APPROVED BY
BUREAU OF EXPLOSIVES

DATE 10/27/92

CHAPARRAL

LOADING AND BRACING WITH WOODEN DUNNAGE IN END OPENING ISO CONTAINERS OF THE COMPLETE ROUND, PACKED IN THE M570 SHIPPING AND STORAGE CONTAINER, PALLETIZED AND UNPALLETIZED

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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. SEE GENERAL NOTE "L" ON PAGE 2.

U.S. ARMY MATERIEL COMMAND DRAWING									
APPROVED, U.S. ARMY MISSILE COMMAND	DRAFT:	NAMZ	TECHNICIAN	ENGINEER					
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William F Ernst	MAY 1993			3					
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	CLASS	DIVISION	DRAWING	FILE					
	19	48	8190	GM15CH2					

DO NOT SCALE

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 THE CHAPARRAL COMPLETE ROUND PACKED IN THE M570 SHIPPING AND STORAGE CONTAINER, UNPALLETIZED, AND PALLETIZED FOUR (4) M570 CONTAINERS PER PALLET UNIT. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE SHIPPING AND STORAGE CONTAINER; SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH FOUR (4) M570 CONTAINERS. SEE PAGE 3 AND AMC DRAWING 19-48-5235-GM20CH1 FOR DETAILS OF THE PALLET UNIT. CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS OR PALLET UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED COMPLETE ROUND, OR WHEN THEY ARE EMPTY.
- D. THE LOAD AS SHOWN IS BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-5" HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 95" 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.
- E. WHEN LOADING CONTAINERS OR PALLET UNITS, 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. EXLESSIVE SLACK CAN BE ELIMINATED FROM THE LOAD ON PAGE 4 BY USING 4' X 8' SHEETS OF PLYWOOD CUT TO A HEIGHT OF 7'-7" BY THICKNESS REQUIRED ON ONE OR BOTH SIDES OF THE CONTAINER. FOR THE LOAD ON PAGE 5, ADDITIONAL PIECES OF AN APPROPRIATE THICKNESS CAN BE LAMINATED TO THE HORIZONTAL PIECES OF THE FILLER ASSEMBLY. NAIL EACH ADDITIONAL PIECE W/I APPROPRIATELY SIZED NAIL EVERY 12".
- F. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" BY 5-1/2" 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. IN SOME CONTAINERS, SUCH AS SOME ALL STEEL CONTAINERS, THERE IS A SLOT AT THE CORNERS OF THE FORWARD WALL. A PIECE OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES OF THE FORWARD STRUT ASSEMBLIES TO PROVIDE A FLAT SURFACE FOR THE 2" X 4" 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 ENDWALL OF THE CONTAINER IS SMOOTH AND FLAT.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

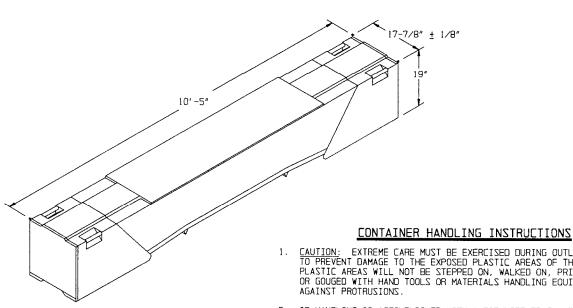
_UMBER - - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.

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 SURSTITUTED

(GENERAL NOTES CONTINUED)

- J. <u>CAUTION</u>: 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 ONE OF SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- L. 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:
 - 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 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.
- M. 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.
- N. 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.

