

APPROVED BY
BUREAU OF EXPLOSIVES

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DATE 11/20/91

LOADING AND BRACING (CL & LCL) IN BOX CARS OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS PA97 SERIES CONTAINER

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

DO NOT SCALE

REVISIONS				DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
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				CLASS	DIVISION	DRAWING	FILE	
				19	48	4042B/ 18	5 PM 1000	

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA97 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGE 4. REFER TO THE US ARMY MAT-RIFL COMMAND (AMC) DRAWING 19-48-4042A/19-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA97 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 PROPELLING CHARGE CONTAINERS THAT OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL SIDEWALLS OR END WALLS OF BOX CARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOX CARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL OF CONTAINER TO METAL OF CAR CONTACT IS POSSIBLE. REFER TO PAGE 64 FOR GUIDANCE.
- E. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHARTS ON PAGE 40 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.
- F. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLET UNITS OF PROPELLING CHARGES 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 65 FOR GUIDANCE.
- H. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED UNITS OF PROPELLING CHARGES, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER -----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS -----: COMMON, FED SPEC FF-N-105.
- STAPLES -----: FED SPEC FF-N-105; SENCO QUALITY OR EQUAL.
- STRAPPING, STEEL -: ASTM D 3953; FLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.
- STRAP SEAL -----: ASTM D 3953; CLASS H, FINISH A, B (GRADE 2); OR C, TYPE D, STYLE I, II, OR IX.
- 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.

- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 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/7-10d 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 CARLOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" 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 QUALITY 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 PAIRS 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 21 FOR GUIDANCE.
- P. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- Q. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- R. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.
- S. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY 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.
- T. **NOTICE:** WHEN POSITIONING PALLET UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLET UNITS 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 CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
- U. LOAD BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS TYPICALLY SHOWN BY PIECES MARKED (5) AND (6) ON PAGE 10. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.
- V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL

(GENERAL NOTES CONTINUED ON PAGE 3)

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 67 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.

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

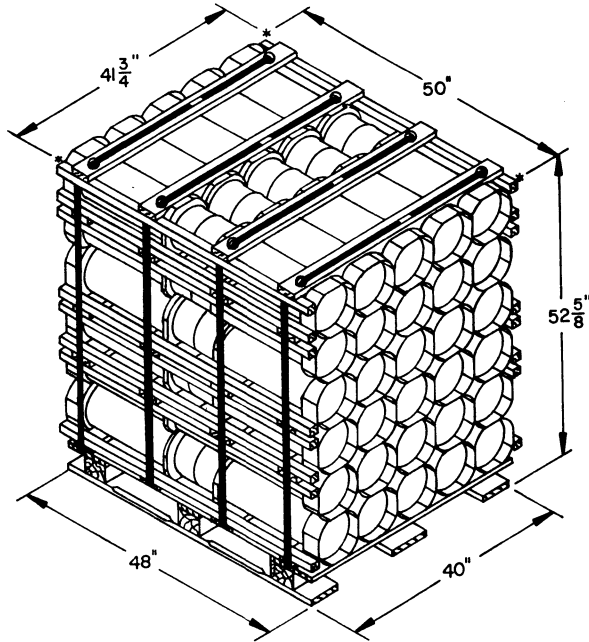
GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- AA. **CAUTION:** FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, 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 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 PROPELLING CHARGES. **NOTICE:** ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.
- CC. IF 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 73 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 73, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- 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.

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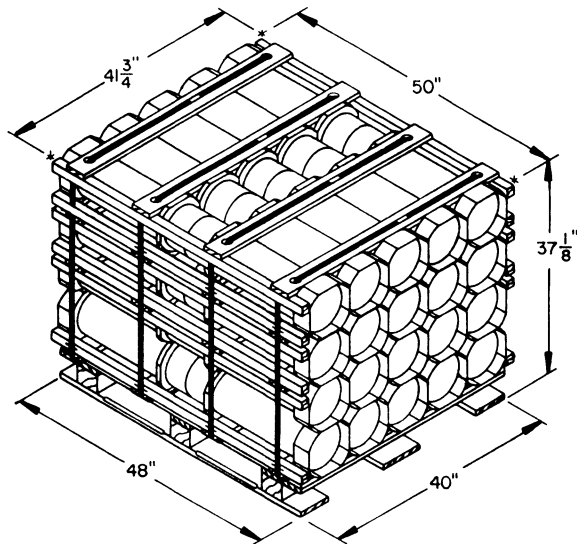
- EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED 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 72.
- 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 PALLETIZED UNITS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
- ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 46 THRU 48.
 - THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGES 42 THRU 45 FOR GUIDANCE.
 - 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 EVEN LAYERS WHICH ARE ONE OR MORE LESS IN HEIGHT THAN THE LOAD IN THE ENDS OF THE CAR. INSTALL CENTER GATES, STRUTS AND GATE HOLD DOWNS AS SHOWN IN THE APPLICABLE CONVENTIONAL BOX CAR DRAWING HEREIN, TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.
 - 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 49 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGES 56 AND 57.
- GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



PALLET UNIT (BASIC HEIGHT)

CONTAINER-----60 EACH @ 29 LBS (APPROX)
 CUBE-----63.6 CUBIC FEET (APPROX)
 GROSS WEIGHT-----1,919 LBS (APPROX)

REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES.

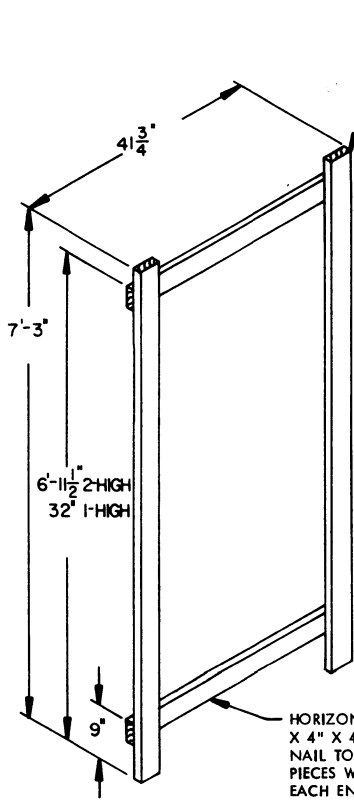


PALLET UNIT (DECREASED HEIGHT)

CONTAINER-----40 EACH @ 29 LBS (APPROX)
 CUBE-----44.8 CUBIC FEET (APPROX)
 GROSS WEIGHT-----1,320 LBS (APPROX)

REFER TO PAGES 22 THRU 31 FOR OUTLOADING PROCEDURES.

PALLET UNIT DETAILS

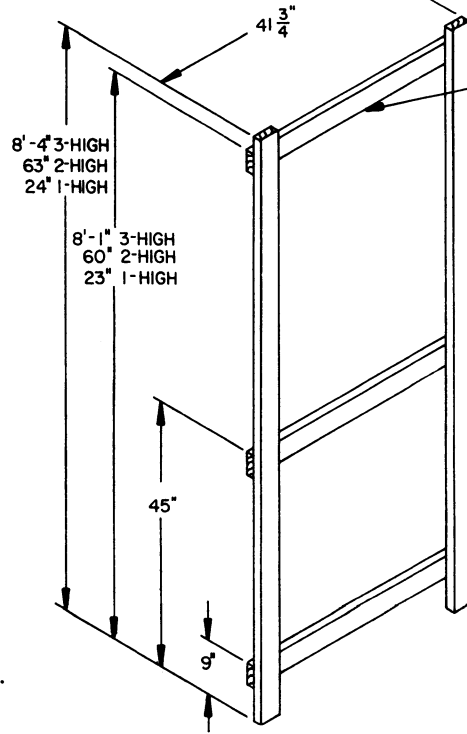


SIDE FILL ASSEMBLY A

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 6.

VERTICAL PIECE, 2" X 4" X 7'-3" FOR A 2-HIGH LOAD, 35" FOR A 1-HIGH LOAD (2 REQD).

HORIZONTAL PIECE 2" X 4" X 41-3/4" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END .



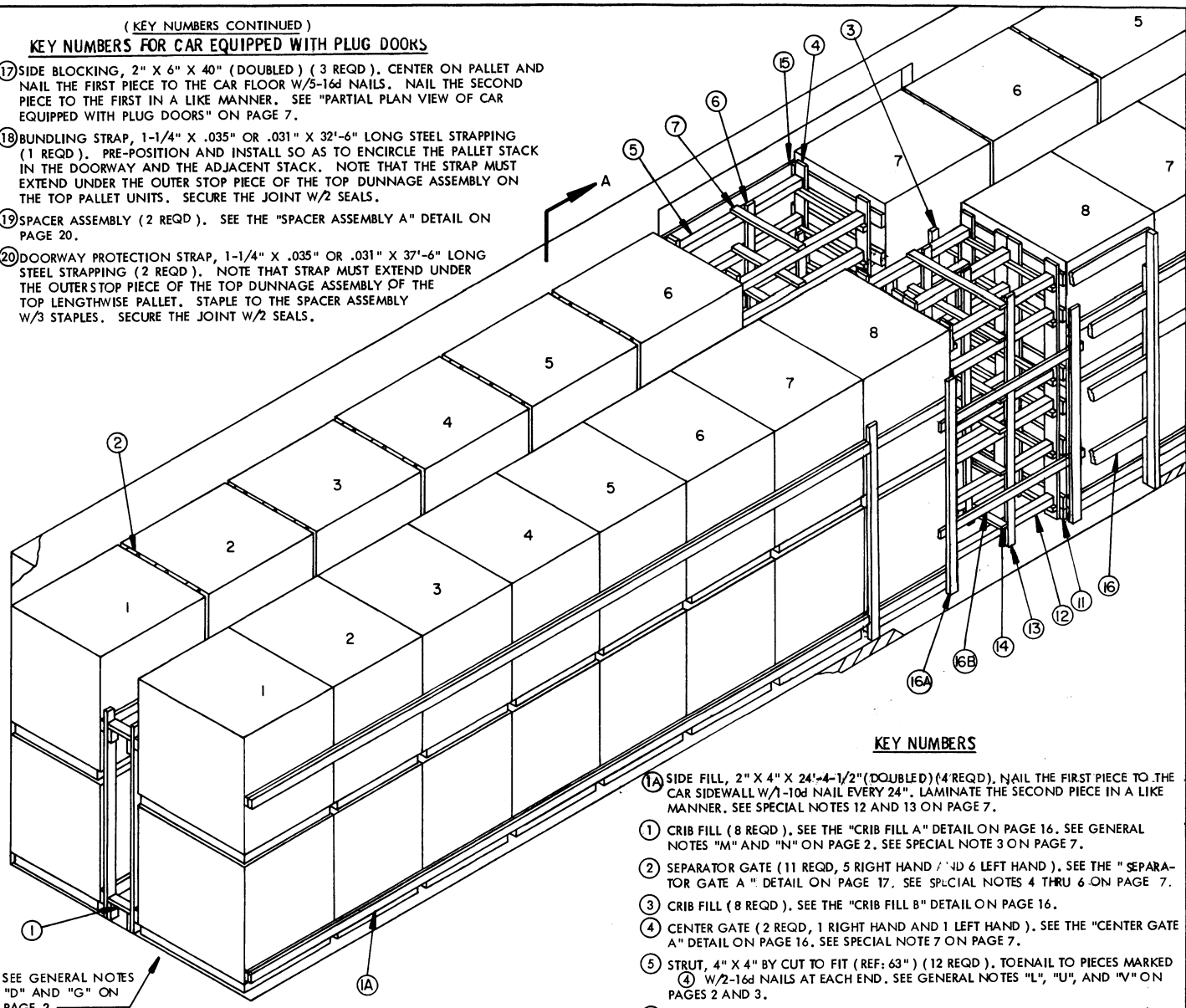
SIDE FILL ASSEMBLY B

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 22.

(KEY NUMBERS CONTINUED)

KEY NUMBERS FOR CAR EQUIPPED WITH PLUG DOORS

- 17 SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (3 REQD). CENTER ON PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS" ON PAGE 7.
- 18 BUNDLING STRAP, 1-1/4" X .035" OR .031" X 32'-6" LONG STEEL STRAPPING (1 REQD). PRE-POSITION AND INSTALL SO AS TO ENIRCLE THE PALLET STACK IN THE DOORWAY AND THE ADJACENT STACK. NOTE THAT THE STRAP MUST EXTEND UNDER THE OUTER STOP PIECE OF THE TOP DUNNAGE ASSEMBLY ON THE TOP PALLET UNITS. SECURE THE JOINT W/2 SEALS.
- 19 SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- 20 DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 37'-6" LONG STEEL STRAPPING (2 REQD). NOTE THAT STRAP MUST EXTEND UNDER THE OUTER STOP PIECE OF THE TOP DUNNAGE ASSEMBLY OF THE TOP LENGTHWISE PALLET. STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES. SECURE THE JOINT W/2 SEALS.

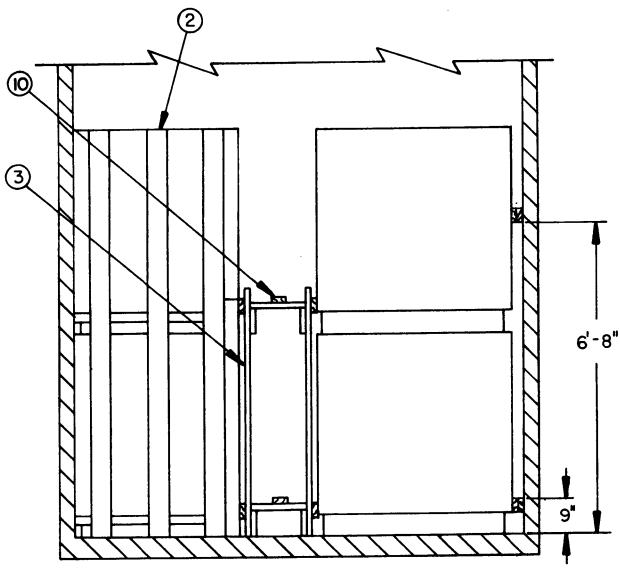


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

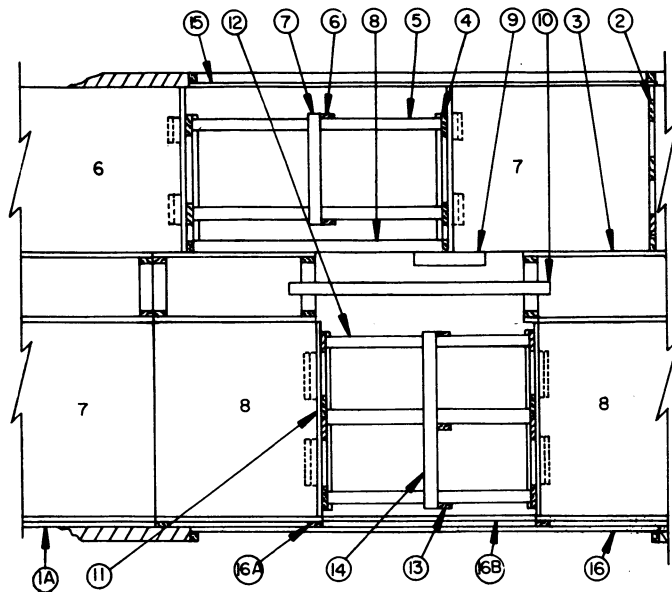
KEY NUMBERS

- 1A SIDE FILL, 2" X 4" X 24'-4-1/2" (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 12 AND 13 ON PAGE 7.
- 1 CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 7.
- 2 SEPARATOR GATE (11 REQD, 5 RIGHT HAND AND 6 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 17. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 7.
- 3 CRIB FILL (8 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16.
- 4 CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 7 ON PAGE 7.
- 5 STRUT, 4" X 4" BY CUT TO FIT (REF: 63") (12 REQD). TOENAIL TO PIECES MARKED 4 W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
- 6 VERTICAL STRUT BRACING, 2" X 4" X 8'-6" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 7 HORIZONTAL STRUT BRACING, 2" X 4" X 30" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 8 STRUT, 2" X 4" BY CUT TO FIT (REF: 63") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED 4 W/2-12d NAILS AT EACH END. SEE PAGE 7.
- 9 SIDE BLOCKING FOR CENTER GATE "A", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 7.
- 10 CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 72") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 7.
- 11 CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 17.
- 12 STRUT, 4" X 4" BY CUT TO FIT (REF: 54") (18 REQD). TOENAIL TO PIECES MARKED 11 W/2-16d NAILS AT EACH END.
- 13 VERTICAL STRUT BRACING, 2" X 4" X 8'-6" (3 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 14 HORIZONTAL STRUT BRACING, 2" X 4" X 54" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 15 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 7.
- 16 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS.
- 16A SIDE FILL ASSEMBLY (2 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 5. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- 16B SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 72") (2 REQD). POSITION AT 29-1/2" AND 6'-8" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 16A W/3-10d NAILS AT EACH JOINT.

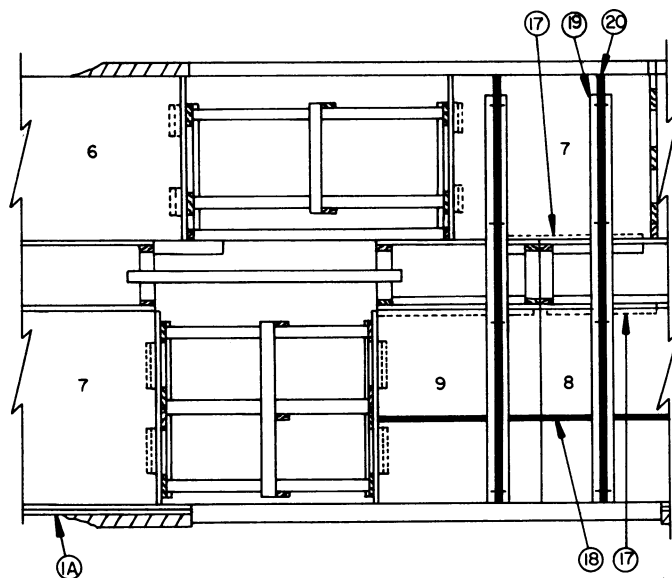


SECTION A-A

58 BASIC HEIGHT UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS

THE 7 AND 9-STACK LOAD PATTERN IS ADEQUATE FOR PLUG DOOR CARS HAVING NAILABLE SIDEWALLS.

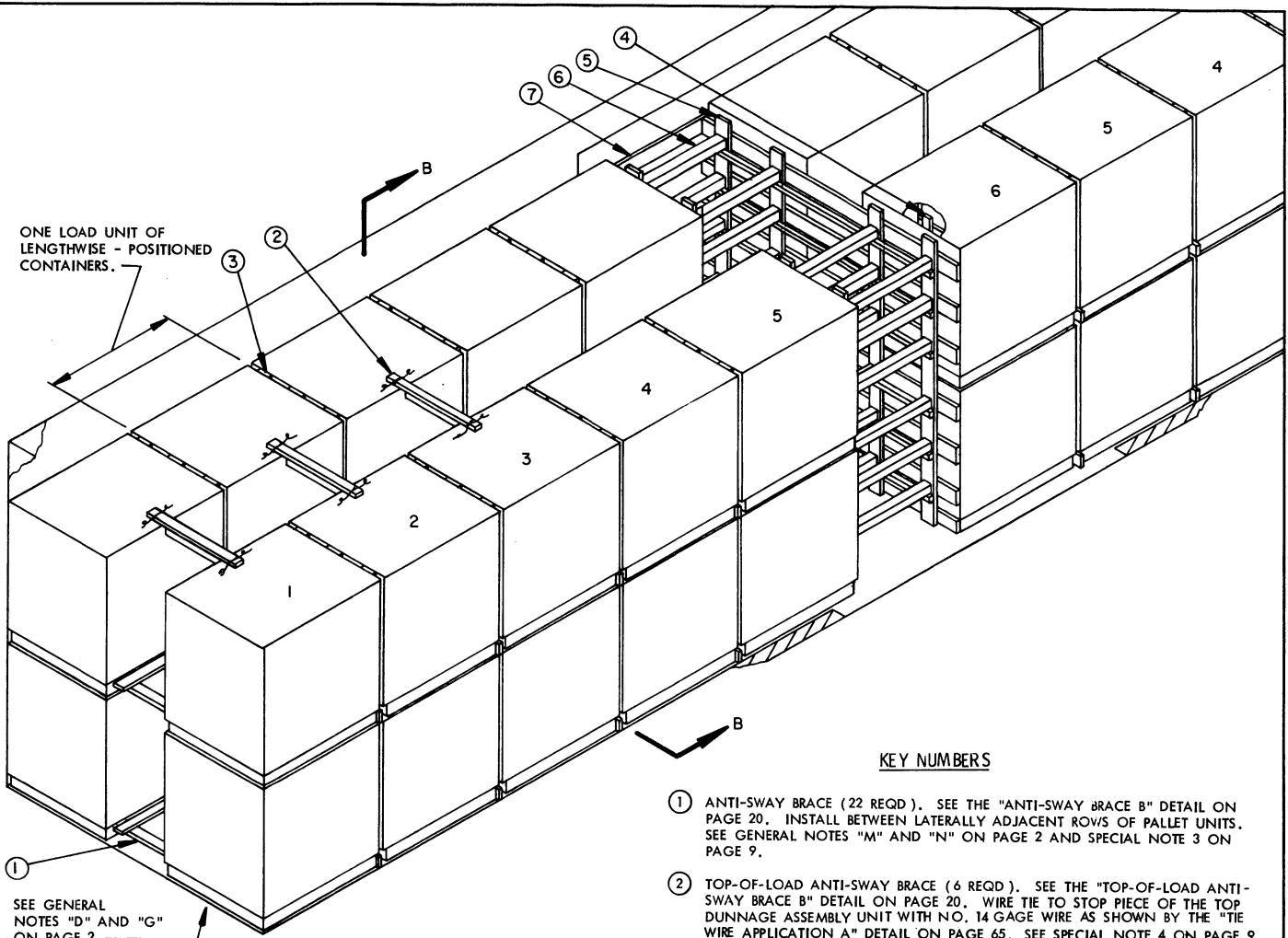
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BORAD FEET
1" X 4"	132	44
1" X 6"	374	187
2" X 2"	80	27
2" X 3"	77	39
2" X 4"	1,127	752
2" X 6"	202	202
4" X 4"	144	192
NAILS	NO. REQD	POUNDS
6d (2")	332	2
10d (3")	1,672	25-3/4
12d (3-1/4")	40	3/4
16d (3-1/2")	128	3

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 2 BELOW AND GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 6. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 92,112 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 76,760 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE "HIGH CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. ALL SEPARATOR GATES WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 41-3/4" WIDE BY 8'-0" LONG WITH A 1" X 6" SECURED TO THE BOTTOM SIMILAR TO THAT SHOWN BY THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 65.
7. CENTER GATES "A" AND "B" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 66 FOR GUIDANCE.
8. 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 ⑬ AND ⑭ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 69 THRU 71 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH FLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS" FOR GUIDANCE. NOTE THAT THE VERTICAL PIECES AND BOTTOM STRUT SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ③, 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. WHEN TWO STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY A BUNDLING STRAP, PIECE MARKED ⑱. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE HALF THE PALLET LENGTH OR WIDTH.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 42. FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACKS NO. 7 AND THE CROSSWISE STACK NO. 9. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 56 AND 57.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 60 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 61 AND 63 FOR CROSSWISE UNITS.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.
12. THE SIDE FILL, PIECE MARKED ⑩A, 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 A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, 1" X 4" MATERIAL MUST BE ADDED TO THE SIDE FILL AND TO THE SIDE FILL ASSEMBLIES, PIECES MARKED ⑩A AND ⑩B. LAMINATE TO PIECE MARKED ⑩A W/1-6d NAIL EVERY 24" OR TO THE HORIZONTAL PIECES OF A SIDE FILL ASSEMBLY W/4-6d NAILS. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑩B, MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑩A.
13. WHEN USING THE PLUG DOOR PROCEDURES SHOWN AT LEFT IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ⑩A, TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑩B, AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ⑩C.

LOAD AS SHOWN

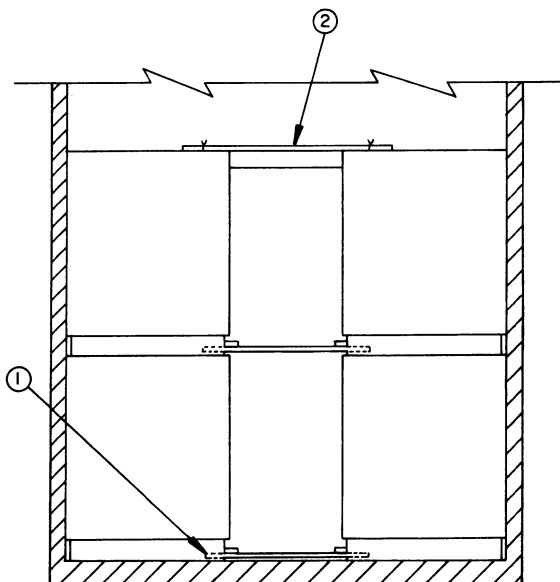
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	58	111,302 LBS
DUNNAGE		2,918 LBS
TOTAL WEIGHT		114,220 LBS



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO STOP PIECE OF THE TOP DUNNAGE ASSEMBLY UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 9.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5, 7, AND 8 ON PAGE 9.
- ④ STOP PIECE, 1" X 4" X 60" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 9.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTES 9, 10, AND 11 ON PAGE 9.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 9.



SECTION B-B

(SPECIAL NOTES CONTINUED)

13. 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 38 THRU 63 FOR GUIDANCE.
14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 60 FOR SHIPPING GUIDANCE.
15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

SPECIAL NOTES:

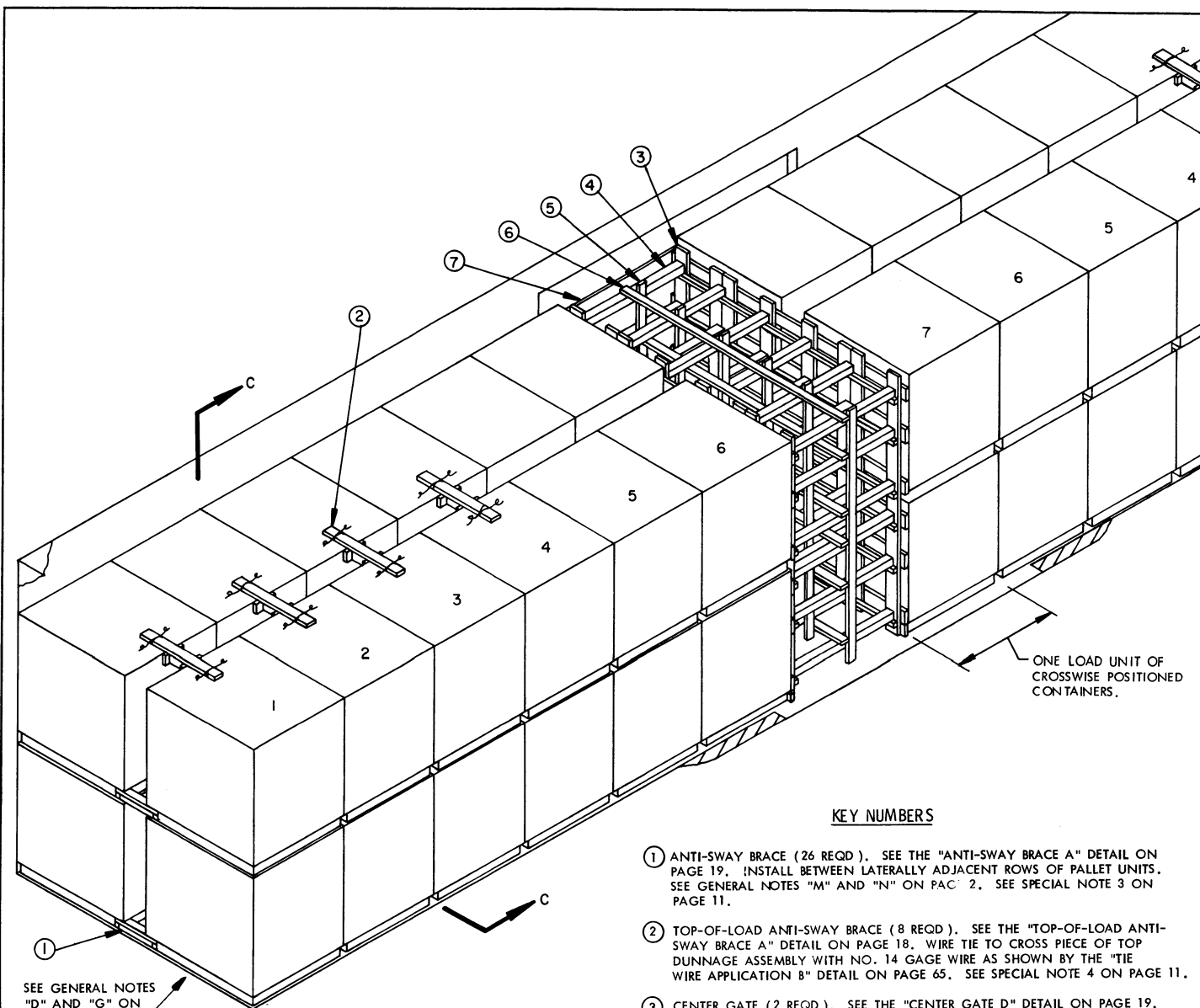
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 8. A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 99,788 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 69,084 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION AS SHOWN ON PAGE 14 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (7), 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 OF 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 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STOP PIECE WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. FOR A 2-HIGH LOAD OR A 1-HIGH LOAD, SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 21. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED (4), WILL BE 58" FOR A 2-HIGH LOAD OR 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "H" IS USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 65 FOR CONSTRUCTION GUIDANCE.
9. 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 66 FOR GUIDANCE.
10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CENTER GATES. IN LIEU OF EACH "CENTER GATE C" SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 16. 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 66. OMIT THE STOP PIECE FROM "CENTER GATE A".
11. DOOR SPANNER TYPE GATE HOLD-DOWN MAY BE USED IN LIEU OF THE 1" X 6" AND 2" X 4" MATERIAL NAILED TO CENTER GATE "C", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 68 FOR GUIDANCE.
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 69 THRU 71 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED (5) THRU (8) ON PAGE 14 FOR GUIDANCE.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -----	44 -----	84,436 LBS
DUNNAGE -----	-----	1,834 LBS
TOTAL WEIGHT -----	-----	86,270 LBS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	175	59
1" X 6"	565	283
2" X 2"	100	34
2" X 3"	34	17
2" X 4"	313	209
2" X 6"	192	192
4" X 4"	86	115
NAILS	NO. REQD	POUNDS
6d (2")	424	2-1/2
10d (3")	536	8-1/4
12d (3-1/4")	62	1-1/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1 LB		

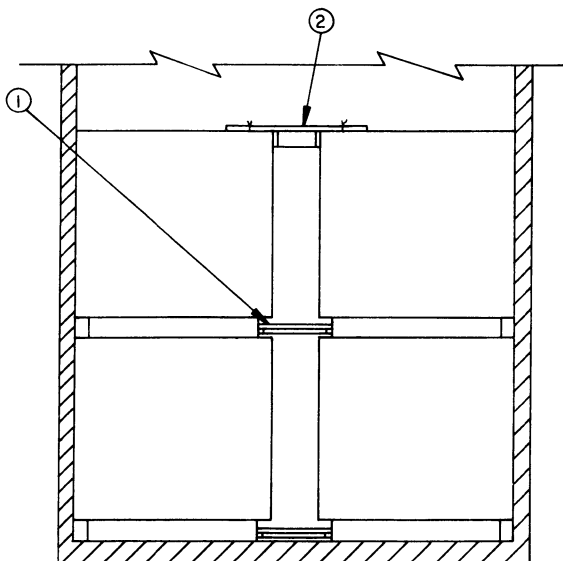


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAC. 2. SEE SPECIAL NOTE 3 ON PAGE 11.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 11.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE GENERAL NOTE "M" ON PAGE 2. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 11.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF. 57") (36 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGES 2 AND 3.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 8'-6" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 2" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 11.



SECTION C-C

(SPECIAL NOTES CONTINUED)

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 38 THRU 63 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 61 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 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. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 10. A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 122,816 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-FOUR (44) UNITS, FOR AN APPROXIMATE WEIGHT OF 84,436 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION AS SHOWN ON PAGE 30 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, 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 LENGTH ON EITHER SIDE OF THE CAR.
4. TOP OF LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A CROSS PIECE WITH NO. 14 GAGE WIRE AS SHOWN. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. CENTER GATE "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 66 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE D", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 10, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 17. 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 66.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "D" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 68 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 69 THRU 71 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③ THRU ⑥ ON PAGE 30 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	73	25
1" X 6"	80	40
2" X 2"	288	96
2" X 3"	43	22
2" X 4"	211	141
2" X 6"	265	265
4" X 4"	171	228
NAILS	NO. REQD	POUNDS
6d (2")	412	2-1/2
10d (3")	1100	17
12d (3-1/4")	32	3/4
16d (3-1/2")	144	3-1/4
WIRE, NO. 14 GAGE ----- 80' REQD -----		1-1/2 LBS

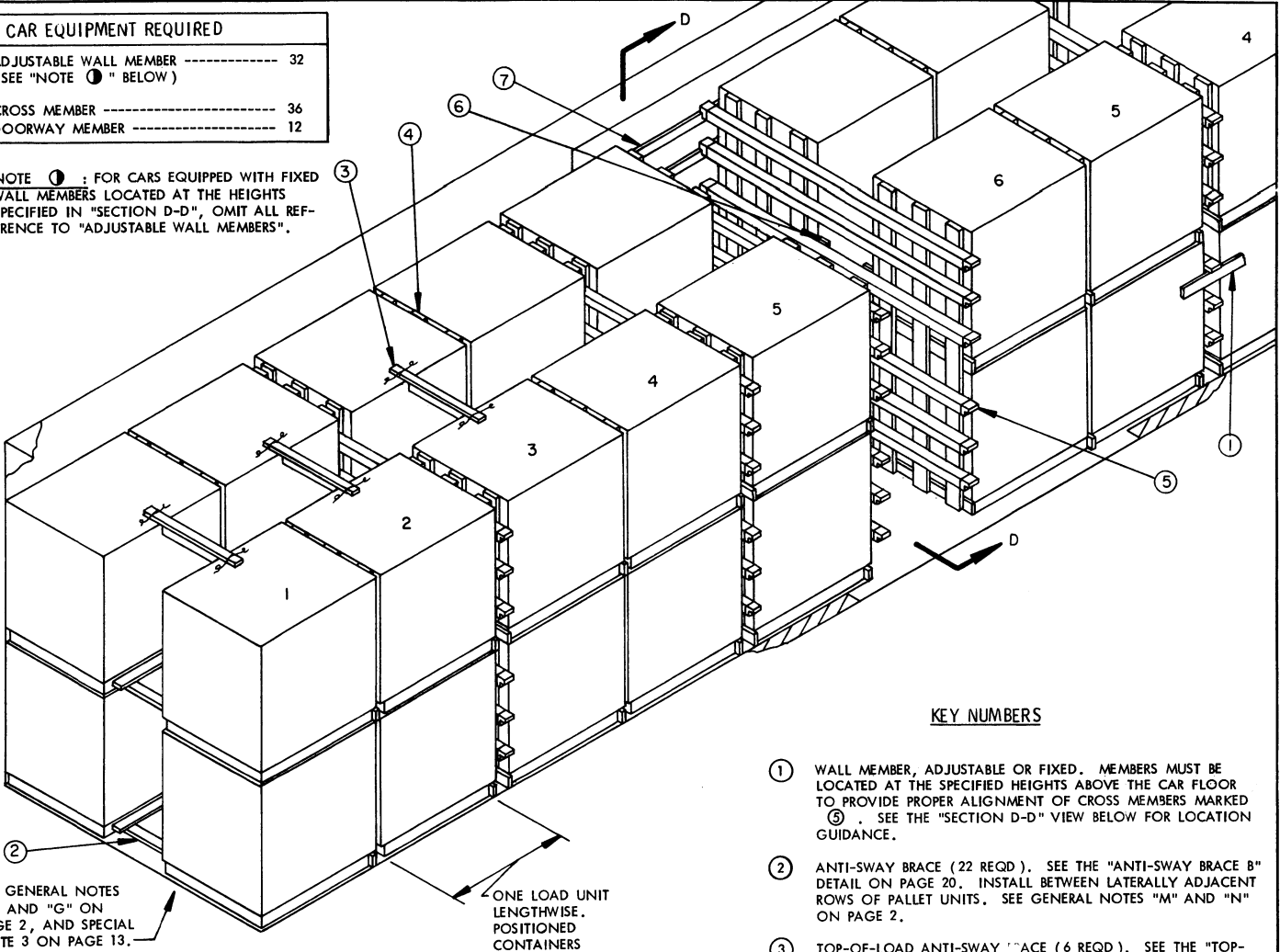
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	52 -----	99,788 LBS
DUNNAGE -----		1,659 LBS
TOTAL WEIGHT -----		101,447 LBS

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	32
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	36
DOORWAY MEMBER -----	12

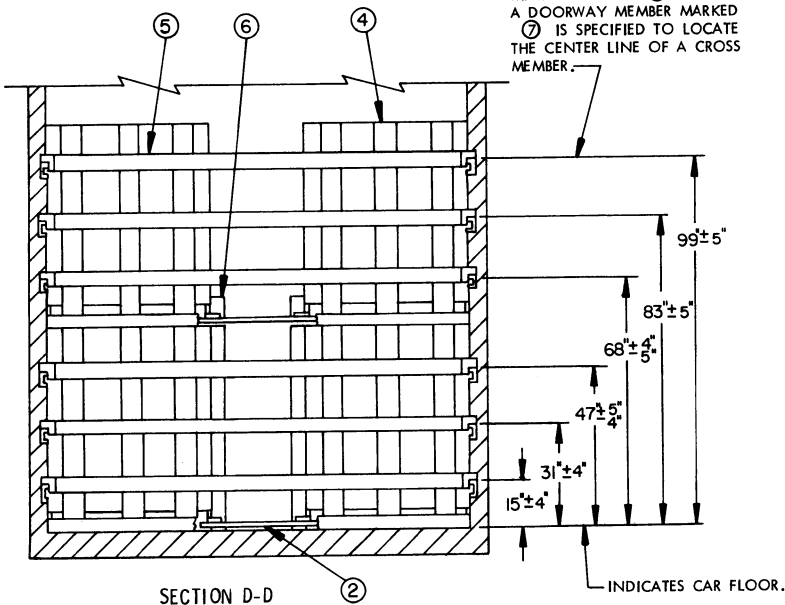
NOTE 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION D-D", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



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

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 7 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION D-D

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤. SEE THE "SECTION D-D" VIEW BELOW FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO STOP PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SEPARATOR GATE (15 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.
- ⑤ CROSS MEMBER (36 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ STOP PIECE, 1" X 4" X 60" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ④ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑦ DOORWAY MEMBER (12 REQD). SEE THE "SECTION D-D" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 13.

