

# ATACMS

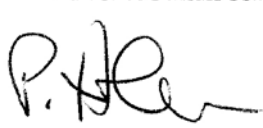
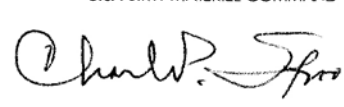
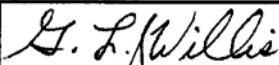
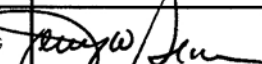

## LOADING AND BRACING (TL & LTL) IN VAN TRAILERS<sup>⊕</sup> OF MISSILE/ LAUNCH POD ASSEMBLY (M/LPA) FOR ARMY TACTICAL MISSILE SYSTEM

### INDEX

<u>ITEM</u>	<u>PAGE(S)</u>
GENERAL NOTES AND MATERIAL SPECIFICATIONS - - - - -	2
M/LPA STACKING AND HANDLING GUIDANCE - - - - -	3-4
M/LPA DETAIL - - - - -	4
DETAILS - - - - -	5
8-UNIT LOAD IN A 48'-0" LONG BY 7'-8" WIDE VAN TRAILER - - - - -	6-7
8-UNIT LOAD IN A 40'-0" LONG BY 7'-8" WIDE VAN TRAILER - - - - -	8-9
7-UNIT LOAD IN A 53'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -	10-11
5-UNIT LOAD IN A 45'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -	12-13
3-UNIT LOAD IN A 48'-0" LONG BY 8'-2" WIDE VAN TRAILER - - - - -	14-15
TYPICAL LTL (2-UNIT LOAD) - - - - -	16-17
TYPICAL LTL (1-UNIT LOAD) - - - - -	18
DETAILS - - - - -	19-24

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

### U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY AVIATION AND MISSILE 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 24.</b>			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND    U.S. ARMY DEFENSE AMMUNITION CENTER	<b>DO NOT SCALE</b>		<b>AUGUST 1990</b>	
	ENGINEER OR TECHNICIAN	BASIC REV.	RICHARD HAYNES MELVIN SIX	
	TRANSPORTATION ENGINEERING DIVISION			
	VALIDATION ENGINEERING DIVISION	TESTED		
ENGINEERING DIRECTORATE	CLASS	DIVISION	DRAWING	FILE
	19	48	8179	GM11AT1

**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 THE ARMY TACTICAL MISSILE SYSTEM (ATACMS) COMPLETE ROUND, WHEN PACKED IN THE MISSILE/LAUNCH POD ASSEMBLY (M/LPA). SUBSEQUENT REFERENCE TO ASSEMBLY HEREIN MEANS THE M/LPA WITH MISSILE COMPONENTS.
- C. FOR DETAILS OF THE MISSILE/LAUNCH POD ASSEMBLY, SEE US ARMY MISSILE COMMAND DRAWING NO. 13288205 AND THE ATACMS MISSILE/LAUNCH POD ASSEMBLY DETAIL ON PAGE 4.
- D. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE VAN TRAILERS AND APPLY TO TRAILERS HAVING WOOD, OR WOOD AND METAL, OR ALL METAL FLOORS. REGARDLESS OF THE DIMENSIONS OF THE VAN TRAILERS SHOWN, THE PROCEDURES ARE ALSO APPLICABLE FOR TRAILERS WHICH ARE 89" THRU 99" IN WIDTH AND FOR TRAILERS OF OTHER LENGTHS FROM THE SHORTEST TO THE LONGEST AVAILABLE (REF: 24' TO 53'), AND FOR STRAIGHT TRUCK VANS. THE SPECIFIED BRACING IS ADEQUATE FOR LOADS WEIGHING UP TO AND INCLUDING THE MAXIMUM WEIGHTS PERMITTED BY LAW.
- E. SELECTION OF A VEHICLE FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.
- F. 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.
- G. **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.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED ON A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.
- J. LAUNCH POD ASSEMBLIES ARE TO BE POSITIONED WITH THE FORWARD END TOWARDS THE FORWARD END OF THE TRAILER. ALL ASSEMBLIES IN EACH STACK AND IN EACH LOAD UNIT ARE TO BE POSITIONED IN THIS MANNER.
- 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.

(CONTINUED AT RIGHT)

**MATERIAL SPECIFICATIONS**

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
- STRAPPING, STEEL - - : ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
- SEAL, STRAP - - - - : ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
- ANTI-CHAFING MATERIAL - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

- L. 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 25 FOR GUIDANCE.
- M. **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.
- N. 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 AND OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- O. PORTIONS OF THE TRAILERS, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- P. THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 6". INSTALLING FILL ASSEMBLIES OR CRIB FILL ASSEMBLIES BETWEEN THE ASSEMBLIES AS REQUIRED CAN ELIMINATE EXCESSIVE SLACK FROM A LOAD.
- Q. IF THE SPACE AT THE REAR OF THE LOAD, BETWEEN THE ASSEMBLIES 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 SHOWN ON PAGE 21. IF THE SPACE AT THE REAR OF THE LOAD IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY "A" OR "C" AS DEPICTED ON PAGES 21 AND 22. **NOTE:** REAR BLOCKING ASSEMBLIES MAY BE REPLACED WITH NAILED HEADERS AT THE REAR OF THE LOAD, PROVIDED THE TRAILER FLOOR IS CONFIGURED SUCH AS TO ALLOW NAILING IN THIS AREA. **CAUTION:** THE NAILED HEADER METHOD IS REQUIRED WHEN LOADING VAN TRAILERS EQUIPPED WITH ROLL-UP TYPE DOORS.
- R. **CAUTION:** WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, ASSEMBLIES 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.
- S. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED M/LPAS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE, 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. THE DUNNAGE ASSEMBLIES SHOWN WITHIN THIS DRAWING ARE BASED ON THE DIMENSIONS FOR THE BLOCK IA AND BLOCK II M/LPA'S. WHEN SHIPPING BLOCK I M/LPA'S, SOME LADING WEIGHTS WILL CHANGE SLIGHTLY.
- V. THE "LOAD AS SHOWN" FOR MOST OF THE FULL LOADS DEPICTED HEREIN IS BASED ON AN APPROXIMATE LADING WEIGHT OF 42,000 POUNDS. THE SPECIFIED BLOCKING AND BRACING FOR THE FULL LOADS IS ADEQUATE FOR THE RETENTION OF LOADS UP TO 43,000 POUNDS, IF IT IS DESIRED TO INCREASE THE LADING WEIGHT.

## REVISIONS

REVISION NO. 1, DATED DECEMBER 1996, CONSISTS OF:

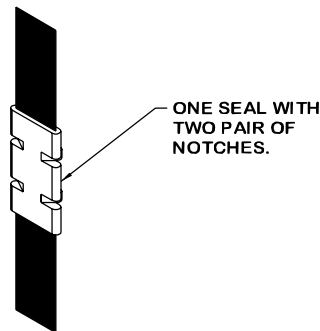
1. ADDITION OF PLYWOOD SPACERS TO CENTER GATE ASSEMBLIES FOR USE WITH NEW STYLE MISSILE/LAUNCH POD ASSEMBLIES.
2. ADDING NEW WEIGHTS FOR ASSEMBLIES.

REVISION NO. 2, DATED AUGUST 2004, CONSISTS OF:

1. ADDING NEW WEIGHTS FOR M/LPAS.
2. UPDATING DRAWING FORMAT.
3. REMOVING THE TRAILER WITH MECHANICAL BRACING.

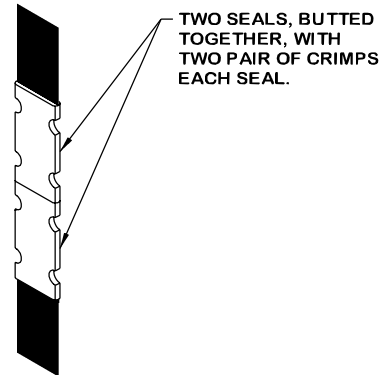
(M/LPA STACKING AND HANDLING GUIDANCE CONTINUED FROM PAGE 4)

3. INSTALLATION OF 1-1/4" X .035" OR .031" STACK UNITIZING STEEL STRAPPING.
  - A. EACH OF THE TWO UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE ASSEMBLIES, NEAR THE ASSEMBLY STRONG POINTS (I.E., THE LATERAL FRAME MEMBERS/BULKHEADS). PLACE STRAPPING SO THAT IT LAYS FLAT AND STRAIGHT WITH THE CONTOUR OF THE ASSEMBLIES, I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP AND BOTTOM OF THE STACK.
  - B. PLACE ANTI-CHAFING NEUTRAL BARRIER UNDER THE STRAPPING AT ALL POINTS OF CONTACT WITH THE ASSEMBLY AND SECURE TO PREVENT DISLODGE MENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING NEUTRAL BARRIER MAY BE TAPED OR STRING-TIED TO THE ASSEMBLY OR STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND THE STRAPPING TO FORM A SELF-HOLDING UNIT.
  - C. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH ONE STRAP SEAL AS SHOWN. CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE ASSEMBLIES DURING STRAP TENSIONING. CARE SHOULD BE EXERCISED TO ENSURE THAT THE ASSEMBLIES ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.
4. CAUTION: CARE MUST BE EXERCISED DURING HANDLING OF THE ASSEMBLIES TO PREVENT DAMAGE CAUSED BY BUMPING OR DROPPING OF THE ASSEMBLIES.



### STRAP JOINT A

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



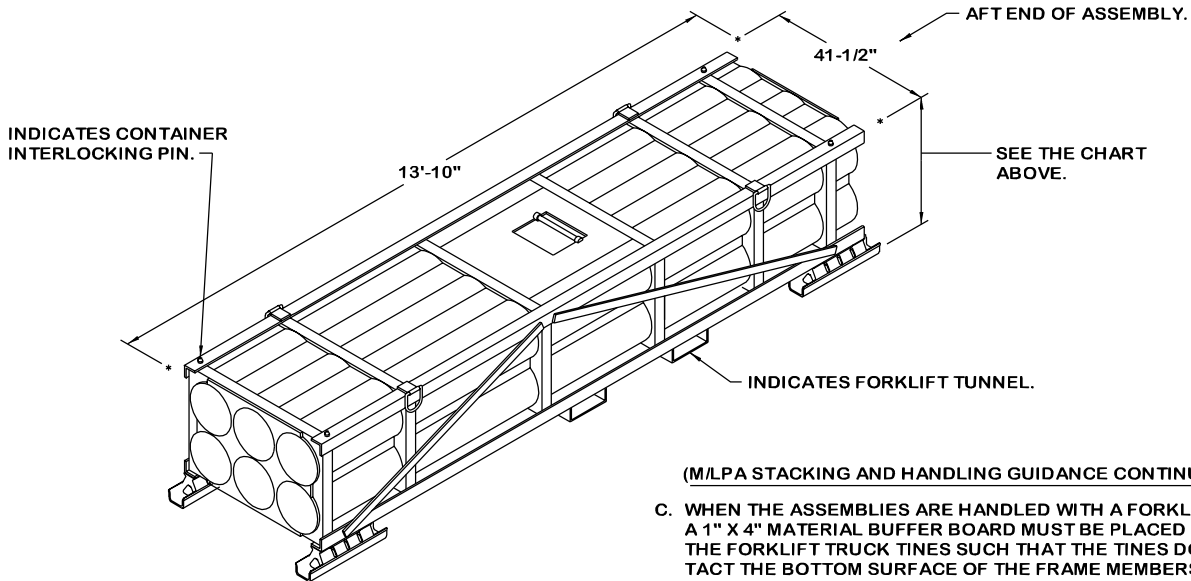
### STRAP JOINT B

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

### END-OVER-END LAP JOINT DETAILS

**GROSS WEIGHT, DIMENSIONS, AND CUBE OF  
MISSILE LAUNCH POD ASSEMBLIES**

NSN	DODIC	TYPE	LENGTH	WIDTH	HEIGHT	WEIGHT (LBS)	CUBE (CU FT)
1427-00-000-0195	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	5, 105	129. 7
1427-01-274-3904	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	4, 814	129. 7
1427-01-386-3113	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	5, 111	129. 7
1427-01-398-6538	PL38	BLOCK IA	13' -10"	41-1/2"	33-3/4"	4, 640	134. 6
1427-01-463-0001	PL38	BLOCK IA	13' -10"	41-1/2"	33-3/4"	4, 640	134. 6
1427-01-439-8639	PL47	BLOCK II	13' -10"	41-1/2"	33-3/4"	4, 985	134. 6
1427-01-481-1620	N/A	TACMS 2K	13' -10"	41-1/2"	33-3/4"	4, 985	134. 6
1427-01-480-8516	PL65	IA UNITARY	13' -10"	41-1/2"	33-3/4"	4, 682	134. 6



**MISSILE/LAUNCH POD ASSEMBLY**

**M/LPA STACKING AND HANDLING GUIDANCE**

**1. ASSEMBLY STACKING FOR OUTLOADING PURPOSES.**

- A. THE UPPER ASSEMBLY SHOULD BE PLACED AS CLOSELY AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE LOWER ASSEMBLY.
- B. WHEN STACKING THESE ASSEMBLIES, CARE MUST BE EXERCISED TO ENSURE THAT THE INTERLOCKING HOLES IN THE BOTTOM OF THE ASSEMBLY SKIDS ALIGN CORRECTLY WITH THE INTERLOCKING PINS ON THE TOP OF THE FRAME OF THE LOWER ASSEMBLY AND INSURE PROPER FUNCTIONING OF THE ASSEMBLY INTERLOCKS.