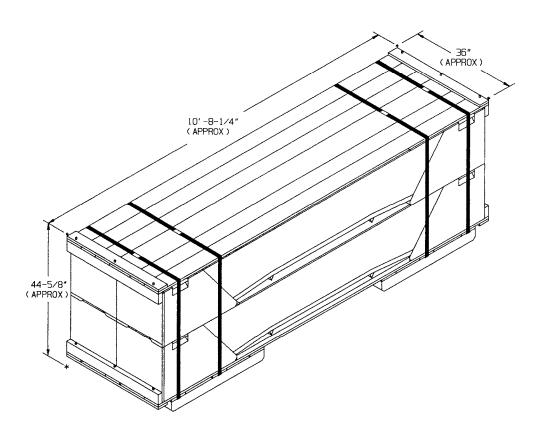


CONTAINER DETAIL

GROSS WEIGHT - - - - 280 POUNDS (APPROX)
TARE WEIGHT - - - 95 POUNDS (APPROX)
CUBE - - - - - - 24.7 CUBIC FEET

CAUTION: EXTREME CARE MUST BE EXERCISED DURING OUTLOADING OPERATIONS TO PREVENT DAMAGE TO THE EXPOSED PLASTIC AREAS OF THE CONTAINER. PLASTIC AREAS WILL NOT BE STEPPED ON, WALKED ON, PRIED AGAINST, STRUCK OR GOUGED WITH HAND TOOLS OR MATERIALS HANDLING EQUIPMENT, OR BUMPED

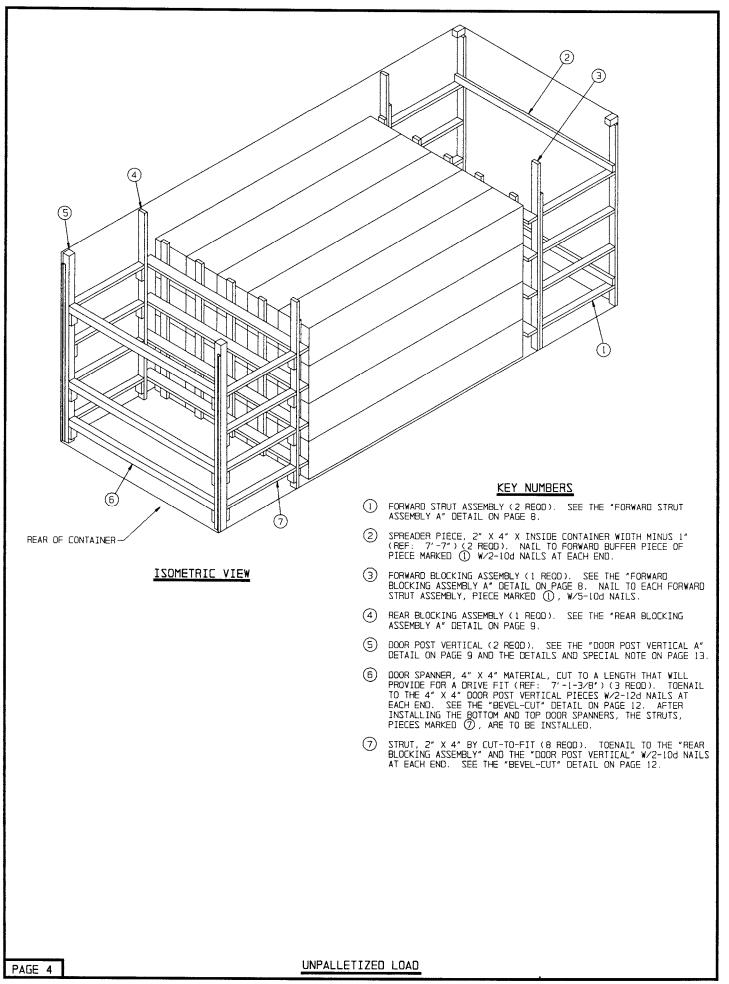
IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, CONTAINERS SHOULD BE HAULED FROM A SIDE POSITION. CAUTION: THE USUALLY APPLIED ENDHANDLING IS NOT PERMITTED. HOWEVER, FORK TIMES MAY BE PLACED UNDER THE SKIDS FROM AN END DIRECTION. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER OR WITHDRAWING FORKS FROM UNDER A CONTAINER, TO PREVENT DAMAGE TO THE CONTAINERS BY THE FORK TIMES OR THE FORKLIFT PACKAGE GIARD.