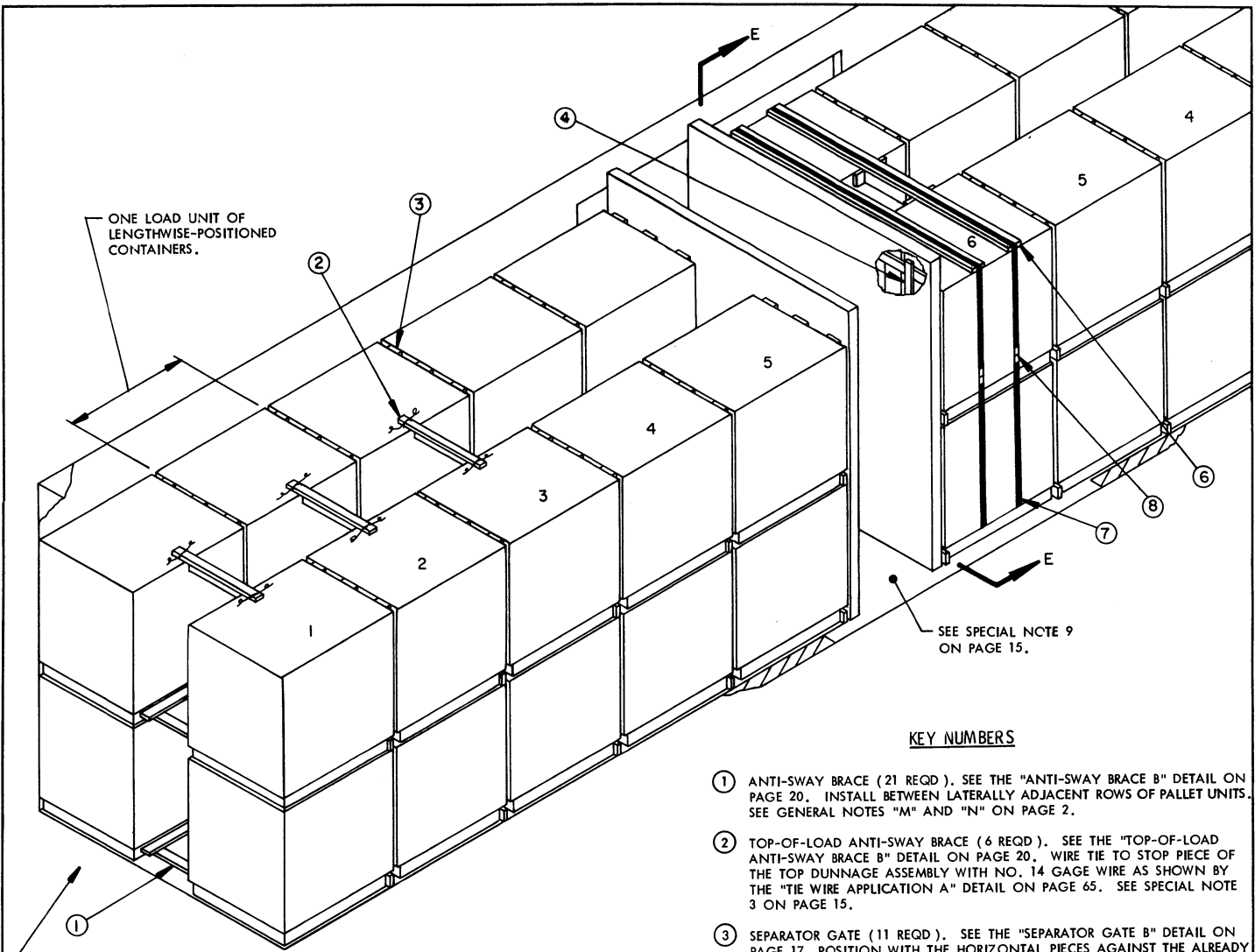
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 12. A MAXIMUM OF THIRTY-SIX (36) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,084 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "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 BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STOP PIECE WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" 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 ⑥. 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 65 FOR CONSTRUCTION GUIDANCE.
8. IF THE CAR BEING LOADED IS NOT EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, SIX (6) PALLET UNITS IN THE SECOND LAYER WHICH ARE EITHER COMPLETELY IN THE DOORWAY OR WHICH EXTEND INTO THE DOORWAY MUST BE OMITTED.
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 36 AND 37 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	299	100
1" X 6"	788	394
2" X 4"	301	201
NAILS	NO. REQD	POUNDS
6d (2")	576	3-1/2
10d (3")	264	4-1/4
12d (3-1/4")	30	1/2
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	84,436 LBS
DUNNAGE		1,400 LBS
TOTAL WEIGHT --		85,836 LBS

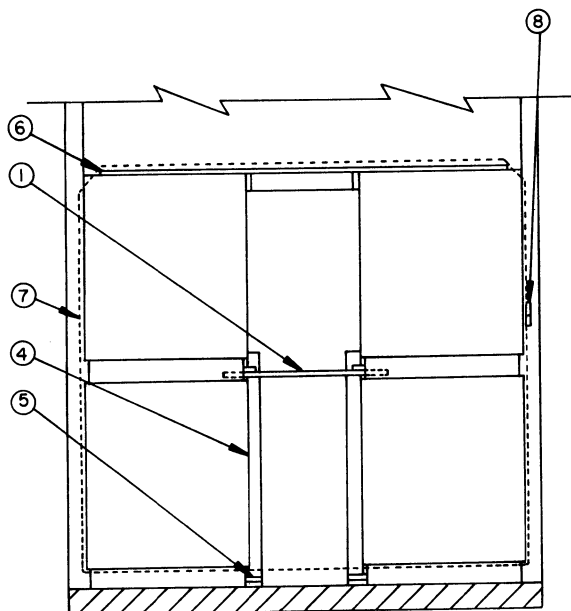


ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (21 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO STOP PIECE OF THE TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 3 ON PAGE 15.
- ③ SEPARATOR GATE (11 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 15.
- ④ STOP PIECE, 1" X 4" X 60" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 15.
- ⑤ SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 7 ON PAGE 15.
- ⑥ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 37'-6" LONG STEEL STRAPPING (2 REQD). NOTE THAT STRAP MUST EXTEND UNDER THE STOP PIECE OF THE TOP DUNNAGE ASSEMBLY OF THE UNITS. STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 15.
- ⑧ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

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



SECTION E-E

(SPECIAL NOTES CONTINUED)

8. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE LOAD UNIT ON BOTH SIDES OF THE CAR.
9. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 30, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY IS REQUIRED IF THE LOAD IN EITHER END OF THE CAR IS MORE THAN SIX (6) LOAD UNITS LONG.
10. 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 42 THRU 49 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO TRANSPORTED, REFER TO PAGE 60, 61, AND 63 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

SPECIAL NOTES:

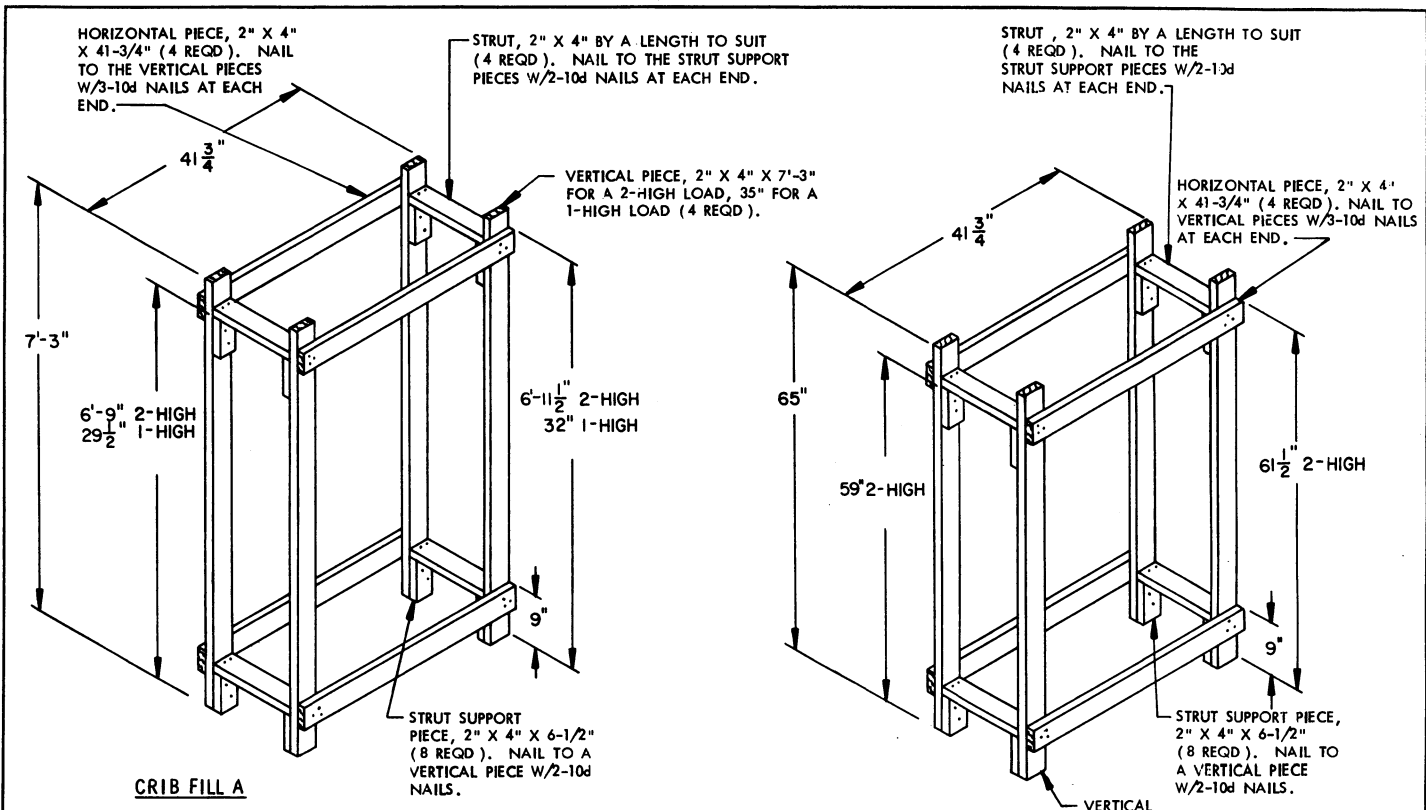
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 14. A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 99,788 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-TWO (32) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 61,408 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE OPERATING MECHANISM FOR THE LOAD DIVIDER BULKHEAD IS LOCATED ON THE EDGE OF THE BULKHEAD (OPERABLE FROM OUTSIDE THE CAR) FIFTY-SIX (56) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 107,464 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR, AND THIRTY-SIX (36) UNITS CAN BE PLACED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 69,084 POUNDS. IF THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 30 IS EMPLOYED, THEN, SIXTY-FOUR (64) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 122,816 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FIFTY-TWO (52) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 99,788 POUNDS, AND FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 76,760 POUNDS. IF THE OPERATING MECHANISM IS ON THE EDGE OF THE BULKHEAD, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 130,492 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR, FIFTY-SIX (56) UNITS CAN BE PLACED IN A 50'-6" LONG CAR, FOR AN APPROXIMATE LADING WEIGHT OF 107,464 POUNDS, AND FORTY-FOUR (44) UNITS CAN BE PLACED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 84,436 POUNDS.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STOP PIECES WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 65 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 NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION METHOD OF DOORWAY PROTECTION SHOWN IN THE LOAD ON PAGE 14 BY PIECES MARKED ⑤ THRU ⑧ IS APPLICABLE FOR ANY TYPE DOOR WHETHER SLIDING, PLUG, OR COMBINATION PLUG AND SLIDING. THE WOODEN GATE TYPE DOORWAY PROTECTION, SHOWN AS PIECE ⑦ IN THE LOAD ON PAGE 8, MAY BE USED IF THE CAR IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. REFER TO PAGES 69 THRU 71 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. NOTE THAT DOORWAY PROTECTION SHOWN AS PIECE MARKED ⑦ ON PAGE 10 WILL BE USED IF THE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	231	77
1" X 6"	578	289
2" X 4"	297	198
2" X 6"	36	36
NAILS	NO. REQD	POUNDS
6d (2")	432	2-3/4
10d (3")	252	4
12d (3-1/4")	60	1
16d (3-1/2")	20	1/2
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1 LB		
STEEL STRAPPING, 1-1/4" X .035" OR .031"-75' REQD ----- 11 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		
STAPLE FOR 1-1/4" STRAPPING ----- 6 REQD ----- NIL		

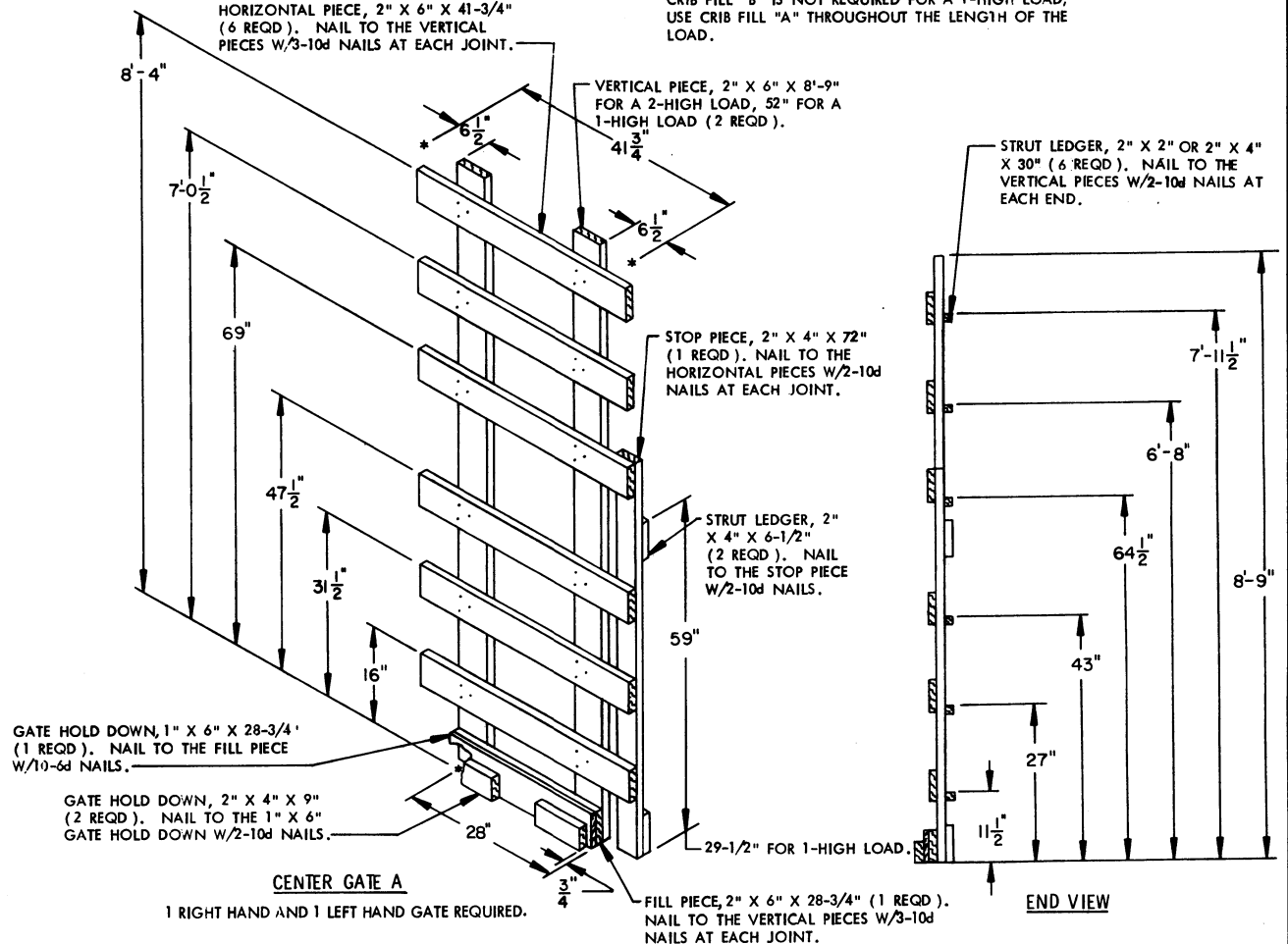
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	44 -----	84,436 LBS
DUNNAGE -----	-----	1,221 LBS
TOTAL WEIGHT -----		85,657 LBS



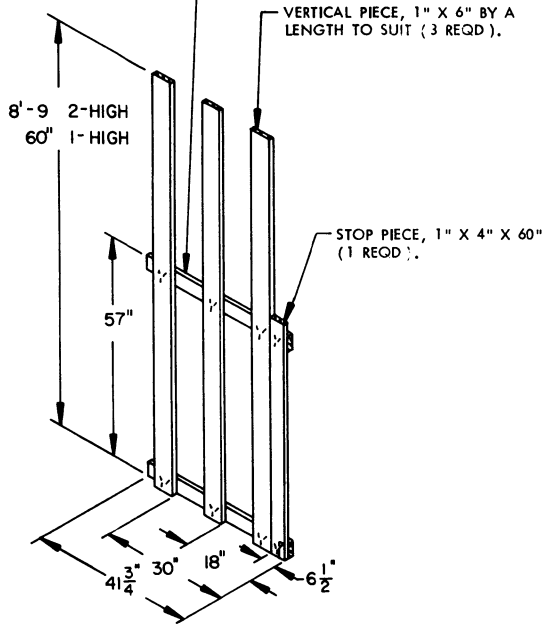
CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

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



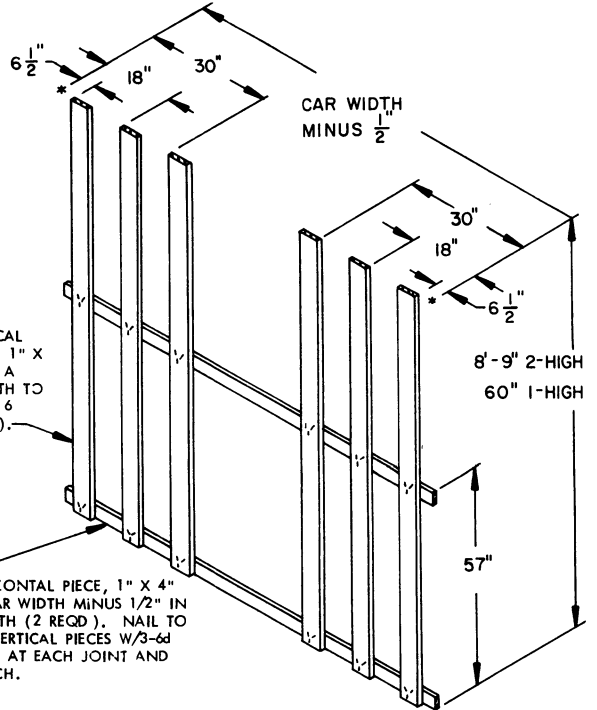
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

HORIZONTAL PIECE, 1" X 4" X 41-3/4" (2 REQD.).
NAIL TO THE VERTICAL PIECES AND THE STOP
PIECE W/3-5d NAILS AT EACH JOINT
AND CLINCH.



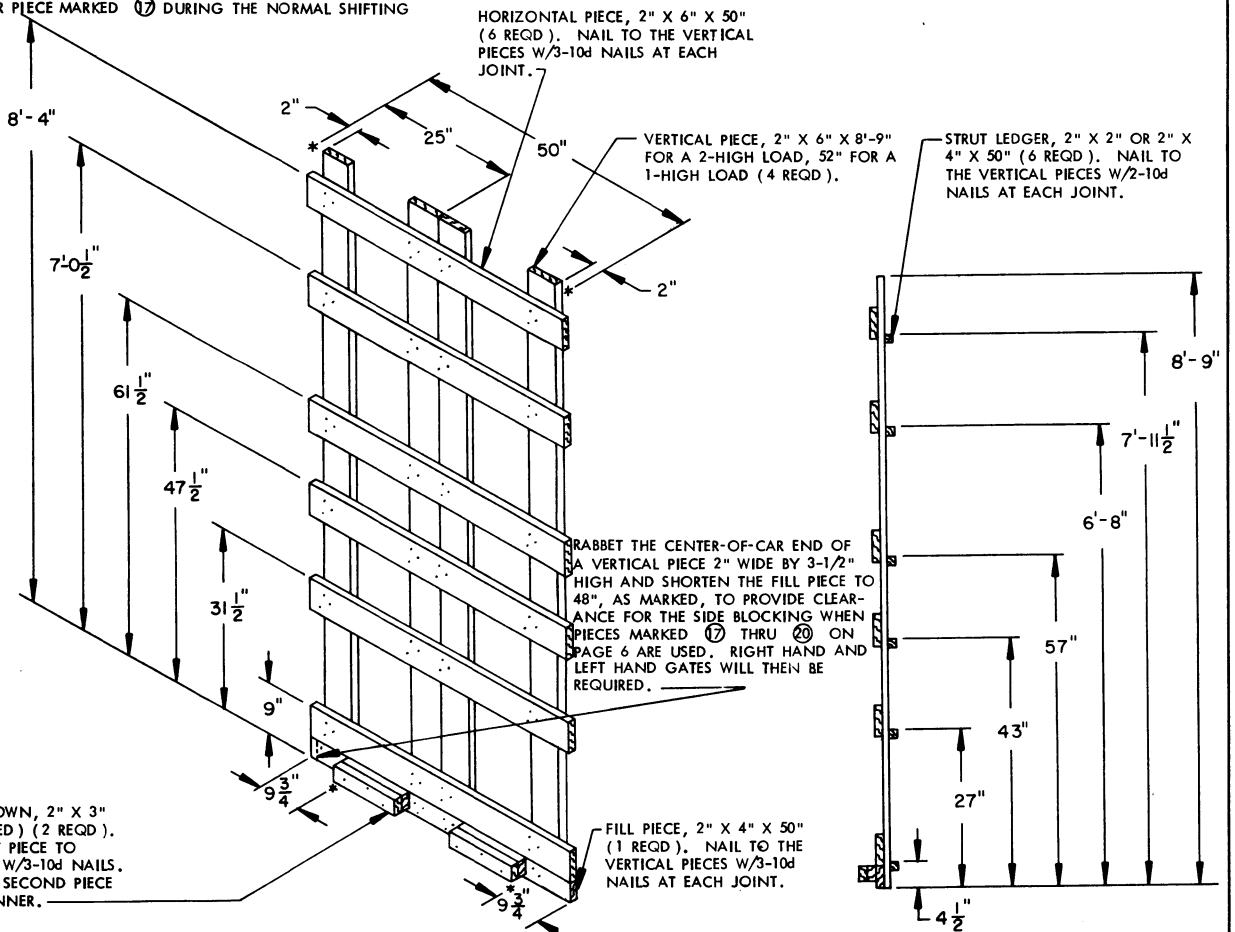
SEPARATOR GATE A

RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. WHEN NAILED FLOORLINE
DOORWAY PROTECTION IS USED, THE ADJACENT SEPARATOR GATES MUST BE
CUT OUT 1-1/2" WIDE BY 3-1/2" HIGH AT THE JUNCTION OF THE STOP PIECE
AND THE BOTTOM HORIZONTAL PIECE, AS MARKED BY PHANTOM LINES, TO
PROVIDE CLEARANCE FOR PIECE MARKED ① DURING THE NORMAL SHIFTING
OF A LOAD.



SEPARATOR GATE B

SEE SPECIAL NOTE 7 ON PAGE 9.



CENTER GATE B

END VIEW

RIGHT HAND AND LEFT HAND GATES MAY BE REQUIRED. SEE
THE "RABBET" LEADER ABOVE.

DETAILS FOR BASIC HEIGHT UNITS

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

SUPPORT PIECE, 2" X 4" BY A LENGTH TO
SUIT (1 REQD). NAIL TO SPACER PIECE
W/4-10d NAILS AND TO THE BUFFER
PIECES W/2-10d NAILS AT EACH JOINT.

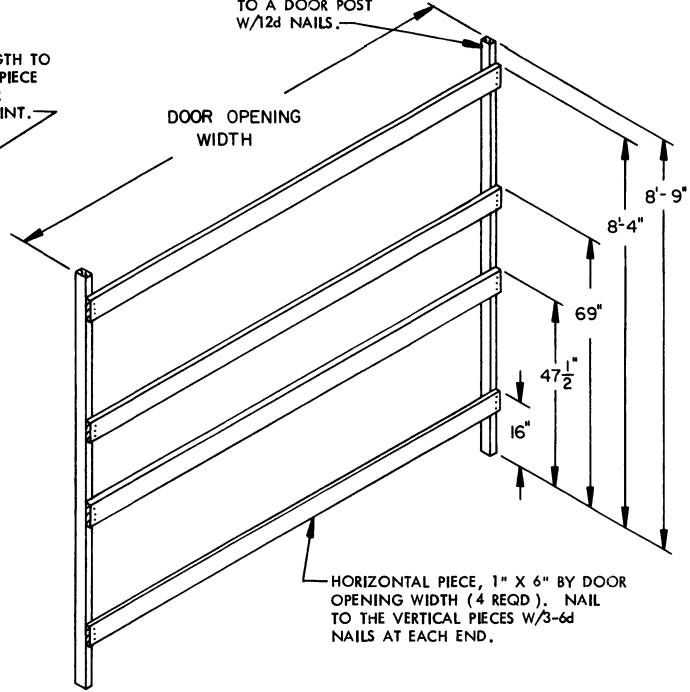
SPACER PIECE, 2"
X 6" BY A LENGTH
TO SUIT (1 REQD).

TOP OF LOAD ANTI-SWAY BRACE A

THIS ASSEMBLY IS DESIGNED FOR USE IN
THE LOADS SHOWN ON PAGES 10 AND 26.

VERTICAL PIECE,
2" X 3" X 8'-9"
(2 REQD). NAIL
TO A DOOR POST
W/12d NAILS.

DOOR OPENING
WIDTH



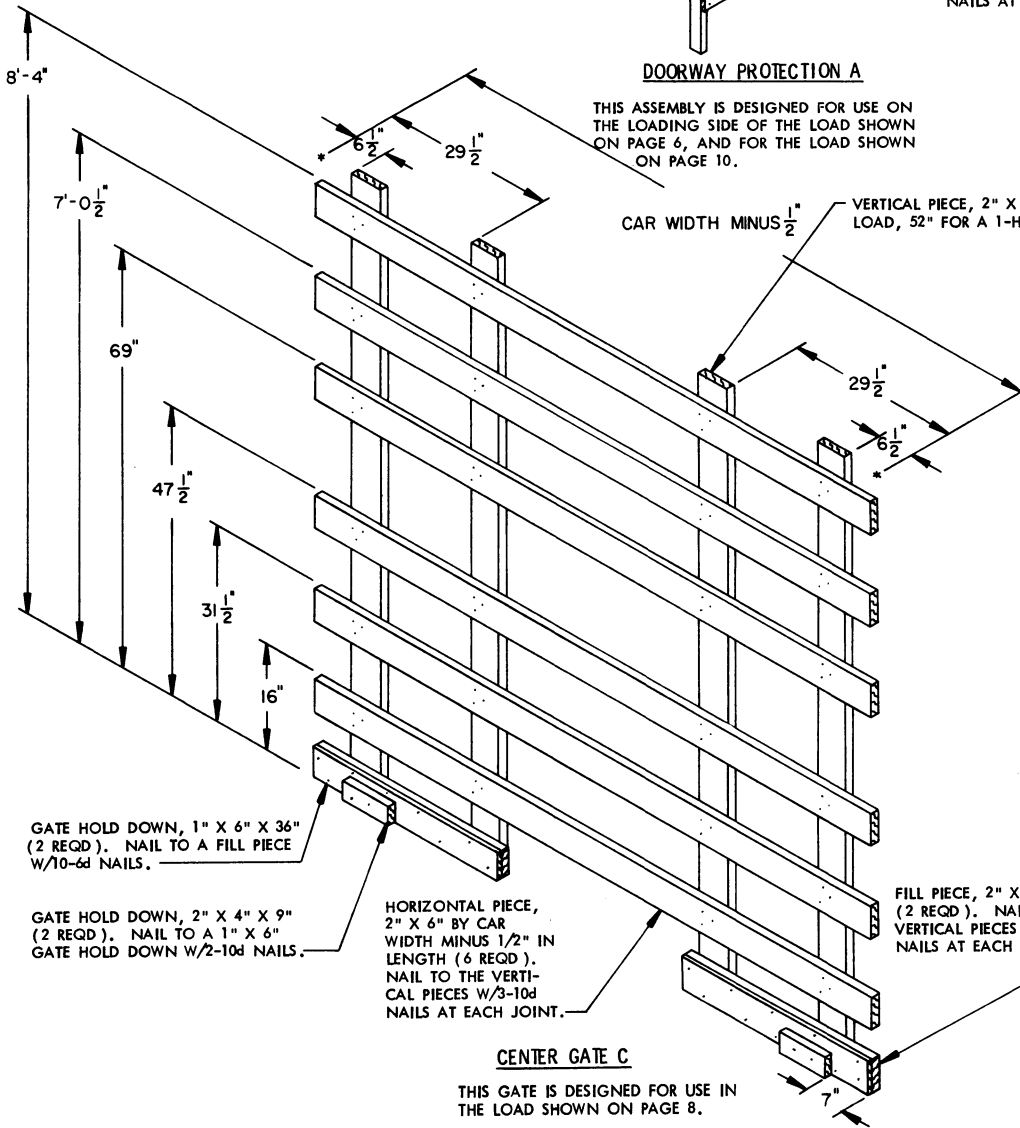
HORIZONTAL PIECE, 1" X 6" BY DOOR
OPENING WIDTH (4 REQD). NAIL
TO THE VERTICAL PIECES W/3-6d
NAILS AT EACH END.

DOORWAY PROTECTION A

THIS ASSEMBLY IS DESIGNED FOR USE ON
THE LOADING SIDE OF THE LOAD SHOWN
ON PAGE 6, AND FOR THE LOAD SHOWN
ON PAGE 10.

VERTICAL PIECE, 2" X 6" X 8'-9" FOR A 2-HIGH
LOAD, 52" FOR A 1-HIGH LOAD (4 REQD).

CAR WIDTH MINUS 1/2"



GATE HOLD DOWN, 1" X 6" X 36"
(2 REQD). NAIL TO A FILL PIECE
W/10-6d NAILS.

GATE HOLD DOWN, 2" X 4" X 9"
(2 REQD). NAIL TO A 1" X 6"
GATE HOLD DOWN W/2-10d NAILS.

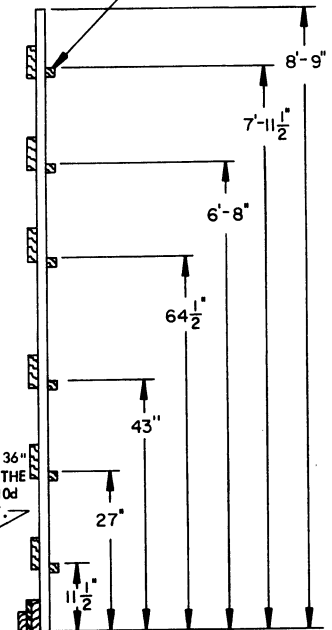
HORIZONTAL PIECE,
2" X 6" BY CAR
WIDTH MINUS 1/2" IN
LENGTH (6 REQD).
NAIL TO THE VERTICAL
PIECES W/3-10d
NAILS AT EACH JOINT.

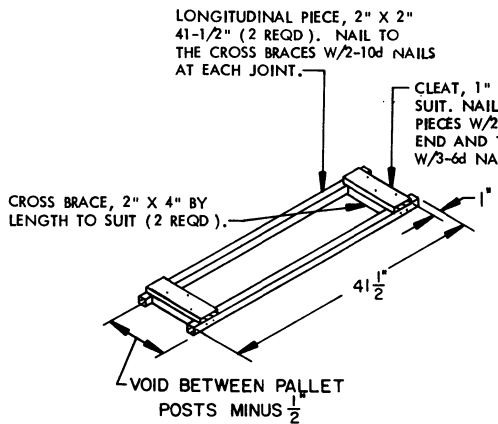
FILL PIECE, 2" X 6" X 36"
(2 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

CENTER GATE C

THIS GATE IS DESIGNED FOR USE IN
THE LOAD SHOWN ON PAGE 8.

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

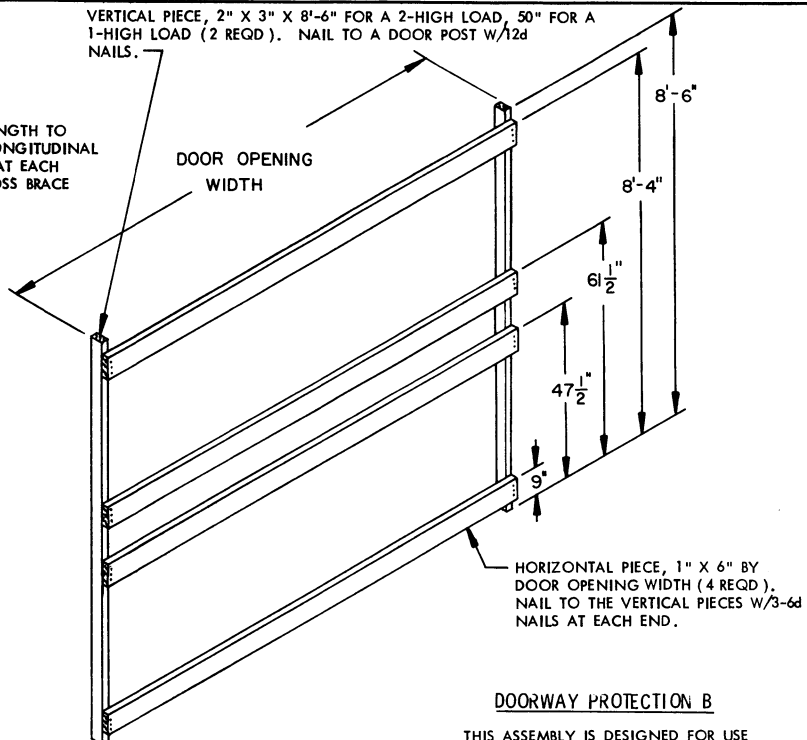




ANTI-SWAY BRACE A

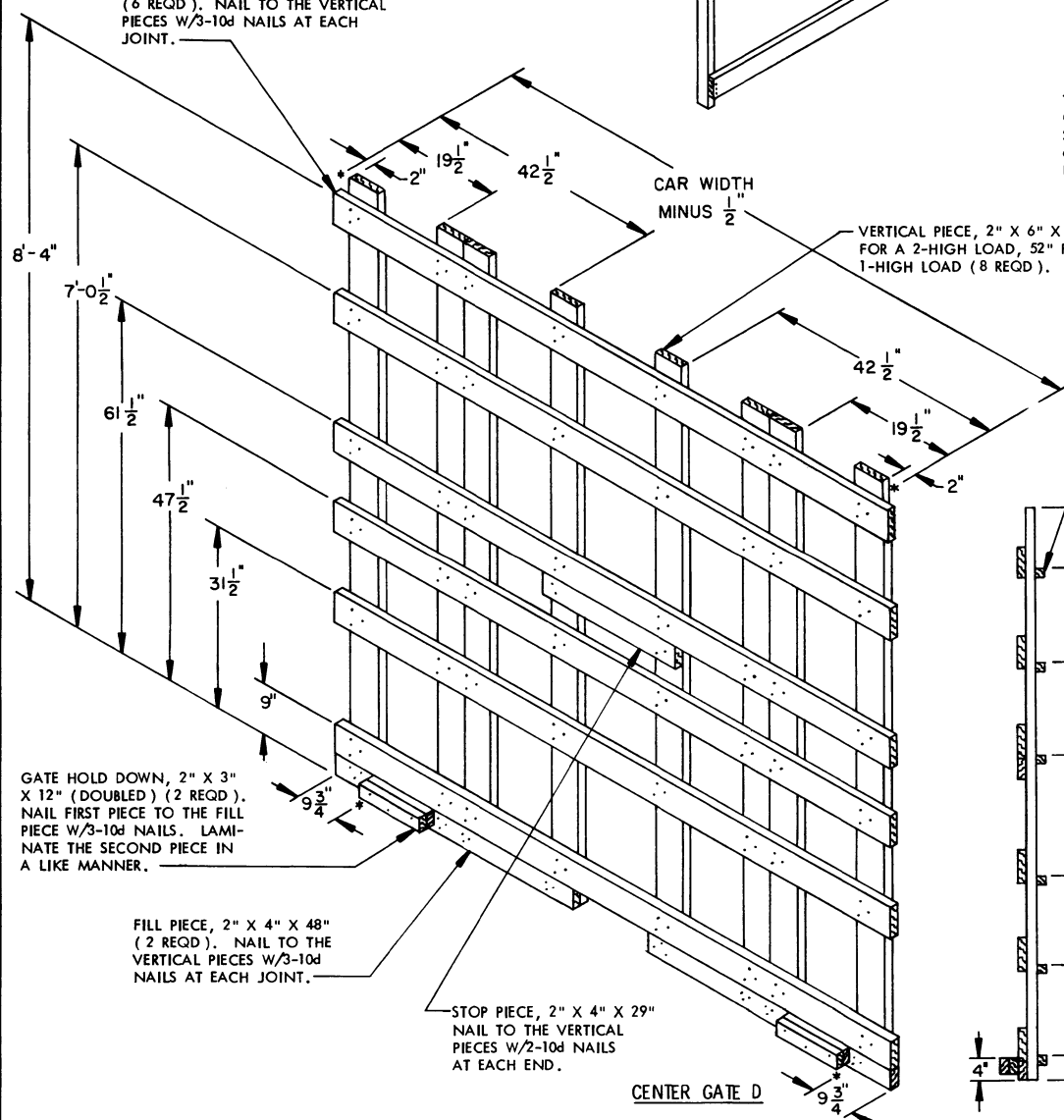
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 10 AND 26.

