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

PA107 SERIES CONTAINERS

INDEX

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.

DO NOT SCALE

REVISIONS			

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U.S. ARMY AMC DRAWING

MAY 1988

CLASS	DIVISION	DRAWING	FILE
19	48	4042C/23	11PM 1000

PROJECT FSA 43C/23-63

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).

B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA 107 SERIES PROPELLING CHARGE CONTAINER ASSEMBLED ON THE 35" X 45-1/2" 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEW ON PAGE 3 FOR SIZE AND WEIGHT. REFER TO U.S. ARMY AMC (DARCOM) DRAWING 19-48-4042A/24-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA 107 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 INCHES (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).

2 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.

3 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.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

LUMBER	SEE TM 743-200-1, DUNNAGE LUMBER: FED SPEC MM-L-751.
NAILS	COMMON, FED SPEC FF-N-105.
STRAPPING, STEEL	FED SPEC QQ-S-781; CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
SEAL, STRAP	FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H, FINISH A, B (GRADE 2), OR C.
PLYWOOD	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.
WIRE	FED SPEC QQ-W-461.
TYGARD	POLYESTER YARN, 1,100 POUNDS/INCH OF WIDTH STRENGTH.
ADHESIVE	TYGARD ADHESIVE.
STAPLE, STRAP	COMMERCIAL GRADE.

(GENERAL NOTES CONTINUED)

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 17. FOR "SHIPMENT OF LEFTOVER CONTAINERS", SEE THE DETAILS AND SPECIAL NOTES ON PAGE 18.

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 PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

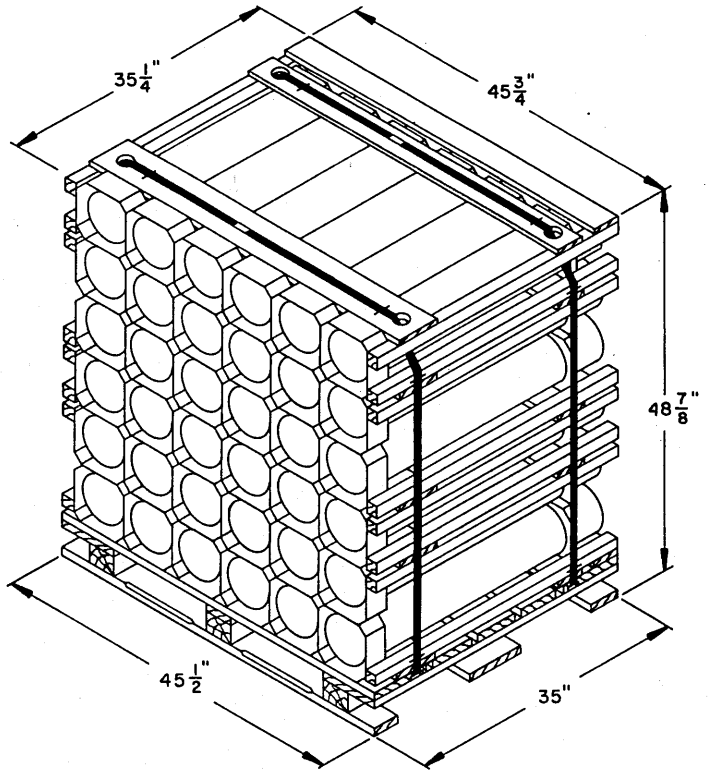
O. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED 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.



PALLET UNIT

CONTAINER ----------36 EACH @ 39 LBS (APPROX)
CUBE ----------45.6 CUBIC FEET (APPROX)
GROSS WEIGHT---------- 1,540 LBS (APPROX)

PALLET UNIT DETAIL

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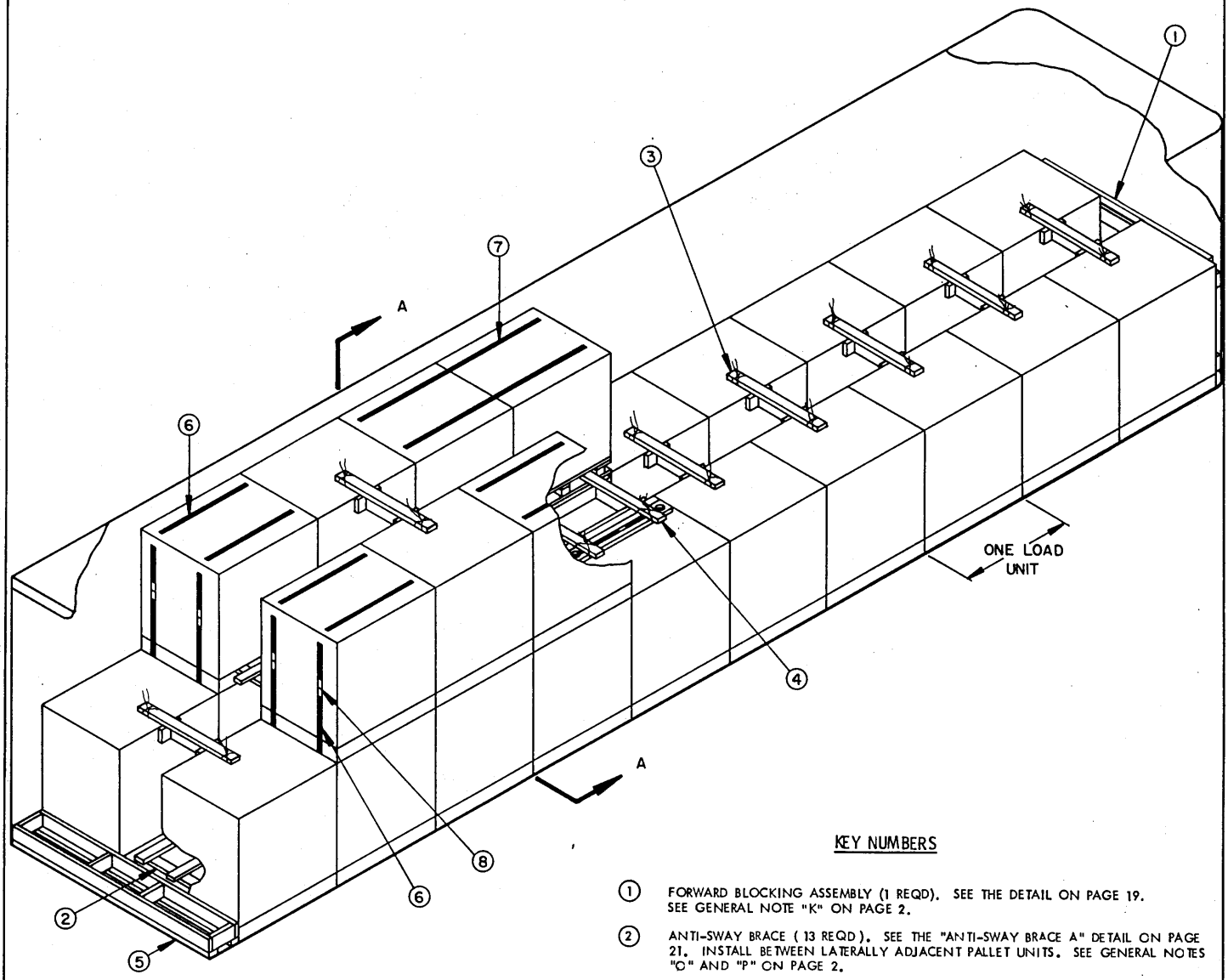


ISOMETRIC VIEW

KEY NUMBERS

(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTE "K" ON PAGE 2.

(2) ANTI-SWAY BRACE (13 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 21. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (7 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" AND THE "TIE WIRE APPLICATION A" DETAILS ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 2 ON PAGE 5.

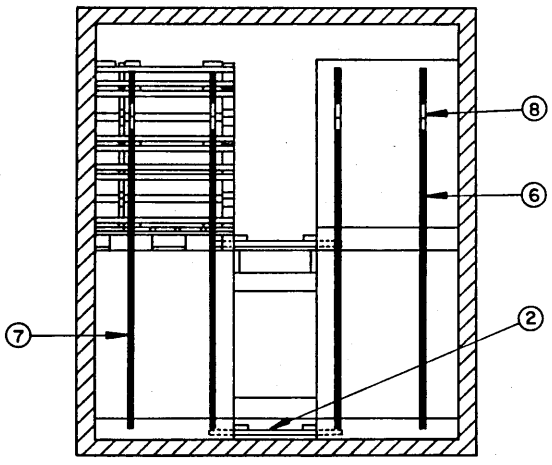
(4) TOP-OF-LOAD ANTI-SWAY BRACE "B" (1 REQD). SEE THE DETAIL ON PAGE 20. POSITION WITH ONE END OF THE SUPPORT PIECES AGAINST THE PALLET POSTS AND WIRE TIE THE OTHER ENDS OF THE SUPPORT PIECES TO THE TOP DUNNAGE ASSEMBLY OF UNIT. SEE THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 5.

(5) REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 4 ON PAGE 5.

(6) STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (6 REQD). THREAD THRU HOLES ON TOP DUNNAGE ASSEMBLY; INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 5 ON PAGE 5.

(7) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 32'-6" LONG STEEL STRAPPING (2 REQD). THREAD THRU HOLES ON TOP DUNNAGE ASSEMBLY; INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS IN THE SECOND LAYER AND TWO (2) PALLET UNITS DIRECTLY BELOW AS SHOWN. SEE SPECIAL NOTE 6 ON PAGE 5.

(8) SEAL FOR 1-1/4" STEEL STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL . SEE GENERAL NOTE "M" ON PAGE 2.



SECTION A - A

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

SMCAC FORM 6, 1 NOV 85

PROJECT FSA 43C/23-63

SPECIAL NOTES:

1. A 27-UNIT LOAD IS SHOWN IN A 40' - 0" LONG BY 7' - 8" WIDE (INSIDE DIMENSION) HI-VOLUME VAN TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD. IF THE TRAILER BEING LOADED DOES NOT HAVE A DOOR OPENING HEIGHT OF AT LEAST 8' - 3" IT WILL BE NECESSARY TO LIMIT THE REARMOST LOAD UNIT TO ONE PALLET UNIT IN HEIGHT. IF A TRAILER WHICH IS 7' - 8-1/2" OR WIDER IS FURNISHED FOR LOADING, THE LOADING PATTERN DEPICTED ON PAGE 8 MAY BE USED IN LIEU OF THE PROCEDURES DEPICTED ON PAGE 4.

2. 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.

3. THE TOP-OF-LOAD ANTI-SWAY BRACE "B", SHOWN IN THE LOAD AS PIECE MARKED ④, IS ONLY REQUIRED FOR THE BRACING OF AN ODD UNIT IN THE SECOND LAYER. IF ANOTHER PALLET UNIT IS POSITIONED OPPOSITE THE ODD UNIT, ANTI-SWAY BRACE "A" WILL BE INSTALLED IN LIEU OF PIECE MARKED ④.

4. IF THE SPACE 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 SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE REAR BLOCKING ASSEMBLY "C" DETAILED ON PAGE 22. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, REAR BLOCKING ASSEMBLY "A" WILL BE USED AS SHOWN. SEE SPECIAL NOTE 11.

5. 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. NOTE THAT WHEN THERE IS ONLY ONE FULL LOAD UNIT IN THE FRONT PORTION OF THE LOAD, EACH STACK IN THE LOAD UNIT MUST BE UNITIZED. FOR THE DEPICTED LOAD, ONE STACK IS BUNDLED TO AN ADJACENT STACK IN LIEU OF UNITIZING. THE UNITIZING STRAPS, PIECE MARKED ⑥, MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.

6. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS SHOWN AS PIECE MARKED ⑦, MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO (2) STACKS IN EACH APPLICABLE ROW.

7. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNIT IN THE FIRST LAYER. A TOP-OF-LOAD ANTI-SWAY BRACE "B" AS DETAILED ON PAGE 20 AND SHOWN IN THE LOAD VIEW AS PIECE MARKED ④ WILL BE INSTALLED IN ADDITION TO STACK UNITIZING STRAPS, PIECES MARKED ⑥.

8. REFER TO PAGE 17 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

9. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED FIVE (5) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 18 FOR GUIDANCE.

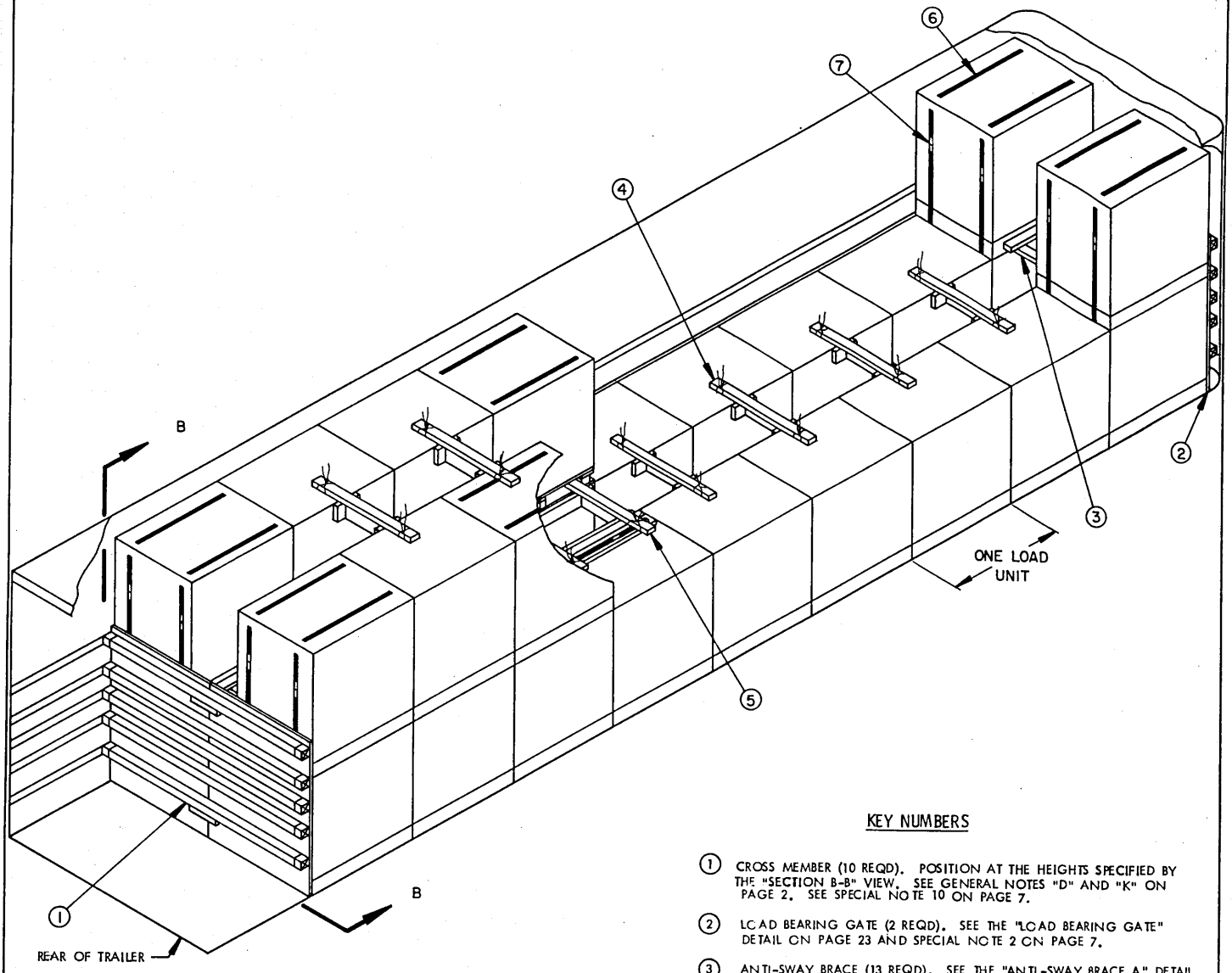
10. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE OF PAGES 14 AND 15.

