

APPROVED BY
BUREAU OF EXPLOSIVES

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DATE 10/27/92

LOADING AND BRACING IN END OPENING ISO CONTAINERS OF SPARROW (AIM-7F) MISSILES PACKED IN CNU-305/E SHIPPING AND STORAGE CONTAINERS

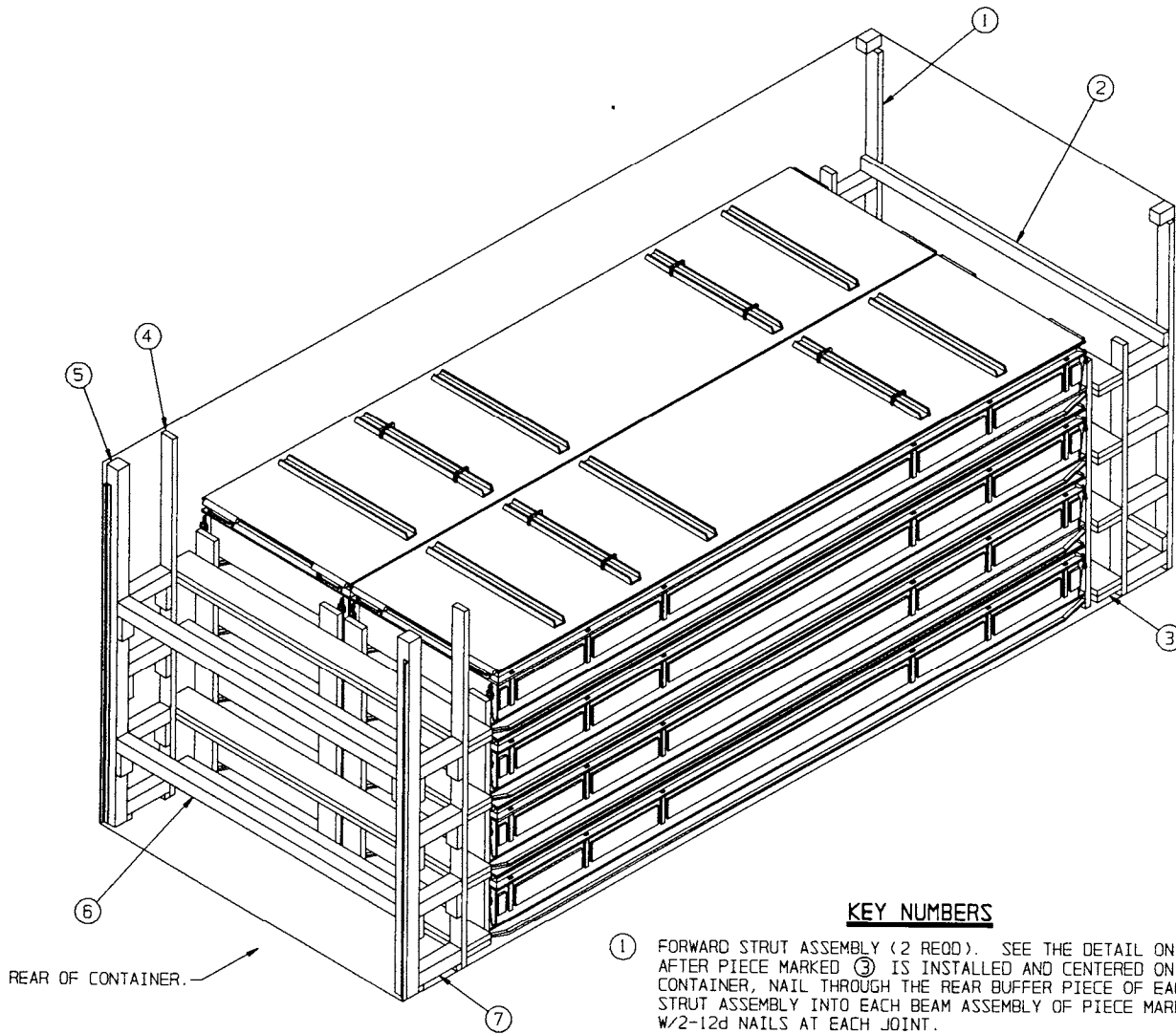
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- LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLAT CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY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

