

APPROVED BY  
BUREAU OF EXPLOSIVES

*J.H. Fleishman*

DATE 10/27/92

# LOADING AND BRACING IN END OPENING ISO CONTAINERS OF MAVERICK (AGM-65) MISSILES PACKED IN CNU-131/E SHIPPING AND STORAGE CONTAINERS

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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-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.

## U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND  
CHEMICAL COMMAND

*Timothy R. Free*

APPROVED BY ORDER OF COMMANDING GENERAL, U.S.  
ARMY MATERIEL COMMAND

*John L. Bryant*

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

DRAFTSMAN

TECHNICIAN

ENGINEER

L. FIEFFER

VALIDATION  
ENGINEERING  
DIVISION

TRANSPORTATION  
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DIVISION

LOGISTICS  
ENGINEERING  
OFFICE

*AM*

*W. Jurek*

*W. Ernst*

JANUARY 1993

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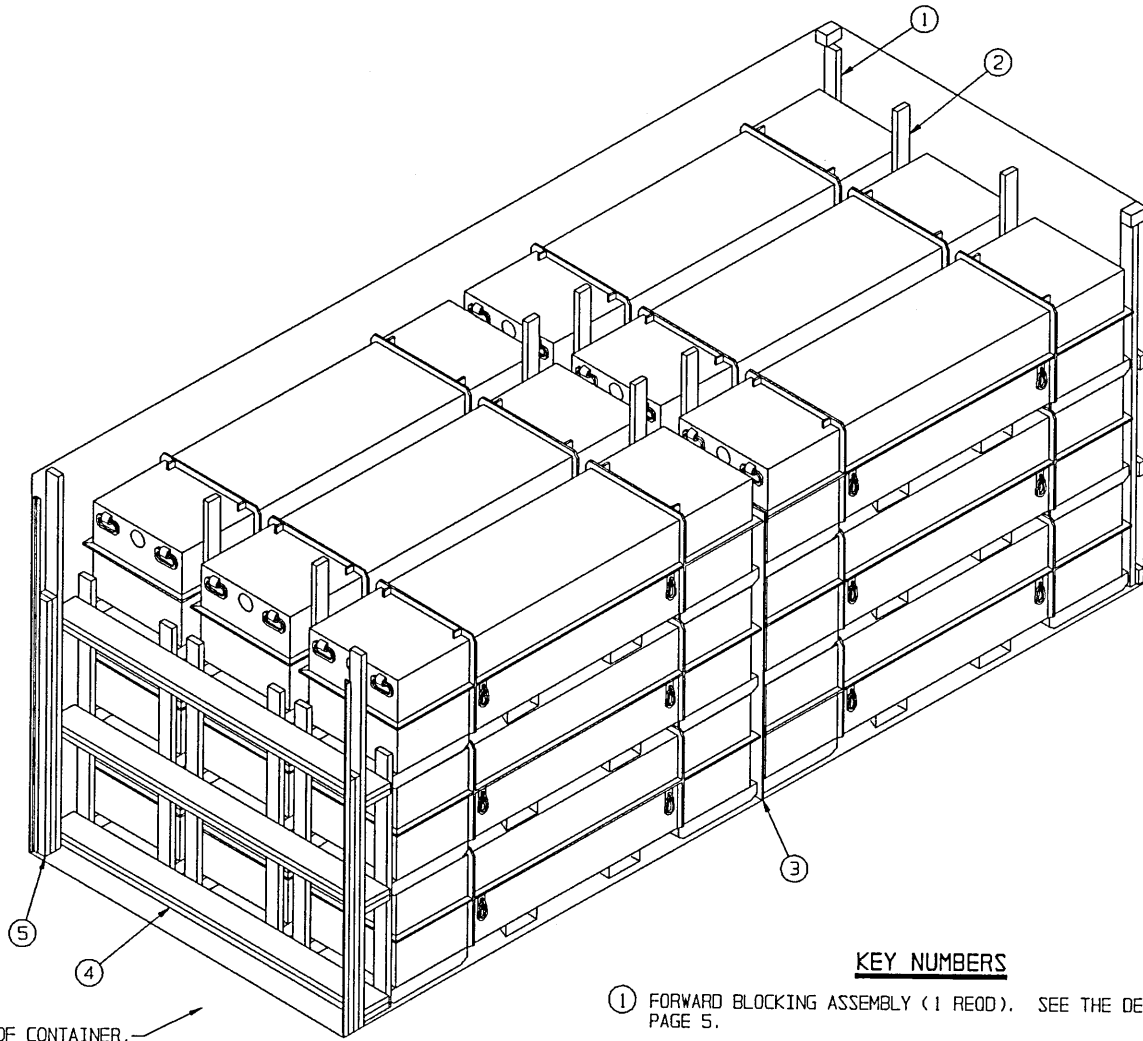
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48