11. 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 26 AND 27 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN; FOR THE DEPICTED LOAD IN A 40' - 0" LONG TRAILER WHEN USING THE NAILDED-HEADER METHOD, IT WILL BE NECESSARY TO FORM NINE LOAD UNITS INSTEAD OF TEN, AS 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.

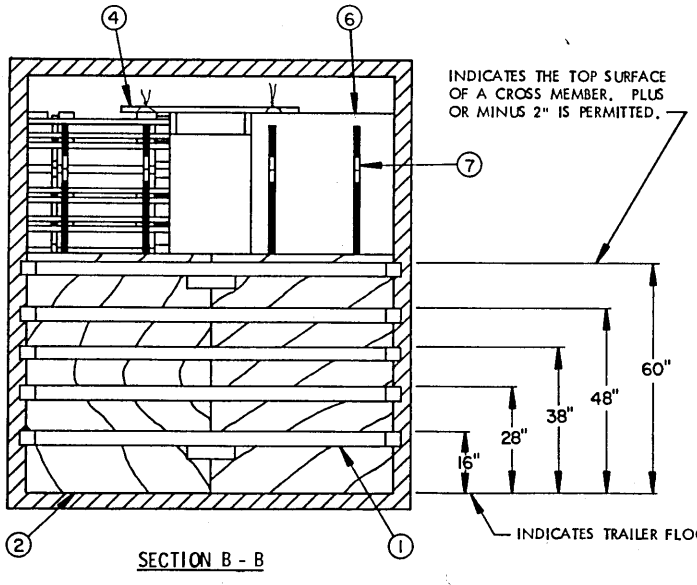
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	217 75	145 75
NAILS	NO. REQD	POUNDS
10d (3")	355	5-1/2
STEEL STRAPPING, 1-1/4" X .035" OR .031"--215' REQD ------31 LBS SEAL FOR 1-1/4" STRAPPING ---------- 16 REQD ------ NIL WIRE, NO. 14 GAGE ---------- 40' REQD ------NIL		

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	27	41,580 LBS
DUNNAGE		477 LBS
	TOTAL WEIGHT ------	42,057 LBS

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



ISOMETRIC VIEW



SECTION B - B

KEY NUMBERS

(1) CROSS MEMBER (10 REQD). POSITION AT THE HEIGHTS SPECIFIED BY THE "SECTION B-B" VIEW. SEE GENERAL NOTES "D" AND "K" ON PAGE 2. SEE SPECIAL NOTE 10 ON PAGE 7.

(2) LOAD BEARING GATE (2 REQD). SEE THE "LOAD BEARING GATE" DETAIL ON PAGE 23 AND SPECIAL NOTE 2 ON PAGE 7.

(3) ANTI-SWAY BRACE (13 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 21. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS.

(4) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" AND THE "TIE WIRE APPLICATION A" DETAILS ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 3 ON PAGE 7.

(5) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. 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 OF UNIT. SEE THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 4 ON PAGE 7.

(6) STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 25'-0" LONG STEEL STRAPPING (12 REQD). THREAD THRU HOLES ON TOP DUNNAGE ASSEMBLY; INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 5 ON PAGE 7.

(7) SEAL FOR 1-1/4" STRAPPING (24 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

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

SPECIAL NOTES:

1. A 27-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 CAN BE USED.

2. IF PLYWOOD IS NOT AVAILABLE FOR THE CONSTRUCTION OF LOAD BEARING GATES, OR IF DESIRED, PIECES MARKED (2) MAY BE CONSTRUCTED FROM 1" LUMBER. SEE THE "ALTERNATIVE LOAD BEARING GATE" DETAIL ON PAGE 23. NOTE THAT PIECES MARKED (2) ARE NOT REQUIRED IF THE CROSS MEMBERS CONTACT THE PALLET DUNNAGE AND/OR INTERMEDIATE DUNNAGE ASSEMBLY OF A UNIT BY AT LEAST ONE-HALF THE SURFACE OF THE HEIGHT OF THE CROSS MEMBER.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (4) IN THE LOAD ON PAGE 6, 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.

4. THE 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, ANTI-SWAY BRACE "A" WILL BE INSTALLED IN LIEU OF PIECE MARKED (5).

5. STACK UNITIZING STRAPS, PIECES MARKED (6), WILL BE APPLIED AROUND THE REARMOST COMPLETE STACK AND AROUND THE MOST FORWARD COMPLETE STACK IN EACH ROW WHERE THE NUMBER OF TIERS (LAYERS IN THE LOAD) CHANGES.

6. IF ONLY ONE PALLET UNIT IS LOADED IN THE SECOND LAYER, SPACER ASSEMBLY PROCEDURES AS SPECIFIED ON PAGE 16 MAY BE USED, OR THE TOP-OF-LOAD ANTI-SWAY BRACE "B" AND STACK UNITIZING STRAPS AS SHOWN ON PAGE 6 MAY BE USED.

7. REFER TO PAGE 17 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

8. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED FIVE (5) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 18 FOR GUIDANCE.

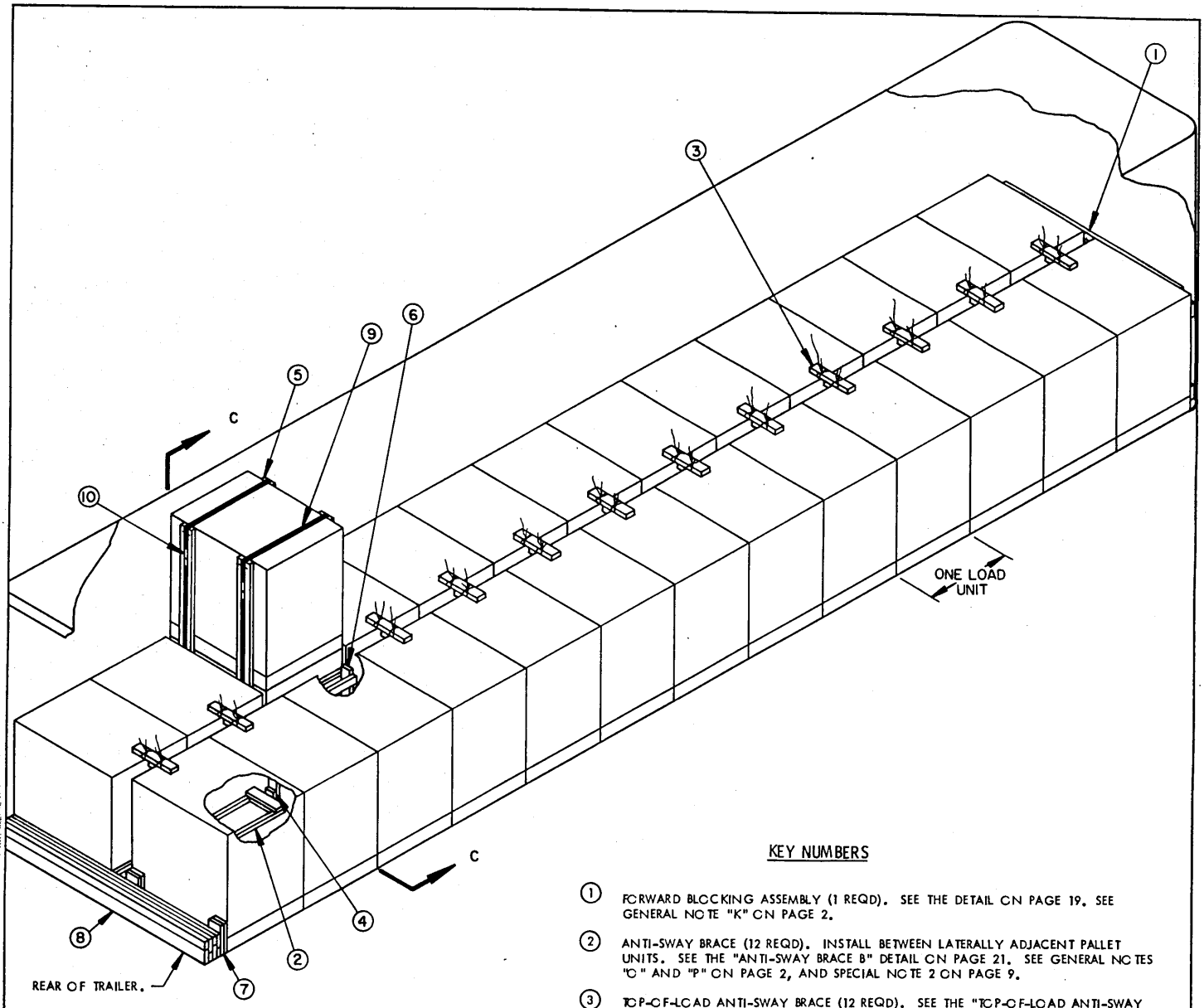
9. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 16.

10. IF THE TRAILER BEING LOADED IS EQUIPPED ONLY WITH SHORT WALL MEMBERS AT THE REAR FOR ATTACHMENT OF THE CROSS MEMBERS, THE CROSS MEMBERS AND LOAD BEARING GATES, PIECES MARKED (1) AND (2), WILL BE OMITTED FROM THE FRONT OF THE LOAD; UNLESS THE TRAILER HAS A SQUARE FRONT, A FORWARD BLOCKING ASSEMBLY WILL BE REQUIRED. SEE THE DETAIL ON PAGE 19.

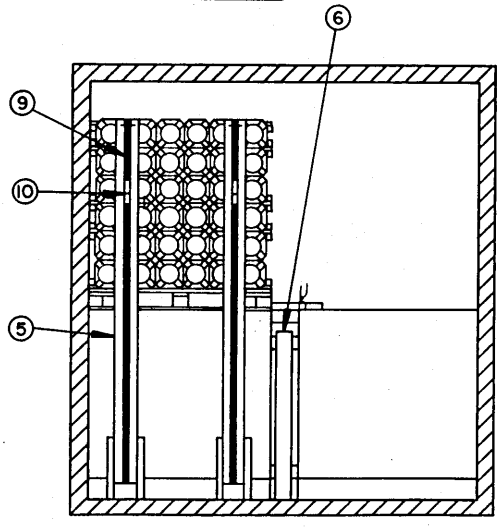
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4" 2" X 6"	4 180 26	2 120 26
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	24 260	NIL 5-1/2
STEEL STRAPPING, 1-1/4"X .035" OR .031"---300' REQD-----43 LBS SEAL FOR 1-1/4" STRAPPING ---------- 24 REQD----- 1 LB WIRE, NO. 14 GAGE ---------- 25' REQD-----NIL		
PLYWOOD, 1/2" ---------- 81 SQ FT REQD-112 LBS CROSS MEMBER ---------- 10 REQD		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	27	41,580 LBS
DUNNAGE		458 LBS
TOTAL WEIGHT		42,038 LBS (APPROX)



ISOMETRIC VIEW



SECTION C - C

KEY NUMBERS

(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTE "K" ON PAGE 2.

(2) ANTI-SWAY BRACE (12 REQD). INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 21. SEE GENERAL NOTES "O" AND "P" ON PAGE 2, AND SPECIAL NOTE 2 ON PAGE 9.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (12 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 20. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 3 ON PAGE 9.

(4) SPACER PIECE 2" X 4" X 6" (4 REQD). NAIL TO THE ANTI-SWAY BRACE, PIECE MARKED (2), W/2-10d NAILS. ONLY REQUIRED AT THE END OF ANTI-SWAY BRACES WHERE IT IS NECESSARY TO COMPENSATE FOR THE THICKNESS OF THE STRAPPING BOARD ASSEMBLIES, PIECES MARKED (5), AND FILL PIECES MARKED (7), IF USED.

(5) STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 25. SEE SPECIAL NOTE 4 ON PAGE 9.

(6) CRIB FILL (1 REQD) POSITION AS SHOWN. WIRE TIE TO THE INTERMEDIATE DUNNAGE ASSEMBLY OF AN ADJACENT UNIT WITH NO. 14 GAGE WIRE. SEE THE DETAIL AND THE CRIB FILL CHART ON PAGE 19. SEE SPECIAL NOTE 5 ON PAGE 9.

(7) FILL PIECE, 2" X 6" X 12" (DOUBLED) (2 REQD) POSITION AS SHOWN. NAIL THE FIRST PIECE TO SOLID FILL W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. (ONLY REQUIRED FOR AN UNEVEN LOAD LENGTH).

(8) REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY C" DETAIL ON PAGE 22. SEE SPECIAL NOTE 6 ON PAGE 9.

(9) STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 24' - 6" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE A PALLET UNIT STACK AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED (5), AS SHOWN. STAPLE TO UPPER PORTION OF STRAPPING BOARD ASSEMBLY W/1 STAPLE. SEE SPECIAL NOTES 5, 7, AND 8, ON PAGE 9.

(10) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

27-UNIT LOAD IN A 40' - 0" LONG BY 8' - 2" WIDE HI-VOLUME VAN TRAILER

PROJECT FSA 43C/23-63

(SPECIAL NOTES CONTINUED)

8. IF ANOTHER PALLET UNIT IS POSITIONED OPPOSITE THE UNIT IN THE TOP LAYER, TWO (2) ANTI-SWAY BRACES SHOWN AS PIECES MARKED ② CAN BE USED IN LIEU OF PIECE MARKED ⑥, IF DESIRED. IF TWO ADDITIONAL UNITS ARE POSITIONED IN THE TOP LAYER, BUNDLING STRAPS, 29' - 6" LONG (WITH STRAPPING BOARD ASSEMBLIES) MUST BE APPLIED AROUND THE TWO (2) LONGITUDINALLY ADJACENT PALLET STACKS. THEN, PIECES MARKED ⑦ WILL NOT BE REQUIRED.

9. IF THE TRAILER BEING OUTLOADED CONTAINS MECHANICAL BRACING DEVICES, SUCH AS WALL BELT RAILS AND LOAD BLOCKING 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" BELOW. THE MECHANICAL BRACING DEVICE SYSTEM OF A TRAILER MUST HAVE A LENGTH OF AT LEAST 39' - 6" AS MEASURED FROM THE FRONT WALL OF THE TRAILER. FOR THE DEPICTED LOAD IN A 40' - 0" LONG TRAILER, IT MAY BE NECESSARY TO FORM TWELVE LOAD UNITS INSTEAD OF THIRTEEN, AS SHOWN. IF THE TRAILER HAS ROUNDED FRONT CORNERS, INSTALL CROSS MEMBERS AT THE FRONT OF THE LOAD IN LIEU OF USING THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①. SEE GENERAL NOTES "D" AND "K" ON PAGE 2.

10. REFER TO PAGE 17 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

11. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED FIVE (5) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 18 FOR GUIDANCE.

12. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 14 THRU 16.

13. 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 26 AND 27 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN; FOR THE DEPICTED LOAD IN A 40'-0" LONG TRAILER WHEN USING THE NAILED-HEADER METHOD, IT WILL BE NECESSARY TO FORM TWELVE LOAD UNITS INSTEAD OF THIRTEEN, AS 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.

SPECIAL NOTES:

1. A 27-UNIT LOAD IS SHOWN IN A 40' - 0" LONG BY 8' - 2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TYPE TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED. IF LONGER TRAILERS ARE USED, REFER TO THE PROCEDURES DEPICTED ON PAGES 10 AND 11.

