

APPROVED BY
 BUREAU OF EXPLOSIVES
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 DATE 9/26/75

LOADING & BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF 152 MM CARTRIDGE, M41A3, PACKED IN A CYLINDRICAL METAL CONTAINER AND PALLETIZED HORIZONTALLY, 20 PER 35" BY 45-1/2" 4-WAY ENTRY 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 CONTAINER/TRAILER-ON-FLAT-CAR MOVEMENTS.

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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 TO THE 152MM CARTRIDGE, M411A3, PALLETIZED.
- C. FOR DETAILS OF THE PALLETIZED UNIT, SEE PAGE 3.
PALLET DIMENSIONS --- 37" LONG BY 50-1/2" WIDE BY 45-1/4" HIGH.
GROSS WEIGHT ----- 1,900 POUNDS (APPROX).
- D. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE EMPTY OR LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE TITLE OF THIS DOCUMENT.
- E. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 213, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.
- F. THE LOADS AS SHOWN ARE BASED ON 40'-0" LONG CONVENTIONAL TYPE VAN TRAILERS OF ANY WIDTH, HAVING WOOD, OR WOOD AND METAL, OR METAL FLOORS, AND THEY ARE LIMITED TO HIGHWAY MOVEMENTS ONLY. ALTHOUGH THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON A 40-FOOT LONG TRAILER, THESE PROCEDURES ARE ALSO APPLICABLE TO LONGER TRAILERS, SUCH AS 42-OR 45-FOOT LONG TRAILERS. TO UTILIZE THE ADDITIONAL AVAILABLE SPACE WITHIN THE LONGER TRAILERS, AND PROVIDED THAT WEIGHT LIMITATIONS ARE NOT EXCEEDED, ADDITIONAL STACKS OF LADING ITEMS MAY BE SHIPPED WITHIN A LOAD. THE DEPICTED BLOCKING AND BRACING PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY CHANGES NECESSITATED BY THE VARIOUS TRAILER LENGTHS. THE BLOCKING AND BRACING PROCEDURES DEPICTED FOR A FULL LOAD ARE ADEQUATE FOR A MAXIMUM LOAD. SPECIFIC GUIDANCE CONCERNING LTL LOADS IS AS SPECIFIED FOR EACH TYPICAL LTL PROCEDURE SHOWN HEREIN. THE SPECIFICATIONS OF THIS DRAWING ARE ALSO APPLICABLE TO TRAILERS THAT ARE SHORTER THAN 40 FEET. IF A SHORTER TRAILER IS USED ADJUSTMENTS TO THE LOADING PATTERN AND TO THE SPECIFIED BLOCKING WILL BE MADE AS REQUIRED TO SATISFY THE SHORTER VEHICLE.
- 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.
- 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 AND 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. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, 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.
- K. CAUTION: DO NOT NAIL BLOCKING SHOWN HEREIN TO THE TRAILER WALLS. ALL NAILING WILL BE WITHIN THE DUNNAGE OR THE TRAILER FLOOR, AS INDICATED.
- L. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIRS OF CRIMPS PER SEAL MUST BE USED. CAUTION: EXERCISE CARE DURING STRAP TENSIONING TO PREVENT DAMAGE TO CONTAINERS.
- M. 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 OR 1-5/8" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE OR 1-5/8" THICK BY 5-5/8" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL SUPPORTED BY A 2" X 4" STRUT RISER, IT IS PERMISSIBLE TO USE TRIPLED 2" X 4" MATERIAL SUPPORTED BY A 1" X 4" STRUT RISER. SEE THE "ALTERNATIVE REAR BLOCKING" DETAIL ON PAGE 5.

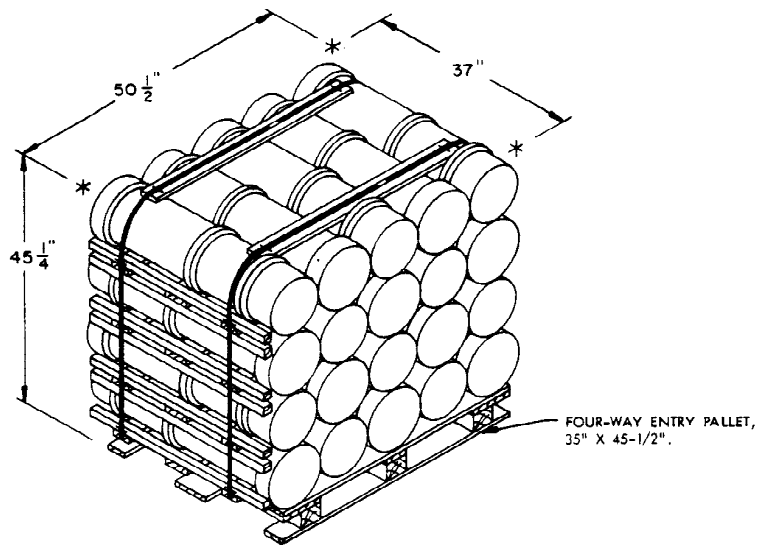
(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER ----- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED,
REF: FED SPEC FF-N-105,
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- STRAPPING, STEEL-- : TYPE I OR IV, FINISH A, B, OR C, FED SPEC QQ-5-781.
- STRAP SEAL ----- : COMMERCIAL GRADE.
- WIRE ----- : FED SPEC QQ-W-461.

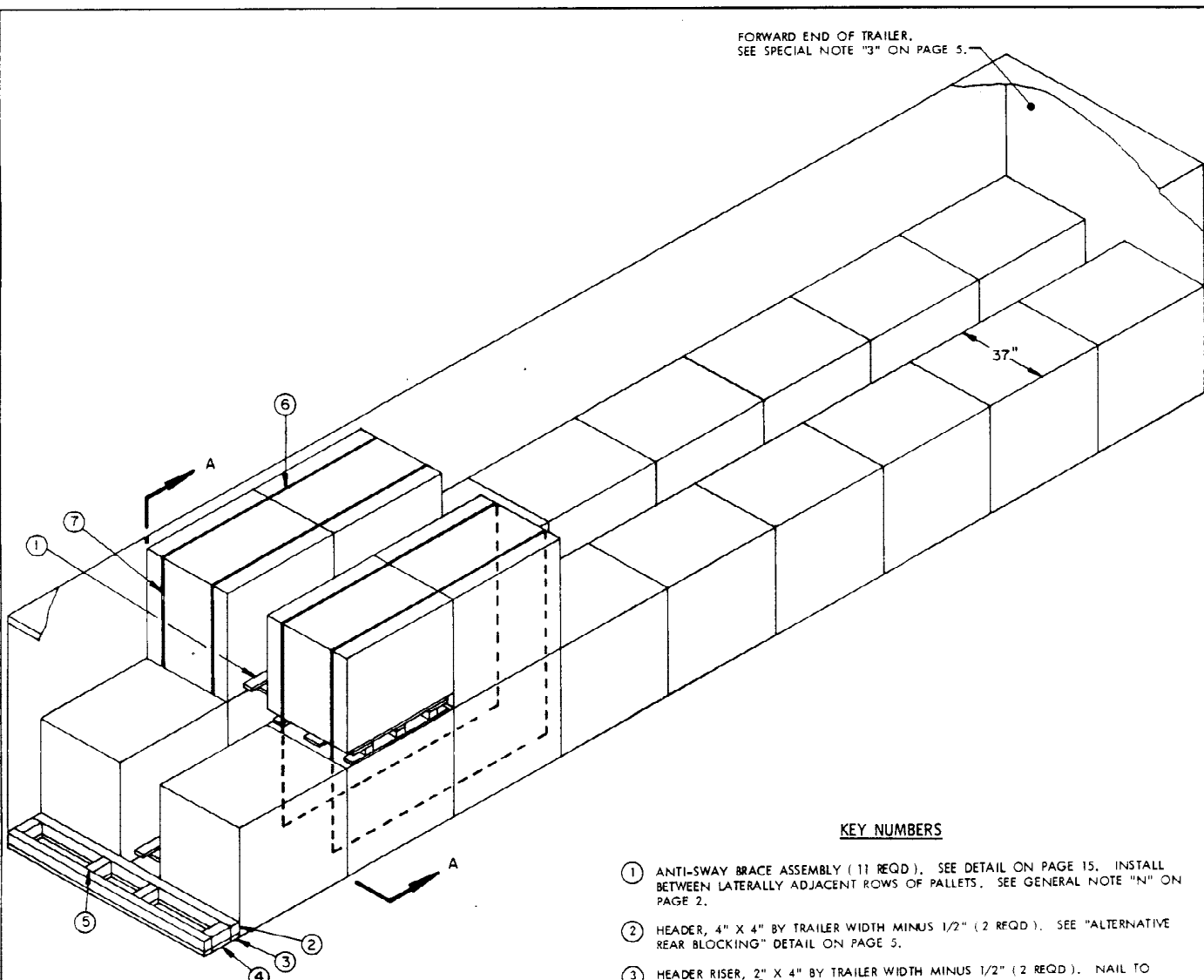
(GENERAL NOTES CONTINUED)

