



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

PA161 CONTAINER, WOODEN PALLET

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*** 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 	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.			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  U.S. ARMY DEFENSE AMMUNITION CENTER	DO NOT SCALE		MARCH 2006	
	ENGINEER OR TECHNICIAN	BASIC REV.	MELVIN SIX	
	TRANSPORTATION ENGINEERING DIVISION	VALIDATION ENGINEERING DIVISION	TESTED	
	ENGINEERING DIRECTORATE			
			CLASS	DIVISION
			DRAWING	FILE
			19	48
			4331/50	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 M231 MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKED IN PA161 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 19-48-4326/50-20PM1012 FOR UNITIZATION PROCEDURES FOR THE MODULAR ARTILLERY CHARGE SYSTEM (MACS) PACKAGED IN PA161 CONTAINERS.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN 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.

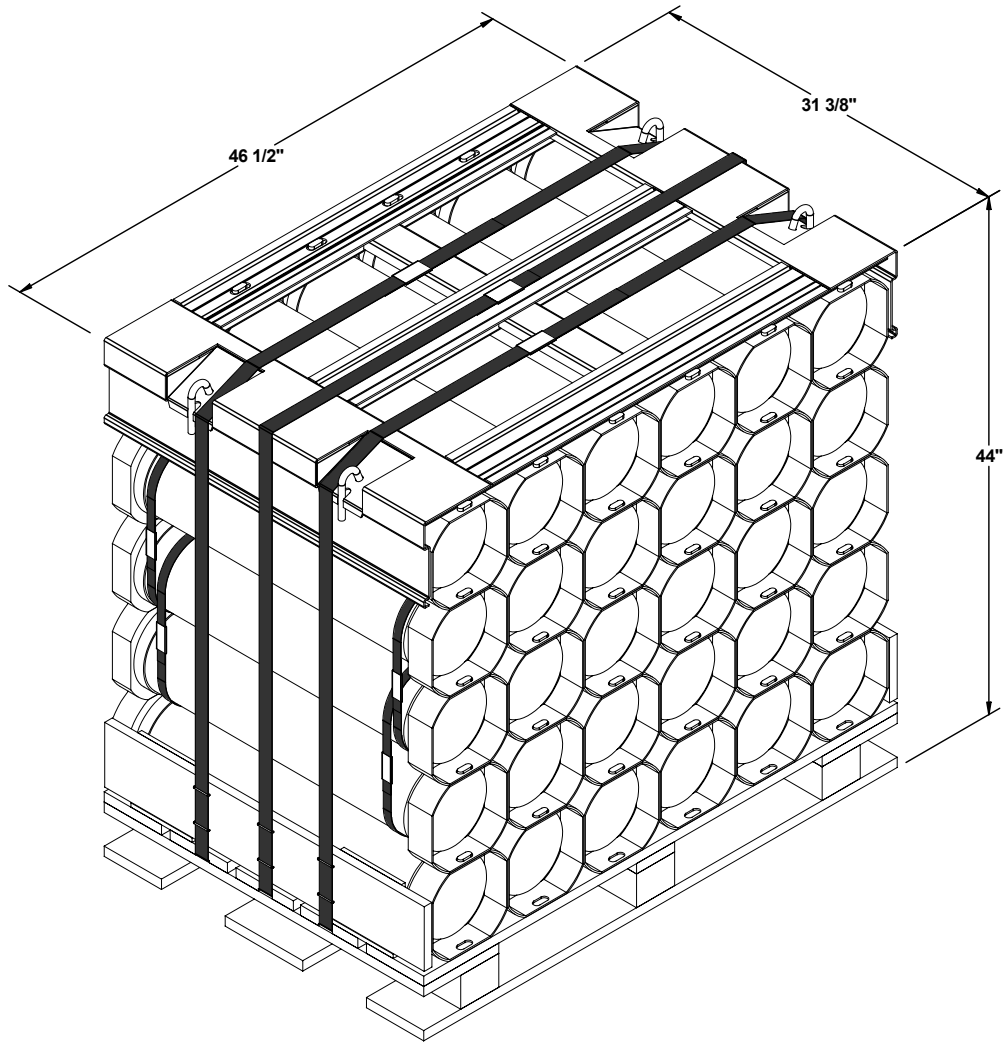
(CONTINUED AT RIGHT)

- 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 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 B" AS DEPICTED ON PAGE 24. IF THE VOID AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY "A", "C" OR "D", AS SHOWN ON PAGES 24 AND 25. **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.
- 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.

MATERIAL SPECIFICATIONS

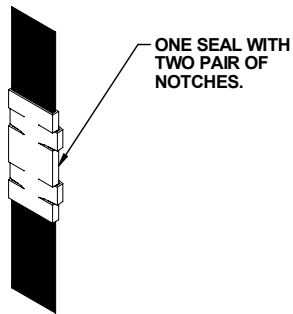
LUMBER - - - - - :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
NAILS - - - - - :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
STRAPPING, STEEL - - - :	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B, (GRADE 2), OR C.
SEAL, STRAP - - - - - :	ASTM D3953; CLASS 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.
WIRE, CARBON STEEL - - - :	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.

- R. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF ITEMS CAN BE TRANSPORTED. SEE THE "PROCEDURES FOR SHIPMENT OF PARTIAL PALLET UNITS" DETAIL ON PAGE 19.
- S. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF PALLET UNITS OF PA161 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 25.4MM 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 - - - - - 1,297 LBS (APPROX)
 CUBE - - - - - 37.2 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.

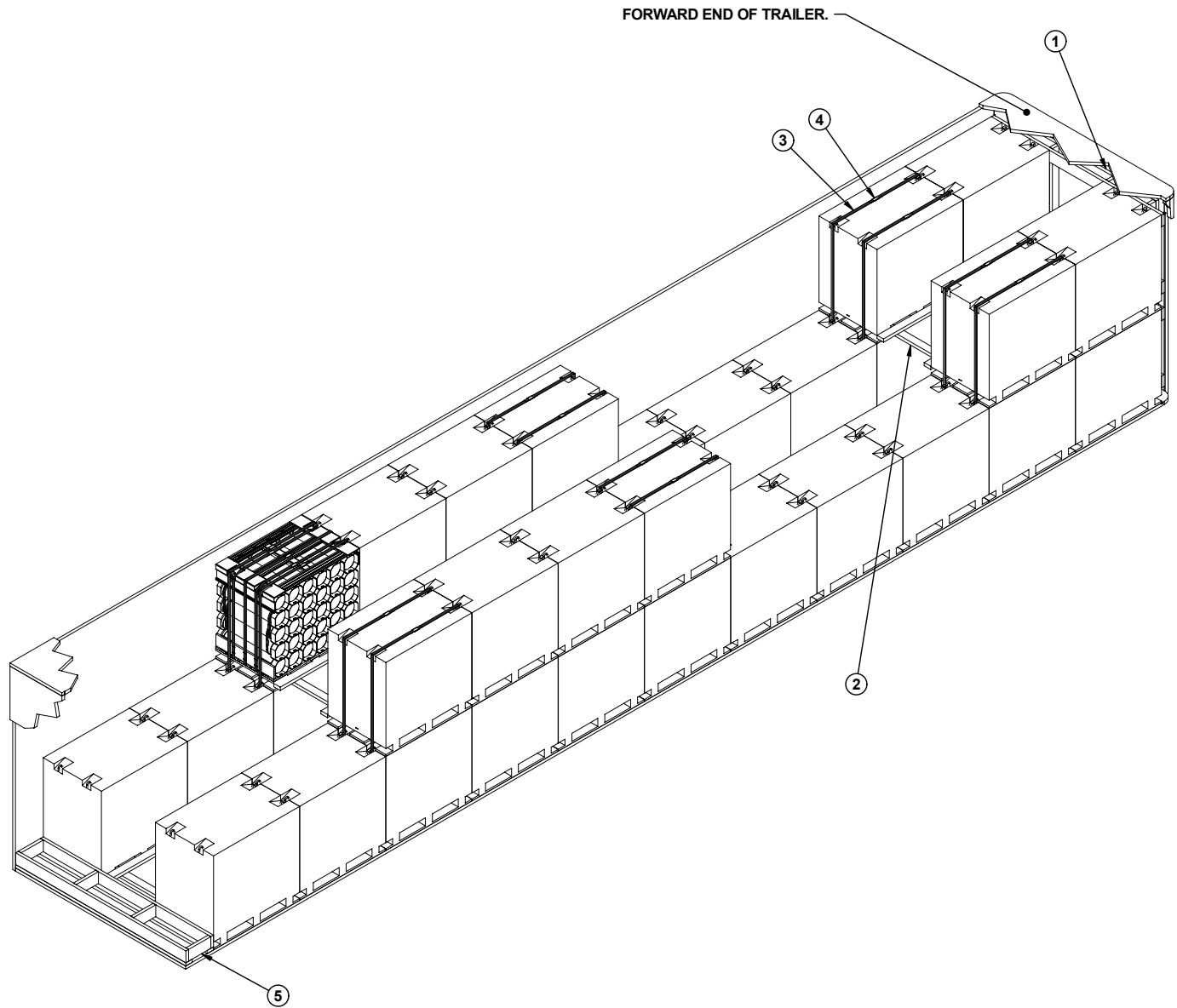


TWO SEALS, BUTTED
TOGETHER, WITH
TWO PAIR OF CRIMPS
EACH SEAL.

STRAP JOINT B

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

END-OVER-END LAP JOINT DETAILS



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 22 AND SPECIAL NOTE 1 ON PAGE 5.
- ② ANTI-SWAY BRACE (17 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 20 AND SPECIAL NOTE 2 ON PAGE 5.
- ③ STACK UNITIZING STRAP, 1-1.4" X .031" OR .035" X 22'-8" LONG STEEL STRAPPING (6 REQD, 2 PER STACK). SEE SPECIAL NOTE 4 ON PAGE 5.
- ④ SEAL FOR 1-1/4" STRAPPING (12 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑤ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 24 AND SPECIAL NOTE 3 ON PAGE 5.

