

APPROVED BY
BUREAU OF EXPLOSIVES

Jan H

DATE 4/05/2006

LOADING AND BRACING IN END OPENING ISO CONTAINERS OF PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS

M16 SERIES CONTAINER

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NOTE: THIS DRAWING SUPERSEDES THE PORTIONS OF AMC DRAWING 19-48-4154-15PM1002, DATED MARCH 1982, THAT PERTAIN TO THE M16 CONTAINER.

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 14.			
	DO NOT SCALE		FEBRUARY 2006	
<i>Richard Garside</i>	ENGINEER OR TECHNICIAN	BASIC REV.	RICHARD GARSIDE	
	TRANSPORTATION ENGINEERING DIVISION	<i>Samuel A. Jaffer</i>		
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	VALIDATION ENGINEERING DIVISION	TESTED	CLASS	DIVISION
	ENGINEERING DIRECTORATE	19 48 4154/4 15PM1002		
U.S. ARMY DEFENSE AMMUNITION CENTER	PROJECT CA 175/4-80			

GENERAL NOTES

(GENERAL NOTES CONTINUED)

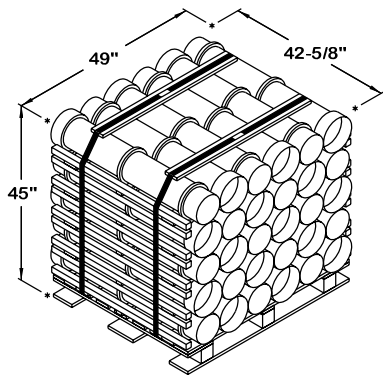
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF PROPELLING CHARGES PACKED IN M16 SERIES METAL CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH AMMUNITION ITEMS. SEE PAGE 3 AND AMC DRAWING 19-48-4042A/4-20PM1001 FOR DETAILS OF THE PALLET UNITS. **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 LOADS AS SHOWN ARE 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 LOADS ARE DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOADS 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 HORIZONTAL PIECES ON THE CENTER BLOCKING ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR QUANTITY OF THE VERTICAL OR HORIZONTAL PIECES IN THE CENTER BLOCKING 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 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.
- L. 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.

(CONTINUED AT RIGHT)

- 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 4 THRU 9 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE OMITTED UNIT ASSEMBLY ON PAGE 13.
 - 1. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE TO 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 5, 7 AND 9, ARE REQUIRED WHEN LOADING TWO-HIGH LOADS, AND FOUR UNIVERSAL LOAD RETAINERS, AS DEPICTED IN THE LOADS ON PAGES 4, 6 AND 8, ARE REQUIRED WHEN LOADING ONE-HIGH LOADS. 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. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
 - 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, FOUR CENTER BLOCKING ASSEMBLIES, EIGHT SIDE BLOCKING ASSEMBLIES, AND TWO DOOR POST VERTICALS.
 - 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
 - 3. INSTALL TWO SIDE BLOCKING ASSEMBLIES.
 - 4. LOAD FOUR PALLET UNITS (TWO PALLET UNITS FOR ONE-HIGH LOADS) AND INSTALL ONE CENTER BLOCKING ASSEMBLY.
 - 5. REPEAT STEPS 3 AND 4 UNTIL ALL PALLET UNITS, CENTER BLOCKING ASSEMBLIES, AND SIDE BLOCKING ASSEMBLIES ARE INSTALLED.
 - 6. INSTALL THE REAR BLOCKING ASSEMBLY.
 - 7. INSTALL THE STRUTS OR SOLID FILL, DOOR POST VERTICALS, UNIVERSAL LOAD RETAINERS, AND DOOR SPANNER PIECES.

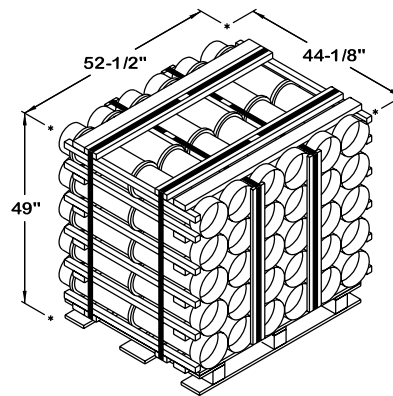
MATERIAL SPECIFICATIONS

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



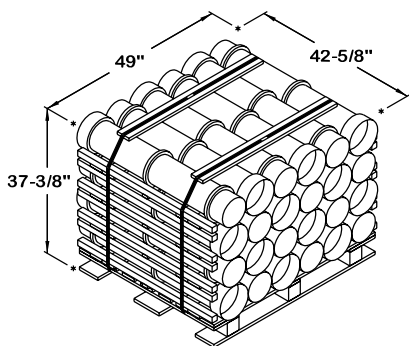
ALTERNATED CONTAINERS METHOD (INCREASED HEIGHT)

CONTAINER - - - - - 30 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 53.2 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,820 LBS (APPROX)



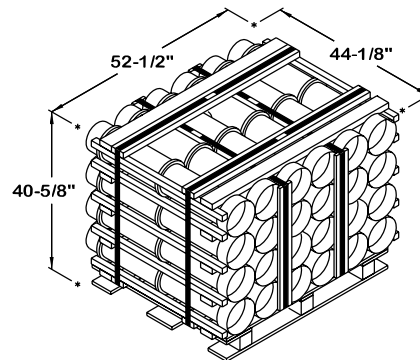
FLAT DUNNAGE METHOD (BASIC HEIGHT)

CONTAINER - - - - - 30 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 65.7 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,870 LBS (APPROX)



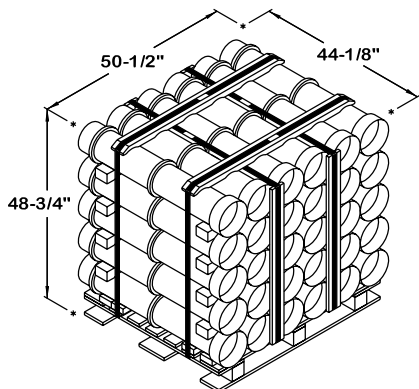
ALTERNATED CONTAINERS METHOD (BASIC HEIGHT)

CONTAINER - - - - - 24 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 43.8 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,472 LBS (APPROX)



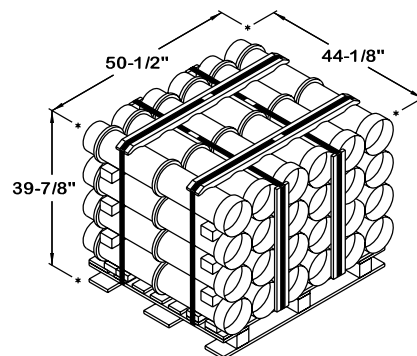
FLAT DUNNAGE METHOD (DECREASED HEIGHT)

CONTAINER - - - - - 24 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 54.5 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,516 LBS (APPROX)