U.S. ARMY MATERIEL COMMAND DRAWING			
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JANUARY 1993			
	CLASS	DIVISION	DRAWING
	19	48	8510
			FILE
			SP15J23

DO NOT SCALE



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD STRUT ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 4. AFTER PIECE MARKED ③ IS INSTALLED AND CENTERED ON THE CONTAINER, NAIL THROUGH THE REAR BUFFER PIECE OF EACH FORWARD STRUT ASSEMBLY INTO EACH BEAM ASSEMBLY OF PIECE MARKED ③ W/2-12d NAILS AT EACH JOINT.
- ② SPREADER PIECE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (2 REQD). POSITION AS SHOWN, IMMEDIATELY ABOVE THE TOP AND BOTTOM STRUTS AND NAIL TO THE FORWARD BUFFER PIECES OF PIECES MARKED ① W/2-10d NAILS AT EACH END.
- ③ FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 5.
- ④ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 5.
- ⑤ DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 4 AND DETAILS A AND B ON PAGE 7.
- ⑥ 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 VERTICALS W/2-12d NAILS AT EACH END. SEE THE BEVEL CUT DETAIL ON PAGE 6.
- ⑦ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 13-1/4") (8 REQD). TOENAIL TO THE BUFFER PIECE OF THE REAR BLOCKING ASSEMBLY AND TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	66	44
2" X 6"	44	44
2" X 8"	122	163
4" X 4"	47	63
NAILS	NO. REQD	POUNDS
10d (3")	256	4
12d (3-1/4")	88	1-1/2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-305/E CONTAINER	8	22,840 LBS
DUNNAGE		634 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		28,174 LBS (APPROX)

- N. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE FILLER ASSEMBLY ON PAGE 6. 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.
- O. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
 - 1. PREFABRICATE TWO FORWARD STRUT ASSEMBLIES, ONE FORWARD AND ONE REAR BLOCKING ASSEMBLY, AND TWO DOOR POST VERTICALS.
 - 2. INSTALL THE TWO FORWARD STRUT ASSEMBLIES.
 - 3. INSTALL THE TWO SPREADER PIECES.
 - 4. INSTALL THE FORWARD BLOCKING ASSEMBLY.
 - 5. LOAD EIGHT CONTAINERS.
 - 6. INSTALL THE REAR BLOCKING ASSEMBLY.
 - 7. INSTALL THE TWO DOOR POST VERTICALS.
 - 8. INSTALL THE TWO DOOR SPANNER PIECES.
 - 9. INSTALL THE EIGHT STRUTS.