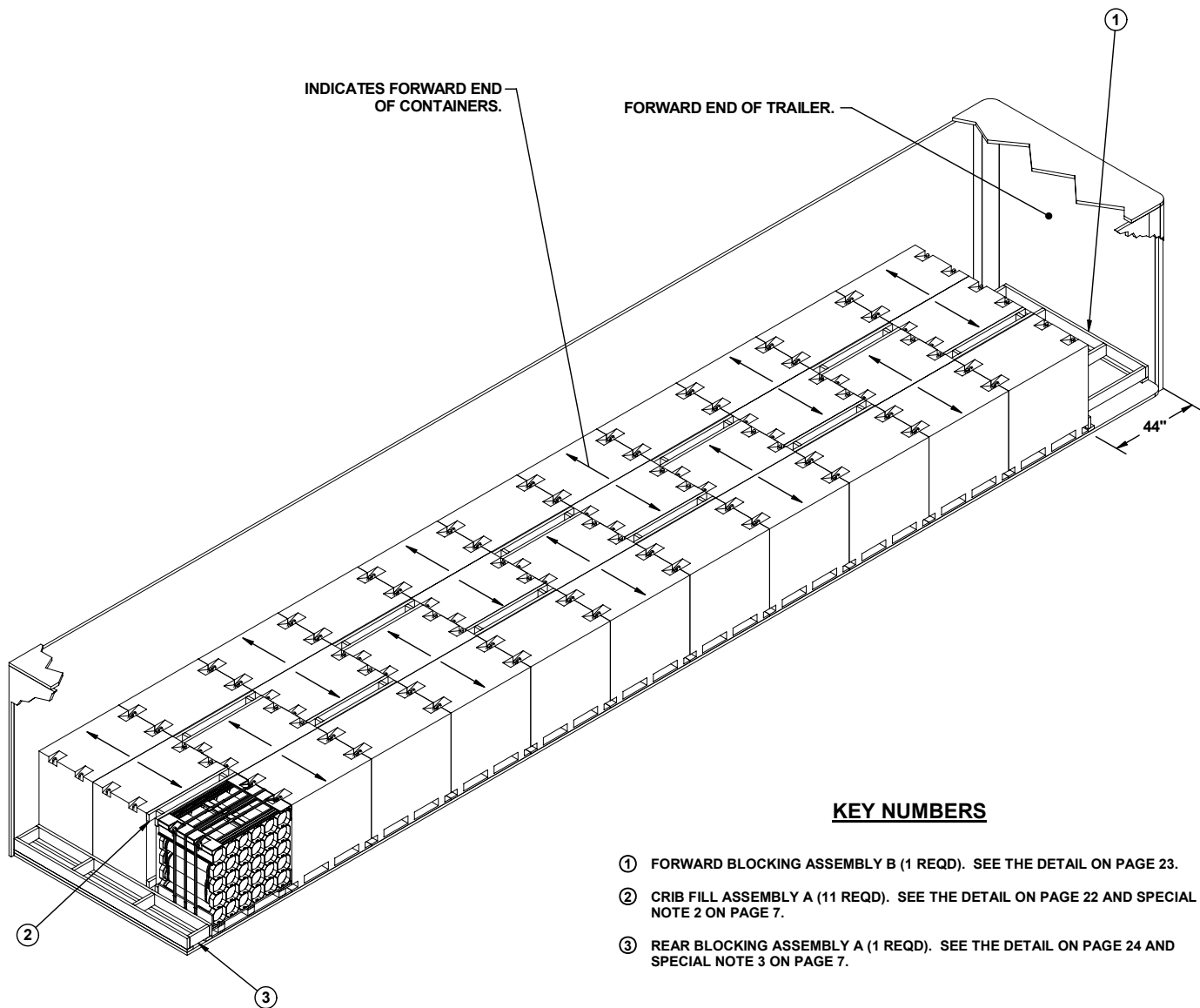
SPECIAL NOTES:

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. ANTI-SWAY BRACES ARE REQUIRED WHEN THE SPACE BETWEEN LATERALLY ADJACENT UNITS EXCEEDS 6", 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 A" AS DETAILED ON PAGE 24. 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, AS SHOWN, 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 DETAILED ON PAGE 20. 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"	278	185
2" X 6"	91	91
NAILS	NO. REQD	POUNDS
10d (3")	240	3-3/4
STEEL STRAPPING, 1-1/4" - 182.5' REQD - - 17 LBS		
SEAL FOR 1-1/4" STRAPPING - - 12 REQD - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - -	34 - - - -	44,098 LBS
DUNNAGE - - - - -	- - - - -	572 LBS
TOTAL WEIGHT - - - - -		44,670 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 23.
- ② CRIB FILL ASSEMBLY A (11 REQD). SEE THE DETAIL ON PAGE 22 AND SPECIAL NOTE 2 ON PAGE 7.
- ③ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 24 AND SPECIAL NOTE 3 ON PAGE 7.

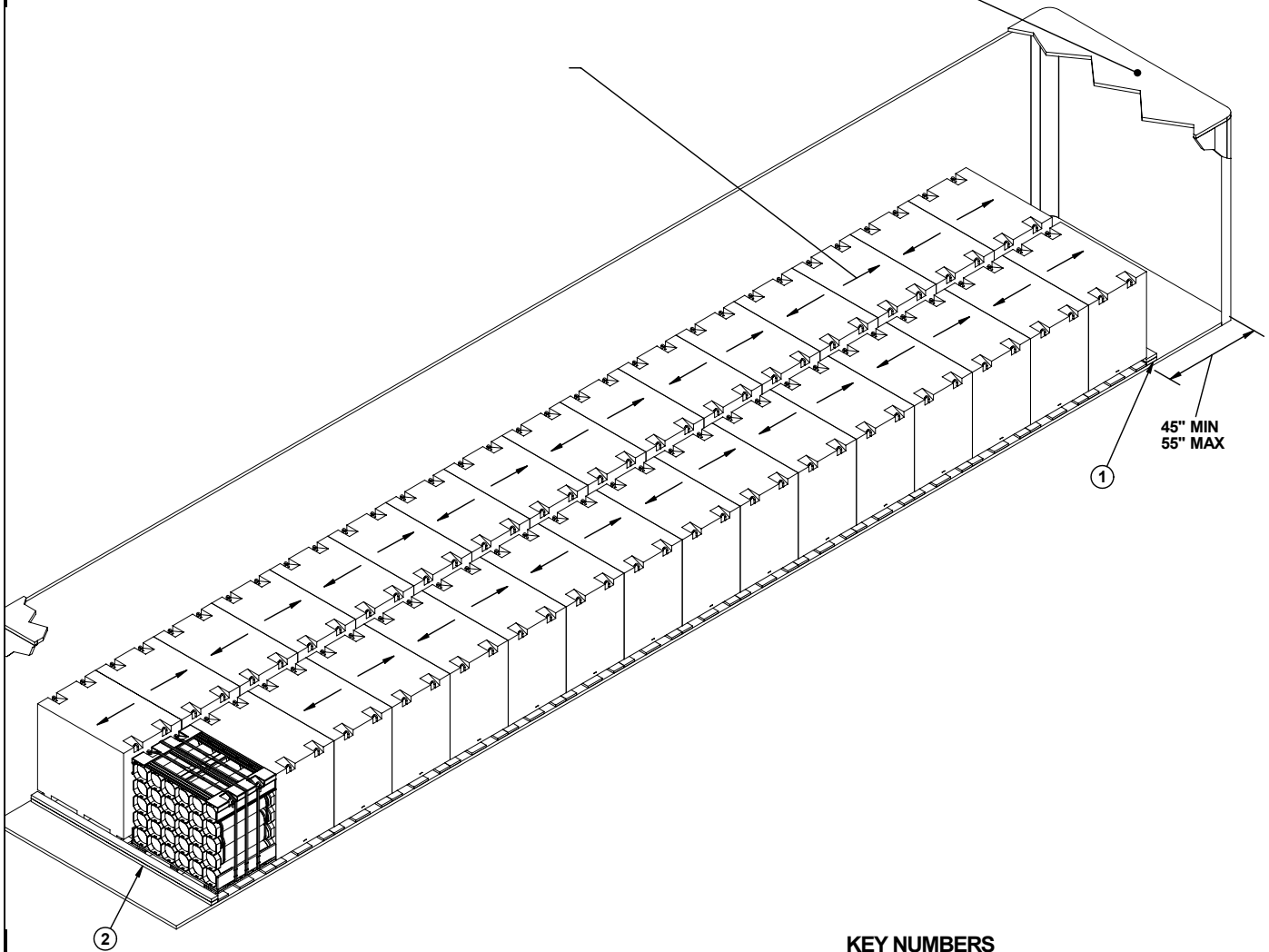
SPECIAL NOTES:

1. A 48'-0" LONG BY 8'-5" WIDE (INSIDE DIMENSION) VAN TRAILER WITH ROUNDED FRONT IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN LATERALLY ADJACENT 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 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 DETAILED ON PAGE 24. 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. ALTERNATE THE POSITION OF THE LATERAL VOID IN THE LOAD TO ENSURE A UNIFORM LOAD, AS DEPICTED IN THE LOAD ON PAGE 8.
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
2" X 3"	10	5
2" X 4"	159	106
2" X 6"	132	132
NAILS	NO. REQD	POUNDS
10d (3")	280	4-1/2

LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	33	42,801 LBS
DUNNAGE		487 LBS
TOTAL WEIGHT		43,288 LBS (APPROX)

FORWARD END OF TRAILER.



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/9-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/9-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ② REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/17-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/17-10d NAILS. SEE THE HEADER NAILING CHARTS AND SPECIAL NOTE 3 ON PAGE 9.

SPECIAL NOTES:

1. A 48'-0" LONG BY 8'-2" 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. SEE THE "CRIB FILL ASSEMBLY B" DETAIL ON PAGE 22.
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 B" AS DETAILED ON PAGE 24. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 24.
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.

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.

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

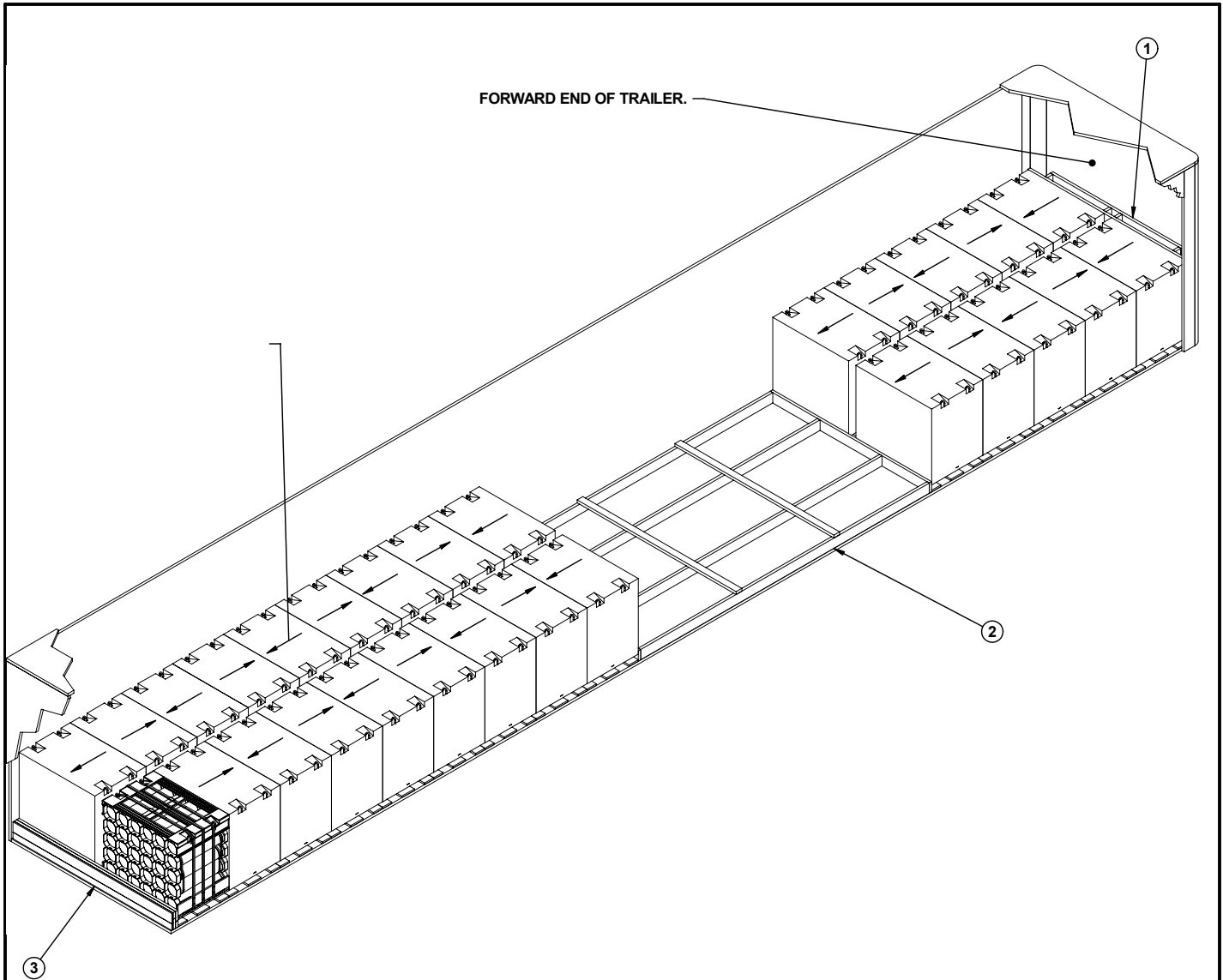
* HEADERS AT THE REAR OF A FULL LOAD OR AT THE REAR END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 4" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND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

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	17	11
2" X 6"	17	17
NAILS	NO. REQD	POUNDS
10d (3")	43	3/4
20d (4")	9	1/2

LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
PALLET UNIT - - - - -	32 - - - - -	41,504 LBS
DUNNAGE - - - - -	- - - - -	56 LBS

TOTAL WEIGHT - - - - - 41,560 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 22.
- ② CENTER SPACER ASSEMBLY A (2 REQD). SEE THE DETAIL ON PAGE 21.
- ③ REAR BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 24 AND SPECIAL NOTE 3 ON PAGE 11.

