

LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF 9MM CARTRIDGE, PRACTICE, M934, AT4 PACKED IN PLYWOOD BOXES (PALLETIZED)

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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:** 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

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GENERAL NOTES

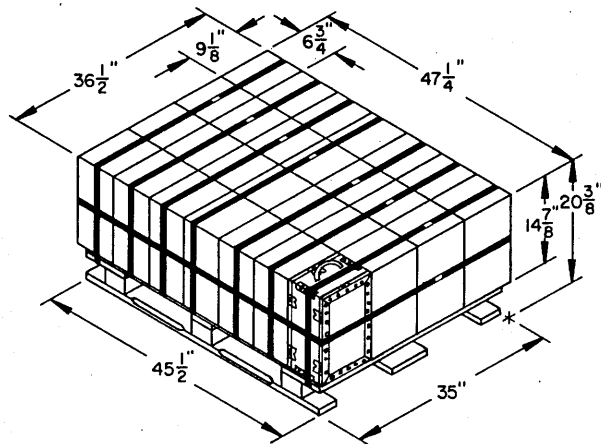
(GENERAL NOTES CONTINUED)

- 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 9MM CARTRIDGE, PRACTICE, M934 PACKED IN PLYWOOD BOXES ASSEMBLED ON A 35" X 45-1/2" 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEW ON PAGE 3 FOR SIZES AND WEIGHTS. REFER TO U.S. ARMY MATERIEL COMMAND DRAWING 19-48-4316/37A-20RA1002 FOR UNITIZATION PROCEDURES FOR 9MM CARTRIDGE, PRACTICE, M934.
- C. THIS ITEM IS A DOT CLASS C EXPLOSIVE. THE OUTLOADING PROCEDURES DELINEATED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED PALLETS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE.
- D. 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" AND 7'-8" 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 THAN SHOWN. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- E. 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.
- F. 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.
- G. 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, WEIGHTS SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.
- H. 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.
- J. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 44,000 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.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF 9MM CARTRIDGE, PRACTICE, M934 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.
- L. ALL LOADS ARE SHOWN IN TRAILERS HAVING SQUARED FRONT CORNERS AT THE FORWARD END. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH ROUNDED FRONT CORNERS, A "FORWARD BLOCKING ASSEMBLY" AS DEPICTED ON PAGE 12 IS REQUIRED. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH LARGE-ANGLE FRONT CORNERS, "SPACER ASSEMBLIES" AS DEPICTED ON PAGE 17 ARE REQUIRED. LIKEWISE, IF A MECHANICAL VAN TRAILER HAVING ROUNDED OR LARGE-ANGLED FRONT CORNERS IS BEING USED, POSITION A CROSS-MEMBER AT THE FRONT OF THE TRAILER SO AS TO BE AT RIGHT ANGLES WITH THE TWO SIDE WALLS.
- M. FOR SHIPMENT OF LEFTOVER CONTAINERS, SEE THE DETAILS AND SPECIAL NOTES ON PAGE 11.
- 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 WHENEVER 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 THE 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. 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 18 FOR GUIDANCE.
- U. SHIPMENT OF THE 9MM CARTRIDGE, PRACTICE, M934 IS LIMITED TO ONE PALLET HIGH.
- V. FOR TRAILERS NOT EQUIPPED WITH REAR CORNER POSTS, THE REAR BLOCKING ASSEMBLY MUST BE EXTENDED TO CONTACT THE REAR DOORS WHEN CLOSED.

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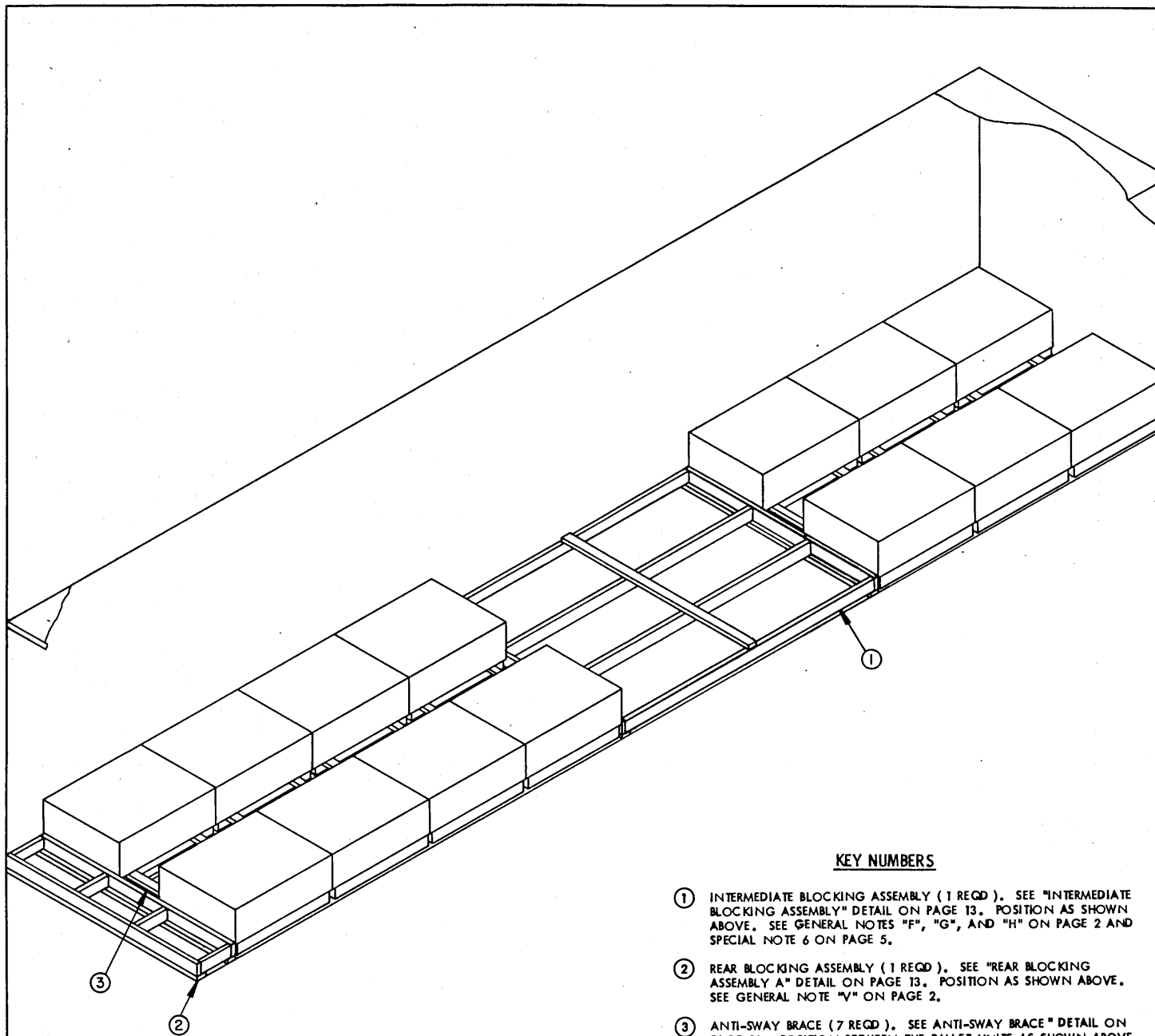
MATERIAL SPECIFICATIONS

- LUMBER _____ : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS _____ : COMMON, FED SPEC FF-N-105.
- WIRE _____ : FED SPEC QQ-W-461
- TYGARD _____ : POLYESTER YARN, 1100 POUNDS/INCH OF WIDTH STRENGTH.
- ADHESIVE _____ : TYGARD ADHESIVE.
- STRAPPING, SEAL _____ : CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C; FED SPEC QQ-S-781.
- SEAL, STRAP _____ : TYPE D, STYLE I, II, OR III, CLASS H, FINISH A, B, (GRADE 2), OR C, FED SPEC QQ-S-781.



