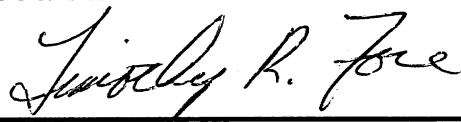
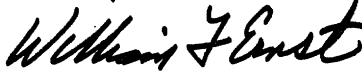
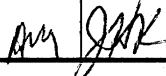




# LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF CBU-87/B AND CBU-89/B MUNITIONS PACKED IN CNU-411/E METAL CONTAINERS

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● CAUTION: THE OUTLOADING PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS, NOT TRAILER-ON-FLAT-CAR MOVEMENT.

U.S. ARMY MATERIEL COMMAND DRAWING			
APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND  	DRAFTSMAN S. WILSON	TECHNICIAN P. BRIGHT	ENGINEER
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  	VALIDATION ENGINEERING DIVISION  	TRANSPORTATION ENGINEERING DIVISION  	LOGISTICS ENGINEERING OFFICE  
FEBRUARY 1993			
CLASS	DIVISION	DRAWING	FILE
19	48	7141	SP11J11

DO NOT SCALE

## GENERAL NOTES

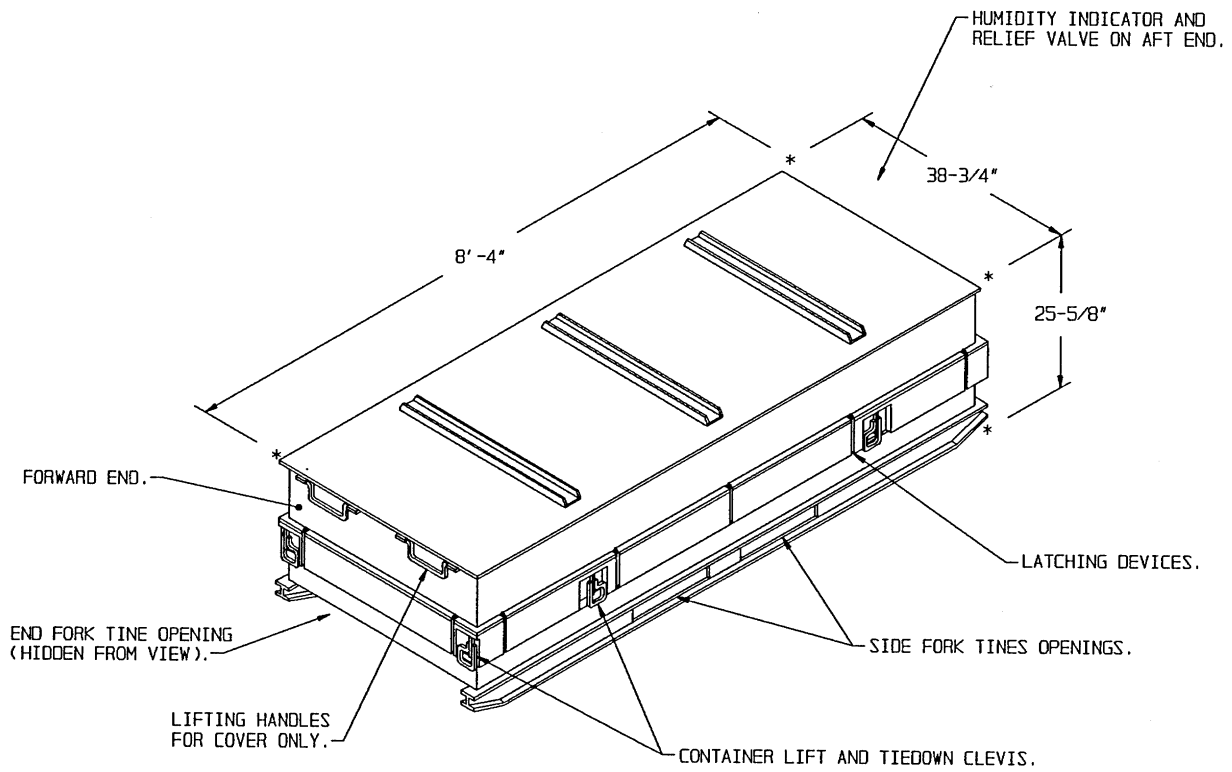
(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES CONTAINED HEREIN ARE APPLICABLE TO CBU-87/B AND CBU-89/B MUNITIONS PACKED IN CNU-411/E METAL CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-411/E CONTAINER WITH CONTENTS.
- C. FOR DETAILS OF THE CNU-411/E CONTAINER, SEE AIR FORCE DRAWING NO. 8394441 AND THE CONTAINER DETAIL ON PAGE 3.
- D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. VAN TRAILERS WHICH ARE 40'-0" AND 45'-0" LONG BY 7'-8-1/2" 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.
- E. 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 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 OR AXLE WEIGHT EXCEEDS THE MAXIMUM ALLOWED, WEIGHT SHOULD BE VERIFIED BY ACTUALLY WEIGHING THE LOADED VEHICLE.
- F. 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.
- G. 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.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE 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 HEREIN.
- J. 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 CONTAINERS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
- K. 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.
- L. 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.
- M. 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.
- N. 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.
- O. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, 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 THE DEPICTED OUTLOADING METHODS.

