

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 OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA104 SERIES COMPLETE ROUND CONTAINER WHEN UNITIZED ON A 44-1/2" X 43-1/2" METAL PALLET. SEE THE PICTORIAL VIEW ON PAGE 3. REFER TO THE U.S. ARMY AMC DRAWING 19-48-4079/68-20PM1002 FOR UNITIZATION PROCEDURES FOR THE PA104 SERIES CONTAINER.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX CARS, FOR SHIPMENTS IN BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
- D. CAUTION: METAL COMPLETE ROUND CONTAINERS THAT ARE FLUSH WITH OR OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL ENDWALLS OF BOXCARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOXCARS HAVING WOOD ENDWALLS. IF CARS WITH WOOD ENDWALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE ENDWALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 34 FOR GUIDANCE.
- E. PALLET UNITS WILL BE POSITIONED WITH THE BASE ENDS OF CONTAINERS AGAINST THE CAR ENDWALL. LONGITUDINALLY ADJACENT UNITS WILL BE POSITIONED WITH BASE END AGAINST BASE END OR BELL END AGAINST BELL END OF CONTAINERS.
- F. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLETIZED UNITS OF COMPLETE ROUNDS 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.
- G. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END OF CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 35 FOR GUIDANCE.
- H. CONVENTIONAL BOX CARS EQUIPPED WITH SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR 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.
- J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF COMPLETE ROUNDS, 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. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER**-----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS**-----: COMMON, FED SPEC FF-N-105.
- STAPLES**-----: FED SPEC FF-N-105; SENCO QUALITY OR EQUAL.
- STRAPPING, STEEL**---: ASTM D 3953; FLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.
- STRAP SEAL**-----: ASTM D 3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.
- STRAP STAPLE**-----: COMMERCIAL GRADE.
- PLYWOOD**-----: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NIP-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- WIRE**-----: FED SPEC QQ-W-461.
- HARDBOARD**-----: ANS1/AHA A135.4 CLASS 1.
- SOLID FIBERBOARD**---: FED SPEC PP-F-320; TYPE SF, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE SF, CLASS WEATHER RESISTANT, GRADE W65 OR STRONGER.

(GENERAL NOTES CONTINUED)

- L. 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 LAMINATED 2" X 6" MATERIAL, IT IS PERMISSIBLE TO USE 4" X 4" MATERIAL. TOENAIL EACH END W/2-16D NAILS IN LIEU OF W/2-12D NAILS.
- M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR 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.
- N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CARLOADS 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" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTICE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- O. WHEN STEEL STRAPPING IS SEALED AT AN END OVER END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) 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 37 FOR GUIDANCE.
- P. 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.
- Q. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR 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 RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- R. 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 0.454KG.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CAR)

- S. 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 OF THE "DOORWAY PROTECTION" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES 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 "M" ABOVE.
- T. NOTICE: WHEN POSITIONING PALLET UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO 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 PALLET UNITS IN TO 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 PALLET UNIT, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2 INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
- U. LOAD BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS TYPICALLY SHOWN BY PIECES MARKED (8) AND (9) ON PAGE 4. 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 FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED FROM PAGE 2)

- V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. 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 WHEN USING THE ALTERNATIVE 4" x 4" STRUTS AS PERMITTED BY GENERAL NOTE "L", WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. DOUBLED 2" x 6" STRUTS SHOULD NOT BE BEVELED ON THE ENDS. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD (OR IN GENERAL NOTE "L") 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 37 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 OF A 4" x 4" STRUT NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END OF A 4" x 4" STRUT 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.
- W. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

- X. THE OUTLOADING PROCEDURES FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS AND DOORWAY MEMBERS WITHIN THESE CARS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. CAUTION: BOX CARS EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
 1. FOR BLOCKING THE LOADS WHICH ARE DEPICTED, A CROSS MEMBER WILL NOT BE RELIED UPON TO RETAIN MORE LADING ON EITHER SIDE THAN AS SHOWN. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM AND CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE SPACING OF THE LOCKING HOLES IN THE WALL MEMBERS PERMIT. LOCKING BARS (LEVER JACKS) SHOULD BE USED FOR THIS PURPOSE. AN ADDITIONAL 1/2" OF ADJUSTMENT CAN BE MADE BY TURNING A CROSS MEMBER END FOR END WHEN LOCKING PINS ON THE MEMBER ARE OFF-CENTER. NOTE: IT IS RECOMMENDED THAT EACH CROSS MEMBER BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CAR).
 2. CAUTION: ALL BLOCKING AND BRACING COMPONENTS IN EMPTY CARS AND ALL UNUSED COMPONENTS IN LOADED CARS MUST BE "SECURED" FOR SHIPMENT---ADJUSTABLE WALL MEMBERS TO VERTICAL WALL ATTACHMENT RAILS, AND CROSS MEMBERS TO ADJUSTABLE WALL MEMBERS OR TO FIXED HORIZONTAL WALL MEMBERS OR TO DOORWAY MEMBERS, AND DOORWAY MEMBERS TO DOOR POSTS. COMPONENTS ASSIGNED TO EACH CAR MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
- Y. IN A CAR EQUIPPED WITH ADJUSTABLE WALL MEMBERS, PROVIDING THE FIXED WALL MEMBERS WHICH ARE PRESENT IN SOME "ADJUSTABLE" CARS ARE NOT PROPERLY POSITIONED TO PROVIDE SIDE BEARING SURFACES BETWEEN THE UNITS AND THE CAR SIDEWALLS, ADJUSTABLE WALL MEMBERS (AS REQUIRED) MUST BE INSTALLED TO PROVIDE A MINIMUM OF ONE SURFACE AREA FOR SIDE BEARING AT SOME LOCATION WITHIN THE UPPER HALF OF EACH UNIT.
- Z. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

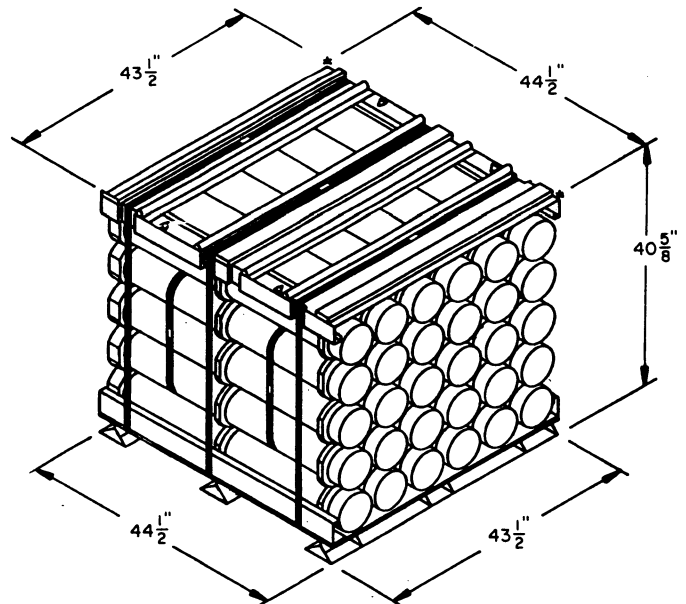
(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- AA. CAUTION: FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIP-CO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSOQ 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 XL1.
- BB. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR 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 CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.
- CC. IF MAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS 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 43 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 43, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

(CONTINUED AT RIGHT)

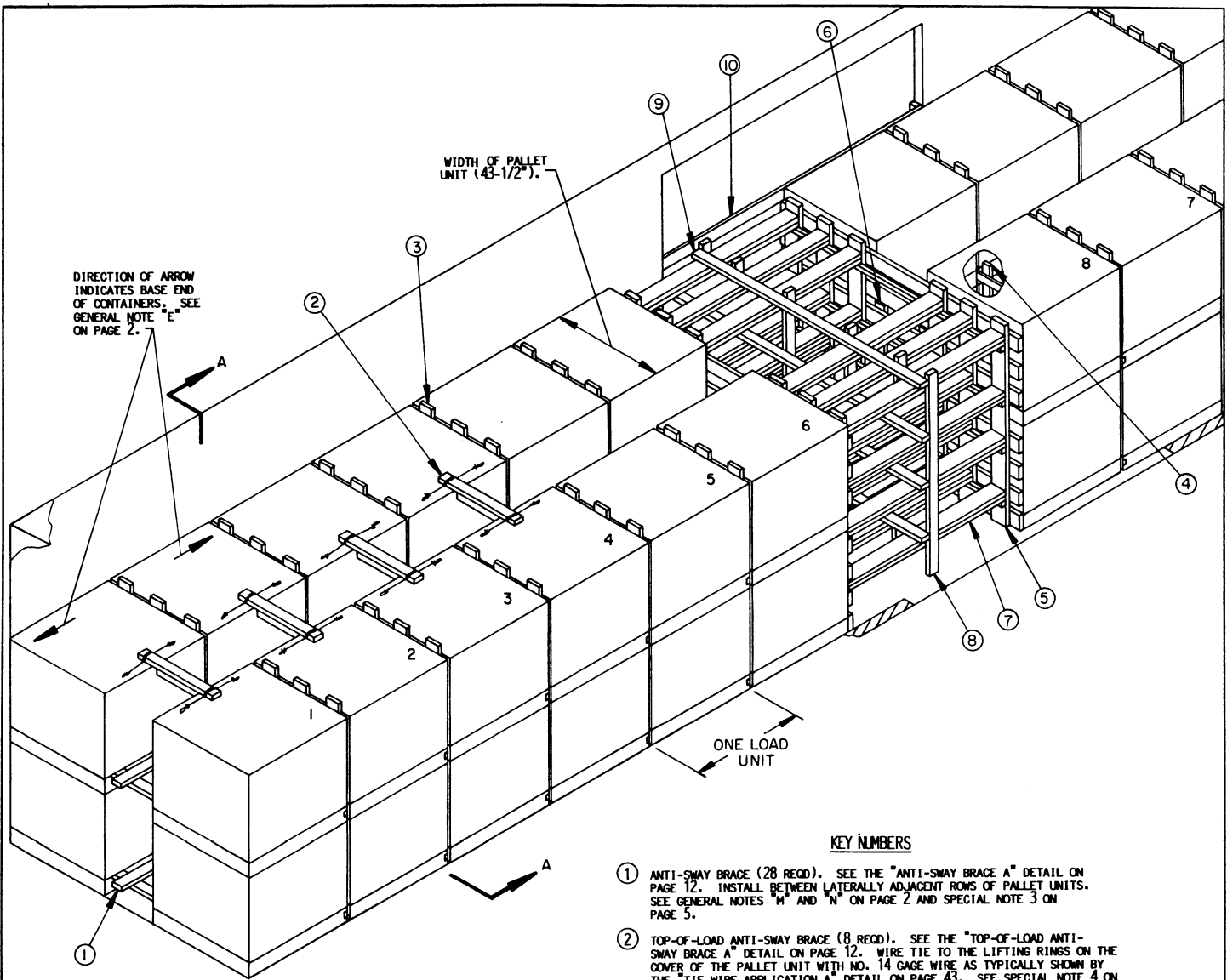
(GENERAL NOTES CONTINUED)

- DD. 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.
- EE. 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 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 BY GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 1-PIECE BULKHEADS AND BETWEEN 2-PIECE BULKHEADS ARE SHOWN ON PAGE 42.
- FF. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN A CAR END WALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF PALLET UNITS WHICH 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, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
 1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 18 AND 19.
 2. THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGE 17 FOR GUIDANCE.
 3. AT LOCATION(S) WHERE K-BRACE MIGHT NORMALLY BE USED IN A LOAD IN A CONVENTIONAL CAR, LOAD DIVIDER BULKHEADS CAN BE POSITIONED. LOADING CAN THEN CONTINUE TOWARD THE CENTER OF THE CAR FROM EACH INSTALLED LOAD DIVIDER BULKHEAD, IN EVEN LAYERS WHICH ARE ONE OR MORE LESS IN HEIGHT THAN THE LOAD IN THE ENDS OF THE CAR. INSTALL CENTER GATES, STRUTS AND GATE HOLD DOWNS AS SHOWN IN THE APPLICABLE CONVENTIONAL BOX CAR DRAWING HEREIN, TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.
 4. ONE OR MORE UNITS CAN BE POSITIONED IN CONTACT WITH A LOAD DIVIDER ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 31, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 26.
- GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

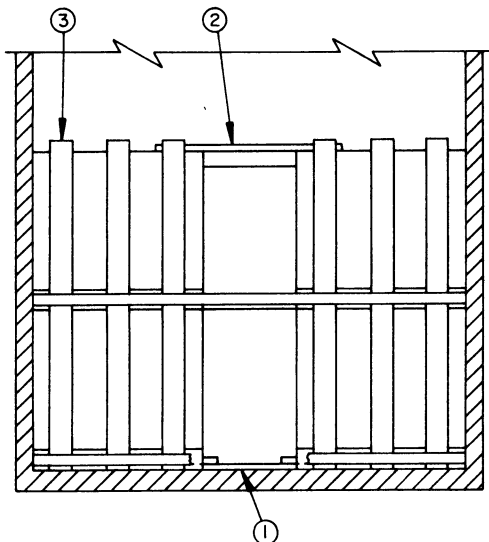


PALLET UNIT

CONTAINER ----- 30 EACH @ 70 LBS (APPROX)
 CUBE ----- 45.5 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 2,283 LBS (APPROX)



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① ANTI-SWAY BRACE (28 REQD.). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 5.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD.). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO THE LIFTING RINGS ON THE COVER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 43. SEE SPECIAL NOTE 4 ON PAGE 5.
- ③ SEPARATOR GATE (12 REQD.). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. POSITION WITH THE TIE PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 5.
- ④ STOP PIECE, 1" x 4" x 48" (2 REQD.). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6D NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 5.
- ⑤ CENTER GATE (2 REQD.). SEE THE "CENTER GATE A" DETAIL ON PAGE 12. SEE SPECIAL NOTES 9 THRU 11 ON PAGE 5.
- ⑥ CENTER GATE STOP PIECE, 2" x 4" x 30" (DOUBLED) (4 REQD.). SEE THE "CENTER GATE A" DETAIL FOR PLACEMENT AND NAILING. SEE SPECIAL NOTE 16 ON PAGE 5.
- ⑦ STRUT, 2" x 6" BY CUT TO FIT (REF: 7'-6") (DOUBLED) (24 REQD.). LAMINATE W/1-10D NAIL EVERY 6". TOENAIL TOP PIECE TO PIECE MARKED ⑤ W/2-12D NAILS AT EACH END. SEE GENERAL NOTES "L", "I", AND "U" ON PAGE 2.
- ⑧ VERTICAL STRUT BRACING, 2" x 4" x 6'-5" (6 REQD.). NAIL TO THE STRUTS W/3-10D NAILS AT EACH JOINT.
- ⑨ HORIZONTAL STRUT BRACING, 2" x 4" BY CAR WIDTH MINUS 2" (4 REQD.). NAIL TO THE STRUTS W/3-10D NAILS AT EACH JOINT.
- ⑩ DOORWAY PROTECTION (2 REQD.). SEE THE DETAIL ON PAGE 14. NAIL TO THE DOOR POSTS W/12D NAILS. SEE SPECIAL NOTE 12 ON PAGE 5.

(SPECIAL NOTES CONTINUED)

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO CENTER GATE "A" PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 38 FOR GUIDANCE.
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT 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, SHOWN AS PIECE MARKED ⑩ IN THE LOAD ON PAGE 4, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 39 THRU 41 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, NAILABLE FLOOR-LINE BLOCKING, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. NOTE THAT THE DOORWAY PROTECTION FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. SEE PAGE 46.
13. THE DEPICTED LOAD PATTERN CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHOD OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 16 THRU 31 FOR GUIDANCE.
14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 32 FOR SHIPPING GUIDANCE.
15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 33 FOR GUIDANCE.
16. WHEN SPLIT GATES ARE TO BE USED IN A LOAD AND THE GATES ARE COMPLETELY WITHIN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING WITHIN THE DOORWAY, THE SPLIT GATES MUST BE MODIFIED AS SHOWN BY THE PHANTOM LINES ON THE "CENTER GATE B" DETAIL ON PAGE 13. FOR A 2-HIGH LOAD THE 65-1/2" AND 35-3/4" HIGH HORIZONTAL PIECES WILL BE EXTENDED TOWARD THE CENTER OF THE CAR WIDTH APPROXIMATELY FIVE INCHES (5"). TO PREVENT THE SPLIT GATES FROM ENTERING THE DOOR OPENING, DOUBLED 2" X 4" X 36" LONG PIECES WILL BE POSITIONED SO AS TO BE IN CONTACT WITH THE PALLET UNITS AND NAILED TO THESE EXTENSIONS. FOR A 1-HIGH LOAD THE 35-3/4" AND 25" HIGH HORIZONTALS WILL BE EXTENDED, AND DOUBLED 20" LONG 2" X 4" PIECES APPLIED.
17. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED OFFSET LOAD OR FOR THE PERMITTED 60-UNIT LOAD MUST HAVE A LOAD LIMIT OF AT LEAST 133,000 POUNDS. FIFTY-SIX PALLET UNITS CAN BE LOADED IN A CAR HAVING A LOAD LIMIT OF 130,600 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE PLACED IN EACH END OF THE CAR. FOR A 48-UNIT LOAD IN A 50'-6" LONG CAR, A LOAD LIMIT OF AT LEAST 120,700 POUNDS IS REQUIRED IF AN OFFSET PATTERN IS USED, OR A LOAD LIMIT OF 110,700 POUNDS OR GREATER IF LOADED EVENLY. FOR A 36-UNIT LOAD IN A 40'-6" LONG CAR, A LOAD LIMIT OF AT LEAST 92,300 POUNDS IS REQUIRED.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. A MAXIMUM OF FORTY-EIGHT (48) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 109,584 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR. THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 82,188 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR. NOTE THAT IN A 40' LONG CAR, ONLY FOUR (4) STRUTS ARE REQUIRED PER ROW/LAYER; OMIT THE CENTER STRUTS. IF THE LOAD LIMIT OF THE DEPICTED 60'-8" LONG CAR PERMITS, AN ADDITIONAL FOUR (4) PALLET UNITS CAN BE SHIPPED. SEE SPECIAL NOTE 17 AT LEFT.
3. IF THE NAILABLE FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION AS SHOWN BY THE "ALTERNATIVE DOORWAY PROTECTION" DETAIL ON PAGE 41 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑩, NAILABLE FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILABLE BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 4, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO LIFTING RINGS ON THE CORNER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 3" TIE PIECES ARE LOCATED UNDER THE "OVERHANGS" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. WHEN NAILABLE FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILABLE BLOCKING MUST BE MODIFIED. FOR A 2-HIGH LOAD OR A 1-HIGH LOAD, SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 35. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILABLE FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED ④, WILL BE 45" FOR A 2-HIGH LOAD OR 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "E" IS USED IN A CAR EQUIPPED WITH PLUG DOORS.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 35 FOR CONSTRUCTION GUIDANCE.
9. CENTER GATE "A" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 36 FOR GUIDANCE.
10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE A" SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 4, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 13. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 36, OMIT THE STOP PIECE FROM "CENTER GATE C".

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	56	127,848 LBS
DUNNAGE		2,616 LBS
TOTAL WEIGHT		130,464 LBS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 3"	220	55
1" x 4"	8	3
1" x 6"	584	292
2" x 2"	108	36
2" x 3"	27	14
2" x 4"	494	330
2" x 6"	564	564
NAILS	NO. REQD	POUNDS
6d (2")	480	3
10d (3")	1,296	20
12d (3-1/4")	164	2-3/4
WIRE, NO. 14 GAGE	80' REQD	1-1/2 LBS

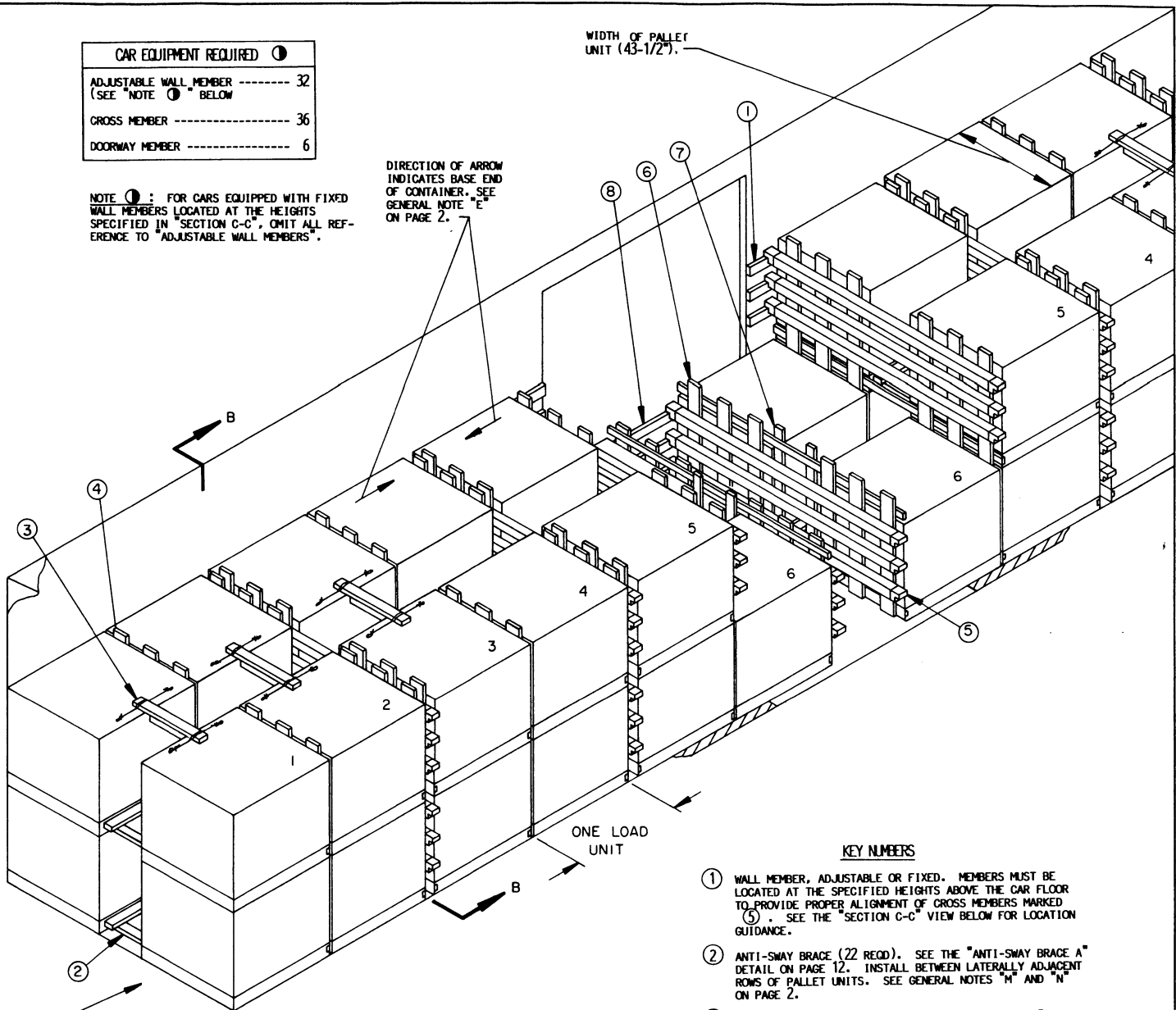
CAR EQUIPMENT REQUIRED ●

ADJUSTABLE WALL MEMBER (SEE NOTE 1 BELOW)	32
CROSS MEMBER	36
DOORWAY MEMBER	6

NOTE 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN SECTION C-C, OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".