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

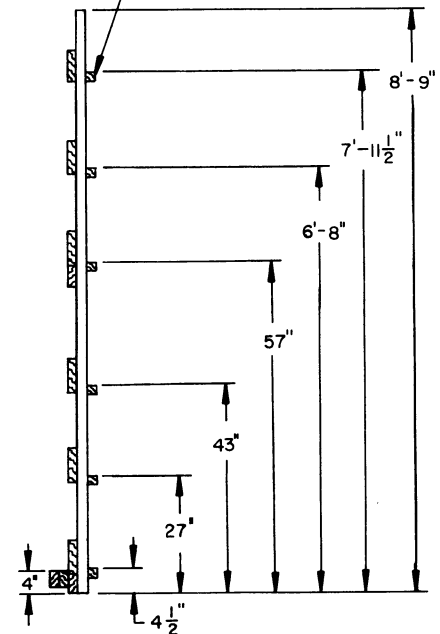


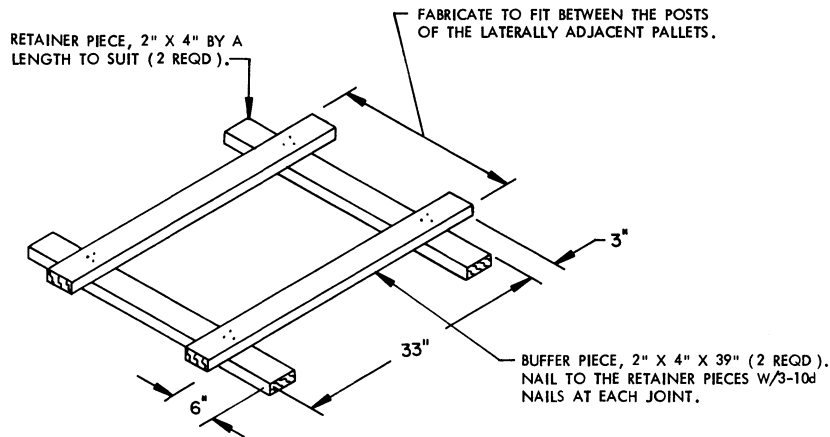
DOORWAY PROTECTION B

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 6, AND FOR THE LOAD SHOWN ON PAGE 8. ALSO FOR THE LOAD ON PAGE 14 IF CAR HAS SLIDING DOORS.



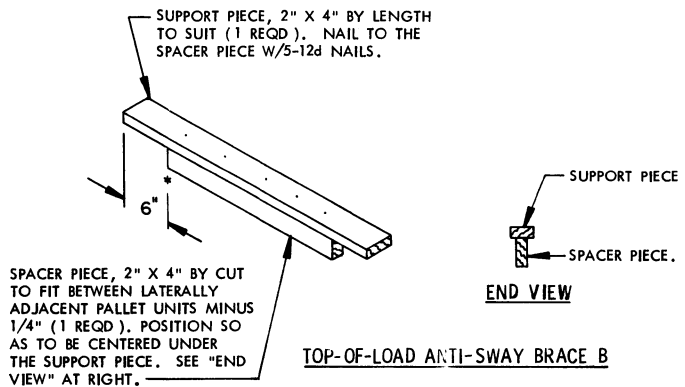
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 10.





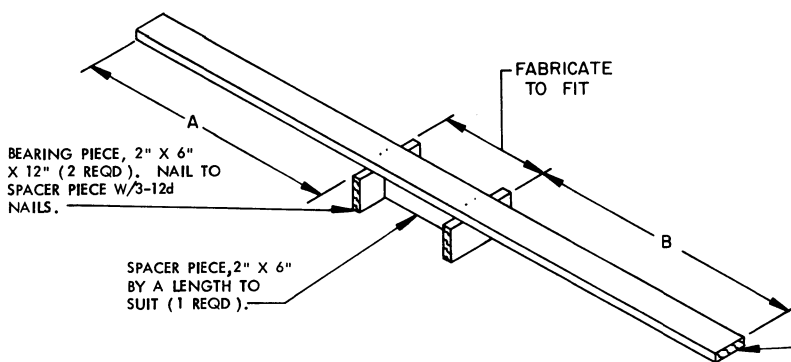
ANTI-SWAY BRACE B

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 8, 12, 14, 24, 28 AND 30.



TOP-OF-LOAD ANTI-SWAY BRACE B

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 8, 12, 14, 24, 28 AND 30.



SPACER ASSEMBLY A

SPACER ASSEMBLY A		
LOAD PAGE	DIMENSION	
	A	B
6, 22	36-1/2"	50"
8, 14, 24	36-1/2"	36-1/2"
10, 26, 30	50"	50"

STRAPPING BOARD, 2" X 6" BY CAR WIDTH MINUS 1/2" (2 REQD). NAIL TO BEARING PIECES W/2-12d NAILS AT EACH JOINT AND TO THE SPACER PIECE W/3-12d NAILS.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

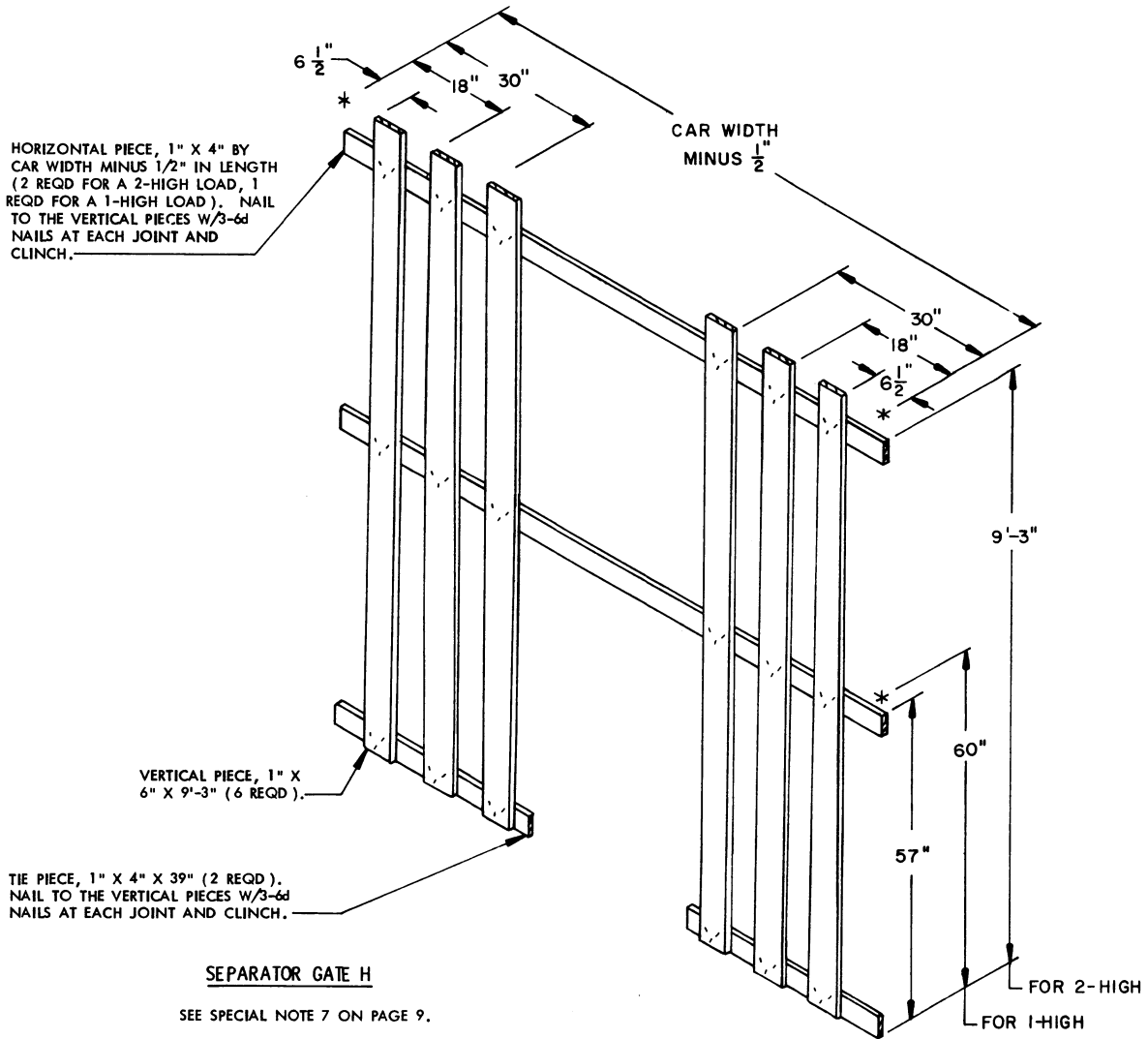
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



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

STRAP JOINT B

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

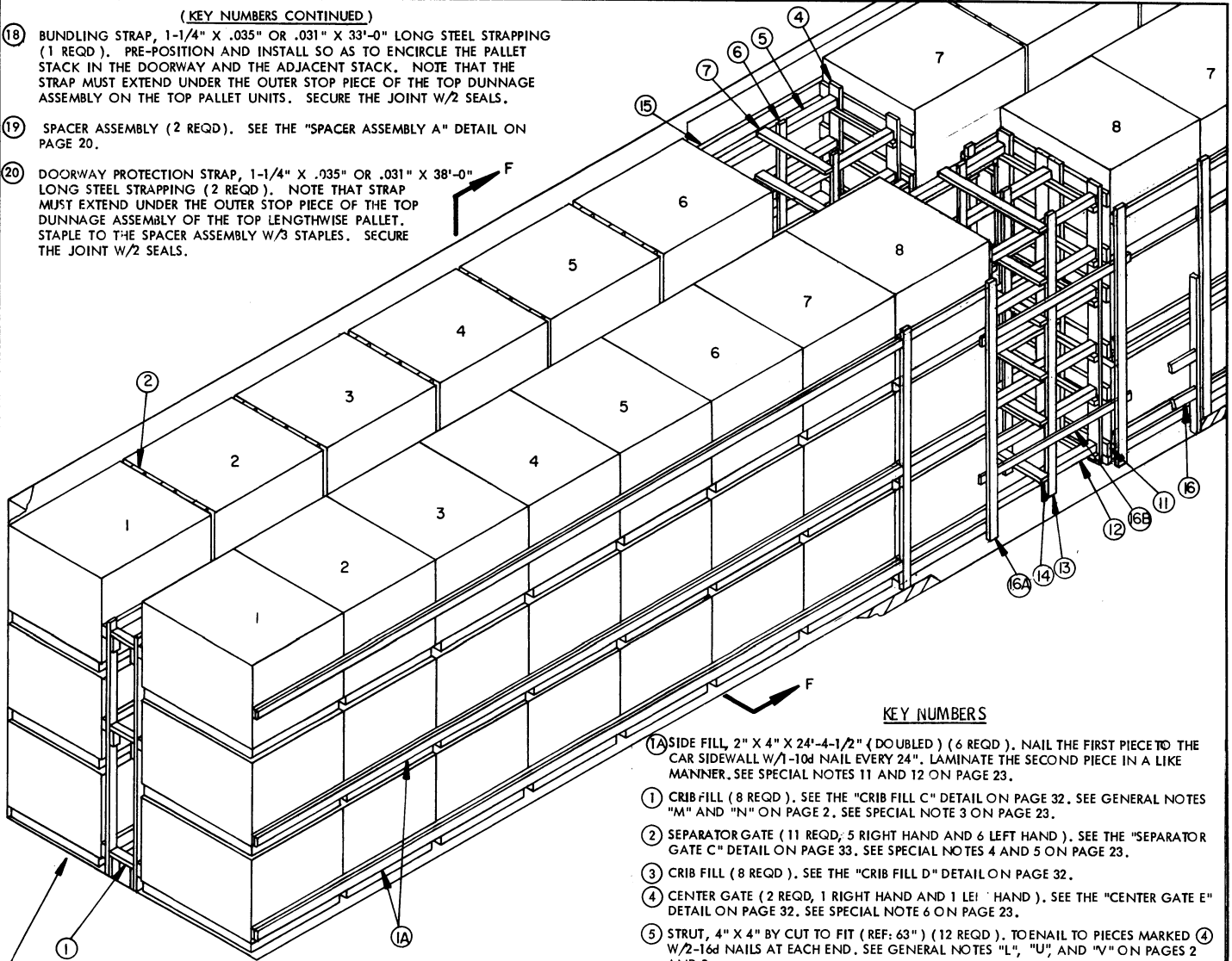


(KEY NUMBERS CONTINUED.)

18 BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION AND INSTALL SO AS TO ENIRCLE THE PALLET STACK IN THE DOORWAY AND THE ADJACENT STACK. NOTE THAT THE STRAP MUST EXTEND UNDER THE OUTER STOP PIECE OF THE TOP DUNNAGE ASSEMBLY ON THE TOP PALLET UNITS. SECURE THE JOINT W/2 SEALS.

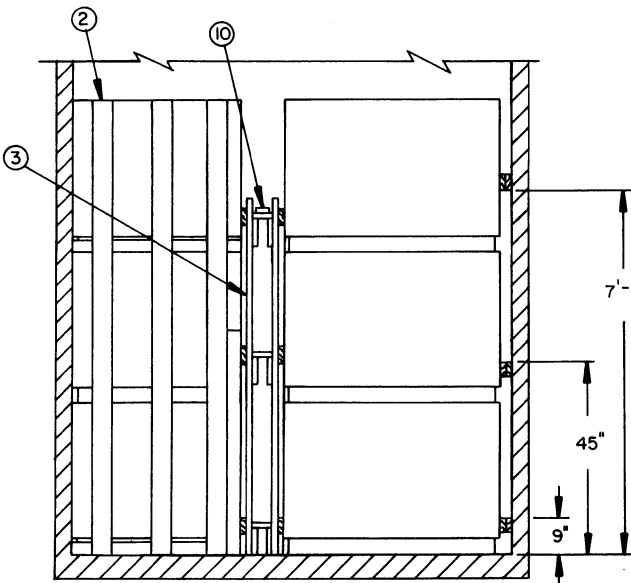
19 SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.

20 DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 38'-0" LONG STEEL STRAPPING (2 REQD). NOTE THAT STRAP MUST EXTEND UNDER THE OUTER STOP PIECE OF THE TOP DUNNAGE ASSEMBLY OF THE TOP LENGTHWISE PALLET. STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES. SECURE THE JOINT W/2 SEALS.



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

ISOMETRIC VIEW



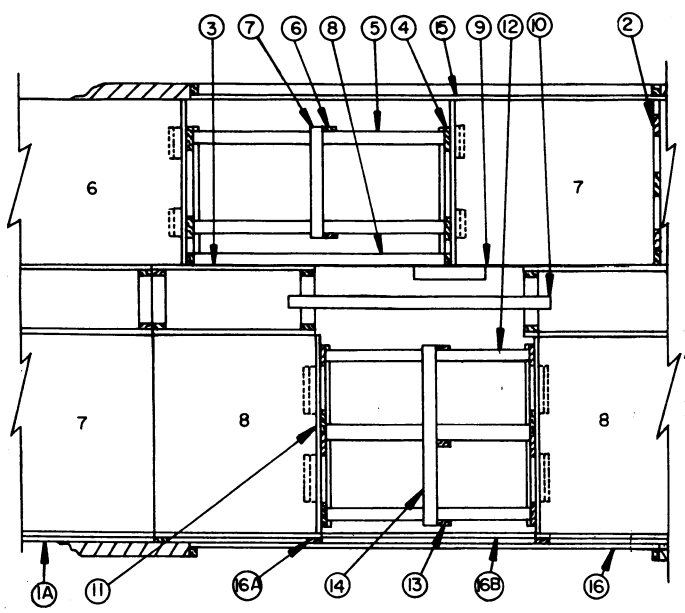
SECTION F-F

87 DECREASED HEIGHT UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

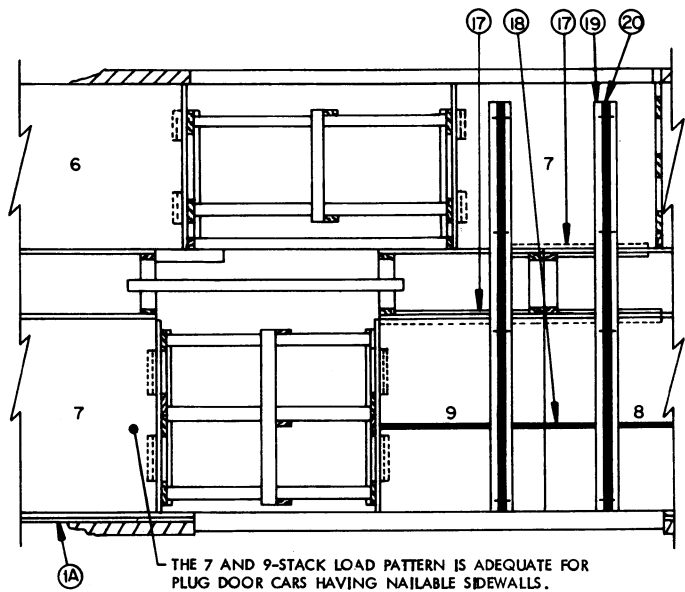
KEY NUMBERS

- 1A SIDE FILL, 2" X 4" X 24'-4-1/2" (DOUBLED) (6 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 11 AND 12 ON PAGE 23.
 - 1 CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 32. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 23.
 - 2 SEPARATOR GATE (11 REQD; 5 RIGHT HAND AND 6 LEFT HAND). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 33. SEE SPECIAL NOTES 4 AND 5 ON PAGE 23.
 - 3 CRIB FILL (8 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 32.
 - 4 CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE E" DETAIL ON PAGE 32. SEE SPECIAL NOTE 6 ON PAGE 23.
 - 5 STRUT, 4" X 4" BY CUT TO FIT (REF: 63") (12 REQD). TO ENAIL TO PIECES MARKED 4 W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
 - 6 VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
 - 7 HORIZONTAL STRUT BRACING, 2" X 4" X 30" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
 - 8 STRUT, 2" X 4" BY CUT TO FIT (REF: 63") (3 REQD). TO ENAIL TO THE STOP PIECES OF PIECES MARKED 4 W/2-12d NAILS AT EACH END.
 - 9 SIDE BLOCKING FOR CENTER GATE "E", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 23.
 - 10 CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 72") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 23.
 - 11 CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 33.
 - 12 STRUT, 4" X 4" BY CUT TO FIT (REF: 54") (18 REQD). TO ENAIL TO PIECES MARKED 11 W/2-16d NAILS AT EACH END.
 - 13 VERTICAL STRUT BRACING 2" X 4" X 9'-0" (3 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
 - 14 HORIZONTAL STRUT BRACING, 2" X 4" X 54" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
 - 15 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 34. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 23.
 - 16 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 35. NAIL TO THE DOOR POSTS W/12d NAILS.
 - 16A SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY B" DETAIL ON PAGE 5. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
 - 16B SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 72") (2 REQD). POSITION AT 29-1/2" AND 6'-11" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 16A W/3-10d NAILS AT EACH JOINT.
- KEY NUMBERS FOR CARS EQUIPPED WITH PLUG DOORS**
- 17 SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (3 REQD). CENTER ON THE PALLET. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS" ON PAGE 23

(CONTINUED AT LEFT)



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW OF CAR EQUIPPED WITH PLUG DOORS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	159	53
1" X 6"	431	216
2" X 2"	90	27
2" X 3"	44	22
2" X 4"	1172	782
2" X 6"	207	707
4" X 4"	144	192
NAILS	NO. REQD	POUNDS
6d (2")	455	2-3/4
10d (3")	2002	31
12d (3-1/4")	32	3/4
16d (3-1/2")	128	3

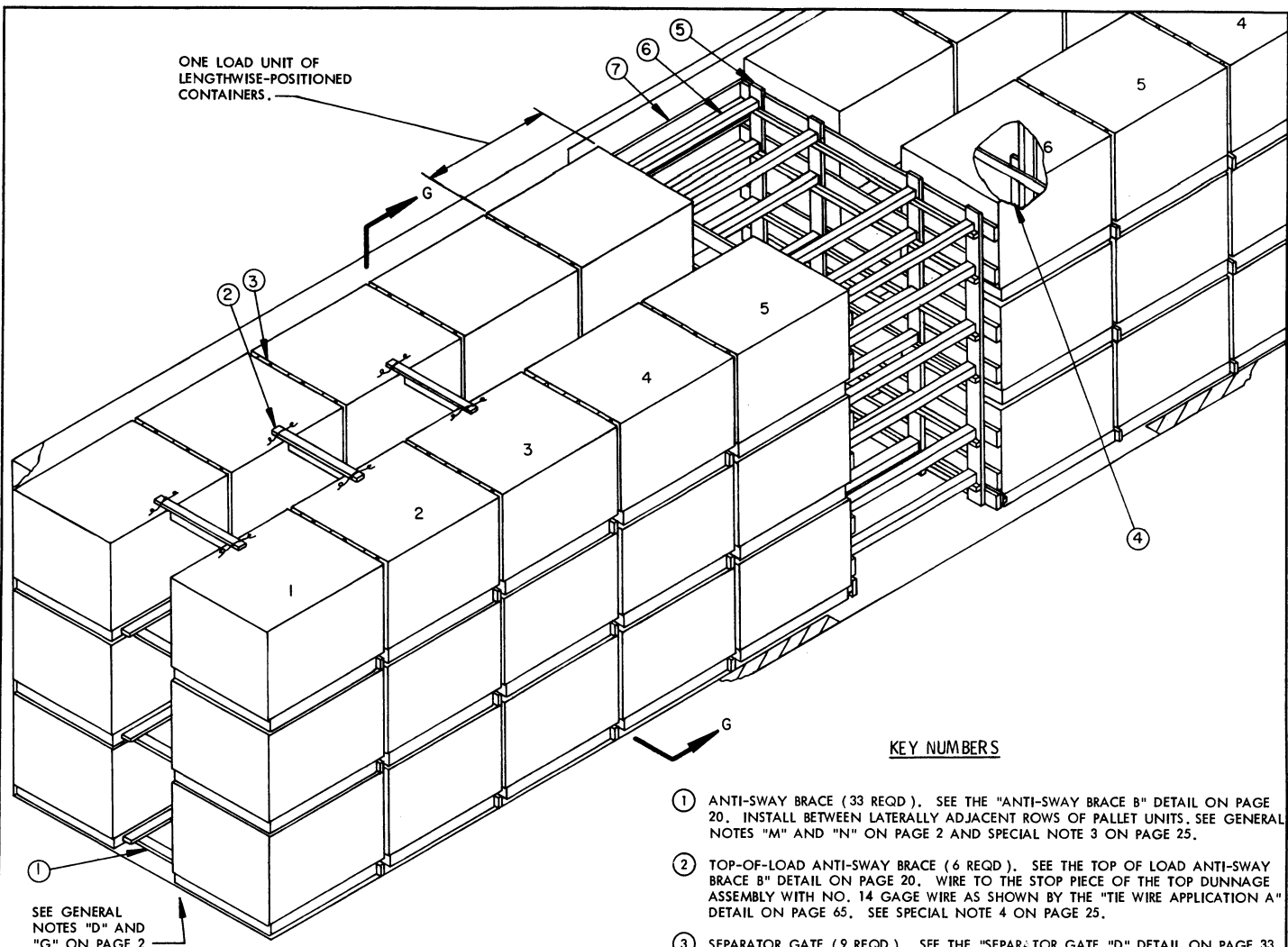
87 DECREASED HEIGHT UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 2 BELOW AND GENERAL NOTE "D" ON PAGE 2.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 6. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,040 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY (60) UNITS, FOR A LADING WEIGHT OF 79,200 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. ALL SEPARATOR GATES WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. CENTER GATES "E" AND "F" 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 66 FOR 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 OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑬ AND ⑭ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 69 THRU 71 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 AND BOTTOM STRUT SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ③, 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. WHEN TWO STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY A BUNDLING STRAP, PIECE MARKED ⑱. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET LENGTH OR WIDTH.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 42. SIX (6) UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACKS NO. 7 AND THE CROSSWISE STACK NO. 9. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 56 AND 57.
9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 60 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 61 AND 63 FOR CROSSWISE UNITS.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.
11. THE SIDE FILL, PIECE MARKED ①A, 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 A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, 1" X 4" MATERIAL MUST BE ADDED TO THE SIDE FILL AND TO THE SIDE FILL ASSEMBLIES, PIECES MARKED ①A AND ①6A. LAMINATE TO PIECE MARKED 1A W/1-6d NAIL EVERY 24". OR TO THE HORIZONTAL PIECES OF A SIDE FILL ASSEMBLY W/4-6d NAILS. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ①6A, MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ①A.
12. WHEN USING PLUG DOOR PROCEDURES SHOWN AT LEFT IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ①A TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ①6A, AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ①6B.

LOAD AS SHOWN

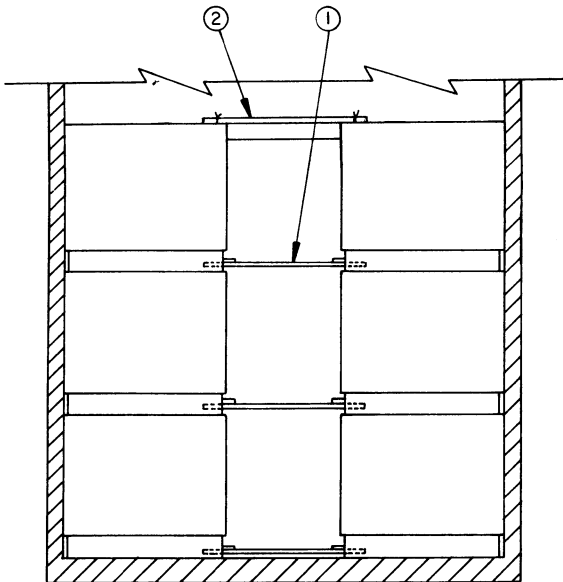
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	87	114,840 LBS
DUNNAGE		3,036 LBS
TOTAL WEIGHT		117,876 LBS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 25.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE TOP OF LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TO THE STOP PIECE OF THE TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 25.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE "D" DETAIL ON PAGE 33. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 25.
- ④ STOP PIECE, 1" X 4" X 46" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 25.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 25.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION "C" DETAIL ON PAGE 34. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 25.



SECTION G-G

(SPECIAL NOTES CONTINUED)

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 PIECES MARKED ⑦ IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 69 THRU 71 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ④ THRU ⑥ ON PAGE 14 FOR GUIDANCE.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 38 THRU 63 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 60 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

SPECIAL NOTES:

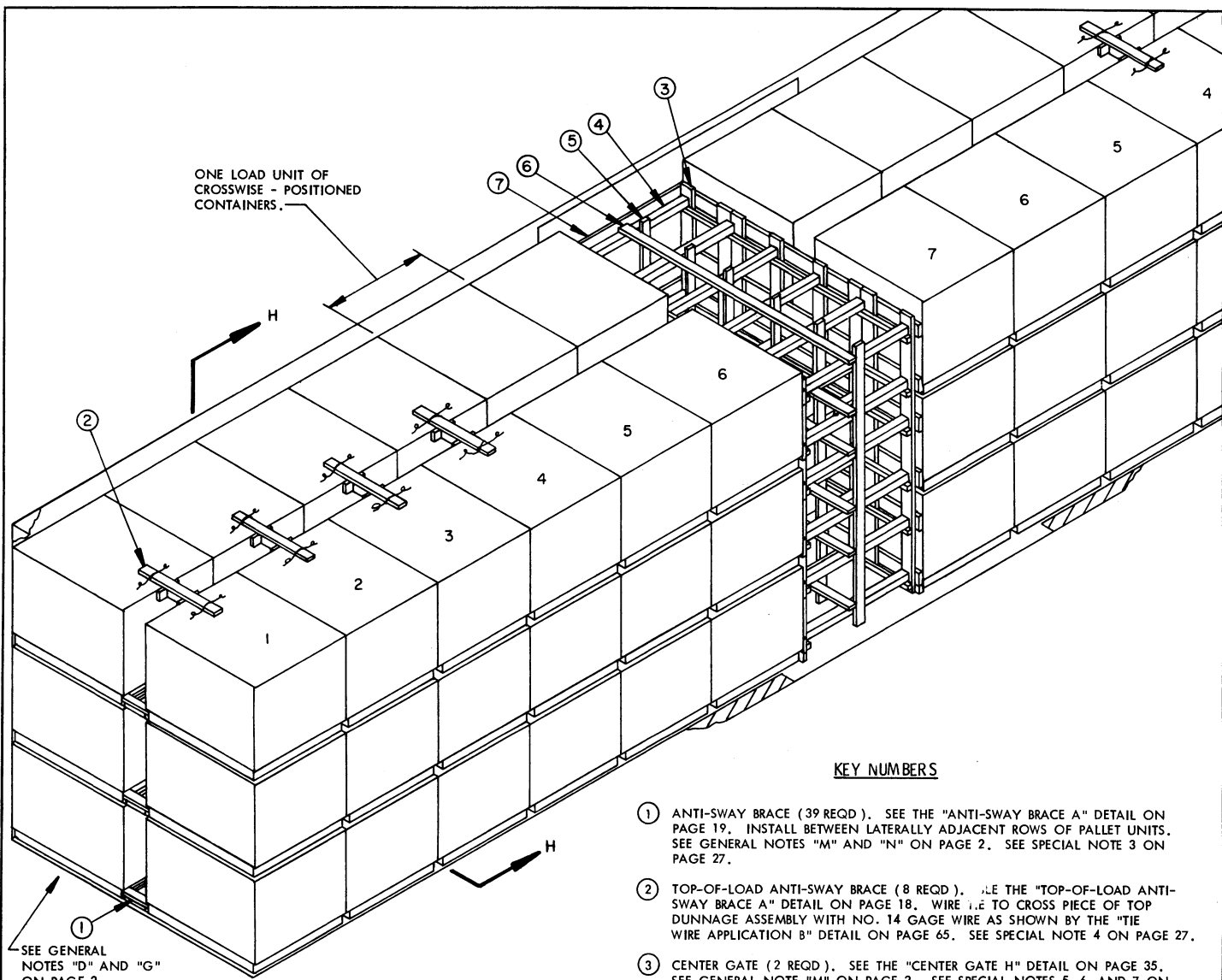
1. A 50'-6" LONG BY 9'-2" WIDE WOOD LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 24. A MAXIMUM OF SEVENTY-EIGHT (78) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 102,960 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-EIGHT (48) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,360 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION AS SHOWN ON PAGE 14 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE 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 24, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STOP PIECE WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION 'B' DETAIL ON PAGE 65. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' LONG CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, WHEN LOADING THE BOX CAR, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 65 FOR CONSTRUCTION GUIDANCE.
8. CENTER GATE "G" 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 66 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 G", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 24, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 32. 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 66. OMIT THE STOP PIECES FROM "CENTER GATE E".
10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 1" X 6" AND 2" X 4" MATERIAL NAILED TO CENTER GATE "G", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 68 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	231	77
1" X 6"	632	316
2" X 2"	100	34
2" X 3"	36	18
2" X 4"	459	306
2" X 6"	189	189
4" X 4"	87	116
NAILS	NO. REQ'D	POUNDS
6d (2")	610	3-3/4
10d (3")	668	10-1/2
12d (3-1/4")	62	1-1/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ----- 60' REQ'D ----- 1 LB		

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LOAD AS SHOWN

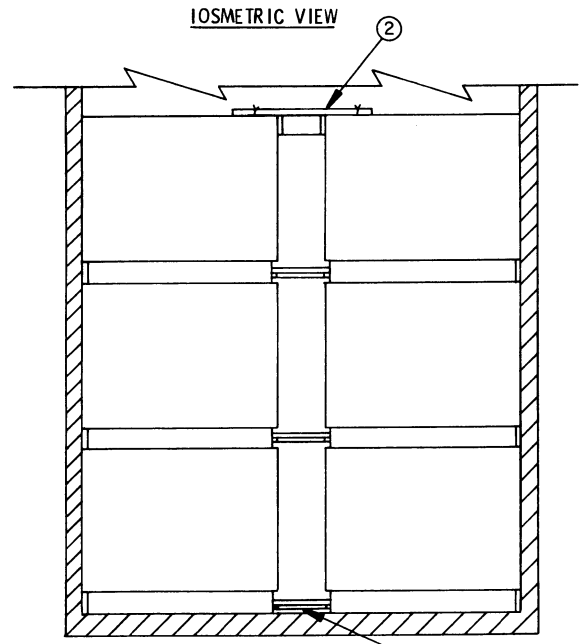
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	66 -----	87,120 LBS
DUNNAGE -----	-----	2,129 LBS
TOTAL WEIGHT -----		89,249 LBS



KEY NUMBERS

- ① ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 27.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 27.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35. SEE GENERAL NOTE "M" ON PAGE 2. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 27.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 57") (36 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGES 2 AND 3.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 35. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 27.

ISOMETRIC VIEW



SECTION H-H

(SPECIAL NOTES CONTINUED)

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 ONE OR TWO TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 38 THRU 63 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 61 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" 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. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 26. A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 126,720 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY-SIX (66) UNITS, FOR AN APPROXIMATE WEIGHT OF 87,120 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION AS SHOWN ON PAGE 30 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ④, 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 LENGTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. CENTER GATE "H" 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 66 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE H", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 26, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 33. 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 66.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "G" PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 68 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 26, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILALBE DOOR POSTS. REFER TO PAGES 69 THRU 71 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③ THRU ④ ON PAGE 30 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	123	41
1" X 6"	120	60
2" X 2"	378	126
2" X 3"	44	22
2" X 4"	250	167
2" X 6"	275	275
4" X 4"	171	228
NAILS	NO. REQD	POUNDS
6d (2")	618	3-3/4
10d (3")	1216	18-3/4
12d (3-1/4")	32	3/4
16d (3-1/2")	144	3-1/4
WIRE, NO. 14 GAGE ----- 80' REQD ----- 1-1/2 LBS		

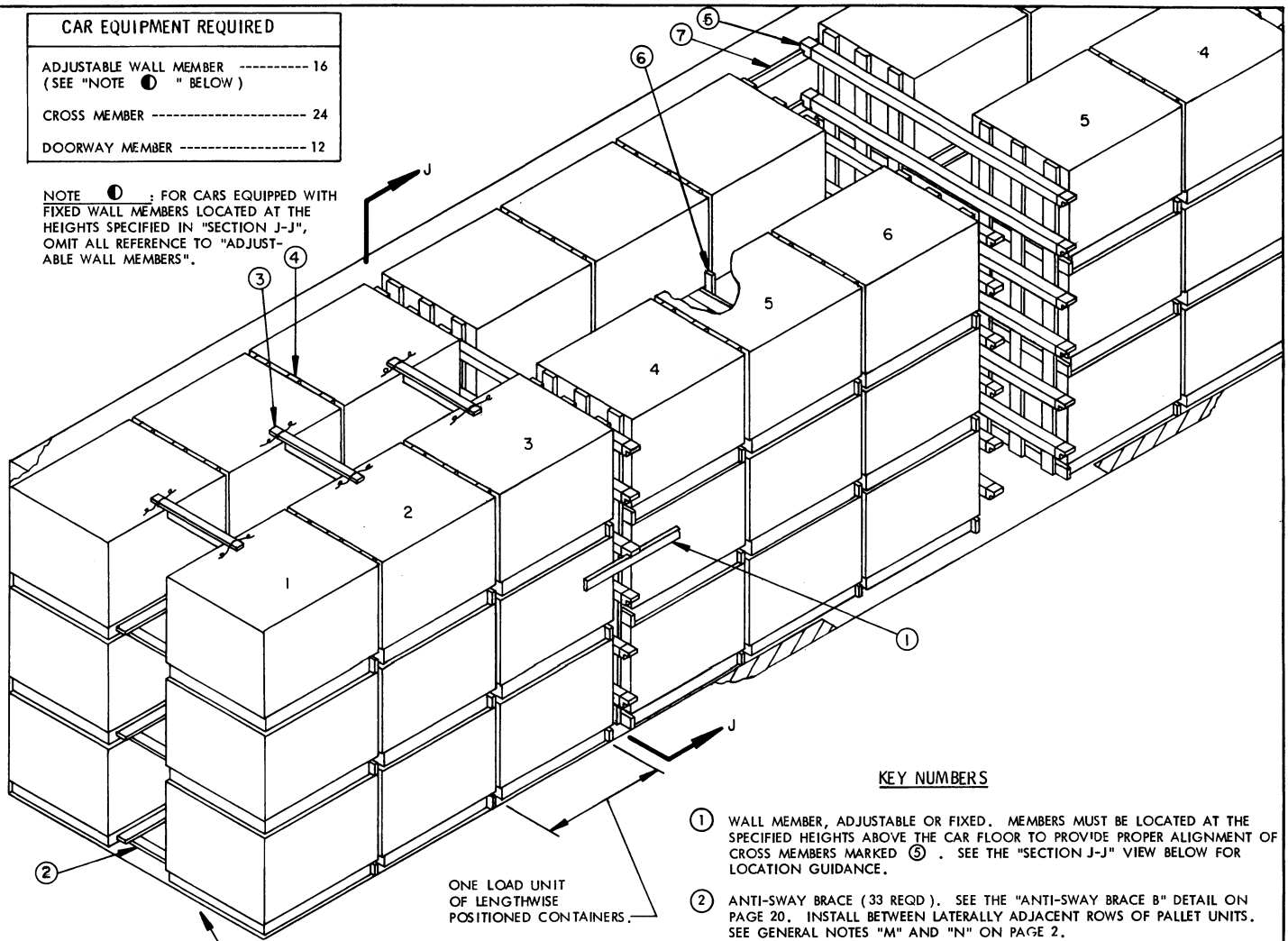
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	78 -----	102,960 LBS
DUNNAGE -----		1,866 LBS
TOTAL WEIGHT -----		104,826 LBS

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	16
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	24
DOORWAY MEMBER -----	12

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



SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 29.

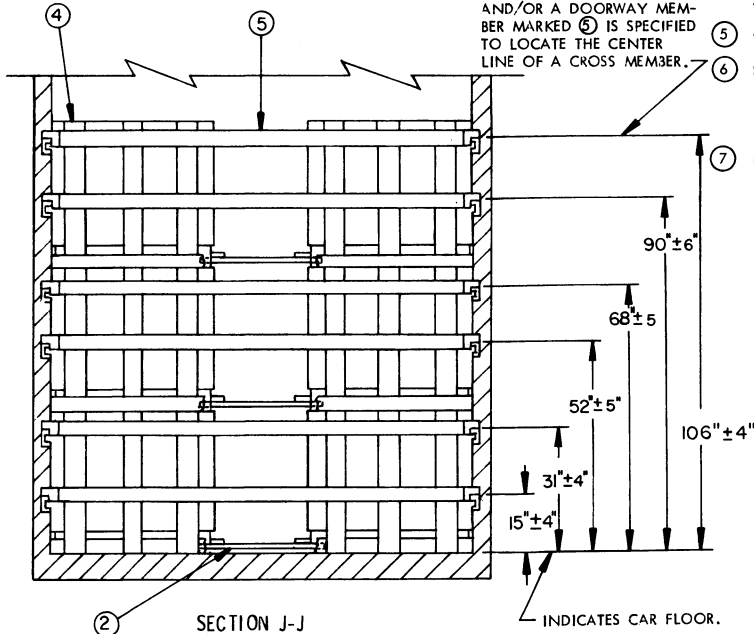
ISOMETRIC VIEW

ONE LOAD UNIT OF LENGTHWISE POSITIONED CONTAINERS.