- N. 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.
- O. PORTIONS OF THE TRAILER BODIES DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS ONE OF THE SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- P. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.
- Q. A TRAILER HAVING AN INSIDE HEIGHT OF 7'-8" OR GREATER IS REQUIRED FOR THE LOADING OF A PARTIAL SECOND LAYER AS SHOWN ON PAGES 4 THROUGH 7 AND 12 THROUGH 13. ALSO, IF THE REAR DOOR OPENING IS NOT AT LEAST 7'-8" HIGH TO PERMIT THE ENTRY OF A 2-PALLET-HIGH UNITIZED STACK, OR IF THE CAPACITY OF THE MATERIAL HANDLING EQUIPMENT IS NOT ADEQUATE TO HANDLE A UNITIZED STACK, IT WILL BE NECESSARY TO LOAD THE PALLET UNITS ONE AT A TIME AND PERFORM THE STACKING AND UNITIZING OPERATIONS INSIDE THE TRAILER.
- R. SHIPMENTS OF PALLETIZED UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER PALLET 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 UNITS WITHIN A LOAD. SEE PAGES 10 AND 11 FOR GUIDANCE RELATIVE TO THE SHIPMENT OF PARTIAL PALLET UNITS AND PAGE 9 FOR GUIDANCE RELATIVE TO THE SHIPMENT OF LEFTOVER CONTAINERS.



152 MM CARTRIDGE, PALLETIZED

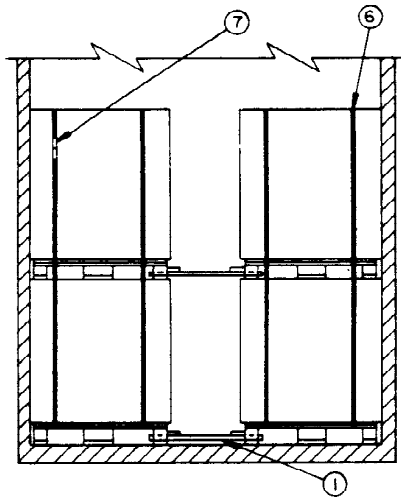
FORWARD END OF TRAILER.
SEE SPECIAL NOTE "3" ON PAGE 5.



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE ASSEMBLY (11 REQD.). SEE DETAIL ON PAGE 15. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLETS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② HEADER, 4" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD.). SEE "ALTERNATIVE REAR BLOCKING" DETAIL ON PAGE 5.
- ③ HEADER RISER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD.). NAIL TO PIECE MARKED ② W/1-10d NAIL EVERY 8".
- ④ STRUT RISER, 2" X 4" BY CUT TO FIT (4 REQD.). NAIL TO PIECE MARKED ③ W/1-10d NAIL EVERY 6".
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (4 REQD.). ALIGN WITH THE EDGE OF A PALLET AND TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" X 34'-0" LONG STEEL STRAPPING (4 REQD.). INSTALL AS SHOWN TO SECURE TWO PALLET UNITS IN THE SECOND LAYER TO TWO PALLET UNITS IN THE FIRST LAYER. SEE SPECIAL NOTE 7 ON PAGE 5.
- ⑦ SEAL FOR 1-1/4" STRAPPING (8 REQD., 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.

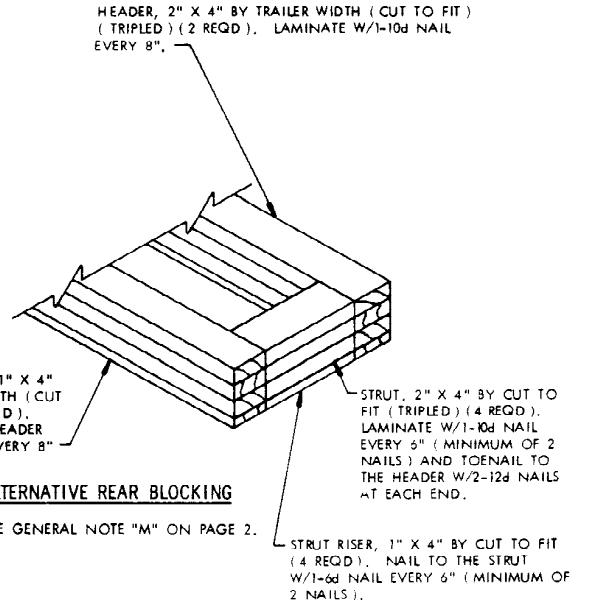


SECTION A-A

22-UNIT LOAD IN A 40'-0" LONG CONVENTIONAL TYPE VAN TRAILER

SPECIAL NOTES:

1. A 22-PALLET UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER WHICH HAS A SQUARE FRONT.
2. WIDER OR NARROWER TRAILERS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD BY ADJUSTING THE ANTI-SWAY BRACE ASSEMBLY.
3. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, USE A "FORWARD BLOCKING ASSEMBLY" AS SHOWN IN THE DETAIL ON PAGE 15.
4. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGE 8, 9, 10, AND 11.
5. SEE PAGE 6 FOR AN "ALTERNATIVE LOADING PATTERN".
6. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT IN THE FIRST LAYER. ALSO, IF ONLY ONE PALLET UNIT IS LOADED IN THE SECOND LAYER, SWAY BRACING PROCEDURES AS SPECIFIED ON PAGE 11 MUST BE USED TO SUPPORT THE UNIT IN THE SECOND LAYER. THE "PAGE 11" PROCEDURES WILL BE USED IN LIEU OF THE SECOND-LAYER SWAY BRACING PROCEDURES DEPICTED ON PAGE 4.
7. THE UNITIZING STRAPS MAY BE INSTALLED, AS SHOWN ON PAGE 6, TO SECURE EACH PALLET UNIT IN THE SECOND LAYER TO THE CORRESPONDING PALLET UNIT IN THE FIRST LAYER IN LIEU OF THE METHOD SHOWN ON PAGE 4.



