LOADING AND BRACING (TL & LTL) IN VAN TRAILERS ⬢ OF CBU ITEMS PACKED IN CNU-92/E SHIPPING AND STORAGE CONTAINERS

INDEX

⬢ CAUTION: THE OUTLOADING PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS, NOT TRAILER-ON-FLATCAR MOVEMENTS.

U.S. ARMY MATERIEL COMMAND DRAWING

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DO NOT SCALE

PROJECT SP 44-66

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 CBU ITEMS PACKAGED IN THE CNU-92/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-92/E CONTAINER WITH CONTENTS.

C. FOR DETAILS OF THE CONTAINER, SEE PAGE 3.
CONTAINER DIMENSIONS - - - 95-1/8" LONG X 23-1/8" WIDE X 24-15/16" HIGH
GROSS WEIGHT - - - - - - - - 1,150 POUNDS (APPROX)
TARE WEIGHT - - - - - - - - 341 POUNDS (APPROX)

D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, WOOD AND METAL, OR METAL FLOORS. REGARDLESS OF THE DIMENSIONS OF THE VAN TRAILERS SHOWN, 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 SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.

E. SELECTION OF A VEHICLE TO BE USED TO TRANSPORT THE DESIGNATED ITEM MUST COMPLY WITH AR 55-355, CHAPTER 29, FOR EXPLOSIVES AND OTHER DANGEROUS ARTICLES, IN FULL.

F. THE GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY. THE TOTAL WEIGHT OF THE LADING, OF THE DUNNAGE, OF THE TRACTOR, AND OF THE 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.

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 40,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS UP TO 43,000 POUNDS, 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 CNU-92/E CONTAINERS, 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 ON PAGE 4, AND POSITION THE CONTAINERS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.

L. 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 17 FOR GUIDANCE.

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 AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

(CONTINUED AT RIGHT)

(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 THE PIECE ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

O. 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.

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

Q. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CNU-92/E CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY THAN THE ITEMS SPECIFIED IN THE DRAWING TITLE, OR WHEN THEY ARE EMPTY.

R. 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 25.4 MM AND ONE POUND EQUALS 0.454 KG.

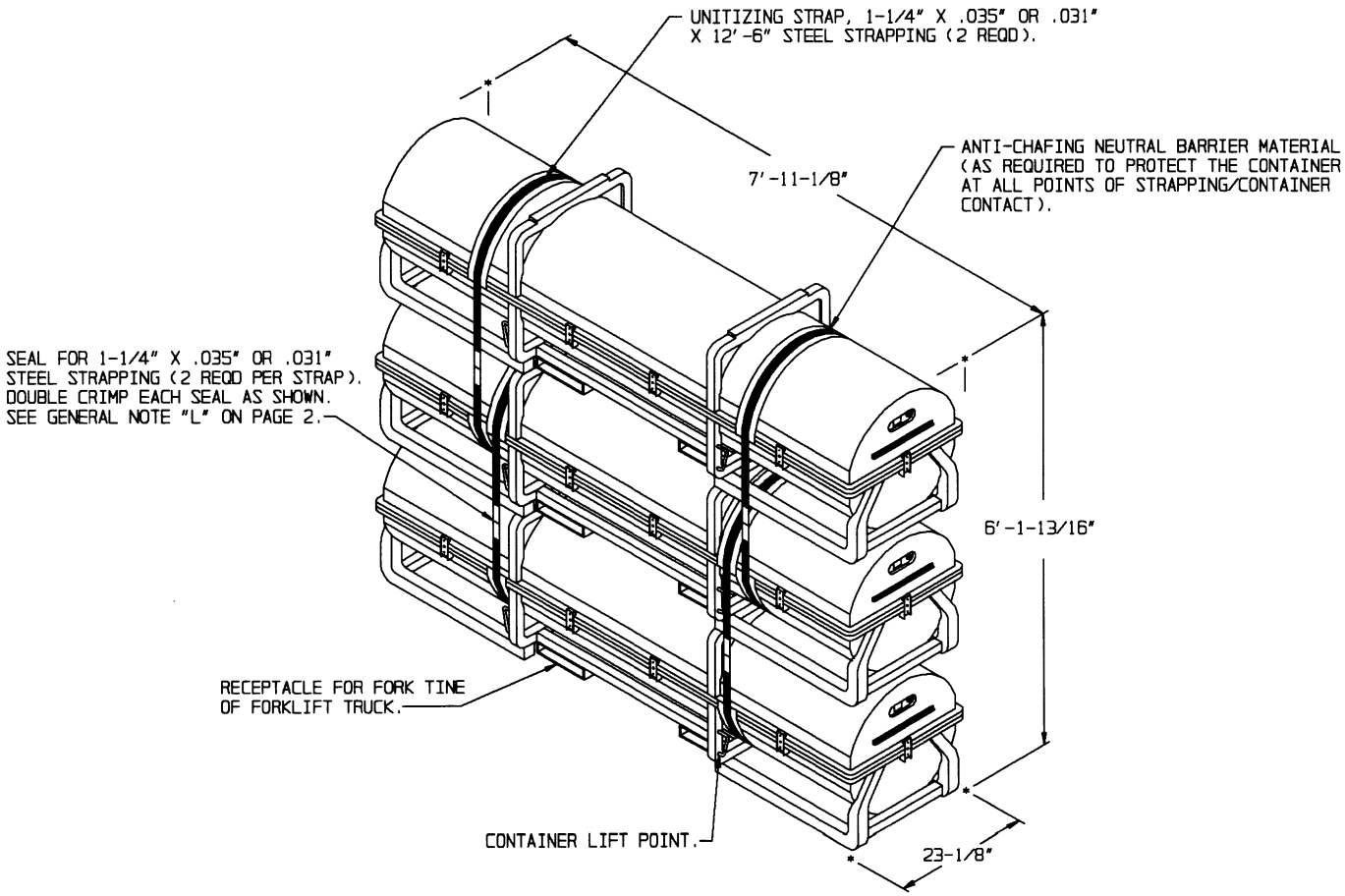
REVISIONS

REVISION NUMBER 1, DATED MAY 1996, CONSISTS OF:

1. UPDATING GENERAL NOTES, DRAWING FORMAT, AND MATERIAL SPECIFICATIONS TO CURRENT STANDARDS.
2. ADDING PROCEDURE FOR CROSSWISE LOADING.
3. ADDING PROCEDURES FOR LOADING IN LONGER TRAILERS.
4. REMOVING REFERENCES TO ROUND-FRONT TRAILERS.

MATERIAL SPECIFICATIONS

LUMBER - - - - - - - - :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
NAILS - - - - - - - - :	FED SPEC FF-N-105; COMMON.
STRAPPING, STEEL - - :	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
SEAL, STRAP - - - - :	ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
ANTI-CHAFING MATERIAL - - - - - - :	MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.



UNITIZING AND HANDLING PROCEDURAL GUIDANCE

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 AFT END OF AN UPPER CONTAINER ABOVE THE AFT END OF THE NEXT LOWER CONTAINER.

   C. THE CONTAINER SKIDS OF AN UPPER CONTAINER SHOULD BE FULLY SEATED AGAINST THE SKID LOCATOR PIECES ON THE COVER OF THE NEXT LOWER CONTAINER.

2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "L" ON PAGE 2.

   A. UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE CONTAINERS AS SHOWN, AND SO THAT STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG SIDES AND STRAIGHT ACROSS 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 DISLODGMENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE CONTAINER OR STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND AND 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 ON PAGE 17. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE CONTAINERS. DURING STRAP TENSIONING, CARE SHOULD EXERCISED TO INSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

(UNITIZING AND HANDLING GUIDANCE CONT.)

3. CONTAINER OR CONTAINER STACK HANDLING.

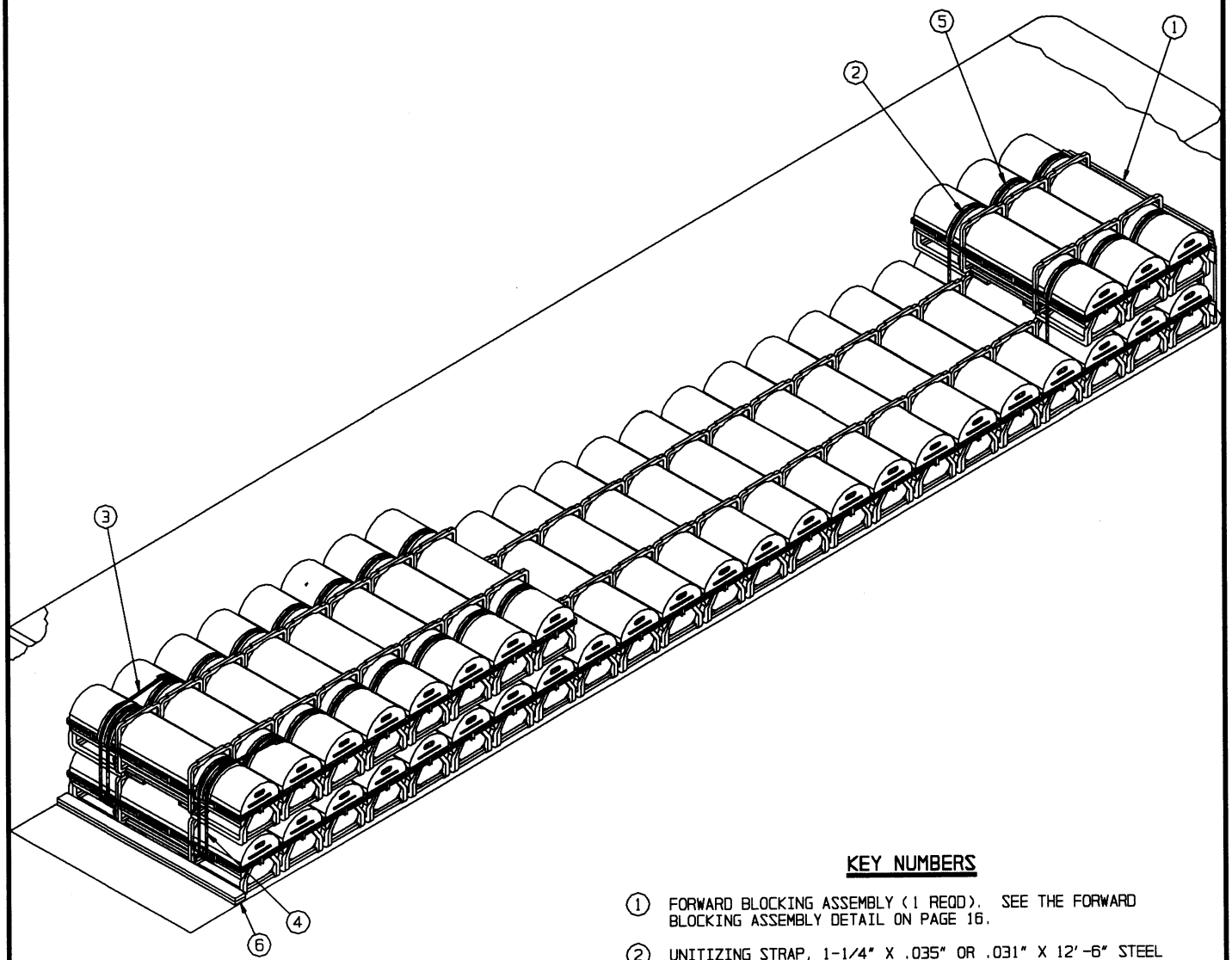
   NOTES: (1) APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.

