LOADING & BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS● OF 25MM CARTRIDGES PACKED IN PA125 METAL BOXES AND UNITIZED ON A 44" X 40" METAL PALLET

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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.

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MAY 1992

CLASS	DIVISION	DRAWING	FILE
19	48	4247/17	11PM1005

DO NOT SCALE

PROJECT CA 259/17-88

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 PA125 METAL BOXES ASSEMBLED ON THE THE 44" X 40" 4-WAY ENTRY PALLET. SEE THE PICTORIAL VIEW ON PAGE 3 FOR SIZE AND WEIGHT. REFER TO U.S. ARMY AMC DRAWING 19-48-4232/17-20PM1007 FOR UNITIZATION PROCEDURES FOR THE PA125 METAL AMMUNITION BOXES.

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'-8" WIDE (INSIDE DIMENSION) HAVE BEEN SHOWN, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE 89" THRU 99" IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE 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 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.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

LUMBER - - - - - - - -: FED SPEC MM-L-751. SEE TM 743-200-1. (DUNNAGE LUMBER).

NAILS - - - - - - - -: FED SPEC FF-N-105; COMMON.

PLYWOOD - - - - - - -: FED SPEC NN-P-530; GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

STRAPPING, STEEL - -: ASTM D 3953; FLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.

SEAL, STRAP - - - -: ASTM D 3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.

STAPLE, STRAP - - -: COMMERCIAL GRADE.

WIRE - - - - - - - - -: FED SPEC QQ-W-461.

(GENERAL NOTES CONTINUED)

F. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OFF 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 SEMITRAILER CARRYING THE LADING MUST NOT EXCEED THE MAXIMUM GROSS WEIGHT ALLOWED FOR THE STATE OR STATES THRU WHICH THE LOAD IS TO BE TRANSPORTED BY MOTOR CARRIER. LIKEWISE, THE GROSS WEIGHT ON A SINGLE OR TANDEM AXLE MUST NOT EXCEED THE MAXIMUM ALLOWABLE WEIGHT. IF THERE IS ANY DOUBT AS TO WHETHER THE TOTAL GROSS WEIGHT OF AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.

G. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED MAY BE USED, HOWEVER, THE APPROVED METHODS SHOWN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.

H. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 42,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF HEAVIER LOADS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.

J. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF CARTRIDGES, 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. 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. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. REFER TO U.S. ARMY AMC DRAWING 19-48-4232/17-20PM1007 FOR LESS THAN FULL PALLET UNITS, AND "SHIPMENT OF PARTIAL PALLET UNIT" DETAIL AND SPECIAL NOTES ON PAGE 12.

M. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 12 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. 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.

(CONTINUED ON PAGE 3)

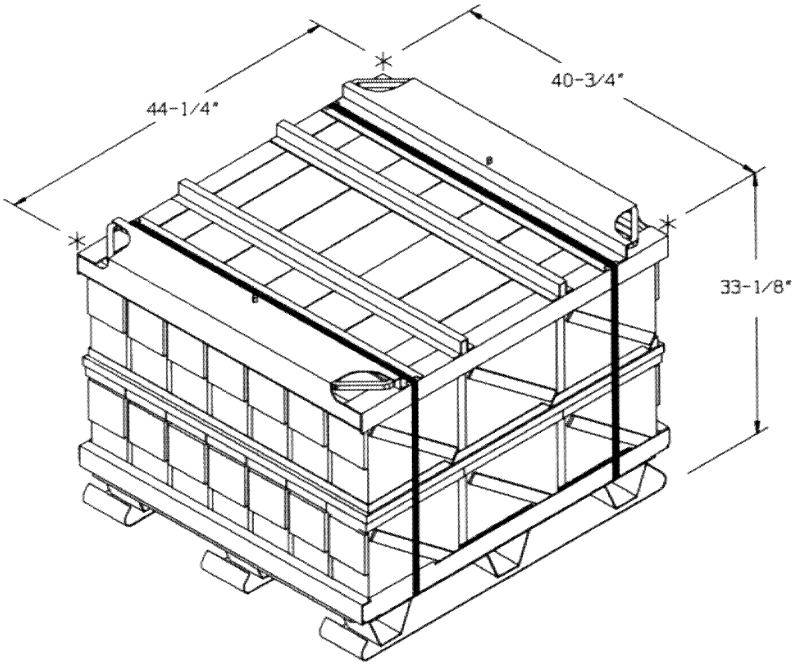
(GENERAL NOTES CONTINUED FROM PAGE 2)

P. 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.

Q. 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.

R. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, END WALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

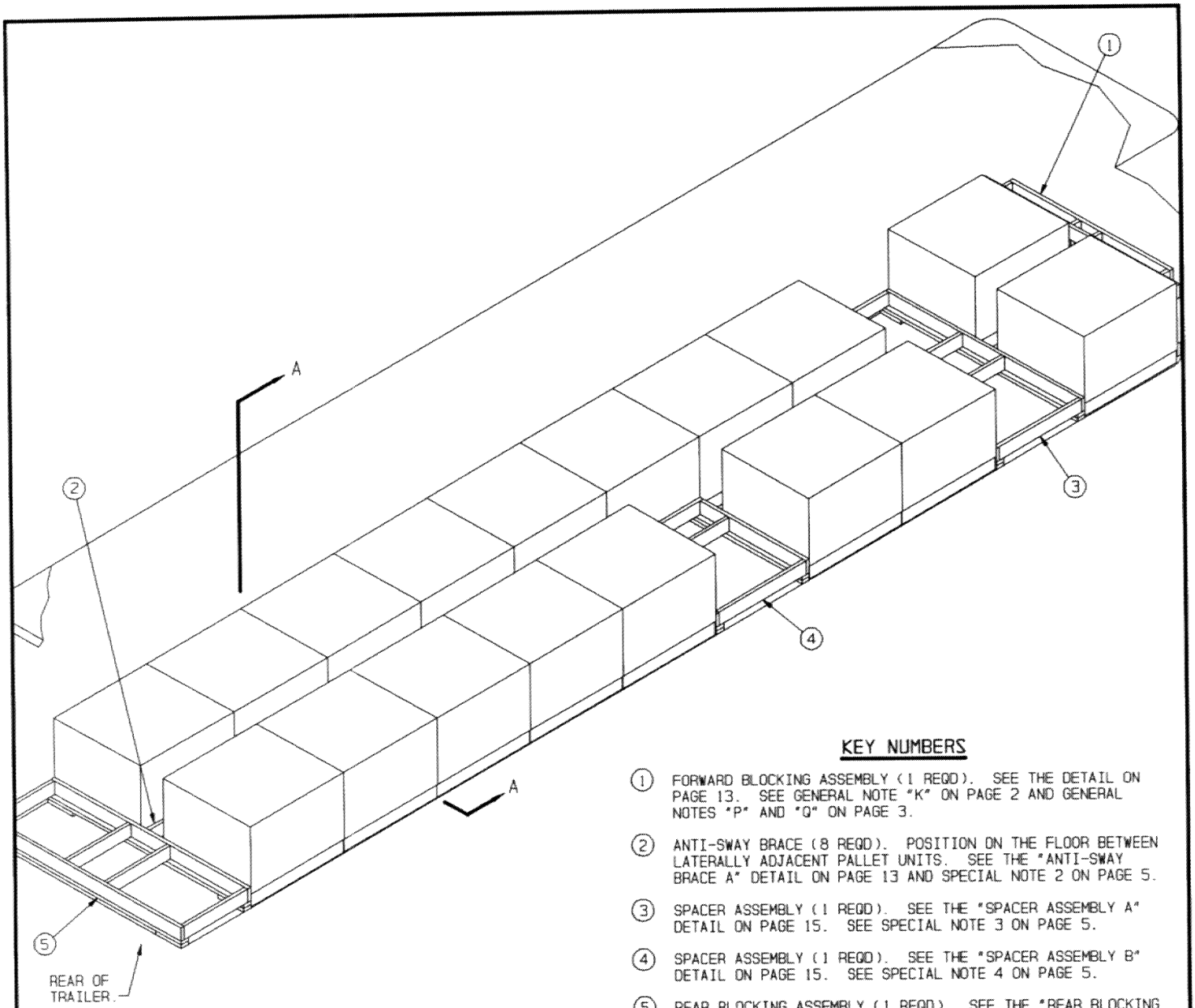
S. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



PALLET UNIT

BOX - - - - - - - - - 42 EACH @ 54 LBS (APPROX)
CUBE - - - - - - - - - 34.57 CUBIC FEET (APPROX)
GROSS WEIGHT - - - - 2,475 LBS (APPROX)

PALLET UNIT DETAIL



ISOMETRIC VIEW

KEY NUMBERS

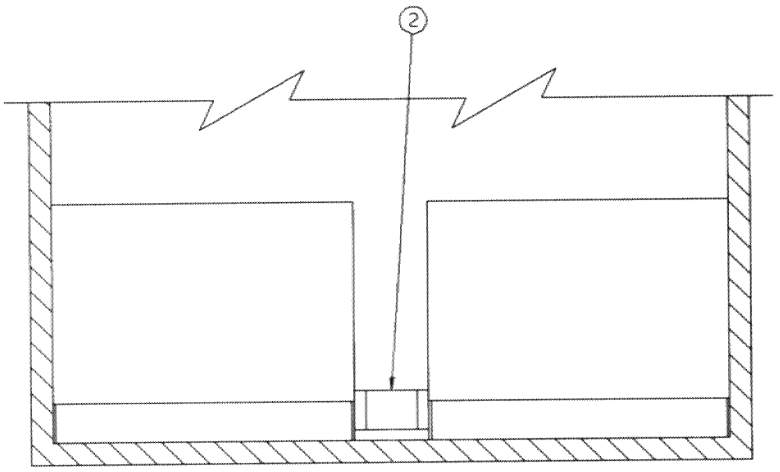
(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 13. SEE GENERAL NOTE "K" ON PAGE 2 AND GENERAL NOTES "P" AND "Q" ON PAGE 3.