ALTERNATIVE REAR BLOCKING

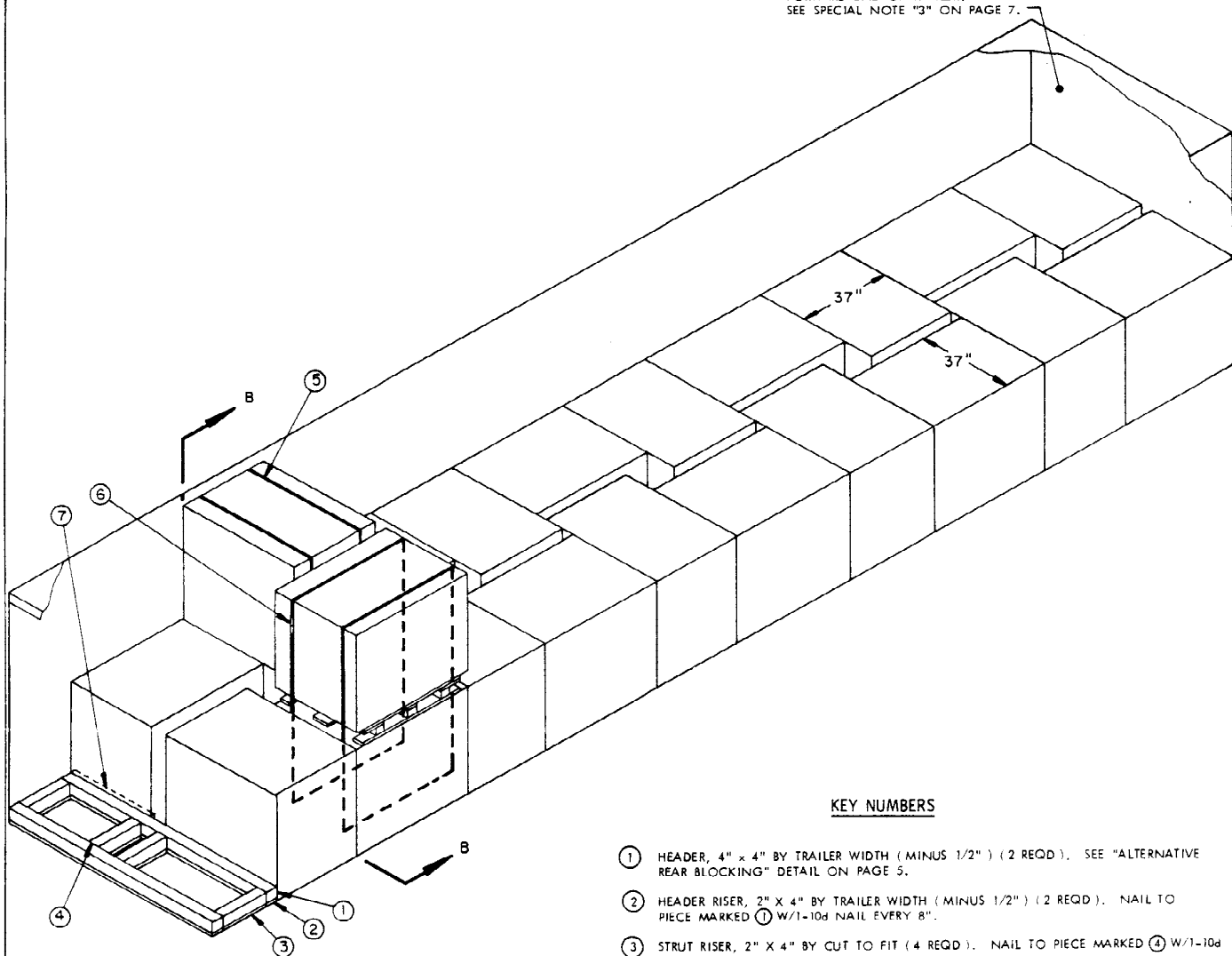
SEE GENERAL NOTE "M" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	74	50
2" X 6"	72	72
4" X 4"	19	26
NAILS	NO. REQD	POUNDS
10d (3")	126	2
16d (3-1/2")	16	1/2
STEEL STRAPPING, 1-1/4" X .035" ---- 136' REQD --- 20 LBS		
SEAL FOR 1-1/4" STEEL STRAPPING ---- 8 REQD --- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	22 -----	41,800 LBS
DUNNAGE -----		393 LBS
TOTAL WEIGHT -----		42,193 LBS

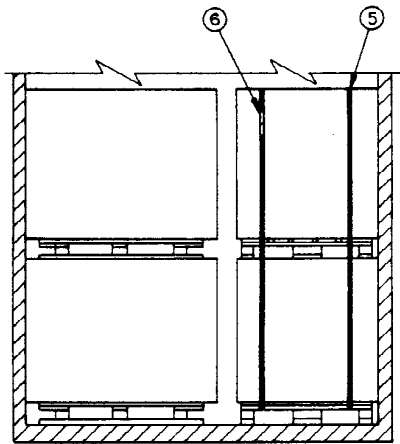
FORWARD END OF TRAILER.
SEE SPECIAL NOTE "3" ON PAGE 7.



ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 4" x 4" BY TRAILER WIDTH (MINUS 1/2") (2 REQD). SEE "ALTERNATIVE REAR BLOCKING" DETAIL ON PAGE 5.
- ② HEADER RISER, 2" x 4" BY TRAILER WIDTH (MINUS 1/2") (2 REQD). NAIL TO PIECE MARKED ① W/1-10d NAIL EVERY 8".
- ③ STRUT RISER, 2" x 4" BY CUT TO FIT (4 REQD). NAIL TO PIECE MARKED ④ W/1-10d NAIL EVERY 6".
- ④ STRUT, 4" x 4" BY CUT TO FIT (4 REQD). ALIGN WITH THE EDGE OF A PALLET AND TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" x .035" x 25'-0" LONG STEEL STRAPPING (4 REQD). INSTALL AS SHOWN TO ENCIRCLE TWO PALLET UNITS.
- ⑥ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ FILLER, 2" x 6" x 37" (1 REQD). NAIL TO PIECE MARKED ① W/5-10d NAILS.

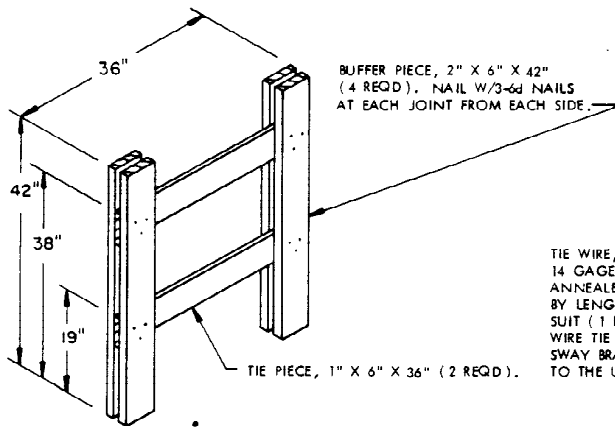


SECTION B-B

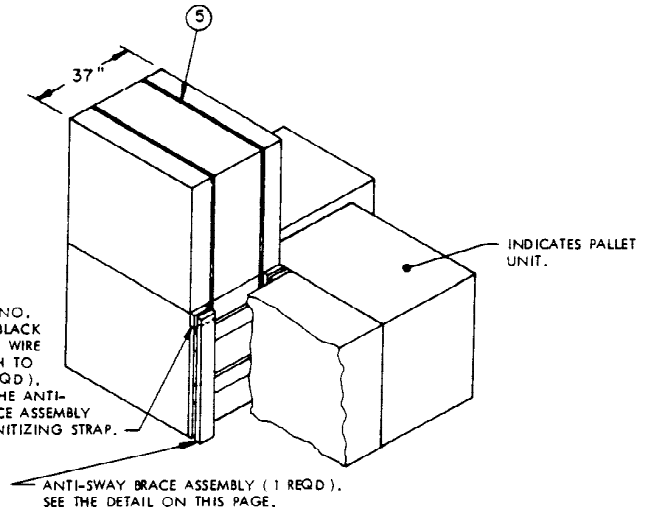
THE UNITIZING STRAP IS OMITTED FROM THE TWO-HIGH STACK ON THE LEFT FOR CLARITY. 22-UNIT LOAD IN A 40'-0" LONG CONVENTIONAL TYPE VAN TRAILER

SPECIAL NOTES:

1. A 22-PALLET UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER WHICH HAS A SQUARE FRONT. A "CHIMNEY" TYPE LOADING PATTERN IS USED.
2. WIDER TRAILERS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD. TRAILERS NARROWER THAN 7'-4" CANNOT BE LOADED USING THE LOADING PATTERN SHOWN ON PAGE 6.
3. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, USE A "FORWARD BLOCKING ASSEMBLY" AS SHOWN ON PAGE 15.
4. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 8, 9, 10, AND 11.
5. SEE PAGE 4 FOR AN "ALTERNATIVE LOADING PATTERN".
6. THE PALLET UNITS IN THE SECOND LAYER MUST NOT BE POSITIONED ON THE REARMOST PALLET UNITS IN THE FIRST LAYER.
7. IF ONLY ONE UNIT IS TO BE SHIPPED IN THE SECOND LAYER, POSITION IT WITH THE 37" DIMENSION PARALLEL TO THE SIDE WALL OF THE TRAILER AND USE ANTI-SWAY BRACE ASSEMBLY AS SHOWN IN THE DETAILS ON THIS PAGE.



