

LOADING AND BRACING (TL AND LTL) IN VAN TRAILERS[⊕] OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS

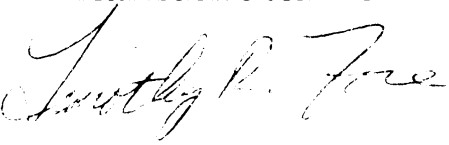
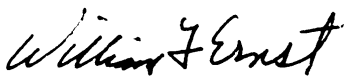
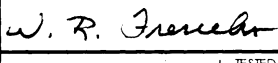
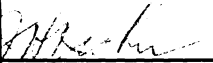
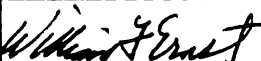
M19 SERIES CONTAINERS

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⊕ **CAUTION: THE LOADING PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS, NOT TRAILER-ON FLATCAR (TOFC) MOVEMENTS.**

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND 	ENGINEER	BASIC		DO NOT SCALE			
		REV.	MICHAEL SARDONE	WEBSITE: HTTP://WWW.DAC.ARMY.MIL			
	TECHNICIAN	BASIC	RALPH ARNOLD	JULY 1986			
	REV.			REVISION NO. 1		NOVEMBER 1997	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND 	TRANSPORTATION ENGINEERING DIVISION			SEE THE REVISION LISTING ON PAGE 5			
	VALIDATION ENGINEERING DIVISION			CLASS	DIVISION	DRAWING	FILE
	LOGISTICS ENGINEERING OFFICE			19	48	4042C/6	11PM1000
U.S. ARMY DEFENSE AMMUNITION CENTER							

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE M19 SERIES PROPELLING CHARGE CONTAINER ASSEMBLED ON THE 40" X 48" 4-WAY ENTRY PALLET. SEE THE PICTORAL VIEWS ON PAGE 3 FOR SIZES AND WEIGHTS. SEE U.S. ARMY MATERIEL COMMAND DRAWING 19-48-4042A/6-20PM1001 FOR UNITIZATION PROCEDURES FOR THE M19 SERIES CONTAINERS.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. REGARDLESS OF THE DIMENSIONS OF THE VAN TRAILERS SHOWN, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE 89" THRU 99" IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- D. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 29, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- E. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. THE TOTAL WEIGHT OF THE LADING, OF THE DUNNAGE, OF THE TRACTOR, AND OF THE SEMITRAILER CARRYING THE LADING MUST NOT EXCEED THE MAXIMUM GROSS WEIGHT ALLOWED FOR THE STATE OR STATES THRU WHICH THE LOAD IS TO BE TRANSPORTED BY MOTOR CARRIER. LIKEWISE, THE GROSS WEIGHT ON A SINGLE OR TANDEM AXLE MUST NOT EXCEED THE MAXIMUM ALLOWABLE WEIGHT. IF THERE IS ANY DOUBT AS TO WHETHER THE TOTAL GROSS WEIGHT OR AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.
- F. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED MAY BE USED, HOWEVER, THE APPROVED METHODS SHOWN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- G. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 43,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS, UP TO 45,000 POUNDS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF PROPELLING CHARGES, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- J. ALL LOADS ARE SHOWN IN TRAILERS HAVING ROUNDED CORNERS AT THE FORWARD END. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
- K. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

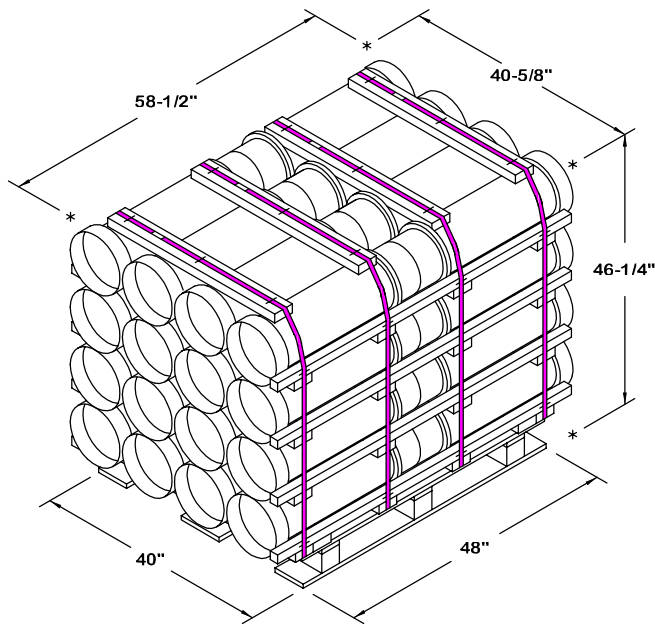
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(GENERAL NOTES CONTINUED)

- M. **NOTICE:** A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS. 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 THE PIECE ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- O. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- P. **CAUTION:** WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, PALLET UNITS BEING LOADED INTO THE CONVEYANCE MUST BE POSITIONED TO ALLOW A CLEAR PATH OF EXIT FOR THE OPERATOR AT ALL TIMES, SHOULD AN EMERGENCY EXIT BECOME NECESSARY.
- Q. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE "SHIPMENT OF A PARTIAL PALLET UNIT" DETAILS ON PAGE 18. FOR "SHIPMENT OF LEFT-OVER CONTAINERS" SEE THE DETAILS ON PAGE 17.
- R. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF PALLET UNITS OF M19 SERIES CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED PROPELLING CHARGES, OR WHEN THEY ARE EMPTY.
- S. 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.
- T. ANY OF THE PALLET UNITS DEPICTED ON PAGE 3 MAY BE LOADED AS A MIXED LOAD IN THE SAME TRAILER, INCLUDING THE BASIC HEIGHT UNITS WITH THE DECREASED HEIGHT UNITS. FOR MIXED-HEIGHT LOADS, POSITION ALL PALLET UNITS OF ONE HEIGHT IN ONE LAYER, WITH THE TALLER UNITS IN THE BOTTOM LAYER. IF FULL LAYERS OF ONE HEIGHT UNIT ARE NOT POSSIBLE FOR THE QUANTITY OF EACH SIZE TO BE SHIPPED, THE TALLER UNITS WILL BE LOADED IN THE FORWARD PORTION OF THE BOTTOM LAYER, AND THE SHORTER UNITS IN THE REAR PORTION.

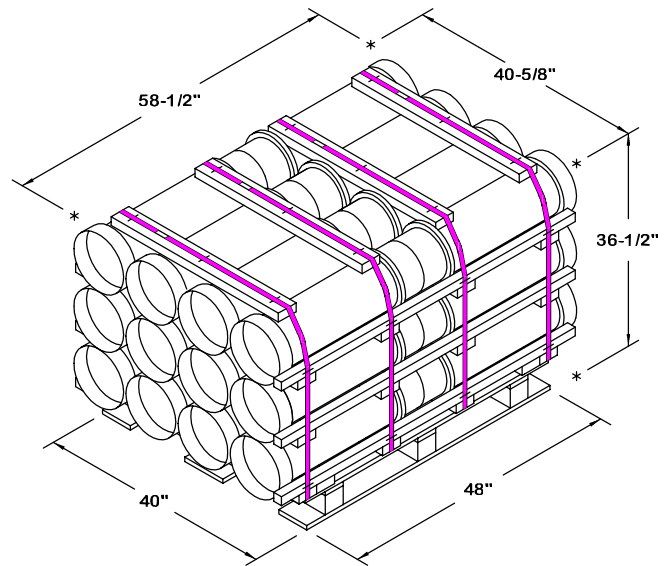
MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
- STRAPPING, STEEL - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.



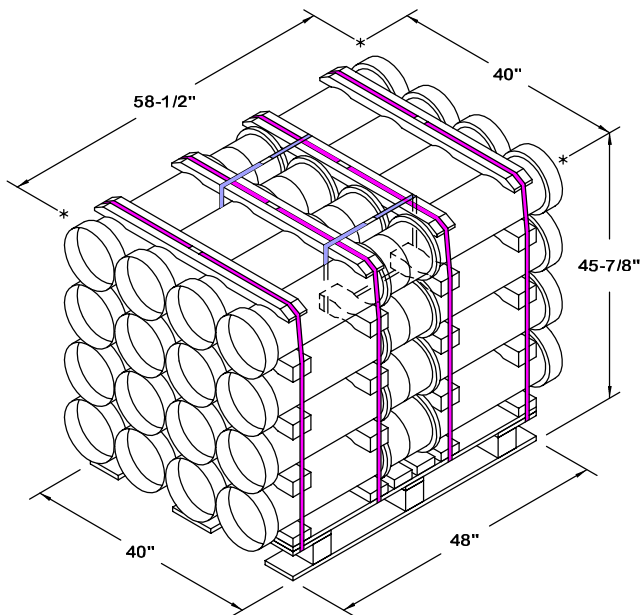
FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER - - - - - 32 EACH @ 52 LBS (APPROX)
 CUBE - - - - - 63.6 CUBIC FEET (APPROX)
 GROSS WEIGHT - - - - - 1,872 LBS (APPROX)



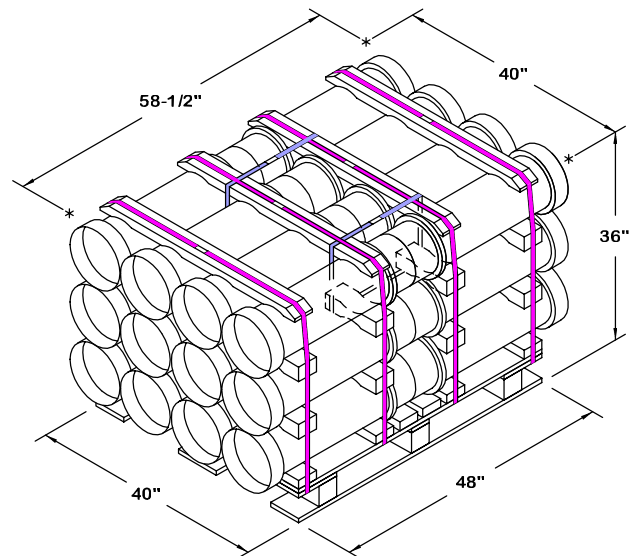
FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER - - - - - 24 EACH @ 52 LBS (APPROX)
 CUBE - - - - - 50.2 CUBIC FEET (APPROX)
 GROSS WEIGHT - - - - - 1,430 LBS (APPROX)



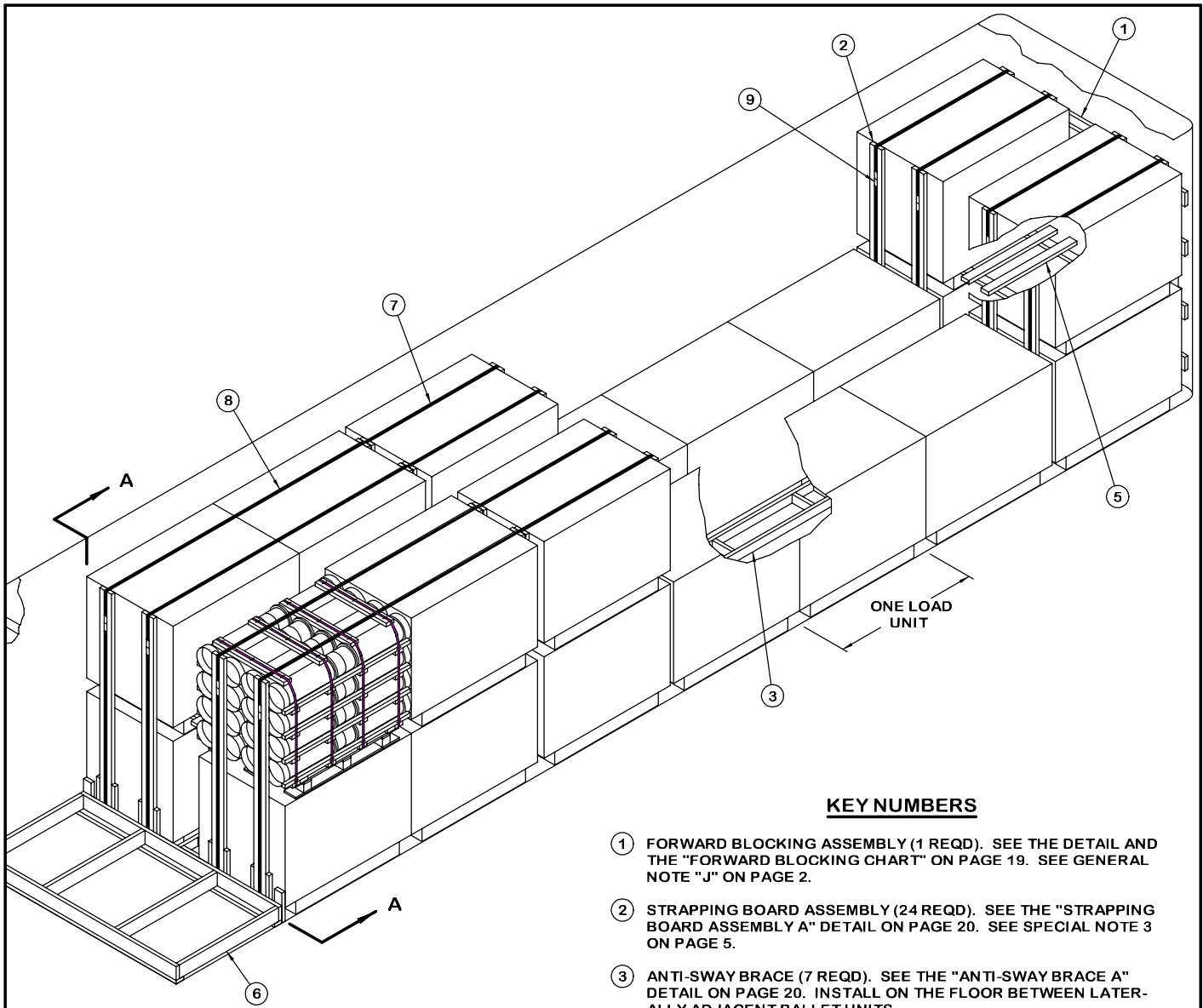
ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER - - - - - 32 EACH @ 52 LBS (APPROX)
 CUBE - - - - - 62.1 CUBIC FEET (APPROX)
 GROSS WEIGHT - - - - - 1,873 LBS (APPROX)

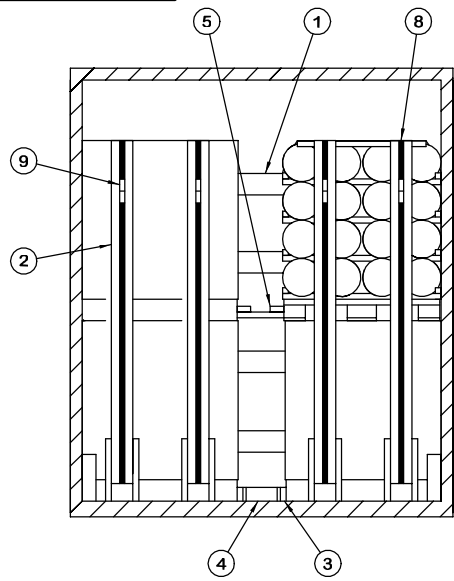


ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER - - - - - 24 EACH @ 52 LBS (APPROX)
 CUBE - - - - - 48.8 CUBIC FEET (APPROX)
 GROSS WEIGHT - - - - - 1,429 LBS (APPROX)



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② STRAPPING BOARD ASSEMBLY (24 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 5.
- ③ ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS.
- ④ SPACER PIECE, 2" X 4" X 8" (6 REQD). NAIL TO A STRUT OF AN ANTI-SWAY BRACE, PIECE MARKED ③, W/2-10d NAILS. ONLY REQUIRED AT THE END OF AN ANTI-SWAY BRACE "A" WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF A STRAPPING BOARD ASSEMBLY.
- ⑤ ANTI-SWAY BRACE (4 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER. SEE SPECIAL NOTE 4 ON PAGE 5. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ⑥ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 5 ON PAGE 5.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 26'-6" LONG STEEL STRAPPING (8 REQD). INSTALL SO AS TO ENCIRCLE A PALLET UNIT STACK AN THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO THE UPPER PORTION OF THE STRAPPING BOARD ASSEMBLY, PIECE MARKED ②, W/1 STAPLE. SEE SPECIAL NOTE 6 ON PAGE 5.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 37'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE TWO PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO TOP OF STRAPPING BOARD ASSEMBLY, PIECE MARKED ②, W/1 STAPLE.
- ⑨ SEAL FOR 1-1/4" STRAPPING (24 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
22-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER**

(SPECIAL NOTES CONTINUED)

10. REFER TO PAGE 18 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
11. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SIX MAY BE SECURED TO THE TOP OF A FULL OR PARTIAL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFT-OVER CONTAINERS" ON PAGE 17 FOR GUIDANCE.
12. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO PAGES 14 THROUGH 16 FOR GUIDANCE.
13. IF THE TRAILER BEING LOADED DOES NOT HAVE A DOOR OPENING HEIGHT OF AT LEAST 7'-10" IT WILL BE NECESSARY TO LIMIT THE REARMOST LOAD UNIT TO ONE PALLET UNIT IN HEIGHT. IF THE SECOND LAYER AT THE REAR OF THE LOAD IS MOVED FORWARD, THE BUNDLING STRAPS, PIECE MARKED ⑧, WILL NOT BE REQUIRED; FOUR ADDITIONAL STACK UNITIZING STRAPS, PIECE MARKED ⑦, WILL THEN BE REQUIRED.
14. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. THE NAILED-HEADER METHOD IS SHOWN ON PAGES 6 AND 7. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

REVISION

REVISION NO. 1, DATED NOVEMBER 1997, CONSISTS OF:

1. INCLUDING LOAD DRAWINGS OF LONGER AND WIDER TRAILERS.
2. INCORPORATING NAILED-HEADER METHOD INTO LOAD DRAWINGS.
3. REMOVING LOADS IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.
4. REMOVING TOP-OF-LOAD ANTI-SWAY BRACES FROM LOAD DRAWINGS.
5. REMOVING TYGARD METHOD OF LOAD RESTRAINT.
6. UPDATING GENERAL NOTES AND DRAWING FORMAT.

SPECIAL NOTES:

1. A 22-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) HI-VOLUME VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 4 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 46-1/4" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40" LONG BY 58-1/2" WIDE BY 45-7/8" HIGH AND WEIGHING APPROXIMATELY 1,873 POUNDS.
3. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②. SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 20.
4. IF DESIRED, ANTI-SWAY BRACE "B", PIECE MARKED ⑤, MAY BE USED BETWEEN LATERALLY ADJACENT FIRST-LAYER PALLET UNITS IN LIEU OF PIECE MARKED ③. THE SPACER PIECES, PIECE MARKED ④, WILL THEN NOT BE REQUIRED.
5. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE PIECE MARKED ⑥ ON PAGE 4. THE REAR BLOCKING ASSEMBLY "B" SHOWN IN THE LOAD VIEW ON PAGE 4 AND DETAILED ON PAGE 21 IS APPLICABLE FOR LOADS OF EITHER THE FLAT DUNNAGE OR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS TWO LAYERS IN HEIGHT, AND IS ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT. THE REAR BLOCKING ASSEMBLY "A" DETAILED ON PAGE 19 WILL BE USED FOR LOADS OF FLAT DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT.
6. A PALLET UNIT AT EACH END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET UNIT IN THE FIRST LAYER, UNLESS THE STACKED UNITS ARE AGAINST THE FRONT WALL OF A SQUARE-FRONT TRAILER, AGAINST THE FORWARD BLOCKING ASSEMBLY, OR AT THE VERY REAR OF THE LOAD. THE UNITIZING STRAPS, PIECE MARKED ⑦, AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②, MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
7. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, AS SHOWN, BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑧, MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②, IN EACH APPLICABLE ROW.
8. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNIT IN THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING STRAPPING BOARD ASSEMBLIES AND UNITIZING STRAPS, PIECES MARKED ② AND ⑦.
9. IF A PALLET UNIT IS ADDED TO THE DEPICTED LOAD, REPLACE ONE PAIR OF UNITIZING STRAPS, PIECE MARKED ⑦, WITH A PAIR OF BUNDLING STRAPS, PIECE MARKED ⑧. POSITION STRAPPING BOARDS AT EACH END OF THE FOUR PALLET UNITS AND ENCIRCLE WITH THE BUNDLING STRAPS. IF A PALLET UNIT IS OMITTED FROM THE DEPICTED LOAD, THE STACK CONTAINING THE ODD PALLET UNIT MUST BE SECURED TO A LONGITUDINALLY ADJACENT STACK WITH TWO BUNDLING STRAPS.

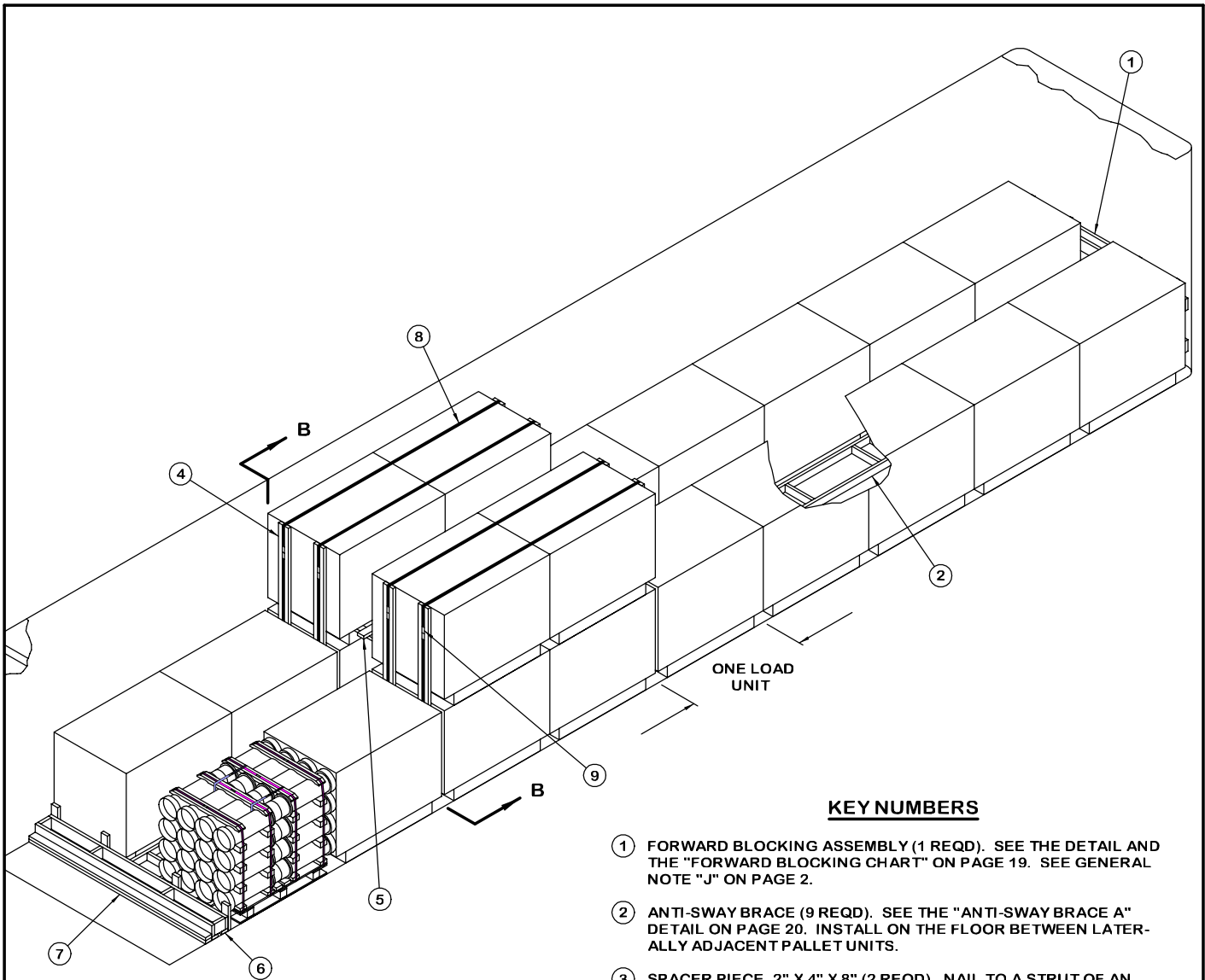
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BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	64	22
2" X 4"	184	123
2" X 6"	265	265
NAILS	NO. REQD	POUNDS
10d (3")	434	6-3/4
1-1/4" STEEL STRAPPING - - 360' REQD - - - 51-1/2 LBS		
SEAL FOR 1-1/4" STRAPPING - 24 REQD - - - 1-1/4 LBS		

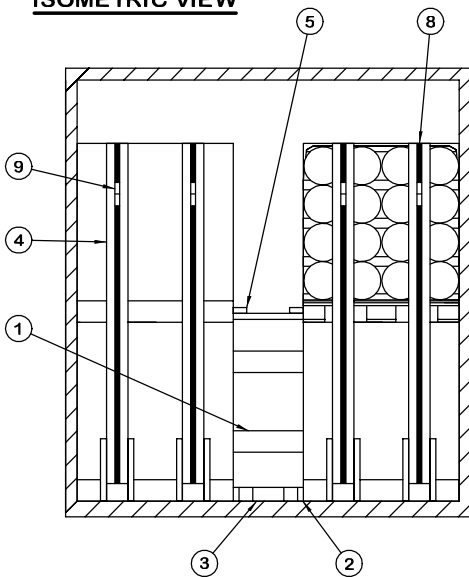
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	22 - - - - -	41,184 LBS
DUNNAGE - - - - -	- - - - -	880 LBS
TOTAL WEIGHT - - - - -		42,064 LBS (APPROX)

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
22-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER**



ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② ANTI-SWAY BRACE (9 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS.
- ③ SPACER PIECE, 2" X 4" X 8" (2 REQD). NAIL TO A STRUT OF AN ANTI-SWAY BRACE, PIECE MARKED ②, W/2-10d NAILS. ONLY REQUIRED AT THE END OF AN ANTI-SWAY BRACE "A" WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF A STRAPPING BOARD ASSEMBLY.
- ④ STRAPPING BOARD ASSEMBLY (8 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 7.
- ⑤ ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER. SEE SPECIAL NOTE 4 ON PAGE 7. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ⑥ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 5 ON PAGE 7.
- ⑦ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (DOUBLED) (1 REQD). POSITION AGAINST THE REAR BLOCKING ASSEMBLY, PIECE MARKED ⑥. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/17-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER AND TOENAIL TO THE REAR BLOCKING ASSEMBLY W/4-10d NAILS.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 37'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIrcLE TWO PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO TOP OF STRAPPING BOARD ASSEMBLY, PIECE MARKED ④, W/1 STAPLE.
- ⑨ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.

ONE LOAD UNIT

(SPECIAL NOTES CONTINUED)

10. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SIX MAY BE SECURED TO THE TOP OF A FULL OR PARTIAL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFT-OVER CONTAINERS" ON PAGE 17 FOR GUIDANCE.
11. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO PAGES 14 THROUGH 16 FOR GUIDANCE.
12. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED WITH THE REAR BLOCKING SHOWN ON PAGES 6 AND 7. SEE THE NAILING CHART BELOW FOR GUIDANCE. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

FORWARD HEADER NAILING CHART *	
# NAILS	MAX. LOAD WEIGHT (LBS)
3	15,000
4	20,000
5	25,000
6	30,000
7	35,000
8	40,000
9	45,000

* HEADERS AT THE FRONT END OF A LOAD OR AT THE FRONT END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 6" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-20d NAILS, FOR A TOTAL OF 8-10d AND 8-20d NAILS PER HEADER.

REAR HEADER NAILING CHART *	
# NAILS	MAX. LOAD WEIGHT (LBS)
6	15,000
7	17,500
8	20,000
9	22,500
10	25,000
11	27,500
12	30,000
13	32,500
14	35,000
15	37,500
16	40,000
17	42,500
18	45,000

* HEADERS AT THE REAR OF A FULL LOAD OR AT THE REAR END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 4" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-10d NAILS, FOR A TOTAL OF 16-10d NAILS. NOTE: REAR HEADERS MAY BE HANDLED IN THE SAME MANNER AS FORWARD HEADERS, USING 2" X 6" MATERIAL WITH 10d AND 20d NAILS, IF DESIRED.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	22	8
2" X 4"	214	143
2" X 6"	109	109
NAILS	NO. REQD	POUNDS
10d (3")	246	4
1-1/4" STEEL STRAPPING - - 148' REQD - - - 21-1/4 LBS		
SEAL FOR 1-1/4" STRAPPING - 8 REQD - - - 1/2 LB		

SPECIAL NOTES:

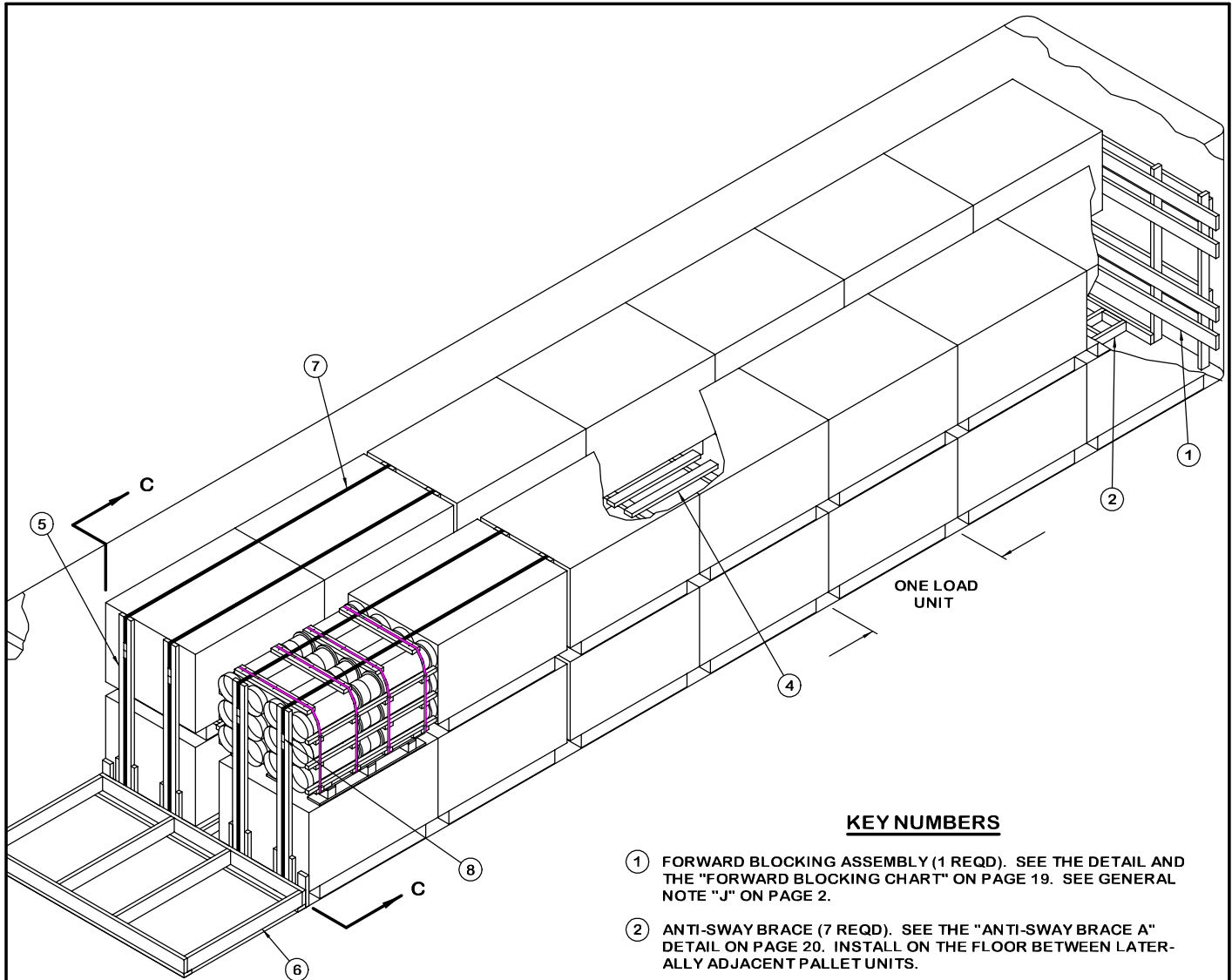
1. A 22-UNIT LOAD IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) HI-VOLUME VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS AND A NAILABLE FLOOR. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 6 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40" LONG BY 58-1/2" WIDE BY 45-7/8" HIGH AND WEIGHING APPROXIMATELY 1,873 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 46-1/4" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS.
3. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED (4). SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 20.
4. IF DESIRED, ANTI-SWAY BRACE "B", PIECE MARKED (5), MAY BE USED BETWEEN LATERALLY ADJACENT FIRST-LAYER PALLET UNITS IN LIEU OF PIECE MARKED (2). THE SPACER PIECES, PIECE MARKED (3), WILL THEN NOT BE REQUIRED.
5. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE PIECE MARKED (6) ON PAGE 4. THE REAR BLOCKING ASSEMBLY "B" SHOWN IN THE LOAD VIEW ON PAGE 6 AND DETAILED ON PAGE 21 IS APPLICABLE FOR LOADS OF EITHER THE FLAT DUNNAGE OR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS TWO LAYERS IN HEIGHT, AND IS ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT. THE REAR BLOCKING ASSEMBLY "A" DETAILED ON PAGE 19 WILL BE USED FOR LOADS OF FLAT DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT. WHEN A REAR BLOCKING ASSEMBLY IS USED AS SHOWN IN THE LOAD ON PAGE 6, THE STRUT LENGTHS WILL BE THE MINIMUM 6" LONG.
6. A PALLET UNIT AT EACH END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET UNIT IN THE FIRST LAYER, UNLESS THE STACKED UNITS ARE AGAINST THE FRONT WALL OF A SQUARE-FRONT TRAILER, AGAINST THE FORWARD BLOCKING ASSEMBLY, OR AT THE VERY REAR OF THE LOAD. THE UNITIZING STRAPS, PIECE MARKED (7) ON PAGE 4, AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED (4), MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
7. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, AS SHOWN, BUNDLING STRAPS, SHOWN AS PIECE MARKED (8), MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED (4), IN EACH APPLICABLE ROW.
8. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNIT IN THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING STRAPPING BOARD ASSEMBLIES AND UNITIZING STRAPS, PIECES MARKED (4) ON PAGE 6 AND PIECE MARKED (7) ON PAGE 4.
9. REFER TO PAGE 18 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

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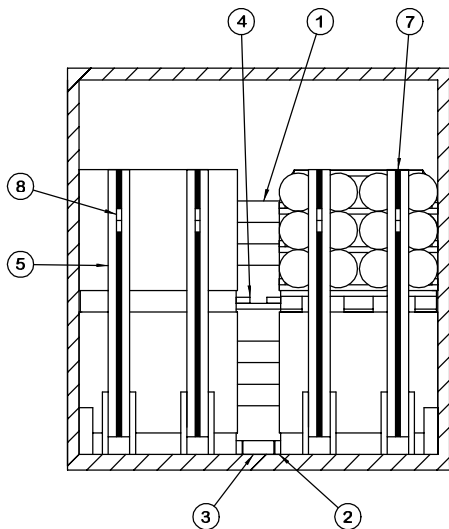
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	22 - - - - -	41,206 LBS
DUNNAGE - - - - -	- - - - -	546 LBS
TOTAL WEIGHT - - - - -		41,752 LBS (APPROX)

FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
22-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE HI-VOLUME VAN TRAILER



ISOMETRIC VIEW



SECTION C-C

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS.
- ③ SPACER PIECE, 2" X 4" X 8" (2 REQD). NAIL TO A STRUT OF AN ANTI-SWAY BRACE, PIECE MARKED ②, W/2-10d NAILS. ONLY REQUIRED AT THE END OF AN ANTI-SWAY BRACE "A" WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF A STRAPPING BOARD ASSEMBLY.
- ④ ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER. SEE SPECIAL NOTE 3 ON PAGE 9. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ⑤ STRAPPING BOARD ASSEMBLY (8 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 4 ON PAGE 9.
- ⑥ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 5 ON PAGE 9.
- ⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCLOSE TWO PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO TOP OF STRAPPING BOARD ASSEMBLY, PIECE MARKED ⑤, W/1 STAPLE. SEE SPECIAL NOTE 6 ON PAGE 9.
- ⑧ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
28-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE CONVENTIONAL VAN TRAILER**

SPECIAL NOTES:

1. A 28-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 8 IS THE FLAT DUNNAGE METHOD (DECREASED HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 36-1/2" HIGH AND WEIGHING APPROXIMATELY 1,430 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT) HAVING OVERALL DIMENSIONS OF 40" LONG BY 58-1/2" WIDE BY 36" HIGH AND WEIGHING APPROXIMATELY 1,429 POUNDS.
3. IF DESIRED, ANTI-SWAY BRACE "B", PIECE MARKED ④, MAY BE USED BETWEEN LATERALLY ADJACENT FIRST-LAYER PALLET UNITS IN LIEU OF PIECE MARKED ②.
4. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ⑤. SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 20.
5. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE PIECE MARKED ⑥ ON PAGE 8. THE REAR BLOCKING ASSEMBLY "B" SHOWN IN THE LOAD VIEW ON PAGE 8 AND DETAILED ON PAGE 21 IS APPLICABLE FOR LOADS OF EITHER THE FLAT DUNNAGE OR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS TWO LAYERS IN HEIGHT, AND IS ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT. THE REAR BLOCKING ASSEMBLY "A" DETAILED ON PAGE 19 WILL BE USED FOR LOADS OF FLAT DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT.
6. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑦, MUST BE INSTALLED SO AS TO ENCIRCLE THE REAR-MOST TWO STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECES MARKED ⑤, IN EACH APPLICABLE ROW.
7. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW IT MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT OF THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING STRAPPING BOARD ASSEMBLIES, PIECE MARKED ⑦ ON PAGE 4.
8. REFER TO PAGE 18 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
9. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SIX MAY BE SECURED TO THE TOP OF A FULL OR PARTIAL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 17 FOR GUIDANCE.
10. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO PAGES 14 THROUGH 16 FOR GUIDANCE.
11. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. THE NAILED-HEADER METHOD IS SHOWN ON PAGES 6 AND 7. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

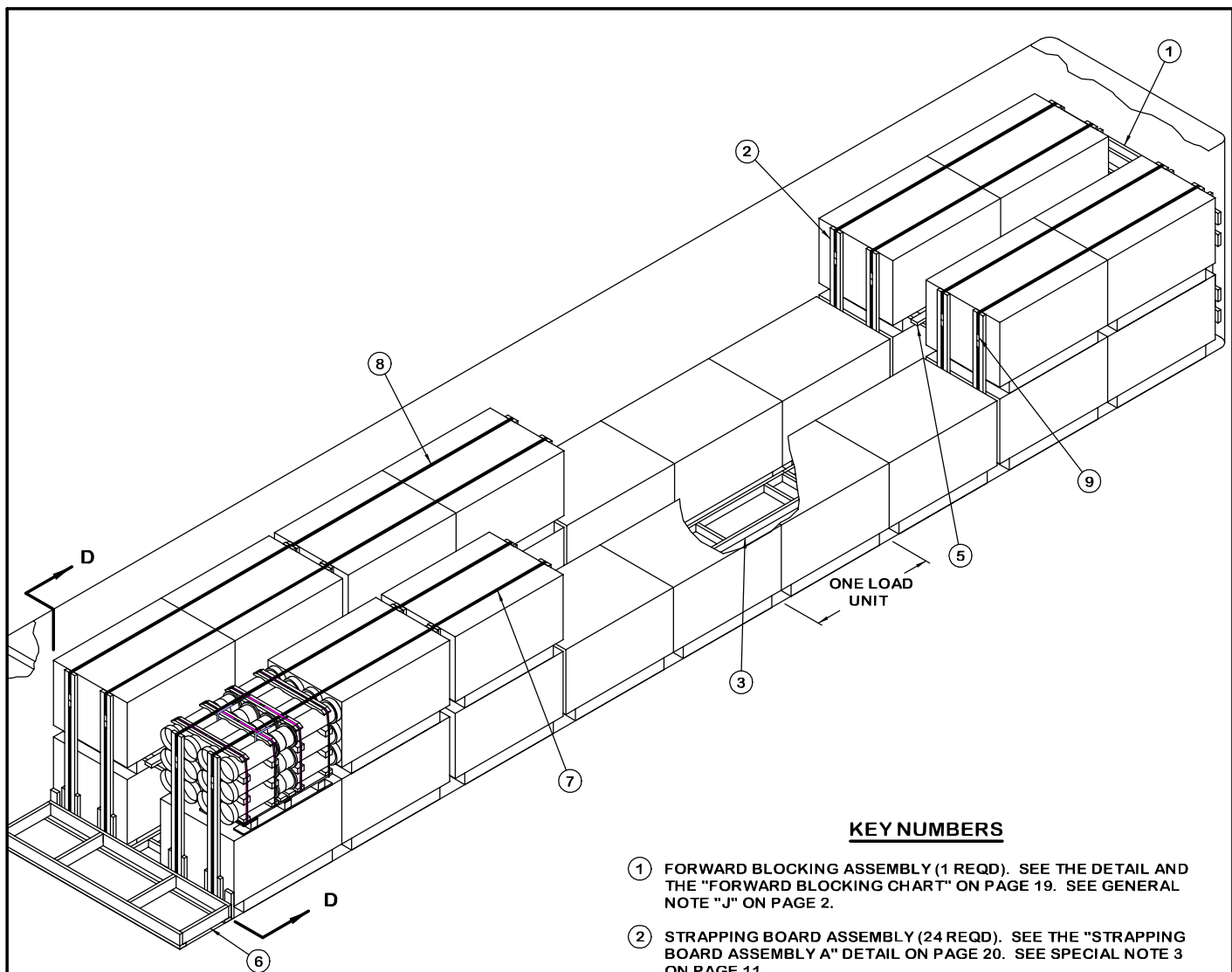
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	22	8
2" X 4"	208	139
2" X 6"	137	137
NAILS	NO. REQD	POUNDS
10d (3")	366	5-3/4
1-1/4" STEEL STRAPPING - - 132' REQD - - - - - 19 LBS		
SEAL FOR 1-1/4" STRAPPING - 8 REQD - - - - - 1/2 LB		

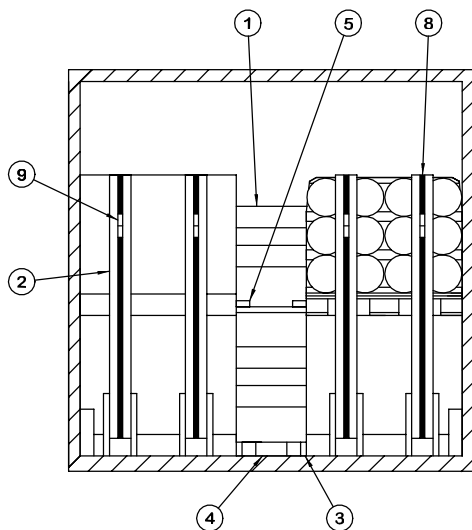
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	28 - - - - -	40,040 LBS
DUNNAGE - - - - -	- - - - -	594 LBS
TOTAL WEIGHT - - - - -		40,634 LBS (APPROX)

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
28-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE CONVENTIONAL VAN TRAILER**



ISOMETRIC VIEW



SECTION D-D

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② STRAPPING BOARD ASSEMBLY (24 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 11.
- ③ ANTI-SWAY BRACE (9 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS.
- ④ SPACER PIECE, 2" X 4" X 8" (6 REQD). NAIL TO A STRUT OF AN ANTI-SWAY BRACE, PIECE MARKED ③, W/2-10d NAILS. ONLY REQUIRED AT THE END OF AN ANTI-SWAY BRACE "A" WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF A STRAPPING BOARD ASSEMBLY.
- ⑤ ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER. SEE SPECIAL NOTE 4 ON PAGE 11. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ⑥ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 5 ON PAGE 11.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 23'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE A PALLET UNIT STACK AN THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO THE UPPER PORTION OF THE STRAPPING BOARD ASSEMBLY, PIECE MARKED ②, W/1 STAPLE. SEE SPECIAL NOTE 6 ON PAGE 11.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (10 REQD). INSTALL SO AS TO ENCIRCLE TWO PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN. STAPLE TO TOP OF STRAPPING BOARD ASSEMBLY, PIECE MARKED ②, W/1 STAPLE.
- ⑨ SEAL FOR 1-1/4" STRAPPING (24 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
29-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE CONVENTIONAL VAN TRAILER**

SPECIAL NOTES:

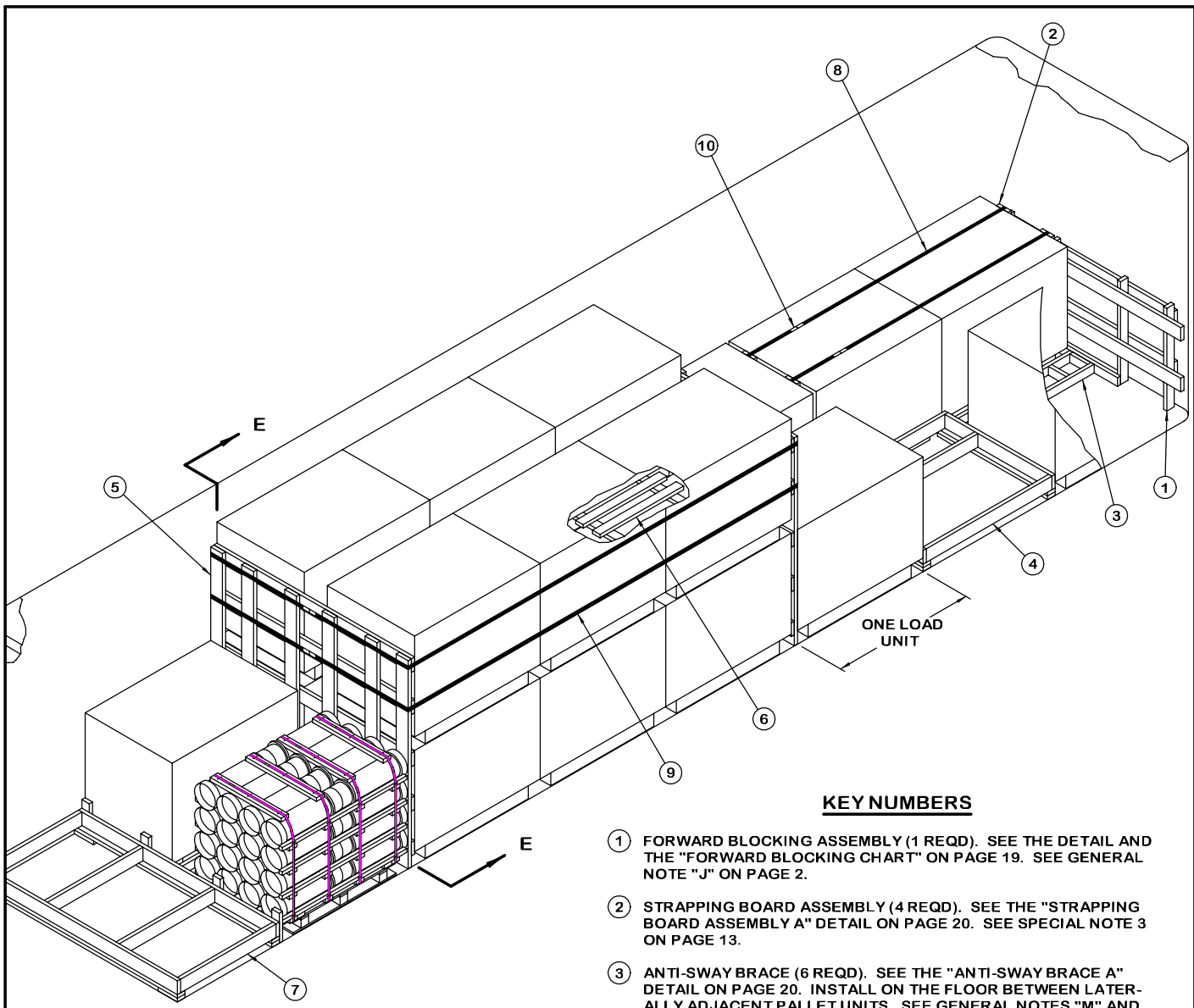
1. A 29-UNIT LOAD IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 10 IS THE ROUTED DUNNAGE METHOD (DECREASED HEIGHT) HAVING OVERALL DIMENSIONS OF 40" LONG BY 58-1/2" WIDE BY 36" HIGH AND WEIGHING APPROXIMATELY 1,429 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 36-1/2" HIGH AND WEIGHING APPROXIMATELY 1,430 POUNDS.
3. IF DESIRED, ANTI-SWAY BRACE "B", PIECE MARKED (5), MAY BE USED BETWEEN LATERALLY ADJACENT FIRST-LAYER PALLET UNITS IN LIEU OF PIECE MARKED (3).
4. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED (2). SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 20.
5. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE PIECE MARKED (6) ON PAGE 10. THE REAR BLOCKING ASSEMBLY "B" SHOWN IN THE LOAD VIEW ON PAGE 10 AND DETAILED ON PAGE 21 IS APPLICABLE FOR LOADS OF EITHER THE FLAT DUNNAGE OR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS TWO LAYERS IN HEIGHT, AND IS ALSO APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT. THE REAR BLOCKING ASSEMBLY "A" DETAILED ON PAGE 19 WILL BE USED FOR LOADS OF FLAT DUNNAGE METHOD UNITS WHEN THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT.
6. A PALLET UNIT AT EACH END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET UNIT IN THE FIRST LAYER, UNLESS THE STACKED UNITS ARE AGAINST THE FRONT WALL OF A SQUARE-FRONT TRAILER, AGAINST THE FORWARD BLOCKING ASSEMBLY, OR AT THE VERY REAR OF THE LOAD. THE UNITIZING STRAPS, PIECE MARKED (7), AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED (2), MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
7. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS, SHOWN AS PIECE MARKED (8), MUST BE INSTALLED SO AS TO ENCIRCLE THE REAR-MOST TWO STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECES MARKED (2), IN EACH APPLICABLE ROW.
8. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW IT MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT OF THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING STRAPPING BOARD ASSEMBLIES, PIECE MARKED (7) ON PAGE 10.
9. REFER TO PAGE 18 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
10. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SIX MAY BE SECURED TO THE TOP OF A FULL OR PARTIAL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 17 FOR GUIDANCE.
11. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO PAGES 14 THROUGH 16 FOR GUIDANCE.
12. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. THE NAILED-HEADER METHOD IS SHOWN ON PAGES 6 AND 7. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	64	22
2" X 4"	237	158
2" X 6"	222	222
NAILS	NO. REQD	POUNDS
10d (3")	480	7-1/2
1-1/4" STEEL STRAPPING - - 376' REQD - - - 53-3/4 LBS		
SEAL FOR 1-1/4" STRAPPING - 24 REQD - - - 1-1/4 LBS		

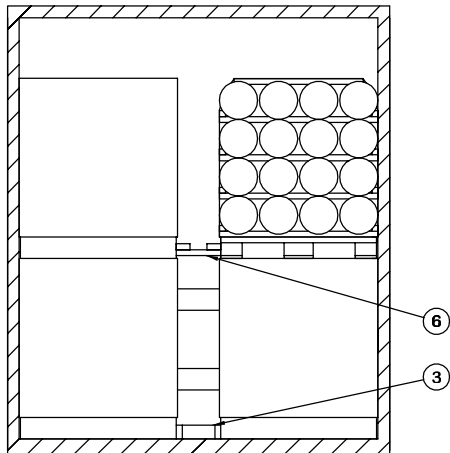
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ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	29 - - - - -	41, 441 LBS
DUNNAGE - - - - -	- - - - -	867 LBS
TOTAL WEIGHT - - - - -		42, 308 LBS (APPROX)

**FLAT DUNNAGE/ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
29-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE CONVENTIONAL VAN TRAILER**



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 13.
- ③ ANTI-SWAY BRACE (6 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 21. NAIL TO THE ANTI-SWAY BRACE, PIECE MARKED ③, W/2-10d NAILS. SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑤ BULKHEAD GATE, (2 REQD). SEE THE DETAIL AND THE "BULK-HEAD GATE CHART" ON PAGE 22.
- ⑥ ANTI-SWAY BRACE (3 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER. SEE SPECIAL NOTE 4 ON PAGE 13.
- ⑦ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 19. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO ONE-HIGH PALLET UNITS. STAPLE TO A STRAPPING BOARD ASSEMBLY, PIECE MARKED ②, W/1 STAPLE. SEE SPECIAL NOTE 7 ON PAGE 13.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 38'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE TOP UNITS OF THE TWO-HIGH STACKS AND THE BULKHEAD GATES, PIECE MARKED ⑤. STAPLE TO EACH BULKHEAD GATE W/4 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 13.
- ⑩ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.

SPECIAL NOTES:

1. A TYPICAL 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 12 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 46-1/2" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED ON PAGE 3.
3. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②. SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 20.
4. IF THE SPACE BETWEEN THE PALLET UNITS PERMITS, AND IF DESIRED, ANTI-SWAY BRACE "B" AS DETAILED ON PAGE 20 MAY BE USED IN LIEU OF PIECE MARKED ③.
5. THE SPACER ASSEMBLY SHOWN IN THE LOAD VIEW AS PIECE MARKED ④ IS SHOWN ONLY TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF THE SPACER ASSEMBLY, THE BUNDLING STRAPS, PIECE MARKED ⑧, WILL NOT BE REQUIRED. NOTE THAT A SPACER ASSEMBLY MUST BE POSITIONED WHERE THERE WILL BE A PALLET UNIT AT EACH END; A SPACER ASSEMBLY MUST NOT BE POSITIONED ADJACENT TO THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, OR ADJACENT TO A BULKHEAD GATE, PIECE MARKED ⑤.
6. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOORS MEASURES 1'-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1'-1/2" BUT LESS THAN 9", USE REAR BLOCKING ASSEMBLY "C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A", PIECE MARKED ⑦ ON PAGE 12, FOR THE FLAT DUNNAGE METHOD UNITS WHEN THE REAR LOAD IS ONLY ONE LAYER IN HEIGHT. REAR BLOCKING ASSEMBLY "B" MAY BE USED WHEN LOADING THE ROUTED DUNNAGE METHOD UNITS, OR WHEN THE FLAT DUNNAGE METHOD UNIT IS LOADED TWO LAYERS IN HEIGHT AT THE REAR. SEE SPECIAL NOTE 9.
7. A PALLET UNIT THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 12, AROUND THAT PALLET UNIT AND THE PALLET UNIT IMMEDIATELY ADJACENT. NOTE THAT ONLY ONE BUNDLING STRAP IS REQUIRED WHEN A PALLET UNIT IS OMITTED FROM A LOAD OF DECREASED HEIGHT FLAT DUNNAGE OR ROUTED DUNNAGE METHOD UNITS. A PALLET UNIT WILL NOT BE OMITTED FROM THE SECOND LAYER PORTION OF THE LOAD.
8. THE SECOND LAYER PORTION OF THE LOAD IS LIMITED TO NOT MORE THAN TEN BASIC HEIGHT UNITS OR 14 DECREASED HEIGHT UNITS. THE LOWER BUNDLING STRAPS, PIECE MARKED ⑨, MAY BE OMITTED IF THE SECOND LAYER CONTAINS TWO OR FOUR BASIC HEIGHT UNITS, OR NOT MORE THAN SIX DECREASED HEIGHT UNITS.
9. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. THE NAILED-HEADER METHOD IS SHOWN IN THE LOAD ON PAGES 6 AND 7. NOTE THE NAILED-HEADER METHOD MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
10. REFER TO PAGE 18 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
11. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SIX MAY BE SECURED TO THE TOP OF A FULL OR PARTIAL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFT-OVER CONTAINERS" ON PAGE 17 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	11	4
2" X 4"	122	84
2" X 6"	275	275
NAILS	NO. REQD	POUNDS
10d (3")	430	6-3/4
1-1/4" STEEL STRAPPING - - 132' REQD - - - - 19 LBS		
SEAL FOR 1-1/4" STRAPPING - 8 REQD - - - - 1/2 LB		

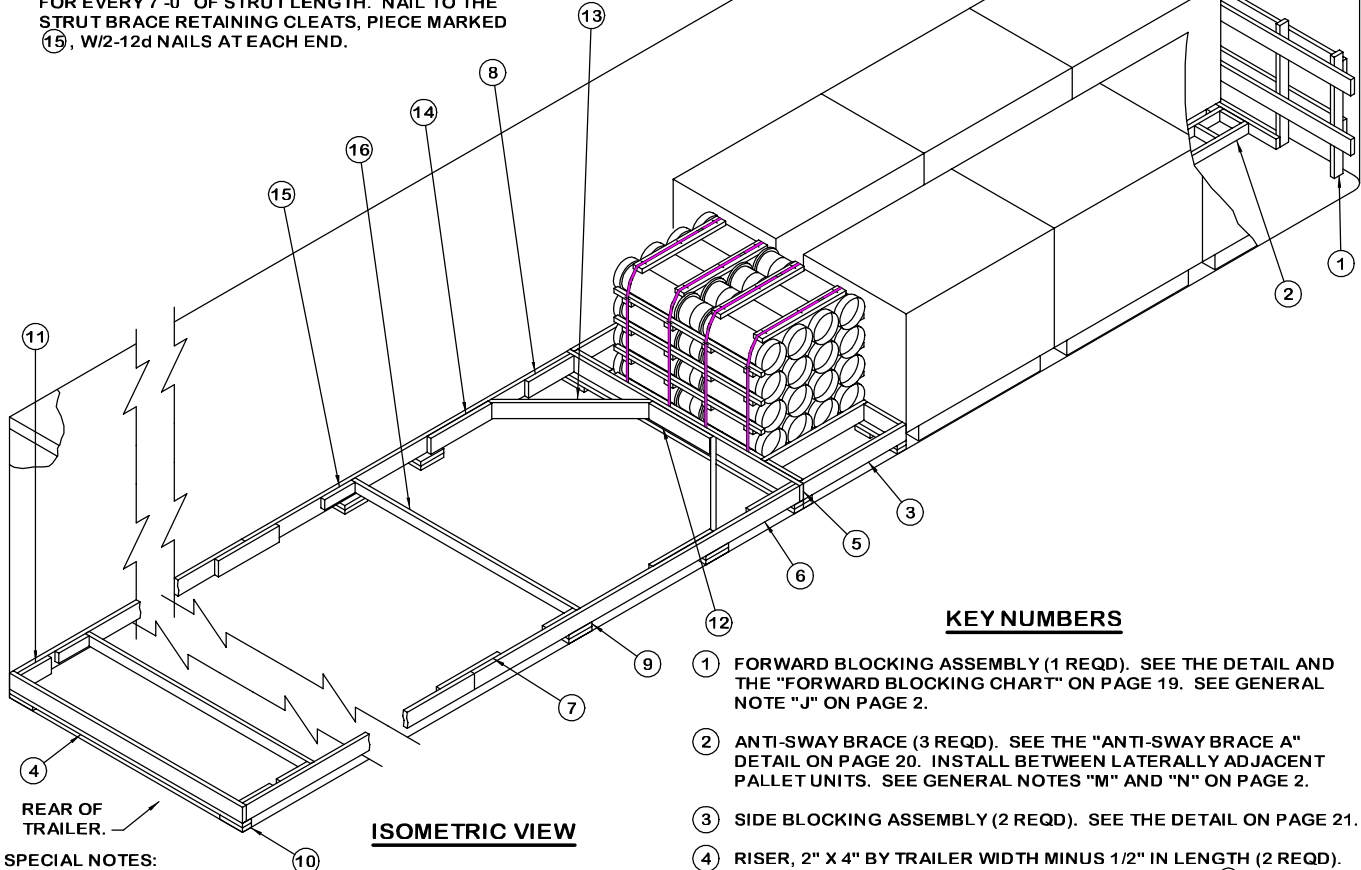
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	19 - - - - -	35,568 LBS
DUNNAGE - - - - -	- - - - -	749 LBS
TOTAL WEIGHT - - - - -		36,317 LBS (APPROX)

**ALTERNATIVE LOADING PROCEDURES FOR ALL UNITS
19-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER**

(KEY NUMBERS CONTINUED)

- ⑭ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). POSITION AGAINST END OF DIAGONAL BRACE, PIECE MARKED ⑬, AND NAIL TO A SIDE STRUT MARKED ⑥ W/8-10d NAILS.
- ⑮ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS.
- ⑯ STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT-TO-FIT) (MINIMUM OF 1 REQD). INSTALL ONE NEAR END OF STRUTS MARKED ⑥ AS SHOWN. ONE ADDITIONAL PIECE REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE STRUT BRACE RETAINING CLEATS, PIECE MARKED ⑮, W/2-12d NAILS AT EACH END.



ISOMETRIC VIEW

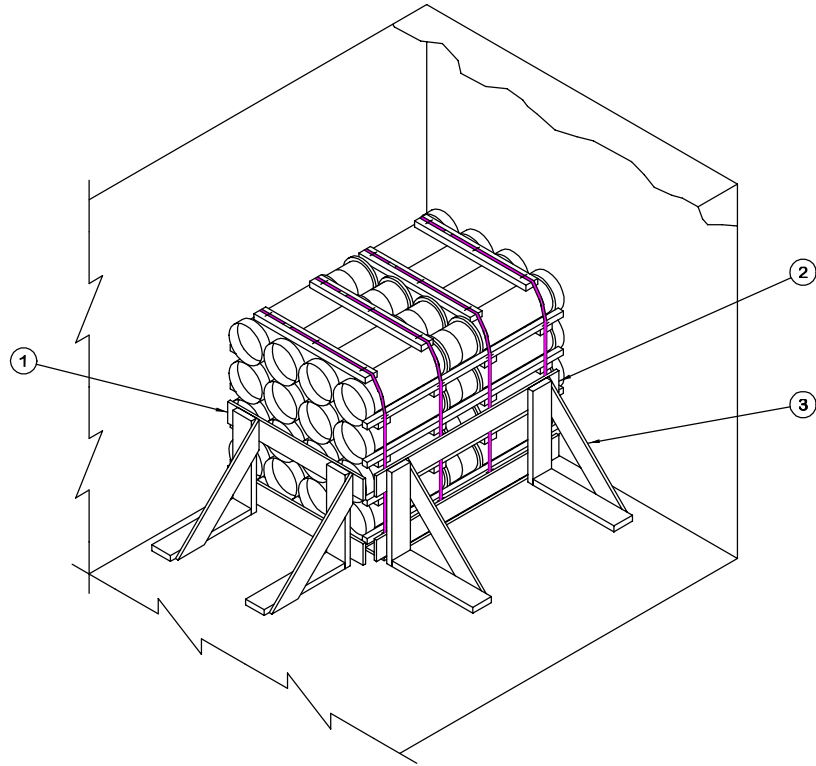
SPECIAL NOTES:

- 1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" BLOCKING IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER WHICH IS EQUIPPED WITH OR WITHOUT NAILABLE FLOORS AND REAR CORNER POSTS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
- 2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 46-1/4" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED ON PAGE 3.
- 3. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ④ THRU ⑯, IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.
- 4. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED IN LIEU OF "K-BRACE" TYPE REAR BLOCKING. THE NAILED-HEADER METHOD IS SHOWN IN THE LOAD ON PAGES 6 AND 7. NOTE THE NAILED-HEADER METHOD MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS, AND MAY BE USED IN LIEU OF PIECES MARKED ④ THRU ⑯ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS. SEE SPECIAL NOTE 6.
- 5. WHEN SHIPPING AN ODD NUMBERED QUANTITY, PIECES MARKED ④, ⑨, AND ⑩ MAY BE OMITTED. WHEN THE LOAD CONSISTS OF AN EVEN NUMBERED QUANTITY OF ROUTED DUNNAGE METHOD UNITS, PIECES MARKED ⑩ MAY BE OMITTED. THE BRACING SHOWN IS APPLICABLE FOR AN EVEN QUANTITY OF FLAT DUNNAGE METHOD UNITS.
- 6. WHEN THE NAILED-HEADER METHOD OF BRACING SHOWN ON PAGE 6 IS APPLIED FOR THE BRACING OF THE DEPICTED 7-UNIT LOAD OR ANY ODD NUMBERED QUANTITY, ONLY THE DOUBLED 2" X 4" PIECES ARE REQUIRED. SEE THE LOAD ON PAGE 16. WHEN SHIPPING AN EVEN NUMBERED QUANTITY, THE APPLICABLE REAR BLOCKING ASSEMBLY WILL BE USED.

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART" ON PAGE 19. SEE GENERAL NOTE "J" ON PAGE 2.
- ② ANTI-SWAY BRACE (3 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ SIDE BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 21.
- ④ RISER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO BOTTOM EDGE OF HEADER, PIECE MARKED ⑤, W/1-10d NAIL EVERY 12". SEE SPECIAL NOTE 5 AT LEFT.
- ⑤ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD).
- ⑥ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN HEADERS MARKED ⑤ (2 REQD).
- ⑦ SPLICE PIECE, 2" X 4" X 24" (2 REQD). CENTER ON A JOINT OF PIECES MARKED ⑥ AND NAIL W/4-10d NAILS AT EACH END.
- ⑧ POCKET CLEAT, 2" X 6" X 18", (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER MARKED ⑤ W/3-10d NAILS.
- ⑨ FILLER PIECE, 2" X 4" X 9" (AS REQD). POSITION SO AS TO BE CENTERED UNDER THE JOINT OF THE STRUT BRACE AND THE STRUT BRACE RETAINING CLEAT, PIECES MARKED ⑮ AND ⑯, AND/OR UNDER THE JOINT OF A DIAGONAL BRACE AND A BACK-UP CLEAT, PIECES MARKED ⑬ AND ⑭.
- ⑩ RISER PIECE, 2" X 4" X 9" (AS REQD). NAIL TO THE BOTTOM EDGE OF THE RISER, PIECE MARKED ④, AND/OR TO A FILLER PIECE, PIECE MARKED ⑨, W/2-10d NAILS. SEE SPECIAL NOTE 5 AT LEFT.
- ⑪ STRUT RETAINING BLOCK, 2" X 6" X 12" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER MARKED ⑤ W/3-12d NAILS.
- ⑫ CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO HEADER MARKED ⑤ W/6-10d NAILS.
- ⑬ DIAGONAL BRACE, 2" X 6" BY CUT-TO-FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND TOENAIL TO THE ADJACENT HEADER MARKED ⑤ AND SIDE STRUT MARKED ⑥ W/2-16d NAILS AT EACH END.

(CONTINUED AT ABOVE LEFT)



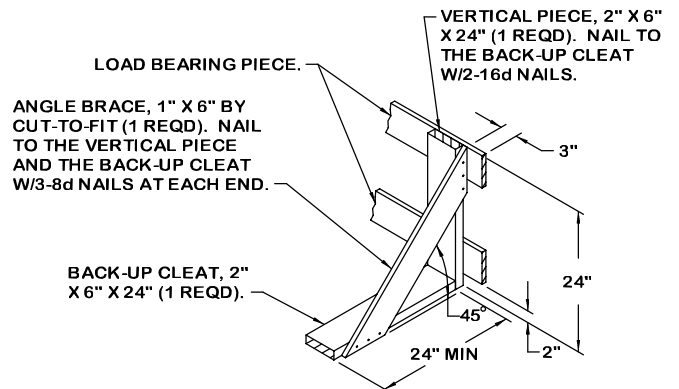
ISOMETRIC VIEW

SPECIAL NOTES:

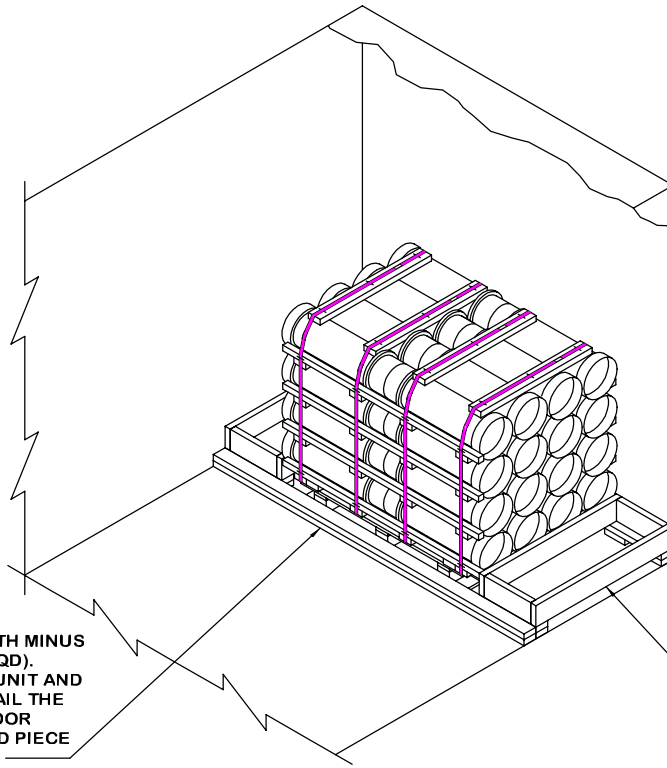
1. A 1-UNIT LOAD IS SHOWN DEPICTING THE USE OF LTL BRACES IN A CONVENTIONAL TYPE VAN TRAILER EQUIPPED WITH NAILABLE FLOORS. TRAILERS WITH ALL METAL FLOORS CANNOT BE USED.
2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8" LONG BY 58-1/2" WIDE BY 46-1/4" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED ON PAGE 3.
3. IF THE TRAILER BEING LOADED HAS ROUNDED FRONT CORNERS, TWO ADDITIONAL LTL BRACES AND TWO ADDITIONAL LOAD BEARING PIECES MAY BE POSITIONED AT THE FORWARD END OF THE LADING, OR A FORWARD BLOCKING ASSEMBLY, SHOWN AS KEY NUMBER ① ON PAGE 4, MAY BE USED.
4. EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING; HOWEVER, NOT LESS THAN TWO BRACES WILL BE USED AGAINST EACH PALLETIZED UNIT ACROSS THE WIDTH OF THE TRAILER.
5. MORE THAN ONE PALLET UNIT CAN BE SHIPPED PROVIDING THE CAPACITY OF LTL BRACE IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN TWO ROWS, WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDEWALLS. ANTI-SWAY BRACES WILL BE INSTALLED BETWEEN THE LATERALLY ADJACENT PALLET UNITS.

KEY NUMBERS

- ① LOAD BEARING PIECE, 1" X 6" X 40" (2 REQD). LOCATE AT HEIGHTS SPECIFIED IN "LTL BRACE" DETAIL BELOW. NAIL TO PIECES MARKED ③ W/4-6d NAILS AT EACH JOINT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② LOAD BEARING PIECE, 1" X 6" X 54" (2 REQD). LOCATE AT HEIGHTS SPECIFIED IN DETAIL BELOW. NAIL TO PIECES MARKED ③ W/4-6d NAILS AT EACH JOINT.
- ③ LTL BRACE (4 REQD). SEE THE DETAIL BELOW. NAIL EACH LTL BRACE TO TRAILER FLOOR W/7-10d NAILS. SEE SPECIAL NOTE 4 AT LEFT.



LTL BRACE



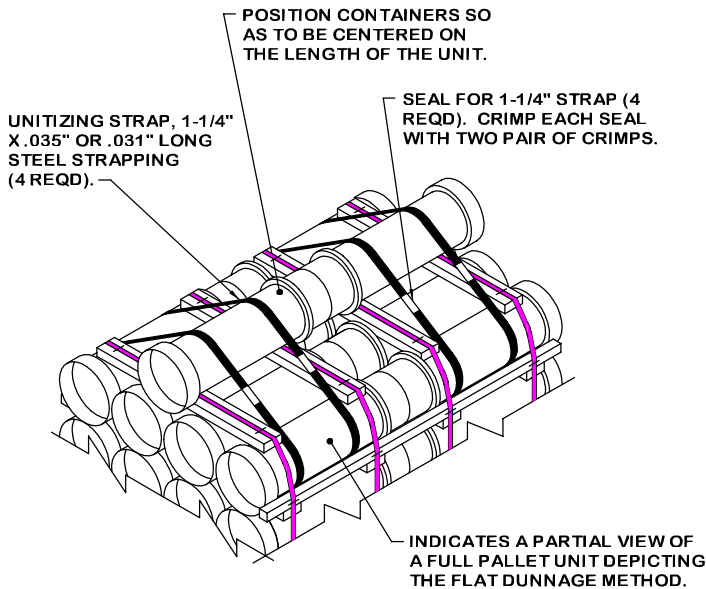
HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET UNIT AND SIDE BLOCKING ASSEMBLIES. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

SIDE BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 21.

ISOMETRIC VIEW

SPECIAL NOTES:

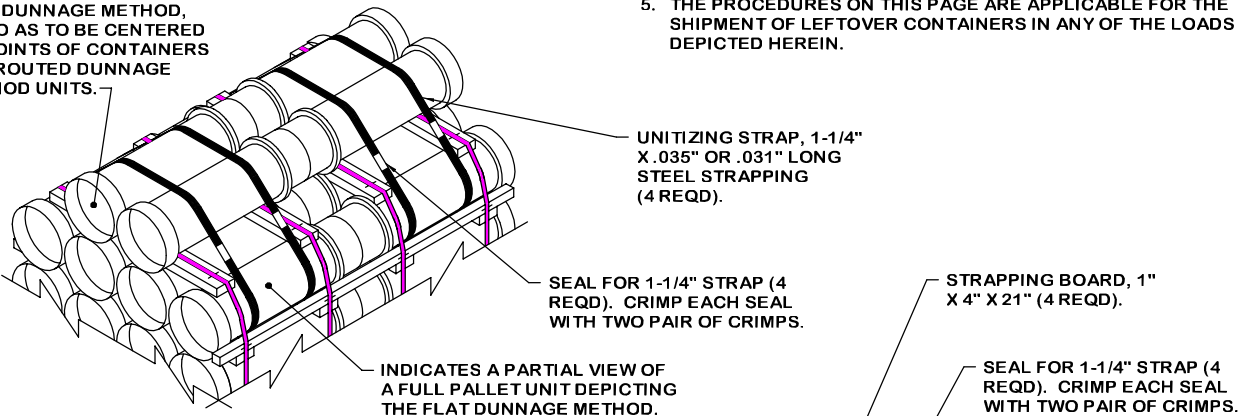
1. A 1-UNIT LOAD IS SHOWN DEPICTING THE USE OF A NAILED HEADER IN A CONVENTIONAL TYPE VAN TRAILER EQUIPPED WITH NAILABLE FLOORS. TRAILERS WITH ALL METAL TYPE FLOORS CANNOT BE USED.
2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) HAVING OVERALL DIMENSIONS OF 40-5/8' LONG BY 58-1/2" WIDE BY 46-1/4" HIGH AND WEIGHING APPROXIMATELY 1,872 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS ON PAGE 3.
3. IF THE TRAILER BEING LOADED IS EQUIPPED WITH ROUNDED CORNERS, A FORWARD BLOCKING ASSEMBLY AS DETAILED ON PAGE 19 IS REQUIRED.
4. FOR AN EVEN NUMBER OF PALLET UNITS TO BE LOADED, THE LOAD SHOULD BE FORMED IN TWO ROWS WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDEWALLS. ANTI-SWAY BRACES WILL BE INSTALLED BETWEEN LATERALLY ADJACENT PALLET UNITS AS IN THE LOAD ON PAGE 6. FOR GREATER LTL LOADS USING THE NAILED HEADER METHOD, REFER TO THE NAILING CHARTS ON PAGE 7 FOR GUIDANCE.



SECUREMENT OF TWO CONTAINERS

NOTE: TO SECURE ONLY ONE LEFTOVER CONTAINER, DELETE ONE CONTAINER AND TWO STRAPS.

POSITION CONTAINERS SO AS TO BE CENTERED ON THE LENGTH OF THE UNIT FOR FLAT DUNNAGE METHOD, OR SO AS TO BE CENTERED ON JOINTS OF CONTAINERS FOR ROUTED DUNNAGE METHOD UNITS.

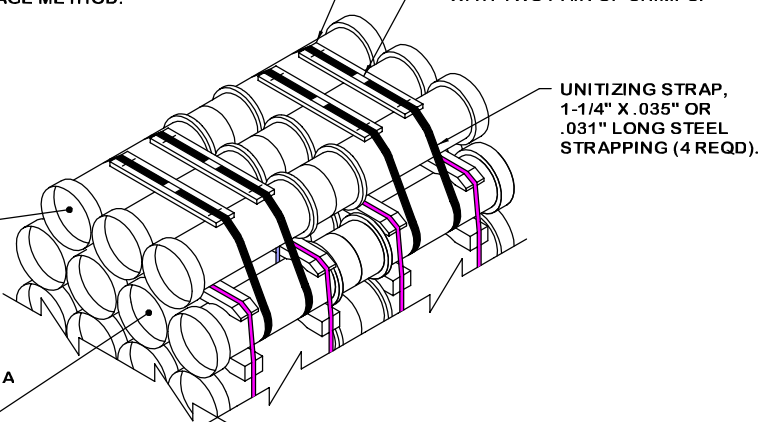


SECUREMENT OF FOUR CONTAINERS

NOTE: TO SECURE ONLY TWO LEFTOVER CONTAINERS, DELETE TWO OF THE CONTAINERS AND TWO STRAPS.

POSITION CONTAINERS SO AS TO BE CENTERED ON THE JOINTS OF THE CONTAINERS BELOW.

INDICATES A PARTIAL VIEW OF A FULL PALLET UNIT DEPICTING THE ROUTED DUNNAGE METHOD.

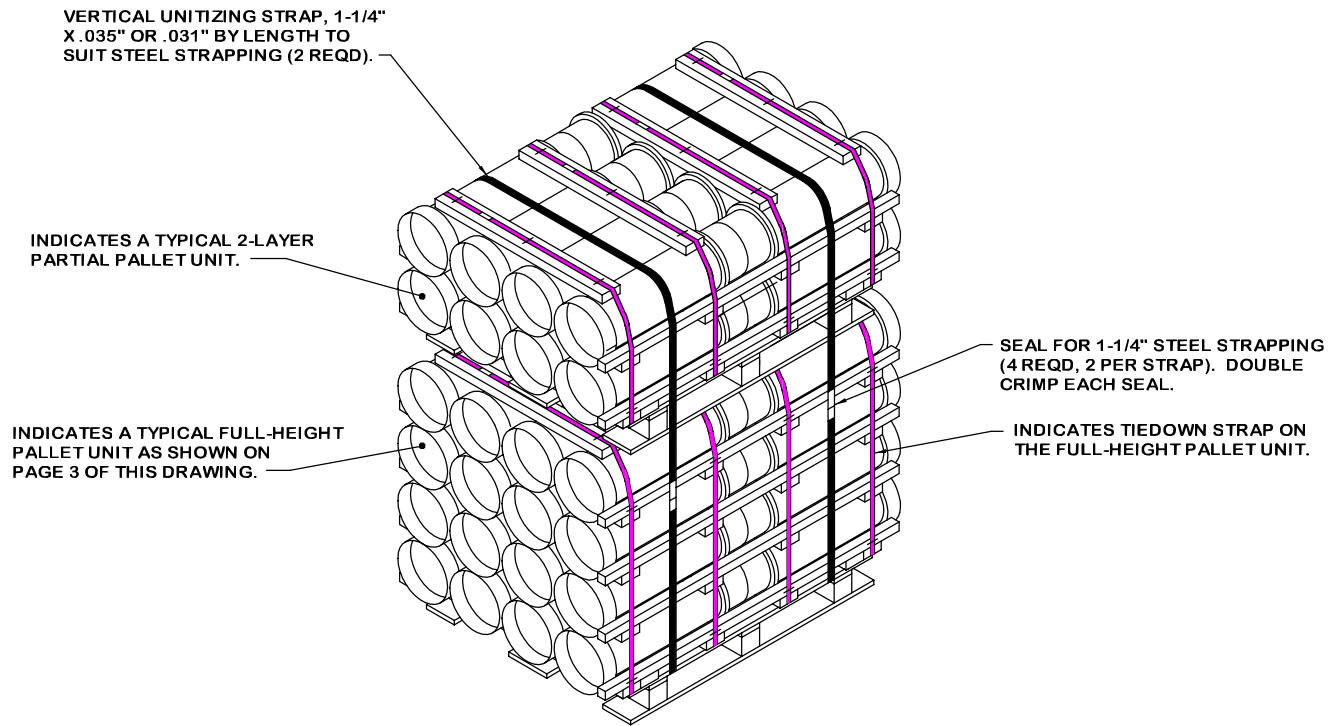


SECUREMENT OF SIX CONTAINERS

NOTE: TO SECURE ONLY THREE LEFTOVER CONTAINERS, DELETE THREE CONTAINERS ALONG WITH THREE STRAPS AND TWO STRAPPING BOARDS.

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SECUREMENT ON TOP OF A FULL PALLET UNIT AS SHOWN ON PAGE 18.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. **CAUTION:** A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SECUREMENT OF LEFTOVER CONTAINERS FOR SHIPMENT. THE VIEW AT THE TOP LEFT DEPICTS TWO LEFTOVER CONTAINERS SECURED TO A FULL-HEIGHT FLAT DUNNAGE METHOD PALLET UNIT. THE VIEW AT LEFT DEPICTS FOUR LEFTOVER CONTAINERS SECURED TO A FULL-HEIGHT FLAT DUNNAGE METHOD PALLET UNIT. FOR THE FLAT DUNNAGE METHOD UNITS THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY; THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLY. THE VIEW BELOW DEPICTS SIX LEFTOVER CONTAINERS SECURED TO A FULL-HEIGHT ROUTED DUNNAGE METHOD UNIT. WHEN THREE LEFTOVER CONTAINERS ARE BEING SECURED SIDE BY SIDE, A STRAPPING BOARD WILL BE REQUIRED UNDER EACH STRAP. LEFTOVER CONTAINERS MUST BE SECURED WITH A MINIMUM OF TWO PIECES OF STEEL STRAPPING.
4. THE PREFERRED LOCATION FOR THE POSITIONING OF A PALLET UNIT HAVING ONE OR MORE CONTAINERS STRAPPED TO THE TOP WOULD BE WITHIN THE ONE-HIGH PORTION OF THE LOAD; IT MUST NOT HAVE A PALLET UNIT STACKED ON TOP.
5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.

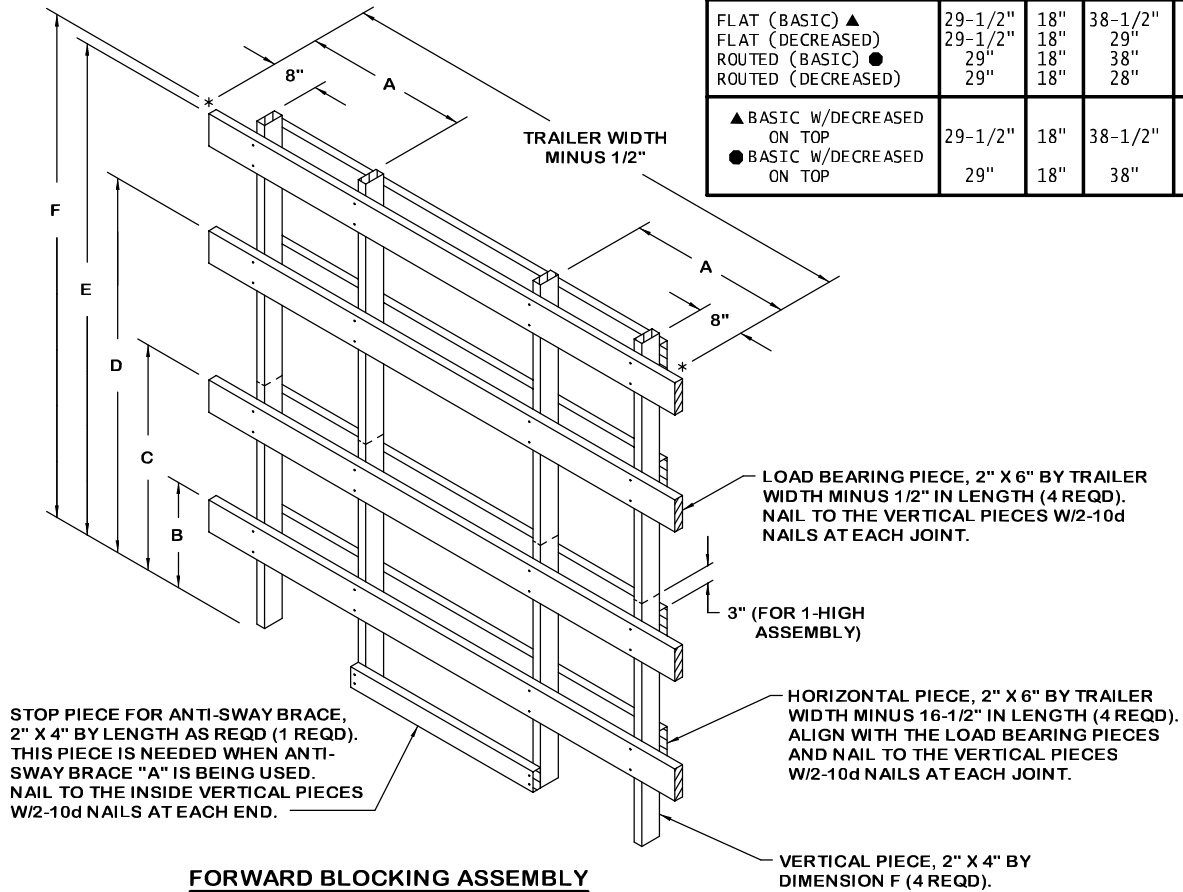


**SECUREMENT OF A PARTIAL PALLET UNIT
ON TOP OF A FULL PALLET UNIT**

SPECIAL NOTES:

1. THE VIEW SHOWN ABOVE DEPICTS A PARTIAL 2-LAYER PALLET UNIT POSITIONED ON TOP OF A FULL-HEIGHT PALLET UNIT AND UNITIZED WITH TWO VERTICAL UNITIZING STRAPS. PLACEMENT WITHIN THE LOAD IS OPTIONAL, EXCEPT THAT IT WILL NOT BE POSITIONED WITHIN A GROUP WHICH IS BUNDLED TOGETHER OR WITHIN A STACK WHICH IS UNITIZED. THE PREFERRED LOCATION WOULD BE WITHIN A ONE-HIGH PORTION OF A LOAD (NOT IN THE REAR LOAD UNIT) IF AVAILABLE, OR WITHIN THE TOP LAYER OF A LOAD IF THE TRAILER HEIGHT PERMITS.
2. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
3. FOR SHIPMENT OF ONE THROUGH SIX "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 17 OF THIS DRAWING.

FORWARD BLOCKING CHART						
PALLET UNIT TYPE	DIMENSIONS					
	A	B	C	D	E	F
FLAT (BASIC) ▲	29-1/2"	18"	38-1/2"	64"	7'-0"	7'-2"
FLAT (DECREASED)	29-1/2"	18"	29"	54"	65"	68"
ROUTED (BASIC) ●	29"	18"	38"	64"	7'-0"	7'-2"
ROUTED (DECREASED)	29"	18"	28"	54"	64"	67"
▲ BASIC W/DECREASED ON TOP	29-1/2"	18"	38-1/2"	64"	6'-3"	6'-6"
● BASIC W/DECREASED ON TOP	29"	18"	38"	64"	6'-2"	6'-5"



FORWARD BLOCKING ASSEMBLY

THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS, AND IS APPLICABLE FOR A CORNER RADIUS OF NOT MORE THAN 6-1/2". IF THE RADIUS IS FROM 6-1/2" TO 8", 2" X 6" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 4" PIECES SHOWN. IF THE TRAILER IS EQUIPPED WITH LARGE-ANGLED FRONT CORNERS, REFER TO PAGE 23 FOR GUIDANCE.

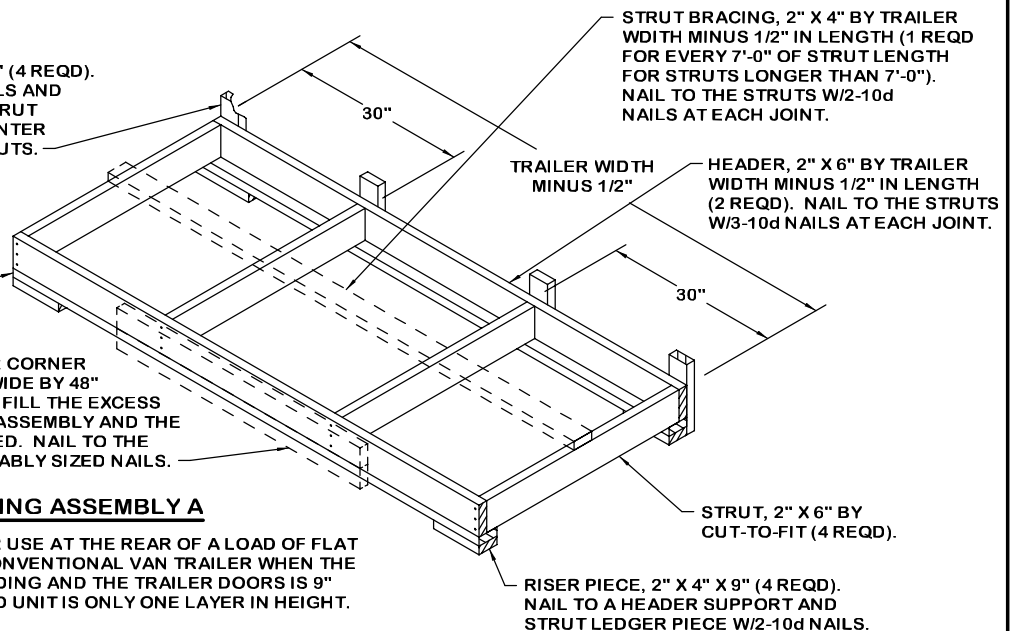
LOAD BEARING PIECE, 2" X 4" X 12" (4 REQD). NAIL TO THE HEADER W/3-10d NAILS AND TO THE HEADER SUPPORT AND STRUT LEDGER PIECE W/2-10d NAILS. CENTER INNER PIECES ON THE INSIDE STRUTS.

HEADER SUPPORT AND STRUT LEDGER PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE BOTTOM EDGE OF A HEADER W/1-10d NAIL EVERY 12".

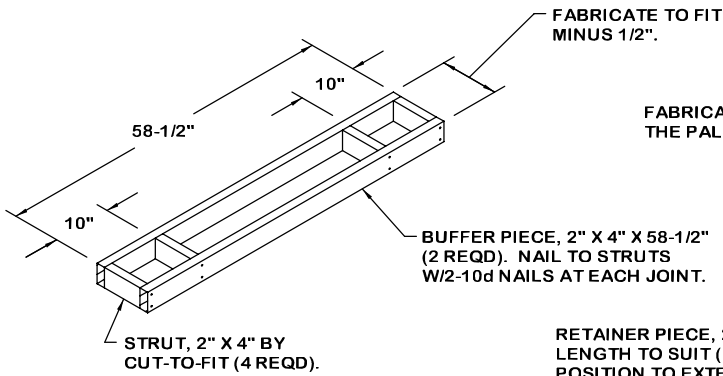
IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL, 4" AND 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING ASSEMBLY AND THE TRAILER DOORS WHEN THEY ARE CLOSED. NAIL TO THE REAR BLOCKING ASSEMBLY W/4 APPLICABLY SIZED NAILS.

REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD OF FLAT DUNNAGE METHOD UNITS IN A CONVENTIONAL VAN TRAILER WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER AND THE REAR LOAD UNIT IS ONLY ONE LAYER IN HEIGHT.



DETAILS



ANTI-SWAY BRACE A

THIS ANTI-SWAY BRACE IS DESIGNED FOR USE ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. NOTE THAT AN ASSEMBLY NEED NOT BE CONSTRUCTED FOR A TIGHT FIT; UP TO 1/2" SPACE IS PERMITTED.

FABRICATE TO FIT MINUS 1/2".

FABRICATE TO FIT AGAINST THE PALLET POSTS (REF: 33").

FABRICATE TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS.

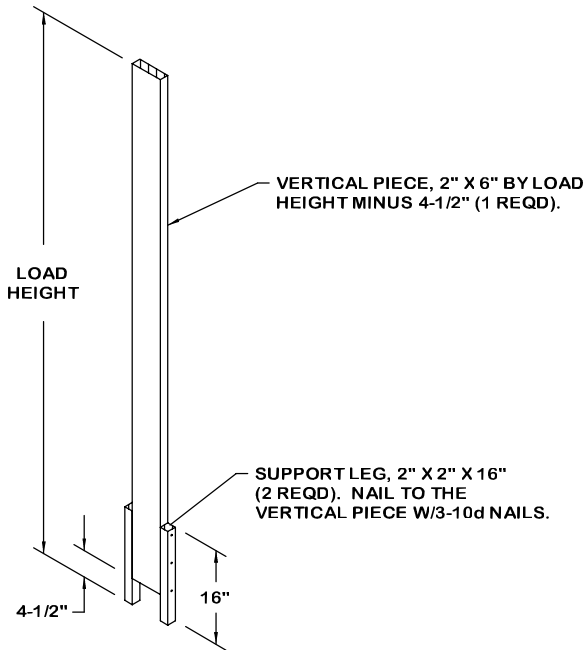
BUFFER PIECE, 2" X 4" X 58-1/2" (2 REQD). NAIL TO STRUTS W/2-10d NAILS AT EACH JOINT.

RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION TO EXTEND UNDER THE LATERALLY ADJACENT PALLET AND AGAINST THE PALLET POSTS.

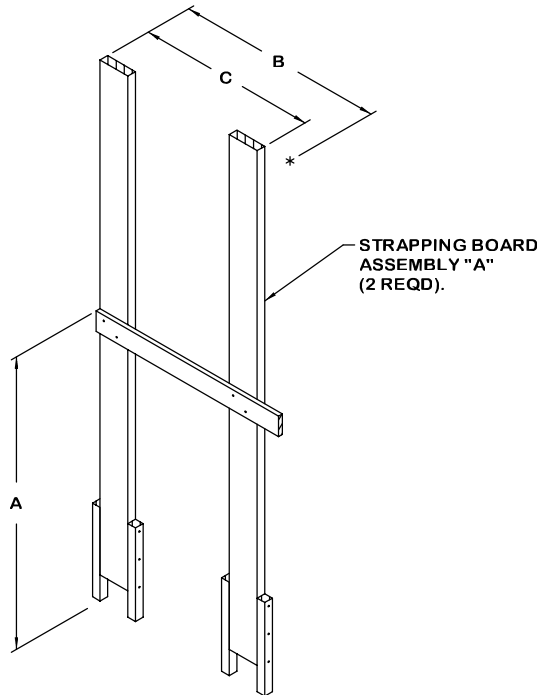
BUFFER PIECE, 2" X 4" X 39" (2 REQD). POSITION AGAINST THE PALLET POSTS AND NAIL TO THE RETAINER PIECES W/3-10d NAILS AT EACH JOINT.

ANTI-SWAY BRACE B

THIS ANTI-SWAY BRACE MUST BE FABRICATED IN PLACE BETWEEN THE PALLET.



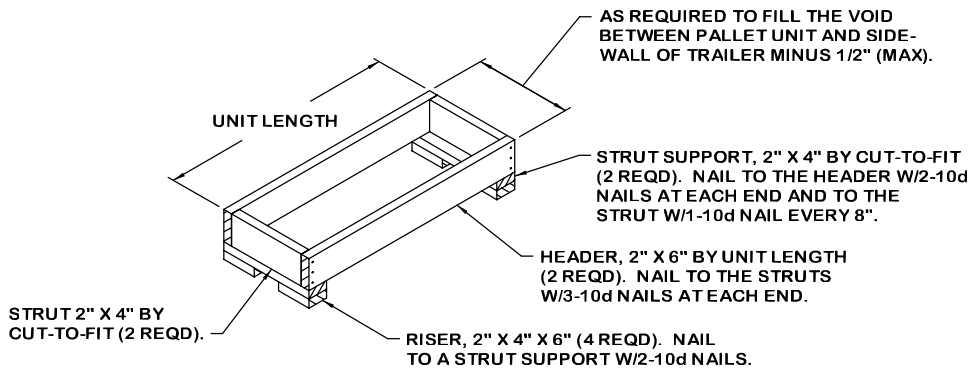
STRAPPING BOARD ASSEMBLY A



STRAPPING BOARD ASSEMBLY B

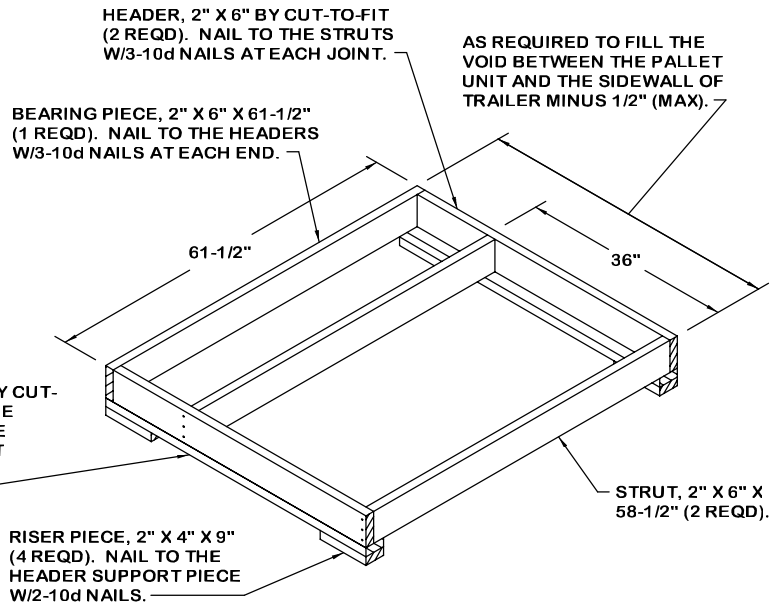
RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED. THE ASSEMBLY IS AN ALTERNATIVE FOR A PAIR OF STRAPPING BOARD "A" ASSEMBLIES.

STRAPPING BOARD ASSEMBLY B CHART			
PALLET UNIT TYPE	DIMENSIONS		
	A	B	C
FLAT (BASIC)	50"	36"	31"
FLAT (DECREASED)	41"	36"	31"
ROUTED (BASIC)	50"	35-1/2"	31"
ROUTED (DECREASED)	40"	35-1/2"	31"



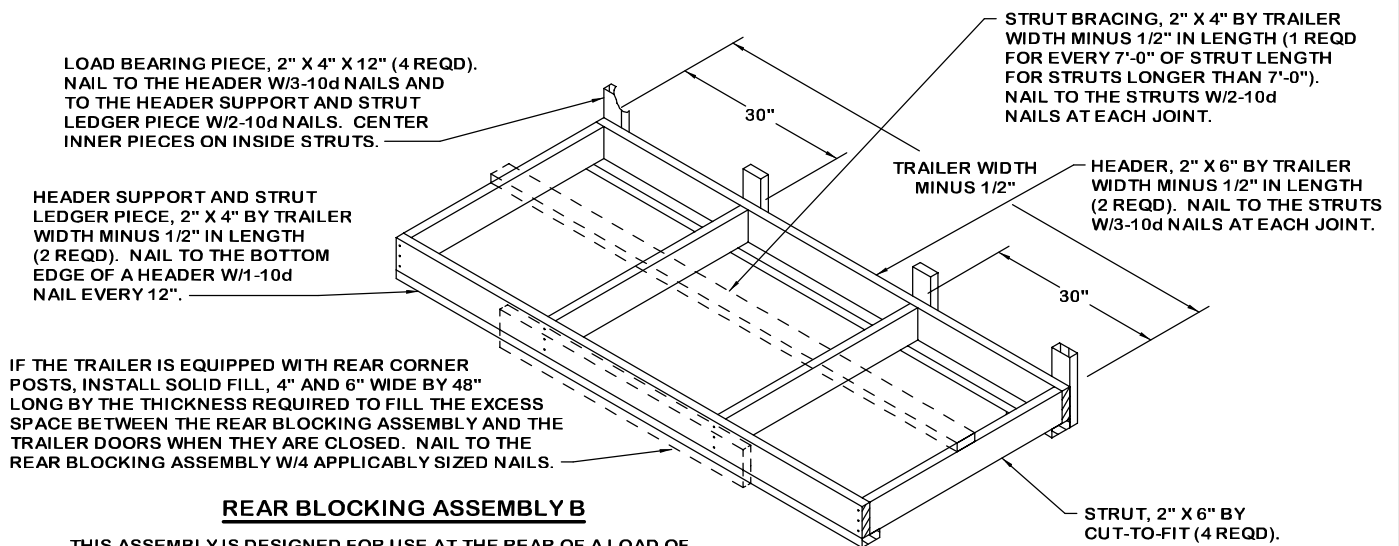
SIDE BLOCKING ASSEMBLY

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN THE LOADS ON PAGES 14 AND 16. IF THE ROUTED DUNNAGE METHOD UNITS ARE BEING LOADED, THE RISER PIECES MAY BE OMITTED.



SPACER ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING AS SHOWN IN THE LOAD ON PAGE 12.

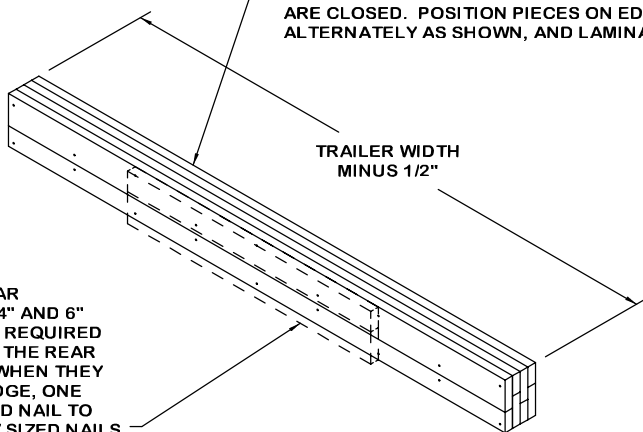


REAR BLOCKING ASSEMBLY B

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD OF ROUTED DUNNAGE METHOD UNITS IN A CONVENTIONAL VAN TRAILER WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER. THIS ASSEMBLY WILL ALSO BE USED AT THE REAR OF A LOAD OF FLAT DUNNAGE WHEN THE REAR LOAD UNIT IS TWO LAYERS IN HEIGHT.

DETAILS

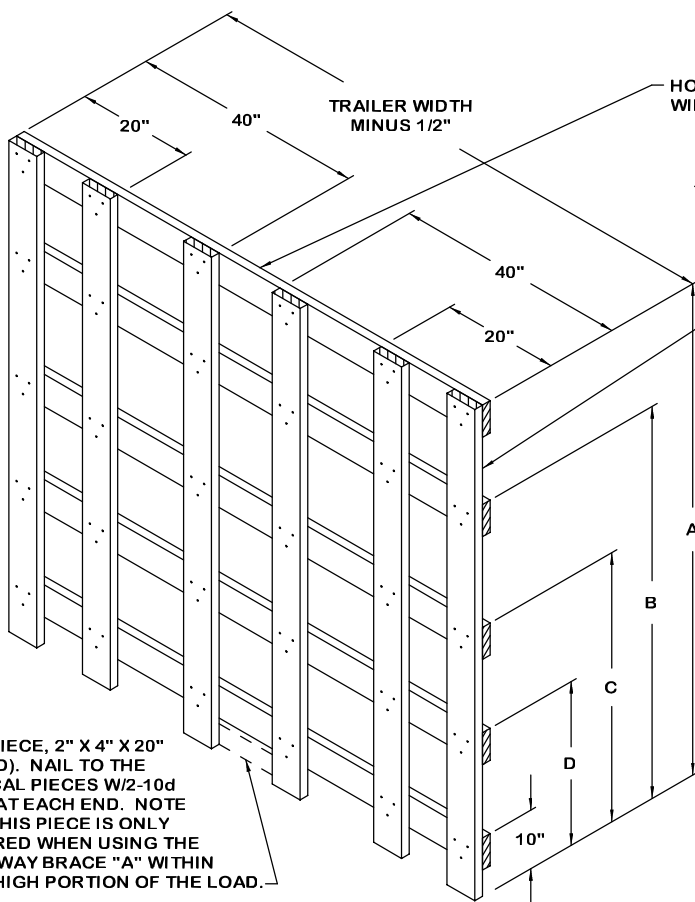
SOLID FILL, 4" AND 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO CONTACT REAR CORNER POSTS OR TO CONTACT REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER, ALTERNATELY AS SHOWN, AND LAMINATE W/1-10d NAIL EVERY 12".



IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL, 4" AND 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING AND THE TRAILER DOORS WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER AS SHOWN, AND NAIL TO THE REAR BLOCKING W/4 APPLICABLY SIZED NAILS.

REAR BLOCKING ASSEMBLY C

THIS REAR BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD IN A CONVENTIONAL VAN TRAILER WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS LESS THAN 9".



HORIZONTAL PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (5 REQD).

POSITION 2-HIGH PORTION OF LOAD AGAINST THIS SIDE OF GATE.

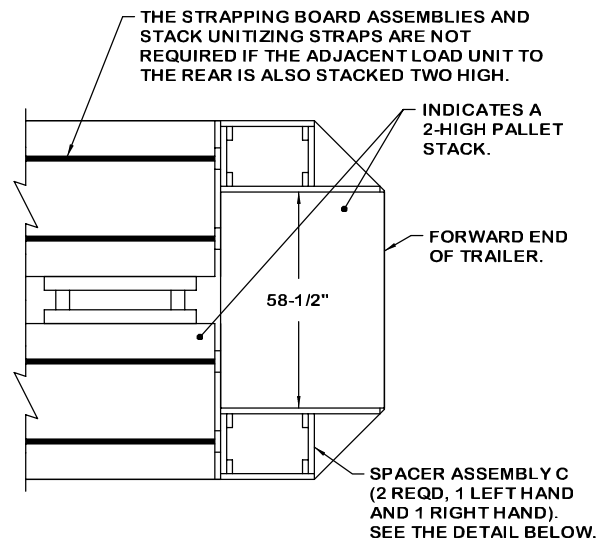
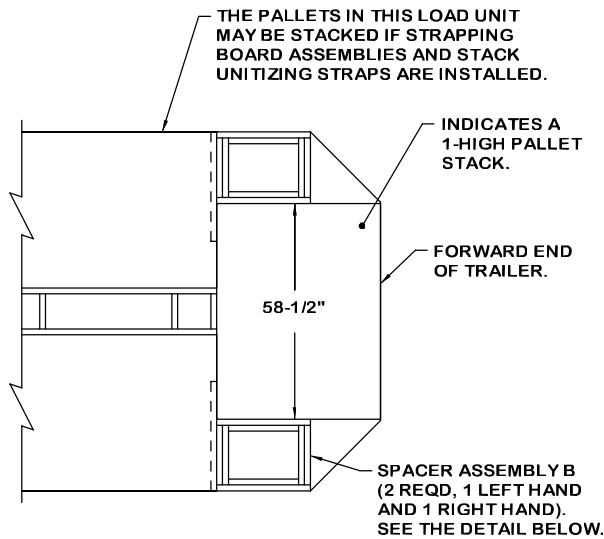
VERTICAL PIECE, 2" X 6" MATERIAL (6 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

STOP PIECE, 2" X 4" X 20" (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END. NOTE THAT THIS PIECE IS ONLY REQUIRED WHEN USING THE ANTI-SWAY BRACE "A" WITHIN THE 2-HIGH PORTION OF THE LOAD.

BULKHEAD GATE

THIS GATE IS DESIGNED FOR USE IN THE ALTERNATIVE LOADING PROCEDURE LOAD ON PAGE 12.

BULKHEAD GATE CHART				
PALLET UNIT TYPE	DIMENSIONS			
	A	B	C	D
FLAT (BASIC) ▲	7'-0"	67"	46"	28"
FLAT (DECREASED)	64"	46-1/2"	36"	- - -
ROUTED (BASIC) ●	7'-0"	67"	45-1/2"	28"
ROUTED (DECREASED)	64"	46"	36"	- - -
▲ BASIC W/DECREASED ON TOP	6'-2"	56"	46"	28"
● BASIC W/DECREASED ON TOP	6'-2"	56"	45"	28"



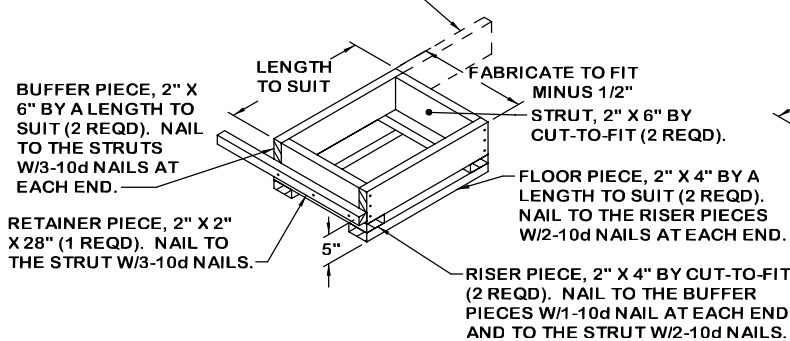
ALTERNATIVE FORWARD LOADING PATTERN A

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF ONE PALLET UNIT IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLED CORNERS OF ANOTHER SIZE. THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) IS SHOWN. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED ON PAGE 3.

ALTERNATIVE FORWARD LOADING PATTERN B

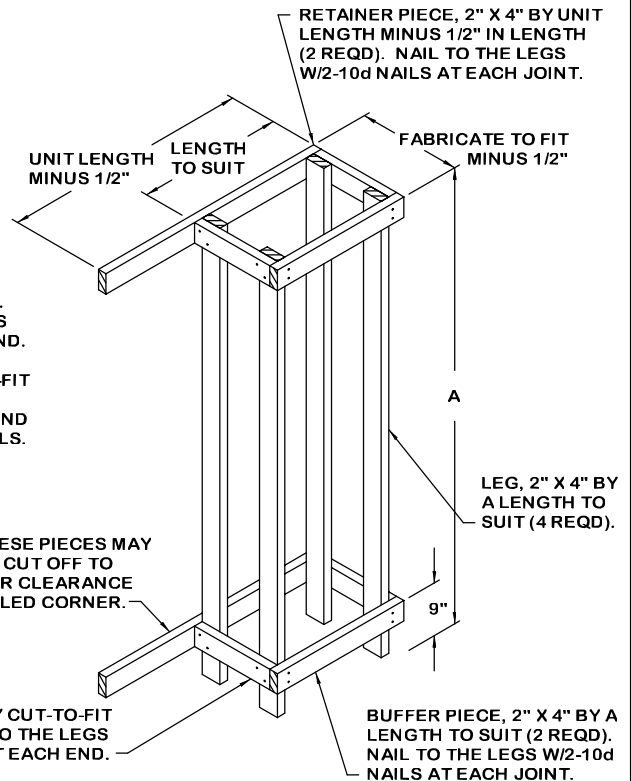
THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A STACK OF TWO PALLET UNITS IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLED CORNERS OF ANOTHER SIZE. NOTE THAT IF THE LOAD UNIT BEHIND THE STACKED PALLETS IN THE FRONT OF THE TRAILER IS ONLY ONE HIGH, TWO STACK UNITIZING STRAPS MUST BE INSTALLED AROUND THOSE PALLET UNITS IN THE FRONT STACK. THE ROUTED DUNNAGE METHOD (BASIC HEIGHT) IS SHOWN. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS DEPICTED ON PAGE 3.

IF THE LONGITUDINALLY ADJACENT LOAD UNIT IS STACKED AND SECURED WITH STRAPPING AND STRAPPING BOARD ASSEMBLIES, THIS BUFFER PIECE MUST BE EXTENDED TO WITHIN 1/2" OF THE FRONT WALL OF THE TRAILER IN LIEU OF USING THE RETAINER PIECE.



SPACER ASSEMBLY B

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A SINGLE PALLET UNIT WHICH IS TURNED 90° FROM THE NORMAL LOADING ORIENTATION AND POSITIONED IN THE FRONT OF AN ANGLED-CORNER CONVENTIONAL VAN TRAILER AS SHOWN IN THE "ALTERNATIVE FORWARD LOADING PATTERN A" VIEW ABOVE. RIGHT HAND AND LEFT HAND SPACER ASSEMBLIES ARE REQUIRED.



SPACER ASSEMBLY C

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A TWO-HIGH PALLET STACK WHICH IS TURNED 90° FROM THE NORMAL LOADING ORIENTATION AND POSITIONED IN THE FRONT OF AN ANGLED-CORNER CONVENTIONAL VAN TRAILER AS SHOWN IN THE "ALTERNATIVE FORWARD LOADING PATTERN B" VIEW ABOVE. NOTE THAT THIS VIEW DEPICTS THE ASSEMBLY POSITIONED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED IN A LOAD. RIGHT HAND AND LEFT HAND SPACER ASSEMBLIES ARE REQUIRED.

SPACER ASSEMBLY C CHART	
PALLET UNIT TYPE	DIM A
FLAT (BASIC) ▲	64"
FLAT (DECREASED)	54"
ROUTED (BASIC) ●	64"
ROUTED (DECREASED)	54"
▲ BASIC W/DECREASED ON TOP	64"
● BASIC W/DECREASED ON TOP	64"

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