

# LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS

## PA93 SERIES CONTAINER

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THIS DOCUMENT INCLUDES OUTLOADING PROCEDURES FOR CONVENTIONAL TYPE TRAILERS AND FOR TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES AS APPROVED BY THE BUREAU OF EXPLOSIVES, ASSOCIATION OF AMERICAN RAILROADS. CAUTION: THE PROCEDURES SHOWN HEREIN, FOR BOTH TYPES OF TRAILERS, ARE ONLY APPLICABLE FOR HIGHWAY MOVEMENTS; NOT FOR CONTAINER/TRAILER-ON-FLAT-CAR MOVEMENTS.

REVISIONS				DRAFTSMAN	PROJ ENG
				2810/PS	WRF
				CHECKER	LOG ENGRG OFFICE
				WJH	WJH
APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND					
<i>George J. H. ...</i>					
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIALS COMMAND (AMC)					
<i>William F. Ernst</i>					
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL					
U.S. ARMY AMC DRAWING					
MAY 1987					
CLASS	DIVISION	DRAWING	FILE		
19	48	4042C/ 14	11 PM 1000		

DO NOT SCALE

## GENERAL NOTES

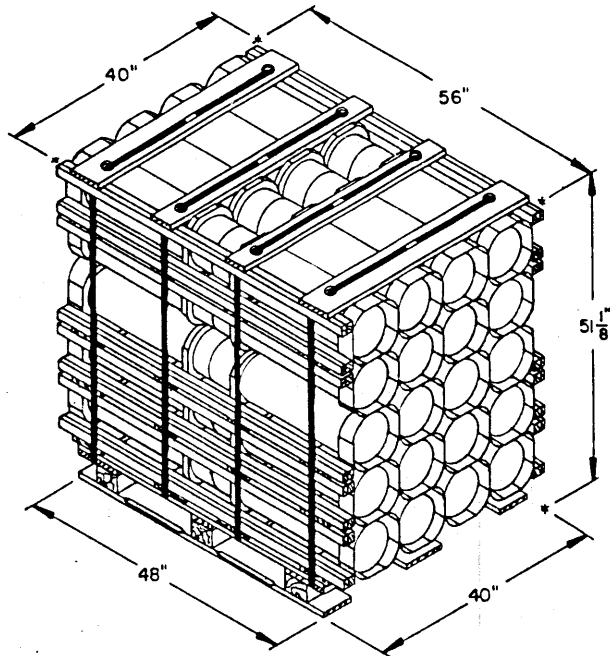
(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA93 SERIES PROPELLING CHARGE CONTAINER ASSEMBLED ON THE 40" X 48" 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEWS ON PAGE 3 FOR SIZES AND WEIGHTS. REFER TO U.S. ARMY DARCOM (AMC) DRAWING 19-48-4042A/15-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA93 SERIES CONTAINERS.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS, AND FOR SHIPMENTS IN VAN TRAILERS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES (CROSS MEMBERS AND WALL MEMBERS) AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. VAN TRAILERS WHICH ARE 40'-0" LONG BY 7'-6" TO 7'-8-1/2" WIDE (INSIDE DIMENSION) HAVE BEEN SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE EIGHTY-NINE INCHES (89") THRU NINETY-NINE (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 LOADING AND BRACING PROCEDURES SPECIFIED HEREIN ARE ALSO ADEQUATE (CONFIGURATION WISE AND STRENGTH WISE) FOR LOADS IN SHORTER OR LONGER VANS AND IN NARROWER OR WIDER VANS THAN SHOWN. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT FOR TRAILERS EQUIPPED WITH VARIOUS TYPES OF SELF CONTAINED MECHANICAL BRACING DEVICES ARE LIMITED TO HIGHWAY MOVEMENTS ONLY. THE HEIGHT REQUIREMENTS SPECIFIED WITHIN THIS DRAWING FOR THE INSTALLATION OF CROSS MEMBERS ARE IDENTICAL WITH THOSE RECOMMENDED BY THE BUREAU OF EXPLOSIVES PAMPHLET 6C, AND APPENDICES THERETO. **CAUTION:** TRAILERS EQUIPPED WITH WALL MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
1. PALLET UNITS SHOULD BE LOADED TIGHTLY AGAINST EACH OTHER AND/OR AGAINST INSTALLED CROSS MEMBERS. VOIDS LENGTHWISE WITHIN A LOAD SHOULD BE MINIMUM. CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE WALL MEMBER LOCKING HOLE SPACING PERMITS. EACH CROSS MEMBER WILL BE INSTALLED WITH EACH END ATTACHED AS NEARLY AS POSSIBLE IN A "MATED" POSITION (AT EQUAL HEIGHTS, AND AT EQUAL DISTANCES FROM THE END OF THE TRAILER).
- CROSS MEMBERS IN EMPTY TRAILERS AND THOSE UNUSED IN LOADED TRAILERS MUST BE "SECURED" FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH TRAILER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
- ONE (1) CROSS MEMBER WILL BE REQUIRED FOR EACH 10,000 POUNDS OF LADING, AND SHOULD NOT BE RELIED UPON TO RETAIN A GREATER WEIGHT. CROSS MEMBERS WILL NOT BE DOUBLED; THAT IS, TWO CROSS MEMBERS AT THE SAME HEIGHT LOCATION WILL NOT BE PLACED SIDE BY SIDE.
- E. 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.
- F. 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 SEMI-TRAILER 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.
- G. **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.
- H. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 42,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF HEAVIER LOADS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.
- J. 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.
- K. 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. OMIT CROSS-MEMBERS IN THE FORWARD END OF MECHANICAL VAN TRAILERS HAVING A SQUARE FRONT.
- L. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE "SHIPMENT OF A PARTIAL PALLET UNIT" DETAIL AND SPECIAL NOTES ON PAGE 20. FOR "SHIPMENT OF LEFTOVER CONTAINERS", SEE THE DETAILS AND SPECIAL NOTES ON PAGE 19.
- M. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 25 FOR GUIDANCE.
- N. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCDURAL 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.
- O. **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 ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- P. 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.
- Q. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, END WALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- R. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- 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 0.454KG.
- T. THE PALLET UNITS DEPICTED ON PAGE 3 MAY BE LOADED AS A MIXED LOAD IN THE SAME TRAILER. FOR MIXED-HEIGHT LOADS, POSITION ALL PALLET UNITS OF ONE HEIGHT IN FULL LAYERS OF ONE HEIGHT IN ONE LAYER, WITH THE TALLER UNITS BEING 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 TRAILER WITH THE SHORTER UNITS IN THE REAR PORTION.

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## MATERIAL SPECIFICATIONS

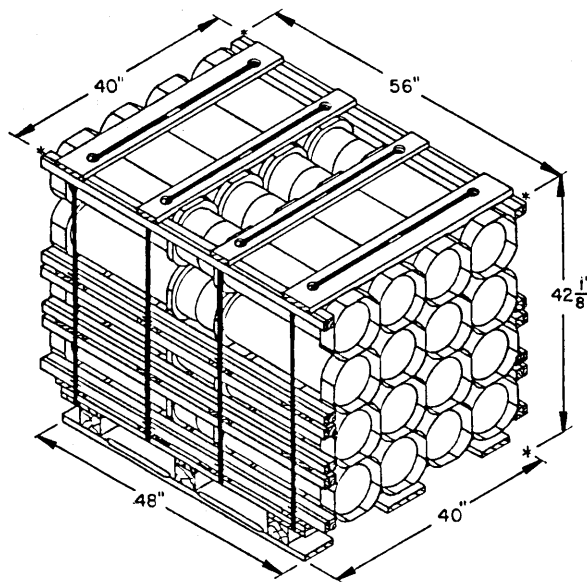
<u>LUMBER</u> -----	SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751
<u>NAILS</u> -----	FED SPEC FF-N-105; COMMON
<u>STRAPPING, STEEL</u> -----	FED SPEC QQ-S-781; CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
<u>SEAL, STRAP</u> -----	FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H, FINISH A, B, (GRADE 2), OR C.
<u>WIRE</u> -----	FED SPEC QQ-W-461
<u>TYGARD</u> -----	POLYESTER YARN, 1,100 POUNDS/INCH OR WIDTH STRENGTH.
<u>ADHESIVE</u> -----	TYGARD ADHESIVE.
<u>PLYWOOD</u> -----	GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.



**PALLET UNIT ( BASIC HEIGHT )**

CONTAINER ----- 40 EACH @ 48 LBS ( APPROX )  
 CUBE ----- 66.3 CUBIC FEET ( APPROX )  
 GROSS WEIGHT ----- 2,142 LBS ( APPROX )

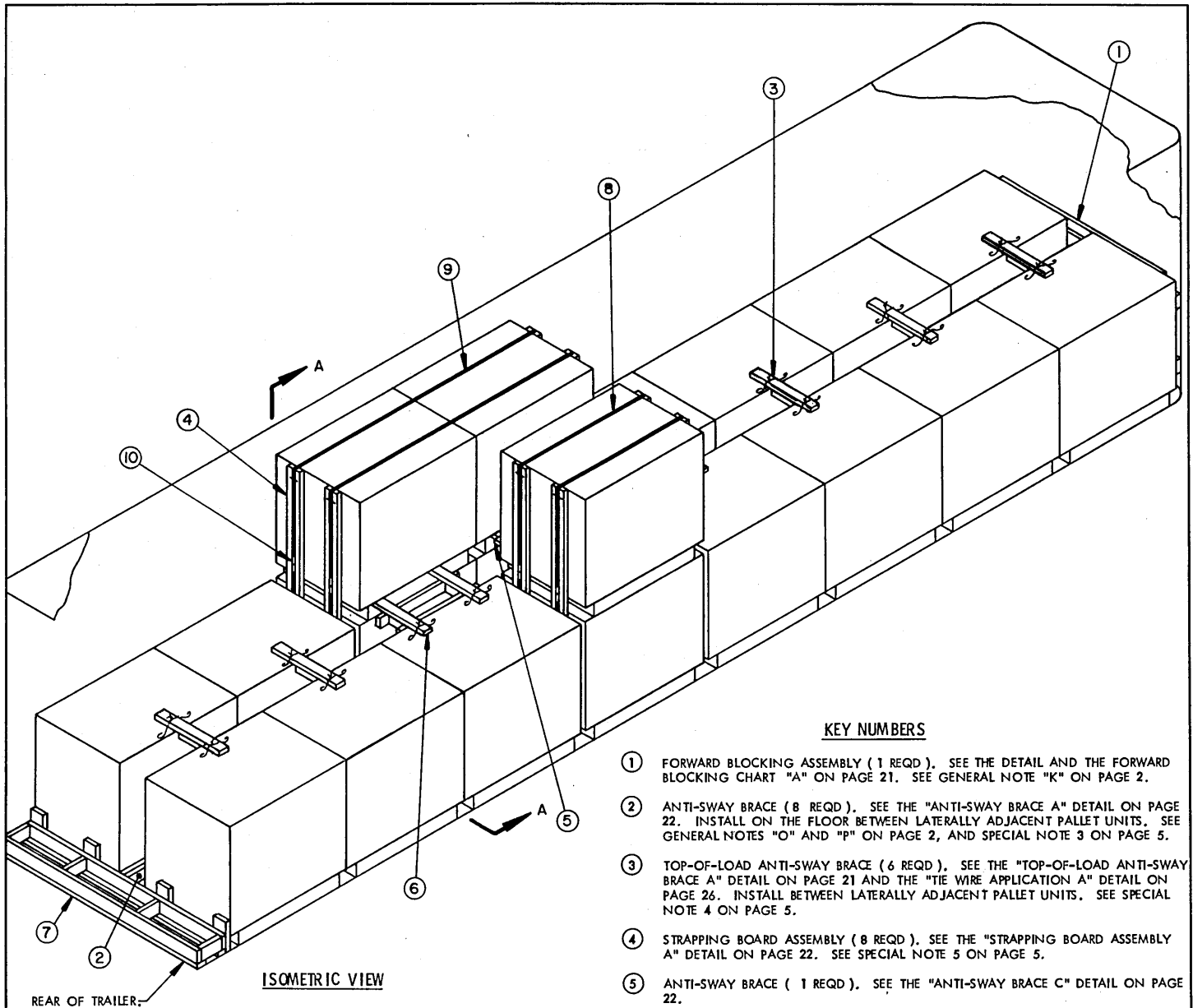
REFER TO PAGES 4 THRU 9 AND 14 AND 15 FOR  
 OUTLOADING PROCEDURES.



**PALLET UNIT ( DECREASED HEIGHT )**

CONTAINER ----- 32 EACH @ 48 LBS ( APPROX )  
 CUBE ----- 54.6 CUBIC FEET ( APPROX )  
 GROSS WEIGHT ----- 1,727 LBS ( APPROX )

REFER TO PAGES 10 THRU 15 FOR OUTLOADING PROCEDURES.

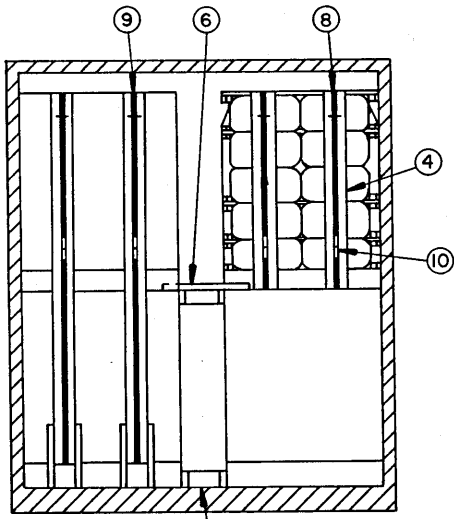


ISOMETRIC VIEW

REAR OF TRAILER

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY ( 1 REQD ). SEE THE DETAIL AND THE FORWARD BLOCKING CHART "A" ON PAGE 21. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE ( 8 REQD ). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "O" AND "P" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 5.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE ( 6 REQD ). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 21 AND THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 26. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 5.
- ④ STRAPPING BOARD ASSEMBLY ( 8 REQD ). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 5 ON PAGE 5.
- ⑤ ANTI-SWAY BRACE ( 1 REQD ). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22.
- ⑥ TOP-OF-LOAD ANTI-SWAY BRACE ( 1 REQD ). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. POSITION WITH ONE END OF THE SUPPORT PIECES AGAINST THE PALLET POSTS AND WIRE TIE THE OTHER ENDS OF THE SUPPORT PIECES TO THE TOP DUNNAGE ASSEMBLY AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 26. SEE SPECIAL NOTE 6 ON PAGE 5.
- ⑦ REAR BLOCKING ASSEMBLY ( 1 REQD ). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 24 AND SPECIAL NOTE 7 ON PAGE 5.
- ⑧ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING ( 2 REQD ). INSTALL SO AS TO ENCIRCLE A PALLET UNIT STACK AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN, STAPLE TO THE UPPER PORTION OF THE STRAPPING BOARD ASSEMBLY, PIECE MARKED ④ , W/1 STAPLE. SEE SPECIAL NOTES 8 AND 10 ON PAGE 5.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 37'-0" LONG STEEL STRAPPING ( 2 REQD ). INSTALL SO AS TO ENCIRCLE TWO ( 2 ) PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES AS SHOWN . STAPLE TO TOP OF STRAPPING BOARD ASSEMBLY, PIECE MARKED ④ , W/1 STAPLE. SEE SPECIAL NOTE 9 ON PAGE 5.
- ⑩ SEAL FOR 1-1/4" STRAPPING ( 8 REQD, 2 PER STRAP ). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION A-A

PALLET UNIT ( BASIC HEIGHT )  
 19- UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER

( SPECIAL NOTES CONTINUED )

SPECIAL NOTES:

11. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
12. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SEVEN ( 7 ) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.
13. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 16 AND 17.
14. IF THE TRAILER BEING LOADED DOES NOT HAVE A DOOR OPENING HEIGHT OF AT LEAST 8'-9" IT WILL BE NECESSARY TO LIMIT THE REARMOST LOAD UNIT TO ONE PALLET UNIT IN HEIGHT.
15. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 28 AND 29 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN CONVENTIONAL VAN TRAILERS EQUIPPED WITH HINGED DOORS.

1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE ( INSIDE DIMENSION ) HI-VOLUME VAN TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED. SEE SPECIAL NOTE 14.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 4 IS THE BASIC HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 51-1/8" HIGH AND WEIGHING APPROXIMATELY 2,142 POUNDS.
3. IF THE SPACE BETWEEN THE ROWS OF PALLET UNITS PERMITS, AND IF DESIRED, ANTI-SWAY BRACE "C", AS DETAILED ON PAGE 22, MAY BE USED IN LIEU OF PIECE MARKED ② .
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 4, ARE TO BE POSITIONED BETWEEN ALL LATERALLY ADJACENT TOP-LAYER PALLET UNITS; HOWEVER, IF THE PALLET UNIT IN THE SECOND LAYER IS UNITIZED TO THE CORRESPONDING PALLET UNIT IN THE FIRST LAYER, A TOP-OF-LOAD ANTI-SWAY BRACE WILL NOT BE REQUIRED.
5. 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 27.
6. THE TOP-OF-LOAD ANTI-SWAY BRACE "B", SHOWN IN THE LOAD AS PIECE MARKED ⑥ , IS ONLY REQUIRED FOR THE BRACING OF AN ODD UNIT IN THE SECOND LAYER. IF ANOTHER PALLET UNIT IS POSITIONED OPPOSITE THE ODD UNIT, THE ANTI-SWAY BRACE "C", SHOWN AS PIECE MARKED ⑤ , WILL BE INSTALLED IN LIEU OF PIECE MARKED ⑥ .
7. 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 25. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" PIECE MARKED ⑦ ON PAGE 4. SEE SPECIAL NOTE 15.
8. 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. FOR THE DEPICTED LOAD, ONE STACK IS BUNDLED TO AN ADJACENT STACK IN LIEU OF UNITIZING. THE UNITIZING STRAPS, PIECE MARKED ⑧ , AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ④ , MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
9. 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 ⑨ , MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO ( 2 ) STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ④ , IN EACH APPLICABLE ROW.
10. 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 AND ⑧ . PROVIDE LATERAL BRACING BY INSTALLING A TOP-OF-LOAD ANTI-SWAY BRACE "B", PIECE MARKED ⑥ .