   (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. 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. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE CONTAINER. DO NOT HANDLE STACKED CONTAINERS WITH A SLING.

   C. WHEN UNLOADING CONTAINERS, REMOVE THE LATERAL DUNNAGE, AND SHIFT THE NEAR END OF THE CONTAINER STACK TOWARDS THE CENTER OF THE TRAILER. ATTACH A CHAIN FROM THE CONTAINER LIFTING POINT ON ONE SIDE CONTAINER, AROUND THE FOKRLIFT MAST, TO THE CONTAINER LIFTING POINT ON THE OPPOSITE SIDE OF THE CONTAINER. SLIGHTLY ELEVATE AND INSERT THE FORK TINES UNDER THE END OF THE CONTAINER STACK AND SLOWLY DRAG THE CONTAINER STACK REARWARD UNTIL IT CAN BE HANDLED FROM THE SIDE, TAKING CARE NOT TO DAMAGE THE CONTAINERS.



ISOMETRIC VIEW

KEY NUMBERS

(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE FORWARD BLOCKING ASSEMBLY DETAIL ON PAGE 16.

(2) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 12'-6" STEEL STRAPPING (22 REQD). SEE THE "UNITIZATION AND HANDLING" PROCEDURES ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.

(3) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 16'-6" STEEL STRAPPING (2 REQD). POSITION LONGITUDINALLY AROUND THE FOUR REAR CONTAINERS AS SHOWN.

(4) SEAL FOR 1-1/4" STEEL STRAPPING (48 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH 2 PAIR OF CRIMPS. SEE "END-OVER-END LAP JOINT" DETAIL ON PAGE 17 AND GENERAL NOTE "L" ON PAGE 2.

(5) ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STEEL STRAPPING MARKED (2) AND (3) AT ALL POINTS OF CONTAINER/STRAPPING CONTACT.

(6) REAR HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1" (DOUBLED) (1 REQD). POSITION TIGHTLY AGAINST CONTAINER SKIDS AS SHOWN. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/8-20d NAILS. SEE SPECIAL NOTE 3 ON PAGE 5.

34-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER

SPECIAL NOTES:

1. A 34-UNIT LOAD IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) TRAILER WITH NAILABLE FLOORS.

2. A TRAILER EQUIPPED WITH ROUNDED FRONT CORNERS IS SHOWN. IF THE TRAILER TO BE LOADED HAS A SQUARE FRONT, OMIT THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, AND POSITION THE CONTAINERS DIRECTLY AGIANST THE FORWARD ENDWALL.

3. SIDE BLOCKING IS NOT REQUIRED FOR THIS LOAD CONFIGURATION PROVIDED THAT THE STACKS OF TWO CONTAINERS ARE BUNDLED TOGETHER WITH 1-1/4" STEEL STRAPPING. SEE GENERAL NOTE "L" ON PAGE 2.

4. IF DESIRED, THE LOAD COULD BE CONFIGURED AS SUCH: THREE BUNDLES OF TWO CONTAINERS IN THE FRONT OF THE TRAILER, FOURTEEN SINGLE CONTAINERS, AND SEVEN BUNDLES OF TWO CONTAINERS, PROVIDED THERE IS SUFFICIENT NAILABLE FLOOR SPACE AT THE REAR OF THE TRAILER.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	112	112
NAILS	NO. REQD	POUNDS
10d (3") 20d (4")	76 8	1-1/4 1/2
STEEL STRAPPING, 1-1/4" - - 308' REQD - - - - 44 LBS SEAL FOR 1-1/4" STRAPPING - - 48 REQD - - - - 3 LBS ANTI-CHAFING MATERIAL - - - - AS REQD - - - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	34	39,100 LBS
DUNNAGE		273 LBS
TOTAL WEIGHT		39,373 LBS (APPROX)

34-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER

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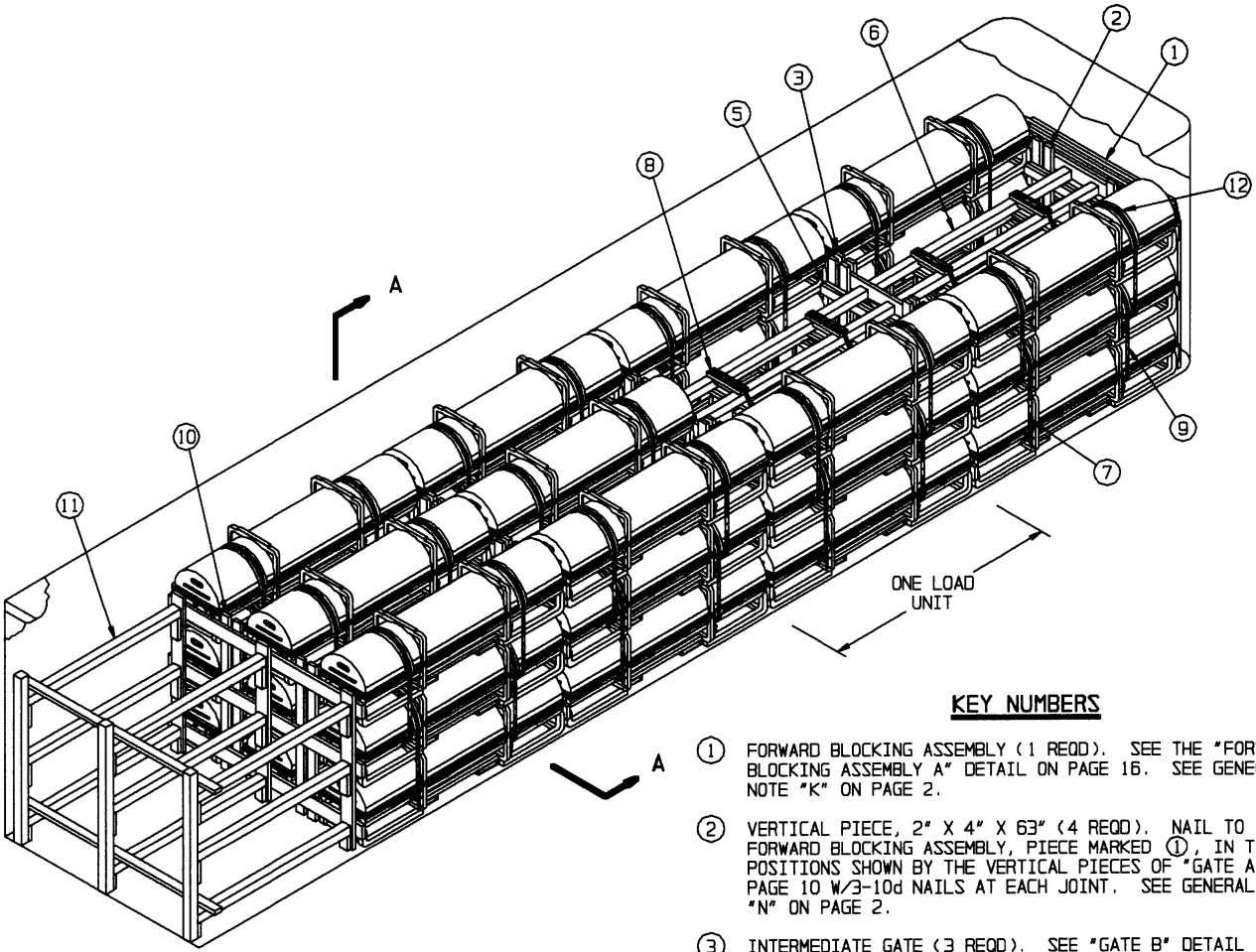
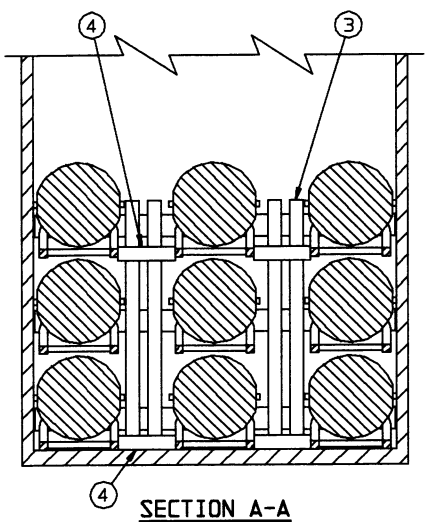


ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE "FORWARD BLOCKING ASSEMBLY A" DETAIL ON PAGE 16. SEE GENERAL NOTE "K" ON PAGE 2.

(2) VERTICAL PIECE, 2" X 4" X 63" (4 REQD). NAIL TO THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED (1), IN THE POSITIONS SHOWN BY THE VERTICAL PIECES OF "GATE A" ON PAGE 10 W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "N" ON PAGE 2.

(3) INTERMEDIATE GATE (3 REQD). SEE "GATE B" DETAIL ON PAGE 10.

(4) LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN THE SKIDS OF LATERALLY ADJACENT CONTAINERS IN THE TOP AND BOTTOM LAYERS (REF: 15-1/4" FOR A 90" WIDE VAN) (DOUBLED) X 32 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES MARKED (2) OR TO GATES MARKED (3) W/3-10d NAILS AT EACH JOINT. NAIL THE SECOND PIECE TO THE FIRST W/4-10d NAILS. NOTE: WITHIN A LOAD CONTAINING A FILLER ASSEMBLY MARKED (6) THE LATERAL BRACES MUST BE INSTALLED BETWEEN THE CONTAINERS IN BOTH THE BOTTOM AND SECOND LAYERS.

