

APPROVED BY
 HAZARDOUS MATERIALS SYSTEMS
 (BOE) ASSOCIATION OF AMERICAN
 RAILROADS
J. H. Harrison
 DATE 8/19/92

LOADING AND BRACING (CL & LCL) IN BOX CARS OF COMPLETE ROUNDS PACKED IN CYLINDRICAL METAL CONTAINERS AND UNITIZED ON A 35" X 45-1/2" WOODEN PALLET PA 104 SERIES CONTAINER

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THIS OUTLOADING PROCEDURE DRAWING INCLUDES PROCEDURES FOR CONVENTIONAL TYPE BOX CARS, BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES OF VARIOUS DESIGN AND MANUFACTURE, AND CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

DO NOT SCALE

REVISIONS				DRAFTSMAN	PROJ ENG
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				CHECKER	LOG ENGRG OFFICE
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U.S. ARMY AMMUNITION CENTER AND SCHOOL					
U.S. ARMY AMC DRAWING					
FEBRUARY 1992					
CLASS	DIVISION	DRAWING	FILE		
19	48	4212/6	5 PM 1003		

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TA 743-280-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA104 SERIES COMPLETE ROUND CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" PALLET. SEE THE PICTORIAL VIEW ON PAGE 4, REFER TO THE U.S. ARMY AMC (DARCOM) DRAWING 79-48-4079/6-20PM1002 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 CONTAINERS THAT OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL SIDEWALLS OR END WALLS OF BOX CARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOX CARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS 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 51 FOR GUIDANCE.
- E. PALLETIZED UNITS OF COMPLETE ROUNDS WILL BE POSITIONED WITH THE BASE ENDS OF CONTAINERS AGAINST THE CAR END WALL OR SIDEWALL AS APPLICABLE TO THE LOAD BEING SHIPPED. LONGITUDINALLY ADJACENT LENGTHWISE UNITS WILL BE POSITIONED WITH BASE END AGAINST BASE END OR BELL END AGAINST BELL END OF THE CONTAINERS.
- F. ALL THE LOADS SHOWN HEREIN ARE TYPICAL, BECAUSE OF THIS FACT IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHART ON PAGE 28 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.
- G. 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.
- H. 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 52 FOR GUIDANCE.
- J. BOX CARS EQUIPPED WITH CONVENTIONAL 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.
- K. 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.
- L. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED 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.
- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- N. **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 ON TO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- O. 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 COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- P. 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 58 FOR GUIDANCE.
- Q. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- R. 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.
- S. 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.

(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.
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 III.
STRAP STAPLE	COMMERCIAL GRADE.
PLYWOOD	GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NN-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	ANSI/AHA A135.4, CLASS 1.
SOLID FIBERBOARD	FED SPEC PP-F-320. TYPE 5F, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE 5F, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

- T. 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 "N" ABOVE.
- U. **NOTICE:** WHEN POSITIONING PALLETIZED 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 PALLETIZED UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. **CAUTION:** WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE PALLETIZED UNITS, 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.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED)

- V. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY THE "STRUT BRACING" DETAIL ON PAGE 54. 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.
- W. 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, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 54 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- X. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

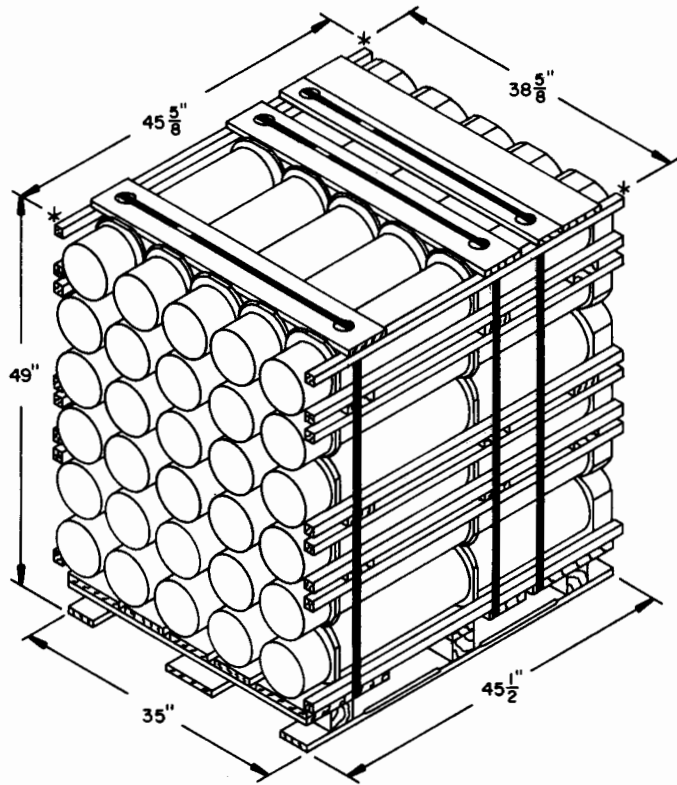
(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

- Y. 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 CROSS MEMBERS 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.
- Z. 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.
- AA. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

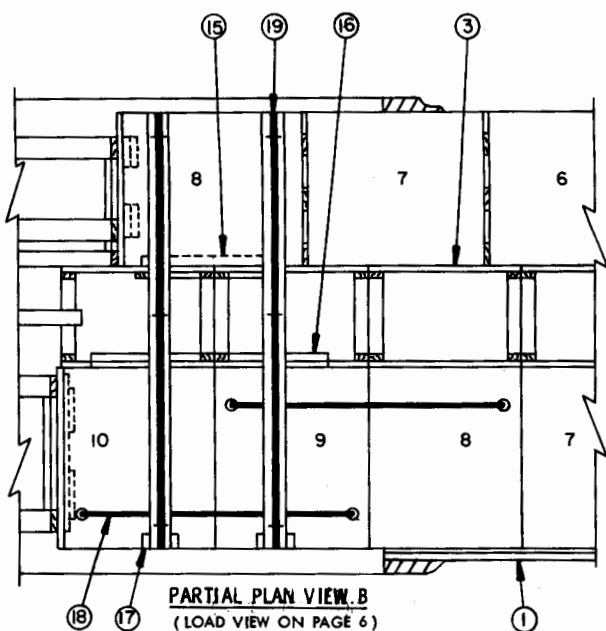
(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- BB. **CAUTION:** FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANS-CO 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 XII.
- CC. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL 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. **NOTE:** 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.
- DD. IF NAILING 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 60 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 60, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- EE. **NOTE:** 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.
- FF. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "GG" BELOW. DETAILS OF STRUT ASSEMBLES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 59.
- GG. 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 PALLETIZED 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 32 THRU 35.
 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 PAGES 30 AND 31 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 46, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 42.
- HH. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



PALLET UNIT

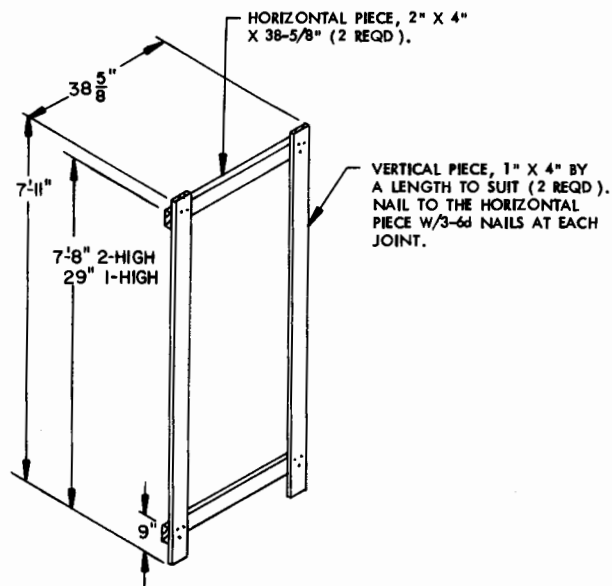
CONTAINER ----- 30 EACH @ 75 LBS (APPROX)
 CUBE ----- 50.0 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 2,408 LBS (APPROX)



PARTIAL PLAN VIEW, B
(LOAD VIEW ON PAGE 6)

KEY NUMBERS

- ⑮ SIDE BLOCKING, 2" X 6" X 36" OR A LENGTH TO SUIT (DOUBLED) (1 REQD). POSITION AS SHOWN. NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑯ SIDE BLOCKING, 2" X 4" X 60" OR A LENGTH TO SUIT (DOUBLED) (1 REQD). PRE-POSITION 45-5/8" FROM THE NEAR SIDE CAR WALL AND NAIL AS DIRECTED IN KEY NUMBER ⑮ ABOVE W/8-16d NAILS.
- ⑰ STRAPPING BOARD/SPACER ASSEMBLY A, (2 REQD). SEE THE DETAIL ON PAGE 23.
- ⑱ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 30'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION THE FIRST STRAP BEFORE LOADING PALLET STACK NO. 8, PRE-POSITION THE SECOND STRAP BEFORE LOADING PALLET STACK NO. 9. TENSION AND SEAL THE STRAP THAT ENCIRCLES PALLET STACK NUMBERS 8 AND 9, THEN REPEAT THE PROCEDURE FOR PALLET STACKS 9 AND 10.
- ⑲ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (2 REQD). POSITION AS SHOWN. STAPLE TO STRAPPING BOARD MARKED ⑰ W/3 STAPLES.
- ⑳ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2. NOTE: THE SEALS ARE NOT SHOWN.

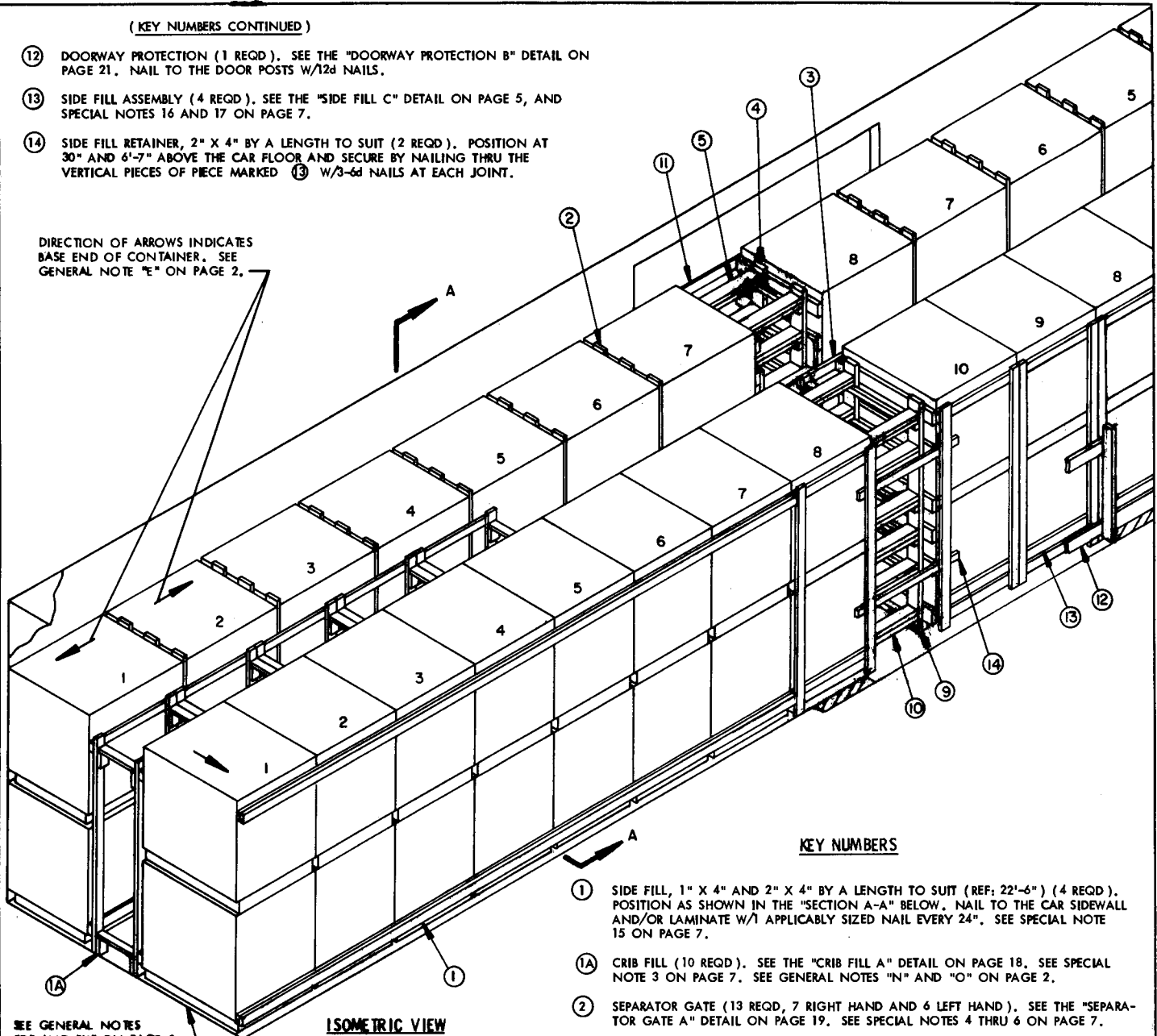


SIDE FILL ASSEMBLY C

(KEY NUMBERS CONTINUED)

- ⑫ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 21. NAIL TO THE DOOR POSTS W/12d NAILS.
- ⑬ SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL C" DETAIL ON PAGE 5, AND SPECIAL NOTES 16 AND 17 ON PAGE 7.
- ⑭ SIDE FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION AT 30" AND 6'-7" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑬ W/3-6d NAILS AT EACH JOINT.

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



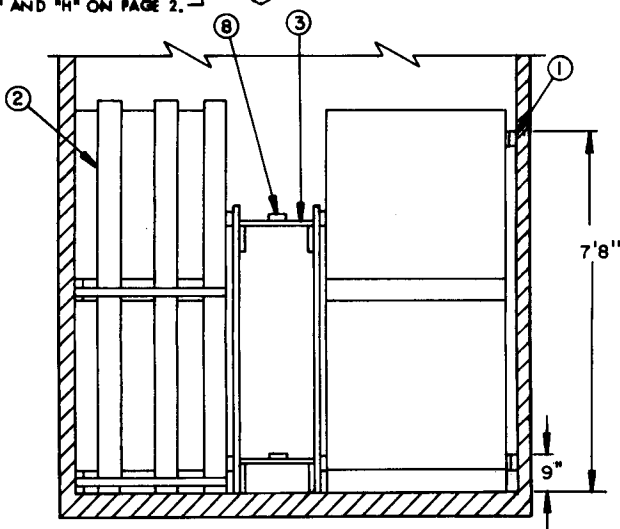
ISOMETRIC VIEW

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

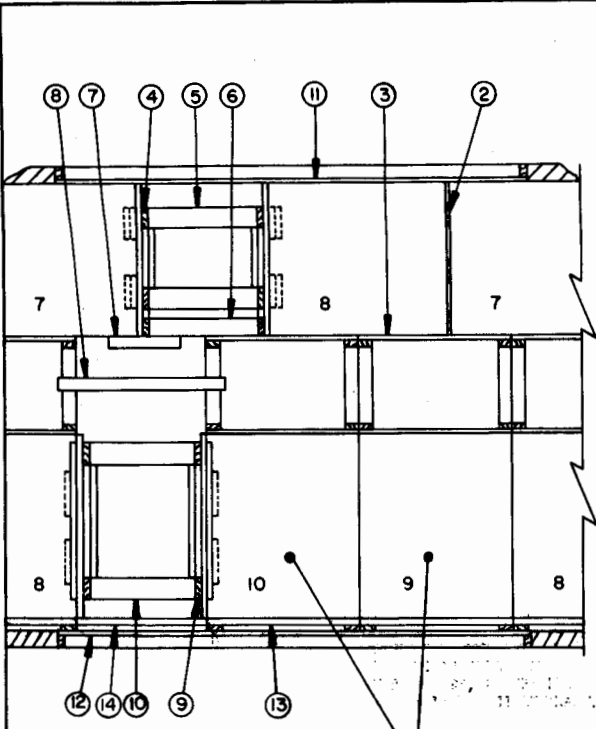
KEY NUMBERS

- ① SIDE FILL, 1" X 4" AND 2" X 4" BY A LENGTH TO SUIT (REF: 22'-6") (4 REQD). POSITION AS SHOWN IN THE "SECTION A-A" BELOW. NAIL TO THE CAR SIDEWALL AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 24". SEE SPECIAL NOTE 15 ON PAGE 7.
- ①A CRIB FILL (10 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 3 ON PAGE 7. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ② SEPARATOR GATE (13 REQD, 7 RIGHT HAND AND 6 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 7.
- ③ CRIB FILL (8 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 18.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 7 ON PAGE 7.
- ⑤ STRUT, 2" X 6" BY CUT TO FIT (REF: 27") (DOUBLED) (12 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO PIECES MARKED ④ W/2-12d NAILS AT EACH END. SEE GENERAL NOTE "M", ON PAGE 2, AND GENERAL NOTES "V" AND "W" ON PAGE 3. SEE SPECIAL NOTE 8 ON PAGE 7.
- ⑥ STRUT, 2" X 4" BY CUT TO FIT (REF: 27") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED ④ W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW" ON PAGE 7.
- ⑦ SIDE BLOCKING FOR CENTER GATE "A", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" ON PAGE 7.
- ⑧ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 42") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 7.
- ⑨ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 19.
- ⑩ STRUT, 2" X 6" BY CUT TO FIT (REF: 26") (DOUBLED) (12 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO PIECES MARKED ⑨ W/2-12d NAILS AT EACH END. SEE SPECIAL NOTE 8 ON PAGE 7.
- ⑪ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 7.

(CONTINUED ABOVE)



SECTION A-A



PARTIAL PLAN VIEW A
 IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, SEE SPECIAL NOTES 10 AND 11 AT RIGHT.

(SPECIAL NOTES CONTINUED)

- 16. IF THE CAR TO BE LOADED HAS PLUG TYPE DOORS, AND HAS NAILABLE SIDEWALLS, THE SIDE FILL ASSEMBLIES AND THE SIDE FILL RETAINERS, PIECES MARKED ⑬ AND ⑭ WILL NOT BE REQUIRED; EXTEND THE LENGTH OF THE SIDE FILL, PIECE MARKED ① TO THE DOOR AS SHOWN IN THE "PARTIAL PLAN VIEW B" DETAIL ON PAGE 5.
- 17. THE DEPICTED SIDE FILL IS APPLICABLE FOR 9'-2" OR 9'-4" WIDE CARS. IF THE CAR TO BE LOADED IS WIDER THAN 9'-4" DOUBLED 2" X 4" SIDE FILL WILL BE USED IN LIEU OF WHAT IS SHOWN. ALSO, THE VERTICAL PIECES OF PIECE MARKED ⑬ WILL BE 2" X 4" IN LIEU OF 1" X 4" MATERIAL AS SHOWN.
- 18. THE 60'-8" LONG CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 66-UNIT LOAD MUST HAVE A LOAD LIMIT OF AT LEAST 168,800 POUNDS. A 50'-6" CAR FOR SHIPMENT OF A 54-UNIT LOAD MUST HAVE A LOAD LIMIT OF 132,800 POUNDS OR GREATER. A 40'-6" LONG CAR REQUIRES A LOAD LIMIT OF AT LEAST 107,100 POUNDS FOR A 40-UNIT LOAD.

SPECIAL NOTES:

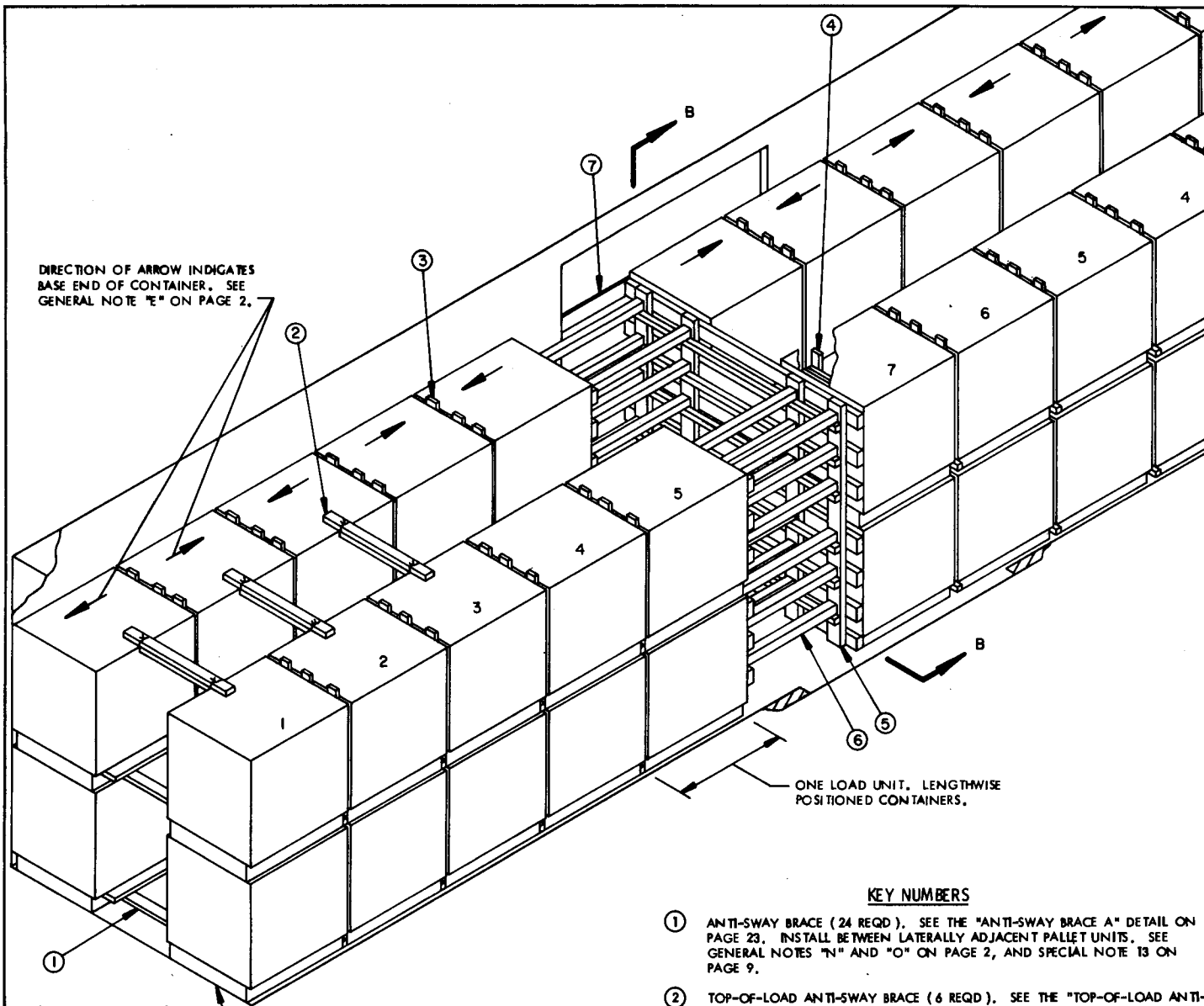
- 1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
- 2. A MAXIMUM OF FIFTY-FOUR (54) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 130,032 POUNDS, CAN BE PLACED IN A 30'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 96,320 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
- 3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FIVE (5) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD IN A 60' CAR. FOUR (4) ARE REQUIRED IN EACH END OF 40' AND 50' CARS.
- 4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 2" X 2" TIE PIECES ARE LOCATED BETWEEN THE PALLET WINGS OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
- 5. ALL SEPARATOR GATES WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE A VERTICAL PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
- 6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 38" WIDE BY 8'-0" LONG.
- 7. CENTER GATES "A" AND "B" 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 53 FOR GUIDANCE.
- 8. IF THE DEPICTED LOAD CONTAINS SEVEN UNITS OR LESS IN EACH END OF THE CAR, 4" X 4" STRUTS MAY BE USED IN LIEU OF PIECES MARKED ⑤ AND ⑩ NAIL AS DESCRIBED BY KEY NUMBER ⑥ ON PAGE 8.
- 9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑪ AND ⑫ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 56 THRU 58 FOR OTHER TYPES OF DOORWAY PROTECTION.
- 10. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW B" DETAIL, AND KEY NUMBERS ⑬ THRU ⑭ ON PAGE 5 FOR GUIDANCE. NOTE THAT THE CRIB FILL MARKED ③ MUST HAVE 3" CUT OFF EACH VERTICAL AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING.
- 11. IF THE PALLET STACKS IN THE DOORWAY ARE POSITIONED SO THE FORKLIFT OPENINGS ARE NOT CLOSE ENOUGH IN ALIGNMENT TO RECEIVE TWO (2) DOORWAY PROTECTION STRAPS ACROSS THE LOAD WIDTH; THAT PALLET STACK MUST BE UNITIZED TO THE LONGITUDINALLY ADJACENT PALLET STACK AS SHOWN IN THE "PARTIAL PLAN VIEW B" DETAIL ON PAGE 5.
- 12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 30 OR FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACKS NO. 7 AND THE CROSSWISE STACK NO. 8. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 42 AND 43.
- 13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 47 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS, AND PAGES 48 AND 50 FOR CROSSWISE UNITS.
- 14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.
- 15. THE SIDE FILL PIECE MARKED ① IN THE LOAD ON PAGE 6, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLY "C" PIECE MARKED ⑬, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD, IN LIEU OF PIECE MARKED ①.

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BILL OF MATERIAL		
NUMBER	LINEAR FEET	BOARD FEET
1" X 4"	161	54
1" X 6"	405	203
2" X 2"	150	50
2" X 3"	35	18
2" X 4"	1106	738
2" X 6"	255	255
NAILS	NO. REQD	POUNDS
6d (2")	386	2-1/4
10d (3")	1922	23
12d (3-1/4")	182	2-1/4
16d (3-1/2")	8	1/4
WIRE, NO. 14 GAGE ----- 12' REQD ----- NIL		

LOAD AS SHOWN

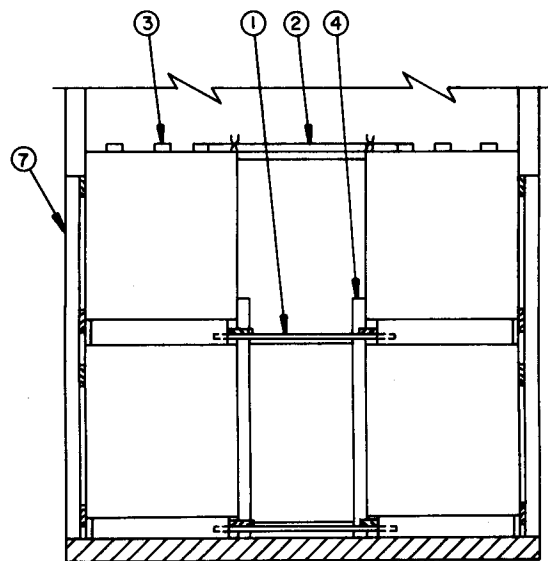
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -----	66	158,928 LBS
DUNNAGE -----		2,636 LBS
TOTAL WEIGHT -----		161,564 LBS



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

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

ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

- ① ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTE 13 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO THE TOP DUNNAGE ON UNIT AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 4 ON PAGE 9.
- ③ SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 9.
- ④ STOP PIECE, 1" X 4" X 60" (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/2-6d NAILS AT EACH JOINT. SEE SPECIAL NOTE 6 ON PAGE 9.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20. SEE SPECIAL NOTES 8 AND 9 ON PAGE 9.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF" 45") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V", AND "W" ON PAGE 3, AND SPECIAL NOTE 11 ON PAGE 9.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 9.

(SPECIAL NOTES CONTINUED)

13. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED) OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA, IN LIEU OF PIECE MARKED ⑦, USE PIECES MARKED ③ THRU ⑧ ON PAGE 14. SEE SPECIAL NOTES 8 AND 9 ON PAGE 15 FOR GUIDANCE.
14. 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) 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 27 THRU 46 FOR GUIDANCE.
15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 47 FOR SHIPPING GUIDANCE.
16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.
17. FOR SHIPMENT OF THE DEPICTED 48-UNIT LOAD, THE 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 119,300 POUNDS. A 60-UNIT LOAD IN A 60'-8" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 146,800 POUNDS. A 36-UNIT LOAD CAN BE SHIPPED IN A 40'-6" LONG CAR, HAVING A LOAD LIMIT OF 89,400 POUNDS OR GREATER.

