

# LOADING AND BRACING (TL & LTL) IN VAN TRAILERS<sup>⊕</sup> OF GUIDANCE CONTROL UNIT, WGU-12, WGU-25, WGU-36 OR WGU-39 PACKED IN CNU-371 METAL CONTAINERS, PALLETIZED

## INDEX

ITEM	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS - - - - -	2
PALLET UNIT DETAIL - - - - -	3
28 UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE TRAILER - - - - -	4-5
25 UNIT LOAD IN A 53'-0" LONG BY 8'-2" WIDE TRAILER - - - - -	6-7
24 UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE TRAILER - - - - -	8-9
24 UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE TRAILER - - - - -	10-11
TYPICAL LTL (3 UNIT LOAD) - - - - -	12-13
TYPICAL LTL (1 UNIT LOAD) - - - - -	14-15
DETAILS - - - - -	16-20, 24
PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS - - - - -	21
PROCEDURES FOR SHIPMENT OF PARTIAL PALLET UNITS - - - - -	22
PROCEDURES FOR VAN TRAILERS EQUIPPED WITH LARGE-ANGLED FRONT CORNERS -	23

**DISTRIBUTION STATEMENT A:**

APPROVED FOR PUBLIC RELEASE  
DISTRIBUTION IS UNLIMITED.

**⊕ CAUTION: THE PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE TO  
HIGHWAY MOVEMENTS, NOT TRAILER-ON-FLATCAR (TOFC) MOVEMENTS.**

## U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND		<b>CAUTION: VERIFY PRIOR TO USE AT <a href="https://www.dau.mil/cop/ammo/Pages/Default.aspx">https://www.dau.mil/cop/ammo/Pages/Default.aspx</a> THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 24.</b>							
RUS.ALLEN.J .1230354282	Digitally signed by RUS.ALLEN.J.1230354282 Date: 2019.06.03 16:49:09 -05'00'	<b>DO NOT SCALE</b>		<b>MAY 2019</b>					
	DESIGN ENGINEER	BASIC	QUYEN TRAN						
		REV.							
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND		ENGINEERING DIVISON	FIEFFER.LAUR A.A.1230375727	Digitally signed by FIEFFER.LAURA.A.1230375727 Date: 2019.05.07 07:52:01 -05'00'					
SMITH.THERESA. ANN.1009147639	Digitally signed by SMITH.THERESA.ANN.1009147 639 Date: 2019.06.24 07:06:39 -05'00'	TEST ENGINEER	FELICIANO.AD IN.1259200373	Digitally signed by FELICIANO.ADIN.1259200373 Date: 2019.05.09 06:06:47 -05'00'					
		TEST REPORT	NA	CLASS	DIVISION	DRAWING	FILE		
U.S. ARMY DEFENSE AMMUNITION CENTER		EXPLOSIVE SAFETY DIRECTORATE	THOMAS.CARL.AN THONY.110462137 2	Digitally signed by THOMAS.CARL.ANTHONY.1104 621372 Date: 2019.05.09 07:34:13 -05'00'		19	48	8857	SP11PM3

## 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 SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF WGU-12, WGU-25, WGU-36, AND WGU-39 GUIDANCE CONTROL UNITS PACKED IN CNU-371 METAL CONTAINERS ON METAL PALLETES. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH AMMUNITION ITEMS. SEE PAGE 3 AND NAVSEA DRAWING 6214084 FOR DETAILS OF THE PALLET UNIT. **CAUTION:** REGARDLESS OF THE QUANTITY OF PALLET UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE VAN TRAILER MUST NOT BE EXCEEDED.
- 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 FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.
- E. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF 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 40,000 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 ON A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, 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. 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, AND POSITION THE PALLET UNITS DIRECTLY AGAINST THE FORWARD PORTION OF THE TRAILER.
- K. 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 "END-OVER-END LAP JOINT DETAILS" ON PAGE 24 FOR GUIDANCE.

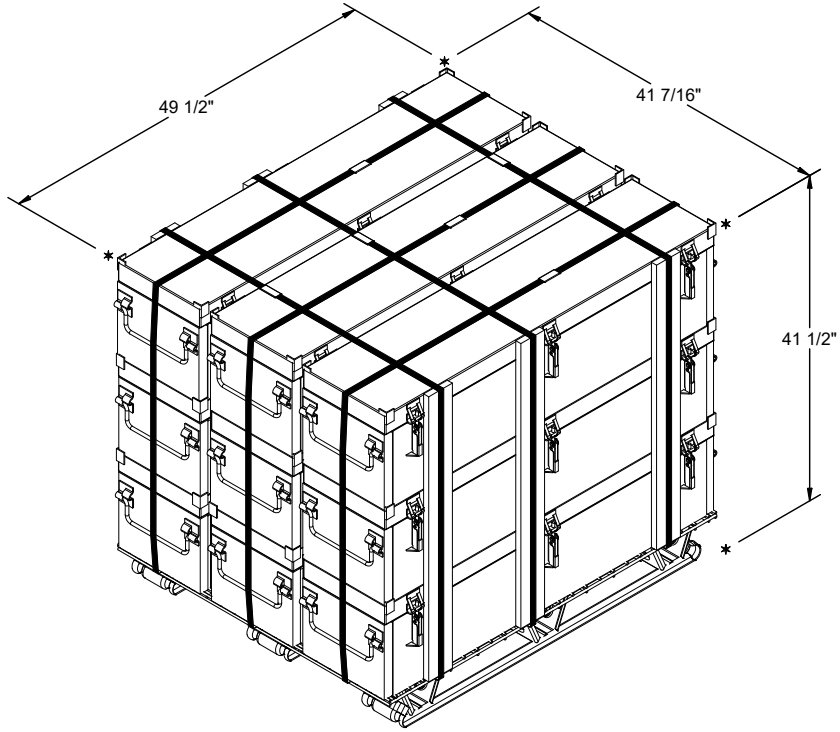
(CONTINUED AT RIGHT)

## MATERIAL SPECIFICATIONS

LUMBER	---	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
NAILS	---	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
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-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

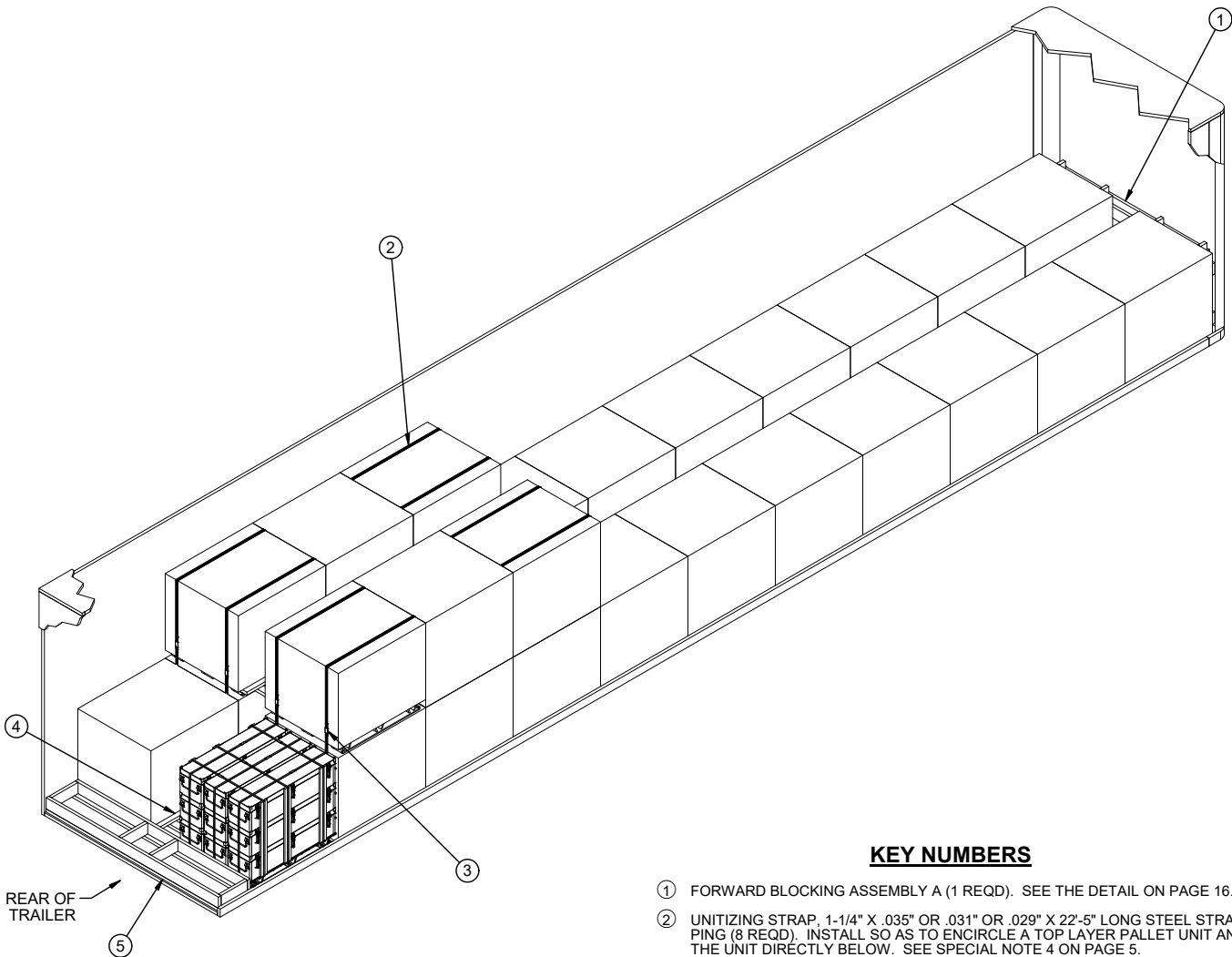
## (GENERAL NOTES CONTINUED)

- L. 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 THAT 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 ASTM F1667 AS NEARLY AS PRACTICABLE. STAPLES THAT 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. THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 6". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE CRIB FILL ASSEMBLIES OR ANTI-SWAY BRACES. NAIL EACH ADDITIONAL PIECE TO THE BUFFER PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE LUMBER USED IN THESE ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNIT.
- 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. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR MEASURES 1-1/2" OR LESS REAR BLOCKING IS NOT REQUIRED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THE 9". USE THE "REAR BLOCKING ASSEMBLY B" AS DEPICTED ON PAGE 18. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A", AS SHOWN ON PAGE 18. **NOTE:** REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER IS CONFIGURED SUCH AS TO ALLOW NAILING IN THE AREA IN QUESTION. REFER TO THE LOAD ON PAGE 8 AND THE HEADER NAILING CHARTS ON PAGE 9 FOR GUIDANCE. **CAUTION:** THE NAILED HEADER METHOD IS REQUIRED WHEN LOADING VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS.
- Q. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- R. THE PALLET UNITS THAT DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE "SHIPMENT OF A PARTIAL PALLET UNIT" DETAILS ON PAGE 22. FOR "SHIPMENT OF LEFTOVER CONTAINERS" SEE THE DETAILS ON PAGE 21.
- S. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF PALLET UNITS OF CNU-371 CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED MUNITION, OR WHEN THEY ARE EMPTY.
- T. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN CNU CONTAINERS AND STEEL STRAPPING, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.
- U. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- V. 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 25.4MM, AND ONE POUND EQUALS 0.454 KG.



**PALLET UNIT**

GROSS WEIGHT - - - - - 1,400 LBS  
CUBE - - - - - 49.3 CU FT



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 16.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 22'-5" LONG STEEL STRAPPING (8 REQD). INSTALL SO AS TO ENCIRCLE A TOP LAYER PALLET UNIT AND THE UNIT DIRECTLY BELOW. SEE SPECIAL NOTE 4 ON PAGE 5.
- ③ SEAL FOR 1-1/4" STRAPPING (8 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL WITH TWO PAIR OF NOTCHES. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 24.
- ④ ANTI-SWAY BRACE A (14 REQD). SEE THE DETAIL ON PAGE 17 AND SPECIAL NOTE 2 ON PAGE 5.
- ⑤ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 18 AND SPECIAL NOTE 3 ON PAGE 5.