(5) LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN THE SKIDS OF THE OUTSIDE ROWS (REF: 49-3/4" FOR A 92" WIDE VAN) (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES MARKED (2) OR TO GATES MARKED (3) W/3-10d NAILS AT EACH JOINT. NAIL THE SECOND PIECE TO THE FIRST W/7-10d NAILS. NOTE: THESE PIECES ARE ONLY REQUIRED WHEN A CONTAINER IS OMITTED FROM A LOAD UNIT.

(6) FILLER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 11. SEE SPECIAL NOTE 3 ON PAGE 7.

(7) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 12'-6" STEEL STRAPPING (44 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.

(8) STEEL STRAPPING, 1-1/4" X .035" OR .031" X 11'-0" (4 REQD). SEE THE "APPLICATION OF FILLER ASSEMBLY" DETAIL ON PAGE 11.

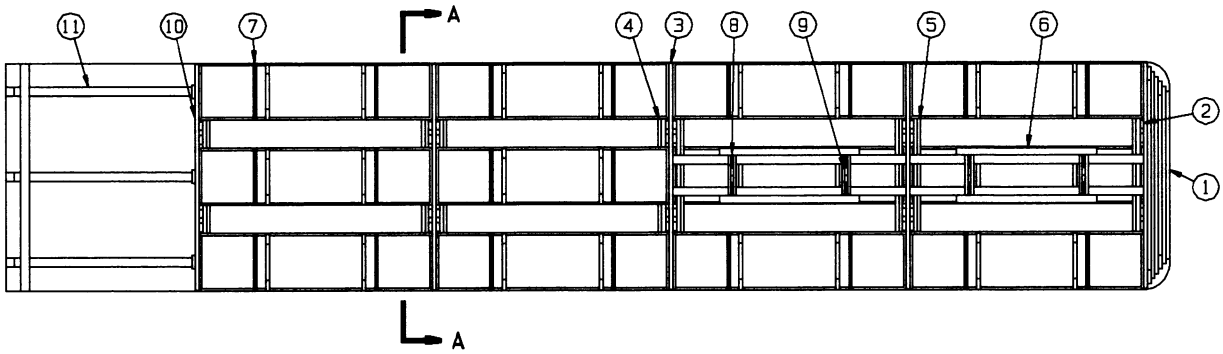
(9) SEAL FOR 1-1/4" STRAPPING (96 REQD). CRIMP EACH SEAL WITH 2 PAIR OF CRIMPS. SEE "END-OVER-END LAP JOINT" DETAIL ON PAGE 17 AND GENERAL NOTE "L" ON PAGE 2.

(10) REAR GATE (1 REQD). SEE "GATE A" DETAIL ON PAGE 10.

(11) REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 4 ON PAGE 7.

(12) ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STEEL STRAPPING MARKED (7) AND (8) AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.

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



PLAN VIEW

SPECIAL NOTES:

1. A 34-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. FOR WIDER TRAILERS, SEE THE LOAD ON PAGE 4.

2. A TRAILER EQUIPPED WITH A ROUND FRONT IS SHOWN. FOR TRAILERS EQUIPPED WITH A SQUARE FRONT, ELIMINATE THE FORWARD BLOCKING ASSEMBLY AND THE VERTICAL PIECES, PIECES MARKED ① AND ②, AND INSTEAD INSTALL A FORWARD GATE, "GATE A" ON PAGE 10. INSTALL WITH THE GATE HORIZONTAL PIECES AGAINST THE FRONT WALL OF THE TRAILER.

3. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS BEING SHIPPED. THE LOAD MAY BE INCREASED BY REPLACING ONE OR BOTH FILLER ASSEMBLIES, PIECES MARKED ⑥, WITH ONE OR TWO CONTAINERS, PROVIDED THAT THE LOAD LIMIT OF THE TRAILER IS NOT EXCEEDED AND ANY STATE WEIGHT LAW REQUIREMENTS ARE NOT VIOLATED. THE LOAD MAY BE DECREASED BY OMITTING AN ENTIRE REAR LOAD UNIT OR A COMPLETE LAYER, OR BY THE USE OF ADDITIONAL FILLER ASSEMBLIES. NOTE: IF ALL THE CONTAINERS IN THE THIRD LAYER OF THE CENTER ROW ARE OMITTED, THE USE OF FILLER ASSEMBLIES IN THAT ROW IS NOT REQUIRED, BUT ADDITIONAL LATERAL BRACES, PIECES MARKED ⑤, WILL BE REQUIRED.

4. IN THE REAR BLOCKING ASSEMBLY, PIECE MARKED ⑪, IF THE STRUTS (REF: 72") ARE LONGER THAN 7'-0", ADDITIONAL 2" X 4" HORIZONTAL BRACES WILL BE REQUIRED, ALONG WITH 2" X 4" X 63" VERTICAL BRACING. SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 18.

BILL OF MATERIAL

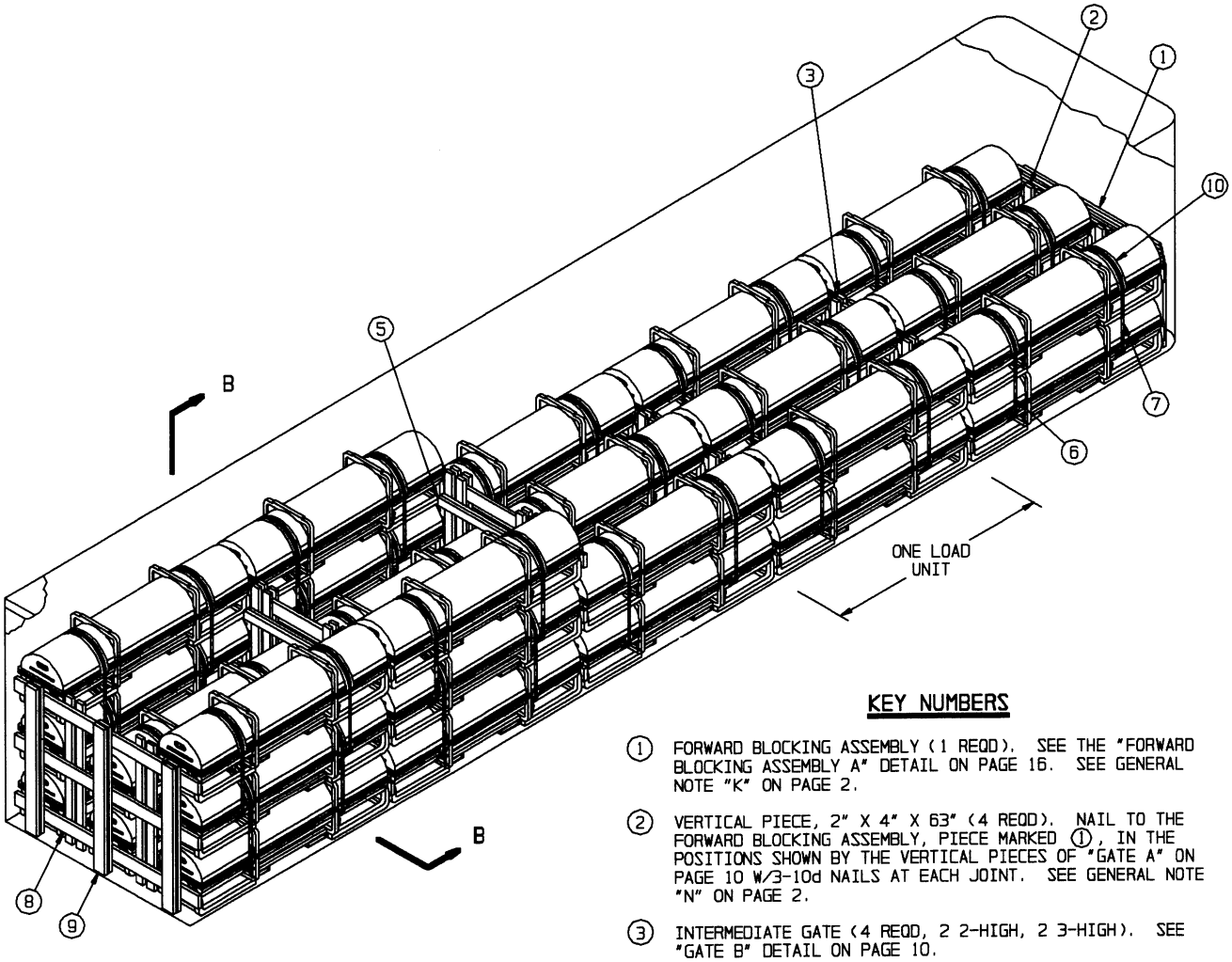
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	318	212
2" X 6"	221	221
4" X 4"	122	163
NAILS	**NO. REQD**	**POUNDS**
10d (3")	919	14-1/2
12d (3-1/4")	90	1-1/2
20d (4")	36	1

STEEL STRAPPING, 1-1/4" - - 594' REQD - - - - 85 LBS
SEAL FOR 1-1/4" STRAPPING - - 96 REQD - - - - 5 LBS
ANTI-CHAFING MATERIAL - - - - AS REQD - - - - - NIL

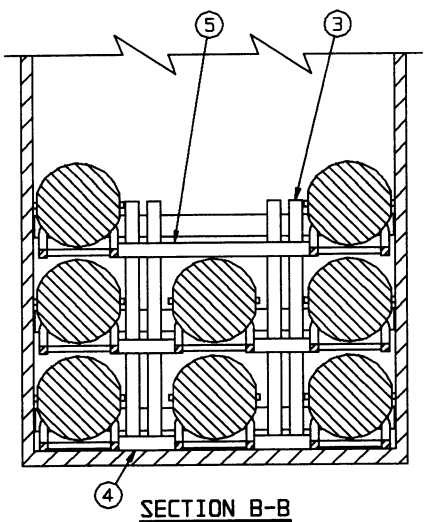
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	34	39,100 LBS
DUNNAGE		1,299 LBS
TOTAL WEIGHT		40,399 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE "FORWARD BLOCKING ASSEMBLY A" DETAIL ON PAGE 16. SEE GENERAL NOTE "K" ON PAGE 2.