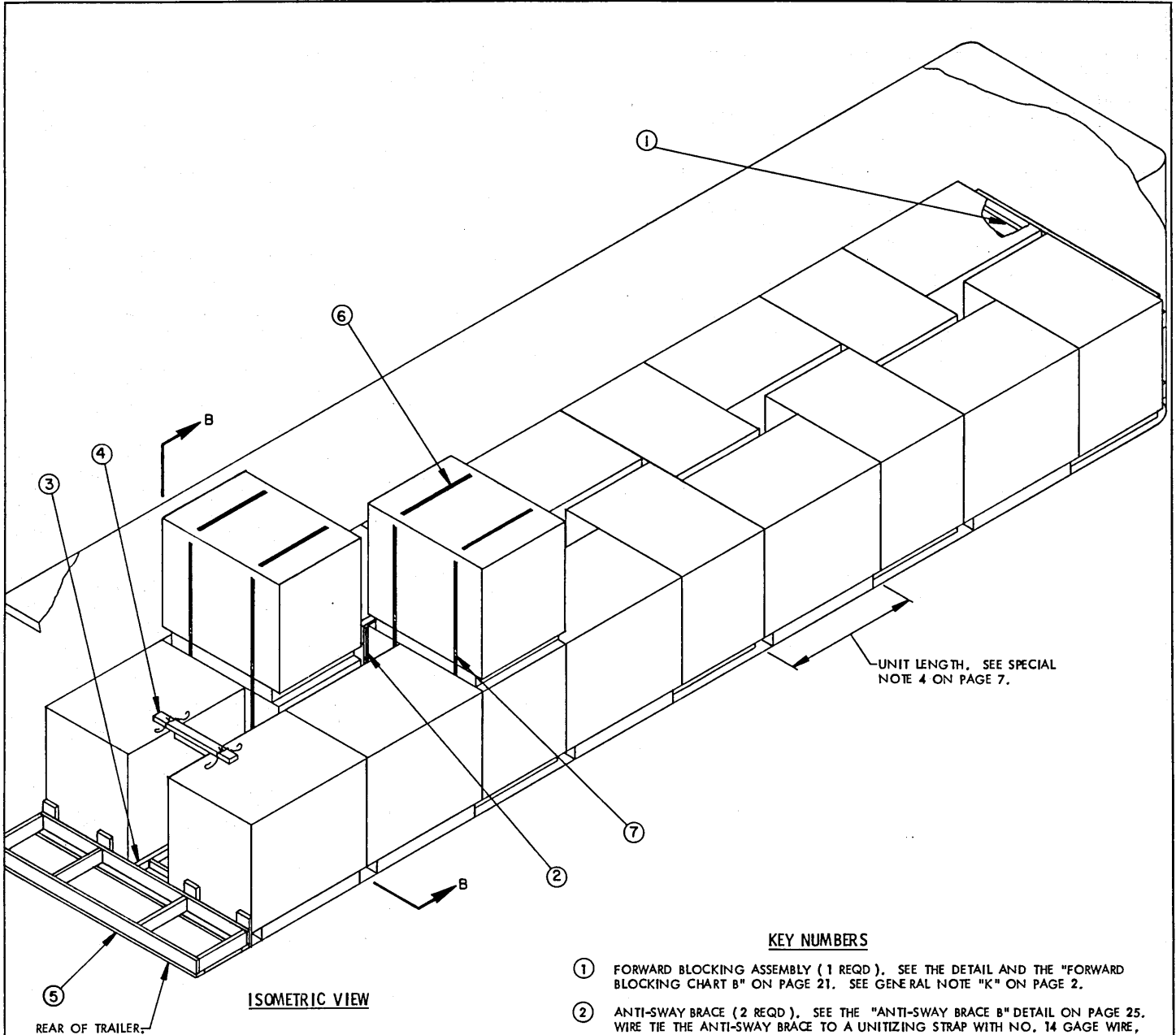
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BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	22	8
2" X 4"	176	118
2" X 6"	120	120
NAILS	NO. REQD	POUNDS
10d ( 3" )	330	5-1/4
STEEL STRAPPING, 1-1/4" X .035" OR .031"	130' REQD	19 LBS
SEAL FOR 1-1/4" STRAPPING	8 REQD	NIL
WIRE, NO. 14 GAGE	70' REQD	1 LB
STAPLE	8 REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT	19	40,698 LBS
DUNNAGE		518 LBS
TOTAL WEIGHT		41,216 LBS

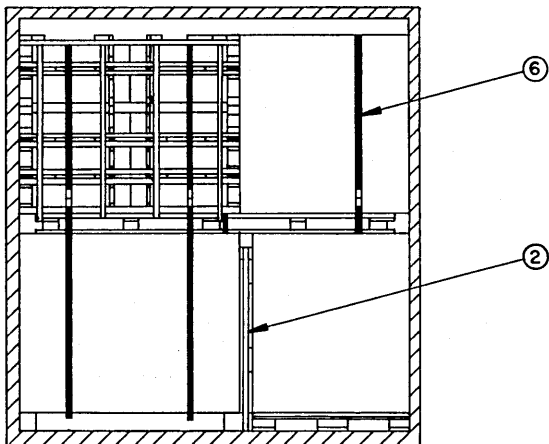
PALLET UNIT ( BASIC HEIGHT )  
19-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER



ISOMETRIC VIEW

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART B" ON PAGE 21. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 25. WIRE TIE THE ANTI-SWAY BRACE TO A UNITIZING STRAP WITH NO. 14 GAGE WIRE. SEE GENERAL NOTES "O" AND "P" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 7.
- ③ ANTI-SWAY BRACE (1 REQD). POSITION AS SHOWN. SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22.
- ④ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). POSITION AS SHOWN; SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 21, AND THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 26.
- ⑤ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 24. SEE SPECIAL NOTE 5 ON PAGE 7.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (4 REQD). THREAD BEHIND THE 2" X 2" STOPPIECES OF THE TOP DUNNAGE ASSEMBLY. INSTALL AS SHOWN TO ENCIRCLE TWO PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 7.
- ⑦ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION B-B

(PALLET UNIT (BASIC HEIGHT)  
 20-UNIT LOAD (CHIMNEY PATTERN) IN A 40'-0" LONG BY 8'-3" WIDE HI-VOLUME VAN TRAILER

**SPECIAL NOTES:**

1. A 20-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 8'-3" WIDE ( INSIDE DIMENSION ) HI-VOLUME VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. A "CHIMNEY" TYPE LOADING PATTERN IS SHOWN. TRAILERS AS NARROW AS 8'-1" MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 6 IS THE BASIC HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 51-1/8" HIGH AND WEIGHING APPROXIMATELY 2,142 POUNDS.
3. ANTI-SWAY BRACE "B", SHOWN AS PIECE MARKED (2) , MUST BE ADJUSTED IN THICKNESS WHEN TRAILERS OTHER THAN 8'-3" WIDE ARE BEING LOADED. REFER TO THE NOTE BENEATH THE DETAIL ON PAGE 25 FOR GUIDANCE. NOTE THAT PIECE MARKED (2) , IS ONLY REQUIRED WHEN A 2-HIGH PALLET STACK IS LOADED LATERALLY ADJACENT TO A 1-HIGH PALLET STACK, AS SHOWN, TO PREVENT TIPPING OF THE 2-HIGH STACK.
4. FOR THE DEPICTED LOAD, PALLET UNITS IN THE SECOND LAYER WILL BE UNITIZED TO "LENGTHWISE" POSITIONED PALLET UNITS IN THE FIRST LAYER. IF MORE PALLET UNITS ARE TO BE LOADED IN THE SECOND LAYER, OR IF DESIRED, THE "CHIMNEY" PATTERN PROCEDURES SHOWN ON PAGE 12 MAY BE USED IN LIEU OF THE DEPICTED PROCEDURES.
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 SHOWN ON PAGE 25. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY, PIECE MARKED (5) , ON PAGE 6.
6. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
7. LEFTOVER CONTAINERS, IN AN AMOUNT NOT TO EXCEED SEVEN (7) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.
8. SEE PAGE 4 FOR AN ALTERNATIVE LOADING PATTERN.
9. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 16 AND 17.
10. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 28 AND 29 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN. 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**

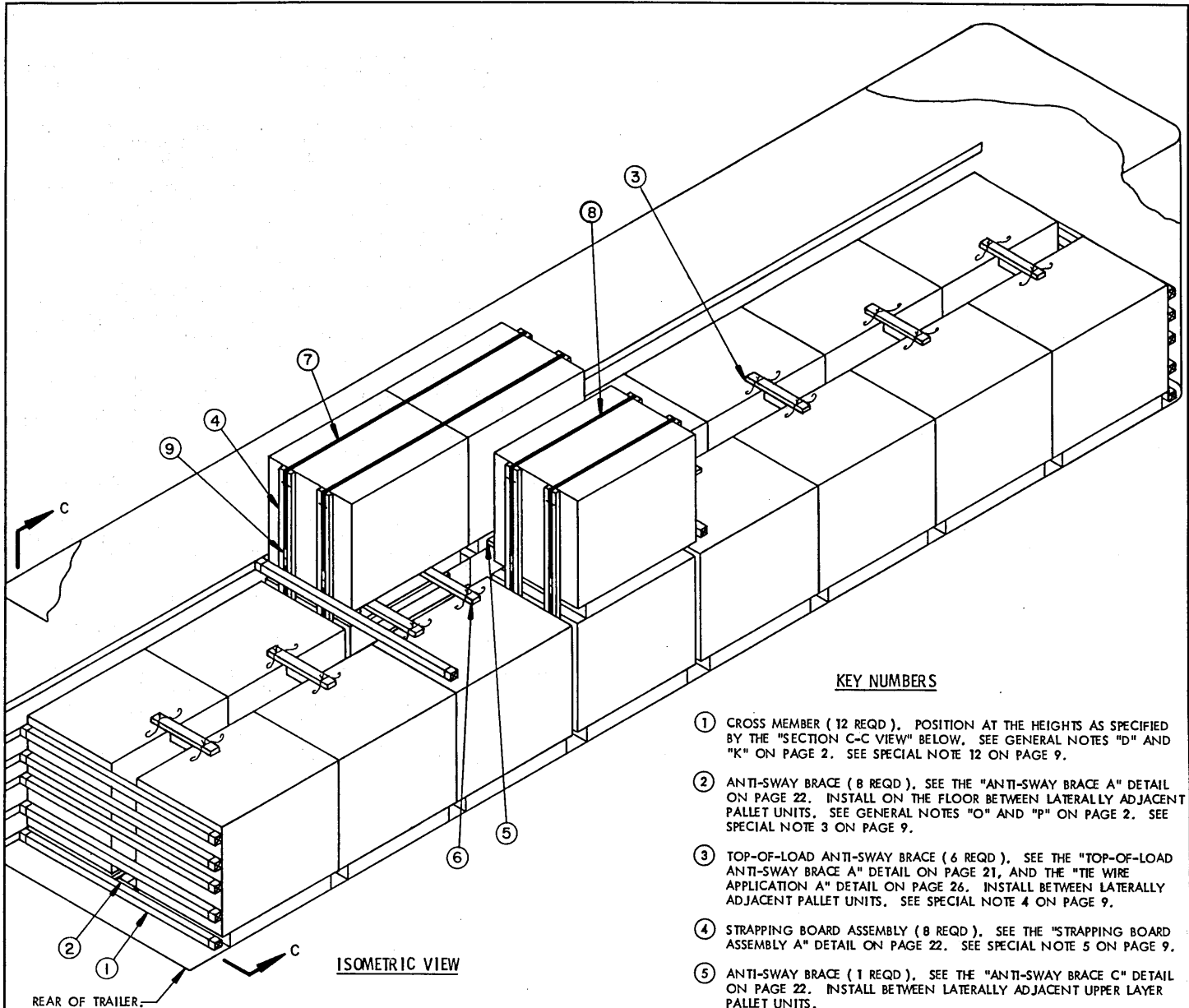
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	14	7
2" X 4"	48	32
2" X 6"	75	75
NAILS	NO. REQD	POUNDS
6d (2")	24	1/4
10d (3")	108	1-3/4
STEEL STRAPPING, 1-1/4" X .035" OR .031" ----	100' REQD ----	15 LBS
SEAL FOR 1-1/4" STRAPPING -----	8 REQD ----	NIL
WIRE, NO. 14 GAGE -----	20' REQD ----	NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	20 -----	42,840 LBS
DUNNAGE -----		245 LBS

TOTAL WEIGHT -- 43,085 LBS

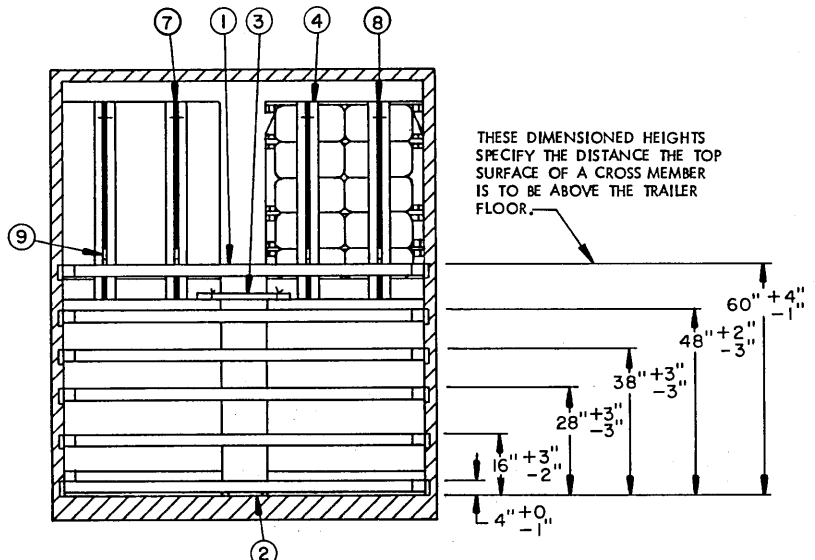
PALLET UNIT ( BASIC HEIGHT )  
 20-UNIT LOAD ( CHIMNEY PATTERN ) IN A 40'-0" LONG BY 8'-3" WIDE HI-VOLUME VAN TRAILER



**KEY NUMBERS**

- ① CROSS MEMBER (12 REQD). POSITION AT THE HEIGHTS AS SPECIFIED BY THE "SECTION C-C VIEW" BELOW, SEE GENERAL NOTES "D" AND "K" ON PAGE 2. SEE SPECIAL NOTE 12 ON PAGE 9.
- ② ANTI-SWAY BRACE (8 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS, SEE GENERAL NOTES "O" AND "P" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 9.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 21, AND THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 26. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 9.
- ④ STRAPPING BOARD ASSEMBLY (8 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 5 ON PAGE 9.
- ⑤ ANTI-SWAY BRACE (1 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT UPPER LAYER PALLET UNITS.
- ⑥ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. POSITION WITH ONE END OF THE SUPPORT PIECES AGAINST THE PALLET POSTS AND WIRE TIE THE OTHER END OF SUPPORT PIECES TO THE TOP DUNNAGE ASSEMBLY OF UNIT AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 26. SEE SPECIAL NOTE 6 ON PAGE 9.
- ⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 37'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS IN THE SECOND LAYER AND TWO (2) UNITS DIRECTLY BELOW AS SHOWN. STAPLE TO A STRAPPING BOARD ASSEMBLY, PIECE MARKED ④, W/1 STAPLE. SEE SPECIAL NOTE 7 ON PAGE 9.
- ⑧ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS. SEE SPECIAL NOTE 7 ON PAGE 9. STAPLE TO A 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 "M" ON PAGE 2.

**ISOMETRIC VIEW**



THESE DIMENSIONED HEIGHTS SPECIFY THE DISTANCE THE TOP SURFACE OF A CROSS MEMBER IS TO BE ABOVE THE TRAILER FLOOR.

**SECTION C-C**

**PALLET UNIT (BASIC HEIGHT)**

**19-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME VAN TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES**



**SPECIAL NOTES:**

1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE ( INSIDE DIMENSION ) HI-VOLUME VAN TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. TRAILERS OF OTHER DIMENSIONS MAY BE USED. SEE SPECIAL NOTE 11.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 8 IS THE BASIC HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 51-1/8" HIGH AND WEIGHING APPROXIMATELY 2,142 POUNDS.
3. IF THE SPACE BETWEEN THE ROWS OF PALLET UNITS PERMITS, AND IF DESIRED, ANTI-SWAY BRACE "C", AS DETAILED ON PAGE 22, MAY BE USED IN LIEU OF PIECE MARKED ② .
4. TOP-OF-LOAD ANTI-SWAY BRACES SHOWN AS PIECE MARKED ③ ARE TO BE POSITIONED BETWEEN ALL UPPER-LAYER PALLET UNITS. HOWEVER, IF THE PALLET UNITS IN THE SECOND LAYER ARE UNITIZED TO THE CORRESPONDING PALLET UNIT IN THE FIRST LAYER, A TOP-OF-LOAD ANTI-SWAY BRACE WILL NOT BE REQUIRED.
5. 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 27.
6. TOP-OF-LOAD ANTI-SWAY BRACE "B", SHOWN IN THE LOAD AS PIECE MARKED ⑤ , IS ONLY REQUIRED FOR THE BRACING OF AN ODD UNIT IN THE SECOND LAYER. IF ANOTHER PALLET UNIT IS POSITIONED OPPOSITE THE ODD UNIT THE ANTI-SWAY BRACE "C" WILL BE INSTALLED IN LIEU OF PIECE MARKED ⑥ .
7. 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 USING STRAPPING BOARD ASSEMBLIES, PIECE MARKED ④ , AND EITHER BUNDLING STRAPS OR STACK UNITIZING STRAPS, PIECES MARKED ⑦ OR ⑧ .
8. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
9. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SEVEN ( 7 ) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.
10. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 18.
11. IF THE TRAILER BEING LOADED DOES NOT HAVE A DOOR OPENING HEIGHT OF AT LEAST 8'-9" IT WILL BE NECESSARY TO LIMIT THE REARMOST LOAD UNIT TO ONE PALLET UNIT IN HEIGHT, OR TO LOCATE THE SECOND-LAYER PORTION FURTHER AHEAD IN THE LOAD.
12. IF THE TRAILER BEING LOADED IS EQUIPPED ONLY WITH SHORT WALL MEMBERS AT THE REAR FOR ATTACHMENT OF THE CROSS MEMBERS, THE CROSS MEMBERS LOCATED AT THE FRONT OF THE TRAILER WILL BE OMITTED.

