

APPROVED BY
 BUREAU OF EXPLOSIVES
J. H. Ashman
 DATE 4/29/93

LOADING AND BRACING (CL & LCL) IN BOX CARS OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS PA94 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 <i>Dia</i>	TYPIST <i>Pc</i>	CHECKER <i>GRG</i>	TECHNICIAN <i>P. Arnold</i>	ENGINEER
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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 PA94 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE U.S. ARMY AMC (DARCOM) DRAWING 19-48-4042A/16-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA94 SERIFS 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 SIDE 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 79 FOR GUIDANCE.
- E. UNITS WILL BE POSITIONED WITH THE BASE ENDS OF CONTAINERS AGAINST THE CAR END WALL OR SIDEWALL AS APPLICABLE TO THE LOAD BEING SHIPPED. LONGITUDINALLY ADJACENT CONTAINERS-LENGTHWISE UNITS WILL BE POSITIONED WITH BASE END AGAINST BASE END OR BELL END AGAINST BELL END.
- F. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHARTS ON PAGE 52 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.
- G. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLETIZED UNITS OF 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.
- H. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 80 FOR GUIDANCE.
- J. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- K. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- L. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLET 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.
- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. 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 4" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- N. **NOTICE:** A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR SIDEWALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS OR SIDEWALL BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- O. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY Senco PRODUCTS INCORPORATED. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD-RE-STRAINING FLOOR DUNNAGE APPLICATION.
- P. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 88 FOR GUIDANCE.
- Q. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- R. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIDE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- S. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

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

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

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

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

STRAP STAPLE ----: COMMERCIAL GRADE.

PLYWOOD -----: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

WIRE -----: FED SPEC GQ-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.

- T. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY 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 "N" ABOVE.
- U. **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.
- V. 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 6. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

(CONTINUED ON PAGE 3)

- W. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 84 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- X. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

- Y. THE OUTLOADING PROCEDURES FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS AND DOORWAY MEMBERS WITHIN THESE CARS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. CAUTION: BOX CARS EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
- 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.
 - IN A CAR EQUIPPED WITH ADJUSTABLE WALL MEMBERS, PROVIDING THE FIXED WALL MEMBERS WHICH ARE PRESENT IN SOME "ADJUSTABLE" CARS ARE NOT PROPERLY POSITIONED TO PROVIDE SIDE BEARING SURFACES BETWEEN THE UNITS AND THE CAR SIDEWALLS, ADJUSTABLE WALL MEMBERS (AS REQUIRED) MUST BE INSTALLED TO PROVIDE A MINIMUM OF ONE SURFACE AREA FOR SIDE BEARING AT SOME LOCATION WITHIN THE UPPER HALF OF EACH UNIT.
- AA. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

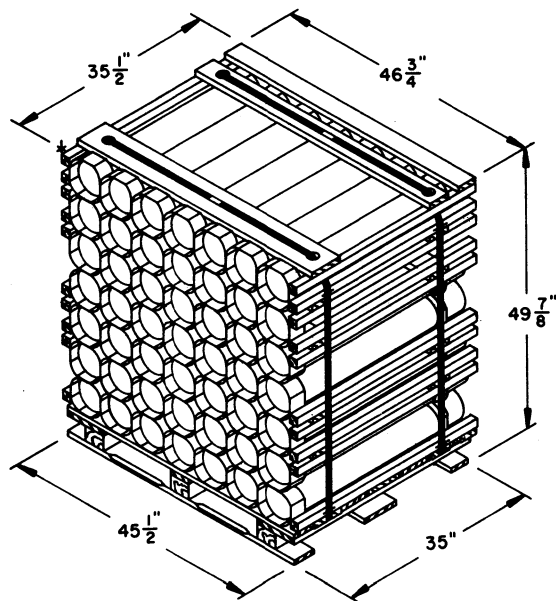
GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- BB. CAUTION: FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY 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.
- CC. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVING IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF 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.

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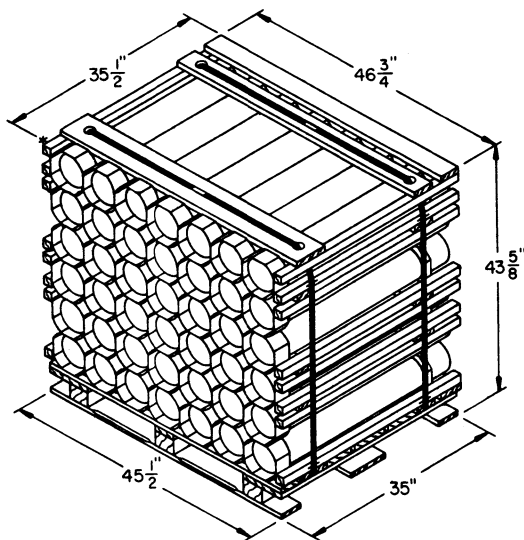
- DD. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 90 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 90, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- EE. 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.
- FF. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED BY GENERAL NOTE "GG-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 89.
- GG. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN A CAR END WALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF PALLET UNITS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIEKS 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 58 THRU 61.
 - 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 54 THRU 57 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 LAYS 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 74, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGES 68 AND 70.
- HH. 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----- 49 EACH @ 27 LBS (APPROX)
 CUBE -----47.9 CUBIC FEET (APPROX)
 GROSS WEIGHT -----1,471 LBS (APPROX)

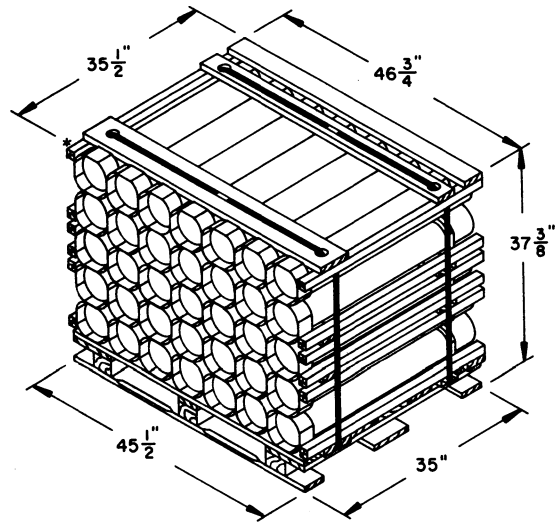
REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES



PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)

CONTAINER ----- 42 EACH @ 27 LBS (APPROX)
 CUBE ----- 41.9 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,271 LBS (APPROX)

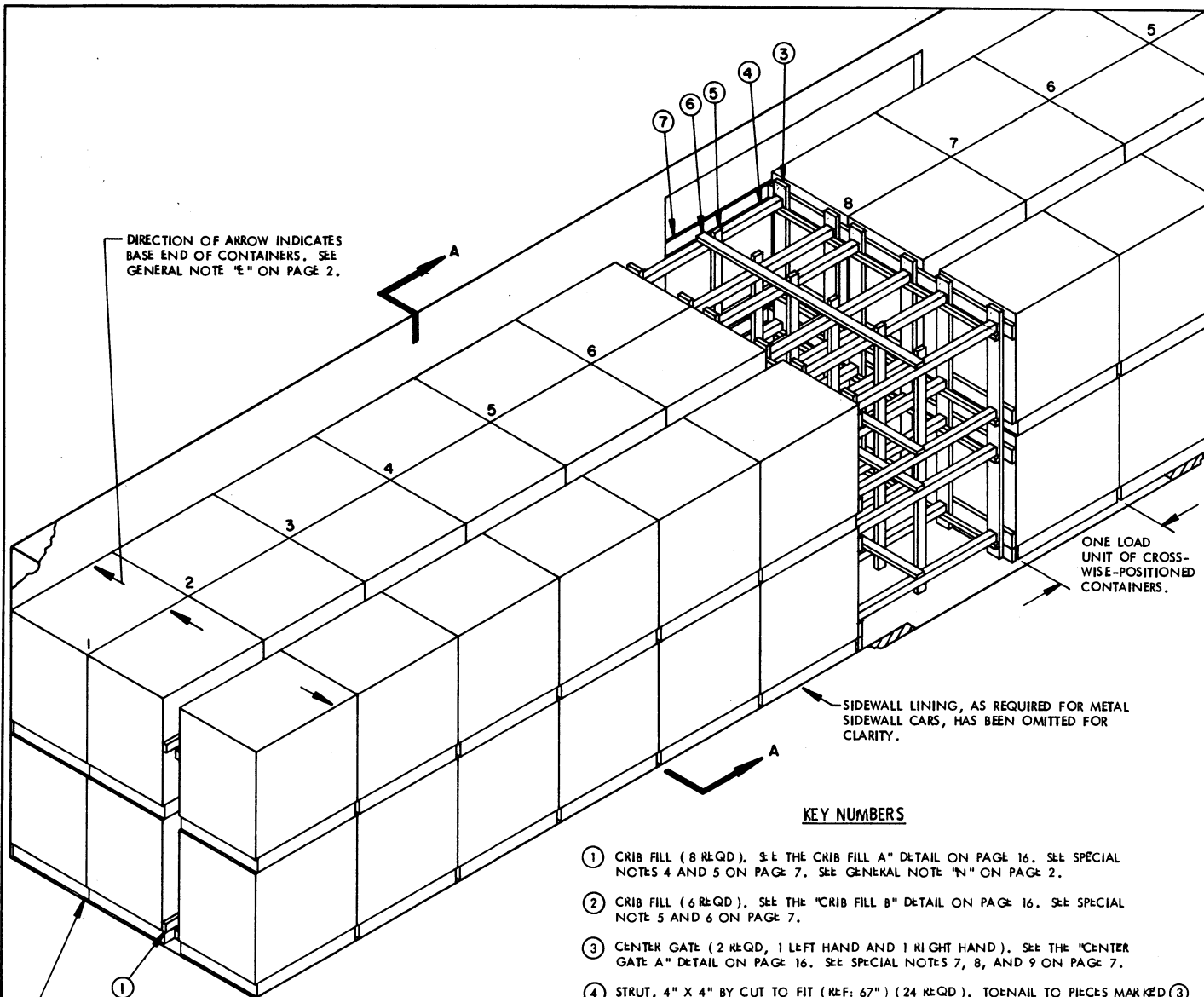
REFER TO PAGES 20 THRU 29 FOR OUTLOADING PROCEDURES .



PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)

CONTAINER ----- 35 EACH @ 27 LBS (APPROX)
 CUBE ----- 35.9 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,065 LBS (APPROX)

REFER TO PAGES 34 THRU 43 FOR OUTLOADING PROCEDURES



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

ONE LOAD
UNIT OF CROSS-
WISE-POSITIONED
CONTAINERS.

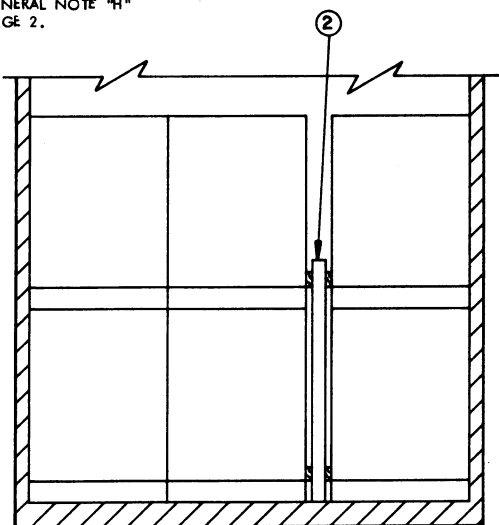
SIDEWALL LINING, AS REQUIRED FOR METAL
SIDEWALL CARS, HAS BEEN OMITTED FOR
CLARITY.

KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE CRIB FILL A" DETAIL ON PAGE 16. SEE SPECIAL NOTES 4 AND 5 ON PAGE 7. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16. SEE SPECIAL NOTE 5 AND 6 ON PAGE 7.
- ③ CENTER GATE (2 REQD, 1 LEFT HAND AND 1 RIGHT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 16. SEE SPECIAL NOTES 7, 8, AND 9 ON PAGE 7.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 67") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 8'-0" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 7" (4 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 17. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 10 AND 11 ON PAGE 7.

ISOMETRIC VIEW

SEE GENERAL NOTE "H"
ON PAGE 2.



SECTION A-A

PALLET UNIT (BASIC HEIGHT)

84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

11. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦, TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER, OR JUST THE TOP TIER OF THE MIDDLE ROW OF UNITS CAN BE OMITTED AS SHOWN BY THE LOAD ON PAGE 8. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE METAL-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 AND SPECIAL NOTE 3 BELOW. NOTE THAT THE SIDEWALL LINING HAS BEEN OMITTED FOR CLARITY.
2. THE BASIC 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 105,912 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR A LADING WEIGHT OF 79,434 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 7' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 7'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. 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. NOTE THAT CRIB FILL IS ONLY REQUIRED WHEN THERE IS A TOTAL OF THREE AND ONE-HALF INCHES (3-1/2") OR MORE OF LATERAL SPACE ACROSS THE CAR.
5. THE WIDTH OF THE VERTICAL PIECES, AND/OR THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES OF THE CRIB FILL, PIECES MARKED ① AND ②, MUST BE ADJUSTED AS NECESSARY TO SUIT THE LATERAL VOID FOR THE WIDTH OF THE CAR BEING LOADED. A MAXIMUM OF THREE-QUARTER INCH (3/4") EXCESS SPACE IS PERMISSIBLE. NOTE THAT IN WOOD-LINED CARS AN EXCESS LATERAL SPACE MAY BE FILLED BY NAILING LUMBER TO THE CAR SIDEWALL AT THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦, IN LIEU OF USING THE CRIB FILL.
6. IF THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 28 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ ON PAGE 6, NAILED FLOORLINE BLOCKING MUST BE USED UNDER EACH CRIB FILL IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. NOTE THAT THREE INCHES (3") MUST BE CUT OFF THE BOTTOM END OF ONE OR BOTH VERTICAL PIECES OF THE CRIB FILL, PIECE MARKED ②, WHERE IT RESTS ON THE NAILED BLOCKING. SEE SPECIAL NOTE 10.
7. CENTER GATE "A" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE A" DETAIL ON PAGE 81 FOR GUIDANCE.
8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE A", SHOWN IN THE LOAD VIEW ON PAGE 6 AS PIECE MARKED 3, INSTALL TWO (2) "CENTER GATES M" AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "A", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY 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 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ③ THRU ⑥ ON PAGE 28. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

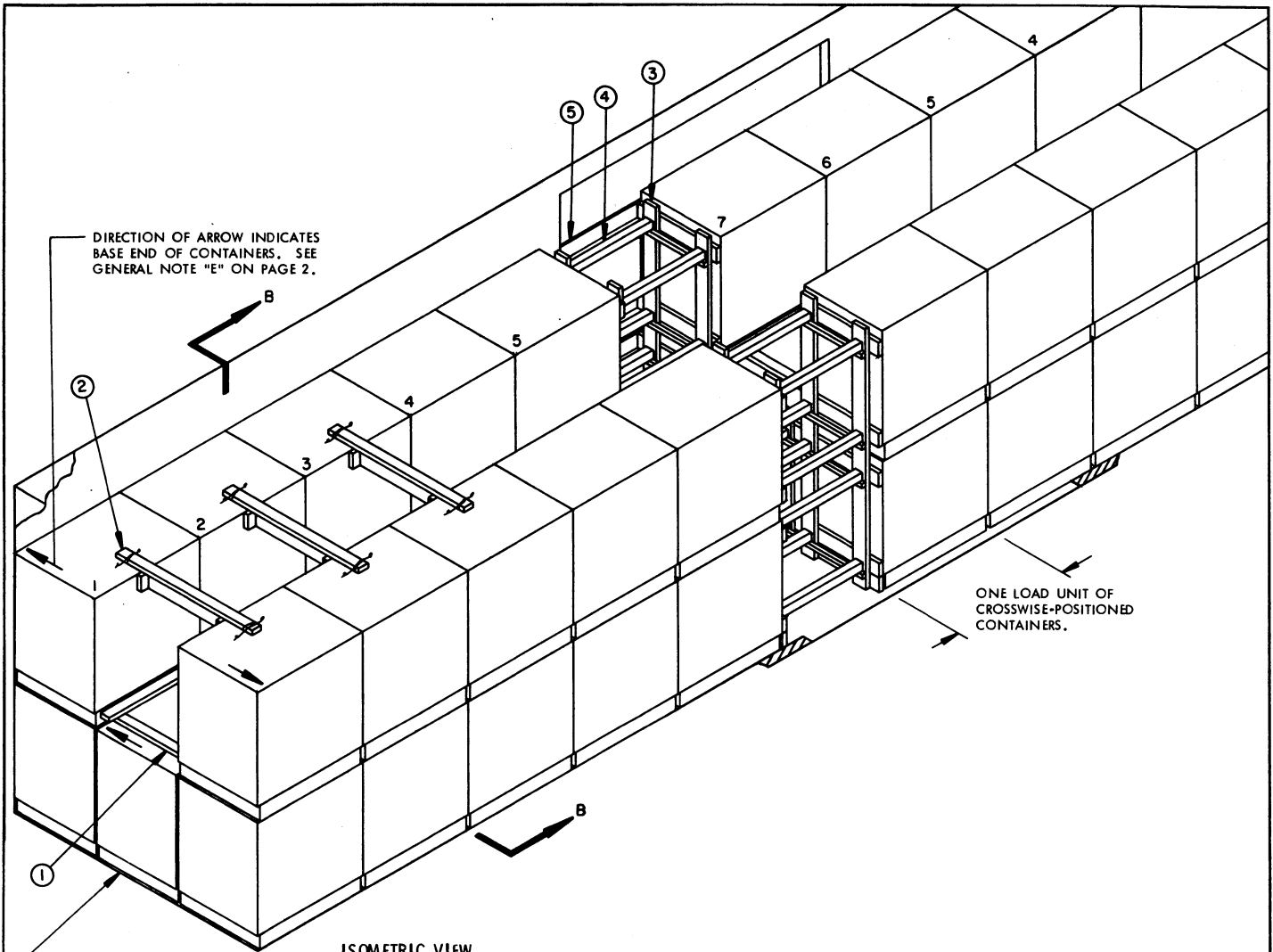
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BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	74	24
2" X 3"	32	16
2" X 4"	482	322
2" X 6"	187	187
4" X 4"	134	179
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	648	10
12d (3-1/4")	32	3/4
16d (3-1/2")	96	2-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	84	123,564 LBS
DUNNAGE-----		1,550 LBS
TOTAL WEIGHT-----		125,114 LBS

PALLET UNIT (BASIC HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



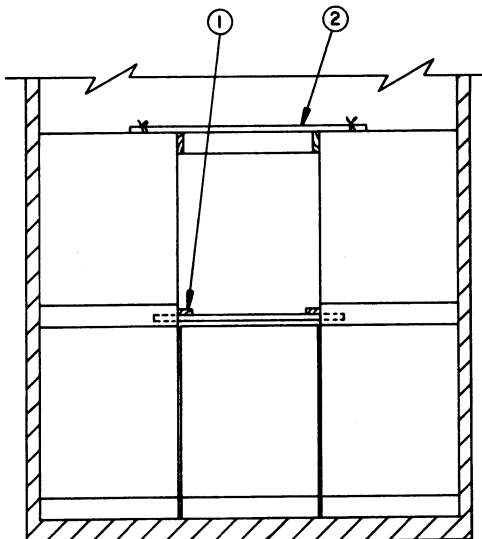
ISOMETRIC VIEW

SEE GENERAL NOTE "H" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 9.

ONE LOAD UNIT OF CROSSWISE-POSITIONED CONTAINERS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (12 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 9.
- ③ CENTER GATE (2 REQD, 1 LEFT HAND AND 1 RIGHT HAND). SEE THE "CENTER GATE B" DETAIL ON PAGE 17. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 9.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (20 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 17. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 AND 10 ON PAGE 9.



SECTION B-B

PALLET UNIT (BASIC HEIGHT)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

10. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑤, TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FIVE (5) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER CAN ALSO BE OMITTED. OR, A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A 1-TIER LOAD. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" 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 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 8. A MAXIMUM OF FORTY-FIVE (45) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 66,195 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SEVENTY (70) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 102,970 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN A 60' LONG CAR.
5. CRIB FILL ASSEMBLIES, AS DETAILED ON PAGE 16 AND SHOWN WITHIN THE LOAD ON PAGE 6 BY PIECES MARKED ① AND ②, MUST BE USED IN THE BOTTOM LAYER IF THE TOTAL ACCUMULATED SPACE ACROSS THE CAR IS THREE AND ONE-HALF INCHES (3-1/2") OR MORE. SEE SPECIAL NOTES 4 AND 5 ON PAGE 7 FOR GUIDANCE.
6. CENTER GATE "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 B" DETAIL ON PAGE 81 FOR GUIDANCE.
7. 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 B", SHOWN IN THE LOAD VIEW ON PAGE 8 AS PIECE MARKED ③, INSTALL TWO (2) "CENTER GATES M", MODIFIED AS NECESSARY, AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO THE CENTER GATE "B", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 FLOOR-LINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED AS TYPICALLY SHOWN BY PIECES MARKED ③ THRU ④ ON PAGE 28. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

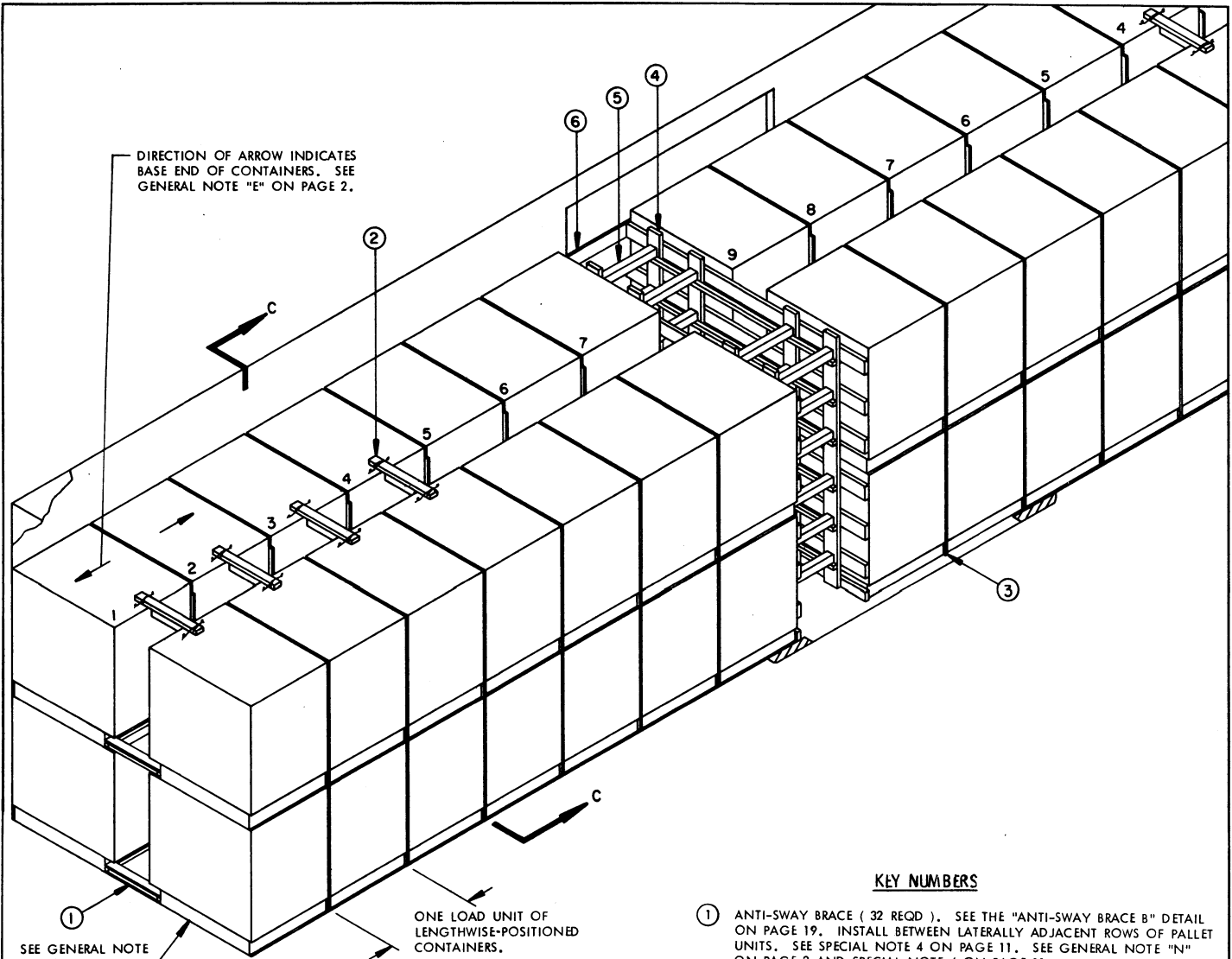
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BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	58	20
2" X 3"	32	16
2" X 4"	209	140
2" X 6"	182	182
4" X 4"	65	87
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	468	7-1/4
12d (3-1/4")	32	3/4
16d (3-1/2")	80	1-3/4
WIRE, NO. 14 GAGE-----60' REQD-----1 LB		

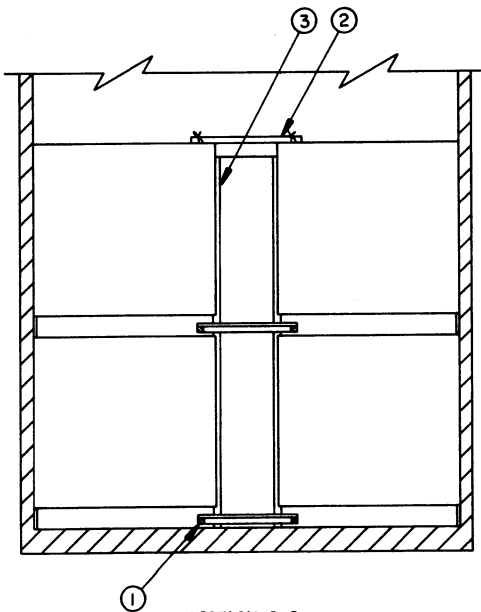
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	60-----	88,260 LBS
DUNNAGE-----	-----	982 LBS
TOTAL WEIGHT-----		89,242 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW



SECTION C-C

KEY NUMBERS

- ① ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 11. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 11.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 5 ON PAGE 11.
- ③ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 8'-0" (28 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNIT STACKS AND AGAINST CAR SIDEWALL. NAIL TO THE CROSS BRACE OF THE ADJACENT UPPER ANTI-SWAY BRACE, PIECE MARKED ①, W/2-6d NAILS. SEE SPECIAL NOTES 6 AND 7 ON PAGE 11.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 11.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 27") (24 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑥ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 17. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 11.

PALLET UNIT (BASIC HEIGHT).

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

(SPECIAL NOTES CONTINUED)

10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "C", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑥ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ④ THRU ⑦ ON PAGE 14. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 75 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 10. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 70,608 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SEVENTY-SIX (76) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 111,796 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8'-0" OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE EIGHT (8) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. IF THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 14 BY PIECES MARKED ④ THRU ⑦ ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑥ ON PAGE 10, 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 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 ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 11 AT LEFT.
5. 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 STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD FOR 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED IN EACH END OF A LOAD FOR 60' CARS.
6. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PIECES OF 3/8" PLYWOOD, SHOWN AS PIECE MARKED ③, AGAINST THE ALREADY-LOADED UNITS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT UPPER ANTI-SWAY BRACE, PIECE MARKED ①, TO PREVENT LATERAL MOVEMENT. REPEAT THE PROCEDURE FOR THE REMAINING STACKS. NOTE THAT IF NAILED FLOORLINE BLOCKING AND STEEL STRAPPING ARE USED FOR DOORWAY PROTECTION IN LIEU OF THE WOODEN DOOR GATE TYPE SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 10, IT WILL BE NECESSARY TO CUT OUT THE BOTTOM CORNER OF THE PLYWOOD SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. A 3-1/2" HIGH BY 2-1/2" WIDE CUTOOUT IN THE CENTER-OF-CAR EDGE OF THE BOTTOM IS REQUIRED IN ORDER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING.
7. IF PLYWOOD FOR THE SEPARATOR GATES IS NOT AVAILABLE, OR IF DESIRED, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE. NOTE THAT ONLY FIFTEEN (15) LOAD UNITS CAN BE PLACED IN A 50'-6" LONG CAR IF THE DIMENSIONAL LUMBER SEPARATOR GATES ARE USED IN LIEU OF THE PLYWOOD SEPARATOR GATES.
8. CENTER GATE "C" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE C" DETAIL ON PAGE 81 FOR GUIDANCE.
9. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN IN THE LOAD VIEW ON PAGE 10 AS PIECE MARKED ④, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 83. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	125	42
1" X 6"	64	32
2" X 2"	279	93
2" X 3"	39	20
2" X 4"	157	105
2" X 6"	191	191
4" X 4"	54	72
NAILS	NO. REQD	POUNDS
6d (2")	552	3-1/4
10d (3")	552	8-1/2
12d (3-1/4")	64	1-1/4
16d (3-1/2")	96	2-1/4
PLYWOOD, 3/8" -----	896 SQ FT REQD -----	924 LBS
WIRE, NO. 14 GAGE -----	60' REQD -----	1 LB

LOAD AS SHOWN

ITEM QUANTITY WEIGHT (APPROX)

PALLET UNIT ----- 64 ----- 94,144 LBS
DUNNAGE ----- ----- 2,051 LBS

TOTAL WEIGHT----- 96,195 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT)

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

CAR EQUIPMENT REQUIRED

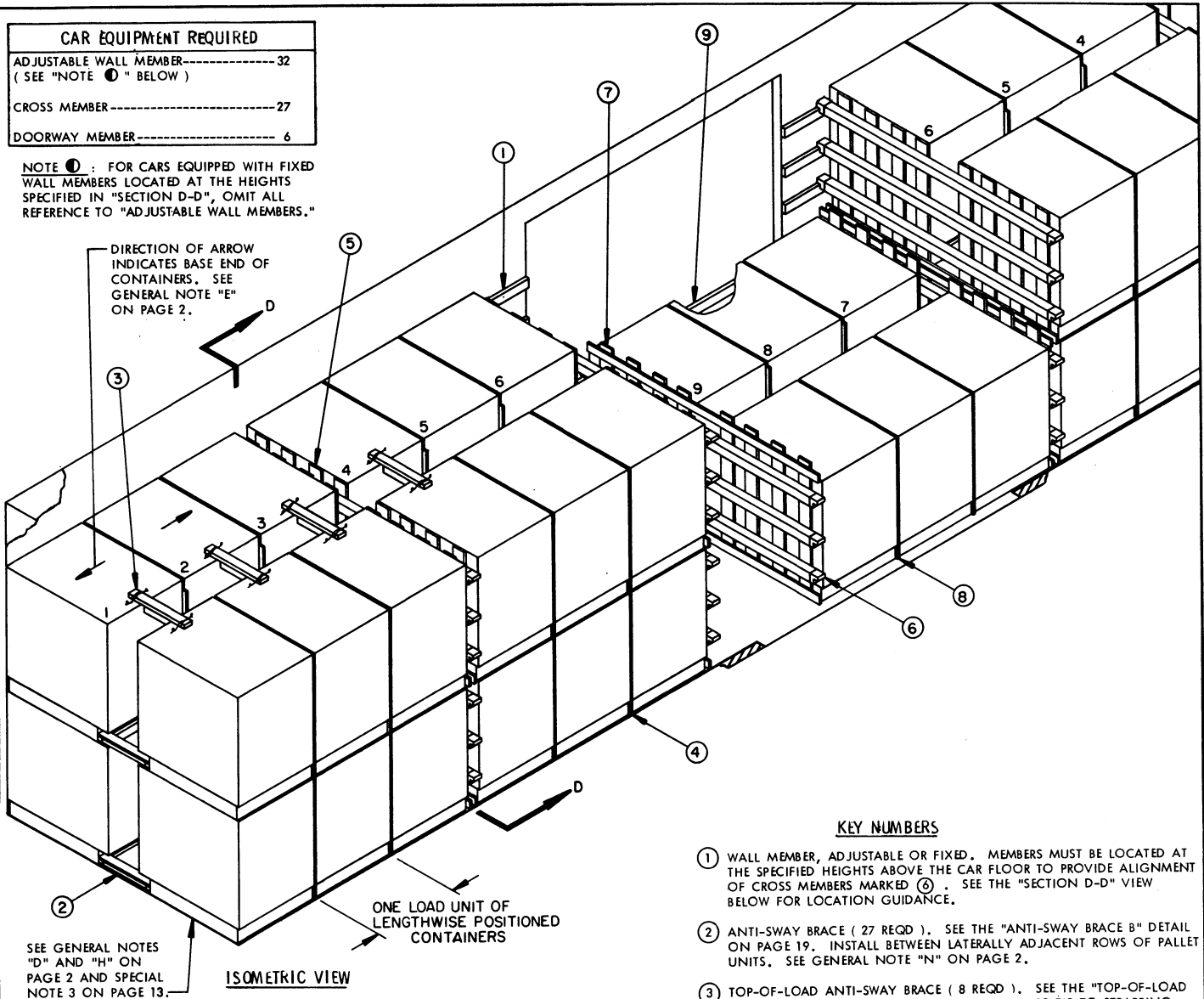
ADJUSTABLE WALL MEMBER-----32
(SEE "NOTE 1" BELOW)

CROSS MEMBER-----27

DOORWAY MEMBER-----6

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."

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

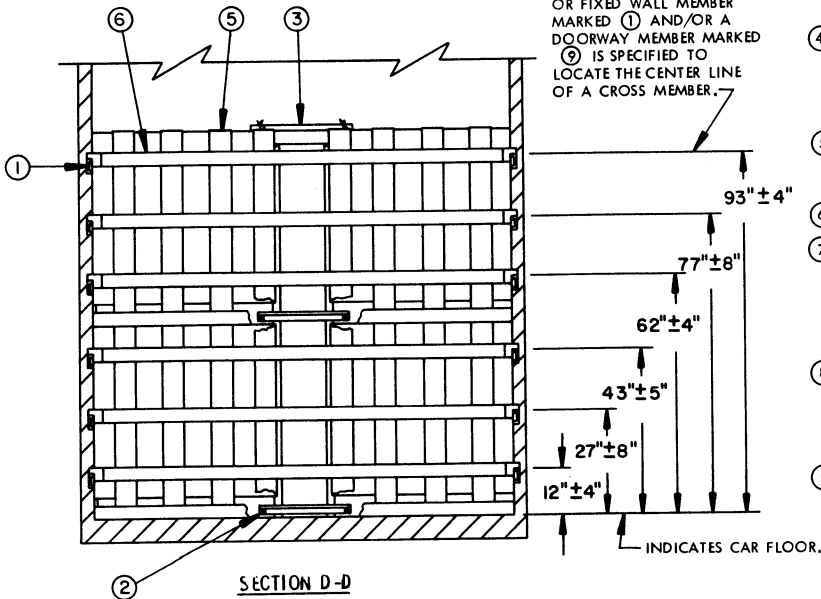


SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 13.

ISOMETRIC VIEW

ONE LOAD UNIT OF LENGTHWISE POSITIONED CONTAINERS

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 9 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE ALIGNMENT OF CROSS MEMBERS MARKED 6. SEE THE "SECTION D-D" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (27 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 13.
- 4 PLYWOOD SEPARATOR GATE, 3/8" X 48" X 8'-0" (16 REQD). POSITION AGAINST ALREADY LOADED PALLET STACKS AND AGAINST CAR SIDE-WALL. NAIL TO THE CROSS BRACE OF THE ADJACENT UPPER ANTI-SWAY BRACE, PIECE MARKED 2, W/2-6d NAILS. SEE SPECIAL NOTES 5 AND 6 ON PAGE 13.
- 5 SEPARATOR GATE FOR 2-HIGH (6 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. POSITION SO THE VERTICAL PIECES WILL BE AGAINST THE PALLET UNIT STACKS. SEE SPECIAL NOTE 7 ON PAGE 13.
- 6 CROSS MEMBER (27 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- 7 SEPARATOR GATE FOR 1-HIGH (2 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. POSITION SO THE VERTICAL PIECES WILL BE AGAINST THE PALLET UNITS. NOTE THAT SEPARATOR GATES USED IN THE DOORWAY AREA MUST BE NAILED TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED 2, W/4-6d NAILS. SEE SPECIAL NOTE 6 ON PAGE 13.
- 8 PLYWOOD SEPARATOR GATE, 3/8" X 48" X 48" (4 REQD). POSITION AGAINST 1-HIGH PALLET AND AGAINST DOORWAY MEMBER OR FLUSH WITH OUTSIDE EDGE OF UNIT, AS APPLICABLE. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED 2, W/2-6d NAILS.
- 9 DOORWAY MEMBER (6 REQD). SEE THE "SECTION D-D" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 13.

PALLET UNIT (BASIC HEIGHT)

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 12. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 70,608 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED ENDWALLS 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 ENDWALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ⑤, 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 STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE ENDWALL, THEN POSITION TWO (2) PLYWOOD PIECES, SHOWN AS PIECE MARKED ④, AGAINST THE UNIT STACKS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT UPPER ANTI-SWAY BRACE, PIECES MARKED ②, SO AS TO PREVENT LATERAL MOVEMENT OF THE PLYWOOD. REPEAT THIS PROCEDURE, AS APPLICABLE, FOR THE REMAINING PALLET UNIT STACKS. NOTE THAT IF DESIRED, PLYWOOD SEPARATOR GATES MAY BE USED IN LIEU OF THE DIMENSIONAL LUMBER SEPARATOR GATES, PIECES MARKED ⑤ AND ⑦.
6. IF PLYWOOD IS NOT AVAILABLE FOR THE SEPARATOR GATES, PIECES MARKED ④ AND ⑧, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE.
7. THE DIMENSIONAL LUMBER SEPARATOR GATES, SHOWN AS PIECES MARKED ⑤ AND ⑦ IN THE LOAD ON PAGE 12, WILL BE POSITIONED WITH THE 1" X 6" VERTICAL PIECES AGAINST THE PALLET UNITS AND THE HORIZONTAL PIECE (5) LOCATED BETWEEN THE CROSS MEMBERS. THE PIECE MARKED ⑦ WHICH IS IN THE DOORWAY MUST BE NAILED TO THE CROSS PIECE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ②, W/2-10d NAILS TO PREVENT THE GATE FROM SHIFTING INTO THE DOORWAY.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL SIX PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE END PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 48 AND 55 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

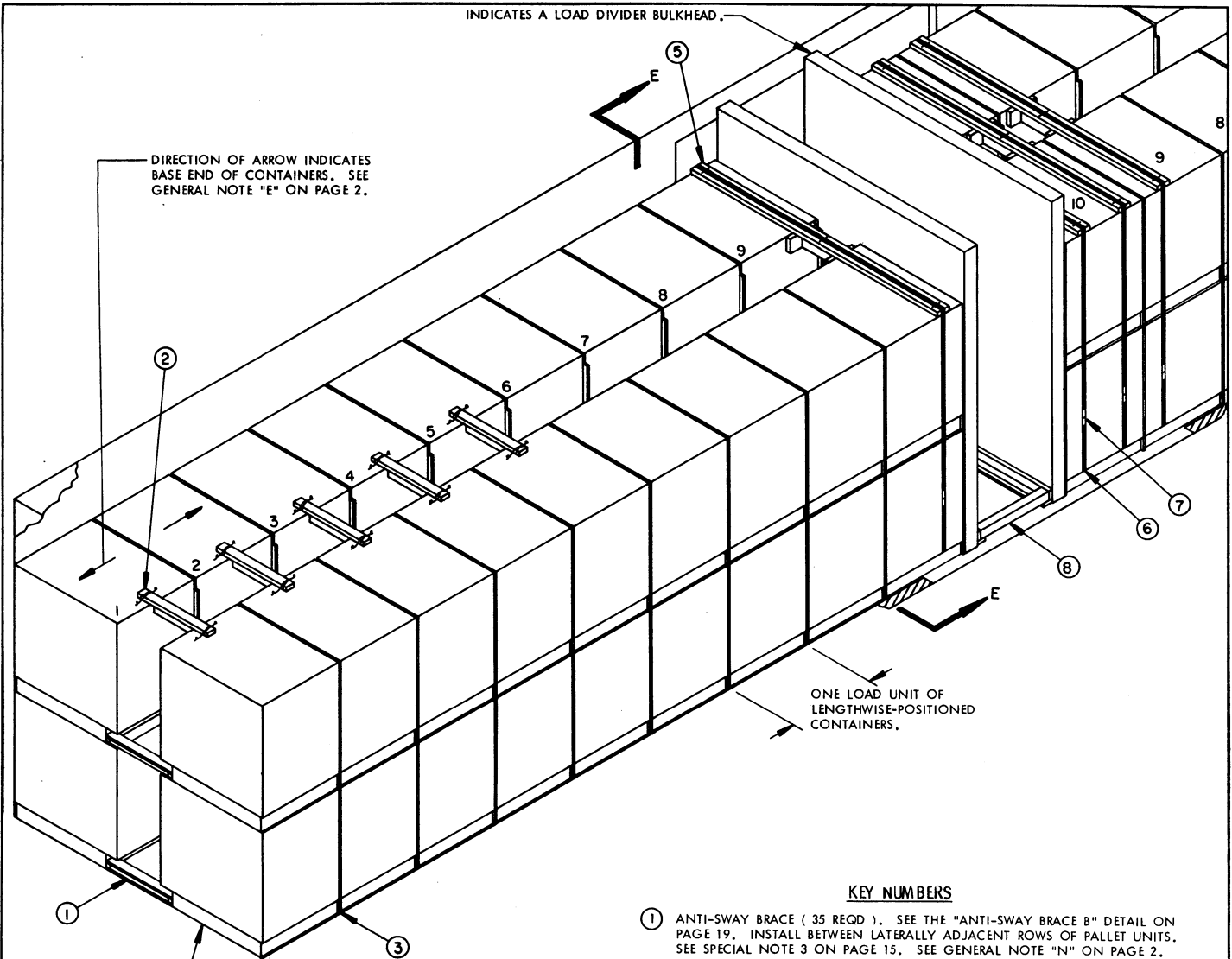
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	251	84
1" X 6"	458	229
2" X 2"	159	53
2" X 4"	131	88
NAILS	NO. REQD	POUNDS
6d (2")	802	4-3/4
10d (3")	216	3-1/2
12d (3-1/4")	32	3/4
PLYWOOD, 3/8" ----- 576 SQ FT REQD ----- 594 LBS		
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	54 -----	79,434 LBS
DUNNAGE -----	-----	1,512 LBS
TOTAL WEIGHT -----		80,946 LBS

PALLET UNIT (BASIC HEIGHT)

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

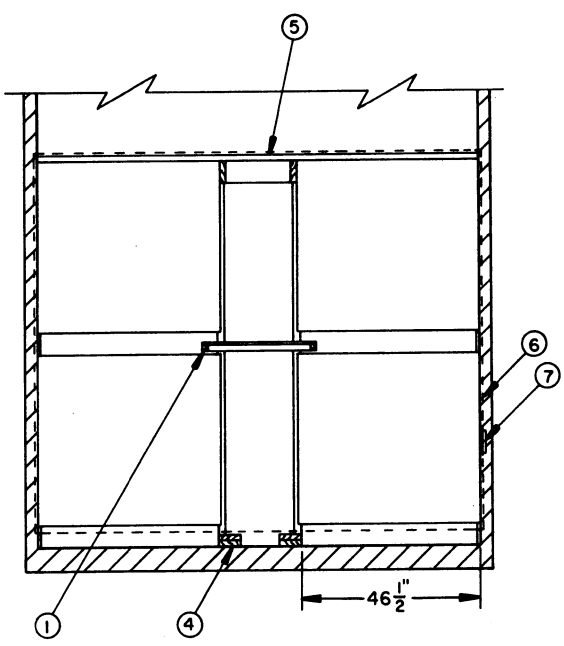


SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (35 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 3 ON PAGE 15. SEE GENERAL NOTE "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 3 ON PAGE 15.
- ③ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 8'-0" (38 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET STACKS AND AGAINST CAR SIDEWALL. NAIL TO THE CROSS BRACE OF THE ADJACENT UPPER LAYER ANTI-SWAY BRACE, PIECE MARKED ①, W/2-6d NAILS. SEE SPECIAL NOTES 4 AND 5 ON PAGE 15. NOTE THAT EACH PLYWOOD SEPARATOR GATE IN THE DOORWAY AREA MUST HAVE A 3-1/2" HIGH BY 2-1/2" WIDE NOTCH IN THE CENTER-OF-CAR SIDE OF THE BOTTOM IN ORDER TO PROVIDE CLEARANCE FOR THE SIDE BLOCKING, PIECE MARKED ④.
- ④ SIDE BLOCKING, 2" X 6" X 35-1/2" (DOUBLED) (6 REQD, 2 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). POSITION AGAINST THE PALLETS IN THE DOORWAY AREA AS SHOWN IN THE "SECTION E-E" VIEW BELOW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. THE LOADING-SIDE PIECES MAY BE PRE-POSITIONED, IF DESIRED. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 15.
- ⑤ SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 19.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 37'-0" LONG STEEL STRAPPING (4 REQD). INSTALL TO ENIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES.
- ⑦ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑧ STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 87. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 9 ON PAGE 15.