ANTI-SWAY BRACE ASSEMBLY



POSITION OF ANTI-SWAY BRACE ASSEMBLY

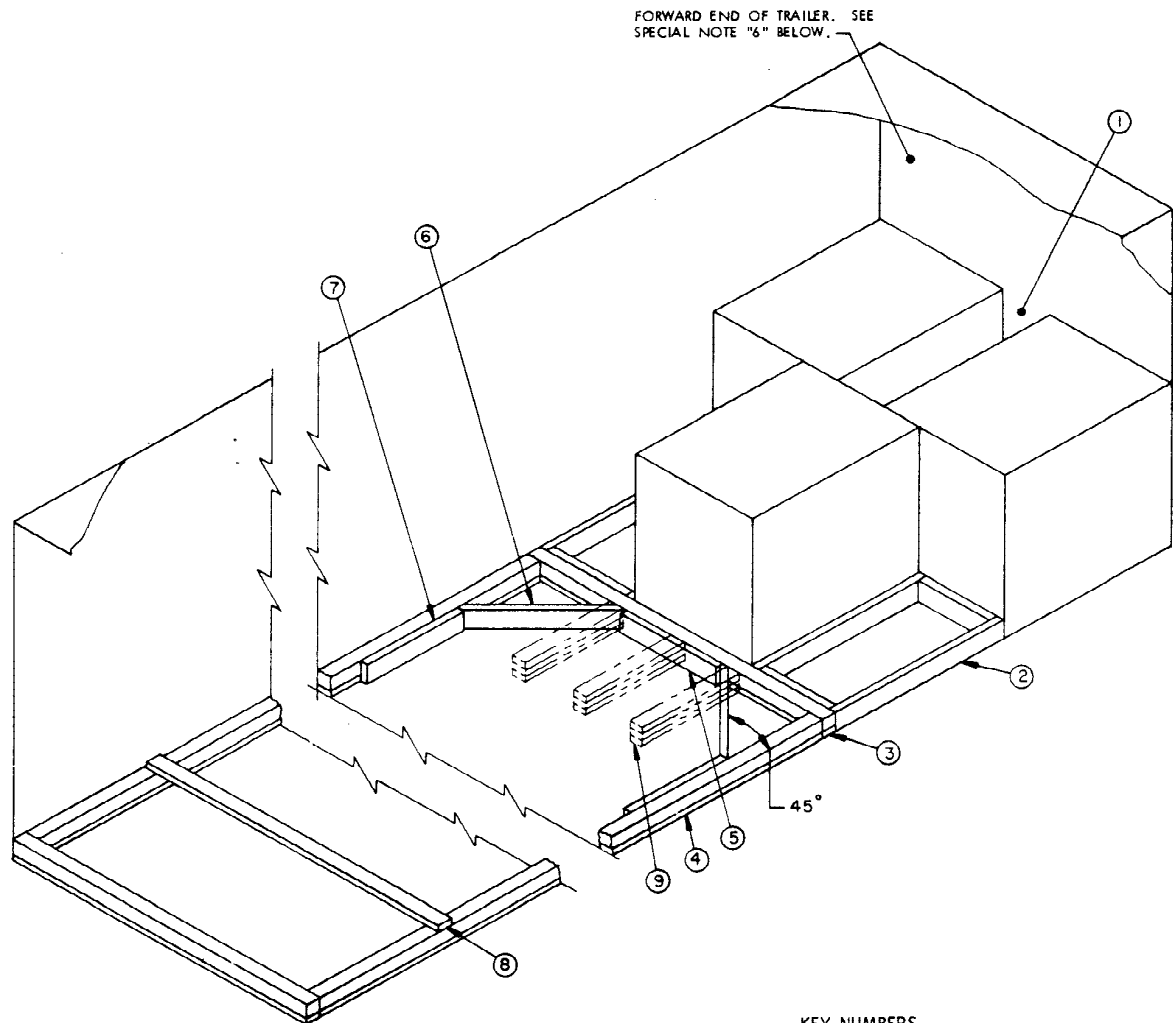
THE ANTI-SWAY BRACE ASSEMBLY SHOWN IS ADEQUATE TO PROVIDE LATERAL SUPPORT IN TRAILERS WHICH ARE GREATER THAN 92" IN WIDTH. FOR TRAILERS WHICH ARE 92" OR LESS IN WIDTH, THE BUFFER PIECES MAY BE MADE OF 1" X 6" MATERIAL. THE THICKNESS OF THE ASSEMBLY WILL BE ADJUSTED AS REQUIRED TO PROVIDE ADEQUATE LATERAL SUPPORT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	23	16
2" X 6"	6	6
4" X 4"	23	31
NAILS	NO. REQD	POUNDS
10d (3")	46	3/4
16d (3-1/2")	16	1/2
STEEL STRAPPING, 1-1/4" X .035" ----- 100' REQD--- 15 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 8 REQD--- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	22 -----	41,800 LBS
DUNNAGE -----		149 LBS
TOTAL WEIGHT -----		41,949 LBS

22-UNIT LOAD IN A 40'-0' LONG CONVENTIONAL TYPE VAN TRAILER



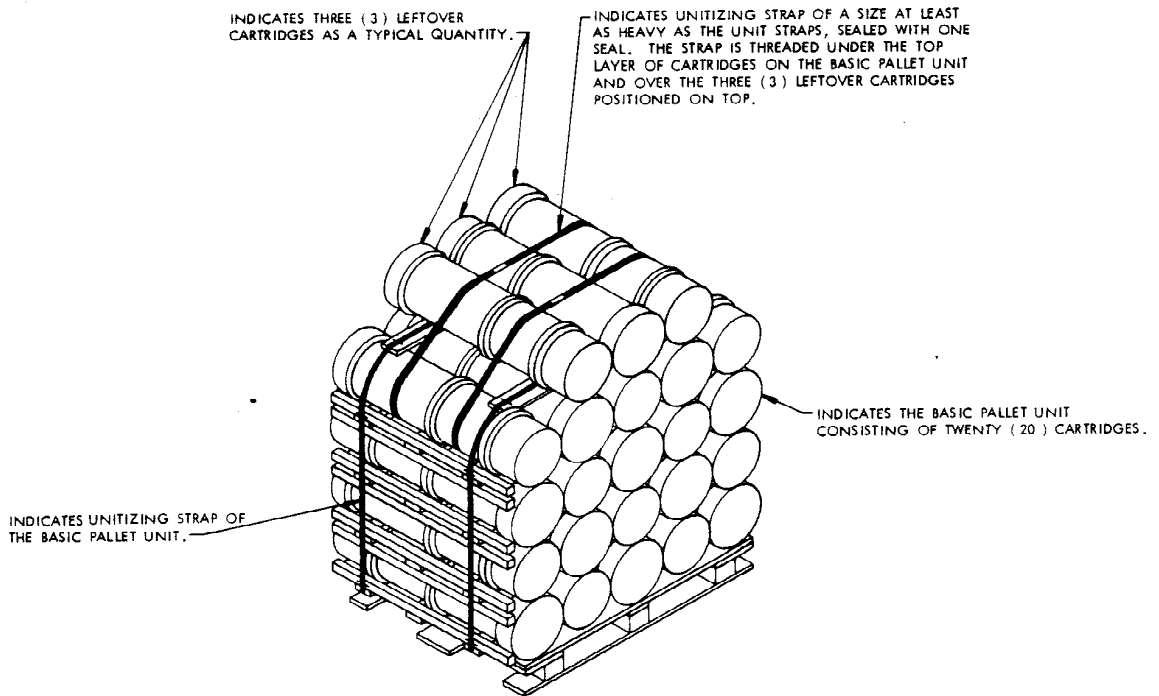
ISOMETRIC VIEW

SPECIAL NOTES:

1. THIS LTL OUTLOADING PROCEDURE IS SHOWN DEPICTING THE USE OF "K-BRACE" AND "NAILED FLOOR LINE" BLOCKING IN A 7'-6" WIDE TRAILER. WIDER OR NARROWER TRAILERS CAN ALSO BE USED.
2. IF AN EVEN NUMBER OF PALLET UNITS ARE BEING OUTLOADED, USE FOUR (4) BACK-UP CLEATS SHOWN AS PIECES MARKED ⑨ ABOVE. ALIGN TWO (2) BACK-UP CLEATS WITH EACH PALLET UNIT.
3. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED REAR PIECE ③ AND PIECES ④ THRU ⑧, IS ADEQUATE FOR RETAINING A MAXIMUM SIZE LTL LOAD OF 26,000 POUNDS.
4. PIECES MARKED ⑨ ARE FOR USE IN A TRAILER WHICH HAS A NAILABLE FLOOR AND SHOULD BE USED, IF POSSIBLE, IN LIEU OF PIECES MARKED REAR PIECE ③ AND PIECES ④ THRU ⑧ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS. THREE (3) BACK-UP CLEATS, SHOWN AS PIECES MARKED ⑨, ARE ADEQUATE FOR RETAINING A MAXIMUM SIZE LTL LOAD OF 12,000 POUNDS. FOUR (4) BACK-UP CLEATS ARE ADEQUATE FOR RETAINING A MAXIMUM SIZE LTL LOAD OF 16,000 POUNDS.
5. A SQUARE-FRONT TRAILER IS SHOWN IN THE LOAD VIEW. IF THE TRAILER BEING LOADED HAS ROUNDED CORNERS AT THE FORWARD END, REFER TO PAGE 15 FOR "FORWARD BLOCKING" SPECIFICATIONS WHICH MUST BE USED.
6. IF THE LOAD WEIGHS MORE THAN 26,000 POUNDS, USE HEADERS AND STRUTS AS SHOWN ON PAGE 4 IN LIEU OF THE PROCEDURES SHOWN ON THIS PAGE. STRUT BRACING, 2" X 4" BY TRAILER WIDTH (CUT TO FIT) IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE STRUTS W/3-12d NAILS AT EACH JOINT.

KEY NUMBERS

- ① ANTI-SWAY BRACE ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 15.
- ② SIDE BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 16.
- ③ HEADER, 4" X 4" AND 2" X 4", TRAILER WIDTH (CUT TO FIT). (2 REQD). LAMINATE 2" X 4" TO 4" X 4" W/1-10d NAIL EVERY 8".
- ④ SIDE STRUT, 4" X 4" AND 2" X 4", CUT TO FIT (2 REQD). LAMINATE 2" X 4" TO 4" X 4" W/1-10d NAIL EVERY 12". TOENAIL TO HEADER W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 3 AT THE LEFT.
- ⑤ SPACER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO HEADER W/7-12d NAILS.
- ⑥ DIAGONAL BRACE, 2" X 6" X CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO THE HEADER AND SIDE STRUTS W/2-16d NAILS AT EACH END.
- ⑦ SIDE CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE SIDE STRUT W/8-12d NAILS.
- ⑧ STRUT BRACING, 2" X 4" X TRAILER WIDTH (CUT TO FIT) (MINIMUM OF 1 REQD). ONE ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE SIDE STRUTS W/3-12d NAILS AT EACH END.
- ⑨ BACK-UP CLEAT, 2" X 4" X 30" (TRIPLED) (3 REQD). ALIGN WITH PALLET POST. NAIL FIRST PIECE TO THE TRAILER FLOOR W/7-12d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 4 AT LEFT.

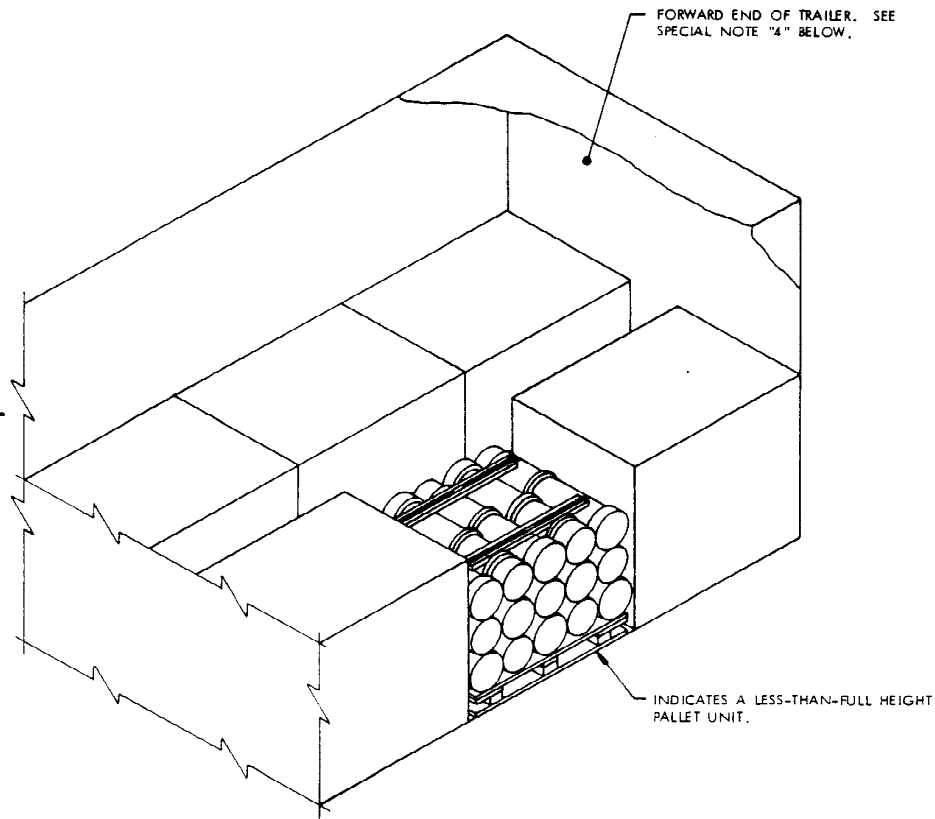


SECUREMENT OF TOP CONTAINERS

SPECIAL NOTES:

1. SHIPMENTS OF PALLETIZED UNITS SHOULD CONSIST OF FULL-HEIGHT 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 CARTRIDGES. LEFTOVER CARTRIDGES ARE DESCRIBED AS A QUANTITY OF CARTRIDGES WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 11 OR WITHIN A TIER AS SHOWN ON PAGE 10. THEY ARE USUALLY CARTRIDGES OF THE SAME AMMUNITION ITEM AS THE BALANCE OF THE LOAD ALTHOUGH THEY MAY BE ANY OTHER COMPATIBLE ITEM.
2. SHIPMENT OF LEFTOVER CARTRIDGES IS APPLICABLE FOR SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CARTRIDGES IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SECUREMENT OF LEFTOVER CARTRIDGES FOR SHIPMENT. A MAXIMUM OF THREE CARTRIDGES MAY BE SECURED TO A FULL-HEIGHT AND/OR PARTIAL PALLET UNIT. IF THE QUANTITY OF LEFTOVER CARTRIDGES IS GREATER THAN THREE, ADDITIONAL PALLET UNITS MAY BE ASSEMBLED IN THE MANNER SHOWN. HOWEVER, IT IS PREFERABLE TO SHIP FULL LAYER PARTIAL PALLET UNITS AS TYPICALLY DEPICTED ON PAGES 10 AND 11.
4. LEFTOVER CARTRIDGES MUST BE SECURED TO A FULL OR PARTIAL UNIT WITH A MINIMUM OF TWO (2) PIECES OF STEEL STRAPPING (SEPARATE FROM UNIT STRAPS) OF A SIZE AT LEAST AS HEAVY AS THE STRAPPING USED TO SECURE THE CARTRIDGES ON THE PALLETIZED UNIT UNDERNEATH THE LEFTOVER CARTRIDGES. THREAD A STRAP UNDER THE TOP LAYER OF CARTRIDGES, AS NEAR AS PRACTICAL TO THE ADJACENT UNIT STRAP, ENCIRCLE THE LEFTOVER CARTRIDGES, TENSION, AND SEAL THE JOINT WITH ONE DOUBLE CRIMPED SEAL.
5. THE PROCEDURES SHOWN ARE ALSO APPLICABLE TO LOADS IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.