7148

SP15J18

DO NOT SCALE



REAR OF CONTAINER. →

ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REOD). SEE THE DETAIL ON PAGE 5.
- ② CENTER GATE (4 REOD). SEE THE DETAIL ON PAGE 6.
- ③ LOAD BEARING GATE (1 REOD). SEE THE DETAIL ON PAGE 6.
- ④ REAR BLOCKING ASSEMBLY (1 REOD). SEE THE DETAIL ON PAGE 5.
- ⑤ FILL MATERIAL 4" WIDE BY 64" LONG MATERIAL (AS REOD). NAIL EACH PIECE TO THE REAR BLOCKING ASSEMBLY AND/OR LAMINATE TOGETHER W/6 NAILS OF A SUITABLE SIZE (10d NAILS FOR 2" THICK MATERIAL). SEE DETAILS A AND B ON PAGE 9.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	99	33
2" X 4"	224	150
2" X 8"	46	62
NAILS	NO. REOD	POUNDS
6d (2")	114	3/4
10d (3")	141	2-1/4
PLYWOOD, 1/2"	45.50 SQ FT REOD	62.56 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-131/E	18	14,850 LBS
DUNNAGE		556 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		20,106 LBS (APPROX)

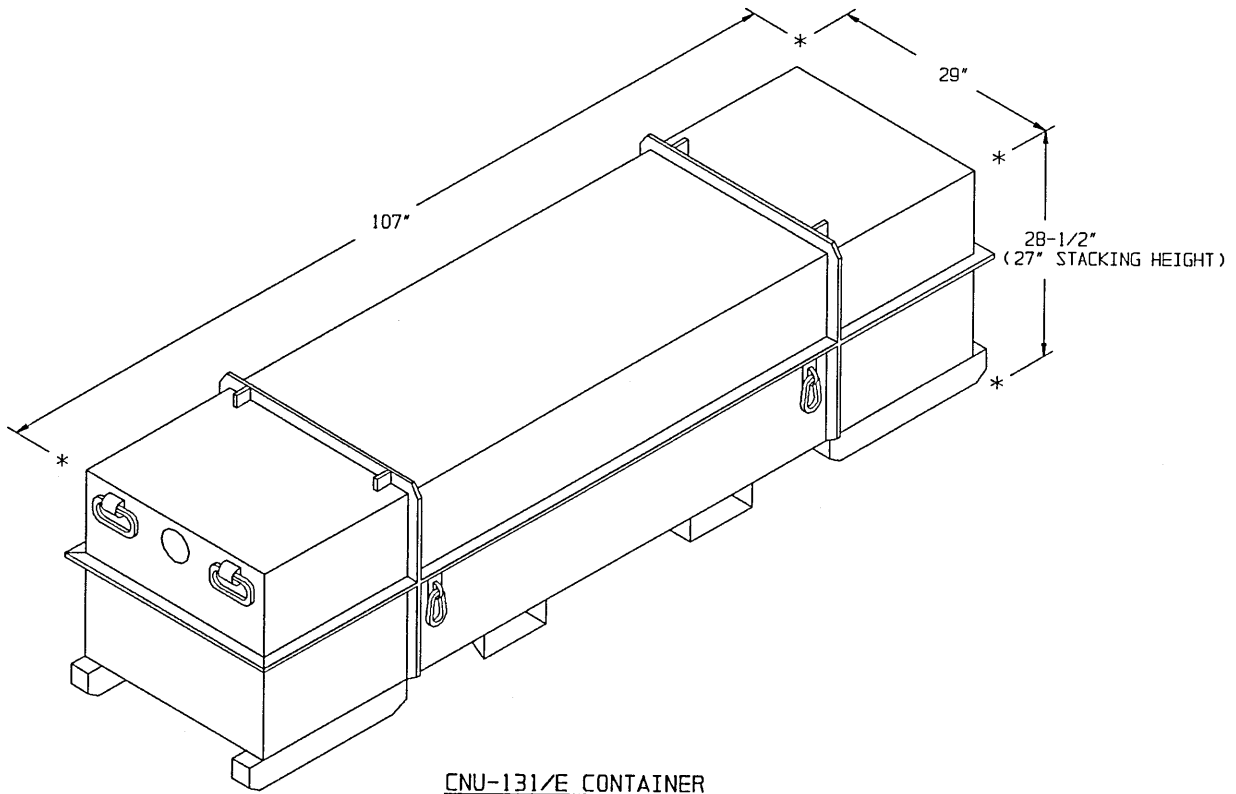
- M. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE FILLER ASSEMBLY ON PAGE 4. WHEN A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.
  - 1. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE OR TWO LADING UNITS), LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE REAR OF THE LOAD.
  - 2. IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN TWO LADING UNITS), LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE TOTAL LOAD SHIFTED FORE OR AFT, AS NECESSARY, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBUTION. THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY THOSE ADJUSTMENTS TO THE DUNNAGE WHICH ARE REQUIRED TO ACCOMMODATE THE NUMBER OF UNITS TO BE SHIPPED.
- N. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
  - 1. PREFABRICATE ONE FORWARD AND ONE REAR BLOCKING ASSEMBLY, FOUR CENTER GATES, AND ONE LOAD BEARING GATE.
  - 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
  - 3. LOAD SIX CONTAINERS.
  - 4. INSTALL TWO CENTER GATES AND LOAD THREE CONTAINERS.
  - 5. INSTALL THE LOAD BEARING GATE.
  - 6. REPEAT STEPS 3 AND 4.
  - 7. INSTALL THE REAR BLOCKING ASSEMBLY.
  - 8. INSTALL THE FILL MATERIAL BETWEEN THE REAR BLOCKING ASSEMBLY AND THE LOAD RETAINERS.