2. IF THE TRAILER TO BE LOADED IS LESS THAN 8' - 1-1/2" WIDE LATERAL BRACING IS NOT REQUIRED. IN WIDER TRAILERS, AS SHOWN, ANTI-SWAY BRACES WILL BE INSTALLED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS IN EACH LAYER. NOTE THAT ANTI-SWAY BRACES BETWEEN THE PALLET UNITS AT THE FORWARD AND REAR ENDS OF A 2-HIGH PORTION MUST BE SECURED BY WIRE TYING TO THE PALLET POSTS. IF DESIRED, CRIB FILL SHOWN AS PIECE MARKED ⑥ MAY BE USED IN LIEU OF PIECES MARKED ② AND ③ IN THE 1-HIGH PORTION OF THE LOAD. NOTE THAT 2-HIGH CRIB FILL WILL BE USED BETWEEN LATERALLY ADJACENT PALLET UNITS IN THE SECOND LAYER WHICH ARE NOT UNITIZED - (WHICH COULD BE THE CASE IF A SHORTER TRAILER IS USED).

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 8, 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.

4. FOR EASE OF INSTALLATION, A STRAPPING BOARD ASSEMBLY "B" MAY BE USED IN LIEU OF EACH PAIR OF STRAPPING BOARD ASSEMBLIES, PIECE MARKED ⑤. SEE THE "STRAPPING BOARD ASSEMBLY B" DETAIL ON PAGE 25.

5. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW AS SHOWN, IT MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT IN THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING UNITIZING STRAPS, PIECE MARKED ⑨. IN TRAILERS WHICH ARE 7' - 10" OR WIDER, PROVIDE LATERAL BRACING BY INSTALLING CRIB FILL, AS DETAILED ON PAGE 19 AND SHOWN IN THE LOAD VIEW ON PAGE 8 AS PIECE MARKED ⑥.

6. IF THE SPACE 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 SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE REAR BLOCKING ASSEMBLY "C", AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, REAR BLOCKING ASSEMBLY "B" DETAILED ON PAGE 22, WILL BE USED. SEE SPECIAL NOTE 13.

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 OR AGAINST THE FORWARD BLOCKING ASSEMBLY. PALLET UNITS MUST NOT BE POSITIONED ON TOP OF THE REARMOST LOAD UNIT. THE UNITIZING STRAPS, PIECE MARKED ⑨, AND THE STRAPPING BOARD ASSEMBLIES, PIECE MARKED ⑤, MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.

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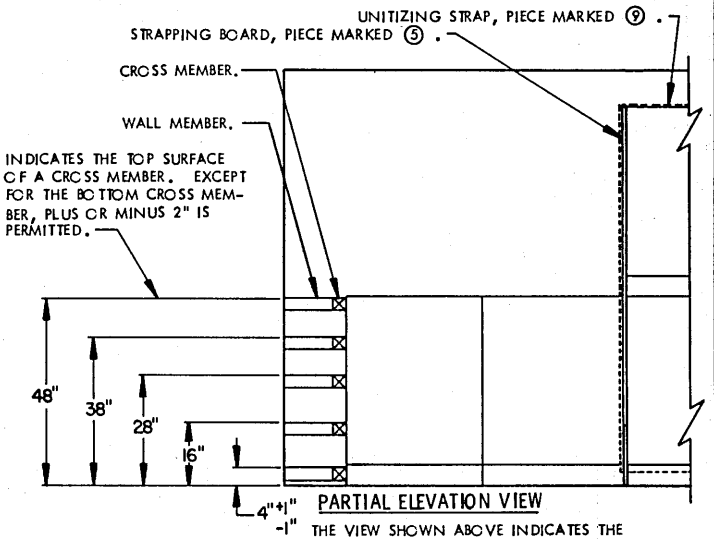


PARTIAL ELEVATION VIEW

THE VIEW SHOWN ABOVE INDICATES THE REAR PORTION OF THE LOAD SHOWN ON PAGE 8. SEE SPECIAL NOTE 9 ABOVE.

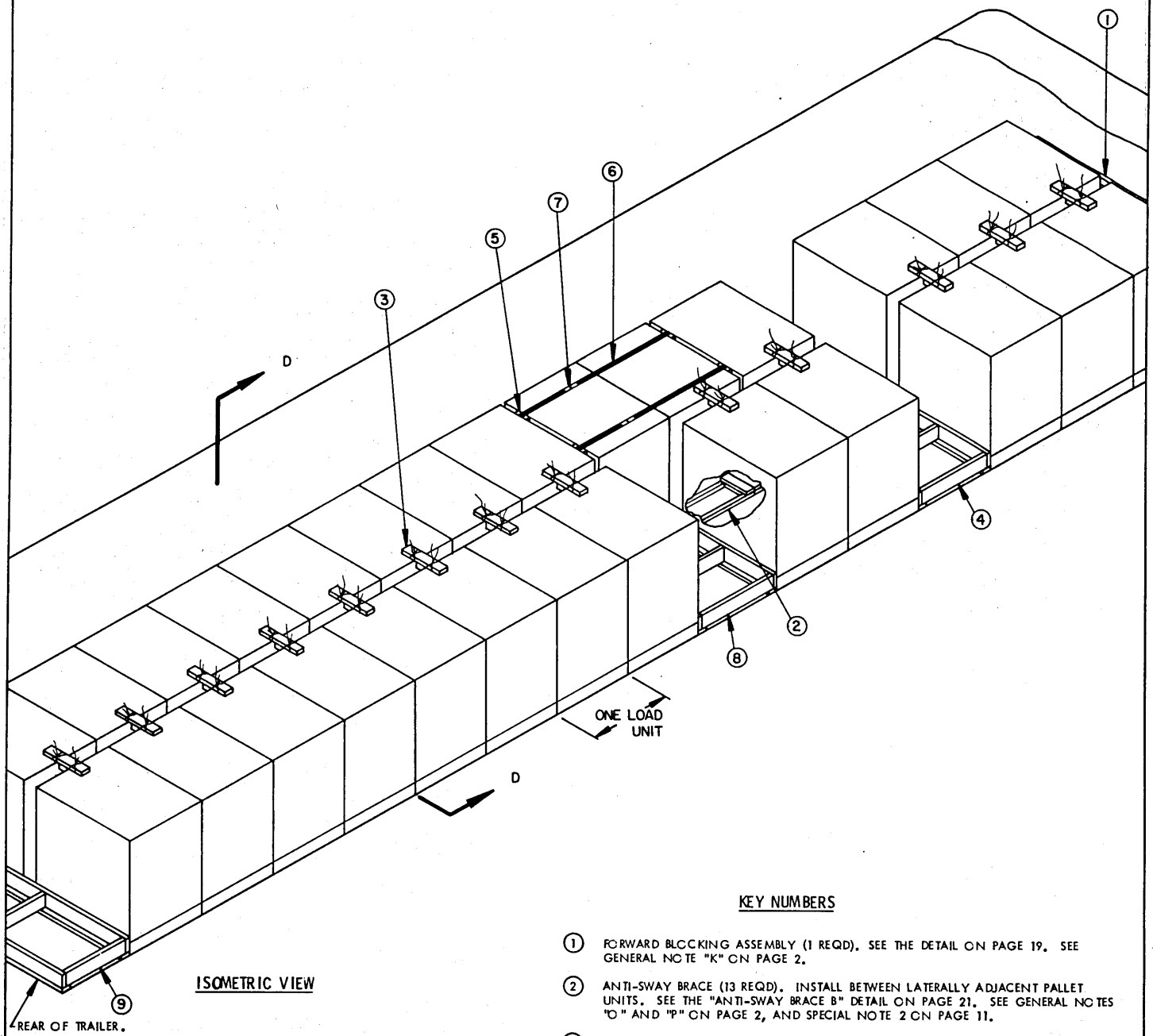
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	27	41,580 LBS
DUNNAGE		424 LBS
TOTAL WEIGHT		42,004 LBS

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	33	11
2" X 2"	81	27
2" X 3"	2	1
2" X 4"	114	76
2" X 6"	94	94
NAILS	**NO. REQD**	**POUNDS**
6d (2")	128	3/4
10d (3")	224	3-1/2

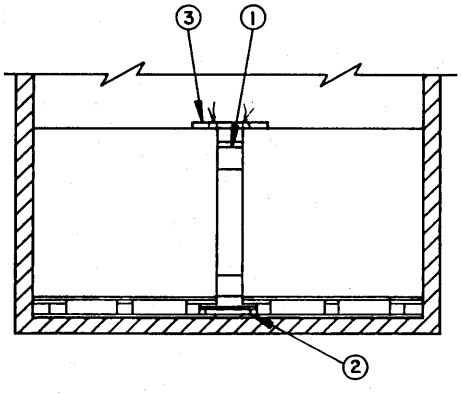
STEEL STRAPPING, 1-1/4" X .035" OR .031"	49'	REQD	7 LBS
SEAL FOR 1-1/4" STRAPPING	4	REQD	NIL
STAPLE	2	REQD	NIL
WIRE, NO. 14 GAGE	60'	REQD	1 LB



ISOMETRIC VIEW

KEY NUMBERS

1. FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTE "K" ON PAGE 2.
2. ANTI-SWAY BRACE (13 REQD). INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 21. SEE GENERAL NOTES "O" AND "P" ON PAGE 2, AND SPECIAL NOTE 2 ON PAGE 11.
3. TOP-OF-LOAD ANTI-SWAY BRACE (13 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 20. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON THAT PAGE.
4. SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 21. SEE SPECIAL NOTE 3 ON PAGE 11.
5. STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE "STRAPPING BOARD ASSEMBLY A" DETAIL ON PAGE 25.
6. BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-6" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) PALLET UNITS. SECURE TO EACH PIECE MARKED ⑤ W/1 STAPLE. SEE SPECIAL NOTE 4 ON PAGE 11.
7. SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.
8. SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 24. SEE SPECIAL NOTE 5 ON PAGE 11.
9. REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 22. SEE SPECIAL NOTE 6 ON PAGE 11.



SECTION D - D

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

PROJECT FSA 43C/23-63

SPECIAL NOTES:

1. A 27-UNIT LOAD IS SHOWN IN A 48' - 0" LONG BY 8' - 2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED.

2. ANTI-SWAY BRACES AND TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② AND ③ IN THE LOAD ON PAGE 10 ARE TO BE POSITIONED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS. IF DESIRED, CRIB FILL DETAILED ON PAGE 19, AND SHOWN IN THE LOAD ON PAGE 8 AS PIECE MARKED ⑥ MAY BE USED IN LIEU OF PIECES MARKED ② AND ③, HOWEVER, IF THE TRAILER TO BE LOADED IS LESS THAN 8' - 2" WIDE LATERAL BRACING WILL NOT BE REQUIRED.

3. SPACER ASSEMBLY "A" SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 10 IS USED FOR THE PURPOSE OF PROVIDING FOR PROPER WEIGHT DISTRIBUTION, AND IS SHOWN AS TYPICAL ONLY. IF THE TRAILER TO BE LOADED IS LONGER THAN 48' THE LOCATION OF THE ASSEMBLY, AND/OR THE STRUT LENGTHS, MAY BE DIFFERENT FROM WHAT IS SHOWN. IF A SHORTER TRAILER IS USED FOR THE DEPICTED LOAD, THIS ASSEMBLY MAY NOT BE REQUIRED. NOTE THAT A SPACER ASSEMBLY MUST NOT BE POSITIONED ADJACENT TO THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①.

4. A PALLET UNIT THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING BUNDLING STRAPS SHOWN AS PIECES MARKED ⑥ IN THE LOAD ON PAGE 10, AROUND THAT PALLET UNIT AND THE PALLET UNIT IMMEDIATELY ADJACENT.

5. THE SPACER ASSEMBLY SHOWN AS PIECE MARKED ⑧ IN THE LOAD VIEW, IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF THE SPACER ASSEMBLY, STRAPPING BOARDS AND BUNDLING STRAPS, PIECES MARKED ⑤ AND ⑥, 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.

6. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 22. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE "REAR BLOCKING ASSEMBLY B" AS SHOWN.

7. REFER TO PAGE 17 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

8. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED FIVE (5) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 18 FOR GUIDANCE.

9. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 14 AND 15.

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 26 AND 27. 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

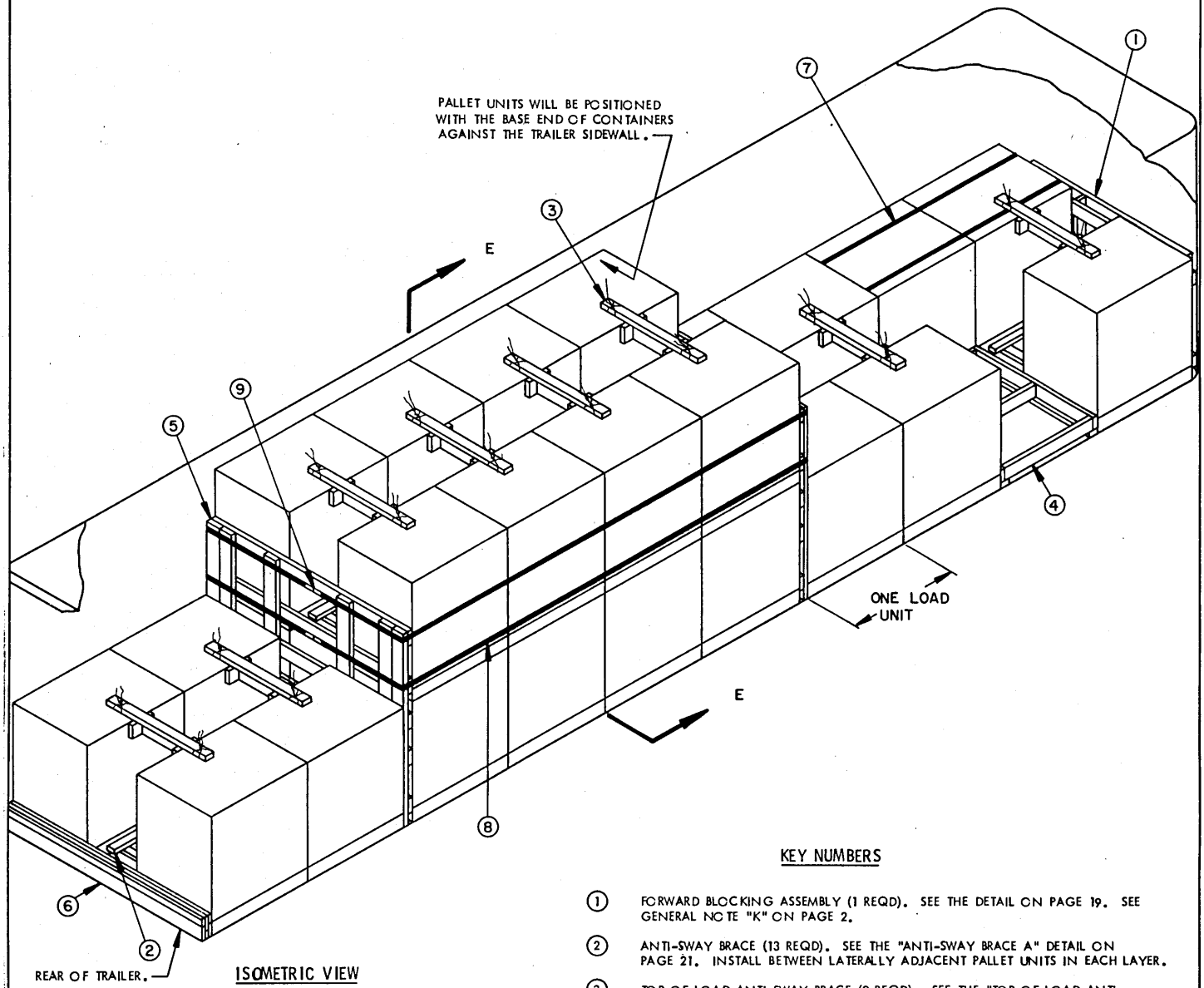
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	30	10
2" X 2"	87	29
2" X 3"	4	2
2" X 4"	107	71
2" X 6"	116	116
NAILS	**NO. REQD**	**POUNDS**
6d (2")	130	2
10d (3")	269	4-1/4

