

# LOADING AND BRACING (TL & LTL) IN VAN TRAILERS<sup>⊕</sup> OF BLU-107/B (DURANDAL) WEAPONS PACKED IN CNU-381/E SHIPPING AND STORAGE CONTAINERS

## INDEX

ITEM	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS - - - - -	2
UNITIZATION AND HANDLING GUIDANCE - - - - -	3
20-UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE VAN TRAILER - - - - -	4,5
20-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -	6,7
TYPICAL LTL (2-UNIT LOAD) - - - - -	8,9
TYPICAL LTL (1-UNIT LOAD) - - - - -	10
DETAILS - - - - -	11,12

⊕ 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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SEPTEMBER 1994			
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DO NOT SCALE

## GENERAL NOTES

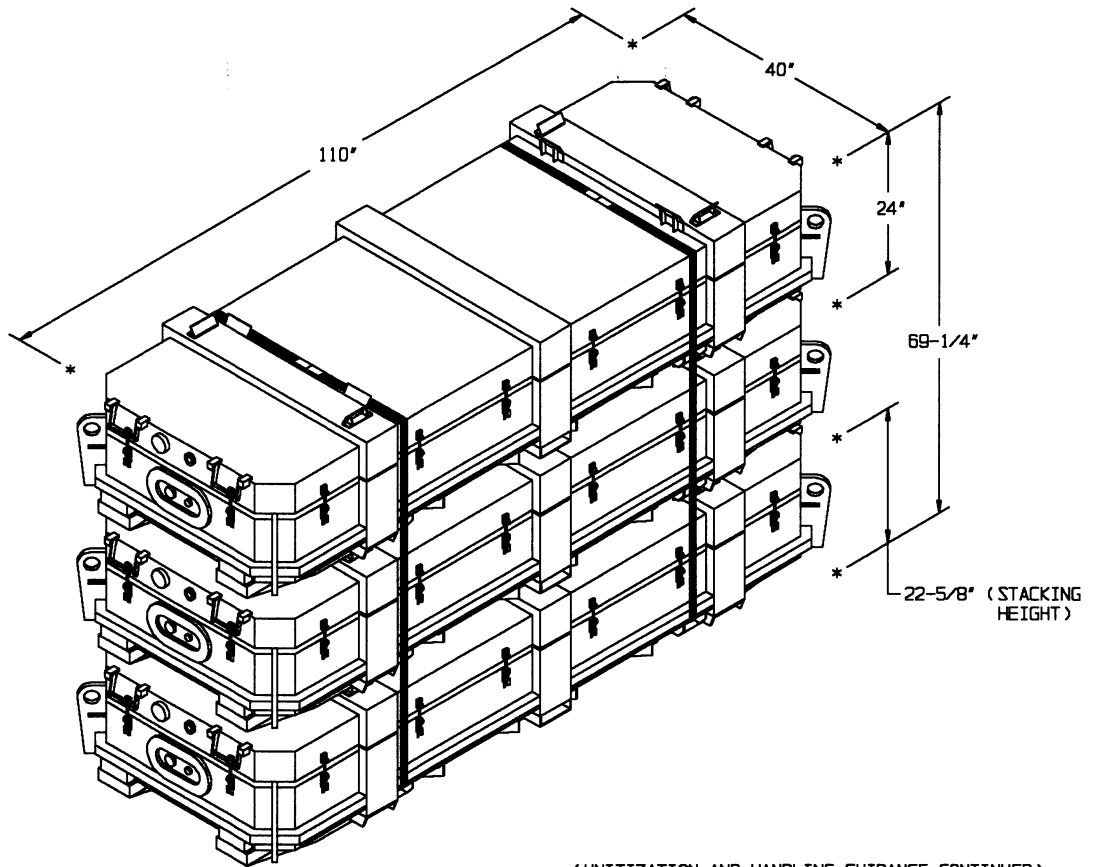
(GENERAL NOTES CONTINUED)

- 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 SPECIFIED IN THIS DRAWING ARE APPLICABLE TO BLU-107/B (DURANDAL) WEAPONS PACKED IN CNU-381/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-381/E CONTAINER WITH CONTENTS.
- CONTAINER DIMENSIONS - - - 110" L X 40" W X 24" H  
CONTAINER WEIGHT - - - - 2,050 LBS (APPROX)  
CONTAINER CUBE - - - - - 61.1 CUBIC FEET (APPROX)
- 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. VAN TRAILERS WHICH ARE 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) AND 48'-0" LONG BY 8'-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.
- 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 THE LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 41,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS, UP TO 46,000 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 BLU-107/B (DURANDAL) WEAPONS, 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. 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.
- K. 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.
- L. 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.
- M. 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.
- N. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- O. CAUTION: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, CONTAINERS 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.
- Q. 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.
- 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.



**CONTAINER STACK**

(UNITIZATION AND HANDLING GUIDANCE CONTINUED)

**UNITIZATION AND HANDLING GUIDANCE**

1. STACKING CONTAINERS FOR UNITIZING.

- A. WHEN STACKING CONTAINERS FOR UNITIZING, PLACE THE UPPER CONTAINER DIRECTLY ON TOP OF THE LOWER CONTAINER.
- 2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STRAPS. SEE GENERAL NOTE "J" ON PAGE 2.
  - A. POSITION STRAPS TO ENCIRCLE THE CONTAINERS THRU THE STRUCTURAL CHANNEL OPENING OF A LOWER CONTAINER AND OVER THE TOP OF THE CONTAINERS AS SHOWN IN THE ISOMETRIC VIEW AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK.
  - B. THE STRAPPING WILL BE FIRMLY TENSIONED BUT NOT SO MUCH AS TO DAMAGE THE CONTAINERS. EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO SEALS BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL, AS SHOWN IN THE "STRAP JOINT B" DETAIL ON PAGE 12. THE LAP JOINT MAY BE MADE EITHER ALONG THE SIDE OF THE STACK OR ON TOP, AS DESIRED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEAL. SEE GENERAL NOTE "J" ON PAGE 2.