REAR OF TRAILER

**BILL OF MATERIAL**

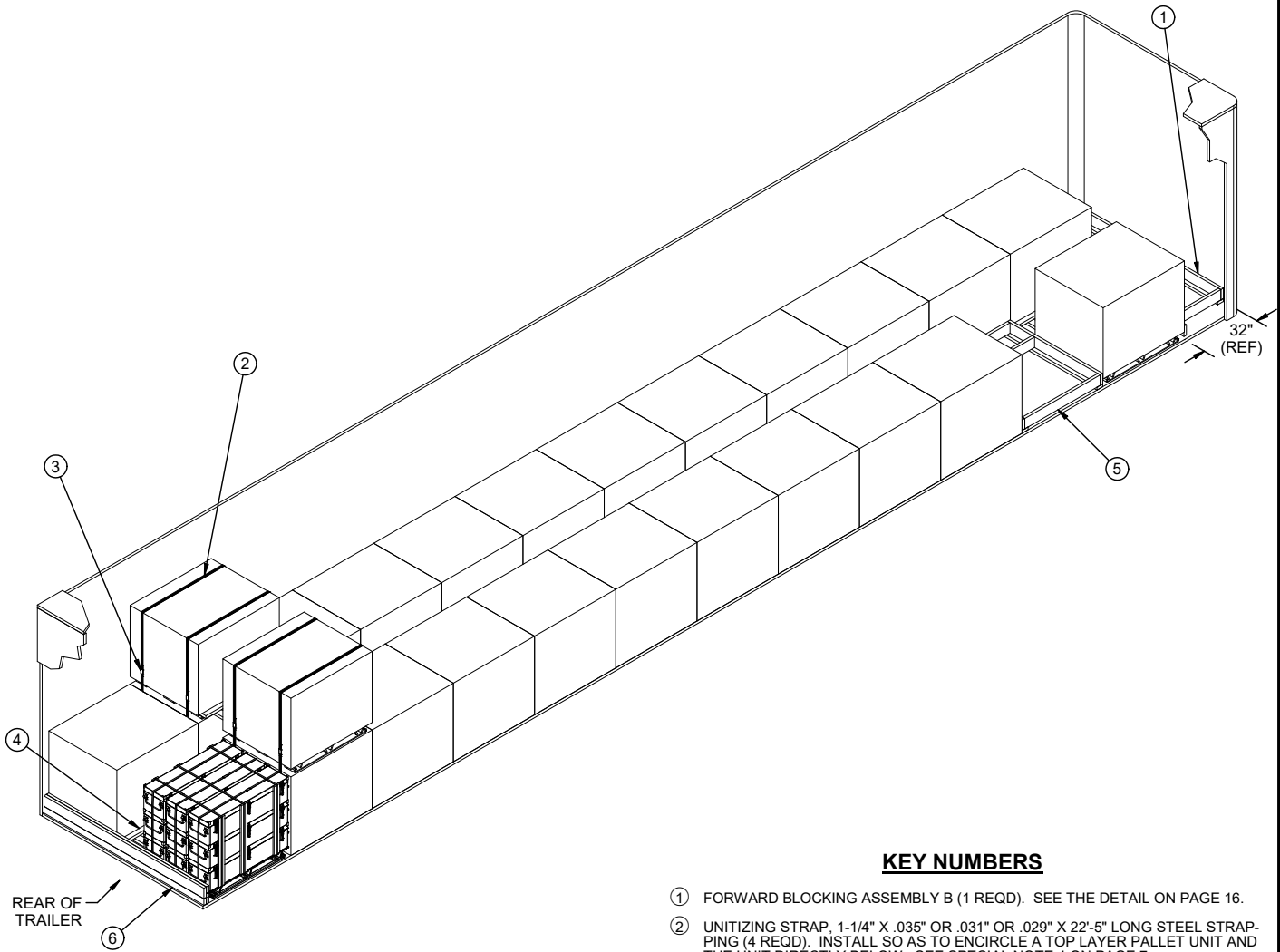
LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	202	135
2" X 6"	51	51
NAI LS	NO. REQD	POUNDS
10d (3")	256	4
STEEL STRAPPING, 1-1/4" -	179.33' REQD -	26 LBS
SEAL FOR 1-1/4" STRAPPING - - -	8 REQD -	1/2 LB

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	28	39,200 LBS
DUNNAGE		403 LBS
<b>TOTAL WEIGHT</b>		<b>39,603 LBS (APPROX)</b>

**SPECIAL NOTES:**

1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER AND ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY MAY BE OMITTED.
2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM PALLET UNIT TO PALLET UNIT.
3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY B" AS DEPICTED ON PAGE 18. IF THE SPACE AT THE REAR OF THE LOAD IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. **NOTE:** REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER IS CONFIGURED SUCH AS TO ALLOW NAILING IN THE AREA IN QUESTION. REFER TO THE REAR HEADER ON PAGE 8 AND THE HEADER NAILING CHARTS ON PAGE 9 FOR GUIDANCE.
4. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
5. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO STACKS IN EACH APPLICABLE ROW. SEE THE LOAD ON PAGE 10 FOR DETAILS.
6. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
7. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED TWO CONTAINERS MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 21 FOR GUIDANCE.
8. REFER TO PAGE 22 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 16.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 22'-5" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE A TOP LAYER PALLET UNIT AND THE UNIT DIRECTLY BELOW. SEE SPECIAL NOTE 4 ON PAGE 7.
- ③ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL WITH TWO PAIR OF NOTCHES. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 24.
- ④ ANTI-SWAY BRACE A (12 REQD). SEE THE DETAIL ON PAGE 17 AND SPECIAL NOTE 2 ON PAGE 7.
- ⑤ FILLER ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 17.
- ⑥ REAR BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 18 AND SPECIAL NOTE 3 ON PAGE 7.

**BILL OF MATERIAL**

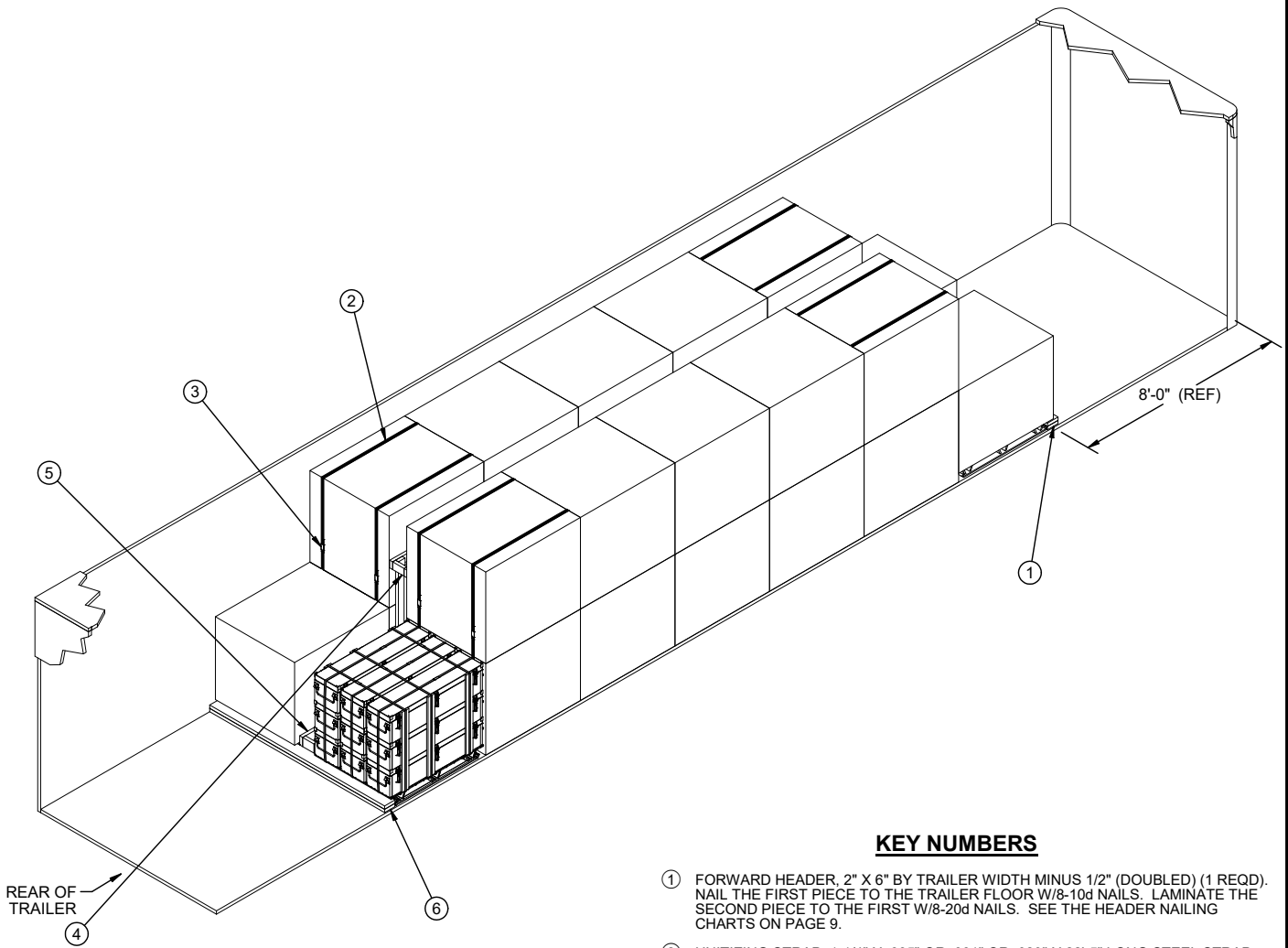
LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	187	125
2" x 6"	62	62
NAI LS	NO. REQD	POUNDS
10d (3")	218	3-1/2
STEEL STRAPPING, 1-1/4" - 89.67' REQD - - 13 LBS		
SEAL FOR 1-1/4" STRAPPING - - 4 REQD - - 1/4 LB		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	25	35,000 LBS
DUNNAGE		391 LBS
<b>TOTAL WEIGHT</b>		<b>35,391 LBS (APPROX)</b>

**SPECIAL NOTES:**

1. A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH AROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY MAY BE OMITTED.
2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM PALLET UNIT TO PALLET UNIT.
3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY B" AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS DEPICTED ON PAGE 18. IF THE SPACE AT THE REAR OF THE LOAD IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. **NOTE:** REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER IS CONFIGURED SUCH AS TO ALLOW NAILING IN THE AREA IN QUESTION. REFER TO THE REAR HEADER ON PAGE 8 AND THE HEADER NAILING CHARTS ON PAGE 9 FOR GUIDANCE.
4. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
5. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO STACKS IN EACH APPLICABLE ROW. SEE THE LOAD ON PAGE 10 FOR DETAILS.
6. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
7. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED TWO CONTAINERS MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 21 FOR GUIDANCE.
8. REFER TO PAGE 22 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 22'-5" LONG STEEL STRAPPING (8 REQD). INSTALL SO AS TO ENCIRCLE THE UPPER AND LOWER PALLET UNITS IN STACKS ADJACENT TO ONE-HIGH STACKS. SEE SPECIAL NOTE 4 ON PAGE 9.
- ③ SEAL FOR 1-1/4" STRAPPING (8 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL WITH TWO PAIR OF NOTCHES. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 24.
- ④ CRIB FILL ASSEMBLY (5 REQD). SEE THE DETAIL ON PAGE 19 AND SPECIAL NOTE 2 ON PAGE 9.
- ⑤ ANTI-SWAY BRACE B (2 REQD). SEE THE DETAIL ON PAGE 19 AND SPECIAL NOTE 2 ON PAGE 9.
- ⑥ REAR HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/14-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/14-20d NAILS. SEE SPECIAL NOTE 3 AND THE HEADER NAILING CHARTS ON PAGE 9.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	200	133
2" x 6"	48	48
NAI LS	NO. REQD	POUNDS
10d (3")	213	3-1/2
20d (4")	21	1
STEEL STRAPPING, 1-1/4" - 179.33' REQD - 26 LBS		
SEAL FOR 1-1/4" STRAPPING - - - 8 REQD - 1/2 LB		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	24	33,600 LBS
DUNNAGE		393 LBS
<b>TOTAL WEIGHT</b>		<b>33,993 LBS (APPROX)</b>



