

APPROVED BY  
BUREAU OF EXPLOSIVES

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DATE

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# LOADING AND BRACING\* IN END OPENING ISO CONTAINERS OF PAL- LETIZED MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKED IN CYLINDRICAL METAL CONTAINERS

## PA103A2 CONTAINER, WOODEN PALLET

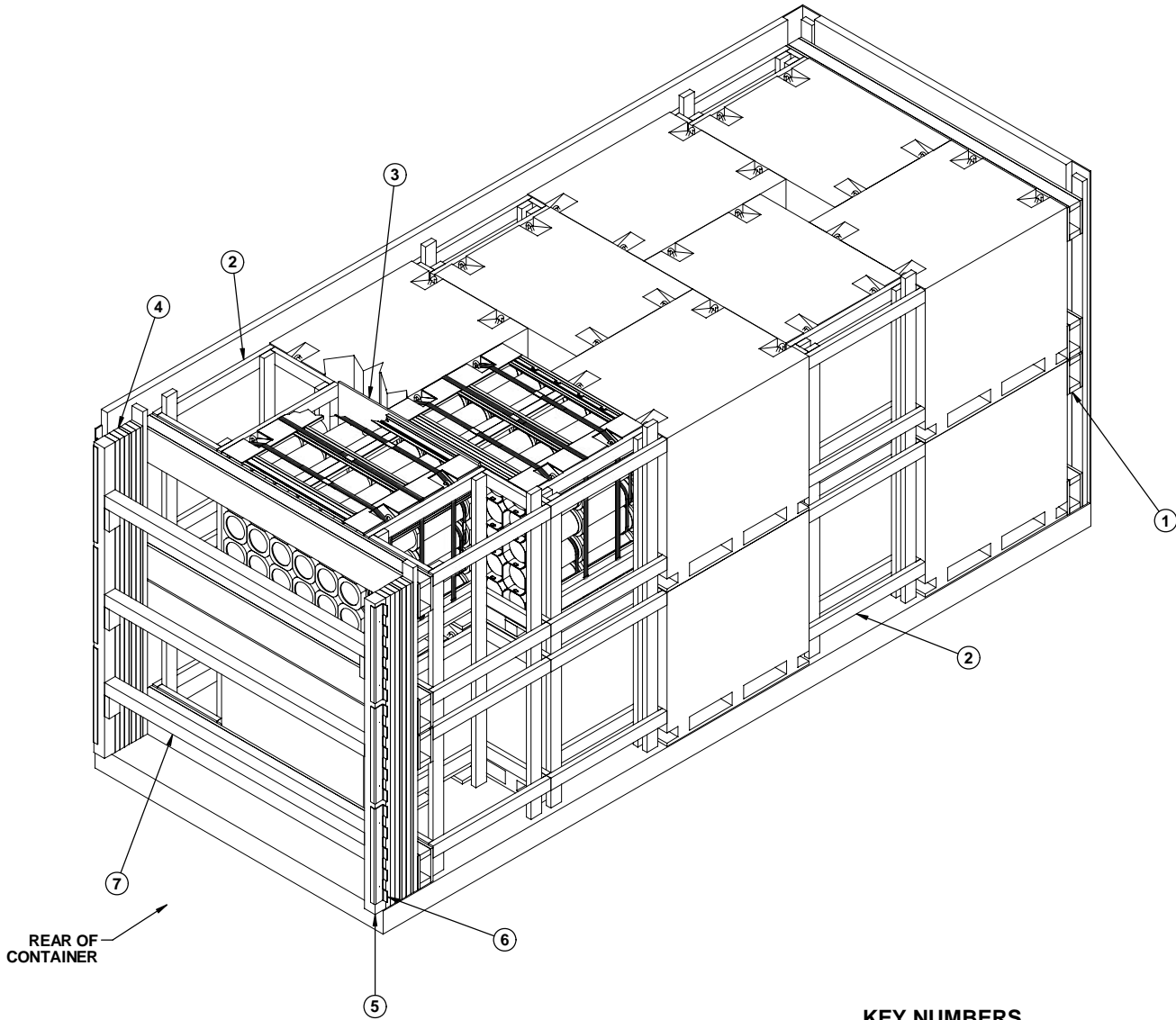
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\*THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY CONTAINER-ON-FLATCAR (COFC) RAIL, MOTOR, OR WATER CARRIERS.

### U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY FIELD SUPPORT 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 12.					
<i>David L. Hays</i>		DO NOT SCALE			APRIL 2006		
		ENGINEER OR TECHNICIAN	BASIC REV.	MELVIN SIX			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND		TRANSPORTATION ENGINEERING DIVISION	<i>Kaura A. Tuff</i>				
<i>[Signature]</i>		VALIDATION ENGINEERING DIVISION	<i>[Signature]</i>			TESTED	
		ENGINEERING DIRECTORATE	<i>[Signature]</i>			CLASS	DIVISION
U.S. ARMY DEFENSE AMMUNITION CENTER				19	48	4333/50A	15PM1024



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD/REAR BLOCKING ASSEMBLY A (2 REQD). SEE THE DETAIL ON PAGE 8.
- ② SIDE FILL ASSEMBLY (6 REQD). SEE THE DETAIL ON PAGE 10.
- ③ SEPARATOR GATE (1 REQD). SEE THE DETAIL ON PAGE 12.
- ④ DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 10, "DETAIL A" ON PAGE 11, AND GENERAL NOTE "Q" ON PAGE 3.
- ⑤ FILL MATERIAL, 4" WIDE BY 7'-4" LONG MATERIAL (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/6 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.
- ⑥ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, "DETAIL A" ON PAGE 11, AND GENERAL NOTE "Q" ON PAGE 3.
- ⑦ 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 W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 11.

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	18	33,030 LBS
DUNNAGE		1,099 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 38,829 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	30	10
2" X 3"	2	1
2" X 4"	596	397
4" X 4"	36	48
NAI LS	NO. REQD	POUNDS
6d (2")	386	2-1/4
10d (3")	520	8
12d (3-1/4")	12	1/4
PLYWOOD, 1/2"	28.11 SQ FT REQD	39 LBS
PLYWOOD, 3/4"	48.03 SQ FT REQD	100 LBS
UNIVERSAL LOAD RETAINER	6 REQD	39 LBS

**GENERAL NOTES**

**(GENERAL NOTES CONTINUED)**

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO PALLETIZED MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKED IN PA103A2 CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS PALLET UNIT WITH CONTAINERS. SEE PAGE 5 AND U. S. ARMY MATERIEL COMMAND DRAWING 19-48-4326/50A-20PM1012. **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 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". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE BUFFER PIECES ON THE SIDE FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR LENGTH OF THE PIECES IN THE SIDE 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 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 OR 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 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.
- 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.

