

APPROVED BY
 BUREAU OF EXPLOSIVES
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LOADING AND BRACING (CL & LCL) IN BOX CARS OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS PA68 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	TYPE	CHECKER	TECHNICIAN	ENGINEER
	REV	BAB	JM	PB	R. Arnold	
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APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC) <i>William F. Ernst</i> U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL						
APPROVED BY U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND <i>Timothy R. Fore</i>						
U.S. ARMY MATERIEL COMMAND						
DECEMBER 1992						
		CLASS	DIVISION	DRAWING	FILE	
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GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA68 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" AND/OR A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE U.S. ARMY DARCOM (AMC) DRAWING 19-48-4042A/11-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA68 SERIES CONTAINER.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX CARS, FOR SHIPMENTS IN BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
- D. CAUTION: METAL PROPELLING CHARGE CONTAINERS THAT OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL SIDEWALLS OR END WALLS OF BOX CARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOX CARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARDS. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 123 FOR GUIDANCE.
- E. EXCEPT FOR PALLET UNITS OF ALTERNATED CONTAINERS, UNITS WILL BE POSITIONED WITH THE BASE ENDS OF CONTAINERS AGAINST THE CAR SIDEWALL.
- F. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS POSSIBLE 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 96 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 124 FOR GUIDANCE.
- J. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN, HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- K. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- L. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED UNITS OF 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.

MATERIAL SPECIFICATIONS

- LUMBER----- : SEE TM 743-200-1, DUNNAGE LUMBER, FED SPEC MM-L-751.
- NAILS----- : COMMON, FED SPEC FF-N-106.
- STRAPPING, STEEL-- : ASTM D 3953; FLAT STRAPPING, TYPE I 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 I, STYLE I, II OR IV.
- STRAP STAPLE----- : COMMERCIAL GRADE.
- PLYWOOD----- : GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- WIRE----- : FED SPEC QQ-W-461.
- HARDBOARD----- : ANSI/AHA A135.4, CLASS 1.
- SOLID FIBERBOARD-- : FED SPEC PP-F-320, TYPE SF, CLASS DOMESTIC, GRADE 175 OR STRONGER, OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

(GENERAL NOTES CONTINUED)

- M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- N. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR SIDEWALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS OR SIDEWALL BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH 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 CARLOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCOR PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD-RESTRAINING FLOOR DUNNAGE APPLICATION.
- P. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL, WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 130 FOR GUIDANCE.
- Q. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- R. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED, HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- S. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

- T. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY 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 PALLETIZED UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLETIZED UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. CAUTION: WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE PALLETIZED UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
- V. LOAD BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN IN SOME LOADS OF PALLET UNITS OF CROSSWISE POSITIONED CONTAINERS. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.
- W. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE

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(GENERAL NOTES CONTINUED)

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 126 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.

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

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

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

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

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- BB. CAUTION: FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY 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 SAVINGS 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.

- 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 132 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 132, 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

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(GENERAL NOTES CONTINUED)

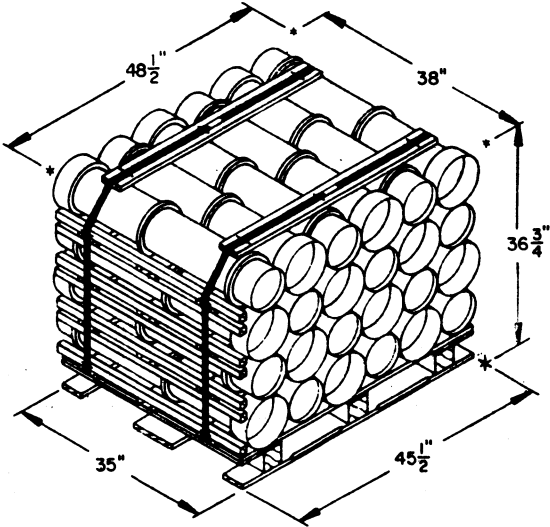
THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.

- 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 131.

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

1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 104 THRU 107.
2. THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGES 98 THRU 103 FOR GUIDANCE.
3. AT LOCATION (S) WHERE K-BRACES MIGHT NORMALLY BE USED IN A LOAD IN A CONVENTIONAL CAR, LOAD DIVIDER BULKHEADS CAN BE POSITIONED. LOADING CAN THEN CONTINUE TOWARD THE CENTER OF THE CAR FROM EACH INSTALLED LOAD DIVIDER BULKHEAD, IN EVEN LAYERS WHICH ARE ONE OR MORE LESS IN HEIGHT THAN THE LOAD IN THE ENDS OF THE CAR. INSTALL CENTER GATES, STRUTS AND GATE HOLD DOWNS AS SHOWN IN THE APPLICABLE CONVENTIONAL BOX CAR DRAWING HEREIN, TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.
4. ONE OR MORE UNITS CAN BE POSITIONED IN CONTACT WITH A LOAD DIVIDER BULKHEAD ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 118, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 114.

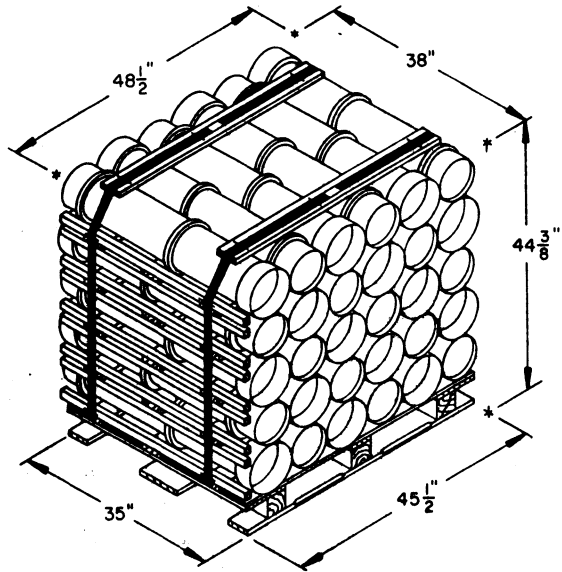
- HH. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

CONTAINER ----- 24 EACH @ 50 LBS (APPROX)
 CUBE ----- 39.2 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,335 LBS (MAX) (APPROX)

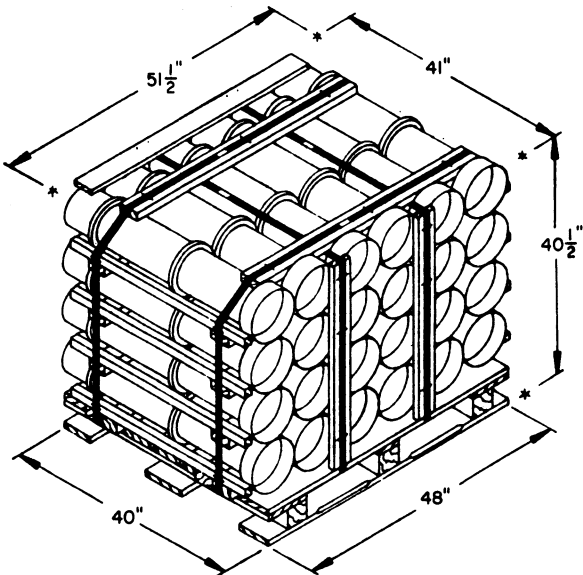
REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES.



ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

CONTAINER ----- 30 EACH @ 50 LBS (APPROX)
 CUBE ----- 47.4 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,651 LBS (APPROX)

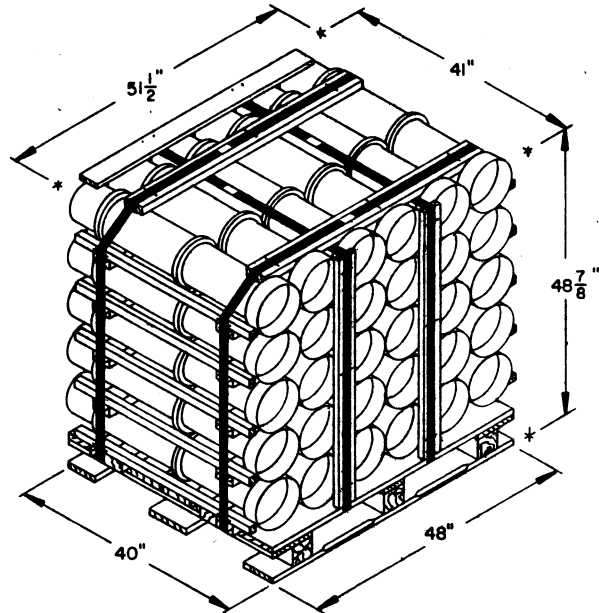
REFER TO PAGES 22 THRU 31 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----- 24 EACH @ 50 LBS (APPROX)
 CUBE ----- 49.5 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,400 LBS (APPROX)

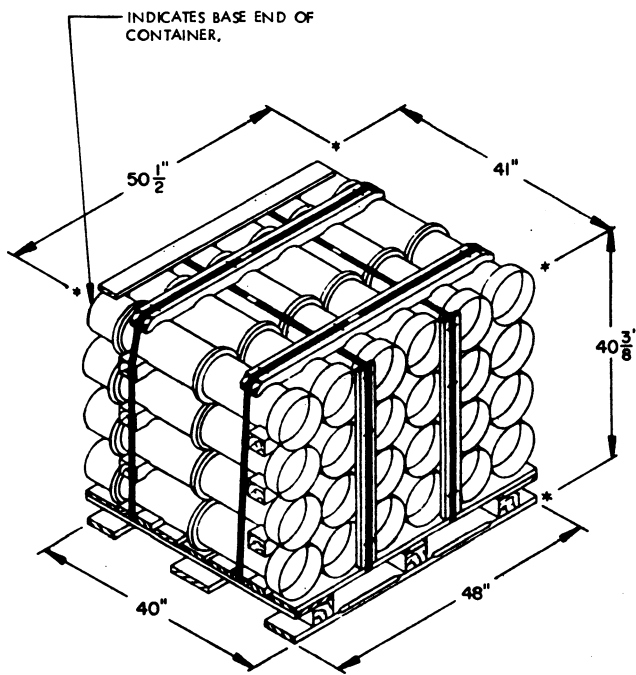
REFER TO PAGES 36 THRU 45 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)

CONTAINER ----- 30 EACH @ 50 LBS (APPROX)
 CUBE ----- 59.7 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,709 LBS (APPROX)

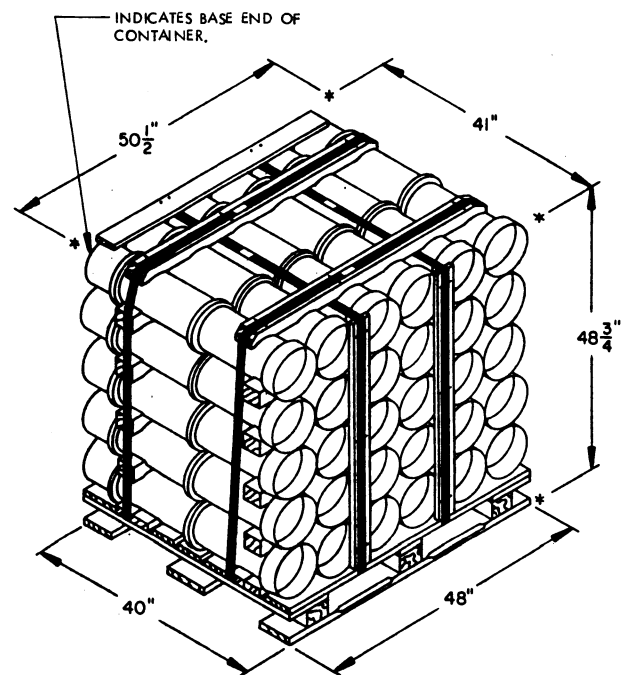
REFER TO PAGES 50 THRU 59 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----- 24 EACH @ 50 LBS (APPROX)
 CUBE ----- 48.4 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,385 LBS (APPROX)

REFER TO PAGES 64 THRU 73 FOR OUTLOADING PROCEDURES.



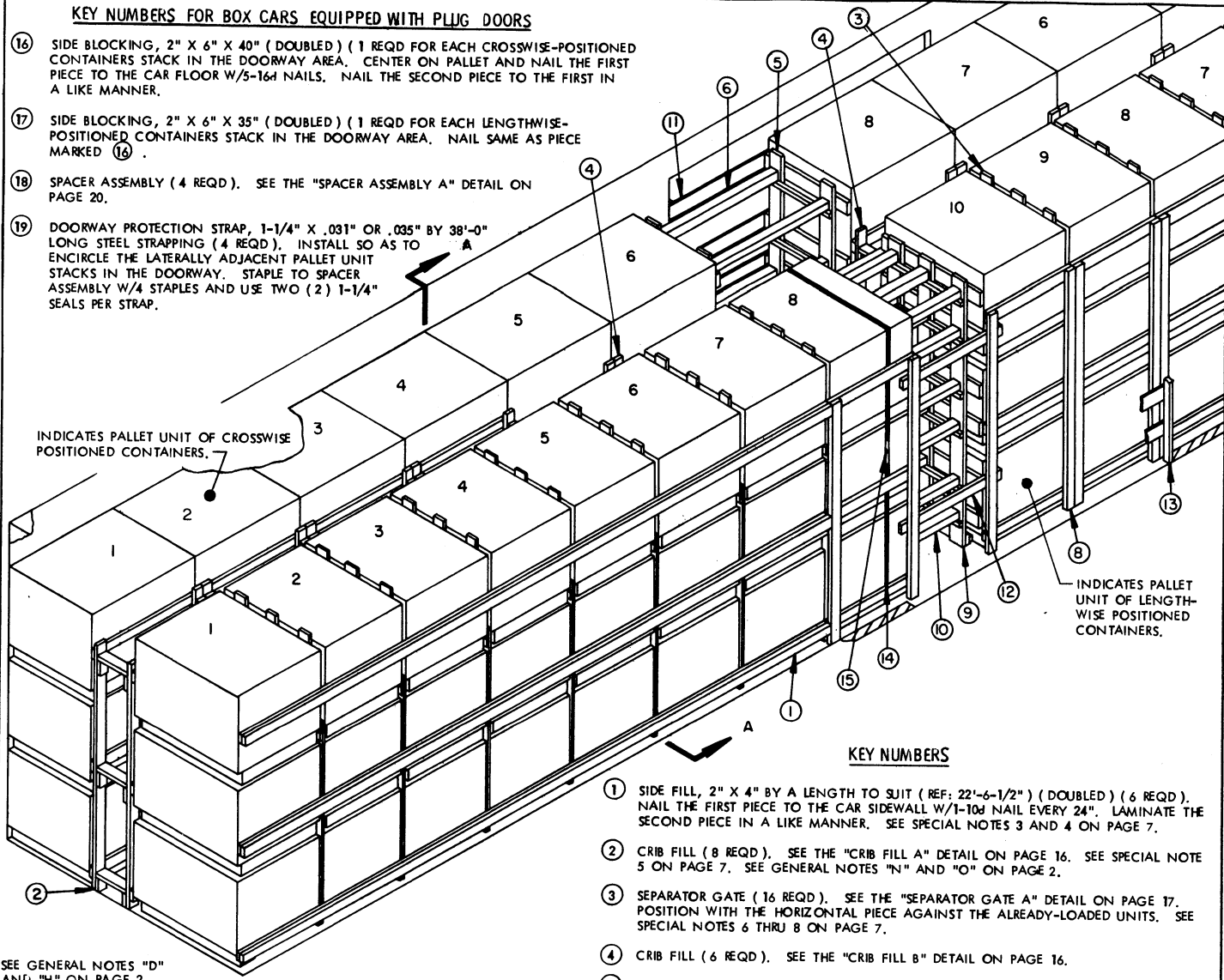
ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)

CONTAINER----- 30 EACH @ 50 LBS (APPROX)
 CUBE ----- 58.4 CUBIC FEET (APPROX)
 GROSS WEIGHT----- 1,711 LBS (APPROX)

REFER TO PAGES 78 THRU 87 FOR OUTLOADING PROCEDURES.

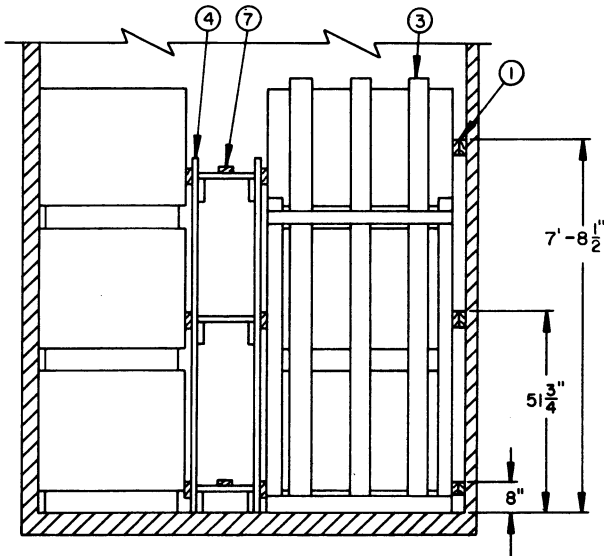
KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

- ⑬ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. CENTER ON PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑭ SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. NAIL SAME AS PIECE MARKED ⑬).
- ⑮ SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- ⑯ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 38'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.



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

ISOMETRIC VIEW



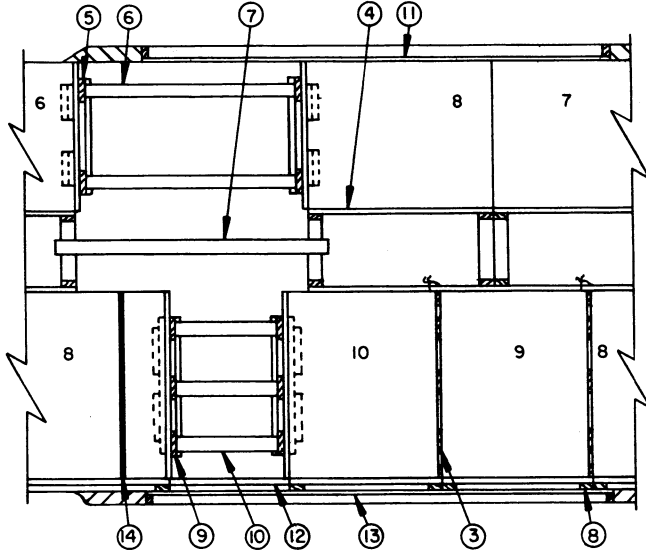
SECTION A-A

KEY NUMBERS

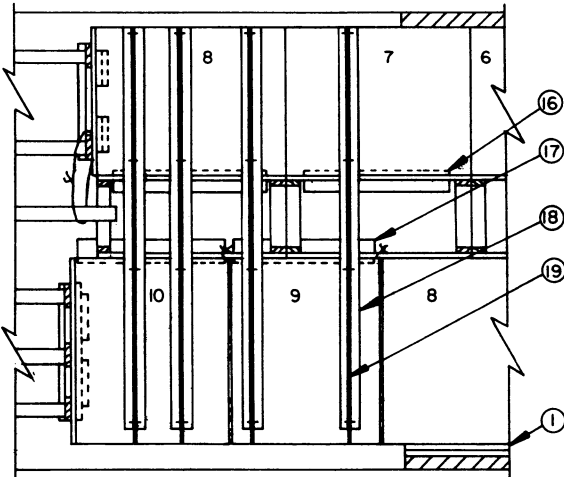
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 22'-6-1/2") (DOUBLED) (6 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 7.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 5 ON PAGE 7. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 7.
- ④ CRIB FILL (6 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 9 ON PAGE 7.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (12 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑦ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 62") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 7.
- ⑧ SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY D" DETAIL ON PAGE 19. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- ⑨ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 17.
- ⑩ STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (18 REQD). TOENAIL TO PIECES MARKED ⑨ W/2-16d NAILS AT EACH END.
- ⑪ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 7.
- ⑫ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 45") (2 REQD). POSITION AT 31" AND 7'-5" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑧ W/3-10d NAILS AT EACH END.
- ⑬ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS.
- ⑭ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 28'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACK AS SHOWN.
- ⑮ SEAL FOR 1-1/4" STRAPPING (2 REQD). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

(CONTINUED ABOVE)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
96-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



PARTIAL PLAN VIEW OF BOX CARS EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY A BUNDLING STRAP, AS SHOWN ON PAGE 37. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

SPECIAL NOTES:

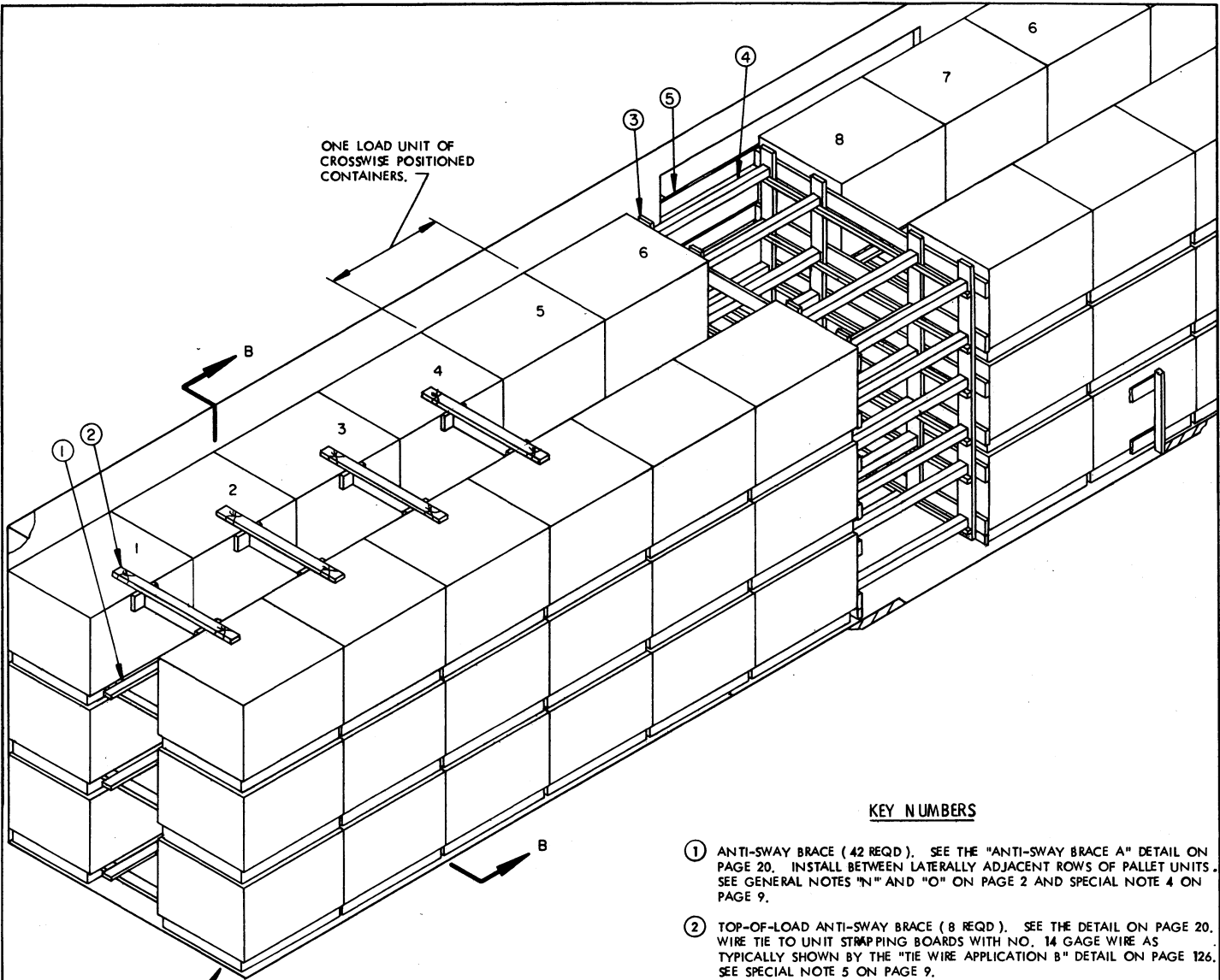
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-EIGHT (78) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 103,974 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY (60) UNITS, FOR A LADING WEIGHT OF 79,980 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING 40' AND 50' CARS. SEE GENERAL NOTE "V" ON PAGE 2.
3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (8) ON PAGE 6, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILEABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (8), AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED (12).
5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), 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.
6. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
7. ALL SEPARATOR GATES, PIECES MARKED (3), WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS: PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-HIGH LOADS FROM 48" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.
9. CENTER GATES "A" AND "B" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (11) AND (13) IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX 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 SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" DETAIL AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. BATTENS WILL BE REQUIRED ON THE CONTAINER ENDS OF THE CONTAINERS-CROSSWISE PALLET UNITS. SEE THE "BATTEN PLACEMENT" DETAIL ON PAGE 130.
11. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 98 AND 99. THE ENTIRE ONE OR TWO TOP TIERS MAY ALSO BE OMITTED.
12. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 114 AND 115.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS-LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS-CROSSWISE UNITS.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILLOF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	346	116
1" X 6"	568	284
2" X 2"	66	22
2" X 3"	39	20
2" X 4"	1384	923
2" X 6"	177	177
4" X 4"	82	110
NAILS	NO. REQD	POUNDS
6d (2")	552	3-1/4
10d (3")	1792	27-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	129	2-3/4
STEEL STRAPPING, 1-1/4" X .031" OR .035"-----28'-0" REQD-----4 LBS		
SEAL FOR 1-1/4" STRAPPING-----2 REQD-----NIL		
WIRE, NO. 14 GAGE-----4' REQD-----NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	96-----	127,968 LBS
DUNNAGE-----	-----	3,343 LBS
TOTAL WEIGHT-----		131,311 LBS (APPROX)

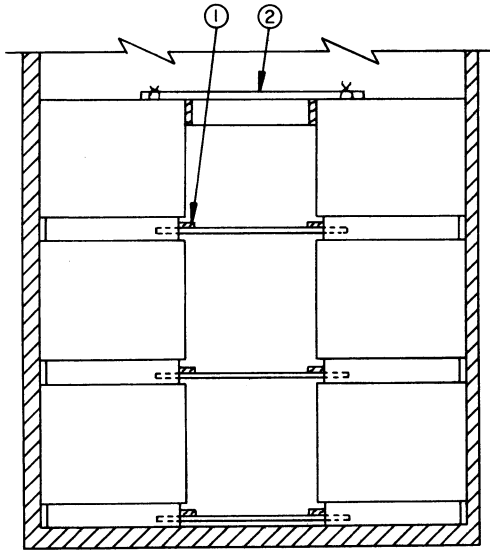


SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 5 ON PAGE 9.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTE 6, 7, AND 8 ON PAGE 9.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 9.



SECTION B-B

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

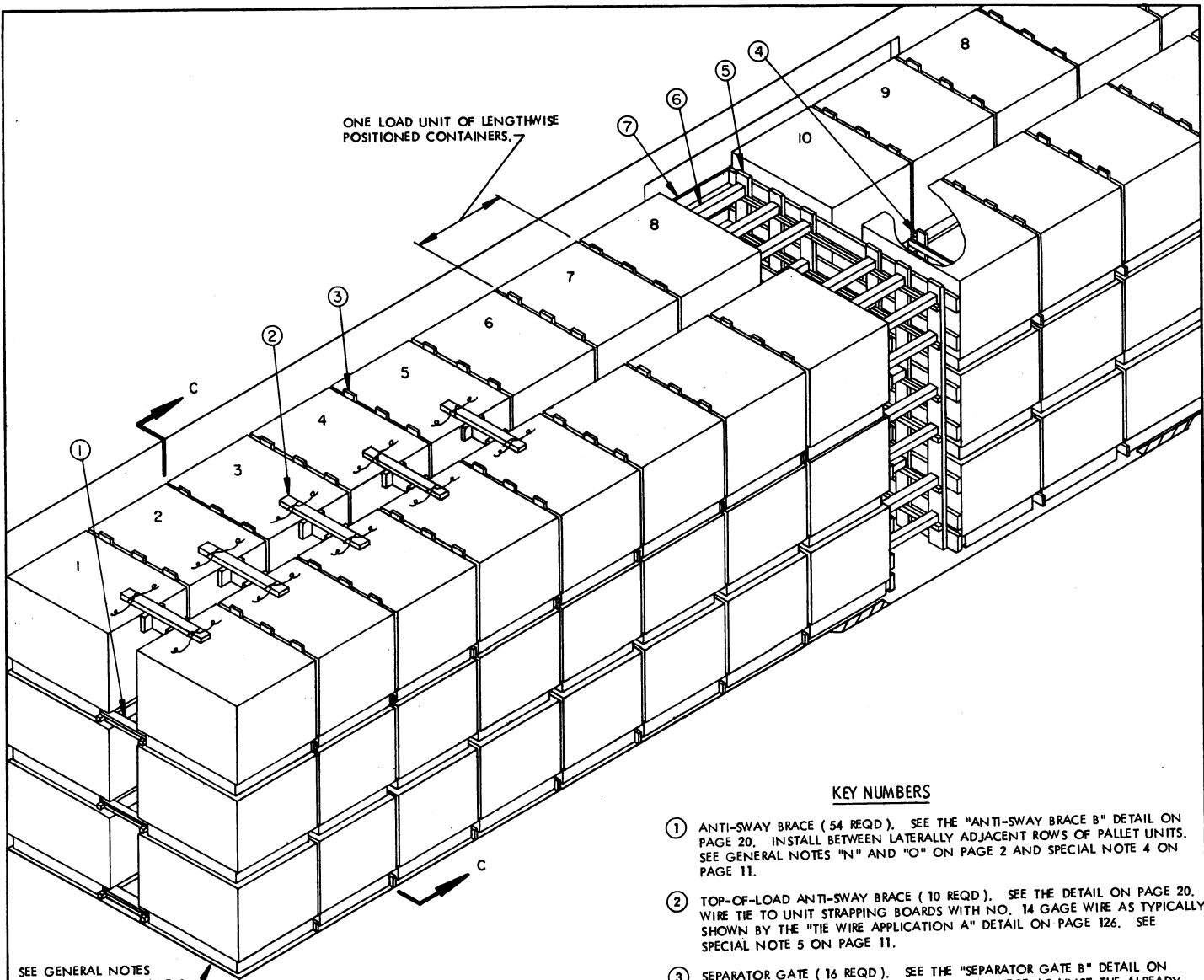
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT) A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,976 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FIFTY-FOUR (54) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,982 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
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 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. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (5), NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" CAR OR A 50'-6" CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.
6. CENTER GATE "C" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 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 C", SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 16. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 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 AREA 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 128 THRU 130 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 SHOWN ON PAGE 14 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 118 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 119 AND 122 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	105	35
2" X 3"	35	18
2" X 4"	653	436
2" X 6"	214	214
4" X 4"	86	115
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	904	14
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

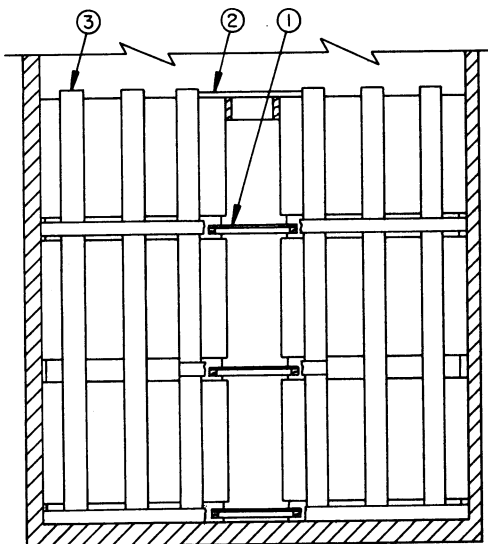
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	111,972 LBS
DUNNAGE		1,761 LBS
TOTAL WEIGHT-----		113,733 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



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

ISOMETRIC VIEW



SECTION C-C

KEY NUMBERS

- ① ANTI-SWAY BRACE (54 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 11.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 5 ON PAGE 11.
- ③ SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6, 8, AND 9 ON PAGE 11.
- ④ STOP PIECE, 1" X 4" X 6'-9" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 11.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE SPECIAL NOTES 10, 11, AND 12 ON PAGE 11.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (36 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 13 ON PAGE 11.

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

108-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

12. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE HOLD DOWNS ON CENTER GATES "D", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
13. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 30 MUST BE USED IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 122 FOR GUIDANCE.
15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 10 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A CAR HAVING A LOAD LIMIT OF AT LEAST 147,900 POUNDS IS REQUIRED FOR SHIPMENT OF THE DEPICTED 108-UNIT LOAD WHEN USING AN OFFSET LOADING PATTERN. A MAXIMUM OF EIGHTY-FOUR (84) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 111,972 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR HAVING A LOAD LIMIT OF 117,400 POUNDS OR GREATER WHEN USING AN OFFSET LOADING PATTERN; AN EVENLY DISTRIBUTED LOAD WILL REQUIRE A CAR HAVING A LOAD LIMIT OF 114,500 POUNDS OR GREATER. SIXTY-SIX (66) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,978 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE NINE (9) 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 DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 30 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 1.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" CAR OR A 50'-6" CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.
6. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
7. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECE MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
8. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 21. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED-FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED ④, WILL BE 47" FOR A 3-HIGH OR 2-HIGH LOAD OR 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "G" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.
9. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124 FOR CONSTRUCTION GUIDANCE.
10. CENTER GATE "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
11. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE D", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 10, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 17. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	579	193
1" X 6"	1016	508
2" X 2"	439	147
2" X 3"	39	20
2" X 4"	229	153
2" X 6"	255	255
4" X 4"	78	104
NAILS	NO. REQD	POUNDS
6d (2")	1524	9
10d (3")	1020	15-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	144	3-1/4
WIRE, NO. 14 GAGE-----120' REQD-----2 LBS		

LOAD AS SHOWN

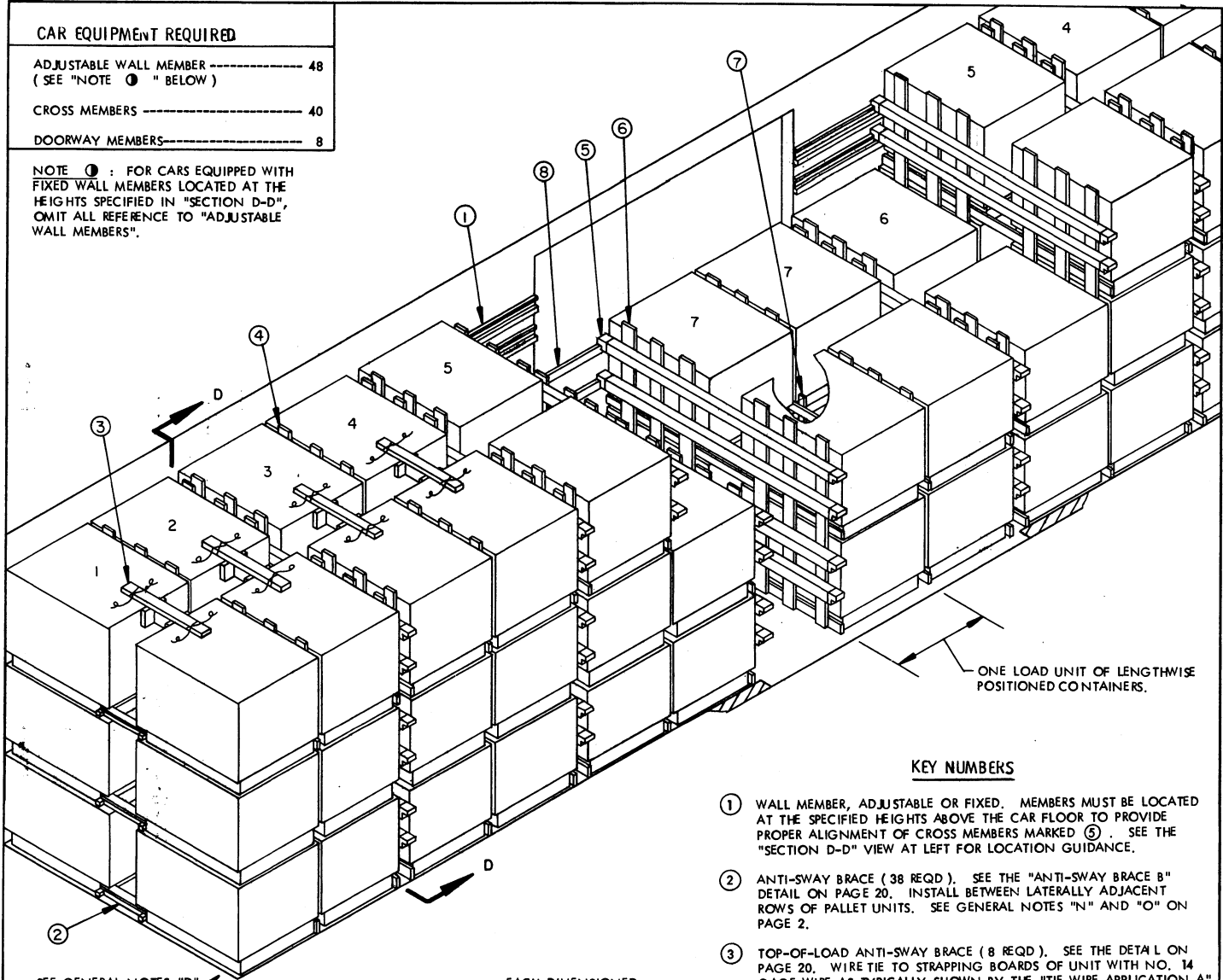
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	108	143,964 LBS
DUNNAGE		2,791 LBS
TOTAL WEIGHT		146,755 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
108-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	48
(SEE "NOTE 1" BELOW)	
CROSS MEMBERS -----	40
DOORWAY MEMBERS -----	8

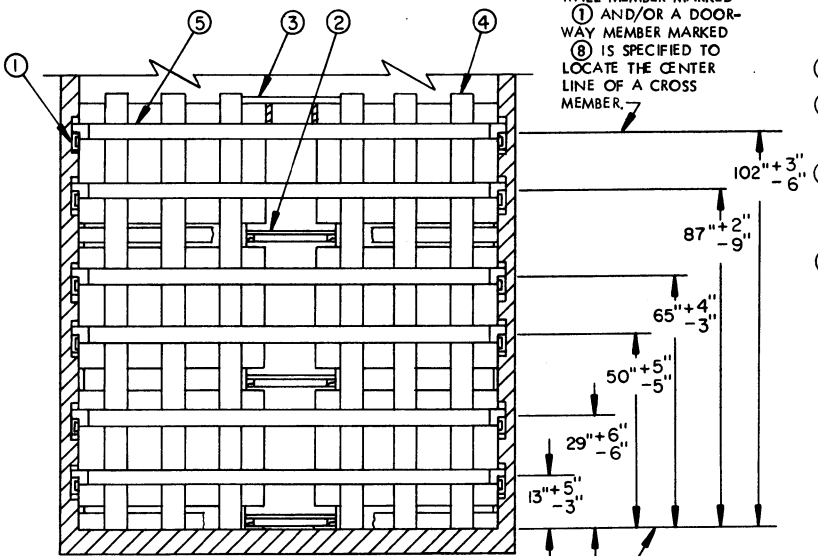
NOTE 1 : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION D-D", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



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

ISOMETRIC VIEW

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



SECTION D-D

INDICATES CAR FLOOR.

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤. SEE THE "SECTION D-D" VIEW AT LEFT FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SEPARATOR GATE FOR 3-HIGH (14 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.
- ⑤ CROSS MEMBER (40 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 2-HIGH (5 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑦ STOP PIECE, 1" X 4" X 42" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AND NAIL TO THE HORIZONTAL PIECES ON PIECE MARKED ⑥ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑧ DOORWAY MEMBER (8 REQD). SEE THE "SECTION D-D" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 13.

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

76-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 PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 79,980 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (4), MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED (4) SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECE MARKED (7). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124 FOR CONSTRUCTION GUIDANCE.
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 ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 92 AND 93 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

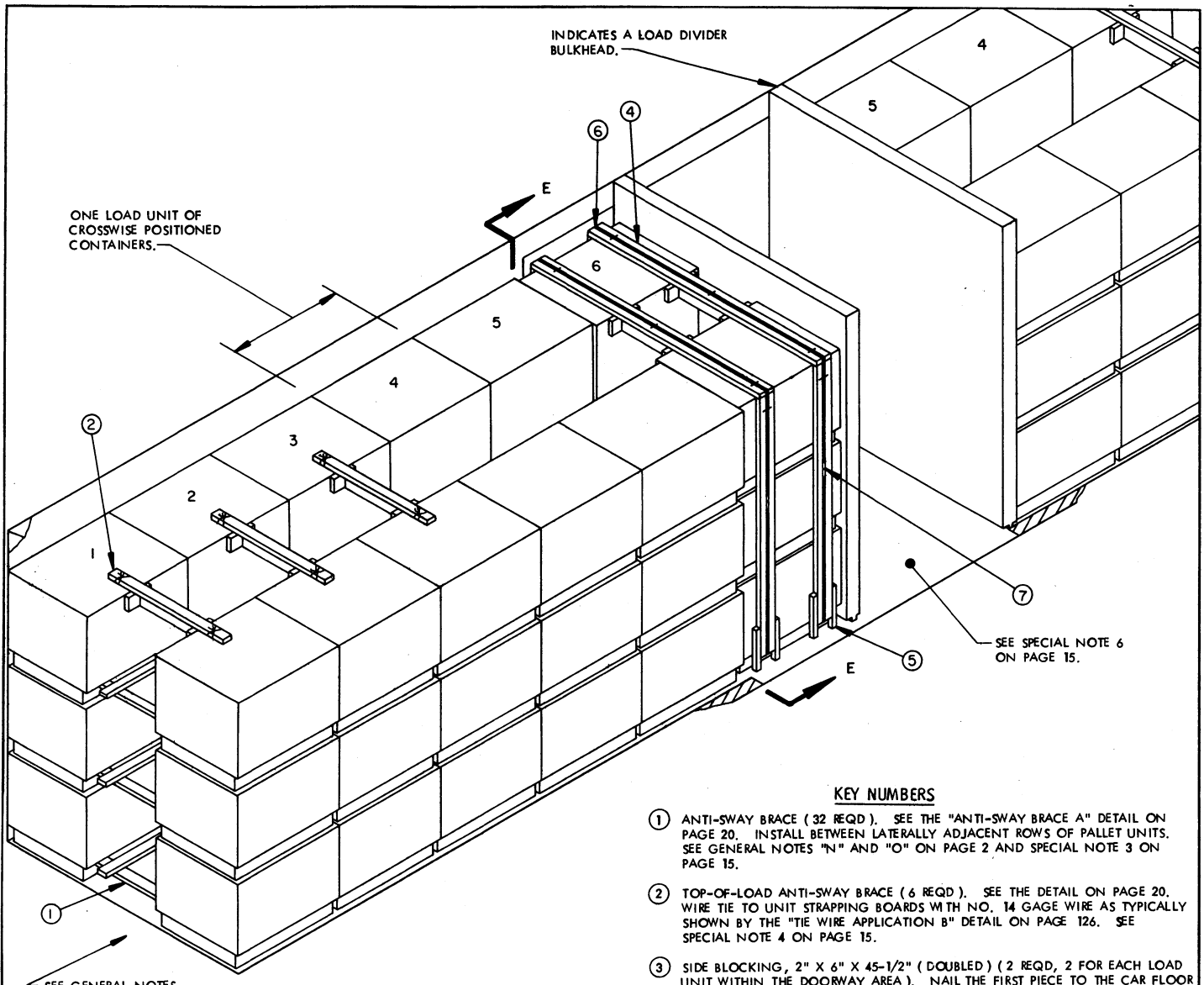
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	559	187
1" X 6"	972	486
2" X 2"	236	79
2" X 4"	150	100
2" X 6"	30	30
NAILS	NO. REQD	POUNDS
6d (2")	1366	8-1/4
10d (3")	416	6-1/2
WIRE, NO. 14 GAGE-----64' REQD-----1 LB		

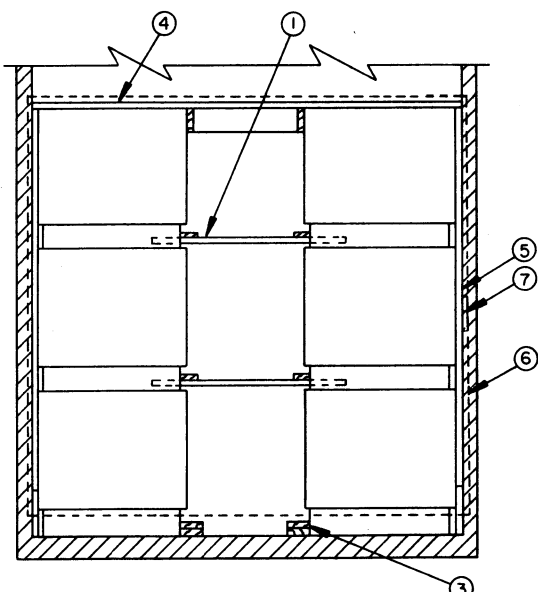
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	76-----	401,368 LBS
DUNNAGE-----	-----	1,780 LBS
TOTAL WEIGHT-----		103,148 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
 76-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

- ① ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 15.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 15.
- ③ SIDE BLOCKING, 2" X 6" X 45-1/2" (DOUBLED) (2 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (5) AT FLOOR LEVEL.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- ⑤ STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 20.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 38'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. STAPLE TO STRAPPING BOARD ASSEMBLY W/1 STAPLE NEAR THE TOP. SEE SPECIAL NOTE 5 ON PAGE 15.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
 66-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

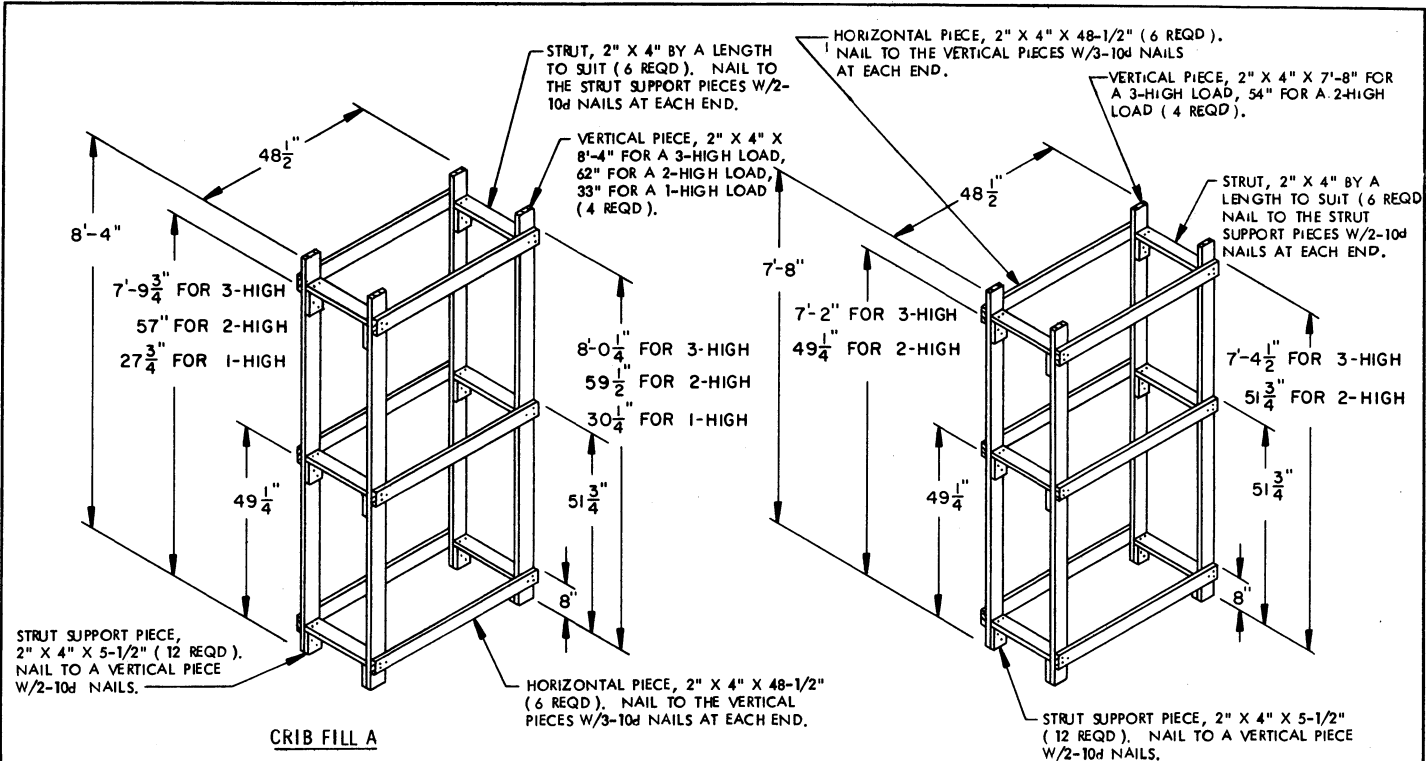
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 14 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF EIGHTY-FOUR (84) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 111,972 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 71,982 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 10 IS EMPLOYED, ONE HUNDRED AND TWO (102) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 135,966 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, EIGHTY-FOUR (84) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 111,972 POUNDS, AND SIXTY-SIX (66) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 87,978 POUNDS.
3. THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 14 ARE USUALLY IN LIFU OF THE WOODEN DOOR GATE TYPE PROTECTION. NAILED FLOORLINE BLOCKING MUST BE USUALLY IN LIFU OF THE LOW-R 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 WIDTH OR LENGTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED 2 IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR, THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" CAR.
5. 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 5 IN THE LOAD ON PAGE 8, FOR LOADS OF CROSSWISE POSITIONED CONTAINERS OR PIECE MARKED 7 ON PAGE 10 FOR LENGTHWISE POSITIONED CONTAINERS, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. PIECES MARKED 4 THRU 7 ON PAGE 14 WILL BE USED FOR LOADS OF CROSSWISE POSITIONED CONTAINERS. PIECES MARKED 4 THRU 7 ON PAGE 30 WILL BE USED FOR LOADS OF LENGTHWISE-POSITIONED CONTAINERS. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH.
6. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED 5 IN THE LOAD ON PAGE 58, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS. A STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE BULKHEADS AS SHOWN ON PAGE 44.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 107 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 119 AND 122 FOR SHIPPING GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	11	4
2" X 4"	492	328
2" X 6"	103	103
NAILS	NO. REQD	POUNDS
10d (3")	520	8
12d (3-1/4")	26	1/2
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4" X .031" OR .035"-----76'-0"REQD-----11 LBS		
SEAL FOR 1-1/4" STRAPPING-----4 REQD-----NIL		
WIRE, NO. 14 GAGE-----72' REQD-----1 LB		