STEEL STRAPPING, 1-1/4" ------- 43 REQD ---------- 7 LBS
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ---------- NIL
STAPLE ---------- 2 REQD ---------- NIL

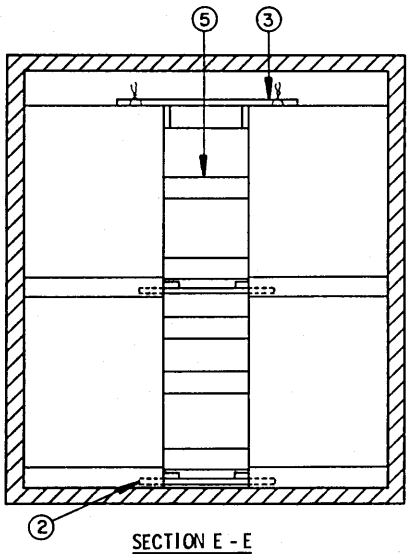
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	27	41,580 LBS
DUNNAGE		470 LBS

TOTAL WEIGHT ------ 42,050 LBS



ISOMETRIC VIEW



SECTION E - E

KEY NUMBERS

1. FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTE "K" ON PAGE 2.
2. ANTI-SWAY BRACE (13 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 21. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS IN EACH LAYER.
3. TOP-OF-LOAD ANTI-SWAY BRACE (9 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A", AND THE "TIE WIRE APPLICATION A" DETAILS ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT UNITS. SEE SPECIAL NOTE 2 ON PAGE 13.
4. SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 24. SEE SPECIAL NOTE 3 ON PAGE 13.
5. BULKHEAD GATE (2 REQD). SEE THE DETAIL ON PAGE 24.
6. REAR BLOCKING (1 REQD). SEE THE REAR BLOCKING ASSEMBLY "C" DETAIL ON PAGE 22. SEE SPECIAL NOTES 4 AND 5 ON PAGE 13.
7. BUNDLING STRAP, 1-1/4" X .035" OR .031" X 24' - 6" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE TWO PALLET UNITS. SEE SPECIAL NOTE 6 ON PAGE 13.
8. BUNDLING STRAP, 1-1/4" X .035" OR .031" X 48' - 6" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE EIGHT UPPER-LAYER PALLET UNITS AS SHOWN. SEE SPECIAL NOTE 7 ON PAGE 13.
9. SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

ALTERNATIVE LOADING PROCEDURES

27-UNIT LOAD IN A 40' - 0" LONG BY 7' - 8" WIDE HIGH-VOLUME VAN TYPE TRAILER

SMCAC FORM 6, 1 NOV 85

PROJECT FSA 43C/23-63

SPECIAL NOTES:

1. A 27-UNIT LOAD IS SHOWN IN A 40' - 0" LONG BY 7' - 8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TYPE TRAILER. WIDER OR NARROWER TRAILERS MAY BE USED. HIGH-VOLUME TRAILERS MAY BE REQUIRED.

2. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 12, ARE TO BE POSITIONED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS IN EACH LAYER.

3. THE SPACER ASSEMBLY, SHOWN IN THE LOAD VIEW AS PIECE MARKED ④, IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF THE SPACER ASSEMBLY, THE BUNDLING STRAPS, SHOWN AS PIECE MARKED ⑦, 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 OR A BULKHEAD GATE, PIECES MARKED ① AND ⑤.

4. 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 SHOWN. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, REAR BLOCKING ASSEMBLY "A" DETAILED ON PAGE 22 WILL BE USED. SEE SPECIAL NOTE 5.

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 26 AND 27 FOR GUIDANCE. A NAILED-HEADER METHOD AND A TYGARD METHOD ARE SHOWN; FOR THE DEPICTED LOAD IN A 40'-0" LONG TRAILER WHEN USING THE NAILED-HEADER METHOD, IT WILL BE NECESSARY TO FORM NINE LOAD UNITS INSTEAD OF TEN, AS 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.

6. A PALLET UNIT THAT DOES NOT HAVE A PALLET UNIT DIRECTLY OPPOSITE MUST BE SECURED BY INSTALLING BUNDLING STRAPS, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 12, AROUND THAT PALLET UNIT AND THE PALLET UNIT IMMEDIATELY ADJACENT; A PALLET UNIT WILL NOT BE OMITTED FROM THE SECOND LAYER PORTION OF THE LOAD.

7. THE SECOND LAYER PORTION OF THE LOAD IS LIMITED TO NOT MORE THAN TWELVE (12) PALLET UNITS. THE LOWER BUNDLING STRAP, PIECE MARKED ⑧, MAY BE OMITTED IF THE SECOND LAYER CONTAINS SIX UNITS OR LESS.

8. REFER TO PAGE 17 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

9. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED FIVE (5), MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 18 FOR GUIDANCE.

BILL OF MATERIAL (TYPICAL)

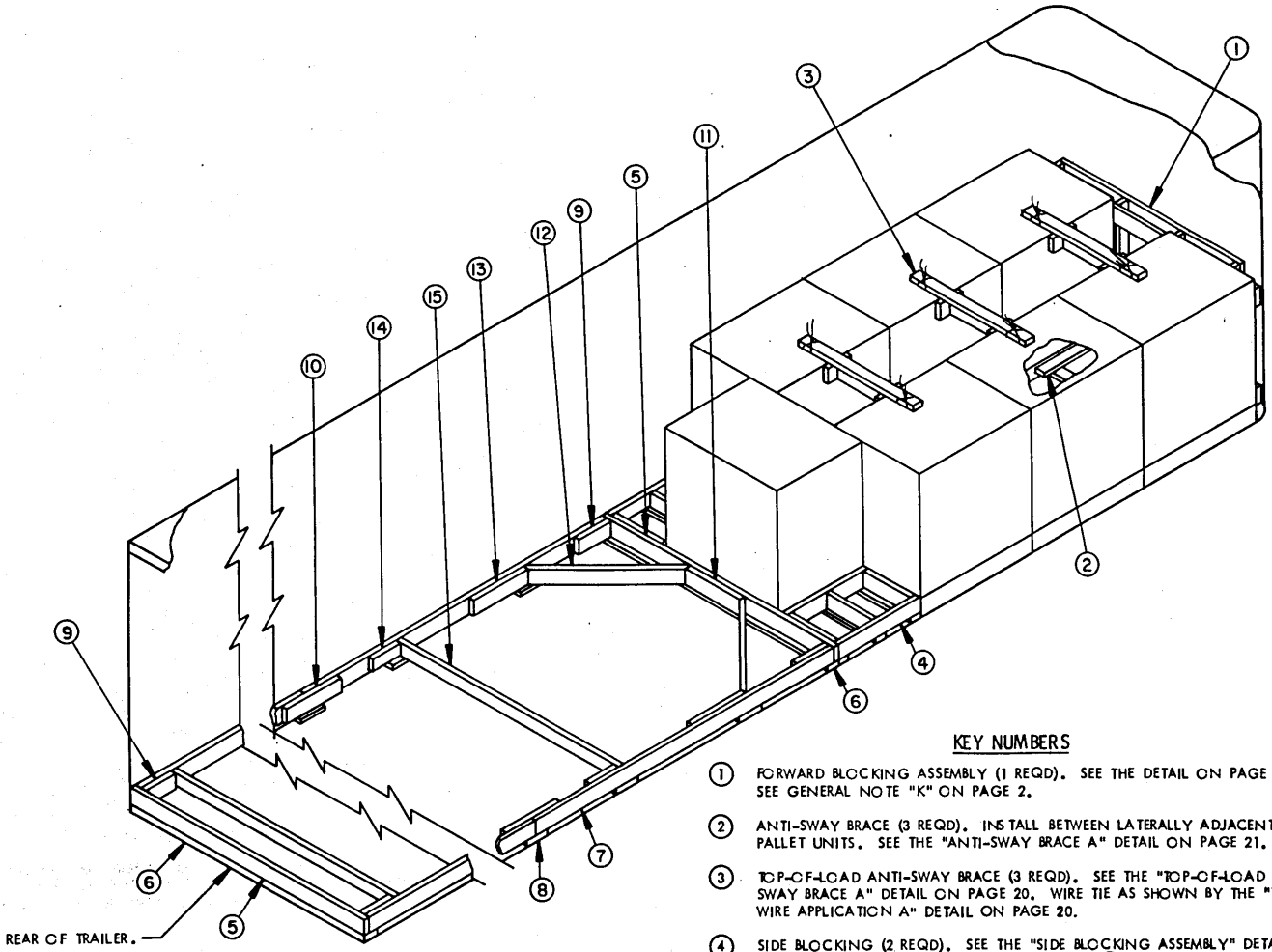
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	220	147
2" X 6"	252	252
NAILS	**NO. REQD**	**POUNDS**
10d (3")	541	8-1/2

STEEL STRAPPING, 1-1/4" X .035" OR .031" --- 146' REQD ----- 21 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD ----- NIL
WIRE, NO. 14 GAGE ---------- 45' REQD ----- NIL

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	27	41,580 LBS
DUNNAGE		828 LBS
	TOTAL WEIGHT	42,408 LBS

ALTERNATIVE LOADING PROCEDURES
27-UNIT LOAD IN A 40' - 0" LONG BY 7' - 8" WIDE HIGH-VOLUME VAN TYPE TRAILER



ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES COVER THE USE OF BOTH "K-BRACE" AND NAILED: FLOOR LINE BLOCKING IN A 7' - 6" WIDE (INSIDE DIMENSION) VAN TRAILER WHICH IS EQUIPPED WITH OR WITHOUT NAILABLE FLOORS AND REAR CORNER POSTS. WIDER OR NARROWER TRAILERS MAY BE USED. SEE SPECIAL NOTES 4 AND 5.

2. ANTI-SWAY BRACES AND TOP-OF-LOAD ANTI-SWAY BRACES; PIECES MARKED ②AND③, WILL BE POSITIONED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS.

3. THE K-BRACE BLOCKING SHOWN AS PIECES MARKED⑤THRU ⑮ IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.

4. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, SPECIAL REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGES 26 AND 27. A NAILED-HEADER METHOD AND 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, AND MAY BE USED IN LIEU OF PIECES MARKED⑤THRU ⑮ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.

5. IF DESIRED, IN TRAILERS EQUIPPED WITH NAILABLE FLOORS, THE NAILED-HEADER METHOD OF REAR BLOCKING MAY BE USED IN LIEU OF THE K-BRACE BLOCKING SHOWN AS PIECES MARKED⑤THRU ⑮. REFER TO PAGE 26 FOR GUIDANCE. WHEN THE NAILED-HEADER METHOD IS APPLIED FOR THE BRACING OF THE DEPICTED 7-UNIT LOAD OR ANY ODD NUMBERED QUANTITY, ONLY THE DOUBLED 2" X 4" PIECES ARE REQUIRED. OMIT THE REAR BLOCKING ASSEMBLY; WHEN SHIPPING AN EVEN NUMBERED QUANTITY, THE NAILED-HEADER METHOD WILL APPLY AS SHOWN. AS AN ALTERNATIVE IN NAILABLE FLOOR TRAILERS, OR IN TRAILERS HAVING NON-NAILABLE FLOORS, THE TYGARD METHOD DEPICTED ON PAGE 27 MAY BE USED.

KEY NUMBERS

① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTE "K" ON PAGE 2.

② ANTI-SWAY BRACE (3 REQD). INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 21.

③ TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 20. WIRE TIE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 20.

④ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 21. NAIL TO A HEADER, PIECE MARKED⑤, W/2-10d NAILS.

⑤ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). SEE SPECIAL NOTE 4 AT LEFT.

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, PIECE MARKED⑤, W1-10d NAIL EVERY 8".

⑦ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN THE FORWARD AND REAR HEADERS, PIECES MARKED⑤(2 REQD).

⑧ RISER PIECE, 2" X 4" X 9" (AS REQD). CENTER UNDER THE JOINTS OF PIECES MARKED⑫AND⑬, ⑭AND⑮, AND UNDER THE SPLICE OF PIECES MARKED⑦, IF APPLICABLE. NAIL TO SIDE STRUT MARKED⑦W/2-10d NAILS.

⑨ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT, PIECE MARKED⑦, W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED⑤, W/3-12d NAILS.

⑩ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF PIECES MARKED⑦AND NAIL TO SIDE STRUT MARKED⑦W/4-10d NAILS AT EACH END.

⑪ CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO A HEADER, PIECE MARKED⑤, W/6-10d NAILS.

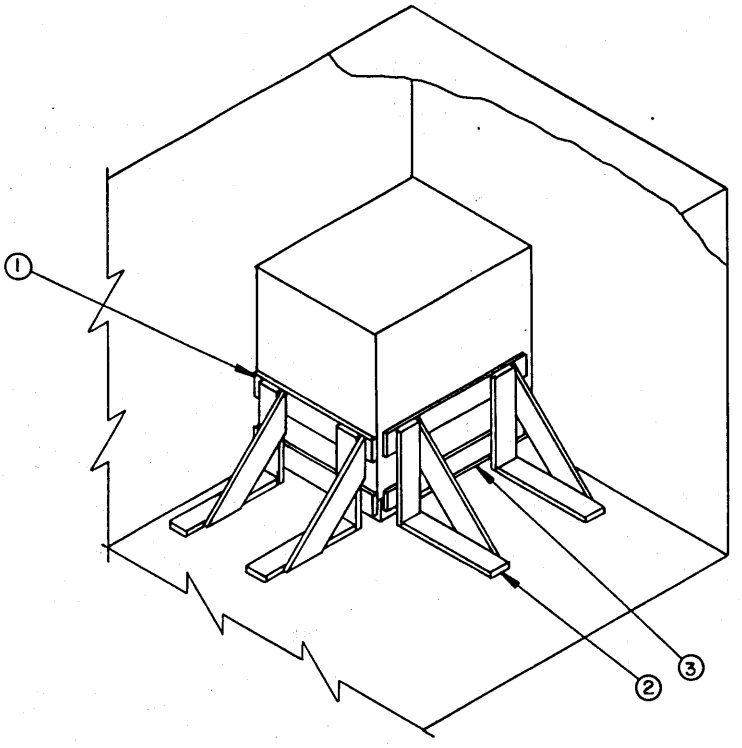
⑫ DIAGONAL BRACE, 2" X 6" BY CUT-TO-FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45°CUTS. INSTALL AT A 45°ANGLE AS SHOWN AND TOENAIL TO THE ADJACENT HEADER AND SIDE STRUT, PIECES MARKED⑤AND⑦, W/2-16d NAILS AT EACH END.

⑬ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED⑦, W/8-10d NAILS.

⑭ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED⑦, W/3-10d NAILS.

⑮ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQUIRED). POSITION ONE STRUT BRACE AT THE REAR OF THE TRAILER AND NAIL TO THE POCKET CLEATS, PIECES MARKED⑨, W/2-12d NAILS AT EACH END. IF THE SIDE STRUTS, PIECES MARKED⑦, ARE LONGER THAN 7' - 0", AN ADDITIONAL STRUT BRACE, PIECE MARKED⑮, AND TWO (2) STRUT BRACE RETAINING CLEATS, PIECES MARKED⑭, AND TWO (2) RISER PIECES MARKED⑧, MUST BE APPLIED FOR EVERY 7' - 0" OF SIDE STRUT LENGTH.