PALLET UNIT DETAIL

BOXES ————— 28 EACH @ 110 LBS (APPROX)
CUBE ————— 20,3 CUBIC FEET (APPROX)
GROSS WEIGHT ————— 3,151 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① INTERMEDIATE BLOCKING ASSEMBLY (1 REQD). SEE "INTERMEDIATE BLOCKING ASSEMBLY" DETAIL ON PAGE 13. POSITION AS SHOWN ABOVE. SEE GENERAL NOTES "F", "G", AND "H" ON PAGE 2 AND SPECIAL NOTE 6 ON PAGE 5.
- ② REAR BLOCKING ASSEMBLY (1 REQD). SEE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 13. POSITION AS SHOWN ABOVE. SEE GENERAL NOTE "V" ON PAGE 2.
- ③ ANTI-SWAY BRACE (7 REQD). SEE "ANTI-SWAY BRACE" DETAIL ON PAGE 12. POSITION BETWEEN THE PALLET UNITS AS SHOWN ABOVE.

SPECIAL NOTES:

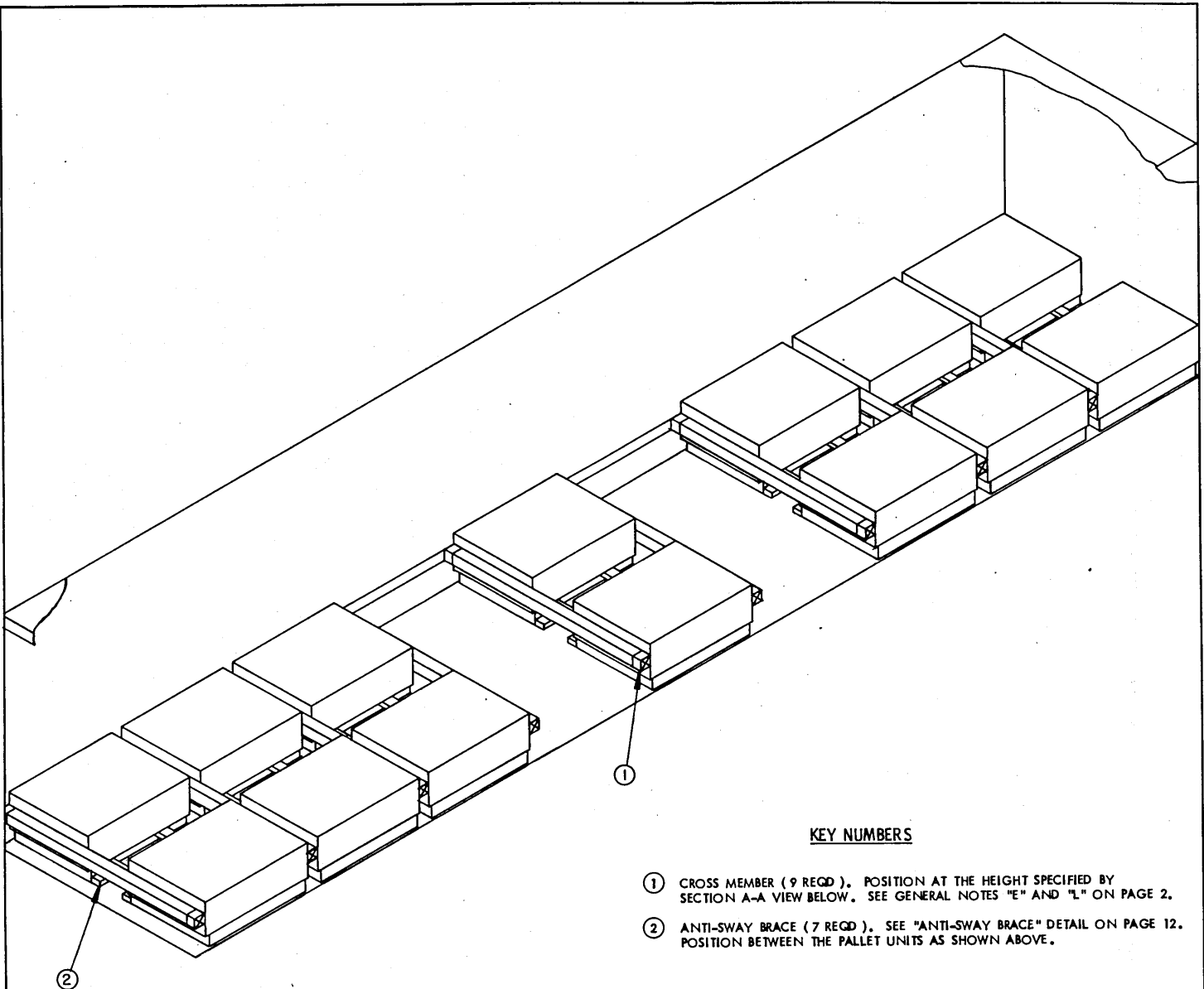
1. A 14-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER DIMENSIONS MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 4 HAS OVERALL DIMENSIONS OF 47-1/4" WIDE BY 36-1/2" LONG BY 20-3/8" HIGH AND A WEIGHT OF APPROXIMATELY 3,151 POUNDS.
3. LEFTOVER BOXES IN AN AMOUNT NOT TO EXCEED ELEVEN (11) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER BOXES" ON PAGE 11 FOR GUIDANCE.
4. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 8 THRU 10.
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 15 AND 16 FOR GUIDANCE. THE NAILED-HEADER METHOD IS SHOWN ON PAGE 15 AND THE TYGARD METHOD IS SHOWN ON PAGE 16. NOTE THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
6. FOR WESTERN TYPE TRAILERS (ADJUSTABLE REAR TANDEM) SIX (6) PALLET UNITS SHOULD BE PLACED AT THE FRONT OF THE TRAILER WITH EIGHT (8) PALLET UNITS AT THE REAR OF THE TRAILER. FOR STANDARD TYPE TRAILERS (FIXED REAR TANDEM) EIGHT (8) PALLET UNITS SHOULD BE PLACED AT THE FRONT OF THE TRAILER, WITH SIX (6) PALLET UNITS AT THE REAR OF THE TRAILER. SEE GENERAL NOTES "G" AND "H" ON PAGE 2.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	76	51
2" X 6"	77	77
NAILS	NO. REQD	POUNDS
10d (3")	160	2

LOAD AS SHOWN

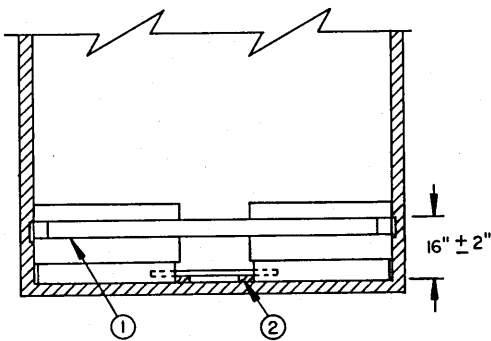
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	14	44,114 LBS
DUNNAGE		259 LBS
TOTAL WEIGHT		44,373 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① CROSS MEMBER (9 REQD). POSITION AT THE HEIGHT SPECIFIED BY SECTION A-A VIEW BELOW. SEE GENERAL NOTES "E" AND "L" ON PAGE 2.
- ② ANTI-SWAY BRACE (7 REQD). SEE "ANTI-SWAY BRACE" DETAIL ON PAGE 12. POSITION BETWEEN THE PALLET UNITS AS SHOWN ABOVE.