DIRECTION OF ARROW INDICATES BASE END OF CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2.

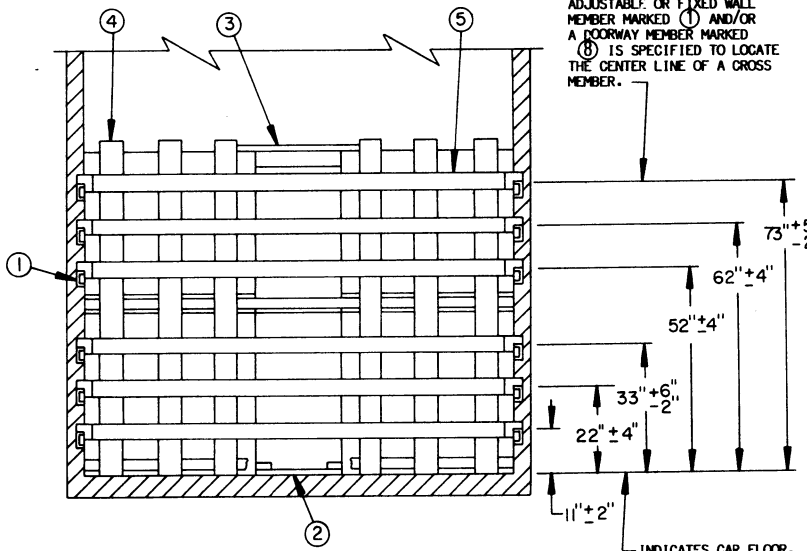
WIDTH OF PALLET UNIT (43-1/2").



SEE GENERAL NOTES "D" AND "G" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 7.

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 8 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION B-B

INDICATES CAR FLOOR.

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO THE LIFTING RINGS ON THE COVER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. SEE SPECIAL NOTE 4 ON PAGE 7.
- 4 SEPARATOR GATE FOR 2-HIGH (14 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. AS APPLICABLE, POSITION WITH THE TIE PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 7.
- 5 CROSS MEMBER (36 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 SEPARATOR GATE FOR 1-HIGH (2 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. AS APPLICABLE, POSITION WITH THE TIE PIECES AGAINST THE ALREADY-LOADED UNITS.
- 7 STOP PIECE, 1" x 4" x 48" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE TIE PIECES OF PIECE MARKED 6 WITH 3-6D NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 7.
- 8 DOORWAY MEMBER (6 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 7.

(SPECIAL NOTES CONTINUED)

- THE CAR TO BE USED FOR THE DEPICTED EVEN LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 101,700 POUNDS. IF AN OFFSET PATTERN IS USED, A LOAD LIMIT OF 120,000 POUNDS WILL BE REQUIRED. FOR A 52-UNIT LOAD IN A 60'-8" LONG CAR, A LOAD LIMIT OF 129,100 POUNDS IS REQUIRED FOR AN OFFSET PATTERN OR A LOAD LIMIT OF 120,300 POUNDS OR GREATER IF LOADED EVENLY.

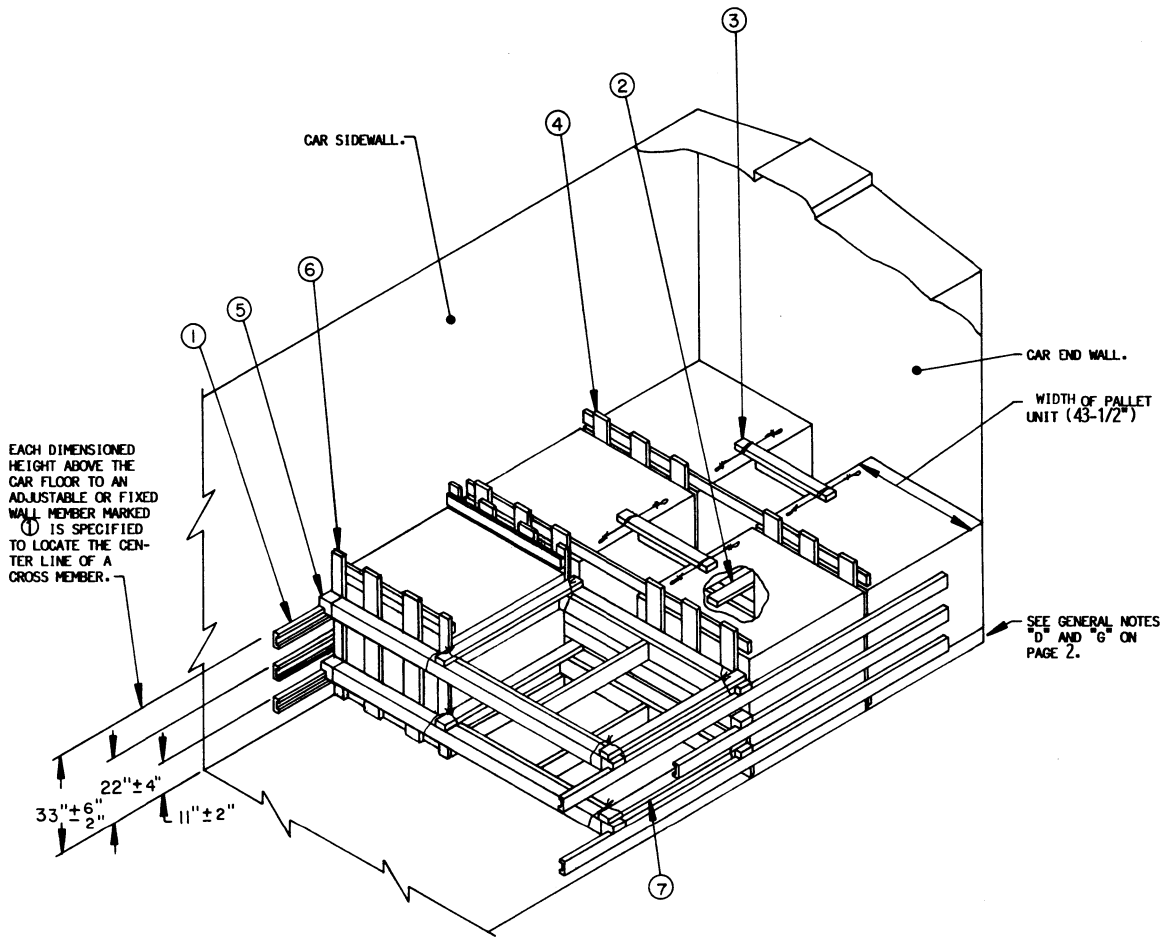
SPECIAL NOTES:

- A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
- A MAXIMUM OF FIFTY-TWO (52) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 118,716 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR. THIRTY (30) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,490 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 10 BELOW.
- IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (4), MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
- TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE LIFTING RINGS ON THE CORNER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
- TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED (4), SO THE 1" X 3" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
- SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (7), IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
- SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 35 FOR CONSTRUCTION GUIDANCE.
- IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL FOUR PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.
- THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LGL PROCEDURES ON PAGES 8 AND 9 FOR GUIDANCE.
- FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 33 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 3"	287	72
1" x 4"	16	6
1" x 6"	636	318
2" x 4"	300	200
NAILS	NO. REQD	POUNDS
6d (2")	600	3-3/4
10d (3")	264	4-1/4
12d (3-1/4")	30	1/2
WIRE, NO. 14 GAGE -----	60' REQD -----	1 LB

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	44 -----	100,452 LBS
DUNNAGE -----	-----	1,202 LBS
TOTAL WEIGHT -----		101,654 LBS



ISOMETRIC VIEW

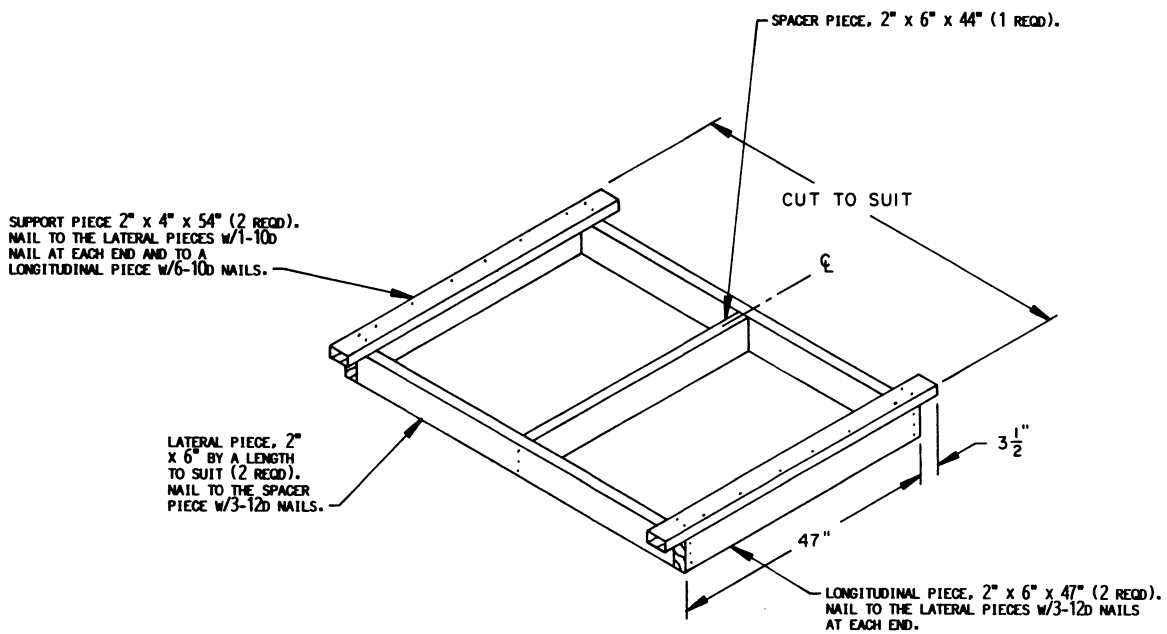
SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. THREE (3) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' LONG CARS, FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60' LONG CAR.
4. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
5. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED ⑦, MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECES TO THE CAR END WALL W/6-10D NAILS. IF THE END WALL IS NON-AVAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

KEY NUMBERS

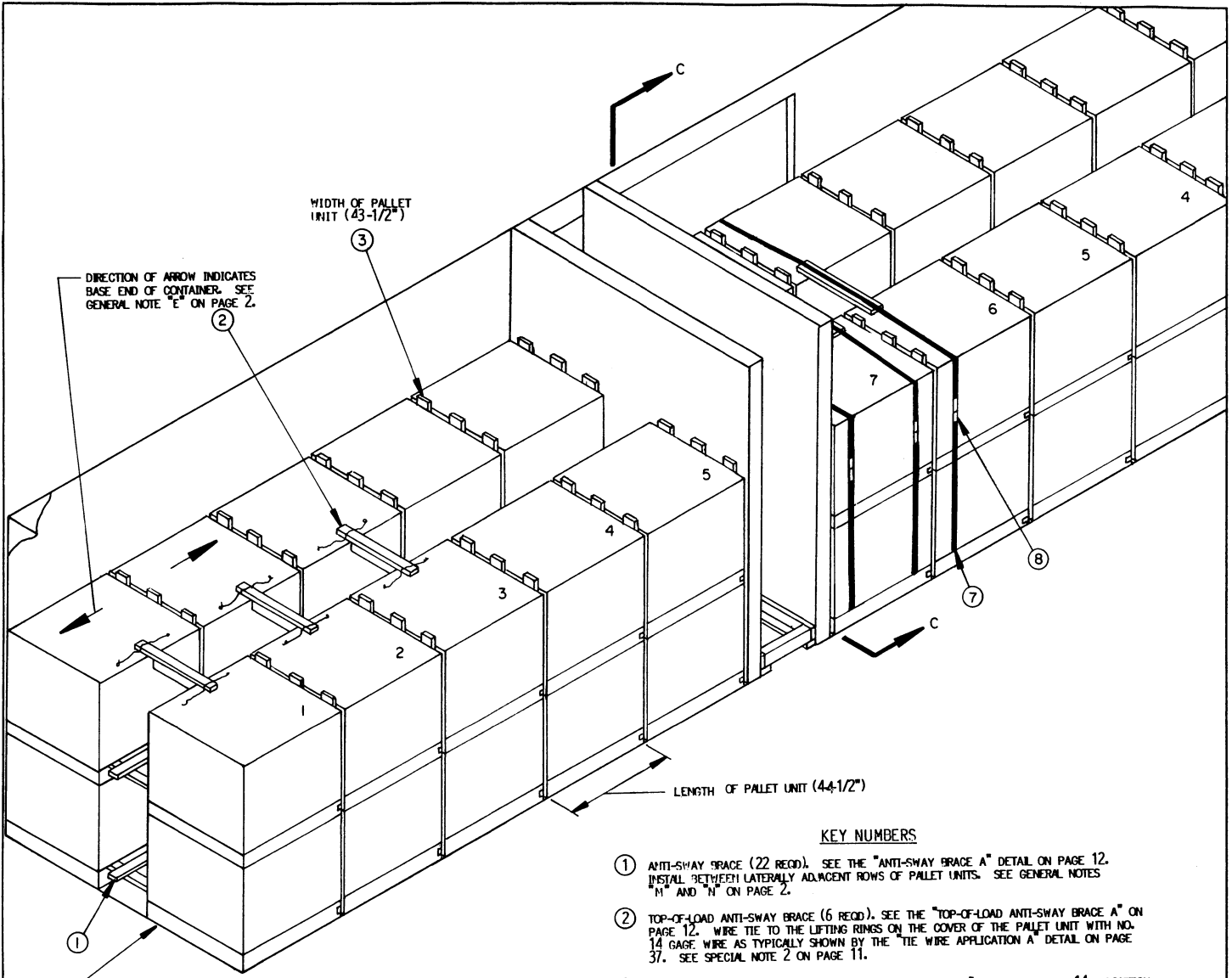
- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤.
- ② ANTI-SWAY BRACE (2 REQ). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQ). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO THE LIFTING RINGS ON THE COVER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. SEE SPECIAL NOTE 3 AT LEFT.
- ④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQ). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. POSITION WITH THE 1" X 3" TIE PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑤ CROSS MEMBER (5 REQ). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQ). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 14. POSITION WITH THE 1" X 3" TIE PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑦ SPACER ASSEMBLY (2 REQ). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 9 AND SPECIAL NOTE 5 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES HAVING ADJUSTABLE OR FIXED WALL MEMBERS



SPACER ASSEMBLY A

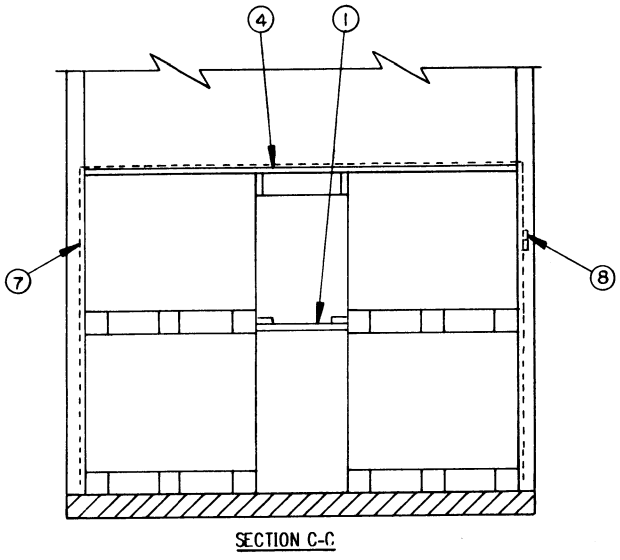
TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES HAVING ADJUSTABLE OR FIXED WALL MEMBERS



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (22 REQD.). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD.). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" ON PAGE 12. WIRE TIE TO THE LIFTING RINGS ON THE COVER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. SEE SPECIAL NOTE 2 ON PAGE 11.
- ③ SEPARATOR GATE (12 REQD.). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. POSITION WITH THE TIE PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 6 ON PAGE 11.
- ④ STOP PIECE, 1" x 4" x 48" (4 REQD.). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-60 NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 11.
- ⑤ DOORWAY BLOCKING, 2" x 6" x 44" (DOUBLED) (4 REQD.). POSITION AS SHOWN IN "SECTION C-C". NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-160 NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑥ SPACER ASSEMBLY (3 REQD.). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 41. SEE SPECIAL NOTE 7 ON PAGE 11.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" x .031" OR .035" x 33'-0" LONG STEEL STRAPPING (3 REQD.). INSTALL TO ENCIROLE THE PALLET UNIT STACKS AND THE SPACER ASSEMBLY IN THE DOORWAY AREA. STAPLE TO THE SPACER ASSEMBLY W/2 STAPLES.
- ⑧ SEAL FOR 1-1/4" STRAPPING (6 REQD.). DOUBLE CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑨ STRUT ASSEMBLY (1 REQD.). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 42. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 8 ON PAGE 11.



SECTION C-C

SPECIAL NOTES :

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE 'D' ON PAGE 2.
2. A MAXIMUM OF SIXTY (60) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 136,980 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR. THIRTY-SIX (36) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 82,188 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO LIFTING RINGS ON THE CORNER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED (3), SO THE 1" X 3" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER FLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 35 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. TWO (2) DOORWAY PROTECTION STRAPS AND SPACER ASSEMBLIES, PIECES MARKED (7) AND (6), RESPECTIVELY, ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN THE DOORWAY OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) EACH DOORWAY PROTECTION STRAP AND SPACER ASSEMBLY IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH. THE DEPICTED DOORWAY PROTECTION IS APPLICABLE FOR CARS EQUIPPED WITH EITHER SLIDING TYPE OR PLUG TYPE DOORS, OR A COMBINATION THEREOF. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING TYPE DOORS, WOODEN DOOR GATES, SHOWN AS PIECE MARKED (10) ON PAGE 4 OR ANY OF THE ALTERNATIVES ON PAGES 39 THRU 41 MAY BE USED.
8. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED (8) IN THE LOAD ON PAGE 10 IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN FIVE (5) LOAD UNITS.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 16 THRU 31 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 32 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 33 FOR GUIDANCE.

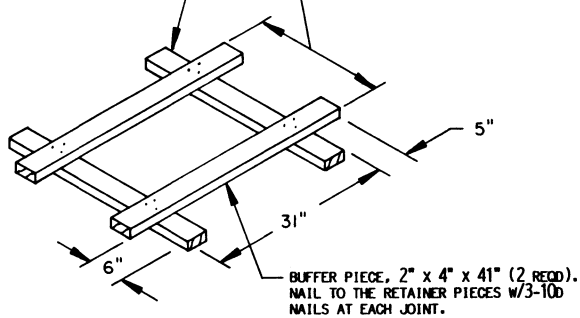
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" x 4" x 3"	219	55
1" x 4" x 4"	16	6
1" x 6" x 4"	504	252
1" x 6" x 6"	17	12
2" x 4" x 4"	353	236
2" x 6" x 4"	30	30
4" x 4" x 4"	22	30
NAIS	NO. REQD	POUNDS
60 (2")	473	3
100 (3")	282	4-1/2
120 (3-1/4")	61	1
160 (3-1/2")	40	1
STEEL STRAPPING, 1-1/4" x .035" OR .031" --- 99' REQD --- 15 LBS		
SEAL FOR 1-1/4" STRAPPING --- 6' REQD --- NIL		
WIRE, NO. 14 GAGE --- 60' REQD --- 1 LB		
STAPLES --- 12' REQD --- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	48	109,584 LBS
DUNNAGE		1,268 LBS
TOTAL WEIGHT		110,852 LBS

RETAINER PIECE, 2" x 4" BY A LENGTH TO SUIT (2 RECD).

FABRICATE TO FIT BETWEEN THE POSTS OF THE LATERALLY ADJACENT PALLETS.



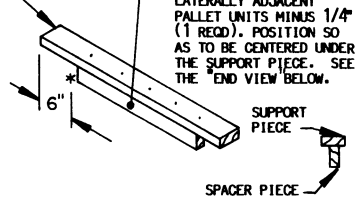
BUFFER PIECE, 2" x 4" x 41" (2 RECD). NAIL TO THE RETAINER PIECES W/3-10D NAILS AT EACH JOINT.

ANTI-SWAY BRACE A

FOR USE WITH LENGTHWISE-POSITIONED CONTAINERS AS SHOWN IN THE LOADS ON PAGES 4 THRU 10. IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENINGS OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET UNITS.

SUPPORT PIECE, 2" x 4" BY A LENGTH TO SUIT (1 RECD). NAIL TO THE SPACER PIECE W/5-12D NAILS.

SPACER PIECE, 2" x 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS MINUS 1/4" (1 RECD). POSITION SO AS TO BE CENTERED UNDER THE SUPPORT PIECE. SEE THE "END VIEW BELOW."



END VIEW

TOP-OF-LOAD ANTI-SWAY BRACE A

THIS ASSEMBLY IS FOR USE WITH LENGTHWISE POSITIONED CONTAINERS, AS SHOWN IN THE LOADS ON PAGE 4, 6, 8, AND 10.