SECTION E-E

PALLET UNIT (BASIC HEIGHT)

76-UNIT LOAD IN A 60'-8" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

(SPECIAL NOTES CONTINUED)

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 52 THRU 61 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 75 FOR GUIDANCE IF PALLET UNITS ARE LOADED AS SHOWN, OR TH PAGES 76 AND 78 IF THE PALLET UNITS ARE TURNED OPPOSITE TO THOSE SHOWN.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-4" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 14. A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 88,260 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR, OR A MAXIMUM OF FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 70,608 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN USING THE LOADING PROCEDURES AS SHOWN ON PAGE 6 (OR ON PAGE 28), A MAXIMUM OF EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 123,564 POUNDS, CAN BE PLACED 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 105,912 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR A LADING WEIGHT OF APPROXIMATELY 79,434 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 STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FIVE (5) BRACES ARE REQUIRED IN EACH END OF THIS LOAD; FOUR (4) BRACES ARE REQUIRED IN EACH END OF THE LOAD WHEN SHIPPING IN 40' OR 50' LONG CARS.
4. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PIECES OF 3/8" PLYWOOD, SHOWN AS PIECE MARKED ③, AGAINST THE ALREADY-LOADED UNIT STACKS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT ANTI-SWAY BRACES, PIECE MARKED ①, TO PREVENT LATERAL MOVEMENT. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF PLYWOOD FOR THE SEPARATOR GATES IS NOT AVAILABLE, OR IF DESIRED, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE.
6. DOORWAY PROTECTION PROCEDURES FOR PLUG TYPE DOORS ARE SHOWN ON PAGE 14 IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑥ ON PAGE 10. NAILED FLOORLINE BLOCKING IS USED IN LIEU OF THE LOWER ANTI-SWAY BRACES 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, OR WIDTH ON EITHER SIDE OF THE CAR.
7. THE NAILED FLOORLINE BLOCKING AND BUNDLING STRAP PROCEDURE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ THRU ⑦ IN THE LOAD ON PAGE 14, IS APPLICABLE FOR BOX CARS EQUIPPED WITH PLUG TYPE DOORS, BUT MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) SPACER ASSEMBLIES AND DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) SPACER ASSEMBLY AND DOORWAY PROTECTION STRAP ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM SIX INCHES (6") TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH ON BOTH SIDES OF THE CAR.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 10 (PIECE MARKED ⑦ ON PAGE 6 IF PALLET UNITS ARE LOADED OPPOSITE TO THAT SHOWN) WILL BE USED. REFER TO PAGES 86 THRU 88 FOR ALTERNATIVE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.
9. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 14, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

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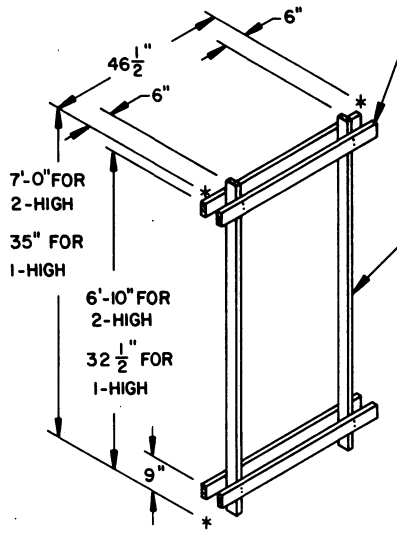
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	160	54
1" X 8"	17	12
2" X 2"	206	69
2" X 4"	229	153
2" X 6"	88	88
4" X 4"	11	15
NAILS	NO. REQD	POUNDS
6d (2")	584	3-1/2
10d (3")	298	4-3/4
12d (3-1/4")	108	2
16d (3-1/2")	60	1-1/2
PLYWOOD, 3/8" -----1216 SQ FT REQD --1254 LBS		
STEEL STRAPPING, 1-1/4" X .031" OR .035" --148' REQD----- 22 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 8 REQD----- NIL		
STAPLE FOR 1-1/4" STRAPPING ----- 12 REQD----- NIL		
WIRE, NO. 14 GAGE -----60' REQD----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	76-----	111,796 LBS
DUNNAGE-----	-----	2,071 LBS
TOTAL WEIGHT-----		113,867 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT)

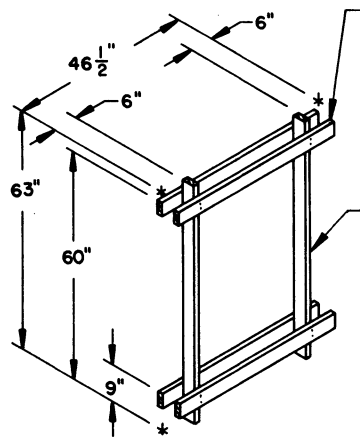
76-UNIT LOAD IN A 60'-8" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



CRIB FILL A

HORIZONTAL PIECE, 2" X 4" X 46-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 4" X 7'-0" FOR A 2-HIGH LOAD, 35" FOR A 1-HIGH LOAD.

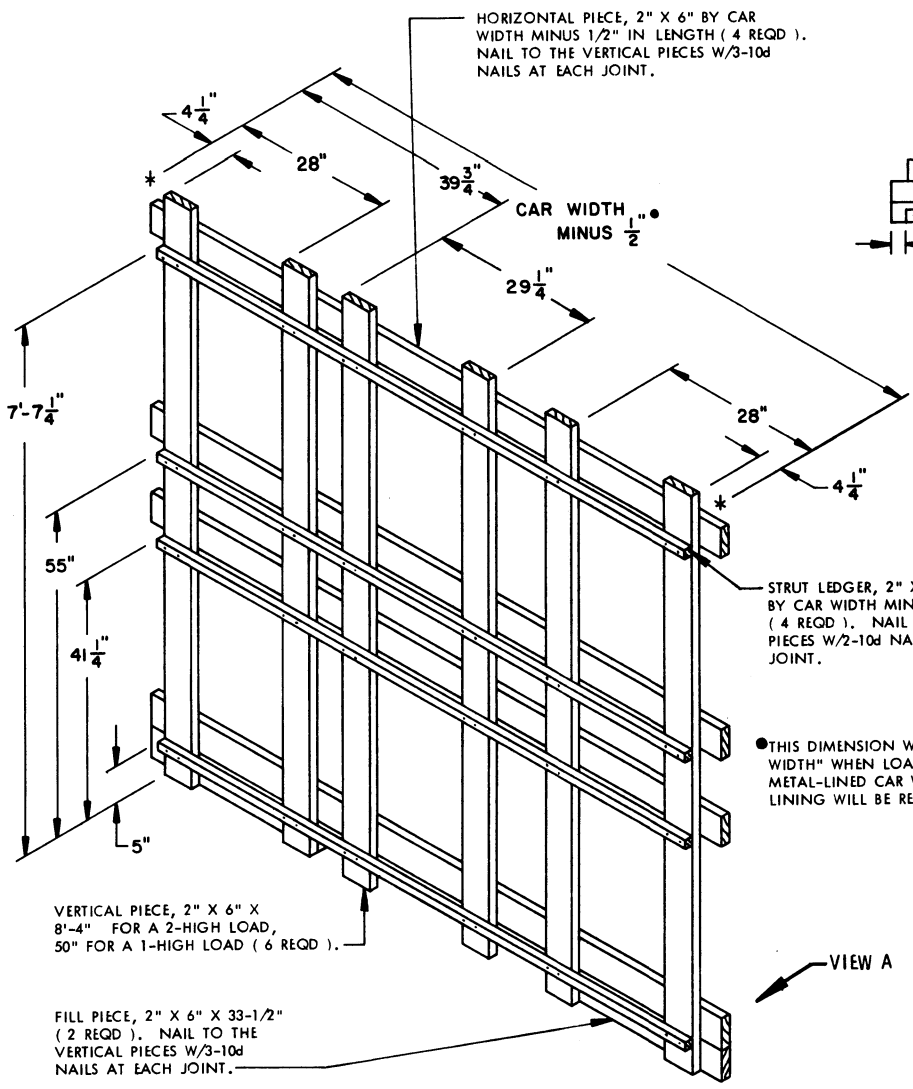


CRIB FILL B

HORIZONTAL PIECE, 2" X 4" X 46-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

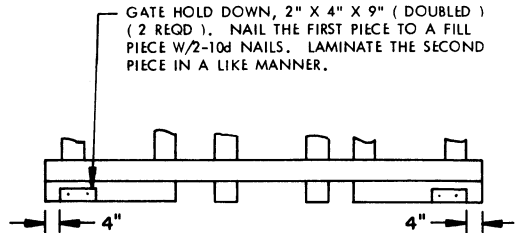
VERTICAL PIECE, 2" X 4" X 63" (2 REQD).

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



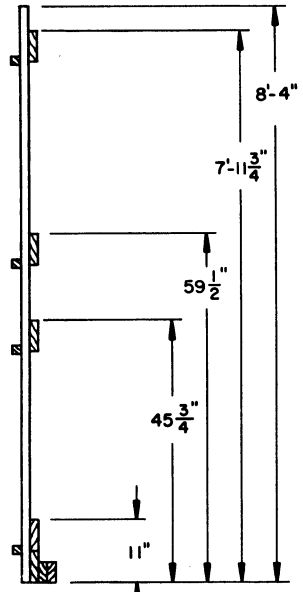
CENTER GATE A

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 6. NOTE THAT LEFT HAND AND RIGHT HAND GATES ARE REQUIRED.

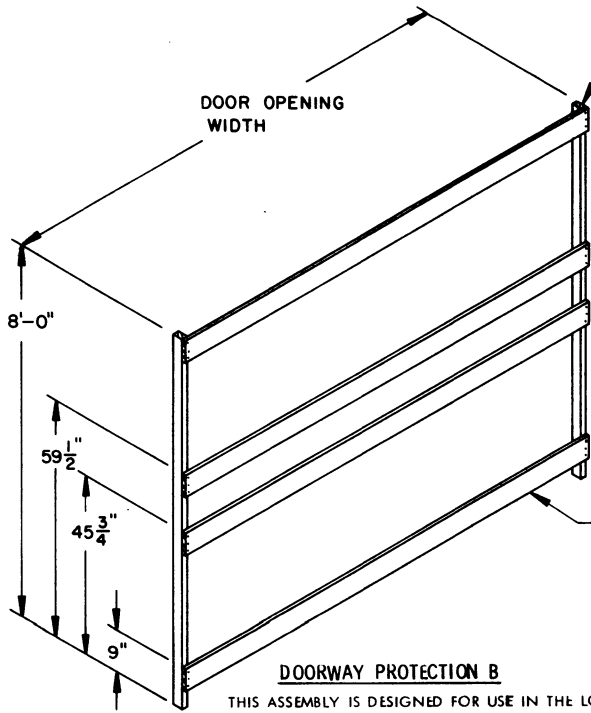


VIEW A

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



END VIEW

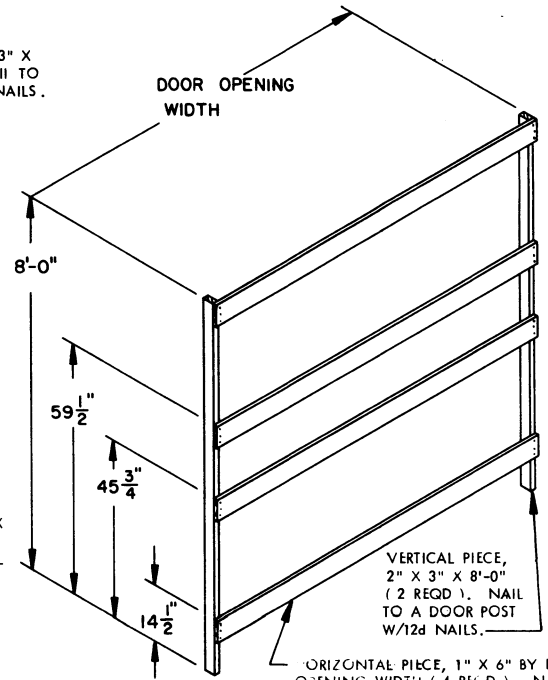


DOORWAY PROTECTION B

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

VERTICAL PIECE, 2" X 3" X 8'-0" (2 REQD.). NAIL TO A DOOR POST W/12d NAILS.

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



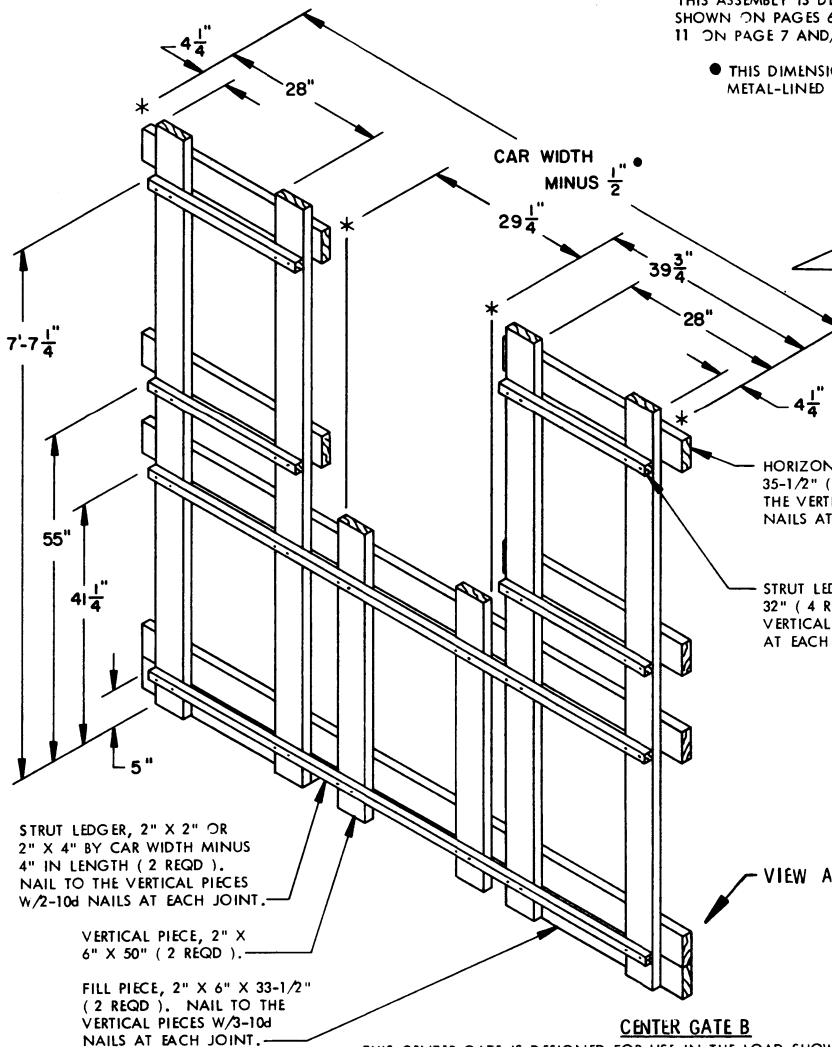
DOORWAY PROTECTION A

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGES 6 AND 8. SEE SPECIAL NOTE 11 ON PAGE 7 AND/OR 10 ON PAGE 9.

● THIS DIMENSION WILL BE "LOAD WIDTH" WHEN LOADING IN A METAL-LINED CAR WHERE SIDEWALL LINING IS REQUIRED.

VERTICAL PIECE, 2" X 3" X 8'-0" (2 REQD.). NAIL TO A DOOR POST W/12d NAILS.

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



CENTER GATE B

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 8. NOTE THAT LEFT HAND AND RIGHT HAND GATES ARE REQUIRED.

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

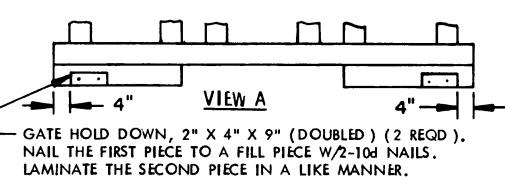
VERTICAL PIECE, 2" X 6" X 50" (2 REQD.).

FILL PIECE, 2" X 6" X 33-1/2" (2 REQD.). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

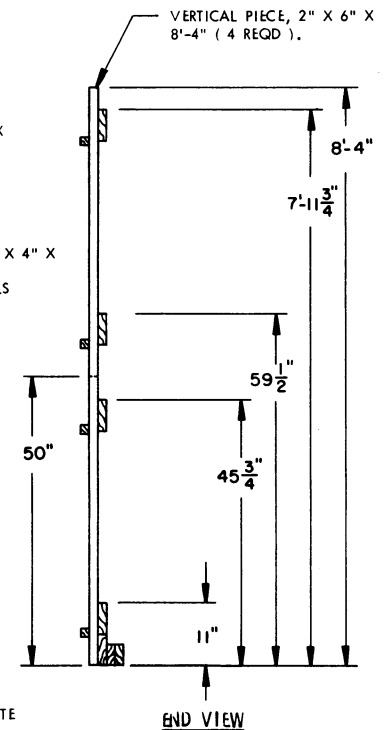
HORIZONTAL PIECE, 2" X 6" X 35-1/2" (4 REQD.). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2" X 2" OR 2" X 4" X 32" (4 REQD.). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

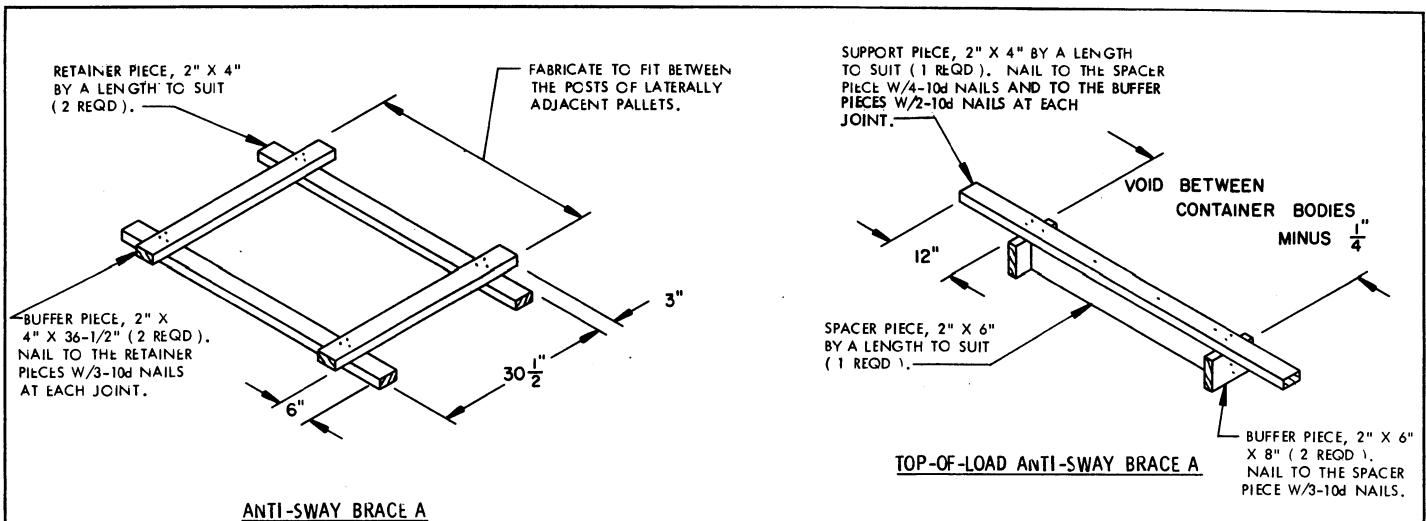
VIEW A



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

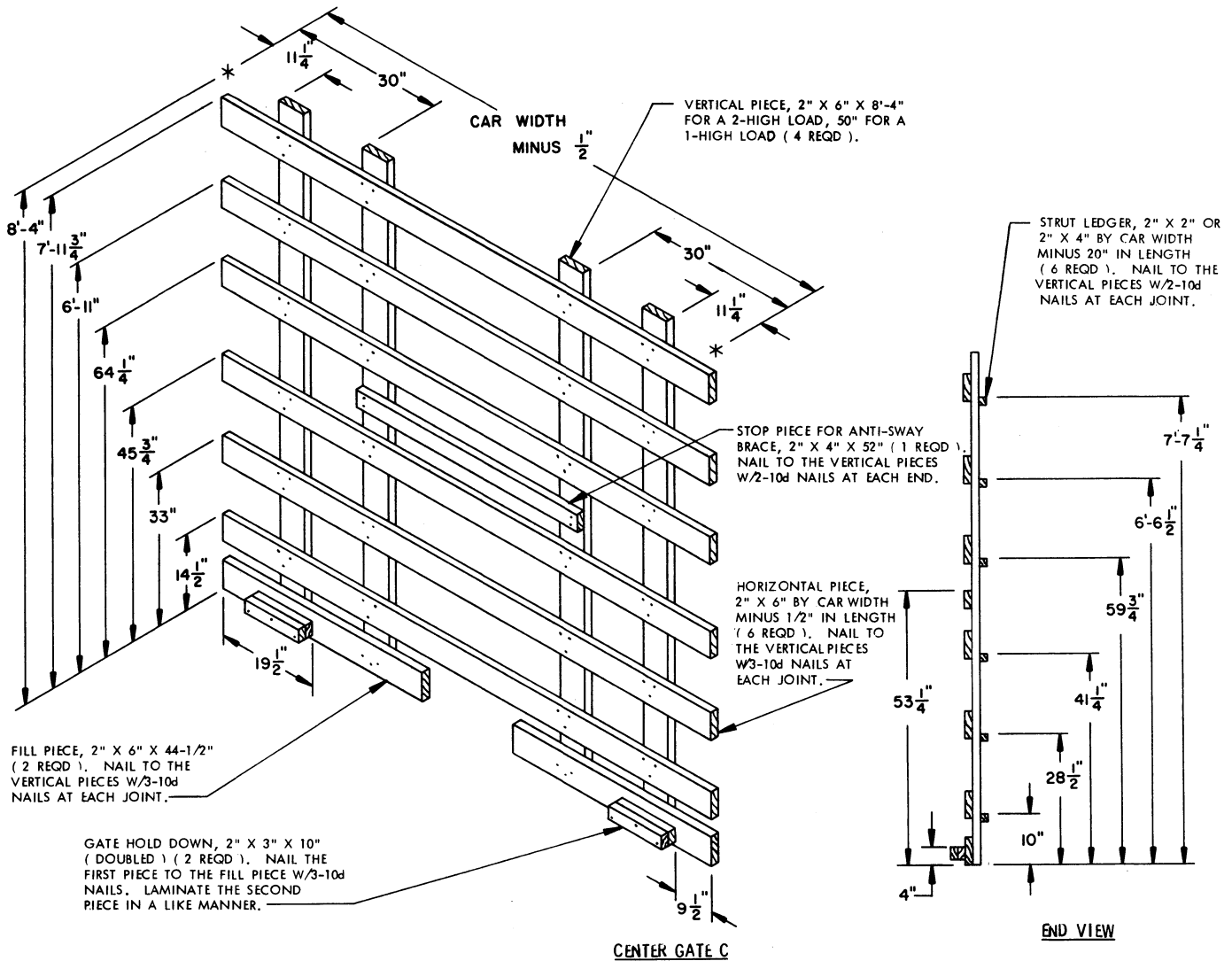


END VIEW

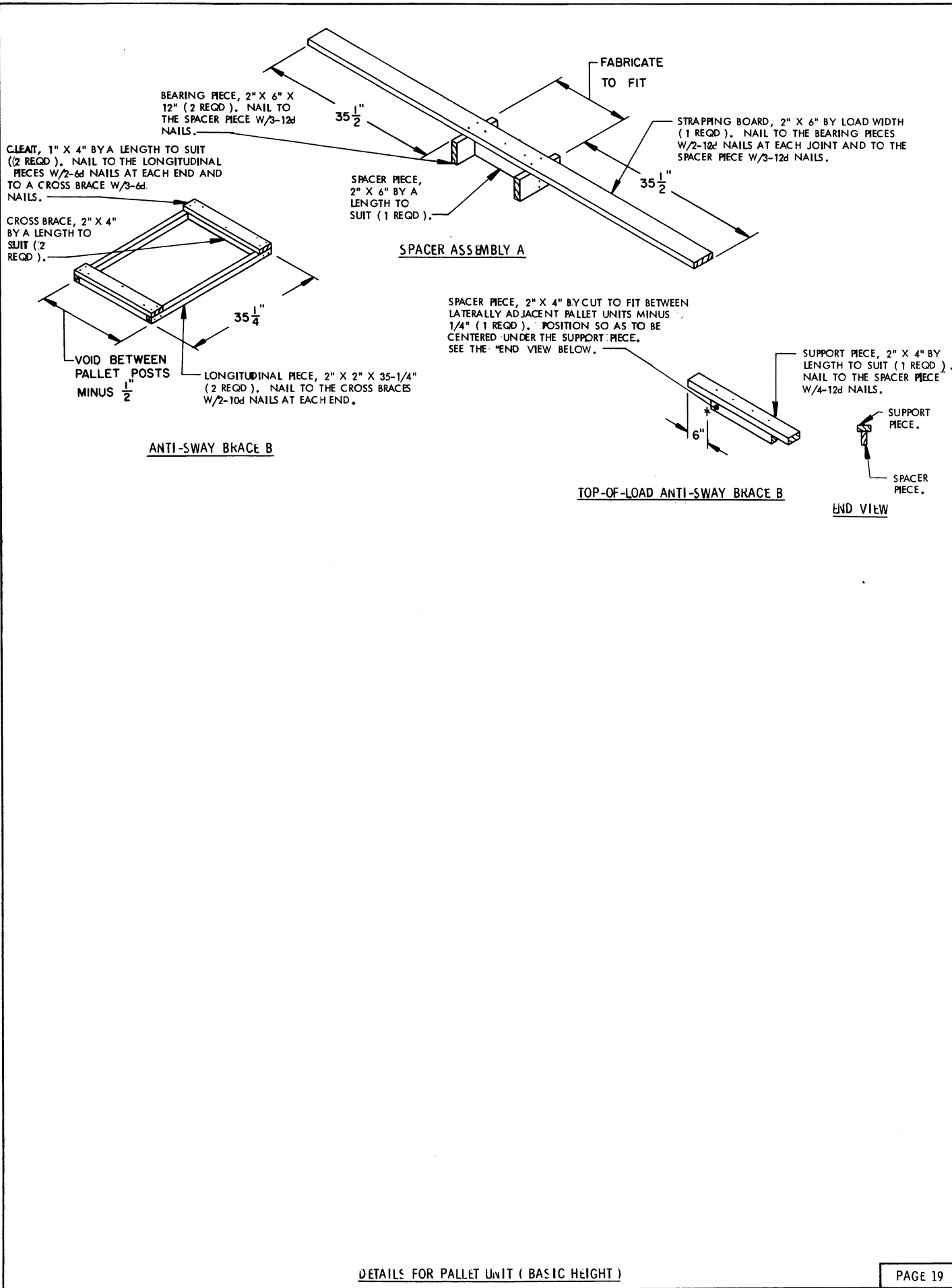


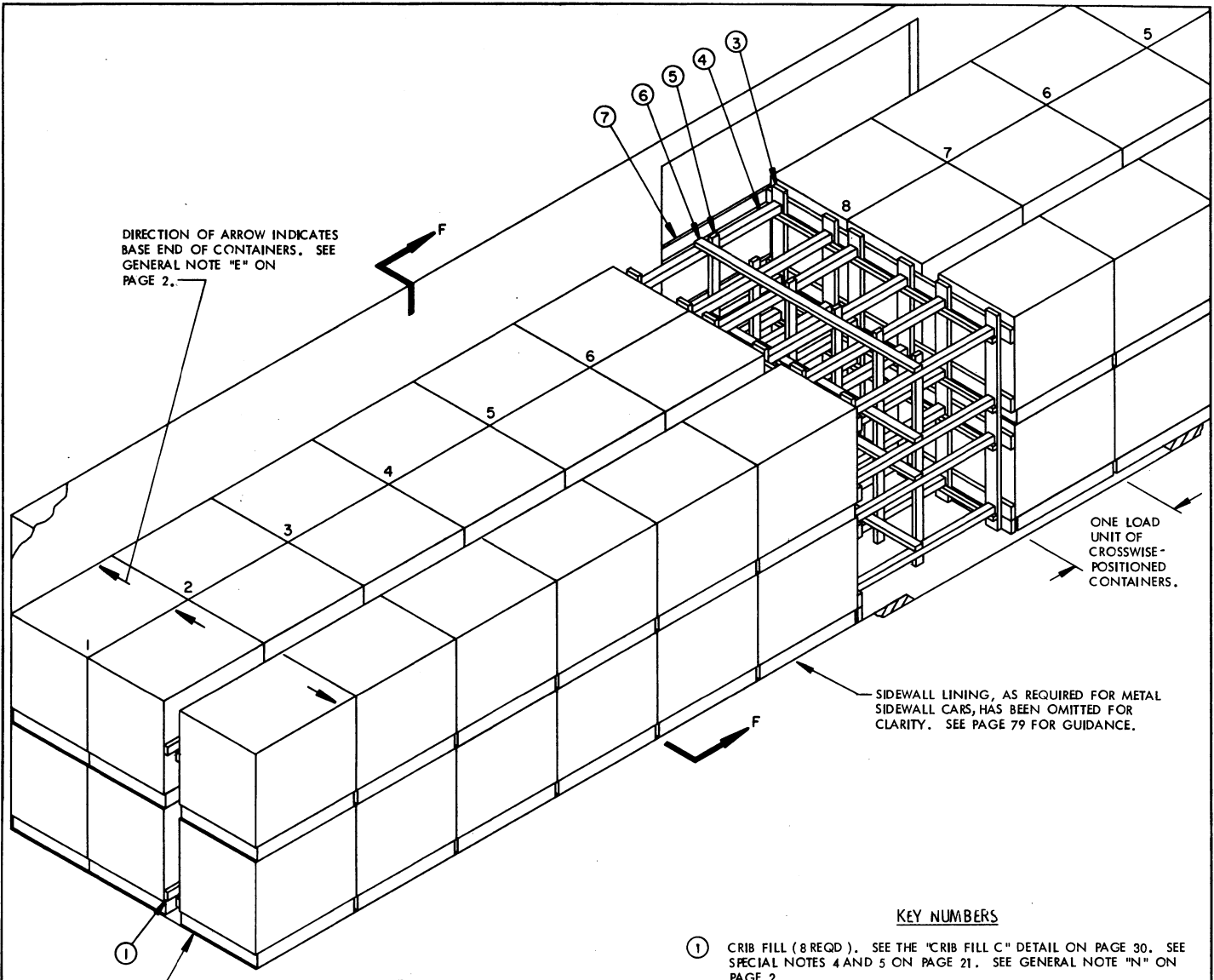
ANTI-SWAY BRACE A

IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED. ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENINGS OF A LOADED PALLET UNIT PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET UNIT.



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





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

ONE LOAD
UNIT OF
CROSSWISE-
POSITIONED
CONTAINERS.

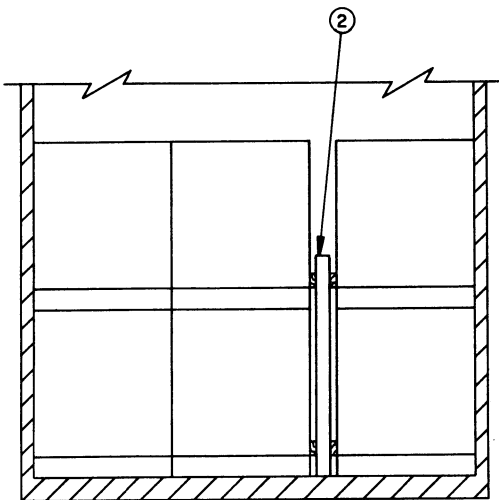
SIDEWALL LINING, AS REQUIRED FOR METAL
SIDEWALL CARS, HAS BEEN OMITTED FOR
CLARITY. SEE PAGE 79 FOR GUIDANCE.

ISOMETRIC VIEW

SEE SPECIAL NOTE
"H" ON PAGE 2.

KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 30. SEE SPECIAL NOTES 4 AND 5 ON PAGE 21. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 30. SEE SPECIAL NOTES 5 AND 6 ON PAGE 21.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 30. SEE SPECIAL NOTES 7, 8, AND 9 ON PAGE 21.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 67") (24 REQD). TOENAIL TO PIECE MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 7'-0" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 7" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 31. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 10 AND 11 ON PAGE 21.



SECTION F-F

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ③ THRU ⑥ ON PAGE 28. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.
11. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦; TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER OR JUST THE TOP TIER OF THE MIDDLE ROW OF UNITS CAN BE OMITTED AS SHOWN BY THE LOAD ON PAGE 22. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE METAL-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 AND SPECIAL NOTE 3 BELOW. NOTE THAT THE SIDEWALL LINING HAS BEEN OMITTED FOR CLARITY.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 20. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 91,512 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR A LADING WEIGHT OF 68,634 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 7' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 7'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. 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. NOTE THAT CRIB FILL IS ONLY REQUIRED WHEN THERE IS THREE AND ONE-HALF INCHES (3-1/2") OR MORE OF LATERAL SPACE BETWEEN PALLET UNIT STACKS, TOTAL THAT IS.
5. THE WIDTH OF THE VERTICAL PIECES, AND/OR THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES OF THE CRIB FILL, PIECES MARKED ① AND ②, MUST BE ADJUSTED AS NECESSARY TO SUIT THE LATERAL VOID FOR THE WIDTH OF THE CAR BEING LOADED. A MAXIMUM OF THREE-QUARTERS INCH (3/4") EXCESS SPACE IS PERMISSIBLE. NOTE THAT IN WOOD-LINED CARS AN EXCESS LATERAL SPACE MAY BE FILLED BY NAILING LUMBER TO THE CAR SIDEWALL AT THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦, IN LIEU OF USING THE CRIB FILL.
6. IF THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 28 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ ON PAGE 20, NAILED FLOORLINE BLOCKING MUST BE USED UNDER EACH CRIB FILL IN THE DOORWAY AREA. NAILED BLOCKING 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 ON EITHER SIDE OF THE CAR. NOTE THAT THREE INCHES (3") MUST BE CUT OFF THE BOTTOM END OF ONE OR BOTH VERTICAL PIECES OF THE CRIB FILL, PIECE MARKED ②, WHERE IT RESTS ON THE NAILED BLOCKING. SEE SPECIAL NOTE 10.
7. 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 A" DETAIL ON PAGE 81 FOR GUIDANCE.
8. 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 IN THE LOAD VIEW ON PAGE 20 AS PIECE MARKED ③, INSTALL TWO (2) "CENTER GATES M" AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "D", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.

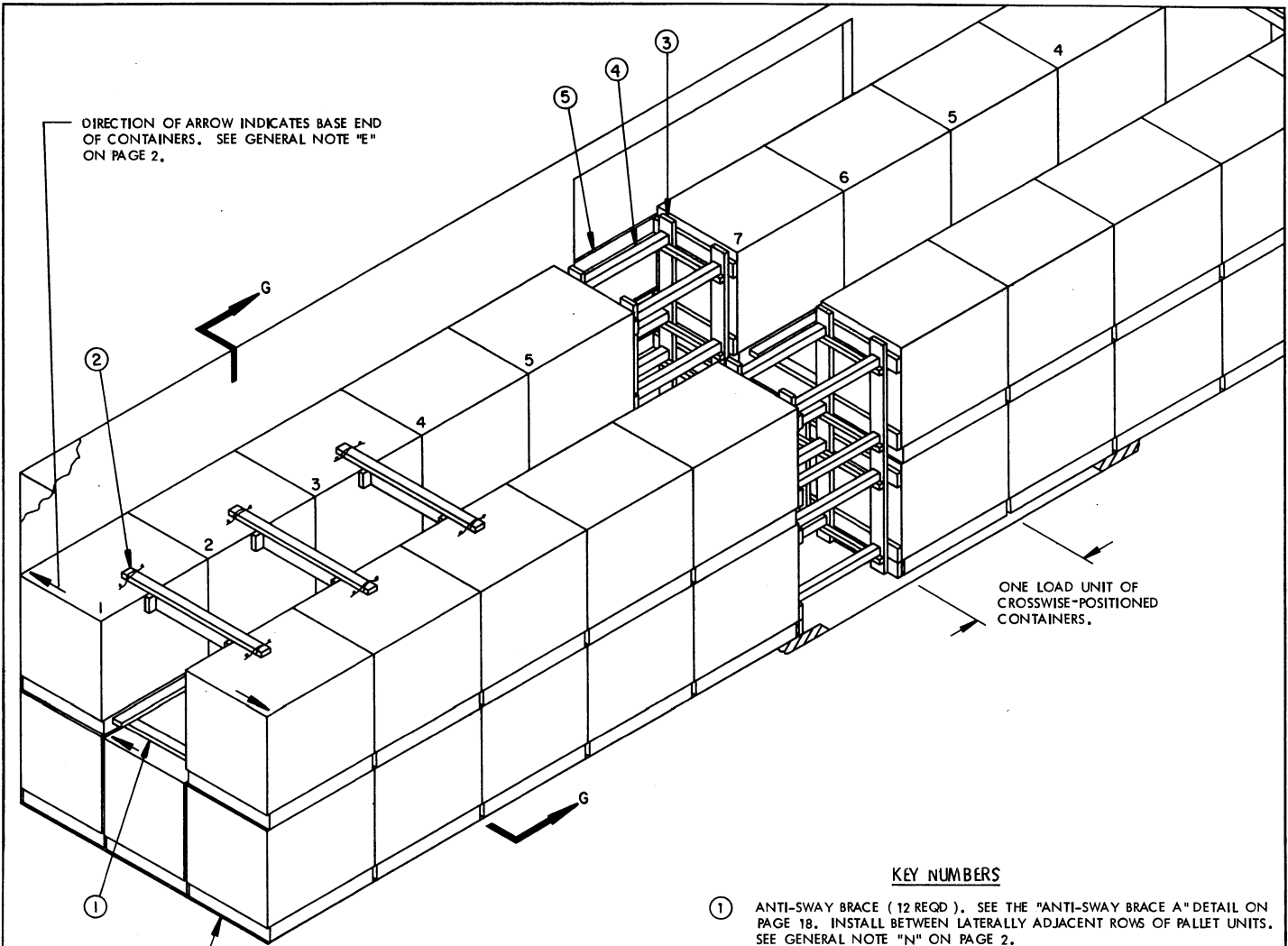
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	74	24
2" X 3"	28	14
2" X 4"	453	302
2" X 6"	174	174
4" X 4"	134	179
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	660	10-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	84-----	106,764 LBS
DUNNAGE-----	-----	1,480 LBS
TOTAL WEIGHT-----		108,244 LBS

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



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

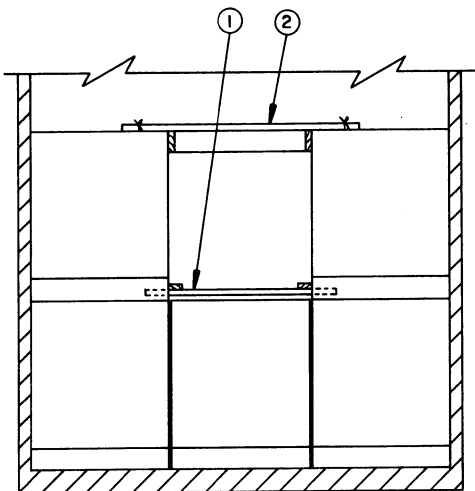
SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 23.

ISOMETRIC VIEW

ONE LOAD UNIT OF CROSSWISE-POSITIONED CONTAINERS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (12 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 23.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 31. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 23.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (20 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 31. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 AND 10 ON PAGE 23.



SECTION G-G

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

- 10. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑤, TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.
- 11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FIVE (5) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER CAN ALSO BE OMITTED. OR, A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
- 12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
- 13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

- 1. A 50'-6" LONG BY 9'-0" 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 AND SPECIAL NOTE 3 BELOW.
- 2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 22. A MAXIMUM OF FORTY-FIVE (45) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 57,195 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SEVENTY (70) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 88,970 POUNDS CAN BE LOADED.
- 3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
- 4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 22, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. 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 60' LONG CAR.
- 5. CRIB FILL ASSEMBLIES, AS DETAILED ON PAGE 30 AND SHOWN WITHIN THE LOAD ON PAGE 20 BY PIECES MARKED ① AND ②, MUST BE USED IN THE BOTTOM LAYER IF THE TOTAL ACCUMMULATED SPACE ACROSS THE CAR IS THREE AND ONE-HALF INCHES (3-1/2") OR MORE. SEE SPECIAL NOTES 4 AND 5 ON PAGE 21 FOR GUIDANCE.
- 6. CENTER GATE "E" 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 B" DETAIL ON PAGE 81 FOR GUIDANCE.
- 7. 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 E", SHOWN IN THE LOAD VIEW ON PAGE 22 AS PIECE MARKED ③, INSTALL TWO (2) "CENTER GATES M", MODIFIED AS NECESSARY, AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
- 8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO THE CENTER GATE "E", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
- 9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ⑥ THRU ⑧ ON PAGE 28.

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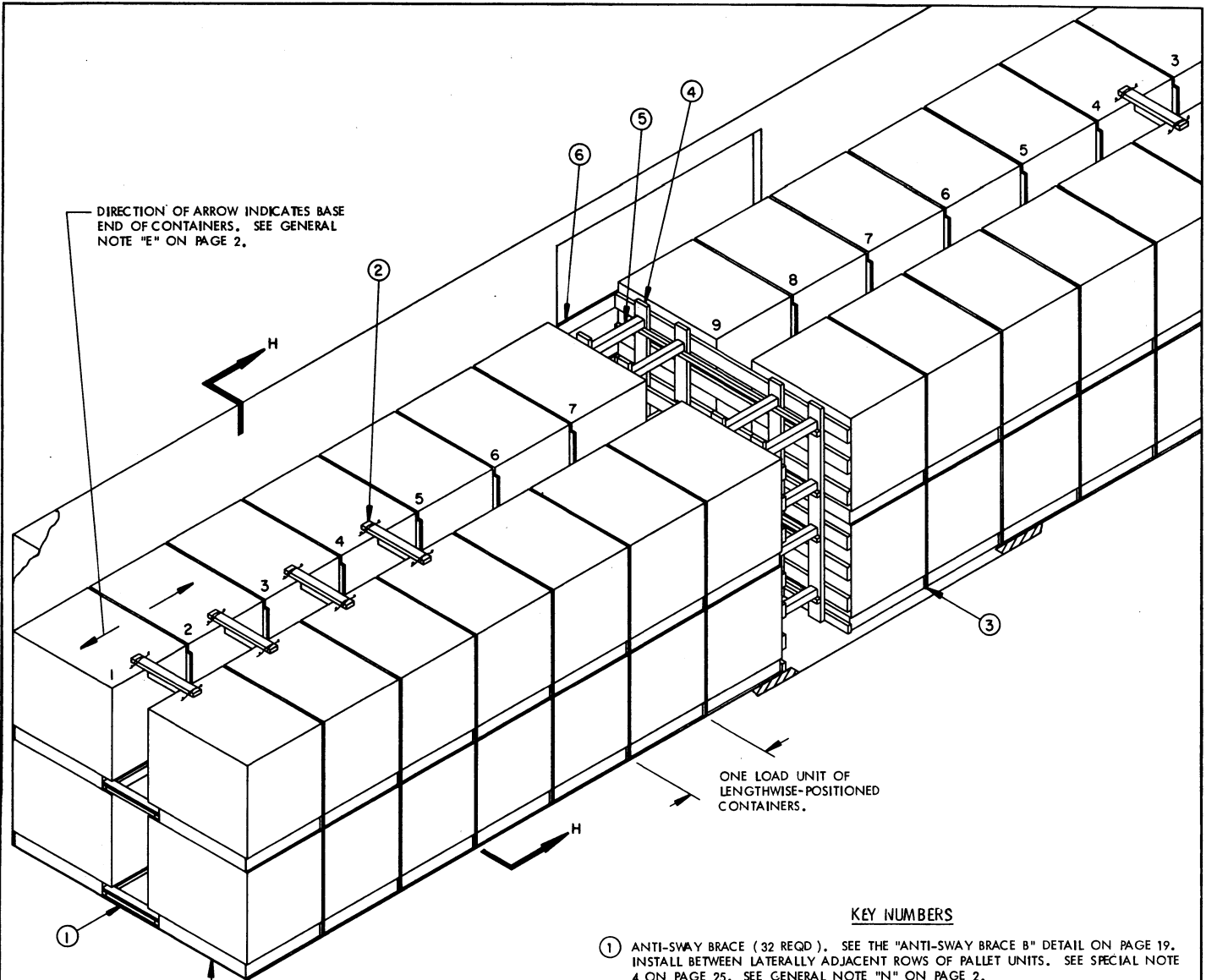
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	56	19
2" X 3"	28	14
2" X 4"	208	139
2" X 6"	158	158
4" X 4"	65	87
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	484	7-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	80	1-3/4
WIRE, NO. 14 GAGE -----60' REQD-----1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	76,260 LBS
DUNNAGE		926 LBS

TOTAL WEIGHT-----77,186 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR

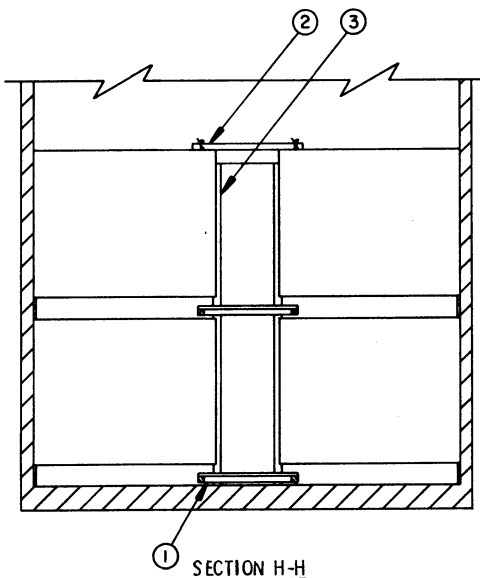


SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 25. SEE GENERAL NOTE "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 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 5 ON PAGE 25.
- ③ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 7'-0" (28 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNIT STACKS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ① W/2-6d NAILS. SEE SPECIAL NOTES 6 AND 7 ON PAGE 25.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 32. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 25.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 27") (16 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑥ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 31. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 25.



