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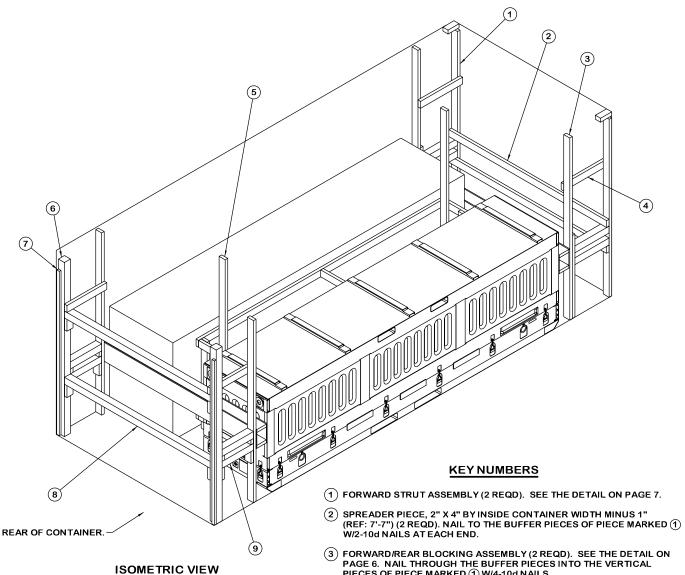
LOADING AND BRACING IN END OPENING ISO CONTAINERS OF AGM-130C-12 MISSILES PACKED IN CNU-578/E CONTAINERS

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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-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 **LAURA FIEFFER DO NOT SCALE** ENGINEER REV WEBSITE: HTTP://WWW.DAC.ARMY.MIL BASIC **TECHNICIAN** REV. **JULY 2000** BASIC DRAFTSMAN REV. TRANSPORTATION ENGINEERING APPROVED BY ORDER OF COMMANDING GENERAL, William R. Frerich U.S. ARMY MATERIEL COMMAND DIVISION CLASS DIVISION DRAWING FILE VALIDATION **ENGINEERING** DIVISION 19 48 8667 SP15J100 ENGINEERING DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER



LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-578/E DUNNAGE CONTAINER		- ´484 LBS

TOTAL WEIGHT - - - - - - 15, 104 LBS (APPROX)

BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" × 4" 2" × 6" 4" × 4"	159 31 42	106 31 56	
NAILS	NO. REQD	POUNDS	
6d (2") 10d (3") 12d (3-1/4")	88 112 40	3/4 1-3/4 3/4	

PLYWOOD, 1/2" - - - 24.02 SQ FT REQD - - 33.02 LBS DOOR POST VERTICAL RETAINER - 2 REQD - - - 64 LBS

- PIECES OF PIECE MARKED (1) W/4-10d NAILS.
- (4) STABILIZER PIECE, 2" X 4" BY CUT TO FIT (4 REQD). INSTALL TO SPAN BETWEEN THE BUFFER PIECE ON THE FORWARD/REAR BLOCKING ASSEMBLY AND THE BUFFER PIECE ON THE FORWARD STRUT ASSEM-BLY OR THE DOOR POST VERTICAL, WITH THE TOP OF THE STABILIZER PIECE AT 67". NAIL TO THE BUFFER PIECE ON THE FORWARD/REAR BLOCKING ASSEMBLY AND TO THE BUFFER PIECE ON THE FORWARD STRUT ASSEMBLY OR THE DOOR POST VERTICAL W/2-10d NAILS AT EACH END.
- (5) FILLER ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 5.
- (6) DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 7 AND "DETAIL B" ON PAGE 9.
- (7) DOOR POST VERTICAL RETAINER (2 REQD). SEE THE DETAIL ON PAGE 8 AND THE SPECIAL NOTE AND "DETAIL B" ON PAGE 9. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- (8) DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (2 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL CUT" DETAIL ON PAGE 10.
- (9) STRUT, 4" X 4" BY CUT-TO-FIT (REF: 18-1/4") (4 REQD). TOENAIL TO THE BUFFER PIECES OF THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 10.

(GENERAL NOTES CONTINUED)

- H. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAV-ITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.
- J. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- K. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- L. MAXIMUM LOAD WEIGHT CRITERIA:

THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IMPOSED ON THE INTERMODAL CONTAINER SYSTEM.

