

ATACMS

LOADING AND BRACING (TL & LTL) ON FLATBED TRAILERS[⊕] OF MISSILE/ LAUNCH POD ASSEMBLY (M/LPA) FOR ARMY TACTICAL MISSILE SYSTEM

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

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY AVIATION AND MISSILE COMMAND O'CONNOR.DOUG ¹ LAS.LEO.11405822 51 <small>Digitally signed by O'CONNOR.DOUGLAS.LEO.114 0582251 Date: 2023.06.07 08:14:08 -05'00'</small>	CAUTION: VERIFY PRIOR TO USE AT https://www.dau.mil/cop/ammo/pages/default.aspx THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 16.			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND BRAILSFORD.KEITH ¹ H.ANTHONY.10286 55661 <small>Digitally signed by BRAILSFORD.KEITH.ANTHONY. 1028655661 Date: 2023.06.09 12:13:00 -05'00'</small> DEFENSE AMMUNITION CENTER	DO NOT SCALE	SEPTEMBER 1989		
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GENERAL NOTES

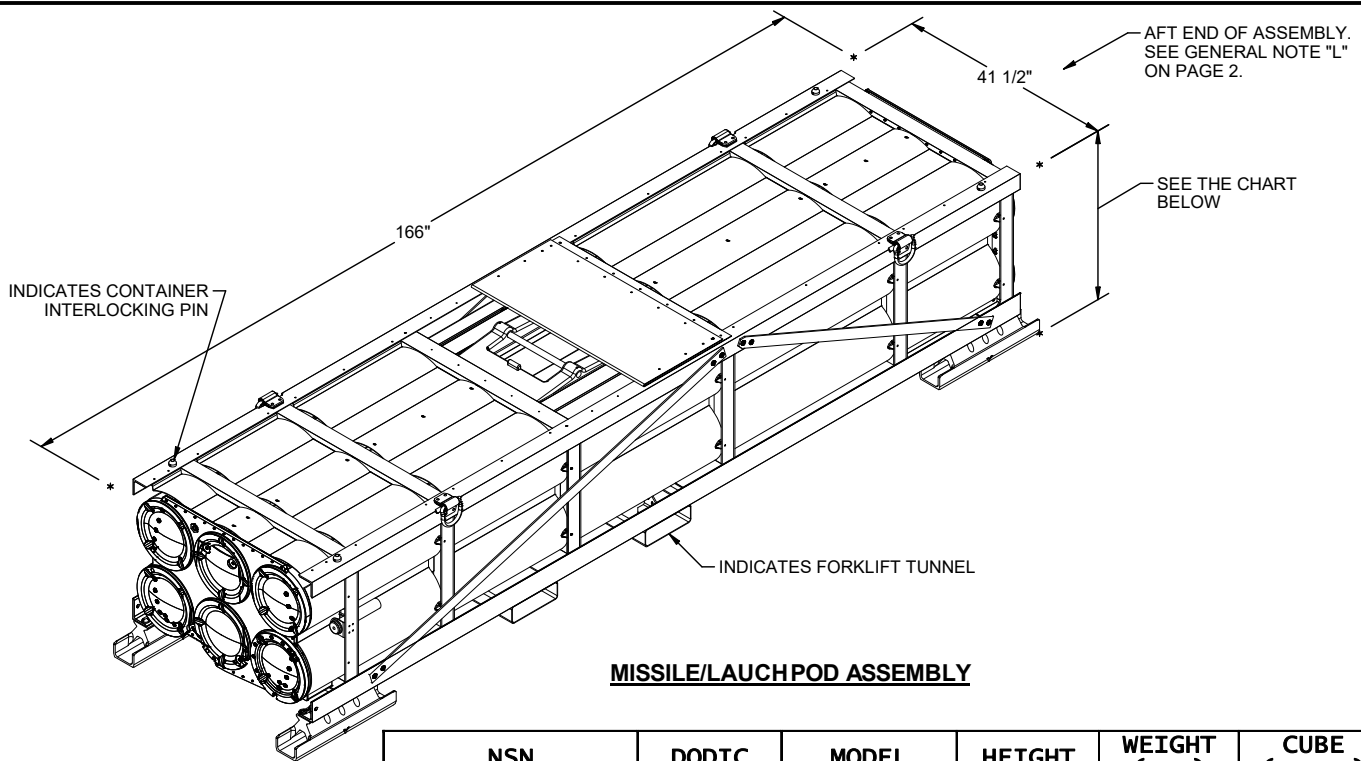
(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF ARMY TACTICAL MISSILE SYSTEMS (ATACMS) COMPLETE ROUNDS, WHEN PACKED IN THE MISSILE/LAUNCH POD ASSEMBLY (M/LPA). SUBSEQUENT REFERENCE TO ASSEMBLY HEREIN MEANS THE M/LPA WITH MISSILE ITEMS. SEE PAGE 3 AND US ARMY MISSILE COMMAND DRAWING 13330138 FOR DETAILS OF THE ASSEMBLY.
- C. THE LOADS AS SHOWN HEREIN ARE BASED ON 45'-0" LONG BY 8'-6" WIDE FLATBED TRAILERS. TRAILERS OF OTHER LENGTHS AND WIDTHS MAY BE USED. TRAILERS MUST HAVE WOOD OR WOOD AND METAL FLOORS. TRAILERS HAVING ALL-METAL FLOORS CANNOT BE USED. **CAUTION:** IF THE TRAILER FLOOR IS EQUIPPED WITH EXPOSED METAL DECKING ABOVE THE BOGIE ASSEMBLY, OR ELSEWHERE, FIELD MEASUREMENTS SHOULD BE MADE TO ENSURE THAT THE METAL DECKING DOES NOT INTERFERE WITH THE PROPER POSITIONING AND NAILING OF THE DUNNAGE AS SPECIFIED BY THE PROCEDURES SHOWN HEREIN.
- D. SELECTION OF A VEHICLE FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY VEHICLES IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS WILL BE SELECTED FOR USE.
- E. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT FOR A LOAD WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF APPLICABLE LOADING REQUIREMENTS, AND THE SHIPPER WILL LOAD ACCORDINGLY.
- F. **NOTICE:** A SHIPMENT WILL BE POSITIONED ON A TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS CONTAINED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEMS.
- G. THE STACK UNITIZING STRAPPING SPECIFIED IN THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 3 IS ONLY APPLICABLE TO LOADS THAT ARE BEING TIED DOWN UTILIZING STRAPPING. THE STACK UNITIZING STRAPS ARE NEEDED WHEN USING WEB STRAPS OR STEEL STRAPS, BUT ARE NOT NEEDED WHEN USING CHAINS. THE BUNDLING STRAPS ARE ONLY NEEDED WITH STEEL HOLD-DOWN STRAPS, NOT WITH THE CHAINS OR WEB STRAPS.
- H. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE ASSEMBLIES 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.
- J. 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.
- K. **CAUTION:** REGARDLESS OF THE TYPE OF TRAILER INVOLVED, ONLY THOSE TRAILERS HAVING TIEDOWN ANCHORING FACILITIES WHICH PROVIDE HOLDING STRENGTH EQUAL TO OR GREATER THAN THE STRENGTH OF THE HOLD-DOWN STRAPS OR CHAINS AND WHICH ALIGN NEAR THE INDICATED LOCATIONS FOR THE HOLD-DOWN STRAPS OR CHAINS SHOULD BE USED. IF THE TRAILER ANCHOR DEVICES ARE NOT PROPERLY POSITIONED TO RECEIVE STRAPPING OR CHAINS, AS SHOWN, OR IF THE ANCHOR DEVICES ARE NOT EQUAL TO OR GREATER THAN THE STRENGTH OF THE TIEDOWN STRAPS OR CHAINS, STEEL STRAPS MAY BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED. **CAUTION:** AVOID TRAILER WHEELS, FIFTH WHEEL PLATE CONTROLS AND OTHER APPURTENANCES. USE EDGE PROTECTORS OR PADS ON ALL SHARP EDGES. NEITHER CHAINS NOR WEB STRAPS WILL BE APPLIED TO FORM A COMPLETE LOOP THAT ENCOMPASSES THE LADING AND THE TRAILER FRAME AND/OR BED.
- L. LAUNCH POD ASSEMBLIES ARE TO BE POSITIONED WITH THE FORWARD END TOWARDS THE REAR END OF THE TRAILER. ALL ASSEMBLIES IN EACH STACK AND IN EACH LOAD UNIT ARE TO BE POSITIONED IN THIS MANNER.
- M. 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. 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 DETAILS ON PAGE 12 FOR GUIDANCE.
- O. THE TRANSPORTING VEHICLE OPERATOR SHOULD BE INSTRUCTED TO PERIODICALLY INSPECT THE TIEDOWN CHAINS AND LOAD BINDERS DURING TRANSIT AND TIGHTEN IF NECESSARY.
- P. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING AND STAYING OF THE DESIGNATED ITEM.
- Q. PLACE ANTI-CHAFING NEUTRAL BARRIER MATERIAL UNDER THE STEEL STRAPPING AND CHAINS AT ALL POINTS OF CONTACT WITH THE CONTAINER, EXCEPT THROUGH FORKLIFT OPENINGS, AND SECURE TO PREVENT DISLODGE DURING AND AFTER STRAP OR CHAIN APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE M/LPA, OR IT CAN BE FORMED INTO STRAP OR CHAIN ENCIRCLING TUBES BY WINDING MATERIAL AROUND THE STRAP OR CHAIN TO FORM A SELF-HOLDING UNIT.
- R. THE HEIGHT OF THE SKIDS ON THE LAUNCH POD ASSEMBLY MAY VARY DEPENDING UPON WHETHER THE ASSEMBLIES ARE NEW OR HAVE BEEN IN STORAGE OR HAVE THE NEW STYLE SKID (5-9/16" HIGH). THE THICKNESS OF THE SUPPORTS "A" AND "B" UNDER THE ASSEMBLIES MAY REQUIRE ADJUSTMENT TO ACCOUNT FOR THIS VARIATION IN SKID HEIGHT. THE SUPPORT THICKNESSES MUST BE ADJUSTED TO BE EQUAL TO OR NOT MORE THAN ONE-QUARTER INCH LESS THAN THE MEASURED DISTANCE BETWEEN THE BOTTOM OF THE LAUNCH POD ASSEMBLY FRAME AND THE DECK OF THE TRANSPORT VEHICLE. THIS MEASUREMENT WILL BE MADE FROM A SINGLE POD ASSEMBLY AND NOT FROM A STACK OF PODS. THE SUPPORTS WILL THEN BE CONSTRUCTED USING APPROPRIATE THICKNESSES OF NOMINAL LUMBER OR NOMINAL LUMBER AND 3-1/2" WIDE PLYWOOD STRIPS. NAIL THE PLYWOOD STRIPS TO THE NOMINAL LUMBER WITH 8-6d NAILS FOR A SUPPORT WITH TWO ASSEMBLIES WIDE OR WITH 5-6d NAILS FOR A SUPPORT FOR ONE ASSEMBLY WIDE.
- S. THE DUNNAGE ASSEMBLIES SHOWN WITHIN THIS DRAWING ARE BASED ON THE DIMENSIONS FOR THE BLOCK IA AND BLOCK II M/LPAs. WHEN SHIPPING BLOCK I M/LPAs, SOME LADING WEIGHTS WILL CHANGE SLIGHTLY.
- T. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- U. 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.

(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).
- STRAP, WEB, COMMERCIAL** - - - - - : WEB SLING AND TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, WSTDA-T-1, REVISED 2005.
- 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.
- STAKE POCKET PROTECTOR** - - - - - : COMMERCIAL GRADE.
- ANTI-CHAFING MATERIAL** - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
- CHAIN** - - - - - : NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 2010.
- LOAD BINDER** - - - - - : FED SPEC GG-B-325.
- WIRE, CARBON STEEL** - - - - - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.



