

APPROVED BY
BUREAU OF EXPLOSIVES

D m Hess

DATE 5/21/05

LOADING AND BRACING (CL & LCL) IN BOXCARS* OF STANDARD MISSILE, RIM-66, PACKED 1 PER MK372 SHIP- PING AND STORAGE CONTAINERS

INDEX

ITEM	PAGE(S)
GENERAL NOTES AND MATERIAL SPECIFICATIONS	2-3
CONTAINER STACKING AND HANDLING GUIDANCE	4
CONTAINER DETAIL	4
DETAILS	5
18 CONTAINER LOAD IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR	6-7
17 CONTAINER LOAD IN A 60'-8" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS	8-9
9 CONTAINER LOAD IN A 60'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR	10-11
TYPICAL LCL (2 CONTAINER LOAD)	12
DETAILS	13-18

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

U.S. ARMY MATERIEL COMMAND DRAWING

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Raymond P M

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THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 18.**

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GENERAL NOTES

- 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 STANDARD MISSILE, RIM-66 PACKED IN MK372 CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS CONTAINER WITH MISSILE ITEMS.
- C. FOR DETAILS OF THE CONTAINER, SEE NAVAL SEA SYSTEMS COMMAND DRAWING OR-68/21B AND PAGE 4.
- D. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE USED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM THAT 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 CUSHIONED BOXCARS 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.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

(GENERAL NOTES CONTINUED)

- 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 CONTAINERS 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 AND 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 CONTAINERS. **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 CONTAINERS, 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. **CAUTION:** CARE MUST BE EXERCISED DURING HANDLING OF THE CONTAINERS TO PREVENT DAMAGE CAUSED BY BUMPING OR DROPPING THE CONTAINERS.
- R. 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.
- S. **CAUTION:** WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, CONTAINERS 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.
- T. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.
- U. 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 ON PAGE 3)

V. 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.
2. **NOTICE:** WHEN POSITIONING CONTAINERS IN A CAR, THEY SHOULD BE PRESSED TIGHTLY TOGETHER Laterally AND LENGTHWISE 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 CONTAINERS 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 CONTAINERS, 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 UPPER 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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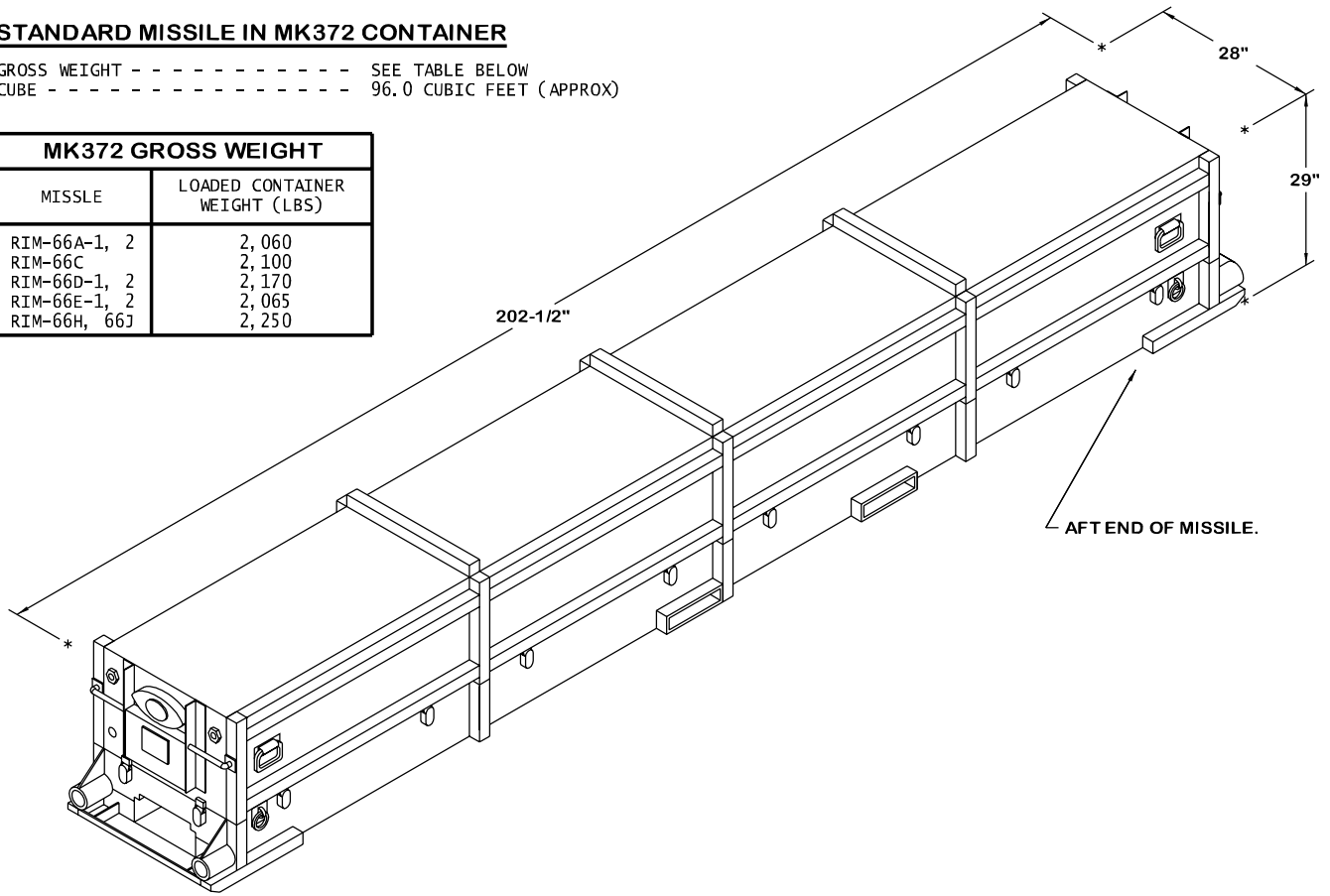
W. FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS:

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) THAT 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 STANDARD MISSILES. **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 "SIDE FILLER TYPICAL TYPE A" VIEW ON PAGE 18 FOR GUIDANCE. IF THE BACK OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "SIDE FILLER TYPICAL TYPE B" VIEW ON PAGE 18, 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. 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 CONTAINERS THAT ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS, 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 8 FOR DETAILS.

STANDARD MISSILE IN MK372 CONTAINER

GROSS WEIGHT - - - - - SEE TABLE BELOW
 CUBE - - - - - 96.0 CUBIC FEET (APPROX)

MK372 GROSS WEIGHT	
MISSILE	LOADED CONTAINER WEIGHT (LBS)
RIM-66A-1, 2	2,060
RIM-66C	2,100
RIM-66D-1, 2	2,170
RIM-66E-1, 2	2,065
RIM-66H, 66J	2,250



CONTAINER STACKING AND HANDLING GUIDANCE

1. CONTAINER STACKING FOR OUTLOADING PURPOSES.
 - A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSELY AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
 - B. POSITION THE AFT END OF AN UPPER CONTAINER ABOVE THE AFT END OF THE NEXT LOWER CONTAINER.
 - C. THE UPPER CONTAINER NESTING FEATURES AND BEARING SURFACES SHOULD BE PROPERLY ALIGNED WITH THE NEXT LOWER CONTAINER.

2. CONTAINER OR CONTAINER 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.

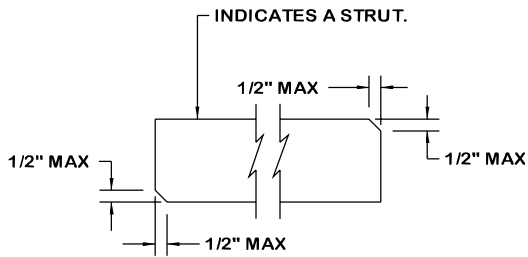
(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

- A. ONLY APPROVED AND APPROPRIATELY SIZED MHE WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
- B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
- C. THE MK372 CONTAINERS MAY BE HANDLED AND POSITIONED WITHIN THE BOXCAR WITH TWO MK42 OR MK45 HANDLIFT TRUCKS WITH TRUCK ADAPTOR MK26 OR A COMBINATION OF HAND LIFT TRUCK AND FORK TRUCK.

