APPROVED BY BUREAU OF EXPLOSIVES

DATE 11-10-96

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

PA37 SERIES CONTAINERS

INDEX

<u>ITEM</u>	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS	. 2
PALLET UNIT DETAILS	
ALTERNATED CONTAINER PALLET UNIT LOAD (BASIC HEIGHT)	-,.
ALTERNATED CONTAINER PALLET UNIT LOAD (INCREASED HEIGHT)	
FLAT DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)	
FLAT DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT)	
ROUTED DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)	
ROUTED DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT)	
DETAILS	
TYPICAL REDUCED LOAD	- 20

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.

NOTE: THIS DRAWING SUPERSEDES THE PORTIONS OF AMC DRAWING 19-48-4154-15PM1002, DATED MARCH 1982, THAT PERTAIN TO THE PA37 CONTAINER.

DO NOT SCALE

U.S. ARMY MATERIEL COMMAND DRAWING				
APPROVED, U.S. ARMY INDUSTRIĄL OPERĄJIONS COMMAND	DRAFTS	NAMZ	TECHNICIAN	ENGINEER
Sainf & Stechwich				L. FIEFFER
APPROVED BY ORDER OF COMMANDING GENERAL, U.S.	VALIDAT ENGINEE DIVISI	RING ON	TRANSPORTATION ENGINEERING DIVISION	ENGINEERING OFFICE
ARMY MATERIEL COMMAND	9	SK L	U. Freni	WeiFErnet
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U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	CLASS	NOISIVID	DRAWING	FILE
	19	48	4154/ 9	15PM1002

GENERAL NOTES

- THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF PROPELLING CHARGES PACKED IN PA37 SERIES LUAUS UF PRUPELLING CHARGES PALKED IN PA37 SERIES
 CYLINDRICAL METAL CONTAINERS. SUBSEQUENT REFERENCE TO
 PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH AMMUNITION
 ITEMS. SEE PAGES 3 THROUGH 5 AND AMC DRAWING
 19-48-4042A/9-20PM1001 FOR DETAILS OF THE PALLET UNITS.
 CAUTION: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE
 SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- 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 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", VERIEY INSIDE CONTAINER HEIGHT PRIDR TO FABRICATING DUNNAGE. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-DN-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: DTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- 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 BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE VERTICAL PIECES ON THE CENTER FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/I APPROPRIATELY SIZED NAIL EVERY 12".

 ADDITIONALLY, THE THICKNESS AND/OR GUANTITY OF THE VERTICAL OR HORIZONTAL PIECES IN THE CENTER FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNIT.
- 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.
- 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

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

NAILS - - - - - - : FED SPEC FF-N-105; COMMON.

PLYW000 - - - - -:

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.

ASTM A853; ANNEALED AT FINISH, BLACK DXIDE FINISH, .0800" DIA, GRADE 1006 WIRE, CARBON STEEL -:

TR BETTER.

STAPLE, STRAP - - -: COMMERCIAL GRADE.

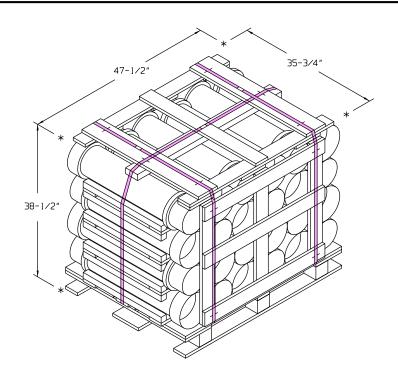
ASTM A501, STEEL STRUCTURAL TUBING; AND ASTM A570, STEEL, STRIP, HOT-ROLLED, GRADE 36 (MINIMUM). STEEL, STRUCTURAL -:

(GENERAL NOTES CONTINUED)

- 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 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, DNLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BI DEKTNG
- 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.
- 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:

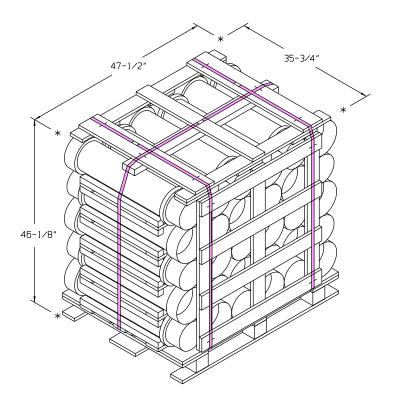
THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE ARE DELINEATED IN THE LUAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY 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 BUREAU OF EXPLOSIVES
 PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/
 CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES
 - A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC
 - 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.
- 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
- 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 DNE INCH EQUALS 25.4 MM AND DNE POUND EQUALS 0.454 KG.
- P. THE QUANTITY OF PALLET UNITS SHOWN IN THE LOADS ON PAGES 6 THROUGH 16 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "TYPICAL REDUCED LOAD" DETAILS ON PAGE 20.
 - 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.
 - IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN THREE LADING UNITS FOR A TWO-HIGH LOAD, OR MORE
 THAN ONE LADING UNIT FOR A ONE-HIGH LOAD, 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 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.



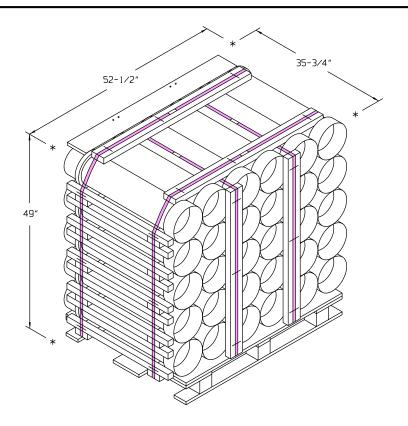
ALTERNATED CONTAINER PALLET UNIT (BASIC HEIGHT)

UNIT WEIGHT - - - - - 1,163 POUNDS (APPROX)
CUBE - - - - - - - 37.8 CUBIC FEET
REFER TO PAGES 6 AND 7 FOR OUTLOADING PROCEDURES.



