APPROVED BY
BUREAU OF EXPLOSIVES
DATE 8/19/91

LOADING AND BRACING ☼ (CL & LCL) IN BOX CARS OF COMPLETE ROUNDS * PACKED IN CYLINDRICAL METAL CONTAINERS AND UNITIZED ON A 40" X 59" WOODEN PALLET

PAI13 SERIES CONTAINER

INDEX

☼ 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.

* CARLOADING PROCEDURES CONTAINED WITHIN THIS DRAWING REFER TO THE VOLCANO MINE SYSTEM.

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	7/91	W. Smith		

APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND

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

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

U.S. ARMY MATERIEL COMMAND

FEBRUARY 1992

CLASS	DIVISION	DRAWING	FILE
19	48	4212/13	5PM 1003

PROJECT CA 225113-85

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).

B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE COMPLETE ROUND PACKED IN THE PA113 CONTAINER AND UNITIZED ON A 40" X 59" WOODEN PALLET. SEE THE PICTORIAL VIEW ON PAGE 3. REFER TO THE U.S. ARMY AMC DRAWING 19-48-4079/12-20PM1002 FOR UNITIZATION PROCEDURES FOR THE PA113 SERIES CONTAINER.

C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX CARS, FOR SHIPMENTS IN BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

D. CAUTION: METAL COMPLETE ROUND CONTAINERS THAT ARE FLUSH WITH OR OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL 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 40 FOR GUIDANCE.

E. PALLET UNITS 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.

F. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLET UNITS OF COMPLETE ROUNDS IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE IN OTHERWISE PROPER CONDITION, IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS, WILL BE SELECTED.

G. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 41 FOR GUIDANCE.

H. CONVENTIONAL BOX CARS EQUIPPED WITH SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CONVENTIONAL CARS EQUIPPED WITH PLUG DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.

J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. UNLESS PROHIBITED WITHIN THE SPECIAL NOTES, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.

K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLET UNITS OF COMPLETE ROUNDS, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

LUMBER----------: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.

NAILS----------: COMMON, FED SPEC FF-N-105.

STRAPPING, STEEL -: ASTM D 3953; FLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.

STRAP SEAL--------: ASTM D 3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.

STRAP STAPLE ------: COMMERCIAL GRADE.

PLYWOOD---------: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC 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 SF, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

(GENERAL NOTES CONTINUED)

L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. 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".

M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR SIDEWALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS OR SIDEWALL BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED BOX CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALTIY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.

O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 39 FOR GUIDANCE.

P. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDEWALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.

Q. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

R. 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 BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "M" ABOVE.

S. NOTICE: WHEN POSITIONING PALLET UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLET UNITS 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 PALLET UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF THE 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.

T. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY KEY NUMBERS (7) AND (8) ON PAGE 6. 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 THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES 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.

U. 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

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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 43 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.

V. WHERE 2" X 2" PIECES ARE SPECIFIED FOR STRUT LEDGERS, 2" X 4" MATERIAL MAY BE SUBSTITUTED IF DESIRED.

W. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

X. THE OUTLOADING PROCEDURES FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS AND DOORWAY MEMBERS WITHIN THESE CARS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. CAUTION: BOX CARS EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.

1. FOR BLOCKING THE LOAD WHICH IS DEPICTED, A CROSS MEMBER WILL NOT BE RELIED UPON TO RETAIN MORE LADING ON EITHER SIDE THAN AS SHOWN. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM AND CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE SPACING OF THE LOCKING HOLES IN THE WALL MEMBERS PERMIT. LOCKING BARS (LEVER JACKS) SHOULD BE USED FOR THIS PURPOSE. AN ADDITIONAL 1/2" OF ADJUSTMENT CAN BE MADE BY TURNING A CROSS MEMBER END-FOR-END WHEN LOCKING PINS ON THE MEMBER ARE OFF-CENTER. NOTE: IT IS RECOMMENDED THAT EACH CROSS MEMBER BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CAR).

2. CAUTION: ALL BLOCKING AND BRACING COMPONENTS IN EMPTY CARS AND ALL UNUSED COMPONENTS IN LOADED CARS MUST BE "SECURED" FOR SHIPMENT---ADJUSTABLE WALL MEMBERS TO VERTICAL WALL ATTACHMENT RAILS, AND CROSS MEMBERS TO ADJUSTABLE WALL MEMBERS, AND DOORWAY MEMBERS TO DOOR POSTS. COMPONENTS ASSIGNED TO EACH CAR MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.

Y. IN A CAR EQUIPPED WITH ADJUSTABLE WALL MEMBERS, PROVIDING THE FIXED WALL MEMBERS WHICH ARE PRESENT IN SOME "ADJUSTABLE" CARS ARE NOT PROPERLY POSITIONED TO PROVIDE SIDE BEARING SURFACES BETWEEN THE UNITS AND THE CAR SIDEWALLS, ADJUSTABLE WALL MEMBERS (AS REQUIRED) MUST BE INSTALLED TO PROVIDE A MINIMUM OF ONE SURFACE AREA FOR SIDE BEARING AT SOME LOCATION WITHIN THE UPPER HALF OF EACH UNIT.

Z. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHOD.

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

AA. CAUTION: FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN THE OFFICIAL RAILWAY EQUIPMENT REGISTER, WILL BE RBL, XL, OR XLI.

BB. 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. NOTICE: ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN (15") OF TRAVEL ARE ACCEPTABLE.

CC. 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 49 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 49 THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

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(GENERAL NOTES CONTINUED)

DD. NOTICE: AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.

EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS 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 "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 48.

FF. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN A CAR END WALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF PALLET UNITS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.

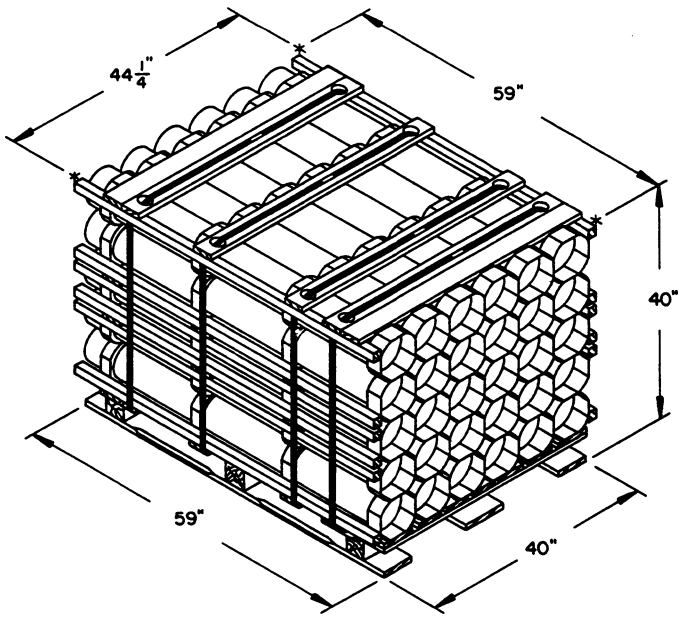
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 18 AND 19.

2. THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGE 17 FOR GUIDANCE.

3. AT LOCATION (S) WHERE K-BRACES 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 A ONE-HIGH LOADING PATTERN. INSTALL CENTER GATES AND STRUTS AS SHOWN ON PAGE 6 OF THE 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 BULKHEAD ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 30 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 26.

GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHOD.



PALLET UNIT

CONTAINER ----------30 EACH @ 85 LBS (APPROX)
CUBE ---------- 60.4 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 2,741 LBS (APPROX)

(KEY NUMBERS CONTINUED)

⑯ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 37. NAIL TO THE DOOR POSTS W/12d NAILS.

KEY NUMBERS FOR CARS EQUIPPED WITH PLUG DOORS

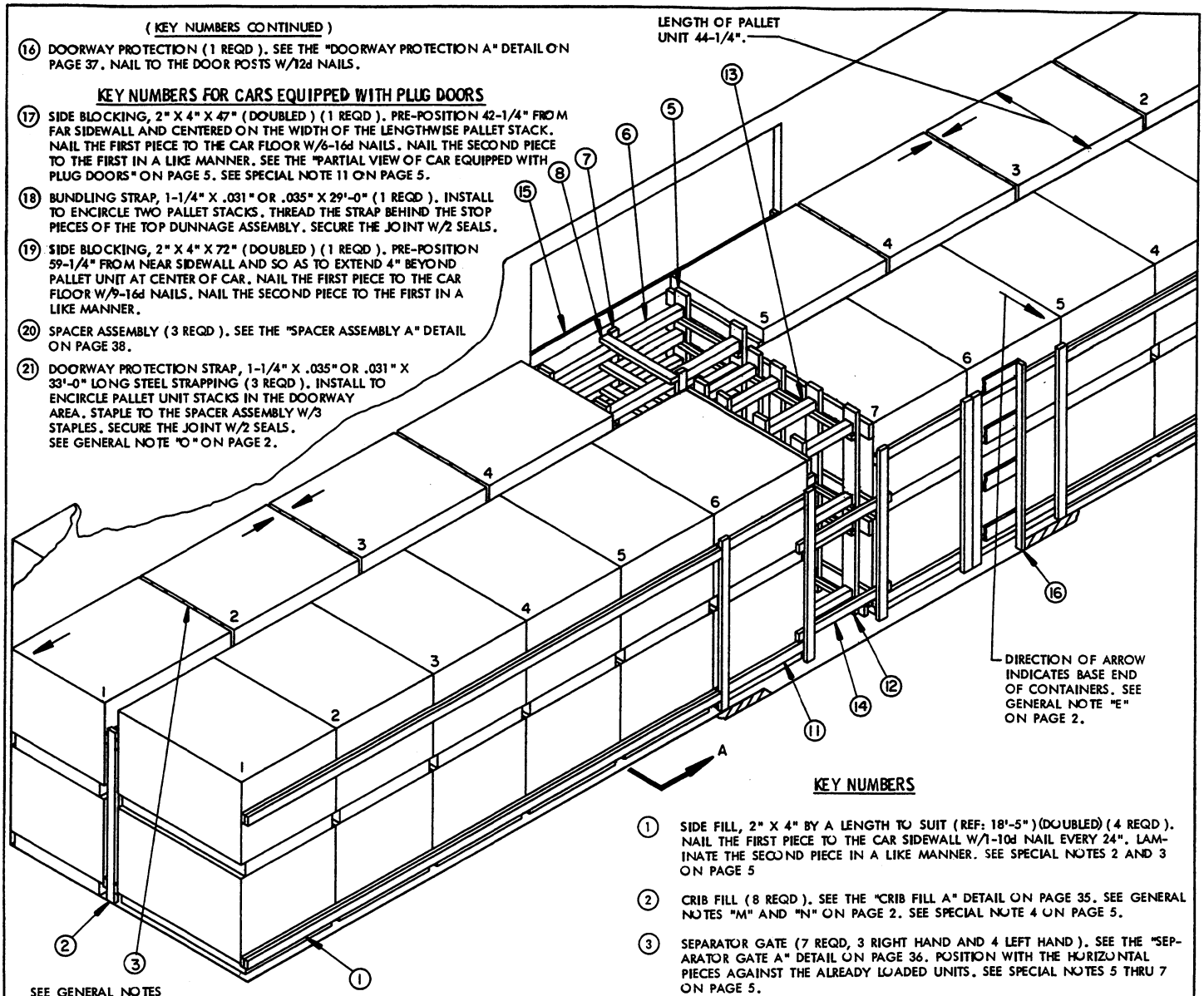
⑰ SIDE BLOCKING, 2" X 4" X 47" (DOUBLED) (1 REQD). PRE-POSITION 42-1/4" FROM FAR SIDEWALL AND CENTERED ON THE WIDTH OF THE LENGTHWISE PALLET STACK. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL VIEW OF CAR EQUIPPED WITH PLUG DOORS" ON PAGE 5. SEE SPECIAL NOTE 11 ON PAGE 5.

⑱ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 29'-0" (1 REQD). INSTALL TO ENCIRCLE TWO PALLET STACKS. THREAD THE STRAP BEHIND THE STOP PIECES OF THE TOP DUNNAGE ASSEMBLY. SECURE THE JOINT W/2 SEALS.

⑲ SIDE BLOCKING, 2" X 4" X 72" (DOUBLED) (1 REQD). PRE-POSITION 59-1/4" FROM NEAR SIDEWALL AND SO AS TO EXTEND 4" BEYOND PALLET UNIT AT CENTER OF CAR. NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

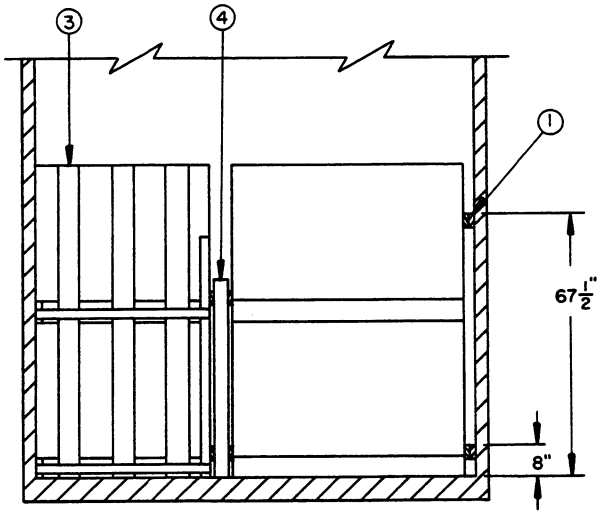
⑳ SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 38.

㉑ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES. SECURE THE JOINT W/2 SEALS. SEE GENERAL NOTE "O" ON PAGE 2.



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

ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 18'-5") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 2 AND 3 ON PAGE 5

② CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 35. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 4 ON PAGE 5.

③ SEPARATOR GATE (7 REQD, 3 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 36. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 5.

④ CRIB FILL (5 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 35. SEE SPECIAL NOTE 8 ON PAGE 5.

⑤ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 35. SEE SPECIAL NOTE 9 ON PAGE 5.

⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 64") (12 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.

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

⑧ HORIZONTAL STRUT BRACING, 2" X 4" X 36" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑨ STRUT, 2" X 4" BY CUT TO FIT (REF: 64") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED ⑤ W/2-12d NAILS AT EACH END.

⑩ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 31") (2 REQD). TOENAIL TO THE STRUT LEDGERS ON THE MODIFIED CRIB FILL "B" ASSEMBLIES AT THE CENTER OF THE CAR W/2-12d NAILS AT EACH END.

⑪ SIDE FILL ASSEMBLY (3 REQD). SEE THE DETAIL ON PAGE 43.

⑫ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE B" DETAIL ON PAGE 36.

⑬ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (16 REQD). TOENAIL TO PIECES MARKED ⑫ W/2-16d NAILS AT EACH END.

⑭ SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 44") (2 REQD). POSITION AT 12" AND 49" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑪ W/3-10d NAILS AT EACH JOINT.

⑮ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 37. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 5.

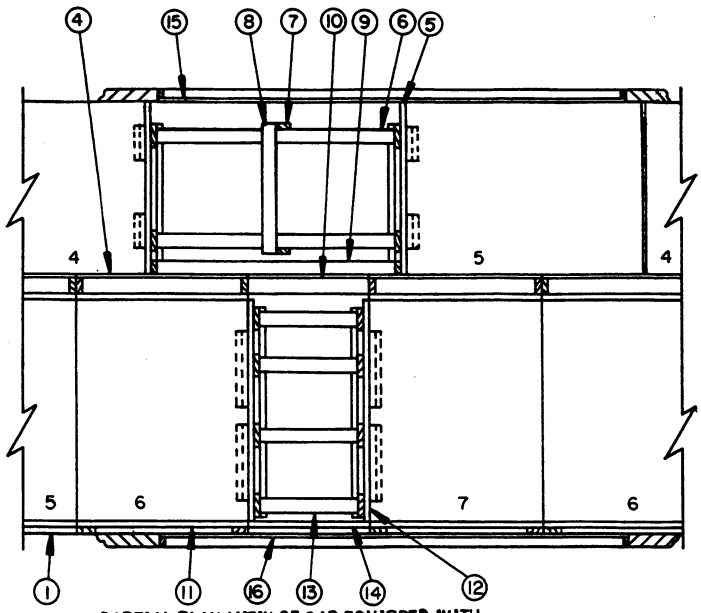
(CONTINUED ABOVE)

44-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

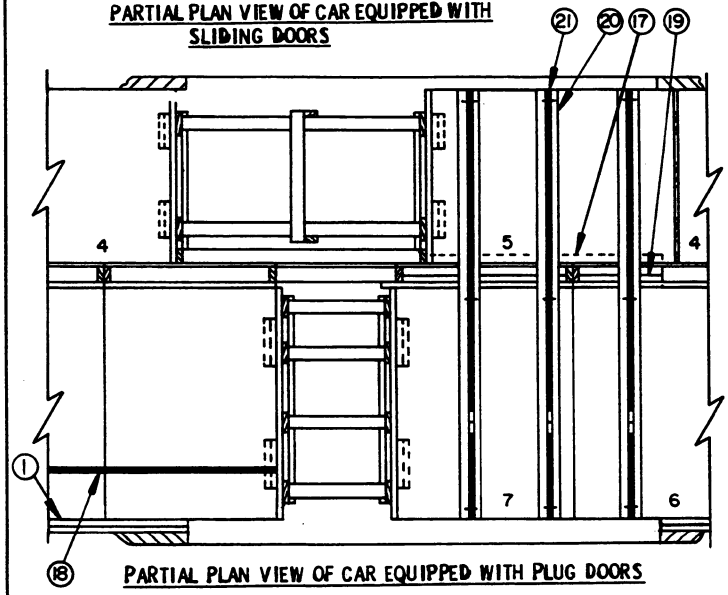
SACAC FORM 6-1, 1 NOV 87

SUPERSEDES SACAC FORM 6, 1 NOV 85

PROJECT CA 225/13-85



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED 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 NOTE "D" ON PAGE 2.

2. THE SIDE FILL, PIECE MARKED ① , IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT WILL CONTACT ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑪ , MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ① .

3. WHEN USING THE PLUG DOOR PROCEDURES SHOWN AT LEFT IN A CAR WITH NAILABLE SIDEWALLS, THE SIDE FILL, PIECE MARKED ① , WILL BE EXTENDED TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑪ , AND THE SIDE FILL ASSEMBLY RETAINER, PIECE MARKED ⑭ .

4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ② , MUST BE INSTALLED IN EACH END OF THE LOAD REGARDLESS OF THE CAR LENGTH WHEN LOADING CARS WHICH ARE 9'-4" OR 9'-6" WIDE. LATERAL FILL IS NOT REQUIRED IN 9'-2" WIDE CARS. PIECES MARKED ② , ④ , AND ⑩ , AND THE STOP PIECES ON CENTER GATE "A", MAY THEN BE OMITTED WHEN LOADING 9'-2" WIDE CARS.

5. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 4, 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 1" X 3" HORIZONTAL PIECES ARE LOCATED UNDER THE WINGS OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

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 41 FOR CONSTRUCTION GUIDANCE.

7. SEPARATOR GATES IN THE DOORWAY OR WITHIN SIX INCHES (6") OF BEING IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE WIRE TIED TO A HORIZONTAL PIECE OF THE ADJACENT CRIB FILL, PIECE MARKED ④ , TO PREVENT DISPLACEMENT.

8. NOTE THAT THE CRIB FILL USED IN THE CENTER OF THE CAR MUST HAVE STRUT LEDGERS ADDED TO IT AS SHOWN BY THE PHANTOM LINES ON THE DETAIL SHOWN ON PAGE 35 SO AS TO BE ABLE TO INSTALL THE CRIB FILL RETAINER, PIECE MARKED ⑩ .

9. 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 42 FOR GUIDANCE.

10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑮ AND ⑯ IN THE LOAD ON PAGE 4, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 45 THRU 47 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS" FOR GUIDANCE. NOTE THAT THE VERTICAL PIECES OF THE CRIB FILL, PIECES MARKED ④ , IN THE DOORWAY MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF SOME OF THE PIECES SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING. NOTE: TWO DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE STACK LENGTH OR WIDTH.

11. WHEN USING THE DOORWAY PROTECTION PROCEDURES SHOWN BY THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS" AT LEFT IN A CAR WHICH IS 9'-2" WIDE, A DOUBLED 2" X 6" X 72" PIECE WILL BE USED IN LIEU OF PIECES MARKED ⑰ AND ⑲ . POSITION AS SPECIFIED WITHIN KEY NUMBER ⑲ .

(CONTINUED ON PAGE 7)

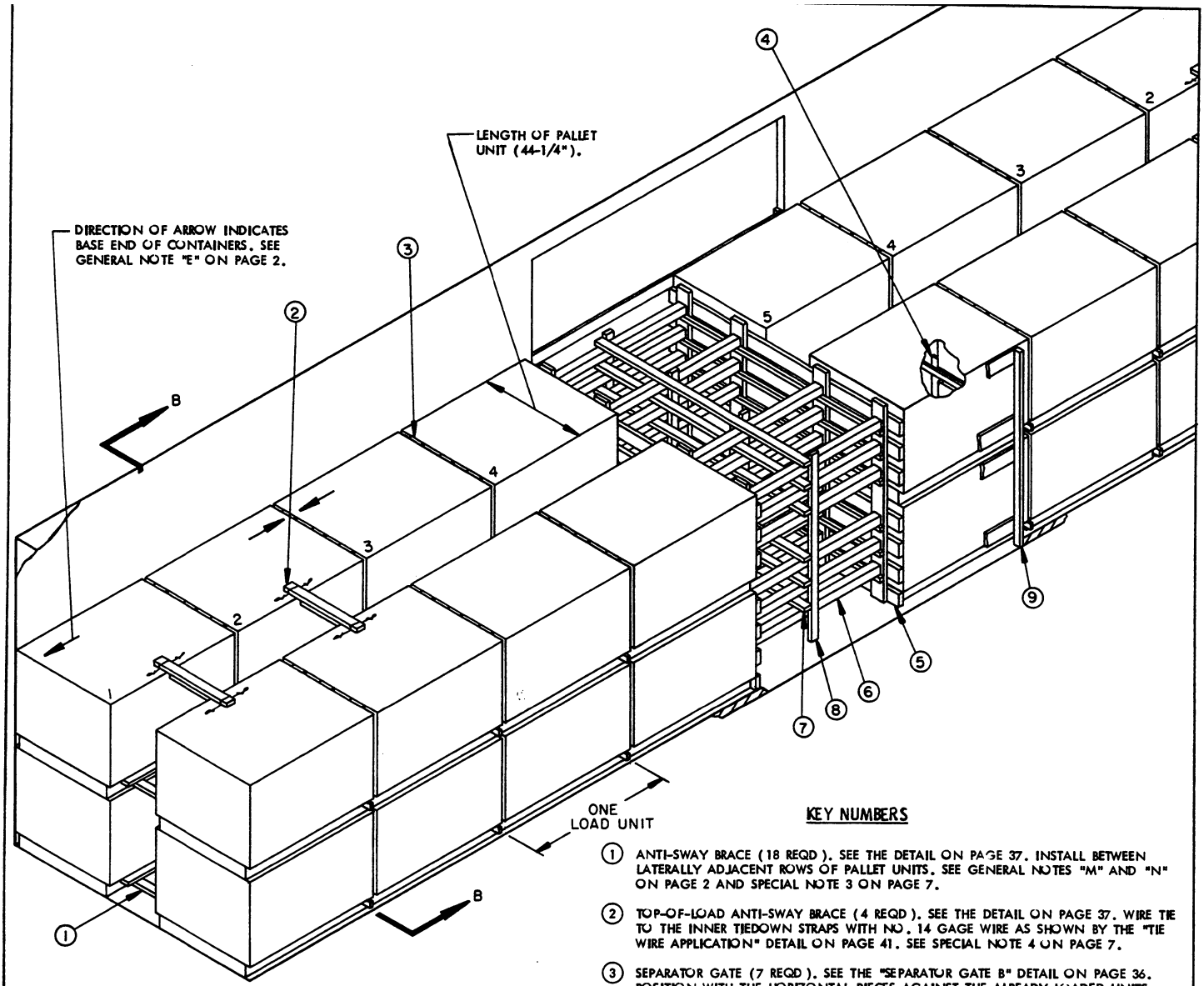
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	52	26
1" X 4"	233	78
1" X 6"	220	110
2" X 2"	72	24
2" X 3"	34	17
2" X 4"	415	277
2" X 6"	183	183
4" X 4"	98	131
NAILS	**NO. REQD**	**POUNDS**
6d (2")	410	2-1/2
10d (3")	512	8
12d (3-1/4")	28	1
16d (3-1/2")	112	2-1/2

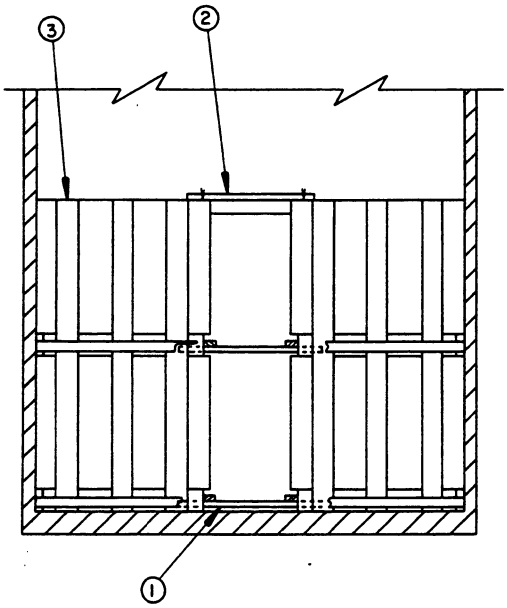
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	44	120,604 LBS
DUNNAGE		1,706 LBS
TOTAL WEIGHT		122,310 LBS*

*LOAD LIMIT OF AT LEAST 132,800 POUNDS IS REQUIRED.



ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

(1) ANTI-SWAY BRACE (18 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 7.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE DETAIL ON PAGE 37. WIRE TIE TO THE INNER TIEDOWN STRAPS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. SEE SPECIAL NOTE 4 ON PAGE 7.

(3) SEPARATOR GATE (7 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 7.

(4) STOP PIECE, 1" X 4" X 48" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3), WHICH IS WITHIN 6" OF THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT UNITS AND NAIL TO THE HORIZONTAL PIECES W/2-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 7.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 38. SEE SPECIAL NOTES 8 THRU 10 ON PAGE 7.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 64") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "T" ON PAGE 2 AND GENERAL NOTE "U" ON PAGE 3.

(7) HORIZONTAL STRUT BRACING, 2" X 4" X 8'-7" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(8) VERTICAL STRUT BRACING, 2" X 4" X 6'-5" (4 REQD) NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(9) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 37. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 7.

36-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 31 FOR SHIPPING GUIDANCE.

14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 34 FOR GUIDANCE.

(SPECIAL NOTES CONTINUED FROM PAGE 5)

12. THE DEPICTED LOAD CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE PALLET UNIT BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 16 OR 17. THE LOAD CAN BE REDUCED BY TWO PALLET UNITS BY OMITTING THE CROSSWISE STACK NO. 6. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED (13) . THREE PALLET UNITS CAN BE OMITTED BY USING A COMBINATION OF BOTH METHODS. IF THE LOAD IS TO BE REDUCED BY FOUR UNITS, OMIT STACKS NO. 5 AND 7. ADDITIONAL STRUT BRACING, PIECES MARKED (7) AND (8) , WILL BE REQUIRED, AS WELL AS STRUT BRACING FOR PIECES MARKED (13) . DOORWAY PROTECTION, PIECE MARKED (15) , WILL THEN NOT BE REQUIRED.

13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 31 FOR LENGTHWISE UNITS AND PAGES 32 AND 33 FOR CROSSWISE UNITS.

14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 34 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. A MAXIMUM OF TWENTY-EIGHT (28) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,748 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-FOUR (44) UNITS CAN BE LOADED IN A 60'-8" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 120,604 POUNDS. NOTE THAT A LOAD LIMIT OF AT LEAST 88,700 POUNDS IS REQUIRED FOR A FULL LOAD IN A 40'-6" LONG CAR, A LOAD LIMIT OF AT LEAST 110,800 POUNDS IS REQUIRED FOR THE DEPICTED LOAD, AND A LOAD LIMIT OF AT LEAST 132,800 POUNDS IS REQUIRED FOR A FULL LOAD IN A 60'-8" LONG CAR.