SPECIAL NOTES:

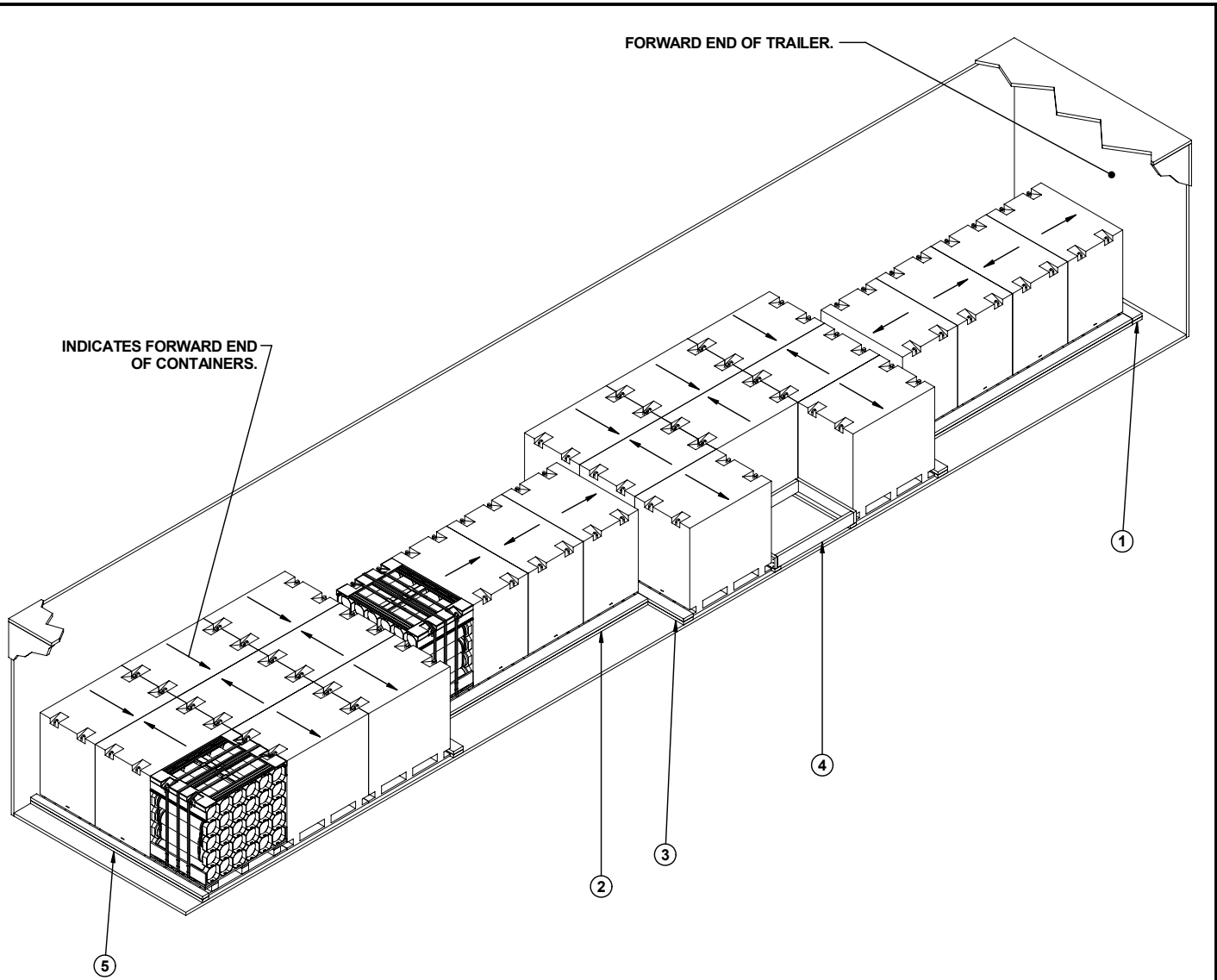
1. A 40'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY "A", MAY BE OMITTED. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT PALLET UNITS EXCEEDS 6", AS MEASURED FROM PALLET ADAPTER TO PALLET ADAPTER. SEE THE "CRIB FILL ASSEMBLY B" DETAIL ON PAGE 22.
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 A" AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY A" AS DETAILED ON PAGE 21. 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 THE CENTER SPACER ASSEMBLY. 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
10d (3")	104	1-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	28	36,316 LBS
DUNNAGE		321 LBS
TOTAL WEIGHT		36,637 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD HEADER, 2" X 6" X 57'-1/2"(DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/5-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/5-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.
- ② 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.
- ③ INTERMEDIATE HEADER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (3 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.
- ④ SPACER ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 26.
- ⑤ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-10d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 9.

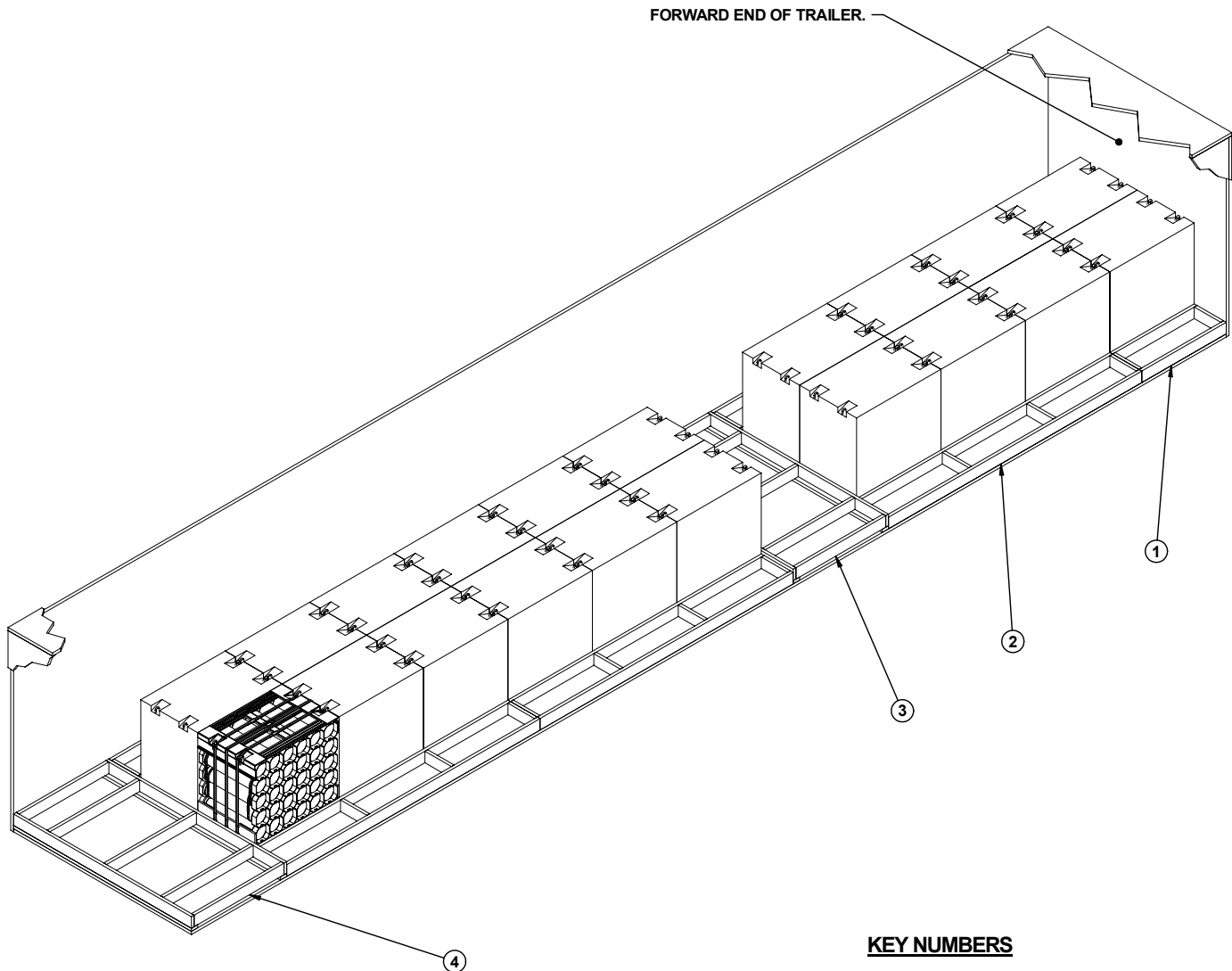
SPECIAL NOTES:

1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. IF 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 B" AS DETAILED ON PAGE 24 OR A NAILED HEADER, AS SHOWN. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE "REAR BLOCKING ASSEMBLY C" AS DETAILED ON PAGE 25 OR A NAILED HEADER, AS SHOWN. 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 ABOVE MUST BE INSTALLED.
3. 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.
4. THE LOADING PROCEDURES SHOWN ON PAGE 12 ARE LIMITED TO 1-LAYER LOADS; PALLET UNITS WILL NOT BE STACKED.
5. THE SPLIT IN THE LOAD CONFIGURATION ON PAGE 12 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.
6. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	22	15
2" X 6"	72	72
NAILS	NO. REQD	POUNDS
10d (3")	55	7
20d (4")	23	1

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	25	32,425 LBS
DUNNAGE		173 LBS
TOTAL WEIGHT		32,598 LBS (APPROX)



KEY NUMBERS

- ① SIDE BLOCKING ASSEMBLY FOR 1 PALLET UNIT (2 REQD). SEE DETAIL ON PAGE 26 AND SPECIAL NOTE 3 ON PAGE 15.
- ② SIDE BLOCKING ASSEMBLY FOR 3 PALLET UNITS (6 REQD). SEE DETAIL ON PAGE 26 AND SPECIAL NOTE 3 ON PAGE 15.
- ③ CENTER SPACER ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 3 ON PAGE 15.
- ④ REAR BLOCKING ASSEMBLY C (1 REQD). SEE THE DETAIL ON PAGE 24 AND SPECIAL NOTE 2 ON PAGE 15.