- M. 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 EX-CEEDED, 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.
- N. 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.
- O. 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.
- P. THE QUANTITY OF CNU-578/E CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE REDUCED LOAD PROVISIONS ON PAGE 10.
- Q. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN CONTAINERS AND THE END OPENING CONTAINER, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.
- R. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
 - PREFABRICATE TWO FORWARD STRUT ASSEMBLIES, TWO FORWARD/REAR BLOCKING ASSEMBLIES, ONE FILLER ASSEMBLY, AND NAIL A DOOR POST VERTICAL RETAINER TO EACH DOOR POST VERTICAL, ONE RIGHT HAND AND ONE LEFT HAND.
 - INSTALL THE FORWARD STRUT ASSEMBLIES, THE FORWARD BLOCKING ASSEMBLY, THE SPREADER PIECES, AND TWO STABILIZER PIECES.
 - 3. LOAD TWO CNU-578/E CONTAINERS.
 - 4. INSTALL THE FILLER ASSEMBLY.
 - 5. INSTALL THE REAR BLOCKING ASSEMBLY.
 - INSTALL THE DOOR POST VERTICAL ASSEMBLIES (ONE RIGHT HAND AND ONE LEFT HAND).
 - 7. INSTALL THE TWO DOOR SPANNER PIECES.
 - 8. INSTALL THE FOUR STRUTS AND TWO STABILIZER PIECES.

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCOR-DANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF AGM-130C-12 MISSILES PACKED IN CNU-578/E CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-578/E CONTAINER WITH MISSILE ITEMS. SEE PAGE 4 AND U. S. AIR FORCE DRAWING 9531330 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 93" HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE A TOTAL INSIDE HEIGHT OF 95", BUT A CLEAR HEIGHT UNDER THE ROOF BOWS OF 93", VERIFY INSIDE CONTAINER HEIGHT PRIOR TO FABRICATING DUNNAGE. 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
- D. WHEN LOADING CNU-578/E CONTAINERS, 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 FILLER ASSEMBLY. NAIL EACH ADDITIONAL PIECE TO A LONGITUDINAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE LENGTH OF THE LATERAL PIECES 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 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 POS-SIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE AS-SEMBLIES 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 FORWARD WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE FORWARD STRUT 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 FORWARD WALL ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCK-ING.

(CONTINUED AT LEFT)

MATERIAL SPECIFICATIONS

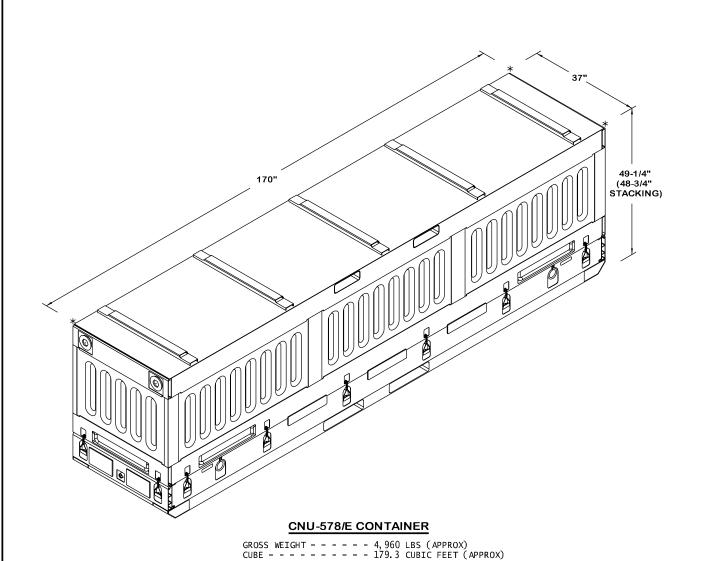
LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.

 $\underline{\text{NAILS}}$ ----: ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).