PALLET UNIT

GROSS WEIGHT - - - - 1,402 POUNDS (APPROX) . CUBE - - - - - - - 119.2 CUBIC FEET

CONTAINER DETAIL, CONTAINER HANDLING INSTRUCTIONS AND PALLET UNIT DETAIL



RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- I. PREFABRICATE TWO FORWARD STRUT ASSEMBLIES A, ONE FORWARD BLOCKING ASSEMBLY A, ONE REAR BLOCKING ASSEMBLY A, AND TWO DOOR POST VERTICALS A.
- 2. INSTALL THE FORWARD STRUT ASSEMBLIES A.
- 3. INSTALL THE SPREADER PIECES.
- 4. INSTALL THE FORWARD BLOCKING ASSEMBLY A.
- 5. LOAD TWENTY CONTAINERS.
- 6. INSTALL THE REAR BLOCKING ASSEMBLY A.
- INSTALL THE TWO DOOR POST VERTICALS A, AND, AS APPROPRIATE, NAIL TO THE DOOR POST VERTICAL RETAINERS.
- 8. INSTALL THE TWO DOOR SPANNER PIECES (ONE AT THE LOWEST POSITION AND ONE AT THE UPPERMOST POSITION).
- INSTALL THE STRUTS BETWEEN THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICALS AND INSTALL THE REMAINING DOOR SPANNER PIECE.

BILL OF MATERIAL								
LUMBER	LINEAR FEET	BOARD FEET						
2" X 4" 2" X 6" 4" X 4"	207 61 37	138 61 49						
NAILS	NO. REOD	POUNDS						
10d (3″) 12d (3-1/4″)	238 12	3-3/4 1/4						

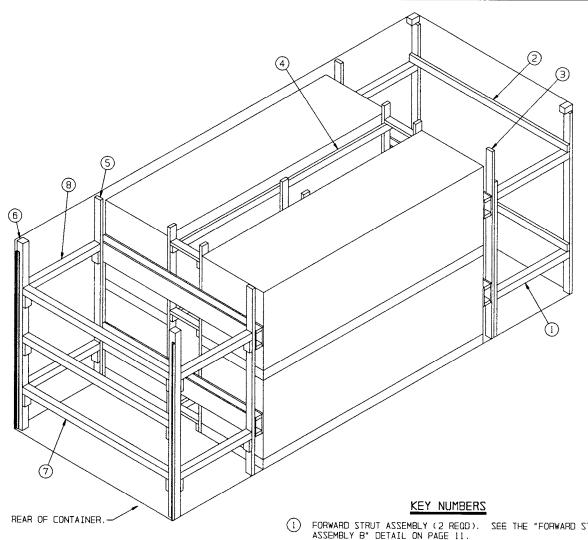
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ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINERS		

TOTAL WEIGHT - - - - - - 10,800 LBS (APPROX)

UNPALLETIZED LOAD

PAGE 5



ISOMETRIC VIEW

- (1) FORWARD STRUT ASSEMBLY (2 REQD). SEE THE "FORWARD STRUT
- 2 SPREADER PIECE, 2' X 4" X INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7') (2 REOD). NAIL TO THE BUFFER PIECE OF PIECE MARKED ① W/2-10d NAILS AT EACH END.
- FORWARD BLOCKING ASSEMBLY (1 REOD). SEE THE "FORWARD BLOCKING ASSEMBLY B" DETAIL ON PAGE 10. NAIL TO EACH FORWARD STRUT ASSEMBLY, PIECE MARKED ①, W/5-10d NAILS.
- (4) FILLER ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 11.
- (5) REAR BLOCKING ASSEMBLY (1 REOD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 10.
- (6) DOOR POST VERTICAL (2 REOD). SEE THE "DOOR POST VERTICAL B" DETAIL ON PAGE 12 AND THE DETAILS AND SPECIAL NOTE ON PAGE 13.
- (7) DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (3 REDD). TOENAIL TO THE 4" X 4" DOOR POST VERTICAL PIECES W/Z-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 12. AFTER INSTALLING THE BOTTOM AND TOP DOOR SPANNERS, THE STRUTS, PIECES MARKED (8), ARE TO BE INSTALLED.
- (B) STRUT, 4" X 4" BY CUT-TO-FIT (4 REOD). TOENAIL TO THE "REAR BLOCKING ASSEMBLY" AND THE "DOOR POST VERTICAL" W/2-10d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 12.