- 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 CNU-131/E CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-131/E CONTAINER WITH MISSILES INSTALLED. SEE PAGE 4 FOR DETAILS OF THE CONTAINER. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 95" (93" CLEAR HEIGHT). 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 CNU-131/E 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 VERTICAL PIECES ON THE CENTER GATES. NAIL EACH ADDITIONAL PIECE TO THE VERTICAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE VERTICAL OR HORIZONTAL PIECES IN THE CENTER GATES MAY BE ADJUSTED, AS NECESSARY, TO FACILITATE VARIANCE IN THE CNU-131/E 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" 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 ONE OF THE SIDEWALLS, 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 FLAT BED 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.

MATERIAL SPECIFICATIONS

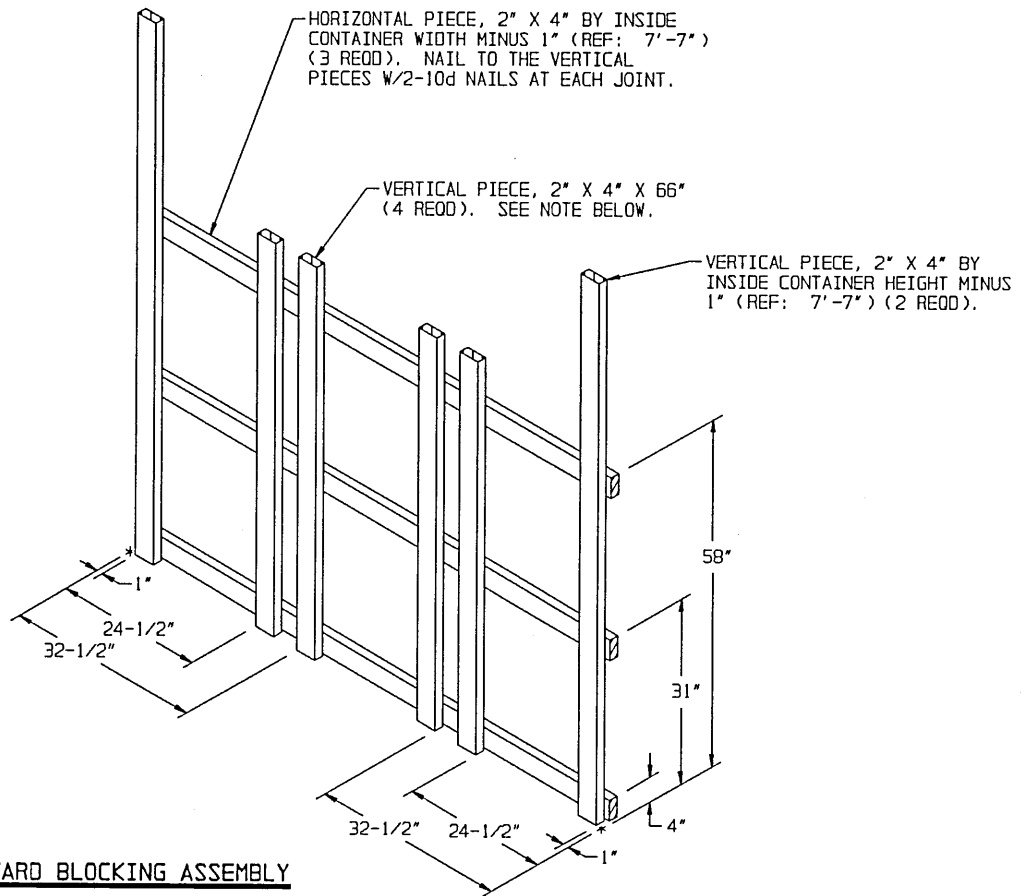
- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- WIRE, CARBON STEEL - - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.

(CONTINUED AT LEFT)