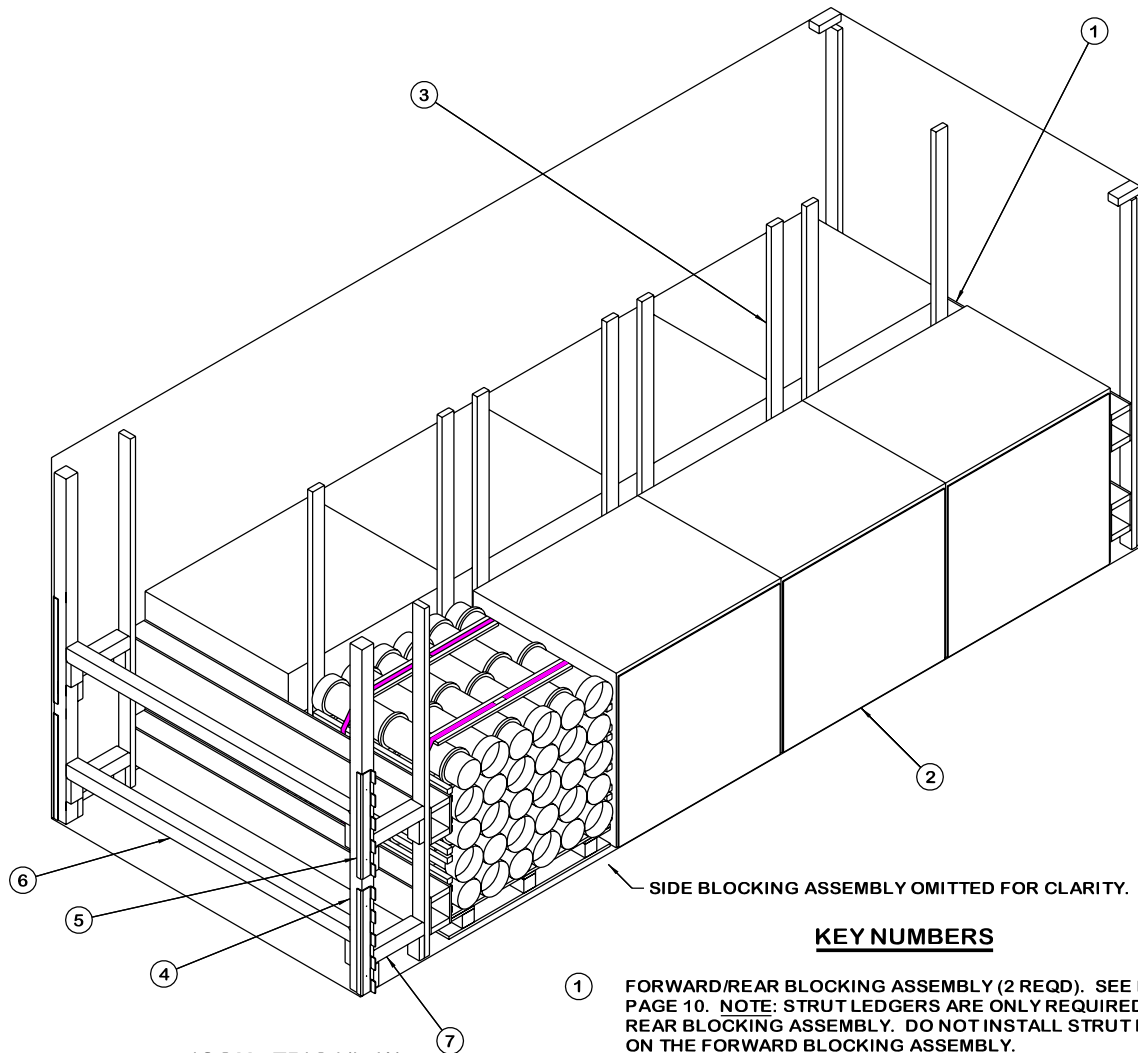
ROUTED DUNNAGE METHOD (BASIC HEIGHT)

CONTAINER - - - - - 30 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 62.9 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,848 LBS (APPROX)



ROUTED DUNNAGE METHOD (DECREASED HEIGHT)

CONTAINER - - - - - 24 EACH @ 55 LBS (APPROX)
 CUBE - - - - - 51.9 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,494 LBS (APPROX)



ISOMETRIC VIEW

SIDE BLOCKING ASSEMBLY OMITTED FOR CLARITY.

KEY NUMBERS

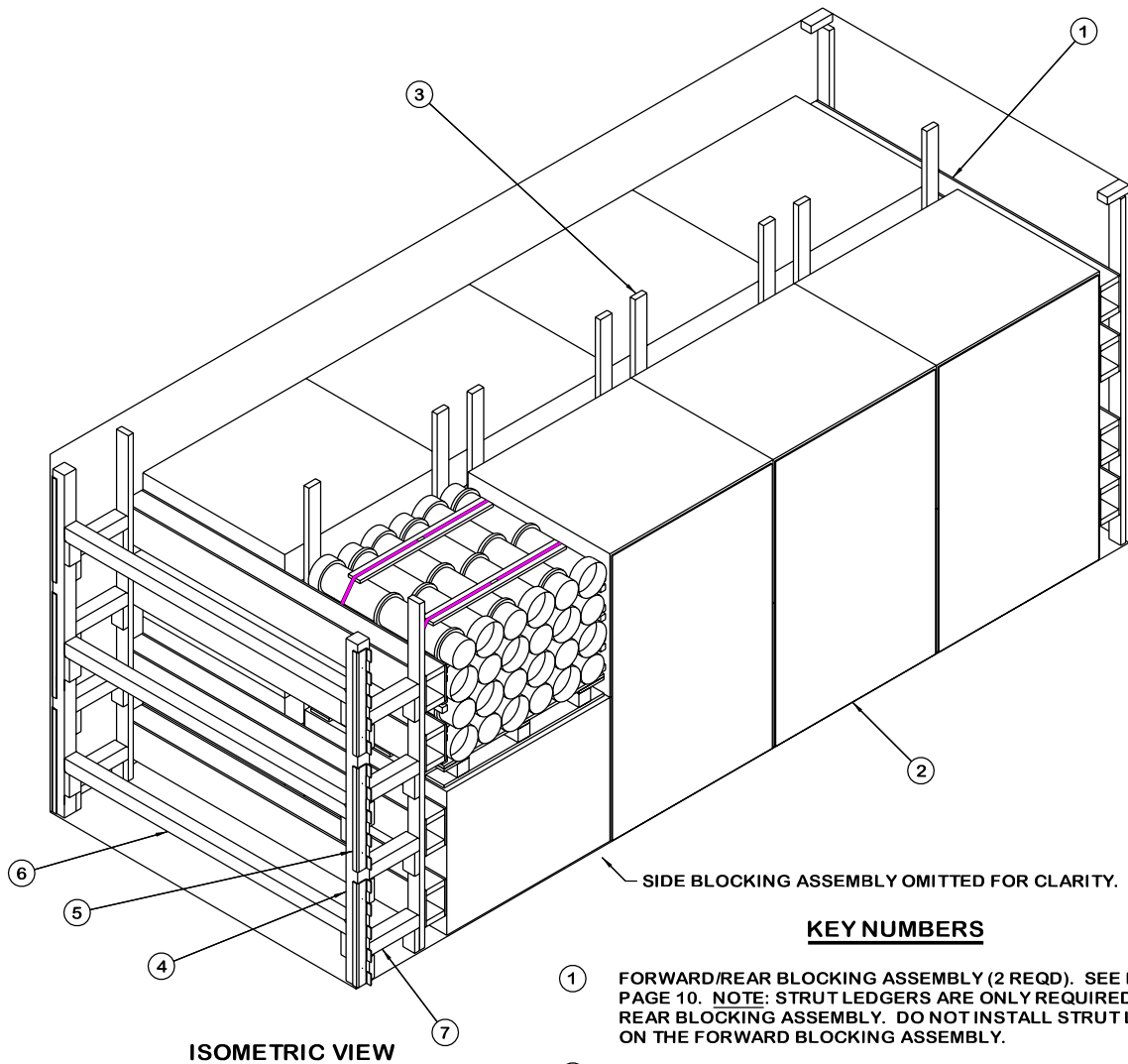
- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 10. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.
- ② SIDE BLOCKING ASSEMBLY (8 REQD). SEE DETAIL ON PAGE 14.
- ③ CENTER BLOCKING ASSEMBLY A (4 REQD). SEE DETAIL ON PAGE 11.
- ④ DOOR POST VERTICAL (2 REQD). SEE DETAIL ON PAGE 13, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑤ UNIVERSAL LOAD RETAINER (4 REQD, 2 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, DAC DRAWING ACV00682, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑥ DOOR SPANNER, 4" X 4" BY 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 "BEVEL CUT" DETAIL ON PAGE 13.
- ⑦ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 15-1/2") (4 REQD). TOENAIL TO THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END OF STRUT. SEE "DETAIL A" ON PAGE 12, AND "BEVEL CUT" DETAIL ON PAGE 13.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	8	14,560 LBS
DUNNAGE		662 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 19,922 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	205	136
2" X 6"	61	61
4" X 4"	34	46
NAILS	NO. REQD	POUNDS
6d (2")	224	1-1/2
10d (3")	136	2
12d (3-1/4")	24	1/2
PLYWOOD, 1/4" - - -	118 SQ FT REQD - - - - -	81 LBS
PLYWOOD, 1/2" - - -	48 SQ FT REQD - - - - -	66 LBS
UNIVERSAL LOAD RETAINER - -	4 REQD - - - - -	26 LBS



ISOMETRIC VIEW

SIDE BLOCKING ASSEMBLY OMITTED FOR CLARITY.

