LOADING AND BRACING (TL & LTL) IN VAN TRAILERS[®] OF AGM-130 PACKED IN CNU-578 CONTAINERS

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U.S. ARMY MATERIEL COMMAND DRAWING APPROVED U.S. ARMY CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS JOINT MUNITIONS COMMAND THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 24. Digitally signed by RUS. RUS.ALLEN. ALLEN.J. 1230354282 DN: c=US, o=U.S. J.123035428 Government, ou=DoD, DO NOT SCALE **SEPTEMBER 2009** ou=PKI, ou=USA, cn=RUS, ALLEN J. 1230354282 **ENGINEER** BASIC **ADIN FELICIANO** Date: 2009.10.20 13:32:11 -05'00' TECHNICIAN REV TRANSPORTATION FIEFFER.LAURA. A.1230375727 A.1230375727 A.1230375727 A.1230375727 APPROVED BY ORDER OF COMMANDING **ENGINEERING** GENERAL, U.S ARMY MATERIEL COMMAND DIVISON CARNEY.GA Digitally signed by CARNEY.GARY.BURTON.103870 CARNEY.GA CARNET.GAU.... RY.BURTON DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, ou=DaRNEY.GARY.BURTON.103 CLASS DIVISION DRAWING FILE VALIDATION BARICKMAN. Digitally signed by BAF PHEIP.W.1290202202 **ENGINEERING** PHILIP. 00-000, 00-PKI, 00-USA, cin-BARICKMAN PHILIP. W.1230202202 Dise: 2009.09.04 10.49.11-050 DIVISON BEAVER.JERRY Updately algred by BEAVER.JERRY. W.123094992 Updately algred by BEAVER.JERRY. W.1230949952 Updately algred by BEAVER.JERRY. W.1230949962 Updately a 8670 19 48 SP11J100 **ENGINEERING** DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER

[®] <u>CAUTION</u>: THE PROCEDURES SHOWN HEREIN ARE <u>ONLY</u> APPLICABLE TO HIGHWAY MOVEMENTS, <u>NOT</u> TRAILER-ON-FLATCAR (TOFC) MOVEMENTS.

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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF AGM-130C MISSILES PACKED IN CNU-578 CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MISSILE ITEMS. SEE PAGE 4 AND AIR FORCE DRAWING 9531330 FOR DETAILS OF THE CONTAINER
- 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 I AW
- D. SELECTION OF A VEHICLE FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.
- E. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF 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 ALLOWABLE WEIGHT.
- 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 40,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS, UP TO 40,000 POUNDS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED ON A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, 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. SOME 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, AND POSITION THE CONTAINERS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
- K. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MIN-IMUM 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. REFER TO THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 3 FOR GUID-

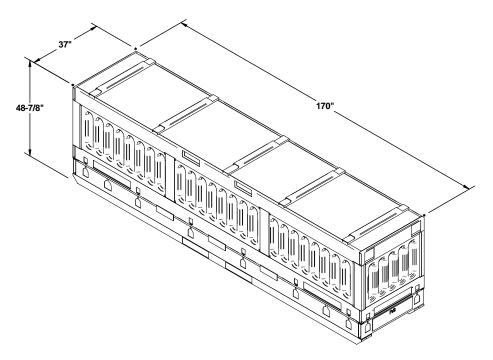
(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VO- LUNTARY PRODUCT STANDARD PS 20.
<u>NAILS</u> :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
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.
ANTI - CHAFING MATERIAL:	MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
WIRE, CARBON STEEL -:	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE

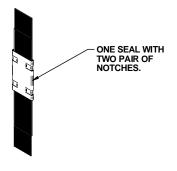
(GENERAL NOTES CONTINUED)

- L. 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.
- M. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES THAT 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 ASTM F1667 AS NEARLY AS PRACTICABLE. STAPLES THAT 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.
- N. THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 6". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE ANTI-SWAY BRACES. NAIL EACH ADDITIONAL PIECE TO THE BUFFER PIECE WIAPPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND LENGTH OF THE LUMBER USED IN THESE ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE VAN TRAIL FR.
- O. <u>CAUTION</u>: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, CONTAINERS 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.
- P. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THE 9". USE THE "REAR BLOCKING ASSEMBLY A" AS DEPICTED ON PAGE 21. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B", AS SHOWN ON PAGE 21. NOTE: REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER IS CONFIGURED SUCH AS TO ALLOW NAILING IN THE AREA IN QUESTION. REFER TO THE LOAD ON PAGE 4 AND THE HEADER NAILING CHARTS ON PAGE 5 FOR GUIDANCE. CAUTION: THE NAILED HEADER METHOD IS REQUIRED WHEN LOADING VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS.
- Q. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- R. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF CNU-578 CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED MUNITION, OR WHEN THEY ARE EMPTY.
- S. 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.
- T. 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.