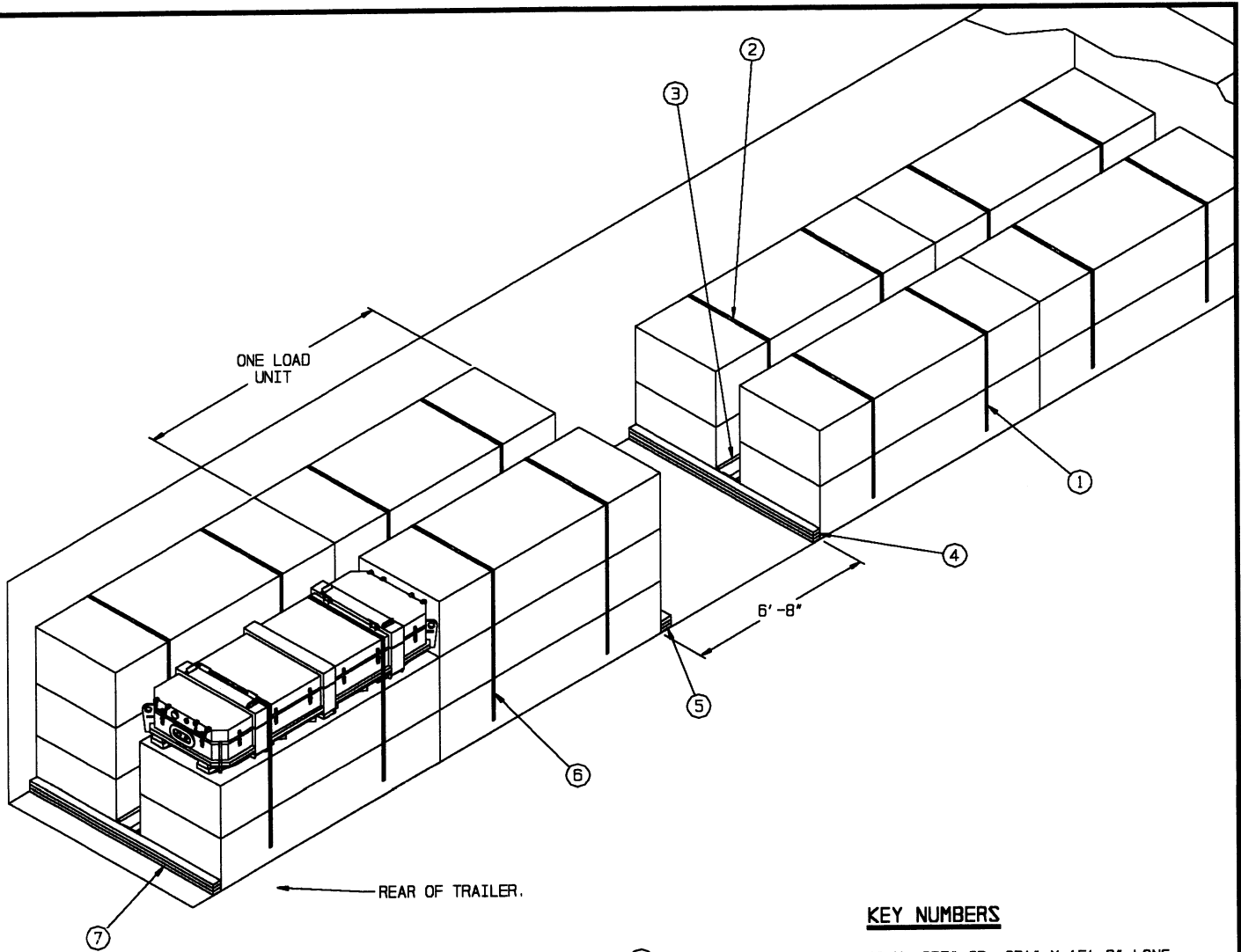
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3. CONTAINER OR CONTAINER STACK HANDLING.

NOTES: (1) APPROVED MATERIALS HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.