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 J-J" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO STOP PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 ON PAGE 29.
- 4 SEPARATOR GATE FOR 3-HIGH (13 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 33. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 5 ON PAGE 29.
- 5 CROSS MEMBER (24 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 STOP PIECE, 1" X 4" X 45" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED 4 W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 29.
- 7 DOORWAY MEMBER (12 REQD). SEE THE "SECTION J-J" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 7 ON PAGE 29.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 7 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION J-J

INDICATES CAR FLOOR.

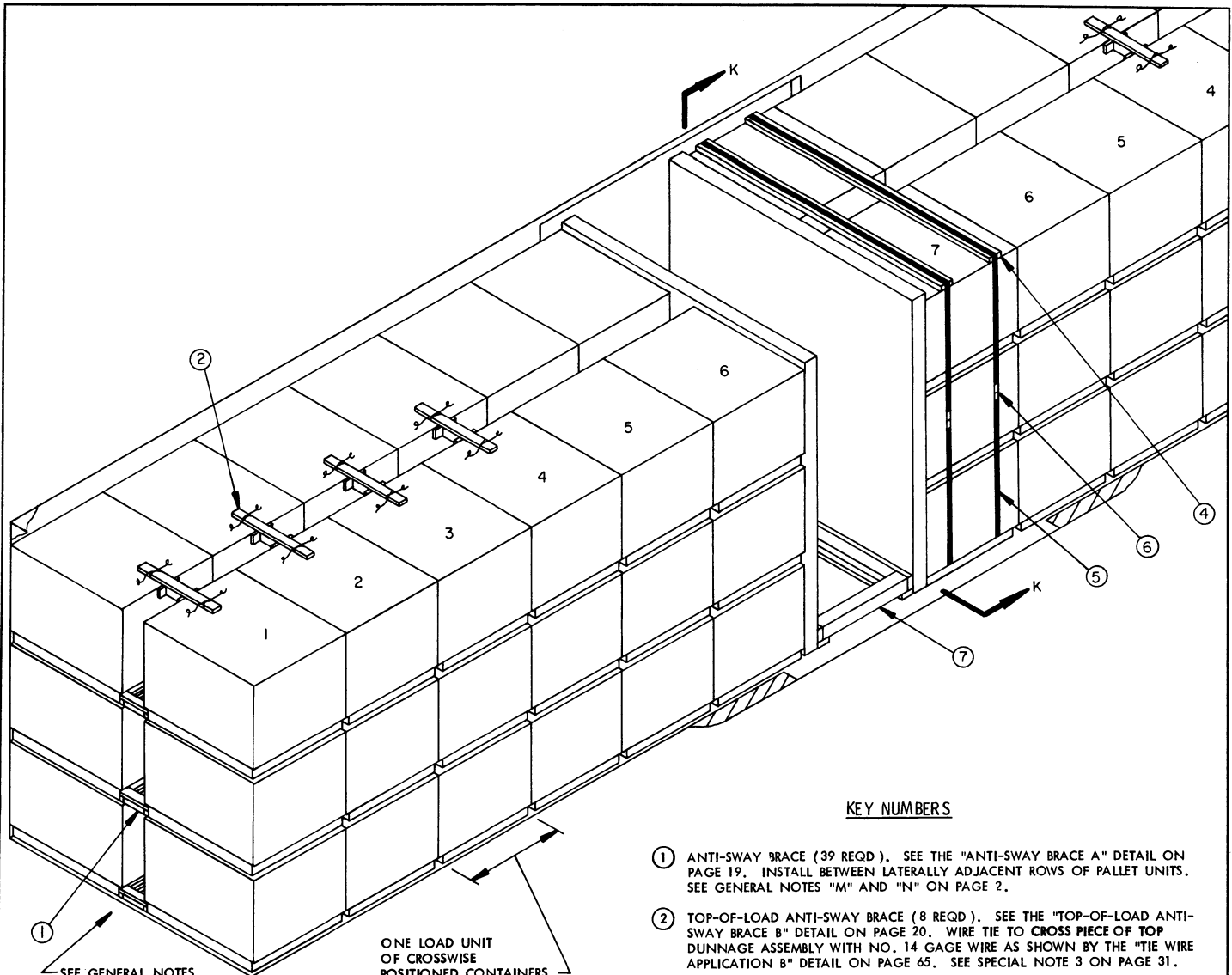
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 28. A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,280 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHT AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 28. MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STOP PIECES WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50" CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" 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 ⑥. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. IF THE CAR BEING LOADED IS NOT EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, SIX (6) PALLET UNITS IN THE THIRD LAYER WHICH ARE EITHER COMPLETELY IN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY MUST BE OMITTED.
8. 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 SIX (6) 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 36 AND 37 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	372	124
1" X 6"	722	361
2" X 4"	443	296
NAILS	NO. REQD	POUNDS
6d (2")	738	4-1/2
10d (3")	396	6-1/4
12d (3-1/4")	30	1/2
WIRE, NO. 14 GAGE ----- 60' REQD -----		1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	66 -----	87,120 LBS
DUNNAGE -----	-----	1,575 LBS
TOTAL WEIGHT -----		88,695 LBS

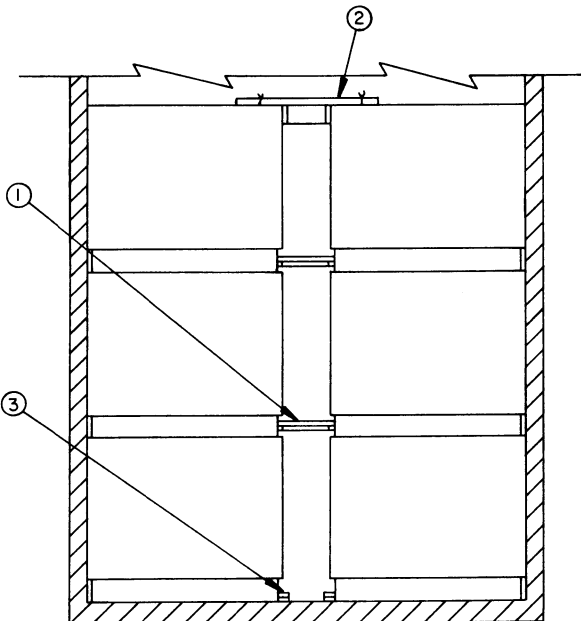


ISOMETRIC VIEW

ONE LOAD UNIT OF CROSSWISE POSITIONED CONTAINERS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 65. SEE SPECIAL NOTE 3 ON PAGE 31.
- ③ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CARFLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 4 ON PAGE 31.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- ⑤ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 38'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑦ STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 72.



SECTION K-K

(SPECIAL NOTES CONTINUED)

5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 30, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY IS REQUIRED IF THE LOAD IN EITHER END OF THE CAR IS MORE THAN SIX (6) LOAD UNITS LONG.
6. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE LOAD UNIT ON BOTH SIDES OF THE CAR.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES REFER TO PAGES 42 THRU 49 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 60, 61, AND 63 FOR SHIPPING GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 62 FOR GUIDANCE.

SPECIAL NOTES:

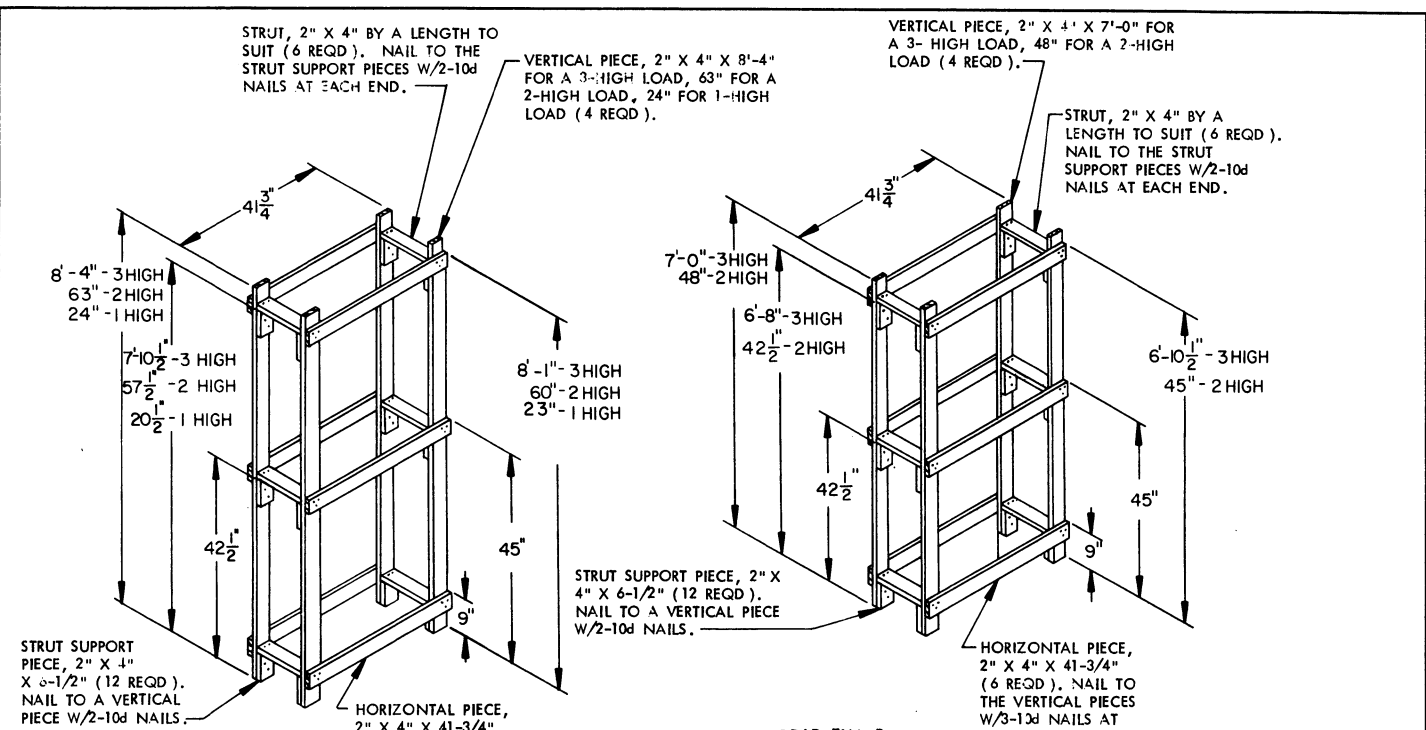
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE LOAD ON PAGE 30. A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 126,720 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SIXTY (60) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 79,200 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE OPERATING MECHANISM FOR THE LOAD DIVIDER BULKHEAD IS LOCATED ON THE EDGE OF THE BULKHEAD (OPEARABLE FROM OUTSIDE THE CAR), ONE-HUNDRED AND TWO (102) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 134,640 POUNDS CAN POSSIBLY BE LOADED IN A 60'-8" LONG CAR, EIGHTY-FOUR (84) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 110,880 POUNDS, AND SIXTY-SIX (66) PALLET UNITS CAN BE PLACED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT 87,120 POUNDS. IF THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 14 IS EMPLOYED, THEN, SEVENTY-EIGHT (78) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 102,960 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR, SIXTY-SIX (66) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 87,120 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE PLACED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 63,360 POUNDS. IF THE OPERATING MECHANISM IS ON THE EDGE OF THE BULKHEAD, EIGHTY-FOUR (84) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 110,880 POUNDS CAN BE LOADED IN A 60'-8" LONG CAR, SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 95,040 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE PLACED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 71,280 POUNDS.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 30, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 65. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE HALF OR MORE OF THE STACK LENGTH. THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLY, AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION SHOWN IN THE LOAD ON PAGE 30 AS PIECES MARKED ③ THRU ⑥ IS APPLICABLE FOR ANY TYPE DOOR WHETHER SLIDING, PLUG, OR COMBINATION PLUG AND SLIDING. THE WOODEN GATE TYPE DOORWAY PROTECTION, SHOWN AS PIECE MARKED ④ ON PAGE 26, MAY BE USED IF THE CAR IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. REFER TO PAGES 69 THRU 71 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. NOTE THAT DOORWAY PROTECTION SHOWN AS PIECE MARKED ⑦ ON PAGE 24 WILL BE USED IF THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	110	37
1" X 8"	17	12
2" X 2"	270	90
2" X 4"	150	100
2" X 6"	54	54
4" X 4"	11	15
NAILS	NO. REQD	POUNDS
6d (2")	564	3-1/2
10d (3")	442	7
12d (3-1/4")	42	3/4
16d (3-1/2")	20	1/2
WIRE, NO. 14 GAGE -----	80' REQD -----	1-1/2 LBS
STEEL STRAPPING, 1-1/4" X .035" X .031" --	76' REQD -----	11 LBS
SEAL FOR 1-1/4" STRAPPING -----	4 REQD -----	NIL
STAPLES FOR 1-1/4" STRAPPING -----	3 REQD -----	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	78	102,960 LBS
DUMP GAGE -----		641 LBS
TOTAL WEIGHT -----		103,601 LBS

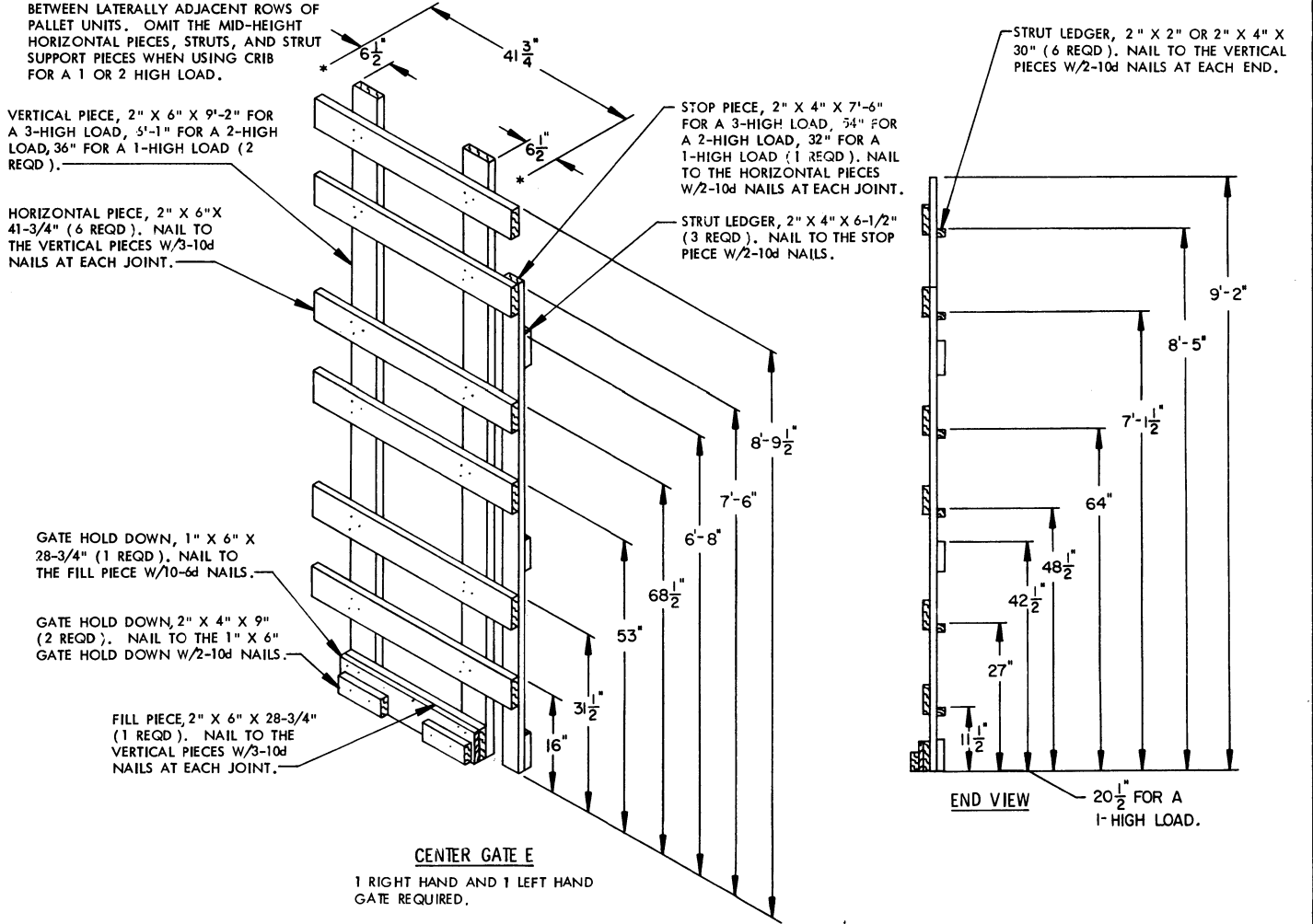


CRIB FILL D

OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES, WHEN USING CRIB FOR A 2-HIGH LOAD. CRIB FILL "D" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "C" THROUGHOUT THE LENGTH OF THE LOAD.

CRIB FILL C

CRIB FILL ASSEMBLIES "C" AND "D" SHOULD BE PRE-ASSEMBLED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2 HIGH LOAD.



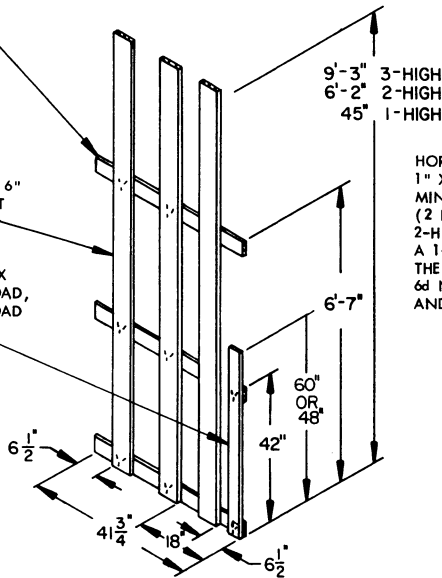
END VIEW

20 1/2" FOR A 1-HIGH LOAD.

HORIZONTAL PIECE, 1" X 4" X 41-3/4" (3 REQD FOR 3-HIGH LOAD, 2 REQD FOR 2-HIGH AND 1-HIGH LOADS). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

VERTICAL PIECE, 1" X 6" BY A LENGTH TO SUIT (3 REQD).

STOP PIECE, 1" X 4" X 48" FOR A 3-HIGH LOAD, 60" FOR A 2-HIGH LOAD (1 REQD).

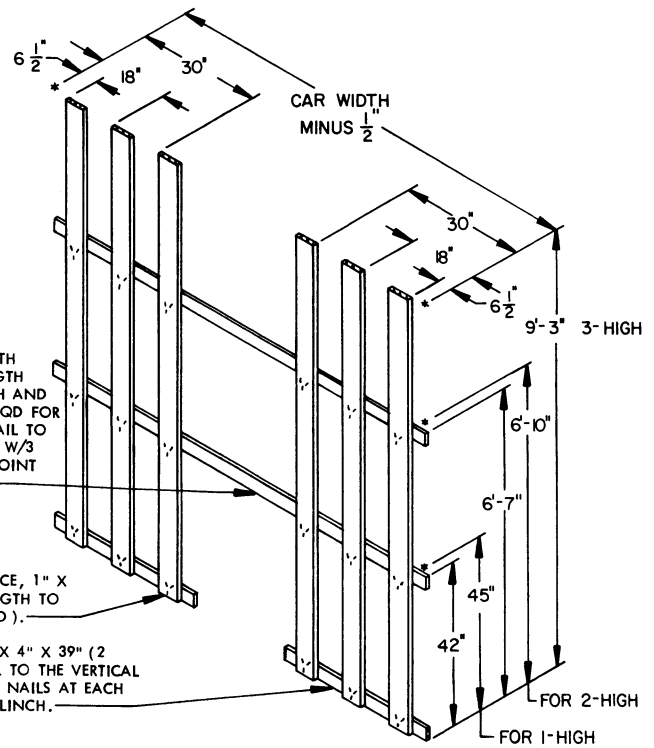


SEPARATOR GATE C

HORIZONTAL PIECE, 1" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (2 REQD FOR 3-HIGH AND 2-HIGH LOADS, 1 REQD FOR A 1-HIGH LOAD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

VERTICAL PIECE, 1" X 6" BY A LENGTH TO SUIT (6 REQD).

TIE PIECE, 1" X 4" X 39" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.



SEPARATOR GATE D

RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN. WHEN NAILED FLOORLINE DOORWAY PROTECTION IS USED, THE ADJACENT SEPARATOR GATES MUST BE RABBETED 1-1/2" WIDE BY 3-1/2" HIGH AT THE JUNCTION OF THE STOP PIECE AND THE BOTTOM HORIZONTAL PIECE, AS MARKED BY PHANTOM LINES, TO PROVIDE CLEARANCE FOR PIECE MARKED 17 DURING THE NORMAL SHIFTING OF A LOAD.

VERTICAL PIECE, 2" X 6" X 9'-2" FOR A 3-HIGH LOAD, 6'-1" FOR A 2-HIGH LOAD, 36" FOR A 1-HIGH LOAD (4 REQD).

HORIZONTAL PIECE, 2" X 6" X 50" (6 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

FILL PIECE, 2" X 4" X 50" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 3" X 12" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE FILL PIECE W/3-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

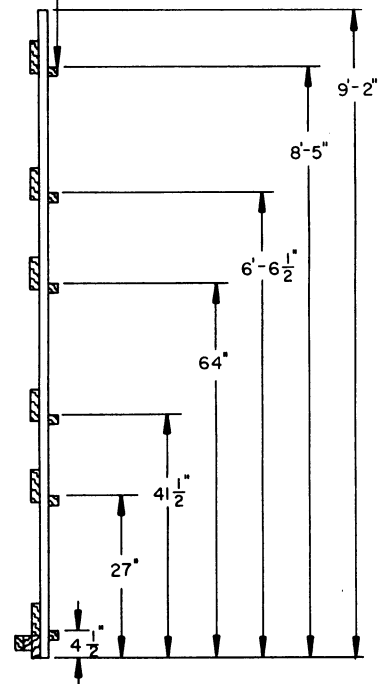
CENTER GATE F

1 RIGHT HAND AND 1 LEFT HAND GATE MAY BE REQUIRED. SEE THE "RABBET" LEADER ABOVE.

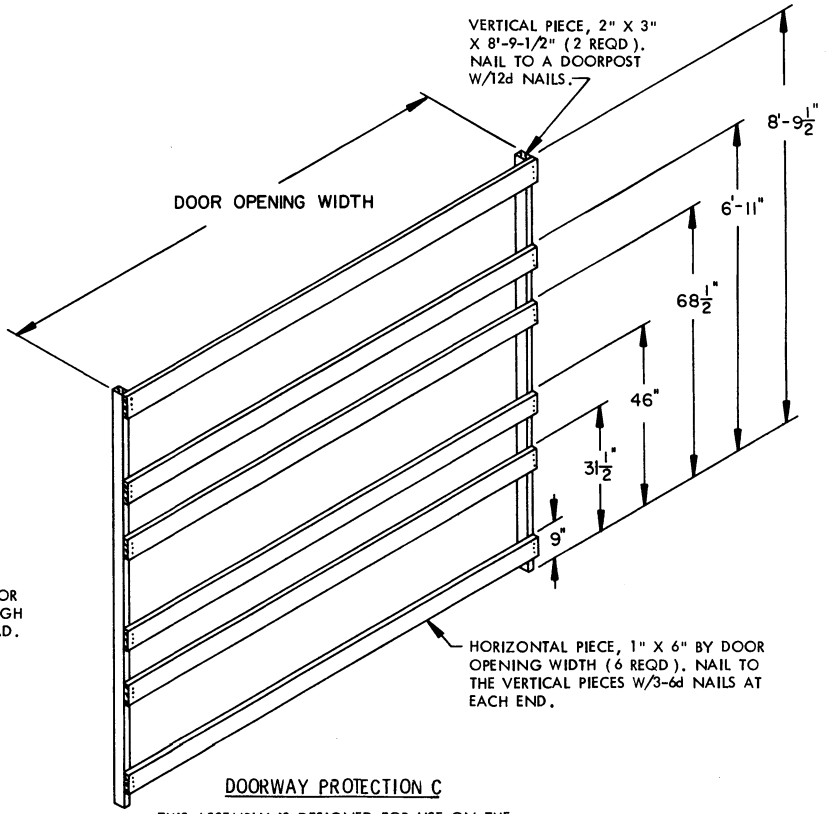
RABBET THE CENTER-OF-CAR END OF A VERTICAL PIECE 2" WIDE BY 3-1/2" HIGH AND SHORTEN THE FILL PIECE TO 48", AS MARKED, TO PROVIDE CLEARANCE FOR THE SIDE BLOCKING WHEN PIECES MARKED 17 THRU 20 ON PAGE 22 ARE USED. RIGHT HAND AND LEFT HAND GATES WILL THEN BE REQUIRED.

DETAILS FOR DECREASED HEIGHT UNITS

STRUT LEDGER, 2" X 2" OR 2" X 4" X 50" (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



END VIEW



VERTICAL PIECE, 2" X 3" X 8'-9-1/2" (2 REQD). NAIL TO A DOORPOST W/12d NAILS.

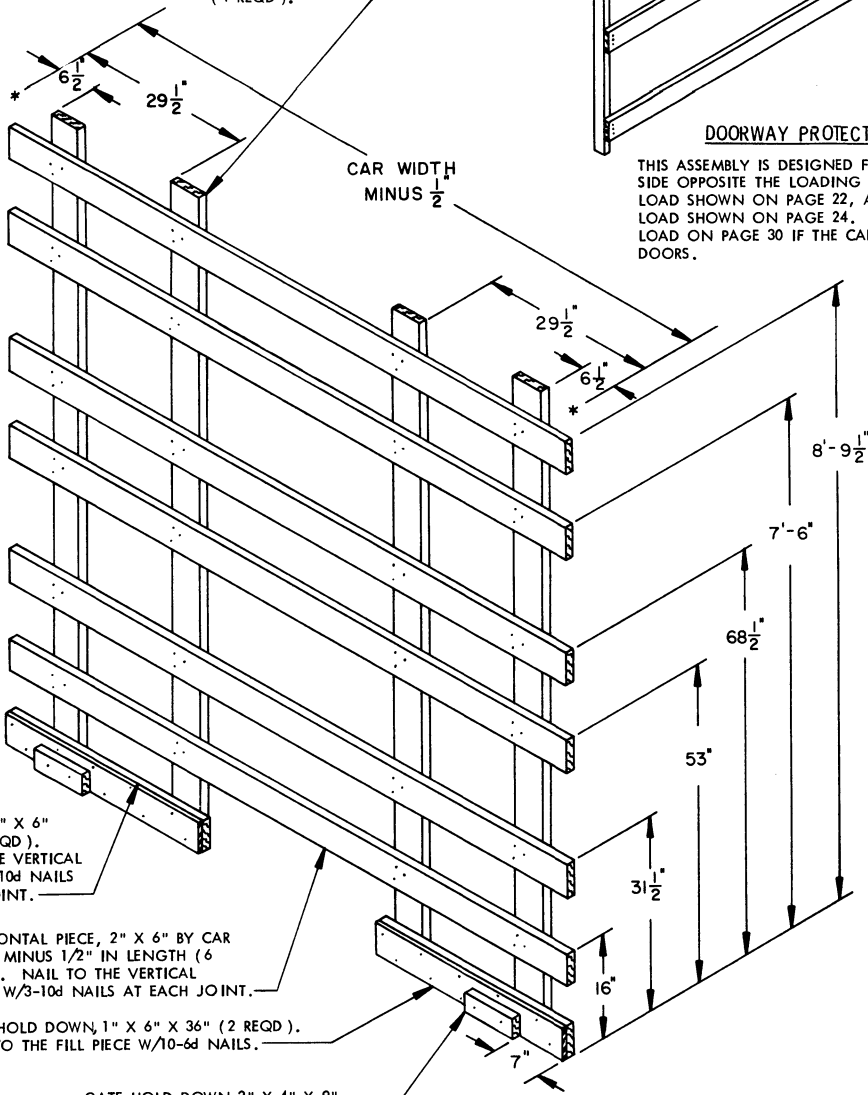
DOOR OPENING WIDTH

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

DOORWAY PROTECTION C

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 22, AND FOR THE LOAD SHOWN ON PAGE 24. ALSO FOR THE LOAD ON PAGE 30 IF THE CAR HAS SLIDING DOORS.

VERTICAL PIECE, 2" X 6" X 9'-2" FOR A 3 HIGH LOAD, 6'-1" FOR A 2 HIGH LOAD AND 36" FOR A 1 HIGH LOAD. (4 REQD).



CAR WIDTH MINUS 1/2"

FILL PIECE 2" X 6" X 36" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

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

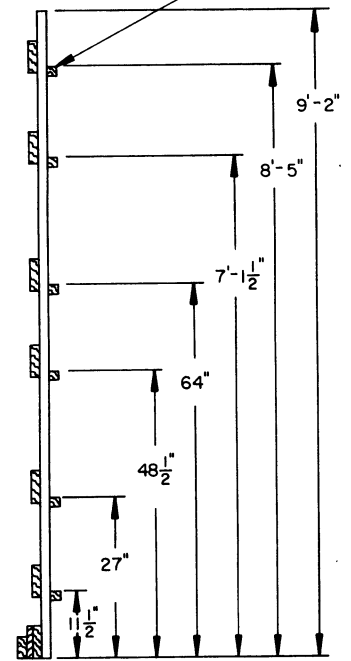
GATE HOLD DOWN, 1" X 6" X 36" (2 REQD). NAIL TO THE FILL PIECE W/10-6d NAILS.

GATE HOLD DOWN, 2" X 4" X 9" (2 REQD). NAIL TO THE 1" X 6" GATE HOLD DOWN W/2-10d NAILS.

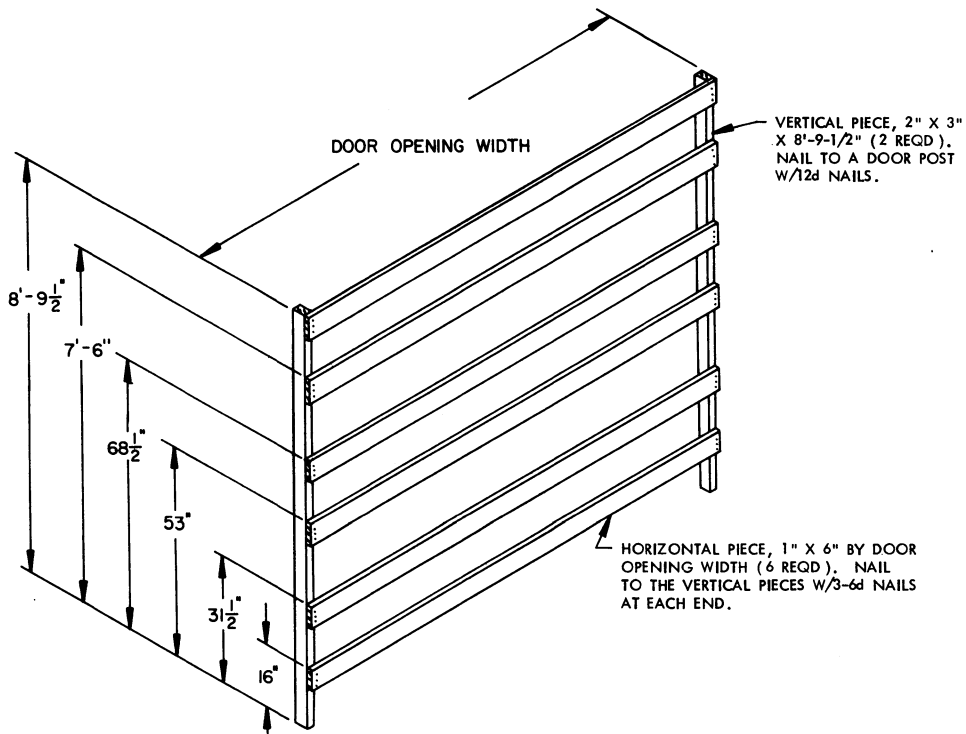
CENTER GATE G

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 24.

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



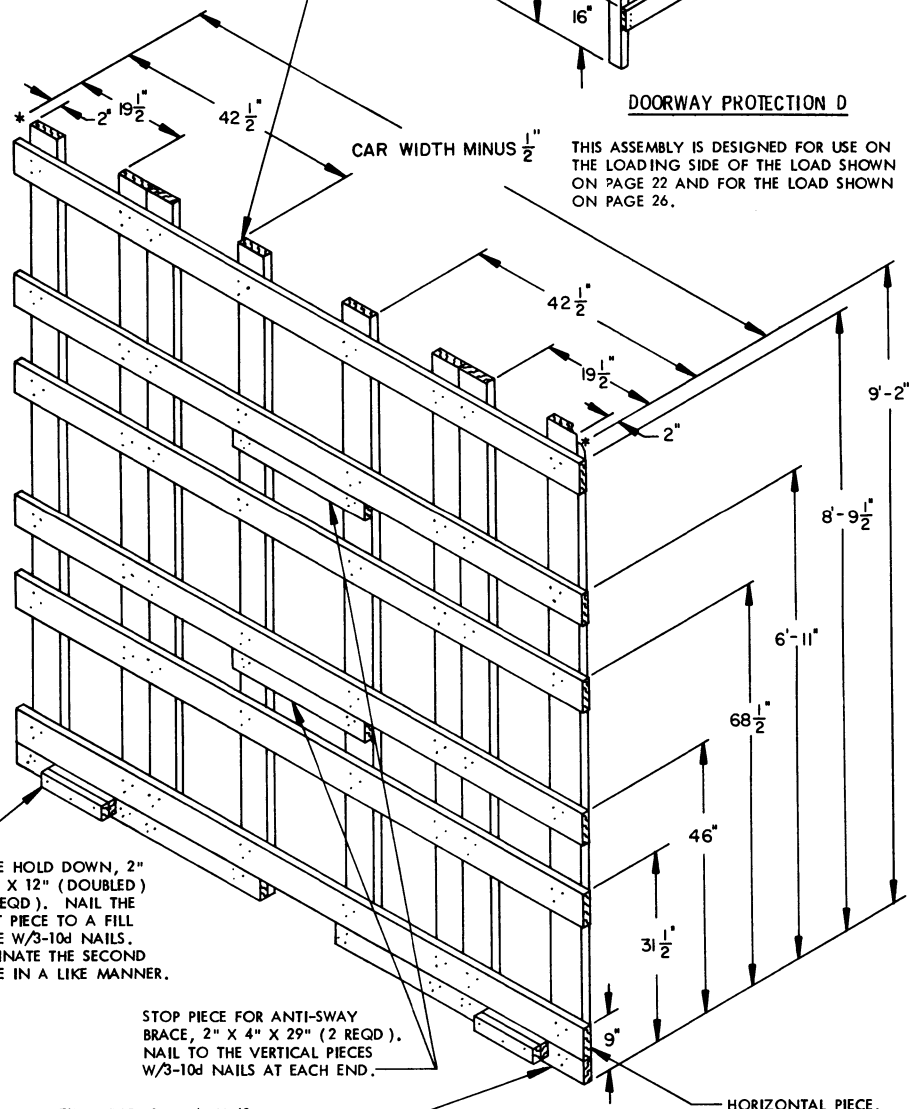
END VIEW



VERTICAL PIECE, 2" X 6" X 9'-2" FOR A 3-HIGH LOAD, 6'-1" FOR A 2-HIGH LOAD AND 36" FOR A 1-HIGH LOAD (8 REQD).

DOORWAY PROTECTION D

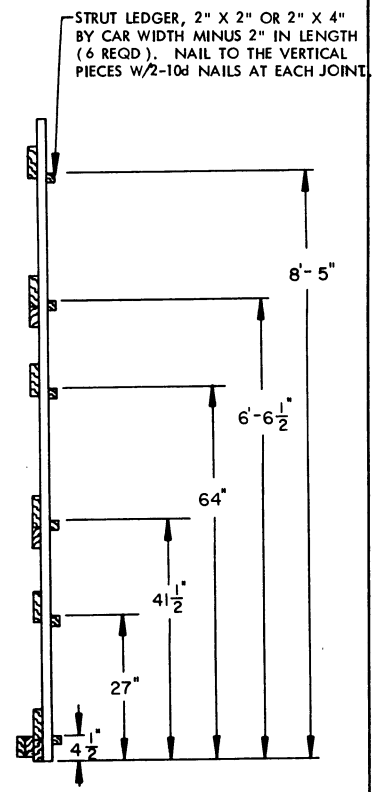
THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 22 AND FOR THE LOAD SHOWN ON PAGE 26.

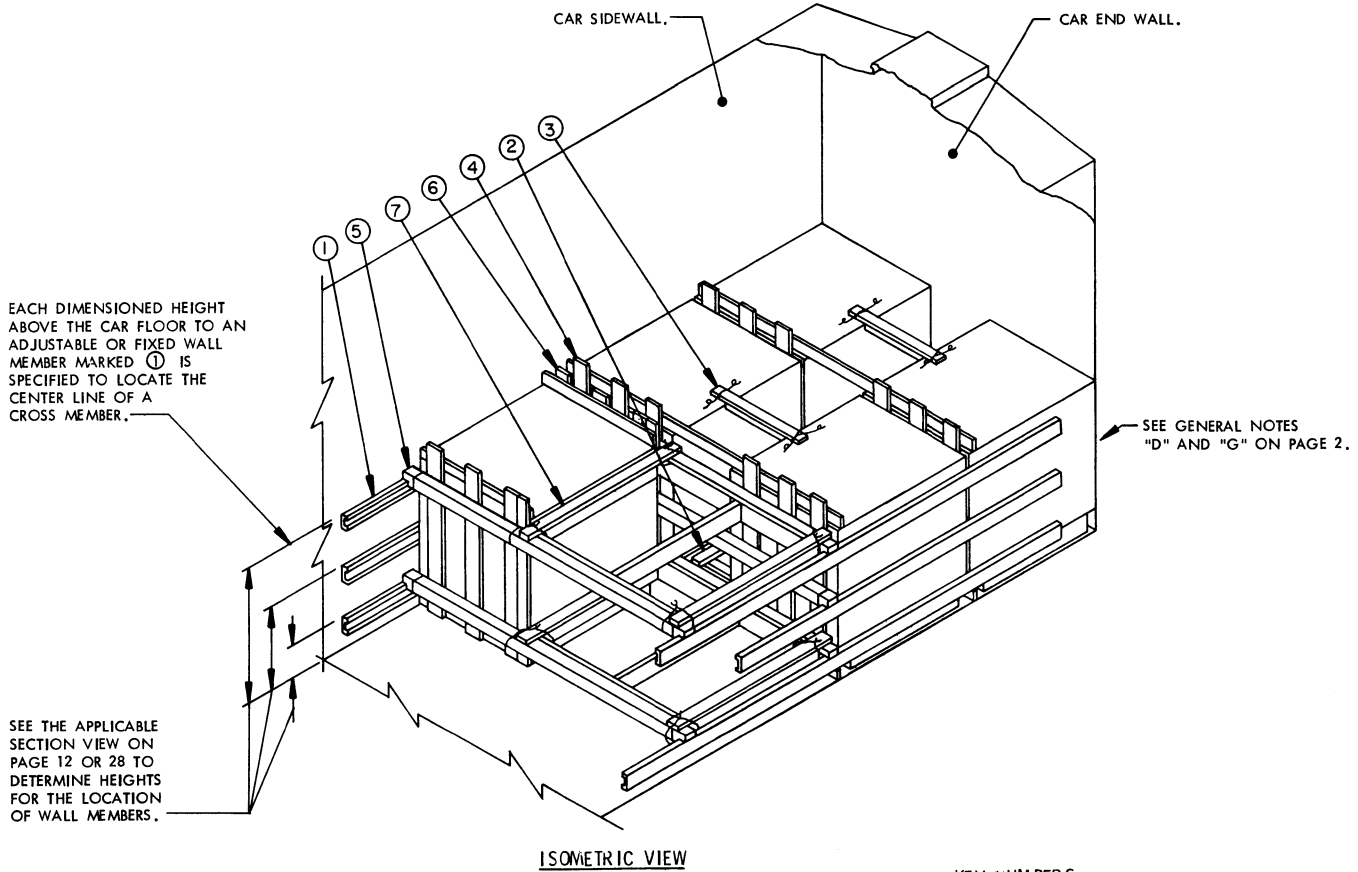


CENTER GATE H

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 26.