SECTION H-H

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
 64-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(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 BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (6) IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED (4) THRU (7) ON PAGE 14. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 75 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 24. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 81,008 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SEVENTY-SIX (76) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 95,596 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8'-0" OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE EIGHT (8) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. IF THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (6), 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 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 ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 11 AT LEFT.
5. 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 STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD FOR 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED EACH END OF A LOAD FOR 60' CARS.
6. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PIECES OF 3/8" PLYWOOD, SHOWN AS PIECE MARKED (3), AGAINST THE ALREADY-LOADED UNITS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT UPPER ANTI-SWAY BRACE, PIECES MARKED (1), TO PREVENT LATERAL MOVEMENT. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS. SEE THE "ALTERNATIVE SEPARATOR GATE A" DETAIL ON PAGE 80 IF IT IS DESIRED TO USE A 1-PIECE PLYWOOD GATE. NOTE THAT IF NAILED FLOOR LINE BLOCKING AND STEEL STRAPPING ARE USED FOR DOORWAY PROTECTION IN LIEU OF THE WOODEN DOOR GATE TYPE SHOWN AS PIECE MARKED (6) IN THE LOAD ON PAGE 24, IT WILL BE NECESSARY TO CUT OUT THE BOTTOM CORNER OF THE PLYWOOD SEPARATOR GATE, PIECE MARKED (3), WHICH IS IN THE DOORWAY AREA. A 3-1/2" HIGH BY 2-1/2" WIDE CUTOUT IN THE CENTER-OF-CAR EDGE OF THE BOTTOM IS REQUIRED IN ORDER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING.
7. IF PLYWOOD FOR THE SEPARATOR GATES IS NOT AVAILABLE, OR IF DESIRED, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE. NOTE THAT ONLY FIFTEEN (15) LOAD UNITS CAN BE PLACED IN A 50'-6" LONG CAR IF THE DIMENSIONAL LUMBER SEPARATOR GATES ARE USED IN LIEU OF THE PLYWOOD SEPARATOR GATES.
8. CENTER GATE "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 C" DETAIL ON PAGE 81 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 F", SHOWN IN THE LOAD VIEW ON PAGE 24 AS PIECE MARKED (4), INSTALL TWO (2) "CENTER GATES O" AS DETAILED ON PAGE 83. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
10. DOOR SPANNER TYPE GATE HOLD-DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO THE CENTER GATE "F", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	125	42
1" X 6"	64	32
2" X 2"	249	83
2" X 3"	35	18
2" X 4"	157	105
2" X 6"	183	183
4" X 4"	36	48
NAILS	NO. REQD	POUNDS
6d (2")	496	3
10d (3")	552	8-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
PLYWOOD, 3/8"	784 SQ FT REQD	809 LBS
WIRE, NO. 14 GAGE	60' REQD	1 LB

LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	64	81,344 LBS
DUNNAGE		1,846 LBS
TOTAL WEIGHT		83,190 LBS

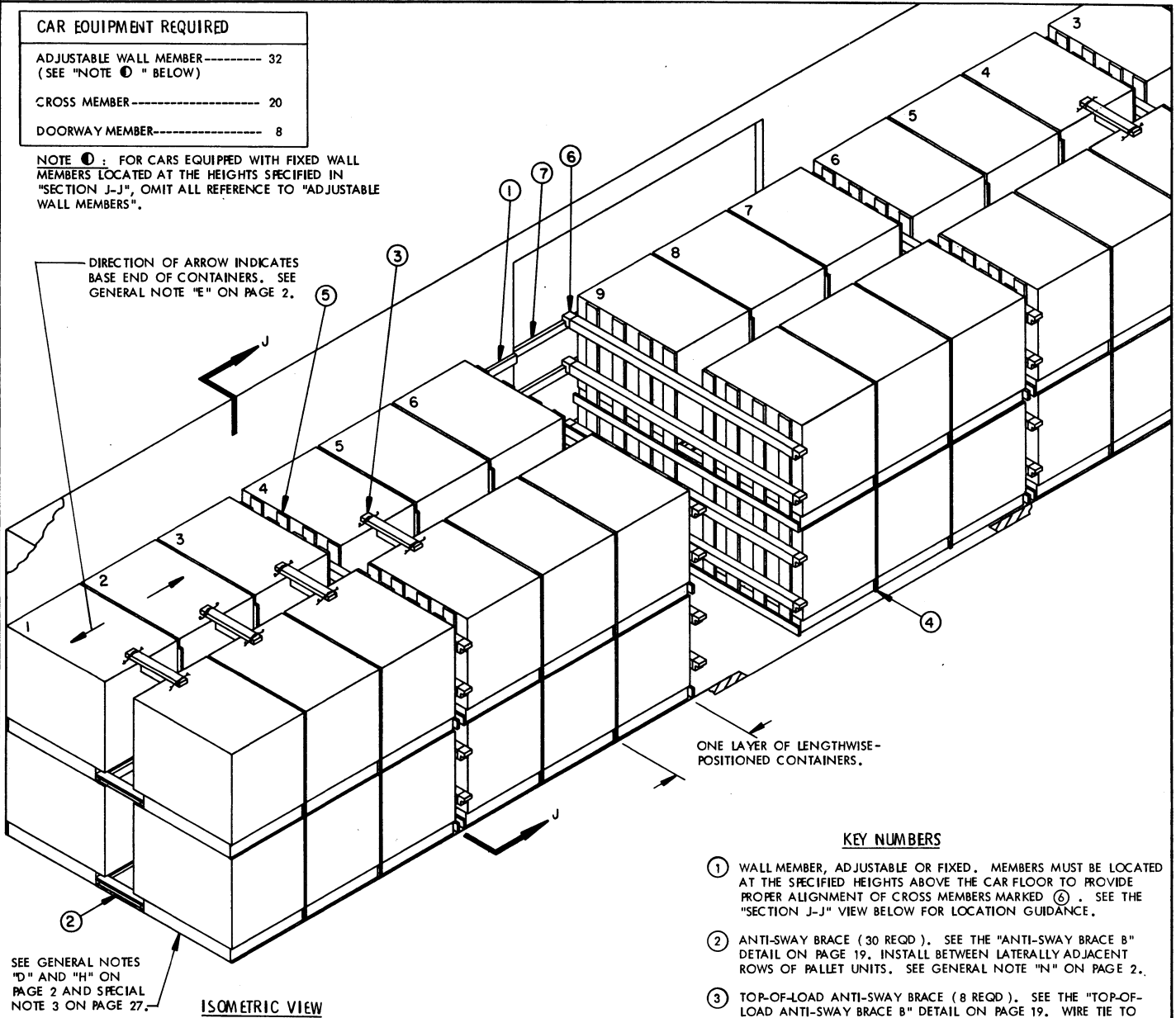
PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
64-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER-----	32
(SEE "NOTE ①" BELOW)	
CROSS MEMBER-----	20
DOORWAY MEMBER-----	8

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".

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

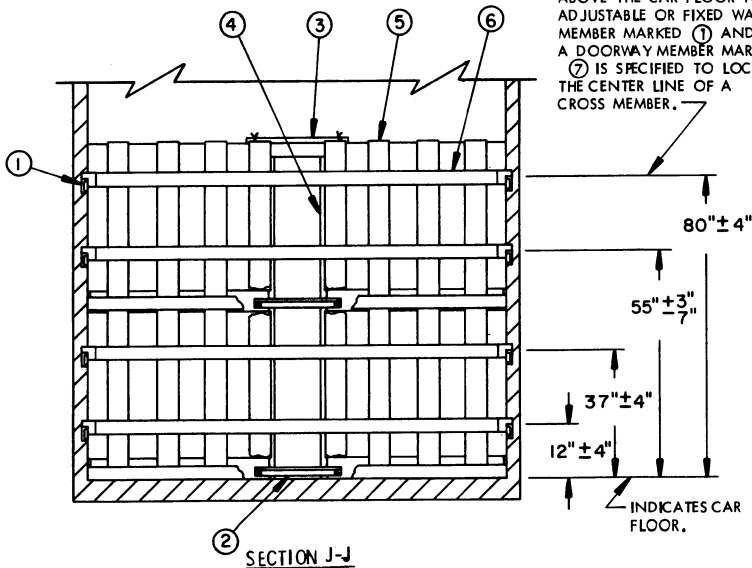


ONE LAYER OF LENGTHWISE-POSITIONED CONTAINERS.

SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 27.

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.



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 ⑥. SEE THE "SECTION J-J" VIEW BELOW FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (30 REQD.). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD.). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 27.
- ④ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 7'-0" (20 REQD.). POSITION AGAINST THE ALREADY LOADED PALLET UNIT STACKS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ②, W/2-6d NAILS. SEE SPECIAL NOTES 5 AND 6 ON PAGE 27.
- ⑤ SEPARATOR GATE (8 REQD.). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 33. POSITION SO THE VERTICAL PIECES WILL BE AGAINST THE PALLET UNIT STACK. NOTE THAT THE SEPARATOR GATES USED IN THE DOORWAY AREA MUST BE NAILED TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ②, W/4-6d NAILS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 27.
- ⑥ CROSS MEMBER (20 REQD.). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑦ DOORWAY MEMBER (8 REQD.). SEE THE "SECTION J-J" VIEW AT LEFT FOR LOCATION GUIDANCE.

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)

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

SPECIAL NOTES:

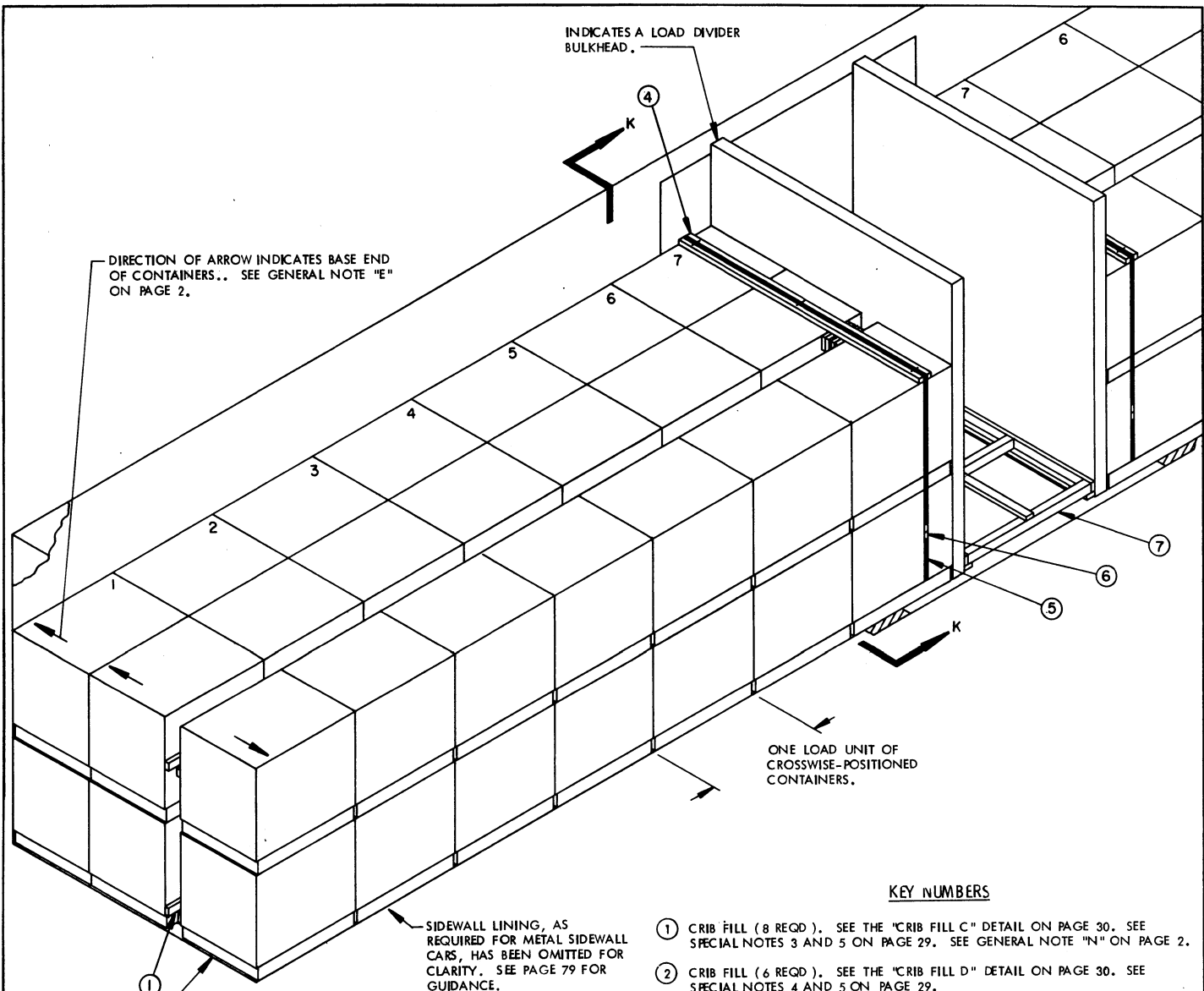
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 26. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 61,008 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED ENDWALLS 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 "SQUARE END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ⑤, 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 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PLYWOOD PIECES SHOWN AS PIECE MARKED ④ AGAINST THE UNIT STACKS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT UPPER ANTI-SWAY BRACE, PIECE MARKED ②, SO AS TO PREVENT LATERAL MOVEMENT OF THE PLYWOOD. REPEAT THIS PROCEDURE AS APPLICABLE FOR REMAINING PALLET UNIT STACKS. NOTE THAT IF DESIRED, PLYWOOD SEPARATOR GATES MAY ALSO BE USED IN LIEU OF THE DIMENSIONAL LUMBER SEPARATOR GATES, PIECE MARKED ⑤. SEE THE "ALTERNATIVE SEPARATOR GATE A" DETAIL ON PAGE 80 IF IT IS DESIRED TO USE A 1-PIECE PLYWOOD GATE.
6. IF PLYWOOD IS NOT AVAILABLE FOR THE SEPARATOR GATES, PIECE MARKED ④, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE.
7. THE DIMENSIONAL LUMBER SEPARATOR GATES, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 26, WILL BE POSITIONED WITH THE 1" X 6" VERTICAL PIECES AGAINST THE PALLET UNITS AND WITH THE HORIZONTAL PIECE (5) LOCATED BETWEEN THE CROSS MEMBERS. THE SEPARATOR GATE WHICH IS IN THE DOORWAY MUST BE NAILED TO THE CROSS PIECE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ②, W/2-10d NAILS TO PREVENT THE GATE FROM SHIFTING INTO THE DOORWAY.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLE 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 48 AND 55 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	260	87
1" X 6"	448	224
2" X 2"	177	59
2" X 4"	142	95
NAILS	NO. REQD	POUNDS
6d (2")	804	4-3/4
10d (3")	240	3-3/4
12d (3-1/4")	32	3/4
PLYWOOD, 3/8"-----560 SQ FT REQD----- 578 LBS		
WIRE, NO. 14 GAGE----- 60' REQD----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	76,260 LBS
DUNNAGE		1,519 LBS
TOTAL WEIGHT		77,779 LBS

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
 60-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES

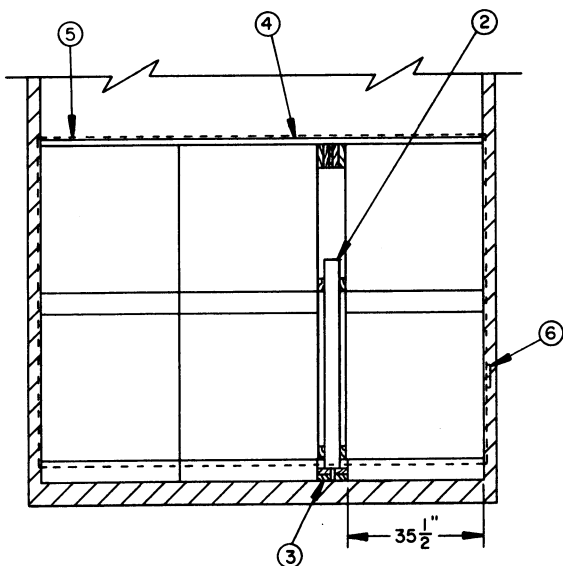


ISOMETRIC VIEW

SEE GENERAL NOTE "H" ON PAGE 2.

KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 30. SEE SPECIAL NOTES 3 AND 5 ON PAGE 29. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 30. SEE SPECIAL NOTES 4 AND 5 ON PAGE 29.
- ③ SIDE BLOCKING, 2" X 4" X 45-1/2" (DOUBLED) (4 REQD). POSITION AGAINST THE PALLETS IN THE DOORWAY AREA AS SHOWN IN THE "SECTION K-K" VIEW BELOW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16 NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT THE LOADING SIDE PIECES MUST BE PRE-POSITIONED. SEE SPECIAL NOTE 6 ON PAGE 29.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 33.
- ⑤ DOORWAY PROTECTION STRAP, 1-1/4" X .031" X 35'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE STRAP TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 29.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑦ STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 87. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 8 ON PAGE 29.



SECTION K-K

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE-LAYER)
 84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

(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 SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) 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 52 THRU 61 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE IF PALLET UNITS ARE LOADED AS SHOWN, OR TO PAGE 75 IF PALLET UNITS ARE TURNED OPPOSITE TO THOSE SHOWN.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE METAL-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3. NOTE THAT THE SIDEWALL LINING HAS BEEN OMITTED FOR CLARITY.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 28. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 91,512 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR, OR A MAXIMUM OF FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,634 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN USING THE LOADING PROCEDURES AS SHOWN ON PAGE 24, A MAXIMUM OF SEVENTY-SIX (76) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 96,596 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY (60) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 76,260 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR A LADING WEIGHT OF APPROXIMATELY 61,008 POUNDS.
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 THE LOAD REGARDLESS OF THE CAR LENGTH. NOTE THAT CRIB FILL IS ONLY REQUIRED WHEN THERE IS A TOTAL OF THREE AND ONE-HALF INCHES (3-1/2") OR MORE OF LATERAL SPACE ACROSS THE CAR.
4. THE "LOW" CRIB, SHOWN AS PIECE MARKED ②, MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF THE VERTICAL PIECES IF THE CRIB FILL IS IN THE DOORWAY AREA, SO THE CRIB FILL WILL REST EVENLY ON THE SIDE BLOCKING, PIECE MARKED ③.
5. THE WIDTH OF THE VERTICAL PIECES, AND/OR THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES OF THE CRIB FILL, PIECES MARKED ① AND ②, MUST BE ADJUSTED AS NECESSARY TO SUIT THE LATERAL VOID FOR THE WIDTH OF THE CAR BEING LOADED. A MAXIMUM OF THREE-QUARTER INCH (3/4") EXCESS SPACE IS PERMISSIBLE. NOTE THAT IN WOOD-LINED CARS AN EXCESS LATERAL SPACE MAY BE FILLED BY NAILING LUMBER TO THE CAR SIDEWALL AT THE HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION, PIECE MARKED ⑦ ON PAGE 20, IN LIEU OF USING THE CRIB FILL.
6. THE SIDE BLOCKING, SHOWN AS PIECE MARKED ③, WILL BE OF NOMINAL SIZE LUMBER IF THERE IS ADEQUATE SPACE BETWEEN THE PALLETS. IF THERE IS NOT ADEQUATE SPACE BETWEEN THE PALLETS THE SIDE BLOCKING PIECES MUST BE RIPPED TO FIT.
7. DOORWAY PROTECTION PROCEDURES FOR PLUG TYPE DOORS ARE SHOWN ON PAGE 28 IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ ON PAGE 20. NAILED FLOORLINE BLOCKING IS USED IN ADDITION TO THE CRIB FILL ASSEMBLIES IN THE DOORWAY AREA. NAILED BLOCKING, SPACER ASSEMBLIES, DOORWAY PROTECTION STRAPS, AND SEALS, PIECES MARKED ③ THRU ⑥ IN THE LOAD ON PAGE 28, ARE 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 OR WIDTH ON EITHER SIDE OF THE CAR. TWO (2) SPACER ASSEMBLIES AND DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) SPACER ASSEMBLY AND DOORWAY PROTECTION STRAP ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM SIX INCHES (6") TO ONE-HALF THE PALLET STACK AND/OR LOAD UNIT LENGTH OR WIDTH ON BOTH SIDES OF THE CAR. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.
8. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 28, IS REQUIRED WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

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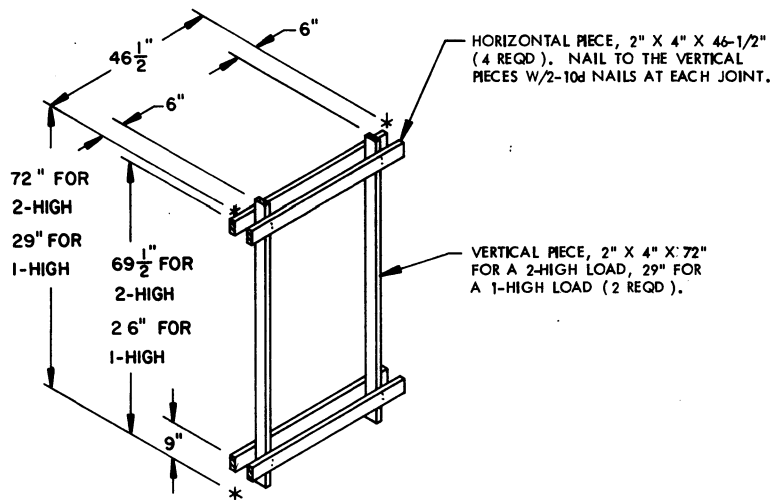
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	2	1
1" X 8"	17	12
2" X 4"	446	298
2" X 6"	27	27
4" X 4"	20	27
NAILS	NO. REQD	POUNDS
6d (2")	24	1/4
10d (3")	278	4-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	40	1
STEEL STRAPPING, 1-1/4" X .031" OR .035"----- 70' REQD----- 10 LBS		
SEAL FOR 1-1/4" STRAPPING----- 4 REQD----- NIL		
STAPLES FOR 1-1/4" STRAPPING----- 6 REQD----- NIL		

LOAD AS SHOWN

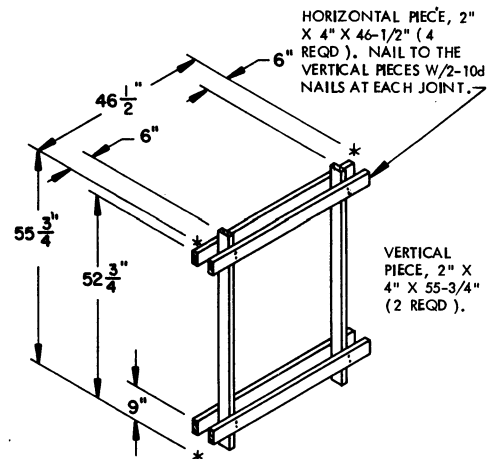
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	84	106,764 LBS
DUNNAGE-----		747 LBS

TOTAL WEIGHT-----107, 511 LBS

PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

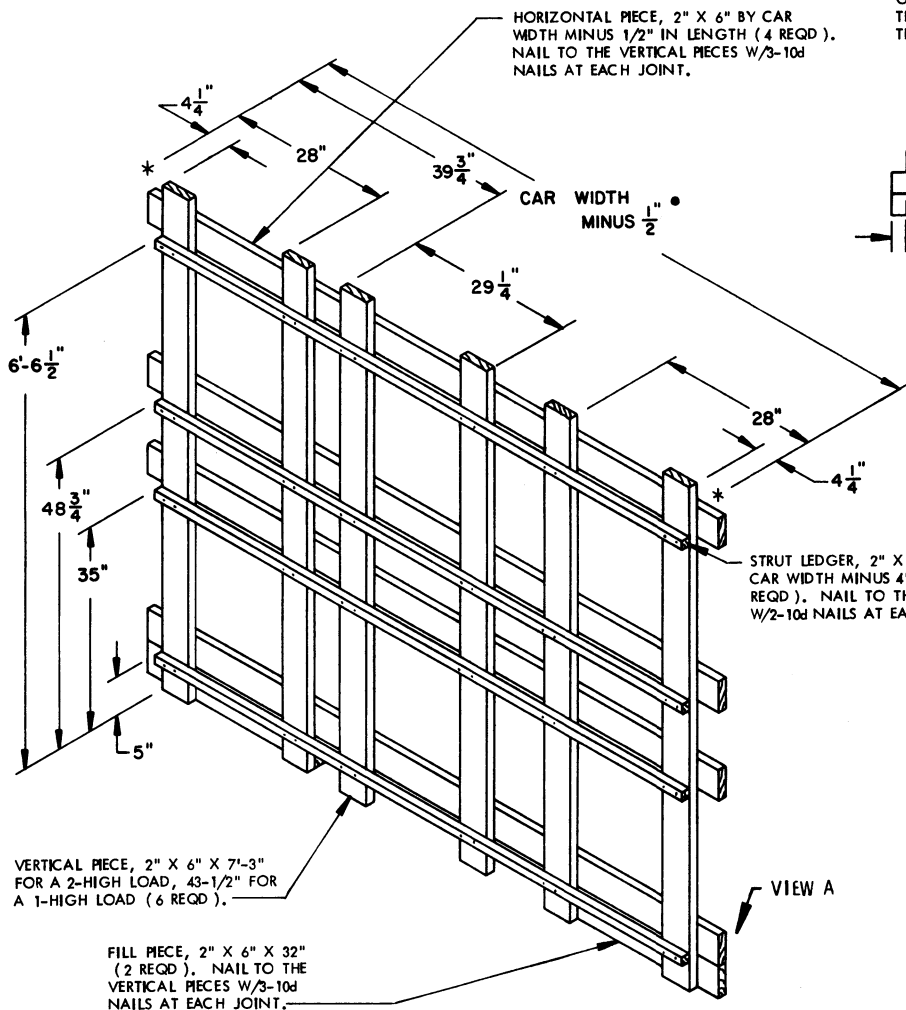


CRIB FILL C



CRIB FILL D

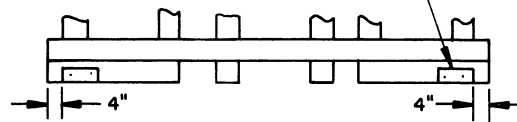
CRIB FILL "D" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "C" THROUGHOUT THE LENGTH OF THE LOAD.



CENTER GATE D

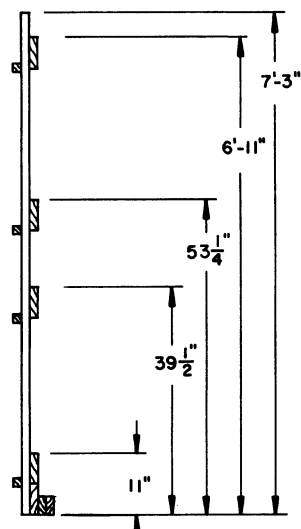
THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 20. NOTE THAT LEFT HAND AND RIGHT HAND GATES ARE REQUIRED.

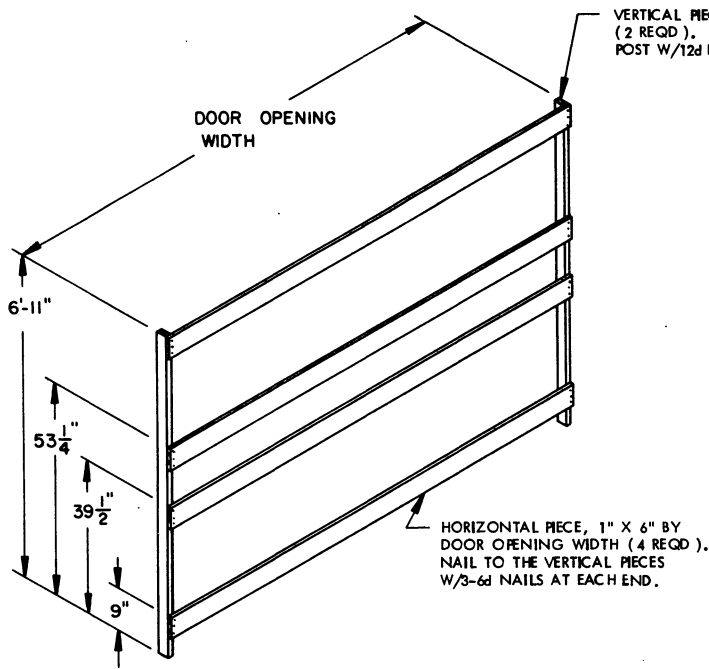
GATE HOLD DOWN, 2" X 4" X 9" (DOUBLED) (2 REQD.). NAIL THE FIRST PIECE TO A FILL PIECE W/2-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.



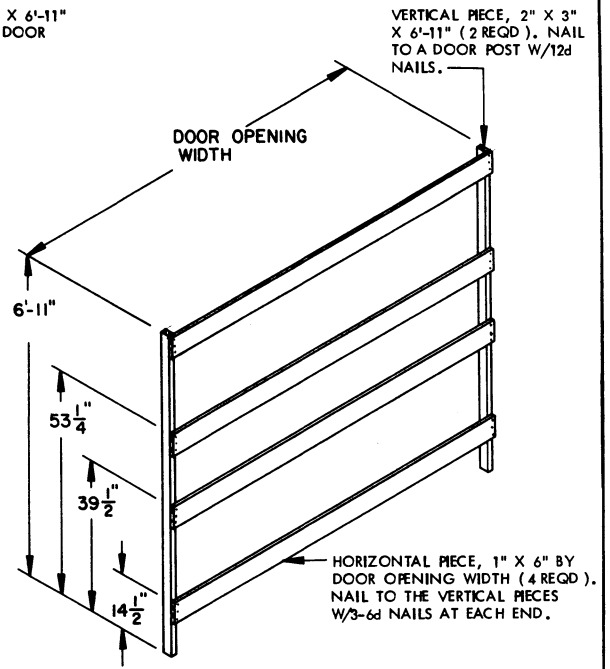
VIEW A

● THIS DIMENSION WILL BE "LOAD WIDTH" WHEN LOADING IN A METAL-LINED CAR WHERE SIDEWALL LINING IS REQUIRED.

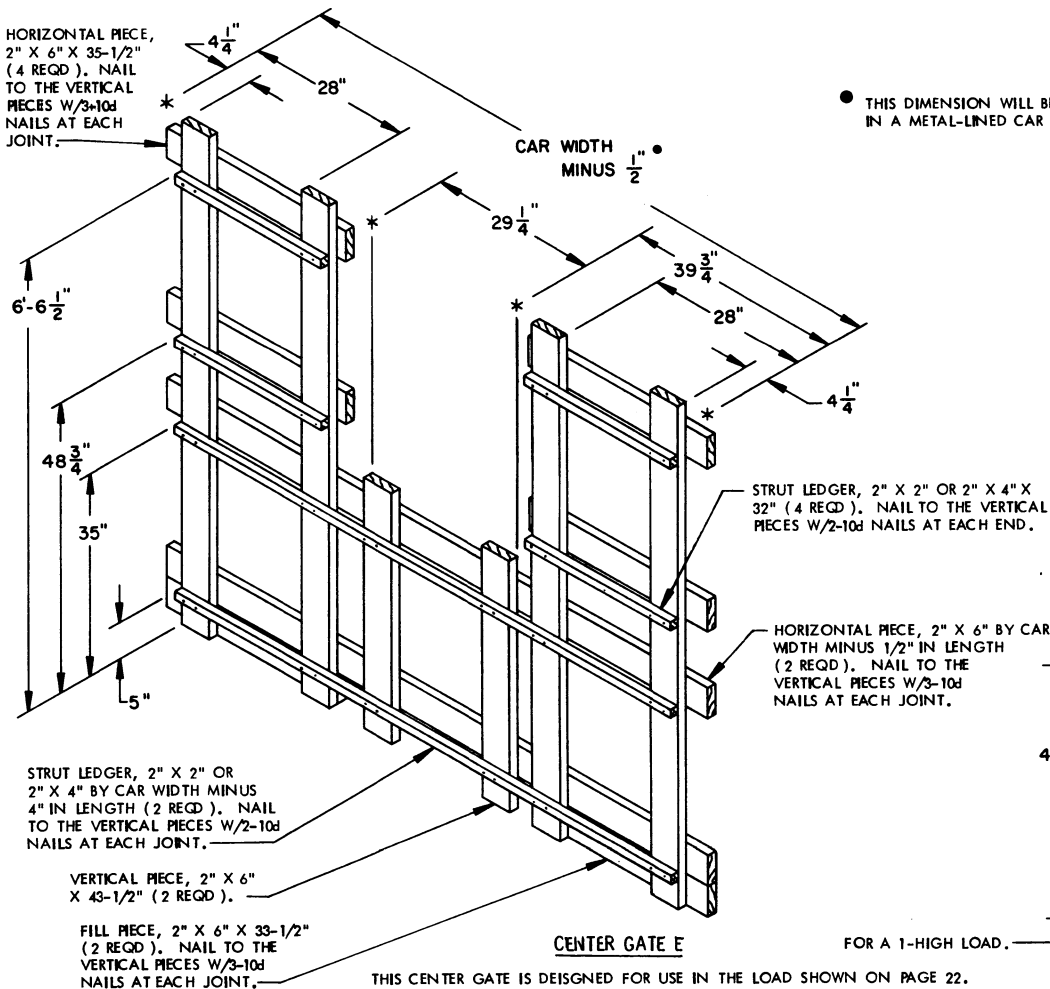




DOORWAY PROTECTION C
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 24.

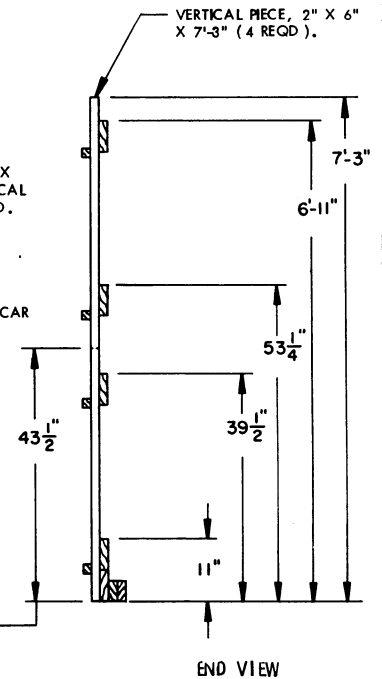


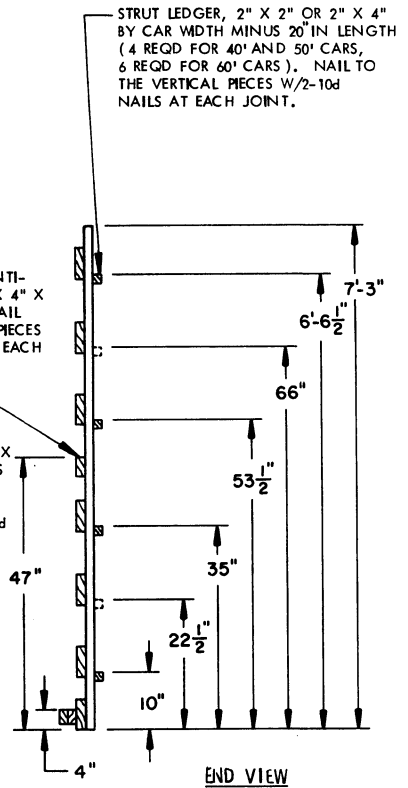
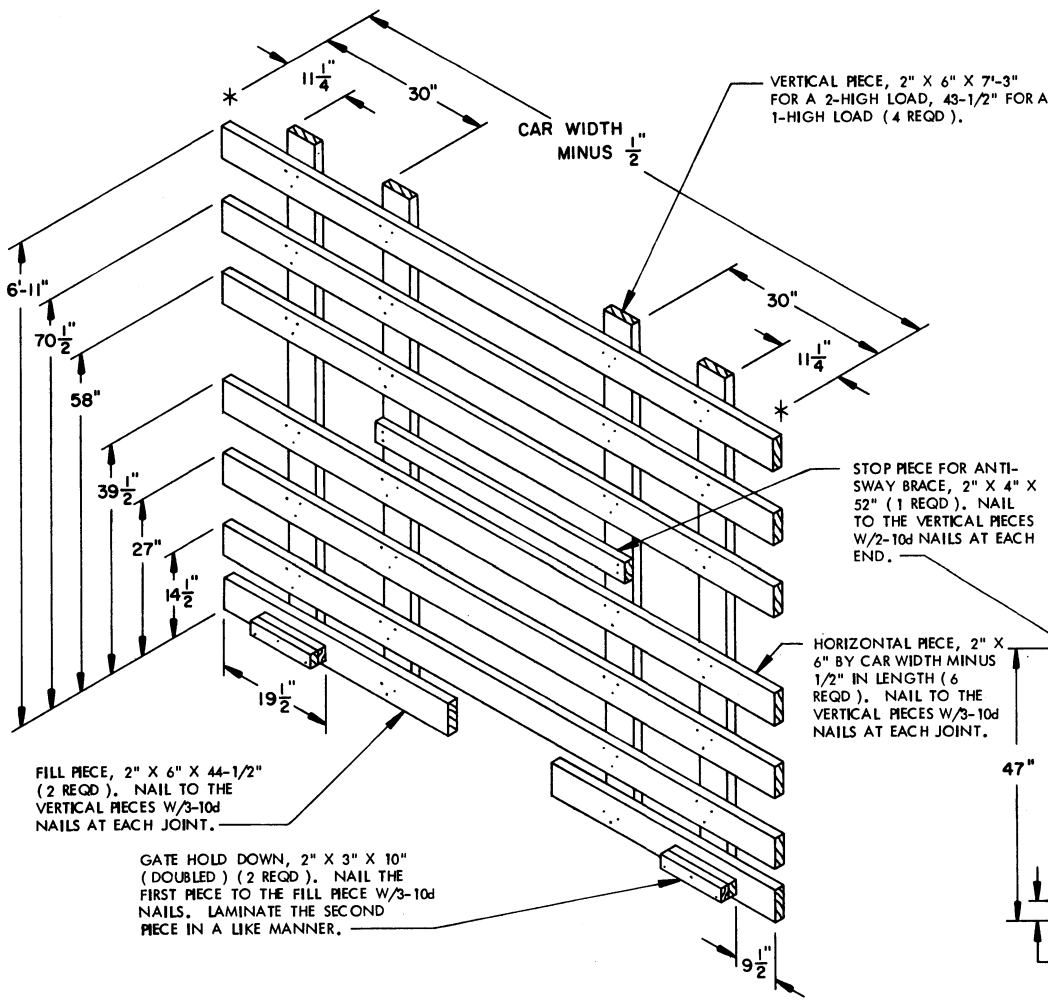
DOORWAY PROTECTION D
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGES 20 AND 22. SEE SPECIAL NOTE 11 ON PAGE 21 AND/OR SPECIAL NOTE 10 ON PAGE 23.



CENTER GATE E
THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 22. NOTE THAT LEFT HAND AND RIGHT HAND GATES ARE REQUIRED.

● THIS DIMENSION WILL BE "LOAD WIDTH" WHEN LOADING IN A METAL-LINED CAR WHERE SIDEWALL LINING IS REQUIRED.

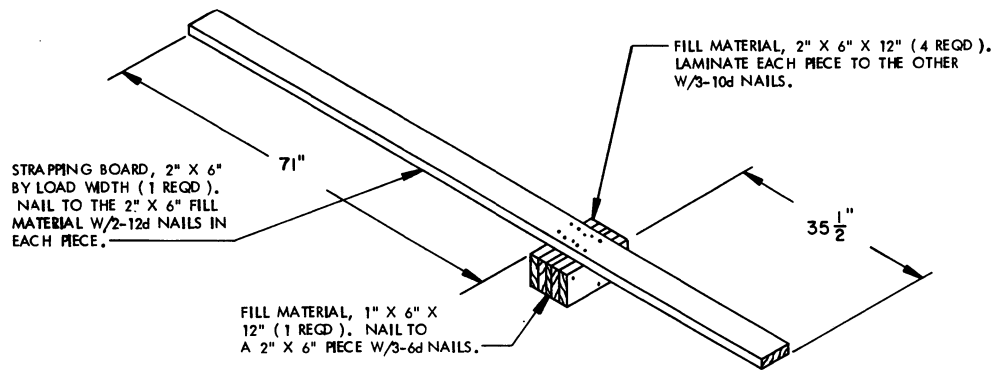




NOTE THAT THE PHANTOM LINED STRUT LEDGERS AT THE 22-1/2" AND 66" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60' LONG CAR.

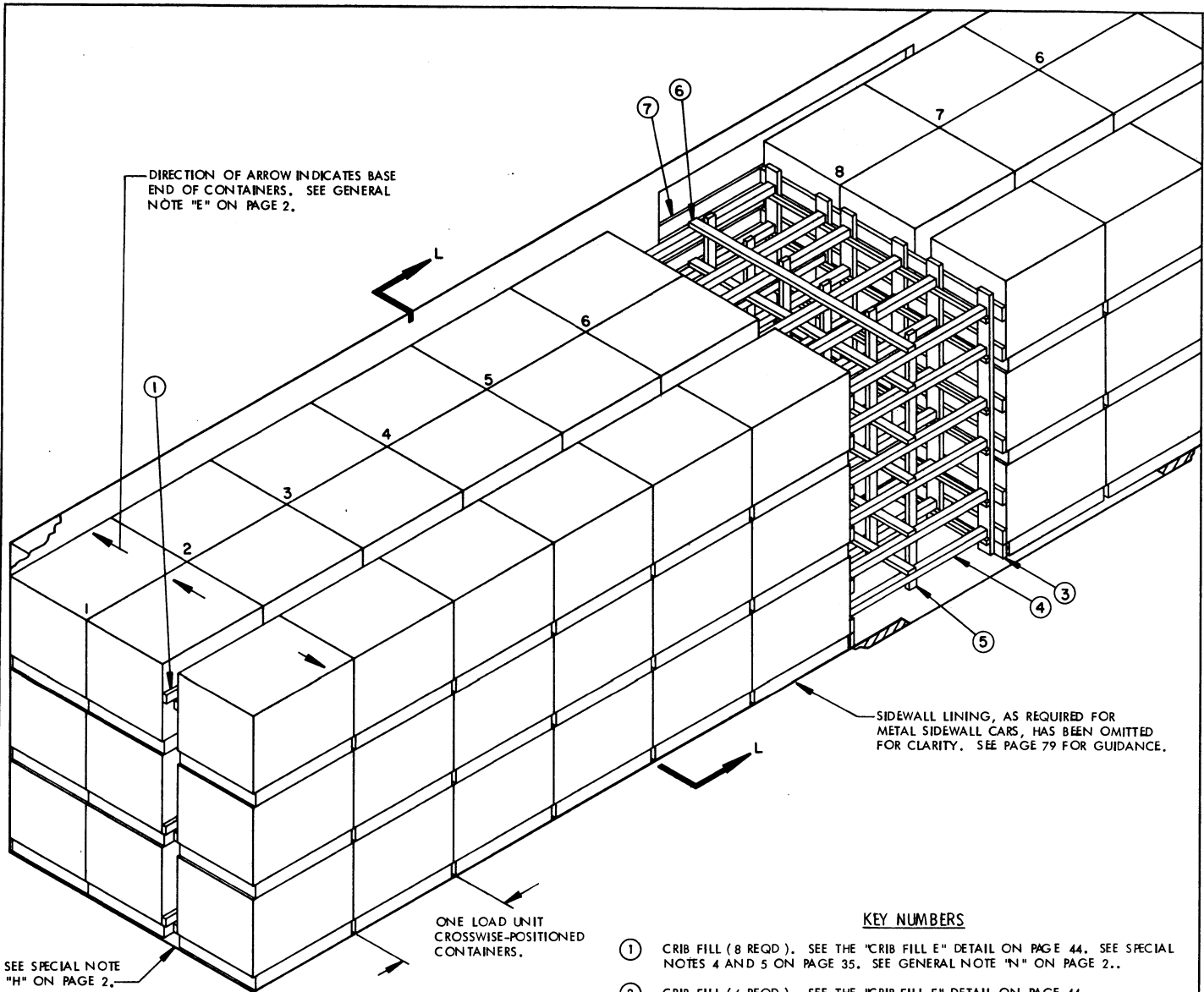
CENTER GATE F

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



SPACER ASSEMBLY B

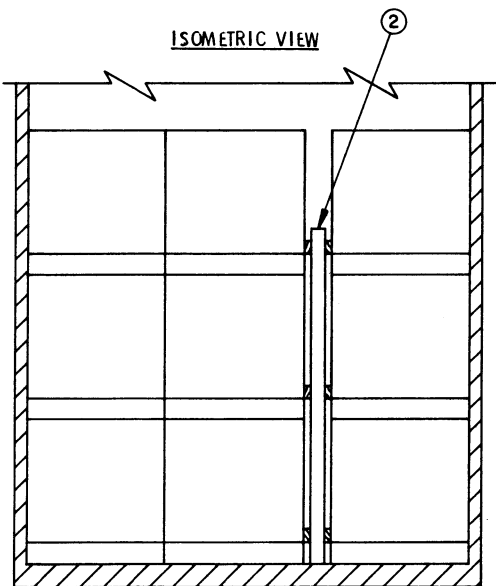
THE AMOUNT OF THE FILL MATERIAL SHOULD BE ADJUSTED SO IT IS APPROXIMATELY 1/2" (MAX) LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.



KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 44. SEE SPECIAL NOTES 4 AND 5 ON PAGE 35. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 44.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 44. SEE SPECIAL NOTES 7, 8, AND 9 ON PAGE 35.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 67") (36 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR PAGE 3.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" X 8'-7" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 7" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 46. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 10 AND 11 ON PAGE 35.

ISOMETRIC VIEW



SECTION L-L

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
 126-UNIT LOAD IN A 60'-8" LC'G BY 9'-6" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

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 NINE (9) PALLET UNITS OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER OR JUST THE TOP TIER OF THE MIDDLE ROW OF UNITS CAN BE OMITTED, AS SHOWN BY THE LOAD ON PAGE 36. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE METAL-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 AND SPECIAL NOTE 3 BELOW. NOTE THAT THE SIDEWALL LINING HAS BEEN OMITTED FOR CLARITY.
2. THE BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 34. A CAR HAVING A LOAD LIMIT OF AT LEAST 138,400 POUNDS IS REQUIRED FOR SHIPMENT OF THE DEPICTED 126-UNIT LOAD WHEN USING AN OFFSET LOADING PATTERN. A MAXIMUM OF ONE-HUNDRED EIGHT (108) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 115,020 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR HAVING A LOAD LIMIT OF AT LEAST 117,900 POUNDS IF USING THE OFFSET LOADING PATTERN; AN EVENLY DISTRIBUTED LOAD REQUIRES A CAR HAVING A LOAD LIMIT OF AT LEAST 116,700 POUNDS. EIGHTY-ONE (81) UNITS, FOR A LADING WEIGHT OF 86,265 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 7' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 7'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. 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. NOTE THAT CRIB FILL IS ONLY REQUIRED WHEN THERE IS THREE AND ONE-HALF INCHES (3-1/2") OR MORE OF LATERAL SPACE BETWEEN PALLET UNIT STACKS, TOTAL SPACE THAT IS.
5. THE WIDTH OF THE VERTICAL PIECES, AND/OR THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES OF THE CRIB FILL, PIECES MARKED ① AND ②, MUST BE ADJUSTED AS NECESSARY TO SUIT THE LATERAL VOID FOR THE WIDTH OF THE CAR BEING LOADED. A MAXIMUM OF THREE-QUARTER INCH (3/4") EXCESS SPACE IS PERMISSIBLE. NOTE THAT IN WOOD-LINED CARS, AN EXCESS LATERAL SPACE MAY BE FILLED BY NAILING LUMBER TO THE CAR SIDEWALL AT THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦, IN LIEU OF USING THE CRIB FILL.
6. IF NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES SIMILAR TO THOSE SHOWN ON PAGE 28 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ ON PAGE 34, NAILED FLOORLINE BLOCKING MUST BE USED UNDER EACH CRIB FILL IN THE DOORWAY AREA. NAILED BLOCKING 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 ON EITHER SIDE OF THE CAR. NOTE THAT THREE INCHES (3") MUST BE CUT OFF THE BOTTOM END OF ONE OR BOTH VERTICAL PIECES OF THE CRIB FILL WHERE IT RESTS ON THE NAILED BLOCKING. SEE SPECIAL NOTE 10.
7. 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 A" DETAIL ON PAGE 81 FOR GUIDANCE.
8. 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 IN THE LOAD VIEW ON PAGE 34 AS PIECE MARKED ③, INSTALL TWO (2) "CENTER GATES M" AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION
9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "G", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY 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 34, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ③ THRU ⑥ ON PAGE 28. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.
11. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑦, TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.