(CONTINUED AT RIGHT)

**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:**

- 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.

**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 PALLET UNITS SHOWN IN THE LOADS ON PAGES 2, 4 AND 6 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE FILLER ASSEMBLY ON PAGE 5. THE FILLER ASSEMBLY CAN ONLY BE USED IN THE LOADS SHOWN ON PAGES 2 AND 6.**

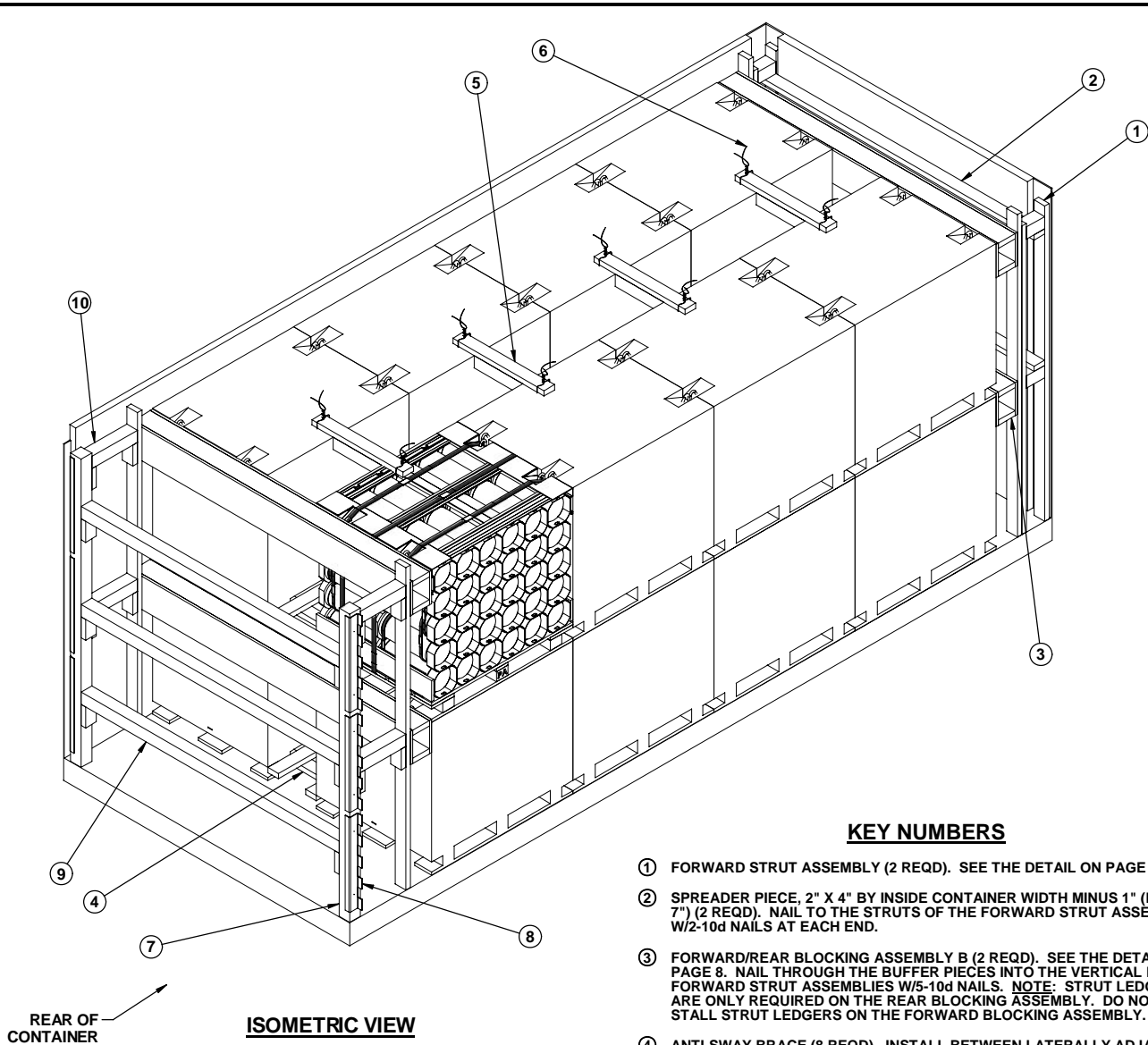
- 1. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE, TWO OR THREE LADING UNITS), LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE CENTER OF THE LOAD.
- 2. IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN THREE LADING UNITS), LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE TOTAL LOAD SHIFTED 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.

**Q. SIX UNIVERSAL LOAD RETAINERS, AS DEPICTED IN THE LOADS ON PAGES 2, 4 AND 6, ARE REQUIRED WHEN LOADING TWO LAYERS OF PALLET UNITS, AND FOUR ARE REQUIRED WHEN LOADING ONE LAYER OF PALLET UNITS. REFER TO DAC DRAWING ACV00682 FOR DETAILS OF THE UNIVERSAL LOAD RETAINER CONSTRUCTION, AND TO DEPARTMENT OF THE ARMY DRAWING DA-116 FOR DETAILS FOR INSTALLATION TO THE DOOR POST VERTICAL, PLACEMENT INTO THE CONTAINER, AND FOR OTHER METHODS OF REAR-OF-LOAD RESTRAINT.**

**R. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN PALLET UNITS OR BETWEEN PALLET UNITS AND THE END OPENING CONTAINER, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.**

**MATERIAL SPECIFICATIONS**

- LUMBER** - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS** - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
- PLYWOOD** - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, 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, 0.0800" DIA, GRADE 1006 OR BETTER.
- ANTI-CHAFING MATERIAL** - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.