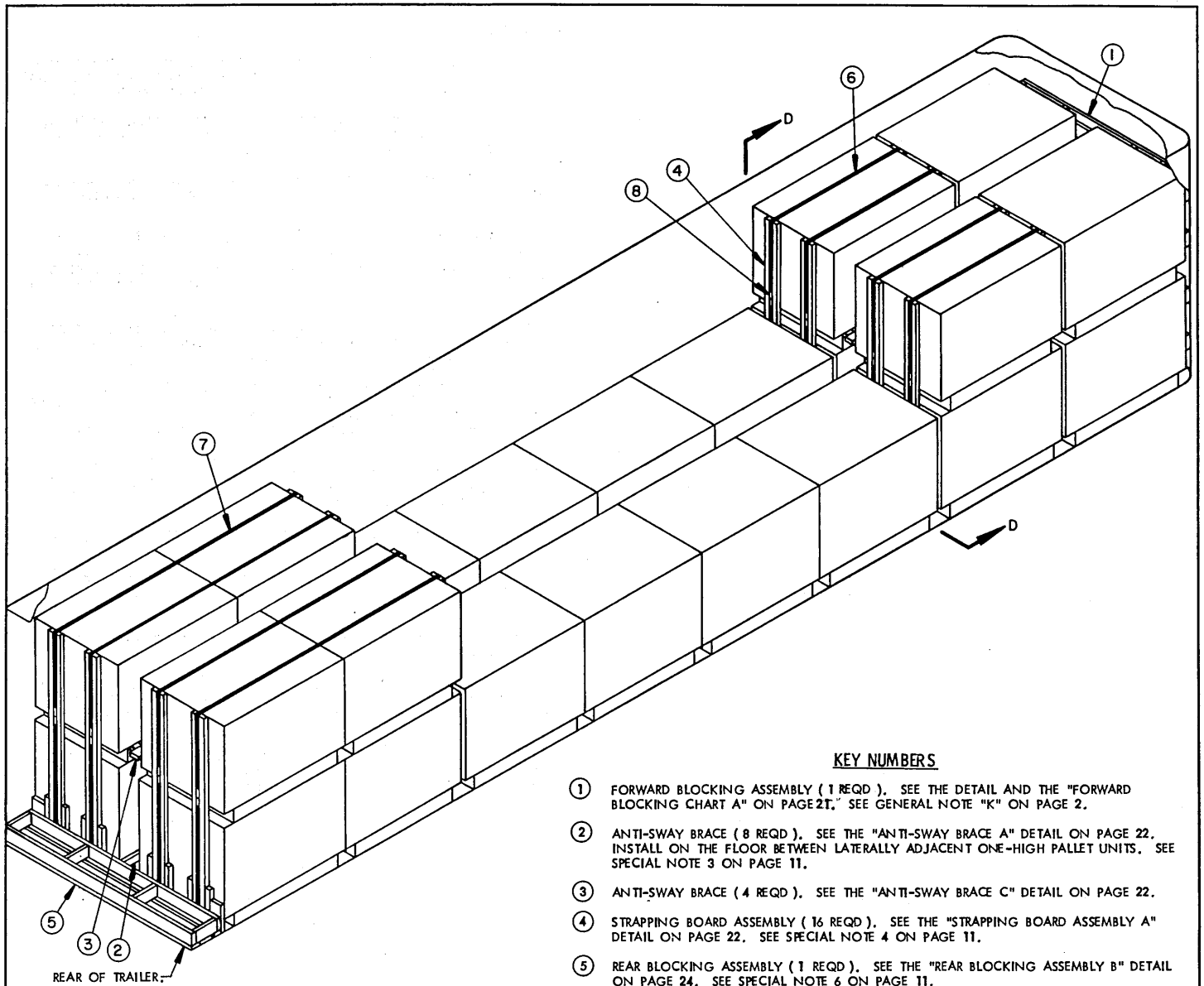
**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	22	8
2" X 4"	144	96
2" X 6"	69	69
NAILS	NO. REQD	POUNDS
10d ( 3" )	234	3-3/4
STEEL STRAPPING, 1-1/4" X .035" OR .031" -----	130' REQD	19 LBS
SEALS FOR 1-1/4" STRAPPING -----	8 REQD	NIL
NO. 14 GAGE WIRE -----	70' REQD	1 LB
STAPLE -----	8 REQD	NIL
CROSS MEMBER -----		12 REQD

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	19	40,698 LBS
DUNNAGE -----		356 LBS
TOTAL WEIGHT -----		41,035 LBS

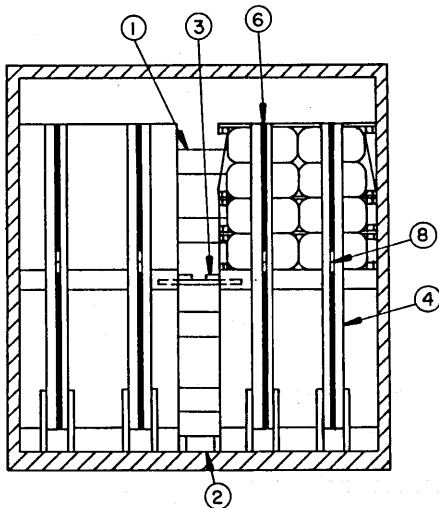
PALLET UNIT ( BASIC HEIGHT )  
 19-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE HI-VOLUME TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY ( 1 REQD ). SEE THE DETAIL AND THE "FORWARD BLOCKING CHART A" ON PAGE 22. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE ( 8 REQD ). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT ONE-HIGH PALLET UNITS. SEE SPECIAL NOTE 3 ON PAGE 11.
- ③ ANTI-SWAY BRACE ( 4 REQD ). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22.
- ④ STRAPPING BOARD ASSEMBLY ( 16 REQD ). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 4 ON PAGE 11.
- ⑤ REAR BLOCKING ASSEMBLY ( 1 REQD ). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 24. SEE SPECIAL NOTE 6 ON PAGE 11.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .031" OR .035" X 34'-0" LONG STEEL STRAPPING ( 4 REQD ). INSTALL SO AS TO ENCIRCLE TWO ( 2 ) PALLET UNITS. SEE SPECIAL NOTE 7 ON PAGE 11; STAPLE TO A STRAPPING BOARD ASSEMBLY, PIECE MARKED ④, W/1 STAPLE.
- ⑦ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 34'-0" LONG STEEL STRAPPING ( 4 REQD ). INSTALL SO AS TO ENCIRCLE TWO ( 2 ) PALLET UNITS IN THE SECOND LAYER AND TWO ( 2 ) UNITS DIRECTLY BELOW AS SHOWN. SEE SPECIAL NOTE 8 ON PAGE 11. STAPLE TO A STRAPPING BOARD ASSEMBLY, PIECE MARKED ④, W/1 STAPLE.
- ⑧ SEAL FOR 1-1/4" STRAPPING ( 16 REQD, 2 PER STRAP ). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION D-D

PALLET UNIT ( DECREASED HEIGHT )

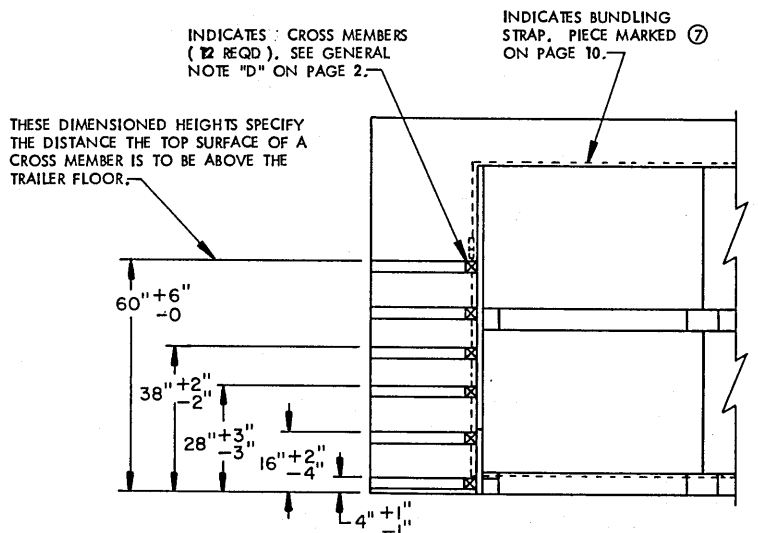
24-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE CONVENTIONAL VAN TRAILER

( SPECIAL NOTES CONTINUED )

9. 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 AND ⑤. PROVIDE LATERAL BRACING BY INSTALLING A TOP-OF-LOAD ANTI-SWAY BRACE "B", SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 8 AND DETAILED ON PAGE 22. WIRE TIE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 26.
10. IF THE TRAILER BEING OUTLOADED CONTAINS MECHANICAL BRACING DEVICES, SUCH AS WALL BELT RAILS AND LOADBLOCKING CROSS MEMBERS, WHICH CONFORM TO SPECIFICATIONS SET FORTH WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C AND APPENDICES THERETO, THEY MAY BE USED AT THE REAR OF THE LOAD AS SHOWN IN THE "PARTIAL ELEVATION VIEW" ON THIS PAGE. THE MECHANICAL BRACING DEVICE SYSTEM OF A TRAILER MUST HAVE A LENGTH OF AT LEAST 38'-6" AS MEASURED FROM THE FRONT WALL OF THE TRAILER. SEE GENERAL NOTES "D" AND "K" ON PAGE 2.
11. IF THE TRAILER BEING OUTLOADED CONTAINS MECHANICAL BRACING DEVICES, AND HAS ROUNDED FRONT CORNERS, INSTALL CROSS MEMBERS AT THE FRONT OF THE LOAD IN LIEU OF USING THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①.
12. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
13. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SEVEN (7), MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.
14. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 16 AND 17 FOR CONVENTIONAL VAN TRAILERS AND PAGE 18 FOR MECHANICAL VAN TRAILERS.

SPECIAL NOTES :

1. A 24-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE ( INSIDE DIMENSION ) CONVENTIONAL VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. WIDER OR NARROWER TRAILERS MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 10 IS THE DECREASED HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 42-1/8" HIGH AND WEIGHING APPROXIMATELY 1,727 POUNDS.
3. IF DESIRED, ANTI-SWAY BRACE "C" WHICH IS SHOWN AS PIECE MARKED ③ AND USED BETWEEN THE LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER MAY ALSO BE USED BETWEEN THE PALLET UNITS IN THE FIRST LAYER IN LIEU OF ANTI-SWAY BRACE "A". THE STOP PIECE ON THE FORWARD BLOCKING ASSEMBLY MAY THEN BE OMITTED.
4. 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 27.
5. IN LIEU OF USING A TOP-OF-LOAD ANTI-SWAY BRACE "B" FOR THE BRACING OF A PALLET UNIT IN THE SECOND LAYER THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE, THE ODD PALLET MAY BE SECURED BY ENCIRCLING THAT STACK AND AN IMMEDIATELY ADJACENT STACK WITH STRAPPING BOARD ASSEMBLIES AND BUNDLING STRAPS, PIECES MARKED ④ AND ⑦.
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" DETAILED ON PAGE 25. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY "B" AS SHOWN. SEE SPECIAL NOTE 15.
7. 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 ⑥, AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ④, MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
8. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IN A CONVENTIONAL VAN TRAILER IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑦, MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO (2) STACKS AND TWO PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ④, IN EACH APPLICABLE ROW.



PARTIAL ELEVATION VIEW

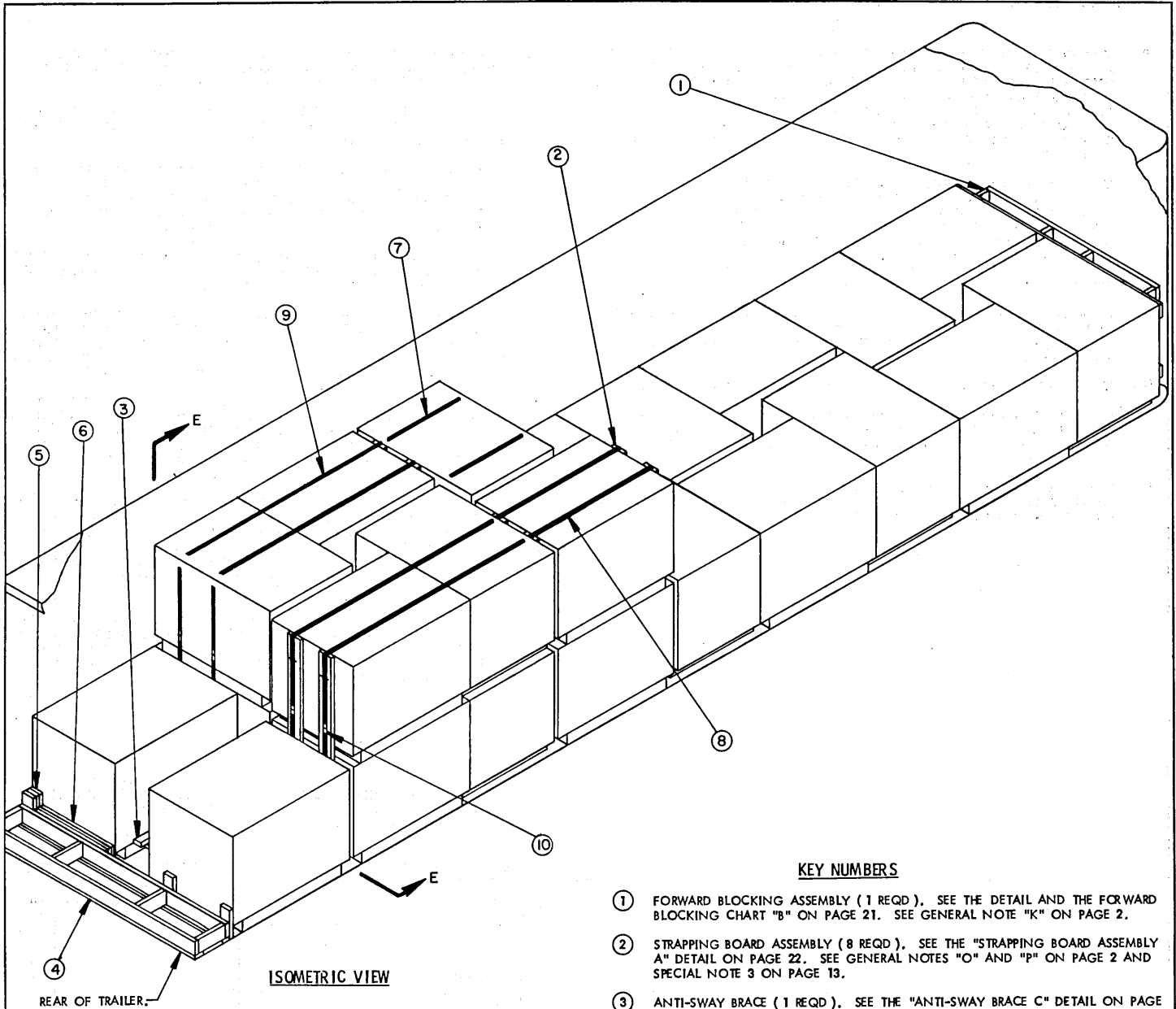
THE VIEW SHOWN ABOVE INDICATES THE REAR PORTION OF THE LOAD SHOWN ON PAGE 10. SEE SPECIAL NOTES 10 AND 11 ON THIS PAGE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	43'	15
2" X 4"	185	124
2" X 6"	189	189
NAILS	NO. REQD	POUNDS
10d ( 3" )	400	6-1/4
STEEL STRAPPING, 1-1/4" X .035" OR .031" ---		236' REQD --- 34 LBS
SEAL FOR 1-1/4" STRAPPING -----		16 REQD --- 1 LB
STAPLE -----		16 REQD --- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	24 -----	41,448 LBS
DUNNAGE -----		698 LBS
TOTAL WEIGHT -----		42,146 LBS

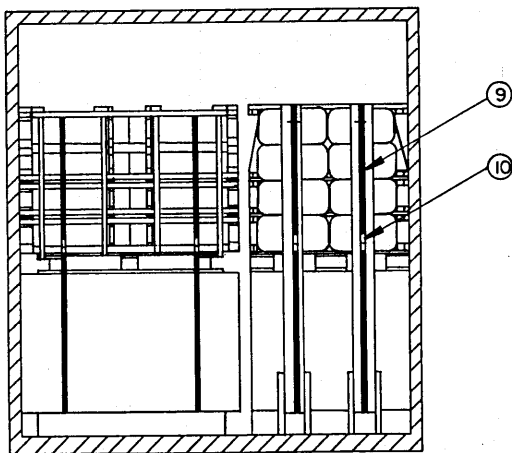
1 PALLET UNIT ( DECREASED HEIGHT )  
24-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE CONVENTIONAL VAN TRAILER



ISOMETRIC VIEW

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY ( 1 REQD ). SEE THE DETAIL AND THE FORWARD BLOCKING CHART "B" ON PAGE 21. SEE GENERAL NOTE "K" ON PAGE 2.
- ② STRAPPING BOARD ASSEMBLY ( 8 REQD ). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 22. SEE GENERAL NOTES "O" AND "P" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 13.
- ③ ANTI-SWAY BRACE ( 1 REQD ). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22.
- ④ REAR BLOCKING ASSEMBLY ( 1 REQD ). SEE THE "REAR BLOCKING ASSEMBLY A" ON PAGE 24 AND SPECIAL NOTE 4 ON PAGE 13.
- ⑤ FILL PIECE, 2" X 6" X 12" ( 2 REQD ). NAIL THE FIRST PIECE TO THE LOAD BEARING PIECE OF PIECE MARKED ④ W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑥ FILL PIECE, 2" X 6" X 34" ( 3 REQD ). NAIL THE FIRST PIECE TO THE HEADER OF PIECE MARKED ④ W/4-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING ( 2 REQD ). THREAD BEHIND 2" X 2" STOP PIECES OF TOP DUNNAGE ASSEMBLY. INSTALL AS SHOWN TO ENCIRCLE TWO PALLET UNITS. SEE SPECIAL NOTE 7 ON PAGE 13.
- ⑧ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING ( 2 REQD ). INSTALL SO AS TO ENCIRCLE A PALLET UNIT STACK AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②, AS SHOWN. STAPLE TO UPPER PORTION OF STRAPPING BOARD ASSEMBLY W/1 STAPLE. SEE SPECIAL NOTE 7 ON PAGE 13.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 32'-0" LONG STEEL STRAPPING ( 4 REQD ). INSTALL SO AS TO ENCIRCLE TWO ( 2 ) PALLET UNIT STACKS AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ②, AS SHOWN. STAPLE TO UPPER PORTION OF STRAPPING BOARD ASSEMBLY W/1 STAPLE. SEE SPECIAL NOTES 6 AND 8 ON PAGE 13.
- ⑩ SEAL FOR 1-1/4" STRAPPING ( 16 REQD, 2 PER STRAP ). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION E-E