DETAILS FOR DECREASED HEIGHT UNITS





ISOMETRIC VIEW

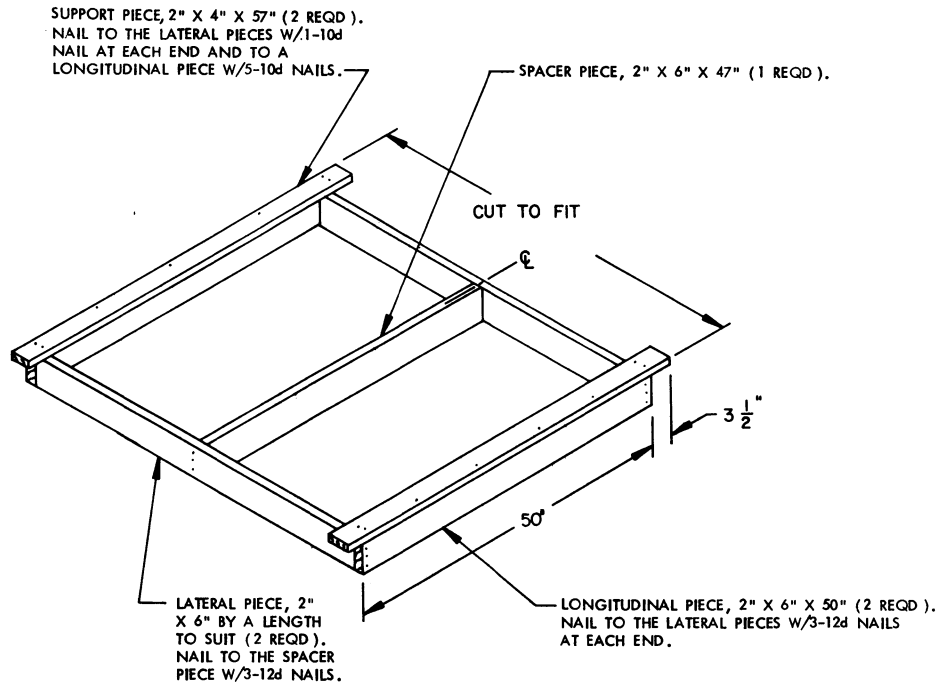
KEY NUMBERS

SPECIAL NOTES:

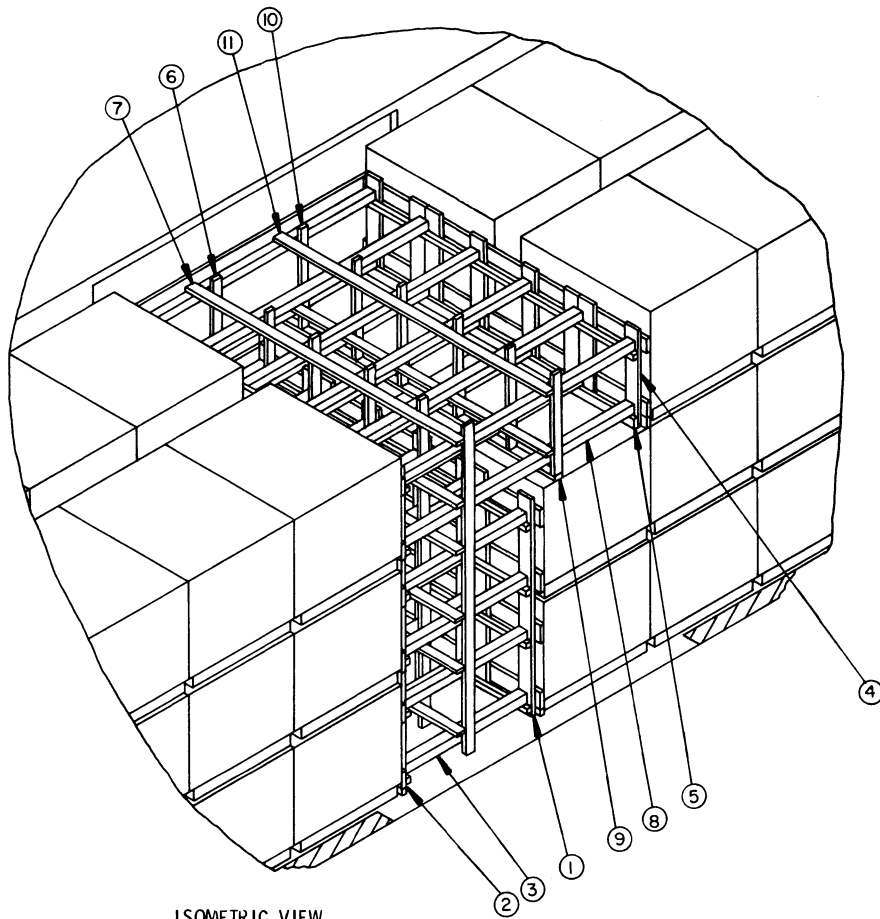
1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. 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.

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. 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 B" DETAIL ON PAGE 20. WIRE TIE TO STOP PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. SEE SPECIAL NOTE 4 AT LEFT.
- ④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 17 OR 33. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑤ CROSS MEMBER (5 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR ONE UNIT WIDE ON PAGE 17 OR 33. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑦ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 37 AND SPECIAL NOTE 6 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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



SPACER ASSEMBLY B



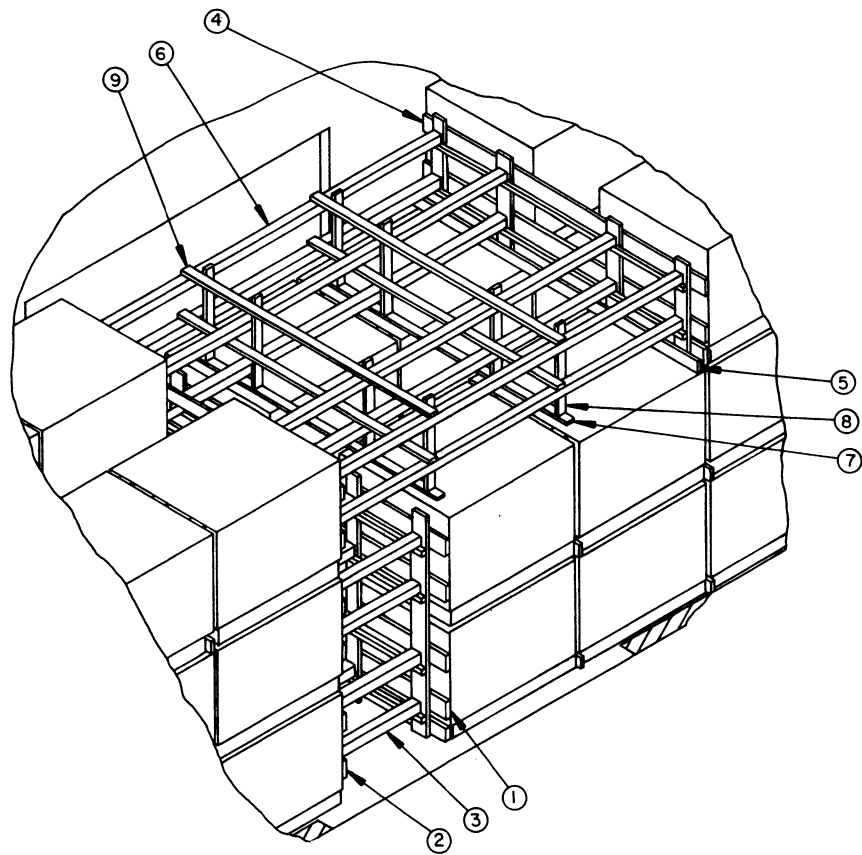
ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER OR NARROWER CARS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE DECREASED HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE BASIC HEIGHT UNIT.
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM A 3-HIGH LOAD ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP TWO LAYERS FROM A 3-HIGH LOAD, OR THE TOP LAYER FROM A 2-HIGH LOAD.
4. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
5. THE CENTER GATE "H" USED IS ONLY APPLICABLE FOR THE DECREASED HEIGHT UNIT DEPICTED. THE CENTER GATE "D" AS DETAILED ON PAGE 19, WILL BE USED FOR THE BASIC HEIGHT UNIT.
6. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED ⑨, MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

- ① CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 AT THE LEFT.
- ② CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35.
- ③ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
- ④ CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35.
- ⑤ GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 2" IN LENGTH (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). POSITION BETWEEN THE CENTER GATES PIECES MARKED ② AND ④ IN THE THIRD LAYER AND TOENAIL W/2-16d NAILS AT EACH END.
- ⑨ STRUT BRACING PAD, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.
- ⑩ VERTICAL STRUT BRACING, 2" X 4" X 32" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑪ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 2" IN LENGTH (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW

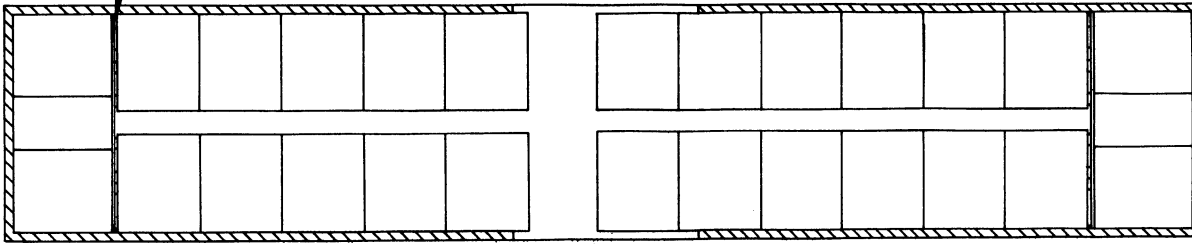
SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE DECREASED HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE BASIC HEIGHT UNIT.
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM TWO (2) LOAD UNITS ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP LAYER FROM JUST ONE (1) LOAD UNIT.
4. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
5. THE CENTER GATE "G" USED IS ONLY APPLICABLE FOR THE DECREASED HEIGHT UNIT DEPICTED. CENTER GATE "C" AS DETAILED ON PAGE 18 WILL BE USED FOR THE BASIC HEIGHT UNIT.
6. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED ⑦, MUST BE POSITIONED UNDER AND SECURED TO EACH VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

- ① CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34. SEE SPECIAL NOTE 5 AT LEFT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34.
- ③ STRUT, 4" X 4" BY CUT TO FIT (16 REQD). TOENAIL TO PIECES MARKED ① AND ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.
- ④ CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34.
- ⑤ SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "G", SHOWN AS PIECE MARKED ④, W/3-10d NAILS AT EACH JOINT.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PIECES MARKED ② AND ④ W/2-16d NAILS AT EACH END.
- ⑦ STRUT BRACING PAD, 2" X 4" BY CAR WIDTH MINUS 6" IN LENGTH (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.
- ⑧ VERTICAL STRUT BRACING, 2" X 4" X 32" (8 REQD). NAIL TO THE STRUTS MARKED ⑥ 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 6 AT LEFT.
- ⑨ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 6" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE).
SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 41.
POSITION AS SHOWN WITH THE VERTICAL PIECES
AGAINST THE CROSSWISE POSITIONED PALLET UNITS.



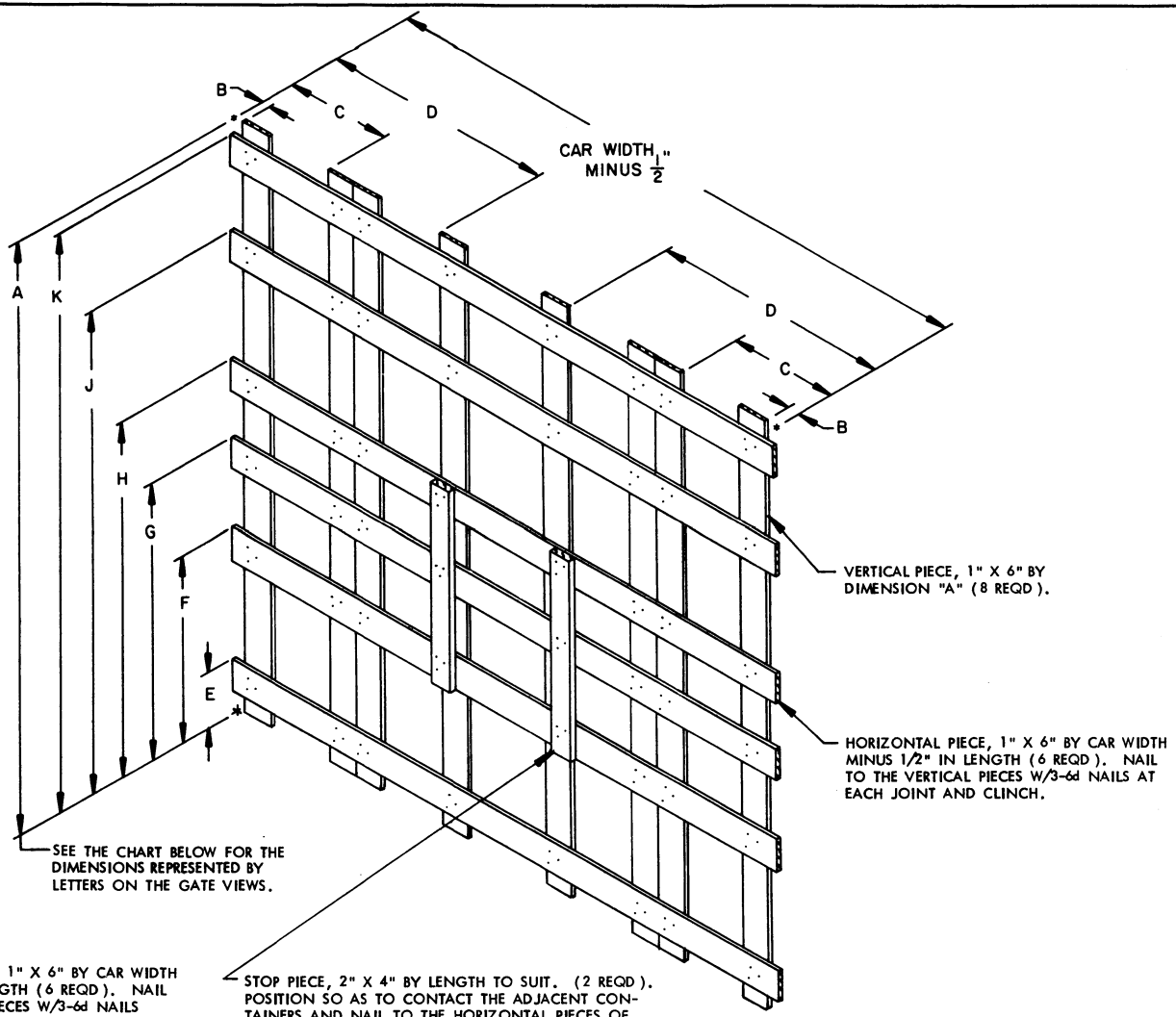
TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

A 11 LONG PLUS 2 WIDE LOAD IS SHOWN.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE AND ON PAGE 41 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "E", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "E" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE CROSSWISE UNITS OF THE LOAD.
4. THE CHART AT RIGHT SHOWS THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES. FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHARTS.
5. WHEN USING THE COMBINATION LOADING PATTERN, THE CONTAINERS LENGTHWISE PALLET UNIT (S) WILL BE POSITIONED IN THE END (S) OF THE CAR SO THAT CONTAINERS CROSSWISE UNITS WILL BE ADJACENT TO THE VOID AREA AT THE CENTER OF THE CAR. THIS WILL PROVIDE FOR PROPER INSTALLATION OF THE CENTER GATES AND STRUTS.

LOAD PATTERN CHART			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	20	CROSSWISE LOAD ON PAGE 10 OR 26	62"
	20	9 LONG AT 41-3/4" PLUS 1 WIDE AT 50"	52"
	20	8 LONG AT 41-3/4" PLUS 2 WIDE AT 50"	43"
	20	7 LONG AT 41-3/4" PLUS 3 WIDE AT 50"	34"
	20	6 LONG AT 41-3/4" PLUS 4 WIDE AT 50"	25"
	18	5 LONG AT 41-3/4" PLUS 4 WIDE AT 50"	66"
	18	LENGTHWISE LOAD ON PAGE 8 OR 24.	24"
	50'-6" CAR	26	CROSSWISE LOAD ON PAGE 10 OR 26
26		12 LONG AT 41-3/4" PLUS 1 WIDE AT 50"	47"
26		11 LONG AT 41-3/4" PLUS 2 WIDE AT 50"	37"
26		10 LONG AT 41-3/4" PLUS 3 WIDE AT 50"	28"
24		COMBINATION LOAD ON PAGE 6 OR 22	57" & 43"
24		8 LONG AT 41-3/4" PLUS 4 WIDE AT 50"	61"
24		7 LONG AT 41-3/4" PLUS 5 WIDE AT 50"	52"
24		6 LONG AT 41-3/4" PLUS 6 WIDE AT 50"	43"
24		5 LONG AT 41-3/4" PLUS 7 WIDE AT 50"	34"
24		4 LONG AT 41-3/4" PLUS 8 WIDE AT 50"	25"
22	LENGTHWISE LOAD ON PAGE 8 OR 24	43"	
60'-8" CAR	32	CROSSWISE LOAD ON PAGE 10 OR 26	54"
	32	15 LONG AT 41-3/4" PLUS 1 WIDE OR 26	44"
	32	14 LONG AT 41-3/4" PLUS 2 WIDE AT 50"	34"
	32	13 LONG AT 41-3/4" PLUS 3 WIDE AT 50"	25"
	30	11 LONG AT 41-3/4" PLUS 4 WIDE AT 50"	58"
	30	10 LONG AT 41-3/4" PLUS 5 WIDE AT 50"	49"
	30	9 LONG AT 41-3/4" PLUS 6 WIDE AT 50"	40"
	30	8 LONG AT 41-3/4" PLUS 7 WIDE AT 50"	31"
	26	LENGTHWISE LOAD ON PAGE 8 OR 24	63"



SEE THE CHART BELOW FOR THE DIMENSIONS REPRESENTED BY LETTERS ON THE GATE VIEWS.

VERTICAL PIECE, 1" X 6" BY DIMENSION "A" (8 REQD).

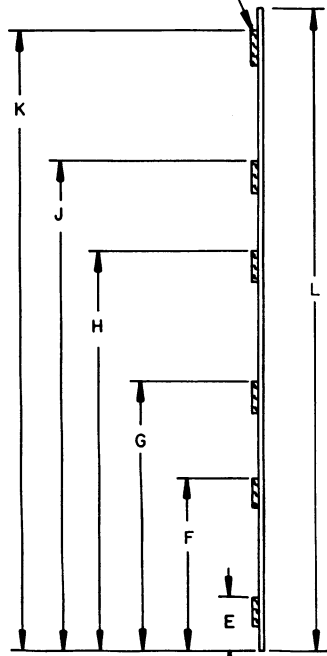
HORIZONTAL PIECE, 1" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (6 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

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

STOP PIECE, 2" X 4" BY LENGTH TO SUIT. (2 REQD). POSITION SO AS TO CONTACT THE ADJACENT CONTAINERS AND NAIL TO THE HORIZONTAL PIECES OF THE SEPARATOR GATE W/3-10d NAILS AT EACH JOINT.
 NOTE: STOP PIECES ARE ONLY REQUIRED ON SEPARATOR GATES WHICH ARE IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

SEPARATOR GATE E

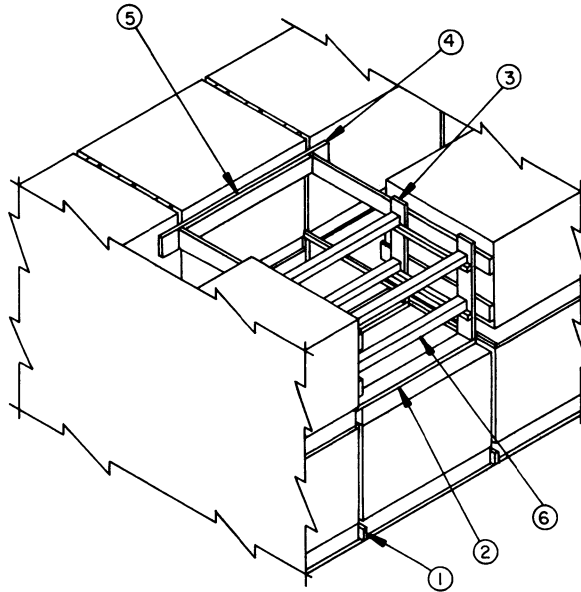
THIS VIEW DEPICTS A SEPARATOR GATE FOR A 2-HIGH LOAD OF BASIC HEIGHT UNITS. SEE THE "END VIEW" BELOW FOR HEIGHT DIMENSIONS FOR THE DECREASED HEIGHT UNITS, WHICH CAN BE LOADED 3-HIGH.



END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD OF DECREASED HEIGHT UNITS.

PALLET UNIT	DIMENSIONS										
	A	B	C	D	E	F	G	H	J	K	L
BASIC HEIGHT	8'-6"	2"	19-1/2"	42-1/2"	9"	31-1/2"	47-1/2"	61-1/2"	7'-0-1/2"	8'-4"	----
DECREASED HEIGHT	----	2"	19-1/2"	42-1/2"	9"	31-1/2"	46"	68-1/2"	6'-11"	8'-9-1/2"	9'-0"



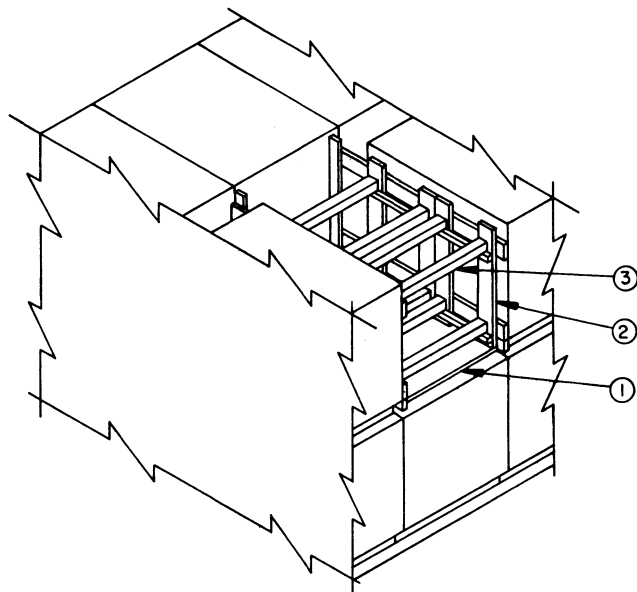
ISOMETRIC VIEW

KEY NUMBERS

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. THE PALLET UNIT SHOWN IS THE DECREASED HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT UNITS.
3. 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 TOP LAYER PALLET UNIT FROM A 3-LAYER LOAD OF DECREASED HEIGHT UNITS.
4. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
6. NOTE THAT THE TOP HORIZONTAL PIECE OF EACH SEPARATOR GATE WHICH IS ADJACENT TO THE OMITTED UNIT AREA MUST BE 1" X 2" MATERIAL IN LIEU OF 1" X 4" AND MAY NEED TO BE ADJUSTED IN HEIGHT SO AS TO PROVIDE CLEARANCE BETWEEN IT AND THE CONTAINERS ON THE UNIT BELOW AS WELL AS CLEARANCE BETWEEN IT AND THE LOAD BEARING GATE, PIECE MARKED ③. ALSO, THE VERTICAL PIECES MUST BE OF A LENGTH SO AS TO BE FLUSH WITH THE TOP OF THE 1" X 2" HORIZONTAL PIECE.

- ① MODIFIED SEPARATOR GATE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17 OR 33 FOR POSITIONING OF THE VERTICAL PIECES. SEE SPECIAL NOTE 6 AT LEFT FOR GATE MODIFICATIONS. POSITION GATE SO THE HORIZONTAL PIECES ARE AWAY FROM THE OMITTED UNIT AREA.
- ② SUPPORT PIECE, 2" X 6" X 50" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE PIECE MARKED ③.
- ③ LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING A" DETAIL ON PAGE 44 FOR THE BASIC HEIGHT UNITS, OR "LOAD BEARING GATE C" DETAIL ON PAGE 45 FOR THE DECREASED HEIGHT UNITS. NAIL TO THE FILLER PIECE, PIECE MARKED ⑤, W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ②, W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.
- ④ ANTI-SWAY BEARING PIECE, 2" X 6" X 6'-8" (1 REQD).
- ⑤ FILLER PIECE, 2" X 6" X 47" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ④, W/5-10d NAILS.
- ⑥ STRUT, 4" X 4" X 44" (AS REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END.



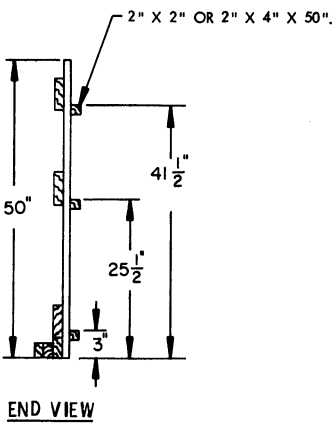
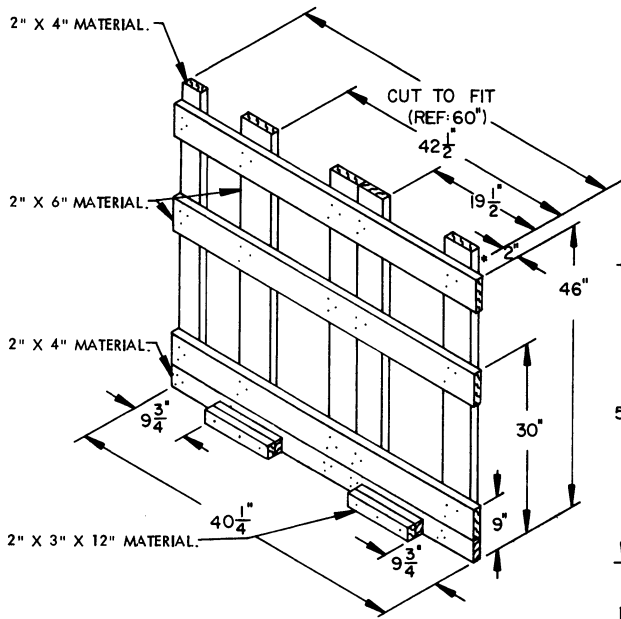
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE DECREASED HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT UNITS.
3. 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 TOP LAYER PALLET UNIT FROM A 3-LAYER LOAD OF DECREASED HEIGHT UNITS.
4. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

- ① SUPPORT PIECE, 2" X 6" X 41-3/4" (2 REQD). POSITION BENEATH THE OUTSIDE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ②.
- ② LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 44 FOR THE BASIC HEIGHT UNITS, OR "LOAD BEARING GATE D" DETAIL ON PAGE 45 FOR DECREASED HEIGHT UNITS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ① W/2-10d NAILS AT EACH JOINT. **CAUTION:** USE CARE NOT TO TOENAIL INTO A CONTAINER.
- ③ STRUT, 4" X 4" X 35-3/4" (AS REQD). TOENAIL TO PIECES MARKED ② W/2-10d NAILS AT EACH END.

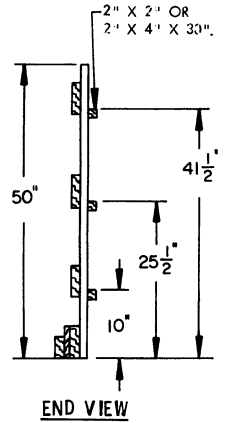
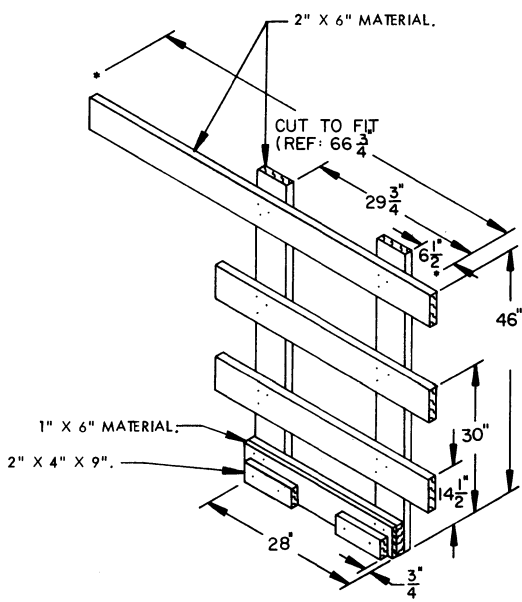


LOAD BEARING GATE B

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT CONTAINERS - CROSSWISE UNITS. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

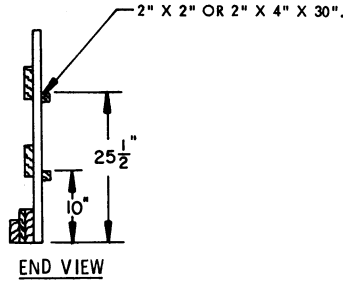
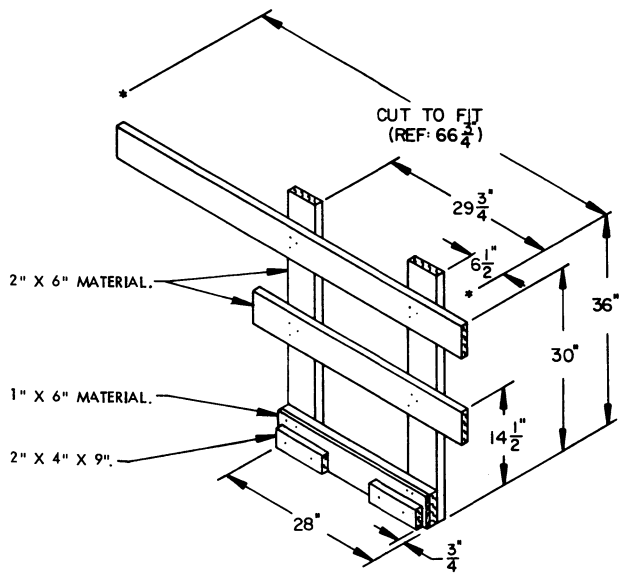
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGES 42 AND 43. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE OR CROSSWISE POSITIONED PALLET UNITS, RESPECTIVELY.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A 2" X 4" HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 1" X 6" HOLD DOWN PIECE W/10-6d NAILS AND THE 2" X 4" HOLD DOWN PIECE W/2-10d NAILS. NAIL THE 2" X 2" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



LOAD BEARING GATE A

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT CONTAINERS - LENGTHWISE UNITS. SEE SPECIAL NOTE 3 ABOVE FOR NAILING GUIDANCE. ONE RIGHT AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

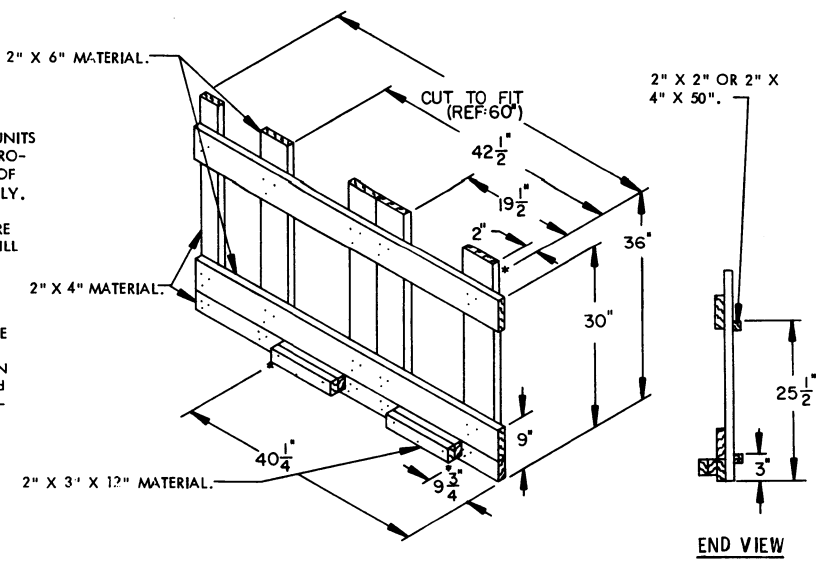


LOAD BEARING GATE C

THIS GATE IS FOR USE IN A LOAD OF DECREASED HEIGHT CONTAINERS - LENGTHWISE UNITS. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

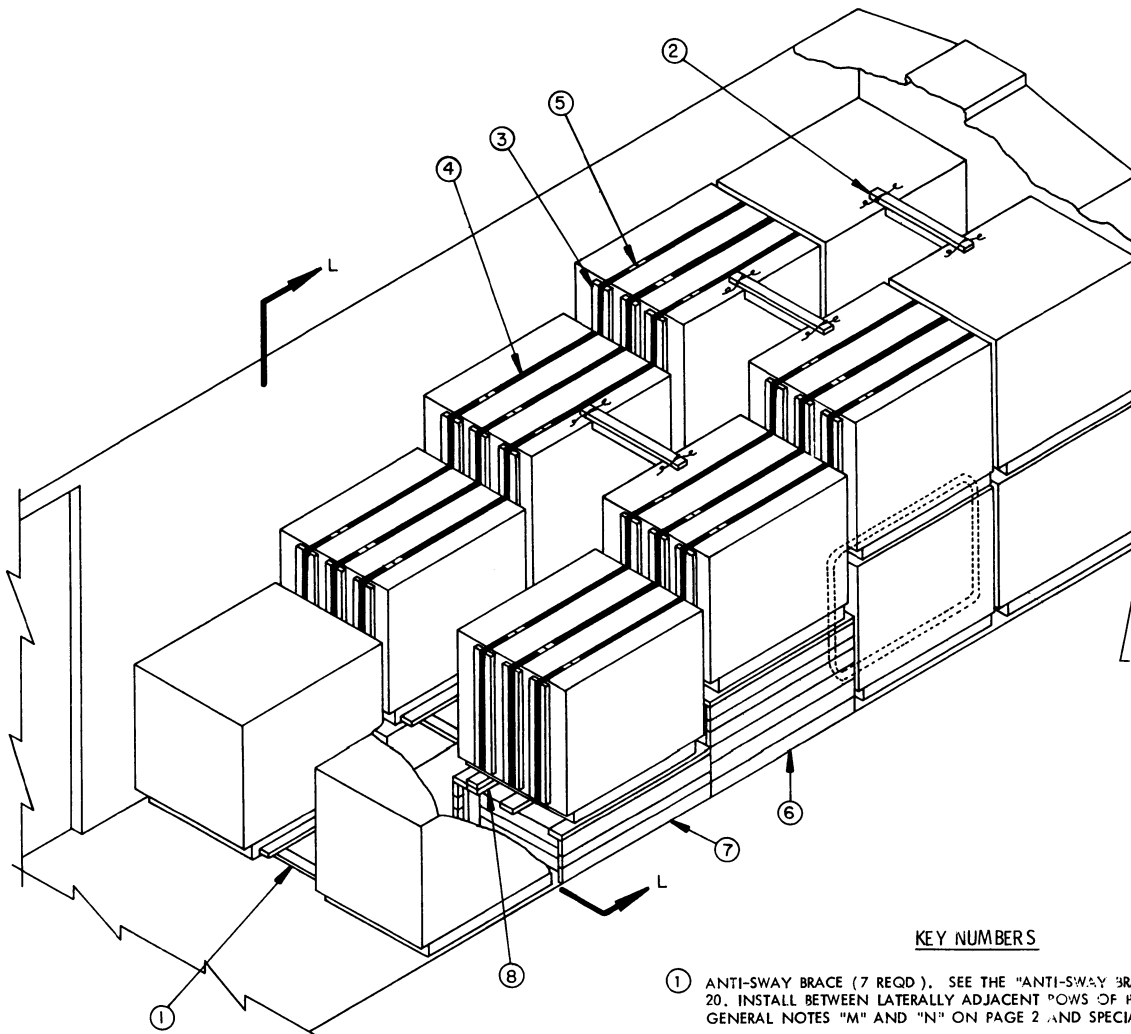
SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGES 42 AND 43. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE OR CROSSWISE POSITIONED PALLET UNITS, RESPECTIVELY.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT TO FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE INCREASED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 1" X 6" HOLD DOWN PIECE W/10-6d NAILS AND THE 2" X 4" HOLD DOWN PIECE W/2-10d NAILS. NAIL THE 2" X 2" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



LOAD BEARING GATE D

THIS GATE IS FOR USE IN A LOAD OF DECREASED HEIGHT CONTAINERS CROSSWISE UNITS. SEE SPECIAL NOTE 3 AT LEFT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

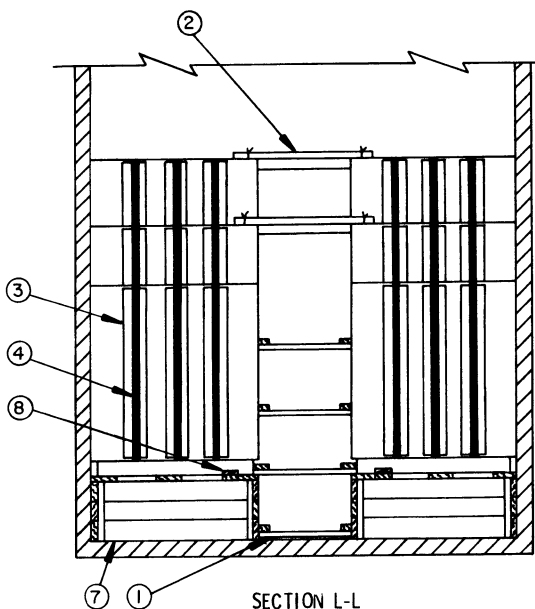


SEE GENERAL NOTE
"G" ON PAGE 2.

