

LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF COMPLETE ROUNDS PACKED IN CYLINDRICAL METAL CONTAINERS AND UNITIZED ON A 40" X 48" WOODEN PALLET

MI73 SERIES CONTAINER

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

REVISIONS				DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
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				APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)				
				U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL				
				U.S. ARMY MATERIEL COMMAND				
				FEBRUARY 1990				
				CLASS	DIVISION	DRAWING	FILE	
				19	48	4213/1	IIPM 1003	

DO NOT SCALE

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 M173 COMPLETE ROUND CONTAINER ASSEMBLED ON THE 40' X 48' 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEW ON PAGE 3 FOR SIZE AND WEIGHT. REFER TO U.S. ARMY AMC DRAWING 19-48-4079/1-20RM1002 FOR UNITIZATION PROCEDURES FOR THE M173 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" AND 8'-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 3C, 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 TANDEN AXLE MUST NOT EXCEED THE MAXIMUM ALLOWABLE WEIGHT. IF THERE IS ANY DOUBT AS TO WHETHER THE TOTAL GROSS WEIGHT OF AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.

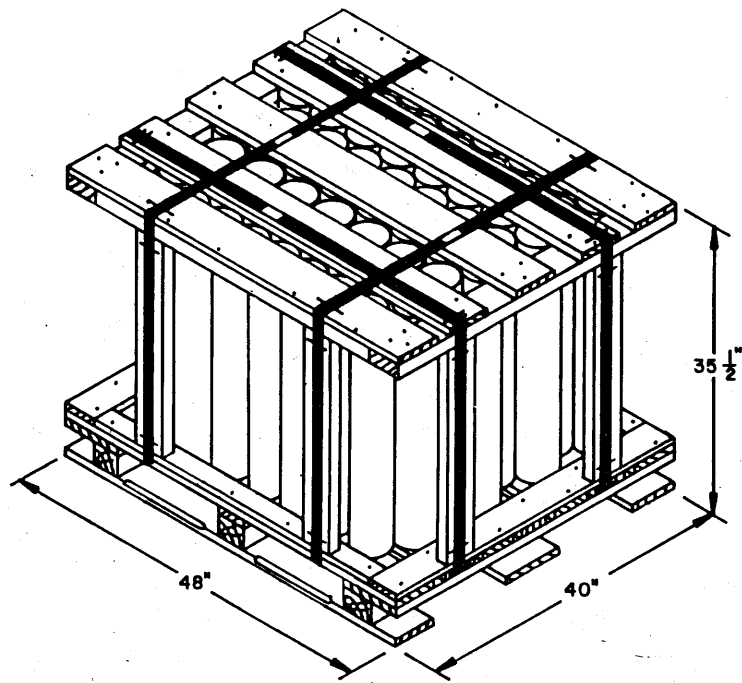
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(GENERAL NOTES CONTINUED)

- 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 COMPLETE ROUNDS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKING AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- K. SOME LOADS ARE SHOWN IN TRAILERS HAVING ROUNDED CORNERS AT THE FORWARD END. IF THE CONVENTIONAL VAN TRAILER BEING USED IS EQUIPPED WITH A SQUARE FRONT OR WITH AN INSTALLED BULKHEAD, OMIT THE FORWARD BLOCKING ASSEMBLY, 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. 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.
- 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 3 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.

MATERIAL SPECIFICATIONS

<u>LUMBER</u> -----:	SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
<u>NAILS</u> -----:	FED SPEC FF-N-105, COMMON.
<u>STRAPPING, STEEL</u> -----:	FED SPEC QQ-S-781 CLASS 1, TYPE I OR IV, HEAVY DUTY FINISH A, B (GRADE 2), OR C.
<u>SEAL, STRAP</u> -----:	FED SPEC QQ-S-781; TYPE D, STYLE I, II, OR IV, CLASS H. FINISH A, B, (GRADE 2), OR C
<u>PLYWOOD</u> -----:	GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR CLUE, GRADE C-D, FED SPEC NN-P-630. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR EXTERIOR GRADE MAY BE SUBSTITUTED.
<u>TYGARD</u> -----:	POLYESTER YARN, 1,100 POUNDS/INCH OF WIDTH STRENGTH.
<u>ADHESIVE</u> -----:	TYGARD ADHESIVE.



PALLET UNIT

CONTAINER	-----	60 EACH @ 34 LBS (APPROX)
CUBE	-----	39.4 CUBIC FEET (APPROX)
GROSS WEIGHT	-----	2,206 LBS (APPROX)



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

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

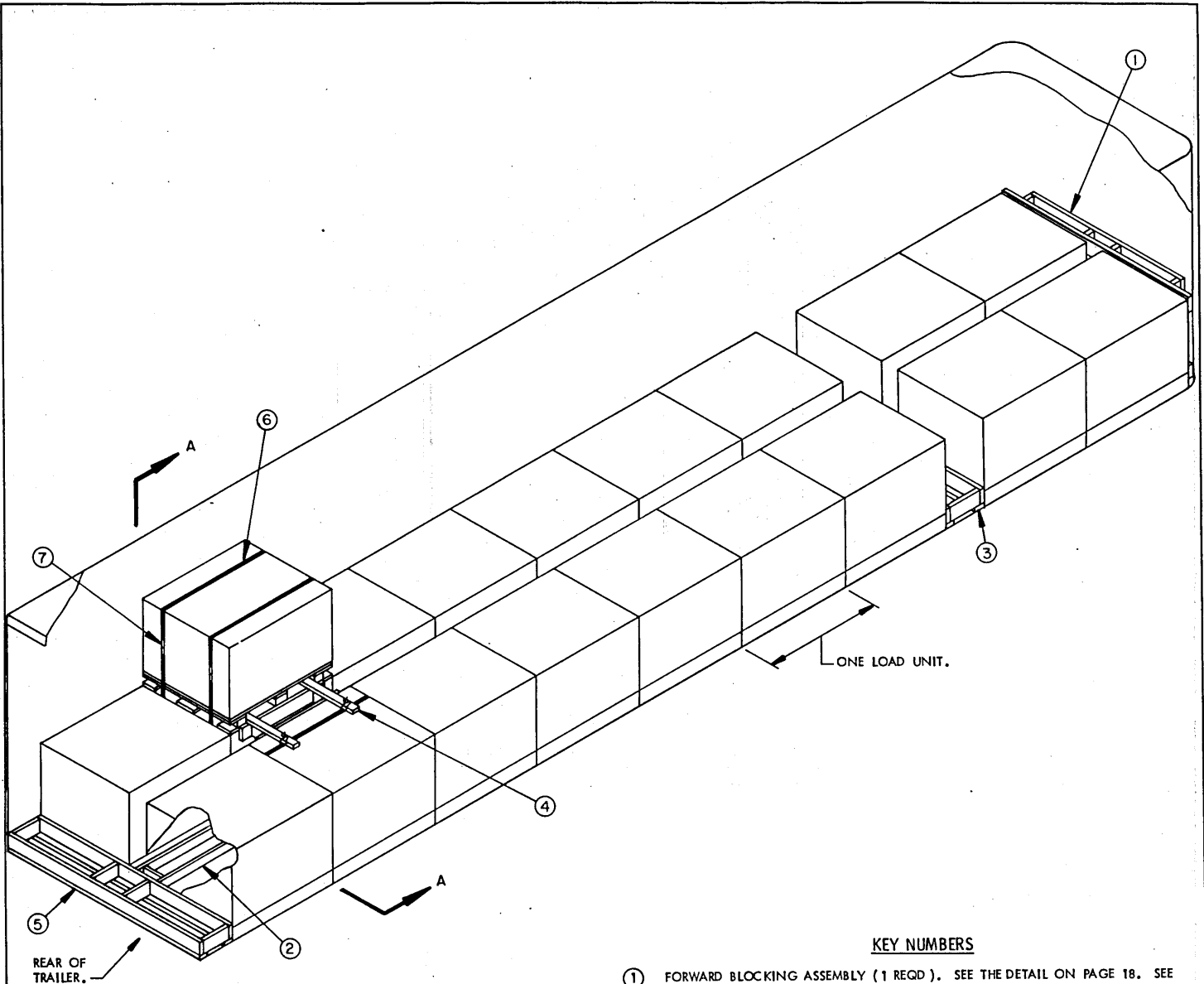


TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

STRAP JOINT B

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

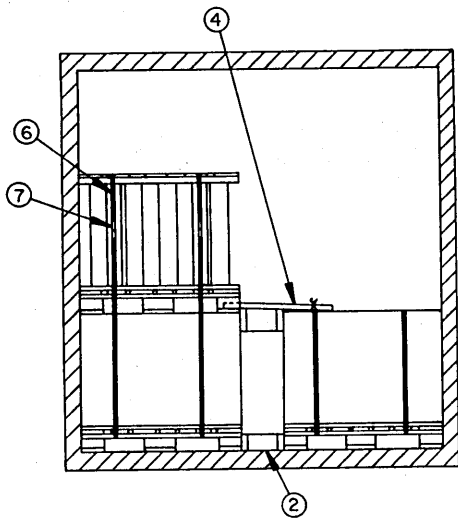
DETAILS



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (9 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. SEE GENERAL NOTES "O" AND "P" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- ③ SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 4 ON PAGE 5.
- ④ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 19. POSITION WITH ONE END OF THE SUPPORT PIECES AGAINST THE PALLET POST AND WIRE TIE THE OTHER END OF THE SUPPORT PIECES TO THE UNIT LOAD STRAP. SEE THE "TIE WIRE APPLICATION" DETAIL ON PAGE 20. SEE SPECIAL NOTE 5 ON PAGE 5.
- ⑤ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 6 ON PAGE 5.
- ⑥ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE ONE (1) COMPLETE STACK. SEE THE "STACK DETAIL" ON PAGE 17 AND SPECIAL NOTE 7 ON PAGE 5.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION A-A