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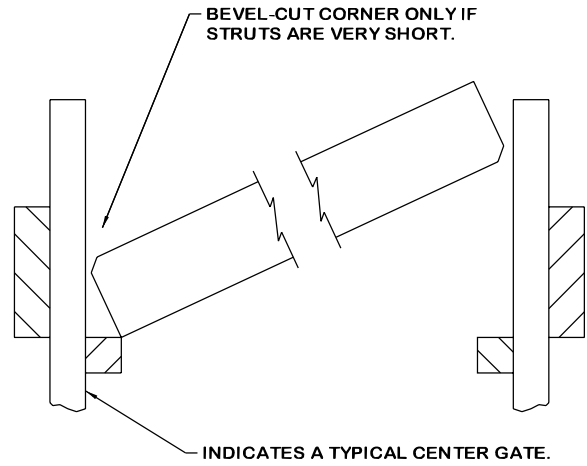
(CONTAINER STACKING AND HANDLING GUIDANCE CONTINUED)

- D. WHEN UNLOADING CONTAINERS, REMOVE THE DUNNAGE, AND SHIFT THE NEAR END OF A CONTAINER STACK TOWARDS THE BOXCAR DOORWAY. ATTACH A CHAIN FROM THE CONTAINER LIFTING CLEVIS ON ONE SIDE OF THE BOTTOM CONTAINER, AROUND THE FORKLIFT MAST, TO THE CONTAINER LIFTING CLEVIS ON THE OPPOSITE SIDE OF THE CONTAINER. SLIGHTLY ELEVATE AND INSERT THE FORK TINES UNDER THE END OF THE CONTAINER STACK AND SLOWLY DRAG THE CONTAINER STACK UNTIL IT CAN BE HANDLED FROM THE SIDE, TAKING CARE NOT TO DAMAGE THE CONTAINERS.
3. INSTALLATION OF 1-1/4" X .035" OR .031" STACK UNITIZING STEEL STRAPPING.
 - A. POSITION TWO UNITIZING STRAPS AROUND THE LOWER TWO CONTAINERS. LOCATE EACH STRAP THROUGH A FORK POCKET OF THE LOWER CONTAINER AND OVER THE TOP OF THE UPPER CONTAINER. REPEAT FOR TWO UPPER CONTAINERS. PLACE STRAPPING SO THAT IT LAYS FLAT AND STRAIGHT WITH THE CONTOUR OF THE CONTAINERS, 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 CONTAINER. SECURE TO PREVENT DISLODGE MENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING NEUTRAL BARRIER MAY BE TAPED OR STRING-TIED TO THE CONTAINER 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. SEE GENERAL NOTE "J" ON PAGE 2. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE CONTAINERS DURING STRAP TENSIONING. CARE SHOULD BE EXERCISED TO ENSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.



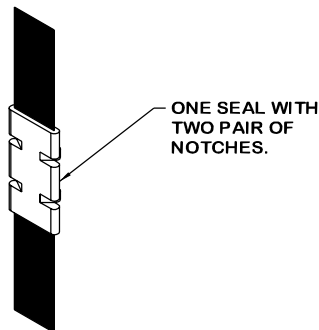
BEVEL-CUT

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".



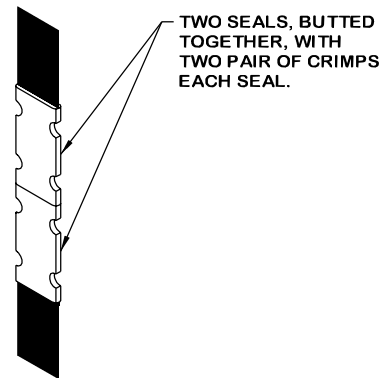
STRUT INSTALLATION

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



STRAP JOINT A

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

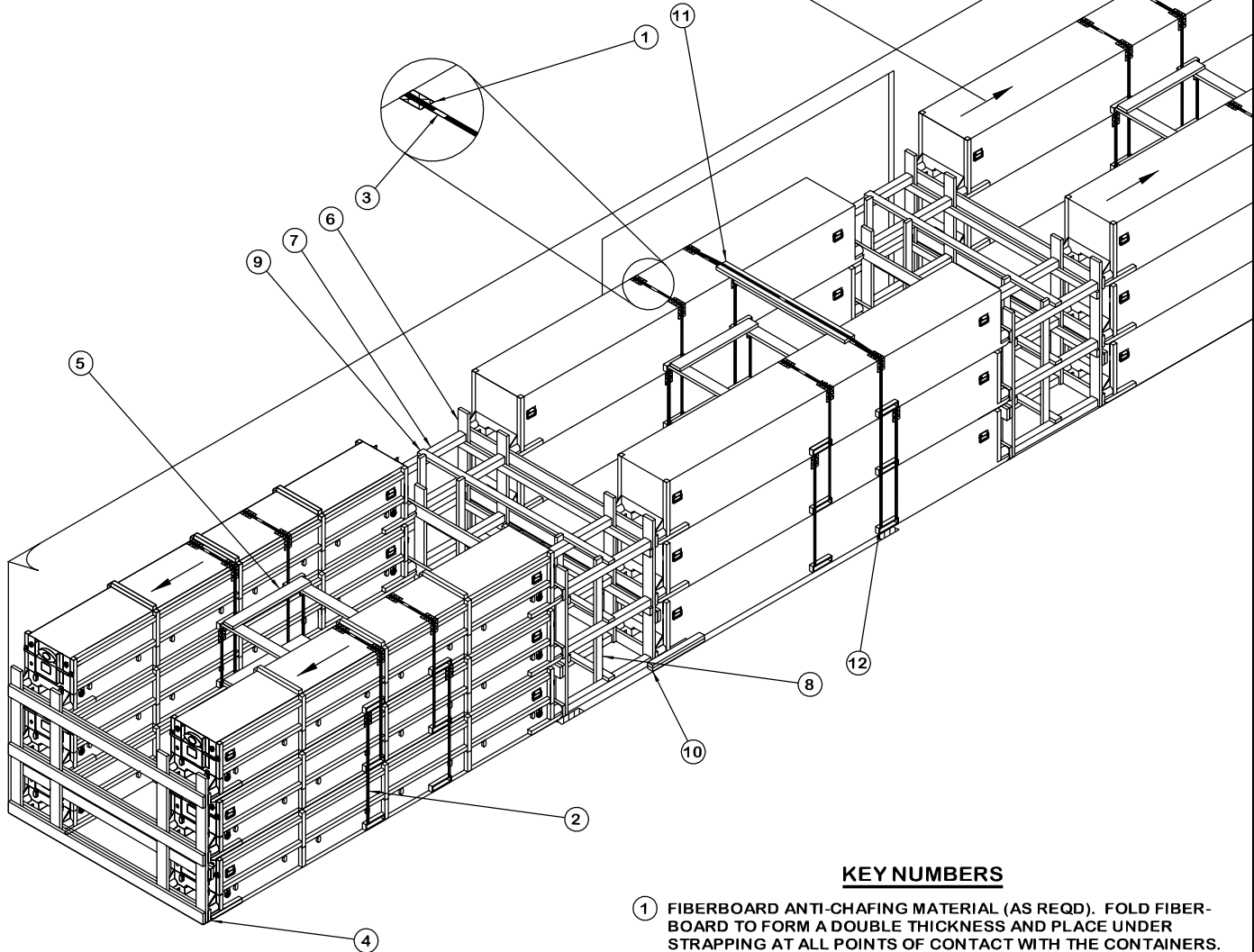


STRAP JOINT B

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

END-OVER-END LAP JOINT DETAILS

INDICATES FORWARD END OF THE CONTAINER.
 NOTE: FORWARD END OF THE CENTER CONTAINER STACK
 MUST FACE TOWARD THE SAME END OF THE BOXCAR.



ISOMETRIC VIEW

KEY NUMBERS

- ① FIBERBOARD ANTI-CHAFING MATERIAL (AS REQD). FOLD FIBERBOARD TO FORM A DOUBLE THICKNESS AND PLACE UNDER STRAPPING AT ALL POINTS OF CONTACT WITH THE CONTAINERS.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (24 REQD).
- ③ SEAL FOR 1-1/4" STRAPPING (25 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ④ ENDWALL BULKHEAD (2 REQD). SEE THE DETAIL ON PAGE 13.
- ⑤ ANTI-SWAY BRACE (9 REQD). SEE THE DETAIL ON PAGE 15. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF CONTAINERS.
- ⑥ CENTER GATE (4 REQD). SEE THE DETAIL ON PAGE 13.
- ⑦ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 47-3/4") (24 REQD). TOENAIL TO CENTER GATES W/2-16d NAILS AT EACH END.
- ⑧ VERTICAL STRUT BRACING, 2" X 4" BY CUT-TO-FIT (8 REQD, REF: 64"). NAIL TO THE STRUTS, PIECES MARKED ⑦, W/3-10d NAILS AT EACH JOINT.
- ⑨ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1" (6 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑦, W/3-10d NAILS AT EACH JOINT.
- ⑩ FLOORLINE BLOCKING, 2" X 4" X 30" (DOUBLED) (2 REQD). POSITION SO AS TO CONTACT THE CONTAINER TO BE PLACED IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. LAMINATE THE SECOND TO THE FIRST IN LIKE MANNER. SEE SPECIAL NOTE 7 ON PAGE 7.
- ⑪ STRAPPING BOARD (1 REQD). SEE THE DETAIL ON PAGE 15.
- ⑫ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 33'-8" LONG STEEL STRAPPING (1 REQD). INSTALL AS TO ENIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/2 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 7.