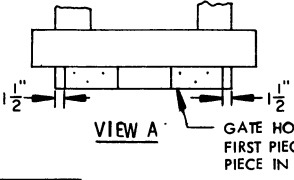
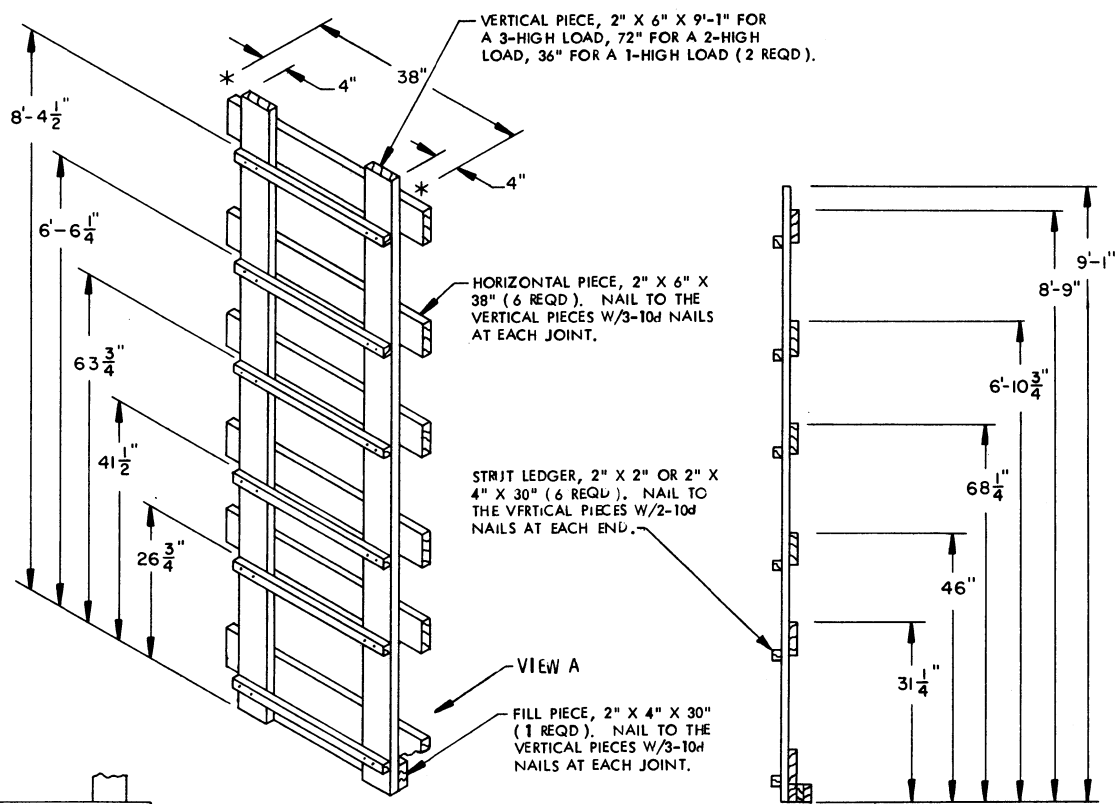
LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	87,978 LBS
DUNNAGE		891 LBS
TOTAL WEIGHT		88,869 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
 66-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

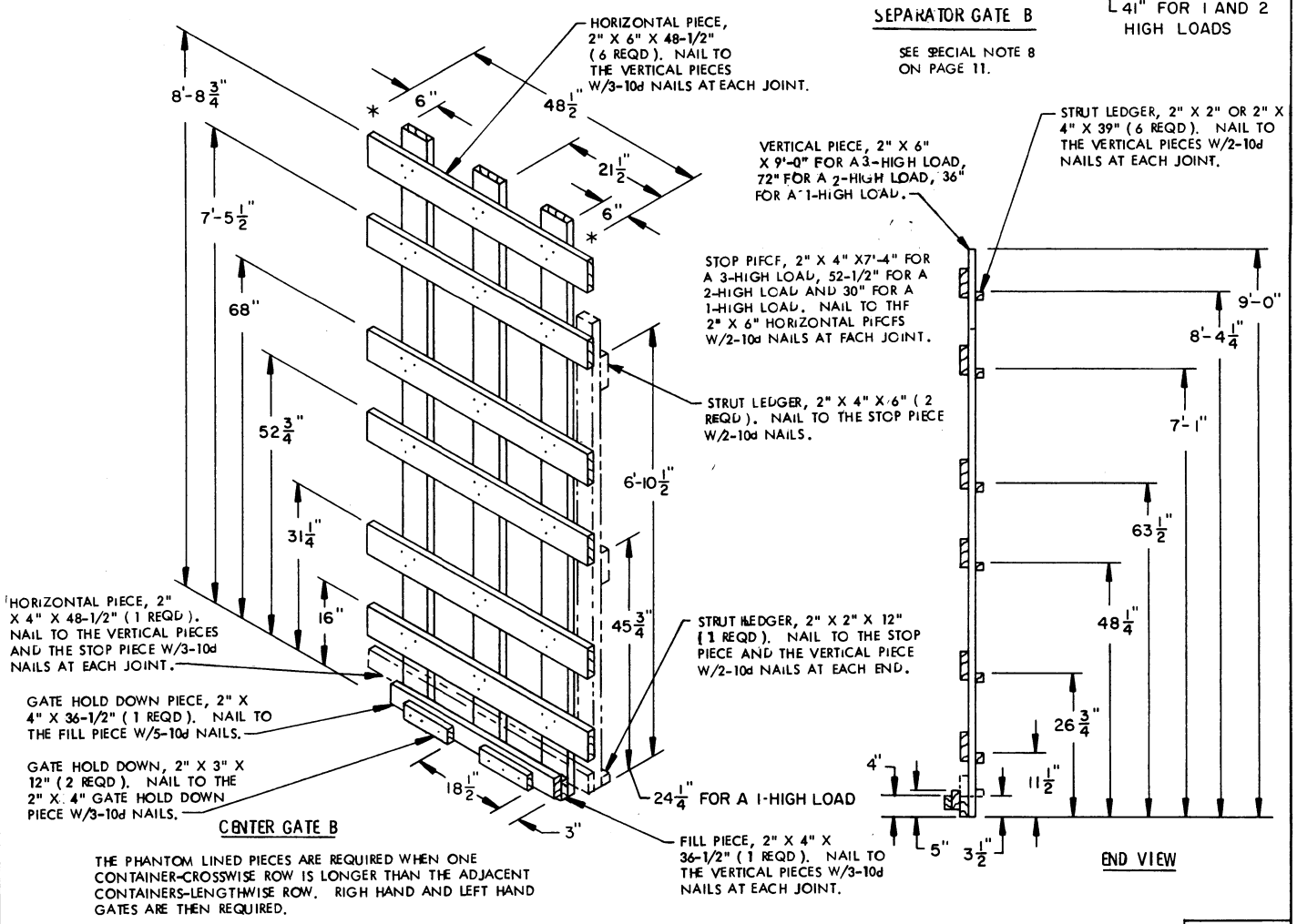
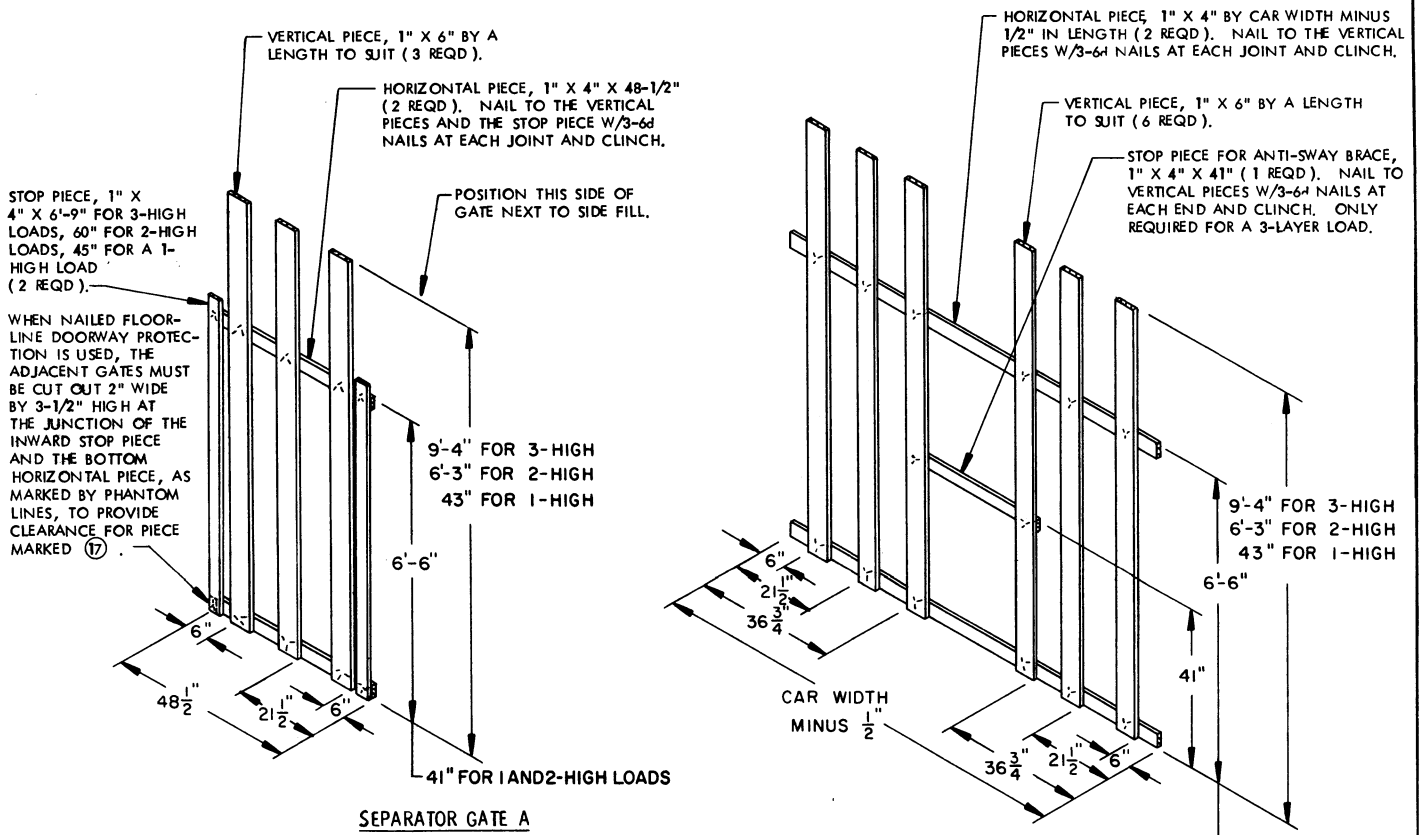


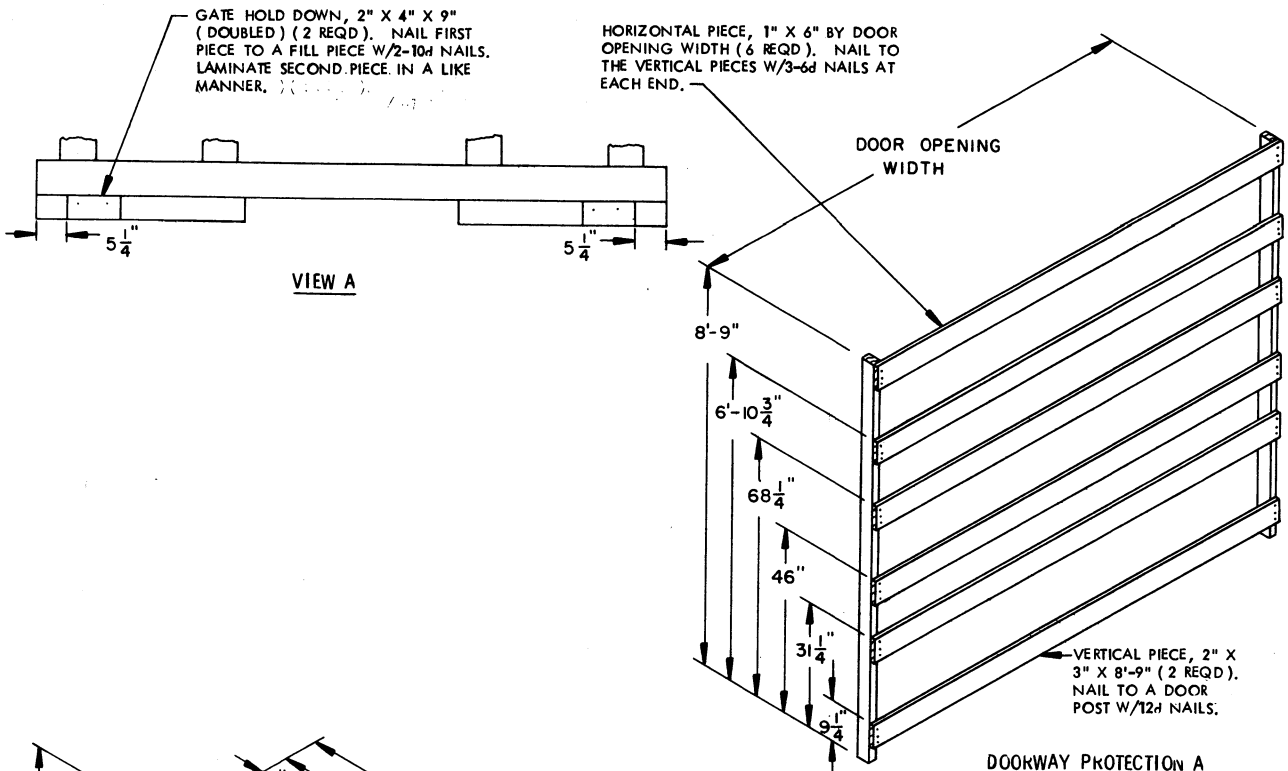
CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2-HIGH LOAD.

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

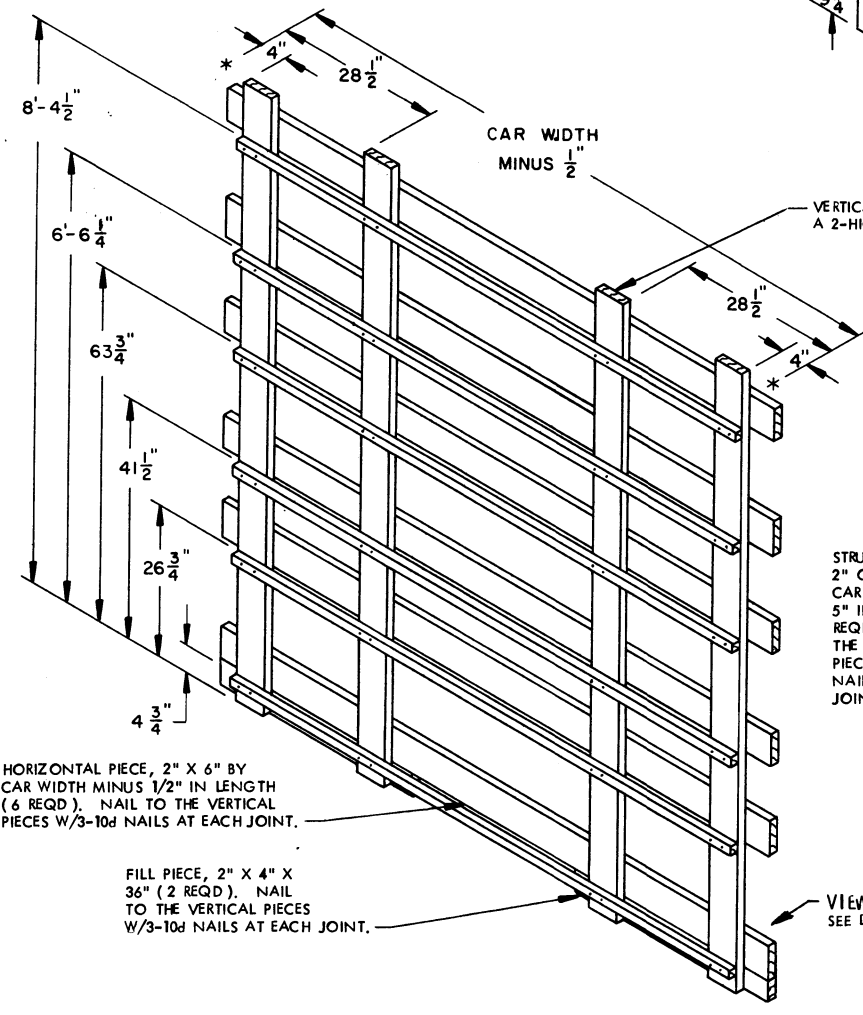


DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

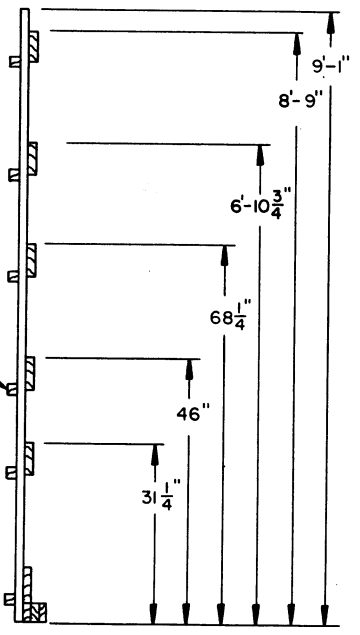




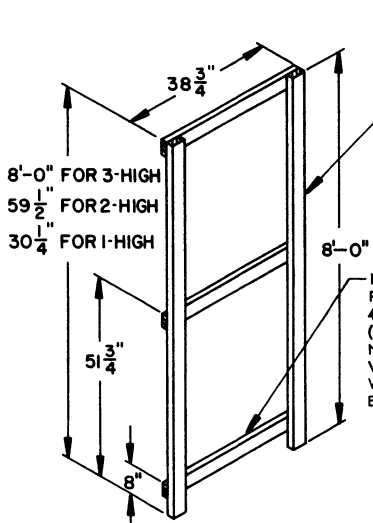
DOORWAY PROTECTION A
 THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 6, AND FOR THE LOAD SHOWN ON PAGE 8.



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



END VIEW



SIDE FILL ASSEMBLY D

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

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

VERTICAL PIECE, 2" X 4" X 8'-0" FOR 3-HIGH, 62" FOR 2-HIGH, 33" FOR 1-HIGH (2 REQD).

HORIZONTAL PIECE, 2" X 4" X 38-3/4" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END.

DOOR OPENING WIDTH

8'-8 3/4"

7'-5 1/2"

68"

52 3/4"

31 1/4"

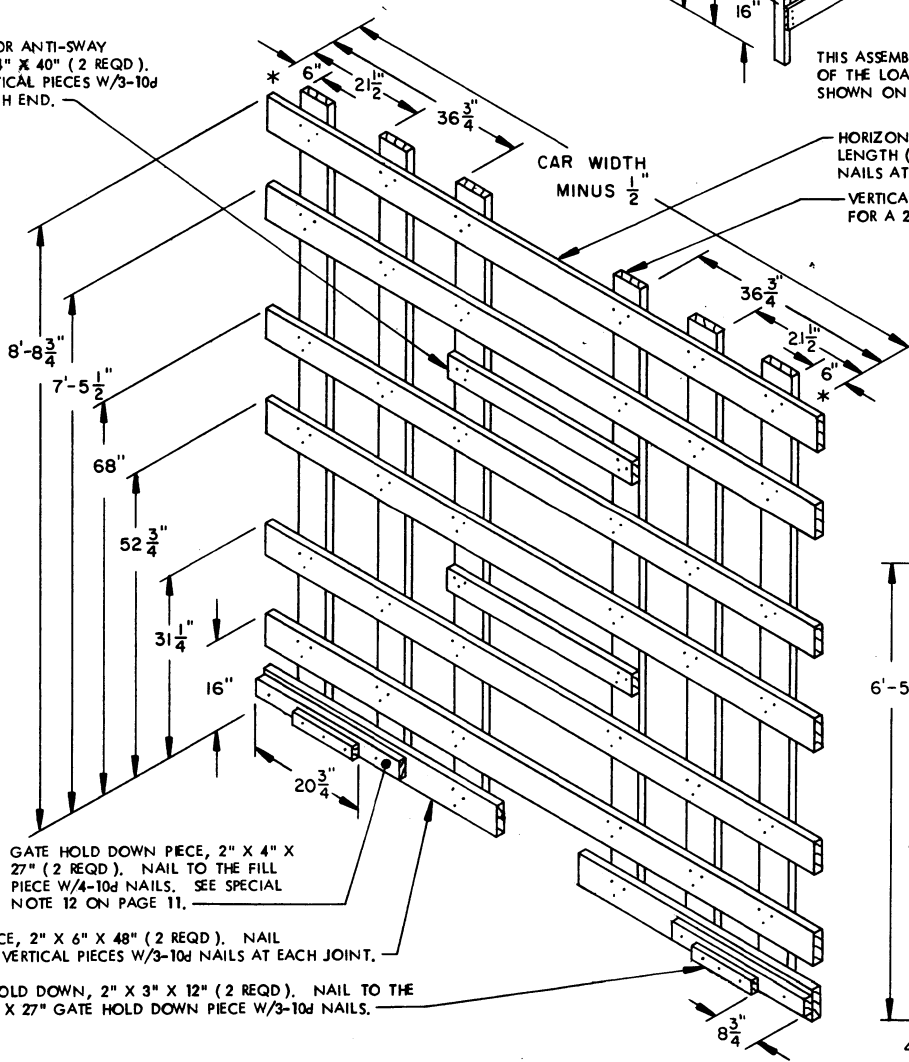
16"

VERTICAL PIECE, 2" X 3" X 8'-8-3/4" (2 REQD). NAIL TO A DOOR POST W/12d NAILS.

DOORWAY PROTECTION B

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

STOP PIECE FOR ANTI-SWAY BRACE, 2" X 4" X 40" (2 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH END.



CENTER GATE D

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

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

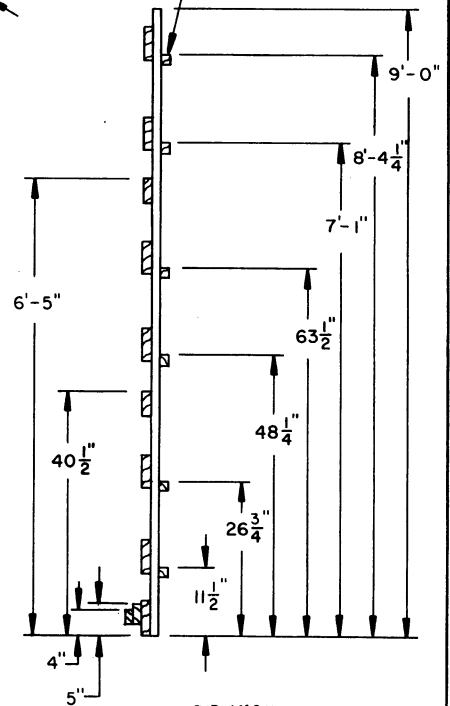
VERTICAL PIECE, 2" X 6" X 9'-0" FOR A 3-HIGH LOAD, 72" FOR A 2-HIGH LOAD, 36" FOR A 1-HIGH LOAD (6 REQD).

STRUT LEDGER, 2" X 2" OR 2" X 4" BY CAR WIDTH MINUS 7" IN LENGTH (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD DOWN PIECE, 2" X 4" X 27" (2 REQD). NAIL TO THE FILL PIECE W/4-10d NAILS. SEE SPECIAL NOTE 12 ON PAGE 11.

FILL PIECE, 2" X 6" X 48" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 3" X 12" (2 REQD). NAIL TO THE 2" X 4" X 27" GATE HOLD DOWN PIECE W/3-10d NAILS.

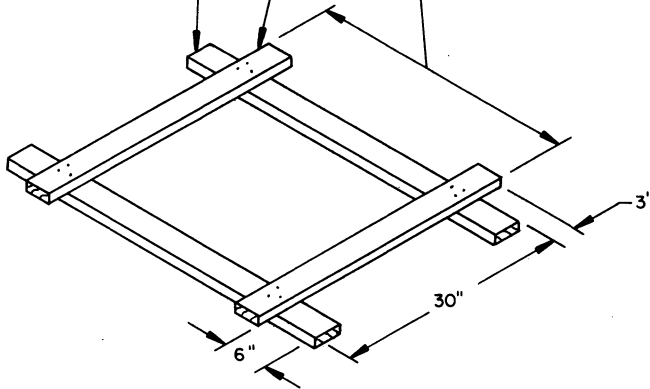


END VIEW

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

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

FABRICATE TO FIT BETWEEN THE
POSTS OF LATERALLY ADJACENT
PALLET.

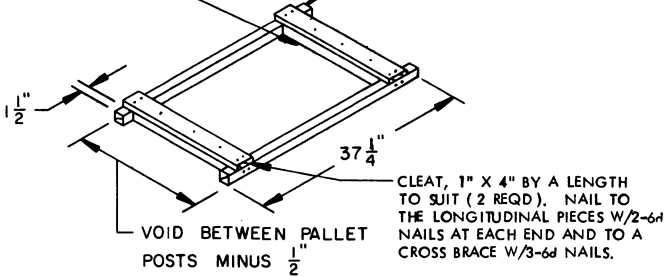


ANTI-SWAY BRACE A

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 OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.

CROSS BRACE, 2" X 4" BY A LENGTH
TO SUIT (2 REQD).

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



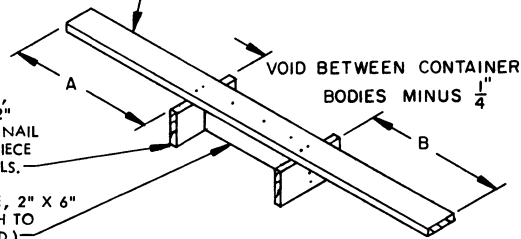
ANTI-SWAY BRACE B

SEE SPECIAL NOTE 4 ON PAGE 11. NOTE: IN SOME PLACES THE UNIT LENGTH MINUS 3/4" WILL BE CHANGED TO UNIT LENGTH MINUS 1-1/2"

STRAPPING BOARD, 2" X 6" BY A LENGTH
TO SUIT (1 REQD). NAIL TO BUFFER
PIECE W/2-12d NAILS AT EACH JOINT AND
TO THE SPACER PIECES W/3-12d NAILS.

BUFFER PIECE,
2" X 6" X 12"
(2 REQD). NAIL
TO SPACER PIECE
W/3-12d NAILS.

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



SPACER ASSEMBLY A

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

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

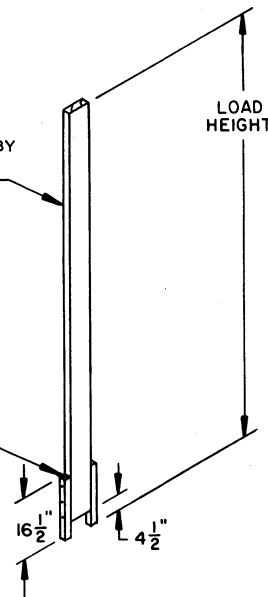
BUFFER PIECE, 2" X 6" X 8"
(2 REQD). NAIL TO THE
SPACER PIECE W/3-10d NAILS.

TOP-OF-LOAD ANTI-SWAY BRACE

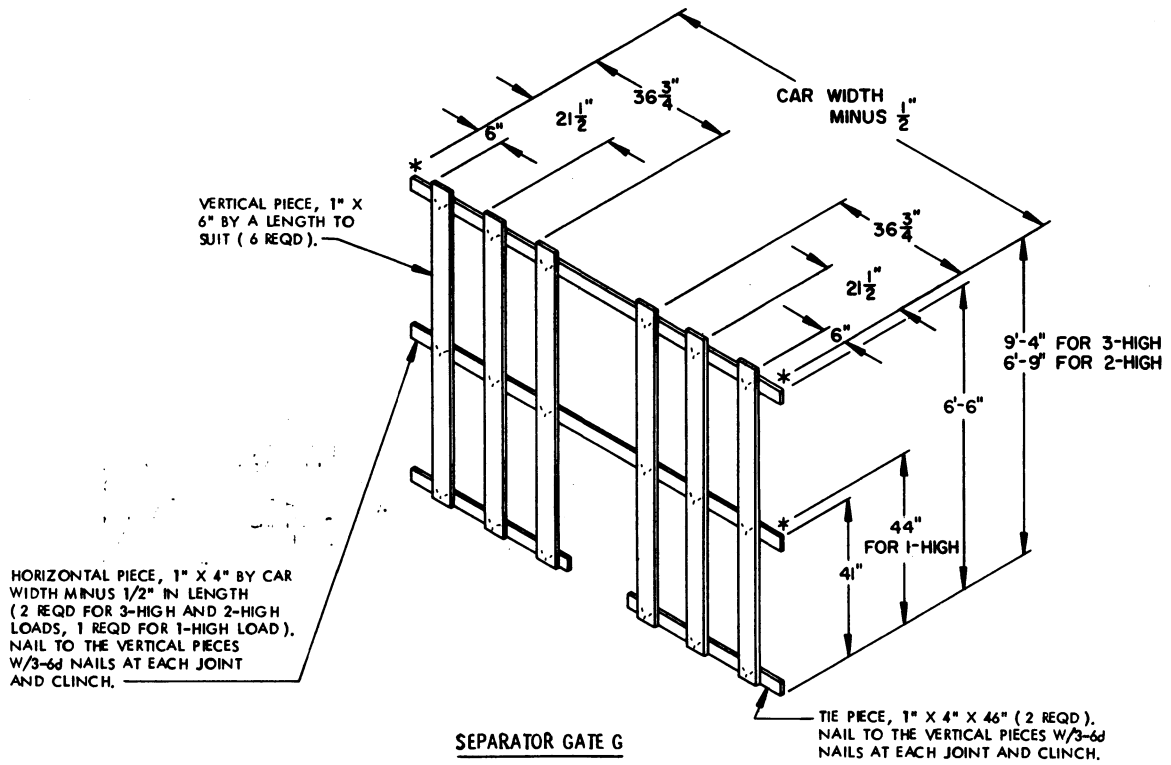
LOAD PAGE	DIMENSION	
	A	B
6, 7, 22, 23	37-3/4"	44-1/2"
8, 24	37-3/4"	37-3/4"
9, 26, 30	44-1/2"	44-1/2"
14	39-1/4"	39-1/4"

VERTICAL PIECE, 2" X 6" BY
LOAD HEIGHT REQUIRED
MINUS 4-1/2" (1 REQD).

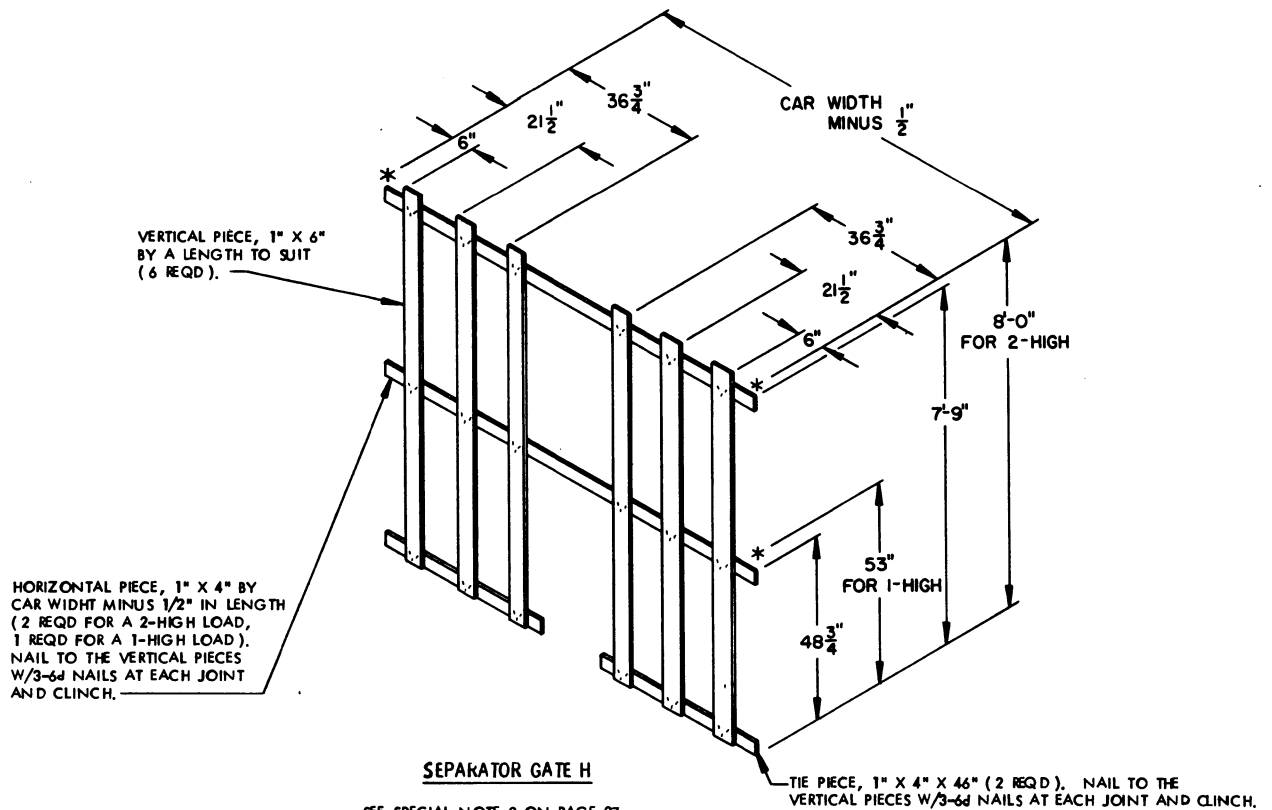
SUPPORT LEG, 2" X 2" X
16-1/2" (2 REQD). NAIL
TO VERTICAL PIECE
W/3-10d NAILS.



STRAPPING BOARD ASSEMBLY



SEE SPECIAL NOTE 8 ON PAGE 11.



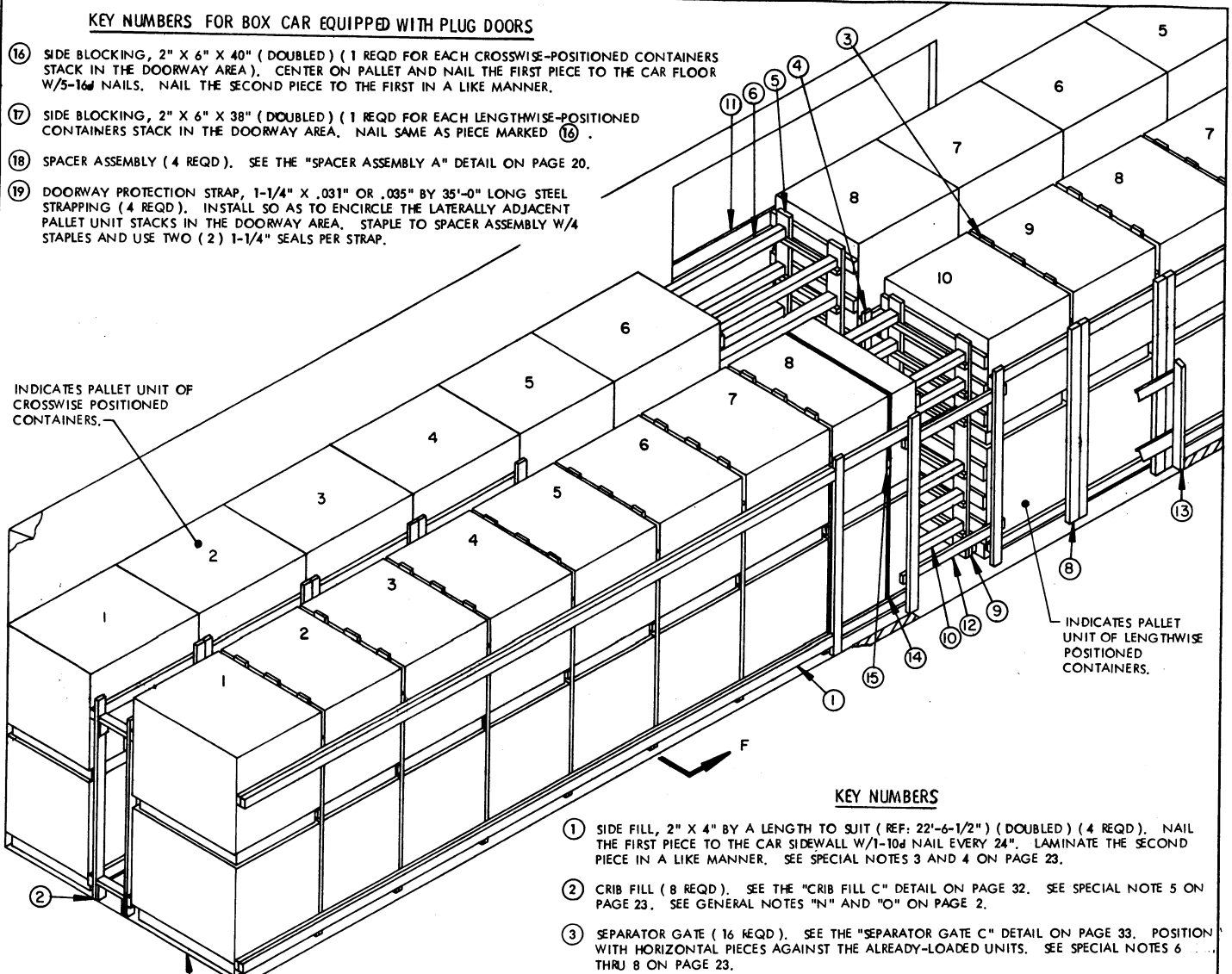
SEE SPECIAL NOTE 8 ON PAGE 27.

PALLET UNIT DETAILS

KEY NUMBERS FOR BOX CAR EQUIPPED WITH PLUG DOORS

- ①⑥ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA). CENTER ON PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ①⑦ SIDE BLOCKING, 2" X 6" X 38" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. NAIL SAME AS PIECE MARKED ①⑥).
- ①⑧ SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 20.
- ①⑨ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 35'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

INDICATES PALLET UNIT OF CROSSWISE POSITIONED CONTAINERS.

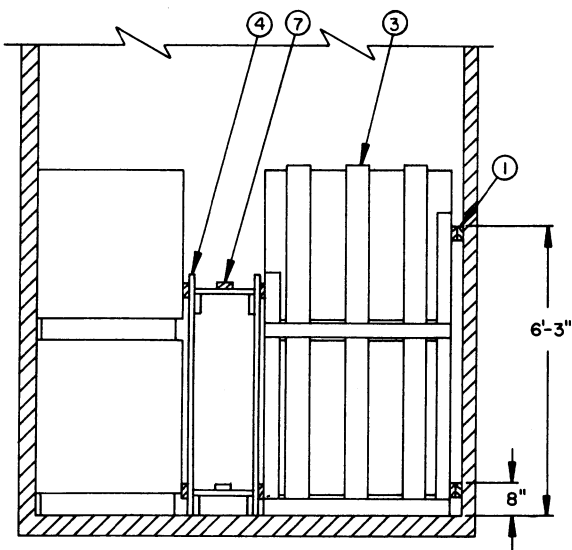


ISOMETRIC VIEW

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

KEY NUMBERS

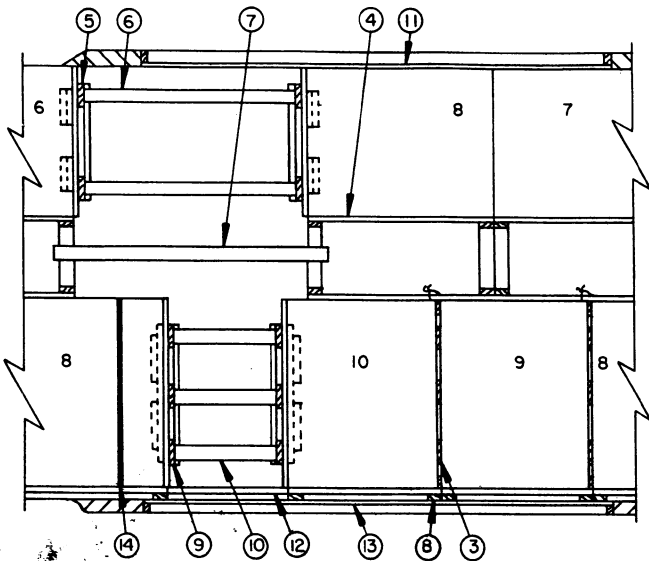
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 22'-6-1/2") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 23.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 32. SEE SPECIAL NOTE 5 ON PAGE 23. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 33. POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 23.
- ④ CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 32.
- ⑤ CENTER GATE (2 REQD). SEE "CENTER GATE E" DETAIL ON PAGE 32. SEE SPECIAL NOTE 9 ON PAGE 23.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (12 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑦ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 62") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 23.
- ⑧ SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY E" DETAIL ON PAGE 34. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDE WALL.
- ⑨ CENTER GATE (2 REQD). SEE "CENTER GATE F" DETAIL ON PAGE 33.
- ⑩ STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (12 REQD). TOENAIL TO PIECES MARKED ⑨ W/2-16d NAILS AT EACH END.
- ⑪ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 34. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 23.
- ⑫ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY LENGTH TO SUIT (REF: 45") (2 REQD). POSITION AT 15" AND 71" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑧ W/3-10d NAILS AT EACH END.
- ⑬ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 34. NAIL TO THE DOOR POSTS W/12d NAILS.
- ⑭ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 24'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACK AS SHOWN.
- ⑮ SEAL FOR 1-1/4" STRAPPING (2 REQD). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



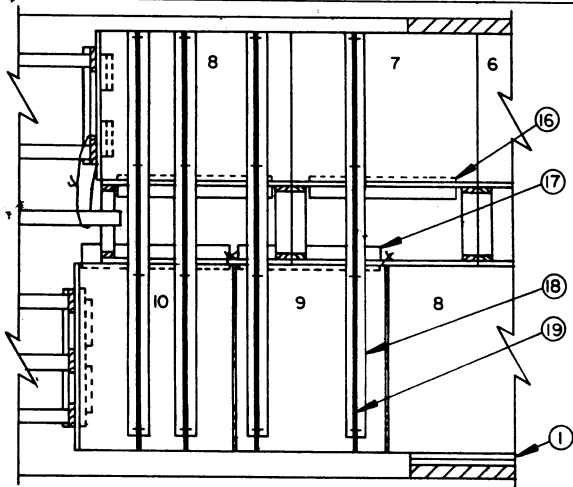
SECTION F-F

(CONTINUED ABOVE)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

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

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	338	113
1" X 6"	440	220
2" X 2"	71	24
2" X 3"	32	16
2" X 4"	972	652
2" X 6"	142	142
4" X 4"	69	92
NAILS	NO. REQD	POUNDS
6d (2")	528	3-1/4
10d (3")	1254	17-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	196	2-1/4
STEEL STRAPPING, 1-1/4" X .031" OR .035" --- 24'-0" REQD	4	LBS
SEAL FOR 1-1/4" STRAPPING	2	REQD --- NIL
WIRE, NO. 14 GAGE	4	REQD --- NIL

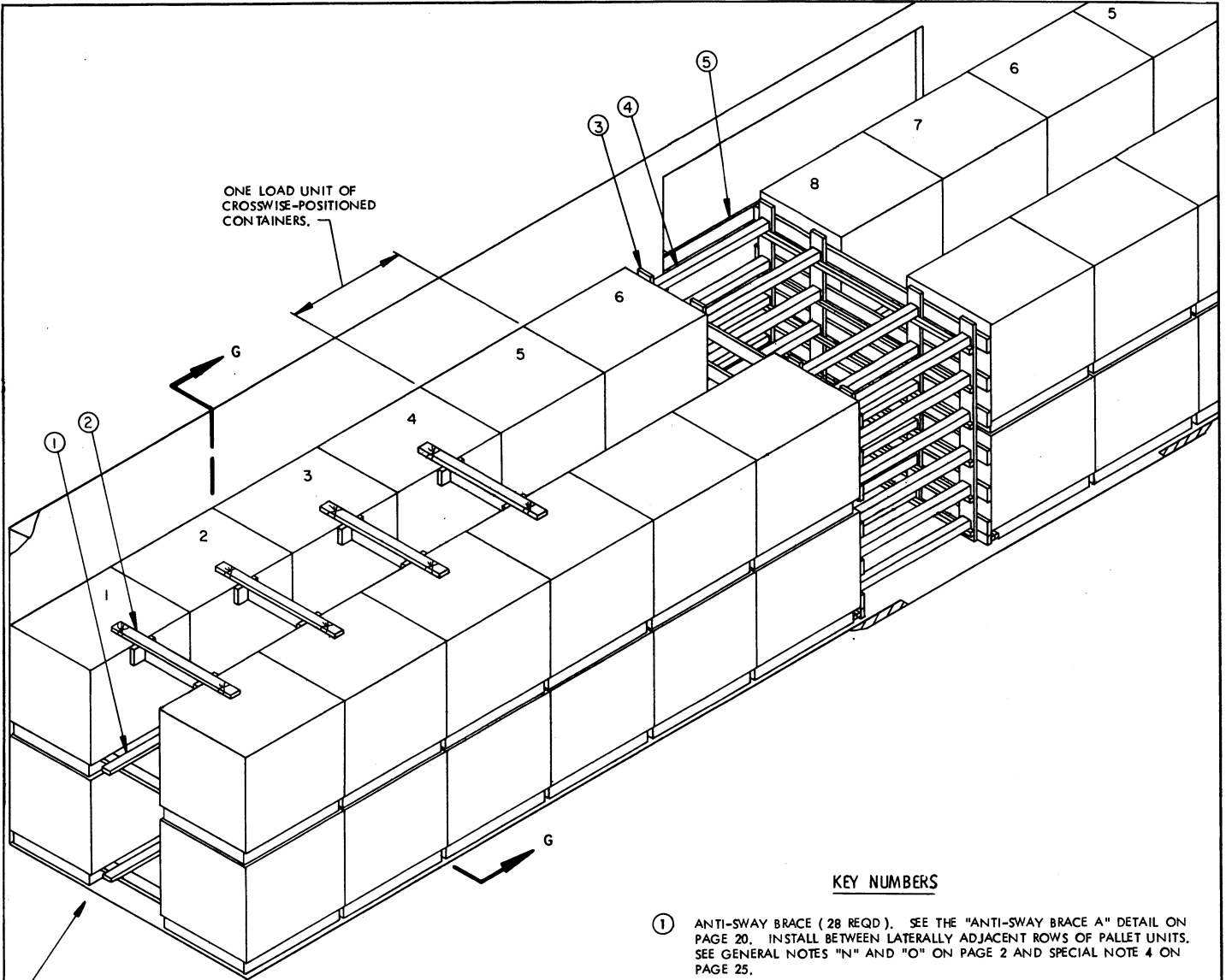
SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 22 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,852 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 66,040 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE SIDE FILL, PIECE MARKED ①, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑥ ON PAGE 22, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ①.
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ①, TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑥ AND THE SIDE FILL ASSEMBLY RETAINER PIECE, PIECE MARKED ⑫.
5. THE "HIGH" CRIB SHOWN AS PIECE MARKED ②, 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.
6. THE SEPARATOR GATES, SHOWN AS PIECE MARKED ③, IN THE LOAD ON PAGE 22, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
7. ALL SEPARATOR GATES, PIECE MARKED ③, WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 48" WIDE BY 7'-6" LONG. EIGHT FOOT LONG PIECES MAY BE USED.
9. CENTER GATES "E" AND "F" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK'S WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑪ AND ⑬ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 128 THRU 130 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 SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" DETAIL AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. BATTENS WILL BE REQUIRED ON THE CONTAINER ENDS OF THE CONTAINERS-CROSSWISE PALLET UNITS. SEE THE "BATTEN PLACEMENT" DETAIL ON PAGE 130.
11. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 98 OR 99. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS-LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS CROSSWISE UNITS.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

LOAD AS SHOWN

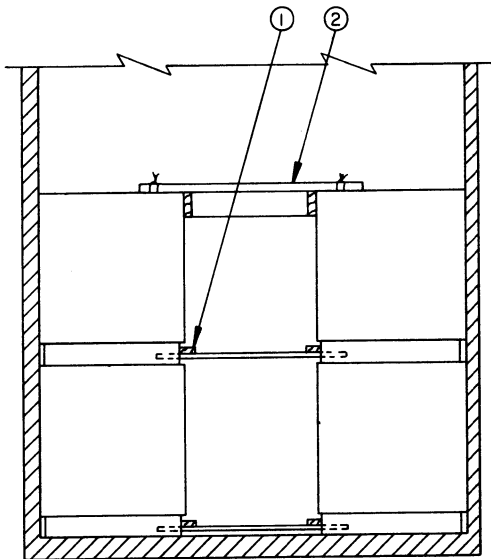
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	64	105,664 LBS
DUNNAGE		2,546 LBS
TOTAL WEIGHT		108,210 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



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

ISOMETRIC VIEW



SECTION G-G

KEY NUMBERS

- ① ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 25.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 5 ON PAGE 25.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 25.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 43") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 34. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 25.

