В	APPROVED BY SUREAU OF EXPLOSIVES
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LOADING AND BRACING IN END OPENING ISO CONTAINERS OF M117 750 POUND BOMBS PALLETIZED ON WOODEN PALLETS (4-PACK)

INDEX

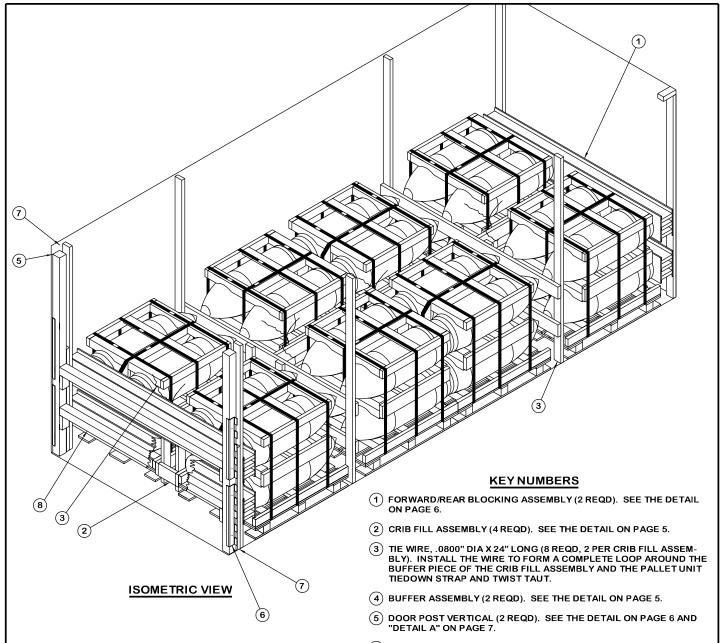
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LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR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

U.S. ARMY MATERIEL COMMAND DRAWING APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8. DO NOT SCALE FEBRUARY 2006 **MELVIN SIX** BASIC ENGINEER OR **TECHNICIAN** APPROVED BY ORDER OF COMMANDING GENERAL, TRANSPORTATION U.S. ARMY MATERIEL COMMAND ENGINEERING DIVISION DIVISION VALIDATION CLASS DRAWING **ENGINEERING** DIVISION 19 48 4353 15PB1014 **ENGINEERING** DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTE

PROJECT

CA 376-06



BILL OF MATERIAL						
LUMBER	LINEAR FEET	BOARD FEET				
2" x 4" 2" x 6" 4" x 4"	120 208 29	80 208 39				
NAILS	NO. REQD	POUNDS				
6d (2") 10d (3") 12d (3-1/4")	216 280 8	1-1/2 4-1/2 1/4				

PLYWOOD. 1/2" - - - - 59 SQ FT REQD - - - - 59 LBS WIRE, .0800" DIA - - - - - 32' REQD - - - - 1/2 LB UNIVERSAL LOAD RETAINER - - 4 REQD - - - - 26 LBS

- (6) UNIVERSAL LOAD RETAINER (4 REQD, 2 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE "DETAIL A" ON PAGE 7, DEPARTMENT OF ARMY DRAWING DA-116, AND GENERAL NOTE "Q" ON PAGE 3.
- 7 FILL MATERIAL, 4" WIDE BY 46" LONG MATERIAL (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/4 NAILS OF A SUITABLE SIZE (10d FOR 2" THICK MATERIAL). NAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER.

 NOTE: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE "DETAIL A" ON PAGE 7.
- (8) DOOR SPANNER, 4" X 4" MATERIAL CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1-1/4") (2 REQD). TOENAIL TO THE DOOR POST VERTICAL W12-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 4.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	- 8	764 LBS

TOTAL WEIGHT - - - - - 31,304 LBS (APPROX)