**ISOMETRIC VIEW**

**KEY NUMBERS**

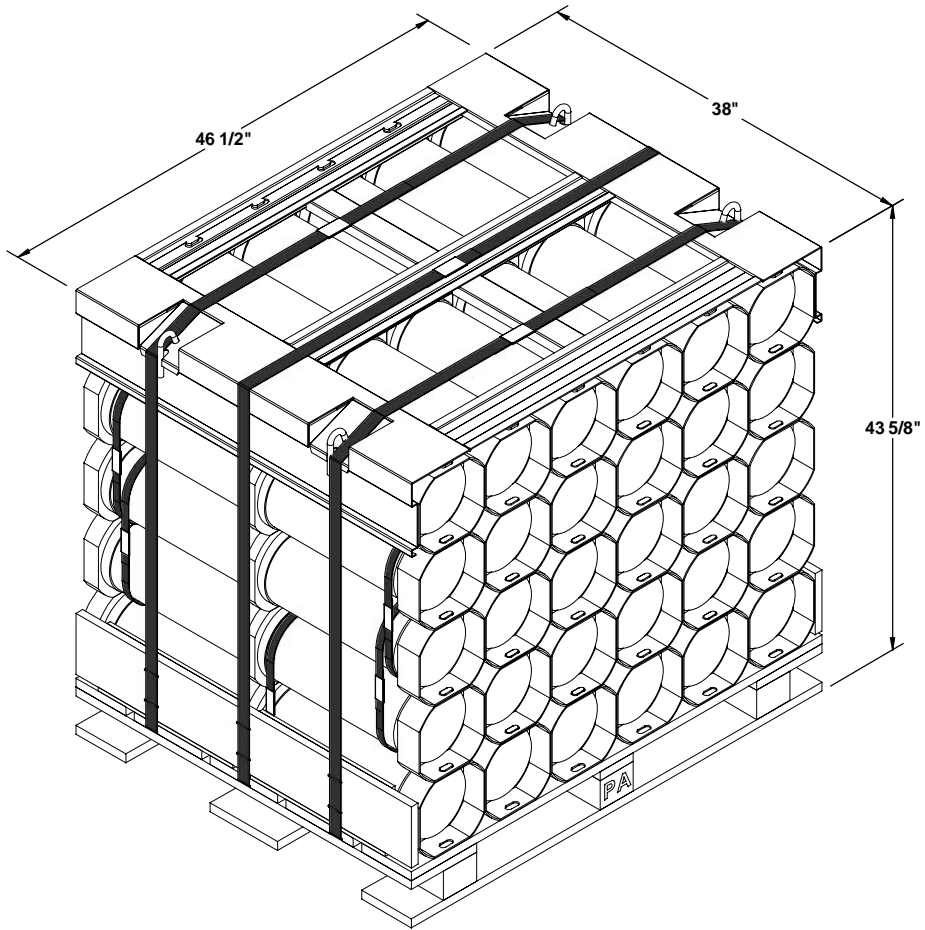
- ① FORWARD STRUT ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 10.
- ② SPREADER PIECE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (2 REQD). NAIL TO THE STRUTS OF THE FORWARD STRUT ASSEMBLY W/2-10d NAILS AT EACH END.
- ③ FORWARD/REAR BLOCKING ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 8. NAIL THROUGH THE BUFFER PIECES INTO THE VERTICAL PIECE OF FORWARD STRUT ASSEMBLIES W/5-10d NAILS. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.
- ④ ANTI-SWAY BRACE (8 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 7.
- ⑤ TOP OF LOAD ANTI-SWAY BRACE (4 REQD). SEE THE DETAIL ON PAGE 7.
- ⑥ TIE WIRE, .080" DIA 24" LONG (8 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP OF LOAD ANTI-SWAY BRACE AND THE TOP PALLET ADAPTOR CENTER SUPPORT.
- ⑦ DOOR POST VERTICAL (2 REQD, ONE LEFT HAND AND ONE RIGHT HAND). SEE THE DETAIL ON PAGE 10, "DETAIL A" ON PAGE 11, AND GENERAL NOTE "Q" ON PAGE 3.
- ⑧ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, "DETAIL A" ON PAGE 11, AND GENERAL NOTE "Q" ON PAGE 3.
- ⑨ 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 W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 11.
- ⑩ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 16") (4 REQD). TOENAIL TO THE BUFFER PIECES OF THE REAR BLOCKING ASSEMBLY AND TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 11.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	246	164
4" X 4"	50	66
NAI LS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	320	5
12d (3-1/4")	28	1/2
PLYWOOD, 3/4"	58.14 SQ FT REQD	120 LBS
WI RE, .080" DIA	4' REQD	NIL
UNI VERSAL LOAD RETAI NER	6 REQD	39 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	16	29,360 LBS
DUNNAGE		625 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 34,685 LBS (APPROX)

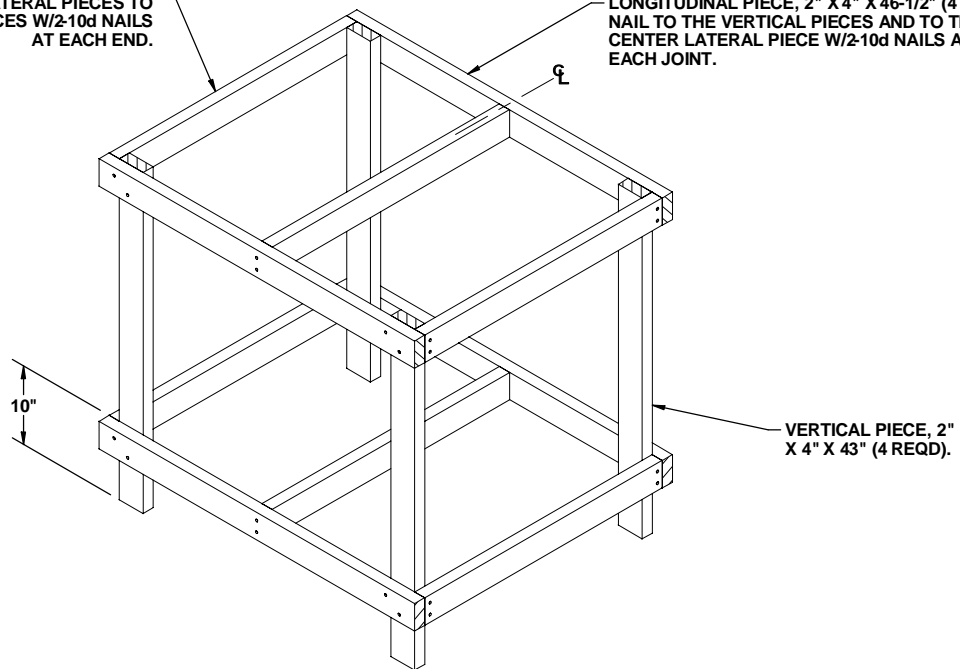


**PALLET UNIT DETAIL**

GROSS WEIGHT - - - - - 1,835 LBS (APPROX)  
 CUBE - - - - - 44.3 CU FT (APPROX)

LATERAL PIECE, 2" X 4" X 35" (6 REQD).  
 NAIL FOUR OUTER LATERAL PIECES TO  
 THE VERTICAL PIECES W/2-10d NAILS  
 AT EACH END.