**2. ASSEMBLY OR ASSEMBLY STACK HANDLING.**

**NOTES:** (1) MATERIALS HANDLING EQUIPMENT (MHE) IS INTENDED TO MEAN EQUIPMENT, SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, AND SPREADER BARS, THAT CAN BE USED TO HANDLE THE DEPICTED ASSEMBLIES.

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

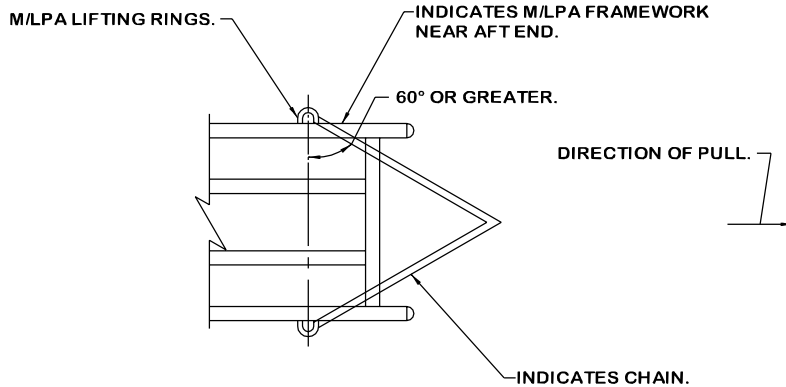
- A. ONLY APPROVED AND APPROPRIATELY SIZED MHE WILL BE USED FOR HANDLING THE DEPICTED ASSEMBLIES.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE ASSEMBLIES MUST BE HANDLED FROM A SIDE POSITION ONLY. CARE MUST BE EXERCISED WHEN INSERTING THE FORKS UNDER THE ASSEMBLY INTO THE FORKLIFT TUNNELS TO PREVENT DAMAGE TO THE ASSEMBLY BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.

(CONTINUED AT RIGHT)

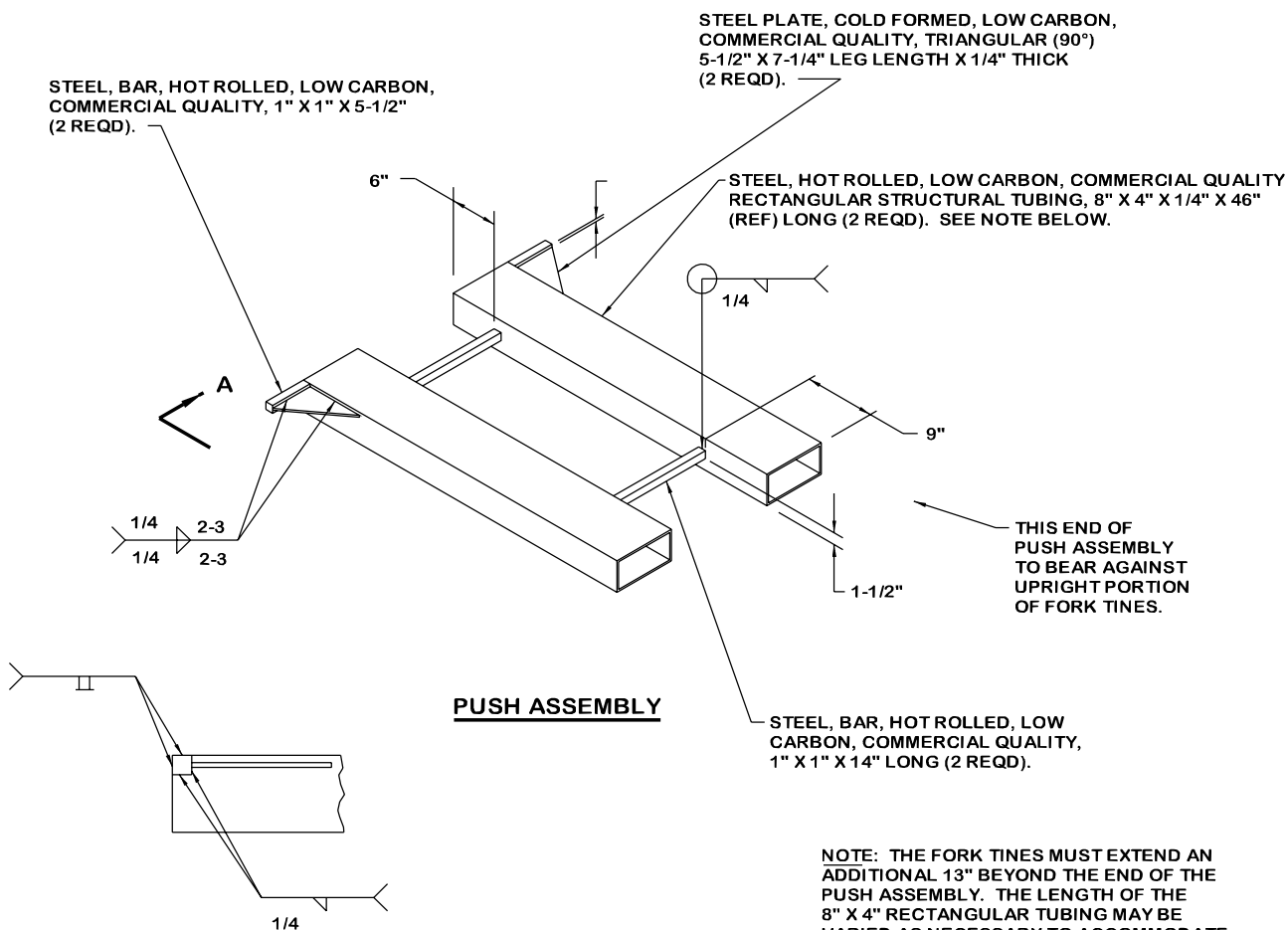
**(M/LPA STACKING AND HANDLING GUIDANCE CONTINUED)**

- C. WHEN THE ASSEMBLIES ARE HANDLED WITH A FORKLIFT TRUCK, A 1" X 4" MATERIAL BUFFER BOARD MUST BE PLACED ACROSS THE FORKLIFT TRUCK TINES SUCH THAT THE TINES DO NOT CONTACT THE BOTTOM SURFACE OF THE FRAME MEMBERS.
- D. ASSEMBLIES WILL BE PUSHED IN THE VAN TRAILER USING A PUSHER ASSEMBLY OR A 4" X 4" BUFFER BOARD WILL BE POSITIONED BETWEEN THE HEELS OF THE FORKLIFT TRUCK TINES AND THE ASSEMBLY FRAME. THE PUSHER ASSEMBLY DEPICTED ON PAGE 5 MAY ALSO BE USED IN PLACE OF A 4" X 4" BUFFER BOARD TO PUSH THE ASSEMBLY INTO THE VAN TRAILER. THE ASSEMBLY OR ASSEMBLY STACK THEN MUST BE PRIED INTO ITS FINAL LOCATION (APPLIES ONLY TO THE FIRST ASSEMBLY OR ASSEMBLY STACK LOADED IN A LOAD UNIT).
- E. THE DUNNAGE ASSEMBLIES AT THE FRONT AND ALONG THE SIDEWALLS OF THE TRAILER MUST BE PRE-POSITIONED PRIOR TO LOADING THE FIRST STACK OF ASSEMBLIES INTO IT. ONCE THE FIRST STACK OF ASSEMBLIES IS IN POSITION, THE SECOND STACK CAN BE LOADED IN THE TRAILER SUBSEQUENT TO THE INSTALLATION OF THE CENTER FILLER ASSEMBLY. LOADING OF THE SECOND STACK WILL BE ACCOMPLISHED UTILIZING THE METHOD PREVIOUSLY DESCRIBED FOR THE FIRST STACK.
- F. WHEN REMOVING AN ASSEMBLY OR ASSEMBLY STACK FROM A VAN TRAILER BY ATTACHING CHAINS TO THE FRAME AND DRAGGING THE ASSEMBLY OR ASSEMBLY STACK PARTIALLY OUT OF THE VAN TRAILER, CARE MUST BE TAKEN TO ENSURE THAT THE PULL ANGLE OF EACH OF THE TWO CHAIN LEGS IS 60° OR GREATER. IF THE CHAIN IS ATTACHED SO THAT THE PULL ANGLE IS LESS THAN 60°, STRUCTURAL FAILURE OF THE M/LPA FRAME COULD OCCUR. SEE THE "M/LPA TOW ANGLE" DETAIL ON PAGE 5. CHAINS WILL BE ATTACHED ONLY TO BOTTOM-LAYER UNITS, AND SHACKLES WILL BE USED TO ATTACH THE DRAG CHAINS TO THE LIFTING RINGS. A FORKLIFT TRUCK IS TO BE USED FOR DRAGGING THE UNITS SO THAT THE TINES OF THE TRUCK CAN BE INSERTED A SHORT DISTANCE UNDER THE AFT END OF THE BOTTOM M/LPA AND THE AFT END OF THE M/LPA UNIT LIFTED ENOUGH TO JUST CLEAR THE TRAILER FLOOR BEFORE ACTUAL DRAGGING IS BEGUN. CAUTION: FORKLIFT TINES MUST ONLY BEAR ON THE BOTTOM SURFACE OF A BULKHEAD BRACE ASSEMBLY AT THE AFT END OF THE BOTTOM M/LPA UNIT DURING A DRAGGING OPERATION. NOTICE: WIRE ROPE CABLE CAN BE SUBSTITUTED FOR THE CHAIN SPECIFIED HEREIN.

(CONTINUED ON PAGE 3)



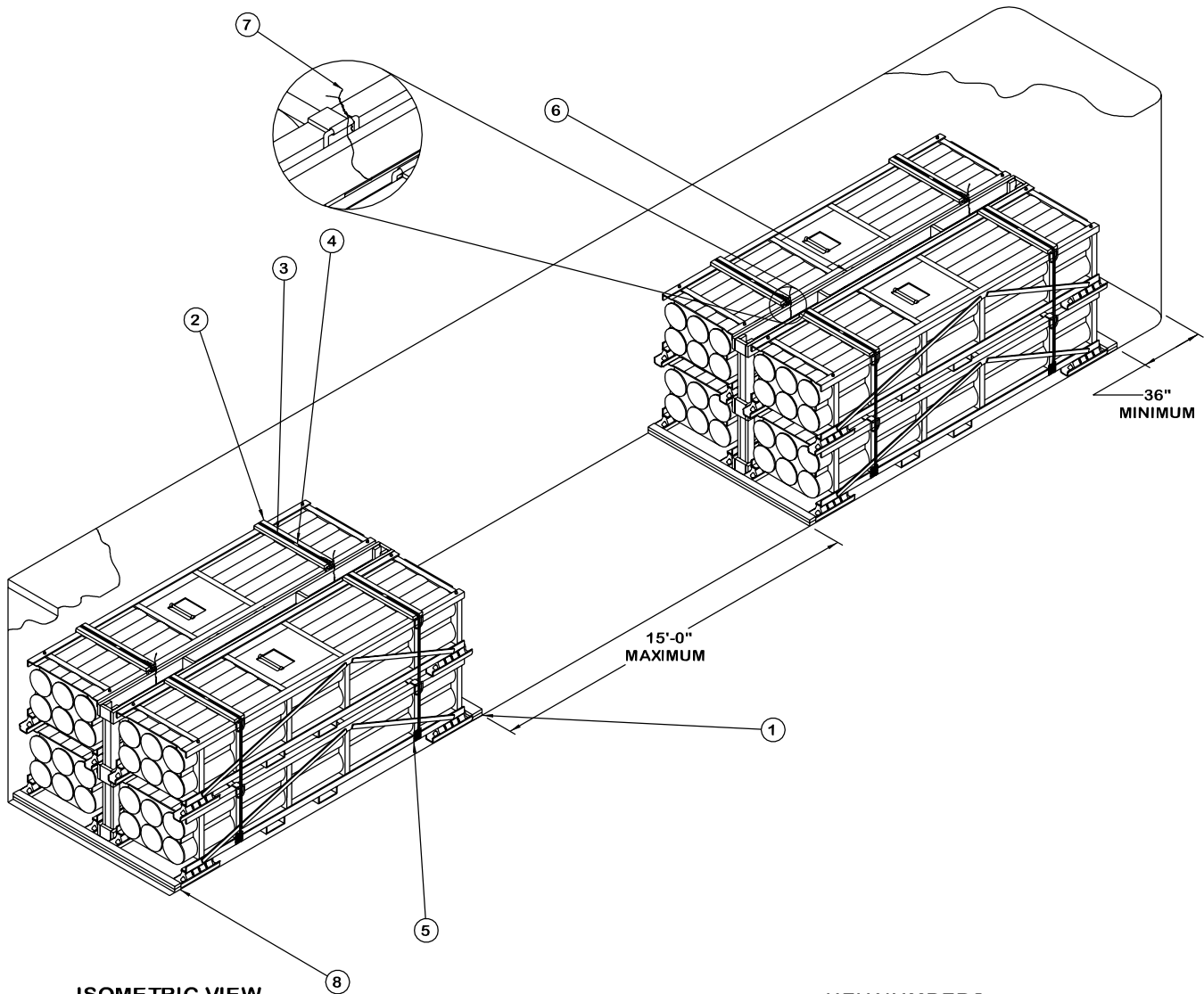
**M/LPA TOW ANGLE**  
(PARTIAL PLAN VIEW)



**PUSH ASSEMBLY**

**SECTION VIEW A**

NOTE: THE FORK TINES MUST EXTEND AN ADDITIONAL 13" BEYOND THE END OF THE PUSH ASSEMBLY. THE LENGTH OF THE 8" X 4" RECTANGULAR TUBING MAY BE VARIED AS NECESSARY TO ACCOMMODATE VARIOUS LENGTH FORK TINES.