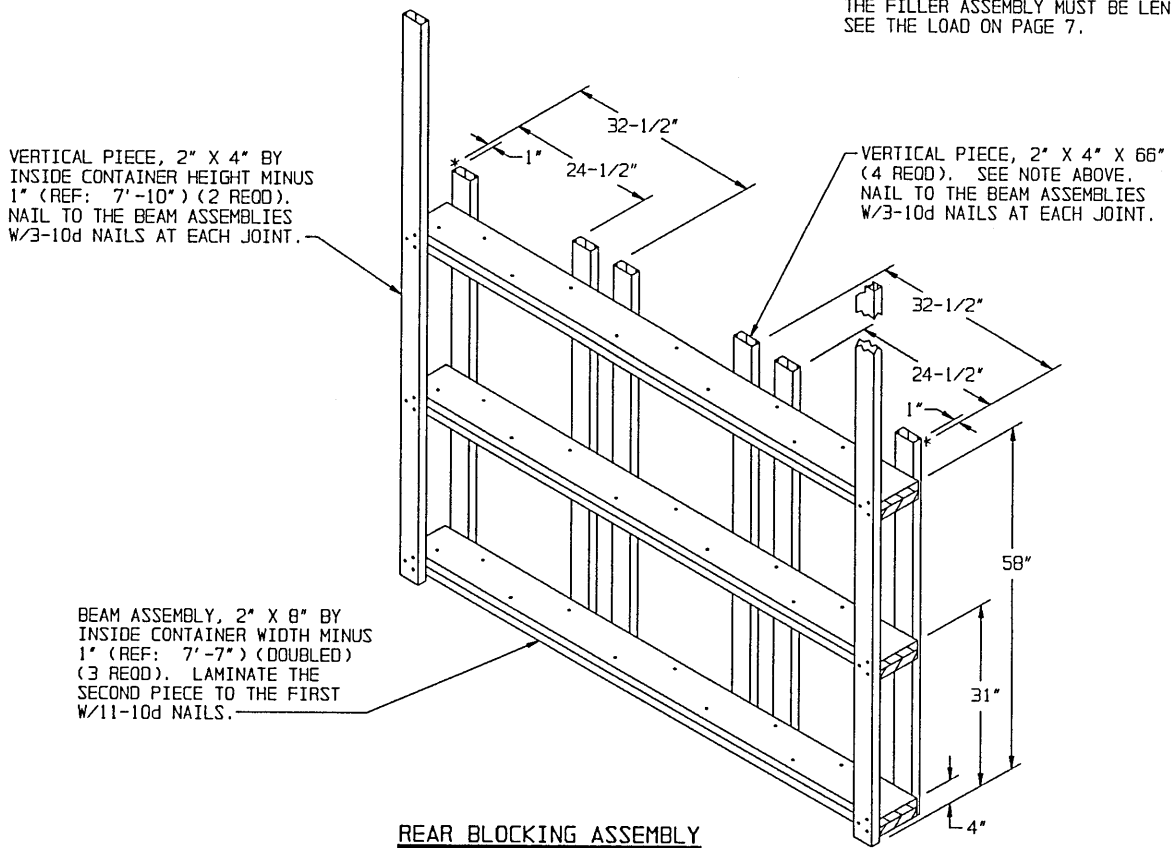


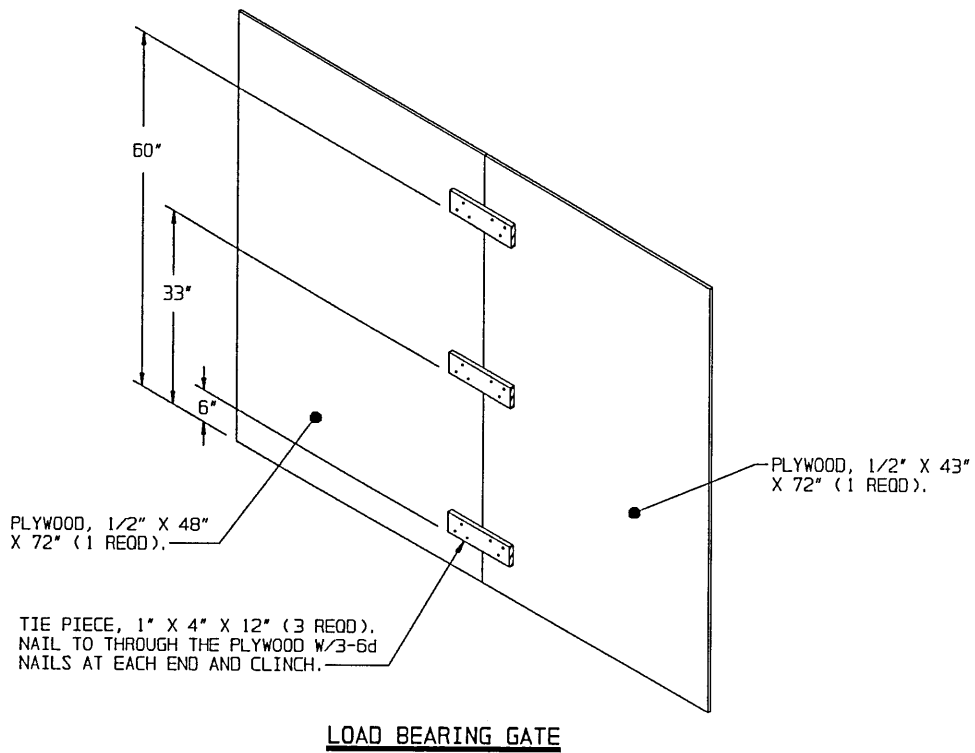
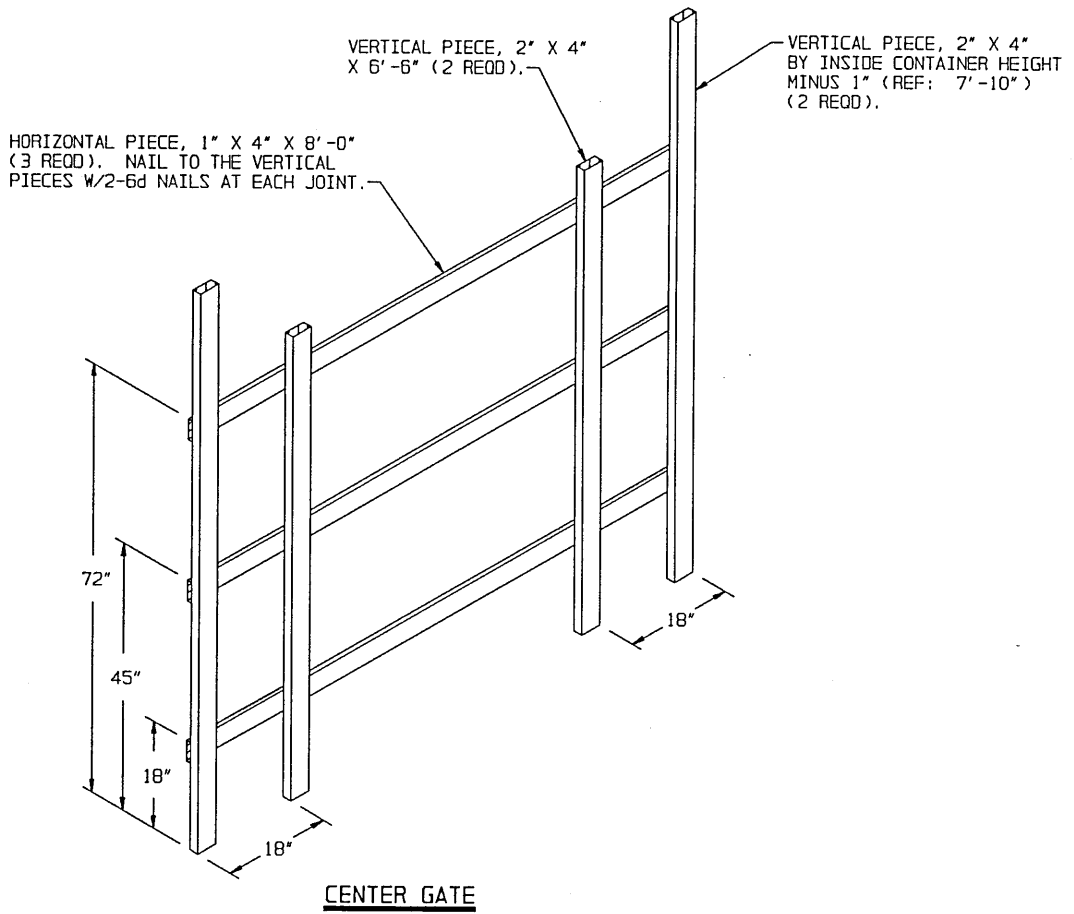
CNU-131/E CONTAINER