3. IF THE ALTERNTAIVE DOORWAY PROTECTION PROCEDURES AS SHOWN IN THE LOAD ON PAGE 12 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (9) , NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 6, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE INNER TIEDOWN STRAPS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. TWO (2) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF 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 (3) , SO THE 1" X 3" HORIZONTAL PIECES ARE LOCATED UNDER THE "WINGS" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

6. SEPARATOR GATES IN THE DOORWAY OR WITHIN SIX INCHES (6") OF THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECE MARKED (4) . IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO THREE 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 41 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 42 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 6, INSTALL TWO (2) "CENTER GATES D" AS SHOWN ON PAGE 39. 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 42.

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 NAILABLE SIDEWALLS. SEE THE "ALTERNATIVE GATE HOLD-DOWN" AND "CENTER GATE "C" MODIFICATION" DETAILS ON PAGE 44.

11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (9) IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 45 THRU 47 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE ALTERNATIVE DOORWAY PROTECTION IN THE LOAD ON PAGE 12 FOR GUIDANCE.

12. 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 14 THRU 30 FOR GUIDANCE.

(CONTINUED ABOVE)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	128	32
1" X 4"	8	3
1" X 6"	360	180
2" X 2"	102	34
2" X 3"	27	14
2" X 4"	290	194
2" X 6"	252	252
4" X 4"	128	171
NAILS	**NO. REQD**	**POUNDS**
6d (2")	308	2
10d (3")	648	10
12d (3-1/4")	54	1
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 40' REQD ---------- 1 LB		

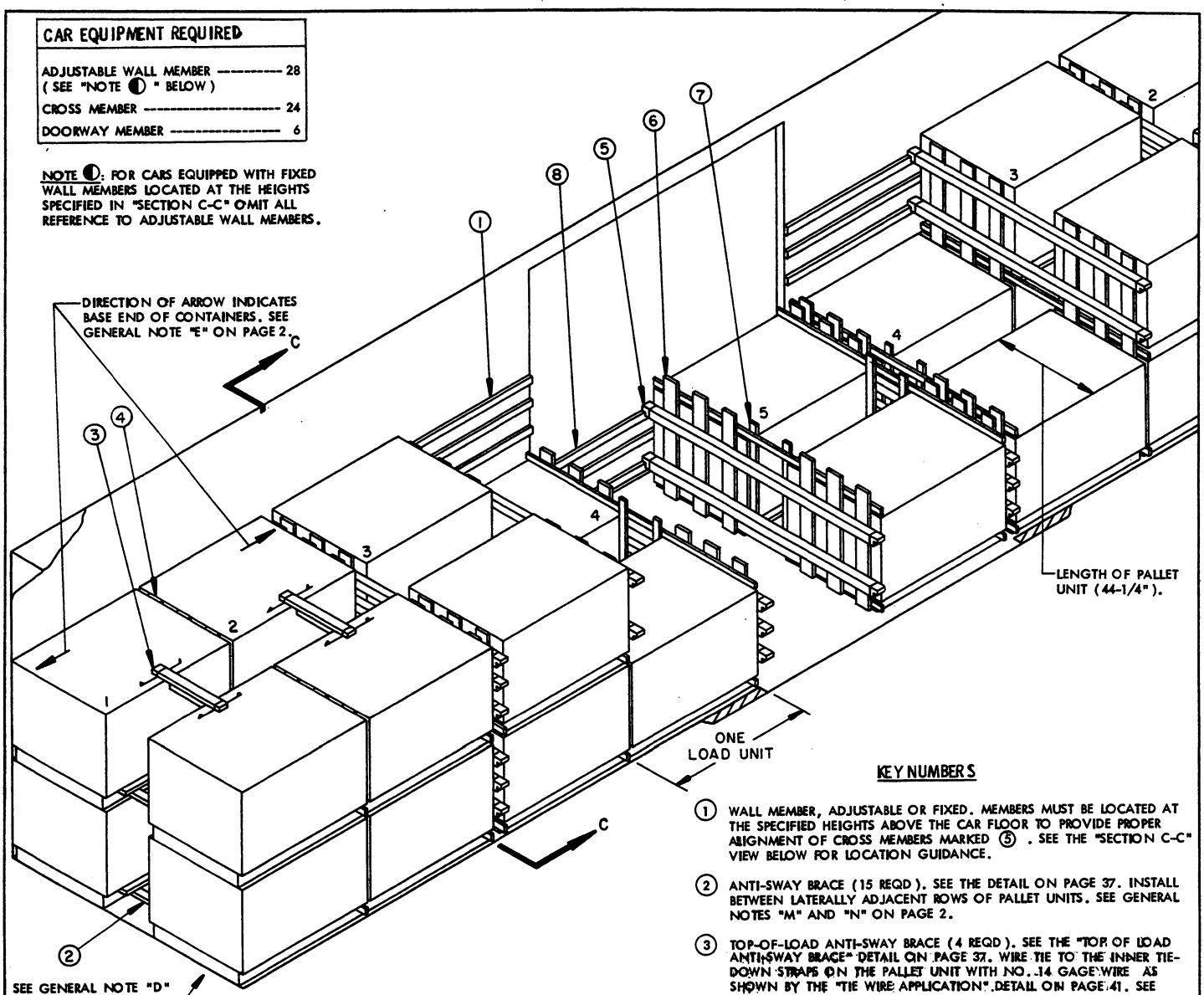
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	36	98,676 LBS
DUNNAGE		1,777 LBS
TOTAL WEIGHT		100,453 LBS

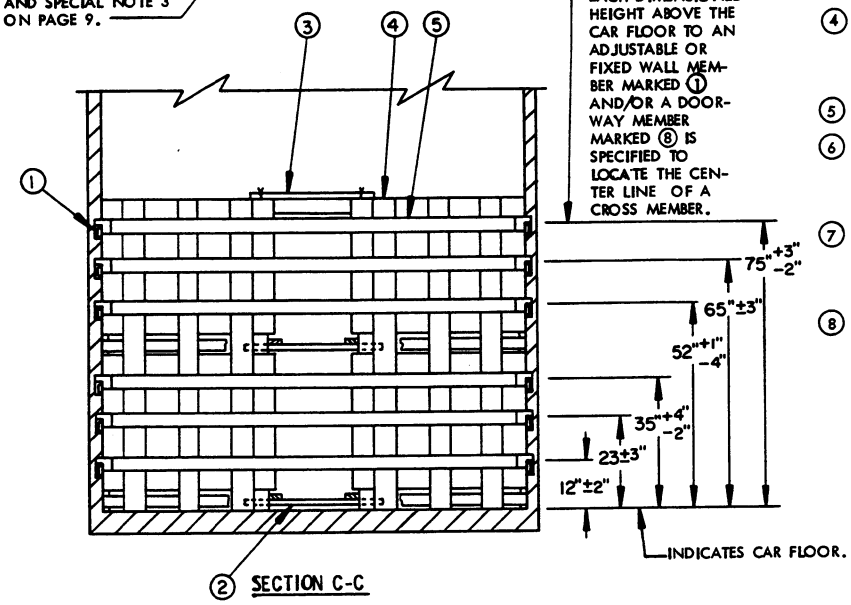
36-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐" BELOW)	28
CROSS MEMBER	24
DOORWAY MEMBER	6

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



ISOMETRIC VIEW



② SECTION C-C

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤ . SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (15 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE "TOP OF LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 37. WIRE TIE TO THE INNER TIE-DOWN STRAPS ON THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. SEE SPECIAL NOTE 4 ON PAGE 9.

④ SEPARATOR GATE FOR 2-HIGH (8 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 9.

⑤ CROSS MEMBER (24 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

⑥ SEPARATOR GATE FOR 1-HIGH (4 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 9.

⑦ STOP PIECE, 1" X 4" X 48" (8 REQD). POSITION SO AS TO BE AGAINST PALLET UNITS IN THE DOORWAY AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ⑥ W/2-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 9.

⑧ DOORWAY MEMBER (6 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 9.

30-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES

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. IF THE 50'-6" LONG CAR FURNISHED IS EQUIPPED WITH 9'-0" OR NARROWER DOOR OPENINGS, THIRTY-FOUR (34) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 93,194 POUNDS, CAN BE LOADED. A CAR HAVING A LOAD LIMIT OF AT LEAST 99,700 POUNDS WILL BE REQUIRED. SEE GENERAL NOTE "D" ON PAGE 2.

2. A MAXIMUM OF TWENTY-TWO (22) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,302 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR HAVING 10'-0" WIDE DOOR OPENINGS. TWENTY-SIX (26) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,266 POUNDS CAN BE LOADED IN CARS HAVING 9'-0" OR NARROWER DOOR OPENINGS. A CAR HAVING A LOAD LIMIT OF AT LEAST 88,600 POUNDS WILL BE REQUIRED FOR A 26-UNIT LOAD. THIRTY-EIGHT (38) PALLET UNITS CAN BE PLACED IN A 60'-8" LONG CAR, FOR AN APPROXIMATE LADING WEIGHT OF 104,158 POUNDS, IF THE CAR HAS A LOAD LIMIT OF AT LEAST 110,900 POUNDS AND HAS 10'-0" WIDE DOOR OPENINGS. FORTY-TWO (42) UNITS CAN BE LOADED IF THE DOOR OPENINGS ARE 8'-0" OR NARROWER. THE LADING WEIGHT WILL THEN BE APPROXIMATELY 121,400 POUNDS AND THE LOAD LIMIT MUST BE AT LEAST 121,900 POUNDS.

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 "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.

4. TOP-OF-LOAD ANTI-SWAY BRACE, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE INNER TIEDOWN STRAPS OF THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. TWO (2) BRACES ARE REQUIRED IN EACH END OF A CAR REGARDLESS OF 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 1" X 3" TIE PIECES ARE LOCATED UNDER THE "WINGS" OF THE PALLET UNITS. 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 ⑦. 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 41 FOR CONSTRUCTION GUIDANCE.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, ADDITIONAL 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 MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 10 AND 11 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 34 FOR GUIDANCE.

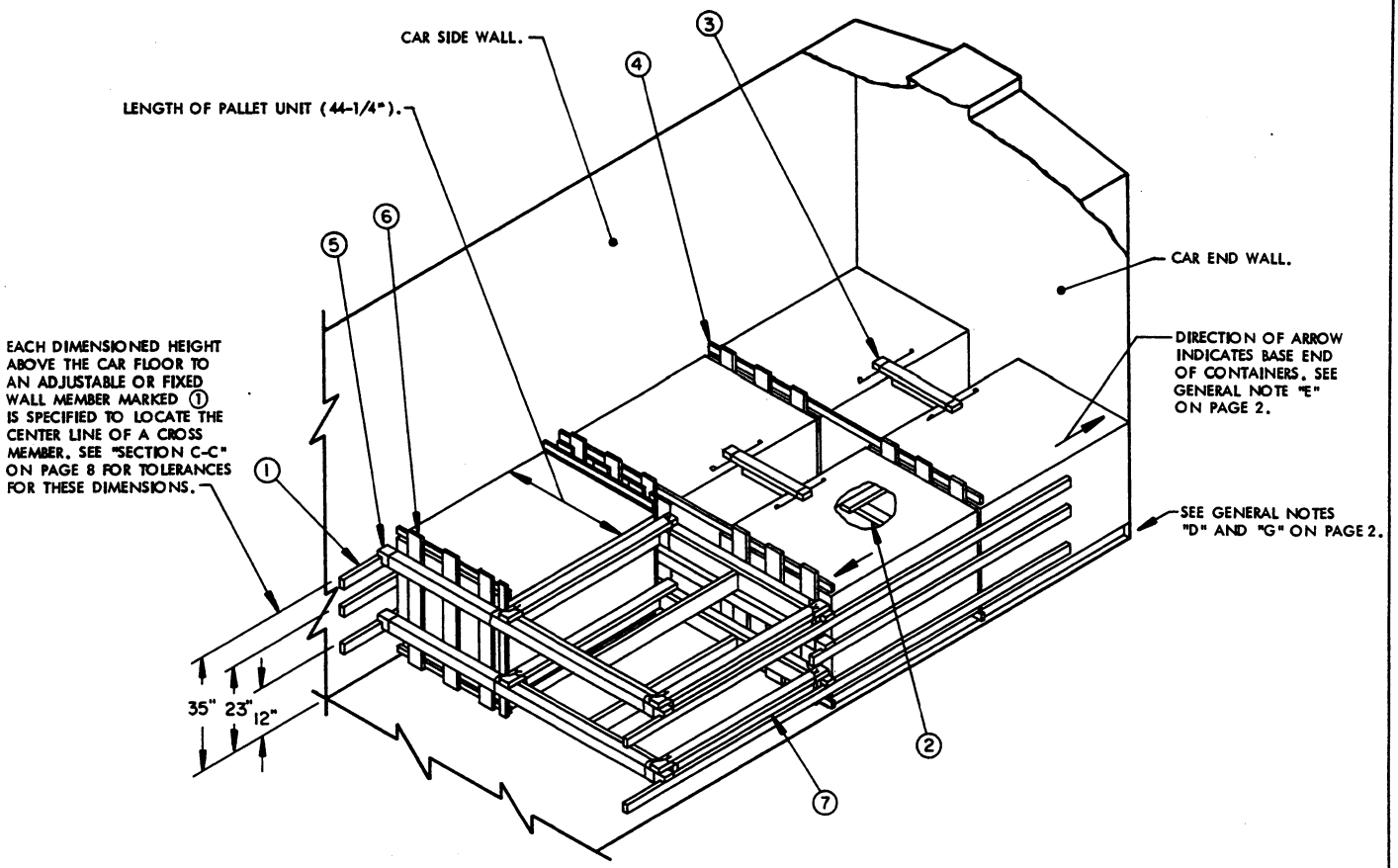
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	216	54
1" X 4"	32	11
1" X 6"	411	206
2" X 4"	169	113
2" X 6"	63	63
NAILS	**NO. REQD**	**POUNDS**
6d (2")	464	2-3/4
10d (3")	180	3
12d (3-1/4")	20	1/2
WIRE, NO. 14 GAGE ----------	40' ----------	1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -------	30 ----------	82,230 LBS
DUNNAGE ----------		902 LBS
TOTAL WEIGHT ----------		83,132 LBS

30-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



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. TWO (2) 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; FOR THE HEIGHT OF THE GATE, 40" WIDE PLYWOOD WILL BE ADEQUATE.

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 . SEE SPECIAL NOTE 5.

② ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 37. WIRE TIE TO THE INNER TIEDOWN STRAPS ON THE UNIT AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. SEE SPECIAL NOTE 3.

④ SEPARATOR GATE FOR 1-HIGH BY 2-WIDE (2 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION AS SHOWN WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 4.

⑤ CROSS MEMBER (5 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

⑥ SEPARATOR GATE FOR 1-HIGH BY 1-WIDE (2 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 36.

⑦ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 11 AND SPECIAL NOTE 5 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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

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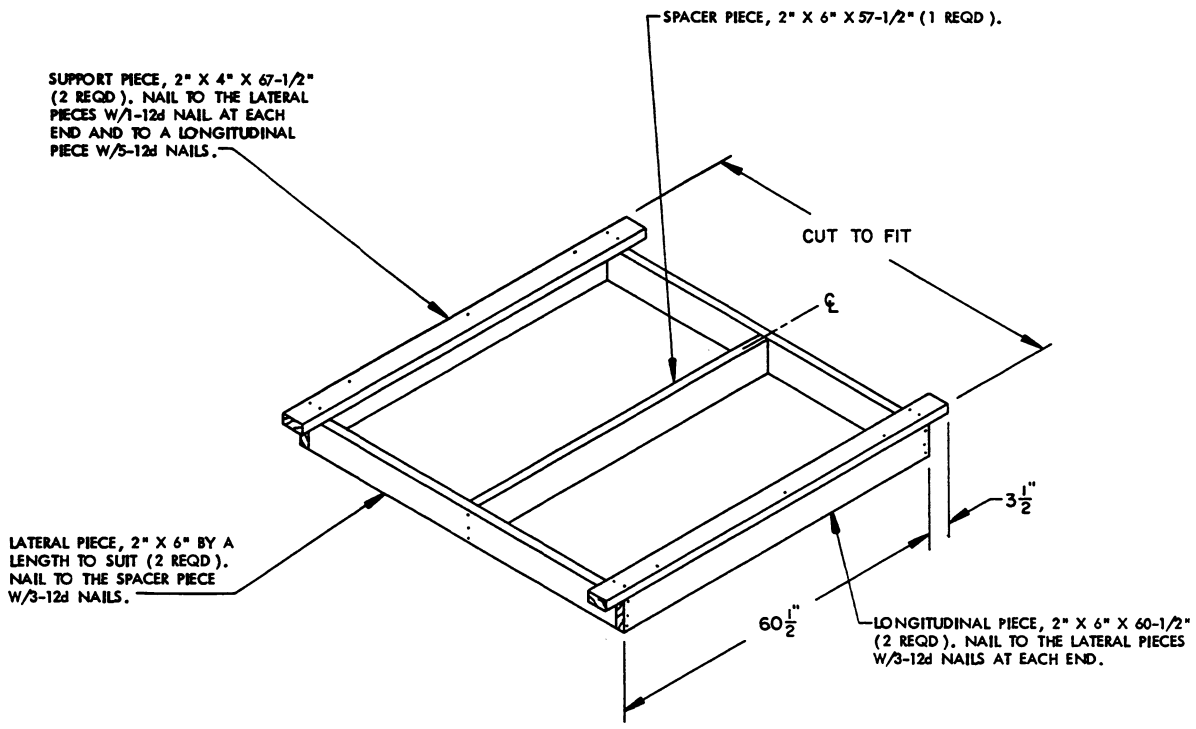
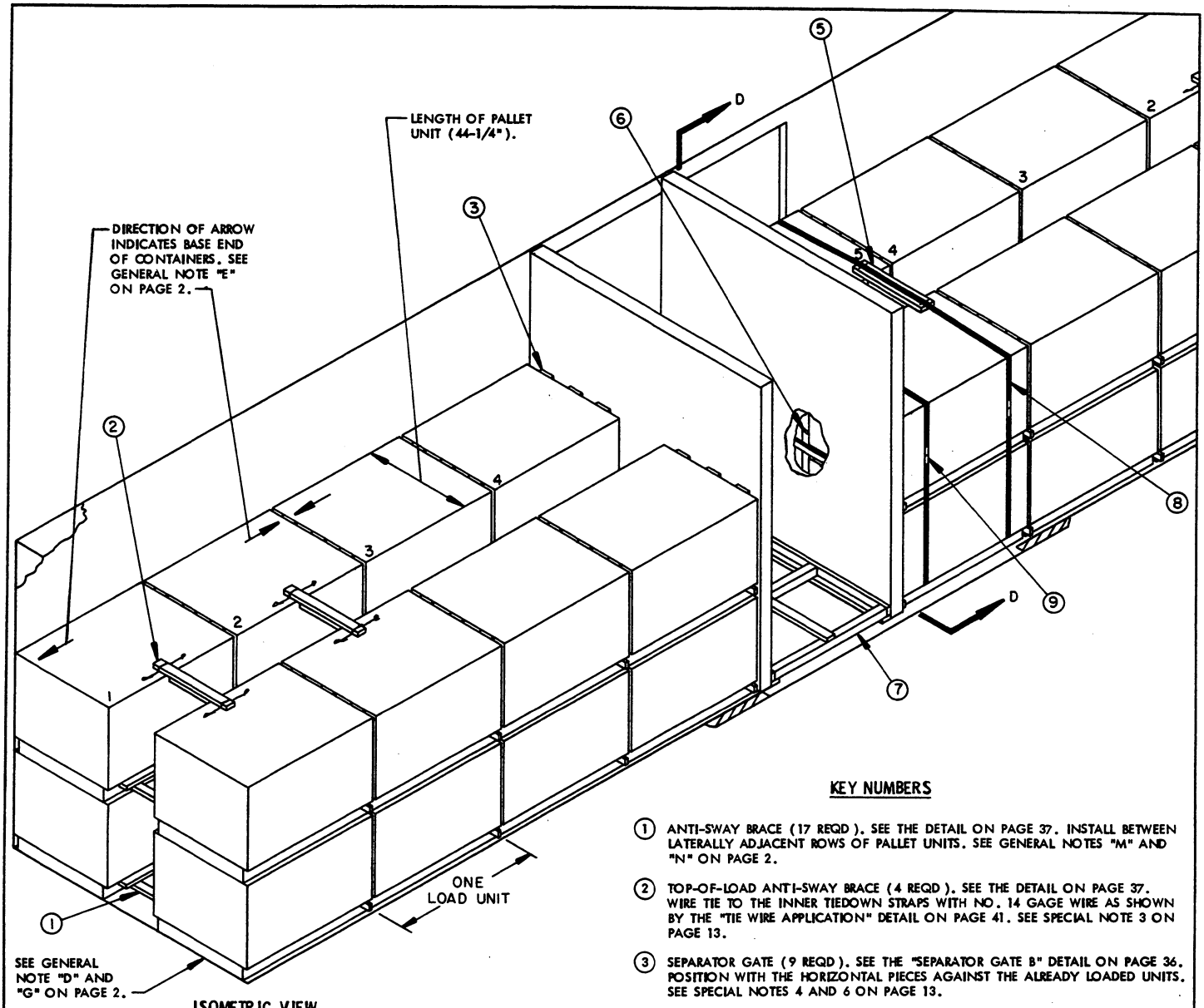
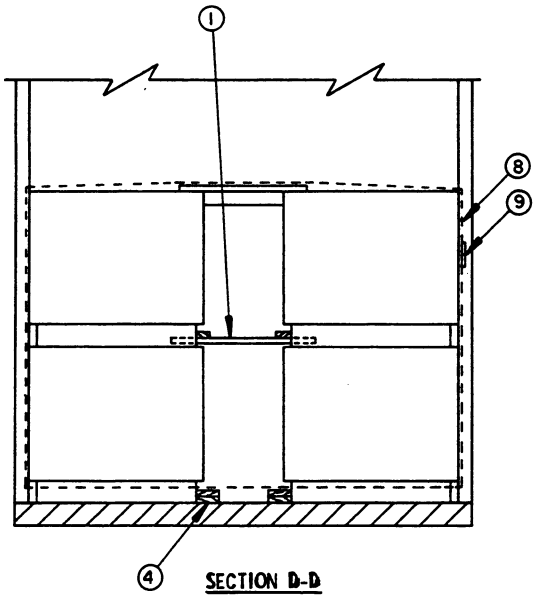


SPACER ASSEMBLY C

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



ISOMETRIC VIEW



SECTION D-D

KEY NUMBERS

(1) ANTI-SWAY BRACE (17 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE DETAIL ON PAGE 37. WIRE TIE TO THE INNER TIEDOWN STRAPS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. SEE SPECIAL NOTE 3 ON PAGE 13.

(3) SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 13.

(4) DOORWAY BLOCKING, 2" X 6" X 52" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN "SECTION D-D" VIEW BELOW. 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 NOTE 7 ON PAGE 13.

(5) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 38.

(6) STOP PIECE, 1" X 4" X 48" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3), WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/2-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 13.

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 48. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 8 ON PAGE 13.

(8) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT STACKS AND SPACER ASSEMBLY IN THE DOORWAY AREA. STAPLE TO THE SPACER W/2 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 13.

(9) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "O" ON PAGE 2.

36-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS

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 "AA" THRU "EE" ON PAGE 3.

2. A MAXIMUM OF TWENTY-EIGHT (28) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,748 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-FOUR (44) UNITS CAN BE LOADED IN A 60'-8" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 120,604 POUNDS. NOTE THAT A LOAD LIMIT OF AT LEAST 88,700 POUNDS IS REQUIRED FOR A FULL LOAD IN A 40'-6" LONG CAR, A LOAD LIMIT OF AT LEAST 110,700 POUNDS IS REQUIRED FOR THE DEPICTED LOAD, AND A LOAD LIMIT OF AT LEAST 132,800 POUNDS IS REQUIRED FOR A FULL LOAD IN A 60'-8" LONG CAR.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE INNER TIEDOWN STRAPS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. TWO (2) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF CAR LENGTH.

4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 3" HORIZONTAL PIECES ARE LOCATED UNDER THE "WINGS" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

5. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑥. 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 41 FOR CONSTRUCTION GUIDANCE.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE DEPICTED DOORWAY PROTECTION IS APPLICABLE FOR CARS EQUIPPED WITH EITHER SLIDING TYPE OR PLUG TYPE DOORS, OR A COMBINATION THEREOF. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING TYPE DOORS, WOODEN DOOR GATES, SHOWN AS PIECES MARKED ⑨ ON PAGE 6, OR ANY OF THE ALTERNATIVES ON PAGES 45 THRU 47 MAY BE USED.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	173	44
1" X 4"	8	3
1" X 6"	360	180
1" X 8"	17	12
2" X 4"	242	162
2" X 6"	94	94
4" X 4"	22	30
NAILS	**NO. REQD**	**POUNDS**
6d (2")	348	2-1/4
10d (3")	232	3-3/4
12d (3-1/4")	46	1
16d (3-1/2")	24	3/4

STRAPPING, 1-1/4" X .031" OR .035"	66'	REQD	9-1/2 LBS
SEALS FOR 1-1/4" STRAPPING	4	REQD	NIL
STAPLES	4	REQD	NIL
WIRE, NO. 14 GAGE	40'	REQD	1 LB

LOAD AS SHOWN

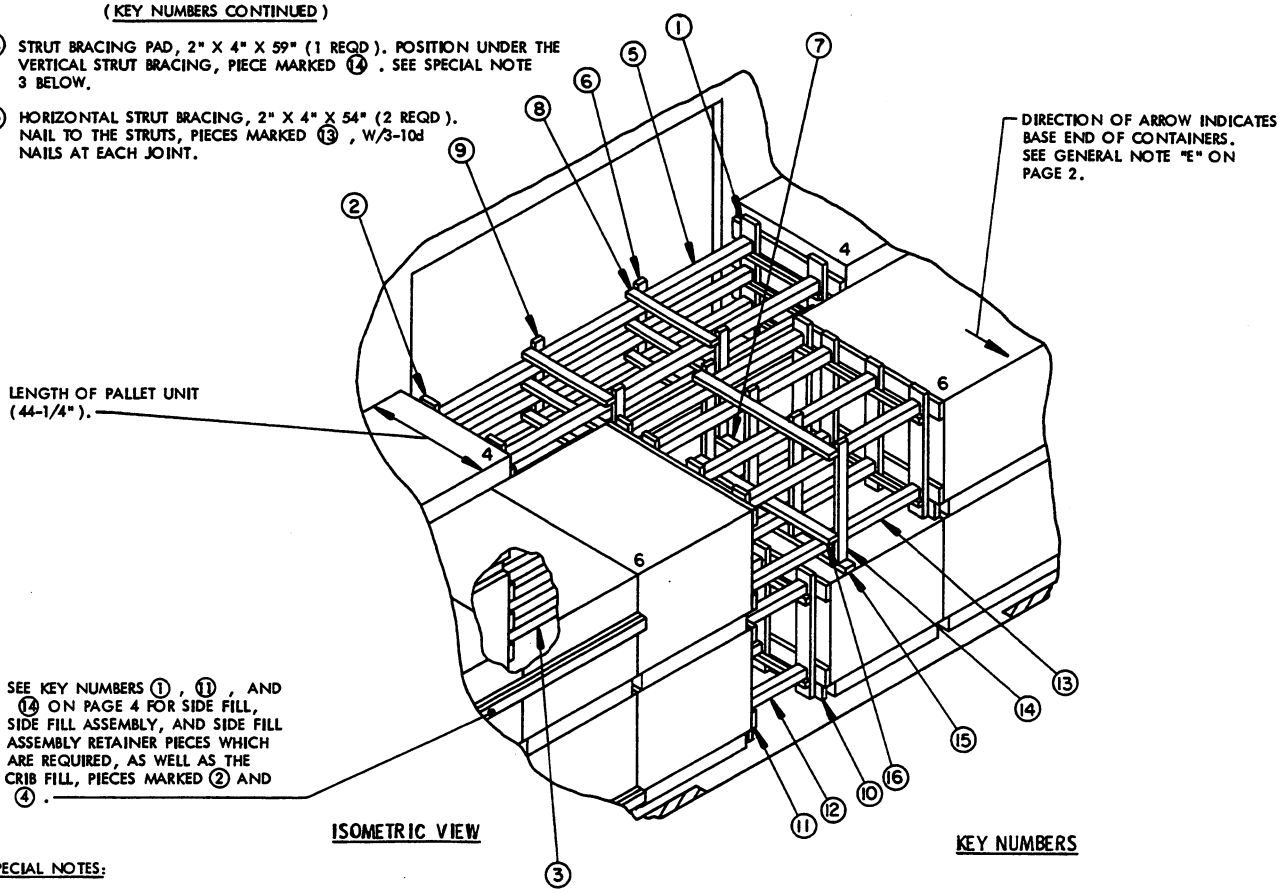
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	36	98,676 LBS
DUNNAGE		1,069 LBS
TOTAL WEIGHT		99,745 LBS

36-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS

(KEY NUMBERS CONTINUED)

⑮ STRUT BRACING PAD, 2" X 4" X 59" (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED ⑭. SEE SPECIAL NOTE 3 BELOW.