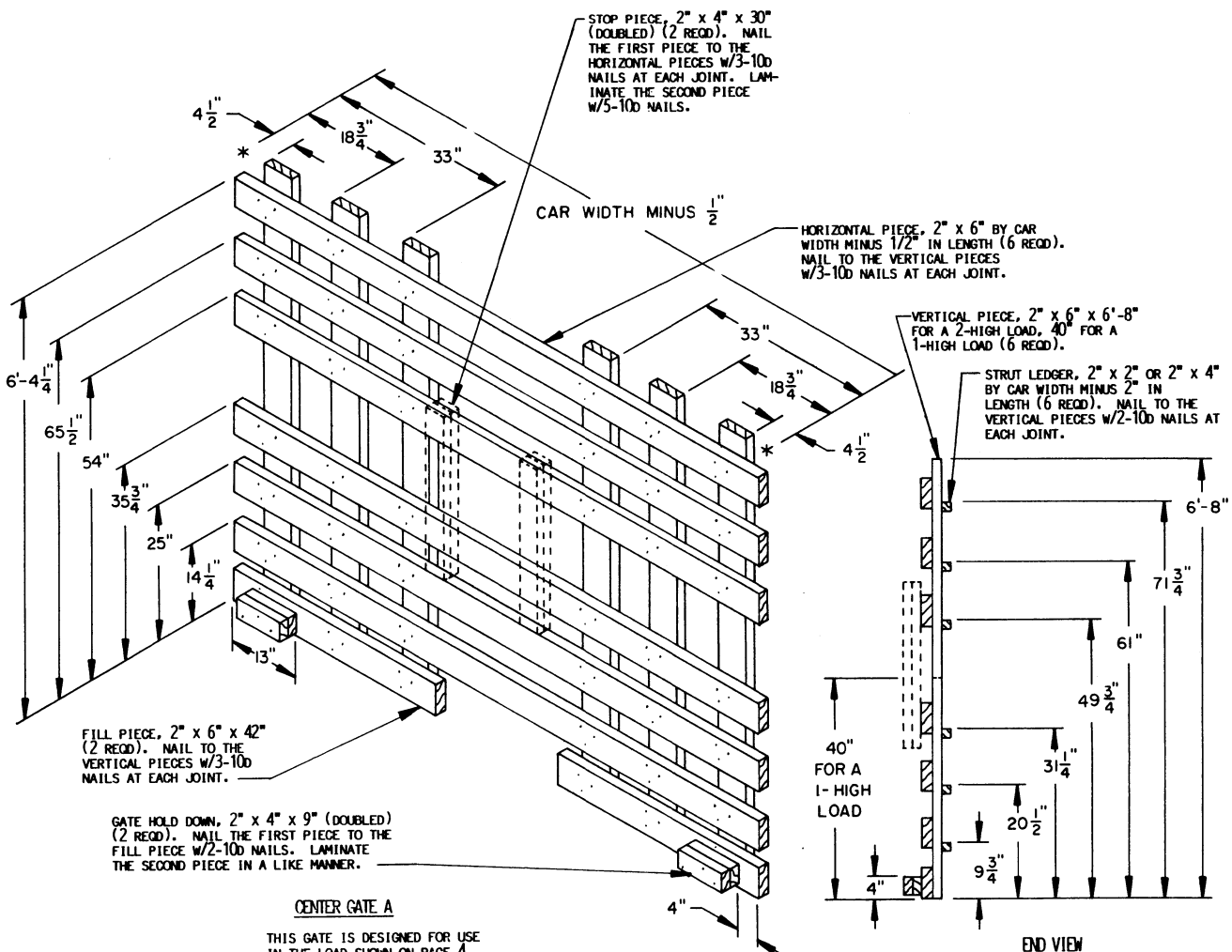
STOP PIECE, 2" x 4" x 30" (DOUBLED) (2 RECD). NAIL THE FIRST PIECE TO THE HORIZONTAL PIECES W/3-10D NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE W/5-10D NAILS.

CAR WIDTH MINUS 1/2"

HORIZONTAL PIECE, 2" x 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (6 RECD). NAIL TO THE VERTICAL PIECES W/3-10D NAILS AT EACH JOINT.

VERTICAL PIECE, 2" x 6" x 6'-8" FOR A 2-HIGH LOAD, 40" FOR A 1-HIGH LOAD (6 RECD).

STRUT LEDGER, 2" x 2" OR 2" x 4" BY CAR WIDTH MINUS 2" IN LENGTH (6 RECD). NAIL TO THE VERTICAL PIECES W/2-10D NAILS AT EACH JOINT.



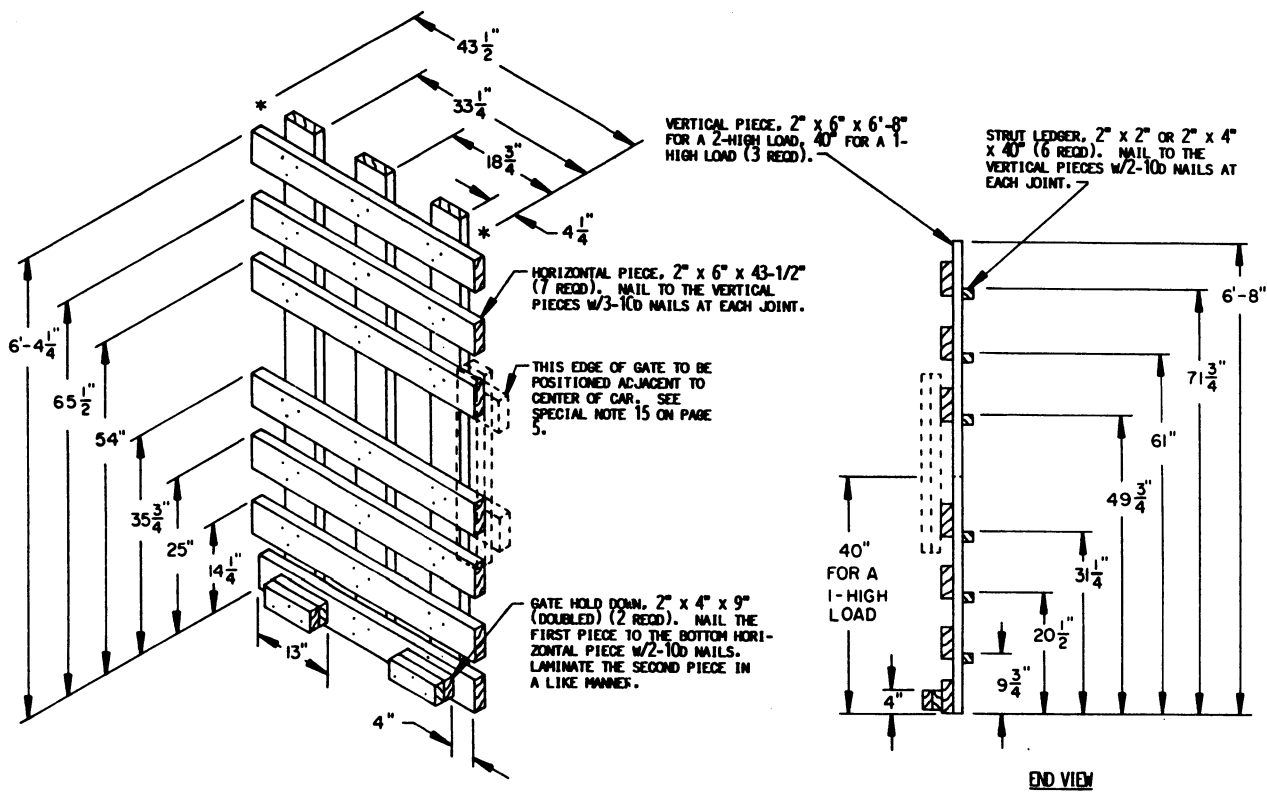
FILL PIECE, 2" x 6" x 42" (2 RECD). NAIL TO THE VERTICAL PIECES W/3-10D NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" x 4" x 9" (DOUBLED) (2 RECD). NAIL THE FIRST PIECE TO THE FILL PIECE W/2-10D NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

CENTER GATE A

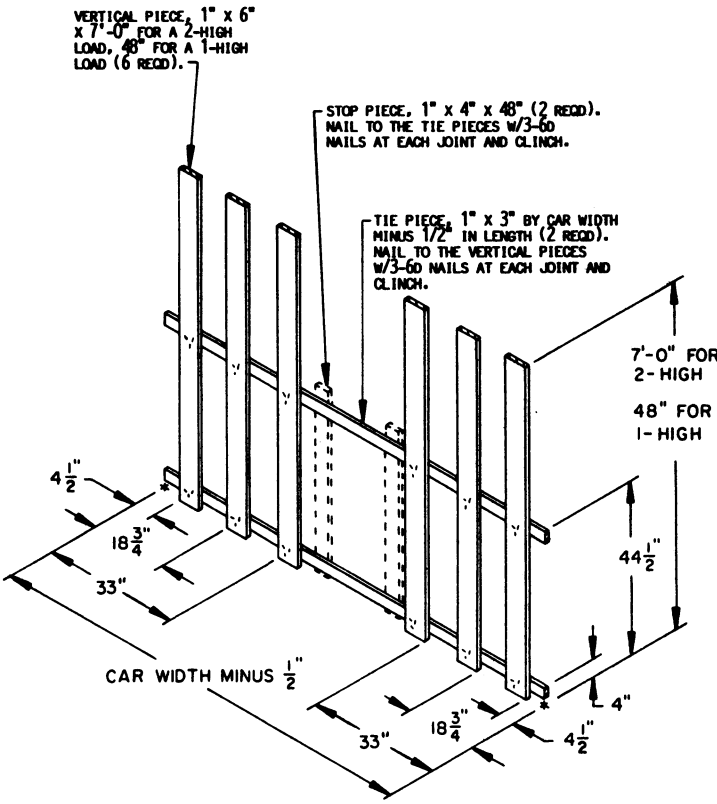
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 4.

END VIEW



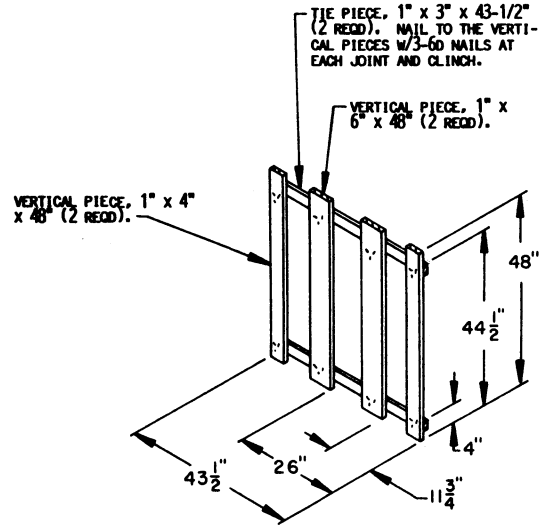
CENTER GATE B

ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. SEE SPECIAL NOTES 10 AND 16 ON PAGE 5.



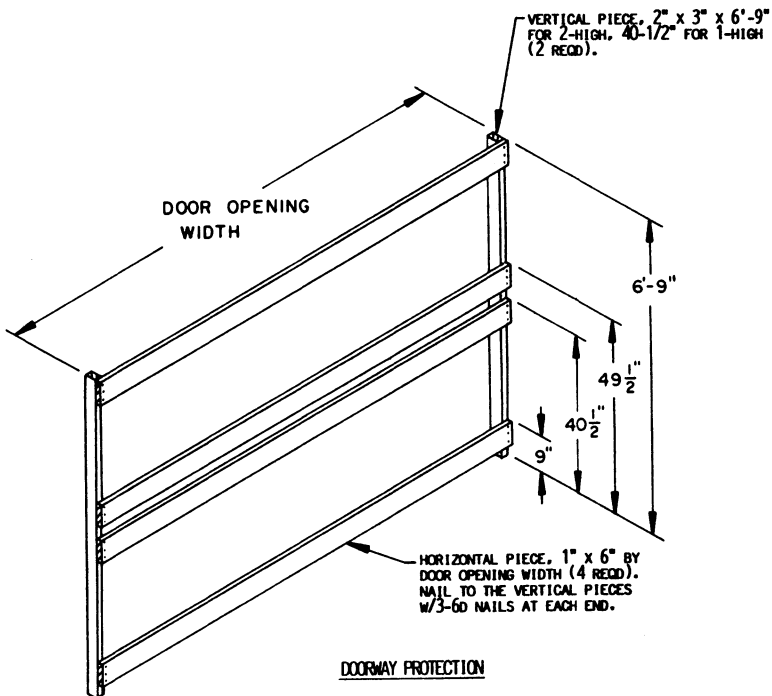
SEPARATOR GATE A

THIS ASSEMBLY IS FOR USE IN THE LOADS ON PAGES 4 THRU 10. SEE THE SEPARATOR GATE C' DETAIL ON PAGE 35 FOR AN ALTERNATIVE GATE.



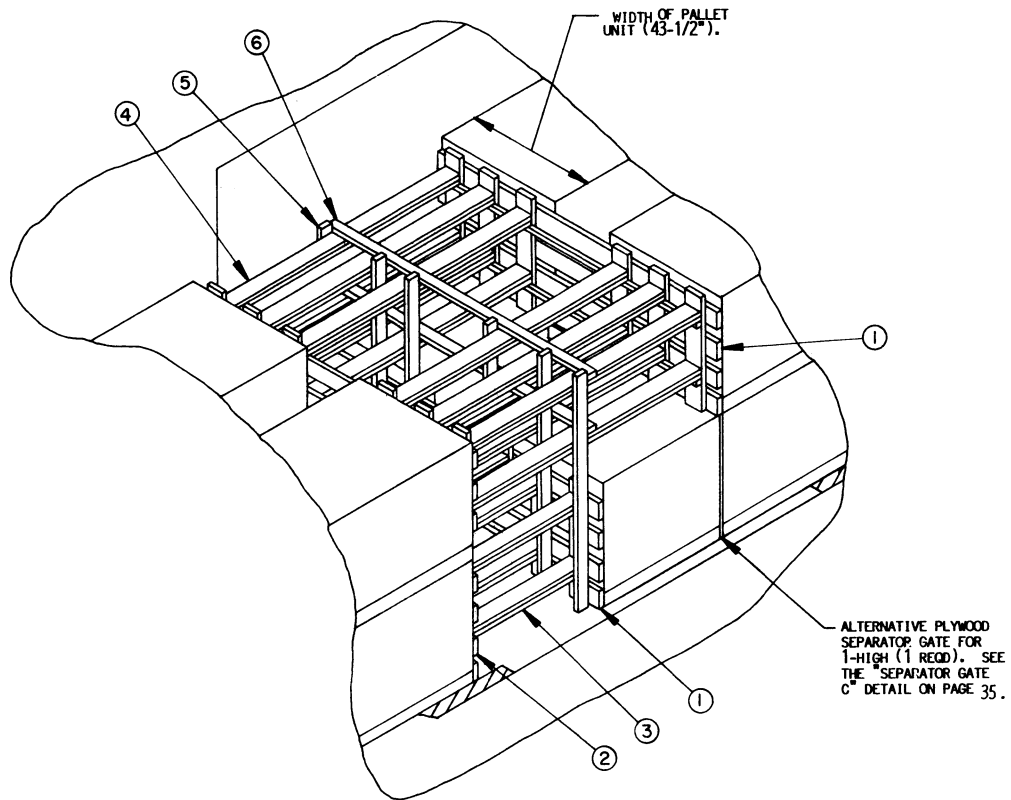
SEPARATOR GATE B

THIS ASSEMBLY IS FOR USE IN THE LOADS ON PAGES 8, 26, 28, AND 32.



DETAILS

THIS PAGE INTENTIONALLY LEFT BLANK



ISOMETRIC VIEW

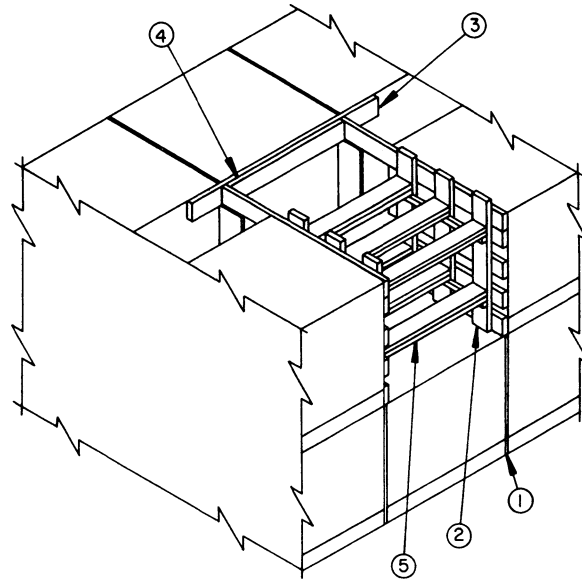
SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED-GATE METHOD OF PARTIAL-LAYER BRACING. WIDER CARS AND CARS OF ANY LENGTH CAN BE USED.
2. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO PAGE 4 FOR LATERAL BRACING AND DOORWAY PROTECTION REQUIREMENTS.
3. DEPENDING UPON THE LENGTH OF CAR BEING USED, IT MAY BE NECESSARY TO ALSO INSTALL 36" LONG VERTICAL STRUT BRACING ABOVE THE 1-HIGH PORTION OF THE LOAD AND FOUR (4) ADDITIONAL HORIZONTAL STRUT BRACING PIECES.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQD.). SEE THE "CENTER GATE A" DETAIL ON PAGE 12. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② CENTER GATE FOR 2-HIGH (1 REQD.). SEE THE "CENTER GATE A" DETAIL ON PAGE 12.
- ③ STRUT, 2" x 6" BY CUT TO FIT (DOUBLED) (12 REQD.). POSITION BETWEEN PIECES MARKED ① AND ② IN THE FIRST LAYER AND TOENAIL W/2-12D NAILS AT EACH END. SEE GENERAL NOTES "L", "T" AND "U" ON PAGE 2.
- ④ STRUT, 2" x 6" BY CUT TO FIT (DOUBLED) (12 REQD.). POSITION BETWEEN PIECES MARKED ① AND ② IN THE SECOND LAYER AND TOENAIL W/2-12D NAILS AT EACH END.
- ⑤ VERTICAL STRUT BRACING, 2" x 4" x 6'-5" (6 REQD.). NAIL TO THE STRUTS MARKED ③ AND ④ W/3-10D NAILS AT EACH JOINT. SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ HORIZONTAL STRUT BRACING, 2" x 4" BY CAR WIDTH MINUS 2", IN LENGTH (2 REQD.). NAIL TO THE STRUTS, PIECES MARKED ④, W/3-10D NAILS AT EACH JOINT.

LENGTHWISE-POSITIONED PALLET UNITS
TYPICAL LCL LOAD USING STRUTTED-GATE METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A PALLET UNIT FROM A 1-LAYER LOAD.
3. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO PAGE 4 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECE IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.

KEY NUMBERS

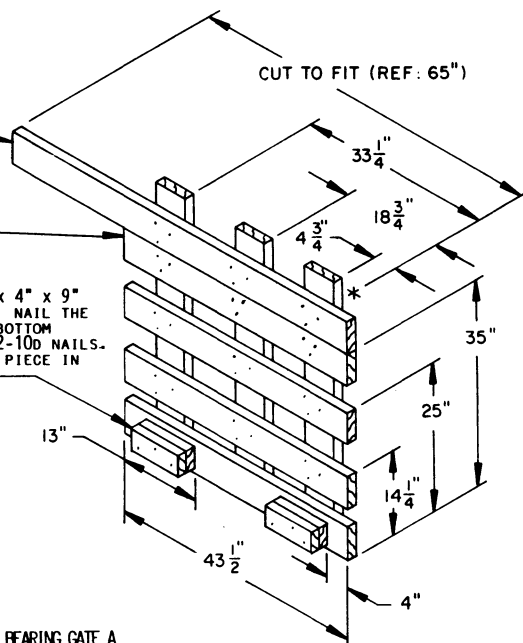
- ① SEPARATOR GATE (2 RECD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 35.
- ② LOAD BEARING GATE (2 RECD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE A" DETAIL BELOW. NAIL TO THE FILLER PIECE, PIECE MARKED ④, w/3-10D NAILS.
- ③ ANTI-SWAY BEARING PIECE, 2" x 6" x 72" (1 RECD).
- ④ FILLER PIECE, 2" x 6" x 41-1/2" (1 RECD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ③, w/5-10D NAILS.
- ⑤ STRUT, 2" x 6" x 38-1/2" (DOUBLED) (6 RECD). LAMINATE w/1-10D NAIL EVERY 6". TOENAIL TOP PIECE TO PIECE MARKED ② w/2-12D NAILS AT EACH END.

HORIZONTAL BEARING PIECE, 2" x 6" BY CAR WIDTH MINUS 45" (REF: 65") (1 RECD). NAIL TO THE VERTICAL PIECES w/3-10D NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" x 6" x 43-1/2" (4 RECD). NAIL TO THE VERTICAL PIECES w/3-10D NAILS AT EACH JOINT.

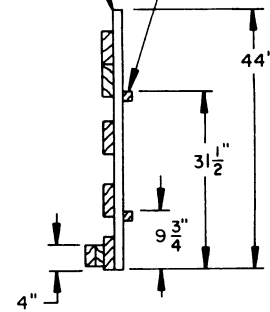
GATE HOLD DOWN, 2" x 4" x 9" (DOUBLED) (2 RECD). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE w/2-10D NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

LOAD BEARING GATE A



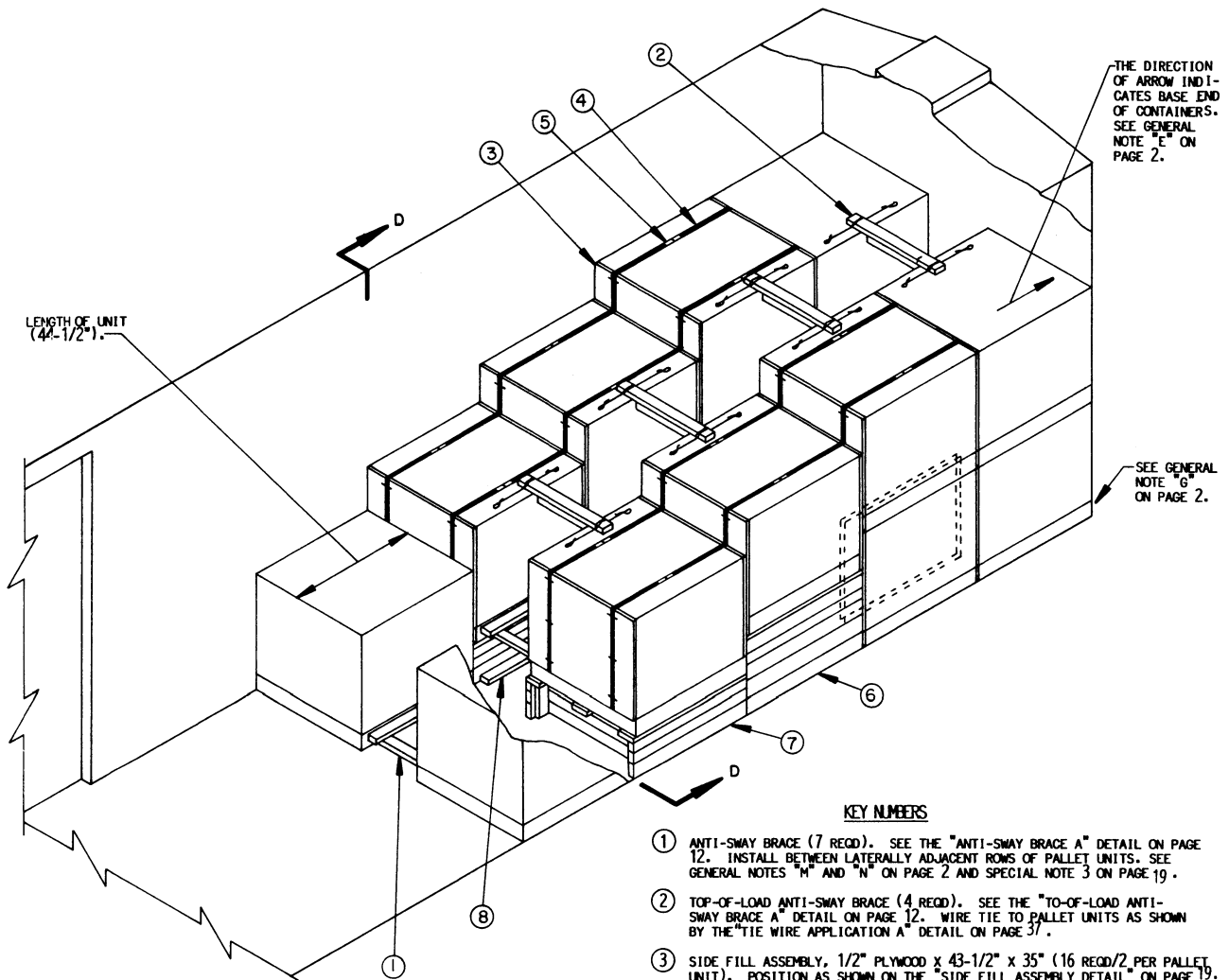
STRUT LEDGER, 2" x 2" OR 2" x 4" x 36" (2 RECD). NAIL TO THE VERTICAL PIECES w/2-10D NAILS AT EACH JOINT.