TYPICAL LTL (7-UNIT LOAD) IN A CONVENTIONAL VAN TYPE TRAILER



ISOMETRIC VIEW

SPECIAL NOTES:

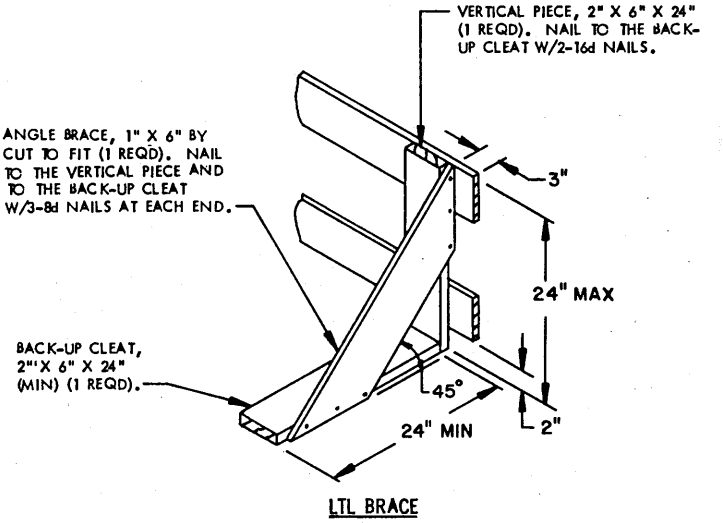
1. A ONE-PALLET UNIT LOAD IS SHOWN DEPICTING THE USE OF LTL BRACES IN A CONVENTIONAL TYPE VAN TRAILER EQUIPPED WITH NAILABLE FLOORS. TRAILERS WITH ALL METAL FLOORS CANNOT BE USED.
2. IF THE TRAILER BEING LOADED HAS ROUNDED FRONT CORNERS, TWO (2) ADDITIONAL LTL BRACES, AND TWO (2) ADDITIONAL LOAD BEARING PIECES MAY BE POSITIONED AT THE FORWARD END OF THE LADING OR A FORWARD BLOCKING ASSEMBLY, SHOWN AS KEY NUMBER (1) ON PAGE 14 MAY BE USED.
3. 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.
4. 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 AND TOP-OF-LOAD ANTI-SWAY BRACES WILL BE INSTALLED BETWEEN THE LATERALLY ADJACENT UNITS.

KEY NUMBERS

(1) LOAD BEARING PIECE, 1" X 6" X 35" (2 REQD). LOCATE AT HEIGHTS SPECIFIED IN "LTL BRACE" DETAIL BELOW. NAIL TO THE VERTICAL PIECES OF THE LTL BRACE W/4-6d NAILS AT EACH JOINT.

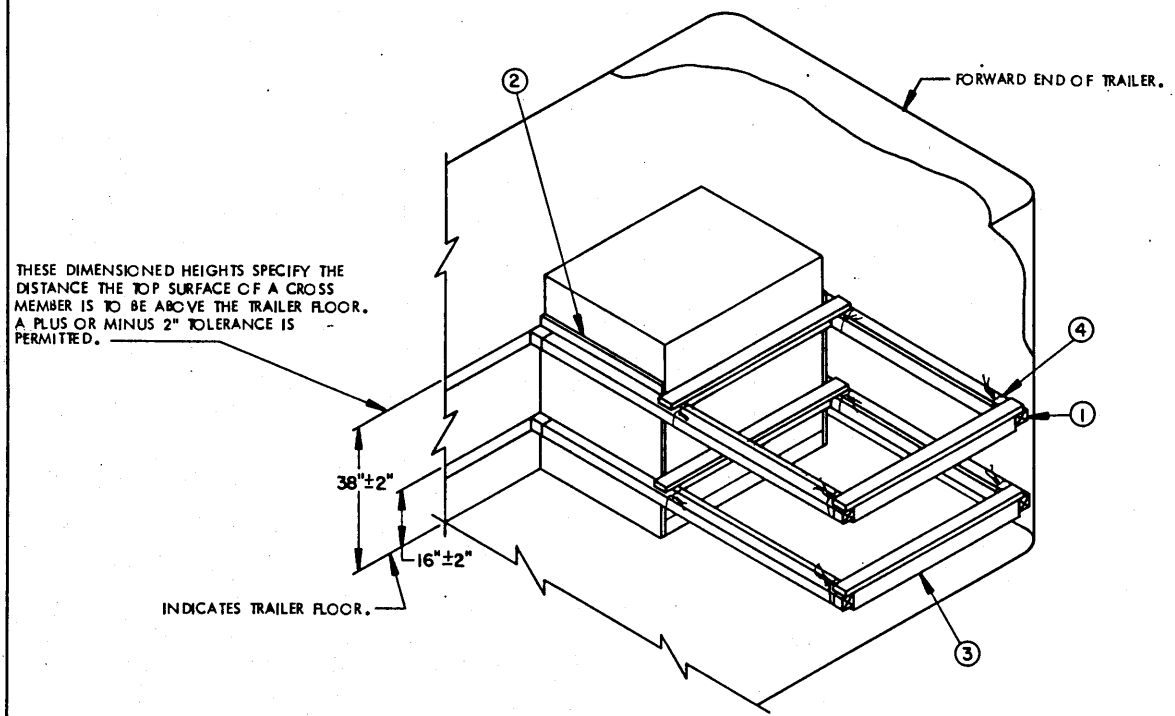
(2) LTL BRACE (4 REQD). SEE THE DETAIL BELOW. NAIL EACH LTL BRACE TO TRAILER FLOOR W/7-10d NAILS. SEE SPECIAL NOTE 3 AT LEFT.

(3) LOAD BEARING PIECE, 1" X 6" X 40" (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.



LTL BRACE

TYPICAL LTL - 1 PALLET UNIT IN A CONVENTIONAL VAN TYPE TRAILER



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.

2. A TYPICAL LTL LOAD OF ONE (1) PALLET UNIT IS SHOWN. IF TWO (2) PALLET UNITS ARE TO BE TRANSPORTED, POSITION THE UNITS TWO (2) ACROSS THE WIDTH OF THE TRAILER. OMIT THE SPACER ASSEMBLIES AND TIE WIRES SHOWN AS PIECES MARKED ③, AND ④. NOTE: WHEN LOADING TWO (2) PALLET UNITS ACROSS THE WIDTH OF THE TRAILER, POSITION THE UNITS AGAINST THE FORWARD END WALL (UNLESS 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.

KEY NUMBERS

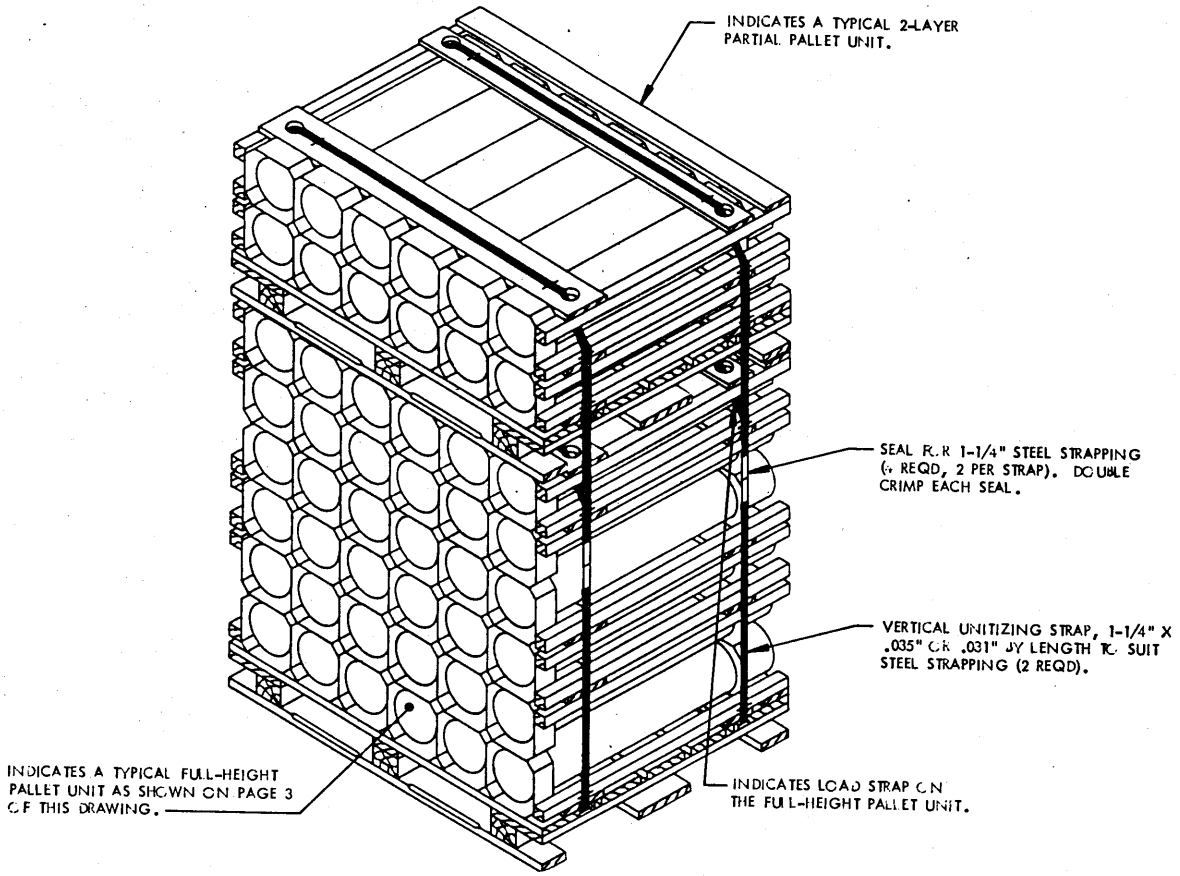
① CROSS MEMBER (4 REQD). POSITION IN TWO (2) BLOCKING STATIONS AT THE HEIGHTS AS SPECIFIED BY THE ISOMETRIC VIEW ABOVE. SEE GENERAL NOTES "D" AND "K" ON PAGE 2.

② PLYWOOD, 1/2" X 35" X 40" (2 REQD). POSITION BETWEEN THE PALLET UNIT AND THE CROSS MEMBERS.

③ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 23.

④ TIE WIRE, NO. 14 GAGE WIRE 24" LONG (8 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE CROSS MEMBER AND THE SPACER ASSEMBLY. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE SPACER ASSEMBLY WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE, OR WITH A STRAP STAPLE.

TYPICAL LTL-(1 PALLET UNIT) IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES



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

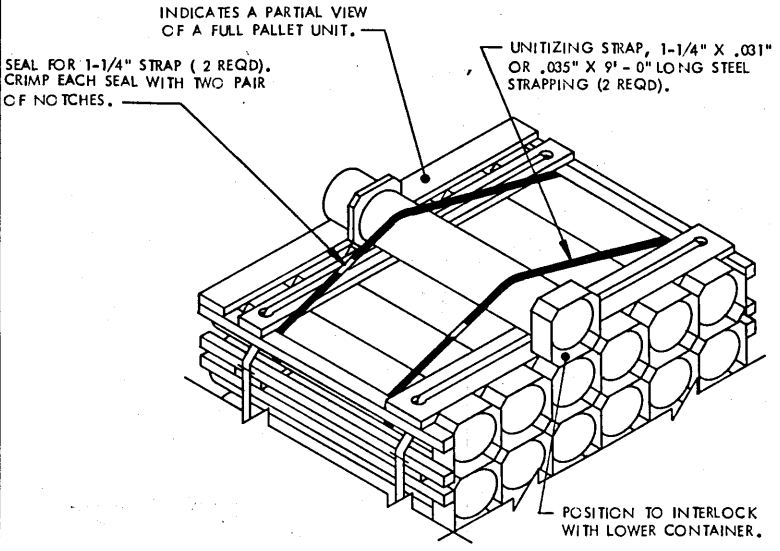
SPECIAL NOTES:

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 SHOULD 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.

3. THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CONVENTIONAL TYPE VAN TRAILERS AND IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.

4. FOR SHIPMENT OF ONE THROUGH FIVE "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 18 OF THIS DRAWING.



SECUREMENT OF ONE CONTAINER

SPECIAL NOTES:

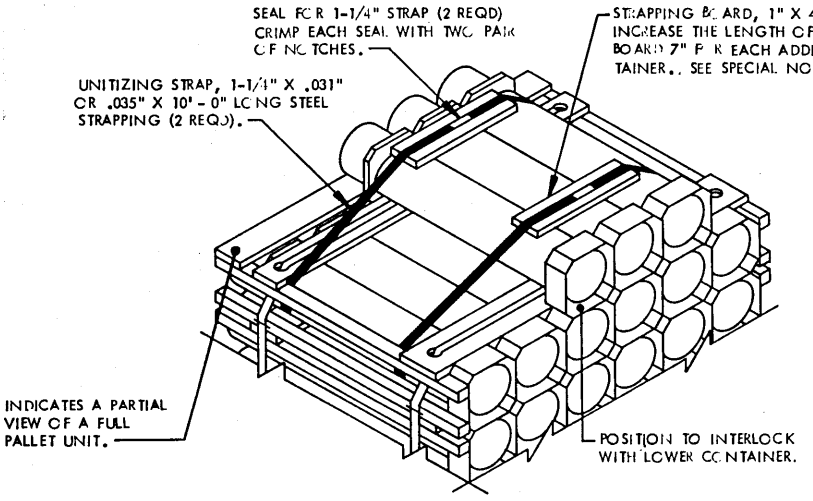
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO A FORM A FULL-LAYERED PARTIAL UNIT FOR SECUREMENT ON TOP OF A FULL PALLET UNIT AS SHOWN ON PAGE 17.

2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.