(2) ANTI-SWAY BRACE (8 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 13 AND SPECIAL NOTE 2 ON PAGE 5.

(3) SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 15. SEE SPECIAL NOTE 3 ON PAGE 5.

(4) SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 15. SEE SPECIAL NOTE 4 ON PAGE 5.

(5) REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 14. SEE SPECIAL NOTE 5 ON PAGE 5.



SECTION A-A

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

PROJECT CA 259/17-88

SPECIAL NOTES:

1. A 17-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.

2. ANTI-SWAY BRACE "A" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 4 IS REQUIRED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS. IF SPACE PERMITS, ANTI-SWAY BRACE "B" DETAILED ON PAGE 16 SHOULD BE USED IN LIEU OF PIECE MARKED ②.

3. 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 THAN 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 ④ IN THE LOAD VIEW, IS ONLY SHOWN TO DEPICT A TYPICAL INSTALLATION. IF A PALLET UNIT IS LOADED IN PLACE OF A SPACER ASSEMBLY, PIECE MARKED ④ 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.

5. IF THE VOID AT THE REAR OF THE LOAD BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE VOID AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 14. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A", PIECE MARKED ⑤ ON PAGE 4.

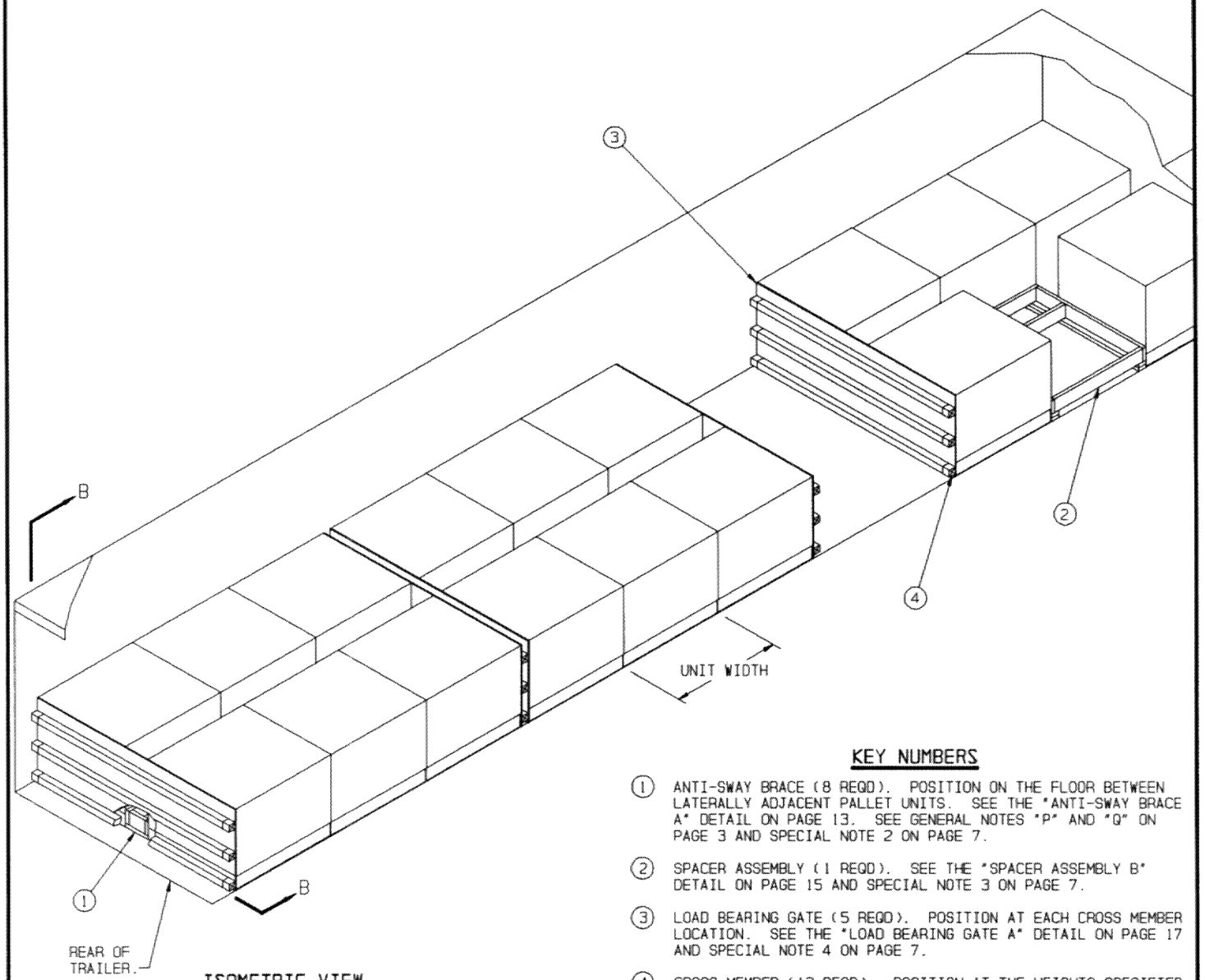
6. REFER TO PAGE 12 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

7. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER METHOD OF REAR BLOCKING MUST BE INSTALLED. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGE 19 FOR GUIDANCE. NOTE THAT THE NAILED-HEADER METHOD OF REAR BLOCKING MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	75 168	50 168
NAILS	NO. REQD	POUNDS
10d (3")	298	4-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	17	42,075 LBS
DUNNAGE		441 LBS
TOTAL WEIGHT		42,516 LBS (APPROX)



ISOMETRIC VIEW

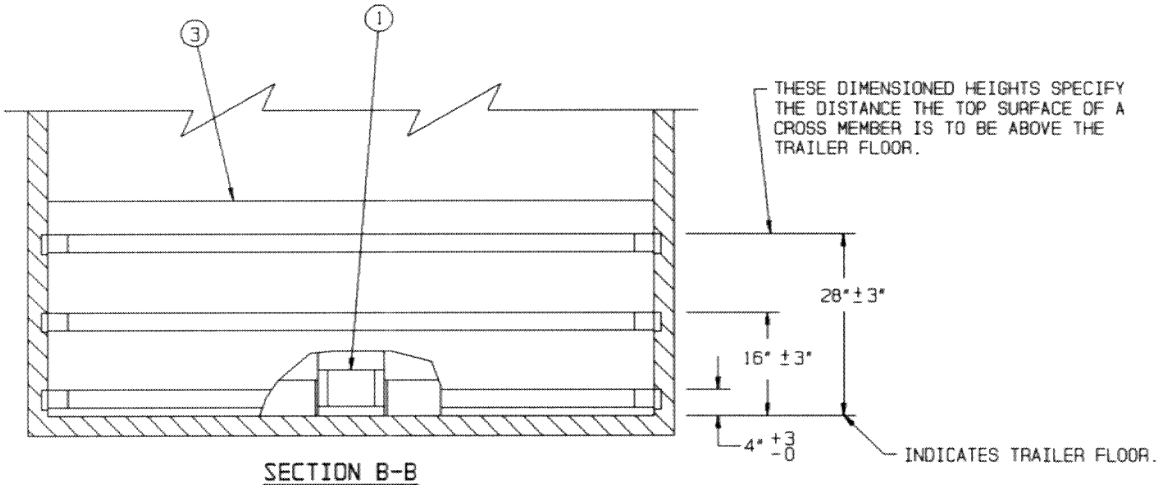
KEY NUMBERS

(1) ANTI-SWAY BRACE (8 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 13. SEE GENERAL NOTES "P" AND "Q" ON PAGE 3 AND SPECIAL NOTE 2 ON PAGE 7.

(2) SPACER ASSEMBLY (1 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 15 AND SPECIAL NOTE 3 ON PAGE 7.

(3) LOAD BEARING GATE (5 REQD). POSITION AT EACH CROSS MEMBER LOCATION. SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 17 AND SPECIAL NOTE 4 ON PAGE 7.

(4) CROSS MEMBER (12 REQD). POSITION AT THE HEIGHTS SPECIFIED BY THE "SECTION B-B" VIEW BELOW. SEE GENERAL NOTES "D" AND "K" ON PAGE 2.



SECTION B-B

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

PROJECT CA 259/17-88

SPECIAL NOTES:

1. A 17-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES. TRAILERS OF OTHER DIMENSIONS CAN BE USED.

2. IF THE SPACE BETWEEN THE ROWS OF PALLET UNITS PERMITS, AND IF DESIRED, ANTI-SWAY BRACE "B" AS DETAILED ON PAGE 16 MAY BE USED IN LIEU OF PIECE MARKED ①.

3. THE SPACER ASSEMBLY PROCEDURES DEPICTED ON PAGE 11 MAY BE USED IN LIEU OF PIECE MARKED ②, IF DESIRED. NOTE THAT CROSS MEMBERS ARE REQUIRED AT BOTH ENDS OF THE ODD UNIT.

4. IF PLYWOOD IS NOT AVAILABLE, OR IF DESIRED, PIECES MARKED ③ MAY BE CONSTRUCTED FROM 1" AND/OR 2" LUMBER. SEE THE ALTERNATIVE LOAD BEARING GATE "A" AND "B" DETAILS ON PAGE 18.