(CONTINUED AT RIGHT)

## MATERIAL SPECIFICATIONS

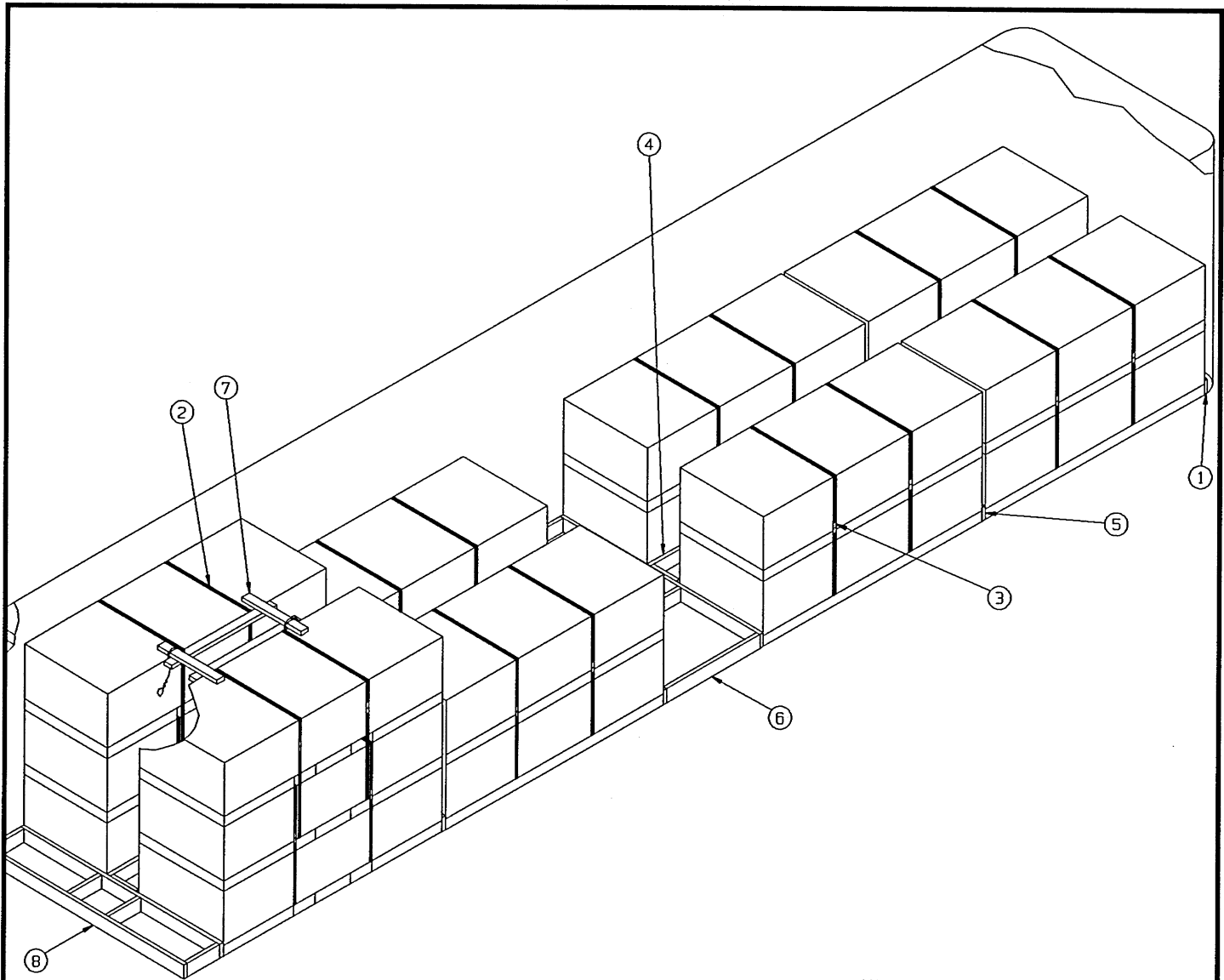
- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- STRAPPING, STEEL - - - : ASTM D3953; FLAT STRAPPING, TYPE I OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.
- SEAL, STRAP - - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.
- WIRE, CARBON STEEL - - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA GRADE 1006 OR BETTER.



**CNU-411/E CONTAINER**

(STACKING HEIGHT 24-13/32")

CONTAINER DIMENSIONS - - - - 8'-4" LONG X 38-3/4" WIDE X 25-5/8" HIGH.  
 GROSS WEIGHT W/CBU-87/B MUNITIONS - - - 2,370 POUNDS (APPROX)  
 GROSS WEIGHT W/CBU-89/B MUNITIONS - - - 1,930 POUNDS (APPROX)  
 TARE WEIGHT - - - - - 470 POUNDS (APPROX)



REAR OF TRAILER.

**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING (1 REOD). SEE THE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 11. SEE GENERAL NOTE "J" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- ② UNITIZING STRAP, 1-1/4" X .031" OR .035" X 16'-0" LONG STEEL STRAPPING (20 REOD). INSTALL SO AS TO ENCIRCLE A STACK OF TWO CONTAINERS AS SHOWN. ALSO, INSTALL SO AS TO ENCIRCLE THE BOTTOM TWO CONTAINERS AND THE TOP TWO CONTAINERS IN THE 3-HIGH STACKS.
- ③ SEAL FOR 1-1/4" STRAPPING (40 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ ANTI-SWAY BRACE (4 REOD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT CONTAINERS. SEE THE "ANTI-SWAY BRACE ASSEMBLY" DETAIL ON PAGE 12.
- ⑤ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (2 REOD). POSITION ON EDGE BETWEEN LONGITUDINALLY ADJACENT CONTAINERS AS SHOWN.
- ⑥ SPACER (1 REOD). SEE THE "SPACER ASSEMBLY" DETAIL ON PAGE 11 AND SPECIAL NOTE 4 ON PAGE 5.
- ⑦ TOP-OF-LOAD ANTI-SWAY BRACE (1 REOD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" AND THE "TIE WIRE APPLICATION" DETAILS ON PAGE 13. SEE SPECIAL NOTE 5 ON PAGE 5.
- ⑧ REAR BLOCKING (1 REOD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 14. SEE SPECIAL NOTE 6 ON PAGE 5.