SPECIAL NOTES:

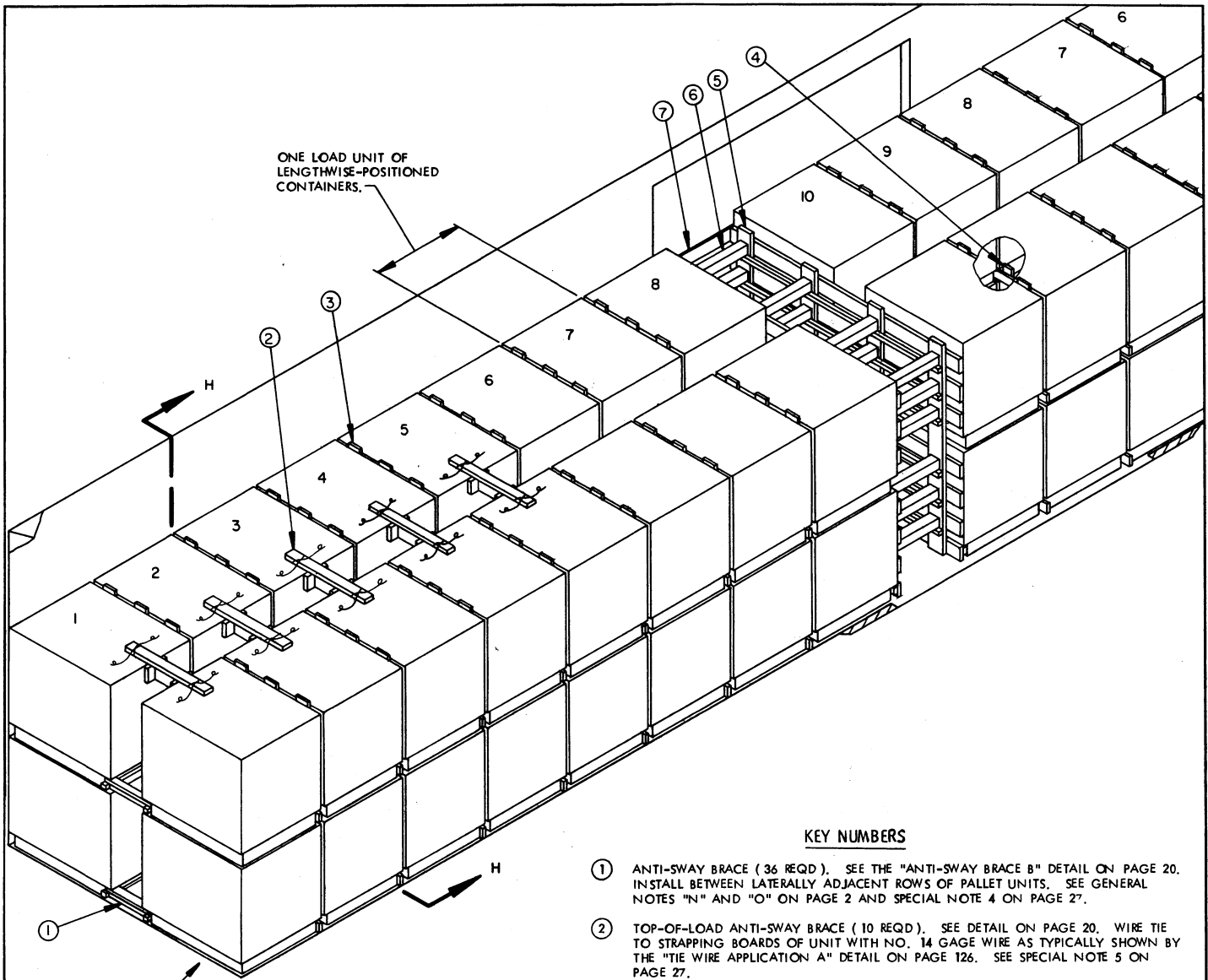
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 79,248 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 59,436 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE 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. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 30 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE 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 TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.
6. CENTER GATE "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 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 G", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 24, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 32. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
8. 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 127 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 ⑦ IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 SHOWN ON PAGE 14 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
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 94 THRU 122 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	105	35
2" X 3"	28	14
2" X 4"	454	303
2" X 6"	199	199
4" X 4"	86	115
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	728	1-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	92,456 LBS
DUNNAGE		1,428 LBS
TOTAL WEIGHT-----		93,884 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
56-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

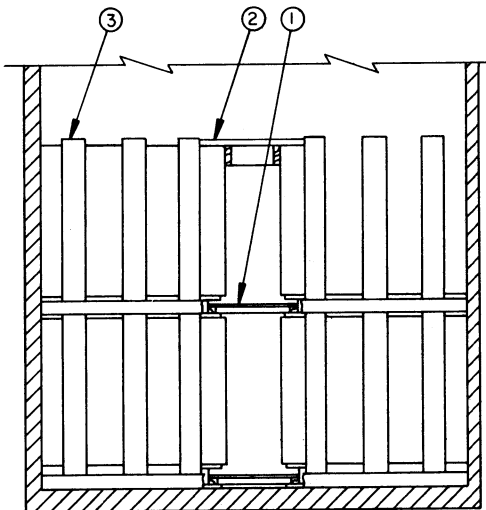


SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (36 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 27.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 5 ON PAGE 27.
- ③ SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 33. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 6, 8, AND 9 ON PAGE 27.
- ④ STOP PIECE, 1" X 4" X 52" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 27.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35. SEE SPECIAL NOTES 10, 11, AND 12 ON PAGE 27.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 35. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 13 ON PAGE 27.



SECTION H-H

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
72 UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

- 13. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 26, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 30 MUST BE USED IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
- 14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 122 FOR GUIDANCE.
- 15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR GUIDANCE.
- 16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 127 FOR GUIDANCE.

SPECIAL NOTES:

- 1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
- 2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 26 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 92,456 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCENURES. FORTY-FOUR (44) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 72,644 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
- 3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE NINE (9) 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 DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 30 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 13.
- 5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR A 40'-6" CAR.
- 6. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, WHEN LOADING THE BOX CAR, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
- 7. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECE MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
- 8. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 21. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES WILL BE 54" LONG FOR A 2-HIGH LOAD OR 12" LONG FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "H" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.
- 9. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124 FOR CONSTRUCTION GUIDANCE.
- 10. CENTER "H" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
- 11. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE H", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 26, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 33. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
- 12. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE HOLD DOWN MATERIAL NAILED TO CENTER GATE "H", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	385	129
1" X 6"	800	400
2" X 2"	228	76
2" X 3"	32	16
2" X 4"	115	77
2" X 6"	205	205
4" X 4"	52	70
NAILS	NO. REQD	POUNDS
6d (2")	928	5-1/2
10d (3")	608	9-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----120' REQD-----2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	72	118,872 LBS
DUNNAGE-----		1,966 LBS
TOTAL WEIGHT-----		120,838 LBS (APPROX)

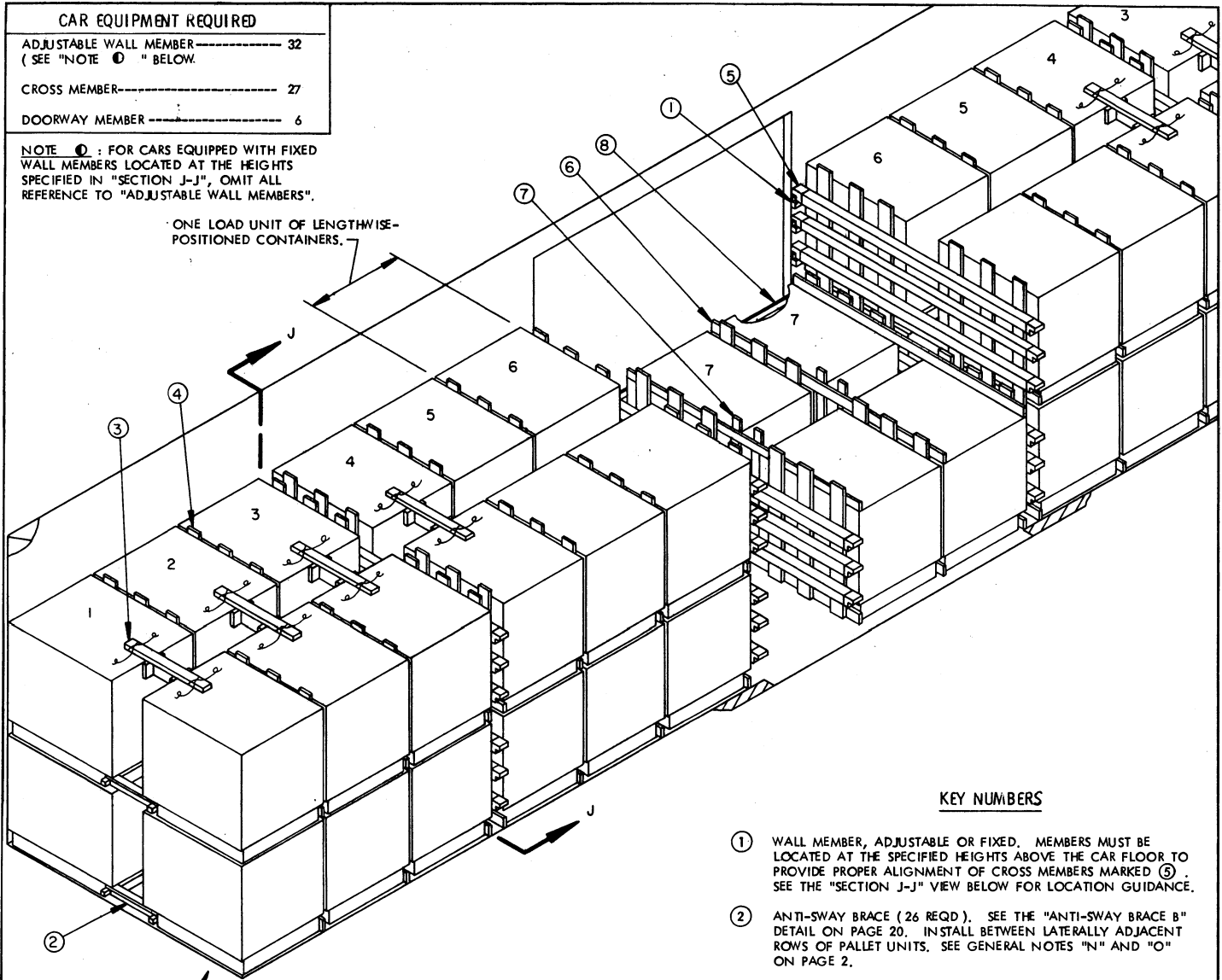
ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
72-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

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 J-J", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".

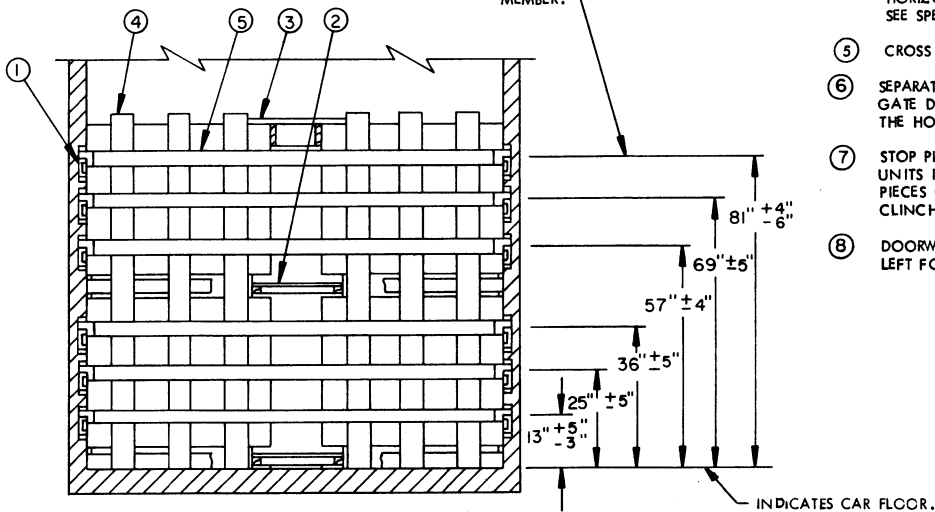
ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.



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

ISOMETRIC VIEW

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



SECTION J-J

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION J-J" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 29.
- 4 SEPARATOR GATE FOR 2-HIGH (14 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 33. AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 29.
- 5 CROSS MEMBER (27 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- 6 SEPARATOR GATE FOR 1-HIGH (3 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 33. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS.
- 7 STOP PIECE, 1" X 4" X 52" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED 6 W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 29.
- 8 DOORWAY MEMBER (6 REQD). SEE THE "SECTION J-J" VIEW AT LEFT FOR LOCATION GUIDANCE.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

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

SPECIAL NOTES:

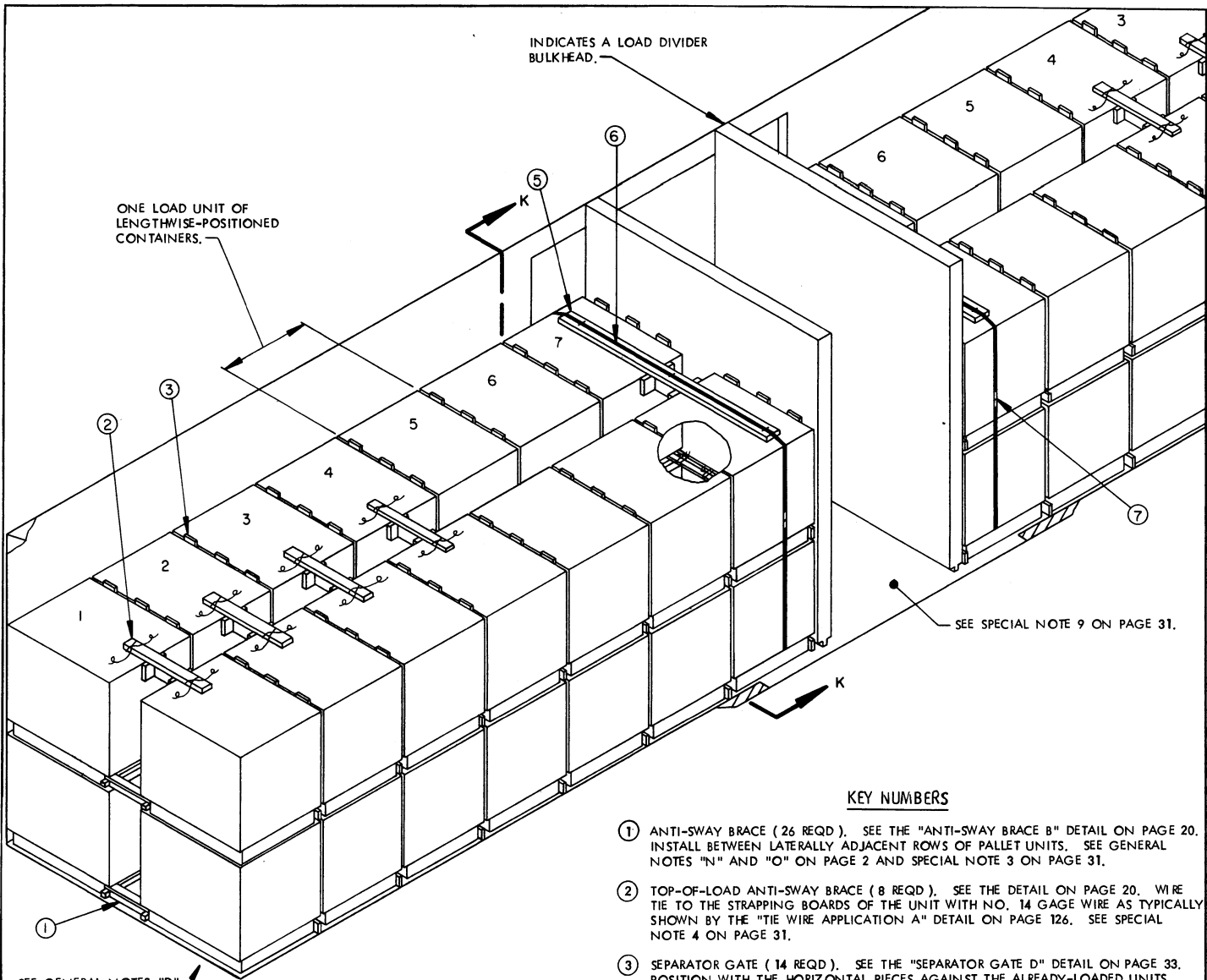
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 28 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 66,040 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHT AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 28, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS OF THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR A 40'-6" CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECE MARKED ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124 FOR CONSTRUCTION GUIDANCE.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF 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 92 NAD 93 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	397	133
1" X 6"	707	354
2" X 2"	125	42
2" X 4"	86	58
2" X 6"	20	20
NAILS	NO. REQD	POUNDS
6d (2")	916	5-1/2
10d (3")	272	4-1/4
WIRE, NO. 14 GAGE-----96' REQD-----1-1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	85,852 LBS
DUNNAGE		1,226 LBS
TOTAL WEIGHT-----		87,078 LBS (APPROX)

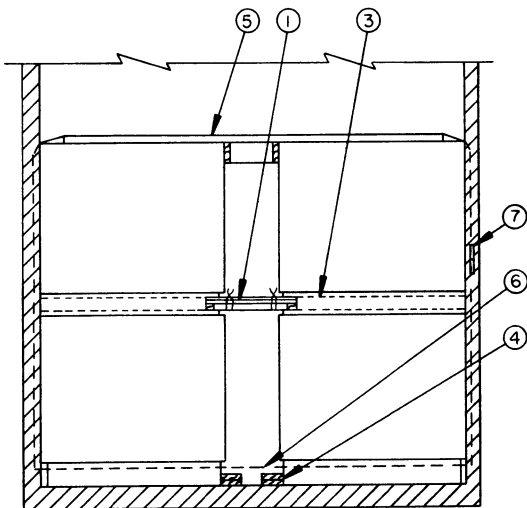


ISOMETRIC VIEW

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

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 31.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO THE STRAPPING BOARDS OF THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 31.
- ③ SEPARATOR GATE (14 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 33. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. NAIL OR WIRE TIE HORIZONTAL PIECES WITHIN DOORWAY AREA TO ANTI-SWAY BRACE "B" TO PREVENT DISPLACEMENT OF SEPARATOR GATE D. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 31.
- ④ SIDE BLOCKING, 2" X 6" X 36" (DOUBLED) (4 REQD, 2 PER EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (S) AT FLOOR LEVEL.
- ⑤ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 35.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 35'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIROLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 31.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



SECTION K-K

ALTERNATED CONTAINERS UNITS (INCREASED HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-2" 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 98 THRU 107 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 PAGES 119 AND 122 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED, CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 30 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 112,268 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 72,644 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE CONTAINERS CROSSWISE LOADING PATTERN SHOWN ON PAGE 24 IS EMPLOYED, FIFTY-SIX (56) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 92,456 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 59,436 POUNDS.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 30 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, NAILED FLOORLINE BLOCKING MUST BE 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 WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 30, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" CAR.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED ③, SO THE 1" X 4" PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY WIRE TYING THE TOP HORIZONTAL TO THE ANTI-SWAY BRACE, SHOWN AS PIECE MARKED ①.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, , IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124 FOR CONSTRUCTION GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 26, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 MAY BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. PIECES MARKED ④ THRU ⑦ ON PAGE 30 WILL BE USED FOR LOADS OF LENGTHWISE-POSITIONED CONTAINERS. PIECES MARKED ④ THRU ⑦ ON PAGE 14 WILL BE USED FOR LOADS OF CROSSWISE-POSITIONED CONTAINERS. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH.
9. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 58 IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SEVEN (7) LOAD UNITS. A STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE BULKHEADS AS SHOWN ON PAGE 44.

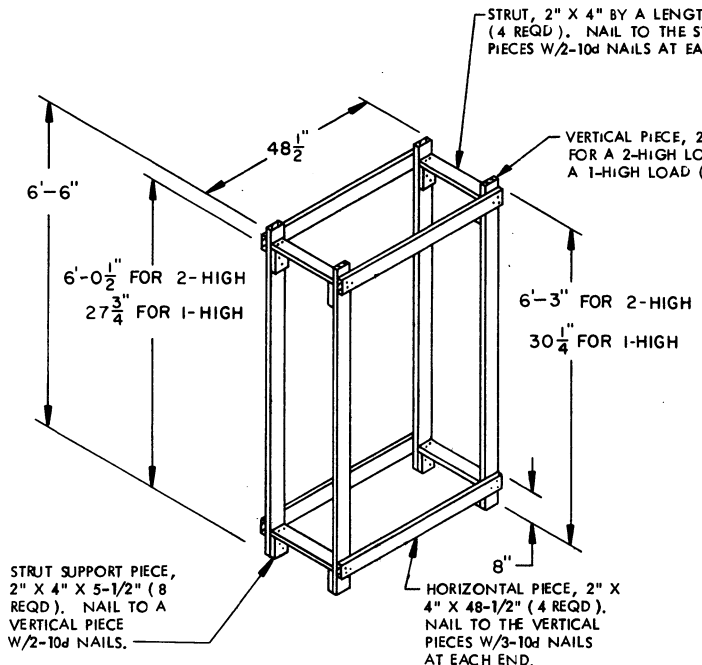
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	355	119
1" X 6"	630	315
2" X 2"	162	54
2" X 4"	113	76
2" X 6"	55	55
NAILS	NO. REQD	POUNDS
6d (2")	868	5-1/4
10d (3")	320	5
12d (3-1/4")	24	1/2
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4" X .035" OR .035" --- 70'-0" REQD --- 10 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		
WIRE, NO. 14 GAGE ----- 105' REQD ----- 2 LBS		

(CONTINUED ABOVE)

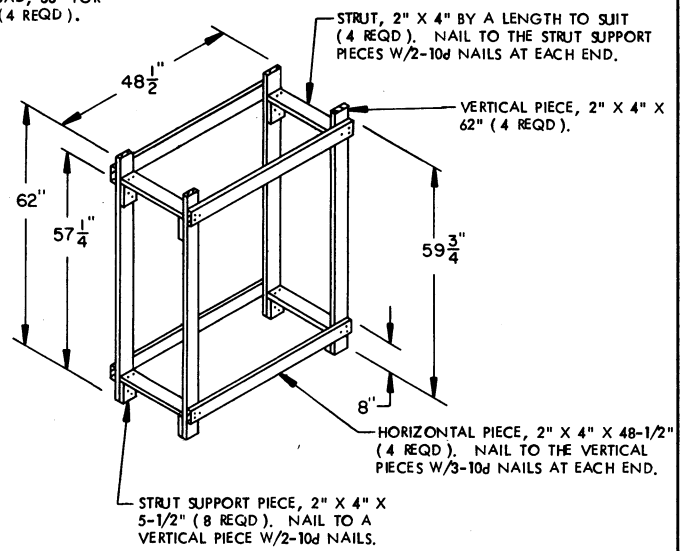
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	56-----	92,456 LBS
DUNNAGE-----	-----	1,261 LBS
TOTAL WEIGHT-----		93,717 LBS (APPROX)



CRIB FILL C

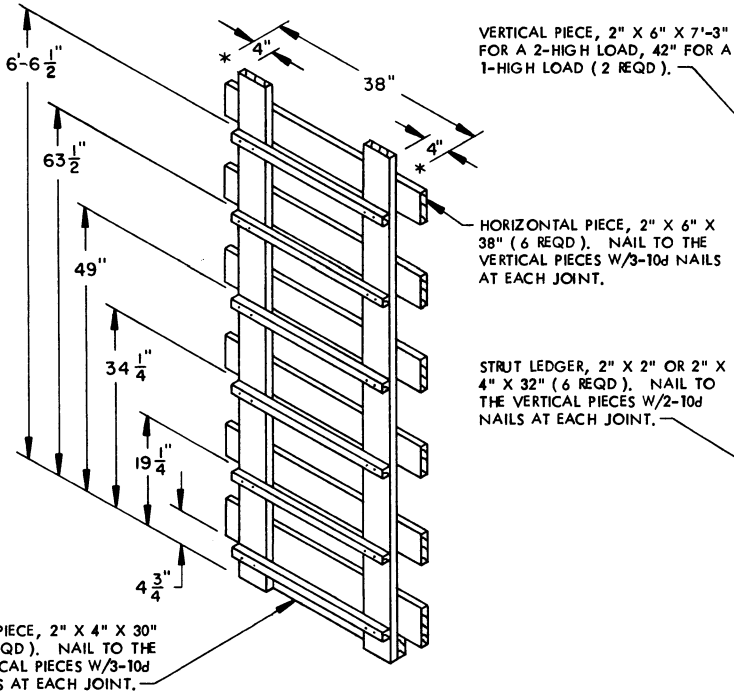
CRIB FILL ASSEMBLIES "C" AND "D" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.



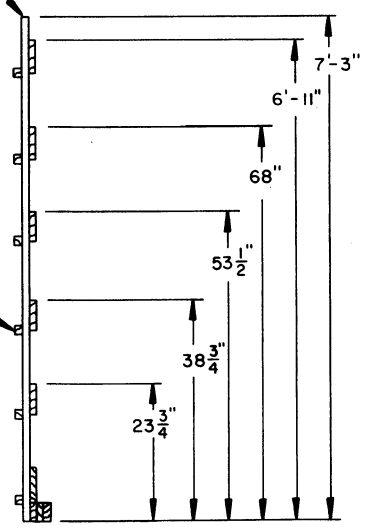
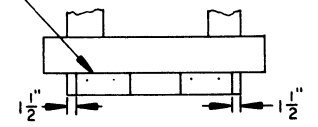
CRIB FILL D

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

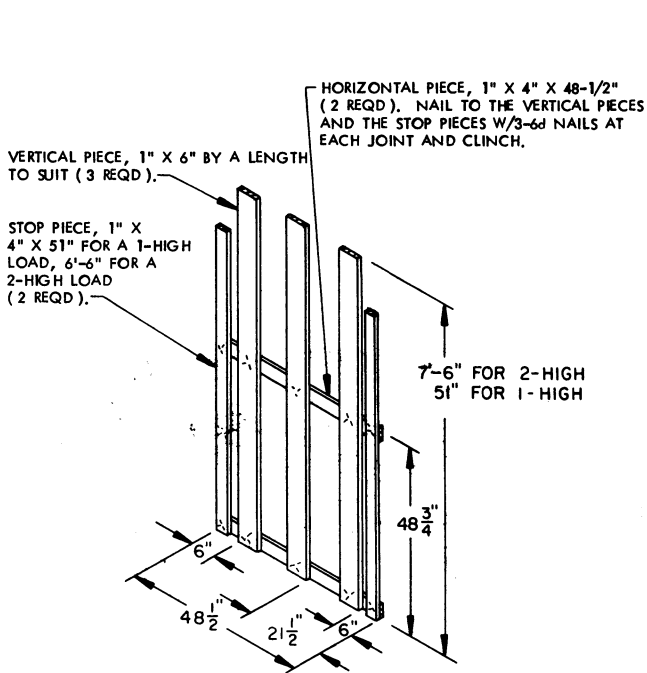
GATE HOLD DOWN, 2" X 4" X 9" (DOUBLED) (2 REQD). NAIL FIRST PIECE TO FILL PIECE W/2-10d NAILS. LAMINATE SECOND PIECE IN A LIKE MANNER.



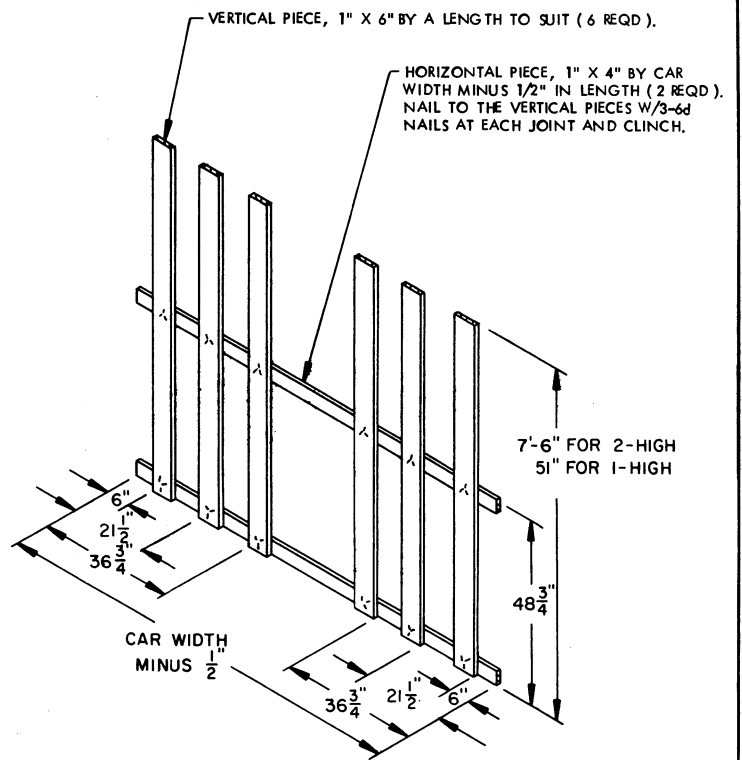
CENTER GATE E



STRUT LEDGER, 2" X 2" OR 2" X 4" X 32" (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



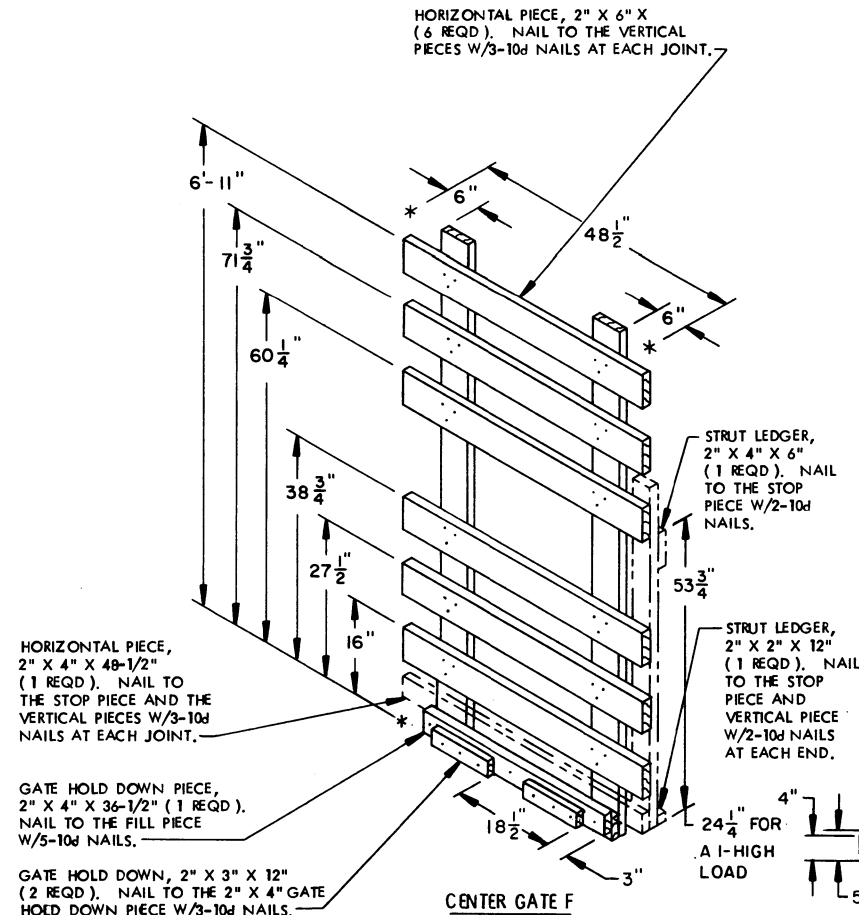
SEPARATOR GATE C



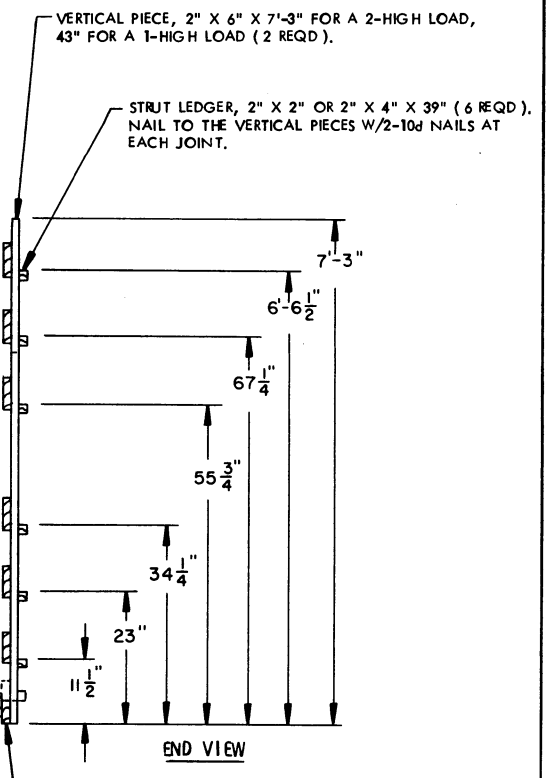
SEPARATOR GATE D

SEE SPECIAL NOTE 8 ON PAGE 27.

WHEN NAILED FLOORLINE DOORWAY PROTECTION IS USED, THE ADJACENT GATES MUST BE CUT OUT 2" WIDE BY 3-1/2" HIGH AT THE JUNCTION OF THE INWARD STOP PIECE AND THE BOTTOM HORIZONTAL PIECE, AS MARKED BY PHANTOM LINES, TO PROVIDE CLEARANCE FOR PIECE MARKED (M).

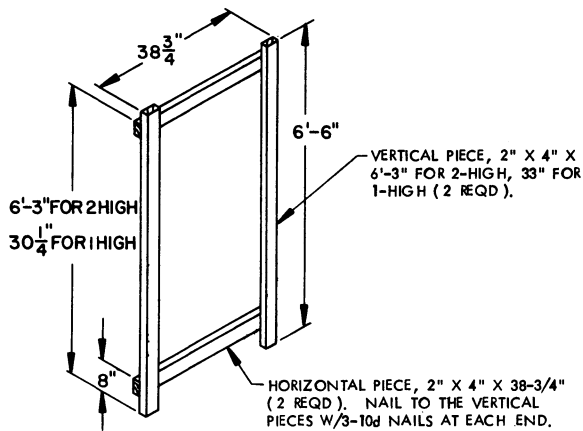


CENTER GATE F



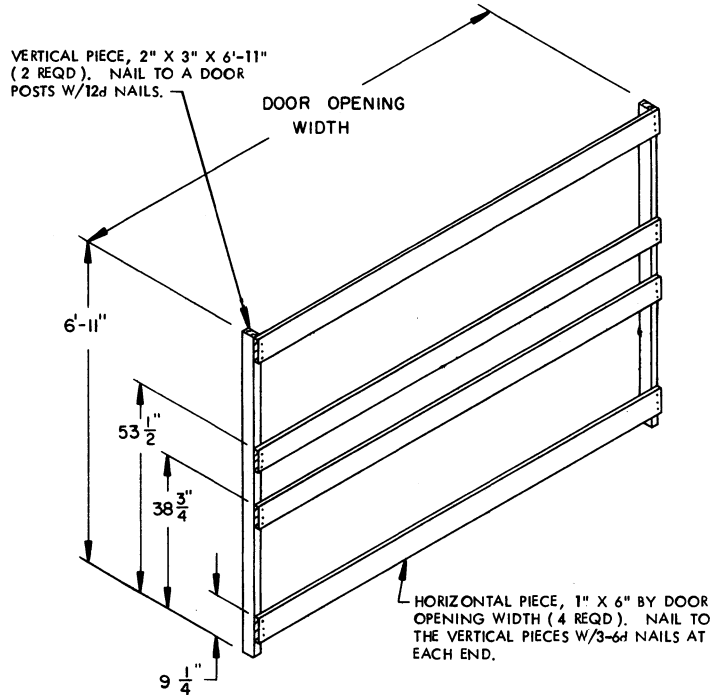
THE PHANTOM PIECES ARE REQUIRED WHEN ONE CONTAINER-CROSSWISE ROW IS LONGER THAN THE ADJACENT CONTAINERS-LENGTHWISE ROW. RIGHT HAND AND LEFT HAND GATES ARE THEN REQUIRED.

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



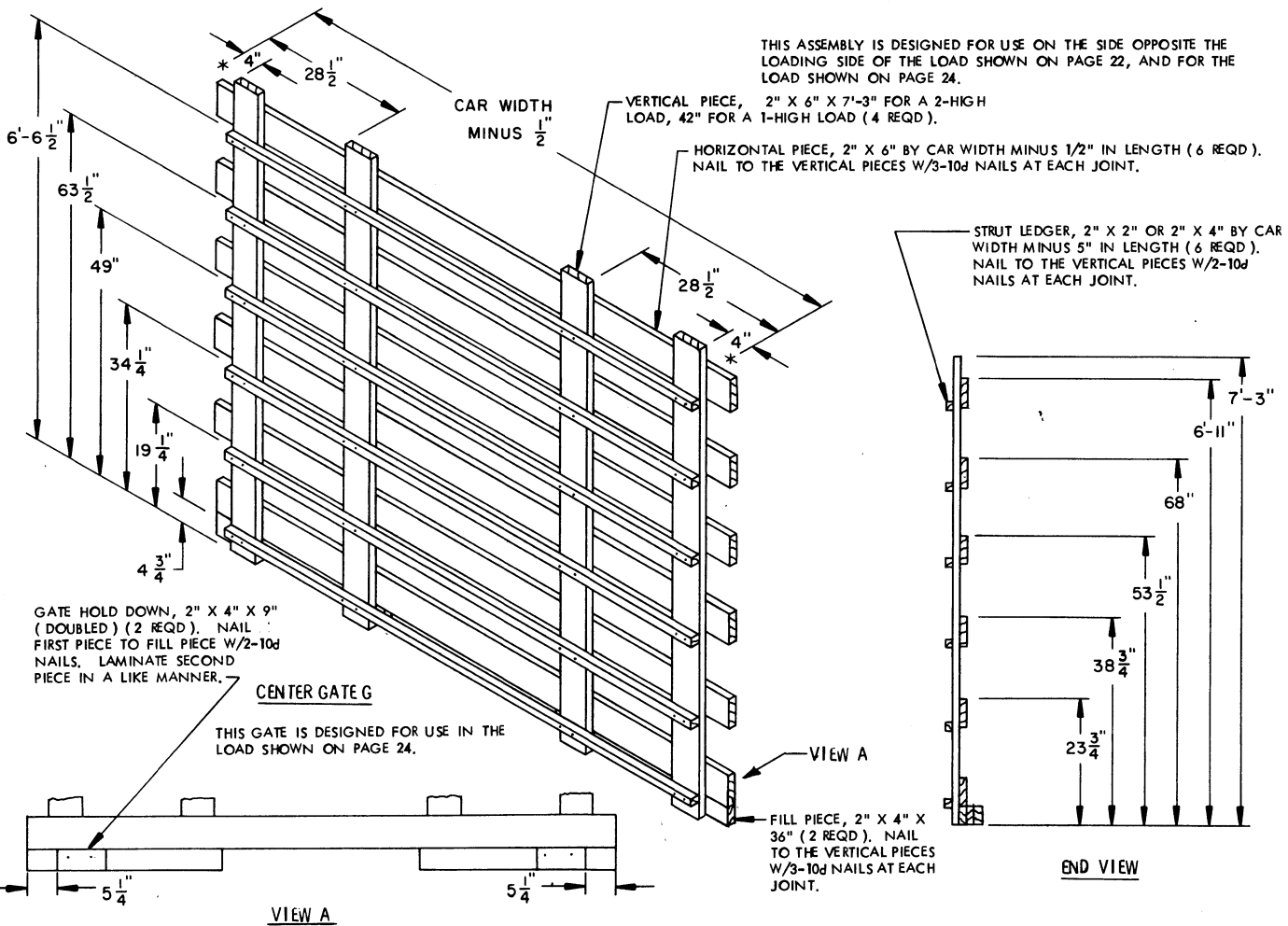
SIDE FILL ASSEMBLY E

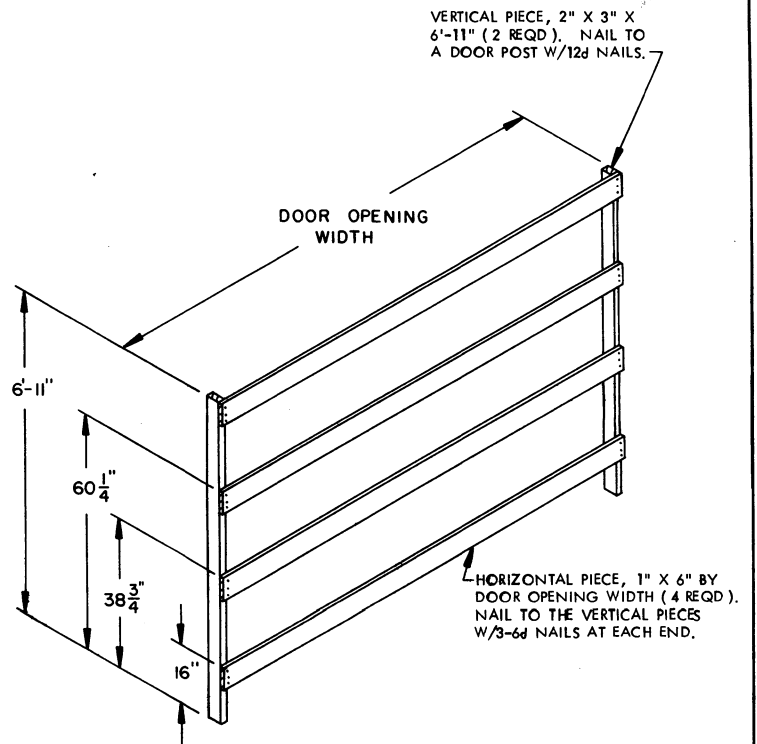
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 22.



DOORWAY PROTECTION C

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 22, AND FOR THE LOAD SHOWN ON PAGE 24.





VERTICAL PIECE, 2" X 3" X 6'-11" (2 REQD). NAIL TO A DOOR POST W/12d NAILS.

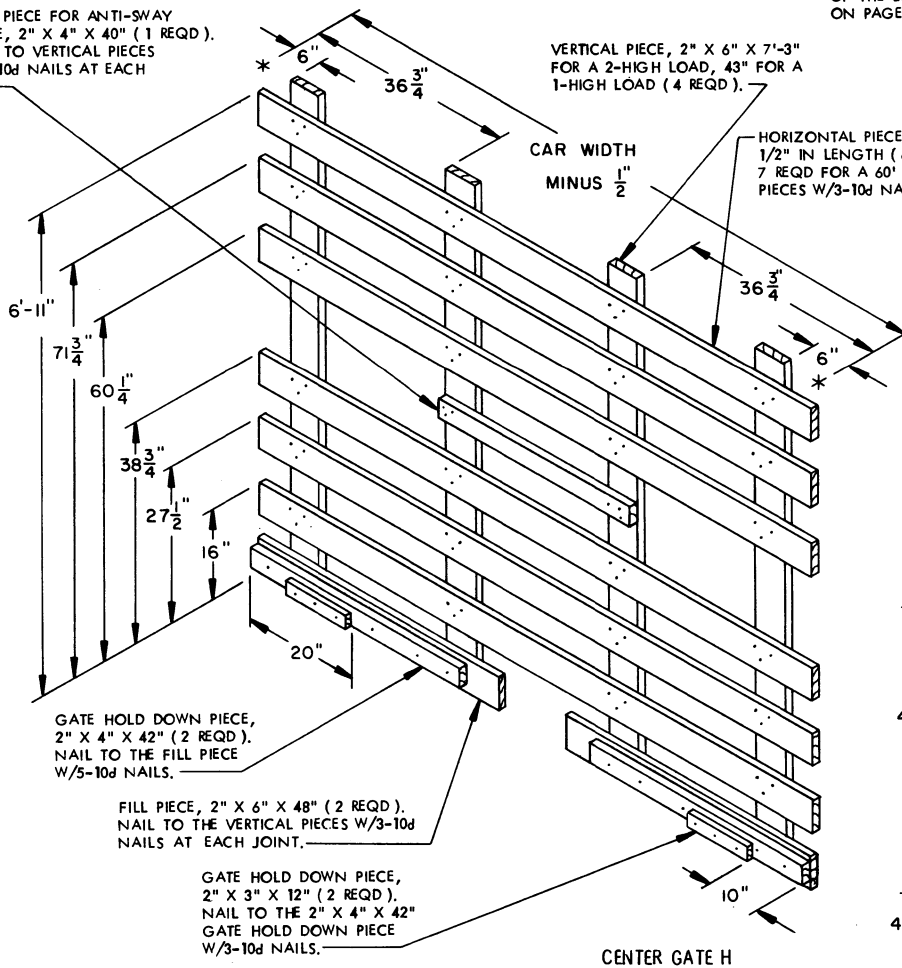
DOOR OPENING WIDTH

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

DOORWAY PROTECTION D

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

STOP PIECE FOR ANTI-SWAY BRACE, 2" X 4" X 40" (1 REQD). NAIL TO VERTICAL PIECES W/3-10d NAILS AT EACH END.



VERTICAL PIECE, 2" X 6" X 7'-3" FOR A 2-HIGH LOAD, 43" FOR A 1-HIGH LOAD (4 REQD).

CAR WIDTH MINUS 1/2"

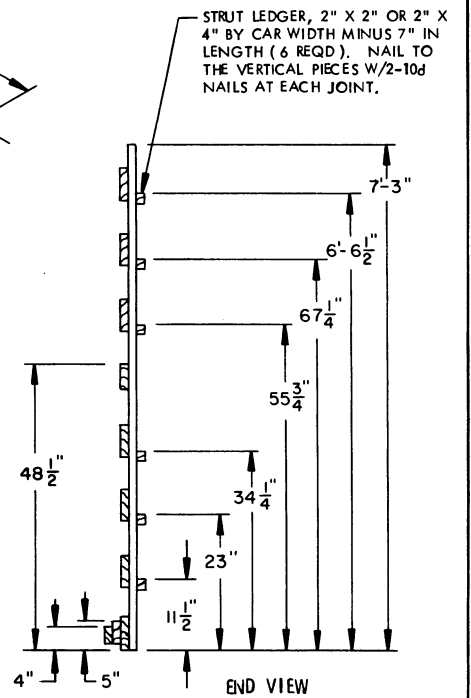
HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (6 REQD FOR 40' AND 50' CARS, 7 REQD FOR A 60' CAR). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN PIECE, 2" X 4" X 42" (2 REQD). NAIL TO THE FILL PIECE W/5-10d NAILS.