SPECIAL NOTES:

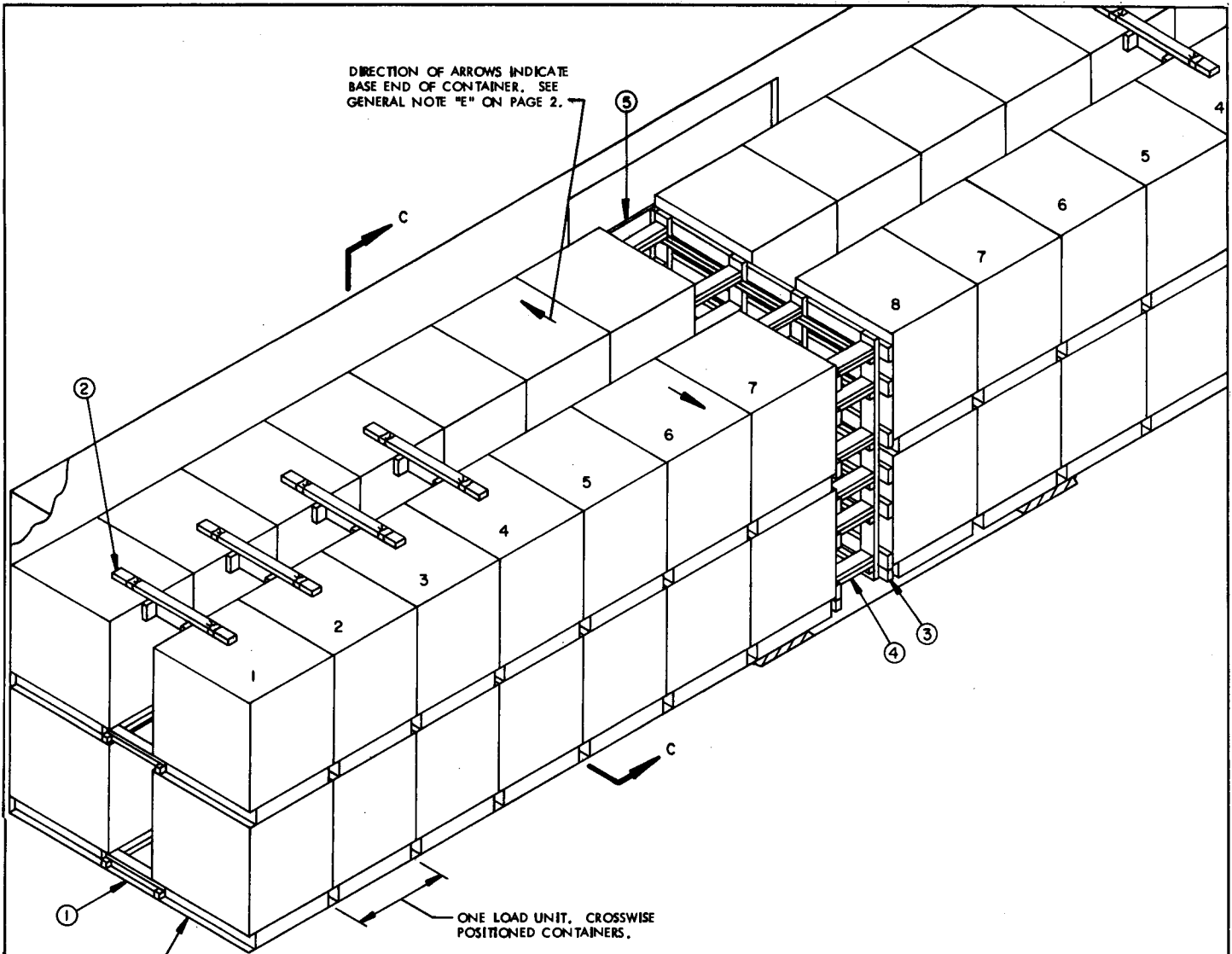
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.
2. A MAXIMUM OF SIXTY (60) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 144,480 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,688 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 17.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60' CAR, THREE (3) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.
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 2" X 2" PIECES ARE LOCATED BETWEEN THE PALLET WINGS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY 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. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 52 FOR CONSTRUCTION GUIDANCE.
8. CENTER GATE "C" 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 53 FOR GUIDANCE.
9. 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 C", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 18. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "PIECE APPLICATION" DETAIL ON PAGE 53. OMIT THE STOP PIECES FROM "CENTER GATE A".
10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 55 FOR GUIDANCE.
11. IF THE DEPICTED LOAD CONTAINS EIGHT (8) UNITS OR MORE AT EITHER END OF THE CAR, DOUBLED 2" X 6" STRUTS WILL BE REQUIRED IN LIEU OF PIECE MARKED ⑥. NAIL AS DESCRIBED BY KEY NO ④ ON PAGE 10.
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 56 THRU 58 FOR OTHER TYPES OF DOORWAY PROTECTION.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	177	59
1" X 6"	398	199
2" X 2"	281	94
2" X 3"	31	16
2" X 4"	322	215
2" X 6"	246	246
4" X 4"	90	120
NAILS	NO. REQD	POUNDS
6d (2")	380	2-1/4
10d (3")	606	9-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ----- 36' REQD ----- 1/2 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	48 -----	115,584 LBS
DUNNAGE -----	-----	1,913 LBS
TOTAL WEIGHT ---		117,497 LBS



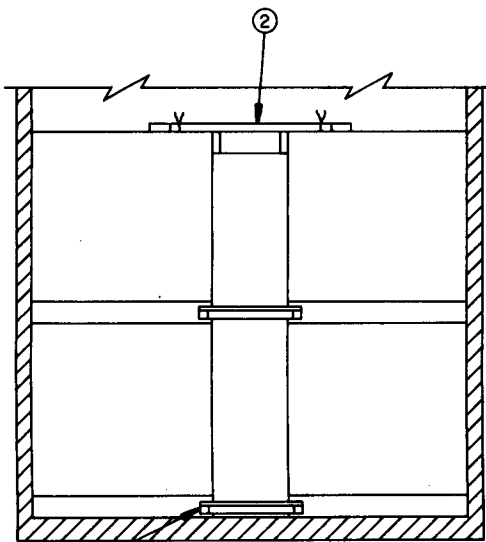
ISOMETRIC VIEW

SEE GENERAL NOTE "H" ON PAGE 2.

ONE LOAD UNIT, CROSSWISE POSITIONED CONTAINERS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 23 INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 11.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO PALLET TIE DOWN STRAP WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 4 ON PAGE 11.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 21. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 11.
- ④ STRUT, 2" X 6" BY CUT TO FIT (REF: 20") (DOUBLED) (21 REQD). LAMINATE W/1-10d NAILS EVERY 6" AND TOENAIL TO PIECES MARKED ③ W/2-12d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 11.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 21. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 9 AND 10 ON PAGE 11.



SECTION C-C

(SPECIAL NOTES CONTINUED)

11. 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) 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 26 THRU 46 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 48 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.
14. FOR SHIPMENT OF THE DEPICTED 60-UNIT LOAD IN A 50'-6" LONG CAR, A CAR HAVING A LOAD LIMIT OF AT LEAST 151,900 POUNDS IS REQUIRED; A 56-UNIT LOAD HAVING SEVEN LOAD UNITS IN EACH END OF THE CAR WILL REQUIRE A LOAD LIMIT OF 136,400 POUNDS OR GREATER. NOTE THAT HORIZONTAL AND VERTICAL STRUT BRACING WILL BE REQUIRED. A 72-UNIT OFFSET LOAD IN A 60'-8" LONG CAR WILL REQUIRE A LOAD LIMIT OF AT LEAST 175,100 POUNDS; AN EVENLY DISTRIBUTED 72-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 174,800 POUNDS OR GREATER. IF SUCH A CAR IS NOT AVAILABLE, A 64-UNIT EVENLY DISTRIBUTED LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF AT LEAST 156,000 POUNDS. NOTE THAT TWO (2) SETS OF STRUT BRACING WILL BE REQUIRED. A 44-UNIT LOAD IN A 40'-6" LONG CAR NEEDS A CAR WITH A LOAD LIMIT OF 106,700 POUNDS OR GREATER; A 40-UNIT EVENLY DISTRIBUTED LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF AT LEAST 98,000 POUNDS. ONE (1) SET OF STRUT BRACING WILL BE REQUIRED FOR A 40-UNIT LOAD.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. A MAXIMUM OF FORTY-FOUR (44) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 105,952 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. SEVENTY-TWO (72) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 173,376 POUNDS CAN BE LOADED IN A 60'-8" LONG CAR.
3. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT LONGITUDINAL DISPLACEMENT OF ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "D" AS SHOWN ON THE DETAIL ON PAGE 21.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED AT EACH END OF THE LOAD IN 40' AND 50' CARS. FIVE (5) BRACES ARE REQUIRED AT EACH END IN 60' CARS.
5. CENTER GATE "D" 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 53 FOR GUIDANCE.
6. 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 D", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 10, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 19. 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 53.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 2" AND 2" X 4" MATERIAL NAILED TO CENTER GATE D, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 55 FOR GUIDANCE.
8. IF THE DEPICTED LOAD CONTAINS SEVEN (7) UNITS OR LESS IN EACH END OF THE CAR, 4" X 4" STRUTS MAY BE USED IN LIEU OF PIECE MARKED ④. NAIL AS DESCRIBED BY KEY NUMBER ⑥ ON PAGE 8.
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 56 THRU 58 FOR OTHER TYPES OF DOORWAY PROTECTION.
10. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA IN LIEU OF PIECE MARKED ⑤, USE PIECES MARKED ③ THRU ⑥ ON PAGE 16. SEE SPECIAL NOTES 5 AND 6 ON PAGE 17 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	130	44
1" X 6"	64	32
2" X 2"	295	99
2" X 3"	35	18
2" X 4"	173	116
2" X 6"	275	275
NAILS	NO. REQD	POUNDS
6d (2")	408	2-1/2
10d (3")	744	11-1/2
12d (3-1/4")	124	2
WIRE, NO. 14 GAGE ----- 48" REQD ----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	60 -----	144,480 LBS
DUNNAGE -----	-----	1,185 LBS

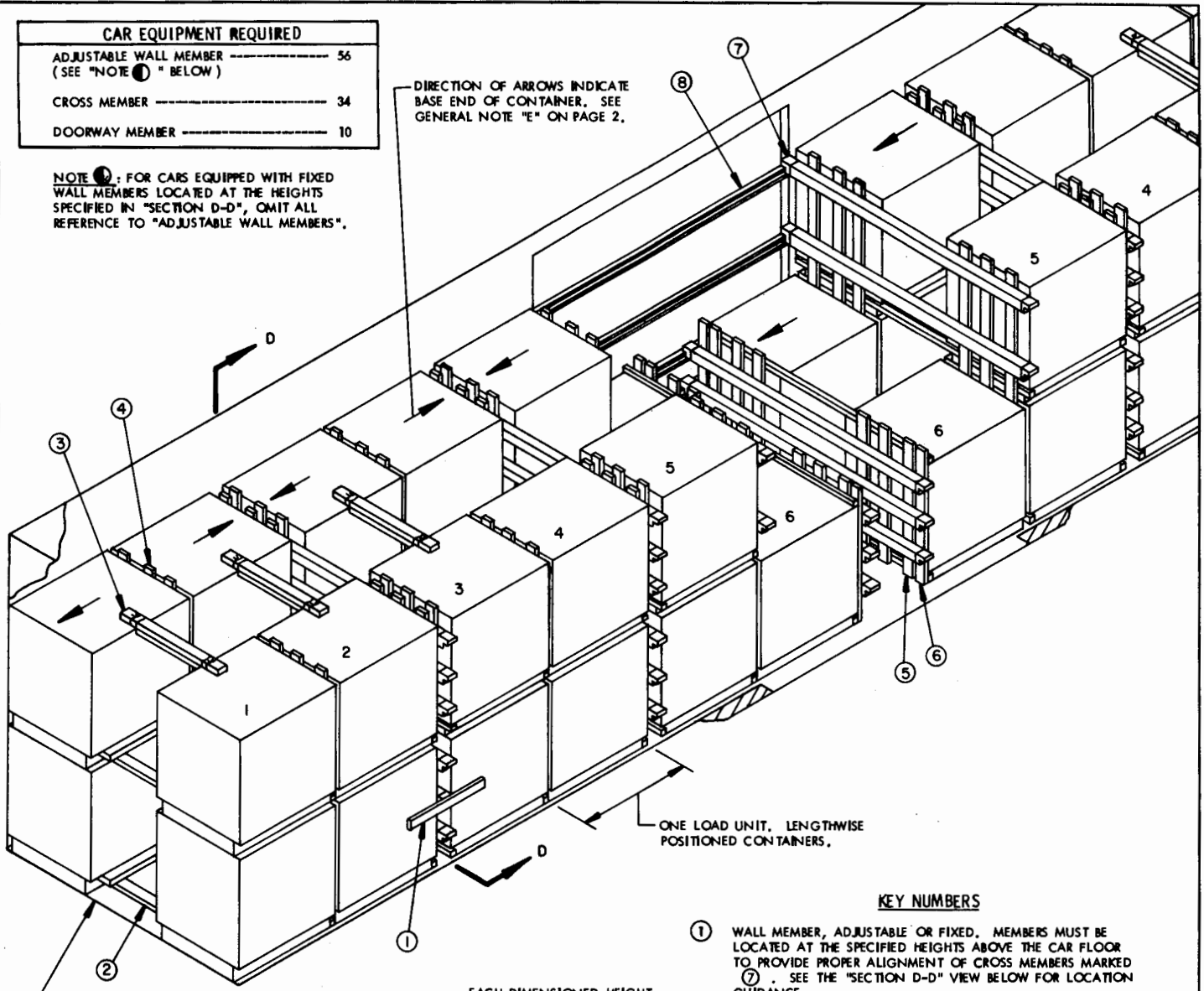
TOTAL WEIGHT -- 145,665 LBS

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	56
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	34
DOORWAY MEMBER -----	10

NOTE 2: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION D-D", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".

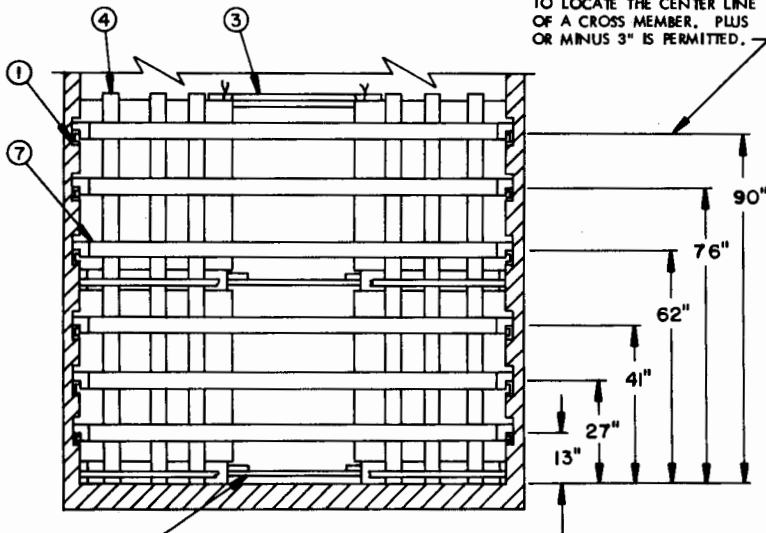
DIRECTION OF ARROWS INDICATE BASE END OF CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2.



ISOMETRIC VIEW

SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 13.

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, PLUS OR MINUS 3" IS PERMITTED.



SECTION D-D

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 ⑦. SEE THE "SECTION D-D" VIEW BELOW FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SEPARATOR GATE FOR 2-HIGH (14 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.
- ⑤ SEPARATOR GATE FOR 1-HIGH (2 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19.
- ⑥ STOP PIECE, 1" X 4" X 54" (4 REQD). NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/2-6d NAILS AT EACH JOINT. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑦ CROSS MEMBER (34 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑧ DOORWAY MEMBER (10 REQD). SEE THE "SECTION D-D" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 13.

SPECIAL NOTES:

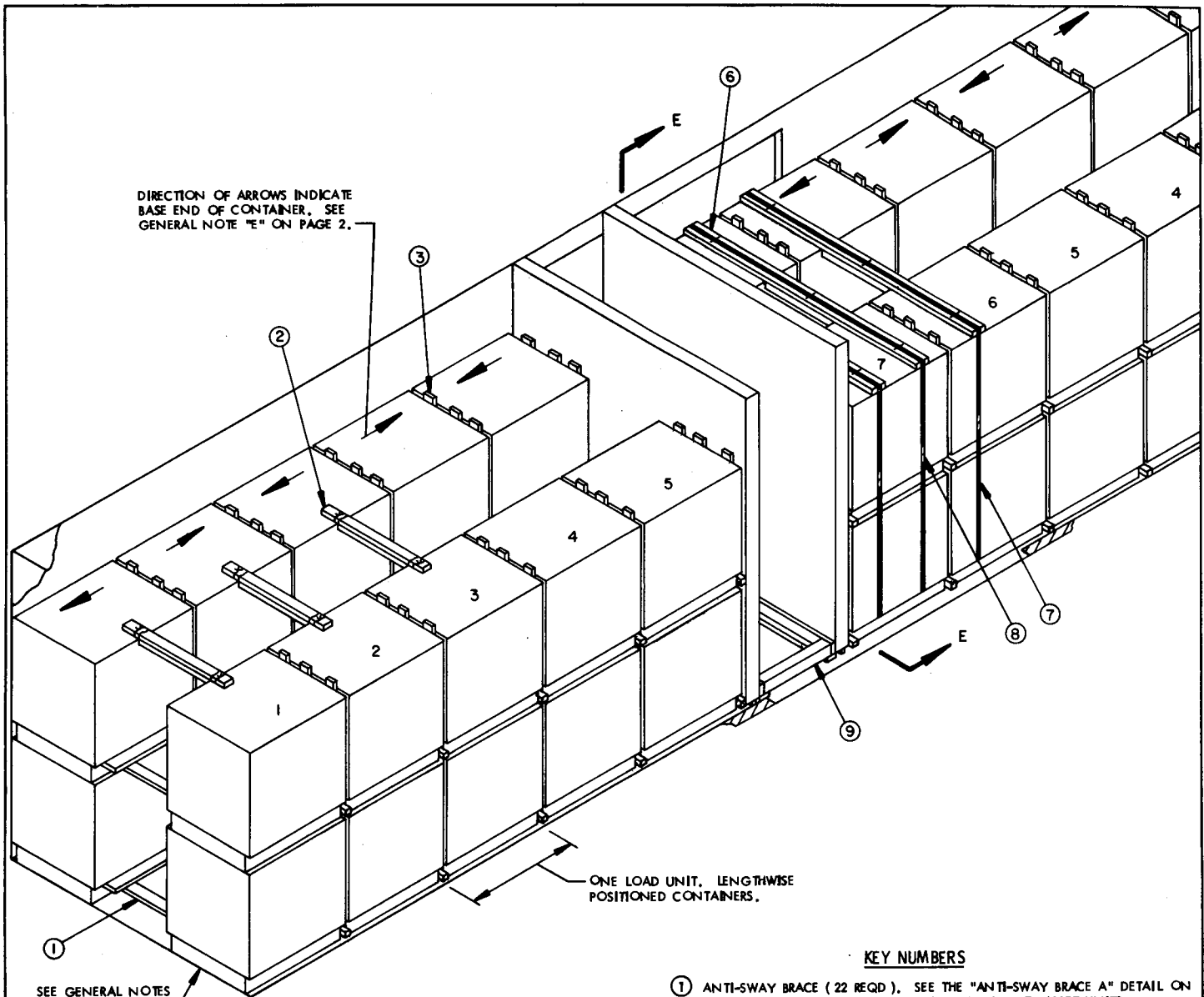
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. A MAXIMUM OF THIRTY-SIX (36) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 86,688 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. 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 "H" 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.
4. TOP-OF-LOAD ANTI-SWAY BRACES SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 12 MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF THE LOAD REGARDLESS OF THE CAR LENGTH.
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 (4), SO THE 2" X 2" PIECES ARE LOCATED BETWEEN THE PALLET WINGS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (6), PRIOR TO POSITIONING. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 52 FOR CONSTRUCTION GUIDANCE.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL FOUR (4) PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD CAN 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 FROM THE CENTER PORTION OF THE LOAD TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGE 24 AND 25 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	270	90
1" X 6"	503	252
2" X 2"	287	96
2" X 4"	280	187
2" X 6"	66	66
NAILS	NO. REQD	POUNDS
6d (2")	528	2-1/2
10d (3")	294	4-1/2
WIRE, NO. 14 GAGE ----- 36 FT REQD ----- 1/2 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	44 -----	105,952 LBS
DUNNAGE -----	-----	1,390 LBS
TOTAL WEIGHT -----		107,342 LBS

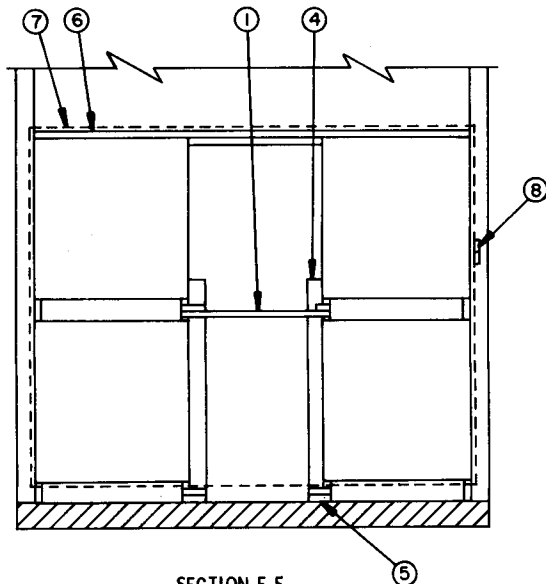


DIRECTION OF ARROWS INDICATE
BASE END OF CONTAINER. SEE
GENERAL NOTE "E" ON PAGE 2.

ONE LOAD UNIT, LENGTHWISE
POSITIONED CONTAINERS.

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

ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

- ① ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 15.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 3 ON PAGE 15.
- ③ SEPARATOR GATE (12 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. SEE SPECIAL NOTE 4 ON PAGE 15.
- ④ STOP PIECE, 1" X 4" X 57" (4 REQD). POSITION AGAINST THE PALLET UNITS IN THE DOORWAY AREA. NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/2-6d NAILS AT EACH JOINT. SEE SPECIAL NOTE 5 ON PAGE 15.
- ⑤ SIDE BLOCKING, 2" X 6" BY A LENGTH TO SUIT (REF: 72") (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTES 7 AND 8 ON PAGE 15.
- ⑥ STRAPPING BOARD/SPACER ASSEMBLY "B" (3 REQD). SEE THE DETAIL ON PAGE 23.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (3 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 15.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑨ STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 59. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 10.

(SPECIAL NOTES CONTINUED)

11. 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 28 THRU 35 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 47 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.
14. FOR SHIPMENT OF THE DEPICTED 48-UNIT OFFSET LOAD, THE 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 119,000 POUNDS. A 60-UNIT LOAD IN A 60'-8" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF 146,700 POUNDS, OR GREATER. NOTE THAT THE BULKHEADS MUST HAVE THE OPERATING MECHANISM ON THE EDGE OF THE BULKHEAD IN ORDER TO LOAD 60 UNITS. A 56-UNIT LOAD WILL REQUIRE A CAR HAVING A LOAD LIMIT OF 136,800 POUNDS OR GREATER.

SPECIAL NOTES:

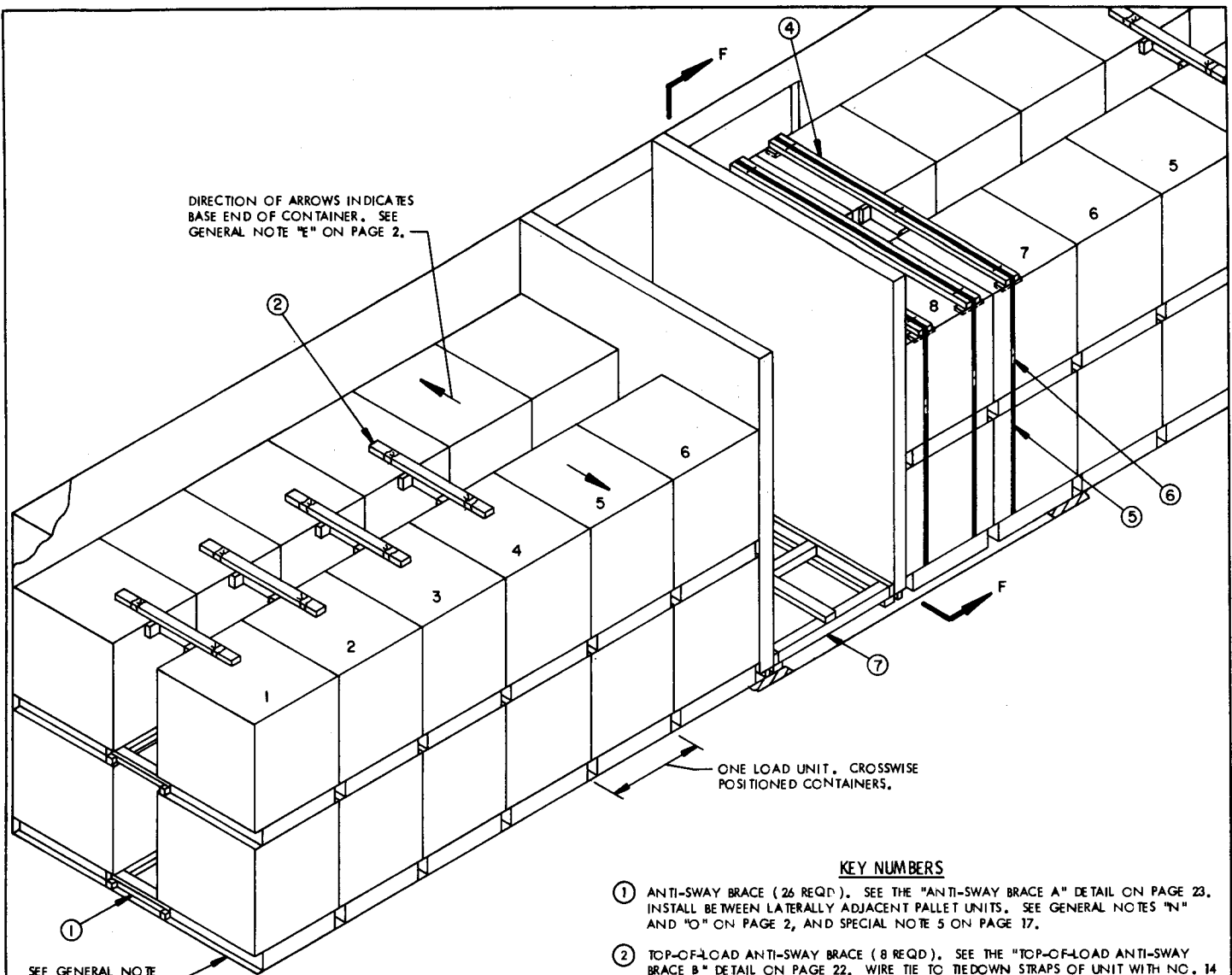
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. A MAXIMUM OF FIFTY-SIX (56) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 134,848 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-SIX (36) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 86,688 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 14 MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.
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 2" X 2" TE PIECES ARE LOCATED BETWEEN THE PALLET WINGS OF THE UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY 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 PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 52 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILABLE SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 56 THRU 58 FOR OTHER TYPES OF DOORWAY PROTECTION.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILABLE SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SIDE BLOCKING SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 14, MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED ①, FOR ALL UNITS REQUIRING DOORWAY PROTECTION STRAPS; IF THE PALLET UNITS ARE POSITIONED CROSSWISE, REFER TO KEY NUMBERS ③ THRU ⑥ ON PAGE 16, AND SPECIAL NOTES 5 AND 6 ON PAGE 17 FOR GUIDANCE.
9. TWO (2) 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 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 WIDTH.
10. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑨ IN THE LOAD ON PAGE 14, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF THE LOAD CONSISTED OF FIVE (5) LOAD UNITS IN EACH END OF THE CAR. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 50' OR LONGER CARS.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 2"	219	73
1" X 6"	400	200
2" X 2"	219	73
1" X 8"	18	12
2" X 4"	317	211
2" X 6"	126	126
4" X 4"	12	16
NAILS	NO. REQD	POUNDS
6d (2")	392	2-1/2
10d (3")	327	5
12d (3-1/4")	16	1/4
16d (3-1/2")	24	1/2
STEEL STRAPPING -----	108' REQD -----	16 LBS
SEAL FOR 1-1/4" STRAPPING -----	6 REQD -----	NIL
STAPLE FOR 1-1/4" STRAPPING -----	9 REQD -----	NIL
WIRE, NO. 14 GAGE -----	36 REQD -----	1/2 LB

LOAD AS SHOWN

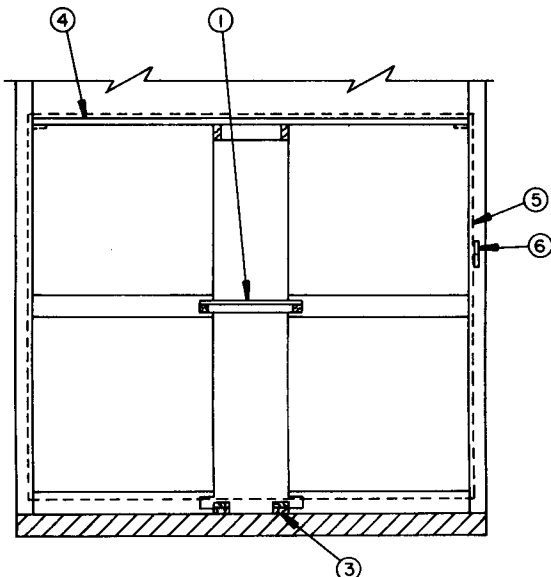
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	48 -----	115,584 LBS
DUNNAGE -----	-----	1,447 LBS
TOTAL WEIGHT -----		117,034 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQ'D). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTE 5 ON PAGE 17.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQ'D). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO TIEDOWN STRAPS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 22. SEE SPECIAL NOTE 3 ON PAGE 17.
- ③ SIDE BLOCKING, 2" X 4" BY A LENGTH TO SUIT (REF: 60") (DOUBLED) (2 REQ'D). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 17.
- ④ STRAPPING BOARD/SPACER ASSEMBLY "C" (3 REQ'D). SEE THE DETAIL ON PAGE 23.
- ⑤ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (3 REQ'D). STAPLE TO STRAPPING BOARD MARKED ④ W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 17.
- ⑥ SEAL FOR 1-1/4" STRAPPING (6 REQ'D, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑦ STRUT ASSEMBLY (1 REQ'D). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 59. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 17.