SPECIAL NOTES:

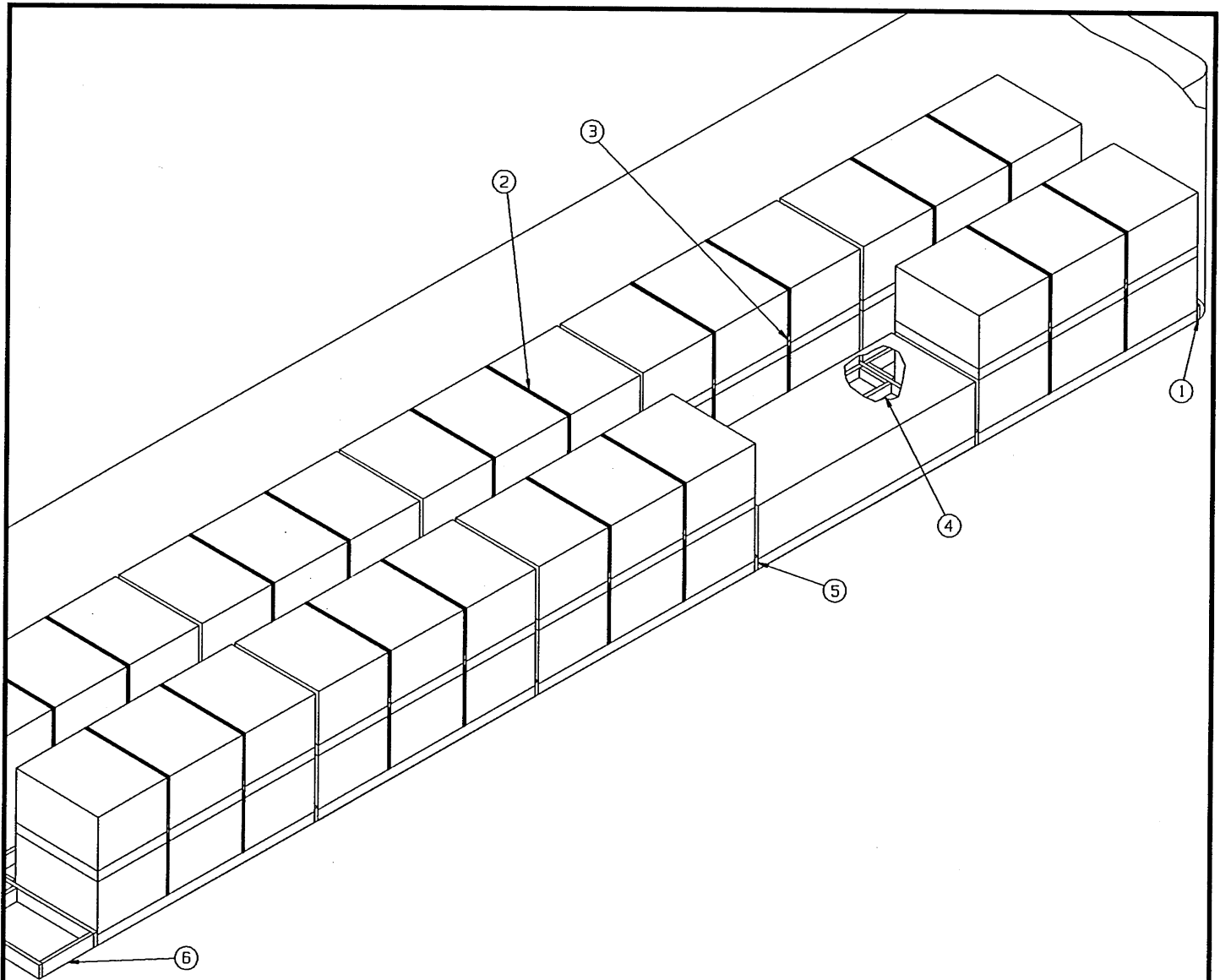
1. AN 18-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8-1/2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER HAVING ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE DEPICTED LOAD QUANTITY MAY BE ADJUSTED TO COMPLY WITH THE MAXIMUM LOAD WEIGHT REQUIREMENT OR THE QUANTITY TO BE TRANSPORTED.
3. IF THE TRAILER TO BE LOADED HAS A SQUARE FRONT, AN ADDITIONAL HEADER, PIECE MARKED ⑤ WILL BE USED IN LIEU OF PIECE MARKED ①.
4. THE SPACER ASSEMBLY SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 4 IS USED FOR THE PURPOSE OF PROVIDING FOR PROPER WEIGHT DISTRIBUTION, AND CAN ALSO BE USED IN PLACE OF TWO OMITTED CONTAINERS TO ADJUST THE QUANTITY OF THE LOAD. 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. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ⑦, ARE REQUIRED FOR THE LATERAL BRACING OF 3-HIGH CONTAINER STACKS ONLY.
6. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE CONTAINERS AND THE REAR DOOR, MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 14. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY, PIECE MARKED ⑧, ON PAGE 4.
7. 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 PAGE 15 FOR GUIDANCE. NOTE THAT THE SPECIAL REAR BLOCKING FOR TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.
8. FOR SHIPMENT OF LESS THAN FULL LOADS. REFER TO THE APPLICABLE GUIDANCE ON PAGE 8 THRU 10.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	2	1
2" X 4"	13	9
2" X 6"	161	161
NAILS	NO. REQD	POUNDS
6d (2")	4	NIL
10d (3")	144	2.25
STEEL STRAPPING, 1-1/4" - - 320' REQD - - 46.00 LBS		
SEAL FOR 1-1/4" STRAPPING - - 40 REQD - - 2.00 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER - - - - -	18 - - - - -	40,290 LBS
DUNNAGE - - - - -	- - - - -	393 LBS
TOTAL WEIGHT - - - - -		40,683 LBS (APPROX)



**ISOMETRIC VIEW**

↑ REAR OF TRAILER.