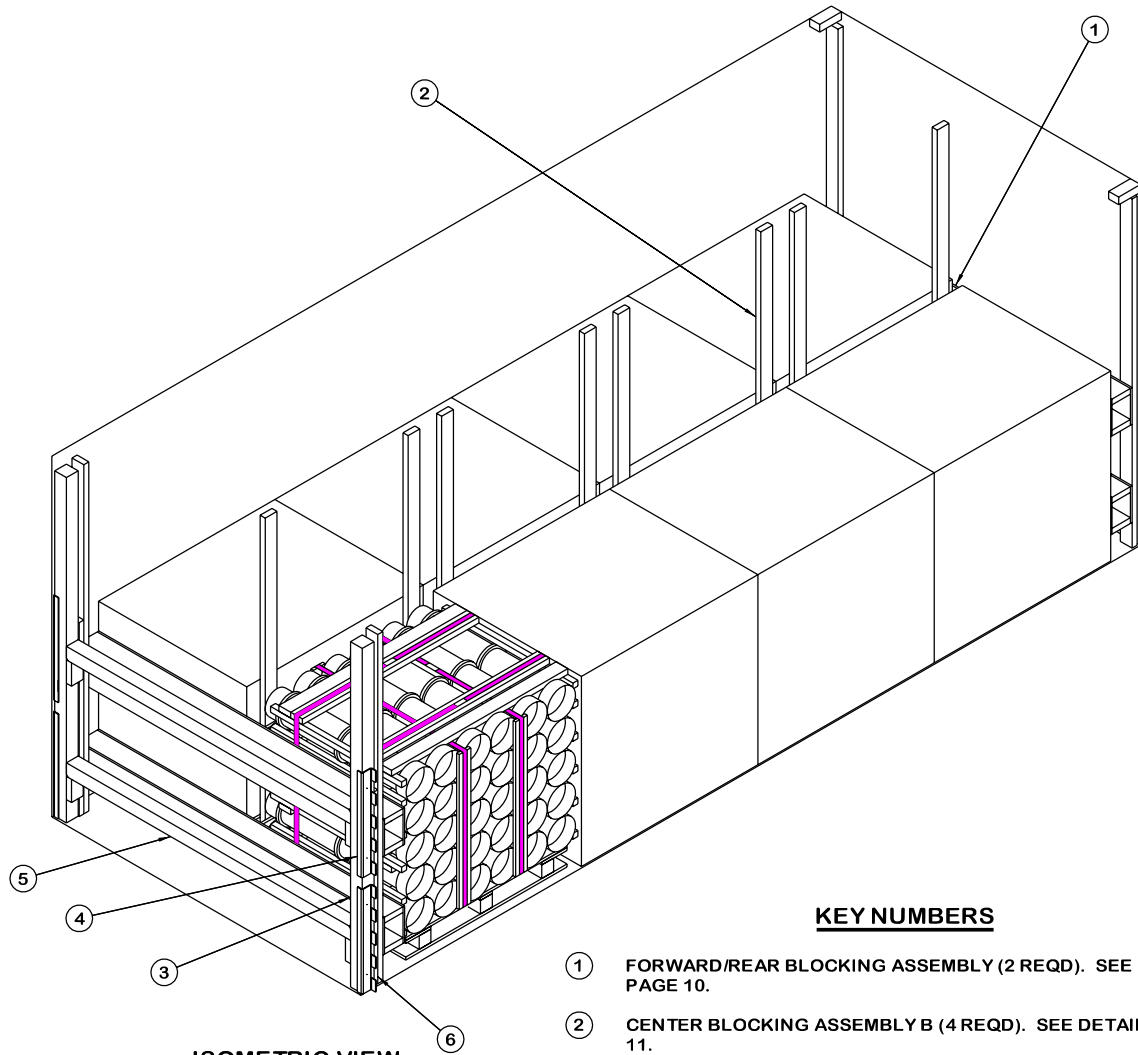
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- ② SIDE BLOCKING ASSEMBLY (8 REQD). SEE DETAIL ON PAGE 14.
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- ⑤ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, DAC DRAWING ACV00682, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑥ DOOR SPANNER, 4" X 4" BY CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1 1/4") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE "BEVEL CUT" DETAIL ON PAGE 13.
- ⑦ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 15'-1/2") (8 REQD). TOENAIL TO THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END OF STRUT. SEE "DETAIL A" ON PAGE 12, AND "BEVEL CUT" DETAIL ON PAGE 13.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	284	190
2" X 6"	121	121
4" X 4"	46	62
NAILS	NO. REQD	POUNDS
6d (2")	400	2-1/2
10d (3")	268	4-1/4
12d (3-1/4")	44	3/4
PLYWOOD, 1/4" - - - 198 SQ FT REQD	- - - - -	136 LBS
PLYWOOD, 1/2" - - - 96 SQ FT REQD	- - - - -	132 LBS
UNIVERSAL LOAD RETAINER - - 6 REQD	- - - - -	39 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	16 - - - - -	23,552 LBS
DUNNAGE - - - - -	- - - - -	1,060 LBS
CONTAINER - - - - -	- - - - -	4,700 LBS
TOTAL WEIGHT - - - - -		29,312 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