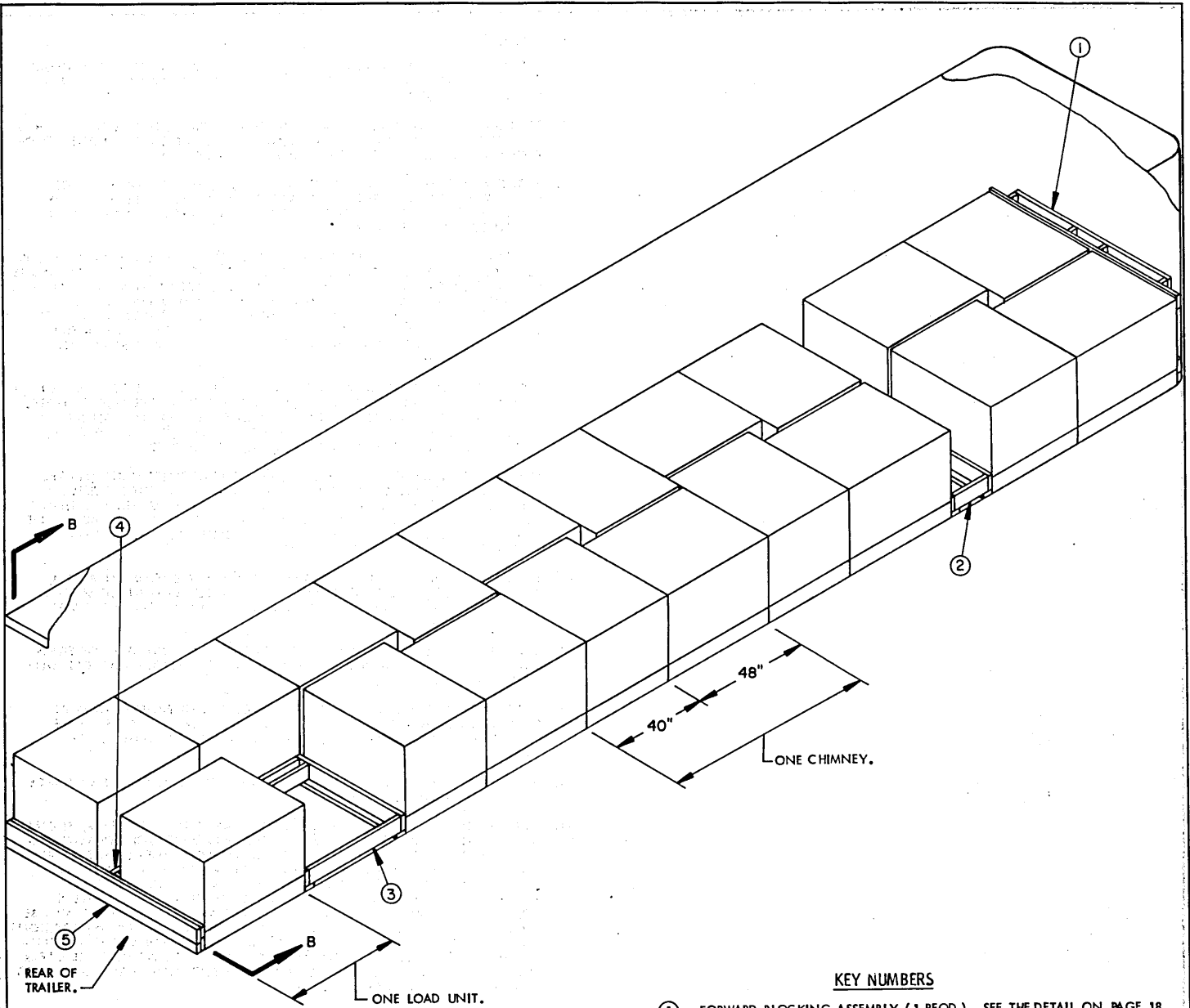
SPECIAL NOTES:

1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TYPE TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE SPECIAL NOTE 2.
2. REFER TO PAGE 6 FOR AN ALTERNATIVE LOADING PATTERN; IF A TRAILER WHICH IS 8'-2" OR WIDER IS FURNISHED FOR LOADING, THE LOADING PATTERN DEPICTED ON PAGE 8 MAY BE USED IN LIEU OF THE DEPICTED PROCEDURES.
3. ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ②, IN THE LOAD ON PAGE 4, ARE TO BE POSITIONED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS. IF SPACE PERMITS, "ANTI-SWAY BRACE B", DETAILED ON PAGE 20, MAY BE USED IN LIEU OF PIECE MARKED ②.
4. SPACER ASSEMBLY "A" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 4, 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 40', 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.
5. THE TOP-OF-LOAD ANTI-SWAY BRACE, 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 "B" WILL BE INSTALLED IN LIEU OF PIECE MARKED ④; THEN TWO (2) ADDITIONAL UNITIZING STRAPS MARKED ⑥ WILL BE REQUIRED.
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" DETAILED ON PAGE 21. 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.
7. THE STACK UNITIZING STRAPS, PIECES MARKED ⑤ IN THE LOAD ON PAGE 4, WILL BE INSTALLED TO SECURE AN UNSUPPORTED PALLET UNIT IN THE SECOND LAYER TO A CORRESPONDING UNIT IN THE FIRST LAYER, EXCEPT AT THE VERY REAR OF THE LOAD.
8. 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.
9. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED EIGHT (8) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 16 FOR GUIDANCE.
10. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 12 THRU 14.
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 22 AND 23 FOR GUIDANCE. THE NAILED-HEADER METHOD IS SHOWN ON PAGE 22 AND THE TYGARD METHOD IS SHOWN ON PAGE 23. FOR THE DEPICTED LOAD IN A 40'-0" LONG TRAILER WHEN USING THE NAILED-HEADER METHOD, IT WILL BE NECESSARY TO OMIT THE SPACER ASSEMBLY, PIECE MARKED ③, AND IT MAY BE NECESSARY TO FORM EIGHT LOAD UNITS IN LIEU OF NINE, AS SHOWN; ADDITIONAL UNITS CAN BE POSITIONED IN THE SECOND LAYER AS SHOWN BY THE "ALTERNATIVE LOADING PROCEDURE" DETAIL ON PAGE 17. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
12. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO (2) STACKS IN EACH APPLICABLE ROW. SEE THE "ALTERNATIVE LOADING PROCEDURE" DETAIL ON PAGE 17 FOR A TYPICAL INSTALLATION..

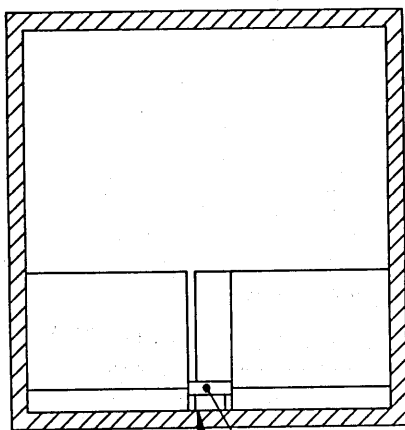
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	140	94
2" X 6"	75	75
NAILS	NO. REQD	POUNDS
10d (3")	288	4-1/2
STEEL STRAPPING, 1-1/4" ----- 42' REQD ----- 6 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		
WIRE, NO. 14 GAGE ----- 4' REQD ----- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	19	41,914 LBS
DUNNAGE		349 LBS
TOTAL WEIGHT		42,263 LBS (APPROX)



ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD.). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② SPACER ASSEMBLY (1 REQD.). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 3 ON PAGE 7.
- ③ SPACER ASSEMBLY (1 REQD.). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 19. SEE SPECIAL NOTE 4 ON PAGE 7.
- ④ ANTI-SWAY BRACE (1 REQD.). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE DETAIL ON PAGE 19. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ⑤ REAR BLOCKING ASSEMBLY (1 REQD.). SEE THE "REAR BLOCKING ASSEMBLY C" DETAIL ON PAGE 21. SEE SPECIAL NOTE 5 ON PAGE 7.

SPECIAL NOTES:

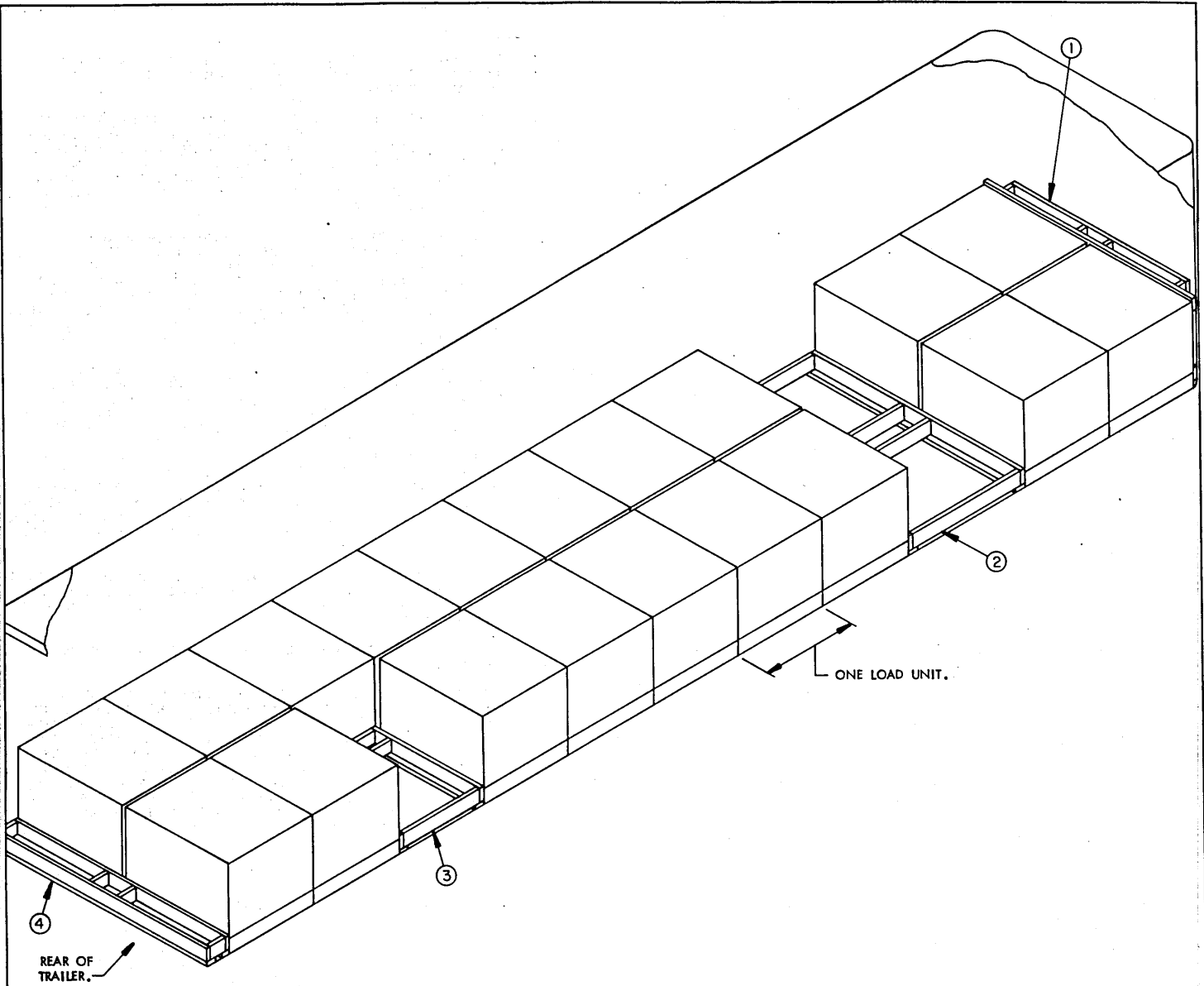
1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TYPE TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED. SEE SPECIAL NOTE 2.
2. A TYPICAL CHIMNEY-PATTERN LOAD IS SHOWN ON PAGE 6. THERE ARE 16 PALLET UNITS WITHIN THE CHIMNEY PATTERN. THREE ADDITIONAL UNITS AT THE REAR OF THE LOAD ARE POSITIONED WITH THE PALLET UNIT WIDTH PARALLEL TO THE SIDE WALL OF THE TRAILER. AN ANTI-SWAY BRACE, PIECE MARKED ④, IS REQUIRED BETWEEN THE TWO Laterally ADJACENT UNITS, AND SPACER ASSEMBLY "B", PIECE MARKED ③, IS REQUIRED TO FILL THE REMAINING VOID.
3. SPACER ASSEMBLY "A" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 6 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 40' 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. THE SPACER ASSEMBLY SHOWN AS PIECE MARKED ③ IN THE LOAD VIEW, IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. 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.
5. 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 "A" DETAILED ON PAGE 21 WILL BE USED. SEE SPECIAL NOTE 8.
6. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED EIGHT (8) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 16 FOR GUIDANCE.
7. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 12 THRU 14.
8. 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 22 AND 23 FOR GUIDANCE. THE NAILED-HEADER METHOD IS SHOWN ON PAGE 22 AND THE TYGARD METHOD IS SHOWN ON PAGE 23. FOR THE DEPICTED LOAD IN A 40'-0" LONG TRAILER WHEN USING THE NAILED-HEADER METHOD, IT WILL BE NECESSARY TO OMIT THE SPACER ASSEMBLY, PIECE MARKED ②. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	61	41
2" X 6"	81	81
NAILS	NO. REQD	POUNDS
10d (3")	128	2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	19-----	41,914 LBS
DUNNAGE-----		246 LBS
TOTAL WEIGHT-----		42,160



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 2 ON PAGE 9.
- ③ SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 19. SEE SPECIAL NOTE 3 ON PAGE 9.
- ④ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY B" DETAIL ON PAGE 21. SEE SPECIAL NOTE 4 ON PAGE 9.