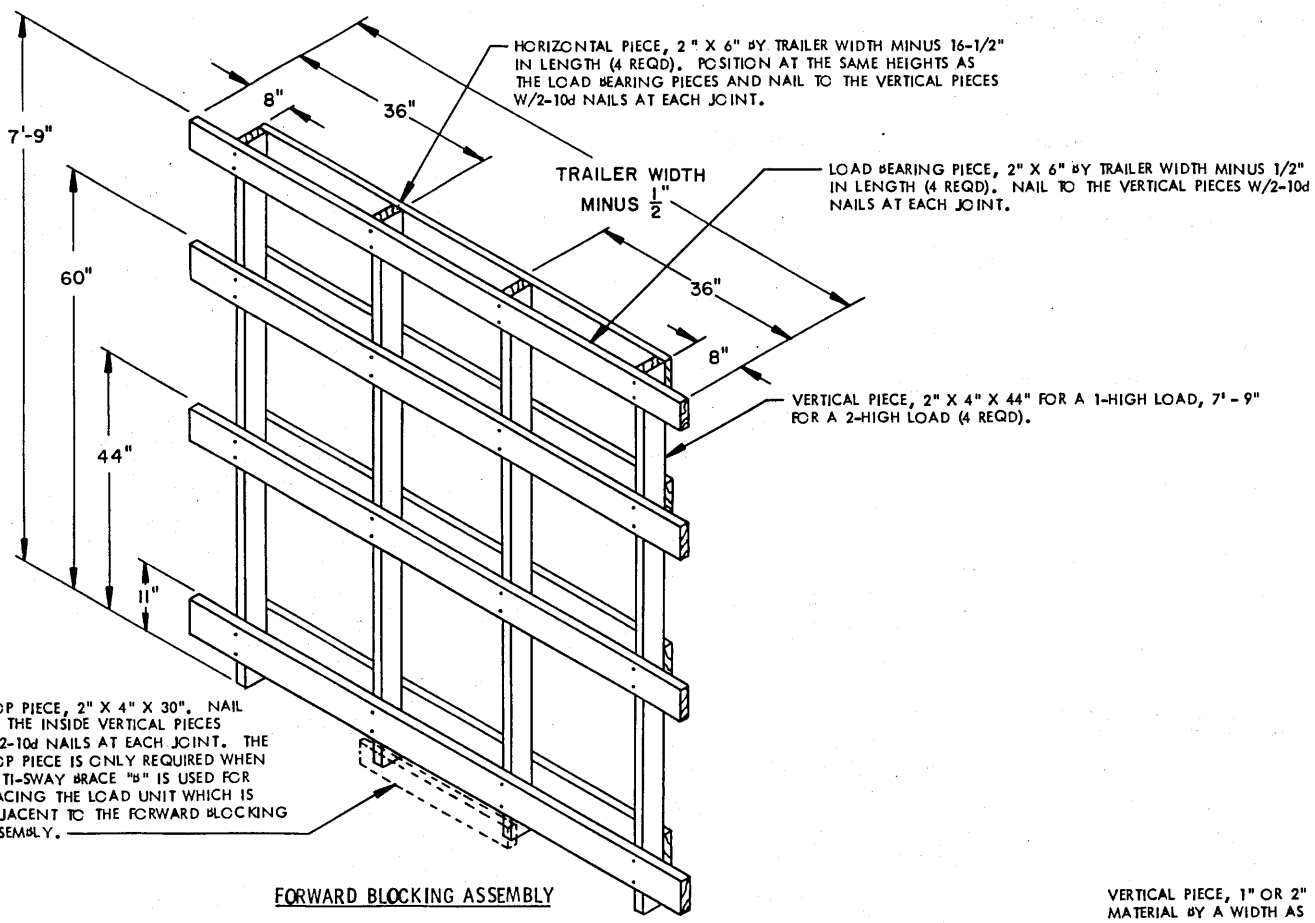
3. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SECUREMENT OF LEFTOVER CONTAINERS FOR SHIPMENT. THE VIEW AT TOP LEFT DEPICTS ONE LEFTOVER CONTAINER SECURED TO A FULL-HEIGHT PALLET UNIT. THE BOTTOM VIEW DEPICTS THREE LEFTOVER CONTAINERS SECURED TO A FULL-HEIGHT PALLET UNIT. WHEN THREE THRU FIVE LEFTOVER CONTAINERS ARE BEING SHIPPED, A STRAPPING BOARD WILL BE NEEDED. LEFTOVER CONTAINERS MUST BE SECURED WITH A MINIMUM OF TWO (2) PIECES OF STEEL STRAPPING; NOTE THAT THE STRAPPING MUST NOT BE APPLIED TO THE TOP DUNNAGE ASSEMBLY. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLY.

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.

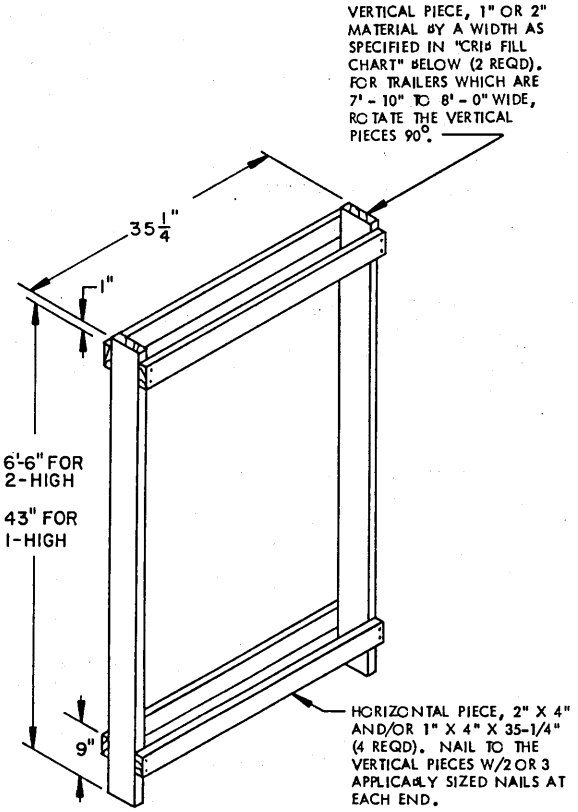


SECUREMENT OF THREE CONTAINERS



FORWARD BLOCKING ASSEMBLY

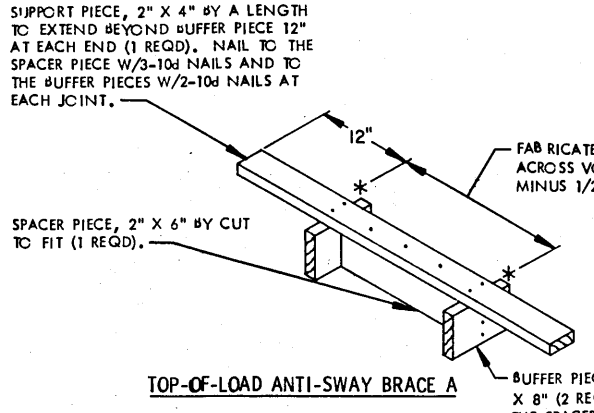
THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS, AND IS APPLICABLE FOR A CORNER RADIUS OF NOT MORE THAN 6-1/2". IF THE RADIUS IS FROM 6-1/2" TO 8", 2" X 6" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 4" PIECES. IF THE TRAILER TO BE LOADED HAS LARGE ANGLED CORNERS AT THE FORWARD END, REFER TO PAGE 28 FOR GUIDANCE.



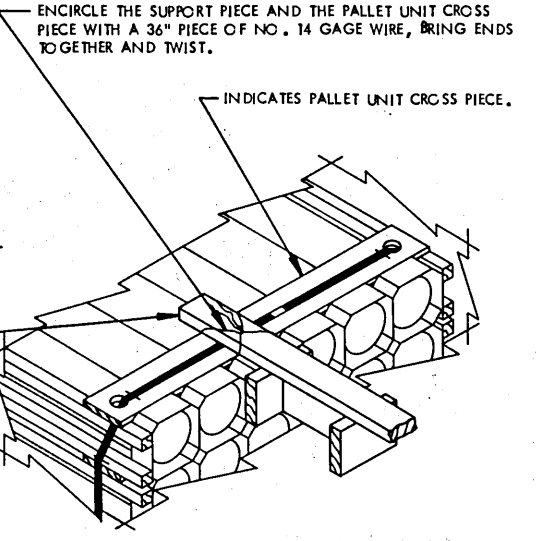
CRIB FILL

THIS CRIB FILL ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 8.

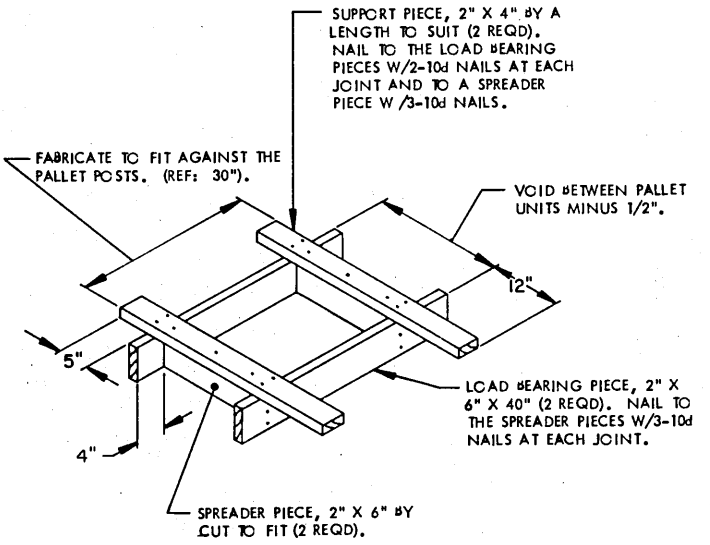
CRIB FILL CHART											
TRAILER WIDTH											
7' - 10"		7' - 11"		8' - 0"		8' - 1"		8' - 2"		8' - 3"	
VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ
1" X 4"	1"	2" X 4"	1" & 1"	2" X 4"	1" & 2"	2" X 4"	1" & 1"	2" X 4"	1" & 2"	2" X 6"	1" & 1"



TOP-OF-LOAD ANTI-SWAY BRACE A

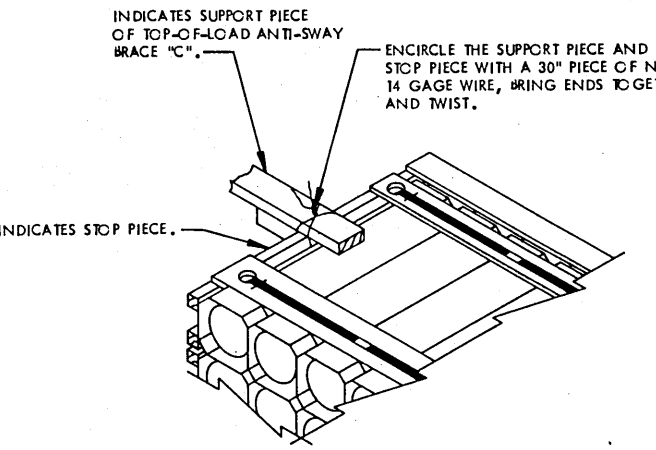


TIE WIRE APPLICATION A

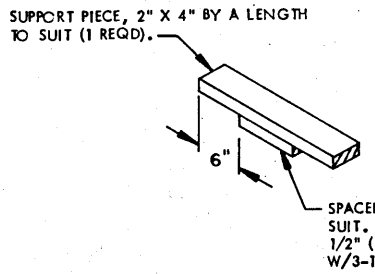


TOP-OF-LOAD ANTI-SWAY BRACE B

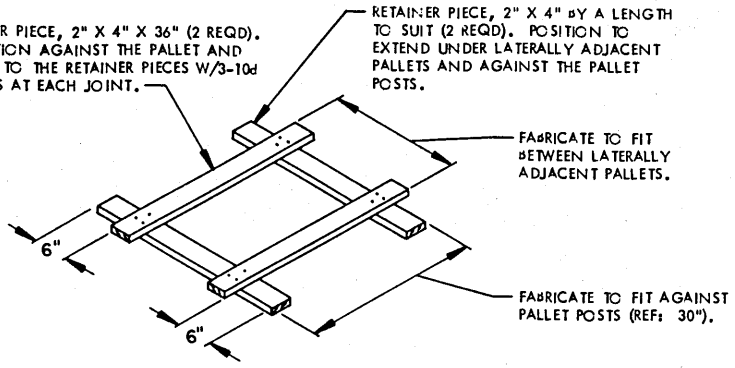
THIS ASSEMBLY IS DESIGNED FOR THE LATERAL BRACING OF A PALLET UNIT IN THE SECOND LAYER WHEN THERE IS NOT A PALLET UNIT DIRECTLY OPPOSITE IT AND TOP-OF-LOAD ANTI-SWAY BRACING IS REQUIRED.



TIE WIRE APPLICATION B

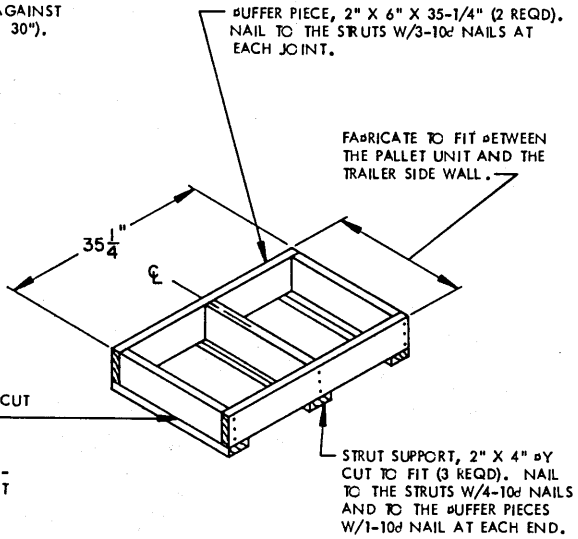


TOP-OF-LOAD ANTI-SWAY BRACE C



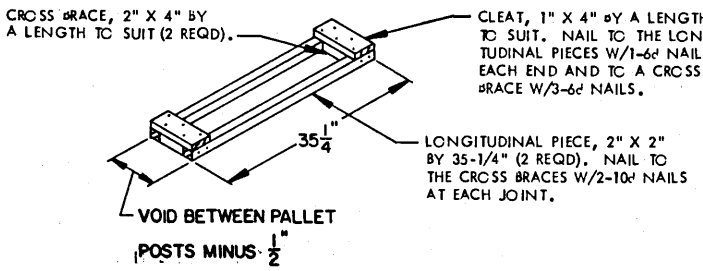
ANTI-SWAY BRACE A

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

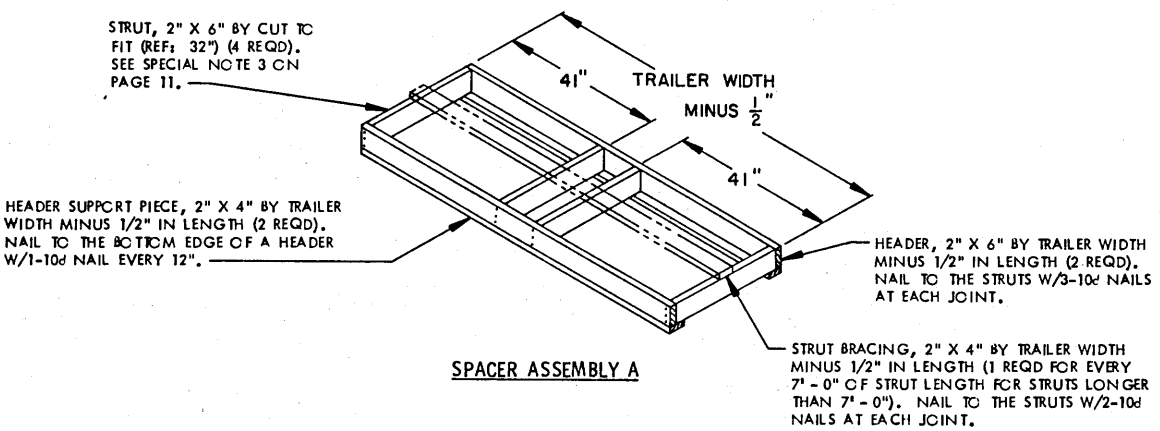


SIDE BLOCKING ASSEMBLY

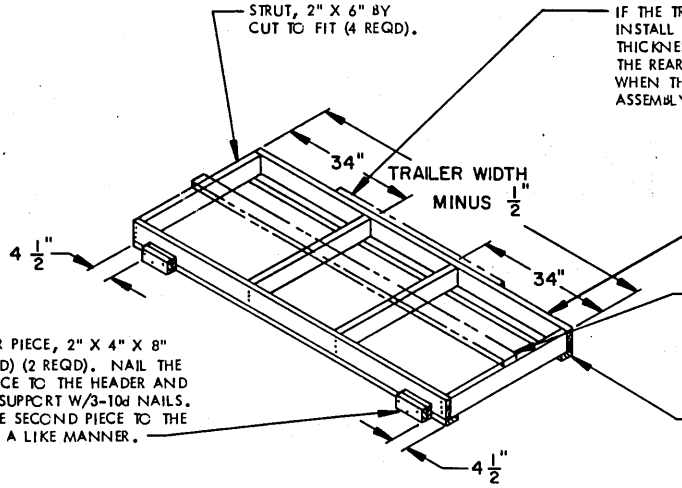
THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN THE TYPICAL LTL LOAD SHOWN ON PAGE 14.