**KEY NUMBERS**

- ① FORWARD BLOCKING (1 REOD). SEE THE "FORWARD BLOCKING ASSEMBLY A" DETAIL ON PAGE 13. SEE GENERAL NOTE "J" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 7.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (18 REOD). PREPOSITION, AND INSTALL SO AS TO ENCIRCLE TWO CONTAINERS.
- ③ SEAL FOR 1-1/4" STRAPPING (36 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "K" ON PAGE 2.
- ④ ANTI-SWAY BRACE (5 REOD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT CONTAINERS. SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 12.
- ⑤ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (4 REOD). POSITION ON EDGE BETWEEN LONGITUOINALLY ADJACENT CONTAINERS AS SHOWN.
- ⑥ REAR BLOCKING ASSEMBLY (1 REOD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 14. SEE SPECIAL NOTE 6 ON PAGE 7.

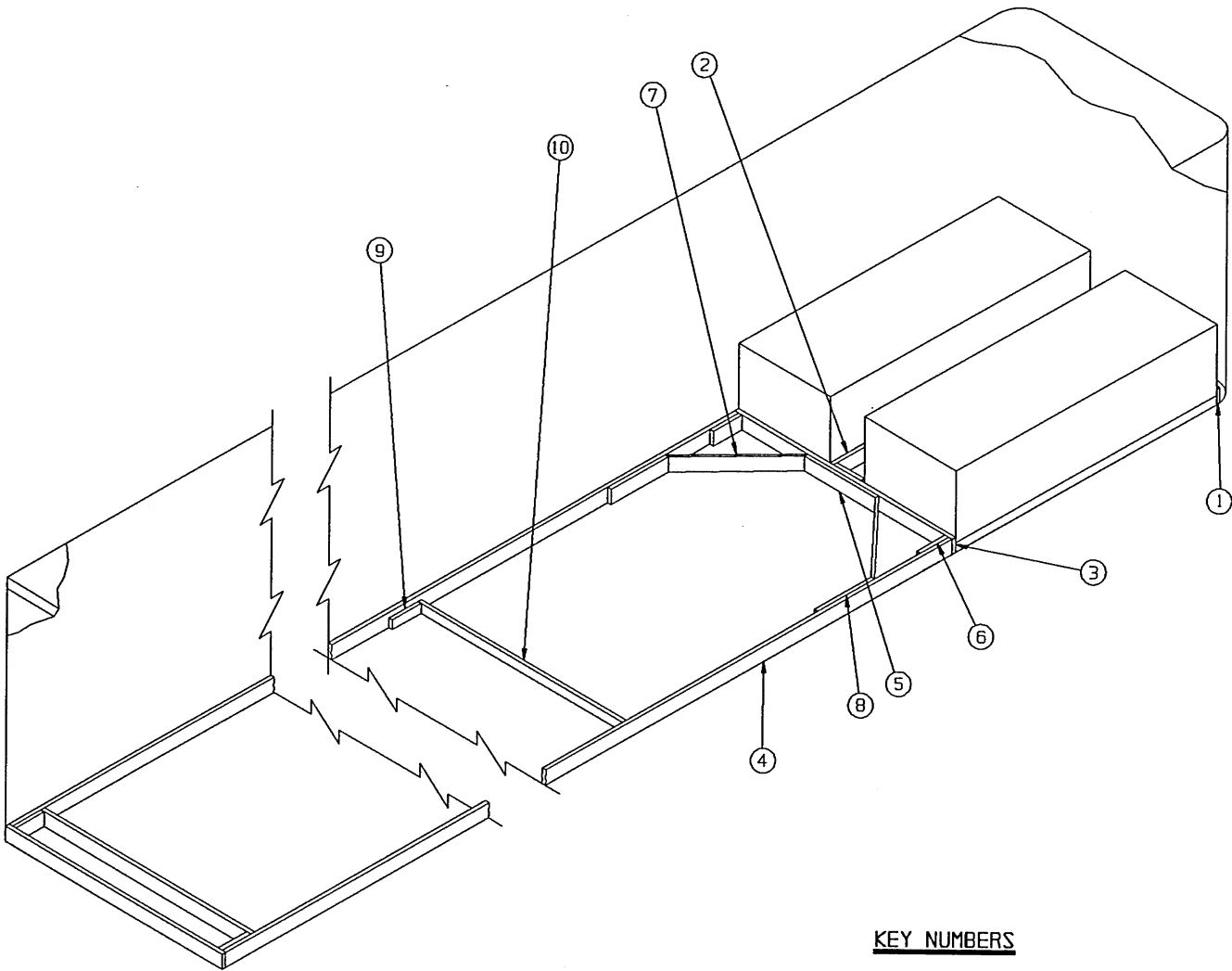
SPECIAL NOTES:

1. A 19-UNIT LOAD IS SHOWN IN A 40'-0" LONG BY 7'-8-1/2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER HAVING ROUNDED FRONT CORNERS. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE DEPICTED LOAD QUANTITY MAY BE ADJUSTED TO COMPLY WITH THE MAXIMUM LOAD WEIGHT REQUIREMENT OR THE QUANTITY TO BE TRANSPORTED.
3. IF THE TRAILER TO BE LOADED HAS A SQUARE FRONT, AN ADDITIONAL HEADER, PIECE MARKED ⑤ WILL BE USED IN LIEU OF PIECE MARKED ①.
4. THE "SPACER ASSEMBLY" DETAILED ON PAGE 11, AND SHOWN IN THE LOAD ON PAGE 4 AS PIECE MARKED ⑥, CAN BE USED TO ADJUST THE QUANTITY OF THE DEPICTED LOAD, OR TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION. THE LOCATION OF THE ASSEMBLY, AND/OR THE STRUT LENGTHS MAY BE DIFFERENT FROM WHAT IS SHOWN. NOTE THAT 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 CONTAINERS AND THE REAR DOOR, MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 14. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY, PIECE MARKED ⑦, ON PAGE 6.
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 PAGE 15 FOR GUIDANCE. 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. FOR SHIPMENT OF LESS THAN FULL LOADS, REFER TO THE APPLICABLE GUIDANCE ON PAGES 8 THRU 10.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	2	1
2" X 6"	167	167
NAILS	NO. REQD	POUNDS
6d (2")	4	NIL
10d (3")	126	2
STEEL STRAPPING, 1-1/4" - - 288' REQD - - 42.00 LBS		
SEAL FOR 1-1/4" STRAPPING - - 36 REQD - - 2.00 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER - - - - -	19 - - - - -	45,030 LBS
DUNNAGE - - - - -	- - - - -	382 LBS
TOTAL WEIGHT - - - - -		45,412 LBS (APPROX)



ISOMETRIC VIEW

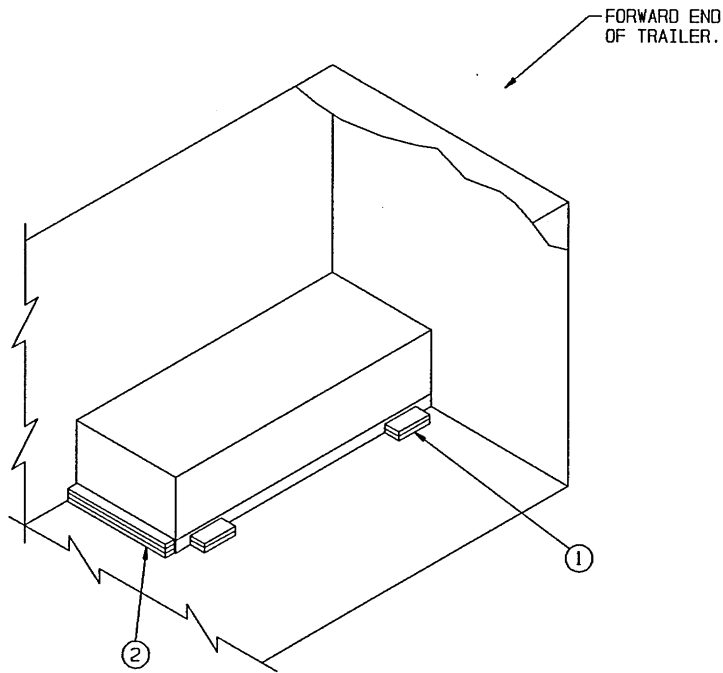
KEY NUMBERS

- ① FORWARD BLOCKING (1 REOD). SEE THE "FORWARD BLOCKING B" DETAIL ON PAGE 11. SEE GENERAL NOTE "J" ON PAGE 2.
- ② ANTI-SWAY BRACE (1 REOD). POSITION ON THE FLOOR BETWEEN LATERALLY ADJACENT CONTAINERS. SEE THE "ANTI-SWAY BRACE ASSEMBLY" DETAIL ON PAGE 12.
- ③ HEADER, 2" X 6" BY TRAILER WIDTH (CUT TO FIT) (2 REOD).
- ④ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN HEADERS MARKED ③ (2 REOD). SEE SPECIAL NOTE 2 ON PAGE 9.
- ⑤ CENTER CLEAT, 2" X 6" X 30" (1 REOD). NAIL TO HEADER, PIECE MARKED ③, W/6-10d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 12" (4 REOD). NAIL TO SIDE STRUT, PIECE MARKED ④, W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER PIECE MARKED ③, W/3-12d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REOD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ③, AND SIDE STRUT, PIECE MARKED ④, W/2-16d NAILS AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 24" (2 REOD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/8-10d NAILS.
- ⑨ STRUT BRACE RETAINER CLEAT, 2" X 4" X 12" (AS REOD). NAIL TO SIDE STRUT, PIECE MARKED ④, W/3-10d NAILS. SEE SPECIAL NOTE 4 ON PAGE 9.
- ⑩ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT TO FIT) (MINIMUM OF ONE REOD). NAIL TO PIECE MARKED ⑨ W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 9.



SPECIAL NOTES:

1. A 7'-8-1/2" (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. IF THE SIDE STRUTS SHOWN AS PIECE MARKED ④ ARE FORMED FROM MORE THAN ONE PIECE OF MATERIAL. THEY MAY BE SPLICED BY CENTERING A 2" X 6" X 24" PIECE ON THE JOINT OF THE SIDE STRUTS AND NAILING W/4-10d NAILS AT EACH END. IF DESIRED, THE STRUT BRACING PIECE(S), PIECE MARKED ⑩, MAY BE NAILED TO THE SPLICE PIECES IN LIEU OF USING ADDITIONAL STRUT BRACE RETAINER CLEATS, PIECES MARKED ⑨.
3. THE K-BRACE BLOCKING SHOWN AS PIECES MARKED ③ THRU ⑩ WILL RETAIN A MAXIMUM OF 20,000 POUNDS.
4. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO PIECE MARKED ⑥. IF THE SIDE STRUTS, PIECE MARKED ④, ARE LONGER THAN 7'-0" AN ADDITIONAL STRUT BRACE, PIECE MARKED ⑩, AND TWO STRUT BRACE RETAINER CLEATS, PIECE MARKED ⑨, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
5. 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 15 FOR GUIDANCE. NOTE THAT THE NAILED-HEADER METHOD OF REAR BLOCKING MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS, AND MAY BE USED IN LIEU OF PIECES MARKED ③ THRU ⑩ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.