SECTION F-F

SPECIAL NOTES:

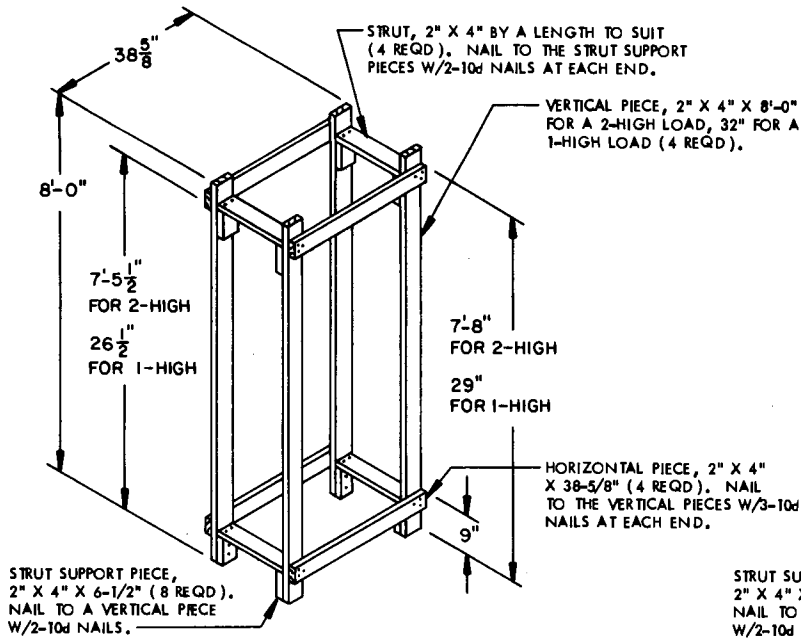
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. A MAXIMUM OF SEVENTY-TWO (72) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 173,376 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 105,952 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 16 MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.
4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILABLE SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 56 THRU 58 FOR OTHER TYPES OF DOORWAY PROTECTION.
5. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILABLE SIDE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SIDE BLOCKING SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 16, MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED ①, FOR ALL UNITS REQUIRING BUNDLING STRAPS; IF THE PALLET UNITS ARE POSITIONED LENGTHWISE, REFER TO KEY NUMBERS ⑤ THRU ⑧ ON PAGE 14, AND SPECIAL NOTES 8 AND 9 ON PAGE 15 FOR GUIDANCE.
6. 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 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.
7. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 16 IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF THE LOAD CONSISTED OF FIVE (5) LOAD UNITS IN EACH END OF THE CAR. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS REGARDLESS OF THE CAR LENGTH.
8. 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 28 THRU 35 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 48 AND/OR PAGE 50 FOR SHIPPING GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 49 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER:	LINEAR FEET	BOARD FEET
1" X 4"	117	39
2" X 2"	168	56
1" X 8"	18	12
2" X 4"	200	135
2" X 6"	57	57
4" X 4"	17	23
NAILS	NO. REQD	POUNDS
6d (2")	348	2
10d (3")	389	6
12d (3-1/4")	16	1/4
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4" -----	108' REQD -----	16 LBS
SEAL FOR 1-1/4" STRAPPING -----	6 REQD -----	NIL
STAPLE FOR 1-1/4" STRAPPING -----	9 REQD -----	NIL
WIRE, NO. 14 GAGE -----	48' REQD -----	1 LB

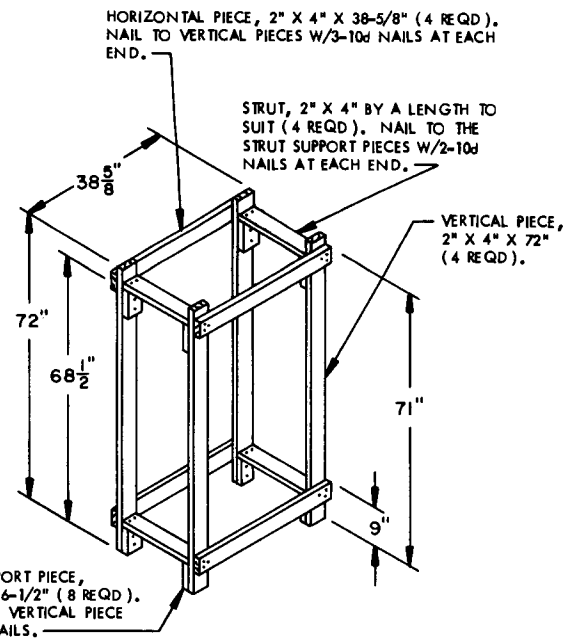
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	56 -----	134,848 LBS
DUNNAGE -----	-----	670 LBS
TOTAL WEIGHT -----		135,518 LBS



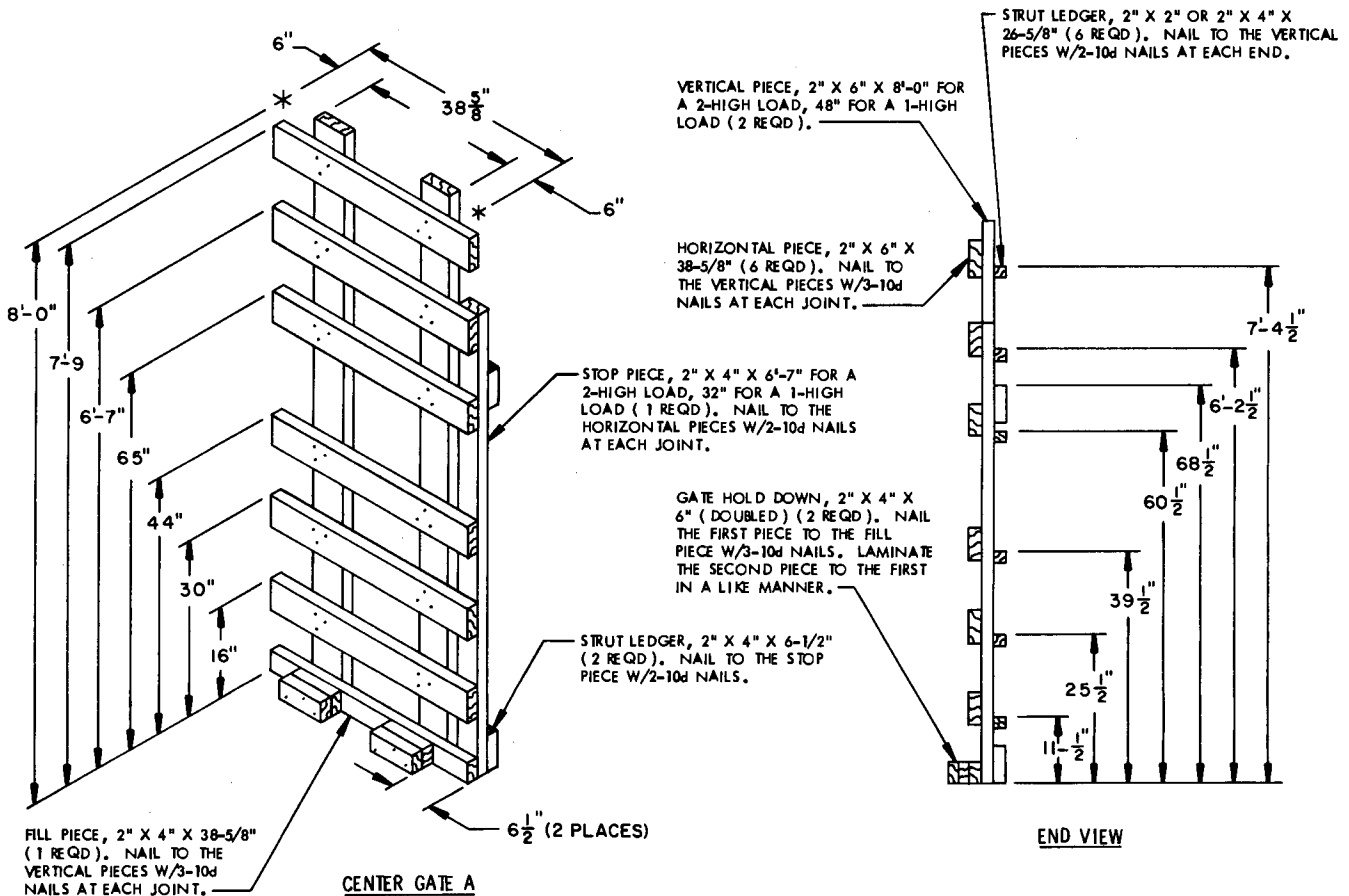
CRIB FILL A

CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PREFABRICATED. CONSTRUCT TO BE $1/2"$ TO $3/4"$ LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.



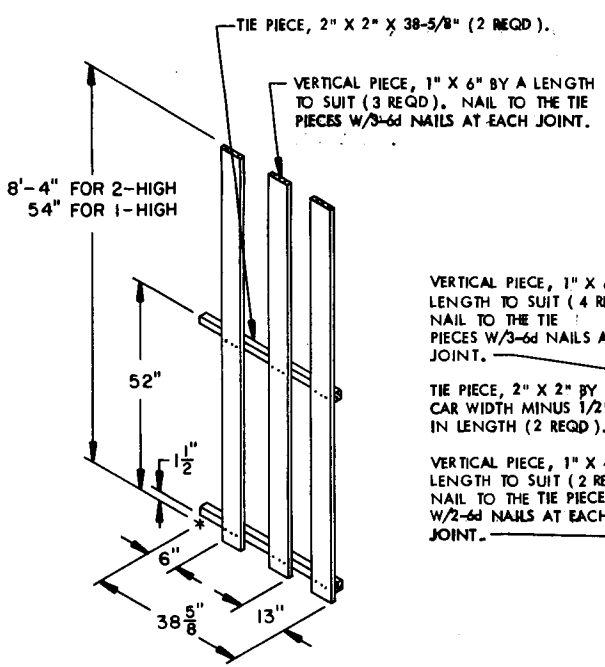
CRIB FILL B

CRIB FILL "B" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "A" THROUGHOUT THE LENGTH OF THE LOAD.



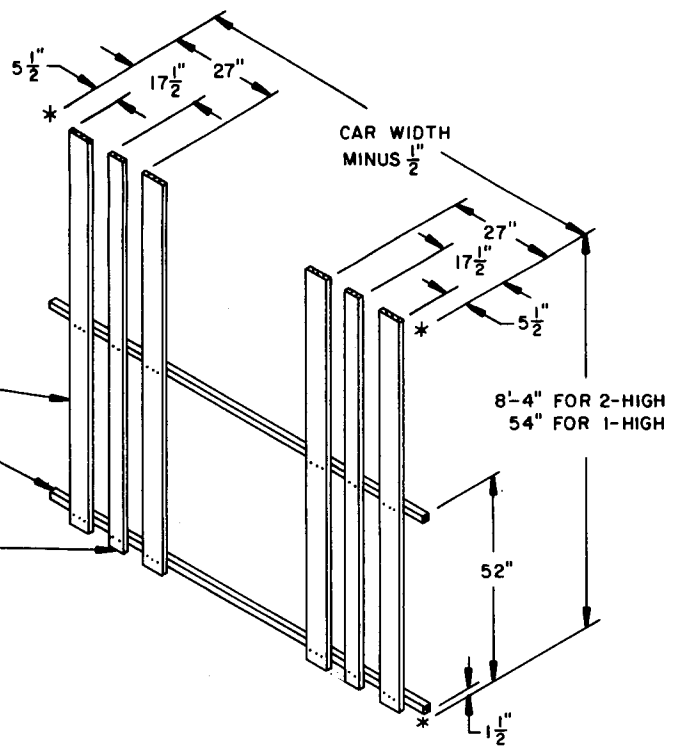
CENTER GATE A

END VIEW

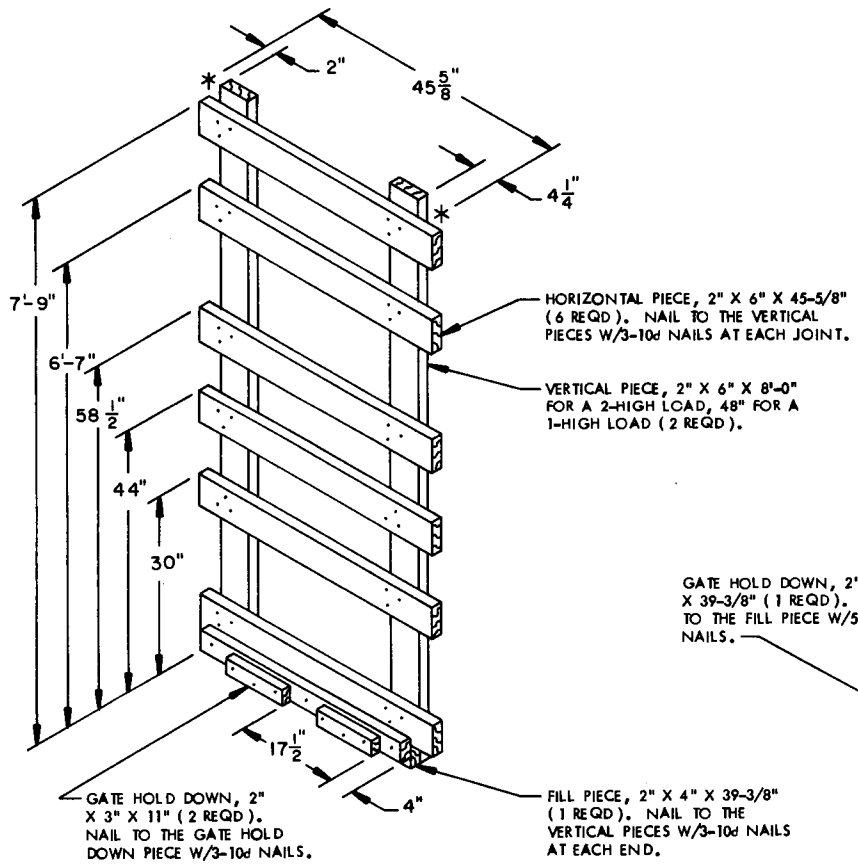


SEPARATOR GATE A

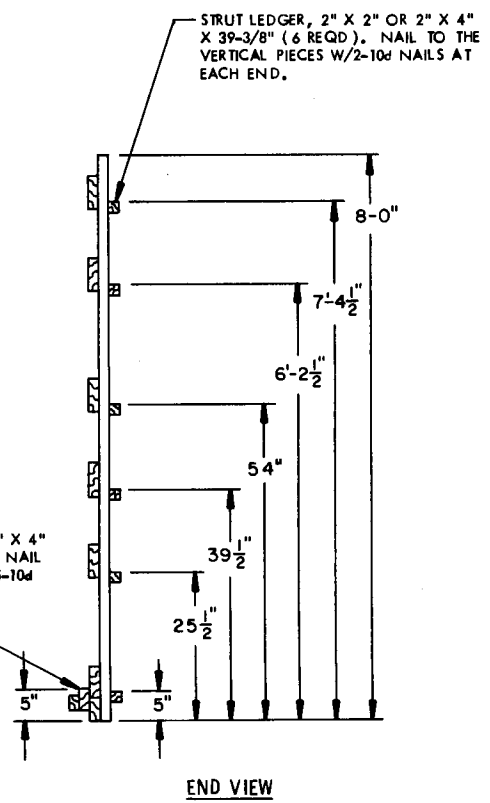
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



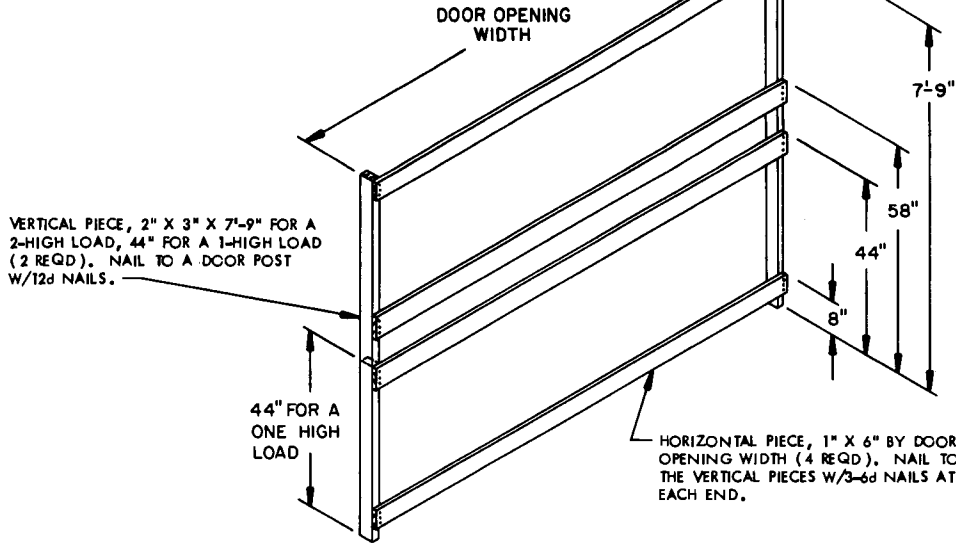
SEPARATOR GATE B



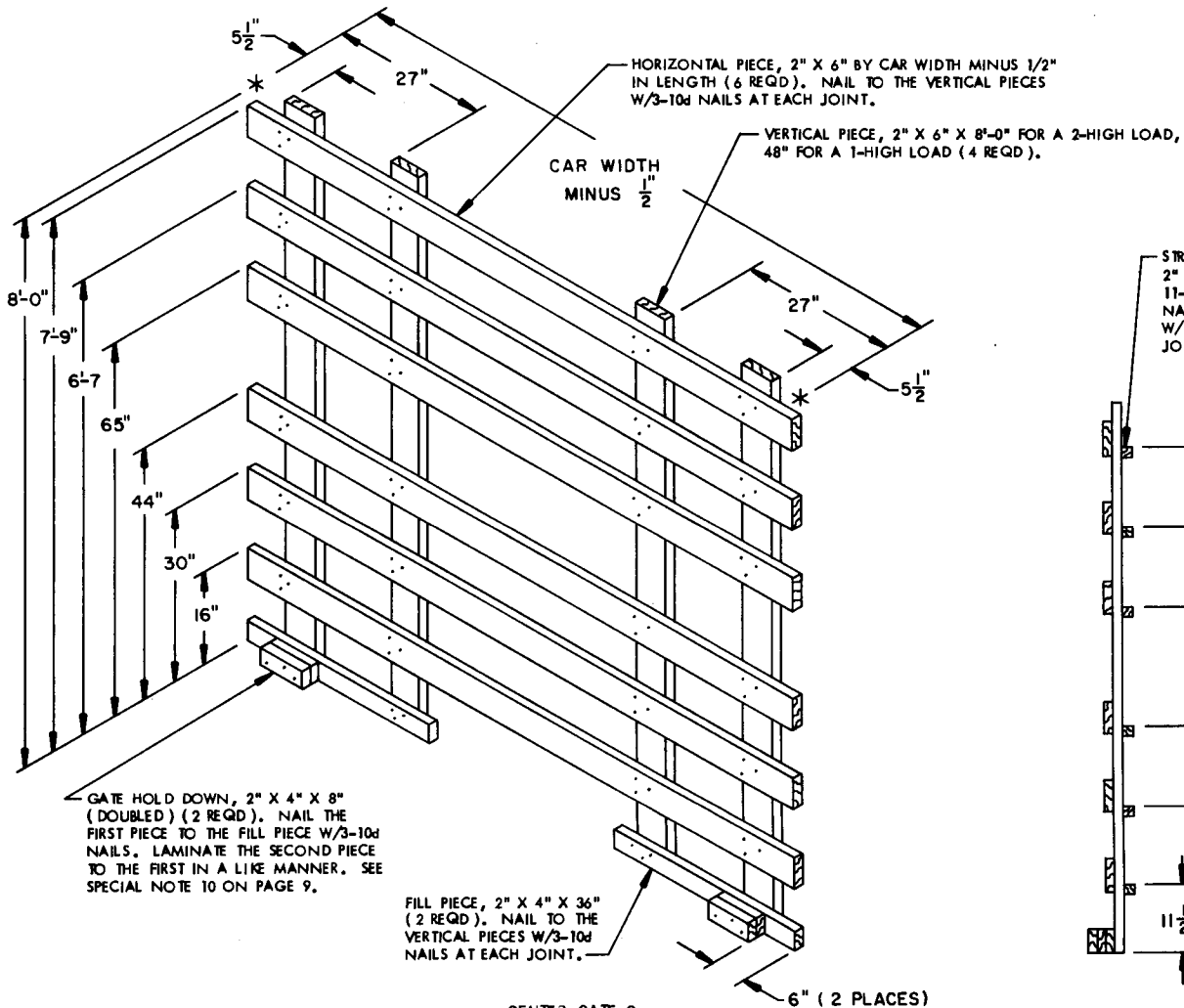
CENTER GATE B



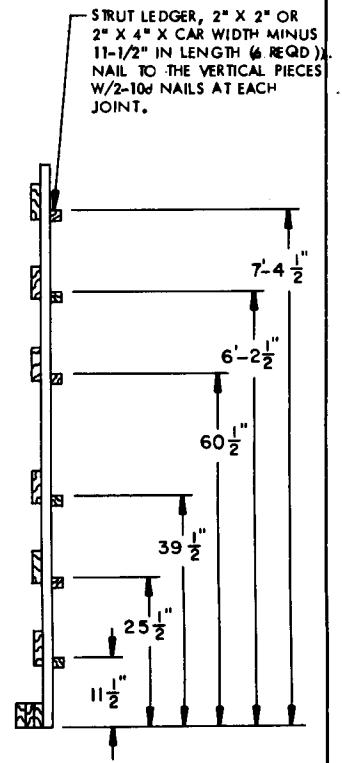
DETAILS



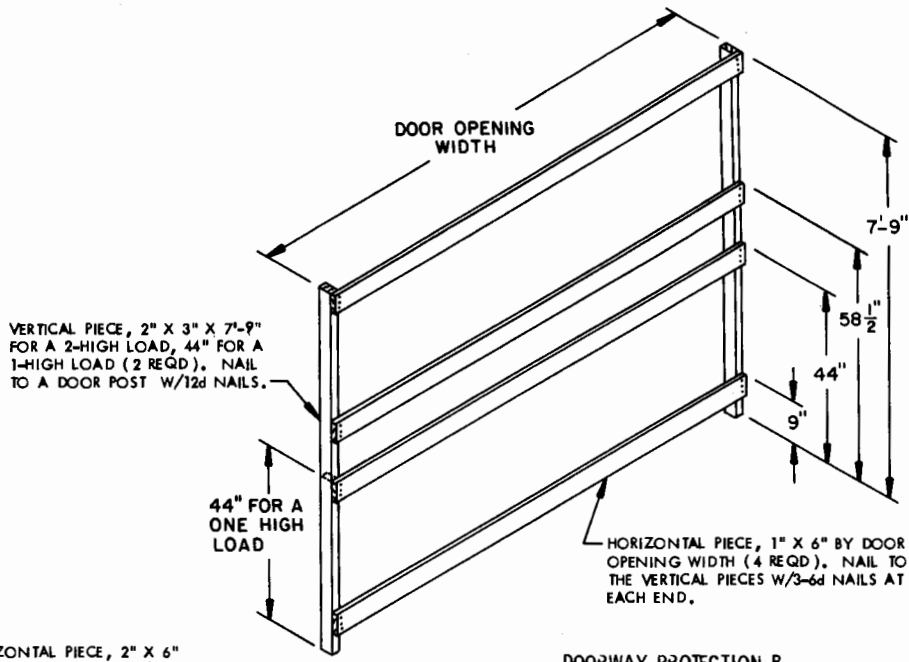
DOORWAY PROTECTION A



CENTER GATE C

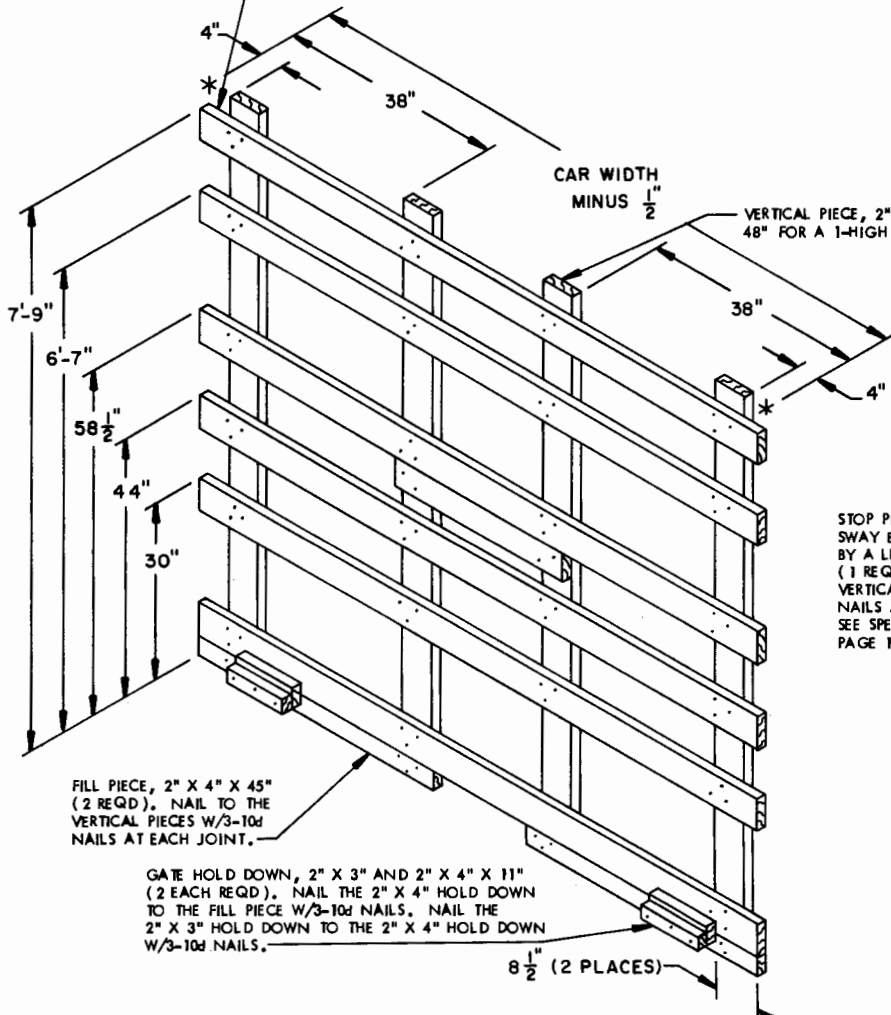


END VIEW



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

DOORWAY PROTECTION B

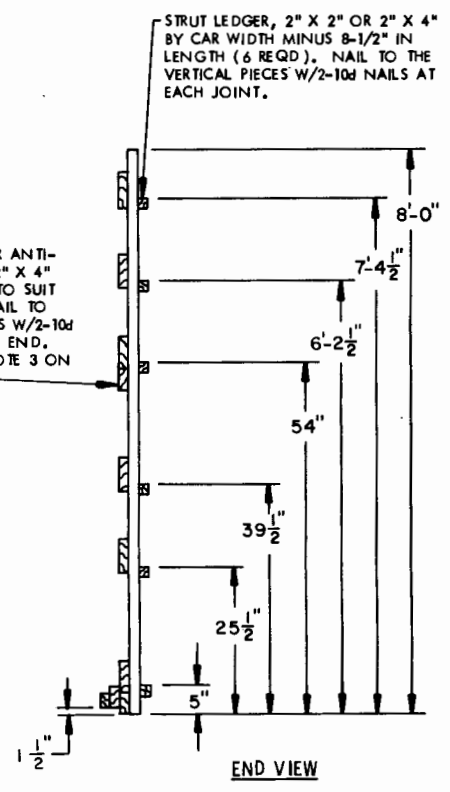


FILL PIECE, 2" X 4" X 45" (2 REQD), NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 3" AND 2" X 4" X 11" (2 EACH REQD). NAIL THE 2" X 4" HOLD DOWN TO THE FILL PIECE W/3-10d NAILS. NAIL THE 2" X 3" HOLD DOWN TO THE 2" X 4" HOLD DOWN W/3-10d NAILS.

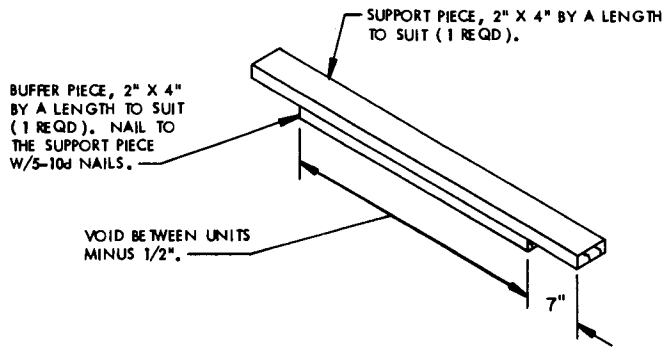
8 1/2" (2 PLACES)

CENTER GATE D

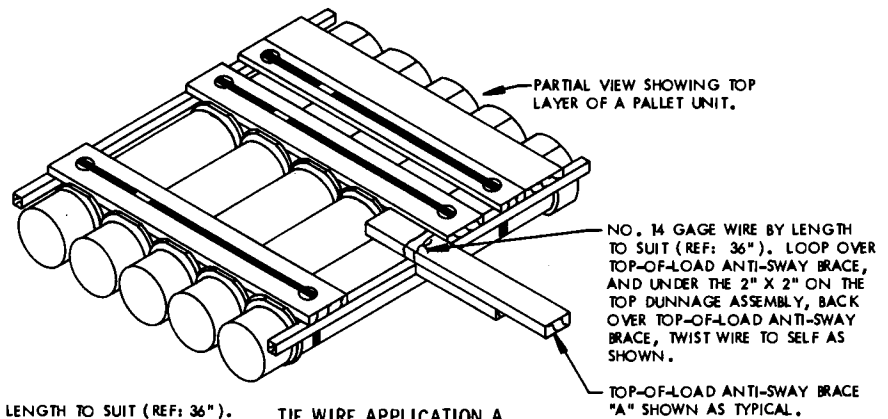


END VIEW

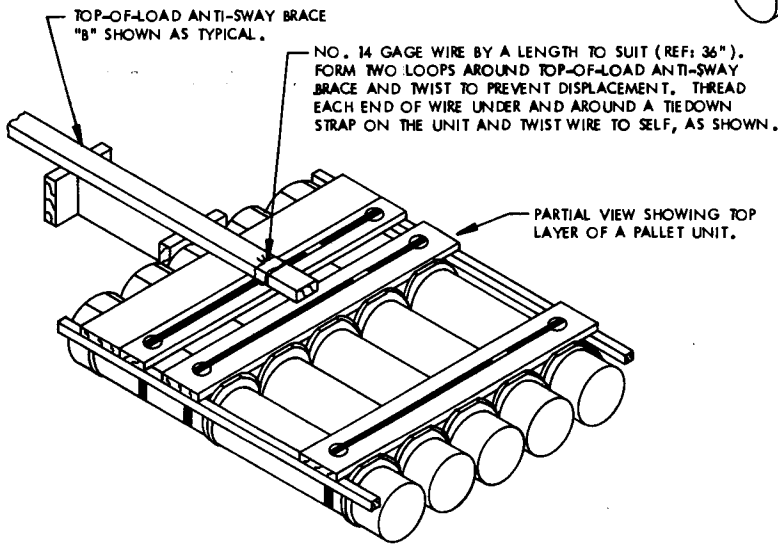
DETAILS



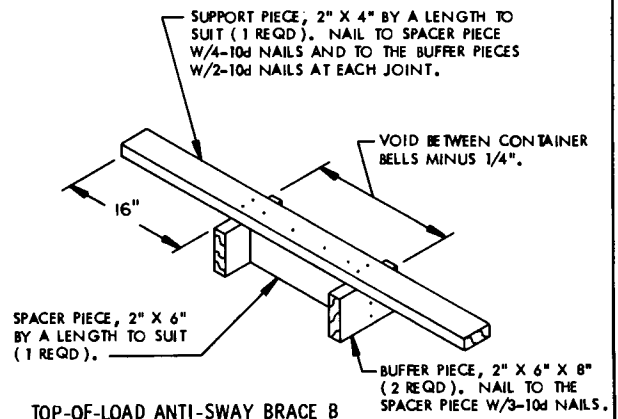
TOP-OF-LOAD ANTI-SWAY BRACE A



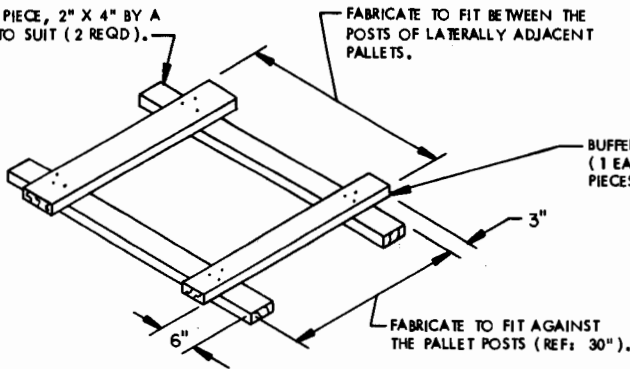
TIE WIRE APPLICATION A



TIE WIRE APPLICATION B



RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD).