5. REFER TO PAGE 12 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

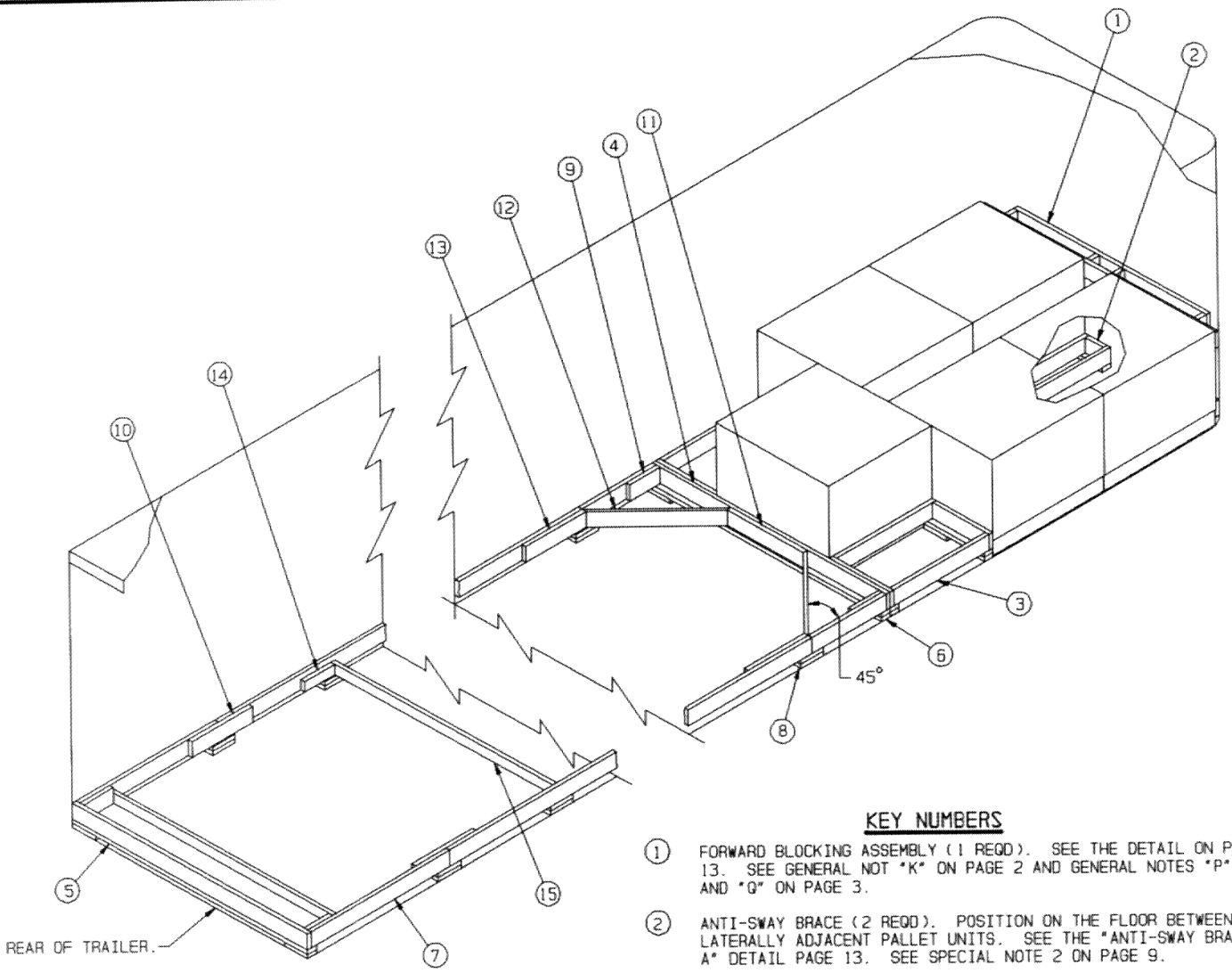
6. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 11.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	25 88	17 88
NAILS	NO. REQD	POUNDS
10d (3")	168	2-3/4
1/2" PLYWOOD - - - - - 105 SQ FT REQD - - - 144 LBS CROSS MEMBER - - - - - - - - - - - - - - - - - - 12 REQD		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	17	42,075 LBS
DUNNAGE		357 LBS
TOTAL WEIGHT		42,432 LBS (APPROX)

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



ISOMETRIC VIEW

KEY NUMBERS

1. FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 13. SEE GENERAL NOT "K" ON PAGE 2 AND GENERAL NOTES "P" AND "Q" ON PAGE 3.

2. ANTI-SWAY BRACE (2 REQD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE "ANTI-SWAY BRACE A" DETAIL PAGE 13. SEE SPECIAL NOTE 2 ON PAGE 9.

3. SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY D" DETAIL ON PAGE 16. NAIL TO A HEADER, PIECE MARKED ④. W/2-10d NAILS. SEE SPECIAL NOTE 3 ON PAGE 9.

4. HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). SEE SPECIAL NOTE 7 AND 8 ON PAGE 9.

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. RISER PIECE, 2" X 4" X 9" (4 REQD). POSITION UNDER EACH END OF HEADER AND SIDE STRUT SUPPORT PIECES MARKED ⑤. NAIL TO PIECE MARKED ⑤ W/2-10d NAILS.

7. SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE FORWARD AND REAR HEADERS PIECE MARKED ④ (2 REQD). SEE SPECIAL NOTE 4 ON PAGE 9.

8. RISER PIECE, 2" X 4" X 9" (DOUBLED) (AS REQD). LAMINATE W/2-10d NAILS. CENTER UNDER THE JOINTS OF PIECES MARKED ⑫, ⑬, ⑭ AND ⑮ AND UNDER THE SPLICE OF PIECES MARKED ⑦ IF APPLICABLE. NAIL TO SIDE STRUT MARKED ⑦ W/2-10d NAILS.

9. POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑦. W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④. W/2-12d NAILS.

10. SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF PIECES MARKED ⑦ AND NAIL TO SIDE STRUT MARKED ⑦ W/4-10d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 9.

(KEY NUMBERS CONTINUED)

11. CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO A HEADER, PIECE MARKED ④. 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 MARKED ④ AND ⑦. W/2-16d NAILS AT EACH END.

13. BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑦. W/8-10d NAILS.

14. STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑦. W/3-10d NAILS. SEE SPECIAL NOTE 5 ON PAGE 9.

15. STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQD). NAIL TO THE POCKET CLEATS, PIECES MARKED ⑨ AND/OR TO THE STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑭. W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 9.

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

PROJECT CA 259/17-88

SPECIAL NOTES:

1. THESE OUTLOADING PROCEDURES COVER THE USE OF BOTH "K-BRACE" AND NAILED FLOOR LINE BLOCKING IN A 7'-8" 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 NOTE 7 AND 8.

2. ANTI-SWAY BRACE "A" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 8 ARE TO BE POSITIONED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS. IF DESIRED, OR IF SPACE PERMITS, "ANTI-SWAY BRACE B" DETAILED ON PAGE 16 MAY BE USED IN LIEU OF PIECE MARKED ②.

3. THE SIDE BLOCKING PIECE MARKED ③, ARE SHOWN ONLY TO DEPICT A TYPICAL INSTALLATION. SIDE BLOCKING 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.

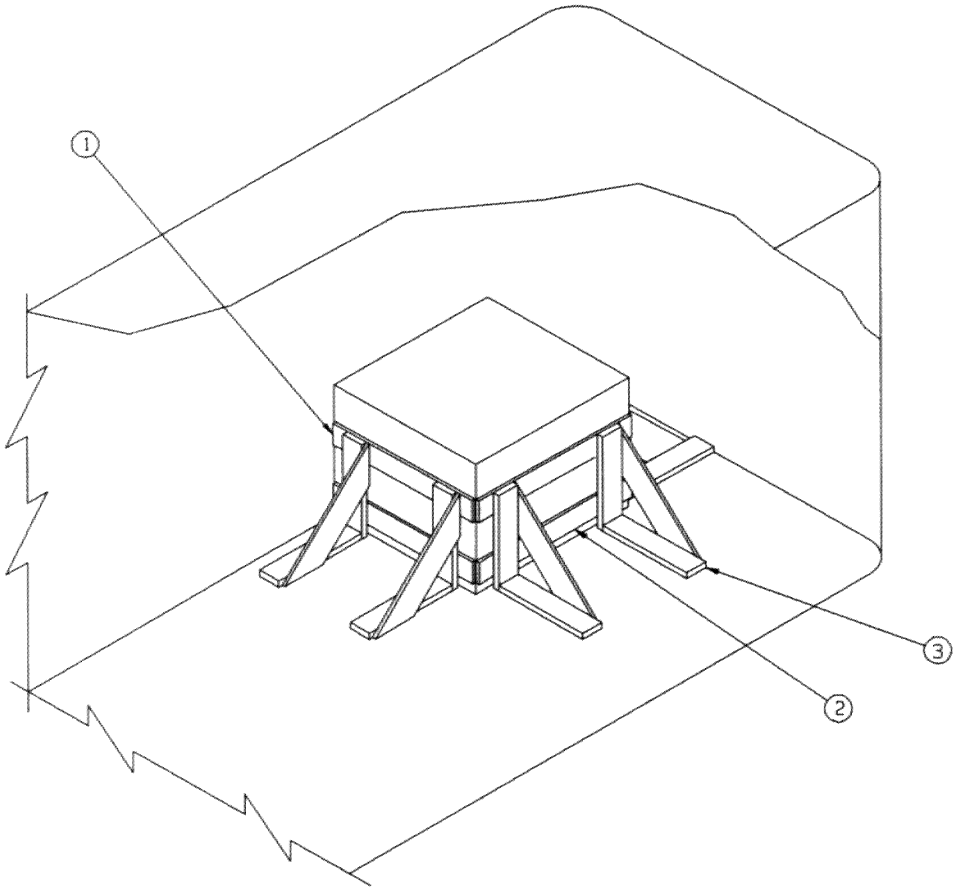
4. DEPENDING ON THE NUMBER OF UNITS BEING LOADED, EACH OF THE SIDE STRUTS, PIECE MARKED ⑦, MAY NEED TO BE FORMED FROM MORE THAN ONE PIECE OF MATERIAL. IF SUCH IS THE CASE, THE SIDE STRUTS MUST BE SPLICED. SPLICING CAN BE ACCOMPLISHED BY CENTERING A 2" X 6" X 24" PIECE ON THE JOINT OF THE SIDE STRUTS AND NAILING IT TO THE SIDE STRUTS W/4-10d NAILS AT EACH END. CAUTION: A RISER PIECE, PIECE MARKED ⑧, MUST BE POSITIONED UNDER EACH SPLICE JOINT. NOTE: IF DESIRED, THE STRUT BRACING PIECE(S), PIECE MARKED ⑮, MAY BE NAILED TO THE SPLICE PIECES IN LIEU OF USING ADDITIONAL STRUT BRACE RETAINING CLEATS, PIECE MARKED ⑭.

5. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO PIECE MARKED ⑨. IF THE SIDE STRUTS, PIECE MARKED ⑦, ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE, PIECE MARKED ⑮, AND TWO (2) STRUT BRACE RETAINING CLEATS, PIECE MARKED ⑭, AND TWO RISER PIECE MARKED ⑧, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.

6. THE "K-BRACE" BLOCKING, SHOWN AS PIECE MARKED ④ THRU ⑮, IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.

7. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER METHOD OF REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING. SEE THE "PROCEDURES FOR CONVENTIONAL VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS" ON PAGE 19 FOR GUIDANCE. NOTE THAT THE NAILED-HEADER METHOD OF REAR BLOCKING MAY ALSO BE USED IN LIEU OF PIECES MARKED ④ THRU ⑮ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.

8. 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 ⑮. REFER TO PAGE 19 FOR GUIDANCE.



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.

2. THE POSITIONING OF A SINGLE PALLET UNIT IS OPTIONAL. IF THE TRAILER HAS A SQUARE FRONT, THE TWO (2) FORWARD LTL BRACES MAY BE OMITTED AND THE UNIT POSITIONED AGAINST THE END WALL.

3. MORE THAN ONE PALLET UNIT CAN BE SHIPPED PROVIDING THE CAPACITY OF THE LTL BRACES IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN ROWS, WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDEWALLS. ANTI-SWAY BRACE "A" DETAILED ON PAGE 13 MUST BE INSTALLED BETWEEN LATERALLY ADJACENT UNITS.

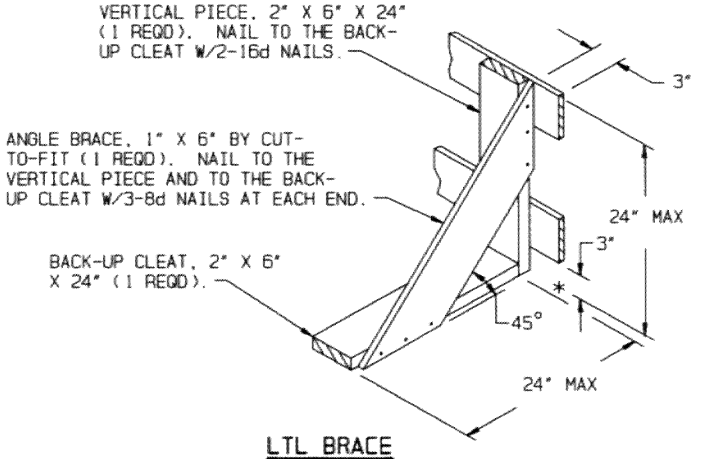
4. EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING, HOWEVER NOT LESS THAN TWO (2) BRACES WILL BE USED AGAINST EACH PALLET UNIT ACROSS THE WIDTH OF THE TRAILER. ADDITIONAL BRACES MAY BE INSTALLED FOR THE RETENTION OF A HEAVIER LOAD.

KEY NUMBERS

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

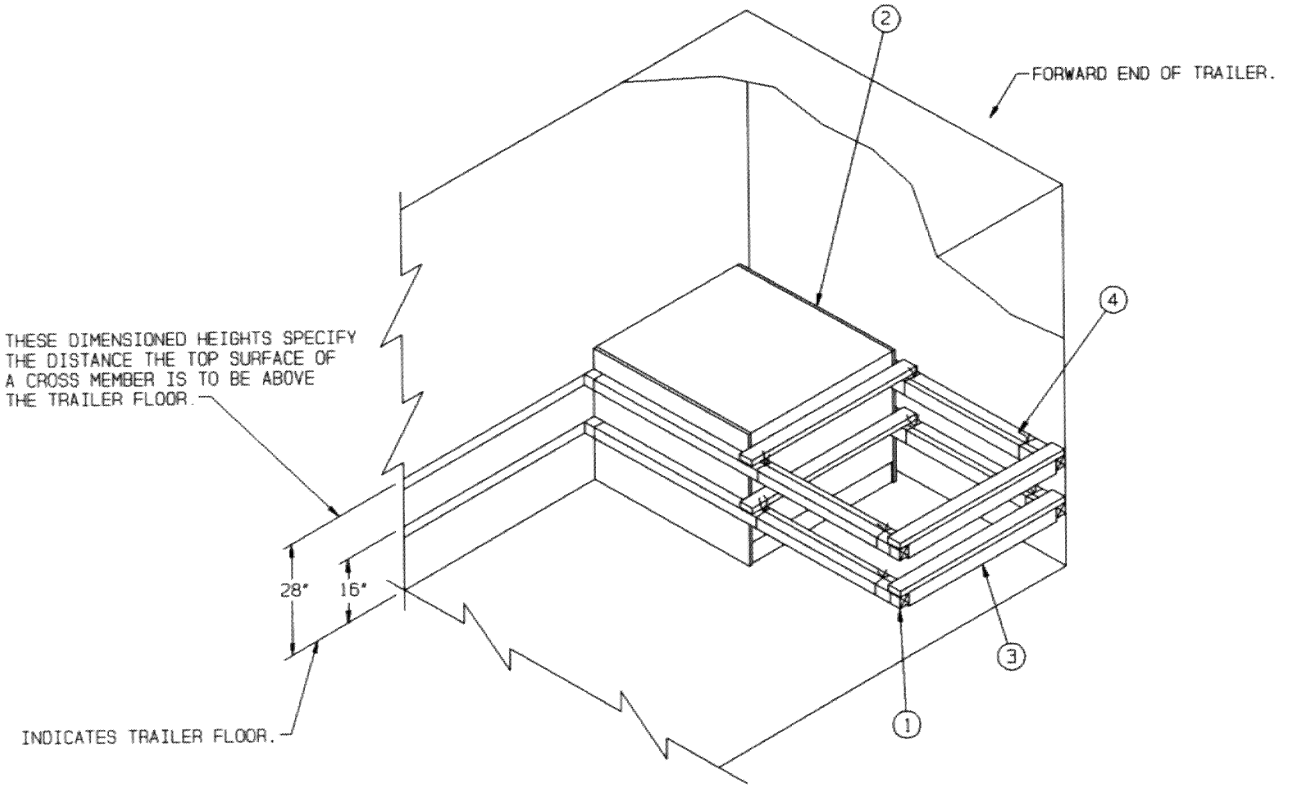
(2) LOAD BEARING PIECE, 1" X 6" X 44" (2 REQD). LOCATE AT THE HEIGHTS AS SPECIFIED IN THE "LTL BRACE" DETAIL BELOW. NAIL TO THE LTL BRACES W/4-6d NAILS AT EACH JOINT.

(3) LTL BRACE (6 REQD). SEE THE "LTL BRACE" DETAIL BELOW. NAIL TO THE TRAILER FLOOR W/10-10d NAILS.



LTL BRACE

TYPICAL LTL (1-UNIT LOAD) IN A CONVENTIONAL VAN 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) PALLETIZED UNIT IS SHOWN. IF TWO (2) PALLETIZED UNITS ARE TO BE TRANSPORTED, POSITION THE TWO UNITS 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) PALLETIZED UNITS ACROSS THE WIDTH OF THE TRAILER, POSITION THE UNITS AGAINST THE FORWARD END WALL (UNLESS THE TRAILER HAS ROUNDED CORNERS) AND OMIT THE TWO CROSS MEMBERS AT THE FORWARD END. POSITION ONE ANTI-SWAY BRACE SHOWN AS PIECE MARKED (1) ON PAGE 6, BETWEEN THE UNITS, AND INSTALL TWO LOAD BEARING GATES SHOWN AS PIECE MARKED (3) ON PAGE 6.

KEY NUMBERS

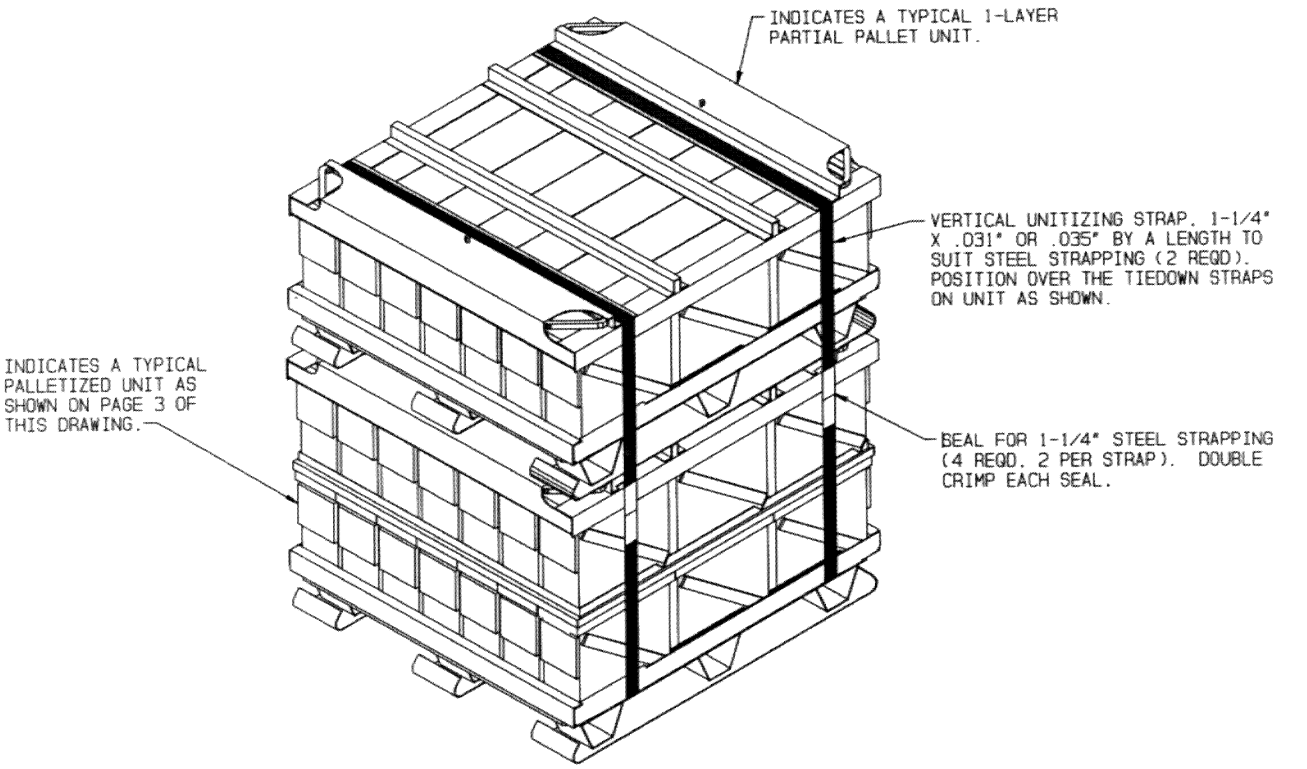
(1) CROSS MEMBER (4 REQD). POSITION AT THE HEIGHTS AS SPECIFIED BY THE ISOMETRIC VIEW ABOVE. SEE GENERAL NOTE "D" AND "K" ON PAGE 2.