SECTION A-A

SPECIAL NOTES:

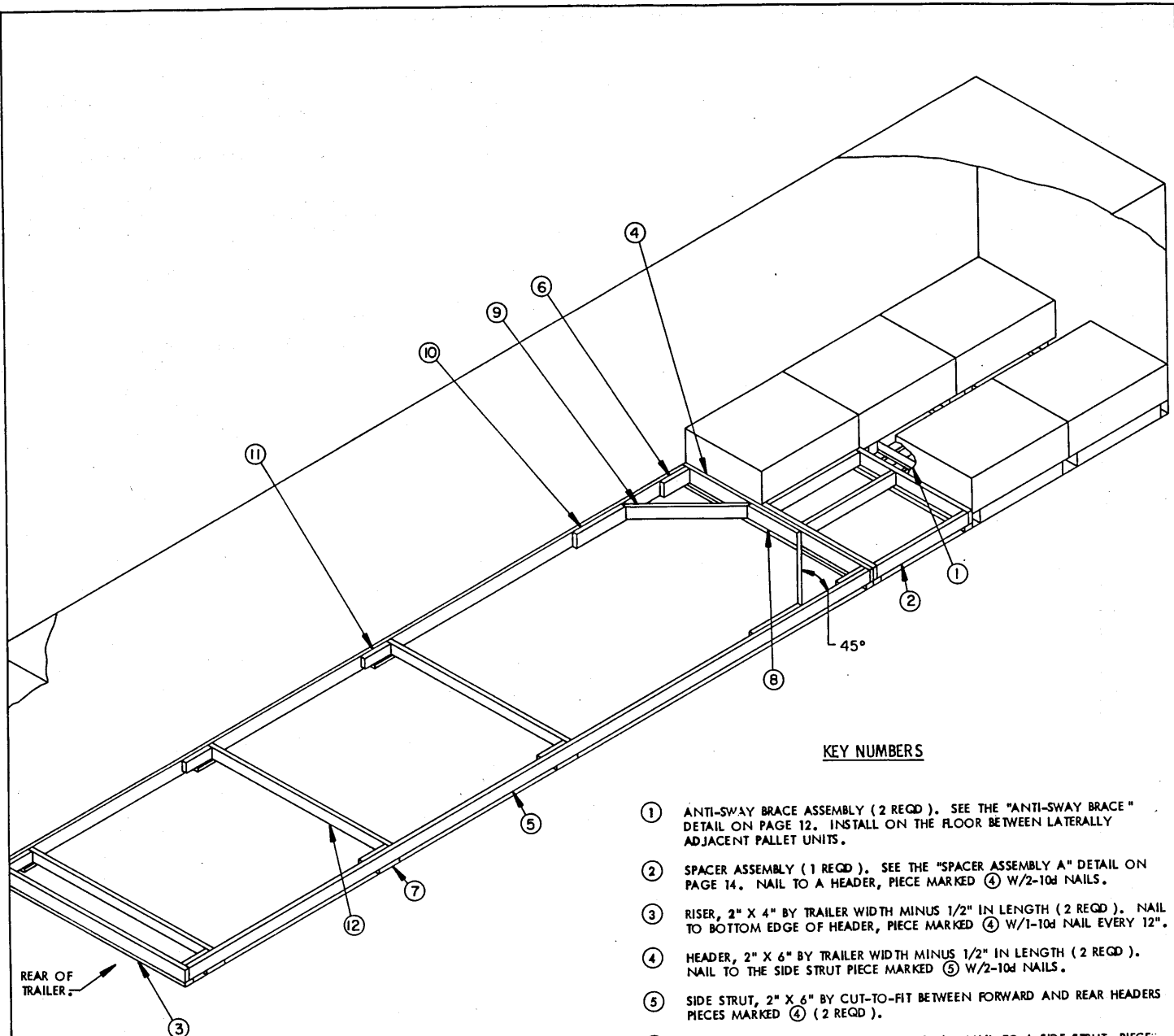
1. A 14-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. TRAILERS OF OTHER DIMENSIONS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 6 HAS OVERALL DIMENSIONS OF 47-1/4" WIDE BY 36-1/2" LONG BY 20-3/8" HIGH AND A WEIGHT OF APPROXIMATELY 3,151 POUNDS.
3. IF A PALLET UNIT IS TO BE ADDED TO OR OMITTED FROM THE DEPICTED LOAD, SPACER ASSEMBLY B DEPICTED ON PAGE 14 MUST BE USED. NOTE THAT CROSS MEMBERS ARE REQUIRED AT BOTH ENDS OF THE ODD UNIT. SEE "TYPICAL LTL (1-UNITLOAD)" DETAIL ON PAGE 10.
4. LEFTOVER BOXES IN AN AMOUNT NOT TO EXCEED ELEVEN (11) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER BOXES" ON PAGE 11 FOR GUIDANCE. SEE GENERAL NOTE "E" ON PAGE 2.
5. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 10.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	37	25
NAILS	NO. REQD	POUNDS
10d (3")	56	1
CROSS MEMBER	9 REQD	

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	14	44,114 LBS
DUNNAGE		51 LBS
TOTAL WEIGHT		44,165 LBS (APPROX)



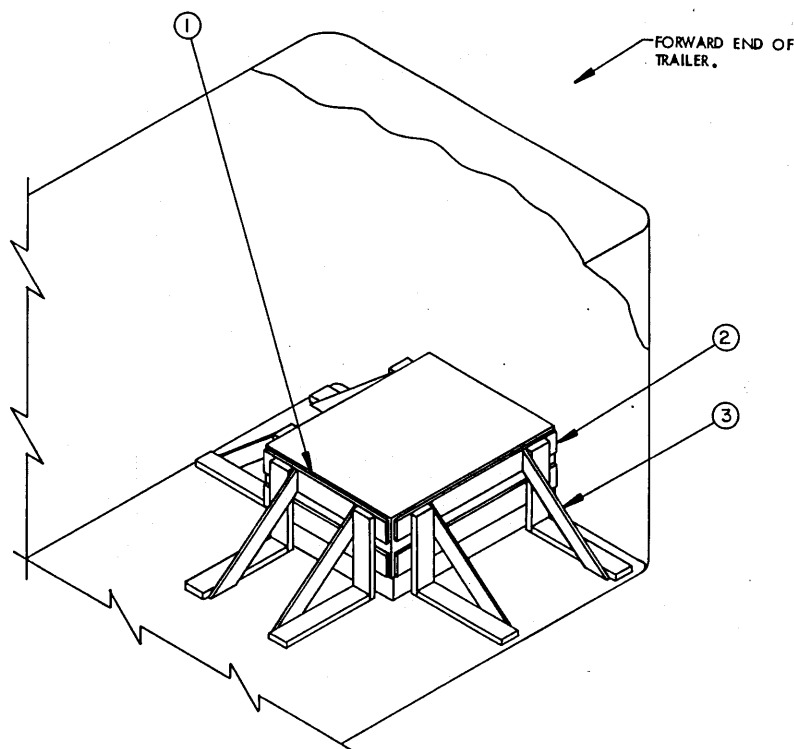
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE ASSEMBLY (2 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 12. INSTALL ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS.
- ② SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 14. NAIL TO A HEADER, PIECE MARKED ④ W/2-10d NAILS.
- ③ RISER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO BOTTOM EDGE OF HEADER, PIECE MARKED ④ W/1-10d NAIL EVERY 12".
- ④ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE SIDE STRUT PIECE MARKED ⑤ W/2-10d NAILS.
- ⑤ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN FORWARD AND REAR HEADERS (2 REQD).
- ⑥ POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ③ W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④ W/3-12d NAILS.
- ⑦ FILLER PIECE, 2" X 4" X 9" (AS REQD). POSITION SO AS TO BE CENTERED UNDER THE JOINT OF THE STRUT BRACE AND THE STRUT BRACE RETAINING CLEAT, PIECES MARKED ⑪ AND ⑫. NAIL TO A SIDE STRUT, PIECE MARKED ⑤ W/2-10d NAILS.
- ⑧ CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO THE HEADER, PIECE MARKED ④ W/6-10d NAILS.
- ⑨ 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 MARKED ④ AND ⑤ W/2-16d NAILS AT EACH END.
- ⑩ SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO THE SIDE STRUT, PIECE MARKED ⑤ W/8-10d NAILS.
- ⑪ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑤ W/3-10d NAILS.
- ⑫ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQUIRED). INSTALL ONE (1) NEAR THE REAR OF THE TRAILER AS SHOWN. ONE (1) ADDITIONAL PIECE REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑪ W/2-12d NAILS AT EACH END.