**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 EVENLY SPACED. LAMINATE THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 7.
- ② STRAPPING BOARD, 2" X 6" X 40" (8 REQD). LOCATE BETWEEN THE LIFTING RINGS, AS SHOWN.
- ③ STACK UNITIZING STRAP, 1-1/4" X .031" OR .035" X 18'-4" LONG STEEL STRAPPING (8 REQD, 2 PER STACK).
- ④ SEAL FOR 1-1/4" STRAPPING (8 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑤ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER ALL STRAPS AT POINTS OF CONTACT WITH ASSEMBLIES.
- ⑥ CRIB FILL ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE TWO-HIGH STACKS OF ASSEMBLIES AS SHOWN. SEE SPECIAL NOTE 2 ON PAGE 5.
- ⑦ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND EACH END OF THE CRIB FILL ASSEMBLY, PIECE MARKED ⑥, AND THE TOP ASSEMBLY'S LIFTING RINGS. BRING THE ENDS TOGETHER AND TWIST TAUT.
- ⑧ REAR HEADER, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-10d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 7.

**SPECIAL NOTES:**

1. A 8-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 48'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
3. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE ASSEMBLIES 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 NAILED HEADER AS SHOWN OR THE REAR BLOCKING ASSEMBLY "B" AS DETAILED ON PAGE 21. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE CONTAINERS AND THE REAR DOOR IS 9" OR GREATER, USE THE NAILED HEADER AS SHOWN OR THE REAR BLOCKING ASSEMBLY "A" AS DETAILED ON PAGE 21. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING OF PIECE MARKED (8) ON PAGE 6, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD.

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

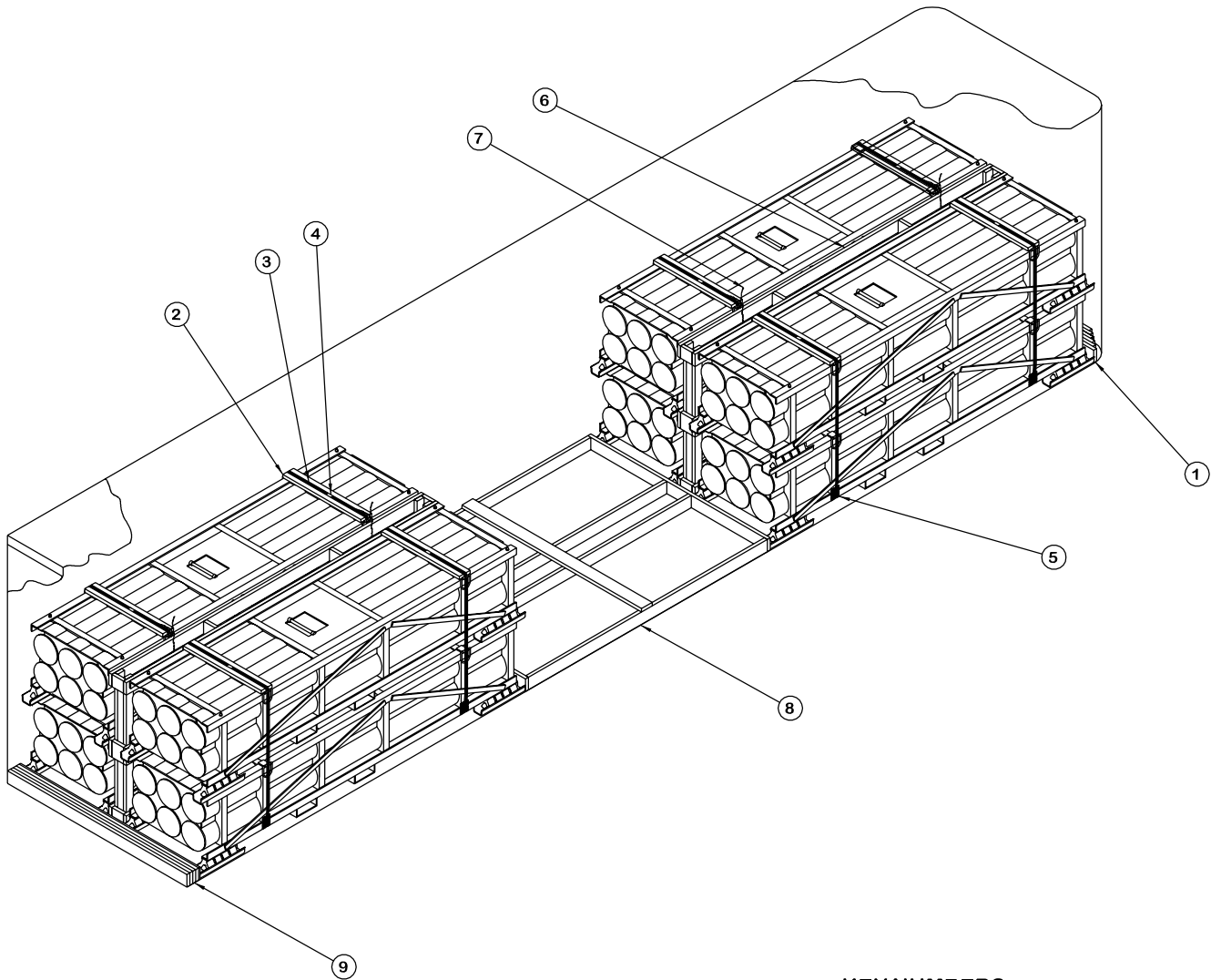
\* HEADERS AT THE REAR OF A FULL LOAD OR AT THE REAR END OF A DIVIDED LOAD WILL BE DOUBLED 2" X 4" MATERIAL. THE NUMBER OF NAILS INDICATED ABOVE REFERS TO THE NUMBER OF NAILS USED IN EACH LAMINATION OF A HEADER, FOR EXAMPLE 8 NAILS MEANS THE FIRST BOARD IS NAILED TO THE TRAILER FLOOR W/8-10d NAILS, AND 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"	75	50
2" X 6"	146	146
2" X 8"	58	77
NAILS	NO. REQD	POUNDS
10d (3")	260	4
20d (4")	12	1/2
STEEL STRAPPING, 1-1/4" - -	147' REQD - - - -	21 LBS
SEAL FOR 1-1/4" STRAPPING - -	8 REQD - - - -	1/2 LBS
WIRE, 0.0800" - - - - -	8' REQD - - - -	1/4 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA - - - - -	8 - - - - -	40,888 LBS
DUNNAGE - - - - -	- - - - -	569 LBS

TOTAL WEIGHT - - - - - 41,457 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 19 AND SPECIAL NOTES 2 AND 3 ON PAGE 9.
- ② STRAPPING BOARD, 2" X 6" X 40" (8 REQD). LOCATE BETWEEN THE LIFTING RINGS, AS SHOWN.
- ③ STACK UNITIZING STRAP, 1-1/4" X .031" OR .035" X 18'-4" LONG STEEL STRAPPING (8 REQD, 2 PER STACK).
- ④ SEAL FOR 1-1/4" STRAPPING (8 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑤ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER ALL STRAPS AT POINTS OF CONTACT WITH ASSEMBLIES.
- ⑥ CRIB FILL ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE TWO-HIGH STACKS OF ASSEMBLIES AS SHOWN. SEE SPECIAL NOTE 4 ON PAGE 9.
- ⑦ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND EACH END OF THE CRIB FILL ASSEMBLY, PIECE MARKED ⑥, AND THE TOP ASSEMBLY'S LIFTING RINGS. BRING THE ENDS TOGETHER AND TWIST TAUT.
- ⑧ CENTER SPACER ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 22 AND SPECIAL NOTE 5 ON PAGE 9.
- ⑨ REAR BLOCKING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 6 ON PAGE 9.



**SPECIAL NOTES:**

1. A 8-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 40'-0" LONG BY 7'-8" WIDE (INSIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. A TRAILER WITH ROUNDED FRONT CORNERS IS SHOWN. IF A TRAILER WITH SQUARE FRONT CORNERS IS TO BE LOADED, THE FORWARD BLOCKING ASSEMBLY "A", PIECE MARKED ① ON PAGE 8, MAY BE REPLACED WITH FORWARD BLOCKING, PIECE MARKED ① ON PAGE 16.
3. IF THE TRAILER HAS SUFFICIENT NAILING AREA AT THE FRONT OF THE LOAD, A NAILED HEADER MAY BE USED IN PLACE OF THE FORWARD BLOCKING ASSEMBLY. SEE THE LOAD ON PAGE 6 FOR GUIDANCE ON INSTALLING A NAILED HEADER.
4. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
5. CENTER SPACER ASSEMBLY, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 8, IS TO BE USED FOR THE PURPOSE OF PROVIDING FOR PROPER WEIGHT DISTRIBUTION, AND IS SHOWN AS TYPICAL ONLY. IF THE TRAILER TO BE LOADED IS LONGER THAN 40', THE LOCATION OF THE ASSEMBLY, AND OR THE STRUT LENGTHS, MAY BE DIFFERENT FROM WHAT IS SHOWN. IF A SHORTER TRAILER IS USED FOR THE DEPICTED LOAD, THIS ASSEMBLY MAY NOT BE REQUIRED. NOTE: THE CENTER SPACER ASSEMBLY MUST NOT BE POSITIONED NEXT TO A FORWARD BLOCKING ASSEMBLY, IF REQUIRED.
6. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE ASSEMBLIES AND THE REAR DOOR IS 9" OR GREATER, USE THE REAR BLOCKING ASSEMBLY "A" AS DETAILED ON PAGE 21. IF THE SPACE AT THE REAR OF THE LOAD IS GREATER THAN 1-1/2" BUT LESS THAN 9", USE THE REAR SPACING ASSEMBLY "B" AS SHOWN. 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 PIECE MARKED ③ ON PAGE 6 AND THE HEADER NAILING CHARTS ON PAGE 7 FOR GUIDANCE.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD.

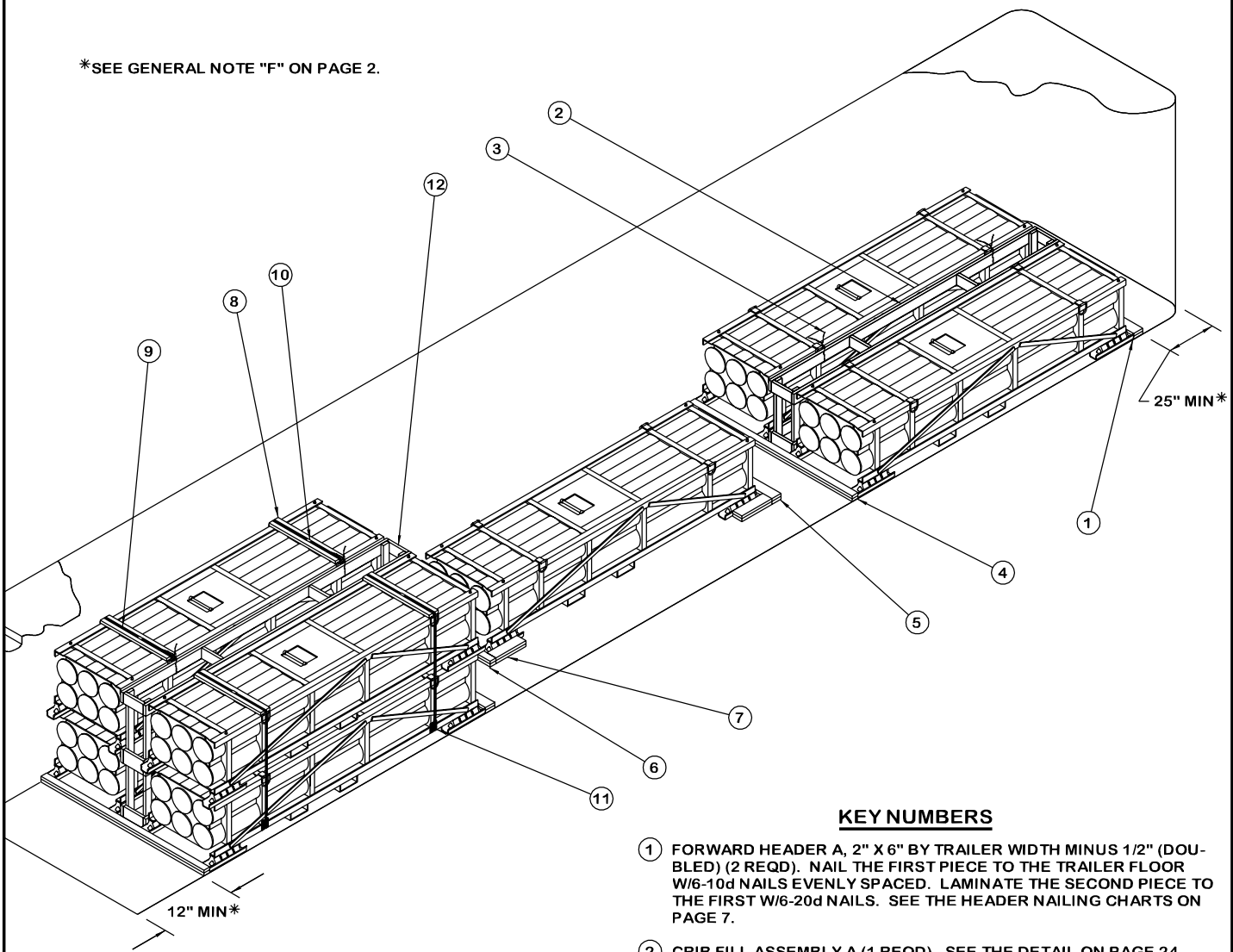
**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	8	4
2" X 4"	44	30
2" X 6"	250	250
2" X 8"	58	77
NAILS	NO. REQD	POUNDS
6d (2")	6	NIL
10d (3")	368	5-3/4
STEEL STRAPPING, 1-1/4" - - -147' REQD - - - -		21 LBS
SEAL FOR 1-1/4" STRAPPING - - - 8 REQD - - - -		1/2 LBS
WIRE, 0.0800" DIA - - - - - 8' REQD - - - -		1/4 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA - - - - -	8 - - - - -	40,888 LBS
DUNNAGE - - - - -	- - - - -	746 LBS
TOTAL WEIGHT - - - - -		41,634 LBS (APPROX)