(2) LOAD BEARING GATE (2 REQD). SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 17 AND SPECIAL NOTE 2 AT LEFT.

(3) SPACER ASSEMBLY (2 REQD). SEE THE SPACER ASSEMBLY "C" DETAIL ON PAGE 16.

(4) TIE WIRE, NO. 14 GAGE WIRE 30" 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.

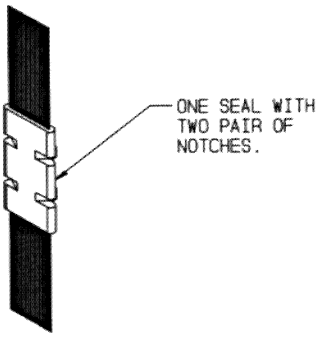
TYPICAL LTL (1-UNIT LOAD) IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES



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

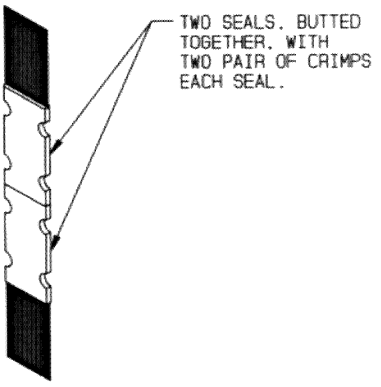
SPECIAL NOTES:

1. THE VIEW SHOWN ABOVE DEPICTS A PARTIAL 1-LAYER PALLET UNIT POSITIONED ON TOP OF A FULL-HEIGHT PALLET UNIT AND UNITIZED WITH TWO VERTICAL UNITIZING STRAPS. PLACEMENT WITHIN THE LOAD IS OPTIONAL, EXCEPT THAT IT WILL NOT BE POSITIONED ADJACENT TO SPACER ASSEMBLIES MARKED ③ AND ④ IN THE LOAD ON PAGE 4, OR IN THE REAR LOAD UNIT.
2. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS THAN FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
3. THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CONVENTIONAL TYPE VAN TRAILERS AND IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.



STRAP JOINT A

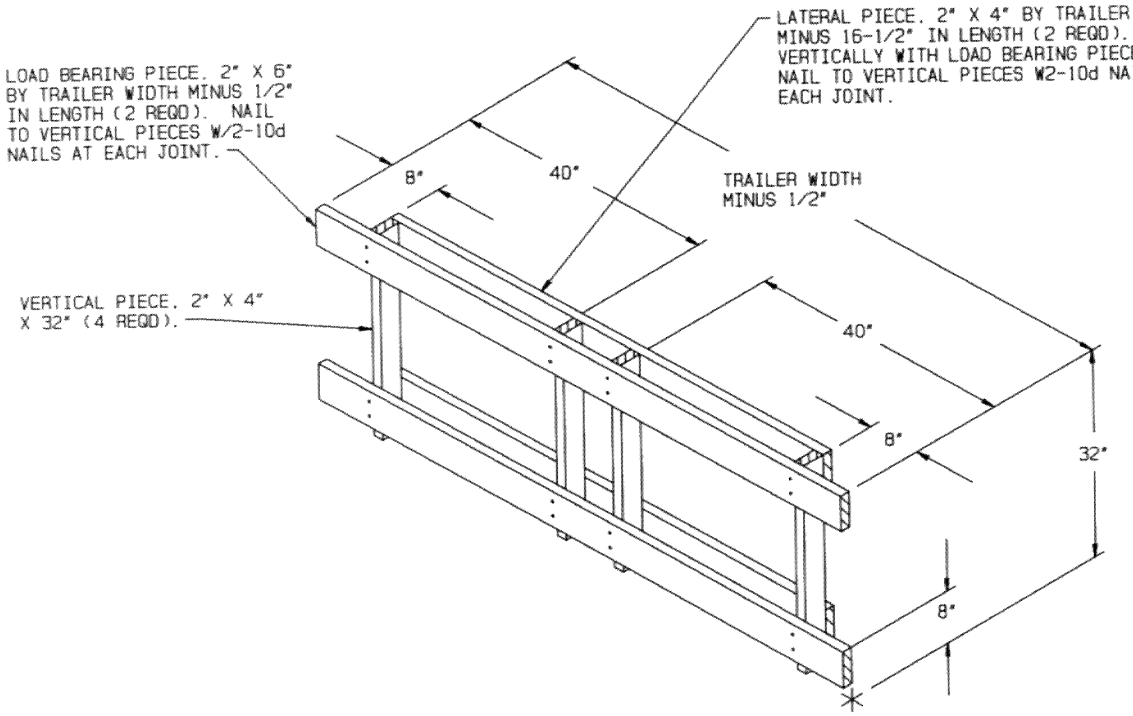
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

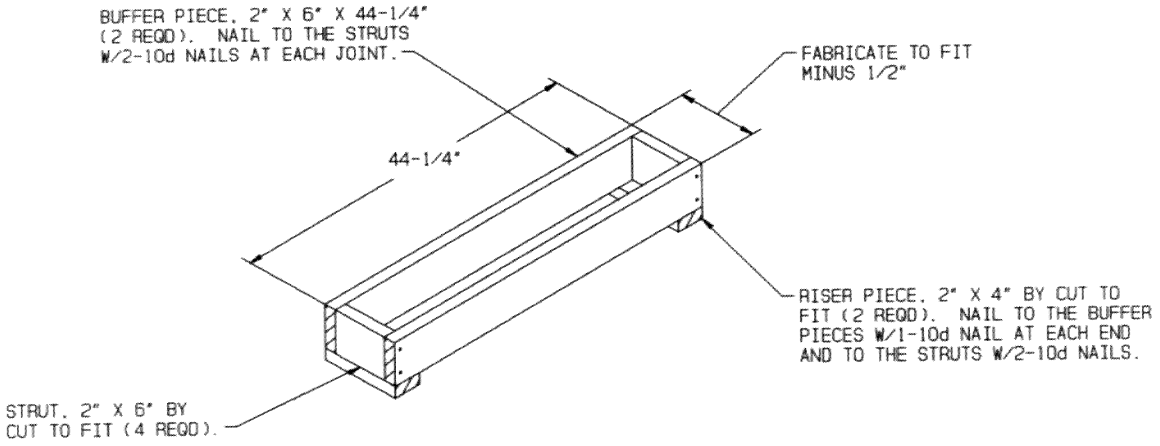
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



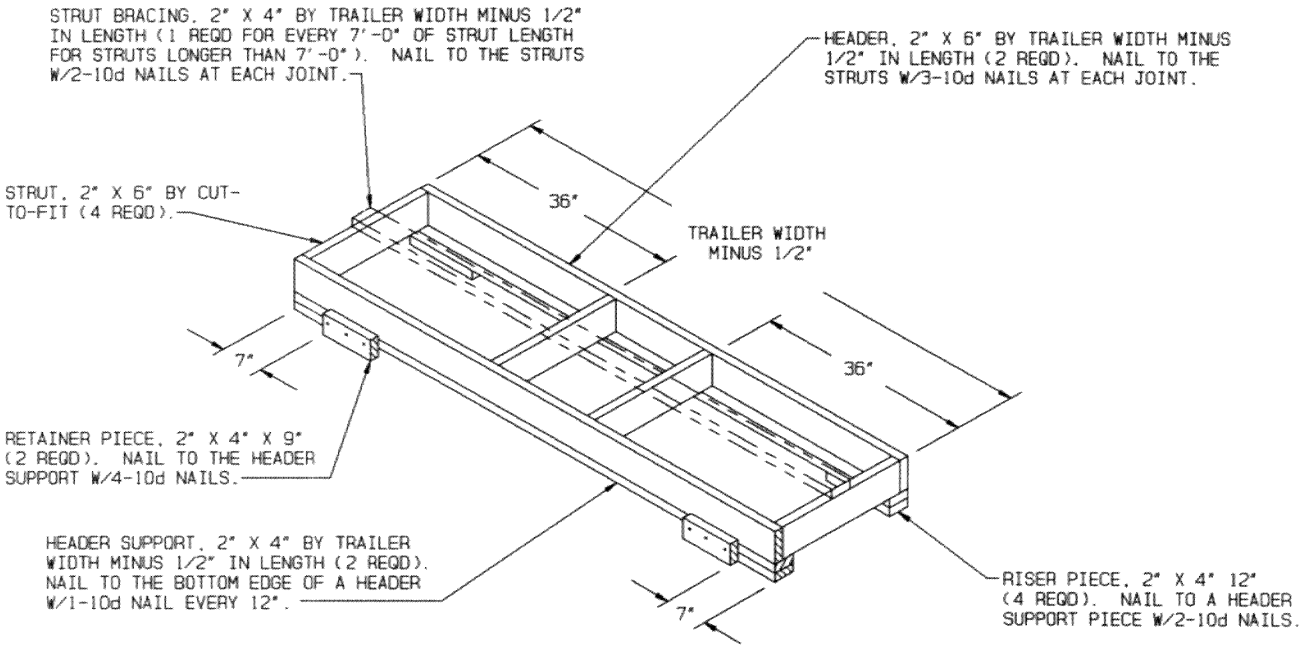
FORWARD BLOCKING ASSEMBLY

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 20 FOR GUIDANCE.