(CONTINUED AT LEFT)

LOAD AS SHOWN

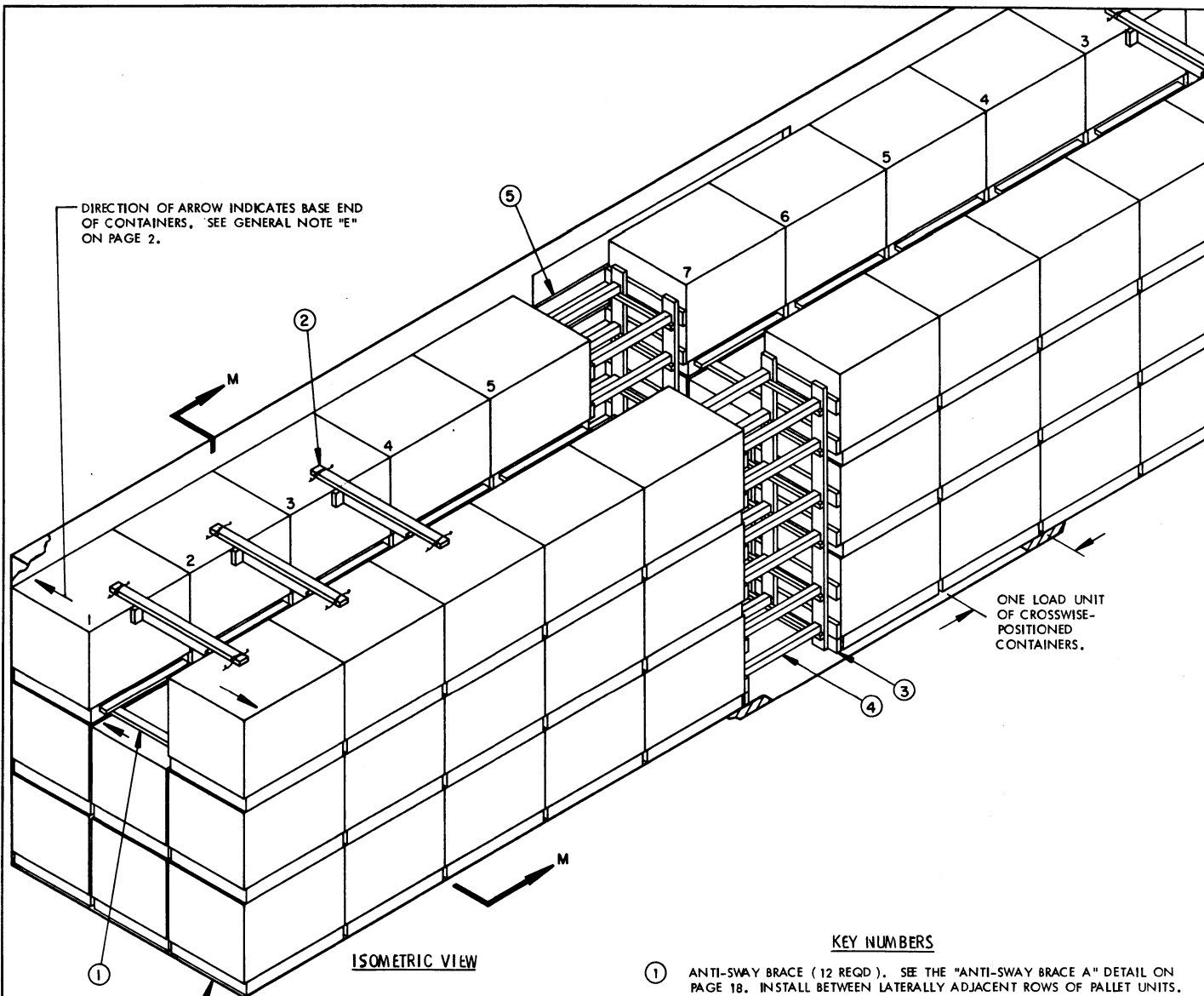
ITEM QUANTITY WEIGHT (APPROX)

PALLET UNIT----- 126 ----- 134,190 LBS
DUNNAGE----- 2 ----- 2,132 LBS

TOTAL WEIGHT----- 136,322 LBS

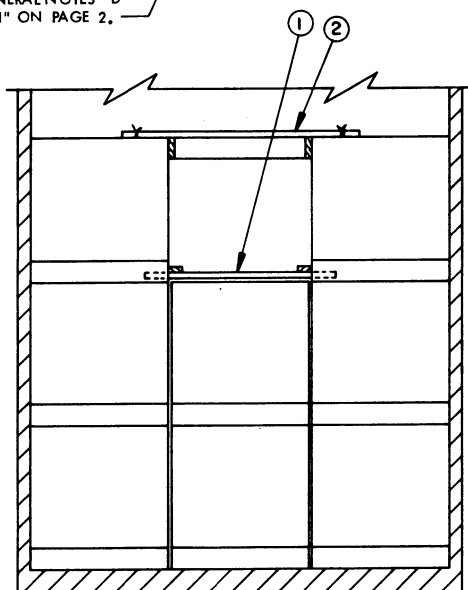
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	110	37
2" X 3"	36	18
2" X 4"	662	442
2" X 6"	231	231
4" X 4"	201	268
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	952	14-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	144	3-1/4

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
126-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONV NTIONAL BOX CAR



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

ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

- ① ANTI-SWAY BRACE (12 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 37.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 45. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 37.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (32 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 46. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 9 AND 10 ON PAGE 37.

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
 96-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" 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 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 36. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 76,680 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; IF A 60'-8" LONG CAR IS AVAILABLE, ONE-HUNDRED-TWELVE (112) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 119,280 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 36, MUST BE INSTALLED IN EACH END OF A CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 80. 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 60' LONG CAR.
5. CRIB FILL ASSEMBLIES, AS DETAILED ON PAGE 44 AND SHOWN WITHIN THE LOAD ON PAGE 36 BY PIECES MARKED ① AND ②, MUST BE USED IN THE BOTTOM TWO LAYERS IF THE TOTAL ACCUMULATED SPACE ACROSS THE CAR IS THREE AND ONE-HALF INCHES (3-1/2") OR MORE. SEE SPECIAL NOTES 4 AND 5 ON PAGE 35 FOR GUIDANCE.
6. 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 B" DETAIL ON PAGE 81 FOR GUIDANCE.
7. 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 IN THE LOAD VIEW ON PAGE 36 AS PIECE MARKED ③, INSTALL TWO (2) "CENTER GATES M", MODIFIED AS NECESSARY, AND TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 82. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF DOUBLED 2" X 3" MATERIAL NAILED TO THE CENTER GATE "H", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE ⑤ IN THE LOAD ON PAGE 36, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED ③ THRU ⑥ ON PAGE 28.
10. IF THE CAR BEING LOADED IS A METAL-LINED CAR AND SIDEWALL LINING AS SHOWN ON PAGE 79 IS USED, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE VERTICAL PIECES OF THE DOORWAY PROTECTION, PIECE MARKED ⑤, TO 2" X 4" OR 2" X 6" MATERIAL IN ORDER FOR THE HORIZONTAL PIECES OF THE ASSEMBLY TO CONTACT THE LADING AND/OR THE CENTER GATES.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF EIGHT (8) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. THE ENTIRE TOP TIER CAN ALSO BE OMITTED. OR, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

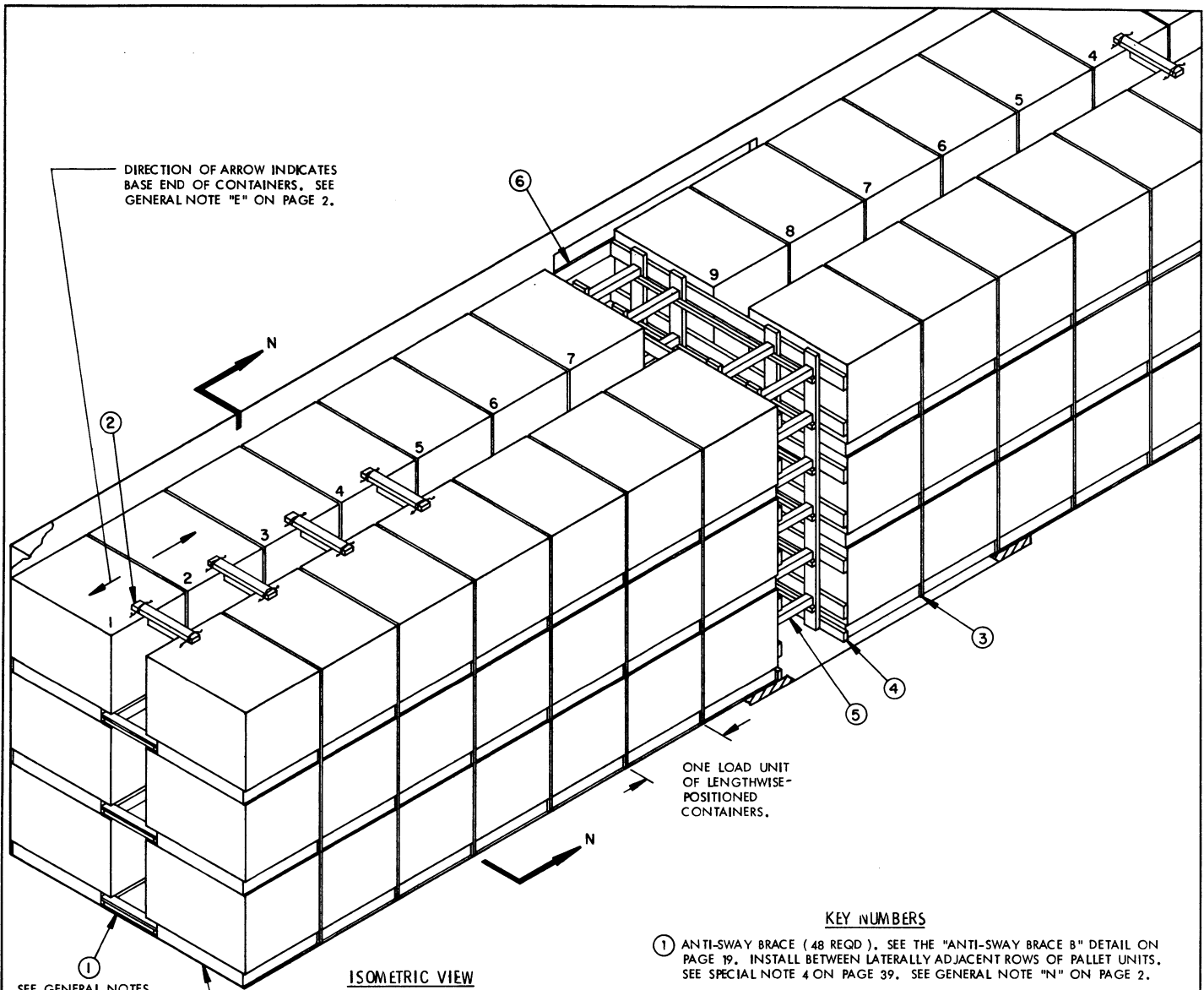
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	97	33
2" X 3"	36	18
2" X 4"	208	139
2" X 6"	230	230
4" X 4"	104	139
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	588	9-1/4
12d (3-1/4")	36	3/4
16d (3-1/2")	128	3
WIRE, NO. 14 GAGE-----60' REQD-----1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	96	102,240 LBS
DUNNAGE		1,253 LBS

TOTAL WEIGHT----- 103,493 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
96-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CONVENTIONAL BOX CAR

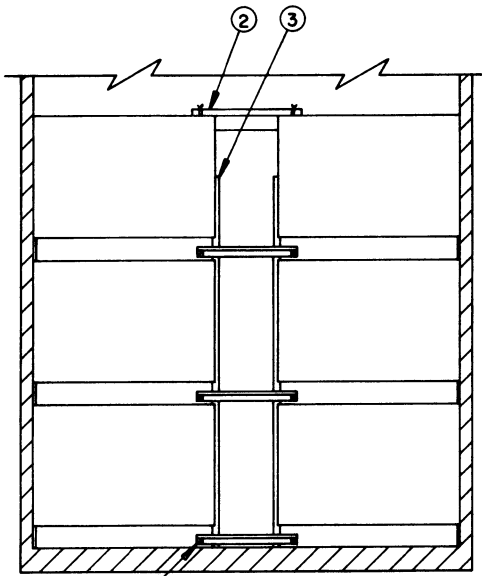


ISOMETRIC VIEW

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

KEY NUMBERS

- ① ANTI-SWAY BRACE (48 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 39. SEE GENERAL NOTE "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 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 5 ON PAGE 39.
- ③ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 8'-0" (28 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNIT STACKS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ①, W/2-6d NAILS. SEE SPECIAL NOTES 6 AND 7 ON PAGE 39. SEE GENERAL NOTE "N" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 46. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 39.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 27") (24 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ⑥ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 45. NAIL TO THE DOOR POSTS W/ 12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 39.



SECTION N-N

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
 96-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

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) 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 LAYERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 50 THRU 78 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 75 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 38. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,680 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, ONE-HUNDRED-FOURTEEN (114) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 121,410 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8'-0" OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE EIGHT (8) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. IF THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 14 ARE 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 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 ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 11 BELOW.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 38, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD FOR 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED IN EACH END OF A LOAD FOR 60' CARS.
6. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATE, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PIECES OF 3/8" PLYWOOD SHOWN AS PIECE MARKED (3), AGAINST THE ALREADY-LOADED UNITS AND AGAINST THE CAR SIDE WALL. THE PLYWOOD WILL THEN BE NAILED TO THE ADJACENT UPPER ANTI-SWAY BRACES, PIECES MARKED (1), TO PREVENT LATERAL MOVEMENT. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS. SEE THE "ALTERNATIVE SEPARATOR GATE A" DETAIL ON PAGE 80, IF IT IS DESIRED TO USE A 1-PIECE PLYWOOD GATE. NOTE THAT IF NAILED FLOORLINE BLOCKING AND STEEL STRAPPING ARE USED FOR DOORWAY PROTECTION IN LIEU OF THE WOODEN DOOR GATE TYPE SHOWN AS PIECE MARKED (6) IN THE LOAD ON PAGE 38, IT WILL BE NECESSARY TO CUT OUT THE BOTTOM CORNER OF THE PLYWOOD SEPARATOR GATE, PIECE MARKED (3), WHICH IS IN THE DOORWAY AREA. A 3-1/2" HIGH BY 2-1/2" WIDE CUT OUT IN THE CENTER OF-CAR EDGE OF THE BOTTOM IS REQUIRED IN ORDER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING.
7. IF PLYWOOD FOR THE SEPARATOR GATES IS NOT AVAILABLE, OR IF DESIRED, DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE. NOTE THAT ONLY FIFTEEN (15) LOAD UNITS CAN BE PLACED IN A 50'-6" LONG CAR IF THE DIMENSIONAL LUMBER SEPARATOR GATES ARE USED IN LIEU OF THE PLYWOOD SEPARATOR GATES.
8. CENTER GATE "J" 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 C" DETAIL ON PAGE 81 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 J", SHOWN IN THE LOAD VIEW ON PAGE 38 AS PIECE MARKED (4), INSTALL TWO (2) "CENTER GATE C" AS DETAILED ON PAGE 83. AFTER THE SPLIT GATES HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS TYPICALLY DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 83.
10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO THE CENTER GATE "J", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 85 FOR GUIDANCE.
11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (6) IN THE LOAD ON PAGE 38, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 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 AS TYPICALLY SHOWN BY PIECES MARKED (4) THRU (7) ON PAGE 14. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	187	63
1" X 6"	96	48
2" X 2"	392	131
2" X 3"	41	21
2" X 4"	220	147
2" X 6"	199	199
4" X 4"	54	72
NAILS	NO. REQD	POUNDS
6d (2")	800	4-3/4
10d (3")	720	11-1/4
12d (3-1/4")	32	3/4
16d (3-1/2")	96	2-1/4
PLYWOOD, 3/8"	896 SQ FT REQD	924 LBS
WIRE, NO. 14 GAGE	60' REQD	1 LB

LOAD AS SHOWN

ITEM QUANTITY WEIGHT (APPROX)

PALLET UNIT----- 96 ----- 102,240 LBS
DUNNAGE----- 2,306 LBS

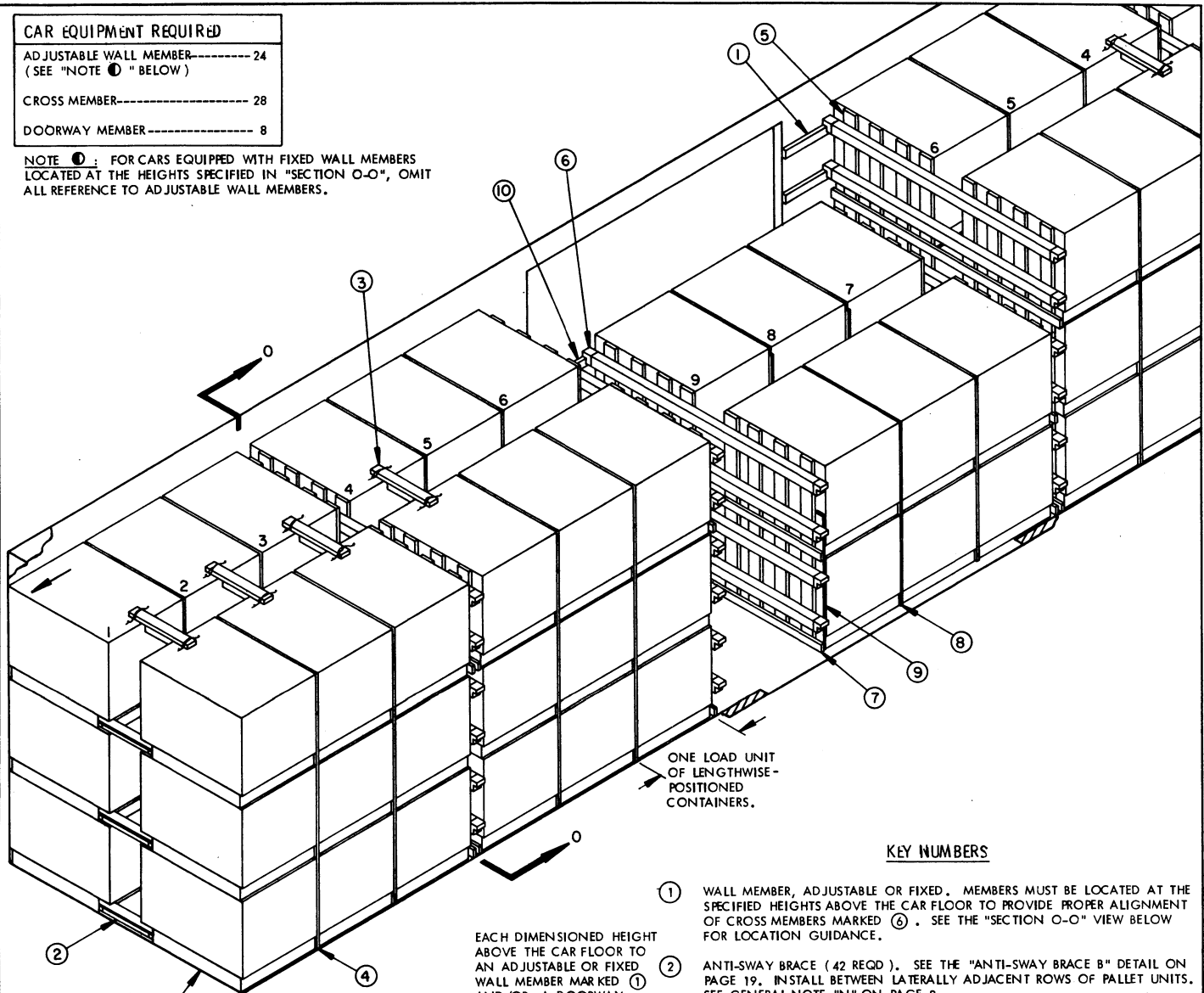
TOTAL WEIGHT----- 104,546 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
96-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER-----	24
(SEE "NOTE 1" BELOW)	
CROSS MEMBER-----	28
DOORWAY MEMBER-----	8

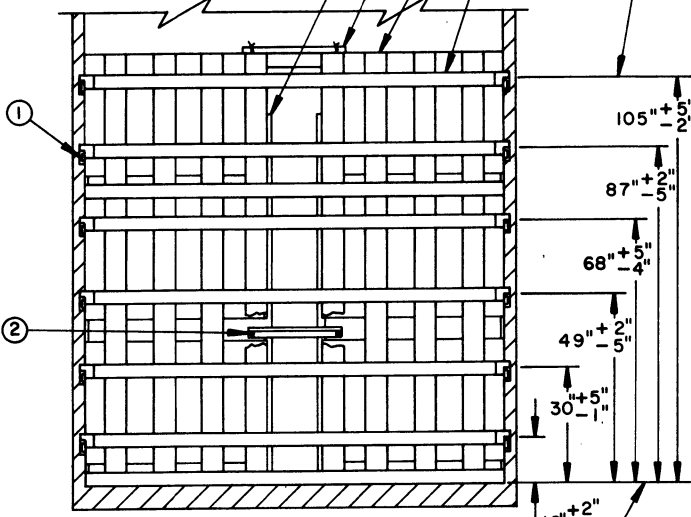
NOTE 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION O-O", OMIT ALL REFERENCE TO ADJUSTABLE WALL MEMBERS.



SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 41.

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 10 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION O-O

INDICATES CAR FLOOR.

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 6. SEE THE "SECTION O-O" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. SEE SPECIAL NOTE 4 ON PAGE 41.
- 4 PLYWOOD SEPARATOR GATE, 3/8" X 48" X 8'-0" (16 REQD). POSITION AGAINST THE ALREADY LOADED PALLET UNIT STACKS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED 2 W/2-6d NAILS. SEE SPECIAL NOTES 5 AND 6 ON PAGE 41. SEE GENERAL NOTE "N" ON PAGE 2.
- 5 SEPARATOR GATE FOR 3-HIGH (6 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 47. POSITION SO THE VERTICAL PIECES WILL BE AGAINST THE PALLET UNIT STACKS. SEE SPECIAL NOTE 7 ON PAGE 41. SEE GENERAL NOTE "N" ON PAGE 2.
- 6 CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- 7 SEPARATOR GATE FOR 2-HIGH (2 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 47. POSITION SO THE VERTICAL PIECES WILL BE AGAINST THE PALLET UNIT STACKS. NOTE THAT THE SEPARATOR GATE (5) USED IN THE DOORWAY AREA MUST BE NAILED TO THE CROSS BRACE OF THE ADJACENT UPPER ANTI-SWAY BRACE, PIECE MARKED 2, W/4-6d NAILS. SEE SPECIAL NOTE 7 ON PAGE 41. SEE GENERAL NOTE "N" ON PAGE 2.
- 8 PLYWOOD SEPARATOR GATE, 3/8" X 48" X 6'-0" (4 REQD). POSITION AGAINST THE ALREADY LOADED PALLET UNIT STACKS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED 2, W/2-6d NAILS.
- 9 STOP PIECE, 1" X 4" X 54" (2 REQD). POSITION ONE AT EACH END OF THE DIMENSIONAL LUMBER SEPARATOR GATE IN THE DOORWAY, PIECE MARKED 7, AND NAIL TO THE HORIZONTAL PIECES W/2-6d NAILS AT EACH JOINT AND CLINCH.
- 10 DOORWAY MEMBER (8 REQD). SEE THE "SECTION O-O" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 41.

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)

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

SPECIAL NOTES:

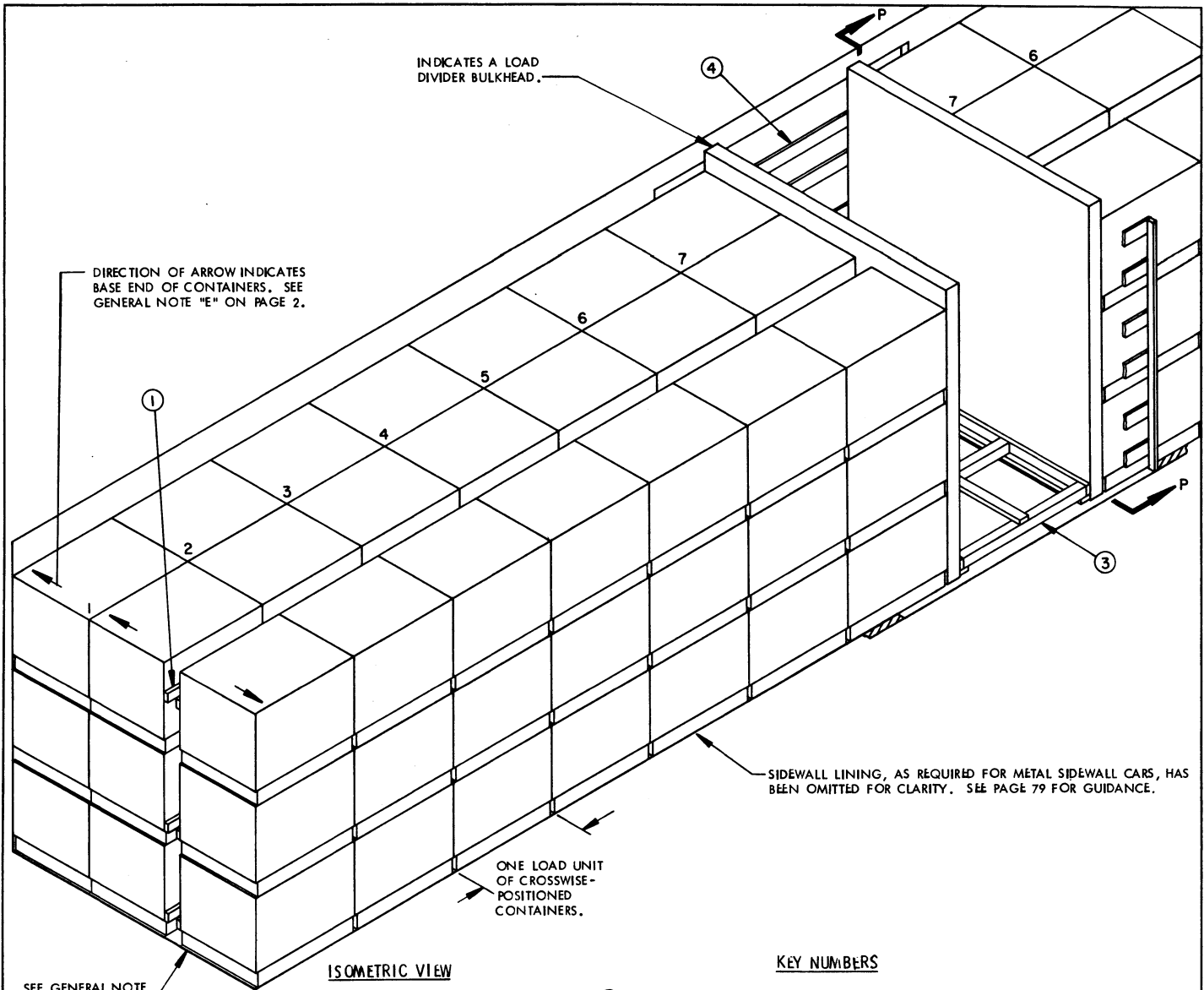
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 40. A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,680 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED ENDWALLS 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 "SQUARE END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED (5) MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 40, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS. NOTE THAT FIVE (5) BRACES WILL BE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. AS GUIDANCE FOR INSTALLING PLYWOOD SEPARATOR GATES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION TWO (2) PLYWOOD PIECES, SHOWN AS PIECE MARKED (4), AGAINST THE UNIT STACKS AND AGAINST THE CAR SIDEWALL. THE PLYWOOD WILL THEN BE NAILED TO THE UPPER ANTI-SWAY BRACES, PIECE MARKED (2), SO AS TO PREVENT LATERAL MOVEMENT OF THE PLYWOOD. REPEAT THIS PROCEDURE AS APPLICABLE FOR THE REMAINING PALLET UNIT STACKS. NOTE THAT IF DESIRED, PLYWOOD SEPARATOR GATES MAY ALSO BE USED IN LIEU OF THE DIMENSIONAL LUMBER SEPARATOR GATES, PIECE MARKED (5). SEE THE "ALTERNATIVE SEPARATOR GATE A" DETAIL ON PAGE 80 IF IT IS DESIRED TO USE A 1-PIECE PLYWOOD GATE.
6. IF PLYWOOD IS NOT AVAILABLE FOR THE SEPARATOR GATES, PIECE MARKED (4), DIMENSIONAL LUMBER SEPARATOR GATES MAY BE USED. SEE THE "ALTERNATIVE SEPARATOR GATE B" DETAIL ON PAGE 84 FOR CONSTRUCTION GUIDANCE.
7. THE DIMENSIONAL LUMBER SEPARATOR GATES, SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 40, WILL BE POSITIONED WITH THE 1" X 6" VERTICAL PIECES AGAINST THE PALLET UNITS AND WITH THE HORIZONTAL PIECE (5) LOCATED BETWEEN THE CROSS MEMBERS. THE SEPARATOR GATE WHICH IS IN THE DOORWAY MUST BE NAILED TO THE CROSS PIECE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED (2), W/2-10d NAILS TO PREVENT THE GATE FROM SHIFTING INTO THE DOORWAY.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AND IF THE HEIGHT OF THE DOOR OPENING PERMITS, AN ADDITIONAL SIX PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 48 AND 49 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	316	106
1" X 6"	545	273
2" X 2"	247	83
2" X 4"	182	122
NAILS	NO. REQD	POUNDS
6d (2")	1020	6
10d (3")	336	5-1/4
12d (3-1/4")	32	3/4
PLYWOOD, 3/8"-----	608 SQ FT REQD-----	627 LBS
WIRE, NO. 14 GAGE-----	60' REQD-----	1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	84-----	89,460 LBS
DUNNAGE-----	-----	1,808 LBS
TOTAL WEIGHT-----	-----	91,268 LBS (APPROX)

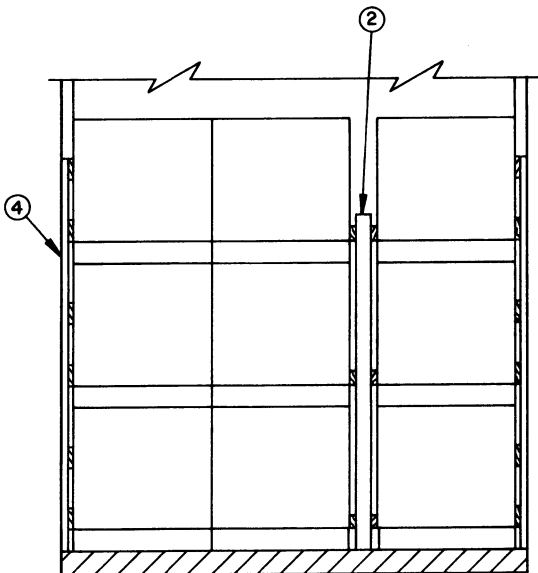
PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
 84-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



SEE GENERAL NOTE "H" ON PAGE 2.

KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 44. SEE SPECIAL NOTES 3 AND 4 ON PAGE 43. SEE GENERAL NOTE "N" ON PAGE 2.
- ② CRIB FILL (6 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 44.
- ③ STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 87. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 8 ON PAGE 43.
- ④ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 46. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 6 AND 7 ON PAGE 43.



PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)

126-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE METAL-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3. NOTE THAT THE SIDEWALL LINING HAS BEEN OMITTED FOR CLARITY.
2. THE BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 42. A MAXIMUM OF ONE-HUNDRED-EIGHT (108) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 115,020 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; EIGHTY-ONE (81) UNITS, FOR A LADING WEIGHT OF 86,265 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. WHEN USING THE LOADING PROCEDURES AS SHOWN ON PAGE 38, A MAXIMUM OF ONE-HUNDRED AND FOURTEEN (114) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 121,410 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, NINETY (90) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 95,850 POUNDS, AND SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR A LADING WEIGHT OF APPROXIMATELY 76,680 POUNDS.
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 THE LOAD REGARDLESS OF THE CAR LENGTH. NOTE THAT CRIB FILL IS ONLY REQUIRED WHEN THERE IS A TOTAL OF THREE AND ONE-HALF INCHES (3-1/2") OR MORE OF LATERAL SPACE ACROSS THE CAR.
4. THE WIDTH OF THE VERTICAL PIECES, AND/OR THE THICKNESS OF THE HORIZONTAL PIECES ON ONE OR BOTH SIDES OF THE CRIB FILL, PIECES MARKED ① AND ②, MUST BE ADJUSTED AS NECESSARY TO SUIT THE LATERAL VOID FOR THE WIDTH OF THE CAR BEING LOADED. A MAXIMUM OF THREE-QUARTERS INCH (3/4") EXCESS SPACE IS PERMISSIBLE. NOTE THAT IN WOOD-LINED CARS, AN EXCESS LATERAL SPACE MAY BE FILLED BY NAILING LUMBER TO THE CAR SIDEWALL AT THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION PIECE MARKED ⑦ ON PAGE 34, IN LIEU OF USING THE CRIB FILL.
5. THE "LOW" CRIB, SHOWN AS PIECE MARKED ②, MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF THE VERTICAL PIECES IF THE CRIB FILL IS IN THE DOORWAY AREA AND THE NAILED FLOORLINE BLOCKING AND STEEL STRAPPING METHOD OF DOORWAY PROTECTION IS USED. THIS WILL ALLOW THE CRIB FILL TO REST EVENLY ON THE SIDE BLOCKING AND TO BEAR AGAINST THE PALLET UNITS AT THE PROPER HEIGHTS.
6. THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION SHOWN IN THE LOAD VIEW ON PAGE 42 AS PIECE MARKED ④ IS APPLICABLE ONLY IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED IN LIEU OF PIECE MARKED ④. FOR THE DEPICTED LOAD, REFER TO PIECES MARKED ③ THRU ⑥ ON PAGE 28 FOR A TYPICAL INSTALLATION OF DOORWAY PROTECTION FOR A PLUG DOOR CAR. IF THE LOADING PATTERN SHOWN ON PAGE 38 IS USED, REFER TO PIECES MARKED ④ THRU ⑦ ON PAGE 14 FOR DOORWAY PROTECTION GUIDANCE. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.
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 PIECE MARKED ④ IN THE LOAD ON PAGE 42, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 86 THRU 88 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED.
8. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 42, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.
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 NINE (9) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) 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 52 THRU 61 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 76 AND 78 FOR GUIDANCE IF THE PALLET UNITS ARE LOADED AS SHOWN, OR TO PAGE 75 IF THE PALLET UNITS ARE TURNED OPPOSITE TO THOSE SHOWN.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 77 FOR GUIDANCE.

BILL OF MATERIAL

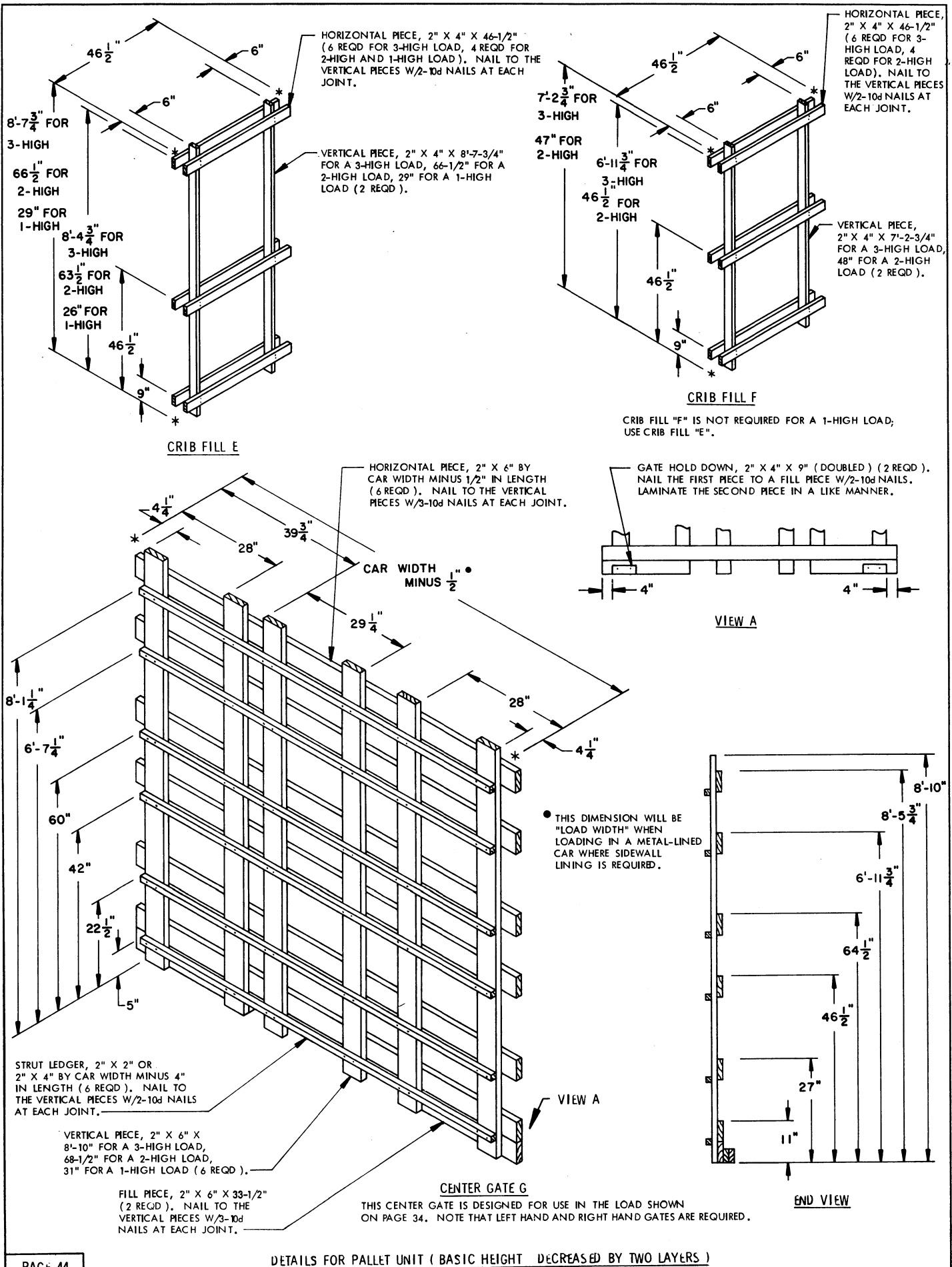
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
1" X 8"	18	17
2" X 3"	36	18
2" X 4"	598	399
4" X 4"	20	27
NAILS	NO. REQD	POUNDS
6d (2")	90	3/4
10d (3")	366	5-3/4
12d (3-1/4")	52	1
WIRE, NO. 14 GAGE-----60' REQD-----1 LB		

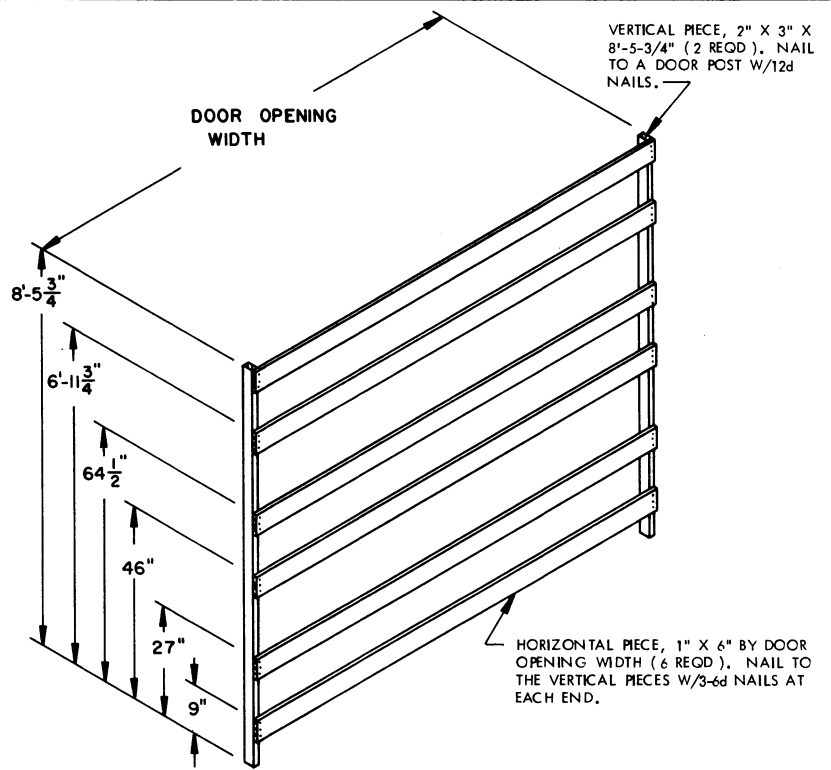
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	126-----	134,190 LBS
DUNNAGE-----	-----	1,050 LBS

TOTAL WEIGHT----- 135,240 LBS (APPROX)

PALLET UNIT (BASIC HEIGHT DECREASED BY TWO LAYERS)
126-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

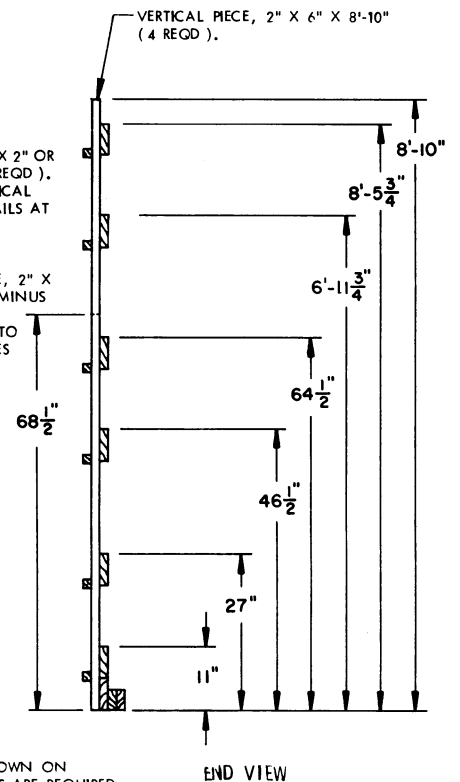
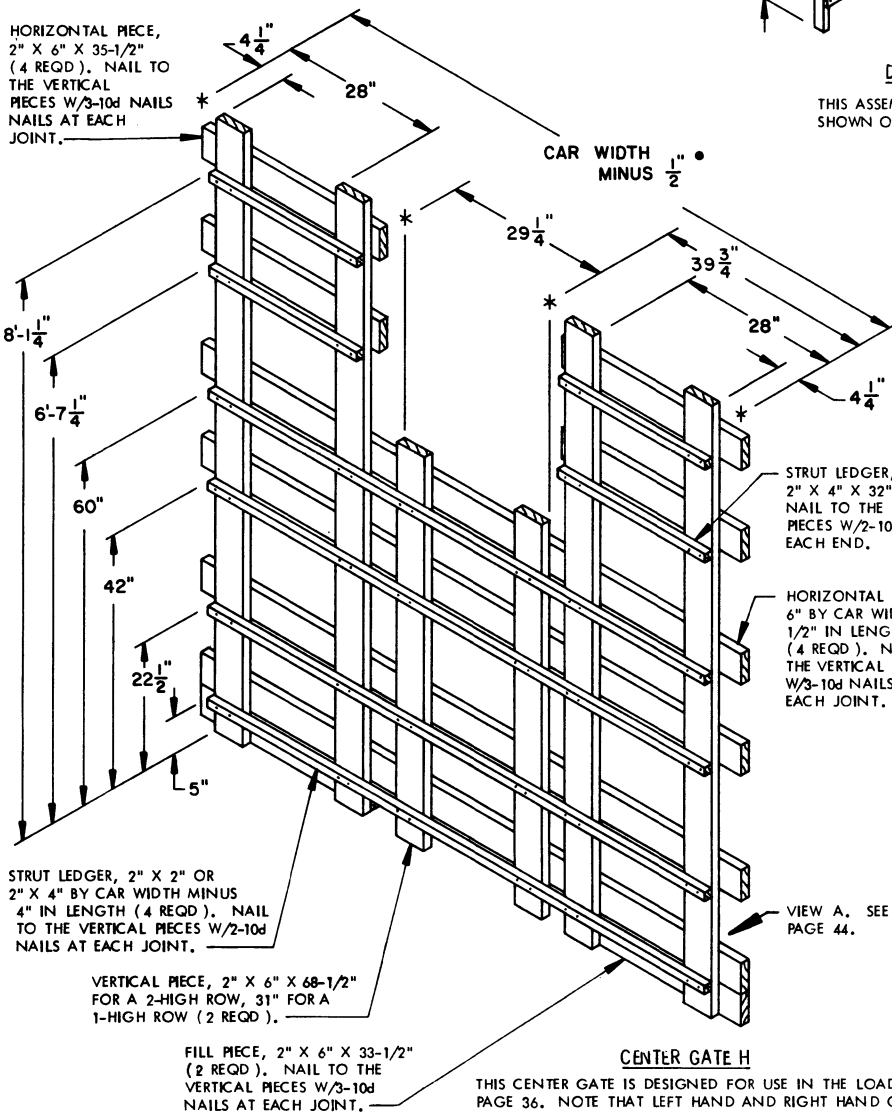


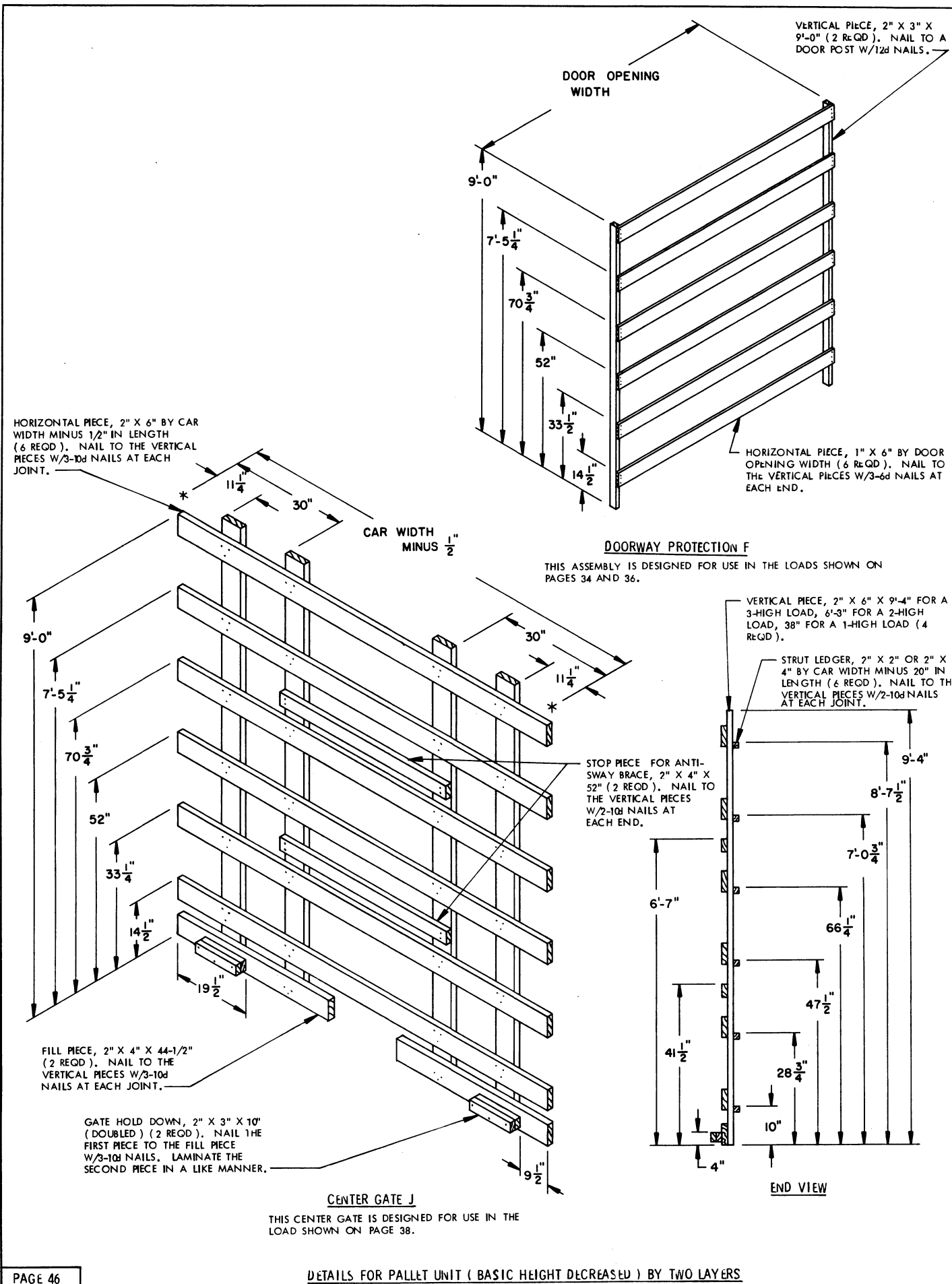


DOORWAY PROTECTION E

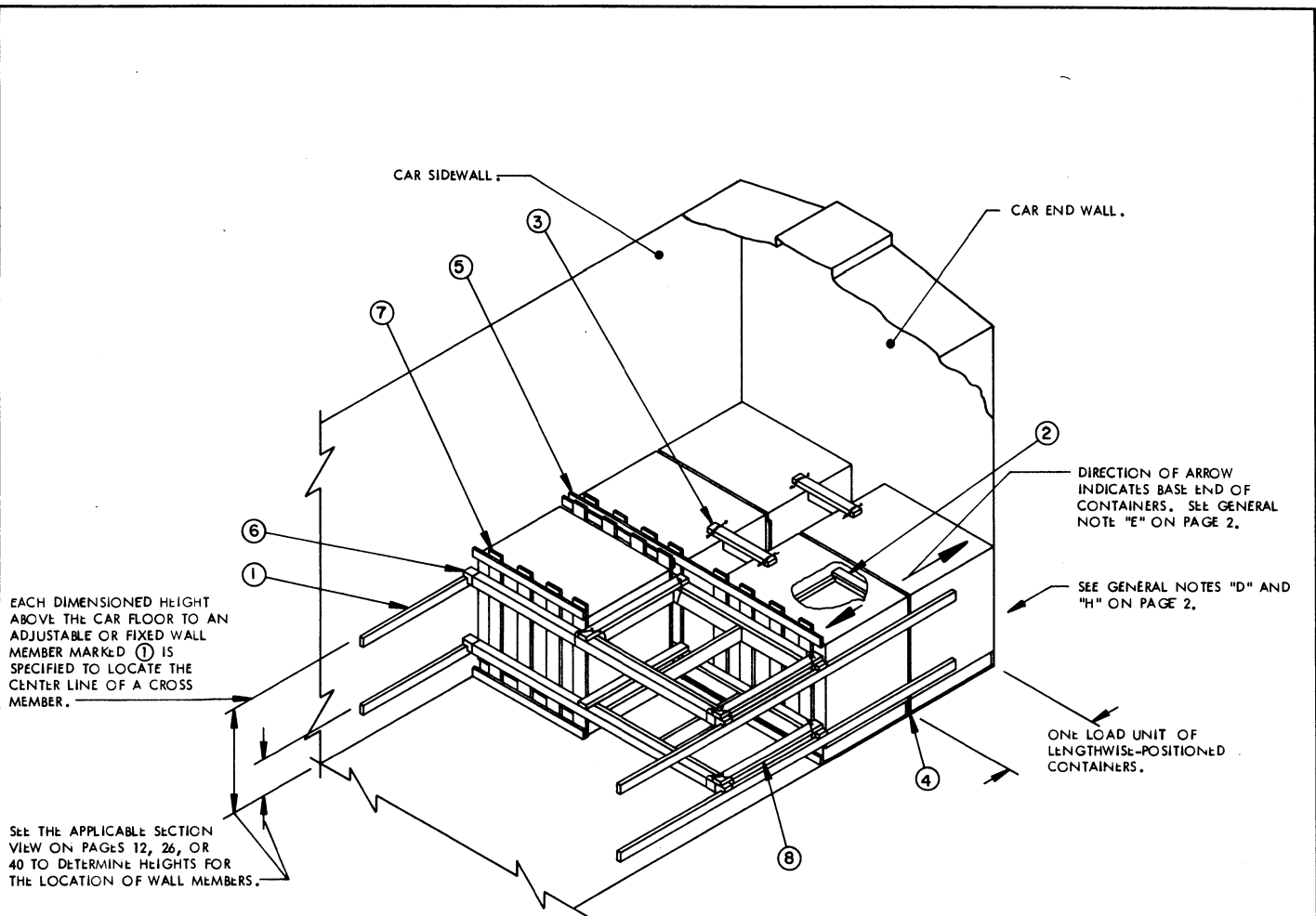
THIS ASSEMBLY IS DESIGNED FOR USE IN THE SHOWN ON PAGE 38.