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

- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIAL HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS MUST BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO A CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
- C. IF A CONTAINER OR STACK OF CONTAINERS IS HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE FROM THE LIFTING POINTS ON THE BOTTOM CONTAINER OF A STACK.
- D. WHEN LOADING A CONTAINER OR CONTAINER STACK, THE CONTAINER OR STACK WILL BE PARTIALLY PLACED INTO THE END OF THE TRAILER BY HANDLING WITH A FORKLIFT FROM THE SIDE. THE FORKLIFT THEN MUST INSERT ITS TINES FROM THE END OF THE CONTAINER OR STACK, LIFT THE END SLIGHTLY, THEN PROCEED TO PUSH THE CONTAINER OR STACK INTO ITS FINAL POSITION WITHIN THE TRAILER. CARE MUST BE EXERCISED TO AVOID DAMAGE TO THE CONTAINER ENDS, ETC., DURING PUSHING OPERATIONS.
- E. WHEN UNLOADING A CONTAINER OR CONTAINER STACK FROM THE TRAILER, THE FORKLIFT TINES WILL BE INSERTED UNDER THE LOWER CONTAINER, THE FORKLIFT WILL THEN ELEVATE THE END SLIGHTLY ABOVE THE FLOOR, AND BEGIN DRAGGING THE CONTAINER OR STACK FROM THE TRAILER AFTER ATTACHING A CHAIN OR WEB STRAP FROM A LOWER CONTAINER LIFT POINT AROUND THE FORKLIFT MAST TO A LOWER LIFT POINT ON THE OPPOSITE SIDE OF THE CONTAINER.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① UNITIZING STRAP, 1-1/4" X .035" OR .031" X 15'-6" LONG STEEL STRAPPING (8 REQD). INSTALL TO ENIRCLE THE CONTAINERS IN THE TWO-HIGH STACKS. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 3.
- ② SEAL FOR 1-1/4" STEEL STRAPPING (32 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 12 AND GENERAL NOTE "J" ON PAGE 2.
- ③ SIDE BLOCKING ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 11. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 5.
- ④ FORWARD HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 4 ON PAGE 5.
- ⑤ INTERMEDIATE HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (TRIPLED) (1 REQD). POSITION AS SHOWN, 6'-8" FROM THE END OF THE SECOND LOAD UNIT. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS. NAIL THE THIRD PIECE TO THE SECOND W/6-20d NAILS.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 19'-0" LONG STEEL STRAPPING (8 REQD). INSTALL TO ENIRCLE THE CONTAINERS IN THE THREE-HIGH STACKS.
- ⑦ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/10-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 5.