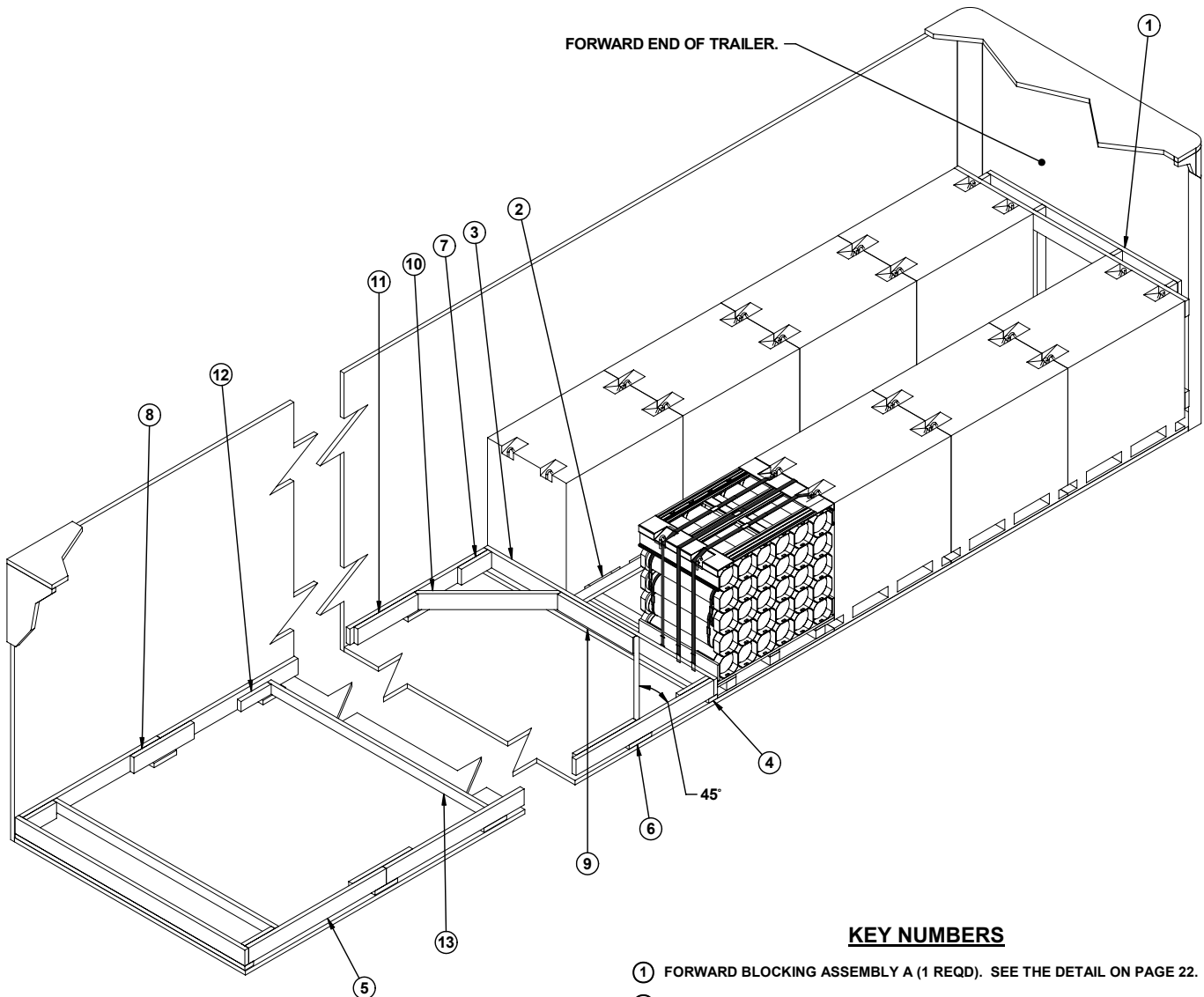
SPECIAL NOTES:

1. A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSION) VAN TRAILER IS SHOWN. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. IF 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 C" 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 DETAILED ON PAGE 24. 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.
3. IF DESIRED, NAILED SIDE BLOCKING MAY BE USED IN LIEU OF SIDE FILL ASSEMBLIES. SEE THE LOAD ON PAGE 12 FOR DETAILS.
4. THE LOADING PROCEDURES SHOWN ON PAGE 14 ARE LIMITED TO 1-LAYER LOADS; PALLET UNITS WILL NOT BE STACKED.
5. THE SPLIT IN THE LOAD CONFIGURATION ON PAGE 14 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.
6. REFER TO PAGE 19 FOR GUIDANCE IN THE SHIPMENT OF PARTIAL PALLET UNITS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	17	11
2" X 6"	264	264
NAILS	NO. REQD	POUNDS
10d (3")	244	3-3/4

LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	20	25,940 LBS
DUNNAGE		553 LBS
TOTAL WEIGHT		26,493 LBS (APPROX)

FORWARD END OF TRAILER.



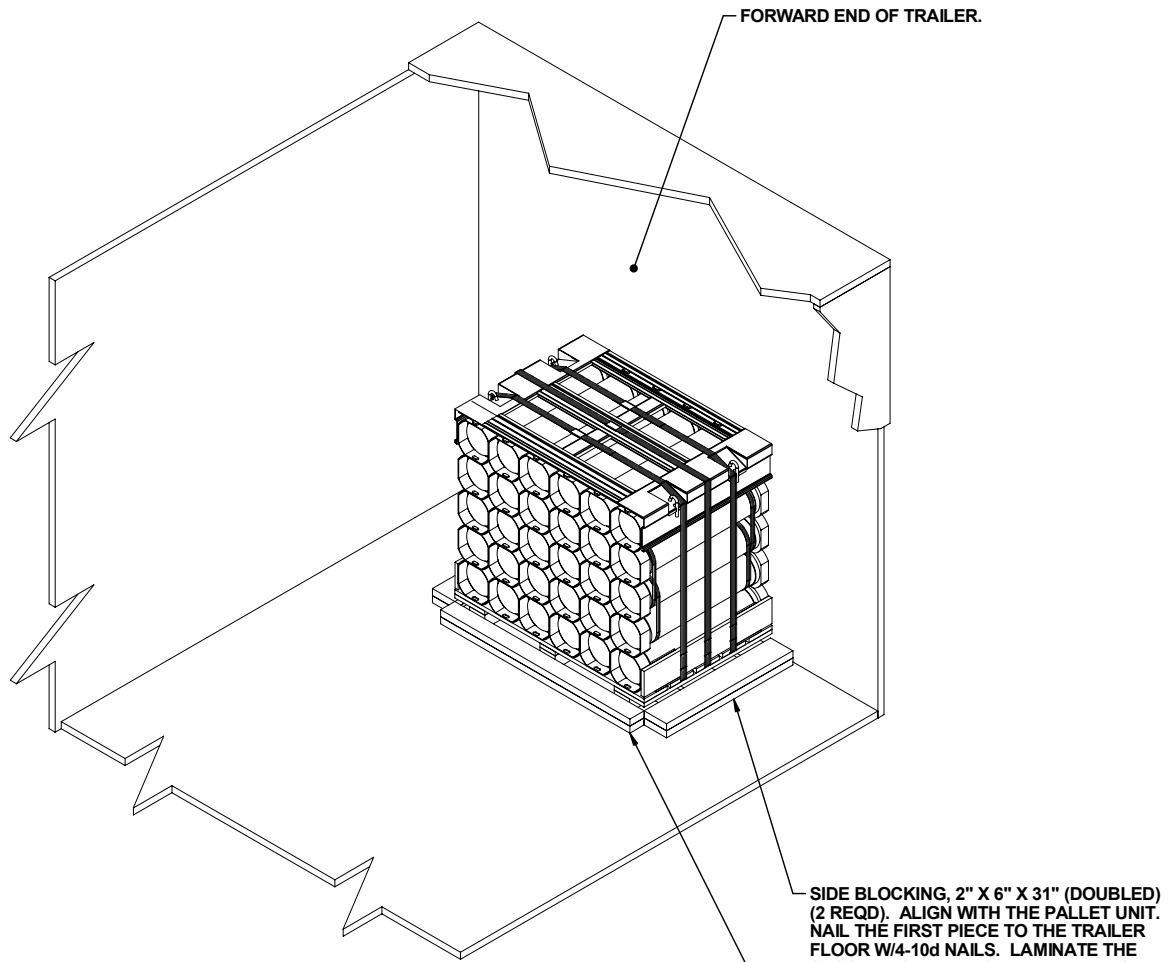
ISOMETRIC VIEW

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 22.
- ② ANTI-SWAY BRACE (4 REQD). INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE THE DETAIL ON PAGE 20.
- 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).
- 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.

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.



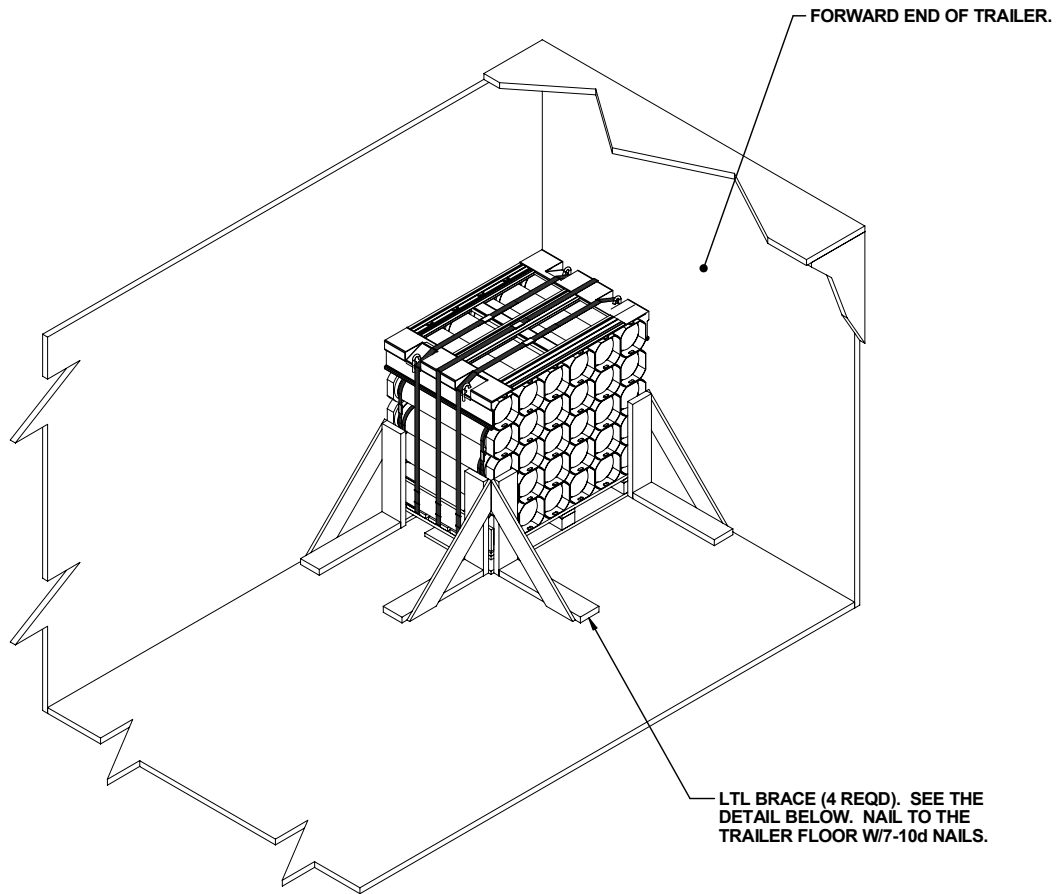
ISOMETRIC VIEW

SIDE BLOCKING, 2" X 6" X 31" (DOUBLED)
(2 REQD). ALIGN WITH THE PALLET UNIT.
NAIL THE FIRST PIECE TO THE TRAILER
FLOOR W/4-10d NAILS. LAMINATE THE
SECOND TO THE FIRST W/4-10d NAILS.

HEADER, 2" X 4" X 46" (DOUBLED)
(1 REQD). CENTER ON THE PALLET UNIT.
NAIL THE FIRST PIECE TO THE TRAILER
FLOOR W/4-10d NAILS. LAMINATE THE
SECOND TO THE FIRST W/4-10d NAILS.

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 DETAIL ON PAGES 22 AND 23.
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.