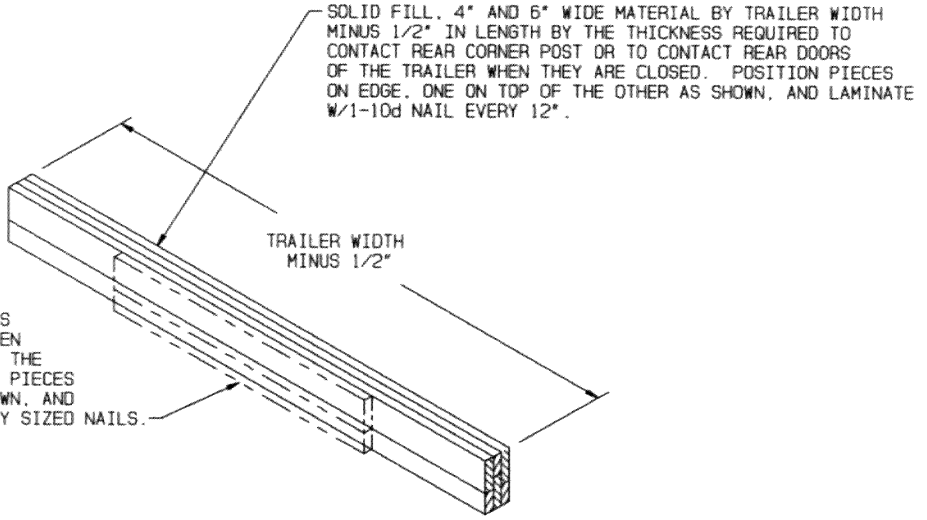
ANTI-SWAY BRACE A

THIS ASSEMBLY IS DESIGNED FOR USE ON THE FLOOR BETWEEN LATERALLY ADJACENT PALLET UNITS. NOTE THAT AN ASSEMBLY NEED NOT BE CONSTRUCTED FOR A TIGHT FIT; UP TO ONE HALF INCH (1/2") SPACE IS PERMITTED.



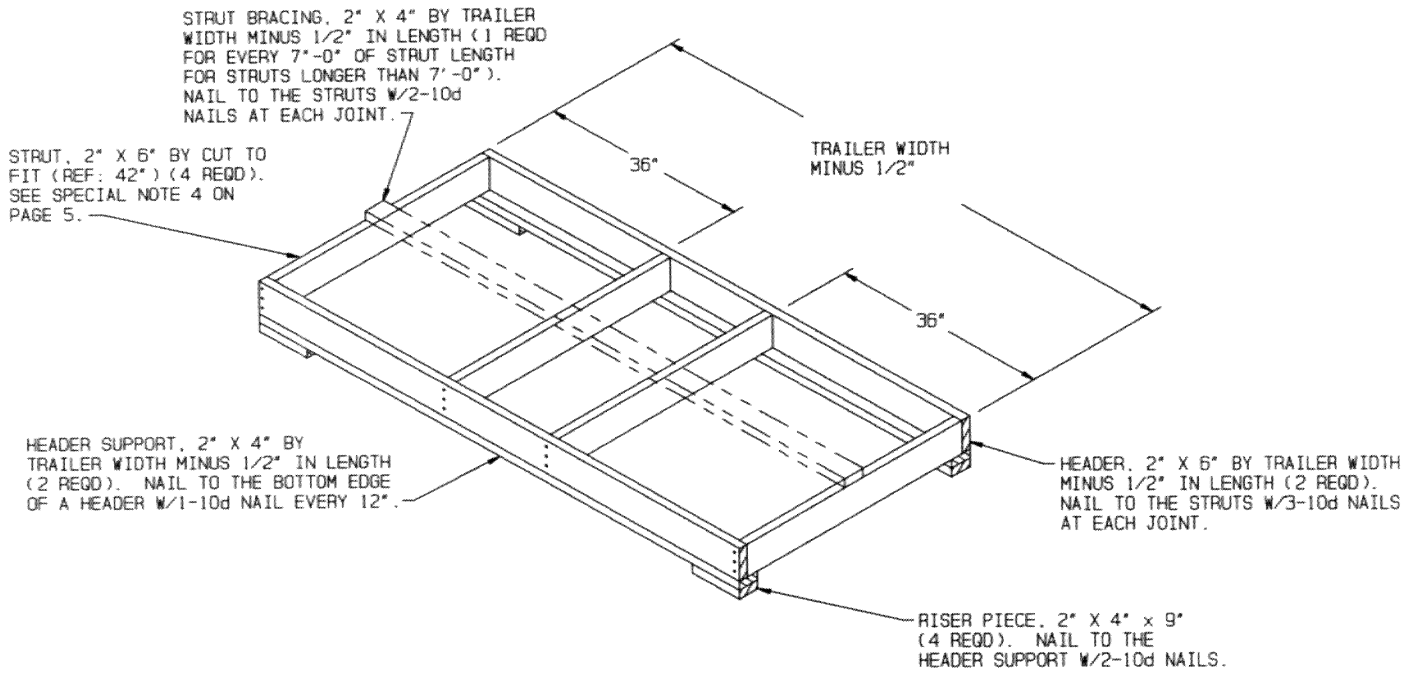
REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF THE LOAD IN A CONVENTIONAL VAN TRAILER WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9". NOTE THAT THE ABOVE VIEW IS ROTATED 180 FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

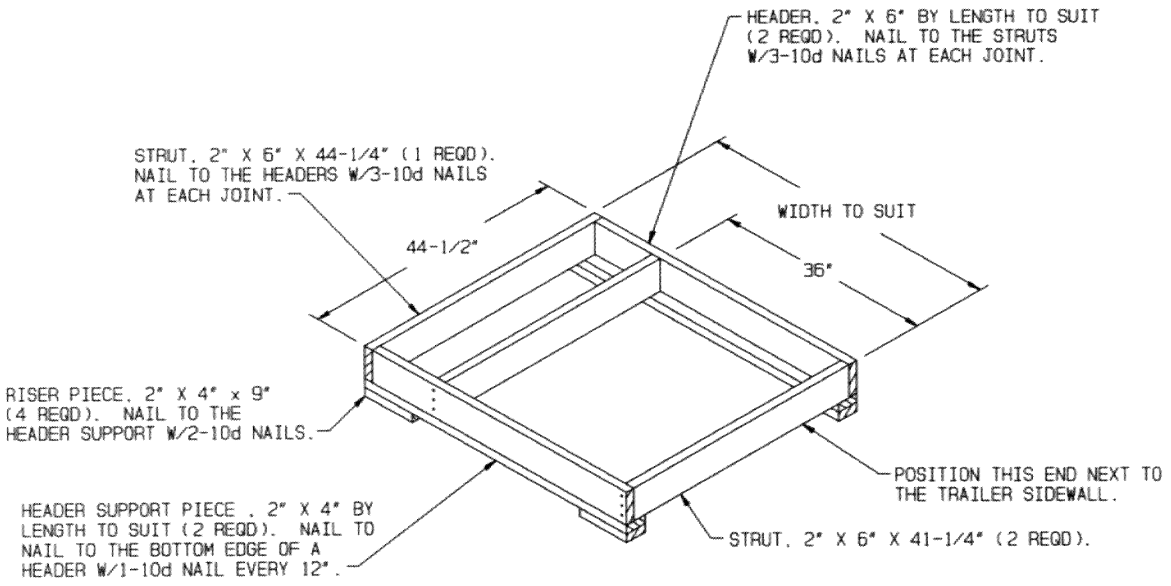


IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL, 4" AND 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER AS SHOWN, AND NAIL TO THE REAR BLOCKING W/4 APPLICABLY SIZED NAILS.