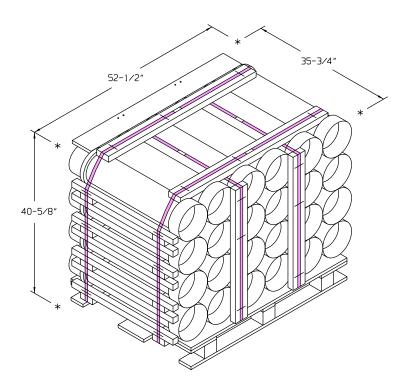
ALTERNATED CONTAINER PALLET UNIT (INCREASED HEIGHT)

UNIT WEIGHT - - - - 1,432 POUNDS (APPROX)
CUBE - - - - - - 45.3 CUBIC FEET
REFER TO PAGES 8 AND 9 FOR OUTLOADING PROCEDURES.



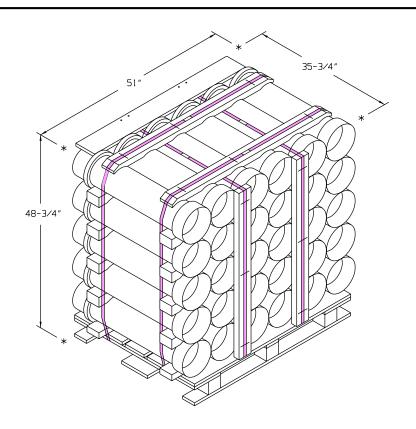
FLAT DUNNAGE PALLET UNIT (BASIC HEIGHT)

UNIT WEIGHT - - - - - 1,452 POUNDS (APPROX)
CUBE - - - - - - - 53.2 CUBIC FEET
REFER TO PAGES 10 AND 11 FOR DUTLOADING PROCEDURES.



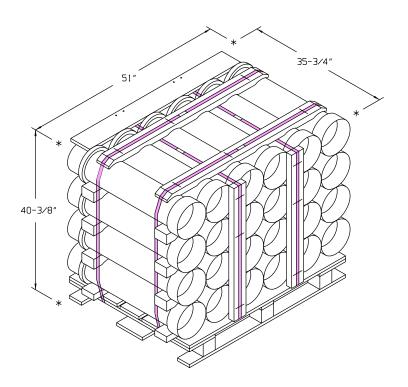
FLAT DUNNAGE PALLET UNIT (DECREASED HEIGHT)

UNIT WEIGHT - - - - - 1,195 PDUNDS (APPROX)
CUBE - - - - - - - 44.1 CUBIC FEET
REFER TO PAGES 12 AND 13 FOR DUTLOADING PROCEDURES.



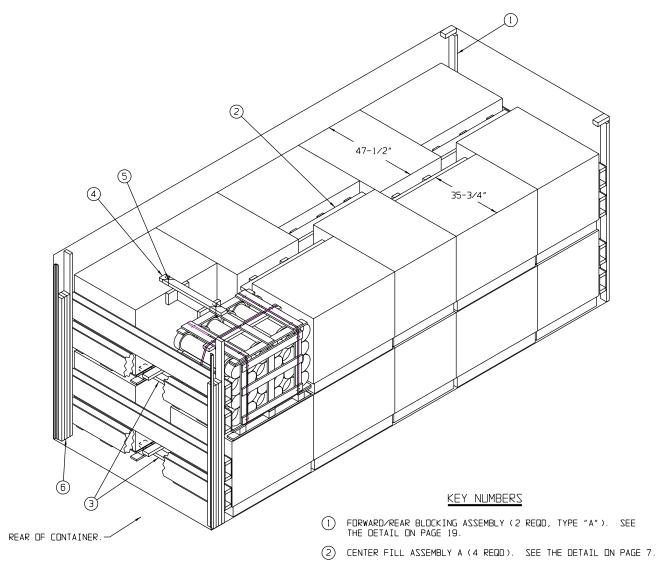
ROUTED DUNNAGE PALLET UNIT (BASIC HEIGHT)

UNIT WEIGHT - - - - - 1,429 POUNDS (APPROX)
CUBE - - - - - - - 51.4 CUBIC FEET
REFER TO PAGES 14 AND 15 FOR DUTLOADING PROCEDURES.



ROUTED DUNNAGE PALLET UNIT (DECREASED HEIGHT)

UNIT WEIGHT - - - - - 1,161 POUNDS (APPROX)
CUBE - - - - - - - 42.6 CUBIC FEET
REFER TO PAGES 16 AND 17 FOR OUTLOADING PROCEDURES.



ISOMETRIC VIEW

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 3" 2" X 4" 2" X 6"	96 12 263 99	32 6 176 99
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	544 238	3-1/4 3-3/4
DLVWDDD 1/2" OF OF SD CT DCDD 122 OO LDS		

PLYWOOD, 1/2" - - - 96.06 SQ FT REQD - - 132.09 LBS WIRE, NO. 14 GAGE - - - - - 4' REQD - - - - - NIL

- (3) ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 18.
- 4 TOP SPACER A (1 REQD). SEE THE DETAIL ON PAGE 7.
- TIE WIRE, NO. 14 GAGE WIRE 24" LONG (2 REGD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP SPACER AND THE TOP DUNNAGE ASSEMBLY OF THE PALLET UNIT. BRING (5) ENDS TOGETHER AND TWIST TAUT.
- FILL MATERIAL, 4" WIDE BY 72" LONG MATERIAL (AS REGD).
 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. SEE "DETAIL A" AND "DETAIL B" ON PAGE 21.

LOAD AS SHOWN

<u>ITEM</u>	QUANTITY	WEIGHT (APPROX)
DUNNAGE	20	- 766 LBS

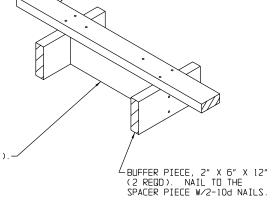
TOTAL WEIGHT - - - - - - 28,726 LBS (APPROX)

PAGE 6

ALTERNATED CONTAINER PALLET UNIT LOAD (BASIC HEIGHT)

- 1. PREFABRICATE TWO FORWARD/REAR BLUCKING ASSEMBLIES (TYPE "A"), FOUR CENTER FILL ASSEMBLIES "A", AND DNE TOP SPACER "A".
- 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
- 3. LOAD FOUR PALLET UNITS AND INSTALL ONE CENTER FILL ASSEMBLY.
- REPEAT STEP 3 THREE TIMES.
- 5. LOAD FOUR PALLET UNITS, AND INSTALL TWO ANTI-SWAY BRACES AND ONE TOP SPACER WITH TIE WIRE.
- 6. INSTALL THE REAR BLOCKING ASSEMBLY.
- 7. INSTALL THE FILL MATERIAL.