\*SEE GENERAL NOTE "F" ON PAGE 2.



**ISOMETRIC VIEW**

**(KEY NUMBERS CONTINUED)**

- ⑩ SEAL FOR 1-1/4" STRAPPING (4 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑪ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER ALL STRAPS AT POINTS OF CONTACT WITH ASSEMBLIES.
- ⑫ CRIB FILL ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE TWO-HIGH STACKS OF ASSEMBLIES AS SHOWN. SEE SPECIAL NOTE 2 ON PAGE 11.

**KEY NUMBERS**

- ① FORWARD HEADER A, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS EVENLY SPACED. LAMINATE THE SECOND PIECE TO THE FIRST W/6-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 7.
- ② CRIB FILL ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE ONE-HIGH STACK OF ASSEMBLIES AS SHOWN. SEE SPECIAL NOTE 2 ON PAGE 11.
- ③ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND EACH END OF THE CRIB FILL ASSEMBLIES, PIECES MARKED ② AND ⑫, AND THE TOP ASSEMBLY'S LIFTING RINGS. BRING THE ENDS TOGETHER AND TWIST TAUT.
- ④ REAR HEADER A, 2" X 4" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-10d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 7 AND SPECIAL NOTE 3 ON PAGE 11.
- ⑤ FORWARD HEADER B, 2" X 6" X 54" (DOUBLED) (1 REQD). CENTER THE FIRST PIECE ON THE TRAILER FLOOR, AS SHOWN, AND NAIL TO THE TRAILER FLOOR W/4-10d NAILS EVENLY SPACED. LAMINATE THE SECOND PIECE TO THE FIRST W/4-20d NAILS. SEE THE HEADER NAILING CHARTS ON PAGE 7.
- ⑥ REAR HEADER B, 2" X 4" X 54" (DOUBLED) (1 REQD). CENTER THE FIRST PIECE ON THE TRAILER FLOOR, AS SHOWN, AND NAIL 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 7.
- ⑦ SIDE BLOCKING, 2" X 6" X 18" (DOUBLED) (4 REQD). POSITION AGAINST THE ASSEMBLY SKIDS AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS EVENLY SPACED. LAMINATE THE SECOND PIECE TO THE FIRST W/4-10d NAILS.
- ⑧ STRAPPING BOARD, 2" X 6" X 40" (4 REQD). LOCATE BETWEEN THE LIFTING RINGS, AS SHOWN.
- ⑨ STACK UNITIZING STRAP, 1-1/4" X .031" OR .035" X 18'-4" LONG STEEL STRAPPING (4 REQD, 2 PER STACK).

**SPECIAL NOTES:**

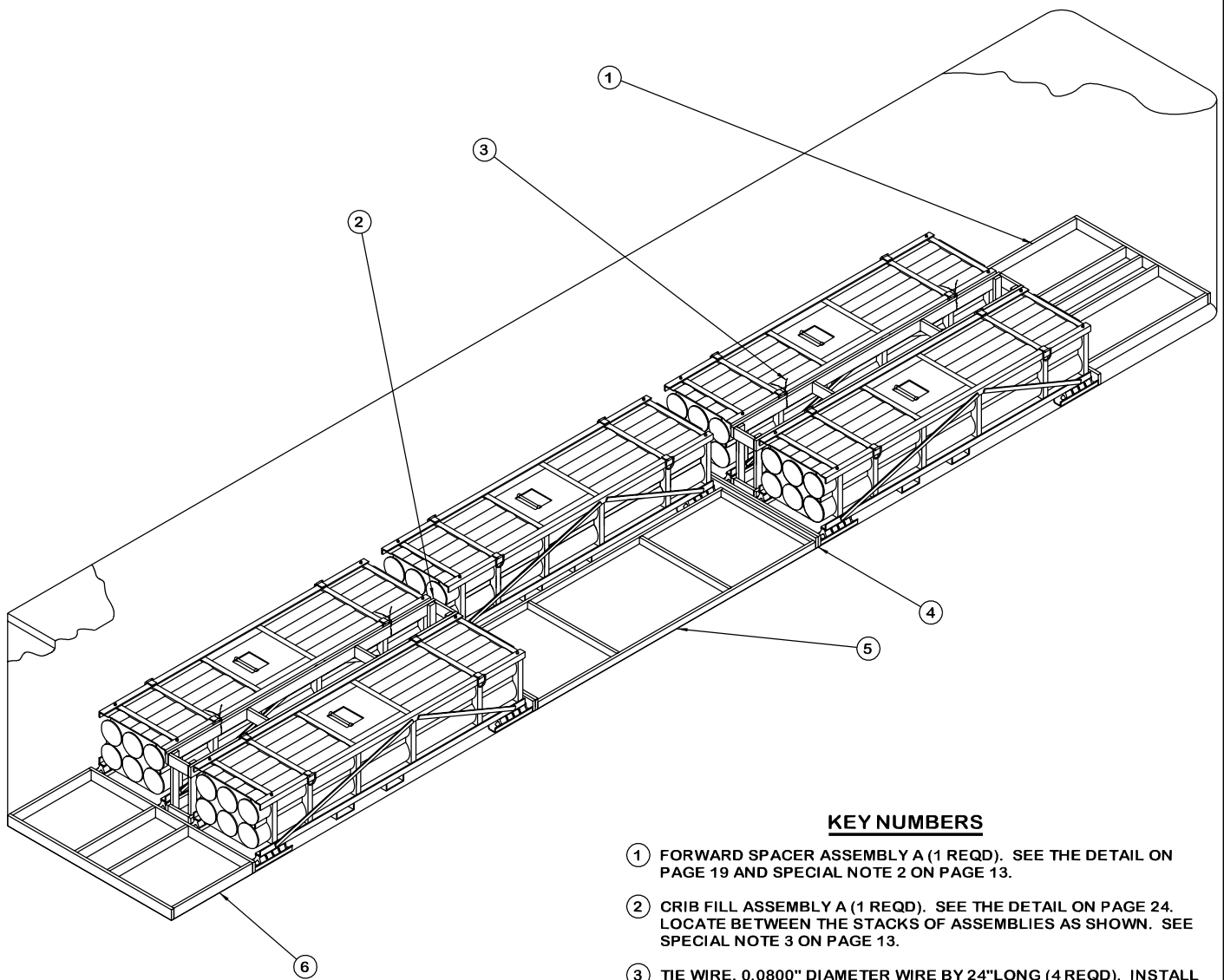
1. A 7-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 53'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
3. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE ASSEMBLIES 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 NAILED HEADER AS SHOWN OR THE REAR BLOCKING ASSEMBLY "B" AS DETAILED ON PAGE 21. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE CONTAINERS AND THE REAR DOOR IS 9" OR GREATER, USE THE NAILED HEADER AS SHOWN OR THE REAR BLOCKING ASSEMBLY "A" AS DETAILED ON PAGE 21. IF THE TRAILER IS EQUIPPED WITH A METAL THRESHOLD PLATE AND IT INTERFERES WITH THE NAILING OF PIECE MARKED (4) ON PAGE 10, ONE OF THE REAR BLOCKING ASSEMBLIES DESCRIBED ABOVE MUST BE INSTALLED.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	74	50
2" X 6"	169	169
2" X 8"	29	38
NAILS	NO. REQD	POUNDS
10d (3")	238	4
20d (4")	16	3/4
STEEL STRAPPING, 1-1/4" - - - 74' REQD - - - 11 LBS		
SEAL FOR 1-1/4" STRAPPING - - 4 REQD - - - 1/4 LBS		
WIRE, 0.0800" DIA - - - - - 8' REQD - - - 1/4 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	7	35,777 LBS
DUNNAGE		527 LBS
TOTAL WEIGHT		36,304 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD SPACER ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 19 AND SPECIAL NOTE 2 ON PAGE 13.
- ② CRIB FILL ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE STACKS OF ASSEMBLIES AS SHOWN. SEE SPECIAL NOTE 3 ON PAGE 13.
- ③ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (4 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND EACH END OF THE CRIB FILL ASSEMBLY, PIECE MARKED ②, AND THE ASSEMBLY'S LIFTING RINGS. BRING THE ENDS TOGETHER AND TWIST TAUT.
- ④ INTERMEDIATE SPACER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). LAMINATE THE FIRST PIECE TO THE SECOND W/1-10d NAIL EVERY 12" AND POSITION ON EDGE.
- ⑤ FILLER ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 23.
- ⑥ REAR BLOCKING ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 4 ON PAGE 13.

**SPECIAL NOTES:**

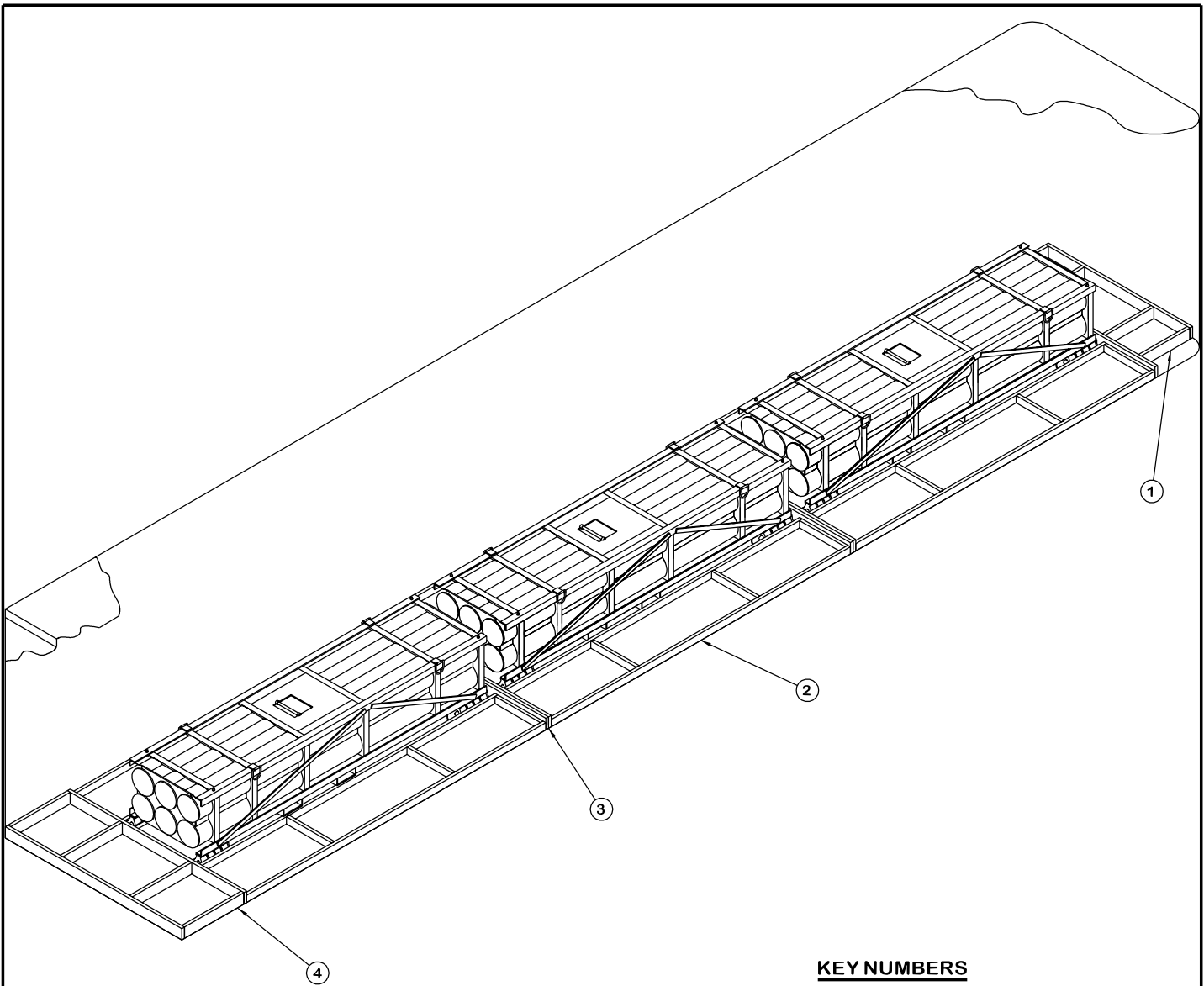
1. A 5-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 45'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. IF THE TRAILER HAS SUFFICIENT NAILING AREA AT THE FRONT OF THE LOAD, A NAILED HEADER MAY BE USED IN PLACE OF THE FORWARD SPACER ASSEMBLY. SEE THE LOAD ON PAGE 6 FOR GUIDANCE ON INSTALLING A NAILED HEADER.
3. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
4. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE ASSEMBLIES 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 21. 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 PIECE MARKED ⑥ ON PAGE 6 AND THE HEADER NAILING CHARTS ON PAGE 7 FOR GUIDANCE.
5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	46	31
2" X 6"	114	114
NAILS	NO. REQD	POUNDS
10d (3")	88	1-1/2
WIRE, 0.0800" DIA	8' REQD	1/4 LBS