PALLET UNIT ( DECREASED HEIGHT )

24-UNIT LOAD ( CHIMNEY PATTERN ) IN A 40'-0" LONG BY 8'-3" WIDE CONVENTIONAL VAN TRAILER

**SPECIAL NOTES:**

1. A 24-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 8'-3" WIDE ( INSIDE DIMENSION ) VAN TRAILER WHICH HAS ROUNDED FRONT CORNERS. A "CHIMNEY" TYPE LOADING PATTERN IS SHOWN. TRAILERS AS NARROW AS 8'-1" MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 12 IS THE DECREASED HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 42-1/8" HIGH AND WEIGHING APPROXIMATELY 1,727 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 27.
4. 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 SHOWN ON PAGE 25. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY, PIECE MARKED ④ , ON PAGE 12 . SEE SPECIAL NOTE 14.
5. IF A ONE-LAYER CHIMNEY PATTERN LOAD IS TO BE SHIPPED, PIECES MARKED ② AND PIECES MARKED ⑤ THRU ⑩ WILL NOT BE REQUIRED.
6. A CHIMNEY UNIT AT EACH END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE BUNDLED TO A CHIMNEY UNIT IN THE FIRST LAYER, UNLESS THE STACKED CHIMNEY UNITS ARE AGAINST THE FRONT WALL OF A SQUARE-FRONT TRAILER OR AGAINST THE FORWARD BLOCKING ASSEMBLY. THE BUNDLING STRAPS AND STRAPPING BOARD ASSEMBLIES, PIECES MARKED ② AND ⑧ , MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
7. THE UNITIZING STRAPS, PIECES MARKED ⑦ AND ⑧ , ARE ONLY REQUIRED WHEN SECURING A SINGLE UNIT IN THE SECOND LAYER TO A PALLET UNIT DIRECTLY BENEATH. NOTE THAT STRAPPING BOARD ASSEMBLIES WILL BE REQUIRED WHEN UNITIZING STRAPS ARE APPLIED AROUND THE WIDTH OF THE UNIT ( IN THE SAME DIRECTION AS THE LENGTH OF THE CONTAINERS ).
8. IF A PALLET STACK AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS SHOWN AS PIECE MARKED ⑨ , MUST BE INSTALLED SO AS TO ENCIRCLE THE REAR MOST TWO STACKS IN EACH APPLICABLE ROW, STRAPPING BOARD ASSEMBLIES WILL BE REQUIRED.
9. 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 REAR MOST PALLET UNIT IN THE FIRST LAYER. SECURE AS SHOWN BY PIECES MARKED ⑦ , OR PIECES MARKED ② AND ⑧ . NOTE THAT ANTI-SWAY BRACING WILL BE REQUIRED. SEE KEY NUMBER ② ON PAGE 6 AND SPECIAL NOTE 3 ON PAGE 7 FOR INSTALLATION GUIDANCE.
10. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
11. LEFTOVER CONTAINERS, IN AN AMOUNT NOT TO EXCEED SEVEN ( 7 ) , MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.
12. SEE PAGE 10 FOR AN ALTERNATIVE LOADING PATTERN.
13. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 16 AND 17.
14. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 28 AND 29 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

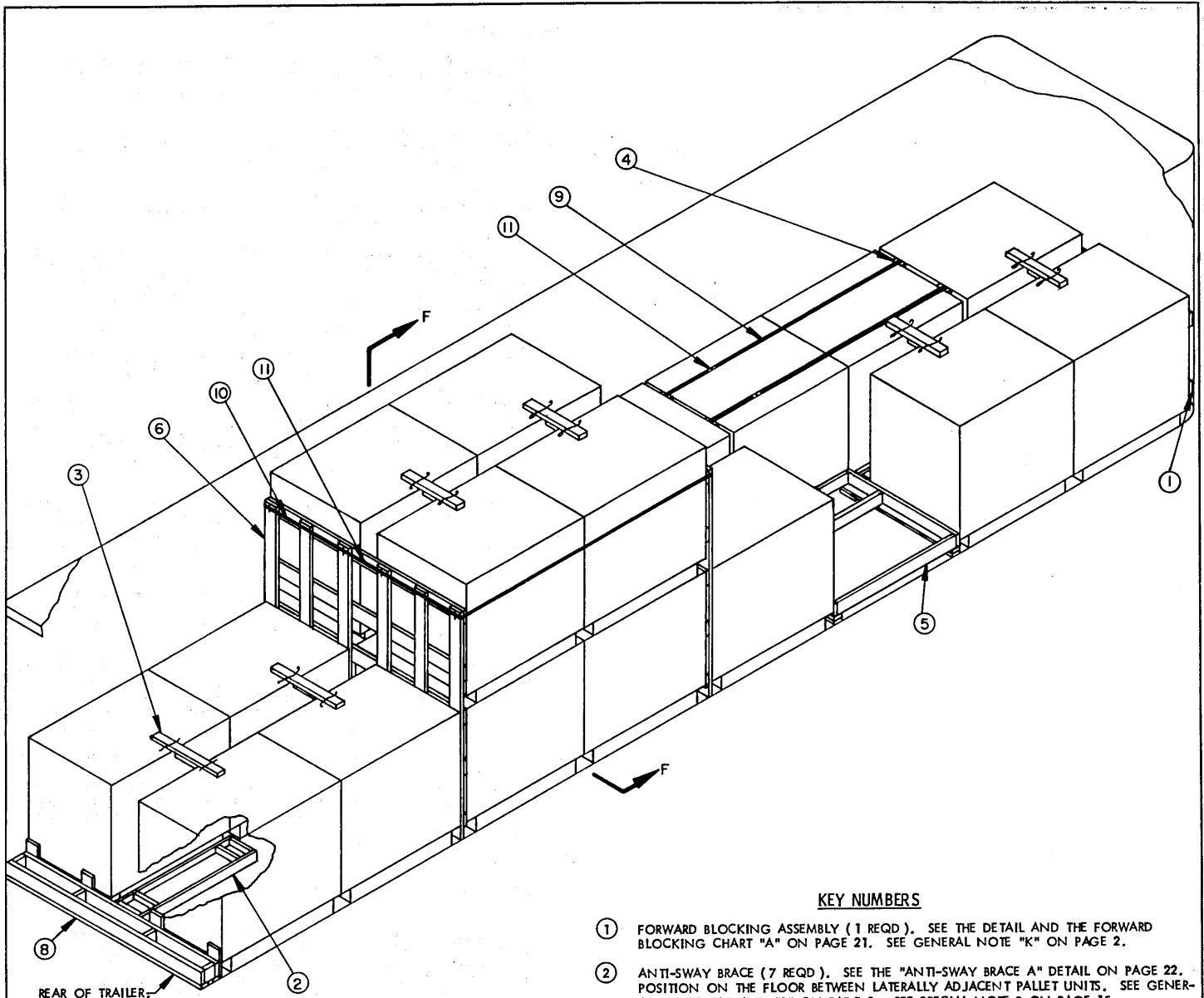
**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	22	8
2" X 4"	42	28
2" X 6"	117	117
NAILS	NO. REQD	POUNDS
10d ( 3" )	168	2-3/4
STEEL STRAPPING, 1-1/4" X .035" OR .031" --- 222' REQD --- 32 LBS		
SEALS FOR 1-1/4" STRAPPING ----- 16 REQD --- 1 LB		
STAPLE ----- 8 REQD --- NIL		

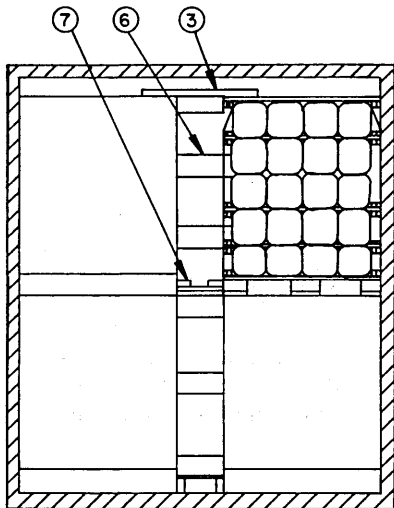
**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	24 -----	41,448 LBS
DUNNAGE -----	-----	342 LBS
TOTAL WEIGHT -----		41,790 LBS

PALLET UNIT ( DECREASED HEIGHT )  
 24-UNIT LOAD ( CHIMNEY PATTERN ) IN A 40'-0" LONG BY 8'-3" WIDE CONVENTIONAL VAN TRAILER



ISOMETRIC VIEW



SECTION F-F

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE FORWARD BLOCKING CHART "A" ON PAGE 21. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "O" AND "P" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 15.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (7 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 21 AND THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 26. SEE SPECIAL NOTE 4 ON PAGE 15.
- ④ STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 5 ON PAGE 15.
- ⑤ SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 23. NAIL TO THE ANTI-SWAY BRACE, PIECE MARKED ②, W/2-10d NAILS. SEE SPECIAL NOTE 6 ON PAGE 15.
- ⑥ BULKHEAD GATE (2 REQD). SEE THE DETAIL AND THE "BULKHEAD GATE CHART" ON PAGE 27.
- ⑦ ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 22. INSTALL BETWEEN THE SECOND LAYER OF LATERALLY ADJACENT PALLET UNITS.
- ⑧ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 24. SEE SPECIAL NOTE 7 ON PAGE 15.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 29'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) ONE-HIGH PALLET UNITS. STAPLE TO A STRAPPING BOARD ASSEMBLY, PIECE MARKED ④, W/1 STAPLE. SEE SPECIAL NOTE 8 ON PAGE 15.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 36'-6" LONG STEEL STRAPPING (1 REQD). INSTALL SO AS TO ENCIRCLE THE TOP UNITS OF THE TWO-HIGH STACKS AND THE BULKHEAD GATES, PIECES MARKED ⑥. STAPLE TO EACH BULKHEAD GATE, PIECE MARKED ⑥, W/4 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 15.
- ⑪ SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

ALTERNATIVE LOADING PROCEDURES FOR ALL UNITS  
19-UNIT LOAD IN A 40'-0" LONG BY 7'-8-1/2" WIDE HI-VOLUME VAN TRAILER

**SPECIAL NOTES:**

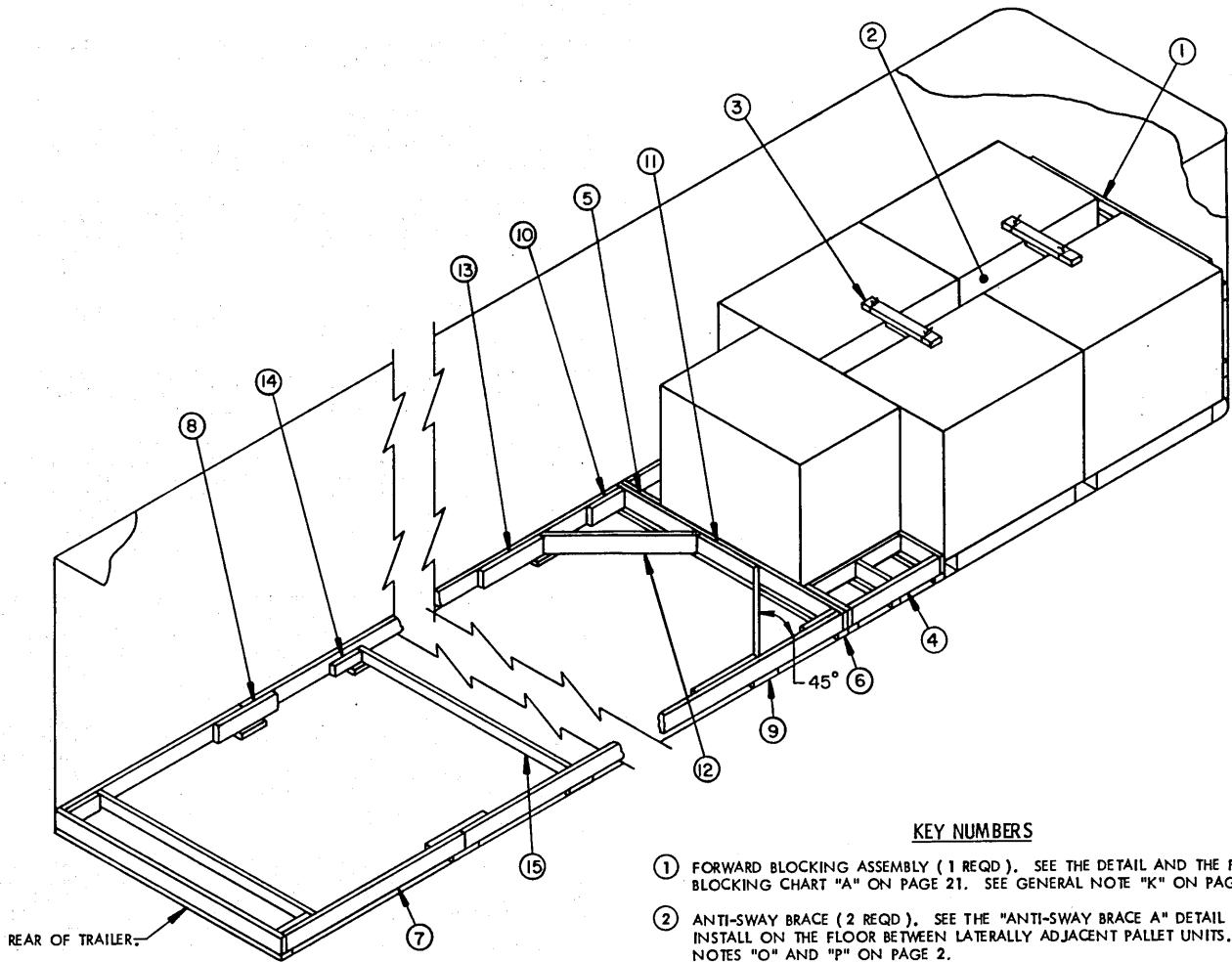
1. A TYPICAL 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8-1/2" WIDE (INSIDE DIMENSION) HI-VOLUME VAN TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 14 IS THE BASIC HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 51-1/8" HIGH AND WEIGHING APPROXIMATELY 2,142 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNIT DEPICTED ON PAGE 3.
3. IF DESIRED, ANTI-SWAY BRACE "C" SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 14 AND USED BETWEEN THE Laterally ADJACENT PALLET UNITS IN THE SECOND LAYER MAY ALSO BE USED BETWEEN THE PALLET UNITS IN THE FIRST LAYER IN LIEU OF ANTI-SWAY BRACE "A". THE STOP PIECES ON THE BULKHEAD GATES AND ON THE FORWARD BLOCKING ASSEMBLY MAY THEN BE OMITTED.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③, ARE TO BE POSITIONED BETWEEN ALL Laterally ADJACENT PALLET UNITS IN EACH TOP LAYER FOR THE BASIC HEIGHT UNITS.
5. 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 27.
6. THE SPACER ASSEMBLY SHOWN IN THE LOAD VIEW AS PIECE MARKED ⑤ IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF THE SPACER ASSEMBLY, THE STRAPPING BOARD ASSEMBLIES AND THE BUNDLING STRAPS, PIECES MARKED ④ AND ⑨, 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 ⑥.
7. 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 25. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A", PIECE MARKED ⑧ ON PAGE 14. SEE SPECIAL NOTE 10.
8. A PALLET UNIT THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑩ IN THE LOAD ON PAGE 14, 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 UNITS. A PALLET UNIT WILL NOT BE OMITTED FROM THE SECOND LAYER PORTION OF THE LOAD.
9. WHEN ONLY ONE (1) BUNDLING STRAP, PIECE MARKED ⑩, IS APPLIED, THE SECOND LAYER PORTION OF THE LOAD IS LIMITED TO NOT MORE THAN FOUR (4) BASIC HEIGHT PALLET UNITS, OR FOUR (4) DECREASED HEIGHT UNITS. IF AN ADDITIONAL BUNDLING STRAP IS APPLIED AROUND THE SECOND LAYER PORTION (POSITIONED SO AS TO EXTEND OVER THE NEXT LOWER LEVEL BULKHEAD GATE HORIZONTAL PIECE), NOT MORE THAN EIGHT (8) BASIC HEIGHT UNITS OR TEN (10) DECREASED HEIGHT UNITS CAN BE LOADED WHEN THE ADDITIONAL BUNDLING STRAP IS APPLIED.
10. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 28 AND 29 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
11. REFER TO PAGE 20 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.
12. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED SEVEN (7) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 19 FOR GUIDANCE.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	11	4
2" X 4"	176	118
2" X 6"	252	252
NAILS	NO. REQD	POUNDS
10d (3")	49	7-1/2
STEEL STRAPPING, 1-1/4" X .035" OR .031" --	131' REQD	19 LBS
SEAL FOR 1-1/4" STRAPPING -----	6 REQD	NIL
NO. 14 GAGE WIRE -----	70' REQD	1-1/4 LBS
STAPLES -----	8 REQD	NIL

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	19 -----	40,698 LBS
DUNNAGE -----	-----	775 LBS
TOTAL WEIGHT -----		41,473 LBS