SPECIAL NOTES:

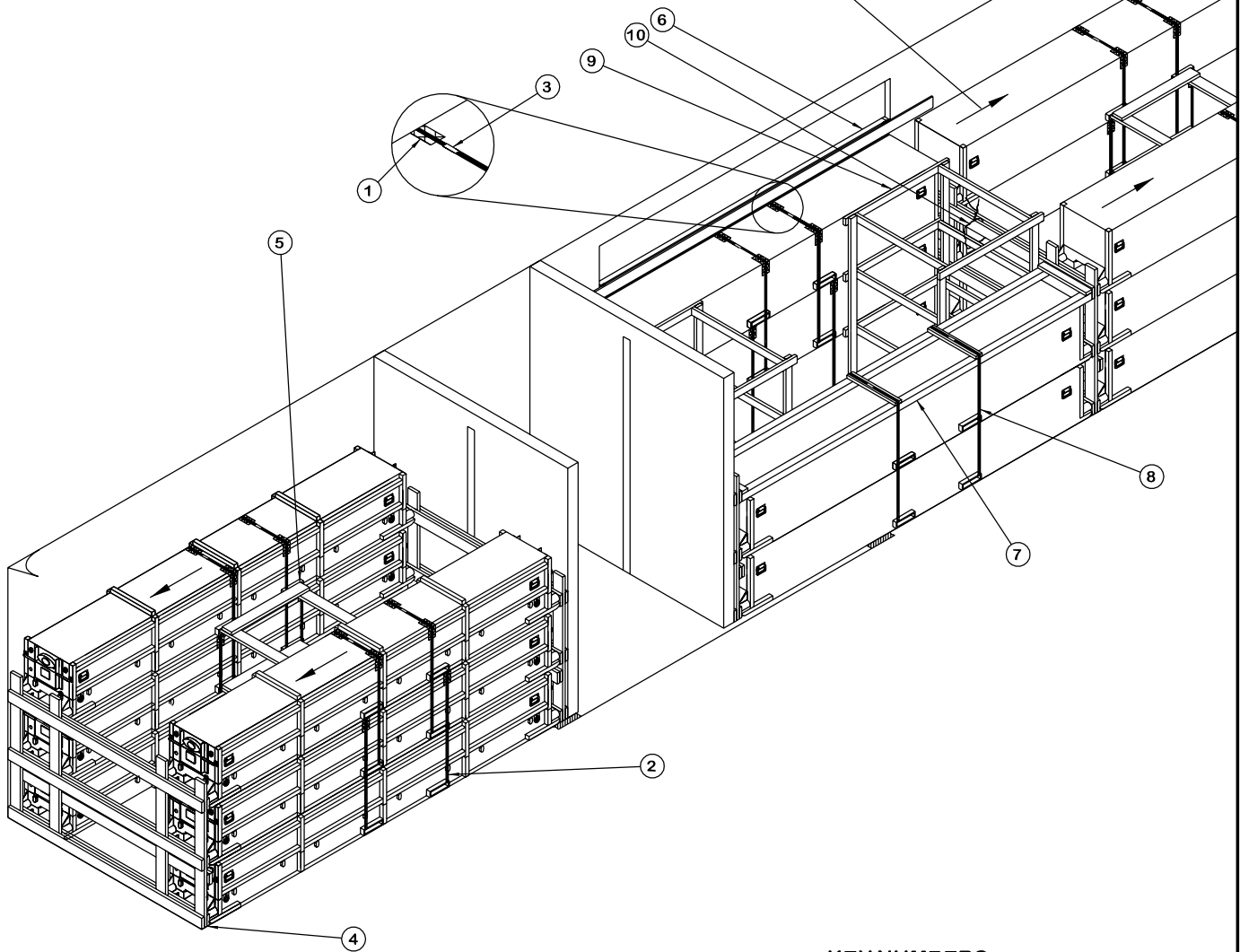
1. A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 14'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS, THRU DOORS OR WIDER DOOR OPENINGS CAN BE USED.
2. STACKS OF CONTAINERS POSITIONED NEAREST TO THE ENDS OF THE BOXCAR MUST BE POSITIONED WITH THEIR AFT ENDS TOWARDS THE CENTER OF THE CAR.
3. MINIMUM "THRU" OR STAGGERED DOOR OPENING WIDTH IS 14'-0".
4. ANTI-SWAY BRACING OR CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT CONTAINERS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT. SEE LOAD ON PAGE 8 FOR USE OF CRIB FILL ASSEMBLIES.
5. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING LENGTH OF THE RETAINER PIECE IN THE ANTI-SWAY BRACE ASSEMBLIES, PIECES MARKED ⑤ ON PAGE 6.
6. THE SPECIFIED BLOCKING AND BRACING PROCEDURES APPLICABLE TO AN 18 CONTAINER LOAD ARE ALSO APPLICABLE TO A 12 CONTAINER LOAD TO BE PLACED IN A 50'-6" LONG BY 9'-2" WIDE BOXCAR. QUANTITIES OF DUNNAGE WILL BE ADJUSTED AS REQUIRED.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL CONTAINERS STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. DOORWAY PROTECTION WILL CONSIST OF NAILED FLOORLINE BLOCKING, STRAPPING BOARD AND DOORWAY PROTECTION STRAPS ENCIRCLING THE LOAD UNIT. TWO STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD. ONE STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES BUT LESS THAN HALF OF THE CONTAINER LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS, A WOODEN GATE TYPE OF DOORWAY PROTECTION MAY BE USED. SEE DETAILS ON PAGES 16 AND 17.
8. FOR SHIPMENT OF A LOAD WHICH CONTAINS LESS CONTAINERS THAN WHAT IS SHOWN, SEE THE PROCEDURES CONTAINED ON PAGES 8 THRU 12.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	181	121
2" X 6"	563	563
4" X 4"	98	130
NAILS	NO. REQD	POUNDS
10d (3")	621	9-3/4
16d (3-1/2")	120	2-3/4
STEEL STRAPPING, 1-1/4" - - -382' REQD - - - - 55 LBS		
SEAL FOR 1-1/4" STRAPPING - - 25 REQD - - -1-1/4 LBS		
STRAPPING STAPLE - - - - - 2 REQD - - - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MK372 CONTAINER	18	40,500 LBS
DUNNAGE		1,695 LBS
TOTAL WEIGHT		42,195 LBS (APPROX)

INDICATES FORWARD END OF THE CONTAINER.
 NOTE: FORWARD END OF THE CENTER CONTAINER STACK
 MUST FACE TOWARD THE SAME END OF THE BOXCAR.



ISOMETRIC VIEW

KEY NUMBERS

- ① FIBERBOARD ANTI-CHAFING MATERIAL (AS REQD). FOLD FIBERBOARD TO FORM A DOUBLE THICKNESS AND PLACE UNDER STRAPPING AT ALL POINTS OF CONTACT WITH THE CONTAINERS.
- ② UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (20 REQD).
- ③ SEAL FOR 1-1/4" STRAPPING (22 REQD, 1 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.
- ④ ENDWALL BULKHEAD (5 REQD). SEE THE DETAIL ON PAGE 13.
- ⑤ ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 15. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF CONTAINERS.
- ⑥ DOORWAY PROTECTION D (1 REQD). SEE THE DETAIL ON PAGE 17 AND SPECIAL NOTE 5 ON PAGE 8.
- ⑦ FILLER ASSEMBLY (1 REQD). SEE DETAIL ON PAGE 14.
- ⑧ FILLER ASSEMBLY STRAP, 1-1/4" X .035" OR .031" X 15'-4" LONG STEEL STRAPPING (2 REQD). POSITION AS SHOWN. STAPLE TO FILLER ASSEMBLY W/2 STAPLES.
- ⑨ CRIB FILL ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 14 AND SPECIAL NOTE 4 ON PAGE 9.
- ⑩ TIE WIRE, .0800" DIA 36" LONG (4 REQD, 2 PER CRIB FILL ASSEMBLY). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE CRIB FILL ASSEMBLY AND THE ENDWALL BULKHEAD. BRING ENDS TOGETHER AND TWIST TAUT.

**17 CONTAINER LOAD IN A 60'-8" LONG BY 9'-4" WIDE
 CONVENTIONAL BOXCAR EQUIPPED WITH LOAD DIVER BULKHEADS**

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-4" 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. ANTI-SWAY BRACING OR CRIB FILL ASSEMBLIES ARE REQUIRED WHEN THE SPACE BETWEEN THE LATERALLY ADJACENT CONTAINERS EXCEEDS 6", AS MEASURED FROM UNIT TO UNIT.
5. DOORWAY PROTECTION IS REQUIRED FOR ALL CONTAINER STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION IN THE LOAD ON PAGE 8 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 16 AND 17 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION MUST BE USED. SEE THE LOAD ON PAGE 6 FOR GUIDANCE.
6. A WIDER OR NARROWER BOXCAR CAN BE USED FOR SHIPPING THE DEPICTED LOAD BY ADJUSTING THE ANTI-SWAY BRACE RETAINER PIECES AND THE CRIB FILL STRUTS.
7. FOR SHIPMENTS OF A LOAD WHICH CONTAINS MORE OR FEWER CONTAINERS THAN WHAT IS SHOWN, SEE THE PROCEDURES ON PAGES 6, 10 AND 12.

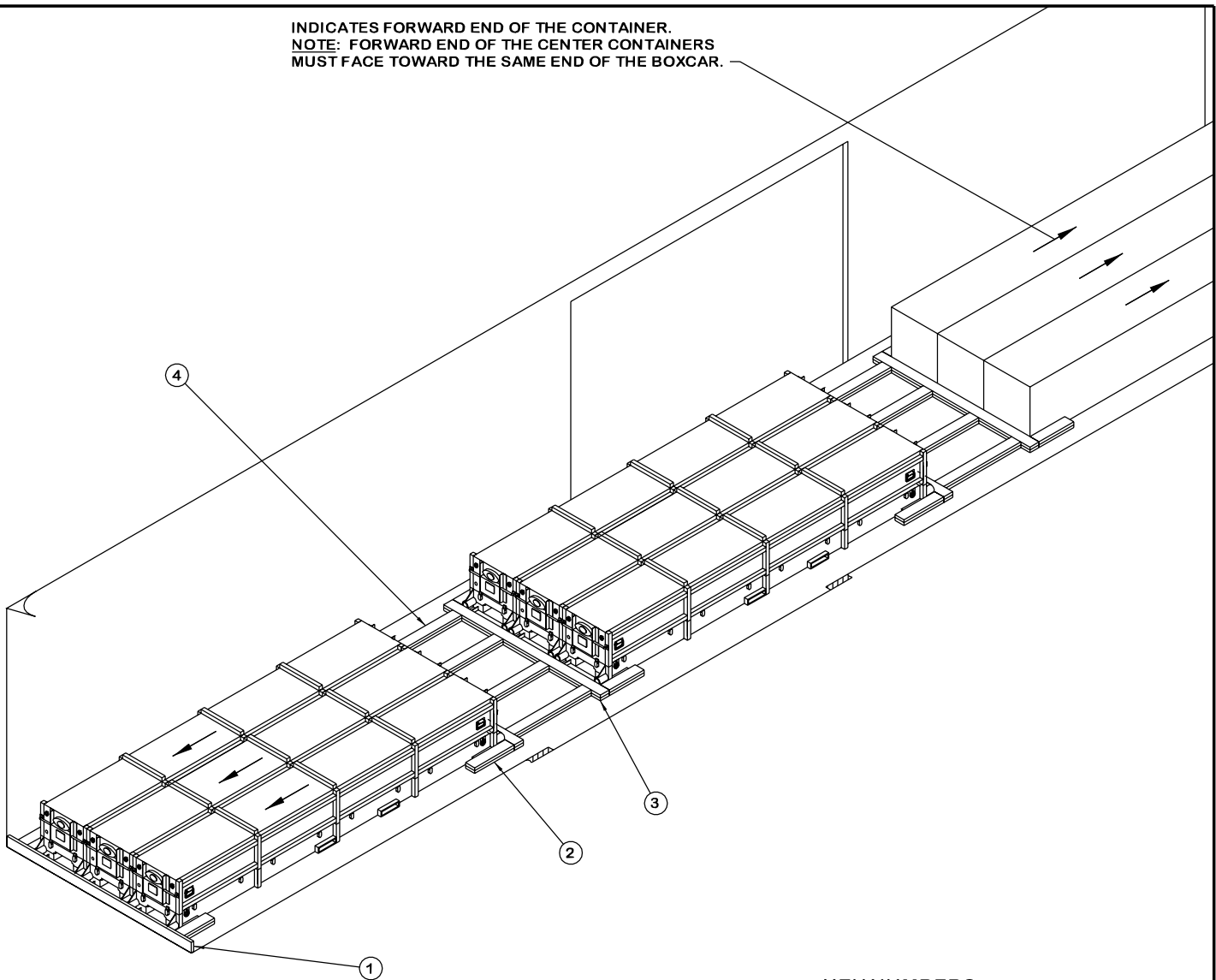
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	218	145
2" X 6"	704	704
4" X 4"	34	45
NAILS	NO. REQD	POUNDS
10d (3")	676	11
STEEL STRAPPING, 1-1/4" - - -321' REQD - - - 46 LBS		
SEAL FOR 1-1/4" STRAPPING - - - 22 REQD - - - 1 LB		
WIRE, .0800" - - - - - 6' REQD - - - - - NIL		
STRAPPING STAPLE - - - - - 2 REQD - - - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MK372 CONTAINER	17	38,250 LBS
DUNNAGE		1,846 LBS
TOTAL WEIGHT		40,096 LBS (APPROX)

**17 CONTAINER LOAD IN A 60'-8" LONG BY 9'-4" WIDE
CONVENTIONAL BOXCAR EQUIPPED WITH LOAD DIVER BULKHEADS**

INDICATES FORWARD END OF THE CONTAINER.
NOTE: FORWARD END OF THE CENTER CONTAINERS
MUST FACE TOWARD THE SAME END OF THE BOXCAR.



ISOMETRIC VIEW

KEY NUMBERS

- ① ENDWALL BATTEN, 2" X 6" BY CAR WIDTH MINUS 1/2" (2 REQD). NAIL TO THE ENDWALL W/6-8d NAILS.
- ② SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (12 REQD). LOCATE AS SHOWN, ADJACENT TO CONTAINER SKIDS. LAMINATE THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/7-16d NAILS.
- ③ HEADER, 2" X 6" X 8'-0" (DOUBLED) (4 REQD). LOCATE SO AS TO BE CENTERED ON THE CONTAINER'S SKIDS AND LAMINATE THE FIRST PIECE TO THE CAR FLOOR W/12-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/12-40d NAILS.
- ④ BACK-UP CLEAT, 2" X 6" BY CUT-TO FIT (DOUBLED) (8 REQD). LOCATE AS SHOWN. LAMINATE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/7-40d NAILS.

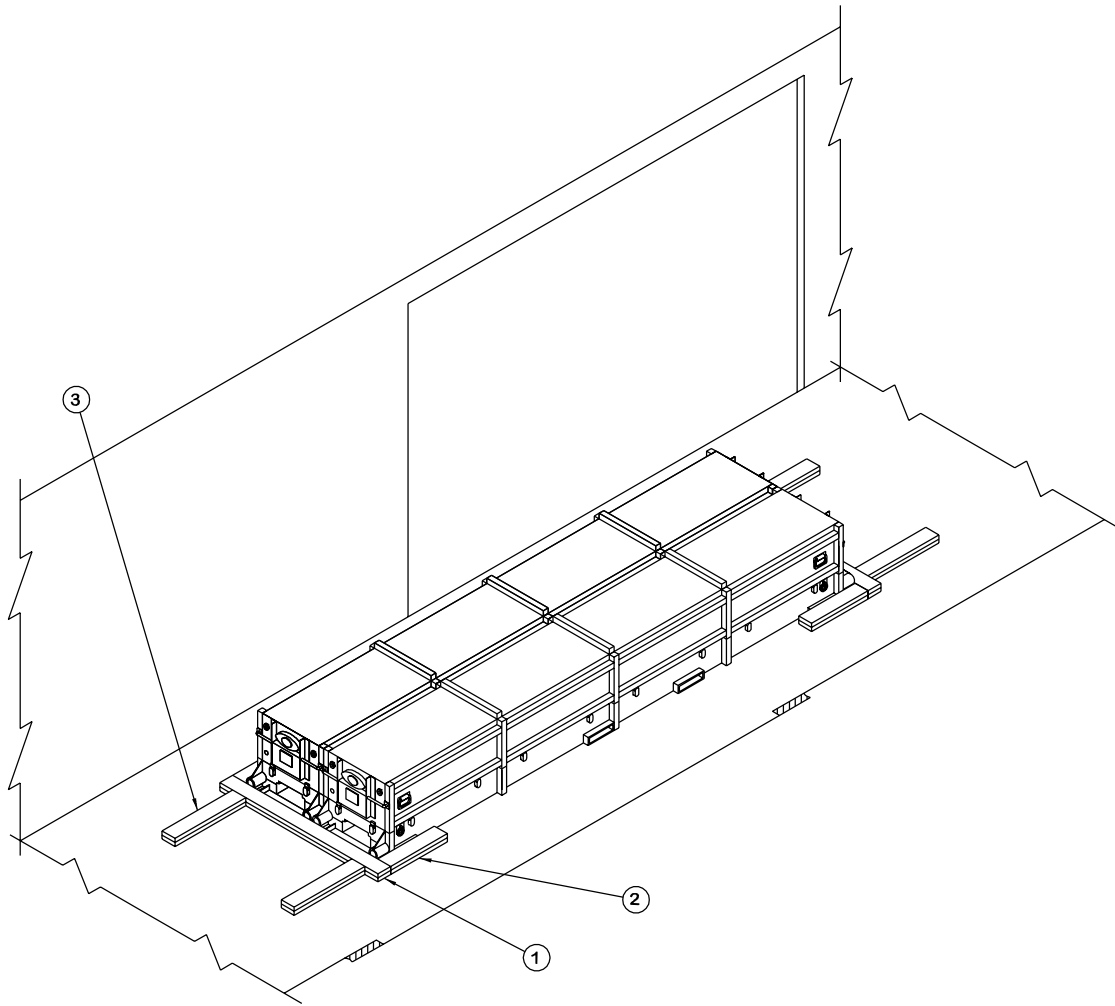
SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR HAVING A WOOD OR NAILABLE METAL FLOOR EQUIPPED WITH 14'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. BOXCARS OF OTHER DIMENSIONS AND BOXCARS HAVING WIDER DOOR OPENINGS CAN BE USED.
2. CONTAINERS 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 ② ON PAGE 10.
5. FOR SHIPMENTS OF A LOAD WHICH CONTAINS MORE OR FEWER CONTAINERS THAN WHAT IS SHOWN, SEE THE PROCEDURES ON PAGES 6, 8 AND 12.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" x 6"	194	194
NAILS	NO. REQD	POUNDS
8d (2-1/2")	12	1/2
16d (3-1/2")	272	6
40d (5")	104	6-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MK372 CONTAINER	9	20,250 LBS
DUNNAGE		399 LBS
TOTAL WEIGHT		20,649 LBS (APPROX)



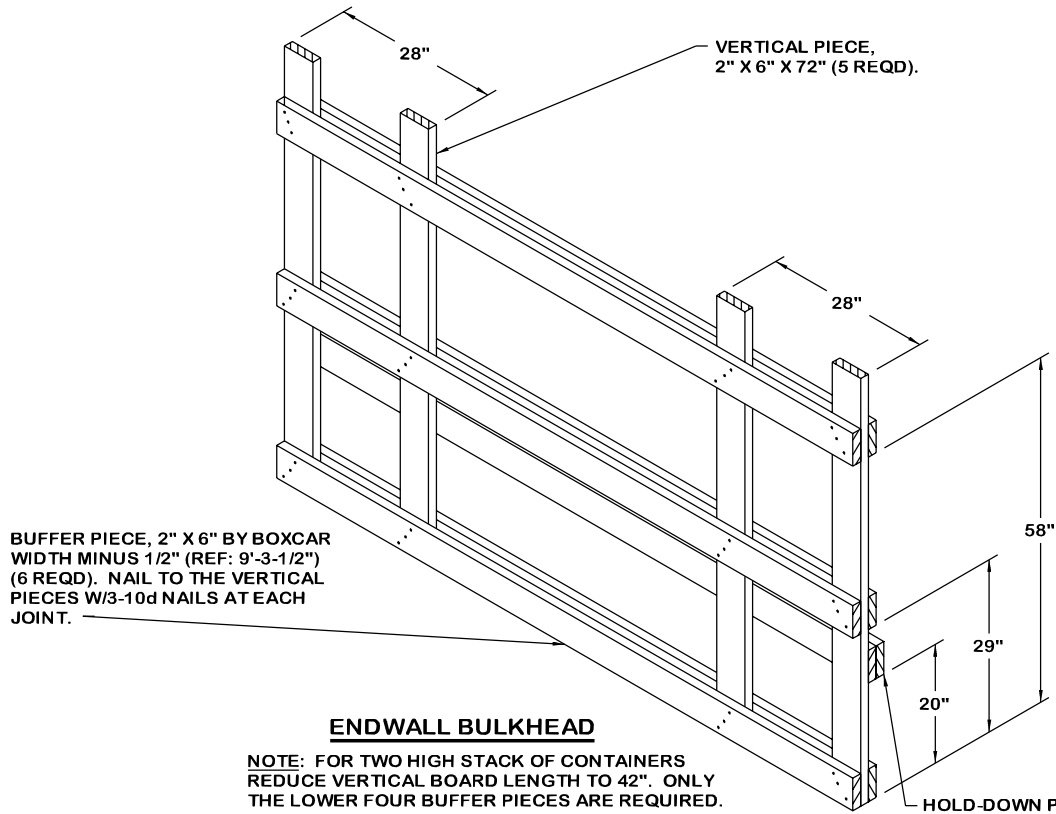
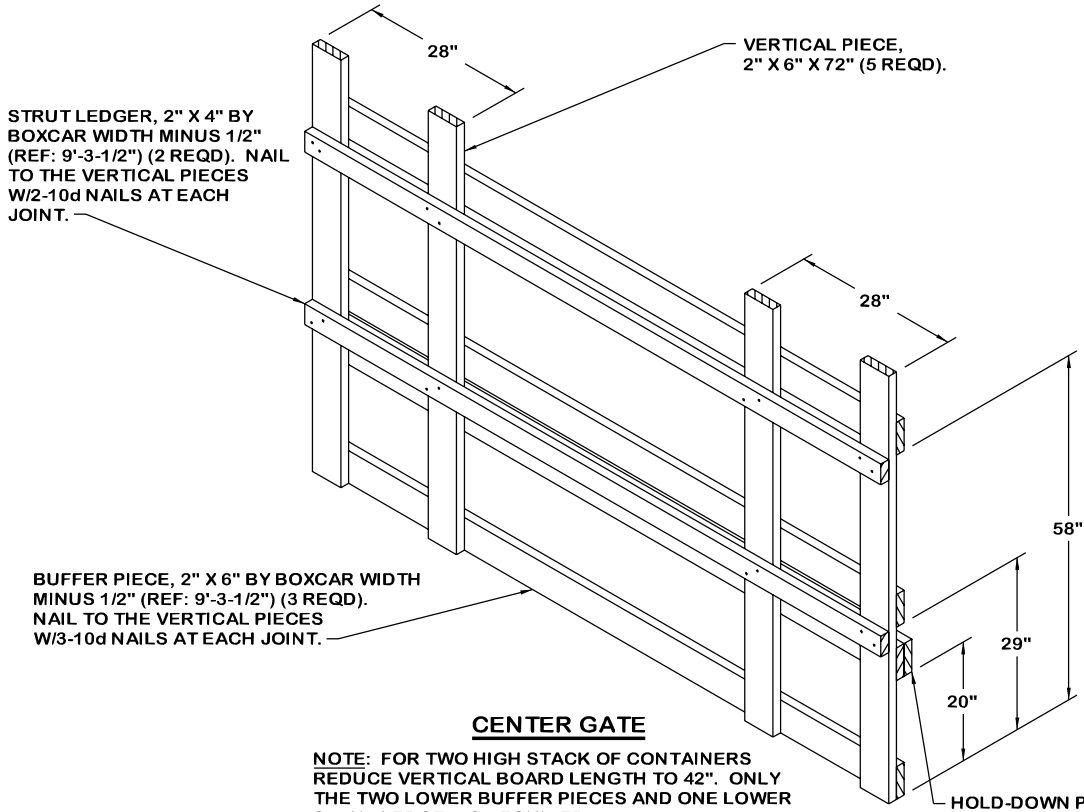
ISOMETRIC VIEW

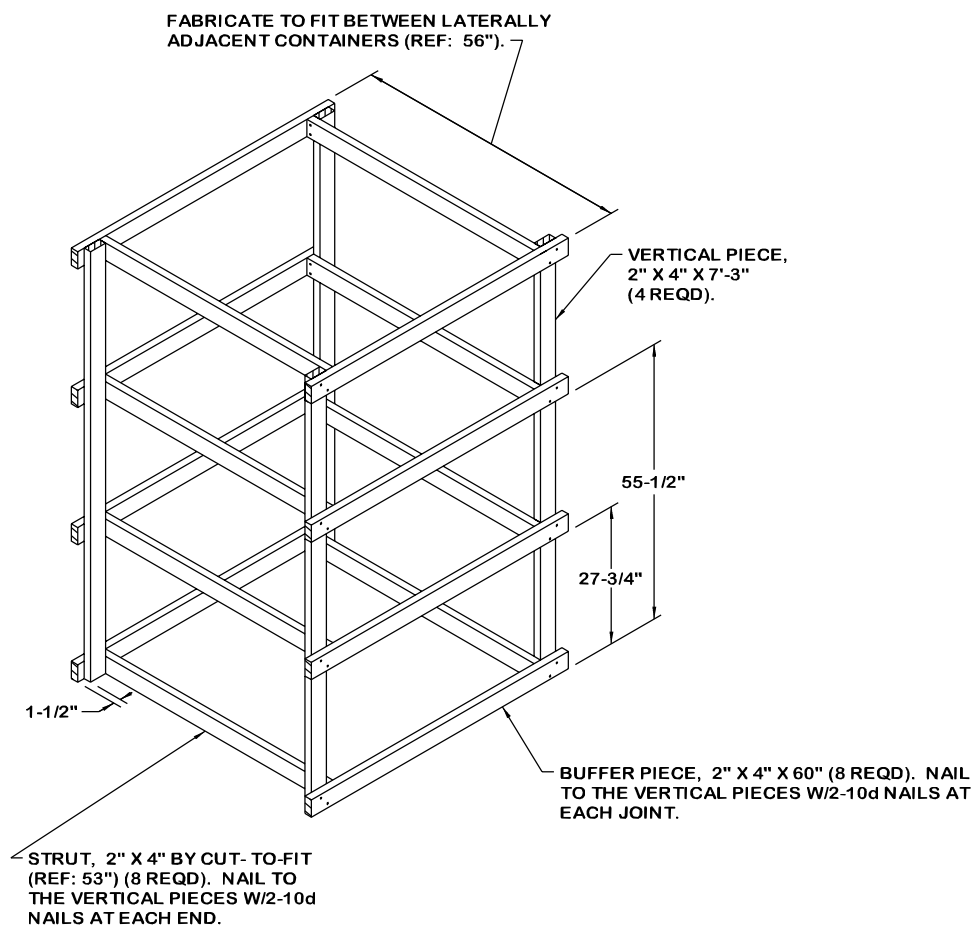
SPECIAL NOTES:

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. 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 ②.

KEY NUMBERS

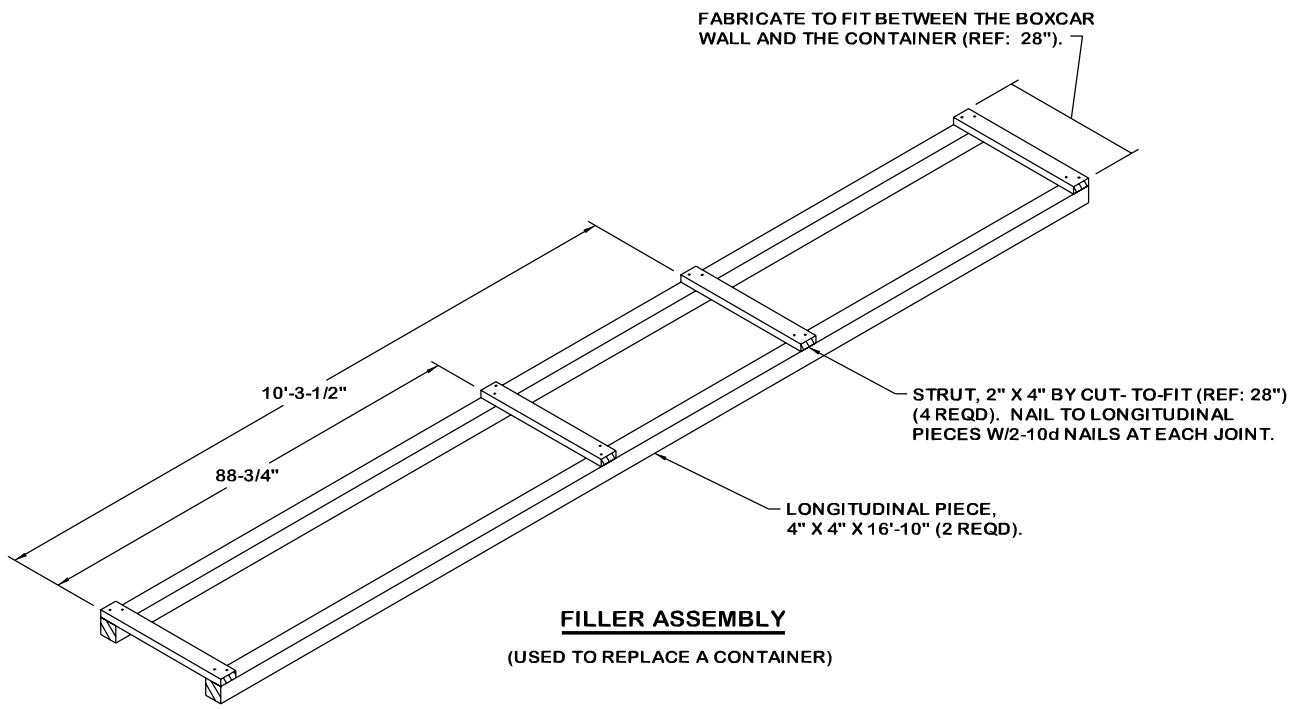
- ① HEADER, 2" X 6" X 63" (DOUBLED) (2 REQD). LOCATE SO AS TO BE CENTERED ON THE CONTAINER SKIDS. LAMINATE THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/8-40d NAILS.
- ② BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). LOCATE AS SHOWN. LAMINATE THE FIRST PIECE TO CAR FLOOR W/6-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-40d NAILS.
- ③ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). LOCATE AS SHOWN, ADJACENT TO CONTAINER SKIDS. LAMINATE THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/6-16d NAILS.



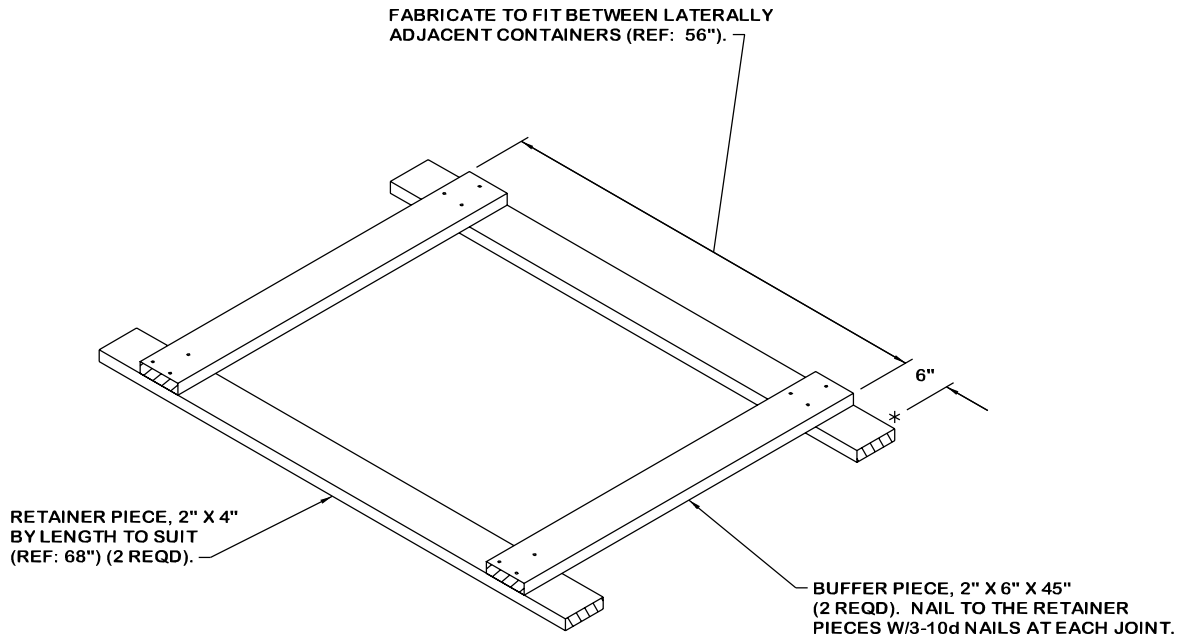


CRIB FILL ASSEMBLY

NOTE: FOR TWO HIGH STACK OF CONTAINERS REDUCE VERTICAL BOARD LENGTH TO 58". ONLY THE SIX LOWER STRUTS AND SIX LOWER BUFFER PIECES ARE REQUIRED.