SPACER PIECE, 2" X 6"
BY DISTANCE BETWEEN
LATERALLY ADJACENT
PALLET UNITS MINUS 3"
(REF: 17-1/2") (1 REGD).



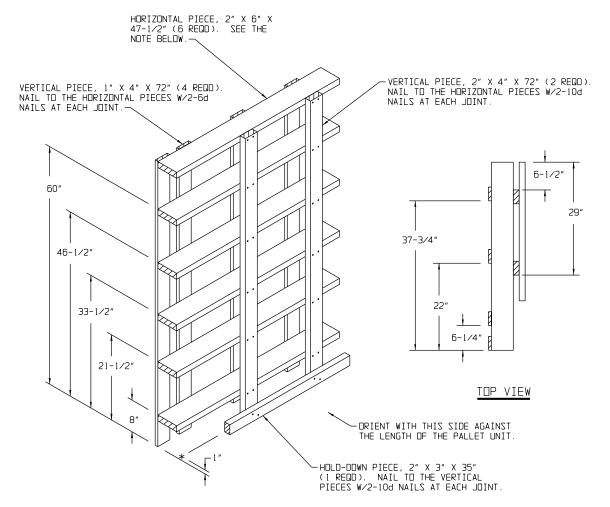
RETAINER PIECE, 2" X 4" X 36" (1 REQD). CENTER ON THE SPACER PIECE AND NAIL TO THE BUFFER

PIECES AND SPACER PIECE W/2-10d

NAILS AT EACH JOINT.

TOP SPACER A

(FOR USE WITH ALTERNATED CONTAINER PALLET UNITS.)

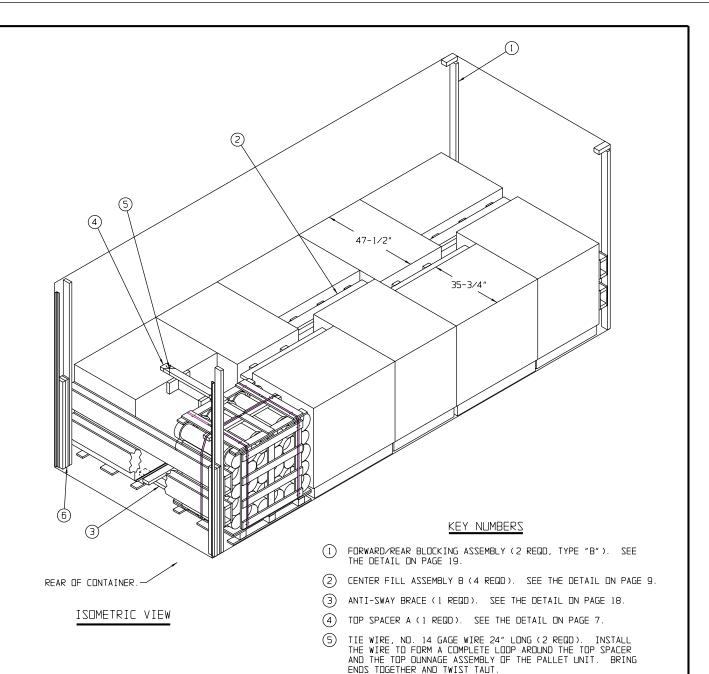


CENTER FILL ASSEMBLY A

NOTE: FOR A ONE HIGH LOAD, ELIMINATE THE TOP THREE HORIZONTAL PIECES AND SHORTEN THE VERTICAL PIECES TO 33-1/2". THE LENGTH OF THE HORIZONTAL PIECE MUST BE AS CLOSE AS POSSIBLE TO THE LENGTH OF THE LONGITUDINAL VOID TO BE FILLED.

ALTERNATED CONTAINER PALLET UNIT LOAD (BASIC HEIGHT)

PAGE 7



BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 3" 2" X 4" 2" X 6"	64 12 149 67	22 6 100 67
NAILS	NO. REQD	POUNDS
6d (2″) 10d (3″)	312 146	2 2-1/4
PLYWOOD 3/4" 48 03 SD ET REDD 99 06 LBS		

PLYWOOD, 3/4" - - - 48.03 SQ FT REQD - - 99.06 LBS WIRE, NO. 14 GAGE - - - - - 4' REQD - - - - NIL

LOAD AS SHOWN

FILL MATERIAL, 4" WIDE BY 44" LONG MATERIAL (AS REGD).
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" AND "DETAIL B" ON PAGE 21.

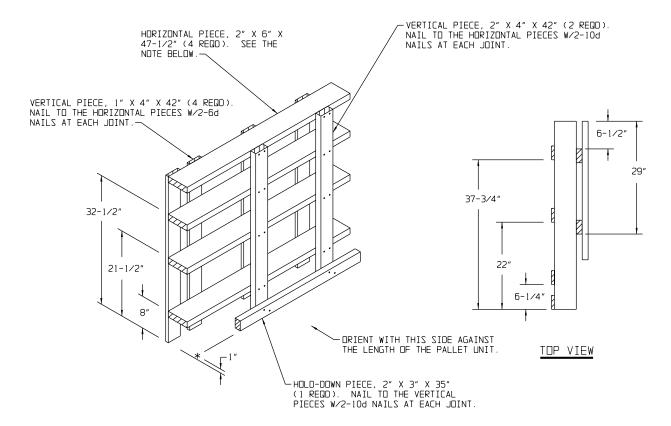
ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	10	494 LBS

TOTAL WEIGHT - - - - - - 19,514 LBS (APPROX)

PAGE 8

ALTERNATED CONTAINER PALLET UNIT LOAD (INCREASED HEIGHT)