MISSILE/LAUNCHPOD ASSEMBLY

NSN	DODIC	MODEL	HEIGHT	WEIGHT (LBS)	CUBE (CU FT)
1427-01-481-1620	N/A	TACMS 2K	33-3/4"	4,985	134.6
1427-01-398-6538	PL38	M39A1	33-3/4"	4,640	134.6
1427-01-463-0001	PL38	M39A1	33-3/4"	4,640	134.6
1427-01-439-8639	PL47	M39A3	33-3/4"	4,985	134.6
1427-01-480-8516	PL65	M48	33-3/4"	4,682	134.6
1427-00-000-0195	PL81	M39	32-5/8"	5,105	129.7
1427-01-274-3904	PL81	M39	32-5/8"	4,814	129.7
1427-01-386-3113	PL81	M39	32-5/8"	5,111	129.7
1427-01-511-2143	PM75	M57	33-3/4"	4,676	134.6
1427-01-649-5369	PMC8	M57A1	33-3/4"	4,755	134.6

UNITIZATION AND HANDLING GUIDANCE

(UNITIZATION AND HANDLING GUIDANCE CONTINUED)

- A. 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.
- B. STRAPS WILL BE POSITIONED SO AS TO ENCIRCLE THE ASSEMBLIES AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACE OF THE ASSEMBLIES; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK. POSITION STRAPPING NEAR THE ASSEMBLY STRONG POINTS (I.E. THE LATERAL FRAME MEMBER/BULKHEADS).
- C. PLACE ANTI-CHAFING NEUTRAL BARRIER MATERIAL 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 MATERIAL 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.
- D. STRAPPING WILL BE FIRMLY TENSIONED AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH ONE DOUBLE NOTCHED OR TWO DOUBLE CRIMPED STRAP SEALS. SEE GENERAL NOTE "N" ON PAGE 2. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK. 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.
- E. ONLY APPROVED AND APPROPRIATELY SIZED MATERIAL HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED ASSEMBLIES. APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.
- F. PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

- G. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE ASSEMBLIES SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER AN ASSEMBLY, TO PREVENT DAMAGE TO THE ASSEMBLY BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. IF ONE ASSEMBLY IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE ASSEMBLY. DO NOT HANDLE STACKED ASSEMBLIES WITH A SLING.

(CONTINUED AT RIGHT)

REVISIONS

REVISION NO. 1, DATED OCTOBER 1993, CONSISTS OF:

- 1. ADDING PROCEDURES FOR 45'-0" LONG TRAILER.
- 2. REMOVING BACK-UP CLEATS FROM THE DEPICTED LOADS.
- 3. CHANGING NAILING GUIDANCE.

REVISION NO. 2, DATED JUNE 1994, CONSISTS OF:

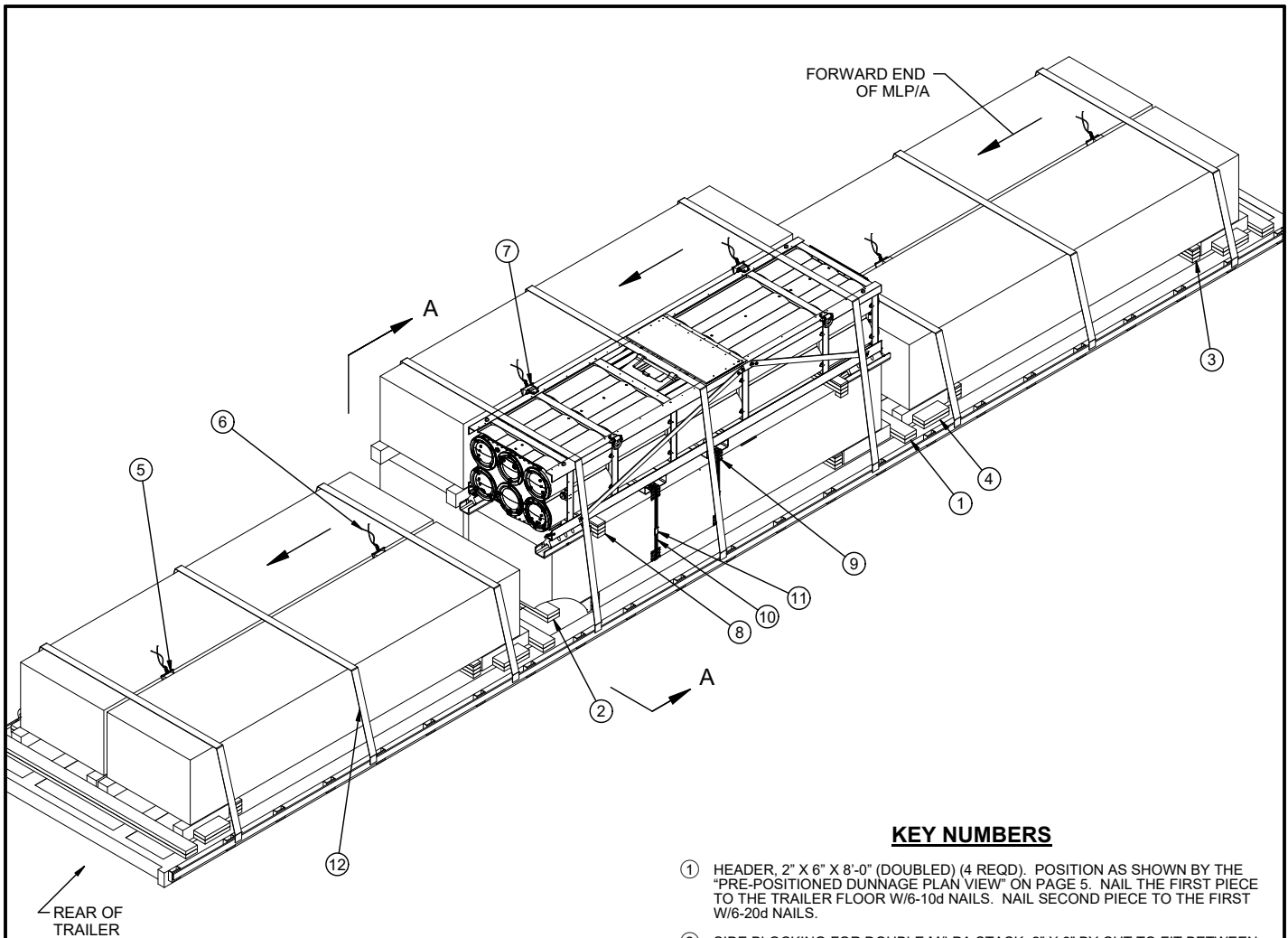
- 1. ADDING NEW WEIGHTS FOR THE M/LPA IN THE GENERAL NOTES IN EACH "LOAD AS SHOWN".
- 2. ADDING "CAUTION" NOTE FOR THE LOAD ON PAGE 8 (9-UNIT LOAD), AND ADJUSTING LOAD LOCATION DIMENSIONS.

REVISION NO. 3, DATED MARCH 2004, CONSISTS OF:

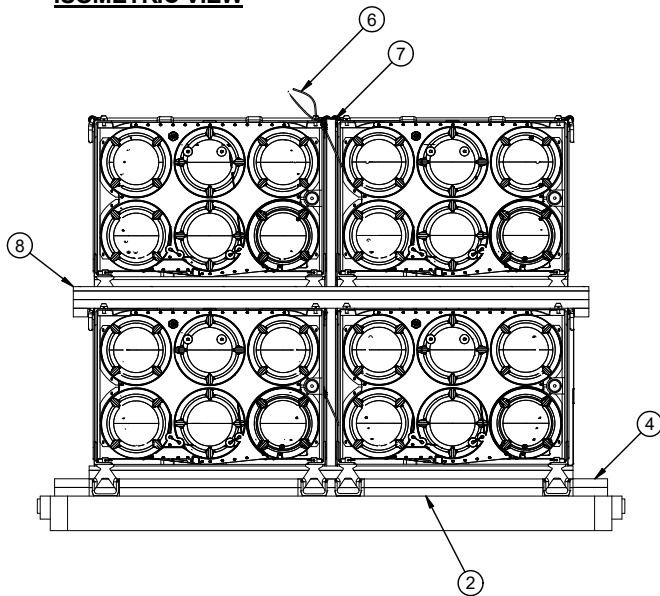
- 1. ADDING NEW WEIGHTS FOR M/LPA'S.
- 2. UPDATING DRAWING FORMAT.
- 3. ADDING PROCEDURES FOR THE USE OF WEB STRAPS.
- 4. DELETING 9-UNIT LOAD (OVERWEIGHT).

REVISION NO. 4, DATED MAY 2023, CONSISTS OF:

- 1. ADDING A LOAD FOR 12 EMPTY M/LPA'S.
- 2. ADDING ITEMS TO THE CHART ABOVE.
- 3. UPDATING DRAWING FORMAT.



ISOMETRIC VIEW

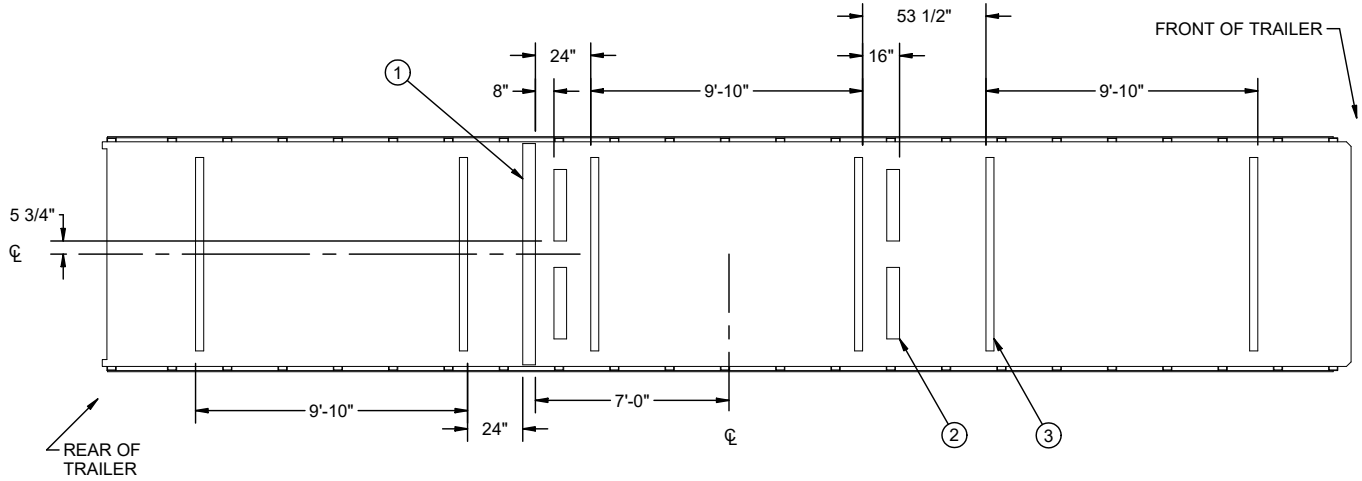


SECTION A-A

STRAPPING OMITTED FOR CLARITY PURPOSES.

KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (DOUBLED) (4 REQD). POSITION AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL SECOND PIECE TO THE FIRST W/6-20d NAILS.
- ② SIDE BLOCKING FOR DOUBLE M/LPA STACK, 2" X 6" BY CUT TO FIT BETWEEN ASSEMBLY SKIDS (REF: 31") (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ SUPPORT A, 2" X 4" X 7'-0" (TRIPLED) AND 1" X 4" X 7'-0" (6 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST 2" X 4" PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND AND THIRD PIECES IN A LIKE MANNER. NAIL THE 1" X 4" PIECE TO THE THIRD 2" X 4" PIECE W/8-6d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.
- ④ SIDE BLOCKING FOR SINGLE M/LPA STACK, 2" X 6" X 12" (DOUBLED) (8 REQD). POSITION AGAINST AN ASSEMBLY SKID AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ ANTI-CHAFING PIECE, 2" X 4" X 35" (4 REQD). POSITION AS SHOWN AND WIRE TIE TO A VERTICAL FRAME MEMBER OF ONE ASSEMBLY AT TWO LOCATIONS.
- ⑥ TIE WIRE, .0800" DIA 18" LONG (12 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE ANTI-CHAFING PIECE AND A VERTICAL FRAME MEMBER OF AN UPPER AND LOWER ASSEMBLY OR AT TWO PLACES ON ONE ASSEMBLY, AS APPLICABLE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑦ ANTI-CHAFING, 2" X 4" X 65-1/2" (2 REQD). POSITION AS SHOWN AND WIRE TIE TO A VERTICAL FRAME MEMBER OF AN UPPER AND A LOWER ASSEMBLY IN ONE ASSEMBLY STACK.
- ⑧ SUPPORT B (2 REQD). SEE THE DETAIL ON PAGE 13.
- ⑨ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STEEL STRAPS AT POINTS OF CONTACT WITH THE M/LPA.
- ⑩ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 12'-5" LONG STEEL STRAPPING (4 REQD). SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 3.
- ⑪ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑫ WEB STRAP ASSEMBLY (9 REQD). POSITION TO EXTEND FROM A WINCH ON ONE SIDE OF THE TRAILER, OVER THE CONTAINERS, TO AN ATTACHMENT POINT ON THE OPPOSITE SIDE. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN" ON PAGE 15.



PRE-POSITIONED DUNNAGE PLAN VIEW

KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 4

SPECIAL NOTES:

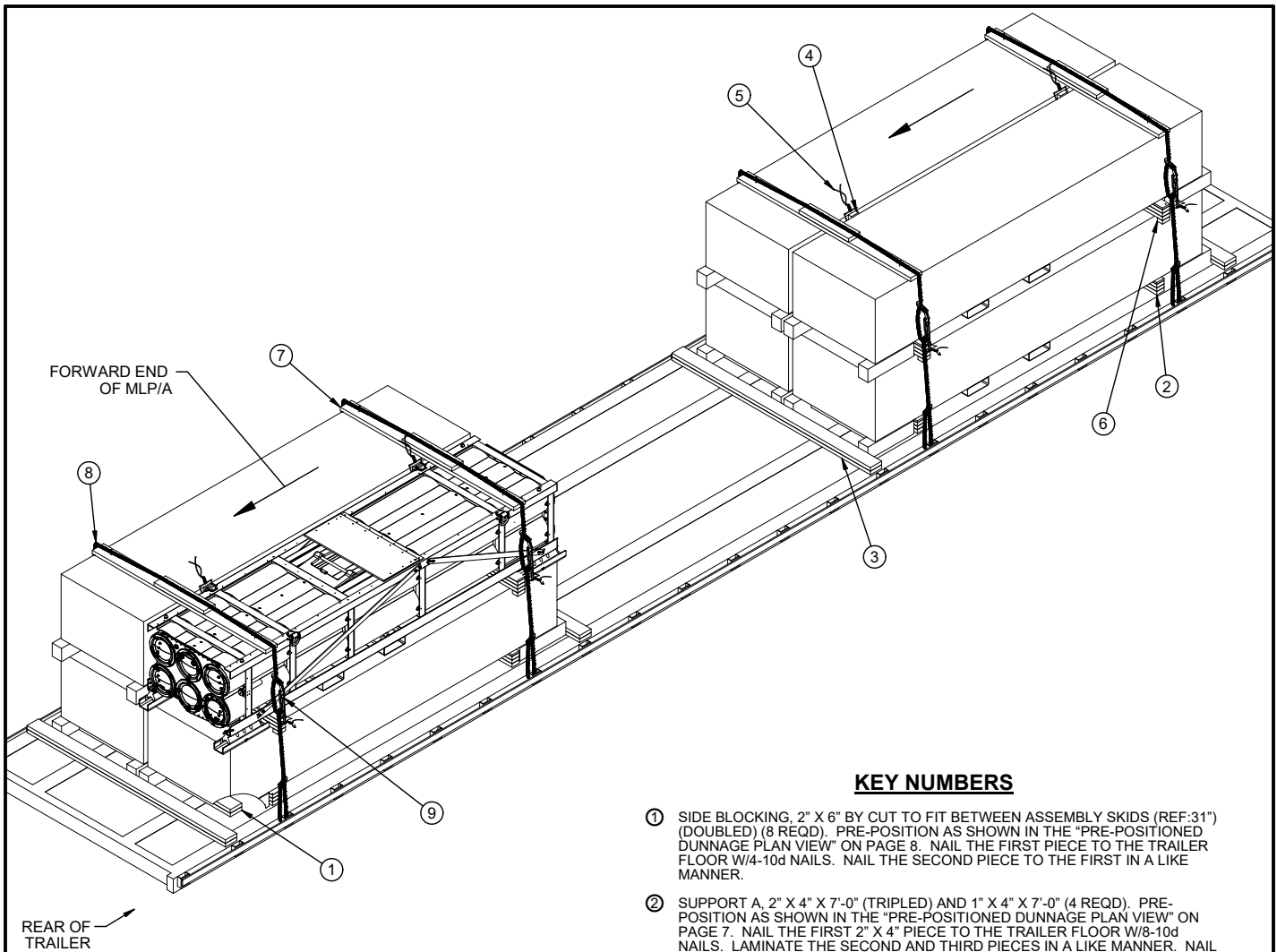
1. AN 8-UNIT LOAD IS SHOWN ON A 45'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. OTHER LENGTH AND WIDTH TRAILERS MAY BE USED.
2. ALL STRAPS AND SUPPORTS MUST BE INSTALLED NEAR THE STRONG POINTS OF VERTICALLY REINFORCED AREAS OF THE MLPAs AS SHOWN IN THE LOAD VIEW ON PAGE 4.
3. THE LOCATIONS FOR THE PRE-POSITIONED DUNNAGE PIECES ARE SPECIFIED IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ABOVE. ONE HEADER IS SHOWN IN THE VIEW AND ALL THE PRE-POSITIONED PIECES ARE TO BE LOCATED FROM THAT PIECE.
4. THE LOCATION DIMENSION FOR THE HEADER PIECE TO BE INSTALLED IS BASED ON THE USE OF A 45'-0" LONG TRAILER OF THE "WESTERN" TYPE, WHICH HAS THE REAR TANDEM LOCATED AT THE EXTREME REAR OF THE TRAILER. THESE LOCATION DIMENSIONS ARE NOT MANDATORY FOR USE AND MAY BE ADJUSTED TO SUIT.
5. THE DEPICTED LOAD CANNOT BE SHIPPED ON A 48'-0" LONG TRAILER WITHOUT EXCEEDING MAXIMUM WEIGHTS.
6. THE LOAD AS SHOWN IS BASED ON "BLOCK IA OR BLOCK II" MLPAs. WHEN SHIPPING "BLOCK I" MLPAs THE WEIGHT OF THE LADING WILL CHANGE. SEE THE WEIGHT CHART ON PAGE 3. IF AN ASSEMBLY IS EQUIPPED WITH AN OLDER STYLE SKID (4-3/8" HIGH) THE SUPPORT "A" AND "B" WILL CONSIST OF DOUBLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL. FOR ASSEMBLIES WITH THE NEWER STYLE SKID (5-9/16" HIGH) THE SUPPORTS "A" AND "B" WILL CONSIST OF TRIPLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. SEE THE DETAILS ON PAGES 6, 8, 10, AND 11 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.
8. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE WEB STRAPPING, REFER TO THE PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	72	24
2" X 3"	2	1
2" X 4"	251	168
2" X 6"	94	94
NAILS	NO. REQD	POUNDS
6d (2")	64	3/4
10d (3")	368	6-3/4
20d (4")	24	1
STEEL STRAPPING, 1-1/4" - - 50' REQD - - - 7 LBS		
SEAL FOR 1-1/4" STRAPPING - - 4 REQD - - - NIL		
WEB STRAP ASSEMBLY - - - - - 9 REQD		
WIRE, .0800" - - - - - 18' REQD - - 1/2 LBS		
ANTI-CHAFING MATERIAL - - - AS REQD - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	8	40,888 LBS*
DUNNAGE		585 LBS
TOTAL WEIGHT		41,473 LBS (APPROX)

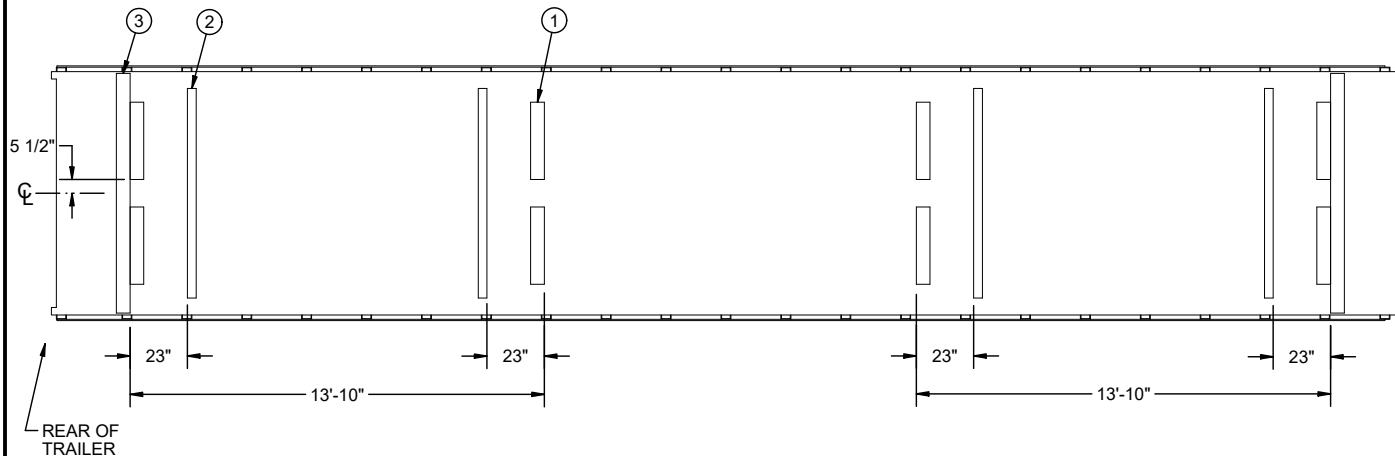
*SEE SPECIAL NOTE 5 ABOVE.



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY CUT TO FIT BETWEEN ASSEMBLY SKIDS (REF:31") (DOUBLED) (8 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 8. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ② SUPPORT A, 2" X 4" X 7'-0" (TRIPLED) AND 1" X 4" X 7'-0" (4 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 7. NAIL THE FIRST 2" X 4" PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND AND THIRD PIECES IN A LIKE MANNER. NAIL THE 1" X 4" PIECE TO THE THIRD PIECE W/8-6d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.
- ③ HEADER, 2" X 6" X 8'-0" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS.
- ④ ANTI-CHAFING PIECE, 2" X 4" X 65-1/2" (4 REQD). POSITION AS SHOWN AND WIRE TIE TO A LIFTING RING OF AN UPPER AND LOWER MLP/A IN ONE STACK.
- ⑤ TIE WIRE, .0800" DIA 18" LONG (8 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE ANTI-CHAFING PIECE AND A LIFTING RING OF AN UPPER AND LOWER MLP/A. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑥ SUPPORT B (4 REQD). SEE THE DETAIL ON PAGE 13.
- ⑦ STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 12.
- ⑧ CHAIN BINDING, 5/16", GRADE 70 BY A LENGTH TO SUIT (4 REQD). POSITION AS SHOWN. ATTACH TO A TRAILER STAKE POCKET, NOT A RUB RAIL. SEE THE "SPECIAL PROVISIONS FOR CHAIN TIEDOWN" ON PAGE 16.
- ⑨ LOAD BINDER, 5/16", OVER-CENTER TYPE (4 REQD, 1 PER CHAIN). WIRE TIE HANDLE TO PREVENT OPENING DURING TRANSPORT. FASTEN THE TENSIONED CHAIN TO THE CHAIN BOARD W/1-20d NAIL AT EACH END BY DRIVING EACH NAIL INTO THE PIECES THRU AN OPENING IN A CHAIN LINK AND BENDING IT OVER THE LINK.