ALTERNATIVE LOADING PROCEDURES FOR ALL UNITS  
19-UNIT LOAD IN A 40'-0" LONG BY 7'-8-1/2" WIDE HI-VOLUME VAN TRAILER



ISOMETRIC VIEW

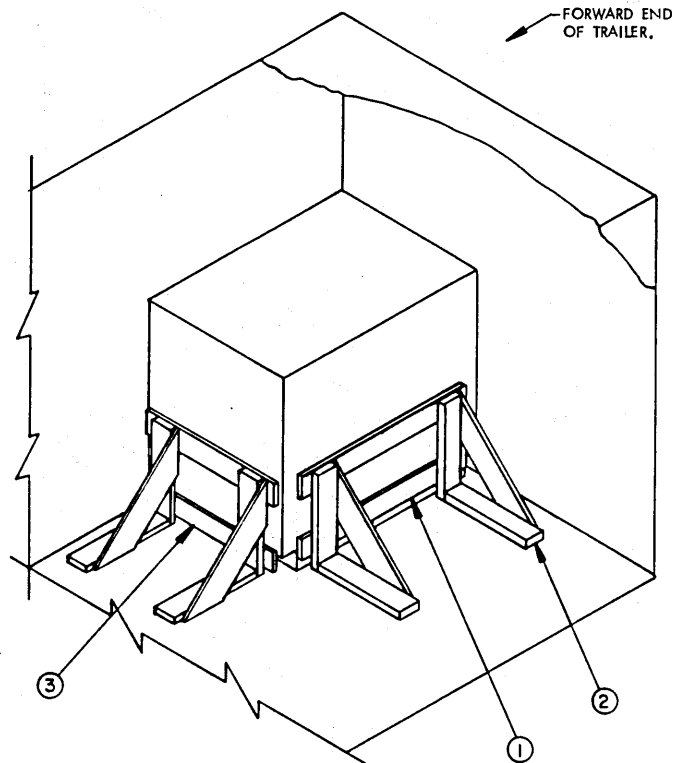
**SPECIAL NOTES:**

1. A 5-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER WHICH IS EQUIPPED WITH OR WITHOUT A NAILABLE FLOOR. WIDER OR NARROWER TRAILERS MAY BE USED.
2. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT UNIT. THE PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT DEPICTED ON PAGE 3.
3. TOP-OF-LOAD ANTI-SWAY BRACES, PIECES MARKED ③, WILL BE POSITIONED BETWEEN ALL LATERALLY ADJACENT BASIC HEIGHT PALLET UNITS.
4. THE "K-BRACE" BLOCKING, PIECES MARKED ⑤ THRU ⑮, WILL RETAIN A MAXIMUM LTL LOAD OF 20,000 POUNDS.
5. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED. HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 28 AND 29 FOR GUIDANCE. A NAILED-HEADER METHOD IS SHOWN ON PAGE 28 AND TYGARD METHOD IS SHOWN ON PAGE 29. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN CONVENTIONAL VAN TRAILERS EQUIPPED WITH HINGED DOORS, AND MAY BE USED IN LIEU OF PIECES MARKED ⑤ THRU ⑮ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL AND THE FORWARD BLOCKING CHART "A" ON PAGE 21. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 21. WIRE TIE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 26. SEE SPECIAL NOTE 3 AT LEFT.
- ④ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 23.
- ⑤ HEADER, 2" X 6" BY TRAILER WIDTH (CUT TO FIT) (2 REQD). POSITION ON EDGE.
- ⑥ HEADER AND SIDE STRUT SUPPORT, 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".
- ⑦ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN HEADERS MARKED ⑤ (2 REQD).
- ⑧ SPLICE PIECE, 2" X 6" X 24" (2 REQD). CENTER ON A JOINT OF PIECES MARKED ⑦ AND NAIL W/4-10d NAILS AT EACH END.
- ⑨ RISER PIECE, 2" X 4" X 9" (AS REQD). NAIL TO THE BOTTOM EDGE OF PIECE MARKED ⑦ W/2-10d NAILS.
- ⑩ POCKET-CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO PIECE MARKED ⑦ W/3-10d NAILS. TOENAIL TO THE ADJACENT PIECE MARKED ⑤ W/2-12d NAILS.
- ⑪ CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO THE HEADER, PIECE MARKED ⑤, W/6-10d NAILS.
- ⑫ 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 STRUT MARKED ⑦ W/2-12d NAILS AT EACH END.
- ⑬ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO PIECE MARKED ⑦ W/8-10d NAILS.
- ⑭ STRUT BRACING SUPPORT PIECE, 2" X 4" X 12" (AS REQD). NAIL TO SIDE STRUT PIECE MARKED ⑦ W/3-10d NAILS.
- ⑮ STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT TO FIT) (AS REQD). INSTALL ONE (1) NEAR REAR END OF SIDE STRUTS AND NAIL TO PIECE MARKED ⑩ AS SHOWN. ONE (1) ADDITIONAL PIECE IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. TOENAIL TO STRUTS MARKED ⑦ W/2-12d NAILS AT EACH END. **CAUTION:** USE CARE WHEN TOENAILING TO PREVENT NAILING THRU OR INTO A SIDE WALL OF THE TRAILER.





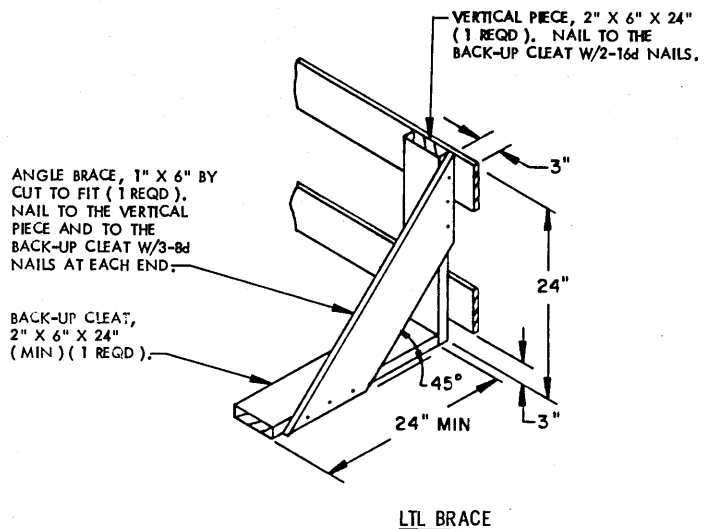
ISOMETRIC VIEW

**SPECIAL NOTES:**

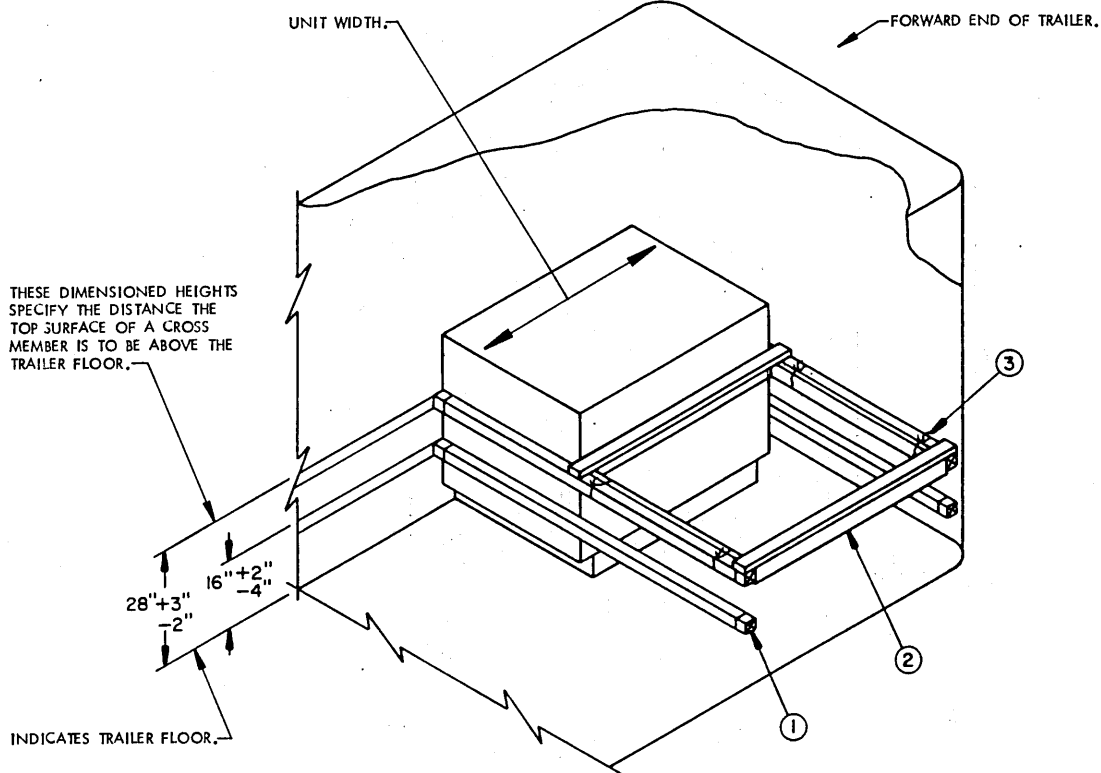
1. A ONE-PALLET UNIT LOAD IS SHOWN DEPICTING THE USE OF LTL BRACES IN A CONVENTIONAL TYPE VAN TRAILER EQUIPPED WITH NAILABLE FLOORS. TRAILERS WITH ALL METAL FLOORS CANNOT BE USED.
2. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT UNIT HAVING OVER DIMENSIONS OF 40" LONG BY 56" WIDE BY 51-1/8" HIGH AND WEIGHING APPROXIMATELY 2,142 POUNDS. THE PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT DEPICTED ON PAGE 3.
3. IF THE TRAILER BEING LOADED HAS ROUNDED FRONT CORNERS, TWO (2) ADDITIONAL LTL BRACES AND TWO (2) 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 16 MAY BE USED.
4. EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING. HOWEVER, NOT LESS THAN TWO (2) BRACES WILL BE USED AGAINST EACH PALLET UNIT ACROSS THE WIDTH OF THE TRAILER.
5. MORE THAN ONE PALLET UNIT CAN BE SHIPPED PROVIDING THE CAPACITY OF THE LTL BRACES 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 UNITS AND TOP-OF-LOAD ANTI-SWAY BRACES, IF APPLICABLE.

**KEY NUMBERS**

- ① LOAD BEARING PIECE, 1" X 6" X 48" ( 2 REQD ). LOCATE AT HEIGHTS SPECIFIED IN THE "LTL BRACE" DETAIL BELOW. NAIL TO THE VERTICAL PIECES OF THE LTL BRACE W/4-6d NAILS AT EACH JOINT.
- ② LTL BRACE ( 4 REQD ). SEE THE DETAILS BELOW. NAIL EACH LTL BRACE TO TRAILER FLOOR W/7-10d NAILS. SEE SPECIAL NOTE 4 AT LEFT.
- ③ LOAD BEARING PIECE, 1" X 6" X 38" ( 2 REQD ). LOCATE AT HEIGHTS SPECIFIED IN DETAIL BELOW. NAIL TO THE VERTICAL PIECES OF THE LTL BRACE W/4-6d NAILS AT EACH JOINT.



TYPICAL LTL-1 PALLET UNIT IN A CONVENTIONAL VAN TRAILER

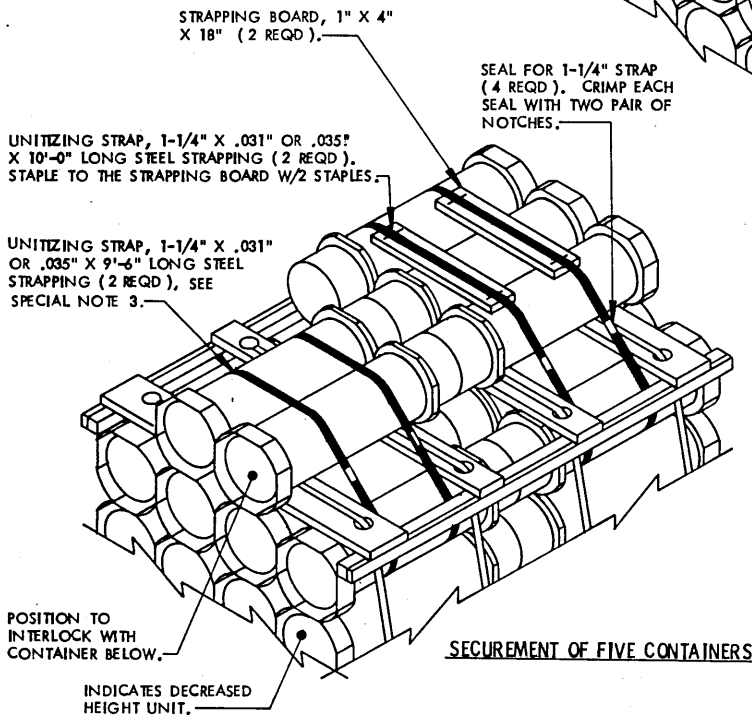
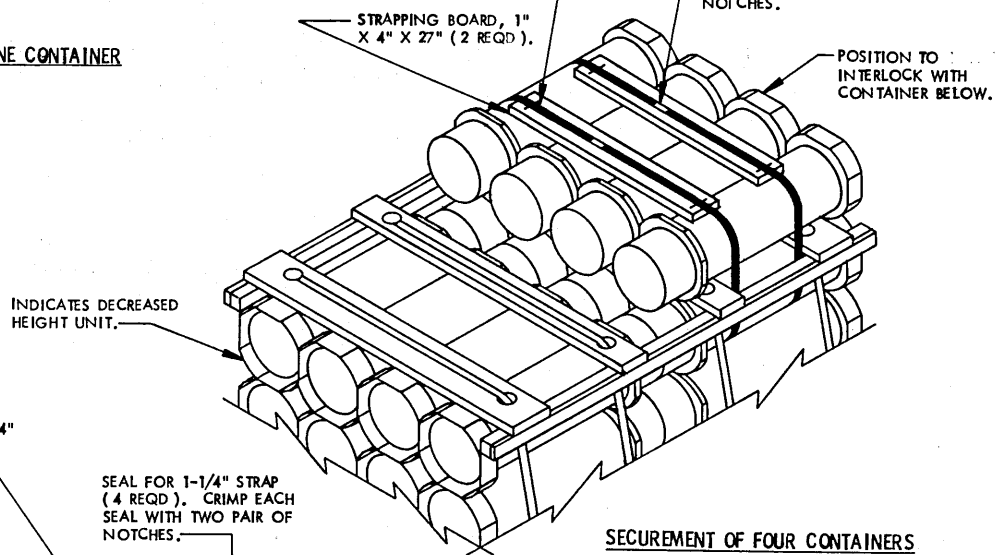
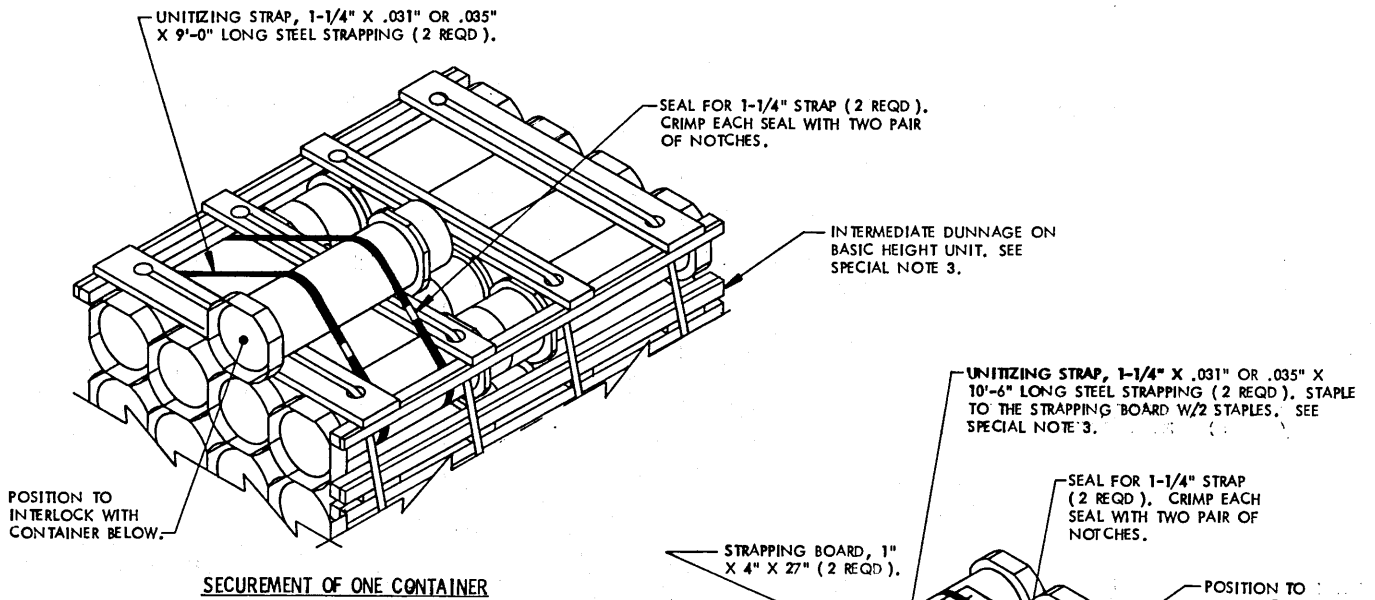


#### SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES DEPICT A VAN TRAILER WHICH IS EQUIPPED WITH MECHANICAL BRACING DEVICES.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LTL LOAD IS THE DECREASED HEIGHT UNIT HAVING OVERALL DIMENSIONS OF 40" LONG BY 56" WIDE BY 42-1/8" HIGH. THE PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT UNIT DEPICTED ON PAGE 3.
3. THE SPECIFIED CROSS MEMBER LOCATION DIMENSIONS ARE APPLICABLE FOR PALLET UNIT DEPICTED HEREIN. FOR THE BASIC HEIGHT UNIT THE UPPER LEVEL CROSS MEMBERS WILL BE POSITIONED AT THE 48" HEIGHT LOCATION.
4. A TYPICAL LTL LOAD OF ONE (1) PALLETIZED UNIT IS SHOWN. IF TWO (2) PALLETIZED UNITS ARE TO BE TRANSPORTED, POSITION THE UNITS TWO ACROSS THE WIDTH OF THE TRAILER. OMIT THE SPACER ASSEMBLIES AND TIE WIRES SHOWN AS PIECES MARKED ② AND ③. NOTE: WHEN LOADING TWO (2) PALLETIZED UNITS ACROSS THE WIDTH OF THE TRAILER, POSITION THE UNITS AGAINST THE FORWARD END WALL (UNLESS THE TRAILER HAS ROUNDED CORNERS) AND OMIT THE TWO CROSS MEMBERS AT THE FORWARD END. INSTALL AN ANTI-SWAY BRACE BETWEEN UNITS AND ALSO A TOP-OF LOAD ANTI-SWAY BRACE, IF APPLICABLE, FOR THE UNIT BEING SHIPPED.
5. TWO (2) SPACER ASSEMBLIES, PIECE MARKED ②, ARE REQUIRED WHEN LOADING THE BASIC HEIGHT UNIT. WHEN LOADING THE DECREASED HEIGHT UNIT DEPICTED ON PAGE 3, A SPACER ASSEMBLY IS REQUIRED AT ONLY ONE LEVEL AS SHOWN.

