LOADING AND BRACING (TL & LTL) IN VAN TRAILERS OF BLU-109/B BOMBS IN CNU-417/E CONTAINERS

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<u>CAUTION</u>: THE PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO HIGHWAY MOVEMENTS: NOT TRAILER-ON-FLAT-CAR MOVEMENTS.

U.S. ARMY MATERIEL COMMAND DRAWING					
APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND	DRAFT:	NAMZ	TECHNIC	IAN	ENGINEER
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GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO BLU-109/B BOMBS PACKED IN THE CNU-417/E CONTAINER. SEE THE CONTAINER DETAIL ON PAGE 3 AND U. S. AIR FORCE DRAWING NUMBER 8463212.
- C. 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. 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.
- D. 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.
- 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 LOADS, UP TO 45,000 POUNDS, 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 PALLET UNITS OF BOMBS, 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. 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)

MATERIAL SPECIFICATIONS

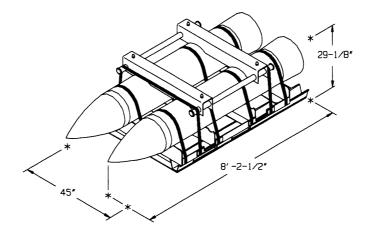
NAILS ----: FED SPEC FF-N-105; COMMON.

WIRE, CARBON STEEL -: ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006

OR BETTER.

(GENERAL NOTES CONTINUED)

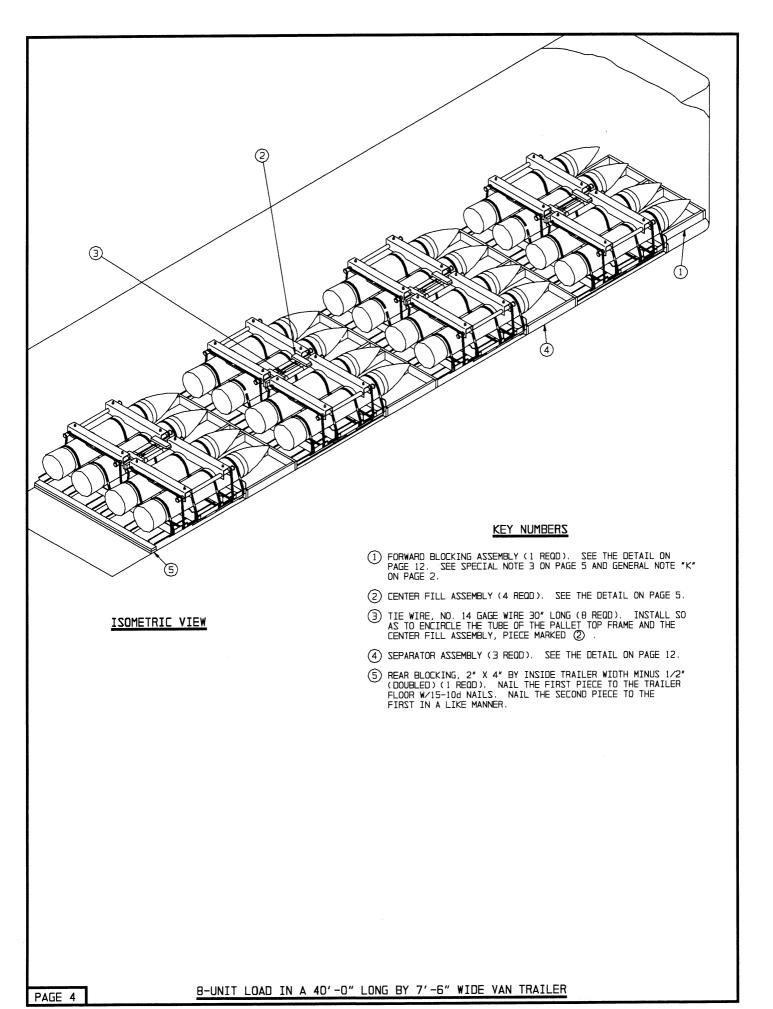
- K. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED 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.
- L. 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.
- M. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- N. THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 3". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE CENTER FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE TO THE HORIZONTAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12".
- O. CAUTION: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, PALLET UNITS BEING LOADED INTO THE CONVEYANCE MUST BE POSITIONED TO ALLOW A CLEAR PATH OF EXIT FOR THE OPERATOR AT ALL TIMES, SHOULD AN EMERGENCY EXIT BECOME NECESSARY.
- P. 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.