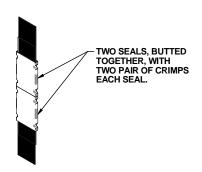
CNU-578 CONTAINER

GROSS WEIGHT - - - - - - - - 4,960 LBS CUBE - - - - - - - - - 179.3 CU FT



STRAP JOINT A

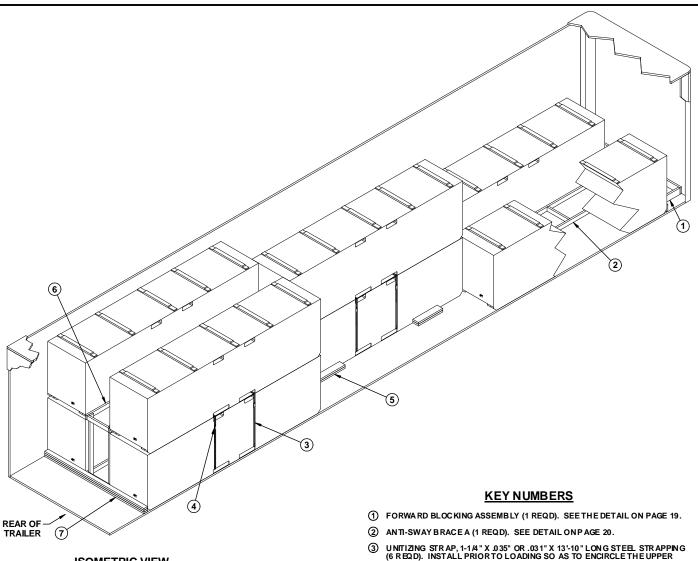
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



- UNITIZING STRAP, 1-1/4" X .035" OR .031" X 13'-10" LONG STEEL STRAPPING (6 REQD). INSTALL PRIOR TO LOADING SO AS TO ENCIRCLE THE UPPER AND LOWER CONTA INER STHROUGH THE FORKLIFT OPENINGS IN STACKS AD JACENT TO ONE-HIGH STACKS OR TO THE DOOR. SEE SPECIAL NOTE 4
- 4 SEAL FOR 1-1 /4" STRAPPING (6 OR 12 REQD). CRIMP SINGLE SEALS WITH TWO PAIR OF NOTCHES OR CRIMP DOUBLE SEALS WITH TWO PAIR OF CRIMPS EACH. SEE THE STRAP DETAILS ON PAGE 3.
- SIDE BLOCKING, 2" X 6" X 24" (DOUB LED) (4 REQD), NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- 6 ANTI-SWAY BRACE B (1 REQD). SEE DETAIL ON PAGE 20.
- THE HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/16-10d NAILS. LAMIN ATE THE SECOND PIECE TO THE FIRST W/16-10d NAILS AND LAMIN ATE THE THIRD PIECE TO THE SECOND PIECE IN A LIKE MANNER. SEE HEADER NAILING CHART ON PAGE 5.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	166 30	111 30
NAI LS	NO. REQD	POUNDS
10d (3")	184	3

STEEL STRAPPING, 1-1/4" - 83' REQD - - 12 LBS SEAL FOR 1-1/4" STRAPPING - 6 REQD - - 1/4 LBS ANTI-CHAFING MATERIAL - - AS REQD - - - NIL

LOAD AS SHOWN

<u>I TEM</u> WEIGHT (APPROX) **QUANTI TY** 39,680 LBS 295 LBS TOTAL WEIGHT - - - -39,975 LBS (APPROX)

PAGE 4

8 UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER

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

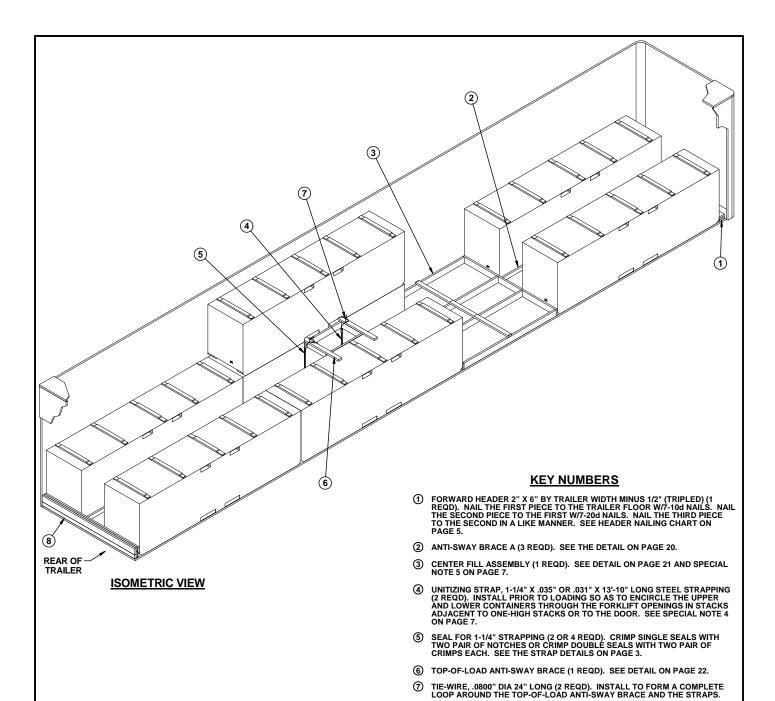
HEADERS AT THE FRONT END OF A LOAD OR AT THE FRONT END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 6" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND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