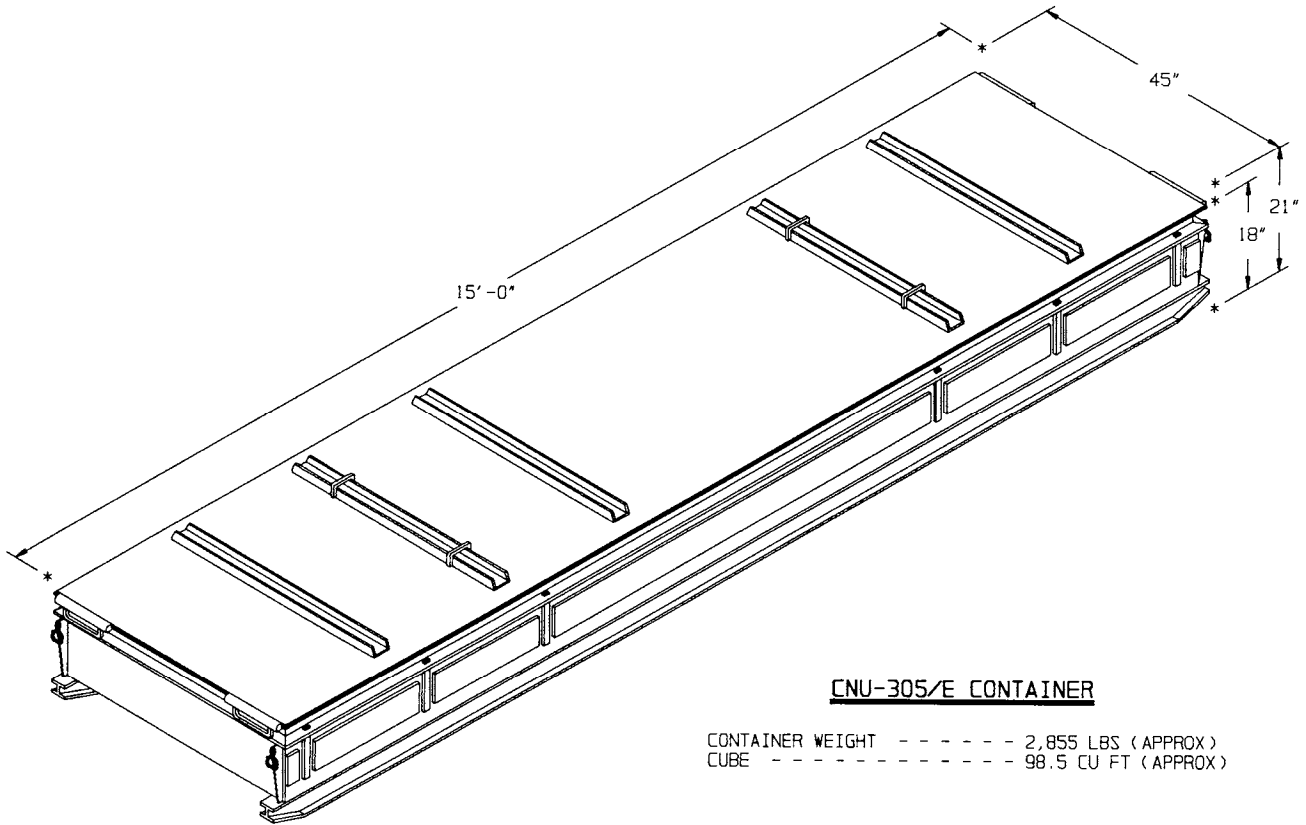
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF SPARROW (AIM-7F) MISSILES PACKED IN CNU-305/E CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-305/E 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" (92" 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-305/E CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF 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 ADDING PLYWOOD OR HARDBOARD FILL PIECES ON ONE OR BOTH SIDES OF THE ISO CONTAINER OR BETWEEN CNU-305/E CONTAINERS. FILL PIECES MUST BE SECURED (STRAP TAPE, ETC.) TO PREVENT MOVEMENT. ANTI-CHAFING MAY ALSO BE INSTALLED BETWEEN THE CNU-305/E CONTAINERS AND BETWEEN THE CNU-305/E CONTAINERS AND THE ISO CONTAINER SIDEWALL, IF DESIRED, USING FIBERBOARD AND SECURING IN PLACE.
- 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. 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 BLOCKING ASSEMBLY 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 FORWARD WALL 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:

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.
- HARDBOARD - - - - - : FED SPEC LLL-B-810; TYPE I.
- FIBERBOARD - - - - - : FED SPEC PPP-F-320; TYPE SF (SOLID FIBERBOARD), CLASS DOMESTIC, ALL GRADES.

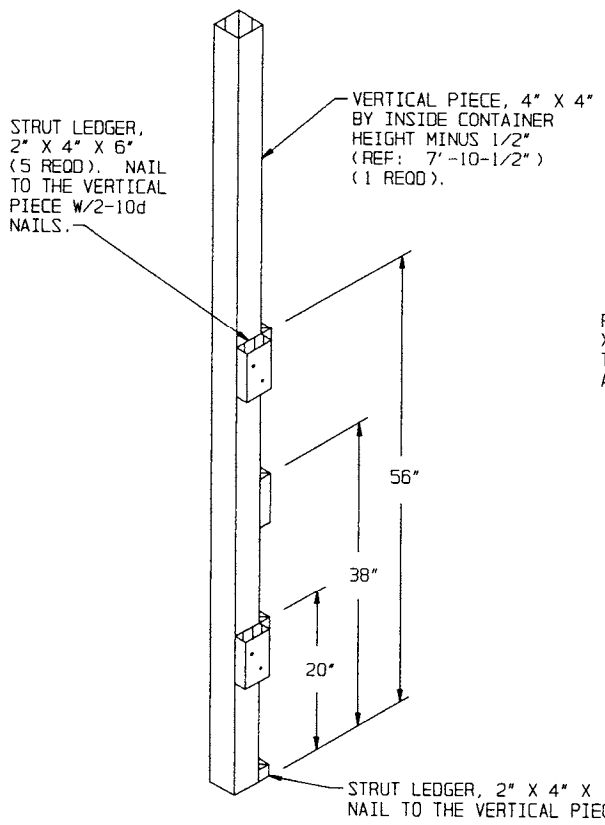
- 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
- 2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- L. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLAT BED 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 0.454 KG.

