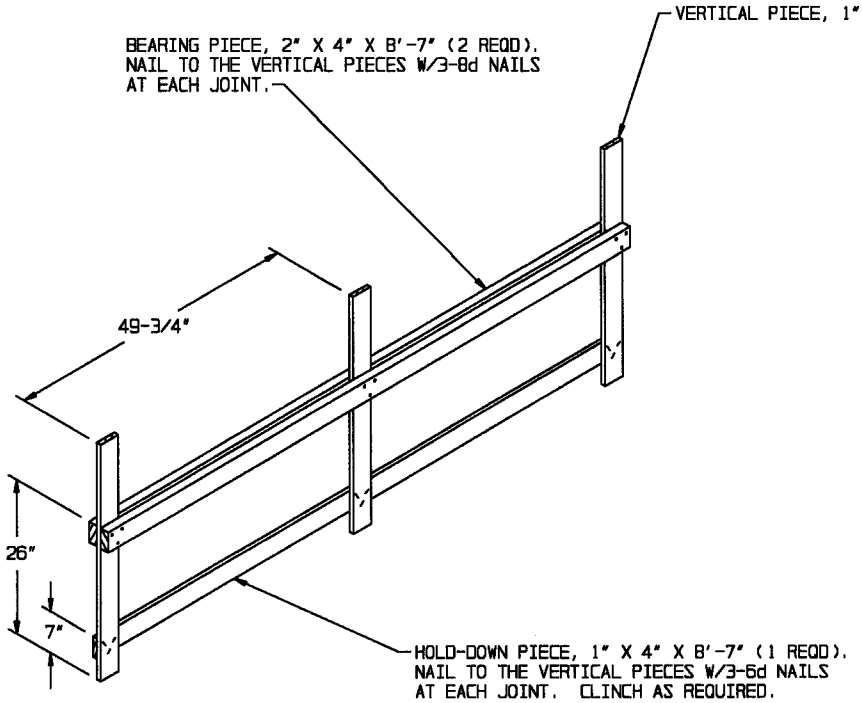
PROJECT SP 220-92



END BLOCKING ASSEMBLY A



CENTER GATE A



SPACER ASSEMBLY A

DETAIL

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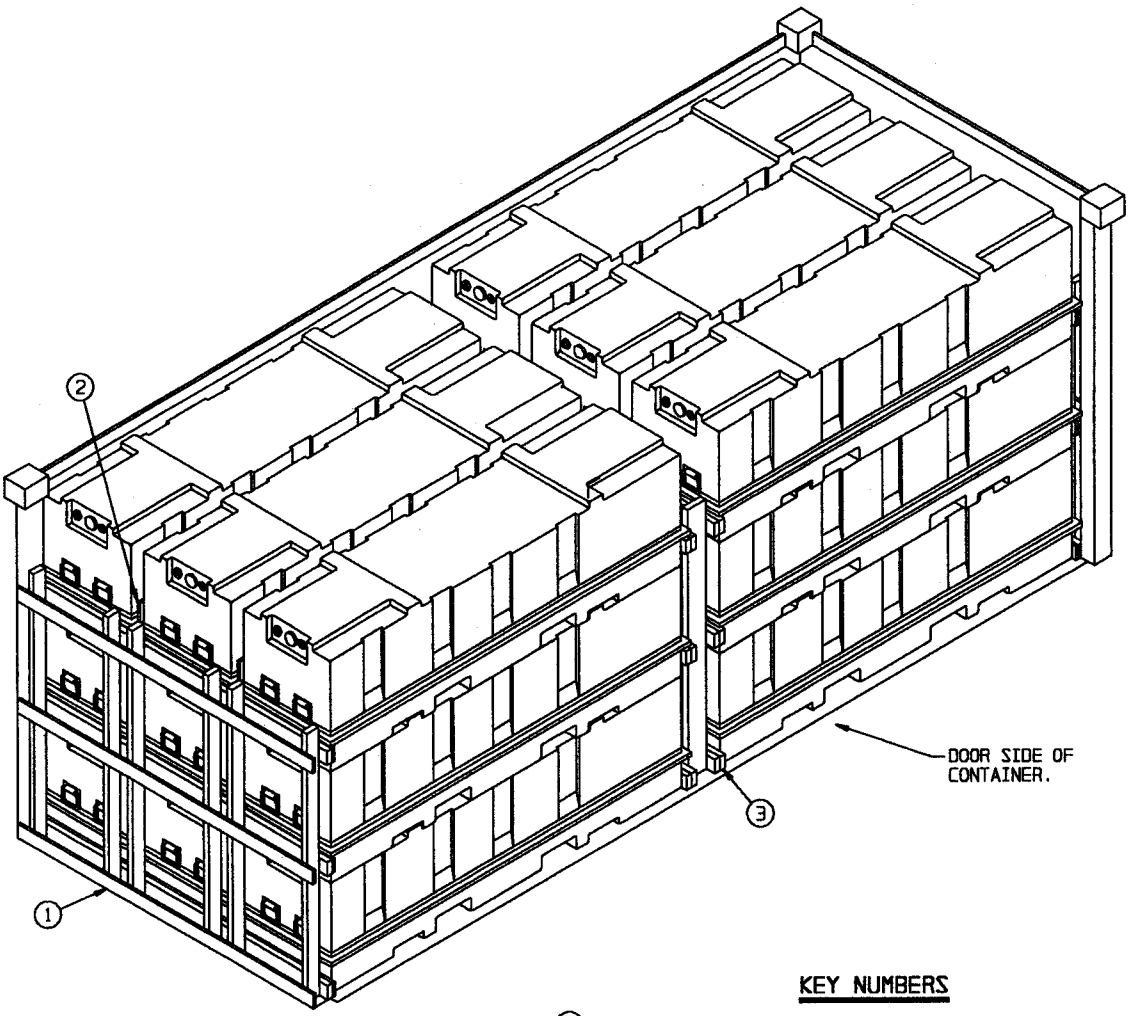


ISOMETRIC VIEW

KEY NUMBERS

(1) END BLOCKING ASSEMBLY (2 REQD). SEE THE "END BLOCKING ASSEMBLY B" DETAIL ON PAGE 10.

(2) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 11.

(3) CENTER GATE (3 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 10. SEE SPECIAL NOTE 2 ON PAGE 9.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

1. PRE-FABRICATE TWO END BLOCKING ASSEMBLIES "B", FOUR SPACER ASSEMBLIES "B" AND THREE CENTER GATES "B".
2. INSTALL ONE END BLOCKING ASSEMBLY AND LOAD ONE STACK OF THREE CONTAINERS.
3. REPEAT STEP 2.
4. INSTALL ONE CENTER GATE.
5. INSTALL ONE SPACER ASSEMBLY AND LOAD ONE STACK OF THREE CONTAINERS.
6. REPEAT STEP 5
7. REPEAT STEP 4.
8. REPEAT STEP 5 TWICE.
9. REPEAT STEP 4.