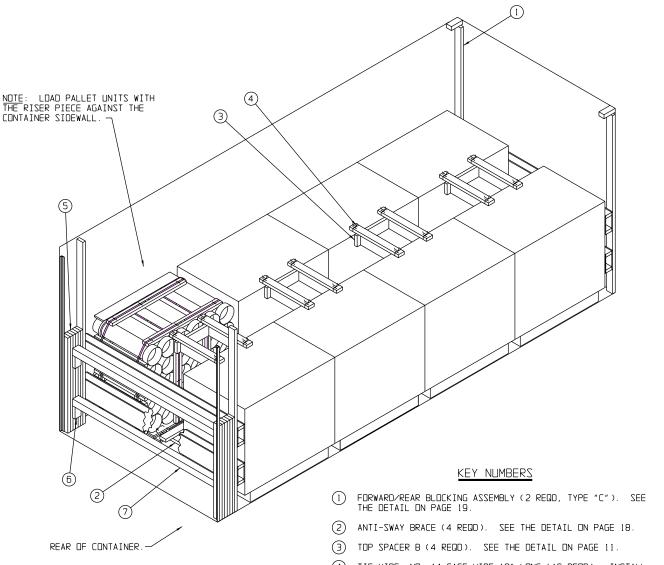
- 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES (TYPE "B"), FOUR CENTER FILL ASSEMBLIES "B", AND ONE TOP SPACER "A".
- 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
- 3. LOAD TWO PALLET UNITS AND INSTALL ONE CENTER FILL ASSEMBLY.
- 4. REPEAT STEP 3 THREE TIMES.
- 5. LOAD TWO PALLET UNITS, AND INSTALL ANTI-SWAY BRACE AND TOP SPACER WITH TIE WIRE.
- 6. INSTALL THE REAR BLOCKING ASSEMBLY.
- 7. INSTALL THE FILL MATERIAL.



CENTER FILL ASSEMBLY B

NOTE: THE LENGTH OF THE HORIZONTAL PIECE MUST BE AS CLOSE AS POSSIBLE TO THE LENGTH OF THE LONGITUDINAL VOID TO BE FILLED.

ALTERNATED CONTAINER PALLET UNIT LOAD (INCREASED HEIGHT)



ISOMETRIC VIEW

LOAD AS SHOWN

<u>ITEM</u>	QUANTITY	WEIGHT (APPROX)
DUNNAGE	8	443 LBS

TOTAL WEIGHT - - - - - - 16,759 LBS (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6" 4" X 4"	208 27 15	139 27 20
NAILS	NO. REQD	POUNDS
6d (2") 10d (3") 12d (3-1/4")	176 200 8	1/4 3-1/4 1/4
PLYWOOD, 1/2" 48.03 SQ FT REQD 66.04 LBS		

- 4) TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REDD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP SPACER AND THE PALLET TIEDOWN STRAP. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE TOP SPACER WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.
- (5) FILL MATERIAL, 4" WIDE BY 48" LONG MATERIAL (AS REDD).

 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

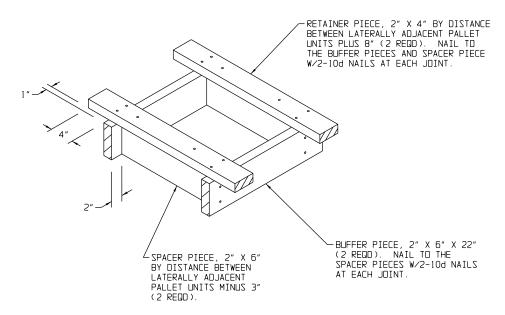
 SIMILAR MANNER. NOTE: MULTIPLE PIECES MAY BE LAMINATED

 TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING

 ASSEMBLY. SEE "DETAIL A" AND "DETAIL B" ON PAGE 21.
- 6 STRUT LEDGER, 2" X 4" X 6" (4 SHOWN OPTIONAL). INSTALL IF DESIRED TO AID IN THE INSTALLATION OF SPANNER PIECES. NAIL TO THE FILL MATERIAL W/2-10d NAILS.
- ODDR 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 FILL MATERIAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 18. NOTE THAT THESE PIECES ARE NOT REGUIRED IF THE SPACE BETWEEN THE REAR BLOCKING ASSEMBLY AND THE LOAD RETAINER IS NOT GREATER THAN 6". ALIGN THE TOP OF THE UPPER SPANNER WITH THE TOP OF THE UPPER TOP BOX BEAM ASSEMBLY, AND ALIGN THE BOTTOM OF THE LOWER SPANNER WITH THE BOTTOM OF THE LOWER BOX BEAM ASSEMBLY.

FLAT DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)

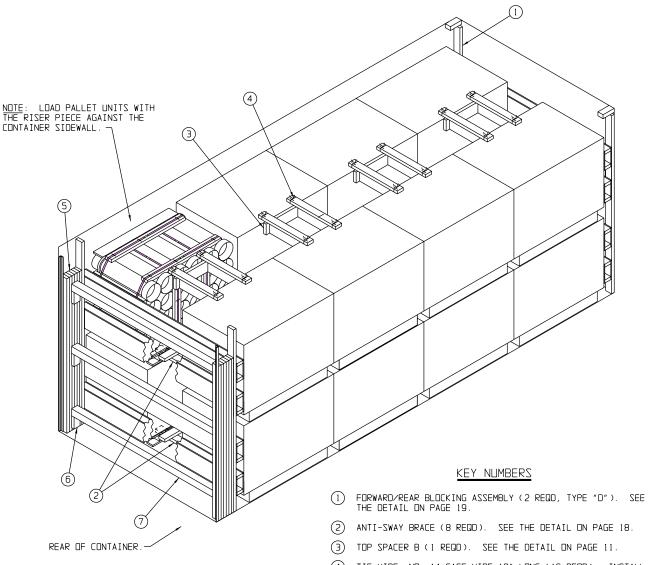
- 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES (TYPE "C"), AND FOUR TOP SPACERS "B".
- 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
- 3. LOAD TWO PALLET UNITS (RISER PIECE TOWARDS WALL) AND INSTALL DNE ANTI-SWAY BRACE AND ONE TOP SPACER WITH TIE WIRE.
- 4. REPEAT STEP 3 THREE TIMES.
- 5. INSTALL THE REAR BLOCKING ASSEMBLY.
- 6. INSTALL THE FILL MATERIAL, STRUT LEDGERS (IF USED), AND DOOR SPANNERS.