SPECIAL NOTES:

1. A 5-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN HAS OVERALL DIMENSIONS OF 36-1/2" LONG BY 47-1/4" WIDE BY 20-3/8" HIGH AND WEIGHS APPROXIMATELY 3,151 POUNDS.
3. THE TRAILER IS SHOWN HAVING A SQUARE FRONT; HOWEVER, IF THE TRAILER BEING LOADED HAS ROUNDED CORNERS, A FORWARD BLOCKING ASSEMBLY, AS DETAILED ON PAGE 12 MUST BE USED.
4. THE "K-BRACE BLOCKING", SHOWN AS PIECES MARKED ③ THRU ⑫ IS ADEQUATE FOR RETAINING 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 15 AND 16 FOR GUIDANCE. THE NAILED-HEADER METHOD IS SHOWN ON PAGE 15 AND THE TYGARD METHOD IS SHOWN ON PAGE 16. 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 MARKED ③ THRU ⑫ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.



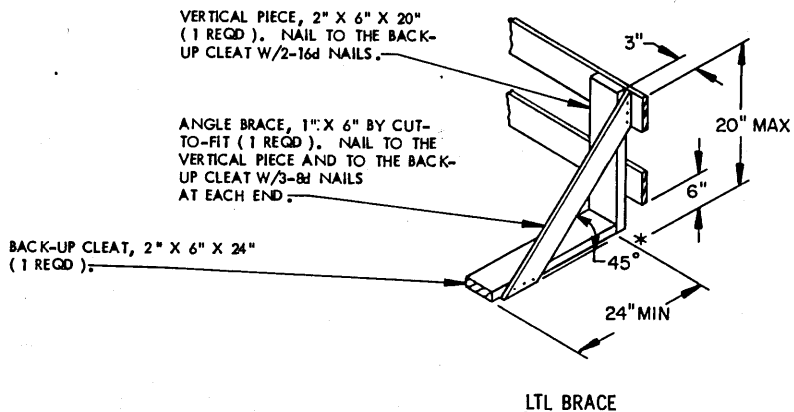
ISOMETRIC VIEW

KEY NUMBERS

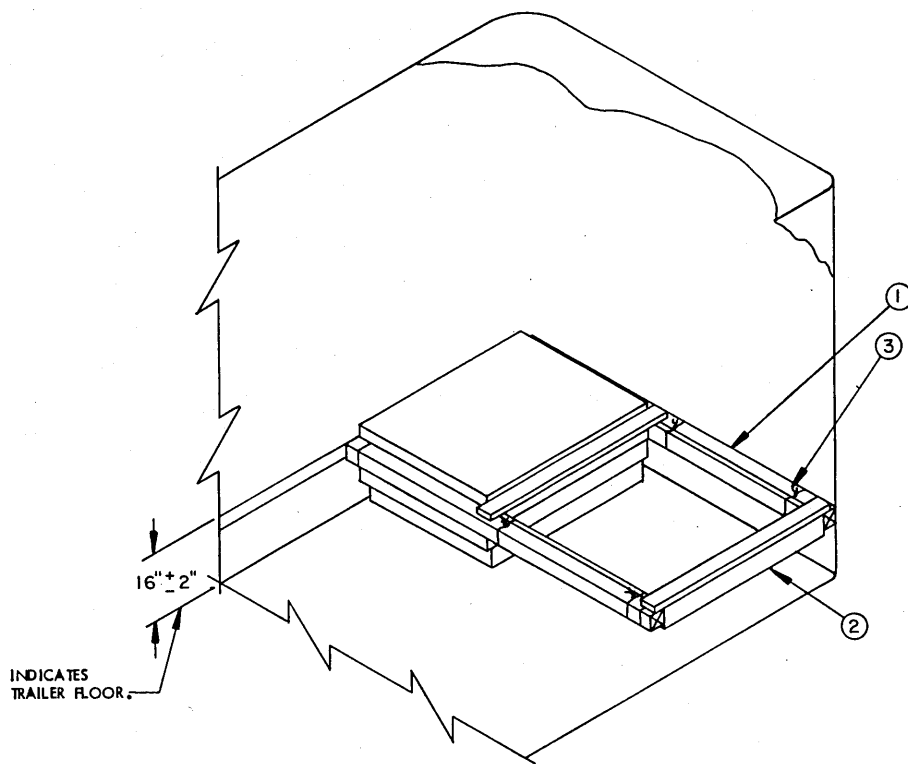
SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN HAS OVERALL DIMENSIONS OF 47-1/4" WIDE BY 36-1/2" LONG BY 20-3/8" HIGH AND WEIGHS APPROXIMATELY 3,151 POUNDS
3. THE POSITIONING OF A UNIT IS OPTIONAL. IF THE TRAILER BEING USED HAS A SQUARE FRONT, THE PALLET UNIT MAY BE LOCATED IN THE CORNER OF THE TRAILER.
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 PALLETIZED UNIT ACROSS THE WIDTH OR LENGTH OF THE TRAILER.

- ① LOAD BEARING PIECE, 1" X 6" X 36" (2 REQD). LOCATE AT THE HEIGHTS AS SPECIFIED IN THE "LTL BRACE" DETAIL BELOW. NAIL TO THE LTL BRACES W/4-6d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2.
- ② LOAD BEARING PIECE, 1" X 6" X 47" (4 REQD). LOCATE AT THE HEIGHTS AS SPECIFIED IN THE "LTL BRACE" DETAIL BELOW. NAIL TO THE LTL BRACES W/4-6d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2.
- ③ LTL BRACE (6 REQD). SEE THE "LTL BRACE" DETAIL BELOW. NAIL TO THE TRAILER FLOOR W/10-10d NAILS. SEE GENERAL NOTE "O" ON PAGE 2.