● THIS DIMENSION WILL BE "LOAD WIDTH" WHEN LOADING IN METAL-LINED CARS WHERE SIDEWALL LINING IS REQUIRED.





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ISOMETRIC VIEW

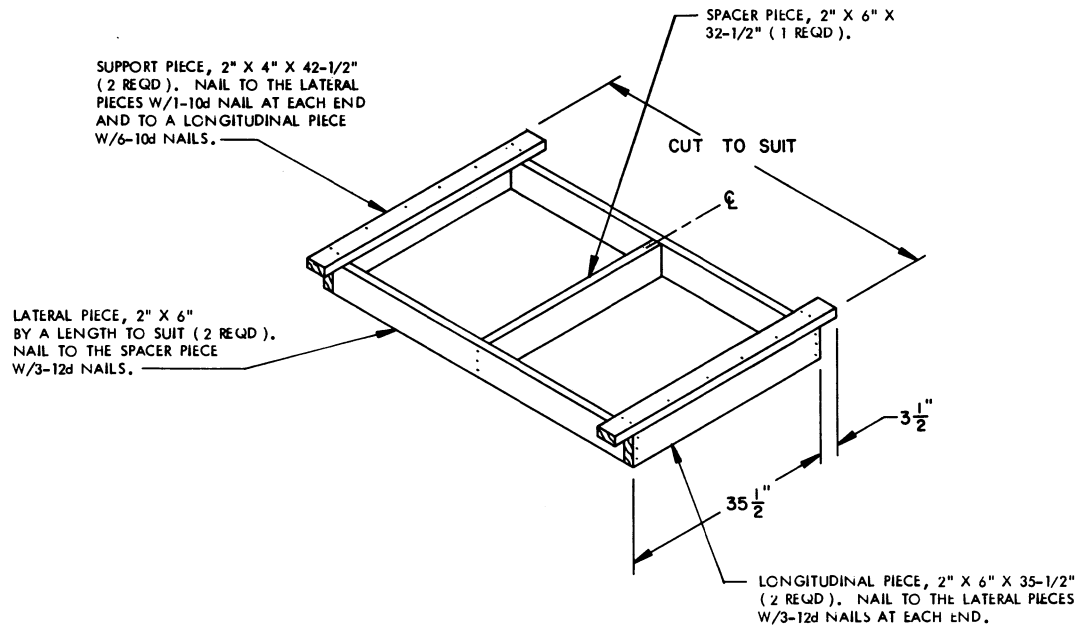
SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT DECREASED BY ONE LAYER. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
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. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH, IF THE LOAD IS AT LEAST FOUR LOAD UNITS IN 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 8, MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

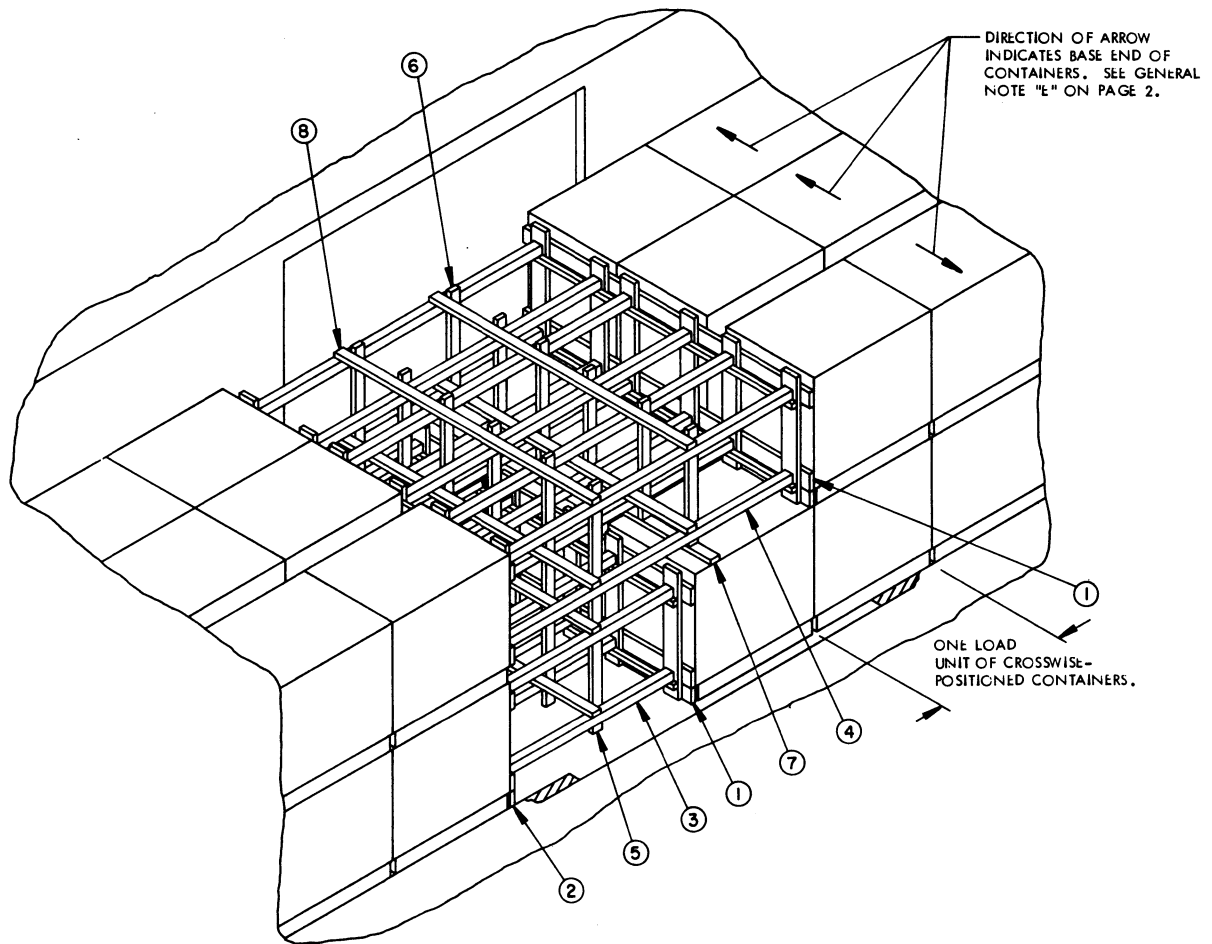
KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 6.
- 2 ANTI-SWAY BRACE (2 REQ'D). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (2 REQ'D). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80.
- 4 PLYWOOD SEPARATOR GATE, 3/8" X 42" X 48" (2 REQ'D). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS WHERE CROSS MEMBERS ARE NOT USED. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED 2, W/2-6d NAILS.
- 5 SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (1 REQ'D). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 19, 33, OR 47. POSITION WITH THE 1" X 6" VERTICAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- 6 CROSS MEMBER (4 REQ'D). SEE GENERAL NOTE "Y" ON PAGE 3.
- 7 SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQ'D, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGES 19, 33, OR 47. AS APPLICABLE, POSITION SO THE 1" X 6" VERTICAL PIECES WILL BE AGAINST THE UNITS.
- 8 SPACER ASSEMBLY (2 REQ'D). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 49 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 C



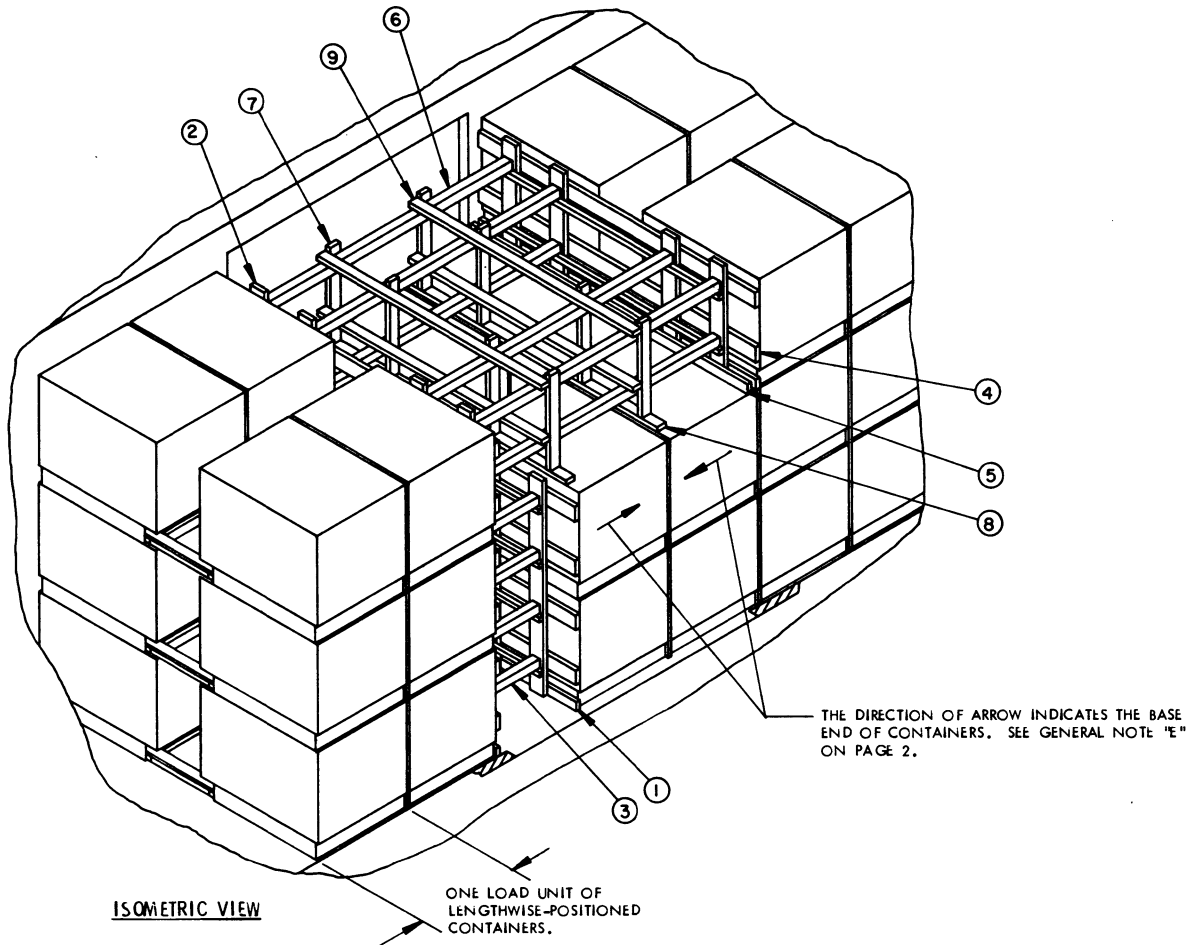
ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-6" 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, HOWEVER, THEY MUST BE AT LEAST 9'-0" WIDE FOR 3-WIDE LOADING AS SHOWN.
2. THE PALLET UNIT (BASIC HEIGHT DECREASED BY ONE LAYER) IS SHOWN IN THE VIEW ABOVE. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM A 2-HIGH LOAD ARE SHOWN AS TYPICAL. THE PROCEDURES MAY BE ADAPTED FOR USE IN A 3-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 "D" USED IS ONLY APPLICABLE FOR THE BASIC HEIGHT DECREASED BY ONE LAYER UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, MAY ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.
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 APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQ'D). SEE THE "CENTER GATE D" DETAIL ON PAGE 30. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 5 AT LEFT.
- ② CENTER GATE FOR 2-HIGH (1 REQ'D). SEE THE "CENTER GATE D" DETAIL ON PAGE 30.
- ③ STRUT, 4" X 4" BY CUT TO FIT (AS REQ'D). 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 "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- ④ STRUT, 4" X 4" BY CUT TO FIT (AS REQ'D). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ② IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (6 REQ'D). NAIL TO THE STRUTS MARKED ③ AND ④ W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (6 REQ'D). NAIL TO THE STRUTS MARKED ④ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑦ W/1-10d NAIL.
- ⑦ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQ'D). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED ⑥ AS SHOWN.
- ⑧ HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (6 REQ'D). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



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 (BASIC HEIGHT DECREASED BY TWO LAYERS). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
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 "J" USED IS ONLY APPLICABLE FOR THE BASIC HEIGHT DECREASED BY TWO LAYERS UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, MAY ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.
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 (8), MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

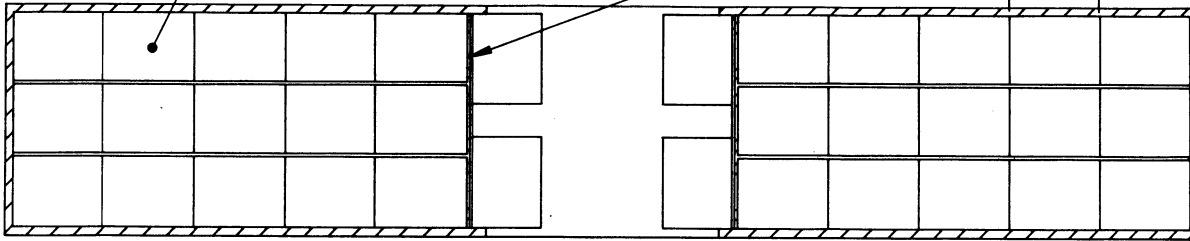
KEY NUMBERS

- (1) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 46. SEE SPECIAL NOTE 5 AT LEFT.
- (2) CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 46.
- (3) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). TOENAIL TO PIECES MARKED (1) AND (2) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "M", "V", AND "W" ON PAGE 2 AND/OR 3.
- (4) CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 46.
- (5) SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "J", SHOWN AS PIECE MARKED (4), W/3-10d NAILS AT EACH JOINT.
- (6) STRUT, 4" X 4" BY CUT TO FIT (AS REQD) TOENAIL TO PIECES MARKED (2) AND (4) W/2-16d NAILS AT EACH END.
- (7) VERTICAL STRUT BRACING, 2" X 4" X 35" (8 REQD). NAIL TO THE STRUTS MARKED (4) W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED (8), W/1-10d NAIL. SEE SPECIAL NOTE 6 AT LEFT.
- (8) STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED (7), AS SHOWN.
- (9) HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

CONTAINERS-CROSSWISE UNITS.

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE), SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 53. POSITION AS SHOWN WITH VERTICAL PIECES AGAINST THE CONTAINERS-CROSSWISE PALLET UNITS.

ONE LOAD UNIT OF CROSSWISE-POSITIONED CONTAINERS.



TYPICAL 3-WIDE COMBINATION LOAD PATTERN PLAN VIEW

A 10-WIDE PLUS 2-LONG LOAD IS SHOWN

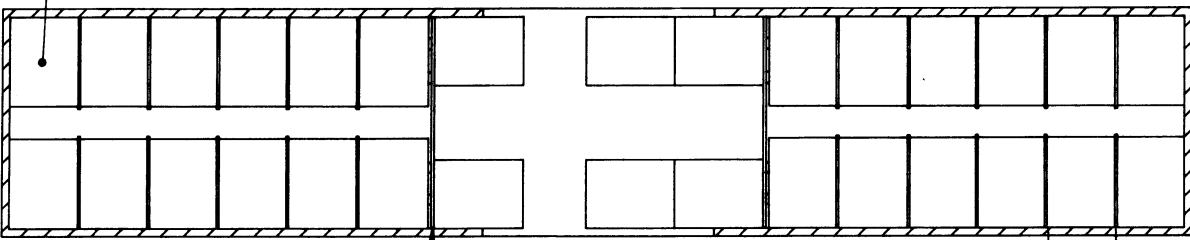
SPECIAL NOTES:

- 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CARS ARE SHOWN IN THE VIEWS ON THIS PAGE. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
- THE PROCEDURES ON THIS PAGE AND PAGE 53 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.
- THE BLOCKING AND BRACING FOR THE COMBINATION LOADS, OTHER THAN SEPARATOR GATE "D" AND THE PLYWOOD PIECES PLACED BETWEEN THE CONTAINERS-LENGTHWISE UNITS, HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "D" 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 CONTAINERS-CROSSWISE UNITS IN A CROSSWISE LOAD (3-WIDE LOAD) AND AGAINST THE CONTAINERS-LENGTHWISE UNITS IN A LENGTHWISE LOAD (2-WIDE LOAD).
- THE CHARTS FOR THE PALLET UNITS ARE SHOWN AT RIGHT. THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES, ARE SPECIFIED. 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.

CONTAINERS-CROSSWISE LOAD			
CAR LENGTH	UNITS Per LAYER	LOADING PATTERN	APPROX STRUT LENGTH
40'-6" CAR	27	CROSSWISE LOAD ON PAGE 6, 20, OR 34	59"
	28	8 WIDE AT 46-3/4" PLUS 2 LONG AT 35-1/2"	35"
	27	7 WIDE AT 46-3/4" PLUS 3 LONG AT 35-1/2"	45"
	26	6 WIDE AT 46-3/4" PLUS 4 LONG AT 35-1/2"	56"
	25	3 WIDE AT 46-3/4" PLUS 8 LONG AT 35-1/2"	51"
50'-6" CAR	36	CROSSWISE LOAD ON PAGE 6, 20 OR 34	43"
	35	9 WIDE AT 46-3/4" PLUS 4 LONG AT 35-1/2"	36"
	34	10 WIDE AT 46-3/4" PLUS 2 LONG AT 35-1/2"	62"
	33	7 WIDE AT 46-3/4" PLUS 6 LONG AT 35-1/2"	57"
	32	4 WIDE AT 46-3/4" PLUS 10 LONG AT 35-1/2"	52"
60'-8" CAR	45	CROSSWISE LOAD ON PAGE 6, 20, OR 34	26"
	43	13 WIDE AT 46-3/4" PLUS 2 LONG AT 35-1/2"	45"
	42	12 WIDE AT 46-3/4" PLUS 3 LONG AT 35-1/2"	55"
	41	9 WIDE AT 46-3/4" PLUS 7 LONG AT 35-1/2"	51"
	40	8 WIDE AT 46-3/4" PLUS 8 LONG AT 35-1/2"	61"
	39	5 WIDE AT 46-3/4" PLUS 12 LONG AT 35-1/2"	56"
	38	2 WIDE AT 46-3/4" PLUS 16 LONG AT 35-1/2"	52"

CONTAINERS-LENGTHWISE LOAD			
CAR LENGTH	UNITS PER LAYER	LOADING PATTERN	APPROX STRUT LENGTH
40'-6" CAR	24	LENGTHWISE LOAD ON PAGE 10, 24, OR 38	50"
	24	10 LONG AT 35-1/2" PLUS 2 WIDE AT 46-3/4"	26"
	22	6 LONG AT 35-1/2" PLUS 5 WIDE AT 46-3/4"	29"
	20	2 LONG AT 35-1/2" PLUS 8 WIDE AT 46-3/4"	35"
50'-6" CAR	32	LENGTHWISE LOAD ON PAGE 10, 24, OR 38	26"
	30	12 LONG AT 35-1/2" PLUS 3 WIDE AT 46-3/4"	27"
	28	8 LONG AT 35-1/2" PLUS 6 WIDE AT 46-3/4"	30"
	26	4 LONG AT 35-1/2" PLUS 9 WIDE AT 46-3/4"	33"
	24	2 LONG AT 35-1/2" PLUS 10 WIDE AT 46-3/4"	58"
60'-8" CAR	38	LENGTHWISE LOAD ON PAGE 10, 24, OR 38	41"
	36	14 LONG AT 35-1/2" PLUS 4 WIDE AT 46-3/4"	27"
	34	10 LONG AT 35-1/2" PLUS 7 WIDE AT 46-3/4"	33"
	32	6 LONG AT 35-1/2" PLUS 10 WIDE AT 46-3/4"	37"
	30	2 LONG AT 35-1/2" PLUS 13 WIDE AT 46-3/4"	40"

CONTAINERS-LENGTHWISE UNITS.

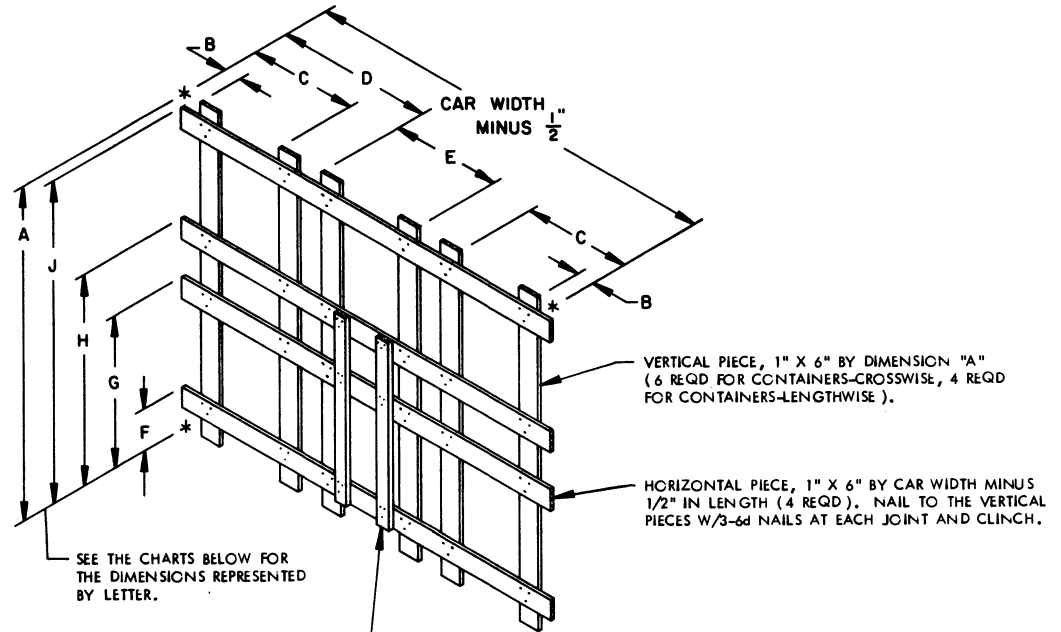


TYPICAL 2-WIDE COMBINATION LOAD PATTERN PLAN VIEW

A 12-LONG PLUS 3-WIDE LOAD IS SHOWN

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE), SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 53. POSITION AS SHOWN WITH THE VERTICAL PIECES AGAINST THE CONTAINER-LENGTHWISE PALLET UNITS.

ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.



SEE THE CHARTS BELOW FOR THE DIMENSIONS REPRESENTED BY LETTER.

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

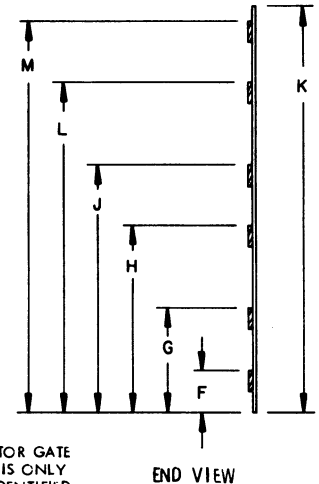
SEPARATOR GATE D

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 2-HIGH LOAD, APPLICABLE TO ANY OF THE UNITS COVERED BY THIS DOCUMENT. SEE THE "END VIEW" BELOW FOR HEIGHT DIMENSIONS FOR THE UNIT WHICH CAN BE LOADED 3-HIGH.

PALLET UNIT NUMBER	DIMENSIONS FOR 3-WIDE LOAD (CONTAINERS CROSSWISE)											
	A	B	C	D	E	F	G	H	J	K	L	M
1	8'-0"	4-1/4"	28"	39-3/4"	29-1/4"	14-1/2"	45-3/4"	64-1/2"	8'-0"			
2	7'-0"	4-1/4"	28"	39-3/4"	29-1/4"	14-1/2"	39-1/2"	58-1/2"	6'-11"			
3	72"	4-1/4"	28"	39-3/4"	29-1/4"	14-1/2"	27"	52"	71"	8'-10"	7'-5"	8'-11"

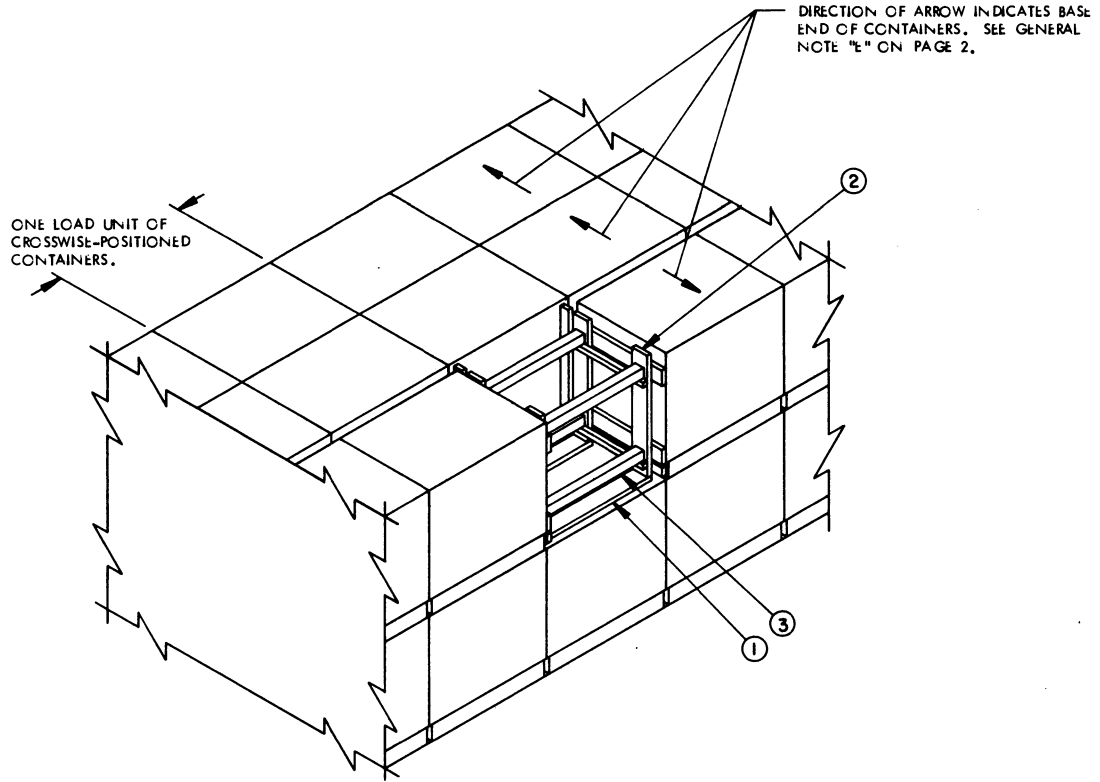
PALLET UNIT NUMBER	DIMENSIONS FOR 2-WIDE LOAD (CONTAINERS LENGTHWISE)											
	A	B	C	D	E	F	G	H	J	K	L	M
1	8'-0"	11-1/4"	30"			9"	45-3/4"	59-1/2"	8'-0"			
2	7'-0"	11-1/4"	30"			9"	39-1/2"	53-1/2"	6'-11"			
3	67"	11-1/4"	30"			9"	33-1/4"	46-1/2"	64-1/2"	8'-9"	7'-0"	8'-6"

PALLET UNIT IDENTIFICATION	SHOWN AS UNIT NUMBER
BASIC HEIGHT	1
BASIC HEIGHT DECREASED BY ONE LAYER	2
BASIC HEIGHT DECREASED BY TWO LAYERS	3



THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD WHICH IS ONLY APPLICABLE FOR UNIT 3 AS IDENTIFIED AT THE LEFT.

END VIEW



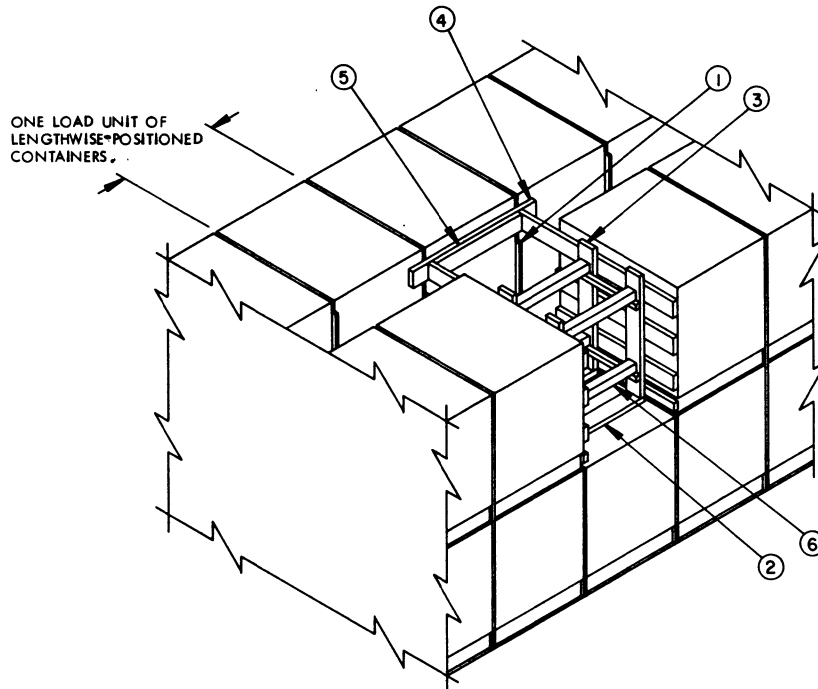
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT DECREASED BY ONE LAYER. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL.
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 () 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.

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 43-3/4" (2 REQD). POSITION BENEATH THE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ②.
- ② LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 56. 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 40-3/4" (AS REQD). TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END.



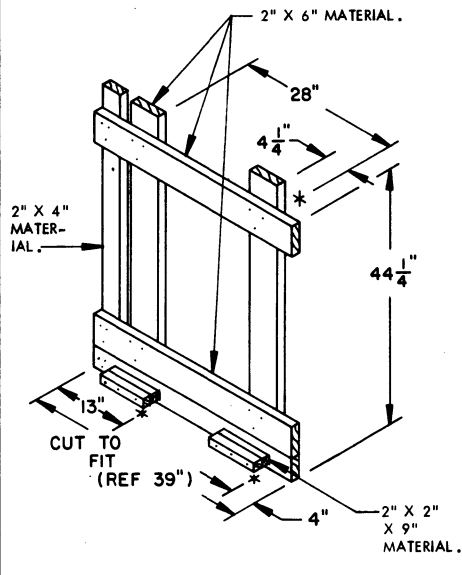
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

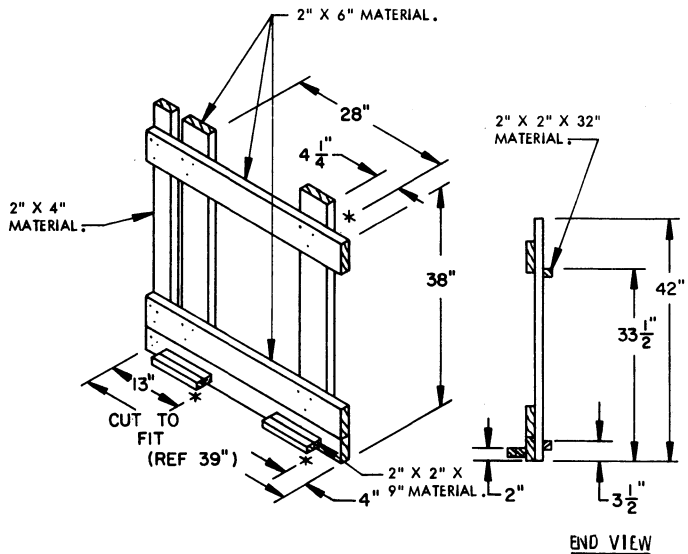
1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT DECREASED BY ONE LAYER. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL.
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 MODIFIED PLYWOOD SEPARATOR GATE, 3/8" X 48" X 7'-0" (2 REQD). PLYWOOD MUST BE NOTCHED AT THE TOP SO THAT THE ANTI-SWAY BEARING PIECE, PIECE MARKED ④ WILL REST EVENLY AGAINST THE UNITS AS SHOWN IN THE ISOMETRIC VIEW ABOVE.
- ② SUPPORT PIECE, 2" X 6" X 32-1/2" (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 APPLICABLE DETAIL ON PAGE 57. 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 48" (1 REQD).
- ⑤ FILLER PIECE, 2" X 6" X 32-1/2" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ④, W/5-10d NAILS.
- ⑥ STRUT, 4" X 4" X 29-1/2" (AS REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END.



LOAD BEARING GATE A

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

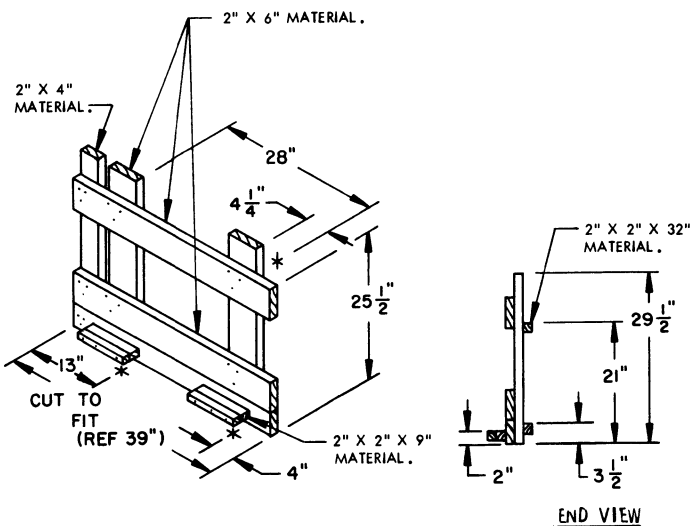


LOAD BEARING GATE B

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNITS. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.

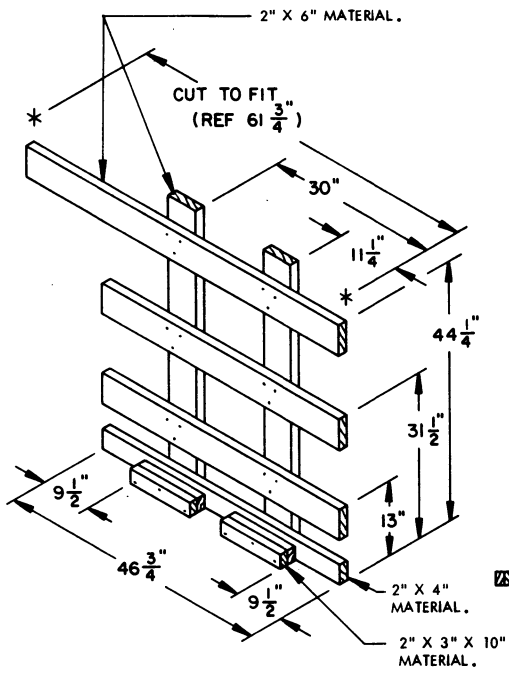
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH THE INDICATED PALLET UNITS USED IN THIS DOCUMENT. THEY ARE ONLY USED FOR THE LCL PROCEDURES SHOWN ON PAGE 54. THESE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-CROSSWISE PALLET UNITS.
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 VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO A 2" X 4" HORIZONTAL PIECE W/2-10d NAILS IN EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.



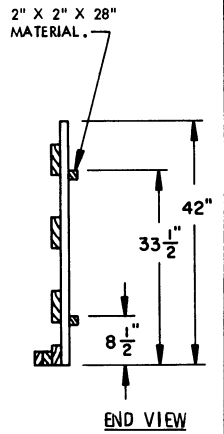
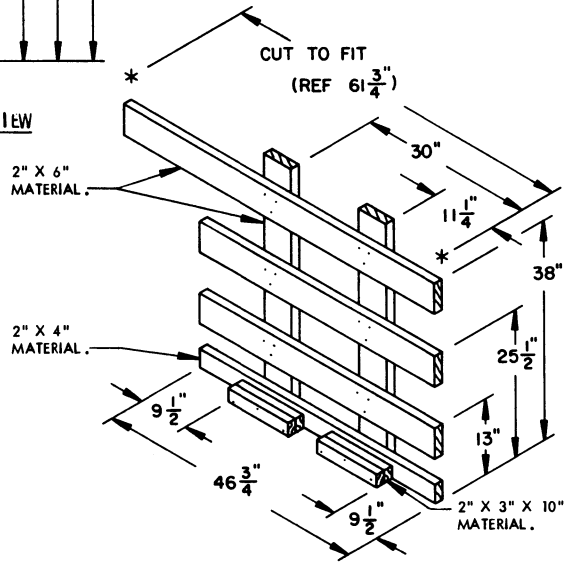
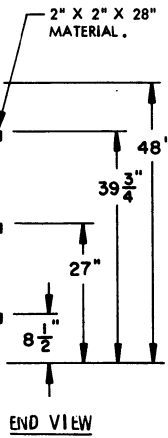
LOAD BEARING GATE C

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNITS. SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.



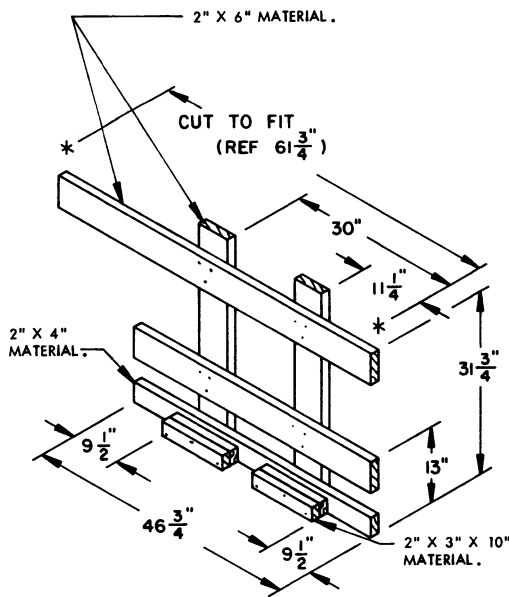
LOAD BEARING GATE D

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



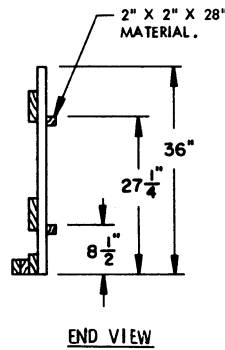
LOAD BEARING GATE E

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNITS. SEE SPECIAL NOTE 3 ABOVE FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE IS REQUIRED. A LEFT HAND GATE IS SHOWN.



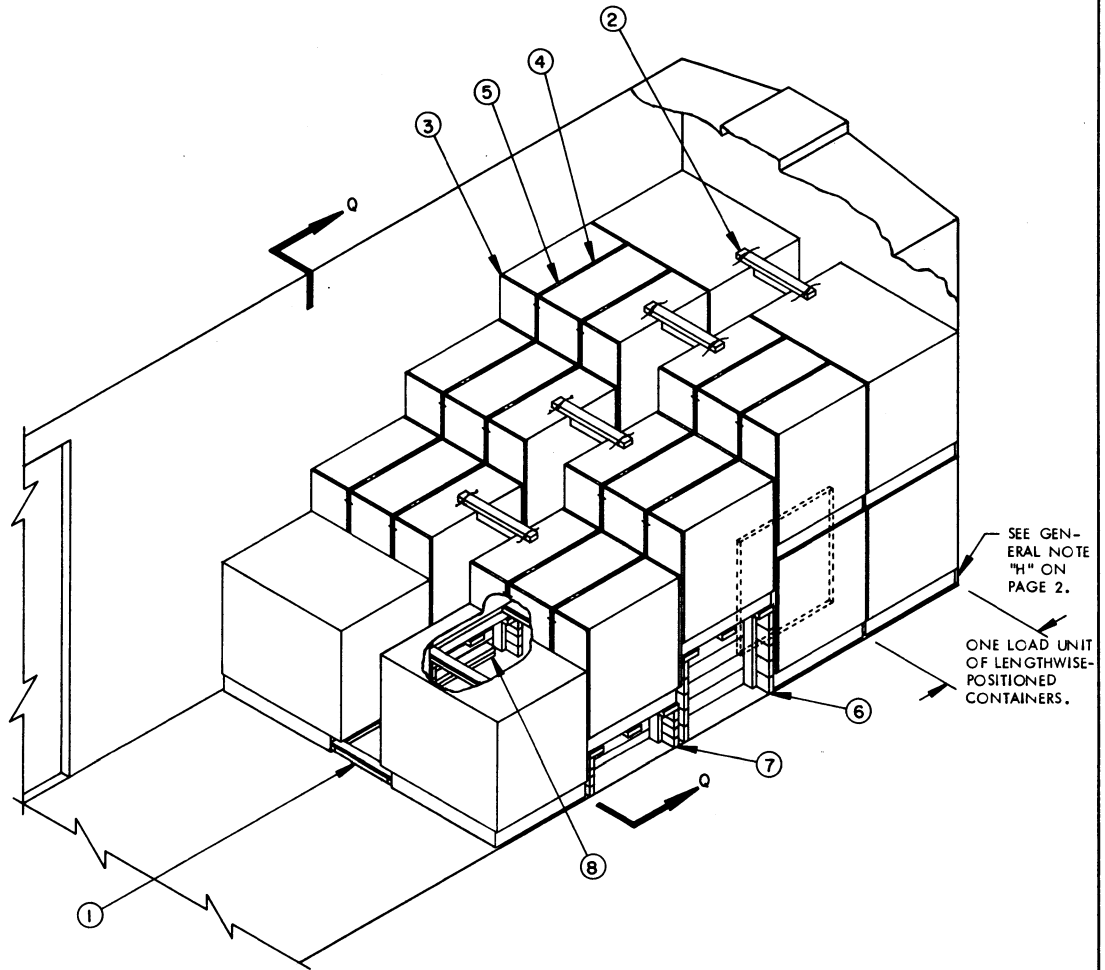
LOAD BEARING GATE F

THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT DECREASED BY TWO LAYERS PALLET UNITS. SEE SPECIAL NOTE 3 ABOVE FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.



SPECIAL NOTES:

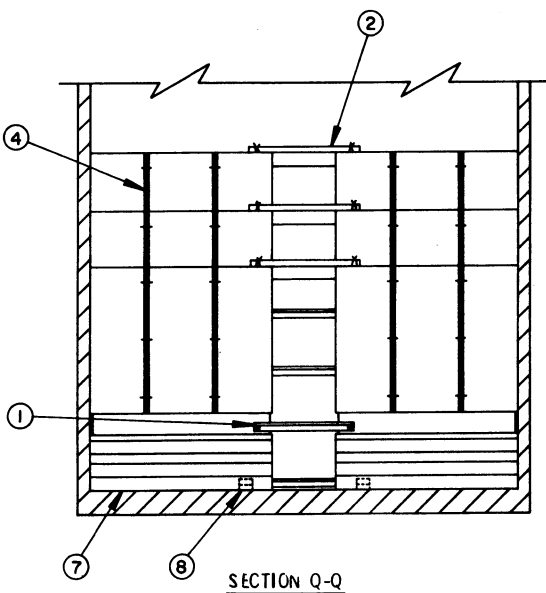
1. THE GATE SHOWN ON THIS PAGE ARE FOR USE WITH THE INDICATED PALLET UNITS USED IN THIS DOCUMENT. THEY ARE ONLY USED FOR THE LCL PROCEDURES SHOWN ON PAGE 55. THESE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-LENGTHWISE PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE 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 (5) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 6" GATE HOLD DOWN PIECE TO A 2" X 4" PIECE W/3-10d NAILS IN EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 59.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 80. SEE SPECIAL NOTE 6 ON PAGE 59.
- ③ SIDE FILL ASSEMBLY (16 REQD/2 PER PALLET UNIT). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 60. POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 60.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 14'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE SIDE FILL ASSEMBLIES. SECURE TO EACH SIDE FILL ASSEMBLY W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 60.
- ⑤ SEAL FOR 1-1/4" STRAPPING (32 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑥ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 59.
- 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 59.
- ⑧ STOP PIECE BLOCKING, 2" X 4" X 24" (4 REQD/1 PER RISER ASSEMBLY). POSITION AGAINST THE CROSS BRACES OF THE RISER ASSEMBLIES AS SHOWN. NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



SECTION Q-Q

STOP PIECE "A", 2" X 4" X 46-3/4" (DOUBLED) (1 REQD). POSITION SO AS TO BE AGAINST THE DECKING PIECE WHICH IS ADJACENT TO THE CENTER OF THE CAR AND NAIL THE FIRST PIECE TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/4-10d NAILS. SEE RISER ASSEMBLY NOTE 3 BELOW.