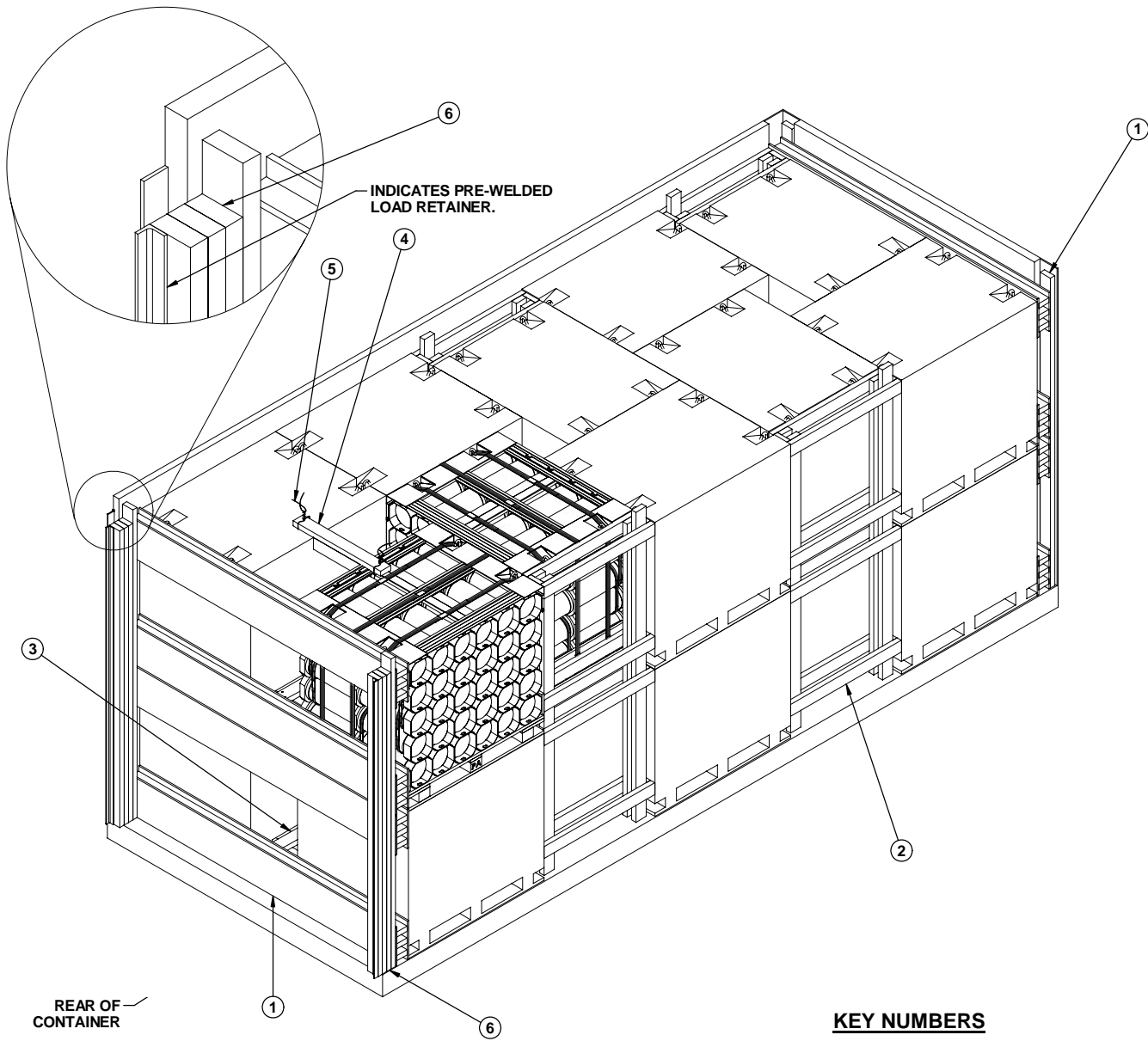
LONGITUDINAL PIECE, 2" X 4" X 46-1/2" (4 REQD).  
 NAIL TO THE VERTICAL PIECES AND TO THE  
 CENTER LATERAL PIECE W/2-10d NAILS AT  
 EACH JOINT.



VERTICAL PIECE, 2"  
 X 4" X 43" (4 REQD).

**FILLER ASSEMBLY**

FOR MINUS ONE PALLET UNIT.



**ISOMETRIC VIEW**

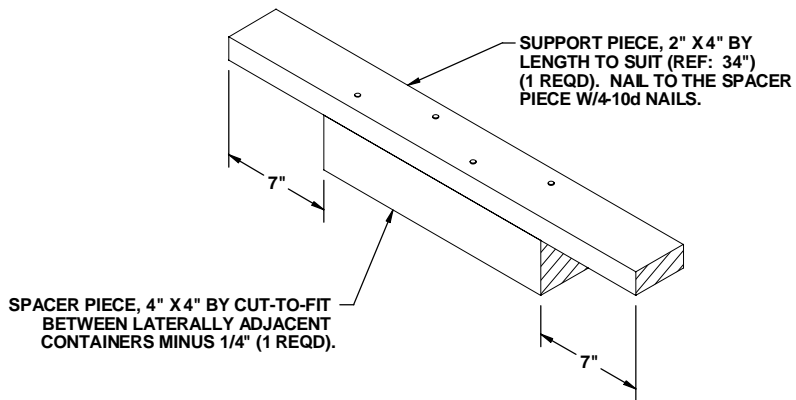
**KEY NUMBERS**

- ① FORWARD/REAR BLOCKING ASSEMBLY C (2 REQD). SEE THE DETAIL ON PAGE 9.
- ② SIDE FILL ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 10.
- ③ ANTI-SWAY BRACE (2 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 7.
- ④ TOP OF LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 7.
- ⑤ TIE WIRE, .0800" DIA 24" LONG (2 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP OF LOAD ANTI-SWAY BRACE AND THE TOP PALLET ADAPTOR CENTER SUPPORT.
- ⑥ FILL MATERIAL, 4" WIDE X 7'-6" LONG MATERIAL (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/7 NAILS OF SUITABLE SIZE (6d FOR 1" THICK MATERIAL OR 10d FOR 2" THICK MATERIAL). LAMINATE ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A LIKE MANNER. SEE "DETAIL B" AND "SOLID FILL DETAIL WITH PRE-WELDED LOAD RETAINER" ON PAGE 11.