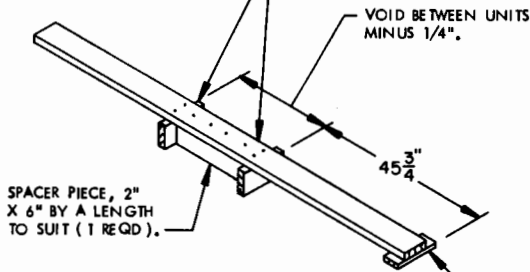
BUFFER PIECE, 2" X 4" AND 2" X 6" X 36" (1 EACH REQD). NAIL TO THE RETAINER PIECES W/3-10d NAILS AT EACH JOINT.

ANTI-SWAY BRACE A

IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; THE 2" X 4" BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET. NAIL THE 2" X 6" BUFFER PIECE LAST; NOTE THAT 2" X 4" MATERIAL CAN BE USED FOR BOTH BUFFER PIECES IF NAILING CAN BE ACCOMPLISHED.

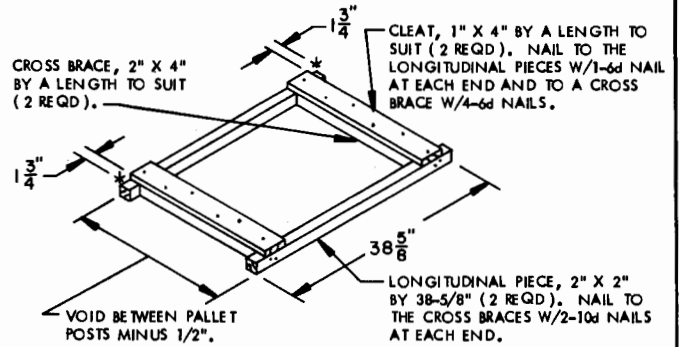
STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (1 REQD). NAIL TO SPACER PIECE W/4-10d NAILS AND TO THE BUFFER PIECES W/2-10d NAILS AT EACH JOINT.

BUFFER PIECE, 2" X 6" X 8" (2 REQD). NAIL TO THE SPACER PIECE W/3-10d NAILS.



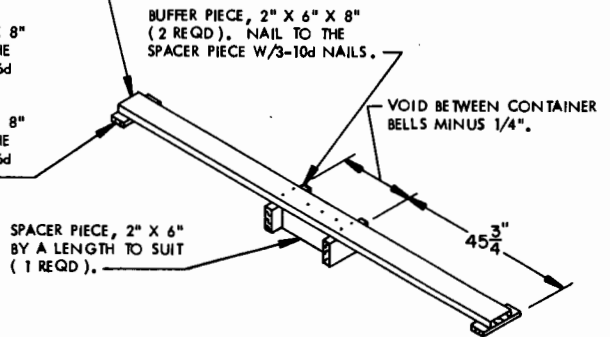
STRAPPING BOARD/SPACER ASSEMBLY A

FILLER CLEAT, 1" X 4" X 8" (2 REQD). NAIL TO THE STRAPPING BOARD W/3-6d NAILS.



ANTI-SWAY BRACE B

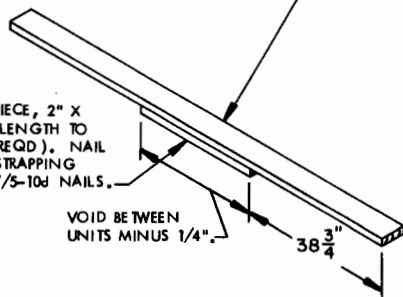
STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (1 REQD). NAIL TO SPACER PIECE W/3-10d NAILS AND TO THE BUFFER PIECES W/2-10d NAILS AT EACH JOINT.



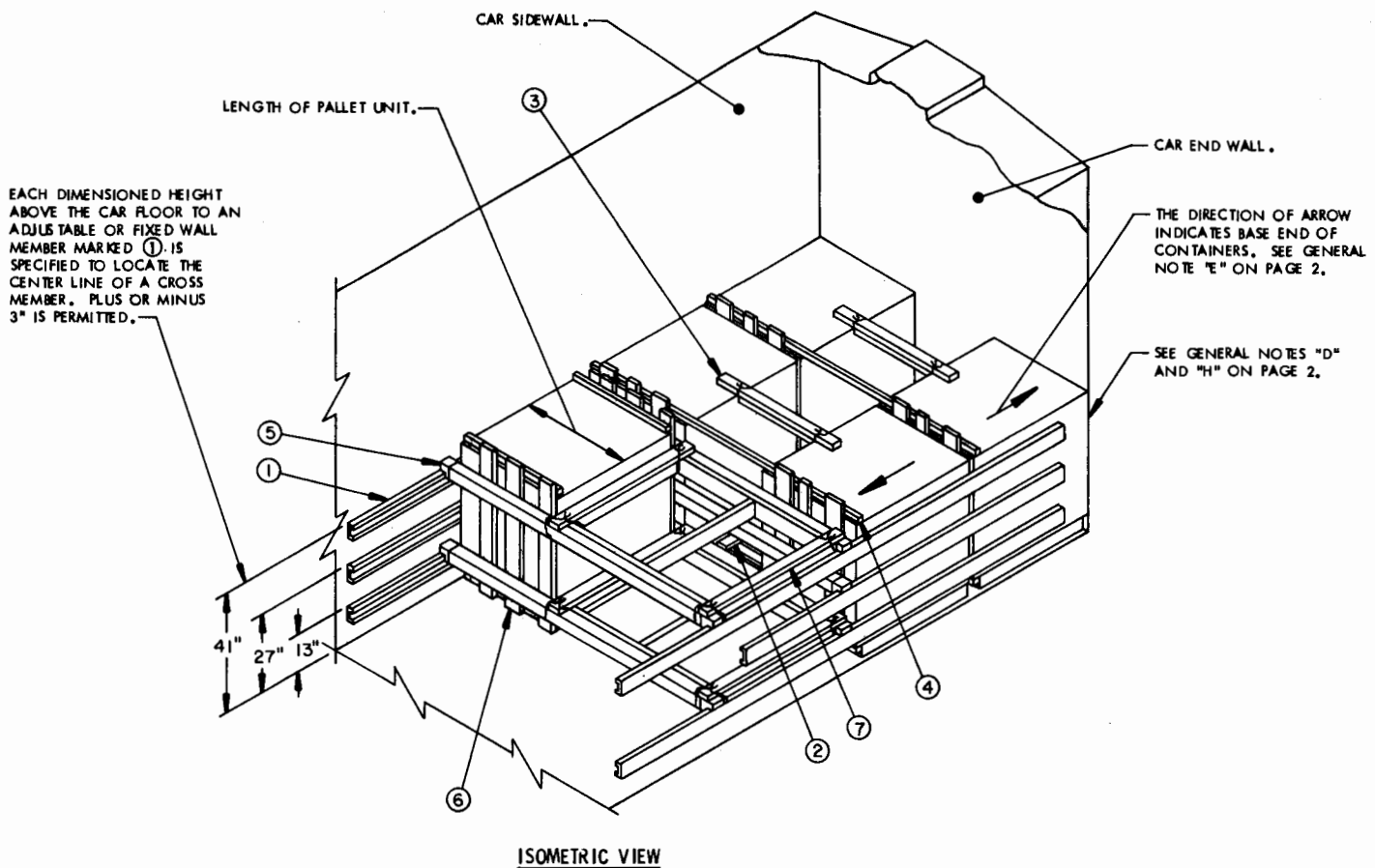
STRAPPING BOARD/SPACER ASSEMBLY C

STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (1 REQD).

SPACER PIECE, 2" X 6" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE STRAPPING BOARD W/5-10d NAILS.



STRAPPING BOARD/SPACER ASSEMBLY B



EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED ① IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER. PLUS OR MINUS 3" IS PERMITTED.

CAR END WALL.

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

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

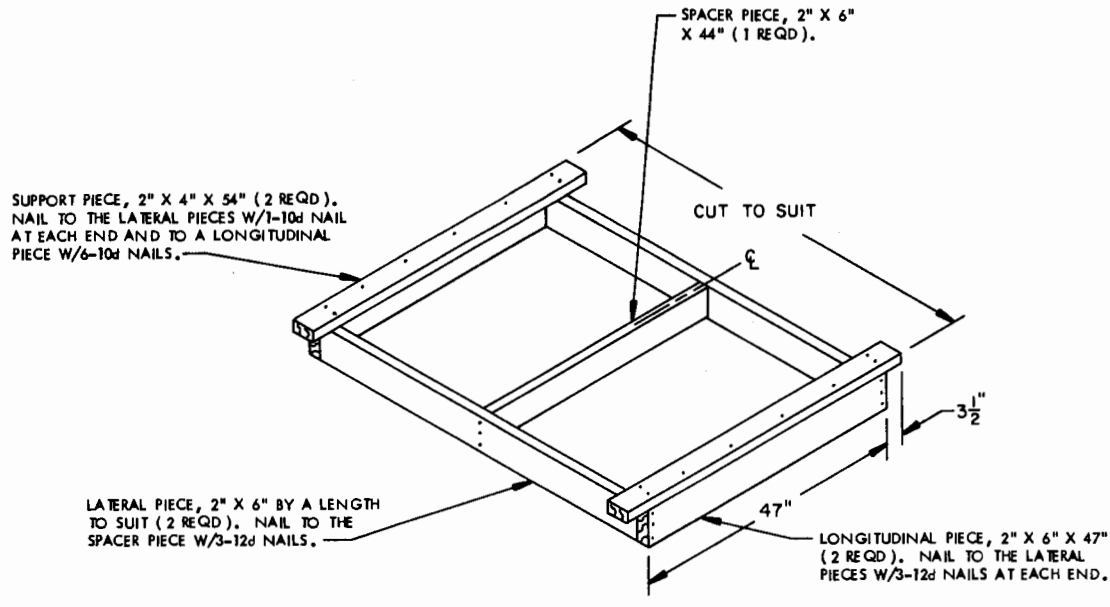
ISOMETRIC VIEW

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. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
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 PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

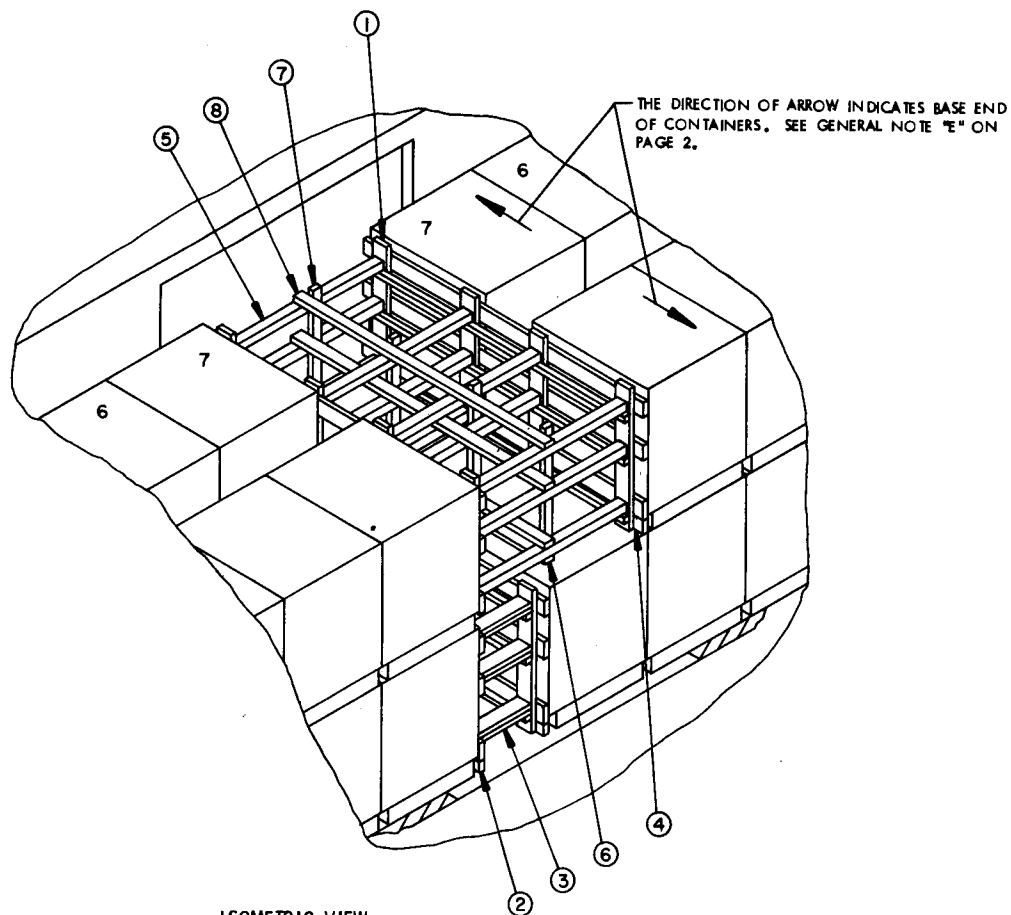
KEY NUMBERS

- 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 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO TOP DUNNAGE ASSEMBLY OF UNIT AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON THAT PAGE. SEE SPECIAL NOTE 3 AT LEFT.
- ④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. POSITION WITH THE 2" X 2" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 4 AT LEFT.
- ⑤ CROSS MEMBER (5 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. POSITION WITH THE 2" X 2" HORIZONTAL PIECES AGAINST THE UNITS.
- ⑦ SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 25 AND SPECIAL NOTE 5 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.



SPACER ASSEMBLY

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



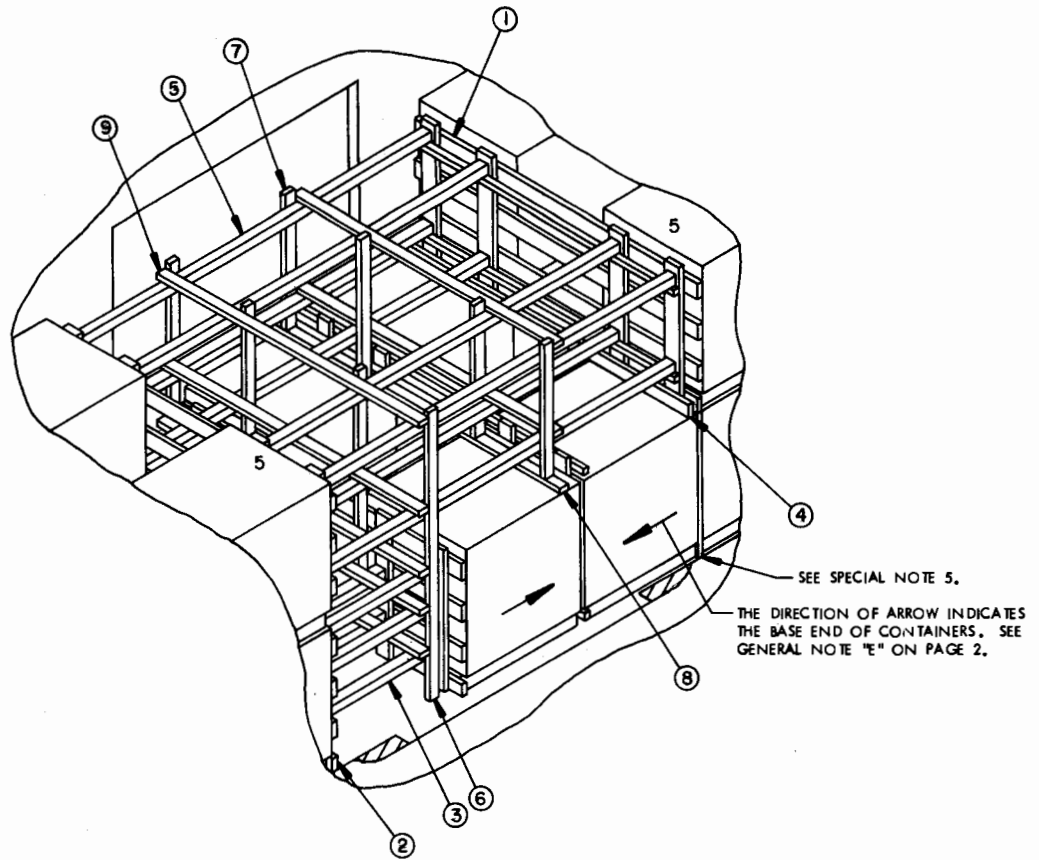
ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER CARS CAN ALSO BE USED.
2. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM ONE (1) LOAD UNIT IS SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP LAYER FROM TWO (2) LOAD UNITS.
3. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
4. IF THE DEPICTED LOAD CONTAINS SEVEN (7) UNITS OR LESS IN EACH END OF THE CAR, 4" X 4" STRUTS MAY BE USED IN LIEU OF PIECE MARKED ③. NAIL AS DESCRIBED BY KEY NUMBER ⑤.
5. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED ⑥, MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 21. SEE GENERAL NOTES "N" AND "C" ON PAGE 2.
- ② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 21.
- ③ STRUT, 2" X 6" BY CUT-TO-FIT (DOUBLED) (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE FIRST LAYER. LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL W/2-12d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2, AND SPECIAL NOTE 4 AT LEFT.
- ④ GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.
- ⑥ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN. SEE SPECIAL NOTE 5 AT LEFT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW

SPECIAL NOTES:

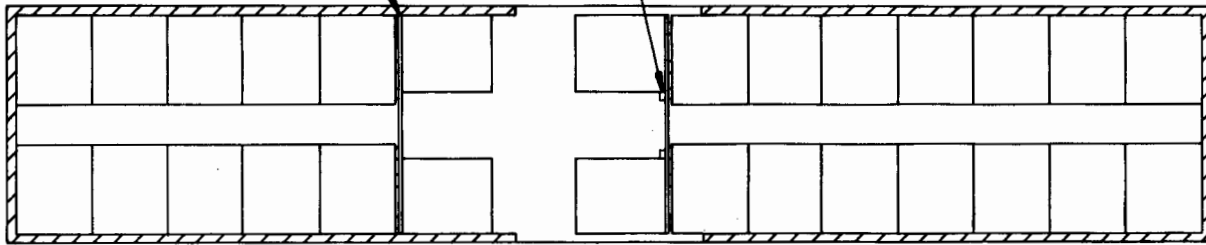
1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS CAN ALSO BE USED.
2. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM TWO (2) LOAD UNITS ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP LAYER FROM JUST ONE (1) LOAD UNIT.
3. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
4. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED ⑧, MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.
5. NOTE THAT A UNIT HEIGHT PLYWOOD SEPARATOR MUST BE POSITIONED WHERE PIECE MARKED ① PROHIBITS THE USE OF SEPARATOR GATE "B". SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 52 FOR CONSTRUCTION GUIDANCE. ALSO, IF THE DEPICTED LOAD CONTAINS EIGHT UNITS OR MORE IN EITHER END OF THE CAR, DOUBLED 2" X 6" STRUTS WILL BE USED IN LIEU OF PIECE MARKED ③ AND/OR ⑤. SEE KEY NUMBER ③ ON PAGE 26 FOR NAILING GUIDANCE.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20.
- ② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20.
- ③ STRUT, 4" X 4" BY CUT-TO-FIT (12 REQD). TOENAIL TO PIECES MARKED ① AND ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3. SEE SPECIAL NOTE 5 AT LEFT.
- ④ SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "C", SHOWN AS PIECE MARKED ①.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (8 REQD). TOENAIL TO PIECES MARKED ① AND ② IN THE SECOND LAYER, W/2-16d NAILS AT EACH END.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED ③ AND ⑤ W/3-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑧, W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 4 AT LEFT.
- ⑧ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.
- ⑨ HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (7 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE).
SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 29.
POSITION AS SHOWN WITH THE VERTICAL PIECES
AGAINST THE CROSSWISE POSITIONED PALLET UNITS.

STOP PIECES, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION
SO AS TO BE IN CONTACT WITH THE ADJACENT CONTAINERS AND
SECURE BY NAILING THRU THE HORIZONTAL PIECES OF THE SEPARATOR
GATE W/3-6d NAILS AT EACH JOINT. NOTE THAT STOP PIECES ARE
ONLY REQUIRED ON SEPARATOR GATES WHICH ARE IN THE DOOR OPEN-
ING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.



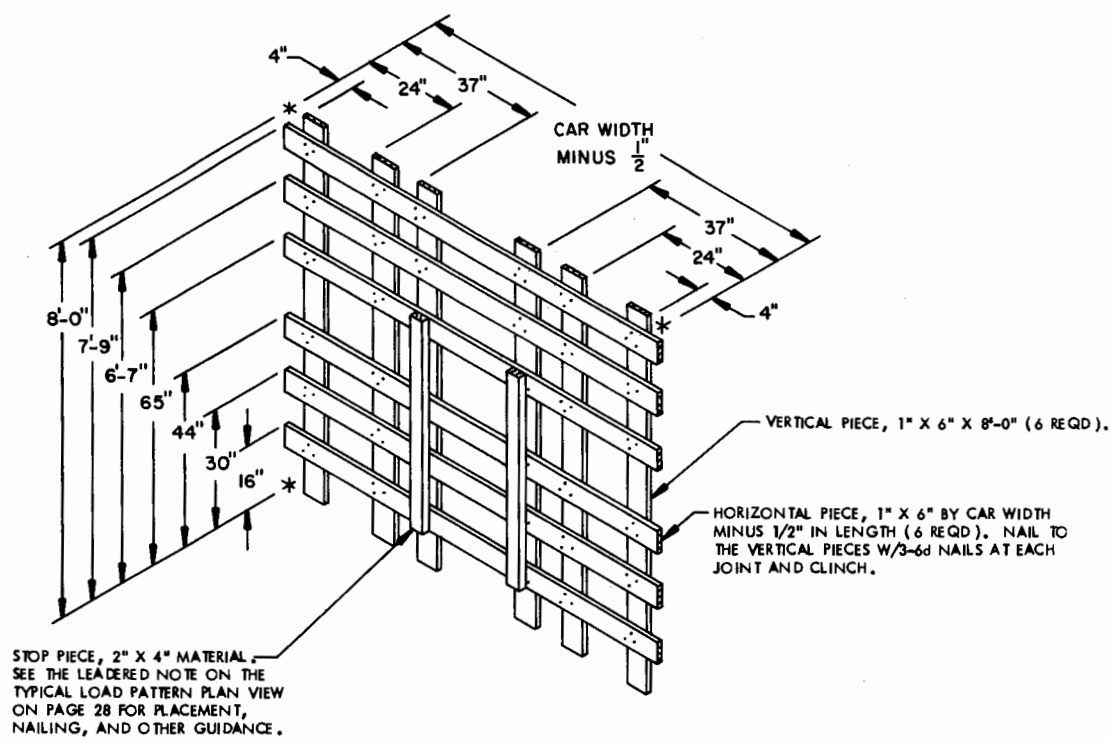
TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

12 CROSSWISE PLUS 2 LENGTHWISE LOAD UNITS ARE SHOWN.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "C", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "C" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE CROSSWISE UNITS OF THE LOAD.
4. THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES, ARE SPECIFIED IN THE LOAD PATTERN CHART AT RIGHT FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHART.

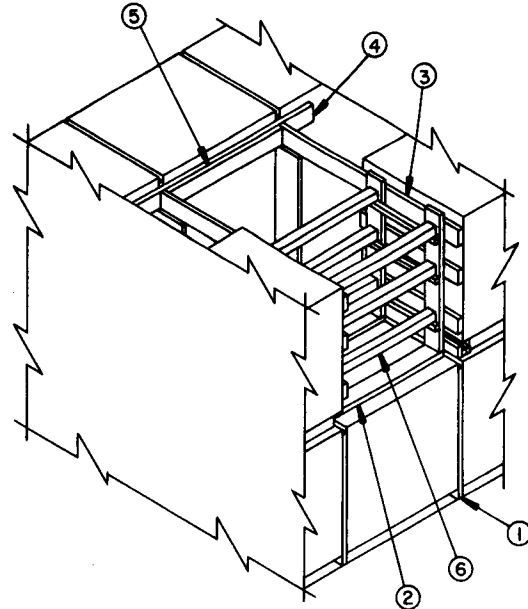
LOAD PATTERN CHART			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
50'-6" CAR	30	CROSSWISE LOAD ON PAGE 10	20"
	28	12 LONG AT 38-5/8" PLUS 2 AT 45-5/8"	42"
	27	COMBINATION LOAD ON PAGE 6.	20" & 45"
	26	3 LONG AT 38-5/8" PLUS 10 AT 45-5/8"	20"
60'-8" CAR	24	LENGTHWISE LOAD ON PAGE 8	45"
	36	CROSSWISE LOAD ON PAGE 10	26"
	34	12 LONG AT 38-5/8" PLUS 5 AT 45-5/8"	25"
	33	COMBINATION LOAD ON PAGE 6	27" & 26"
32	6 LONG AT 38-5/8" PLUS 10 AT 45-5/8"	24"	
	30	LENGTHWISE LOAD ON PAGE 8	27"



SEPARATOR GATE C

SPECIAL NOTES:

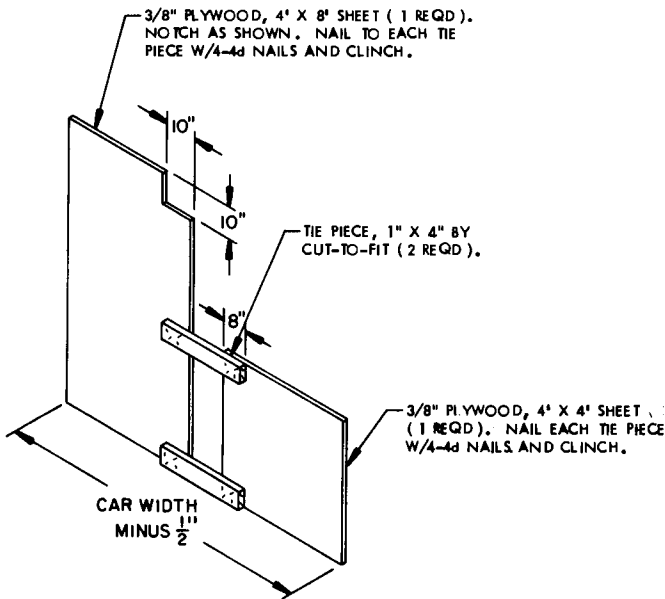
1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
3. ONLY THE BLOCKING AND BRACING FOR OMITTED UNIT IS SHOWN. REFER TO PAGE 8 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
4. SEPARATOR GATE "D" IS REQUIRED AT THE OMITTED UNIT LOCATION ONLY; USE SEPARATOR GATE "B" DETAILED ON PAGE 19 FOR THE BALANCE OF THE LOAD.



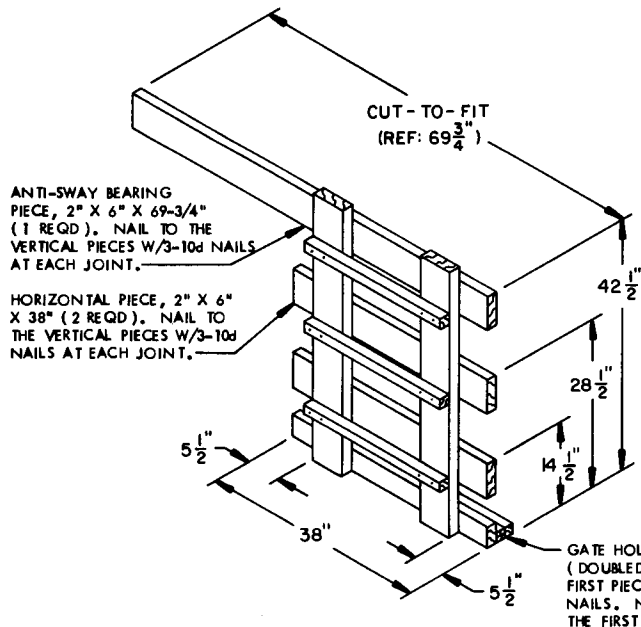
ISOMETRIC VIEW

KEY NUMBERS

- ① SEPARATOR GATE (2 REQD). SEE THE "SEPARATOR GATE D" DETAIL AND SPECIAL NOTE 4 AT LEFT.
- ② SUPPORT PIECE, 2" X 6" X 45-5/8" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ③.
- ③ LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE A" DETAIL BELOW. NAIL TO THE FILLER PIECE, PIECE MARKED ⑤, W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ②, W/2-10d NAILS AT EACH JOINT. **CAUTION:** USE CARE NOT TO TOENAIL INTO A CONTAINER.
- ④ ANTI-SWAY BEARING PIECE, 2" X 6" X 72" (1 REQD).
- ⑤ FILLER PIECE, 2" X 6" X 43-3/8" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ④, W/5-10d NAILS.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 39") (6 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END.

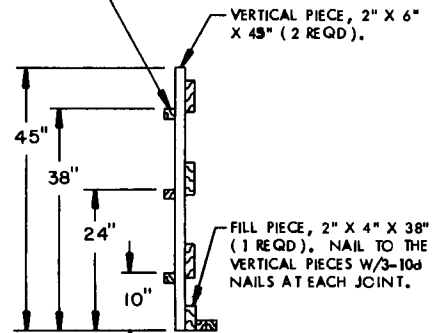


SEPARATOR GATE D.



LOAD BEARING GATE A

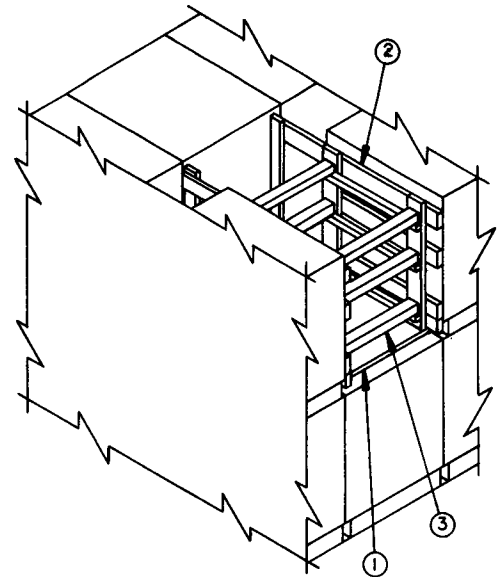
STRUT LEDGER, 2" X 2" OR 2" X 4" X 27" (3 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.



END VIEW

SPECIAL NOTES:

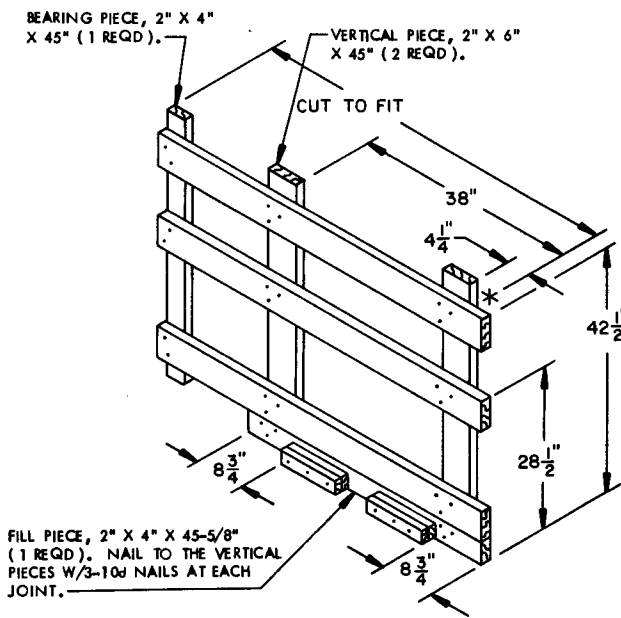
1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF CROSSWISE - POSITIONED PALLET UNITS IS SHOWN AS TYPICAL. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
3. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO PAGE 10 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.



ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (2 REQD). POSITION BENEATH THE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ②.
- ② LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE B" DETAIL BELOW. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ①, W/2-10d NAILS AT EACH JOINT. **CAUTION:** USE CARE NOT TO TOENAIL INTO A CONTAINER.
- ③ STRUT, 4" X 4" BY CUT-TO-FIT (AS REQD). TOENAIL TO PIECES MARKED ② W/2-10d NAILS AT EACH END.

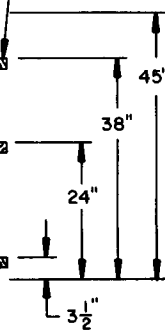


LOAD BEARING GATE B
(1 - RIGHT HAND AND 1 - LEFT HAND GATE REQUIRED)

HORIZONTAL PIECE, 2" X 6" BY CUT-TO-FIT (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS, AND TO THE LOAD BEARING PIECE W/2-10d NAILS.

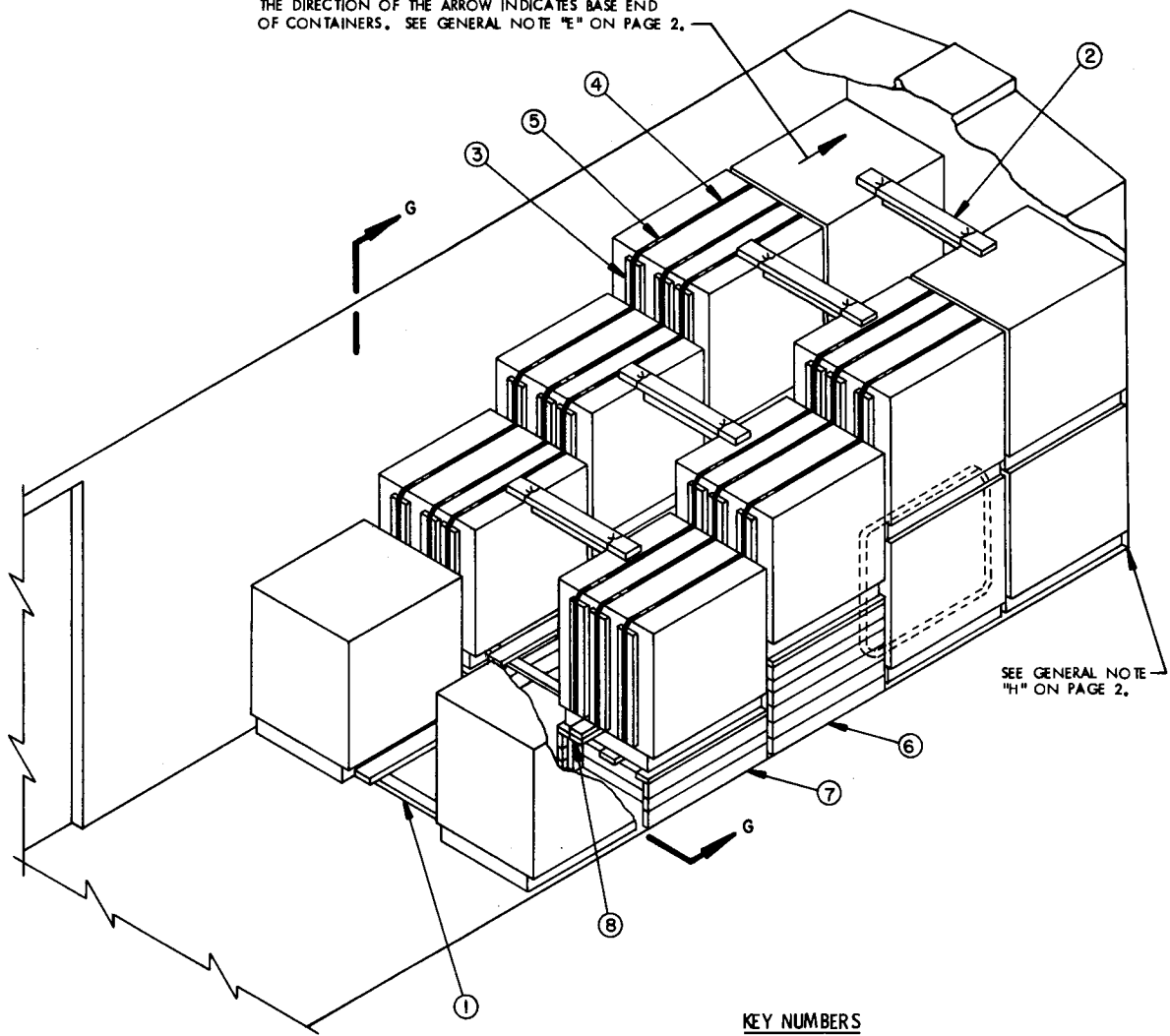
STRUT LEDGER, 2" X 2" OR 2" X 4" X 39-3/8" (3 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 3" X 11" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE FILL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



END VIEW

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

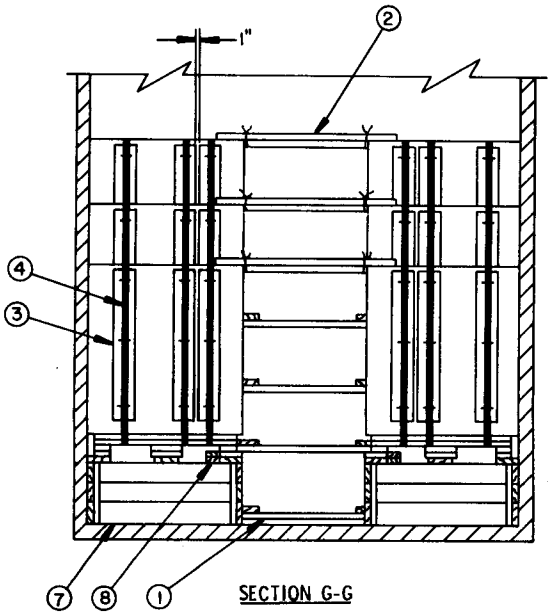


SEE GENERAL NOTE "H" ON PAGE 2.

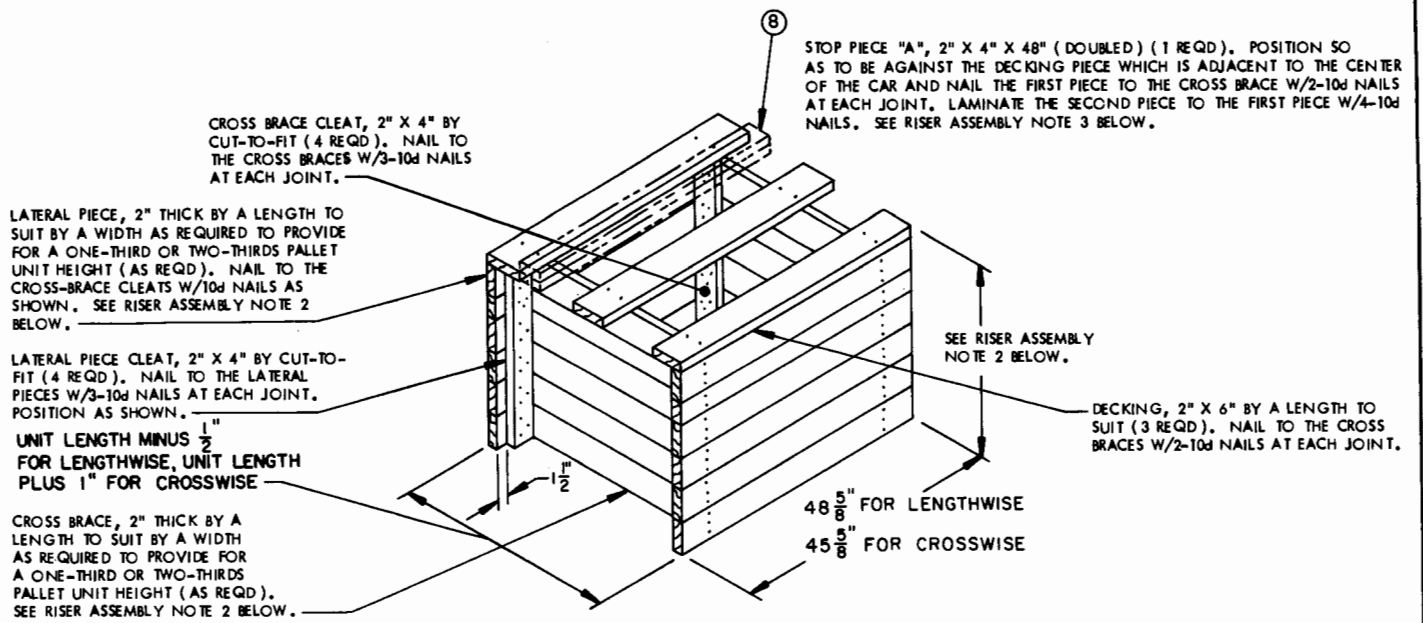
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 33.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22 FOR LENGTHWISE POSITIONED PALLET UNITS, AND "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22 FOR CROSSWISE POSITIONED PALLET UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAILS ON THAT PAGE.
- ③ STRAPPING BOARD, 2" X 6" X 38" (48 REQD/6 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 34, AND "SECTION G-G" AT LEFT. SEE SPECIAL NOTE 5 ON PAGE 33.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 17'-6" LONG (REF) STEEL STRAPPING (24 REQD). INSTALL TO ENIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 34.
- ⑤ SEAL FOR 1-1/4" STRAPPING (48 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑥ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 33.
- ⑦ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 33.
- ⑧ STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 33 FOR LOCATION AND NAILING GUIDANCE.



SECTION G-G



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

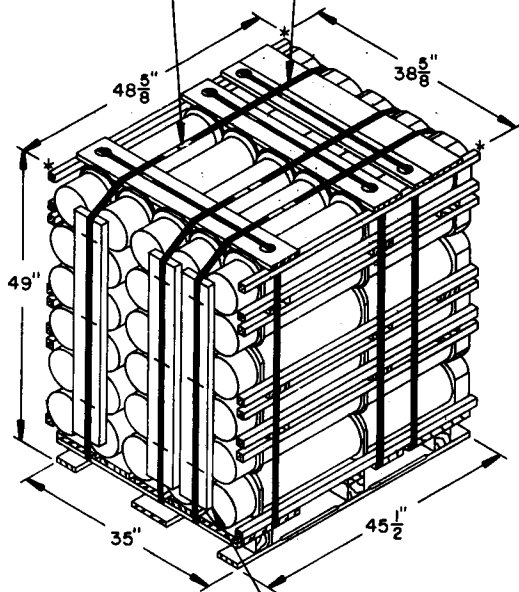
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE POSITIONED UNITS. SEE SPECIAL NOTES 4 AND 5.
3. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
4. ANTI-SWAY BRACE "A" IS APPLICABLE FOR THE LENGTHWISE POSITIONED UNITS. ANTI-SWAY BRACE "B", AS DETAILED ON PAGE 23, WILL BE USED FOR CROSSWISE POSITIONED UNITS.
5. FOR CROSSWISE POSITIONED UNITS, THE STRAPPING BOARDS SHOWN AS PIECES MARKED ③ WILL NOT BE REQUIRED. SEE THE "METHOD B" DETAIL ON PAGE 35 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS, WHEN THE PALLET UNITS ARE TO BE POSITIONED CROSSWISE IN THE CAR. ALSO, FOR LOADS OF CROSSWISE UNITS, STOP PIECE "B", NAILED TO "ANTI-SWAY BRACE B" WILL BE USED IN LIEU OF STOP PIECE "A". SEE THE "STOP PIECE LOCATION" DETAIL ON PAGE 34 FOR NAILING GUIDANCE.

SPECIAL NOTES FOR RISER ASSEMBLY:

1. A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 32. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FIVE (5) PIECES OF 2" X 6" MATERIAL AND ONE (1) PIECE OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 32-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 32, WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 16" 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.
3. THE STOP PIECE "A" SHOWN ON THE RISER ASSEMBLY ABOVE IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 32. IF THE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR, SEE SPECIAL NOTE 5 AT LEFT.

SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP). SEE GENERAL NOTE "P" ON PAGE 2.

REINFORCING STRAP, 1-1/4" X .035" X 17'-6" LONG STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.



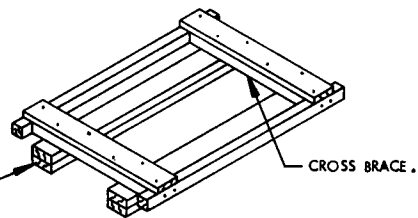
STRAPPING BOARD, 2" X 6" X 38" (6 REQD). POSITION AS SHOWN ABOVE AND IN SECTION "G-G" ON PAGE 32.

METHOD A

NOTE:

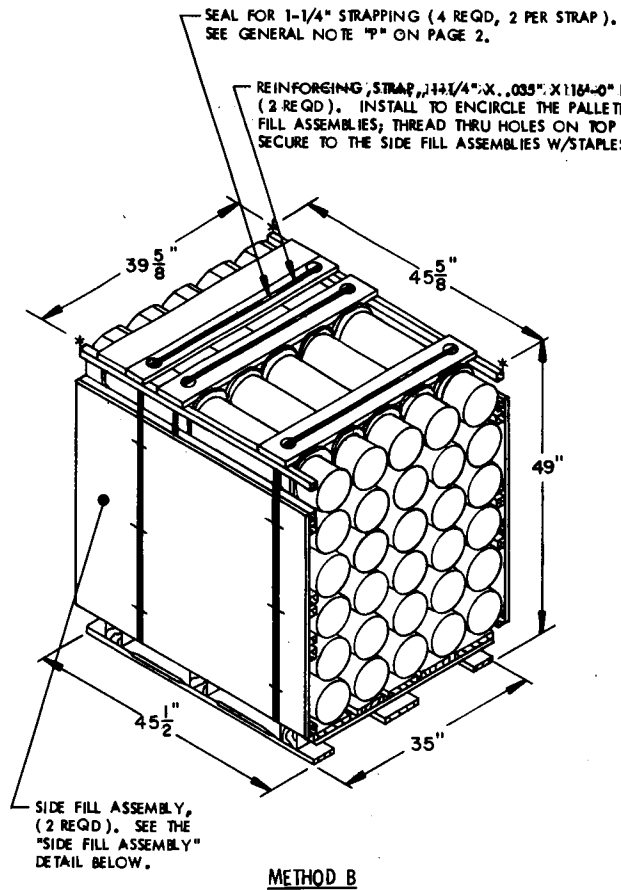
THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 32. FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL ON PAGE 35.

STOP PIECE, "B", 2" X 4" X 39-5/8" (DOUBLED) (2 REQD). POSITION TO CONTACT THE RISER ASSEMBLY ON EACH SIDE OF THE CAR. NAIL THE FIRST PIECE TO THE CROSS BRACE W/3-10d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE TO THE FIRST W/5-10d NAILS.

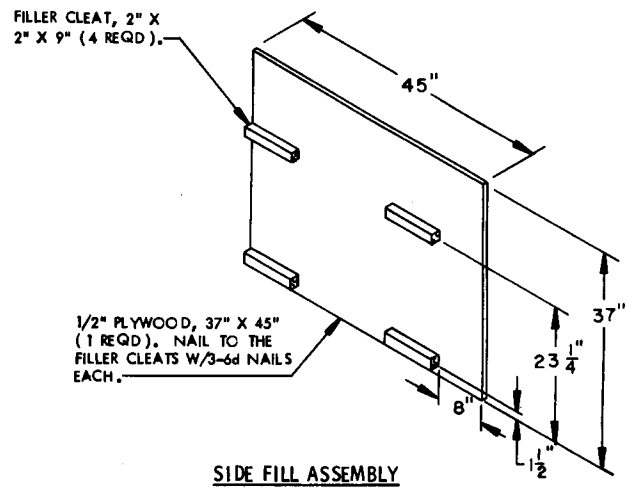


STOP PIECE LOCATION DETAIL

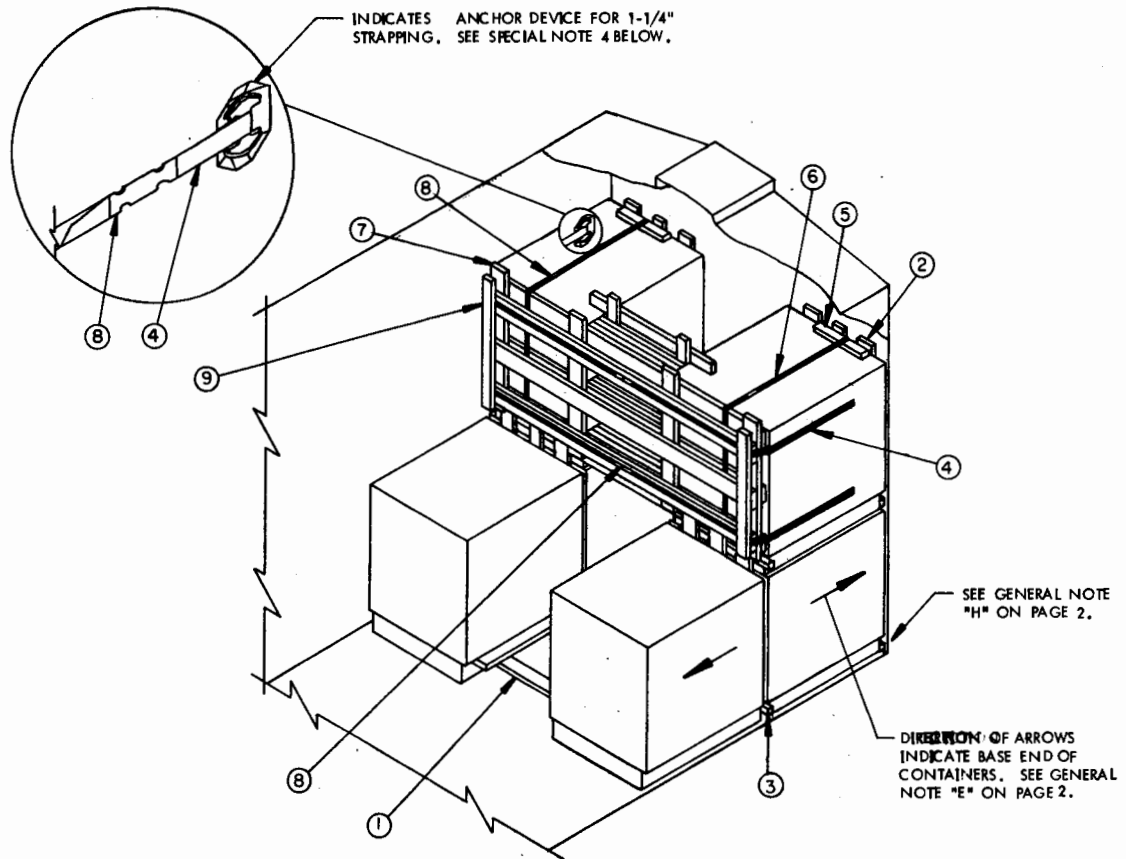
SEE THE ANTI-SWAY BRACE "B" DETAIL ON PAGE 23. FOR CONSTRUCTION GUIDANCE. NOTE THAT STOP PIECES ARE REQUIRED ON ANTI-SWAY BRACES LOCATED OVER THE RISER ASSEMBLIES ONLY.



NOTE:
THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR
PALLET UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN
USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 32.



(1 RIGHT HAND AND 1 LEFT HAND ASSEMBLY REQD).



SPECIAL NOTES:

1. A 9'-2" WIDE ALL-METAL BOX CAR 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 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. A BULKHEAD GATE WITH 2 STRAPS WILL RETAIN 2 PALLET UNITS; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 3 PALLET UNITS.
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 CAR 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 27 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 30 FOR A SINGLE UNIT.

(CONTINUED ON PAGE 37)

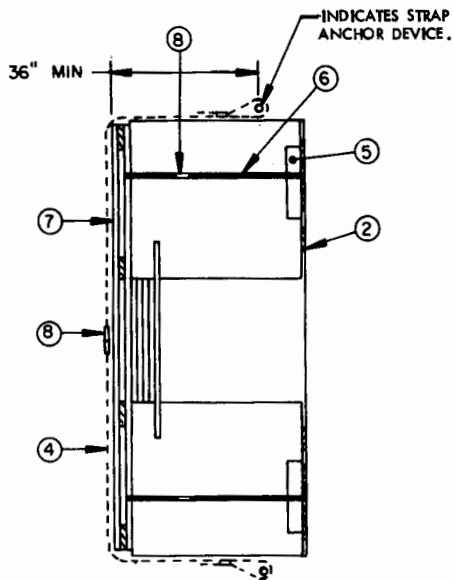
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (3 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN THE LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ② SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR END WALL.
- ③ SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19.
- ④ BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. ATTACH TO AN ANCHOR WITH 1 SEAL. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 37 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 3 AND 4 AT LEFT.
- ⑤ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 37.
- ⑥ BUNDLING STRAP, 1-1/4" X .035" X 17'-6" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑤. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECE MARKED ④.
- ⑦ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 37. SEE SPECIAL NOTE 2 AT LEFT.
- ⑧ SEAL FOR 1-1/4" STRAPPING (10 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED ④, AND 1 PER BUNDLING STRAP, PIECE MARKED ⑥). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑨ STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

(SPECIAL NOTES CONTINUED)

- 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 BELOW FOR THE LOCATION OF THE HORIZONTAL PIECES IN RELATION TO THE LOCATION OF THE STRAPPING BOARDS. THE STRAPPING BOARDS/HORIZONTAL PIECES 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.



STRAP APPLICATION PLAN VIEW

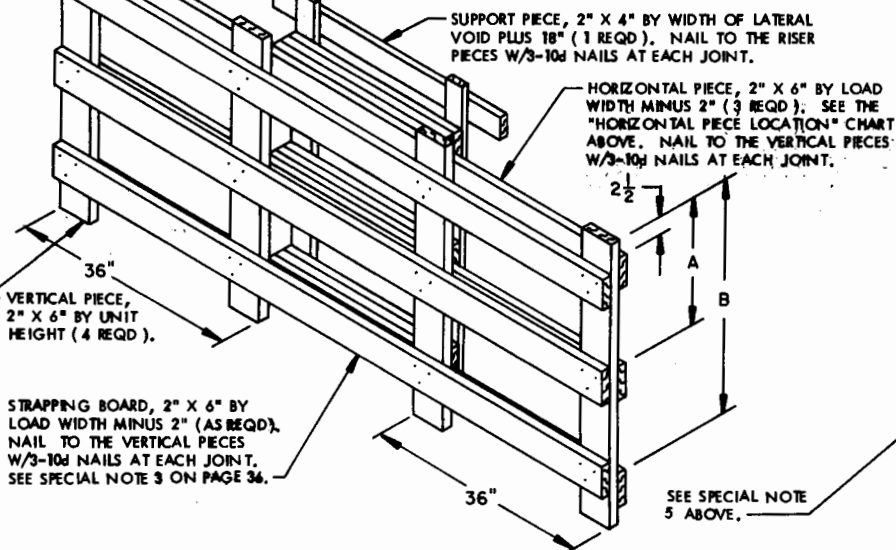
VERTICAL PIECE, 1" X 6" BY UNIT HEIGHT MINUS 5" (1 REQD). NAIL TO THE HORIZONTAL PIECE W/3-6d NAILS.



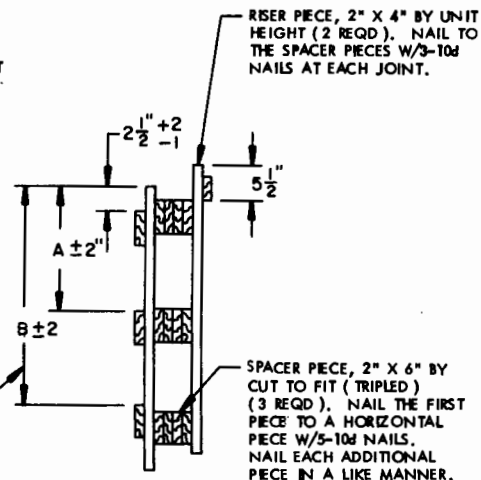
HORIZONTAL PIECE, 2" X 4" X 18" (1 REQD).

STRAPPING BOARD

HORIZONTAL PIECE LOCATION	
DIM A	DIM B
21-1/2 + 1"	37" + 3" - 2"

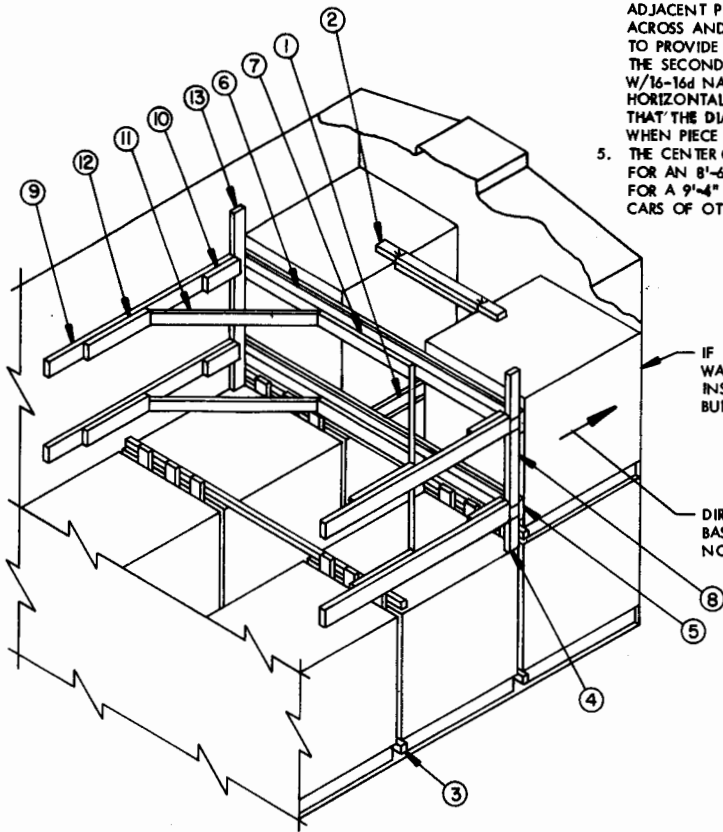


BULKHEAD GATE



END VIEW

(SPECIAL NOTES CONTINUED)



ADJACENT PIECE MARKED ⑨ 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 ⑨ TO THE FIRST W/16-16d 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 ⑨ 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.

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 52.

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

ISOMETRIC VIEW

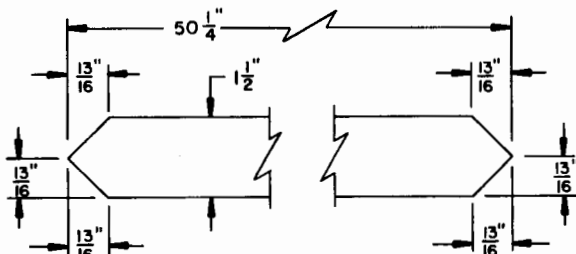
KEY NUMBERS

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 EXCEPT THE COMBINATION LOAD (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A LENGTHWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR CROSSWISE LOADS. NOTE THAT FOR A CROSSWISE PARTIAL TIER, THE PIECES MARKED ⑤ SHOULD BE LOCATED SO AS TO BEAR AGAINST THE PALLET UNITS IN THE SAME LOCATION AS THE HORIZONTAL PIECES OF A CENTER GATE.
3. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, OR FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 39 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.
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 PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ④, ⑤, ⑥, ⑧, ⑩, AND ⑬ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑪ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE

(CONTINUED AT RIGHT ABOVE)

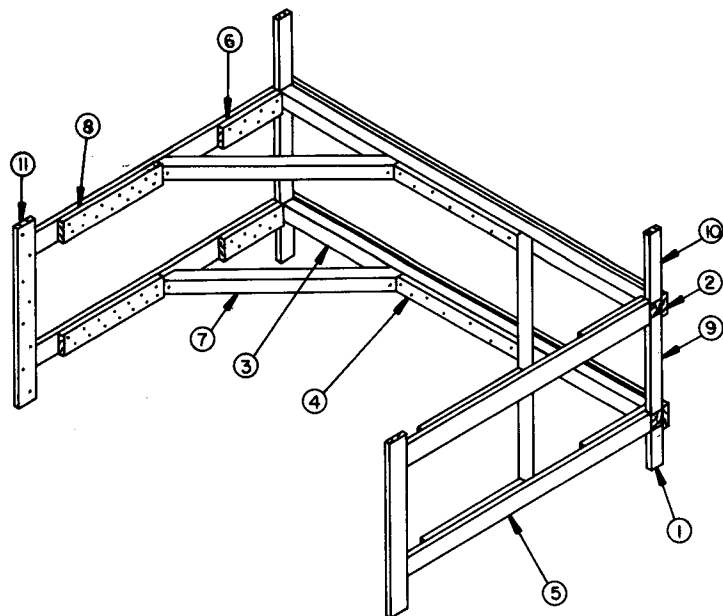
- ① ANTI-SWAY BRACE (2 REQD.). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD.). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON THAT PAGE. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.
- ③ SEPARATOR GATE (2 REQD.). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19, AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 52.
- ④ SUPPORT CLEAT, 2" X 4" X 10" (2 REQD.). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ⑤ AND ⑥ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 4 AT LEFT.
- 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 SPACER CLEAT, 2" X 4" X 25" (2 REQD.). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑨ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD.). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑩ POCKET CLEAT, 2" X 6" X 12" (4 REQD.). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨ W/4-16d NAILS.
- ⑪ 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 ⑨, W/2-16d NAILS AT EACH END.
- ⑫ BACK-UP CLEAT, 2" X 6" X 24" (4 REQD.). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨, W/8-16d NAILS.
- ⑬ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD.). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.