SPECIAL NOTES:

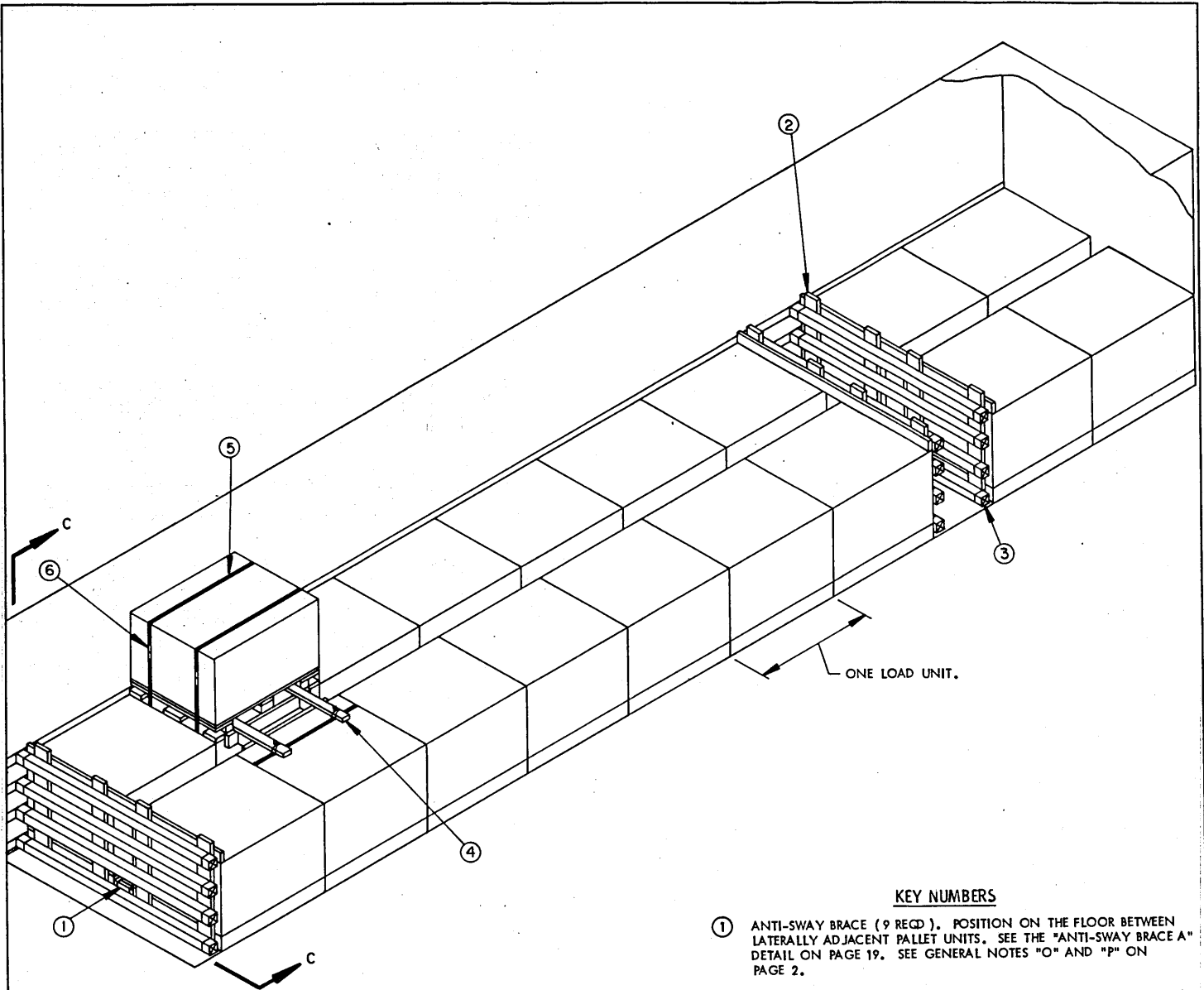
1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. SPACER ASSEMBLY "A" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 8 IS USED FOR THE PURPOSE OF PROVIDING FOR PROPER WEIGHT DISTRIBUTION, AND IS SHOWN AS TYPICAL ONLY. IF THE TRAILER TO BE LOADED IS LONGER THAN 40', 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.
3. THE SPACER ASSEMBLY SHOWN AS PIECE MARKED ③ IN THE LOAD VIEW, IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF THE SPACER ASSEMBLY, PIECE MARKED ③ 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.
4. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 21. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY, PIECE MARKED ④ ON PAGE 8.
5. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED EIGHT (8) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 16 FOR GUIDANCE.
6. 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 22 AND 23 FOR GUIDANCE. THE NAILED-HEADER METHOD IS SHOWN ON PAGE 22 AND THE TYGARD METHOD IS SHOWN ON PAGE 23. FOR THE DEPICTED LOAD, IN A 40'-0" TRAILER, WHEN USING THE NAILED-HEADER METHOD, IT WILL BE NECESSARY TO DECREASE THE LENGTH OF THE STRUTS ON THE SPACER ASSEMBLY, PIECE MARKED ②. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 3"	2	1
2" X 4"	53	36
2" X 6"	101	101
NAILS	NO. REQD	POUNDS
10d (3")	146	2-1/4

LOAD AS SHOWN

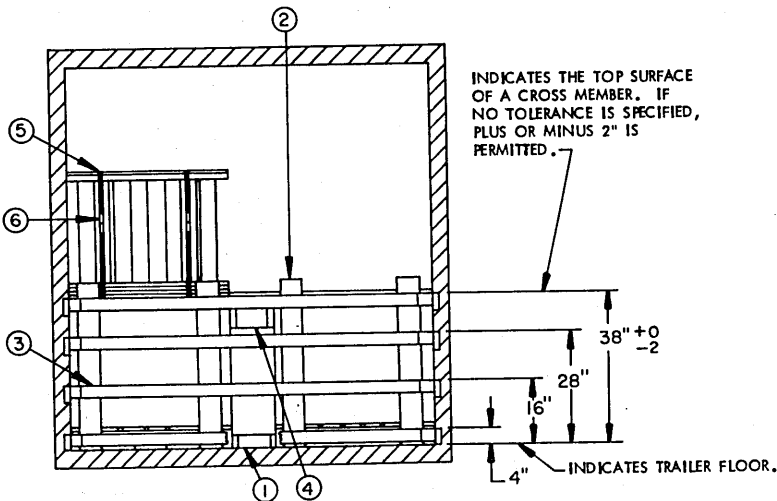
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	19-----	41, 914 LBS
DUNNAGE-----		279 LBS
TOTAL WEIGHT-----		42,193 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (9 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ② LOAD BEARING GATE (3 REQD). SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 20.
- ③ CROSS MEMBER (12 REQD). POSITION AT THE HEIGHTS SPECIFIED BY THE "SECTION C-C" VIEW BELOW. SEE GENERAL NOTES "D" AND "K" ON PAGE 2, AND SPECIAL NOTE 6 ON PAGE 11.
- ④ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 19. POSITION WITH ONE END OF THE SUPPORT PIECES AGAINST THE PALLET POST AND WIRE TIE THE OTHER ENDS OF THE SUPPORT PIECES TO THE UNIT LOAD STRAP. SEE THE "TIE WIRE APPLICATION" DETAIL ON PAGE 20. SEE SPECIAL NOTE 2 ON PAGE 11.
- ⑤ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENIRCLE ONE (1) COMPLETE STACK AS SHOWN BY THE "STACK DETAIL" ON PAGE 17.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2.



SECTION C-C

(SPECIAL NOTES CONTINUED)

6. IF THE TRAILER BEING LOADED IS EQUIPPED ONLY WITH SHORT WALL MEMBERS AT THE REAR FOR ATTACHMENT OF THE CROSS MEMBERS, THE LOAD BEARING GATES, AND THE CROSS MEMBERS, PIECES MARKED ② AND ③, RESPECTIVELY, WILL BE OMITTED FROM BETWEEN THE SECOND AND THIRD LOAD UNITS. TWO (2) PALLET UNITS CAN BE TRANSFERRED TO THE SECOND LAYER OF THE REAR LOAD UNIT, AND UNITIZED AS SHOWN IN THE "TYPICAL REAR VIEW" BELOW. A 2-HIGH LOAD BEARING GATE WILL BE INSTALLED IN LIEU OF PIECE MARKED ② AT THE REAR OF THE LOAD, AND ANTI-SWAY BRACE "B" DETAILED ON PAGE 20, WILL BE INSTALLED BETWEEN LATERALLY ADJACENT UNITS IN THE TOP LAYER. A SPACER ASSEMBLY, SHOWN AS PIECE MARKED ③ ON PAGE 4, WILL BE REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION. ADJUST THE LOCATION AND/OR STRUT LENGTHS OF THE SPACER ASSEMBLY, AS SPECIFIED BY SPECIAL NOTE 4, ON PAGE 5.

SPECIAL NOTES:

1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE "TOP-OF-LOAD ANTI-SWAY BRACE" 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 "B", DETAILED ON PAGE 20, WILL BE INSTALLED IN LIEU OF PIECE MARKED ④; THEN, TWO (2) ADDITIONAL UNITIZING STRAPS MARKED ⑤ WILL BE REQUIRED.
3. THE STACK UNITIZING STRAPS, PIECES MARKED ⑥ IN THE LOAD ON PAGE 10, WILL BE INSTALLED TO SECURE AN UNSUPPORTED PALLET UNIT IN THE SECOND LAYER TO A CORRESPONDING UNIT IN THE FIRST LAYER, EXCEPT AT THE VERY REAR OF THE LOAD. PALLET UNITS MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT IN THE FIRST LAYER UNLESS THEY ARE SUPPORTED BY CROSS MEMBERS AS SHOWN IN THE "TYPICAL REAR VIEW" DETAIL BELOW.
4. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED EIGHT (8) MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 16 FOR GUIDANCE.
5. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE GUIDANCE ON PAGE 15.