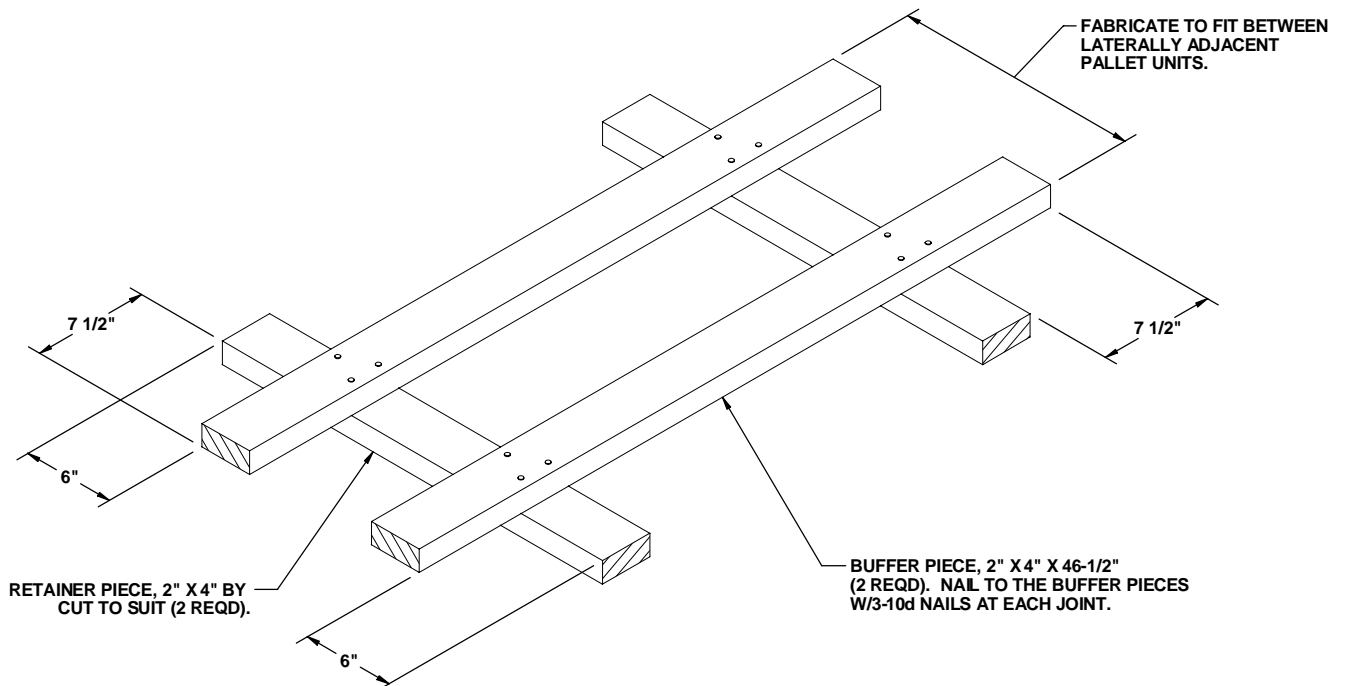
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	286	256
2" X 6"	111	111
4" X 4"	2	2
NAI LS	NO. REQD	POUNDS
6d (2")	528	3-1/4
10d (3")	422	6-1/2
PLYWOOD, 3/4"	116.28 SQ FT REQD	240 LBS
WIRE, .080" DIA	4' REQD	NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	20	36,700 LBS
DUNNAGE		989 LBS
CONTAINER		4,700 LBS
<b>TOTAL WEIGHT</b>		<b>42,389 LBS (APPROX)</b>



**TOP OF LOAD ANTI-SWAY BRACE**



**ANTI-SWAY BRACE**

NOTE: THE ANTI-SWAY BRACE CAN BE PARTIALLY ASSEMBLED, ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET UNIT PRIOR TO POSITIONING OF THE LATERALLY ADJACENT PALLET UNIT.

SEE GENERAL NOTE "G" ON PAGE 3.

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-6" AT FORWARD WALL, 7'-8" ELSEWHERE) (2 REQD). NAIL THRU THE PLYWOOD INTO THE BEAMS W/2-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "G" ON PAGE 3.

PLYWOOD, 3/4" X 9-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (8 REQD). NAIL TO THE BEAMS W/1-6d NAIL EVERY 8".

**FORWARD/REAR BLOCKING ASSEMBLY A**

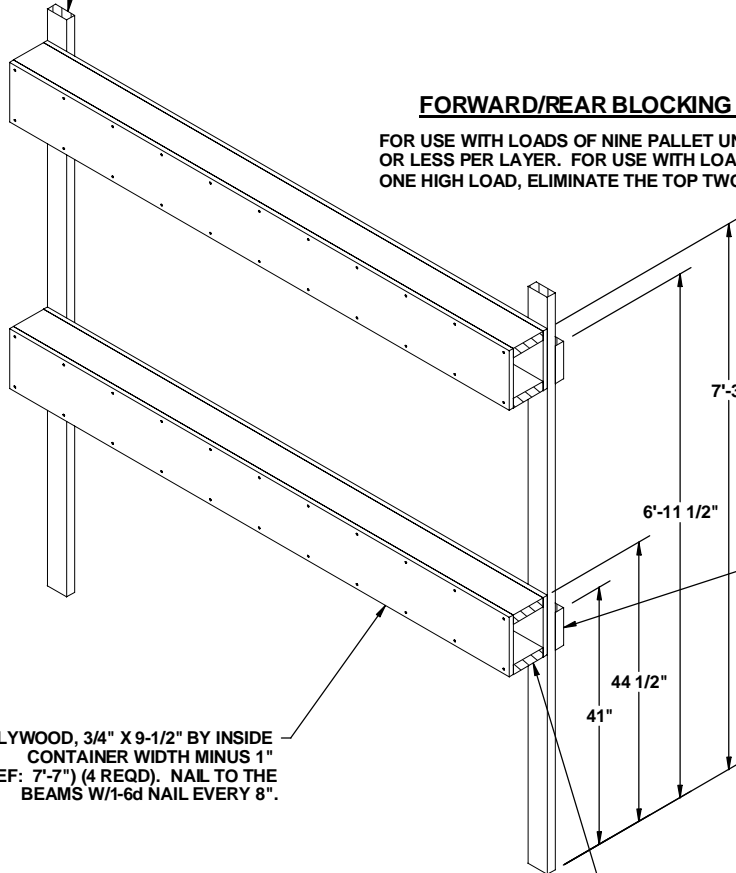
FOR USE WITH LOADS OF NINE PALLET UNITS (17,630 LBS MAX) OR LESS PER LAYER. FOR USE WITH LOADS WITH UP TO A ONE HIGH LOAD, ELIMINATE THE TOP TWO BEAM ASSEMBLY.

BEAM, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (8 REQD).

7'-3"

53 1/2"

43 1/2"



PLYWOOD, 3/4" X 9-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (4 REQD). NAIL TO THE BEAMS W/1-6d NAIL EVERY 8".