⑯ HORIZONTAL STRUT BRACING, 2" X 4" X 54" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ⑬, W/3-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS AND/OR LENGTHS MAY BE USED.

2. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO PAGE 4 FOR LATERAL BRACING, DOORWAY PROTECTION, AND OTHER BRACING.

3. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, SUITABLE LENGTH PADS OF 2" X 4" MATERIAL, SHOWN AS PIECES MARKED ⑦ AND ⑮, MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

4. A 42-UNIT LCL LOAD IS SHOWN. THE DEPICTED PROCEDURES MAY BE ADJUSTED TO OBTAIN A LESSER LOAD QUANTITY. THE UNITS SHOULD BE OMITTED FROM THE LONG-LOAD END TO KEEP LONGITUDINAL WEIGHT DISTRIBUTION AS EQUAL AS POSSIBLE. A UNIT SHOULD BE OMITTED FROM THE ROW THAT PROTRUDES THE FARTHEST. THIS SHOULD ENSURE THAT THE CRIB FILL, IF USED, WILL HAVE BEARING ON EACH ROW TO PROVIDE LATERAL BRACING OF THE REMAINING PALLET UNITS.

KEY NUMBERS

① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 35. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 35.

③ STRUT, 4" X 4" BY CUT TO FIT (REF: 64") (6 REQD). POSITION BETWEEN PIECES MARKED ① AND ② IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "T" ON PAGE 2 AND GENERAL NOTE "U" ON PAGE 3.

④ STRUT, 2" X 4" BY CUT TO FIT (REF: 64") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED ① AND ② W/2-12d NAILS AT EACH END. THIS PIECE NOT SHOWN IN THE ABOVE VIEW. SEE PIECE MARKED ⑨ ON PAGE 4 FOR GUIDANCE.

⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 10'-4") (6 REQD). POSITION BETWEEN PIECES MARKED ① AND ② IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

⑥ VERTICAL STRUT BRACING, 2" X 4" X 37" (2 REQD). NAIL TO THE STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑦, W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 3 AT LEFT.

⑦ STRUT BRACING PAD, 2" X 4" X 44" (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED ⑥. SEE SPECIAL NOTE 3 AT LEFT.

⑧ HORIZONTAL STRUT BRACING, 2" X 4" X 40" (9 REQD). NAIL TO THE STRUTS MARKED ③ AND ⑤ W/3-10d NAILS AT EACH JOINT.

⑨ VERTICAL STRUT BRACING, 2" X 4" X 6'-6" (2 REQD). NAIL TO THE STRUTS MARKED ③ AND ⑤ W/3-10d NAILS AT EACH JOINT.

⑩ CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 36.

⑪ CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 36.

⑫ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (8 REQD). POSITION BETWEEN PIECES MARKED ⑩ AND ⑪ IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

⑬ STRUT, 4" X 4" BY CUT TO FIT (REF: 69") (8 REQD). POSITION BETWEEN PIECES MARKED ⑩ AND ⑪ IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

⑭ VERTICAL STRUT BRACING, 2" X 4" X 42" NAIL TO THE STRUTS MARKED ⑬ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑮, W/1-10d NAIL AT EACH JOINT.

(CONTINUED ABOVE)

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

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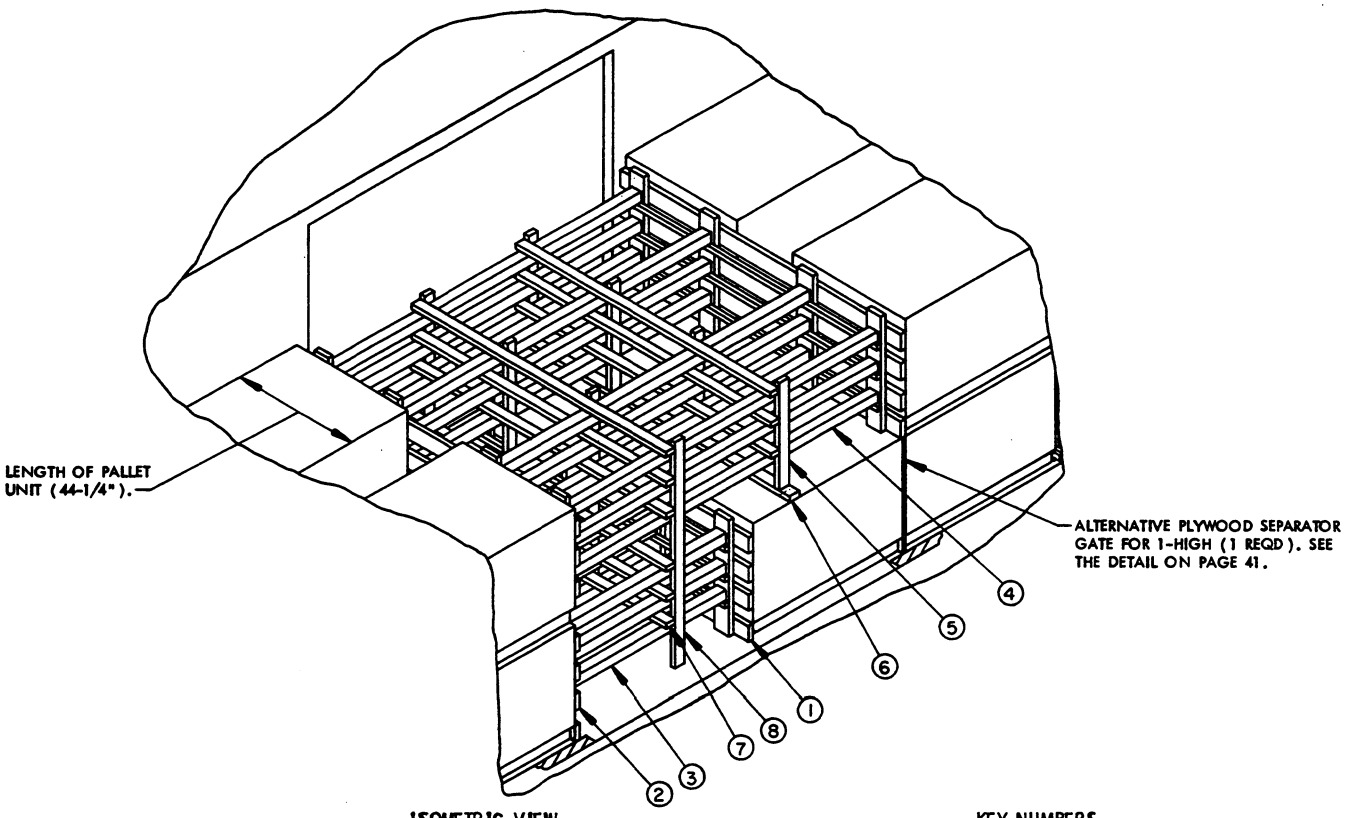
PROJECT CA 225/13-85

SUPERSEDES SIMCAC FORM 6, 1 NOV 85



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS AND/OR LENGTHS MAY BE USED.
2. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO PAGE 6 FOR LATERAL BRACING AND DOORWAY PROTECTION.
3. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF 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 C" DETAIL ON PAGE 38. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 38.

(3) STRUT, 4" X 4" BY CUT TO FIT (12 REQD). POSITION BETWEEN PIECES MARKED (1) AND (2) IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "T" ON PAGE 2 AND GENERAL NOTE "U" ON PAGE 3.

(4) STRUT, 4" X 4" BY CUT TO FIT (12 REQD). POSITION BETWEEN PIECES MARKED (1) AND (2) IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

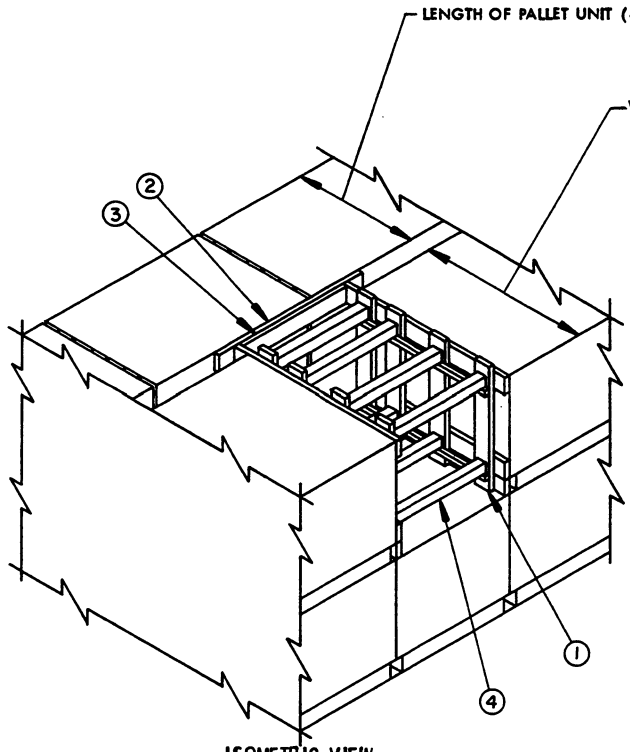
(5) VERTICAL STRUT BRACING, 2" X 4" X 37" (4 REQD). NAIL TO THE STRUTS MARKED (4) W/3-10d NAILS AT EACH JOINT. SEE SPECIAL NOTE 3 AT LEFT.

(6) STRUT BRACING PAD, 2" X 4" X 9'-2" (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED (5).

(7) HORIZONTAL STRUT BRACING, 2" X 4" X 8'-7" (9 REQD). NAIL TO THE STRUTS MARKED (3) AND (4) W/3-10d NAILS AT EACH JOINT.

(8) VERTICAL STRUT BRACING, 2" X 4" X 6'-5" (4 REQD). NAIL TO THE STRUTS MARKED (3) AND (4) W/3-10d NAILS AT EACH JOINT.

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

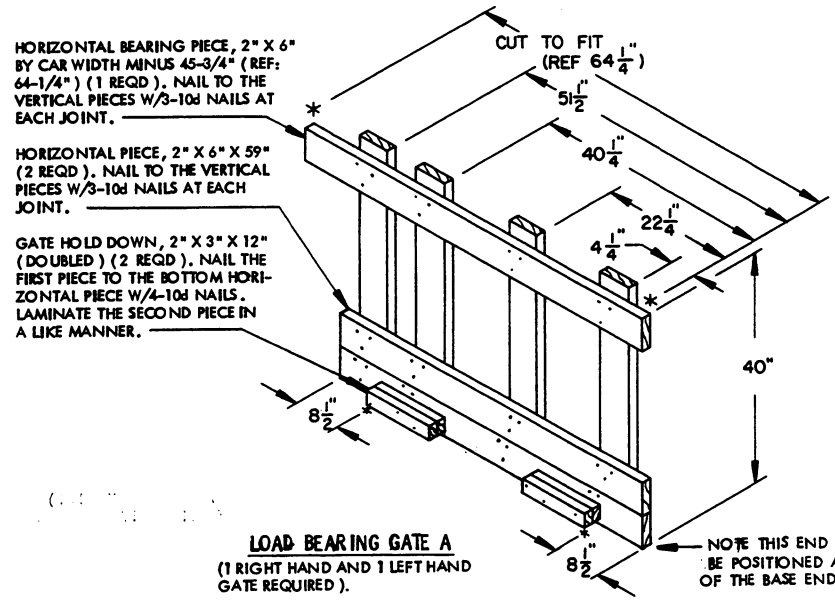
KEY NUMBERS

(1) 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 (3), W/3-10d NAILS.

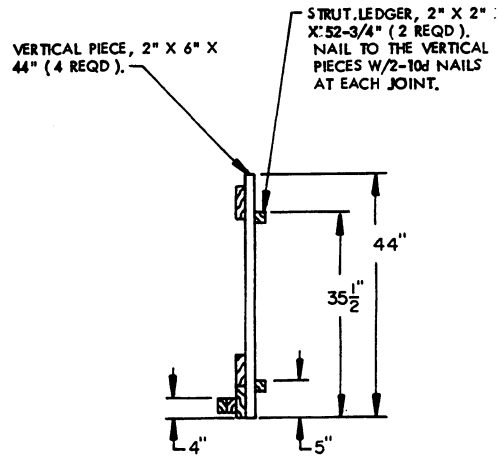
(2) ANTI-SWAY BEARING PIECE, 2" X 6" X 56" (1 REQD).

(3) FILLER PIECE, 2" X 6" X 41-1/4" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (2), W/5-10d NAILS.

(4) STRUT, 4" X 4" X 38-1/4" (8 REQD). TOENAIL TO PIECES MARKED (1) W/2-16d NAILS AT EACH END.

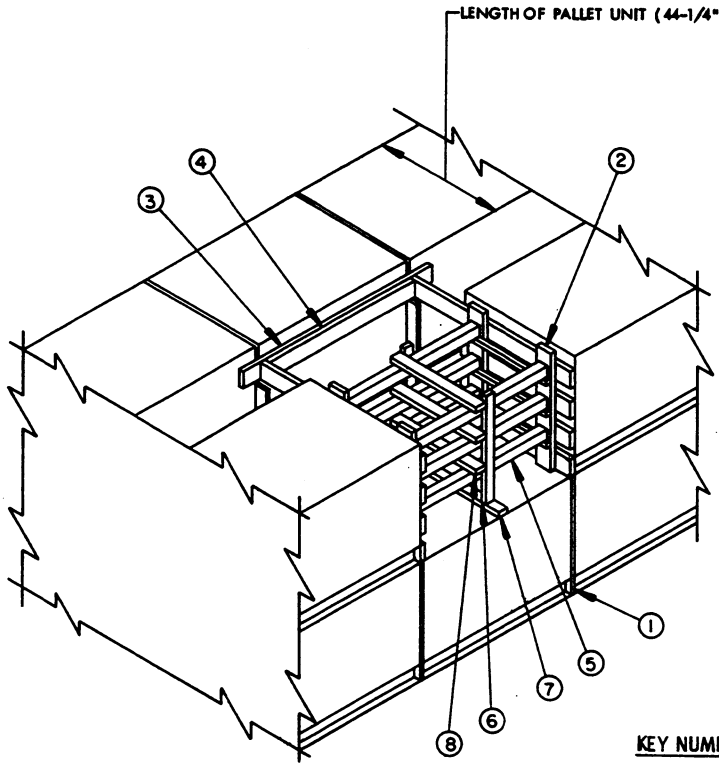


LOAD BEARING GATE A
(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED).



END VIEW

TYPICAL LCL-ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A CROSSWISE-POSITIONED UNIT IN A COMBINATION LOAD



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A PALLET UNIT FROM A 1-LAYER LOAD.
3. THE OMITTED UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER PORTION OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN; REFER TO PAGE 6 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECE ON THE LOAD BEARING GATE IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.

KEY NUMBERS

(1) SEPARATOR GATE (2 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 39.

(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE B" DETAIL BELOW. NAIL TO THE FILLER PIECE, PIECE MARKED (4), W/3-10d NAILS.

(3) ANTI-SWAY BEARING PIECE, 2" X 6" X 72" (1 REQD).

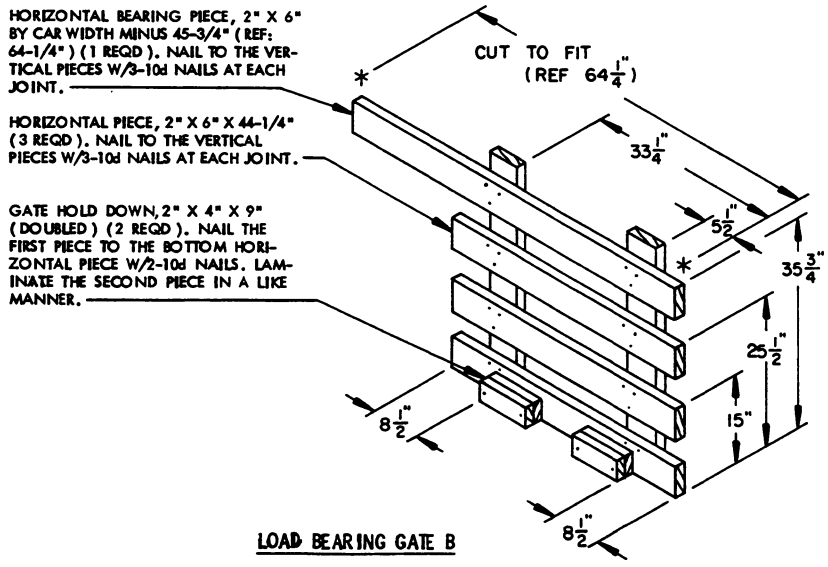
(4) FILLER PIECE, 2" X 6" X 56-3/4" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (3) W/7-10d NAILS.

(5) STRUT, 4" X 4" X 53-3/4" (6 REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.

(6) VERTICAL STRUT BRACING, 2" X 4" X 36" (2 REQD). NAIL TO THE STRUTS, PIECE MARKED (5), W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED (7), W/1-10d NAIL AT EACH JOINT.

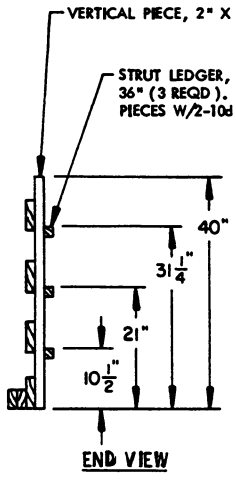
(7) STRUT BRACING PAD, 2" X 4" X 44" (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED (6), AS SHOWN.

(8) HORIZONTAL STRUT BRACING, 2" X 4" X 36" (3 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



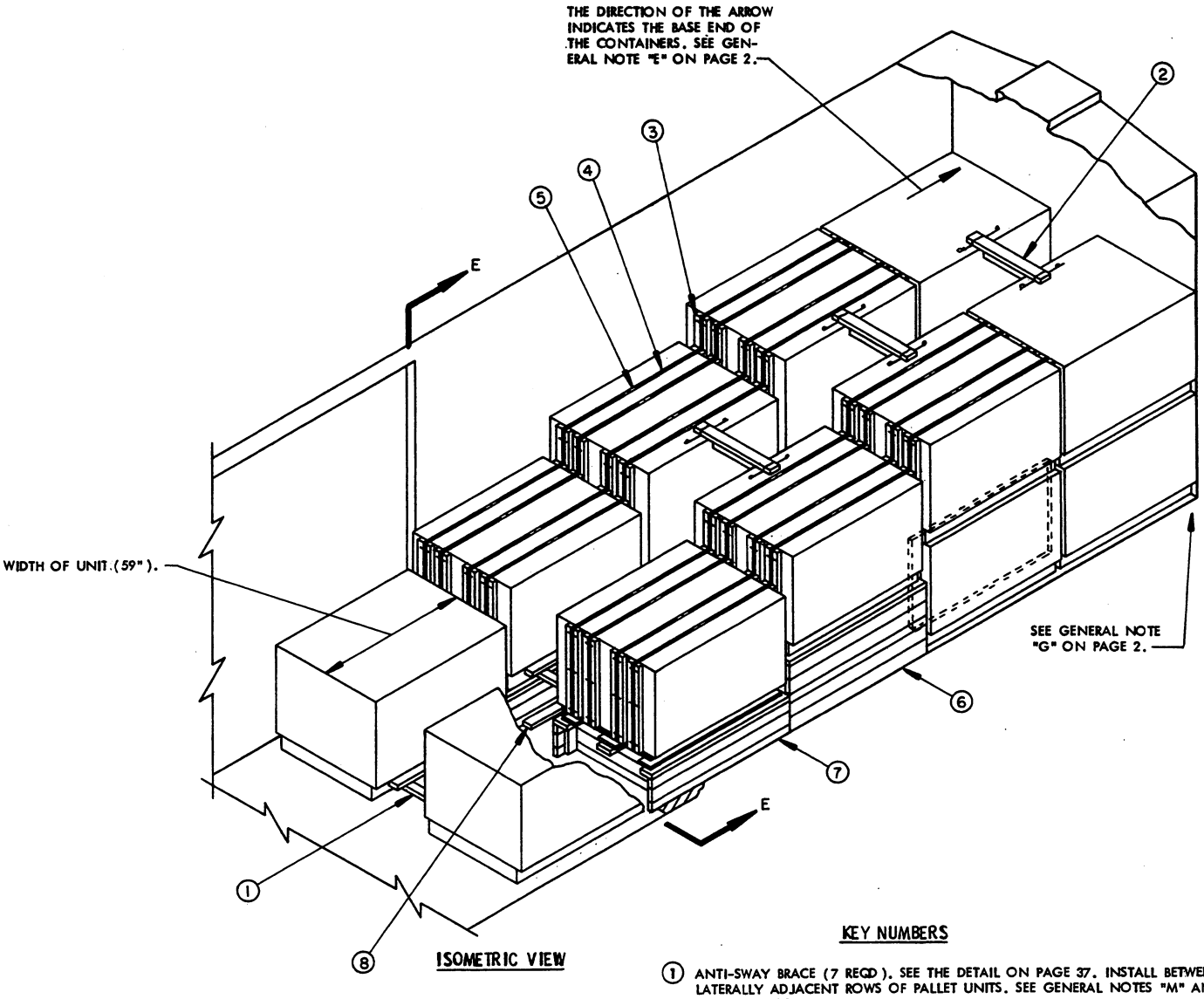
LOAD BEARING GATE B

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

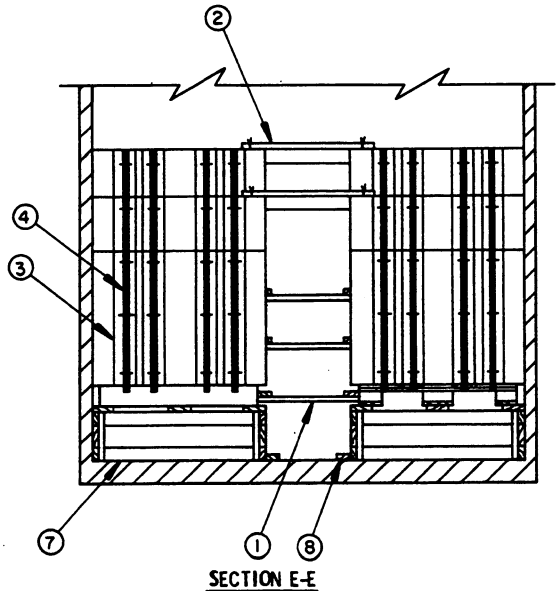


END VIEW

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



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

(1) ANTI-SWAY BRACE (7 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 37. WIRE TIE TO THE INNER TIEDOWN STRAPS ON THE PALLET UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41.

(3) STRAPPING BOARD, 2" X 6" X 35" (64 REQD/8 PER PALLET UNIT). POSITION SO AS TO BE CENTERED ON THE OUTER TWO STACKS OF CONTAINERS AND ON THE JOINT BETWEEN THE SECOND AND THIRD CONTAINERS FROM EACH SIDE.

(4) REINFORCING STRAP, 1-1/4" X .035" X 17'-6" LONG (REF) STEEL STRAPPING (32 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS, PIECE MARKED (3). SECURE TO A STRAPPING BOARD W/3 STAPLES.

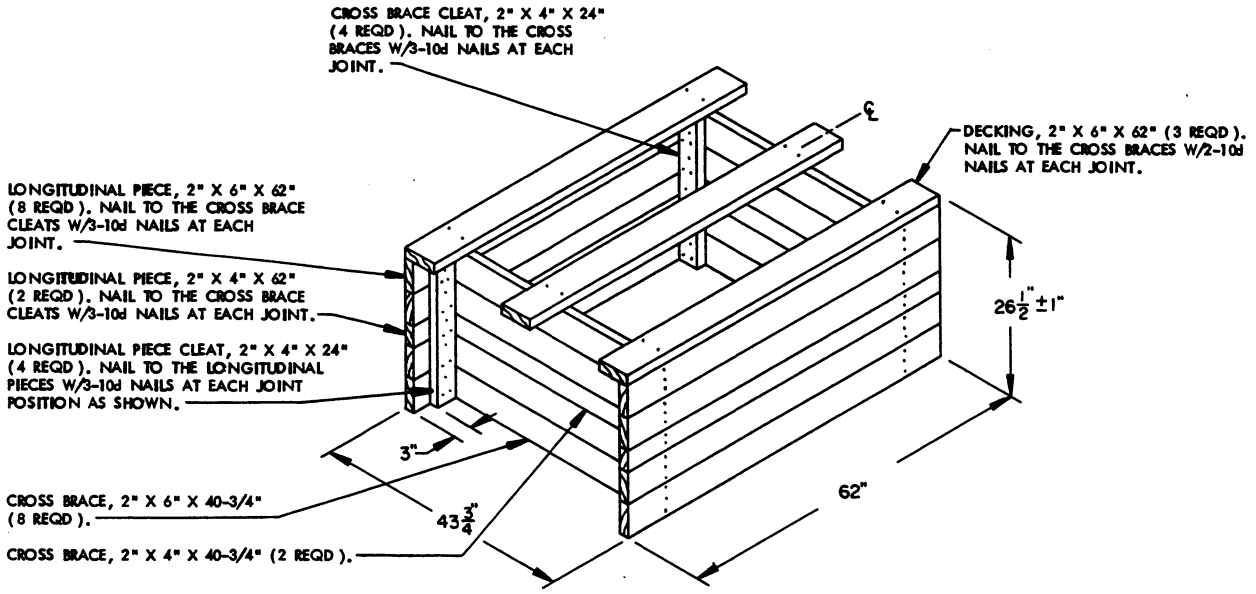
(5) SEAL FOR 1-1/4" STRAPPING (64 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(6) RISER ASSEMBLY (2 REQD). SEE THE "RISER ASSEMBLY A" DETAIL ON PAGE 19.

(7) RISER ASSEMBLY (2 REQD). SEE THE "RISER ASSEMBLY B" DETAIL ON PAGE 19.

(8) RISER STOP PIECE, 2" X 4" X 48" (4 REQD). POSITION AGAINST A RISER ASSEMBLY AND NAIL TO THE CAR FLOOR W/4-16d NAILS.