PRE-POSITIONED DUNNAGE PLAN VIEW

KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 6

SPECIAL NOTES:

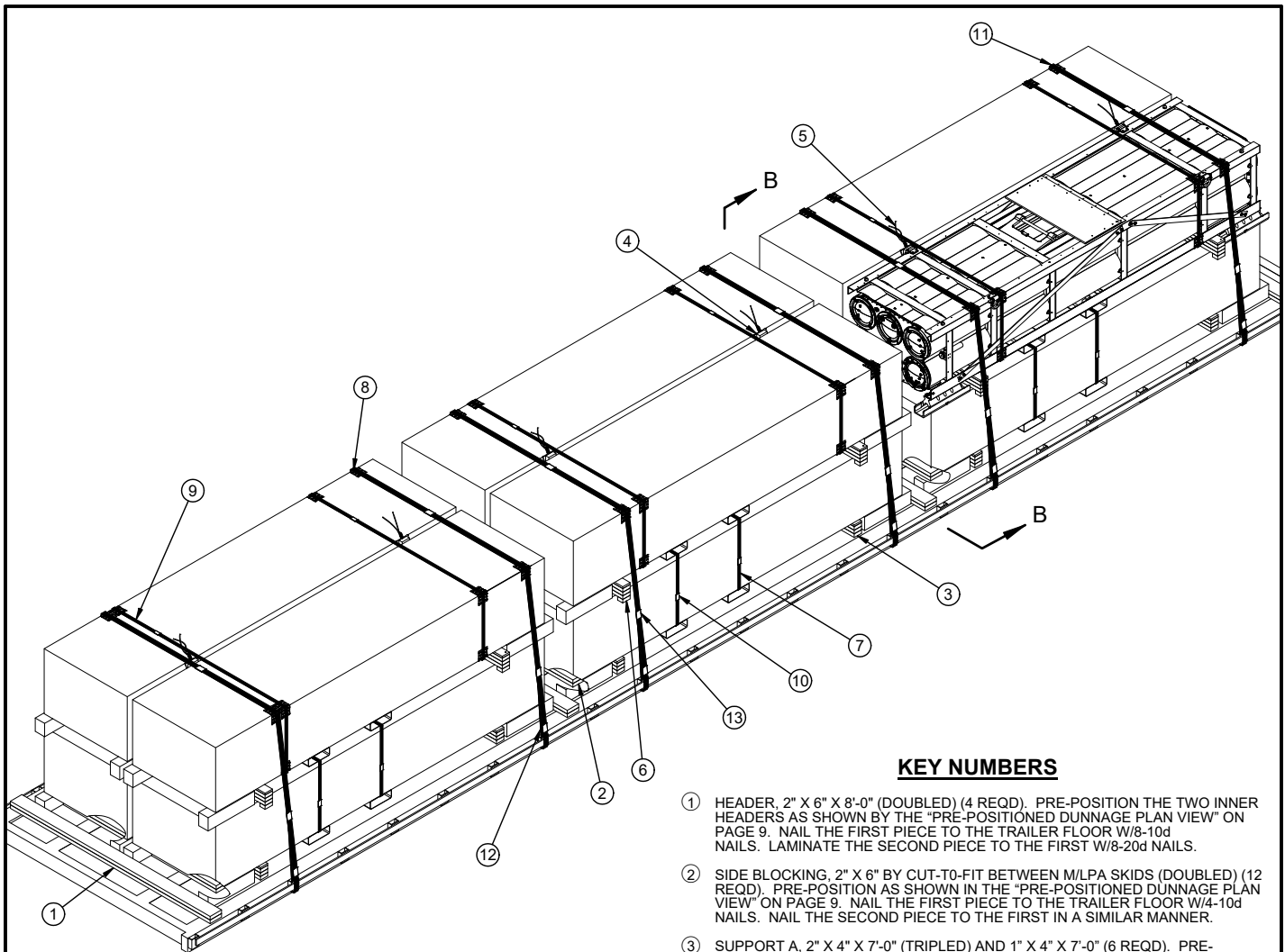
1. AN 8-UNIT LOAD IS SHOWN ON A 45'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. TRAILERS OF OTHER DIMENSIONS CAN BE USED.
2. ALL CHAINS AND SUPPORTS MUST BE INSTALLED NEAR THE STRONG POINTS OR VERTICALLY REINFORCED AREAS OF THE M/LPAs AS SHOWN IN THE LOAD VIEW ON PAGE 6.
3. THE LOCATION DIMENSIONS FOR THE SIDE BLOCKING, SUPPORT "A", AND HEADER PIECES IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ABOVE ARE BASED ON THE USE OF A 45'-0" LONG "WESTERN" STYLE TRAILER, WHICH HAS THE REAR TANDEM LOCATED AT THE EXTREME REAR OF THE TRAILER. THE AXLE DISTRIBUTION REQUIREMENTS SHOULD BE CHECKED BEFORE LOCATING THE PRE-POSITIONED DUNNAGE.
4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD CAN BE REDUCED BY TWO OR FOUR UNITS BY OMITTING THE TOP LAYER FROM ONE OR BOTH LOAD UNITS. SIX OR FIVE UNITS CAN BE LOADED BY COMBINING THE PROCEDURES FOR A LOAD UNIT OF FOUR SHOWN WITH THE PROCEDURES ON PAGES 10 OR 11, RESPECTIVELY.
5. THE LOAD AS SHOWN IS BASED ON "BLOCK IA OR BLOCK II" M/LPAs. WHEN SHIPPING "BLOCK I" M/LPAs THE WEIGHT OF THE LADING WILL CHANGE. SEE THE WEIGHT CHART ON PAGE 3. IF AN ASSEMBLY IS EQUIPPED WITH AN OLDER STYLE SKID (4-3/8" HIGH) THE SUPPORT "A" AND "B" WILL CONSIST OF DOUBLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL. FOR ASSEMBLIES WITH THE NEWER STYLE SKID (5-9/16" HIGH) THE SUPPORTS "A" AND "B" WILL CONSIST OF TRIPLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL.
6. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE CHAINS AND BINDERS, REFER TO THE PROCEDURES ON PAGES 4 AND 5 FOR GUIDANCE. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	58	20
2" X 3"	3	2
2" X 4"	243	163
2" X 6"	54	54
NAILS	NO. REQD	POUNDS
6d (2")	32	1/2
10d (3")	320	5
20d (4")	24	1
CHAIN BINDING, 5/16"	100' REQD	120 LBS
BINDER, LOAD	24 REQD	144 LBS
WIRE, .0800"	12' REQD	NIL
ANTI-CHAFING MATERIAL	AS REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	8	39,880 LBS*
DUNNAGE		598 LBS
TOTAL WEIGHT		40,478 LBS (APPROX)

*SEE SPECIAL NOTE 5 ABOVE.

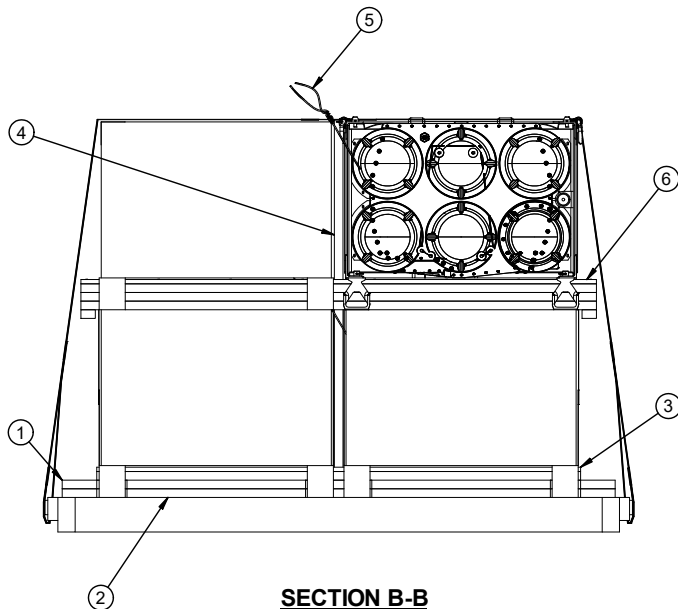


KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (DOUBLED) (4 REQD). PRE-POSITION THE TWO INNER HEADERS AS SHOWN BY THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 9. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-20d NAILS.
- ② SIDE BLOCKING, 2" X 6" BY CUT-TO-FIT BETWEEN M/LPA SKIDS (DOUBLED) (12 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 9. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A SIMILAR MANNER.
- ③ SUPPORT A, 2" X 4" X 7'-0" (TRIPLED) AND 1" X 4" X 7'-0" (6 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 9. NAIL THE FIRST 2" X 4" PIECE TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND AND THIRD PIECES IN A LIKE MANNER. NAIL THE 1" X 4" PIECE TO THE THIRD 2" X 4" PIECE W/8-6d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.
- ④ ANTI-CHAFING, 2" X 4" X 65-1/4" (6 REQD). POSITION AS SHOWN AND WIRE TIE TO A VERTICAL FRAME MEMBER OF ONE ASSEMBLY AT TWO LOCATIONS.
- ⑤ TIE WIRE, .0800" DIA 18" LONG (12 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE ANTI-CHAFING PIECE AND A LIFTING RING OF AN UPPER AND LOWER M/LPA. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑥ SUPPORT B (6 REQD). SEE THE "SUPPORT B" DETAIL ON PAGE 13.
- ⑦ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 12'-5" LONG STEEL STRAPPING (12 REQD). SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 3.
- ⑧ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STEEL STRAPS AND HOLD-DOWN STRAPS AT POINTS OF CONTACT WITH THE M/LPA.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" OR .029" X 18'-6" LONG STEEL STRAPPING (6 REQD). INSTALL SO AS TO ENCIRCLE LATERALLY ADJACENT M/LPAs IN THE TOP LAYER AS SHOWN.
- ⑩ SEAL FOR 1-1/4" STRAPPING (18 REQD). NOTCH EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.
- ⑪ HOLD-DOWN STRAP, 2" X .050" OR .044" X 27'-6" LONG STEEL STRAPPING (6 REQD). INSTALL EACH STRAP FROM TWO 13'-9" LONG PIECES. DO NOT OVERTENSION THE HOLD-DOWN STRAP.
- ⑫ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (12 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP AND THE TRAILER STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 14. ALT: STAKE POCKET PROTECTOR (24 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 14.
- ⑬ SEAL FOR 2" STEEL STRAPPING (30 REQD, 5 PER STRAP). NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 12.

REAR OF TRAILER

ISOMETRIC VIEW



SECTION B-B

STRAPPING OMITTED FOR CLARITY PURPOSES.