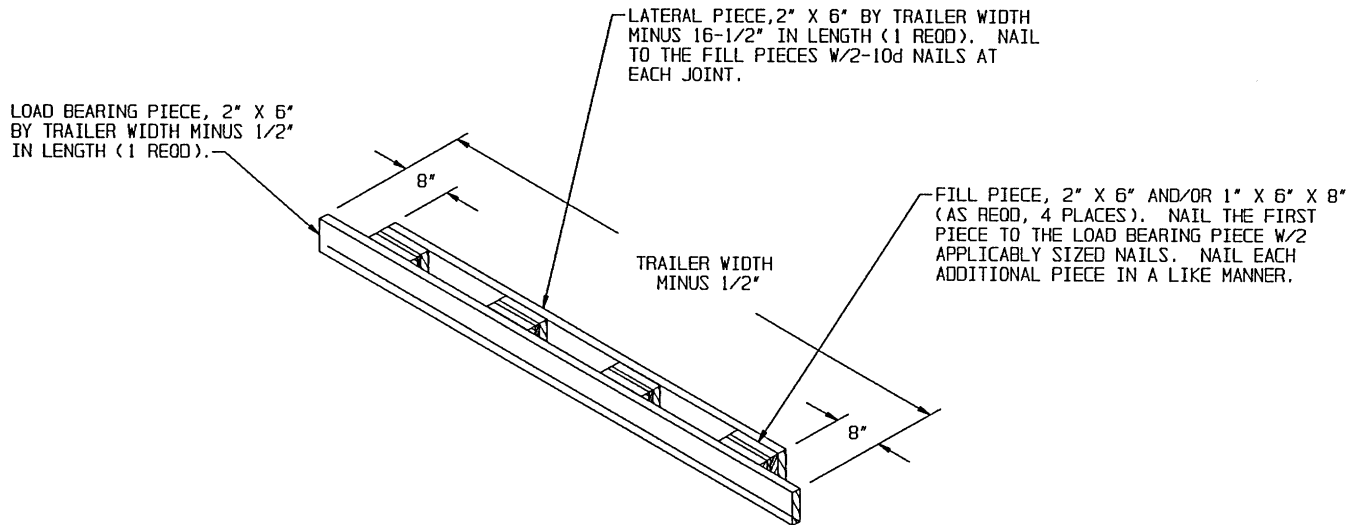
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE CONTAINER SHOWN HAS OVERALL DIMENSIONS OF 8'-4" LONG BY 38-3/4" WIDE BY 24-13/32" HIGH AND WEIGHS APPROXIMATELY 2,370 POUNDS.
3. THE HEADER SHOWN AS PIECE MARKED ② WILL NOT BE RELIED UPON TO RETAIN MORE THAN SIX CONTAINERS.
4. IF MORE THAN ONE CONTAINER IS TO BE TRANSPORTED, THE LOAD SHOULD BE FORMED IN ROWS, WITH THE CONTAINERS POSITIONED AGAINST OPPOSITE SIDEWALLS. SIDE BLOCKING, SHOWN AS PIECE MARKED ① ABOVE MUST BE INSTALLED BETWEEN LATERALLY ADJACENT CONTAINERS. IF THE TRAILER HAS ROUNDED CORNERS AT THE FORWARD END, MOVE THE CONTAINERS BACK A SUITABLE DISTANCE TO CLEAR THE CORNERS AND INSTALL AN ADDITIONAL HEADER.

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (2 REED). POSITION AGAINST THE CONTAINER SKIDS AS SHOWN ABOVE. NAIL THE FIRST PIECE TO THE FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "M" ON PAGE 2.
- ② HEADER, 2" X 4" X 38" (TRIPLED) (1 REED). POSITION AGAINST THE SKIDS OF THE CONTAINER AS SHOWN ABOVE. NAIL THE FIRST PIECE TO THE FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND IN A LIKE MANNER. SEE SPECIAL NOTE 3.

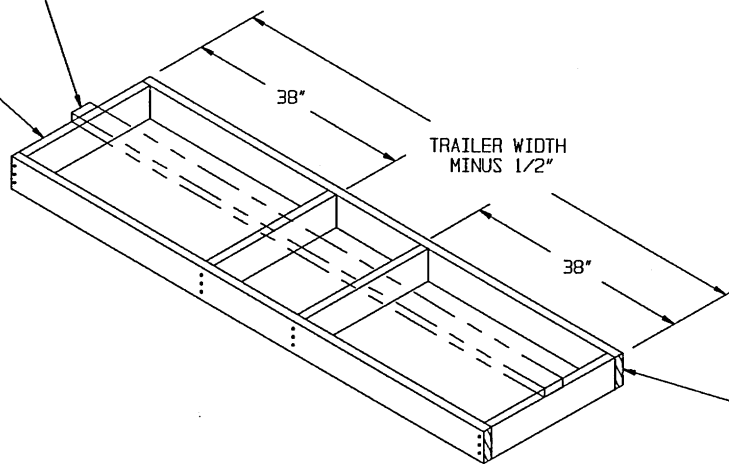


**FORWARD BLOCKING ASSEMBLY**

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", ADDITIONAL FILL PIECES WILL BE USED.