TOP SPACER B

(FOR USE WITH FLAT OR ROUTED DUNNAGE PALLET UNITS.)

FLAT DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)



ISOMETRIC VIEW

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	16	722 LBS

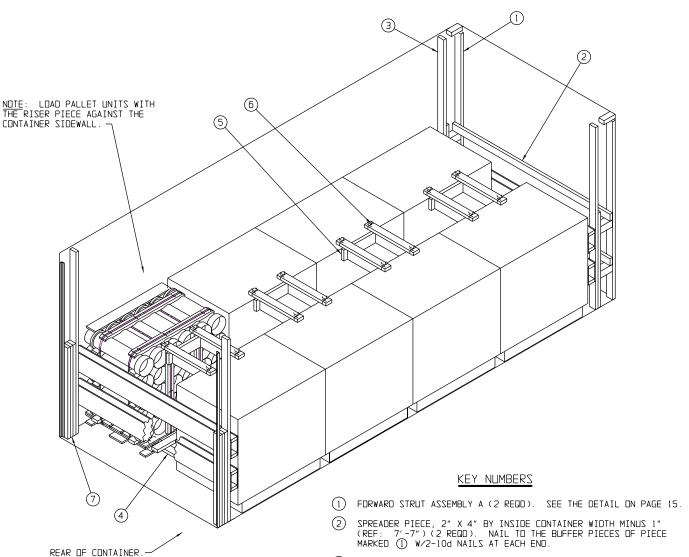
TOTAL WEIGHT - - - - - - 24,542 LBS (APPROX)

BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 4" 2" X 6" 4" X 4"	350 27 22	234 27 30	
NAILS	NO. REQD	POUNOS	
6d (2") 10d (3") 12d (3-1/4")	352 292 12	2-1/4 4-1/2 1/4	
PLYWOOD, 1/2" 96.06 SQ FT REGD 132.08 LBS WIRE, NO. 14 GAGE 24' REGD 0.40 LBS			

- 4) TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP SPACER AND THE PALLET TIEDOWN STRAP. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE TOP SPACER WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.
- (5) FILL MATERIAL, 4" WIDE BY 6'-8" LONG MATERIAL (AS REGD).
 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. SEE "DETAIL A" AND "DETAIL B" ON PAGE 21.
- 6 STRUT LEDGER, 2" X 4" X 6" (6 SHOWN OPTIONAL). INSTALL IF DESIRED TO AID IN THE INSTALLATION OF SPANNER PIECES. NAIL TO THE FILL MATERIAL W/2-10d NAILS.
- ODOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT (REF: 7'-1-3/8") (3 REGD). TOENAIL TO THE FILL MATERIAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 18. NOTE THAT THESE PIECES ARE NOT REGUIRED IF THE SPACE BETWEEN THE REAR BLOCKING ASSEMBLY AND THE LOAD RETAINER IS NOT GREATER THAN 6". ALIGN THE TOP OF THE UPPER SPANNER WITH THE TOP OF THE UPPER TOP BOX BEAM ASSEMBLY, ALIGN THE BOTTOM OF THE LOWER SPANNER WITH THE BOTTOM OF THE LOWER BOX BEAM ASSEMBLY, AND CENTER THE MIDDLE SPANNER BETWEEN THE OTHER TWO SPANNERS.

FLAT DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT)

RECOMMENDED SEQUENTIAL LOADING PROCEDURES PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES (TYPE "D"), AND FOUR TOP SPACERS "B". 2. INSTALL THE FORWARD BLOCKING ASSEMBLY. 3. LOAD FOUR PALLET UNITS (RISER PIECE TOWARDS WALL) AND INSTALL TWO ANTI-SWAY BRACES AND ONE TOP SPACER WITH TIE WIRE. 4. REPEAT STEP 3 THREE TIMES. 5. INSTALL THE REAR BLOCKING ASSEMBLY. 6. INSTALL THE FILL MATERIAL, STRUT LEDGERS (IF USED), AND DOOR SPANNERS. FLAT DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT) PAGE 13



LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
DUNNAGE	8	428 LBS

TOTAL WEIGHT - - - - - - 16,560 LBS (APPROX)

ISOMETRIC VIEW

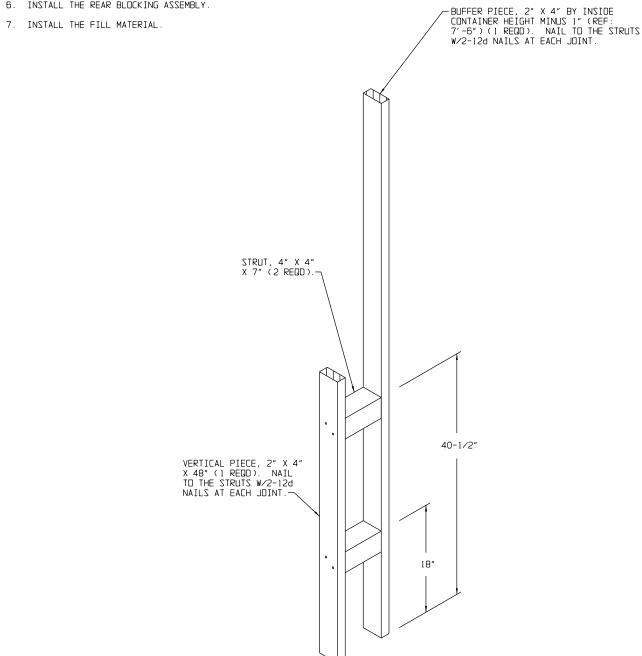
BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 4" 2" X 6" 4" X 4"	220 27 3	147 27 4	
NAILS	NO. REQD	POUNDS	
6d (2") 10d (3") 12d (3-1/4")	176 184 16	1-1/4 3 1/2	
PLYWOOD, 1/2" 48.03 SQ FT REQD 66.04 LBS WIRE, NO. 14 GAGE 24' REQD 0.40 LBS			

- (3) FDRWARD/REAR BLOCKING ASSEMBLY (2 REGD, TYPE "E"). SEE THE DETAIL ON PAGE 19. NAIL THROUGH THE BUFFER PIECES INTO THE VERTICAL PIECES OF PIECE MARKED (1) W/4-10d NAILS.
- (4) ANTI-SWAY BRACE (4 REQD). SEE THE DETAIL ON PAGE 18.
- (5) TOP SPACER B (4 REGD). SEE THE DETAIL ON PAGE 11.
- (6) TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REDD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP SPACER AND THE PALLET TIEDOWN STRAP. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE TOP SPACER WITH A PARTIALLY ORIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.
- FILL MATERIAL, 4" WIDE BY 48" LONG MATERIAL (AS REGD).
 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" AND "DETAIL B" ON PAGE 21.