FILL PIECE, 2" X 6" X 48" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN PIECE, 2" X 3" X 12" (2 REQD). NAIL TO THE 2" X 4" X 42" GATE HOLD DOWN PIECE W/3-10d NAILS.

CENTER GATE H



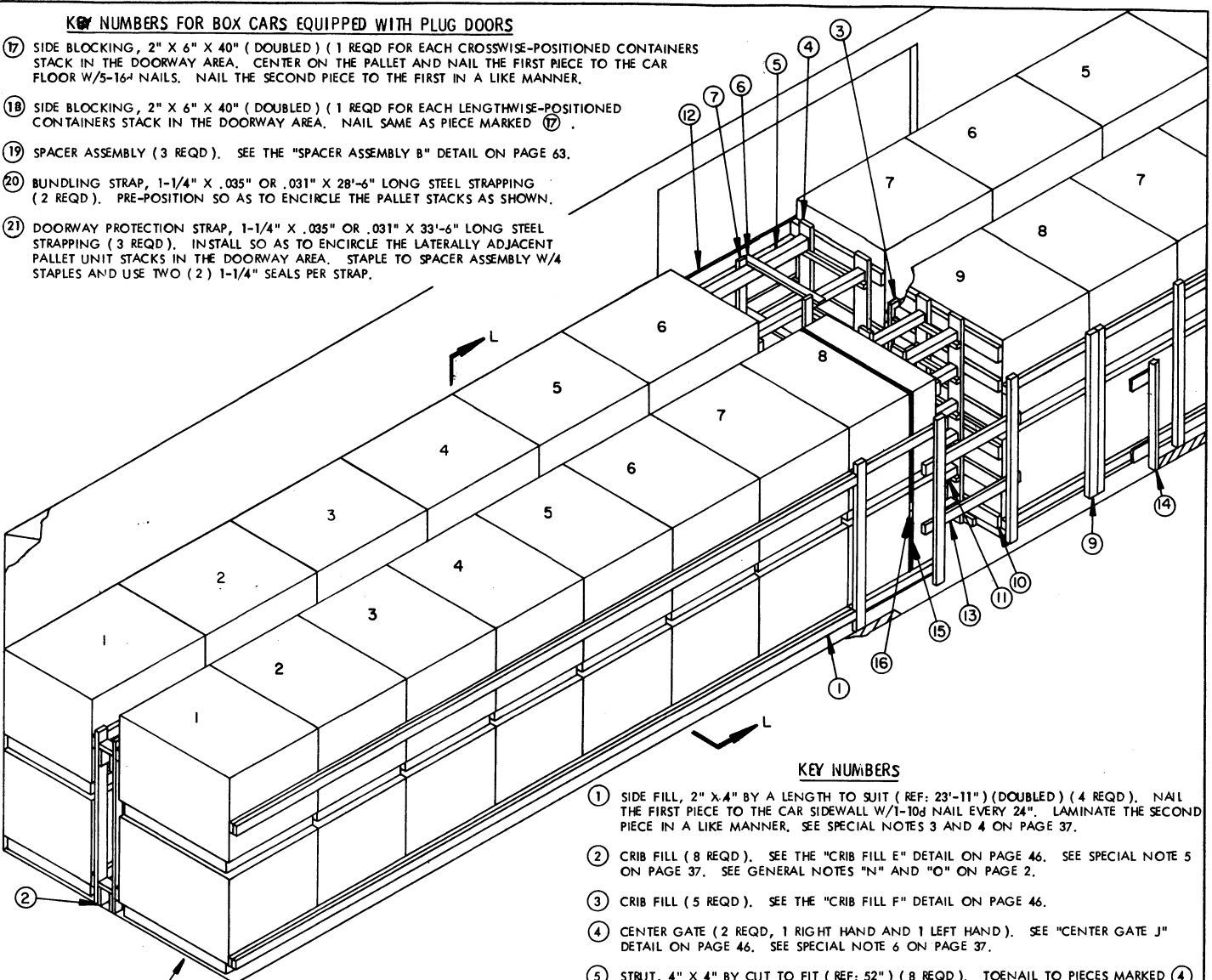
STRUT LEDGER, 2" X 2" OR 2" X 4" BY CAR WIDTH MINUS 7" IN LENGTH (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

END VIEW

THE STRUT LEDGERS AT THE 23" AND 67-1/4" HEIGHTS ARE NOT REQUIRED FOR A LOAD IN A 40'-6" LONG CAR.

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

- ⑰ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑱ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. NAIL SAME AS PIECE MARKED ⑰ .
- ⑲ SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
- ⑳ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 28'-6" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACKS AS SHOWN.
- ㉑ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 33'-6" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE THE Laterally ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

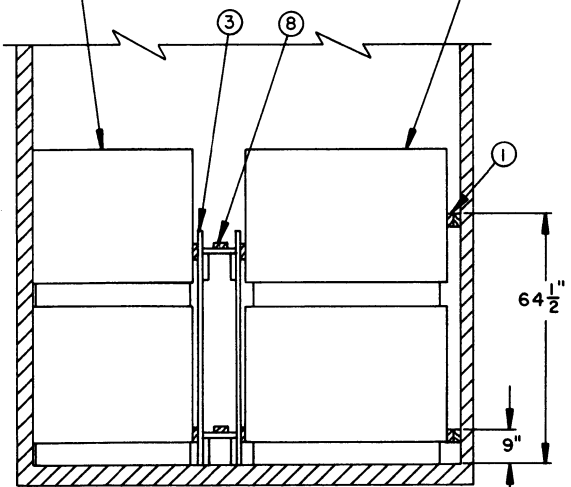


SEE GENERAL NOTE "H" ON PAGE 2.

INDICATES PALLET UNIT OF CROSSWISE-POSITIONED CONTAINERS.

ISOMETRIC VIEW

INDICATES PALLET UNIT OF LENGTHWISE-POSITIONED CONTAINERS.



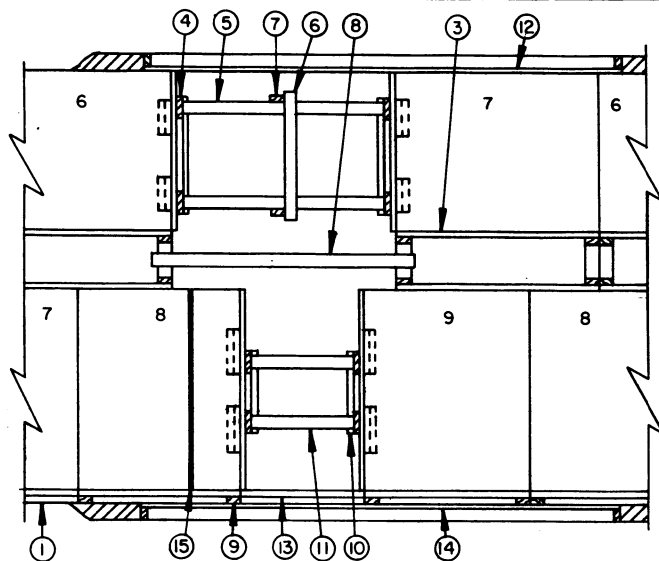
SECTION L-L

KEY NUMBERS

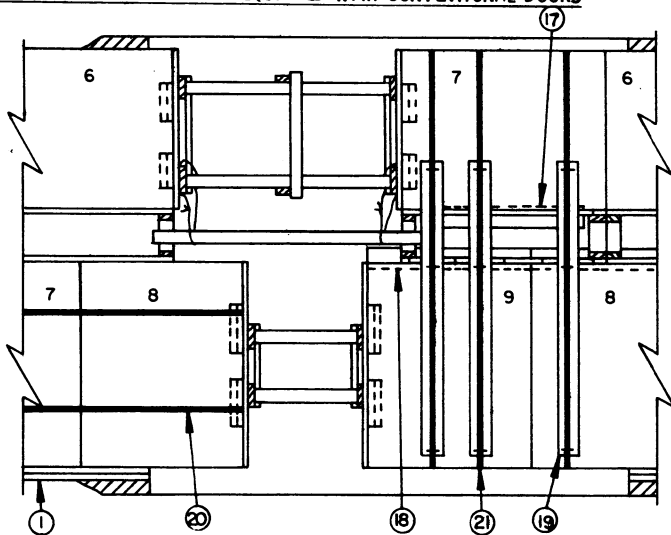
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-11") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 37.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 46. SEE SPECIAL NOTE 5 ON PAGE 37. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ CRIB FILL (5 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 46.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE "CENTER GATE J" DETAIL ON PAGE 46. SEE SPECIAL NOTE 6 ON PAGE 37.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 52") (8 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" X 33" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 6'-2" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑧ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 69") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "F" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 37.
- ⑨ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY F" DETAIL ON PAGE 48. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- ⑩ CENTER GATE (2 REQD). SEE "CENTER GATE K" DETAIL ON PAGE 47.
- ⑪ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (12 REQD). TOENAIL TO PIECES MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑫ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 37.
- ⑬ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY LENGTH TO SUIT (REF: 44") (2 REQD). POSITION AT 25" AND 50" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑨ W/3-10d NAILS AT EACH END.
- ⑭ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 48. NAIL TO THE DOOR POSTS W/12d NAILS.
- ⑮ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 26'-0" LONG STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE LOAD UNIT AS SHOWN. NOT REQUIRED WHEN USING A CAR WITH PLUG DOORS.
- ⑯ SEAL FOR 1-1/4" STRAPPING (2 REQD). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

(CONTINUED ABOVE)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



PARTIAL VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY A BUNDLING STRAP, PIECE MARKED (20). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 70,000 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES: THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 53,200 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE SIDE FILL, PIECE MARKED (1) ; IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES PIECE MARKED (9) ON PAGE 36, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1) .
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALL EXTEND THE SIDE FILL, PIECE MARKED (1) , TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (9) , AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED (13) .
5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2) , MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF ALL LOAD REGARDLESS OF THE CAR LENGTH.
6. CENTER GATES "J" AND "K" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (14) IN THE LOAD ON PAGE 36, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILABLE FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" DETAIL AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
8. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGE 98 OR 99. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.
9. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 114 AND 115.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS CROSSWISE UNITS.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

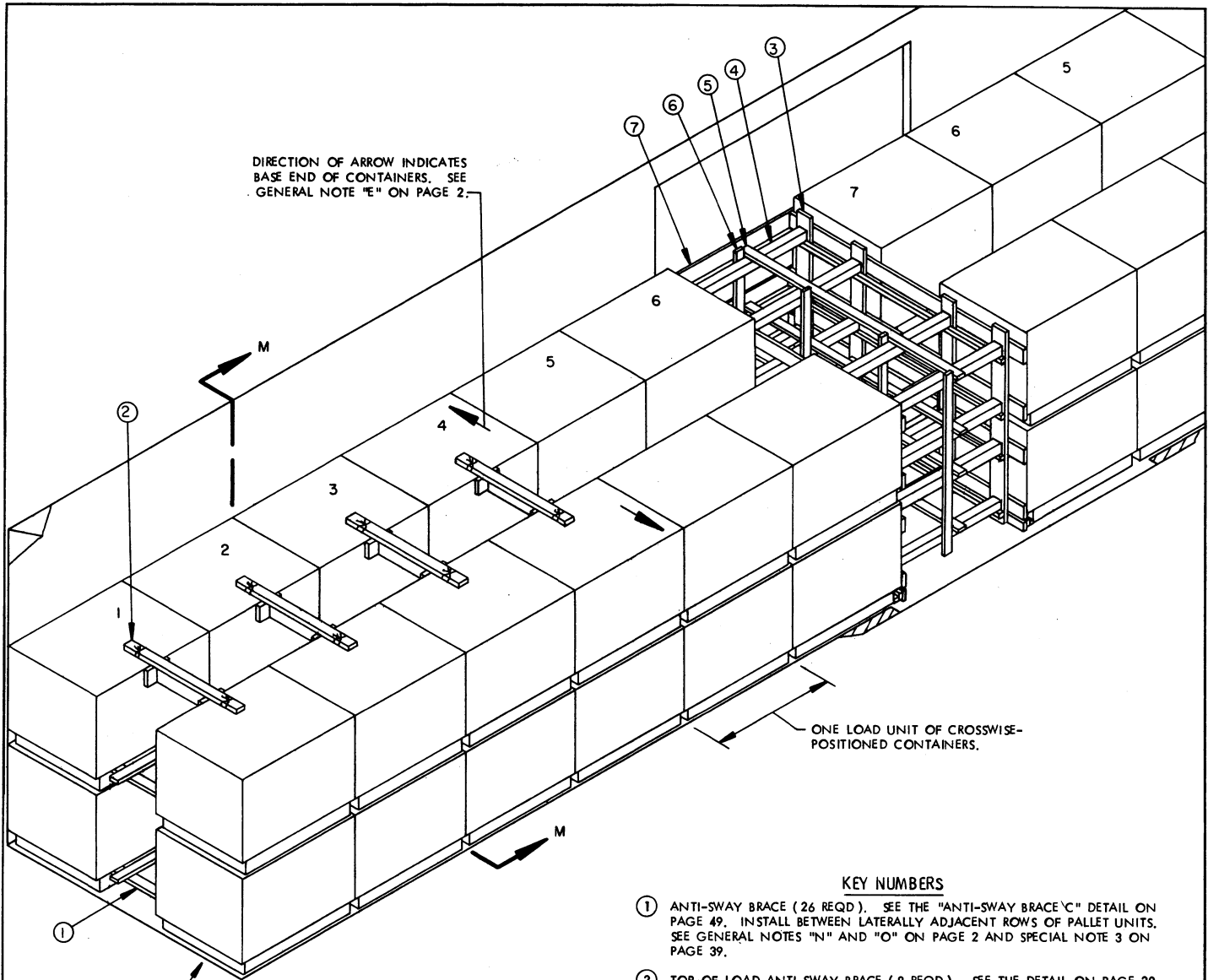
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	46	16
2" X 3"	34	17
2" X 4"	901	601
4" X 4"	60	80
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	1196	18-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	80	1-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	60	84,000 LBS
DUNNAGE		1,796 LBS

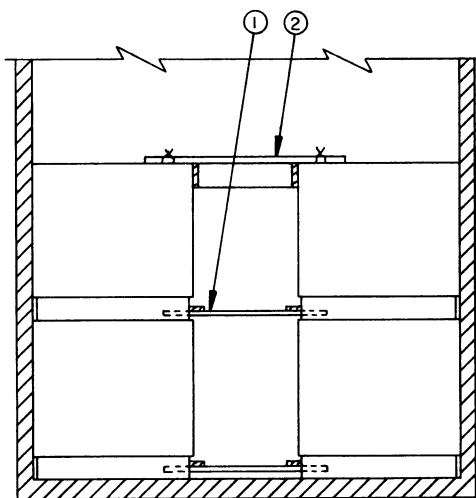
TOTAL WEIGHT----- 85,796 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 39.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 39.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 48. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 39.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF. 52" (16 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ HORIZONTAL STRUT BRACING, 2" X 4" X 8'-10" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 6'-2" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 39.

SPECIAL NOTES:

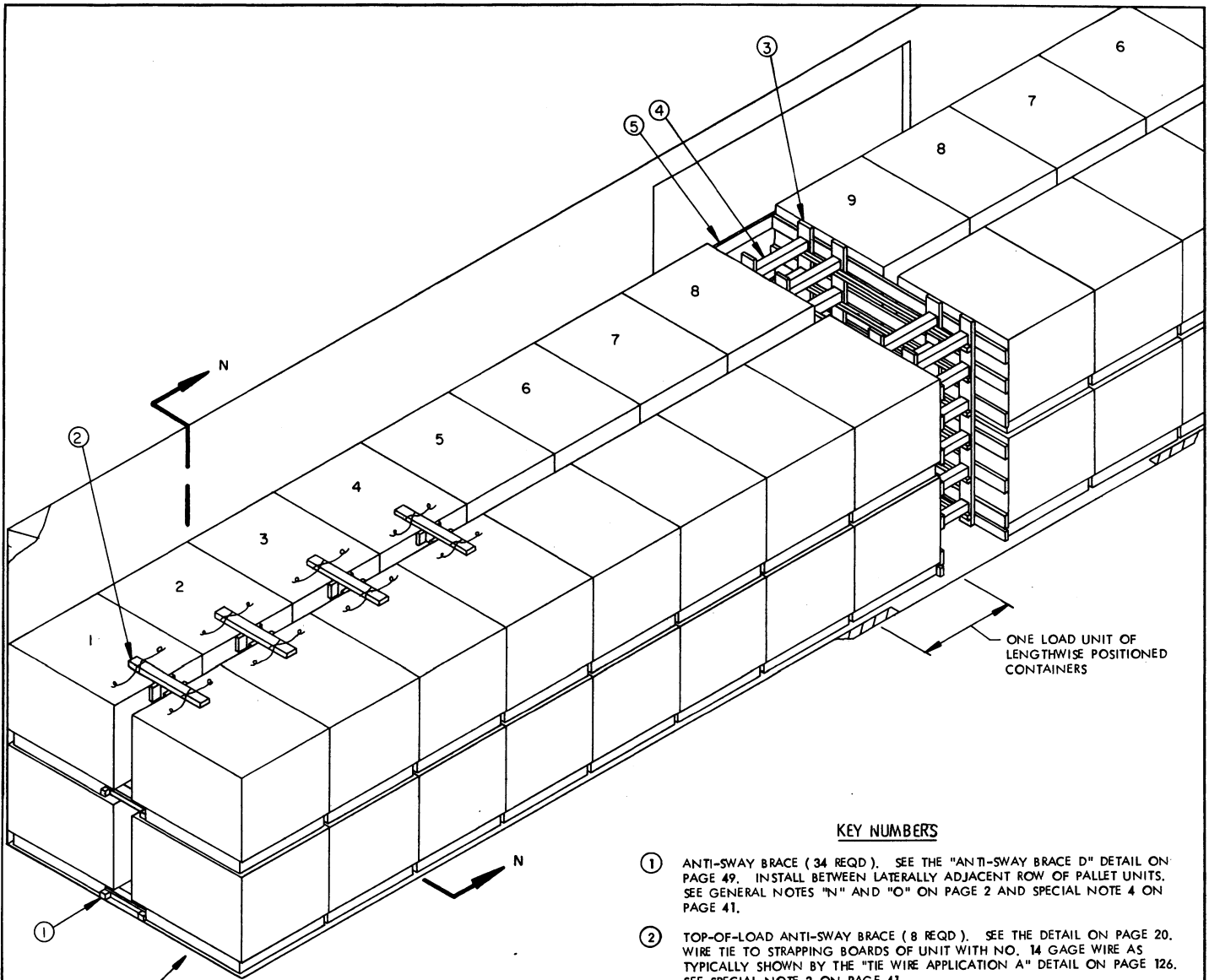
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 38 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 61,600 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 44,800 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 44 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. 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 A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.
5. CENTER GATE "L" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE L" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 38, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 46. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO "CENTER GATE L", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 38, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 44 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 119 FOR 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	25	13
2" X 4"	458	306
2" X 6"	155	155
4" X 4"	70	94
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	720	11-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

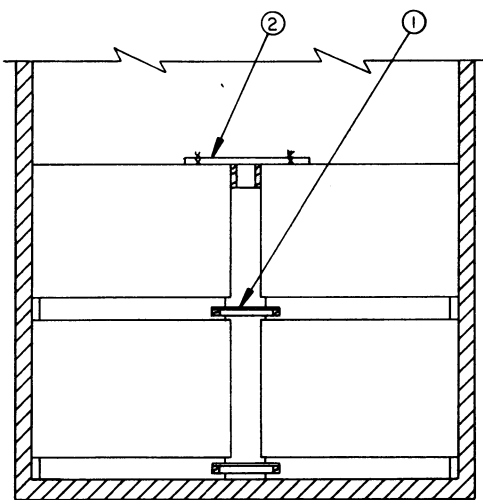
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	52	72,800 LBS
DUNNAGE		1,277 LBS
TOTAL WEIGHT		74,077 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW



SECTION N-N

KEY NUMBERS

- ① ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROW OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 41.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 3 ON PAGE 41.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 49. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 41.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 48. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 41.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 40 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 78,400 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-FOUR (44) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 61,600 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 50' OR 40' CAR.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 40, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "M" AS SHOWN ON THE DETAIL ON PAGE 49.
5. CENTER GATE "M" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE M" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 40, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 47. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE M", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 40, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 58 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 122 FOR GUIDANCE.
10. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	97	33
1" X 6"	80	40
2" X 2"	317	106
2" X 3"	35	18
2" X 4"	128	86
2" X 6"	182	182
4" X 4"	50	67
NAILS	NO. REQD	POUNDS
6d (2")	524	3-1/4
10d (3")	680	10-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----96' REQD-----1-1/2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -----	68-----	95,200 LBS
DUNNAGE -----		1,082 LBS
TOTAL WEIGHT-----		96,282 LBS (APPROX)

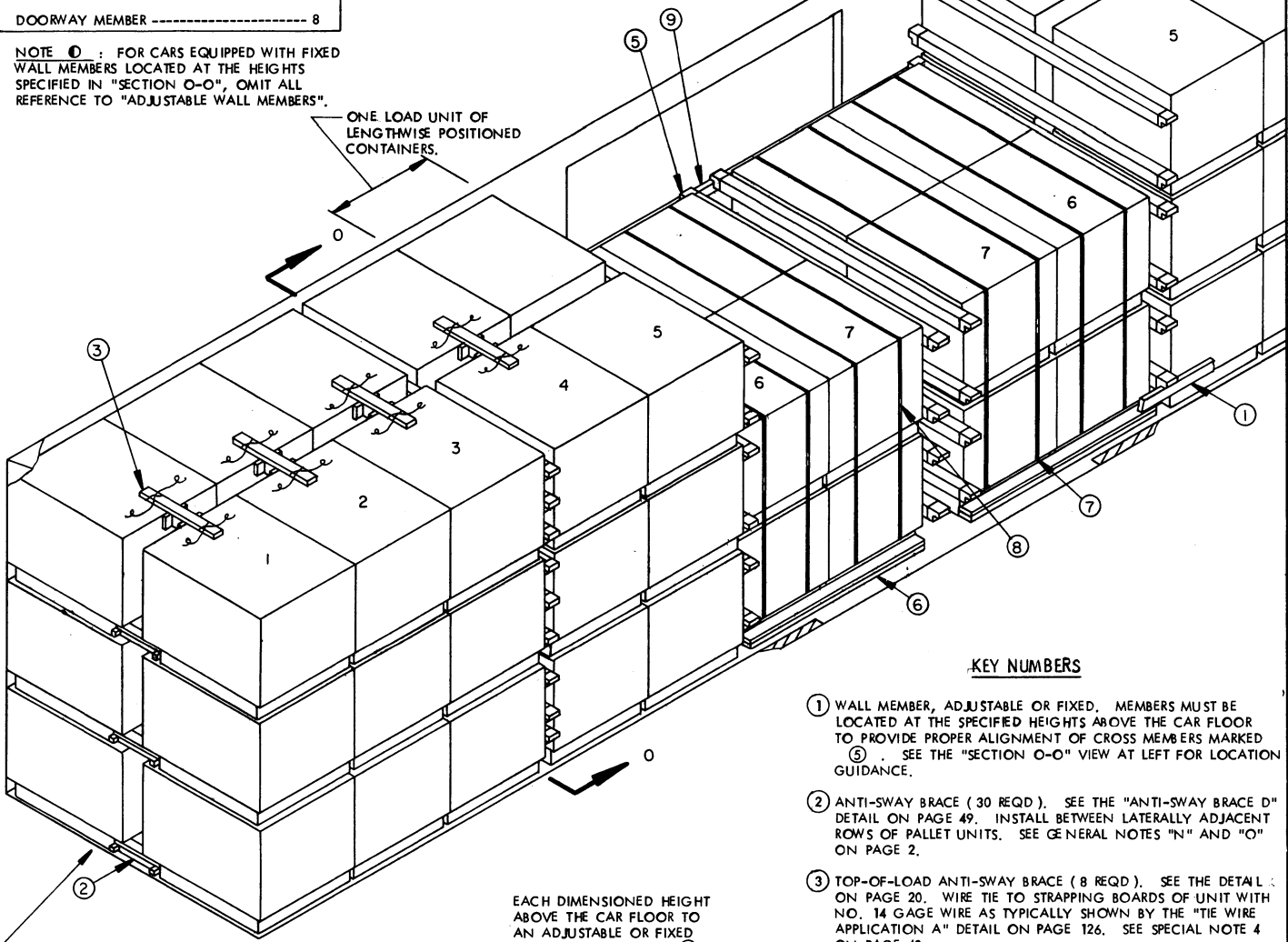
FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	48
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	38
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".

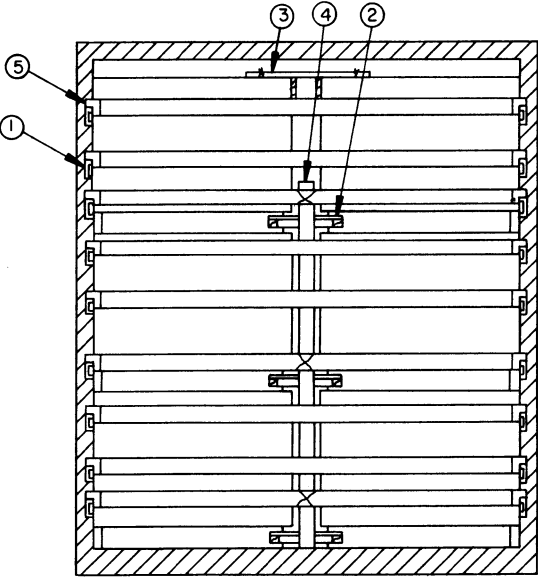
ONE LOAD UNIT OF LENGTHWISE POSITIONED CONTAINERS.



SEE GENERAL NOTE "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 43.

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 2 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION O-O

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION O-O" VIEW AT LEFT FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 43.
- 4 STOP PIECE, 2" X 4" X 8'-0" (6 REQD). POSITION AGAINST ANTI-SWAY BRACE "D" DETAIL BEFORE AND AFTER EACH STATION OF CROSS MEMBERS (EXCEPT IN THE DOORWAY). NAIL TO THE HORIZONTAL 2" X 4" PIECE OF PIECE MARKED 2 W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE. SEE SPECIAL NOTE 5 ON PAGE 43.
- 5 CROSS MEMBER (38 REQD). INSTALL THREE (3) PER LAYER FOR EACH BAY IN THE END OF THE CAR, TWO (2) PER BAY ELSEWHERE. SEE GENERAL NOTE "Y" ON PAGE 3.
- 6 SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- 7 BUNDLING STRAP, 1-1/4" X .035" OR .031" X 29'-0" LONG STEEL STRAPPING (8 REQD). PRE-POSITION, AS APPLICABLE, AND INSTALL TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT WITH ONE STAPLE NEAR EACH END.
- 8 SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- 9 DOORWAY MEMBER (8 REQD). SEE THE "SECTION O-O" VIEW AT LEFT FOR LOCATION GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,000 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.
4. TOP-OF-LOAD ANTI-SWAY BRACES SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 42, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 42, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE "ANTI-SWAY BRACE D" ASSEMBLY FROM MOVING INTO THE CROSS MEMBER AREA.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 93 FOR GUIDANCE.
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

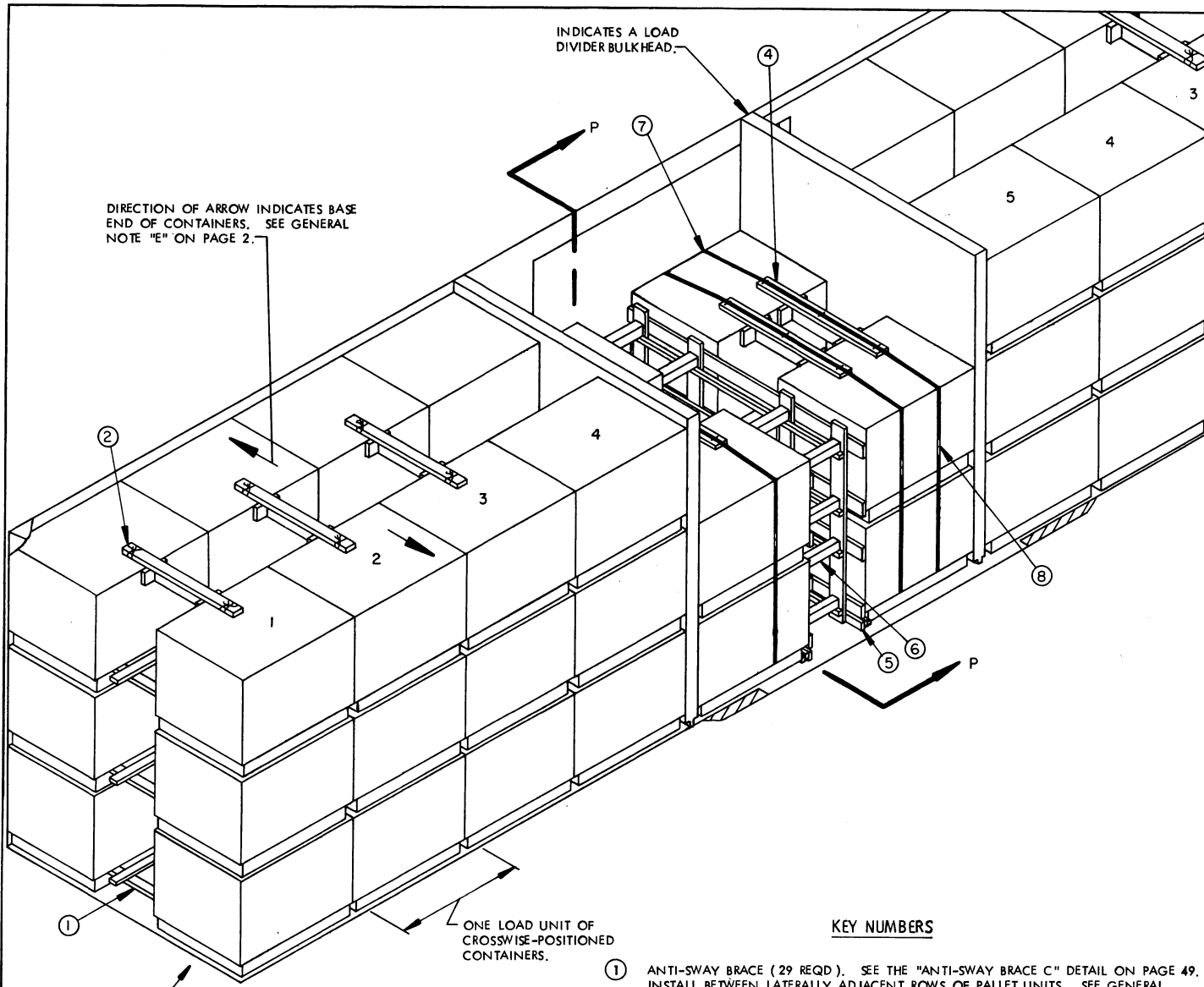
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	76	26
2" X 2"	204	68
2" X 4"	183	122
2" X 6"	13	13
NAILS	NO. REQD	POUNDS
6d (2")	420	2-1/2
10d (3")	376	6
16d (3-1/2")	56	1-1/4
STEEL STRAPPING, 1-1/4" X .031" OR .035" -----232' REQD-----34 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 16 REQD-----NIL		
WIRE, NO. 14 GAGE-----110' REQD-----2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	76-----	106,400 LBS
DUNNAGE-----		504 LBS
TOTAL WEIGHT-----		106,904 LBS (APPROX)

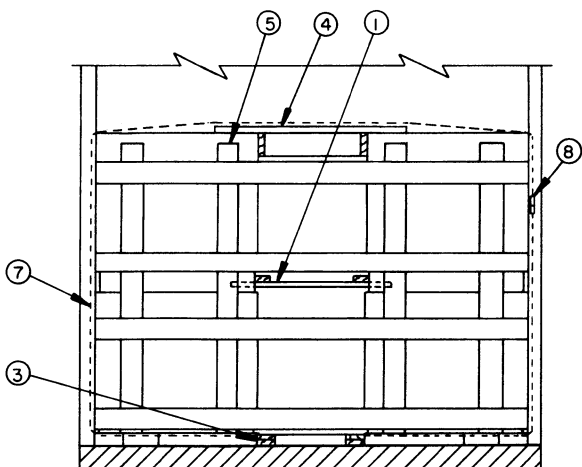
FLAT DUNNAGE METHOD (BASIC HEIGHT)
76-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (29 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 45.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 45.
- ③ SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (4 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE(S) AT FLOOR LEVEL.
- ④ SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 47.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 48. SEE SPECIAL NOTES 5 AND 6 ON PAGE 45.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 21") (16 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (3 REQD). INSTALL OVER THE BATTENS ON THE UNITS AND IN THE DOORWAY AREA. STAPLE TO THE SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 45.
- ⑧ SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



SECTION P-P

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
62-UNIT LOAD IN A 50'-6" LONG BY 9'-2" 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 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 107 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 PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD OF CROSSWISE-POSITIONED CONTAINERS IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). USING THIS PROCEDURE, THE FOLLOWING LOADS CAN BE ACHIEVED.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS EACH END	NO. OF STACKS DOORWAY
60'-8"	78	109,200	5 AND 6	3 LENGTHWISE
40'-6"	48	67,200	3 AND 3	3 LENGTHWISE

IF A CONTAINERS-LENGTHWISE LOADING PATTERN IS USED, USE THE FOLLOWING DATA.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF ROWS EACH END	NO. OF ROWS DOORWAY
60'-8"	92	128,800	7 AND 7	2 CROSSWISE
50'-6"	74	103,600	5 AND 6	2 CROSSWISE
40'-6"	56	78,400	4 AND 4	2 CROSSWISE

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 44 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 44, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40' OR 50' LONG CAR, FOUR (4) ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.
5. CENTER GATE "L" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE L" SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 44, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 46. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 38, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. PIECES MARKED ④, ⑦, AND ⑧ ON PAGE 44 WILL BE USED FOR LOADS OF CROSSWISE-POSITIONED CONTAINERS. PIECES MARKED ④, ⑥, AND ⑦ ON PAGE 58 WILL BE USED FOR LOADS OF LENGTHWISE-POSITIONED CONTAINERS. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH.
8. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED 5 IN THE LOAD ON PAGE 58 IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS. THE STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE BULKHEADS AS SHOWN ON PAGE 44.

(CONTINUED ABOVE)

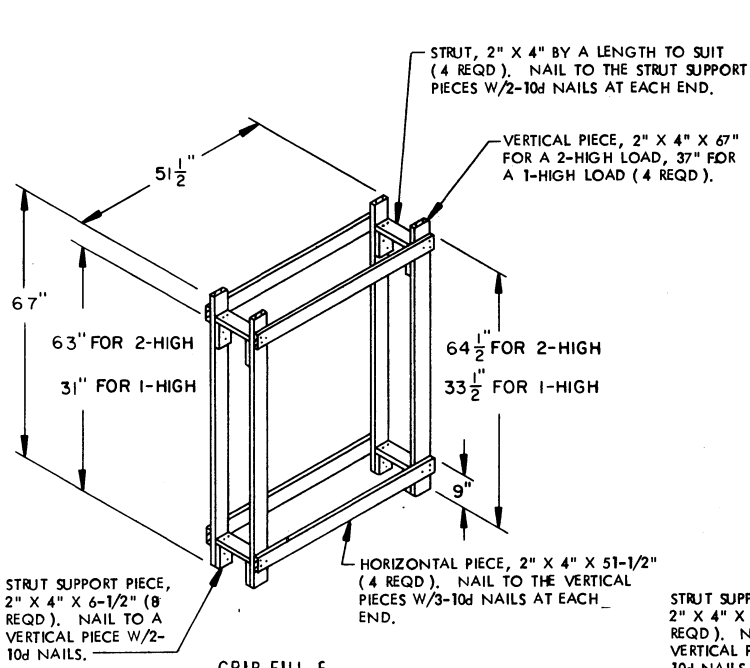
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	68	23
2" X 4"	439	293
2" X 6"	213	213
4" X 4"	28	38
NAILS	NO. REQD	POUNDS
10d (3")	668	10-1/2
12d (3-1/4")	42	3/4
16d (3-1/2")	104	2-1/2
STEEL STRAPPING, 1-1/4" X .031" OR .035" --99' REQD----- 15 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 6 REQD----- NIL		
WIRE, NO. 14 GAGE----- 48' REQD----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	86,800 LBS
DUNNAGE		1,164 LBS

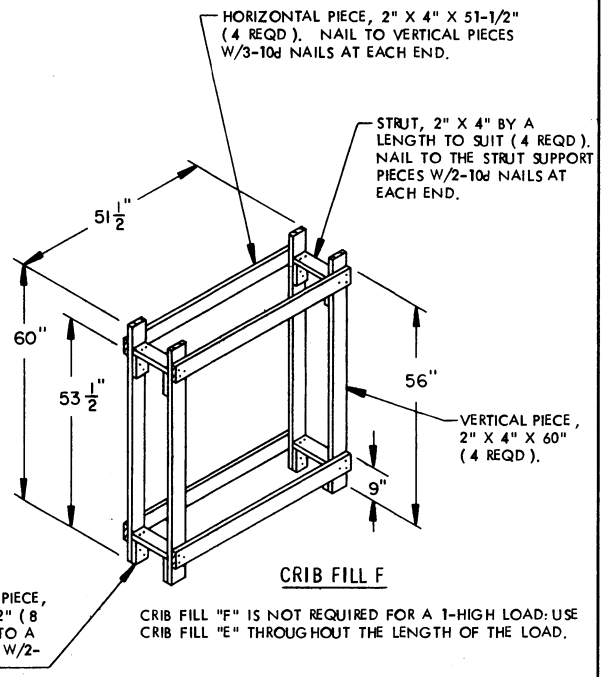
TOTAL WEIGHT----- 87,964 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
62-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



CRIB FILL E

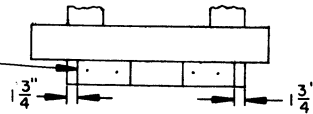
CRIB FILL ASSEMBLIES "E" AND "F" SHOULD BE PREFABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.



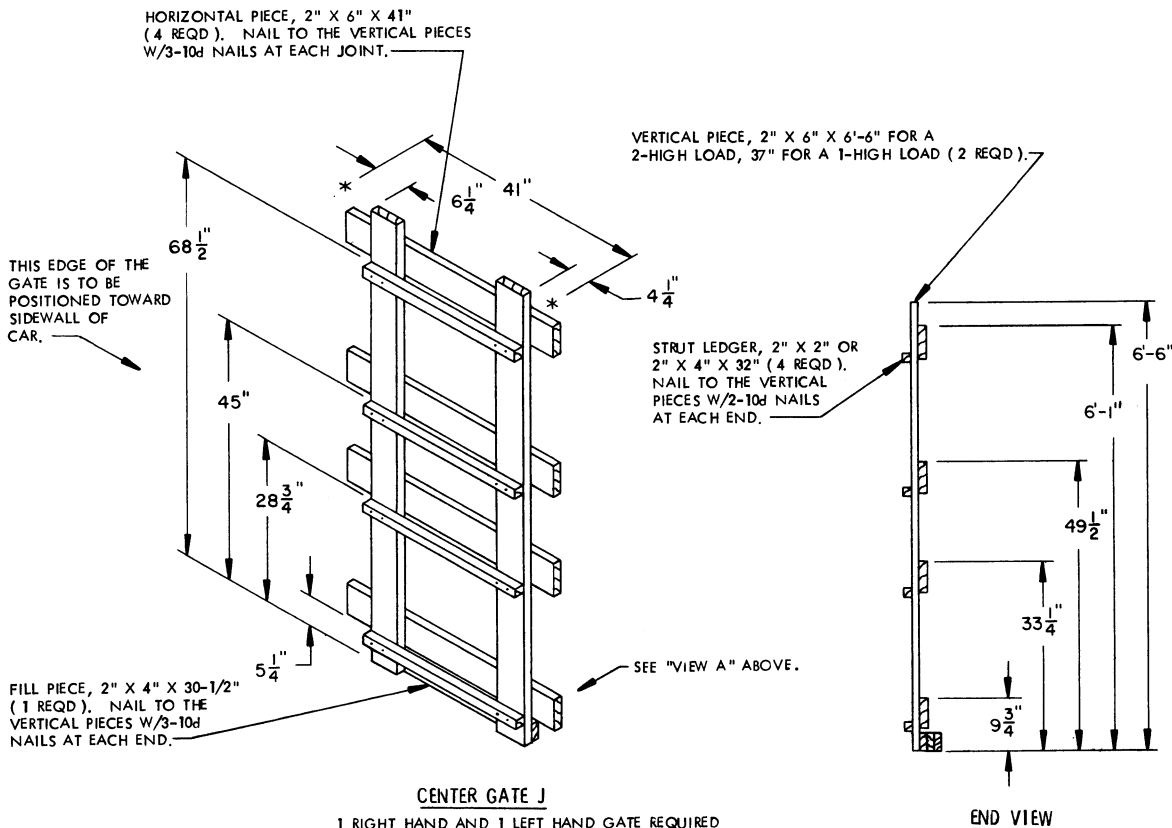
CRIB FILL F

CRIB FILL "F" IS NOT REQUIRED FOR A 1-HIGH LOAD: USE CRIB FILL "E" THROUGHOUT THE LENGTH OF THE LOAD.

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



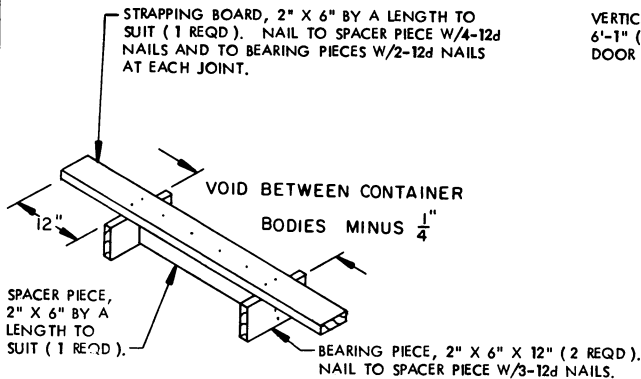
VIEW A



CENTER GATE J

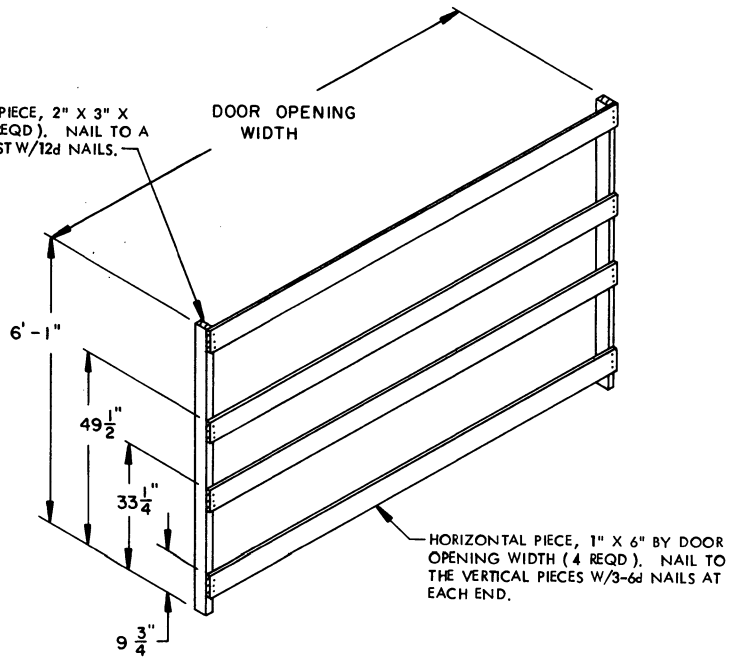
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED

END VIEW



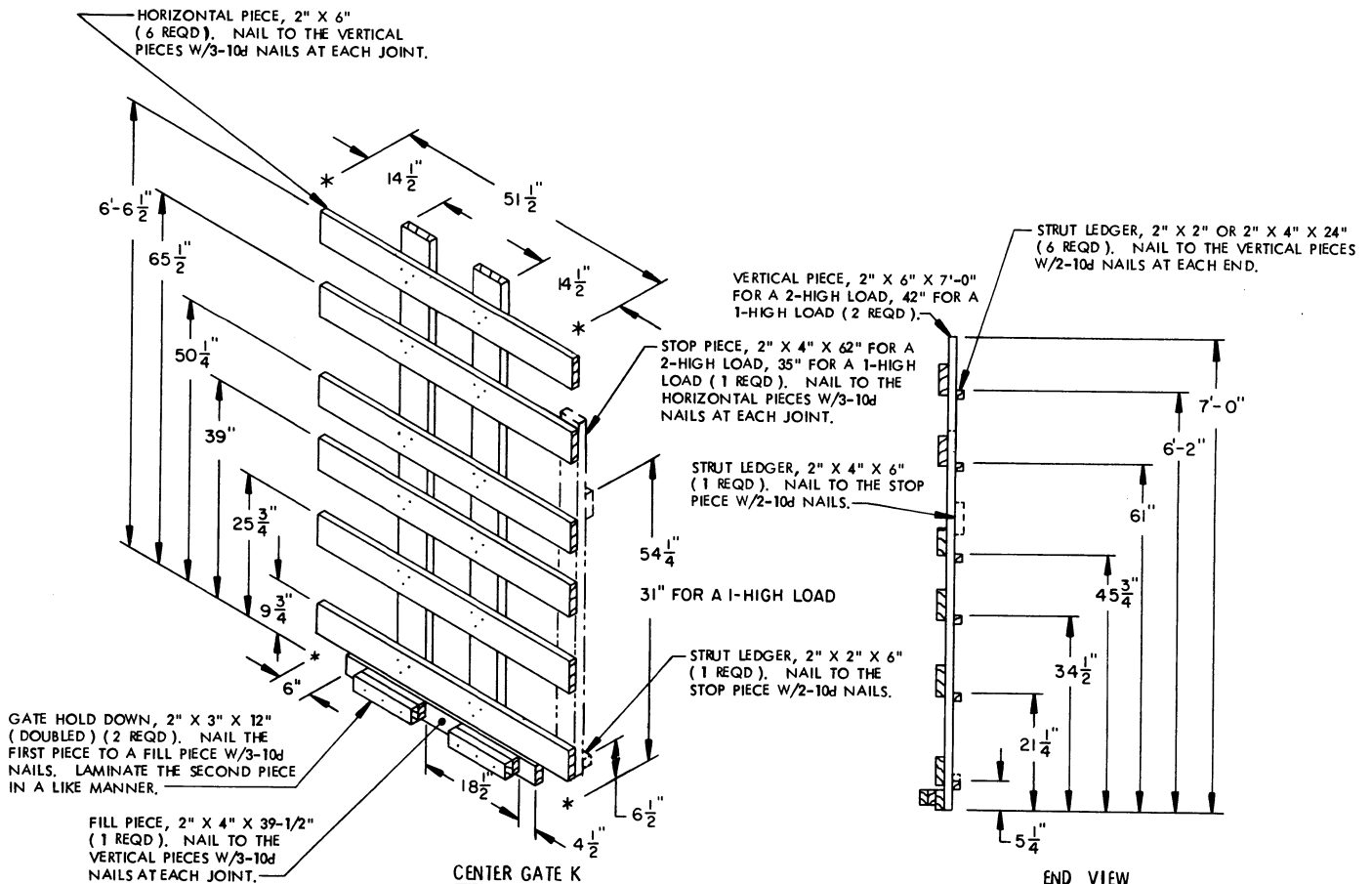
SPACER ASSEMBLY C

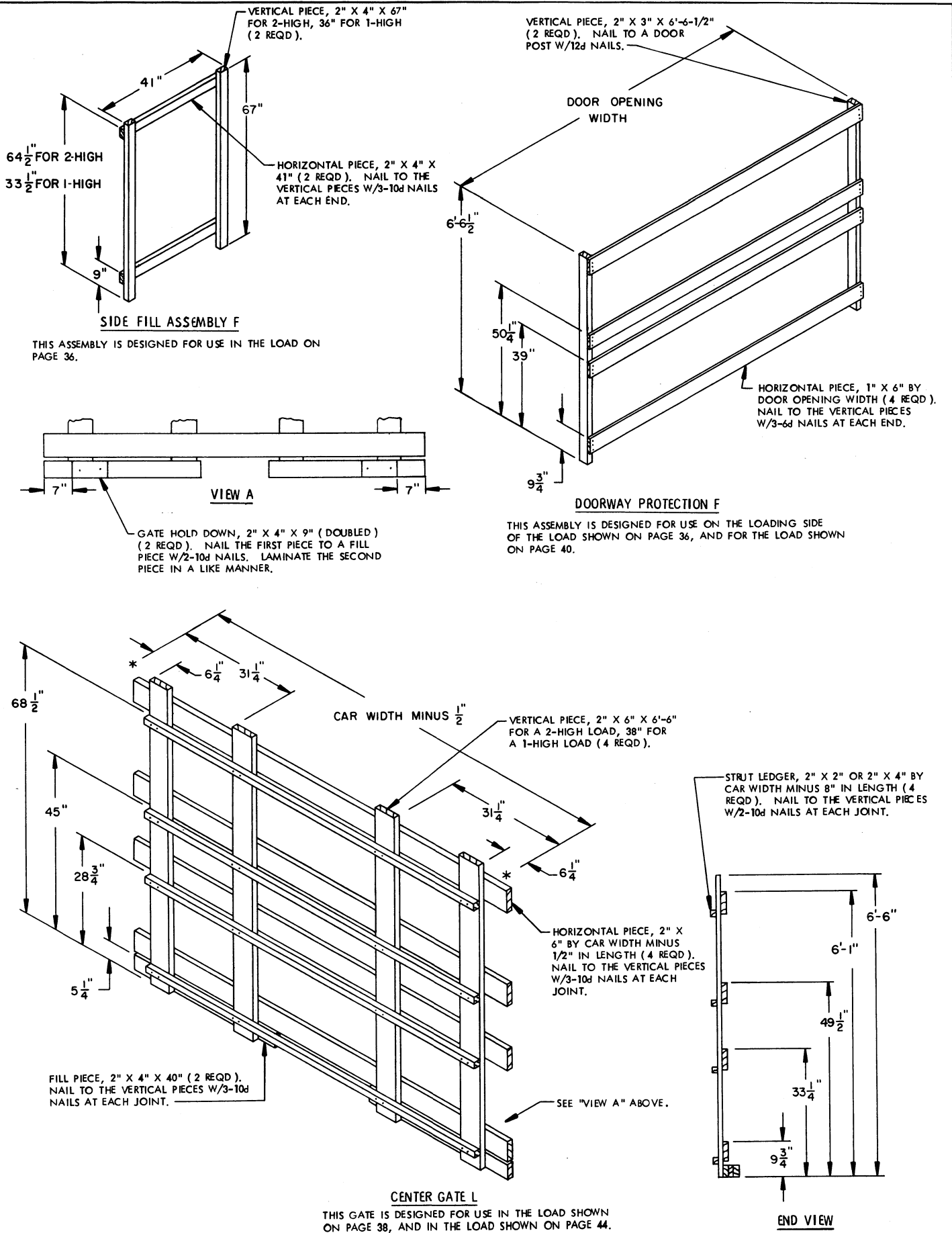
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 38, 44, 52, 66, 72, AND 80.