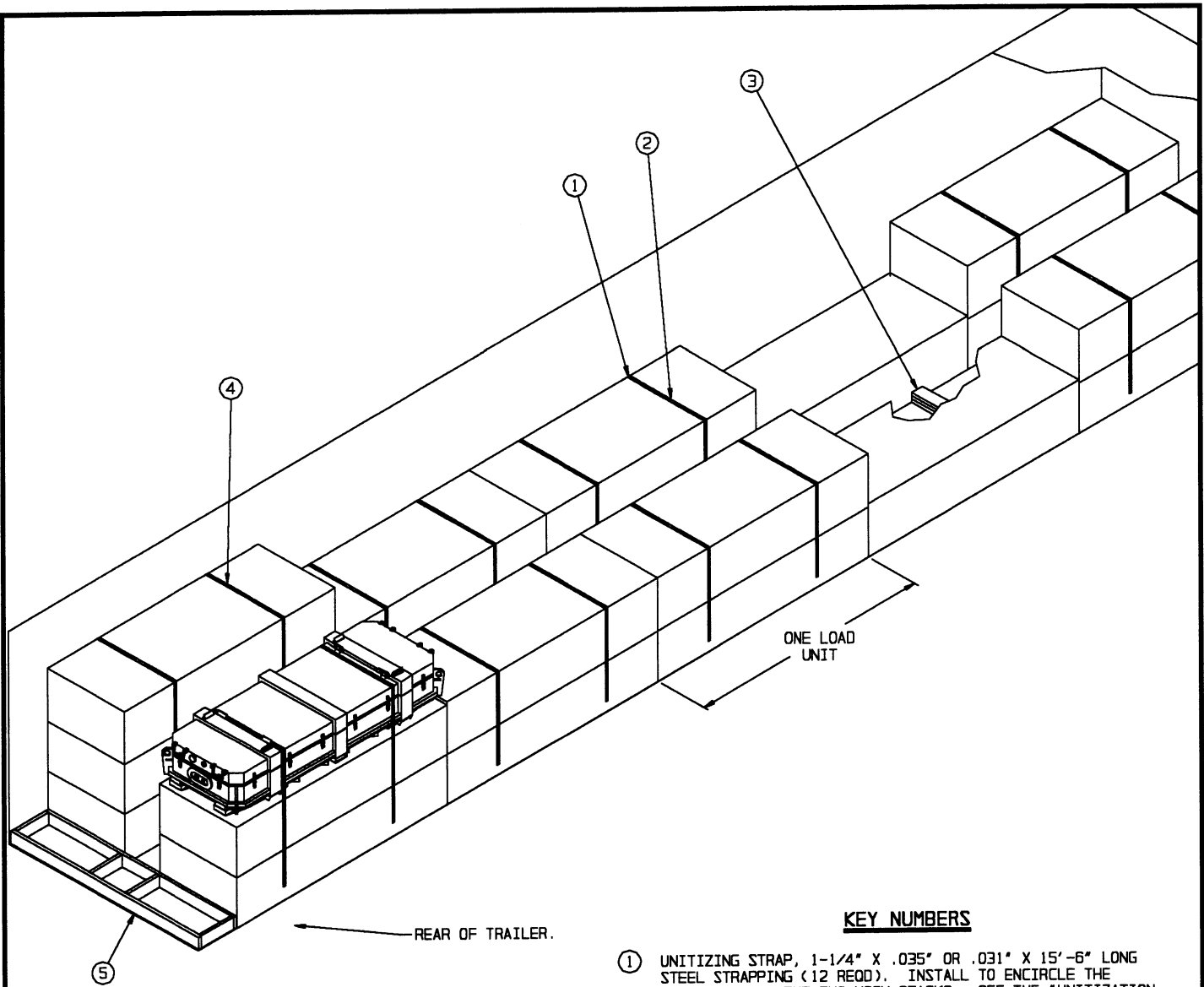
**SPECIAL NOTES:**

1. A 20-UNIT LOAD IS SHOWN IN A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE TRAILER SHOWN IN THE LOAD VIEW ON PAGE 4 IS EQUIPPED WITH A SQUARE FRONT WALL. IF THE TRAILER TO BE LOADED HAS ROUNDED FRONT CORNERS, A FORWARD BLOCKING ASSEMBLY MUST BE USED. SEE THE DETAIL ON PAGE 11.
3. IF DESIRED, NAILED SIDE BLOCKING MAY BE USED IN LIEU OF THE SIDE BLOCKING ASSEMBLY, PIECE MARKED ③. NAILED SIDE BLOCKING WILL CONSIST OF TRIPLED 2" X 6" X 72" LONG PIECES. POSITION AGAINST AND SO AS TO CENTER ON THE LENGTH OF THE CONTAINER AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/10-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. IF A WIDE TRAILER IS NOT FURNISHED FOR LOADING, THE LAST PIECE OF SIDE BLOCKING IN EACH LOAD UNIT WILL NEED TO BE PRE-POSITIONED.
4. IN LIEU OF USING PIECES MARKED ④ AND ⑤, A SPACER ASSEMBLY MAY BE INSTALLED. SEE THE DETAIL ON PAGE 11.
5. IN LIEU OF THE REAR HEADER, A REAR BLOCKING ASSEMBLY MAY BE INSTALLED. SEE THE "REAR BLOCKING ASSEMBLY A" AND "REAR BLOCKING ASSEMBLY B" DETAILS ON PAGE 12.
6. THE DEPICTED LOADING PATTERN IS APPLICABLE FOR A "WESTERN" TYPE TRAILER WHICH HAS THE REAR TANDEMS AT THE EXTREME REAR OF THE TRAILER. IF THE TRAILER FURNISHED IS OTHER THAN A "WESTERN" TYPE, THE DISTANCE BETWEEN THE SECOND AND THIRD LOAD UNITS SHOULD BE 42" IN LIEU OF 6'-8".
7. A LOAD MAY BE INCREASED BY ONE CONTAINER, IF DESIRED. THE ADDED CONTAINER SHOULD BE PLACED ON TOP OF THE SECOND LOAD UNIT FROM THE FRONT. THIS CONTAINER PLACEMENT IS NOT MANDATORY BUT IS PROVIDED AS GUIDANCE ONLY. CONTAINERS SHOULD BE PLACED SO AS TO OBTAIN THE BEST WEIGHT DISTRIBUTION.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE OR TWO CONTAINERS CAN BE OMITTED FROM THE TOP LAYER OF THE REAR LOAD UNIT, AND ALSO FROM THE ADJACENT LOAD UNIT IF MORE THAN TWO CONTAINERS ARE TO BE OMITTED.
9. IF A 48'-0" LONG TRAILER IS FURNISHED FOR LOADING, REFER TO THE LOADING PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE.
10. IF A 40'-0" LONG TRAILER IS FURNISHED FOR LOADING, THE CONTAINERS SHOULD BE LOADED WITHOUT THE SPACE BETWEEN LOAD UNITS TWO AND THREE. FOR A "WESTERN" TYPE TRAILER, THE REAR TWO LOAD UNITS SHOULD BE THREE LAYERS HIGH, AS SHOWN. FOR A TRAILER OTHER THAN A "WESTERN" TYPE, THE SECOND AND THIRD LOAD UNITS SHOULD BE THREE HIGH. FOR 21 UNITS IN A "WESTERN" TYPE TRAILER, THE ADDED UNIT SHOULD BE IN THE SECOND LOAD UNIT FROM THE FRONT OF THE TRAILER. FOR A TRAILER OTHER THAN A "WESTERN", THE ADDED UNIT SHOULD BE IN THE FIRST LOAD UNIT AT THE FRONT OF THE TRAILER.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	52	35
2" X 6"	104	104
NAILS	NO. REQD	POUNDS
10d (3")	164	2-3/4
20d (4")	12	1/2
STEEL STRAPPING, 1-1/4" --- 276' REQD --- 40 LBS		
SEAL FOR 1-1/4" STRAPPING --- 32 REQD --- 2 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	20	41,000 LBS
DUNNAGE		324 LBS
<b>TOTAL WEIGHT</b>		<b>41,324 LBS (APPROX)</b>



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① UNITIZING STRAP, 1-1/4" X .035" OR .031" X 15'-6" LONG STEEL STRAPPING (12 REQD). INSTALL TO ENCIRCLE THE CONTAINERS IN THE TWO-HIGH STACKS. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 3.
- ② SEAL FOR 1-1/4" STEEL STRAPPING (32 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 12 AND GENERAL NOTE "J" ON PAGE 2.
- ③ SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN THE STRUCTURAL CHANNELS OF THE CONTAINERS (TRIPLED) (10 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 7.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 19'-0" LONG STEEL STRAPPING (4 REQD). INSTALL TO ENCIRCLE THE CONTAINERS IN THE THREE-HIGH STACKS.
- ⑤ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY A" DETAIL ON PAGE 12. SEE SPECIAL NOTE 4 ON PAGE 7.