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	5	25,555 LBS
DUNNAGE		289 LBS
TOTAL WEIGHT		25,844 LBS (APPROX)



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD SPACER ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 20 AND SPECIAL NOTE 2 ON PAGE 15.
- ② FILLER ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 23.
- ③ INTERMEDIATE SPACER, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (2 REQD). LAMINATE THE FIRST PIECE TO THE SECOND W/1-10d NAIL EVERY 12" AND POSITION ON EDGE.
- ④ REAR BLOCKING ASSEMBLY C (1 REQD). SEE THE DETAIL ON PAGE 22 AND SPECIAL NOTE 4 ON PAGE 15.

**SPECIAL NOTES:**

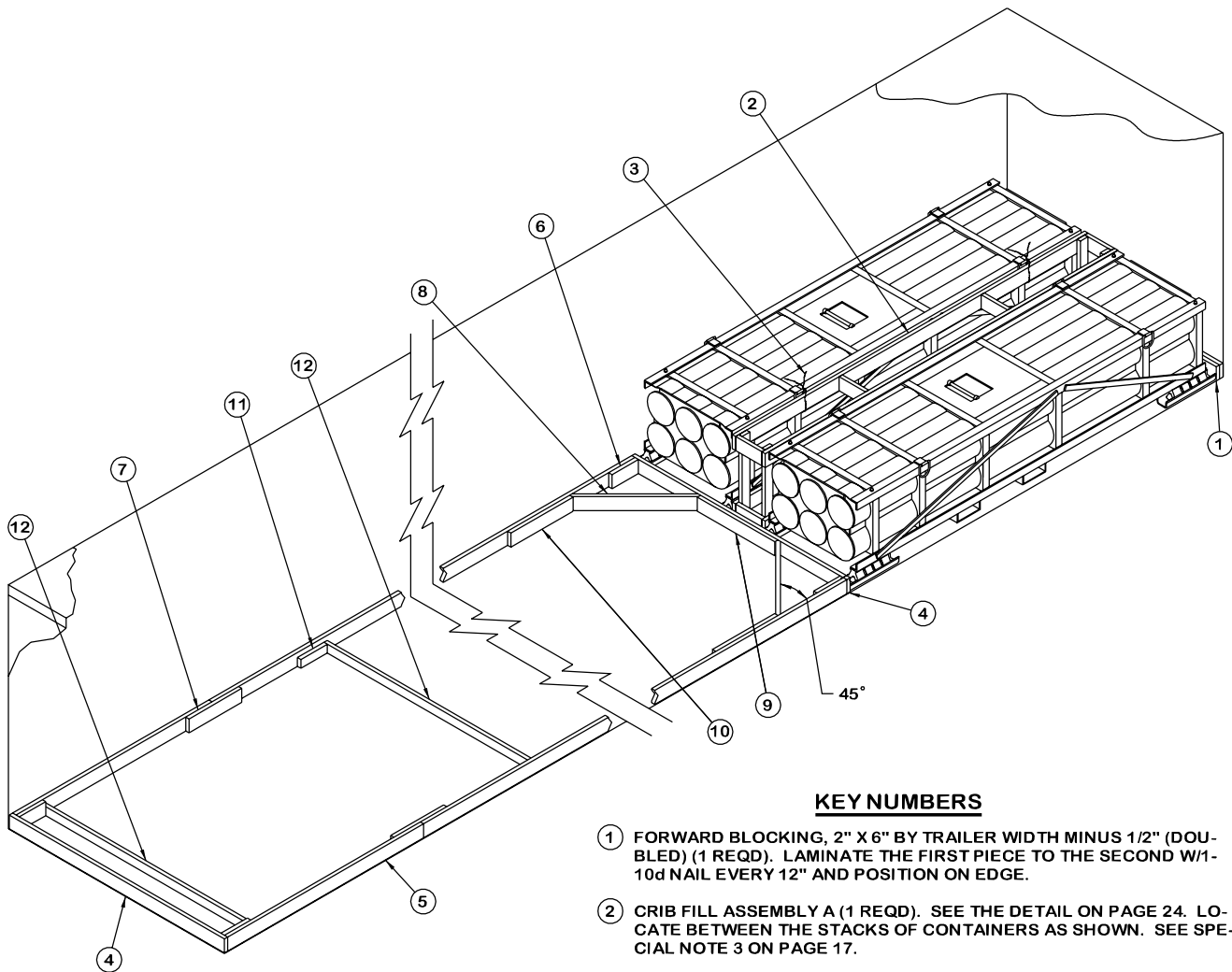
1. A 3-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 48'-0" LONG BY 8'-2" WIDE (INSIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. IF THE TRAILER HAS SUFFICIENT NAILING AREA AT THE FRONT OF THE LOAD, A NAILED HEADER MAY BE USED IN PLACE OF THE FORWARD SPACER ASSEMBLY. SEE THE LOAD ON PAGE 6 FOR GUIDANCE ON INSTALLING A NAILED HEADER.
3. IF THE SPACE AT THE REAR OF THE LOAD BETWEEN THE ASSEMBLIES 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 21. 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 PIECE MARKED ⑧ ON PAGE 6 AND THE HEADER NAILING CHARTS ON PAGE 7 FOR GUIDANCE.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED OR TO SUIT THE WEIGHT OF THE UNIT BEING LOADED. A LOAD CAN BE REDUCED BY OMITTING ONE OR MORE FULL LOAD UNITS FROM THE LOAD.

**BILL OF MATERIAL**

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	216	144
2" X 6"	53	53
NAILS	NO. REQD	POUNDS
10d (3")	144	2-1/4

**LOAD AS SHOWN**

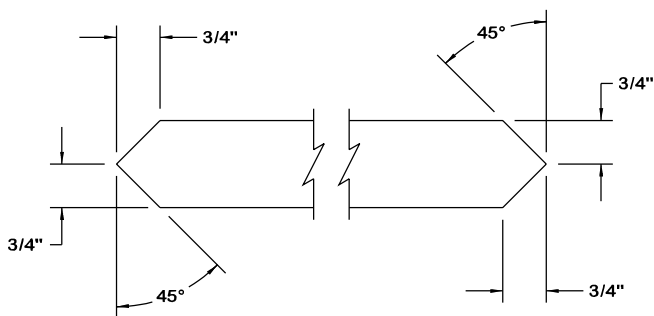
<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
ATACMS M/LPA	3	15,333 LBS
DUNNAGE		403 LBS
<b>TOTAL WEIGHT</b>		<b>15,736 LBS (APPROX)</b>



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD BLOCKING, 2" X 6" BY TRAILER WIDTH MINUS 1/2" (DOUBLED) (1 REQD). LAMINATE THE FIRST PIECE TO THE SECOND W/1-10d NAIL EVERY 12" AND POSITION ON EDGE.
- ② CRIB FILL ASSEMBLY A (1 REQD). SEE THE DETAIL ON PAGE 24. LOCATE BETWEEN THE STACKS OF CONTAINERS AS SHOWN. SEE SPECIAL NOTE 3 ON PAGE 17.
- ③ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (2 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND EACH END OF THE CRIB FILL ASSEMBLY, PIECE MARKED ②, AND THE TOP ASSEMBLY'S LIFTING RINGS. BRING THE ENDS TOGETHER AND TWIST TAUT.
- ④ HEADER, 2" X 6" X TRAILER WIDTH MINUS 1/2" IN LENGTH (2 REQD).
- ⑤ SIDE STRUT, 2" X 6" BY CUT-TO-FIT BETWEEN THE HEADERS, PIECES MARKED ④ (2 REQD). SEE SPECIAL NOTE 4 ON PAGE 15.
- ⑥ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑤, W/3-10d NAILS. TOENAIL TO THE ADJACENT HEADER, PIECE MARKED ④, W/3-12d NAILS.
- ⑦ SPLICE PIECE, 2" X 6" X 24" (AS REQD). CENTER ON JOINT OF SIDE STRUTS, PIECES MARKED ⑤, AND NAIL W/4-10d NAILS TO EACH END OF SIDE STRUTS. SEE SPECIAL NOTE 4 ON PAGE 15.
- ⑧ DIAGONAL BRACE, 2" X 6" X 42" (2 REQD). DOUBLE BEVEL EACH END WITH 45° CUTS. INSTALL AS SHOWN AND TOENAIL TO THE ADJACENT HEADER AND SIDE STRUT, PIECES MARKED ④ AND ⑤, W/2-16d NAILS AT EACH END. SEE THE "DIAGONAL BRACE BEVEL DETAIL" AT LEFT.
- ⑨ CENTER CLEAT, 2" X 6" BY CUT-TO-FIT BETWEEN THE DIAGONAL BRACES, PIECES MARKED ⑦ (1 REQD). NAIL TO THE HEADER, PIECE MARKED ④, W/6-10d NAILS.
- ⑩ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑤, W/8-10d NAILS.
- ⑪ STRUT BRACE RETAINING CLEAT, 2" X 4" X 12" (AS REQD). NAIL TO A SIDE STRUT, PIECE MARKED ⑤, W/3-10d NAILS. SEE SPECIAL NOTE 4 ON PAGE 17.
- ⑫ STRUT BRACE, 2" X 4" BY TRAILER WIDTH MINUS 3" IN LENGTH (MINIMUM OF ONE REQD). NAIL TO THE POCKET CLEATS, PIECES MARKED ⑥, AND/OR TO THE STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑪, W/2-12d NAILS AT EACH END. SEE SPECIAL NOTES 4 AND 5 ON PAGE 17.



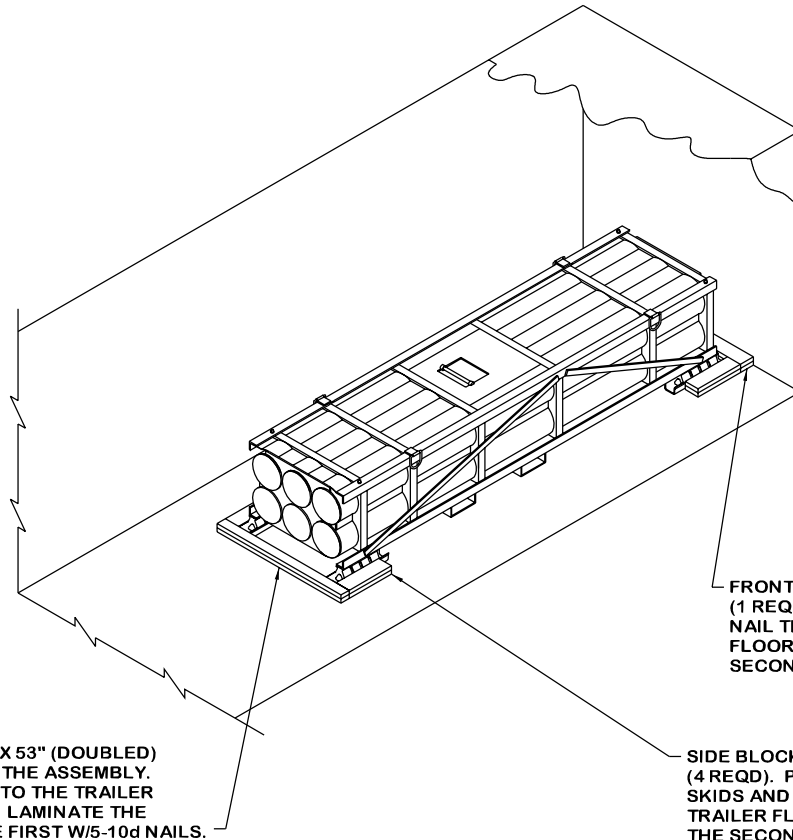
**DIAGONAL BRACE BEVEL DETAIL**

DEPICTED ABOVE IS THE TOP VIEW OF 2" X 6" MATERIAL.