REAR HEADER NAILING CHART [*]		
#NAILS MAX. LOAD WEIGHT (LBS)		
6 7 8 9 10 11 12 13 14 15 16 17	15,000 17,500 20,000 22,500 25,000 27,500 30,000 32,500 35,000 37,500 40,000 42,500 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/8-104 NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-104 NAILS, FOR A TOTAL OF 16-104 NAILS. A MINIMUM OF 6 PAIRS OF NAILS WILL BE USED FOR TRAILER WIDTH HEADERS. NOTE: REAR HEADERS MAY BE HANDLED IN THE SAME MANNER AS FORWARD HEADERS, USING 2" X 6" MATERIAL WITH 104 AND 204 NAILS, IF DESIRED.

SPECIAL NOTES:

- A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH A NAILABLE FLOOR AND ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
- 2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LAT-ERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM CONTAIN-ER TO CONTAINER.
- 3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 21 OR A NAILED HEADER, AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 21 OR A NAILED HEADER, AS SHOWN. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
- 4. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK. IF A STACK AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, UNITIZING STRAPS, MUST BE INSTALLED AROUND EACH OF THE REARMOST STACKS IN EACH APPLICABLE ROW.
- 5. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD; OR, ONE OR MORE UNITS CAN BE ADDED TO OR OMITTED FROM THE TOP TIER.



BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	146	97
2" X 6"	109	109
NAILS	NO. REQD	POUNDS
10d (3")	155	2-1/2
20d (4")	13	1/2

STEEL STRAPPING, 1-1/4" - 28' REOD - - - 4 LBS SEAL FOR 1-1/4" STRAPPING - 2 REOD - - - NIL WIRE, .0800" DIAMETER - - 4' REOD - - - NIL

LOAD AS SHOWN

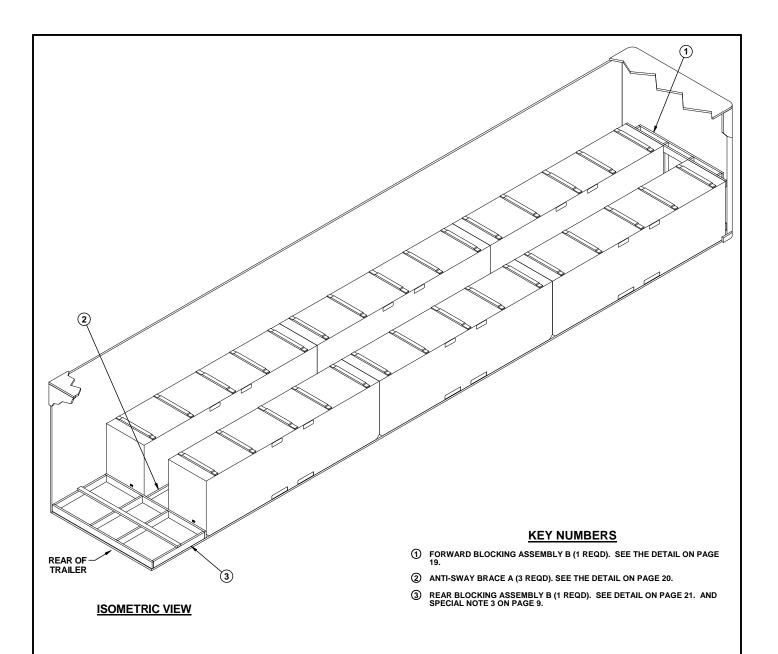
REAR BLOCKING ASSEMBLY A (1 REQD) SEE DETAIL ON PAGE 21 AND SPECIAL NOTE 3 ON PAGE 7.

7 UNIT LOAD IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER

SPECIAL NOTES:

- 1. A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
- 2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LAT-ERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM CONTAIN-ER TO CONTAINER.
- 3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS SHOWN OR A NAILED HEADER. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 21 OR A NAILED HEADER. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
- 4. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK. IF A STACK AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, UNITIZING STRAPS, MUST BE INSTALLED AROUND EACH OF THE REARMOST STACKS IN EACH APPLICABLE ROW.
- 5. ALTERNATE THE POSITION OR SIZE OF THE LATERAL VOID IN THE LOAD TO ENSURE A UNIFORM LOAD, AS DEPICTED IN THE LOAD ON PAGE 6.
- 6. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD; OR, ONE OR MORE UNITS CAN BE ADDED TO OR OMITTED FROM THE TOP TIER.