TYPICAL LTL (1-UNIT LOAD) IN A CONVENTIONAL VAN TRAILER



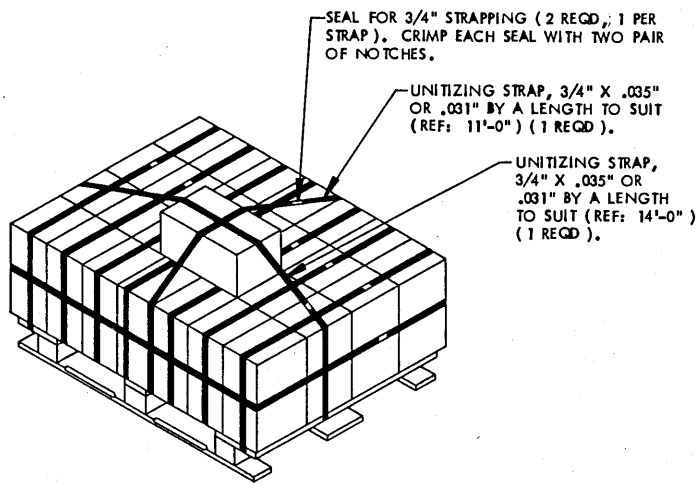
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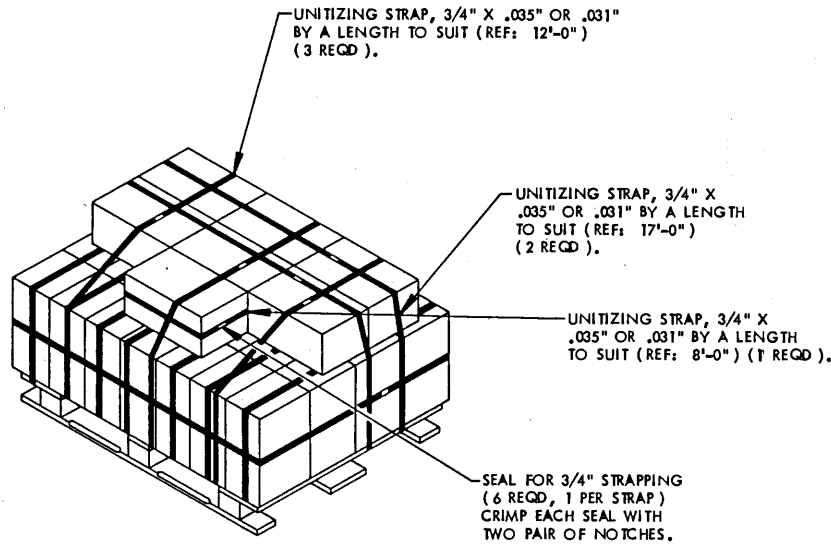
SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) VAN TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES IS SHOWN. TRAILERS OF OTHER WIDTHS MAY BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LTL LOAD HAS OVERALL DIMENSIONS OF 36-1/2" LONG BY 47-1/4" WIDE BY 20-3/8" HIGH AND WEIGHS APPROXIMATELY 3,151 POUNDS.
3. A TYPICAL LTL LOAD OF ONE (1) PALLET UNIT IS SHOWN. IF TWO (2) PALLET 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) PALLET UNITS ACROSS THE WIDTH OF THE TRAILER, POSITION THE UNITS AGAINST THE FORWARD END WALL (UNLESS THE TRAILER HAS ROUNDED CORNERS) AND OMIT ONE CROSS MEMBER AT THE FORWARD END. INSTALL AN ANTI-SWAY BRACE BETWEEN UNITS.

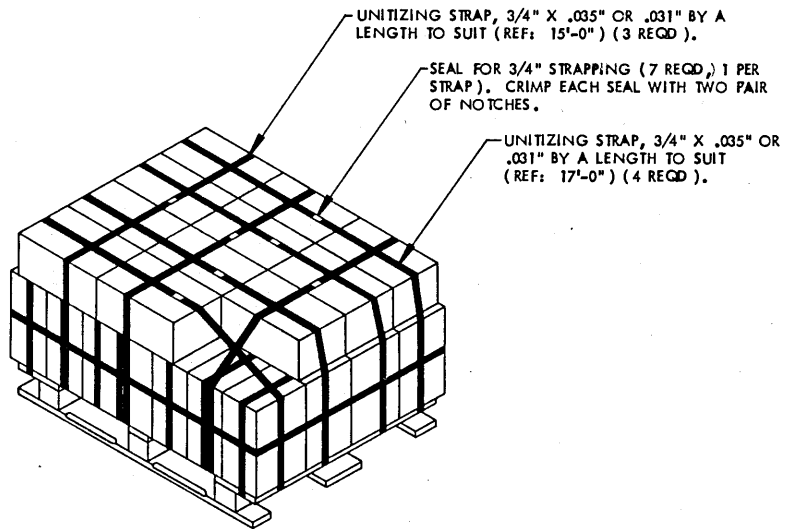
- (1) CROSS MEMBER (2 REQD). POSITION AT THE HEIGHTS AS SPECIFIED BY THE ISOMETRIC VIEW ABOVE. SEE GENERAL NOTES "E" AND "K" ON PAGE 2.
- (2) SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 14. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- (3) TIE WIRE, NO. 14 GAGE WIRE 30" LONG (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE CROSS MEMBER AND SPACER ASSEMBLY. BRING THE 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.



SECUREMENT OF ONE BOX



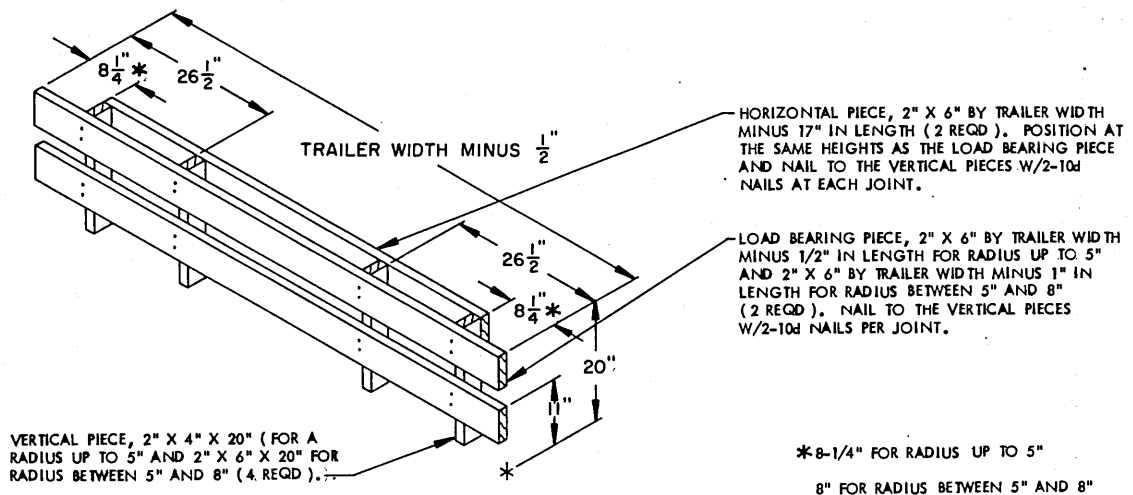
SECUREMENT OF SEVEN BOXES



SECUREMENT OF ELEVEN BOXES

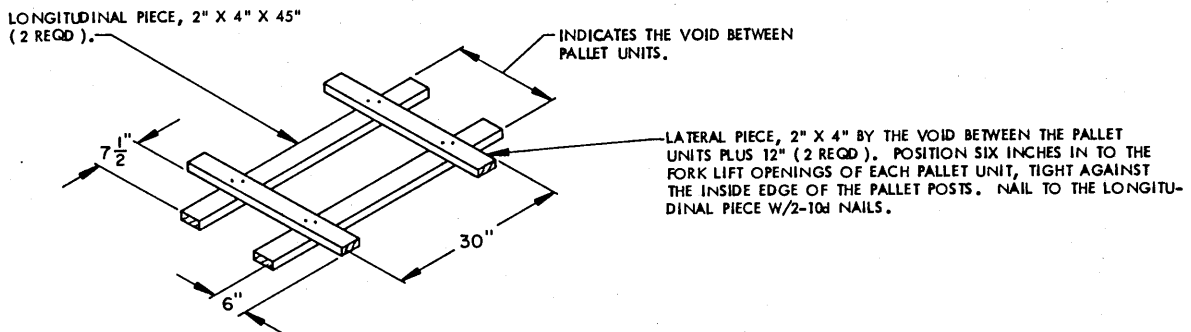
SPECIAL NOTES:

1. SHIPMENT OF FULL PALLET UNITS CONSISTING OF 28 PLYWOOD BOXES SHOULD BE SHIPPED 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 BOXES. LEFTOVER BOXES ARE DESCRIBED AS 11 BOXES OR LESS. SEE SPECIAL NOTE 4 BELOW.
2. SHIPMENT OF LEFTOVER BOXES IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR DEPOT TO POSTS, CAMPS, AND STATIONS, OR UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLIES, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER BOXES (11 BOXES OR LESS) SECURED TO THE TOP OF A FULL PALLET UNIT MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.
4. FOR SHIPMENT OF PARTIAL PALLET UNITS CONSISTING OF MORE THAN 11 BOXES, FILLER ASSEMBLIES SHOULD BE USED TO FILL THE VOIDS ON THE PALLET TO FORM ONE COMPLETE LAYER. SEE THE UNITIZATION PROCEDURES FOR THE AT4 9MM CARTRIDGE, PRACTICE; M934, DRAWING NO. 19-48-4116/37A-20PAT002 FOR FILLER ASSEMBLY DETAILS.