SPECIAL NOTES:

1. A 2-UNIT LOAD OF ATACMS M/LPAS IS SHOWN IN A 8'-2" WIDE (IN-SIDE DIMENSIONS) CONVENTIONAL VAN TRAILER. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED.
2. A TRAILER WITH SQUARE FRONT CORNERS IS SHOWN. IF A TRAILER WITH ROUNDED FRONT CORNERS IS TO BE LOADED, A HEADER, FORWARD SPACER ASSEMBLY OR FORWARD BLOCKING ASSEMBLY WILL NEED TO BE ADDED. SEE THE LOAD ON PAGE 6 FOR GUIDANCE ON INSTALLING A NAILED HEADER, THE LOAD ON PAGE 12 FOR GUIDANCE ON INSTALLING A FORWARD SPACER ASSEMBLY AND THE LOAD ON PAGE 8 FOR GUIDANCE ON INSTALLING A FORWARD BLOCKING ASSEMBLY.
3. CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT UNITS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
4. DEPENDING ON THE NUMBER OF CONTAINERS BEING LOADED, EACH OF THE SIDE STRUTS, PIECES MARKED ⑤ ON PAGE 16, 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 W/4-10d NAILS AT EACH END OF THE SIDE STRUTS. NOTE: IF DESIRED, THE STRUT BRACES, PIECES MARKED ⑫ ON PAGE 16, MAY BE NAILED TO THE SPLICE PIECES IN LIEU OF USING ADDITIONAL STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑪.
5. ALL LOADS THAT UTILIZE THE BLOCKING PROCEDURES DEPICTED ON PAGE 16, REGARDLESS OF THE NUMBER OF CONTAINERS, REQUIRE ONE STRUT BRACE POSITIONED AT THE REAR OF THE TRAILER AND NAILED TO THE POCKET CLEATS, PIECES MARKED ⑥. AN ADDITIONAL STRUT BRACE, PIECE MARKED ⑫, AND TWO STRUT BRACE RETAINING CLEATS, PIECES MARKED ⑪, MUST BE APPLIED FOR EVERY 7'-0" OF SIDE STRUT LENGTH, WHEN THE SIDE STRUTS, PIECES MARKED ⑤, ARE LONGER THAN 7'-0".
6. THE "K-BRACE" BLOCKING, SHOWN AS PIECES MARKED ④ THRU ⑫, IS ADEQUATE FOR RETAINING A MAXIMUM LOAD OF 20,000 POUNDS.
7. THE DEPICTED LOAD CAN BE INCREASED TO SUIT THE QUANTITY TO BE SHIPPED. SEE THE PROCEDURES ON PAGES 6 THRU 15 FOR GUIDANCE. THE DEPICTED LOAD CAN ALSO BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED.



REAR HEADER, 2" X 4" X 53" (DOUBLED)  
(1 REQD). CENTER ON THE ASSEMBLY.  
NAIL THE FIRST PIECE TO THE TRAILER  
FLOOR W/5-10d NAILS. LAMINATE THE  
SECOND PIECE TO THE FIRST W/5-10d NAILS.

FRONT HEADER, 2" X 6" X 54" (DOUBLED)  
(1 REQD). CENTER ON THE ASSEMBLY.  
NAIL THE FIRST PIECE TO THE TRAILER  
FLOOR W/4-10d NAILS. LAMINATE THE  
SECOND PIECE TO THE FIRST W/4-10d NAILS.

SIDE BLOCKING, 2" X 6" X 18" (DOUBLED)  
(4 REQD). POSITION AGAINST THE ASSEMBLY  
SKIDS AND NAIL THE FIRST PIECE TO THE  
TRAILER FLOOR W/4-10d NAILS. LAMINATE  
THE SECOND PIECE TO THE FIRST W/4-10d NAILS.

### ISOMETRIC VIEW

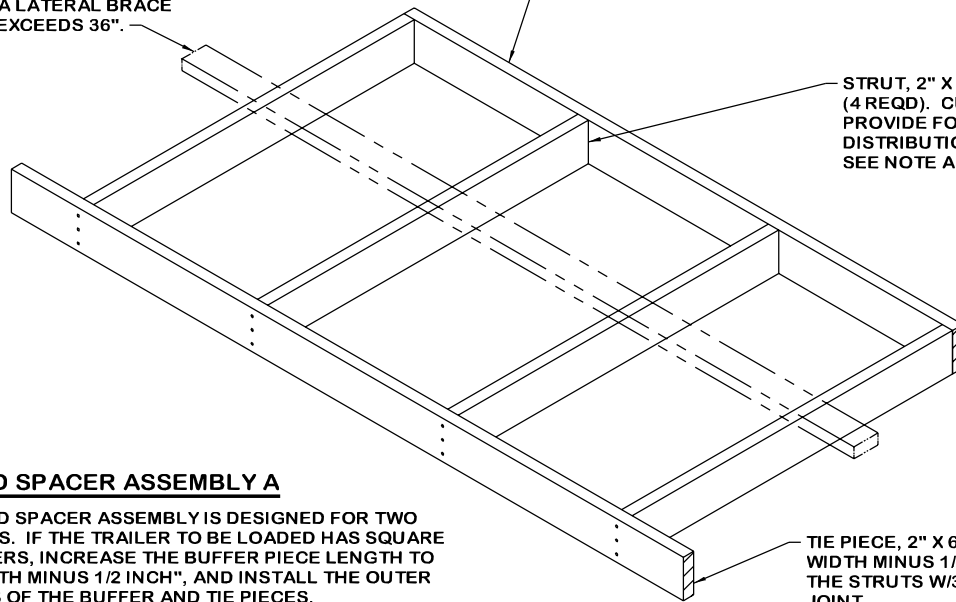
#### SPECIAL NOTES:

1. A 7'-8" WIDE (INSIDE DIMENSION) CONVENTIONAL VAN TRAILER WHICH HAS A NAILABLE FLOOR IS SHOWN. TRAILERS OF OTHER WIDTHS CAN BE USED.
2. POSITIONING OF A UNIT IS OPTIONAL. UNITS MAY ALSO BE LOCATED IN THE CORNER OF THE TRAILER. IF THE TRAILER DOES NOT HAVE A SQUARE FRONT, A FORWARD SPACER OR BLOCKING ASSEMBLY MUST BE INSTALLED WHEN POSITIONING A UNIT IN THE CORNER OF THE TRAILER. SEE DETAIL ON PAGE 23.
3. MORE THAN ONE ASSEMBLY CAN BE SHIPPED, PROVIDING THE CAPACITY OF THE HEADER IS NOT EXCEEDED. THE LOAD SHOULD BE FORMED IN ROWS, WITH UNITS POSITIONED AGAINST OPPOSITE SIDE WALLS. THE PROPER FILLER ASSEMBLY OR CRIB FILL, IF REQUIRED, WILL BE INSTALLED BETWEEN LATERALLY ADJACENT UNITS. SEE THE DETAILS ON PAGE 23 AND 24.
4. THE HEADERS AS APPLIED ABOVE FOR LONGITUDINAL BRACING WILL SUPPORT 12,500 POUNDS OF LADING; A TRAILER WIDTH HEADER WILL SUPPORT UP TO A FULL LOAD OF CONTAINERS. SEE THE HEADER NAILING CHARTS ON PAGE 7.

LATERAL BRACE, 2" X 4" BY INSIDE TRAILER WIDTH MINUS 1/2" (AS REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT. INSTALL A LATERAL BRACE WHEN STRUT LENGTH EXCEEDS 36".

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

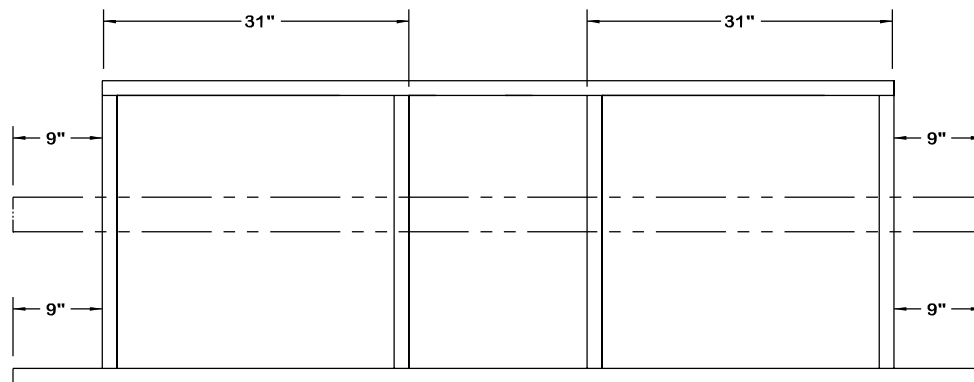
STRUT, 2" X 6" BY CUT-TO-FIT (4 REQD). CUT TO A LENGTH TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION IN THE TRAILER. SEE NOTE AT LEFT.



**FORWARD SPACER ASSEMBLY A**

NOTE: THIS FORWARD SPACER ASSEMBLY IS DESIGNED FOR TWO ROWS OF ASSEMBLIES. IF THE TRAILER TO BE LOADED HAS SQUARE INSIDE FRONT CORNERS, INCREASE THE BUFFER PIECE LENGTH TO "INSIDE TRAILER WIDTH MINUS 1/2 INCH", AND INSTALL THE OUTER STRUTS AT THE ENDS OF THE BUFFER AND TIE PIECES.

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

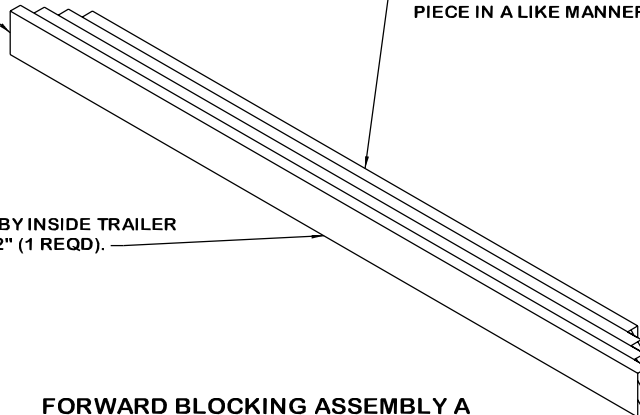


**TOP VIEW**

3/4" X 45° BEVEL CUT ON EACH END OF THE HEADER CAN BE MADE IF DEEMED APPROPRIATE.

SPACER CLEAT, 2" X 6" BY 4" SHORTER THAN PREVIOUS PIECE (AS REQD). POSITION ON EDGE AND CENTER ON HEADER AND NAIL TO THE HEADER W/1-10d NAIL EVERY 12". NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.

HEADER, 2" X 6" BY INSIDE TRAILER WIDTH MINUS 1/2" (1 REQD).



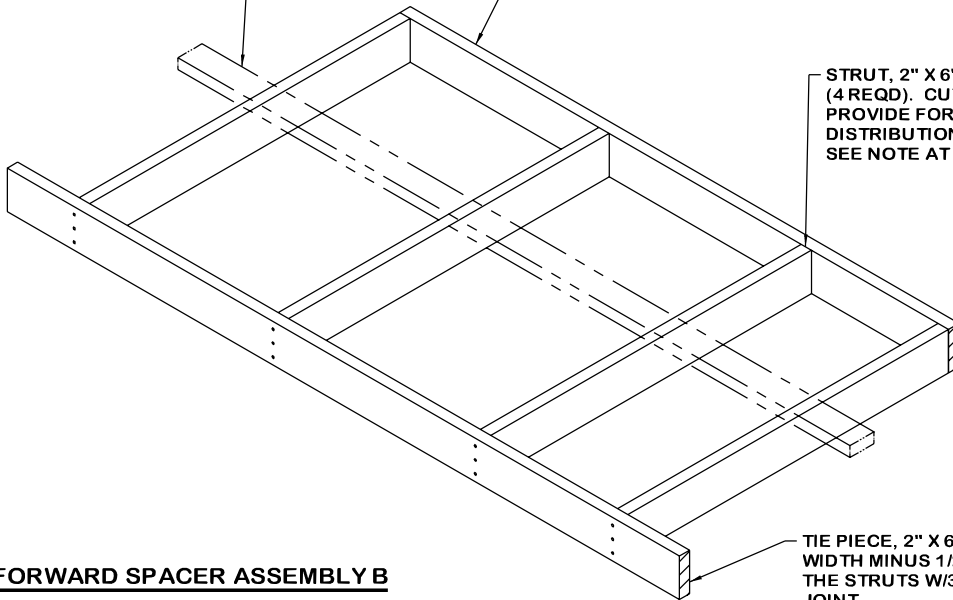
**FORWARD BLOCKING ASSEMBLY A**

THE FORWARD BLOCKING ASSEMBLY DEPICTED ABOVE IS FOR USE AT THE FORWARD END OF A TRAILER HAVING ROUNDED CORNERS WITH A INSIDE RADIUS OF 7" OR LESS. ADDITIONAL LAMINATIONS MUST BE ADDED TO COMPENSATE FOR CORNERS HAVING LARGER RADII.