7 UNIT LOAD IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER



BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	131	87
2" X 6"	63	63
NAILS	NO. REQD	POUNDS
10d (3") 128 2		

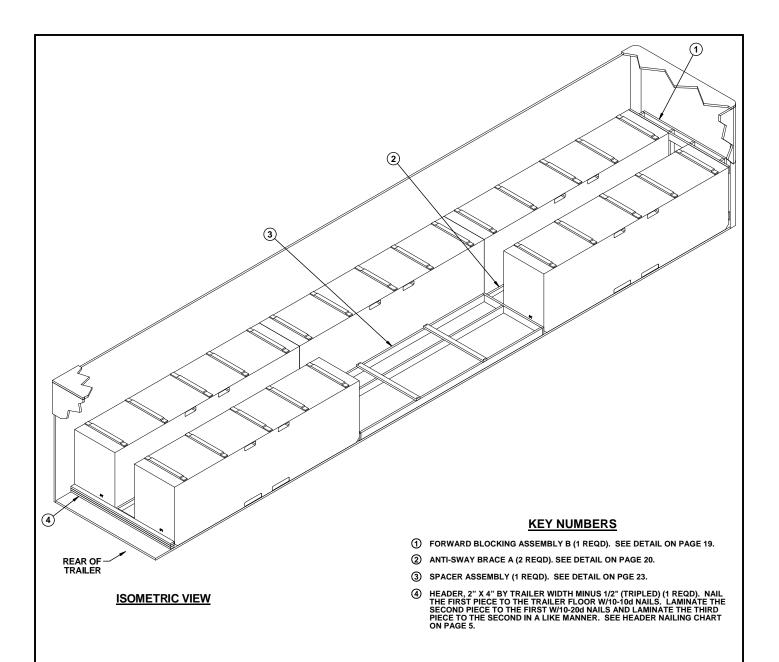
PAGE 8

LOAD AS SHOWN

<u>I TEM</u>	QUANTI TY	WEI GHT (APPROX)
	ER 6	
TOT	AL WEIGHT	30 062 LBS (APPROX)

6 UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER

	SPECIAL NOTES:
	 A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTH- ER DIMENSIONS CAN BE USED.
	2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LAT- ERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM CONTAIN- ER TO CONTAINER.
	3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 21 OR A NAILED HEADER. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS SHOWN OR A NAILED HEADER.
	4. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY OMITTING ONE OR MORE UNITS FROM THE LOAD.
6 UNIT LOAD IN A 48'-0" LONG BY 8'-2	" WIDE VAN TRAILER PAGE 9
	PROJECT <u>SP 369-00</u>



BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	82 79	55 79
NAILS	NO. REQD	POUNDS
10d (3") 20d (4")	104 20	1-3/4 1

LOAD AS SHOWN

TOTAL		
	5	
<u>I TEM</u>	QUANTI TY	WEIGHT (APPROX)

TOTAL WEIGHT - - - - - 25,069 LBS (APPROX)

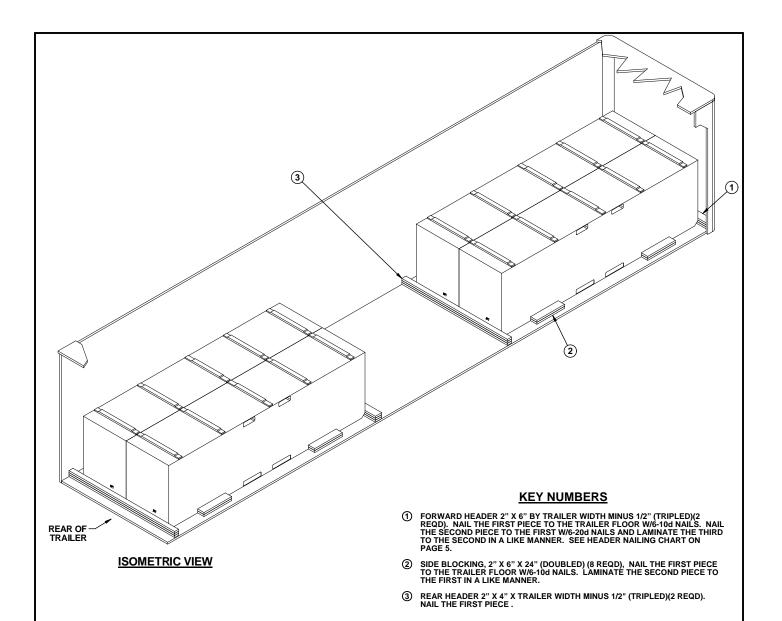
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5 UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE VAN TRAILER

SPECIAL NOTES:

- 1. A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH A NAILABLE FLOOR AND ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
- 2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LAT-ERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM CONTAIN-ER TO CONTAINER.
- 3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 21 OR A NAILED HEADER. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 21 OR A NAILED HEADER, AS SHOWN. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
- 4. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY OMITTING ONE OR MORE UNITS FROM THE LOAD.