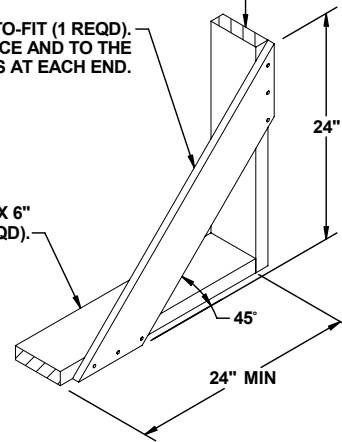


ISOMETRIC VIEW

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.

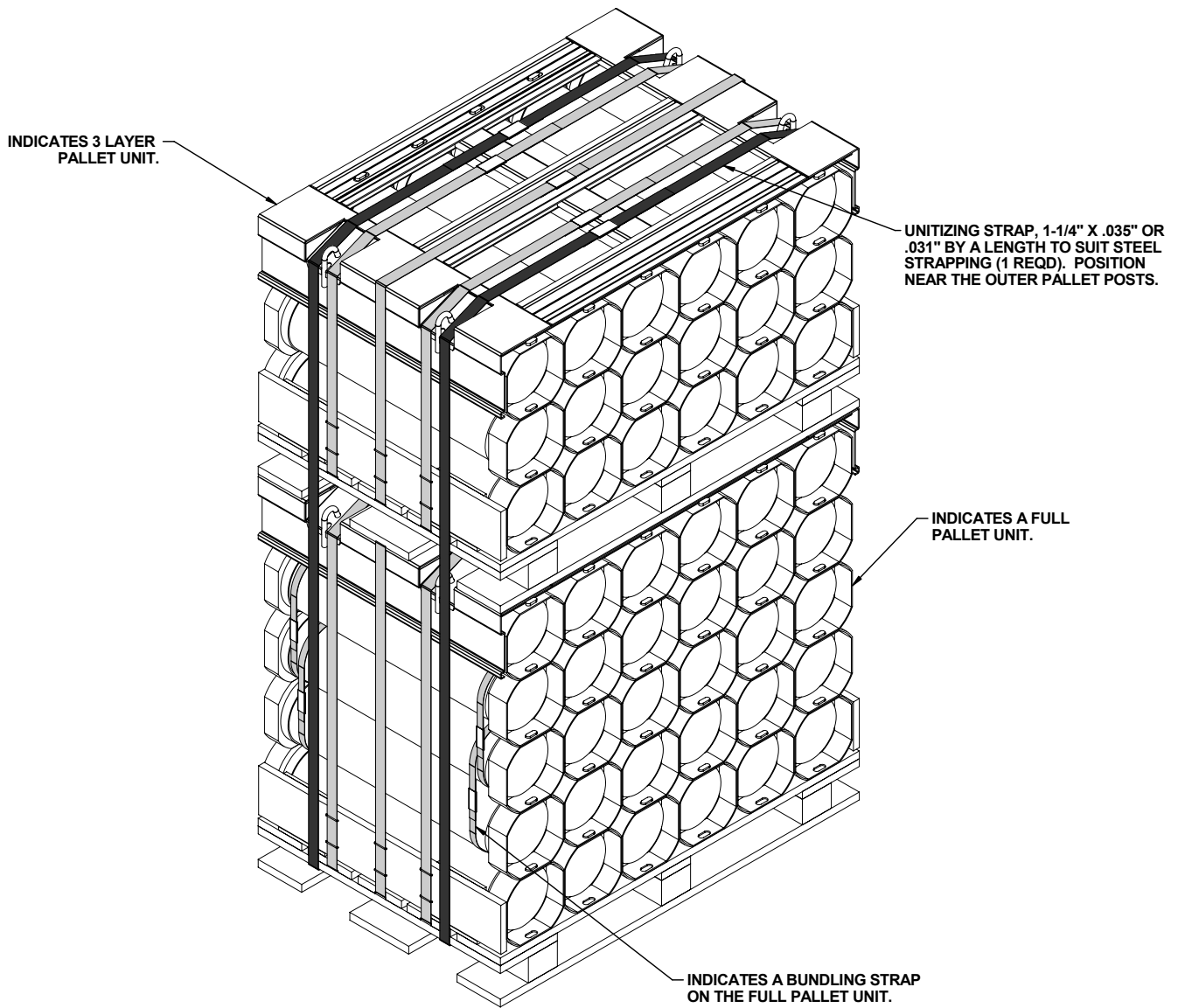
BACK-UP CLEAT, 2" X 6"
MATERIAL (1 REQD).



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 22 THRU 23.
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**

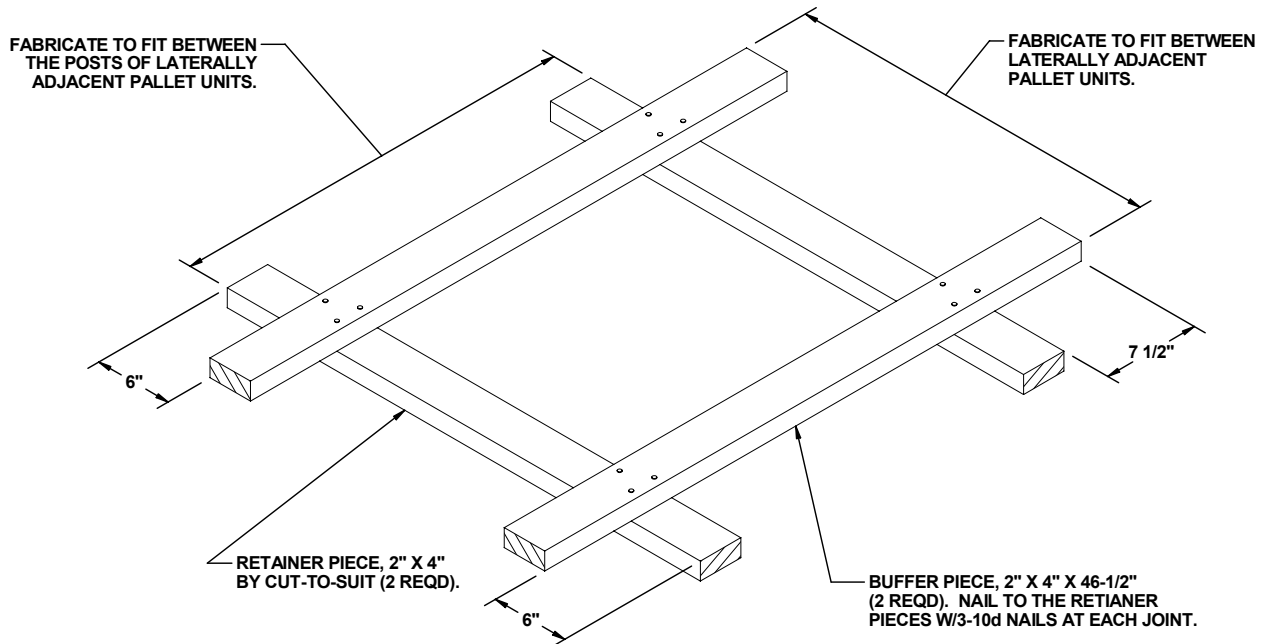
SPECIAL NOTES:

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 19-48-4326/50-20PM1012.
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)

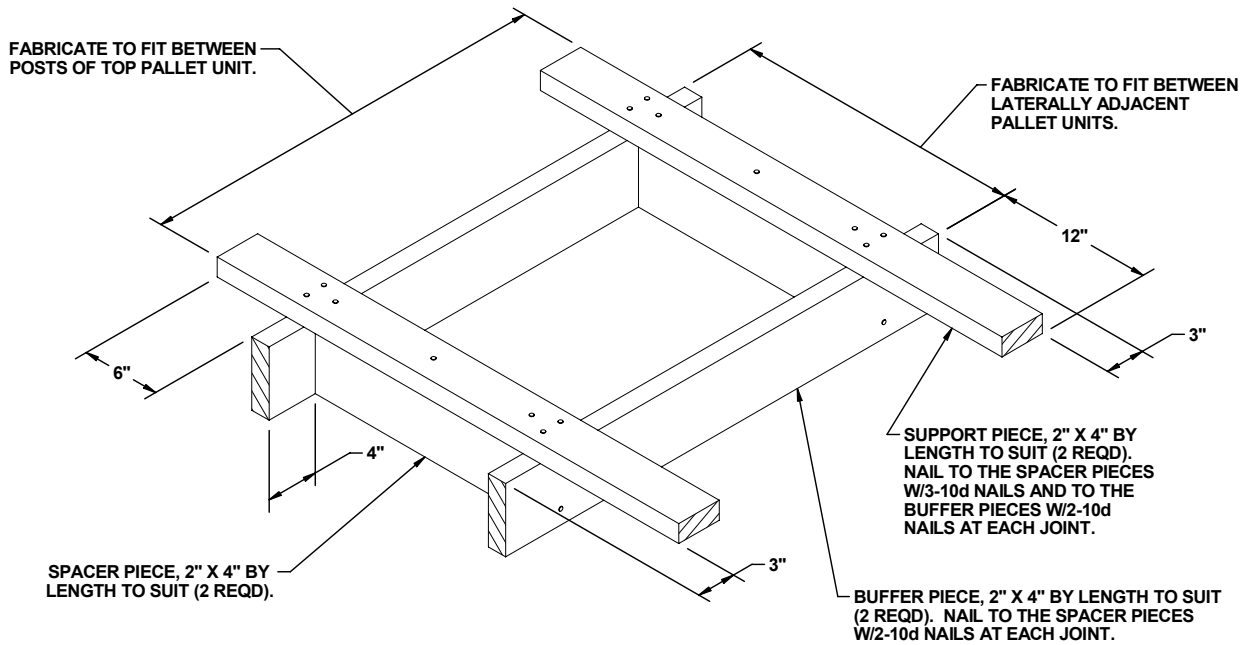
SPECIAL NOTES CONTINUED)

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.



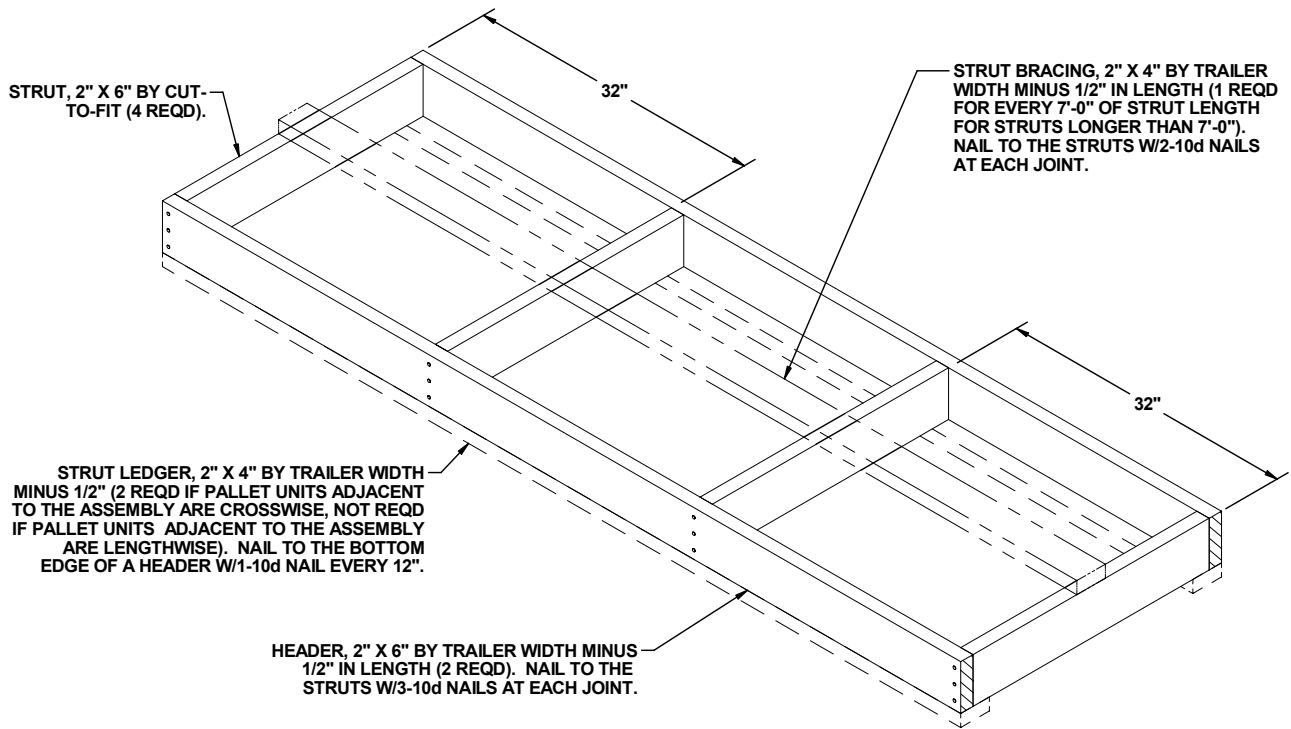
ANTI-SWAY BRACE

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.