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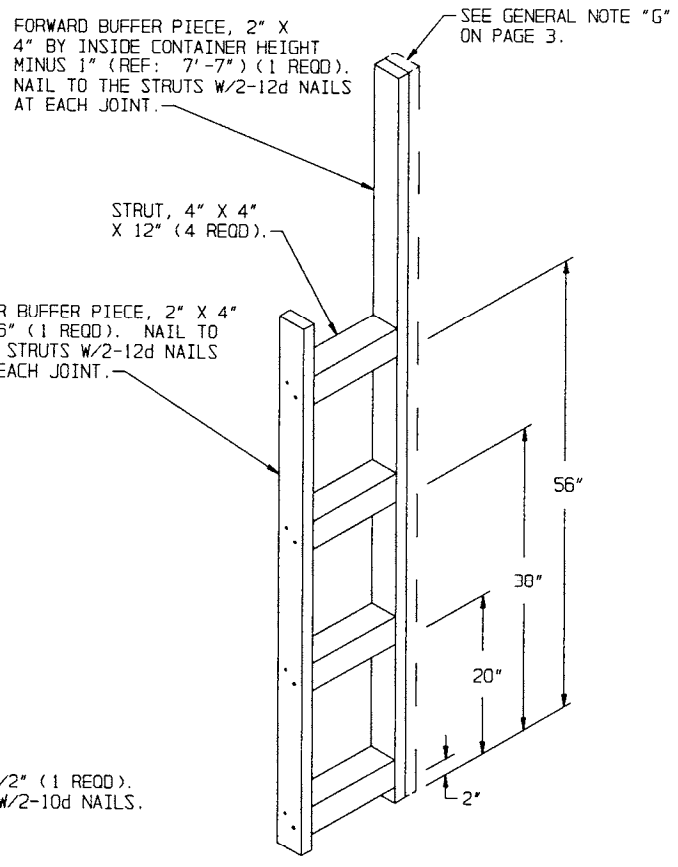


CNU-305/E CONTAINER

CONTAINER WEIGHT - - - - - 2,855 LBS (APPROX)
 CUBE - - - - - 98.5 CU FT (APPROX)