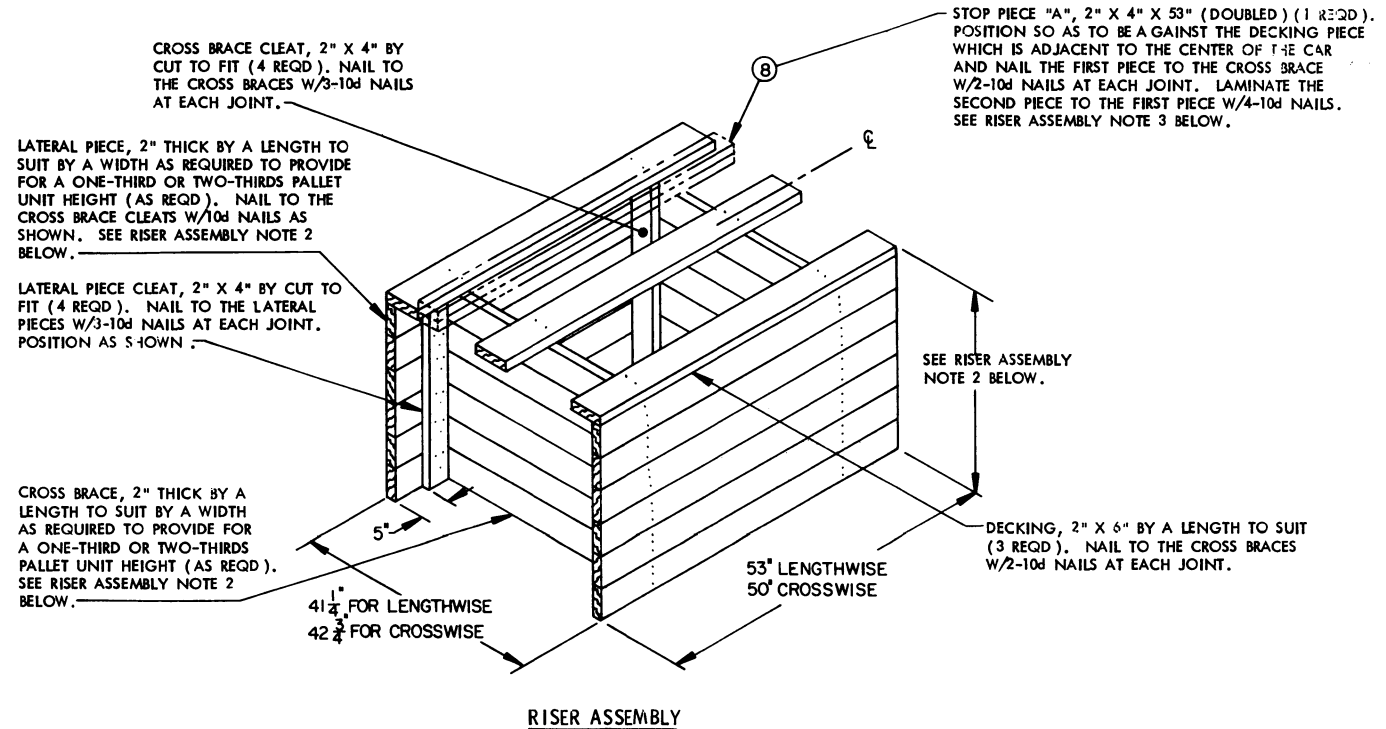
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 47.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65.
- ③ STRAPPING BOARD, 2" X 6" X 46" (48 REQD/6 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 48. SEE SPECIAL NOTE 6 ON PAGE 47.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 18'-6" LONG (REF) STEEL STRAPPING (24 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 48.
- ⑤ SEAL FOR 1-1/4" STRAPPING (48 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑥ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 47.
- ⑦ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 47.
- ⑧ STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 47 FOR LOCATION AND NAILING GUIDANCE.



SECTION L-L



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

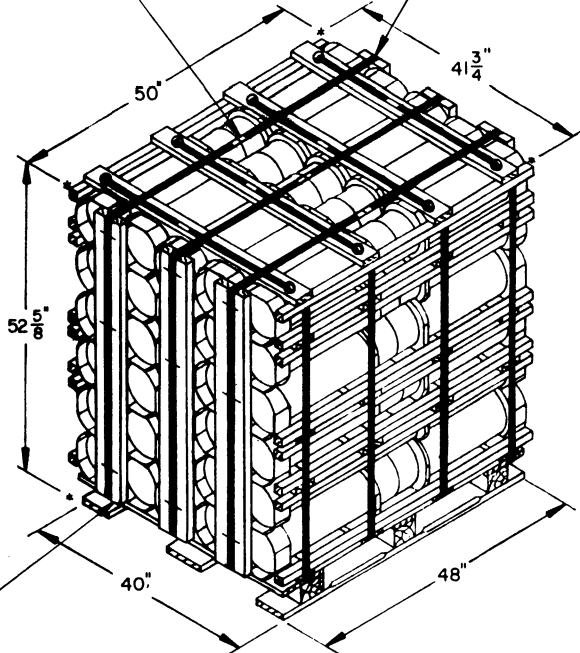
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 46 IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE POSITIONED UNITS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. ANTI-SWAY BRACE "B" IS APPLICABLE FOR THE LENGTHWISE POSITIONED UNITS. ANTI-SWAY BRACE "A" AS DETAILED ON PAGE 19, WILL BE USED FOR CROSSWISE POSITIONED UNITS.
6. FOR CROSSWISE POSITIONED UNITS, THE STRAPPING BOARDS SHOWN AS PIECES MARKED (3) WILL NOT BE REQUIRED. SEE THE "METHOD B" DETAIL ON PAGE 48 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS, WHEN THE PALLET UNITS ARE TO BE POSITIONED CROSSWISE IN THE CAR. ALSO, FOR LOADS OF CROSSWISE UNITS, EACH RISER ASSEMBLY MUST BE HELD IN PLACE BY NAILING A 2" X 4" X 18" PIECE LENGTHWISE IN THE CAR AGAINST THE CENTER-OF-CAR CROSS BRACE OF THE RISER ASSEMBLY. NAIL TO THE CAR FLOOR W/3-16d NAILS.
7. FOR A LOAD OF LENGTHWISE CONTAINER PALLET UNITS, THE PALLET UNITS IN A ROW MUST ALL BE ORIENTED ALIKE SO THE CENTER STRAPPING BOARD WILL CONTACT FROM ONE UNIT TO ANOTHER.

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE BASIC HEIGHT UNIT. THE HEIGHT OF THE BASIC UNIT IS 52-5/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER (6) IN THE LOAD ON PAGE 46. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM SIX (6) PIECES OF 2" X 6" MATERIAL, TO PROVIDE FOR A TOTAL HEIGHT OF 34-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER (7) IN THE LOAD ON PAGE 46, WILL BE FABRICATED FROM THREE (3) PIECES OF 2" X 6" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 18" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE THIRD OR TWO THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE PALLET UNIT BEING LOADED AND THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. NOTE: A PLUS OR MINUS 1" TOLERANCE IS PERMISSIBLE ON THE RISER HEIGHT.
3. THE STOP PIECE "A" SHOWN ON THE RISER ASSEMBLY ABOVE IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 46. IF THE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR, SEE SPECIAL NOTE 6 AT LEFT FOR GUIDANCE.

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

REINFORCING STRAP, 1-1/4" X .035" X 18'-6" LONG STEEL STRAPPING FOR 6 LAYER UNITS,
16'-0" LONG FOR 4-LAYER UNITS (3 REQD.). INSTALL TO ENCIRCLE THE PALLET UNIT AND
THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.



STRAPPING BOARD, 2" X 6" X 46"
FOR 6-LAYER UNITS, 2" X 6" X 31"
FOR 4-LAYER UNITS (4 REQD.).
POSITION TWO SO AS TO CENTER
ON THE JOINTS OF THE OUTER TWO
CONTAINERS AND ONE AS NEAR AS
POSSIBLE TO THE CENTER OF THE
UNIT LENGTH.

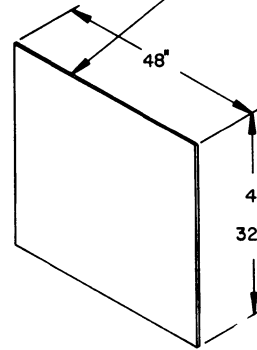
METHOD A

THE BASIC HEIGHT UNIT IS SHOWN.

NOTE:

THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET
UNITS WHICH ARE TO BE POSITIONED LENGTHWISE IN A CAR WHEN USING THE
RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 46. THE BASIC
HEIGHT UNIT IS SHOWN. THE PROCEDURES ARE ALSO APPLICABLE FOR THE
DECREASED HEIGHT UNITS. FOR MODIFICATION OF UNITS TO BE POSITIONED
CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL BELOW.

PLYWOOD, 1/2" BY A LENGTH TO
SUIT X 48" (1 REQD.).

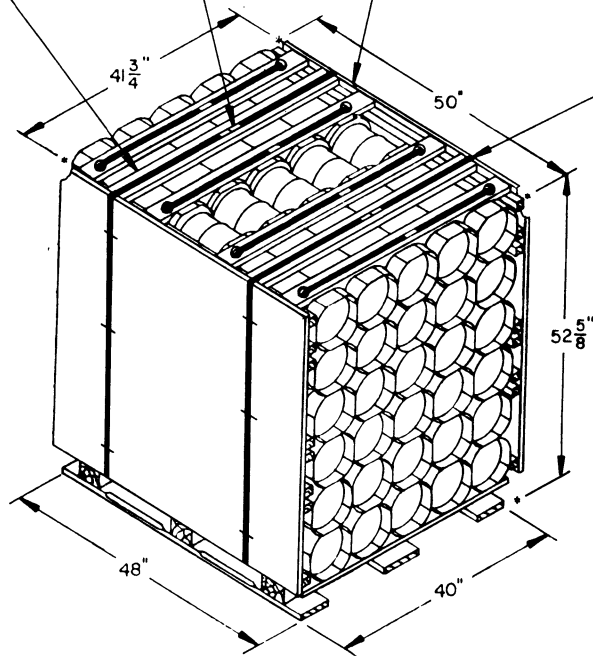


SIDE FILL ASSEMBLY
FOR METHOD "B" BELOW.

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

STRAPPING BOARD,
1" X 4" X 41-3/4"
(2 REQD.). POSITION
AS SHOWN.

SIDE FILL ASSEMBLY (2 REQD.).
SEE THE DETAIL ABOVE.



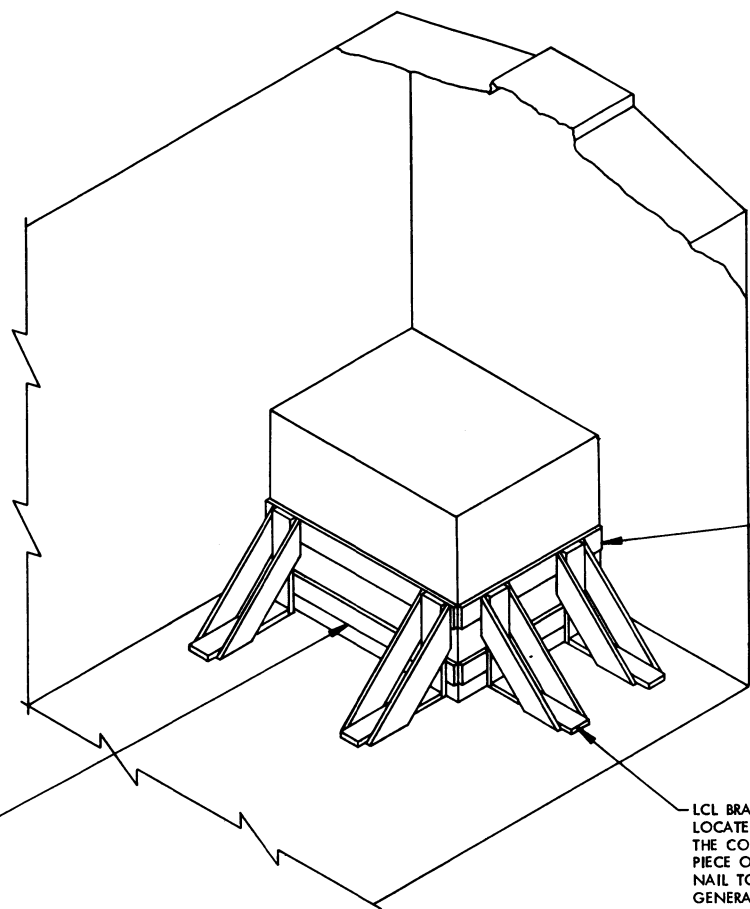
METHOD B

THE BASIC HEIGHT UNIT IS SHOWN.

REINFORCING STRAP, 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING FOR 6-LAYER UNITS,
14'-6" FOR 4-LAYER UNITS (2 REQD.). INSTALL TO ENCIRCLE THE PALLET UNIT, THE
STRAPPING BOARD, AND THE SIDE FILL ASSEMBLIES. SECURE TO THE STRAPPING BOARD
AND THE SIDE FILL ASSEMBLIES W/STAPLES.

NOTE:

THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR
THE BASIC HEIGHT UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A
CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN
ON PAGE 46. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PRO-
CEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR
MODIFICATION OF UNITS TO BE POSITIONED LENGTHWISE IN A CAR,
REFER TO THE "METHOD A" DETAIL AT THE TOP OF THIS PAGE.



HORIZONTAL PIECE, 1" X 6" X 48" (2 REQD.). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

HORIZONTAL PIECE, 1" X 6" X 40" (2 REQD.). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

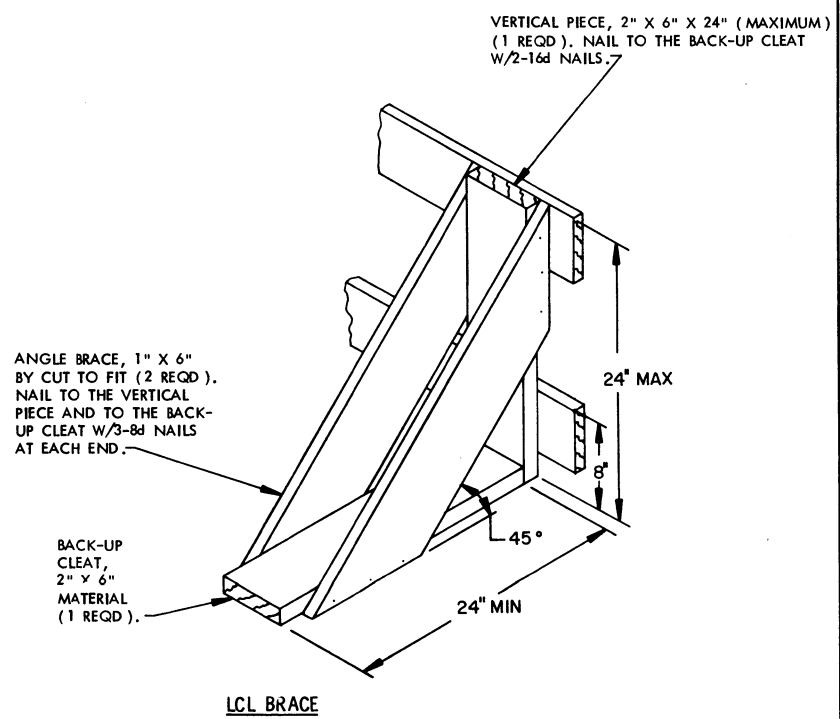
SEE GENERAL NOTE "G" ON PAGE 2.

LCL BRACE (4 REQD.). SEE THE DETAIL BELOW. LOCATE SO AS TO BE CENTERED ON THE JOINTS OF THE CONTAINER ENDS AND/OR AGAINST A CROSS PIECE OF AN INTERMEDIATE DUNNAGE ASSEMBLY. NAIL TO THE CAR FLOOR W/7-6d NAILS. SEE GENERAL NOTES "M" AND "S" ON PAGE 2.

ISOMETRIC VIEW

SPECIAL NOTES:

1. AN 8'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTES "S" AND "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A CROSSWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 4.
4. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE IS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING.

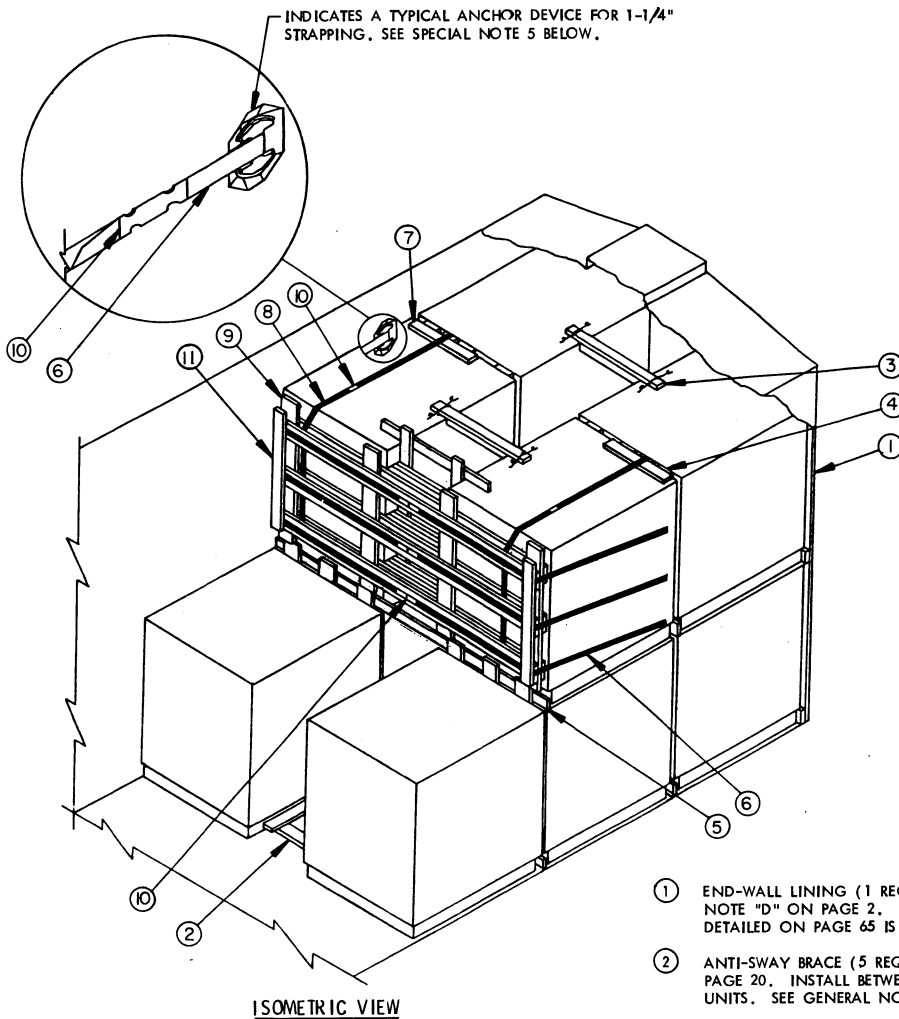


VERTICAL PIECE, 2" X 6" X 24" (MAXIMUM) (1 REQD.). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.

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

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

LCL BRACE



ISOMETRIC VIEW

KEY NUMBERS

- ① END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 64. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 65 IS USED, THE END-WALL LINING IS NOT REQUIRED.
- ② ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65.
- ④ SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17 OR 33. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑤ SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON THE AFOREMENTIONED PAGES.
- ⑥ 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 51 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.
- ⑦ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 51.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 19'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑦. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑥.
- ⑨ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 51. SEE SPECIAL NOTE 3 AT LEFT.
- ⑩ SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED ⑥, AND 1 PER BUNDLING STRAP, PIECE MARKED ⑦). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑪ STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

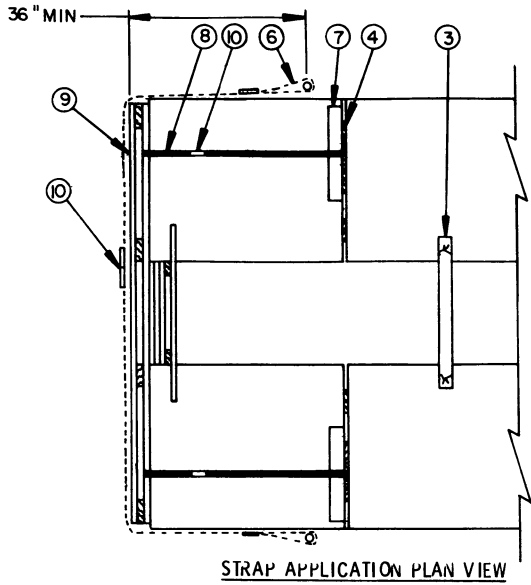
SPECIAL NOTES:

1. A 9'-4" 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 PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. 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.
4. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. A BULKHEAD GATE WITH 2 STRAPS WILL RETAIN 2 BASIC HEIGHT PALLET UNITS OR 3 DECREASED HEIGHT UNITS; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 4 BASIC HEIGHT PALLET UNITS OR 5 DECREASED HEIGHT UNITS.
5. 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 39 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 42 FOR A SINGLE UNIT.

(CONTINUED ON PAGE 51)

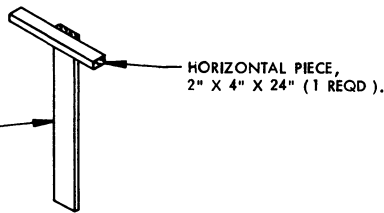
(SPECIAL NOTES CONTINUED)

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



HORIZONTAL PIECE LOCATION			
4-HIGH		6-HIGH	
DIM A.	DIM B	DIM A	DIM B
13" ± 1"	26" ± 3"	21" ± 1"	36" ± 1"

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



STRAPPING BOARD

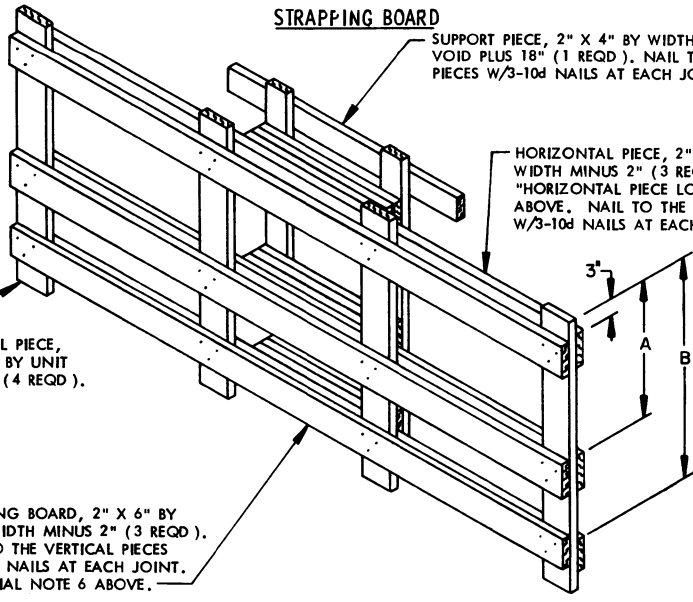
SUPPORT PIECE, 2" X 4" BY WIDTH OF LATERAL VOID PLUS 18" (1 REQD). NAIL TO THE RISER PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" BY LOAD WIDTH MINUS 2" (3 REQD). SEE THE "HORIZONTAL PIECE LOCATION" CHART ABOVE. NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

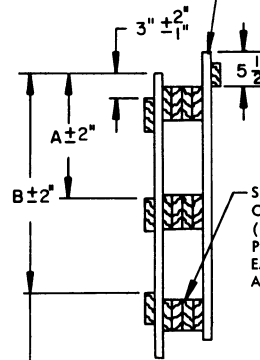
RISER PIECE, 2" X 4" BY UNIT HEIGHT (2 REQD). NAIL TO THE SPACER PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" BY UNIT HEIGHT (4 REQD).

STRAPPING BOARD, 2" X 6" BY LOAD WIDTH MINUS 2" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE SPECIAL NOTE 6 ABOVE.



SEE SPECIAL NOTE 6 ABOVE.



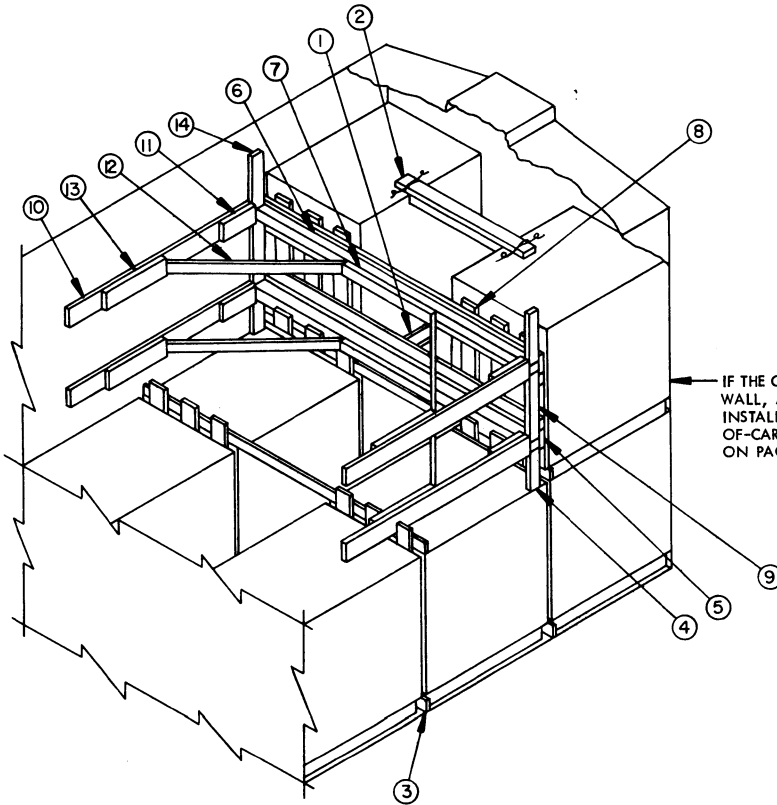
SPACER PIECE, 2" X 6" BY CUT TO FIT (TRIPLED) (3 REQD). NAIL THE FIRST PIECE W/5-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.

(SPECIAL NOTES CONTINUED)

PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE PIECES MARKED ④, ⑤, ⑥, ⑧, ⑩, AND ⑬ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑫ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑪ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60"), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑩ TO THE FIRST W/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 ⑩ IS DOUBLED.

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

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 65.



ISOMETRIC VIEW

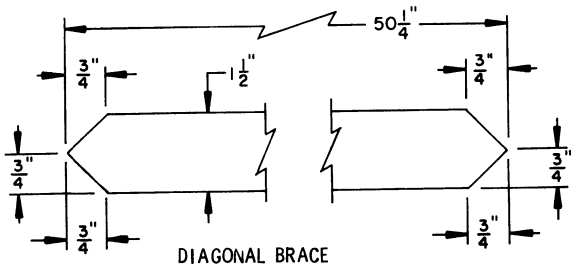
KEY NUMBERS

SPECIAL NOTES:

- 1. A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOX CAR IS SHOWN. WOOD LINED CARS OF OTHER WIDTHS CAN BE USED.
- 2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
- 3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A LENGTHWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR CROSSWISE LOADS. NOTE THAT FOR A CROSSWISE PARTIAL TIER, THE PIECES MARKED ⑤ SHOULD BE LOCATED SO AS TO BEAR AGAINST THE PALLET UNITS IN THE SAME LOCATION AS THE HORIZONTAL PIECES OF A CENTER GATE. PIECE MARKED ④ WILL THEN NEED TO BE POSITIONED HORIZONTALLY IN LIEU OF VERTICALLY AS SHOWN.
- 4. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, THIRD TIER, OR FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. THIS WILL BE NOT MORE THAN FOUR (4) BASIC HEIGHT UNITS OR SIX (6) DECREASED HEIGHT UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 53 THRU 54 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.
- 5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT

(CONTINUED AT RIGHT)

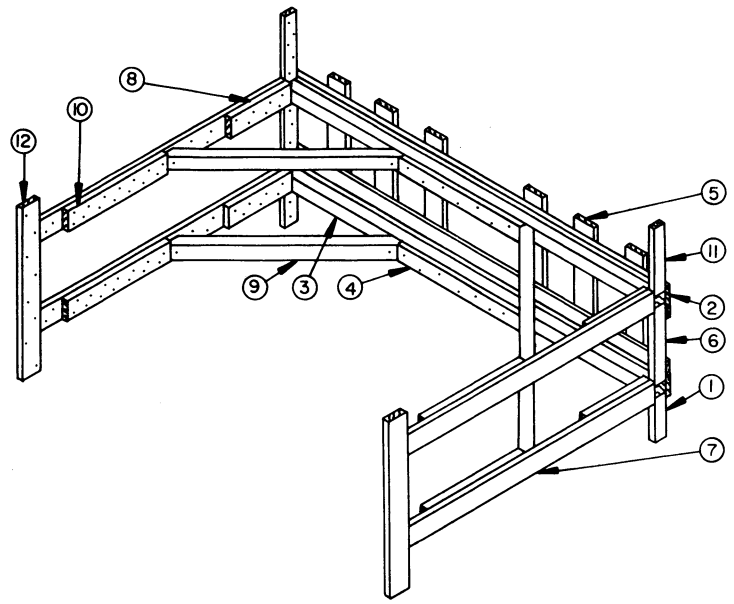
- ① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 65. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL TIER UNITS.
- ③ SEPARATOR GATE (2 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17 AND 33 AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 65.
- ④ SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ⑤ AND ⑥ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.
- ⑤ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ④, W/1-12d NAIL EVERY 6". SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD).
- ⑦ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥, W/7-16d NAILS. SEE SPECIAL NOTE 6 ABOVE.
- ⑧ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE E" DETAIL ON PAGE 53. PLACE WITH HORIZONTAL PIECE ON TOP OF THE BOTTOM HORIZONTAL PIECE AND PROCEED WITH CONSTRUCTION OF K-BRACE. ONLY REQUIRED FOR BASIC HEIGHT LENGTHWISE UNITS.
- ⑨ SPACER CLEAT, 2" X 4" X 28" FOR 6-LAYER OR 12" FOR 4-LAYER UNITS LENGTHWISE; 2" X 4" X 35" FOR 6-LAYER OR 19" FOR 4-LAYER UNITS CORSSWISE (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑪ POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩, W/4-16d NAILS.
- ⑫ DIAGONAL BRACE, 2" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ④, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑬ BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩, W/8-16d NAILS.
- ⑭ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.



DIAGONAL BRACE

SPECIAL NOTES

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN SIX (6) 6-LAYER UNITS OR TEN (10) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 54 AND 55 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 52 MAY BE USED.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑧, ⑩, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑦ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑦ 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 ⑦ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 52 FOR A TYPICAL INSTALLATION OF A K-BRACE.

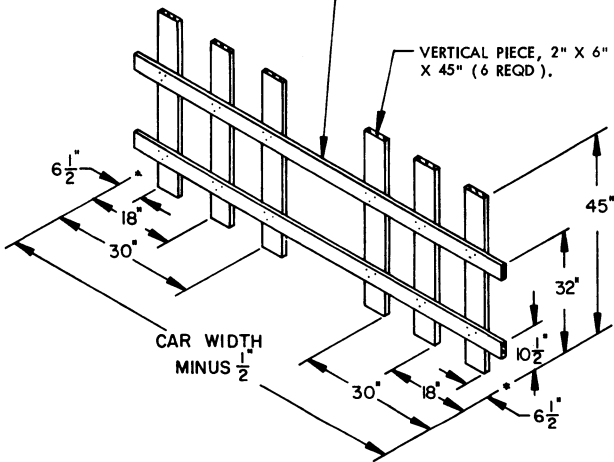


ISOMETRIC VIEW

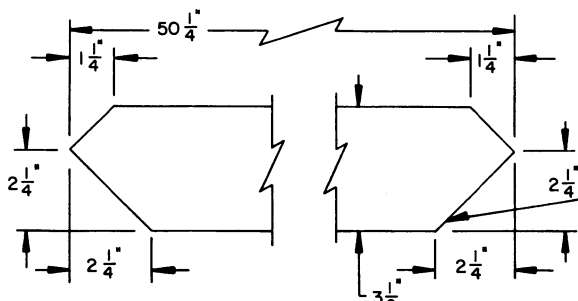
KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT AND SPECIAL NOTE 3 ON PAGE 52.
- ② HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ LOAD BEARING GATE (1 REQD). SEE THE "LOADING BEARING GATE E" DETAIL ON THIS PAGE. PLACE ON TOP OF BOTTOM HORIZONTAL PIECE AND PROCEED WITH CONSTRUCTION OF K-BRACE. ONLY REQUIRED FOR BASIC HEIGHT LENGTHWISE UNITS.
- ⑥ SPACER CLEAT, 2" X 4" X 28" FOR 6-LAYER OR 12" FOR 4-LAYER UNITS LENGTHWISE; 2" X 4" X 35" FOR 6-LAYER OR 19" FOR 4-LAYER UNITS CROSSWISE (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑦ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/1-60d NAIL AT EACH END.
- ⑩ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/14-16d NAILS.
- ⑪ HOLD DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑫ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.

HORIZONTAL PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



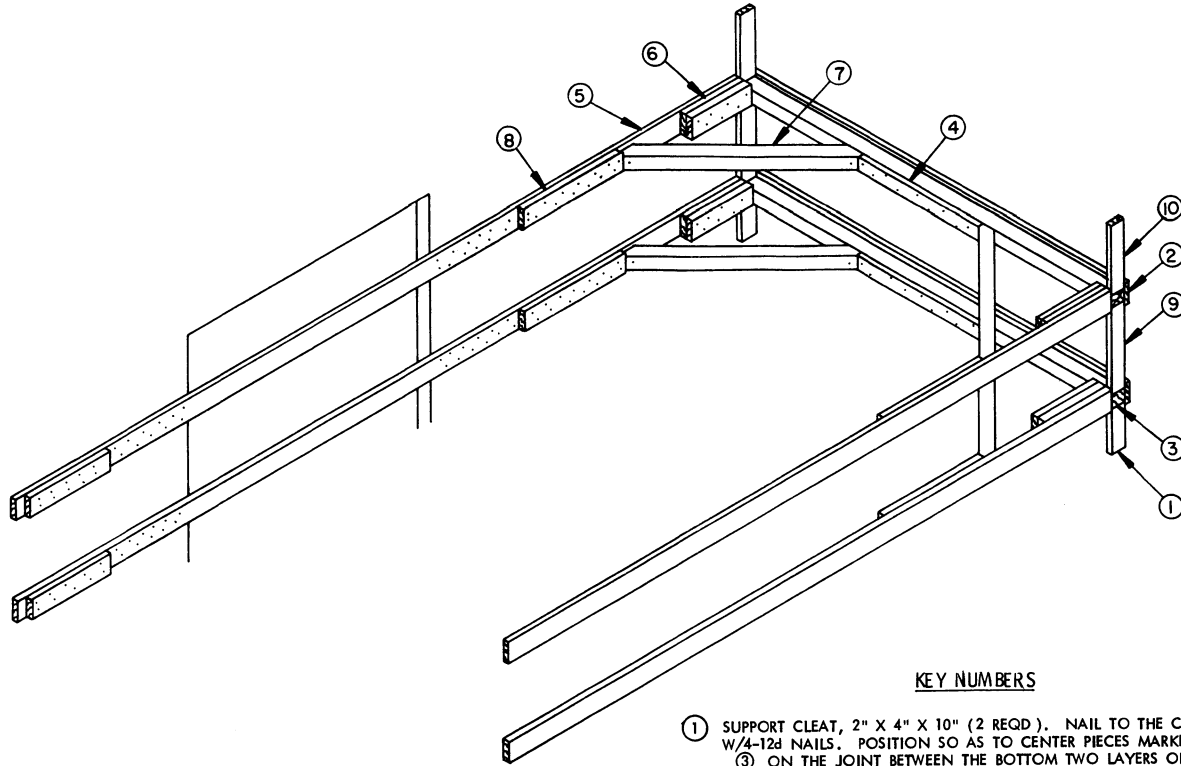
LOAD BEARING GATE E



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "B" K-BRACE



ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 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 28" FOR 6-LAYER OR 12" FOR 4-LAYER UNITS LENGTHWISE; 2" X 4" X 35" FOR 6-LAYER OR 19" FOR 4-LAYER UNITS CROSSWISE (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

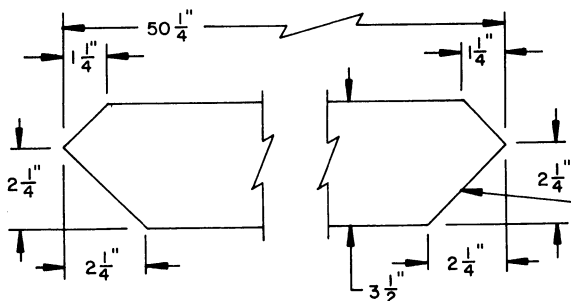
SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN TEN (10) 6-LAYER UNITS OR FOURTEEN (14) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 55 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 53 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" BRACE DEPICTED ON PAGE 52 WILL BE ADEQUATE.
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑤, ⑥, ⑦, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

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(SPECIAL NOTES CONTINUED)

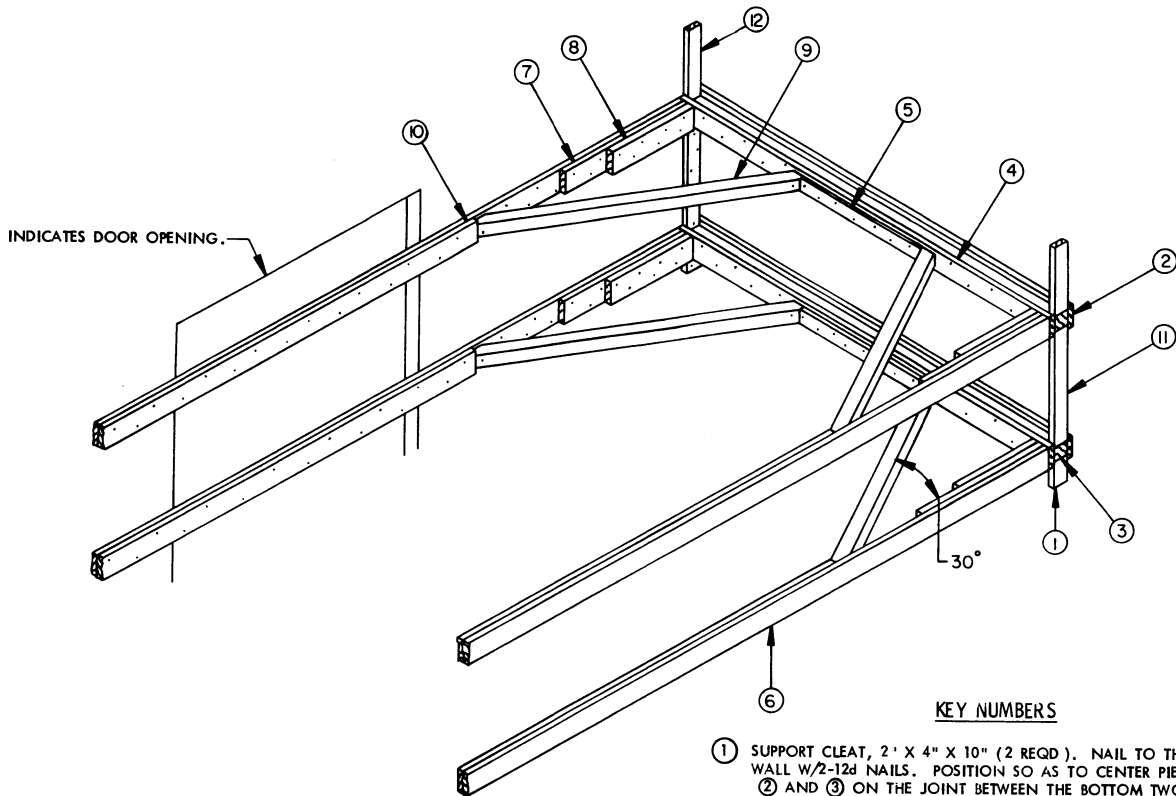
5. WHEN UNITS ARE PLACED LENGTHWISE IN THE CAR, VERTICAL LOAD BEARING PIECES ARE REQUIRED. SEE PIECE MARKED ⑤ ON PAGE 53.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A CROSS CAR BRACE, PIECE MARKED ③, OR A HORIZONTAL WALL CLEAT, PIECE MARKED ⑤.



