

# LOADING AND BRACING (TL & LTL) IN CLOSED OR OPEN TOP VAN TRAILERS OF CDU ITEMS<sup>®</sup> PACKED TEN PER SKIDDED WOODEN BOX

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→ PROCEDURES SPECIFIED HEREIN ARE
APPLICABLE TO THE CDU/4 AND CDU/IO
SERIES RELOAD KITS AND OTHER
SIMILAR KITS.

THIS DRAWING SUPERSEDES
"INTERIM PROCEDURES" DRAWING
AMXSV-4137.

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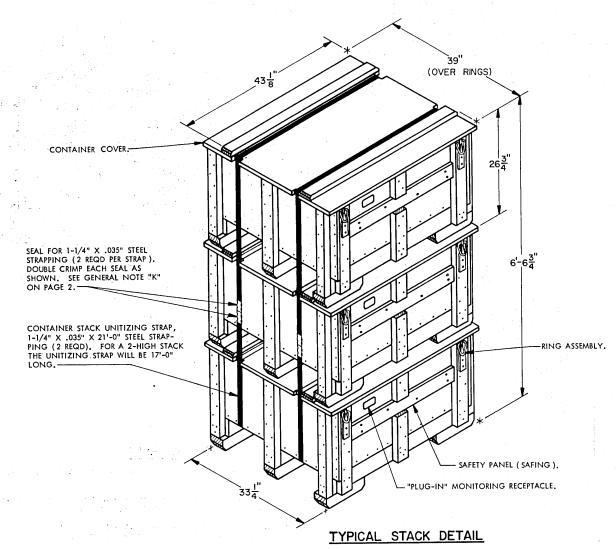
PROJECT FSA 83-67

# **GENERAL NOTES**

- 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 THE CDU/4 AND CDU/10 SERIES RELOAD KITS, AND OTHER SIMILIAR KITS, WHEN THEY ARE PACKAGED IN THE DEPICITED SKIDDED WOODEN BOX. REFERENCE TO CONTAINER HEREIN MEANS THE SKIDDED WOODEN BOX WITH CONTENTS.
- C. THE 30-UNIT LOAD SHOWN ON PAGES 4 AND 5 IS BASED ON A CLOSED OR OPEN TOP VAN TRAILER 38'-0" LONG BY 7'-0" WIDE (INSIDE DIMENSION) HAVING A WOOD OR A WOOD AND METAL, OR A METAL FLOOR. THE DELINEATED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO LONGER TRAILERS AND TO TRAILERS WHICH ARE FROM 86-INCHES THROUGH 93-INCHES WIDE.
- D. FOR DETAILS OF THE RELOAD KIT CONTAINER, SEE DRAWING NO. 9226267.
  - CONTAINER DIMENSIONS ---- 43-1/8" LONG X 39" WIDE X 26-3/4" HIGH. GROSS WEIGHT (MAX) ----- 800 POUNDS (APPROX).
- 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; HOWEVER, THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEM.
- G. 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, THE MONITORING DEVICES AND SIDE PANELS ON THE CONTAINERS ARE ACCESSIBLE FOR IN-TRANSIT OPERATIONS, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- H. CAUTION: WHEN LOADING CONTAINER STACKS ABOARD A TRAILER, THEY WILL BE POSITIONED SO THAT ALL THE "PLUG-IN" MONITORING RECEPTACLES ON THE CONTAINERS WILL FACE THE SAME SIDE OF THE TRAILER.
- 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 IN THE OUTLOADING METHODS ON PAGE 4. IF THE CAPACITY OF THE MATERIALS HANDLING EQUIPMENT USED TO LOAD THE CONTAINERS ABOARD A TRAILER PERMITS, IT IS RECOMMENDED THAT THE CONTAINERS BE UNITIZED PRIOR TO PLACEMENT WITHIN THE TRAILER. IN SOME INSTANCES, CONTAINERS WILL ALREADY BE UNITIZED INTO STACKS WHEN OFFERED FOR LOADING. THESE UNITIZED STACKS SHOULD BE INSPECTED, AND AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPILACED.
- K. WHEN STEEL STRAPPING 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 TO SEAL THE JOINT.
- L. FOR TRAILERS NOT EQUIPPED WITH REAR CORNER POSTS, REAR BLOCKING MUST BE EXTENDED TO CONTACT THE REAR DOORS WHEN THEY ARE CLOSED.
- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-5/8" THICK BY 3-5/8" WIDE.
- O. 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.
- P. PORTIONS OF THE TRAILER BODIES DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS ONE OF THE SIDE WALLS AND THE REAR DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- Q. 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.