DOOR POST VERTICAL

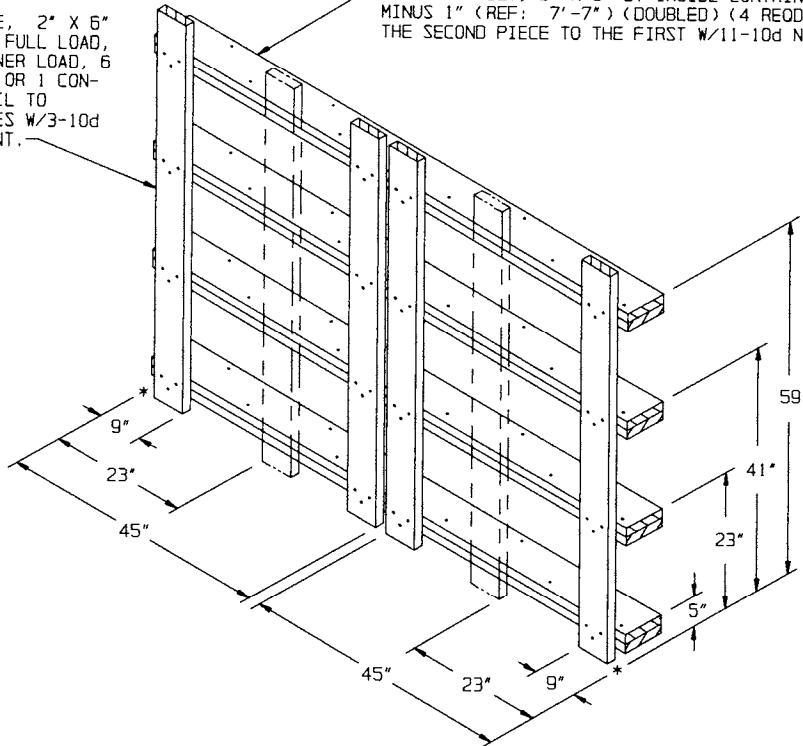


FORWARD STRUT ASSEMBLY

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.

LOAD BEARING PIECE, 2" X 6" X 65" (4 REQD FOR FULL LOAD, 6, 4, OR 2 CONTAINER LOAD, 6 REQD FOR 7, 5, 3, OR 1 CONTAINER LOAD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

BEAM ASSEMBLY, 2" X 8" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (DOUBLED) (4 REQD). LAMINATE THE SECOND PIECE TO THE FIRST W/11-10d NAILS.



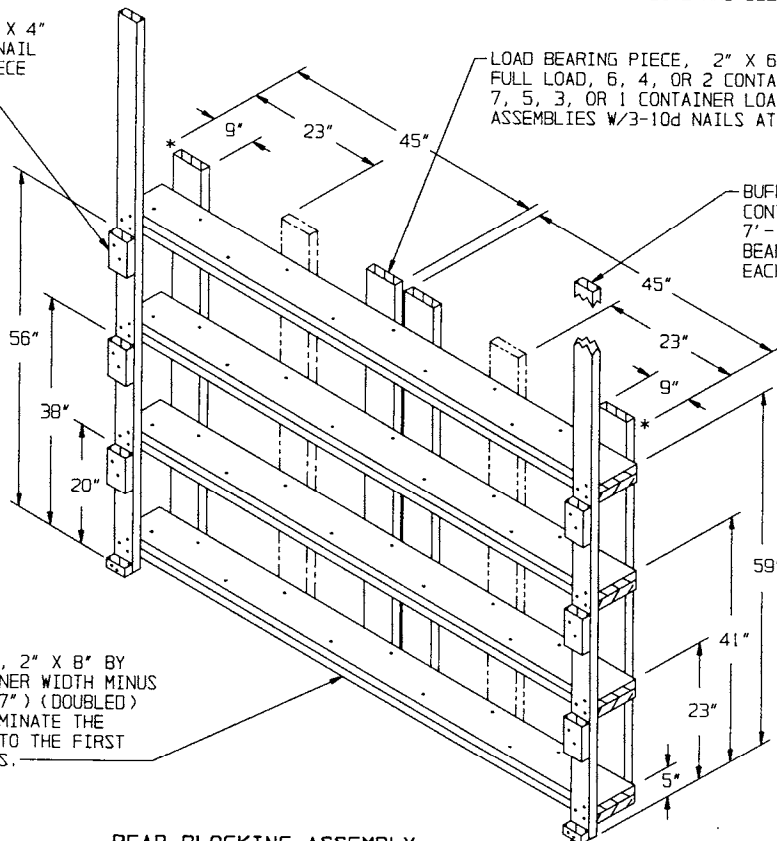
FORWARD BLOCKING ASSEMBLY

NOTE: BOTH THE ASSEMBLIES DEPICTED ON THIS PAGE REQUIRE TWO EXTRA LOAD BEARING PIECES WHEN USED IN LOADS CONSISTING OF AN ODD NUMBER OF LADING UNITS. SEE THE DETAILS ABOVE AND BELOW.

STRUT LEDGER, 2" X 4" X 6" (6 REQD). NAIL TO THE BUFFER PIECE W/2-10d NAILS.

LOAD BEARING PIECE, 2" X 6" X 65" (4 REQD FOR FULL LOAD, 6, 4, OR 2 CONTAINER LOAD, 6 REQD FOR 7, 5, 3, OR 1 CONTAINER LOAD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-10") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.