REAR BLOCKING ASSEMBLY B

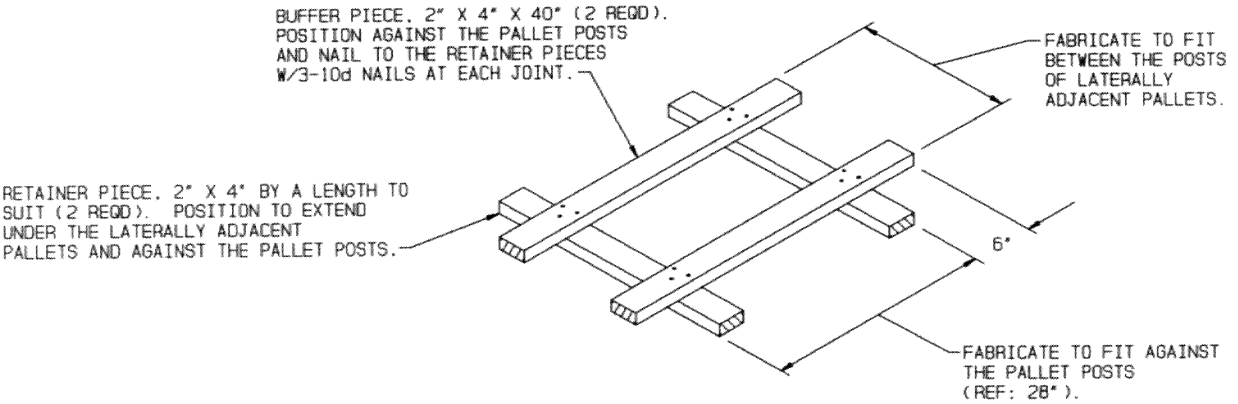


SPACER ASSEMBLY A



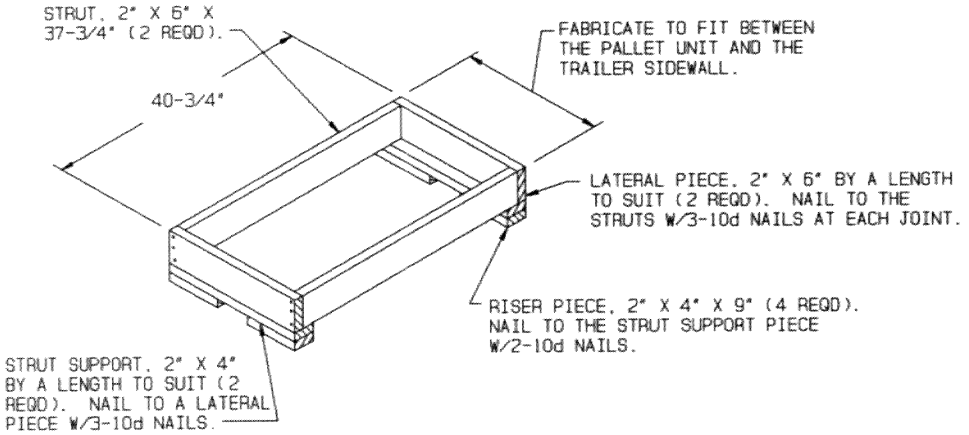
SPACER ASSEMBLY B

THIS ASSEMBLY IS DESIGNED FOR USE INTHE PLACE OF A PALLET UNIT WHICH IS OMITTED FROM THE LOAD IN A CONVENTIONAL VAN TRAILER. AS TYPICALLY SHOWN IN THE LOAD ON PAGE 4.



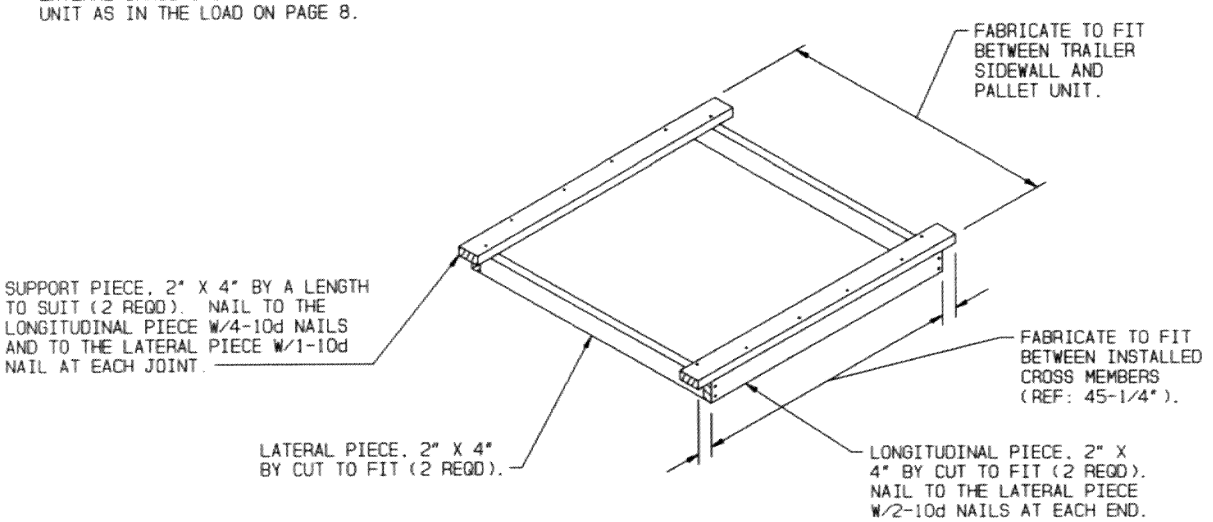
ANTI-SWAY BRACE B

NOTE THAT THIS ASSEMBLY MUST BE FABRICATED IN PLACE BETWEEN PALLETS.



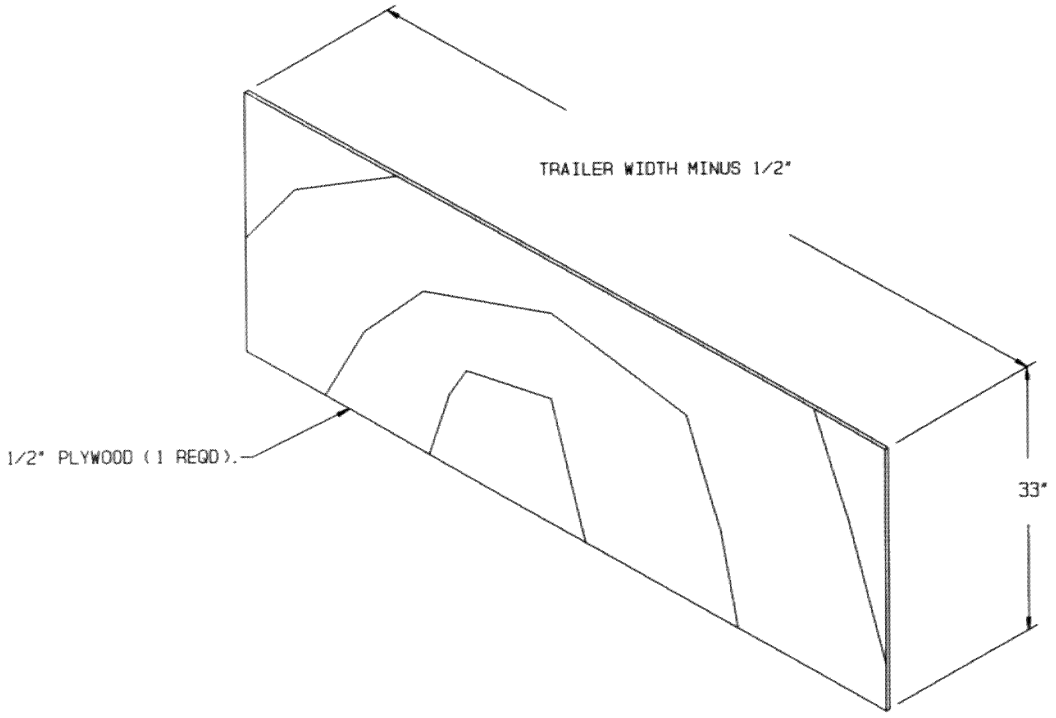
SIDE BLOCKING ASSEMBLY

THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING OF A SINGLE PALLET UNIT AS IN THE LOAD ON PAGE 8.

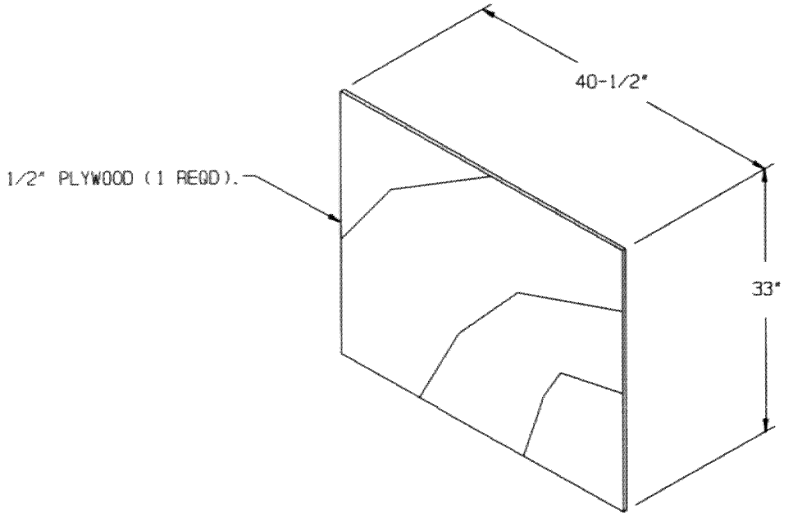


SPACER ASSEMBLY C

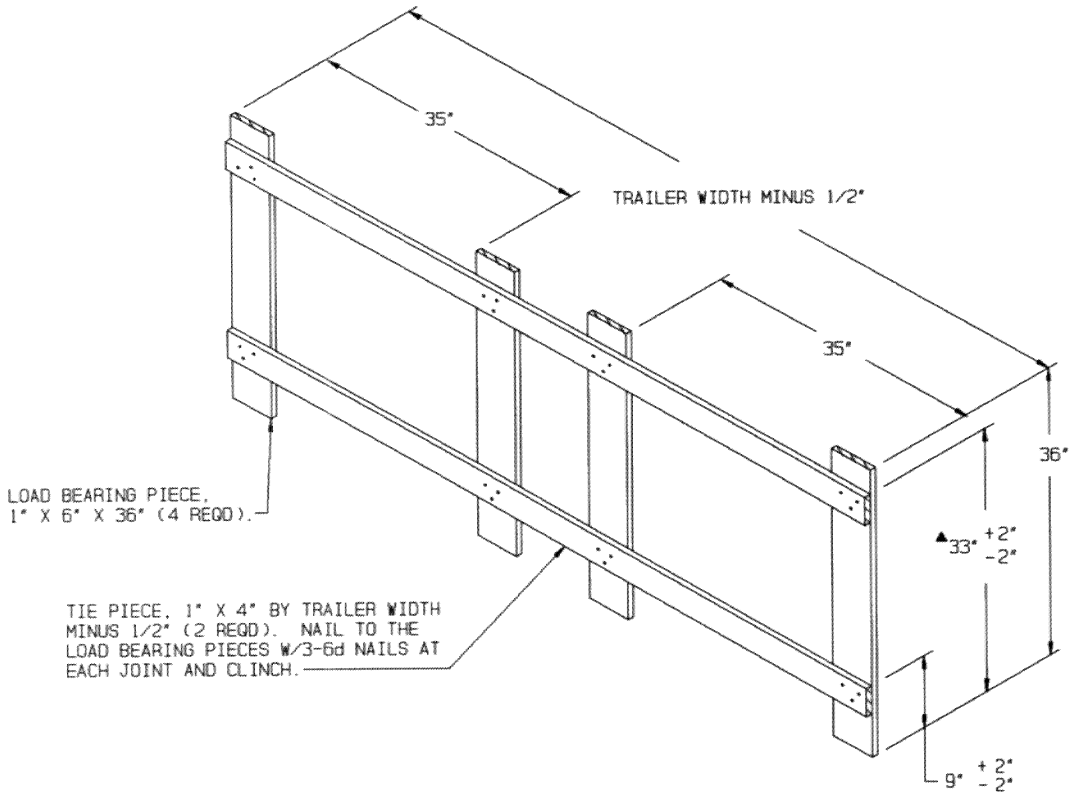
THIS ASSEMBLY IS DESIGNED FOR USE AS LATERAL BRACING IN A TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES.