FORWARD HEADER NAILING CHART*	
#NAILS	MAX. LOAD WEIGHT (LBS)
3	15,000
4	20,000
5	25,000
6	30,000
7	35,000
8	40,000
9	45,000

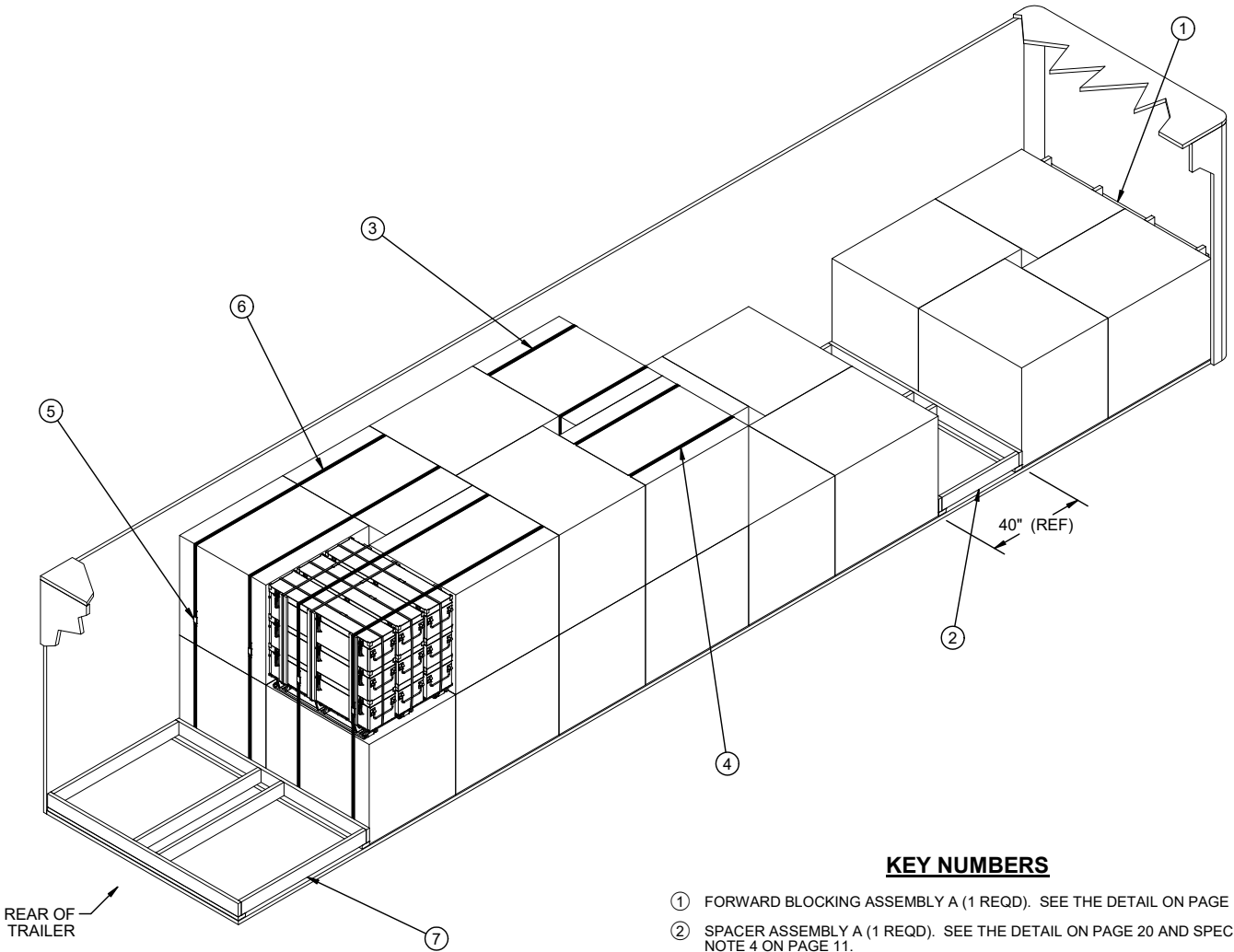
- HEADERS AT THE FRONT END OF A LOAD OR AT THE FRONT END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 6" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-20d NAILS, FOR A TOTAL OF 8-10d AND 8-20d NAILS PER HEADER. A MINIMUM OF 6 PAIRS OF NAILS WILL BE USED FOR TRAILER WIDTH HEADERS.

REAR HEADER NAILING CHART*	
#NAILS	MAX. LOAD WEIGHT (LBS)
6	15,000
7	17,500
8	20,000
9	22,500
10	25,000
11	27,500
12	30,000
13	32,500
14	35,000
15	37,500
16	40,000
17	42,500
18	45,000

- \* HEADERS AT THE REAR OF A FULL LOAD OR AT THE REAR END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 4" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-10d NAILS, FOR A TOTAL OF 16-10d NAILS. A MINIMUM OF 6 PAIRS OF NAILS WILL BE USED FOR TRAILER WIDTH HEADERS. **NOTE:** REAR HEADERS MAY BE HANDLED IN THE SAME MANNER AS FORWARD HEADERS, USING 2" X 6" MATERIAL WITH 10d AND 20d NAILS, IF DESIRED.

**SPECIAL NOTES:**

1. A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. ANTI-SWAY BRACES AND CRIB FILL ASSEMBLIES MAY BE OMITTED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM PALLET UNIT TO PALLET UNIT.
3. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE PALLET UNITS AND THE REAR DOOR IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING THE HEADER, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED BELOW MUST BE INSTALLED. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY B" AS DEPICTED ON PAGE 18. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS DEPICTED ON PAGE 18.
4. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
5. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS MUST BE INSTALLED SO AS TO ENCIRCLE THE REARMOST TWO STACKS IN EACH APPLICABLE ROW. SEE THE LOAD ON PAGE 10 FOR DETAILS.
6. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO UNITS BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD; OR, ONE OR MORE UNITS CAN BE ADDED TO OR OMITTED FROM THE TOP TIER.
7. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED TWO CONTAINERS MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 21 FOR GUIDANCE.
8. REFER TO PAGE 22 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 16.
- ② SPACER ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 20 AND SPECIAL NOTE 4 ON PAGE 11.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 21'-1" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE A TOP LAYER PALLET UNIT AND THE UNIT DIRECTLY BELOW. SEE SPECIAL NOTE 5 ON PAGE 11.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 22'-5" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE A TOP LAYER PALLET UNIT AND THE UNIT DIRECTLY BELOW. SEE SPECIAL NOTE 5 ON PAGE 11.
- ⑤ SEAL FOR 1-1/4" STRAPPING (8 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL WITH TWO PAIR OF NOTCHES. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 24.
- ⑥ BUNDLING STRAP, 1-1/4" X .035" OR .031" OR .029" X 29'-4" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE TWO COMPLETE STACKS. SEE SPECIAL NOTE 6 ON PAGE 11.
- ⑦ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 18 AND SPECIAL NOTE 3 ON PAGE 11.

**BILL OF MATERIAL**

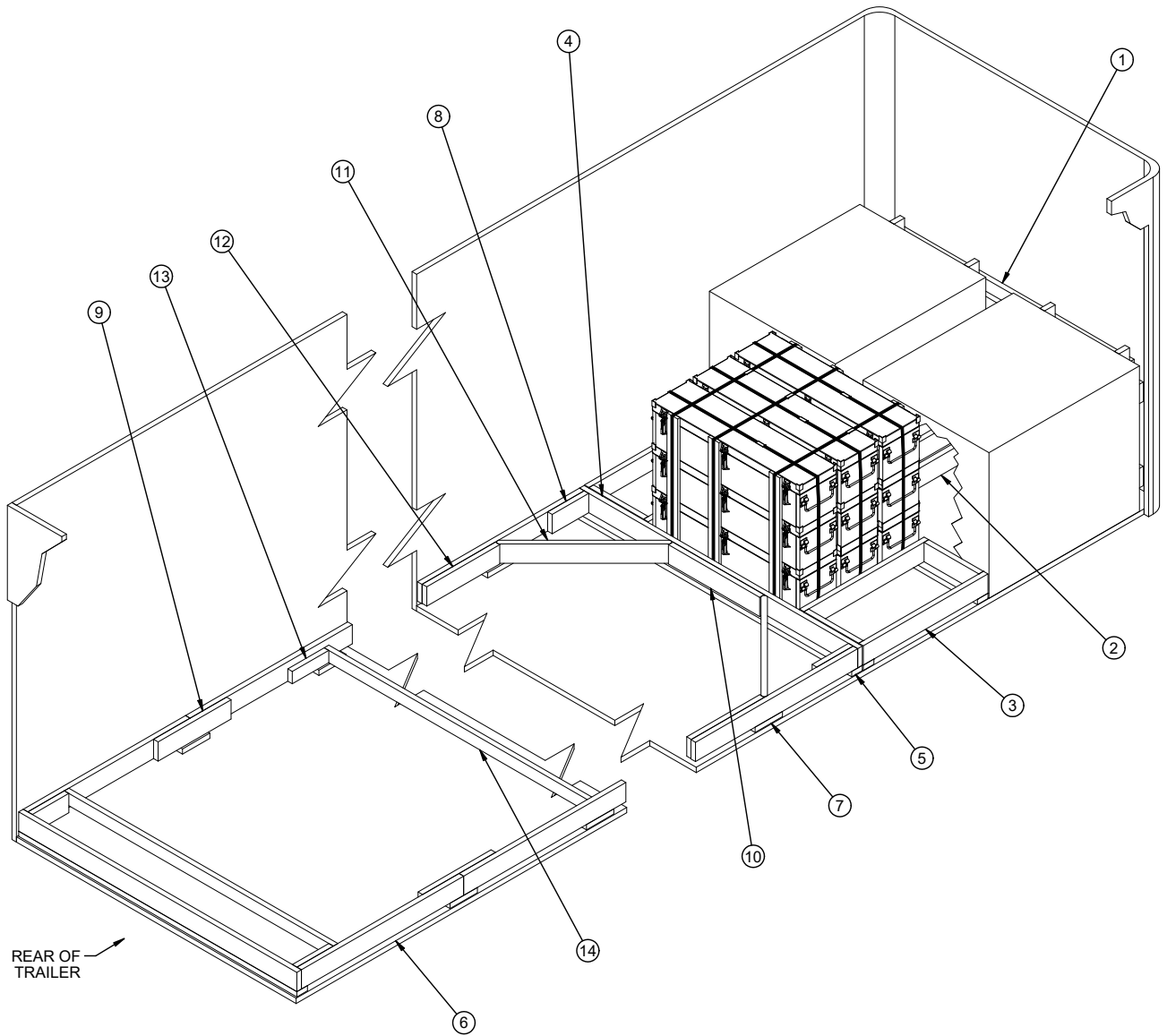
LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	44	29
2" X 6"	91	91
NAI LS	NO. REQD	POUNDS
10d (3")	128	2
STEEL STRAPPING, 1-1/4" - 205' REQD	- - -	29 LBS
SEAL FOR 1-1/4" STRAPPING - 8 REQD	- - -	3/4 LB

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	24	33,600 LBS
DUNNAGE		272 LBS
<b>TOTAL WEIGHT</b>		<b>33,872 LBS (APPROX)</b>