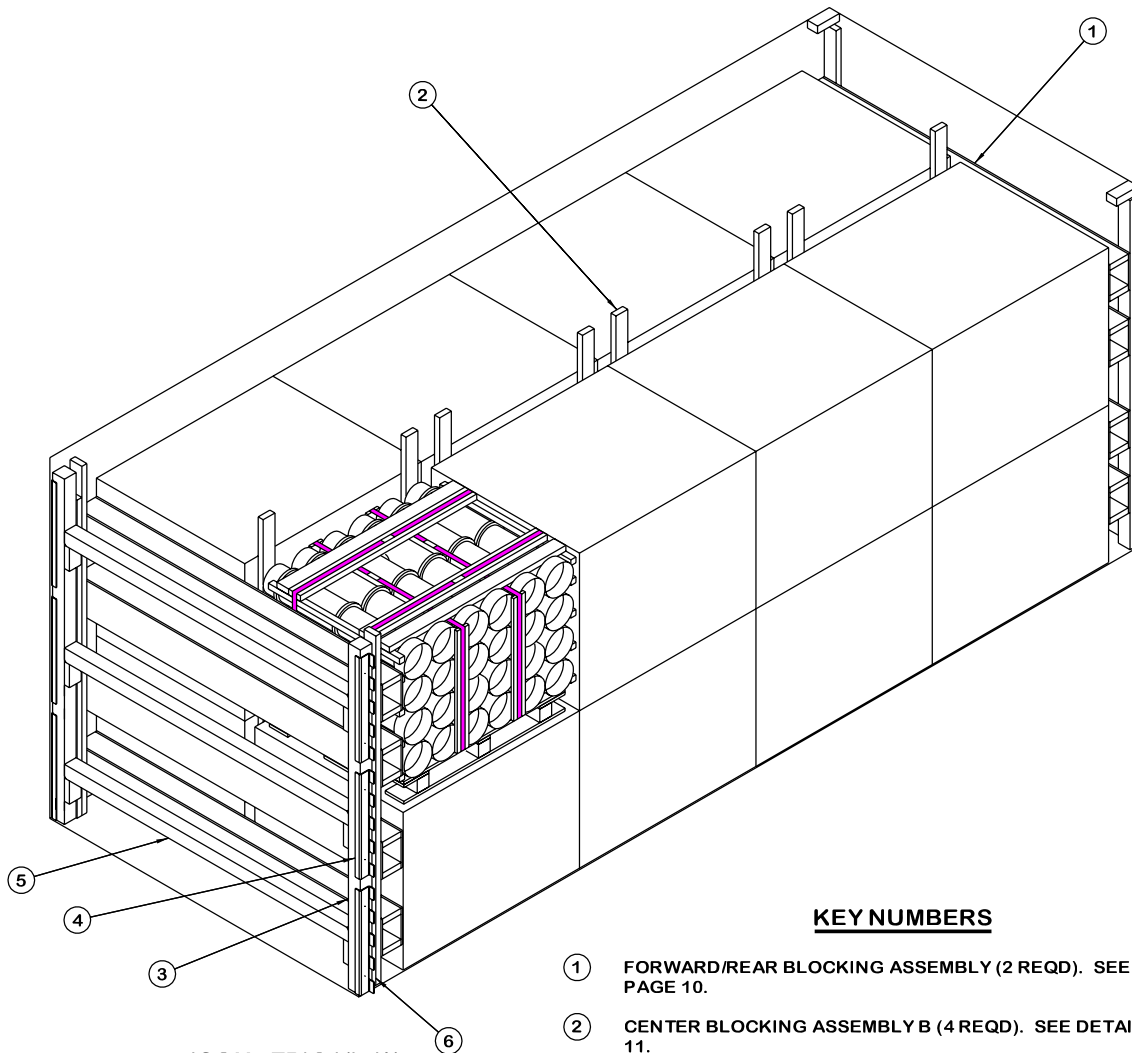
- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 10.
- ② CENTER BLOCKING ASSEMBLY B (4 REQD). SEE DETAIL ON PAGE 11.
- ③ DOOR POST VERTICAL (2 REQD). SEE DETAIL ON PAGE 13, "DETAIL B" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ④ UNIVERSAL LOAD RETAINER (4 REQD, 2 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, DAC DRAWING ACV00682, "DETAIL B" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑤ DOOR SPANNER, 4" X 4" BY 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 "BEVEL CUT" DETAIL ON PAGE 13.
- ⑥ FILL MATERIAL, 1" X 4" OR 2" X 4" BY TOP OF UPPER BOX BEAM ASSEMBLY PLUS 6" (REF: 50") (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/1 NAIL OF A SUITABLE SIZE EVERY 12" (6d FOR 1" THICK AND 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 B" ON PAGE 12.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	8	14,960 LBS
DUNNAGE		507 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 20,167 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	69	23
2" X 4"	126	84
2" X 6"	61	61
4" X 4"	29	39
NAILS	NO. REQD	POUNDS
6d (2")	304	2
10d (3")	32	1/2
12d (3-1/4")	8	NIL
PLYWOOD, 1/2" - - -	48 SQ FT REQD - - - - -	66 LBS
UNIVERSAL LOAD RETAINER - -	4 REQD - - - - -	26 LBS



ISOMETRIC VIEW

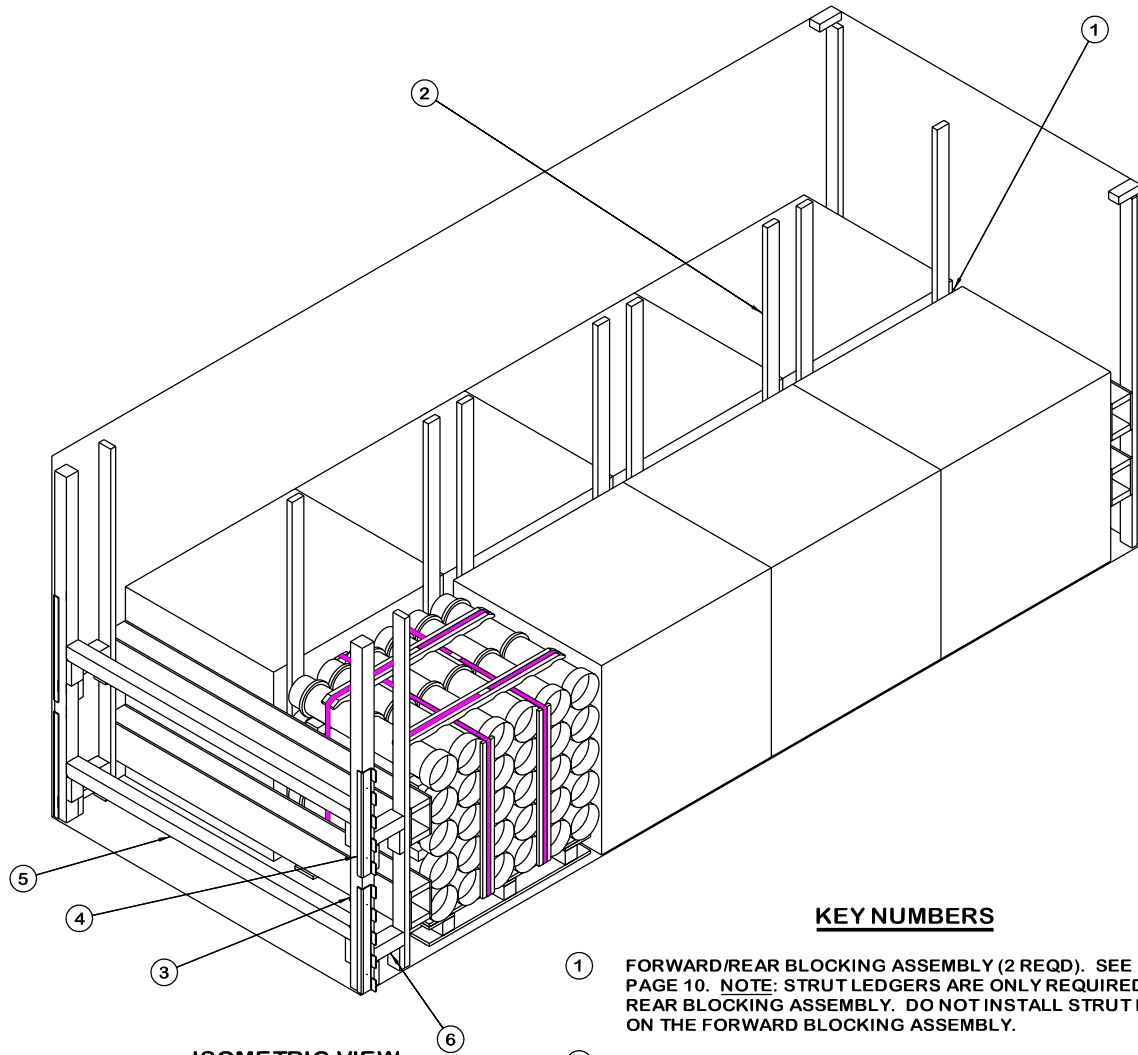
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- ④ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, DAC DRAWING ACV00682, "DETAIL B" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑤ DOOR SPANNER, 4" X 4" BY CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1 1/4") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE "BEVEL CUT" DETAIL ON PAGE 13.
- ⑥ FILL MATERIAL, 1" X 4" OR 2" X 4" BY TOP OF UPPER BOX BEAM ASSEMBLY PLUS 6" (REF: 6'-10") (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/1 NAIL OF A SUITABLE SIZE EVERY 12" (6d FOR 1" THICK AND 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 B" ON PAGE 12.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	139	46
2" X 4"	156	104
2" X 6"	121	121
4" X 4"	36	48
NAILS	NO. REQD	POUNDS
6d (2")	608	3-1/2
10d (3")	56	1
12d (3-1/4")	12	1/4
PLYWOOD, 1/2" - - -	96 SQ FT REQD - - - - -	132 LBS
UNIVERSAL LOAD RETAINER - -	6 REQD - - - - -	39 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	16 - - - - -	24,256 LBS
DUNNAGE - - - - -	- - - - -	815 LBS
CONTAINER - - - - -	- - - - -	4,700 LBS
TOTAL WEIGHT - - - - -		29,771 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