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 5". IF THE RADIUS IS FROM 5" TO 8", USE 2" X 6" X 20" VERTICAL PIECES INSTEAD OF 2" X 4" X 20" VERTICALS SHOWN ABOVE, AND LOAD BEARING PIECES TRAILER WIDTH MINUS 1" IN LENGTH, INSTEAD OF TRAILER WIDTH MINUS 1/2" IN LENGTH.



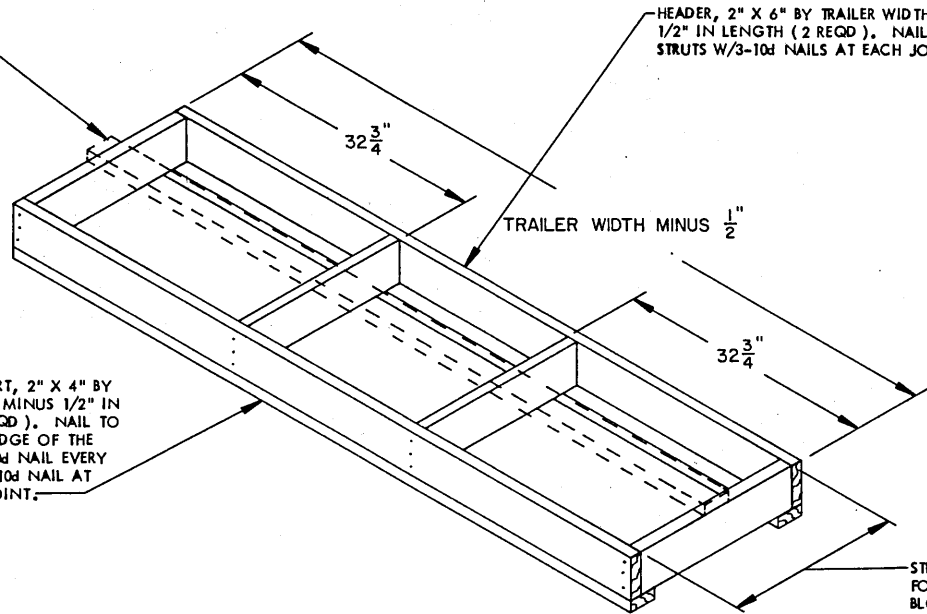
ANTI-SWAY BRACE

THIS ASSEMBLY MUST BE FABRICATED IN PLACE BETWEEN LATERALLY ADJACENT PALLET UNITS.

STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REQD FOR EVERY 7'-0" OF STRUT LENGTH, FOR STRUTS LONGER THAN 7'-0"). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.

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

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

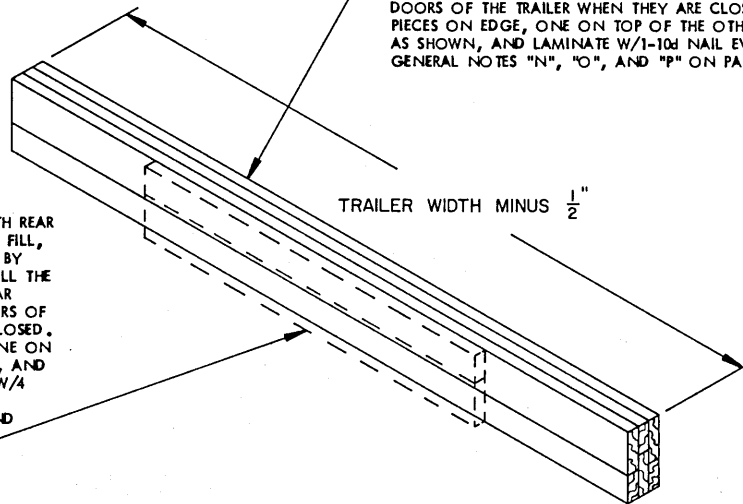


STRUT, 2" X 6" BY 10'-2" FOR THE "INTERMEDIATE BLOCKING ASSEMBLY" AND CUT TO FIT FOR THE "REAR BLOCKING ASSEMBLY A" (4 REQD). SEE THE SPECIAL NOTE BELOW.

INTERMEDIATE BLOCKING ASSEMBLY/REAR BLOCKING ASSEMBLY A

SPECIAL NOTE: THE LENGTH OF THE STRUTS SHOWN ABOVE WILL VARY DEPENDING ON THE LENGTH OF THE TRAILER BEING USED. SEE GENERAL NOTES "G" AND "H" ON PAGE 2.

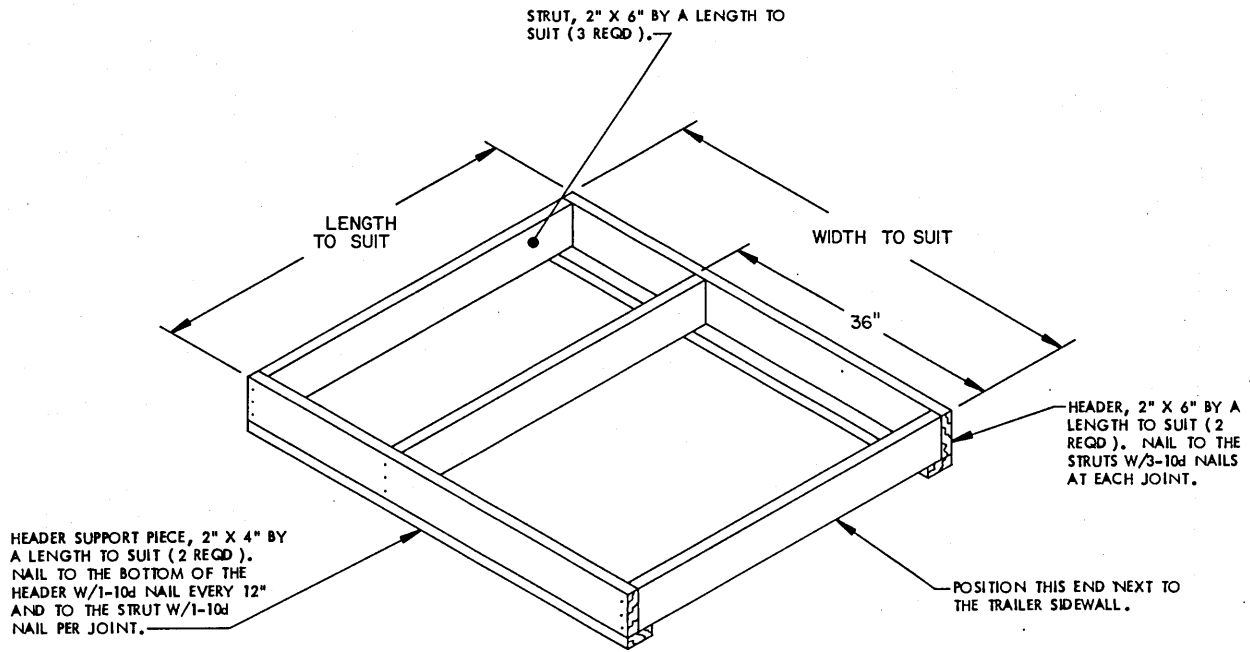
SOLID FILL, 4" AND 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO CONTACT REAR CORNER POSTS OR TO CONTACT REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER, ALTERNATE AS SHOWN, AND LAMINATE W/1-10d NAIL EVERY 12". SEE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



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 APPLICABLY SIZED NAILS. SEE GENERAL NOTES "N", "O", AND "P" ON PAGE 2.