**FORWARD/REAR BLOCKING ASSEMBLY B**

FOR USE WITH LOADS OF EIGHT PALLET UNITS (15,085 LBS MAX) OR LESS PER LAYER. FOR USE WITH LOADS WITH UP TO A ONE HIGH LOAD, ELIMINATE THE TOP BEAM ASSEMBLY AND TWO TOP STRUT LEDGERS (WHERE APPLICABLE).

BEAM, 2" X 6" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (4 REQD).

STRUT LEDGER, 2" X 4" X 6" (4 REQD). NAIL TO THE BUFFER PIECES W/2-10d NAILS EACH. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY DEPICTED ON PAGE 4.

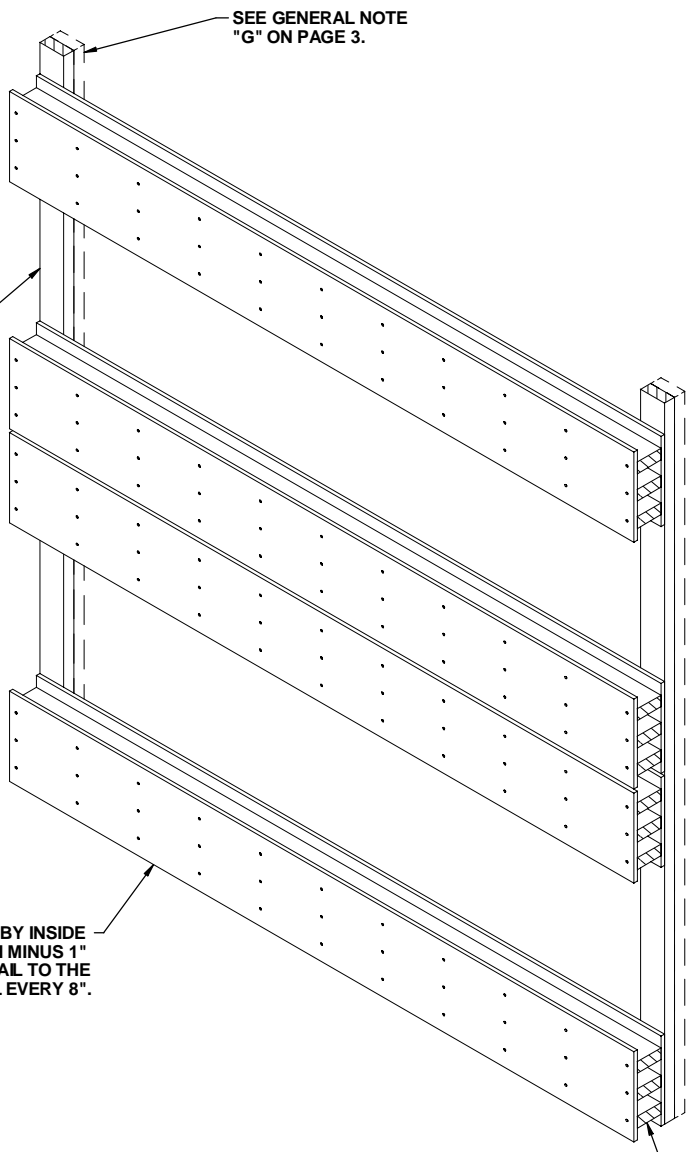
7'-3"

6'-11 1/2"

44 1/2"

41"





SEE GENERAL NOTE "G" ON PAGE 3.

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-6" AT FORWARD WALL, 7'-8" ELSEWHERE) (2 REQD). NAIL THRU THE PLYWOOD INTO THE BEAMS W/2-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "G" ON PAGE 3.

PLYWOOD, 3/4" X 11-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (8 REQD). NAIL TO THE BEAMS W/1-6d NAIL EVERY 8".

**FORWARD/REAR BLOCKING ASSEMBLY C**

FOR USE WITH LOADS WITH TEN PALLET UNITS (22,060 LBS MAX) OR LESS PER LAYER. FOR USE WITH LOADS WITH UP TO A ONE HIGH LOAD, ELIMINATE THE TOP TWO BEAM ASSEMBLY.

BEAM, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (12 REQD).

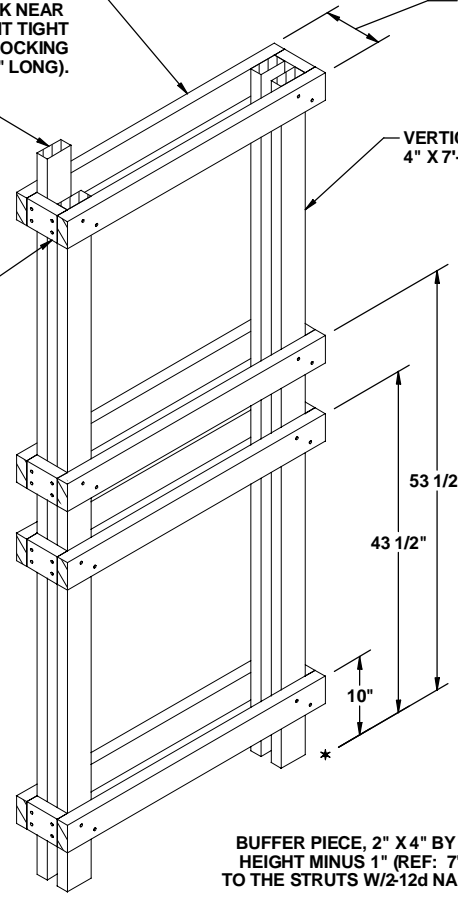
**BUFFER PIECE, 2" X 4" X 38" (8 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.**  
**NOTE: BUFFER PIECE ADJACENT TO STACK NEAR THE DOORS MUST BE ADJUSTED TO FIT TIGHT BETWEEN PALLET UNITS AND REAR BLOCKING ASSEMBLY (REF: 38-1/2" LONG).**

**FABRICATE TO FIT BETWEEN THE ADJACENT PALLET UNIT AND THE ISO CONTAINER WALL.**

**VERTICAL PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-8") (1 REQD).**

**VERTICAL PIECE, 2" X 4" X 7'-3" (3 REQD).**

**STRUT, 2" X 4" BY CUT-TO-FIT (8 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.**



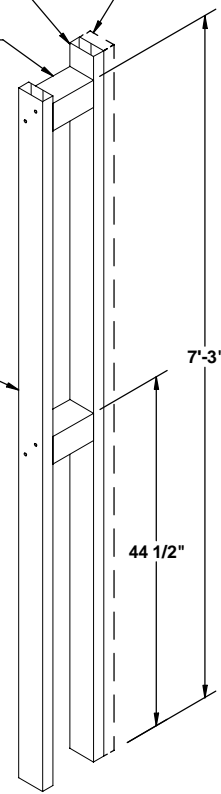
**SIDE FILL ASSEMBLY**

**FOR A ONE HIGH LOAD, ELIMINATE THE TOP FOUR BUFFER PIECES AND THE TOP FOUR STRUTS. REDUCE THE LENGTH OF THE 7'-4" VERTICAL PIECES TO 43-1/2".**

**BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-6") (1 REQD). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.**

**SEE GENERAL NOTE "G" ON PAGE 3.**

**STRUT, 4" X 4" X 8" (2 REQD).**

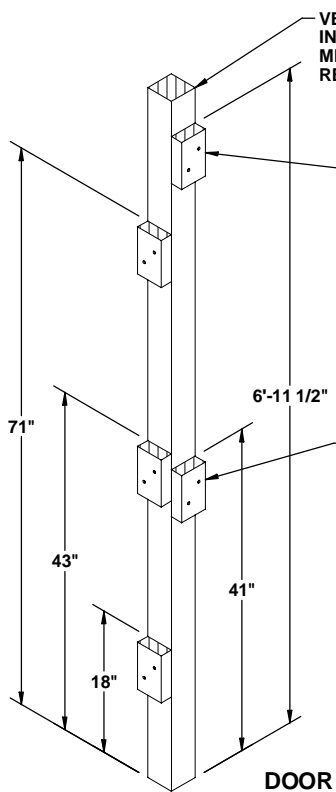


**VERTICAL PIECE, 2" X 4" X 7'-4" (1 REQD). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.**

**VERTICAL PIECE, 4" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-4") (1 REQD).**

**NOTE: ELIMINATE THESE TWO LEDGERS (STRUT LEDGERS) WHEN THE DOOR POST VERTICAL IS TO BE USED WITH SOLID FILL INSTEAD OF STRUTS, AS DEPICTED IN THE LOAD ON PAGE 2.**

**LEDGER, 2" X 4" X 6" (5 REQD). NAIL TO THE VERTICAL PIECE W/2-10d NAILS. SEE "NOTE" AT ABOVE.**

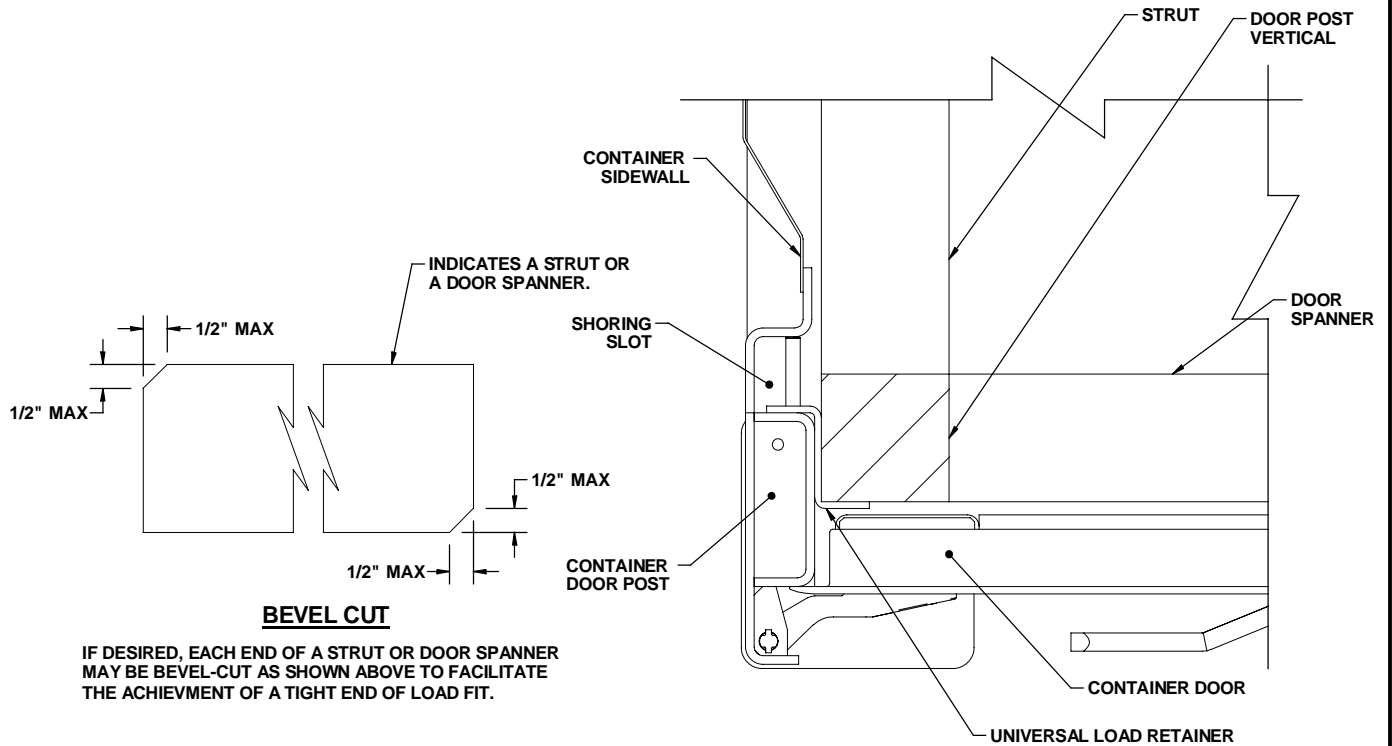


**DOOR POST VERTICAL**

**A LEFT-HAND ASSEMBLY IS DEPICTED ABOVE, A RIGHT-HAND ASSEMBLY IS ALSO REQUIRED. FOR A ONE HIGH LOAD, ELIMINATE ONE TOP (STRUT) LEDGER. SEE "NOTE" ABOVE.**