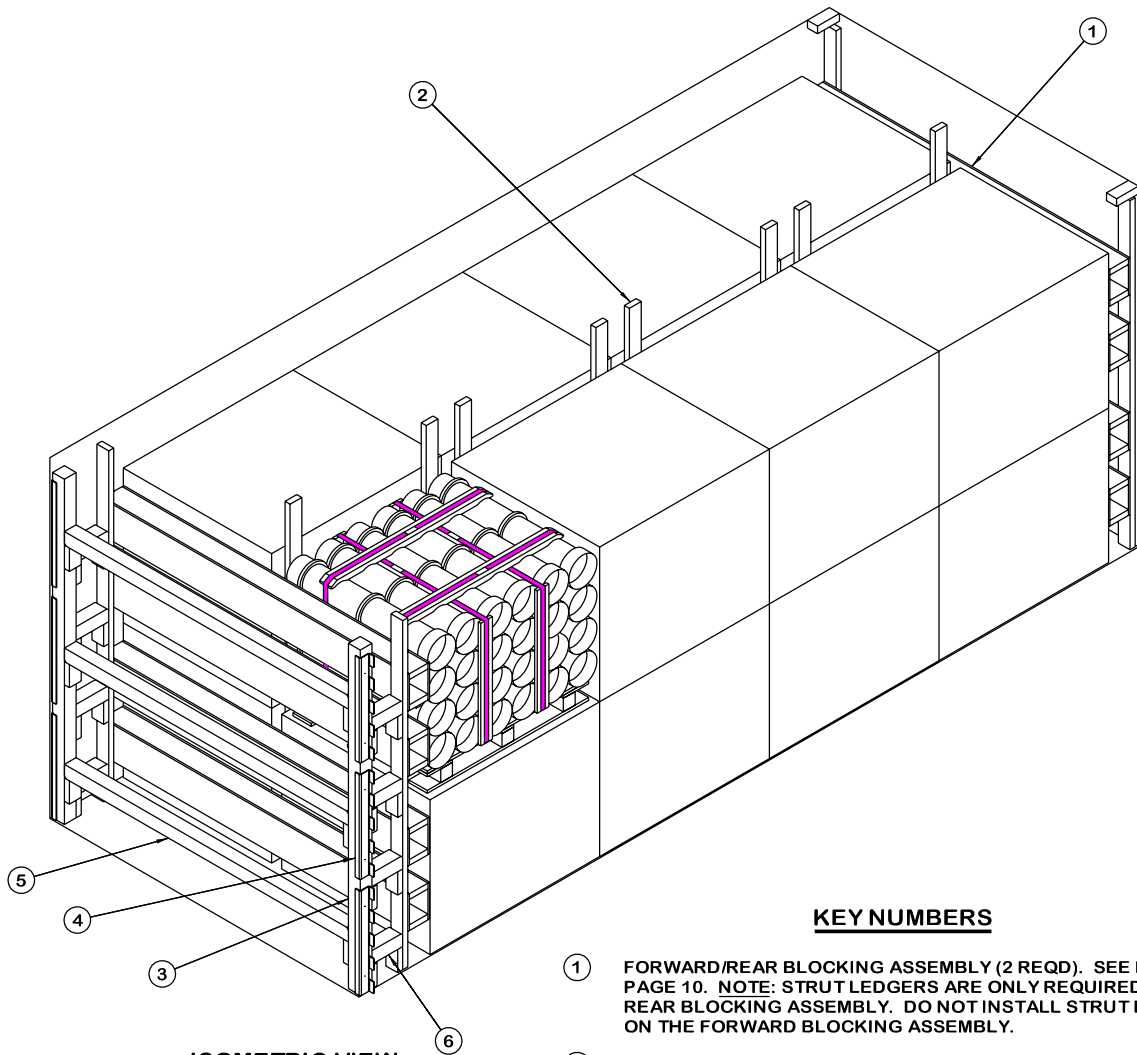
- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 10. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.
- ② CENTER BLOCKING ASSEMBLY C (4 REQD). SEE DETAIL ON PAGE 11.
- ③ DOOR POST VERTICAL (2 REQD). SEE DETAIL ON PAGE 13, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ④ UNIVERSAL LOAD RETAINER (4 REQD, 2 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, DAC DRAWING ACV00682, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑤ DOOR SPANNER, 4" X 4" BY 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 "BEVEL CUT" DETAIL ON PAGE 13.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 9'-1/2") (4 REQD). TOENAIL TO THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END OF STRUT. SEE "DETAIL A" ON PAGE 12, AND "BEVEL CUT" DETAIL ON PAGE 13.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	8	14,784 LBS
DUNNAGE		508 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 19,992 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	67	22
2" X 4"	121	81
2" X 6"	61	61
4" X 4"	32	43
NAILS	NO. REQD	POUNDS
6d (2")	304	1-3/4
10d (3")	40	1/2
12d (3-1/4")	24	1/2
PLYWOOD, 1/2"	48 SQ FT REQD	66 LBS
UNIVERSAL LOAD RETAINER	4 REQD	26 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 10. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.
- ② CENTER BLOCKING ASSEMBLY C (4 REQD). SEE DETAIL ON PAGE 11.
- ③ DOOR POST VERTICAL (2 REQD). SEE DETAIL ON PAGE 13, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ④ 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, DAC DRAWING ACV00682, "DETAIL A" ON PAGE 12, AND GENERAL NOTE "Q" ON PAGE 2.
- ⑤ DOOR SPANNER, 4" X 4" BY CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1 1/4") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE "BEVEL CUT" DETAIL ON PAGE 13.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 9-1/2") (8 REQD). TOENAIL TO THE REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END OF STRUT. SEE "DETAIL A" ON PAGE 12, AND "BEVEL CUT" DETAIL ON PAGE 13.