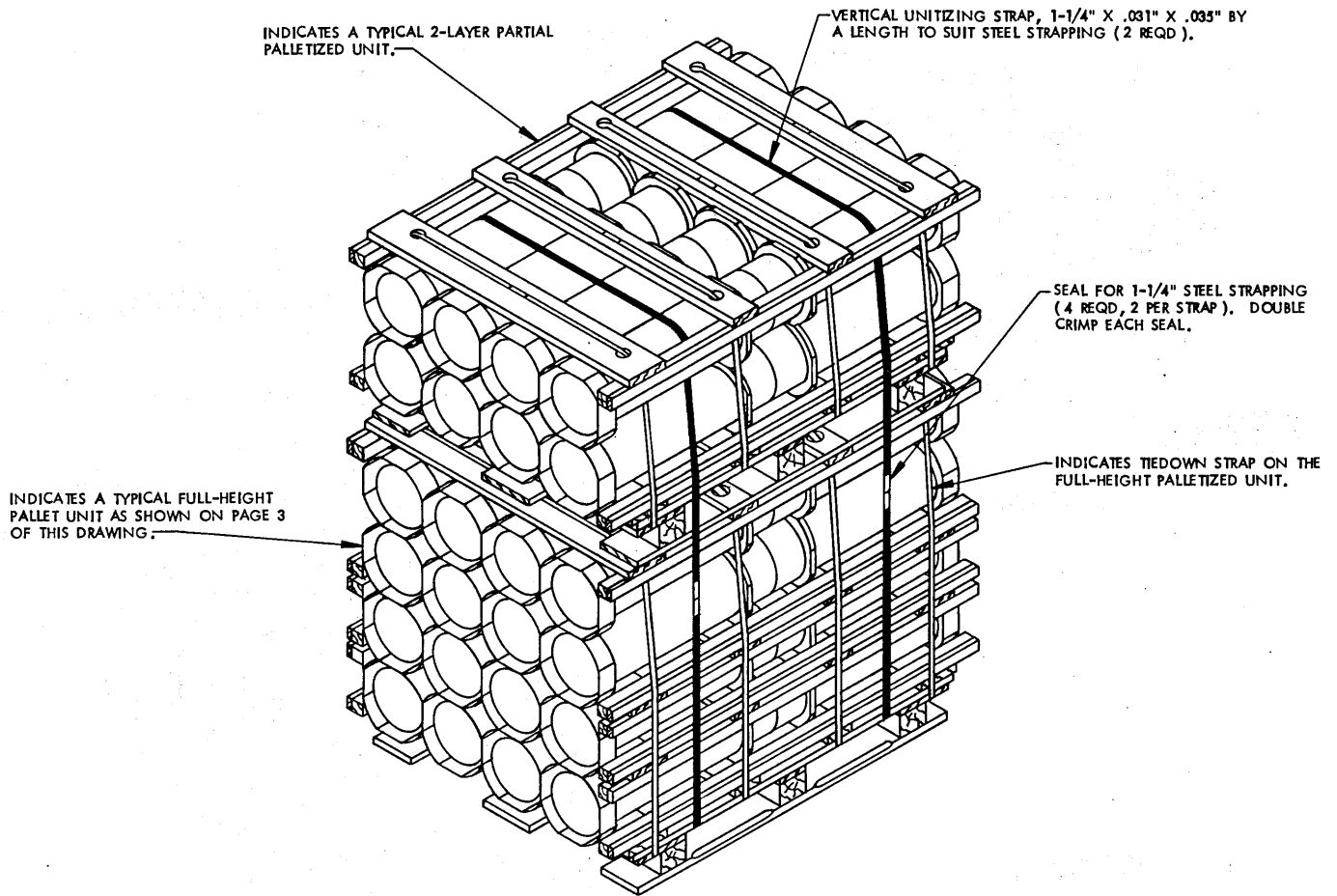
#### KEY NUMBERS

- ① CROSS MEMBER (4 REQD). POSITION AT THE HEIGHTS AS SPECIFIED BY THE ISOMETRIC VIEW ABOVE. SEE GENERAL NOTES "D" AND "K" ON PAGE 2. SEE SPECIAL NOTE 3 ON THIS PAGE.
- ② SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 23. SEE SPECIAL NOTE 5.
- ③ TIE WIRE, NO. 14 GAGE WIRE (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE CROSS MEMBER AND SPACER ASSEMBLY. BRING THE ENDS TOGETHER AND TWIST TAUT.



**SPECIAL NOTES:**

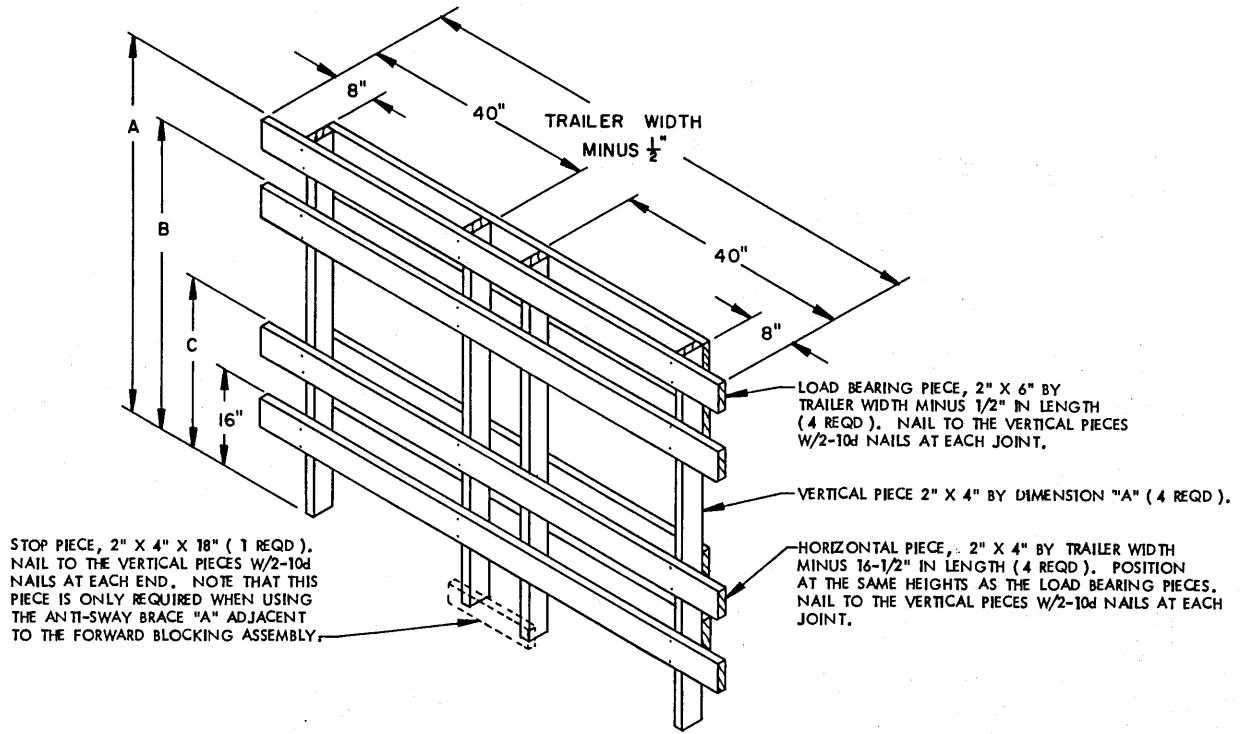
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SECUREMENT ON TOP OF A FULL PALLET UNIT AS SHOWN ON PAGE 20.
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 A PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. NOTE THAT THE UNITIZING STRAP MUST NOT GO AROUND THE TOP DUNNAGE ASSEMBLY, OR INTERMEDIATE DUNNAGE ASSEMBLY IF PRESENT. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.
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:**

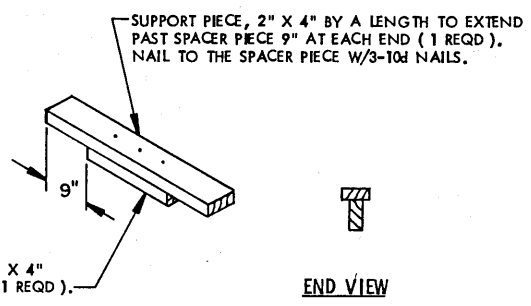
1. THE VIEW SHOWN ABOVE DEPICTS A PARTIAL 2-LAYER PALLET UNIT POSITIONED ON TOP OF A FULL-HEIGHT PALLET UNIT AND UNITIZED WITH TWO VERTICAL UNITIZING STRAPS. PLACEMENT WITHIN THE LOAD IS OPTIONAL, EXCEPT THAT IT WILL NOT BE POSITIONED WITHIN A GROUP WHICH IS BUNDLED TOGETHER OR WITHIN A STACK WHICH IS 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. SHIPMENT 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 AND ON PAGE 19 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
3. THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CONVENTIONAL TYPE VAN TRAILERS AND TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.
4. FOR SHIPMENT OF ONE THROUGH SEVEN "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 19 OF THIS DRAWING.



**FORWARD BLOCKING ASSEMBLY**

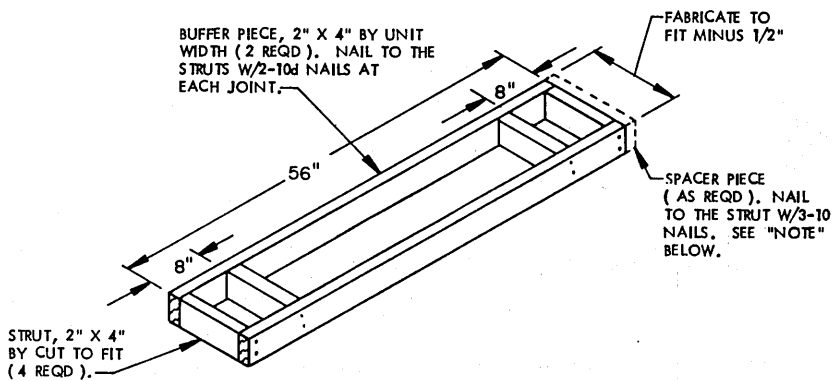
THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS AND IS APPLICABLE FOR A CORNER RADIUS OF NOT MORE THAN 6-1/2". IF THE RADIUS IS FROM 6-1/2" TO 8", 2" X 6" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 4" PIECES. IF THE TRAILER TO BE LOADED HAS LARGE ANGLED CORNERS AT THE FORWARD END, REFER TO PAGE 30 FOR GUIDANCE.

FORWARD BLOCKING CHART A			
PALLET UNIT TYPE	DIMENSION		
	A	B	C
BASIC HEIGHT	7'-3"	69"	45"
DECREASED HEIGHT	6'-6"	60"	36"
BASIC W/DECREASED ON TOP	7'-3"	69"	45"



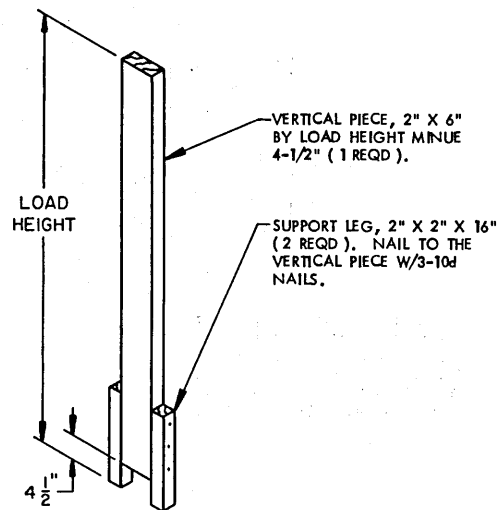
**TOP-OF-LOAD ANTI-SWAY BRACE A**

FORWARD BLOCKING CHART B			
PALLET UNIT TYPE	DIMENSION		
	A	B	C
BASIC HEIGHT	8'-0"	69"	45"
DECREASED HEIGHT	7'-0"	60"	42"
BASIC W/DECREASED ON TOP	7'-9"	69"	45"

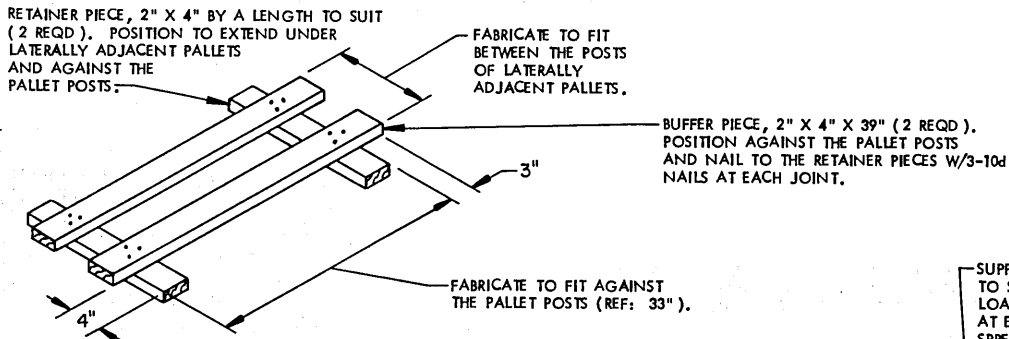


**ANTI-SWAY BRACE A**

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 ONE HALF INCH (1/2") SPACE IS PERMITTED. NOTE: A SPACER PIECE IS ONLY REQUIRED AT THE END OF AN ANTI-SWAY BRACE WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF A STRAPPING BOARD ASSEMBLY WHEN USING ANTI-SWAY BRACE "A".

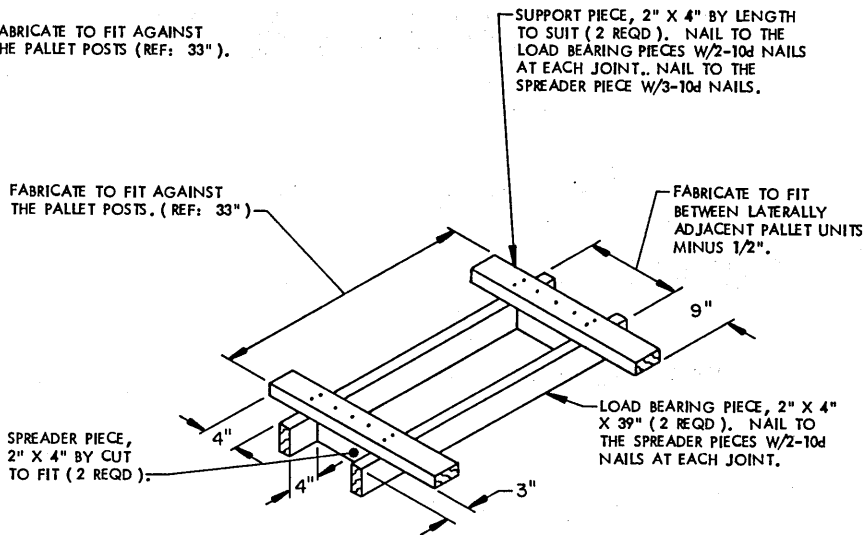


**STRAPPING BOARD ASSEMBLY A**



**ANTI-SWAY BRACE C**

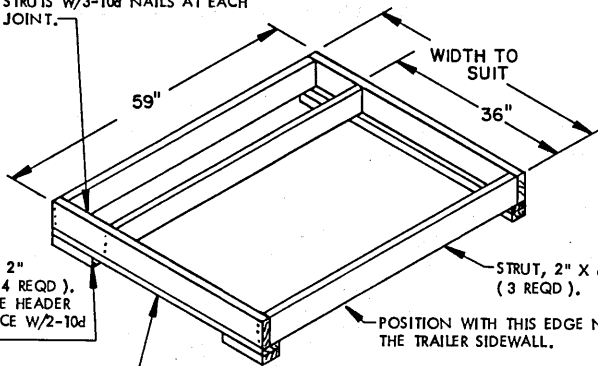
THIS ANTI-SWAY BRACE MUST BE FABRICATED IN PLACE BETWEEN THE PALLETS.



**TOP-OF-LOAD ANTI-SWAY BRACE B**

THIS ASSEMBLY IS DESIGNED FOR THE BRACING OF A PALLET UNIT IN THE SECOND LAYER WHEN THERE IS NOT A PALLET UNIT DIRECTLY OPPOSITE IT, AND TOP-OF-LOAD ANTI-SWAY BRACING IS REQUIRED.

HEADER, 2" X 6" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



RISER PIECE, 2" X 4" X 9" (4 REQD). NAIL TO THE HEADER SUPPORT PIECE W/2-10d NAILS.

STRUT, 2" X 6" X 56" (3 REQD).

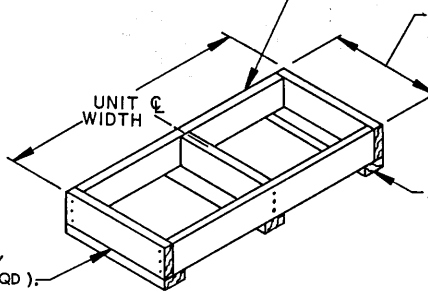
POSITION WITH THIS EDGE NEXT TO THE TRAILER SIDEWALL.

HEADER SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (4 REQD). NAIL TO A HEADER W/1-10d NAIL EVERY 12".

**SPACER ASSEMBLY B**

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN THE LOAD SHOWN ON PAGE 14.

HEADER, 2" X 6" BY UNIT LENGTH (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



AS REQUIRED TO FILL THE VOID BETWEEN PALLET UNIT AND SIDEWALL OF TRAILER MINUS 1/2" (MAX).