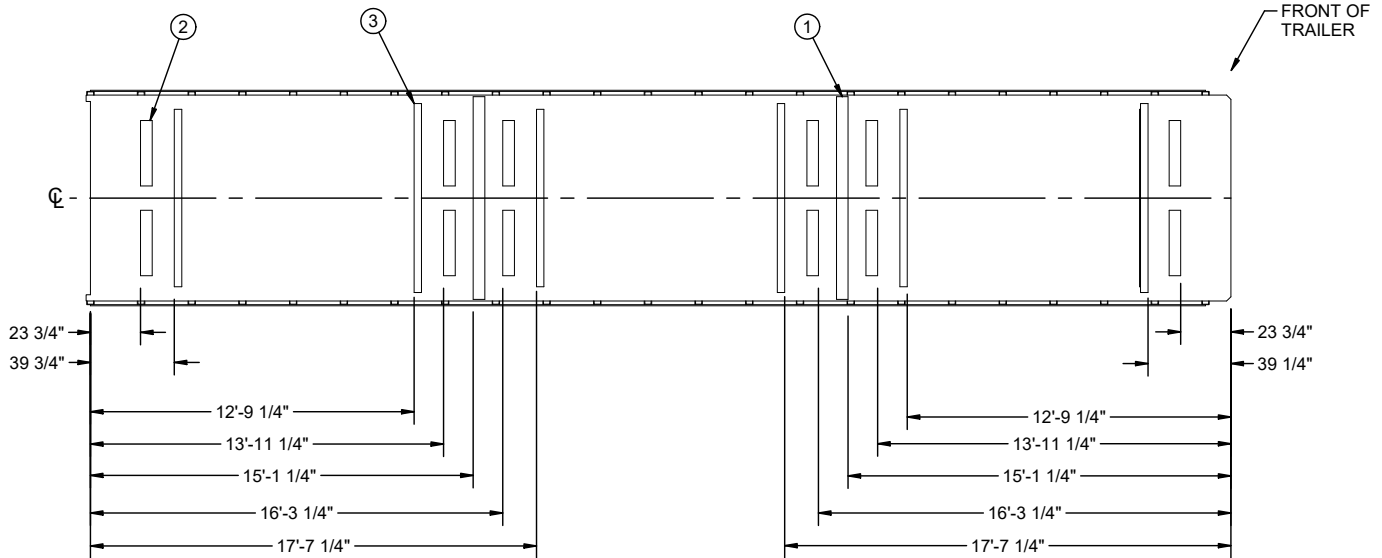
SPECIAL NOTES:

1. A 12-UNIT LOAD (EMPTY) IS SHOWN ON A 45'-0" LONG BY 8'-6" WIDE FLATBED TRAILER. OTHER LENGTH AND WIDTH TRAILERS MAY BE USED.
2. ALL STRAPS AND SUPPORTS MUST BE INSTALLED NEAR THE STRONG POINTS OR VERTICALLY REINFORCED AREAS OF THE MLPAs AS SHOWN IN THE LOAD VIEWS ON PAGE 8.
3. THE DIMENSIONS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" BELOW ARE BASED UPON THE LOAD SIDE OF THE HEADERS BEING LOCATED 15" FROM THE END OF THE TRAILER.
4. PRE-POSITION THE INSIDE HEADERS, THE SIDE BLOCKING PIECES AND THE SUPPORT "A" PIECES AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" BELOW.
5. THE LOAD AS SHOWN IS BASED ON "BLOCK IA OR BLOCK II" MLPAs. WHEN SHIPPING "BLOCK I" MLPAs THE WEIGHT OF THE LADING WILL CHANGE. SEE THE WEIGHT CHART ON PAGE 3. IF AN ASSEMBLY IS EQUIPPED WITH AN OLDER STYLE SKID (4-3/8" HIGH) THE SUPPORT "A" AND "B" WILL CONSIST OF DOUBLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL. FOR ASSEMBLIES WITH THE NEWER STYLE SKID (5-9/16" HIGH) THE SUPPORTS "A" AND "B" WILL CONSIST OF TRI-PLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL.

(SPECIAL NOTES CONTINUED)

6. DO NOT PRE-POSITION THE FRONT AND REAR HEADERS. INSTALL THESE HEADERS AFTER THE MLPAs HAVE BEEN LOADED. PLACE THESE HEADERS TIGHT AGAINST THE MLPAs SKIDS.
7. THE DEPICTED LOAD CAN BE REDUCED OR INCREASED TO SUIT THE QUANTITY TO BE SHIPPED. SEE THE DETAILS ON PAGES 4, 6, 10 AND 11 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.
8. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE STEEL HOLD-DOWN STRAPS, REFER TO THE PROCEDURES ON PAGES 4 AND 5 FOR GUIDANCE. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE.

(CONTINUED AT RIGHT)



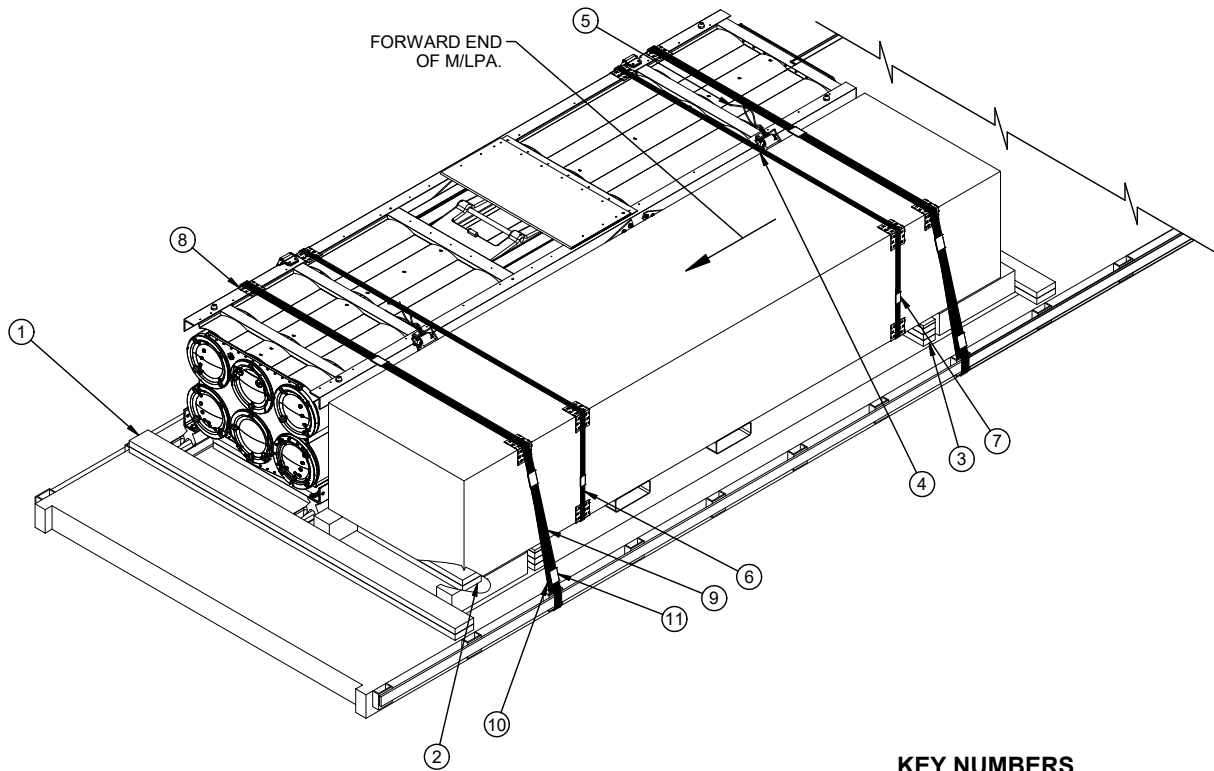
PRE-POSITIONED DUNNAGE PLAN VIEW

KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 8

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	87	29
2" X 3"	4	1
2" X 4"	293	195
2" X 6"	127	127
NAILS	NO. REQD	POUNDS
6d (2")	96	3/4
10d (3")	320	5
20d (4")	32	1-1/4
STEEL STRAPPING, 1-1/4" - 351' REQD - - - 50 LBS		
SEAL FOR 1-1/4" STRAPPING - 18 REQD - - - 1 LB		
STEEL STRAPPING, 2" - - - 183' REQD - - - 61 LBS		
SEAL FOR 2" STRAPPING - - - 30 REQD - - - 6 LBS		
ANTI-CHAFING MATERIAL - - - AS REQD - - - NIL		
WIRE, .0800" DIAMETER - - 18' REQD - - - 1/2 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
EMPTY M/LPA	12	19,728 LBS
DUNNAGE		827 LBS
TOTAL WEIGHT		20,555 LBS (APPROX)