### MATERIAL SPECIFICATIONS

<u>LUMBER</u> :	SEE TM 715-5500-1, DUNNAGE LUMBER; FED SPEC MM-L-75
<u>NAILS</u> :	COMMON, CEMENT COATED OR CHEMICALLY ETCHED, FED SPEC FF-N-105.  ALT: ANNULAR-RING TYPE NAILS OF SAME SIZE.
STRAPPING, STEEL:	TYPE I OR IV, CLASS A OR B, FED SPEC QQ-S-781.
<u>WIRE</u> :	FED SPEC QQ-W-461.

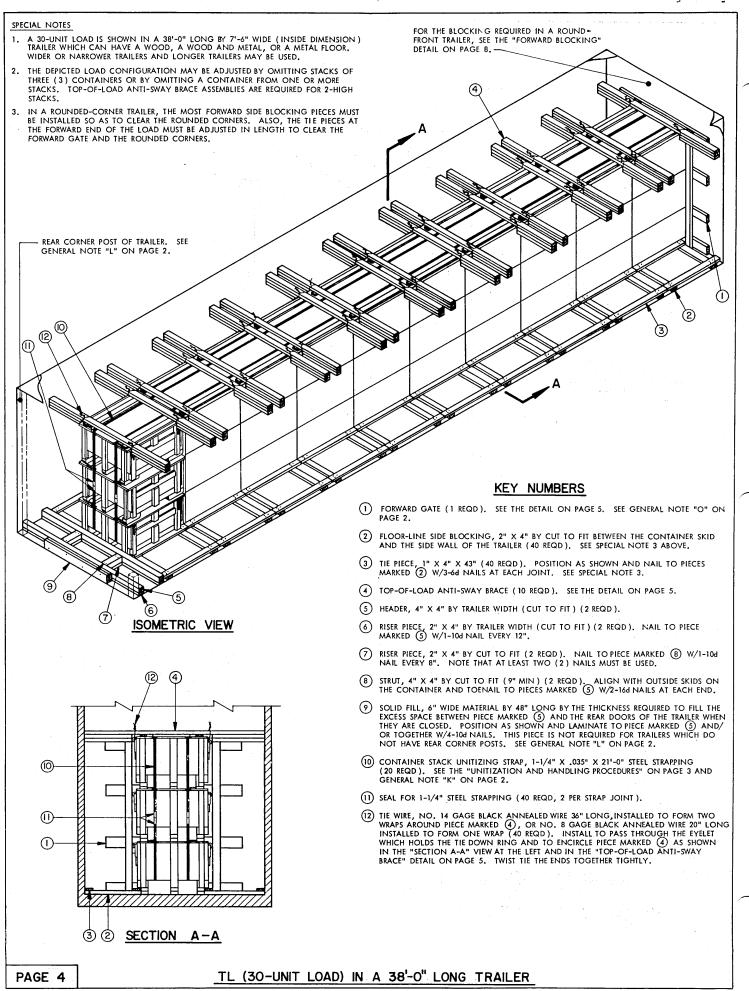


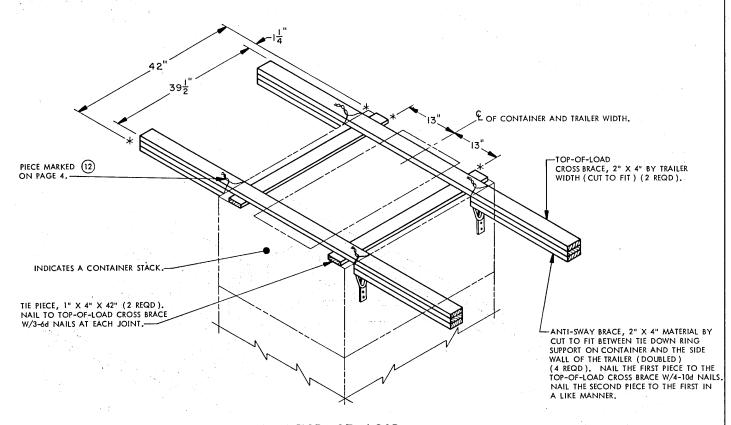
# UNITIZING AND HANDLING PROCEDURAL GUIDANCE

- 1. STACKING CONTAINERS FOR UNITIZING.
  - A. PLACE AN UPPER CONTAINER AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
  - B. THE CONTAINERS WITHIN A STACK WILL BE POSITIONED SO THAT ALL OF THE "PLUG-IN" MONITORING RECEPTACLES ON THE CONTAINERS WILL BE ON THE SAME SIDE OF THE STACK.
- 2. INSTALLATION OF 1-1/4" X .035" UNITIZING STEEL STRAPPING. SEE GENERAL NOTE "J" ON PAGE 2.
  - A. PLACE STRAPPING THROUGH NOTCHES PROVIDED ON COVER OF CONTAINER AS SHOWN, AND SO THAT STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS, I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
  - B. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS AS SHOWN. SEE GENERAL NOTE "K" ON PAGE 2. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE LAP JOINT STRAP SEALS CAN BE EASILY CRIMPED. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO INSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.
- 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