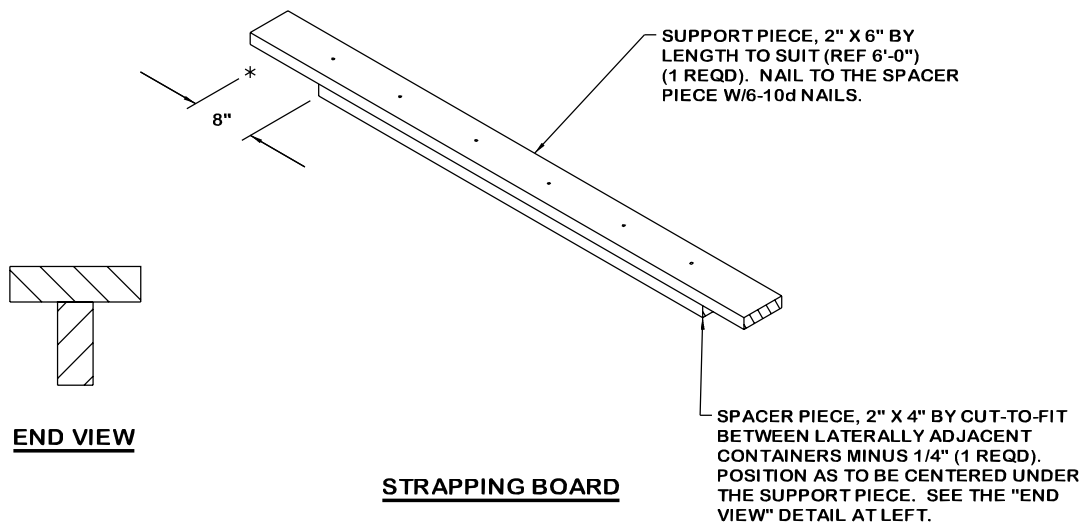


FILLER ASSEMBLY
(USED TO REPLACE A CONTAINER)

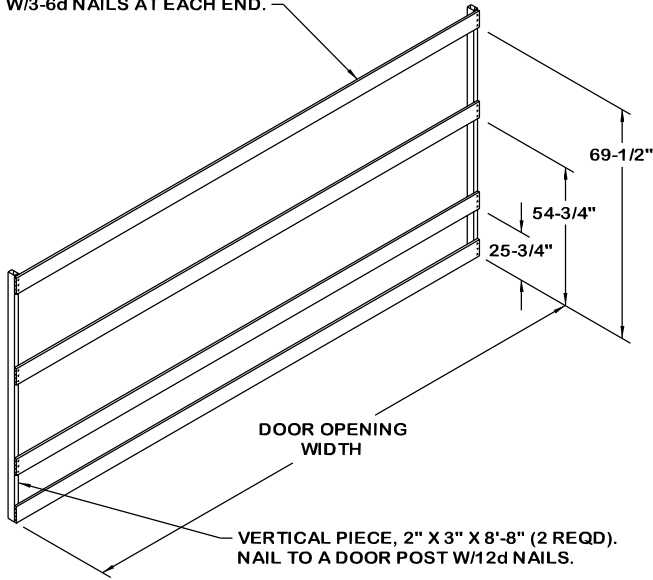


ANTI-SWAY BRACE

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



HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (3 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.



DOORWAY PROTECTION A

SEE SPECIAL NOTES 1 AND 6 AT RIGHT.

SPECIAL NOTES:

1. DOORWAY PROTECTION "A" IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS.
2. DOORWAY PROTECTION "B" IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUT NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE.
3. DOORWAY PROTECTION "C" IS FOR USE IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. IF THE CAR IS EQUIPPED WITH SPECIAL ANCHOR RODS IN THE CAR DOOR POSTS, THE DOORWAY PROTECTION STRAPS MAY BE SECURED TO THESE RODS IN LIEU OF ATTACHING TO THE CAR SIDEWALL WITH STRAP ANCHOR PLATES.
4. DOORWAY PROTECTION "D" IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS, WHEN THE DOOR POSTS ARE NOT NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE DOORWAY PROTECTION "B" DETAIL FOR GUIDANCE.
5. NAILED FLOORLINE BLOCKING AND BUNDLING STRAPS ARE REQUIRED FOR DOORWAY PROTECTION IF NONE OF THE ABOVE METHODS CAN BE USED. SEE THE LOAD ON PAGE 6 FOR GUIDANCE.
6. THE VIEWS ON PAGES 16 AND 17 DEPICT DOORWAY PROTECTION FOR A THREE-LAYER LOAD. FOR A TWO-LAYER LOAD, ELIMINATE THE TOP HORIZONTAL PIECE AND/OR STRAP AND REDUCE THE HEIGHT OF THE VERTICAL PIECES BY 38". FOR A ONE-LAYER LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES AND/OR STRAPS AND REDUCE THE HEIGHT OF THE VERTICAL PIECES BY 76". FOR DOORWAY PROTECTION "D", MOVE THE SPANNER BY AN APPROPRIATE DISTANCE.

VERTICAL PIECE, 2" X 3" X 6'-11" (2 REQD).

VIEW A

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (3 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END. SEE THE DOORWAY PROTECTION "A" DETAIL ABOVE FOR HEIGHT LOCATIONS.

INDICATES DOOR OPENING.

DOORWAY PROTECTION-GATE STRAP, 1-1/4" X .035" OR .031" X 3'-0" (REF) NAIL-ON TYPE STEEL STRAPPING (2 REQD PER LAYER OF LOAD). NAIL TO GATE AND CAR SIDEWALL AS SHOWN IN VIEW "B" BELOW. NOTE: TYPE 1 STRAPPING MAY BE PUNCHED FOR NAILING IF TYPE 2 STRAPPING IS NOT AVAILABLE.

INDICATES LOCATION OF 7 (MIN) 4d NAILS PER STRAP.

DOOR GATE CAR DOORPOST

INDICATES CAR SIDEWALL.

INDICATES CAR FLOOR.

DOORWAY PROTECTION GATE-STRAP

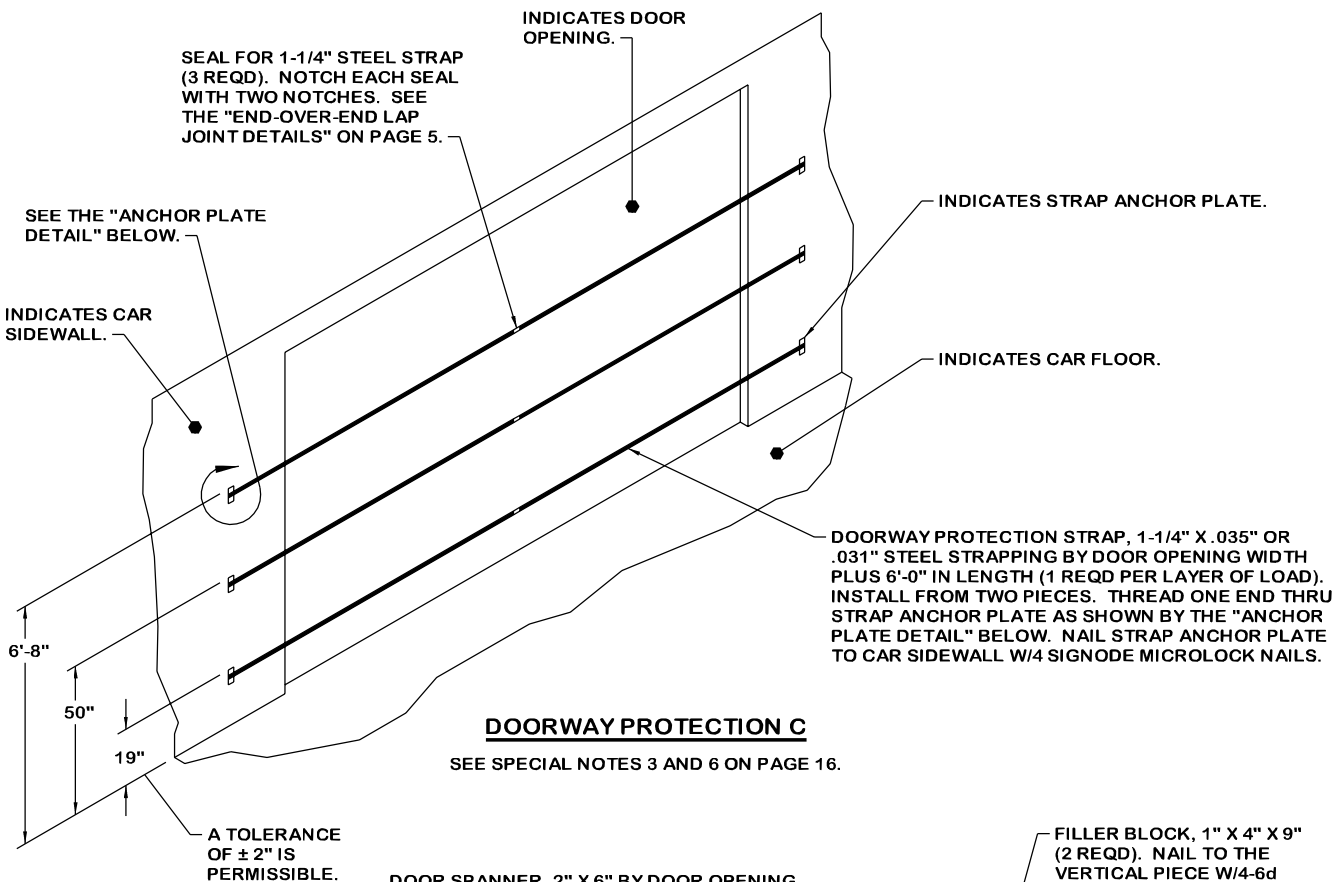
INSIDE SIDEWALL OF CAR

VIEW A

THIS VIEW DEPICTS THE LOCATION OF THE NAILS FOR SECURING THE DOORWAY-PROTECTION GATE STRAP. NOTE THAT THE STRAPS MUST BE APPLIED TO THE CAR SIDEWALL PRIOR TO POSITIONING THE ADJACENT CONTAINERS.