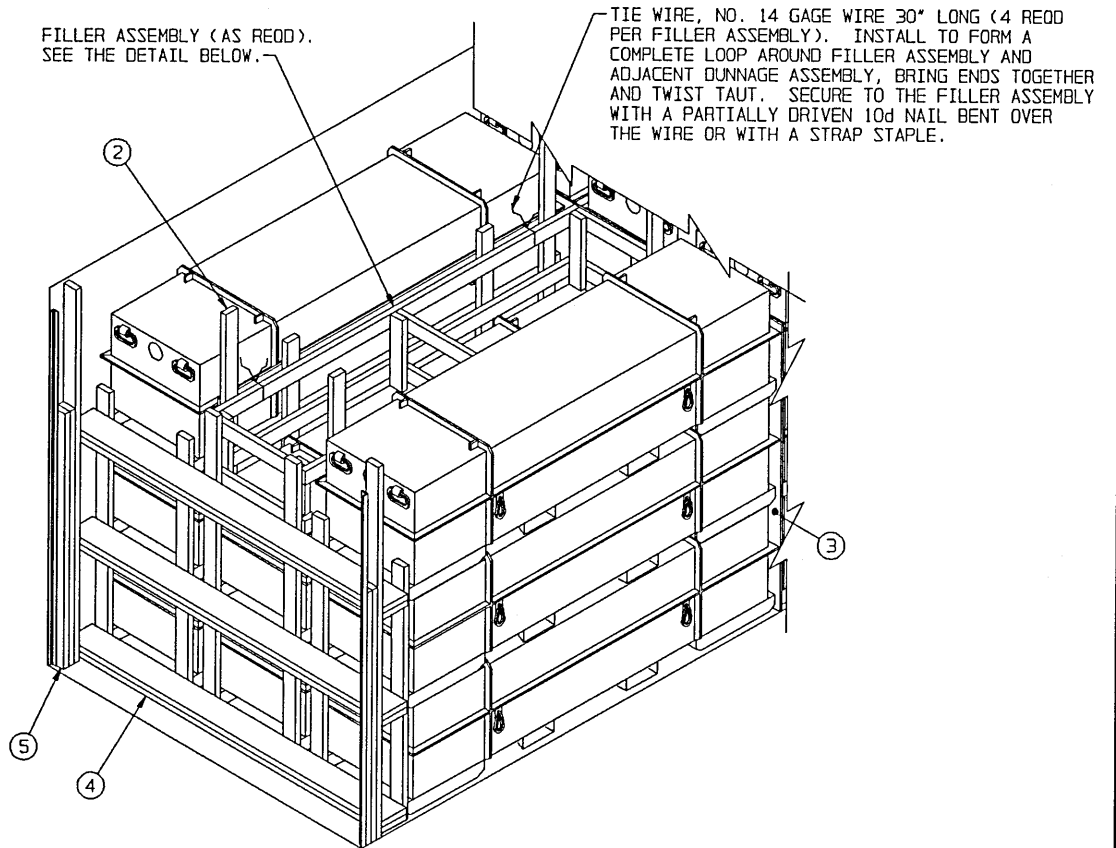
CONTAINER WEIGHT (MAX) - - - - 825 LBS (APPROX)  
 CUBE - - - - - 51.2 CU FT (APPROX)



NOTE: WHEN LOADING A LESS THAN FULL LOAD, THE VERTICAL PIECES THAT WILL COME INTO CONTACT WITH THE FILLER ASSEMBLY MUST BE LENGTHENED TO 6'-2". SEE THE LOAD ON PAGE 7.