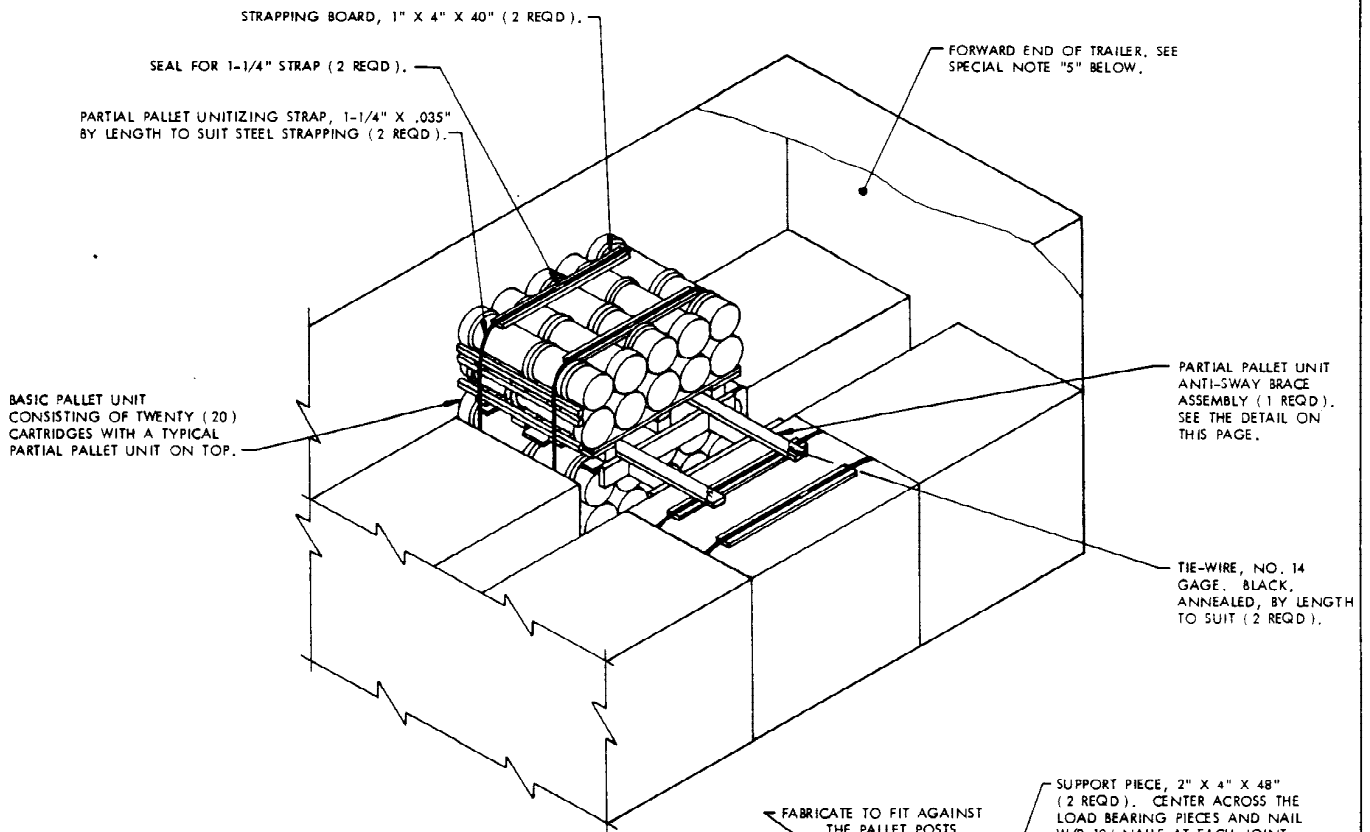
SHIPMENT OF LEFTOVER CONTAINERS



ISOMETRIC VIEW

SPECIAL NOTES:

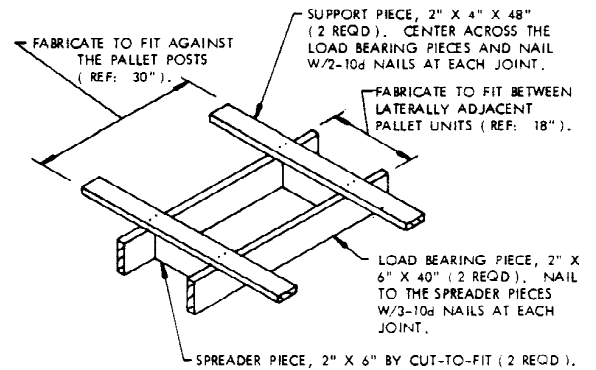
1. SHIPMENTS OF PALLETIZED UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE AND ON PAGE 11 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
2. ONLY PARTIAL PALLET UNITS WHICH HAVE A FULL THREE LAYERS OF CARTRIDGES SHOULD BE POSITIONED IN THE LOAD AS SHOWN. FOR SHIPMENT OF PARTIAL PALLET UNITS WHICH HAVE ONLY ONE OR TWO LAYERS OF CARTRIDGES, SEE THE PROCEDURES ON PAGE 11. FOR SHIPMENT OF "LEFTOVER" CARTRIDGES, SEE THE PROCEDURES ON PAGE 9.
3. THE PROCEDURES SHOWN ARE ALSO APPLICABLE TO LOADS IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.
4. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, USE A "FORWARD BLOCKING ASSEMBLY" AS SHOWN IN THE DETAIL ON PAGE 15.



ISOMETRIC VIEW

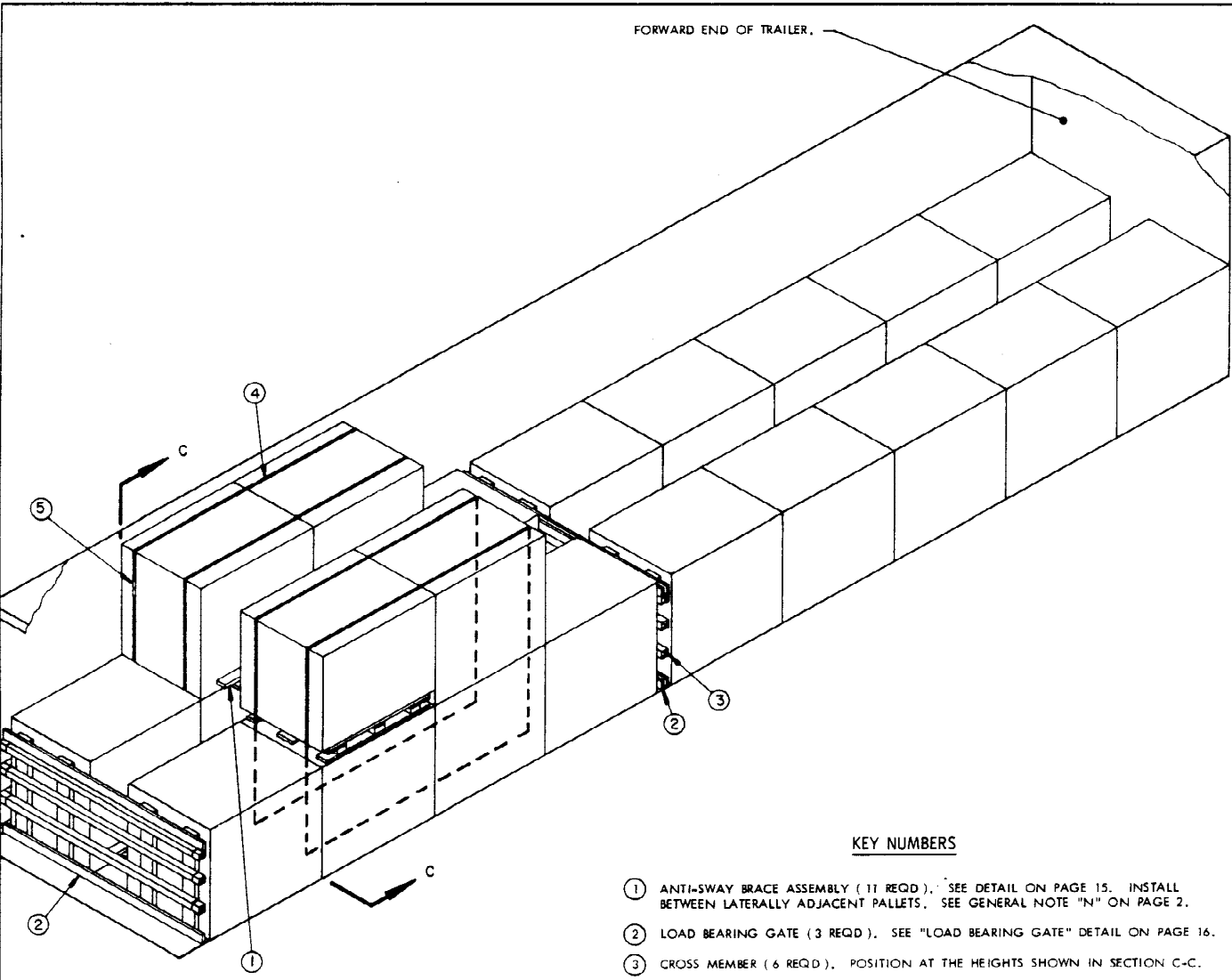
SPECIAL NOTES:

1. SHIPMENTS OF PALLETIZED 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 UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE AND ON PAGE 10 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
2. A PARTIAL PALLET UNIT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNITS WITHIN THE LOAD.
3. THE PROCEDURES SHOWN ON THIS PAGE ARE ONLY APPLICABLE TO PARTIAL PALLET UNITS CONSISTING OF ONE OR TWO LAYERS OF CARTRIDGES. FOR SHIPMENT OF "LEFTOVER" CARTRIDGES, SEE THE PROCEDURES ON PAGE 9.
4. THE PROCEDURES SHOWN ARE ALSO APPLICABLE TO LOADS IN TRAILERS EQUIPPED WITH MECHANICAL BRACING DEVICES.
5. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, USE A "FORWARD BLOCKING ASSEMBLY" AS SHOWN IN THE DETAIL ON PAGE 15.



PARTIAL PALLET UNIT ANTI-SWAY BRACE ASSEMBLY

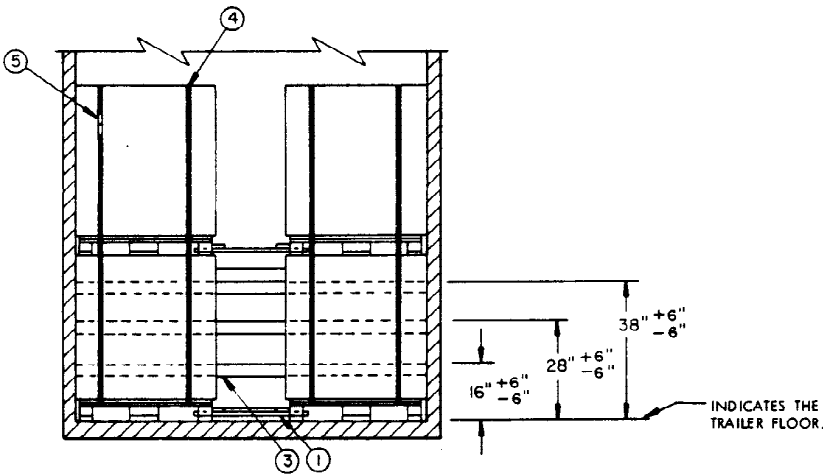
FORWARD END OF TRAILER.



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE ASSEMBLY (11 REQD). SEE DETAIL ON PAGE 15. INSTALL BETWEEN LATERALLY ADJACENT PALLETS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② LOAD BEARING GATE (3 REQD). SEE "LOAD BEARING GATE" DETAIL ON PAGE 16.
- ③ CROSS MEMBER (6 REQD). POSITION AT THE HEIGHTS SHOWN IN SECTION C-C.
- ④ UNITIZING STRAP, 1-1/4" X .035" X 34'-0" LONG STEEL STRAPPING (4 REQD). INSTALL AS SHOWN TO SECURE TWO PALLET UNITS IN THE SECOND LAYER TO TWO PALLET UNITS IN THE FIRST LAYER. SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑤ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.



SECTION C-C

SPECIAL NOTES:

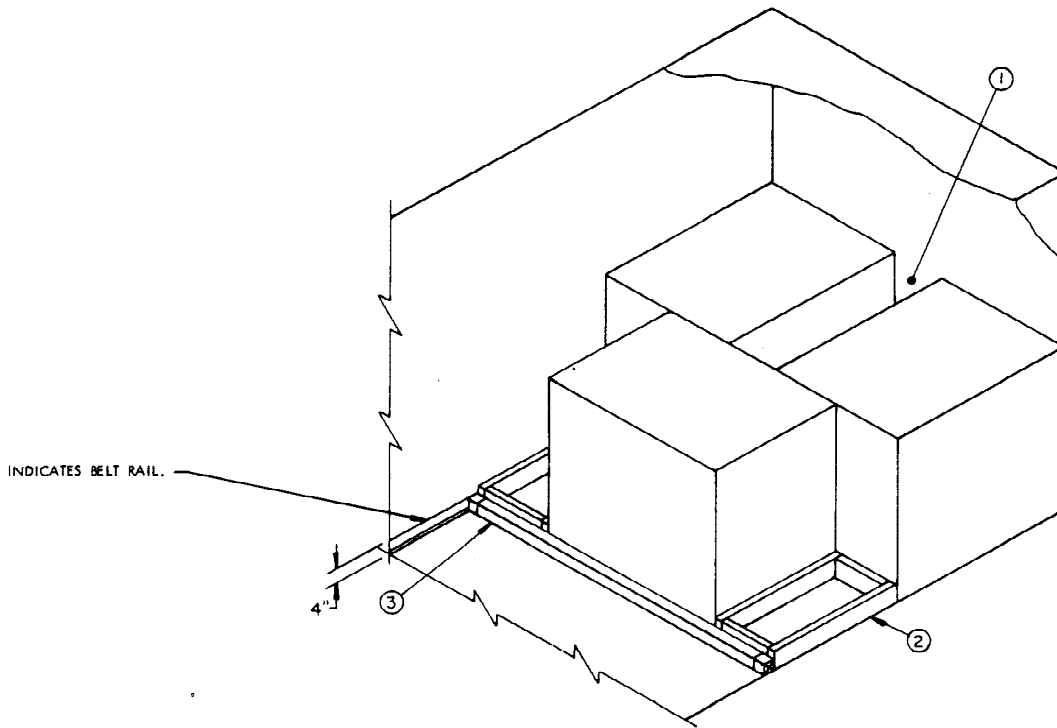
1. A 22-PALLET UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS AND STATIONARY WALL MEMBERS).
2. WIDER OR NARROWER TRAILERS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD BY ADJUSTING THE ANTI-SWAY BRACE ASSEMBLY.
3. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, POSITION THREE CROSS MEMBERS AND ONE LOAD BEARING GATE AT THE FORWARD END OF THE TRAILER. POSITION THE CROSS MEMBERS AT THE SAME HEIGHT AS SHOWN IN SECTION C-C ON PAGE 12. THIS METHOD MAY ALSO BE USED FOR DISTRIBUTION OF WEIGHT.
4. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 8, 9, 10, AND 11.
5. THE UNITIZING STRAPS MAY BE INSTALLED, AS SHOWN ON PAGE 6, TO SECURE EACH PALLET UNIT IN THE SECOND LAYER TO THE CORRESPONDING PALLET UNIT IN THE FIRST LAYER IN LIEU OF THE METHOD SHOWN ON PAGE 12.
6. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON TOP OF THE REARMOST PALLET UNIT IN THE FIRST LAYER. ALSO, IF ONLY ONE PALLET UNIT IS LOADED IN THE SECOND LAYER, SWAY BRACING PROCEDURES AS SPECIFIED ON PAGE 11 MUST BE USED IN LIEU OF THE SECOND-LAYER SWAY BRACING PROCEDURES DEPICTED ON PAGE 12.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	46	16
2" X 4"	55	37
2" X 6"	107	107
NAILS	NO. REQD	POUNDS
10d (3")	160	2-1/2
STEEL STRAPPING, 1-1/4" X .035" ----- 136' REQD---- 20 LBS		
SEAL FOR 1-1/4" STEEL STRAPPING ----- 8 REQD---- NIL		

LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
PALLET UNIT -----	22 -----	41,800 LBS
DUNNAGE -----	-----	423 LBS
TOTAL WEIGHT-----		42,223 LBS

22-UNIT LOAD IN A 40'-0' LONG TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 3-PALLET UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) TRAILER EQUIPPED WITH MECHANICAL BRACING DEVICES (CROSS MEMBERS AND STATIONARY WALL MEMBERS).
2. WIDER OR NARROWER TRAILERS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD BY ADJUSTING THE ANTI-SWAY BRACE ASSEMBLY AND THE SIDE BLOCKING ASSEMBLY.
3. IF THE TRAILER BEING USED IS EQUIPPED WITH ROUNDED CORNERS AT THE FORWARD END, POSITION ADDITIONAL CROSS MEMBERS AT THE FORWARD END OF THE TRAILER AT THE SAME HEIGHT AS AT THE REAR OF THE LOAD.
4. ONE CROSS MEMBER MAY BE USED TO RETAIN UP TO AND INCLUDING FIVE PALLET UNITS. IF MORE THAN FIVE UNITS ARE SHIPPED, THE LOAD MAY BE DIVIDED INTO BAYS OF NOT MORE THAN FIVE UNITS EACH. IF SIX OR MORE PALLET UNITS ARE TO BE SHIPPED IN EACH BAY, UTILIZE THE PROCEDURES DEPICTED ON PAGE 12.