VERTICAL PIECE, 2" x 6" x 44" (3 RECD).



END VIEW

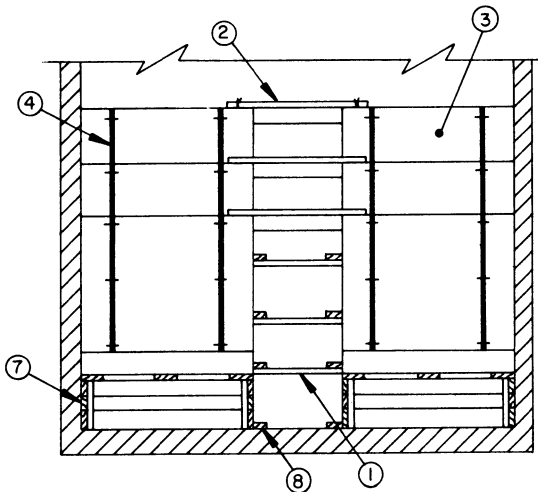
TYPICAL LCL ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A CONTAINERS-LENGTHWISE LOAD



ISOMETRIC VIEW

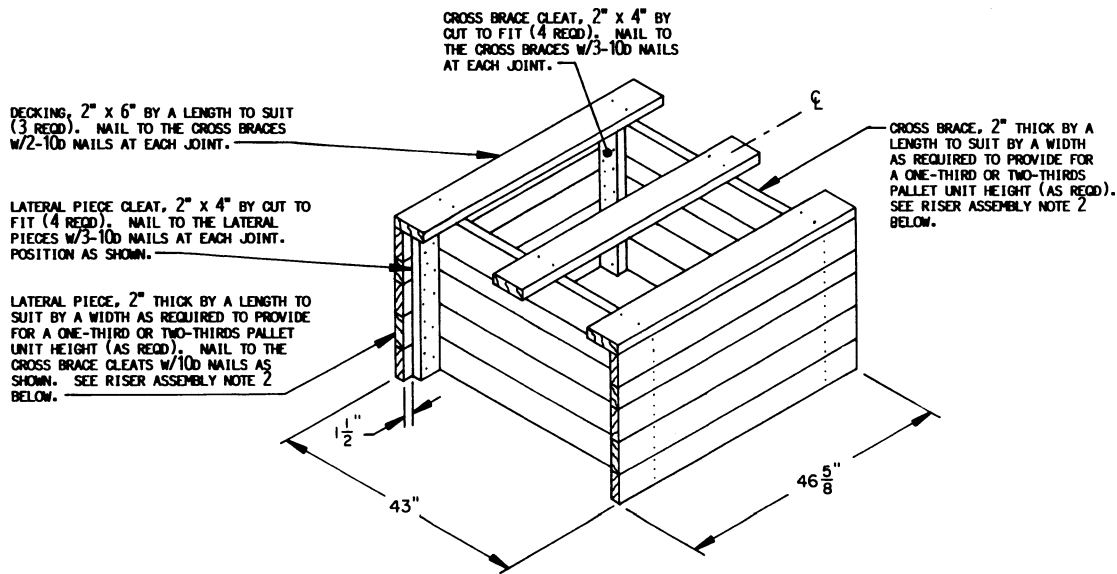
KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQ'D). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 19.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (4 REQ'D). SEE THE "TO-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37.
- ③ SIDE FILL ASSEMBLY, 1/2" PLYWOOD x 43-1/2" x 35" (16 REQ'D/2 PER PALLET UNIT). POSITION AS SHOWN ON THE "SIDE FILL ASSEMBLY DETAIL" ON PAGE 19.
- ④ REINFORCING STRAP, 1-1/4" x .035" x 15'-0" LONG (REF) STEEL STRAPPING (16 REQ'D). INSTALL TO ENCIROLE THE PALLET UNIT AND THE SIDE FILL ASSEMBLY. SECURE TO EACH SIDE FILL ASSEMBLY W/3 STAPLES.
- ⑤ SEAL FOR 1-1/4" STRAPPING (32 REQ'D/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑥ RISER ASSEMBLY (2 REQ'D). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 19.
- ⑦ RISER ASSEMBLY (2 REQ'D). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT.
- ⑧ RISER STOP PIECE, 2" x 4" x 44-1/2" (4 REQ'D). POSITION AGAINST A RISER ASSEMBLY AND NAIL TO THE CAR FLOOR W/3-16D NAILS.



SECTION D-D

TYPICAL LCL USING RISER METHOD OF PARTIAL-LAYER BRACING



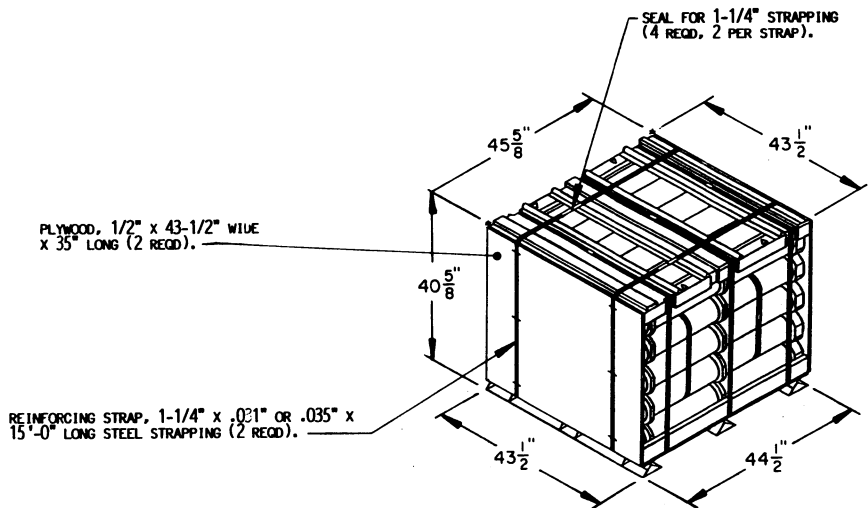
RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

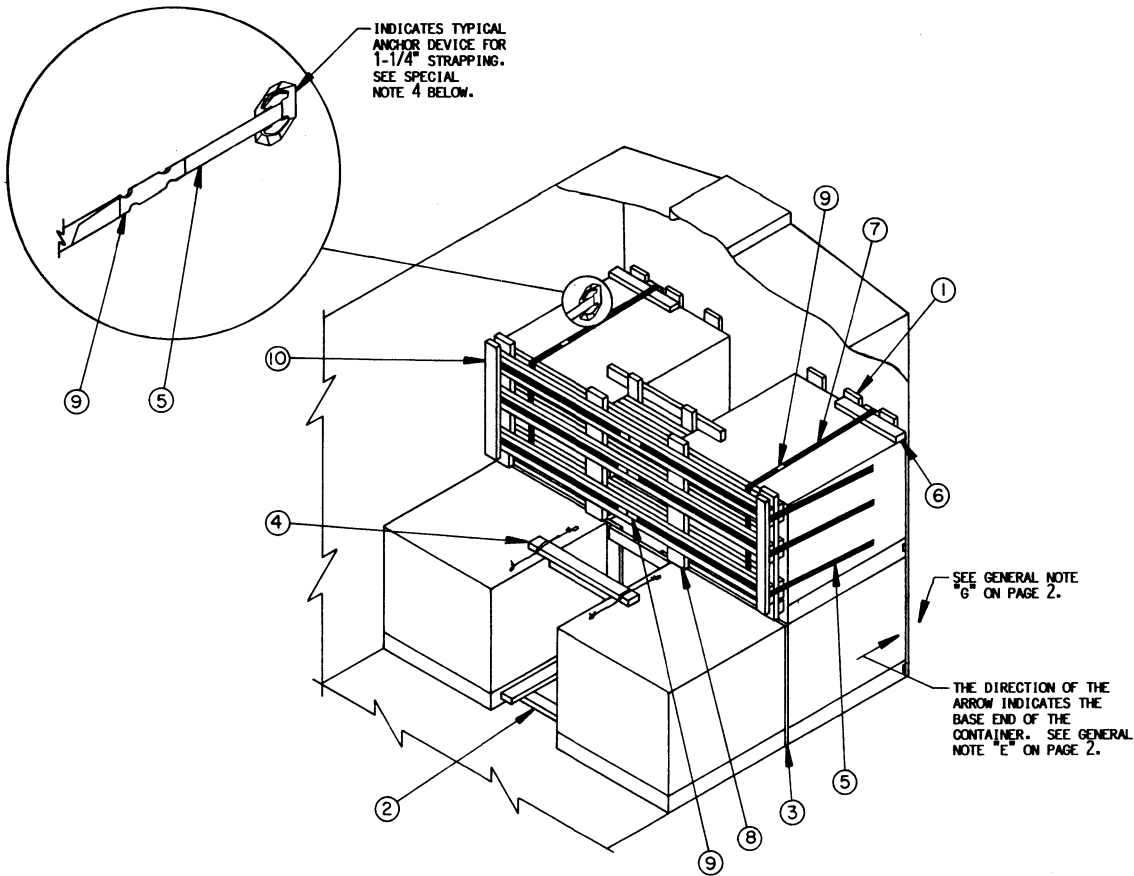
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE RISER METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE WHEN THE CONTAINERS ARE POSITIONED LENGTHWISE IN THE CAR.
3. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO PAGES 4 AND 5 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE RISER ASSEMBLY SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 18 IS THE TWO-THIRDS HEIGHT RISER. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FOUR (4) PIECES OF 2" x 6" MATERIAL AND ONE (1) PIECE OF 2" x 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 27" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 18, WILL BE FABRICATED FROM ONE (1) PIECE OF 2" x 6" MATERIAL AND TWO (2) PIECES OF 2" x 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE TO PROVIDE FOR A TOTAL HEIGHT 14" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. NOTE: A PLUS OR MINUS 1" TOLERANCE IS PERMISSIBLE ON THE RISER HEIGHT.



SIDE FILL ASSEMBLY DETAIL



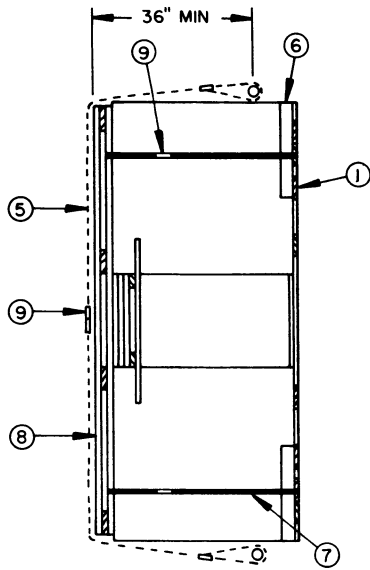
SPECIAL NOTES:

1. A 9'-2" WIDE ALL-METAL BOXCAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF LENGTHWISE POSITIONED PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CROSSWISE POSITIONED PALLET UNITS WILL NOT BE RETAINED BY THE BULKHEAD GATE METHOD.
3. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 3 PALLET UNITS. A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN A MAXIMUM OF 2 PALLET UNITS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS.
4. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST THIRTY-SIX INCHES (36") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CARS SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 16 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 17 FOR A SINGLE UNIT.
5. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 21 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

ISOMETRIC VIEW

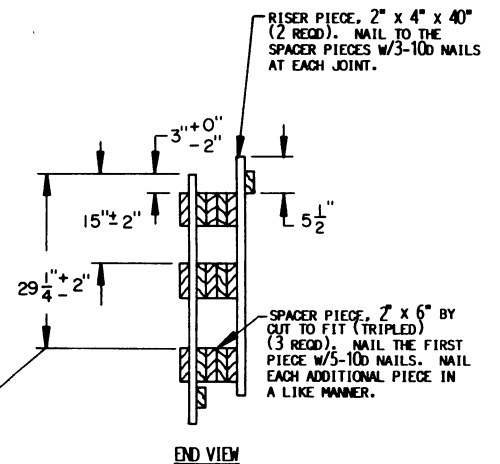
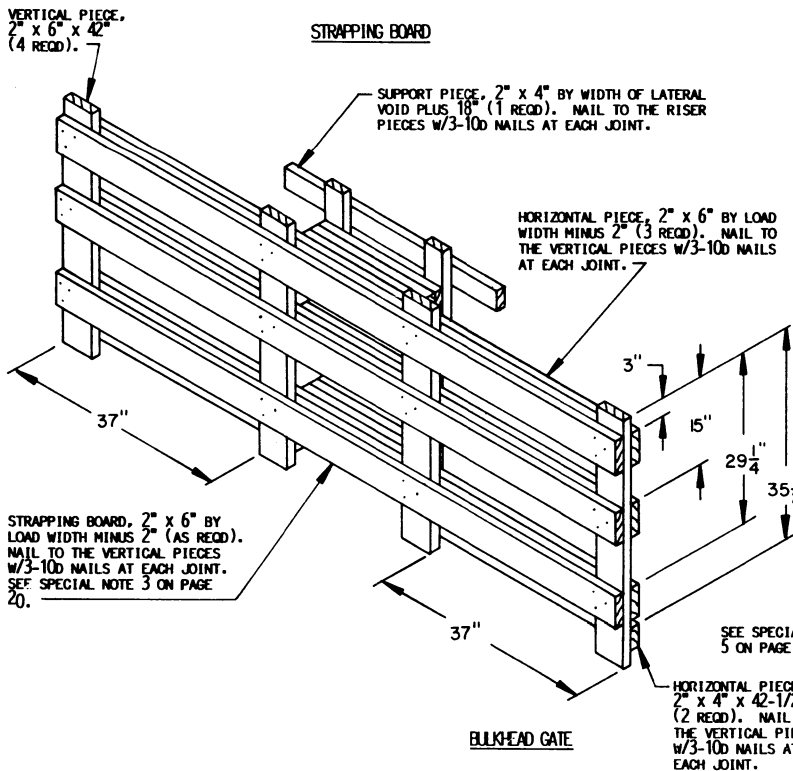
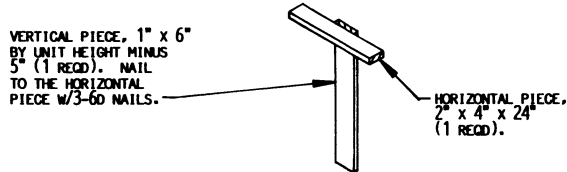
KEY NUMBERS

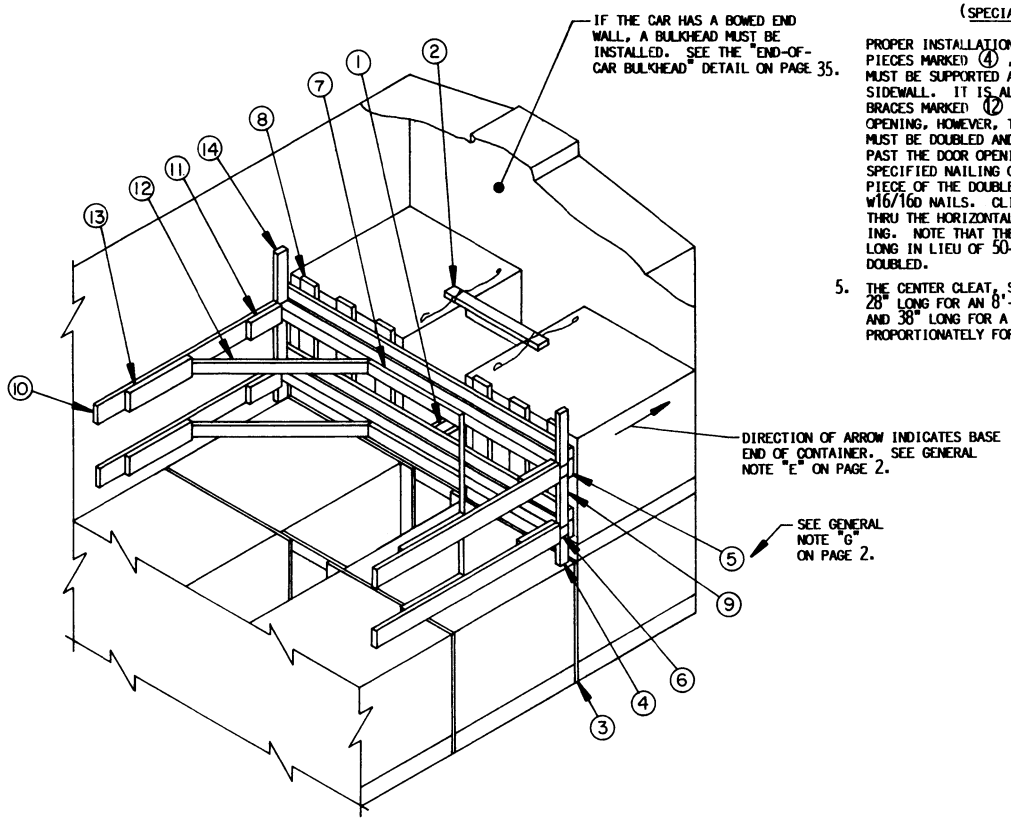
- ① SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR END WALL. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.
- ③ SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 35 AND/OR THE "SEPARATOR GATE A" DETAIL ON PAGE 14.
- ④ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37.
- ⑤ BULKHEAD STRAP, 1-1/4" x .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (AS REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 21 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 3 AND 4 AT LEFT.
- ⑥ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 21.
- ⑦ BUNDLING STRAP, 1-1/4" x .035" x 16'-0" LONG (REF) STEEL STRAPPING (2 REQD), ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑥. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑤.
- ⑧ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 21. SEE SPECIAL NOTE 3 AT LEFT.
- ⑨ SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED ⑤), AND ① PER BUNDLING STRAP, PIECE MARKED ⑦). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑩ STRAP RETAINER, 2" x 4" x 36" (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12D NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.



STRAP APPLICATION PLAN VIEW

THE VIEW ABOVE DEPICTS ONLY THE TOP LAYER OF THE LOAD SHOWN ON PAGE 20. THE ANTI-SWAY BRACE, PIECE MARKED ②, HAS BEEN OMITTED FOR CLARITY.





ISOMETRIC VIEW

(SPECIAL NOTES CONTINUED)

PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE, PIECES MARKED ④, ⑤, ⑥, ⑨, ⑪, AND ⑬, MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑫ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑩ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60°), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑩ TO THE FIRST W/6/12D NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑫ IS DOUBLED.

5. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑦, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2" AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

DIRECTION OF ARROW INDICATES BASE END OF CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2.

SEE GENERAL NOTE "G" ON PAGE 2.

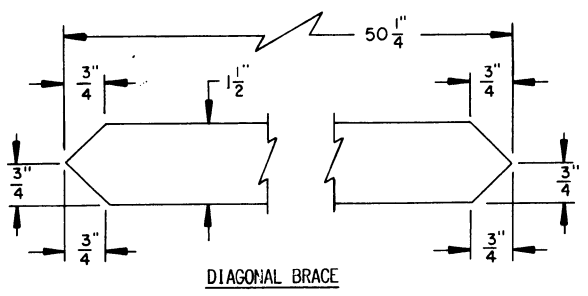
KEY NUMBERS

- ① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 37. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL TIER UNITS.
- ③ SEPARATOR GATE (2 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14.
- ④ SUPPORT CLEAT, 2" x 4" x 8" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ⑤ AND ⑥ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS.
- ⑤ HORIZONTAL PIECE, 2" x 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥, W/1-12D NAIL EVERY 6". SEE SPECIAL NOTE 2 AT LEFT.
- ⑥ CROSS CAR BRACE, 4" x 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD).
- ⑦ CENTER CLEAT, 2" x 4" x 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥, W/7-16D NAILS. SEE SPECIAL NOTE 5 ABOVE.
- ⑧ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 23. POSITION THE LOWER HORIZONTAL PIECE OF THE GATE ON TOP OF THE LOWER HORIZONTAL PIECE MARKED ⑤ AND PROCEED WITH CONSTRUCTION OF K-BRACE.
- ⑨ SPACER CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE SIDEWALL W/5-12D NAILS.
- ⑩ HORIZONTAL WALL CLEAT, 2" x 6" x 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12D NAILS.
- ⑪ POCKET CLEAT, 2" x 6" x 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩, W/4-16D NAILS.
- ⑫ DIAGONAL BRACE, 2" x 4" x 50-1/4" (4 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩, W/2-16D NAILS AT EACH END.
- ⑬ BACK-UP CLEAT, 2" x 6" x 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩, W/8-16D NAILS.
- ⑭ HOLD-DOWN CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12D NAILS.