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 750 POUND BOMBS PACKED ON A WOODEN PALLET UNIT. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH AMMUNITION ITEMS. SEE PAGE 4 AND DEPART-MENT OF THE NAVY DRAWING WR-53/705 FOR DETAILS OF THE PAL-LET UNIT. CAUTION: REGARDLESS OF THE QUANTITY OF PALLET UNITS 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 DI-MENSIONS OF 19'-4" LONG BY 92" WIDE BY 93" HIGH, WITH A MAXI-MUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAIN-ERS 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, HOW-EVER, 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 PALLET UNITS, 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". 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 ADDI-TIONAL PIECES OF APPROPRIATE THICKNESS TO THE BUFFER PIECES ON THE CRIB FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE LENGTH OF THE STRUTS IN THE CRIB FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNIT.
- 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" THICK BY 5-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSI-BLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEM-BLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAIL-ING 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 LAMI-NATED TO THE BUFFER PIECES ON THE FORWARD BLOCKING AS-SEMBLY 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 APPRO-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 AL-LOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.
- H. WHETHER A CONTAINER IS FULL OR IS 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.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

NAILS - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).

COMMERCIAL ITEM DESCRIPTION A-A-55057 PLYWOOD - - - :

INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

STRUCTURAL - - -: ASTM A36; 36,000 PSI MINIMUM YIELD OR BETTER.

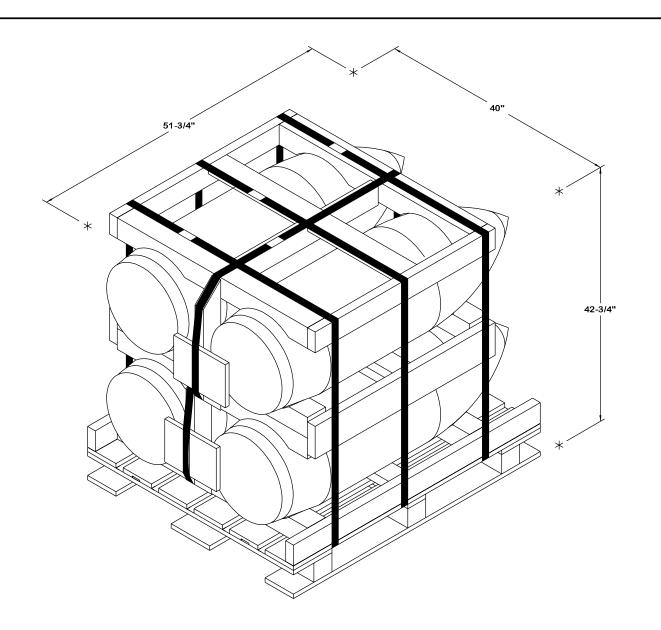
(GENERAL NOTES CONTINUED)

- 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 AD-JUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DE-PENDING 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.

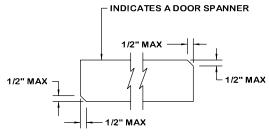
- M. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:
 - A LOADED CONTAINER MUST BE ON CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SER-VICE.
 - 2. THE LOAD LIMITS OF T/COFC RAIL CARS 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 CAR-RIER, 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 EX-PRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVA-LENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.
- P. THE QUANTITY OF PALLET UNITS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "LESS-THAN-FULL-LOAD PROCEDURE" ON PAGE 8.
- Q. FOUR UNIVERSAL LOAD RETAINERS ARE DEPICTED IN THE LOADS ON PAGES 2 AND 8. FOUR UNIVERSAL LOAD RETAINERS ARE RE-QUIRED WHEN LOADING ONE LAYER OF PALLET UNITS. REFER TO DAC DRAWING ACV00682 FOR DETAILS OF THE UNIVERSAL LOAD RETAINER CONSTRUCTION, AND TO DEPARTMENT OF ARMY DRAW-ING DA-116 FOR DETAILS OF THE INSTALLATION TO THE DOOR POST VERTICAL, PLACEMENT INTO THE CONTAINER, AND FOR OTHER METHODS OF REAR-OF-LOAD RESTRAINT.
- R. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
 - 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, FOUR CRIB FILL ASSEMBLIES, TWO BUFFER ASSEMBLIES AND TWO DOOR POST VERTICALS.
 - 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
 - 3. LOAD TWO PALLET UNITS AND ONE CRIB FILL ASSEMBLY AND TIE WIRE CRIB FILL TO ADJACENT PALLET UNIT.
 - 4. INSTALL ONE BUFFER ASSEMBLY.
 - 5. LOAD TWO PALLET UNITS AND ONE CRIB FILL ASSEMBLY AND TIE WIRE CRIB FILL TO ADJACENT PALLET UNIT.
 - LOAD TWO PALLET UNITS AND ONE CRIB FILL ASSEMBLY AND TIE WIRE CRIB FILL TO ADJACENT PALLET UNIT.
 - 7 INSTALL ONE BUFFER ASSEMBLY
 - 8. LOAD TWO PALLET UNITS AND ONE CRIB FILL ASSEMBLY AND TIE WIRE CRIB FILL TO ADJACENT PALLET UNIT.
 - 9. INSTALL THE REAR BLOCKING ASSEMBLY.
 - 10. INSTALL TWO DOOR POST VERTICALS AND FOUR UNIVERSAL LOAD RETAINERS.
- 11. INSTALL FILL MATERIAL AS NEEDED.
- 12. INSTALL TWO DOOR SPANNERS.