DIAGONAL BRACE

SPECIAL NOTES:

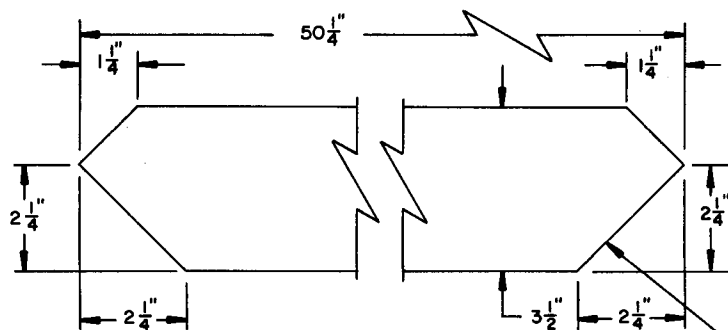
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN FOUR (4) PALLET UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 40 AND 41 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN 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 38 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 DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑨, ⑩, AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d 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 ⑤ 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 38 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

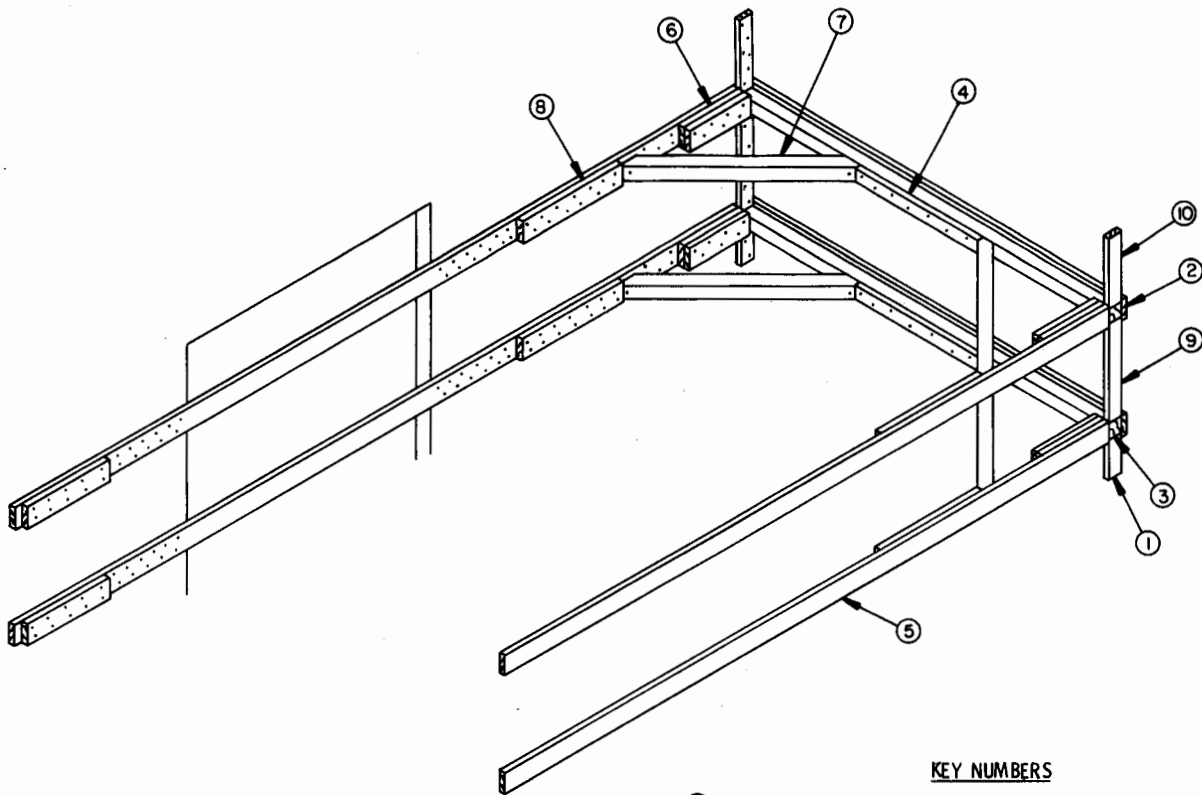
KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- 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 "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 HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.
- ⑦ 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 ⑤ W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 25" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE
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 ⑤.



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN EIGHT (8) PALLET UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 41 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 39 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 38 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, ⑤, ⑥, ⑦ AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ 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 ⑤ IS DOUBLED.

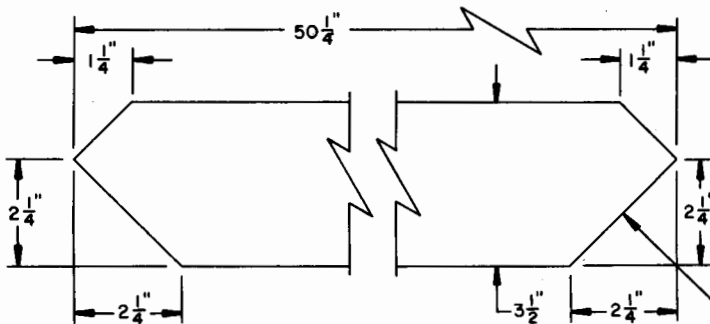
(CONTINUED AT RIGHT)

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD.). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- 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 "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 BELOW.
- ⑤ 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.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD.). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ 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 ⑤, W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD.). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 25" (2 REQD.). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD.). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

(SPECIAL NOTES CONTINUED)

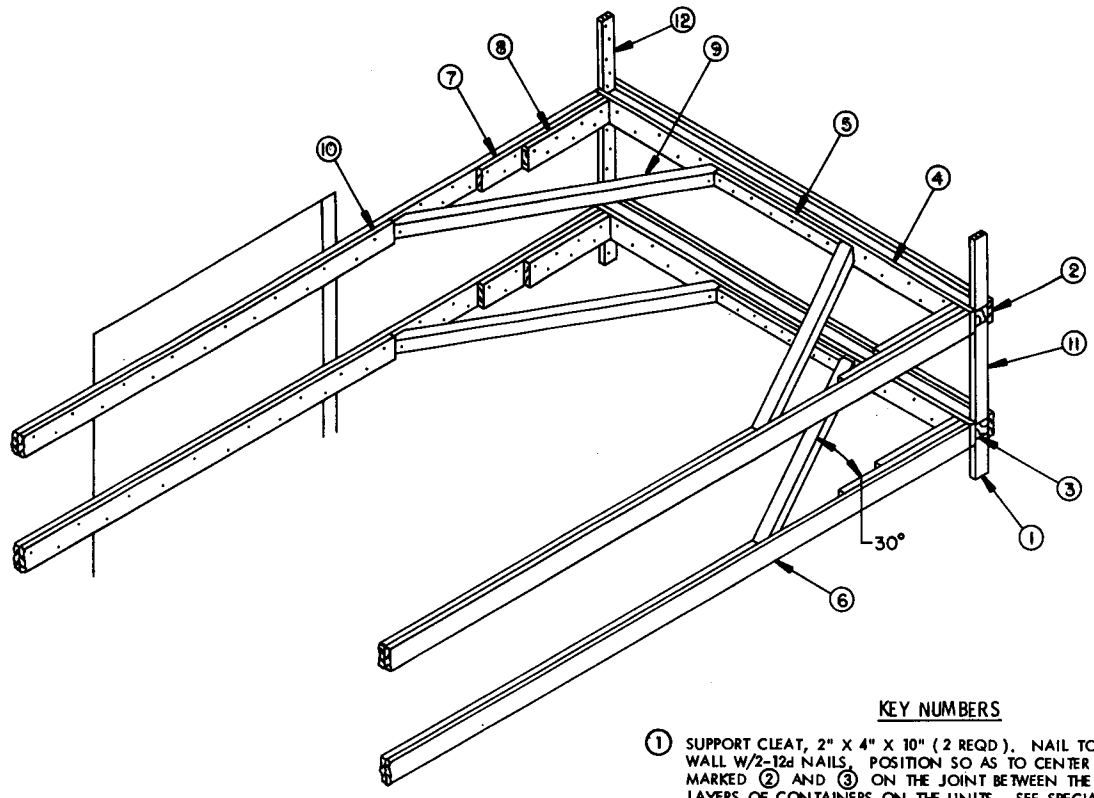
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. **CAUTION:** A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.



DIAGONAL BRACE

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 ⑤.



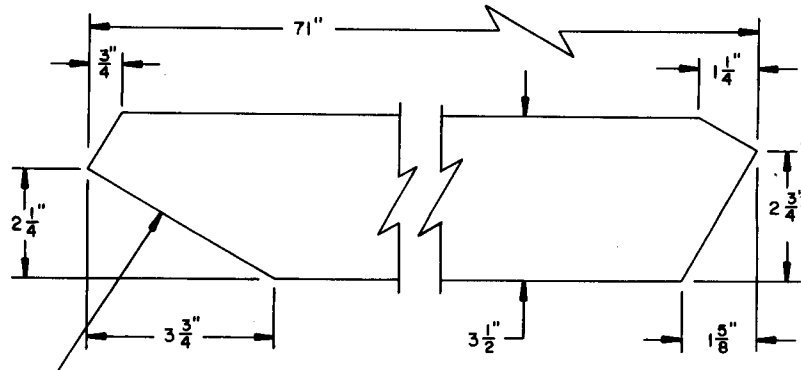
ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- 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".
- 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 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.
- 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 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.
- ⑦ POCKET CLEAT, 2" X 6" X 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ 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 ⑥, W/1-60d NAIL AT EACH END.
- ⑩ 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 ⑨, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/18-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING, IF APPLICABLE.
- ⑪ SPACER CLEAT, 2" X 4" X 25" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑫ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

SPECIAL NOTES:

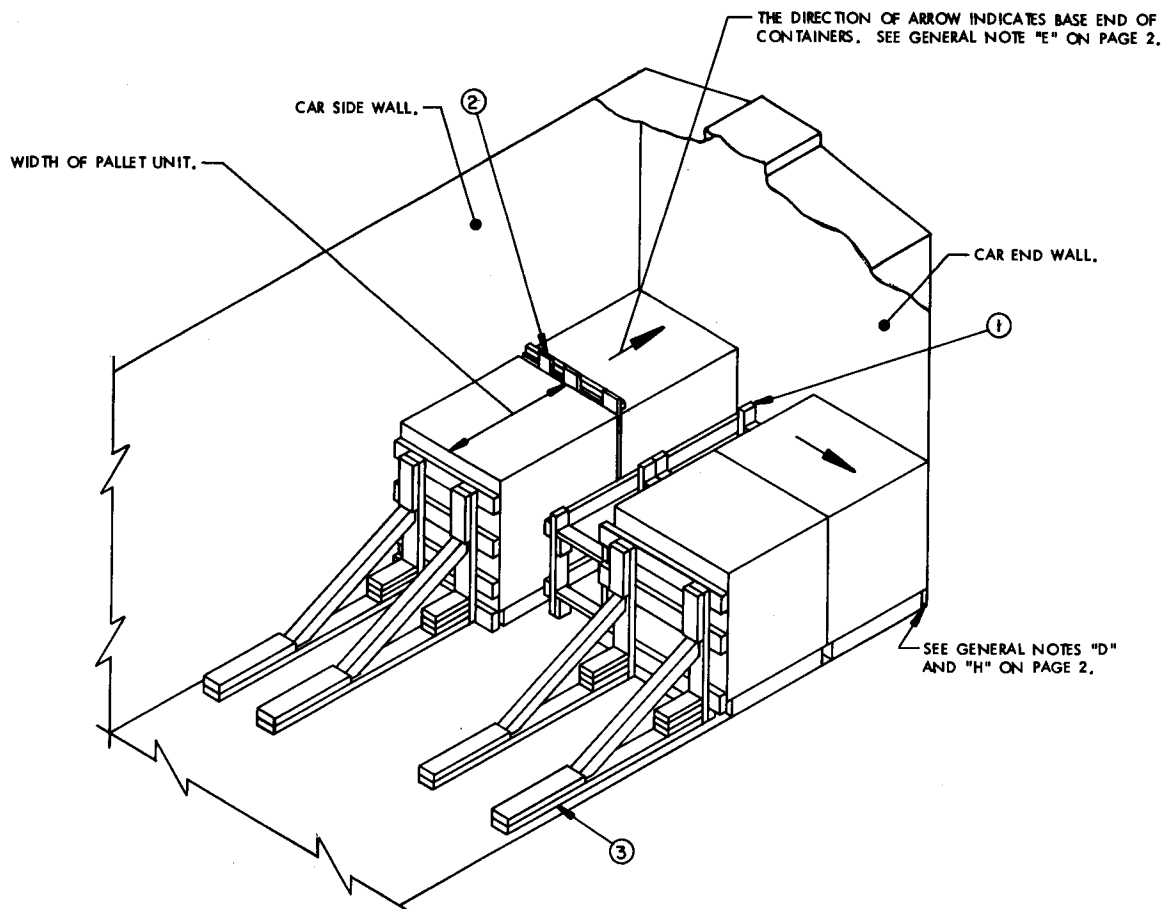
- 1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS. THIS WILL BE NOT MORE THAN TEN (10) PALLET UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 40 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 39 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 38 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, ⑦, ⑧, ⑪ AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT BRACE 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 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.
- 3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤, 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 ⑥ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.



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 ⑥.

TYPE "D" K-BRACE



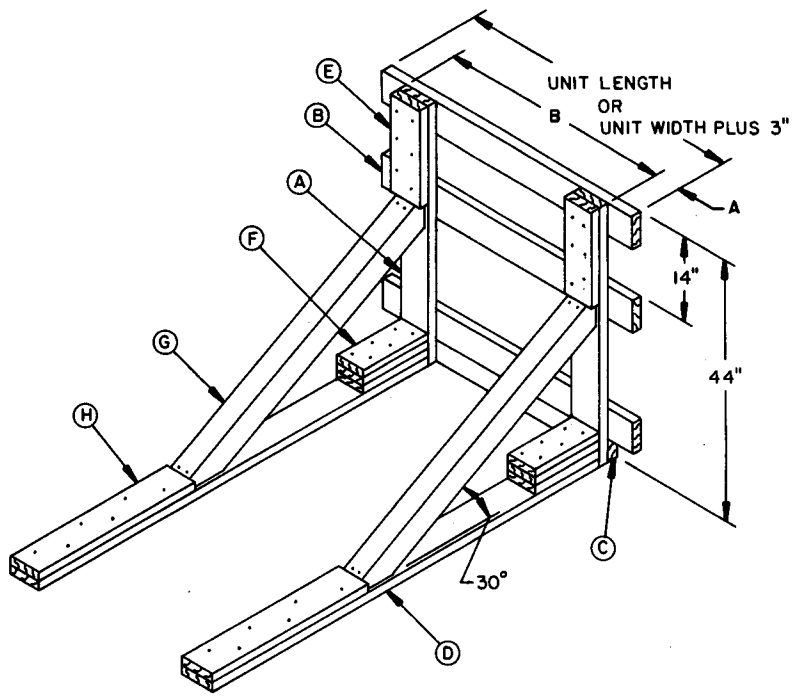
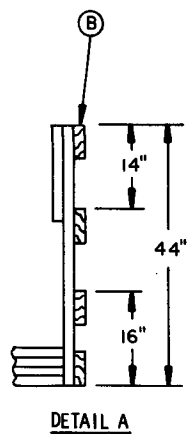
ISOMETRIC VIEW

KEY NUMBERS

- ① CRIB FILL (2 REQD). SEE THE CRIB FILL DETAIL ON PAGE 18. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.
- ③ KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 43 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

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 AND CARS HAVING METAL LININGS CAN BE USED.
2. 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 3 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTHWISE ROWS, OR TWO CROSSWISE ROWS IN LIEU OF ONE OF EACH AS DEPICTED.
3. 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 8,500 POUNDS.
4. HOLD-DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE LENGTHWISE ROW, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 18. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CROSSWISE ROW, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 19.



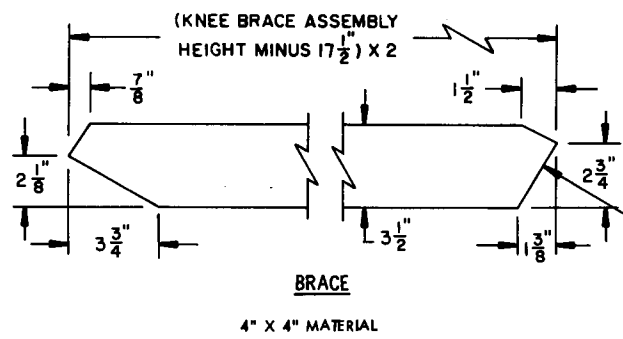
KNEE BRACE ASSEMBLY

VERTICAL PIECE PLACEMENT FOR CROSSWISE CONTAINERS	
DIM A	DIM B
4-1/4"	39-3/8"

VERTICAL PIECE PLACEMENT FOR LENGTHWISE CONTAINERS	
DIM A	DIM B
5-3/4"	27"

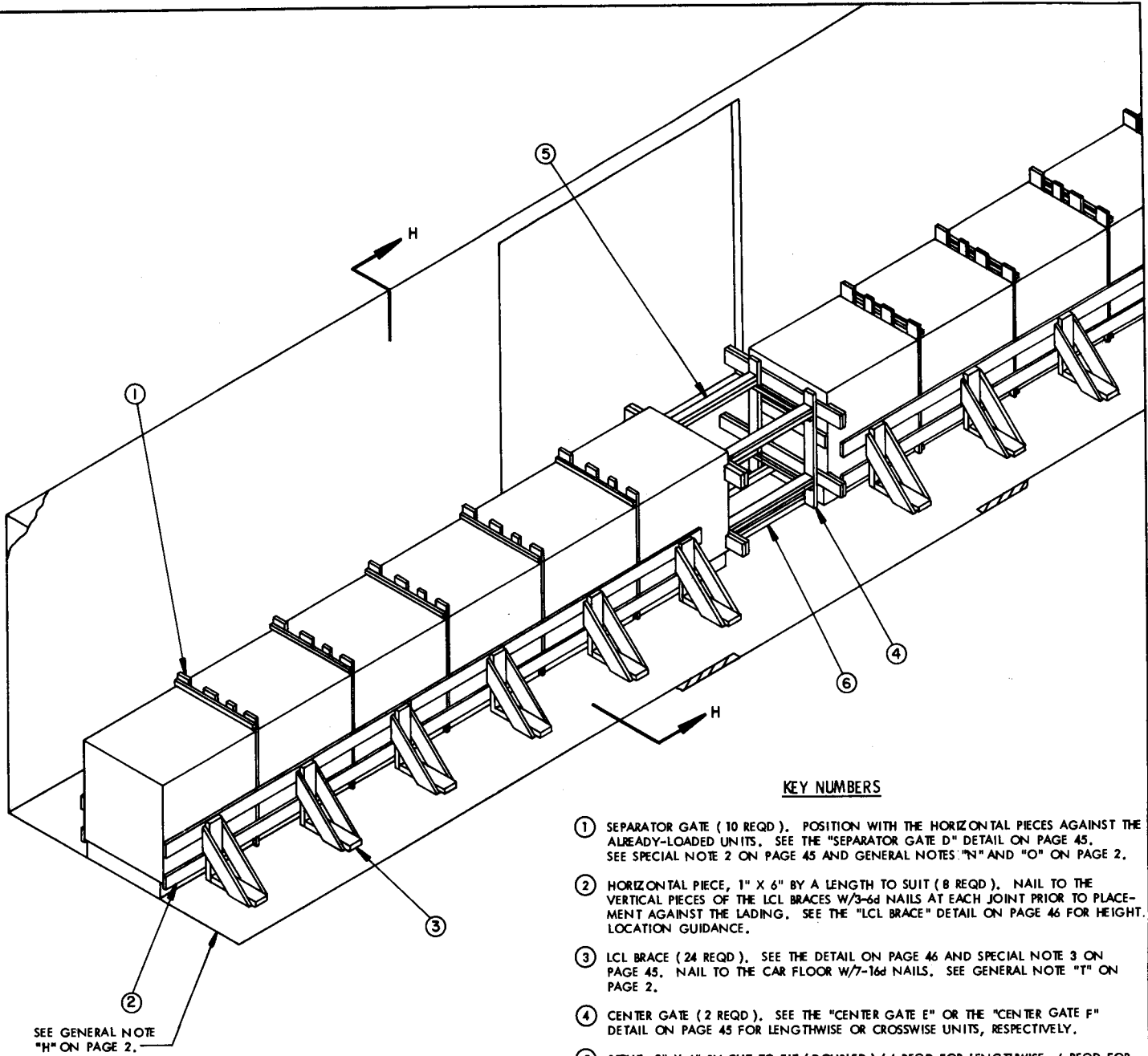
KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" X 44" (2 REQ'D). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH PLUS 3", AS APPLICABLE (4 REQ'D FOR LENGTHWISE, 3 REQ'D FOR CROSSWISE POSITIONED CONTAINERS). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "N" ON PAGE 2. SEE "DETAIL A" AT LEFT ABOVE FOR PLACEMENT OF HORIZONTAL PIECES FOR LENGTHWISE POSITIONED CONTAINERS.
- (C) HORIZONTAL PIECE, 2" X 4" X 39-3/8" (1 REQ'D FOR CROSSWISE POSITIONED CONTAINERS ONLY). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END.
- (D) FLOOR CLEAT, 2" X 6" BY LENGTH TO SUIT (.87 OR 7/8 TIMES LENGTH OF PIECE MARKED (C), PLUS 30") (2 REQ'D). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "T" ON PAGE 2.
- (E) HOLD-DOWN CLEAT, 2" X 6" X 16" (2 REQ'D). NAIL TO A VERTICAL PIECE W/6-10d NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQ'D). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (D), 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.
- (G) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 17-1/2", TIMES 2) (2 REQ'D). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (D), W/2-16d NAILS AT EACH JOINT.
- (H) BACK UP CLEAT, 2" X 6" X 30" (2 REQ'D). NAIL TO THE FLOOR CLEAT, PIECE MARKED (D), W/6-40d NAILS.
- (J) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 4 ON PAGE 42.



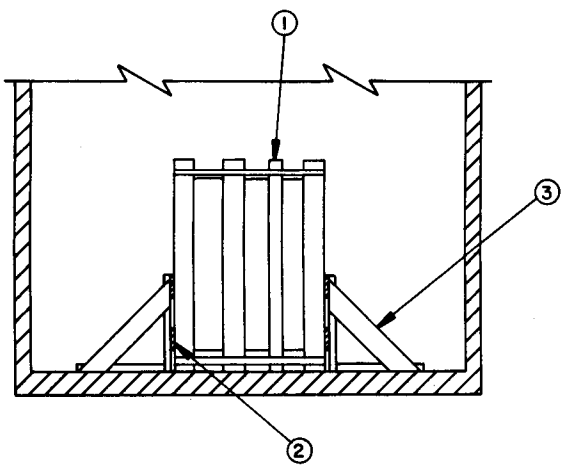
THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

TYPICAL LCL LOAD USING KNEE BRACE METHOD OF PARTIAL-LAYER BRACING



SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

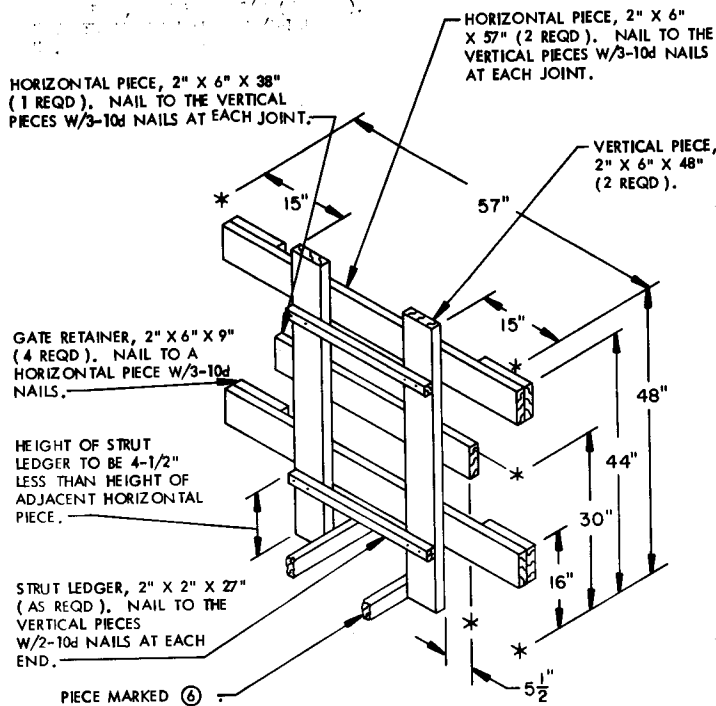


SECTION H-H

KEY NUMBERS

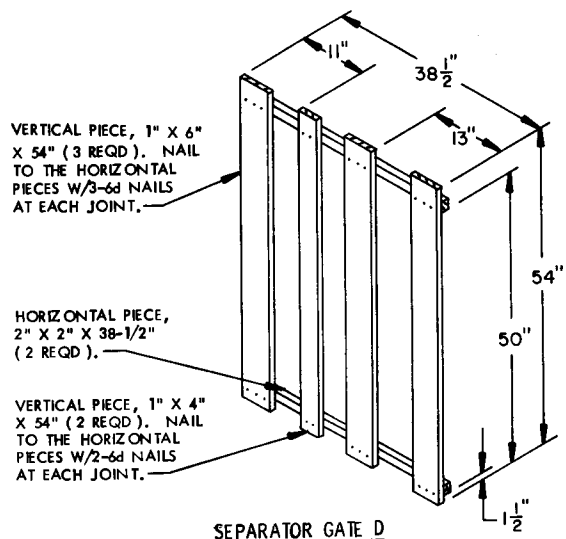
- ① SEPARATOR GATE (10 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 45. SEE SPECIAL NOTE 2 ON PAGE 45 AND GENERAL NOTES "N" AND "O" ON PAGE 2.
- ② HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 46 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (24 REQD). SEE THE DETAIL ON PAGE 46 AND SPECIAL NOTE 3 ON PAGE 45. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "T" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE E" OR THE "CENTER GATE F" DETAIL ON PAGE 45 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.
- ⑤ STRUT, 2" X 6" BY CUT TO FIT (DOUBLED) (4 REQD FOR LENGTHWISE, 6 REQD FOR MOST CROSSWISE). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL TO PIECES MARKED ④ W/2-12d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2, AND SPECIAL NOTE 2 ON PAGE 45.
- ⑥ GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE E" DETAIL ON PAGE 45 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CROSSWISE UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 5 ON PAGE 45.

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



CENTER GATE E

THIS GATE IS FOR USE WITH LENGTHWISE UNITS.



SEPARATOR GATE D

GATE RETAINER, 2" X 6" X 9" (4 REQD). NAIL TO A HORIZONTAL PIECE W/3-10d NAILS.

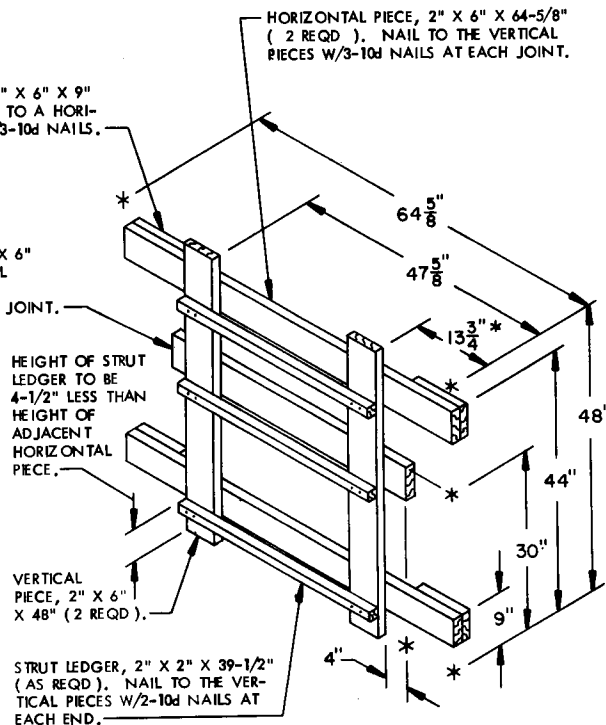
HORIZONTAL PIECE, 2" X 6" X 45" (AS REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

HEIGHT OF STRUT LEDGER TO BE 4-1/2" LESS THAN HEIGHT OF ADJACENT HORIZONTAL PIECE.

VERTICAL PIECE, 2" X 6" X 48" (2 REQD).

STRUT LEDGER, 2" X 2" X 39-1/2" (AS REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

HORIZONTAL PIECE, 2" X 6" X 64-5/8" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



CENTER GATE F

THIS GATE IS FOR USE WITH CROSSWISE UNITS (1-RIGHT HAND AND 1-LEFT HAND GATE REQUIRED)
* POSITION THIS END OF GATE AGAINST BASE END OF CONTAINER.

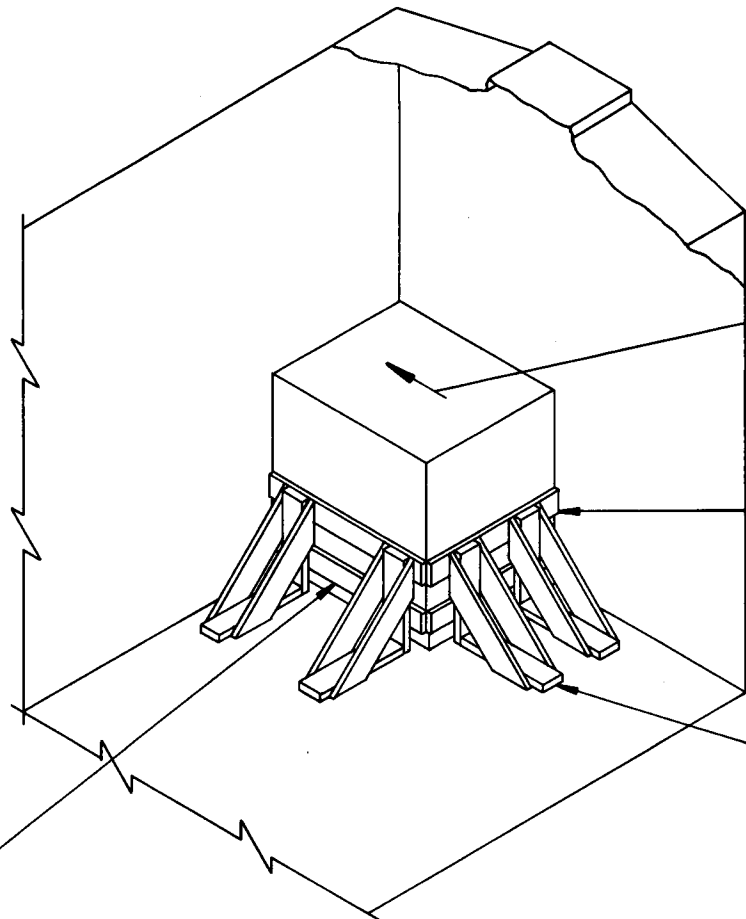
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	45	15
1" X 6"	274	137
2" X 2"	74	25
2" X 3"	12	6
2" X 6"	174	174
NAILS	NO. REQD	POUNDS
6d (2")	364	2-1/4
8d (2-1/2")	288	3
10d (3")	112	1-3/4
16d (3-1/2")	216	4-3/4

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	12	28,896 LBS
DUNNAGE		726 LBS
TOTAL WEIGHT		29,622 LBS

HORIZONTAL PIECE, 1" X 6" X 45-1/2" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.



