

APPROVED BY  
 BUREAU OF EXPLOSIVES  
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 MILITARY ASSISTANT  
 DATE 2/24/69

12

# LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF CBU ITEMS \* PACKED IN THE CNU-98/E CONTAINER

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\* ITEMS SUCH AS THE CBU-15/A  
 THAT REQUIRE SPECIAL IN-TRANSIT  
 MONITORING

DRAFTSMAN <i>RR-FJ/cbe</i>	PROJ ENG <i>GW P/MLW</i>	APSA <i>PJS</i>	SUBMITTED <i>W. J. Harding, Lt.</i>
CHECKED <i>JEE/RDH</i>	ASST PROJ CTR <i>JEE</i>		COMMANDING OFFICER, SAVANNAH ARMY DEPOT
REVISIONS			EXAMINED AND APPROVED <i>Ralph Hall</i>
			AMMUNITION PROCUREMENT & SUPPLY AGENCY
			APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL COMMAND
			<i>Parsons</i>
			U. S. ARMY MATERIEL COMMAND
			APRIL 1969
			CLASS DIVISION DRAWING FILE
			19 48 4078 11J1000

DO NOT SCALE

## GENERAL NOTES

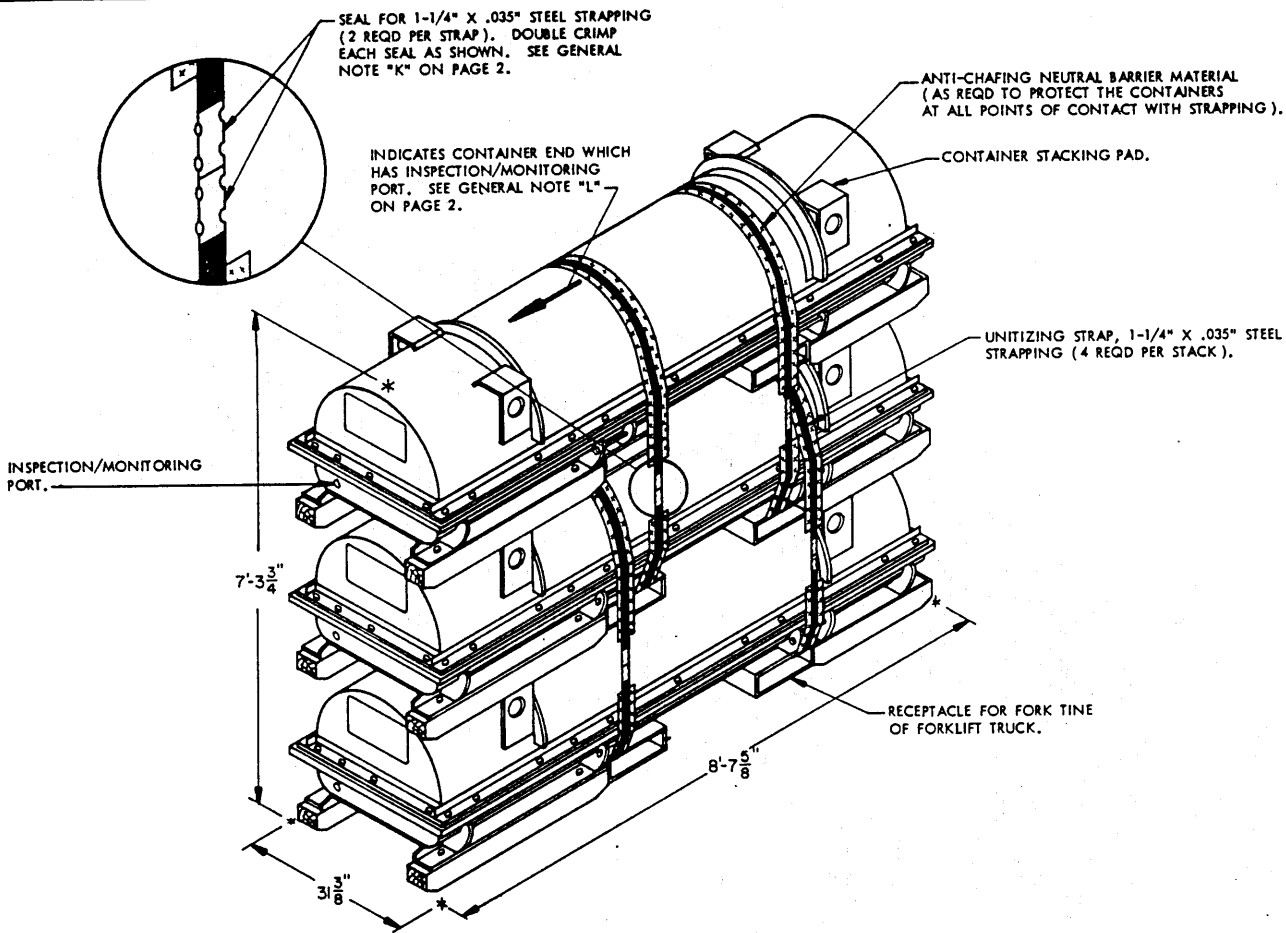
(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO CBU ITEMS WHEN THEY ARE PACKAGED IN THE CNU-98/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-98/E CONTAINER WITH CONTENTS.
- C. FOR DETAILS OF THE CNU-98/E CONTAINER SEE DRAWING NO. 921181.  
CONTAINER DIMENSIONS --- 103-5/8" LONG X 31-3/8" WIDE X 31-1/4" HIGH.  
GROSS WEIGHT ----- 1,178 POUNDS (APPROX).
- D. THE 24-UNIT LOAD SHOWN ON PAGES 4 AND 5 IS BASED ON A CLOSED OR OPEN TOP VAN TRAILER WHICH IS 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) AND HAS A WOOD, WOOD AND METAL, OR A METAL FLOOR. THE DELINEATED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO TRAILERS WHICH ARE FROM 86 INCHES THROUGH 93 INCHES WIDE.
- 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.
- F. 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 HEREIN MAY BE USED. HOWEVER, THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- G. 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 ITEMS DESIGNATED WITHIN THE DRAWING TITLE.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH ITEMS PACKED IN THE CNU-98/E CONTAINERS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, THE INSPECTION/MONITORING PORT OF THIS ITEM IS ACCESSIBLE, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- J. ONE AND ONE-QUARTER INCH (1-1/4") STEEL STRAPPING WILL BE USED TO UNITIZE STACKED CONTAINERS AS SHOWN ON PAGE 3, AND AS SPECIFIED BY THE OUTLOADING METHODS ON PAGES 4 AND 5 AND ON PAGES 8 AND 9. IF THE CAPACITY OF THE MATERIALS HANDLING EQUIPMENT USED TO LOAD THE CONTAINERS ABOARD THE TRAILER PERMITS, IT IS RECOMMENDED THAT THE CONTAINERS BE UNITIZED PRIOR TO PLACEMENT WITHIN THE TRAILER. **NOTICE:** IN SOME INSTANCES CONTAINERS WILL ALREADY BE UNITIZED WHEN OFFERED FOR LOADING. THESE UNITIZED STACKS SHOULD BE INSPECTED, AND AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED.
- K. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED. **CAUTION:** EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO THE CONTAINERS.
- L. THE "MONITORING" END OF THE CONTAINERS MUST BE POSITIONED WITHIN THE TRAILER AS SHOWN BY THE ARROWS ON THE LOAD VIEWS TO FACILITATE MONITORING DURING TRANSIT.
- M. FOR TRAILERS NOT EQUIPPED WITH REAR CORNER POSTS, THE REAR BLOCKING MUST BE EXTENDED TO CONTACT THE REAR DOORS WHEN THEY ARE CLOSED.
- N. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE.
- 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. 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. 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.
- R. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND 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; FED SPEC MM-L-751.
- NAILS** ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED,  
FED SPEC FF-N-105.  
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- STRAPPING, STEEL** ----- : TYPE I OR IV, CLASS A, B OR C, FED SPEC QQ-S-781.
- ANTI-CHAFING MATERIAL:** NEUTRAL BARRIER MATERIAL, MIL-B-121 (OR EQUAL).



**STACK DETAIL**

**UNITIZING AND HANDLING PROCEDURAL GUIDANCE**

(UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

**1. STACKING CONTAINERS FOR UNITIZING.**

- A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
- B. POSITION THE INSPECTION/MONITORING PORT OF AN UPPER CONTAINER ABOVE THE INSPECTION/MONITORING PORT OF THE NEXT LOWER CONTAINER. SEE GENERAL NOTE "L" ON PAGE 2.
- C. THE CONTAINER SKIDS OF AN UPPER CONTAINER SHOULD BE FULLY SEATED UPON THE STACKING PADS ON THE COVER OF THE NEXT LOWER CONTAINER.