**SPECIAL NOTES:**

1. A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY MAY BE OMITTED.
2. CRIB FILL ASSEMBLIES AND/OR ANTI-SWAY BRACES ARE REQUIRED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM PALLET UNIT TO PALLET UNIT. SEE THE DETAILS ON PAGE 17.
3. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY B" AS DEPICTED ON PAGE 18. IF THE SPACE AT THE REAR OF THE LOAD IS 1-1/2" OR LESS, REAR BLOCKING IS NOT REQUIRED. **NOTE:** REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER IS CONFIGURED SUCH AS TO ALLOW NAILING IN THE AREA IN QUESTION. REFER TO THE REAR HEADER ON PAGE 8 AND THE HEADER NAILING CHARTS ON PAGE 9 FOR GUIDANCE.
4. A SPACER ASSEMBLY IS TO BE USED FOR THE PURPOSE OF PROVIDING FOR PROPER WEIGHT DISTRIBUTION, AND IS SHOWN AS TYPICAL ONLY. IF THE TRAILER TO BE LOADED IS LONGER THAN 40', THE LOCATION OF THE ASSEMBLY, AND/OR THE STRUT LENGTHS, MAY BE DIFFERENT FROM WHAT IS SHOWN. NOTE THAT A SPACER ASSEMBLY MUST NOT BE POSITIONED ADJACENT TO THE FORWARD BLOCKING ASSEMBLY.
5. UNITIZING STRAPS MUST BE APPLIED AROUND THE TWO-HIGH STACKS THAT ARE IMMEDIATELY ADJACENT EITHER LATERALLY OR LONGITUDINALLY TO THE ONE-HIGH UNITS. THE UNITIZING STRAPS MUST BE INSTALLED PRIOR TO FINAL POSITIONING OF THE STACK.
6. IF A STACK IN THE LOAD UNIT AT THE REAR OF THE LOAD IS MORE THAN ONE UNIT HIGH, BUNDLING STRAPS MUST BE INSTALLED SO AS TO ENIRCLE THE REARMOST TWO STACKS IN EACH APPLICABLE ROW.
7. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
8. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED TWO CONTAINERS MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 21 FOR GUIDANCE.
9. REFER TO PAGE 22 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.



**ISOMETRIC VIEW**

**(KEY NUMBERS CONTINUED)**

- ⑨ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF PIECE AND NAIL TO SIDE STRUT W/4-10d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 13.
- ⑩ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO A HEADER W/6-10d NAILS.
- ⑪ 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 AND SIDE STRUT W/2-16d NAILS AT EACH END.
- ⑫ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT W/8-10d NAILS.
- ⑬ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT W/3-10d NAILS. SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑭ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQUIRED). NAIL TO THE POCKET CLEATS AND/OR TO THE STRUT BRACE RETAINING CLEATS, W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 13.

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 16.
- ② ANTI-SWAY BRACE B (1 REQD). SEE DETAIL ON PAGE 19.
- ③ SPACER ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 20. SEE SPECIAL NOTE 3 ON PAGE 13.
- ④ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). SEE SPECIAL NOTE 7 ON PAGE 13.
- ⑤ HEADER AND SIDE STRUT SUPPORT, 2" X 4" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO THE BOTTOM EDGE OF A HEADER W/1-10d NAIL EVERY 8".
- ⑥ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE FORWARD AND REAR HEADERS (2 REQD). SEE SPECIAL NOTE 4 ON PAGE 13.
- ⑦ RISER PIECE, 2" X 4" X 9" (AS REQD). CENTER UNDER THE JOINTS OF THE DIAGONAL BRACE AND BACK-UP CLEAT, AND UNDER THE JOINTS OF THE STRUT BRACE RETAINING CLEAT AND STRUT BRACE, AND UNDER THE SPLICE OF SIDE STRUT IF APPLICABLE. NAIL TO SIDE STRUT W/2-10d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER W/3-12d NAILS.

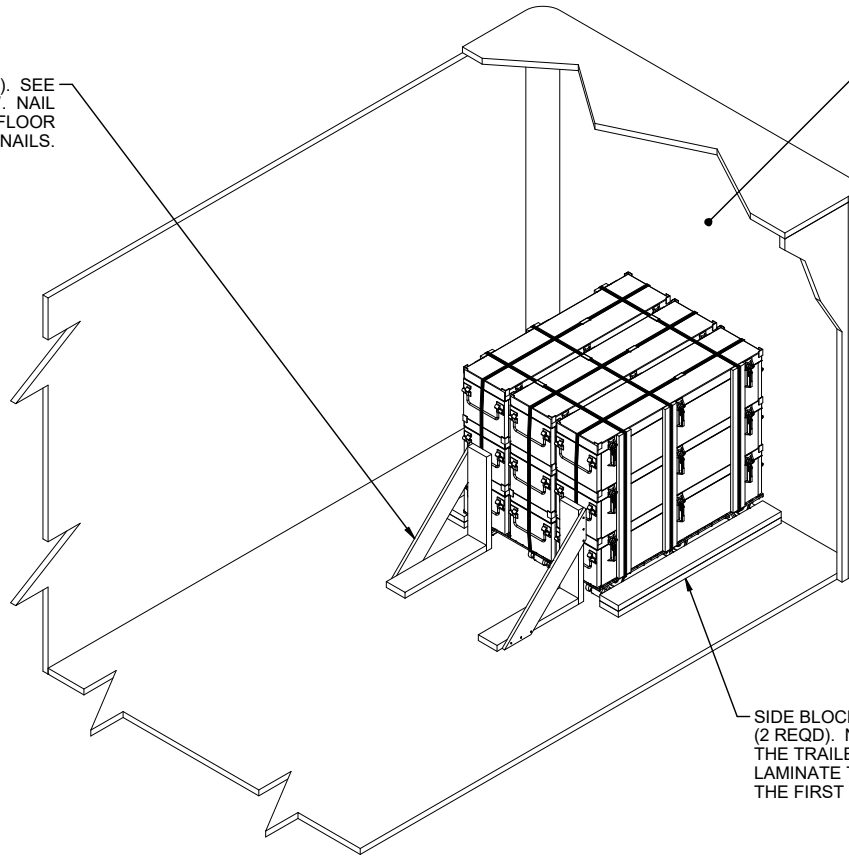
(CONTINUED AT LEFT)

**SPECIAL NOTES:**

1. A 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY MAY BE OMITTED.
2. ANTI-SWAY BRACES MAY BE OMITTED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS IS 6" OR LESS, AS MEASURED FROM PALLET UNIT TO PALLET UNIT.
3. THE SPACER ASSEMBLIES ARE SHOWN ONLY TO DEPICT A TYPICAL LOAD OF AN ODD NUMBER OF PALLET UNITS. THEY WILL BE OMITTED IF LOADING AN EVEN NUMBER OF PALLET UNITS.
4. DEPENDING ON THE NUMBER OF UNITS BEING LOADED, EACH OF THE SIDE STRUTS MAY NEED TO BE FORMED FROM MORE THAN ONE PIECE OF MATERIAL. IF SUCH IS THE CASE, THE SIDE STRUTS MUST BE SPLICED. SPLICING CAN BE ACCOMPLISHED BY CENTERING A 2" X 6" X 24" PIECE ON THE JOINT OF THE SIDE STRUTS AND NAILING IT TO THE SIDE STRUTS W/4-10d NAILS AT EACH END. **CAUTION:** A RISER PIECE MUST BE POSITIONED UNDER EACH SPLICE JOINT. IF DESIRED, THE STRUT BRACE PIECE(S) MAY BE NAILED TO THE SPLICE PIECES IN LIEU OF USING ADDITIONAL STRUT BRACE RETAINING CLEATS.
5. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO THE POCKET CLEAT. IF THE SIDE STRUTS ARE LONGER THAN 7'-0", AN ADDITIONAL STRUT BRACE AND TWO STRUT BRACE RETAINING CLEATS, AND TWO RISER PIECES MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH.
6. THE "K-BRACE" BLOCKING IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.
7. TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS MAY BE USED; HOWEVER, THE NAILED-HEADER METHOD OF REAR BLOCKING MUST BE INSTALLED IN LIEU OF THE "K-BRACE" TYPE BLOCKING. REFER TO THE LOAD ON PAGE 6 AND THE HEADER NAILING CHARTS ON PAGE 9 FOR GUIDANCE. NOTE THAT THE NAILED-HEADER METHOD OF REAR BLOCKING MAY ALSO BE USED IN TRAILERS EQUIPPED WITH HINGED DOORS AND NAILABLE FLOORS, AND MAY BE USED IN LIEU OF THE "K-BRACE" PIECES WHICH APPLY TO TRAILERS HAVING NON-NAILABLE FLOORS.
8. LEFTOVER CONTAINERS IN AN AMOUNT NOT TO EXCEED TWO CONTAINERS MAY BE SECURED TO THE TOP OF A FULL PALLET UNIT FOR SHIPMENT. REFER TO THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 21 FOR GUIDANCE.
9. REFER TO PAGE 22 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

LTL BRACE (2 REQD). SEE THE DETAIL BELOW. NAIL TO THE TRAILER FLOOR W/6-10d NAILS.

FORWARD END OF TRAILER

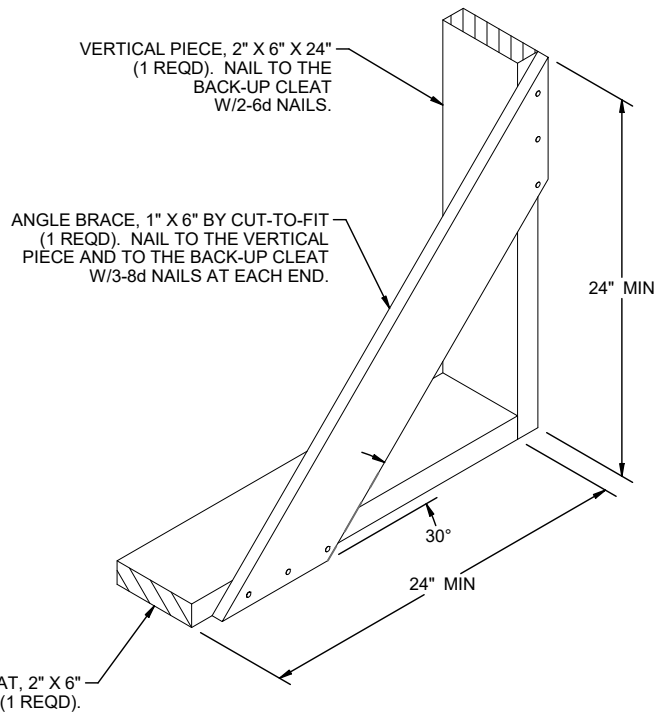


SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS.

**ISOMETRIC VIEW**

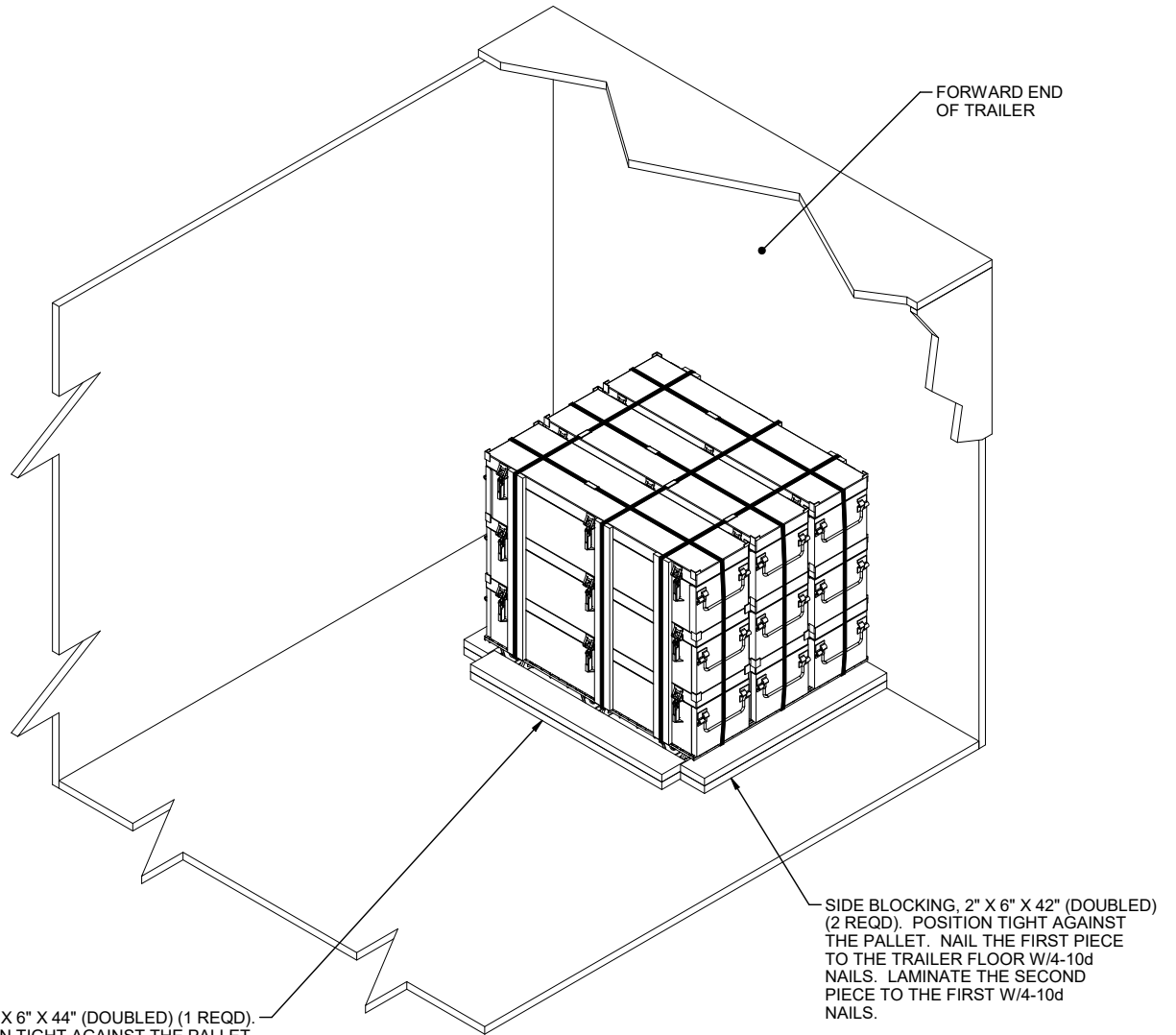
**SPECIAL NOTES:**

1. A 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE POSITIONING OF A UNIT IS OPTIONAL. UNITS MAY ALSO BE LOCATED IN THE CORNER OF THE TRAILER, IF DESIRED. IF THE TRAILER DOES NOT HAVE A SQUARE FRONT, A FORWARD BLOCKING ASSEMBLY MUST BE INSTALLED WHEN POSITIONING A UNIT IN THE CORNER OF THE TRAILER. SEE THE DETAIL ON PAGE 16.
3. MORE THAN ONE PALLET UNIT CAN BE SHIPPED, PROVIDING THE CAPACITY OF THE LTL BRACES IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN ROWS, WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDEWALLS. THE PROPER ANTI-SWAY BRACES, IF REQUIRED, WILL BE INSTALLED BETWEEN THE LATERALLY ADJACENT UNITS. SEE THE DETAIL ON PAGE 17 AND 19.
4. EACH LTL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING; HOWEVER, NOT LESS THAN TWO BRACES WILL BE USED AGAINST EACH PALLET UNIT ACROSS THE WIDTH OF THE TRAILER.



**LTL BRACE**

**TYPICAL LTL (1-UNITLOAD)**



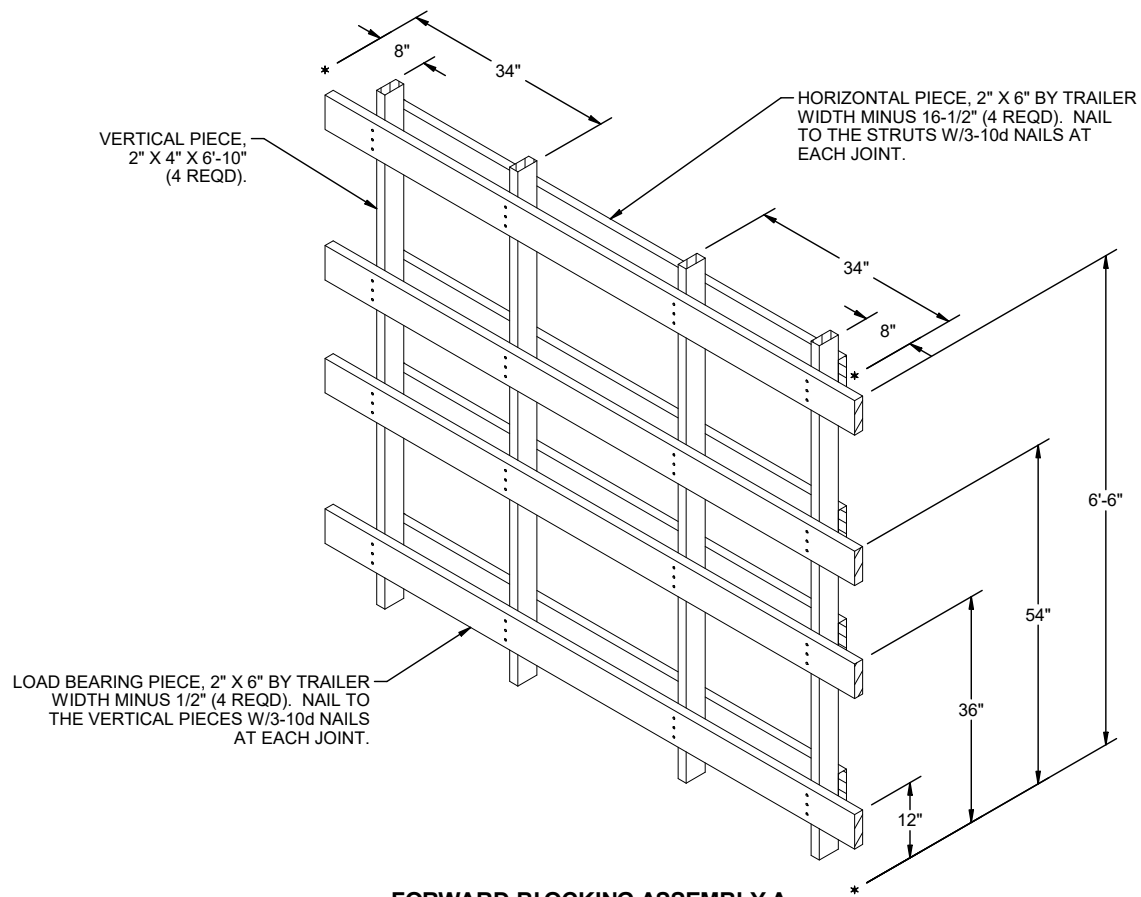
HEADER, 2" X 6" X 44" (DOUBLED) (1 REQD). POSITION TIGHT AGAINST THE PALLET. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS. SEE SPECIAL NOTE 4 BELOW.

SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (2 REQD). POSITION TIGHT AGAINST THE PALLET. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS.

**ISOMETRIC VIEW**

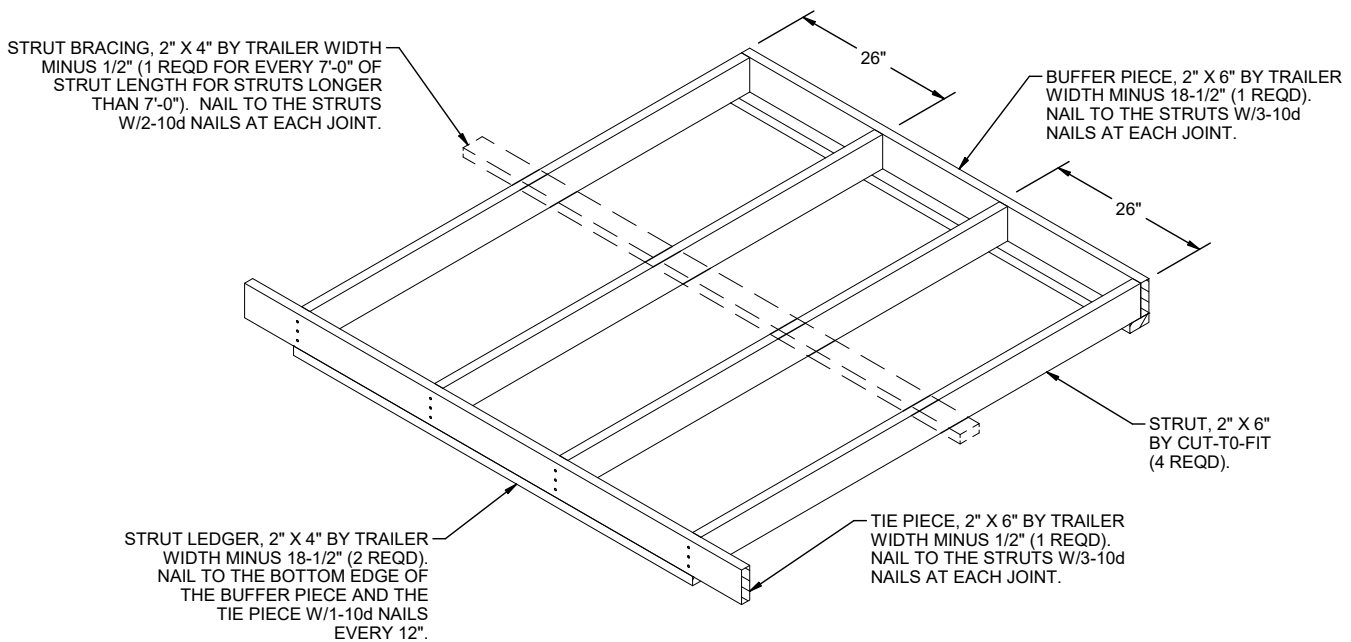
**SPECIAL NOTES:**

1. AN 8'-2" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. THE POSITIONING OF A UNIT IS OPTIONAL. UNITS MAY BE LOCATED IN THE CORNER OF THE TRAILER, IF DESIRED. IF THE TRAILER DOES NOT HAVE A SQUARE FRONT, A FORWARD BLOCKING ASSEMBLY MUST BE INSTALLED WHEN POSITIONING A UNIT IN THE CORNER OF THE TRAILER. SEE THE DETAIL ON PAGE 16.
3. MORE THAN ONE PALLET UNIT CAN BE SHIPPED. THE LOAD SHOULD BE FORMED IN ROWS, WITH THE UNITS POSITIONED AGAINST OPPOSITE SIDE-WALLS. THE PROPER ANTI-SWAY BRACES, IF REQUIRED, WILL BE INSTALLED BETWEEN THE LATERALLY ADJACENT UNITS. SEE THE DETAIL ON PAGE 17 AND 19.
4. THE HEADER AS APPLIED ABOVE FOR LONGITUDINAL BRACING WILL SUPPORT 10,000 POUNDS OF LADING; A TRAILER WIDTH HEADER WILL SUPPORT UP TO A FULL TRAILER LOAD OF PALLET UNITS. SEE THE HEADER NAILING CHARTS ON PAGE 9.



**FORWARD BLOCKING ASSEMBLY A**

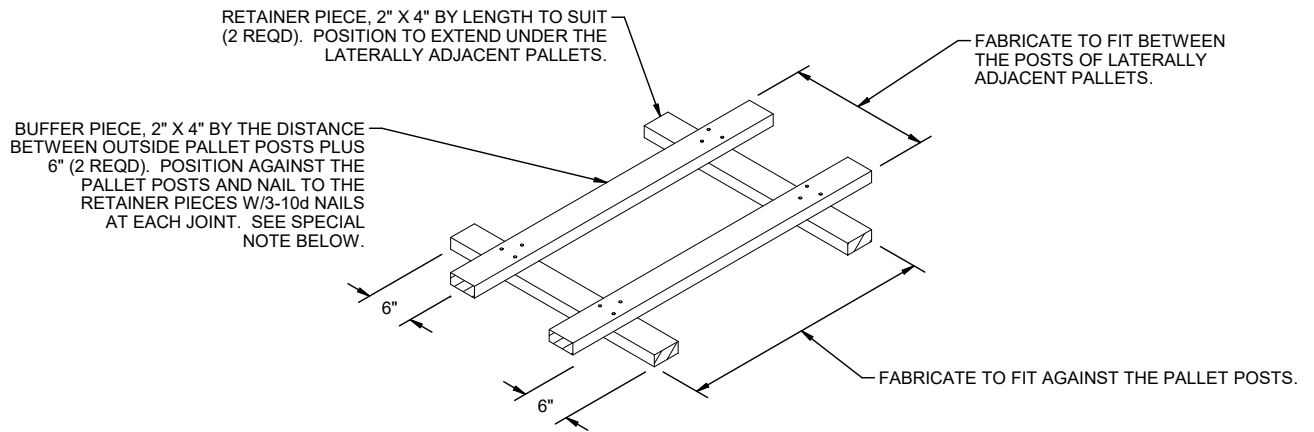
**NOTE:** THIS ASSEMBLY IS APPLICABLE FOR 2-HIGH LOAD. FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO LOAD BEARING PIECES AND THE TOP TWO HORIZONTAL PIECES, AND REDUCE THE HEIGHT OF THE VERTICAL PIECES TO 40". THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS, AND IS APPLICABLE FOR A CORNER RADIUS OF NOT MORE THAN 6-1/2". IF THE RADIUS IS FROM 6-1/2" TO 8", 2" X 6" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 4" PIECES. IF THE TRAILER TO BE LOADED HAS LARGE-ANGLED CORNERS AT THE FORWARD END, REFER TO PAGE 23 FOR GUIDANCE.



**FORWARD BLOCKING ASSEMBLY B**

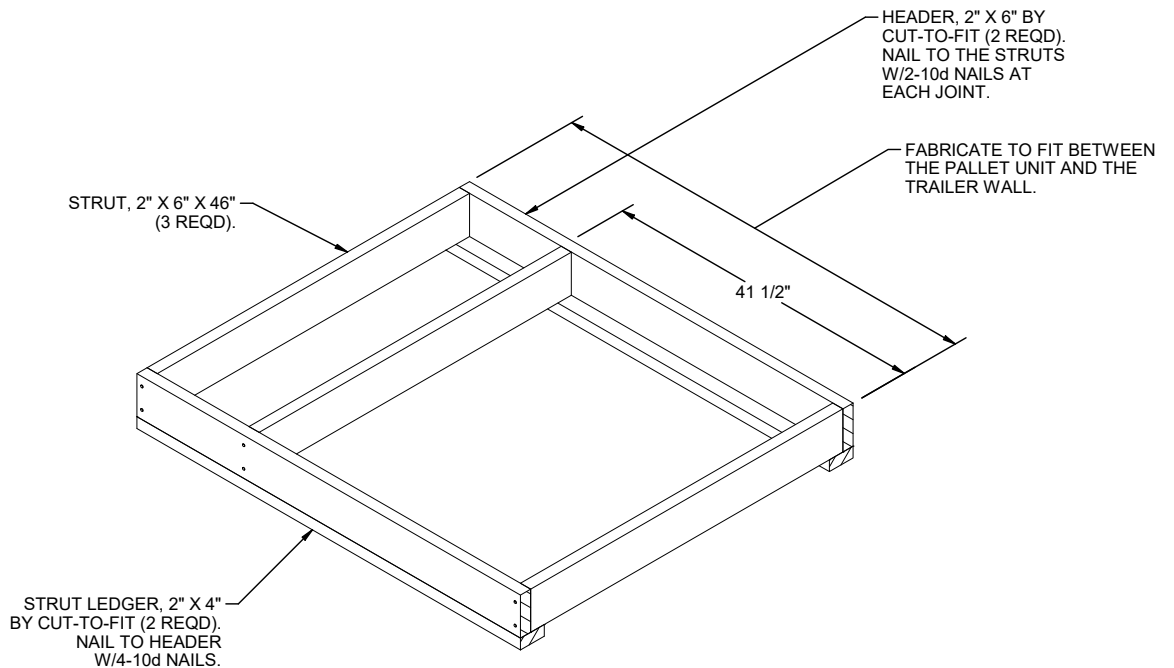
**NOTE:** IF THE TRAILER TO BE LOADED HAS SQUARE INSIDE FRONT CORNERS, INCREASE THE BUFFER PIECE AND THE STRUT LEDGERS LENGTH TO "INSIDE TRAILER WIDTH MINUS 1/2 INCH". INSTALL THE OUTER STRUTS AT THE ENDS OF THE BUFFER AND TIE PIECES.



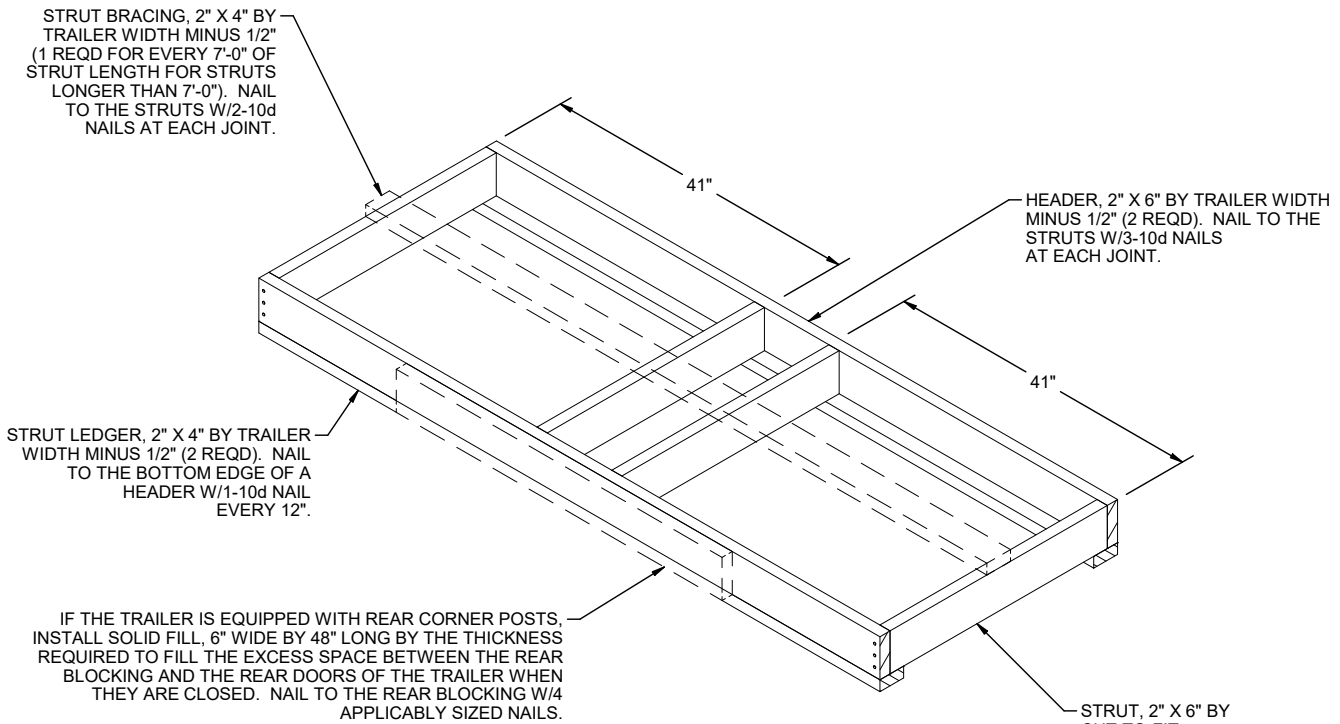


**ANTI-SWAY BRACE A**

IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAIL TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.