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

HORIZONTAL PIECE, 1" X 6" X 38-1/2" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

SEE GENERAL NOTE "H" ON PAGE 2.

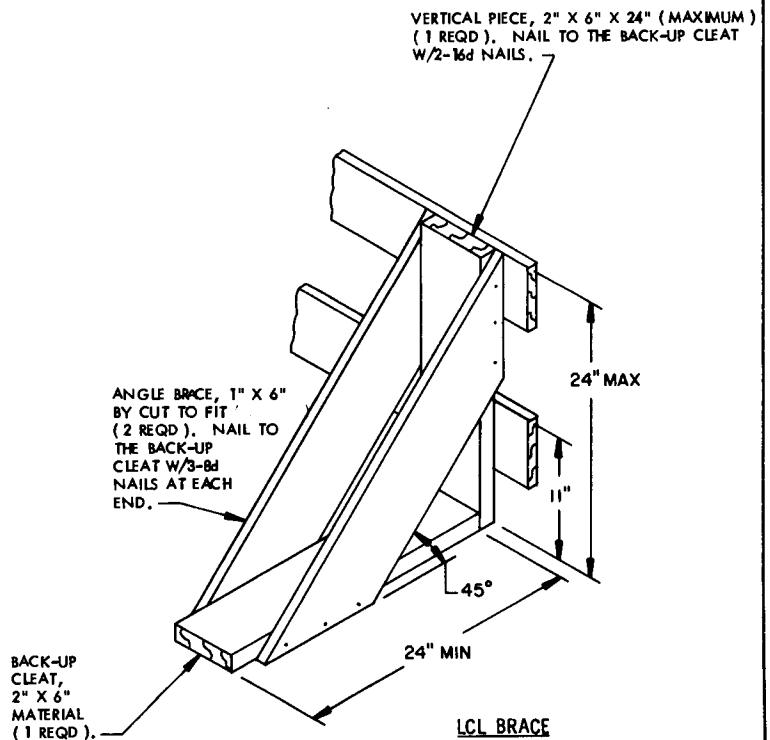
LCL BRACE (4 REQD). SEE THE DETAIL BELOW. LOCATE SO AS TO BE CENTERED ON THE JOINTS OF THE CONTAINER ENDS AND/OR AGAINST THE INTERMEDIATE DUNNAGE PIECES OF THE UNIT. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTES "N" AND "I" ON PAGE 2.

ISOMETRIC VIEW

SPECIAL NOTES:

1. AN 8'-6" 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 "T" AND "D" ON PAGE 2.
2. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A CROSSWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE UNITS AND 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.

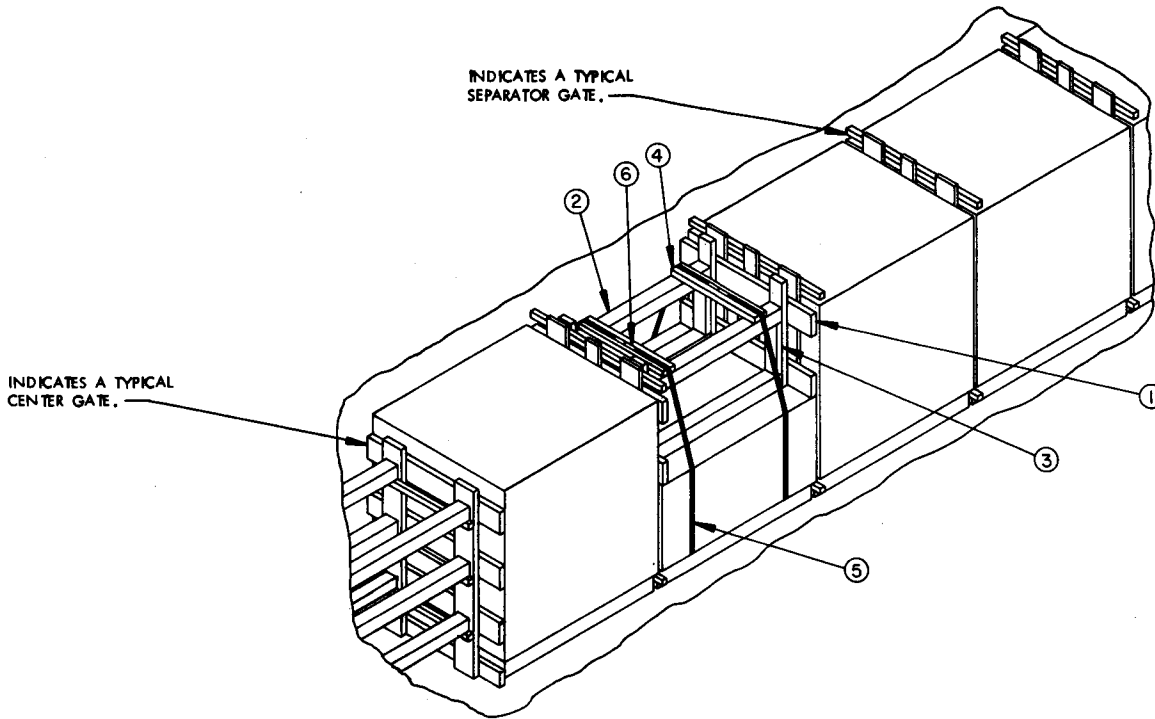
VERTICAL PIECE, 2" X 6" X 24" (MAXIMUM) (1 REQD). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.



ANGLE BRACE, 1" X 6" BY CUT TO FIT (2 REQD). NAIL TO THE BACK-UP CLEAT W/3-8d NAILS AT EACH END.

BACK-UP CLEAT, 2" X 6" MATERIAL (1 REQD).

LCL BRACE



POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

KEY NUMBERS

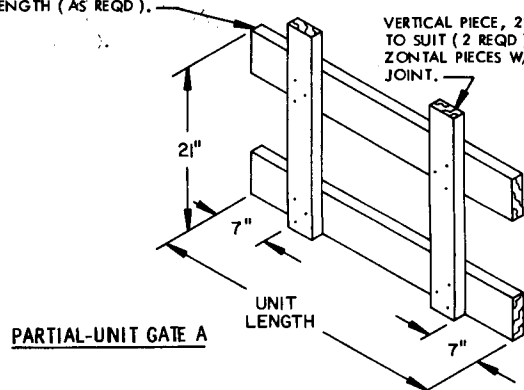
SPECIAL NOTES:

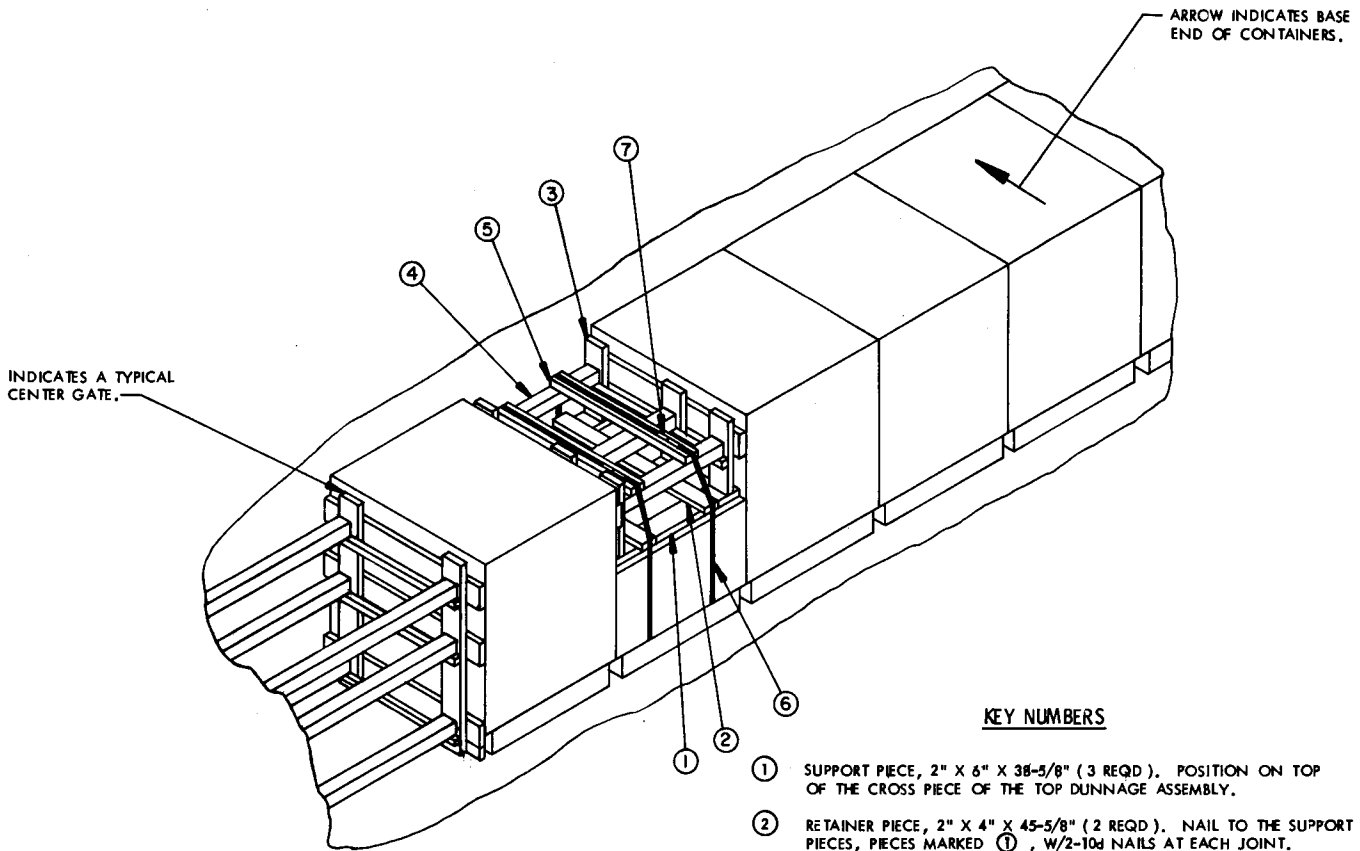
1. SHIPMENTS OF COMPLETE ROUNDS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED CONTAINERS WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
3. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF FIVE (5) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4079/6-20PM1002, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
4. THE FILLERS AS REFERENCED IN SPECIAL NOTE 3 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
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. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

- ① PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ② STRUT, 4" X 4" X 39-5/8" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/2-16d NAILS AT EACH END.
- ③ STRUT SUPPORT PIECE, 2" X 4" X 13" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.
- ④ STRAPPING BOARD, 2" X 4" X 25" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ③, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" X .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.

HORIZONTAL PIECE, 2" X 6" BY UNIT LENGTH (AS REQD).

VERTICAL PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.





INDICATES A TYPICAL CENTER GATE.

ARROW INDICATES BASE END OF CONTAINERS.

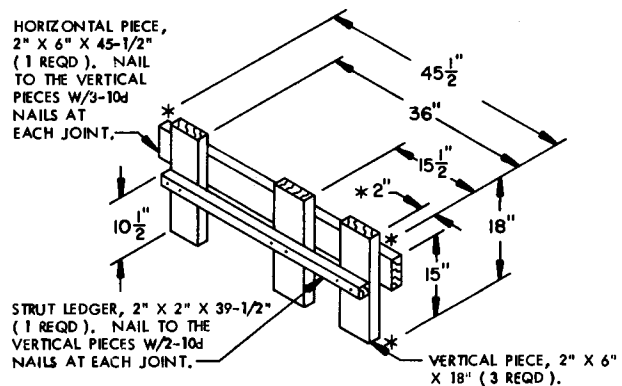
POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 38-5/8" (3 REQD). POSITION ON TOP OF THE CROSS PIECE OF THE TOP DUNNAGE ASSEMBLY.
- ② RETAINER PIECE, 2" X 4" X 45-5/8" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED ①, W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ④ STRUT, 4" X 4" X 32-5/8" (3 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED ③, W/2-16d NAILS AT EACH END.
- ⑤ STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④, W/3-10d NAILS AT EACH JOINT.
- ⑥ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.

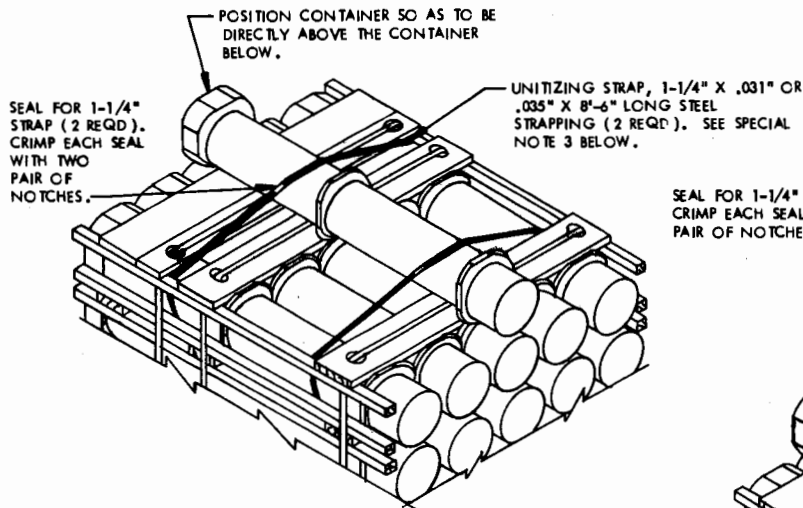
SPECIAL NOTES:

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 CROSSWISE LOAD.
2. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED CONTAINERS WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
3. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF FIVE (5) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4079/6-20PM1002, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
4. THE FILLERS AS REFERENCED IN SPECIAL NOTE 3 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
5. THE "POSITIONING OF PARTIAL CROSSWISE UNIT IN 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. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 50 MAY BE MORE ECONOMICAL.
7. THE PARTIAL-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH BUT NOT IN THE DOORWAY. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND THE CENTER GATE.

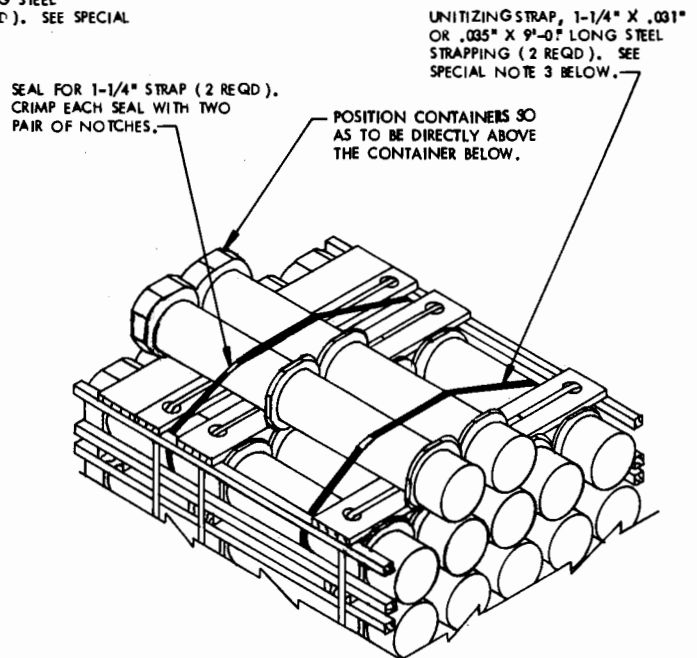


PARTIAL-UNIT GATE B

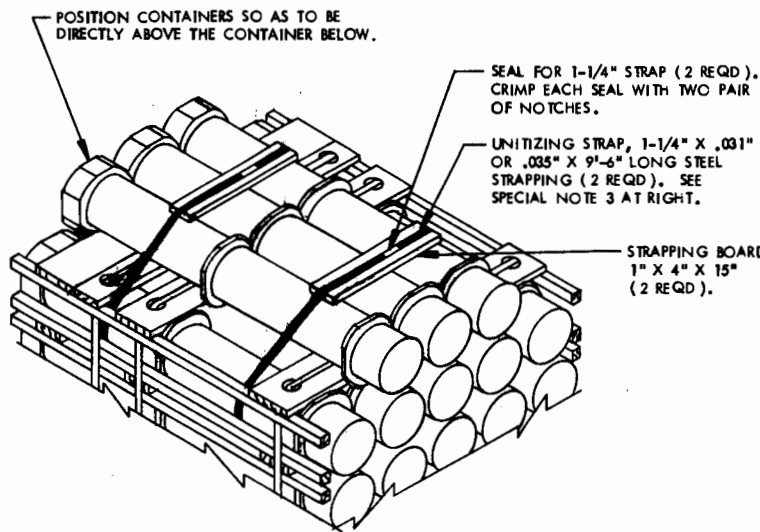
(RIGHT AND LEFT HAND GATES ARE REQUIRED)
* POSITION THIS END OF GATE AGAINST BELL END OF CONTAINER.



SECUREMENT OF ONE CONTAINER



SECUREMENT OF TWO CONTAINERS



SECUREMENT OF THREE CONTAINERS

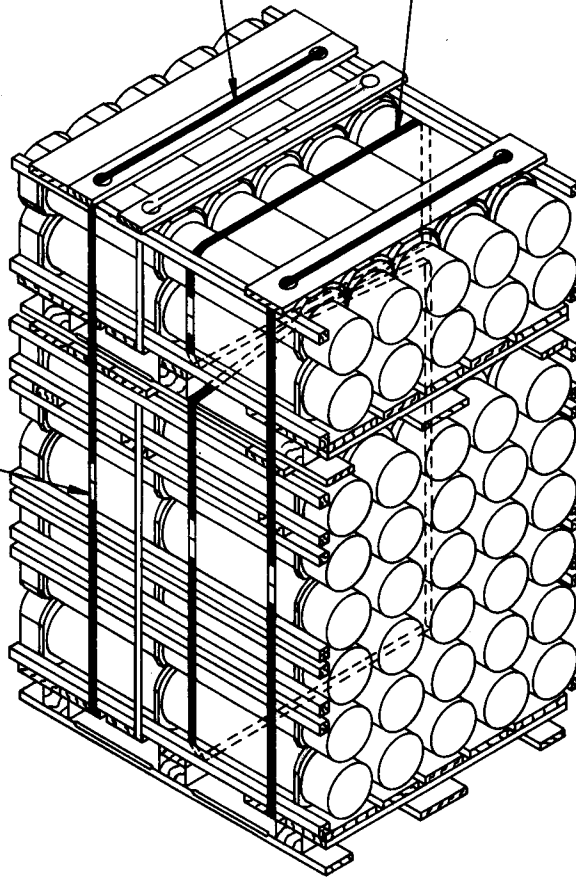
SPECIAL NOTES:

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 LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 50 OR WITHIN A LAYER AS SHOWN ON PAGES 47 AND 48.
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, ASSEMBLY, 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. NOTE THAT THE UNITIZING STRAP MUST NOT GO AROUND THE DUNNGAE ASSEMBLIES. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.
4. 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.
5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.

VERTICAL UNITIZING STRAP, 1-1/4" X .031" OR .035" BY
A LENGTH TO SUIT STEEL STRAPPING (2 REQD). POSITION
OVER EXISTING TIE DOWN STRAP AS SHOWN.

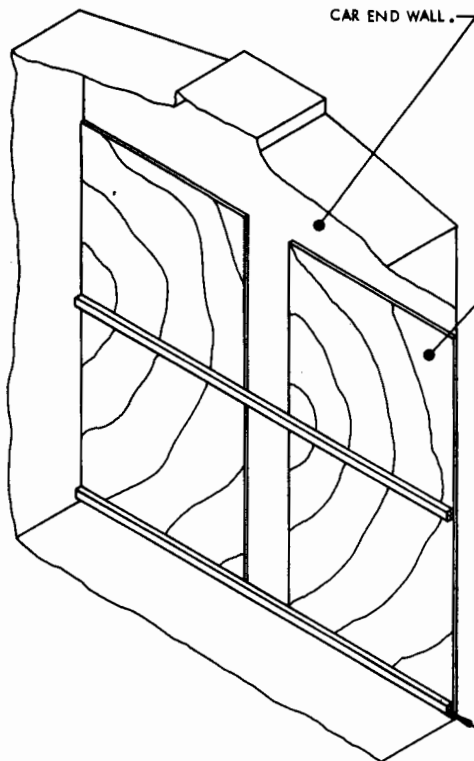
FIGURE-8 UNITIZING STRAP, 1-1/4" X .031" OR .035" BY
A LENGTH TO SUIT STEEL STRAPPING (1 REQD). POSITION
NEAR THE CENTER OF THE UNIT WIDTH. NOTE THAT THE
STRAP PASSES BEHIND THE 2" X 2" STOP PIECES OF DUNNAGE
ASSEMBLIES, AND THRU THE FORK LIFT OPENINGS OF THE
UPPER PALLET.

INDICATES TWO
(2) 1-1/4"
STRAP SEALS.



SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE LOAD. CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN TWO (2) LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN TWO LAYERS OF CONTAINERS, OR AN ALTERNATIVE METHOD FOR ONE OR TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 48.



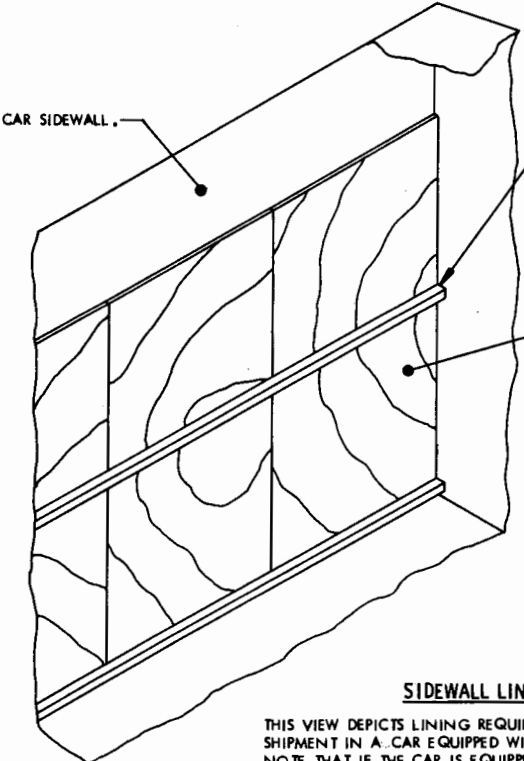
CAR END WALL.

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

TIE PIECE, 2" X 2" BY CAR WIDTH MINUS 1" (MINIMUM OF 2 REQD). LOCATE SO AS TO BE CENTERED BETWEEN THE PALLET WINGS.

END -WALL LINING

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



CAR SIDEWALL.

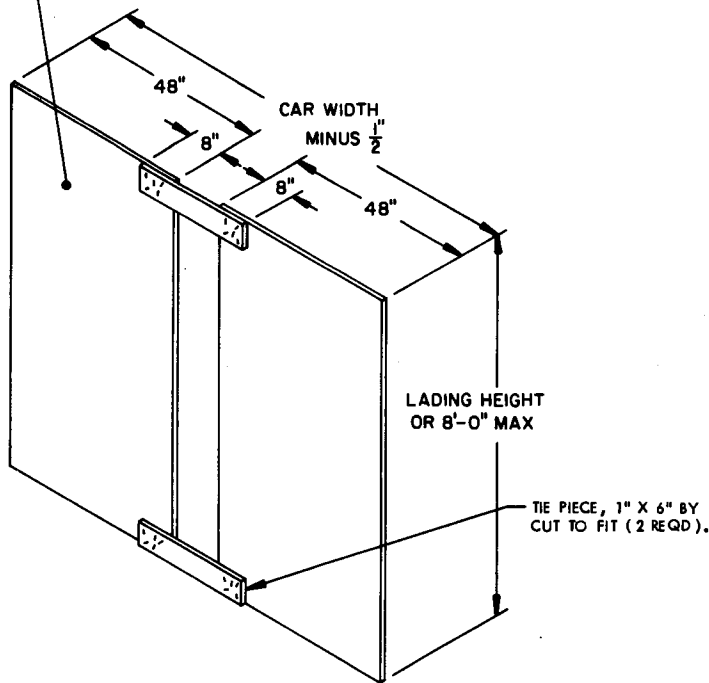
TIE PIECE, 2" X 2" BY RANDOM LENGTH. LOCATE SO AS TO BE CENTERED BETWEEN THE PALLET WINGS OF THE PALLET UNITS. NOTE THAT THE UPPER 2" X 2" PIECE MAY BE POSITIONED ABOVE THE TOP OF THE LOAD.

1/4" MINIMUM PLYWOOD, 1/8" MINIMUM HARDBOARD, OR .060" MINIMUM THICK SOLID WALL FIBERBOARD. NAIL PLYWOOD OR HARDBOARD TO 2" X 2" W/1 APPLICABLY SIZED NAIL EVERY 8". STAPLE FIBERBOARD TO 2" X 2" W/1 STAPLE EVERY 6". NOTE THAT SEPARATOR GATES, OR SIMILARLY POSITIONED VERTICAL 1" X 6" LUMBER, MAY BE USED PROVIDING THEY ARE TIED TOGETHER TO PREVENT DISLODGEMENT.

SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CROSSWISE SHIPMENT IN A CAR EQUIPPED WITH A STEEL SIDEWALL. NOTE THAT IF THE CAR IS EQUIPPED WITH A STEEL-FACED PLUG DOOR, THE SPECIAL LINING WILL ALSO BE REQUIRED IN THE DOORWAY AREA IF THE SPECIFIED DOORWAY PROTECTION DOES NOT SUFFICE.

PLYWOOD, 3/8" X 48" WIDE BY A HEIGHT TO SUIT (2 REQD).
NAIL TO EACH TIE PIECE W/3-4d NAILS AT EACH JOINT AND CLINCH.

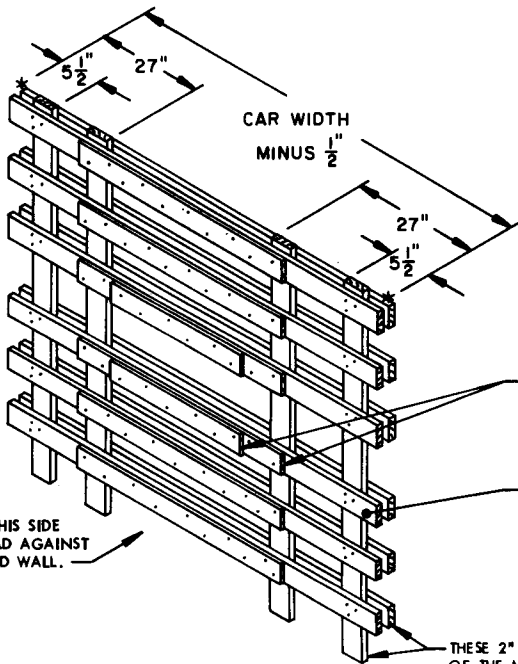


NOTE A:
THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 2" X 2" AND 1" X 6" MATERIAL. THE ALTERNATIVE SEPARATOR GATE CAN BE USED IN LOADS WHICH ARE ONE OR TWO PALLET UNITS IN HEIGHT.

ALTERNATIVE SEPARATOR GATE

SEE "NOTE A" AT RIGHT.

NOTE O:
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 POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" OR 2" X 4" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "C", AS DETAILED ON PAGE 20, IS SHOWN AS TYPICAL.



SHIM MATERIAL, 6" WIDE PLYWOOD OR DIMENSIONAL LUMBER OF A THICKNESS AND LENGTH AS REQUIRED TO FILL THE VOID BETWEEN THE CAR END WALL AND THE BULKHEAD. NAIL TO THE FILLER PIECE AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 6".

FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (ONE REQUIRED FOR EACH HORIZONTAL PIECE ON THE CENTER GATE). ALIGN WITH THE HORIZONTAL PIECES AND NAIL TO THE VERTICAL PIECES OF THE CENTER GATE W/3-10d NAILS AT EACH JOINT.

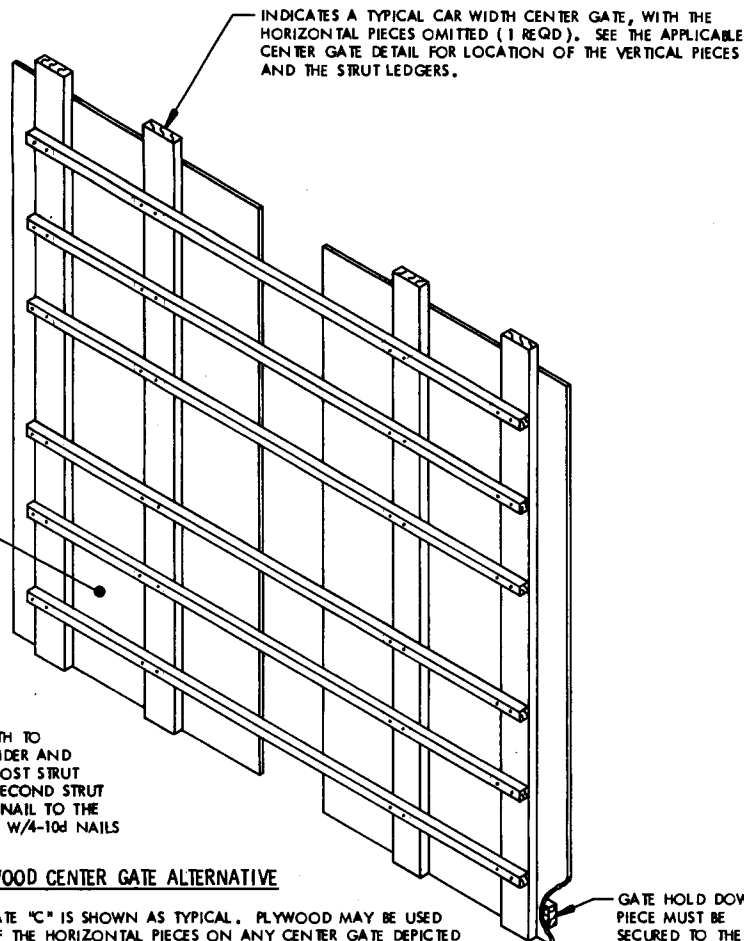
THESE 2" X 6" HORIZONTAL PIECES AND 2" X 6" VERTICAL PIECES ARE PART OF THE MODIFIED CENTER GATE. SEE "NOTE O" ABOVE.

POSITION THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

END-OF-CAR BULKHEAD

SEE "NOTE O" AT RIGHT.

PLYWOOD, 1/2" THICK BY THE UNIT WIDTH OR LENGTH BY 4' OR 8' HIGH (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".
 NOTE: THE WIDTH OF THE PLYWOOD WILL BE UNIT WIDTH IF THE LENGTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 10, OR UNIT LENGTH IF THE WIDTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 8. PLYWOOD MAY BE ALLOWED TO EXTEND BEYOND THE UNIT LENGTH OR WIDTH, IF DESIRED.