DECKING, 2" X 6" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

DECKING, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

CROSS BRACE CLEAT, 2" X 4" BY CUT TO FIT (4 REQD). NAIL TO THE CROSS BRACES W/3-10d NAILS AT EACH JOINT.

LATERAL PIECE, 2" THICK BY A LENGTH TO SUIT BY A WIDTH AS REQUIRED TO PROVIDE FOR A ONE-THIRD OR TWO-THIRDS PALLET UNIT HEIGHT (AS REQD). NAIL TO THE CROSS BRACE PIECES W/10d NAILS AS SHOWN. SEE RISER ASSEMBLY NOTE 2 BELOW.

LATERAL PIECE CLEAT, 2" X 4" BY CUT TO FIT (4 REQD). NAIL TO THE LATERAL PIECES W/3-10d NAILS AT EACH JOINT. POSITION AS SHOWN.

SEE RISER ASSEMBLY NOTE 2 BELOW.

46-3/4" FOR LENGTHWISE CNTRS

47-3/4" FOR CROSSWISE CNTRS

36-1/2" FOR LENGTHWISE CONTAINERS, 35-1/2" FOR CROSSWISE CONTAINERS.

CROSS BRACE, 2" THICK BY A LENGTH TO SUIT BY A WIDTH AS REQUIRED TO PROVIDE FOR A ONE-THIRD OR TWO-THIRDS PALLET UNIT HEIGHT (AS REQD). SEE RISER ASSEMBLY NOTE 2 BELOW.

SPECIAL NOTES:

RISER ASSEMBLY

SPECIAL NOTES FOR RISER ASSEMBLY:

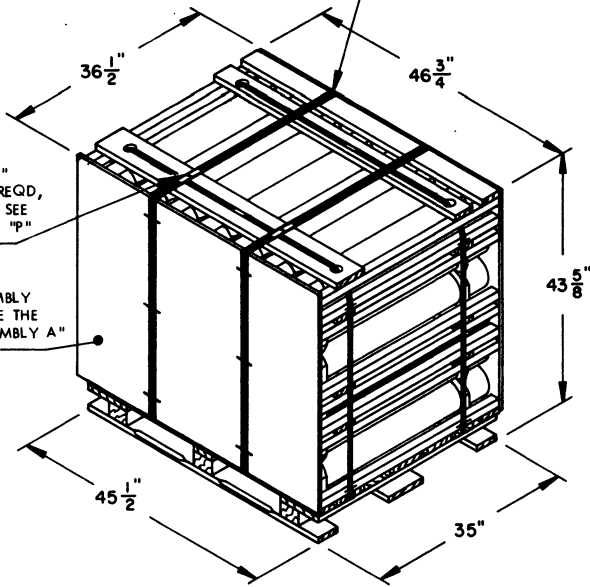
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT DECREASED BY ONE LAYER. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CONTAINERS-CROSSWISE 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 PAGES FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. ANTI-SWAY BRACE "B" IS APPLICABLE FOR ALL THE CONTAINERS-LENGTHWISE UNITS. ANTI-SWAY BRACE "A", AS DETAILED ON PAGE 13, WILL BE USED FOR CONTAINERS-CROSSWISE UNITS. NOTE THAT IF A 9'-6" CAR IS USED AND THE UNITS ARE POSITIONED WITH THE CONTAINERS-CROSSWISE AND THREE UNITS WIDE, ANTI-SWAY BRACING WILL BE OMITTED AND CRIB FILL USED.
6. TOP-OF-LOAD ANTI-SWAY BRACE "B" IS APPLICABLE FOR ALL THE CONTAINERS-LENGTHWISE UNITS. TOP-OF-LOAD ANTI-SWAY BRACE "A", AS DETAILED ON PAGE 18, WILL BE USED FOR CONTAINERS-CROSSWISE UNITS. NOTE THAT IF A 9'-6" CAR IS USED AND THE UNITS ARE POSITIONED CROSSWISE AND 3-WIDE, TOP-OF-LOAD ANTI-SWAY BRACING WILL NOT BE REQUIRED.
7. FOR CONTAINERS-CROSSWISE UNITS, THE METHOD "B" DETAILS FOR SIDE FILL ASSEMBLIES SHOWN ON PAGE 61 WILL BE USED IN LIEU OF THE METHOD "A" SIDE FILL ASSEMBLIES. ALSO, STOP PIECE "A", AS SHOWN ON THE RISER DETAIL ABOVE, WILL BE USED IN LIEU OF THE SIDE BLOCKING STOP PIECES, PIECE MARKED (B) IN THE LCL LOAD ON PAGE 58.

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT. THE HEIGHT OF THIS UNIT IS 43-5/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER (6) IN THE LOAD ON PAGE 58. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FIVE (5) PIECES OF 2" X 6" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 29" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER (7) IN THE LOAD ON PAGE 58, WILL BE FABRICATED FROM THREE (3) PIECES OF 2" X 4" AND ONE (1) PIECE OF 2" X 3" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE TO PROVIDE FOR A TOTAL HEIGHT OF 14-1/2" 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 WITH THE CONTAINERS-CROSSWISE IN THE CAR. IF THE PALLET UNITS ARE POSITIONED WITH THE CONTAINER-LENGTHWISE, AS IN THE LCL LOAD ON PAGE 58, SIDE BLOCKING, PIECE MARKED (B), IS USED AS A STOP PIECE FOR THE RISER.

REINFORCING STRAP, 1-1/4" X .035" X 14'-0" LONG STEEL STRAPPING FOR 6-LAYER UNITS, 13'-0" LONG FOR 5-LAYER UNITS, AND 15'-0" LONG FOR 7-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE SIDE FILL ASSEMBLIES. SECURE TO EACH SIDE FILL ASSEMBLY W/3 STAPLES.

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

SIDE FILL ASSEMBLY (2 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL BELOW.

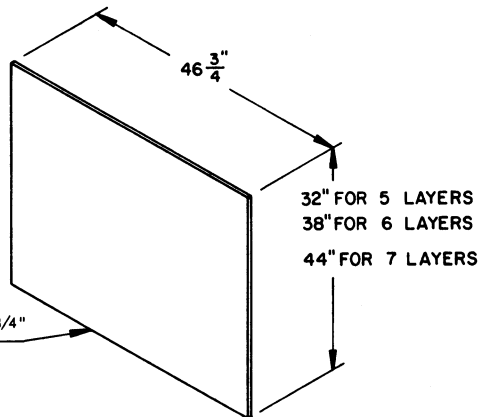


NOTE:

THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR A PALLET UNIT WHICH IS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 58. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE OTHER PALLET UNITS. FOR MODIFICATION OF PALLET UNITS TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL ON PAGE 61.

METHOD A

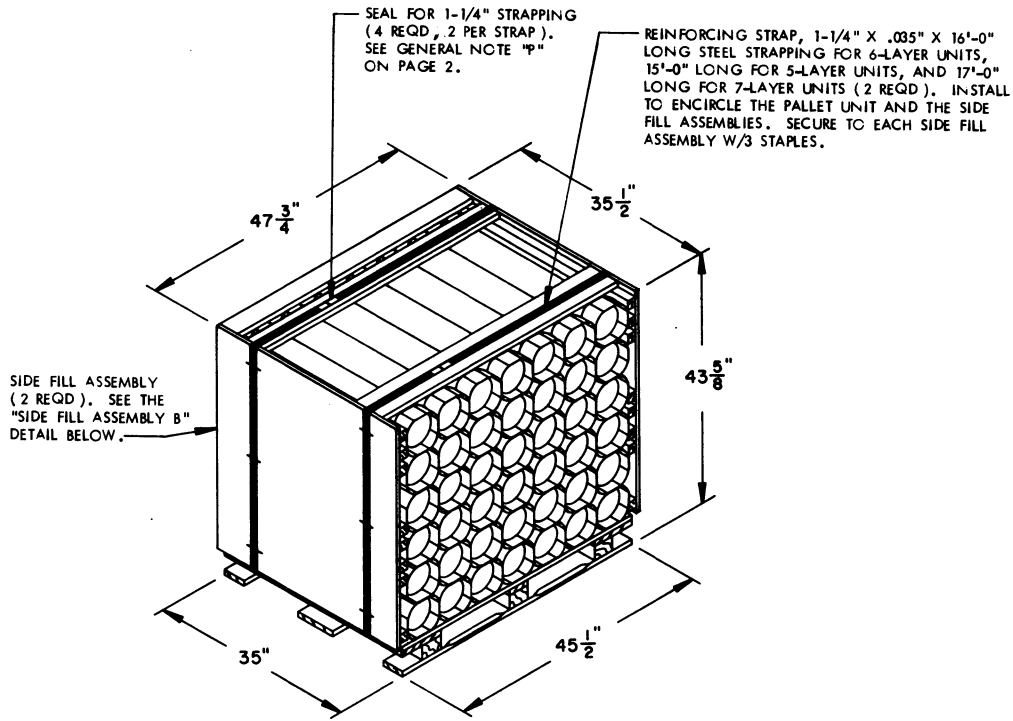
FOR USE WITH ALL PALLET UNITS COVERED BY THIS DOCUMENT. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT DECREASED BY ONE LAYER.



PLYWOOD, 1/2" BY A WIDTH TO SUIT X 46-3/4" (1 REQD).

SIDE FILL ASSEMBLY A

FOR METHOD "A" ABOVE.

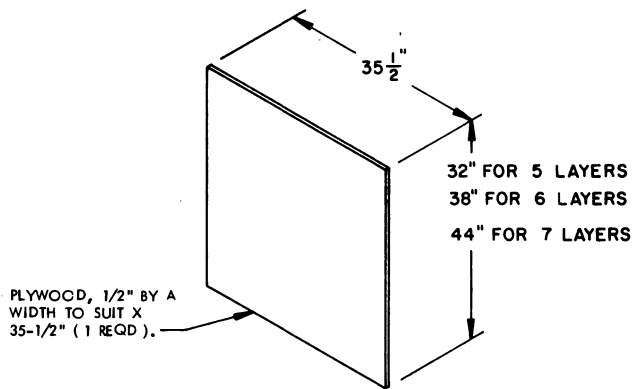


METHOD B

FOR USE WITH ALL PALLET UNITS COVERED BY THIS DOCUMENT. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT DECREASED BY ONE LAYER.

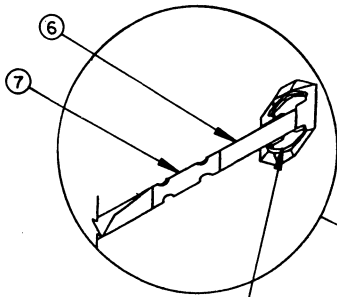
NOTE:

THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR A PALLET UNIT WHICH IS TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 58. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE OTHER PALLET UNITS. FOR MODIFICATION OF PALLET UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL ON PAGE 60.

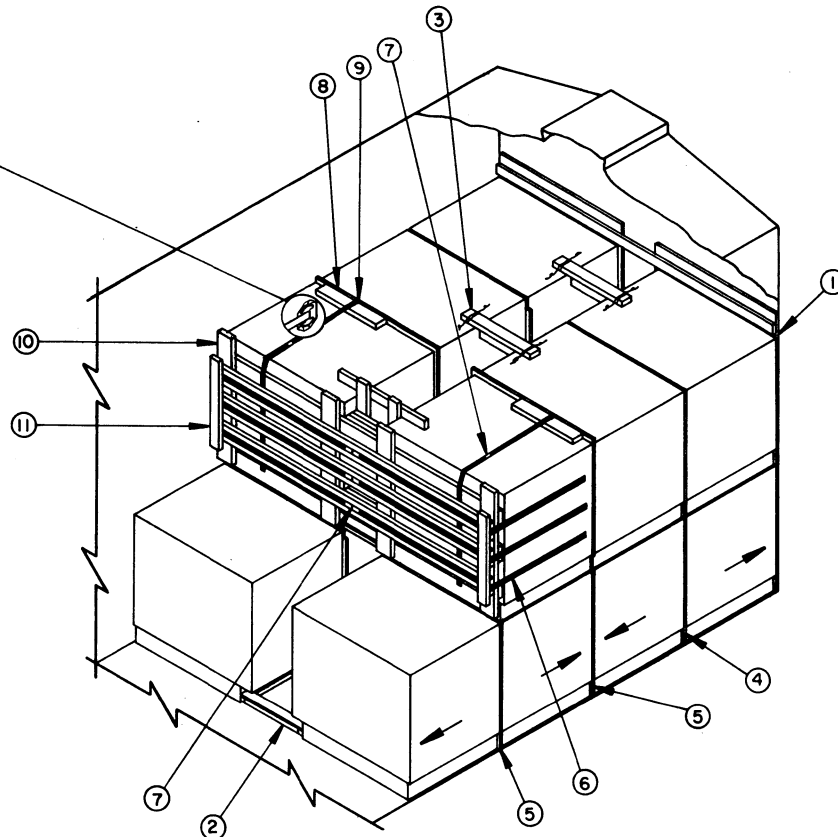


SIDE FILL ASSEMBLY B

FOR METHOD "B" ABOVE.



INDICATES A TYPICAL ANCHOR DEVICE FOR 1-1/4" STRAPPING. SEE SPECIAL NOTE 5 BELOW.



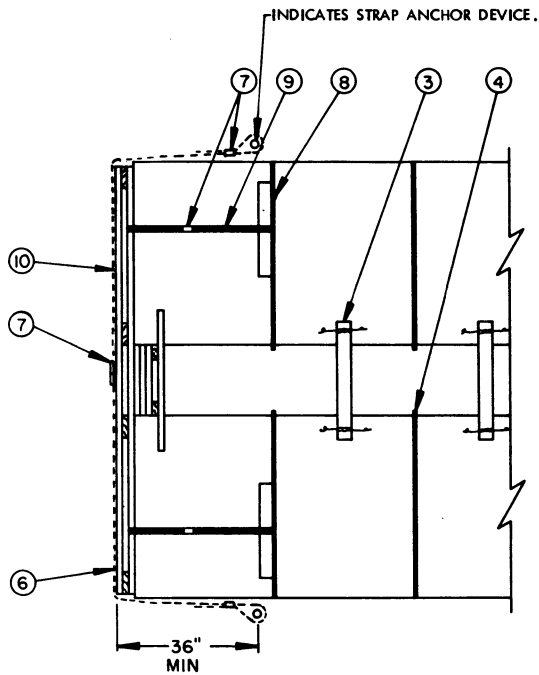
ISOMETRIC VIEW

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 BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LCL LOAD ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER PALLET UNITS COVERED BY THIS DOCUMENT.
3. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF CONTAINERS-LENGTHWISE PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CONTAINERS-CROSSWISE 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 3 BASIC HEIGHT PALLET UNITS OR 4 PALLET UNITS WHICH ARE DECREASED BY ONE OR TWO LAYERS; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 5 BASIC HEIGHT PALLET UNITS, 6 PALLET UNITS DECREASED BY ONE LAYER, OR 7 PALLET UNITS DECREASED BY TWO LAYERS.
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 51 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 55 FOR A SINGLE UNIT.
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 ON PAGE 63 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

KEY NUMBERS

- ① END-WALL LINING (1 REQD.). SEE SPECIAL NOTE 1 ON PAGE 79. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 80 IS USED, THE END-WALL LINING IS NOT REQUIRED.
- ② ANTI-SWAY BRACE (7 REQD.). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "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 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80.
- ④ PLYWOOD SEPARATOR GATE FOR 2-HIGH LOAD, 3/8" X 48" X 7'-0" (2 REQD.). POSITION AGAINST ALREADY LOADED UNITS AND NAIL TO THE CROSS BRACE OF THE UPPER ANTI-SWAY BRACE B, PIECE MARKED ②, W/2-6d NAILS.
- ⑤ PLYWOOD SEPARATOR GATE FOR 1-HIGH LOAD, 3/8" X 48" X 42" (4 REQD.). POSITION AGAINST ALREADY LOADED UNITS AND NAIL TO THE CROSS BRACE OF ANTI-SWAY BRACE B, PIECE MARKED ② W/2-6d NAILS.
- ⑥ BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD.). INSTALL FROM TWO EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 63 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.
- ⑦ SEAL FOR 1-1/4" STRAPPING (14 REQD., 4 PER BULKHEAD STRAP, PIECE MARKED ⑥, AND 1 PER BUNDLING STRAP, PIECE MARKED ⑨).
- ⑧ STRAPPING BOARD ASSEMBLY (2 REQD., 1 RIGHT HAND AND 1 LEFT HAND). SEE THE DETAIL ON PAGE 63.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" X 15'-0" LONG (REF) STEEL STRAPPING (2 REQD.). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD ASSEMBLY, PIECE MARKED ⑧. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECE MARKED ④.
- ⑩ BULKHEAD GATE (1 REQD.). SEE THE DETAIL ON PAGE 63. SEE SPECIAL NOTE 3 AT LEFT.
- 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.



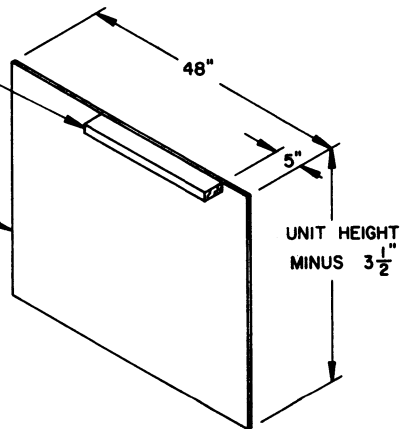
STRAP APPLICATION PLAN VIEW

HORIZONTAL PIECE LOCATION						
PALLET UNITS	5-HIGH		6-HIGH		7-HIGH	
	DIM A	DIM B	DIM A	DIM B	DIM A	DIM B
	13"	22"	16-1/2"	28-1/2"	22-1/2"	35"

HORIZONTAL PIECE, 2" X 4" X 24" (1 REQD).

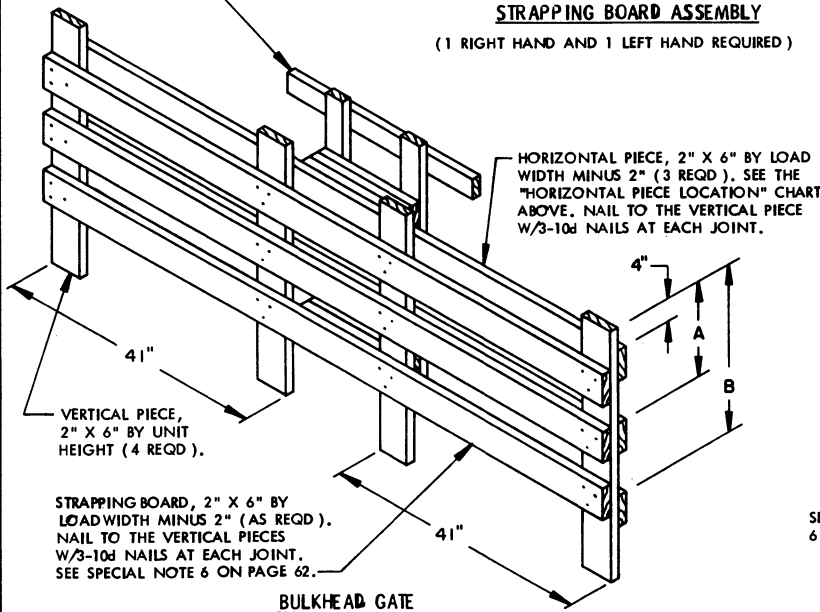
PLYWOOD, 3/8" X 48" BY UNIT HEIGHT MINUS 3-1/2" (1 REQD). NAIL TO THE HORIZONTAL PIECE W/4-6d NAILS.

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.

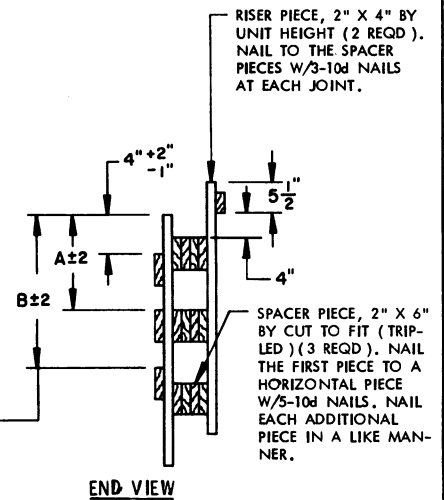


STRAPPING BOARD ASSEMBLY

(1 RIGHT HAND AND 1 LEFT HAND REQUIRED)



BULKHEAD GATE

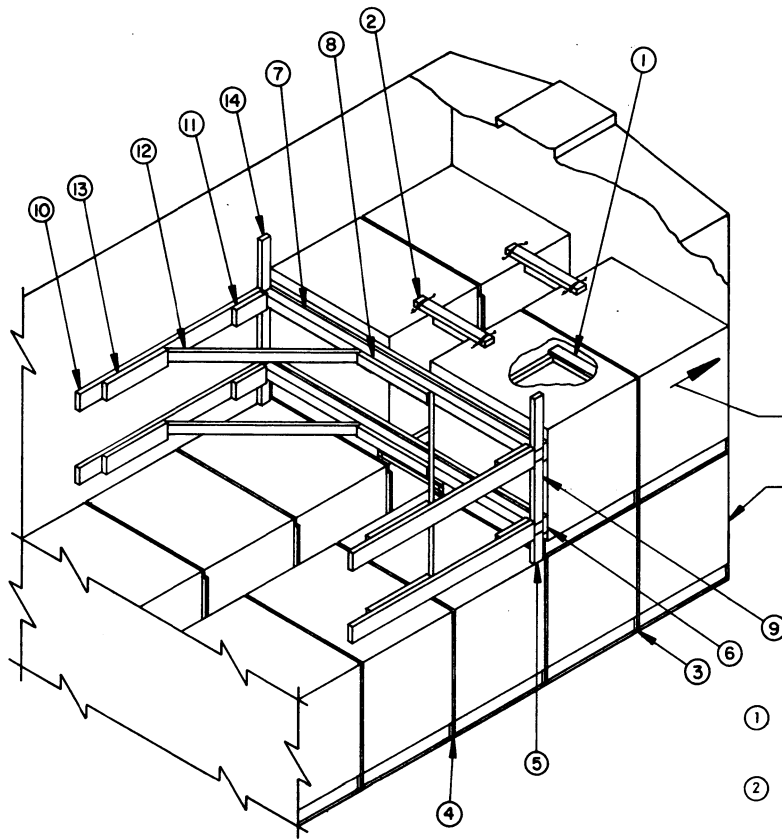


END VIEW

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

(SPECIAL NOTES CONTINUED)

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



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

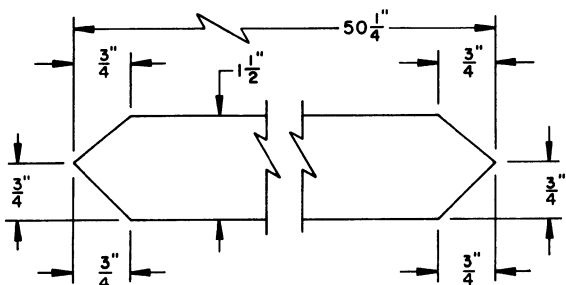
IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 80.

ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOX CAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL LCL LOAD ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER PALLET UNITS COVERED BY THIS DOCUMENT.
3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CAR LOADS DEPICTED HEREIN. A CONTAINERS-LENGTHWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR CONTAINERS-CROSSWISE LOADS.
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 THIRD TIER, SECOND TIER, OR A FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 65, 66, AND 67 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 PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ⑤, ⑥, ⑦, ⑧, ⑪, AND ⑭ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE END OF THE DIAGONAL BRACES MARKED ⑫ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑩ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60°), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑩ TO THE FIRST W/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.

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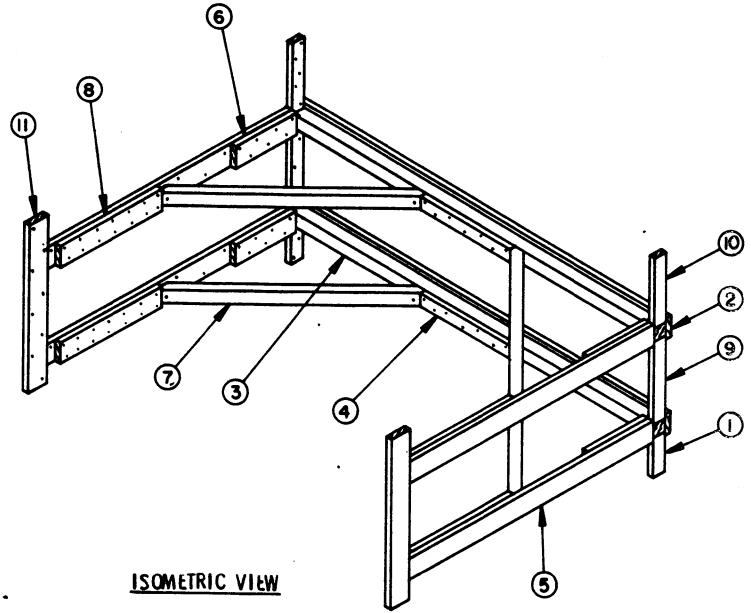
DIAGONAL BRACE

KEY NUMBERS

- ① ANTI-SWAY BRACE (6 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 80. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.
- ③ PLYWOOD SEPARATOR GATE FOR 2-HIGH LOAD, 3/8" X 48" X 7'-0" (2 REQD). POSITION AGAINST THE ALREADY LOADED UNITS AND NAIL TO THE CROSS BRACE OF THE UPPER ANTI-SWAY BRACE B, PIECE MARKED ① W/2-6d NAILS.
- ④ PLYWOOD SEPARATOR GATE FOR 1-HIGH LOAD, 3/8" X 48" X 42" (6 REQD). POSITION AGAINST THE ALREADY LOADED UNITS AND NAIL TO THE CROSS BRACE OF ANTI-SWAY BRACE B, PIECE MARKED ①, W/2-6d NAILS.
- ⑤ SUPPORT CLEAT, 2" X 4" X 8" (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS, POSITION SO AS TO CENTER PIECES ⑥ AND ⑦ ON THE JOINTS BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.
- ⑥ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑦, W/1-12d NAIL EVERY 6".
- ⑦ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD).
- ⑧ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE PIECE MARKED ⑦ W/7-16d NAILS. SEE SPECIAL NOTE 6 ABOVE.
- ⑨ SPACER CLEAT, 2" X 4" X 21-1/2" FOR 6-LAYER UNITS, 27-3/4" FOR 7-LAYER UNITS, 15-1/4" FOR 5-LAYER UNITS (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" (4 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 ⑦, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑬ BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑩ W/8-16d NAILS.
- ⑭ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

SPECIAL NOTES:

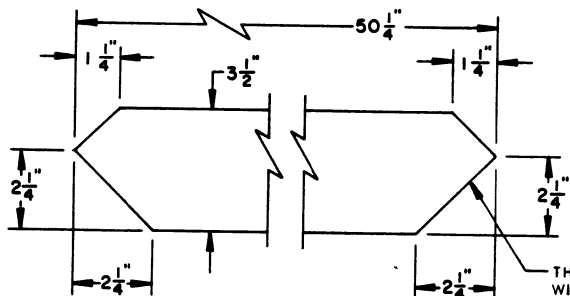
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN NINE (9) 7-LAYER UNITS IN A 3-WIDE LOAD OR EIGHT (8) 7-LAYER UNITS IN A 2-WIDE LOAD, OR NOT MORE THAN NINE (9) 6-LAYER UNITS IN A 3-WIDE LOAD OR TEN (10) 6-LAYER UNITS IN A 2-WIDE LOAD, OR NOT MORE THAN TWELVE (12) 5-LAYER UNITS IN EITHER A 3-WIDE OR 2-WIDE LOAD. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 66 AND 67 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 64 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, ⑤, ⑥, ⑦, ⑧, ⑨, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 64 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

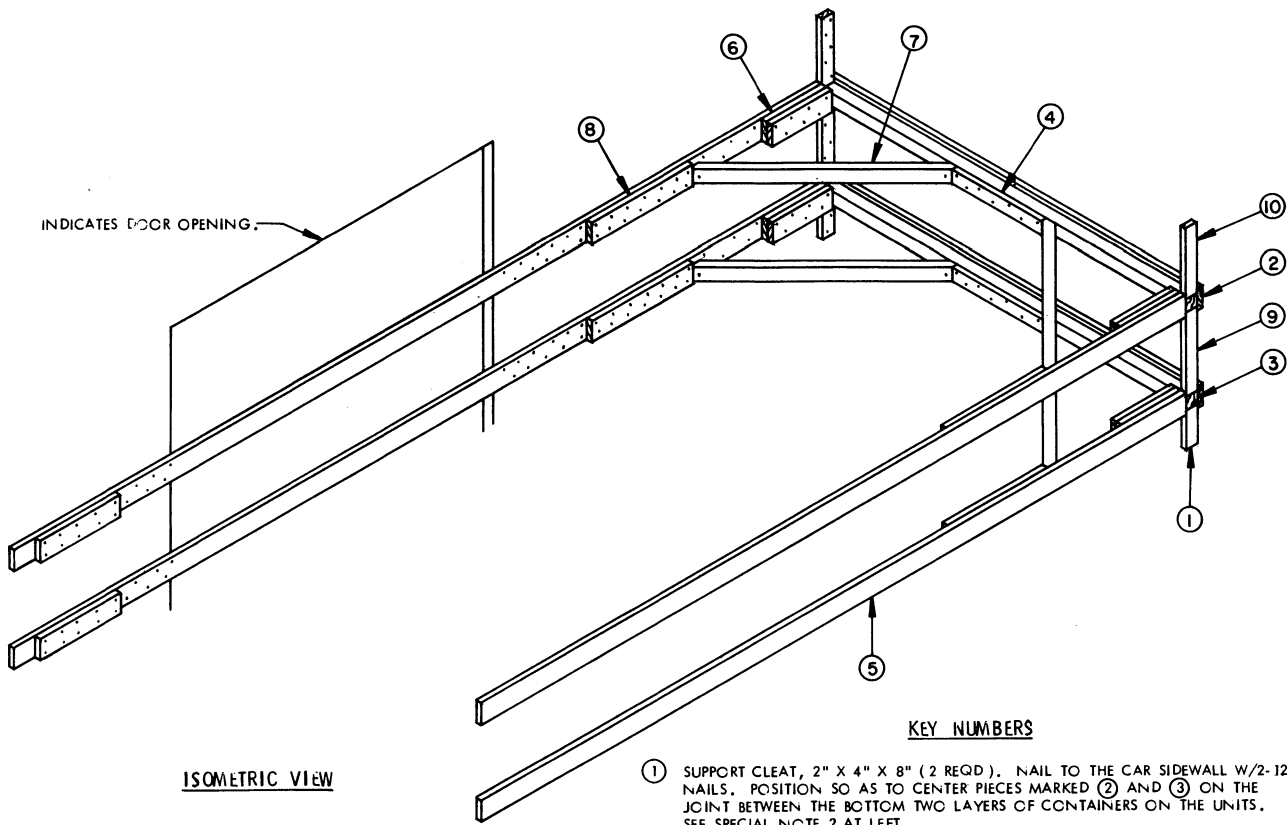
- ① SUPPORT CLEAT, 2" X 4" X 8" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 21-1/2" FOR 6-LAYER UNITS, 27-3/4" FOR 7-LAYER UNITS, AND 15-1/4" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "B" K-BRACE



ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 8" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" 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 ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/4d-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 15-1/4" FOR 5-LAYER UNITS, 21-1/2" FOR 6-LAYER UNITS, AND 27-3/4" FOR 7-LAYER UNITS (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.

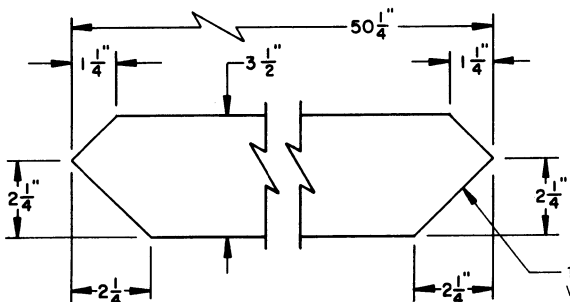
SPECIAL NOTES:

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 TWELVE (12) 7-LAYER UNITS IN EITHER A 3-WIDE OR A 2-WIDE LOAD, OR NOT MORE THAN TWELVE (12) 6-LAYER UNITS IN A 3-WIDE LOAD OR FOURTEEN (14) 6-LAYER UNITS IN A 2-WIDE LOAD, OR NOT MORE THAN EIGHTEEN (18) 5-LAYER UNITS IN A 3-WIDE LOAD OR SIXTEEN (16) (MAXIMUM BY VOLUME IN A 60'-8" LONG CAR) 5-LAYER UNITS IN A 2-WIDE LOAD. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 67 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 65 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 64 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, ⑧, ⑨, AND ⑩, MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT 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" CAR, AND 38" LONG FOR A 9'-4" CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

(CONTINUED AT RIGHT)

(SPECIAL NOTES CONTINUED)

4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.



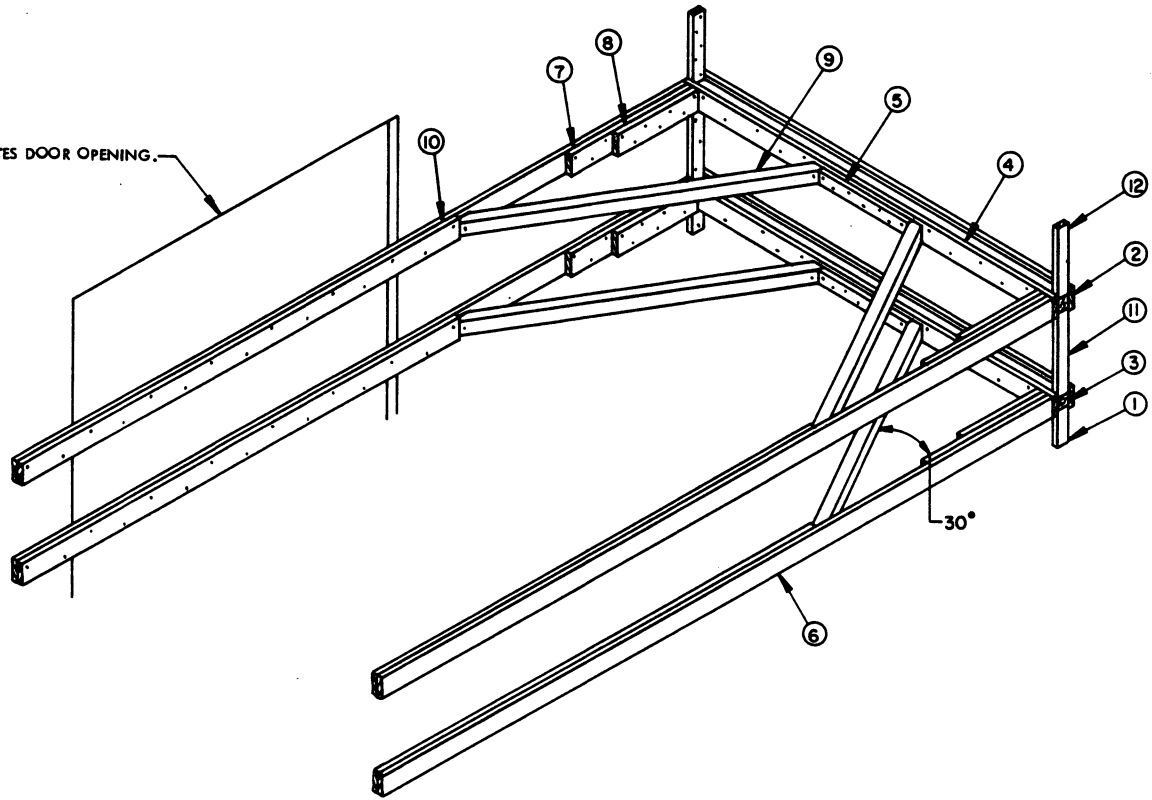
DIAGONAL BRACE

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.

TYPE "C" K-BRACE

INDICATES DOOR OPENING.

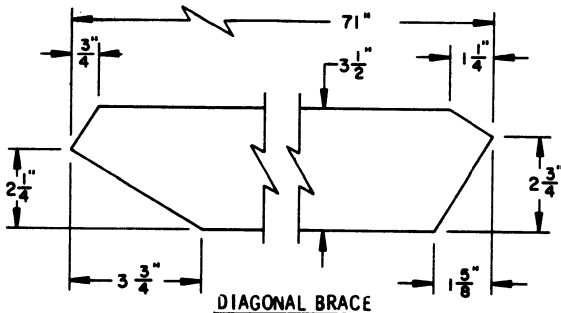


ISOMETRIC VIEW

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 EIGHTEEN (18) 7-LAYER UNITS IN A 3-WIDE LOAD OR FOURTEEN (14) (MAXIMUM BY VOLUME IN A 60'-8" LONG CAR) 7-LAYER UNITS IN A 2-WIDE LOAD, OR NOT MORE THAN EIGHTEEN (18) 6-LAYER OR 5-LAYER UNITS IN A 3-WIDE LOAD OR FOURTEEN (14) 6-LAYER OR 5-LAYER UNITS IN A 2-WIDE LOAD (BOTH MAXIMUM BY VOLUME IN A 60'-8" LONG CAR. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 66 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 65 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 64 WILL BE ADEQUATE.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑦, ⑧, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9' 2" AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

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

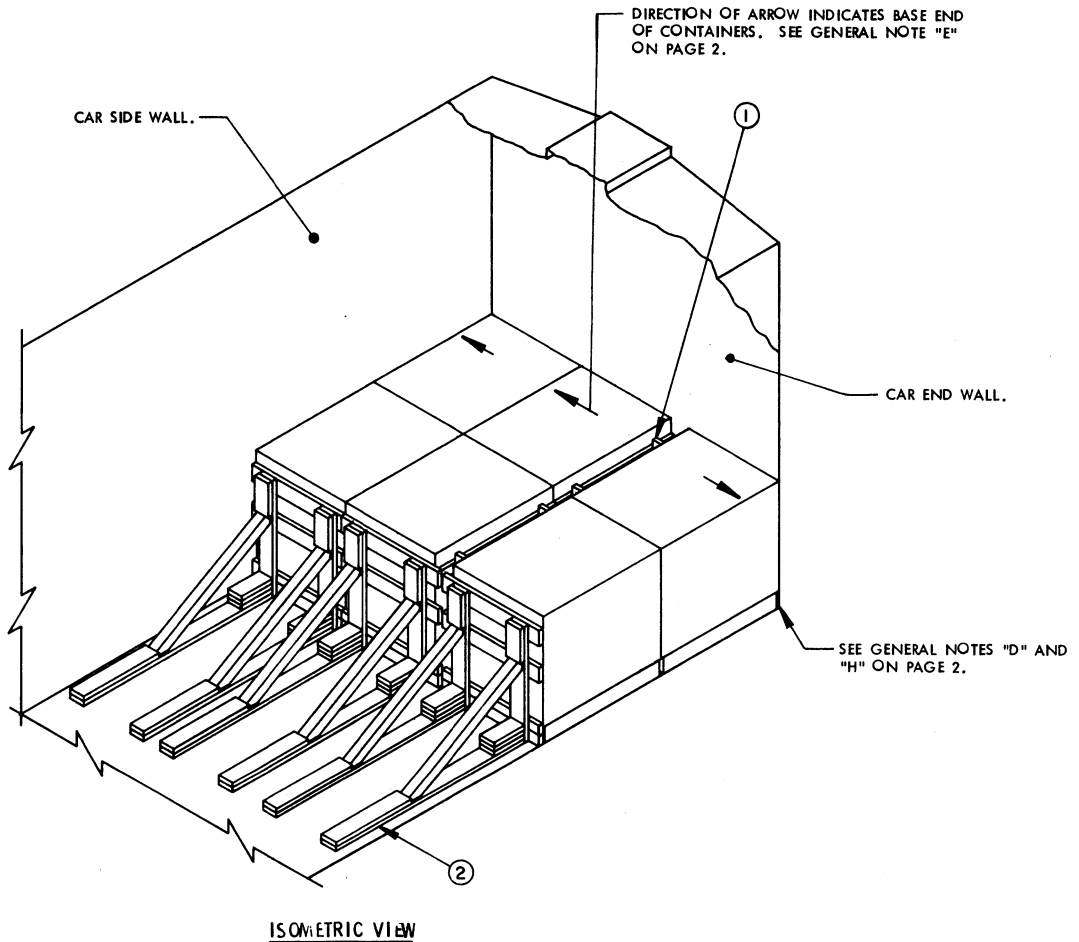
TYPE "D" K-BRACE

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 8" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6".
- ⑤ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO CONTACT PIECE MARKED ④ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TENAIL 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 15-1/4" FOR 5-LAYER UNITS, 21-1/2" FOR 6-LAYER UNITS, AND 27-3/4" FOR 7-LAYER UNITS (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 CONTINUED)

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.



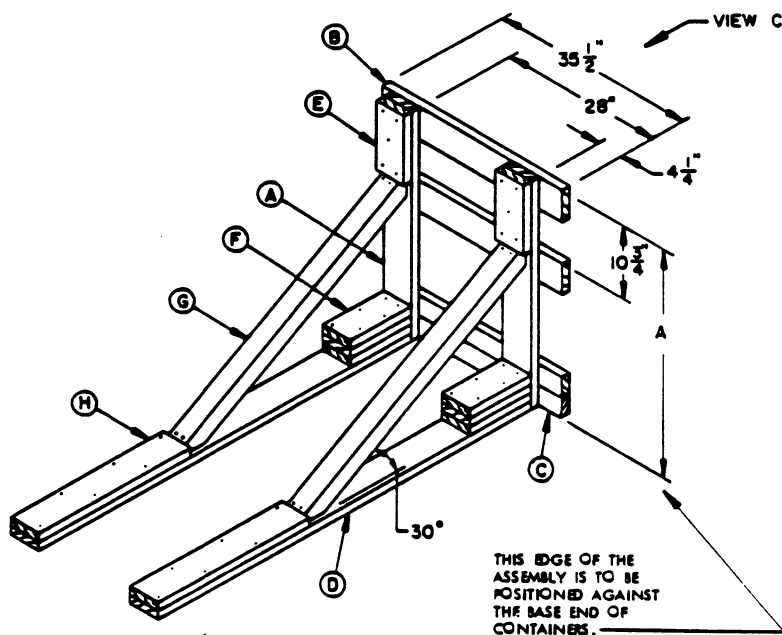
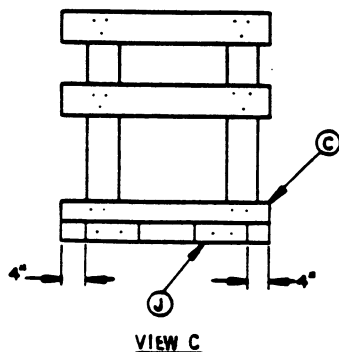
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LINING CAN BE USED. NOTE THAT A CAR MUST BE AT LEAST 9'-0" IN WIDTH FOR A 3-WIDE LOAD.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER PALLET UNITS COVERED BY THIS DOCUMENT.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING FOR CONTAINERS-CROSSWISE UNITS IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATION OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 IS NOT EXCEEDED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS. NOTE THAT RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED.
5. HOLD DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. FOR HOLD DOWN PIECE TO BE APPLIED, REFER TO THE KNEE BRACE ASSEMBLY "VIEW C" DETAIL ON PAGE 69.

KEY NUMBERS

- ① CRIB FILL FOR 1-HIGH (2 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 30. SEE GENERAL NOTE "N" ON PAGE 2.
- ② KNEE BRACE ASSEMBLY (3 REQD). SEE THE "KNEE BRACE ASSEMBLY A" DETAIL ON PAGE 69 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.



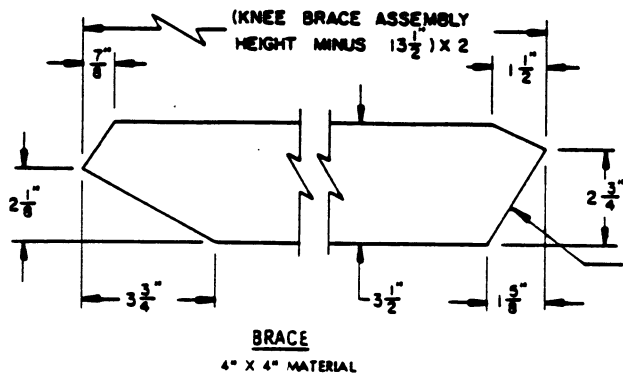
KNEE BRACE ASSEMBLY A

RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED.