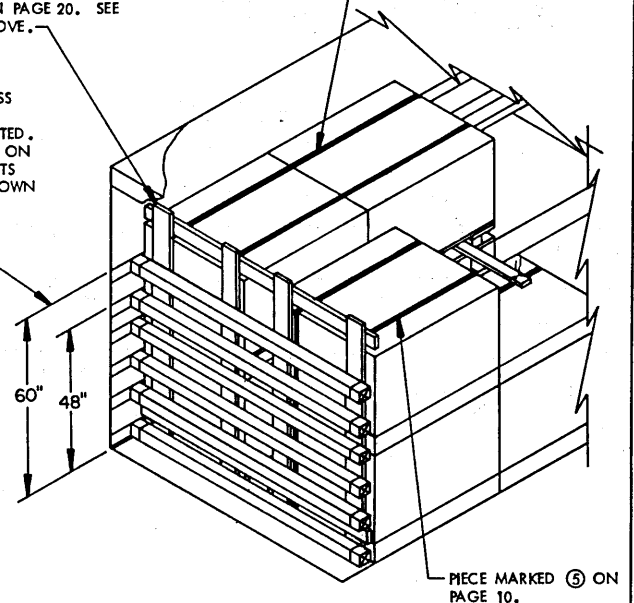
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	119	80
2" X 6"	80	80
NAILS	NO. REQD	POUNDS
10d (3")	206	3-1/4
STEEL STRAPPING, 1-1/4"	42' REQD	6 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL
WIRE, NO. 14 GAGE	4' REQD	NIL
CROSS MEMBER		12 REQD

LOAD BEARING GATE FOR 2-HIGH (1 REQD). SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 20. SEE SPECIAL NOTE 6 ABOVE.

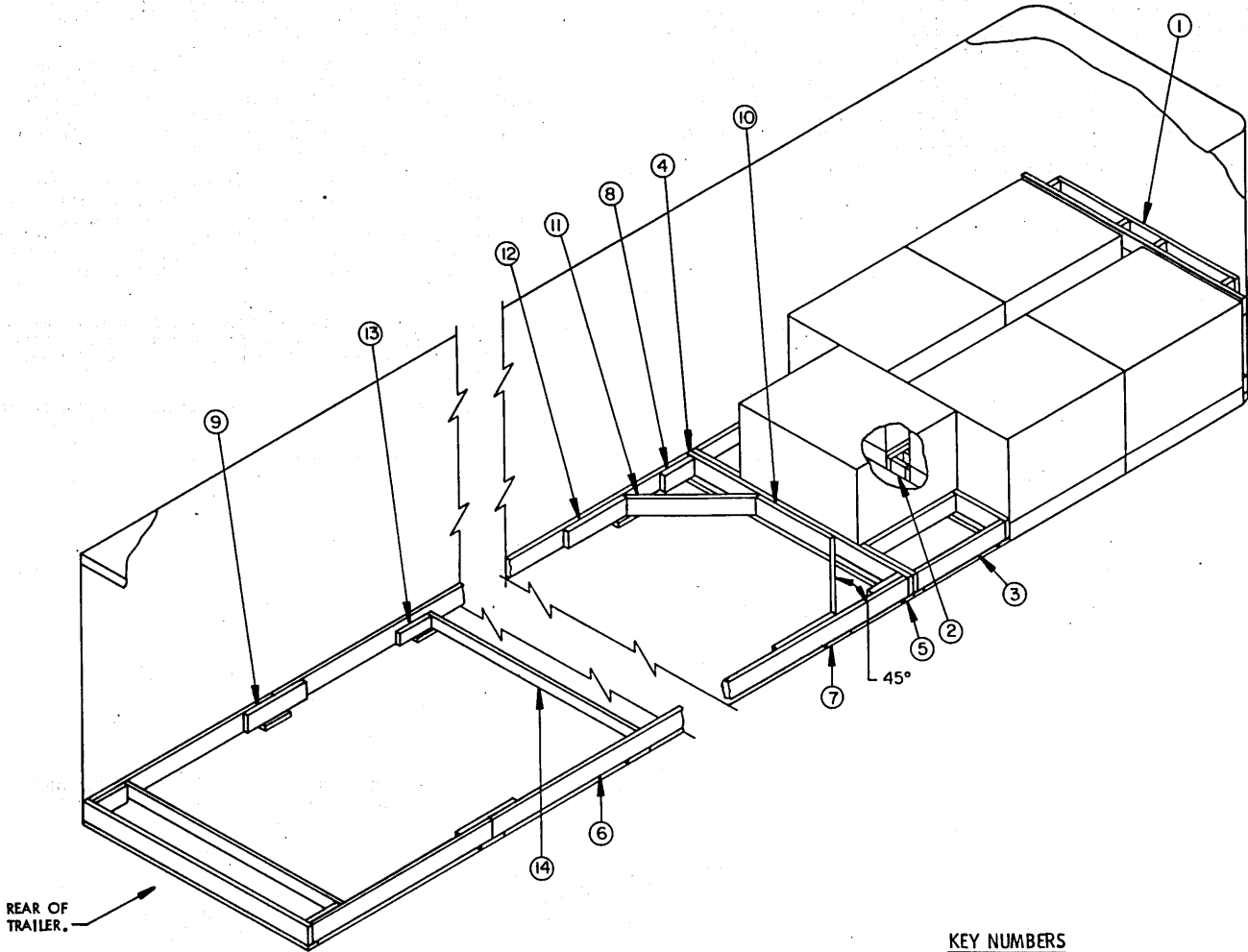
INDICATES THE TOP SURFACE OF A CROSS MEMBER. PLUS OR MINUS 2" IS PERMITTED. SEE "SECTION C-C" ON PAGE 10 FOR HEIGHTS WHICH ARE NOT SHOWN HERE.

BUNDLING STRAP (2 REQD). SEE THE "ALTERNATIVE LOADING PROCEDURE" DETAIL ON PAGE 17 FOR A TYPICAL INSTALLATION.



TYPICAL REAR VIEW

ITEM	LOAD AS SHOWN QUANTITY	WEIGHT (APPROX)
PALLET UNIT	19	41,914
DUNNAGE		330
TOTAL WEIGHT		42,244 LBS (APPROX)



ISOMETRIC VIEW

(KEY NUMBERS CONTINUED)

- ⑫ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/8-10d NAILS.
- ⑬ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS. SEE SPECIAL NOTE 4 ON PAGE 13.
- ⑭ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQUIRED). NAIL TO THE POCKET CLEATS, PIECES MARKED ⑧, AND/OR TO THE STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑬, W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 13.

KEY NUMBERS

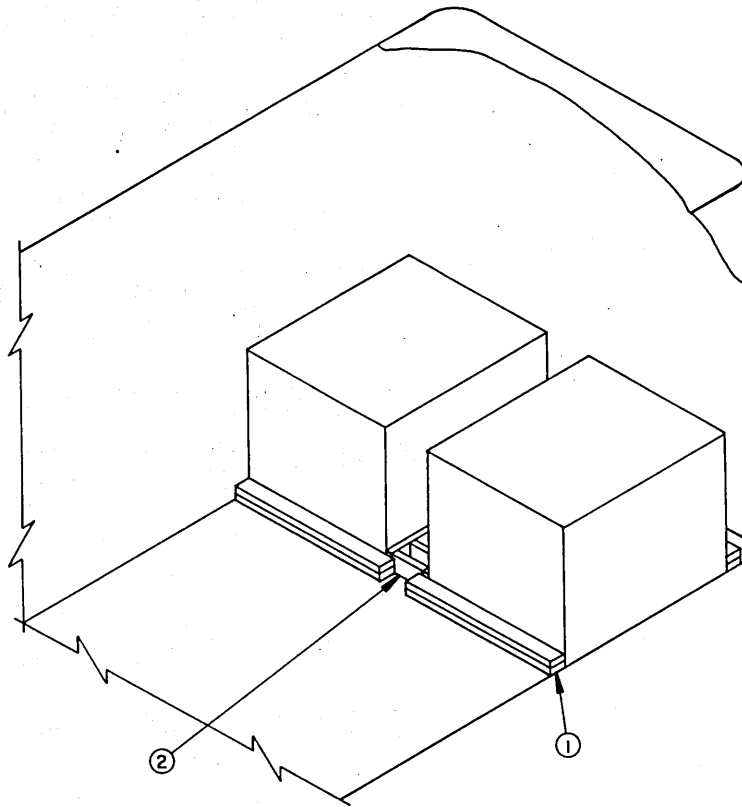
- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (2 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19.
- ③ SIDE BLOCKING (2 REQD). SEE THE "SIDE BLOCKING" DETAIL ON PAGE 19. NAIL TO A HEADER, PIECE MARKED ④, W/2-10d NAILS. SEE SPECIAL NOTE 2 ON PAGE 13.
- ④ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). SEE SPECIAL NOTES 6 AND 7 ON PAGE 13.
- ⑤ 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 MARKED ④, W/1-10d NAIL EVERY 8".
- ⑥ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN THE FORWARD AND REAR HEADERS, PIECES MARKED ④ (2 REQD). SEE SPECIAL NOTE 3 ON PAGE 13.
- ⑦ RISER PIECE, 2" X 4" X 9" (AS REQD). CENTER UNDER THE JOINTS OF PIECES MARKED ⑪ AND ⑫, ⑬ AND ⑭, AND UNDER THE SPLICE OF PIECES MARKED ⑥ IF APPLICABLE. NAIL TO SIDE STRUT MARKED ⑥ W/2-10d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④, W/3-12d NAILS.
- ⑨ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF PIECES MARKED ⑥ AND NAIL TO SIDE STRUT MARKED ⑥ W/4-10d NAILS AT EACH END. SEE SPECIAL NOTE 3 ON PAGE 13.
- ⑩ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO A HEADER, PIECE MARKED ④, W/6-10d NAILS.
- ⑪ 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 ⑥, W/2-16d NAILS AT EACH END.