DOORWAY PROTECTION E

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE FOR THE LOAD SHOWN ON PAGE 36, AND FOR THE LOAD SHOWN ON PAGE 38.

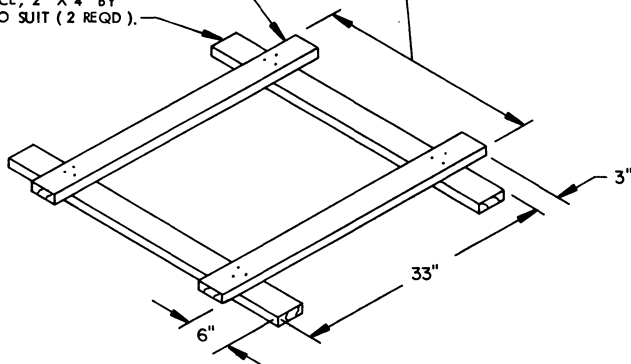




BUFFER PIECE, 2" X 4" X 39" (2 REQD).
NAIL TO THE RETAINER PIECES W/3-10d
NAILS AT EACH JOINT.

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

FABRICATE TO FIT BETWEEN THE
POSTS OF LATERALLY ADJACENT
PALLET.

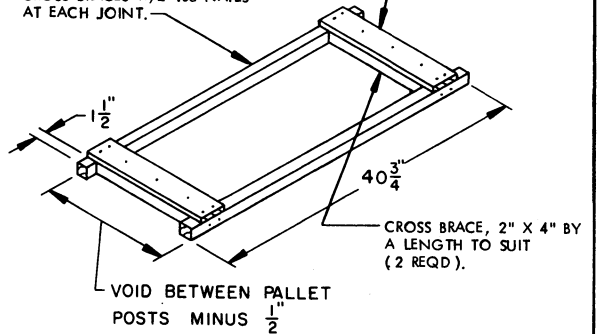


ANTI-SWAY BRACE C

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

CLEAT, 1" X 4" BY A LENGTH TO SUIT
(2 REQD). NAIL TO THE LONGITUDINAL
PIECES W/2-6d NAILS AT EACH END AND TO
A CROSS BRACE W/3-6d NAILS.

LONGITUDINAL PIECE, 2" X 2" BY
40-3/4" (2 REQD). NAIL TO THE
CROSS BRACES W/2-10d NAILS
AT EACH JOINT.

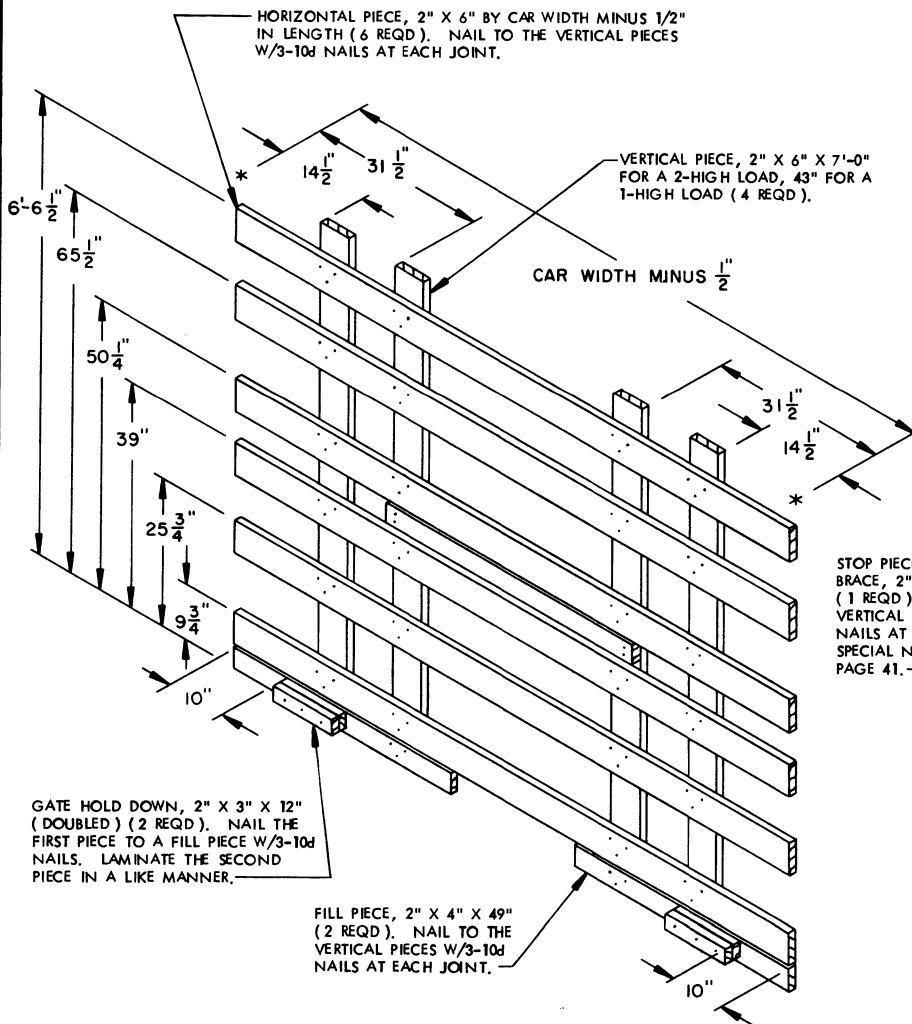


ANTI-SWAY BRACE D

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

VERTICAL PIECE, 2" X 6" X 7'-0"
FOR A 2-HIGH LOAD, 43" FOR A
1-HIGH LOAD (4 REQD).

CAR WIDTH MINUS 1/2"



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

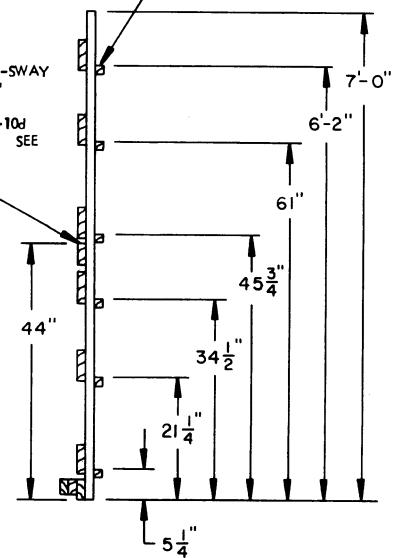
FILL PIECE, 2" X 4" X 49"
(2 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

CENTER GATE M

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 40.

STRUT LEDGER, 2" X 2" OR 2" X 4" BY CAR WIDTH
MINUS 24" IN LENGTH (6 REQD). NAIL TO THE
VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.
THE STRUT LEDGERS AT THE 21-1/4" AND 61"
HEIGHTS ARE NOT REQUIRED FOR A LOAD IN A
50' OR 40' LONG CAR.

STOP PIECE FOR ANTI-SWAY
BRACE, 2" X 4" X 52"
(1 REQD). NAIL TO THE
VERTICAL PIECES W/2-10d
NAILS AT EACH END. SEE
SPECIAL NOTE 4 ON
PAGE 41.

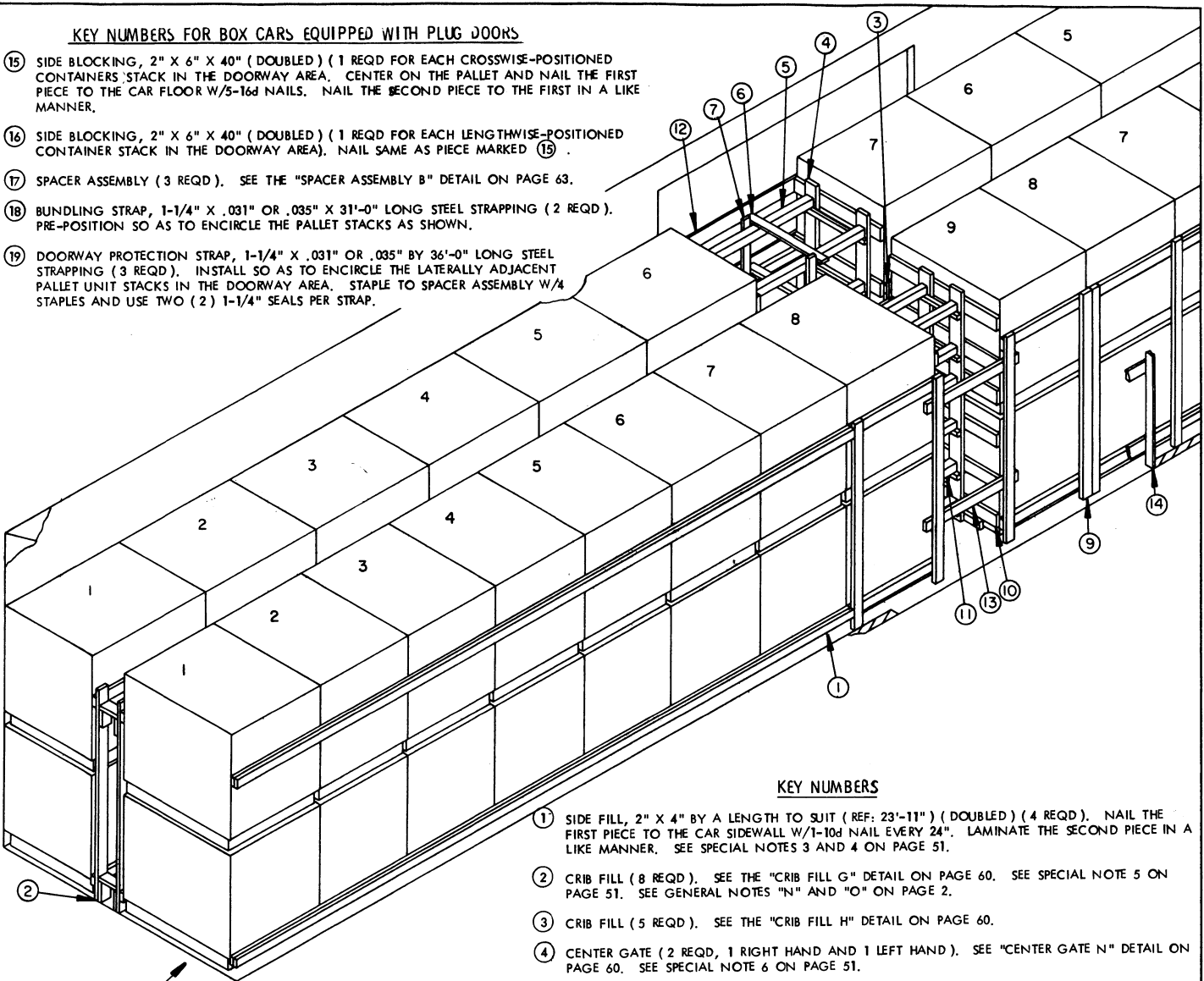


END VIEW

DETAILS FOR FLAT DUNNAGE METHOD (BASIC HEIGHT)

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

- ⑮ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED CONTAINERS STACK IN THE DOORWAY AREA. CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑯ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED CONTAINER STACK IN THE DOORWAY AREA). NAIL SAME AS PIECE MARKED ⑮.
- ⑰ SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
- ⑱ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACKS AS SHOWN.
- ⑲ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

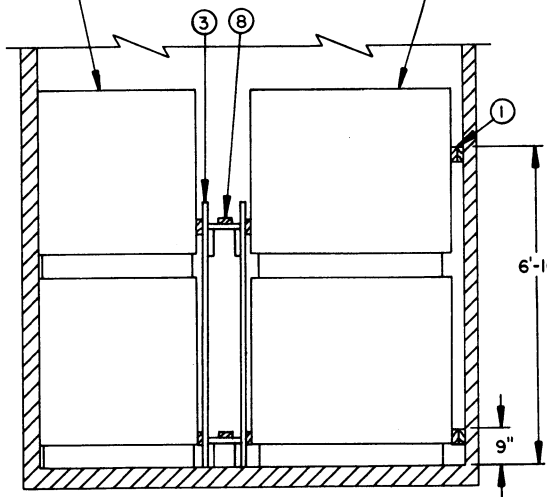


SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

INDICATES PALLET UNIT OF CROSSWISE-POSITIONED CONTAINERS.

INDICATES PALLET UNIT OF LENGTHWISE-POSITIONED CONTAINERS.



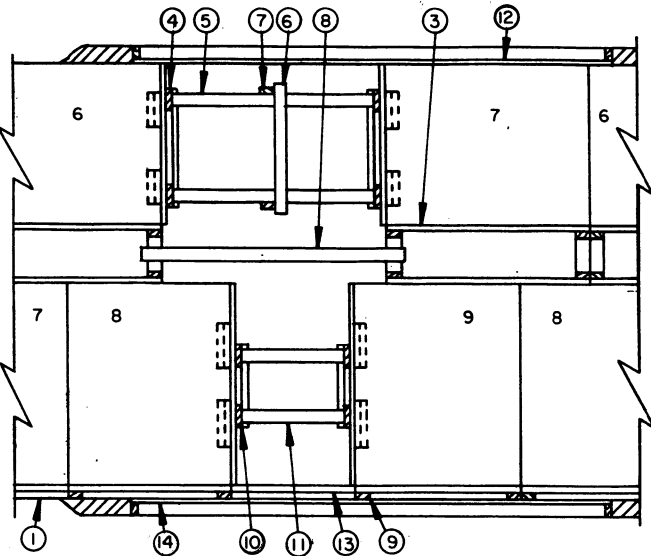
SECTION Q-Q

KEY NUMBERS

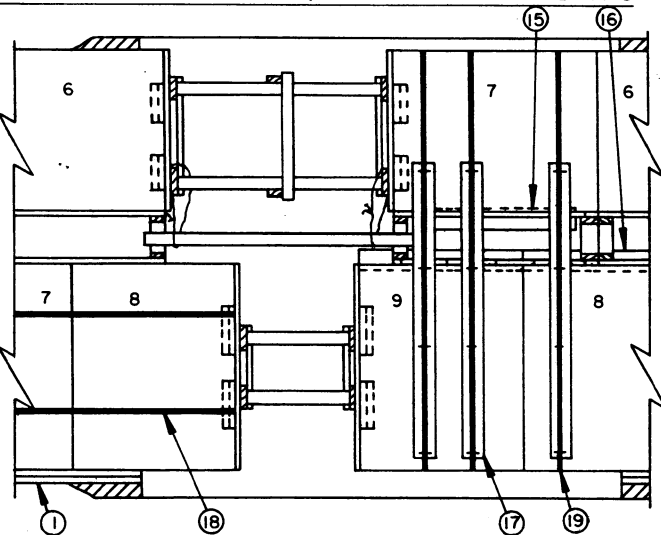
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-11") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 51.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL G" DETAIL ON PAGE 60. SEE SPECIAL NOTE 5 ON PAGE 51. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ CRIB FILL (5 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 60.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE "CENTER GATE N" DETAIL ON PAGE 60. SEE SPECIAL NOTE 6 ON PAGE 51.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 52") (8 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" X 33" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 7'-8" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑧ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 69") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "H" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 51.
- ⑨ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY G" DETAIL ON PAGE 61. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- ⑩ CENTER GATE (2 REQD). SEE "CENTER GATE O" DETAIL ON PAGE 61.
- ⑪ STRUT, 4" X 4" BY CUT TO FIT (25") (12 REQD). TOENAIL TO PIECES MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑫ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 61. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 51.
- ⑬ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY LENGTH TO SUIT (REF: 44") (2 REQD). POSITION AT 26" AND 6'-2" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑨ W/3-10d NAILS AT EACH END.
- ⑭ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 62. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED AT TOP)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY A BUNDLING STRAP, PIECE MARKED (18). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 50 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY- (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,450 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 64,942 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (9) ON PAGE 50, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (9), AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED (13).
5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), 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.
6. CENTER GATES "N" AND "O" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (14) IN THE LOAD ON PAGE 50, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 SHOWN IN THE PARTIAL PLAN VIEW AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
8. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 114 AND 115.
9. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 98 AND 99. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS-LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS-CROSSWISE UNITS.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

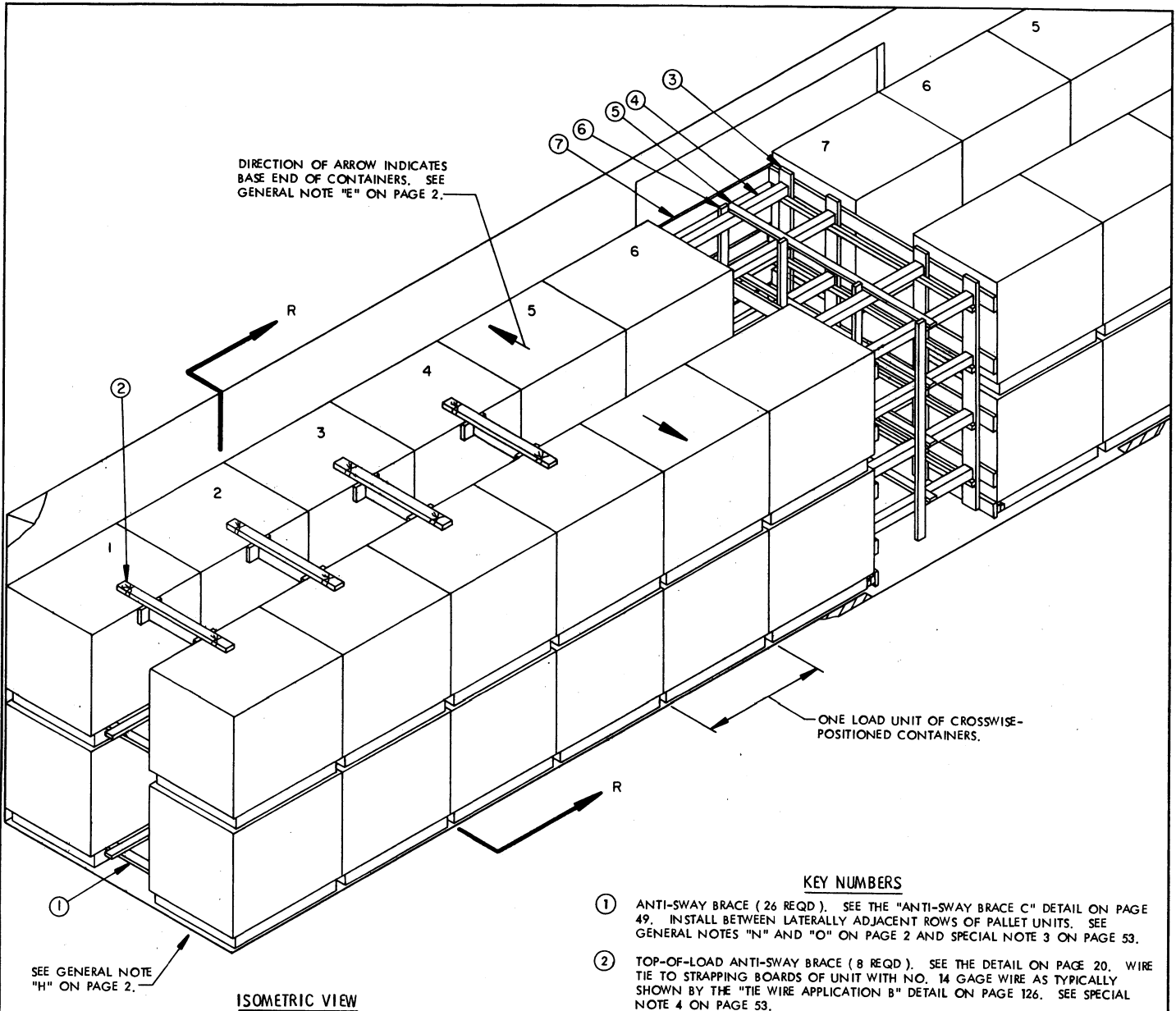
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	46	16
2" X 3"	39	20
2" X 4"	976	651
2" X 6"	143	143
4" X 4"	60	80
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	1196	18-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	80	1-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	60-----	102,540 LBS
DUNNAGE-----	-----	1,922 LBS
TOTAL WEIGHT-----	-----	104,462 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



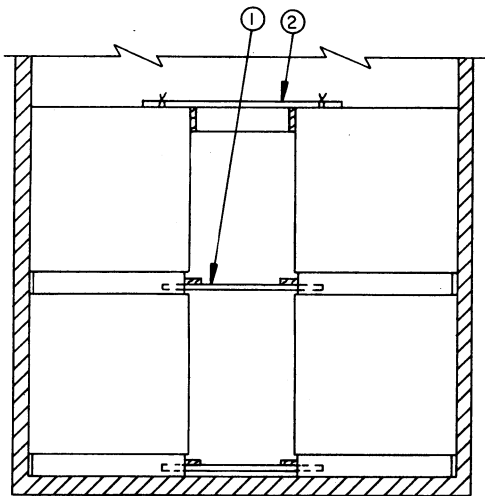
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 53.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 53.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE P" DETAIL ON PAGE 62. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 53.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 52") (16 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ HORIZONTAL STRUT BRACING, 2" X 4" X 8'-10" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 7'-8" (4 REQD). NAIL TO THE STRUT W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 61. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 53.

SEE GENERAL NOTE "H" ON PAGE 2.

ONE LOAD UNIT OF CROSSWISE-POSITIONED CONTAINERS.



SECTION R-R

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
52-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES!

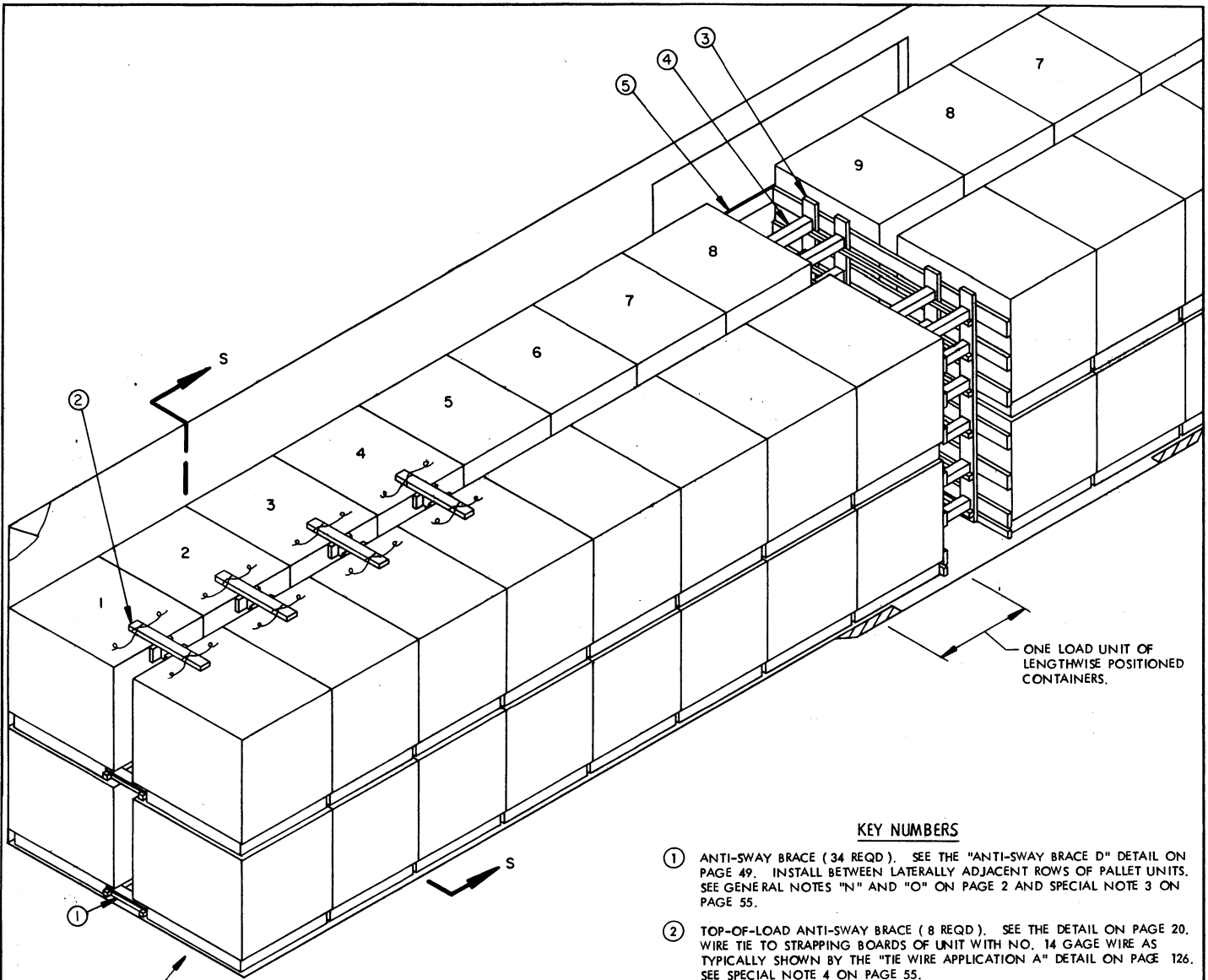
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 52 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,196 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 54,688 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 72 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (7), NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 52, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.
5. CENTER GATE "P" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE P", SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 52, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 60. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "P", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 52, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 72, MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	31	16
2" X 4"	457	305
2" X 6"	167	167
4" X 4"	70	94
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	720	11-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

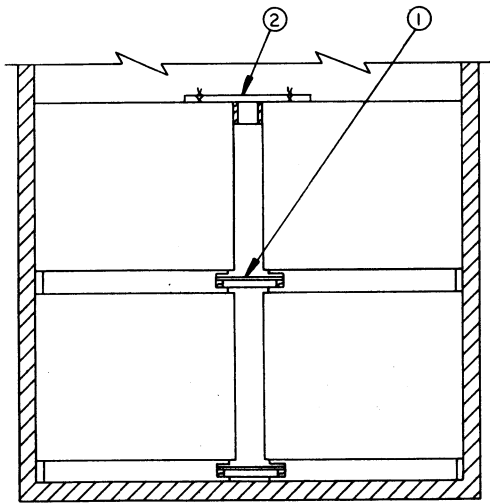
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	52-----	88,868 LBS
DUNNAGE-----	-----	1,305 LBS
TOTAL WEIGHT -----		90,173 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
52-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW



SECTION S-S

KEY NUMBERS

- ① ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 55.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 55.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 63. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 55.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 62. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 55.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 54 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,704 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURE. FORTY-FOUR (44) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,196 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 40'-6" LONG CAR.
3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Q" AS SHOWN ON THE DETAIL ON PAGE 63.
4. TOP-OF-LOAD ANTI-SWAY BRACE, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 54, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. CENTER GATE "Q" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Q", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 54, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 61. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE Q", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 58 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 120 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	97	33
1" X 6"	80	40
2" X 2"	318	106
2" X 3"	38	19
2" X 4"	128	86
2" X 6"	188	188
4" X 4"	50	67
NAILS	NO. REQD	POUNDS
6d (2")	524	3-1/4
10d (3")	680	10-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----96' REQD-----1-1/2 LBS		

LOAD AS SHOWN

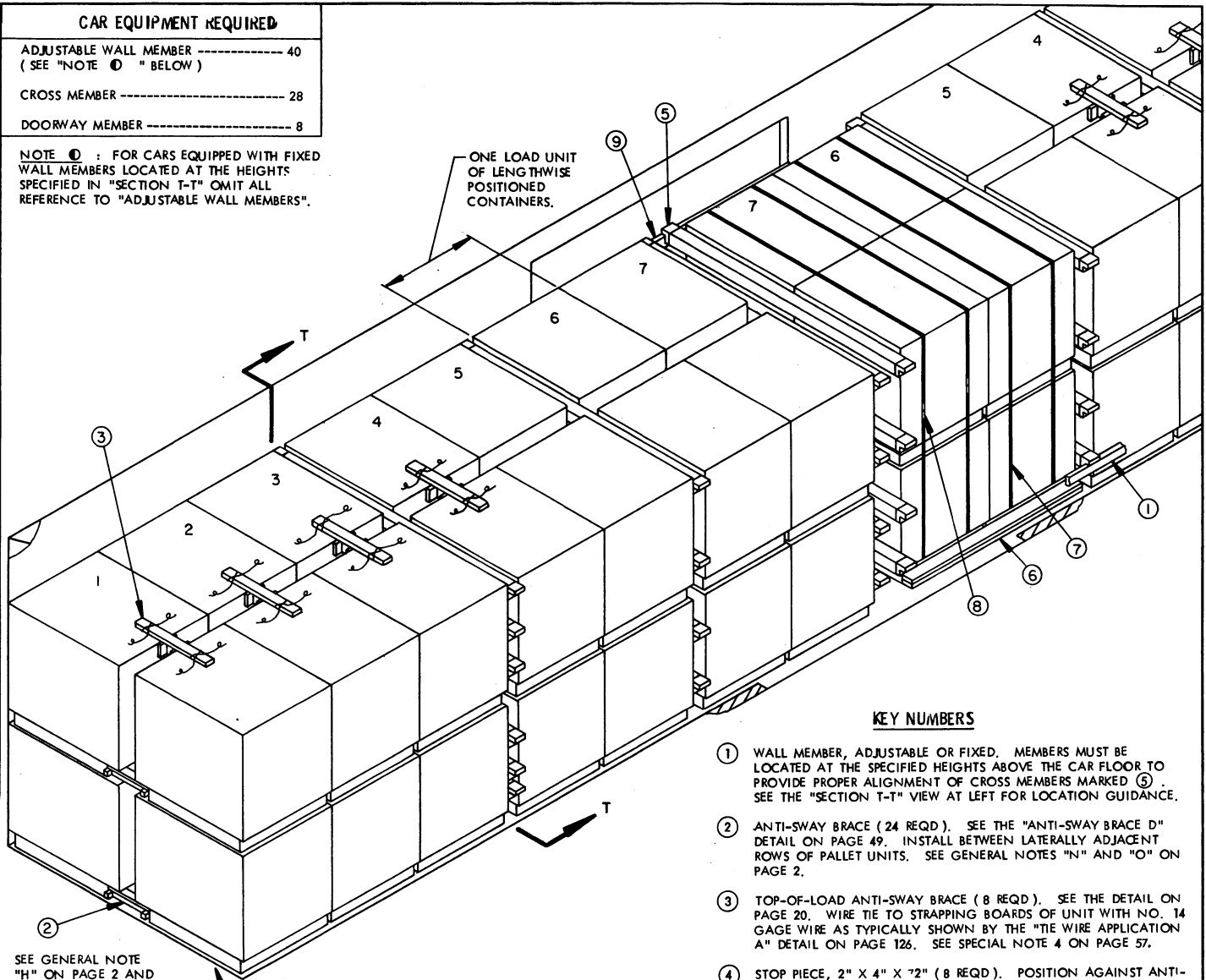
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	68	116,212 LBS
DUNNAGE -----		1,096 LBS
TOTAL WEIGHT-----		117,308 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	40
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	28
DOORWAY MEMBER -----	8

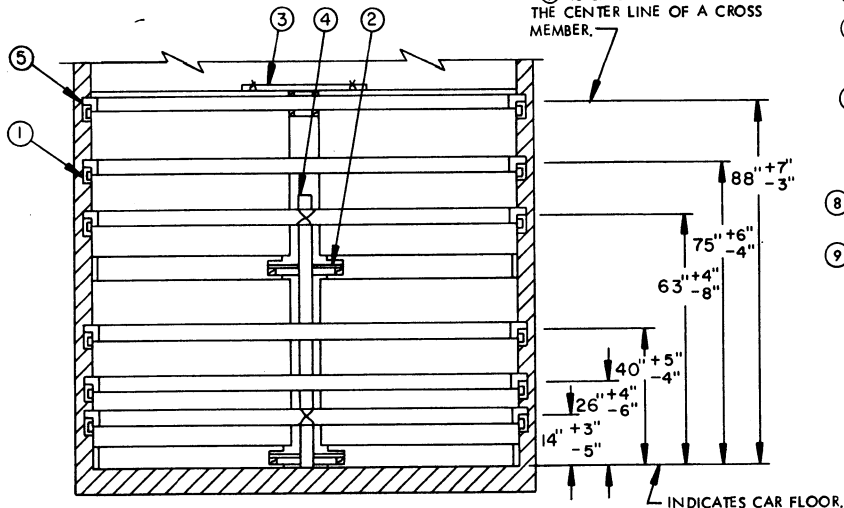
NOTE 1 : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION T-T" OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



SEE GENERAL NOTE "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 57.

ISOMETRIC VIEW

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.



SECTION T-T

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION T-T" VIEW AT LEFT FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARD OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 57.
- 4 STOP PIECE, 2" X 4" X 72" (8 REQD). POSITION AGAINST ANTI-SWAY BRACE D" DETAIL BEFORE AND AFTER EACH STATION OF CROSS MEMBERS (EXCEPT IN THE DOORWAY). NAIL TO THE HORIZONTAL 2" X 4" PIECE MARKED 2 W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE.
- 5 CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- 6 SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- 7 BUNDLING STRAPS, 1-1/4" X .035" OR .031" X 34'-0" LONG STEEL STRAPPING (4 REQD). PRE-POSITION, AS APPLICABLE, AND INSTALL TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT WITH ONE STAPLE NEAR EACH END.
- 8 SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- 9 DOORWAY MEMBER (8 REQD). SEE THE "SECTION T-T" VIEW AT LEFT FOR LOCATION GUIDANCE.

INDICATES CAR FLOOR.

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)

56-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.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,196 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 56, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. WHEN LOADING PALLET UNIT STACKS A STOP PIECE, SHOWN AS PIECE MARKED (4) IN THE SECTION VIEW ON PAGE 56, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE "ANTI-SWAY BRACE D" FROM MOVING INTO THE C CROSS MEMBER AREA.
6. 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 ONE OR TWO LAYERS 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 92 AND 93 FOR GUIDANCE.
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

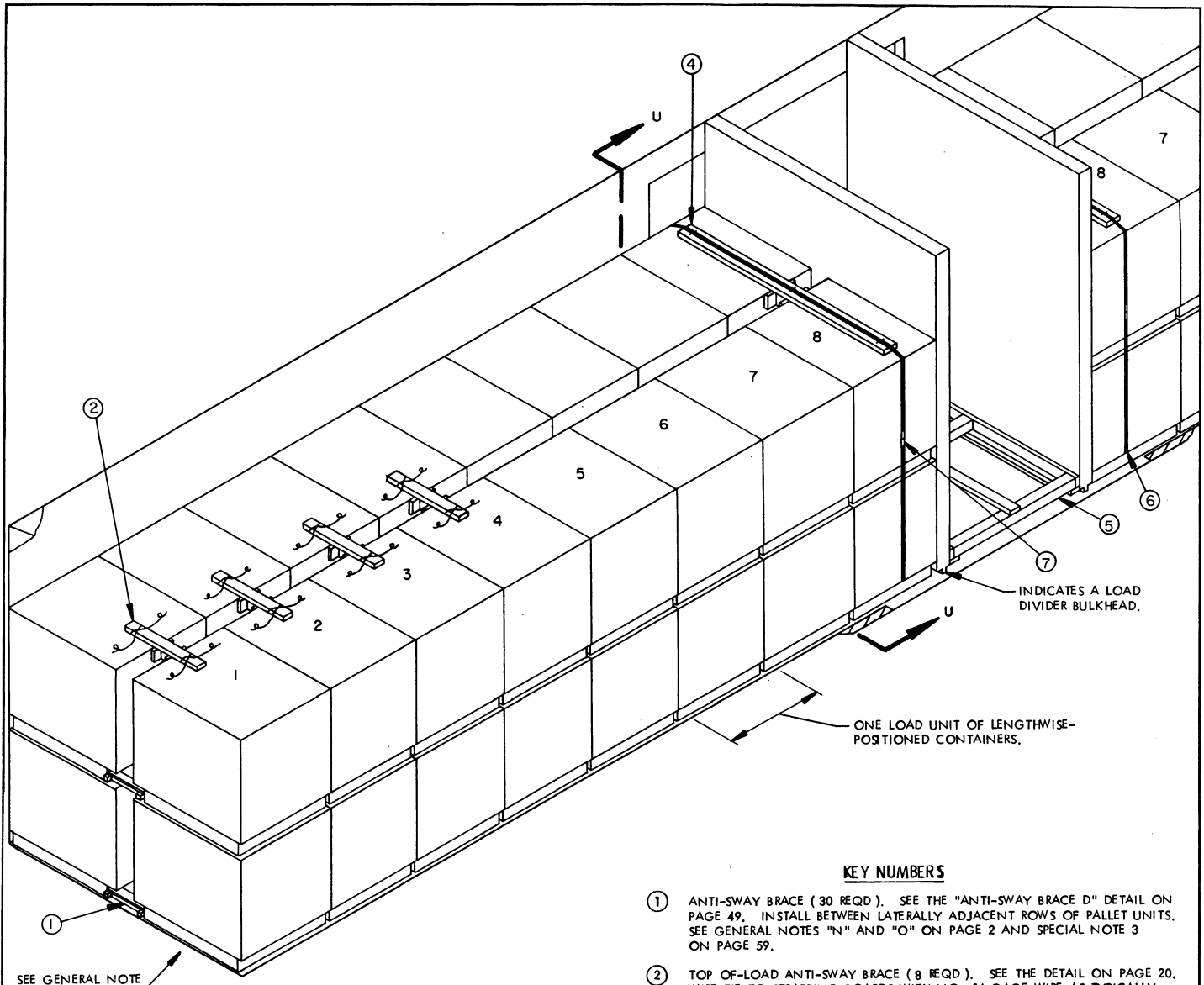
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	69	23
2" X 2"	164	55
2" X 4"	152	102
2" X 6"	14	14
NAILS	NO. REQD	POUNDS
6d (2")	336	2
10d (3")	320	5
16d (3-1/2")	28	3/4
STEEL STRAPPING, 1-1/4" X .031 OR .035"-----136' REQD-----20 LBS		
SEAL FOR 1-1/4" STRAPPING-----8 REQD-----NIL		
WIRE, NO. 14 GAGE-----110' REQD-----2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	95,704 LBS
DUNNAGE		418 LBS

TOTAL WEIGHT-----96,122 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
56-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.

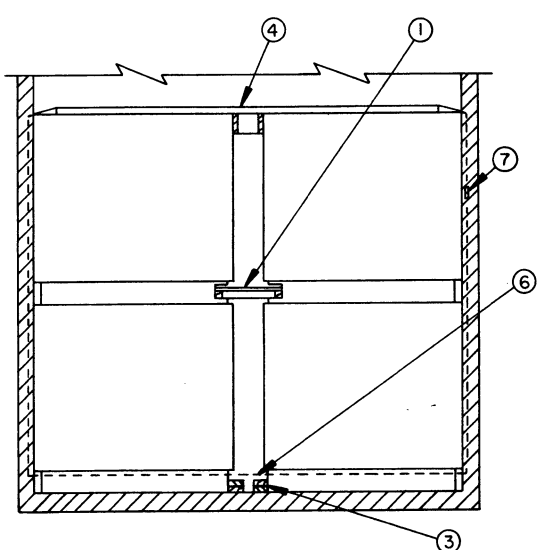
ISOMETRIC VIEW

INDICATES A LOAD DIVIDER BULKHEAD.

ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.

KEY NUMBERS

- ① ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 59.
- ② TOP OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 59.
- ③ SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (4 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (5) AT FLOOR LEVEL.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
- ⑤ STRUT ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 131. SEE SPECIAL NOTE 8 ON PAGE 73.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 73.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD., 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



SECTION U-U

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)

64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 58 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 88,868 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 68,360 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. WHEN THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 52 IS EMPLOYED, FIFTY-TWO (52) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 88,868 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,196 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR, AND THIRTY TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 54,688 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 58 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 58, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. 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 OR WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. PIECES MARKED ④, ⑥, AND ⑦ ON PAGE 58 WILL BE USED FOR LOADS OF LENGTHWISE-POSITIONED CONTAINERS. PIECES MARKED ④, ⑦, AND ⑧ ON PAGE 44 WILL BE USED FOR LOADS OF CROSSWISE POSITIONED CONTAINERS. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH.
6. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 58, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN EIGHT (8) LOAD UNITS. THE STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE BULKHEADS AS SHOWN ON PAGE 44.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 107 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

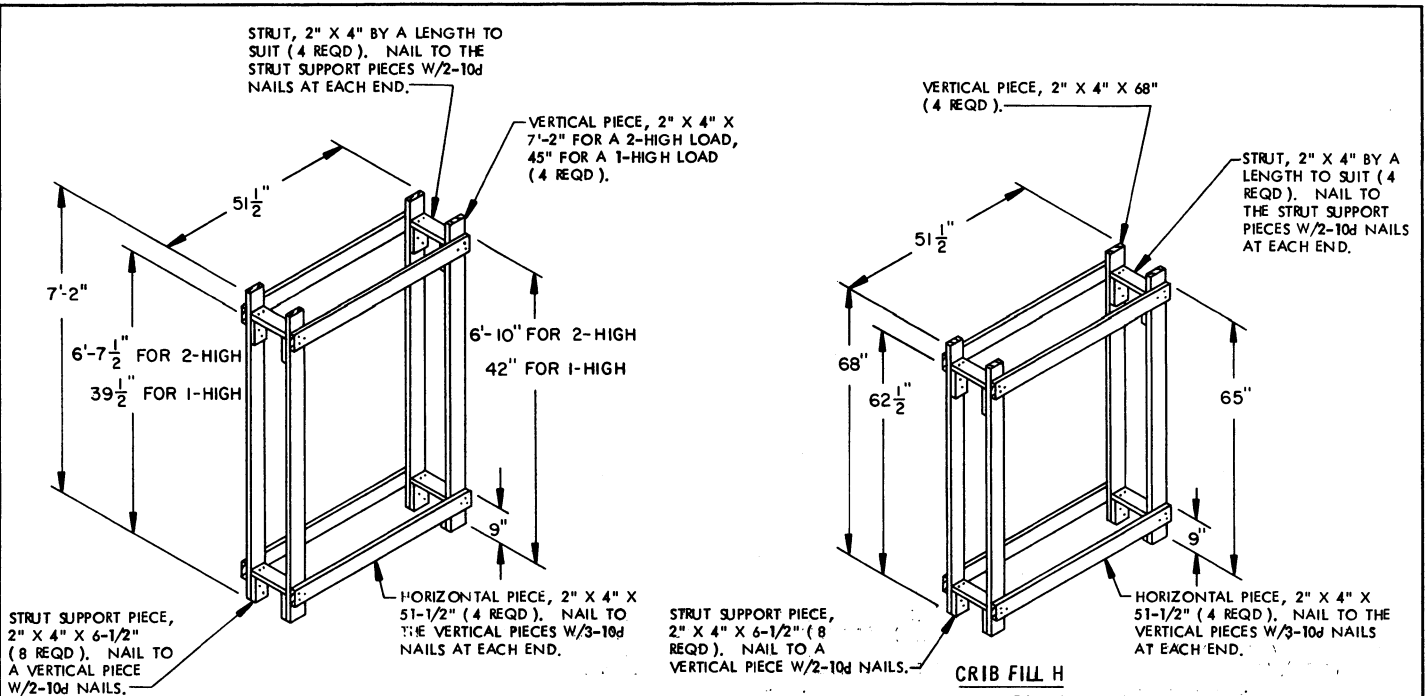
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	86	29
1" X 8"	17	12
2" X 2"	205	69
2" X 4"	163	109
2" X 6"	35	35
4" X 4"	69	26
NAILS	NO. REQD	POUNDS
6d (2")	438	2-3/4
10d (3")	382	6
12d (3-1/4")	40	3/4
16d (3-1/2")	32	3/4
STEEL STRAPPING, 1-1/4" X .035" OR .031"-----72'-0" REQD-----11 LBS		
SEAL FOR 1-1/4" STRAPPING-----4 REQD-----NIL		
WIRE, NO. 14 GAGE-----110' REQD-----2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	64-----	109,376 LBS
DUNNAGE-----	-----	584 LBS

TOTAL WEIGHT-----109,960 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)
64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

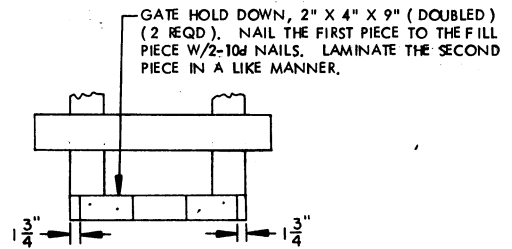


CRIB FILL G

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

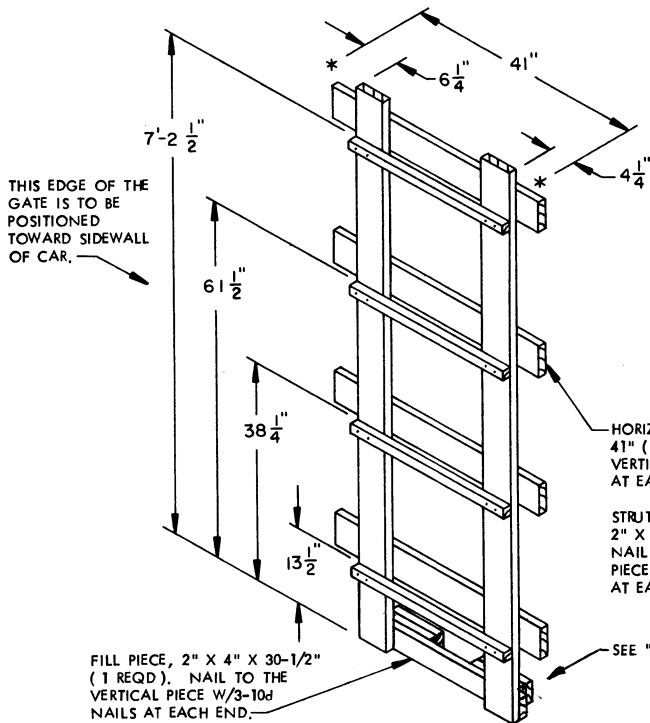
CRIB FILL H

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



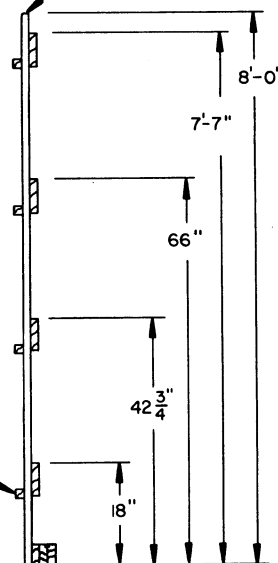
VIEW A

VERTICAL PIECE, 2" X 6" X 8'-0" FOR A 2-HIGH LOAD, 46" FOR A 1-HIGH LOAD.



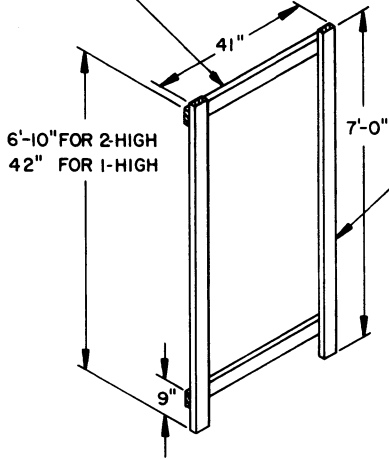
CENTER GATE N

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



END VIEW

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



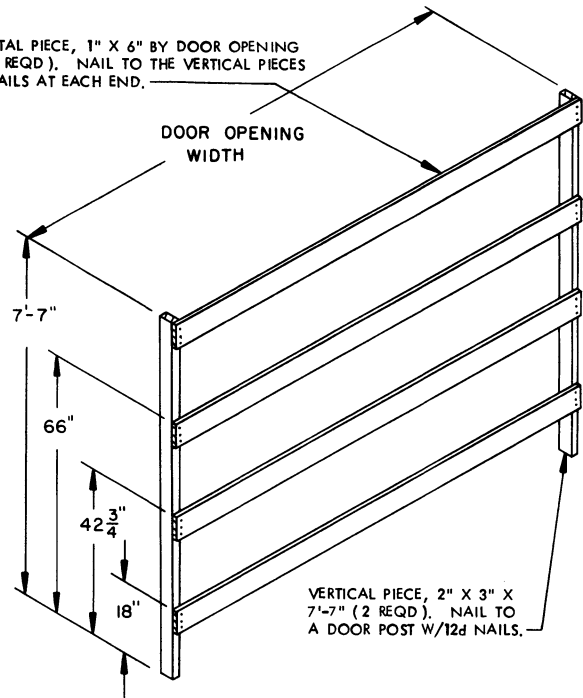
6'-10" FOR 2-HIGH
42" FOR 1-HIGH

VERTICAL PIECE, 2" X 4" X
7'-0" FOR A 2-HIGH, 42" FOR
1-HIGH (2 REQD).

SIDE FILL ASSEMBLY G

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD
ON PAGE 50.

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



DOOR OPENING
WIDTH

7'-7"

66"

42 3/4"

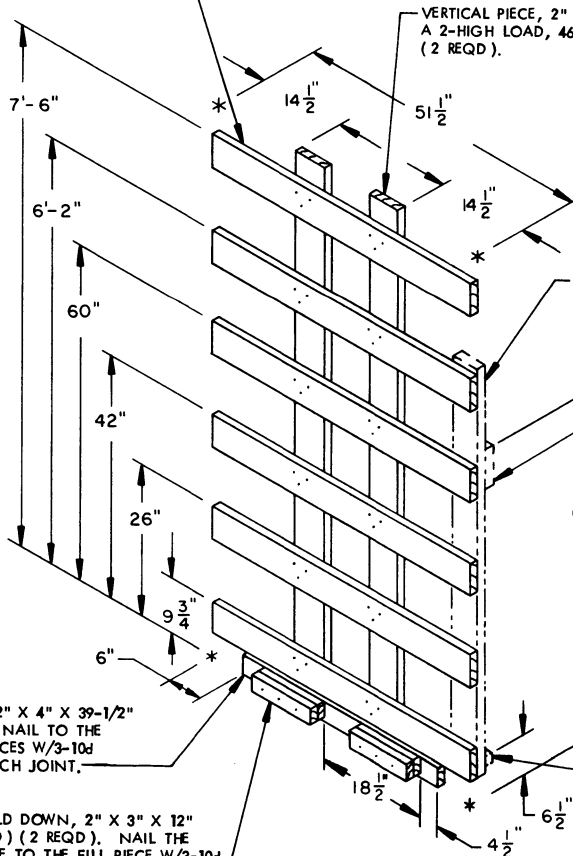
18"

VERTICAL PIECE, 2" X 3" X
7'-7" (2 REQD). NAIL TO
A DOOR POST W/12d NAILS.

DOORWAY PROTECTION G

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OF THE CAR
WHICH IS OPPOSITE THE LOADING SIDE AS SHOWN ON PAGE
50, AND FOR THE LOAD ON PAGE 52.

HORIZONTAL PIECE, 2" X 6" X 51-1/2"
(6 REQD). NAIL TO THE VERTICAL
PIECES W/3-10d NAILS AT EACH JOINT.



VERTICAL PIECE, 2" X 6" X 7'-10" FOR
A 2-HIGH LOAD, 46" FOR A 1-HIGH LOAD
(2 REQD).

STOP PIECE, 2" X 4" X 7'-0" FOR
A 2-HIGH LOAD, 38" FOR A 1-
HIGH LOAD (1 REQD). NAIL TO
THE HORIZONTAL PIECES W/3-10d
NAILS AT EACH JOINT.

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

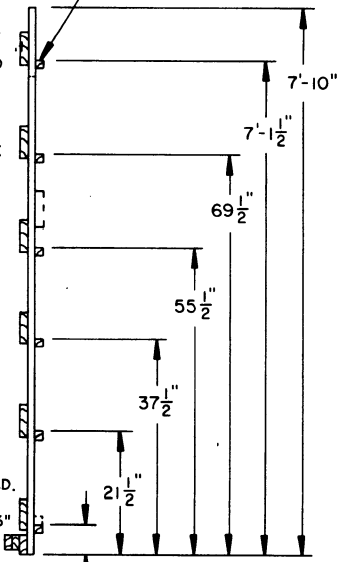
FILL PIECE, 2" X 4" X 39-1/2"
(1 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

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

39-1/2" FOR A 1-HIGH LOAD.

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

STRUT LEDGER, 2" X 2" OR 2" X 4" X 24"
(6 REQD). NAIL TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH END.

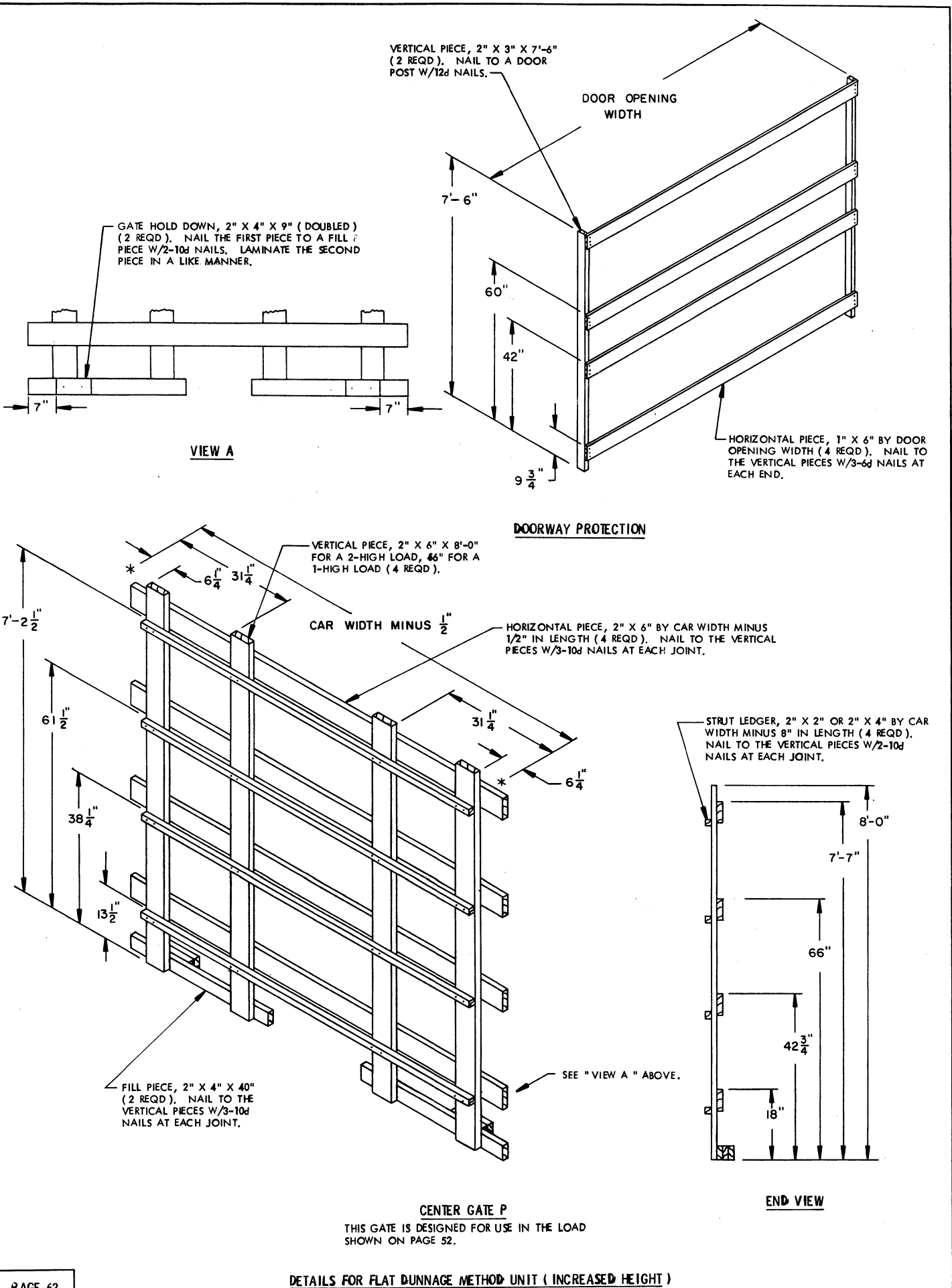


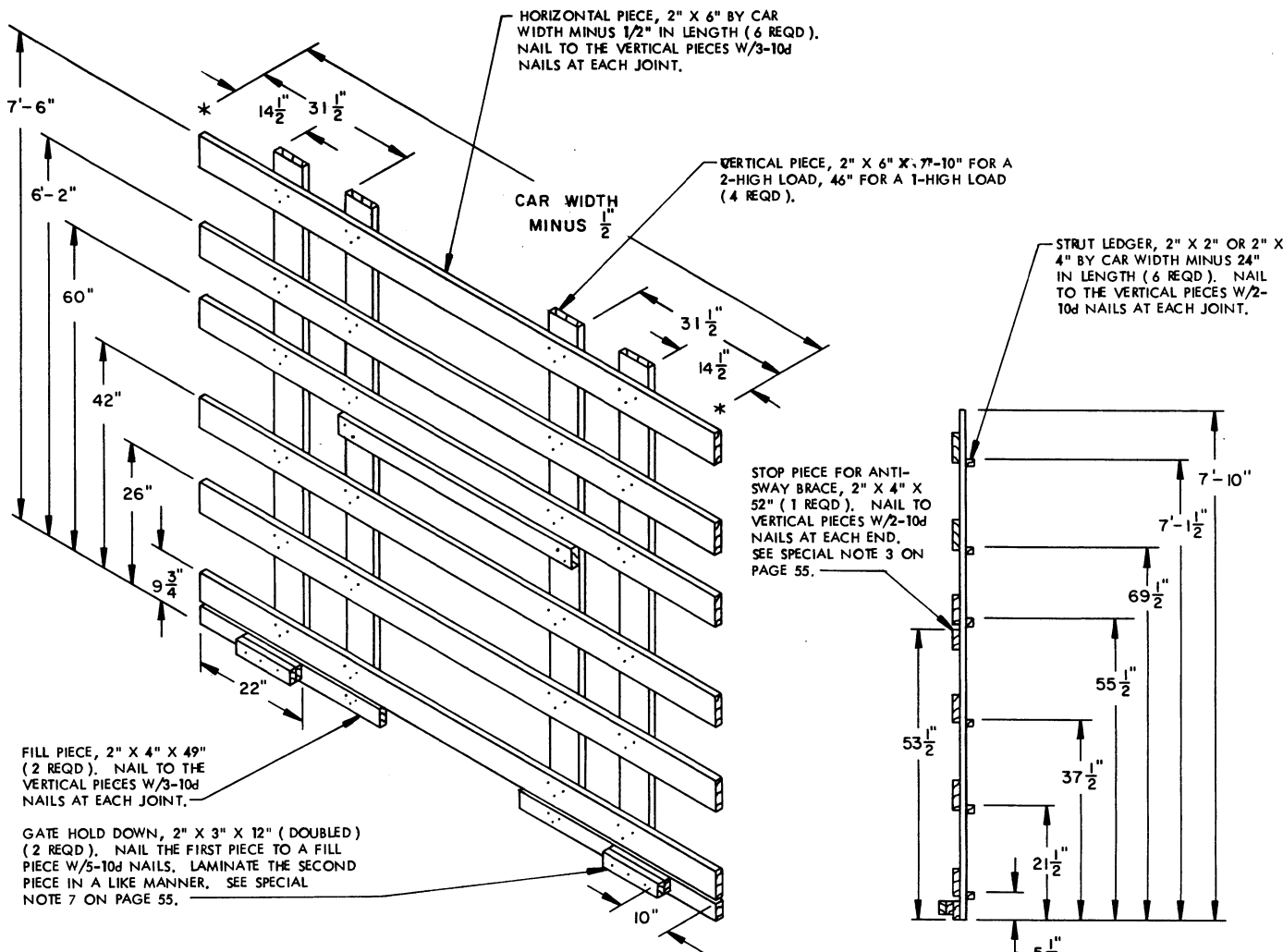
END VIEW

CENTER GATE O

THE PHANTOM-LINED PIECES ARE REQUIRED WHEN ONE CONTAINERS-
CROSSWISE ROW IS LONGER THAN THE ADJACENT CONTAINERS-LENGTHWISE
ROW. RIGHT HAND AND LEFT HAND GATES ARE THEN REQUIRED.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT)

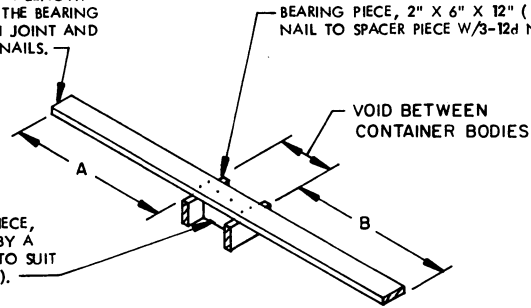




CENTER GATE Q
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 54.

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

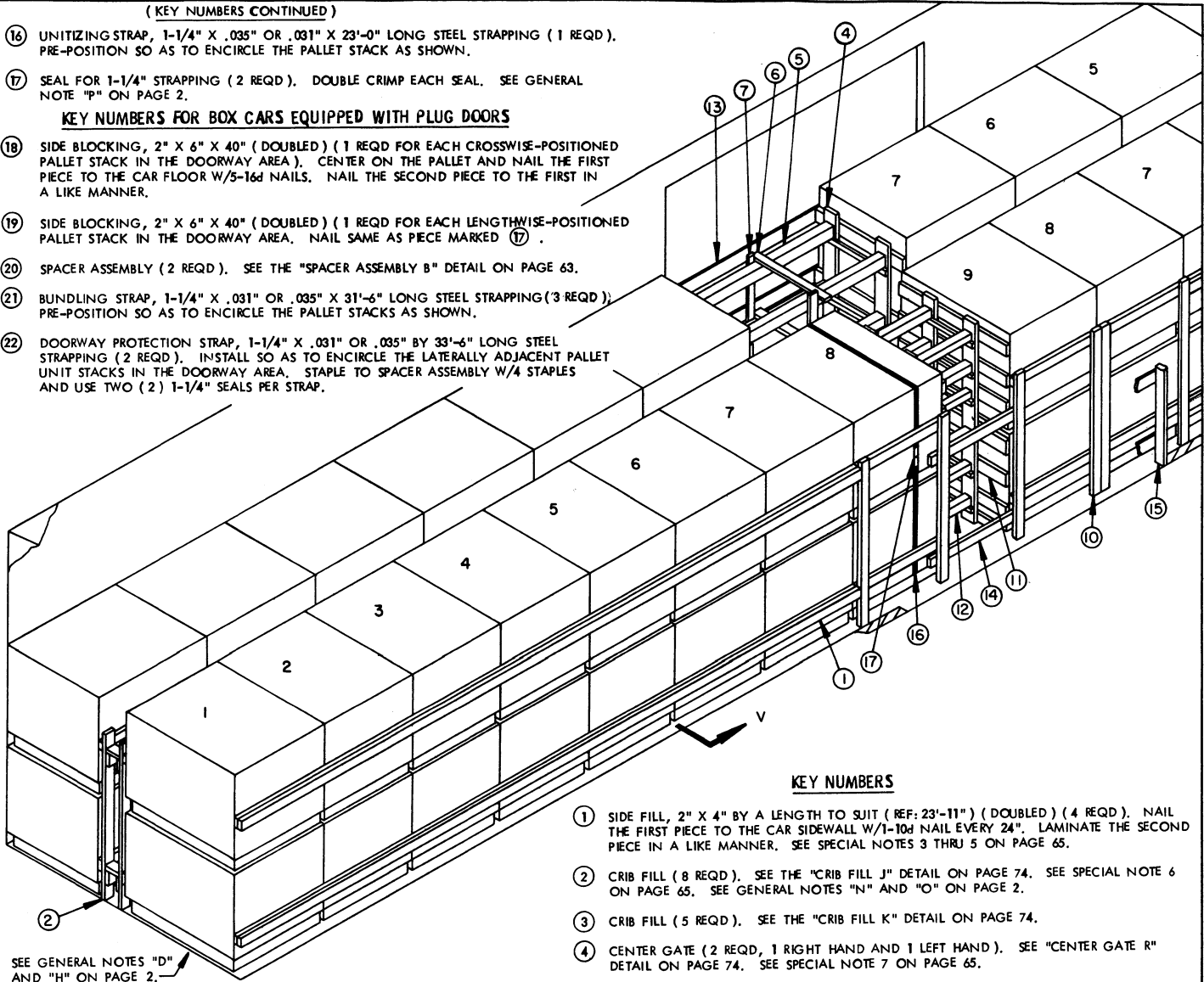
BEARING PIECE, 2" X 6" X 12" (2 REQD). NAIL TO SPACER PIECE W/3-12d NAILS.



SPACER/SPACER ASSEMBLY B		
LOAD PAGE	DIMENSION	
	A	B
36, 37, 50, 51	12"	47"
40, 54, 58	47"	47"
64, 65, 78, 79	12"	46-1/2"
68, 82, 86	46-1/2"	46-1/2"

(KEY NUMBERS CONTINUED)

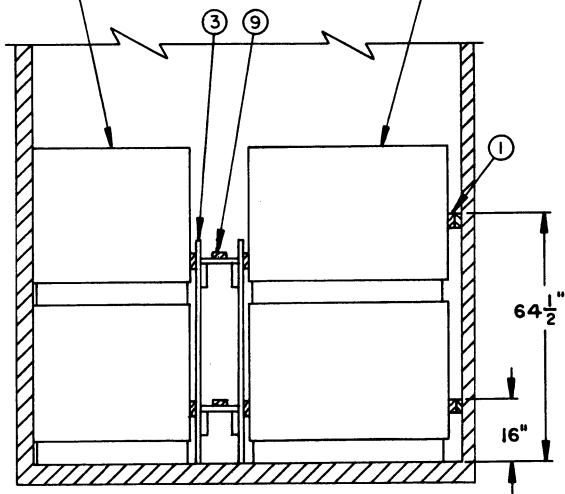
- ⑫ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 23'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACK AS SHOWN.
 - ⑬ SEAL FOR 1-1/4" STRAPPING (2 REQD). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS**
- ⑭ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED PALLET STACK IN THE DOORWAY AREA). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
 - ⑮ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED PALLET STACK IN THE DOORWAY AREA. NAIL SAME AS PIECE MARKED ⑭).
 - ⑯ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
 - ⑰ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-6" LONG STEEL STRAPPING (3 REQD); PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACKS AS SHOWN.
 - ⑱ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 33'-6" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.



ISOMETRIC VIEW

INDICATES PALLET UNIT OF CROSSWISE POSITIONED CONTAINERS.

INDICATES PALLET UNIT OF LENGTHWISE POSITIONED CONTAINERS.



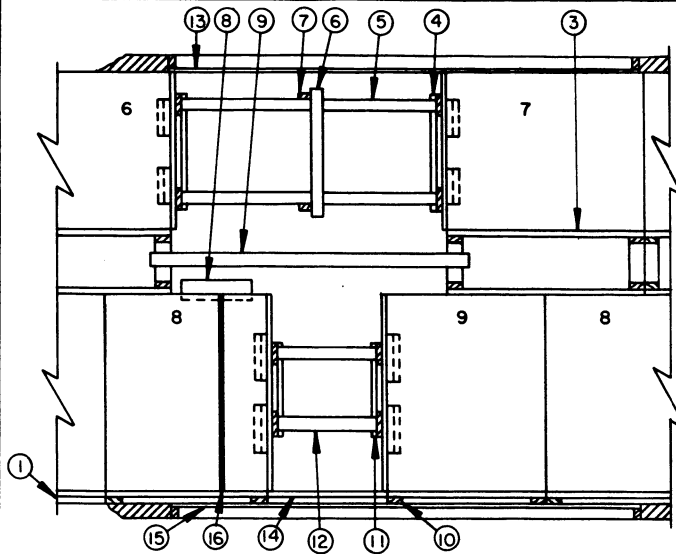
SECTION V-V

KEY NUMBERS

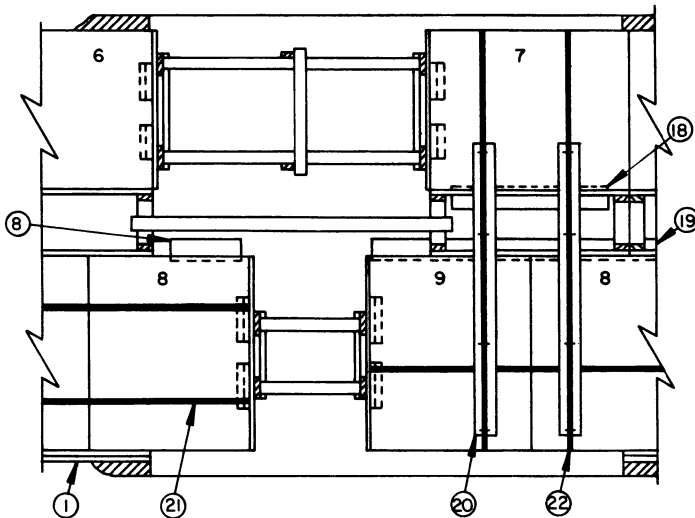
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-11") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 3 THRU 5 ON PAGE 65.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL J" DETAIL ON PAGE 74. SEE SPECIAL NOTE 6 ON PAGE 65. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ CRIB FILL (5 REQD). SEE THE "CRIB FILL K" DETAIL ON PAGE 74.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE "CENTER GATE R" DETAIL ON PAGE 74. SEE SPECIAL NOTE 7 ON PAGE 65.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (8 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" X 33" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 6'-3" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑧ SIDE BLOCKING, 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 65.
- ⑨ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 6'-10") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "K" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 65.
- ⑩ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY H" DETAIL ON PAGE 75. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- ⑪ CENTER GATE (2 REQD). SEE "CENTER GATE S" DETAIL ON PAGE 75.
- ⑫ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (12 REQD). TOENAIL TO PIECES MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑬ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 75. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 65.
- ⑭ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY LENGTH TO SUIT (REF: 44") (2 REQD). POSITION AT 10" AND 51" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑩ W/3-10d NAILS AT EACH END.
- ⑮ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 76. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ABOVE)

**ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 64 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,250 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES: FORTY (40) UNITS, FOR A LADING WEIGHT OF 55,400 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE SIDE FILL, PIECE MARKED ①, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑩ ON PAGE 64, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ①.
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ①, TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑩, AND THE SIDE FILL RETAINER PIECES, PIECE MARKED ⑭.
5. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, A 1" X 4" BY LENGTH TO SUIT PIECE MUST BE LAMINATED SO EACH SIDE FILL, PIECE MARKED ①, W/1-6d NAIL EVERY 24". ALSO, A 1" X 4" X 41" LONG PIECE MUST BE LAMINATED TO EACH HORIZONTAL PIECE OF EACH SIDE FILL ASSEMBLY, PIECE MARKED ⑩, W/5-6d NAILS.
6. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ②, 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.
7. CENTER GATES "R" AND "S" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑬ AND ⑮ IN THE LOAD ON PAGE 64, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 SHOWN IN THE PARTIAL PLAN VIEW AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 98 AND 99. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.
10. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES, AS SHOWN ON PAGES 114 AND 115.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS-LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS CROSSWISE UNITS.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

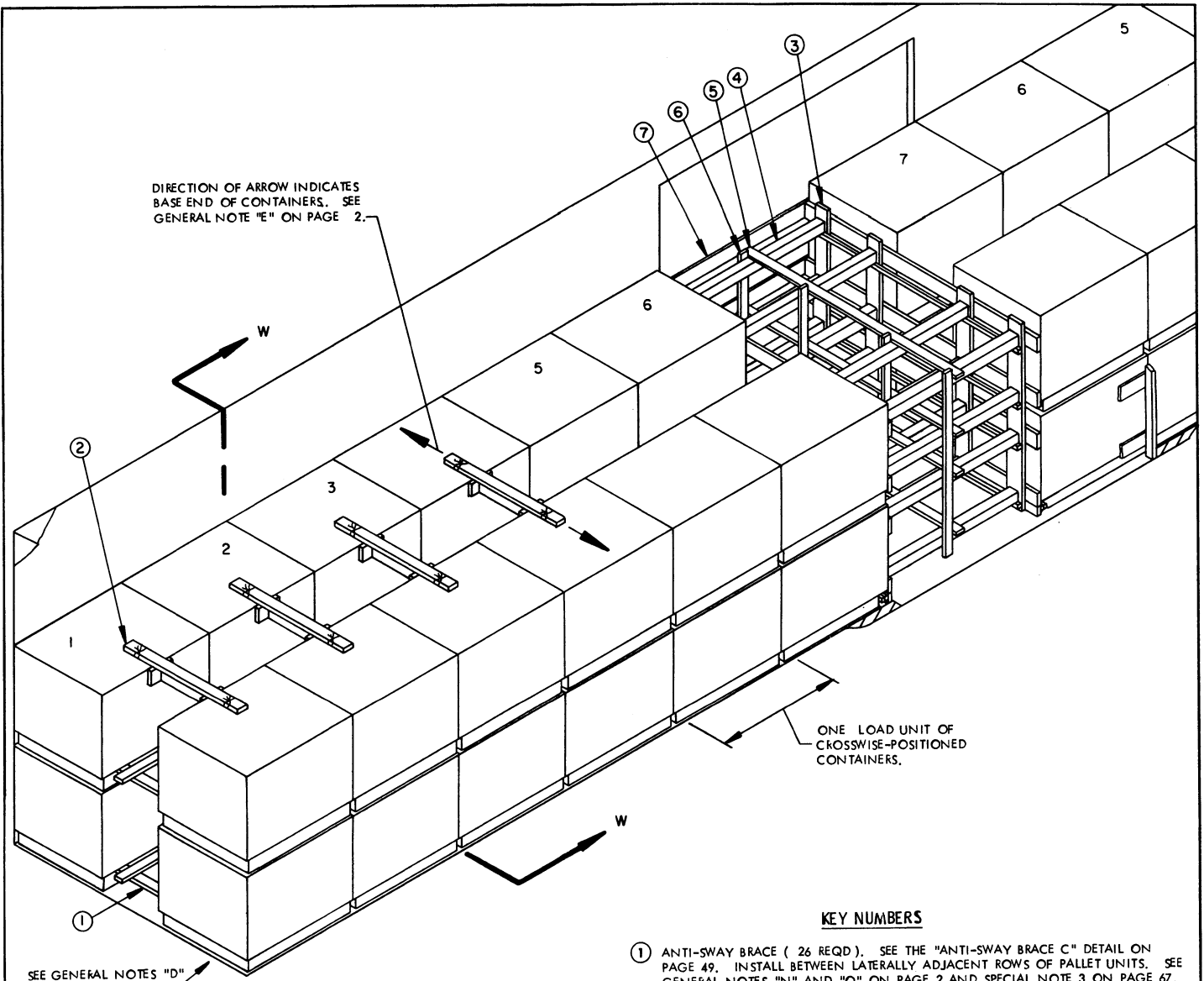
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	46	16
2" X 3"	34	17
2" X 4"	904	603
2" X 6"	132	132
4" X 4"	69	92
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	1196	18-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	88	2
STEEL STRAPPING, 1-1/4" X .031" OR .035"-----23'-0" REQD-----4 LBS		
SEAL FOR 1-1/4" STRAPPING-----2 REQD-----NIL		

LOAD AS SHOWN

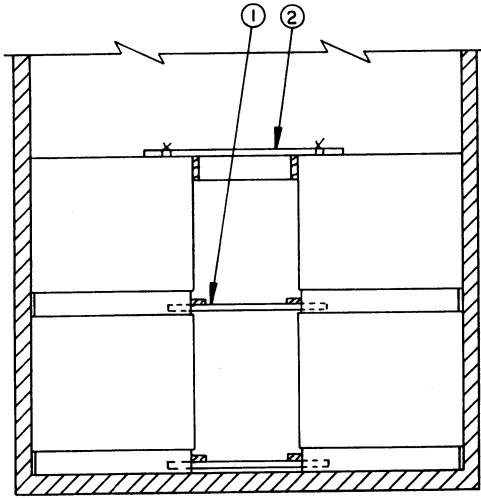
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	60-----	83,100 LBS
DUNNAGE-----	-----	1,826 LBS

TOTAL WEIGHT----- 84,926 LBS (APPROX)

**ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**



ISOMETRIC VIEW



SECTION W-W

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 67.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 67.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE T" DETAIL ON PAGE 76. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 67.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (16 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ HORIZONTAL STRUT BRACING, 2" X 4" X 8'-8" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 6'-3" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 75. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 67.

**ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN A 60' 8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 66 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,940 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 49,860 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 72 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 66, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B." DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR.
5. CENTER GATE "T" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE T", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 66, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 74. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "T", PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 66, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 72, MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

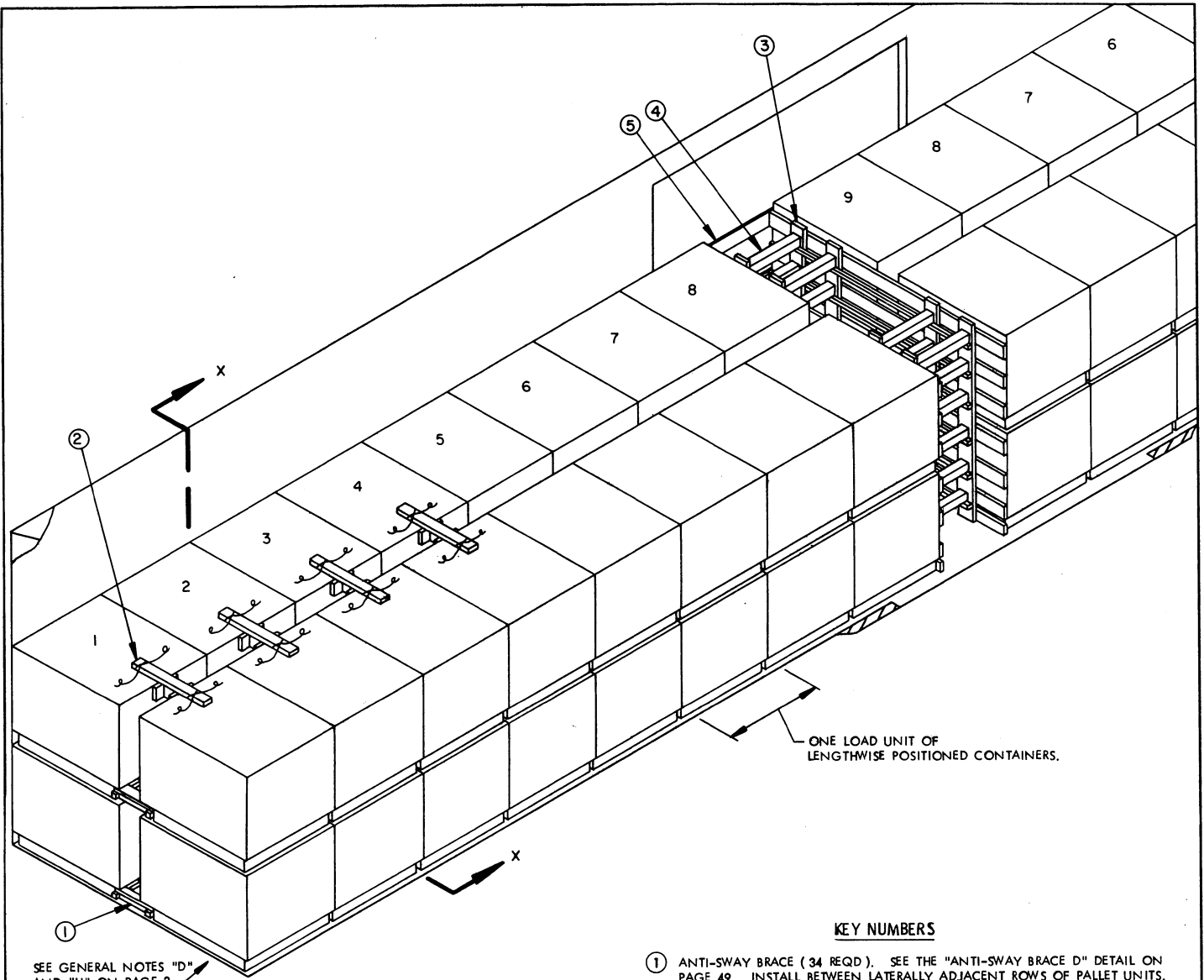
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	69	23
2" X 3"	25	13
2" X 4"	458	306
2" X 6"	155	155
4" X 4"	87	116
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	720	11-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	52-----	72,020 LBS
DUNNAGE-----	-----	1,321 LBS

TOTAL WEIGHT-----73,341 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
52 UNIT LOAD IN A 60' 8" LONG BY 9' 2" WIDE CONVENTIONAL BOX CAR

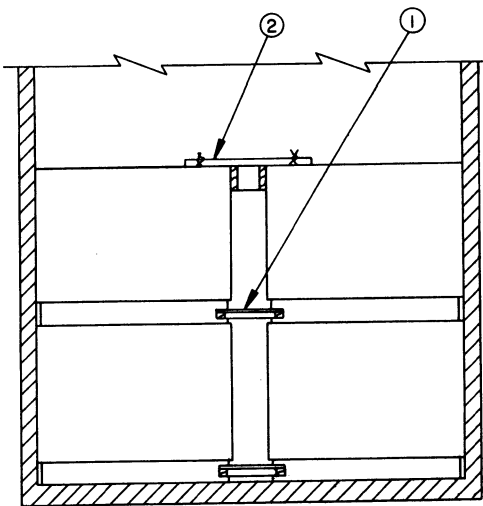


SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 69.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 69.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 77. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 69.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 76. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 69.



SECTION X-X

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
63 UNIT LOAD IN A 60' 8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 68 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 77,560 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-FOUR (44) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,940 POUNDS CAN BE LOADED. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 50' OR 40' LONG CAR.
3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "U" AS SHOWN ON THE DETAIL ON PAGE 77.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 68, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT, WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. CENTER GATE "U" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE U", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 68, INSTALL TWO (2) "CENTER GATES S" AS SHOWN ON PAGE 75. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE U", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ IN THE LOAD ON PAGE 68, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 86 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) PALLET 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 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	97	33
1" X 6"	80	40
2" X 2"	319	107
2" X 3"	34	17
2" X 4"	128	86
2" X 6"	180	180
4" X 4"	50	67
NAILS	NO. REQD	POUNDS
6d (2")	524	3-1/4
10d (3")	680	10-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----96' REQD-----1-1/2 LB		

LOAD AS SHOWN

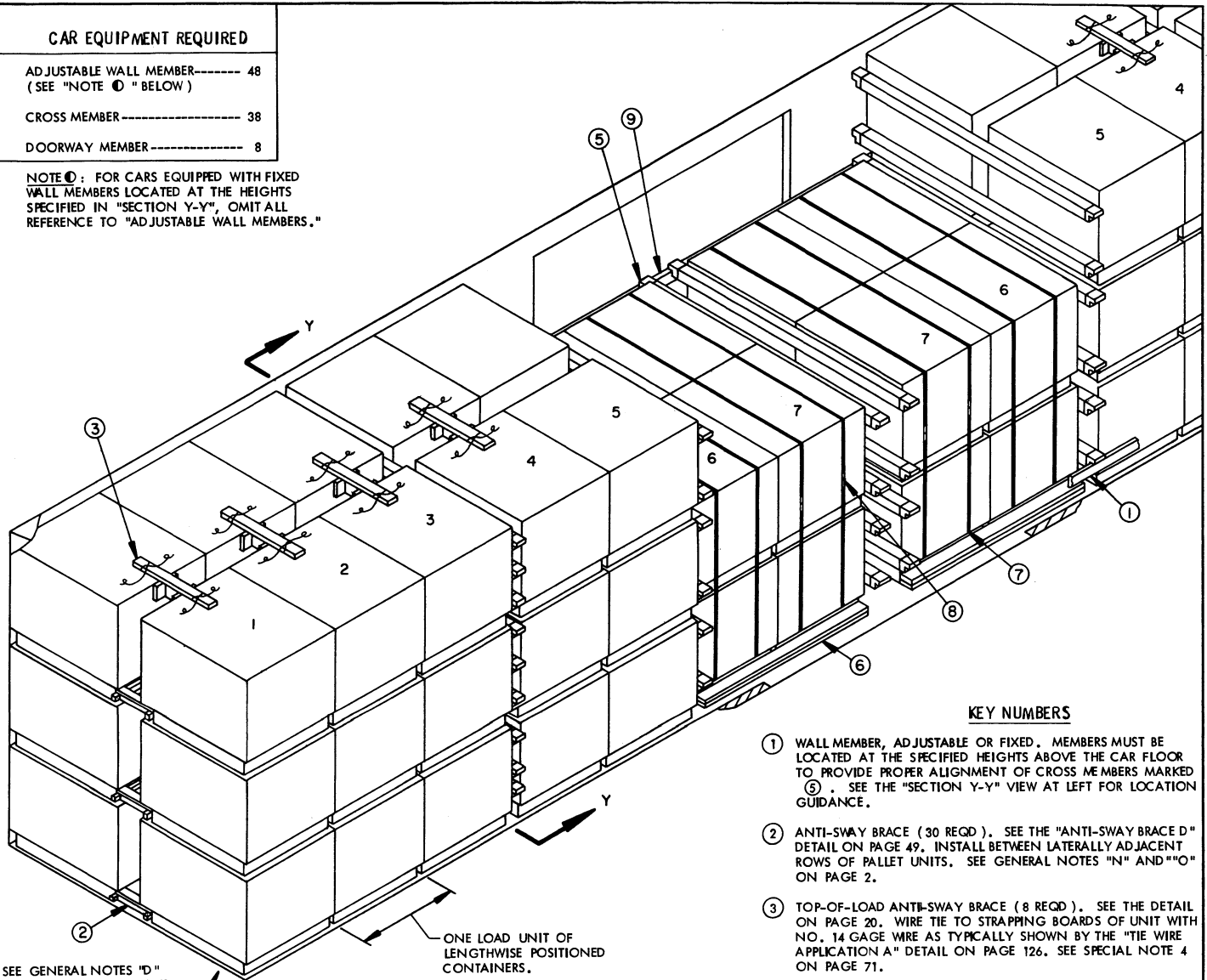
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	68 -----	94,180 LBS
DUNNAGE-----	-----	1,078 LBS
TOTAL WEIGHT-----		95,258 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
68 UNIT LOAD IN 60' 8" LONG BY 9' 2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

- ADJUSTABLE WALL MEMBER----- 48
(SEE "NOTE ①" BELOW)
- CROSS MEMBER----- 38
- DOORWAY MEMBER----- 8

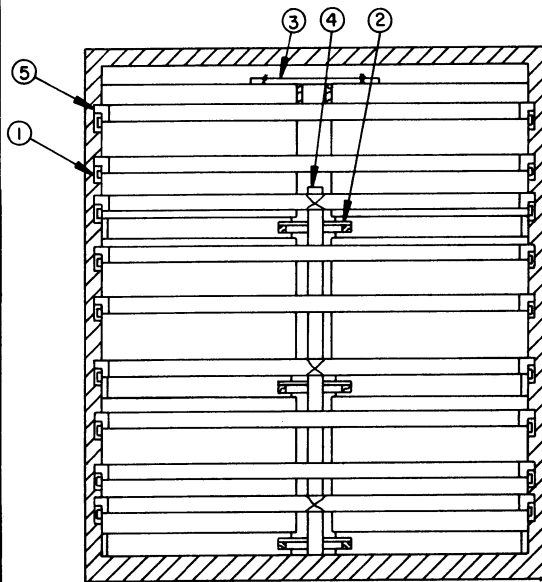
NOTE ①: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION Y-Y", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS."



ISOMETRIC VIEW

SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 71.

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.



SECTION Y-Y.

INDICATES CAR FLOOR.

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤. SEE THE "SECTION Y-Y" VIEW AT LEFT FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 71.
- ④ STOP PIECE, 2" X 4" X 8'-4" (6 REQD). POSITION AGAINST ANTI-SWAY BRACE "D" DETAIL BEFORE AND AFTER EACH STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECE OF THE UPPER AND LOWER PIECE MARKED ② W/2"-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE.
- ⑤ CROSS MEMBER (38 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑥ SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (8 REQD). PRE-POSITION, AS APPLICABLE, AND INSTALL TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT WITH ONE STAPLE NEAR EACH END.
- ⑧ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑨ DOORWAY MEMBER (8 REQD). SEE THE "SECTION Y-Y" VIEW AT LEFT FOR LOCATION GUIDANCE.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
76 UNIT LOAD IN A 50' 6" LONG BY 9' 0" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

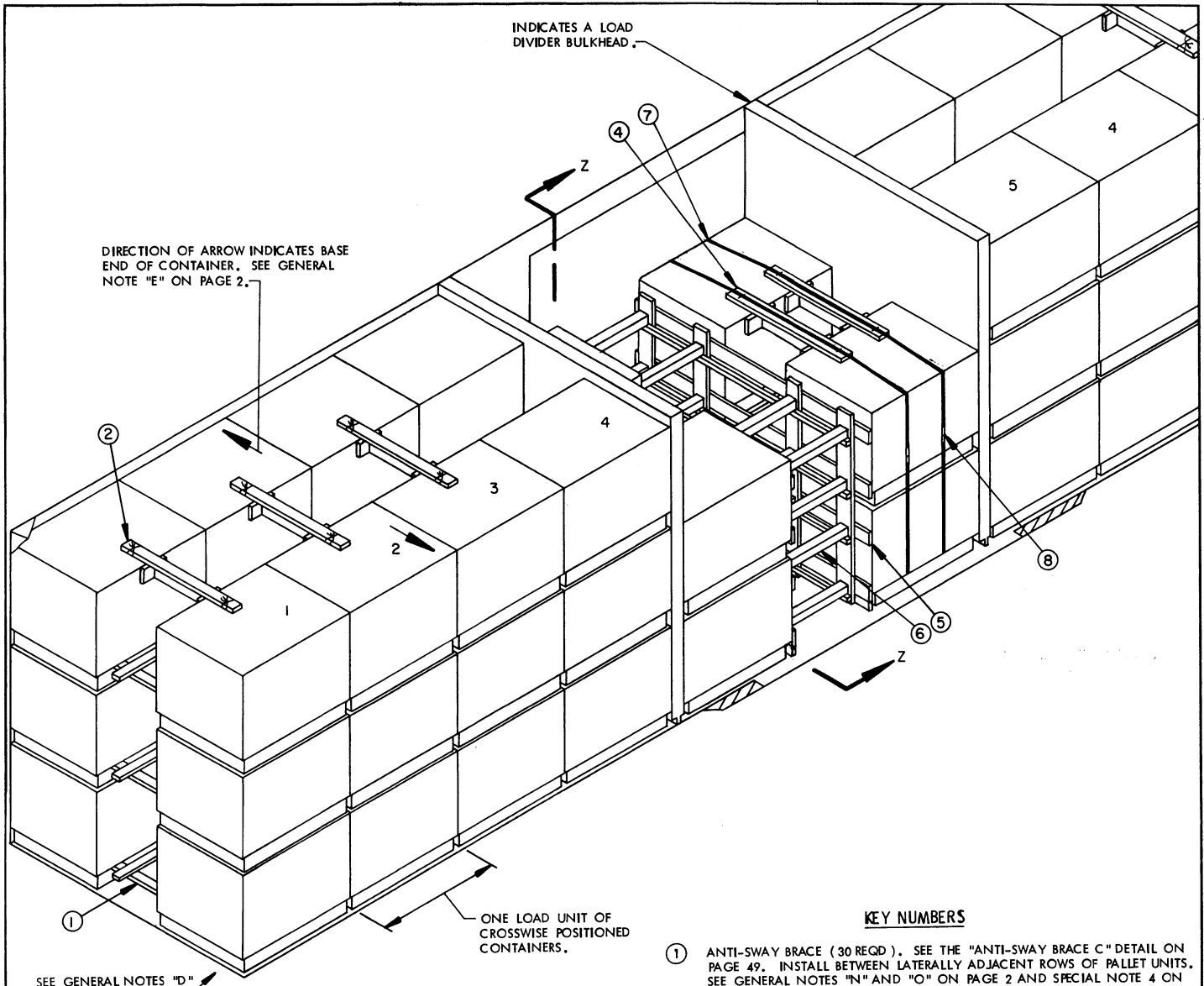
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 70 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,100 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 70, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 70, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE "ANTI-SWAY BRACE D" FROM MOVING INTO THE CROSS MEMBER AREA.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 AND 93 FOR GUIDANCE.
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	86	29
2" X 2"	204	68
2" X 4"	195	130
2" X 6"	14	14
NAILS	NO. REQD	POUNDS
6d (2")	420	2-1/2
10d (3")	368	5-3/4
16d (3-1/2")	56	1-1/4
STEEL STRAPPING, 1-1/4" X .031" OR .035"-----264' REQD-----38' LBS		
SEAL FOR 1-1/4" STRAPPING-----16 REQD-----NIL		
WIRE, NO. 14 GAGE-----110' REQD-----2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	76-----	105,260 LBS
DUNNAGE-----	-----	532 LBS
TOTAL WEIGHT-----		105,792 LBS (APPROX)



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

INDICATES A LOAD DIVIDER BULKHEAD.