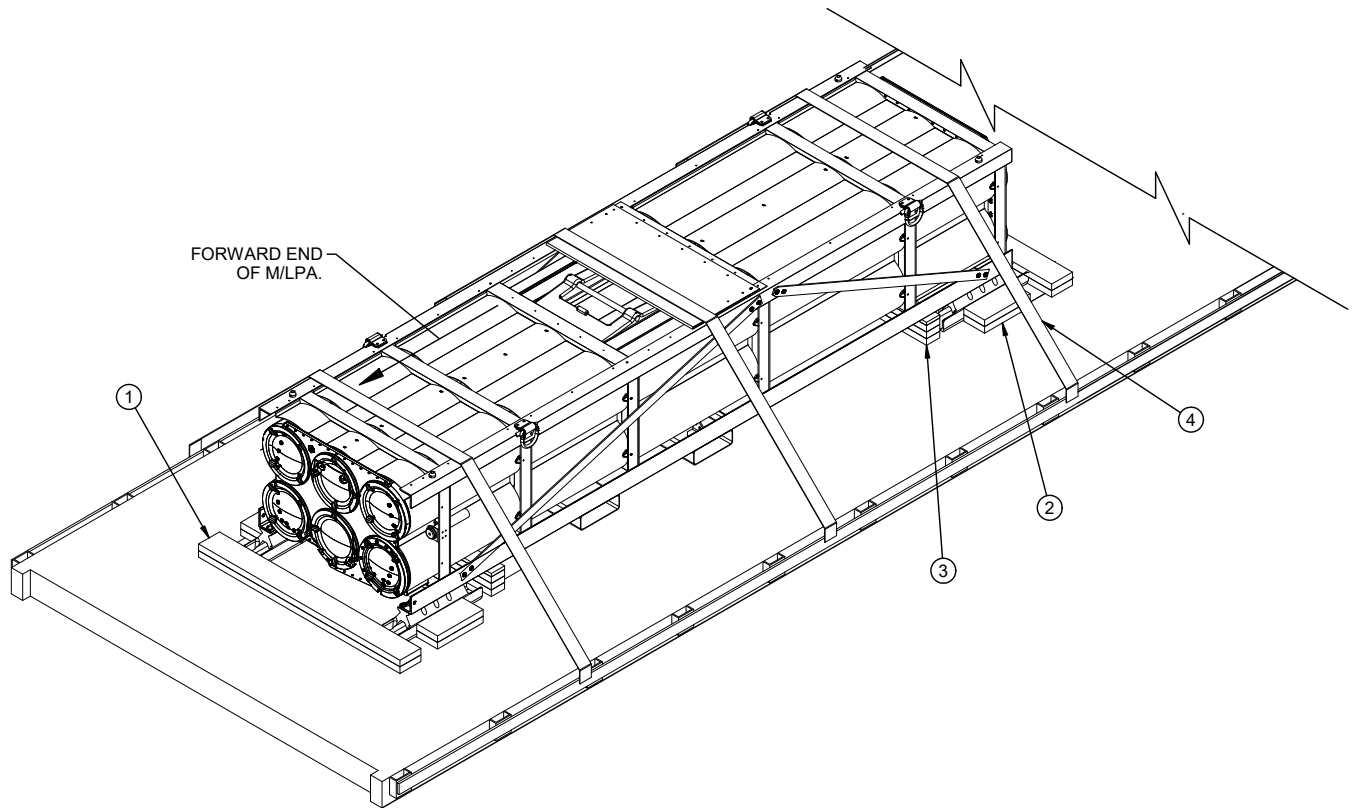
ISOMETRIC VIEW

KEY NUMBERS

- ① HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/6-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-20d NAILS.
- ② SIDE BLOCKING, 2" X 6" BY CUT-TO-FIT BETWEEN M/LPA SKIDS (REF: 31") (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A SIMILAR MANNER.
- ③ SUPPORT A, 2" X 4" X 7'-0" (TRIPLED) AND 1" X 4" X 7'-0" (2 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 9. NAIL THE FIRST 2" X 4" TO THE TRAILER FLOOR W/8-10d NAILS. LAMINATE THE SECOND AND THIRD PIECES IN A LIKE MANNER. NAIL THE 1" X 4" TO THE TOP 2" X 4" W/8-6d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.
- ④ ANTI-CHAFING PIECE, 2" X 4" X 32-1/2" (2 REQD). POSITION AS SHOWN AND WIRE TIE TO A VERTICAL FRAME MEMBER OF ONE M/LPA AT TWO LOCATIONS.
- ⑤ TIE WIRE, .0800" DIA, 18" LONG (4 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE ANTI-CHAFING PIECE AND A VERTICAL FRAME MEMBER OF AN M/LPA AT TWO PLACES. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑥ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 21'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE LATERALLY ADJACENT M/LPAs AS SHOWN.
- ⑦ SEAL FOR 1-1/4" STEEL STRAPPING (2 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL.
- ⑧ ANTI-CHAFING NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STEEL STRAPS AT POINTS OF CONTACT WITH THE M/LPA.
- ⑨ HOLD-DOWN STRAP, 2" X .050" OR .044" X 22'-0" LONG STEEL STRAPPING (2 REQD). INSTALL EACH STRAP FROM ONE PIECE OF STRAPPING. ANCHOR A STRAP TO A TIE-DOWN FACILITY ON ONE SIDE OF THE TRAILER. RUN IT OVER THE LOAD, PASS IT THROUGH A TIE-DOWN FACILITY ON THE OPPOSITE SIDE OF THE TRAILER AND BRING IT BACK UP ABOVE THE TRAILER FLOOR WHERE IT CAN BE TENSIONED AND SEALED.
- ⑩ PAD, 2" X .050" OR .044" X 18" LONG STEEL STRAPPING (4 REQD). POSITION BETWEEN THE HOLD-DOWN STRAP AND THE TRAILER STAKE POCKET AND SEAL TO THE HOLD-DOWN STRAP. SEE "DETAIL A" ON PAGE 14. ALT: STAKE POCKET PROTECTOR (8 REQD). USE TWO UNDER EACH ANCHORING FACILITY WITH A HOLD-DOWN STRAP. SEE "DETAIL B" ON PAGE 14.
- ⑪ SEAL FOR 2" STEEL STRAPPING (10 REQD, 5 PER STRAP). DOUBLE NOTCH EACH SEAL, EXCEPT THOSE USED TO SECURE THE PADS.

SPECIAL NOTES:

1. A TWO-UNIT LTL LOAD IS SHOWN ON AN 8'-0" WIDE FLATBED TRAILER. OTHER WIDTH TRAILERS MAY BE USED.
2. ALL STRAPS AND SUPPORTS MUST BE INSTALLED NEAR THE STRONG POINTS OR VERTICALLY REINFORCED AREAS OF THE M/LPA AS SHOWN ABOVE.
3. THE LOAD AS SHOWN IS BASED ON "BLOCK IA OR BLOCK II" M/LPAs. IF AN ASSEMBLY IS EQUIPPED WITH AN OLDER STYLE SKID (4-3/8" HIGH) THE SUPPORT "A" AND "B" WILL CONSIST OF DOUBLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL FOR ASSEMBLIES WITH THE NEWER STYLE SKID (5-9/16" HIGH) THE SUPPORTS "A" AND "B" WILL CONSIST OF TRIPLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL.
4. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE WEB STRAPPING, REFER TO THE PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE. IF WEB STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 4 AND 5 FOR GUIDANCE.
5. THE DEPICTED LOAD CAN BE INCREASED OR REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. SEE THE DETAILS ON PAGES 4, 6, 8, AND 11 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.

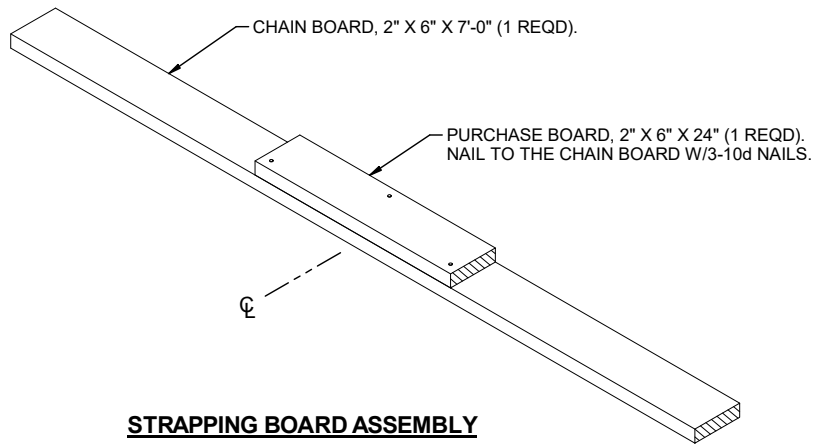


KEY NUMBERS

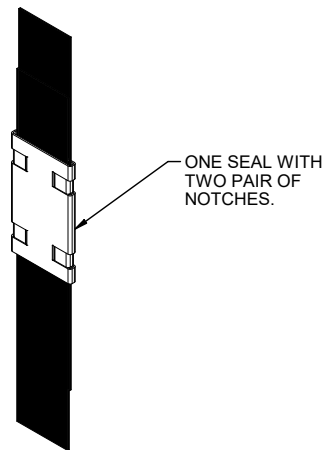
- ① HEADER, 2" X 6" X 53" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/4-20d NAILS.
- ② SIDE BLOCKING, 2" X 6" X 12" (DOUBLED) (4 REQD). POSITION AGAINST AN M/LPA SKID AND NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/3-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A SIMILAR MANNER.
- ③ SUPPORT A, 2" X 4" X 42" (TRIPLED) AND 1" X 4" X 42" (2 REQD). PRE-POSITION AS SHOWN IN THE "PRE-POSITIONED DUNNAGE PLAN VIEW" ON PAGE 5. NAIL THE FIRST 2" X 4" TO THE TRAILER FLOOR W/4-10d NAILS. LAMINATE THE SECOND AND THIRD PIECES IN A LIKE MANNER. NAIL THE 1" X 4" TO THE TOP 2" X 4" W/4-6d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.
- ④ WEB STRAP ASSEMBLY (3 REQD). POSITION TO EXTEND FROM A WINCH ON ONE SIDE OF THE TRAILER, OVER THE CONTAINERS, TO AN ATTACHMENT POINT ON THE OPPOSITE SIDE. SEE THE "SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN" ON PAGE 15.

SPECIAL NOTES:

1. A ONE-UNIT LTL LOAD IS SHOWN ON AN 8'-0" WIDE FLATBED TRAILER. OTHER WIDTH TRAILERS MAY BE USED.
2. ALL STRAPS AND SUPPORTS MUST BE INSTALLED NEAR THE STRONG-POINTS OR VERTICALLY REINFORCED AREAS OF THE M/LPA AS SHOWN ABOVE.
3. THE LOAD AS SHOWN IS BASED ON "BLOCK IA OR BLOCK II" M/LPAs. IF AN ASSEMBLY IS EQUIPPED WITH AN OLDER STYLE SKID (4-3/8" HIGH) THE SUPPORT "A" AND "B" WILL CONSIST OF DOUBLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL. FOR ASSEMBLIES WITH THE NEWER STYLE SKID (5-9/16" HIGH), THE SUPPORTS "A" AND "B" WILL CONSIST OF TRIPLED 2" X 4" MATERIAL AND ONE THICKNESS OF 1" X 4" MATERIAL.
4. IF CHAINS AND LOAD BINDERS ARE TO BE USED FOR LOAD SECUREMENT IN LIEU OF THE WEB STRAPPING, REFER TO THE PROCEDURES ON PAGES 6 AND 7 FOR GUIDANCE. IF STEEL STRAPS ARE TO BE USED FOR LOAD SECUREMENT, REFER TO THE PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE.
5. THE DEPICTED LOAD CAN BE INCREASED TO SUIT THE QUANTITY TO BE SHIPPED. SEE THE DETAILS ON PAGES 4, 6, 8, AND 10 FOR OTHER LOADING CONFIGURATIONS AND QUANTITIES.

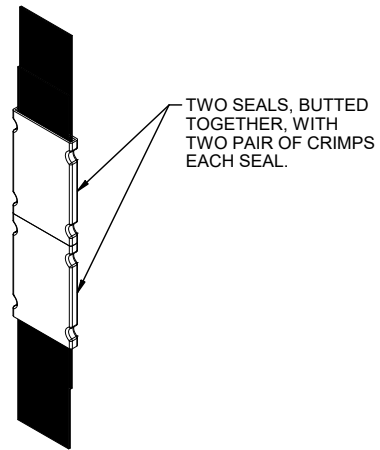


STRAPPING BOARD ASSEMBLY



STRAP JOINT A

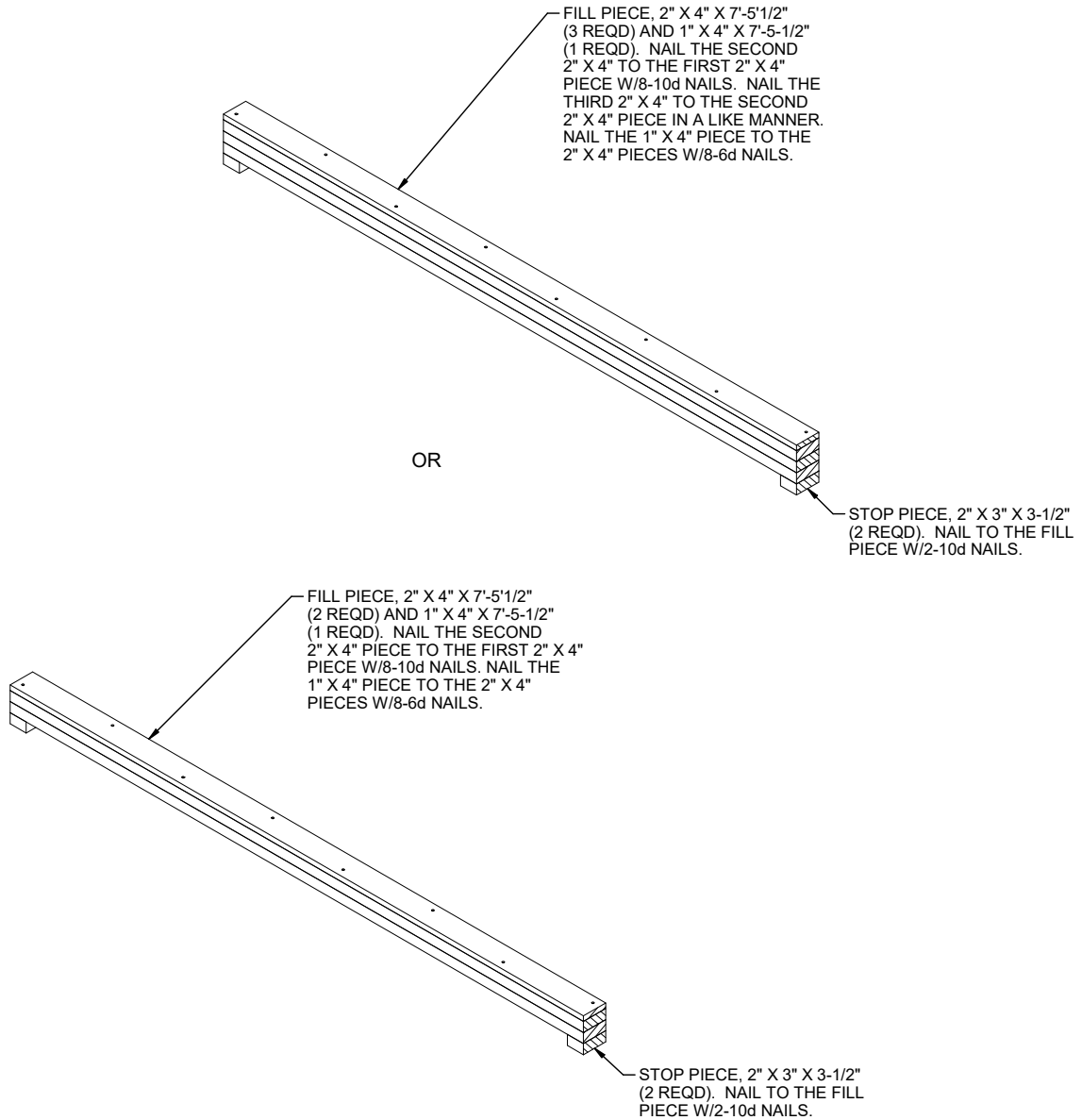
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