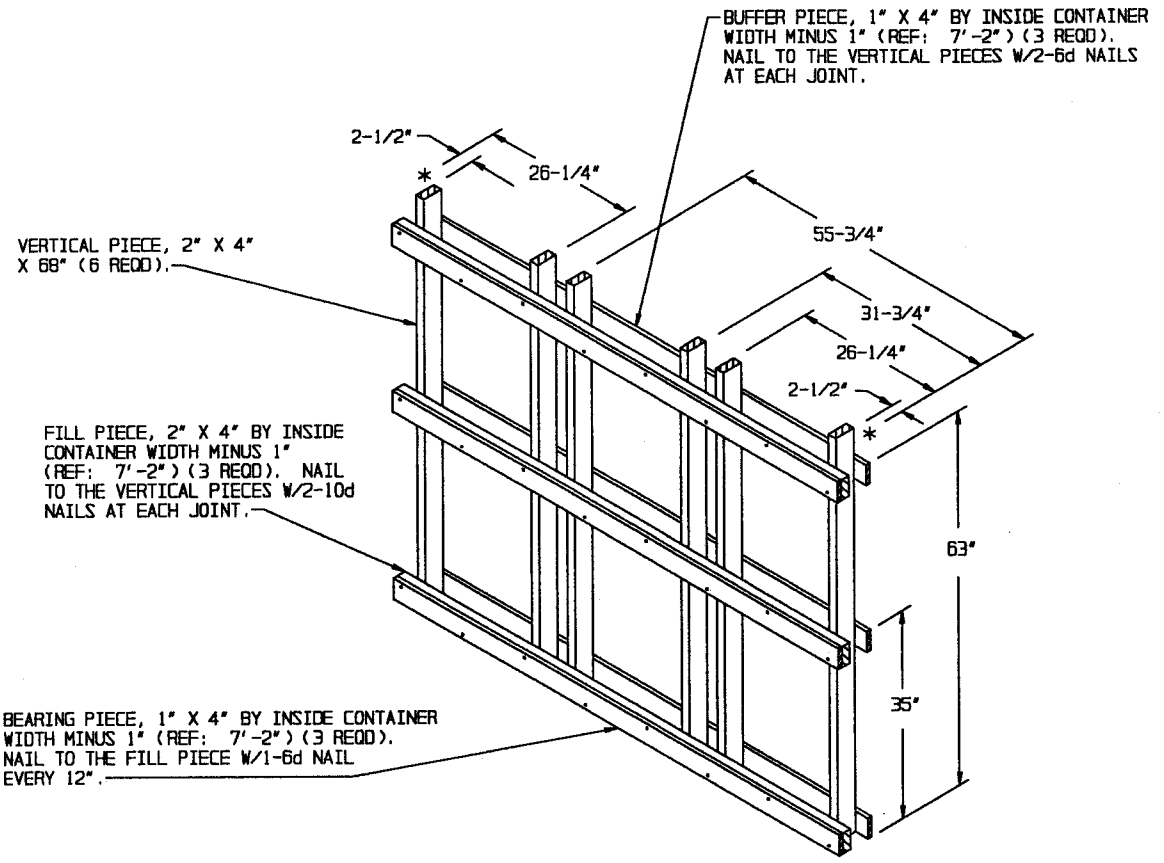
SPECIAL NOTE:

1. IF A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF CNU-263/E CONTAINERS, SEE THE "OMITTED CONTAINER PROCEDURE" DETAIL AND SPECIAL NOTE ON PAGE 12.
2. THE "CENTER GATE B" DETAIL, PIECE MARKED ③ ON PAGE 8, IS BASED ON A VOID OF 11-1/2" BETWEEN LONGITUDINALLY ADJACENT CONTAINERS. IF THE VOID IS LESS THAN 11-1/2", THE THICKNESS OF THE BEARING PIECES MAY NEED TO BE ADJUSTED. A FIELD CHECK OF THE VOID BETWEEN THE LONGITUDINALLY ADJACENT CONTAINERS SHOULD BE MADE PRIOR TO ASSEMBLING THE CENTER GATES.

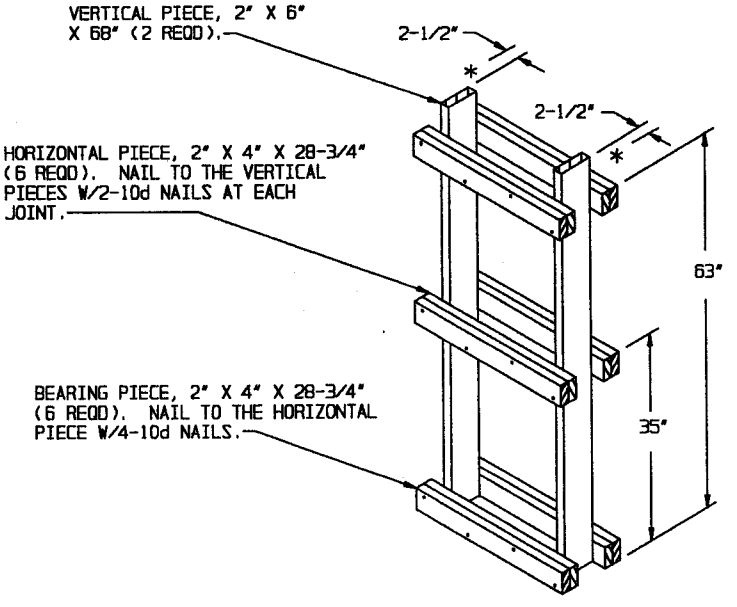
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4" 2" X 6"	190 335 34	63 223 34
NAILS	NO. REQD	POUNDS
6d (2") 8d (2-1/2") 10d (3")	156 144 216	1 1-1/2 3-1/4