STRUT BRACING PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REOD FOR EVERY 7'-0" OF STRUT LENGTH FOR STRUTS LONGER THAN 7'-0"). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.

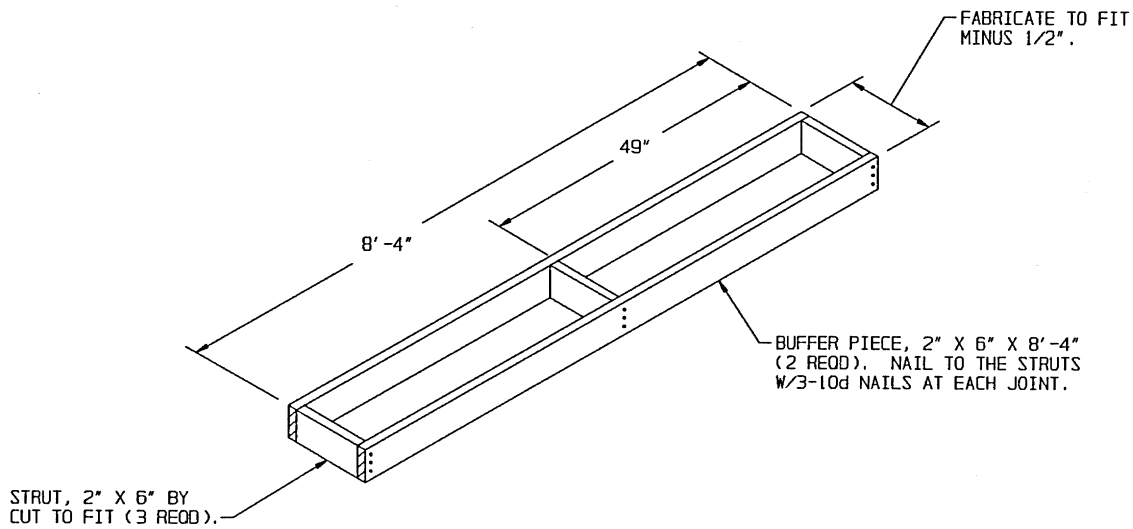
STRUT, 2" X 6" BY CUT-TO-FIT (4 REOD).



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

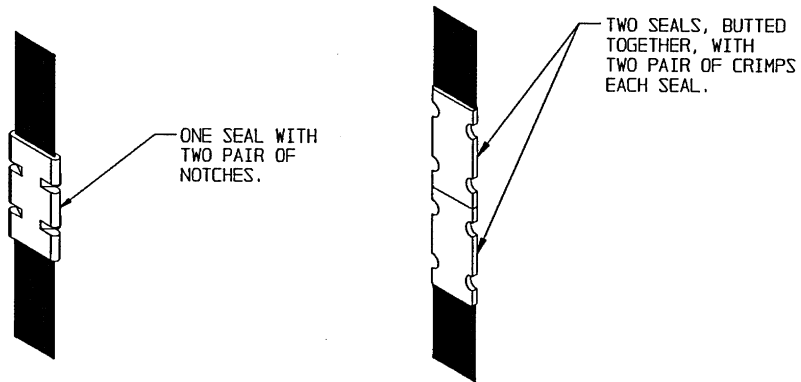
**SPACER ASSEMBLY**

THIS ASSEMBLY IS DESIGNED FOR USE IN THE PLACE OF AN OMITTED LOAD UNIT, AND/OR TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION AS TYPICALLY SHOWN IN THE LOAD ON PAGE 4.



**ANTI-SWAY BRACE**

THIS ASSEMBLY IS DESIGNED FOR USE ON THE FLOOR BETWEEN LATERALLY ADJACENT CONTAINERS. NOTE THAT AN ASSEMBLY NEED NOT BE CONSTRUCTED FOR A TIGHT FIT; UP TO ONE HALF INCH SPACE IS PERMITTED.



**STRAP JOINT A**

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

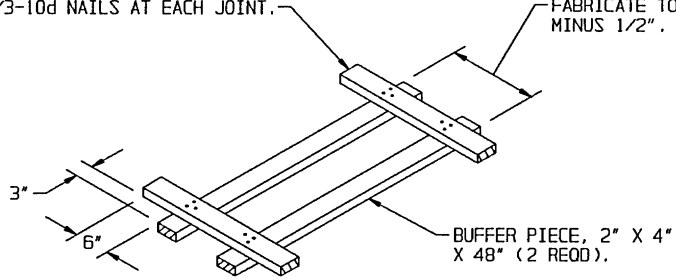
**STRAP JOINT B**

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

**END-OVER-END LAP JOINT DETAILS**

SUPPORT PIECE, 2' X 4" BY  
A LENGTH TO SUIT (2 REOD).  
NAIL TO THE BUFFER PIECES  
W/3-10d NAILS AT EACH JOINT.

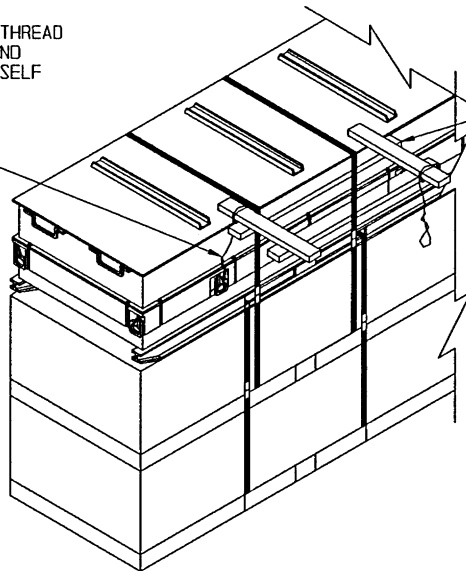
FABRICATE TO FIT  
MINUS 1/2".