RECOMMENDED SEQUENTIAL LOADING PROCEDURES

- PREFABRICATE TWO FORWARD STRUT ASSEMBLIES B, ONE FORWARD BLOCKING ASSEMBLY B, ONE REAR BLOCKING ASSEMBLY B, ONE FILLER ASSEMBLY AND TWO DOOR POST VERTICALS B.
- 2. INSTALL THE FORWARD STRUT ASSEMBLIES B.
- 3. INSTALL THE SPREADER PIECES.
- 4. INSTALL THE FORWARD BLOCKING ASSEMBLY B.
- 5. LOAD FOUR PALLET UNITS AND INSTALL THE FILLER ASSEMBLY.
- 6. INSTALL THE REAR BLOCKING ASSEMBLY B.
- 7. INSTALL THE TWO DOOR POST VERTICALS B, AND, AS APPROPRIATE, NAIL TO THE DOOR POST VERTICAL RETAINERS.
- 8. INSTALL THE TWO DOOR SPANNER PIECES (ONE AT THE LOWEST POSITION AND ONE AT THE UPPERMOST POSITION).
- INSTALL THE STRUTS BETWEEN THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICALS AND INSTALL THE REMAINING DOOR SPANNER PIECE.

BILL OF MATERIAL							
LUMBER	LINEAR FEET BOARD FEET						
2" X 4" 4" X 4"	258 56	172 75					
NAILS	NO. REOD POUNDS						
6d (2") 10d (3") 12d (3-1/4")	192 154 38	1-1/4 2-1/2 3/4					
PLYWOOD, 1/2" 48.03 SO FT REOD 66.04 LBS							

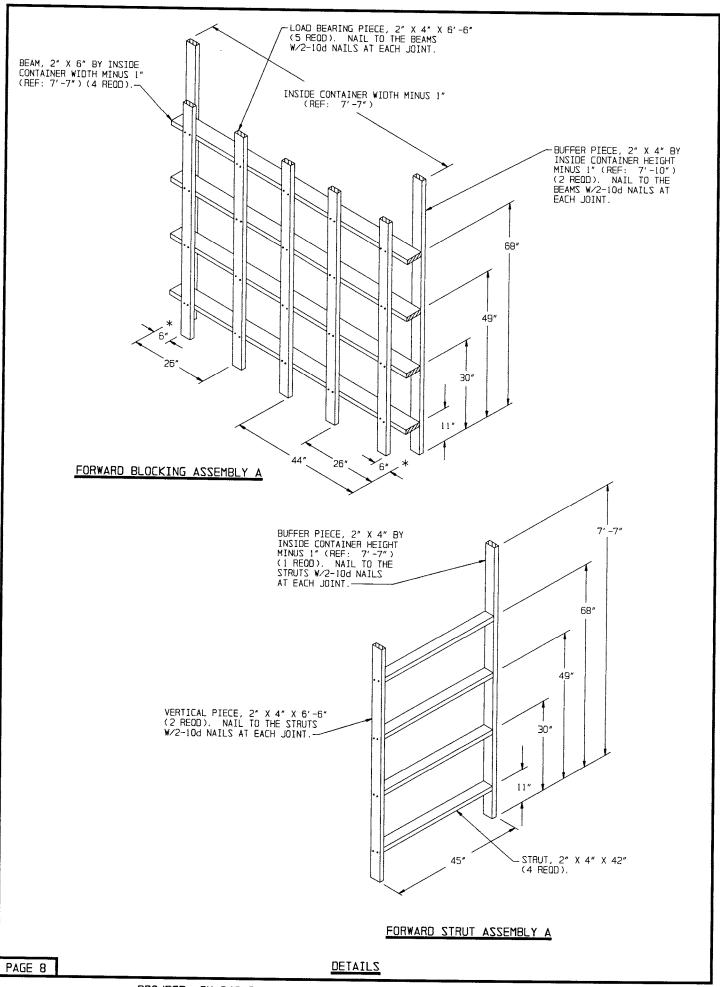
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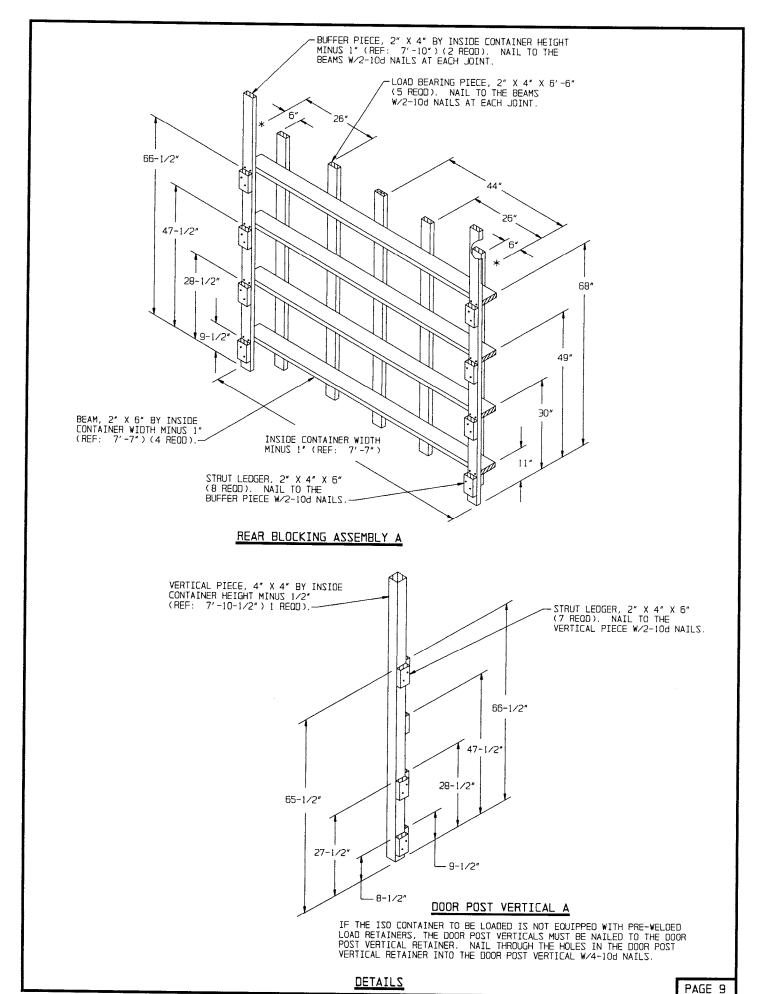
ITEM					Q	JANI	IT.	Y				WEIGHT	(APPROX)
PALLET UNIT DUNNAGE CONTAINER -	-	-	-	-	-		-	-	-	-	-	-,	LBZ