② VERTICAL PIECE, 2" X 4" X 63" (4 REQD). NAIL TO THE FORWARD BLOCKING ASSEMBLY, PIECE MARKED ①, IN THE POSITIONS SHOWN BY THE VERTICAL PIECES OF "GATE A" ON PAGE 10 W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "N" ON PAGE 2.

③ INTERMEDIATE GATE (4 REQD, 2 2-HIGH, 2 3-HIGH). SEE "GATE B" DETAIL ON PAGE 10.

④ LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN THE SKIDS OF LATERALLY ADJACENT CONTAINERS IN THE TOP AND BOTTOM LAYERS (REF: 15-1/4" FOR A 90" WIDE VAN) (DOUBLED) (40 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES MARKED ② OR TO GATES MARKED ③ W/3-10d NAILS AT EACH JOINT. NAIL THE SECOND PIECE TO THE FIRST W/4-10d NAILS. NOTE: IN THE LOAD UNITS WITH TWO CONTAINERS IN THE THIRD LAYER, LATERAL BRACES MUST BE INSTALLED BETWEEN CONTAINERS IN BOTH THE BOTTOM AND SECOND LAYERS.

⑤ LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN THE SKIDS OF THE OUTSIDE ROWS (REF: 49-3/4" FOR A 92" WIDE VAN) (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES MARKED ② OR TO GATES MARKED ③ W/3-10d NAILS AT EACH JOINT. NAIL THE SECOND PIECE TO THE FIRST W/7-10d NAILS. NOTE: THESE PIECES ARE ONLY REQUIRED WHEN A CONTAINER IS OMITTED FROM A LOAD UNIT.

⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 12'-6" STEEL STRAPPING (38 REQD). SEE THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3 AND GENERAL NOTE "L" ON PAGE 2.

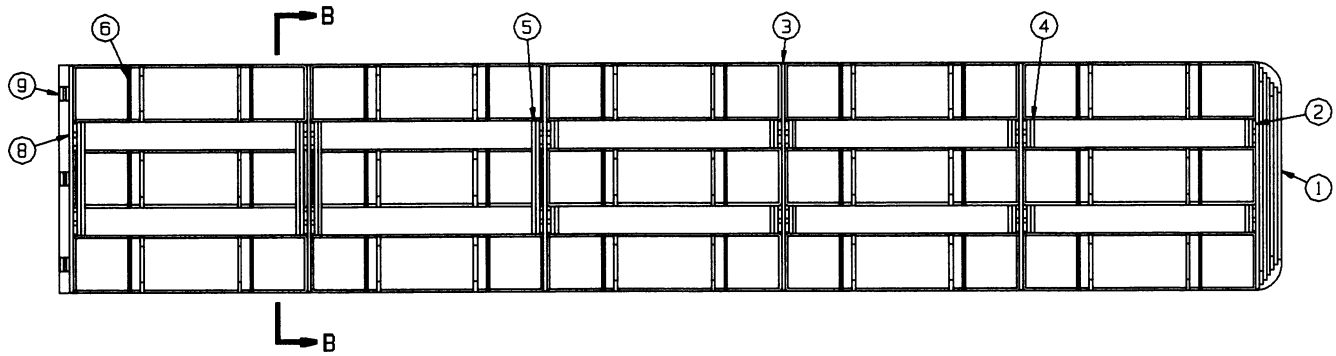
⑦ SEAL FOR 1-1/4" STRAPPING (76 REQD). CRIMP EACH SEAL WITH 2 PAIR OF CRIMPS. SEE "END-OVER-END LAP JOINT" DETAIL ON PAGE 17 AND GENERAL NOTE "L" ON PAGE 2.

⑧ REAR GATE (1 REQD). SEE "GATE A" DETAIL ON PAGE 10.

⑨ SOLID FILL, 6" WIDE MATERIAL BY GATE HEIGHT BY THICKNESS BETWEEN THE LOAD AND THE REAR OF THE TRAILER (3 REQD). NAIL THE FIRST PIECE TO THE REAR GATE MARKED ⑧ W/3-10d NAILS AT EACH JOINT. LAMINATE ADDITIONAL PIECES W/1 APPLICABLY SIZED NAIL EVERY 12". SEE SPECIAL NOTE 4 ON PAGE 9.

⑩ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER STEEL STRAPPING MARKED ⑥ AT ALL POINTS OF STRAPPING/CONTAINER CONTACT.

34-UNIT LOAD IN A 42'-0" LONG BY 7'-8" WIDE VAN TRAILER



PLAN VIEW

SPECIAL NOTES:

1. A 34-UNIT LOAD IN A 42'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. FOR WIDER TRAILERS, SEE THE LOAD ON PAGE 4. LONGER TRAILERS MAY BE USED, HOWEVER, SHORTER TRAILERS CANNOT BE USED FOR THE SHIPMENT OF FIVE LOAD UNITS.

2. A TRAILER EQUIPPED WITH A ROUND FRONT IS SHOWN. FOR TRAILERS EQUIPPED WITH A SQUARE FRONT, ELIMINATE THE FORWARD BLOCKING ASSEMBLY AND THE VERTICAL PIECES, PIECES MARKED ① AND ②, AND INSTEAD INSTALL A FORWARD GATE, "GATE A" ON PAGE 10. INSTALL WITH THE GATE HORIZONTAL PIECES AGAINST THE FRONT WALL OF THE TRAILER.

3. THE DEPICTED LOAD CONFIGURATION MAY BE ADJUSTED TO SATISFY THE QUANTITY OF ITEMS BEING SHIPPED. THE LOAD MAY BE INCREASED BY PLACING TWO CONTAINERS IN THE THIRD LOAD UNIT IN THE THIRD LAYER, PROVIDED THAT THE LOAD LIMIT OF THE TRAILER IS NOT EXCEEDED AND ANY STATE WEIGHT LAW REQUIREMENTS ARE NOT VIOLATED. THE LOAD MAY BE DECREASED BY OMITTING AN ENTIRE REAR LOAD UNIT OR A COMPLETE LAYER.

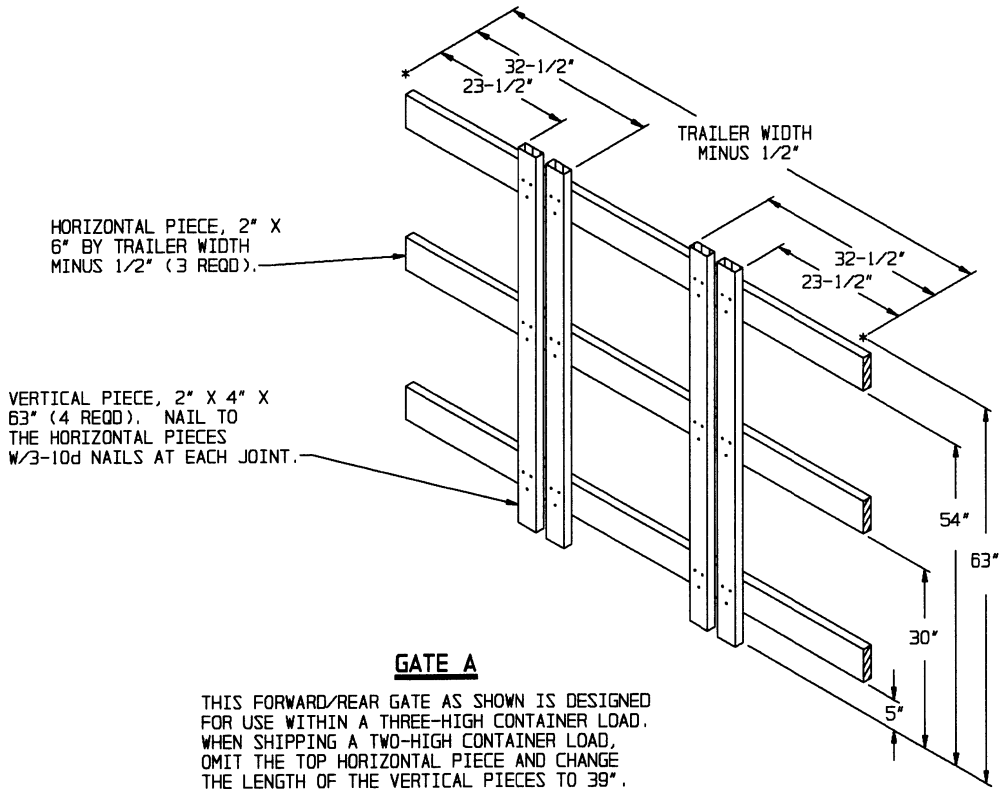
4. IF THE SPACE BETWEEN THE REAR OF THE LOAD AND THE REAR DOORS OF THE TRAILER IS GREATER THAN 12", THEN A REAR BLOCKING ASSEMBLY, PIECE MARKED ⑪ ON PAGE 6, WILL BE REQUIRED.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6" 2" X 4" 2" X 6"	16 307 209	8 205 209
NAILS	NO. REQD	POUNDS
10d (3")	906	14
STEEL STRAPPING, 1-1/4" - - 475' REQD - - - - 68 LBS SEAL FOR 1-1/4" STRAPPING - - 76 REQD - - - - 4 LBS ANTI-CHAFING MATERIAL - - - - AS REQD - - - - - NIL		