**2. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "J".**

- A. EACH OF THE TWO SETS OF UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE CONTAINERS AS SHOWN. PLACE STRAPPING THROUGH THE RECEPTACLE FOR FORK TINE OF FORKLIFT TRUCK AND OVER THE COVER OF THE NEXT CONTAINER ABOVE, AS NEAR AS POSSIBLE TO THE INSIDE ENDS OF THE CONTAINER SKIDS. PLACE STRAPPING SO THAT IT LAYS FLAT AND STRAIGHT WITH THE CONTOUR OF THE CONTAINERS; I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
- B. PLACE ANTI-CHAFING MATERIAL UNDER THE STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT, AND SECURE TO PREVENT DISLODGE MENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE CONTAINERS OR TO THE STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND THE STRAPPING TO FORM A SELF-HOLDING UNIT.
- C. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS AS SHOWN. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF A STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE CONTAINERS. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO ENSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP END) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

(CONTINUED AT RIGHT)

**3. CONTAINER OR CONTAINER STACK HANDLING.**

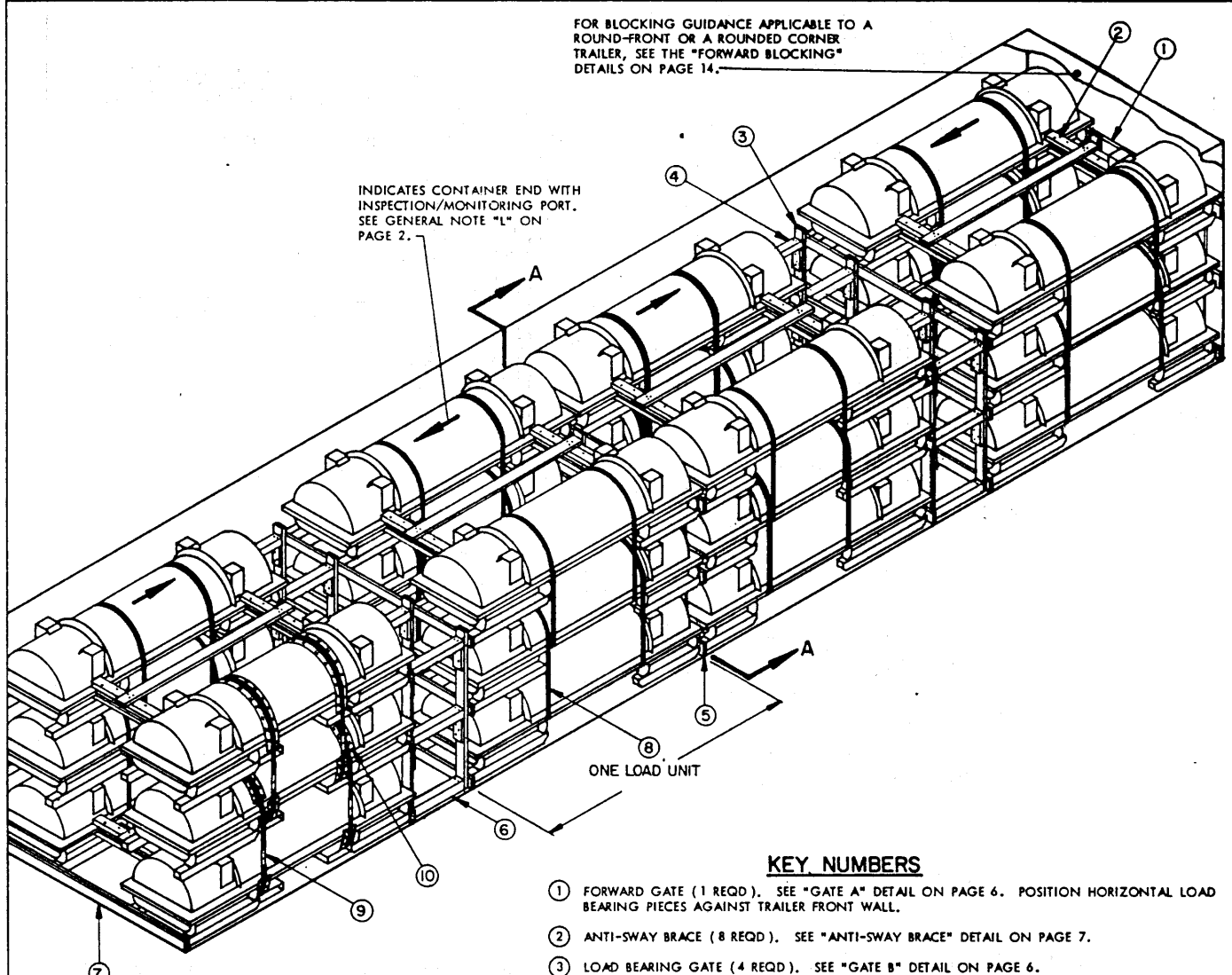
**NOTES:** (1) APPROVED MATERIALS HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE THAN HEREIN.

(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

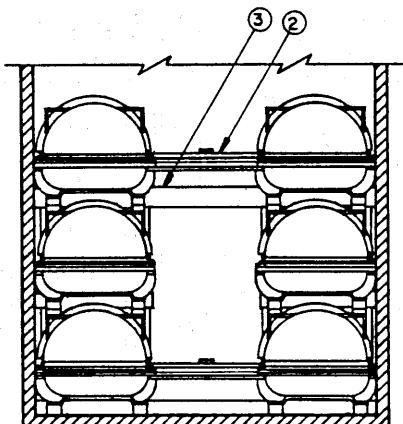
- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CAUTION: THE USUALLY APPLIED END-HANDLING IS NOT PERMITTED; HOWEVER, FORK TINES MAY BE PLACED UNDER THE SKIDS FROM AN END POSITION. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING TRAILER LOADING, A UNITIZED TWO OR THREE-CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK UNDER THE BODY OF AN UPPER CONTAINER.
- C. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS OF THE CONTAINER. HOWEVER, IF A TWO OR THREE-HIGH CONTAINER STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING POINTS ON A CONTAINER. THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CONTAINER.

FOR BLOCKING GUIDANCE APPLICABLE TO A ROUND-FRONT OR A ROUNDED CORNER TRAILER, SEE THE "FORWARD BLOCKING" DETAILS ON PAGE 14.

INDICATES CONTAINER END WITH INSPECTION/MONITORING PORT. SEE GENERAL NOTE "L" ON PAGE 2.



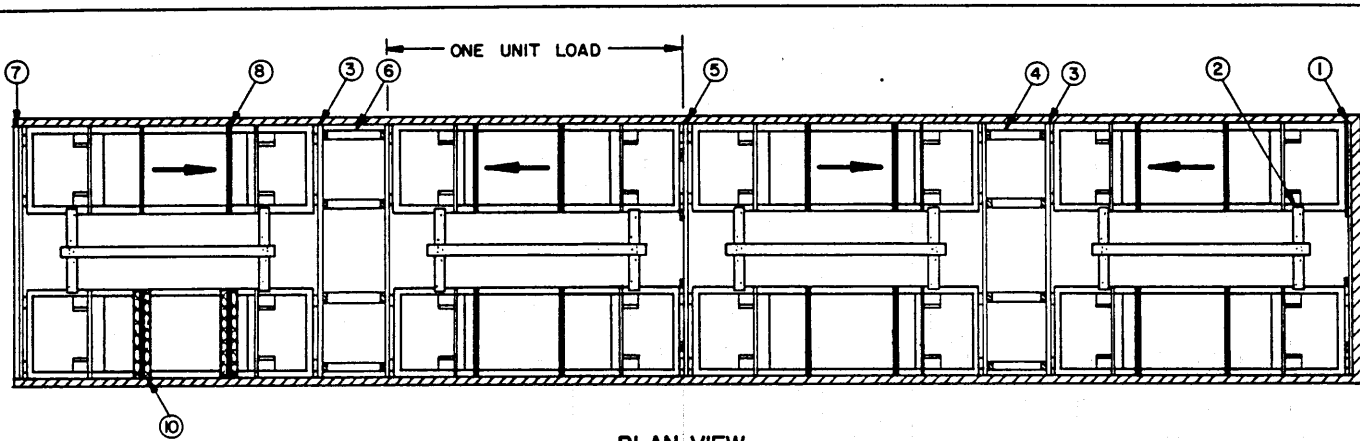
**ISOMETRIC VIEW**



**SECTION A-A**

**KEY NUMBERS**

- ① FORWARD GATE (1 REQD). SEE "GATE A" DETAIL ON PAGE 6. POSITION HORIZONTAL LOAD BEARING PIECES AGAINST TRAILER FRONT WALL.
- ② ANTI-SWAY BRACE (8 REQD). SEE "ANTI-SWAY BRACE" DETAIL ON PAGE 7.
- ③ LOAD BEARING GATE (4 REQD). SEE "GATE B" DETAIL ON PAGE 6.
- ④ STRUT, 4" X 4" X 18" (12 REQD). TOENAIL TO VERTICAL PIECES OF LOAD BEARING GATE W/2-16d NAILS AT EACH END.
- ⑤ SEPARATOR GATE (1 REQD). SEE "GATE A" DETAIL ON PAGE 6.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (MIN 18") (12 REQD). TOENAIL TO VERTICAL PIECES OF LOAD BEARING GATE W/2-16d NAILS AT EACH END.
- ⑦ SOLID FILL, 4" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THICKNESS REQUIRED TO CONTACT THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. LAMINATE W/1-10d NAIL EVERY 12". IF THE TRAILER IS EQUIPPED WITH CORNER POSTS AT THE REAR, THE SOLID FILL MATERIAL WILL HAVE TO BE CUT TO FIT BETWEEN REAR CORNER POSTS. SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑧ UNITIZING STRAP, 1-1/4" X .035" X 16'-0" STEEL STRAPPING (32 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND GENERAL NOTES "J" AND "K" ON PAGE 2.
- ⑨ SEAL FOR 1-1/4" STRAPPING (64 REQD, 2 PER STRAP).
- ⑩ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STEEL STRAPPING AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.



**PLAN VIEW**

**SPECIAL NOTES:**

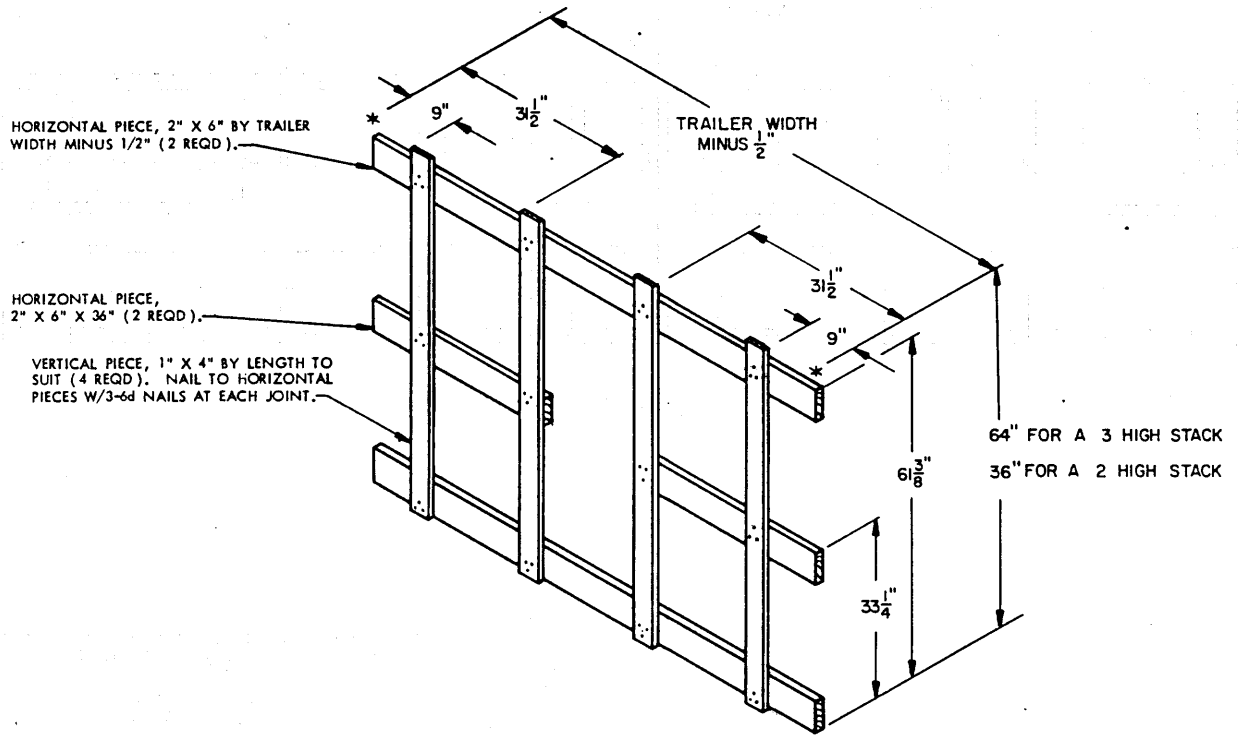
1. A 24-UNIT LOAD IS SHOWN IN A SQUARE-FRONT TRAILER WHICH IS 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION). NOTE: THE LENGTH OF THE TRAILER FROM THE INSIDE OF THE FRONT WALL OF A SQUARE-FRONT TRAILER TO THE INNER SURFACE OF THE REAR DOORS WHEN THEY ARE CLOSED MUST BE AT LEAST 38'-6" FOR THE SHIPMENT OF THE DEPICTED 24-UNIT LOAD. A TRAILER WITH ROUNDED CORNERS AT THE FORWARD END MAY BE USED IF THE ROUNDED CORNERS HAVE A RADIUS OF FIVE-INCHES (5") OR LESS AND THE INSIDE LADING LENGTH FROM THE FORWARD BLOCKING TO THE INNER SURFACE OF THE REAR DOORS WHEN THEY ARE CLOSED MEASURES AT LEAST 38'-6".
2. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS TO BE SHIPPED BY OMITTING A COMPLETE LAYER OR AN ENTIRE LOAD UNIT. AN 18-UNIT LOAD SHIPMENT WILL REQUIRE A TRAILER THAT IS AT LEAST 28'-6" LONG. FOR THE BLOCKING OF A LOAD IN A LONGER TRAILER, LENGTHEN THE STRUTS, PIECE MARKED (4), IN THE LOAD VIEWS ON PAGES 4 AND 5, AND INSTALL STRUT BRACING IF NECESSARY. REFER TO THE "STRUT BRACING" DETAIL ON PAGE 9, IF THE STRUTS ARE 7'-0" OR GREATER IN LENGTH.
3. IF IT IS NECESSARY FOR A LOAD UNIT TO CONTAIN ONE LESS CONTAINER THAN SHOWN TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, A "FILLER ASSEMBLY" MUST BE SUBSTITUTED IN PLACE OF EACH OMITTED CONTAINER. SEE THE "FILLER ASSEMBLY" AND "APPLICATION OF FILLER ASSEMBLY" DETAILS ON PAGE 16.
4. IF ONE OR TWO CONTAINERS ARE OMITTED FROM A SIX-CONTAINER LOAD UNIT, THE ANTI-SWAY BRACE ASSEMBLY, PIECE MARKED (2), MUST BE INSTALLED BETWEEN THE LATERALLY ADJACENT CONTAINERS IN THE SECOND LAYER.

**BILL OF MATERIAL**

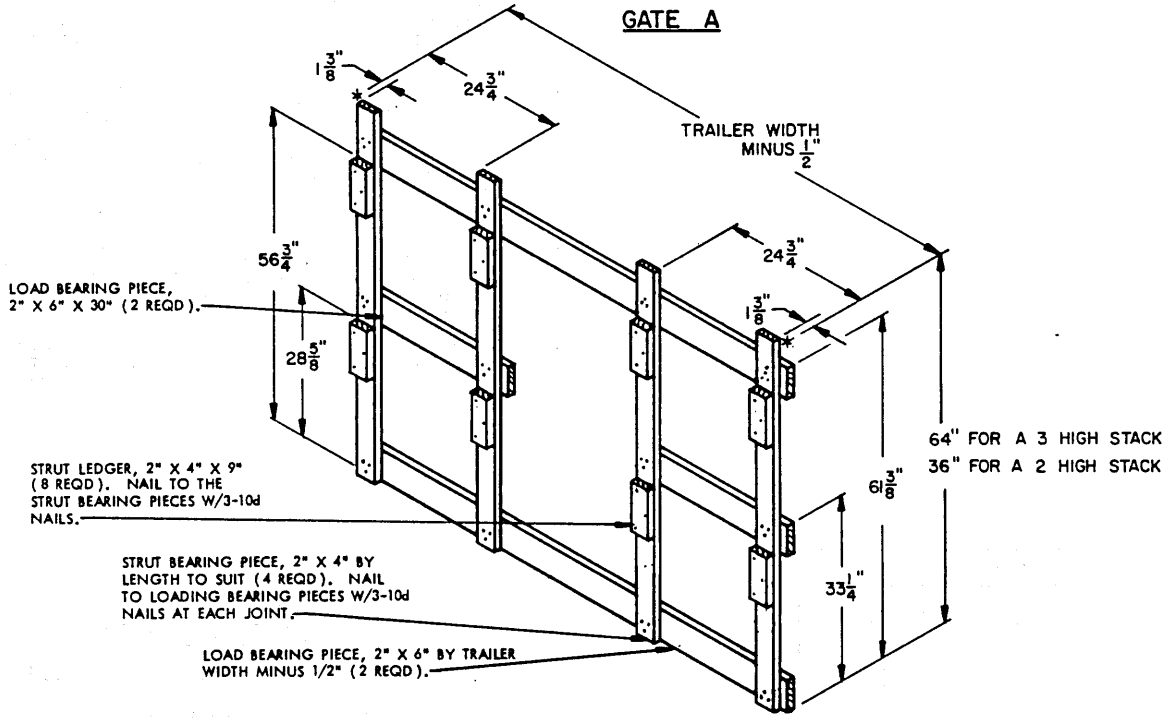
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	131	44
2" X 4"	243	162
2" X 6"	122	122
4" X 4"	40	54
NAILS	NO. REQD	POUNDS
6d (2")	200	1-1/4
10d (3")	408	6-1/4
16d (3-1/2")	96	2-1/4
STEEL STRAPPING, 1-1/4" X .035"	512' REQD	73 LBS
SEALS FOR 1-1/4" STRAPPING	64 REQD	3 LBS
ANTI-CHAFING MATERIAL	AS REQD	NIL

**LOAD AS SHOWN**

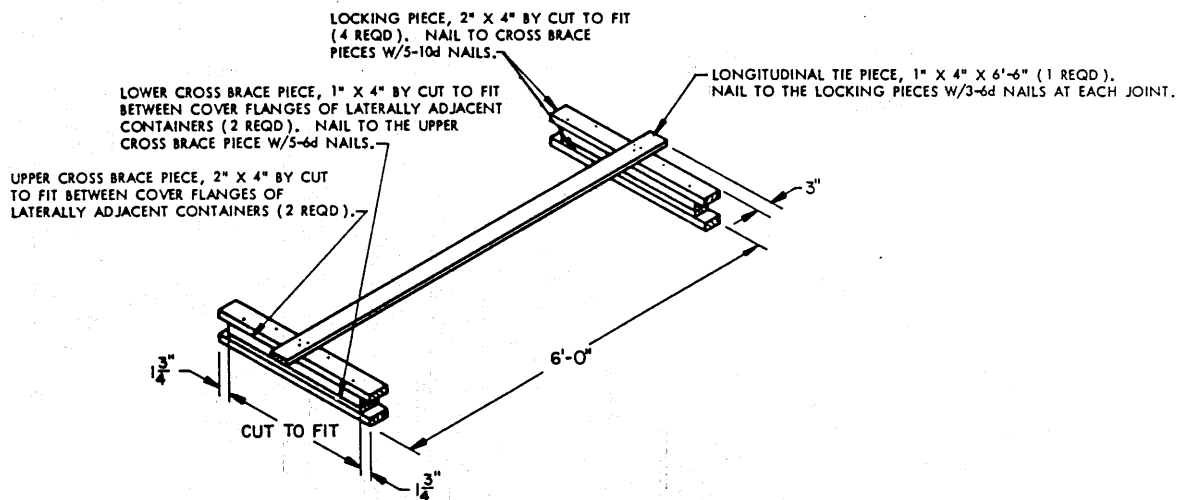
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER (W/CBU ITEM)	24	28,272 LBS
DUNNAGE		1,041 LBS
<b>TOTAL WEIGHT</b>		<b>29,313 LBS</b>



**GATE A**

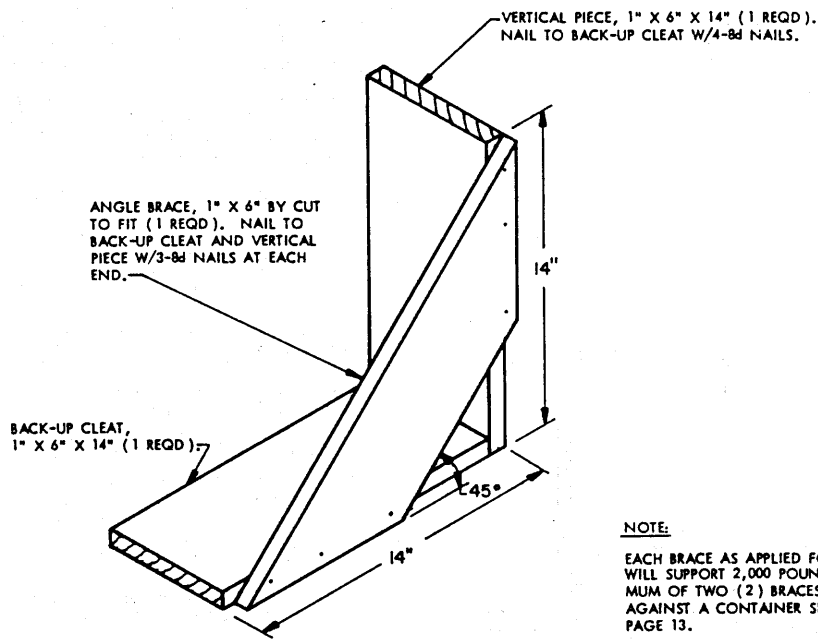


**GATE B**



**ANTI-SWAY BRACE**

ONE OF THE TWO LOCKING PIECES ON EACH END ASSEMBLY MUST BE APPLIED AFTER THE CROSS BRACES AND THE OTHER LOCKING PIECE HAVE BEEN ASSEMBLED AND POSITIONED BETWEEN THE CONTAINERS. THE LONGITUDINAL TIE PIECE WILL BE APPLIED AFTER THE END ASSEMBLIES HAVE BEEN INSTALLED.



**LTL BRACE**

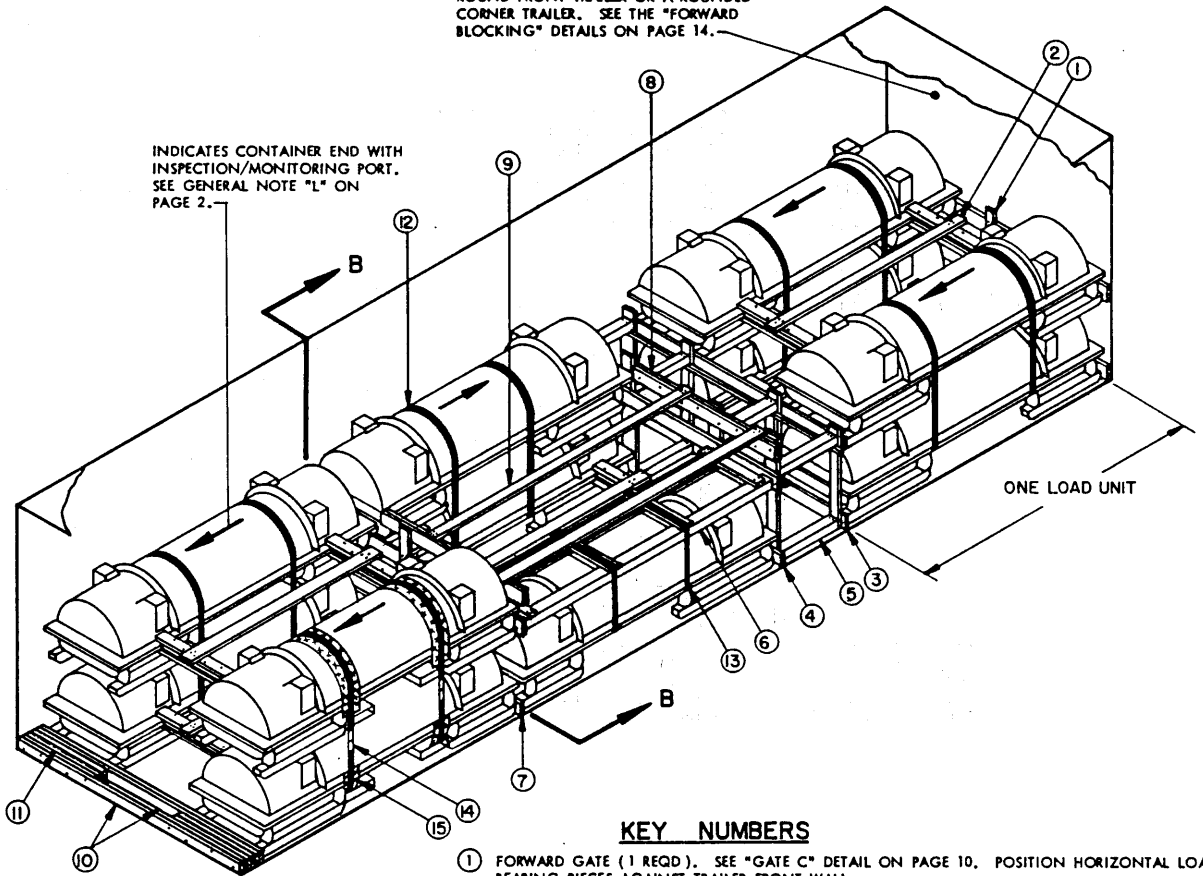
SEE "NOTE" AT RIGHT.

**NOTE:**

EACH BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 2,000 POUNDS. ALSO, A MINIMUM OF TWO (2) BRACES MUST BE USED AGAINST A CONTAINER SIDE, AS SHOWN ON PAGE 13.

FOR BLOCKING GUIDANCE APPLICABLE TO A ROUND-FRONT TRAILER OR A ROUNDED CORNER TRAILER. SEE THE "FORWARD BLOCKING" DETAILS ON PAGE 14.

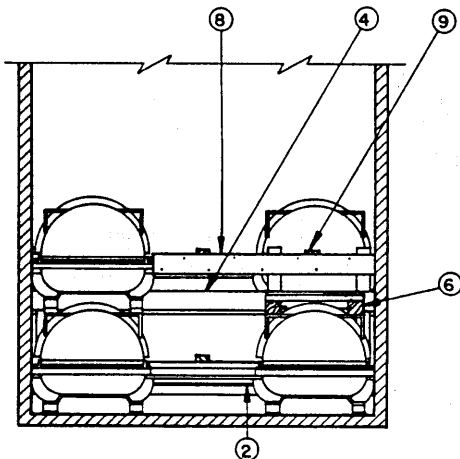
INDICATES CONTAINER END WITH INSPECTION/MONITORING PORT. SEE GENERAL NOTE "L" ON PAGE 2.



ISOMETRIC VIEW

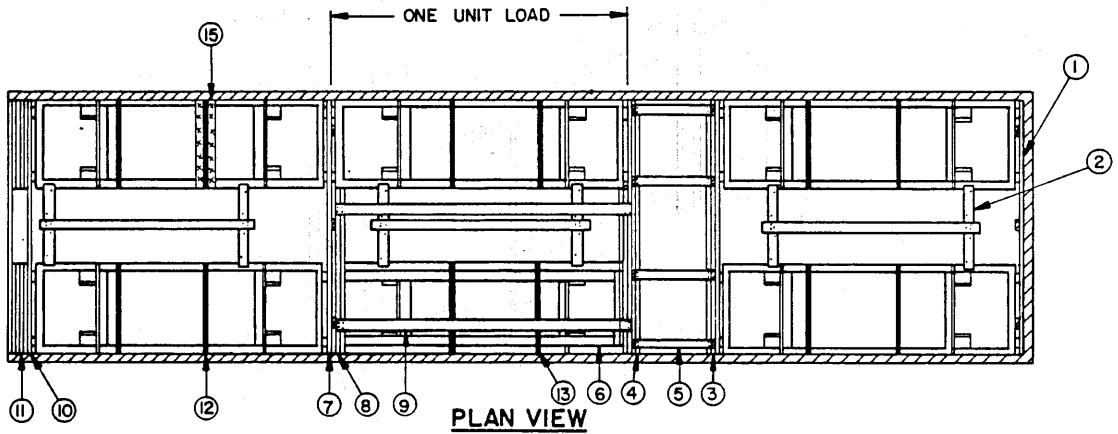
**KEY NUMBERS**

- ① FORWARD GATE (1 REQD). SEE "GATE C" DETAIL ON PAGE 10. POSITION HORIZONTAL LOAD BEARING PIECES AGAINST TRAILER FRONT WALL.
- ② ANTI-SWAY BRACE (5 REQD). SEE "ANTI-SWAY BRACE" DETAIL ON PAGE 7. INSTALL BETWEEN ALL LATERALLY ADJACENT CONTAINERS IN THE FIRST LAYER AND BETWEEN THE LATERALLY ADJACENT CONTAINERS IN THE SECOND LAYER OF THE FORWARD AND REAR LOAD UNITS.
- ③ LOAD BEARING GATE (1 REQD). SEE "GATE D" DETAIL ON PAGE 10.
- ④ LOAD BEARING GATE (1 REQD). SEE "GATE E" DETAIL ON PAGE 11. NAIL THE VERTICAL PIECES OF LOAD BEARING GATE TO "SIDE BLOCKING, PIECE MARKED ⑧, W/3-10d NAILS AT EACH JOINT. SEE THE "GATE E" DETAIL ON PAGE 11 FOR THE LOCATION DIMENSION.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 20") (8 REQD). TOENAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑥ FILLER ASSEMBLY (1 REQD). SEE "FILLER ASSEMBLY" AND "APPLICATION OF FILLER ASSEMBLY" DETAIL ON PAGE 16.
- ⑦ SEPARATOR GATE (1 REQD). SEE "GATE F" DETAIL ON PAGE 11. NOTE: THE GATE MUST BE INSTALLED SO THAT THE VERTICAL 1" X 4" PIECES ARE ON THE SIDE OF THE GATE THAT FACES THE "FILLER ASSEMBLY". NAIL THE VERTICAL PIECES OF "SEPARATOR GATE" TO "SIDE BLOCKING, PIECE MARKED ⑧, W/4-6d NAILS AT EACH JOINT. SEE THE "GATE F" DETAIL ON PAGE 11 FOR THE LOCATION DIMENSION.
- ⑧ SIDE BLOCKING, 2" X 4" BY CUT TO FIT BETWEEN CONTAINER COVER FLANGE AND THE TRAILER SIDE WALL (DOUBLED) (2 REQD). LAMINATE W/8-10d NAILS. SEE KEY NUMBERS ④ AND ⑦ FOR LOCATIONS AND NAILING REQUIREMENTS.
- ⑨ TIE PIECE, 1" X 4" X 8"-10" (2 REQD). NAIL TO "SIDE BLOCKING", PIECE MARKED ⑧, W/4-10d NAILS AT EACH END.
- ⑩ HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD). NAIL REAR HEADER TO "SOLID FILL", PIECE MARKED ⑪ W/4-10d NAILS AT EACH JOINT.
- ⑪ SOLID FILL, 4" WIDE MATERIAL X 30" LONG BY REQUIRED THICKNESS TO FILL VOID BETWEEN HEADERS, PIECE MARKED ⑩. REQUIRED AT TWO (2) LOCATIONS. NAIL TO HEADER AND/OR SELF W/4-10d NAILS AT EACH LOCATION.
- ⑫ UNITIZING STRAP, 1-1/4" X .035" X 15'-0" STEEL STRAPPING (10 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3, AND GENERAL NOTES "J" AND "K" ON PAGE 2.
- ⑬ UNITIZING STRAP, 1-1/4" X .035" X 12'-0" STEEL STRAPPING (2 REQD). SEE "APPLICATION OF FILLER ASSEMBLY" DETAIL ON PAGE 16.
- ⑭ SEAL FOR 1-1/4" STRAPPING (24 REQD, 2 PER STRAP JOINT). DOUBLE CRIMP EACH SEAL.
- ⑮ ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STEEL STRAPPING, PIECES MARKED ⑫ AND ⑬, AT ALL POINTS OF CONTAINER/STRAPPING CONTACT.



SECTION B-B





**PLAN VIEW**

**SPECIAL NOTES:**

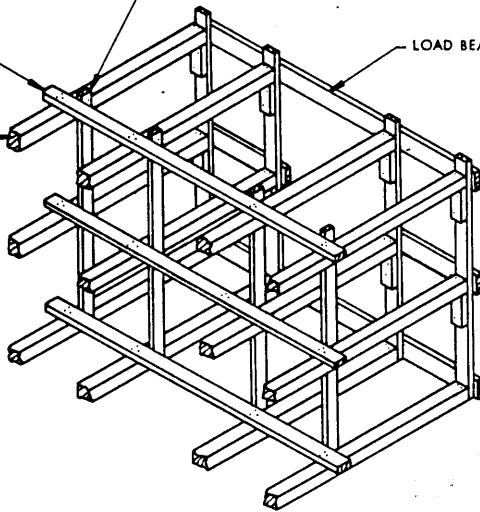
1. THESE LTL OUTLOADING PROCEDURES DEPICT THE USE OF THE TYPICAL INSTALLATION OF A FILLER ASSEMBLY WITHIN A TWO LAYER LOAD. TWELVE CONTAINERS MAY BE SHIPPED IN ACCORDANCE WITH THE SPECIFIED PROCEDURES BY LOADING ANOTHER CONTAINER IN PLACE OF THE DEPICTED "FILLER ASSEMBLY".
2. THE TYPICAL 11-UNIT LOAD IS SHOWN IN A 30'-0" LONG TRAILER. A 29'-0" TRAILER IS THE SHORTEST TRAILER WHICH MAY BE USED TO SHIP THE DEPICTED LOAD. IF THE TRAILER BEING USED IS 34'-0" OR LONGER, STRUT BRACING AS SHOWN IN THE DETAIL BELOW MUST BE USED.

HORIZONTAL STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (1 REQD FOR EACH LAYER OF STRUTS). NAIL TO STRUTS W/3-10d NAILS AT EACH JOINT.

VERTICAL STRUT BRACING, 2" X 4" BY CUT TO FIT (4 REQD). NAIL TO STRUTS W/3-10d NAILS AT EACH JOINT.

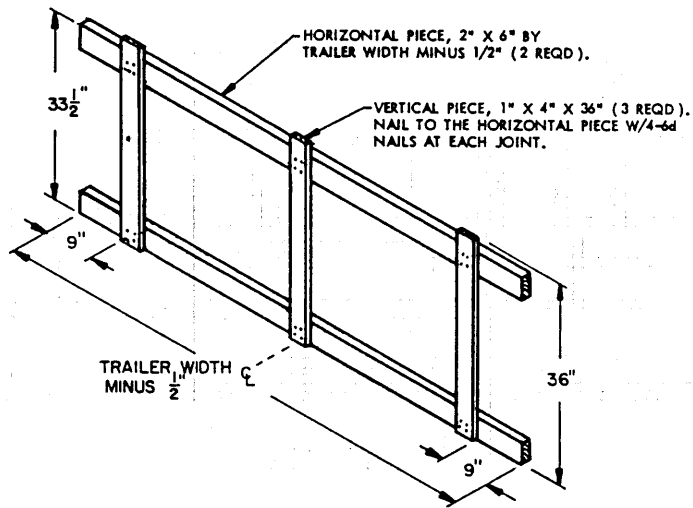
LOAD BEARING GATE.

STRUTS.

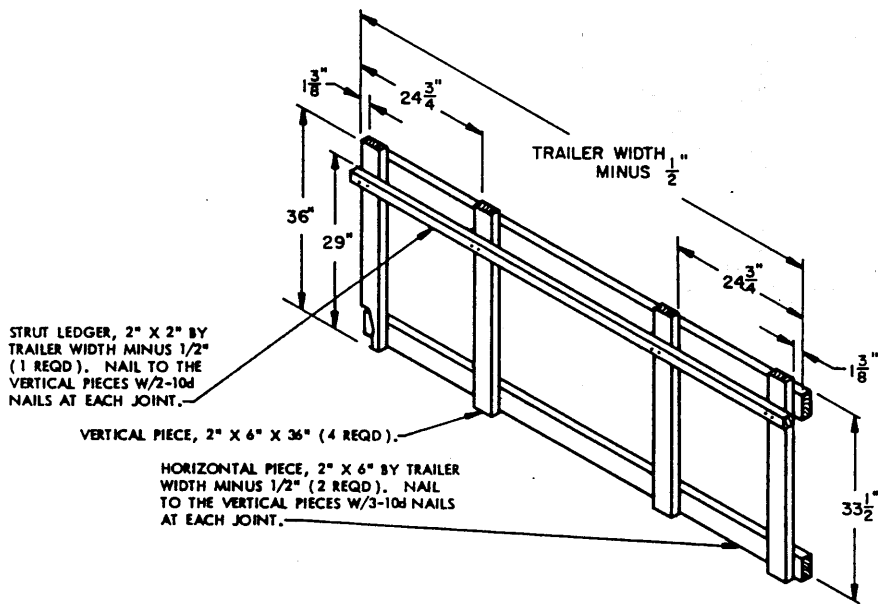


**STRUT BRACING**

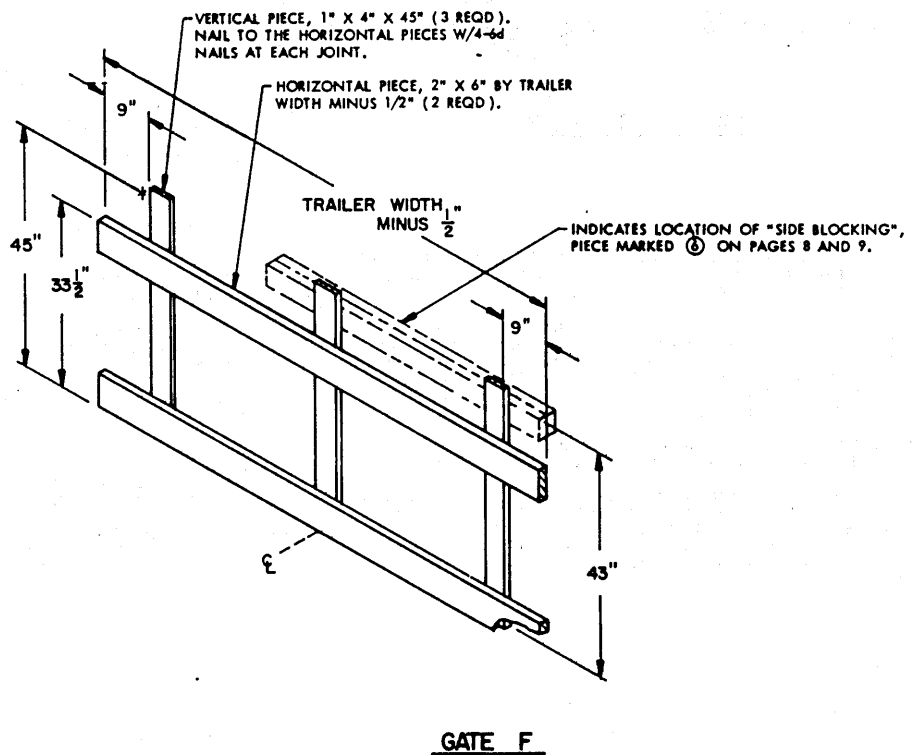
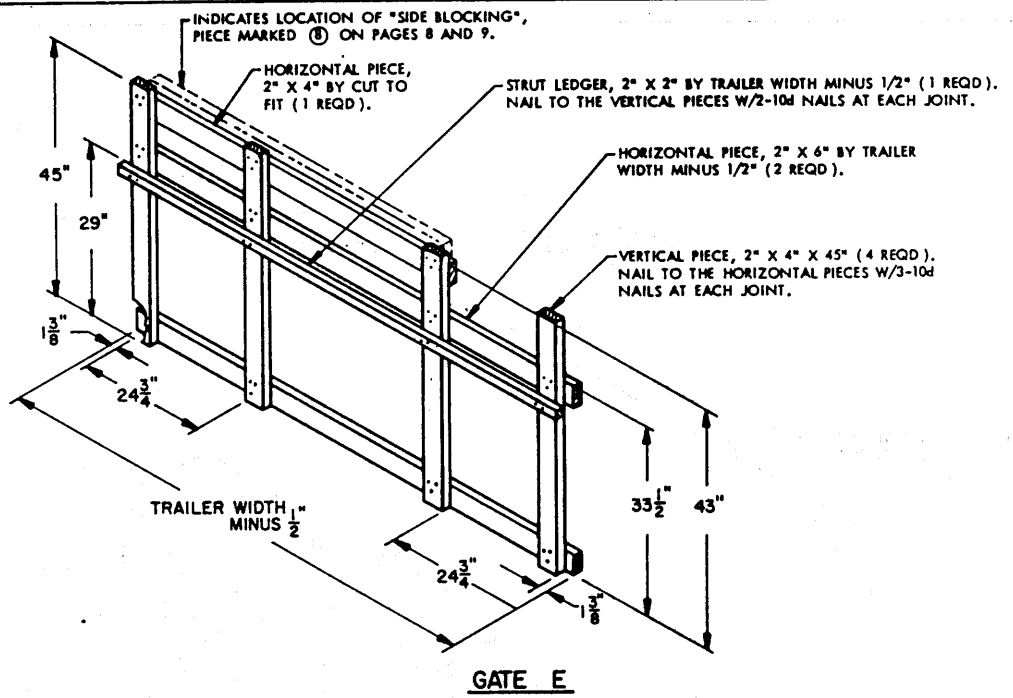
STRUT BRACING AS SHOWN IS REQUIRED IF THE 4" X 4" STRUTS ARE 7'-0" OR GREATER IN LENGTH. INSTALL ONE (1) SET FOR EVERY 7'-0" OF STRUT LENGTH.



**GATE C**



**GATE D**

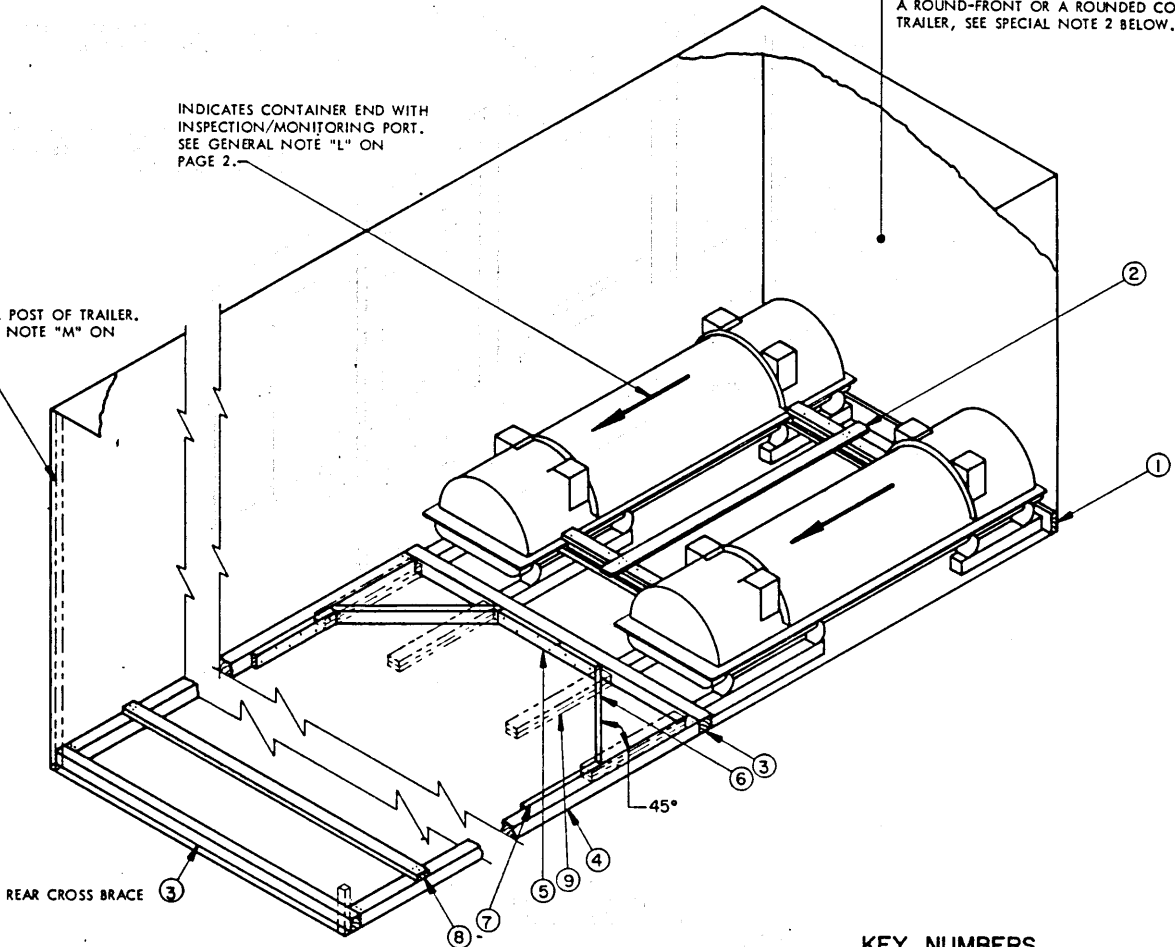


DETAILS

FOR BLOCKING GUIDANCE APPLICABLE TO A ROUND-FRONT OR A ROUNDED CORNER TRAILER, SEE SPECIAL NOTE 2 BELOW.

INDICATES CONTAINER END WITH INSPECTION/MONITORING PORT. SEE GENERAL NOTE "L" ON PAGE 2.

REAR CORNER POST OF TRAILER. SEE GENERAL NOTE "M" ON PAGE 2.



**ISOMETRIC VIEW**

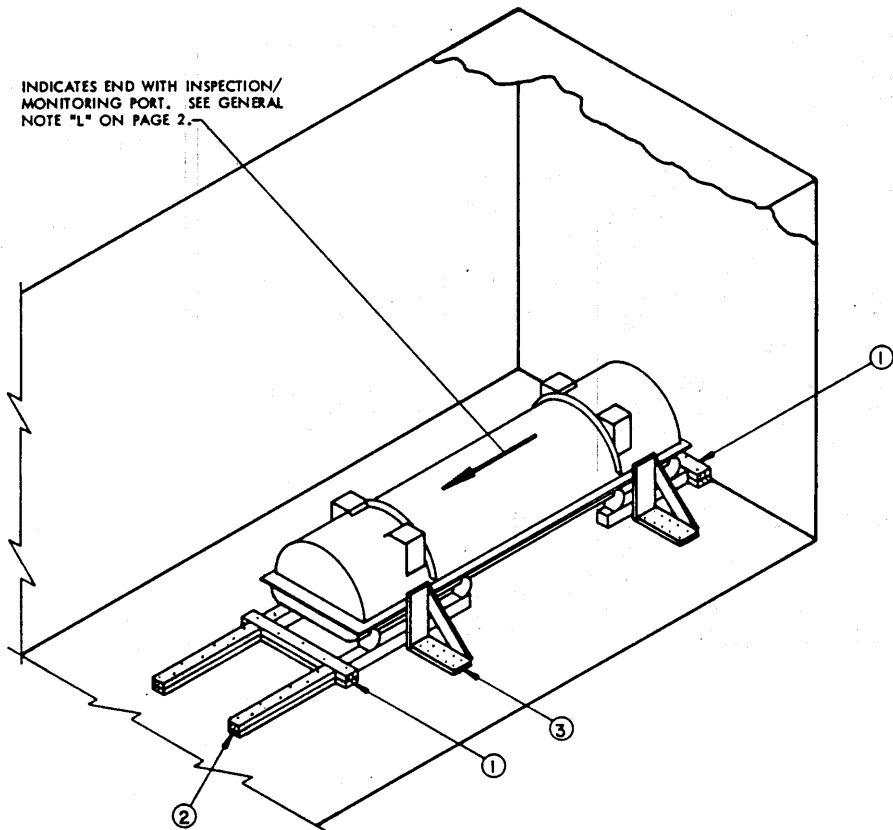
**KEY NUMBERS**

- ① FORWARD HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (1 REQD). SEE SPECIAL NOTE 2 AT LEFT.
- ② ANTI-SWAY BRACE (1 REQD). SEE "ANTI-SWAY BRACE" DETAIL ON PAGE 7.
- ③ HEADER/REAR CROSS BRACE, 4" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD).
- ④ SIDE STRUT, 4" X 4" BY CUT TO FIT (2 REQD). TOENAIL TO THE PIECES MARKED ③ W/2-16d NAILS AT EACH END.
- ⑤ SPACER CLEAT, 2" X 4" X 32" (1 REQD). NAIL TO THE FORWARD PIECE MARKED ③ W/7-12d NAILS.
- ⑥ DIAGONAL BRACE, 2" X 4" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND TOENAIL TO THE PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑦ SIDE CLEAT, 2" X 4" X 24" (2 REQD). NAIL TO PIECE MARKED ④ W/6-12d NAILS.
- ⑧ STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (MINIMUM OF 1 REQD). INSTALL ONE (1) NEAR THE REAR END OF THE SIDE STRUTS MARKED ④ AS SHOWN. ONE (1) ADDITIONAL PIECE IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE SIDE STRUTS MARKED ④ W/3-12d NAILS AT EACH END.
- ⑨ BACK-UP CLEAT, 2" X 4" X 30" (DOUBLED) (4 REQD). ALIGN WITH A CONTAINER SKID AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 4 TO THE LEFT AND GENERAL NOTE "P" ON PAGE 2.

**SPECIAL NOTES**

- 1. THESE LTL OUTLOADING PROCEDURES DEPICT A "K-BRACE" TYPE OF BLOCKING AND A "NAILED-TO-FLOOR" TYPE OF BLOCKING IN A 7'-6" WIDE TRAILER. WIDER OR NARROWER TRAILERS CAN ALSO BE USED.
- 2. IF THE TRAILER TO BE LOADED HAS ROUNDED CORNERS AT THE FORWARD END, SEE THE "FORWARD-BLOCKING METHOD A" DETAIL ON PAGE 14, WHICH MAY BE USED. AS AN ALTERNATIVE METHOD, OR FOR USE IN A ROUND-FRONT TRAILER, THE HEADER AND BACK-UP CLEATS, PIECES MARKED ③ AND ⑨, MAY ALSO BE INSTALLED AT THE FORWARD END OF THE LADING, PROVIDING THE TRAILER HAS A NAILABLE FLOOR.
- 3. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ③ THROUGH ⑧, IS ADEQUATE FOR RETAINING A MAXIMUM SIZE LTL LOAD OF 24,000 POUNDS.
- 4. PIECES MARKED ⑨ ARE FOR USE IN A TRAILER WHICH HAS A NAILABLE FLOOR AND MAY BE USED IN LIEU OF THE REAR CROSS BRACE MARKED ③ AND THE PIECES MARKED ④ THROUGH ⑧ WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS. FOUR (4) BACK-UP CLEATS, SHOWN AS PIECES MARKED ⑨, ARE ADEQUATE FOR RETAINING A MAXIMUM SIZE LTL LOAD OF 20,000 POUNDS.

INDICATES END WITH INSPECTION/  
MONITORING PORT. SEE GENERAL  
NOTE "L" ON PAGE 2.



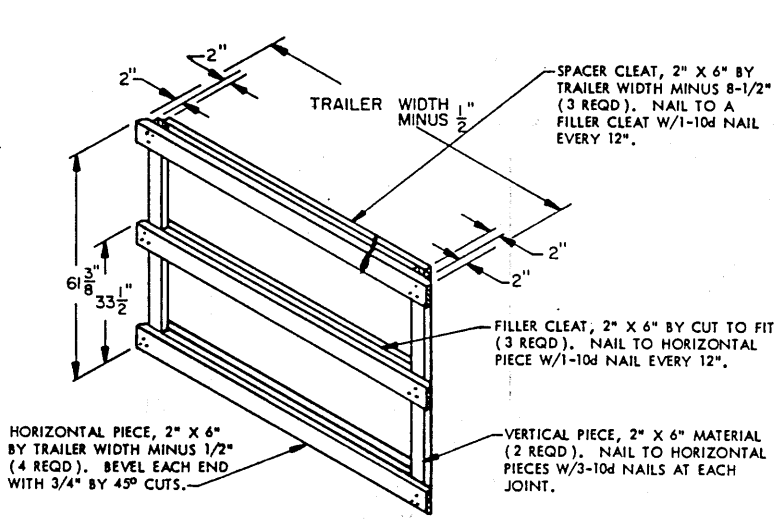
### ISOMETRIC VIEW

### KEY NUMBERS

- ① HEADER, 2" X 4" X 32" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ② BACK-UP CLEAT, 2" X 4" X 30" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ LTL BRACE (4 REQD). SEE DETAIL ON PAGE 7. POSITION AS SHOWN AND NAIL TO THE TRAILER FLOOR W/10-6d NAILS. SEE SPECIAL NOTE 1 BELOW.

### SPECIAL NOTES:

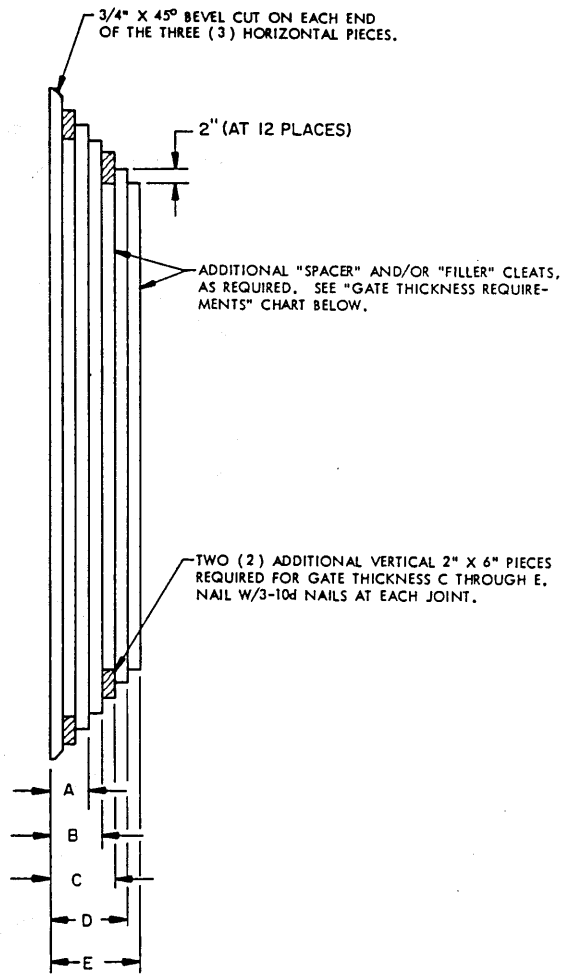
1. IF DESIRED, THE LADING ITEM MAY BE LOADED AGAINST ONE OF THE SIDE WALLS OF THE TRAILER AND THUS ELIMINATE THE NEED FOR TWO (2) OF THE SPECIFIED LTL BRACES MARKED AS PIECE ③.
2. TWO (2) BACK-UP CLEATS, SHOWN AS PIECE MARKED ②, IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 10,000 POUNDS. TWO (2) PIECES MARKED ② MAY ALSO BE USED AT THE FORWARD END OF THE LADING IF DESIRED.