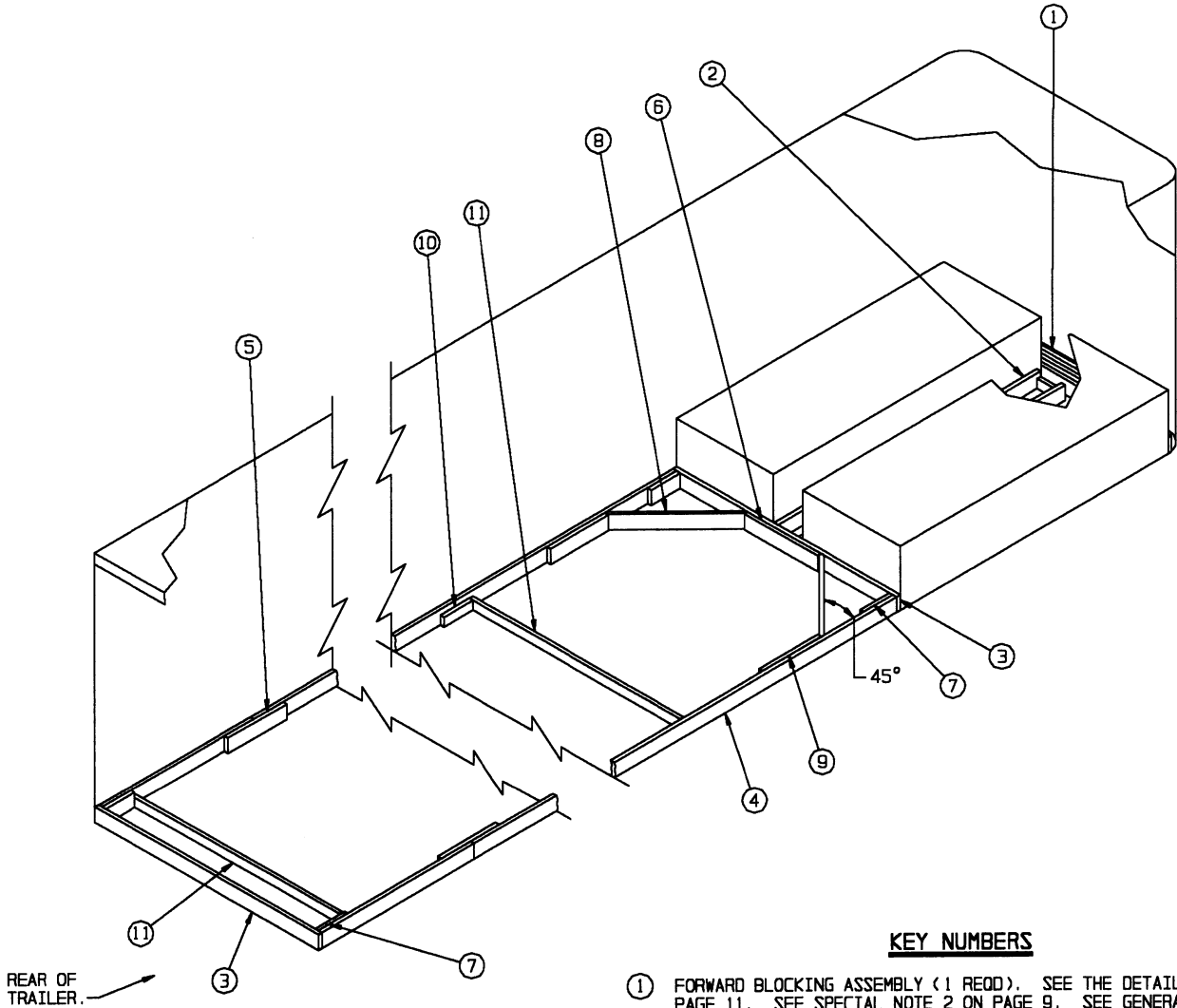
SPECIAL NOTES:

1. A 20-UNIT LOAD IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. THE TRAILER SHOWN IN THE LOAD VIEW ON PAGE 6 IS EQUIPPED WITH A SQUARE FRONT WALL. IF THE TRAILER TO BE LOADED HAS ROUNDED FRONT CORNERS, A FORWARD BLOCKING ASSEMBLY MUST BE USED. SEE THE DETAIL ON PAGE 11.
3. IF DESIRED, IN LIEU OF THE NAILED SIDE BLOCKING, PIECE MARKED ③, A SIDE BLOCKING ASSEMBLY MAY BE USED BETWEEN LATERALLY ADJACENT CONTAINER STACKS. SEE THE DETAIL ON PAGE 11 FOR CONSTRUCTION AND PIECE MARKED ③ ON PAGE 4 FOR A TYPICAL INSTALLATION.
4. IN LIEU OF USING THE REAR BLOCKING ASSEMBLY, PIECE MARKED ⑤, A NAILED REAR HEADER MAY BE USED IF THE FLOOR IS AVAILABLE IN THAT AREA. SEE PIECE MARKED ⑦ ON PAGE 4.
5. THE DEPICTED LOAD CANNOT BE INCREASED UNLESS THE TRACTOR AND TRAILER ARE LIGHTER THAN THE NORMAL. IF A CONTAINER CAN BE ADDED, IT PROBABLY SHOULD BE PLACED ON TOP OF THE SECOND LOAD UNIT FROM THE FRONT. THIS CONTAINER PLACEMENT IS PROVIDED AS GUIDANCE ONLY. A CONTAINER SHOULD BE PLACED SO AS TO OBTAIN THE BEST WEIGHT DISTRIBUTION.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. ONE OR TWO CONTAINERS CAN BE OMITTED FROM THE TOP LAYER OF THE REAR LOAD UNIT, AND FROM ANY OF THE TWO-HIGH LOAD UNITS IF MORE THAN TWO CONTAINERS ARE TO BE OMITTED.
7. IF A TRAILER WHICH IS SHORTER THAN 48'-0" LONG IS FURNISHED FOR LOADING, REFER TO THE LOADING PROCEDURES ON PAGES 4 AND 5 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	67	67
NAILS	NO. REQD	POUNDS
10d (3")	174	2-3/4
STEEL STRAPPING, 1-1/4" - - 262' REQD - - - - 38 LBS		
SEAL FOR 1-1/4" STRAPPING - - 32 REQD - - - - 2 LBS		

LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
CONTAINER - - - - -	20 - - - - -	41,000 LBS
DUNNAGE - - - - -	- - - - -	177 LBS
<u>TOTAL WEIGHT - - - - -</u>		<u>41,177 LBS (APPROX)</u>



**ISOMETRIC VIEW**

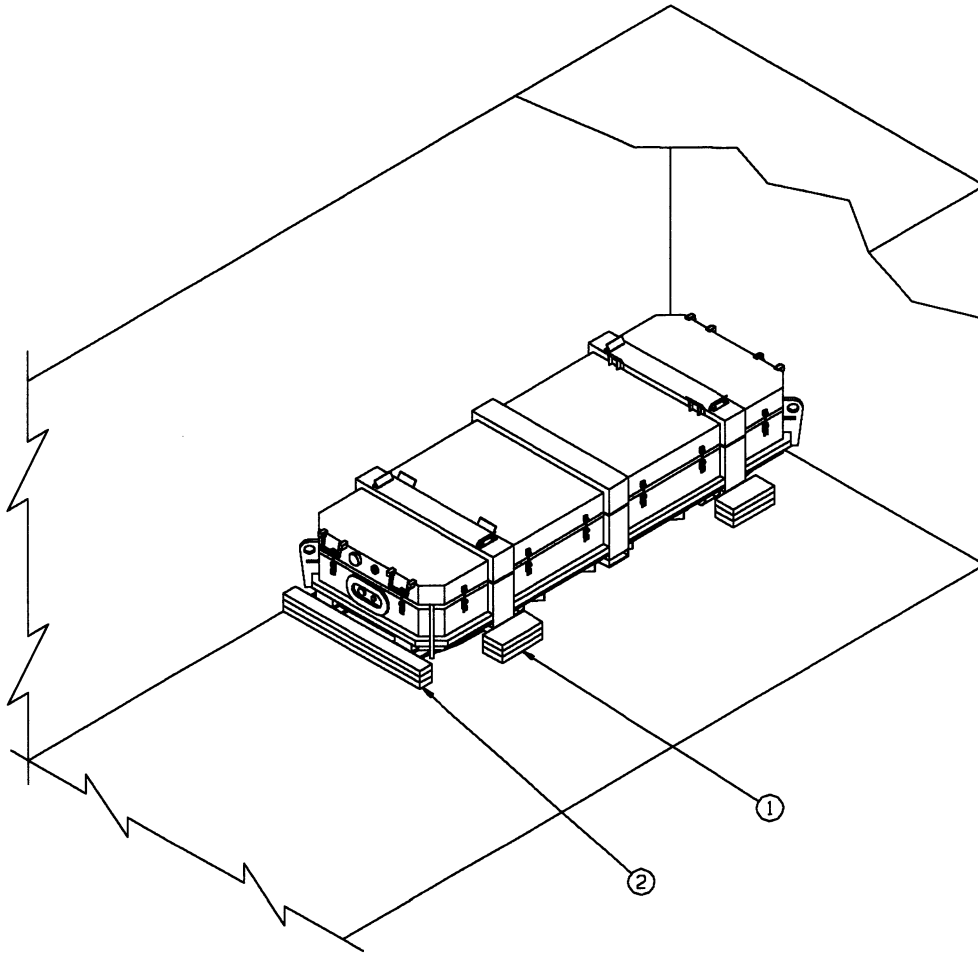
**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 11. SEE SPECIAL NOTE 2 ON PAGE 9. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.
- ② SIDE BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 11.
- ③ HEADER, 2" X 6" BY TRAILER WIDTH (CUT TO FIT) (2 REQD).
- ④ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE HEADERS, PIECES MARKED ③, (2 REQD).
- ⑤ SPLICE PIECE, 2" X 6" X 24" (AS REQD). POSITION SO AS TO CENTER ON THE JOINT OF THE SIDE STRUTS, PIECES MARKED ④, AND NAIL W/4-10d NAILS AT EACH END.
- ⑥ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO THE FORWARD HEADER, PIECE MARKED ③, W/6-10d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/5-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ③, W/3-12d NAILS.
- ⑧ 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 TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ③, AND/OR THE SIDE STRUT, PIECE MARKED ④, W/2-16d NAILS AT EACH END.
- ⑨ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/8-10d NAILS.
- ⑩ STRUT BRACE RETAINER CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ④, W/3-10d NAILS. SEE SPECIAL NOTE 3 ON PAGE 9.
- ⑪ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" (CUT TO FIT) (MINIMUM OF ONE REQD). NAIL TO THE POCKET CLEATS, PIECES MARKED ⑦, AND/OR TO THE STRUT BRACE RETAINER CLEATS, PIECES MARKED ⑩, W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 3 ON PAGE 9.



SPECIAL NOTES:

1. A 2-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER. TRAILERS OF OTHER WIDTHS CAN BE USED.
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 AGAINST THE TRAILER FRONT WALL.
3. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO THE POCKET CLEATS, PIECES MARKED ⑦. IF THE SIDE STRUTS, PIECES MARKED ④, ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE, PIECE MARKED ①, AND TWO STRUT BRACE RETAINING CLEATS, PIECES MARKED ①, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
4. THE K-BRACE BLOCKING, SHOWN AS PIECES MARKED ③ THRU ①, IS ADEQUATE FOR RETAINING A MAXIMUM OF NINE CONTAINERS.
5. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER TYPE METHOD OF REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING, PIECES MARKED ③ THRU ①. SEE PIECE MARKED ⑦ ON PAGE 4 FOR A TYPICAL INSTALLATION. THE HEADER WILL BE NAILED WITH NOT LESS THAN 6-10d NAILS. A HEADER WITH 6 NAILS IS ADEQUATE FOR AN LTL LOAD OF NOT MORE THAN SEVEN CONTAINERS. FOR EACH ADDITIONAL CONTAINER, ADD A 10d NAIL IN EACH LAYER OF THE HEADER.