TOP-OF-LOAD ANTI-SWAY BRACE

TIRE WIRE NO. 14 GAGE WIRE BY LENGTH  
TO SUIT (REF: 54") (2 REOD). FORM  
TWO LOOPS AROUND TOP-OF-LOAD  
ANTI-SWAY BRACE AND TWIST. THREAD  
THROUGH THE CONTAINER LIFT AND  
TIEDOWN CLEVIS AND TWIST TO SELF  
AS SHOWN.

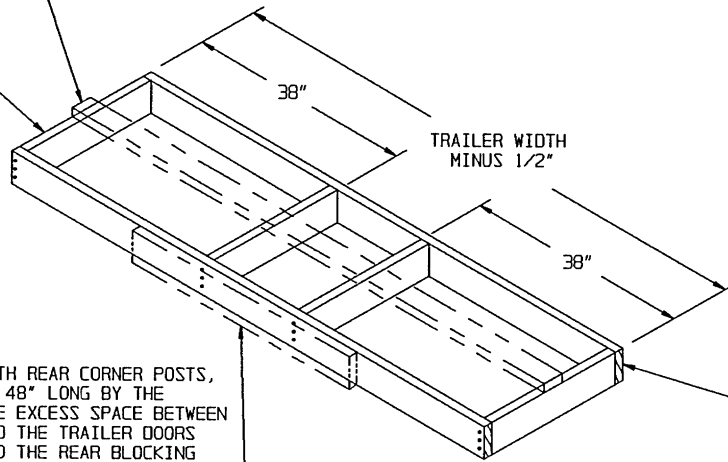
TOP-OF-LOAD ANTI-SWAY  
BRACE SHOWN AS TYPICAL.



TIE WIRE APPLICATION

STRUT BRACING PIECE, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REOD FOR EVERY 7'-0" OF STRUT LENGTH FOR STRUTS LONGER THAN 7'-0"). NAIL TO THE STRUTS W/2-12d NAILS AT EACH JOINT.

STRUT, 2" X 6" BY CUT-TO-FIT (4 REOD).



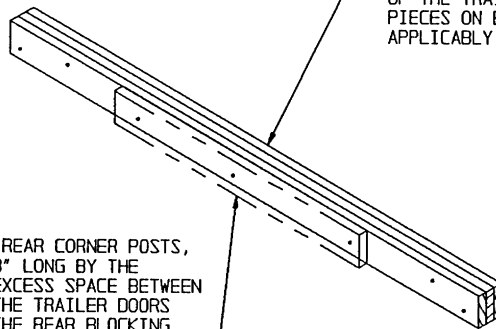
IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING ASSEMBLY AND THE TRAILER DOORS WHEN THEY ARE CLOSED. NAIL TO THE REAR BLOCKING ASSEMBLY W/4 APPLICABLY SIZED NAILS.

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

### REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS FOR USE AT THE REAR END OF A LOAD WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER.

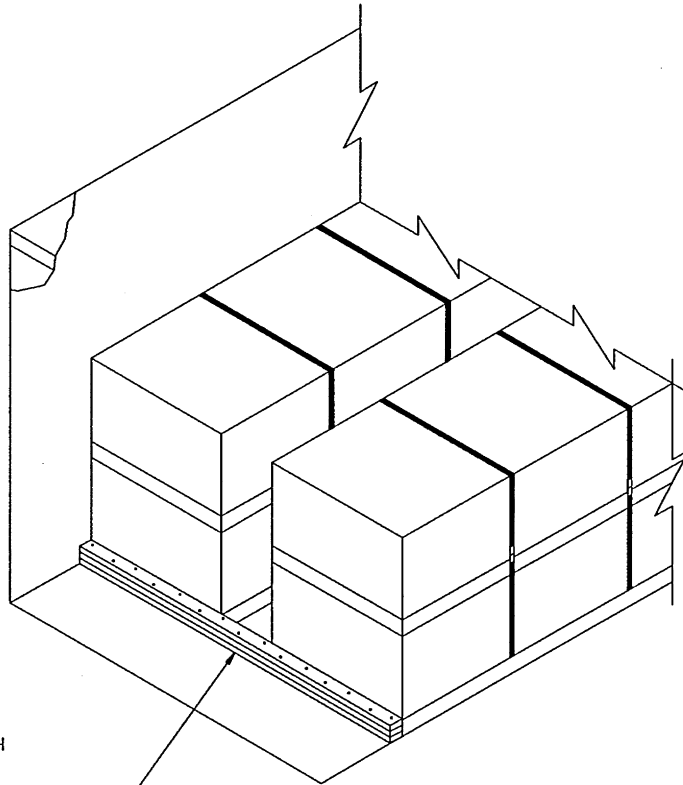
SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO CONTACT REAR CORNER POSTS OF THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE AS SHOWN, AND LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 12".



IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING ASSEMBLY AND THE TRAILER DOORS WHEN THEY ARE CLOSED. NAIL TO THE REAR BLOCKING ASSEMBLY W/4 APPLICABLY SIZED NAILS.

### REAR BLOCKING ASSEMBLY B

THIS ASSEMBLY IS FOR USE AT THE REAR END OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS LESS THAN 9".



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

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 6".
2. THE NAILED-HEADER METHOD OF REAR BLOCKING IS ADEQUATE FOR THE RETENTION OF THE MAXIMUM WEIGHT LOAD.
3. THE NAILED-HEADER METHOD, ALTHOUGH DESIGNED ESPECIALLY FOR TRAILERS HAVING ROLL-UP TYPE DOORS, MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS.