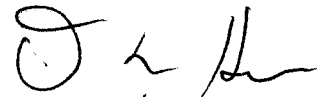


APPROVED BY
BUREAU OF EXPLOSIVES



DATE 11/10/04

ATACMS

LOADING AND BRACING* (CL & LCL) IN BOXCARS OF MISSILE/LAUNCH POD ASSEMBLY (M/LPA) FOR ARMY TACTICAL MISSILE SYSTEM

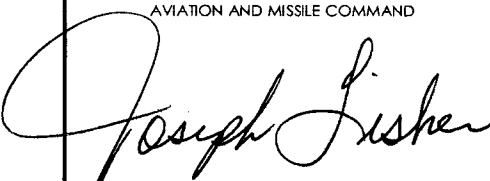
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• THIS OUTLOADING PROCEDURE DRAWING INCLUDES PROCEDURES FOR CONVENTIONAL TYPE BOXCARS AND CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY
AVIATION AND MISSILE COMMAND



CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 22.

DO NOT SCALE

SEPTEMBER 1991

ENGINEER OR TECHNICIAN	BASIC	RICHARD HAYNES
	REV.	MELVIN SIX

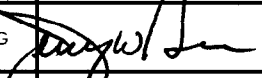
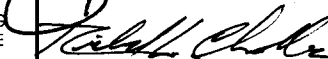
REVISION NO. 2 OCTOBER 2004

APPROVED BY ORDER OF COMMANDING GENERAL,
U.S. ARMY MATERIEL COMMAND

TRANSPORTATION ENGINEERING DIVISION		TESTED
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SEE THE REVISION LISTING ON PAGE 3



VALIDATION ENGINEERING DIVISION		TESTED
ENGINEERING DIRECTORATE		

CLASS	DIVISION	DRAWING	FILE
19	48	5539	GM5AT1

U.S. ARMY DEFENSE AMMUNITION CENTER

PROJECT GM 812-88

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 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 THE 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 SPECIFIED HEREIN CAN ALSO BE USED FOR THE SHIPMENT OF THE ASSEMBLIES WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM IDENTIFIED WITHIN THE DRAWING TITLE.
- E. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOXCARS AND BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
- F. 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. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- G. **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 OR SIDEWALL 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 OR SIDEWALL 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 ONTO, OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- H. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDEWALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- J. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 5 FOR GUIDANCE.

- K. CONVENTIONAL BOXCARS EQUIPPED WITH SLIDING DOORS HAVE BEEN SHOWN, HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CONVENTIONAL CARS EQUIPPED WITH PLUG DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO AND IN CONJUNCTION WITH EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- L. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF THE ATACMS IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE IN OTHERWISE PROPER CONDITION, IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS, WILL BE SELECTED.
- M. WHEN SELECTING RAILCARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOXCARS THAT DO NOT HAVE BOWED ENDWALLS. CARS WITH BOWED ENDS CAN BE USED; HOWEVER, IF AN ENDWALL IS BOWED OUTWARD MORE THAN 2", EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, FILL MATERIAL MUST BE NAILED TO THE BACKSIDE OF THE ENDWALL BULKHEAD TO PROVIDE ADDITIONAL CONTACT AREA BETWEEN THE BULKHEAD AND ENDWALL.
- N. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOXCAR BEING LOADED OR THE QUANTITY TO BE SHIPPED, HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE RAILCAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS.
- O. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH ATACMS, 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.
- P. LOADS WITHIN THIS DOCUMENT ARE TYPICAL. SINCE THE ACTUAL QUANTITY TO BE SHIPPED MAY NOT BE DEPICTED IN ANY OF THE LOAD VIEWS SHOWN HEREIN, A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND THE EASE OF LOADING FOR THE QUANTITY TO BE SHIPPED.
- Q. NEW STYLE MISSILE/LAUNCH POD ASSEMBLIES AS REFERENCED IN THE REVISION BLOCK ON PAGE 3 HAVE END COVERS ON THE AFT END OF THE ASSEMBLY THAT EXTEND SLIGHTLY BEYOND THE TOP AND BOTTOM RAILS.
- R. **CAUTION:** CARE MUST BE EXERCISED DURING HANDLING OF THE ASSEMBLIES TO PREVENT DAMAGE CAUSED BY BUMPING OR DROPPING THE ASSEMBLIES.
- S. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED BOXCAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH ASTM F1667 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- T. **CAUTION:** WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, MISSILE LAUNCH POD 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.
- 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.
- V. AS REQUIRED BY THE ASSOCIATION OF AMERICAN RAILROADS (AAR), ALL 1-1/4" AND 2" STEEL STRAPPING USED FOR LOAD RESTRAINT MUST BE MARKED AS SPECIFIED WITHIN THE APPLICABLE AAR RULES GOVERNING LOADING, BLOCKING AND BRACING OF FREIGHT WITHIN THE CONVEYANCE. FOR THE SPECIFIC MARKING SIZE, FREQUENCY, ETC., REQUIRED, REFER TO THE APPROPRIATE AAR LOADING RULES.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- LUMBER, HARDWOOD - - : FED SPEC MM-L-736; TYPE III
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057; INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR EXTERIOR GRADE MAY BE SUBSTITUTED.
- 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.
- WIRE, CARBON STEEL - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.
- ANTI-CHAFING MATERIAL - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

W. FOR CONVENTIONAL BOXCARS

1. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING TO THE CAR FLOOR OF THE HEADERS AND BACK-UP CLEAT IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "G" ON PAGE 2.
2. **NOTICE:** WHEN POSITIONING MISSILE LAUNCH POD ASSEMBLIES IN A CAR, THEY SHOULD BE PRESSED TIGHTLY TOGETHER LATERALLY WITH AN ANTI-CHAFING ASSEMBLY BETWEEN EACH STACK OF ASSEMBLIES AND BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE M/LPA INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. **CAUTION:** WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE M/LPA, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2" THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
3. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE SECOND LEVEL OF STRUTS MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUT AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.
4. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT APPROXIMATELY 1/4" TO 3/8" LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. MEASUREMENTS FOR STRUT LENGTHS NEED TO BE ACCOMPLISHED AT SEVERAL PLACES DURING THE BLOCKING AND BRACING PROCESS. CARE MUST BE EXERCISED WHEN MEASURING FOR AND INSTALLING STRUTS. THE SPECIFIED APPROXIMATE DIMENSION FOR A STRUT LENGTH MAY BE ADJUSTED, AS NECESSARY, TO PROVIDE FOR A TIGHTLY BLOCKED LOAD WITHOUT DISTORTING, DENTING OR OTHERWISE DAMAGING THE CONTAINERS. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 5 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.

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REVISIONS

REVISION NO. 1, DATED JANUARY 1997, 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 OCTOBER 2004, CONSISTS OF:

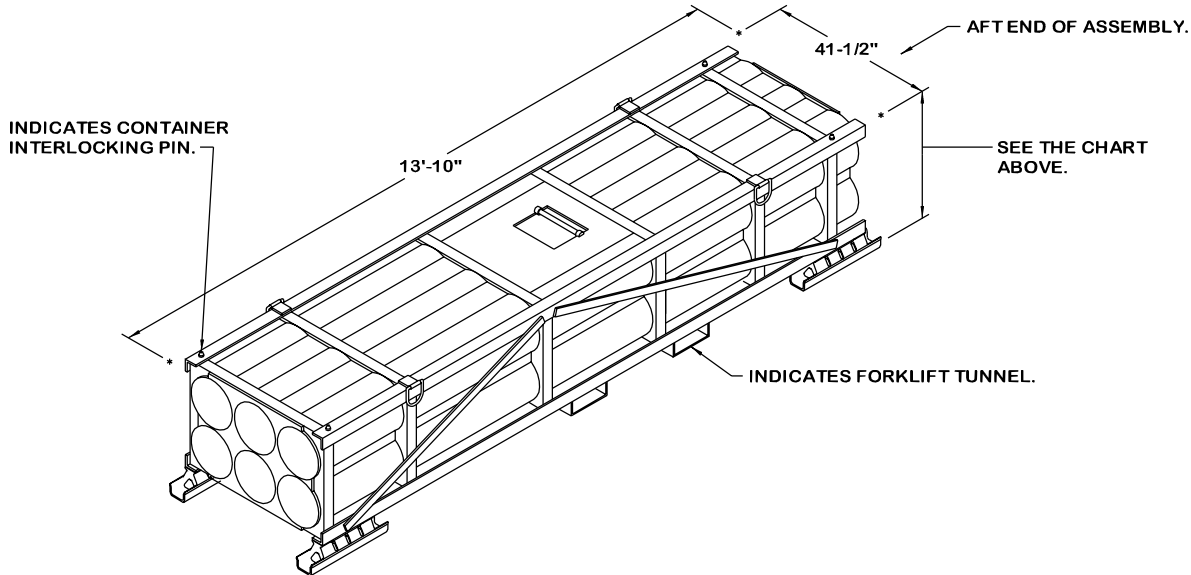
1. ADDING "GROSS WEIGHT, DIMENSIONS, AND CUBE OF MISSILE/LAUNCH POD ASSEMBLIES" CHART.
2. ADDING NEW WEIGHTS FOR ASSEMBLIES.
3. UPDATING DRAWING FORMAT.

X. FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS

1. **CAUTION:** FOR CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN "THE OFFICIAL RAILWAY EQUIPMENT REGISTER", WILL BE RBL, XL, OR XLI.
2. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOXCAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVING IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF COMPLETE ROUNDS. **NOTICE:** ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONED DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST 15" OF TRAVEL ARE ACCEPTABLE.
3. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOXCARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED, HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 22 FOR GUIDANCE. IF THE BACK OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ON PAGE 22, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
4. **NOTICE:** AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.
5. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "X-6" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 22.
6. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN A CAR ENDWALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF MISSILE LAUNCH POD ASSEMBLIES WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF ASSEMBLIES WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, A FILLER ASSEMBLY MUST BE INSTALLED. SEE THE LOAD ON PAGE 12 FOR 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 CONTINUED)

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.

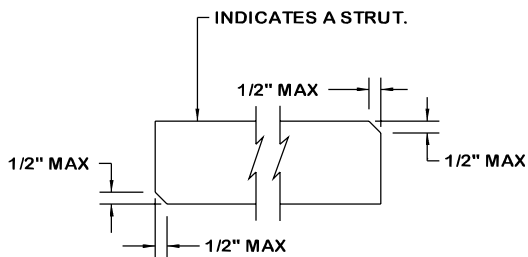
2. ASSEMBLY OR ASSEMBLY STACK HANDLING.

- 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.

- 3. INSTALLATION OF 1-1/4" X .035" OR .031" STACK UNITIZING STEEL STRAPPING. **NOTE:** STACK UNITIZING STRAPS MUST NOT BE APPLIED UNTIL THE SUPPORT ASSEMBLIES ARE IN POSITION.

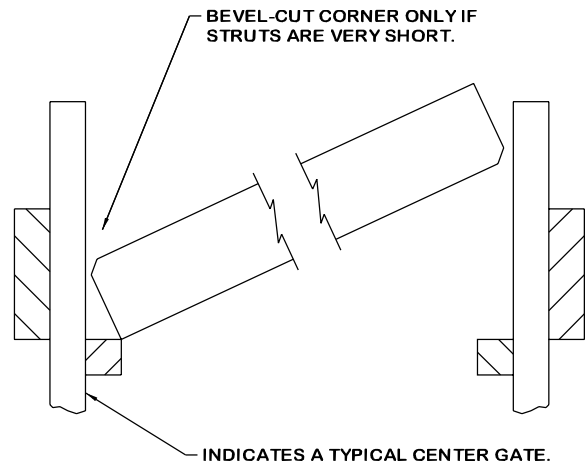
- A. EACH OF THE TWO UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE ASSEMBLIES, NEAR THE ASSEMBLY STRONG POINTS (I.E., THE LATERAL FRAME MEMBERS/BULKHEADS). PLACE STRAPPING SO THAT IT LAYS FLAT AND STRAIGHT WITH THE CONTOUR OF THE ASSEMBLIES, I.E., VERTICAL ALONG THE SIDES AND STRAIGHT ACROSS THE TOP 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.

(CONTINUED AT RIGHT)



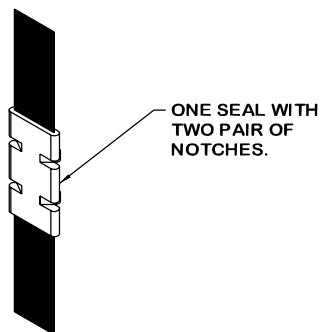
BEVEL-CUT

BEVEL CUTTING THE STRUTS AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". CAUTION: DO NOT BEVEL A CORNER MORE THAN 1/2".



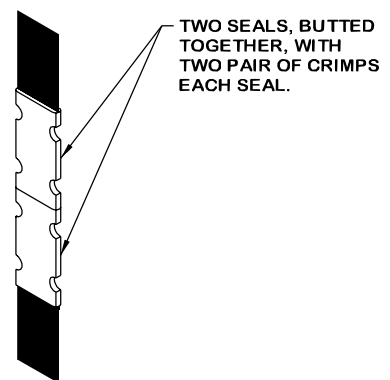
STRUT INSTALLATION

SEE GENERAL NOTE "W-4" ON PAGE 3 FOR ADDITIONAL STRUT INSTALLATION GUIDANCE.



STRAP JOINT A

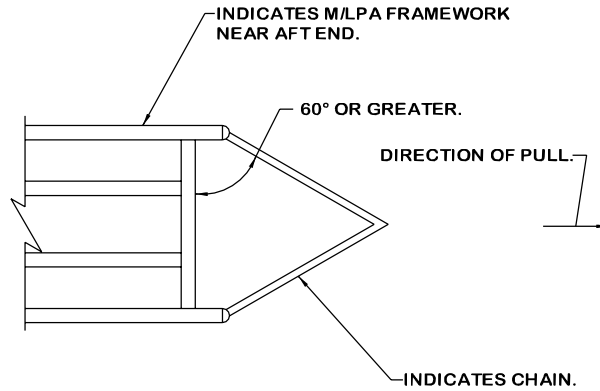
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



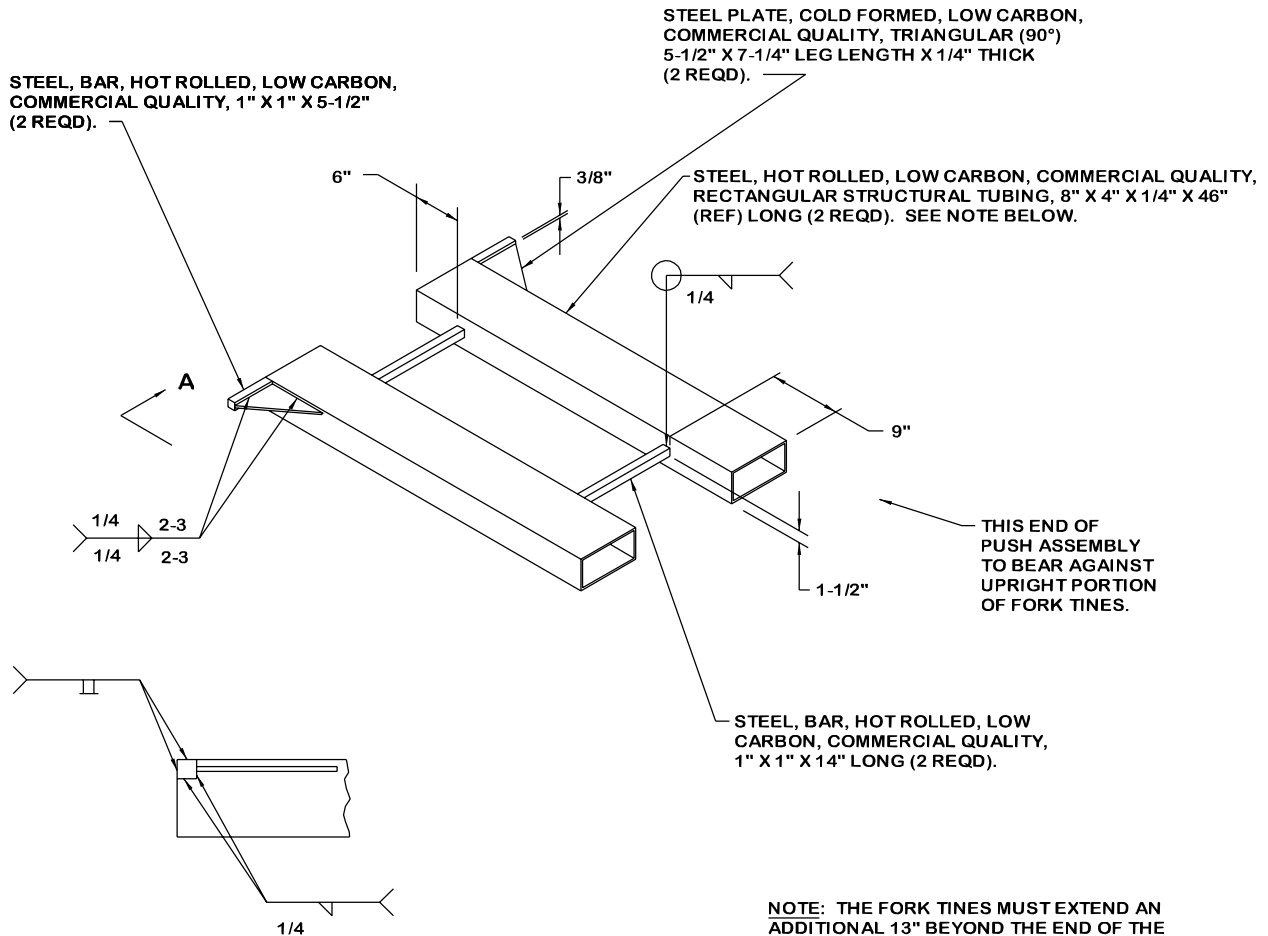
STRAP JOINT B

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

END-OVER-END LAP JOINT DETAILS



M/LPA TOW ANGLE
(PARTIAL PLAN VIEW)



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.

PUSH ASSEMBLY

INDICATES FORKLIFT TRUCK PRE-POSITIONED IN BOXCAR PRIOR TO LOADING OF ASSEMBLIES.

INDICATES PUSH ASSEMBLY. SEE DETAIL ON PAGE 6.

INDICATES 50'-6" LONG CONVENTIONAL BOXCAR HAVING A MINIMUM DOOR OPENING WIDTH OF 14'-0".

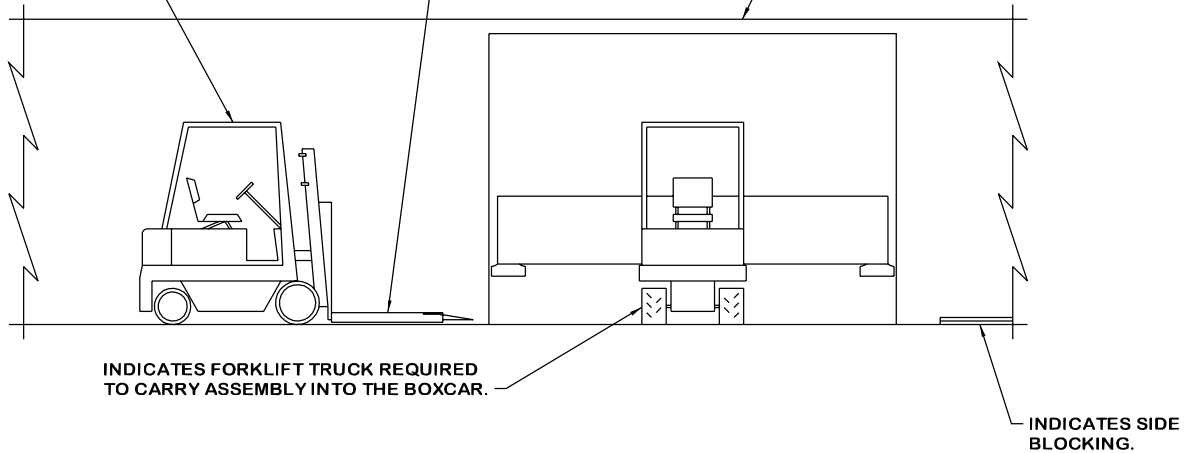


FIGURE 1

THIS VIEW DEPICTS THE LOADING OF ONE ASSEMBLY (LOWER LAYER) INTO A BOXCAR BY A FORKLIFT TRUCK. NOTE OTHER FORKLIFT TRUCK PRE-POSITIONED IN BOXCAR PRIOR TO ASSEMBLY LOADING. NOTE: THE NEAR SIDEWALL AND DOOR OPENING HAVE NOT BEEN SHOWN FOR CLARITY PURPOSES.

INDICATES 50'-6" LONG CONVENTIONAL BOXCAR HAVING A MINIMUM DOOR OPENING WIDTH OF 14'-0".

INDICATES ASSEMBLY STACK (COMPRISED OF ONE UPPER LAYER AND ONE LOWER LAYER ASSEMBLY).

INDICATES UNITIZING STRAP AND STRAPPING BOARD. UNITIZING STRAPS MUST BE TENSIONED AND SEALED PRIOR TO PUSHING STACK INTO ITS FINAL POSITION.

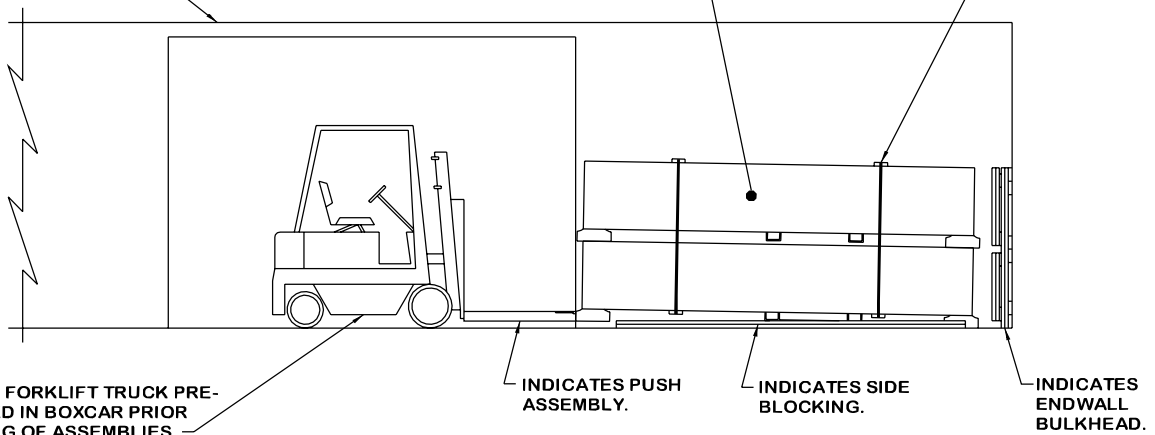
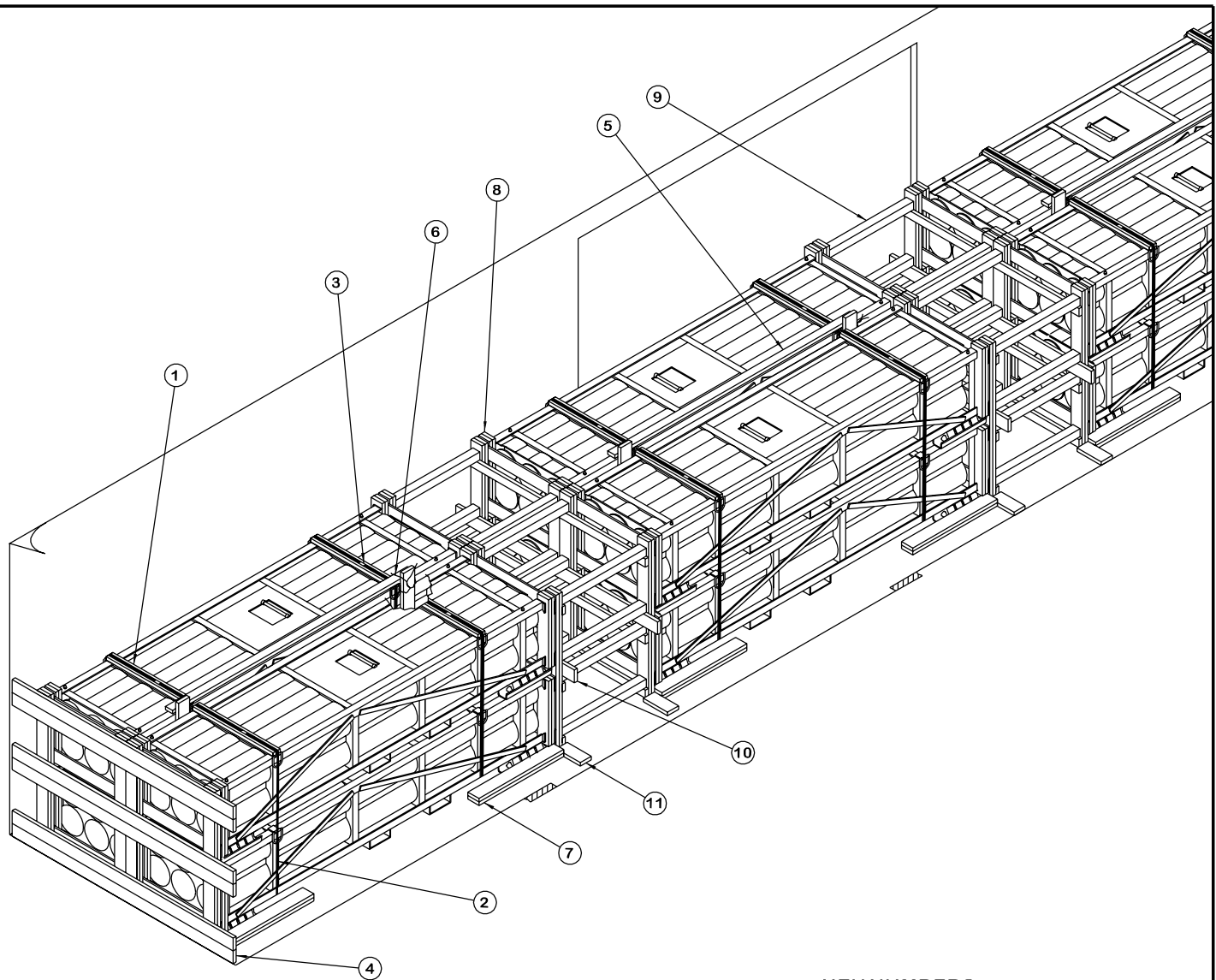


FIGURE 2

THIS VIEW DEPICTS PUSHING AN ASSEMBLY STACK INTO ITS FINAL SHIPPING POSITION BY A PRE-POSITIONED FORKLIFT TRUCK. NOTE PUSH ASSEMBLY LOCATION DURING PUSHING OPERATION. NOTE: THE NEAR SIDEWALL AND DOOR OPENING HAVE NOT BEEN SHOWN FOR CLARITY PURPOSES.



ISOMETRIC VIEW

KEY NUMBERS

- ① STRAPPING BOARD, 2" X 6" X 40" (12 REQD).
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (12 REQD).
- ③ SEAL FOR 1-1/4" STRAPPING (12 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ④ ENDWALL BULKHEAD (2 REQD). SEE THE DETAIL ON PAGE 18.
- ⑤ ANTI-CHAFING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 19.
- ⑥ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (6 REQD, 2 PER ANTI-CHAFING ASSEMBLY). INSTALL ANTI-CHAFING ASSEMBLY AND TIE WIRE THE ASSEMBLY TO THE M/LPA PRIOR TO FINAL POSITIONING OF SECOND STACK IN EACH LOAD BAY.
- ⑦ SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (12 REQD). LOCATE AS SHOWN, ADJACENT TO M/LPA SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑧ CENTER GATE (4 REQD). SEE THE DETAIL ON PAGE 17.
- ⑨ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42-3/4") (32 REQD). TOENAIL TO CENTER GATES W/2-16d NAILS AT EACH END.
- ⑩ STRUT LEDGER, 2" X 4" X 8'-0" (4 REQD). POSITION ON SECOND LEVEL OF STRUTS AND NAIL TO THE CENTER GATE VERTICAL PIECES W/3d-10d NAILS AT EACH JOINT.
- ⑪ SIDE BLOCKING FOR CENTER GATES, 2" X 6" X 12" (8 REQD). NAIL TO THE CAR FLOOR W/2-16d NAILS.

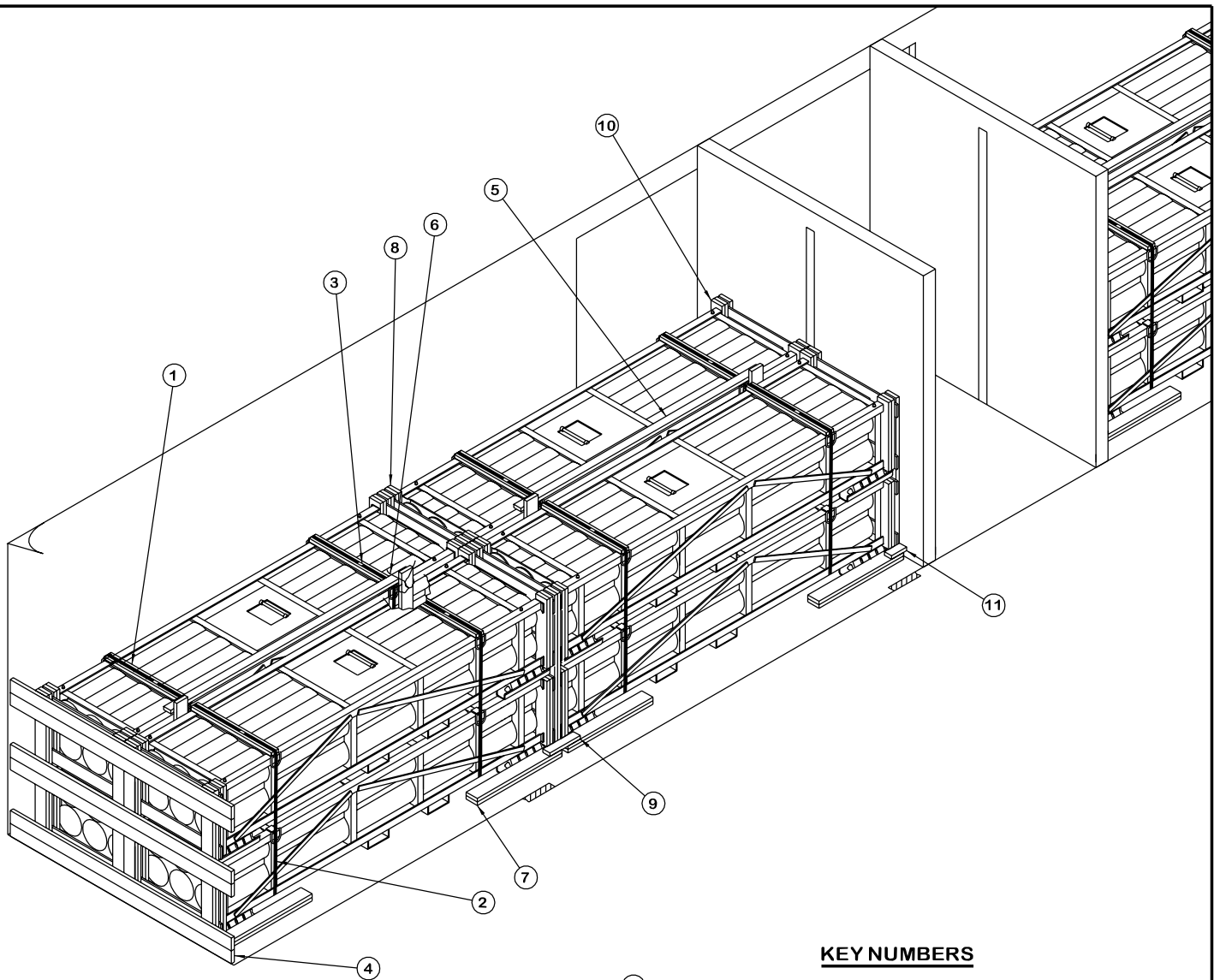
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 14'-0" WIDE DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
2. STACKS OF ASSEMBLIES POSITIONED NEAREST TO THE ENDS OF THE BOXCAR MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
3. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
4. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE DISTANCE FROM THE SIDE-WALL TO THE INSIDE OF THE SIDE BLOCKING PIECES, PIECES MARKED ⑦ ON PAGE 8.
5. THE SPECIFIED BLOCKING AND BRACING PROCEDURES APPLICABLE TO A 12-M/LPA LOAD ARE ALSO APPLICABLE TO AN 8-M/LPA LOAD TO BE PLACED IN A 40'-6" LONG BY 8'-6" WIDE BOXCAR. FOR ADDITIONAL GUIDANCE SEE GENERAL NOTE "W" ON PAGE 3. QUANTITIES OF DUNNAGE WILL BE ADJUSTED AS REQUIRED.
6. FOR SHIPMENT OF A LOAD WHICH CONTAINS LESS ASSEMBLIES THAN WHAT IS SHOWN, SEE THE PROCEDURES CONTAINED ON PAGES 12 THRU 16.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	248	124
2" X 4"	150	100
2" X 6"	663	663
2" X 6" (OAK)	116	116
4" X 4"	134	178
NAILS	NO. REQD	POUNDS
6d (2")	420	2-1/2
10d (3")	1136	17-1/2
12d (3-1/4")	18	1/2
16d (3-1/2")	368	8
STEEL STRAPPING, 1-1/4" - - -222' REQD - - - - 32 LBS		
SEAL FOR 1-1/4" STRAPPING - - 12 REQD - - - 3/4 LBS		
PLYWOOD, 1/2" - - - - -2 SQ FT REQD - - - - 3 LBS		
WIRE, 0.0800" DIA - - - - - 24' REQD - - - 1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA - - - - -	12 - - - - -	61,332 LBS
DUNNAGE - - - - -	- - - - -	2,514 LBS
TOTAL WEIGHT - - - - -		63,846 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① STRAPPING BOARD, 2" X 6" X 40" (12 REQD).
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (12 REQD).
- ③ SEAL FOR 1-1/4" STRAPPING (12 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ④ ENDWALL BULKHEAD (2 REQD). SEE THE DETAIL ON PAGE 18.
- ⑤ ANTI-CHAFING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 19.
- ⑥ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (6 REQD, 2 PER ANTI-CHAFING ASSEMBLY). INSTALL ANTI-CHAFING ASSEMBLY AND TIE WIRE THE ASSEMBLY TO THE M/LPA PRIOR TO FINAL POSITIONING OF SECOND STACK IN EACH LOAD BAY.
- ⑦ SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (12 REQD). LOCATE AS SHOWN, ADJACENT TO M/LPA SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑧ SPACER GATE (1 REQD). SEE THE DETAIL ON PAGE 21. LOCATE BETWEEN LATERALLY ADJACENT ASSEMBLIES.
- ⑨ SIDE BLOCKING FOR SPACER GATE, 2" X 4" X 15" (2 REQD). NAIL TO THE SIDE BLOCKING, KEY NUMBER ⑦, W/3-16d NAILS AT EACH JOINT.
- ⑩ SEPARATOR GATE (2 REQD). SEE THE DETAIL ON PAGE 20. LOCATE BETWEEN ASSEMBLIES AND DIVIDER BULKHEADS.
- ⑪ SIDE BLOCKING FOR SEPARATOR GATE, 2" X 4" X 12" (2 REQD). NAIL TO THE SIDE BLOCKING, KEY NUMBER ⑦, W/3-16d NAILS.

**12-M/LPA LOAD IN A 50'-6" LONG BY 9'-2" WIDE
BOXCAR EQUIPPED WITH LOAD DIVER BULKHEADS**

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED TYPE BOX-CAR EQUIPPED WITH LOAD DIVIDERS AND 14'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
2. STACKS OF ASSEMBLIES POSITIONED NEAREST TO THE ENDS OF THE BOXCAR MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
3. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
4. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE DISTANCE FROM THE SIDE-WALL TO THE INSIDE OF THE SIDE BLOCKING PIECES, PIECES MARKED ⑦ ON PAGE 10.

BILL OF MATERIAL

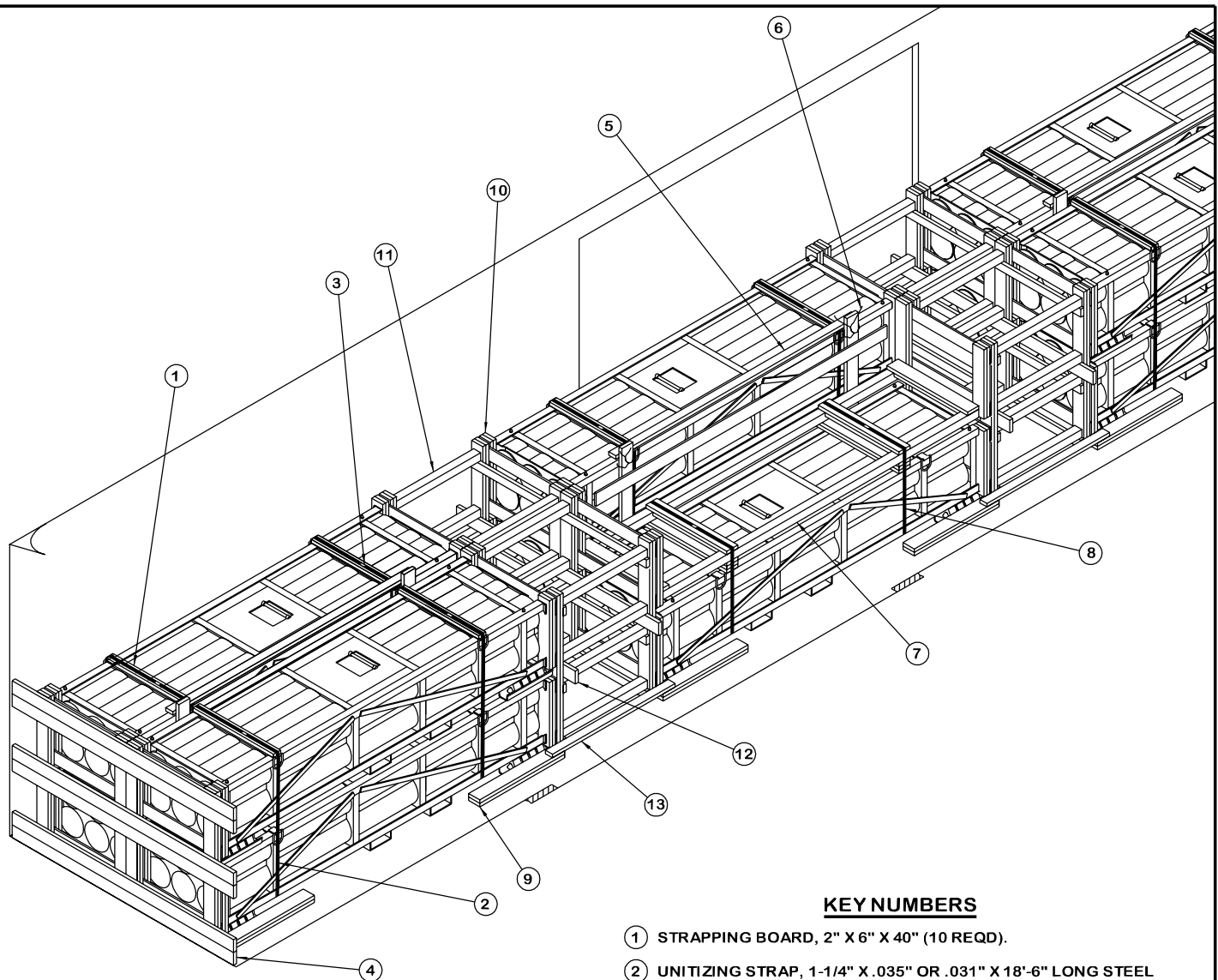
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	219	110
2" X 4"	30	20
2" X 6"	545	545
2" X 6" (OAK)	116	116
NAILS	NO. REQD	POUNDS
6d (2")	372	2-1/4
10d (3")	612	9-1/2
12d (3-1/4")	18	1/2
16d (3-1/2")	114	2-1/2
STEEL STRAPPING, 1-1/4" - - -220' REQD - - - - 32 LBS		
SEAL FOR 1-1/4" STRAPPING - - - 12 REQD - - - - 3/4 LBS		
PLYWOOD, 1/2" - - - - -3 SQ FT REQD - - - - 4 LBS		
WIRE, 0.0800" DIA - - - - - 12' REQD - - - - 1/4 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	12	61,332 LBS
DUNNAGE		1,633 LBS

TOTAL WEIGHT - - - - - 62,965 LBS (APPROX)

**12-M/LPA LOAD IN A 50'-6" LONG BY 9'-2" WIDE
BOXCAR EQUIPPED WITH LOAD DIVER BULKHEADS**



ISOMETRIC VIEW

KEY NUMBERS

- ① STRAPPING BOARD, 2" X 6" X 40" (10 REQD).
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-6" LONG STEEL STRAPPING (10 REQD).
- ③ SEAL FOR 1-1/4" STRAPPING (12 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ④ ENDWALL BULKHEAD (2 REQD). SEE THE DETAIL ON PAGE 18.
- ⑤ ANTI-CHAFING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 19.
- ⑥ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (6 REQD, 2 PER ANTI-CHAFING ASSEMBLY). INSTALL ANTI-CHAFING ASSEMBLY AND TIE WIRE THE ASSEMBLY TO THE M/LPA PRIOR TO FINAL POSITIONING OF SECOND STACK IN EACH LOAD BAY.
- ⑦ FILLER ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 19.
- ⑧ FILLER ASSEMBLY STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (2 REQD).
- ⑨ SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (12 REQD). LOCATE AS SHOWN, ADJACENT TO M/LPA SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑩ CENTER GATE (4 REQD). SEE THE DETAIL ON PAGE 17.
- ⑪ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42-3/4") (32 REQD). TOENAIL TO CENTER GATES W/2-16d NAILS AT EACH END.
- ⑫ STRUT LEDGER, 2" X 4" X 8'-0" (4 REQD). POSITION ON SECOND LEVEL OF STRUTS AND NAIL TO THE CENTER GATE VERTICAL PIECES W/3d-10d NAILS AT EACH JOINT.
- ⑬ SIDE BLOCKING FOR CENTER GATES, 2" X 6" X 61" (4 REQD). NAIL TO THE SIDE BLOCKING, KEY NUMBER ⑨, W/3-16d NAILS AT EACH END.

SPECIAL NOTES:

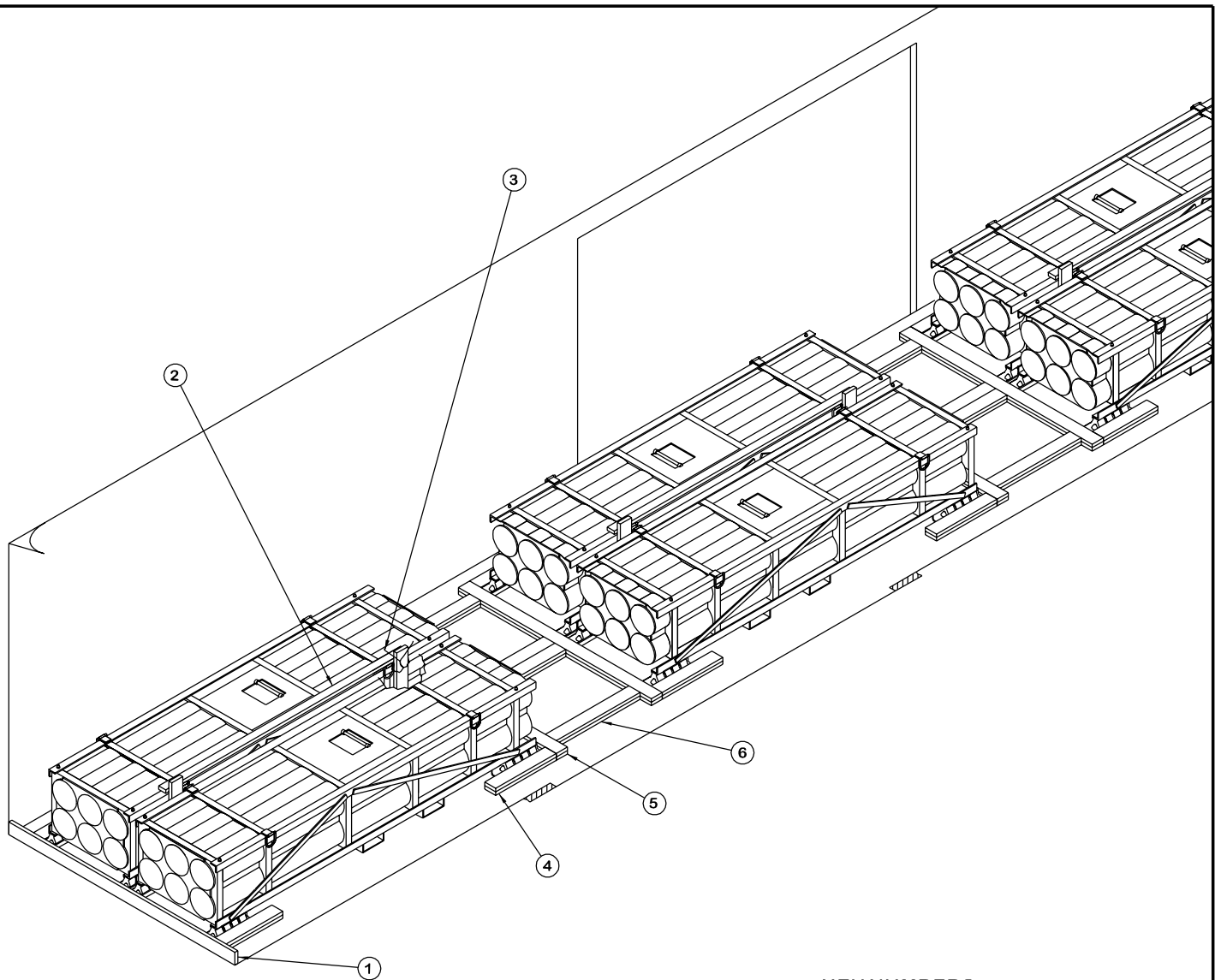
1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 14'-0" WIDE DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
2. STACKS OF ASSEMBLIES POSITIONED NEAREST TO THE ENDS OF THE BOXCAR MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
3. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
4. WHEN A BOXCAR IS LOADED WITH THREE LOAD BAYS, THE OMITTED ASSEMBLY PROCEDURES SHOULD BE APPLIED IN THE CENTER LOAD BAY OF THE CAR.
5. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE DISTANCE FROM THE SIDEWALL TO THE INSIDE OF THE SIDE BLOCKING PIECES, PIECES MARKED ⑨ ON PAGE 12.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	248	124
2" X 4"	171	114
2" X 6"	696	696
2" X 6" (OAK)	116	116
4" X 4"	160	213
NAILS	NO. REQD	POUNDS
6d (2")	420	2-1/2
10d (3")	1198	18-1/2
12d (3-1/4")	18	1/2
16d (3-1/2")	368	8
STEEL STRAPPING, 1-1/4" - - -222' REQD - - - - 32 LBS		
SEAL FOR 1-1/4" STRAPPING - - - 12 REQD - - - - 3/4 LBS		
PLYWOOD, 1/2" - - - - -2 SQ FT REQD - - - - 3 LBS		
WIRE, 0.0800" DIA - - - - - 12' REQD - - - - 1/4 LBS		

LOAD AS SHOWN

<u>ITEM</u>	<u>QUANTITY</u>	<u>WEIGHT (APPROX)</u>
ATACMS M/LPA - - - - -	11 - - - - -	56, 221 LBS
DUNNAGE - - - - -	- - - - -	2, 676 LBS

TOTAL WEIGHT - - - - - 58, 897 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① ENDWALL BULKHEAD, 2" X 6" BY CAR WIDTH MINUS 1/2" (2 REQD). NAIL TO THE ENDWALL W/6-8d NAILS.
- ② ANTI-CHAFING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 19.
- ③ TIE WIRE, 0.0800" DIAMETER WIRE BY 24" LONG (6 REQD, 2 PER ANTI-CHAFING ASSEMBLY). INSTALL ANTI-CHAFING ASSEMBLY AND TIE WIRE THE ASSEMBLY TO THE M/LPA PRIOR TO FINAL POSITIONING OF SECOND STACK IN EACH LOAD BAY.
- ④ SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (12 REQD). LOCATE AS SHOWN, ADJACENT TO M/LPA SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/7-16d NAILS.
- ⑤ HEADER, 2" X 6" X 8'-0" (DOUBLED) (4 REQD). LOCATE SO AS TO BE CENTERED ON THE ASSEMBLIES SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/12-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/12-40d NAILS.
- ⑥ BACK-UP CLEAT, 2" X 6" BY CUT-TO-FIT (REF: 42") (DOUBLED) (8 REQD). LOCATE AS SHOWN AND NAIL FIRST PIECE TO CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/7-40d NAILS.

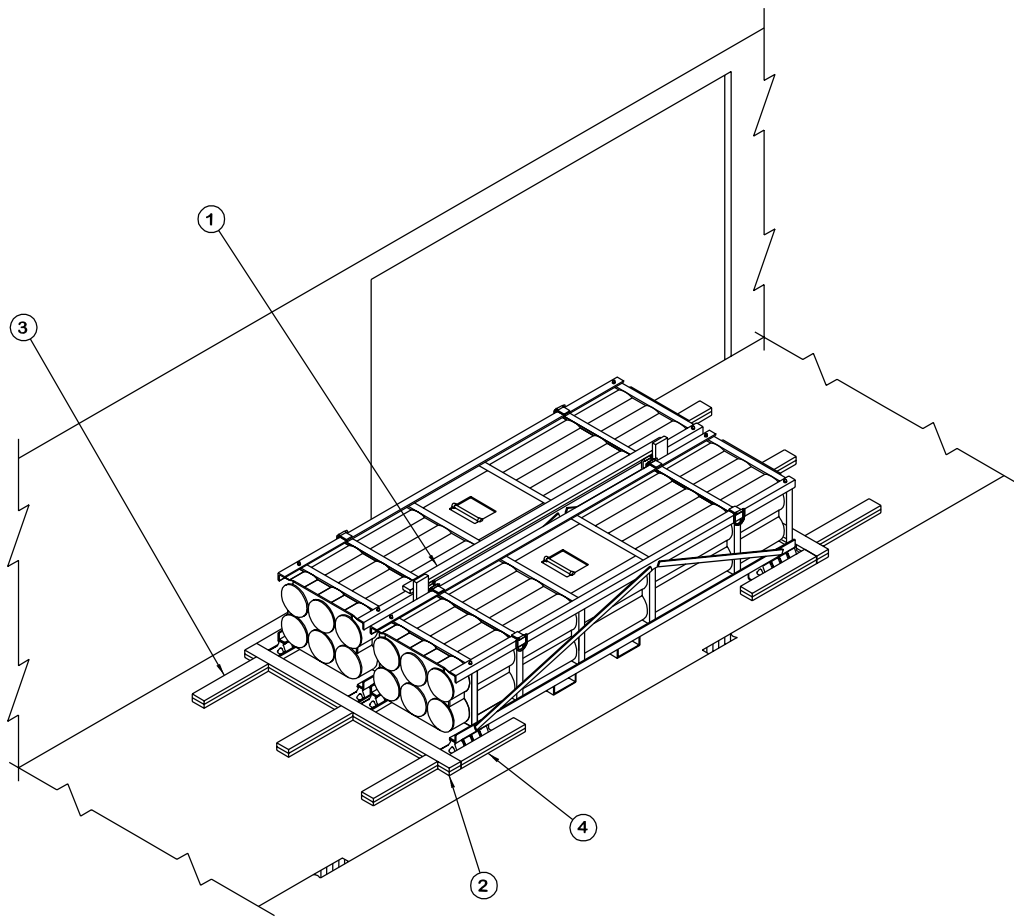
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 14'-0" WIDE DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
2. STACKS OF ASSEMBLIES POSITIONED NEAREST TO THE ENDS OF THE BOXCAR MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
3. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
4. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE DISTANCE FROM THE SIDEWALL TO THE INSIDE OF THE SIDE BLOCKING PIECES, PIECES MARKED ③ ON PAGE 14.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	72	36
2" X 4"	30	20
2" X 6"	201	201
NAILS	NO. REQD	POUNDS
6d (2")	18	1/4
12d (3-1/4")	18	1/2
16d (3-1/2")	258	5-3/4
40d (5")	30	5-1/2
WIRE, 0.0800" DIA - - - - - 12' REQD - - - 1/4 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ATACMS M/LPA	6	30,666 LBS
DUNNAGE		526 LBS
TOTAL WEIGHT		31,192 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-CHAFING ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 19.
- ② HEADER, 2" X 6" X 8'-0" (DOUBLED) (2 REQD). LOCATE SO AS TO BE CENTERED ON THE ASSEMBLY SKIDS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/12-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/12-40d NAILS.
- ③ BACK-UP CLEAT, 2" X 6" X 30" (6 REQD). LOCATE AS SHOWN AND NAIL FIRST PIECE TO CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST W/6-40d NAILS.
- ④ SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (4 REQD). LOCATE AS SHOWN, ADJACENT TO M/LPA SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/7-16d NAILS.

SPECIAL NOTES:

- 1. A 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 14'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER WIDTHS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
- 2. THE PROCEDURES SHOWN ARE ONLY FOR USE IN BOXCARS HAVING WOODEN OR NAILABLE METAL FLOORS.
- 3. IF THE ASSEMBLIES ARE POSITIONED NEAR THE CAR END RATHER THAN IN THE DOORWAY AREA, THE ASSEMBLIES MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
- 4. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
- 5. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE DISTANCE FROM THE SIDE-WALL TO THE INSIDE OF THE SIDE BLOCKING PIECES, PIECES MARKED ④.

FILL PIECE, 2" X 6" X 29-3/4" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 29-3/4"
(OAK) (4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

FILL PIECE, 2" X 6" X 28" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 28"
(OAK) (4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

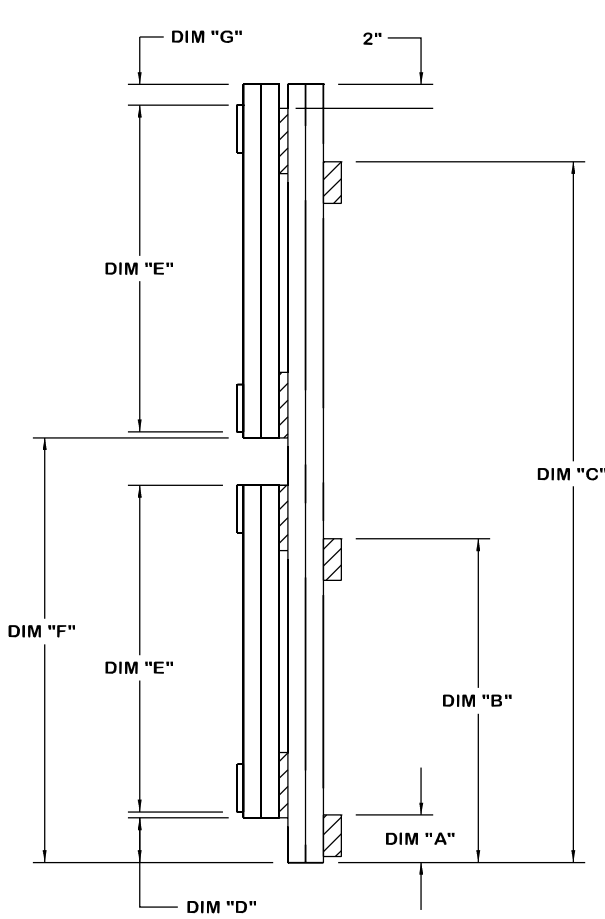
SPACER (AS REQUIRED). SEE THE DETAIL
BELOW. POSITION SO AS TO CONTACT THE
TOP AND BOTTOM RAILS ON THE AFT END
OF THE M/LPA AND NAIL TO THE BUFFER
PIECE W/2-6d NAILS. NOTE: SPACERS ARE
NOT REQUIRED ON THE FORWARD END OF
THE M/LPA.

FILL PIECE, 1" X 6" X 7'-6"
(4 REQD). NAIL TO THE
VERTICAL PIECES W/3-6d
NAILS AT EACH JOINT.

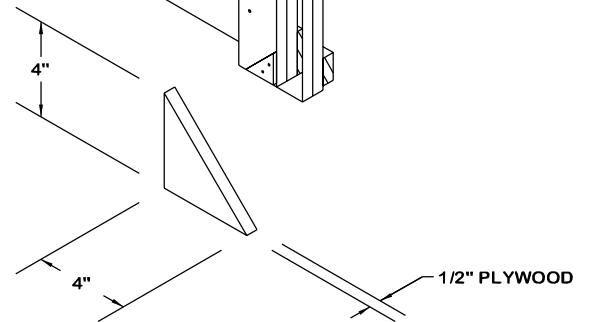
VERTICAL PIECE, 2" X 6" BY DIM "H"
(SEE DIMENSION TABLE BELOW)
(DOUBLED) (4 REQD). LAMINATE
W/1-10d NAIL EVERY 8".

STRUT LEDGER,
2" X 4" X 7'-6" (3 REQD).
NAIL TO THE VERTICAL
PIECES W/2-10d NAILS
AT EACH JOINT.

CENTER GATE



END VIEW



SPACER

TO PROVIDE ADDITIONAL SPACE BETWEEN THE NEW STYLE AFT END
COVER AND THE CENTER GATE, SPACER PIECES, AS DEPICTED ABOVE
MUST BE USED. THE SPACER PIECES SHALL BE LOCATED SO THEY
CONTACT EITHER THE BOTTOM OR TOP RAIL OF THE M/LPA. NOTE:
SPACERS ARE ONLY REQUIRED ON THE AFT END OF THE ASSEMBLIES.

DIMENSION TABLE		
DIMENSIONS	M/LPA TYPE	
	BLOCK I	BLOCK IA, BLOCK II, TACMS 2K, IA UNITARY
DIM "A"	4"	4-1/2"
DIM "B"	27-1/4"	27-3/4"
DIM "C"	59"	60-3/4"
DIM "D"	3-3/4"	4-1/2"
DIM "E"	27-1/4"	26-3/4"
DIM "F"	35-3/4"	37-1/2"
DIM "G"	1-3/4"	2-3/4"
DIM "H"	65-1/2"	67-1/4"

FILL PIECE, 2" X 6" X 29-3/4" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 29-3/4" (OAK)
(4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

FILL PIECE, 2" X 6" X 28" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 28" (OAK)
(4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

ENDWALL BEARING PIECE,
2" X 6" BY CAR WIDTH MINUS
1/2" (6 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

CAR WIDTH
MINUS 1/2"

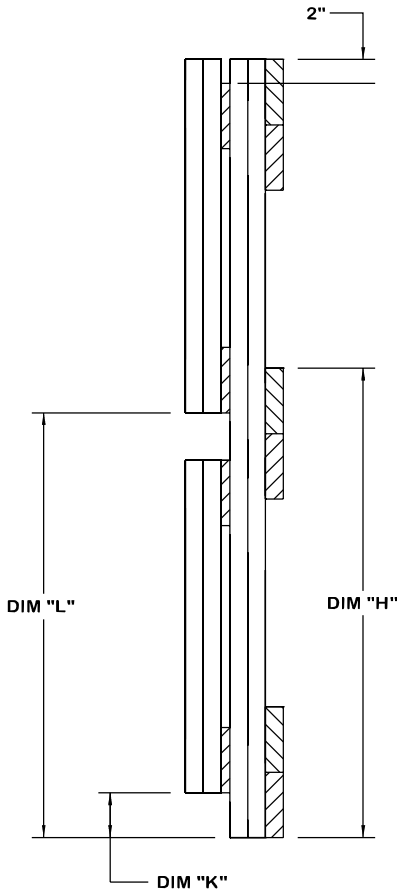
44"

FILL PIECE, 1" X 6" X 7'-6"
(4 REQD). NAIL TO THE
VERTICAL PIECES W/3-6d
NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" BY DIM "M"
(SEE DIMENSION TABLE BELOW)
(DOUBLED) (4 REQD). LAMINATE
W/1-10d NAIL EVERY 8".

28-1/2"

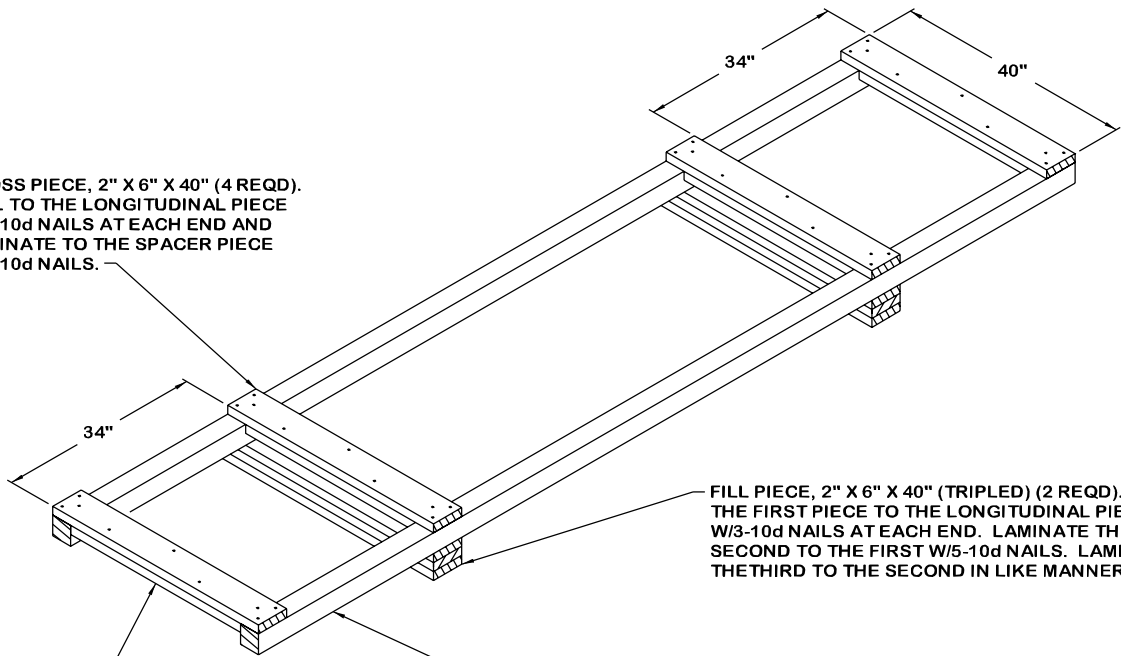
ENDWALL BULKHEAD



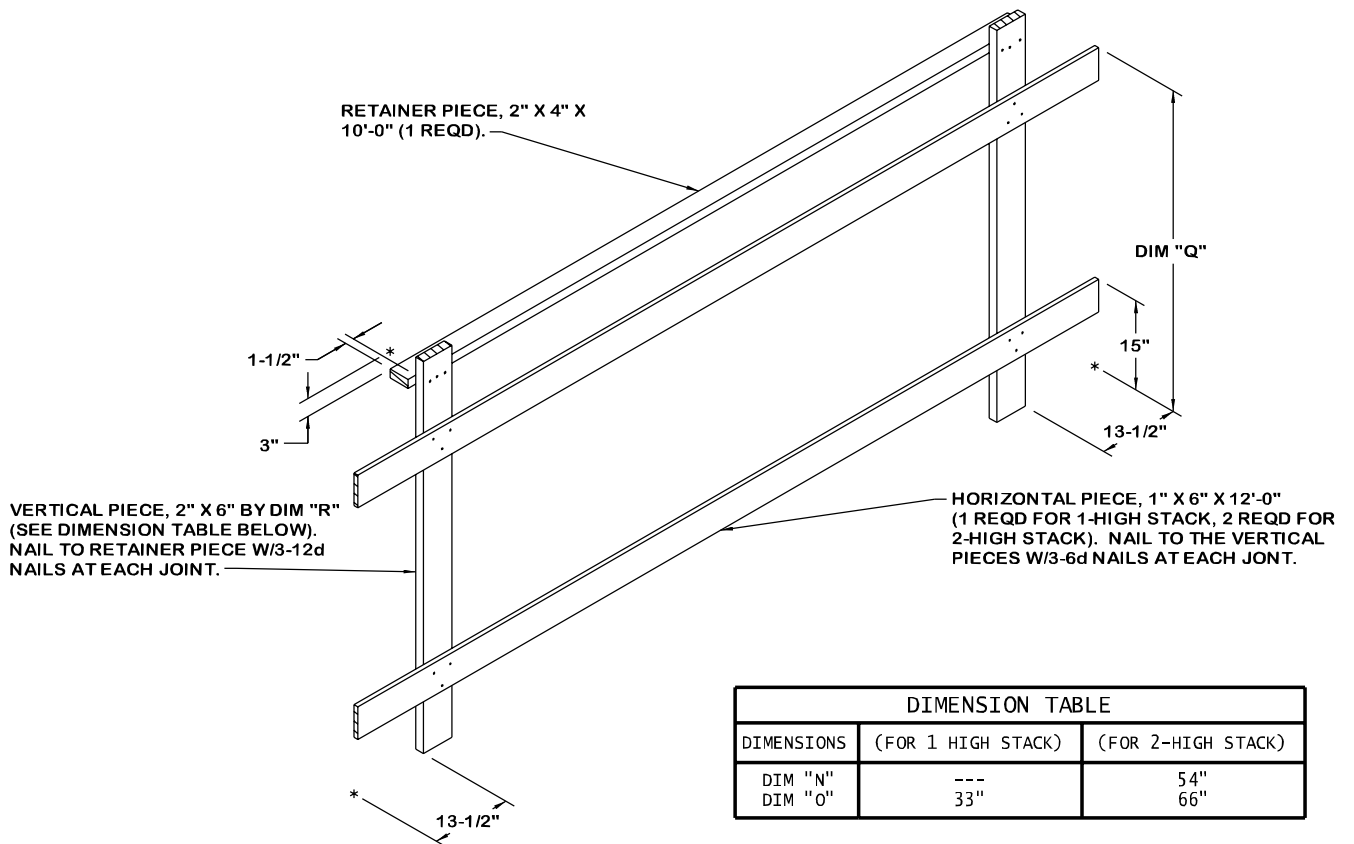
END VIEW

DIMENSION TABLE		
DIMENSIONS	M/LPA TYPE	
	BLOCK I	BLOCK IA, BLOCK II, TACMS 2K, IA UNITARY
DIM "H"	38-1/2"	39-1/2"
DIM "K"	3-3/4"	4-1/2"
DIM "L"	35-3/4"	37-1/2"
DIM "M"	65-1/2"	67-1/4"

CROSS PIECE, 2" X 6" X 40" (4 REQD).
 NAIL TO THE LONGITUDINAL PIECE
 W/3-10d NAILS AT EACH END AND
 LAMINATE TO THE SPACER PIECE
 W/3-10d NAILS.



FILLER ASSEMBLY



DIMENSION TABLE		
DIMENSIONS	(FOR 1 HIGH STACK)	(FOR 2-HIGH STACK)
DIM "N"	---	54"
DIM "O"	33"	66"

ANTI-CHAFING ASSEMBLY

FILL PIECE, 2" X 6" X 29-3/4" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 29-3/4"
(OAK) (4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

FILL PIECE, 2" X 6" X 28" (4 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

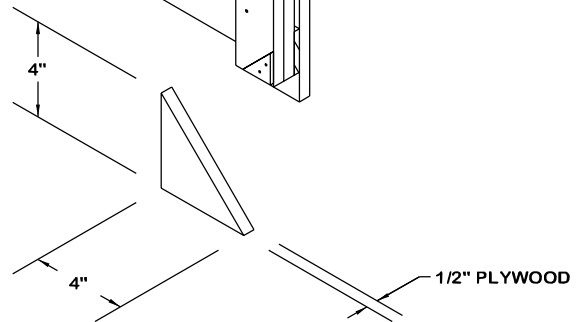
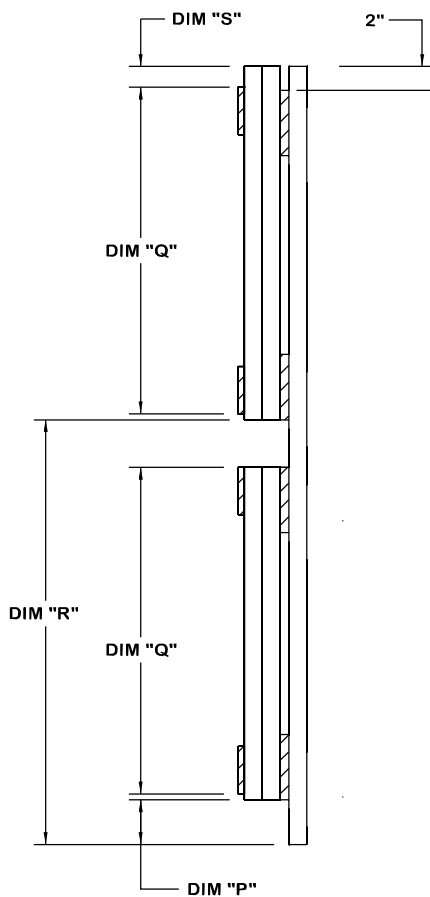
BUFFER PIECE, 2" X 6" X 28" (OAK)
(4 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

SPACER (AS REQUIRED). SEE THE DETAIL
BELOW. POSITION SO AS TO CONTACT THE
TOP AND BOTTOM RAILS ON THE AFT END
OF THE M/LPA AND NAIL TO THE BUFFER
PIECE W/2-6d NAILS. **NOTE:** SPACERS ARE
NOT REQUIRED ON THE FORWARD END OF
THE M/LPA.

FILL PIECE, 1" X 6" X 7'-6"
(4 REQD). NAIL TO THE
VERTICAL PIECES W/3-6d
NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" BY DIM "T"
(SEE DIMENSION TABLE BELOW)
(4 REQD).

SEPARATOR GATE



SPACER

TO PROVIDE ADDITIONAL SPACE BETWEEN THE NEW STYLE AFT END COVER AND THE CENTER GATE, SPACER PIECES, AS DEPICTED ABOVE MUST BE USED. THE SPACER PIECES SHALL BE LOCATED SO THEY CONTACT EITHER THE BOTTOM OR TOP RAIL OF THE M/LPA. **NOTE:** SPACERS ARE ONLY REQUIRED ON THE AFT END OF THE ASSEMBLIES.

END VIEW

DIMENSION TABLE		
DIMENSIONS	M/LPA TYPE	
	BLOCK I	BLOCK IA, BLOCK II, TACMS 2K, IA UNITARY
DIM "P"	3-3/4"	4-1/2"
DIM "Q"	27-1/4"	26-3/4"
DIM "R"	35-3/4"	37-1/2"
DIM "S"	1-3/4"	2-3/4"
DIM "T"	65-1/2"	67-1/4"

FILL PIECE, 2" X 6" X 29-3/4" (8 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 29-3/4"
(OAK) (8 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

FILL PIECE, 2" X 6" X 28" (8 REQD).
NAIL TO 1" X 6" FILL PIECES
W/3-10d NAILS AT EACH JOINT.

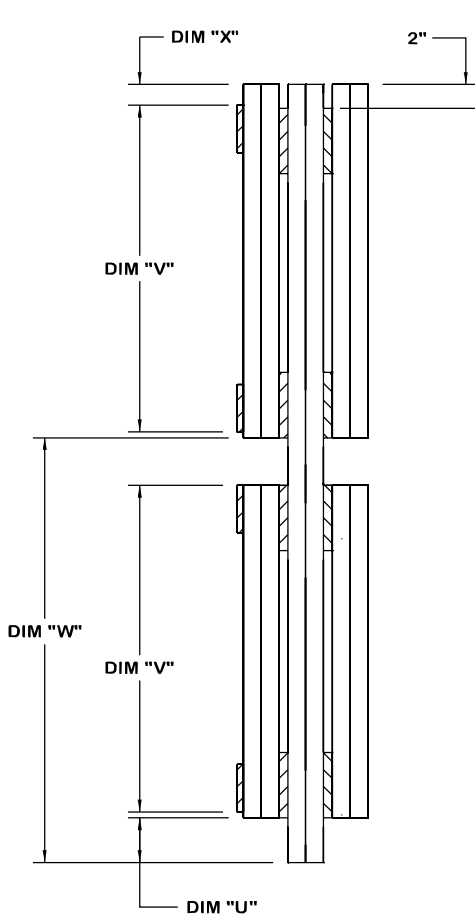
BUFFER PIECE, 2" X 6" X 28" (OAK)
(8 REQD). LAMINATE TO THE
FILL PIECES W/5-10d NAILS.

SPACER (AS REQUIRED). SEE THE DETAIL
BELOW. POSITION SO AS TO CONTACT THE
TOP AND BOTTOM RAILS ON THE AFT END
OF THE M/LPA AND NAIL TO THE BUFFER
PIECE W/2-6d NAILS. NOTE: SPACERS ARE
NOT REQUIRED ON THE FORWARD END OF
THE M/LPA.

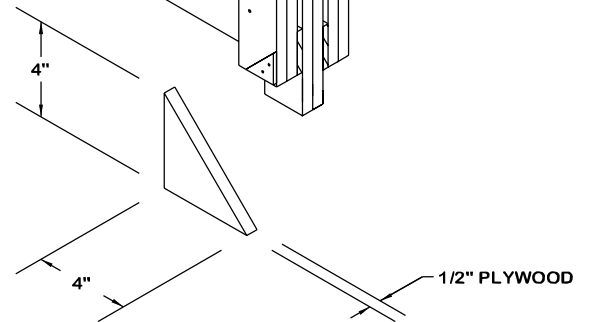
FILL PIECE, 1" X 6" X 7'-6"
(8 REQD). NAIL TO THE
VERTICAL PIECES W/3-6d
NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" BY DIM "Y"
(SEE DIMENSION TABLE BELOW)
(DOUBLED) (4 REQD). LAMINATE
W/1-10d NAIL EVERY 8".

SPACER GATE



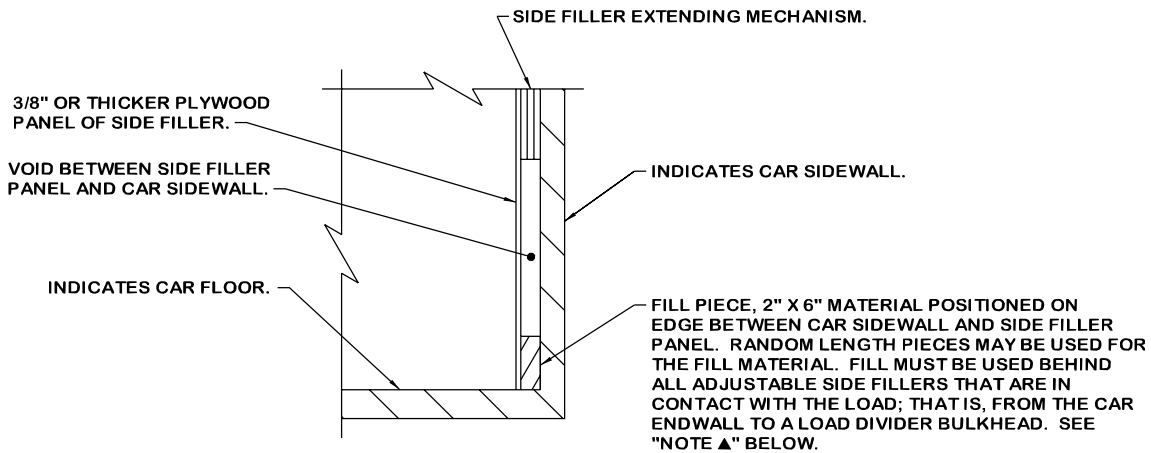
END VIEW



SPACER

TO PROVIDE ADDITIONAL SPACE BETWEEN THE NEW STYLE AFT END
COVER AND THE CENTER GATE, SPACER PIECES, AS DEPICTED ABOVE
MUST BE USED. THE SPACER PIECES SHALL BE LOCATED SO THEY
CONTACT EITHER THE BOTTOM OR TOP RAIL OF THE M/LPA. NOTE:
SPACERS ARE ONLY REQUIRED ON THE AFT END OF THE ASSEMBLIES.

DIMENSION TABLE		
DIMENSIONS	M/LPA TYPE	
	BLOCK I	BLOCK IA, BLOCK II, TACMS 2K, IA UNITARY
DIM "U"	3-3/4"	4-1/2"
DIM "V"	27-1/4"	26-3/4"
DIM "W"	35-3/4"	37-1/2"
DIM "X"	1-3/4"	2-3/4"
DIM "Y"	65-1/2"	67-1/4"

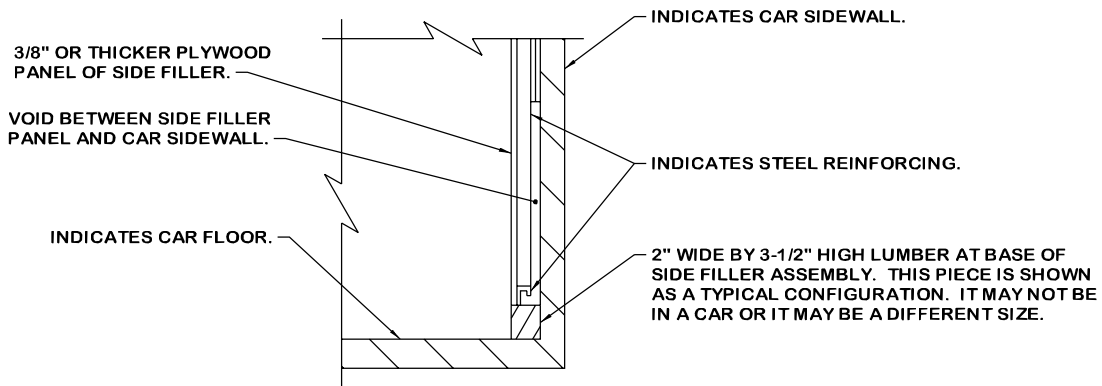


SIDE FILLER TYPICAL TYPE A

THIS VIEW SHOWS THE INSTALLATION OF A "FILL PIECE" IN A CAR EQUIPPED WITH A STANDARD ADJUSTABLE SIDE FILLER.

NOTE ▲:

NAILING OF "FILL PIECES" IS NOT REQUIRED EXCEPT THAT EACH "FILL PIECE" LOCATED NEAREST THE DOOR OPENINGS OF THE CAR WILL BE SECURED AGAINST LONGITUDINAL MOVEMENT W/1-6d NAIL DRIVEN THROUGH THE SIDE FILLER PANEL AND INTO THE "FILL PIECE".



SIDE FILLER TYPICAL TYPE B

THIS VIEW SHOWS A TYPICAL SECTION OF A CAR EQUIPPED WITH HEAVY DUTY, STEEL REINFORCED, ADJUSTABLE SIDE FILLERS. A "FILL PIECE", AS SHOWN IN THE "TYPICAL TYPE A" DETAIL ABOVE, IS NOT REQUIRED IN CARS SO EQUIPPED.