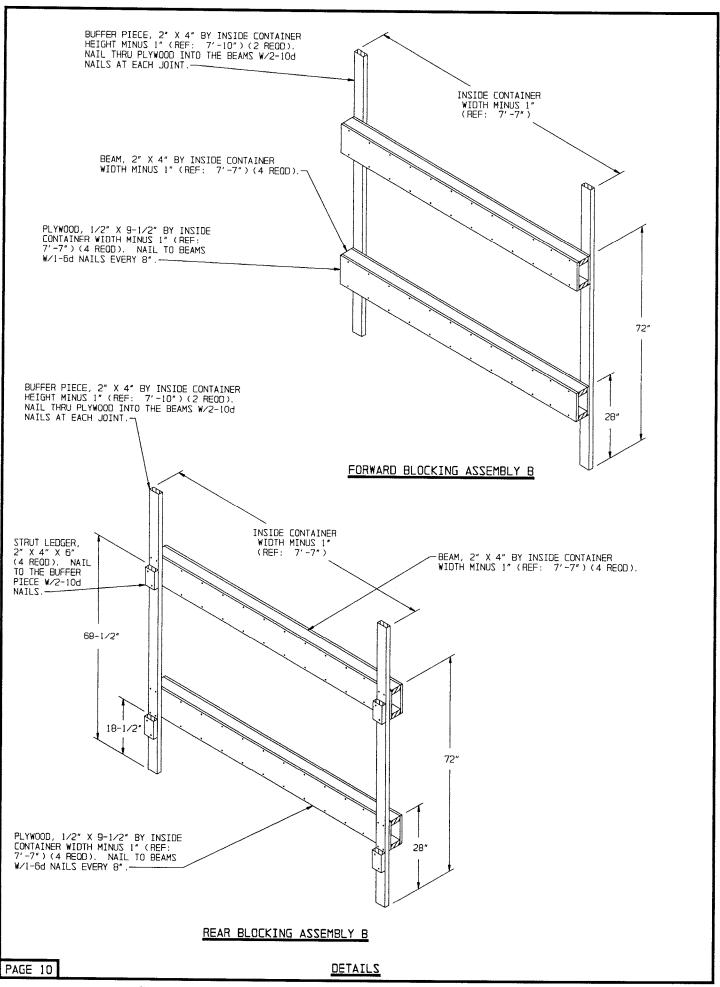
TOTAL WEIGHT - - - - - 10,873 LBS (APPROX)

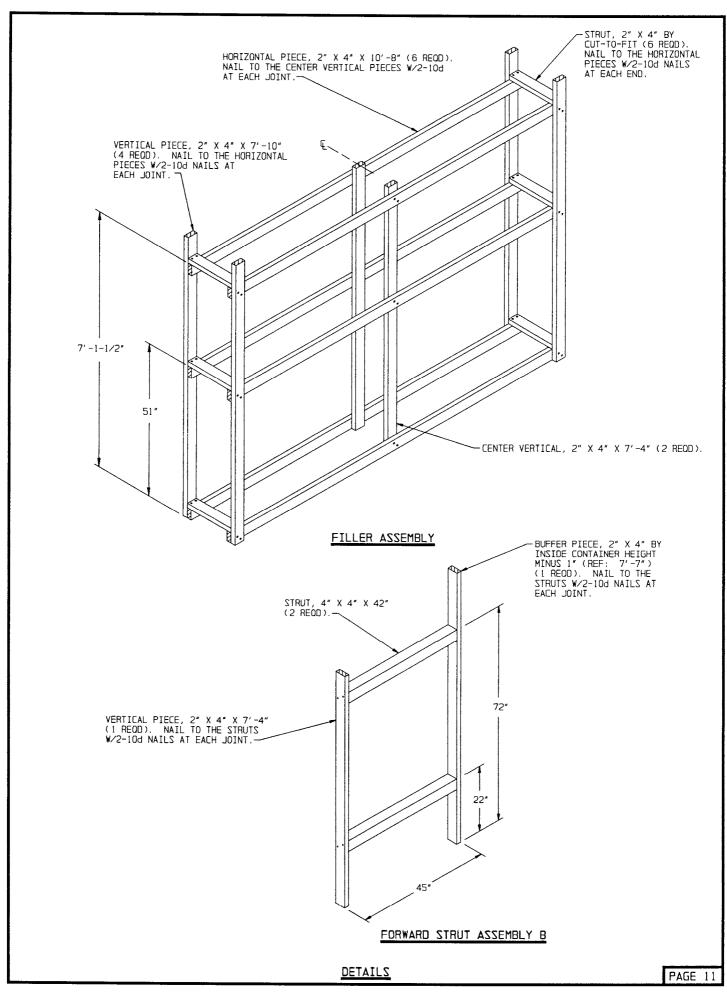
PALLETIZED LOAD

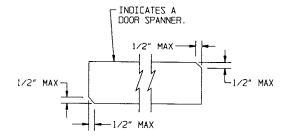
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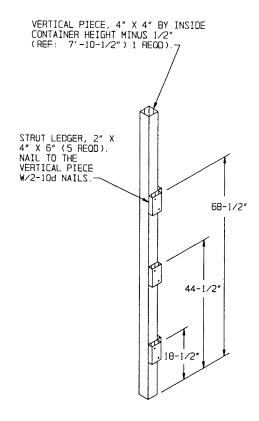