ROUTED DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)

- PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES (TYPE "E"), TWO FORWARD STRUT ASSEMBLIES "A", AND FOUR TOP SPACERS "B".
- 2. INSTALL THE FORWARD STRUT ASSEMBLIES AND SPREADER PIECES.
- 3. INSTALL THE FORWARD BLOCKING ASSEMBLY.
- 4. LOAD TWO PALLET UNITS (RISER PIECE TOWARDS WALL) AND INSTALL ONE ANTI-SWAY BRACE AND ONE TOP SPACER WITH TIE WIRE.
- 5. REPEAT STEP 3 THREE TIMES.

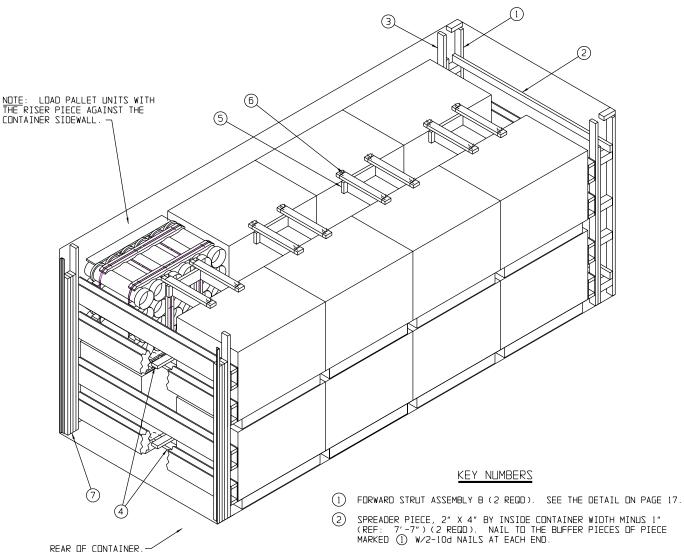
6. INSTALL THE REAR BLOCKING ASSEMBLY.



FORWARD STRUT ASSEMBLY A

ROUTED DUNNAGE PALLET UNIT LOAD (BASIC HEIGHT)

PAGE 15



ISOMETRIC VIEW

LOAD AS SHOWN

<u>ITEM</u>					QUANTITY								<u>WEIGHT</u>	(APPROX)	
PALLET UNIT DUNNAGE CONTAINER -	-	-	-	-	-	-	-	-	-	-	-	-	-	678	LB2

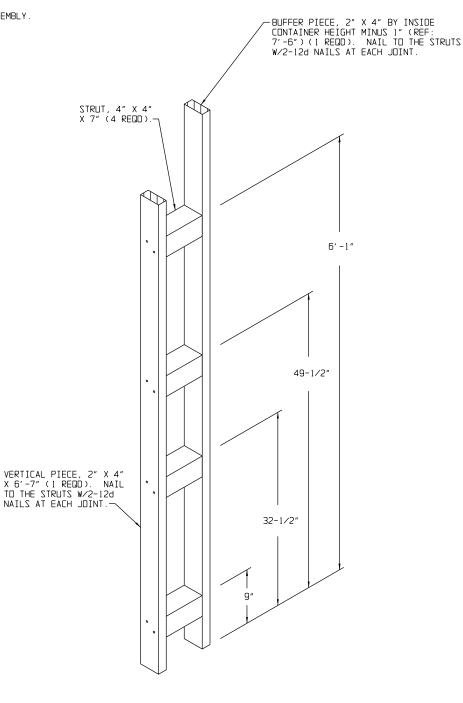
TOTAL WEIGHT - - - - - - 23,954 LBS (APPROX)

BILL OF MATERIAL							
LUMBER	LINEAR FEET	BOARD FEET					
2" X 4" 2" X 6" 4" X 4"	350 27 5	234 27 7					
NAILS	NO. REQD	POUNDS					
6d (2") 10d (3") 12d (3-1/4")	352 360 32	2-1/4 5-3/4 3/4					
PLYWOOD, 1/2" 96.06 SQ FT REGD 132.08 LBS WIRE, NO. 14 GAGE 24' REGD 0.40 LBS							

- (3) FORWARD/REAR BLOCKING ASSEMBLY (2 REGD, TYPE "F"). SEE THE DETAIL ON PAGE 19. NAIL THROUGH THE BUFFER PIECES INTO THE VERTICAL PIECES OF PIECE MARKED (1) W/6-10d NAILS.
- (4) ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 18.
- (5) TOP SPACER B (4 REQD). SEE THE DETAIL ON PAGE 11.
- TIE WIRE, NO. 14 GAGE WIRE 18" LONG (16 REGD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP SPACER AND THE PALLET TIEDOWN STRAP. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE TOP SPACER WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.
- FILL MATERIAL, 4" WIDE BY 6'-7" LONG MATERIAL (AS REGD).
 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. <u>NOTE</u>: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE "DETAIL A" AND "DETAIL B" ON PAGE 21.