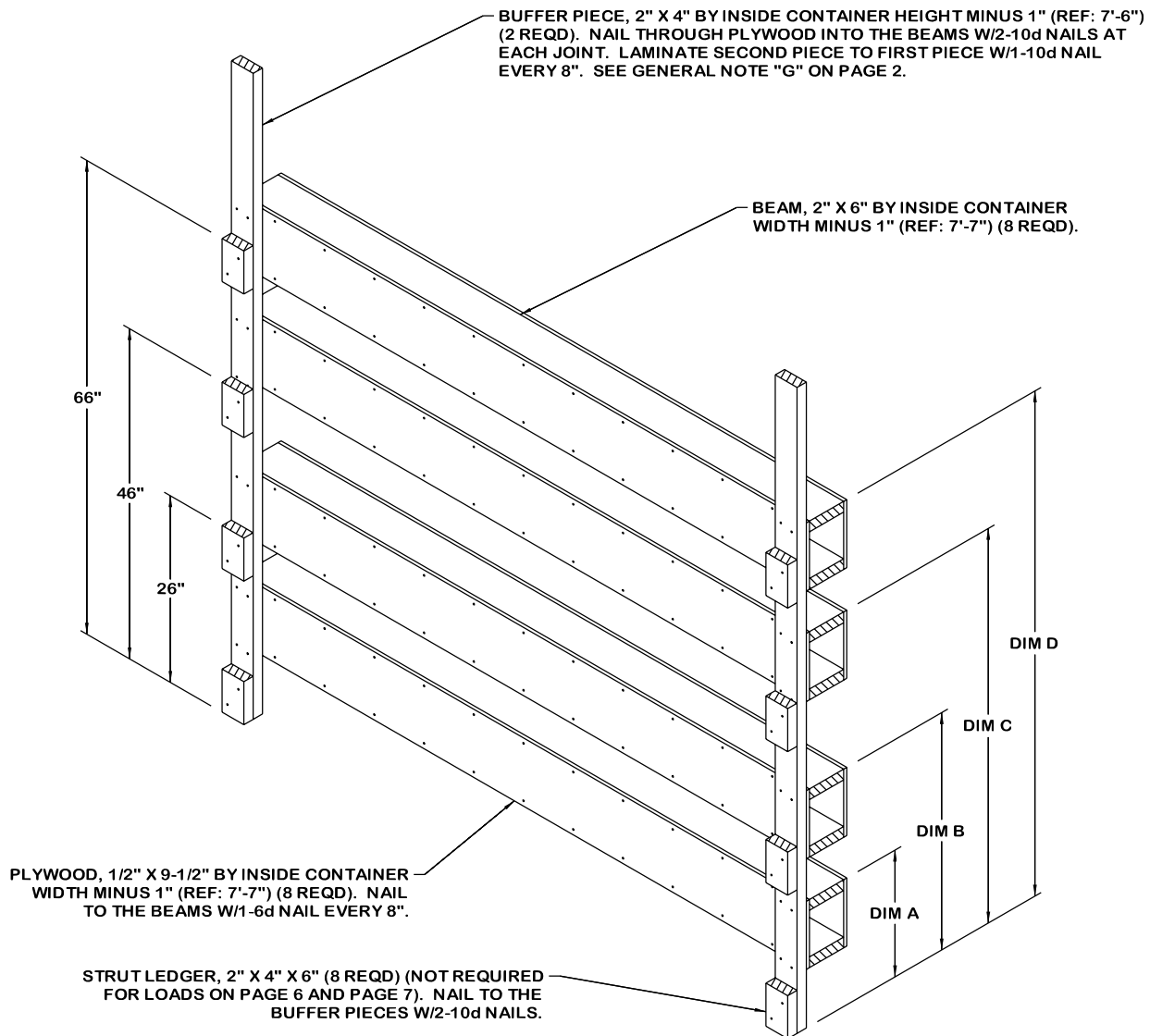
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	133	44
2" X 4"	150	100
2" X 6"	121	121
4" X 4"	42	57
NAILS	NO. REQD	POUNDS
6d (2")	608	3-1/2
10d (3")	76	1-1/4
12d (3-1/4")	44	3/4
PLYWOOD, 1/2"	96 SQ FT REQD	132 LBS
UNIVERSAL LOAD RETAINER	6 REQD	39 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	16	23,904 LBS
DUNNAGE		821 LBS
CONTAINER		4,700 LBS

TOTAL WEIGHT - - - - - 29,425 LBS (APPROX)

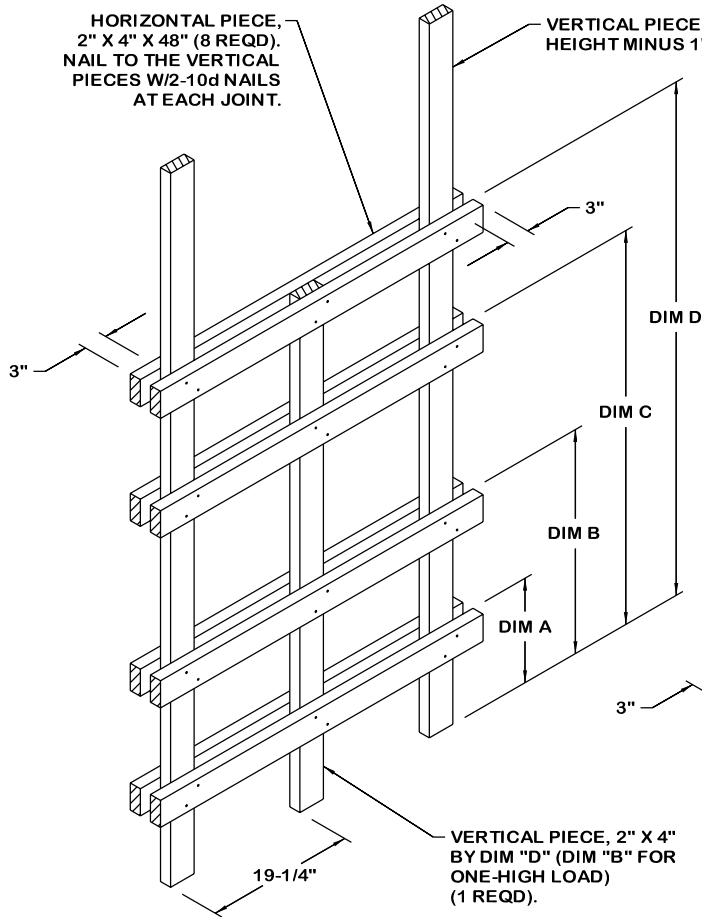
16 PALLET UNIT LOAD (ROUTED DUNNAGE - DECREASED HEIGHT)



FORWARD/REAR BLOCKING ASSEMBLY

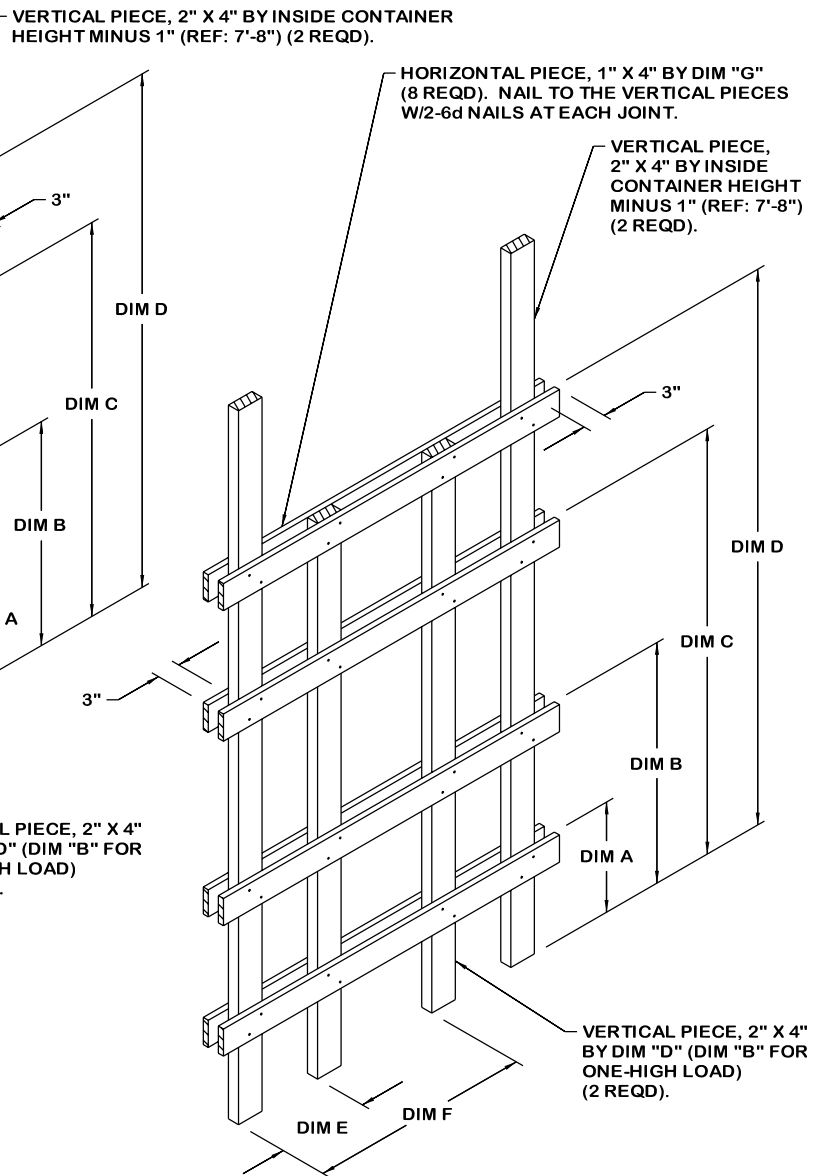
NOTE: FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES AND THE TOP FOUR STRUT LEDGERS (RAISE SECOND STRUT LEDGER TO 36").