LOAD AS SHOWN

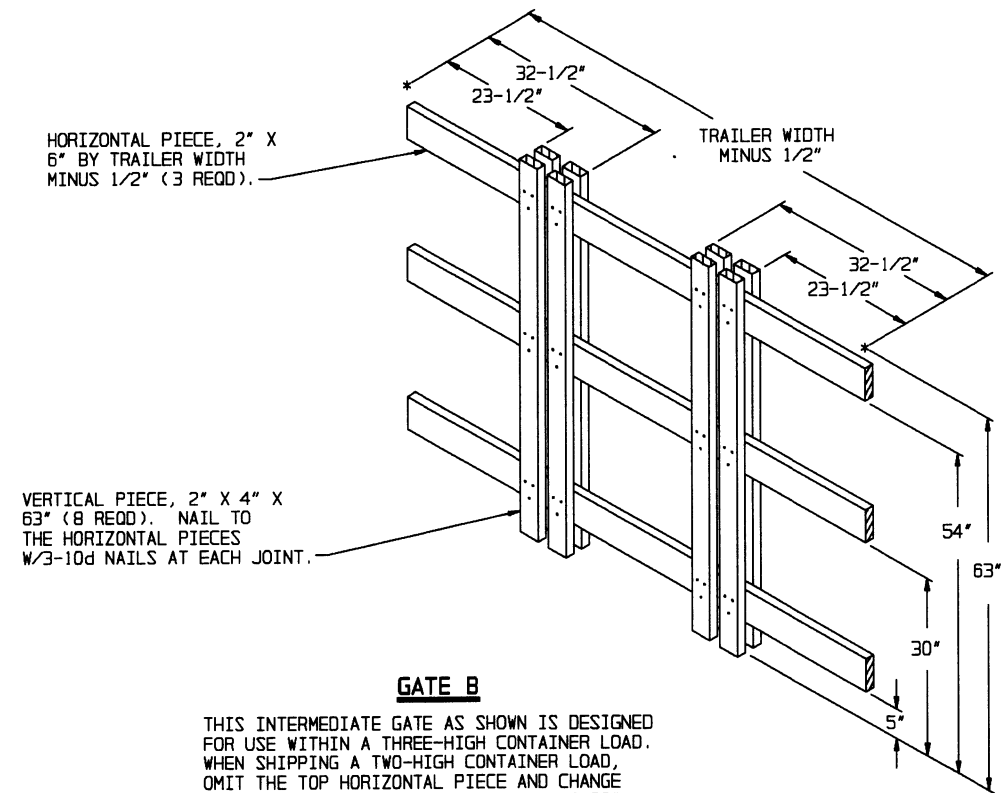
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	34	39,100 LBS
DUNNAGE		930 LBS
TOTAL WEIGHT		40,030 LBS (APPROX)

34-UNIT LOAD IN A 42'-0" LONG BY 7'-8" WIDE VAN TRAILER



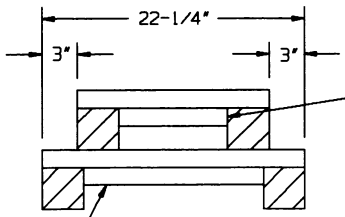
GATE A

THIS FORWARD/REAR GATE AS SHOWN IS DESIGNED FOR USE WITHIN A THREE-HIGH CONTAINER LOAD. WHEN SHIPPING A TWO-HIGH CONTAINER LOAD, OMIT THE TOP HORIZONTAL PIECE AND CHANGE THE LENGTH OF THE VERTICAL PIECES TO 39".



GATE B

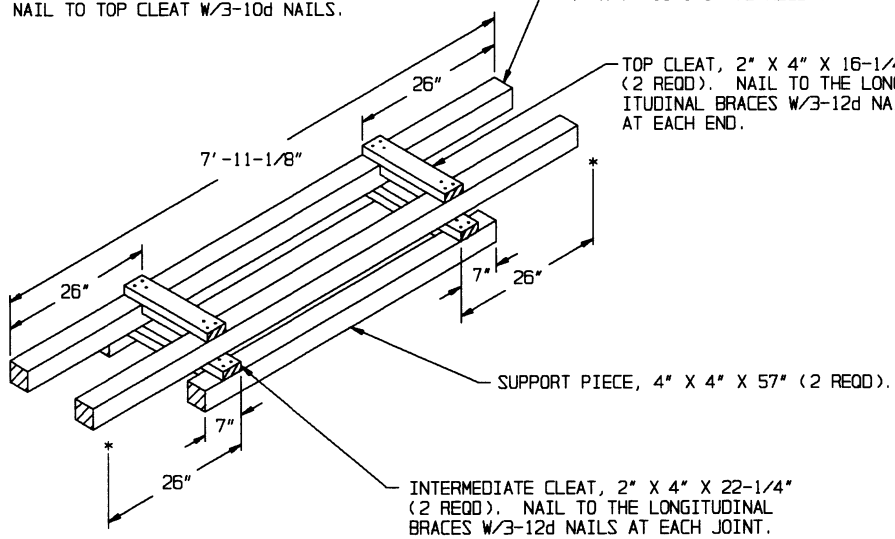
THIS INTERMEDIATE GATE AS SHOWN IS DESIGNED FOR USE WITHIN A THREE-HIGH CONTAINER LOAD. WHEN SHIPPING A TWO-HIGH CONTAINER LOAD, OMIT THE TOP HORIZONTAL PIECE AND CHANGE THE LENGTH OF THE VERTICAL PIECES TO 39".



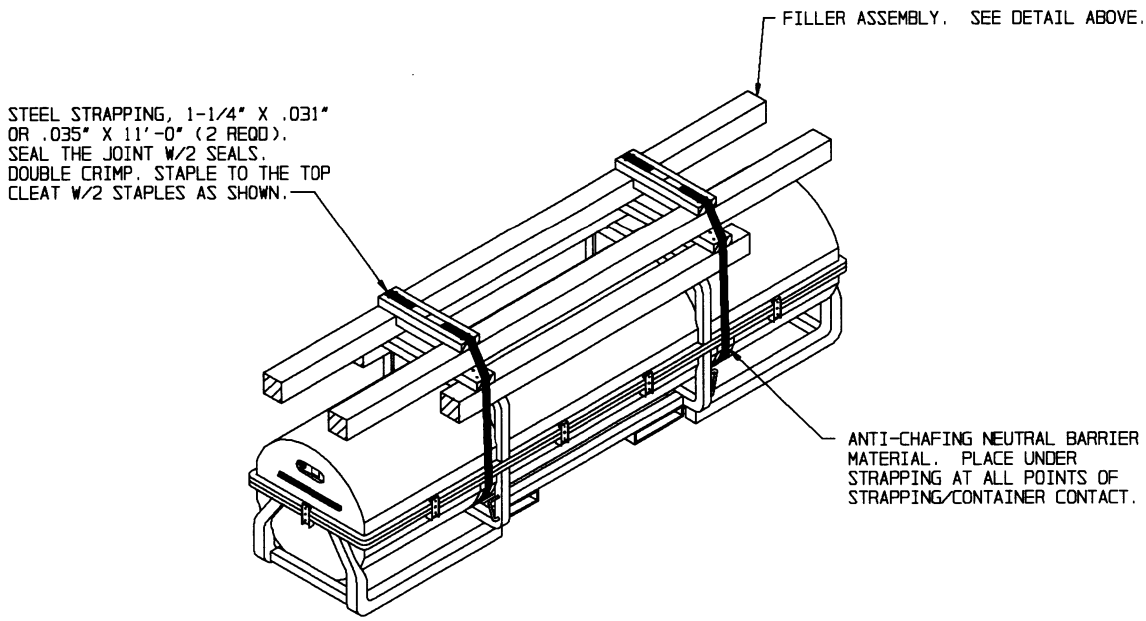
END VIEW

UPPER CROSS BRACE, 2" X 4" BY CUT-TO-FIT (REF: 9") (2 REQD). NAIL TO TOP CLEAT W/3-10d NAILS.

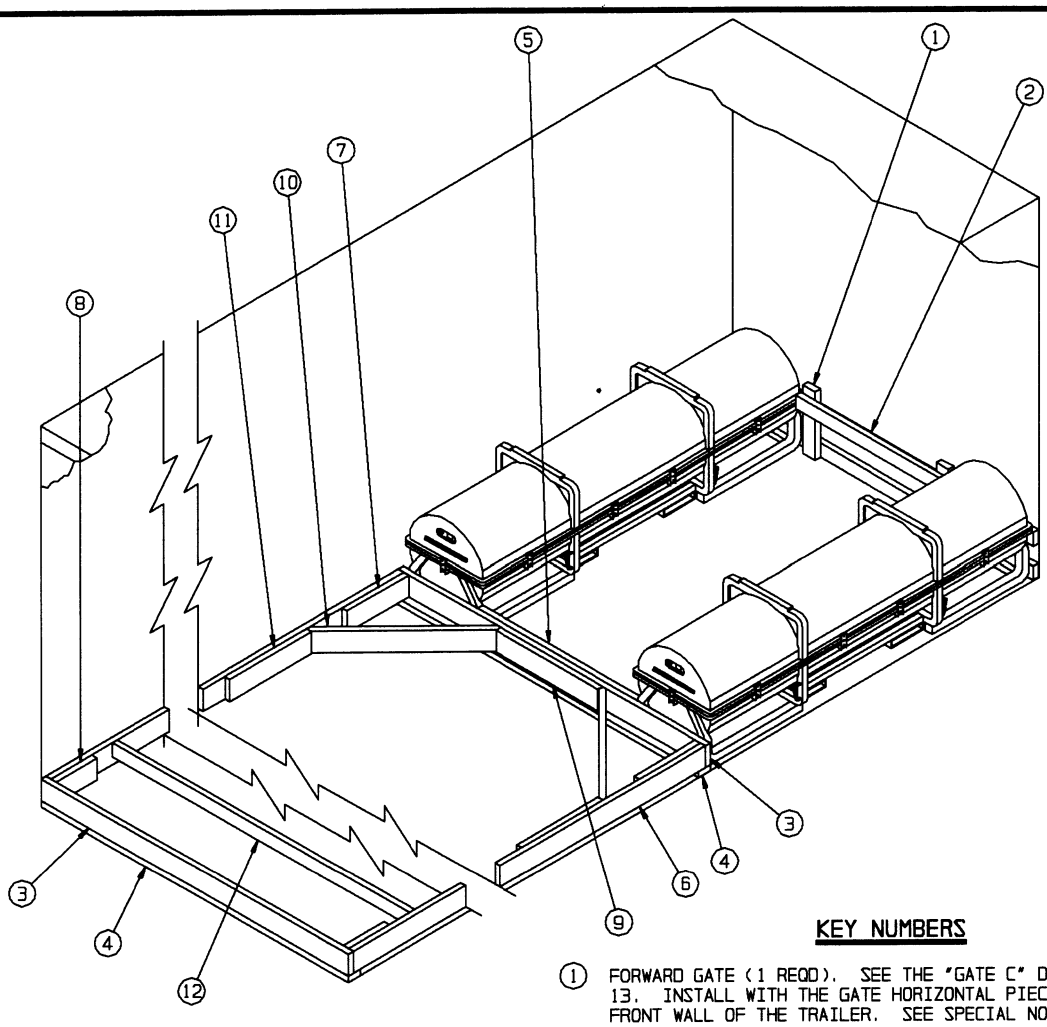
LOWER CROSS BRACE, 2" X 4" BY CUT-TO-FIT (REF: 15") (2 REQD). NAIL TO INTERMEDIATE CLEAT W/4-10d NAILS.