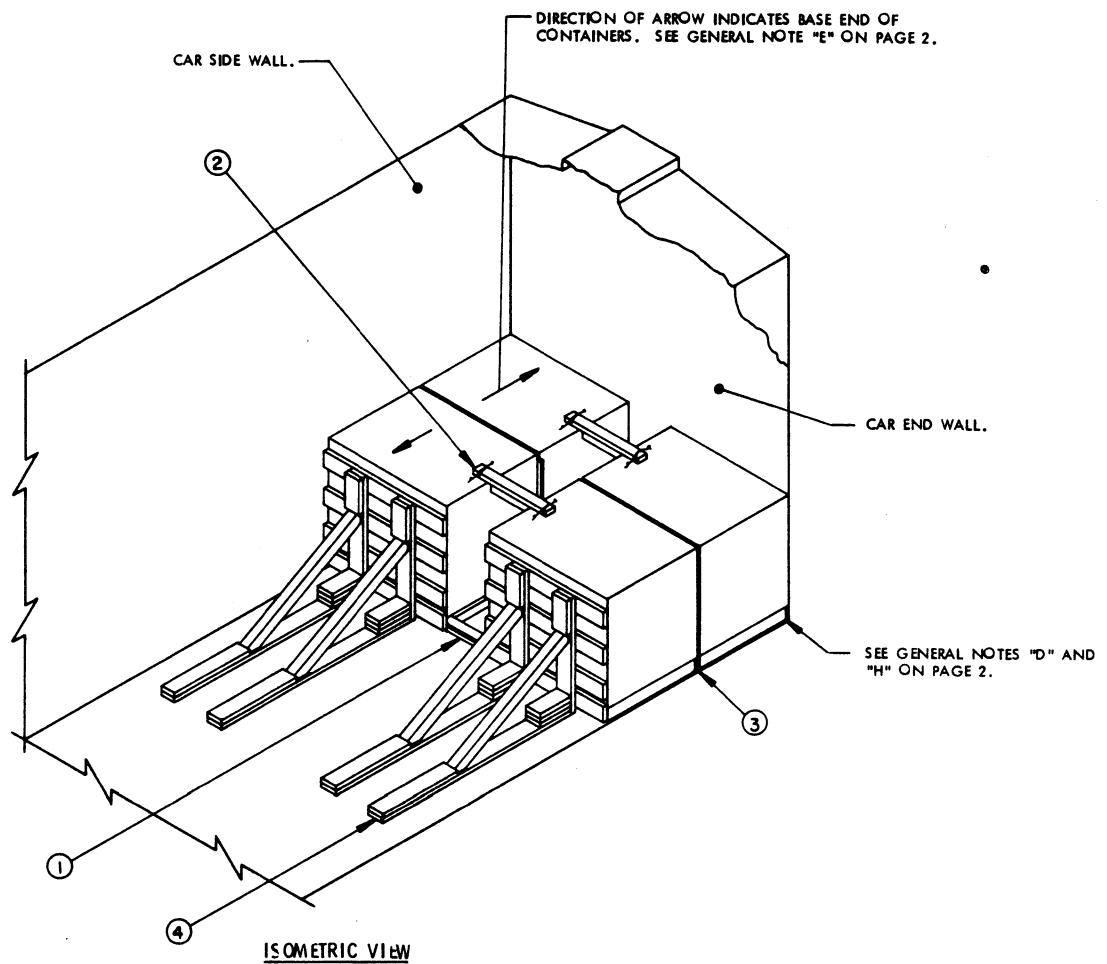
KEY LETTERS

ASSEMBLY HEIGHT FOR CONTAINERS-CROSSWISE UNITS	
PALLET UNIT	DIM A
BASIC HEIGHT	50-3/4"
BASIC HEIGHT DECREASED BY ONE LAYER	38-1/4"
BASIC HEIGHT DECREASED BY TWO LAYERS	38-1/4"

- (A) VERTICAL PIECE, 2" X 6" BY DIMENSION "A" (2 REQD.). SEE CHART AT LEFT. SEE THE VIEW ABOVE FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" X 35-1/2" (2 REQD.). IF CRIB FILL IS USED, AS SHOWN ON PAGE 68, ADD 3" TO THE APPLICABLE END OF THE LOWER HORIZONTAL PIECE SO AS TO HOLD THE CRIB FILL IN PLACE. NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "N" ON PAGE 2.
- (C) HORIZONTAL PIECE, 2" X 4" X 35-1/2" (2 REQD.). IF CRIB FILL IS USED, AS SHOWN ON PAGE 68, ADD 3" TO THE APPLICABLE END SO AS TO HOLD THE CRIB FILL IN PLACE. NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.
- (D) FLOOR CLEAT, 2" X 6" BY LENGTH TO SUIT (.87 OR 7/8 TIMES LENGTH OF PIECE MARKED (G), PLUS 30") (2 REQD.). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "T" ON PAGE 2.
- (E) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD.). NAIL TO A VERTICAL PIECE W/3-10d NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD.). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (D), W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), W/2-16d NAILS.
- (G) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2" TIMES 2) (2 REQD.). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT PIECES MARKED (A) AND (D), RESPECTIVELY, W/2-16d NAILS AT EACH END.
- (H) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD.). NAIL TO THE FLOOR CLEAT PIECE MARKED (D), W/6-10d NAILS.
- (J) HOLD-DOWN CLEAT, 2" X 4" X 9" (DOUBLED) (2 REQD.). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/2-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 68.



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

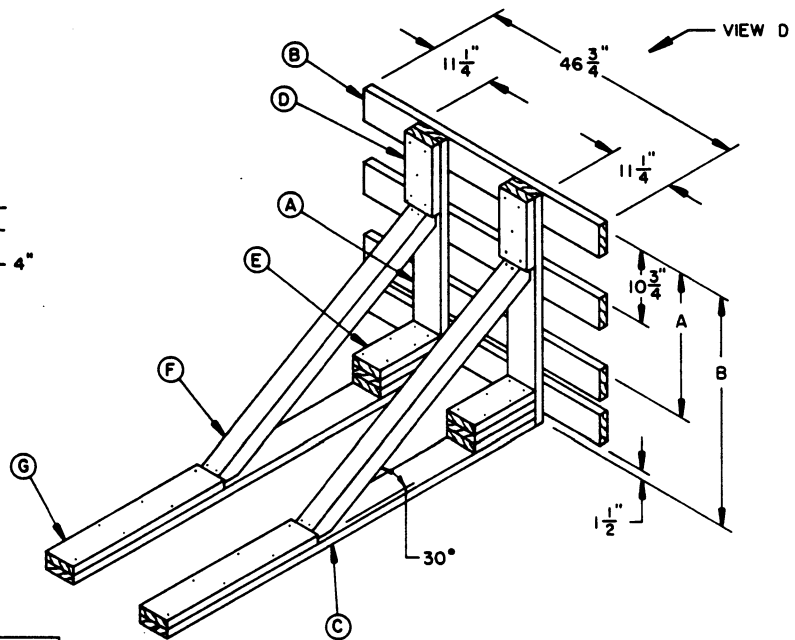
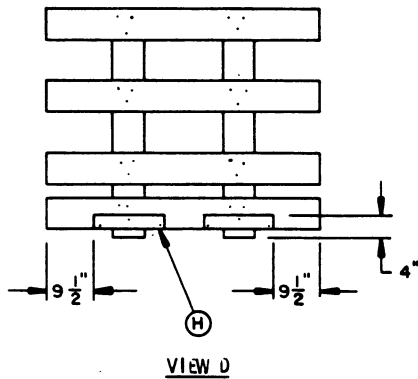


SPECIAL NOTES:

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 BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER PALLET UNITS COVERED BY THIS DOCUMENT.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING FOR CONTAINERS-LENGTHWISE UNITS IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.
5. HOLD DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. FOR HOLD DOWN PIECES TO BE APPLIED, REFER TO THE KNEE BRACE ASSEMBLY "VIEW D" DETAIL ON PAGE 71.

KEY NUMBERS

- ① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 19. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "N" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 19. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 80.
- ③ PLYWOOD SEPARATOR GATE, 3/8" X 48" X 42" (2 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS. NAIL TO THE CROSS BRACE OF THE ADJACENT ANTI-SWAY BRACE, PIECE MARKED ① W/2-6d NAILS SEE GENERAL NOTE "N" ON PAGE 2.
- ④ KNEE BRACE ASSEMBLY (2 REQD). SEE THE "KNEE BRACE ASSEMBLY B" DETAIL ON PAGE 71 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

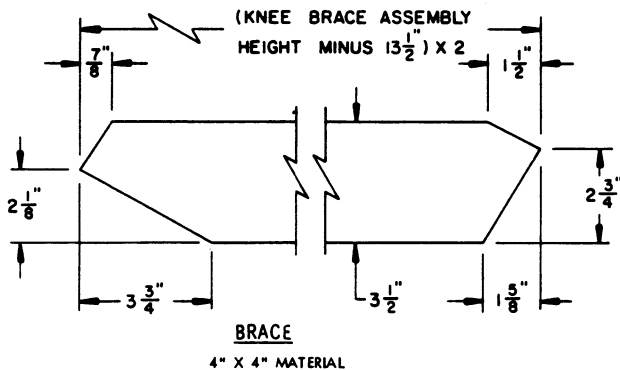


HORIZONTAL PIECE PLACEMENT FOR CONTAINERS - LENGTHWISE UNITS		
PALLET UNIT	DIM A	DIM B
BASIC HEIGHT	29"	50"
BASIC HEIGHT DECREASED BY ONE LAYER	26"	44-1/2"
BASIC HEIGHT DECREASED BY TWO LAYERS	19-3/4"	38-1/4"

KNEE BRACE ASSEMBLY B

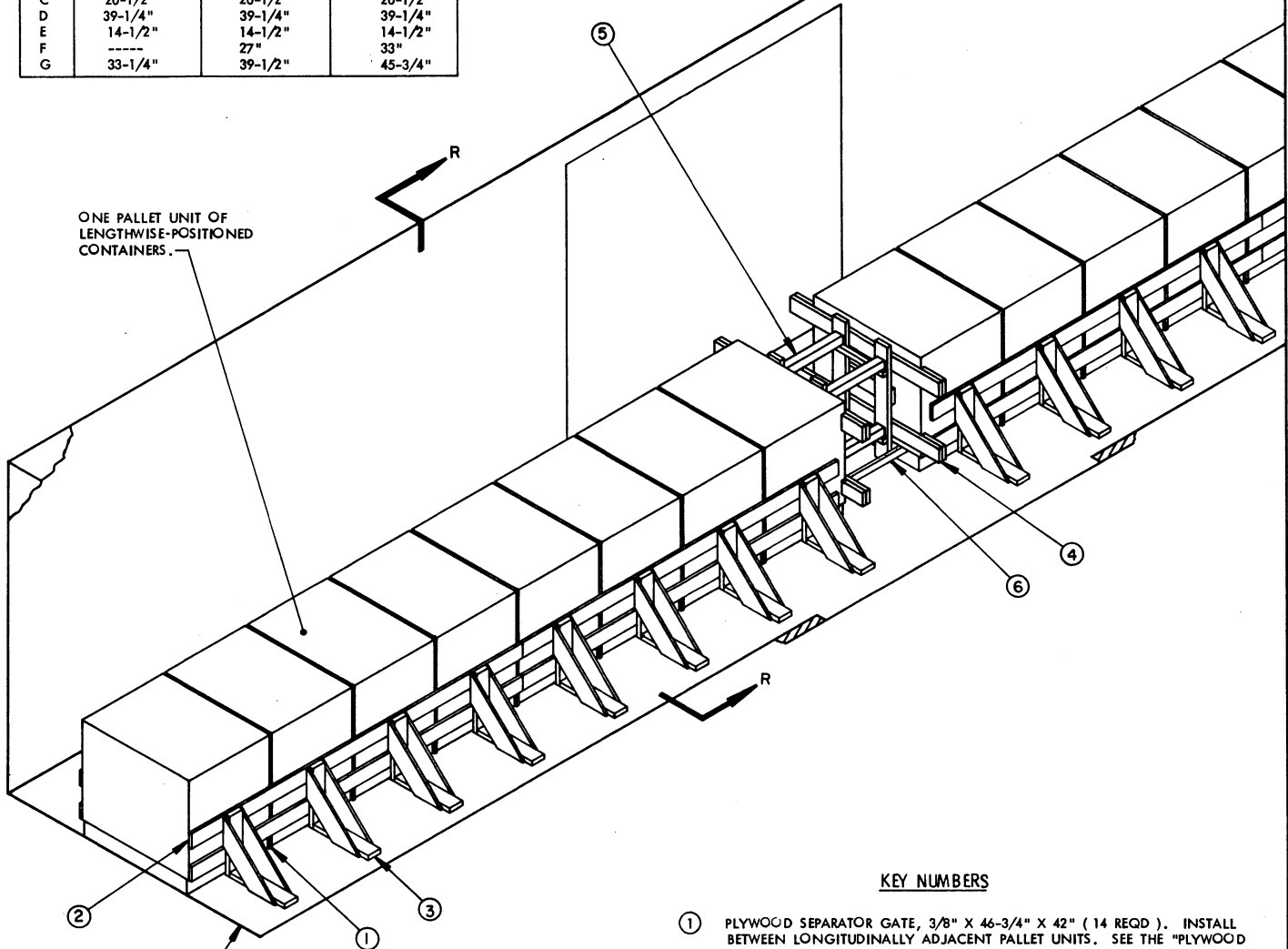
KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" BY DIMENSION "B" (2 REQD). SEE CHART AT LEFT. SEE THE VIEW ABOVE FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" X 46-3/4" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "T" ON PAGE 2.
- (C) FLOOR CLEAT, 2" X 6" BY LENGTH TO SUIT (.87 OR 7/8" TIMES LENGTH OF PIECE MARKED (F), PLUS 30") (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "T" ON PAGE 2.
- (D) HOLD DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.
- (E) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C), W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TO NAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), W/2-16d NAILS.
- (F) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2", TIMES 2) (2 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TO NAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C), RESPECTIVELY, 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) HOLD-DOWN CLEAT, 2" X 3" X 10" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 70.

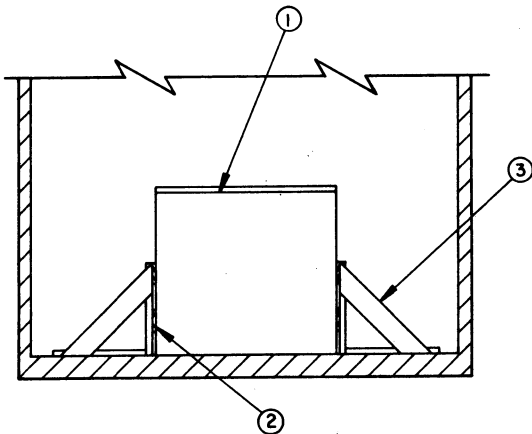


THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

CENTER GATE K			
DIM	5-HIGH UNIT	6-HIGH UNIT	7-HIGH UNIT
A	38"	43-1/2"	50"
B	65-1/4"	65-1/4"	65-1/4"
C	20-1/2"	20-1/2"	20-1/2"
D	39-1/4"	39-1/4"	39-1/4"
E	14-1/2"	14-1/2"	14-1/2"
F	-----	27"	33"
G	33-1/4"	39-1/2"	45-3/4"



ISOMETRIC VIEW

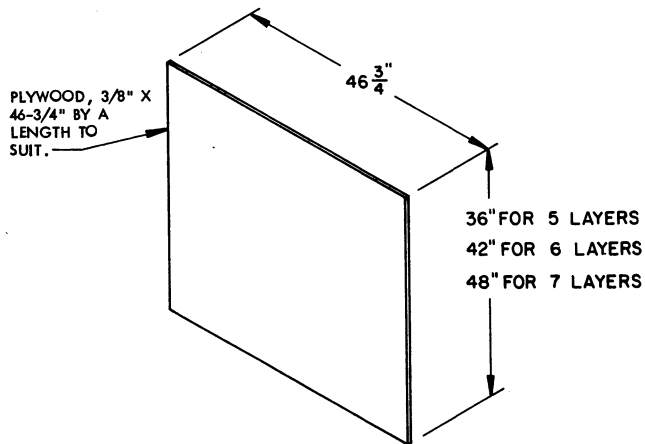


SECTION R-R

KEY NUMBERS

- ① PLYWOOD SEPARATOR GATE, 3/8" X 46-3/4" X 42" (14 REQD). INSTALL BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS. SEE THE "PLYWOOD SEPARATOR GATE" DETAIL ON PAGE 73.
- ② HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (16 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 74 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (32 REQD). SEE THE DETAIL ON PAGE 74 AND SPECIAL NOTE 4 ON PAGE 73. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "T" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE K" OR THE "CENTER GATE L" DETAIL ON PAGE 73 FOR CONTAINERS-LENGTHWISE OR CONTAINERS-CROSSWISE UNITS, RESPECTIVELY.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (4 REQD). TOENAIL TO PIECE MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2. AND/OR 3.
- ⑥ GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE K" DETAIL ON PAGE 73 FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 6 ON PAGE 73.

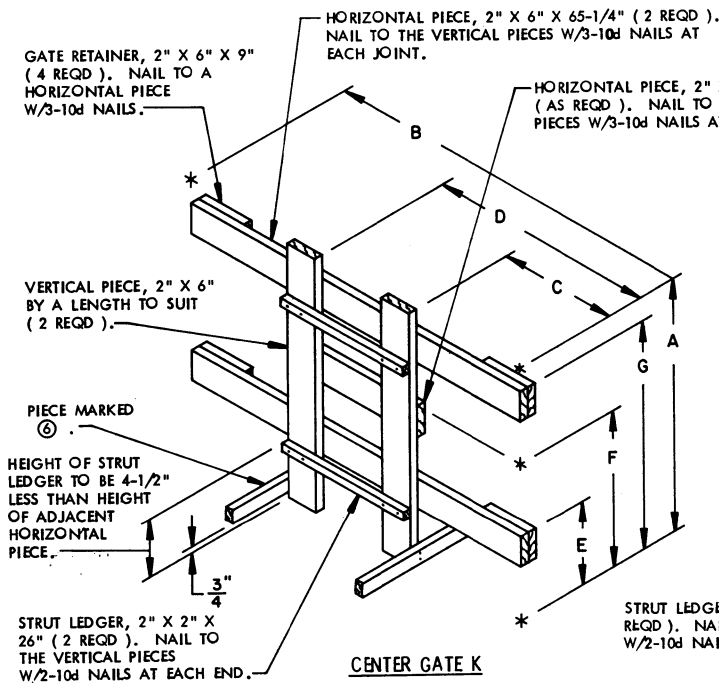
CENTER GATE L			
DIM	5-HIGH UNIT	6-HIGH UNIT	7-HIGH UNIT
H	31"	43-1/2"	50"
J	54"	54"	54"
K	13-1/2"	13-1/2"	13-1/2"
L	37-1/4"	37-1/4"	37-1/4"
M	9-1/2"	9-1/2"	9-1/2"
N	27"	39-1/2"	45-3/4"



PLYWOOD SEPARATOR GATE

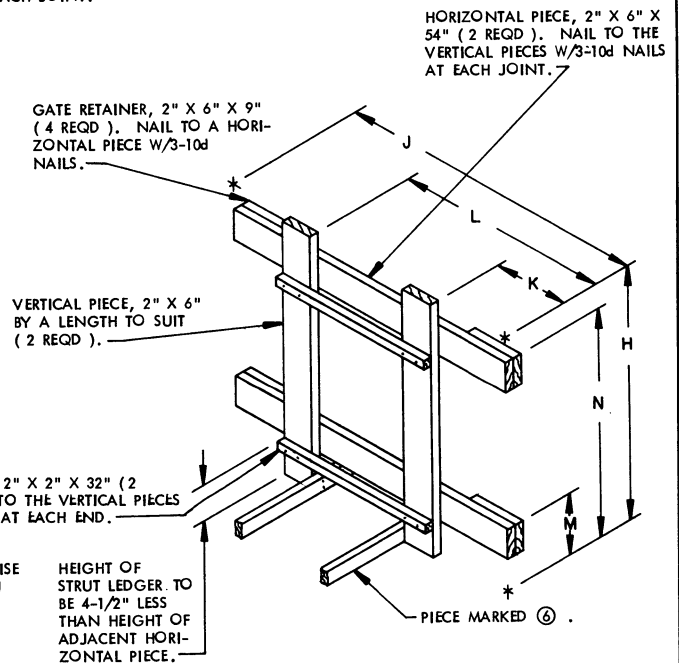
SPECIAL NOTES:

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 BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE TYPICAL 1-WIDE LOAD ON PAGE 72. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A 1-WIDE CONTAINERS-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 CONTAINERS-CROSSWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE PLYWOOD SEPARATOR GATES, PIECES MARKED (1), ARE NOT REQUIRED AND THE QUANTITY OF LCL BRACES, PIECES MARKED (3) IS NOT CORRECT FOR CONTAINERS-CROSSWISE LOADS.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR BOTH LENGTHWISE AND CROSSWISE-POSITIONED UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE LENGTH OR WIDTH OF THE UNIT.
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 PIECES, AS SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATES, MAY BE USED IN LIEU OF PIECES MARKED (2). NOTE THAT ALL CENTER GATES DEPICTED IN THIS DOCUMENT ARE FOR 2 OR 3 WIDE LOADS. IF GATE HOLD DOWN AND FILL PIECES ARE USED THEY MUST BE MODIFIED FOR SINGLE ROW GATES.



CENTER GATE K

THIS GATE IS FOR USE WITH CONTAINERS-LENGTHWISE UNITS. REFER TO THE "CENTER GATE K" CHART ON PAGE 72 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.



CENTER GATE L

THIS GATE IS FOR USE WITH CONTAINERS-CROSSWISE UNITS. REFER TO THE "CENTER GATE L" CHART ON PAGE 72 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	590	295
2" X 2"	8	3
2" X 3"	10	5
2" X 6"	174	174
4" X 4"	9	12
NAILS	NO. REQD	POUNDS
6d (2")	192	1-1/4
8d (2-1/2")	384	4
10d (3")	84	1-1/2
16d (3-1/2")	304	6-3/4
PLYWOOD, 3/8"	-----191 SQ FT-----	-----197 LBS

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	-----16-----	20,336 LBS
DUNNAGE	-----	1,189 LBS
TOTAL WEIGHT	-----	21,525 LBS

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

HORIZONTAL PIECE, 1" X 6" X
46-3/4" (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 35-1/2"
(2 REQD). NAIL TO THE VERTICAL
PIECES OF THE LCL BRACES W/3-6d
NAILS AT EACH JOINT PRIOR TO
PLACEMENT AGAINST LADING.

SEE GENERAL NOTE "H" ON PAGE 2.

LCL BRACE (4 REQD). SEE THE DETAIL BELOW. LOCATE
SO AS TO BE CENTERED ON THE JOINTS OF THE CON-
TAINER ENDS AND/OR AGAINST THE INTERMEDIATE
DUNNAGE PIECES. NAIL TO THE CAR FLOOR W/7-6d
NAILS. SEE GENERAL NOTES "N" AND "T" ON PAGE 2.

ISOMETRIC VIEW

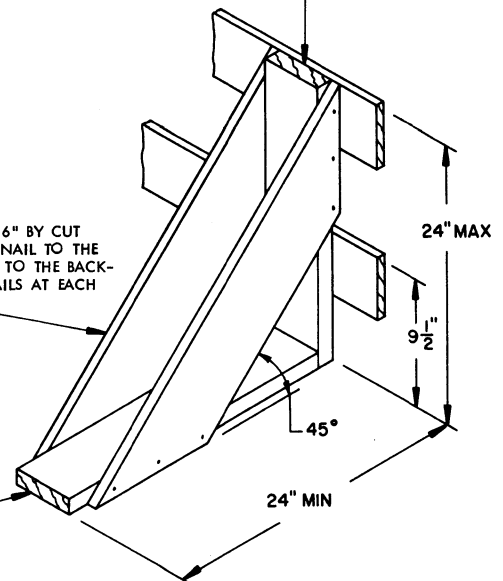
SPECIAL NOTES:

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

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

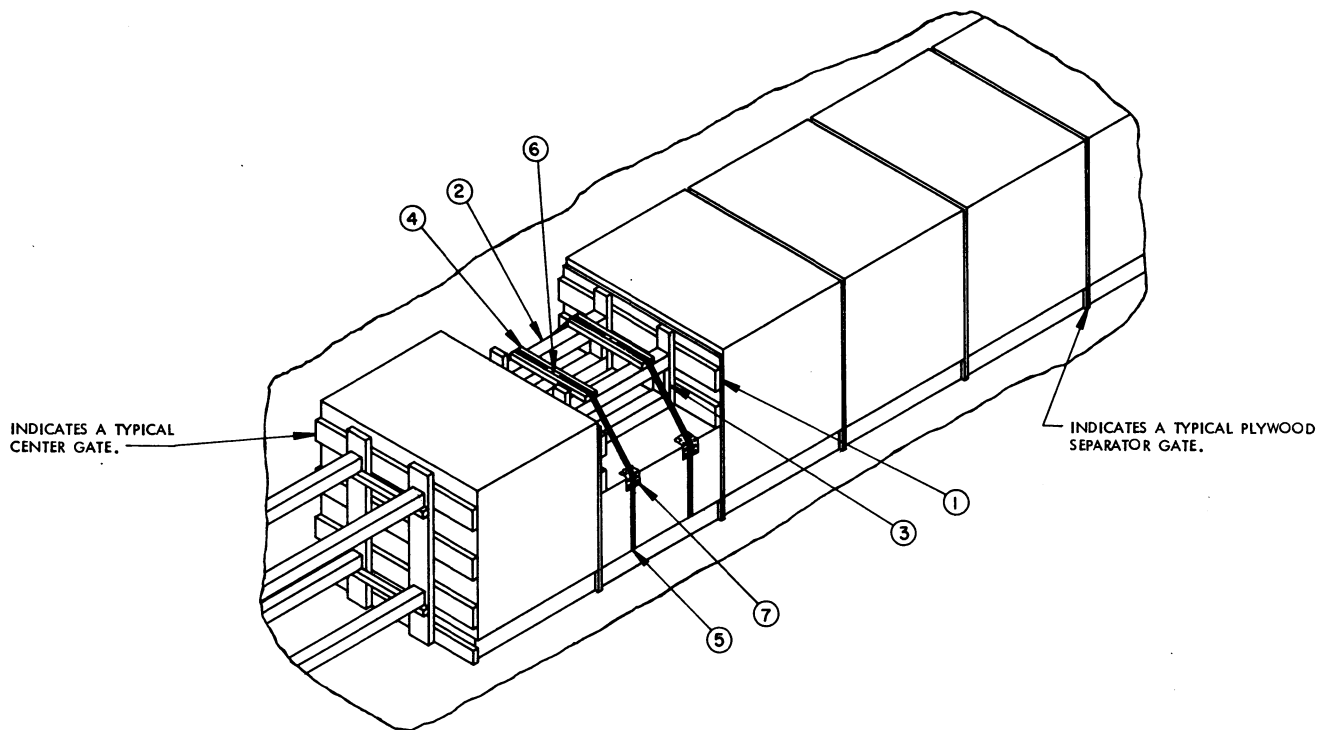
ANGLE BRACE, 1" X 6" BY CUT
TO FIT (2 REQD). NAIL TO THE
VERTICAL PIECE AND TO THE BACK-
UP CLEAT W/3-8d NAILS AT EACH
END.

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



LCL BRACE

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



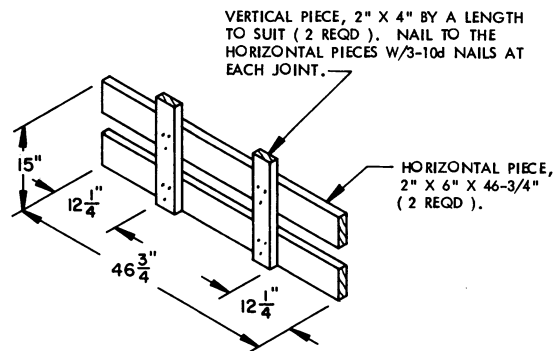
POSITIONING OF PARTIAL CONTAINERS-LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

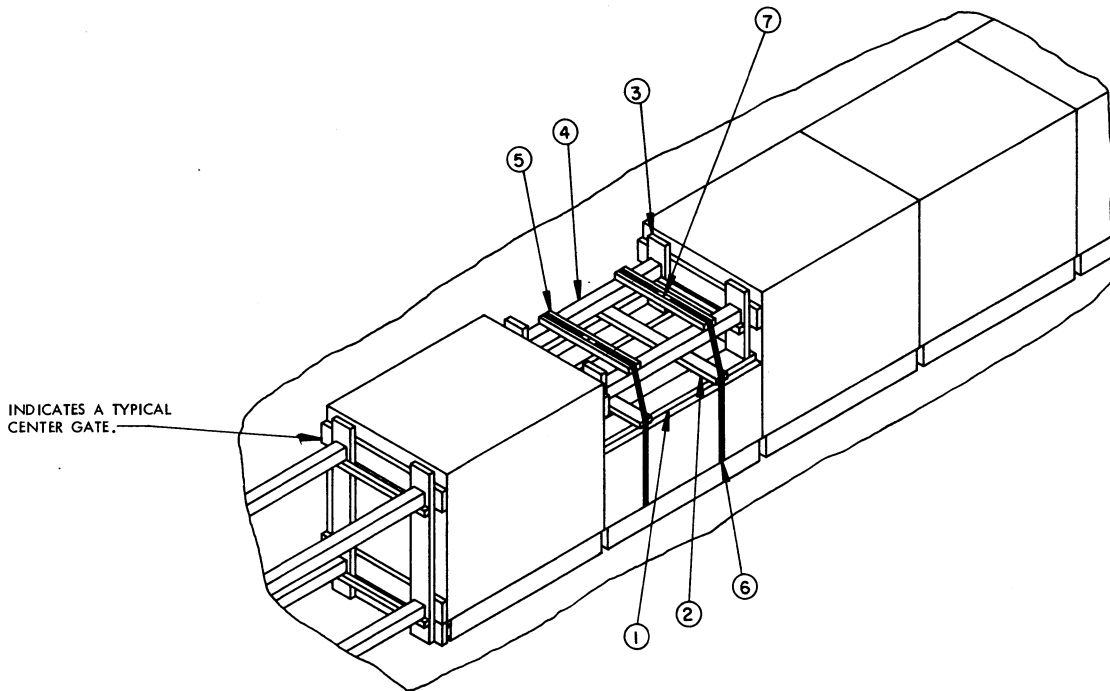
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO A FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CONTAINERS-LENGTHWISE LOAD.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CONTAINERS-LENGTHWISE 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 3-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 SEVEN (7) CONTAINERS OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/16-20PM1001, 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 CONTAINERS-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.
7. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTE "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② STRUT, 4" X 4" X 29-1/2" (4 REQD). TO ENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/2-16d NAILS AT EACH END.
- ③ STRUT SUPPORT PIECE, 2" X 4" X 6-1/2" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/3-10d NAILS.
- ④ STRAPPING BOARD, 2" X 4" X 22-1/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ②, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD).
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD ; 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.
- ⑦ ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



PARTIAL UNIT GATE A



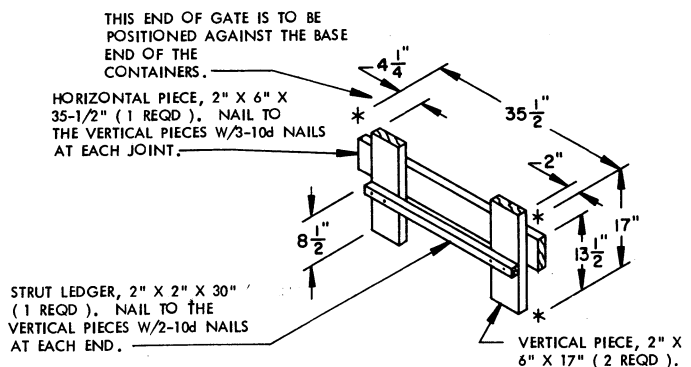
**POSITIONING OF PARTIAL CONTAINERS -
CROSSWISE UNIT IN A LAYER**

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 CONTAINERS-CROSSWISE LOAD.
2. THE BASIC HEIGHT DECREASED BY ONE LAYER PALLET UNIT IS SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW ABOVE. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CONTAINERS-CROSSWISE 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 3-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 SEVEN (7) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/16-20PM1001, 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 CONTAINERS-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 78 MAY BE MORE ECONOMICAL.
8. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 46-3/4" (2 REQD). POSITION ON TOP OF THE CROSS PIECE OF THE TOP DUNNAGE ASSEMBLY.
- ② RETAINER PIECE, 2" X 4" X 35-1/2" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECE MARKED ① , W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD, ONE RIGHT HAND AND ONE LEFT HAND). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTE "N" ON PAGE 2, AND SPECIAL NOTE 3 AT LEFT.
- ④ STRUT, 4" X 4" X 40-3/4" (2 REQD). TO ENAIL TO THE PARTIAL-UNIT GATES, PIECE MARKED ③ , W/2-16d NAILS AT EACH END.
- ⑤ STRAPPING BOARD, 2" X 4" X 27-1/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④ , W/3-10d NAILS AT EACH JOINT.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.



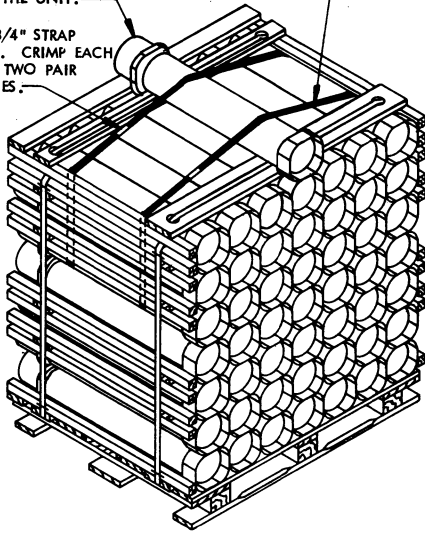
PARTIAL UNIT GATE B

ONE RIGHT HAND AND ONE LEFT HAND REQUIRED.

UNITIZING STRAP, 3/4" X .031" OR .035" X 13'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO EXTEND UNDER THE FIFTH LAYER OF CONTAINERS.

POSITION CONTAINER SO AS TO BE CENTERED ON THE WIDTH OF THE UNIT.

SEAL FOR 3/4" STRAP (2 REQD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

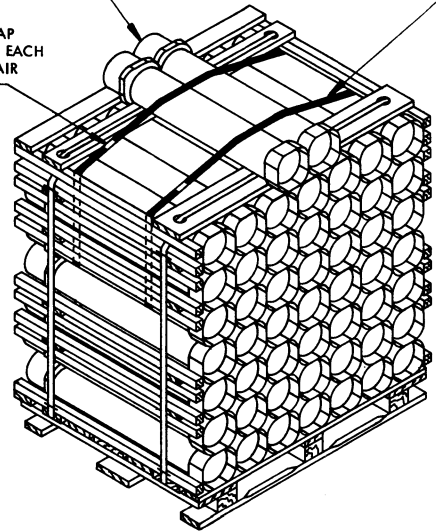


SECUREMENT OF ONE CONTAINER

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

UNITIZING STRAP, 3/4" X .031" OR .035" X 13'-6" LONG STEEL STRAPPING (2 REQD). INSTALL TO EXTEND UNDER THE FIFTH LAYER OF CONTAINERS.

SEAL FOR 3/4" STRAP (2 REQD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.



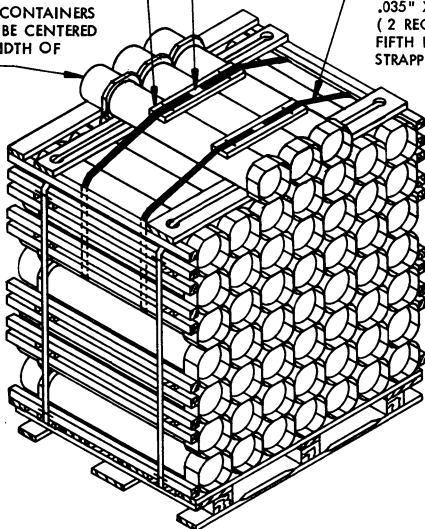
SECUREMENT OF TWO CONTAINERS

STRAPPING BOARD, 1" X 4" MATERIAL, 14" LONG FOR 3-WIDE, 20-1/4" FOR 4-WIDE, 26-1/2" FOR 5-WIDE, 32-3/4" FOR 6-WIDE (2 REQD).

SEAL FOR 3/4" STRAP (2 REQD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

UNITIZING STRAP, 3/4" X .031" OR .035" X 14'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO EXTEND UNDER THE FIFTH LAYER OF CONTAINERS. STAPLE TO STRAPPING BOARD W/2 STAPLES.

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

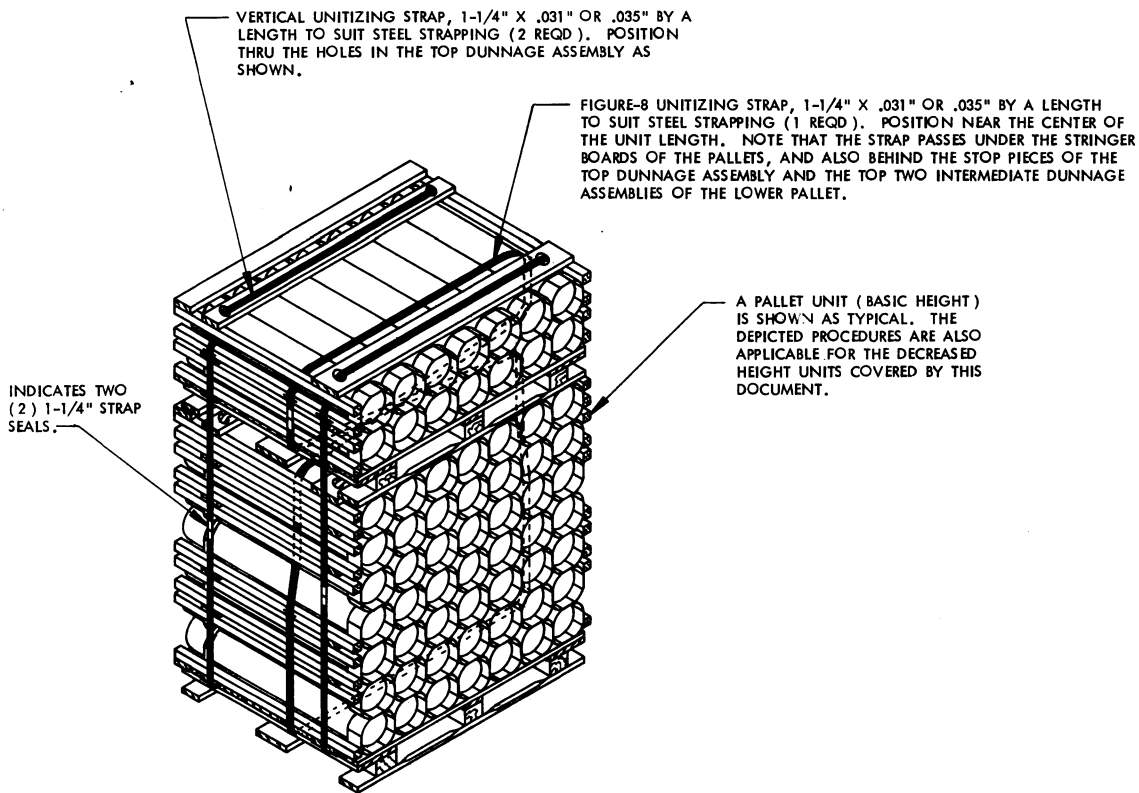


SECUREMENT OF THREE CONTAINERS

THIS METHOD IS ADAPTABLE FOR SECUREMENT OF MORE THAN THREE CONTAINERS BY INCREASING THE LENGTH OF THE STRAPS AND THE STRAPPING BOARDS.

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 78 OR WITHIN A LAYER AS SHOWN ON PAGES 75 AND 76.
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 HEAD-QUARTERS, 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 BASIC HEIGHT PALLET UNIT IS SHOWN. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER HEIGHT UNITS COVERED BY THIS DOCUMENT.
4. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.
5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



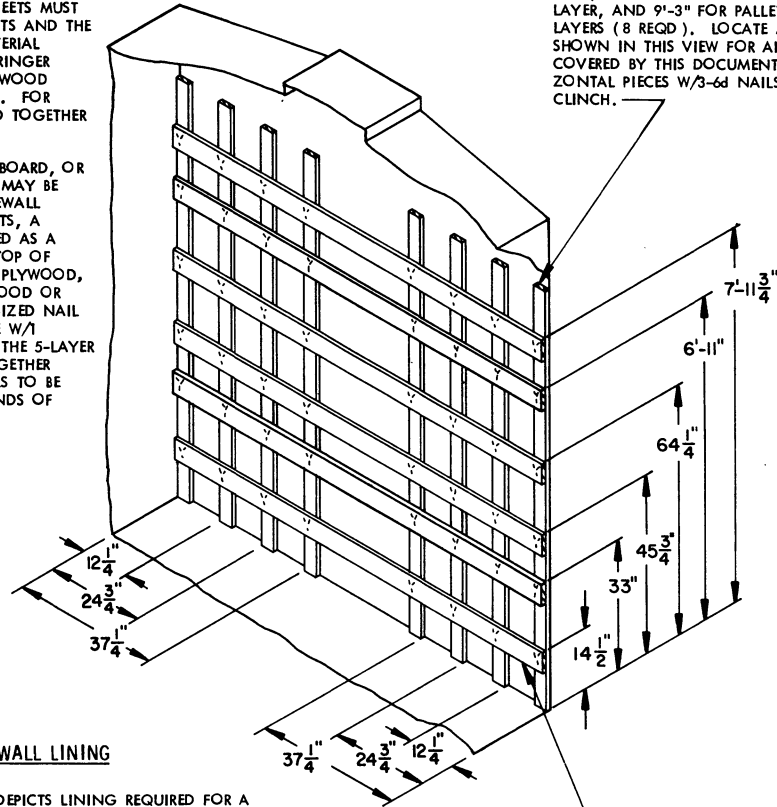
SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CONTAINERS-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 76.

SPECIAL NOTES:

1. 48" X 8'-0" SHEETS OF PLYWOOD (1/2" THICK MINIMUM), MAY BE USED AS END WALL LINING IN LIEU OF THE END-WALL LINING SHOWN AT RIGHT. PLYWOOD SHEETS MUST BE TIED TOGETHER. FOR THE BASIC HEIGHT UNITS AND THE 5-LAYER UNITS, TIE PIECES WILL BE 2" X 2" MATERIAL EXTENDING UNDER THE PALLET BETWEEN THE STRINGER AND THE BOTTOM DECK BOARD. NAIL THE PLYWOOD TO THE TIE PIECE W/3-6d NAILS AT EACH JOINT. FOR THE 6-LAYER UNITS, THE PLYWOOD MAY BE TIED TOGETHER ABOVE THE LOAD.
2. 1/4" MINIMUM PLYWOOD, 1/8" MINIMUM HARDBOARD, OR .060" MINIMUM THICK SOLID WALL FIBERBOARD MAY BE USED AS SIDEWALL LINING IN LIEU OF THE SIDEWALL LINING SHOWN BELOW. FOR THE 6-LAYER UNITS, A 1" X 4" BY RANDOM LENGTH PIECE MAY BE USED AS A TIE PIECE. PLACE THIS TIE PIECE BETWEEN THE TOP OF THE PALLET UNIT STACKS AND THE TOP OF THE PLYWOOD, HARDBOARD, OR FIBER BOARD. NAIL THE PLYWOOD OR HARDBOARD TO THE TIE PIECE W/1 APPLICABLY SIZED NAIL EVERY 8". STAPLE FIBERBOARD TO THE TIE PIECE W/1 STAPLE EVERY 6". FOR THE BASIC HEIGHT AND THE 5-LAYER UNITS, THE SIDEWALL LINING MUST BE TIED TOGETHER BY POSITIONING SUITABLE SIZE TIE PIECES SO AS TO BE WITHIN THE FORK LIFT OPENINGS OR AT THE ENDS OF THE PALLETS, AS APPLICABLE.

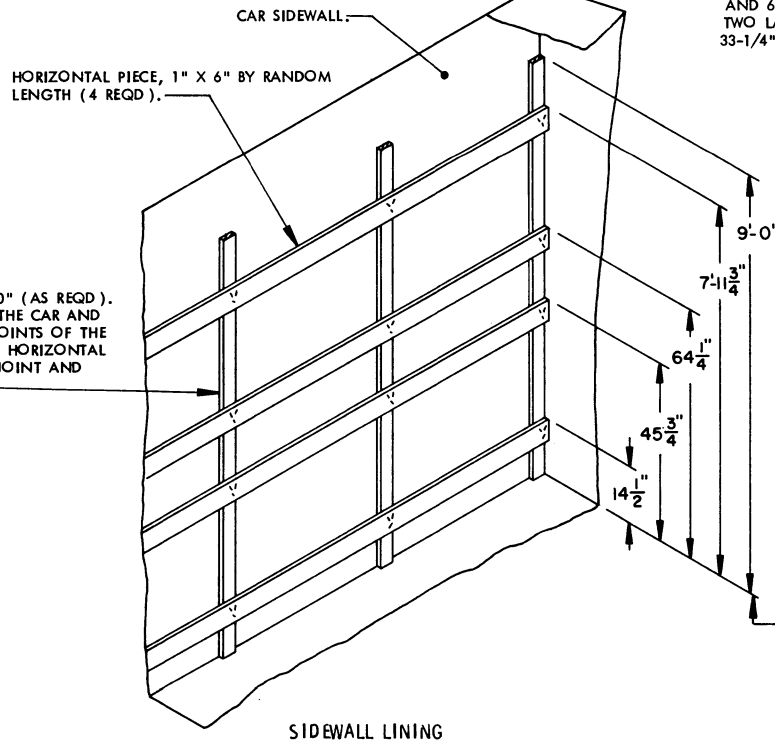
VERTICAL PIECE, 1" X 4" X 8'-3" FOR THE BASIC HEIGHT UNIT, 7'-0" FOR PALLET UNITS DECREASED BY ONE LAYER, AND 9'-3" FOR PALLET UNITS DECREASED BY TWO LAYERS (8 REQD). LOCATE AT THE DIMENSIONS SHOWN IN THIS VIEW FOR ALL THREE (3) PALLET UNITS COVERED BY THIS DOCUMENT. NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.



END WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CONTAINERS-LENGTHWISE LOAD IN A CAR EQUIPPED WITH A STEEL END WALL. SEE SPECIAL NOTE 1 ABOVE.

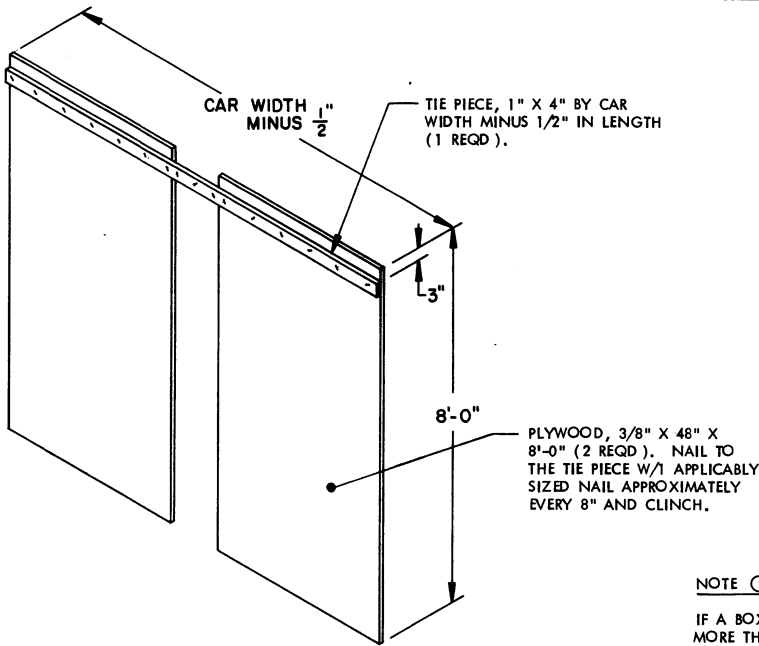
HORIZONTAL PIECE, 1" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (6 REQD). LOCATE AT THE HEIGHTS SPECIFIED, FOR BASIC HEIGHT PALLET UNITS. FOR THE PALLET UNITS DECREASED BY ONE LAYER, THE DIMENSIONS WILL BE 14-1/2", 27", 39-1/2", 58", 70-1/2", AND 6'-11". FOR PALLET UNITS DECREASED BY TWO LAYERS, THE DIMENSIONS WILL BE 14-1/2" 33-1/4", 52", 70-3/4", 7'-5-1/4", AND 9'-0"



SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR CONTAINERS-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. SEE SPECIAL NOTE 2 ABOVE.

THE DIMENSIONS SHOWN ARE FOR THE BASIC HEIGHT PALLET UNIT. THE DIMENSIONS FOR THE PALLET UNIT DECREASED BY ONE LAYER WILL BE 14-1/2", 39-1/2", 58", 6'-11", AND 8'-0". THE DIMENSIONS FOR THE PALLET UNIT DECREASED BY TWO LAYERS WILL BE 14-1/2", 27", 46-1/2", 64-1/2", 6'-11-3/4", 8'-5-3/4", AND 9'-0". NOTE THAT FOR THE DECREASED BY TWO LAYERS UNIT, THERE WILL BE SIX HORIZONTAL PIECES.