PAGE 3



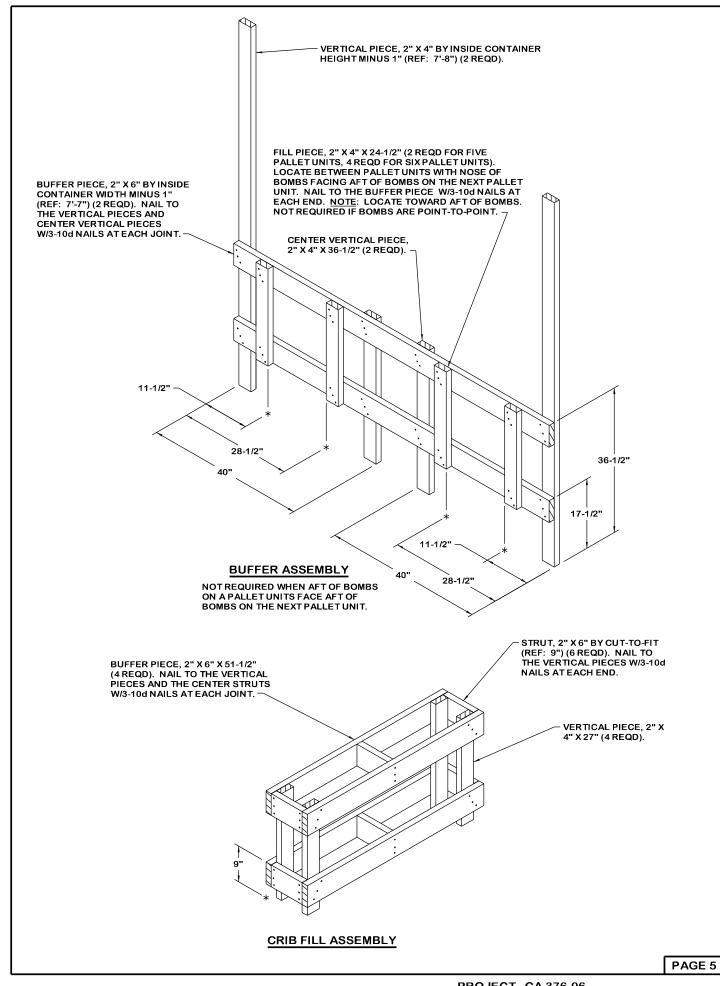
PALLET UNIT

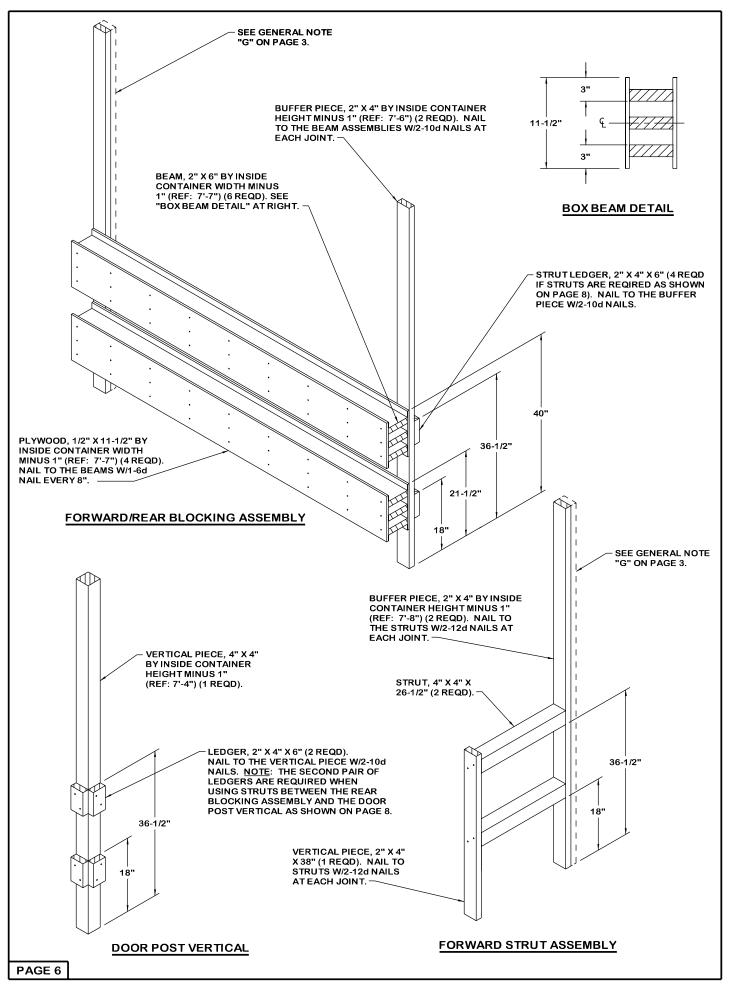
UNIT WEIGHT - - - - - - - 3,230 LBS (APPROX) CUBE - - - - - - - - 51.2 CU FT

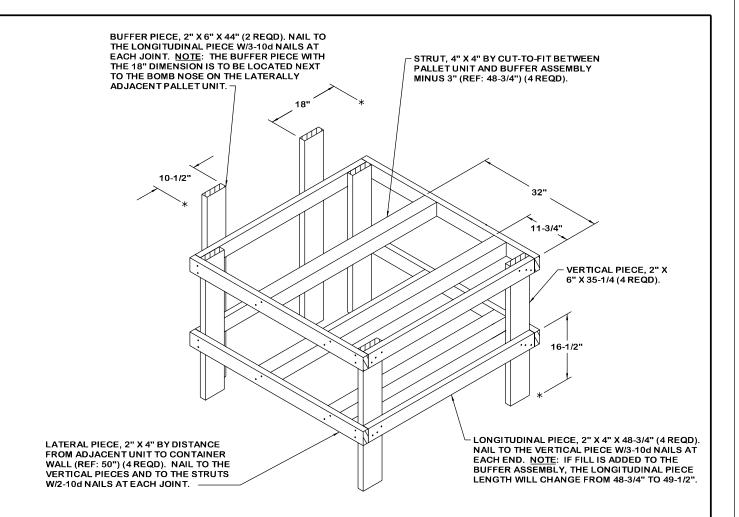


BEVEL-CUT

BEVEL CUTTING THE DOOR SPANNER AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". <u>CAUTION</u>: DO NOT BEVEL A CORNER MORE THAN 1/2".







OMITTED UNIT ASSEMBLY

A RIGHT HAND ASSEMBLY IS SHOWN, A LEFT HAND ASSEMBLY MAY ALSO BE CONSTRUCTED. THIS ASSEMBLY IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. NO MORE THAN TWO OMITTED UNIT ASSEMBLIES MAY BE USED PER LOAD. DO NOT INSTALL AN OMITTED UNIT ASSEMBLY IMMEDIATELY ADJACENT TO ANOTHER OMITTED UNIT ASSEMBLY.