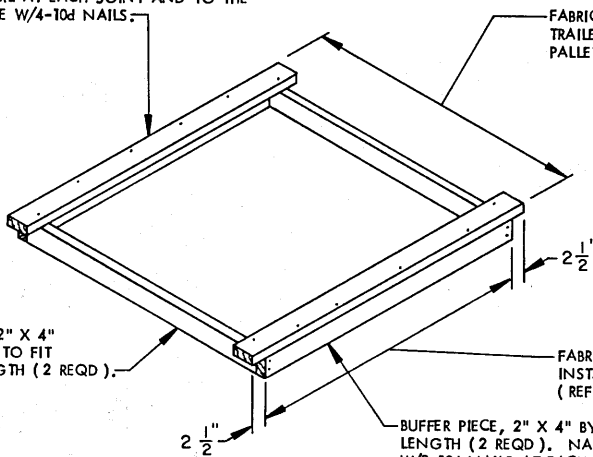
STRUT SUPPORT, 2" X 4" BY CUT TO FIT (3 REQD). NAIL TO THE HEADER W/2-10d NAILS AT EACH END AND TO THE STRUTS W/1-10d NAIL EVERY 8".

STRUT, 2" X 6" BY CUT TO FIT (3 REQD).

**SIDE BLOCKING ASSEMBLY**

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A CONVENTIONAL VAN TRAILER AS SHOWN IN THE TYPICAL LTL LOAD ON PAGE 16.

RETAINER PIECE, 2" X 4" BY CUT TO FIT IN LENGTH (2 REQD). NAIL TO THE STRUTS W/1-10d NAIL AT EACH JOINT AND TO THE BUFFER PIECE W/4-10d NAILS.



FABRICATE TO FIT BETWEEN TRAILER SIDE WALL AND PALLET UNIT.

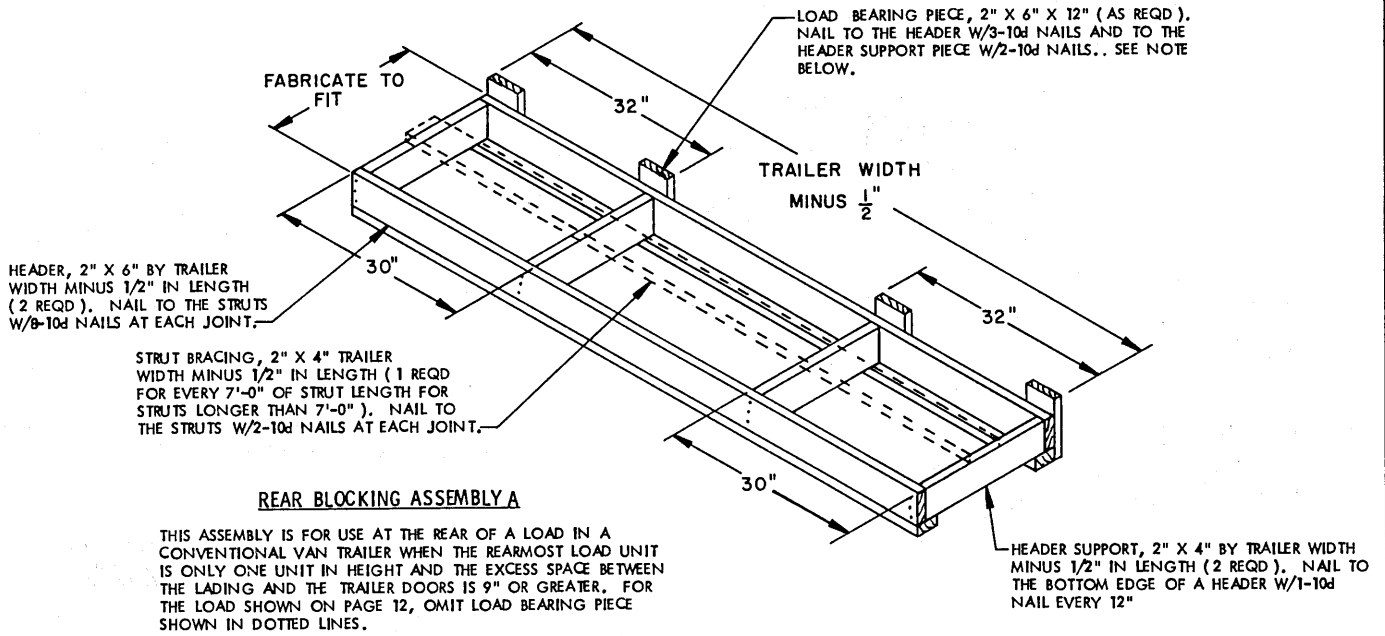
STRUT, 2" X 4" BY CUT TO FIT IN LENGTH (2 REQD).

FABRICATE TO FIT BETWEEN INSTALLED CROSS MEMBERS (REF: 56").

BUFFER PIECE, 2" X 4" BY CUT TO FIT IN LENGTH (2 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH END.

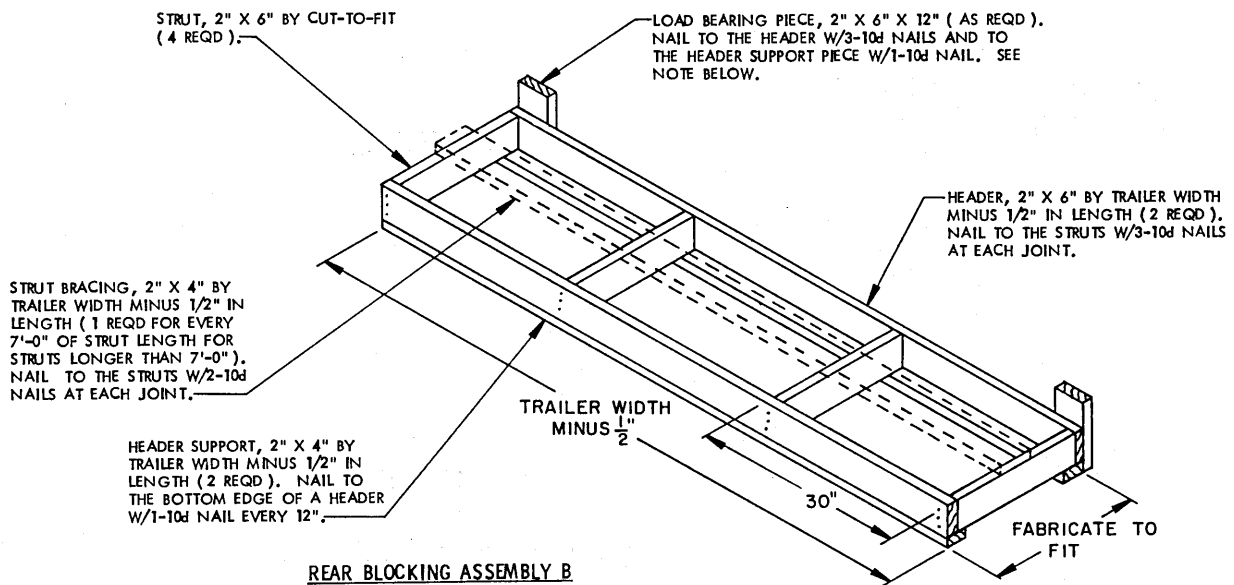
**SPACER ASSEMBLY A**

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES AS SHOWN IN THE TYPICAL LTL LOAD ON PAGE 18. SEE GENERAL NOTE "M" ON PAGE 2.



**REAR BLOCKING ASSEMBLY A**

THIS ASSEMBLY IS FOR USE AT THE REAR OF A LOAD IN A CONVENTIONAL VAN TRAILER WHEN THE REARMOST LOAD UNIT IS ONLY ONE UNIT IN HEIGHT AND THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER. FOR THE LOAD SHOWN ON PAGE 12, OMIT LOAD BEARING PIECE SHOWN IN DOTTED LINES.

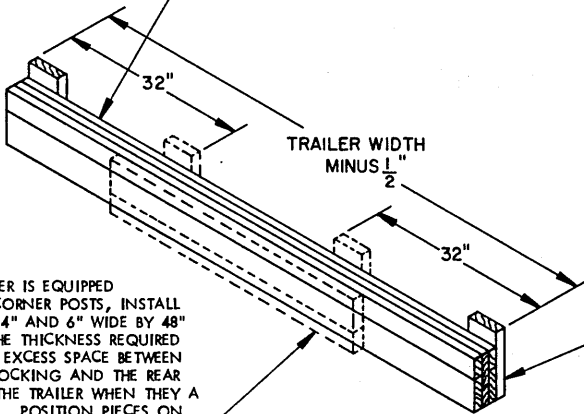


**REAR BLOCKING ASSEMBLY B**

THIS ASSEMBLY IS FOR USE AT THE REAR OF A LOAD IN A CONVENTIONAL VAN TRAILER WHEN THE REAR MOST LOAD UNIT IS STACKED TWO UNITS IN HEIGHT AND THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER.



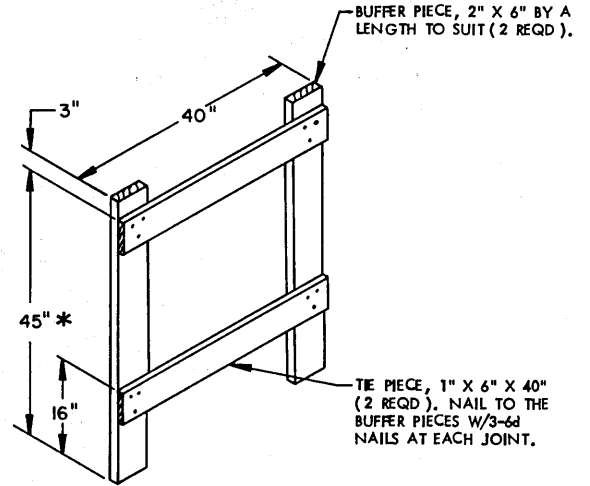
SOLID FILL, 4" AND 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO CONTACT REAR CORNER POSTS OR TO CONTACT REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER, ALTERNATELY AS SHOWN, AND LAMINATE W/1-10d NAIL EVERY 12".



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 REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER AS SHOWN, AND NAIL TO THE REAR BLOCKING W/4 APPLICABLE SIZED NAILS.

**REAR BLOCKING ASSEMBLY C**

THIS REAR BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE REAR END OF A LOAD IN A CONVENTIONAL VAN TRAILER WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS LESS THAN 9" BUT AT LEAST 1-1/2".



**ANTI-SWAY BRACE B**

THE ANTI-SWAY BRACE AS SHOWN IS ADEQUATE TO PROVIDE LATERAL SUPPORT IN TRAILERS WHICH ARE 99" IN WIDTH. THE THICKNESS OF THE ASSEMBLY CAN BE ADJUSTED BY SUBSTITUTING TWO (2) 1" X 6" PIECES FOR THE 2" X 6" BUFFER PIECES.

\*THE 45" DIMENSION SHOWN IS FOR THE BASIC HEIGHT UNIT. THIS DIMENSION WILL BE 42" FOR THE DECREASED HEIGHT UNIT.

LOAD BEARING PIECE, 2" X 6" X 12" (2 REQD IF REAR LOAD UNIT IS STACKED, 4 REQD IF REAR LOAD UNIT IS ONE HIGH). NAIL TO THE SOLID FILL W/ 5-10d NAILS.



ONE SEAL WITH TWO PAIR OF NOTCHES.

**STRAP JOINT A**

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



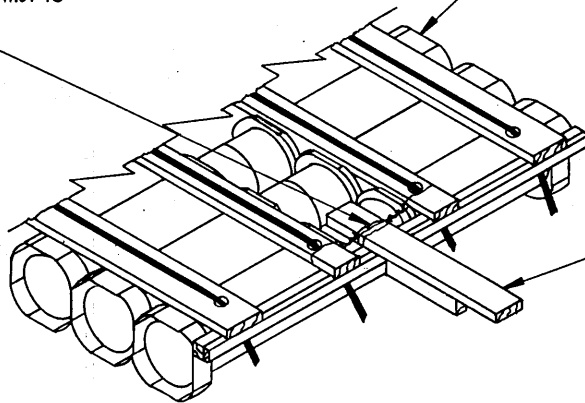
TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

**STRAP JOINT B**

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

NO. 14 GAGE WIRE BY LENGTH TO SUIT. FOR TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE AND TWIST TO PREVENT DISLODGE-  
MENT. THREAD EACH END OF WIRE UNDER AND AROUND A STRAPPING BOARD ON THE UNIT AND TWIST TO SELF AS SHOWN.

PARTIAL VIEW SHOWING TOP LAYER OF CONTAINERS.



TOP-OF-LOAD ANTI-SWAY BRACE "A".

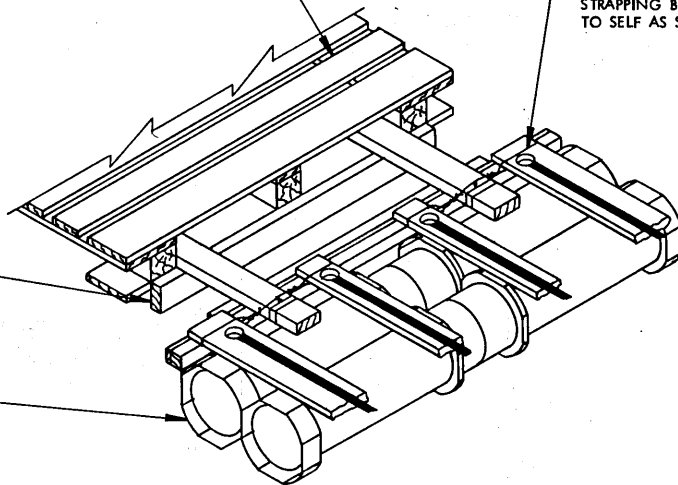
TIE WIRE APPLICATION A

INDICATES PALLET OF 2-HIGH STACK.

NO. 14 GAGE WIRE BY LENGTH TO SUIT. FORM TWO LOOPS AROUND ANTI-SWAY BRACE AND TWIST TO PREVENT DISLODGE-  
MENT. THREAD EACH END OF WIRE UNDER AND AROUND A STRAPPING BOARD ON THE UNIT AND TWIST TO SELF AS SHOWN.

TOP-OF-LOAD ANTI-SWAY BRACE "B".

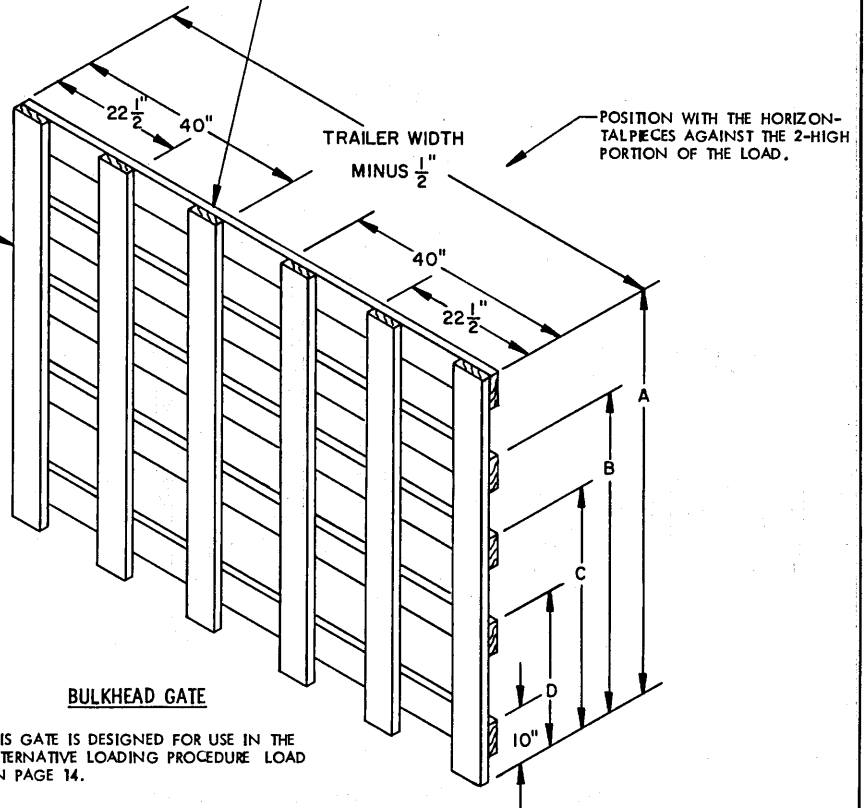
PARTIAL VIEW SHOWING TOP LAYER OF CONTAINERS OF 1-HIGH STACK.



TIE WIRE APPLICATION B

VERTICAL PIECE, 2" X 6" BY DIMENSION "A" IN CHART BELOW (6 REQD.).

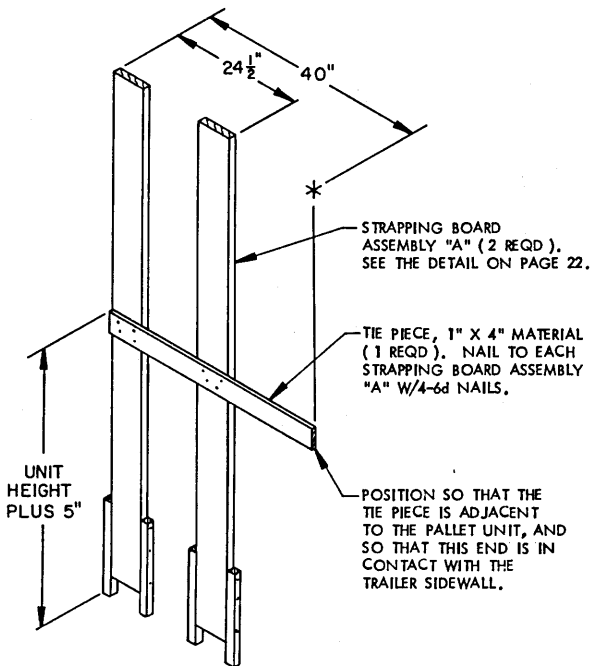
HORIZONTAL PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (5 REQD.), NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



**BULKHEAD GATE**

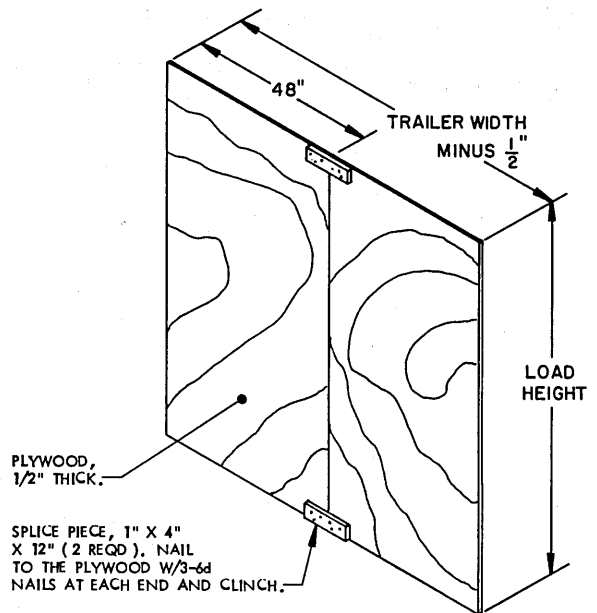
THIS GATE IS DESIGNED FOR USE IN THE ALTERNATIVE LOADING PROCEDURE LOAD ON PAGE 14.