FILLER ASSEMBLY



APPLICATION OF FILLER ASSEMBLY



KEY NUMBERS

① FORWARD GATE (1 REQD). SEE THE "GATE C" DETAIL ON PAGE 13. INSTALL WITH THE GATE HORIZONTAL PIECES AGAINST THE FRONT WALL OF THE TRAILER. SEE SPECIAL NOTE 2 AT LEFT.

② LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN COVER FLANGES (1 REQD). NAIL TO VERTICAL PIECES OF FORWARD GATE MARKED ① W/3-10d NAILS AT EACH JOINT.

③ HEADER, 2" X 6" BY TRAILER WIDTH (CUT-TO-FIT) (2 REQD).

④ SUPPORT PIECE, 2" X 4" BY TRAILER WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO BOTTOM EDGE OF HEADER MARKED ③ W/1-10d NAIL EVERY 8".

⑤ ANTI-SWAY BRACE, 2" X 4" BY CUT-TO-FIT (1 REQD). BEVEL EACH END TO FIT ANGLE OF SKID. NAIL TO HEADER MARKED ③ W/6-10d NAILS.

⑥ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN HEADERS, PIECES MARKED ③ (2 REQD).

⑦ POCKET CLEAT, 2" X 6" X 18" (2 REQD). NAIL TO THE SIDE STRUT MARKED ⑥ W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER MARKED ③ W/3-12d NAILS.

⑧ STRUT RETAINING BLOCK, 2" X 6" X 12" (2 REQD). NAIL TO THE SIDE STRUT MARKED ⑥ W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER MARKED ③ W/3-12d NAILS.

⑨ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE HEADER, PIECE MARKED ③, W/6-10d NAILS.

⑩ 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 TOENAIL TO THE ADJACENT HEADER MARKED ③, AND SIDE STRUT MARKED ⑥, W/2-16d NAILS AT EACH END.

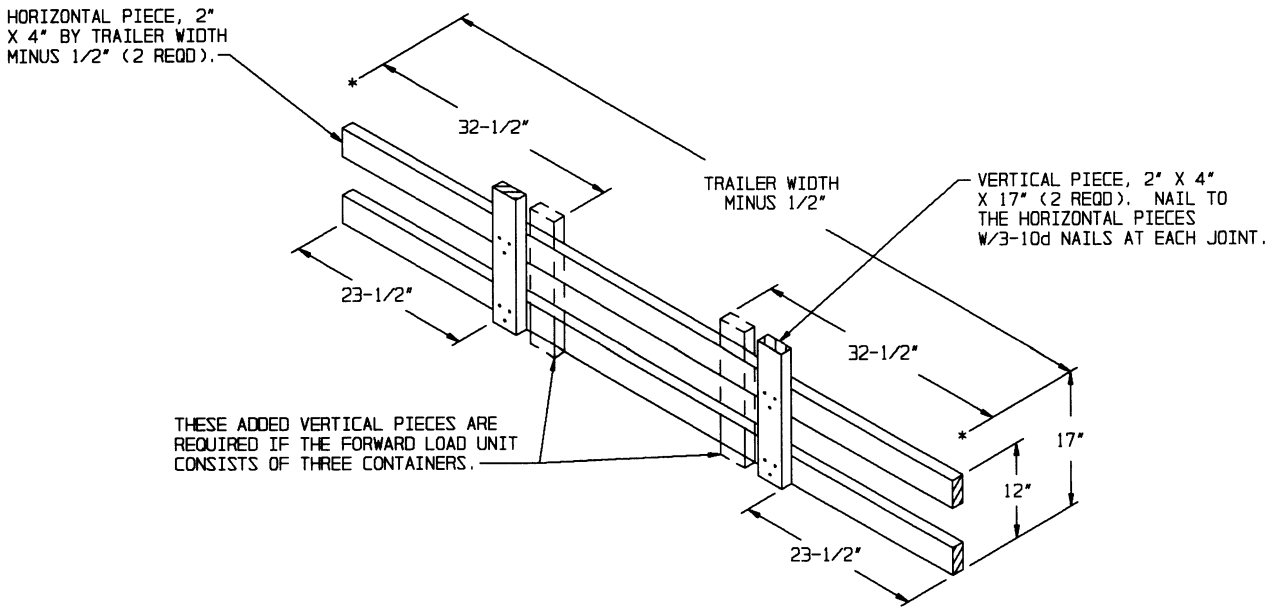
⑪ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑥, W/8-10d NAILS.

⑫ STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT-TO-FIT) (MINIMUM OF 1 REQD). INSTALL ONE NEAR REAR END OF SIDE STRUTS MARKED ⑥ AS SHOWN. AN ADDITIONAL PIECE IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. TOENAIL TO SIDE STRUTS MARKED ⑥ W/4-12d NAILS AT EACH END. CAUTION: USE ARE WHEN TOENAILING TO PREVENT NAILING THRU AND INTO THE SIDEWALL OF A TRAILER.

SPECIAL NOTES:

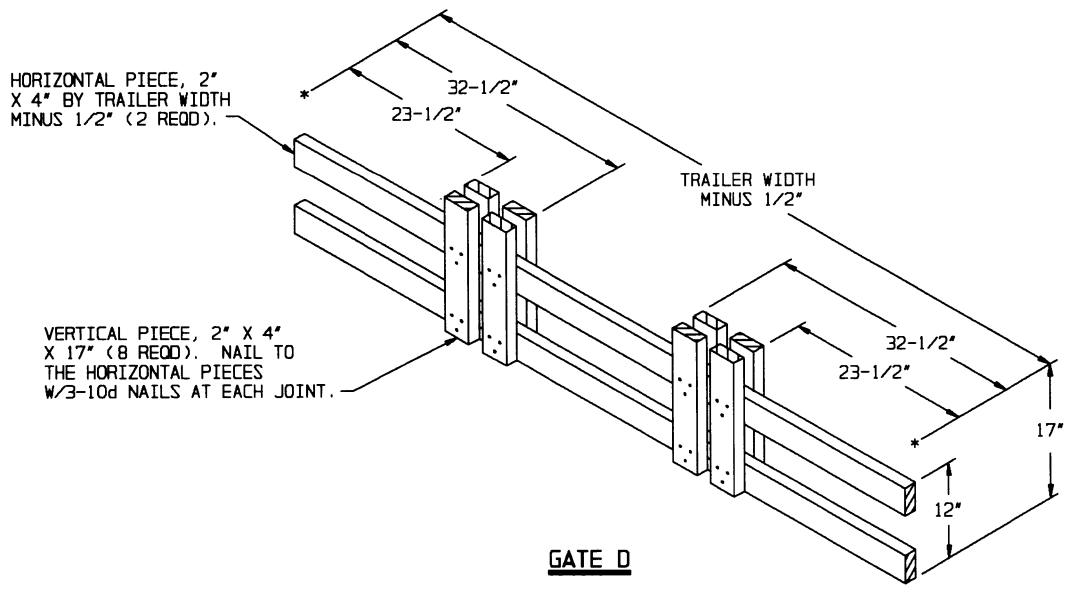
1. THIS PROCEDURE DEPCITS THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE TRAILER AND IS APPLICABLE TO TRAILERS WITH OR WITHOUT A NAILABLE FLOOR. WIDER OR NARROWER TRAILERS CAN ALSO BE USED.
2. IF THE TRAILER TO BE LOADED HAS ROUNDED CORNERS AT THE FORWARD END, SEE THE "FORWARD BLOCKING ASSEMBLY B" ON PAGE 17.
3. THE "K-BRACE" BLOCKING SHOWN IS ADEQUATE FOR RETAINING A MAXIMUM SIZE ONE LAYER LTL LOAD.

TYPICAL LTL (2-UNIT LOAD)



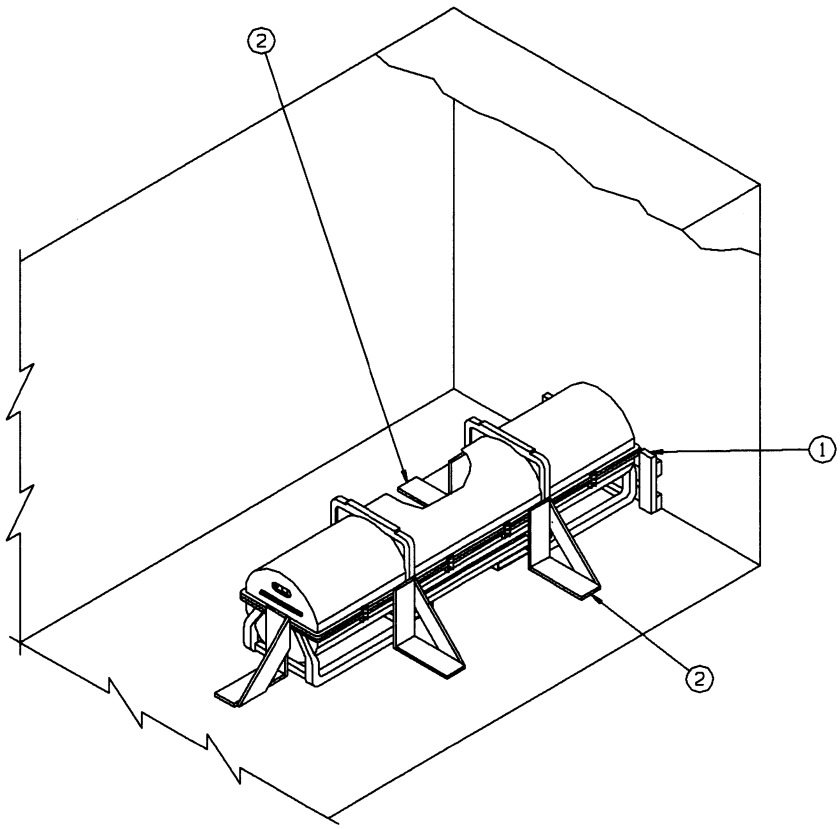
GATE C

THIS FORWARD GATE IS DESIGNED FOR USE AT THE FRONT OF A TWO CONTAINER LOAD UNIT. ADD THE PIECES SHOWN BY PHANTOM LINES IF THE LOAD UNIT CONSISTS OF THREE CONTAINERS.