LOAD AS SHOWN

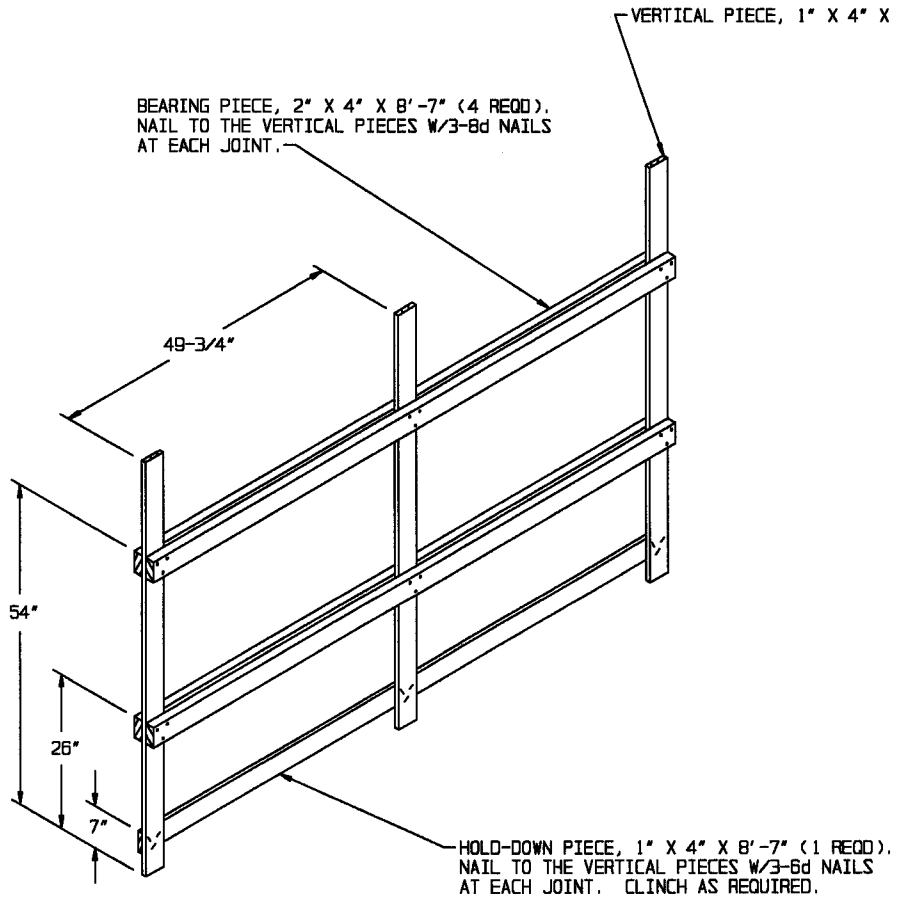
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-263/E	18	12,780 LBS
DUNNAGE		646 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		19,476 LBS (APPROX)