ROUTED DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT)

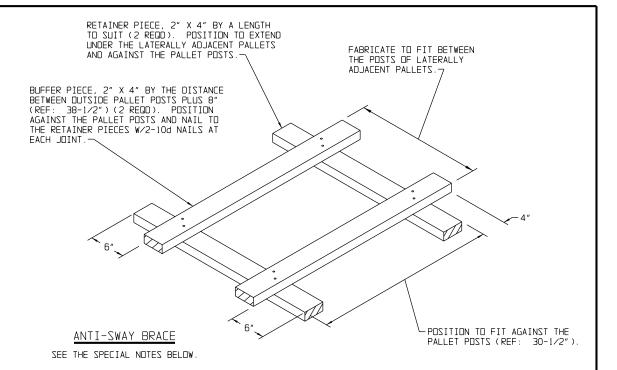
- 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES (TYPE "F"), TWO FORWARD STRUT ASSEMBLIES "B", AND FOUR TOP SPACERS "B".
- 2. INSTALL THE FORWARD STRUT ASSEMBLIES AND SPREADER PIECES.
- 3. INSTALL THE FORWARD BLOCKING ASSEMBLY.
- 4. LOAD FOUR PALLET UNITS (RISER PIECE TOWARDS WALL) AND INSTALL TWO ANTI-SWAY BRACE AND ONE TOP SPACER WITH TIE WIRE.
- 5. REPEAT STEP 3 THREE TIMES.
- 6. INSTALL THE REAR BLOCKING ASSEMBLY.
- 7. INSTALL THE FILL MATERIAL.



FORWARD STRUT ASSEMBLY B

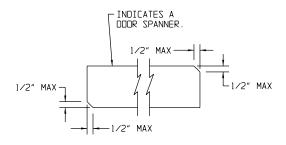
ROUTED DUNNAGE PALLET UNIT LOAD (DECREASED HEIGHT)

PAGE 17



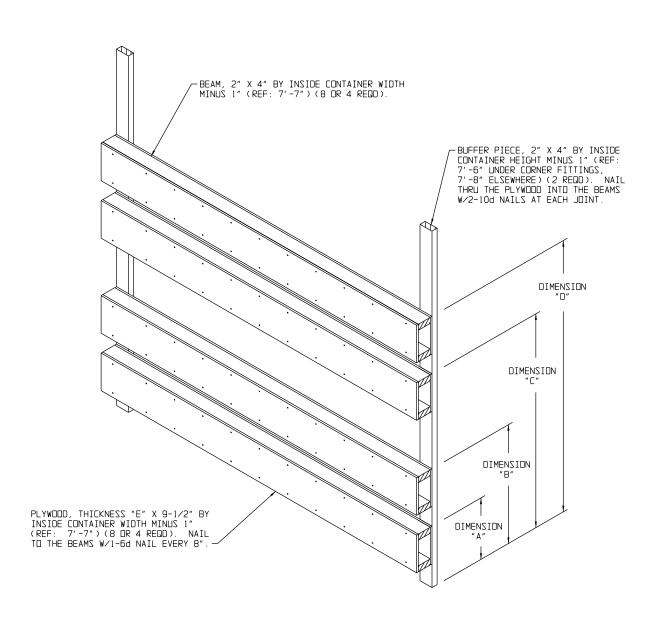
SPECIAL NOTES:

- 1. THE ANTI-SWAY BRACE IS FOR USE BETWEEN PALLET UNITS THAT ARE POSITIONED WITH THE PALLET WIDTH PARALLEL TO THE CONTAINER SIDEWALL.
- 2. ALL ASSEMBLIES MUST BE FABRICATED IN PLACE BETWEEN PALLETS.
 - A. POSITION THE FIRST RETAINER PIECE BETWEEN THE CENTER PALLET POST AND THE POST WHICH IS FURTHEST AWAY. THE RETAINER PIECE IS TO SPAN THE VOID BETWEEN LATERALLY ADJACENT PALLETS.
 - B. POSITION THE SECOND RETAINER PIECE AGAINST THE INSIDE OF THE NEAREST PALLET POST SO AS TO SPAN THE VOID BETWEEN LATERALLY ADJACENT PALLETS.
 - C. POSITION THE FIRST BUFFER PIECE AGAINST THE PALLET POSTS AND EXTENDING 4" BEYOND THE FURTHEST RETAIN-ER PIECE. NAIL TO THE RETAINER PIECE W/2-10d NAILS.
 - D. POSITION THE SECOND BUFFER PIECE AGAINST THE PALLET POSTS ON THE OPPOSITE SIDE AND EXTENDING 4" BEYOND THE FURTHEST RETAINER PIECE. NAIL TO THE RETAINER PIECE W/2-10d NAILS.
 - E. PUSH THE PARTIAL ASSEMBLY FORWARD UNTIL THE FIRST RETAINER PIECE CONTACTS THE PALLET POST ON THE FAR SIDE OF THE PALLET. NAIL THE BUFFER PIECES TO THE SECOND RETAINER PIECE W/2-10d NAILS AT EACH JOINT.
- 3. IF BUFFER PIECES OF 2" X 4" LUMBER ARE OF AN INSUFFICIENT SIZE TO PERMIT ADEQUATE NAILING, 2" X 6" PIECES MAY BE USED INSTEAD.



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.

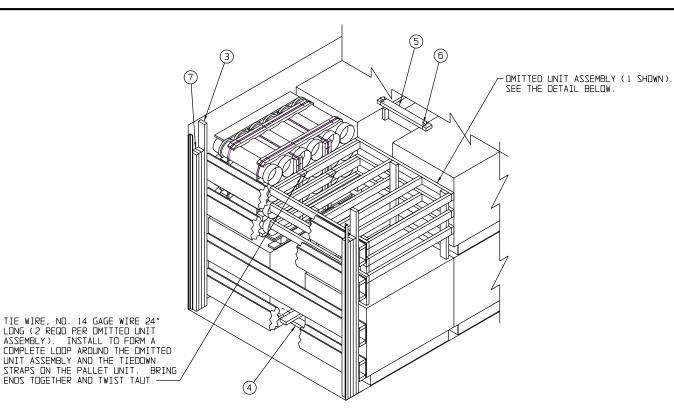


FORWARD/REAR BLOCKING ASSEMBLY

NDTE: FOR DNE HIGH LOADS, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES (DIMENSIONS "C" AND "D" ARE NOT USED, SEE BELOW).