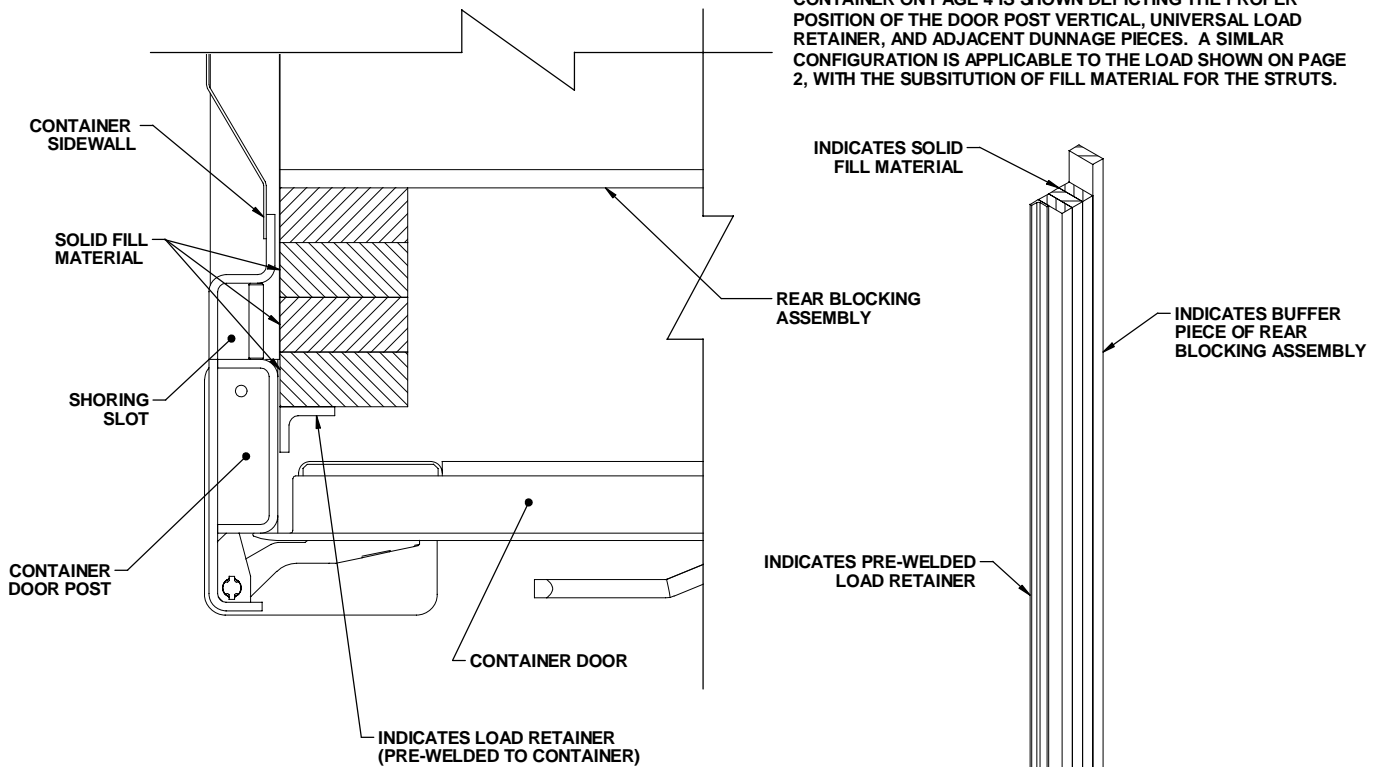
**FORWARD STRUT ASSEMBLY**

**FOR A ONE HIGH LOAD, ELIMINATE THE TOP STRUT AND SHORTEN THE VERTICAL PIECE TO 42".**



**DETAIL A**

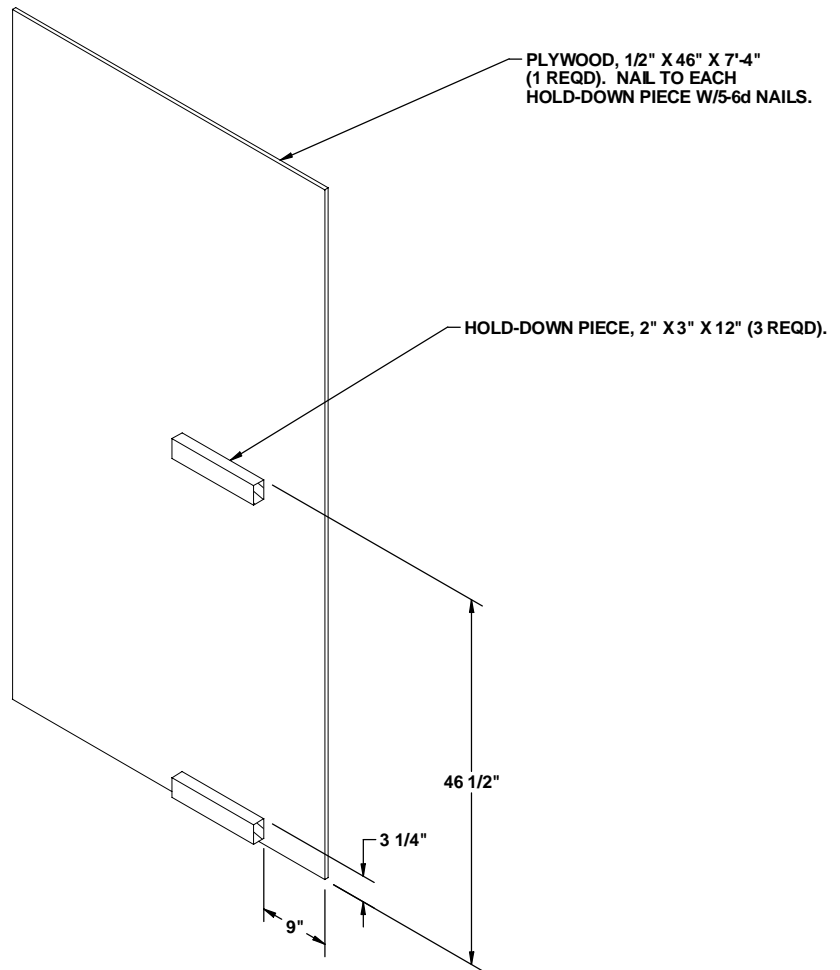
A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER ON PAGE 4 IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL, UNIVERSAL LOAD RETAINER, AND ADJACENT DUNNAGE PIECES. A SIMILAR CONFIGURATION IS APPLICABLE TO THE LOAD SHOWN ON PAGE 2, WITH THE SUBSTITUTION OF FILL MATERIAL FOR THE STRUTS.



**DETAIL B**

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER ON PAGE 6 IS SHOWN DEPICTING THE PROPER POSITION OF THE SOLID FILL MATERIAL AND ADJACENT DUNNAGE PIECES.

**SOLID FILL DETAIL WITH PRE-WELDED LOAD RETAINER**



**SEPARATOR GATE**

**NOTE: FOR ONE HIGH STACK OF PALLET UNITS REDUCE PLYWOOD HEIGHT TO 44" AND ELIMINATE THE TOP HOLD-DOWN PIECE.**