SPECIAL NOTES:

- 1. A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOX CAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.
- 2. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN. ONLY LENGTHWISE LOADS ARE PERMITTED. IF ONLY ONE PALLET UNIT IS TO BE SHIPPED IN A PARTIAL SECOND LAYER, IT WILL BE POSITIONED DIRECTLY ABOVE THE LOWER PALLET UNIT. FOR A PARTIAL FIRST LAYER POSITION THE PALLET UNIT IN ONE CORNER. PROVIDE LATERAL BRACING BY APPLYING VERTICALLY POSITIONED DOUBLED 2" x 4" x 40" LONG PIECES TO THE CAR END WALL AND TO THE K-BRACE. NAIL TO THE CAR END WALL W/6-12D NAILS EACH LAYER. THE FIRST PIECE APPLIED TO THE K-BRACE WILL BE NAILED TO PIECE MARKED ④ W/3-12D NAILS EACH JOINT. LAMINATE THE SECOND PIECE W/6-12D NAILS. IF IT IS NECESSARY TO BRACE MORE PALLET UNITS, REFER TO THE DETAILS ON PAGE 23, 24, OR 25 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. LOAD BEARING GATE C, PIECE MARKED ⑧, IS NOT REQUIRED FOR CROSSWISE-POSITIONED CONTAINERS.
- 3. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL SECOND TIER OR FIRST TIER. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN TWO (2) PALLET UNITS.
- 4. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT

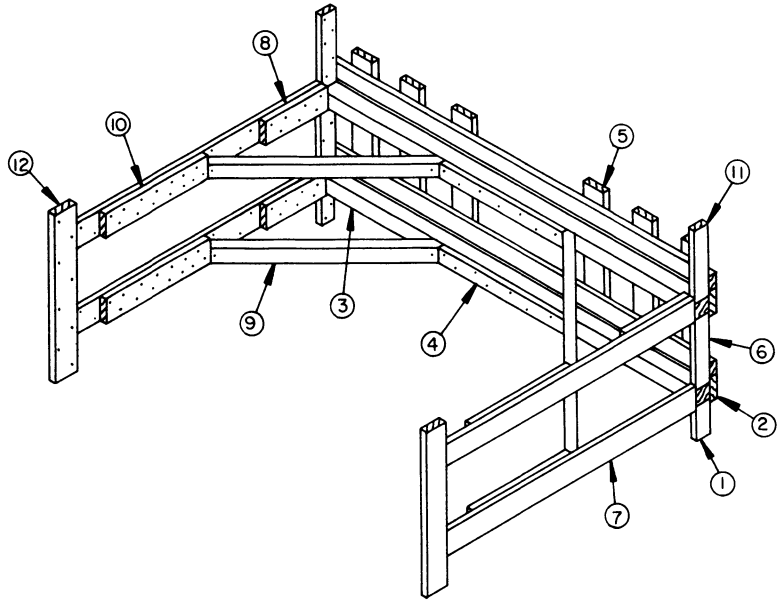
(CONTINUED AT RIGHT)



DIAGONAL BRACE

SPECIAL NOTES:

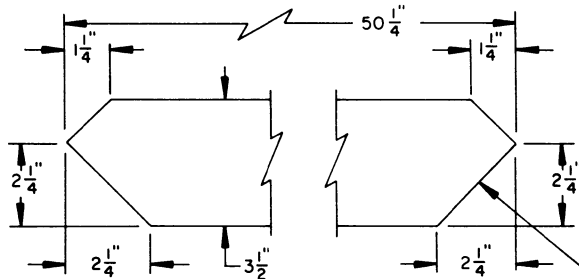
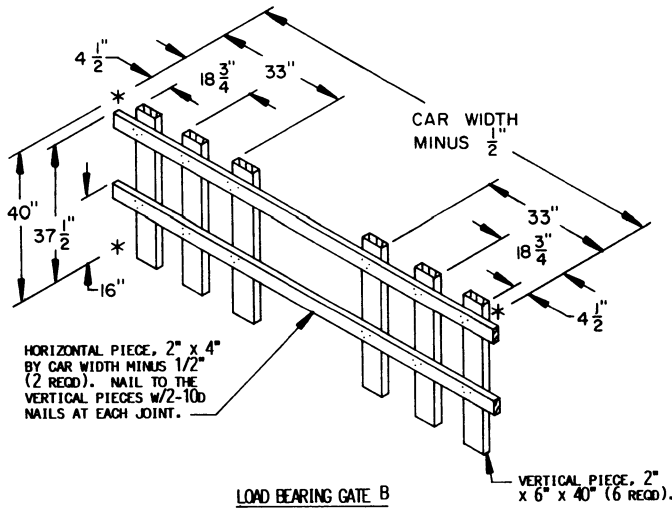
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN SIX (6) PALLET UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 24 AND 25 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 MAY BE USED.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE. PIECES MARKED ①, ②, ③, ⑥, ⑧, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑦ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAP/JUATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑦ TO THE FIRST W/16-160 NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑦ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 22 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

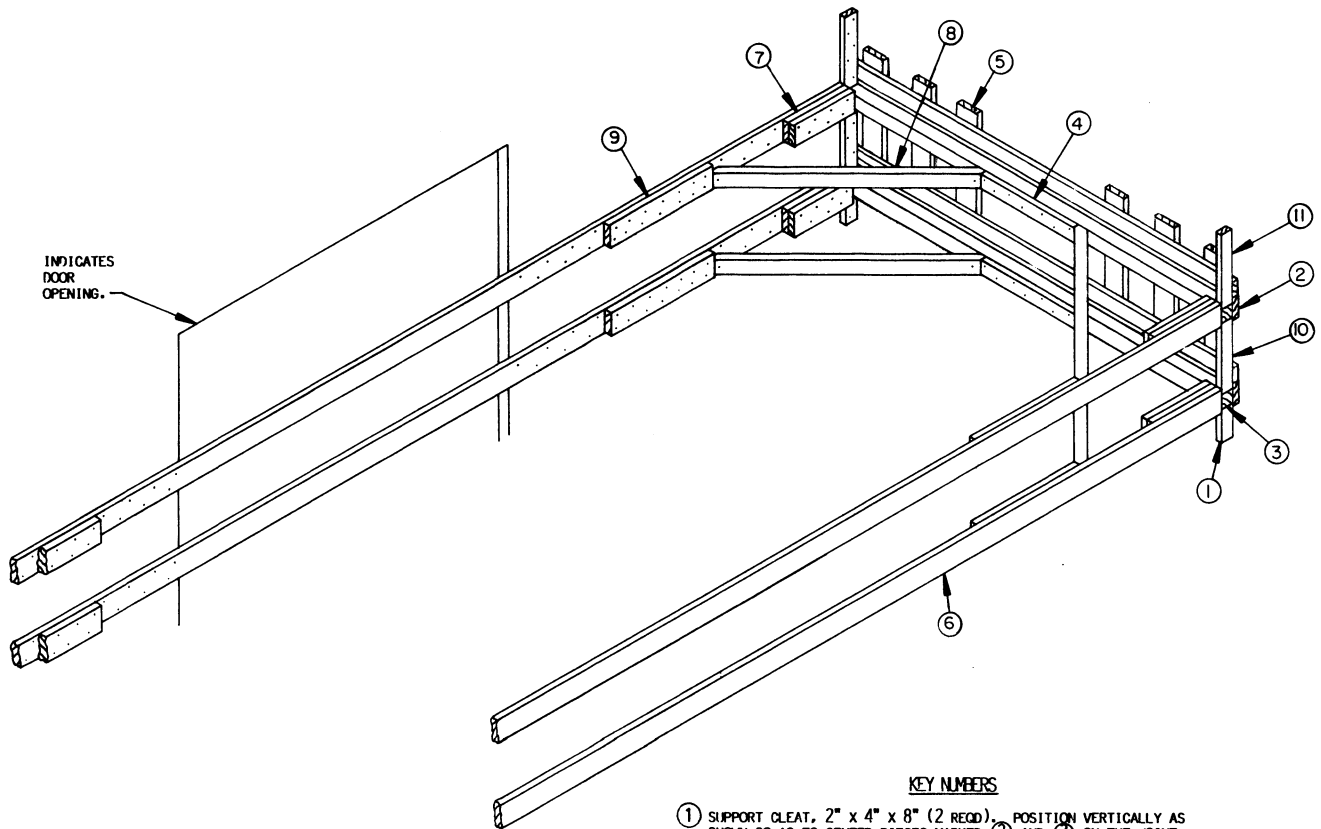
- ① SUPPORT CLEAT, 2" x 4" x 8" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12D NAILS.
- ② HORIZONTAL PIECE, 2" x 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12D NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" x 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" x 4" x 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16D NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE B" DETAIL AT LEFT. POSITION THE LOWER HORIZONTAL PIECE OF THE GATE ON TOP OF THE LOWER HORIZONTAL PIECE MARKED ② AND PROCEED WITH CONSTRUCTION OF K-BRACE.
- ⑥ SPACER CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL WITH 5-12D NAILS.
- ⑦ HORIZONTAL WALL CLEAT, 2" x 6" x 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12D NAILS.
- ⑧ POCKET CLEAT, 2" x 6" x 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/7-16D NAILS.
- ⑨ DIAGONAL BRACE, 4" x 4" x 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/1-60D NAIL AT EACH END.
- ⑩ BACK-UP CLEAT, 2" x 6" x 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/14-16D NAILS.
- ⑪ HOLD DOWN CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12D NAILS.
- ⑫ VERTICAL BACK-UP CLEAT, 2" x 6" x 40" (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12D NAILS.



SEE SPECIAL NOTE 2 ABOVE.

THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A CROSS CAR BRACE, PIECE MARKED ③, OR A HORIZONTAL WALL CLEAT, PIECE MARKED ⑦.

TYPE "B" K-BRACE



ISOMETRIC VIEW

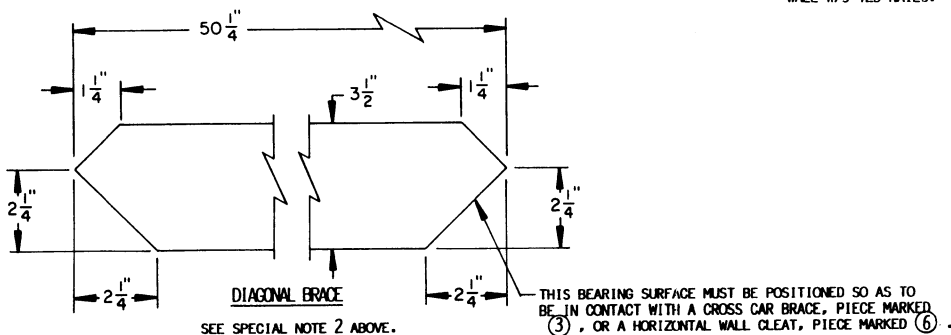
KEY NUMBERS

- ① SUPPORT CLEAT, 2" x 4" x 8" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL w/3-12D NAILS.
- ② LOAD BEARING PIECE, 2" x 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, w/1-12D NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" x 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" x 4" x 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, w/7-16D NAILS. SEE SPECIAL NOTE 3 BELOW.
- ⑤ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 23. POSITION THE LOWER HORIZONTAL PIECE OF THE GATE ON TOP OF THE LOWER PIECE MARKED ② AND PROCEED WITH CONSTRUCTION OF THE K-BRACE.
- ⑥ HORIZONTAL WALL CLEAT, 2" x 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENINGS TO CONTACT PIECE MARKED ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL w/40-12D NAILS.
- ⑦ POCKET CLEAT, 2" x 6" x 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, w/7-16D NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑧ DIAGONAL BRACE, 4" x 4" x 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, w/1-60D NAIL AT EACH END.
- ⑨ BACK-UP CLEAT, 2" x 6" x 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, w/14-16D NAILS.
- ⑩ SPACER CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL w/5-12D NAILS.
- ⑪ HOLD-DOWN CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL w/5-12D NAILS.

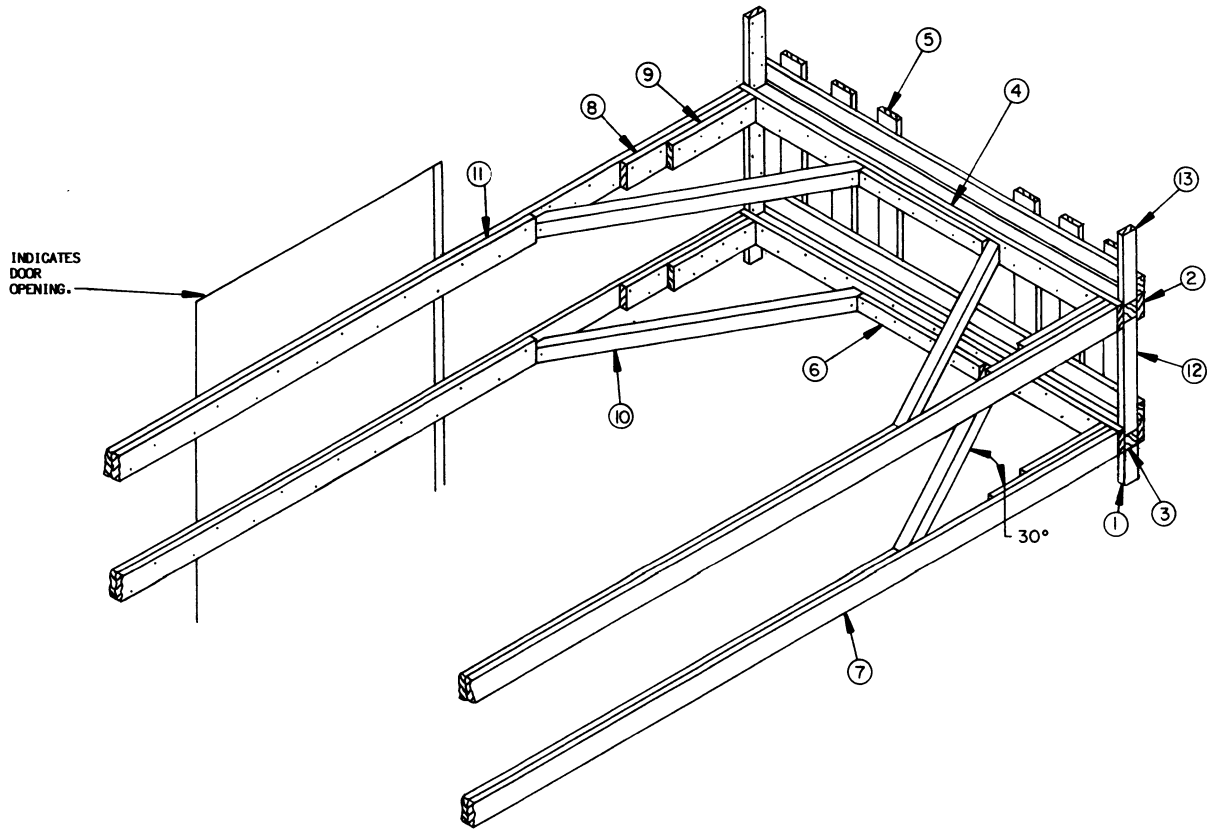
SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN EIGHT (8) PALLET UNITS. IF IT IS NECESSARY TO BLOCK MORE THAN EIGHT PALLET UNITS, REFER TO THE DETAIL ON PAGE 25 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED IS ONLY SIX PALLET UNITS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 23 MAY BE USED. IF THE PARTIAL TIER IS ONLY ONE OR TWO PALLET UNITS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 WILL BE ADEQUATE.
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DRAINAGE. PIECES MARKED ①, ②, ③, ⑦, ⑩, AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑧ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST w/40-16D NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑥ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑥, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

(CONTINUED AT RIGHT)



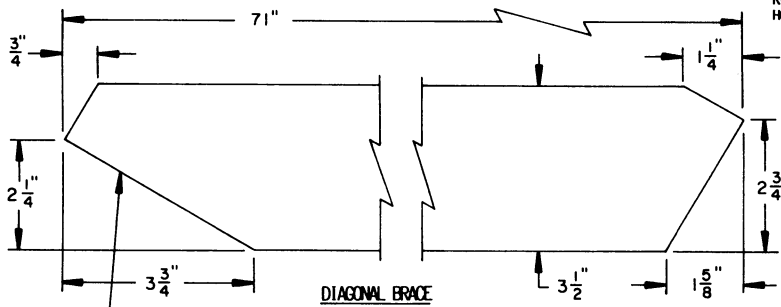
SEE SPECIAL NOTE 2 ABOVE.



SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN TEN (10) PALLET UNITS. IF THE PARTIAL TIER TO BE BRACED IS ONLY EIGHT PALLET UNITS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 24 MAY BE USED. IF SIX PALLET UNITS ARE TO BE SHIPPED, THE TYPE "B" K-BRACE DEPICTED ON PAGE 23 MAY BE USED. IF THE PARTIAL TIER IS ONLY ONE OR TWO PALLET UNITS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 WILL BE ADEQUATE.
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑧, ⑨, ⑫, AND ⑬ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑩ TO BEAR IN FRONT OF A DOOR OPENING. HOWEVER, THE ADJACENT PIECE MARKED ⑦ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-160 NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑦ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑥, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2" AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "D" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑦ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

(CONTINUED AT RIGHT)



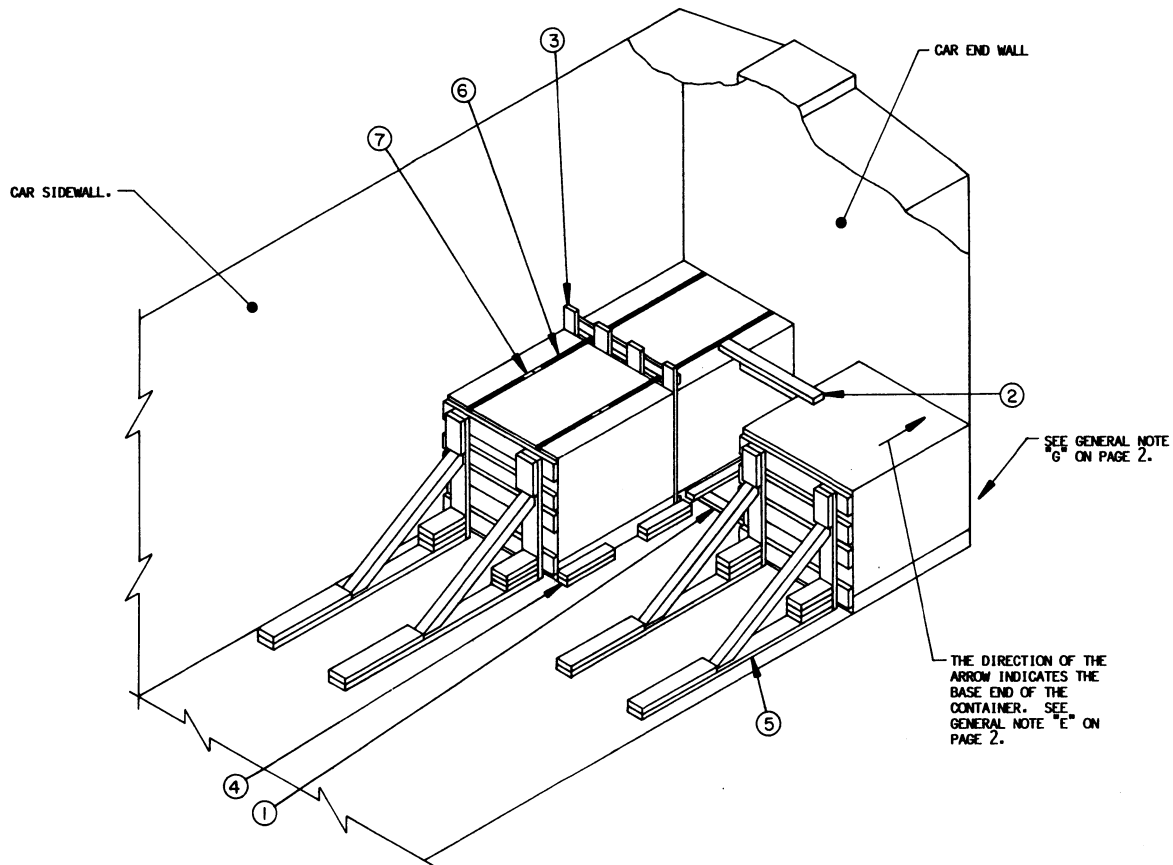
DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A HORIZONTAL WALL CLEAT, PIECE MARKED ⑦.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" x 4" x 8" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINTS BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12D NAILS.
- ② LOAD BEARING PIECE, 2" x 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12D NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" x 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ HORIZONTAL PIECE, 2" x 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12D NAIL EVERY 6".
- ⑤ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 23. POSITION THE LOWER HORIZONTAL PIECE OF THE GATE ON TOP OF THE LOWER LOAD BEARING PIECE MARKED ② AND PROCEED WITH CONSTRUCTION OF THE K-BRACE.
- ⑥ CENTER CLEAT, 2" x 4" x 36" (2 REQD). NAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, W/7-16D NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑦ HORIZONTAL WALL CLEAT, 2" x 6" BY CUT FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO CONTACT PIECE MARKED ④ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12D NAILS.
- ⑧ POCKET CLEAT, 2" x 6" x 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/10-16D NAILS.
- ⑨ POCKET CLEAT, 2" x 6" x 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑧, W/7-16D NAILS.
- ⑩ DIAGONAL BRACE, 4" x 4" x 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/1-60D NAIL AT EACH END.
- ⑪ BACK-UP CLEAT, 2" x 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND TO CONTACT THE DIAGONAL BRACE, PIECE MARKED ⑩, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/18-16D NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING, IF APPLICABLE.
- ⑫ SPACER CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12D NAILS.
- ⑬ HOLD-DOWN CLEAT, 2" x 4" x 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12D NAILS.



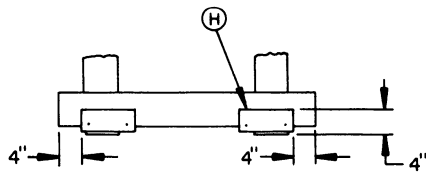
ISOMETRIC VIEW

SPECIAL NOTES:

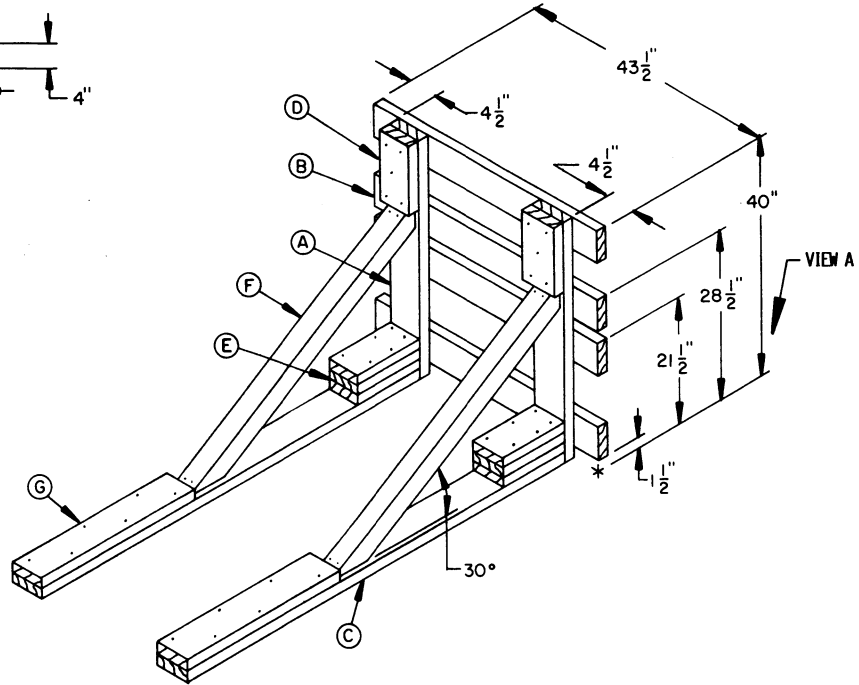
1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR AVAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE KNEE BRACE METHOD OF LCL BRACING IS ONLY APPLICABLE FOR THE BRACING OF PALLET UNITS POSITIONED LENGTHWISE IN THE CAR; KNEE BRACING WILL NOT BE USED FOR PALLET UNITS POSITIONED CROSSWISE.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN THREE (3) PALLET UNITS. AN ADDITIONAL "KNEE" MAY BE ADDED IF IT IS NECESSARY TO BRACE FOUR (4) OR FIVE (5) PALLET UNITS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (1 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 12. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 12. WIRE TIE TO THE LIFTING RINGS ON THE COVER OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 37.
- ③ SEPARATOR GATE (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 14. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.
- ④ SIDE BLOCKING, 2" x 4" x 18" (DOUBLED) (2 REQD). POSITION AS SHOWN WITH ONE TO EXTEND PAST THE END OF THE UNIT AND THE SEPARATOR GATE, PIECE MARKED (3), POSITION THE OTHER AT THE OPPOSITE END OF THE UNIT.
- ⑤ KNEE BRACE ASSEMBLY (2 REQD). SEE THE "KNEE BRACE ASSEMBLY" DETAIL ON PAGE 27.
- ⑥ BUNDLING STRAP, 1-1/4" x .035" OR .031" x 23'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION. NOTE THAT STRAPPING MUST BE THREADED THRU THE SEPARATOR GATE, PIECE MARKED (3).
- ⑦ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.