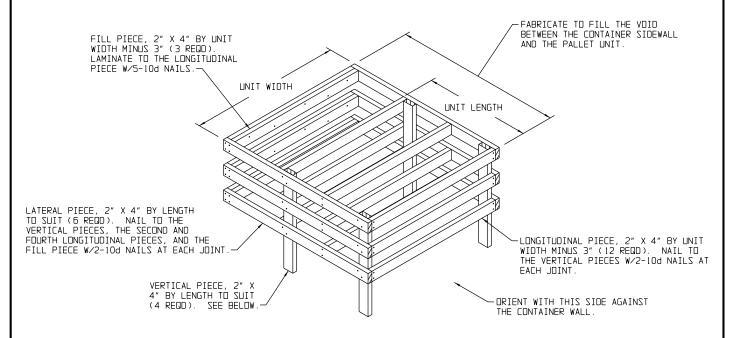
	FORWARD/REAR BLOCKING ASSEMBLY TYPE •									
	" A "	"B"	"C"	"D"	"E"	"F"				
DIMENSION "A"	15-1/2"	22"	22"	17"	24"	15"				
DIMENSION "B"	30"	37-1/2"	41-1/2"	33-1/2"	40-1/2"	32-1/2"				
DIMENZION "C"	54 "	N/A	N∕A	57-1/2"	N∕A	55-1/2"				
DIMENSION "O"	68-1/2"	N/A	N/A	6' -2"	N/A	6' -1"				
THICKNESS "E"	1/2"	3/4"	1/2"	1/2"	1/2"	1/2"				

THE "FORWARD/REAR BLOCKING ASSEMBLY TYPE" REFERS TO THE TYPES LISTED IN THE KEY NUMBERS FOR EACH LOAD. FOR EXAMPLE, THE LOAD ON PAGE 6 REQUIRES TYPE "A" ASSEMBLIES.



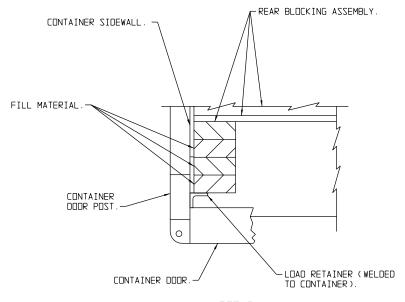
TYPICAL REDUCED LOAD

SEE GENERAL NOTES "H" AND "P" ON PAGE 2. KEY NUMBERS REFER TO THE KEY NUMBERS ON PAGE 16. A DECREASED HEIGHT ROUTED DUNNAGE PALLET UNIT LOAD (AS DEPICTED ON PAGE 16) IS SHOWN AS TYPICAL ONLY. THESE PROCEDURES MAY BE USED WITH ANY OF THE LOADS WITHIN THIS DRAWING.



FILLER ASSEMBLY

THE ASSEMBLY DEPICTED ABOVE IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. NO MORE THAN THREE FILLER ASSEMBLIES MAY BE USED IN A TWO-HIGH TWO-WIDE LOAD, AND NO MORE THAN ONE FILLER ASSEMBLY MAY BE USED IN A ONE-HIGH TWO-WIDE LOAD. THIS ASSEMBLY SHOULD NOT BE USED TO REPLACE PALLET UNITS ORIENTED WITH THE PA37 CONTAINERS PARALLEL TO THE CONTAINER SIDEWALL. NOTE: THE HEIGHT OF THE LATERAL AND LONGITUDINAL PIECES AND THE LENGTH OF THE VERTICAL PIECE DEPENDS ON THE ADJACENT PALLET UNITS. LOCATE THE LONGITUDINAL AND LATERAL PIECES SUCH THAT THEY INTERFACE WITH THE PALLET UNIT DUNNAGE.

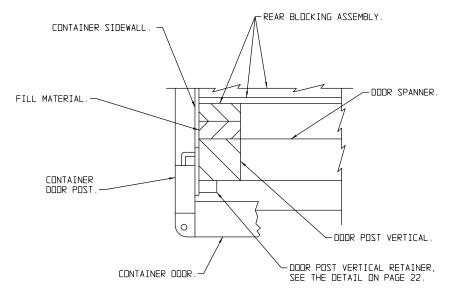


DETAIL A

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

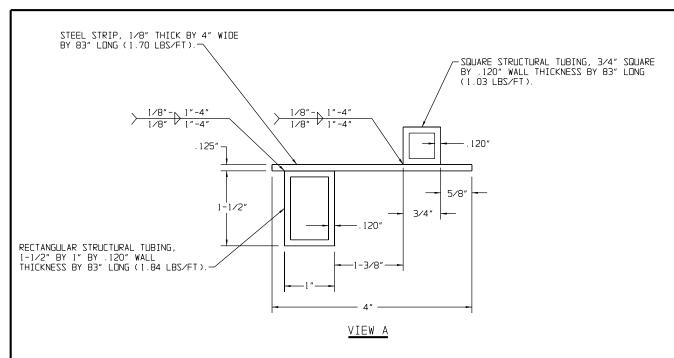
SPECIAL NOTE:

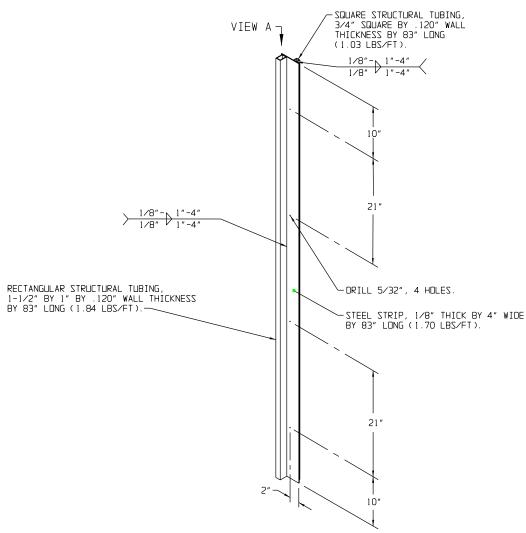
WHEN ISO CONTAINERS ARE NOT EQUIPPED WITH PRE-WELDED LOAD RETAINERS, AS DEPICTED IN "DETAIL A" ABOVE, DOOR POST VERTICALS, DOOR POST VERTICAL RETAINERS AND DOOR SPANNERS WILL BE REQUIRED FOR THE LOADS DEPICTED ON PAGES THROUGH 16. SEE VARIOUS LOADS WITHIN AMC DRAWING 19-48-4153-15PA1002 FOR EXAMPLES. SEE PAGE 22 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.





DOOR POST VERTICAL RETAINER

NOTE: THE ABOVE ASSEMBLY HAS BEEN SHOWN ROTATED 90 $^{\rm o}$ 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.

PAGE 22