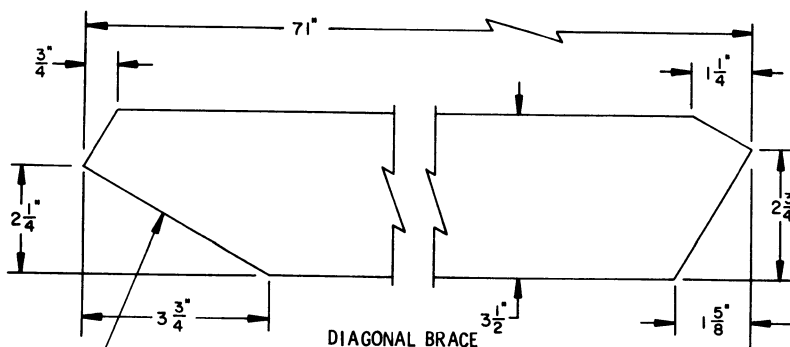
ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ 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 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 28" FOR 6-LAYER OR 12" FOR 4-LAYER UNITS LENGTHWISE; 2" X 4" X 35" FOR 6-LAYER OR 19" FOR 4-LAYER UNITS CROSSWISE (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑫ HOLD DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

SPECIAL NOTES:

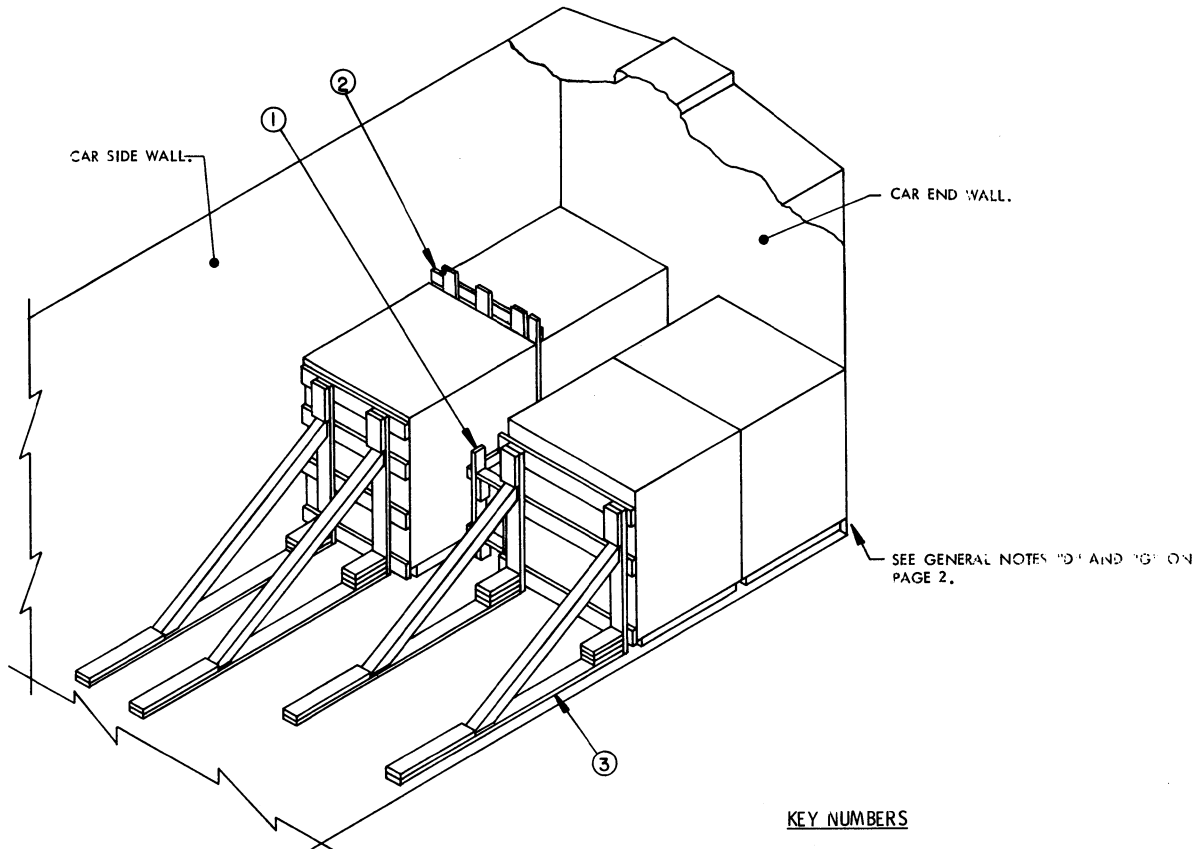
1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS. THIS WILL BE NOT MORE THAN TWELVE (12) 6-LAYER UNITS OR EIGHTEEN (18) 4-LAYER UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 54 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 53 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 52 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, ⑩ 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 ④ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "D" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑥ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.



DIAGONAL BRACE
SEE SPECIAL NOTE 2 ABOVE.

THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A HORIZONTAL WALL CLEAT, PIECE MARKED ⑥.

TYPE "D" K BRACE



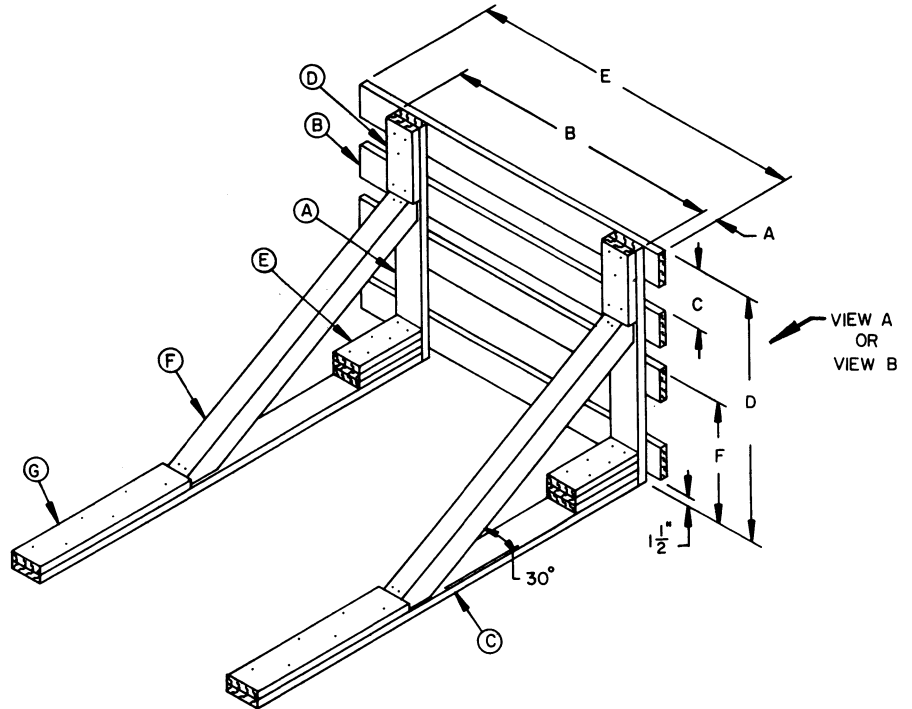
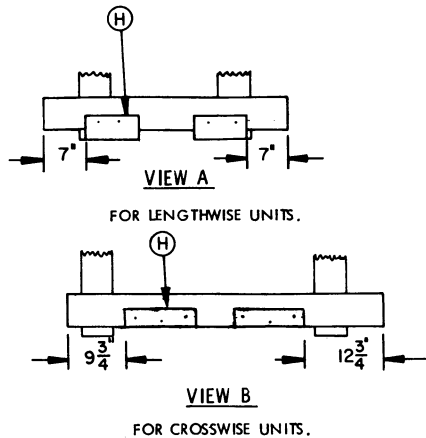
ISOMETRIC VIEW

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 PALLET UNIT SHOWN IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTHWISE ROWS, OR TWO CROSSWISE ROWS IN LIEU OF ONE OF EACH AS DEPICTED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.

KEY NUMBERS

- ① CRIB FILL (2 REQD.). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 16 OR 32. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD.). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17 OR 33. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.
- ③ KNEE BRACE ASSEMBLY (2 REQD.). SEE THE DETAIL ON PAGE 57 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.



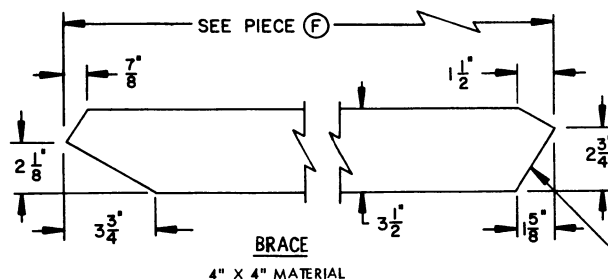
KNEE BRACE ASSEMBLY

KEY LETTERS

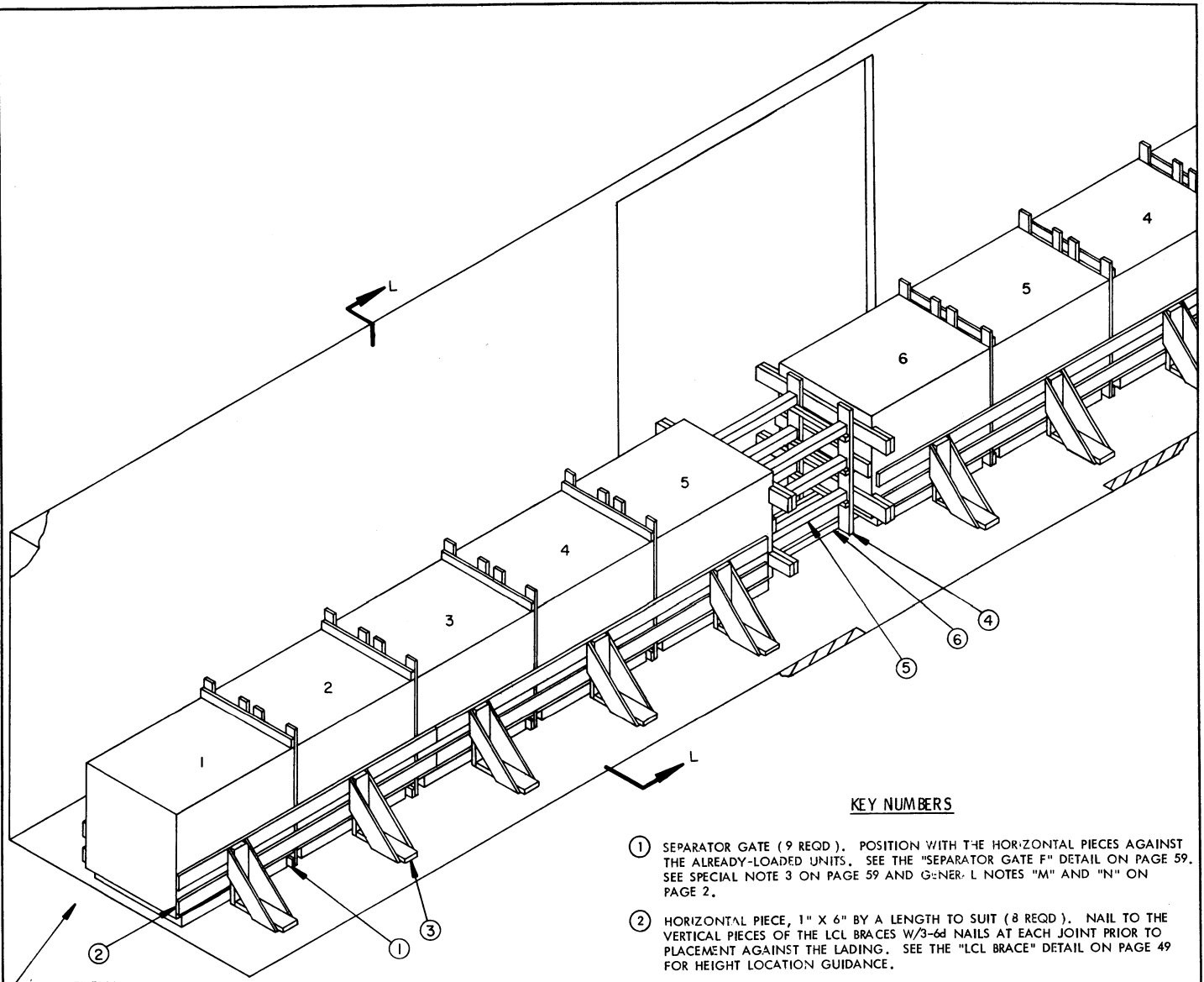
DIMENSIONS FOR LENGTHWISE UNITS						
UNIT	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F
6-HIGH	6-1/2"	28-3/4"	10-3/4"	50"	41-3/4"	24"
4-HIGH	6-1/2"	28-3/4"	10-3/4"	35"	41-3/4"	---

DIMENSIONS FOR CROSSWISE UNITS					
UNITS	DIM A	DIM B	DIM C	DIM D	DIM E
6-HIGH	2"	46"	8-1/2"	52"	53"
4-HIGH	2"	46"	8-1/2"	37"	53"

- (A) VERTICAL PIECE, 2" X 6" X 52" FOR 6-HIGH UNITS, 2" X 6" X 37" FOR 4-HIGH UNITS (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" X 41-3/4" FOR LENGTHWISE UNITS (4 REQD FOR 6-HIGH UNITS, 3 REQD FOR 4-HIGH UNITS) OR 2" X 6" X 53" FOR CROSSWISE UNITS (3 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 8'-6" FOR 6-HIGH UNITS, 2" X 6" X 6'-3" FOR 4-HIGH UNITS (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "S" ON PAGE 2.
- (D) HOLD-DOWN CLEAT, 2" X 6" X 12" FOR LENGTHWISE UNITS, 2" X 6" X 10" FOR CROSSWISE UNITS (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.
- (E) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C), W/5-16d 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 6'-5" FOR 6-HIGH LENGTHWISE UNITS, 4" X 4" X 47" FOR 4-HIGH LENGTHWISE UNITS OR 4" X 4" X 6'-9" FOR 6-HIGH CROSSWISE UNITS, 4" X 4" X 51" FOR 4-HIGH CROSSWISE UNITS (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 JOINT.
- (G) BACK UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), W/6-40d NAILS.
- (H) GATE HOLD DOWN (2 REQD). FOR LENGTHWISE UNITS, 2" X 4" X 9" (DOUBLED). NAIL FIRST PIECE TO A HORIZONTAL PIECE W/2-10d NAILS. LAMINATE SECOND PIECE IN A LIKE MANNER. SEE "VIEW A" ABOVE. FOR CROSSWISE UNITS, 2" X 3" X 12" (DOUBLED). NAIL FIRST PIECE TO A HORIZONTAL PIECE W/3-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE "VIEW B" ABOVE.



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

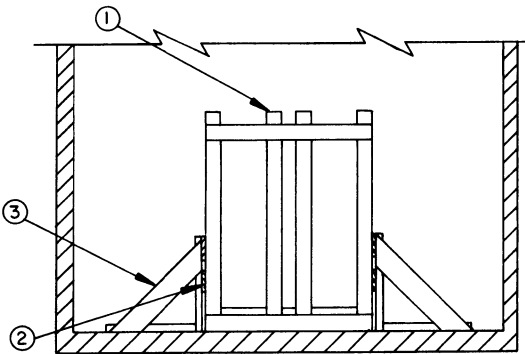


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① SEPARATOR GATE (9 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 59. SEE SPECIAL NOTE 3 ON PAGE 59 AND GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 49 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (22 REQD). SEE THE DETAIL ON PAGE 49 AND SPECIAL NOTE 4 ON PAGE 59. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "5" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE K" OR THE "CENTER GATE J" DETAIL ON PAGE 59 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (6 REQD FOR BASIC HEIGHT LENGTHWISE UNITS, 4 REQD FOR DECREASED HEIGHT LENGTHWISE UNITS (OMIT THE MID HEIGHT LEVEL), OR 9 REQD FOR BASIC HEIGHT CROSSWISE UNITS, 6 REQD FOR DECREASED HEIGHT UNITS (OMIT THE MID HEIGHT LEVEL). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "U" AND "V" ON PAGE 2.
- ⑥ GATE HOLD DOWN (FOR LENGTHWISE UNITS ONLY), 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 K" DETAIL ON PAGE 59 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CROSSWISE UNITS, THE GATE HOLD DOWN PIECES AS SHOWN ON THE "CENTER GATE B" DETAIL ON PAGE 17 WILL BE USED IN LIEU OF PIECE MARKED ⑥.



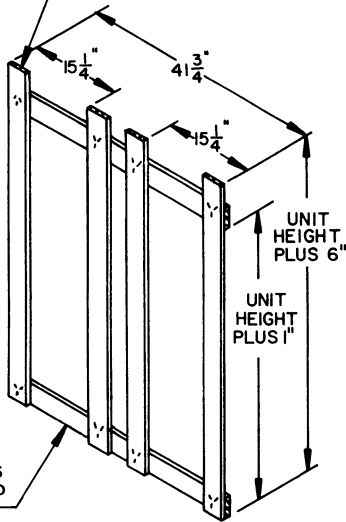
SECTION L-L

CENTER GATE J		
DIM	BASIC	DECREASED
D	52"	36"
E	31-1/2"	-----
F	47-1/2"	31-1/2"

CENTER GATE K		
DIM	BASIC	DECREASED
A	52"	36"
B	47-1/2"	31-1/2"
C	31-1/2"	-----

VERTICAL PIECE, 1" X 4" BY UNIT HEIGHT PLUS 6" (4 REQD).

HORIZONTAL PIECE, 1" X 4" X 41-3/4" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.



SEPARATOR GATE F

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

HORIZONTAL PIECE, 2" X 6" X 60-1/4" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" X 28-3/4" (1 REQD FOR BASIC HEIGHT UNIT ONLY). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END.

VERTICAL PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD).

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

STRUT LEDGER, 2" X 2" OR 2" X 4" X 30" (AS REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

CENTER GATE K

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE K" CHART ON PAGE 58 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL. THE CENTER HORIZONTAL PIECE AND THE ADJACENT STRUT LEDGER ARE ONLY REQUIRED FOR THE BASIC HEIGHT UNIT.

VERTICAL PIECE, 2" X 6" BY A LENGTH TO SUIT (4 REQD).

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

STRUT LEDGER, 2" X 2" OR 2" X 4" X 50" (AS REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

FILL PIECE, 2" X 4" X 50" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

CENTER GATE J

THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE J" CHART ON PAGE 58 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE. THE CENTER HORIZONTAL PIECE AND THE ADJACENT STRUT LEDGER ARE ONLY REQUIRED FOR THE BASIC HEIGHT UNIT. REFER TO "CENTER GATE B" DETAIL ON PAGE 17 FOR GATE HOLD DOWN PIECES.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. A 1-WIDE LENGTHWISE LOAD IS SHOWN AS TYPICAL. A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE CROSSWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE SEPARATOR GATES, PIECES MARKED ①, ARE NOT REQUIRED, AND THE QUANTITY OF LCL BRACES, PIECES MARKED ③, IS NOT CORRECT FOR CROSSWISE LOADS.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR CROSSWISE PALLET UNITS, THE BRACES WILL BE CENTERED ON THE LENGTH OF THE UNIT. FOR THE 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 UNIT AND THEREFORE ARE ONLY TYPICAL.
6. IF DESIRED, GATE HOLD DOWN PIECES WITH THE ASSOCIATED FILL PIECE, AS SHOWN BY THE "CENTER GATE A" DETAIL ON PAGE 15, MAY BE USED IN LIEU OF PIECE MARKED ③ ON PAGE 58 FOR THE LENGTHWISE UNITS. FOR CROSSWISE UNITS, USE THE GATE HOLD DOWNS AS SHOWN ON THE "CENTER GATE B" DETAIL ON PAGE 17.

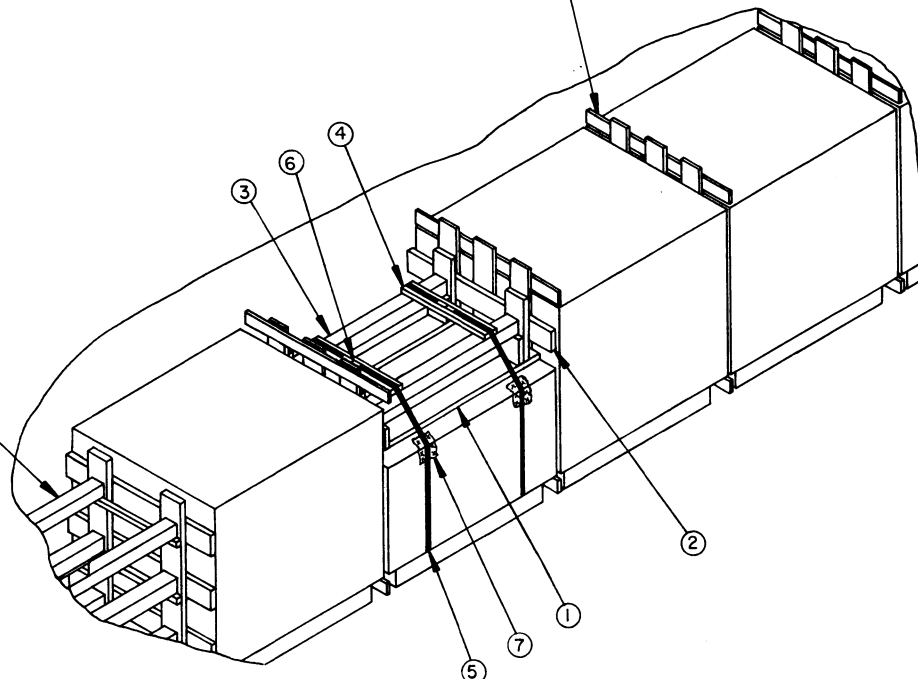
BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	239	80
1" X 6"	299	150
2" X 2"	12	4
2" X 3"	13	7
2" X 6"	136	136
4" X 4"	22	30
NAILS	NO. REQD	POUNDS
6d (2")	348	2
8d (2-1/2")	264	3
10d (3")	92	1-1/2
16d (3-1/2")	222	5

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	11	21,109 LBS
DUNNAGE		826 LBS
TOTAL WEIGHT		21,935 LBS

INDICATES A TYPICAL SEPARATOR GATE.

INDICATES A TYPICAL CENTER GATE.



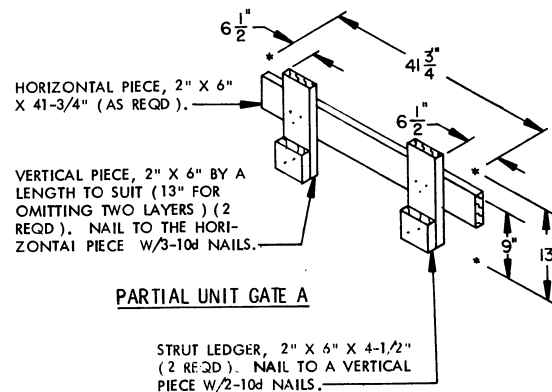
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 4-LAYER UNIT WITHIN A 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF TEN (10) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/19-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
5. THE "POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

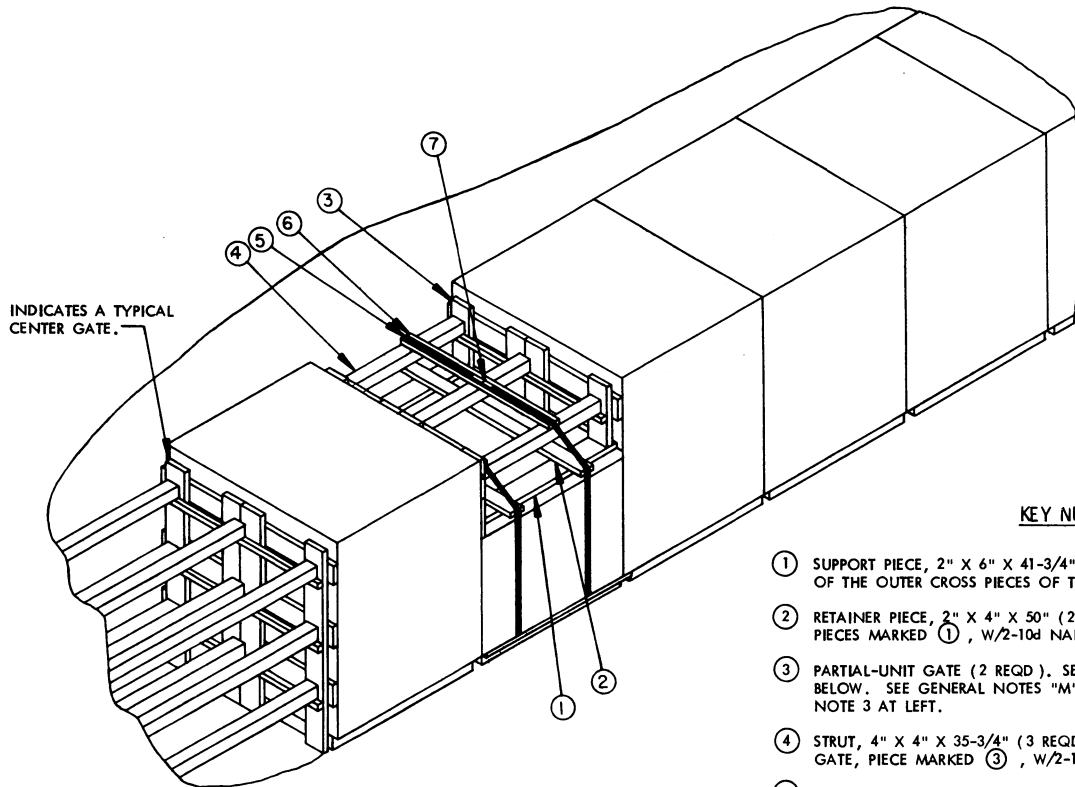
KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 50" (2 REQD). POSITION ON TOP OF THE CROSS PIECES OF THE TOP DUNNAGE ASSEMBLY AND SO AS TO BE UNDER THE VERTICAL PIECES OF PIECE MARKED ②.
- ② PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ③ STRUT, 4" X 4" X 44" (2 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ②, W/2-16d NAILS AT EACH END.
- ④ STRAPPING BOARD, 2" X 4" X 26-3/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ③, W/2-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑥ SEAL FOR 1-1/4" STEEL 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.



PARTIAL UNIT GATE A

STRUT LEDGER, 2" X 6" X 4-1/2" (2 REQD). NAIL TO A VERTICAL PIECE W/2-10d NAILS.



POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER

KEY NUMBERS

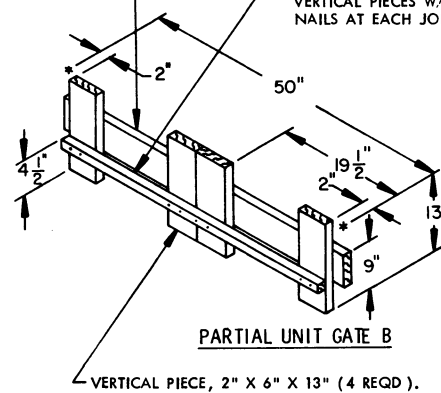
- ① SUPPORT PIECE, 2" X 6" X 41-3/4" (2 REQD). POSITION ON TOP OF THE OUTER CROSS PIECES OF THE TOP DUNNAGE ASSEMBLY.
- ② RETAINER PIECE, 2" X 4" X 50" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED ①, W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ④ STRUT, 4" X 4" X 35-3/4" (3 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED ③, W/2-16d NAILS AT EACH END.
- ⑤ STRAPPING BOARD, 2" X 4" X 44" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④, W/2-10d NAILS AT EACH JOINT.
- ⑥ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-LENGTH AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CROSSWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES 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 4-LAYER UNIT WITHIN A 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF TEN (10) CONTAINERS OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/19-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 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.
6. THE "POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
7. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 63 MAY BE MORE ECONOMICAL.

HORIZONTAL PIECE
2" X 6" X 50" (1
REQD). NAIL TO
THE VERTICAL
PIECES W/3-10d
NAILS AT
EACH JOINT.

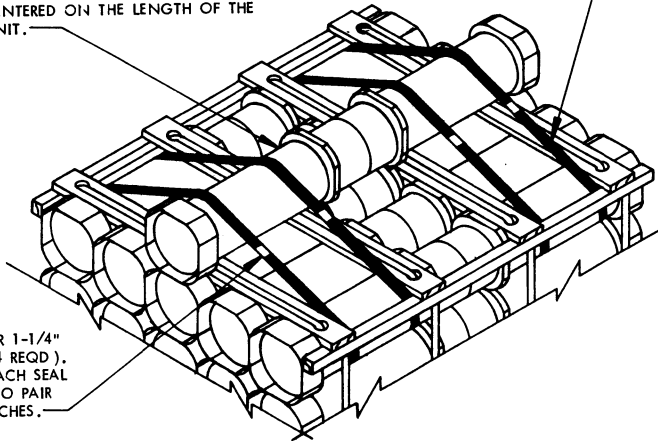
STRUT LEDGER, 2" X 2" X 46"
(1 REQD). NAIL TO THE
VERTICAL PIECES W/2-10d
NAILS AT EACH JOINT.



UNITIZING STRAP, 1-1/4" X .031" OR .035" X 9'-6" LONG STEEL STRAPPING (4 REQD). SEE SPECIAL NOTE 4.

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

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



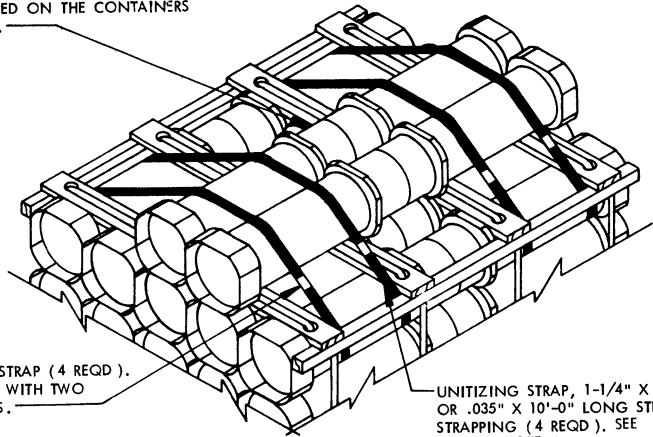
SECUREMENT OF TWO CONTAINERS

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES 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 63 OR WITHIN A LAYER AS SHOWN ON PAGES 60 AND 61.
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. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
4. THE UNITIZING STRAP MUST NOT GO AROUND THE TOP DUNNAGE ASSEMBLY. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES AS SHOWN.
5. 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.
6. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.

POSITION CONTAINERS SO AS TO BE CENTERED ON THE CONTAINERS BELOW.

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



UNITIZING STRAP, 1-1/4" X .031" OR .035" X 10'-0" LONG STEEL STRAPPING (4 REQD). SEE SPECIAL NOTE 4.

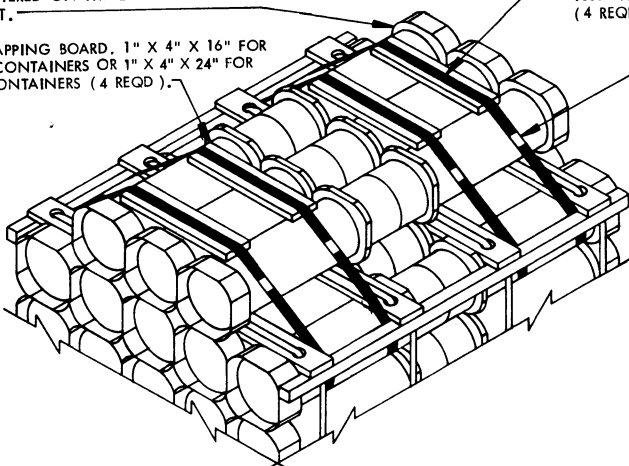
SECUREMENT OF FOUR CONTAINERS

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

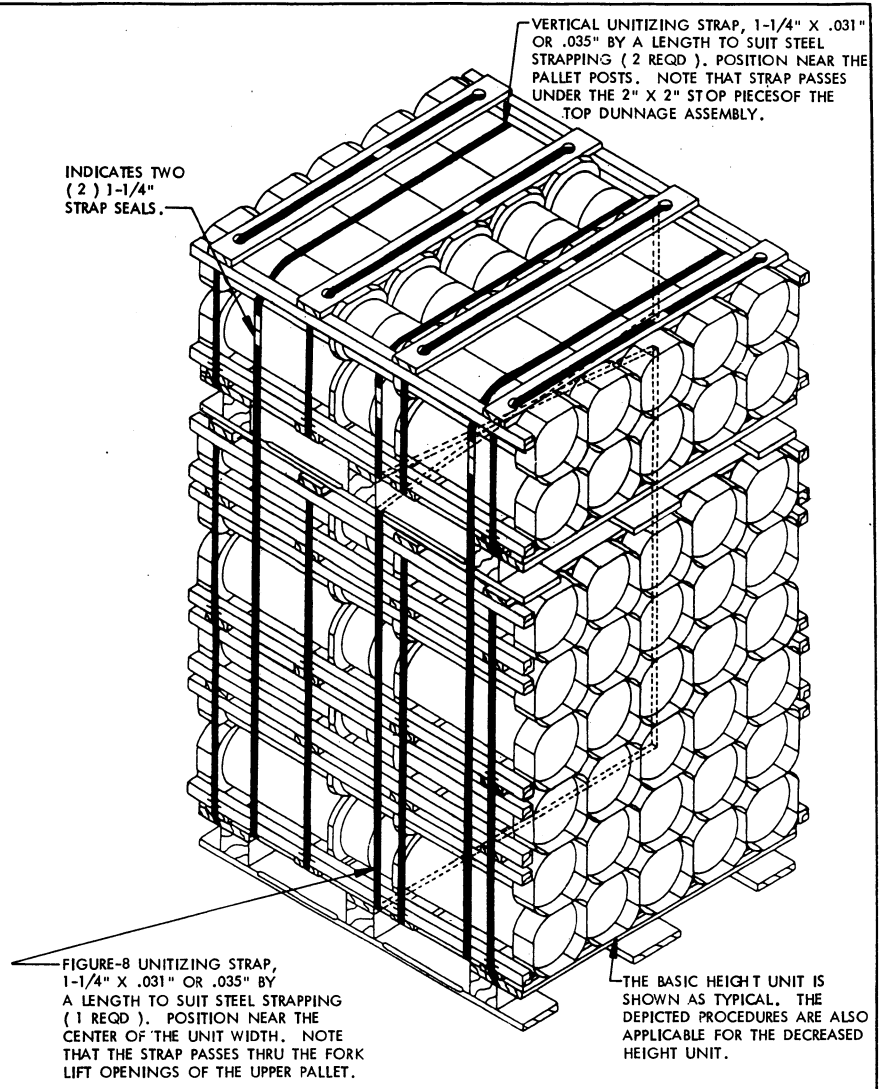
STRAPPING BOARD, 1" X 4" X 16" FOR 3- CONTAINERS OR 1" X 4" X 24" FOR 4 CONTAINERS (4 REQD).

UNITIZING STRAP, 1-1/4" X .031" OR .035" X 10'-6" LONG STEEL STRAPPING (4 REQD). SEE SPECIAL NOTE 4.

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



SECUREMENT OF SIX CONTAINERS



VERTICAL UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). POSITION NEAR THE PALLET POSTS. NOTE THAT STRAP PASSES UNDER THE 2" X 2" STOP PIECES OF THE TOP DUNNAGE ASSEMBLY.

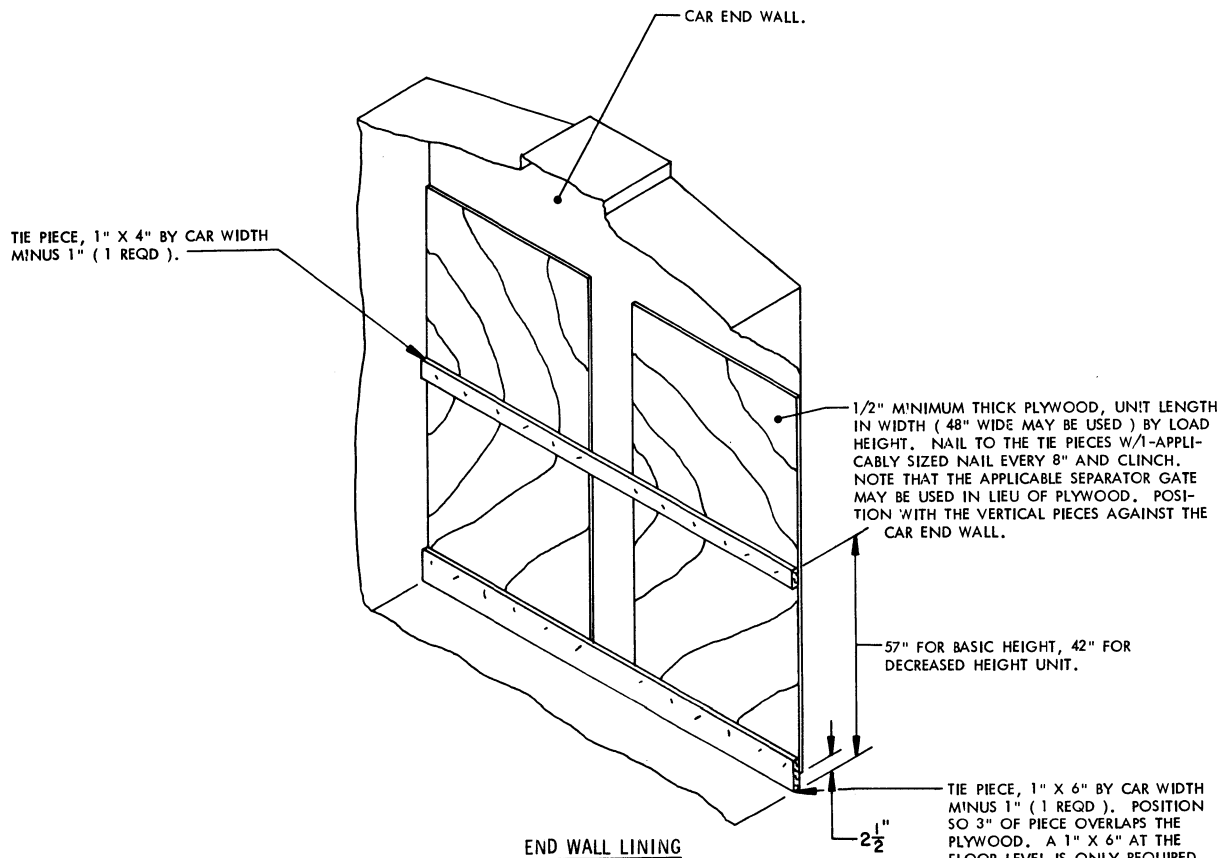
INDICATES TWO (2) 1-1/4" STRAP SEALS.