DOORWAY PROTECTION B

SEE SPECIAL NOTES 2 AND 6 ABOVE.

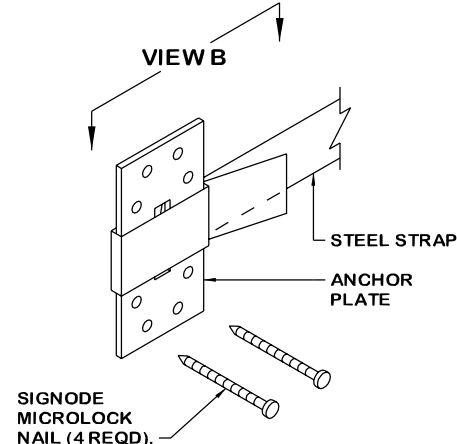


DOORWAY PROTECTION C

SEE SPECIAL NOTES 3 AND 6 ON PAGE 16.

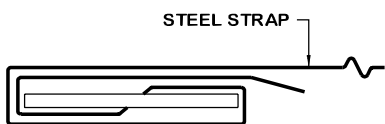
A TOLERANCE OF ± 2" IS PERMISSIBLE.

DOOR SPANNER, 2" X 6" BY DOOR OPENING WIDTH PLUS 24" (1 REQD). POSITION ABOVE THE LOAD AND NAIL THRU A FILLER BLOCK INTO A VERTICAL PIECE W/3-12d NAILS AT EACH JOINT. NAIL TO THE CAR SIDEWALL W/2-12d NAILS AT EACH END (OPTIONAL).

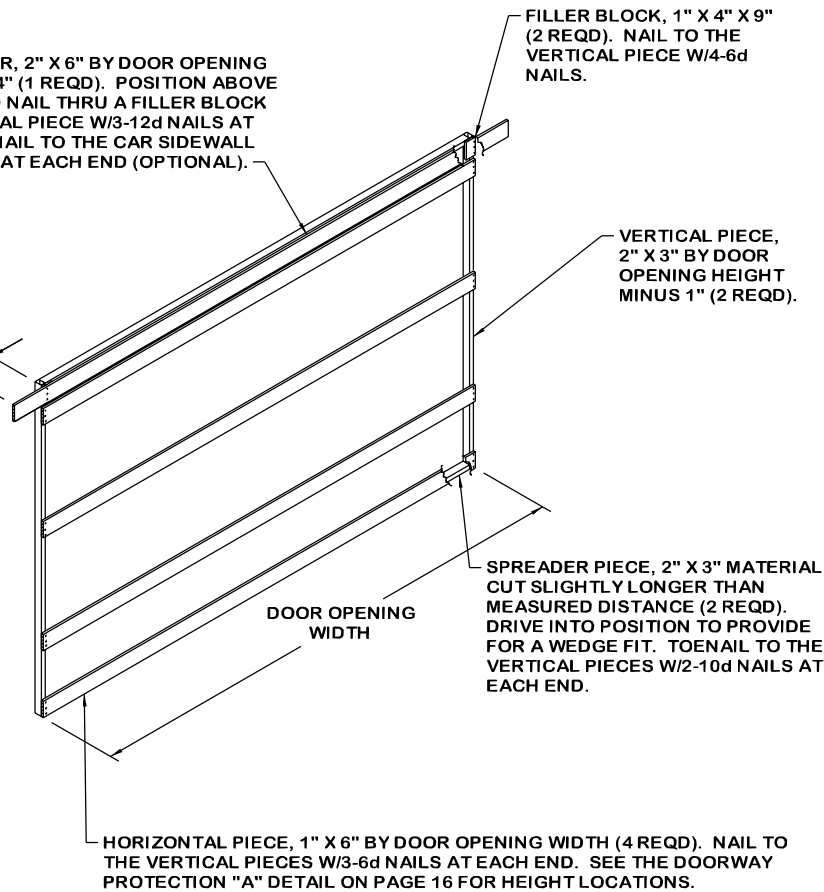


ANCHOR PLATE DETAIL

THIS VIEW AND VIEW "C" BELOW DEPICT THE PROPER THREADING OF A DOORWAY PROTECTION STRAP THRU AN ANCHOR PLATE. NOTE: FOR CLARITY PURPOSES, ONLY TWO NAILS ARE SHOWN. FOUR ARE REQUIRED.



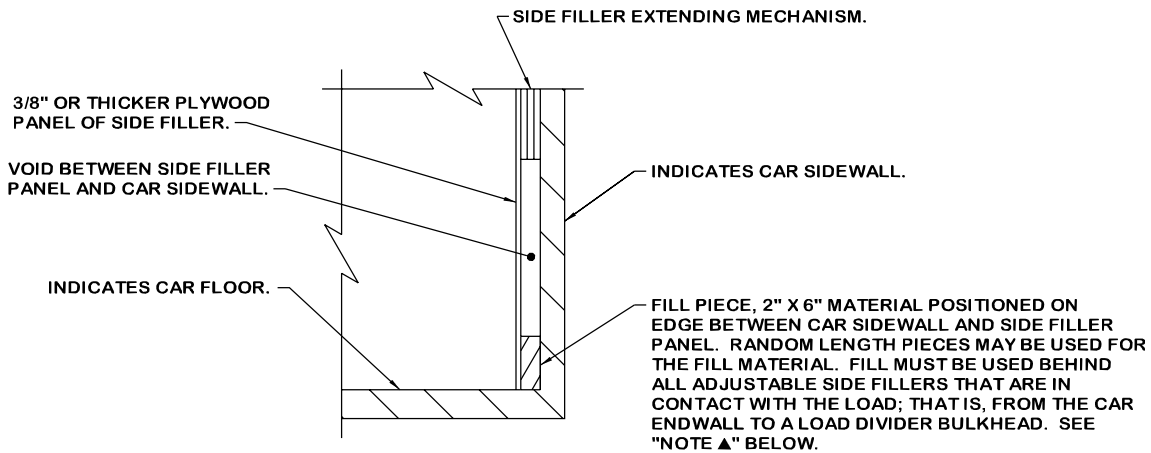
VIEW B



DOORWAY PROTECTION D

SEE SPECIAL NOTES 4 AND 6 ON PAGE 16.

DOORWAY PROTECTION

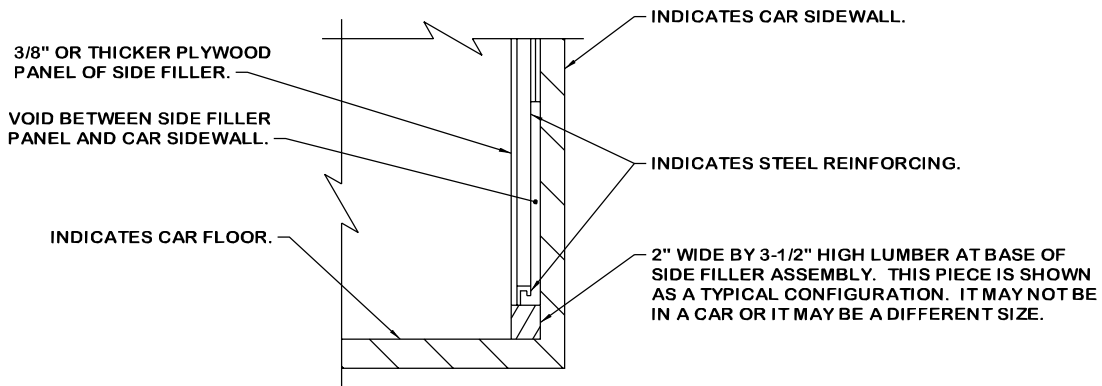


SIDE FILLER TYPICAL TYPE A

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.