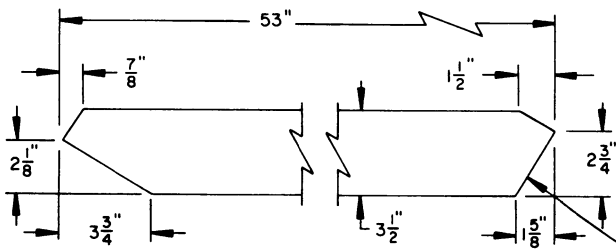
VIEW A



KNEE BRACE ASSEMBLY

KEY NUMBERS

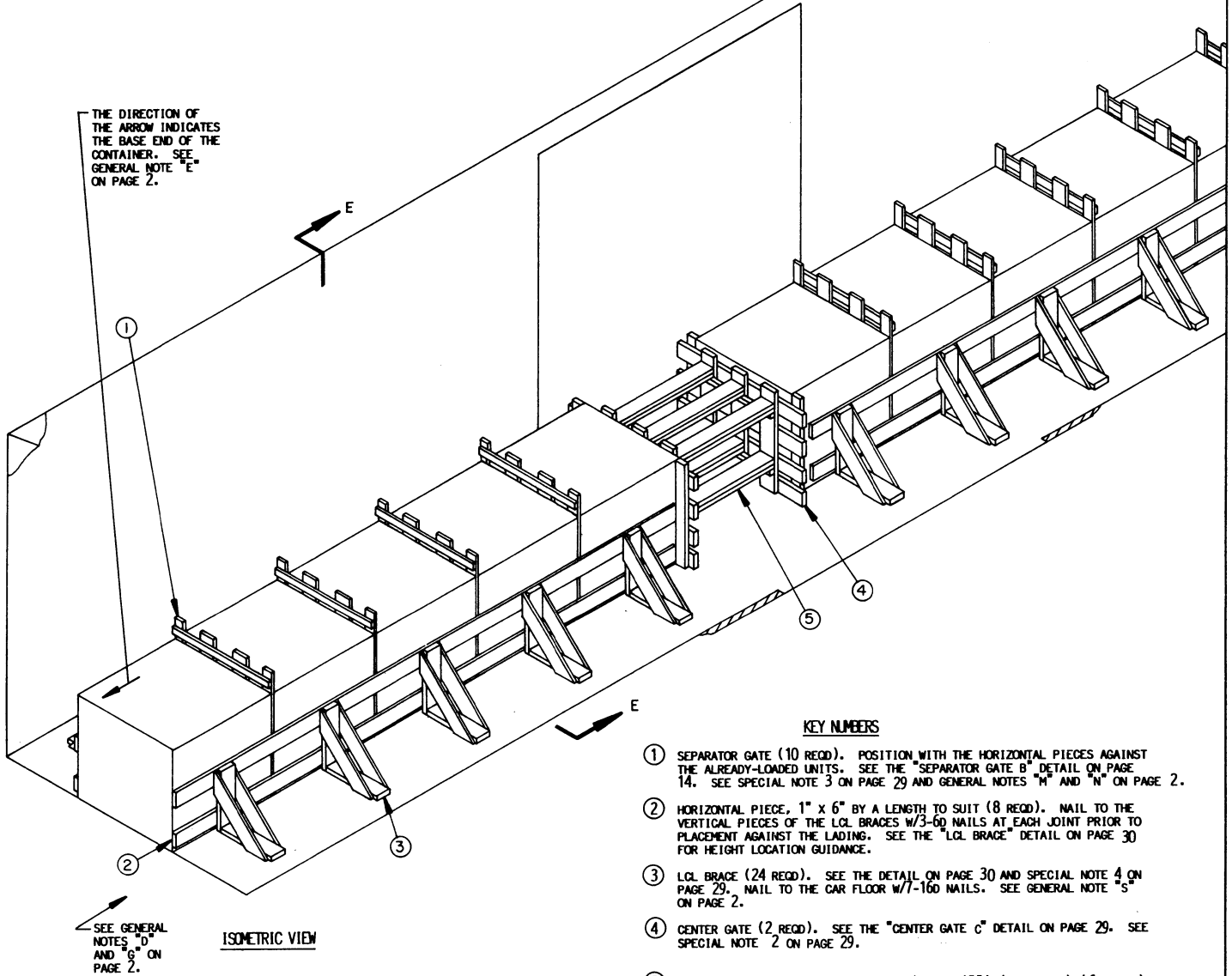
- (A) VERTICAL PIECE, 2" x 6" x 40" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), w/ 2-16D NAILS.
- (B) HORIZONTAL PIECE, 2" x 6" x 43-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES w/3-10D NAILS AT EACH JOINT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- (C) FLOOR CLEAT, 2" x 6" x 6'-5" (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR w/1-16D NAIL EVERY 8". SEE GENERAL NOTE "5" ON PAGE 2.
- (D) HOLD DOWN CLEAT, 2" x 6" x 12" (2 REQD). NAIL TO A VERTICAL PIECE w/5-10D NAILS.
- (E) POCKET CLEAT, 2" x 6" x 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C), w/4-16D NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), w/2-16D NAILS.
- (F) BRACE, 4" x 4" x 53" (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C), w/2-16D NAILS AT EACH END.
- (G) BACK-UP CLEAT, 2" x 6" x 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), w/6-40D NAILS.
- (H) HOLD-DOWN CLEAT, 2" x 4" x 9" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO A HORIZONTAL PIECE w/2-10D NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "VIEW A" DETAIL ABOVE FOR LOCATION DIMENSIONS.



BRACE
4" x 4" MATERIAL

THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

THE DIRECTION OF THE ARROW INDICATES THE BASE END OF THE CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2.

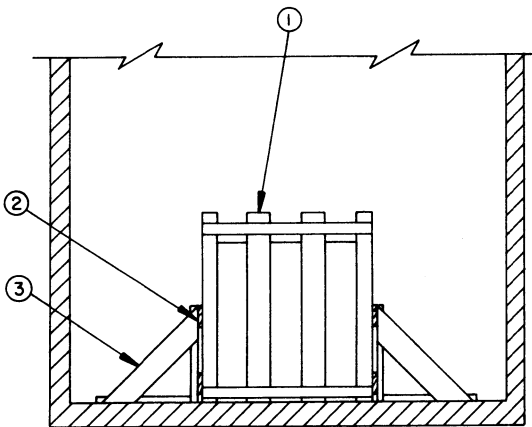


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

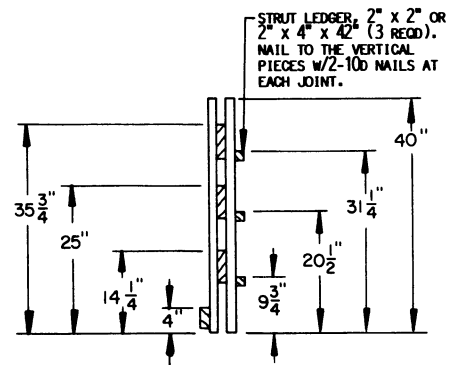
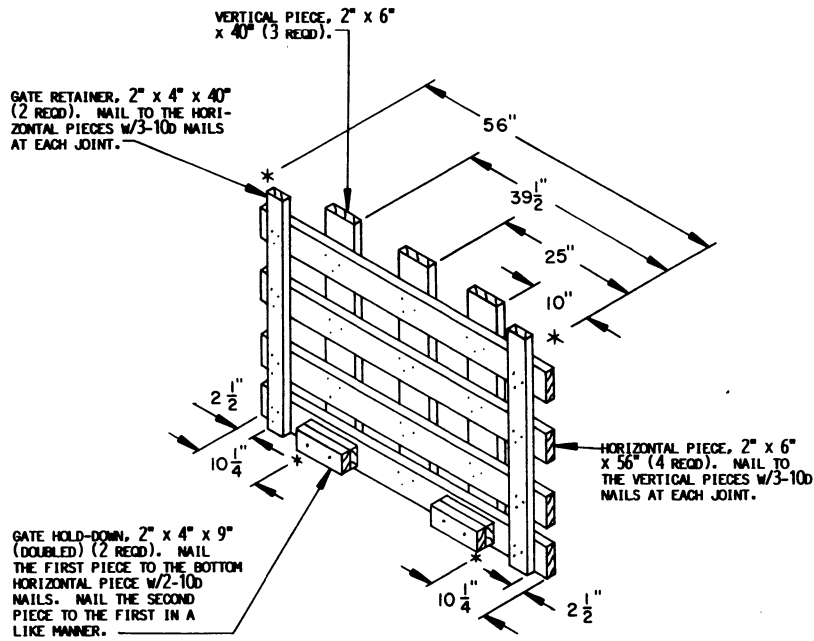
ISOMETRIC VIEW

KEY NUMBERS

- ① SEPARATOR GATE (10 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 14. SEE SPECIAL NOTE 3 ON PAGE 29 AND GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6D NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 30 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (24 REQD). SEE THE DETAIL ON PAGE 30 AND SPECIAL NOTE 4 ON PAGE 29. NAIL TO THE CAR FLOOR W/7-16D NAILS. SEE GENERAL NOTE "S" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 29. SEE SPECIAL NOTE 2 ON PAGE 29.
- ⑤ STRUT, 2" X 6" BY CUT TO FIT (REF: 45°) (DOUBLED) (6 REQD). LAMINATE W/1-10D NAIL EVERY 6". TOENAIL TOP PIECE TO PIECES MARKED ⑤ W/2-12D NAILS AT EACH END. SEE GENERAL NOTES "L", "T", AND "U" ON PAGE 2.



SECTION E-E



CENTER GATE C.

END VIEW

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS AND LENGTHS CAN BE USED. SEE SPECIAL NOTE 2.
2. A 1-WIDE LENGTHWISE LOAD IN A 50'-6" LONG CAR IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR A 10-UNIT LENGTHWISE LOAD IN A 40'-6" LONG CAR. ONLY FOUR (4) STRUTS ARE REQUIRED IN A 40' LONG CAR; OMIT THE CENTER STRUTS. FIFTEEN UNITS CAN BE SHIPPED IN A 60'-8" LONG CAR.
3. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT LENGTH, WITH SLIGHT ADJUSTMENTS AS NECESSARY TO ALIGN A BRACE WITH THE CENTER COLLAR OF THE CONTAINER.
4. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT POSITIONING AND THEREFORE ARE ONLY TYPICAL.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" x 3"	73	19
1" x 4"	80	27
1" x 6"	400	200
2" x 2"	21	7
2" x 4"	20	14
2" x 6"	199	199
NAILS	NO. REQD	POUNDS
6d (2")	384	2-1/2
8d (2-1/2")	288	3
10d (3")	214	3-1/2
12d (3-1/4")	74	1/2
16d (3-1/2")	168	3-3/4

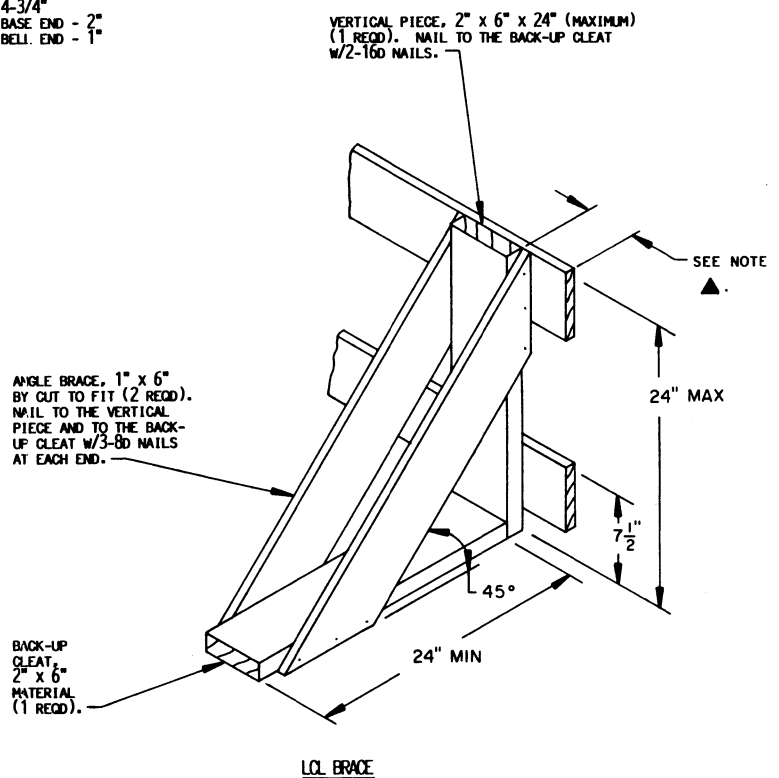
LOAD AS SHOWN (TYPICAL)

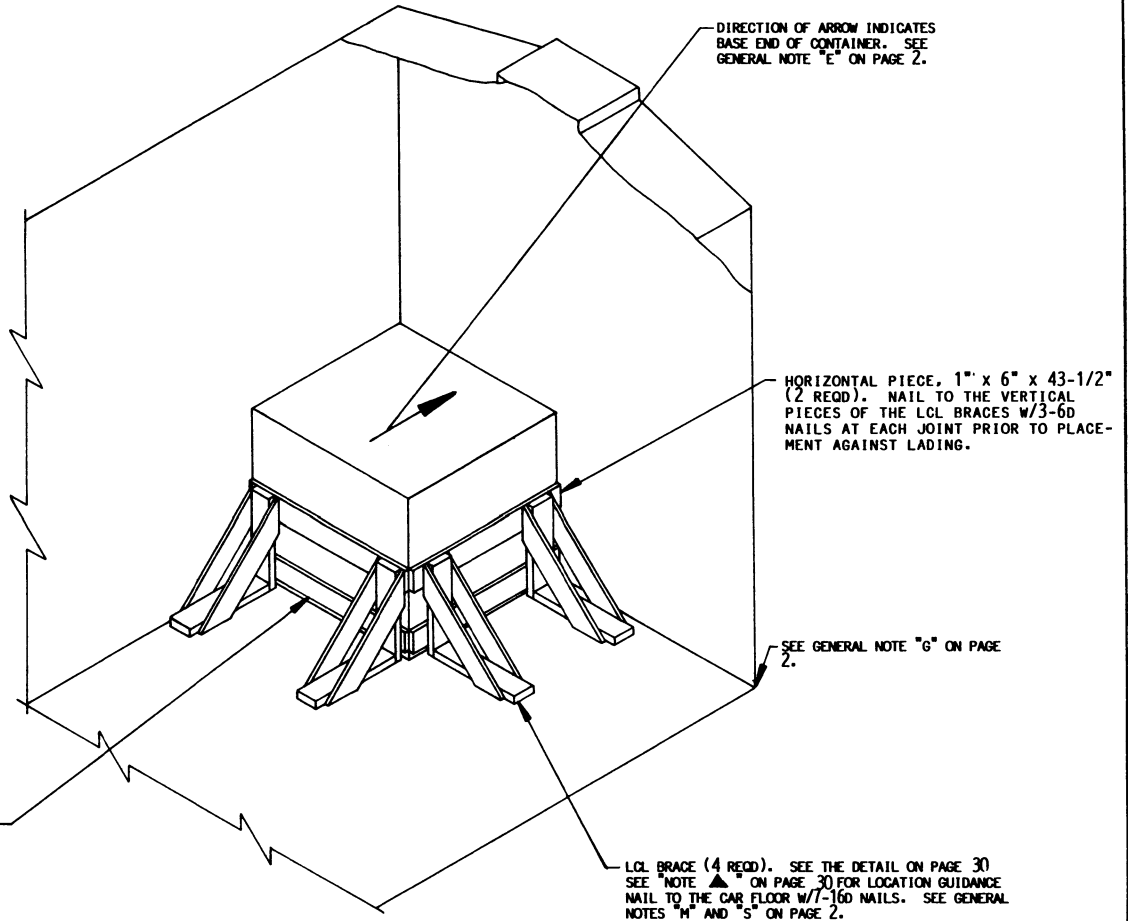
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	12	27,396 LBS
DUNNAGE		946 LBS
TOTAL WEIGHT		28,342 LBS

NOTE ▲ :

THIS DIMENSION WILL BE:

UNIT END - 4-3/4"
UNIT SIDE, BASE END - 2"
UNIT SIDE, BELI. END - 1"





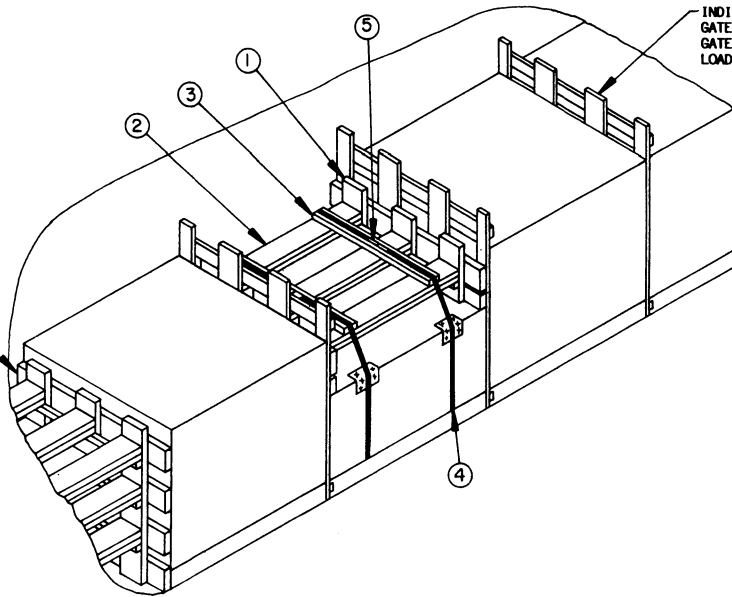
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTES "D" AND "S" ON PAGE 2.
2. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE PROCEDURES ARE APPLICABLE FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 3.
3. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING. BRACES MAY BE ADDED FOR LONGITUDINAL BRACING AS NECESSARY.

INDICATES CENTER GATE "C".
USE CENTER GATE "A"
FOR A 2-WIDE LOAD.

INDICATES SEPARATOR
GATE "B". USE SEPARATOR
GATE "A" FOR A 2-WIDE
LOAD.



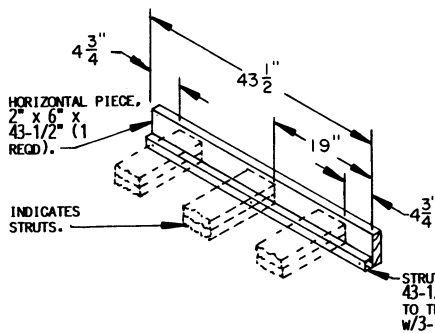
**POSITIONING OF PARTIAL LENGTHWISE
UNIT WITHIN A LAYER**

SPECIAL NOTES:

1. SHIPMENTS OF COMPLETE ROUNDS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A 1-LAYER LOAD. THE PRINCIPLES MAY BE APPLIED FOR SHIPMENT OF A PARTIAL PALLET UNIT IN THE SECOND LAYER.
2. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED COMPLETE ROUNDS WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD WILL BE LIMITED TO NOT LESS THAN THREE (3) LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT A 4-LAYER PARTIAL UNIT. PARTIAL-UNIT GATE DETAILS ARE SHOWN FOR UNITS REDUCED BY ONE AND TWO LAYERS.
3. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4079/68-20PM1002 MUST BE INSTALLED IN PLACE OF THE OMITTED CONTAINERS.
4. THE FILLERS AS REFERENCED IN SPECIAL NOTE 3 SHOULD REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT; THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES ITS DESTINATION.
5. THE "POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
6. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① PARTIAL-UNIT GATE (2 REQD.). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ② STRUT, 2" x 6" x 39-5/8" (DOUBLED) (3 REQD.). LAMINATE W/1-10D NAIL EVERY 6". TOENAIL TO PIECES MARKED ① W/2-12D NAILS AT EACH END.
- ③ STRAPPING BOARD, 2" x 4" x 34" (2 REQD.). NAIL TO THE STRUTS. PIECES MARKED ②, W/2-10D NAILS AT EACH JOINT.
- ④ UNITIZING STRAP, 1-1/4" x .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD.). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑤ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD., 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.



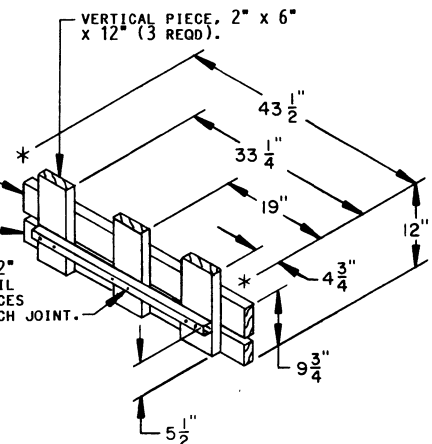
PARTIAL-UNIT GATE B
FOR 4-CONTAINERS HIGH PARTIAL UNIT.

HORIZONTAL PIECE, 2" x 6" x 43-1/2"
(1 REQD.). NAIL TO THE VERTICAL
PIECES W/3-10D NAILS AT EACH
JOINT.

FILL PIECE, 2" x 4" x 43-1/2"
(1 REQD.). NAIL TO THE
VERTICAL PIECES W/3-10D
NAILS AT EACH JOINT.

STRUT LEDGER, 2" x 2" x
43-1/2" (1 REQD.). NAIL
TO THE HORIZONTAL PIECE
W/3-10D NAILS.

STRUT LEDGER, 2" x 2"
x 36" (1 REQD.). NAIL
TO THE VERTICAL PIECES
W/2-10D NAILS AT EACH JOINT.

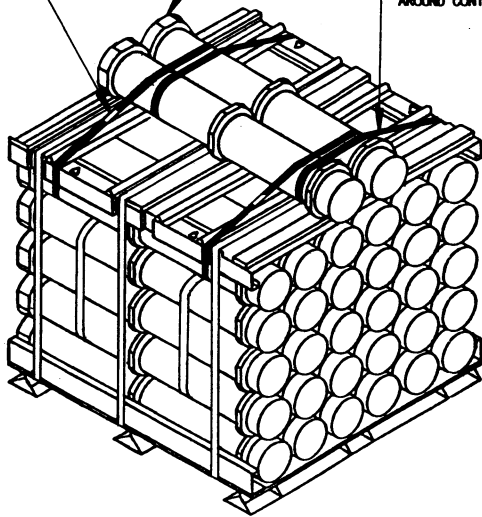


PARTIAL-UNIT GATE A
FOR 3-CONTAINERS HIGH
PARTIAL UNIT.

SEAL FOR 1-1/4" STRAP (2 RECD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

POSITION CONTAINERS SO AS TO BE CENTERED ON THE LENGTH OF THE UNIT.

UNITIZING STRAP, 1-1/4" x .031" OR .035" x 15'-0" LONG STEEL STRAPPING (2 RECD). POSITION TO FORM A COMPLETE LOOP AROUND CONTAINERS.



SECUREMENT OF TWO CONTAINERS

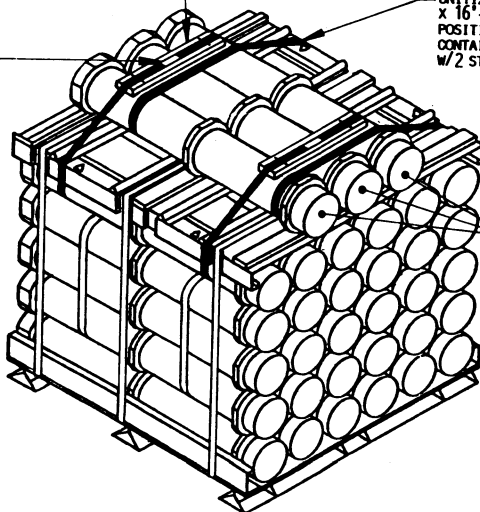
SPECIAL NOTES:

1. SHIPMENT OF COMPLETE ROUNDS SHOULD CONSIST OF FULL HEIGHT AND FULL LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT WITHIN A LAYER AS SHOWN ON PAGE 32.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED, BUT NOT IN THE DOORWAY.
4. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.