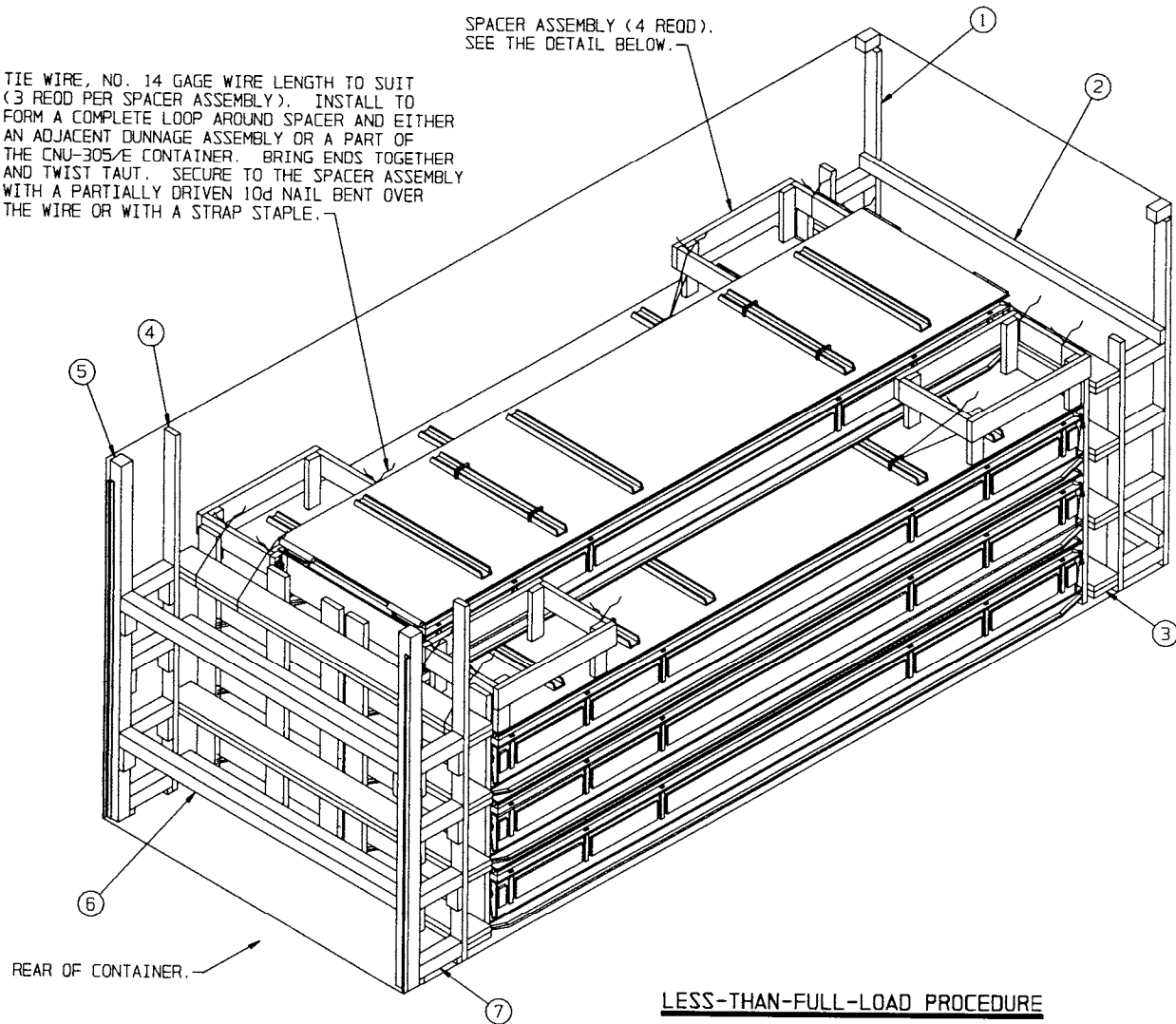
BEAM ASSEMBLY, 2" X 8" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (DOUBLED) (4 REQD). LAMINATE THE SECOND PIECE TO THE FIRST W/11-10d NAILS.