CONTAINER DETAILS

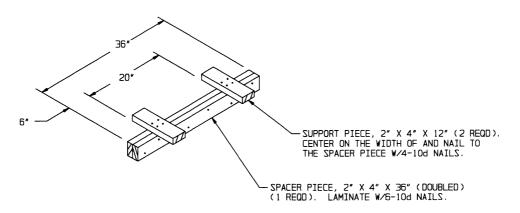
GROSS WEIGHT - - - - 4,470 LBS (APPROX) CUBE - - - - - - 74.7 CU FT (APPROX)

CNU-417/E CONTAINER DETAIL



SPECIAL NOTES:

- .1. AN EIGHT-UNIT LOAD OF BLU-109/B BOMBS PACKED IN THE CNU-417/E CONTAINER IS SHOWN IN A 40'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. WIDER TRAILERS MAY BE USED.
- 2. IF A WIDER TRAILER IS USED FOR SHIPPING THE DEPICTED LOAD, ADDITIONAL SPACER PIECES MAY BE ADDED TO THE CENTER FILL ASSEMBLIES AND THE LENGTH OF THE SUPPORT PIECES MAY BE INCREASED.
- 3. A TRAILER WITH ROUNDED CORNERS AT THE FORWARD END IS SHOWN IN THE LOAD ON PAGE 4. IF A TRAILER WITH A "SQUARE" FRONT IS FURNISHED FOR LOADING, THE FORWARD BLOCKING ASSEMBLY MAY BE CONSTRUCTED THE SAME AS THE SEPARATOR ASSEMBLIES.



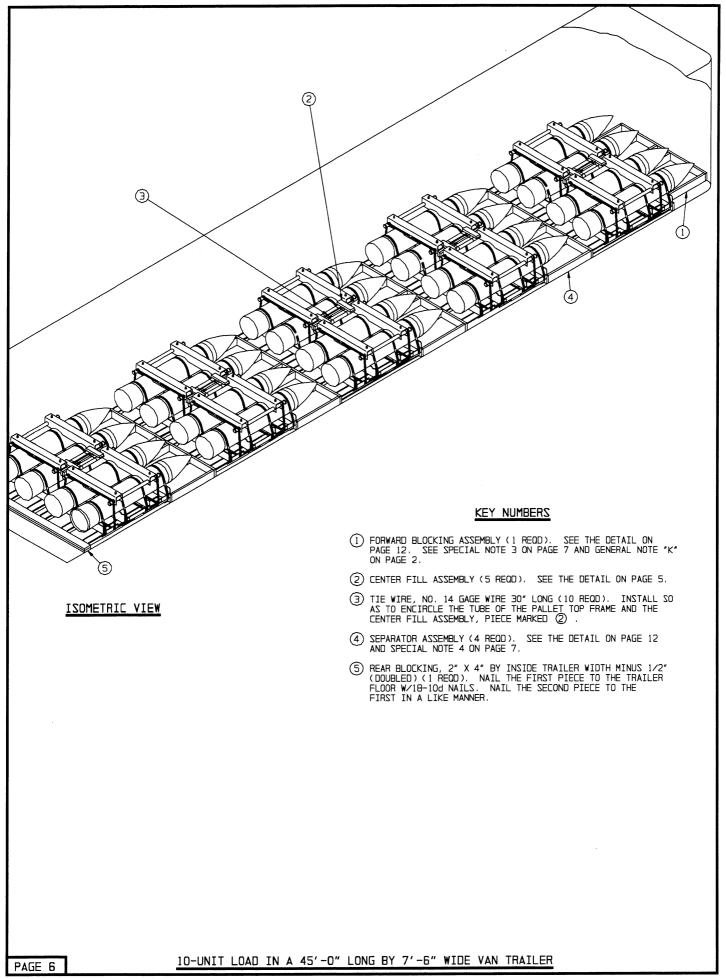
CENTER FILL ASSEMBLY

BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 3" 2" X 4" 2" X 6"	6 49 134	3 32 134	
NAILS	NO. REQD	POUNDS	
10d (3")	254	4	
WIRE, NO. 14 GAGE 20' REQD NIL			

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
	8	
TOTAL W	EIGHT	- 35,302 LBS (APPROX)

8-UNIT LOAD IN A 40'-0" LONG BY 7'-6" WIDE VAN TRAILER



SPECIAL NOTES:

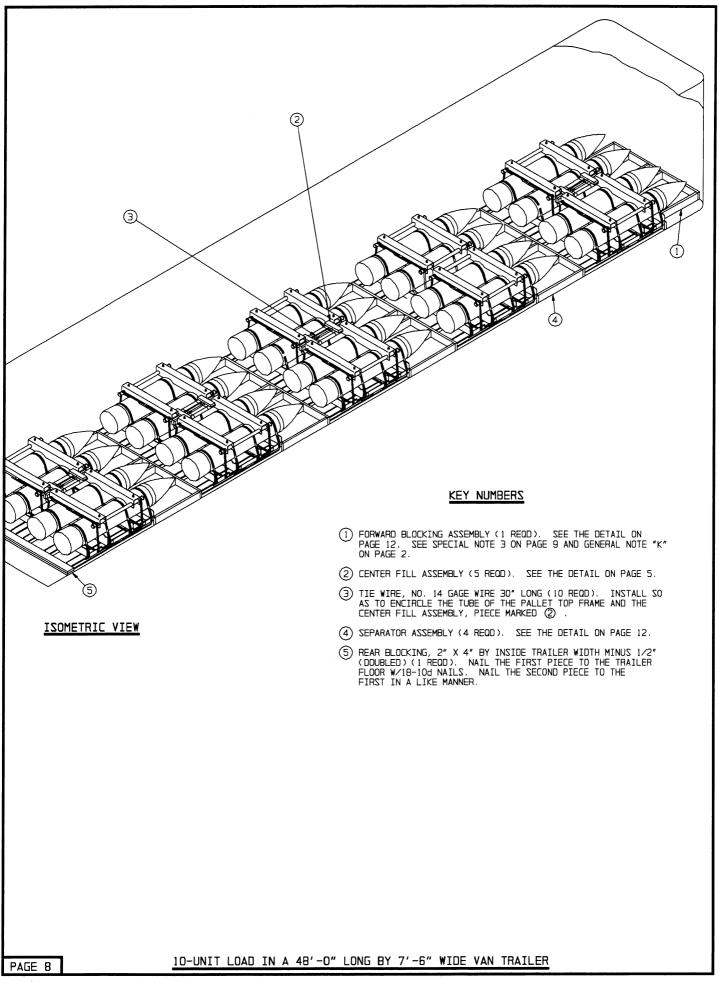
- 1. A TEN-UNIT LOAD OF BLU-109/B BOMBS PACKED IN THE CNU-417/E CONTAINER IS SHOWN IN A 45'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. WIDER TRAILERS MAY BE USED.
- 2. IF A WIDER TRAILER IS USED FOR SHIPPING THE DEPICTED LOAD, ADDITIONAL SPACER PIECES MAY BE ADDED TO THE CENTER FILL ASSEMBLIES AND THE LENGTH OF THE SUPPORT PIECES MAY BE INCREASED.
- 3. A TRAILER WITH ROUNDED CORNERS AT THE FORWARD END IS SHOWN IN THE LOAD ON PAGE 6. IF A TRAILER WITH A "SQUARE" FRONT IS FURNISHED FOR LOADING, THE FORWARD BLOCKING ASSEMBLY MAY BE CONSTRUCTED THE SAME AS THE SEPARATOR ASSEMBLIES.
- 4. WHEN CONSTRUCTING THE SEPARATOR ASSEMBLIES FOR THE LOAD SHOWN ON PAGE 6, THE LENGTH OF THE STRUTS OF THE SEPARATOR ASSEMBLY SHOWN IN DETAIL ON PAGE 12, WILL BE 30" LONG INSTEAD OF THE 37" AS SHOWN.

BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 3" 2" X 4" 2" X 6"	8 55 150	4 37 150	
NAILS	NO. REQD	POUNDS	
10d (3")	313	4-3/4	
WIRE, NO. 14 GAGE 25' REQD 1/4 LB			

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT	(APPROX)
PALLET UNIT DUNNAGE			
TOTAL N	VEIGHT	44,086	LBS (APPROX)

10-UNIT LOAD IN A 45'-0" LONG BY 7'-6" WIDE VAN TRAILER



SPECIAL NOTES:

- 1. A TEN-UNIT LOAD OF BLU-109/B BOMBS PACKED IN THE CNU-417/E CONTAINER IS SHOWN IN A 48'-0" LONG BY 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL TYPE VAN TRAILER. WIDER TRAILERS MAY BE USED.
- 2. IF A WIDER TRAILER IS USED FOR SHIPPING THE DEPICTED LOAD, ADDITIONAL SPACER PIECES MAY BE ADDED TO THE CENTER FILL ASSEMBLIES AND THE LENGTH OF THE SUPPORT PIECES MAY BE INCREASED.
- 3. A TRAILER WITH ROUNDED CORNERS AT THE FORWARD END IS SHOWN IN THE LOAD ON PAGE 8. IF A TRAILER WITH A "SQUARE" FRONT IS FURNISHED FOR LOADING, THE FORWARD BLOCKING ASSEMBLY MAY BE CONSTRUCTED THE SAME AS THE SEPARATOR ASSEMBLIES.