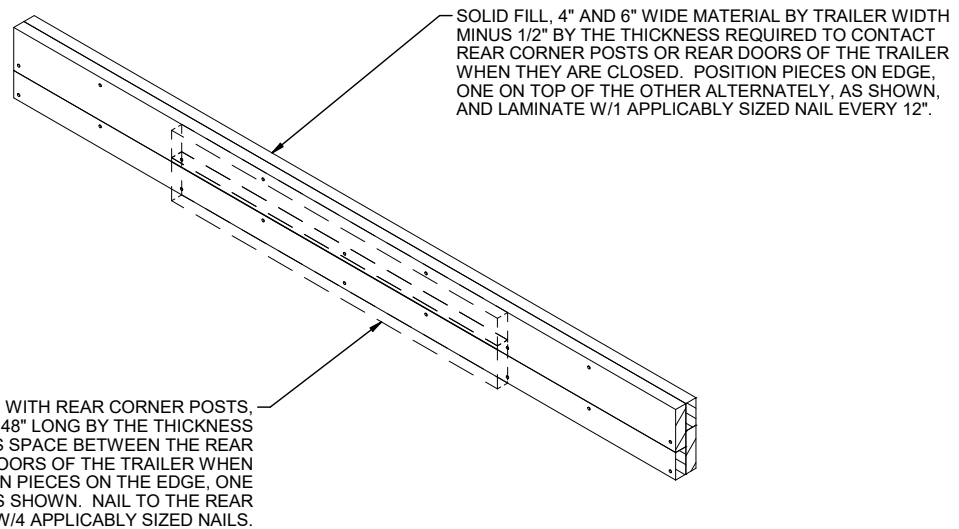


**FILLER ASSEMBLY**



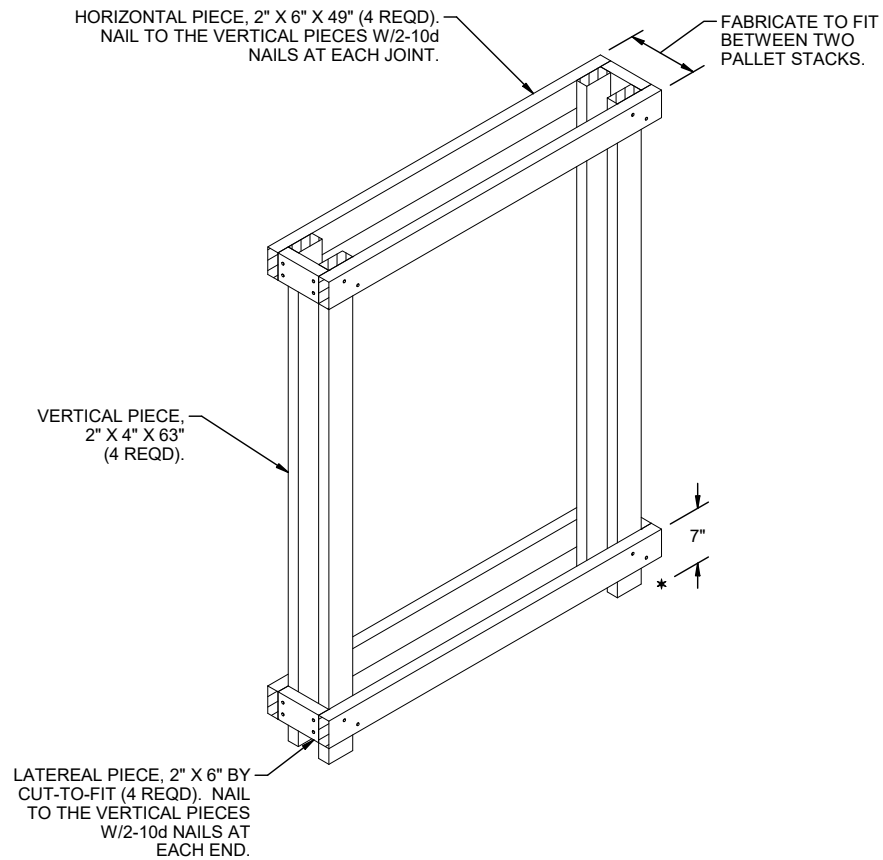
**REAR BLOCKING ASSEMBLY A**

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



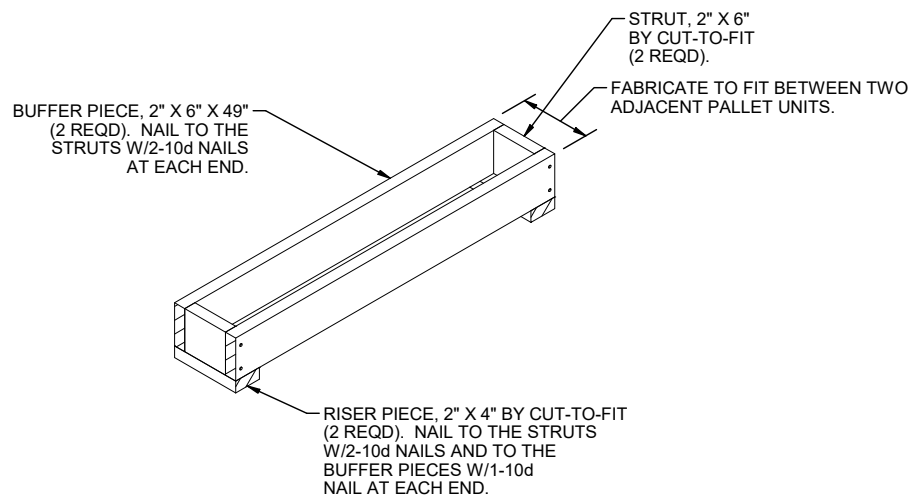
**REAR BLOCKING ASSEMBLY B**

THIS REAR BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF THE LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS GREATER THAN 1-1/2" BUT LESS THAN 9".



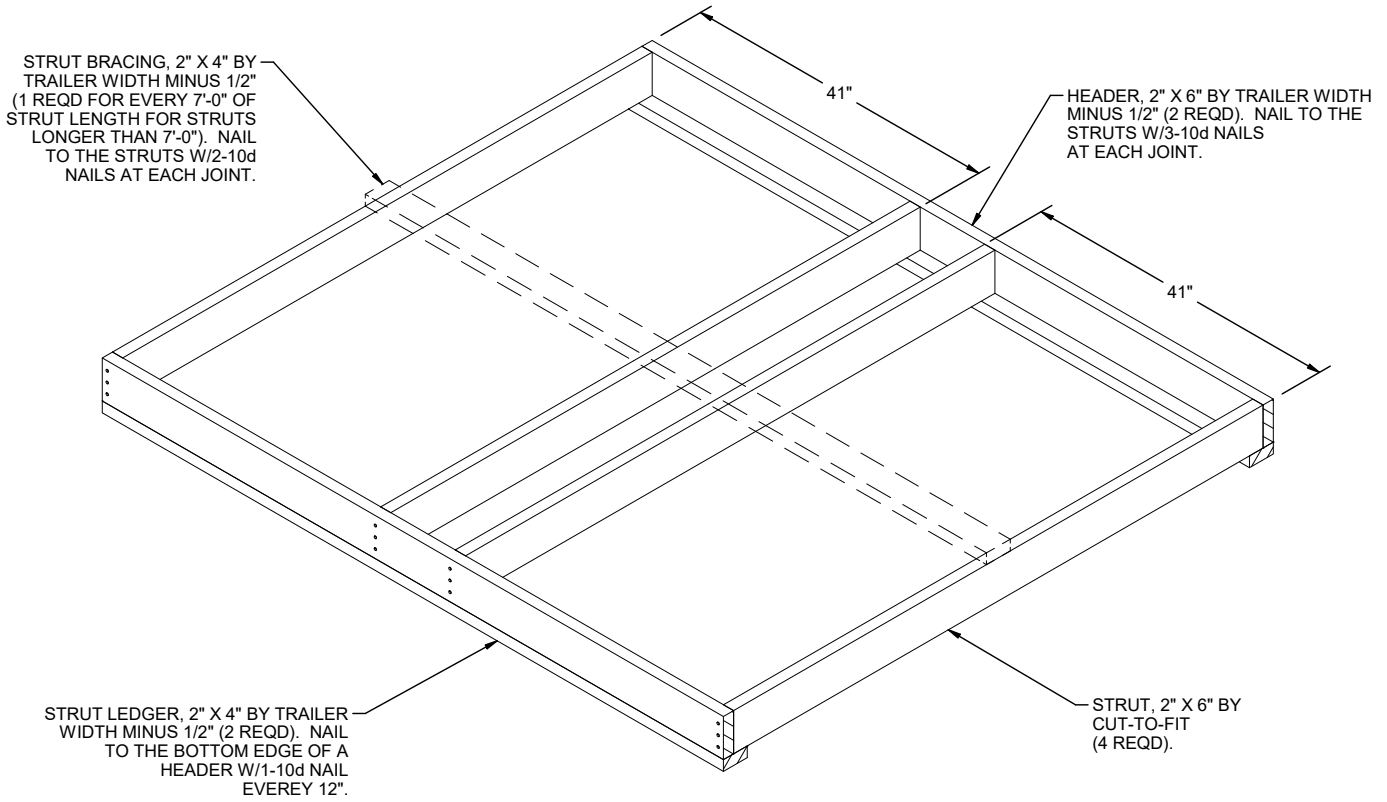
### **CRIB FILL ASSEMBLY**

THIS ASSEMBLY IS APPLICABLE FOR A 2-HIGH LOAD WITH THE PALLET UNIT LENGTH (41-7/16") ORIENTED CROSSWISE IN THE TRAILER. FOR A LOAD WITH THE PALLET UNITS ORIENTED WITH THE LENGTH LENGTHWISE IN THE TRAILER, REDUCE THE LENGTH OF THE HORIZONTAL PIECES TO 41".

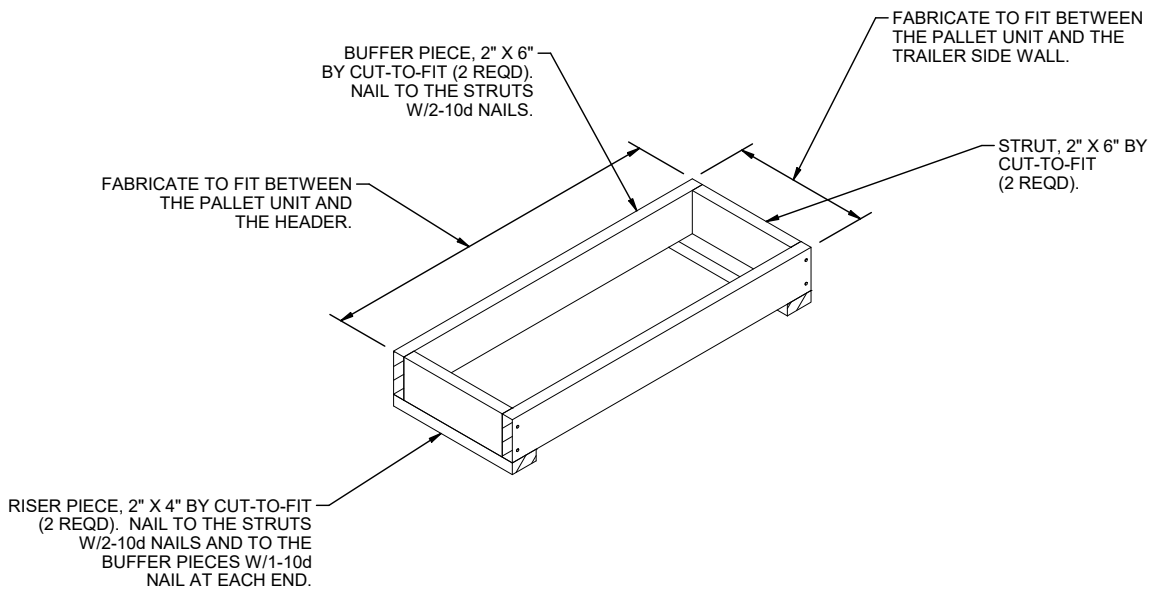


### **ANTI-SWAY BRACE B**

THIS ASSEMBLY IS APPLICABLE FOR A 1-HIGH LOAD WITH THE PALLET UNIT LENGTH (41-7/16") ORIENTED CROSSWISE IN THE TRAILER. FOR A LOAD WITH THE PALLET UNITS ORIENTED WITH THE LENGTH LENGTHWISE IN THE TRAILER, REDUCE THE LENGTH OF THE BUFFER PIECES TO 41".



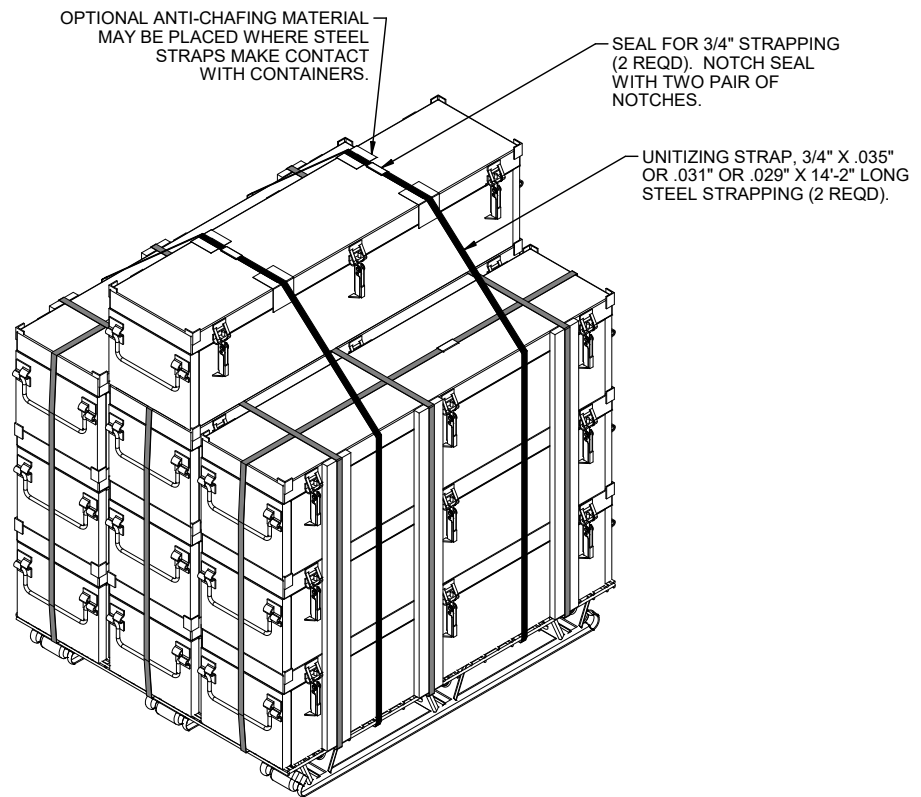
**SPACER ASSEMBLY A**



**SPACER ASSEMBLY B**

**SPECIAL NOTES:**

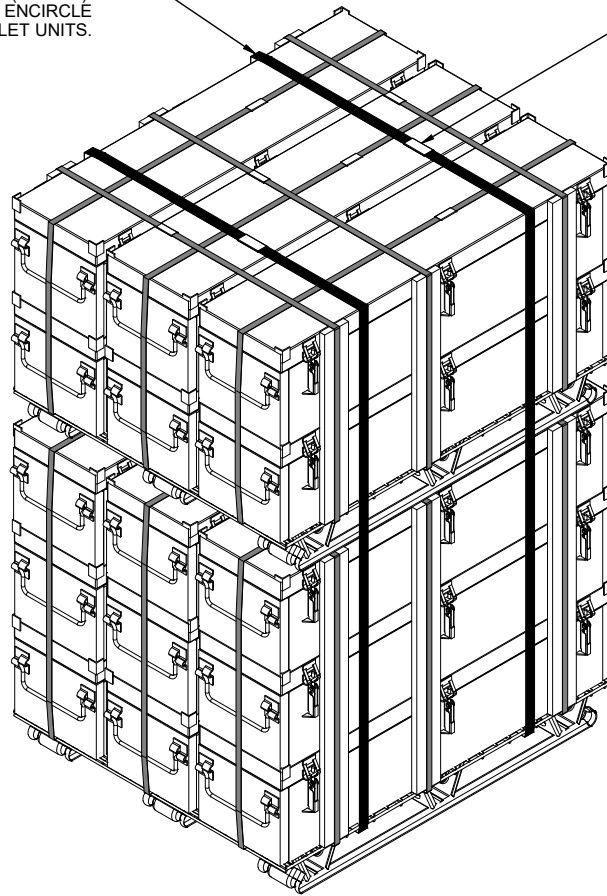
1. SHIPMENTS OF PALLET UNITS OF CNU-371 CONTAINERS SHOULD CONSIST OF FULL-HEIGHT UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS ANY QUANTITY OF CONTAINERS WHICH ARE INSUFFICIENT TO FORM A FULL LAYER OF A PARTIAL PALLET UNIT FOR SHIPMENT ON TOP OF A LOAD AS SHOWN ON PAGE 22. THEY ARE USUALLY CONTAINERS OF THE SAME AMMUNITION ITEM AS THE BALANCE OF THE LOAD ALTHOUGH THEY MAY BE ANY OTHER COMPATIBLE ITEM.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. **CAUTION:** A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SECUREMENT OF LEFTOVER CONTAINERS FOR SHIPMENT. THE PROCEDURES ARE ALSO APPLICABLE FOR SECUREMENT OF LEFTOVER CONTAINERS TO PARTIAL PALLET UNITS FOR SHIPMENT ON TOP OF A LOAD. SEE SPECIAL NOTE 5 ON PAGE 22 FOR LIMITATIONS. IN ADDITION, THE PROCEDURES ARE APPLICABLE FOR SECURING LEFTOVER CONTAINERS TO A PARTIAL UNIT FOR SHIPMENT WITHIN A TIER.
4. THE QUANTITY OF LEFTOVER CONTAINERS WHICH CAN BE SECURED TO FULL OR PARTIAL UNITS IS LIMITED TO ONE OR TWO CONTAINERS. LEFTOVER CONTAINERS MUST NOT BE STACKED. IF THE QUANTITY OF LEFTOVER CONTAINERS TO BE SHIPPED IS MORE THAN TWO, CONTAINERS MUST BE STRAPPED TO MORE THAN ONE UNIT.
5. THE PROCEDURES DEPICTED ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



**SECUREMENT OF ONE ADDITIONAL CONTAINER**

UNITIZING STRAP, 1-1/4" X .035"  
OR .031" OR .029" X 18'-2" LONG  
STEEL STRAPPING (2 REQD).  
INSTALL SO AS TO ENCIRCLE  
BOTH PALLET UNITS.

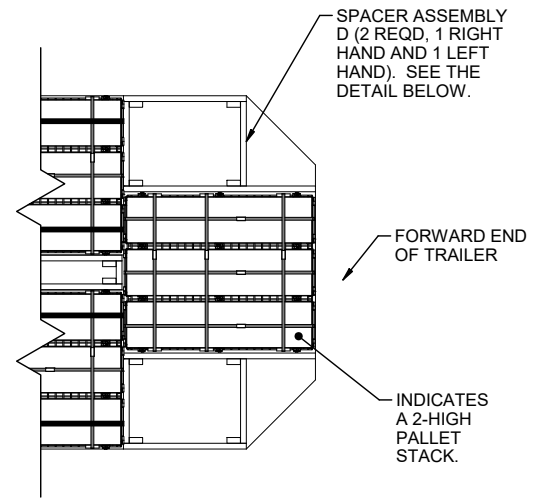
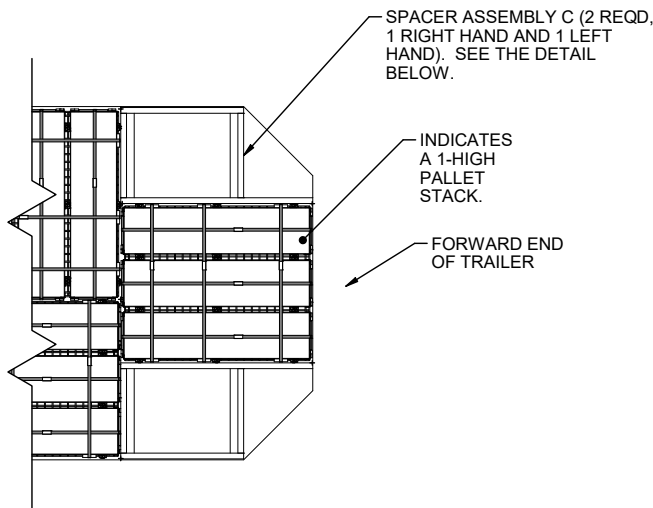
SEAL FOR 1-1/4" STRAPPING  
(2 REQD). NOTCH EACH SEAL  
WITH TWO PAIR OF NOTCHES.



### **SECUREMENT OF A PARTIAL PALLET UNIT ON TOP OF A FULL PALLET UNIT**

#### **SPECIAL NOTES:**

1. SHIPMENTS OF PALLET UNITS OF CNU-371 CONTAINERS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
2. A PARTIAL PALLET UNIT MUST CONSIST OF EITHER ONE OR TWO FULL LAYERS. A LAYER MAY CONSIST OF EMPTY CONTAINERS.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT CAN BE SHIPPED BY POSITIONING IT EITHER ON THE TOP TIER OF A LOAD OR ON THE TOP OF A LOWER PORTION OF A LOAD WHEN THE LOAD CONTAINS A PARTIAL TIER IN THE END OF THE TRAILER. THE PARTIAL UNIT WILL BE STRAPPED TO THE PALLET UNIT DIRECTLY BELOW WITH TWO VERTICAL UNITIZING STRAPS. SEE THE "SECUREMENT OF A PARTIAL UNIT ON TOP OF A FULL PALLET UNIT" VIEW ABOVE FOR GUIDANCE.
4. A PARTIAL PALLET UNIT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNIT IN THE LOAD.
5. LEFTOVER CONTAINERS, IN AN AMOUNT WHICH IS LESS THAN THE QUANTITY IN ONE LAYER OF A UNIT, CAN BE SECURED TO THE TOP OF A PARTIAL UNIT FOR SECUREMENT ON TOP OF A LOAD. THE LEFTOVER CONTAINERS MUST BE SECURED TO THE PARTIAL UNIT WITH THEIR OWN STRAPPING, SEPARATE FROM THE STRAPS FOR THE PARTIAL UNIT. SEE THE DETAILS ON PAGE 21 FOR GUIDANCE IN STRAP APPLICATION.

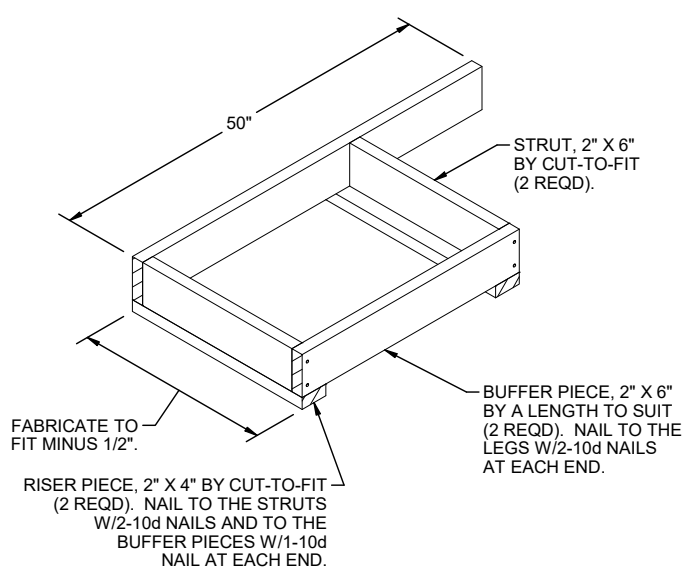


**ALTERNATME FORWARD LOADING PATTERN A**

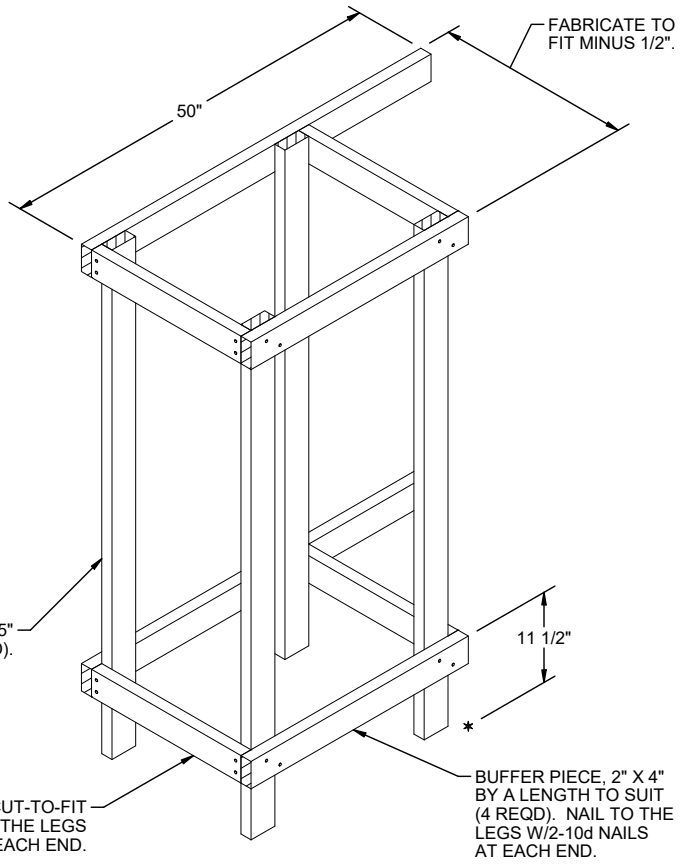
THIS PROCEDURE IS APPLICABLE TO THE LOADING OF ONE PALLET UNIT (1-HIGH) IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE-ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLED CORNERS OF ANOTHER SIZE. A 8'-2" WIDE TRAILER IS SHOWN, NARROW TRAILERS CAN BE USED.

**ALTERNATME FORWARD LOADING PATTERN B**

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A STACK OF TWO (1WIDE, 2-HIGH) PALLET UNITS IN THE FORWARD END OF A CONVENTIONAL VAN TRAILER HAVING LARGE-ANGLED FRONT CORNERS (REF: 18"). THE PROCEDURES MAY ALSO BE USED IN TRAILERS HAVING SQUARE CORNERS, OR ROUNDED FRONT CORNERS, OR ANGLED CORNERS OF ANOTHER SIZE. NOTE THAT IF THE LOAD UNIT BEHIND THE STACKED PALLET UNITS IN THE FRONT IS ONLY ONE HIGH, TWO UNITIZING STRAPS MUST BE INSTALLED AROUND THOSE PALLET UNITS IN THE FRONT STACK. A 7'-8" WIDE TRAILER IS SHOWN, OTHER TRAILERS CAN BE USED.



**SPACER ASSEMBLY C**



**SPACER ASSEMBLY D**

THIS ASSEMBLY IS DESIGNED FOR LATERAL BRACING OF A 2-HIGH PALLET STACK LOCATED IN THE FRONT OF AN ANGLED-CORNER CONVENTIONAL VAN TRAILER AS SHOWN IN THE "ALTERNATIVE FORWARD LOADING PATTERN B" VIEW ABOVE. NOTE THAT THIS VIEW DEPICTS THE ASSEMBLY POSITIONED AS IT WILL BE INSTALLED IN RIGHT SIDE OF THE LOAD. RIGHT HAND AND LEFT HAND SPACER ASSEMBLIES ARE REQUIRED.



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**