(CONTINUED AT LEFT)

TYPICAL LTL (5-UNIT LOAD) IN A CONVENTIONAL VAN TRAILER

SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE SIDE BLOCKING PIECES MARKED ③, ARE SHOWN ONLY TO DEPICT A TYPICAL INSTALLATION. SIDE BLOCKING ASSEMBLIES WILL BE USED WHEN A PALLET UNIT IS OMITTED. THEY MAY OR MAY NOT BE REQUIRED, DEPENDING ON THE QUANTITY OF PALLET UNITS TO BE SHIPPED.
3. DEPENDING ON THE NUMBER OF UNITS BEING LOADED, EACH OF THE SIDE STRUTS, PIECES MARKED ⑥, MAY NEED TO BE FORMED FROM MORE THAN ONE PIECE OF MATERIAL. IF SUCH IS THE CASE, THE SIDE STRUTS MUST BE SPLICED. SPLICING CAN BE ACCOMPLISHED BY CENTERING A 2" X 4" X 24" PIECE ON THE JOINT OF THE SIDE STRUTS AND NAILING IT TO THE SIDE STRUTS W/4-10D NAILS AT EACH END.
CAUTION: A RISER PIECE, PIECE MARKED ⑦, MUST BE POSITIONED UNDER EACH SPLICE JOINT. **NOTE:** IF DESIRED, THE STRUT BRACING PIECE (S), PIECE MARKED ⑭, MAY BE NAILED TO THE SPLICE PIECES IN LIEU OF USING ADDITIONAL STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑬.
4. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO PIECE MARKED ⑧. IF THE SIDE STRUTS, PIECES MARKED ⑥, ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE, PIECE MARKED ⑭, AND TWO (2) STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑬, AND TWO (2) RISER PIECES MARKED ⑦, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
5. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ④ THRU ⑭, IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.
6. 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 22 AND 23 FOR GUIDANCE. THE NAILED-HEADER METHOD SHOWN ON PAGE 22 OR THE TYGARD METHOD SHOWN ON PAGE 23 SHOULD BE USED IF POSSIBLE IN LIEU OF PIECES MARKED ④ THRU ⑭ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
7. 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 MARKED ④ THRU ⑭. REFER TO PAGE 22 FOR GUIDANCE. AS AN ALTERNATIVE IN NAILABLE FLOOR TRAILERS, OR IN TRAILERS HAVING NON-NAILABLE FLOORS, THE TYGARD METHOD DEPICTED ON PAGE 23 MAY BE USED..
8. LEFTOVER CONTAINERS, IN AN AMOUNT NOT TO EXCEED EIGHT (8), MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 16 FOR GUIDANCE.



ISOMETRIC VIEW

SPECIAL NOTES:

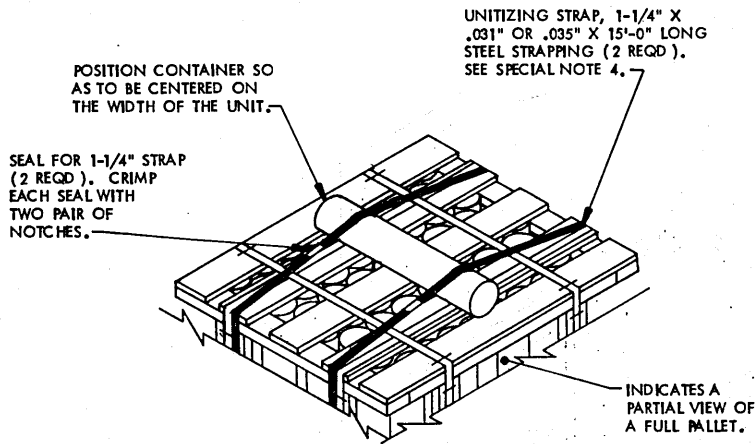
1. THESE OUTLOADING PROCEDURES DEPICT THE USE OF SIDE BLOCKING IN A CONVENTIONAL VAN TRAILER EQUIPPED WITH A NAILABLE FLOOR. TRAILERS WITH ALL METAL FLOORS CANNOT BE USED. A 2 UNIT LOAD IS SHOWN. THIS METHOD IS ALSO APPLICABLE FOR ONE THRU FOUR UNIT LOADS.
2. PRE-POSITION TWO PIECES OF SIDE BLOCKING A MINIMUM OF 6-1/2" FROM THE FRONT OF THE TRAILER. NAIL AS DESCRIBED BY KEY NUMBER ①.
3. WHEN LOADING TWO PALLET UNITS ACROSS THE WIDTH OF THE TRAILER, "ANTI-SWAY BRACE A", SHOWN AS PIECE MARKED ②, MUST BE POSITIONED BETWEEN THE LATERALLY ADJACENT UNITS.
4. IF ONLY ONE PALLET UNIT IS TO BE LOADED, OMIT THE ANTI-SWAY BRACE, PIECE MARKED ②. THE SIDE BLOCKING, PIECE MARKED ①, WILL BE 40" IN LENGTH. ONE PIECE OF DOUBLED 2" X 4" X 48" MATERIAL WILL ALSO BE REQUIRED. POSITION THIS PIECE ALONG THE 48" SIDE OF THE UNIT AND NAIL IN THE MANNER DESCRIBED IN KEY NUMBER ①.
5. IF THE TRAILER HAS A SQUARE FRONT, OMIT THE BLOCKING AT THE FRONT OF THE TRAILER AND POSITION THE PALLET UNIT (5) AGAINST THE FRONT WALL OF THE TRAILER.

KEY NUMBERS

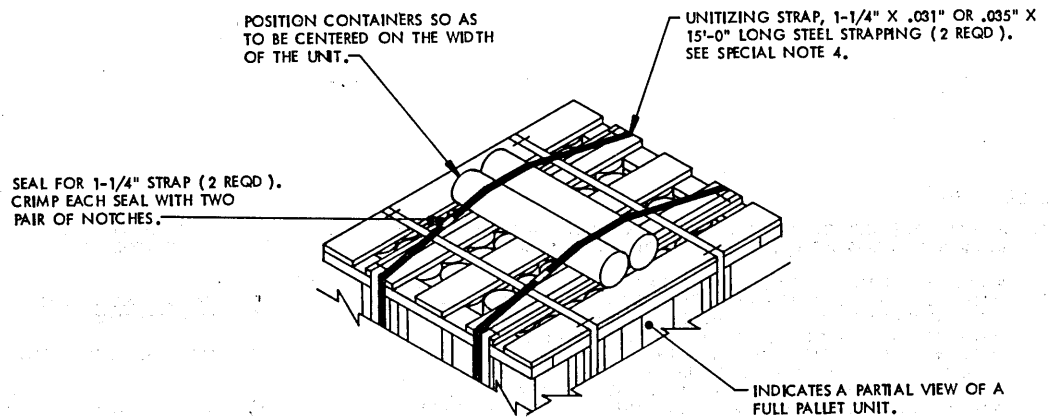
- ① SIDE BLOCKING, 2" X 4" X 42" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTES 2 AND 4 AT LEFT.
- ② ANTI-SWAY BRACE (1 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. SEE SPECIAL NOTE 3 AT LEFT.

SPECIAL NOTES:

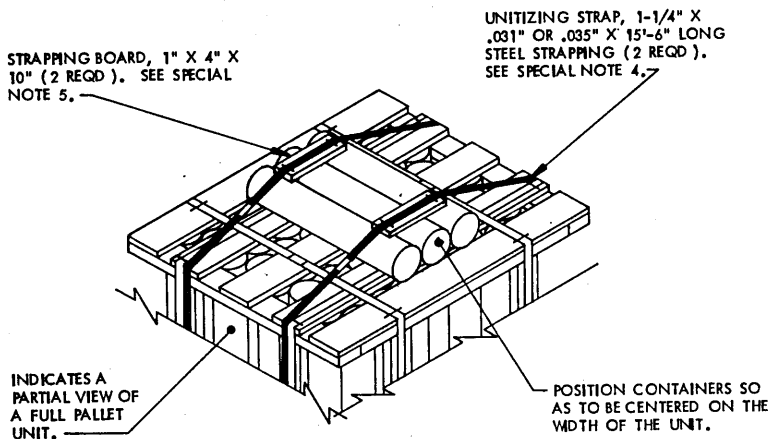
1. SHIPMENTS OF COMPLETE ROUNDS SHOULD CONSIST OF FULL UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL PALLETIZED UNIT.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT, OR FROM DEPOT 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 SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVER-SEAS 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. THE UNITIZING STRAPS MUST BE THREADED THRU THE STRAP SLOTS OF THE PALLET.
5. INCREASE THE LENGTH OF THE STRAPPING BOARD BY 5" FOR EACH ADDITIONAL CONTAINER, UP TO A MAXIMUM OF EIGHT (8) CONTAINERS.



SECUREMENT OF ONE CONTAINER



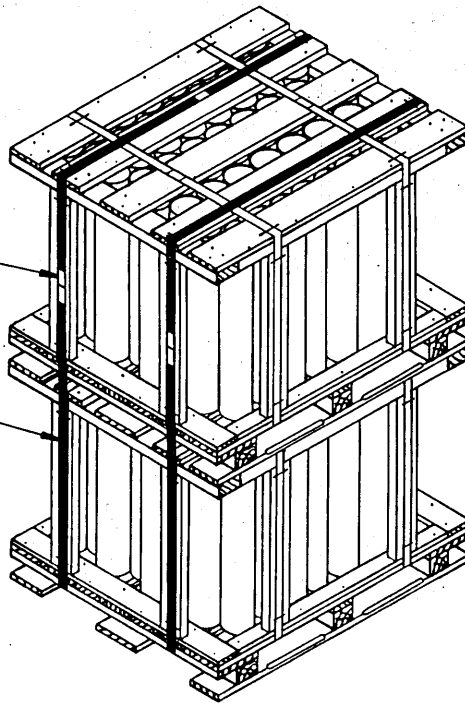
SECUREMENT OF TWO CONTAINERS



SECUREMENT OF THREE CONTAINERS

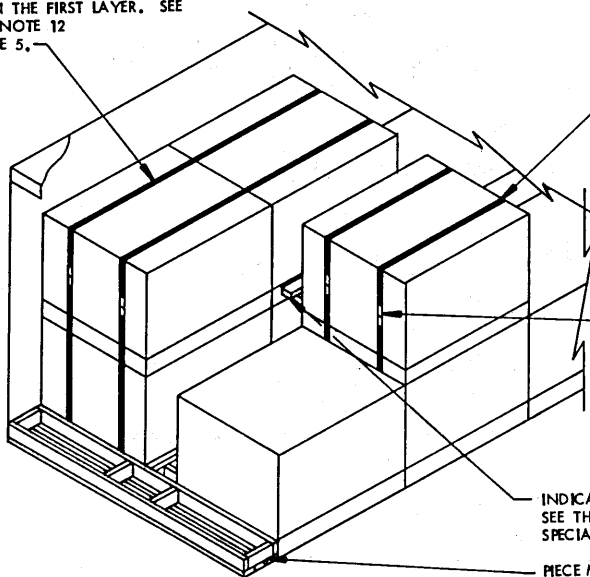
SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD.), 2 PER STRAP). DOUBLE CRIMP EACH SEAL.

VERTICAL UNITIZING STRAP, 1-1/4" X .035" OR .031" X 22'-0" LONG STEEL STRAPPING (2 REQD).



STACK DETAIL

BUNDLING STRAP, 1-1/4" X .035" OR .031" X 29'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO SECURE TWO PALLET UNITS IN THE SECOND LAYER TO TWO PALLET UNITS IN THE FIRST LAYER. SEE SPECIAL NOTE 12 ON PAGE 5.



PIECE MARKED ⑥ ON PAGE 4.