NOTE ▲ :

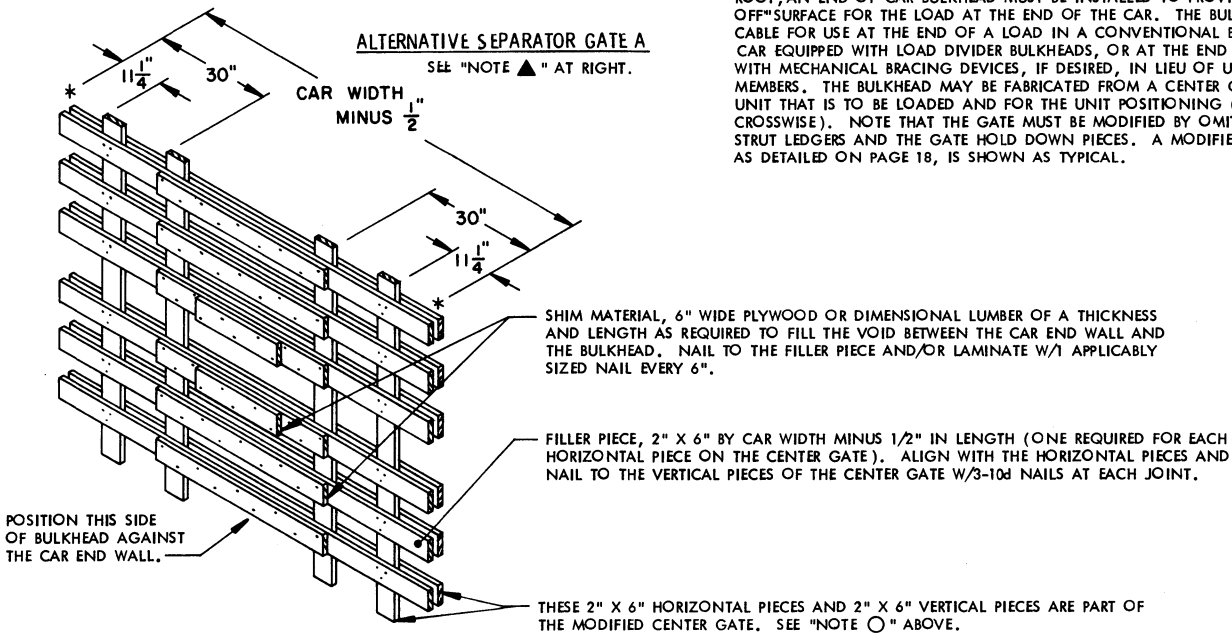
THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SINGLE SHEETS OF PLYWOOD WHICH ARE USED AS SEPARATOR GATES SHOWN WITHIN THE LOAD ON PAGE 24. THIS GATE MAY ALSO BE USED IN LIEU OF THE DIMENSIONAL LUMBER SEPARATOR GATES USED ADJACENT TO THE CROSS MEMBERS IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES ON PAGE 26. NOTE THAT THE LOCATION OF THE TIE PIECE MAY NEED TO BE ADJUSTED SO AS NOT TO ALIGN WITH A CROSS MEMBER. IF THIS ALTERNATIVE GATE IS TO BE USED IN THE LOAD SHOWN ON PAGE 24, AND NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE LOWER INSIDE CORNER OF EACH SHEET OF PLYWOOD MUST BE CUT OUT TO PROVIDE CLEARANCE FOR THE NAILED BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. A CUTOUT 3-1/2" HIGH BY 3" WIDE WILL PROVIDE ADEQUATE CLEARANCE.

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.

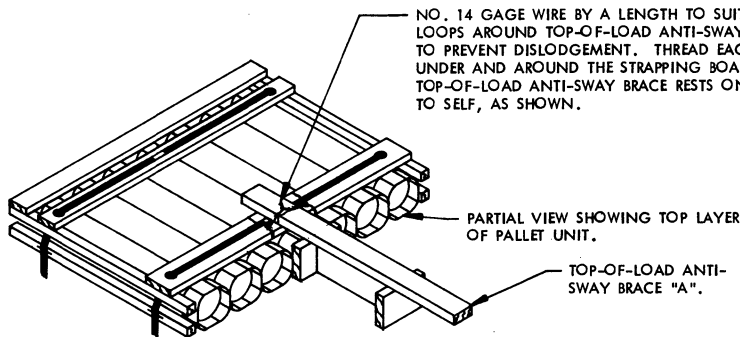
ALTERNATIVE SEPARATOR GATE A

SEE "NOTE ▲" AT RIGHT.

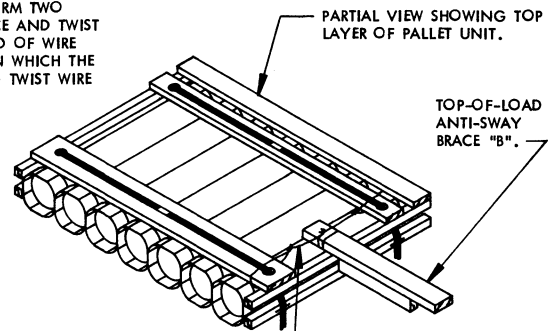


END-OF-CAR BULKHEAD

SEE "NOTE ○" AT RIGHT.



TIE WIRE APPLICATION A



TIE WIRE APPLICATION B

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

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

PLYWOOD, 1/2" THICK BY THE UNIT LENGTH BY LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".

PLYWOOD, 1/2" THICK BY LENGTH TO SUIT BY LOAD HEIGHT (1 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".

GATE HOLD DOWN PIECE MUST BE SECURED TO PLYWOOD.

INDICATES A TYPICAL CAR WIDTH CENTER GATE FOR A 5-PALLET LOAD UNIT OF CONTAINERS-CROSSWISE LOADS, WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR LOCATIONS OF THE VERTICAL PIECES AND THE STRUT LEDGERS.

PLYWOOD CENTER GATE ALTERNATIVE A

SEE "NOTE ■" AT LEFT.

PLYWOOD, 1/2" THICK BY THE UNIT LENGTH BY LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".

PLYWOOD, 1/2" THICK BY LENGTH TO SUIT BY UNIT HEIGHT (1 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".

GATE HOLD DOWN PIECES MUST BE SECURED TO PLYWOOD.

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

PLYWOOD CENTER GATE ALTERNATIVE B

SEE "NOTE ■" BELOW.

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

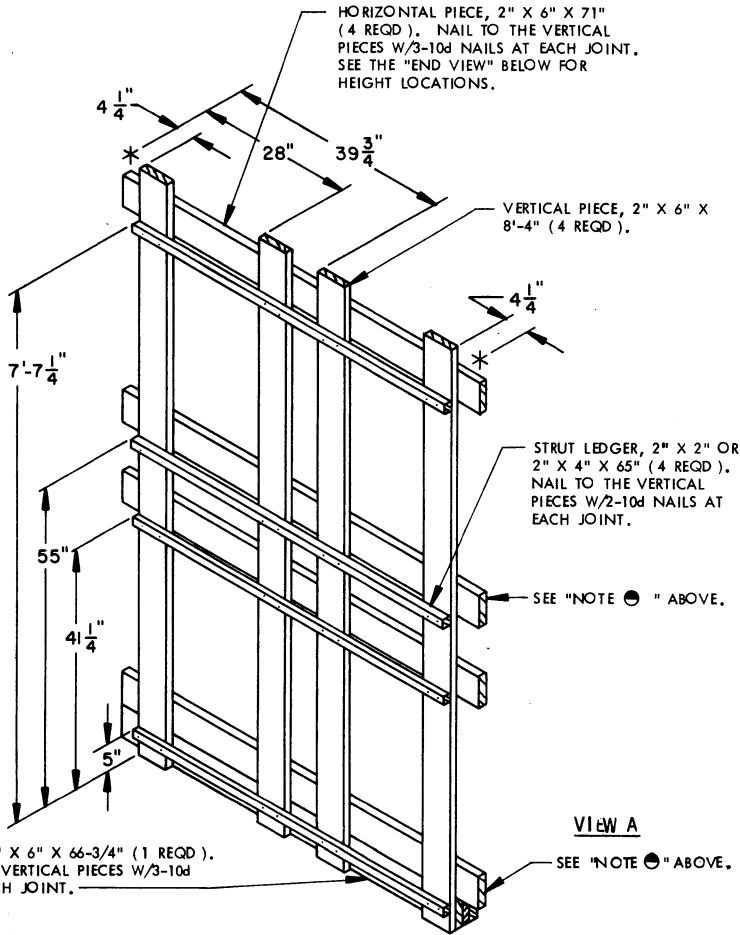
NOTE ■ :

WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE PLYWOOD SHEETS MUST BE CUT OUT ADJACENT TO THE NAILED BLOCKING TO PROVIDE CLEARANCE DURING THE NORMAL SHIFTING OF THE LOAD. THE CUTOUTS MUST BE 3-1/2" HIGH AND OF A WIDTH, AS REQUIRED. FOR THE GATE ALTERNATIVES "A" AND "B" THE PLYWOOD MUST NOT EXTEND BEYOND THE VERTICAL PIECES OF THE GATE; FOR THE GATE ALTERNATIVE "C", THE PLYWOOD AT THE FLOOR SHOULD BE 45" WIDE.

GATE HOLD DOWN PIECES MUST BE SECURED TO THE PLYWOOD.

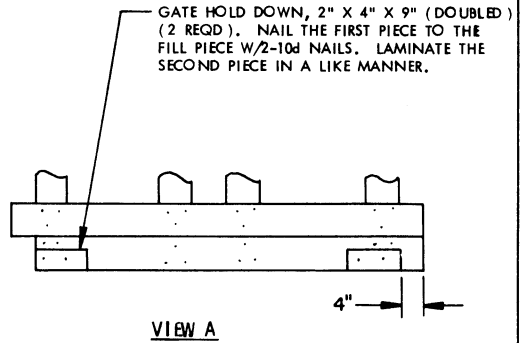
PLYWOOD CENTER GATE ALTERNATIVE C

SEE "NOTE ■" AT LEFT.



NOTE ● :

IF CRIB FILL IS REQUIRED IN A LOAD, AS SHOWN IN THE APPLICABLE LOAD VIEWS, TWO (2) HORIZONTAL PIECES ON EACH CENTER GATE MUST BE EXTENDED APPROXIMATELY ONE AND ONE-HALF INCHES (1-1/2"). EXTENSION OF CENTER GATE HORIZONTAL PIECES AT HEIGHTS TO CLOSELY MATCH THE HEIGHTS OF THE HORIZONTAL PIECES OF THE ADJACENT CRIB FILL WILL PREVENT LONGITUDINAL MOVEMENT OF THE CRIB FILL ASSEMBLIES.



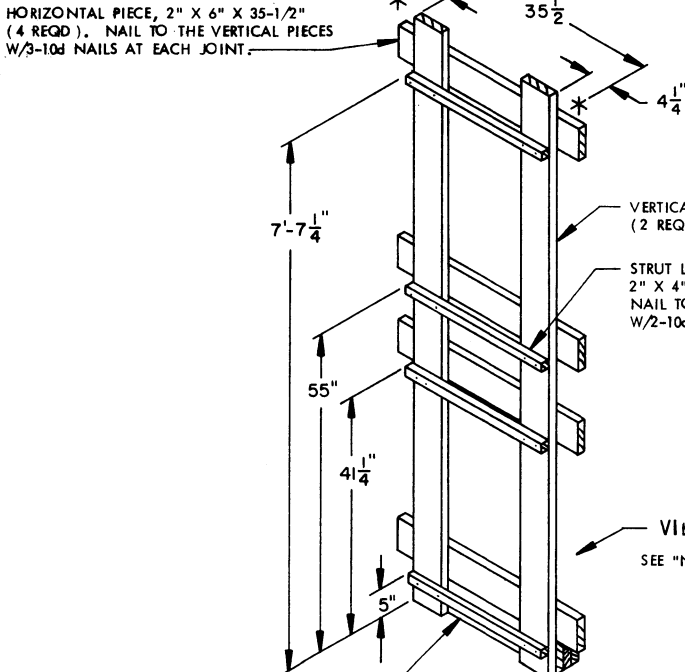
VIEW A

NOTE ● :

THE LOCATION DIMENSIONS FOR THE HORIZONTAL PIECES AND STRUT LEDGERS ON CENTER GATES "M" AND "N" ARE APPLICABLE FOR THE BASIC HEIGHT UNITS. REFER TO "CENTER GATE D" AND "CENTER GATE G" DETAILS ON PAGES 30 AND 44, RESPECTIVELY, FOR HEIGHT DIMENSIONS FOR HORIZONTAL PIECE AND FOR STRUT LEDGER LOCATIONS ON CENTER GATES FOR BASIC HEIGHT UNITS MINUS ONE AND 4 1/4" TWO LAYERS, ALSO RESPECTIVELY.

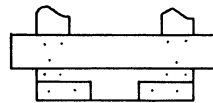
CENTER GATE M

1 LEFT HAND AND ONE RIGHT HAND GATE REQUIRED. SEE "NOTE ●" AT LEFT. SEE SPECIAL NOTE 8 ON PAGE 7, 21, AND/OR 35, AND SPECIAL NOTE 7 ON PAGE 9, 23, AND/OR 37.

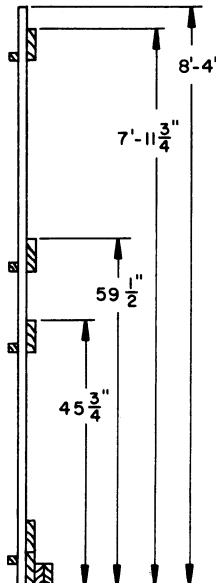


VIEW B

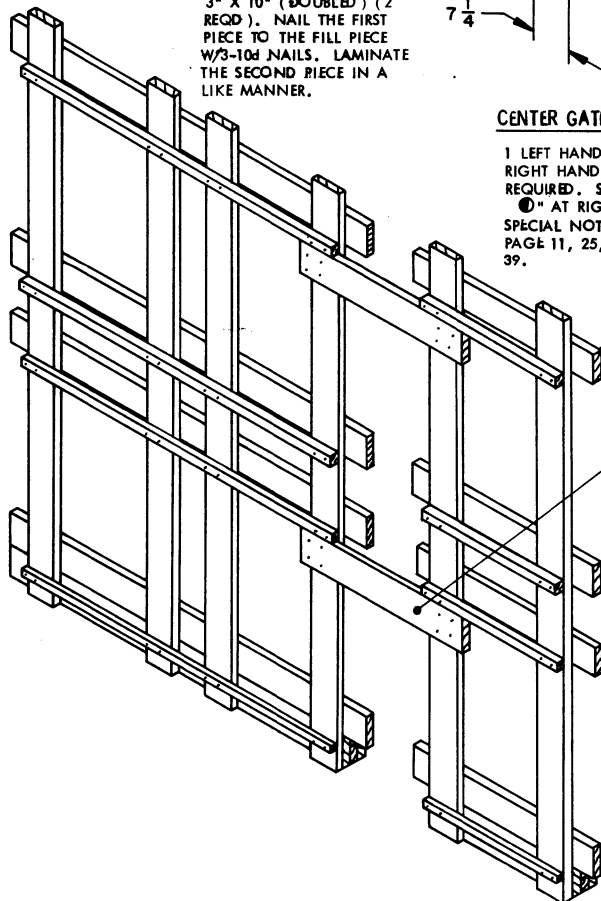
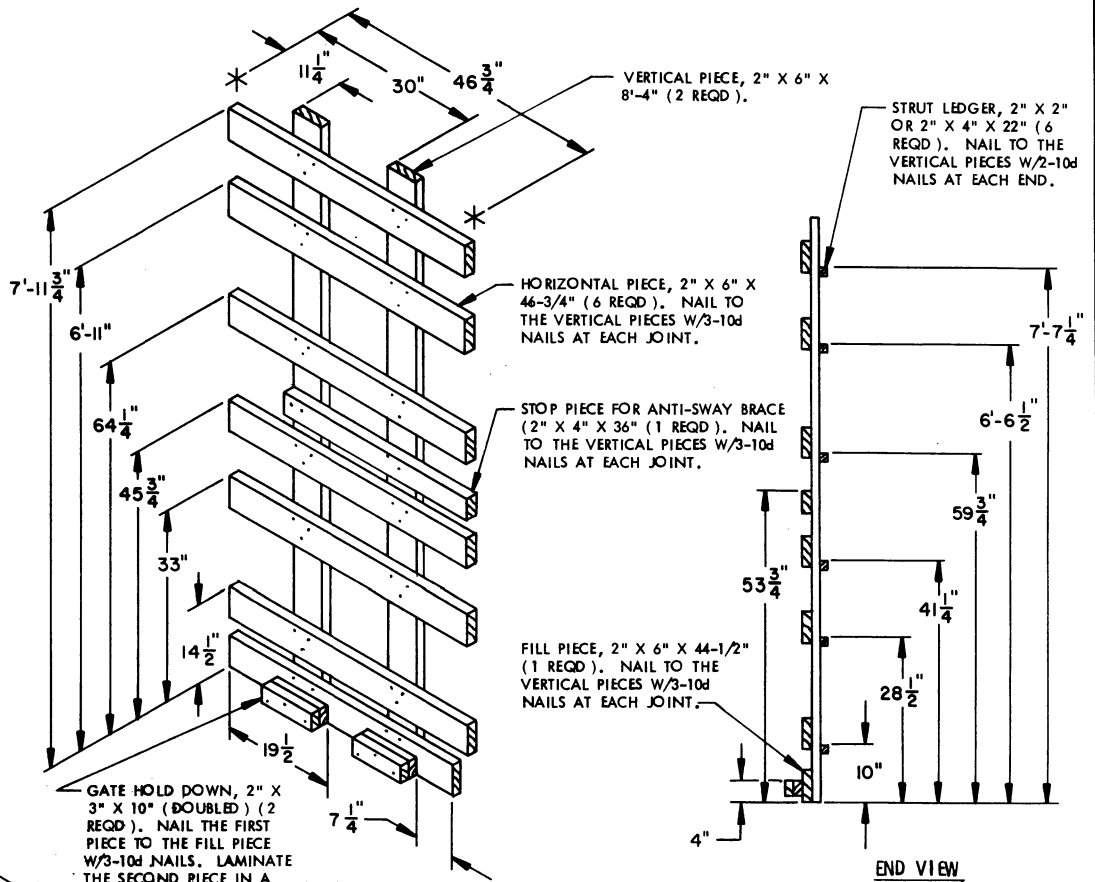
SEE "NOTE ●" ABOVE.



VIEW B



END VIEW



CENTER GATE O

1 LEFT HAND AND 1 RIGHT HAND GATE REQUIRED. SEE "NOTE 1" AT RIGHT. SEE SPECIAL NOTE 9 ON PAGE 11, 25, AND/OR 39.

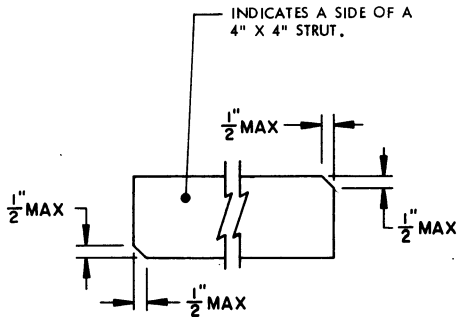
NOTE 1:

THE LOCATION DIMENSIONS FOR THE HORIZONTAL PIECES AND STRUT LEDGERS ARE APPLICABLE FOR THE BASIC HEIGHT UNITS. REFER TO "CENTER GATE F" AND "CENTER GATE J" DETAILS ON PAGES 32 AND 46, RESPECTIVELY, FOR HEIGHT DIMENSIONS FOR HORIZONTAL PIECE AND STRUT LEDGER LOCATIONS ON CENTER GATES FOR BASIC HEIGHT UNITS MINUS ONE AND TWO LAYERS, ALSO RESPECTIVELY.

CENTER GATES "M" AND "N" SHOWN AS TYPICAL. THE PROCEDURES WILL BE SIMILAR FOR TWO CENTER GATES "O".

TIE PIECE, 2" X 6" X 32" FOR USE WITH CENTER GATES "A", "D", AND "G" AND FOR THE LOWER PIECE ON CENTER GATES "B", "E", AND "H". THE UPPER TIE PIECE WILL BE 60" FOR CENTER GATES "B", "E", AND "H". THE TIE PIECE WILL BE 52" LONG FOR CENTER GATES "C", "F", AND "J" AND THE LOWER TIE PIECE CAN BE PLACED UNDER THE LOWEST STRUT LEDGER.

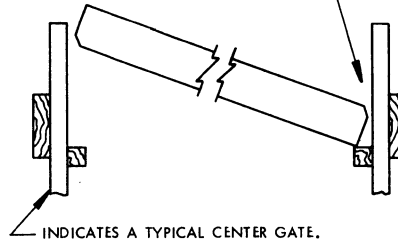
DETAILS



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").

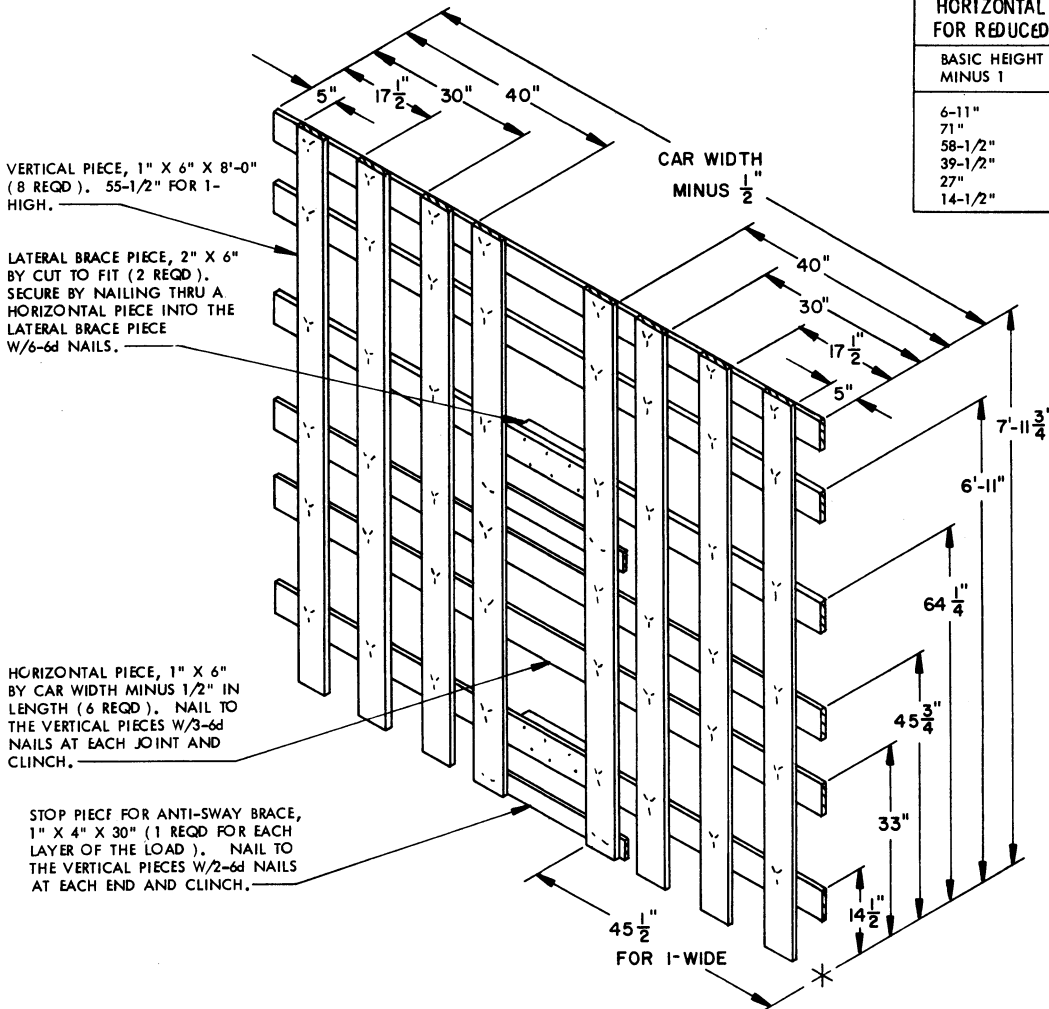
BEVEL-CUT THIS CORNER ONLY IF STRUTS ARE VERY SHORT.



STRUT INSTALLATION

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

HORIZONTAL PIECE LOCATIONS FOR REDUCED HEIGHT UNITS	
BASIC HEIGHT MINUS 1	BASIC HEIGHT MINUS 2
6'-11"	71"
71"	58-1/2"
58-1/2"	52"
39-1/2"	33-1/2"
27"	27"
14-1/2"	14-1/2"



VERTICAL PIECE, 1" X 6" X 8'-0" (8 REQD). 55-1/2" FOR 1-HIGH.

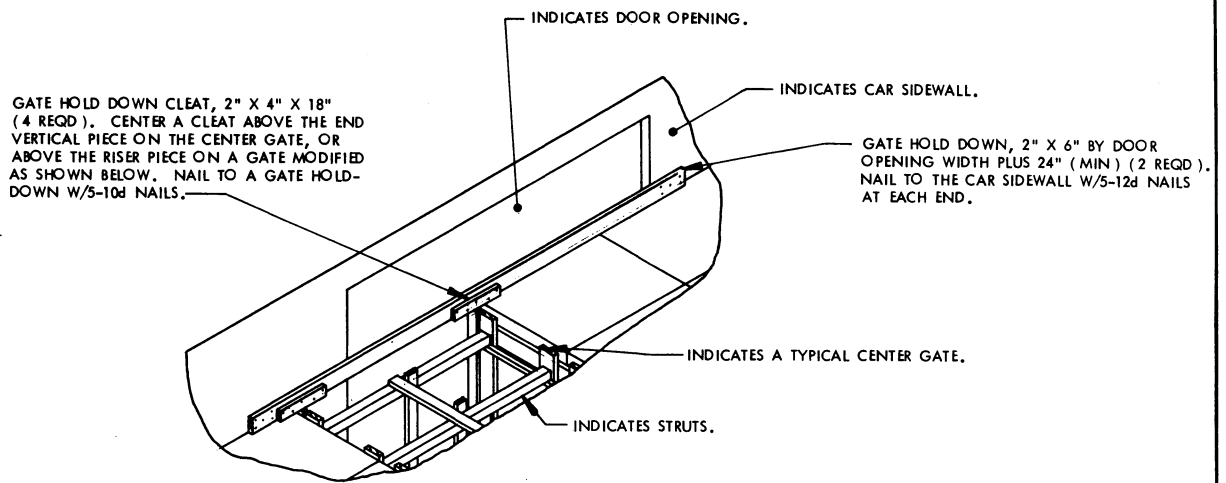
LATERAL BRACE PIECE, 2" X 6" BY CUT TO FIT (2 REQD). SECURE BY NAILING THRU A HORIZONTAL PIECE INTO THE LATERAL BRACE PIECE W/6-6d NAILS.

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 FOR ANTI-SWAY BRACE, 1" X 4" X 30" (1 REQD FOR EACH LAYER OF THE LOAD). NAIL TO THE VERTICAL PIECES W/2-6d NAILS AT EACH END AND CLINCH.

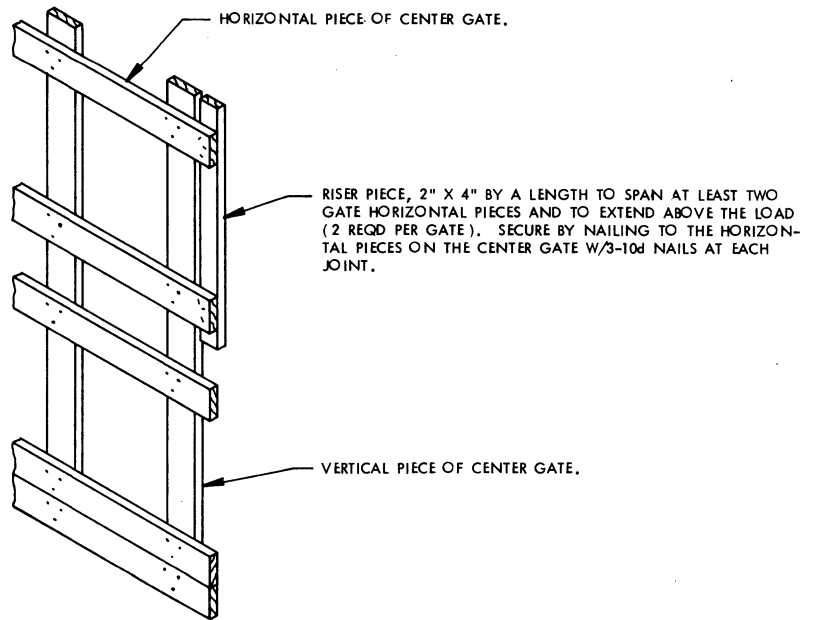
ALTERNATIVE SEPARATOR GATE B

THIS SEPARATOR GATE IS DESIGNED FOR USE AS AN ALTERNATIVE FOR THE PLYWOOD SEPARATOR GATES DEPICTED HEREIN. A GATE FOR BASIC HEIGHT UNITS IS SHOWN. SEE THE CHART ABOVE FOR HORIZONTAL PIECE LOCATION DIMENSIONS FOR THE REDUCED HEIGHT UNITS. SEE SPECIAL NOTE 7 ON PAGES 11, 25, AND/OR 39.



ALTERNATIVE GATE HOLD-DOWN

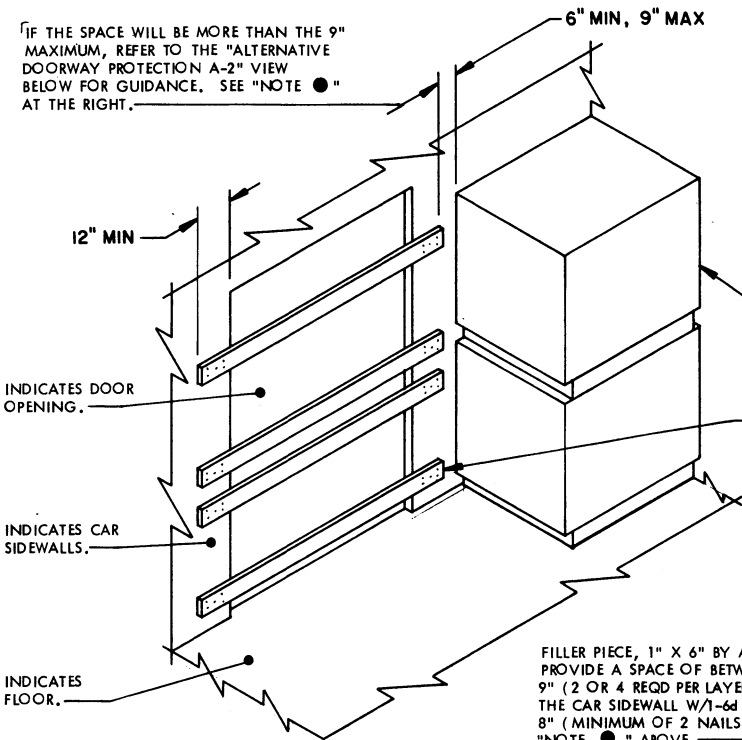
THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE. **NOTE:** FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD-DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD-DOWN. IF NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION IN LIEU OF THE WOODEN GATE TYPE, A CENTER GATE IN THE DOORWAY MUST BE RETAINED LATERALLY BY APPLYING AS DOUBLED 2" X 6" STOP PIECE TO A HORIZONTAL PIECE OF THE GATE.



CENTER GATE MODIFICATION

THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR ALL THE CENTER GATES SHOWN HEREIN, ALL OF 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 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.

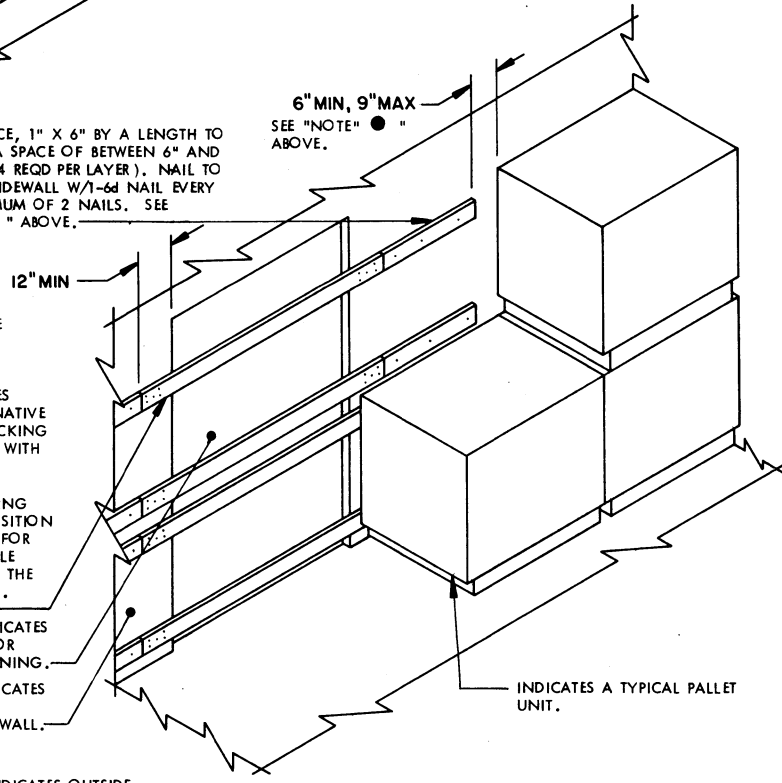


NOTE ● :

THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT, AND IS APPLICABLE WHEN ANTI-SWAY BRACING IS USED FOR A LOAD AND ALSO WHEN THE EXCESS SPACE ACROSS THE CAR IS SMALL ENOUGH THAT ANTI-SWAY BRACING OF ANY KIND IS NOT REQUIRED. IF AN EXCESS LATERAL SPACE IS FILLED BY NAILING LUMBER TO THE CAR SIDEWALL, AS IS PERMITTED FOR THE LOADS ON PAGES 6, 20, AND 34, THE DOOR SPANNERS WILL BE POSITIONED TO BUTT AGAINST THE FILL MATERIAL AND THE TOLERANCE DIMENSION WILL NOT APPLY. ALSO, THE FILLER PIECES SHOWN IN THE ALTERNATIVE DOORWAY PROTECTION A-2 VIEW WILL NOT BE USED. NOTE THAT THE THICKNESS OF THE DOOR SPANNER PIECES MUST EQUAL THE THICKNESS OF THE LUMBER FILL MATERIAL THAT IS NAILED TO THE CAR SIDEWALL.

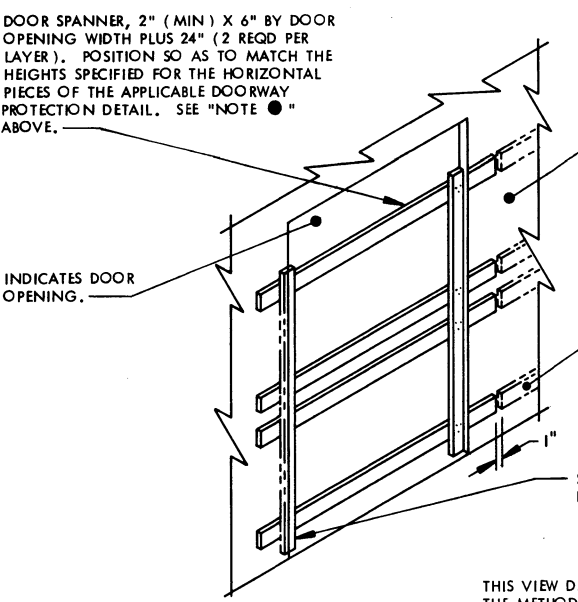
ALTERNATIVE DOORWAY PROTECTION A-1

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 87 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED WITHIN THE LOADS FOR CARS EQUIPPED WITH LOAD DIVIDERS.



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.



ALTERNATIVE DOORWAY PROTECTION A-3

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

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

INDICATES DOOR OPENING.

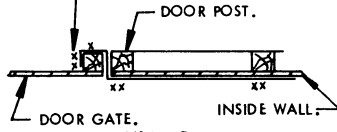
VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD).

INDICATES CAR SIDEWALL.

INDICATES FLOOR.

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



VIEW B

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

ALTERNATIVE DOORWAY PROTECTION B

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

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

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

VIEW A

INDICATES STRAP ANCHOR PLATE.

DOOR SPANNER END OF STRAP.

ISOMETRIC VIEW

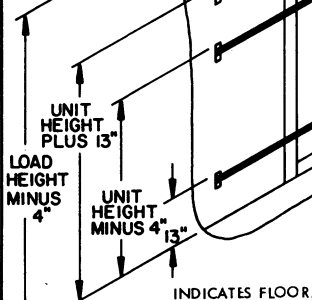
VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

ALTERNATIVE DOORWAY PROTECTION C

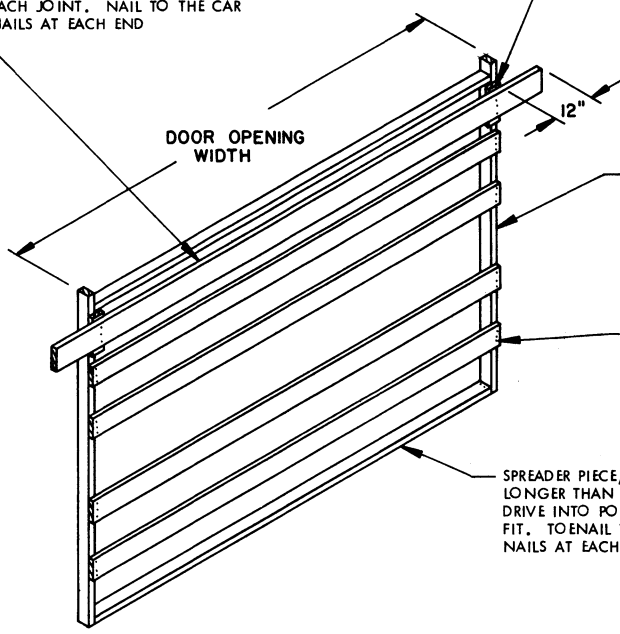
THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. IF THE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



DOORWAY PROTECTION

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

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



DOOR OPENING WIDTH

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

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

SPREADER PIECE, 2" X 3" MATERIAL CUT SLIGHTLY LONGER THAN MEASURED DISTANCE (2 REQD). DRIVE INTO POSITION TO PROVIDE FOR A WEDGE FIT. TO ENAIL 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 NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 87 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 85.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

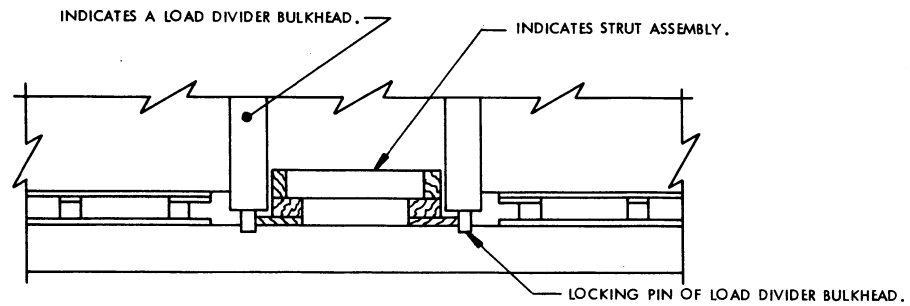
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



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

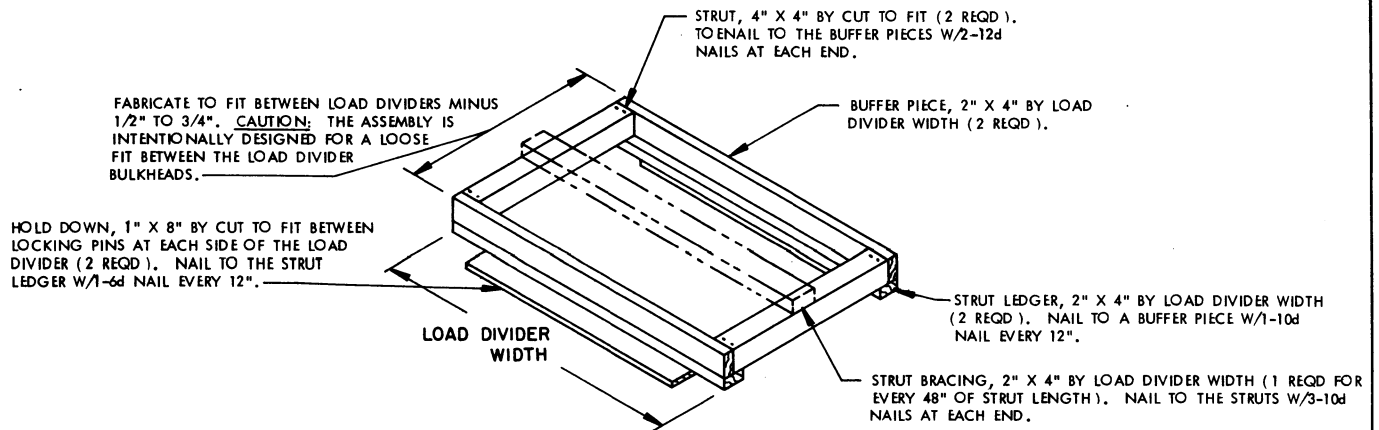
STRAP JOINT B

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



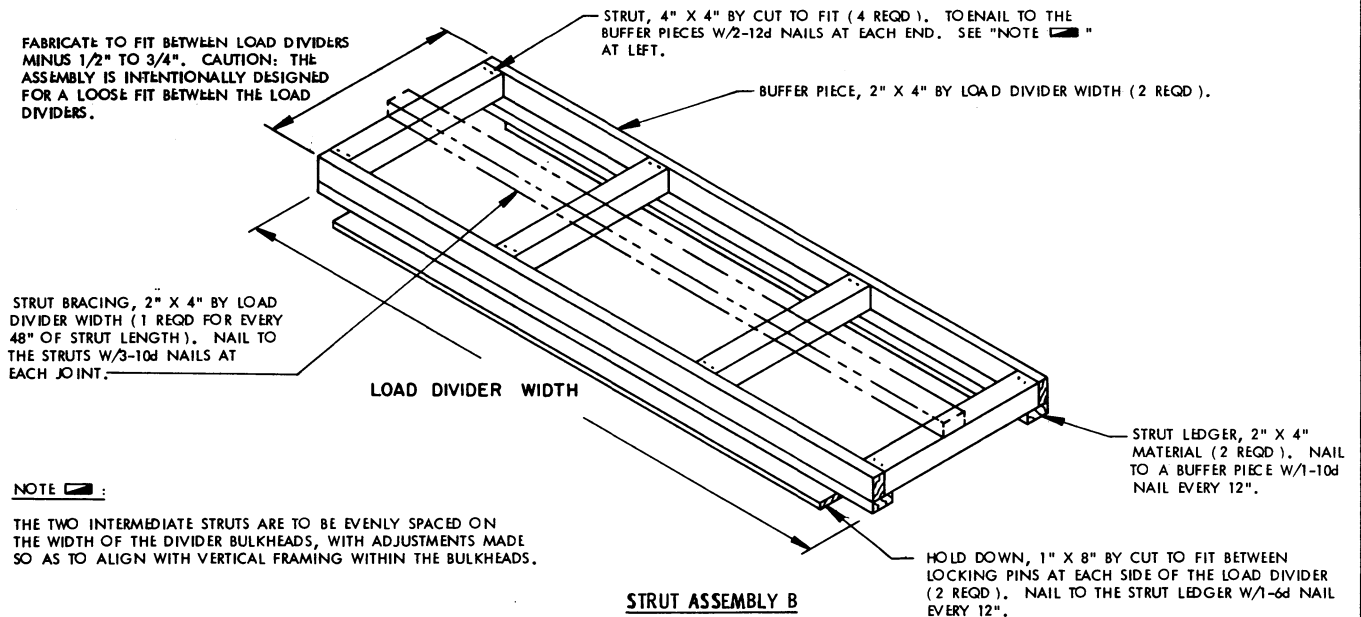
INSTALLATION OF STRUT ASSEMBLY

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



STRUT ASSEMBLY A

STRUT ASSEMBLY "A" IS DESIGNED FOR USE WITH 2-PIECE BULKHEADS, WITH TWO (2) ASSEMBLIES BEING REQUIRED PER LOAD. SEE GENERAL NOTE "FF" ON PAGE 3.

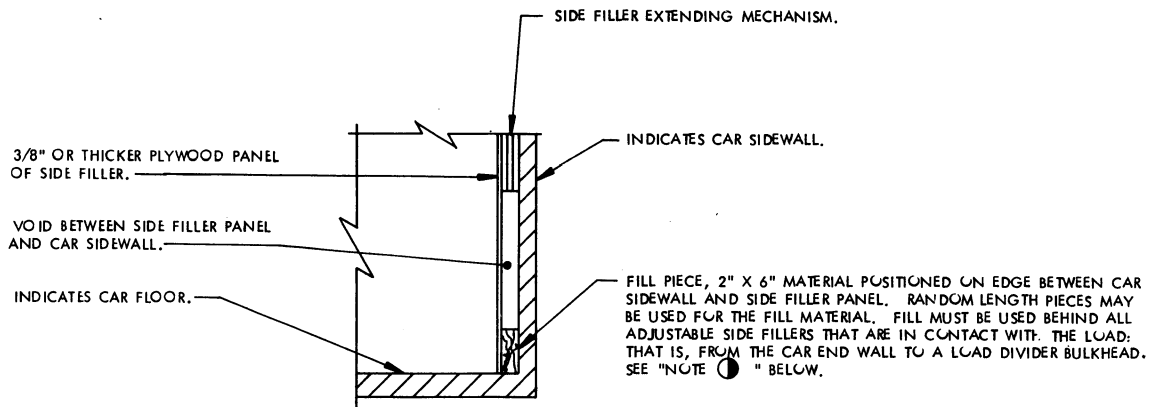


NOTE []:

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.

STRUT ASSEMBLY B

STRUT ASSEMBLY "B" IS DESIGNED FOR USE WITH 1-PIECE BULKHEADS. SEE GENERAL NOTE "FF" ON PAGE 3.

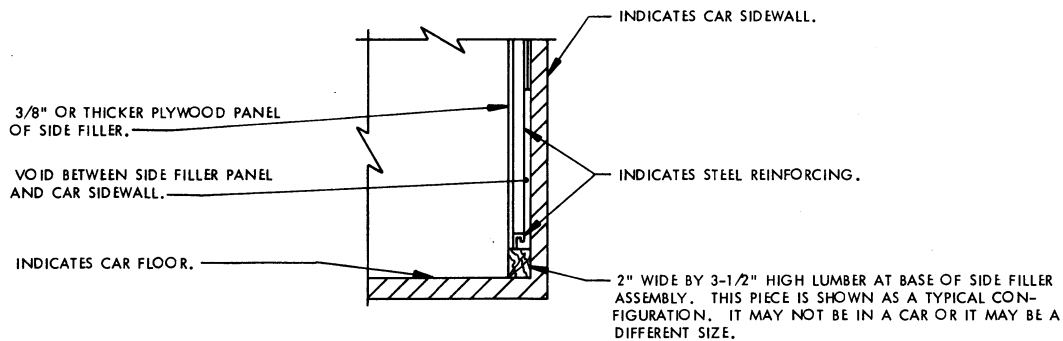


TYPICAL TYPE A

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.