PLYWOOD - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE CD. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

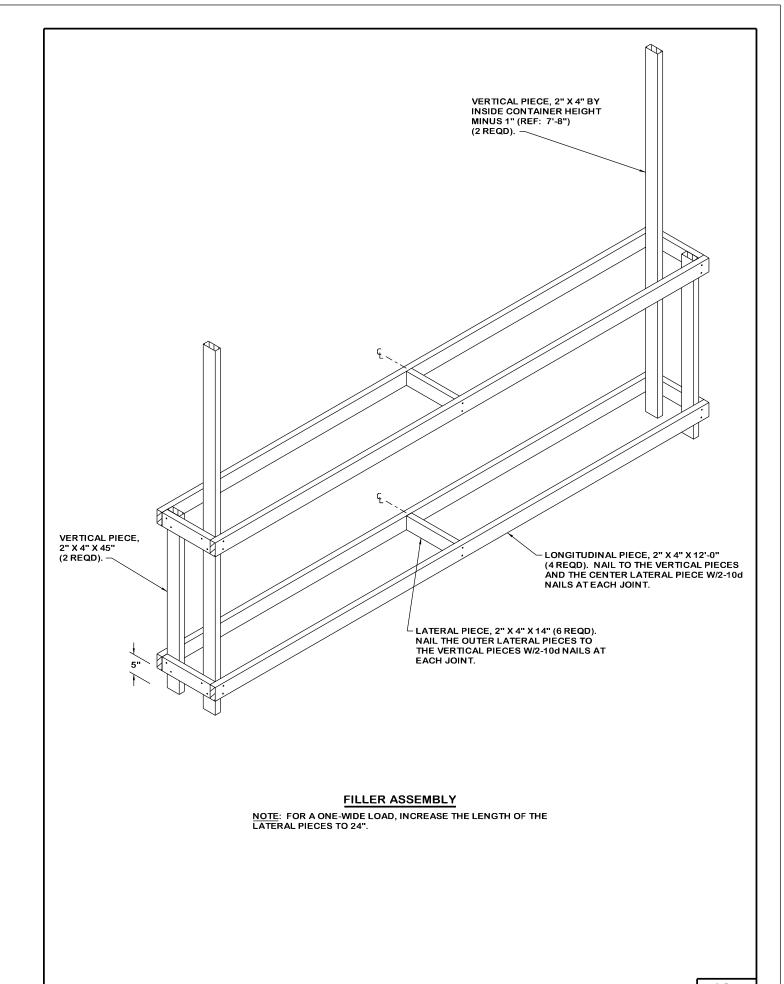
ANTI-CHAFING
MATERIAL - - - -: MIL-B-121 (OR EQUAL); NEUTRAL BARRIER
MATERIAL.

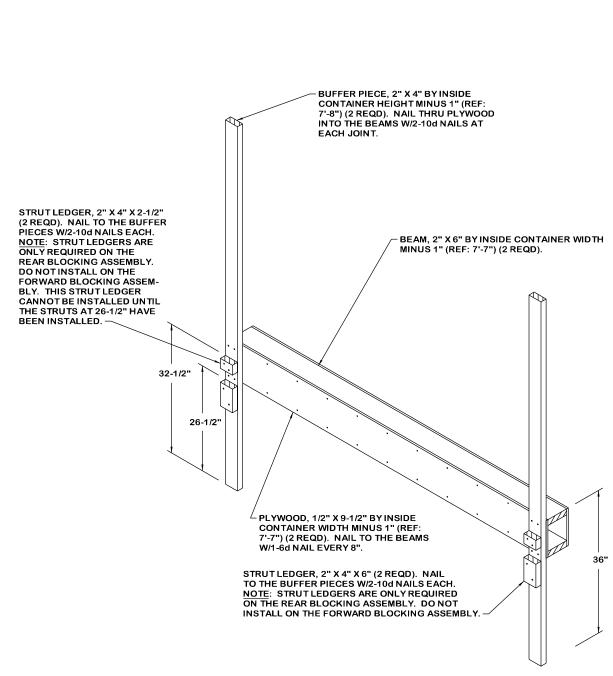
STEEL,
STRUCTURAL - - - : ASTM A501, STEEL STRUCTURAL TUBING; AND
ASTM A570, STEEL, STRIP, HOT-ROLLED,
GRADE 36 (MINIMUM).