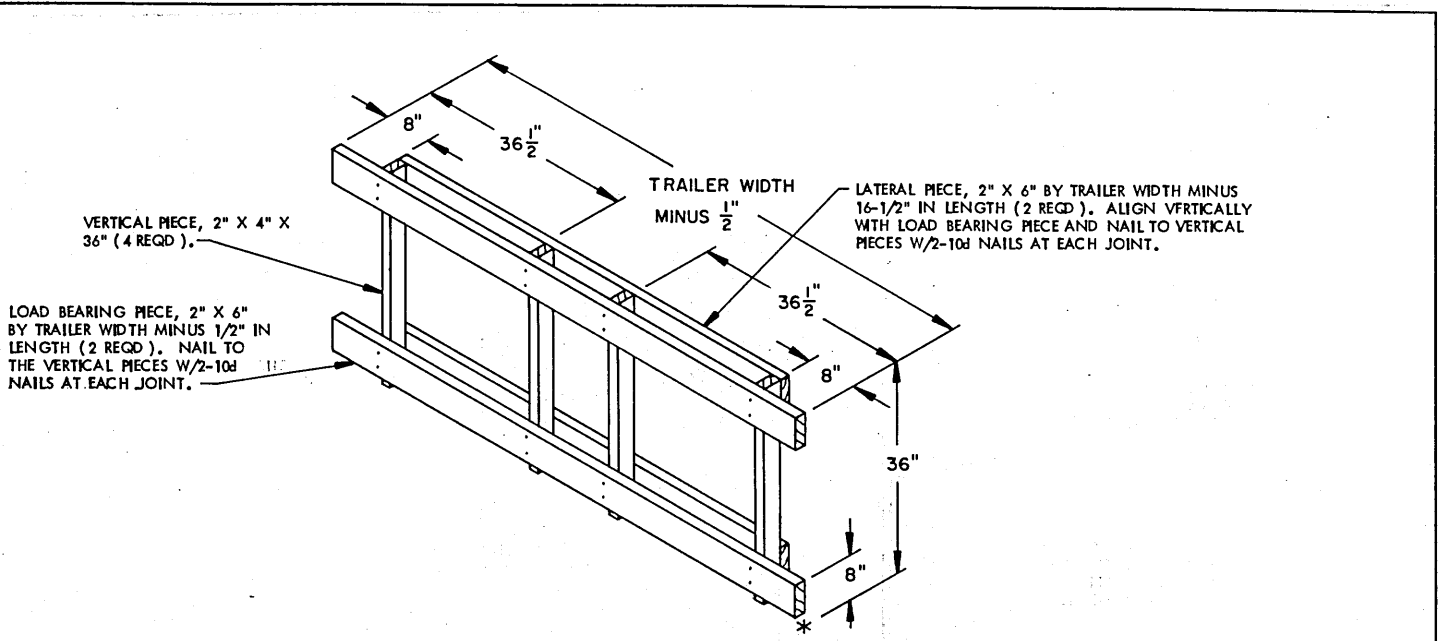
PIECE MARKED ⑦ ON PAGE 4.

INDICATES "ANTI-SWAY BRACE B". SEE THE DETAIL ON PAGE 20. SEE SPECIAL NOTE 5 ON PAGE 5.

PIECE MARKED ⑤ ON PAGE 4.

ALTERNATIVE LOADING PROCEDURE

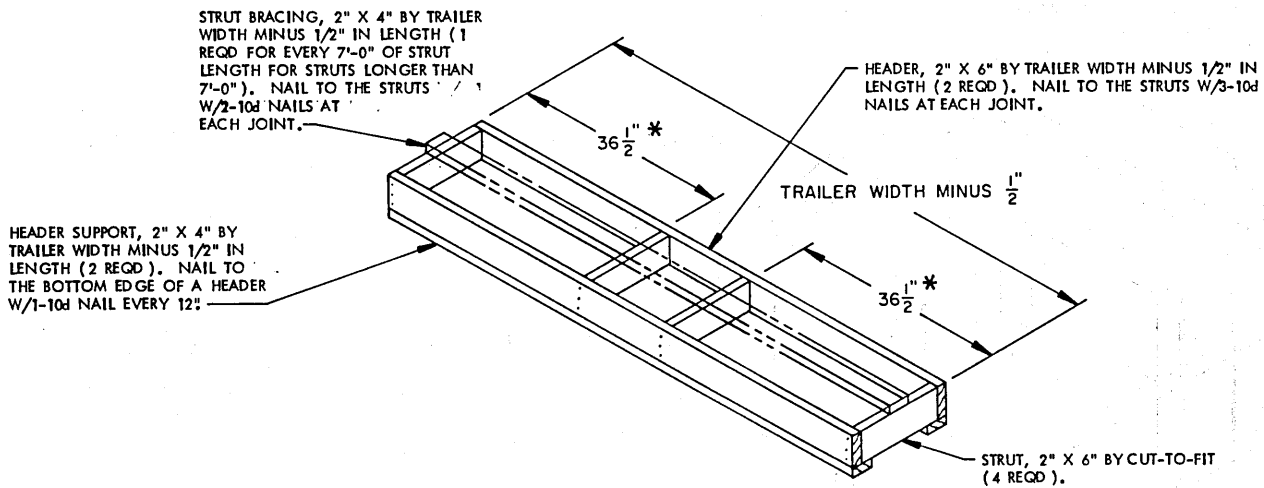
DETAILS



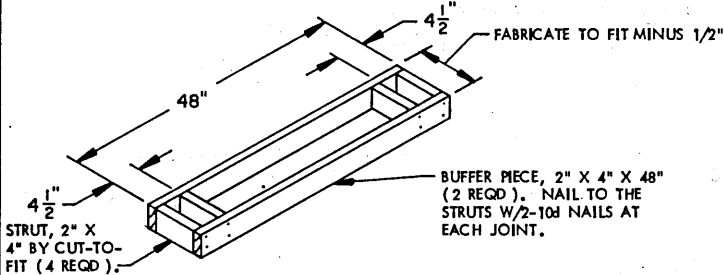
FORWARD BLOCKING ASSEMBLY

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 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 24 FOR GUIDANCE.

* THIS DIMENSION WILL BE 42" WHEN THE 48" DIMENSION OF THE PALLET IS ACROSS THE WIDTH OF THE TRAILER.

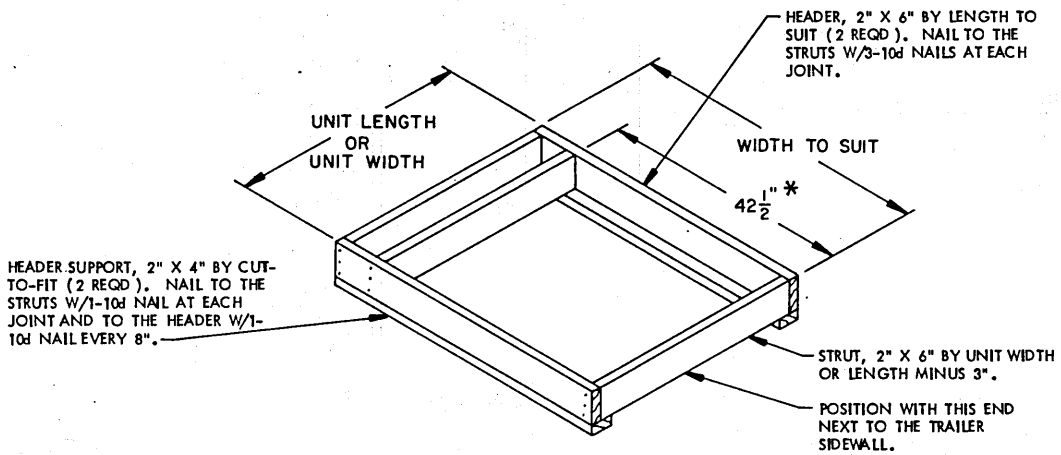


SPACER ASSEMBLY A

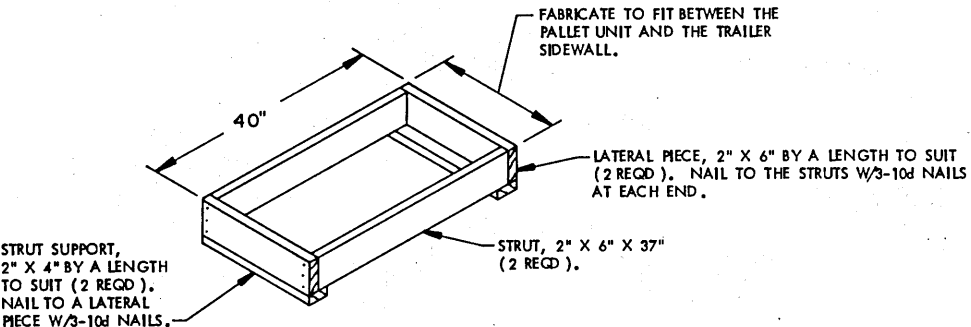


ANTI-SWAY BRACE A

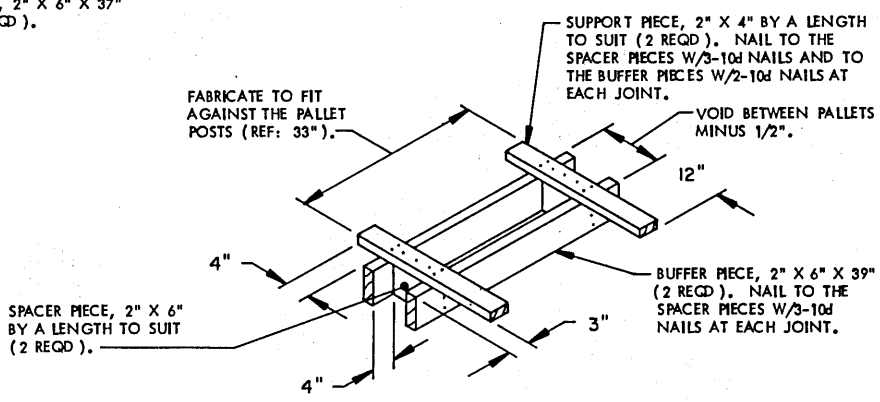
* THE DIMENSION SHOWN IS FOR THE LOAD ON PAGE 8. THIS DIMENSION WILL BE 36-1/2" WHEN THE PALLET LENGTH (40") IS POSITIONED ACROSS THE WIDTH OF THE TRAILERS AS IN THE LOAD ON PAGE 4 OR WHEN USED IN CONJUNCTION WITH A CHIMNEY PATTERN AS DEPICTED IN THE LOAD ON PAGE 6.