BULKHEAD GATE CHART				
PALLET UNIT TYPE	DIMENSIONS			
	A	B	C	D
BASIC HEIGHT	87"	69"	51"	31"
DECREASED HEIGHT	69"	55"	42"	27"
BASIC W/DECREASED ON TO?	78"	64"	51"	31"



**STRAPPING BOARD ASSEMBLY B**

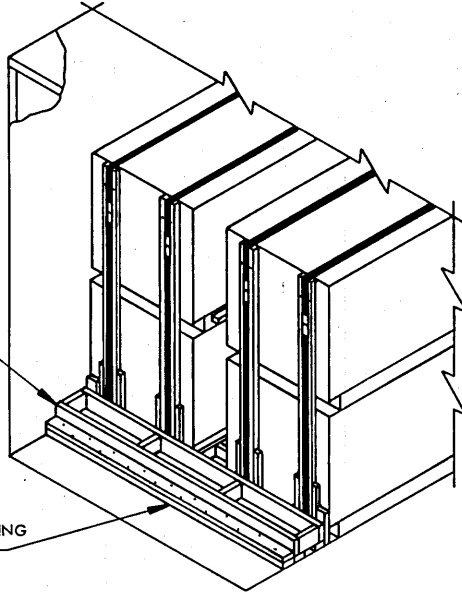
RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED.



**LOAD BEARING GATE**

REAR BLOCKING ASSEMBLY (1 REQD).  
SEE SPECIAL NOTE 2 BELOW.

HEADER, 2" X 4" BY TRAILER WIDTH  
MINUS 1/2" IN LENGTH (DOUBLED)  
(1 REQD). POSITION AGAINST THE  
REAR BLOCKING ASSEMBLY. NAIL  
THE FIRST PIECE TO THE TRAILER FLOOR  
W/15-10d NAILS (1 EVERY 6"). NAIL THE  
SECOND PIECE TO THE FIRST IN A LIKE  
MANNER AND TOENAIL TO THE REAR BLOCKING  
ASSEMBLY W/4-10d NAILS.



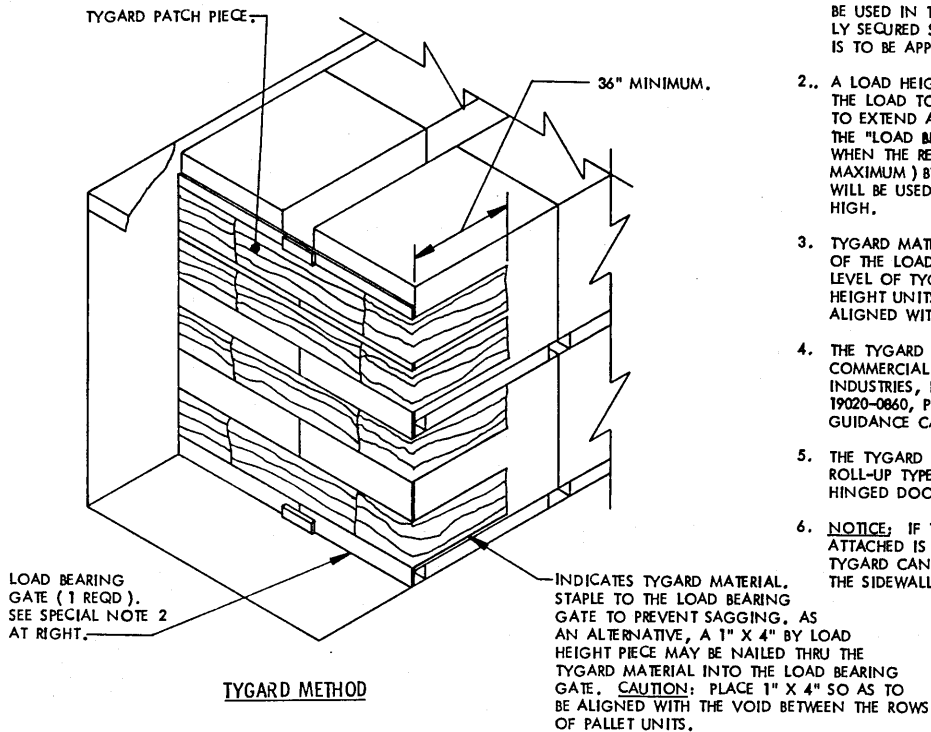
#### NAILED-HEADER METHOD

#### SPECIAL NOTES:

1. THE NAILED-HEADER METHOD OF REAR BLOCKING DEPICTED ABOVE CAN ONLY BE USED IN TRAILERS HAVING A NAILABLE FLOOR AREA BETWEEN THE LADING AND THE METAL THRESHOLD, OR A THRESHOLD PLATE IF THE TRAILER IS SO EQUIPPED, OF AT LEAST FOURTEEN INCHES (14").
2. REAR BLOCKING ASSEMBLY "B" IS SHOWN FOR A TYPICAL INSTALLATION. THE REAR BLOCKING ASSEMBLY WHICH IS SPECIFIED WITHIN THE KEY NUMBERS FOR THE ITEM BEING LOADED WILL BE USED AT THE REAR OF THE LOAD. CONSTRUCT THE ASSEMBLY USING 6" (MINIMUM) LONG STRUTS.
3. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.
4. THE NAILED-HEADER METHOD, ALTHOUGH DESIGNED ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

#### SPECIAL NOTES:

1. THE TYGARD METHOD OF REAR BLOCKING DEPICTED AT LEFT CAN ONLY BE USED IN TRAILERS WHICH HAVE REASONABLY SMOOTH AND ADEQUATELY SECURED SIDEWALL PANELS IN THE AREA WHERE THE TYGARD MATERIAL IS TO BE APPLIED.
- 2.. A LOAD HEIGHT PLYWOOD GATE MUST BE INSTALLED AT THE REAR OF THE LOAD TO PROVIDE A SMOOTH SURFACE FOR THE TYGARD MATERIAL TO EXTEND AROUND. A LOAD HEIGHT GATE CONSTRUCTED SIMILAR TO THE "LOAD BEARING GATE" DETAILED ON PAGE 27, WILL BE USED WHEN THE REAR LOAD UNIT IS STACKED. A LOAD HEIGHT (48" MAXIMUM) BY TRAILER WIDTH MINUS 1/2" IN LENGTH PLYWOOD GATE WILL BE USED WHEN THE REAR LOAD UNIT IS ONLY ONE PALLET UNIT HIGH.
3. TYGARD MATERIAL MUST BE INSTALLED AT TWO LEVELS FOR EACH LAYER OF THE LOAD WHEN SHIPPING THE BASIC HEIGHT UNITS. ONLY ONE LEVEL OF TYGARD MATERIAL IS REQUIRED WHEN SHIPPING THE DECREASED HEIGHT UNITS. THE SINGLE LEVEL OF TYGARD MATERIAL SHOULD BE ALIGNED WITH THE UPPER PORTION OF A LAYER.
4. THE TYGARD MATERIAL AND THE ADHESIVE FOR ATTACHING IT ARE COMMERCIAL PRODUCTS. FOR A SOURCE OF SUPPLY, CONTACT WALNUT INDUSTRIES, INC., 1344 ADAMS ROAD, P.O. BOX "E", BENSALEM, PA 19020-0860, PHONE 1-800-523-6534. APPLICATION INSTRUCTIONS AND GUIDANCE CAN ALSO BE OBTAINED FROM THAT OFFICE.
5. THE TYGARD METHOD, ALTHOUGH ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
6. **NOTICE:** IF THE AREA OF A SIDEWALL WHERE THE TYGARD SHOULD BE ATTACHED IS ROUGH AND/OR BROKEN, THE APPLICABLE PIECE (S) OF TYGARD CAN BE LENGTHENED A SUITABLE AMOUNT AND ATTACHED TO THE SIDEWALL AHEAD OF THE INDICATED PREFERRED LOCATION.



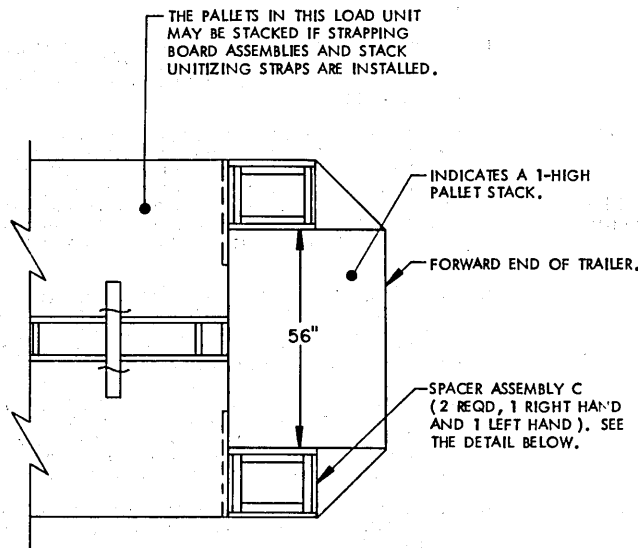
#### RECOMMENDED EQUIPMENT/INSTALLATION PROCEDURES

##### EQUIPMENT REQUIRED

PAINT ROLLER, LATEX  
PAINT ROLLER PAN  
TENSIONING ROD/TOOL  
PRESSURE ROLLER  
RATCHET WRENCH ( 12" TO 15" HANDLE )  
SCISSORS OR KNIFE  
TYGARD ( 15" WIDE ROLL )  
TYGARD ADHESIVE.

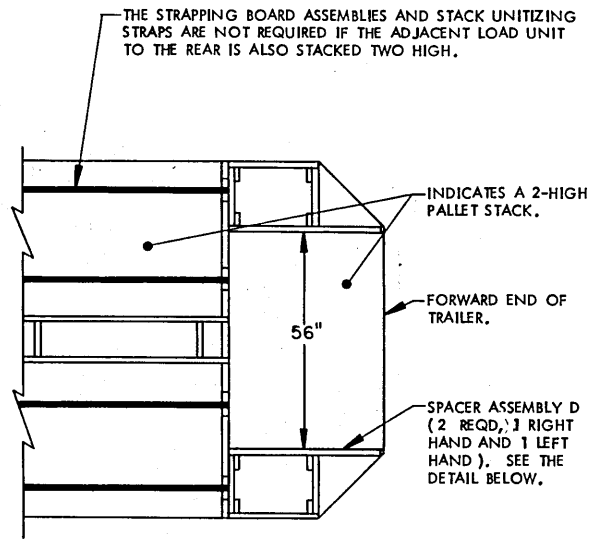
##### BASIC INSTALLATION GUIDANCE

1. CUT TO LENGTH THE REQUIRED NUMBER OF TYGARD PIECES ( FROM 2 TO 8 DEPENDING UPON THE LOAD CONFIGURATION ) FOR ATTACHMENT TO THE TRAILER SIDEWALL. PIECES WILL BE OF A LENGTH AS REQUIRED TO PROVIDE PROPER BONDING TO THE TRAILER SIDEWALL AND TO EXTEND 60" ACROSS THE REAR OF THE LOAD. ALSO, CUT 72" LONG "PATCH" PIECES OF TYGARD MATERIAL, ONE FOR EACH SET OF TWO PIECES PREVIOUSLY CUT.
2. PRIOR TO POSITIONING OF THE PALLETS IN THE REARMOST LOAD UNIT, APPLY TYGARD ADHESIVE TO THE PROPER PORTIONS OF THE TRAILER SIDEWALLS AND TO THE CORD SIDE OF A CORRESPONDING LENGTH OF EACH OF THE TYGARD PIECES THAT ARE TO BE ATTACHED TO THE SIDEWALLS OF THE TRAILER. ALLOW TIME FOR THE ADHESIVE TO "CURE" BEFORE PLACING A STRIP OF TYGARD ONTO A SIDEWALL (ADHESIVE WILL FEEL ALMOST DRY WHEN TOUCHED). **NOTE:** APPLICATION OF TYGARD IS SIMILAR TO THE APPLICATION OF "FORMICA".
3. APPLY THE TYGARD PIECES TO EACH SIDEWALL OF THE TRAILER SO THAT THE PIECES ARE PARALLEL OR NEARLY PARALLEL TO THE FLOOR. ROLL THE TYGARD WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING IS ACHIEVED. TEMPORARILY SECURE THE LOOSE ENDS TO THE TRAILER SIDEWALL OR TO AN OPEN HINGED TYPE DOOR OR TO THE OUTSIDE WALL, AS APPLICABLE.
4. POSITION THE PALLETS OF THE REARMOST LOAD UNIT INTO THE TRAILER AND INSTALL THE SPECIFIED ANTI-SWAY BRACES.
5. UNDO THE PREVIOUSLY SECURED LOOSE ENDS AND BRING A SET OF TWO PIECES TOGETHER ACROSS THE REAR OF THE LOAD. POSITION THE TENSIONING ROD SO THAT THE LOOSE ENDS OF THE TYGARD MATERIAL EXTEND THRU THE SLOT IN ROD. USING THE TWO WRENCHES, ROLL UP THE TYGARD TO TENSION IT ACROSS REAR OF THE LOAD. POSITION A WRENCH SO AS TO MAINTAIN THE TENSION IN THE TYGARD PIECES. CUT OFF AND DISCARD EXCESS MATERIAL FROM ONE PIECE OF THE TYGARD.
6. APPLY TYGARD ADHESIVE TO THE TENSIONED TYGARD PIECES AND ALSO TO THE CORD SIDE OF THE PREVIOUSLY CUT "PATCH" PIECE. APPLY THE "PATCH" AND ROLL WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING.



**ALTERNATIVE FORWARD LOADING PATTERN A**

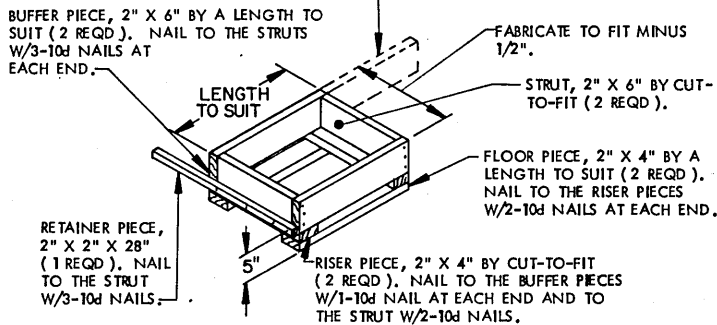
THIS PROCEDURE IS APPLICABLE TO THE LOADING OF ONE (1) PALLET UNIT IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLES CORNERS OF ANOTHER SIZE. THIS PROCEDURE IS APPLICABLE FOR BOTH OF THE UNITS DEPICTED ON PAGE 3.



**ALTERNATIVE FORWARD LOADING PATTERN B**

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A STACK OF TWO (2) 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 PALLET UNITS IN THE FRONT OF THE TRAILER IS ONLY ONE HIGH, TWO (2) STACK UNITIZING STRAPS MUST BE INSTALLED AROUND THOSE PALLET UNITS IN THE FRONT STACK. THIS PROCEDURE IS APPLICABLE FOR BOTH OF THE UNITS DEPICTED ON PAGE 3.

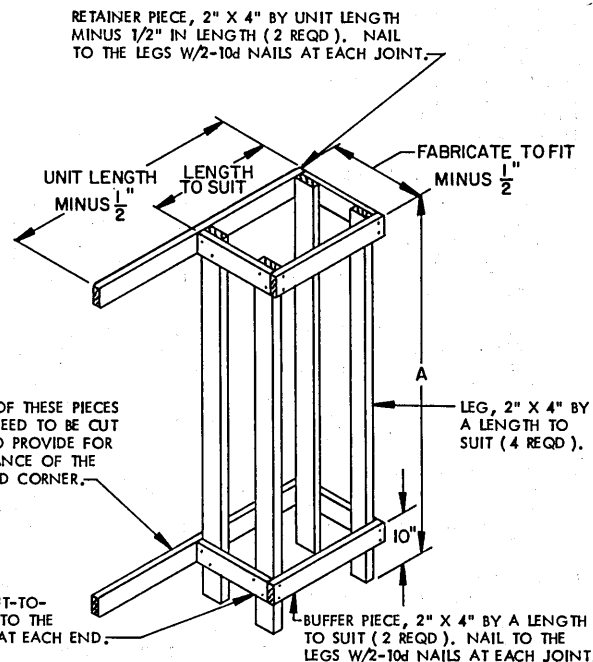
IF THE LONGITUDINALLY ADJACENT LOAD UNIT IS STACKED AND SECURED WITH STRAPPING AND STRAPPING BOARD ASSEMBLIES, THIS BUFFER PIECE MUST BE EXTENDED TO WITHIN 1/2" OF THE FRONT WALL OF THE TRAILER IN LIEU OF USING THE RETAINER PIECE.



**SPACER ASSEMBLY C**

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 D CHART	
PALLET UNIT TYPE	DIM A
BASIC HEIGHT	61-6"
DECREASED HEIGHT	60"
BASIC W/DECREASED ON TOP	69"



**SPACER ASSEMBLY D**

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A 2-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.

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