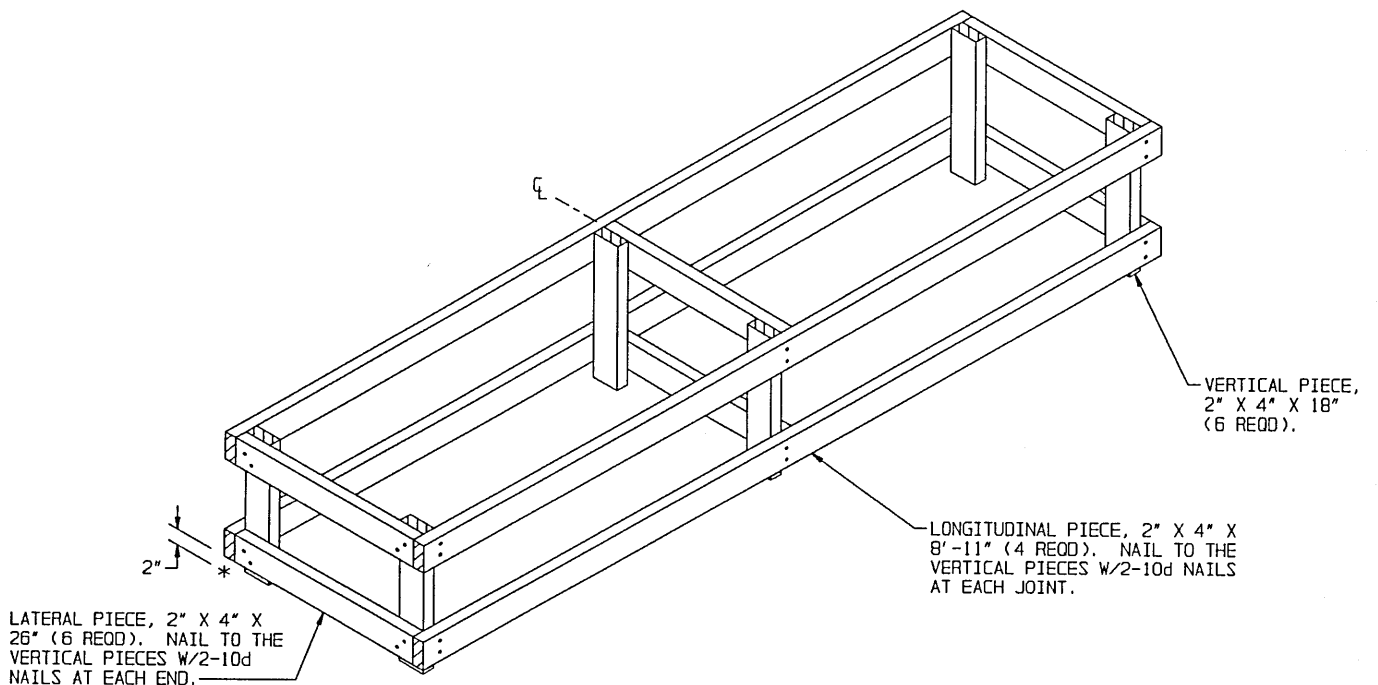




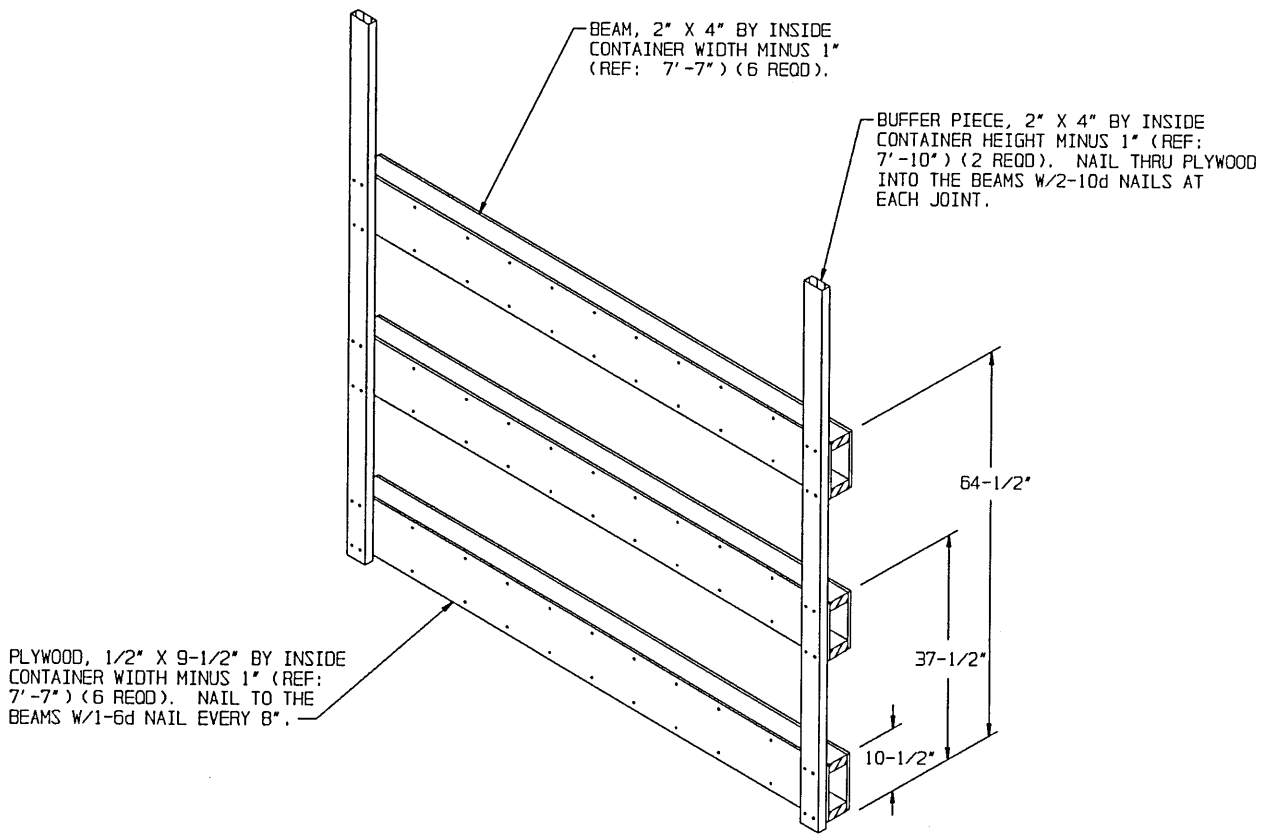


**LESS-THAN-FULL-LOAD PROCEDURE**

THE DETAIL ABOVE DEPICTS A BLOCKING METHOD TO BE USED IN A LESS-THAN-FULL CONTAINER LOAD (LESS THAN 18 UNITS). KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. ONE FILLER ASSEMBLY REPLACES ONE CONTAINER. IF SIX CONTAINERS ARE TO BE OMITTED, OMIT ONE FULL LAYER OF CONTAINERS. SEE GENERAL NOTE "M" ON PAGE 3. NOTE THAT THE TWO CENTER VERTICAL PIECES ON THE REAR BLOCKING ASSEMBLY MUST BE LENGTHENED TO 6'-2" WHEN USED IN THE LOAD DEPICTED ABOVE.