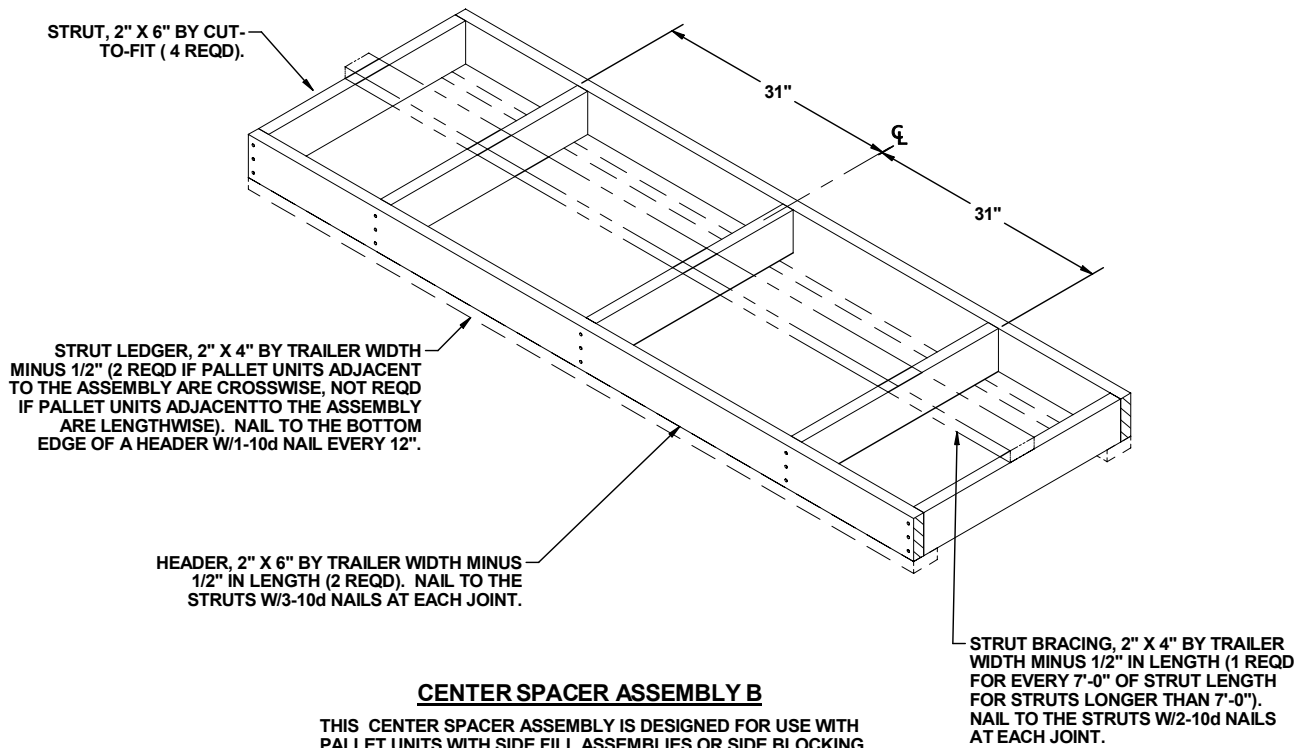
TOP-OF-LOAD ANTI-SWAY BRACE

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 6\"/>



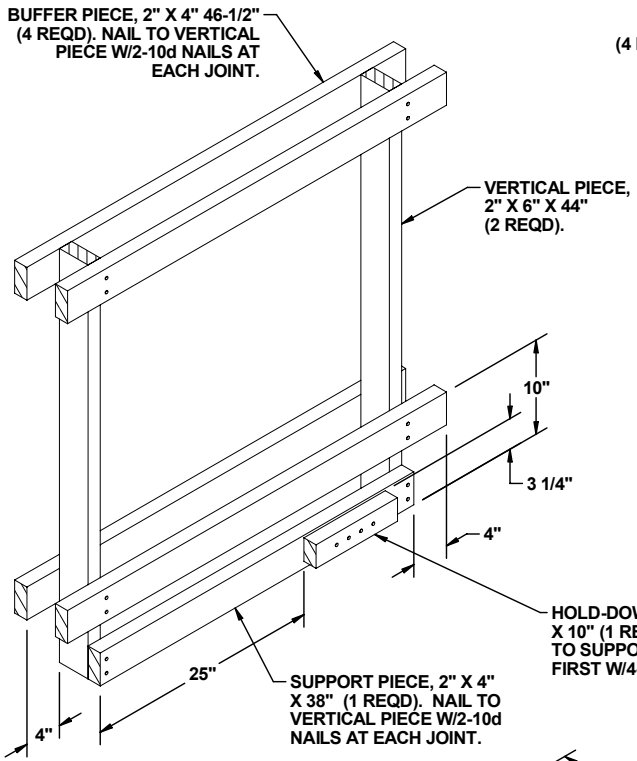
CENTER SPACER ASSEMBLY A

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



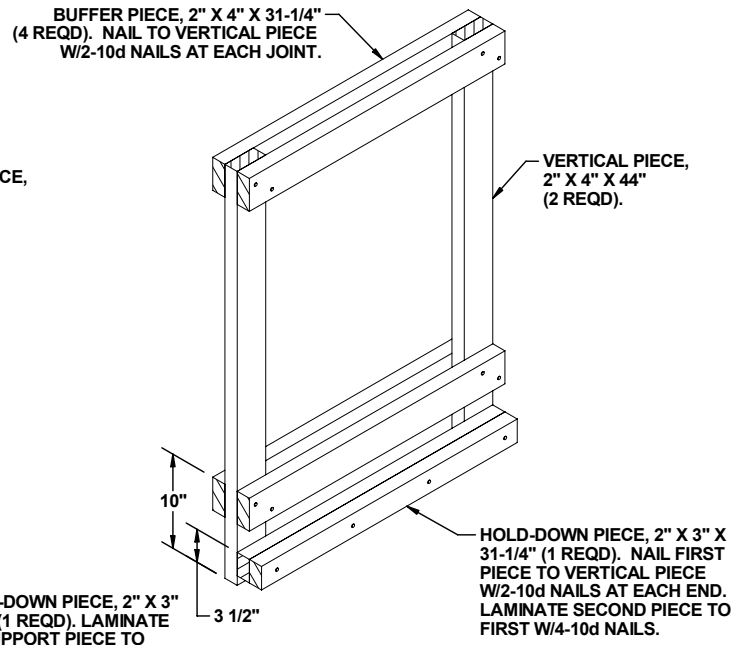
CENTER SPACER ASSEMBLY B

THIS CENTER SPACER ASSEMBLY IS DESIGNED FOR USE WITH PALLET UNITS WITH SIDE FILL ASSEMBLIES OR SIDE BLOCKING.



CRIB FILL ASSEMBLY A

THIS CRIB FILL ASSEMBLY IS DESIGNED FOR USE WITH LATERALLY ADJACENT CROSSWISE PALLET UNITS. VERTICAL PIECE MAY BE POSITIONED WITH WIDE SIDE TOWARD BUFFER PIECE TO DECREASE CRIB FILL DEPTH.

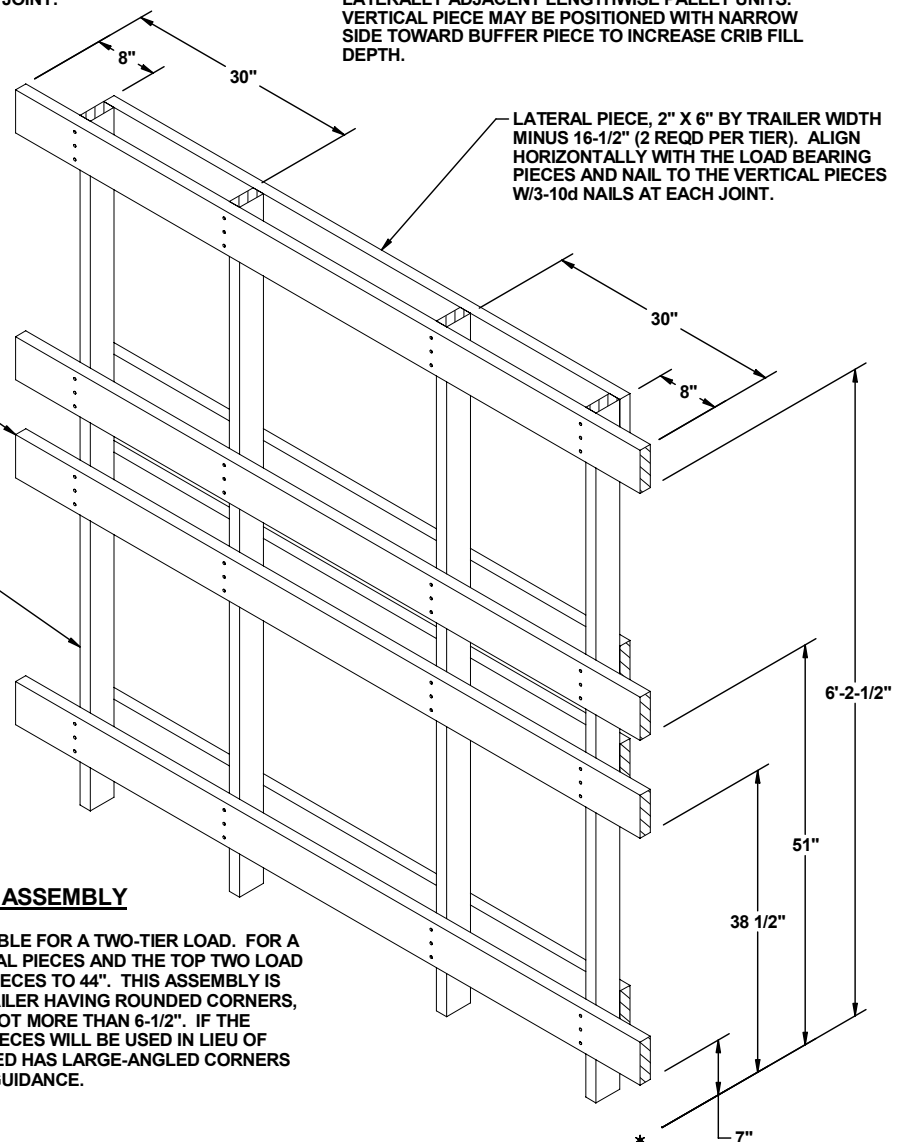


CRIB FILL ASSEMBLY B

THIS CRIB FILL ASSEMBLY IS DESIGNED FOR USE WITH LATERALLY ADJACENT LENGTHWISE PALLET UNITS. VERTICAL PIECE MAY BE POSITIONED WITH NARROW SIDE TOWARD BUFFER PIECE TO INCREASE CRIB FILL DEPTH.