SPACER ASSEMBLY B

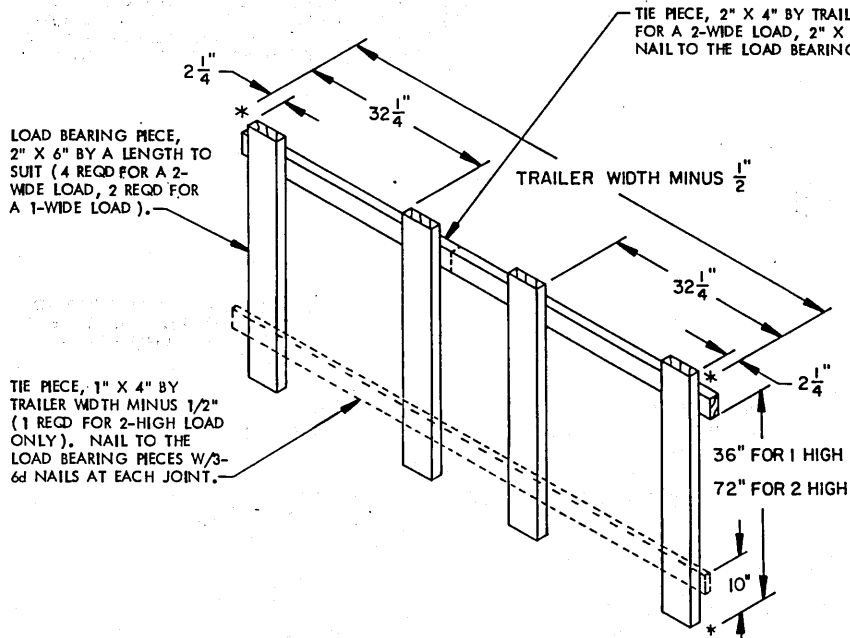


SIDE BLOCKING



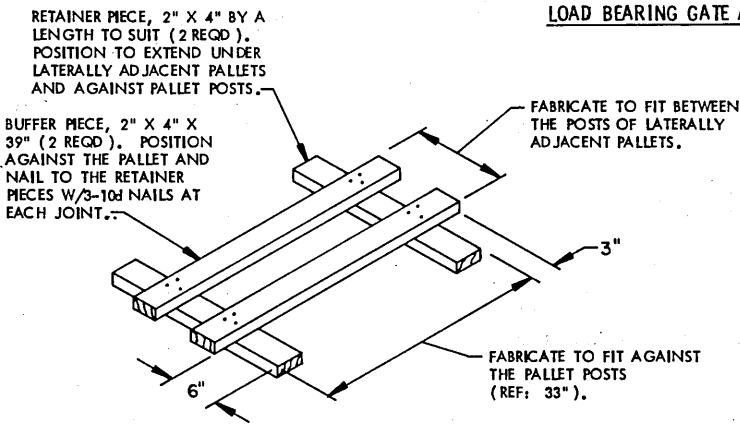
TOP-OF-LOAD ANTI-SWAY BRACE

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.



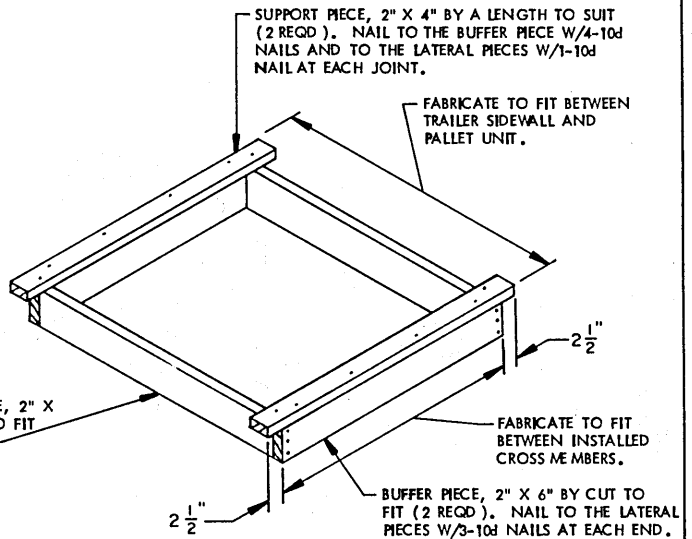
NOTE: DOTTED LINE ON UPPER TIE PIECE REPRESENTS A 1-WIDE GATE.

LOAD BEARING GATE A



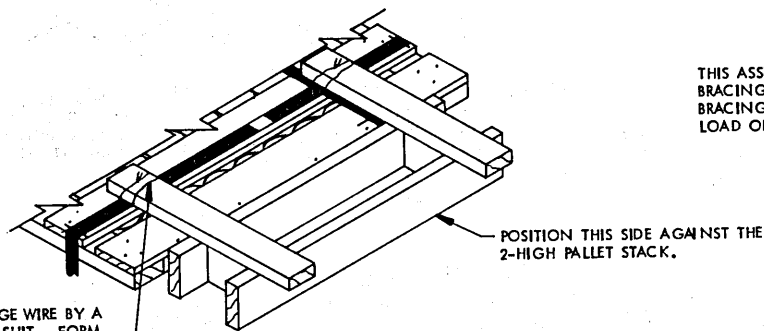
ANTI-SWAY BRACE B

IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.

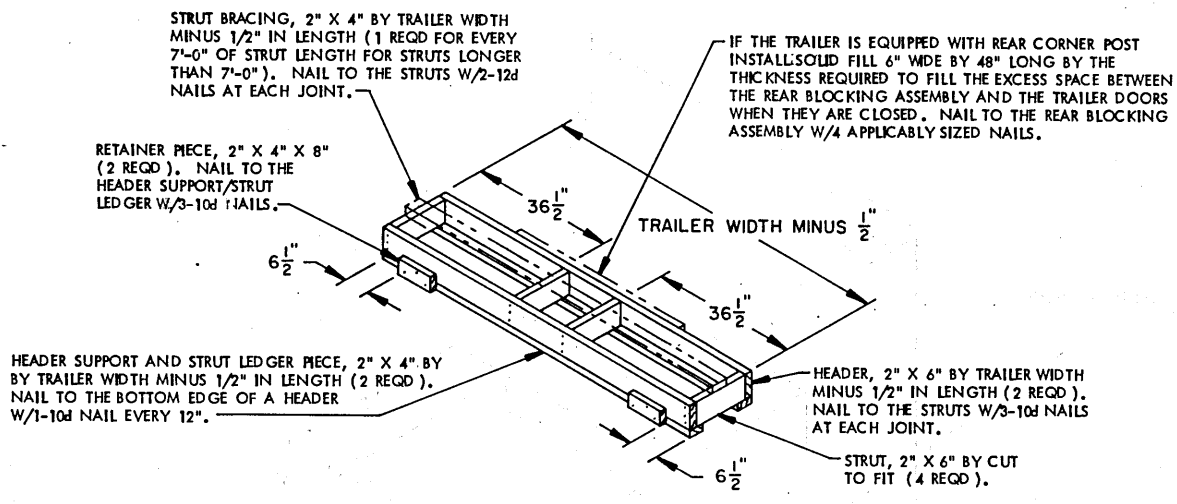


SPACER ASSEMBLY C

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES AS SHOWN IN THE TYPICAL LTL LOAD ON PAGE 12.

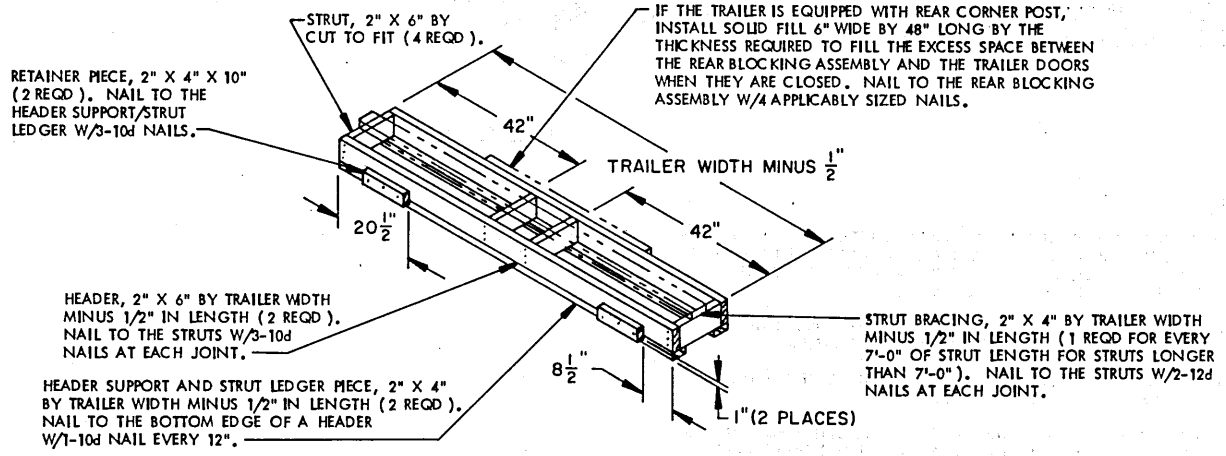


TIE WIRE APPLICATION



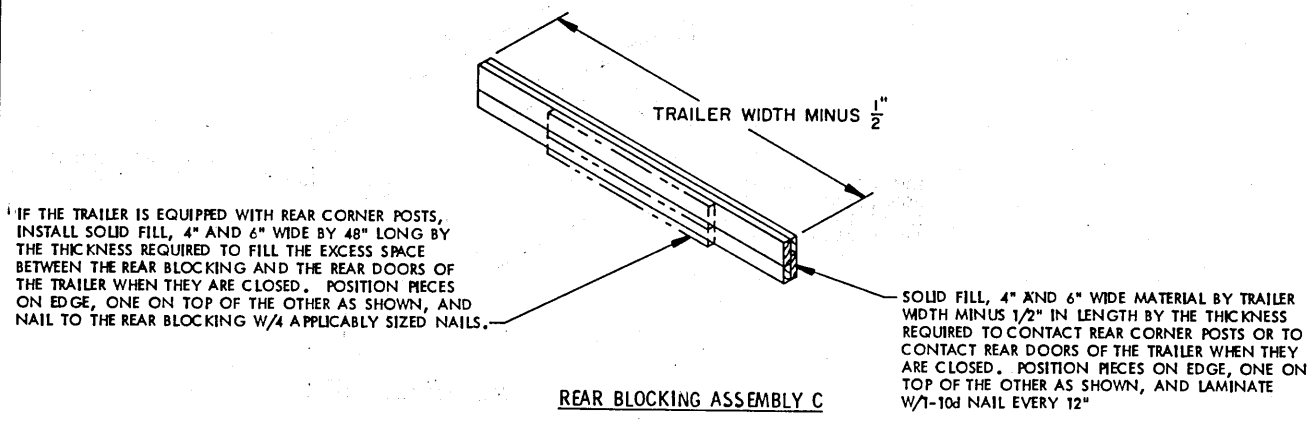
REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS FOR USE AT THE REAR END OF A LOAD WHEN THE PALLET UNITS ARE POSITIONED WITH THE 40" DIMENSION ACROSS THE WIDTH OF THE VAN. 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 A LOAD WHEN THE PALLET UNITS ARE POSITIONED WITH THE 48" DIMENSION ACROSS THE WIDTH OF THE VAN. NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION FROM WHICH IT WILL BE INSTALLED.



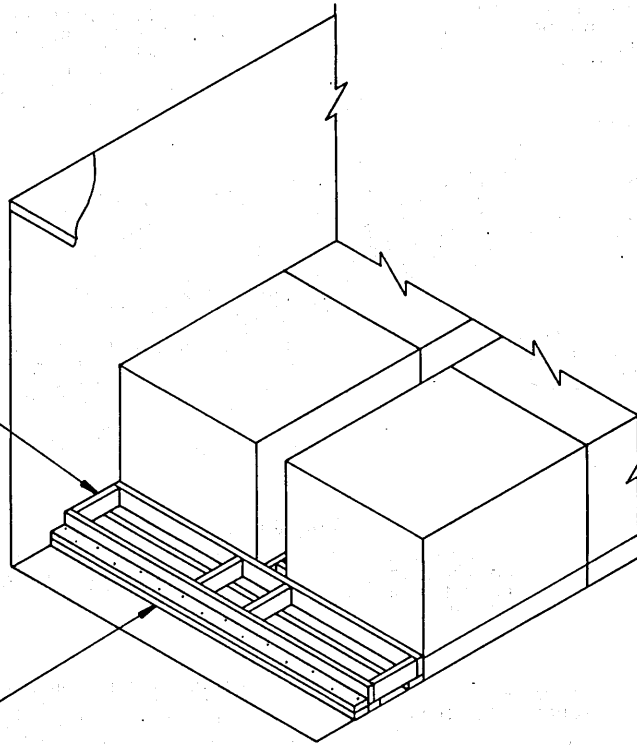
REAR BLOCKING ASSEMBLY C

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".