FORWARD/REAR BLOCKING ASSEMBLY CHART				
UNIT	DIMENSION			
	A	B	C	D
ALTERNATED CONTAINERS - BASIC HEIGHT	14-3/4"	33"	55"	70-1/2"
FLAT DUNNAGE - DECREASED HEIGHT	16"	36"	59-3/4"	6' 4-1/2"
ROUTED DUNNAGE - DECREASED HEIGHT	18-1/2"	35-1/2"	58-1/2"	6' 3-1/4"
ALTERNATED CONTAINERS - INCREASED HEIGHT	14-3/4"	37-3/4"	NA	NA
FLAT DUNNAGE - BASIC HEIGHT	16"	41-1/2"	NA	NA
ROUTED DUNNAGE - BASIC HEIGHT	18-1/2"	40-1/4"	NA	NA



CENTER BLOCKING ASSEMBLY A

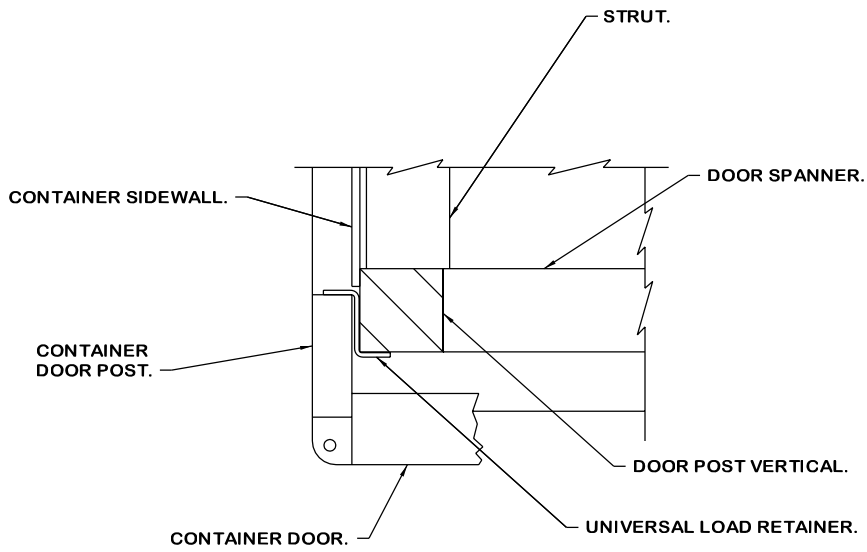
NOTE: FOR A ONE-HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES AND REDUCE THE HEIGHT OF THE CENTER VERTICAL PIECE.



CENTER BLOCKING ASSEMBLY B AND ASSEMBLY C

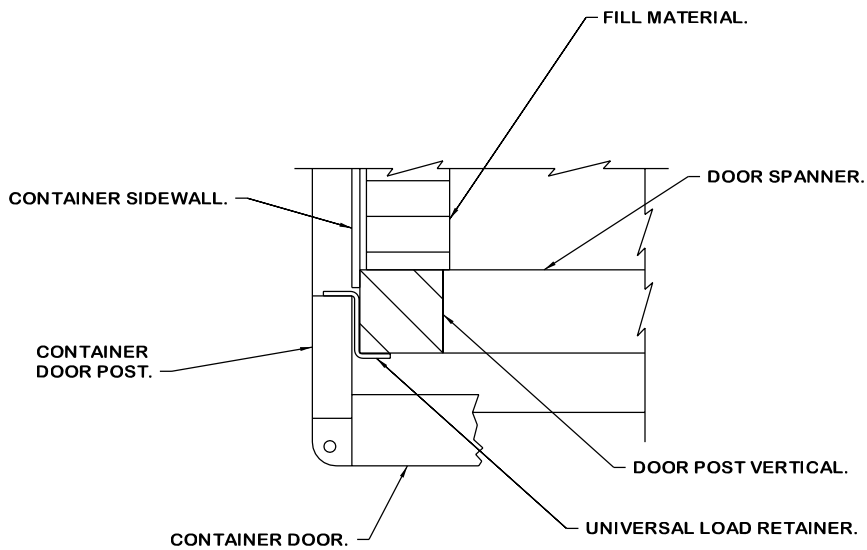
NOTE: FOR A ONE-HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES AND REDUCE THE HEIGHT OF THE CENTER VERTICAL PIECES.

CENTER BLOCKING ASSEMBLY CHART							
UNIT	DIMENSION						
	A	B	C	D	E	F	G
ALTERNATED CONTAINERS - BASIC HEIGHT	13-1/2"	28-3/4"	50-3/4"	66-1/4"	NA	NA	NA
FLAT DUNNAGE - DECREASED HEIGHT	14-1/4"	31"	54-3/4"	71-1/2"	12-3/4"	29-3/4"	52"
ROUTED DUNNAGE - DECREASED HEIGHT	14-1/4"	31"	54-3/4"	71-1/2"	11-3/4"	28-3/4"	50"
ALTERNATED CONTAINERS - INCREASED HEIGHT	13-1/2"	33-3/4"	NA	NA	NA	NA	NA
FLAT DUNNAGE - BASIC HEIGHT	14-1/4"	36"	NA	NA	12-3/4"	29-3/4"	52"
ROUTED DUNNAGE - BASIC HEIGHT	14-1/4"	36"	NA	NA	11-3/4"	28-3/4"	50"