**ISOMETRIC VIEW**

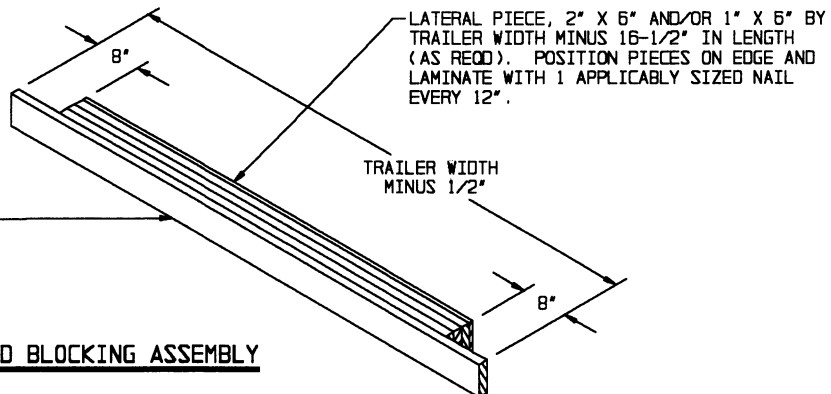
**SPECIAL NOTES:**

1. A 1-UNIT LOAD IS SHOWN IN A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER WHICH HAS A NAILABLE FLOOR. OTHER WIDTH TRAILERS CAN BE USED.
2. IF THE TRAILER BEING LOADED IS EQUIPPED WITH ROUNDED FRONT CORNERS, THE CONTAINER SHOULD BE POSITIONED IN THE CENTER OF THE TRAILER WIDTH AND SIDE BLOCKING INSTALLED ON BOTH SIDES OF THE CONTAINER. IN LIEU OF DOING THAT, A FORWARD BLOCKING ASSEMBLY MAY BE INSTALLED. SEE THE DETAIL ON PAGE 11.
3. THE HEADER, SHOWN AS PIECE MARKED ②, WILL NOT BE RELIED UPON TO RETAIN MORE THAN THREE 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, MUST BE INSTALLED FOR THE ADDED CONTAINER (S), OR SIDE BLOCKING ASSEMBLIES, SHOWN AS PIECE MARKED ② ON PAGE 8, MUST BE INSTALLED BETWEEN LATERALLY ADJACENT CONTAINERS. IF THE TRAILER HAS ROUNDED CORNERS AT THE FORWARD END, INSTALL A FORWARD BLOCKING ASSEMBLY.

**KEY NUMBERS**

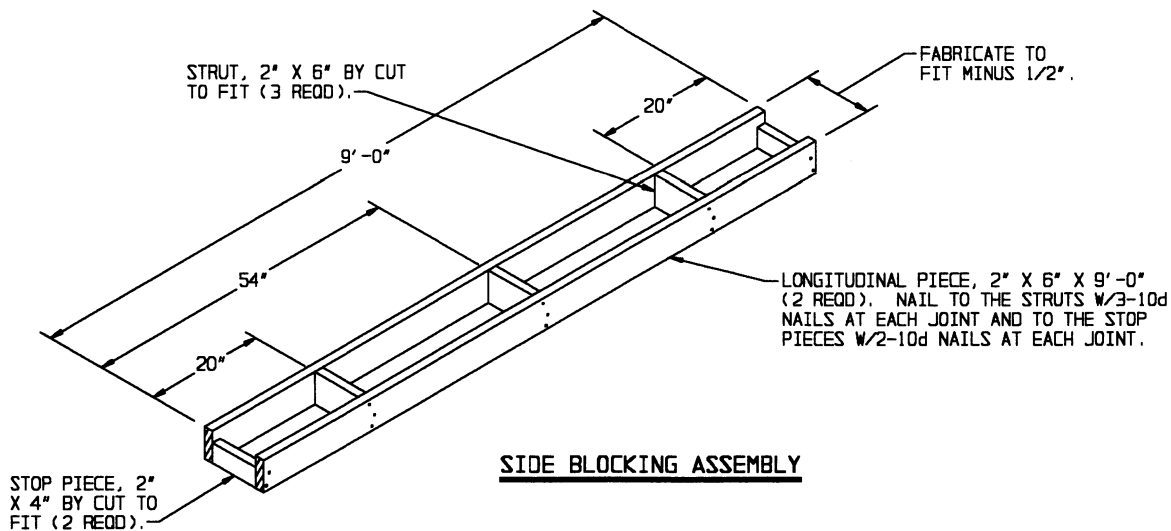
- ① SIDE BLOCKING, 2" X 6" X 12" (TRIPLED) (2 REQD). POSITION AS SHOWN. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE GENERAL NOTE "L" ON PAGE 2. SEE SPECIAL NOTE 2 AT LEFT.
- ② HEADER, 2" X 4" X 40" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 AT LEFT.

LOAD BEARING PIECE, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REQD).