BEVEL-CUT

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

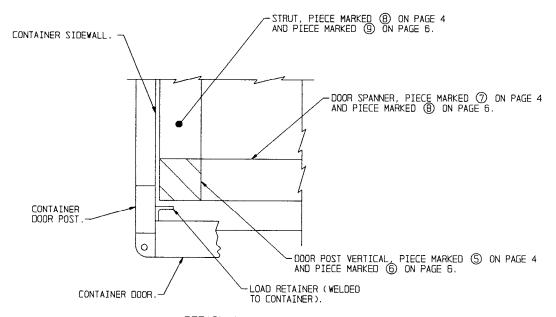


DOOR POST VERTICAL B

IF THE ISO CONTAINER TO BE LOADED IS NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, THE DOOR POST VERTICALS 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.

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DETAILS

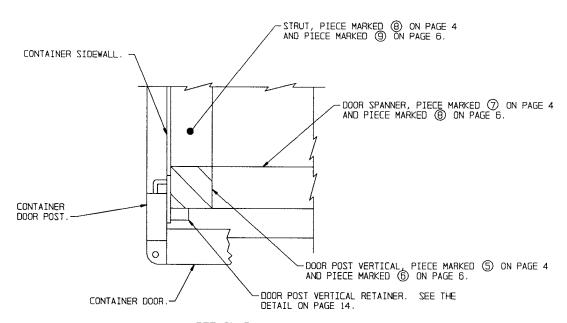


DETAIL A

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:

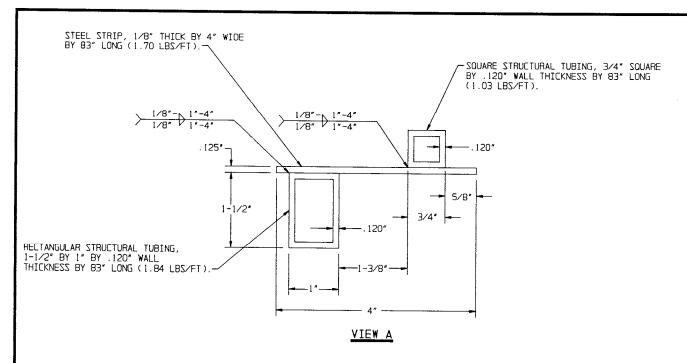
IF THE ISO CONTAINER FURNISHED FOR USE HAS PRE-WELDED LOAD RETAINERS, REFER TO "DETAIL A" ABOVE. IF THE ISO CONTAINER DOES NOT HAVE THE LOAD RETAINERS INSTALLED, THEN THE DOOR POST VERTICAL RETAINERS MUST BE USED. SEE "DETAIL B" BELOW AND THE DETAILS ON PAGE 14 FOR FABRICATION AND INSTALLATION GUIDANCE.

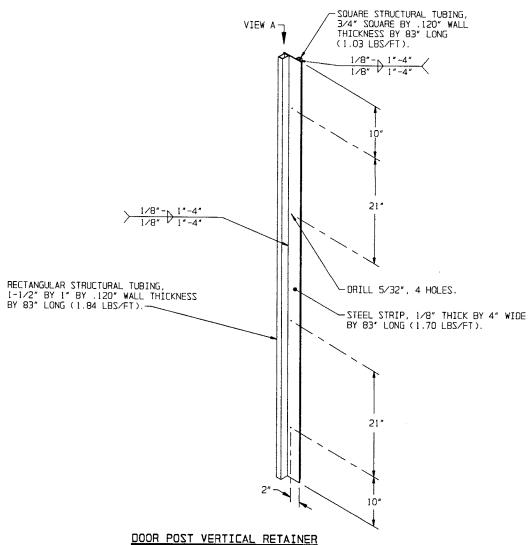


DETAIL B

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

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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.

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DETAILS