ANTI-SWAY BRACE B

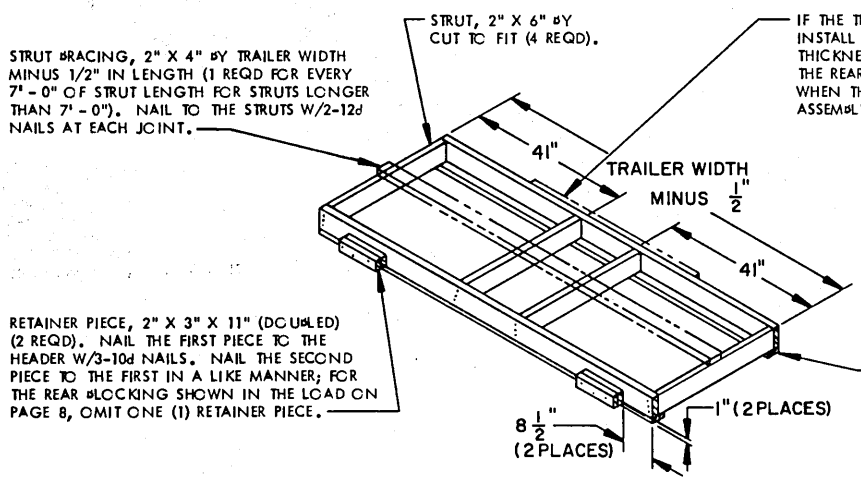


SPACER ASSEMBLY A



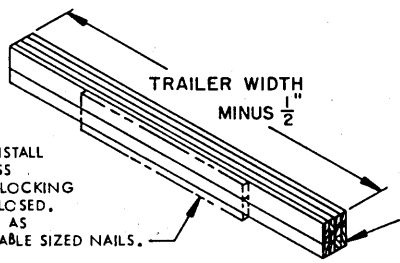
REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS FOR USE AT THE REAR END OF CROSSWISE POSITIONED UNITS WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS GREATER THAN 9". NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.



REAR BLOCKING ASSEMBLY B

THIS ASSEMBLY IS FOR USE AT THE REAR END OF LENGTHWISE POSITIONED UNITS WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS GREATER THAN 9". NOTE THAT THE ABOVE VIEW IS ROTATED 180 FROM THE POSITION IN WHICH IT WILL BE INSTALLED.



IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL, 4" X 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.

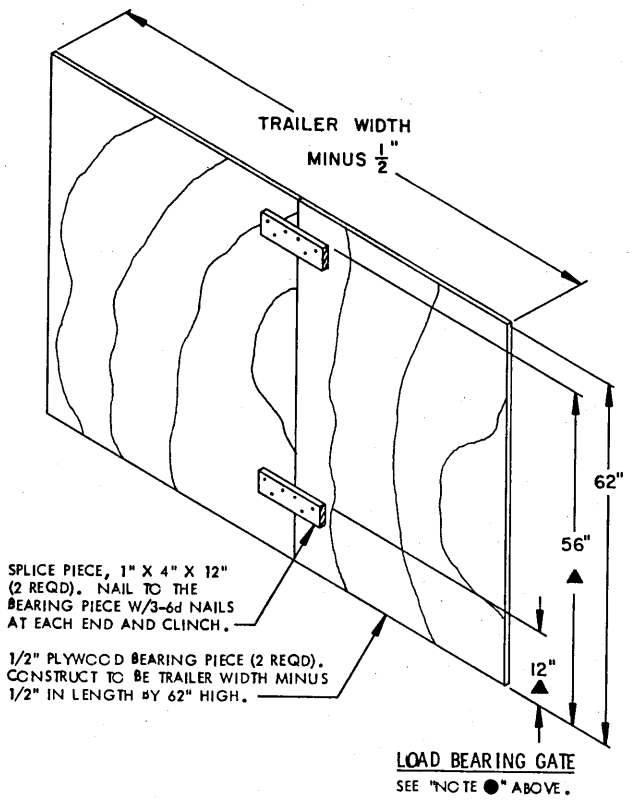
"NOTE"

RETAINER PIECES WILL BE REQUIRED ON THE LOAD BEARING SIDE OF REAR BLOCKING ASSEMBLY "C". REFER TO REAR BLOCKING "A" OR "B" ABOVE FOR LOCATION AND NAILING GUIDANCE.

SOLID FILL, 4" X 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 AS SHOWN, AND LAMINATE W/1-10d NAIL EVERY 12".

REAR BLOCKING ASSEMBLY C

THIS REAR BLOCKING IS DESIGNED FOR USE AT THE REAR END OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS LESS THAN 9". SEE "NOTE" ABOVE.

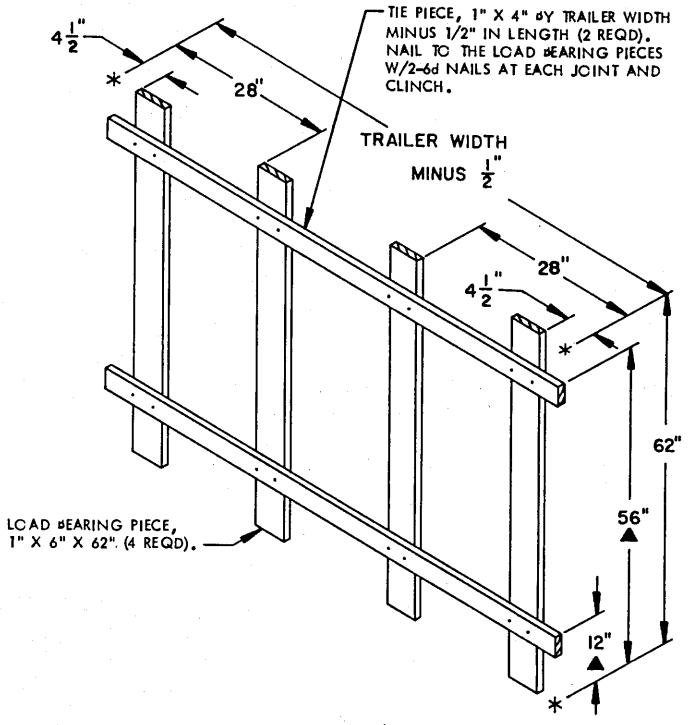


LOAD BEARING GATE

SEE "NOTE ●" ABOVE.

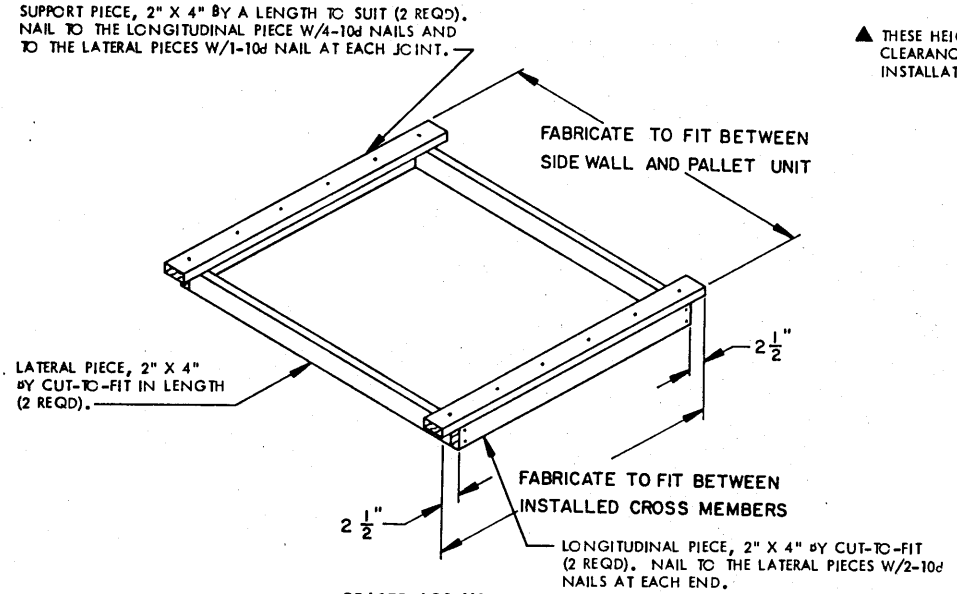
NOTE ●:

IF PLYWOOD IS NOT AVAILABLE, OR IF DESIRED, THE LOAD BEARING GATES MAY BE FABRICATED FROM NOMINAL ONE INCH LUMBER AS SHOWN BY THE "ALTERNATIVE LOAD BEARING GATE" DETAIL BELOW.



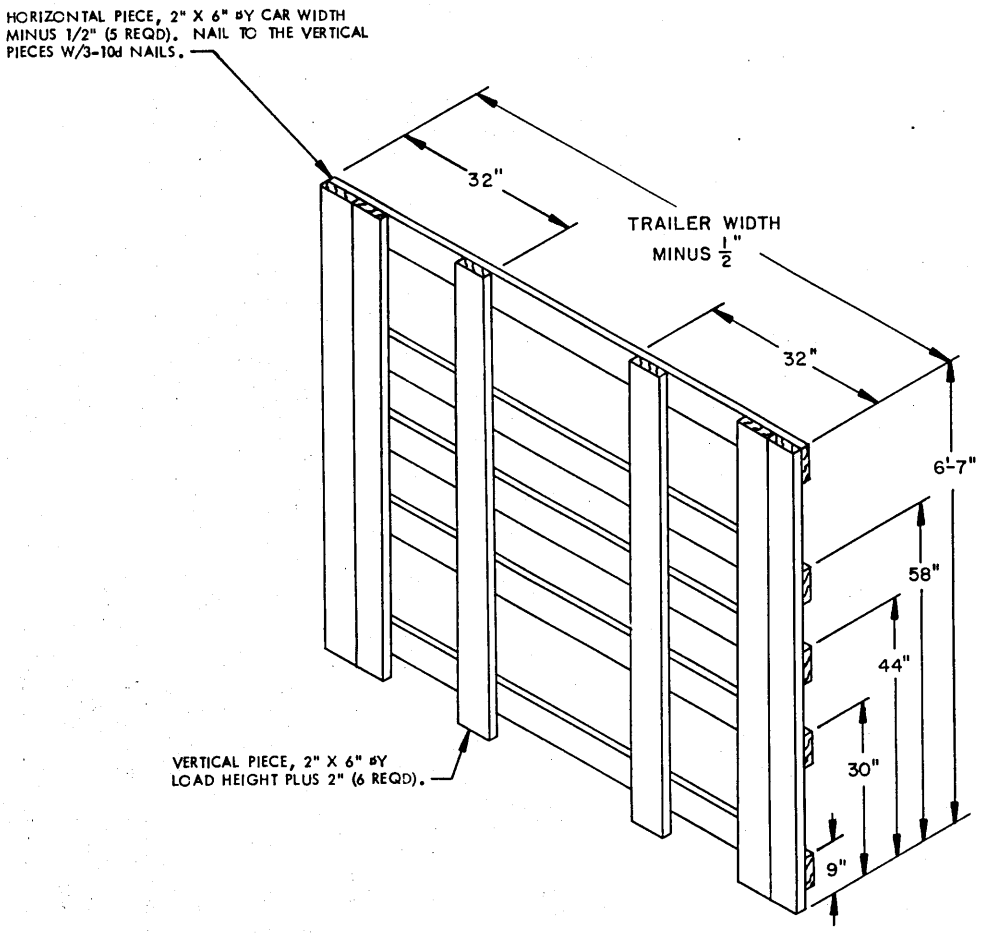
ALTERNATIVE LOAD BEARING GATE

▲ THESE HEIGHTS MAY NEED TO BE ADJUSTED TO PROVIDE FOR CLEARANCE OF THE CROSS MEMBERS AT A MINUS TOLERANCE INSTALLATION.



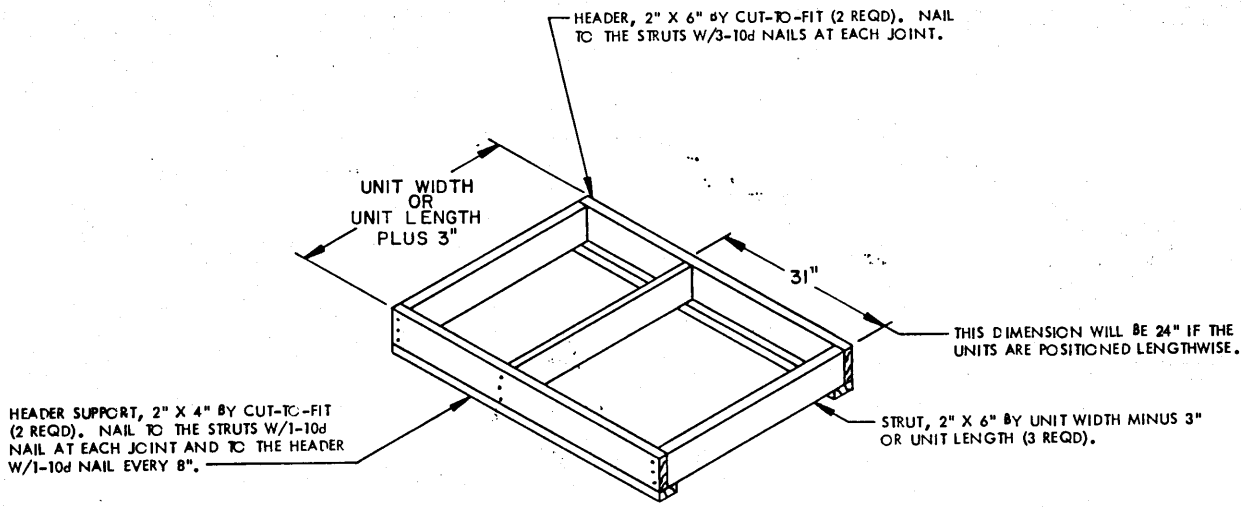
SPACER ASSEMBLY C

FOR USE AS LATERAL BRACING IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES.