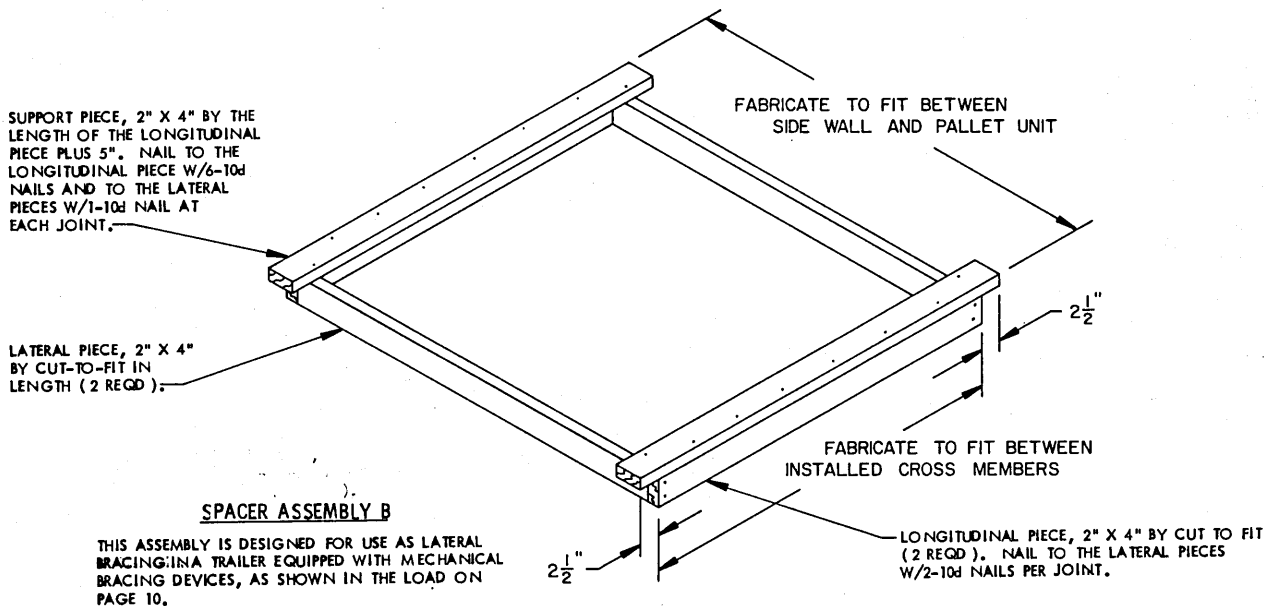
REAR BLOCKING ASSEMBLY B

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 DOORS IS LESS THAN 9" BUT AT LEAST 2". SEE GENERAL NOTES "G" AND "H" ON PAGE 2.



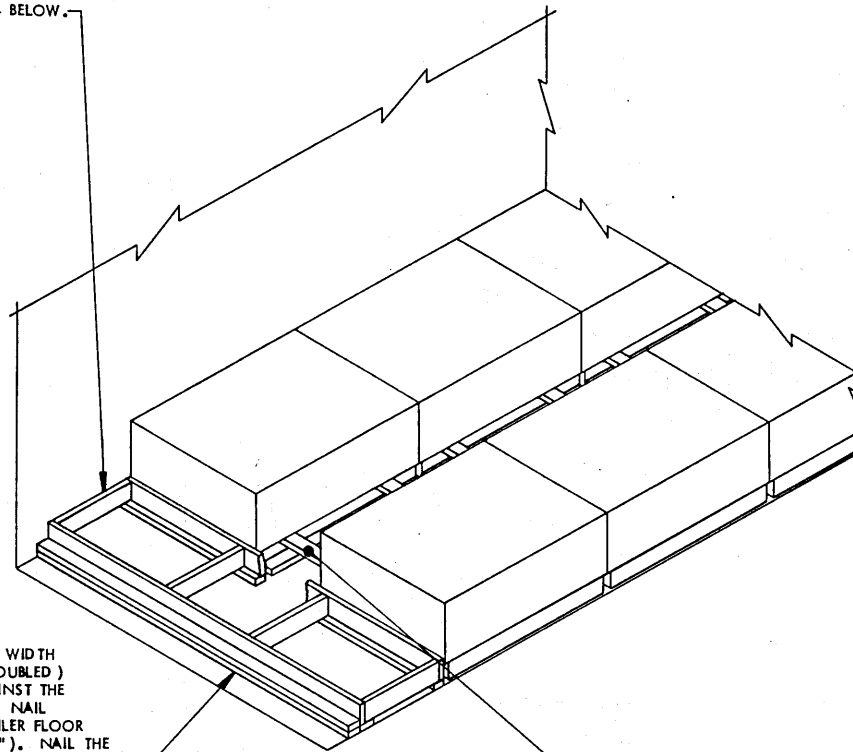
SPACER ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE IN THE PLACE OF A PALLET UNIT WHICH IS OMITTED FROM A LOAD IN A CONVENTIONAL VAN TRAILER, AS TYPICALLY SHOWN ON PAGE 8.



DETAILS

REAR BLOCKING ASSEMBLY "A"
(1 REQD). SEE "REAR BLOCKING
ASSEMBLY A" DETAIL ON PAGE 13.
SEE SPECIAL NOTE 4 BELOW.



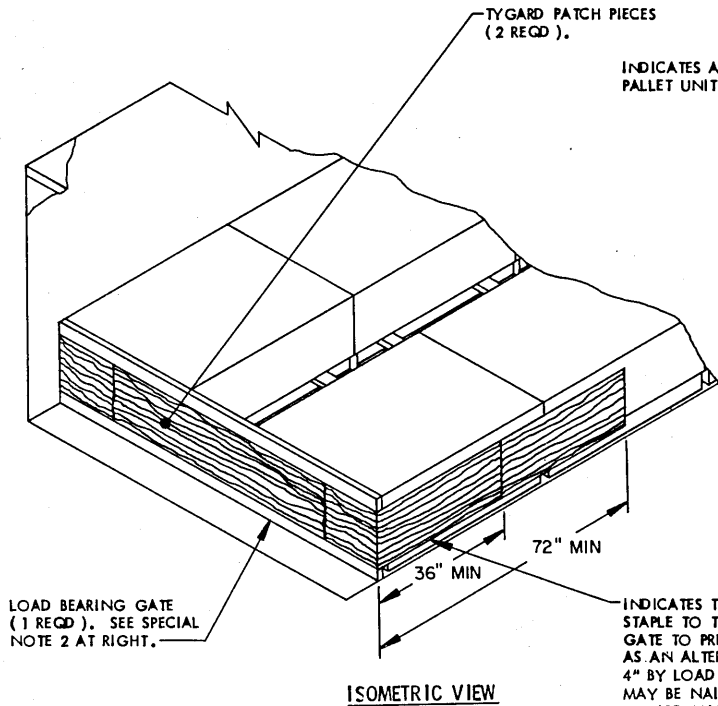
HEADER, 2" X 4" BY TRAILER WIDTH
MINUS 1/2" IN LENGTH (DOUBLED)
(1 REQD). POSITION AGAINST THE
REAR BLOCKING ASSEMBLY. NAIL
THE FIRST PIECE TO THE TRAILER FLOOR
W/15-10d NAILS (1 EVERY 6"). NAIL THE
SECOND PIECE TO THE FIRST IN A LIKE
MANNER AND TO NAIL TO THE REAR
BLOCKING ASSEMBLY W/4-10d NAILS.
SEE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

ANTI-SWAY BRACE
(AS REQD).