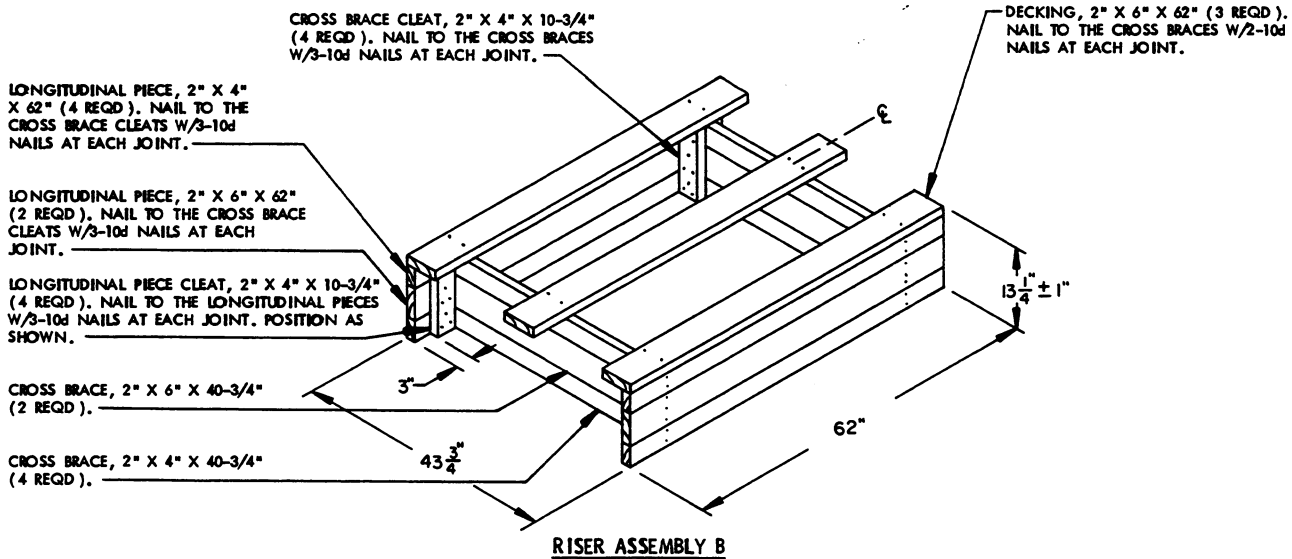
TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



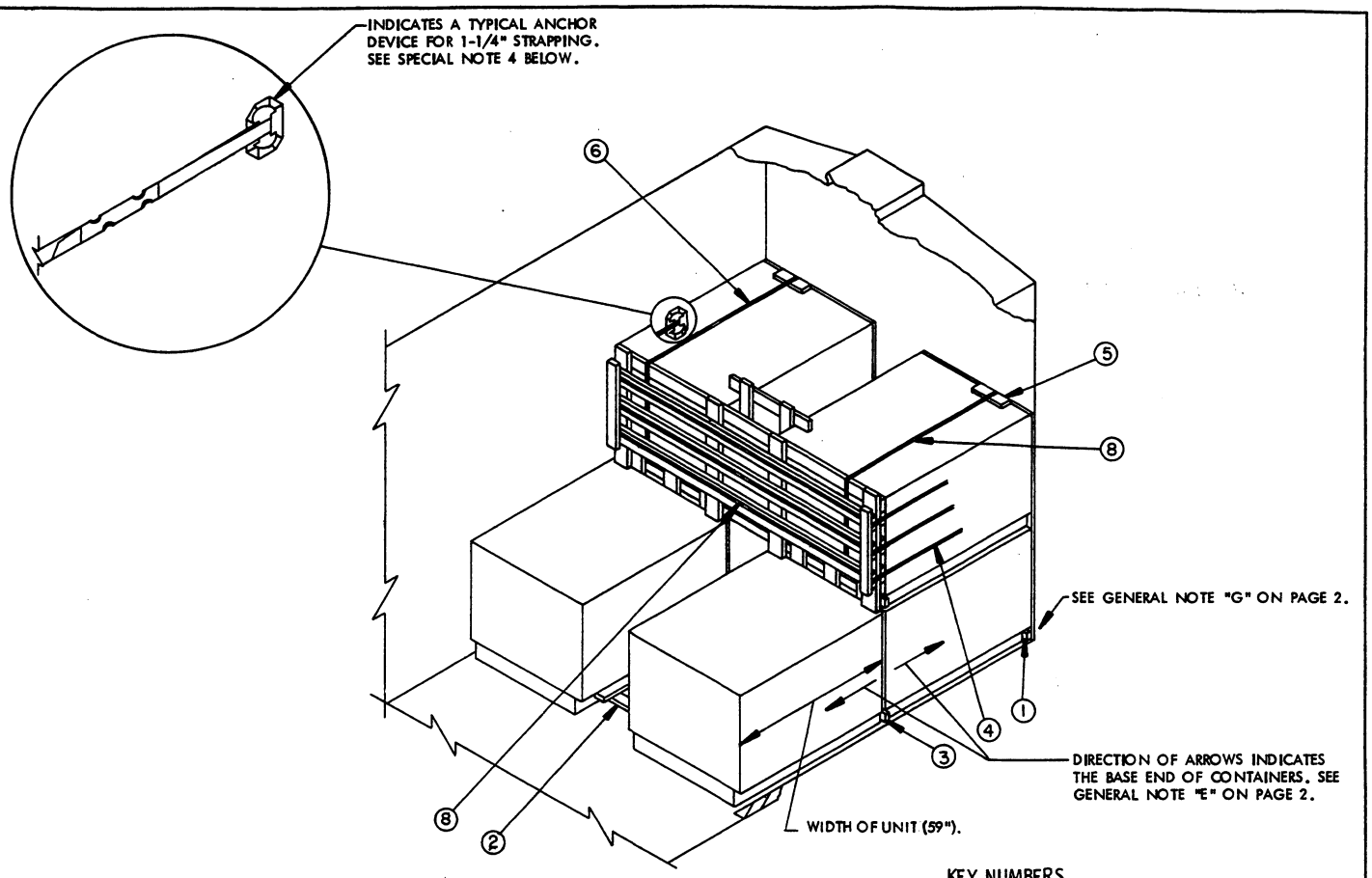
RISER ASSEMBLY A

SPECIAL NOTES FOR LOAD:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE RISER METHOD OF PARTIAL LAYER BRACING IS ONLY APPLICABLE FOR PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. THE RISER METHOD WILL NOT BE USED WITHIN LOADS WHERE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR.
3. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL LAYER BRACING IS SHOWN. REFER TO PAGE 6 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.



RISER ASSEMBLY B



ISOMETRIC VIEW

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 1 PALLET UNIT; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 2 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 15 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 17 FOR A SINGLE UNIT.

5. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 21 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

KEY NUMBERS

(1) SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR END WALL.

(2) ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(3) SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

(4) BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 21 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 3 AND 4 AT LEFT.

(5) STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 21.

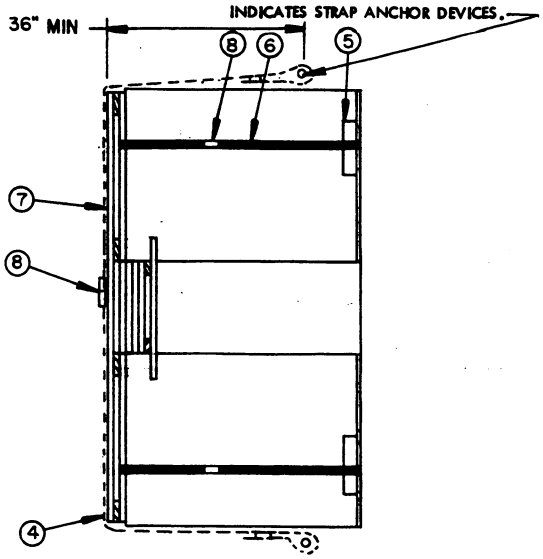
(6) BUNDLING STRAP, 1-1/4" X .035" X 18'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED (5). TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED (4).

(7) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 21. SEE SPECIAL NOTE 3 AT LEFT.

(8) SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED (4), AND 1 PER BUNDLING STRAP, PIECE MARKED (6)). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

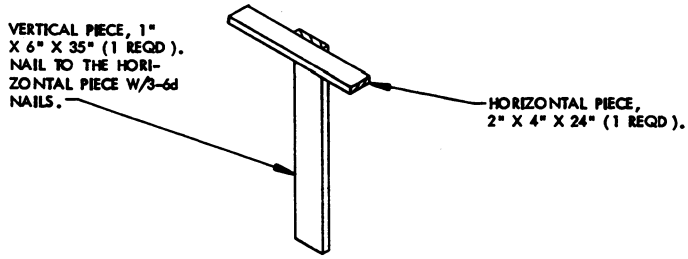
(9) STRAP RETAINER, 2" X 4" X 36" (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

TYPICAL LCL LOAD USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING

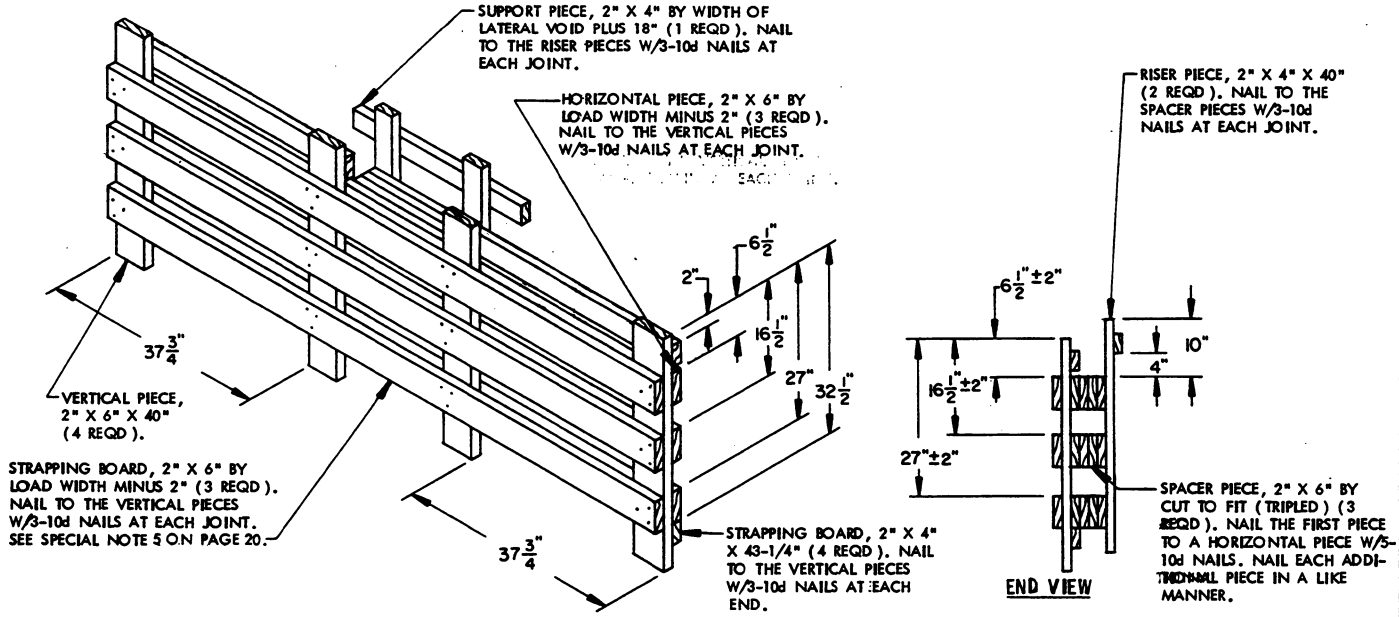


STRAP APPLICATION PLAN VIEW

THE ANTI-SWAY BRACES, PIECE MARKED ② , HAVE BEEN OMITTED FOR CLARITY.

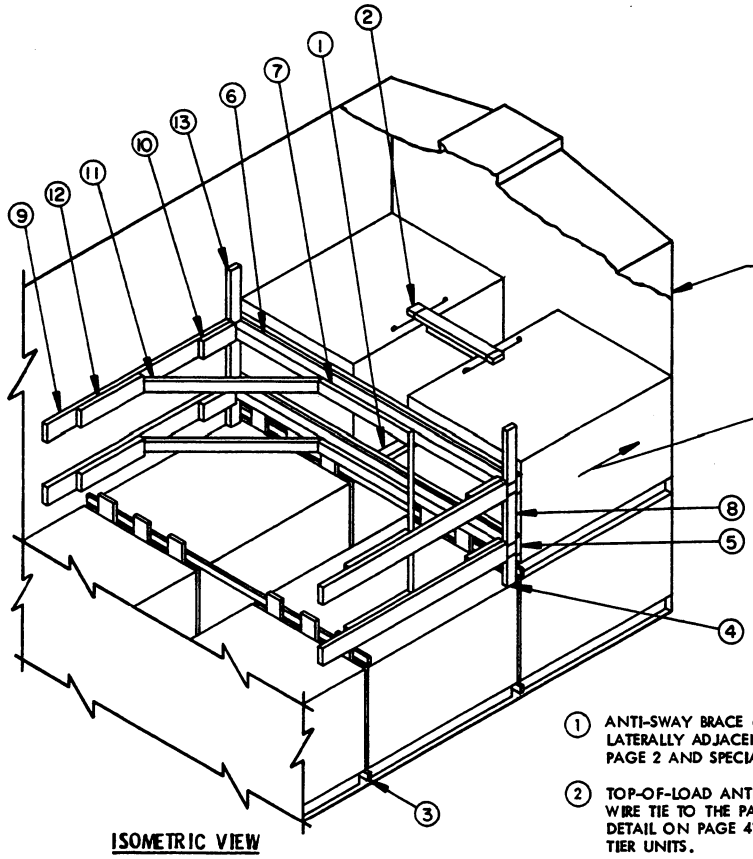


STRAPPING BOARD



BULKHEAD GATE

TYPICAL LCL LOAD USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

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 THE LENGTHWISE LOAD SHOWN ON PAGE 6; PARTIAL-LAYER BRACING WILL NOT BE USED IN THE LOAD SHOWN ON PAGE 4.

3. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL SECOND TIER OR FIRST TIER. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN TWO (2) PALLET UNITS. IF ONLY ONE PALLET UNIT IS TO BE SHIPPED IN A PARTIAL SECOND LAYER, IT WILL BE POSITIONED DIRECTLY ABOVE THE LOWER PALLET UNIT. FOR A PARTIAL FIRST LAYER, POSITION THE PALLET UNIT IN ONE CORNER. PROVIDE LATERAL BRACING BY APPLYING VERTICALLY POSITIONED DOUBLED 2" X 4" X 48" LONG PIECES TO THE CAR END WALL AND TO THE K-BRACE. NAIL TO THE CAR END WALL W/6-12d NAILS EACH LAYER. THE FIRST PIECE APPLIED TO THE K-BRACE WILL BE NAILED TO PIECE MARKED (5) W/3-12d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE W/6-12d NAILS. IF IT IS NECESSARY TO BRACE MORE PALLET UNITS, REFER TO THE DETAILS ON PAGE 23, 24 OR 25 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

4. 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.

KEY NUMBERS

(1) ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 37. WIRE TIE TO THE PALLET UNIT AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

(3) SEPARATOR GATE FOR 1-HIGH (2 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36.

(4) SUPPORT CLEAT, 2" X 4" X 8-1/2" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED (5) AND (6) ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

(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".

(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 4 AT LEFT.

(8) SPACER CLEAT, 2" X 4" X 17-1/4" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

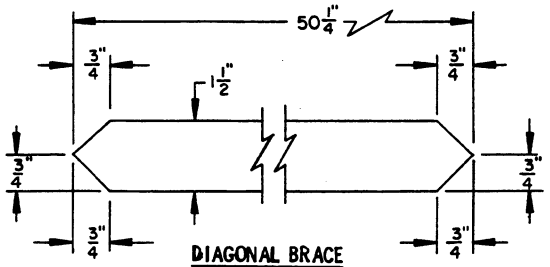
(9) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.

(10) POCKET CLEAT, 2" X 6" X 12" (2 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 4" 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

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

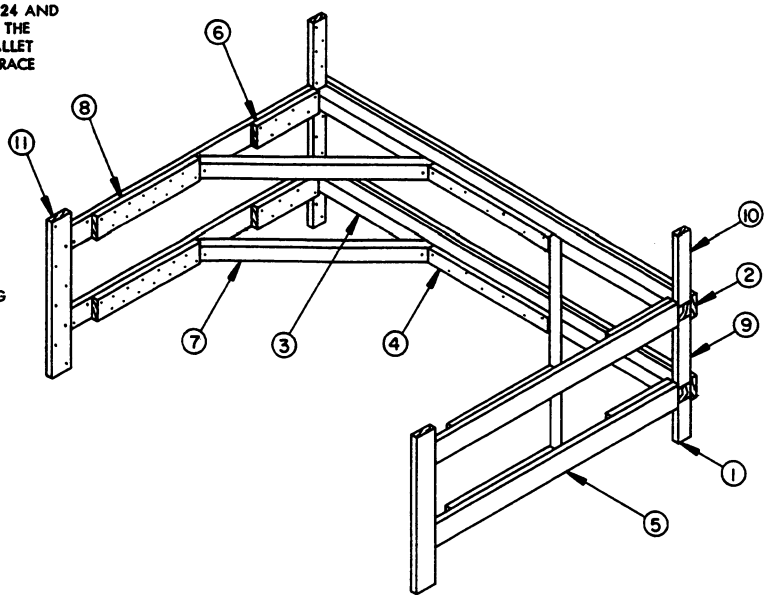
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN FOUR (4) PALLET UNITS. IF IT NECESSARY TO BLOCK MORE THAN FOUR PALLET UNITS, REFER TO THE DETAILS ON PAGES 24 AND 25 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF ONLY ONE OR TWO PALLET UNITS ARE TO BE SHIPPED IN THE PARTIAL LAYER, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 MAY BE USED.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ① , ② , ③ , ⑥ 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 22 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 8-1/2" (2 REQQ). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , W/1-12d NAIL EVERY 6".. SEE GENERAL NOTE "M" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.

⑤ HORIZONTAL WALL CLEAT, 2" X c" 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.

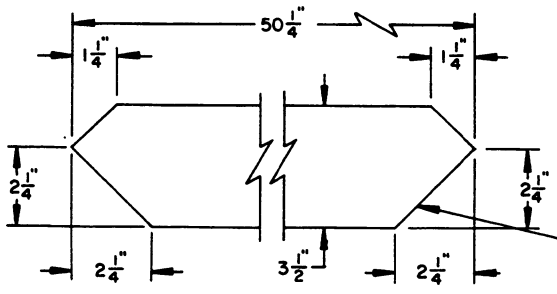
⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/1-60d NAIL AT EACH END.

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 17-1/4" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

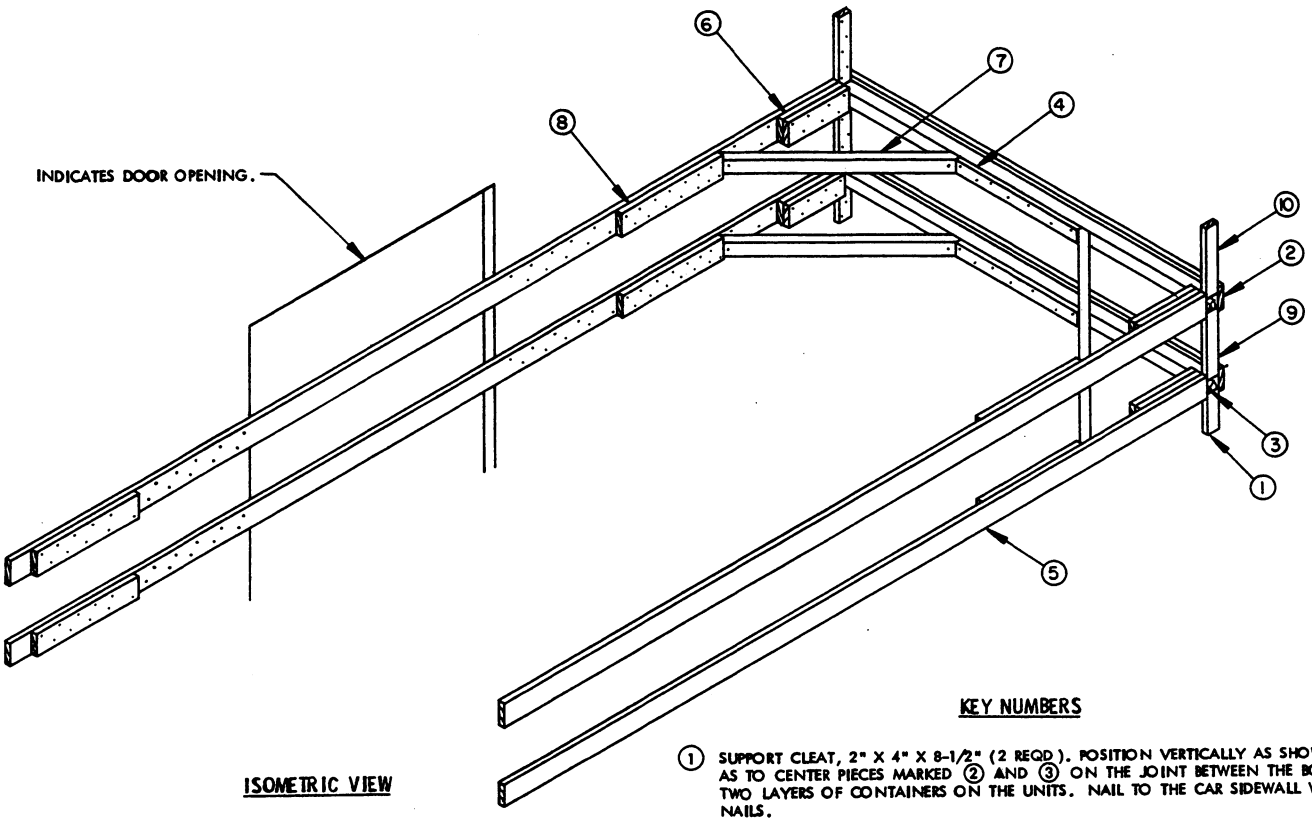
⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

⑪ VERTICAL BACK-UP CLEAT, 2" X 6" X 40" (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



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 .

DIAGONAL BRACE
SEE SPECIAL NOTE 2.



ISOMETRIC VIEW

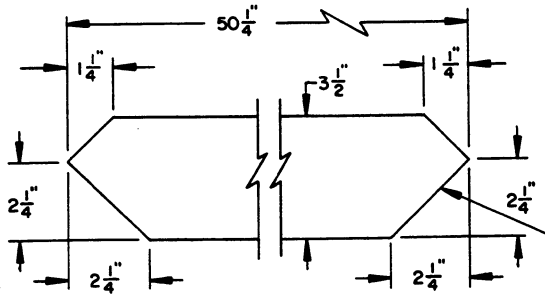
SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN SIX (6) PALLET UNITS. IF IT IS NECESSARY TO BLOCK MORE THAN SIX PALLET UNITS, REFER TO THE DETAIL ON PAGE 25 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED IS ONLY FOUR PALLET UNITS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 23 MAY BE USED. IF THE PARTIAL TIER IS ONLY ONE OR TWO PALLET UNITS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, 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.

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.

(CONTINUED AT RIGHT)



DIAGONAL BRACE

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 8-1/2" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 BELOW.

⑤ 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 17-1/4". NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

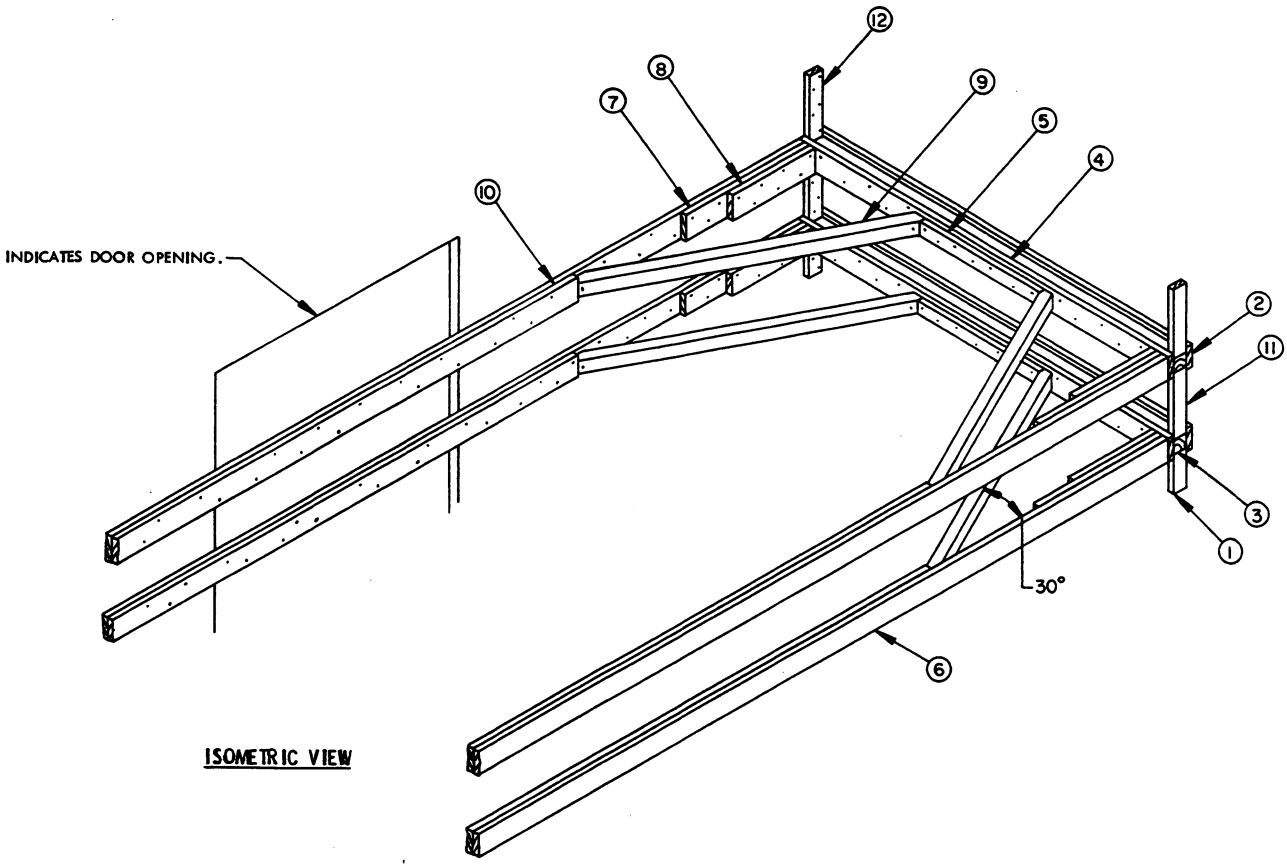
⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

(SPECIAL NOTES CONTINUED)

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.

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.

TYPE "C" K-BRACE



ISOMETRIC VIEW

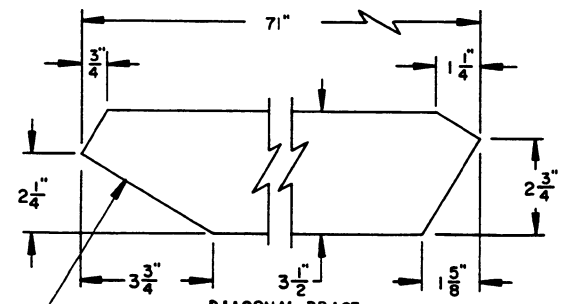
SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN EIGHT (8) PALLET UNITS. IF THE PARTIAL TIER TO BE BRACED IS ONLY SIX PALLET UNITS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 24 MAY BE USED. IF FOUR PALLET UNITS ARE TO BE SHIPPED, THE TYPE "B" K-BRACE DEPICTED ON PAGE 23 MAY BE USED. IF THE PARTIAL TIER IS ONLY ONE OR TWO PALLET UNITS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 22 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, 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 PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 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.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 8-1/2" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ 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.