5 UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE VAN TRAILER



BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	46 80	31 80
NAI LS	NO. REQD	POUNDS
10d (3") 20d (4")	144 24	2-1/4 1

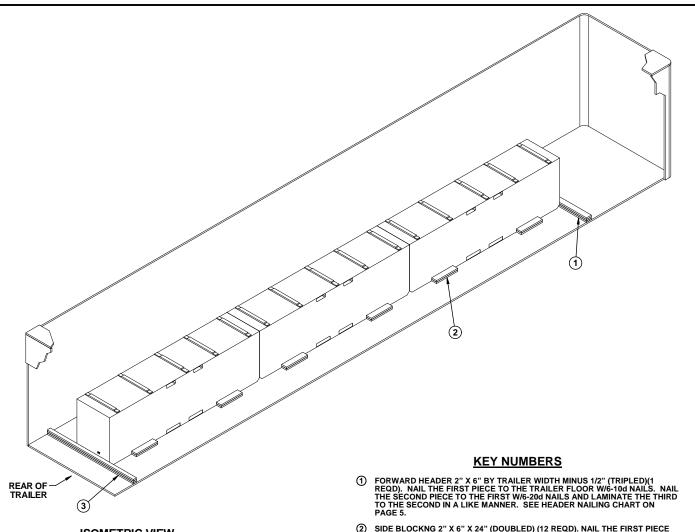
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<u>I TEM</u>	QUANTI TY	<u>WEI GHT</u> (APPROX)
	4	
TOTAL	WEIGHT	20,064 LBS (APPROX)

PAGE 12

4 UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE VAN TRAILER

	SPECIAL NOTES:	
	1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAI TRAILER WITH A NAILABLE FLOOR AND ROUNDED FRONT CORNERS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.	
	2. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINE AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THA 1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS TAILED ON PAGE 21 OR A NAILED HEADER AS SHOWN. IF THE SPACE THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKI ASSEMBLY B" AS DETAILED ON PAGE 21 OR A NAILED HEADER. IF TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTIFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKIN SEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.	N 1- 5 DE- E AT NG 'HE ER-
	3. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO I SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1- LOAD CAN BE REDUCED BY OMITTING ONE OR MORE UNITS FROM TH LOAD.	TIER
4 UNIT LOAD IN A 40'-0" LONG BY 7'-	8" WIDE VAN TRAILER	PAGE 13



② SIDE BLOCKNG 2" X 6" X 24" (DOUBLED) (12 REQD). NAIL THE FIRST PIECE TO THE FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(3) REAR HEADER 2" X 4" X TRAILER WIDTH MINUS 1/2" (TRIPLED)(1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND TO THE FIRST W/6-10d NAILS AND LAMINATE THE THIRD TO THE FIRST W/6-10d NAILS AND LAMINATE THE THIRD TO THE SECOND IN A LIKE MANNER. SEE HEADER NAILING CHART ON PAGE 5.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	23 71	16 71
NAILS	NO. REQD	POUNDS
10d (3") 20d (4")	168 12	2-3/4 1/2

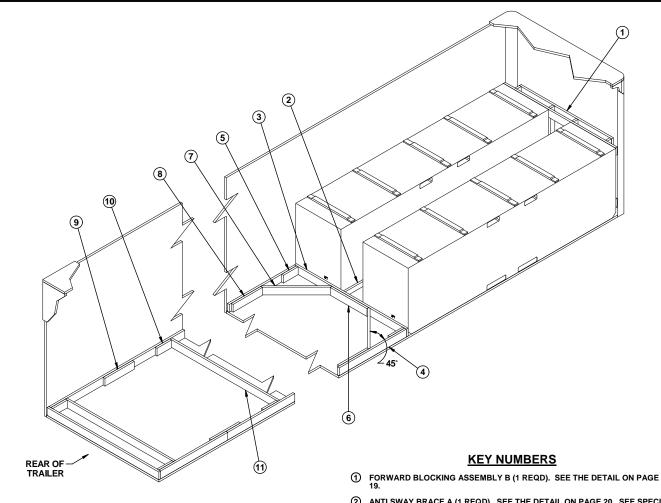
LOAD AS SHOWN

<u>I TEM</u>	QUANTI TY	WEI GHT (APPROX)
	3	
TOTAL	WEIGHT	15,056 LBS (APPROX)

PAGE 14

3 UNIT LOAD (1-WIDE) IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER

	SPECIAL NOTES:
	 A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER DI- MENSIONS CAN BE USED.
	2. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 21 OR A NAILED HEADER AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 21 OR A NAILED HEADER. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
	3. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY OMITTING ONE OR MORE UNITS FROM THE LOAD.
3 UNIT LOAD (1-WIDE) IN A 53'-0" LONG	BY 8'-2" WIDE VAN TRAILER PAGE 15