## (UNITIZING AND HANDLING PROCEDURAL GUIDANCE CONTINUED)

- 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 MAY BE HANDLED FROM AN END OR SIDE POSITION. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER TO PREVENT DAMAGING A CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING TRAILER LOADING OPERATIONS, A UNITIZED STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK UNDER THE BODY OF AN UPPER CONTAINER.
- C. EVEN IF ONLY ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT THE LIFTING IS DONE ON THE BOTTOM OF THE CONTAINER. CAUTION: DO NOT ATTACH A SLING TO THE CONTAINER "RING ASSEMBLY". IF A UNITIZED STACK IS HANDLED BY SLINGING, THE SLING USED MUST BE OF SUCH A DESIGN THAT THE LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CONTAINER.



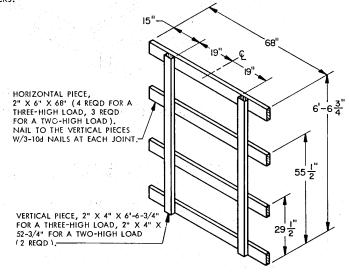


# TOP-OF-LOAD ANTI-SWAY BRACE

THIS ASSEMBLY IS REQUIRED ONLY ON TWO AND THREE-HIGH CONTAINER STACKS.

BILL OF MATERIAL					
LUMBER	LINEAR FEET	BOARD FEET			
1" X 4"	144	46			
2" X 4"	454	303			
2" X 6"	31	31			
4" X 4"	18	24			
NAILS	NO. REQD	POUNDS			
6d (2")	240	1-1/2			
10d (3")	372	5-3/4			
16d (3-1/2")	. 8	0-1/4			

STEEL STRAPPING, 1-1/4" X .035" ------- 420' REQD ------ 60 LBS SEAL FOR 1-1/4" STRAPPING ------ 40 REQD ------ 2 LBS NO. 14 GAGE BLACK ANNEALED WIRE ----- 134' REQD ------ 3 LBS



# FORWARD GATE

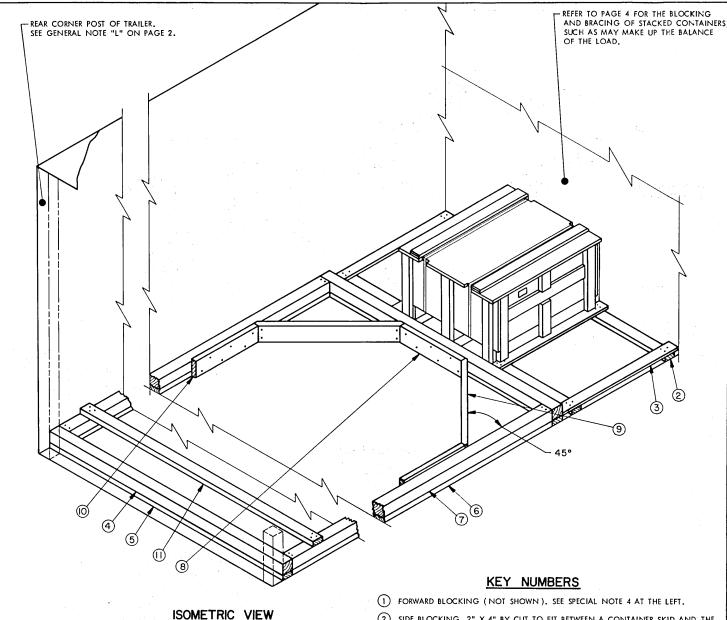
THIS GATE IS DESIGNED FOR USE AT FRONT OF A TWO OR THREE-HIGH LOAD IN A TRAILER HAVING A SQUARE FRONT OR HAVING ROUNDED CORNERS AT THE FORWARD END, SEE THE "FORWARD BLOCKING" DETAIL ON PAGE 8 FOR SPECIFICATIONS APPLICABLE TO A TRAILER HAVING A ROUND FRONT.

# LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
SKIDDED BOX	30	24,000 LBS
		1,126 LBS
	TOTAL WEIGHT	25,126 LBS

TL (30-UNIT LOAD) IN A 38-0" LONG TRAILER

PAGE 5

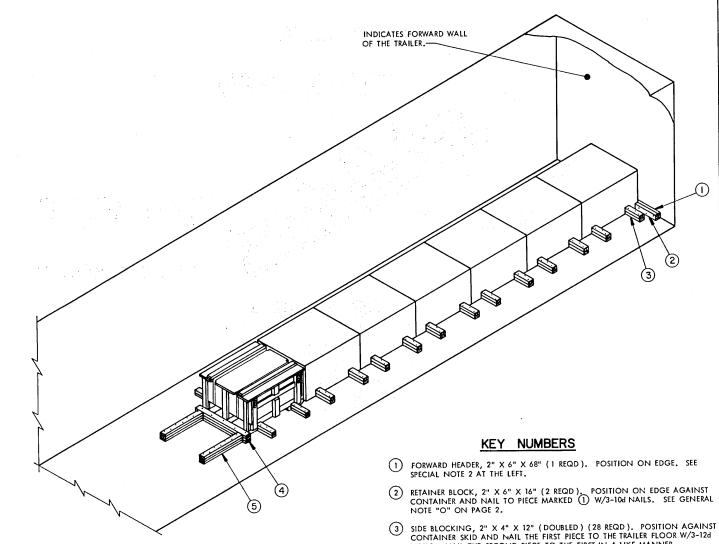


### SPECIAL NOTES

- THESE LTL OUTLOADING PROCEDURES DEPICT THE USE OF "K-BRACE" TYPE BLOCKING IN A 7'-6" WIDE TRAILER WHICH CAN HAVE A WOOD, A WOOD AND METAL, OR A METAL FLOOR. WIDER OR NARROWER TRAILERS MAY BE USED.
- ONLY ONE UNIT OF LADING IS SHOWN; HOWEVER, THE DEPICTED REAR BLOCKING
  IS APPLICABLE FOR THE BRACING OF ANY QUANTITY OF CONTAINERS IN ONE OR
  MORE LAYERS. THE DISTANCE FROM THE REAR OF THE LOAD TO THE REAR CORNER
  POSTS OR DOORS OF THE TRAILER MUST MEASURE AT LEAST 60" FOR THE INSTALLATION OF THE REAR BLOCKING.
- 3. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ④ THRU ① , IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD.
- 4. THE FORWARD BLOCKING IS NOT SHOWN IN THE LOAD VIEW. THE BLOCKING THAT IS REQUIRED AT THE FRONT OF THE LOAD WILL BE DEPENDENT UPON THE NUMBER OF LAYERS IN THE SHIPMENT AND ALSO UPON THE TYPE OF TRAILER TO BE LOADED. FOR THE BLOCKING OF A ONE LAYER LOAD IN A ROUNDED CORNER OR SQUAREFRONT TRAILER, USE PIECES MARKED (1) AND (2) AS SHOWN ON PAGE 7. FOR THE BLOCKING OF A TWO OR THREE LAYER LOAD IN A ROUNDED-CORNER OR SQUARE-FRONT TRAILER, USE PIECE MARKED (1) AS SHOWN ON PAGE 4. SEE THE "FORWARD BLOCKING" DETAIL ON PAGE 8 FOR THE BLOCKING REQUIRED IN A ROUND-FRONT TRAILER.

- SIDE BLOCKING, 2" X 4" BY CUT TO FIT BETWEEN A CONTAINER SKID AND THE SIDE WALL OF THE TRAILER (4 REQD PER STACK). SEE SPECIAL NOTE 3 ON PAGE 4.
- (3) TIE PIECE, 1" X 4" X 43" (4 REQD PER STACK), POSITION AS SHOWN AND NAIL TO PIECES MARKED (2) W/3-6d NAILS AT EACH JOINT. SEE GENERAL NOTE "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 4.
- REAR OF LOAD AND REAR OF TRAILER HEADER, 4" X 4" BY TRAILER WIDTH (CUT TO FIT) (2 REQD).
- (5) RISER PIECE, 2" X 4" BY TRAILER WIDTH (CUT TO FIT) (2 REQD). NAIL TO A PIECE MARKED (4) W/1-104 NAIL EVERY 12".
- 6 RISER PIECE, 2" X 4" BY CUT TO FIT BETWEEN THE REAR OF LOAD AND THE REAR OF TRAILER HEADER (2 REQD). NAIL TO PIECE MARKED 7 W/1-10d NAIL EVERY 12".
- (7) SIDE STRUT, 4" X 4" BY CUT TO FIT BETWEEN THE REAR OF LOAD AND THE REAR OF TRAILER HEADER (2 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END.
- (8) CENTER CLEAT, 2" X 6" X 24" (1 REQD). NAIL TO PIECE MARKED (4) W/6-12d NAILS.
- (2) DIAGONAL BRACE, 2" X 6" BY CUT TO FIT (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AT A 45° ANGLE AS SHOWN AND NAIL TO PIECES MARKED (4) AND (7) W/2-16d NAILS AT EACH END.
- 10 SIDE CLEAT, 2" X 6" X 24" (2 REQD ). NAIL TO PIECE MARKED 7 W/6-12d NAILS.
- (1) STRUT BRACING, 2" X 4" BY TRAILER WIDTH (CUT TO FIT) (MINIMUM OF 1 REQUIRED). ONE (1) ADDITIONAL BRACE IS REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO PIECES MARKED ② W/3-124 NAILS AT EACH END.