STRUT LEDGER, 2" X 4" X 1-1/2" (2 REQD). NAIL TO THE BUFFER PIECE W/2-10d NAILS.

REAR BLOCKING ASSEMBLY

TIE WIRE, NO. 14 GAGE WIRE LENGTH TO SUIT (3 REOD PER SPACER ASSEMBLY). INSTALL TO FORM A COMPLETE LOOP AROUND SPACER AND EITHER AN ADJACENT DUNNAGE ASSEMBLY OR A PART OF THE CNU-305/E CONTAINER. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE SPACER ASSEMBLY WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.

SPACER ASSEMBLY (4 REOD).
SEE THE DETAIL BELOW.

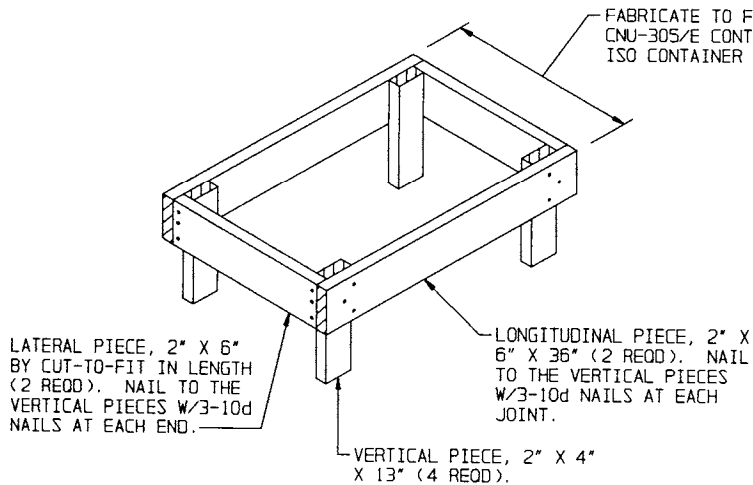


REAR OF CONTAINER.

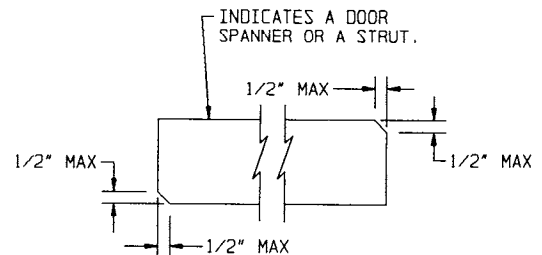
LESS-THAN-FULL-LOAD PROCEDURE

THE DETAIL ABOVE DEPICTS A BLOCKING METHOD TO BE USED IN A LESS-THAN-FULL CONTAINER LOAD (LESS THAN EIGHT UNITS). KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. IF AN EVEN NUMBER OF CONTAINERS ARE TO BE OMITTED, A LAYER OR LAYERS SHOULD BE OMITTED. WHEN LOADING AN ODD NUMBER OF CONTAINERS, BE SURE TO ADD THE ADDITIONAL VERTICAL PIECES TO THE FORWARD AND REAR BLOCKING ASSEMBLIES.

FABRICATE TO FIT BETWEEN CNU-305/E CONTAINER AND ISO CONTAINER SIDEWALL.