LOAD BEARING PIECE, 2" x 6" BY TRAILER WIDTH MINUS 1/2" (2 REQD PER TIER). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" x 4" x 7'-6" (4 REQD).



FORWARD BLOCKING ASSEMBLY

THE ASSEMBLY AS DEPICTED ABOVE IS APPLICABLE FOR A TWO-TIER LOAD. FOR A ONE-TIER LOAD, ELIMINATE THE TOP TWO LATERAL PIECES AND THE TOP TWO LOAD BEARING PIECES AND SHORTEN THE VERTICAL PIECES TO 44". 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 27 FOR GUIDANCE.

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.

BUFFER PIECE, 2" X 6" BY TRAILER WIDTH MINUS 18-1/2" IN LENGTH (1 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

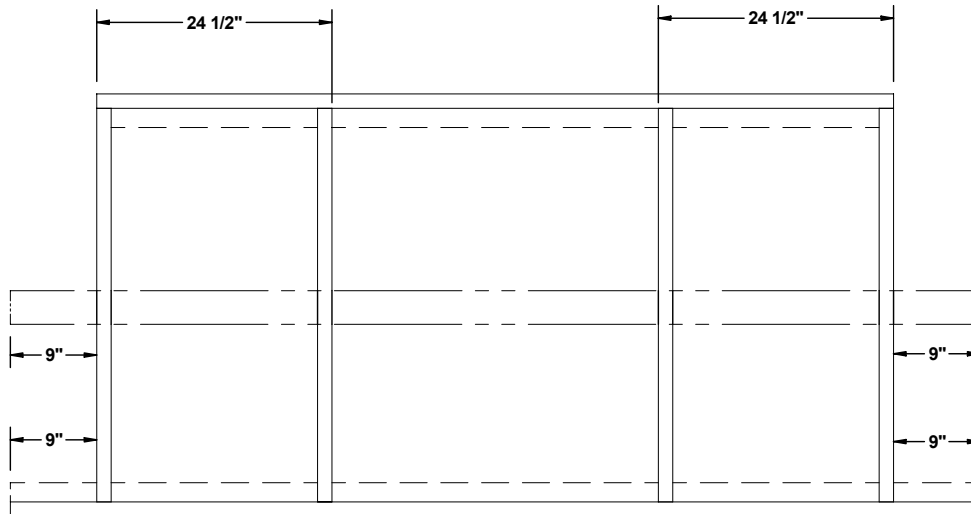
STRUT LEDGER B, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (1 REQD IF PALLET UNITS ADJACENT TO THE ASSEMBLY ARE CROSSWISE, NOT REQD IF PALLET UNITS ARE ADJACENT TO THE ASSEMBLY ARE LENGTHWISE). NAIL TO THE BOTTOM EDGE OF A HEADER W/1-10d NAIL EVERY 12".

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

STRUT LEDGER A, 2" X 4" BY TRAILER WIDTH MINUS 18-1/2" (1 REQD IF PALLET UNITS ADJACENT TO THE ASSEMBLY ARE CROSSWISE, NOT REQD IF PALLET UNITS ARE ADJACENT TO THE ASSEMBLY ARE LENGTHWISE). NAIL TO THE BOTTOM EDGE OF A HEADER W/1-10d NAIL EVERY 12".

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

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

33 1/2"

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.

33 1/2"

STRUT LEDGER, 2" X 4" BY TRAILER WIDTH
MINUS 1/2" (2 REQD IF PALLET UNITS ADJACENT
TO THE REAR BLOCKING ASSEMBLY ARE
CROSSWISE, NOT REQD IF PALLET UNITS ARE
LENGTHWISE ADJACENT TO THE REAR
BLOCKING ASSEMBLY). 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.

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 LOCATION DIMENSIONS WILL BE 46-1/2" NOT 33-1/2".
3. THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

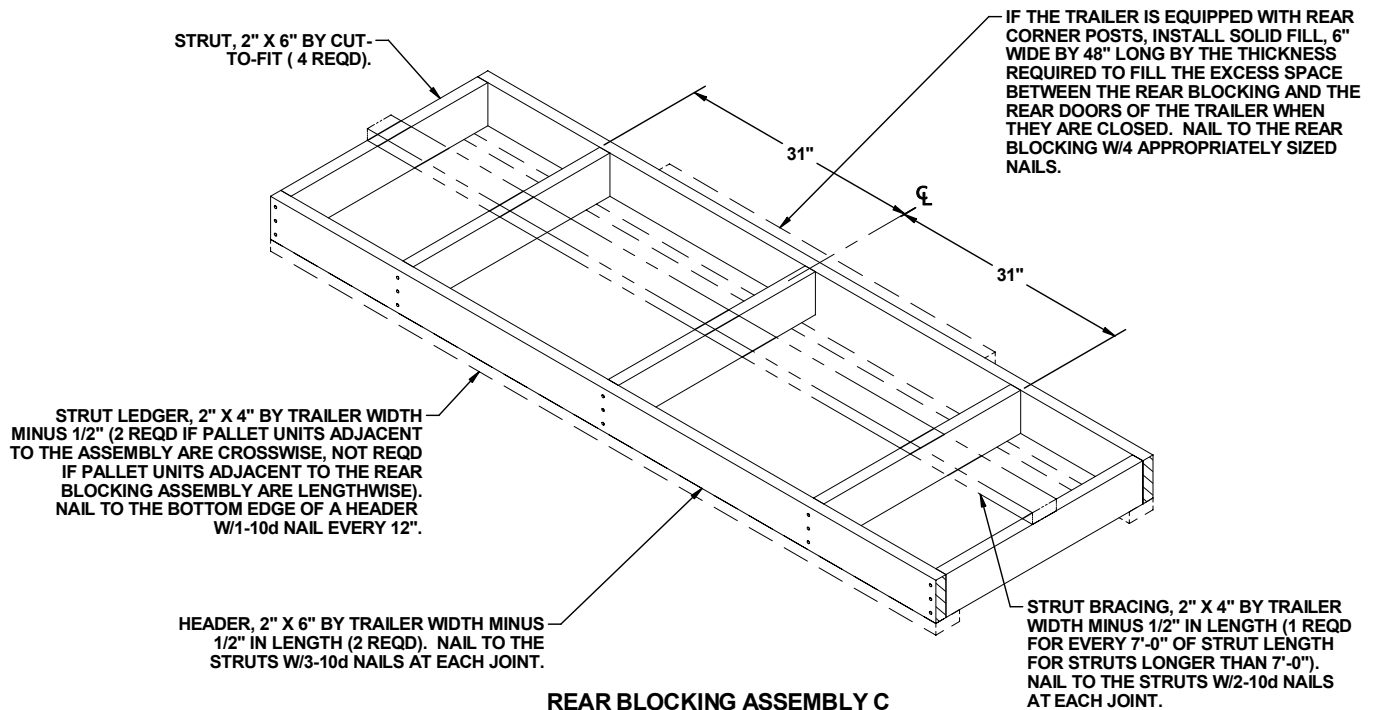
REAR BLOCKING ASSEMBLY A

SOLID FILL, 4" AND 6" WIDE MATERIAL BY TRAILER
WIDTH MINUS 1/2" IN LENGTH BY THICKNESS
REQUIRED TO CONTACT REAR CORNER POSTS OR CONTACT 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".

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 THE EDGE, ONE ON TOP OF THE
OTHER AS SHOWN. NAIL TO THE REAR BLOCKING
W/4 APPROPRIATELY SIZED NAILS.

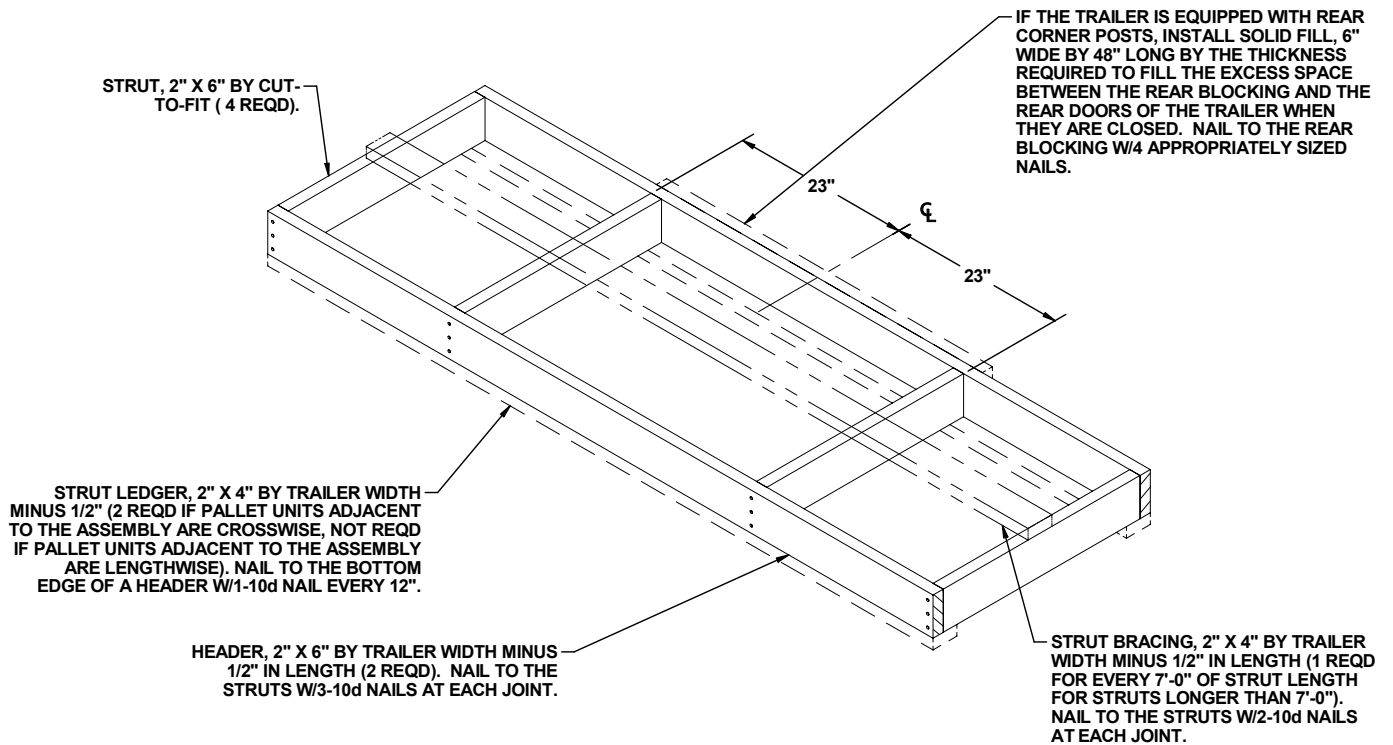
REAR BLOCKING ASSEMBLY B

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".