LATERAL BRACE, 2" X 4" BY INSIDE TRAILER WIDTH MINUS 1/2" (AS REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT. INSTALL A LATERAL BRACE WHEN STRUT LENGTH EXCEEDS 36".

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

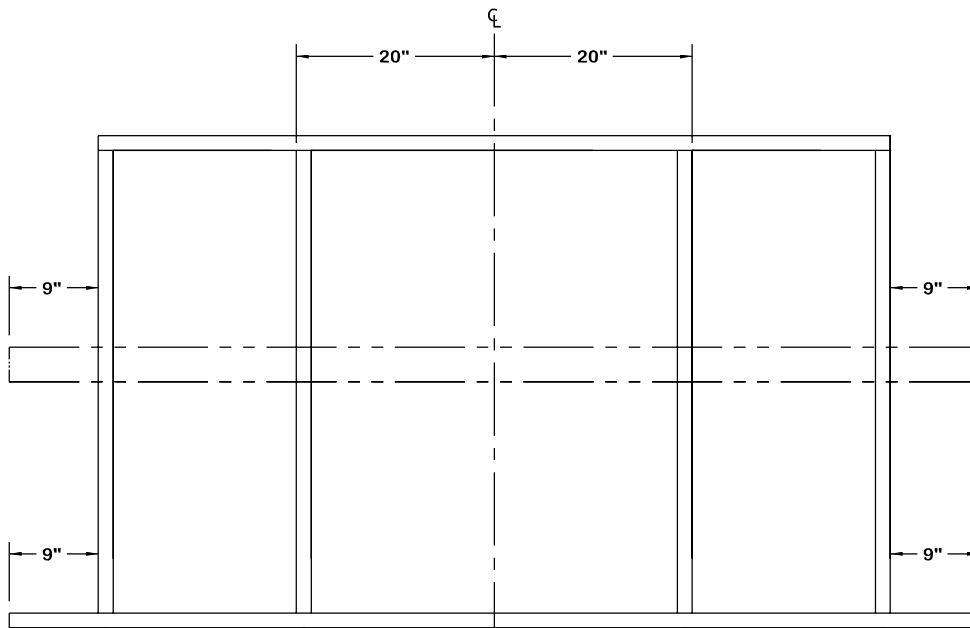
STRUT, 2" X 6" BY CUT-TO-FIT (4 REQD). CUT TO A LENGTH TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION IN THE TRAILER. SEE NOTE AT LEFT.



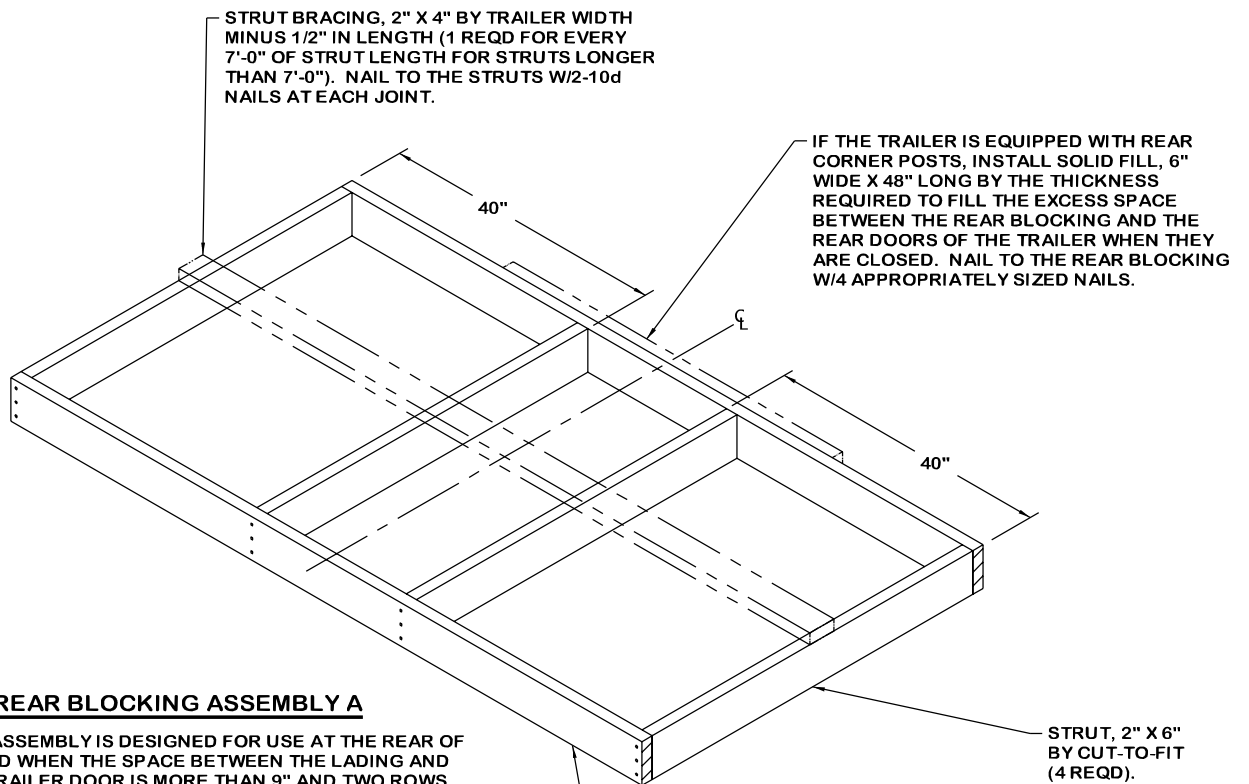
TIE PIECE, 2" X 6" BY INSIDE TRAILER WIDTH MINUS 1/2" (1 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

**FORWARD SPACER ASSEMBLY B**

**NOTE:** THIS FORWARD SPACER ASSEMBLY IS DESIGNED FOR A SINGLE ROW OF ASSEMBLIES LOCATED IN THE CENTER OF THE VAN TRAILER. IF THE TRAILER TO BE LOADED HAS SQUARE INSIDE FRONT CORNERS, INCREASE THE BUFFER PIECE LENGTH TO "INSIDE TRAILER WIDTH MINUS 1/2 INCH", INSTALL THE OUTER STRUTS AT THE ENDS OF THE BUFFER AND TIE PIECES.



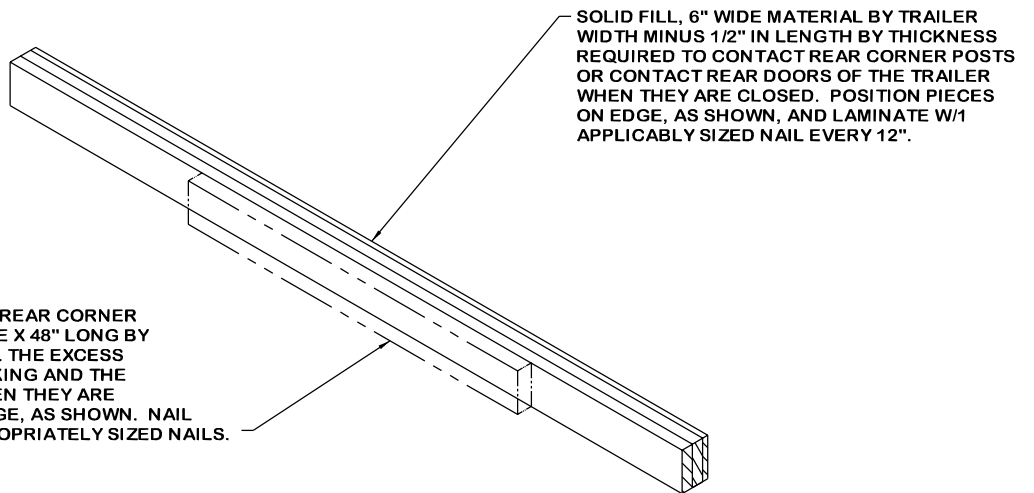
**TOP VIEW**



**REAR BLOCKING ASSEMBLY A**

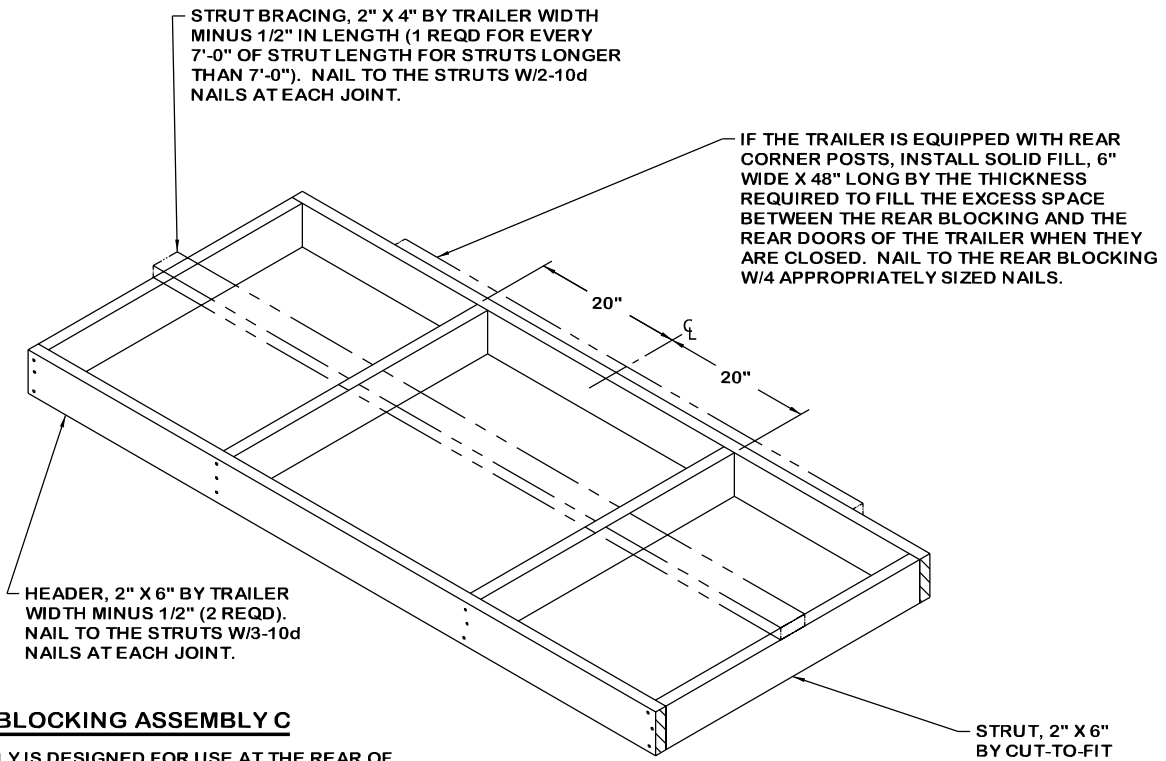
THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF A LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND TWO ROWS OF ASSEMBLIES ARE LOADED ADJACENT TO THE TRAILER DOORS. NOTE: THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

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



**REAR BLOCKING ASSEMBLY B**

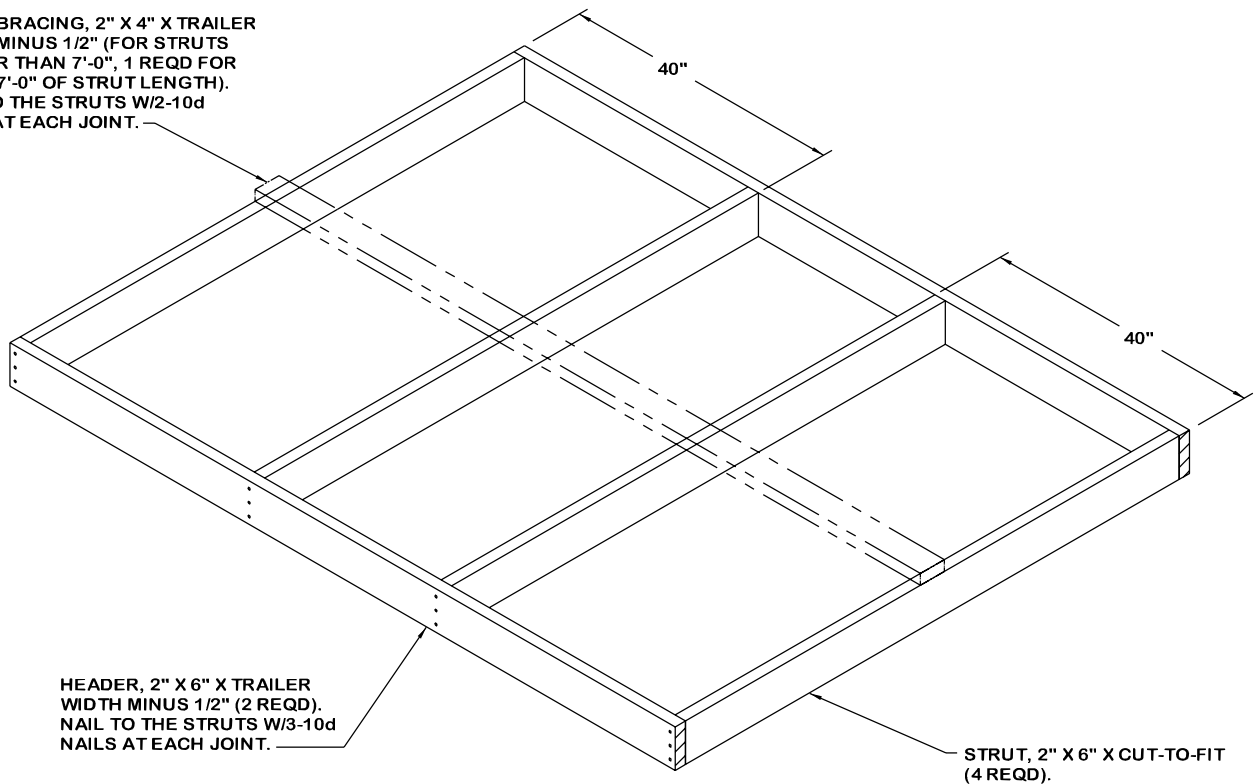
THIS REAR BLOCKING ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF THE LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOORS IS MORE THAN 1-1/2" BUT LESS THAN 9".