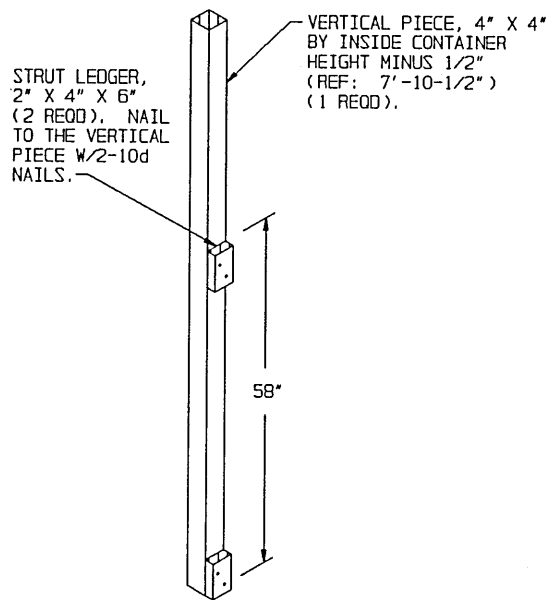


**FILLER ASSEMBLY**



**ALTERNATIVE REAR BLOCKING ASSEMBLY**

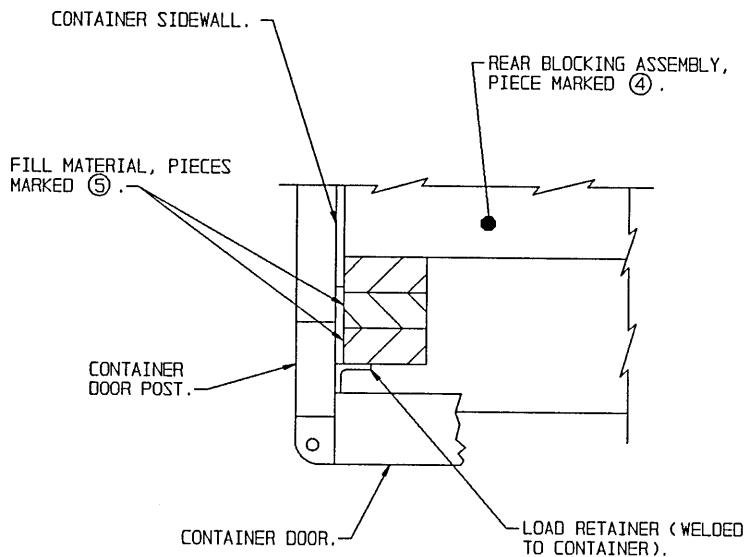
NOTE: THIS REAR BLOCKING ASSEMBLY MAY BE USED IN PLACE OF THE REAR BLOCKING ASSEMBLY DEPICTED ON PAGE 5, IF DESIRED.



**DOOR POST VERTICAL**

IF THE ISO CONTAINER TO BE LOADED IS NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, THE DOOR POST VERTICAL MUST BE NAILED TO THE DOOR POST VERTICAL RETAINER. NAIL THROUGH THE HOLES IN THE DOOR POST VERTICAL RETAINER INTO THE DOOR POST VERTICAL W/4-10d NAILS.