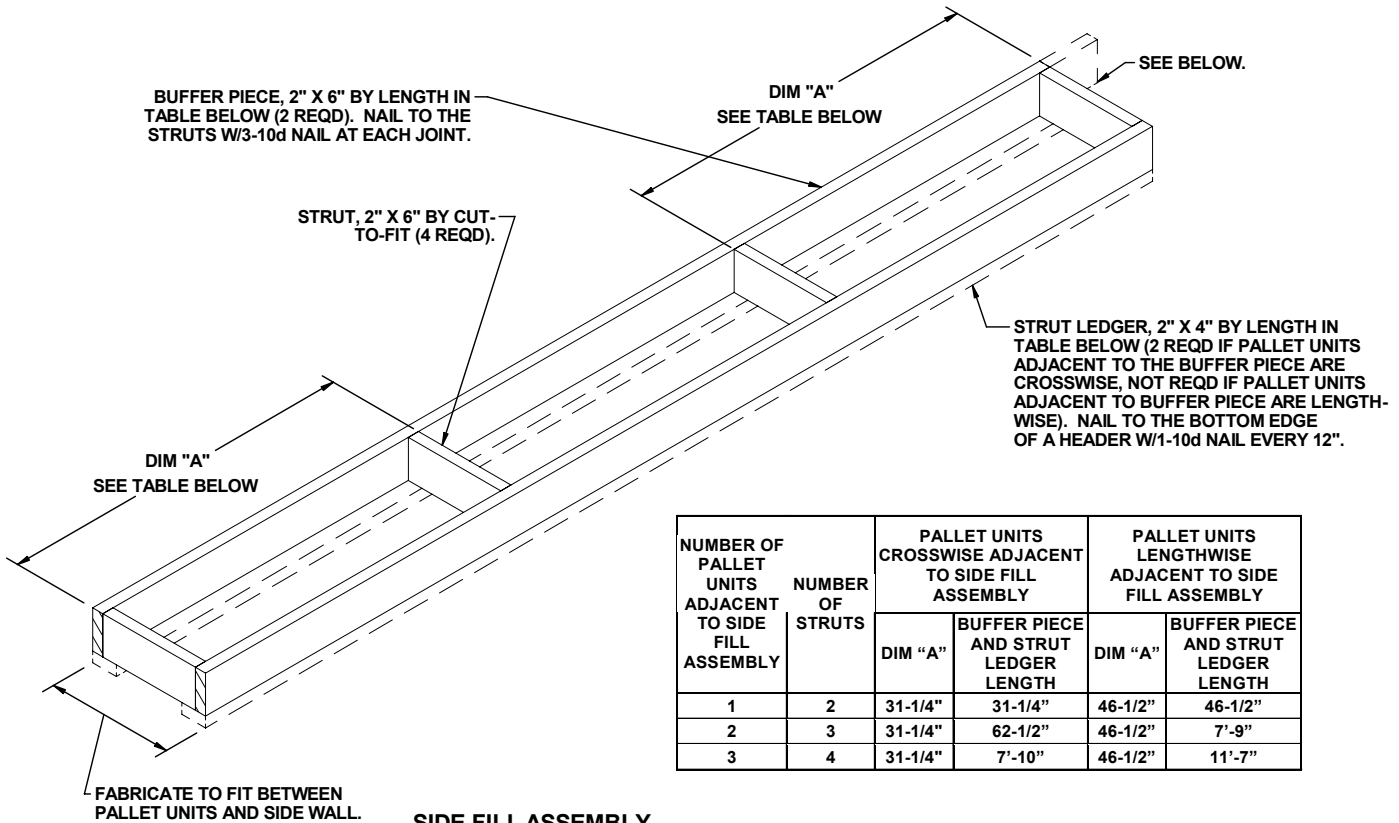
REAR BLOCKING ASSEMBLY C

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 ROWS OF CROSSWISE PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS. NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.



REAR BLOCKING ASSEMBLY D

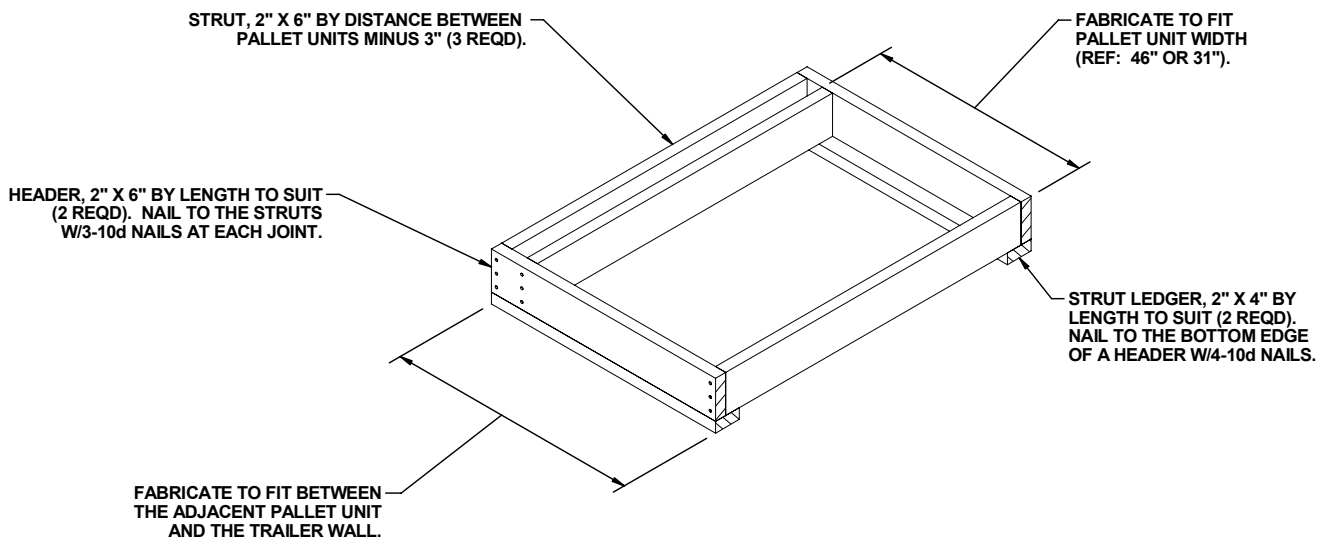
THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND ONE ROW OF LENGTHWISE PALLET UNITS IS LOADED ADJACENT TO THE TRAILER DOORS. IF CROSSWISE PALLET UNITS ARE LOADED ADJACENT TO THE TRAILER DOORS THE STRUT LOCATION DIMENSION OF 23" WILL BE REDUCED TO 15-1/2". NOTE THAT THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.



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 AND STRUT LEDGER LENGTH
1	2	31-1/4"	31-1/4"	46-1/2"	46-1/2"
2	3	31-1/4"	62-1/2"	46-1/2"	7'-9"
3	4	31-1/4"	7'-10"	46-1/2"	11'-7"

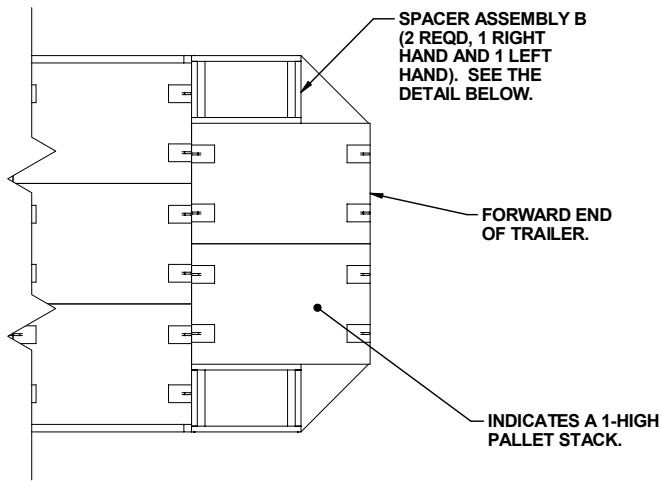
SIDE FILL ASSEMBLY

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.



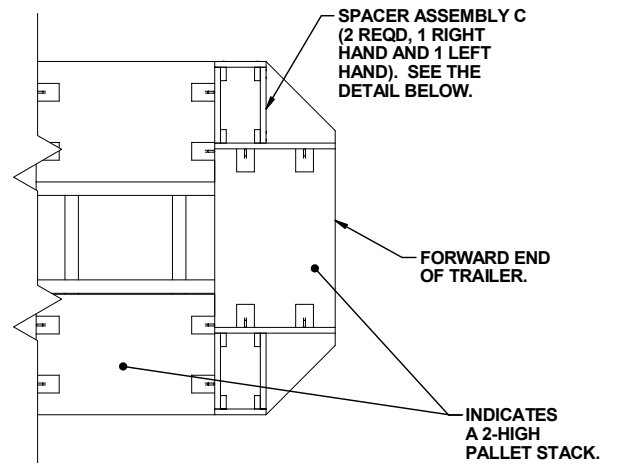
SPACER ASSEMBLY A

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.



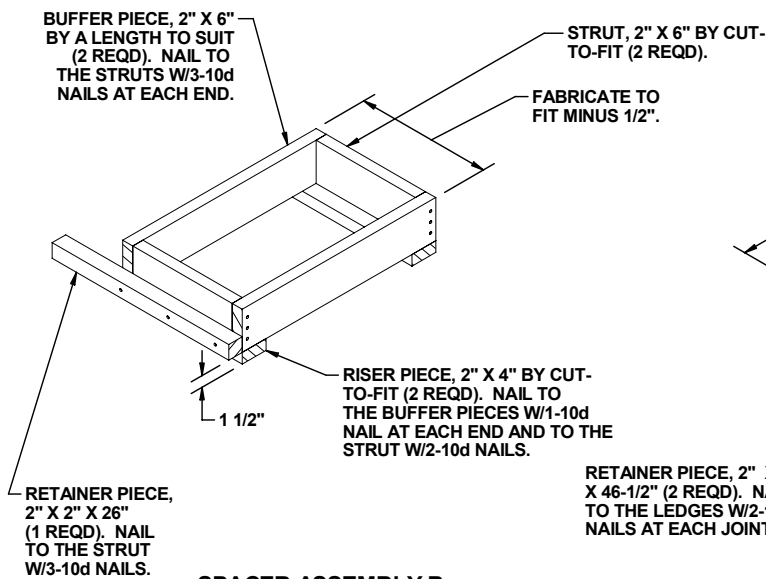
ALTERNATE FORWARD LOADING PATTERN A

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF TWO PALLET UNITS (2-WIDE, 1-HIGH) 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, AND ONE PALLET UNIT MAY BE LOADED IN THE FORWARD END OF THE TRAILER IN PLACE OF TWO.

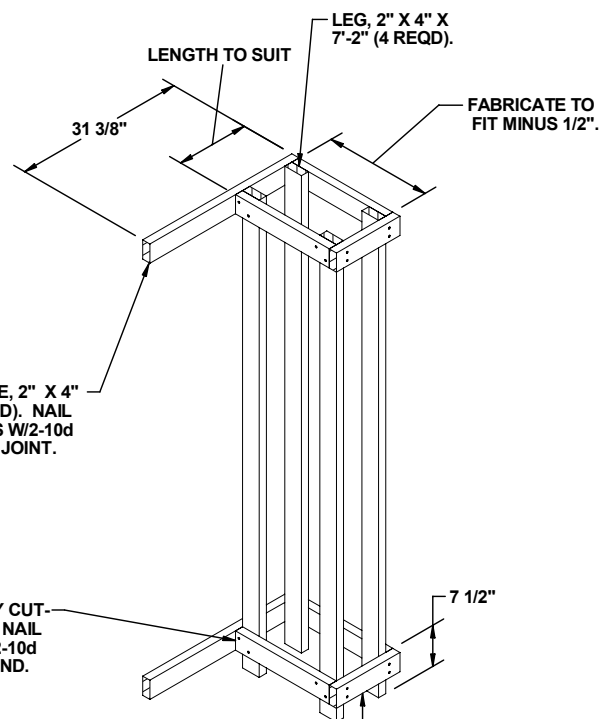


ALTERNATIVE FORWARD LOADING PATTERN B

THIS PROCEDURE IS APPLICABLE TO THE LOADING OF A STACK OF TWO (1-WIDE, 2-HIGH) PALLET UNITS 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. 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.



SPACER ASSEMBLY B



SPACER ASSEMBLY C

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 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED IN A LOAD. RIGHT HAND AND LEFT HAND SPACER ASSEMBLIES ARE REQUIRED.