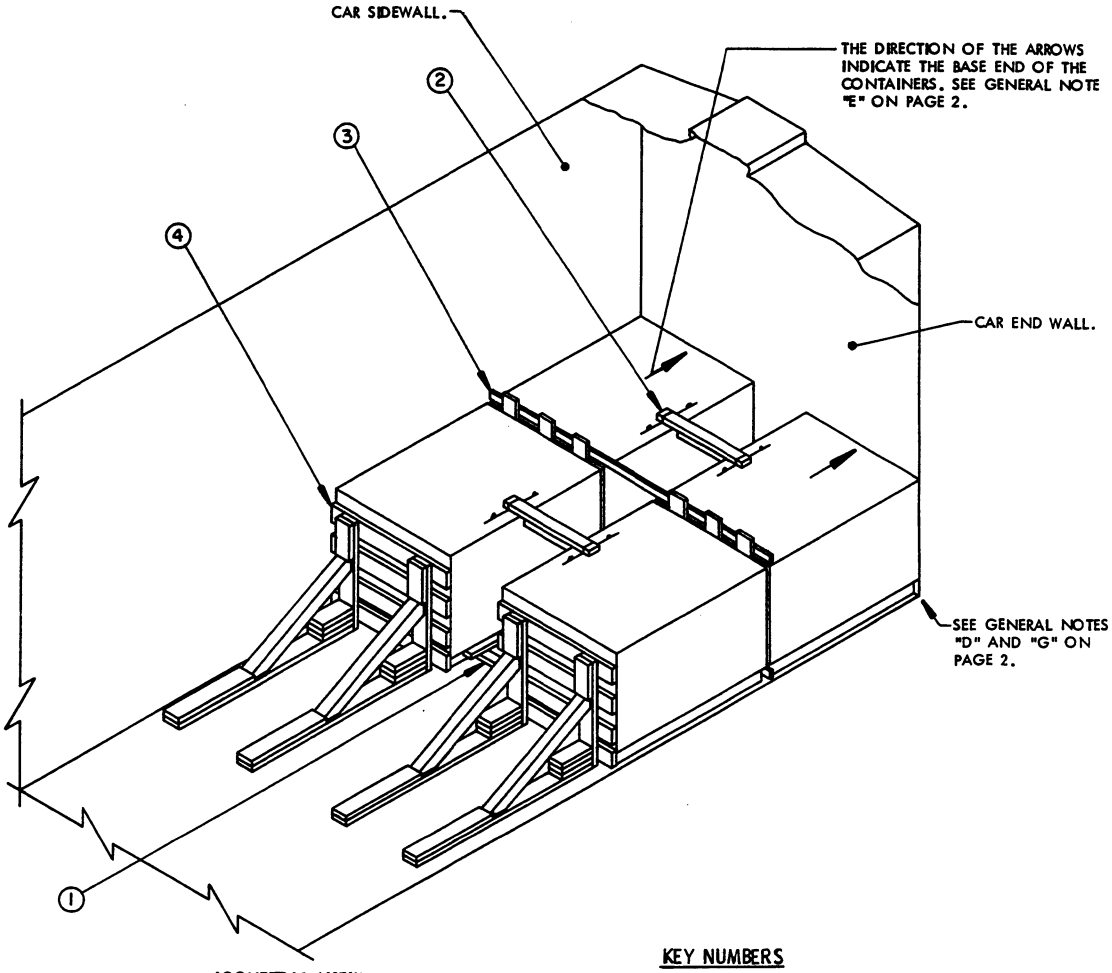
⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/1-60d NAIL AT EACH END.

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 17-1/4" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

⑫ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

TYPE "D" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS 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, PROVIDING THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 3 ARE NOT EXCEEDED.
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 THREE (3) PALLET UNITS. ADDITIONAL "KNEES" MAY BE INSTALLED IF IT NECESSARY TO RESTRAIN MORE THAN THREE PALLET UNITS.

KEY NUMBERS

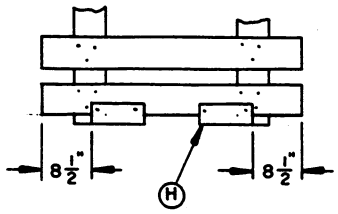
(1) ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 37. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 37. [illegible] WIRE TIE TO THE INNER TIEDOWN STRAPS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 41. SEE SPECIAL NOTE 4 ON PAGE 7.

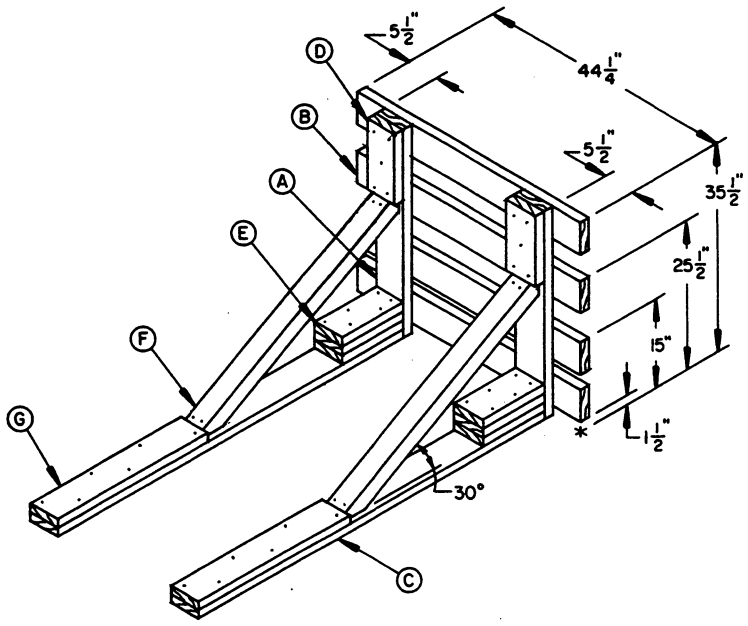
(3) SEPARATOR GATE (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 36. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 7.

(4) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 27.

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



VIEW A
(FOR LENGTHWISE POSITIONED PALLET UNITS)



KNEE BRACE ASSEMBLY

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" X 35-1/2" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), W/2-16d NAILS.

(B) HORIZONTAL PIECE, 2" X 6" X 44-1/4" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(C) FLOOR CLEAT, 2" X 6" X 68-1/2" (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "R" ON PAGE 2.

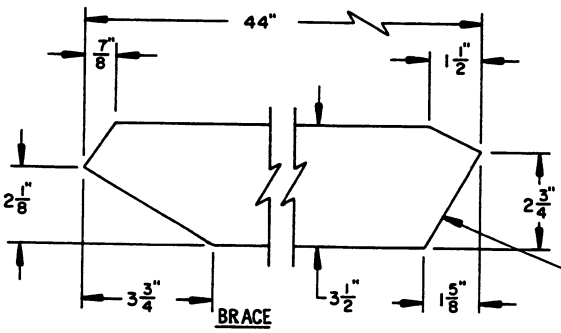
(D) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE VERTICAL PIECE W/5-10d NAILS.

(E) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C), W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), W/2-16d NAILS.

(F) BRACE, 4" X 4" X 44" (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C), W/2-16d NAILS AT EACH END.

(G) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), W/6-40d NAILS.

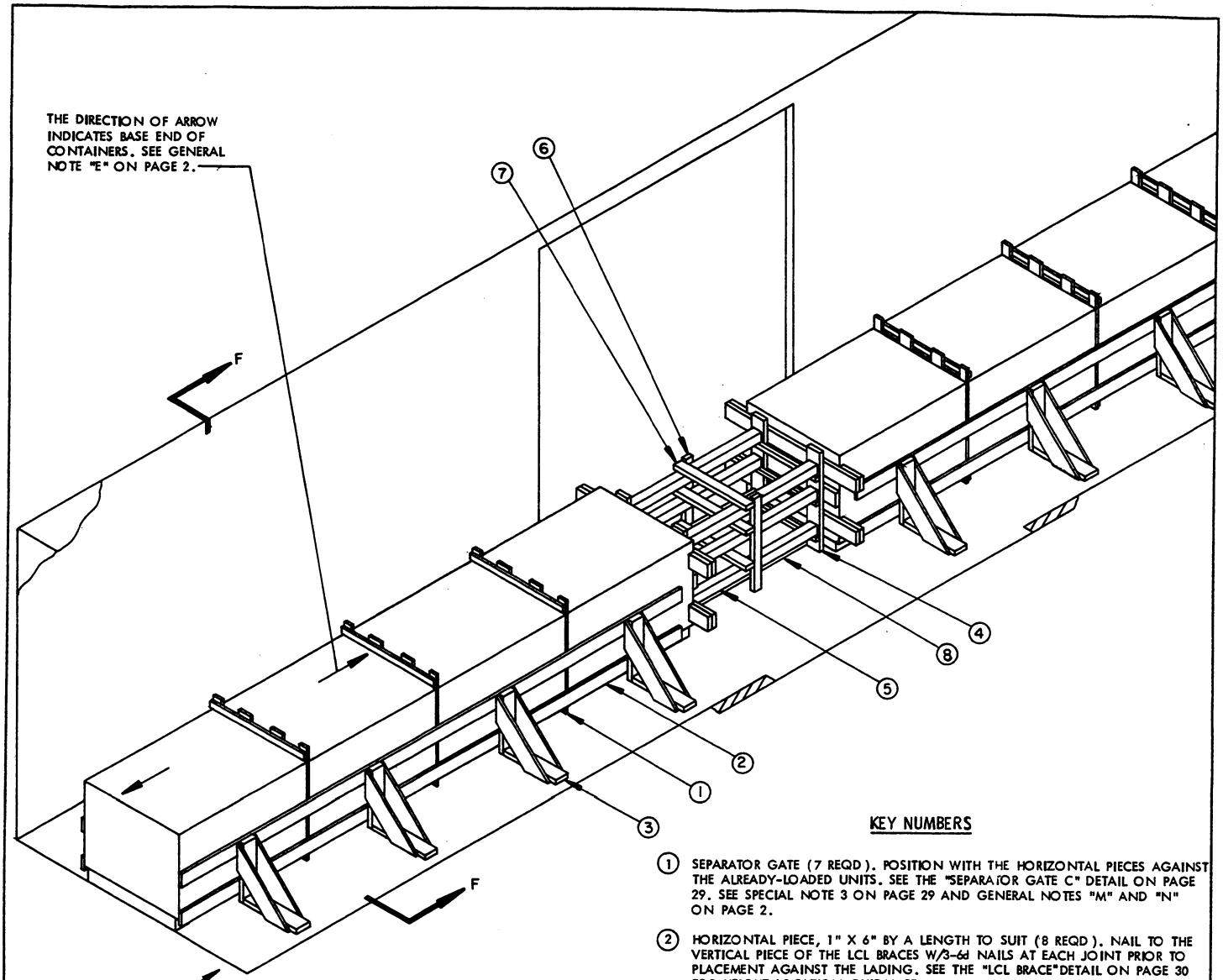
(H) HOLD-DOWN CLEAT, 2" X 4" X 9" (DOUBLED) (2 REQD). SEE "VIEW A" ABOVE. NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



BRACE
4" X 4" MATERIAL

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

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



ISOMETRIC VIEW

KEY NUMBERS

(1) SEPARATOR GATE (7 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 29. SEE SPECIAL NOTE 3 ON PAGE 29 AND GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECE OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 30 FOR HEIGHT LOCATION GUIDANCE.

(3) LCL BRACE (18 REQD). SEE THE DETAIL ON PAGE 30 AND SPECIAL NOTE 4 ON PAGE 29. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.

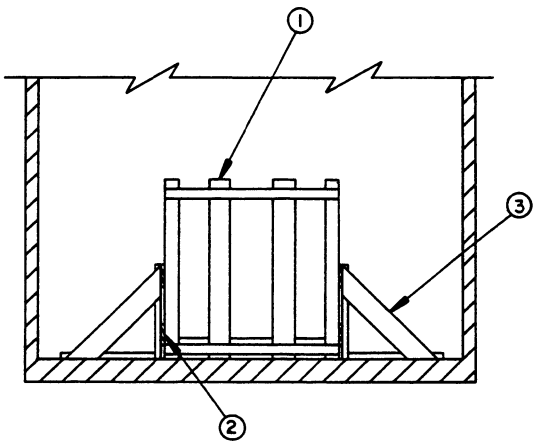
(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 29. SEE SPECIAL NOTES 2 AND 3 ON PAGE 29.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 64") (6 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" AND "U" ON PAGE 2. SEE SPECIAL NOTES 2 AND 3 ON PAGE 29.

(6) VERTICAL STRUT BRACING, 2" X 4" X 37" (2 REQD). NAIL TO THE STRUTS, PIECE MARKED (5), W/3-10d NAILS AT EACH JOINT.

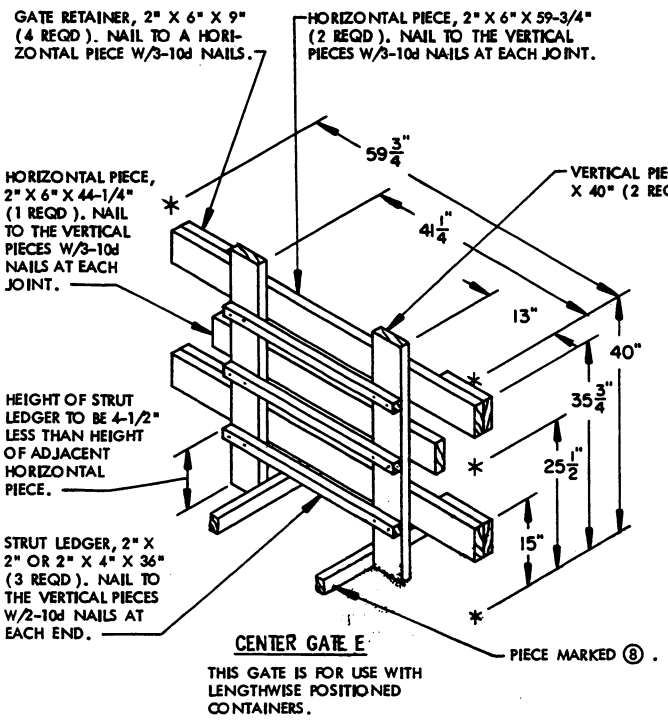
(7) HORIZONTAL STRUT BRACING, 2" X 4" X 36" (3 REQD). NAIL TO THE STRUTS, PIECE MARKED (5), W/3-10d NAILS AT EACH JOINT.

(8) 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 29 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 6 ON PAGE 29.



SECTION F-F

TYPICAL LCL LOAD USING A 1-WIDE LOADING METHOD

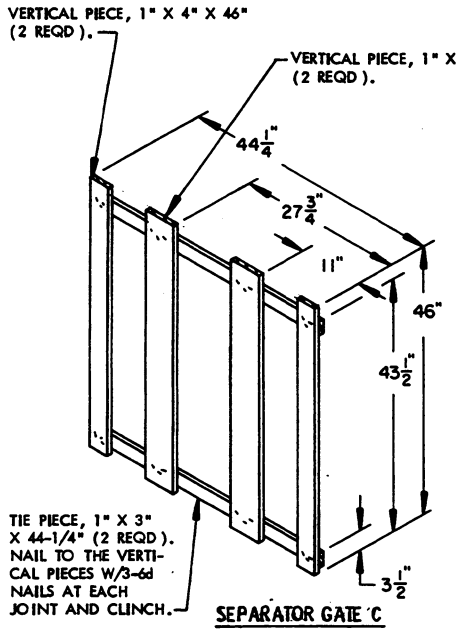


CENTER GATE E

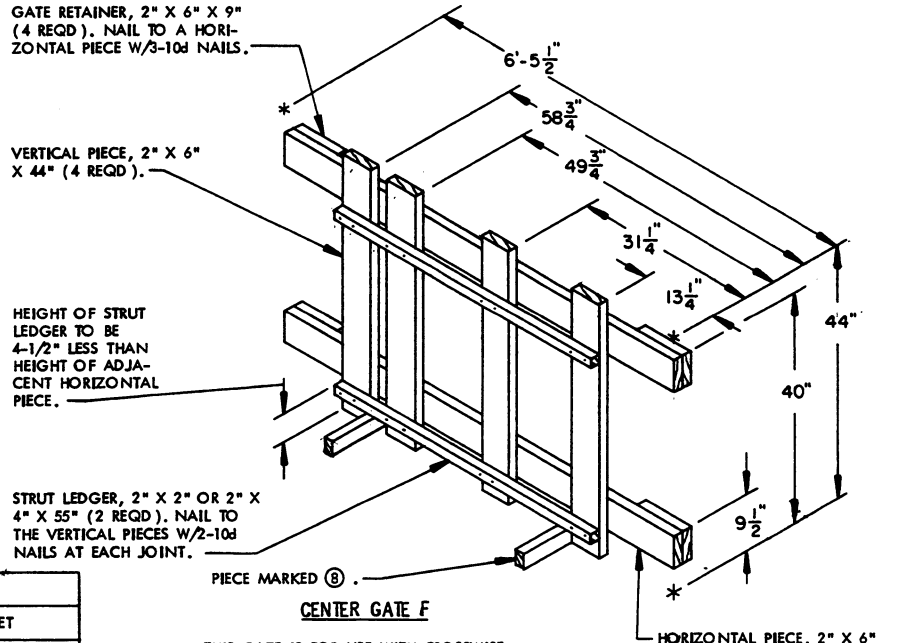
THIS GATE IS FOR USE WITH LENGTHWISE POSITIONED CONTAINERS.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS AND LENGTHS CAN BE USED. SEE SPECIAL NOTE 2.
2. A 1-WIDE LENGTHWISE LOAD IN A 50'-6" LONG CAR IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR A 7-UNIT CONTAINERS-LENGTHWISE LOAD IN A 40'-6" LONG CAR, AND AN 11-UNIT LOAD IN A 60'-8" LONG CAR. ONLY 4 STRUTS WILL BE NEEDED IN A 40'-6" LONG CAR; OMIT THE CENTER LEVEL.
3. ONE-WIDE LOADING PROCEDURES ARE ALSO APPLICABLE FOR CONTAINERS-CROSSWISE LOADS. TEN (10) PALLET UNITS CAN BE LOADED IN A 40'-6" LONG CAR, THIRTEEN (13) CAN BE LOADED IN A 50'-6" LONG CAR AND FIFTEEN (15) UNITS CAN BE LOADED IN A 60'-8" LONG CAR. SEPARATOR GATES ARE NOT REQUIRED.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR CONTAINERS-CROSSWISE PALLET UNITS, THE BRACES WILL BE CENTERED ON THE LENGTH OF THE PALLET UNIT. FOR CONTAINERS LENGTHWISE UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT WIDTH.
5. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED LOAD AND THEREFORE ARE ONLY TYPICAL.
6. IF DESIRED, GATE HOLD-DOWN PIECES AND ASSOCIATED FILL PIECES, AS SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATES FOR SINGLE ROW, MAY BE USED IN LIEU OF PIECE MARKED ⑧.



SEPARATOR GATE C



CENTER GATE F

THIS GATE IS FOR USE WITH CROSSWISE POSITIONED CONTAINERS.

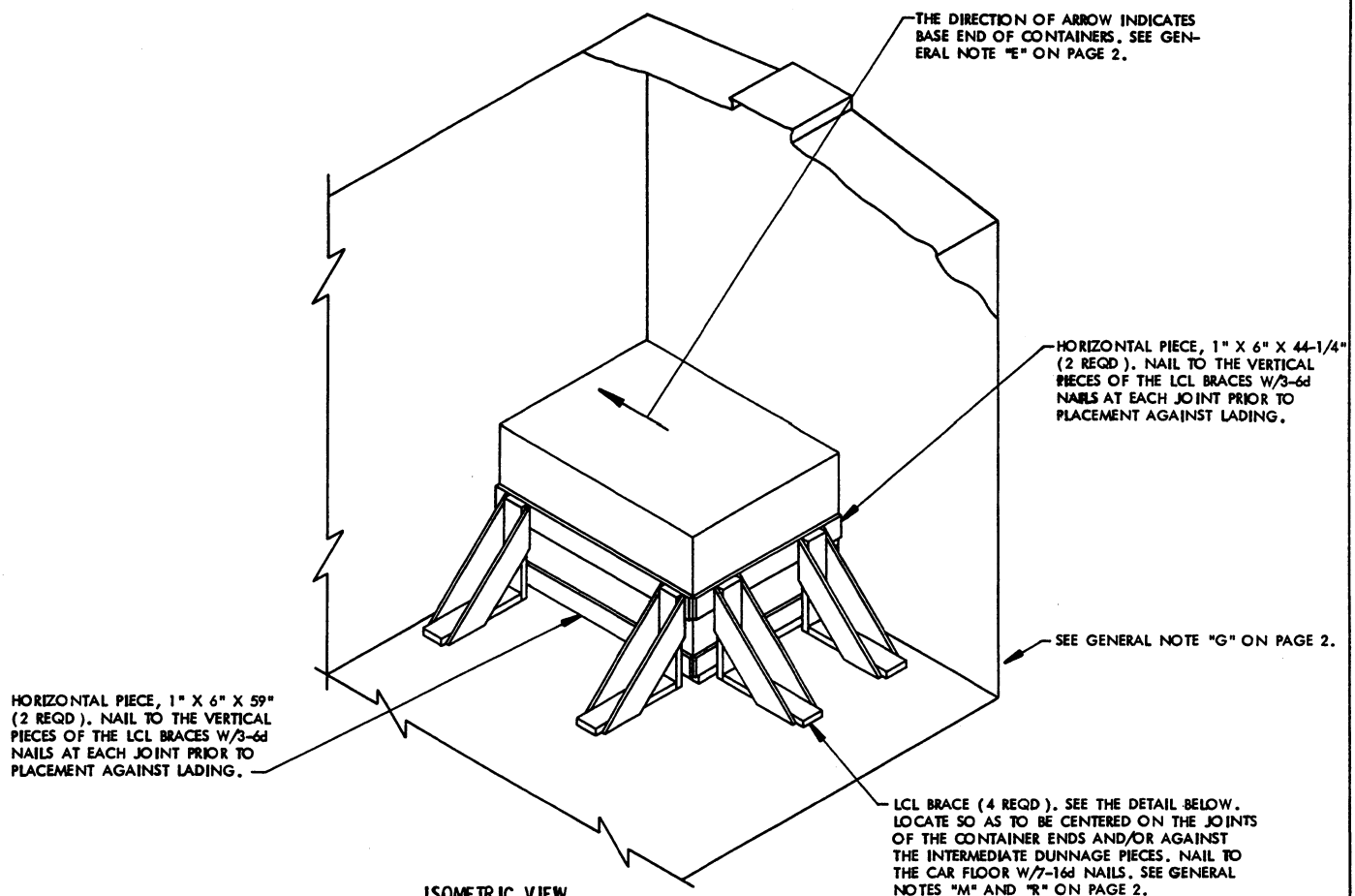
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	52	13
1" X 4"	54	18
1" X 6"	352	176
2" X 2"	18	6
2" X 3"	16	8
2" X 4"	16	11
2" X 6"	113	113
4" X 4"	32	43
NAILS	**NO. REQD**	**POUNDS**
6d (2")	276	1-3/4
8d (2-1/2")	216	2-1/4
10d (3")	116	2
16d (3-1/2")	186	4-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	9	24,669 LBS
DUNNAGE		787 LBS
TOTAL WEIGHT		25,456 LBS

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



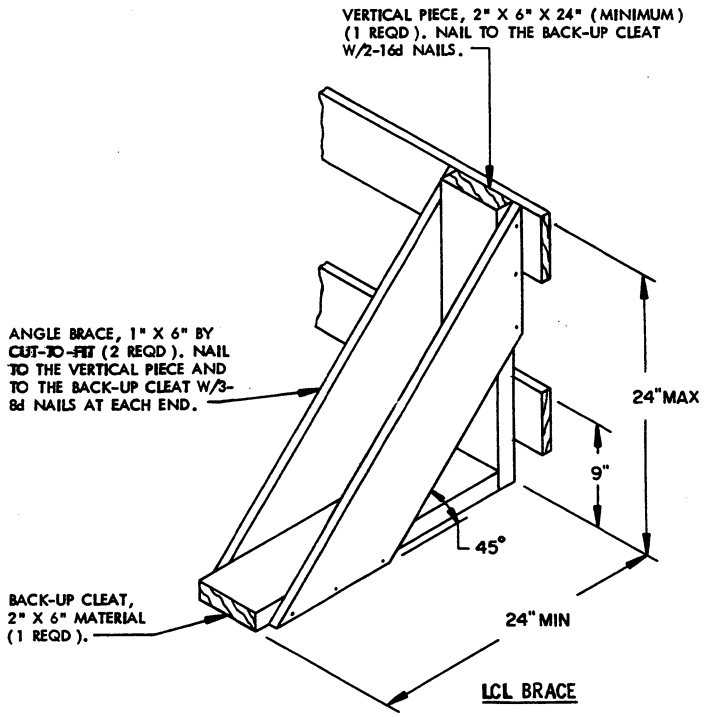
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTES "D" AND "R" ON PAGE 2.

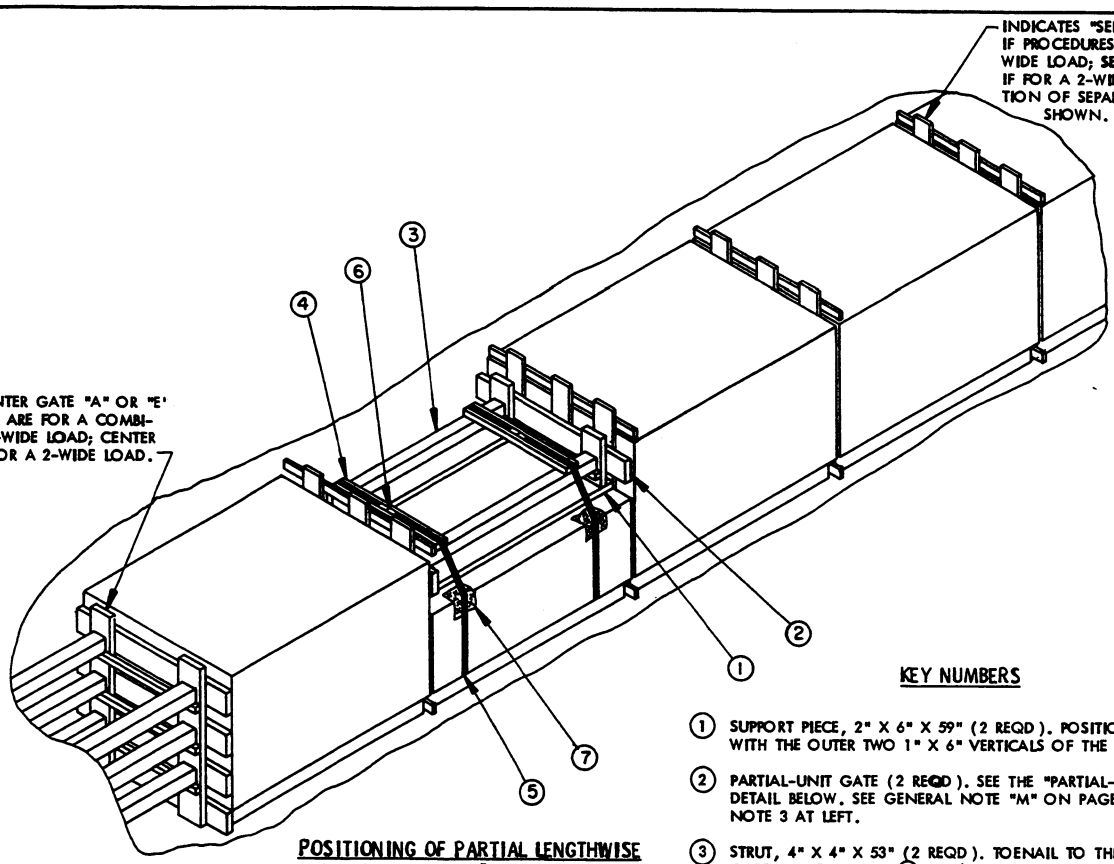
2. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A CONTAINERS-CROSSWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR UNITS WITH THE CONTAINERS POSITIONED LENGTHWISE AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE 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.