GATE D

THIS GATE IS DESIGNED FOR USE AS AN INTERMEDIATE GATE BETWEEN LOAD UNITS OF ONE HIGH CONTAINERS. A LATERAL BRACE, 2" X 4" BY CUT-TO-FIT BETWEEN COVER FLANGES, MUST BE NAILED TO EACH PAIR OF VERTICAL PIECES OF GATE TO PROVIDE SIDE BLOCKING FOR THE CONTAINERS.



SPECIAL NOTES:

1. THIS PROCEDURE DEPICTS THE OUTLOADING OF ONE CONTAINER IN A 7'-6" WIDE VAN TRAILER WHICH HAS A NAILABLE FLOOR. WIDER OR NARROWER TRAILERS CAN BE USED; HOWEVER, TRAILERS WITH NON-NAILABLE FLOORS CANNOT BE USED.

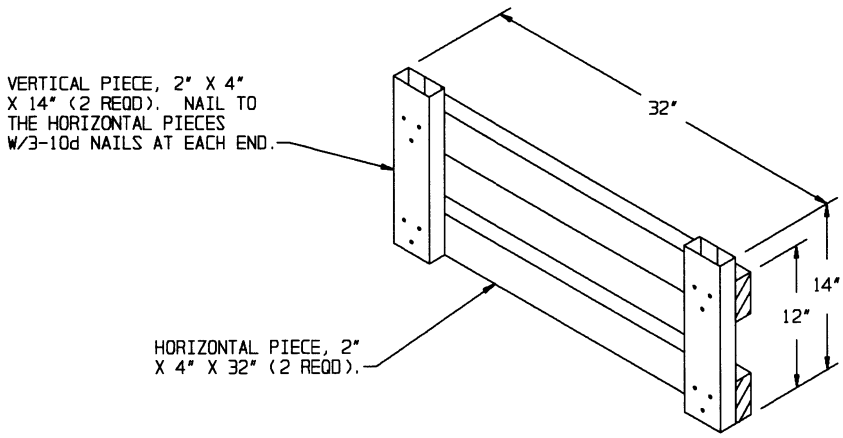
2. NOT LESS THAN TWO LTL BRACES MARKED ② SHALL BE USED AGAINST A SIDE OF A CONTAINER. FOR LONGITUDINAL BRACING, ONE LTL BRACE IS REQUIRED FOR EACH CONTAINER. EACH BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS. IF DESIRED, THE LADING ITEM MAY BE LOADED AGAINST ONE OF THE SIDE WALLS OF THE TRAILER AND THUS ELIMINATE THE NEED FOR TWO OF THE SPECIFIED LTL BRACES.

KEY NUMBERS

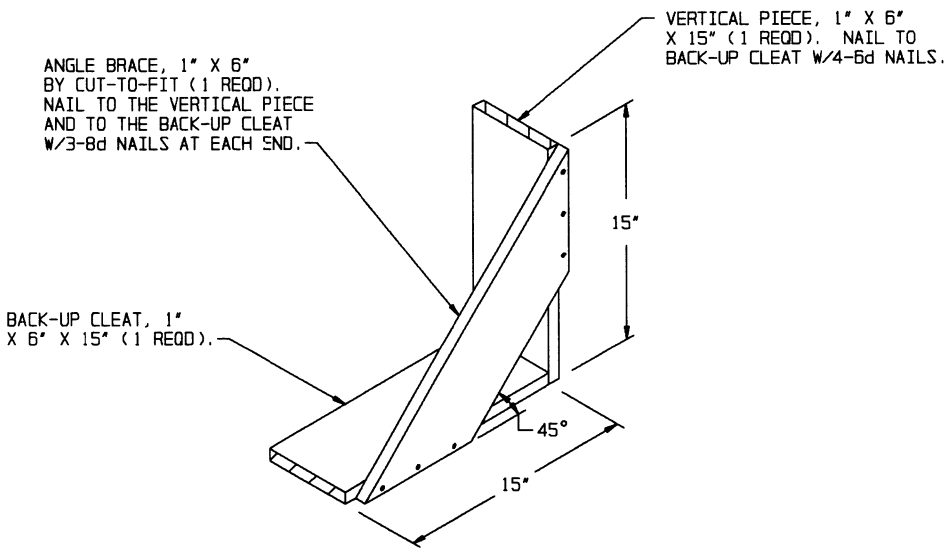
① FORWARD GATE (1 REQD). SEE "GATE E" DETAIL ON PAGE 15.

② LTL BRACE (5 REQD). NAIL TO TRAILER FLOOR W/6-10d NAILS. SEE DETAIL ON PAGE 15 AND SPECIAL NOTE 2 AT LEFT.

TYPICAL LTL (1-UNIT LOAD)

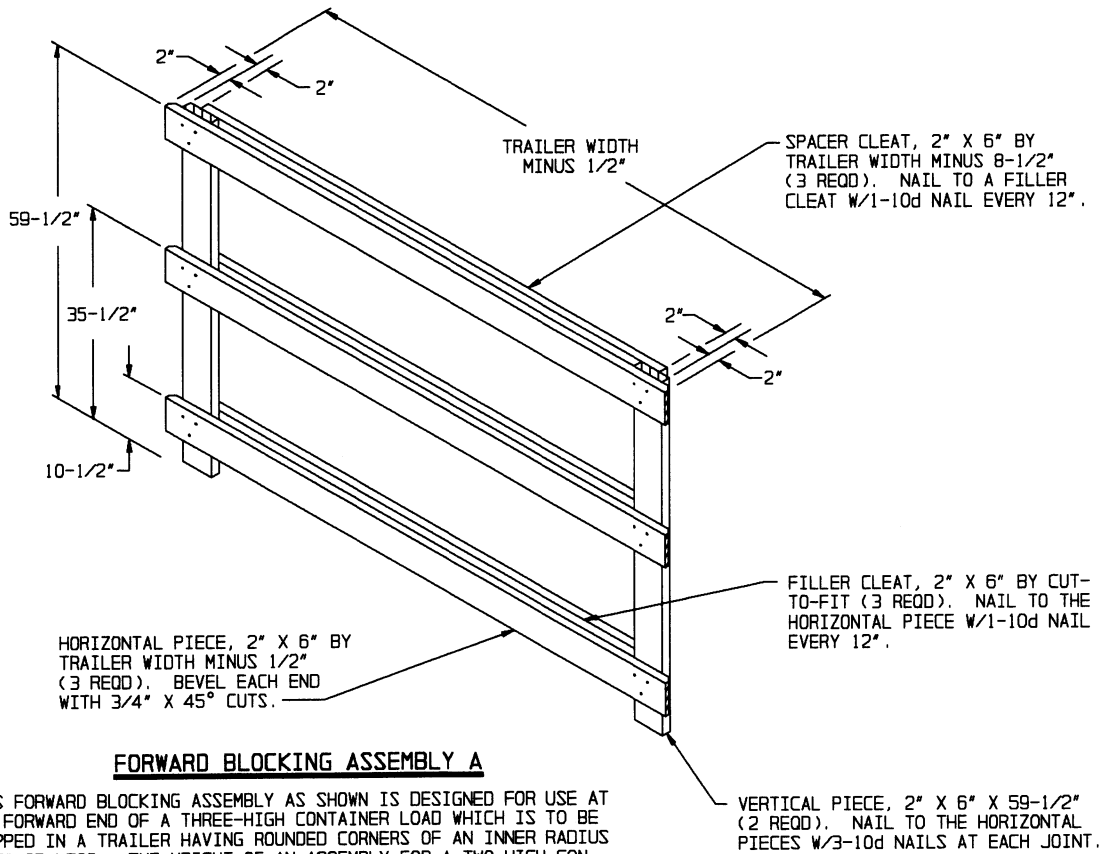


GATE E



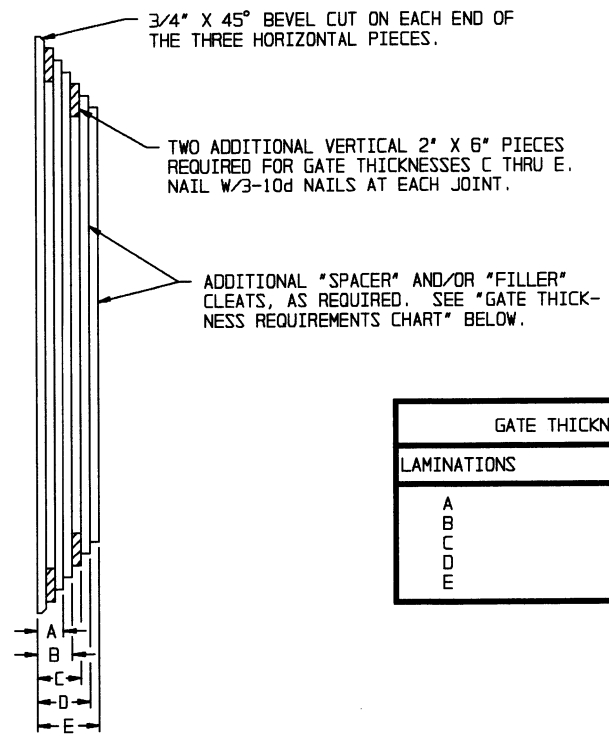
LTL BRACE

SEE SPECIAL NOTE 2 ON PAGE 14.