LOAD BEARING GATE A

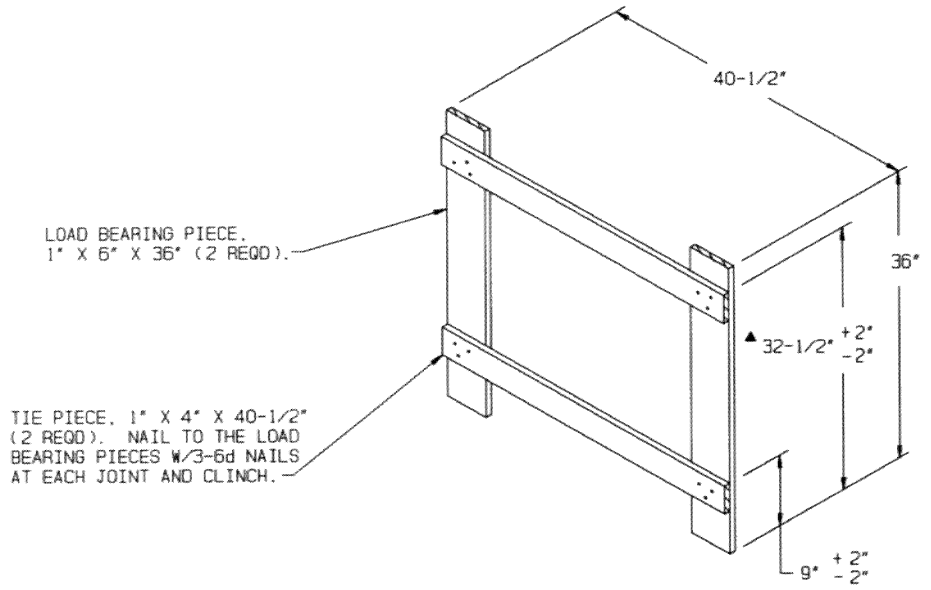


LOAD BEARING GATE B



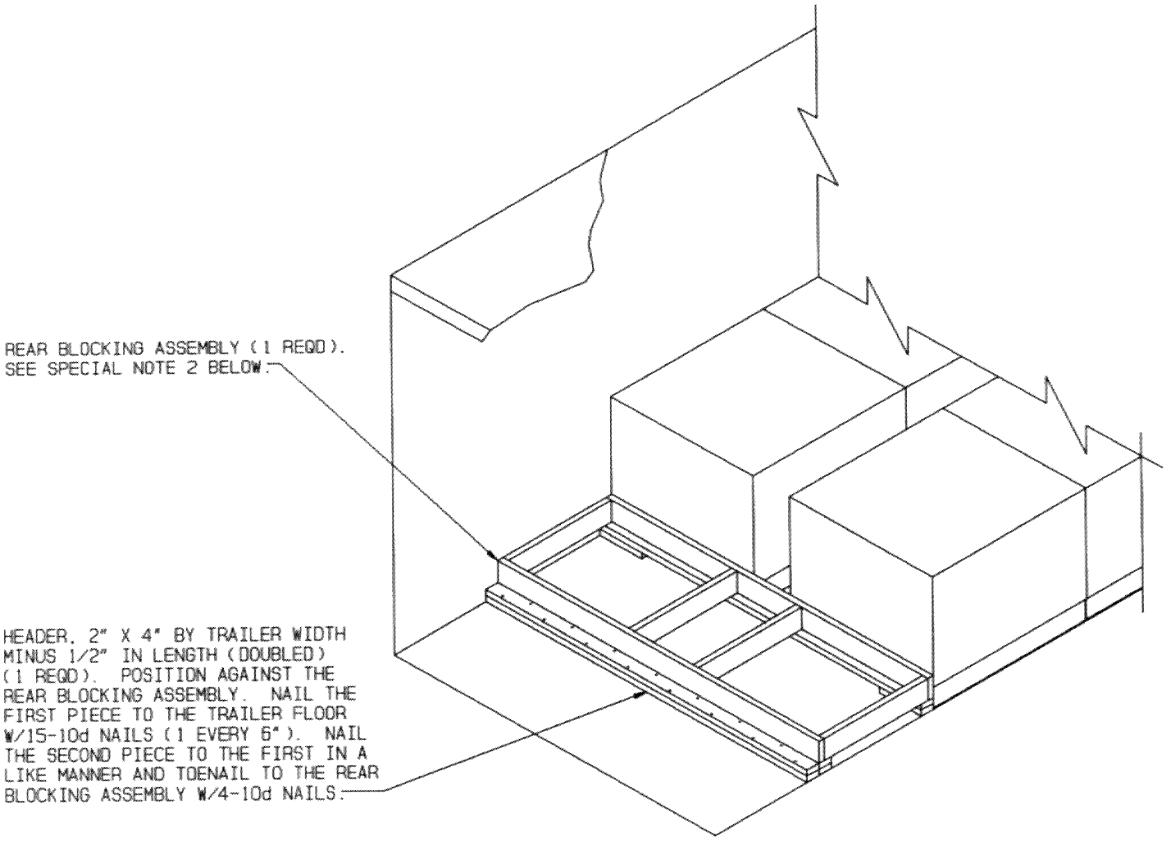
ALTERNATIVE LOAD BEARING GATE A

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



ALTERNATIVE LOAD BEARING GATE B

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



NAILED HEADER METHOD

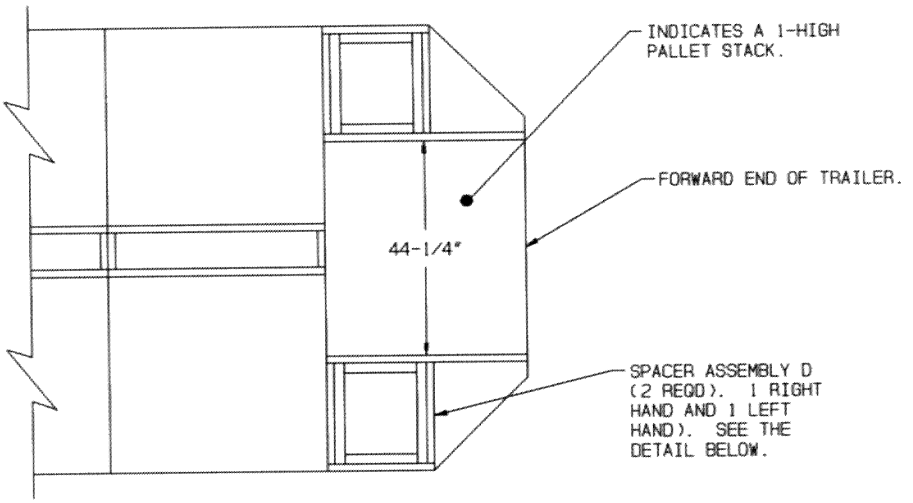
SPECIAL NOTES:

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 (14") INCHES.

2. REAR BLOCKING ASSEMBLY "A" IS SHOWN FOR A TYPICAL INSTALLATION. CONSTRUCT THE ASSEMBLY USING 6" (MINIMUM) LONG STRUTS.

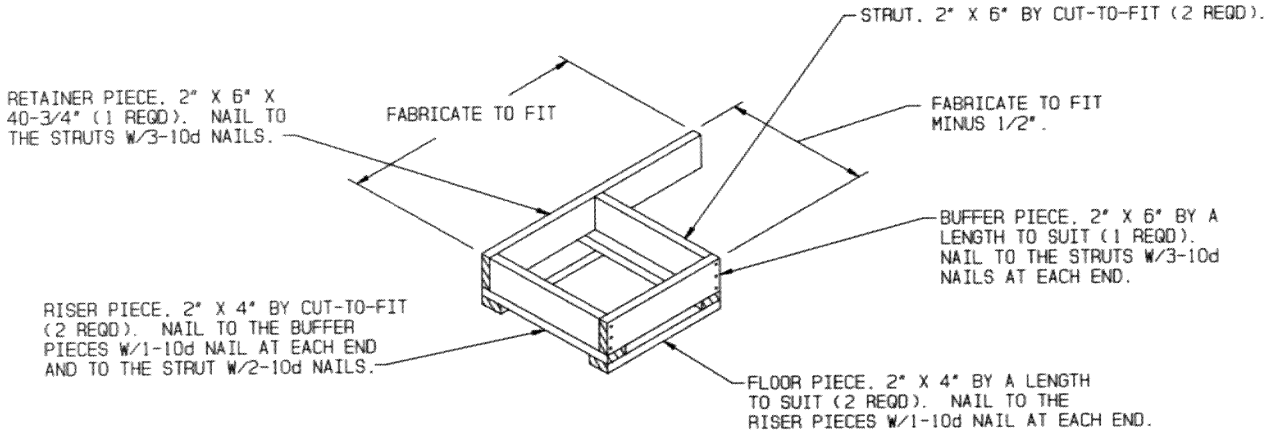
3. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.

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.



ALTERNATIVE FORWARD LOADING PATTERN

THIS PROCEDURES IS APPLICABLE TO THE LOADING OF ONE 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 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 SPACERS ARE REQUIRED.