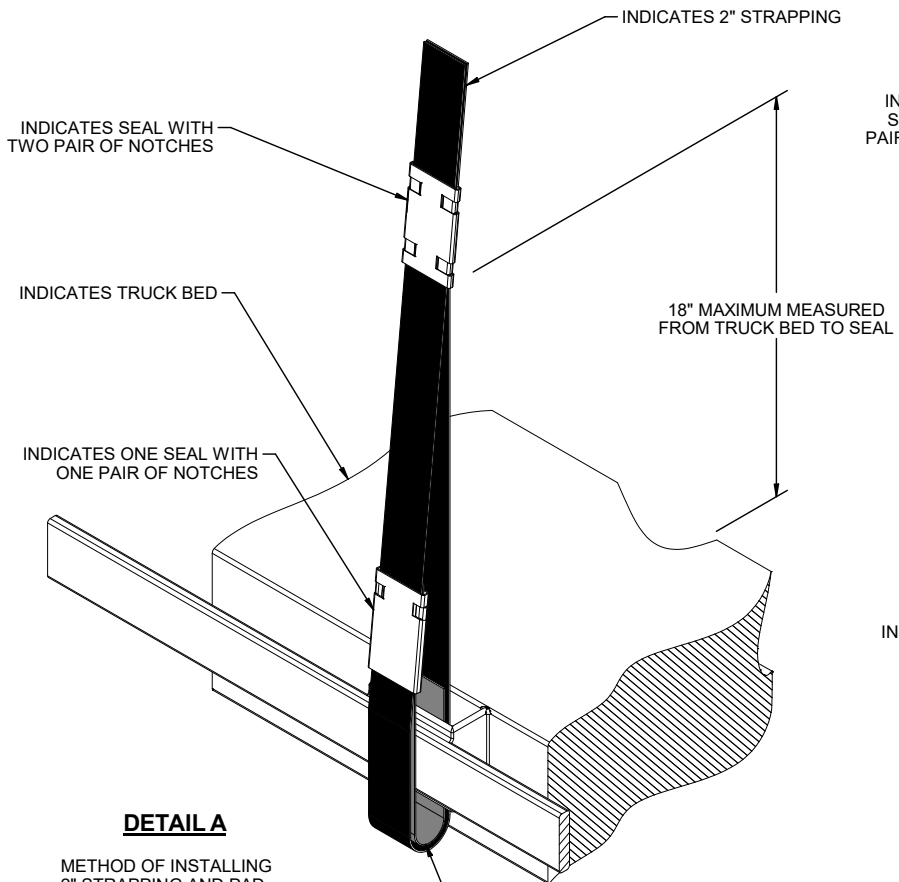
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



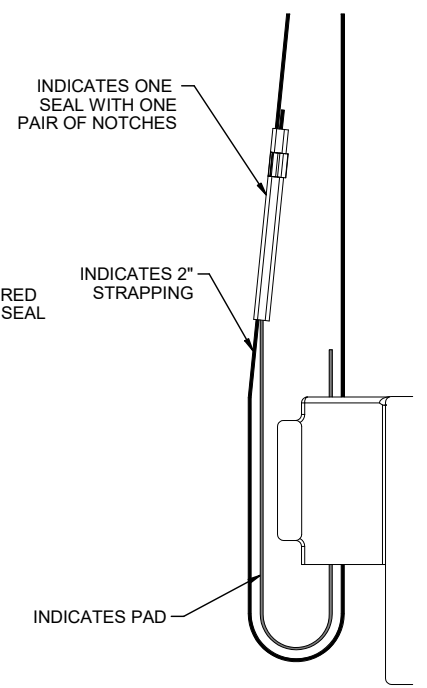
SUPPORT B

TWO VARIATIONS OF "SUPPORT B" ASSEMBLIES HAVE BEEN SHOWN. THE SUPPORT "B" ASSEMBLIES MAY REQUIRE THICKNESS ADJUSTMENTS TO COMPENSATE FOR VARIATIONS IN THE SKID HEIGHT AND INSURE A POSITIVE INTERLOCK BETWEEN THE PINS ON THE TOP OF THE FRAME OF A LOWER ASSEMBLY AND THE HOLE IN THE BOTTOM OF THE SKIDS OF AN UPPER ASSEMBLY IN A STACK ON A TRANSPORT VEHICLE. THE THICKNESS WILL BE BASED ON THE MEASURED DISTANCE BETWEEN THE LOWER FRAME MEMBER OF AN UPPER POD AND THE UPPER FRAME OF A LOWER POD. THE SUPPORT THICKNESS MUST BE EQUAL TO OR NOT MORE THAN ONE-QUARTER INCH LESS THAN THE MEASURED DISTANCE. THE SUPPORT ASSEMBLY WILL BE CONSTRUCTED USING APPROPRIATE THICKNESSES OF NOMINAL LUMBER OR NOMINAL LUMBER AND 3-1/2" WIDE PLYWOOD STRIPS. NAIL THE PLYWOOD STRIPS TO THE NOMINAL LUMBER WITH 8-6d NAILS.

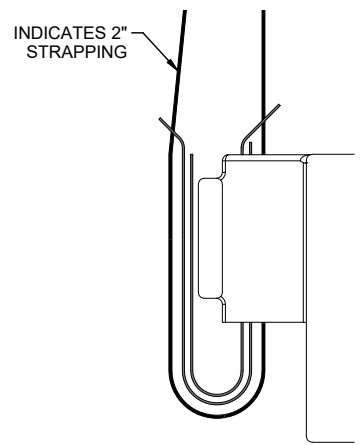


DETAIL A

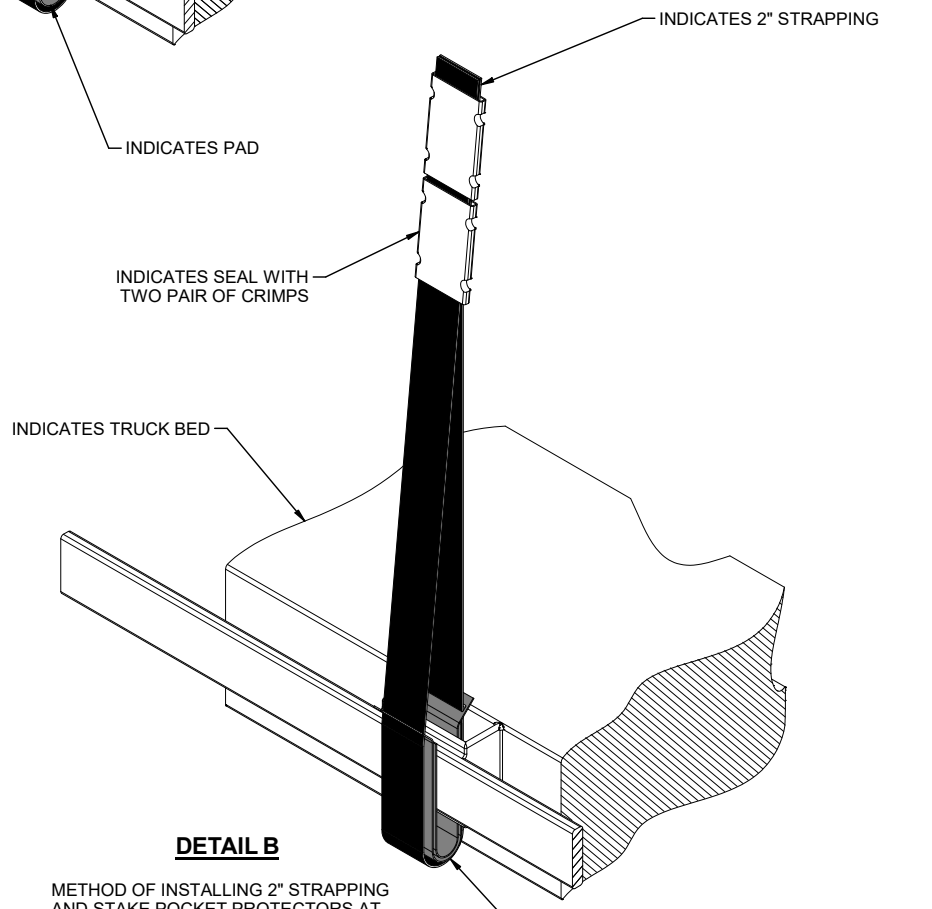
METHOD OF INSTALLING 2" STRAPPING AND PAD AT ANCHORING FACILITY.



PAD SIDE VIEW DETAIL A



POCKET PROTECTOR SIDE VIEW DETAIL B



DETAIL B

METHOD OF INSTALLING 2" STRAPPING AND STAKE POCKET PROTECTORS AT ANCHORING FACILITY (ALT PAD).

TWO STAKE POCKET PROTECTORS UNDER EACH ANCHORING FACILITY. SEE "POCKET PROTECTOR SIDE VIEW DETAIL B" AT LEFT.

STAKE POCKET STRAP DETAILS

SPECIAL PROVISIONS FOR WEB STRAP TIEDOWN

LADING MAY BE SECURED TO A FLATBED TRAILER BY WEB STRAP ASSEMBLIES IN LIEU OF STEEL STRAPPING OR CHAINS AND LOAD BINDERS, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