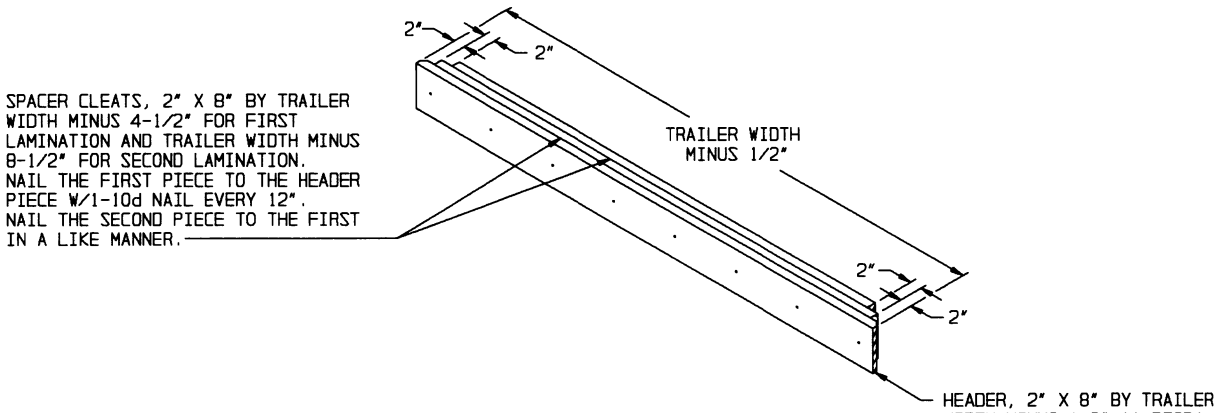
FORWARD BLOCKING ASSEMBLY A

THIS FORWARD BLOCKING ASSEMBLY AS SHOWN IS DESIGNED FOR USE AT THE FORWARD END OF A THREE-HIGH CONTAINER LOAD WHICH IS TO BE SHIPPED IN A TRAILER HAVING ROUNDED CORNERS OF AN INNER RADIUS OF 5" OR LESS. THE HEIGHT OF AN ASSEMBLY FOR A TWO-HIGH CONTAINER LOAD WILL BE 35-1/2". ADDITIONAL LAMINATIONS MUST BE ADDED TO THE SPACER CLEATS TO COMPENSATE FOR LARGER SIZE CORNERS. SEE THE "GATE THICKNESS REQUIREMENTS" CHART AND "PLAN VIEW" BELOW. WHEN USING THIS ASSEMBLY, 2" X 4" X 63" VERTICAL PIECES MUST BE ADDED IN LIEU OF A FORWARD GATE.



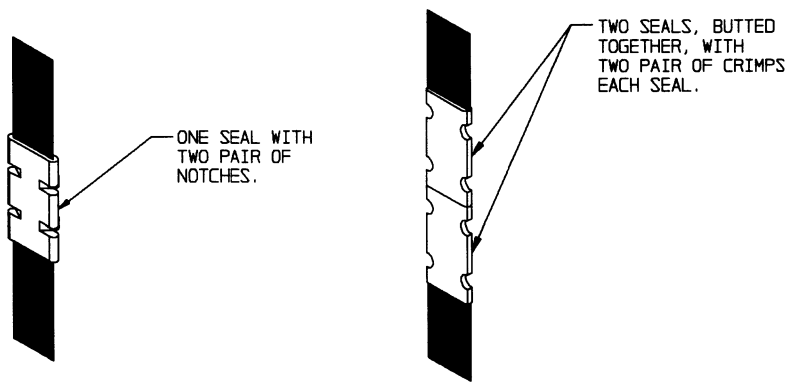
PLAN VIEW

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"



FORWARD BLOCKING ASSEMBLY B

THIS FORWARD BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE FORWARD END OF A ONE-HIGH CONTAINER LOAD WHICH IS TO BE SHIPPED IN A TRAILER HAVING ROUNDED CORNERS OF AN INSIDE RADIUS OF 5" OR LESS. ADDITIONAL LAMINATIONS MUST BE ADDED TO COMPENSATE FOR LARGER SIZE CORNERS. SEE "GATE THICKNESS REQUIREMENTS" CHART ON PAGE 16 FOR GUIDANCE. WHEN USING THIS ASSEMBLY, 2" X 4" X 17" VERTICAL PIECES MUST BE ADDED IN LIEU OF A FORWARD GATE.



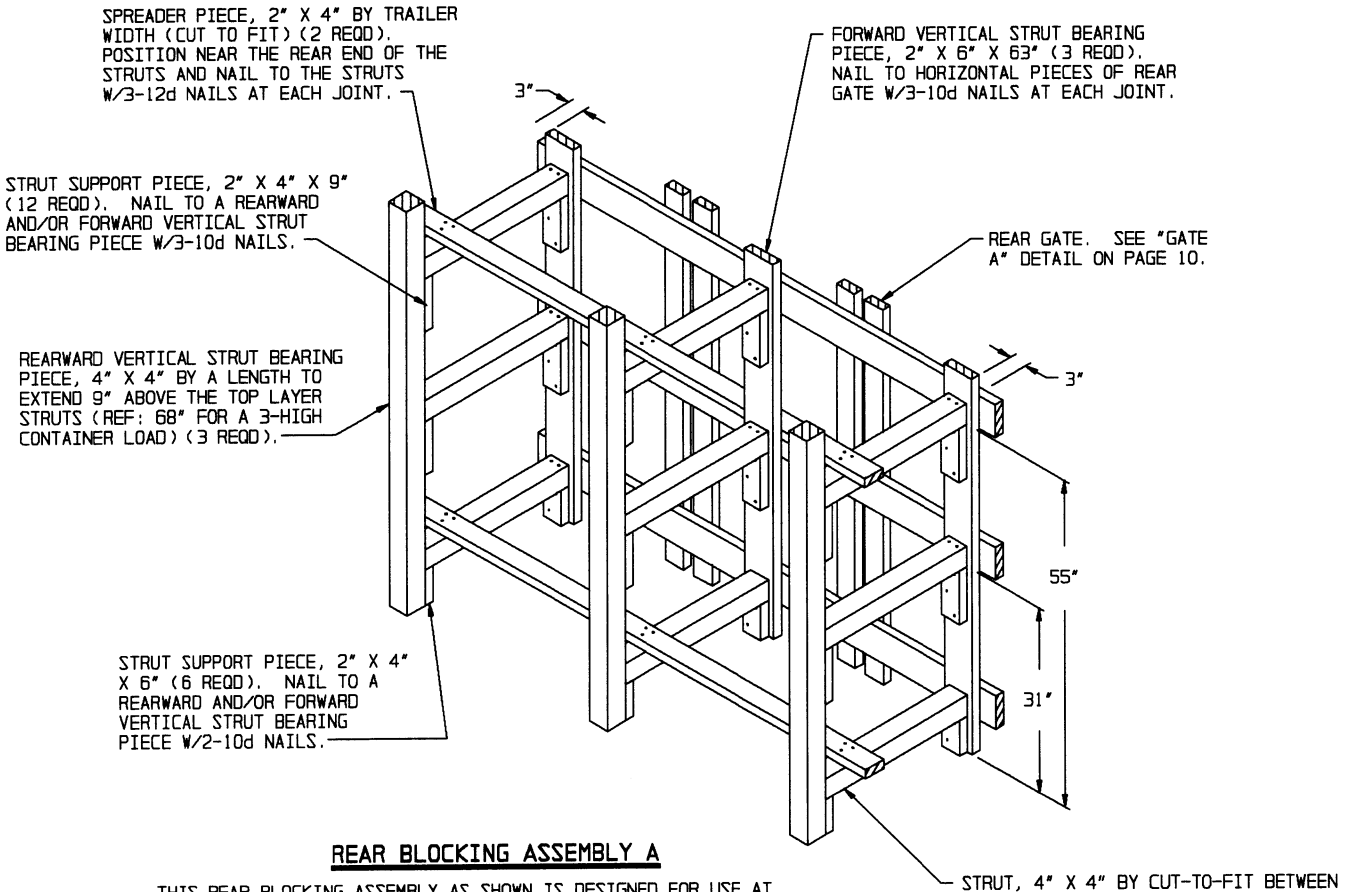
STRAP JOINT A

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

STRAP JOINT B

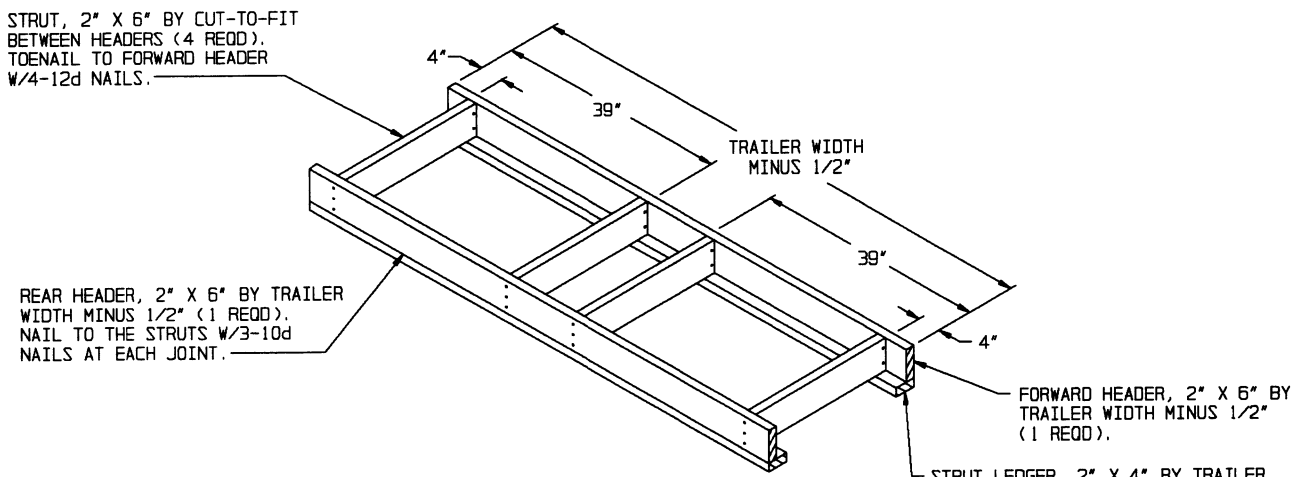
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



REAR BLOCKING ASSEMBLY A

THIS REAR BLOCKING ASSEMBLY AS SHOWN IS DESIGNED FOR USE AT THE REAR END OF A THREE HIGH CONTAINER 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. NOTE: IF IT IS NECESSARY TO USE STRUTS 7'-0" OR LONGER FOR THE BRACING OF A LOAD, AN ADDITIONAL SET OF SPREADER PIECES MUST BE INSTALLED NEAR THE CENTER OF THE STRUT LENGTH. ALSO, A 2" X 4" X 63" VERTICAL BRACE MUST BE INSTALLED AT THE SAME LOCATION FOR EACH SET OF STRUTS.



REAR BLOCKING ASSEMBLY B

THIS REAR BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE DISTANCE BETWEEN THE REAR OF THE LOAD AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED MEASURES 9" 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 ASSEMBLY B BLOCKING SHOWN ABOVE.