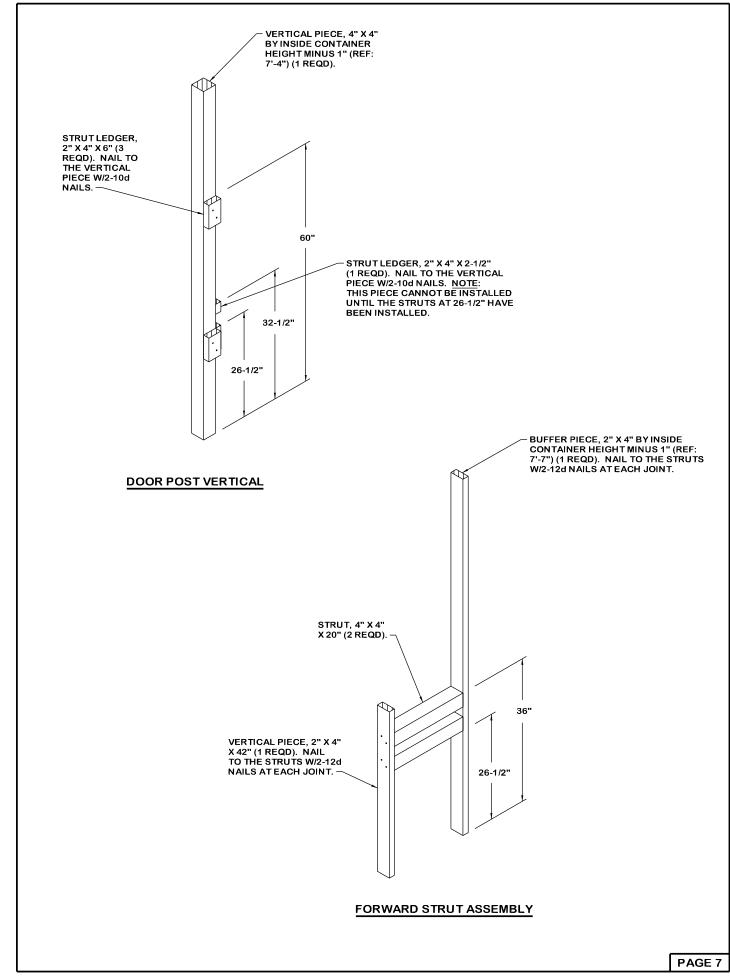
CONTAINER HANDLING GUIDANCE

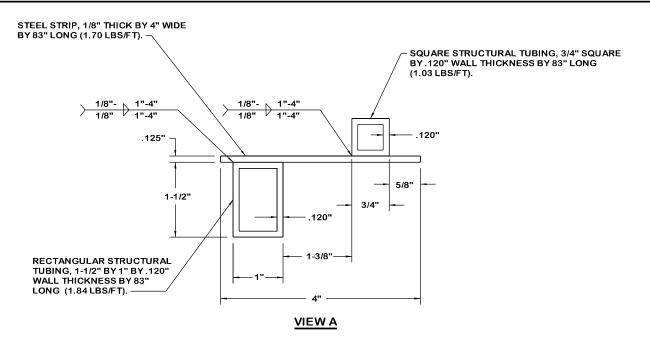
- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS. APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.
- B. PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.
- C. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
- D. WHEN UNLOADING CONTAINERS, REMOVE THE REAR AND LATERAL DUNNAGE, AND SHIFT THE NEAR END OF A CONTAINER TOWARDS THE CENTER OF THE END OPENING CONTAINER. ATTACA CHAIN FROM THE CONTAINER LIFTING CLEVIS ON ONE SIDE OF THE CONTAINER, AROUND THE FORKLIFT MAST, TO THE CONTAINER LIFTING CLEVIS ON THE OPPOSITE SIDE OF THE CONTAINER, OR THREAD A CHAIN THROUGH THE FORKLIFT POCKETS OF THE CONTAINER AND AROUND THE FORKLIFT MAST, FORMING A COMPLETE LOOP. SLIGHTLY ELEVATE AND INSERT THE FORK TINES UNDER THE END OF THE CONTAINER AND SLOWLY DRAG THE CONTAINER REARWARD UNTIL IT CAN BE HANDLED FROM THE SIDE, TAKING CARE NOT TO DAMAGE THE CONTAINER.