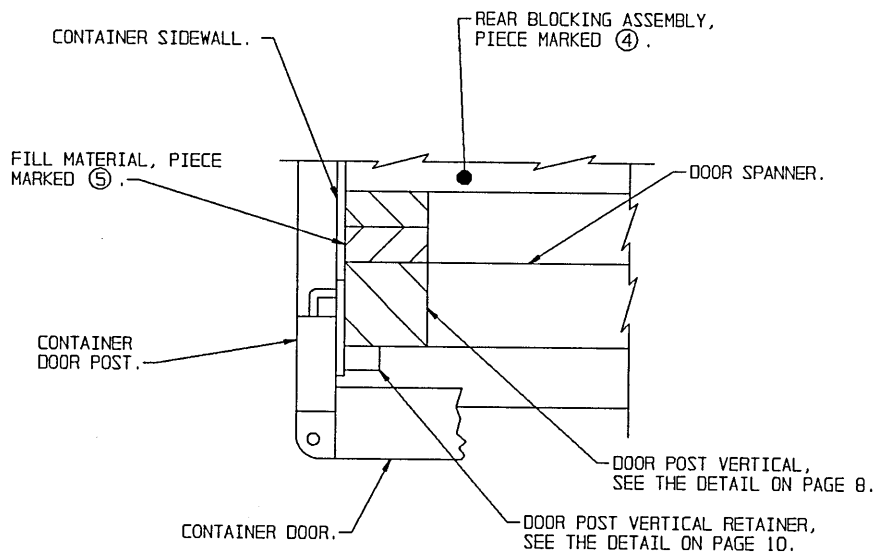


**DETAIL A**

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE FILL MATERIAL AND ADJACENT DUNNAGE PIECES.

**SPECIAL NOTE:**

WHEN COMMERCIAL CONTAINERS ARE NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, AS DEPICTED IN "DETAIL A" ABOVE, DOOR POST VERTICALS, DOOR POST VERTICAL RETAINERS AND DOOR SPANNERS WILL BE REQUIRED FOR THE LOAD DEPICTED ON PAGE 2. SEE VARIOUS LOADS WITHIN AMC DRAWING 19-48-4153-15PA1002 FOR EXAMPLES. SEE PAGE 10 FOR DETAILS OF THE METAL DOOR POST VERTICAL RETAINER.

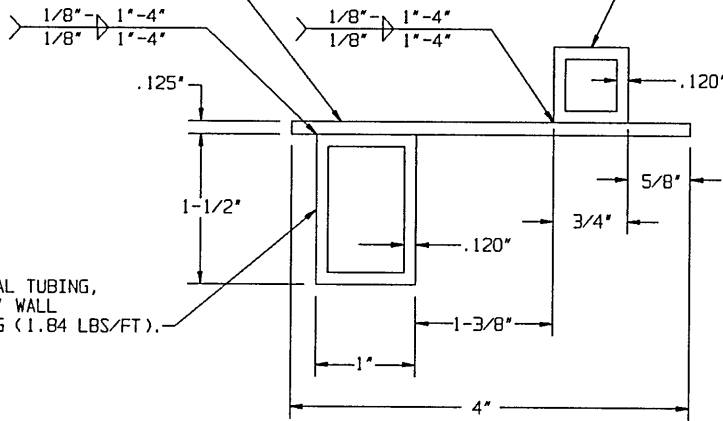


**DETAIL B**

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL RETAINER AND ADJACENT DUNNAGE PIECES.

STEEL STRIP, 1/8" THICK BY 4" WIDE  
BY 83" LONG (1.70 LBS/FT).

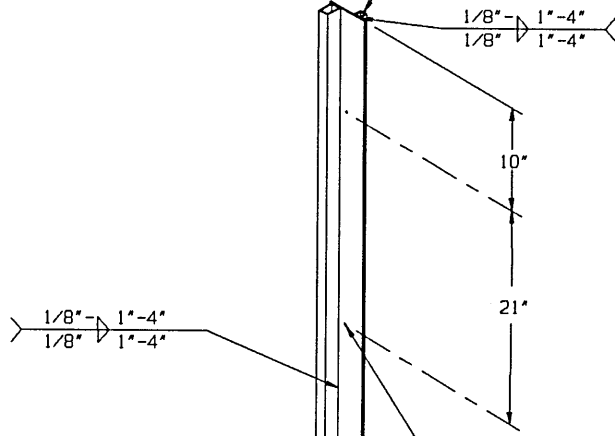
SQUARE STRUCTURAL TUBING, 3/4" SQUARE  
BY .120" WALL THICKNESS BY 83" LONG  
(1.03 LBS/FT).



RECTANGULAR STRUCTURAL TUBING,  
1-1/2" BY 1" BY .120" WALL  
THICKNESS BY 83" LONG (1.84 LBS/FT).

**VIEW A**

SQUARE STRUCTURAL TUBING,  
3/4" SQUARE BY .120" WALL  
THICKNESS BY 83" LONG  
(1.03 LBS/FT).



RECTANGULAR STRUCTURAL TUBING,  
1-1/2" BY 1" BY .120" WALL THICKNESS  
BY 83" LONG (1.84 LBS/FT).

DRILL 5/32", 4 HOLES.

STEEL STRIP, 1/8" THICK BY 4" WIDE  
BY 83" LONG (1.70 LBS/FT).

**DOOR POST VERTICAL RETAINER**

NOTE: THE ABOVE ASSEMBLY HAS BEEN SHOWN ROTATED 90° FROM THE ORIENTATION IN WHICH IT IS INSTALLED IN THE LEFT REAR CORNER OF THE CONTAINER. THE ASSEMBLY HAS BEEN ROTATED FOR HOLE LOCATION CLARITY.