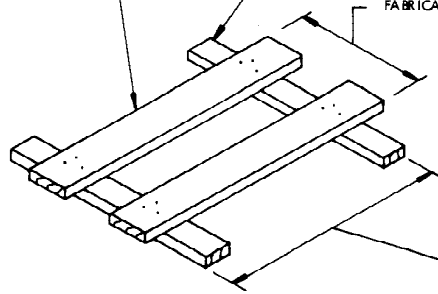
KEY NUMBERS

- ① ANTI-SWAY BRACE ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 15.
- ② SIDE BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 16.
- ③ CROSS MEMBER (1 REQD). POSITION AT THE 4" HEIGHT.

BUFFER PIECE, 2" X 6" X 36" (2 REQD). POSITION AGAINST THE PALLET AND NAIL TO THE RETAINER PIECES W/3-10d NAILS AT EACH JOINT.

RETAINER PIECE, 2" X 4" X 30" (2 REQD). POSITION TO EXTEND UNDER THE LATERALLY ADJACENT PALLETS AND AGAINST THE PALLET POSTS.

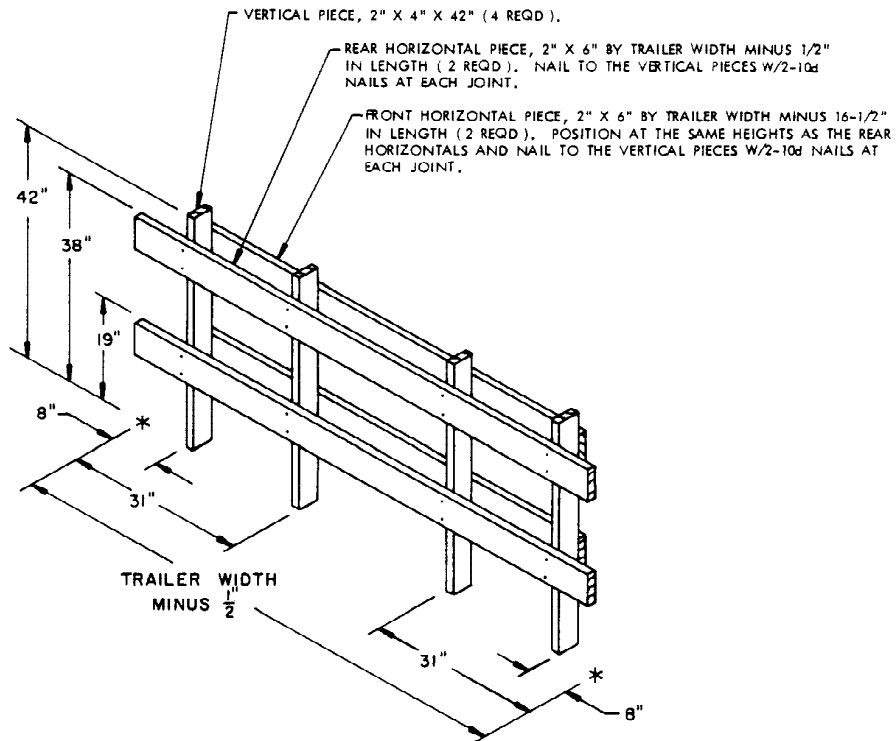
FABRICATE TO FIT BETWEEN LATERALLY ADJACENT PALLETS (REF: 18").



FABRICATE TO FIT AGAINST THE PALLET POSTS (REF: 30").

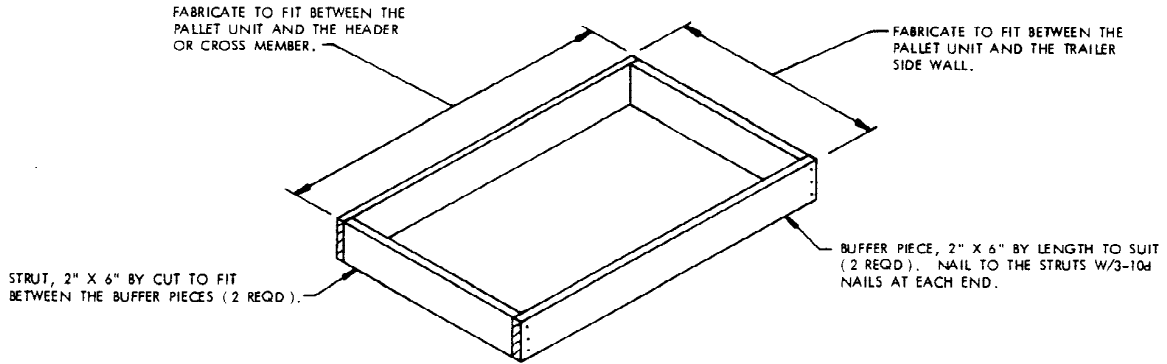
ANTI-SWAY BRACE ASSEMBLY

THIS ASSEMBLY MUST BE FABRICATED IN PLACE, BETWEEN PALLETS.

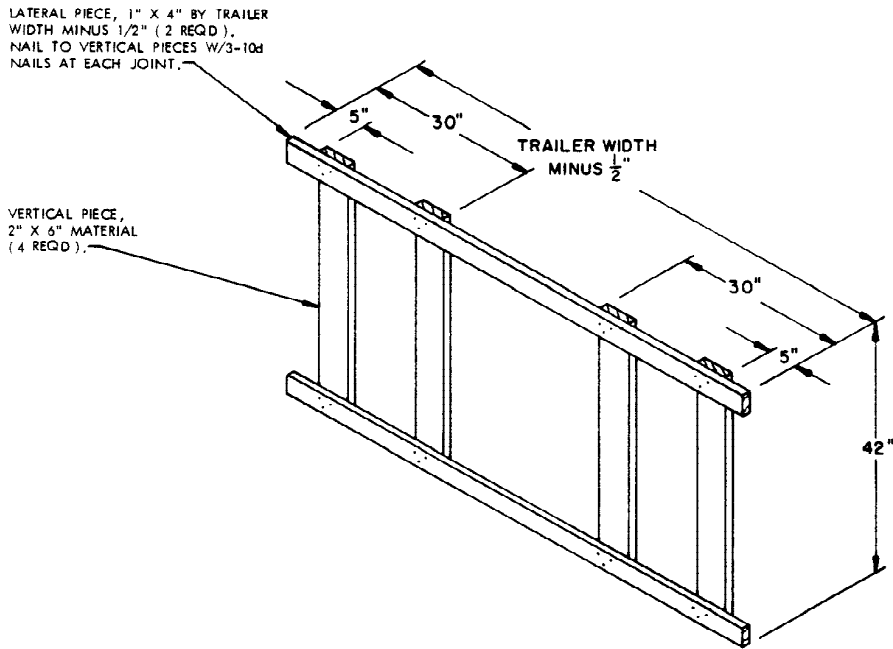


FORWARD BLOCKING ASSEMBLY

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.



SIDE BLOCKING ASSEMBLY



LOAD BEARING GATE