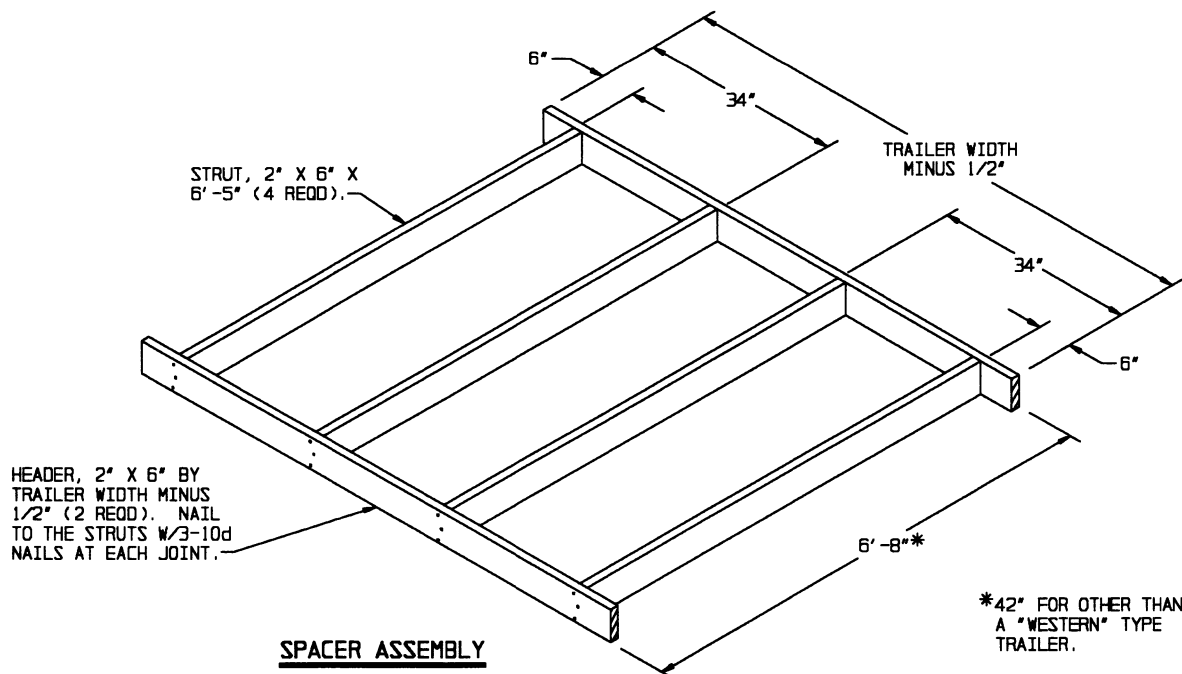


**FORWARD BLOCKING ASSEMBLY**

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 LATERAL PIECES WILL BE USED.



**SIDE BLOCKING ASSEMBLY**



**SPACER ASSEMBLY**

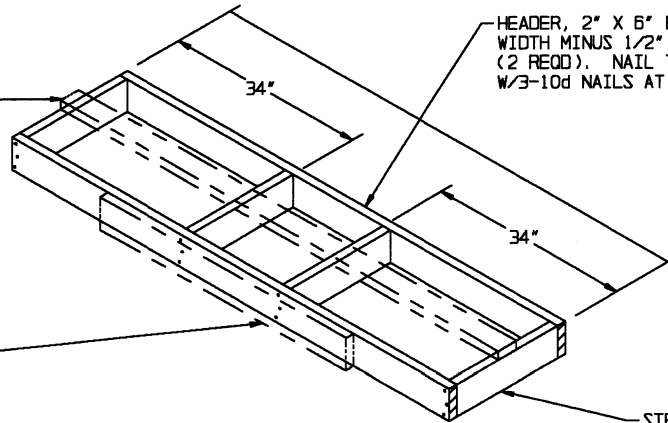
\*42" FOR OTHER THAN A "WESTERN" TYPE TRAILER.

**DETAILS**

STRUT BRACING, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (1 REQD FOR EVERY 7'-0" OF STRUT LENGTH FOR STRUTS LONGER THAN 7'-0"). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.

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

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.

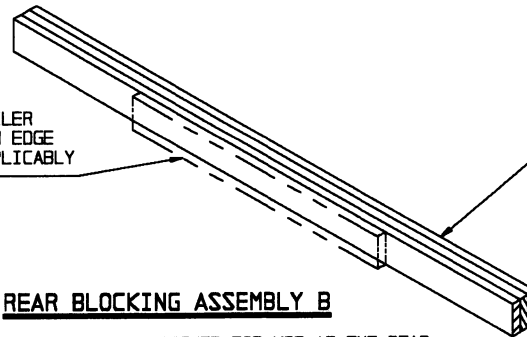


STRUT, 2" X 6" BY CUT-TO-FIT (4 REQD).

**REAR BLOCKING ASSEMBLY A**

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE EXCESS SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS 9" OR GREATER AS SHOWN IN THE LOAD ON PAGE 6.

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 AND THE DOORS ON THE TRAILER WHEN THEY ARE CLOSED. POSITION ON EDGE AND NAIL TO THE SOLID FILL W/4 APPLICABLY SIZED NAILS.



SOLID FILL, 6" WIDE MATERIAL BY TRAILER WIDTH MINUS 1/2" IN LENGTH BY THE THICKNESS REQUIRED TO CONTACT REAR CORNER POSTS OR TO CONTACT REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE AND LAMINATE W/1-10d NAIL EVERY 12".

**REAR BLOCKING ASSEMBLY B**

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



ONE SEAL WITH TWO PAIR OF NOTCHES.

**STRAP JOINT A**

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



TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

**STRAP JOINT B**

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

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

**DETAILS**