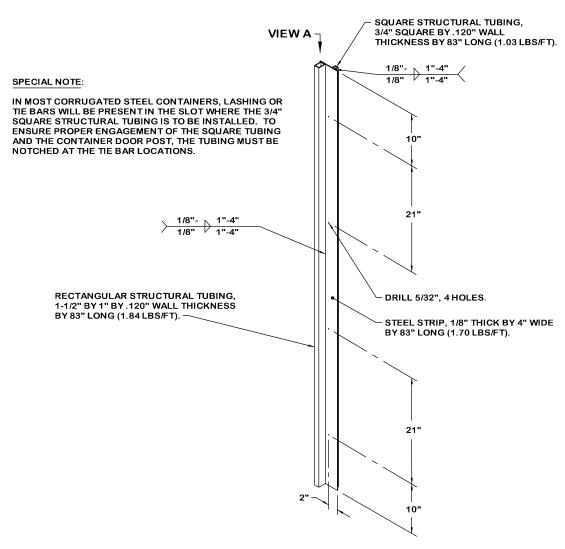




FORWARD/REAR BLOCKING ASSEMBLY

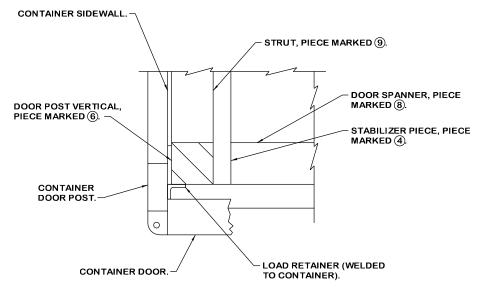






DOOR POST VERTICAL RETAINER

 $\underline{\text{NOTE}}$: 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.

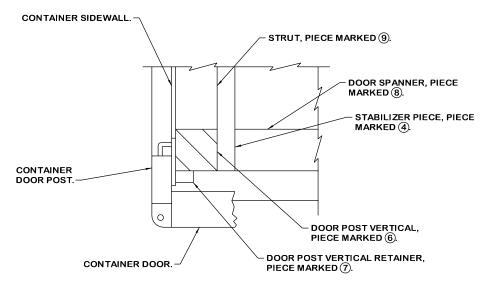


DETAIL A

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:

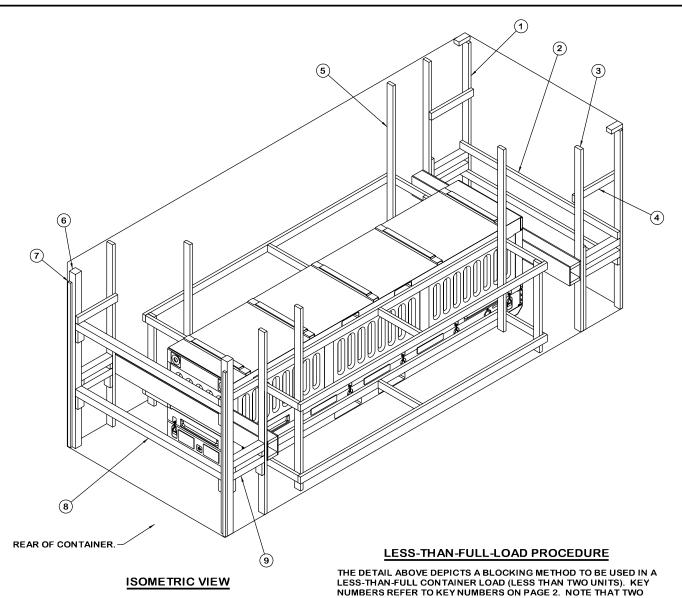
WHEN ISO CONTAINERS ARE EQUIPPED WITH PRE-WELDED LOAD RETAINERS, AS DEPICTED IN "DETAIL A" ABOVE, DOOR POST VERTICAL RETAINERS, PIECES MARKED (7), WILL NOT BE REQUIRED FOR THE LOAD DEPICTED ON PAGE 2. SEE VARIOUS LOADS WITHIN AMC DRAWING 19-48-4153-159A1002 FOR EXAMPLES. SEE PAGE 8 FOR DETAILS OF THE METAL DOOR POST VERTICAL RETAINER.



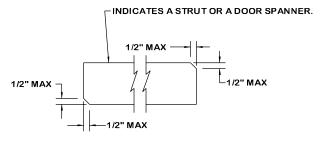
DETAIL B

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.

PAGE 9



THE DETAIL ABOVE DEPICTS A BLOCKING METHOD TO BE USED IN A LESS-THAN-FULL CONTAINER LOAD (LESS THAN TWO UNITS). KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. NOTE THAT TWO FILLER ASSEMBLIES ARE REQUIRED, AND THAT THE FILLER ASSEMBLIES HAVE BEEN MODIFIED AS DESCRIBED IN THE CONSTRUCTION DETAILS ON PAGE 5. SEE GENERAL NOTE "H" ON PAGE 3.



BEVEL-CUT

IF DESIRED, EACH END OF A STRUT OR DOOR SPANNER MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT END OF LOAD FIT.

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