TYPICAL LTL



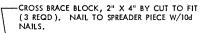
# SPECIAL NOTES

THESE LTL OUTLOADING PROCEDURES DEPICT THE BLOCKING OF A ONE-LAYER LOAD IN A TRAILER WHICH IS EQUIPPED WITH A NAILABLE FLOOR. IF IT IS DESIRED TO SHIP MORE THAN ONE LAYER, THE STACKED CONTAINERS MUST BE UNITIZED AS SHOWN BY THE "UNITIZATION AND HANDLING PROCEDURES" ON PAGE 3. ALSO, TOP-OF-LOAD ANTI-SWAY BRACE ASSEMBLIES MUST BE INSTALLED ON THE STACKED CONTAINERS. SEE PIECE MARKED (4) ON

ISOMETRIC VIEW

- IF THE TRAILER TO BE LOADED HAS A ROUND FRONT, PIECES MARKED (4)
  AND (3) MAY BE INSTALLED AT THE FRONT END OF THE LOAD IN LIEU OF
  USING THE PIECES MARKED (1) AND (2) AS SHOWN.
- TWO (2) BACK-UP CLEATS, SHOWN AS PIECES MARKED  $(\mathfrak{F})$ , ARE ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 8,000 POUNDS.

- 3) SIDE BLOCKING, 2" X 4" X 12" (DOUBLED) (28 REQD). POSITION AGAINST CONTAINER SKID AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- REAR HEADER, 2"  $\times$  4"  $\times$  42" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-12d NAILS. NAIL THE SECOND AND THIRD PIECES TO THE PREVIOUSLY APPLIED PIECE IN A LIKE MANNER.
- BACK-UP CLEAT, 2" X 4" X 30" (TRIPLED) (2 REQD). ALIGN WITH OUTSIDE SKIDS ON THE CONTAINER AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/7-12d NAILS. NAIL THE SECOND AND THIRD PIECES TO THE PREVIOUSLY APPLIED PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 3 AT THE LEFT.



– SPREADER PIECE, 2" X 4" OF A LENGTH TO SUIT (1 REQD). POSITION AS SHOWN AND NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

HEADER, 4" X 4" BY TRAILER WIDTH (CUT TO FIT) (1 REQD).-

> RISER PIECE, 2" X 4" BY TRAILER WIDTH (CUT TO FIT) (1 REQD). NAIL TO HEADER W/1-10d NAIL EVERY 12".

STRUT, 4" X 4" BY CUT TO FIT (4 REQD). POSITION AGAINST STRONG POINTS IN THE TRAILER FRONT WALL AND TOENAIL TO THE HEADER W/2-12d NAILS.

-STRUT RISER, 2" X 4" BY CUT TO FIT (4 REQD). NAIL TO STRUT W/1-101 NAIL EVERY 6".

# FORWARD BLOCKING

THIS "FORWARD BLOCKING" ASSEMBLY IS DESIGNED FOR USE AT THE FORWARD END OF A ONE, TWO, OR THREE-HIGH LOAD WHICH IS TO BE SHIPPED IN A TRAILER HAVING A ROUND FRONT. WHEN THIS "FORWARD BLOCKING" IS USED AT THE FORWARD END OF A TWO OR THREE-HIGH LOAD, THE FIRST TWO STACKS OF THE LOAD MUST BE ENCIRCLED WITH ONE LENGTH OF 1-1/4" X .035" STEEL STRAPPING TO PREVENT THE LADING FROM TIPPING FORWARD DURING TRANSIT.