1. ONLY WEB STRAPS OF GOOD QUALITY WILL BE USED. ALL WEB STRAPS AND ASSOCIATED HARDWARE SHALL CONFORM TO THE WEB SLING & TIEDOWN ASSOCIATION RECOMMENDED STANDARD SPECIFICATION FOR SYNTHETIC WEB TIEDOWNS, WSTDA-T-1, REVISED 2005.
2. ALL WEB STRAP TIEDOWN ASSEMBLIES SHALL BE PERMANENTLY LABELED WITHIN 18" OF ONE END TO SHOW:
 - A. NAME OR TRADEMARK OF MANUFACTURER
 - B. WORKING LOAD LIMIT (WLL)
3. WEB STRAP ASSEMBLY MINIMUM BREAKING STRENGTH WILL BE AT LEAST THREE TIMES THE WLL MARKED ON THE STRAP.
4. THE TOTAL MINIMUM BREAKING STRENGTH (MBS) OF THE STRAPS USED TO RESTRAIN AMMUNITION ITEMS WILL BE AT LEAST 1-1/2 TIMES THE TOTAL WEIGHT OF THE ITEMS, WITH A MINIMUM OF TWO STRAPS POSITIONED OVER EACH LOAD UNIT ON A TRAILER. THE CARRIER SHALL PROVIDE WRITTEN PROOF OF THE MBS OF THE STRAPS TO THE SHIPPING ACTIVITY IF REQUESTED.
5. CARRIERS MUST COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS APPLICABLE TO CARGO RESTRAINT USING WEB STRAPS.
6. WHEN USING STRAPS AND WINCHES FOR CARGO RESTRAINT, THE STRAPS WILL BE TENSIONED UNTIL TIGHT WITHOUT CAUSING DAMAGE TO THE CARGO. ONLY WINCH BARS WILL BE USED FOR OPERATING THE STRAP WINCHES.
7. BEFORE AND DURING INSTALLATION, THE WEB STRAP ASSEMBLIES SHALL BE INSPECTED FOR DEFECTS. STRAPS HAVING ANY OF THE FOLLOWING DEFECTS WILL NOT BE USED FOR THE RESTRAINT OF ANY AMMUNITION LOAD, WITH THE EXCEPTION OF ONE WITH FRAYED ENDS. A STRAP HAVING FRAYED ENDS CAN BE USED IF THE FRAYED END IS TRIMMED AND MELTED WITH HEAT OR FLAME UNTIL ALL STRANDS ARE SEIZED.
 - A. STRAP ASSEMBLY HARDWARE: SHALL BE INSPECTED FOR BENT HOOKS, GOUGES, CORROSION, SIGNS OF REPAIR, BENT RATCHETS OR WINCHES, WEAR, OR ANY OTHER NOTICEABLE DEFECTS.
 - B. STRAP WEBBING: SHALL BE INSPECTED FOR KNOTS, EXCESSIVE ABRASIVE WEAR, TEARS, PUNCTURES, CUTS, ACID OR CAUSTIC BURNS, BROKEN STITCHES, FRAYED ENDS, OIL OR GREASE SPOTS EXCEEDING 6 SQUARE INCHES, BLEACHING OF COLOR, INCREASED STIFFNESS, SPLICES, VISIBLE WEAR INDICATOR THREADS, OR ANY OTHER NOTICEABLE DEFECTS.
8. RATCHET HANDLES MUST BE IN THE LOCKED POSITION AND/OR WINCH LOCKING DEVICES MUST BE FULLY SEATED IN THE TEETH OF THE WINCH.
9. IF THE WINCHES BEING USED ARE THE REMOVABLE TYPE HAVING BOLTS FOR ATTACHMENT TO THE TRAILER, CARE MUST BE EXERCISED WHEN ATTACHING THE WINCHES TO THE TRAILER. IF EXCESSIVE FORCE IS EXERTED ON THE BOLT DURING TENSIONING, DEFORMATION OF THE WINCH BRACKET MAY OCCUR, AND SUBSEQUENTLY CAUSE FAILURE OF THE WINCH BRACKET DURING TRANSPORT. WINCHES MUST BE FASTENED TO THE TRAILER WITH A MINIMUM OF TWO BOLTS.
10. DRIVERS MUST BE INSTRUCTED TO PERIODICALLY CHECK THE TIGHTNESS OF THE WEB STRAP ASSEMBLIES AND RE-TIGHTEN, IF NECESSARY.
11. IF PROVIDED ON OR WITH THE WEB STRAP ASSEMBLIES, SCUFF SLEEVES/WEB PROTECTORS WILL BE USED WHEREVER THE STRAP PASSES OVER A SHARP CORNER OR IRREGULAR SURFACE. IF NOT PROVIDED, ANTI-CHAFING MATERIAL OF A SUITABLE THICKNESS WILL BE USED TO ENSURE THAT THE STRAP WEBBING IS NOT DAMAGED DURING TRANSPORT OF THE LOAD.
12. THE HARDWARE FITTING OF THE TIEDOWN ASSEMBLIES MUST BE ATTACHED TO THE TRAILER IN SUCH A MANNER THAT THEY WILL REMAIN IN PLACE IF SLACK DEVELOPS IN THE STRAP DURING TRANSPORT.

SPECIAL PROVISIONS FOR CHAIN TIEDOWN

LADING MAY BE SECURED TO THE FLATBED TRAILER BY CARRIER-OWNED CHAINS AND LOAD BINDERS IN LIEU OF SPECIFIED STRAPPING, PROVIDED THE FOLLOWING CONDITIONS ARE MET AND THE PROCEDURES CONTAINED ON PAGES 7 AND 8 ARE FOLLOWED.

1. ONLY CHAINS AND LOAD BINDERS OF GOOD QUALITY WILL BE USED. ALL CHAINS AND LOAD BINDERS SHALL CONFORM TO THE NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED APRIL 2010.
2. ALL CHAINS SHALL BE MARKED AS PRESCRIBED BY THE NATIONAL ASSOCIATION OF CHAIN MANUFACTURER'S WELDED CHAIN SPECIFICATION ADOPTED NOVEMBER 1999. AT LEAST ONE LINK IN EVERY 36 LINKS SHALL CARRY THE MANUFACTURER'S PERMANENT AND DISTINCTIVE MARK IDENTIFYING THE GRADE OF CHAIN. CHAINS NOT MARKED IN THIS MANNER SHALL NOT BE USED. IN ADDITION TO THE GRADE MARKING, THE CHAIN MAY ALSO CARRY LETTER MARKINGS OR SYMBOLS IDENTIFYING THE CHAIN MANUFACTURER. THE PRESENCE OF THE MANUFACTURER'S IDENTIFICATION MARKING IS NOT MANDATORY.
3. BEFORE AND DURING INSTALLATION, THE CHAINS AND LOAD BINDERS SHALL BE INSPECTED FOR BENT HOOKS, STRETCH, GOUGES, BENT LINKS, WEAR, OR ANY OTHER NOTICEABLE DEFECTS. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER. CHAINS MUST NOT BE TWISTED DURING INSTALLATION. **CAUTION:** EXTREME CARE MUST BE EXERCISED WHEN TENSIONING CHAINS TO PREVENT DAMAGE OR PERMANENT DEFORMATION TO THE LADING.
4. CHAIN SIZES AND GRADES APPROVED FOR USE WITH FLATBED TRAILER LOADS ARE AS FOLLOWS:
 - A. 3/8", GRADE 43 HIGH TEST CHAIN
 - B. 5/16", GRADE 70 TRANSPORT CHAIN
 - C. 3/8", GRADE 70 TRANSPORT CHAIN
 - D. 5/16", GRADE 80 ALLOY STEEL CHAIN
 - E. 3/8", GRADE 80 ALLOY STEEL CHAIN
5. THE GRABHOOKS ON THE ENDS OF THE CHAIN MAY BE OF THE FOLLOWING TYPES WITH GRADE MARKINGS AS INDICATED.
 - A. CLEVIS GRABHOOKS, 3/8" SIZE, DO NOT REQUIRE GRADE MARKING. ALLOY GRABHOOKS, 5/16" SIZE, SHALL CARRY THE MANUFACTURER'S GRADE MARK OF 7, 70, OR 700. THE HOOKS SHALL BE USED ON THE APPROPRIATE SIZE CHAIN.
 - B. CLOSED EYE GRABHOOKS, 3/8" AND 5/16" SIZE, MAY BE USED ON THE APPROPRIATE SIZE CHAIN IF THEY ARE A PART OF A CHAIN ASSEMBLY WHICH WAS PROVIDED BY A CHAIN MANUFACTURER, AND THE CHAIN ASSEMBLY CARRIES THE CORRECT GRADE IDENTIFICATION MARKING AS PREVIOUSLY STATED. CLOSED EYE GRABHOOKS THAT FORM A PART OF THE CHAIN ASSEMBLY ARE EXEMPT FROM GRADE MARKINGS.
6. CONNECTING LINKS USED FOR CHAIN REPAIR MUST BE CORRECTLY MARKED AND BE EQUAL TO OR GREATER IN STRENGTH THAN THE CHAIN THEY ARE REPAIRING. CHAINS WITH UNMARKED CONNECTING LINKS SHALL NOT BE USED.
7. CHAIN AND FITTING OF A HIGHER GRADE MAY BE SUBSTITUTED FOR THE GRADES SPECIFIED IN NOTE 4 ABOVE.
8. LOAD BINDERS SHALL BE 5/16" TO 3/8" SIZE AND HAVE A MINIMUM BREAKING STRENGTH OF 16,200 POUNDS (WORKING LOAD LIMIT OF 5,400 POUNDS). OVERCENTER TYPE LOAD BINDERS SHALL BE SAFETY WIRED TO PREVENT ACCIDENTAL OPENING DURING TRANSPORT. LOAD BINDER SIZE SHALL BE COMPATIBLE WITH THE SIZE OF THE CHAIN BEING USED.

PROVISIONS FOR THE USE OF FIRE HOSE IN LIEU OF CHAIN BOARDS OR STRAPPING BOARDS

FIRE HOSE THAT IS NO LONGER SUITABLE FOR USE IN FIRE FIGHTING APPLICATIONS CAN BE SUBSTITUTED FOR THE DOUBLED 2" BY 6" WOODEN CHAIN BOARDS OR SINGLE 2" BY 6" STRAPPING BOARDS, AS SPECIFIED HEREIN, PROVIDED THE FOLLOWING CONDITIONS ARE MET.

1. SUBSTITUTION AND APPLICATION GUIDANCE
 - A. FIRE HOSE MAY BE USED WHEREVER A CHAIN OR STRAPPING BOARD CONTACTS A RIGID SURFACE OF THE LOAD PROVIDED GOUGING, SCRATCHING, CRACKING, BENDING, CRUSHING, OR OTHER VISIBLE DAMAGE DOES NOT OCCUR TO THE LOAD.
 - B. ONE OR MORE SEGMENTS OF FIRE HOSE MAY BE USED TO REPLACE EACH CHAIN OR STRAPPING BOARD PROVIDING LOAD PROTECTION DURING TENSIONING OF TIEDOWNS AND LOAD SHIPMENT; I.E., A CHAIN BOARD NEED NOT BE REPLACED BY A SINGLE SEGMENT OF HOSE, MULTIPLE SEGMENTS MAY BE USED INSTEAD, AS LONG AS THEY ARE SECURELY FASTENED TO THE TIEDOWN. REGARDLESS OF THE NUMBER OF SEGMENTS USED, THE HOSE LENGTH WILL BE SUCH THAT IT EXTENDS AT LEAST 6" BEYOND THE EDGE OF THE LOAD.
 - C. FIRE HOSE CANNOT BE USED IN PLACE OF A PURCHASE BOARD ON A LOAD CONSISTING OF MORE THAN TWO CONTAINERS ACROSS THE WIDTH OF THE TRAILER. THE FIRE HOSE CAN BE APPLIED TO THE OUTER STACKS, HOWEVER, A PURCHASE BOARD ASSEMBLY WILL STILL BE REQUIRED TO PROVIDE VERTICAL HOLD-DOWN ON THE CENTER STACK(S).
2. ACCEPTABLE FIRE HOSE
 - A. FIRE HOSE TO BE USED WILL BE A RUBBER LINED SINGLE OR DOUBLE JACKETED TYPE; I.E., IT MUST HAVE A RUBBER LINING INSIDE A SINGLE OR DOUBLED FABRIC (COTTON, LINEN, ETC.) JACKET.
 - B. THE COLLAPSED WIDTH OF THE HOSE MUST BE A MINIMUM OF 2-1/2".
 - C. THE HOSE SEGMENTS USED MUST NOT CONTAIN DEFECTS THAT WILL ALLOW DIRECT CONTACT OF THE CHAIN OR LOAD BINDER WITH THE LOAD. THE HOSE THICKNESS MUST ALSO BE OF SUCH A THICKNESS THAT DENTING OR DAMAGE TO THE LOAD DOES NOT OCCUR DURING CHAIN OR STRAP TENSIONING.
3. SECUREMENT TO CHAINS OR STRAPS
 - A. THE SEGMENTS OF HOSE USED UNDER EACH CHAIN OR STRAP WILL BE SECURED TO THE CHAIN OR STRAP WITH ONE FASTENER EVERY 12", WITH A MINIMUM OF TWO FASTENERS REQUIRED PER HOSE SEGMENT.
 - B. FASTENERS CAN CONSIST OF PLASTIC ELECTRICAL TIES, .0800" DIA WIRE, OR TAPE. REGARDLESS OF THE TYPE OF FASTENING USED, IT MUST PROVIDE A POSITIVE MEANS OF SECUREMENT OF THE HOSE TO THE CHAIN OR STRAP AND MUST NOT DAMAGE THE SURFACE OF THE CONTAINER OR ITEM IT CONTACTS.