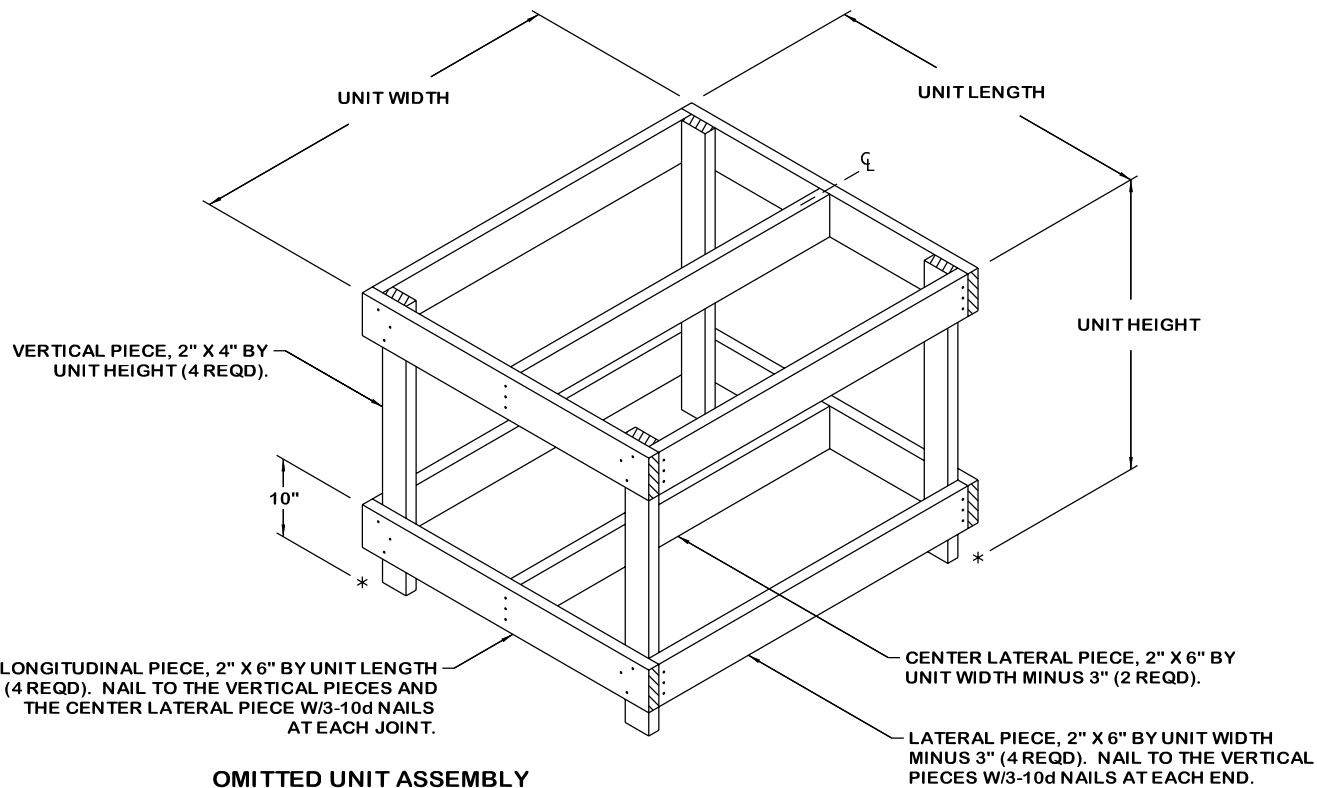
DETAIL A

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE UNIVERSAL LOAD RETAINER AND ADJACENT DUNNAGE PIECES.



DETAIL B

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE UNIVERSAL LOAD RETAINER AND ADJACENT DUNNAGE PIECES.



OMITTED UNIT ASSEMBLY

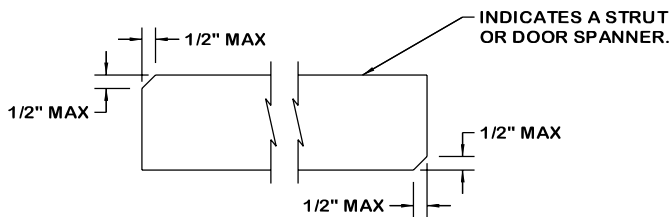
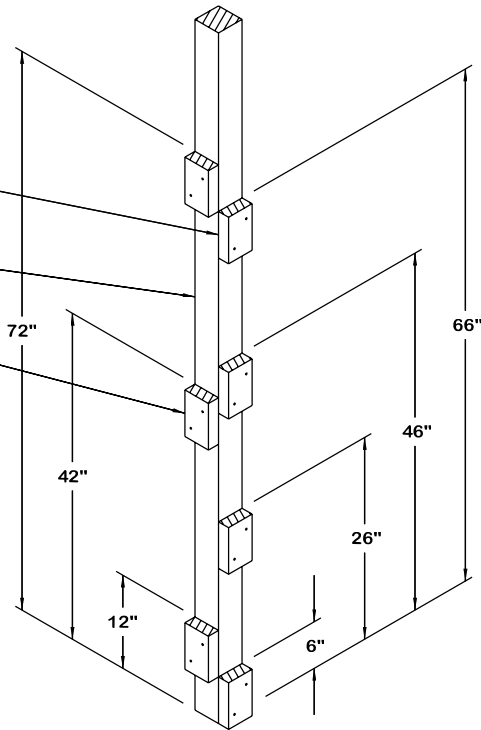
THIS ASSEMBLY IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. NO MORE THAN THREE OMITTED UNIT ASSEMBLIES MAY BE USED PER TWO-HIGH LOAD, AND NO MORE THAN ONE OMITTED UNIT ASSEMBLY MAY BE USED PER ONE-HIGH LOAD. DO NOT INSTALL AN OMITTED UNIT ASSEMBLY IMMEDIATELY ADJACENT TO ANOTHER OMITTED UNIT ASSEMBLY. WIRE TIE TO TWO ADJACENT PALLET UNITS WITH 0.0800" DIA WIRE.

ROTATED 90° FROM THE ISOMETRIC VIEWS SHOWN ON PAGES 4-9.

STRUT LEDGER, 2" X 4" X 6" (4 REQD) (NOT REQUIRED FOR LOADS ON PAGE 6 AND PAGE 7). NAIL TO THE VERTICAL PIECE W/2-10d NAILS.

VERTICAL PIECE, 4" X 4" X 7'-5" (1 REQD).

SPANNER LEDGER, 2" X 4" X 6" (3 REQD). NAIL TO THE VERTICAL PIECE W/2-10d NAILS.



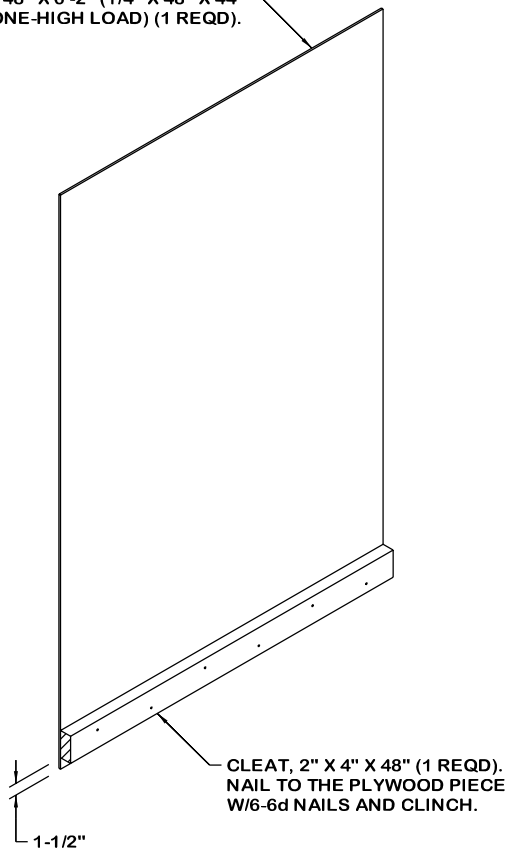
BEVEL CUT

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.

DOOR POST VERTICAL

A LEFT-HAND ASSEMBLY IS DEPICTED ABOVE, A RIGHT-HAND ASSEMBLY IS ALSO REQUIRED. NOTE: FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO STRUT LEDGERS AND TOP SPANNER LEDGER (RAISE SECOND STRUT LEDGER TO 36").

PLYWOOD, 1/4" X 48" X 6'-2" (1/4" X 48" X 44"
FOR A ONE-HIGH LOAD) (1 REQD).



CLEAT, 2" X 4" X 48" (1 REQD).
NAIL TO THE PLYWOOD PIECE
W/6-6d NAILS AND CLINCH.

SIDE BLOCKING ASSEMBLY