



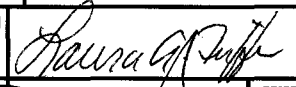
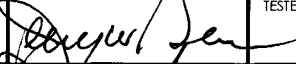

# LOADING AND BRACING (TL & LTL) IN VAN TRAILERS\* OF PALLETIZED MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKED IN CYLINDRICAL METAL CONTAINERS

## PA103A2 CONTAINER, WOODEN PALLET

<u>ITEM</u>	<u>INDEX</u>	<u>PAGE(S)</u>
GENERAL NOTES AND MATERIAL SPECIFICATIONS - - - - -		2-3
PALLET UNIT DETAIL - - - - -		3
24-UNIT LOAD IN A 45'-0" LONG BY 7'-8" WIDE VAN TRAILER - - - - -		4-5
23-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -		6-7
23-UNIT COMBINATION LOAD IN A 48'-0" LONG BY 8'-5" WIDE VAN TRAILER - - - - -		8-9
20-UNIT LOAD IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -		10-11
20-UNIT COMBINATION LOAD IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -		12-13
13-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -		14-15
TYPICAL LTL (8-UNIT) LOAD IN A VAN TRAILER - - - - -		16
TYPICAL LTL (1-UNIT) LOAD IN A VAN TRAILER - - - - -		17
TYPICAL LTL (1-UNIT) LOAD IN A VAN TRAILER - - - - -		18
PROCEDURES FOR SHIPMENT OF PARTIAL PALLET UNITS - - - - -		19
DETAILS - - - - -		20-27

\* **CAUTION:** THE PROCEDURES SHOWN HEREIN ARE ONLY APPLICABLE FOR HIGHWAY MOVEMENTS; NOT FOR TRAILER-ON-FLATCAR (TOFC) MOVEMENTS.

### U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY FIELD SUPPORT COMMAND  	<b>CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 28.</b>							
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND    U.S. ARMY DEFENSE AMMUNITION CENTER	<b>DO NOT SCALE</b>			<b>MARCH 2006</b>				
	ENGINEER OR TECHNICIAN	BASIC REV.	MELVIN SIX					
	TRANSPORTATION ENGINEERING DIVISION							
VALIDATION ENGINEERING DIVISION				TESTED	CLASS	DIVISION	DRAWING	FILE
ENGINEERING DIRECTORATE				19	48	4331/50A	11PM1007	

**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 PALLETIZED M232 MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKED IN PA103A2 CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS PALLET UNIT WITH AMMUNITION ITEMS. SEE PAGE 3 FOR DETAILS OF THE PALLET UNIT. SEE U. S. ARMY MATERIEL COMMAND DRAWING 19-48-4326/50A-20PM1012 FOR UNITIZATION PROCEDURES FOR THE MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKAGED IN PA103A2 CONTAINERS.
- 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 101" 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. 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.
- E. **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.
- F. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 44,000 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.
- G. OTHER TYPES OF LADING ITEMS MAY BE LOADED INTO TRAILERS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF MACS, 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.

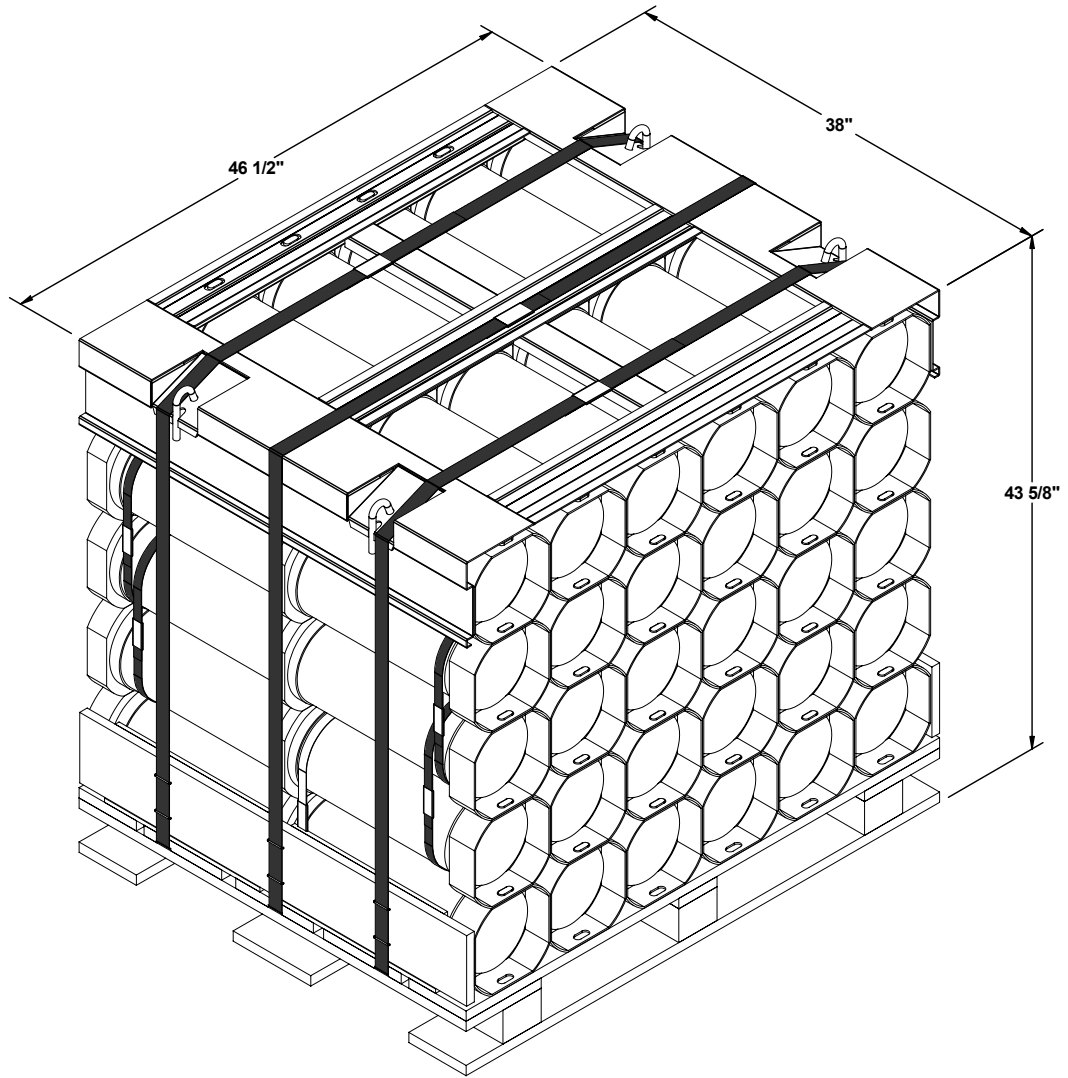
(CONTINUED AT RIGHT)

- H. 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.
- 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 3 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 ASTM F1667 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 SENCOR 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. 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 OR SIDE FILL ASSEMBLIES. 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.
- 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 C" AS DEPICTED ON PAGE 26. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY "A", "B" OR "D", AS SHOWN ON PAGES 25 AND 26. **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. **CAUTION:** THE NAILED HEADER METHOD IS REQUIRED WHEN LOADING VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS.

**MATERIAL SPECIFICATIONS**

<u>LUMBER</u> - - - - - :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
<u>NAILS</u> - - - - - :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCWMS).
<u>STRAPPING, STEEL</u> - - - - :	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B, (GRADE 2), OR C.
<u>SEAL, STRAP</u> - - - - - :	ASTM D3953; CLASS H, FINISH A, B, (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
<u>ANTI-CHAFING MATERIAL</u> - - - - - :	MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
<u>WIRE, CARBON STEEL</u> - - - :	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.

- Q. **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.
- R. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE "PROCEDURES FOR SHIPMENT OF A PARTIAL PALLET UNITS" DETAILS ON PAGE 19.
- S. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF PALLET UNITS OF PA103A2 CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM OTHER THAN THE SPECIFIED MACS, OR WHEN THEY ARE EMPTY.
- T. 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.
- U. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN PALLET UNITS AND THE VAN TRAILER OR INDIVIDUAL PALLET UNITS, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINERS ON THE PALLET UNITS.



**PALLET UNIT DETAIL**

GROSS WEIGHT - - - - - 1,835 LBS (APPROX)  
 CUBE - - - - - 44.6 CU FT (APPROX)



ONE SEAL WITH  
 TWO PAIR OF  
 NOTCHES.

**STRAP JOINT A**

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



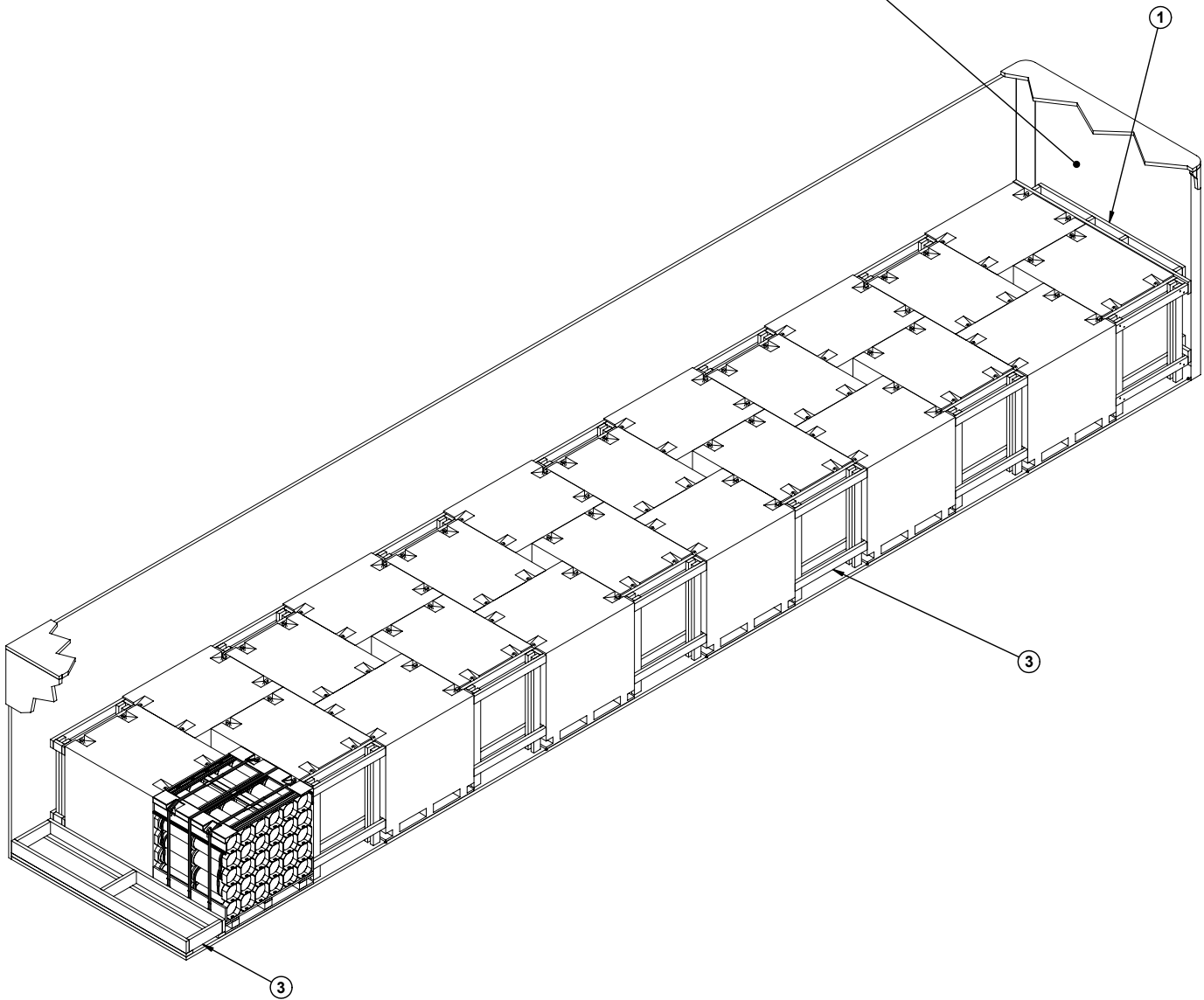
TWO SEALS, BUTTED  
 TOGETHER, WITH  
 TWO PAIR OF CRIMPS  
 EACH SEAL.

**STRAP JOINT B**

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

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

FORWARD END OF TRAILER.



**ISOMETRIC VIEW**

**KEY NUMBERS**

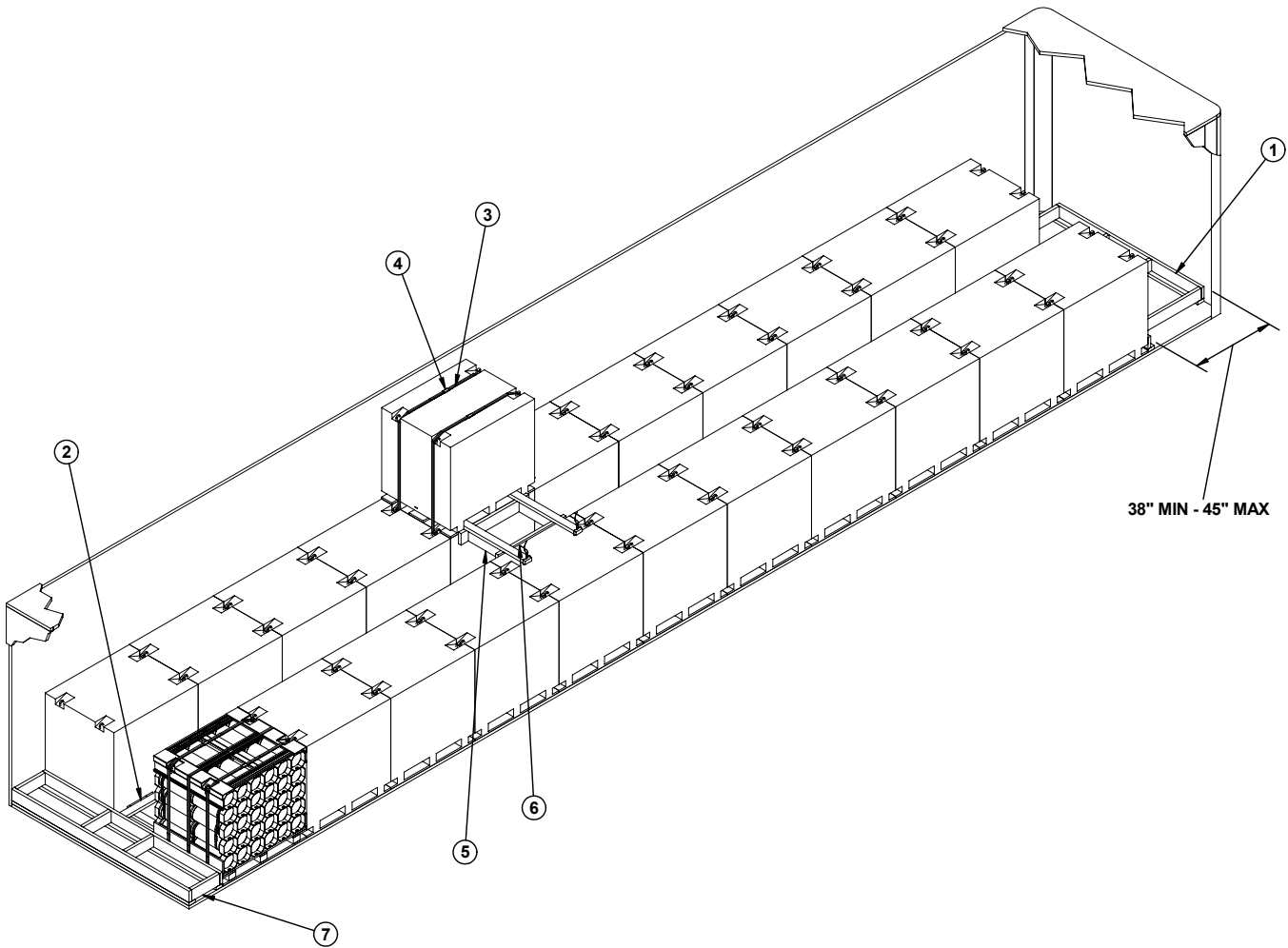
- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 23 AND SPECIAL NOTE 1 ON PAGE 5.
- ② SIDE FILL ASSEMBLY B (12 REQD). SEE THE DETAIL ON PAGE 22 AND SPECIAL NOTE 2 ON PAGE 9.
- ③ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 25 AND SPECIAL NOTE 3 ON PAGE 5.

**SPECIAL NOTES:**

1. A 45'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER WITH ROUNDED FRONT IS SHOWN. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY "A" MAY BE OMITTED. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. SIDE FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN PALLET ADAPTER AND SIDE WALL EXCEEDS 6".
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 C" AS DETAILED ON PAGE 26. 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. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
5. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

<b>BILL OF MATERIAL</b>		
<b>LUMBER</b>	<b>LINEAR FEET</b>	<b>BOARD FEET</b>
2" X 3"	70	35
2" X 4"	372	248
2" X 6"	44	44
<b>NAILS</b>	<b>NO. REQD</b>	<b>POUNDS</b>
10d (3")	284	4-1/2

<u>LOAD AS SHOWN</u>		
<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
PALLET UNIT	- - - - 24	44,040 LBS
DUNNAGE	- - - - - - - - - -	678 LBS
TOTAL WEIGHT		- - - - - 44,718 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

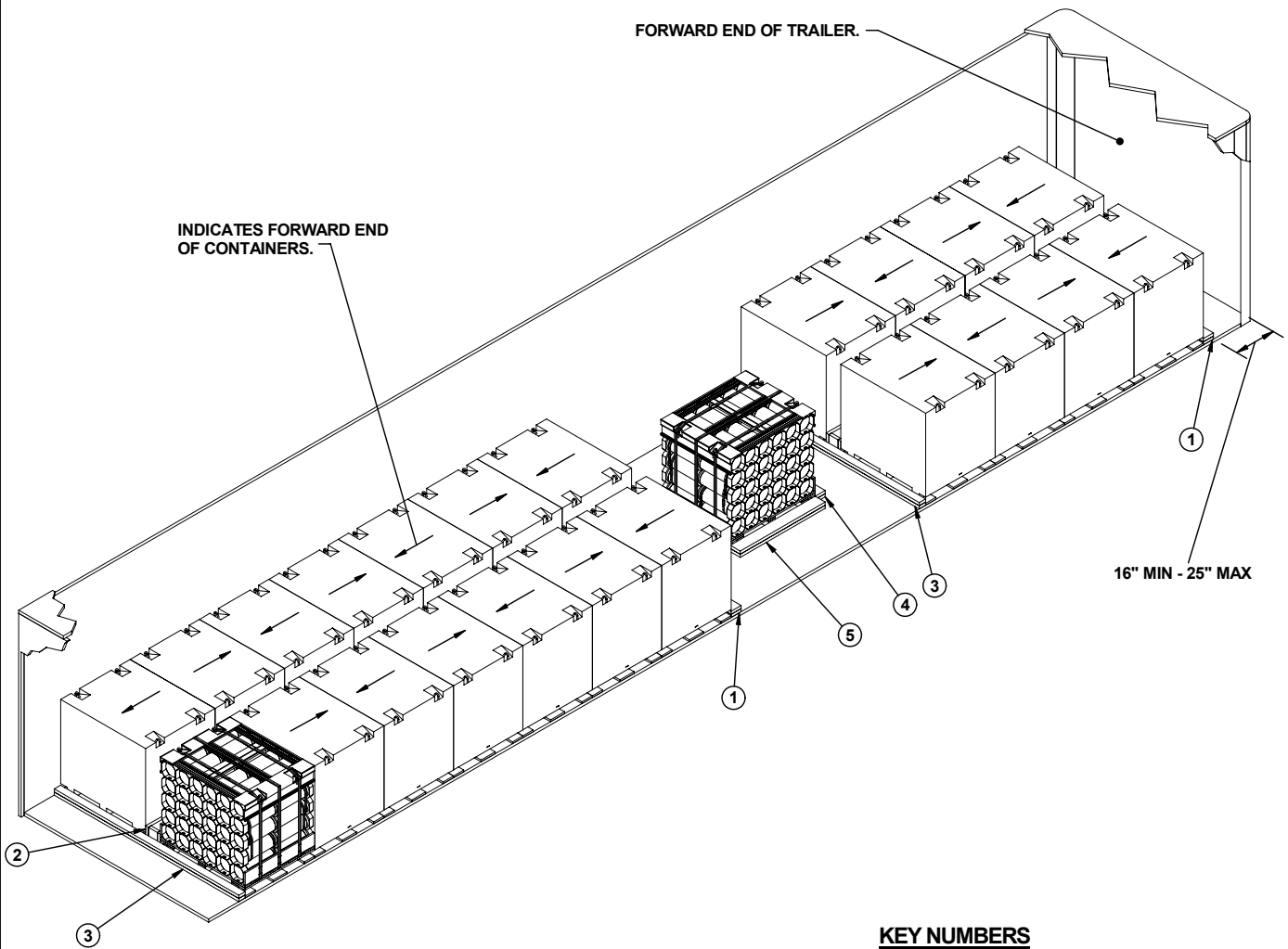
- ① FORWARD BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 24.
- ② ANTI-SWAY BRACE (11 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 20 AND SPECIAL NOTE 2 ON PAGE 7.
- ③ STACK UNITIZING STRAP, 1-1.4" X .031" OR .035" X 22'-8" LONG STEEL STRAPPING (2 REQD, 2 PER STACK). SEE SPECIAL NOTES 4 THRU 7 ON PAGE 7.
- ④ SEAL FOR 1-1/4" STRAPPING (2 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑤ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 20.
- ⑥ TIE WIRE, .0800" DIA 24" LONG (2 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE TOP-OF-LOAD ANTI-SWAY BRACE AND THE TIE-DOWN STRAPS
- ⑦ REAR BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 25 AND SPECIAL NOTE 3 ON PAGE 7.

**SPECIAL NOTES:**

1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER WITH ROUNDED FRONT IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. ANTI-SWAY BRACES ARE REQUIRED WHEN THE SPACE BETWEEN LATERALLY ADJACENT PALLET UNITS EXCEEDS 6", AS MEASURED FROM PALLET ADAPTER TO PALLET ADAPTER.
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 B" 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 C" AS DETAILED ON PAGE 26. 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 PALLET UNIT AT EACH END OF THE SECOND LAYER PORTION OF THE LOAD MUST BE UNITIZED TO A PALLET IN THE FIRST LAYER, UNLESS THE STACKED UNITS ARE AGAINST THE FRONT WALL OF A SQUARE-FRONT TRAILER, AGAINST THE FORWARD BLOCKING ASSEMBLY, OR AT THE VERY REAR OF THE LOAD. 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 TO ENCIRCLE THE FOUR PALLET UNITS IN THE REARMOST TWO STACKS IN EACH APPLICABLE ROW.
6. IF ONLY ONE PALLET UNIT IS TO BE LOADED IN THE SECOND LAYER OF EITHER ROW, IT MUST NOT BE POSITIONED ON THE REARMOST PALLET IN THE FIRST LAYER. PROVIDE LONGITUDINAL BRACING BY INSTALLING UNITIZING STRAPS. PROVIDE LATERAL BRACING BY INSTALLING A "TOP-OF LOAD ANTI-SWAY BRACE" AS SHOWN. WIRE TIE TO THE TIEDOWN STRAPS ON THE ADJACENT PALLET UNIT.
7. IF A PALLET UNIT IS TO BE ADDED TO OR OMITTED FROM THE DEPICTED LOAD, THE STACK CONTAINING THE ODD UNIT IN THE SECOND LAYER AND AN ADJACENT STACK MUST BE SECURED BY INSTALLING TWO BUNDLING STRAPS SO AS TO ENCIRCLE THE TWO STACKS.
8. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
9. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	193	129
2" X 6"	59	59
NAILS	NO. REQD	POUNDS
10d (3")	258	4
STEEL STRAPPING, 1-1/4" - - 45' REQD - - -	4	LBS
SEAL FOR 1-1/4" STRAPPING - - 2 REQD - - -		NIL
WIRE, 0.080" DIA - - - - 4' REQD - - -		NIL

LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - -	23 - - - -	42,205 LBS
DUNNAGE - - - - - -	- - - - -	381 LBS
<b>TOTAL WEIGHT - - - - -</b>		<b>42,586 LBS (APPROX)</b>



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ② CRIB FILL ASSEMBLY A (11 REQD). SEE THE DETAIL ON PAGE 22 AND SPECIAL NOTE 2 ON PAGE 9.
- ③ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/11-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/11-10d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9 AND SPECIAL NOTE 3 ON PAGE 9.
- ④ INTERMEDIATE HEADER, 2" X 6" X 38" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/3-20d NAILS.
- ⑤ SIDE BLOCKING, 2" X 6" X 46" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/4-10d NAILS.



**SPECIAL NOTES:**

1. A 48'-0" LONG BY 8'-5" WIDE (INSIDE DIMENSION) VAN TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT PALLET UNITS EXCEEDS 6", AS MEASURED FROM PALLET ADAPTER TO PALLET ADAPTER.
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 OF THE REAR 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 C" AS DETAILED ON PAGE 26. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 25.
4. THE SPLIT IN THE LOAD CONFIGURATION ON PAGE 18 IS SHOWN AS TYPICAL ONLY. PALLET UNITS MAY BE SHIFTED FORE OR AFT, THE QUANTITY IN EACH LOAD BAY MAY BE ADJUSTED, OR ALL THE PALLET UNITS MAY BE GROUPED TOGETHER IN ONE LOAD BAY AS NEEDED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED OR THE SUPPLIED EQUIPMENT.
5. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

<b>FORWARD HEADER NAILING CHART*</b>	
#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.

<b>REAR HEADER NAILING CHART*</b>	
#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

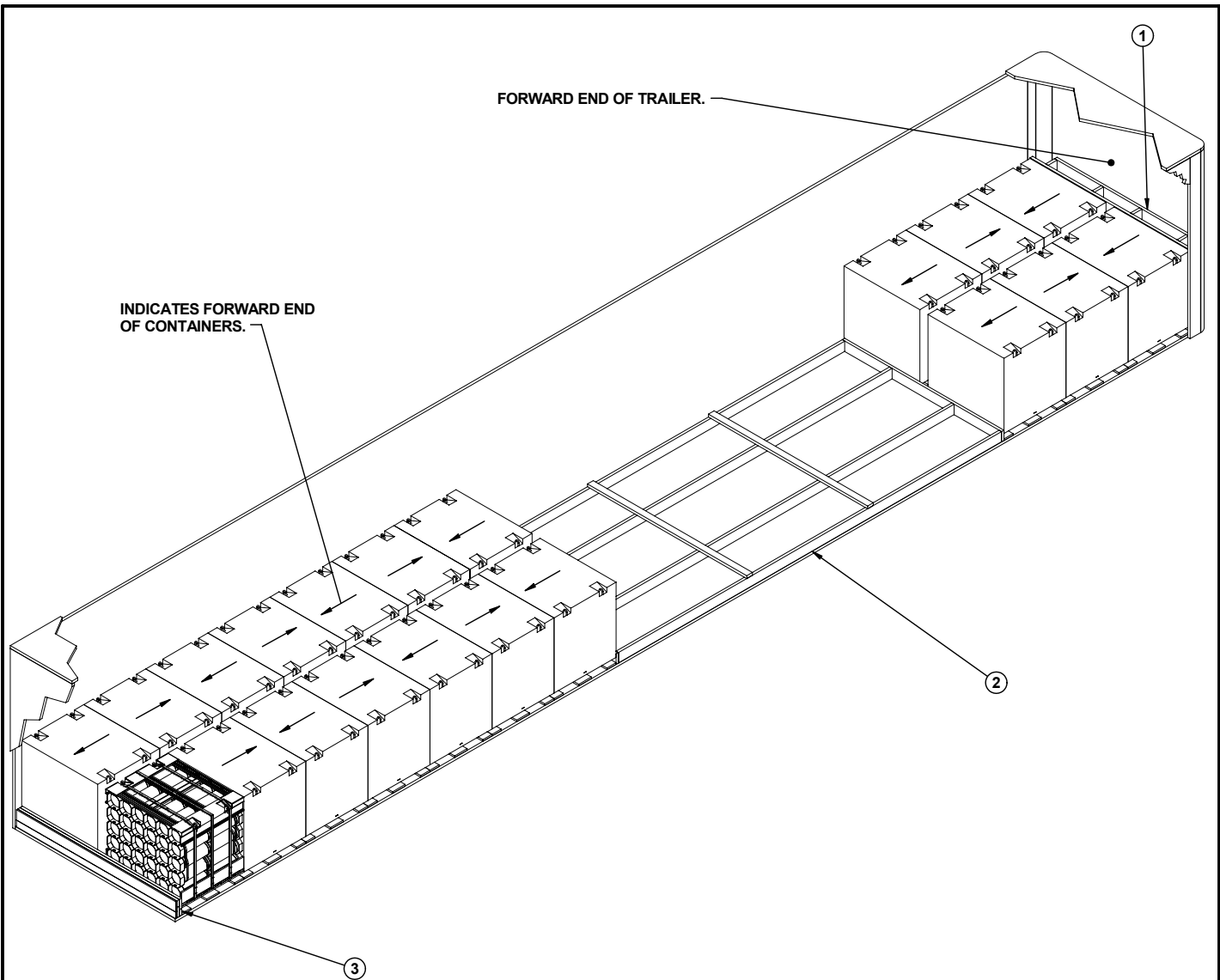
- \* HEADERS AT THE REAR OF A FULL LOAD OR AT THE REAR END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 4" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND THE SECOND BOARD IS LAMINATED TO THE FIRST W/8-10d NAILS, FOR A TOTAL OF 16-10d NAILS. 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.

<b>BILL OF MATERIAL</b>		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	104	67
2" X 6"	141	141
NAILS	NO. REQD	POUNDS
10d (3")	320	5
20d (4")	18	3/4

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	23 - - - - -	42,205 LBS
DUNNAGE - - - - -	- - - - -	425 LBS

TOTAL WEIGHT - - - - - 42,630 LBS (APPROX)



INDICATES FORWARD END OF CONTAINERS.

FORWARD END OF TRAILER.

ISOMETRIC VIEW

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 23.
- ② CENTER SPACER ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 21.
- ③ REAR BLOCKING ASSEMBLY C (1 REQD). SEE THE DETAIL ON PAGE 26 AND SPECIAL NOTE 3 ON PAGE 11.

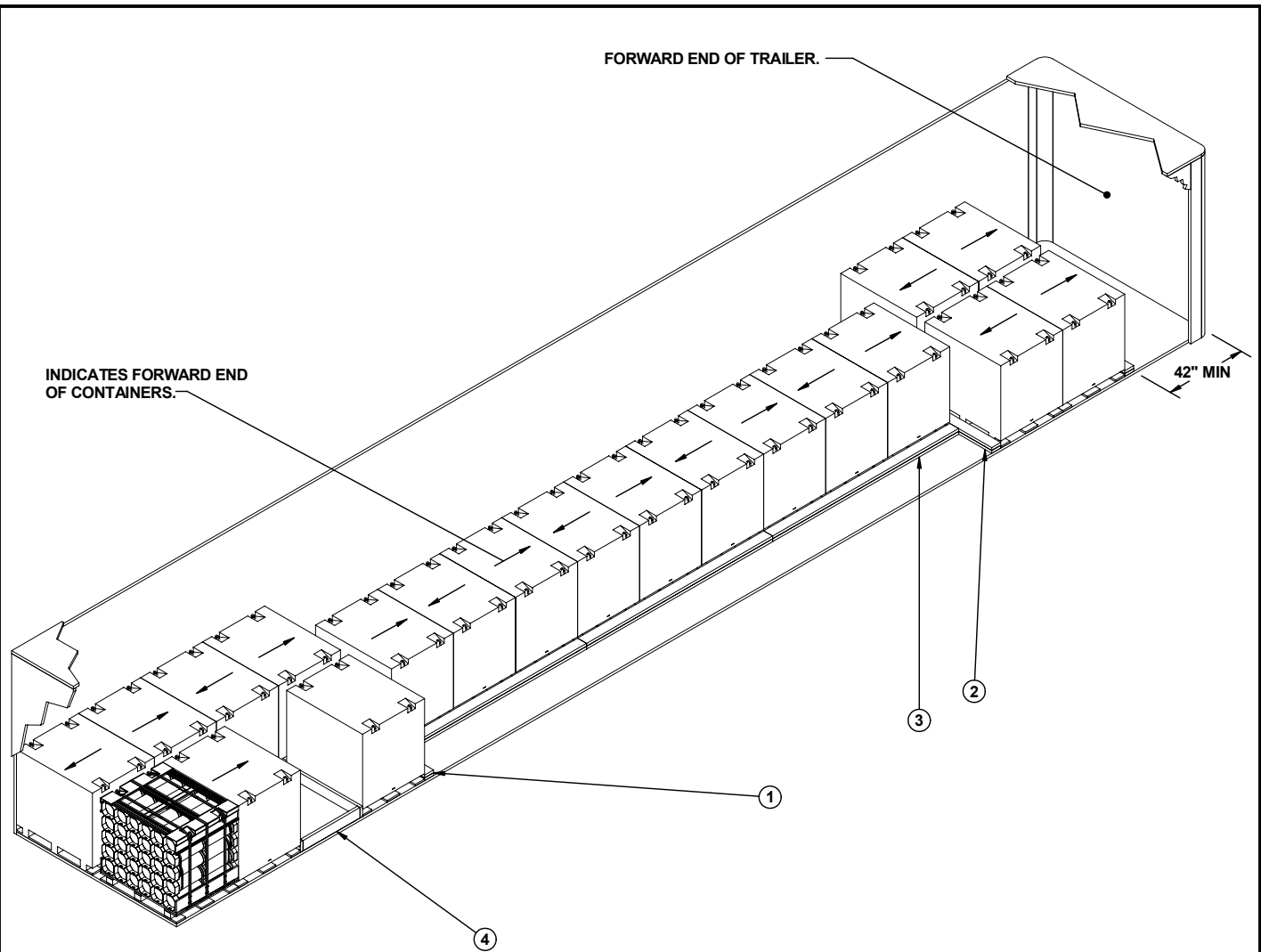
**SPECIAL NOTES:**

1. A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY PIECE ON PAGE 10, MAY BE OMITTED. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT PALLET UNITS EXCEEDS 6", AS MEASURED FROM PALLET ADAPTER TO PALLET ADAPTER.
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 SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE "REAR BLOCKING ASSEMBLY C" AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY B" AS DETAILED ON PAGE 26. **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. IF THE TRAILER BEING LOADED IS EQUIPPED WITH A WOOD OR WOOD AND METAL FLOOR, AND IF DESIRED, NAILED HEADERS MAY BE USED IN LIEU OF CENTER SPACER ASSEMBLIES. SEE THE LOAD ON PAGE 8 FOR DETAILS.
5. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED.
6. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	9	3
1" X 6"	9	4
2" X 4"	48	32
2" X 6"	121	121
NAILS	NO. REQD	POUNDS
6d (2")	16	NIL
10d (3")	104	1.6

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	20	36,700 LBS
DUNNAGE		320 LBS
<b>TOTAL WEIGHT</b>		<b>37,020 LBS (APPROX)</b>



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD HEADER, 2" X 6" X 8'-2"(DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ② INTERMEDIATE HEADER, 2" X 6" X 8'-2"(DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ③ SIDE BLOCKING, 2" X 6" BY LADING LENGTH (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE TO THE FIRST W/1-10d NAIL EVERY 24". INSTALLATION MAY BE MADE FROM RANDOM LENGTH PIECES.
- ④ SPACER ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 23.

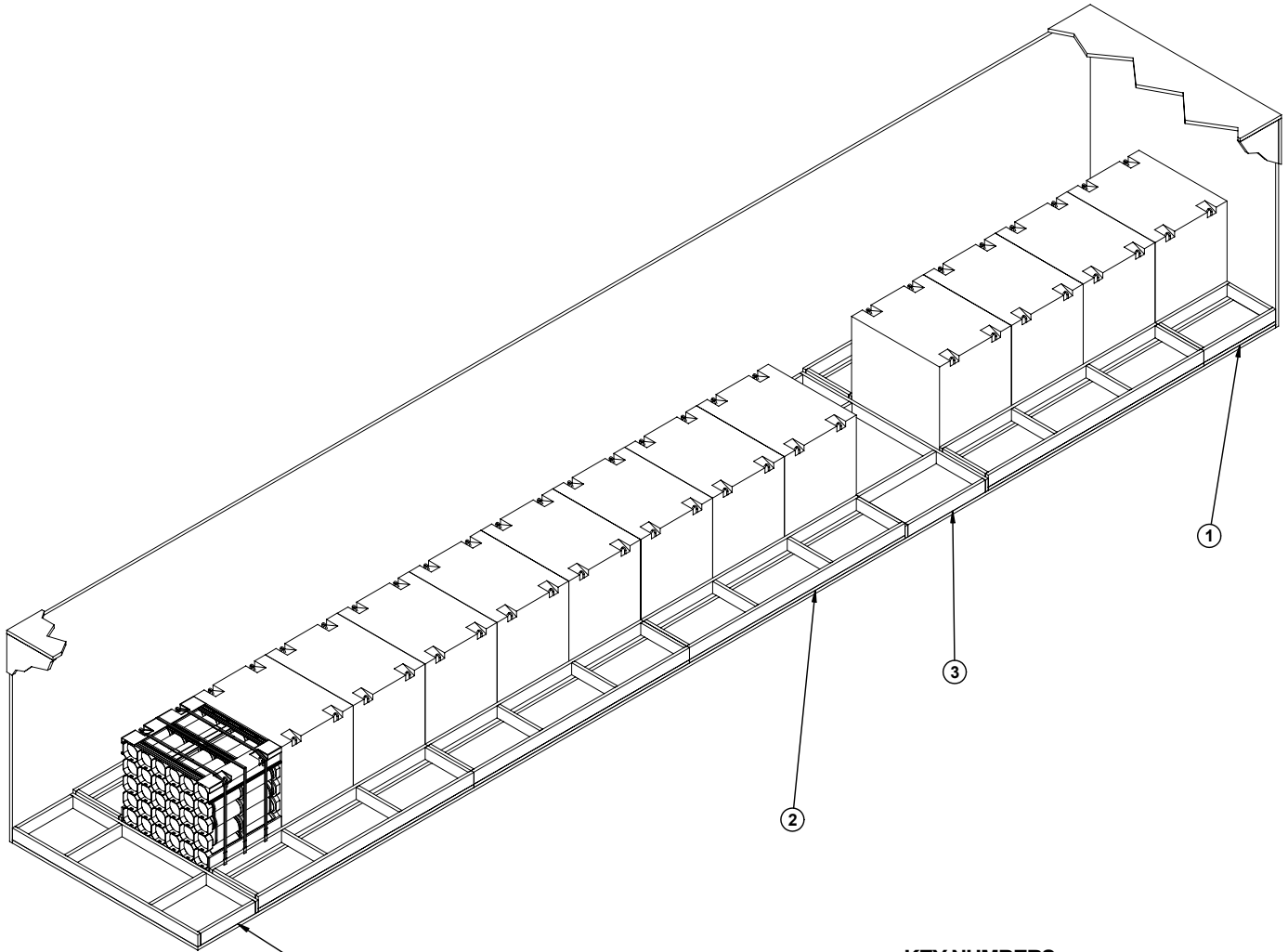
SPECIAL NOTES:

1. A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. IF DESIRED, SIDE FILL ASSEMBLIES, AS DEPICTED ON PAGE 26, MAY BE USED IN LIEU OF THE SIDE BLOCKING. SEE THE LOAD ON PAGE 14 FOR DETAILS.
3. THE SPLIT IN THE LOAD CONFIGURATION ON PAGE 12 IS SHOWN AS TYPICAL ONLY. PALLET UNITS MAY BE SHIFTED FORE OR AFT, THE QUANTITY IN EACH LOAD BAY MAY BE ADJUSTED, OR ALL THE PALLET UNITS MAY BE GROUPED TOGETHER IN ONE LOAD BAY AS NEEDED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED OR THE SUPPLIED EQUIPMENT.
4. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	163	163
NAILS	NO. REQD	POUNDS
10d (3")	78	1-1/4
20d (4")	18	3/4

LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
PALLET UNIT	--- 20 ---	42,205 LBS
DUNNAGE	-----	328 LBS
TOTAL WEIGHT		----- 42,533 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① SIDE FILL ASSEMBLY A FOR 1 PALLET UNIT (2 REQD). SEE DETAIL ON PAGE 22 AND SPECIAL NOTE 2 ON PAGE 15.
- ② SIDE FILL ASSEMBLY A FOR 3 PALLET UNITS (8 REQD). SEE DETAIL ON PAGE 22 AND SPECIAL NOTE 2 ON PAGE 15.
- ③ CENTER SPACER ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 4 ON PAGE 15.
- ④ REAR BLOCKING ASSEMBLY D (1 REQD). SEE THE DETAIL ON PAGE 26 AND SPECIAL NOTE 3 ON PAGE 15.

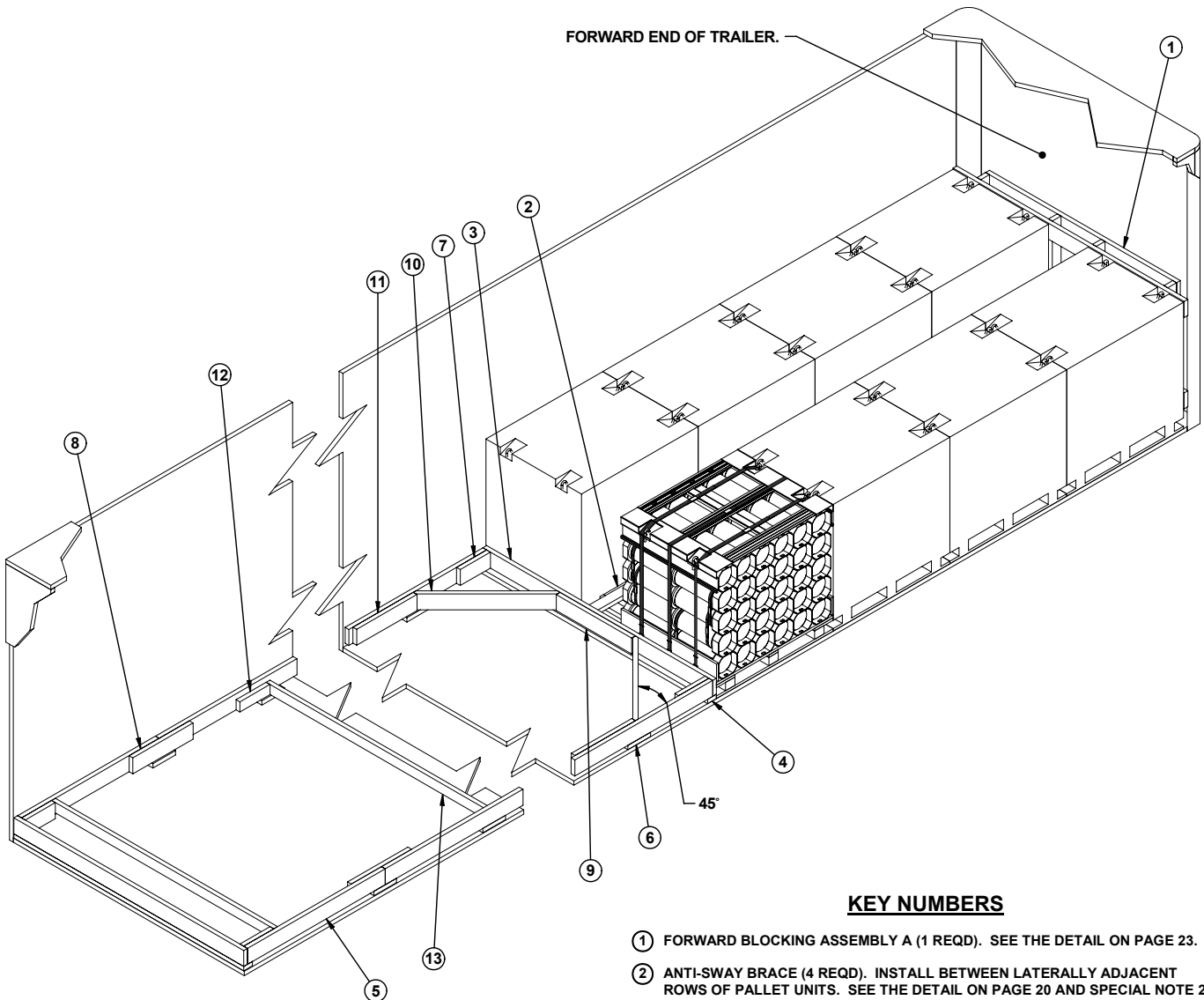
**SPECIAL NOTES:**

1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. IF DESIRED, SIDE BLOCKING MAY BE USED IN LIEU OF THE SIDE FILL ASSEMBLIES. SEE THE LOAD ON PAGE 12 FOR DETAILS.
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 D" 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 C" AS DETAILED ON PAGE 26. 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. THE SPLIT IN THE LOAD CONFIGURATION ON PAGE 14 IS SHOWN AS TYPICAL ONLY. PALLETS MAY BE SHIFTED FORE OR AFT, THE QUANTITY IN EACH LOAD BAY MAY BE ADJUSTED, OR ALL THE PALLETS MAY BE GROUPED TOGETHER IN ONE LOAD BAY AS NEEDED TO SUIT THE QUANTITY TO BE SHIPPED, OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED OR THE SUPPLIED EQUIPMENT. IF THE TRAILER BEING LOADED IS EQUIPPED WITH A WOOD OR WOOD AND METAL FLOOR, AND IF DESIRED, NAILED HEADERS MAY BE USED IN LIEU OF CENTER SPACER ASSEMBLY. SEE THE LOAD ON PAGE 8 FOR DETAILS.
5. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	165	110
2" X 6"	287	287
NAILS	NO. REQD	POUNDS
10d (3")	404	6-1/4

LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	- - - 13 - - - - -	23,881 LBS
DUNNAGE	- - - - -	800 LBS
<b>TOTAL WEIGHT</b>		<b>- - - - - 24,681 LBS (APPROX)</b>

FORWARD END OF TRAILER.



**ISOMETRIC VIEW**

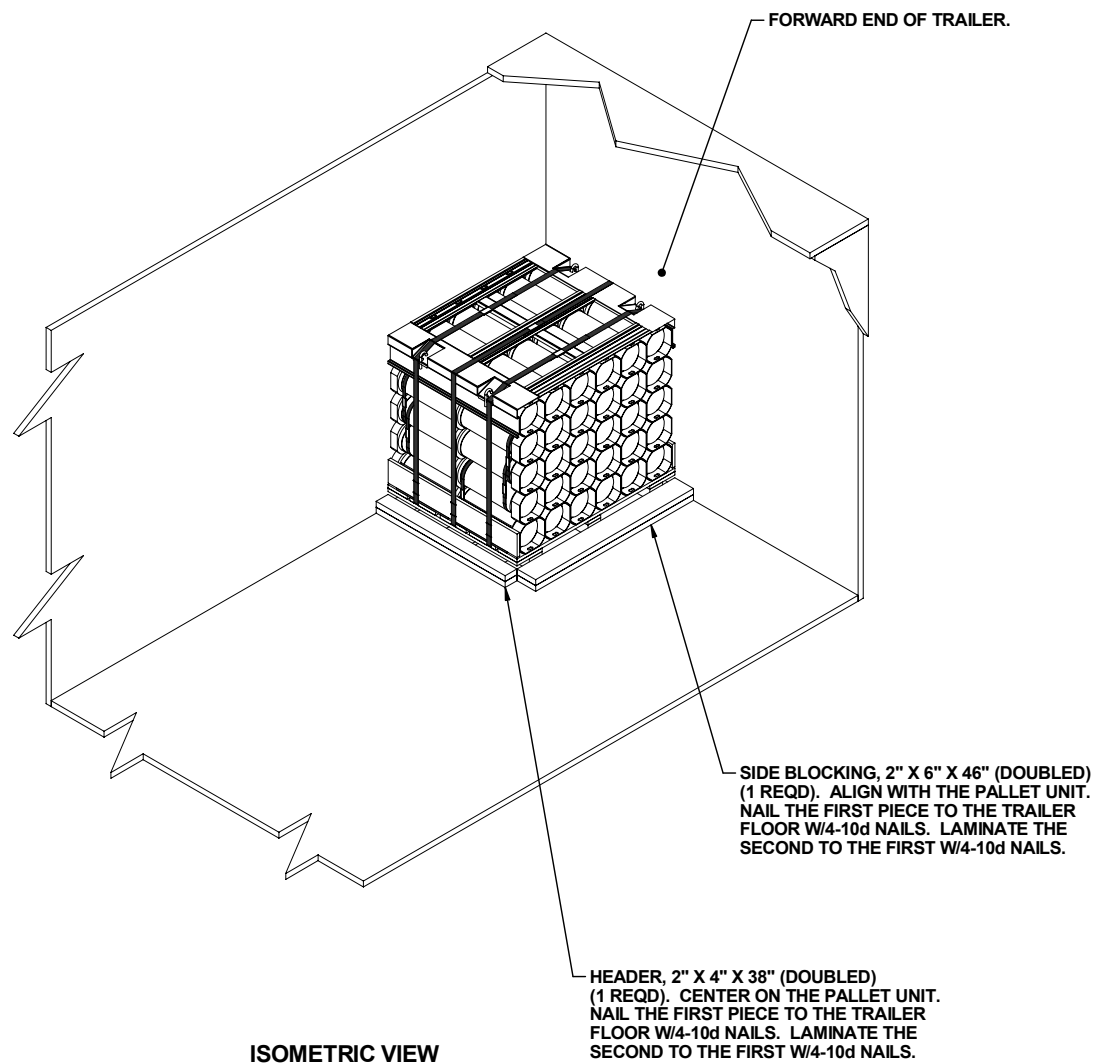
**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 23.
- ② ANTI-SWAY BRACE (4 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 20 AND SPECIAL NOTE 2 AT LEFT.
- ③ HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD).
- ④ 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".
- ⑤ SIDE STRUT, 2" X 6" BY CUT TO FIT BETWEEN THE FORWARD AND REAR HEADERS (2 REQD). SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ 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.
- ⑦ 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.
- ⑧ 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.
- ⑨ CENTER CLEAT, 2" X 6" X 30" (1 REQD). NAIL TO A HEADER W/6-10d NAILS.
- ⑩ 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.
- ⑪ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT W/8-10d NAILS.
- ⑫ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT W/3-10d NAILS.
- ⑬ 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 4 AT LEFT.

**SPECIAL NOTES:**

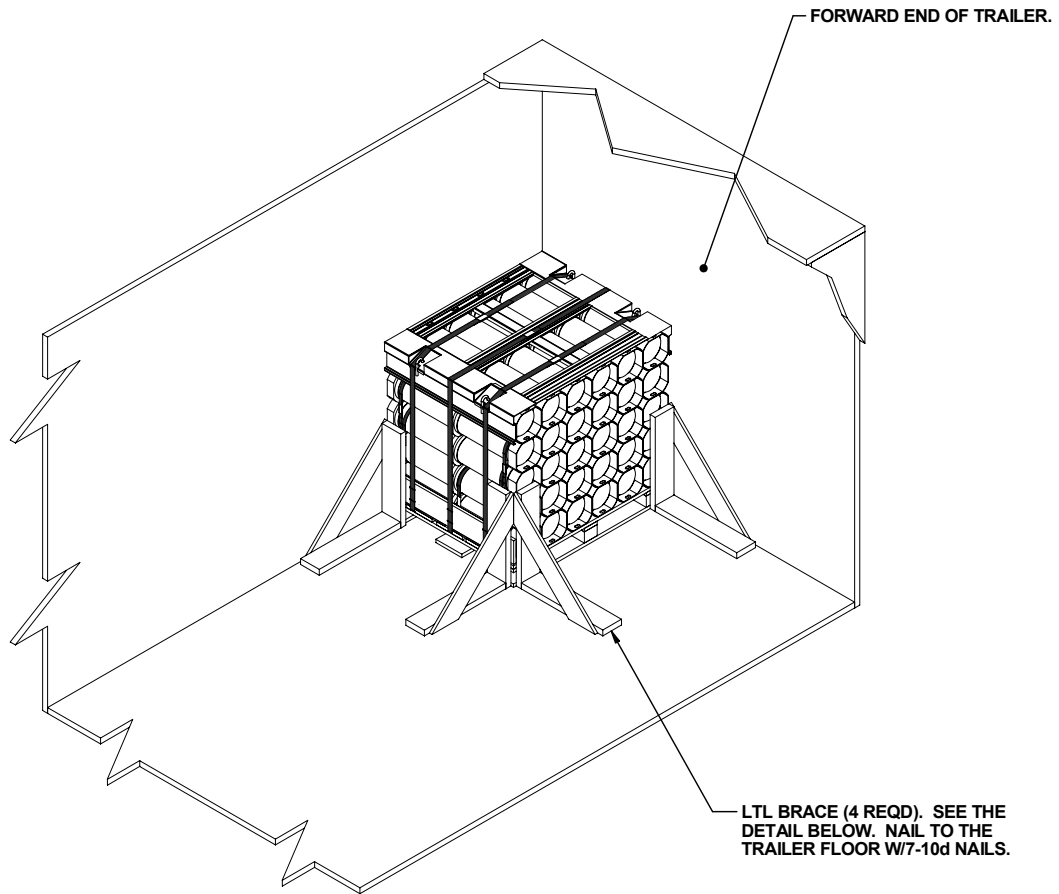
- 1. A 7'-8" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
- 2. ANTI-SWAY BRACES ARE REQUIRED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM PALLET ADAPTER TO PALLET ADAPTER.
- 3. DEPENDING ON THE NUMBER OF UNITS BEING LOADED, EACH OF 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.
- 4. ALL LTL LOADS, REGARDLESS OF THEIR SIZE, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO 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.
- 5. THE "K-BRACE" BLOCKING IS ADEQUATE FOR RETAINING A MAXIMUM LTL LOAD OF 20,000 POUNDS.
- 6. 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 PAGE 8 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.
- 7. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.





**SPECIAL NOTES:**

1. AN 8'-2" WIDE (INSIDE DIMENSION) 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 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 DETAILS ON PAGES 23 AND 24.
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 20.
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.

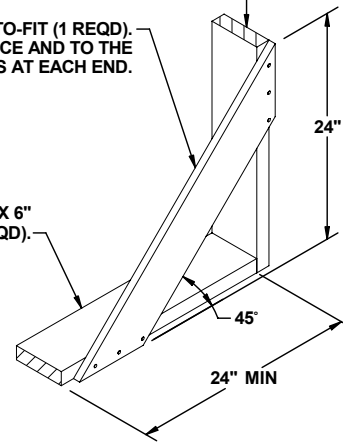


**ISOMETRIC VIEW**

VERTICAL PIECE, 2" X 6" X 24"  
(1 REQD). NAIL TO THE BACK-UP  
CLEAT W/2-10d NAILS.

ANGLE BRACE, 1" X 6" BY CUT-TO-FIT (1 REQD).  
NAIL TO THE VERTICAL PIECE AND TO THE  
BACK-UP CLEAT W/3-8d NAILS AT EACH END.

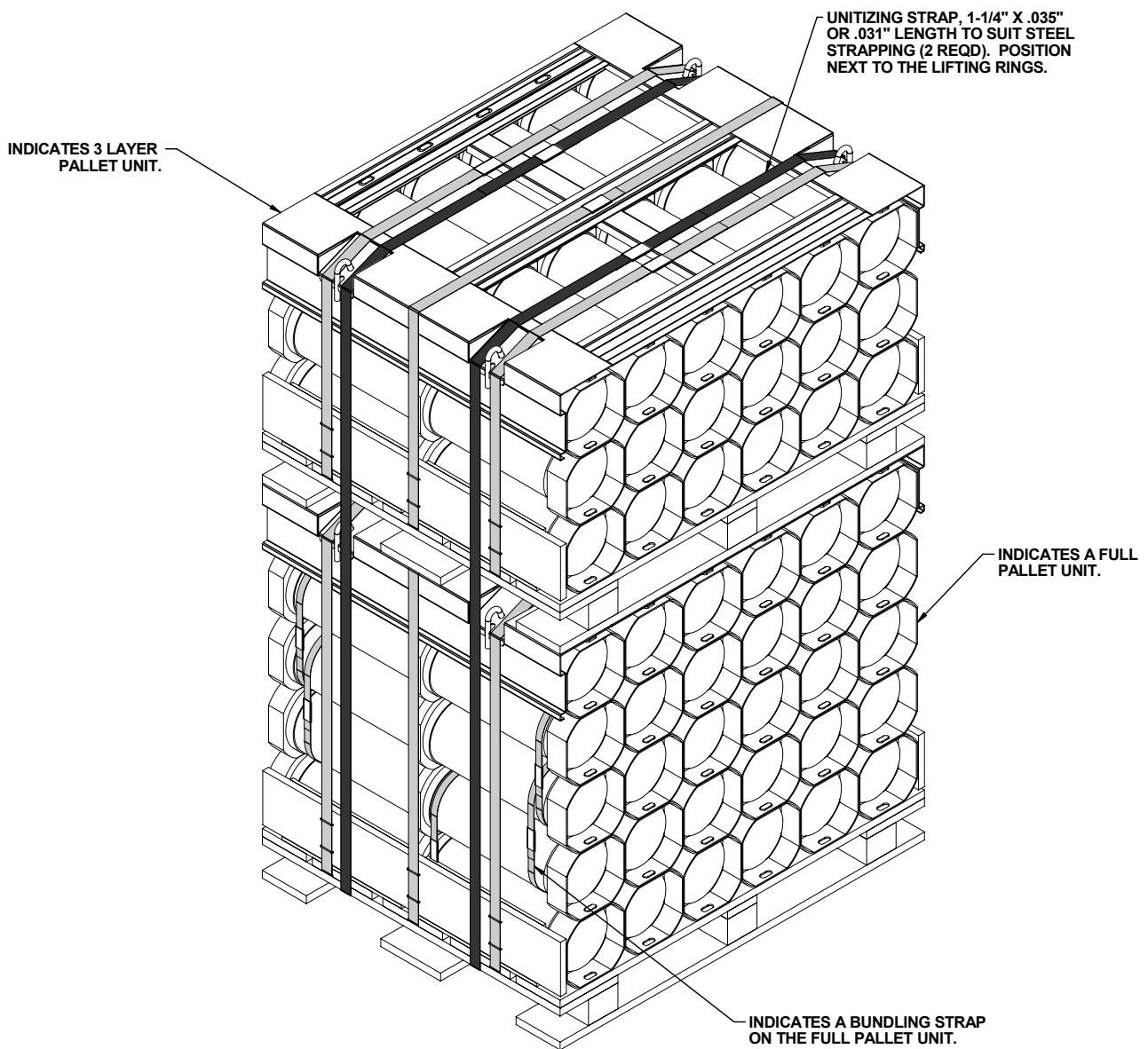
BACK-UP CLEAT, 2" X 6"  
MATERIAL (1 REQD).



**LTL BRACE**

**SPECIAL NOTES:**

1. A 7'-8" WIDE (INSIDE DIMENSION) 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 CENTERED IN 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 DETAILS ON PAGES 23 AND 24.
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 20.
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.



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

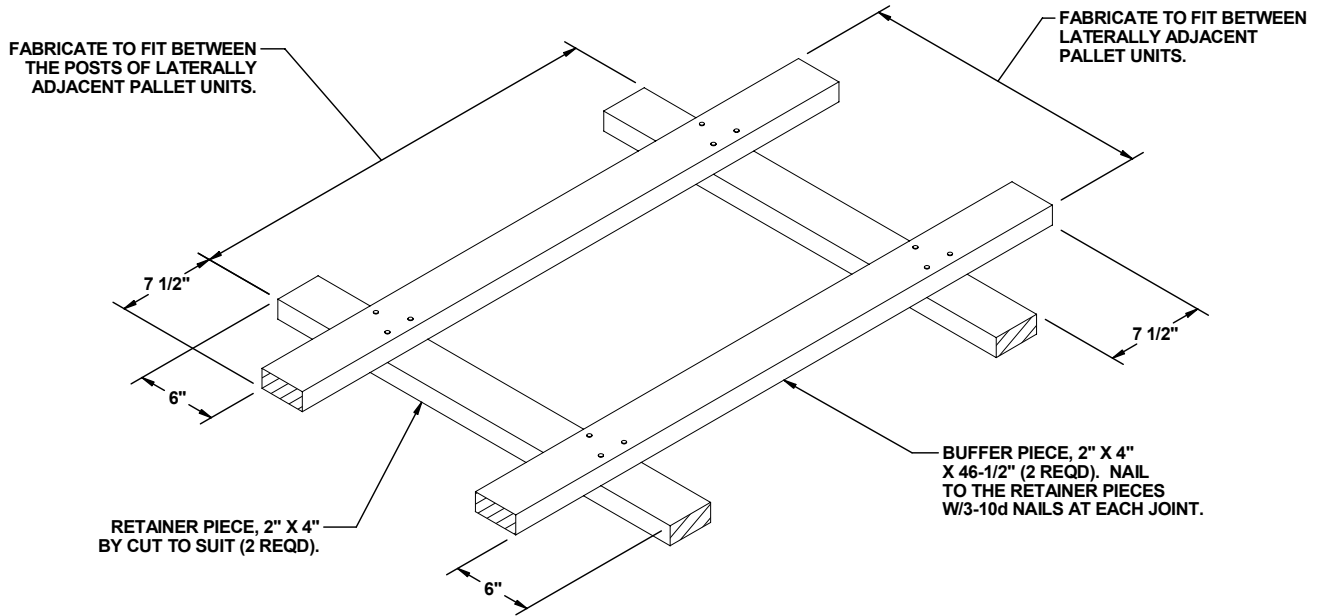
**SPECIAL NOTES:**

1. SHIPMENTS OF PALLET UNITS OF MACS 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 TWO, THREE OR FOUR FULL LAYERS IN ORDER FOR THE TOP AND BOTTOM PALLET ADAPTER ASSEMBLIES TO PROPERLY FUNCTION. A LAYER MAY CONSIST OF EMPTY CONTAINERS, THOUGH, AS DESCRIBED IN THE GENERAL NOTES OF AMC DRAWING 19-48-4326/50A-20PM1012.
3. ELIMINATE THE TWO UPPER BUNDLING STRAPS WHEN UNITIZING A FOUR-HIGH PARTIAL PALLET, AND ELIMINATE ALL BUNDLING STRAPS WHEN UNITIZING A TWO OR THREE-HIGH PARTIAL PALLET UNIT.

(CONTINUED AT RIGHT)

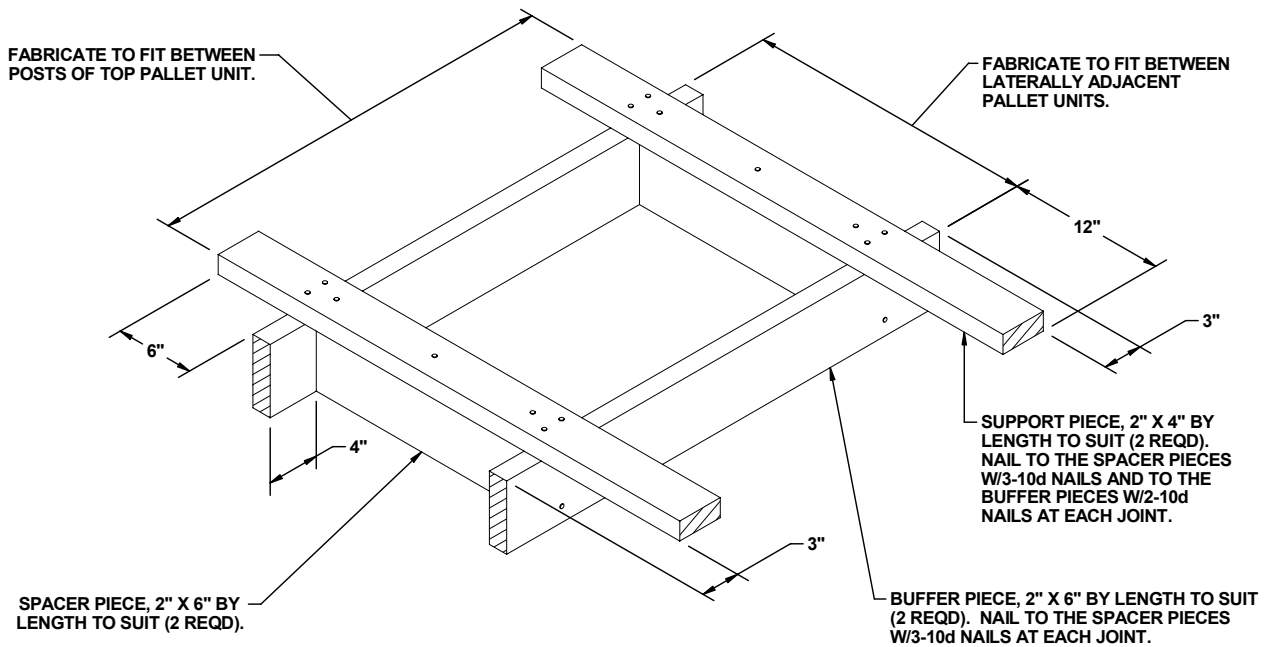
**SPECIAL NOTES CONTINUED)**

4. 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.
5. A PARTIAL PALLET UNIT MUST NOT BE POSITIONED ON THE REARMOST PALLET UNIT IN THE LOAD.



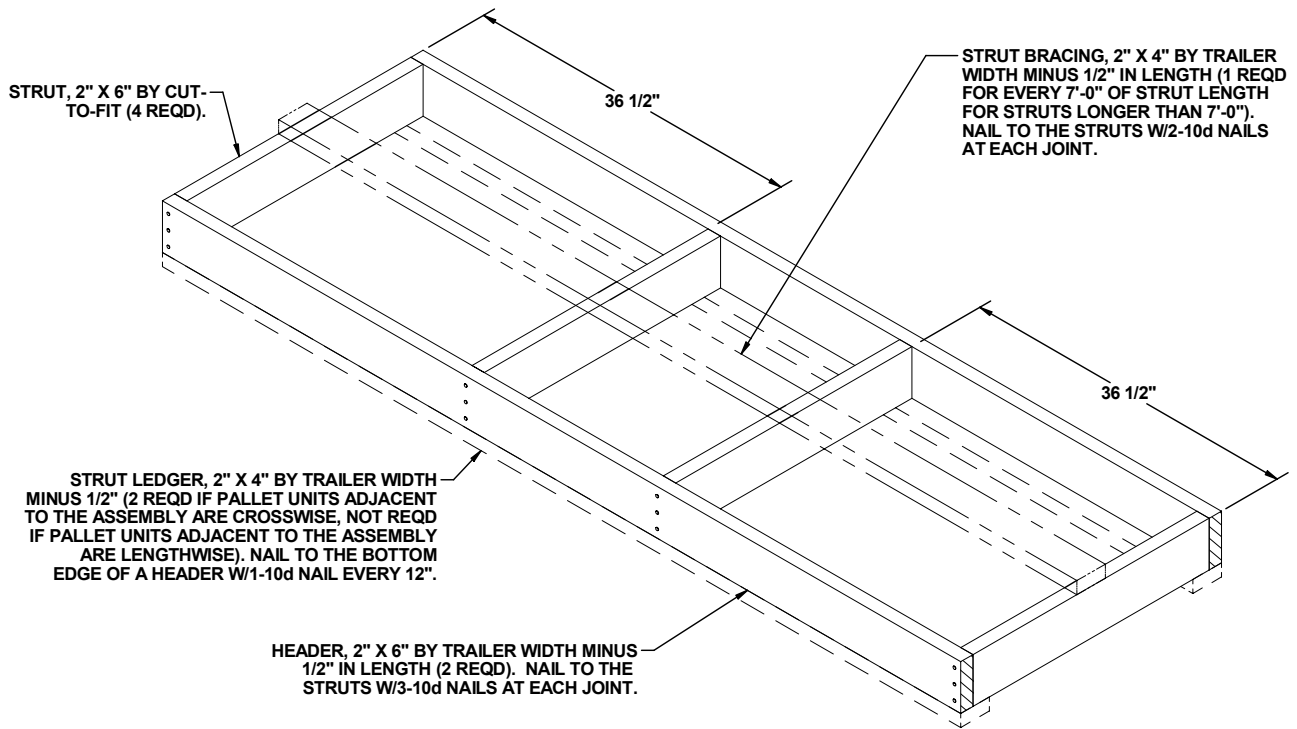
**ANTI-SWAY BRACE**

**NOTE:** THE ANTI-SWAY BRACE CAN BE PARTIALLY ASSEMBLED. ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET UNIT PRIOR TO POSITIONING OF THE LATERALLY ADJACENT PALLET UNIT.



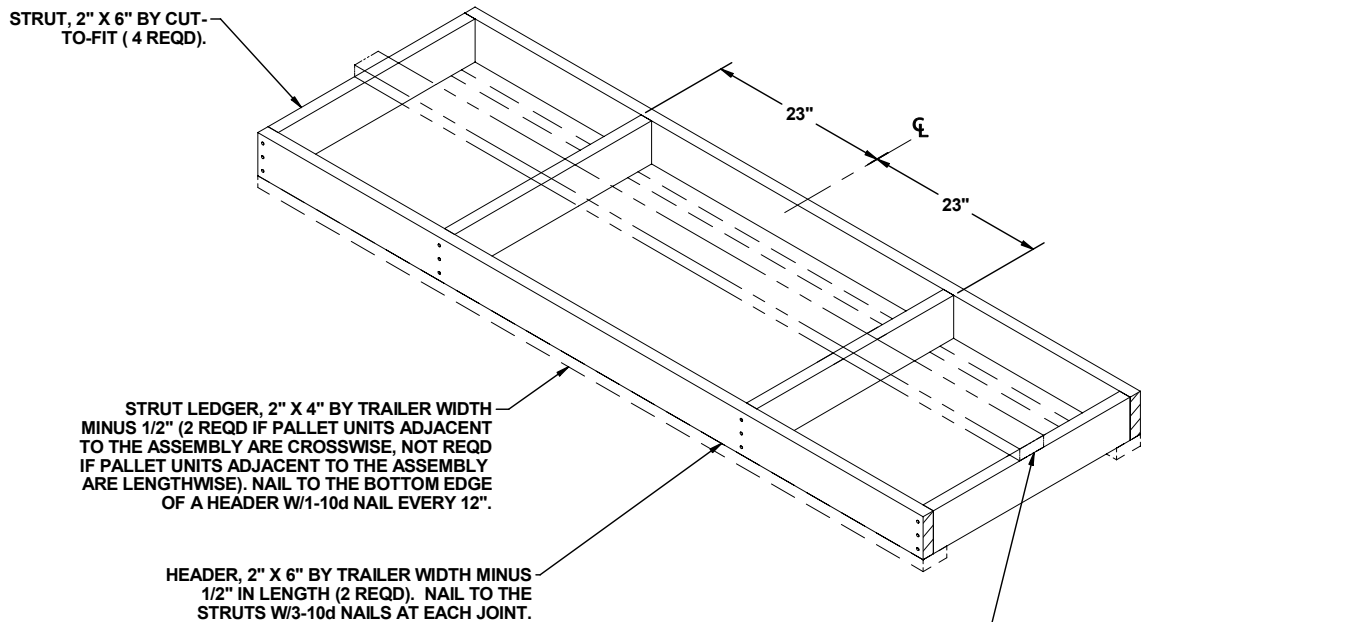
**TOP-OF-LOAD ANTI-SWAY BRACE**

**NOTE:** THIS ASSEMBLY IS DESIGNED FOR THE LATERAL BRACING OF A PALLET UNIT IN A SECOND LAYER WHEN THERE IS NOT A PALLET UNIT DIRECTLY OPPOSITE IT. POSITION THE 6" END OF SUPPORT PIECE TOWARD TOP PALLET UNIT. FABRICATE IN PLACE.



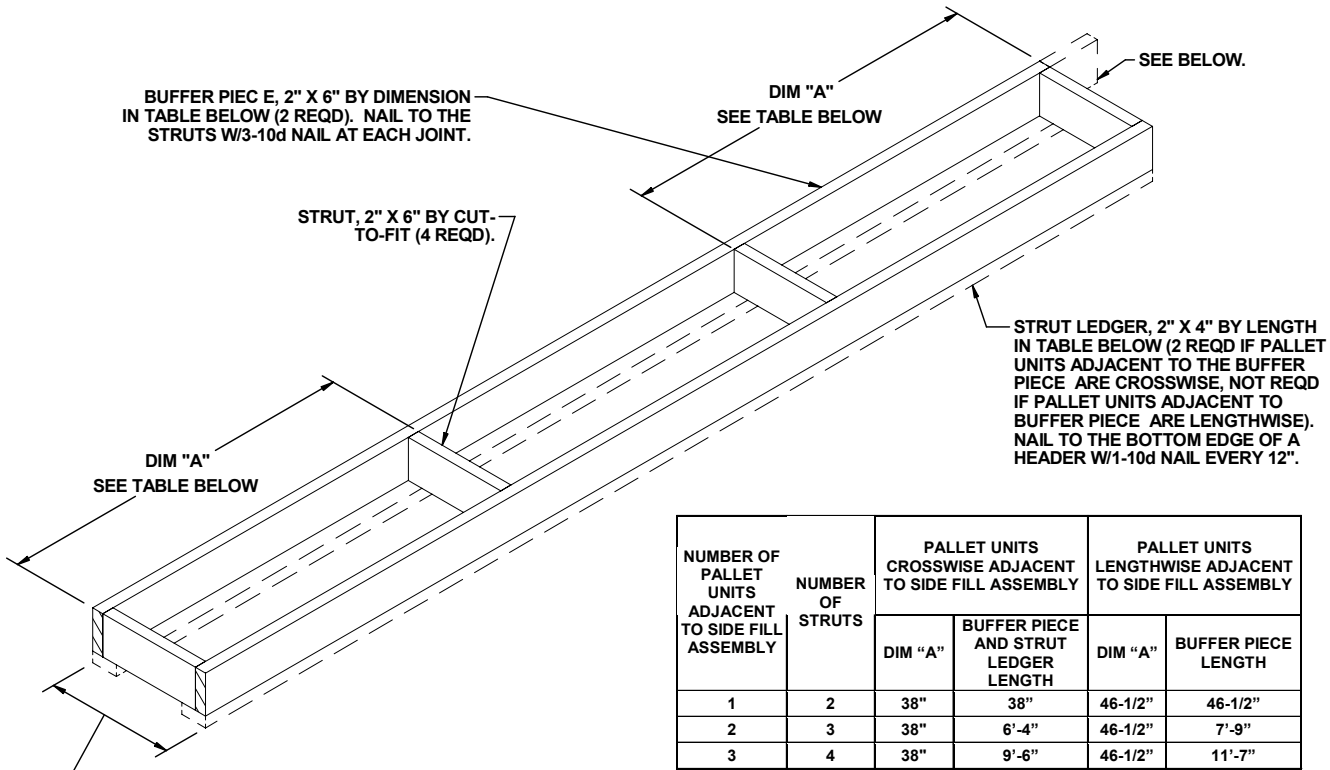
**CENTER SPACER ASSEMBLY A**

THIS CENTER SPACER ASSEMBLY IS DESIGNED FOR USE WITH PALLET UNITS POSITIONED AGAINST THE TRAILER WALLS.



**CENTER SPACER ASSEMBLY B**

THIS CENTER SPACER ASSEMBLY IS DESIGNED FOR USE WITH PALLET UNITS WITH SIDE FILL ASSEMBLIES OR SIDE BLOCKING. IF CROSSWISE PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS THE STRUT DIMENSION OF 23\"/>

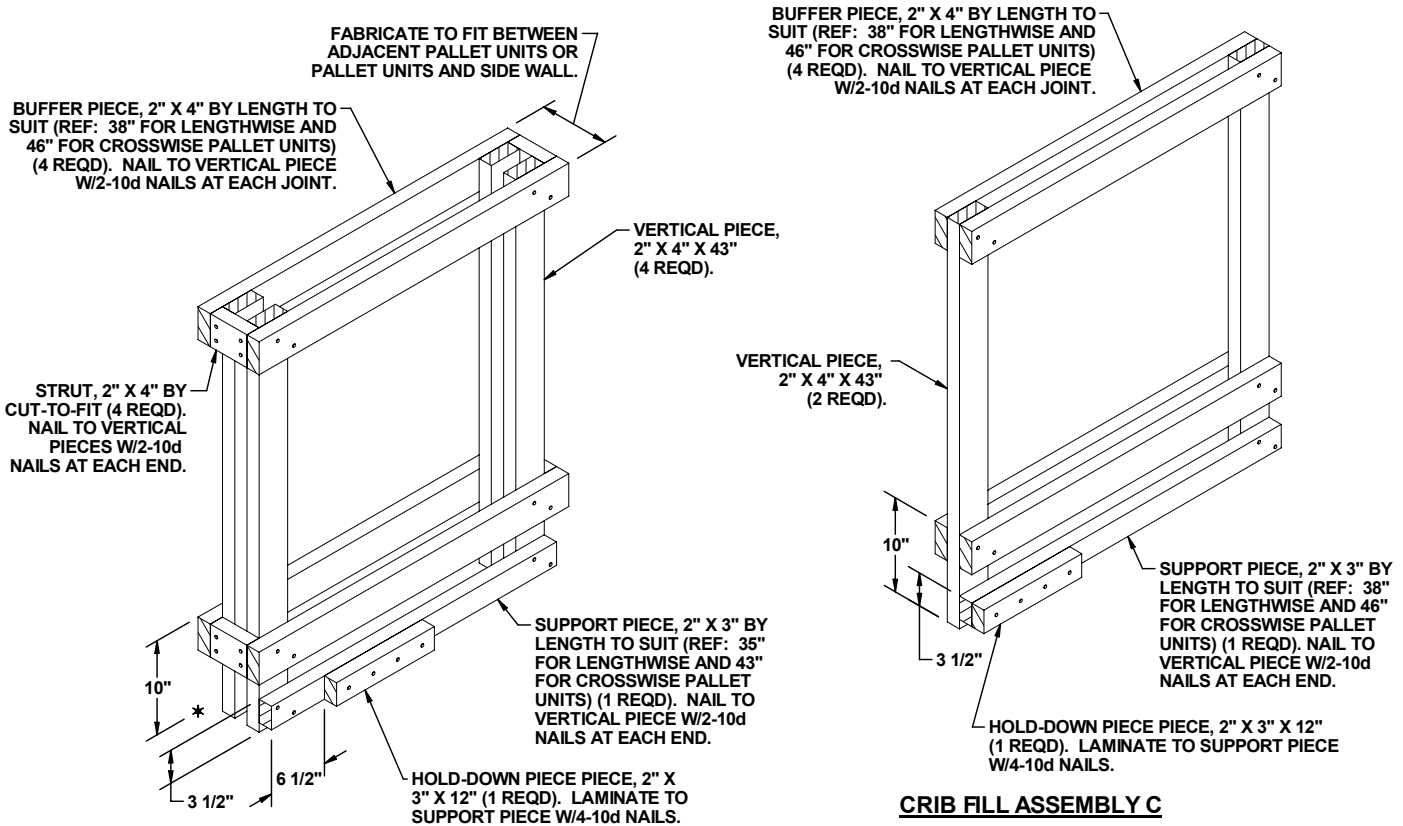


NUMBER OF PALLET UNITS ADJACENT TO SIDE FILL ASSEMBLY	NUMBER OF STRUTS	PALLET UNITS CROSSWISE ADJACENT TO SIDE FILL ASSEMBLY		PALLET UNITS LENGTHWISE ADJACENT TO SIDE FILL ASSEMBLY	
		DIM "A"	BUFFER PIECE AND STRUT LEDGER LENGTH	DIM "A"	BUFFER PIECE LENGTH
1	2	38"	38"	46-1/2"	46-1/2"
2	3	38"	6'-4"	46-1/2"	7'-9"
3	4	38"	9'-6"	46-1/2"	11'-7"

FABRICATE TO FIT BETWEEN ADJACENT PALLET UNITS OR PALLET UNITS AND SIDE WALL.

**CRIB FILL ASSEMBLY A/SIDE FILL ASSEMBLY A**

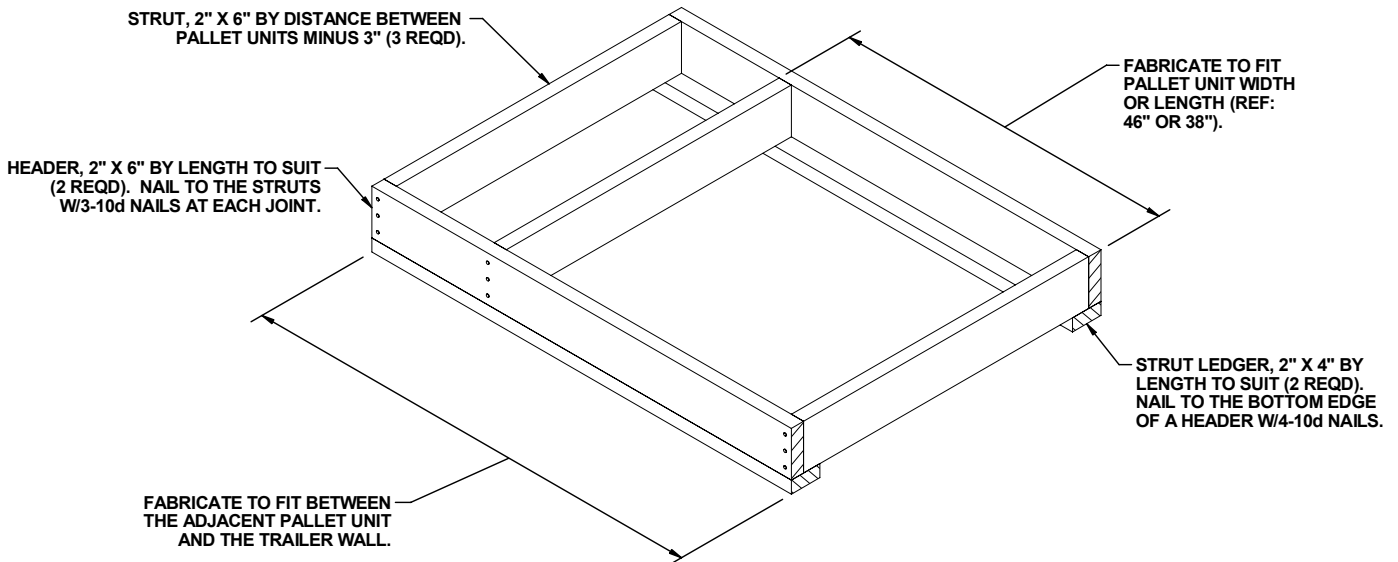
THIS ASSEMBLY IS THREE PALLET UNITS LONG. IF THE TRAILER BEING LOADED HAS ROUNDED CORNERS, AND THE ASSEMBLY IS TO BE USED ADJACENT TO THE FORWARD WALL, LENGTHEN ONE END OF ONE BUFFER PIECE BY 7", AS DEPICTED ABOVE.



**CRIB FILL ASSEMBLY B/SIDE FILL ASSEMBLY B**

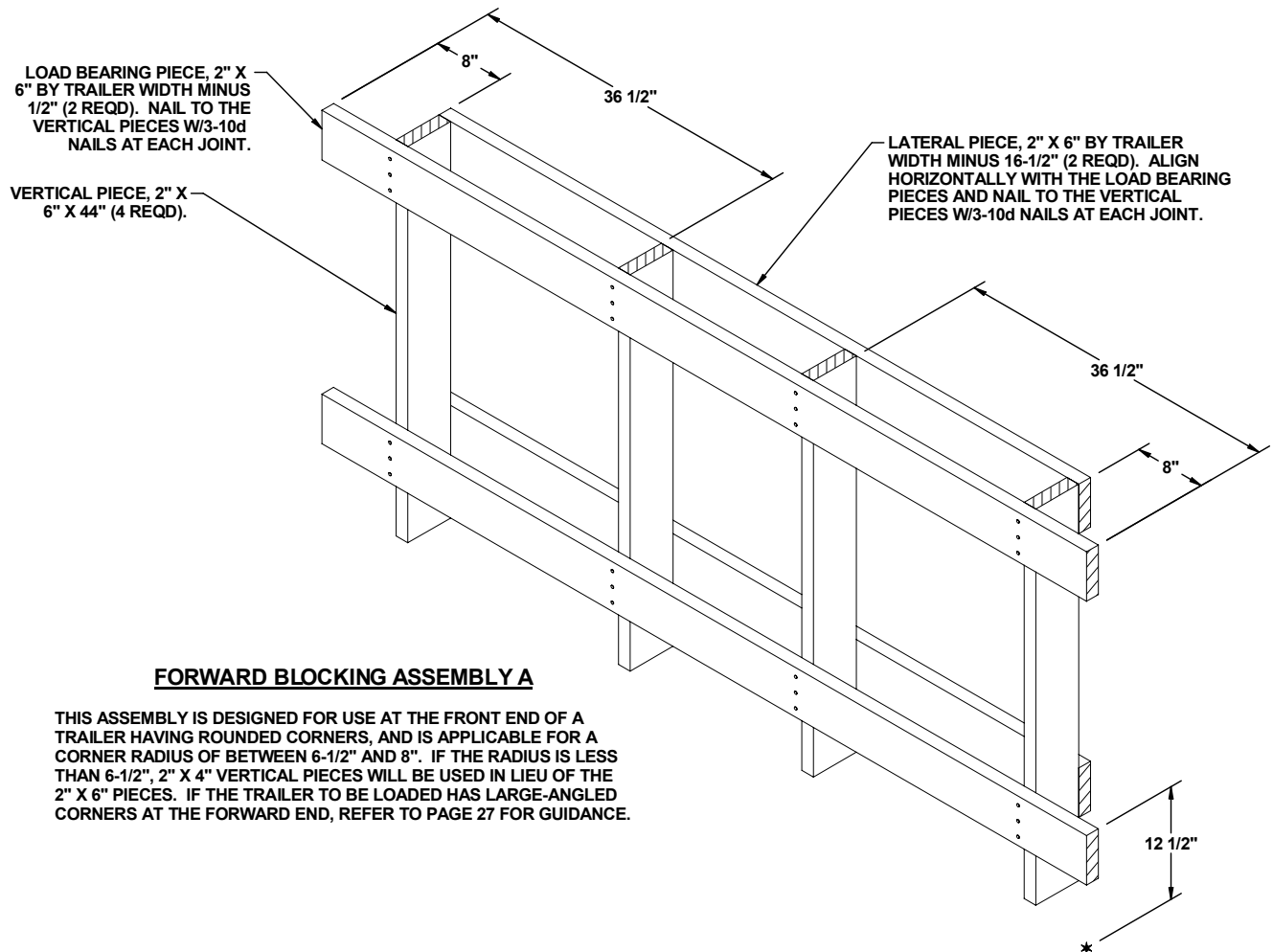
**CRIB FILL ASSEMBLY C**

VERTICAL PIECE MAY BE POSITIONED WITH NARROW SIDE TOWARD BUFFER PIECE TO INCREASE CRIB FILL DEPTH.



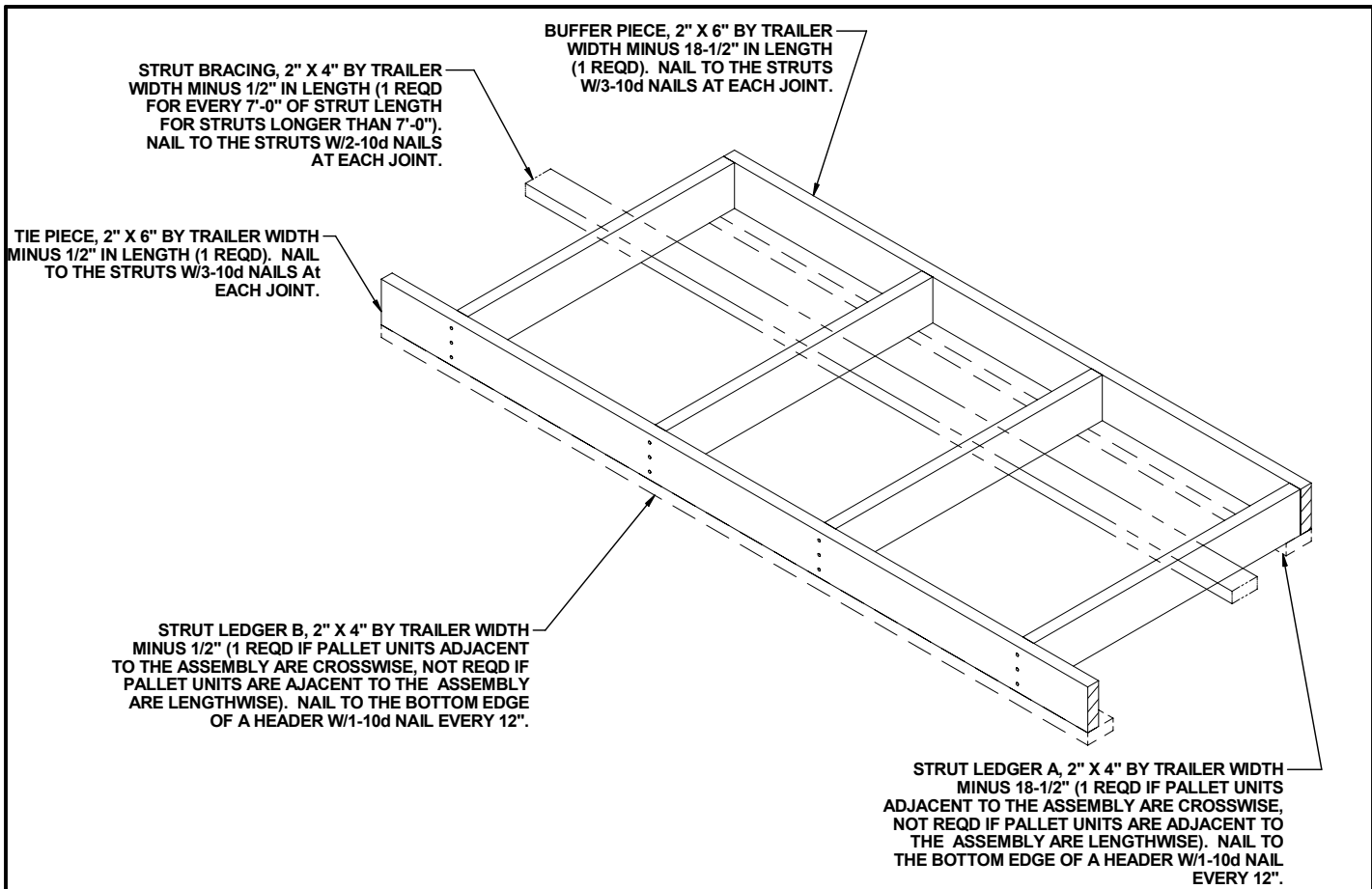
**SPACER ASSEMBLY A**

THIS ASSEMBLY IS DESIGNED TO REPLACE ONE PALLET UNIT AND SIDE FILL OR CRIB FILL ASSEMBLY. WHEN REPLACING ONLY PALLET UNIT, CENTER STRUT IS NOT REQUIRED.



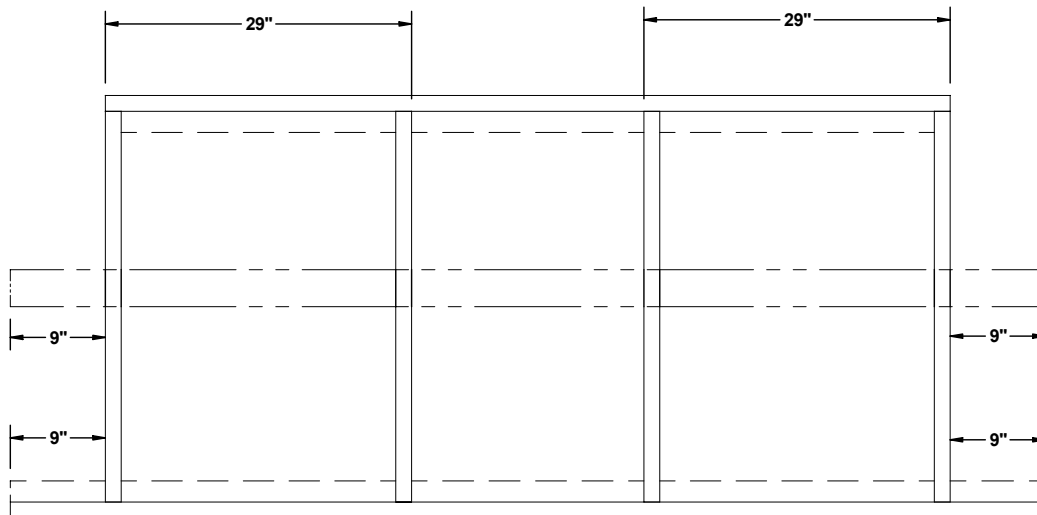
**FORWARD BLOCKING ASSEMBLY A**

THIS ASSEMBLY IS DESIGNED FOR USE AT THE FRONT END OF A TRAILER HAVING ROUNDED CORNERS, AND IS APPLICABLE FOR A CORNER RADIUS OF BETWEEN 6-1/2" AND 8". IF THE RADIUS IS LESS THAN 6-1/2", 2" X 4" VERTICAL PIECES WILL BE USED IN LIEU OF THE 2" X 6" PIECES. IF THE TRAILER TO BE LOADED HAS LARGE-ANGLED CORNERS AT THE FORWARD END, REFER TO PAGE 27 FOR GUIDANCE.



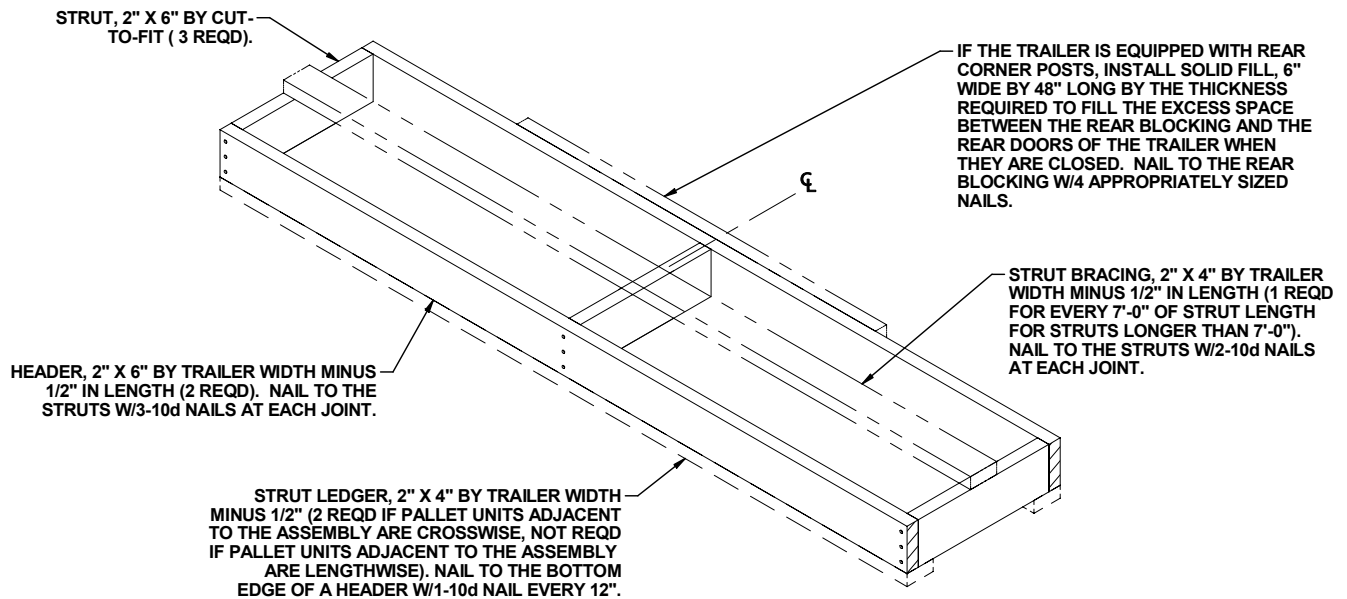
**FORWARD BLOCKING ASSEMBLY B**

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



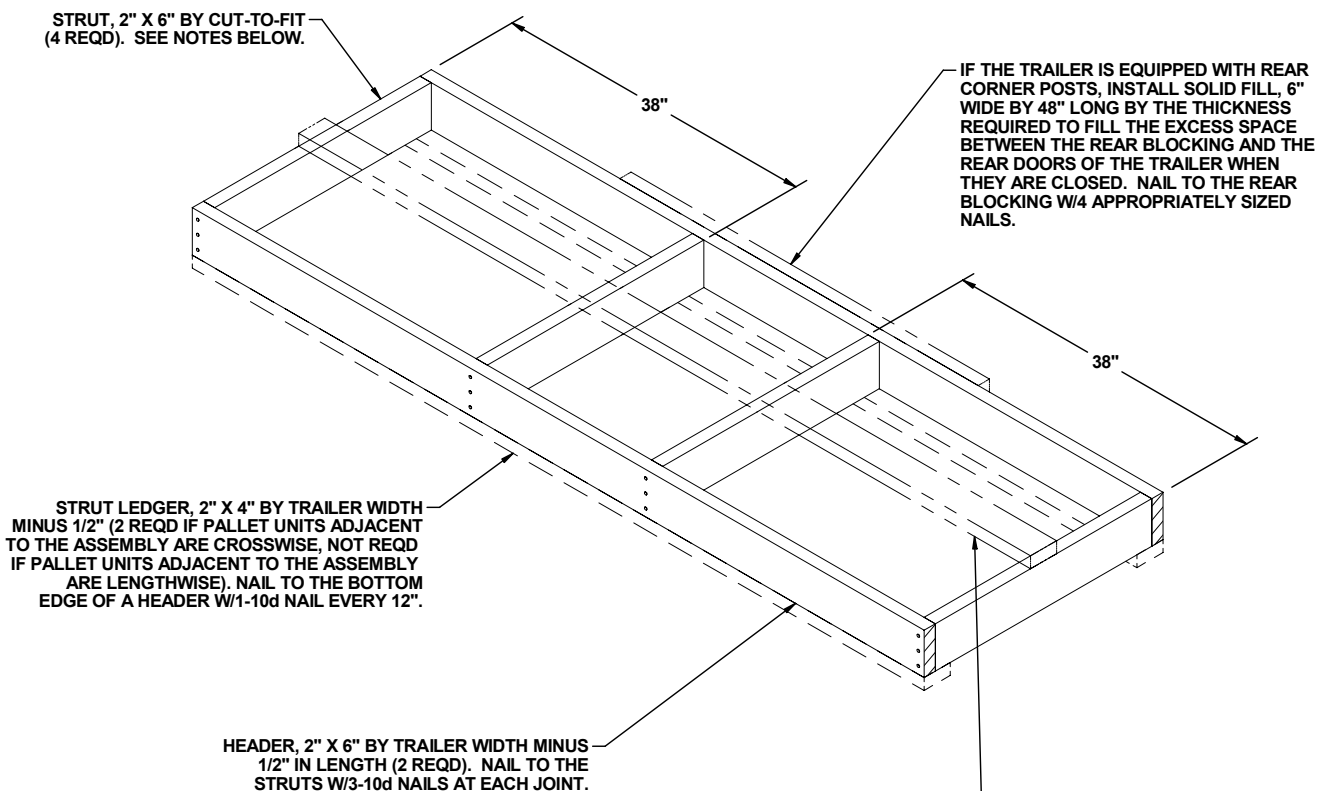
**TOP VIEW**





### REAR BLOCKING ASSEMBLY A

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND TWO PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS, AS SHOWN ON PAGE 4. NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

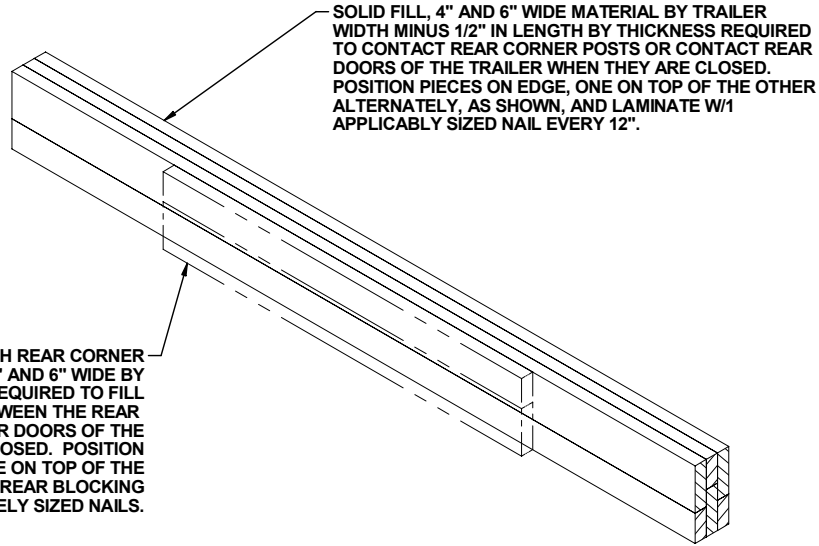


**NOTES:**

1. THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND TWO OR THREE ROWS OF PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS.
2. IF TWO ROWS OF LENGTHWISE PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER THE STRUT DIMENSIONS WILL BE 46-1/2" NOT 38".
3. THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

### REAR BLOCKING ASSEMBLY B

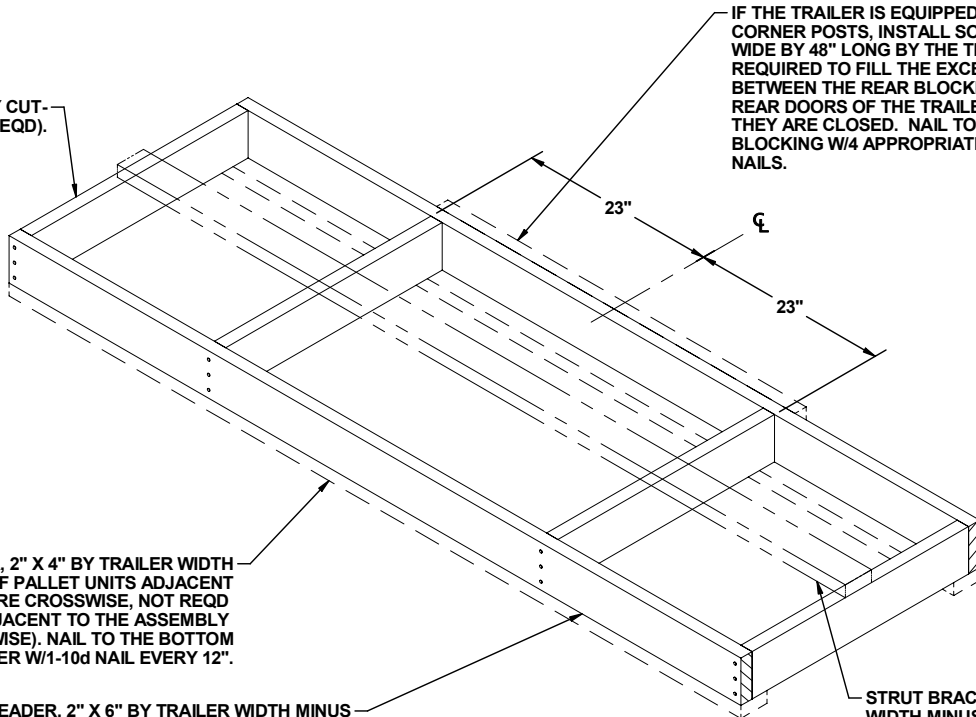
IF THE TRAILER IS EQUIPPED WITH REAR CORNER POSTS, INSTALL SOLID FILL, 4" AND 6" WIDE BY 48" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN THE REAR BLOCKING AND THE REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. POSITION PIECES ON EDGE, ONE ON TOP OF THE OTHER ALTERNATELY, AS SHOWN, AND LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 12".



### **REAR BLOCKING ASSEMBLY C**

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

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



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 REAR DOORS OF THE TRAILER WHEN THEY ARE CLOSED. NAIL TO THE REAR BLOCKING W/4 APPROPRIATELY SIZED NAILS.

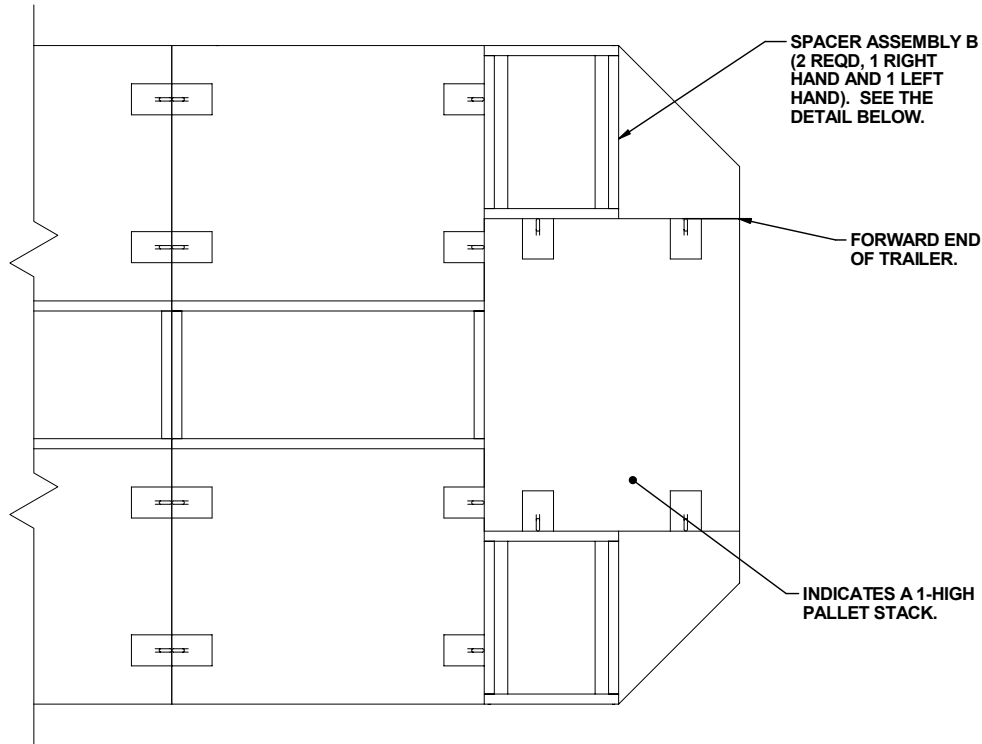
STRUT LEDGER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (2 REQD IF PALLET UNITS ADJACENT TO THE ASSEMBLY ARE CROSSWISE, NOT REQD IF PALLET UNITS ADJACENT TO THE ASSEMBLY ARE LENGTHWISE). NAIL TO THE BOTTOM EDGE OF A HEADER W/1-10d NAIL EVERY 12".

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.

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.

### **REAR BLOCKING ASSEMBLY D**

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND ONE ROW OF LENGTHWISE PALLET UNITS IS LOADED ADJACENT TO THE TRAILER DOORS. IF CROSSWISE PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS THE STRUT DIMENSION OF 23" WILL BE REDUCED TO 19". NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.



### ALTERNATE FORWARD LOADING PATTERN

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF ONE PALLET UNIT IN THE FORWARD END OF A 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 98" WIDE TRAILER IS SHOWN, NARROW TRAILERS CAN BE USED.