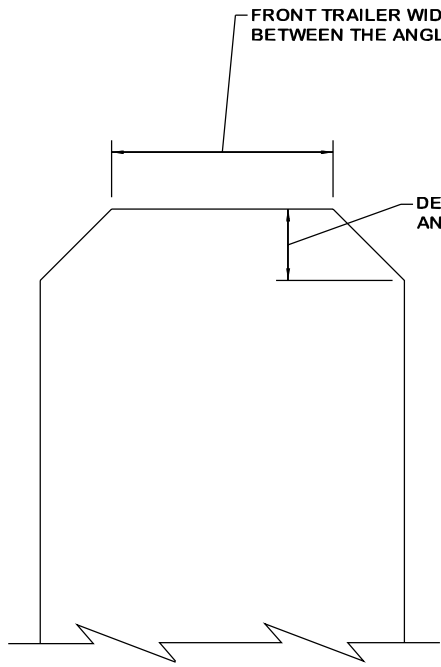
**REAR BLOCKING ASSEMBLY C**

THIS ASSEMBLY IS DESIGNED FOR USE AT THE REAR OF THE LOAD WHEN THE SPACE BETWEEN THE LADING AND THE TRAILER DOOR IS MORE THAN 9" AND ONE ROW OF ASSEMBLIES IS LOADED ADJACENT TO THE TRAILER DOORS. NOTE: THE ABOVE VIEW IS ROTATED 180° FROM THE POSITION IN WHICH IT WILL BE INSTALLED.

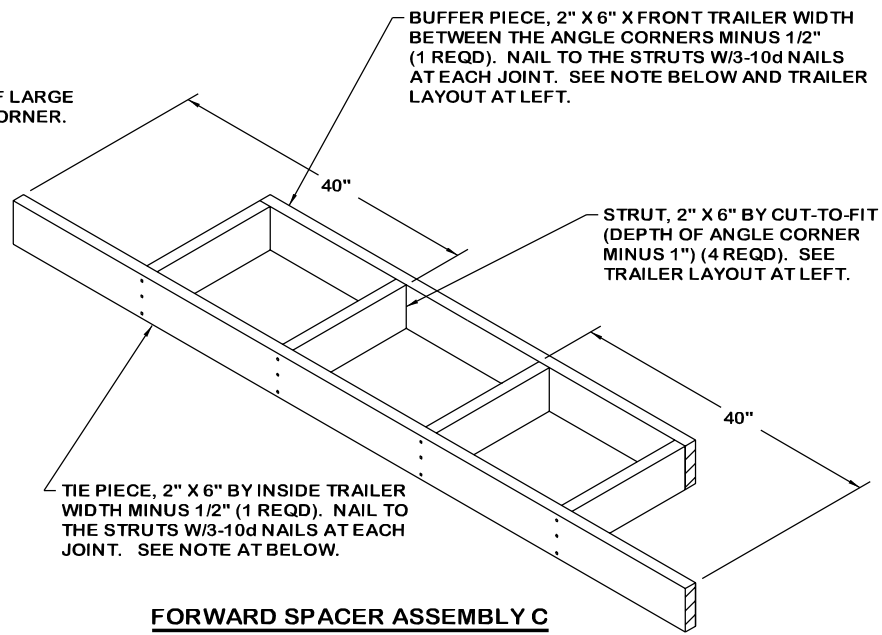
STRUT BRACING, 2" X 4" X TRAILER WIDTH MINUS 1/2" (FOR STRUTS LONGER THAN 7'-0", 1 REQD FOR EVERY 7'-0" OF STRUT LENGTH). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.



**CENTER SPACER ASSEMBLY**

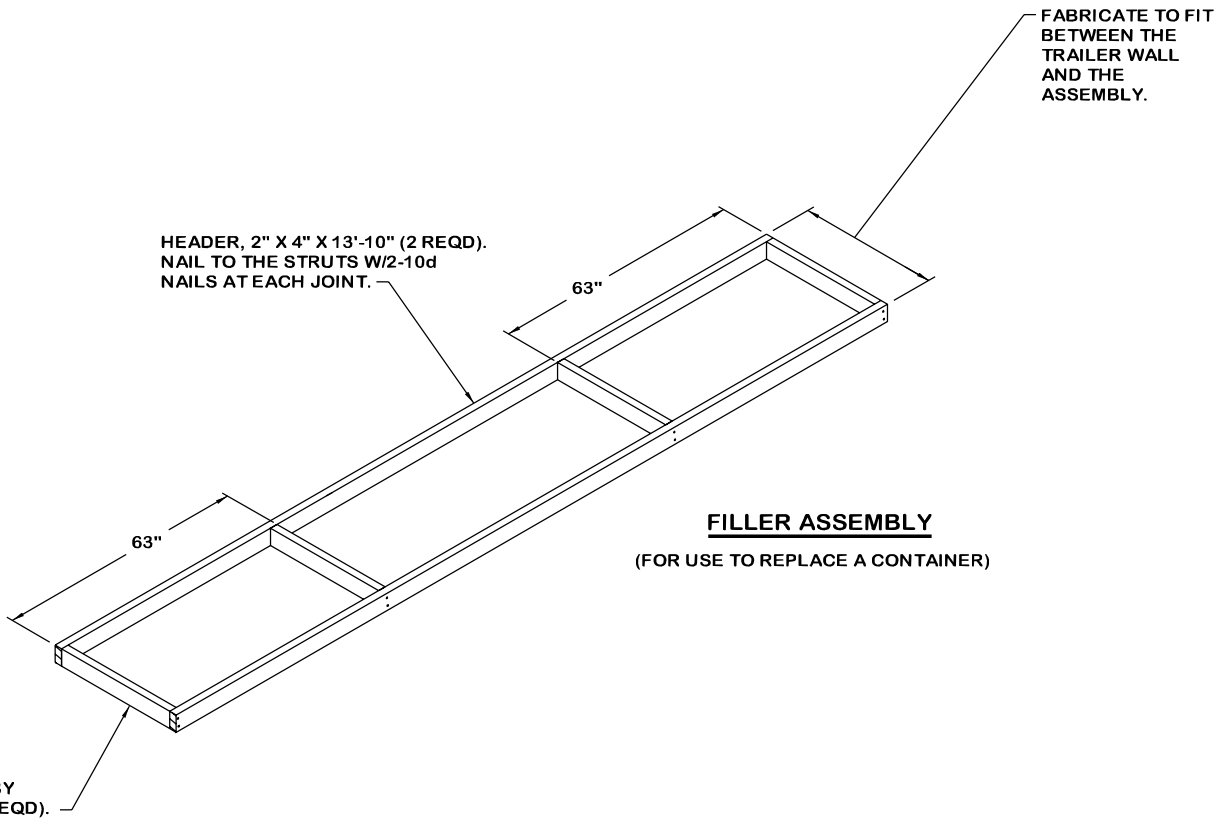


LAYOUT FOR VAN TRAILER WITH LARGE-ANGLED FRONT CORNERS



**FORWARD SPACER ASSEMBLY C**

**NOTE:** THIS FORWARD SPACING ASSEMBLY IS DESIGNED FOR TWO ROWS OF CONTAINERS LOADED IN TRAILER WITH LARGE ANGLE FRONT CORNERS. IF THE TRAILER HAS SUFFICIENT NAILING AREA AT THE FRONT OF THE LOAD, A NAILED HEADER MAY BE USED IN PLACE OF THE SPACER ASSEMBLY. SEE THE LOAD ON PAGE 6 FOR GUIDANCE ON INSTALLING A NAILED HEADER.



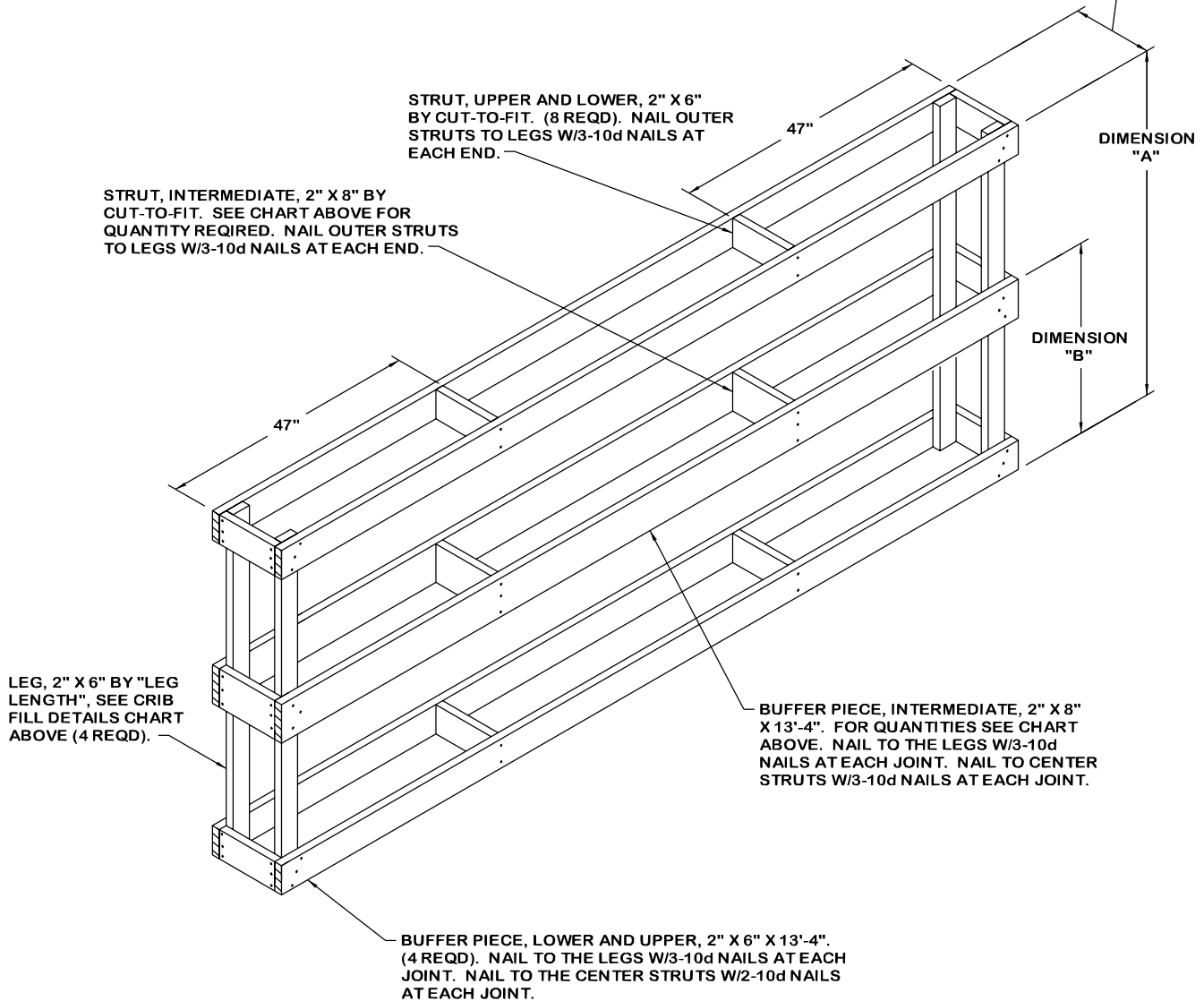
**FILLER ASSEMBLY**

(FOR USE TO REPLACE A CONTAINER)

**CRIB FILL DETAILS CHART**

TIERS PER STACK	CRIB FILL	INTERMEDIATE QUANTITIES		DIMENSIONS		
		STRUTS	BUFFER PIECES	"A"	"B"	LEG LENGTH
1	A	0	0	32"	-	32"
2	B	4	2	65"	36"	65"

FABRICATE TO FIT BETWEEN LATERALLY  
ADJACENT ASSEMBLIES (REF: 9" FOR 7'-8"  
WIDE TRAILERS, 15" FOR 8'-2" WIDE TRAILERS).



**CRIB FILL ASSEMBLIES A AND B**