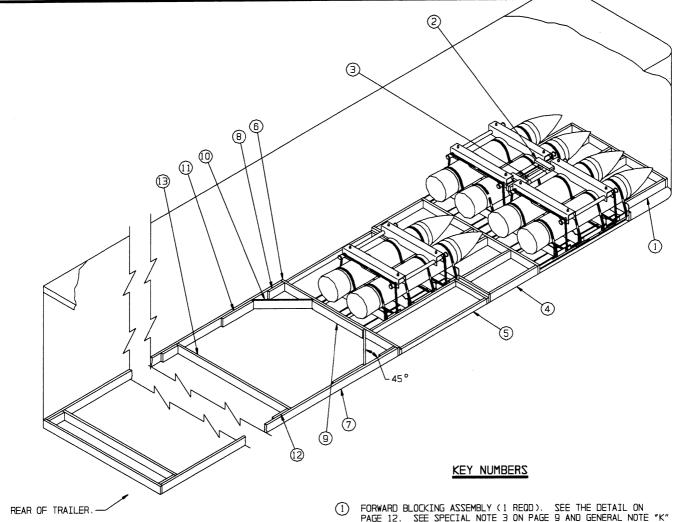
BILL OF MATERIAL			
LUMBER	LINEAR FEET	BOARD FEET	
2" X 3" 2" X 4" 2" X 6"	8 55 167	4 37 167	
NAILS	NO. REQD	POUNDS	
10d (3")	313	4-3/4	
WIRE, NO. 14 GAGE	25' REQD -	1/4 LB	

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
	8	

TOTAL WEIGHT - - - - - - 44,120 LBS (APPROX)

10-UNIT LOAD IN A 48'-0" LONG BY 7'-6" WIDE VAN TRAILER



ISOMETRIC VIEW

SPECIAL NOTES:

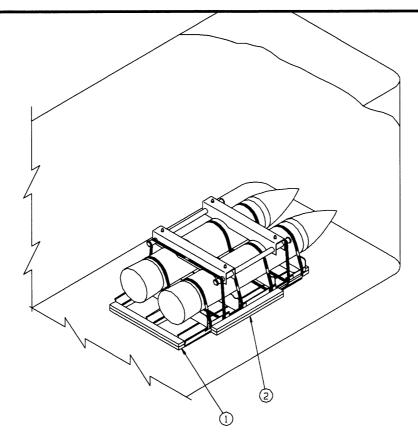
- A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
- 2. THE "K-BRACE BLOCKING", SHOWN AS PIECES MARKED (6) THRU (3), ARE ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 20,000 POUNDS

LATERAL PIECE, 2" X 4" BY LENGTH TO FILL THE VOID BETWEEN THE CONTAINER SKIDS AND THE TRAILER SIDE WALL (2 REQD). NAIL TO THE LONGITUDINAL PIECES W/2-10d NAILS AT EACH END. -LONGITUDINAL PIECE, 2" X 4" X 67" (2 REQD).

ZIDE BLOCKING AZZEMBLY

- FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 12. SEE SPECIAL NOTE 3 ON PAGE 9 AND GENERAL NOTE "K" ON PAGE 2.
- (2) CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 5.
- TIE WIRE, NO. 14 GAGE WIRE 30" LONG (2 REOD). INSTALL S AS TO ENCIRCLE THE TUBE OF THE PALLET TOP FRAME AND THE CENTER FILL ASSEMBLY, PIECE MARKED ② . OZ JLATZNI
- (4) SEPARATOR ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 12.
- (5) SIDE BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL AT LEFT.
- **(6)** REAR HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (2 REQD).
- SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE HEADERS, PIECES MARKED (6) (2 REQD).
- POCKET CLEAT, 2" X 6" X 12" (2 REOD). NAIL TO THE SIDE STI PIECE MARKED \bigcirc , W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED \bigcirc , W/2-12d NAILS. NAIL TO THE SIDE STRUT,
- $\begin{tabular}{lll} \hline \end{tabular} \begin{tabular}{lll} \hline \end{tabular} \begin{ta$
- (D) 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 AND SIDE STRUT, PIECES MARKED ⑥ AND ⑦ W/2-16d NAILS AT EACH END.
- (1) SIDE CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED \bigcirc , W/8-10d NAILS.
- (2) STRUT BRACE RESTRAINING CLEAT, 2" X 6" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑦ , W/3-10d NAILS.
- STRUT BRACE, 2" X 6" BY TRAILER WIDTH MINUS 3" (MIN OF ONE REOD). INSTALL ONE (1) NEAR THE REAR OF THE TRAILER AS SHOWN. ONE (1) ADDITIONAL PIECE REQUIRED FOR EVERY 7'-0" OF STRUT LENGTH. NAIL TO THE STRUT BRACE RETAINING CLEAT, PIECE MARKED (2), W/2-12d NAILS AT EACH END.