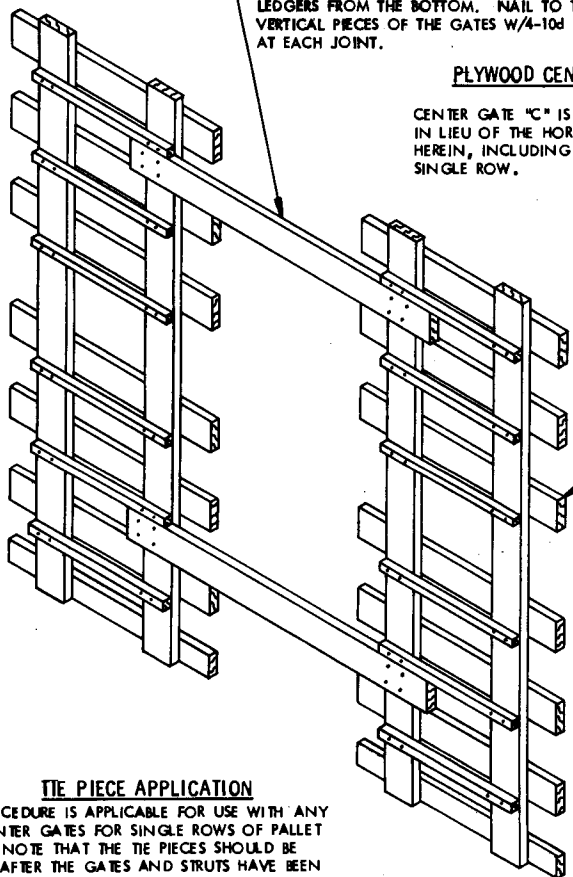
INDICATES A TYPICAL CAR WIDTH CENTER GATE, WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR LOCATION OF THE VERTICAL PIECES AND THE STRUT LEDGERS.

GATE HOLD DOWN PIECE MUST BE SECURED TO THE PLYWOOD.

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.

PLYWOOD CENTER GATE ALTERNATIVE

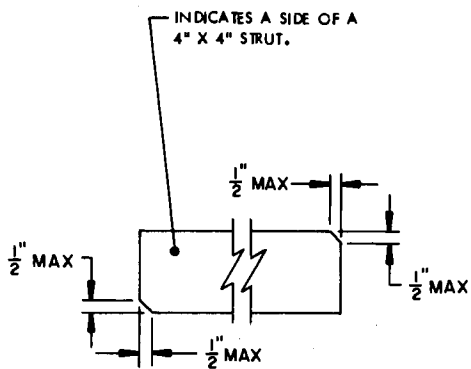
CENTER GATE "C" IS SHOWN AS TYPICAL. PLYWOOD MAY BE USED IN LIEU OF THE HORIZONTAL PIECES ON ANY CENTER GATE DEPICTED HEREIN, INCLUDING THOSE WHICH ARE FOR THE BRACING OF A SINGLE ROW.



INDICATES A TYPICAL CENTER GATE FOR A SINGLE ROW (2 REQD). CENTER GATE "A" FOR LENGTHWISE POSITIONED CONTAINERS IS SHOWN; USE CENTER GATE "B" IF THE CONTAINERS ARE POSITIONED CROSSWISE IN THE CAR. NOTE THAT THE "OUTER" TWO (2) GATE HOLD DOWNS WILL BE REQUIRED AT THE LOCATIONS SHOWN ON CENTER GATES "A" OR "B".

TIE PIECE APPLICATION

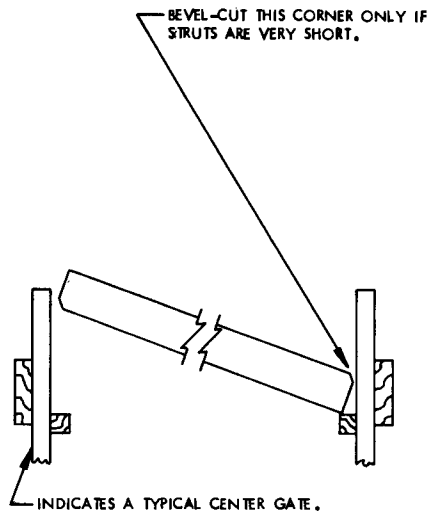
THIS PROCEDURE IS APPLICABLE FOR USE WITH ANY TWO CENTER GATES FOR SINGLE ROWS OF PALLET UNITS. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



INDICATES A SIDE OF A 4" X 4" STRUT.

BEVEL CUT

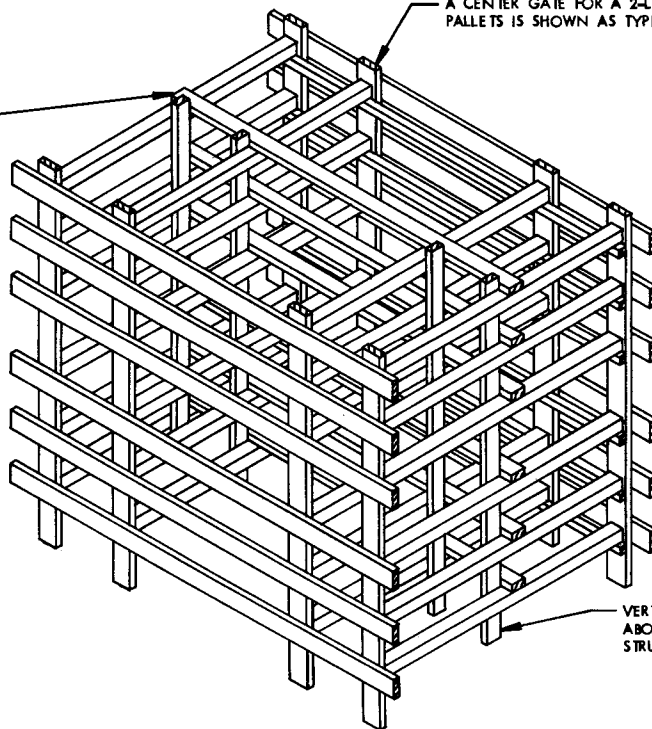
BEVEL CUTTING THE STRUTS AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". CAUTION: DO NOT BEVEL A CORNER MORE THAN ONE-HALF INCH (1/2").



STRUT INSTALLATION

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

HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

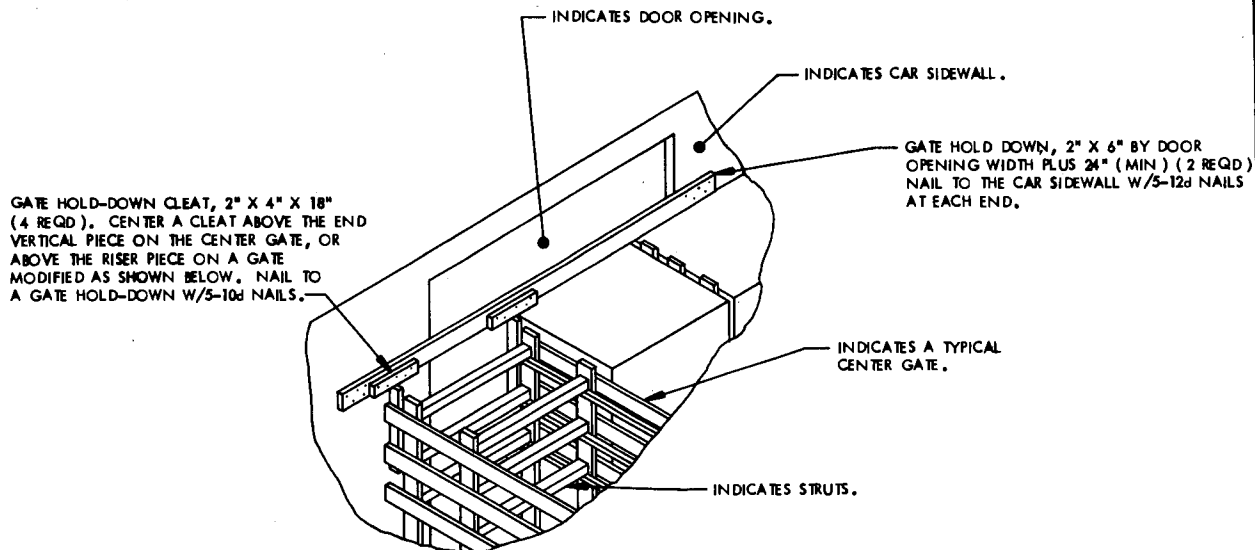


A CENTER GATE FOR A 2-LAYER LOAD OF LENGTHWISE POSITIONED PALLETS IS SHOWN AS TYPICAL.

VERTICAL PIECE, 2" X 4" BY A LENGTH TO EXTEND 2" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

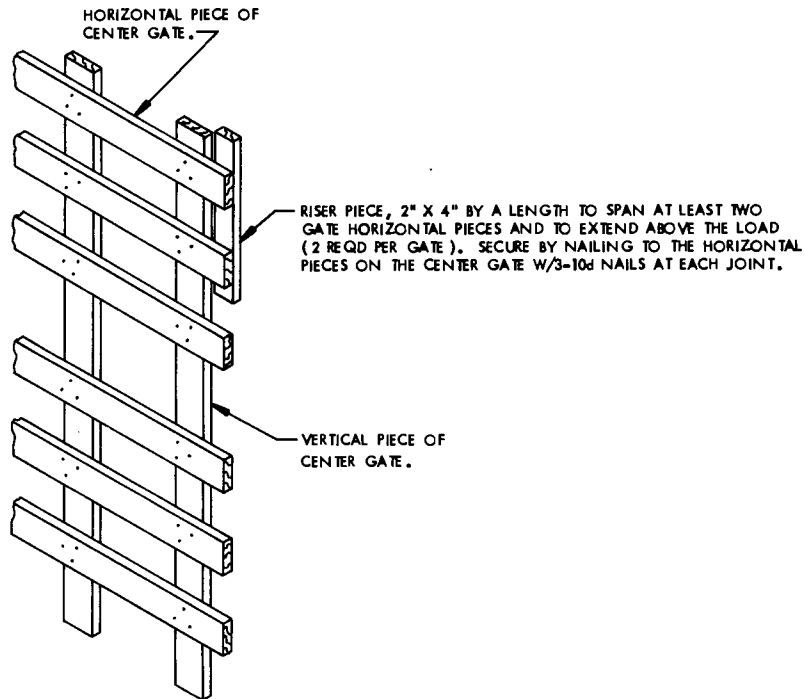
TYPICAL STRUT BRACING

SEE GENERAL NOTE "V" ON PAGE 3.



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:** FOR A GATE NOT 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.



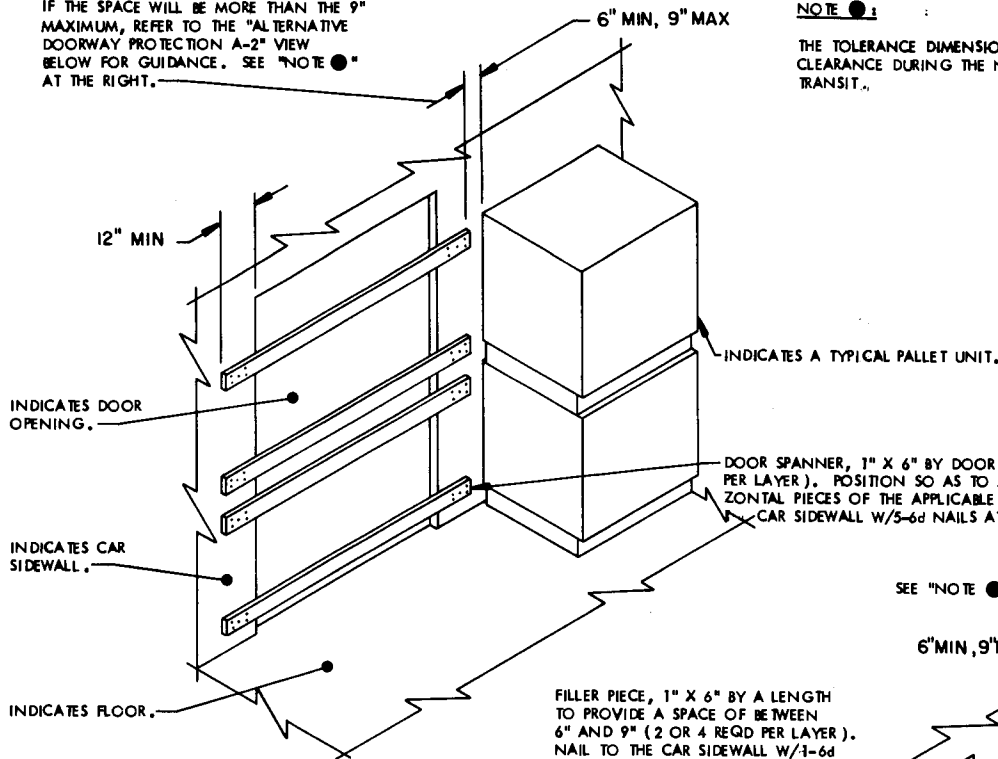
CENTER GATE MODIFICATION

THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR THE CENTER GATES WHICH HAVE THE VERTICAL PIECES INSET FROM THE END OF THE HORIZONTAL PIECES. THE RISER PIECE WILL PROVIDE A MEANS FOR CONTACTING THE GATE WITH THE GATE HOLD-DOWN AS SHOWN IN THE "ALTERNATIVE GATE HOLD-DOWN" DETAIL AT THE TOP OF THIS PAGE. CENTER GATE "C" IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR CENTER GATE "D".

IF THE SPACE WILL BE MORE THAN THE 9" MAXIMUM, REFER TO THE "ALTERNATIVE DOORWAY PROTECTION A-2" VIEW BELOW FOR GUIDANCE. SEE "NOTE 1" AT THE RIGHT.

NOTE 1

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



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. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 57 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED BY THE LOAD VIEWS ON PAGES 14 AND 16.

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 1" 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 1" ABOVE.

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 1" ABOVE.

INDICATES DOOR OPENING.

INDICATES DOOR OPENING.
INDICATES CAR SIDEWALL.
INDICATES OUTSIDE WALL OF CAR.

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. SEE THE NOTE UNDER THE "A-1" PROCEDURES.

INDICATES FILL MATERIAL NAILED TO THE SIDEWALL, OR A FILLER PIECE, 2" X 6" BY A LENGTH TO EQUAL THE LENGTH OF THE FILLER PIECE ON THE OPPOSITE SIDEWALL MINUS 1" (QUANTITY TO BE THE SAME AS FOR THE DOOR SPANNERS AND/OR FILLER PIECES ON THE OPPOSITE SIDEWALL). SEE "NOTE 1" ABOVE.

SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION AGAINST DOOR POST AND NAIL TO THE DOOR SPANNER PIECES W/3-10d NAILS AT EACH JOINT.

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.

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (2 REQD PER LAYER). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END. SEE THE APPLICABLE DOORWAY PROTECTION DETAIL FOR HEIGHT LOCATION.

VIEW B

VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD).

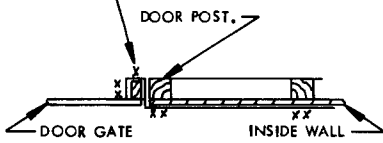
INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

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

INDICATES FLOOR.

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



VIEW B

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

ALTERNATIVE DOORWAY PROTECTION B

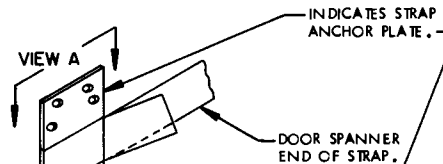
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUT NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE. THE VIEW SHOWN ABOVE IS FOR A TWO-LAYER LOAD.

SEAL FOR 1-1/4" STRAP (2 REQD PER STRAP). DOUBLE CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS.

DOORWAY PROTECTION STRAP, 1-1/4" X .035" STEEL STRAPPING BY DOOR OPENING WIDTH PLUS 8"-0" IN LENGTH (2 REQD PER LAYER). INSTALL FROM TWO (2) PIECES. THREAD ONE END THRU A STRAP ANCHOR PLATE AS SHOWN BY THE "APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE" DETAILS BELOW. NAIL STRAP ANCHOR PLATE TO CAR SIDEWALL W/4-SIGNODE NUMBER 27 RINGLOCK NAILS.

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.



ISOMETRIC VIEW

INDICATES STRAP ANCHOR PLATE.

DOOR SPANNER END OF STRAP.

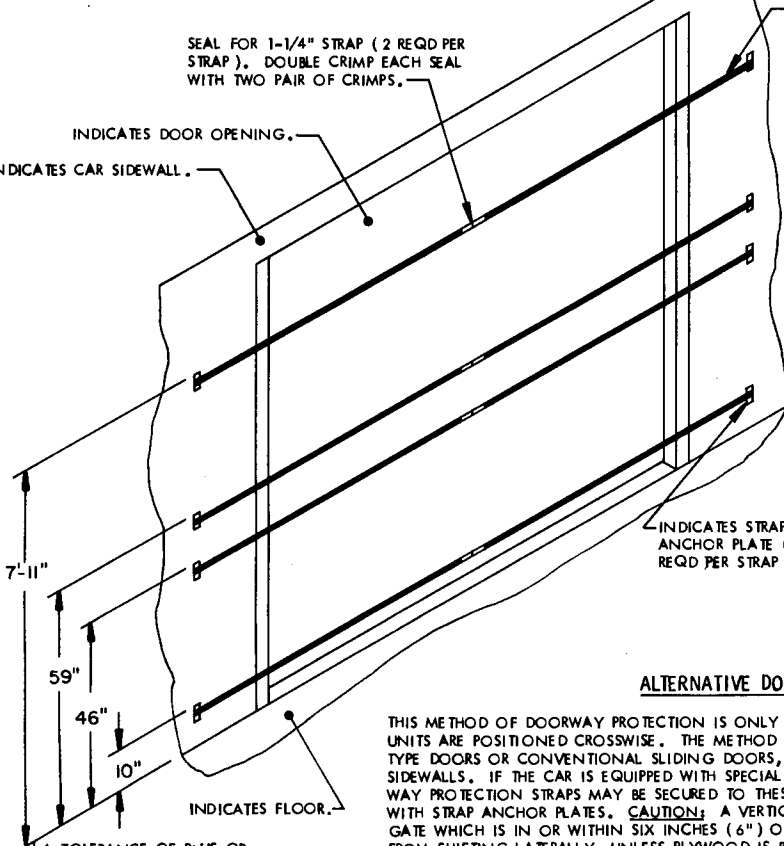
VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

THESE VIEWS DEPICT THE PROPER THREADING OF A DOORWAY PROTECTION STRAP THRU AN ANCHOR PLATE.

ALTERNATIVE DOORWAY PROTECTION C

THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED CROSSWISE. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. IF THE CAR IS EQUIPPED WITH SPECIAL ANCHOR RODS IN THE CAR DOOR POSTS, THE DOORWAY PROTECTION STRAPS MAY BE SECURED TO THESE RODS IN LIEU OF ATTACHING TO THE CAR SIDEWALL WITH STRAP ANCHOR PLATES. **CAUTION:** A VERTICAL PIECE MUST BE ADDED TO EACH END OF A CENTER GATE WHICH IS IN OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING, TO PREVENT THE GATE FROM SHIFTING LATERALLY, UNLESS PLYWOOD IS BEING USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES IN WHICH CASE THE ADDED VERTICAL PIECES WILL NOT BE REQUIRED.

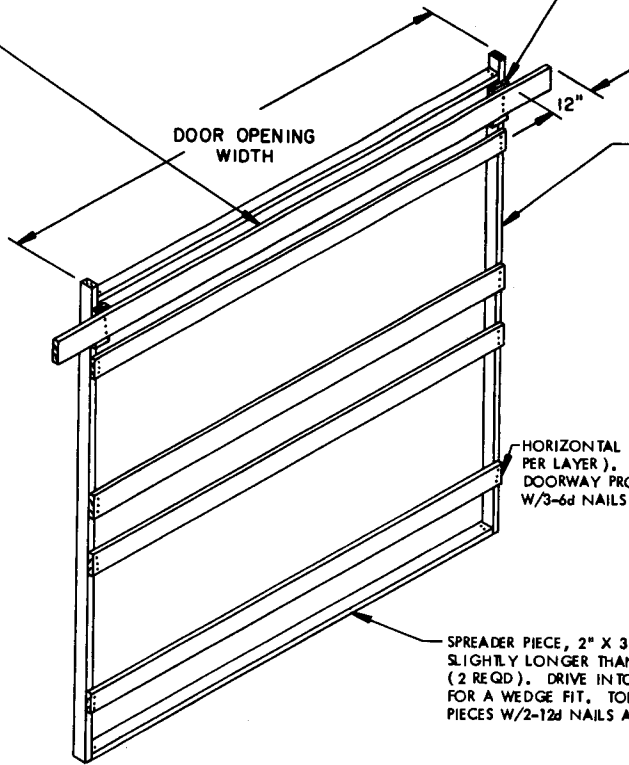


A TOLERANCE OF PLUS OR MINUS 2" IS PERMISSIBLE.

DOORWAY PROTECTION

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).

FILLER BLOCK, 1" X 4" X 9" (2 REQD). NAIL TO A VERTICAL PIECE W/4-6d NAILS.



DOOR OPENING WIDTH

VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD). NOTE THAT IF THE EXCESS SPACE ACROSS A CAR IS FILLED BY NAILING LUMBER TO THE CAR SIDEWALL, IT MAY BE NECESSARY TO INCREASE THE VERTICAL PIECES AND THE SPREADER PIECES TO 2" X 4" OR 2" X 6" MATERIAL. THIS WILL PROVIDE A SURFACE TO WEDGE BETWEEN THE DOOR POSTS WHEN THE GATE IS MOVED INWARD TO CONTACT THE LADING.

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (2 REQD PER LAYER). LOCATE AT HEIGHTS AS SPECIFIED BY THE APPLICABLE DOORWAY PROTECTION DETAIL. NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

SPREADER PIECE, 2" X 3" MATERIAL CUT SLIGHTLY LONGER THAN MEASURED DISTANCE (2 REQD). DRIVE IN TO POSITION TO PROVIDE FOR A WEDGE FIT. TOENAIL TO THE VERTICAL PIECES W/2-12d NAILS AT EACH END.

ALTERNATIVE DOORWAY PROTECTION D

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 57 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 55.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

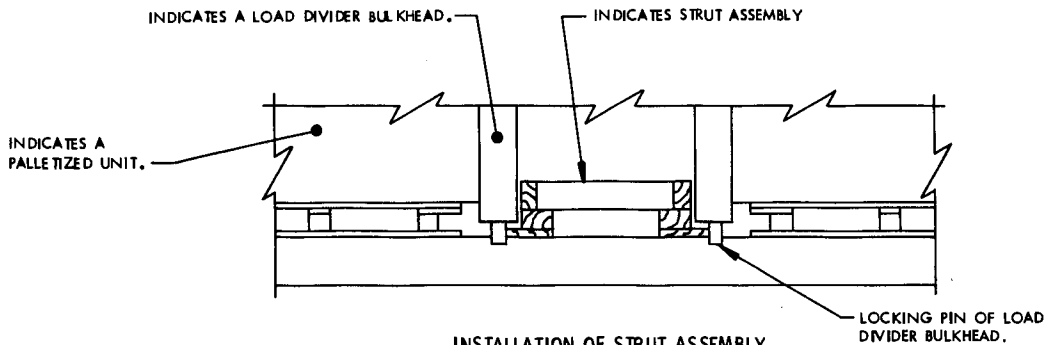
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

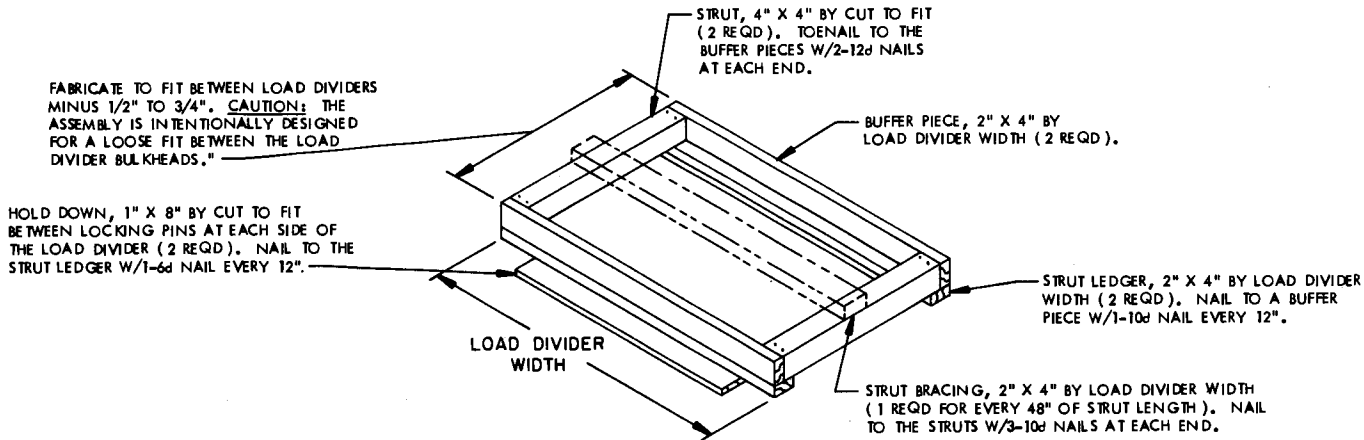
STRAP JOINT B

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



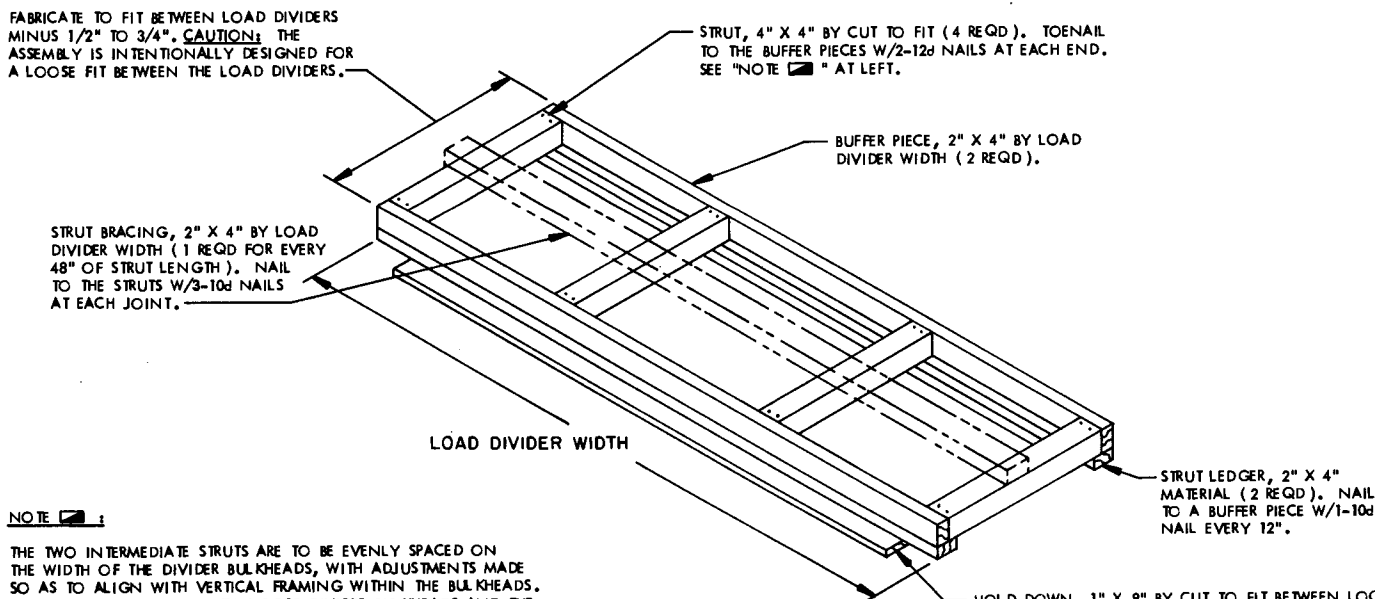
INSTALLATION OF STRUT ASSEMBLY

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 CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD. **NOTE:** TWO (2) ASSEMBLIES AS SHOWN ARE REQUIRED FOR A 2-PIECE BULKHEAD IF NOT LATERALLY ALIGNED. SEE "NOTE 1" BELOW.

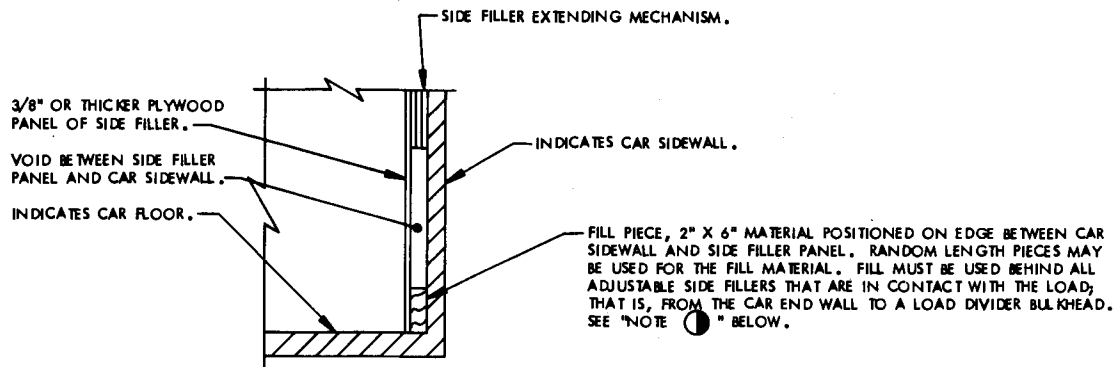


NOTE 1:

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 CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.

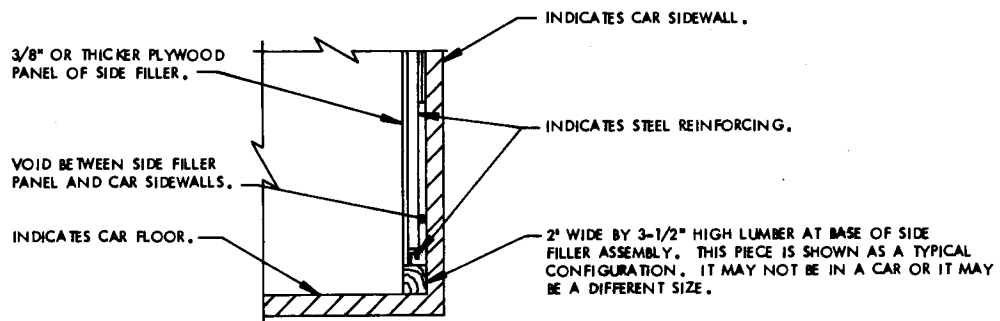


TYPICAL TYPE A

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 SHOW 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.