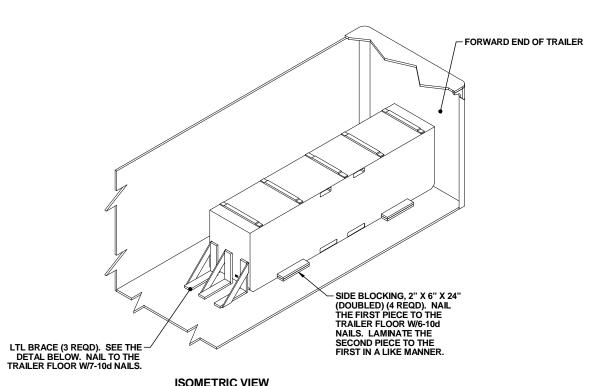
- ANTI SWAY BRACE A (1 REQD). SEE THE DETAIL ON PAGE 20. SEE SPECIAL NOTE 2 ON PAGE 17.
- 3 HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). SEE SPECIAL NOTE 6 ON PAGE 17.
- SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE FORWARD AND REAR HEADERS (2 REQD). SEE SPECIAL NOTE 3 ON PAGE 17. 4
- POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER W/3-12d NAILS.
- 6 CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO A HEADER W/6-10d NAILS.
- 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 AND SIDE STRUT W/2-16d NAILS AT EACH END.
- BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT W/8-10d NAILS.
- SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF THE SIDE STRUTS AND NAIL TO SIDE STRUT W/4-10d NAILS AT EACH END. SEE SPECIAL NOTE 3 ON PAGE 17. 9
- (10) STRUT BRACE RETAINING CLEAT, 2" X 6" X 12" (AS REQD). NAIL TO A SIDE STRUT W/3-10d NAILS. SEE SPECIAL NOTE 4 ON PAGE 17.
- STRUT BRACE, 2" X 6" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQUIRED). NAIL TO THE POCKET CLEATS AND/OR TO THE STRUT BRACE RETAINING CLEATS W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 17.

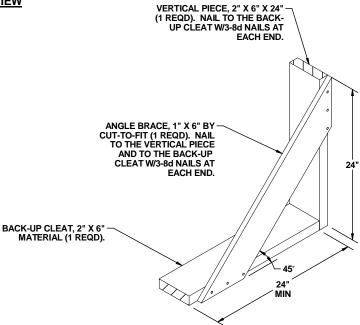
TYPICAL LTL (2-UNITLOAD) PAGE 16

SPECIAL NOTES:

- 1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
- 2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LAT-ERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM CONTAIN-ER TO CONTAINER.
- 3. DEPENDING ON THE NUMBER OF UNITS BEING LOADED, EACH OF THE SIDE STRUTS MAY NEED TO BE FORMED FROM MORE THAN ONE PIECE OF MATERIAL. IF SUCH IS THE CASE, THE SIDE STRUTS MUST BE SPLICED. SPLICING CAN BE ACCOMPLISHED BY CENTERING A 2" X 6" X 24" PIECE ON THE JOINT OF THE SIDE STRUTS AND NAILING IT TO THE SIDE STRUTS W/4-10d NAILS AT EACH END.
- 4. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO THE POCKET CLEAT. IF THE SIDE STRUTS ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE AND TWO STRUT BRACE RETAINING CLEATS MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
- 5. THE "K-BRACE" BLOCKING IS ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 20,000 POUNDS.
- 6. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER METHOD OF REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING. REFER TO THE LOAD ON PAGE 4 AND THE HEADER NAILING CHARTS ON PAGE 5 FOR GUIDANCE. NOTE THAT THE NAILED-HEADER METHOD OF REAR BLOCKING MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS AND NAILABLE FLOORS, AND MAY BE USED IN LIEU OF THE "K-BRACE" PIECES WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.

TYPCAL LTL Q-UNIT LOAD)



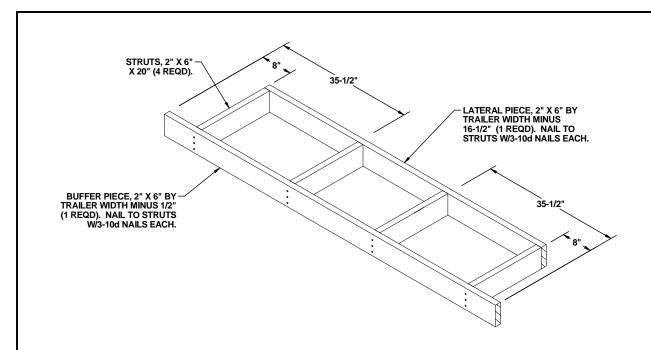


LTL BRACE

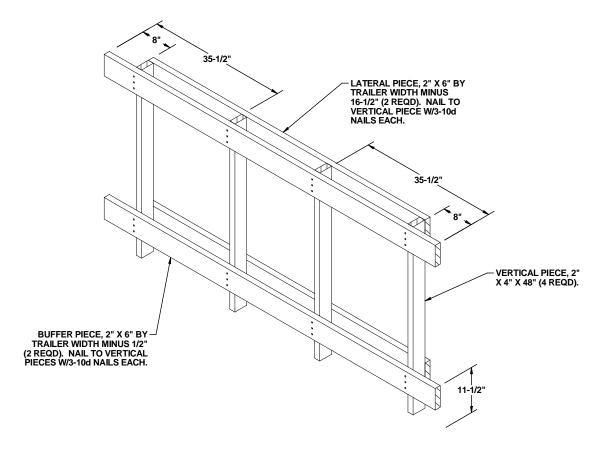
SPECIAL NOTES:

- A 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
- THE POSITIONING OF A UNIT IS OPTIONAL. LTL BRACES MUST CONTACT EITHER THE AFT OR FORWARD END OF THE UNIT, NOT THE SIDES. UNITS MAY ALSO BE LOCATED IN THE CORNER OF THE TRAILER, IF DESIRED. IF THE TRAI-LER DOES NOT HAVE A SQUARE FRONT, A FORWARD BLOCKING ASSEMBLY MUST BE INSTALLED WHEN POSITIONING A UNIT IN THE CORNER OF THE TRAI-LER. SEE THE DETAIL ON PAGE 19.
- MORE THAN ONE CONTAINER CAN BE SHIPPED, PROVIDING THE CAPACITY OF THE LTL BRACES IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN ROWS, WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDEWALLS. THE PROPER ANTI-SWAY BRACES, IF REQUIRED, WILL BE INSTALLED BETWEEN THE LATERALLY ADJACENT UNITS. SEE THE DETAIL ON PAGE 20.
- 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 CONTAINER ACROSS THE WIDTH OF THE TRAILER.

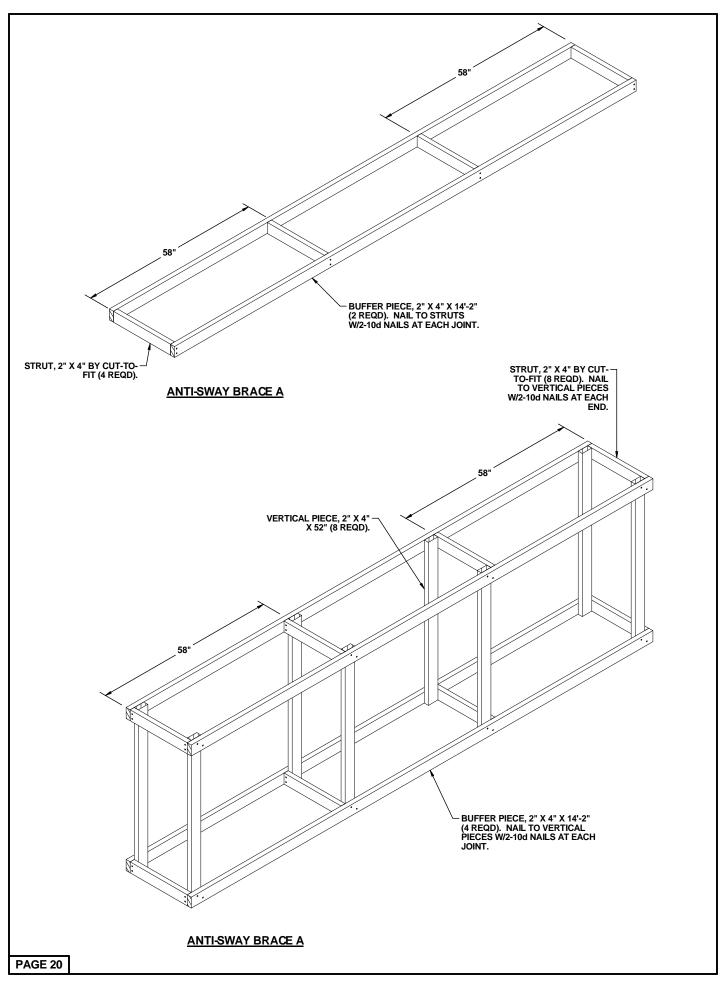
TYPICAL LTL (1-UNITLOAD)