ISOMETRIC VIEW

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. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.
3. THE NAILED-HEADER METHOD, ALTHOUGH DESIGNED ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
4. REAR BLOCKING ASSEMBLY "A" IS SHOWN FOR A TYPICAL INSTALLATION AT THE REAR OF THE LOAD, CONSTRUCT THE ASSEMBLY USING 6" (MINIMUM) LONG STRUTS.

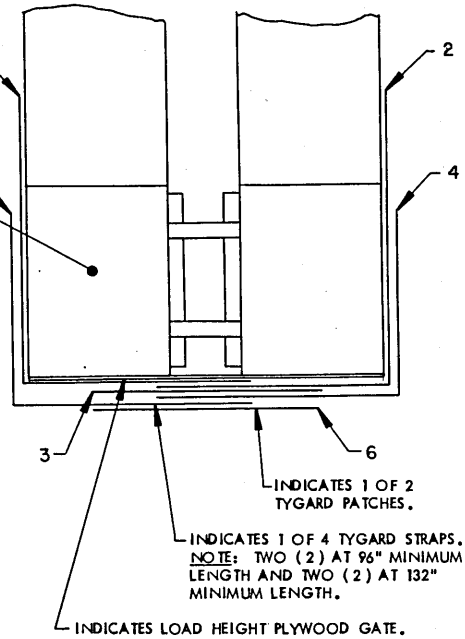


LOAD BEARING GATE (1 REQD). SEE SPECIAL NOTE 2 AT RIGHT.

ISOMETRIC VIEW

INDICATES A PALLET UNIT.

INDICATES TYGARD MATERIAL STAPLE TO THE LOAD BEARING GATE TO PREVENT SAGGING. AS AN ALTERNATIVE, A 1" X 4" BY LOAD HEIGHT PIECE MAY BE NAILED THRU THE TYGARD MATERIAL INTO THE LOAD BEARING GATE. CAUTION: THE NAILS TO BE USED SHOULD NOT EXTEND THRU THE LOAD BEARING GATE.



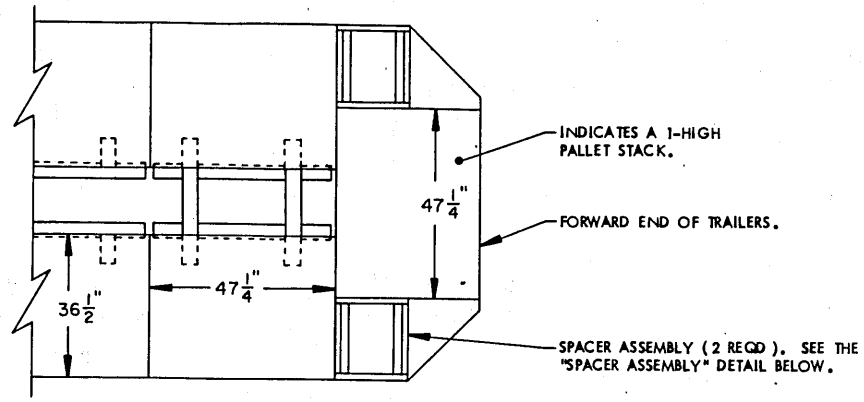
NOTE: FASTENING OF THE TYGARD STRAPS AND TYGARD PATCHES TO THE PLYWOOD LOAD BEARING GATE IS IN NUMERICAL SEQUENCE (REF: 1, 2, 3, ETC.) AS SHOWN ABOVE.

BASIC INSTALLATION GUIDANCE:

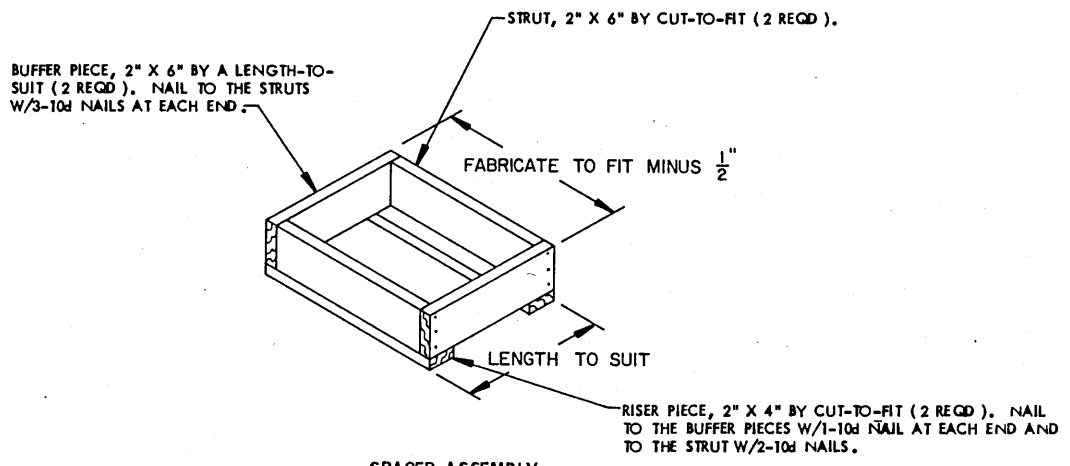
1. CUT TO LENGTH FOUR (4) TYGARD PIECES FOR ATTACHMENT TO THE TRAILER SIDEWALL. PIECES WILL BE OF A LENGTH AS REQUIRED TO PROVIDE PROPER BONDING TO THE TRAILER SIDEWALL AND TO EXTEND 60" ACROSS THE REAR OF THE LOAD. ALSO, CUT 72" LONG "PATCH" PIECES OF TYGARD MATERIAL, ONE FOR EACH SET OF TWO PIECES PREVIOUSLY CUT. SEE SPECIAL NOTE 7 ON THIS PAGE.
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 UNITS 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 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 THE CORD SIDE OF THE PREVIOUSLY CUT "PATCH" PIECE. APPLY THE "PATCH" AND ROLL WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING.

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 BY TRAILER WIDTH MINUS 1/2" IN LENGTH PIECE OF PLYWOOD WILL BE USED.
3. TYGARD MATERIAL MUST BE INSTALLED AT ONE LEVEL, WITH TWO LAYERS OVER LAPPING EACH OTHER, WITH ONE LAYER EXTENDING A MINIMUM OF 36" BEHIND THE OTHER 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", BENSLEM, PA 19020-0860, PHONE 1-800-523-6536. 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 OF TYGARD CAN BE LENGTHENED A SUITABLE AMOUNT AND ATTACHED TO THE SIDEWALL AHEAD OF THE INDICATED PREFERRED LOCATION.
7. EACH SET OF TWO (2) TYGARD STRAPS WITH ONE (1) TYGARD PATCH WILL RETAIN A LOAD WEIGHT OF 22,000 POUNDS. FOR SHIPMENT OF FULL LOADS THE TYGARD MATERIAL MAY BE OVER LAPPED TO PROVIDE THE REQUIRED STRENGTH TO RETAIN THE FULL LOAD.



ALTERNATIVE FORWARD LOADING PATTERN



SPACER ASSEMBLY

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 FORWARD LOADING PATTERN ABOVE.



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.

STRAP SEAL DETAIL