LCL BRACE

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



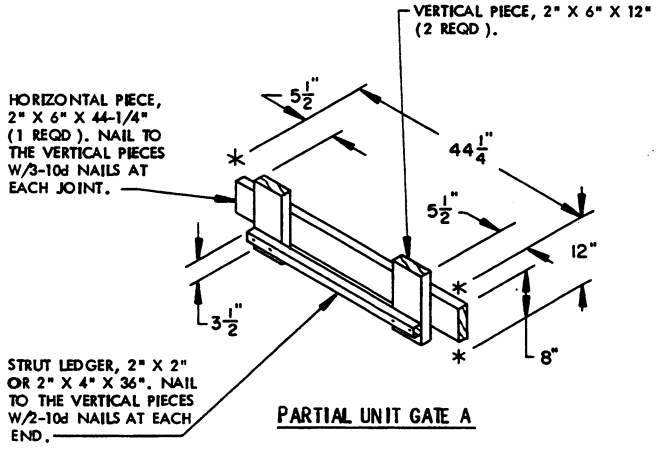
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

KEY NUMBERS

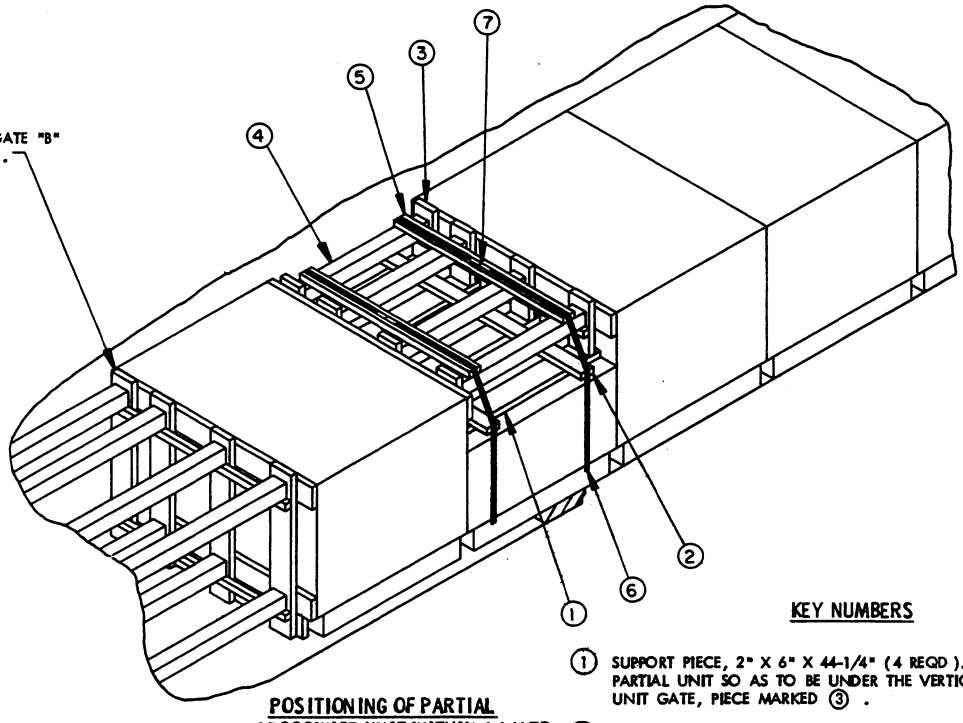
1. SUPPORT PIECE, 2" X 6" X 59" (2 REQD). POSITION SO AS TO ALIGN WITH THE OUTER TWO 1" X 6" VERTICALS OF THE SEPARATOR GATES.
2. PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
3. STRUT, 4" X 4" X 53" (2 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED (2), W/2-16d NAILS AT EACH END.
4. STRAPPING BOARD, 2" X 4" X 31-1/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (3) W/3-10d NAILS AT EACH JOINT.
5. UNITIZING STRAP, 1-1/4" X .031" OR .035" X 14'-6" LONG STEEL STRAPPING (2 REQD). PRE-POSITION.
6. SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.
7. ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.

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 CONTAINER-LENGTHWISE OR COMBINATION LOAD, WHICH EVER IS APPLICABLE.
2. A LESS THAN FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED COMPLETE ROUNDS 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 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
3. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4079/12-20PM1002, 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.
6. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.



PARTIAL UNIT GATE A



POSITIONING OF PARTIAL CROSSWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF COMPLETE ROUNDS SHOULD CONSIST OF FULL HEIGHT AND FULL LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

2. A LESS THAN FULL HEIGHT PALLET UNIT OF CROSSWISE POSITIONED COMPLETE ROUNDS 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 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

3. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4079/12-20PM1002, 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 WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD.

6. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" X 44-1/4" (4 REQD). POSITION ON TOP OF THE PARTIAL UNIT SO AS TO BE UNDER THE VERTICAL PIECES OF THE PARTIAL UNIT GATE, PIECE MARKED (3).

(2) RETAINER PIECE, 2" X 4" X 59" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED (1), W/2-10d NAILS AT EACH JOINT.

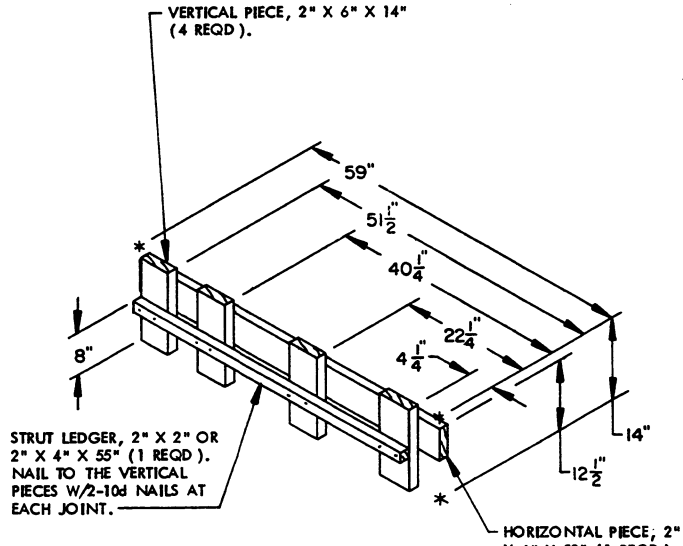
(3) PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(4) STRUT, 4" X 4" X 38-1/4" (4 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED (3), W/2-16d NAILS AT EACH END.

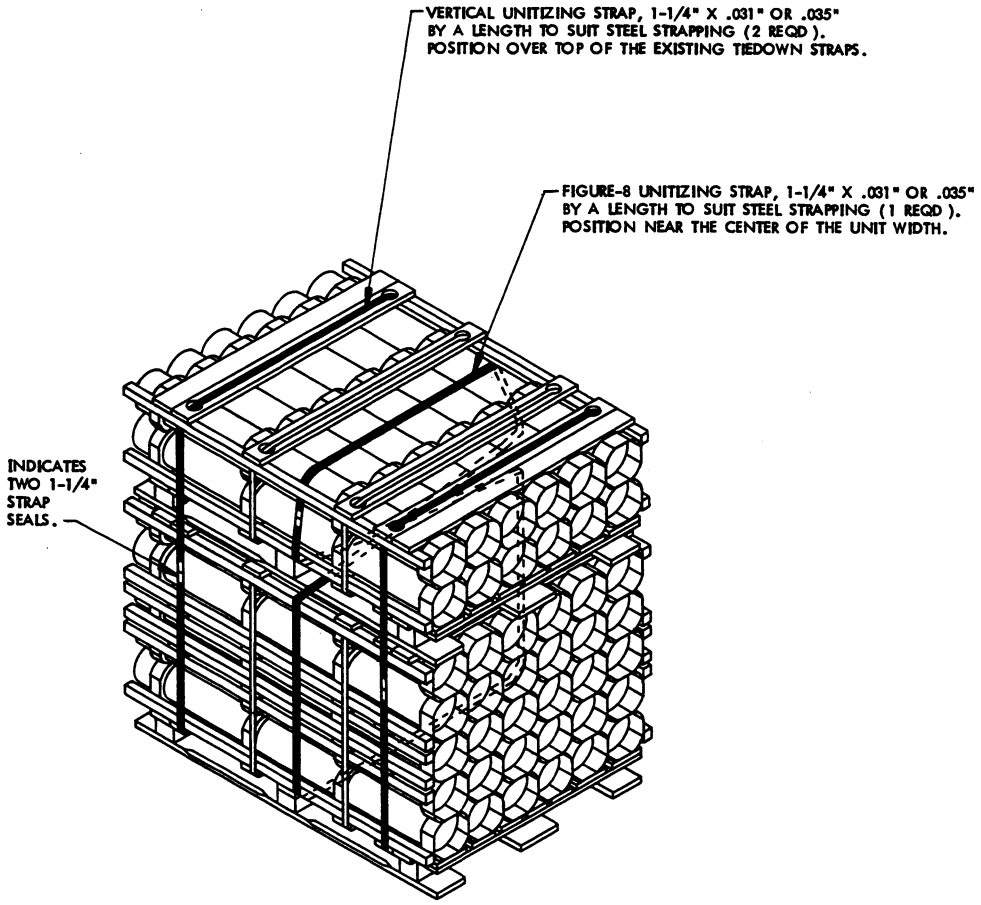
(5) STRAPPING BOARD, 2" X 4" X 50-3/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (4), W/3-10d NAILS AT EACH JOINT.

(6) UNITIZING STRAP, 1-1/4" X .031" OR .035" X 17'-6" LONG STEEL STRAPPING (2 REQD). PRE-POSITION.

(7) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.



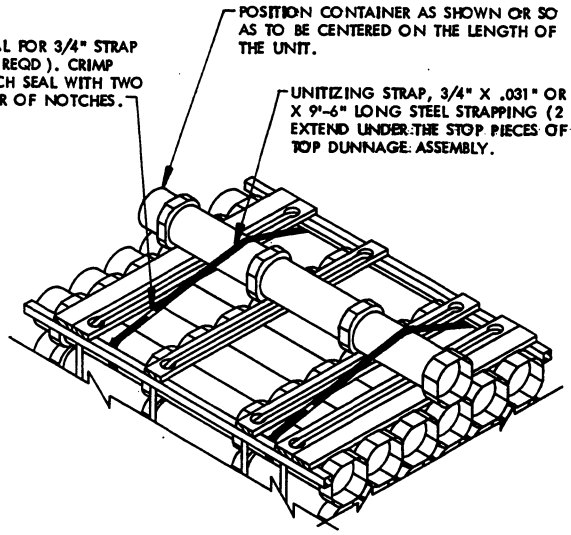
PARTIAL UNIT GATE B



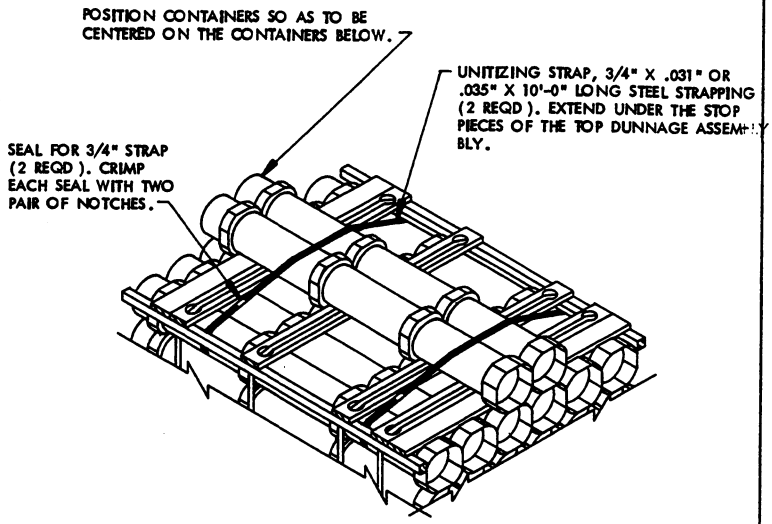
SECUREMENT OF PARTIAL UNIT ON TOP

SPECIAL NOTES:

1. THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE 1-WIDE LOAD OR IN THE CROSSWISE ROW IN A COMBINATION LOAD. CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN THREE LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN THREE LAYERS OF CONTAINERS, OR ALTERNATIVE METHOD FOR ONE AND TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 32.



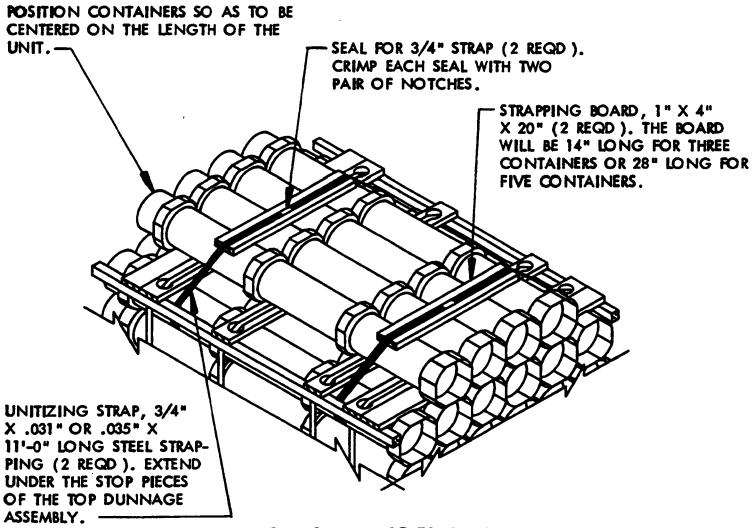
SECUREMENT OF ONE CONTAINER



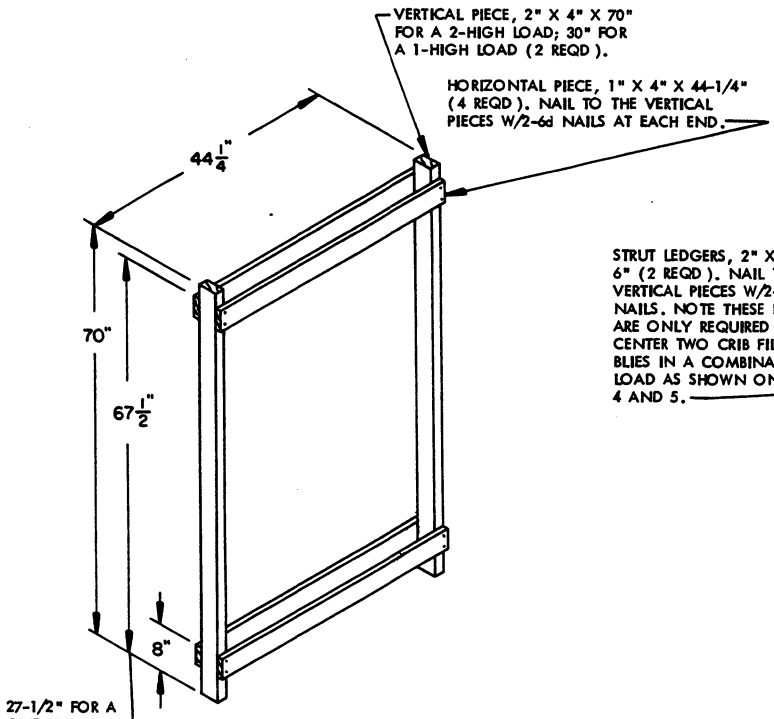
SECUREMENT OF TWO CONTAINERS

SPECIAL NOTES:

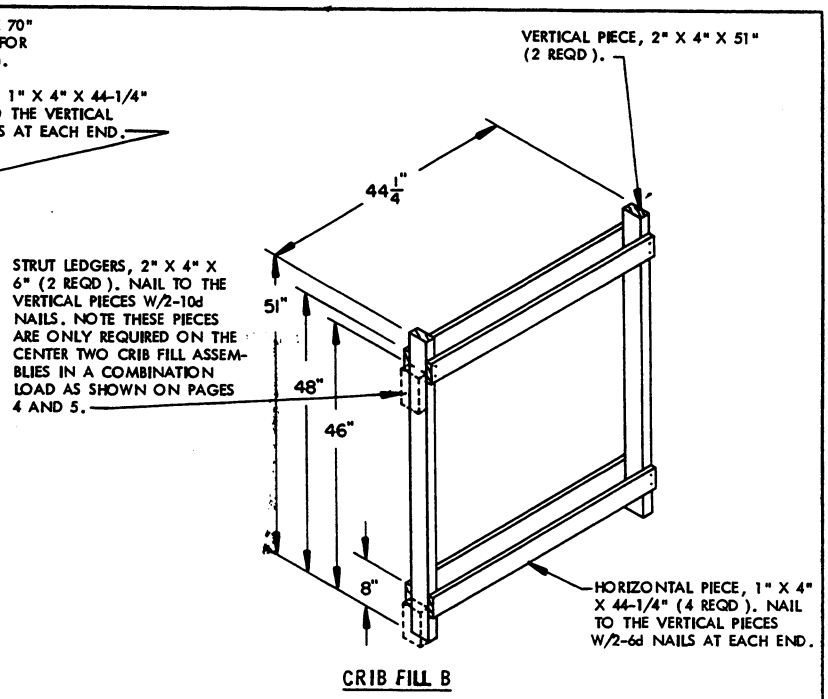
1. SHIPMENTS OF COMPLETE ROUNDS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A 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 33 OR WITHIN A LAYER AS SHOWN ON PAGES 31 AND 32.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.
4. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



SECUREMENT OF FOUR CONTAINERS



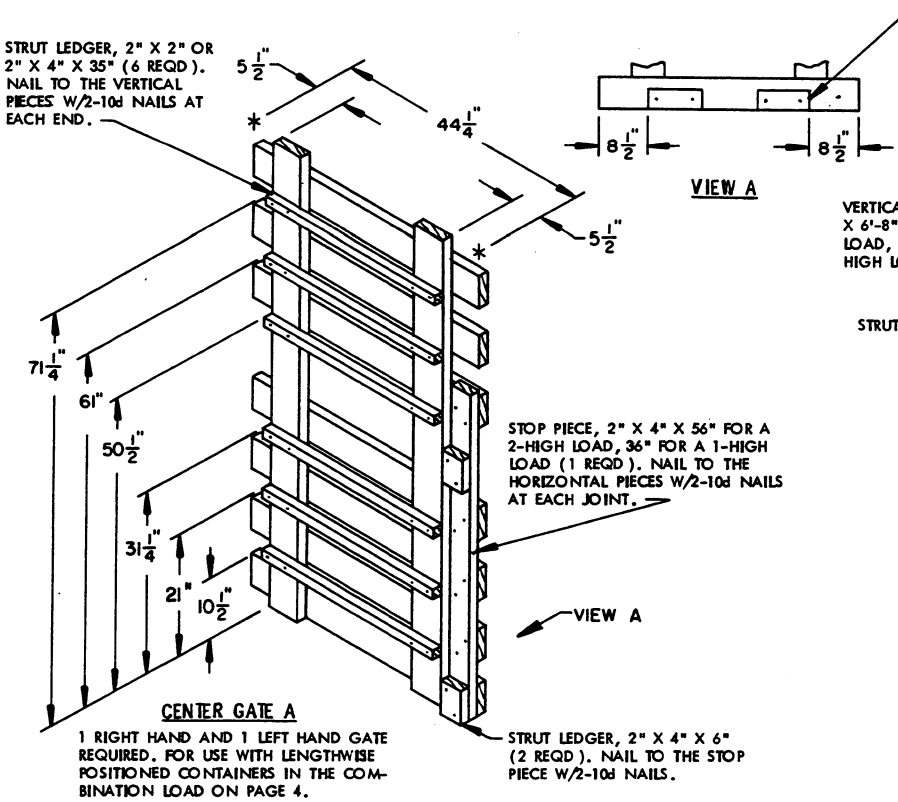
CRIB FILL A



CRIB FILL B

CRIB FILL "B" IS NOT REQUIRED FOR A 1-HIGH LOAD. CRIB FILL "A" WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.

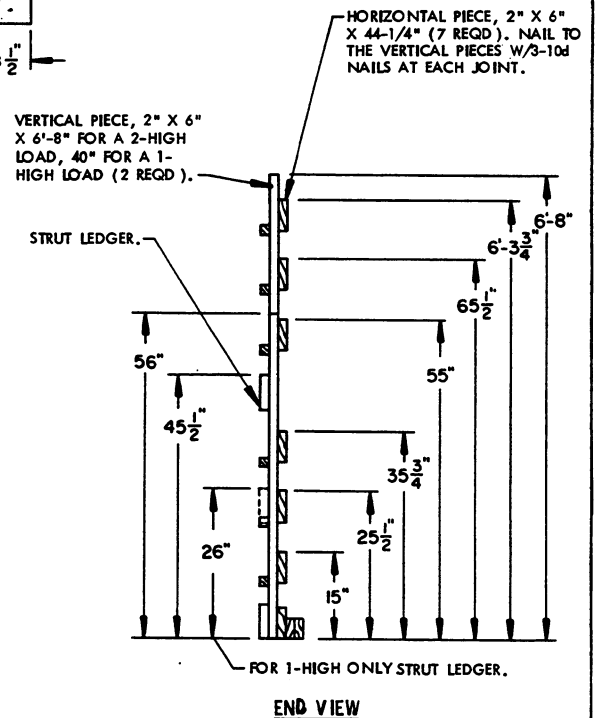
CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. NOTE THAT CRIB FILL ASSEMBLIES "A" AND "B" ARE DESIGNED FOR A 9'-4" CAR. FOR A LOAD IN A 9'-6" WIDE CAR, USE 2" X 6" VERTICAL PIECES; CRIB FILL IS NOT REQUIRED IN A 9'-2" WIDE CAR.



CENTER GATE A

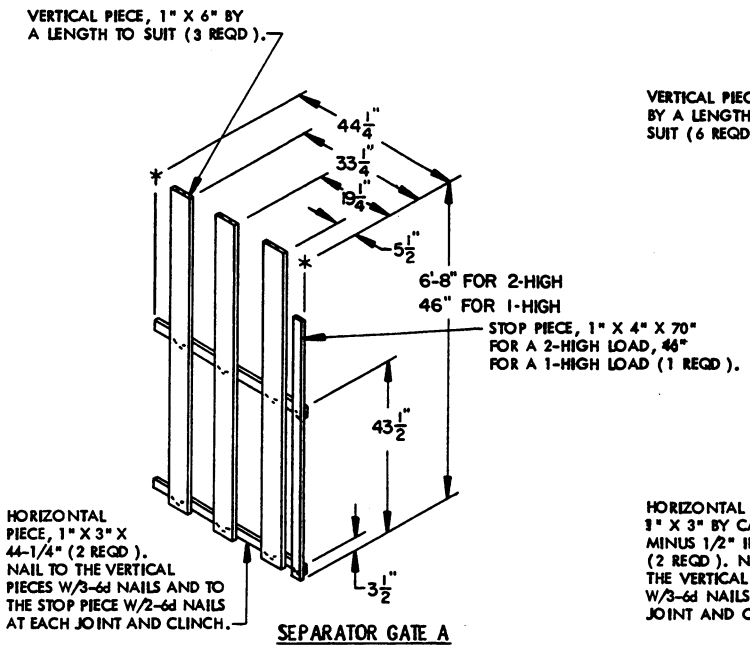
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. FOR USE WITH LENGTHWISE POSITIONED CONTAINERS IN THE COMBINATION LOAD ON PAGE 4.

VIEW A



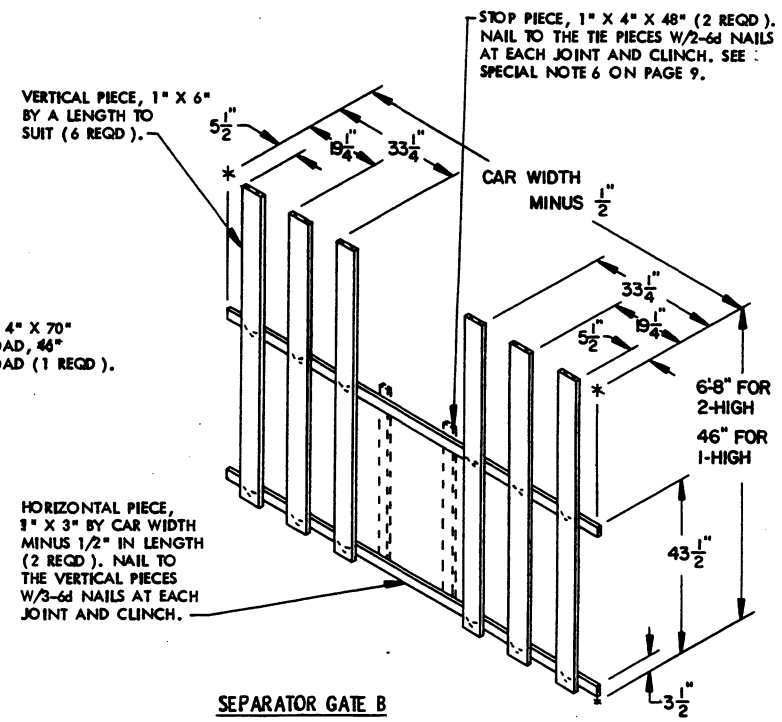
END VIEW

DETAILS



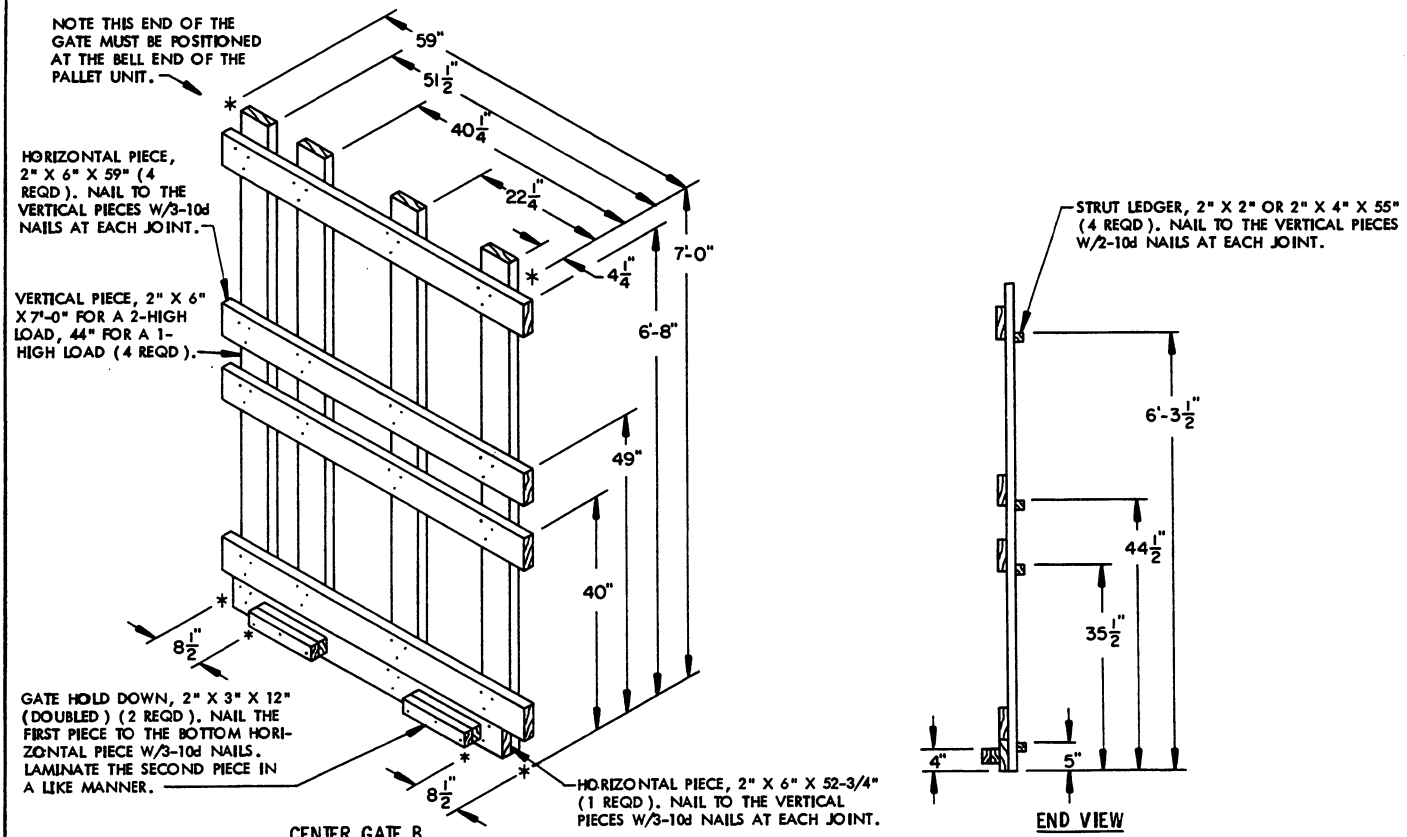
SEPARATOR GATE A

THIS ASSEMBLY IS FOR USE ON PAGES 4, 10, AND 26.