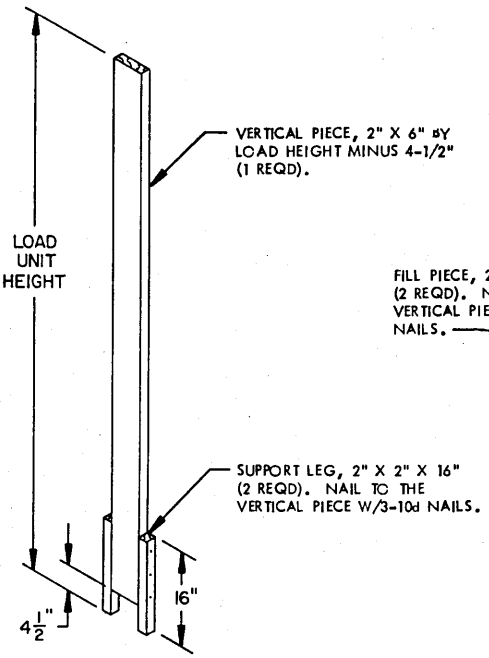
BULKHEAD GATE

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

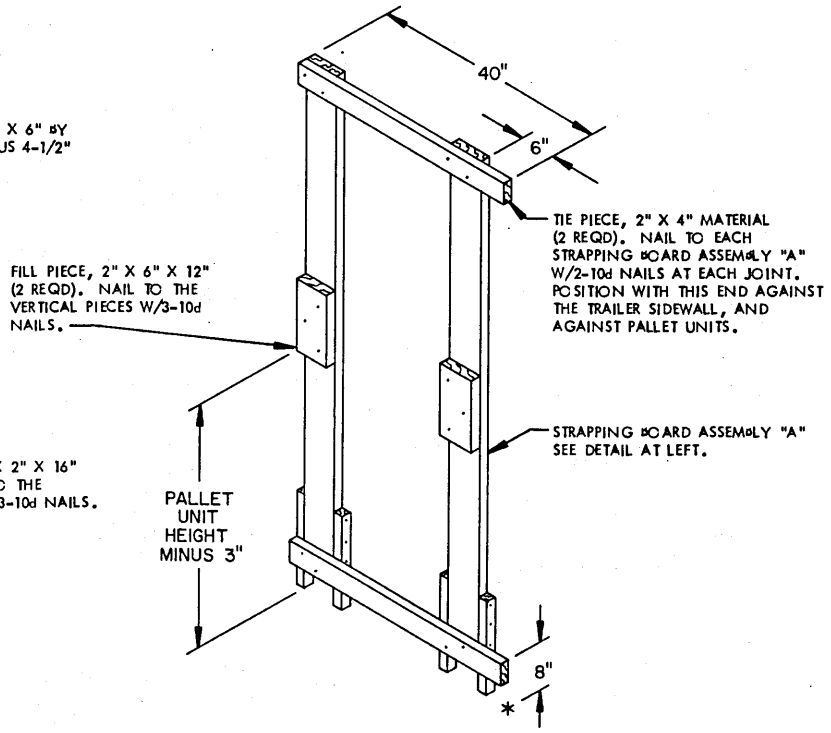


SPACER ASSEMBLY B

THIS ASSEMBLY IS DESIGNED FOR USE IN PLACE OF AN OMITTED UNIT, AS USED IN THE LOAD ON PAGES 10 AND 12.

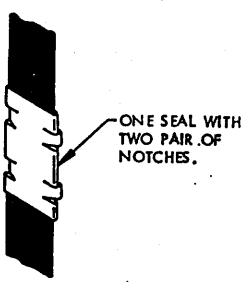


STRAPPING BOARD ASSEMBLY A



STRAPPING BOARD ASSEMBLY B

RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED.

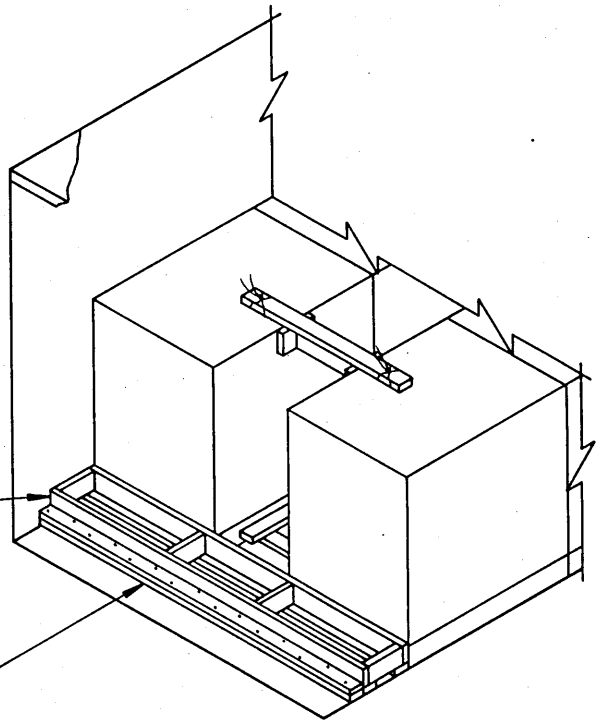


STRAP JOINT A

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

STRAP JOINT B

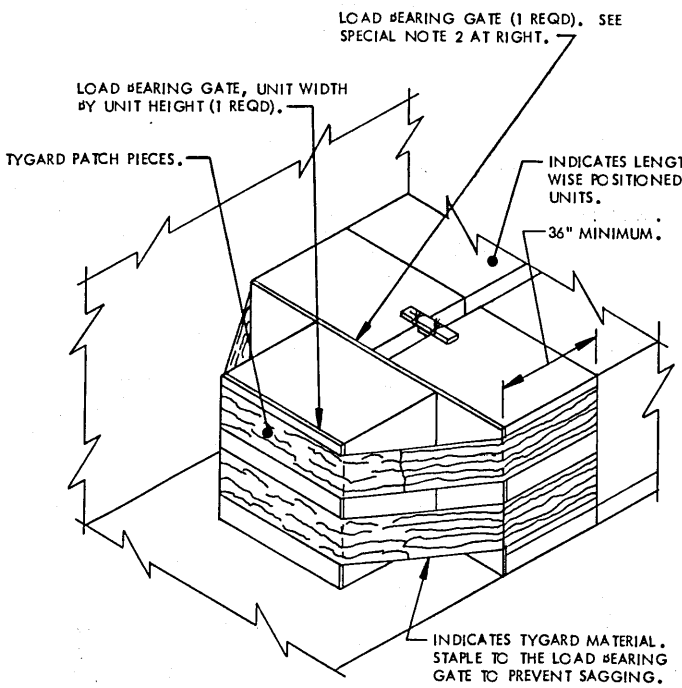
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.



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 "A" IS SHOWN FOR A TYPICAL INSTALLATION. 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.



TYGARD METHOD A

SPECIAL NOTES:

1. THE TYGARD METHOD OF REAR BLOCKING 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. TYGARD MATERIAL MUST BE INSTALLED AT TWO LEVELS FOR EACH LAYER OF THE REAR LOAD UNIT.

2. A PLYWOOD GATE MUST BE INSTALLED AT THE REAR OF THE LOAD TO PROVIDE A SMOOTH SURFACE FOR THE TYGARD MATERIAL TO EXTEND AROUND. IF THE REAR LOAD UNIT IS 2-WIDE INSTALL A GATE WHICH IS TRAILER WIDTH MINUS 1/2" IN LENGTH. IF THE REAR LOAD UNIT IS 1-WIDE ROTATE THE PALLET, INSTALL ONE (1) UNIT WIDTH GATE, AND ONE (1) TRAILER WIDTH MINUS 1/2" IN LENGTH GATE, AS SHOWN BY THE TYGARD METHOD "A" DETAIL AT LEFT. A LOAD HEIGHT GATE CONSTRUCTED SIMILAR TO THE "LOAD BEARING GATE" DETAILED ON PAGE 23 WILL BE USED WHEN THE REAR LOAD UNIT IS STACKED.

3. 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 1-800-523-6536. APPLICATION INSTRUCTIONS AND GUIDANCE CAN ALSO BE OBTAINED FROM THAT OFFICE.

4. THE TYGARD METHOD, ALTHOUGH ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ASLO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

5. 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.

6. TYGARD MATERIAL MUST BE APPLIED TO THE WALL IN SUCH A LONGITUDINAL LOCATION THAT IT WILL HAVE A PALLET UNIT BEARING AGAINST IT. IF A SHIPMENT CONTAINS AN ODD NUMBER OF PALLET UNITS, THE ODD UNIT MUST BE TURNED 90° AND CENTERED ACROSS THE WIDTH OF THE TRAILER AS SHOWN IN THE LOAD ON PAGE 14, AND AS SHOWN BY THE TYGARD METHOD "A" DETAIL AT LEFT. THE TYGARD MATERIAL WILL BE APPLIED TO DIRECTLY OPPOSITE PORTIONS OF THE TRAILER SIDEWALL; IT MUST BE APPLIED TO EXTEND AT LEAST 36" FORWARD OF THE LAST PALLET UNIT CONTACTING THE SIDEWALL ON EACH SIDE OF THE LOAD.

RECOMMENDED EQUIPMENT/INSTALLATION PROCEDURES

EQUIPMENT REQUIRED

PAINT ROLLER, LATEX
PAINT ROLLER, PAN
TENSIONING ROD/TOOL
PRESSURE ROLLER
RATCHET WRENCH (12" TO 15" HANDLE)
OPEN END OR BOX 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.

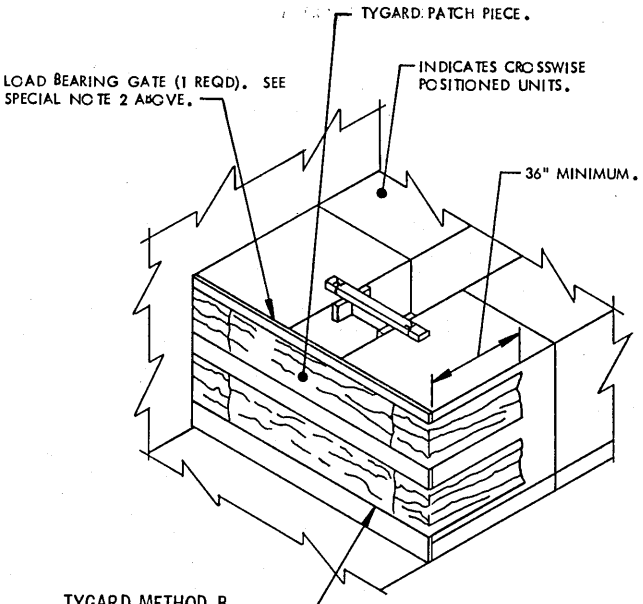
2. PRIOR TO POSITIONING OF THE PALLETS IN THE REARMOST LOAD UNIT, APPLY TYGARD ADHESIVE TO THE PROPER PORTIONS OF THE TRAILER SIDEWALLS AND TO THE CORD SIDE OF A CORRESPONDING LENGTH OF EACH OF THE TYGARD PIECES THAT ARE TO BE ATTACHED TO THE SIDEWALLS OF THE TRAILER. ALLOW TIME FOR THE ADHESIVE TO "CURE" 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 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.

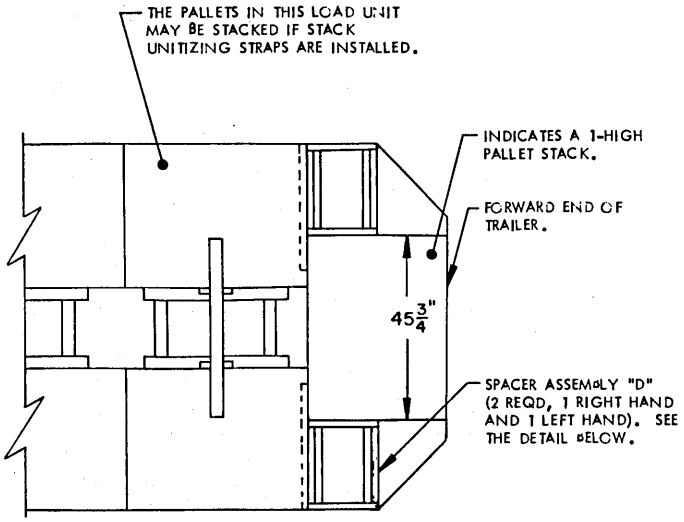
4. POSITION THE PALLETS OF THE REARMOST LOAD UNIT INTO THE TRAILER AND INSTALL THE SPECIFIED ANTI-SWAY BRACES OR CRIB FILL, AS APPLICABLE.

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.

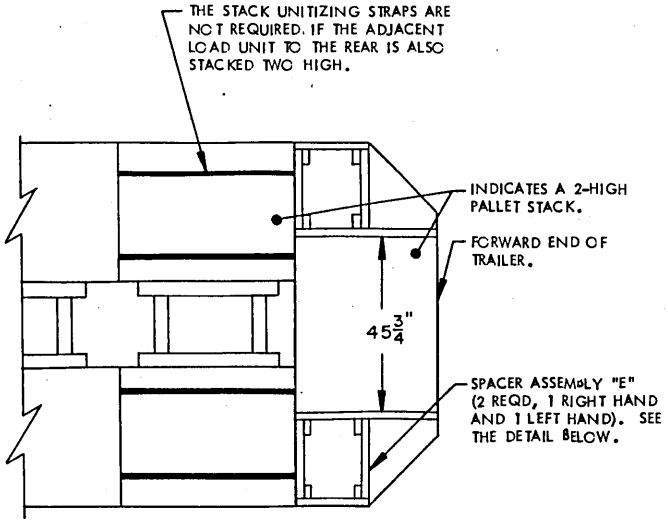


TYGARD METHOD B



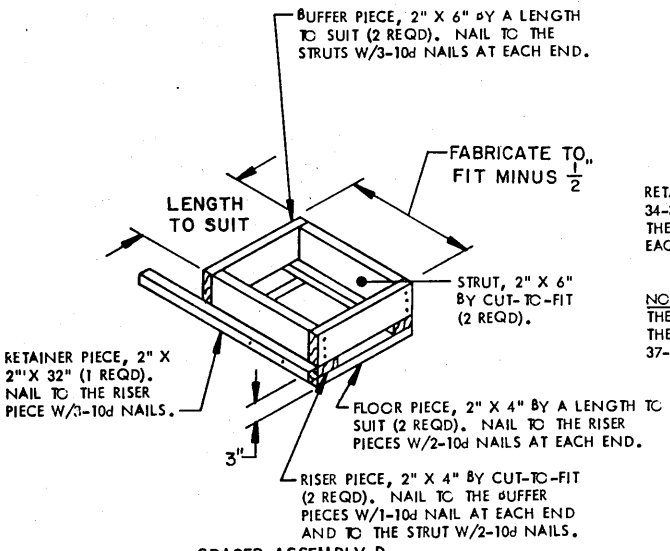
ALTERNATIVE FORWARD LOADING PATTERN A

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 ANGLED CORNERS OF ANOTHER SIZE.



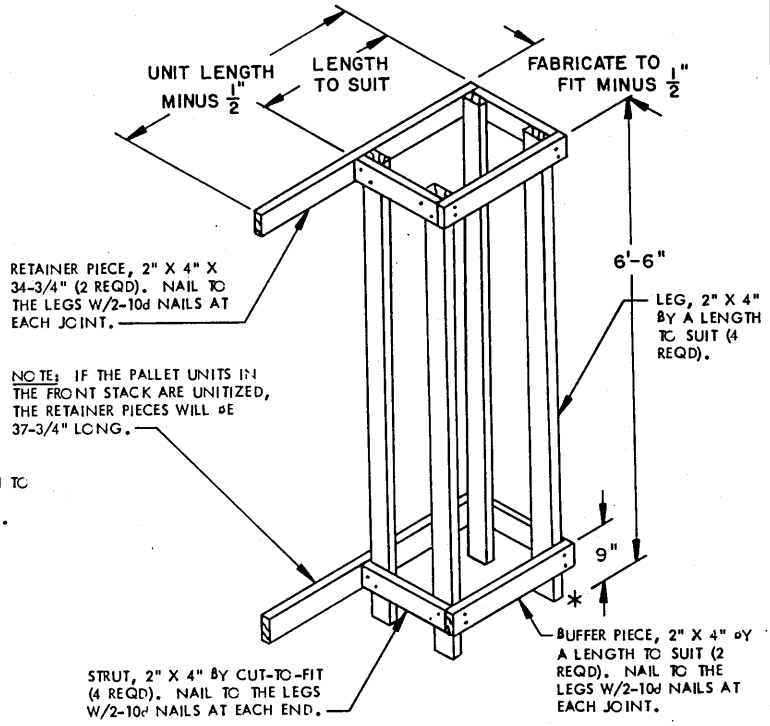
ALTERNATIVE FORWARD LOADING PATTERN B

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, STRAPPING BOARD ASSEMBLIES AND TWO (2) STACK UNITIZING STRAPS MUST BE INSTALLED AROUND THOSE PALLET UNITS IN THE FRONT STACK.



SPACER ASSEMBLY D

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A SINGLE PALLET UNIT WHICH IS 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 E

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A 2-HIGH PALLET STACK WHICH IS 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.