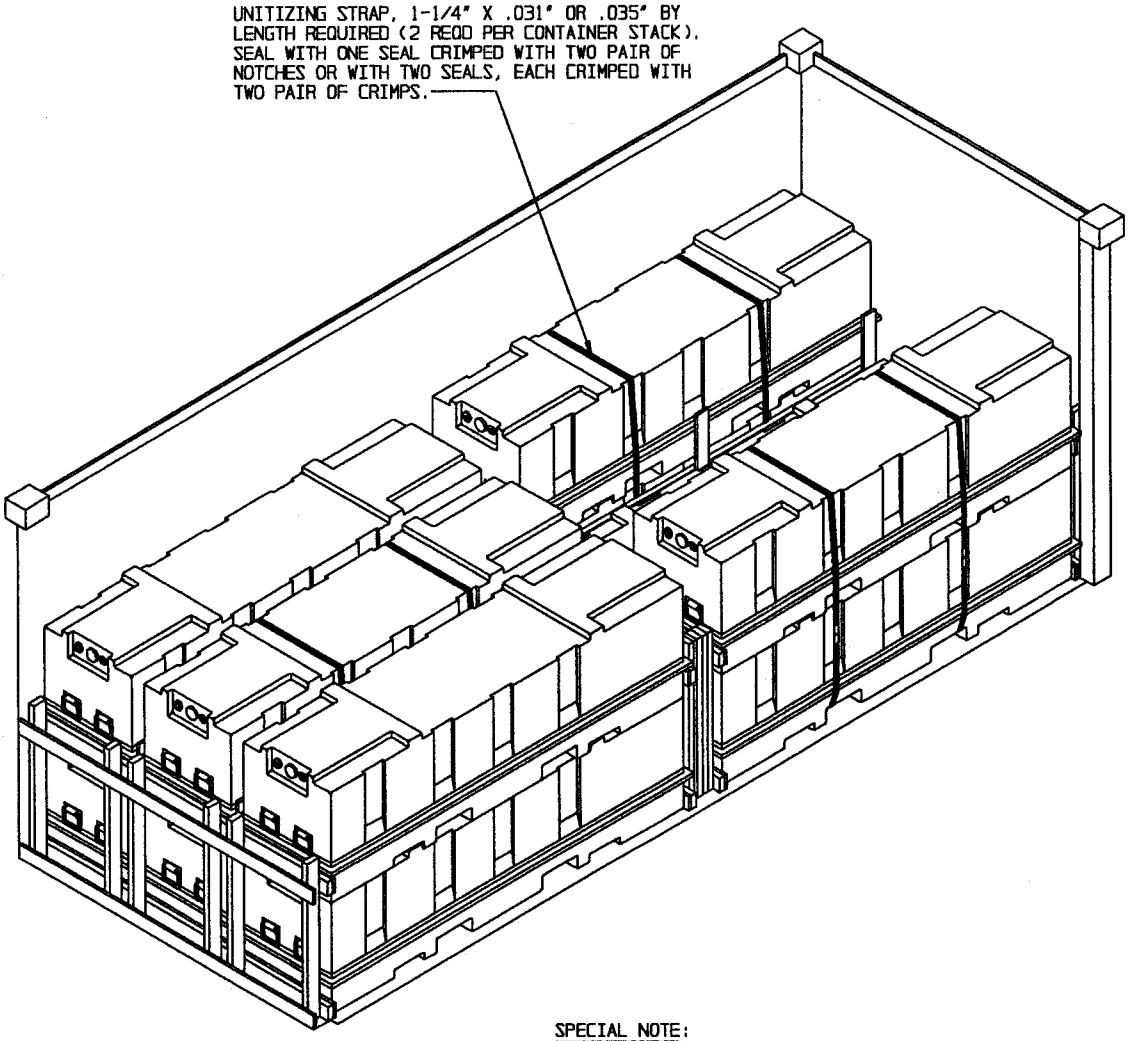
END BLOCKING ASSEMBLY B



CENTER GATE B



SPACER ASSEMBLY B



ISOMETRIC VIEW

SPECIAL NOTE:

1. WHEN REDUCING A LOAD BY ONE OR MORE CONTAINERS IT WILL BE NECESSARY TO UNITIZE THE CONTAINER STACKS WHICH ARE LATERALLY AND LONGITUDINALLY ADJACENT TO THE OMITTED CONTAINER AS DEPICTED IN THE LOAD VIEW ABOVE. SEE GENERAL NOTE "N" ON PAGE 2.