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

THE BASIC HEIGHT UNIT IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE LOAD. CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN TWO (2) LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN TWO LAYERS OF CONTAINERS, OR AN ALTERNATIVE METHOD FOR ONE OR TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 61.



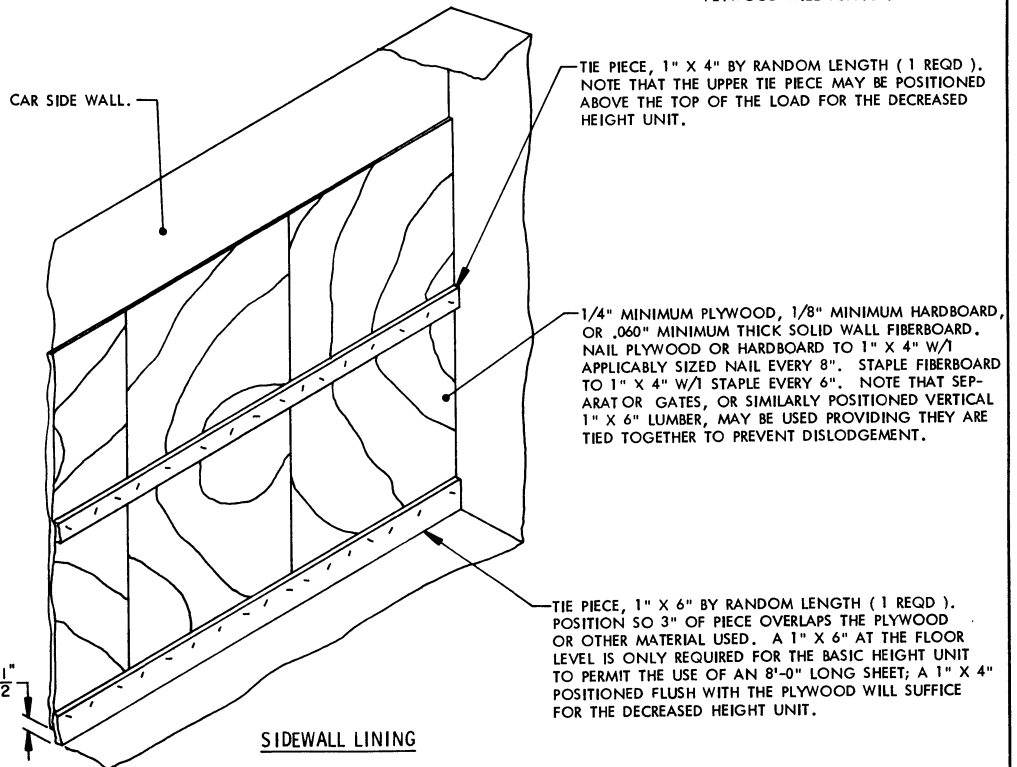
END WALL LINING

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

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

57" FOR BASIC HEIGHT, 42" FOR DECREASED HEIGHT UNIT.

TIE PIECE, 1" X 6" BY CAR WIDTH MINUS 1" (1 REQD). POSITION SO 3" OF PIECE OVERLAPS THE PLYWOOD. A 1" X 6" AT THE FLOOR LEVEL IS ONLY REQUIRED FOR THE BASIC HEIGHT UNIT TO PERMIT THE USE OF AN 8'-0" LONG SHEET OF PLYWOOD; FOR THE DECREASED HEIGHT UNIT A 1" X 4" POSITIONED FLUSH WITH THE PLYWOOD WILL SUFFICE.



SIDEWALL LINING

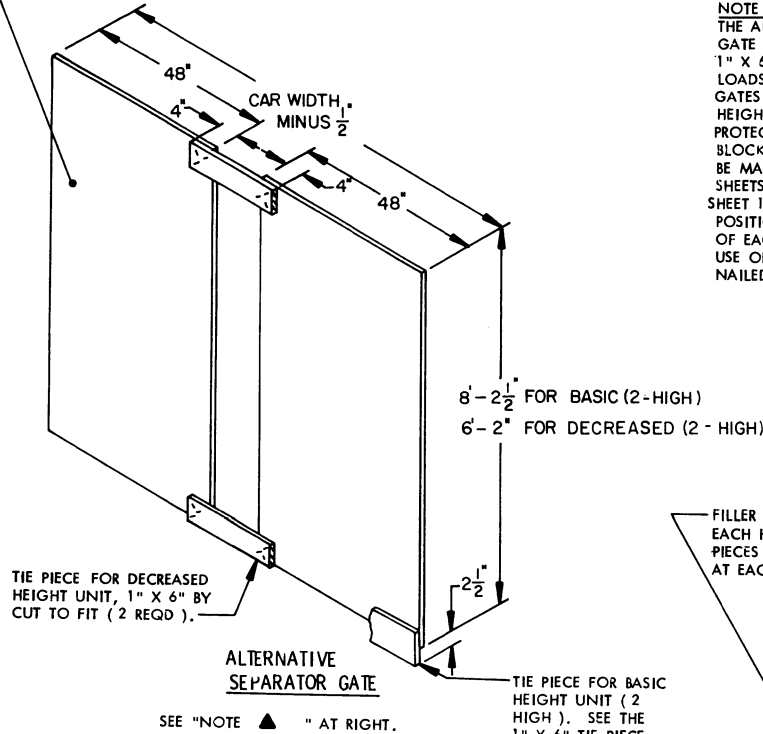
THIS VIEW DEPICTS LINING REQUIRED FOR A CROSSWISE SHIPMENT IN A CAR EQUIPPED WITH A STEEL SIDEWALL. NOTE THAT IF THE CAR IS EQUIPPED WITH A STEEL-FACED PLUG DOOR, THE SPECIAL LINING WILL ALSO BE REQUIRED IN THE DOORWAY AREA IF THE SPECIFIED DOORWAY PROTECTION DOES NOT SUFFICE.

TIE PIECE, 1" X 4" BY RANDOM LENGTH (1 REQD). NOTE THAT THE UPPER TIE PIECE MAY BE POSITIONED ABOVE THE TOP OF THE LOAD FOR THE DECREASED HEIGHT UNIT.

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

TIE PIECE, 1" X 6" BY RANDOM LENGTH (1 REQD). POSITION SO 3" OF PIECE OVERLAPS THE PLYWOOD OR OTHER MATERIAL USED. A 1" X 6" AT THE FLOOR LEVEL IS ONLY REQUIRED FOR THE BASIC HEIGHT UNIT TO PERMIT THE USE OF AN 8'-0" LONG SHEET; A 1" X 4" POSITIONED FLUSH WITH THE PLYWOOD WILL SUFFICE FOR THE DECREASED HEIGHT UNIT.

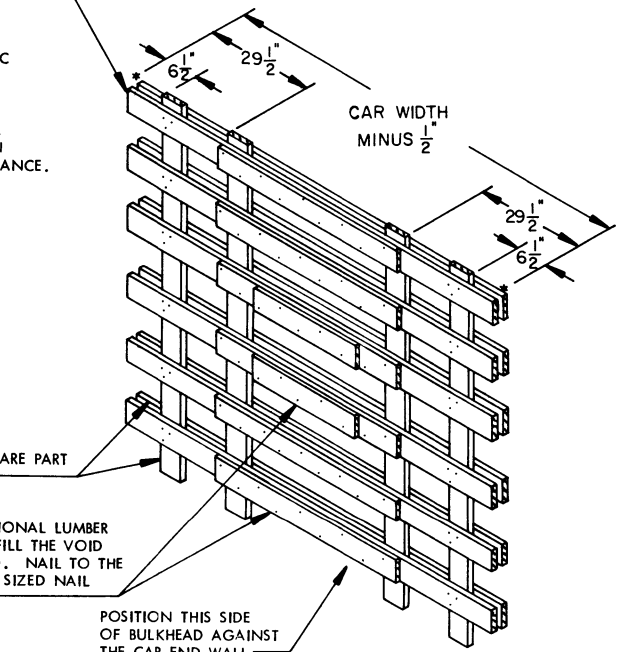
PLYWOOD, 3/8" X 48" WIDE BY A HEIGHT TO SUIT (2 REQD).
NAIL TO EACH TIE PIECE W/3-4d NAILS AT EACH JOINT AND CLINCH.



NOTE ▲ :
THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 1" X 4" AND 1" X 6" MATERIAL. THE ALTERNATIVE SEPARATOR GATE CAN ONLY BE USED IN LOADS WHICH ARE ONE OR TWO PALLET UNITS IN HEIGHT; PLYWOOD SEPARATOR GATES ARE NOT ECONOMICALLY FEASIBLE FOR A 3-LAYER LOAD OF DECREASED HEIGHT UNITS. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE ALTERNATIVE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. FOR THE BASIC HEIGHT UNIT A CUTOUT MUST BE MADE IN THE CENTER OF THE BOTTOM TIE PIECE AND IN THE PLYWOOD SHEET 12". FOR THE DECREASED HEIGHT UNIT, THE LOWER TIE PIECE MUST BE POSITIONED AT LEAST 3-1/2" OFF THE FLOOR. ALSO, THE LOWER INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUTOUT 3-1/2" HIGH BY 12" WIDE. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

NOTE ○ :
IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). 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 18, IS SHOWN AS TYPICAL.

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



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

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

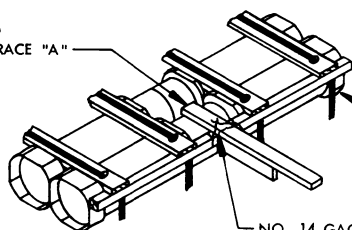
POSITION THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

END OF CAR BULKHEAD

SEE "NOTE ○ " AT LEFT.

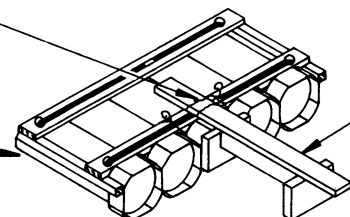
NO. 14 GAGE WIRE BY LENGTH TO SUIT. FORM TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE AND TWIST TO PREVENT DISLODGEEMENT. THREAD EACH END OF WIRE UNDER AND AROUND A STRAPPING BOARD ON THE UNIT AND TWIST WIRE TO SELF, AS SHOWN.

TOP-OF-LOAD ANTI-SWAY BRACE "A"



TIE WIRE APPLICATION A

NO. 14 GAGE WIRE BY A LENGTH TO SUIT. FORM TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE AND TWIST TO PREVENT DISPLACEMENT. THREAD EACH END OF WIRE UNDER AND AROUND A 2" X 2" OF THE TOP DUNNAGE ASSEMBLY ON THE UNIT AND TWIST WIRE TO SELF, AS SHOWN.



TIE WIRE APPLICATION B

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

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

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 36" WIDE FOR LENGTHWISE UNITS OR 48" WIDE FOR CROSSWISE UNITS.

GATE HOLD DOWN PIECE 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.

INDICATES A TYPICAL CENTER GATE FOR A SINGLE ROW (2 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR THE UNIT BEING SHIPPED. A GATE FOR UNITS WHICH ARE POSITIONED WITH THE UNIT WIDTH PARALLEL TO THE CAR SIDEWALL IS SHOWN. THE PROCEDURE IS ALSO APPLICABLE TO GATES FOR UNITS WHICH ARE POSITIONED WITH THE UNIT LENGTH PARALLEL TO THE CAR SIDEWALL.

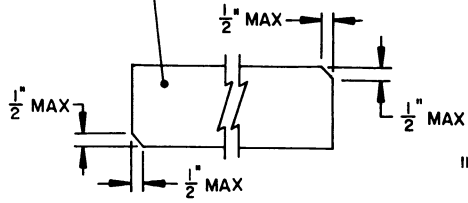
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.

TIE PIECE APPLICATION

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

DETAILS

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

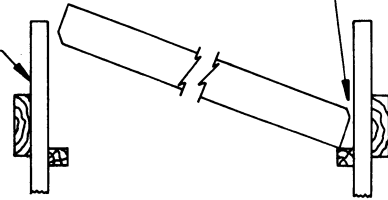


BEVEL CUT

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

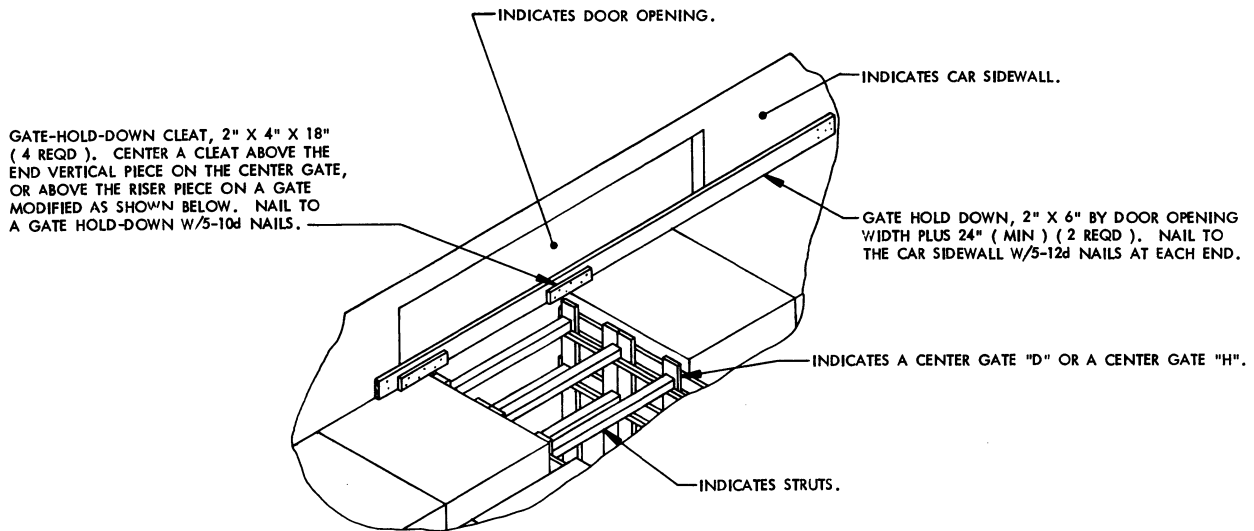
BEVEL-CUT THIS CORNER ONLY IF
STRUTS ARE VERY SHORT.

INDICATES A TYPICAL CENTER GATE.



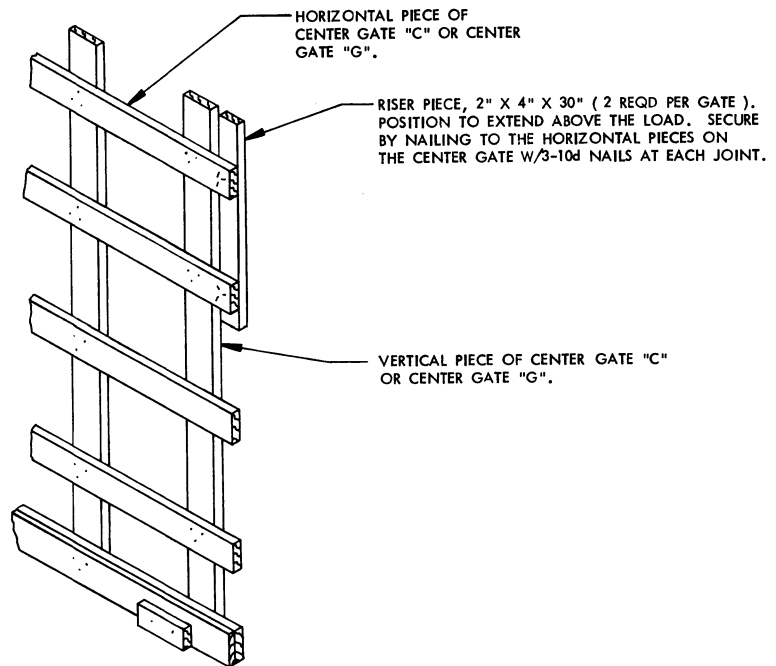
STRUT INSTALLATION

SEE GENERAL NOTE "V" ON PAGE 2 FOR
ADDITIONAL STRUT INSTALLATION GUIDANCE.



ALTERNATIVE GATE HOLD DOWN

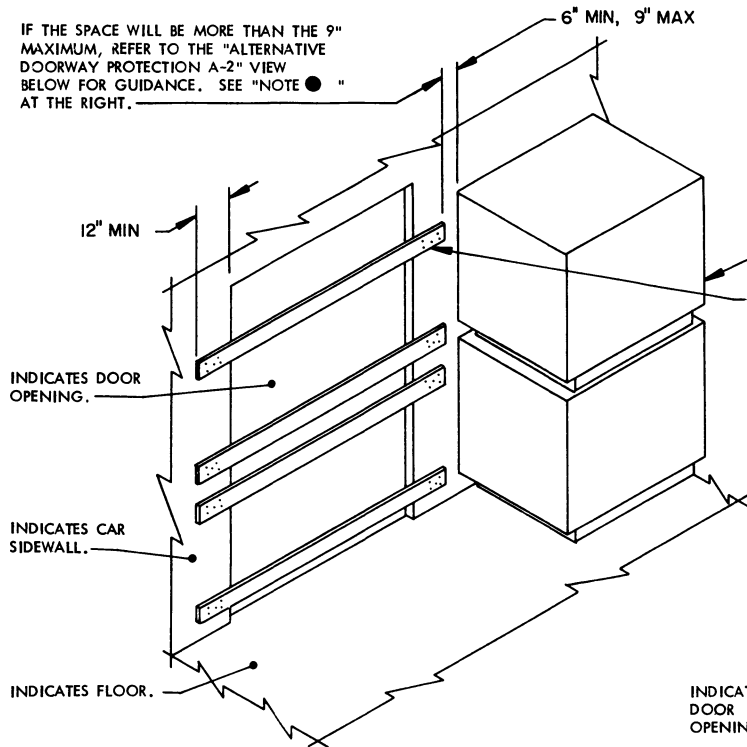
THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, FOR THE LOADS SHOWN ON PAGES 10 OR 26, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE. NOTE: FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD DOWN.



CENTER GATE MODIFICATION

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

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



NOTE ●:

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

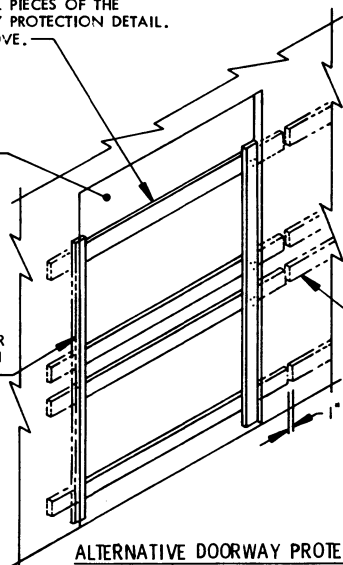
ALTERNATIVE DOORWAY PROTECTION A-1

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 70 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED WITHIN THE PROCEDURES FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS SHOWN ON PAGES 14 AND 30.

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

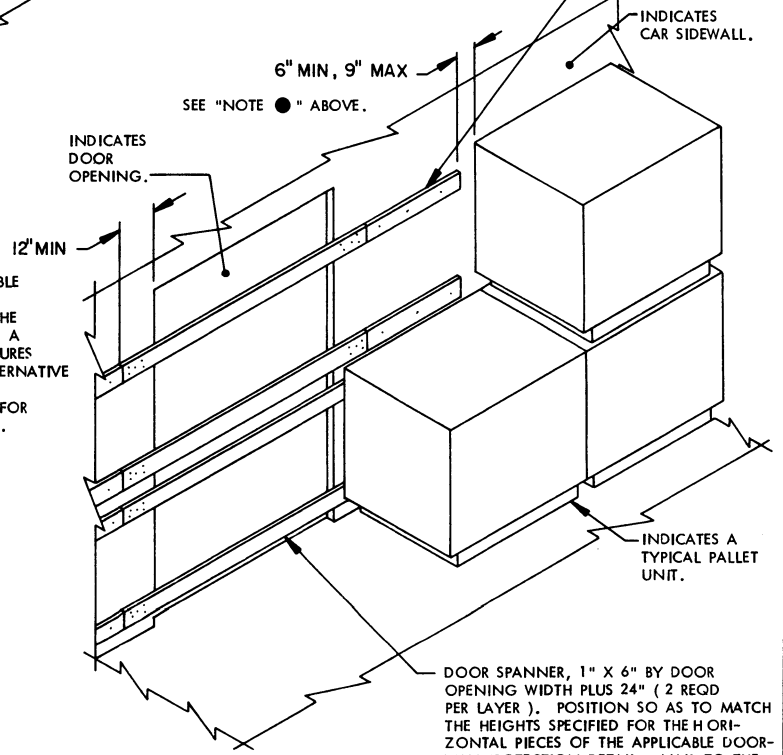
INDICATES DOOR OPENING.

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



ALTERNATIVE DOORWAY PROTECTION A-3

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



ALTERNATIVE DOORWAY PROTECTION A-2

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. SEE THE NOTE UNDER THE "A-1" PROCEDURES.

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

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

VIEW B

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

INDICATES DOOR OPENING.

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 CAR SIDEWALL.

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

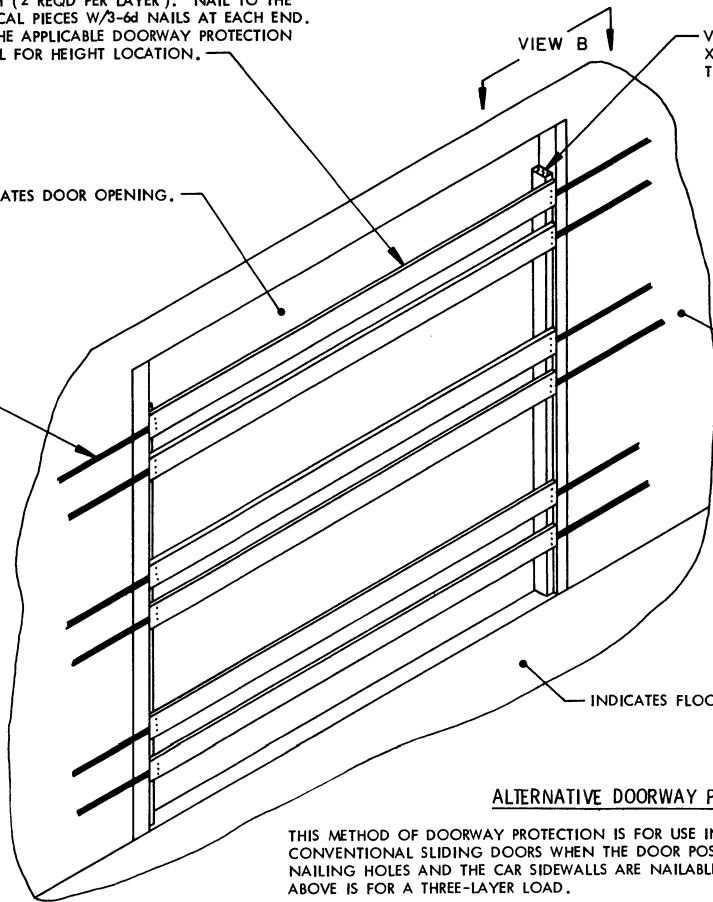
DOOR POST.

INSIDE WALL.

DOOR GATE

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 THREE-LAYER LOAD.

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

DOORWAY PROTECTION STRAP, 1-1/4" X .035" 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 NUMBER 27 RINGLOCK NAILS.

INDICATES DOOR OPENING
INDICATES CAR SIDEWALL.

VIEW A

INDICATES STRAP ANCHOR PLATE.

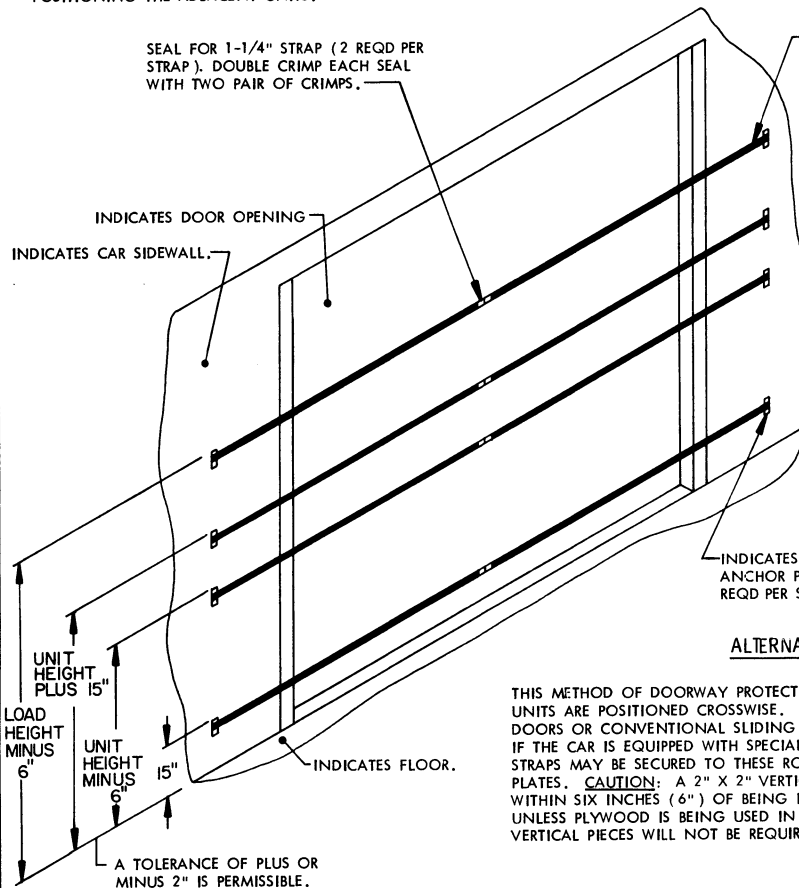
DOOR SPANNER END OF STRAP.

ISOMETRIC VIEW

VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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



INDICATES STRAP ANCHOR PLATE (2 REQD PER STRAP).

ALTERNATIVE DOORWAY PROTECTION C

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

LOAD HEIGHT
UNIT HEIGHT PLUS 15"
UNIT HEIGHT MINUS 15"
A TOLERANCE OF PLUS OR MINUS 2" IS PERMISSIBLE.

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

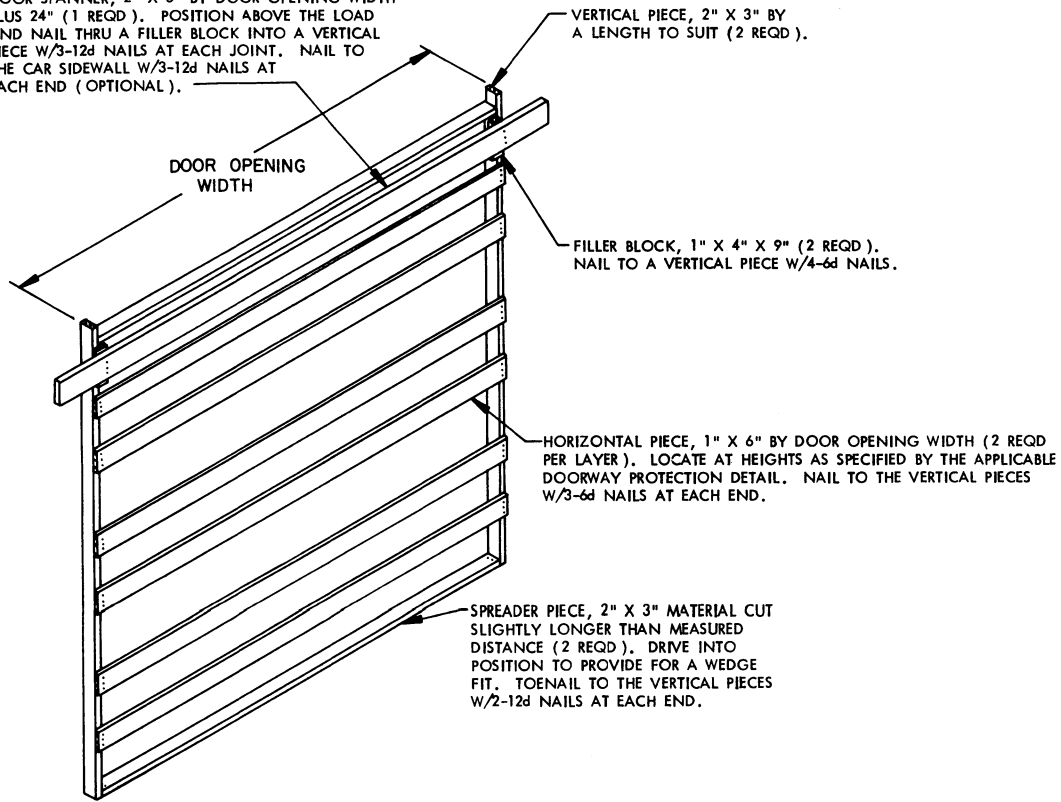
VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD).

DOOR OPENING WIDTH

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

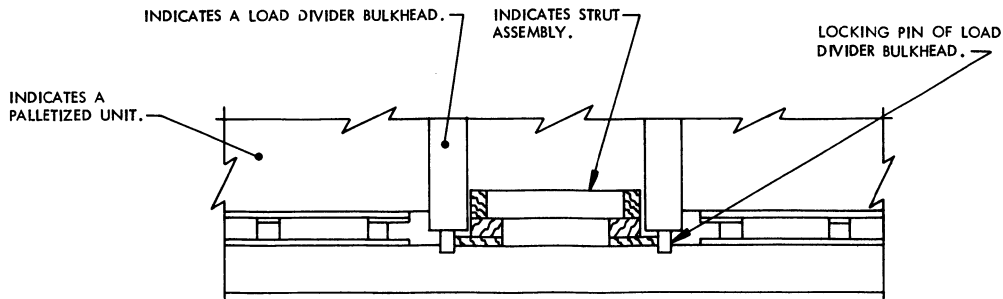
HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (2 REQD PER LAYER). LOCATE AT HEIGHTS AS SPECIFIED BY THE APPLICABLE DOORWAY PROTECTION DETAIL. NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

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



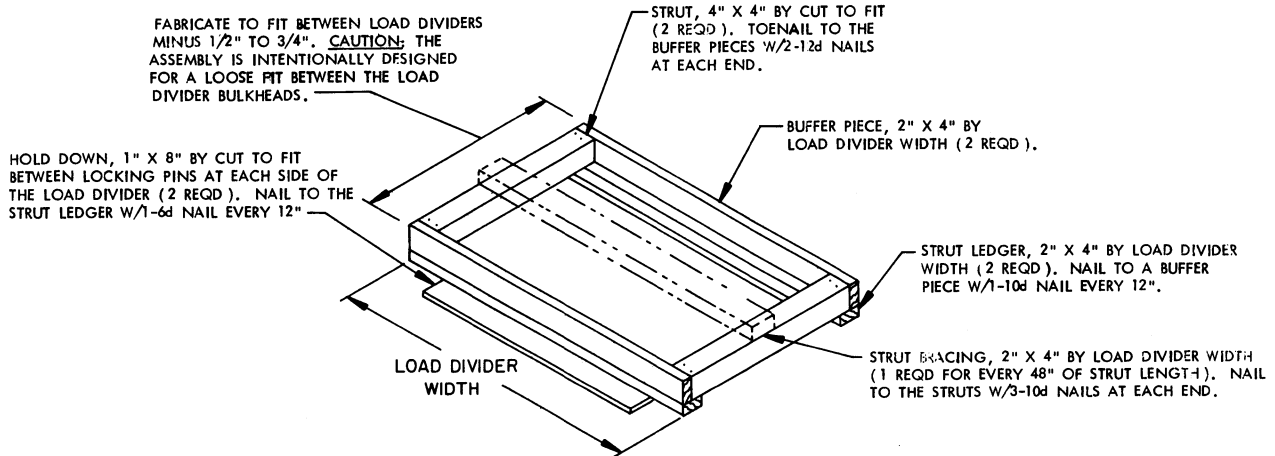
ALTERNATIVE DOORWAY PROTECTION D

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT AVAILABLE. IF THE CAR HAS AVAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 70 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 68.



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.

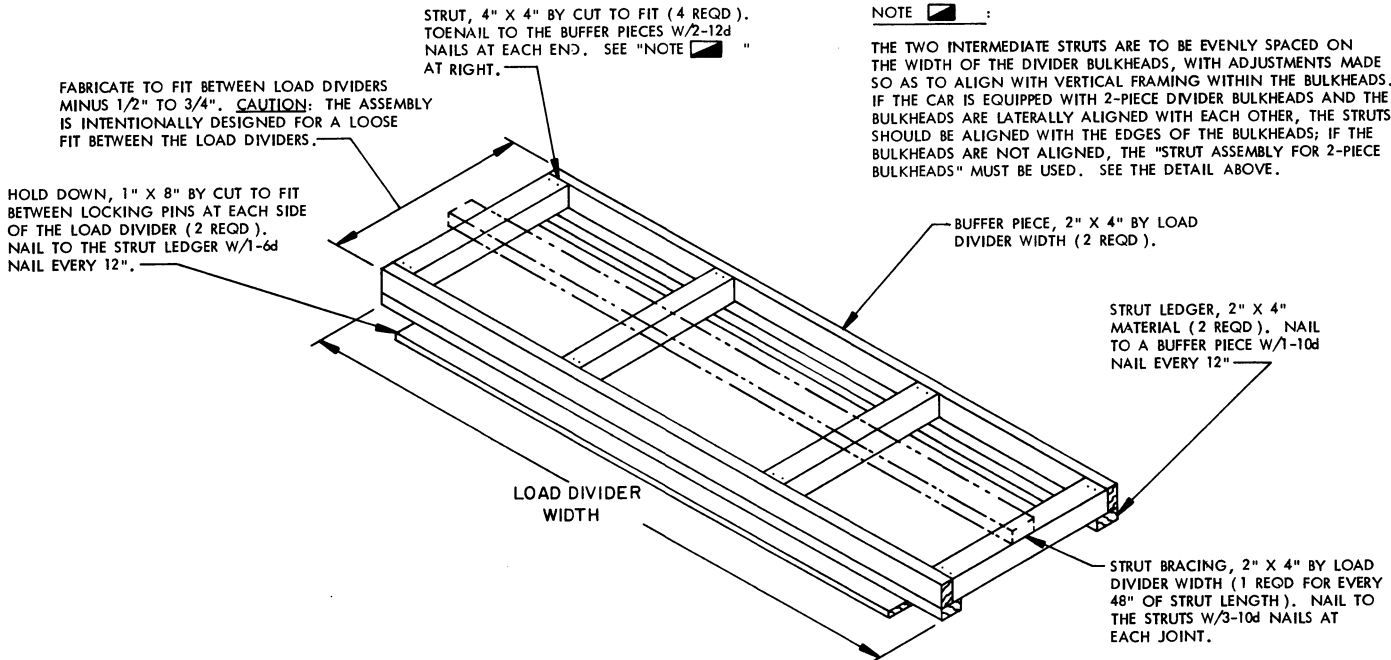


STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

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.

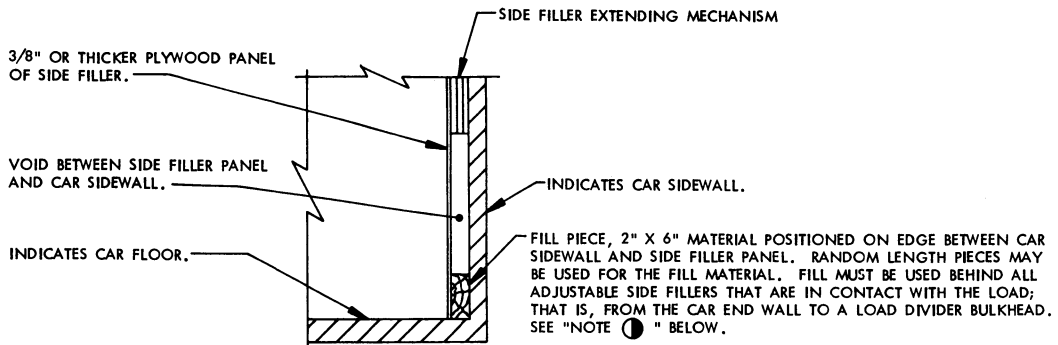
NOTE:

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.

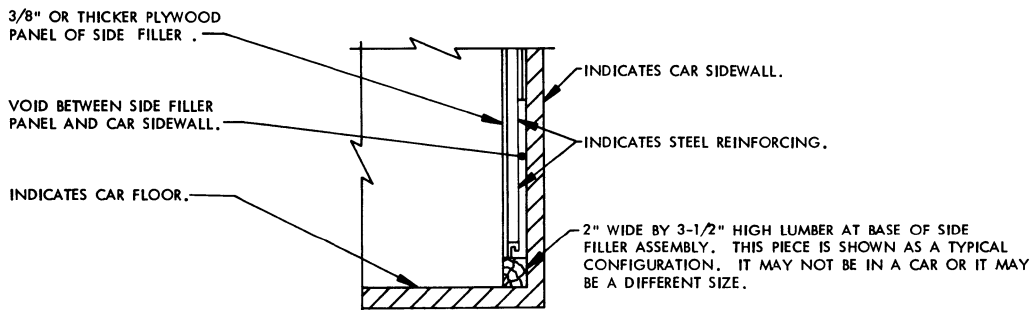


TYPICAL TYPE A

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

NOTE 1 :

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



TYPICAL TYPE B

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