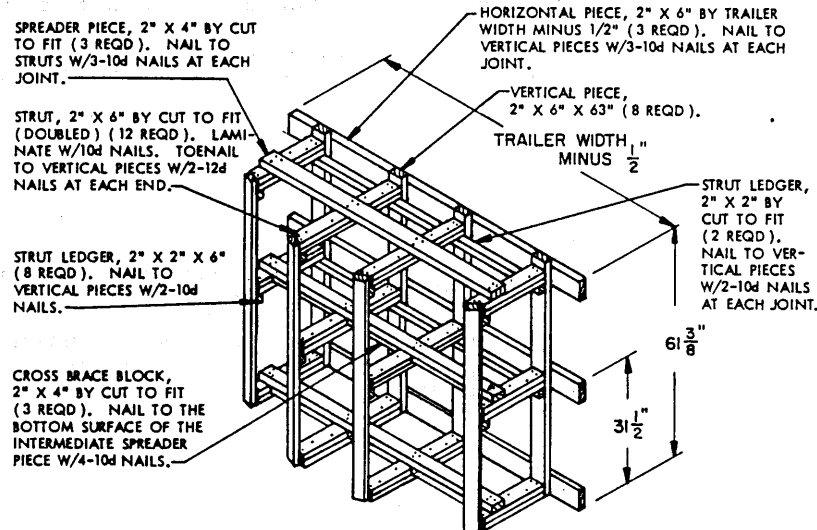
HORIZONTAL PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (4 REQD). BEVEL EACH END WITH 3/4" BY 45° CUTS.

**FORWARD BLOCKING-METHOD A**

THIS "FORWARD BLOCKING" ASSEMBLY AS SHOWN IS DESIGNED FOR USE AT THE FORWARD END OF A THREE (3) CONTAINER HIGH LOAD WHICH IS TO BE SHIPPED IN A TRAILER HAVING ROUNDED CORNERS OF A RADIUS OF 5" OR LESS. ADJUST HEIGHT OF ASSEMBLY TO 33-1/2" FOR A TWO (2) CONTAINER HIGH LOAD. ADDITIONAL LAMINATIONS MUST BE ADDED TO THE BACK SIDE OF THE SPACER CLEATS TO COMPENSATE FOR LARGER SIZE CORNERS. SEE "GATE THICKNESS REQUIREMENTS" CHART AND "PLAN VIEW" TO THE RIGHT.



**PLAN VIEW**

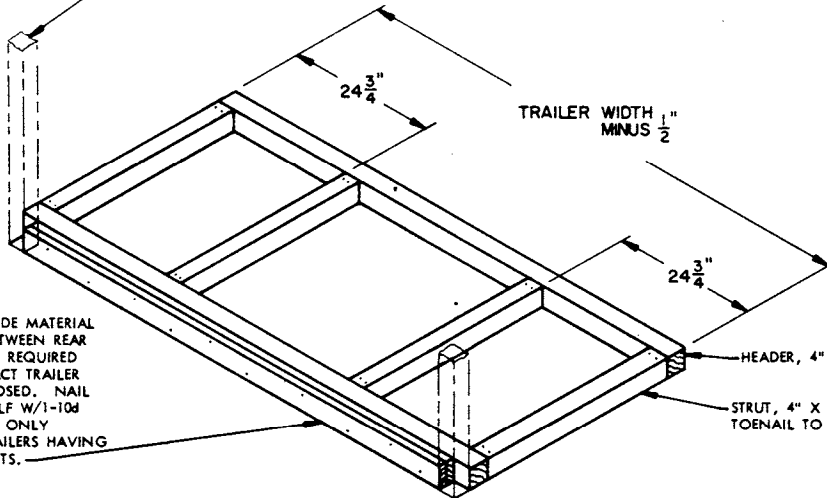


**FORWARD BLOCKING-METHOD B**

THIS "FORWARD BLOCKING" ASSEMBLY AS SHOWN IS DESIGNED FOR USE AT THE FORWARD END OF A THREE (3) CONTAINER HIGH LOAD WHICH IS TO BE SHIPPED IN A TRAILER HAVING A ROUND-FRONT OR HAVING ROUNDED CORNERS OF A RADIUS GREATER THAN 12". ADJUST HEIGHT OF ASSEMBLY TO 31-1/2" FOR A TWO (2) CONTAINER HIGH LOAD.

GATE THICKNESS REQUIREMENTS	
LAMINATIONS	CORNER RADIUS (INSIDE)
A	UP THRU 5"
B	5" THRU 7"
C	7" THRU 8"
D	8" THRU 10"
E	10" THRU 12"
FOR OVER 12" USE METHOD B PROCEDURES SHOWN BELOW.	

INDICATES REAR CORNER POST OF TRAILER. SEE GENERAL NOTE "M" ON PAGE 2. →



SOLID FILL, 4" WIDE MATERIAL BY CUT TO FIT BETWEEN REAR CORNER POSTS BY REQUIRED WIDTH TO CONTACT TRAILER DOORS WHEN CLOSED. NAIL TO HEADER OR SELF W/1-10d NAIL EVERY 12". ONLY REQUIRED FOR TRAILERS HAVING REAR CORNER POSTS.

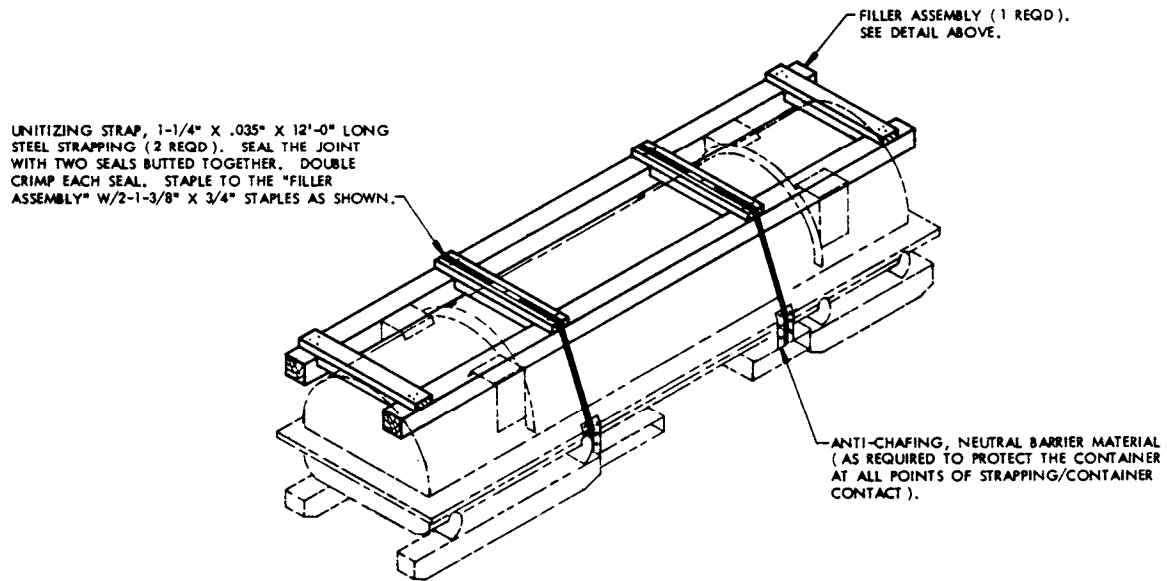
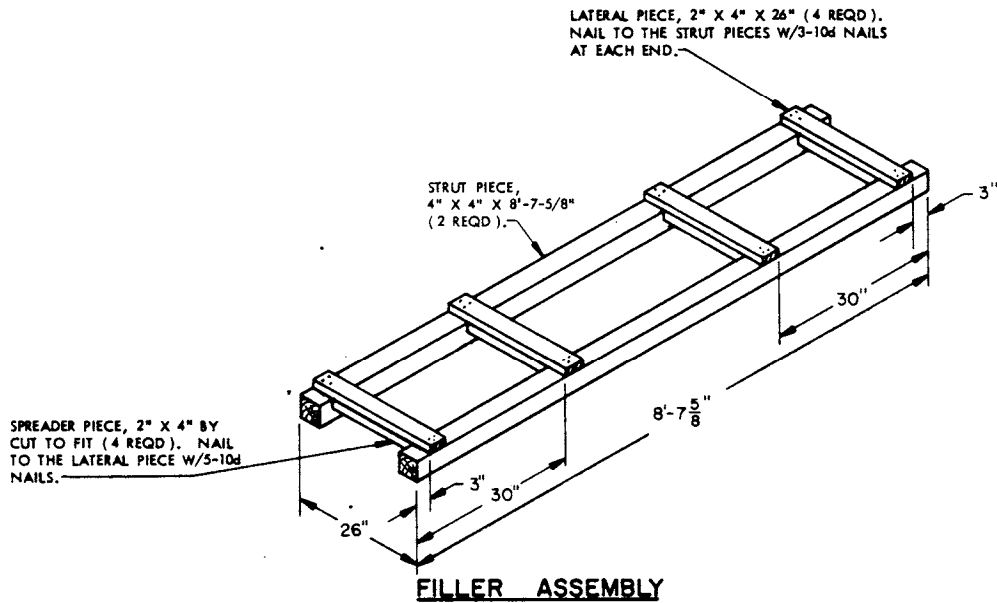
TRAILER WIDTH, "  
MINUS 1/2

HEADER, 4" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD).

STRUT, 4" X 4" BY CUT TO FIT (9' MIN) (4 REQD).  
TOENAIL TO HEADERS W/2-16d NAILS AT EACH END.

### ALTERNATIVE REAR BLOCKING ASSEMBLY

THIS "REAR BLOCKING" ASSEMBLY IS DESIGNED FOR USE AT THE REAR END OF A LOAD WHEN THE DISTANCE BETWEEN THE REAR OF THE LOAD AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED MEASURES 12" OR MORE. IF THE DISTANCE AT THE REAR OF THE LOAD MEASURES 60" OR MORE, A "K-BRACE" TYPE OF BLOCKING, AS DEPICTED ON PAGE 12, MAY BE USED IN LIEU OF THE BLOCKING SHOWN ABOVE.



**APPLICATION OF FILLER ASSEMBLY**