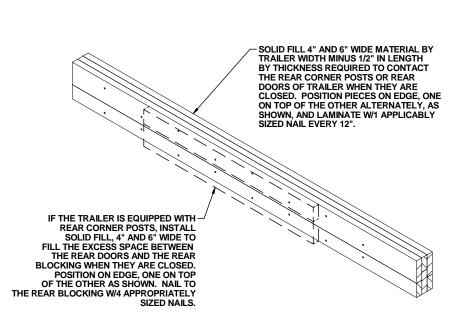


FORWARD BLOCKING ASSEMBLY A

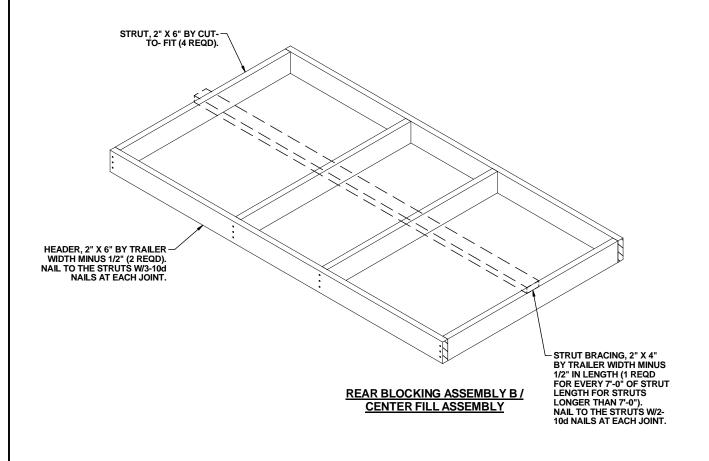


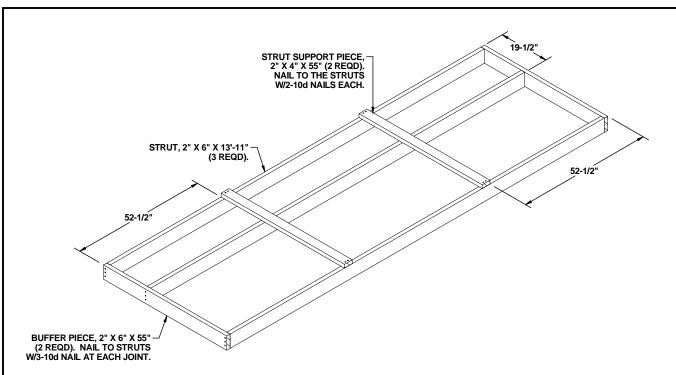
FORWARD BLOCKING ASSEMBLY B





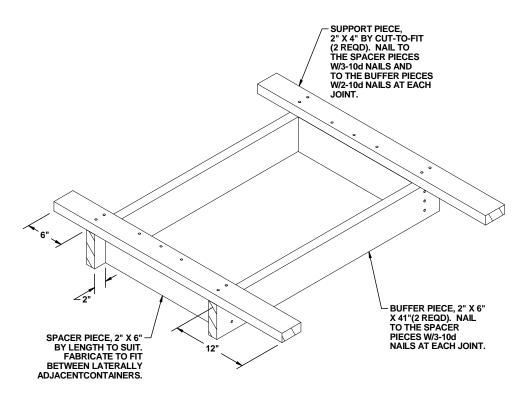
REAR BLOCKING ASSEMBLY A





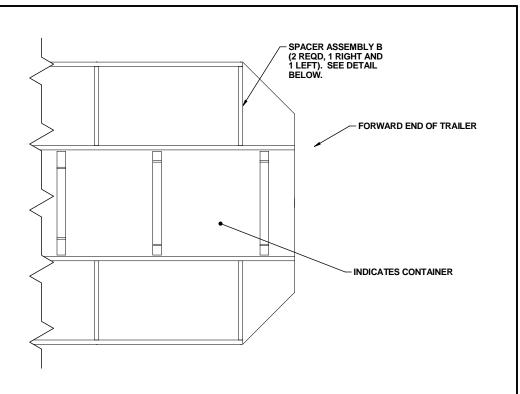
SPACER ASSEMBLY

FOR USE IN 7'-8" WIDE VAN TRAILERS. IF A TRAILER OF A DIFFERENT WIDTH IS USED, MODIFY STRUT SUPPORT PIECE AND BUFFER PIECE LENGTHS ACCORDINGLY.



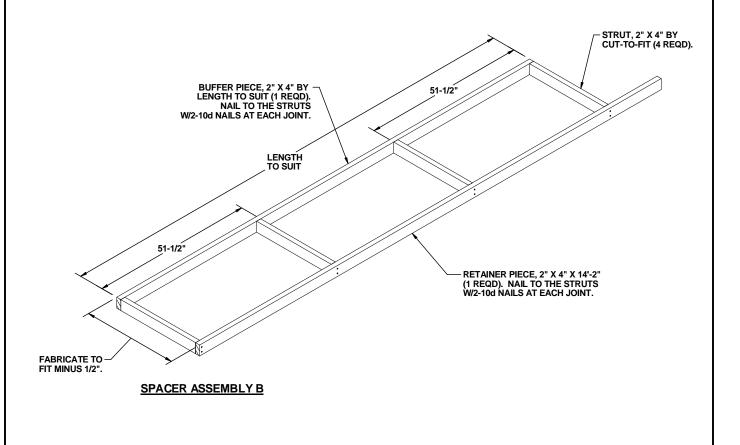
TOP-OF-LOAD ANTI-SWAY BRACE

NOTE: THIS ASSEMBLY IS DESIGNED FOR THE LATERAL BRACING OF A CONTAINER IN A SECOND LAYER WHEN THERE IS NO CONTAINER DIRECTLY OPPOSITE IT. POSITION THE 6" END OF THE SUPPORT PIECE INTO THE FORKLIFT OPENINGS OF THE UPPER CONTAINER.



ALTERNATE FORWARD LOADING PATTERN

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A CONTAINER IN THE FORWARD END OF A VAN TRAILER HAVING LARGE ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURE MAY BE USED FOR TRAILERS HAVING SQUARE CORNERS OR ROUNDED FRONT CORNERS.



PROCEDURES FOR VAN TRAILERS WITH LARGE-ANGLED FRONT CORNERS