SEPARATOR GATE B

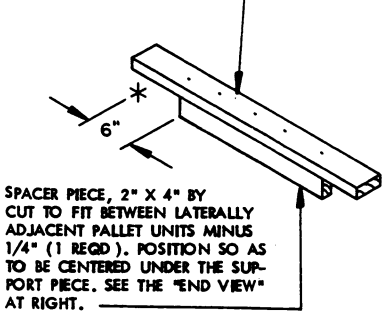
THIS ASSEMBLY IS FOR USE WITH ALL 2-WIDE LOADS OF LENGTH-WISE-POSITIONED CONTAINERS.

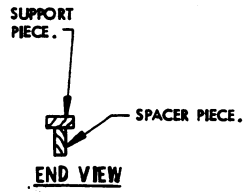


CENTER GATE B

END VIEW

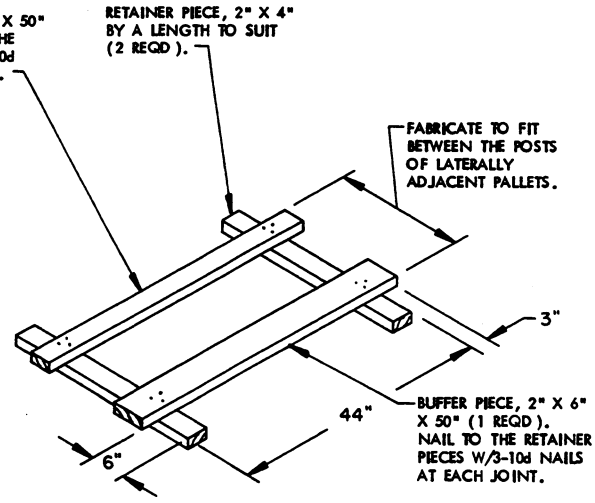
ONE RIGHT HAND AND ONE LEFT HAND REQUIRED. FOR USE WITH THE CONTAINERS-CROSSWISE PORTION OF THE COMBINATION LOAD ON PAGE 4.





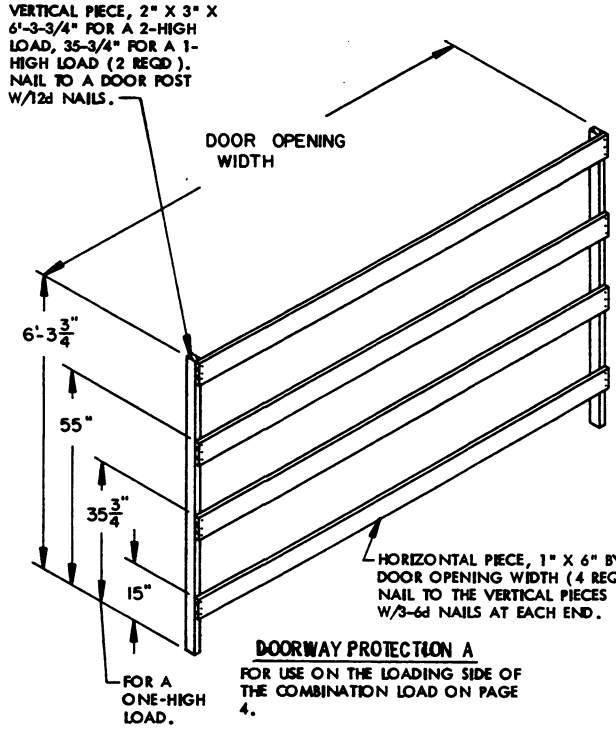
TOP-OF-LOAD ANTI-SWAY BRACE

FOR USE IN THE LOADS ON PAGES 6, 8, 10, AND 12.



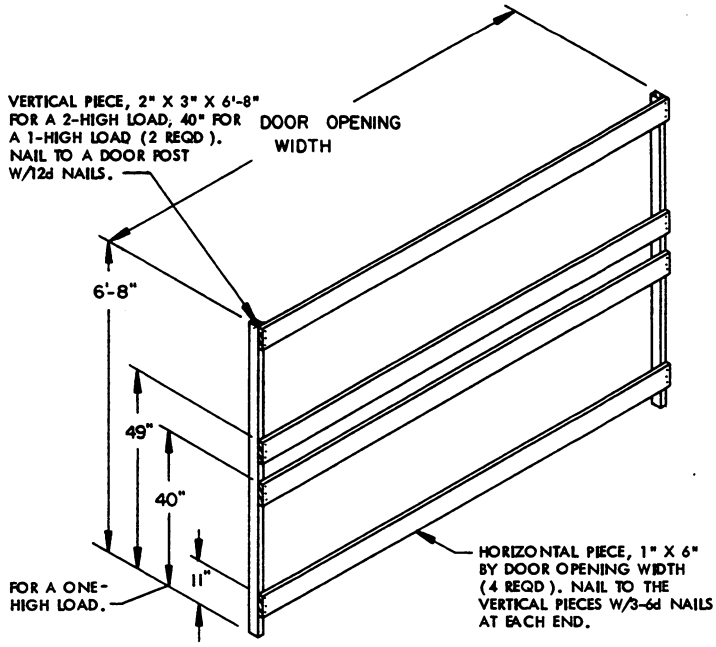
ANTI-SWAY BRACE

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 OPENINGS OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET UNIT. THE 2" X 6" BUFFER PIECE IS APPLIED LAST.



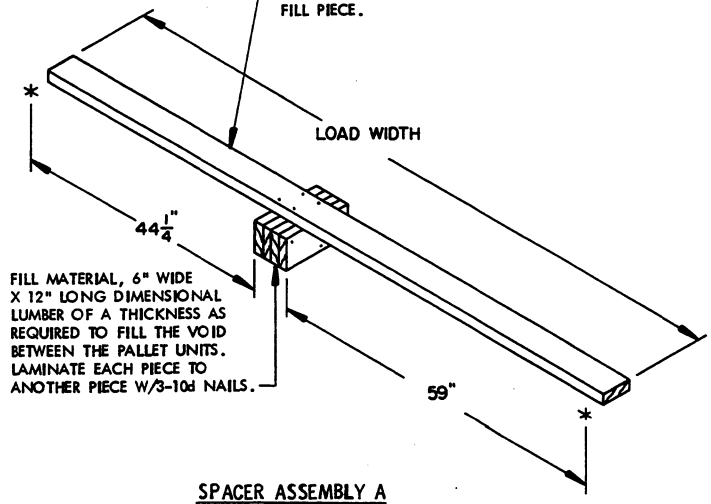
DOORWAY PROTECTION A

FOR USE ON THE LOADING SIDE OF THE COMBINATION LOAD ON PAGE 4.



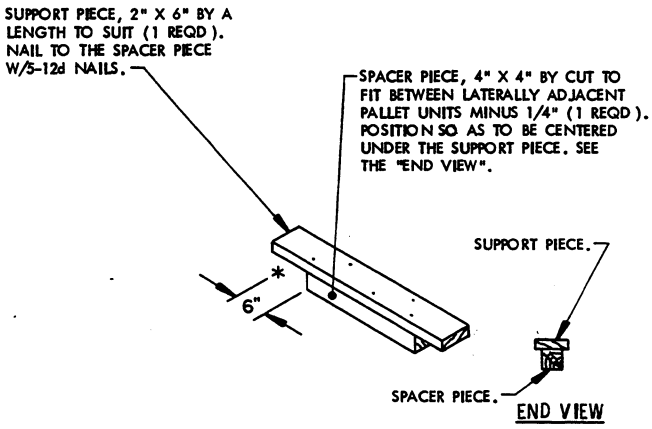
DOORWAY PROTECTION B

FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE COMBINATION LOAD ON PAGE 4, AND IN THE LOAD ON PAGE 6.



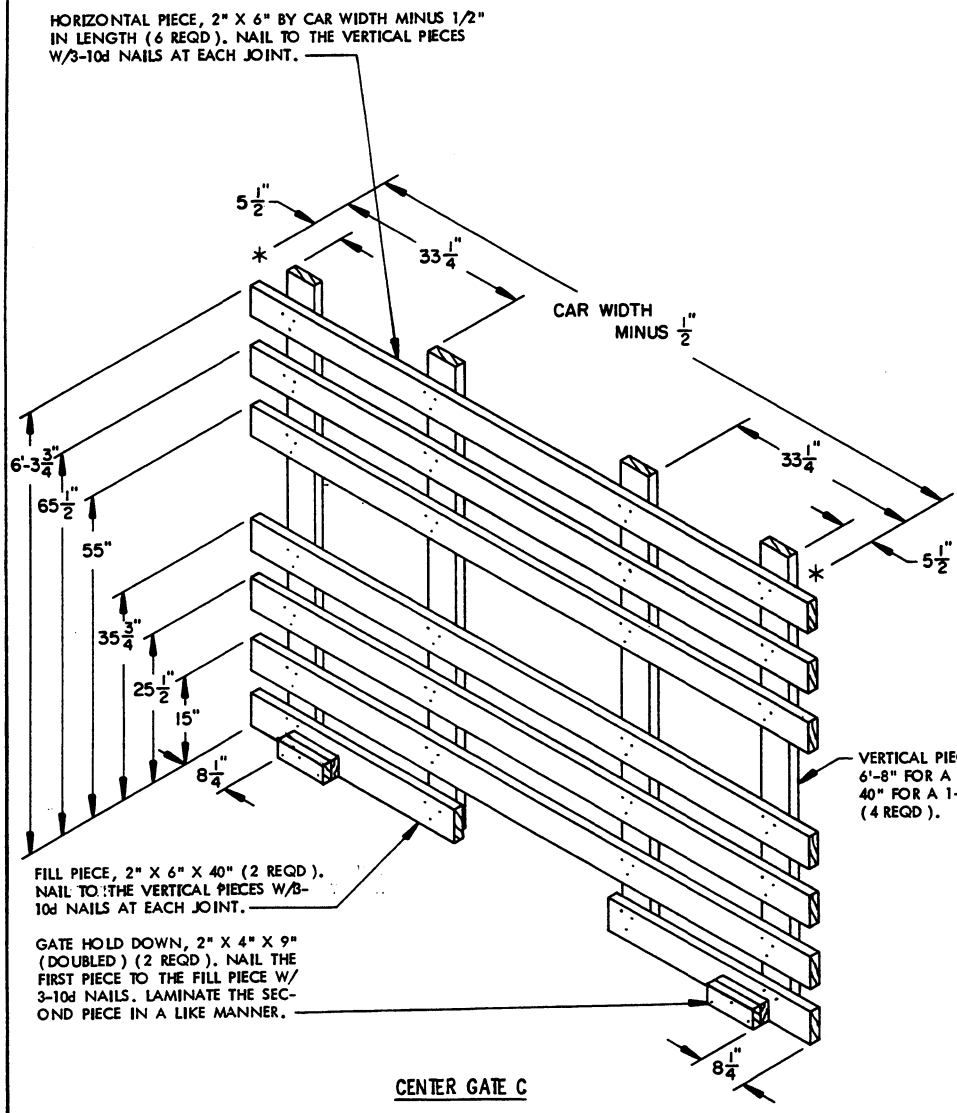
SPACER ASSEMBLY A

THIS ASSEMBLY IS FOR USE IN THE COMBINATION LOAD ON PAGE 4 WHEN THE CAR IS EQUIPPED WITH PLUG TYPE DOORS, OR AS AN ALTERNATIVE TO WOODEN DOOR GATE TYPE DOORWAY PROTECTION WHEN USED IN CONJUNCTION WITH STEEL STRAPPING.



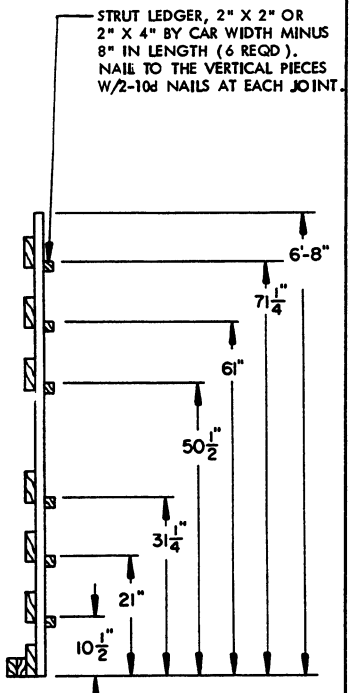
SPACER ASSEMBLY B

THIS ASSEMBLY IS FOR USE IN THE LOAD ON PAGE 12.



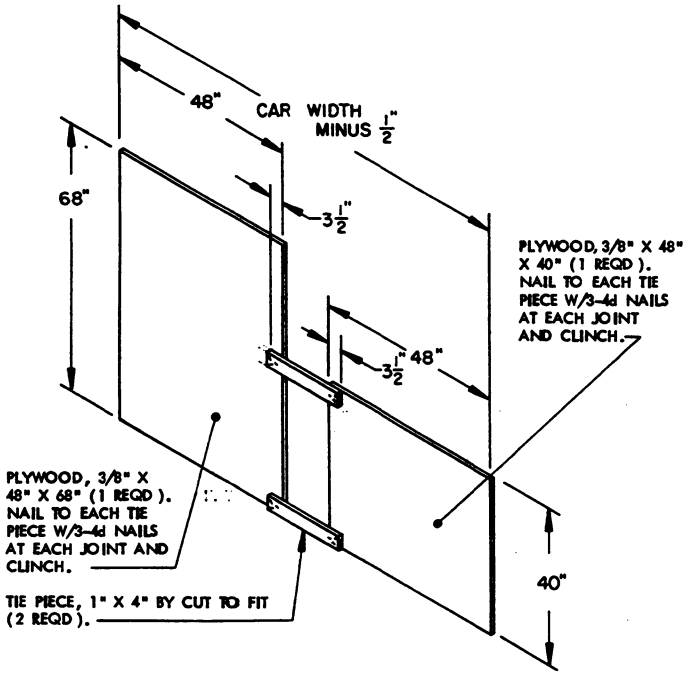
CENTER GATE C

FOR USE IN THE LOAD ON PAGE 6.



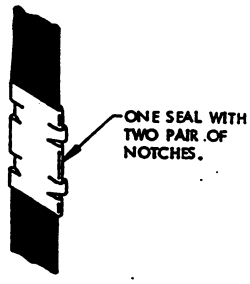
END VIEW

DETAILS



SEPARATOR GATE D

THIS ASSEMBLY IS FOR USE IN THE OMITTED PALLET UNIT PROCEDURES SHOWN ON PAGE 17.

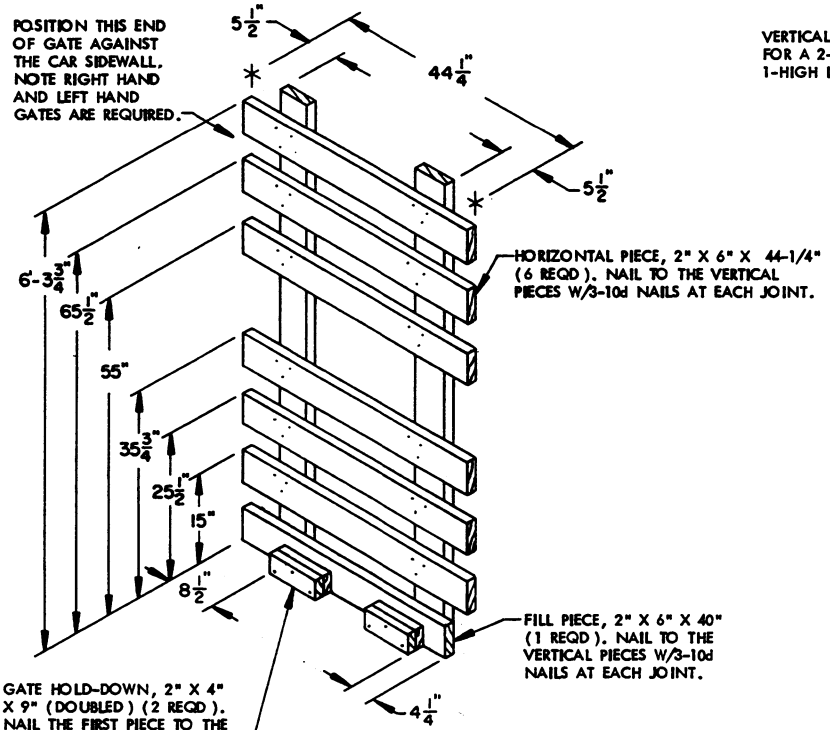


STRAP JOINT A

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

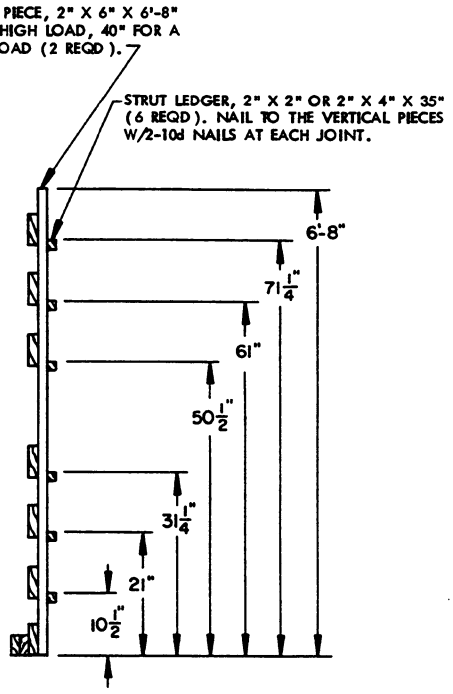
STRAP JOINT B

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

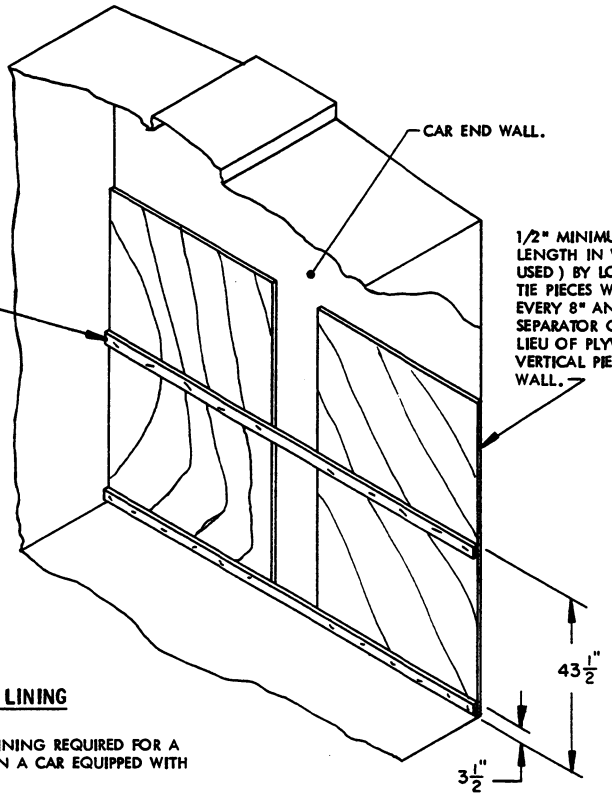


CENTER GATE D

SEE SPECIAL NOTE 9 ON PAGE 7.

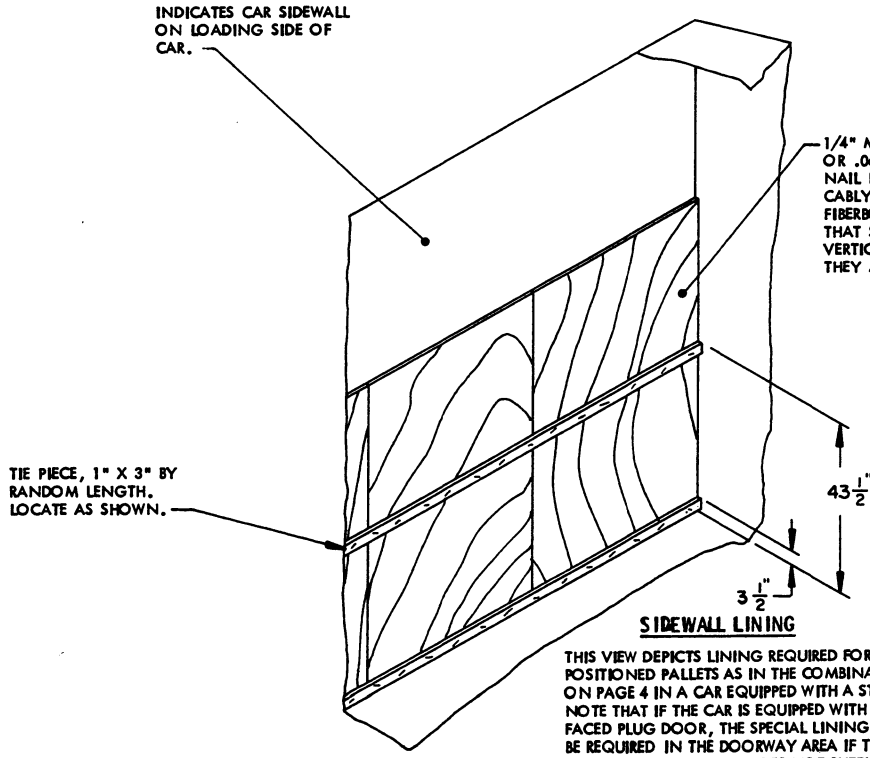


END VIEW



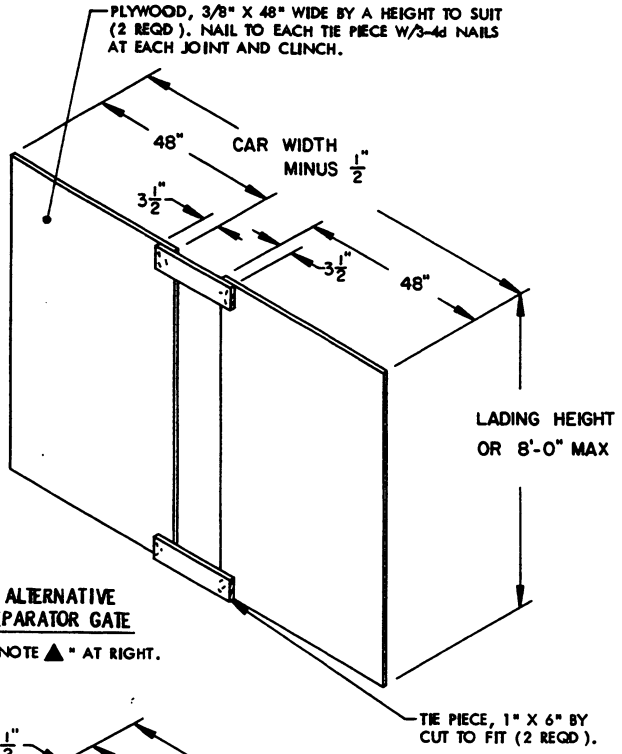
END WALL LINING

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



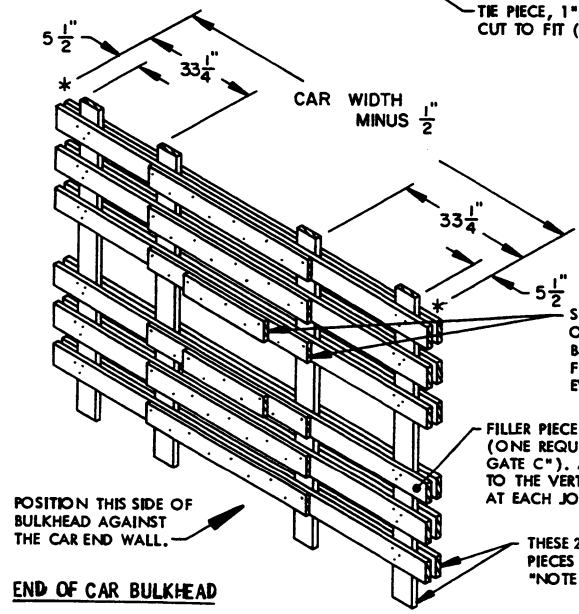
SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR CROSSWISE POSITIONED PALLETS AS IN THE COMBINATION LOAD ON PAGE 4 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.



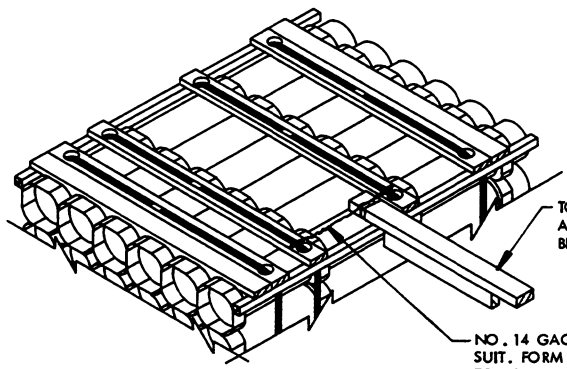
ALTERNATIVE SEPARATOR GATE

SEE "NOTE ▲" AT RIGHT.



END OF CAR BULKHEAD

SEE "NOTE ◯" AT RIGHT.



TIE WIRE APPLICATION

NOTE ▲:

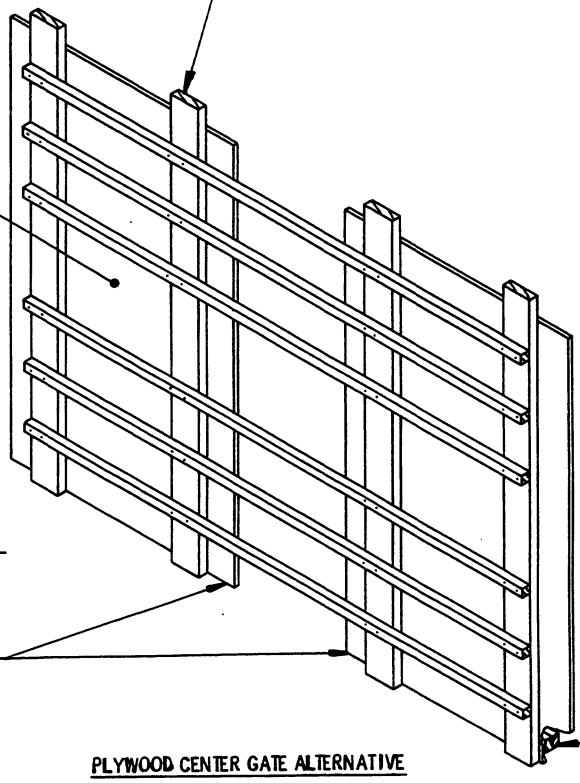
THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 1" X 3" AND 1" X 6" MATERIAL. THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LOADS WHICH ARE EITHER ONE OR TWO PALLET UNITS IN HEIGHT.

NOTE ◯:

IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2") EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNITS POSITIONED LENGTHWISE. NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "C", AS DETAILED ON PAGE 38, IS SHOWN AS TYPICAL.

INDICATES A CENTER GATE "C" WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 38 FOR LOCATION OF THE VERTICAL PIECES AND THE STRUT LEDGERS.

PLYWOOD, 1/2" THICK BY THE UNIT LENGTH BY LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6". NOTE: THE PLYWOOD MAY BE ALLOWED TO EXTEND BEYOND THE UNIT LENGTH OR HEIGHT IF DESIRED.



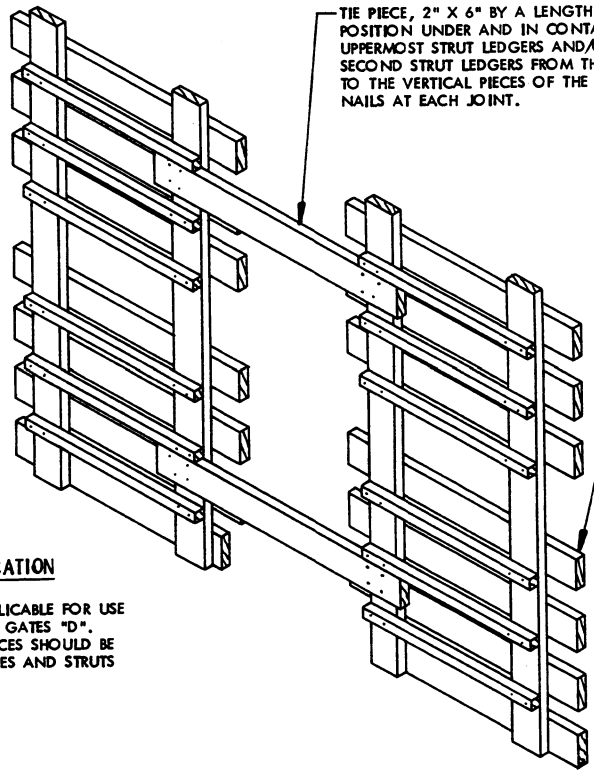
WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, EACH PLYWOOD SHEET MUST HAVE A CUTOUT AT THE LOWER INSIDE CORNER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. THE CUTOUT MUST BE 3-1/2" HIGH AND OF SUFFICIENT WIDTH SO THAT THE REMAINING PLYWOOD AT THE FLOOR IS 41" WIDE.