SEAL FOR 1-1/4" STRAP (4 RECD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

STRAPPING BOARD, 1" x 4" x 15" FOR 3 CONTAINERS, 22" FOR 4 CONTAINERS, OR 29-1/2" FOR 5 CONTAINERS.

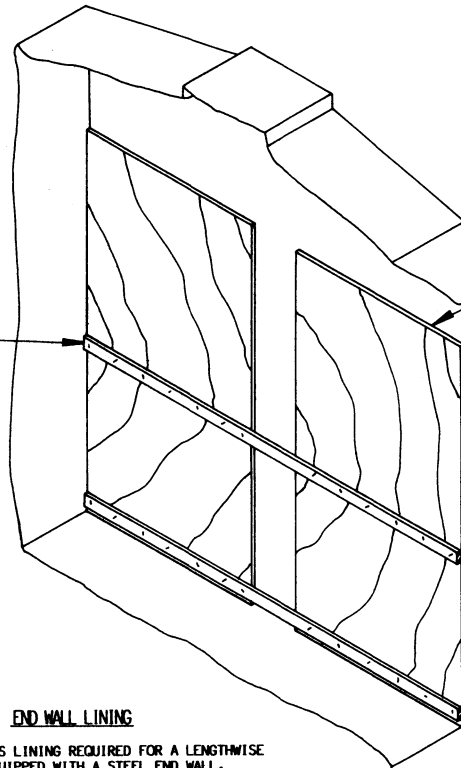
UNITIZING STRAP, 1-1/4" x .031" OR .035" x 16'-0" LONG STEEL STRAPPING (2 RECD). POSITION TO FORM A COMPLETE LOOP AROUND CONTAINERS. SECURE TO STRAPPING BOARD W/2 STAPLES.



POSITION CONTAINERS SO AS TO BE CENTERED ON THE LENGTH OF THE UNIT.

SECUREMENT OF THREE CONTAINERS

TIE PIECE, 1" x 3" BY CAR WIDTH MINUS 1" IN LENGTH (2 REQD).



1/2" MINIMUM THICK PLYWOOD, UNIT LENGTH IN WIDTH BY LOAD HEIGHT (48" WIDE BY 8'-0" HIGH MAY ALSO BE USED AS SHOWN IN THE DETAIL). NAIL TO THE TIE PIECES W/1 APPLICABLY SIZED NAIL EVERY 8" AND CLINCH. NOTE THAT THE APPLICABLE SEPARATOR GATE MAY BE USED IN LIEU OF PLYWOOD. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR END WALL.

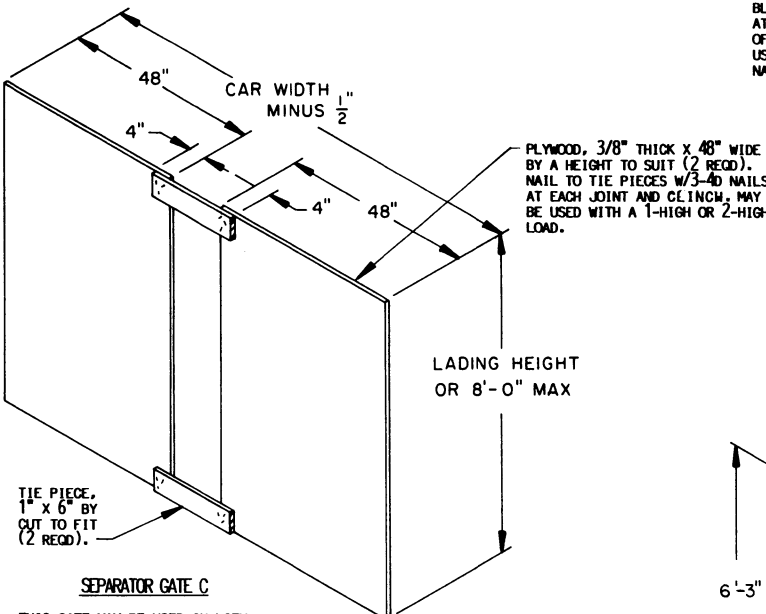
44 1/2"

4"

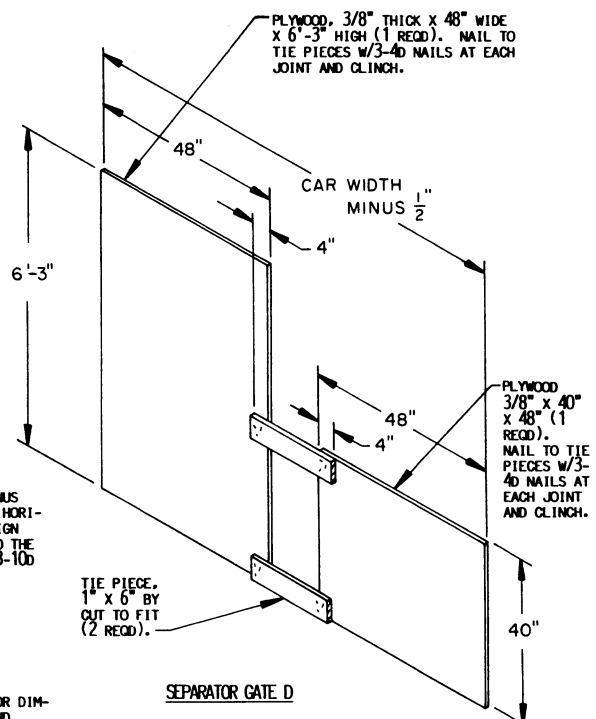
END WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A LENGTHWISE LOAD IN A CAR EQUIPPED WITH A STEEL END WALL.

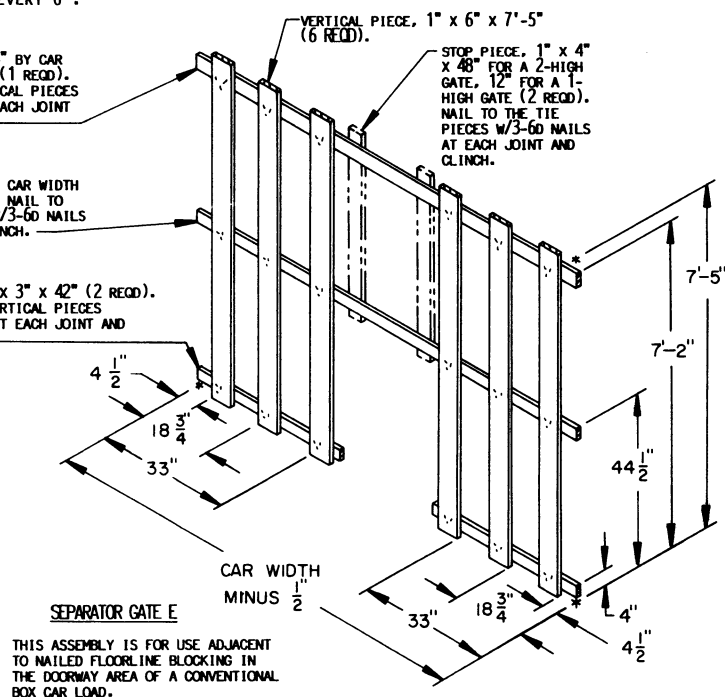
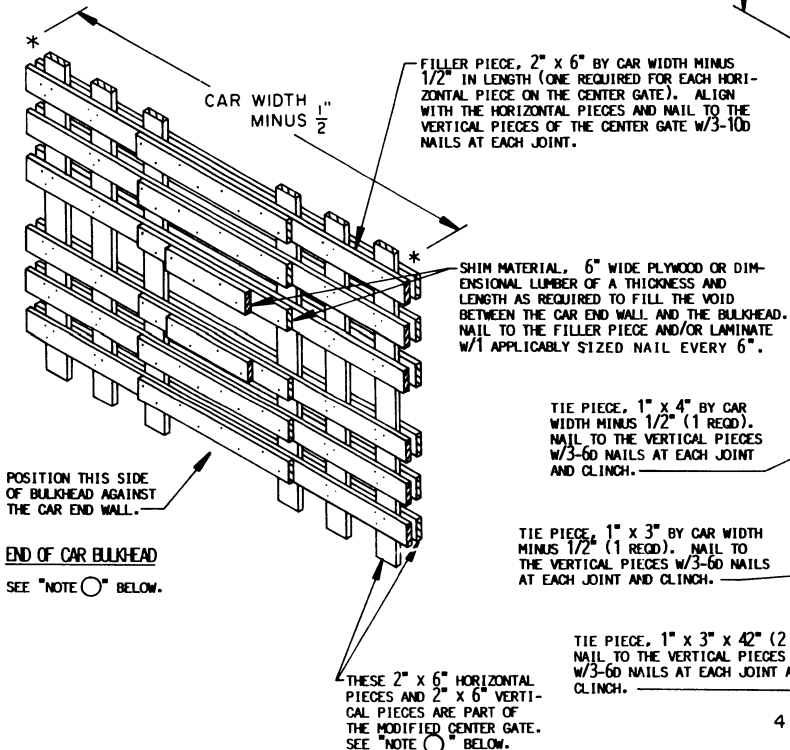
NOTE ▲ : WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE PLYWOOD SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. THE LOWER TIE PIECE MUST BE POSITIONED AT LEAST 3-1/2" OFF THE FLOOR. ALSO, THE LOWER INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUTOUT 3-1/2" HIGH BY 8" WIDE. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.



SEPARATOR GATE C
THIS GATE MAY BE USED IN LIEU OF SEPARATOR GATE "A". SEE "NOTE ▲" ABOVE.



SEPARATOR GATE D
THIS ASSEMBLY IS FOR USE WITH THE PROCEDURES SHOWN ON PAGE 17. SEE "NOTE ▲" ABOVE.

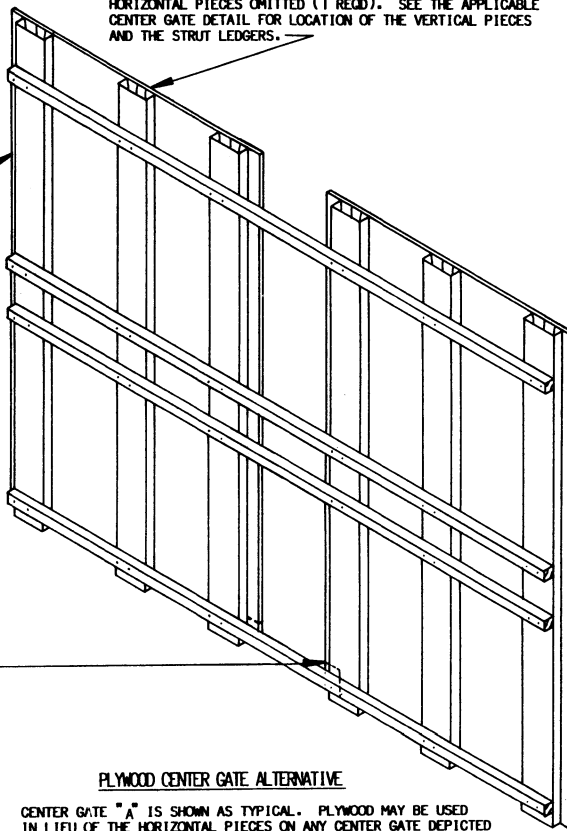


SEPARATOR GATE E
THIS ASSEMBLY IS FOR USE ADJACENT TO NAILED FLOORLINE BLOCKING IN THE DOORWAY AREA OF A CONVENTIONAL BOX CAR LOAD.

NOTE ○ : IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT. NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" x 2" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "A", AS DETAILED ON PAGE 12, IS SHOWN AS TYPICAL.

INDICATES A TYPICAL CAR WIDTH CENTER GATE, WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR LOCATION OF THE VERTICAL PIECES AND THE STRUT LEDGERS.

PLYWOOD, 1/2" THICK BY 43-1/2" WIDE BY THE LOAD HEIGHT (2 REQD), NAIL TO THE VERTICAL PIECES W/1-6D NAIL EVERY 6". PLYWOOD MAY BE ALLOWED TO EXTEND BEYOND THE UNIT WIDTH, IF DESIRED.



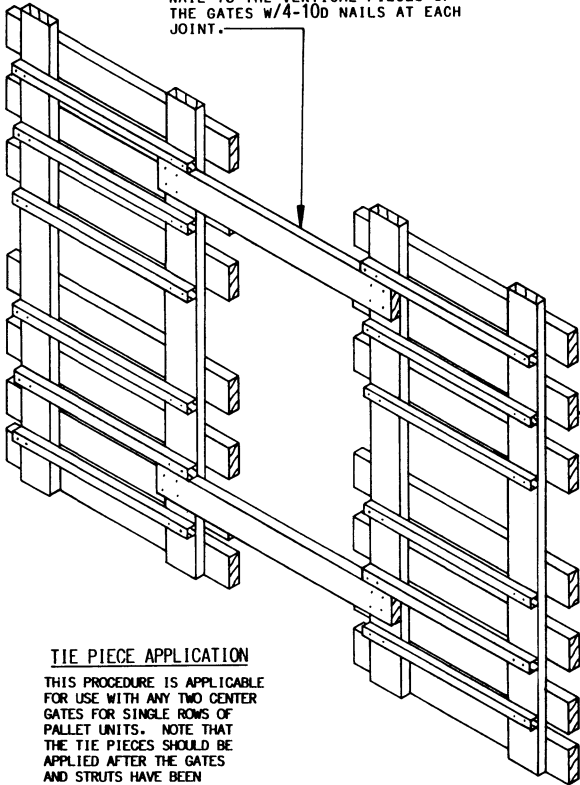
GATE HOLD DOWN PIECE MUST BE SECURED TO THE PLYWOOD.

PLYWOOD CENTER GATE ALTERNATIVE

CENTER GATE "A" IS SHOWN AS TYPICAL. PLYWOOD MAY BE USED IN LIEU OF THE HORIZONTAL PIECES ON ANY CENTER GATE DEPICTED HEREIN, INCLUDING THOSE WHICH ARE FOR THE BRACING OF A SINGLE ROW.

WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, EACH PLYWOOD SHEET MUST HAVE A CUTOUT AT THE LOWER INSIDE CORNER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. THE CUTOUT MUST BE 3-1/2" HIGH AND OF SUFFICIENT WIDTH SO THAT THE REMAINING PLYWOOD AT THE FLOOR IS 42-1/2" WIDE.

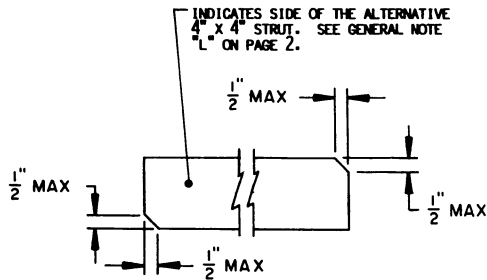
TIE PIECE, 2" x 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



INDICATES A "SPLIT" CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 13.

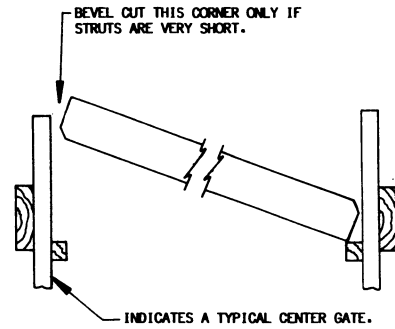
TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH ANY TWO CENTER GATES FOR SINGLE ROWS OF PALLET UNITS. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



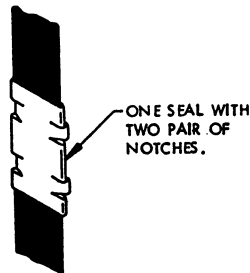
BEVEL CUT

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



STRUT INSTALLATION

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



STRAP JOINT A

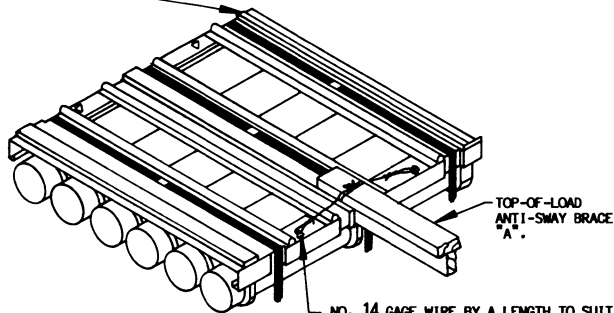
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

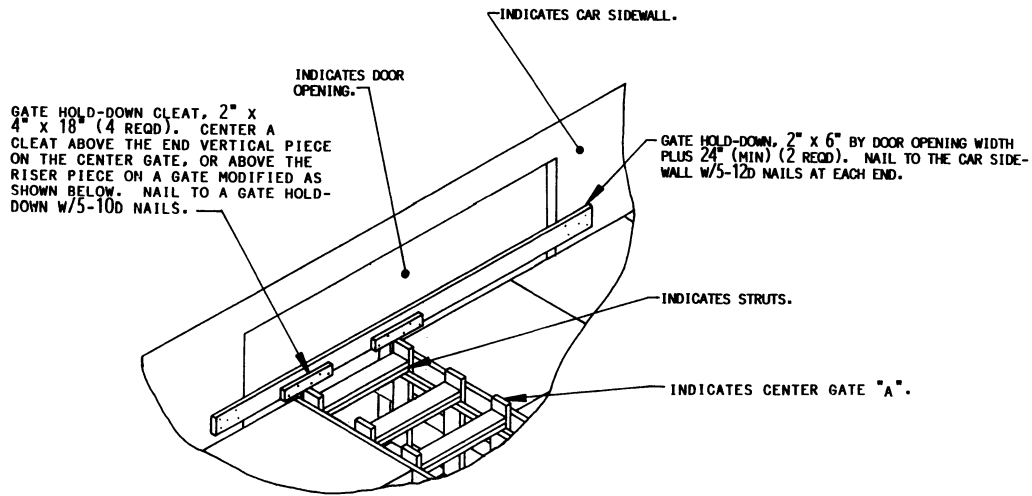
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

VIEW OF TOP LAYER OF LENGTHWISE-POSITIONED CONTAINERS AND PALLET UNIT COVER.



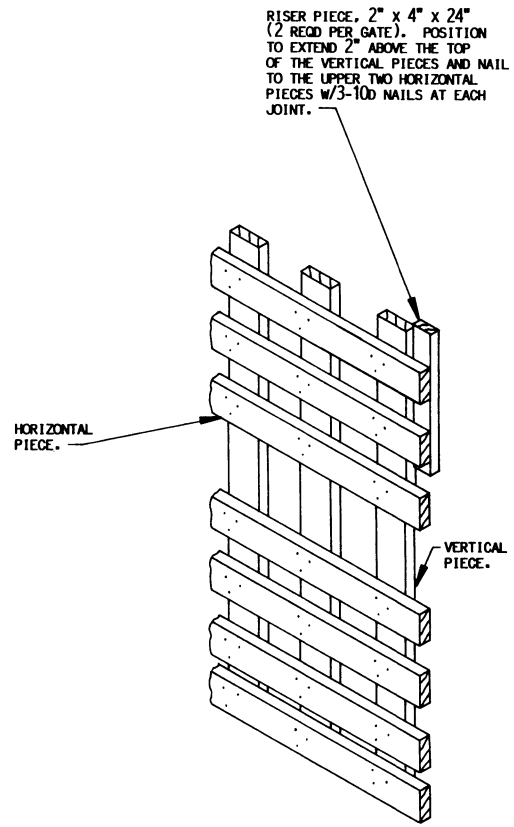
NO. 14 GAGE WIRE BY A LENGTH TO SUIT. FORM TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE SUPPORT PIECE AND TWIST TO PREVENT DISPLACEMENT. THREAD EACH END OF WIRE THRU A LIFTING RING ON THE PALLET COVER AND TWIST.

TIE WIRE APPLICATION A



ALTERNATIVE GATE HOLD-DOWN

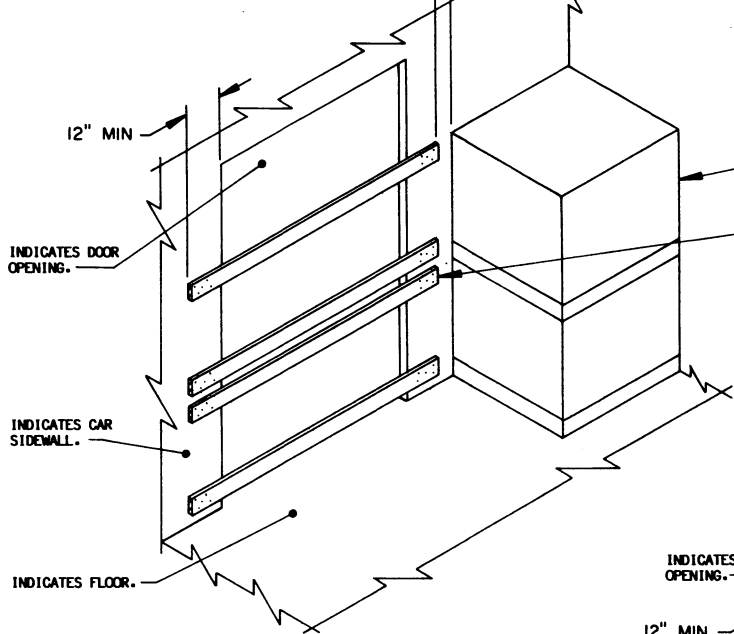
THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD-DOWN WHICH CAN BE USED, IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD-DOWN PIECES WHICH ARE PART OF A CENTER GATE. **NOTE:** IN THE EVENT THAT NEITHER CENTER GATE IS LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD-DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD-DOWN; OMIT THE 2" x 6" GATE HOLD-DOWN PIECES.



MODIFIED CENTER GATE "A"

IF THE SPACE WILL BE MORE THAN THE 9" MAXIMUM, REFER TO THE "ALTERNATIVE DOORWAY PROTECTION A-2" VIEW BELOW FOR GUIDANCE. SEE "NOTE" AT THE RIGHT.

NOTE : THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT.