DETAILS

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

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



NAILED-HEADER METHOD

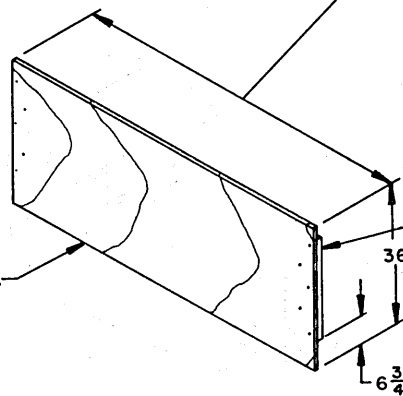
SPECIAL NOTES:

1. THE NAILED-HEADER METHOD OF REAR BLOCKING DEPICTED ABOVE CAN ONLY BE USED IN TRAILERS HAVING A NAILABLE FLOOR AREA BETWEEN THE LADING AND THE METAL THRESHOLD, OR A THRESHOLD PLATE IF THE TRAILER IS SO EQUIPPED, OF AT LEAST FOURTEEN INCHES (14").
2. REAR BLOCKING ASSEMBLY "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.

UNIT WIDTH FOR 1-WIDE LOAD, TRAILER
WIDTH MINUS 1/2" IN LENGTH FOR
2-WIDE LOAD.

1/2" PLYWOOD BEARING
PIECE (1 REQD). NAIL
TO THE FILL PIECES
W/5-6d NAILS AT EACH END.

FILL PIECE, 2" X 4"
X 26" (2 REQD).

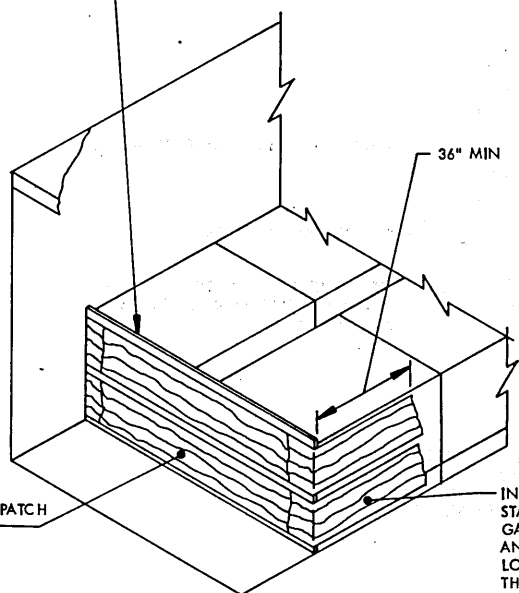


LOAD BEARING GATE B

NAILED-HEADER METHOD

PROCEDURES FOR CONVENTIONAL VAN TRAILER IS EQUIPPED WITH ROLL-UP TYPE DOORS

LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 22. SEE SPECIAL NOTE 2 AT RIGHT.



TYGARD METHOD A

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: PLACE 1" X 4" SO AS TO BE ALIGNED WITH THE VOID BETWEEN THE ROWS OF PALLET UNITS.

SPECIAL NOTES:

1. THE TYGARD METHOD OF REAR BLOCKING DEPICTED, CAN ONLY BE USED IN TRAILERS WHICH HAVE REASONABLY SMOOTH AND ADEQUATELY SECURED SIDE-WALL PANELS IN THE AREA WHERE THE TYGARD MATERIAL IS TO BE APPLIED. NOTE THAT TYGARD MATERIAL MUST BE INSTALLED AT TWO LEVELS ON THE REAR LOAD UNIT.
2. A 36" HIGH 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 AS SHOWN BY THE "TYGARD METHOD A" DETAIL AT LEFT. IF THE REAR LOAD UNIT IS 1-WIDE, ROTATE THE PALLET, INSTALL ONE (1) PALLET WIDTH GATE, AND ONE (1) TRAILER WIDTH MINUS 1/2" IN LENGTH GATE, AS SHOWN BY THE "TYGARD METHOD B" DETAIL BELOW.
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 10920-0860, 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 ALSO 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.

RECOMMENDED EQUIPMENT/INSTALLATION PROCEDURES

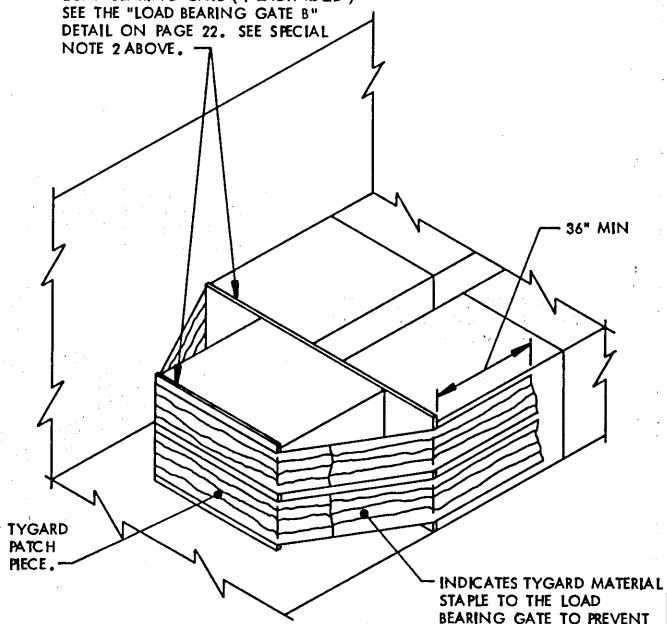
EQUIPMENT REQUIRED

- 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:

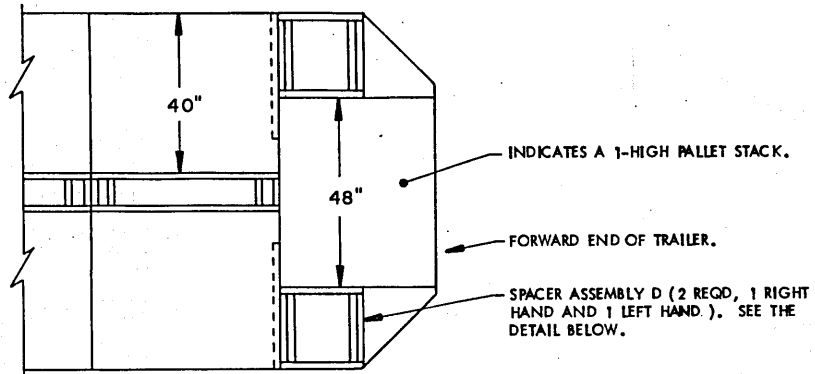
1. CUT TO LENGTH THE REQUIRED NUMBER OF TYGARD PIECES (FROM 2 TO 8) DEPENDING UPON THE LOAD CONFIGURATION) FOR ATTACHMENT TO THE TRAILER SIDEWALL. PIECES WILL BE OF A LENGTH AS REQUIRED TO PROVIDE PROPER BONDING TO THE TRAILER SIDEWALL AND TO EXTEND 60" ACROSS THE REAR OF THE LOAD. ALSO, CUT 72" LONG "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 THE PRESSURE ROLLER TO ENSURE PROPER BONDING IS ACHIEVED. TEMPORARILY SECURE THE LOOSE ENDS TO THE TRAILER SIDEWALL OR TO AN OPEN HINGED TYPE DOOR OR TO THE OUTSIDE WALL, AS APPLICABLE.
4. POSITION THE PALLETS OF THE REARMOST LOAD UNIT INTO THE TRAILER AND INSTALL THE SPECIFIED ANTI-SWAY BRACES.
5. UNDO THE PREVIOUSLY SECURED LOOSE ENDS AND BRING A SET OF TWO PIECES TOGETHER ACROSS THE REAR OF THE LOAD. POSITION THE TENSIONING ROD SO THAT THE LOOSE ENDS OF THE TYGARD MATERIAL EXTEND THRU THE SLOT IN ROD. USING THE TWO WRENCHES, ROLL UP THE TYGARD TO TENSION IT ACROSS REAR OF THE LOAD. POSITION A WRENCH SO AS TO MAINTAIN THE TENSION IN THE TYGARD PIECES. CUT OFF AND DISCARD EXCESS MATERIAL FROM ONE PIECE OF THE TYGARD.
6. APPLY TYGARD ADHESIVE TO THE TENSIONED TYGARD PIECES AND ALSO TO THE CORD SIDE OF THE PREVIOUSLY CUT "PATCH" PIECE. APPLY THE "PATCH" AND ROLL WITH THE PRESSURE ROLLER TO ENSURE PROPER BONDING.

LOAD BEARING GATE (1 EACH REQD) SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 22. SEE SPECIAL NOTE 2 ABOVE.



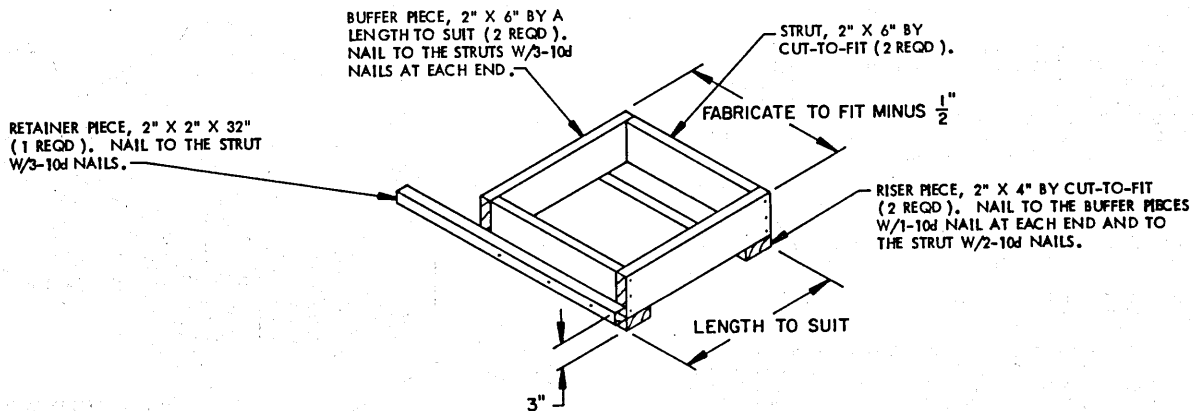
TYGARD METHOD B

INDICATES TYGARD MATERIAL STAPLE TO THE LOAD BEARING GATE TO PREVENT SAGGING.



ALTERNATIVE FORWARD LOADING PATTERN

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.



SPACER ASSEMBLY D

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