TYPICAL LTL (3-UNIT LOAD)



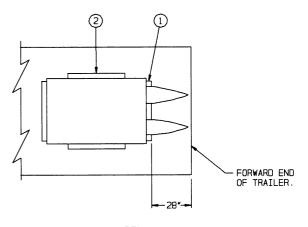
ISOMETRIC VIEW

KEY NUMBERS

- HEADER, 2" X 4" X 42" (DOUBLED) (2 REOD). POSITION TIGHT
 AGAINST THE CONTAINER UNIT AS SHOWN ABOVE AND IN THE
 PLAN VIEW BELOW. NAIL THE FIRST PIECE TO THE FLOOR W/3-10d
 NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE
 MANNER. SEE GENERAL NOTE "K" ON PAGE 2, AND SPECIAL
 NOTE 4 AT LEFT.
- 2 SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (2 REOD). POSITION TIGHT AGAINST THE CONTAINER SKIDS AS SHOWN ABOVE AND IN THE PLAN VIEW BELOW. NAIL THE FIRST PIECE TO THE FLOOR W/5-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

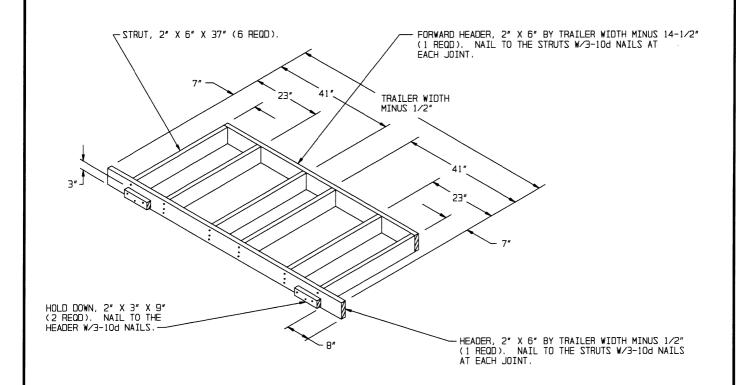
SPECIAL NOTES:

- A 7'-6" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
- THE CONTAINER SHOWN HAS OVERALL DIMENSIONS OF 8'-2-1/2" LONG BY 45" WIDE BY 29-1/8" HIGH AND WEIGHS APPROXIMATELY 4,370 POUNDS.
- 3. THE CONTAINER, AS SHOWN IN THE "ISOMETRIC VIEW" ABOVE, MAY BE POSITIONED ANYWHERE LONGITUDINALLY WITHIN THE TRAILER PROVIDED ADEQUATE NAILING SURFACES ARE AVAILABLE. FOR TRAILER STABILITY PURPOSES, THE CONTAINER SHOULD BE CENTERED LATERALLY WITHIN THE TRAILER.
- 4. NOTE: ONLY THE FORWARD HEADER WILL REQUIRE PRE-POSITIONING PRIOR TO LOADING THE CONTAINER INTO THE TRAILER. THE REMAINING HEADER AND SIDE BLOCKING PIECES MAY BE INSTALLED AFTER THE CONTAINER HAS BEEN LOADED INTO THE TRAILER.

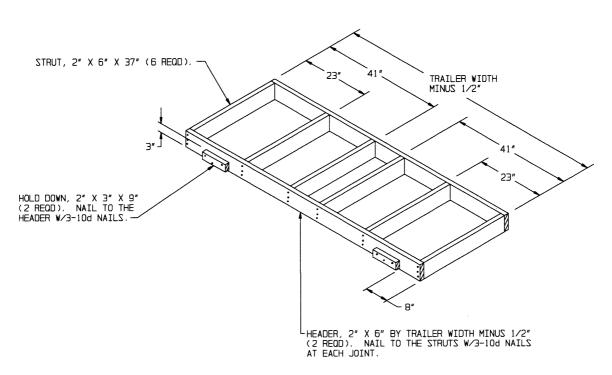


PLAN VIEW

TYPICAL LTL (1-UNIT LOAD)



FORWARD BLOCKING ASSEMBLY



SEPARATOR ASSEMBLY

DETAILS