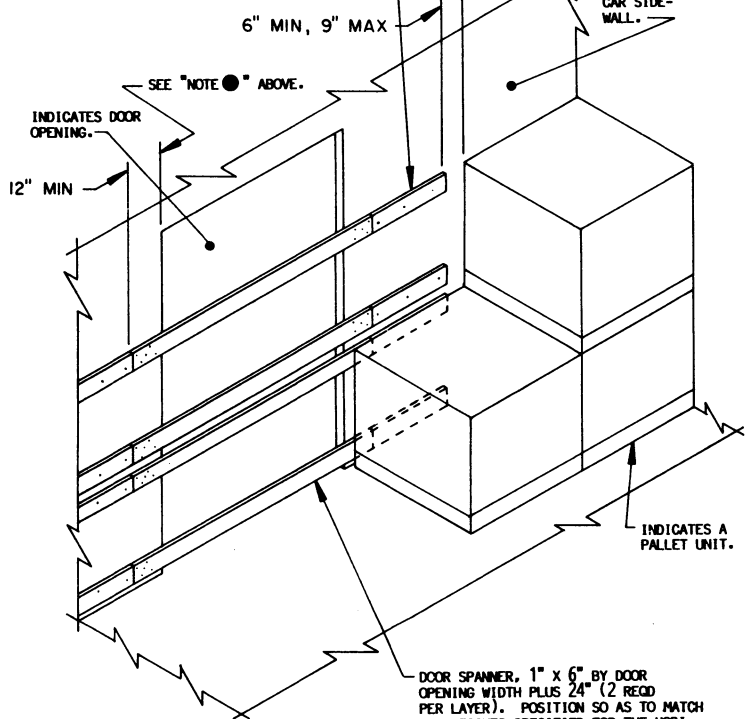


INDICATES PALLET UNIT.
DOOR SPANNER, 1" x 6" BY DOOR OPENING WIDTH PLUS 24" (MIN) (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE APPLICABLE DOORWAY PROTECTION DETAIL. NAIL TO THE CAR SIDEWALL W/5-6D NAILS AT EACH END. SEE "NOTE" ABOVE.

FILLER PIECE, 1" x 6" BY A LENGTH TO PROVIDE A SPACE OF BETWEEN 6" AND 9" (2 OR 4 REQD PER LAYER). NAIL TO THE CAR SIDEWALL W/1-6D NAIL EVERY 8" (MINIMUM OF 2 NAILS). SEE "NOTE" ABOVE.

ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR.

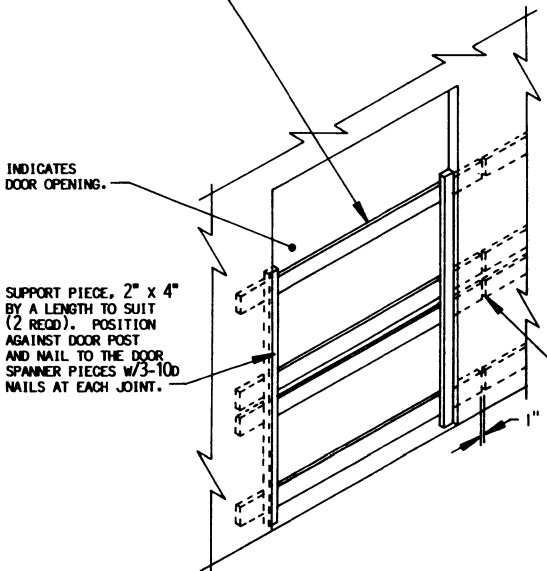


DOOR SPANNER, 2" (MIN) x 6" BY DOOR OPENING WIDTH PLUS 24" (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE APPLICABLE DOORWAY PROTECTION DETAIL. SEE "NOTE" ABOVE.

DOOR SPANNER, 1" x 6" BY DOOR OPENING WIDTH PLUS 24" (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE APPLICABLE DOORWAY PROTECTION DETAIL. NAIL TO THE CAR SIDEWALL W/5-6D NAILS AT EACH END. SEE "NOTE" ABOVE.

ALTERNATIVE DOORWAY PROTECTION A-2

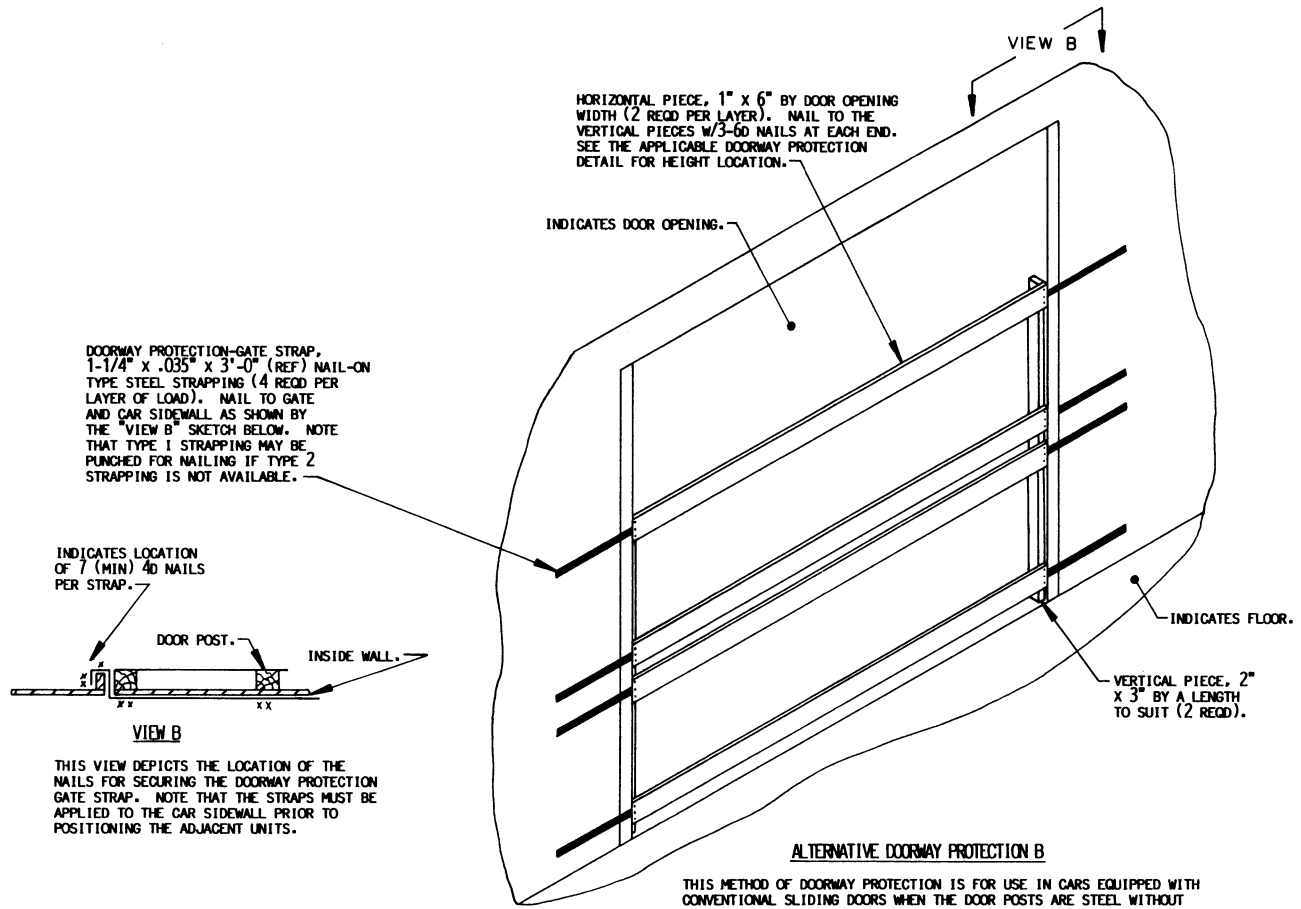
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR.



ALTERNATIVE DOORWAY PROTECTION A-3

THIS VIEW DEPICTS THE DOOR OPENING OF A CAR AS IT APPEARS WHEN LOOKING AT IT FROM OUTSIDE OF THE CAR. THE METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE FOR THE LOADING SIDE OF THE CAR. NOTE THAT THE ADJACENT PALLET UNITS MUST BE POSITIONED APPROXIMATELY 1-3/4" (REF) FROM THE CAR SIDEWALL (1/4" MORE THAN THE THICKNESS OF THE DOOR SPANNER PIECES) TO FACILITATE THE INSTALLATION OF THESE DOOR SPANNER PIECES. THE VIEW SHOWN ABOVE IS FOR A TWO LAYER LOAD.

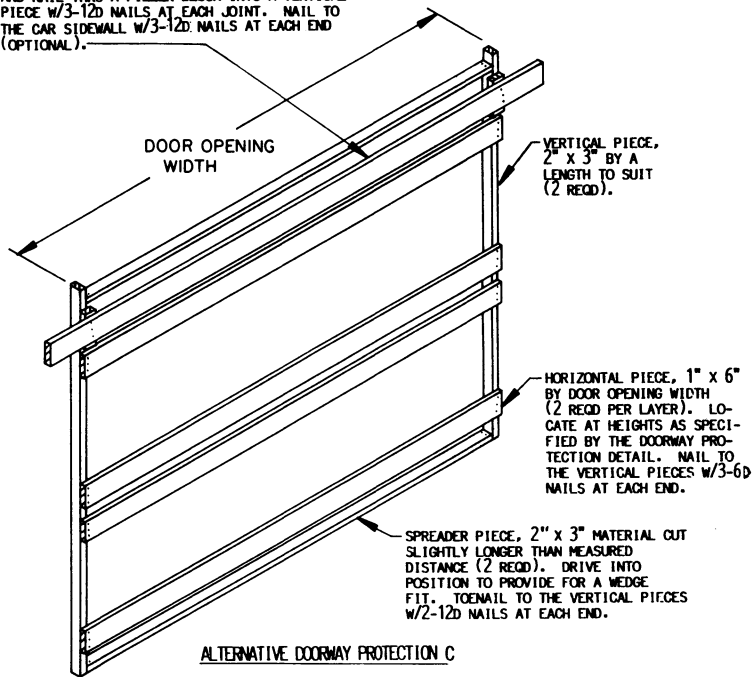
DOORWAY PROTECTION



ALTERNATIVE DOORWAY PROTECTION B

THIS METHOD OF DOORWAY PROTECTION 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. THE VIEW SHOWN ABOVE IS FOR A TWO-LAYER LOAD.

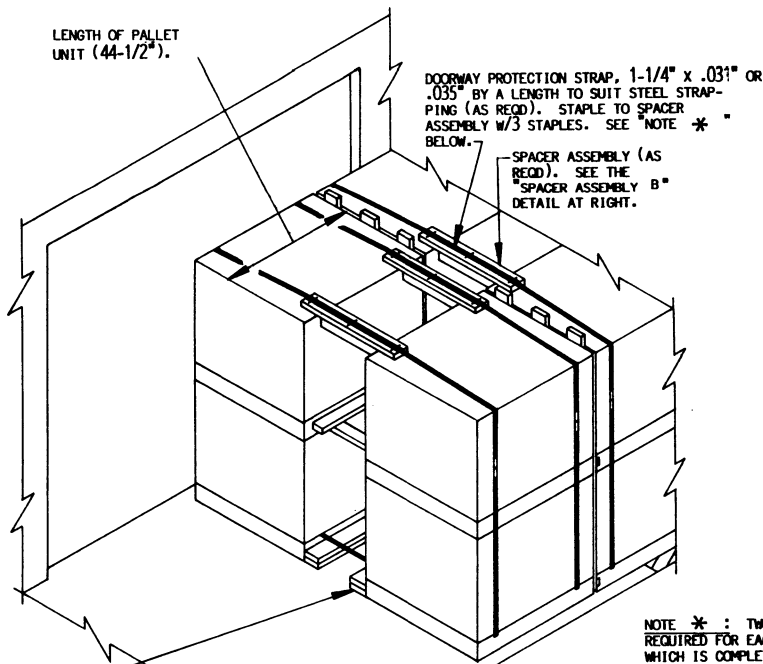
DOOR SPANNER, 2" x 6" BY DOOR OPENING WIDTH PLUS 24" (1 REQD). POSITION ABOVE THE LOAD AND NAIL THRU A FILLER BLOCK INTO A VERTICAL PIECE W/3-12D NAILS AT EACH JOINT. NAIL TO THE CAR SIDEWALL W/3-12D NAILS AT EACH END (OPTIONAL).



ALTERNATIVE DOORWAY PROTECTION C

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT AVAILABLE. IF THE CAR HAS AVAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 40 FOR GUIDANCE. NOTE THAT THE DOOR SPANNER IN THIS DETAIL MAY BE USED AS A GATE HOLD-DOWN PIECE FOR THE "ALTERNATIVE GATE HOLD-DOWN METHOD SHOWN ON PAGE 38.

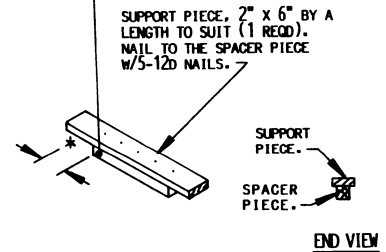
LENGTH OF PALLET UNIT (44-1/2").



ALTERNATIVE DOORWAY PROTECTION D

SIDE BLOCKING, 2" x 6" x 44" (DOUBLED) (2 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 DOORWAY PROTECTION STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16D NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER. OMIT ANTI-SWAY BRACE(S) AT FLOOR LEVEL.

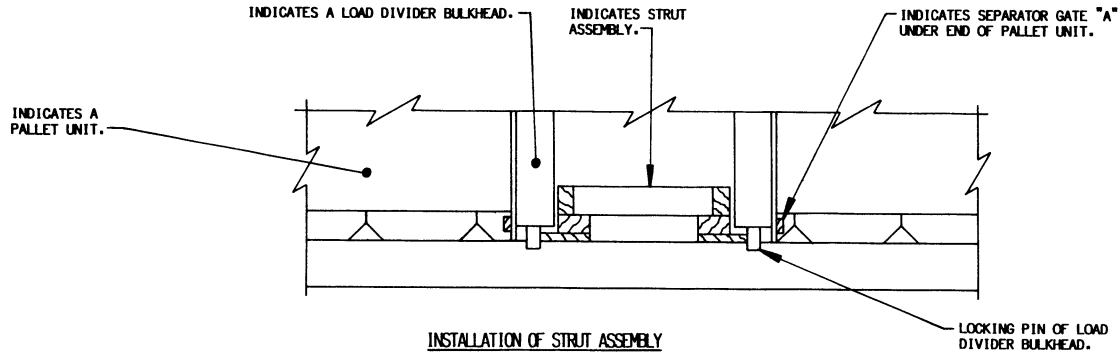
SPACER PIECE, 4" x 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS MINUS 1/4" (1 REQD).



SPACER ASSEMBLY B

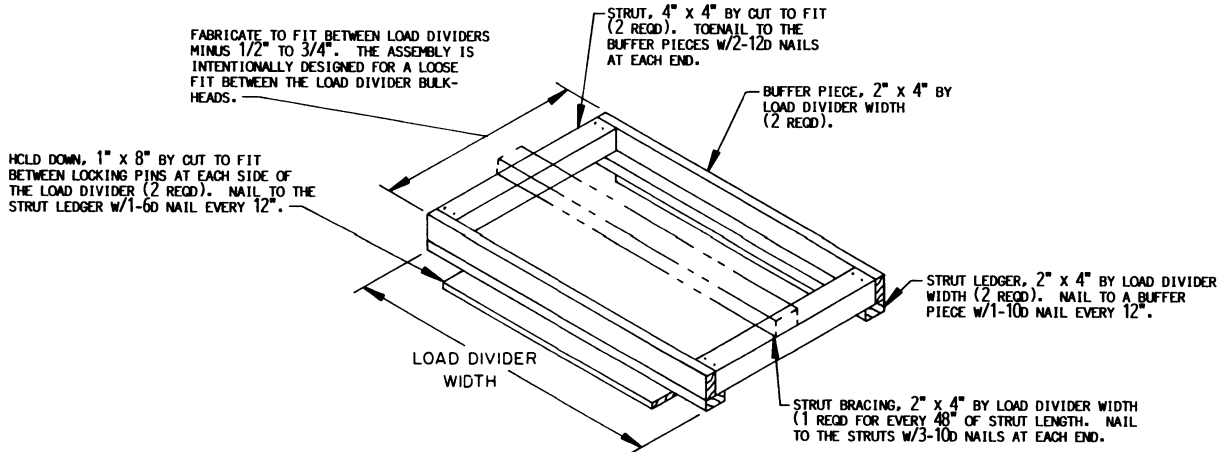
THIS ASSEMBLY IS FOR USE UNDER A DOORWAY PROTECTION STRAP WHICH IS INSTALLED AROUND PALLET UNITS OF LENGTHWISE-POSITIONED CONTAINERS IN THE DOORWAY AREA OF A LOAD. SEE THE "ALTERNATIVE DOORWAY PROTECTION D" DETAIL AT LEFT FOR A TYPICAL INSTALLATION.

NOTE * : TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH.



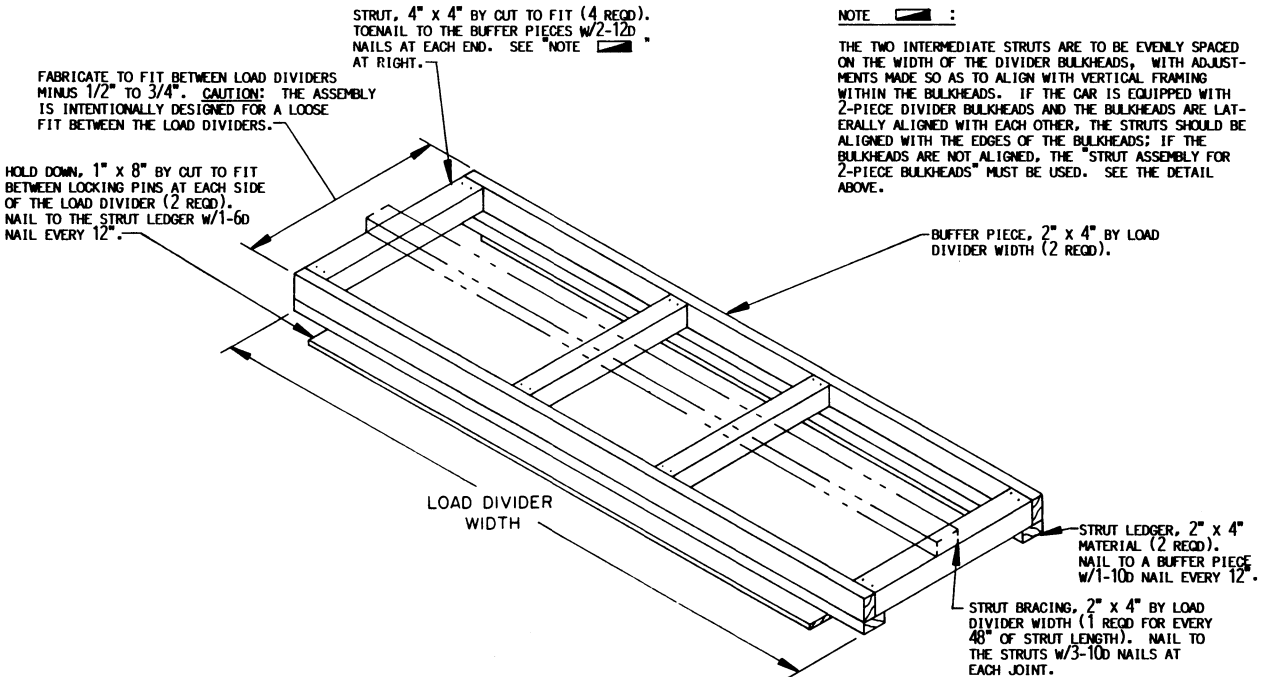
INSTALLATION OF STRUT ASSEMBLY

THIS VIEW SHOWS THE STRUT ASSEMBLY INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS. NOTE THE 1/2" TO 3/4" (TOTAL) SPACE INTENTIONALLY PROVIDED BETWEEN THE ASSEMBLY AND THE BULKHEADS.



STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD. NOTE: TWO ASSEMBLIES AS SHOWN ARE REQUIRED FOR A 2-PIECE BULKHEAD IF NOT LATERALLY ALIGNED. SEE "NOTE" BELOW.



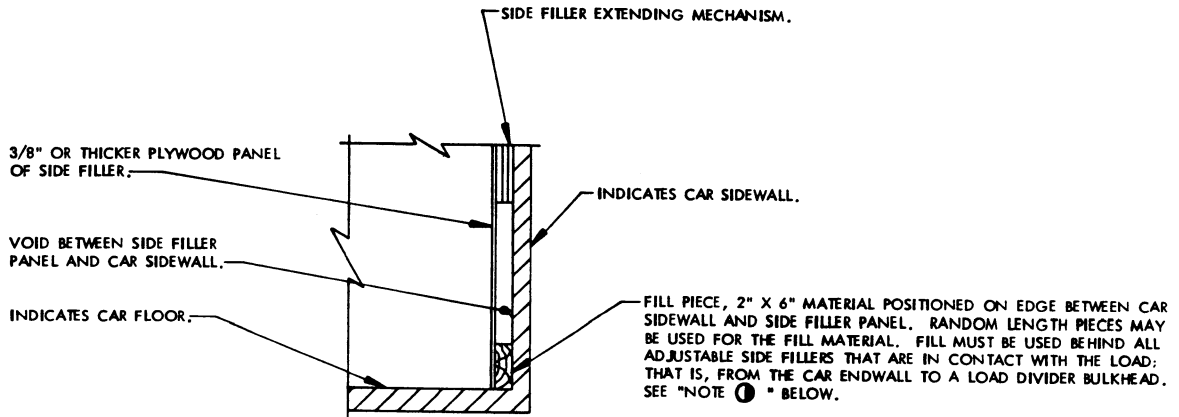
NOTE :

THE TWO INTERMEDIATE STRUTS ARE TO BE EVENLY SPACED ON THE WIDTH OF THE DIVIDER BULKHEADS, WITH ADJUSTMENTS MADE SO AS TO ALIGN WITH VERTICAL FRAMING WITHIN THE BULKHEADS. IF THE CAR IS EQUIPPED WITH 2-PIECE DIVIDER BULKHEADS AND THE BULKHEADS ARE LATERALLY ALIGNED WITH EACH OTHER, THE STRUTS SHOULD BE ALIGNED WITH THE EDGES OF THE BULKHEADS; IF THE BULKHEADS ARE NOT ALIGNED, THE "STRUT ASSEMBLY FOR 2-PIECE BULKHEADS" MUST BE USED. SEE THE DETAIL ABOVE.

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES REGARDLESS OF THE WEIGHT OF THE LOAD.

PROVISIONS FOR BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS

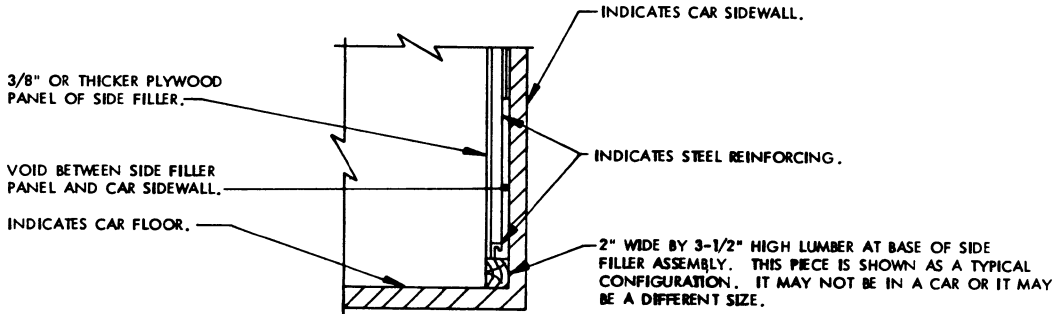


TYPICAL TYPE A

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

NOTE 1:

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".



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.