GATE HOLD DOWN PIECES MUST BE SECURED TO THE PLYWOOD.

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.

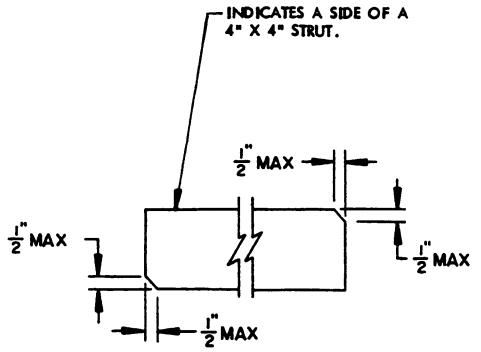
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



INDICATES A "SPLIT" CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 39.

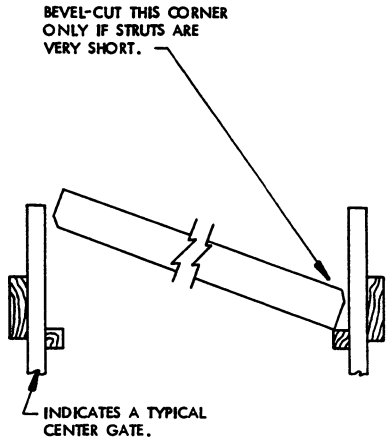
TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH TWO (2) CENTER GATES "D". NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



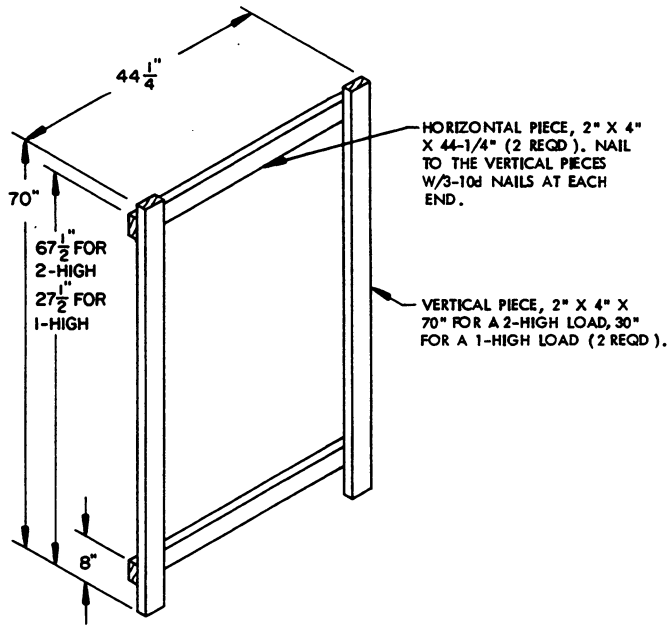
BEVEL-CUT

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



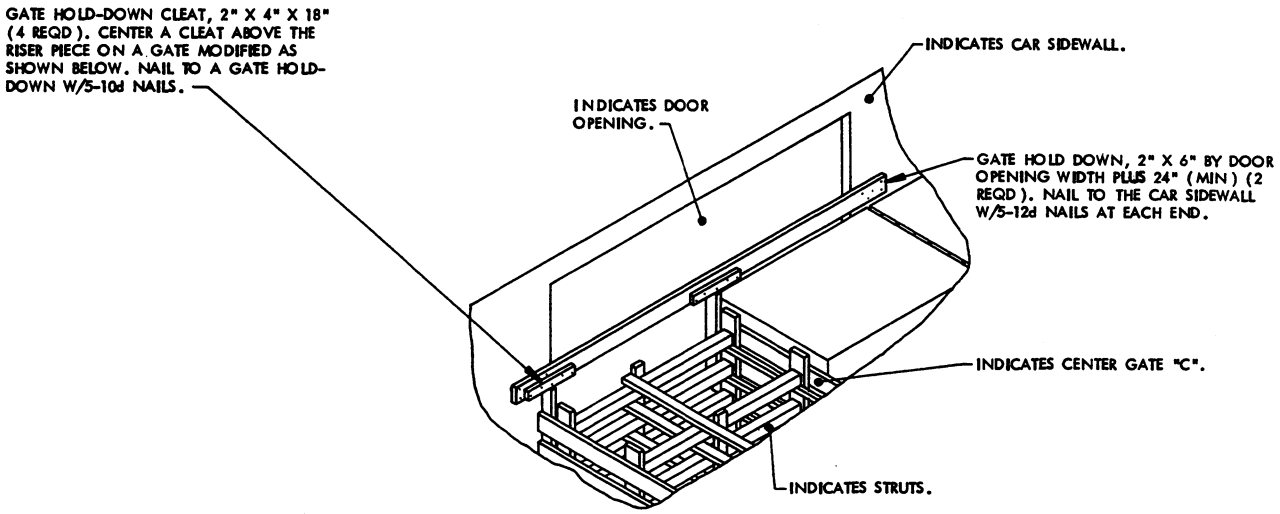
STRUT INSTALLATION

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



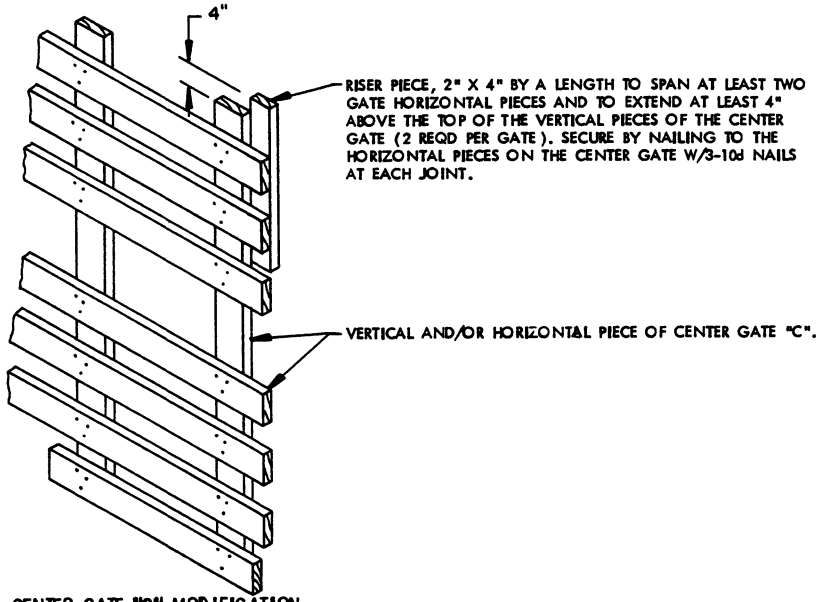
SIDE FILL ASSEMBLY

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



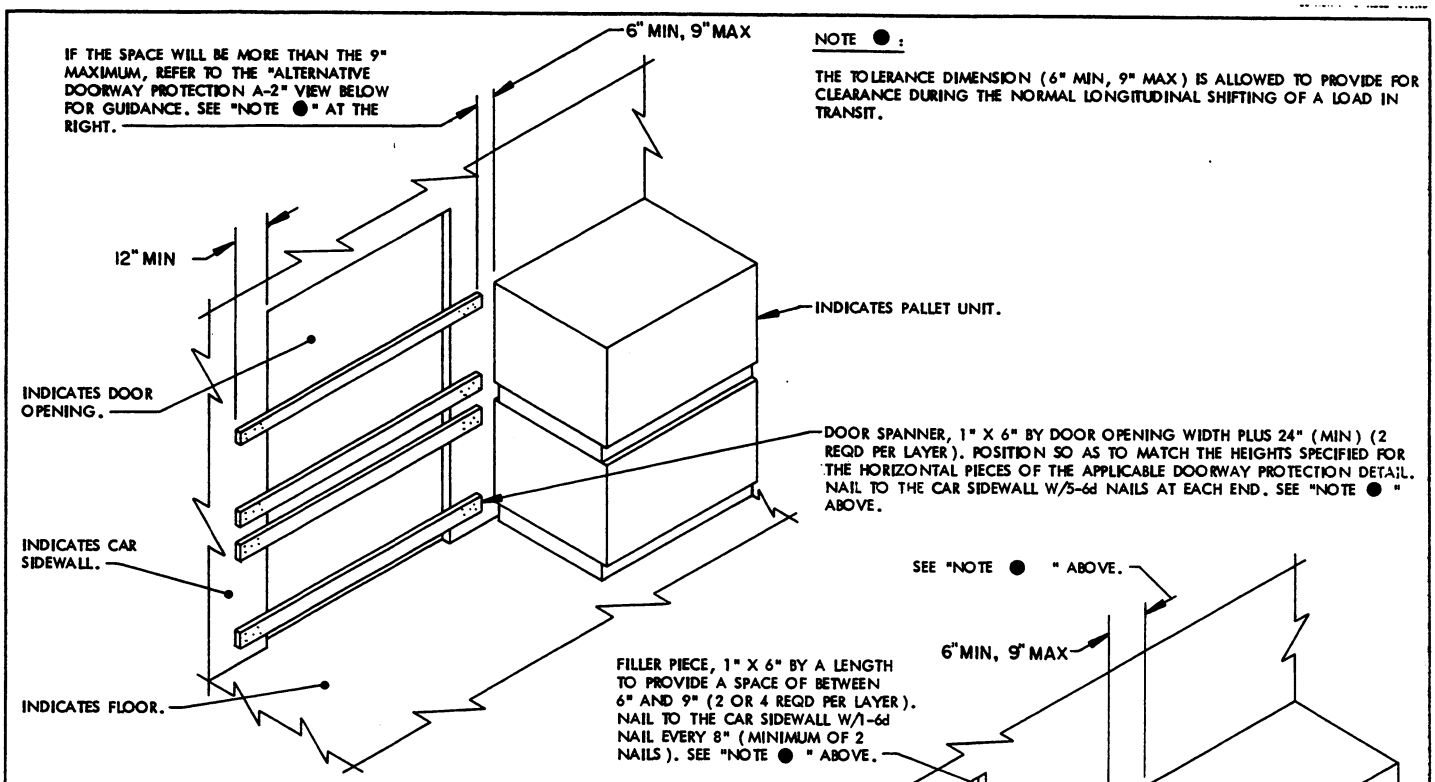
ALTERNATIVE GATE HOLD-DOWN

THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED, IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD-DOWN PIECES WHICH ARE PART OF A CENTER GATE. NOTE: IN THE EVENT THAT EITHER CENTER GATE IS 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 "C" MODIFICATION

THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR CENTER GATE "C" WHICH HAS THE VERTICAL PIECES INSET FROM THE END OF THE HORIZONTAL PIECES AS SHOWN ABOVE. THE RISER PIECE WILL PROVIDE A MEANS FOR THE GATE TO CONTACT THE GATE HOLD-DOWN AS SHOWN IN THE "ALTERNATIVE GATE HOLD-DOWN" DETAIL AT THE TOP OF THIS PAGE.

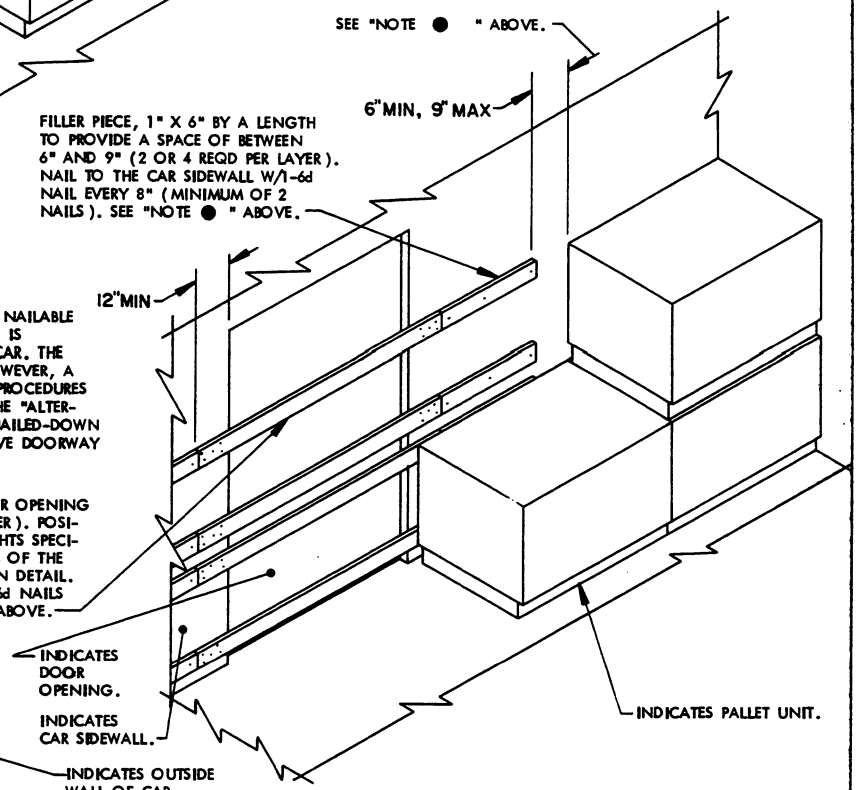


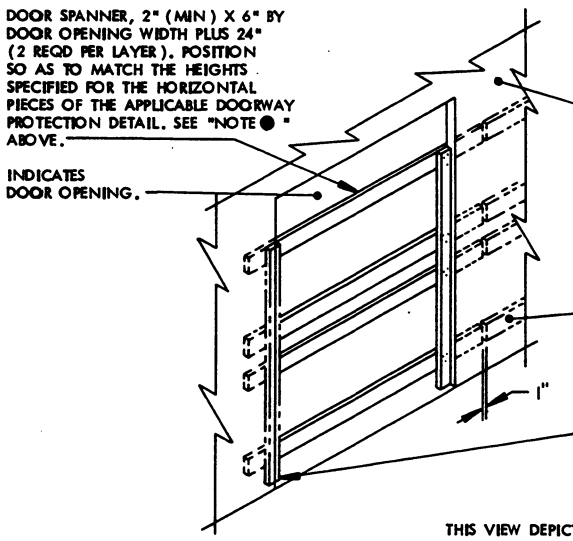
NOTE ● :

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 46 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED BY THE ALTERNATIVE DOORWAY PROTECTION SHOWN IN THE LOAD ON PAGE 12.





ALTERNATIVE DOORWAY PROTECTION A-2

THIS METHOD OF DOORWAY PROTECTION IF 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.

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 "DOORWAY PROTECTION" DETAILS ON PAGE 37 FOR HEIGHT LOCATIONS.

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.

DOOR POST.

DOOR GATE.

INSIDE WALL.

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.

DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" 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 MICROLOCK NAILS.

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

VIEW A

INDICATES STRAP ANCHOR PLATE.

DOOR SPANNER END OF STRAP.

ISOMETRIC VIEW

VIEW A

INDICATES STRAP ANCHOR PLATE (2 REQD PER STRAP).

6'-3"

54"

35"

14"

INDICATES FLOOR.

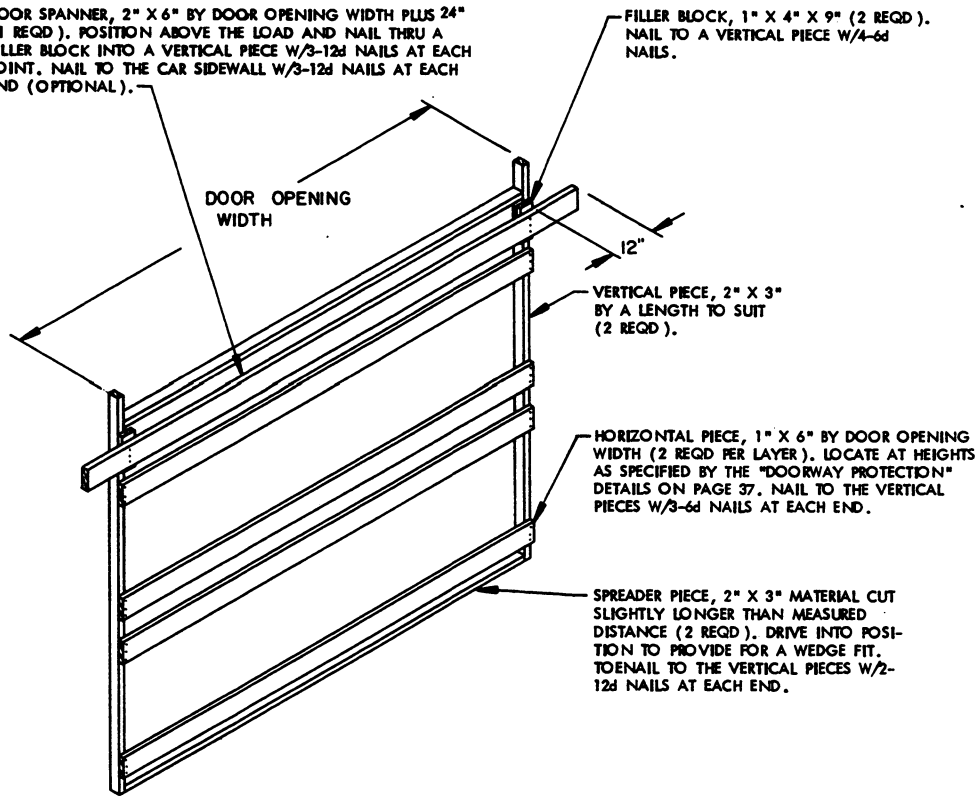
A TOLERANCE OF PLUS OR MINUS 2" IS PERMISSIBLE.

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

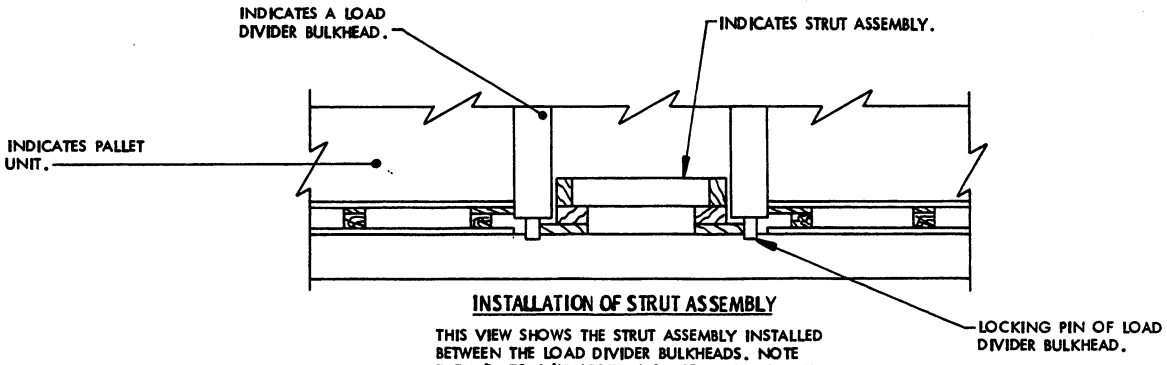
ALTERNATIVE DOORWAY PROTECTION C

THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE IN THE COMBINATION LOAD ON PAGE 4 AND ONLY FOR THE LOADING SIDE OF THE CAR. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITN NAILABLE SIDE WALLS. IF THE CAR IS EQUIPPED WITH SPECIAL ANCHOR RODS IN THE CAR DOOR POSTS, THE DOORWAY PROTECTION STRAPS MAY BE SECURED TO THOSE RODS IN LIEU OF ATTACHING TO THE CAR SIDEWALL WITH STRAP ANCHOR PLATES.



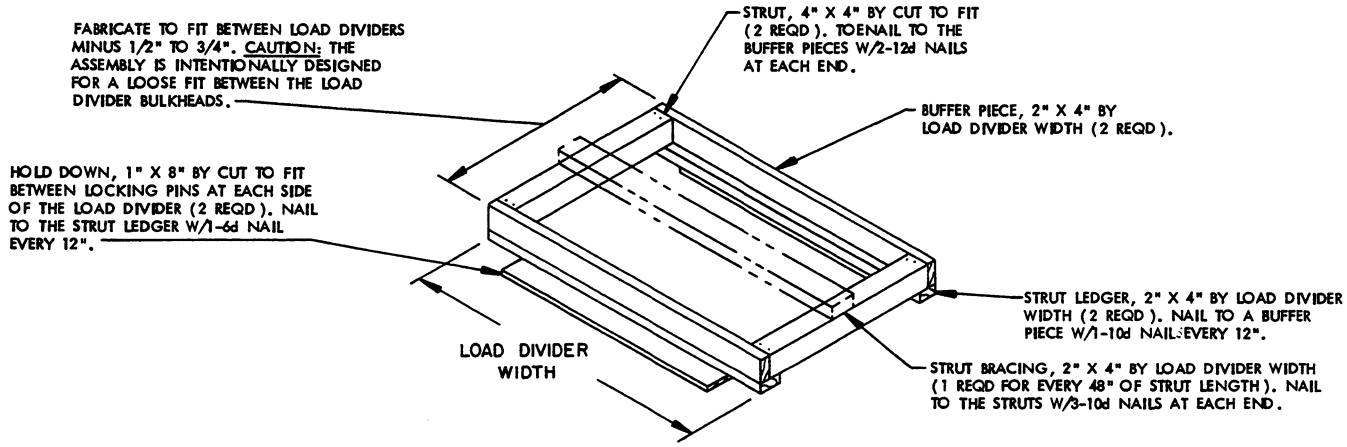
ALTERNATIVE DOORWAY PROTECTION D

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 46 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 44.



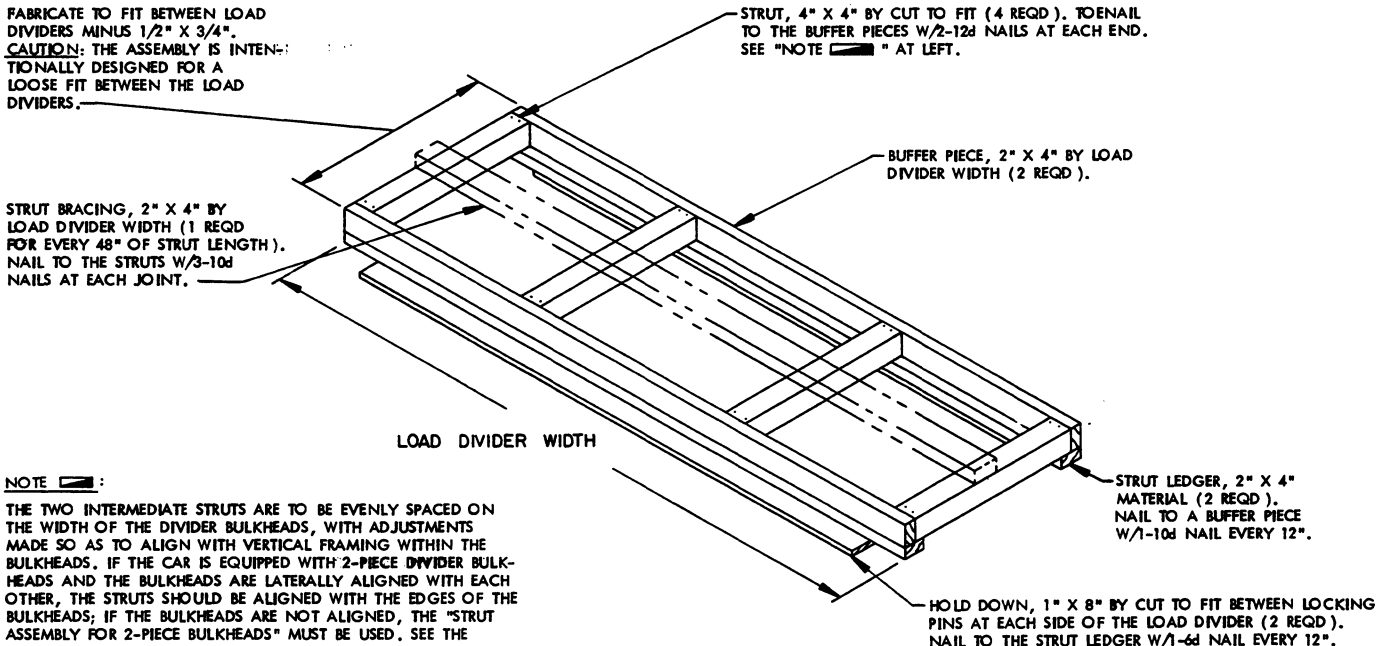
INSTALLATION OF STRUT ASSEMBLY

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 ▬" BELOW.

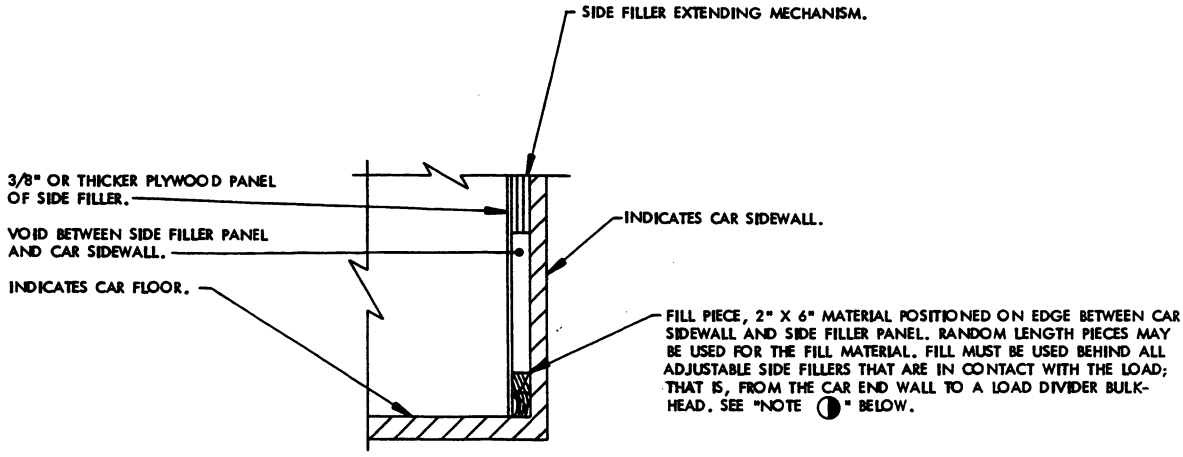


NOTE ▬:

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

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF 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.

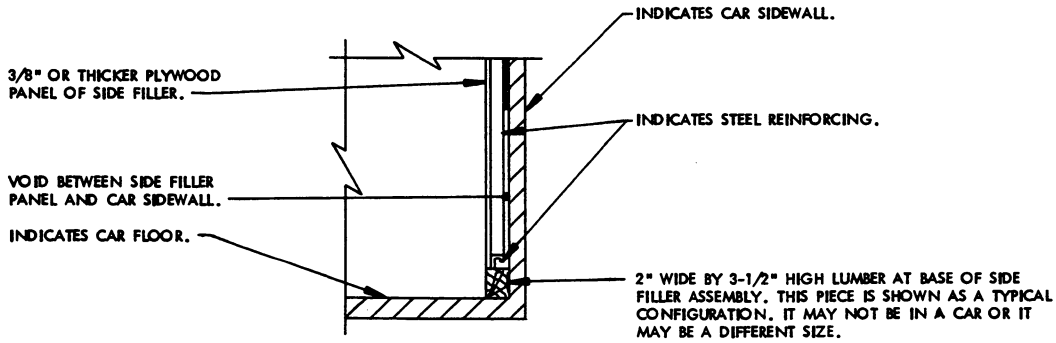


TYPICAL TYPE A

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

NOTE ◑:

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



TYPICAL TYPE B

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