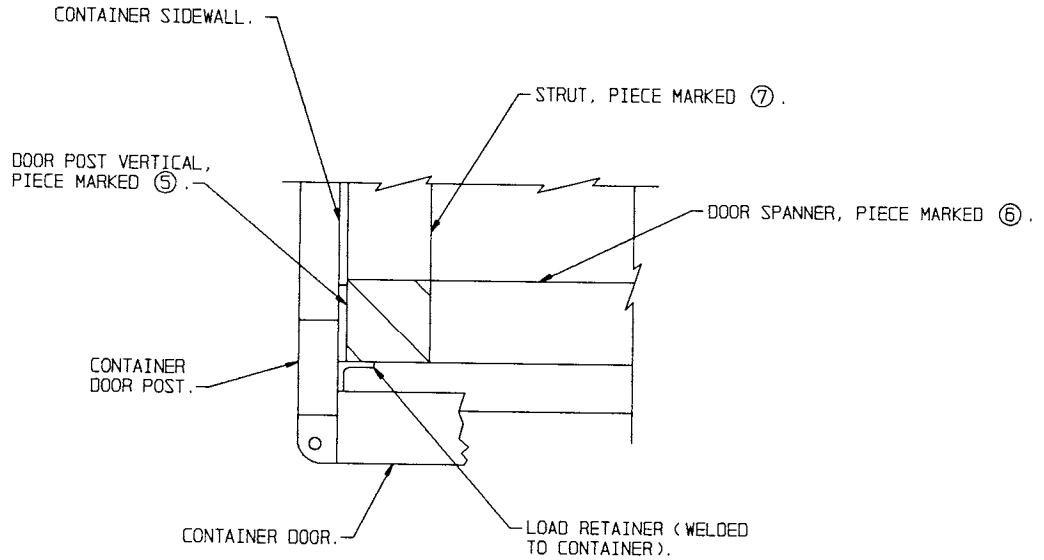


SPACER ASSEMBLY



BEVEL-CUT

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

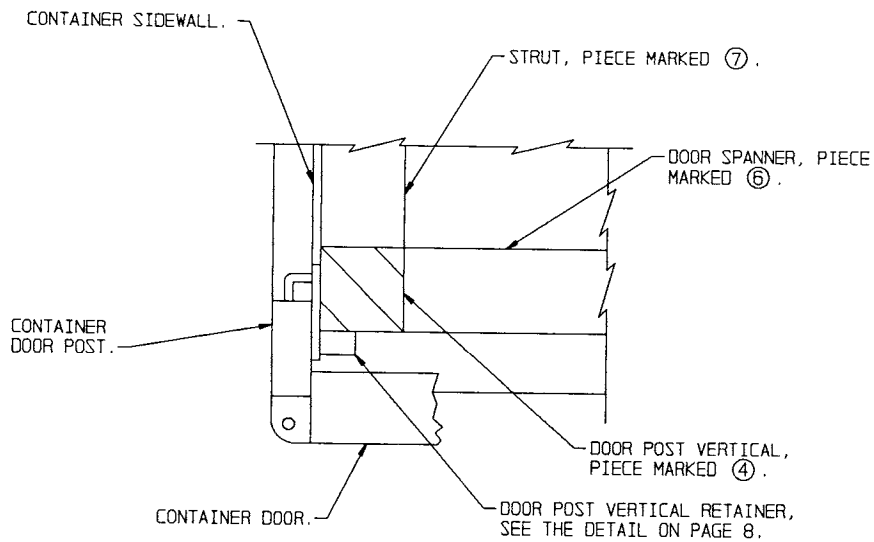


DETAIL A

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL 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 PAGE 8 FOR DETAILS OF THE METAL DOOR POST VERTICAL RETAINER.

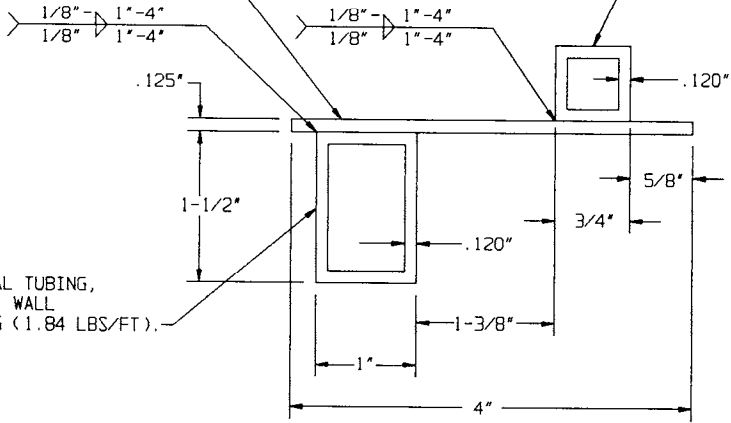


DETAIL B

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.

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).



VIEW A

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

DRILL 5/32", 4 HOLES.

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

DOOR POST VERTICAL RETAINER