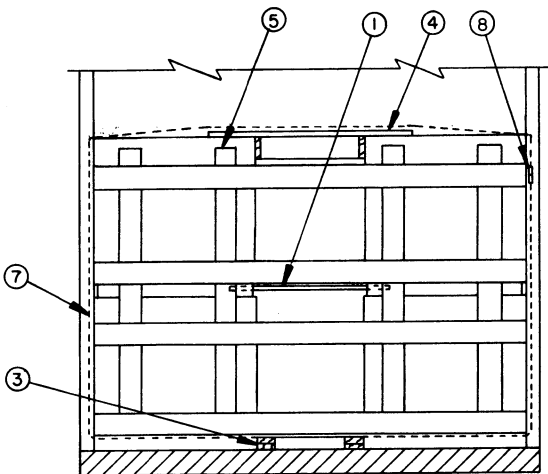
SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ONE LOAD UNIT OF CROSSWISE POSITIONED CONTAINERS.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 73.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 5 ON PAGE 73.
- ③ SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (5) AT FLOOR LEVEL.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 47.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE T" DETAIL ON PAGE 76. SEE SPECIAL NOTES 6, 7 AND 9 ON PAGE 73.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 32") (16 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (2 REQD). INSTALL OVER THE BATTENS ON THE UNITS AND SO AS TO ENIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 73.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



SECTION Z Z

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

62-UNIT LOAD IN A 50'-6" LONG BY 9' 2" 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 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) PALLET 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 98 THRU 107 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 PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 72 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). USING THIS PROCEDURE THE FOLLOWING LOADS CAN BE ACHIEVED.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS EACH END	NO. OF STACKS IN DOORWAY
60'-8"	78	108,030	5 AND 6	3 LENGTHWISE
40'-6"	48	66,480	3 AND 3	3 LENGTHWISE

IF A LENGTHWISE LOADING PATTERN IS USED, USE THE FOLLOWING DATA.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS EACH END	NUMBER OF STACKS IN DOORWAY
60'-8"	92	127,420	7 AND 7	2 CROSSWISE
50'-6"	74	102,490	5 AND 6	2 CROSSWISE
40'-6"	56	77,560	4 AND 4	2 CROSSWISE

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 72 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 72, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR.
5. CENTER GATE "T" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE T" SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 72, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 74. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
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 ⑦ IN THE LOAD ON PAGE 66, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. PIECES MARKED ④, ⑦, AND ⑧ ON PAGE 72 WILL BE USED FOR LOADS OF CROSSWISE-POSITIONED CONTAINERS. PIECES MARKED ④, ⑥, AND ⑦ ON PAGE 86 WILL BE USED FOR LOADS OF LENGTHWISE-POSITIONED CONTAINERS. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.
8. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 86, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS, THE STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE BULKHEADS AS SHOWN ON PAGE 72.

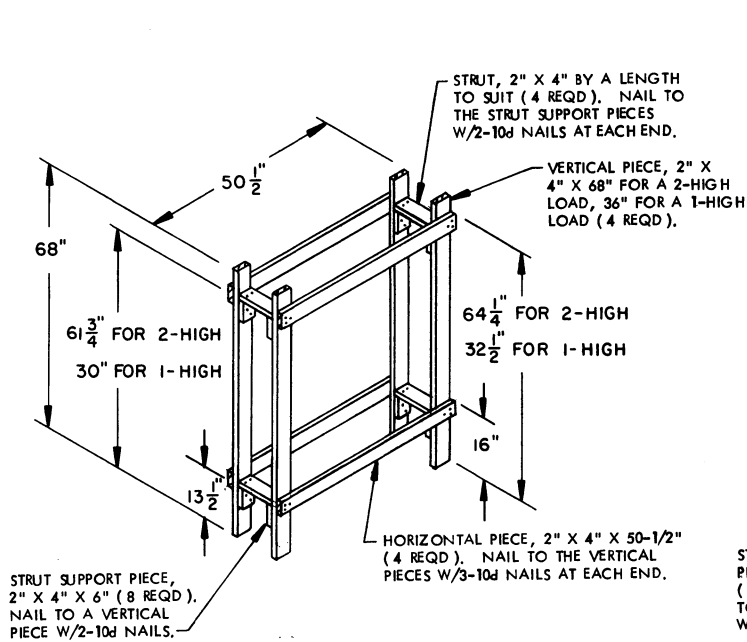
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	69	23
2" X 4"	445	297
2" X 6"	182	182
4" X 4"	43	58
NAILS	NO. REQD	POUNDS
10d (3")	652	10-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	84	2
STEEL STRAPPING, 1-1/4" X .035" OR .035"-----66'-0" REQD-----10 LBS		
SEAL FOR 1-1/4" STRAPPING-----4 REQD-----NIL		
WIRE, NO. 14 GAGE-----36 REQD-----1/2 LB		

LOAD AS SHOWN

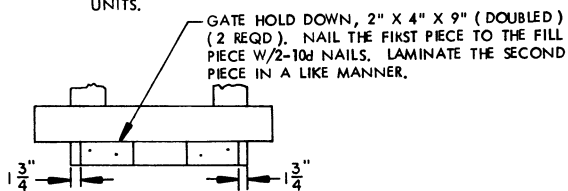
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	85,870 LBS
DUNNAGE		1,144 LBS
TOTAL WEIGHT		87,014 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
62-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

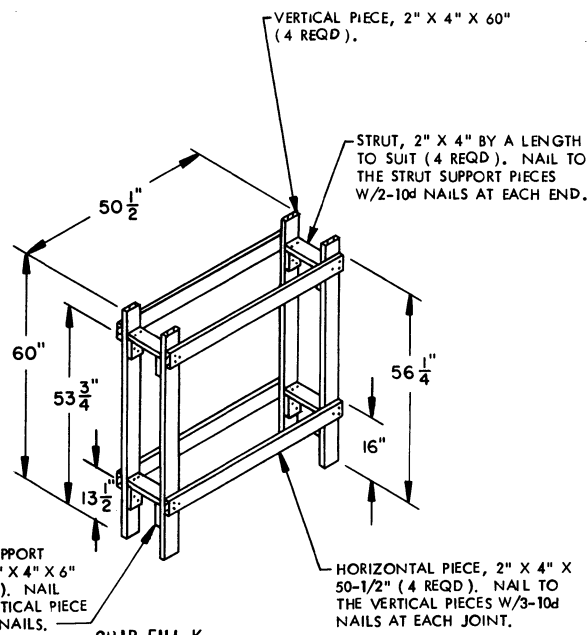


CRIB FILL J

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

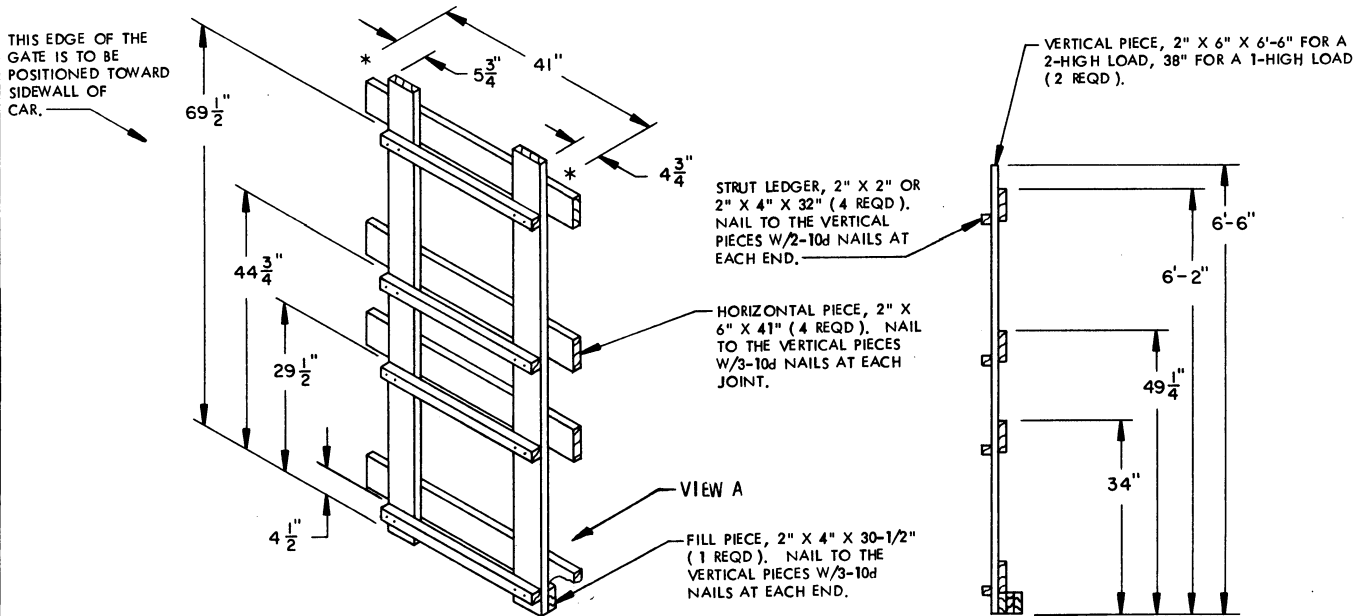


VIEW A



CRIB FILL K

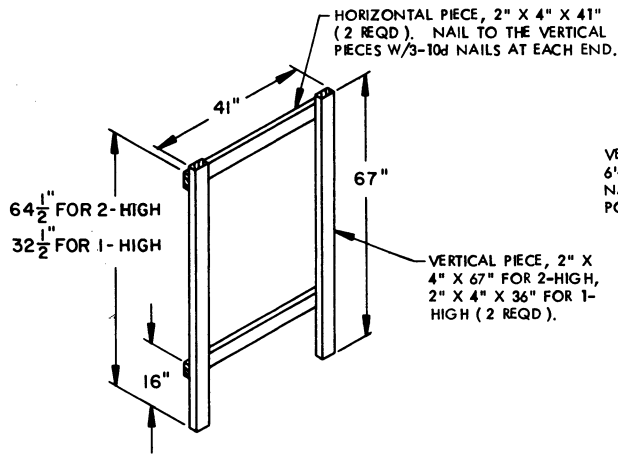
CRIB FILL "K" IS NOT REQUIRED FOR A 1-HIGH LOAD; THE CRIB FILL "J" WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.



CENTER GATE R

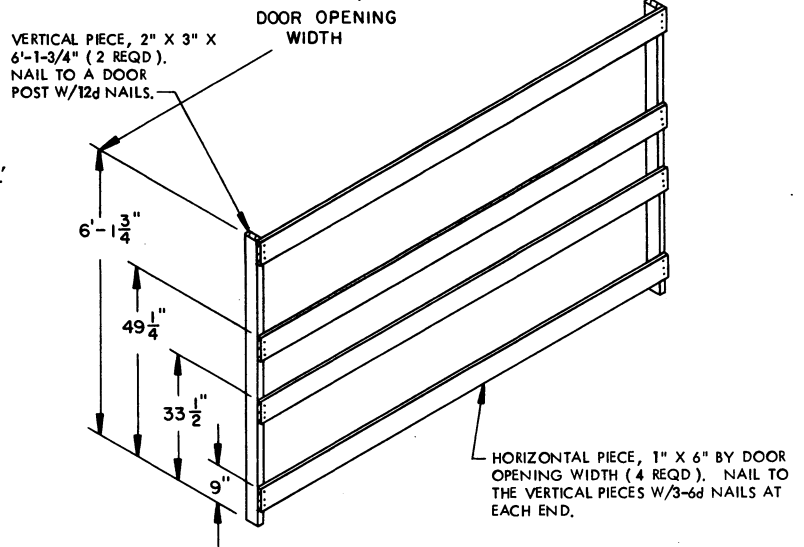
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

END VIEW



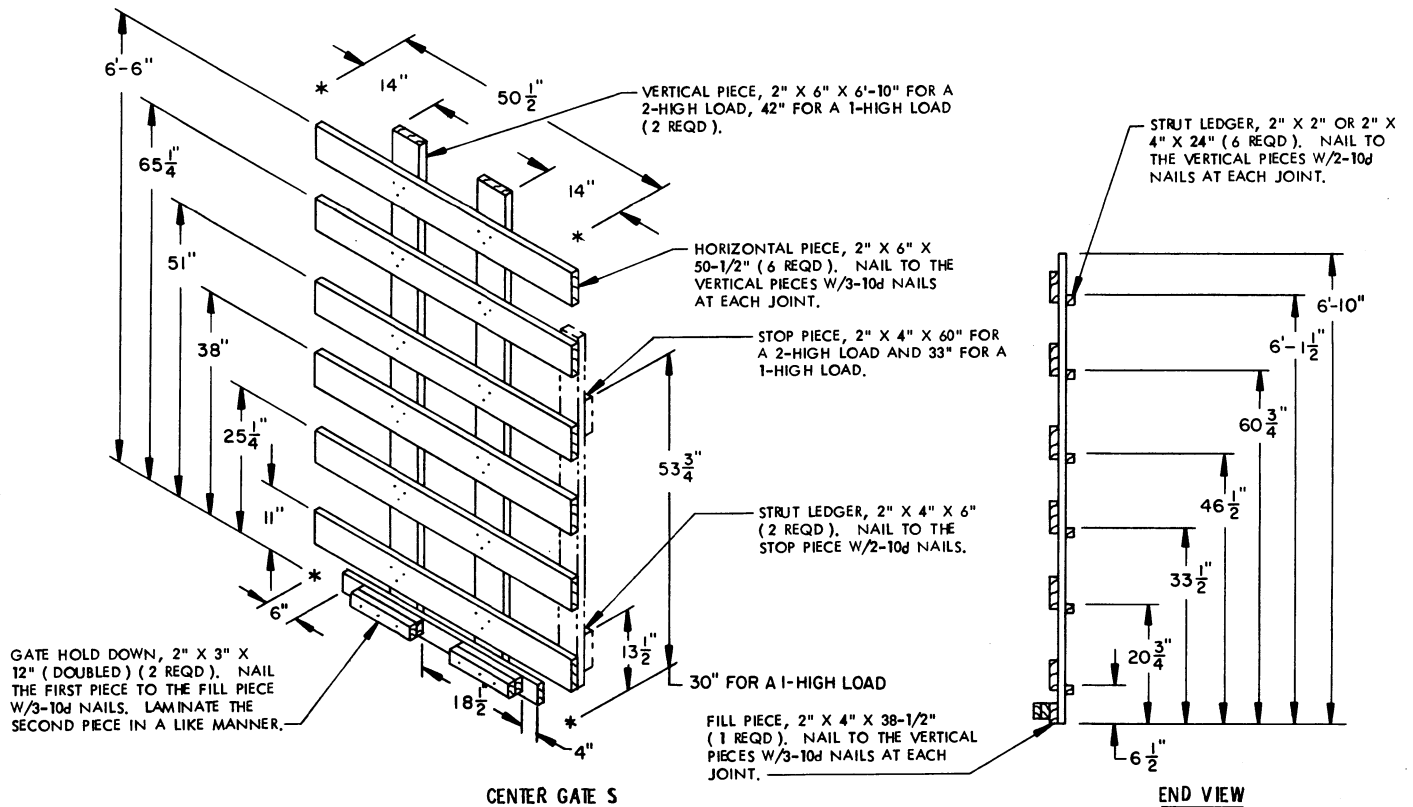
SIDE FILL ASSEMBLY H

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD ON PAGE 64.



DOORWAY PROTECTION J

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 64, AND FOR THE LOAD SHOWN ON PAGE 66.



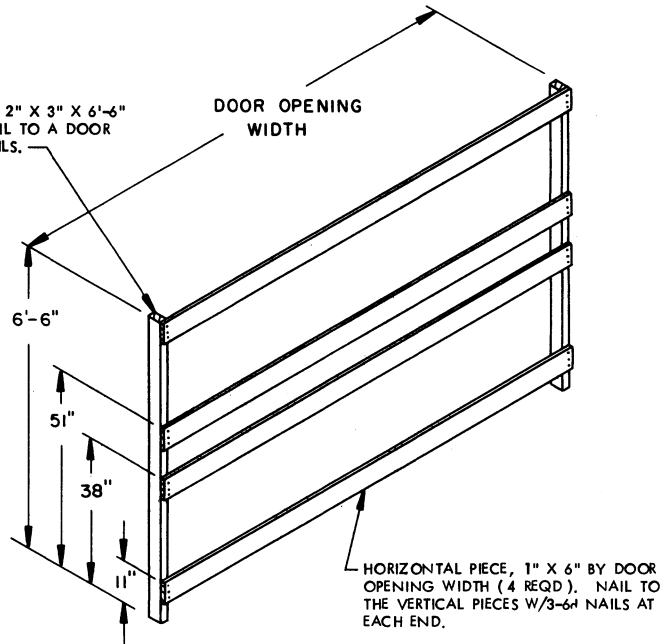
CENTER GATE S

THE PHANTOM-LINED PIECES ARE ONLY REQUIRED WHEN ONE CONTAINERS-CROSSWISE ROW IS LONGER THAN THE ADJACENT CONTAINERS-LENGTHWISE ROW. RIGHT HAND AND LEFT HAND GATES ARE THEN REQUIRED.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

VERTICAL PIECE, 2" X 3" X 6'-6"
(2 REQD), NAIL TO A DOOR
POST W/12d NAILS.

DOOR OPENING
WIDTH



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

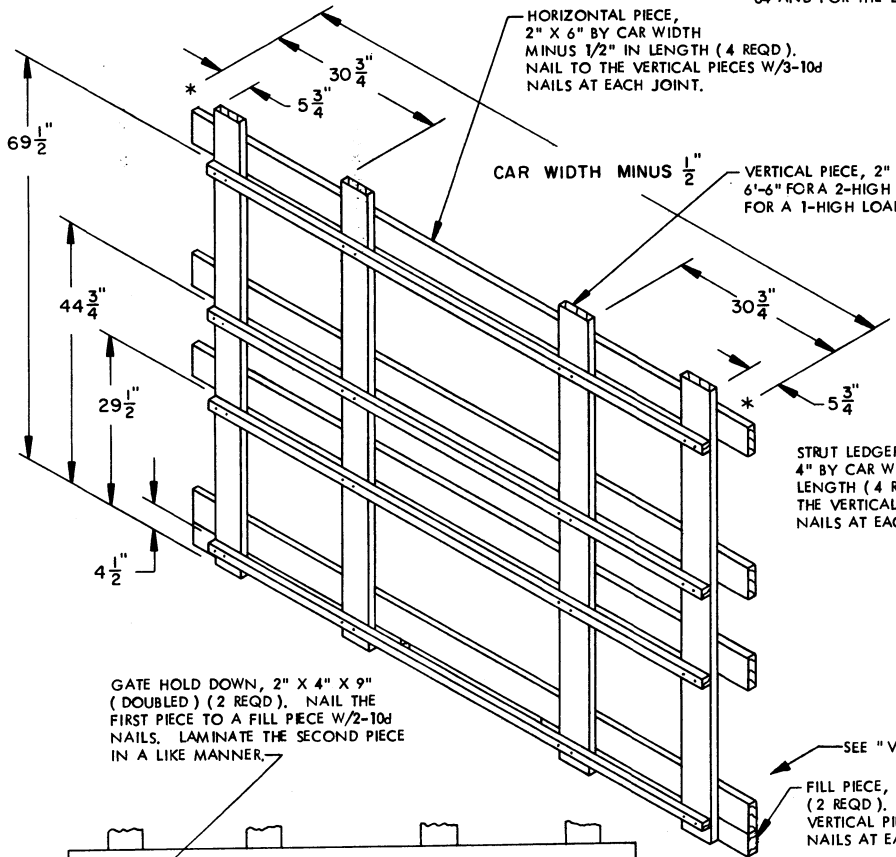
DOORWAY PROTECTION K

THIS ASSEMBLY IS DESIGNED FOR USE ON THE
LOADING SIDE OF THE LOAD SHOWN ON PAGE
64 AND FOR THE LOAD SHOWN ON PAGE 68.

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

CAR WIDTH MINUS 1/2"

VERTICAL PIECE, 2" X 6" X
6'-6" FOR A 2-HIGH LOAD 38"
FOR A 1-HIGH LOAD (4 REQD).



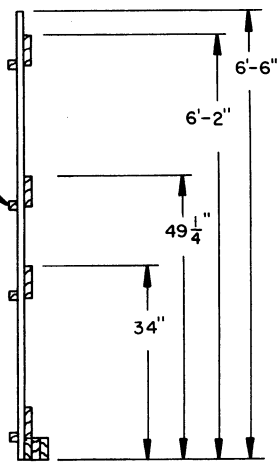
GATE HOLD DOWN, 2" X 4" X 9"
(DOUBLED) (2 REQD). NAIL THE
FIRST PIECE TO A FILL PIECE W/2-10d
NAILS. LAMINATE THE SECOND PIECE
IN A LIKE MANNER.

STRUT LEDGER, 2" X 2" OR 2" X
4" BY CAR WIDTH MINUS 7" IN
LENGTH (4 REQD). NAIL TO
THE VERTICAL PIECES W/2-10d
NAILS AT EACH JOINT.

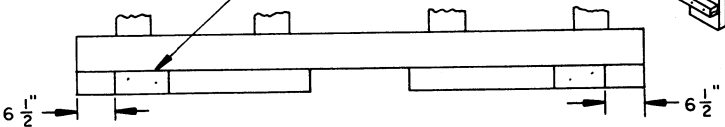
FILL PIECE, 2" X 4" X 40"
(2 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

CENTER GATE T

THIS GATE IS DESIGNED FOR USE
IN THE LOAD SHOWN ON PAGE 66.

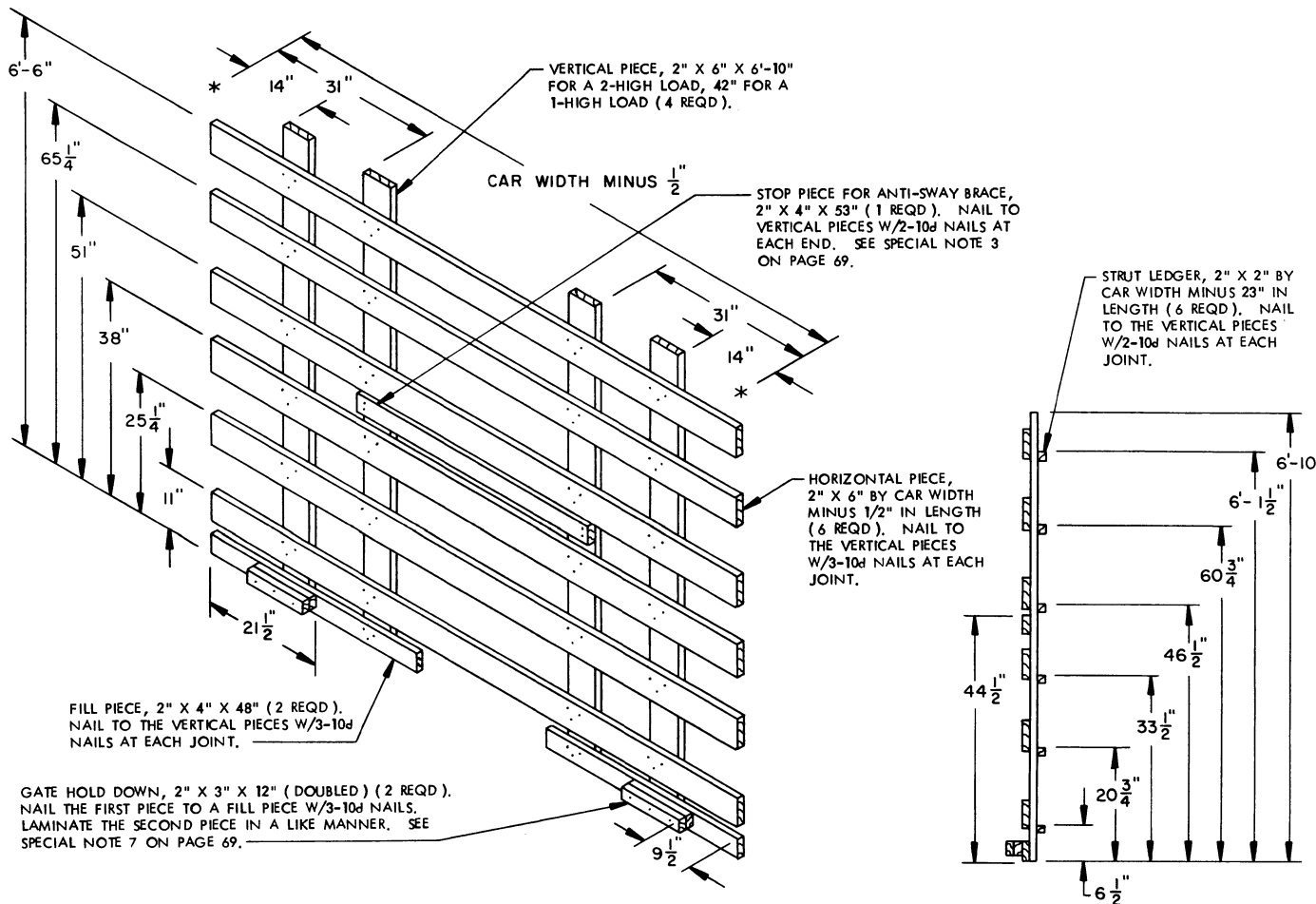


END VIEW



VIEW A

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



CENTER GATE U

THIS GATE IS DESIGNED FOR USE IN THE
LOAD SHOWN ON PAGE 68.

END VIEW

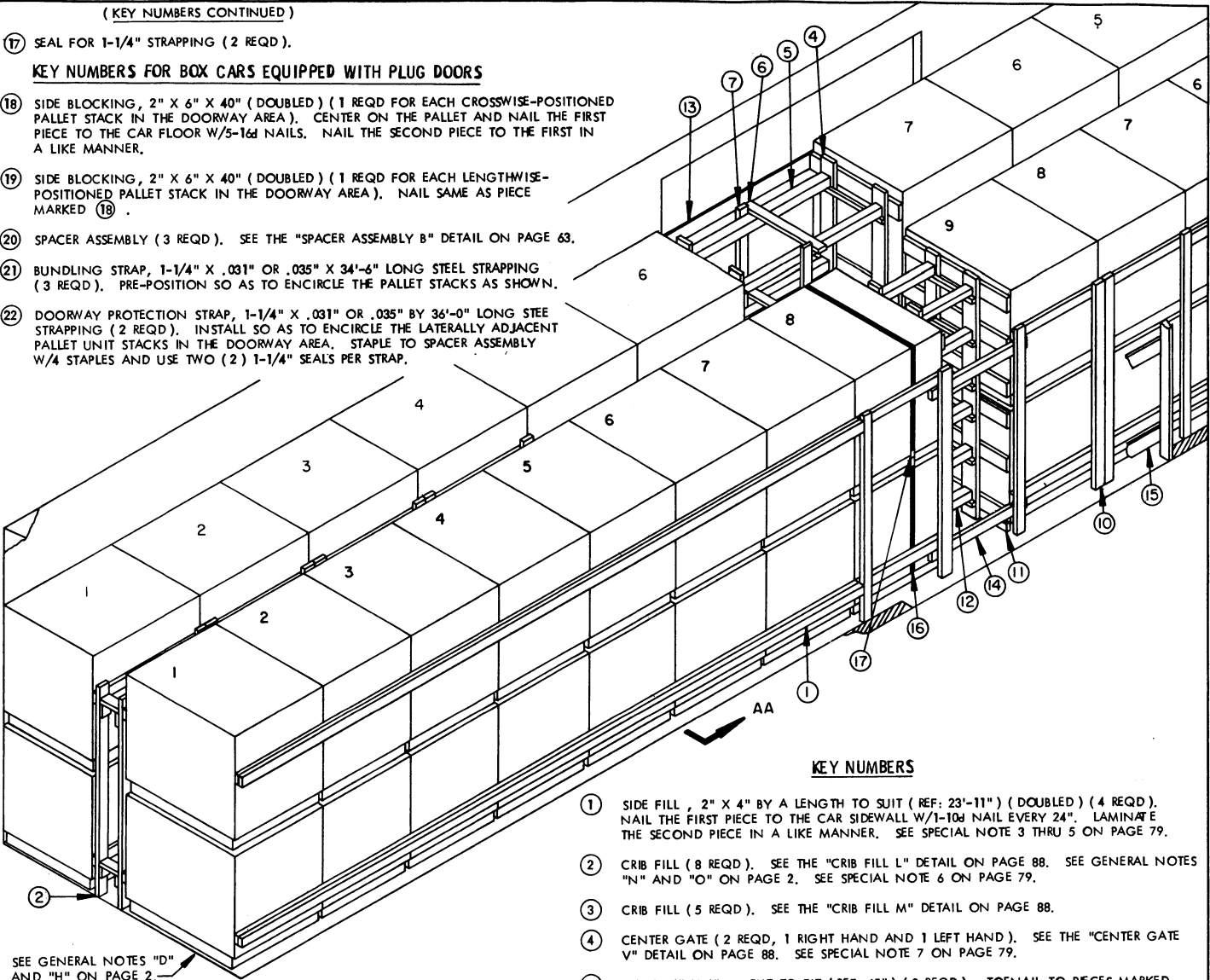
THE STRUT LEDGERS AT THE 20-3/4" AND 60-3/4"
HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN
A 60' LONG CAR; THEY ARE TO BE OMITTED
FOR LOADS IN 40' AND 50' CARS

(KEY NUMBERS CONTINUED)

⑰ SEAL FOR 1-1/4" STRAPPING (2 REQD).

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

- ⑱ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CROSSWISE-POSITIONED PALLET STACK IN THE DOORWAY AREA). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑲ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LENGTHWISE-POSITIONED PALLET STACK IN THE DOORWAY AREA). NAIL SAME AS PIECE MARKED ⑱ .
- ⑳ SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
- ㉑ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 34'-6" LONG STEEL STRAPPING (3 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACKS AS SHOWN.
- ㉒ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

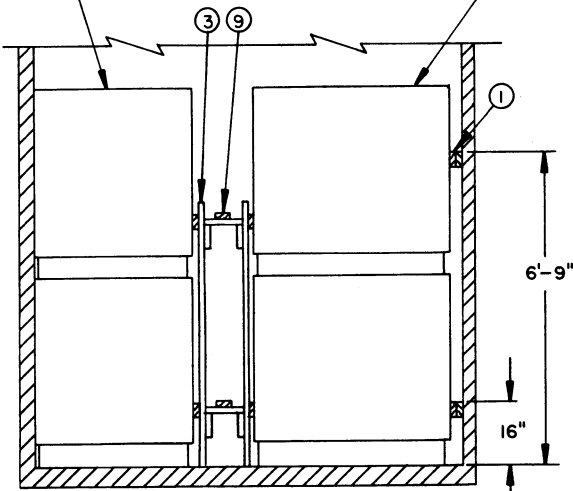


SEE GENERAL NOTES "D" AND "H" ON PAGE 2.

ISOMETRIC VIEW

INDICATES PALLET UNIT OF CROSSWISE POSITIONED CONTAINERS.

INDICATES PALLET UNIT OF LENGTHWISE POSITIONED CONTAINERS.



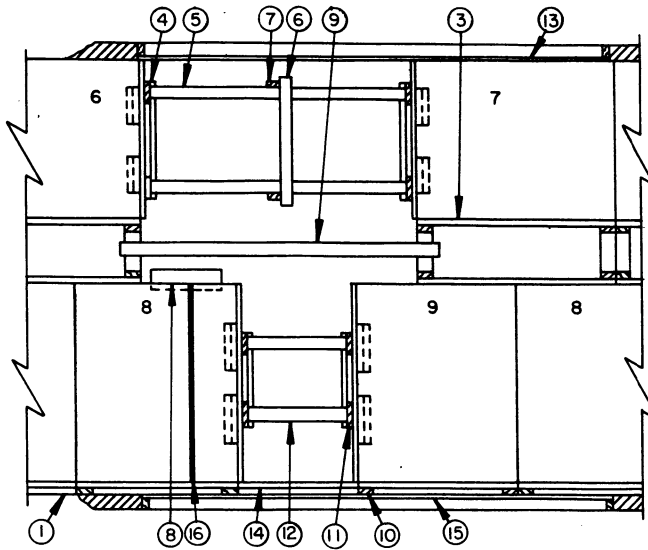
SECTION AA-AA

KEY NUMBERS

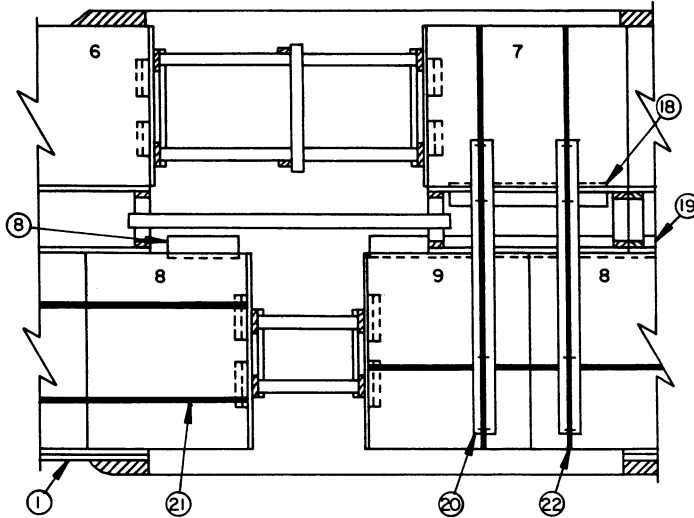
- ① SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-11") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 3 THRU 5 ON PAGE 79.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL L" DETAIL ON PAGE 88. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 6 ON PAGE 79.
- ③ CRIB FILL (5 REQD). SEE THE "CRIB FILL M" DETAIL ON PAGE 88.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE V" DETAIL ON PAGE 88. SEE SPECIAL NOTE 7 ON PAGE 79.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (8 REQD), TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" X 33" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 7'-6" (2 REQD), NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑧ SIDE BLOCKING, 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 79.
- ⑨ CRIB FILL RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 6'-10") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "M" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 79.
- ⑩ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY J" DETAIL ON PAGE 89. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.
- ⑪ CENTER GATE (2 REQD). SEE THE "CENTER GATE W" DETAIL ON PAGE 89.
- ⑫ STRUT, 4" X 4" BY CUT TO FIT (REF 25") (12 REQD). TOENAIL TO PIECES MARKED ⑪ W/2-16d NAILS AT EACH END.
- ⑬ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION L" DETAIL ON PAGE 89. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 79.
- ⑭ SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY LENGTH TO SUIT (REF: 44") (2 REQD). POSITION AT 10" AND 6'-5" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑩ W/3-10d NAILS AT EACH END.
- ⑮ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION M" DETAIL ON PAGE 90. NAIL TO THE DOOR POSTS W/12d NAILS.
- ⑯ STACK UNITIZING STRAP, 1-1/4" X .035" OR .031" X 24'-0" LONG STEEL STRAPPING. INSTALL TO ENCIRCLE STACK NO. 8 AS SHOWN.

(CONTINUED ABOVE)

**ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
60 UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY A BUNDLING STRAP, PIECE MARKED (21). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 78 IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,550 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 68,440 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (10) ON PAGE 78, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).
4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (10), AND THE SIDE FILL ASSEMBLY RETAINER PIECES PIECE MARKED (14).
5. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, A 1" X 4" BY LENGTH TO SUIT PIECE MUST BE LAMINATED TO EACH SIDE FILL, PIECE MARKED (1), W/1-6d NAIL EVERY 24". ALSO, A 1" X 4" X 41" LONG PIECE MUST BE LAMINATED TO EACH HORIZONTAL PIECE OF EACH SIDE FILL ASSEMBLY, PIECE MARKED (10), W/5-6d NAILS.
6. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), 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.
7. CENTER GATES "V" AND "W" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (18) AND (19) IN THE LOAD ON PAGE 78, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 SHOWN IN THE PARTIAL PLAN VIEW AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 98 AND 99. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.
10. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 114 NAD 115.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE FOR CONTAINERS-LENGTHWISE UNITS AND PAGES 119 AND 122 FOR CONTAINERS-CROSSWISE UNITS.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

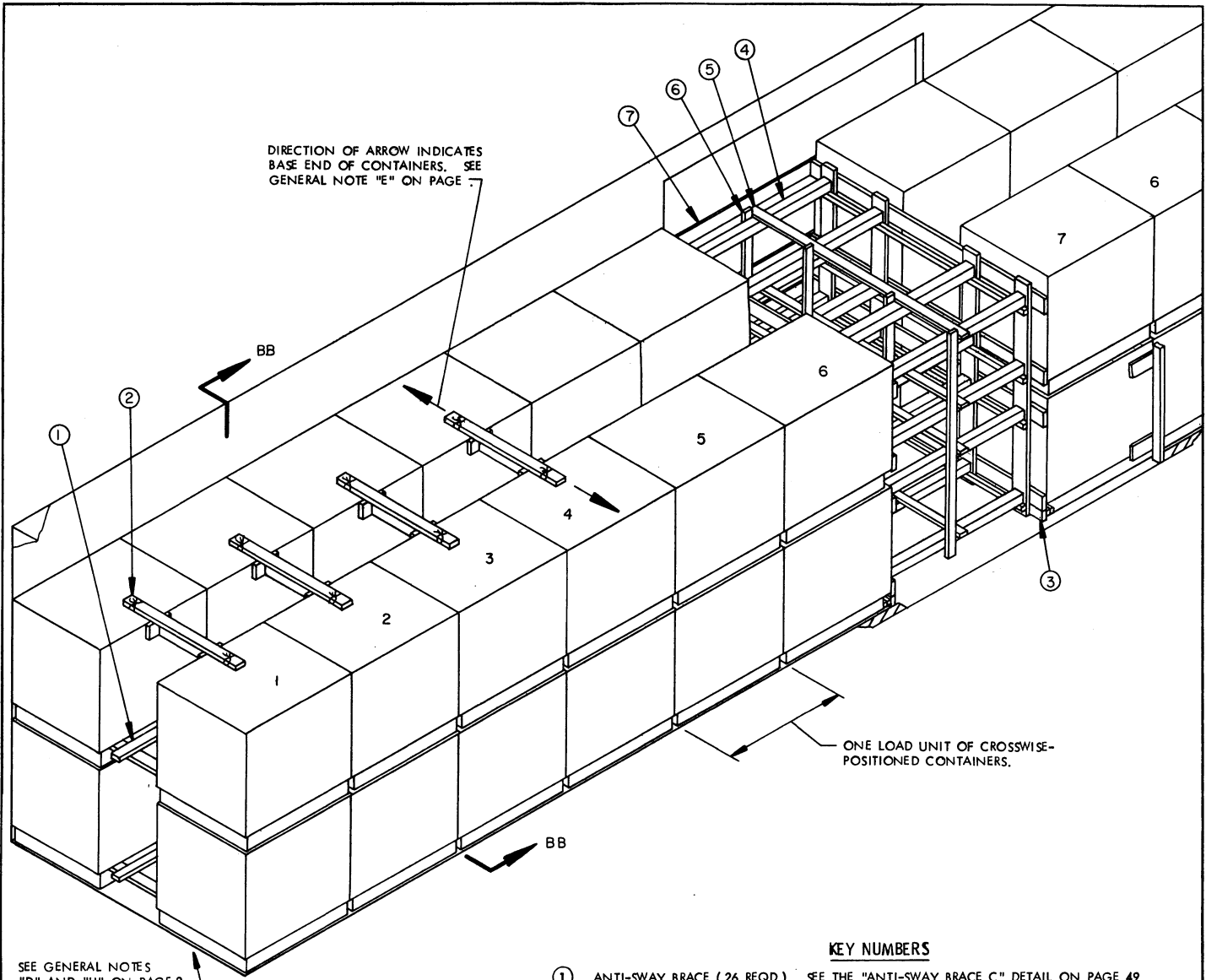
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	46	16
2" X 3"	40	20
2" X 4"	968	646
2" X 6"	144	144
4" X 4"	69	92
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	1188	18-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	88	2
STEEL STRAPPING, 1-1/4" X .031" OR .035" ----- 26' REQD ----- 4 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 2 REQD ----- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	102,660 LBS
DUNNAGE		1,942 LBS

TOTAL WEIGHT----- 104,602 LBS (APPROX)

**ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**

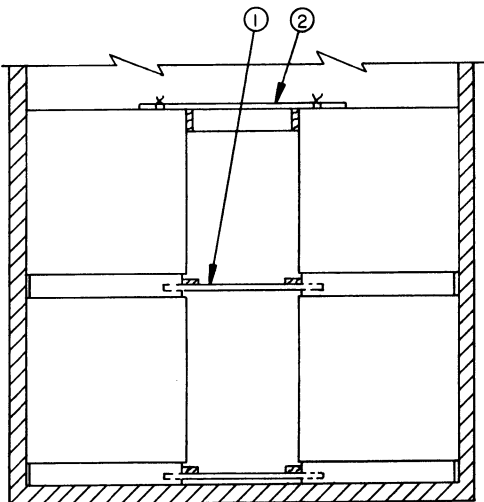


ISOMETRIC VIEW

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

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 81.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 81.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE X" DETAIL ON PAGE 90. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 81.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 65) (16 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ HORIZONTAL STRUT BRACING, 2" X 4" X 8'-8" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 7'-8" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "V" ON PAGE 2.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION L" DETAIL ON PAGE 89. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 81.



SECTION BB-BB

ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
52-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

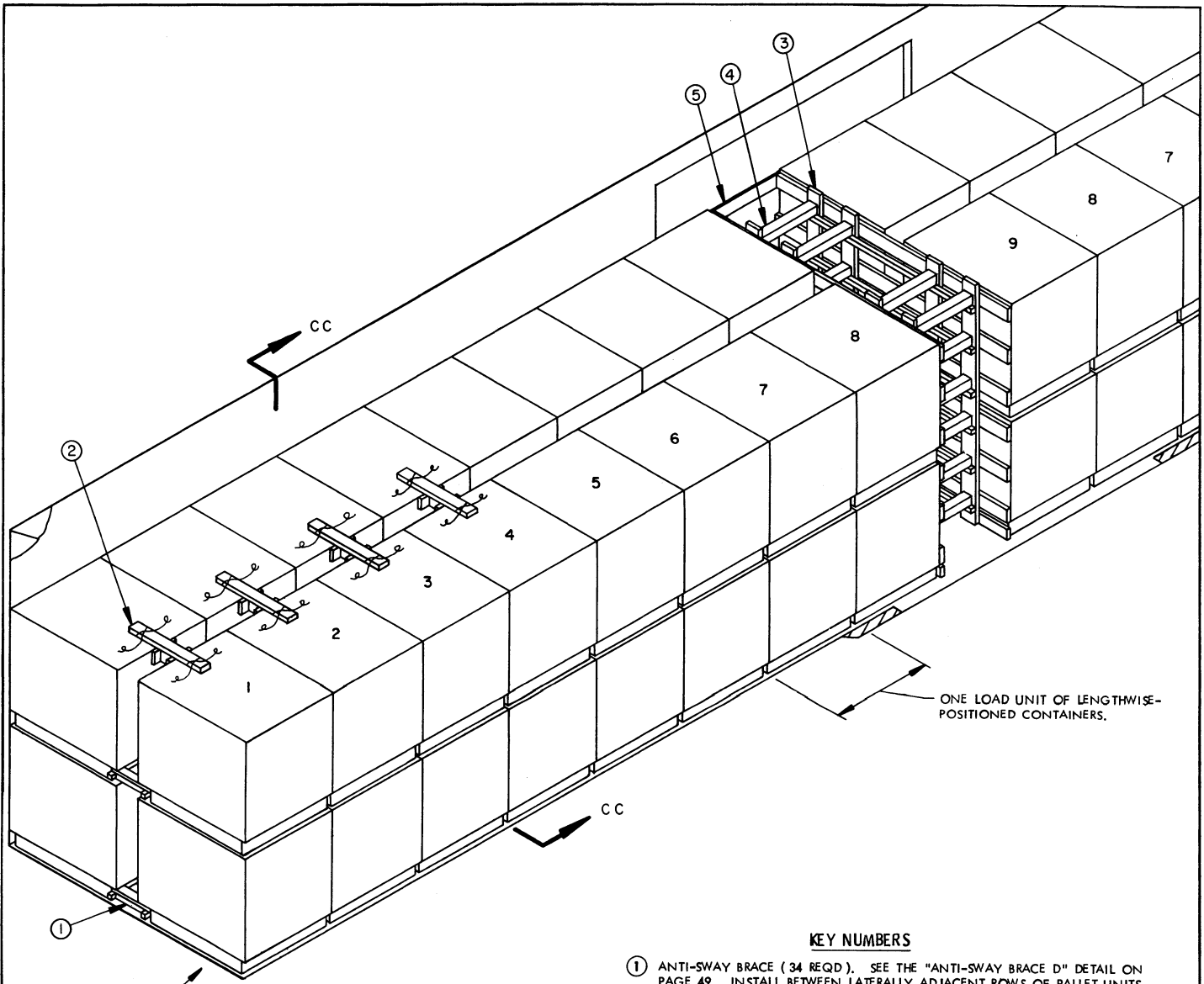
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 80 IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,284 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR A LADING WEIGHT OF 61,596 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 86 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 80, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR.
5. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 80, INSTALL TWO (2) "CENTER GATES V" AS SHOWN ON PAGE 88. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "X", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 80, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 72 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 94 THRU 122 FOR GUIDANCE.
10. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 119 AND 122 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	69	23
2" X 3"	31	16
2" X 4"	465	310
2" X 6"	169	169
4" X 4"	87	116
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	696	10-3/4
12d (3-1/4")	32	3/4
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE-----48' REQD-----1 LB		

LOAD AS SHOWN

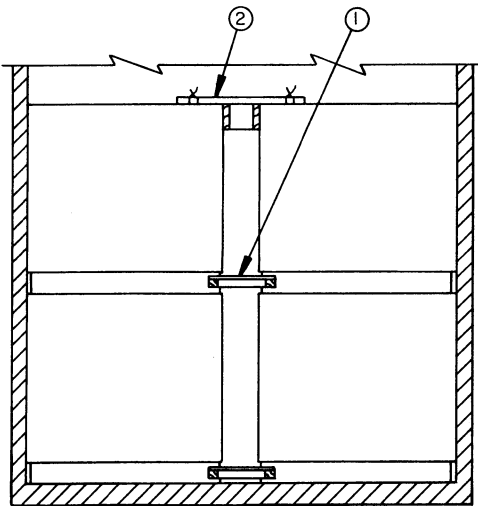
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	52-----	88,972 LBS
DUNNAGE-----	-----	1,363 LBS
TOTAL WEIGHT-----		90,335 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
52-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



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

ISOMETRIC VIEW



SECTION CC-CC

KEY NUMBERS

- ① ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 83.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 83.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE Y" DETAIL ON PAGE 91. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 83.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 25") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION M" DETAIL ON PAGE 90. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 83.

**ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR**

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 82 IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,816 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-FOUR (44) UNITS, FOR A LADING WEIGHT OF 75,284 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 50' OR 40' CAR.
3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Y" AS SHOWN ON THE DETAIL ON PAGE 91.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 82, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. CENTER GATE "Y" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 125 FOR GUIDANCE.
6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Y", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 82, INSTALL TWO (2) "CENTER GATES W" AS SHOWN ON PAGE 89. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 125.
7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE Y", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 127 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 82, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 128 THRU 130 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 AS SHOWN ON PAGE 86 MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 94 THRU 122 FOR GUIDANCE.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	97	33
1" X 6"	80	40
2" X 2"	319	107
2" X 3"	40	20
2" X 4"	131	88
2" X 6"	196	196
4" X 4"	50	67
NAILS	NO. REQD	POUNDS
6d (2")	524	3-1/4
10d (3")	680	10-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----96' REQD----- 1-1/2 LBS		

LOAD AS SHOWN

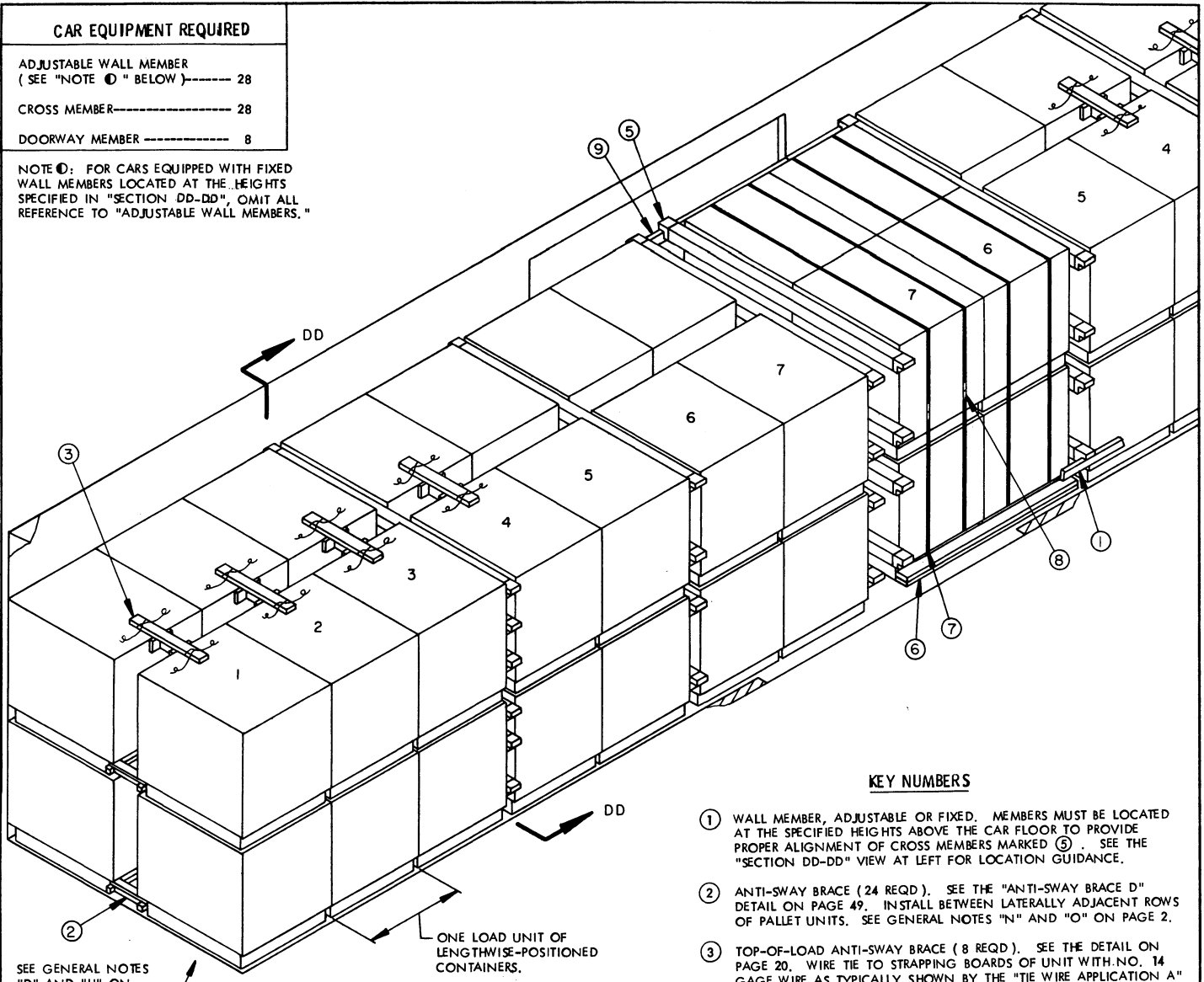
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	68-----	116,348 LBS
DUNNAGE-----		1,121 LBS
TOTAL WEIGHT-----		117,469 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED

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

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

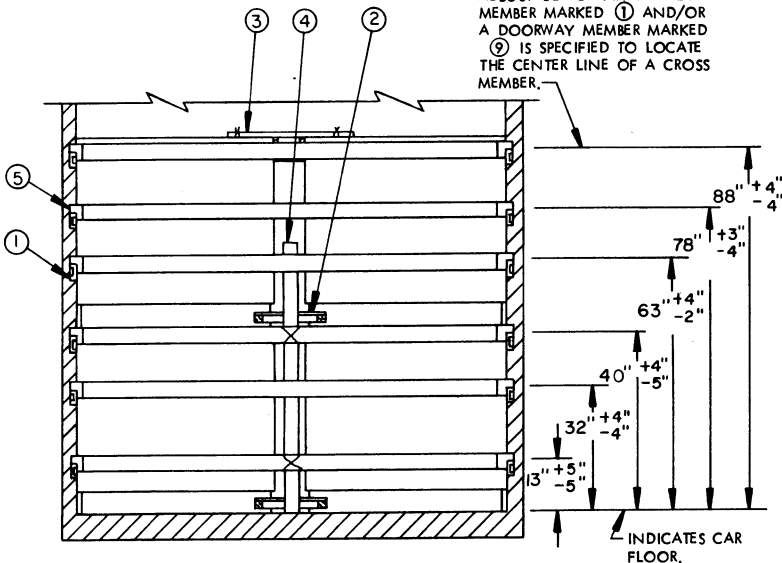


SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 85.

ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 3 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION DD-DD

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 2. SEE THE "SECTION DD-DD" VIEW AT LEFT FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 85.
- 4 STOP PIECE, 2" X 4" X 70" (8 REQD). POSITION AGAINST ANTI-SWAY BRACE "D" DETAIL BEFORE AND AFTER EACH STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECE OF PIECE MARKED 2 W/1-10d NAIL AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE.
- 5 CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- 6 SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- 7 BUNDLING STRAP, 1-1/4" X .035" OR .031" X 34'-0" LONG STEEL STRAPPING (4 REQD). PREPOSITION AS APPLICABLE AND INSTALL TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT WITH ONE STAPLE NEAR EACH END.
- 8 SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- 9 DOORWAY MEMBER (8 REQD). SEE THE "SECTION DD-DD" VIEW AT LEFT FOR LOCATION GUIDANCE.

ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)

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

SPECIAL NOTES:

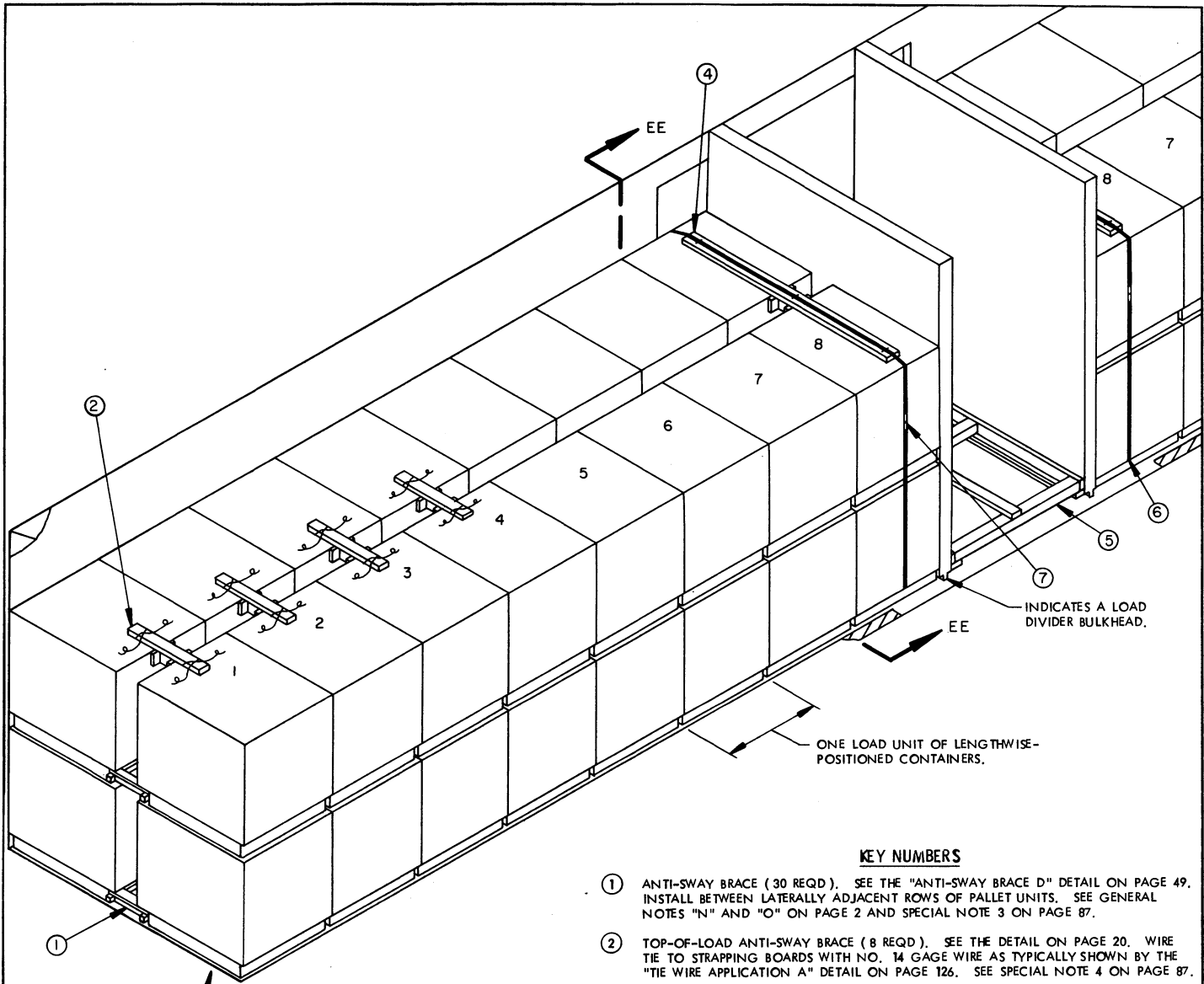
1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 84 IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,284 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR TO ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 84, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 84, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE "ANTI-SWAY BRACE D" FROM MOVING INTO THE CROSS MEMBER AREA.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 92 AND 93 FOR GUIDANCE.
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	69	23
2" X 2"	164	55
2" X 4"	157	105
2" X 6"	20	20
NAILS	NO. REQD	POUNDS
6d (2")	336	2
10d (3")	312	5
16d (3-1/2")	28	3/4
STEEL STRAPPING, 1-1/4" X .031" OR .035"----- 136' REQD--- 20 LBS		
SEAL FOR 1-1/4" STRAPPING----- 8 REQD--- NIL		
WIRE, NO. 14 GAGE----- 110' REQD --- 2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	56	95,816 LBS
DUNNAGE-----		436 LBS
TOTAL WEIGHT-----		96,252 LBS (APPROX)



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

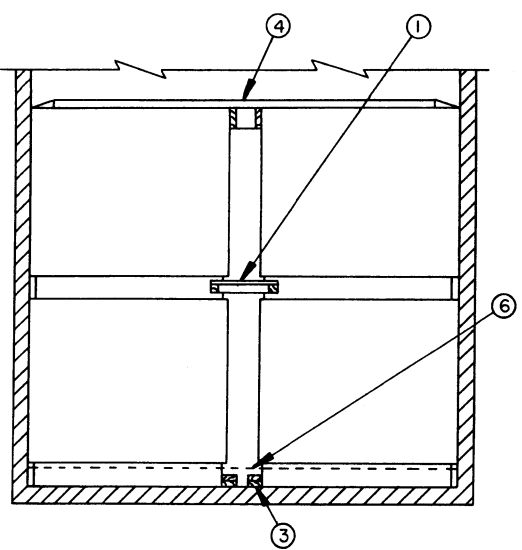
ISOMETRIC VIEW

ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.

INDICATES A LOAD DIVIDER BULKHEAD.

KEY NUMBERS

- ① ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 87.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. SEE SPECIAL NOTE 4 ON PAGE 87.
- ③ SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (4 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER, OMIT ANTI-SWAY BRACE (5) AT FLOOR LEVEL.
- ④ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 63.
- ⑤ STRUT ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 131. SEE SPECIAL NOTE 6 ON PAGE 87.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 5 ON PAGE 87.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE-CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.



SECTION EE-EE

**ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT)
64-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS**

SPECIAL NOTES:

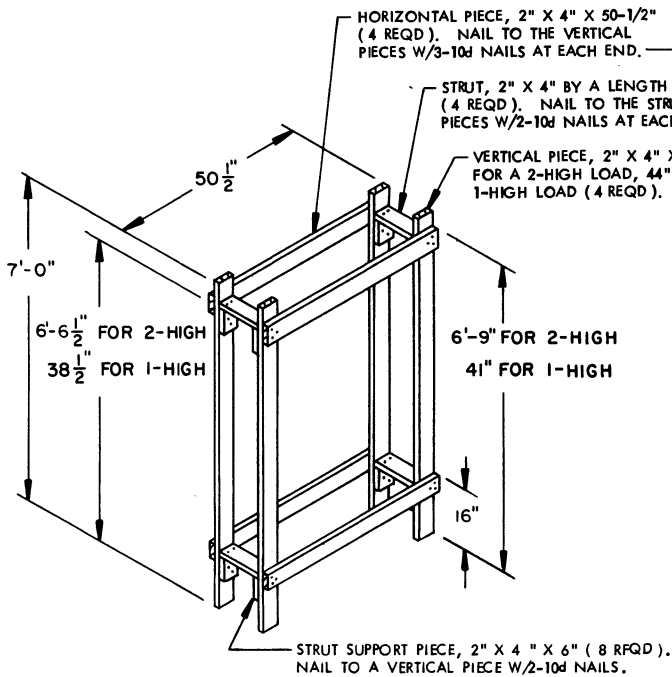
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 86 IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 88,972 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES: FORTY (40) UNITS, FOR A LADING WEIGHT OF 68,440 POUNDS CAN BE LOADED IN A 40'-6" LONG CAR. WHEN THE CONTAINERS-CROSSWISE LOADING PATTERN SHOWN ON PAGE 80 IS EMPLOYED, FIFTY-TWO (52) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 88,972 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,284 POUNDS CAN BE LOADED IN A 50'-6" LONG CAR, AND THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 54,752 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 86 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 86, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 126. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. 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 (5) IN THE LOAD ON PAGE 82 IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR; PIECE MARKED (7) ON PAGE 80 IS APPLICABLE WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. REFER TO PAGES 128 THRU 130 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 IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION. PIECES MARKED (4), (6), AND (7) ON PAGE 86 ARE APPLICABLE WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR. PIECES MARKED (4), (7), AND (8) ON PAGE 72 ARE APPLICABLE WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH OR WIDTH.
6. A STRUT ASSEMBLY SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 86 IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SEVEN (7) LOAD UNITS. THE STRUT ASSEMBLY IS NOT REQUIRED IF LOAD UNITS WITH CENTER GATES AND STRUTS ARE PLACED IN THE AREA BETWEEN THE LOAD DIVIDER BULKHEADS AS SHOWN ON PAGE 72.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 107 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.
8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 120 FOR SHIPPING GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 121 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	86	29
1" X 8"	18	12
2" X 2"	204	68
2" X 4"	169	113
2" X 6"	40	40
4" X 4"	19	26
NAILS	NO. REQD	POUNDS
6d (2")	438	2-3/4
10d (3")	382	6
12d (3-1/4")	40	3/4
16d (3-1/2")	32	3/4
STEEL STRAPPING, 1-1/4" X .031" OR .035" --- 72' REQD ----- 11 LBS		
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD ----- NIL		
WIRE, NO. 14 GAGE ----- 110' REQD ----- 1-1/2 LBS		

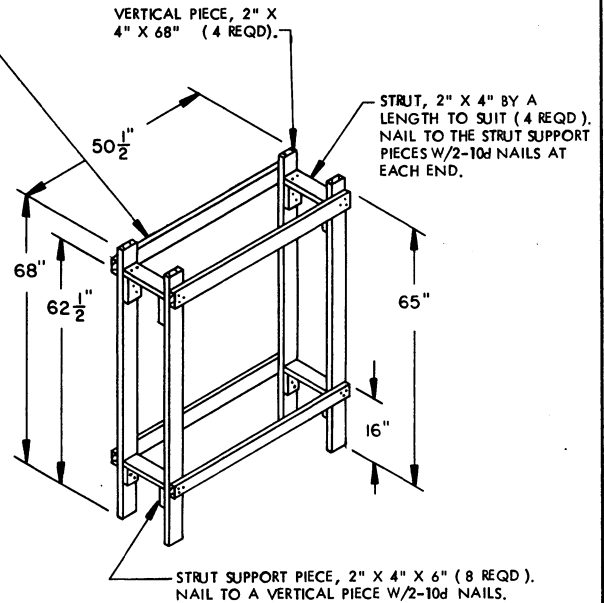
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -----	64 -----	109,504 LBS
DUNNAGE -----		599 LBS
TOTAL WEIGHT -----		110,103 LBS (APPROX)



CRIB FILL L

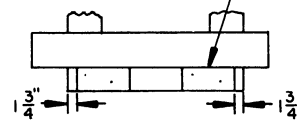
CRIB FILL ASSEMBLIES "L" AND "M" SHOULD BE PRE-FABRICATED CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.



CRIB FILL M

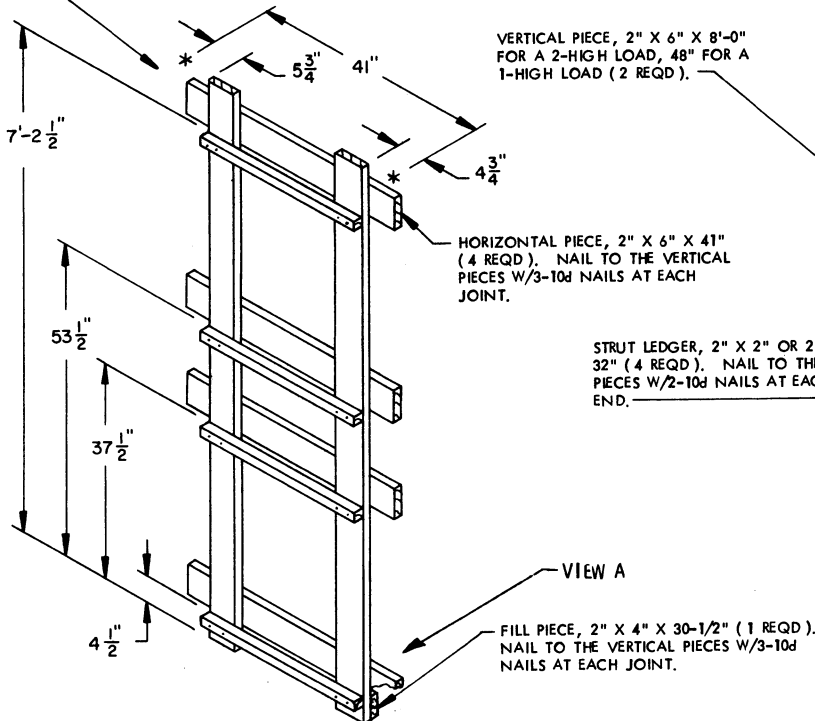
CRIB FILL "M" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "L" THROUGHOUT THE LENGTH OF THE LOAD.

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



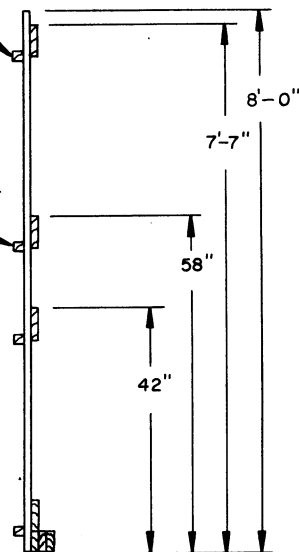
VIEW A

THIS EDGE OF THE GATE IS TO BE POSITIONED TOWARD SIDEWALL OF CAR.

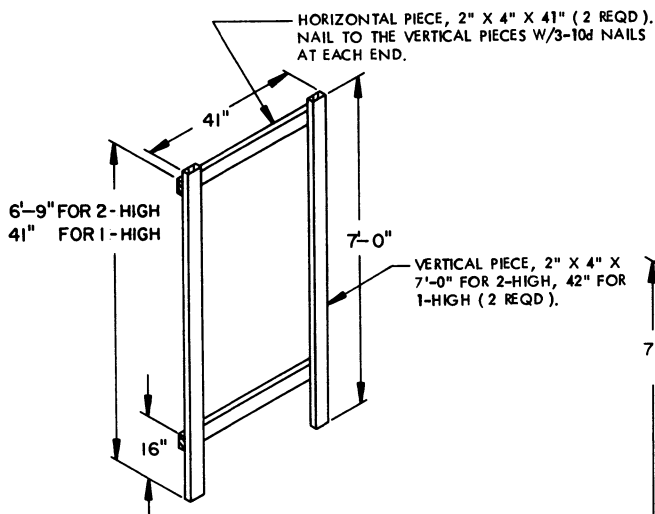


CENTER GATE V

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

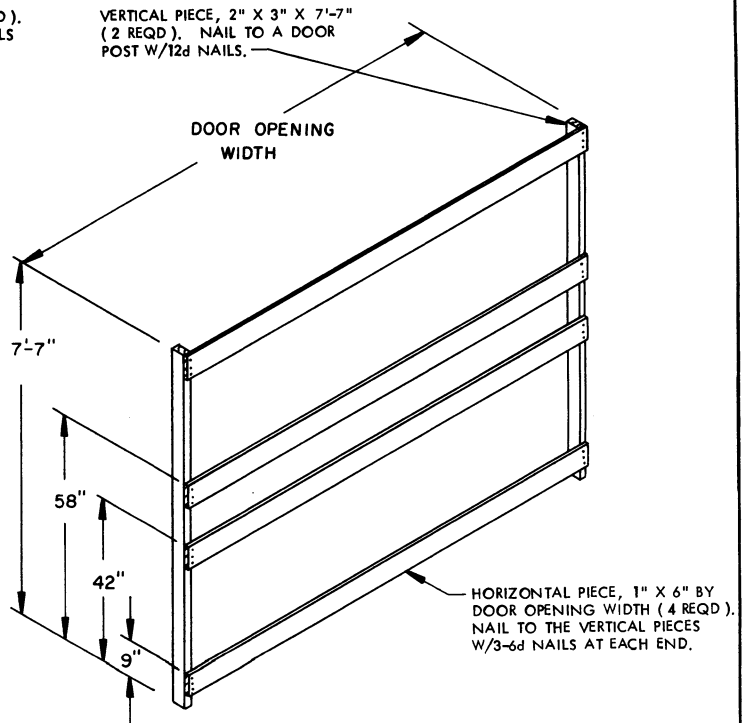


END VIEW



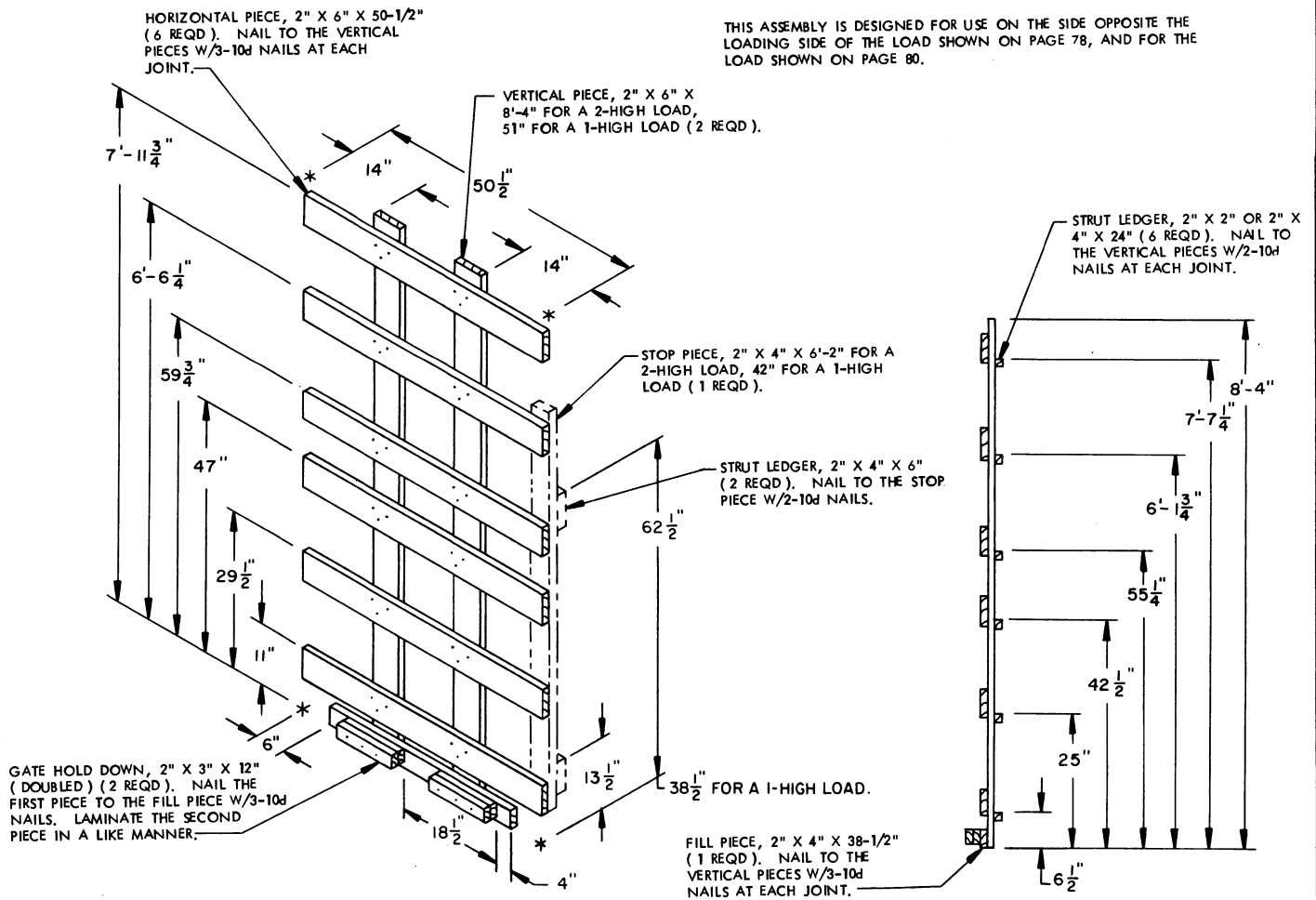
SIDE FILL ASSEMBLY J

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD ON PAGE 78.



DOORWAY PROTECTION L

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 78, AND FOR THE LOAD SHOWN ON PAGE 80.

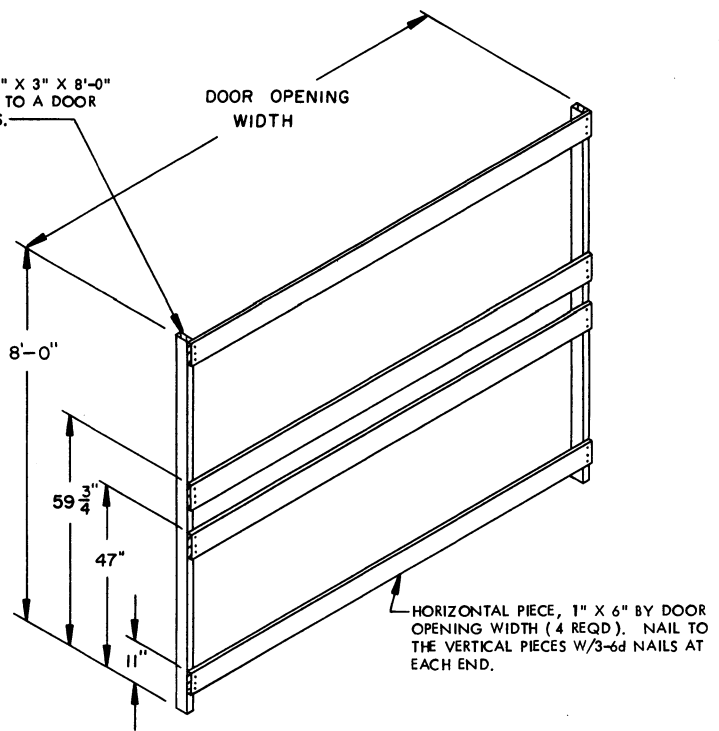


CENTER GATE W

THE PHANTOM LINE PIECES ARE ONLY REQUIRED WHEN ONE CONTAINERS-CROSSWISE ROW IS LONGER THAN THE ADJACENT CONTAINERS-LENGTHWISE ROW. RIGHT HAND AND LEFT HAND GATES ARE THEN REQUIRED.

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

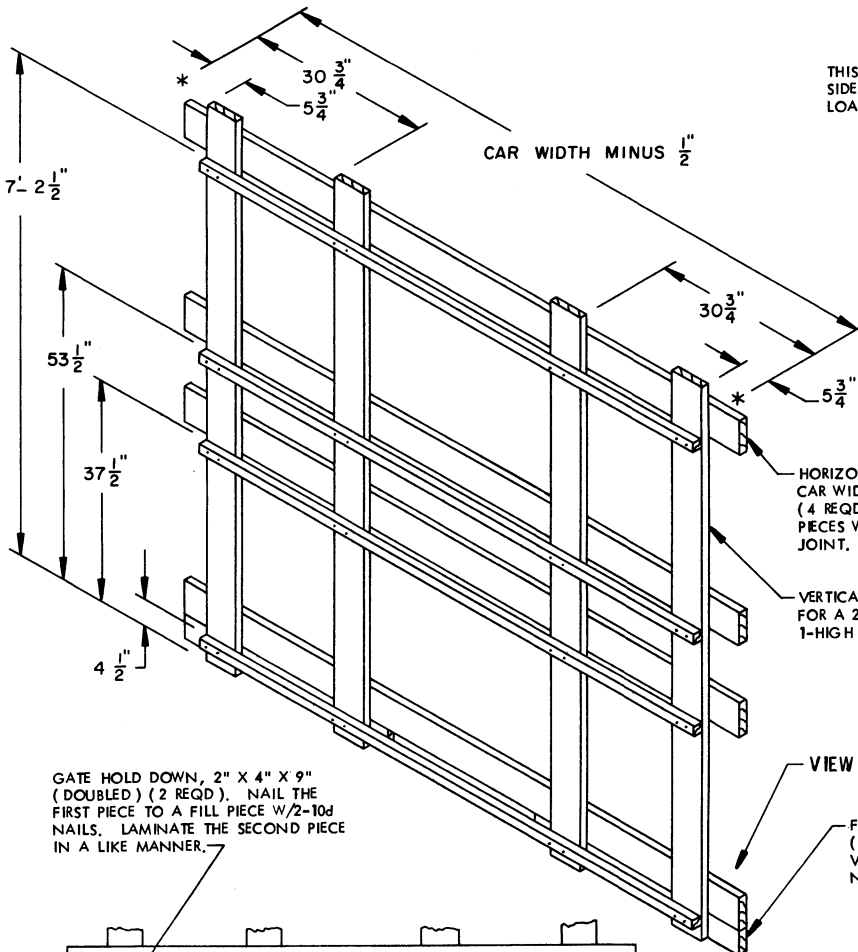
DOOR OPENING
WIDTH



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

DOORWAY PROTECTION M

THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING
SIDE OF THE LOAD SHOWN ON PAGE 78 AND FOR THE
LOAD SHOWN ON PAGE 82.



CAR WIDTH MINUS 1/2"

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

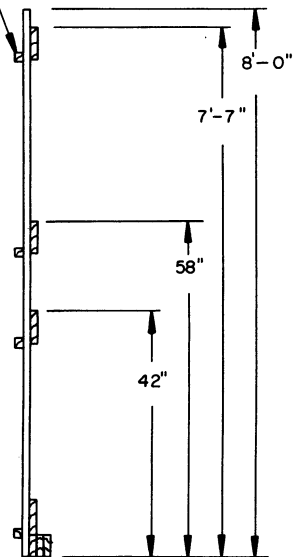
VERTICAL PIECE, 2" X 6" X 8'-0"
FOR A 2-HIGH LOAD, 46" FOR A
1-HIGH LOAD (4 REQD).

FILL PIECE, 2" X 4" X 40"
(2 REQD). NAIL TO THE
VERTICAL PIECES W/3-10d
NAILS AT EACH JOINT.

CENTER GATE X

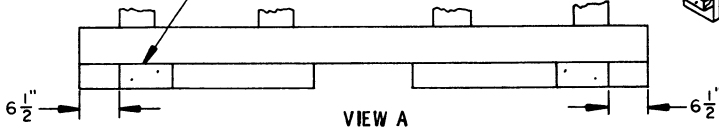
THIS GATE IS DESIGNED FOR USE IN
THE LOAD SHOWN ON PAGE 80.

STRUT LEDGER, 2" X 2" BY CAR
WIDTH MINUS 7" IN LENGTH
(4 REQD). NAIL TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH
JOINT.

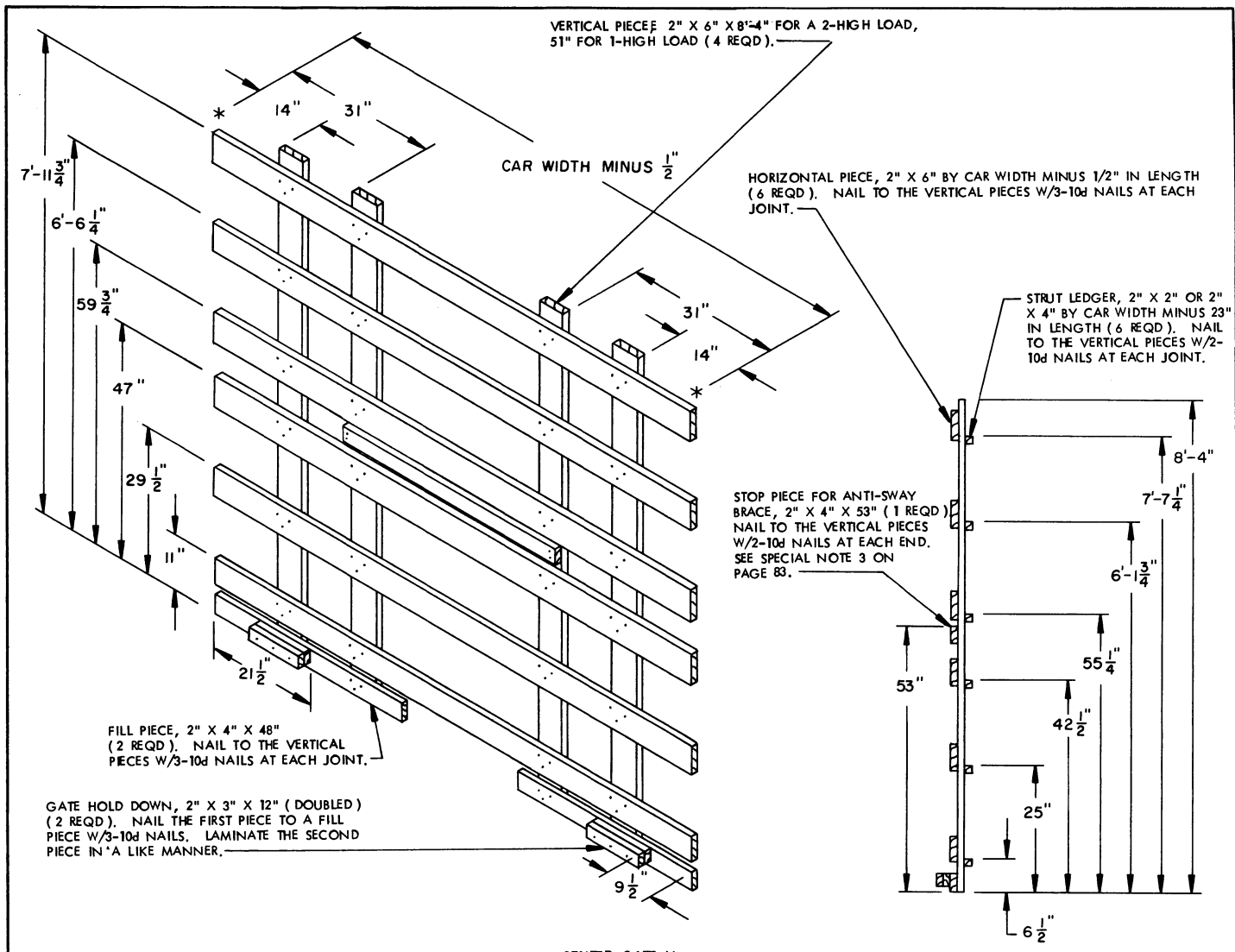


END VIEW

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

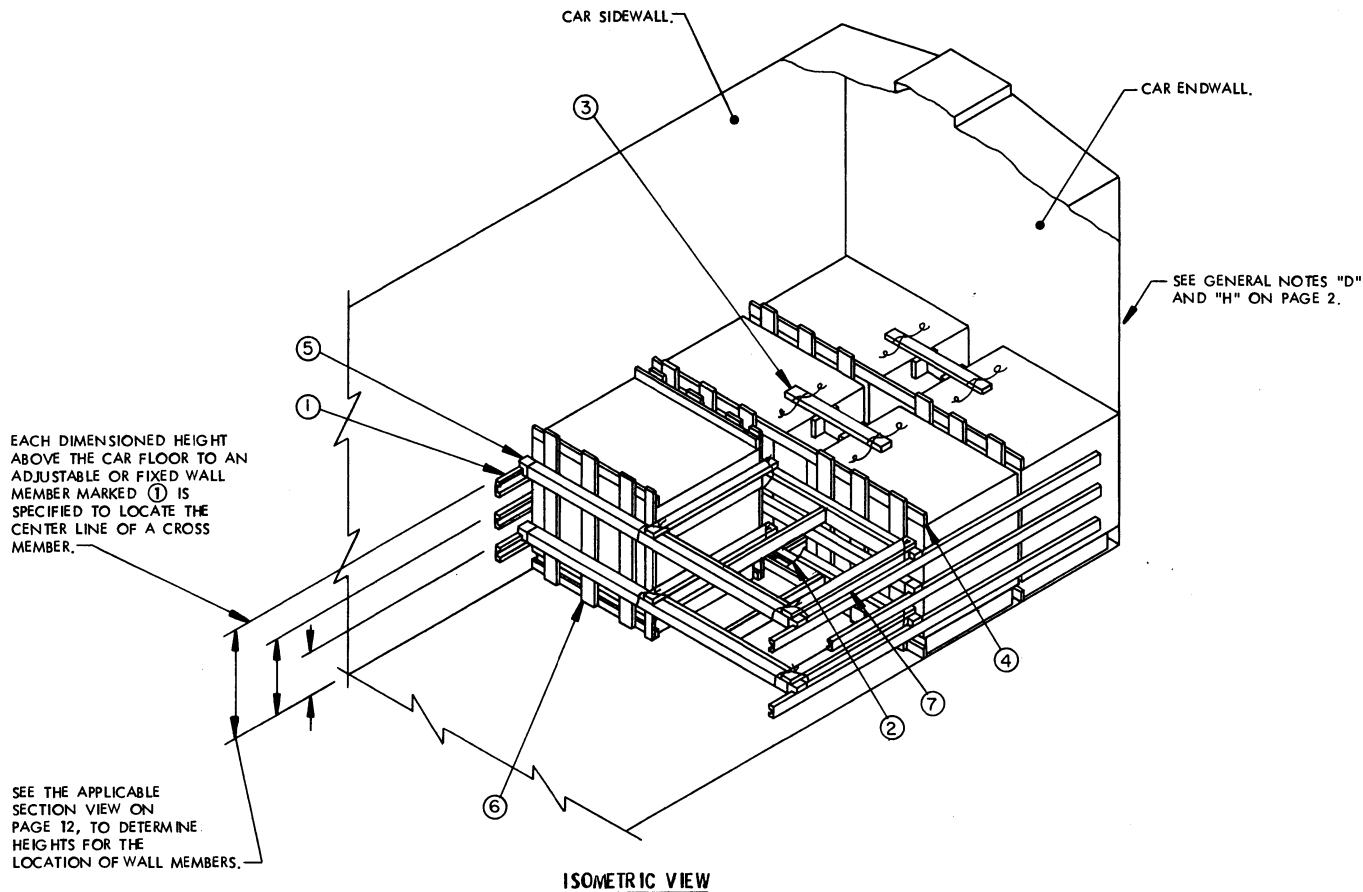


CENTER GATE Y

THIS GATE IS DESIGNED FOR USE IN THE
LOAD SHOWN ON PAGE 82.

END VIEW

THE STRUT LEDGERS AT THE 25" AND
6'-1-3/4" HEIGHTS ARE ONLY REQUIRED
FOR A LOAD IN A 60' OR 50' LONG
CAR; THEY ARE TO BE OMITTED FOR A
LOAD IN A 40' LONG CAR.



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 ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). 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.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU" OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED ⑦, MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 12.
- ④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 17 OR 33. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑤ CROSS MEMBER (5 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR ONE UNIT WIDE ON PAGE 17 OR 33. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑦ SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 93 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

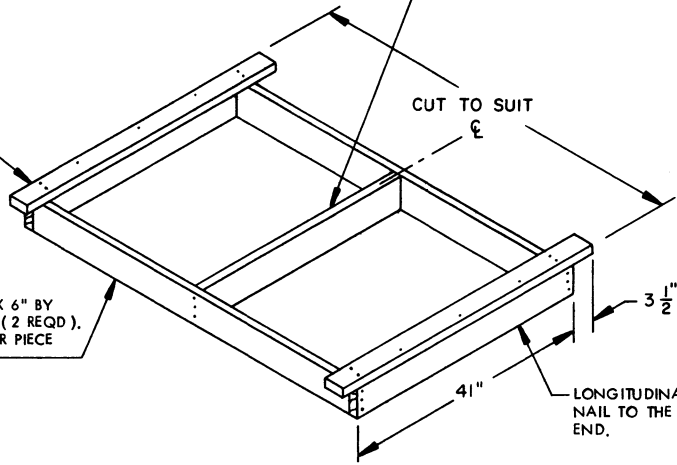
SUPPORT PIECE, 2" X 4" X 48"
(2 REQD). NAIL TO THE LATERAL
PIECES W/1-10d NAIL AT EACH END
AND TO A LONGITUDINAL PIECE
W/3-10d NAILS.

SPACER PIECE, 2" X 6" X 38"
(1 REQD).

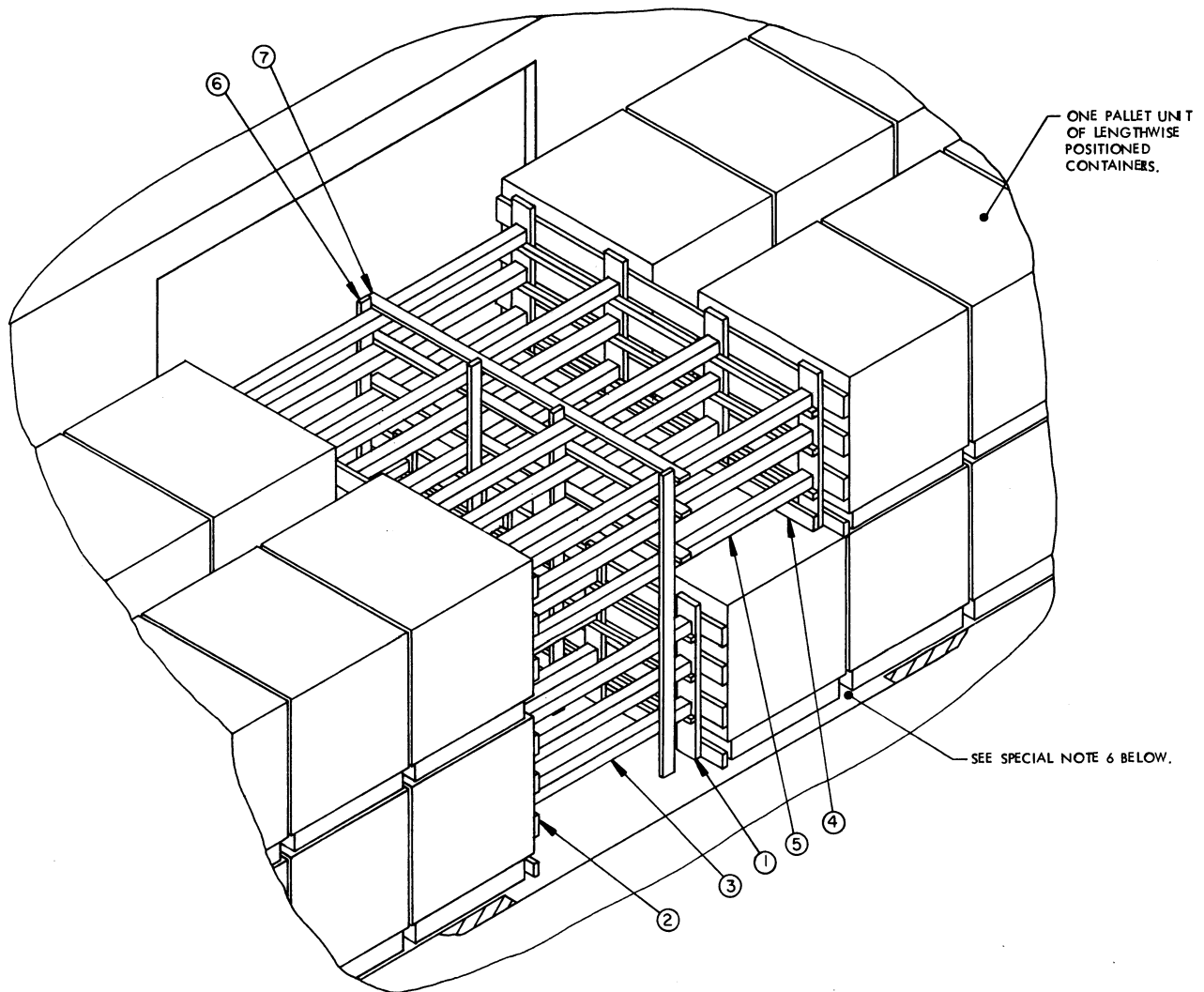
CUT TO SUIT

LATERAL PIECE, 2" X 6" BY
A LENGTH TO SUIT (2 REQD).
NAIL TO THE SPACER PIECE
W/3-12d NAILS.

LONGITUDINAL PIECE, 2" X 6" X 41" (2 REQD).
NAIL TO THE LATERAL PIECES W/3-12d NAILS AT EACH
END.



SPACER ASSEMBLY



ISOMETRIC VIEW

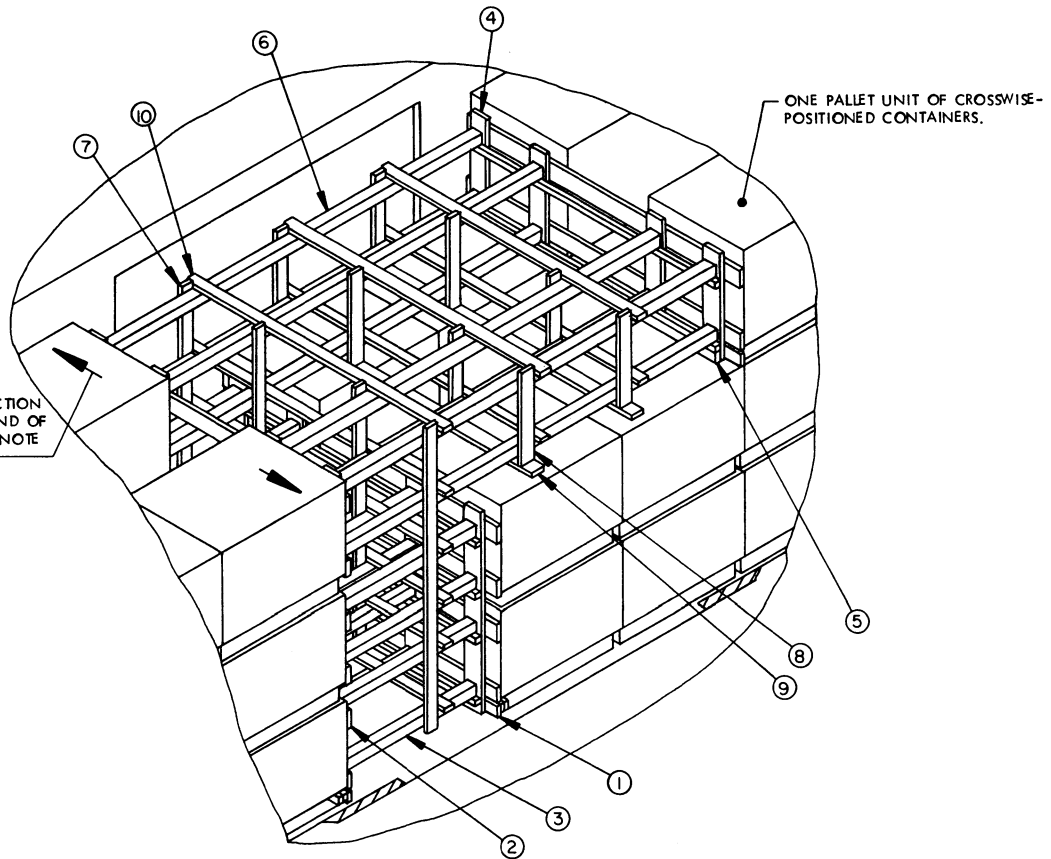
KEY NUMBERS

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER CARS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). 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 PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP ONE OR TWO LAYERS FROM 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 "H" USED IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS 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, WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.
6. WHEN A SEPARATOR GATE IS REQUIRED FOR A 1-HIGH LOAD (ONLY FOR THE ALTERNATED CONTAINERS UNIT), OMIT THE TOP HORIZONTAL AND SHORTEN THE VERTICAL PIECES A HEIGHT WHICH WILL NOT INTERFERE WITH THE 1-HIGH CENTER GATE IN THE UPPER LAYER.

- ① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 AT LEFT.
- ② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 35.
- ③ STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ④ GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES PIECES MARKED ① AND ②, IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO EXTEND 3" BEYOND THE STRUTS AT EACH END (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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



EXCEPT FOR THE ALTERNATED CONTAINERS UNIT, THE DIRECTION OF ARROW INDICATES BASE END OF CONTAINERS. SEE GENERAL NOTE "E" ON PAGE 2.

ISOMETRIC VIEW

SPECIAL NOTES:

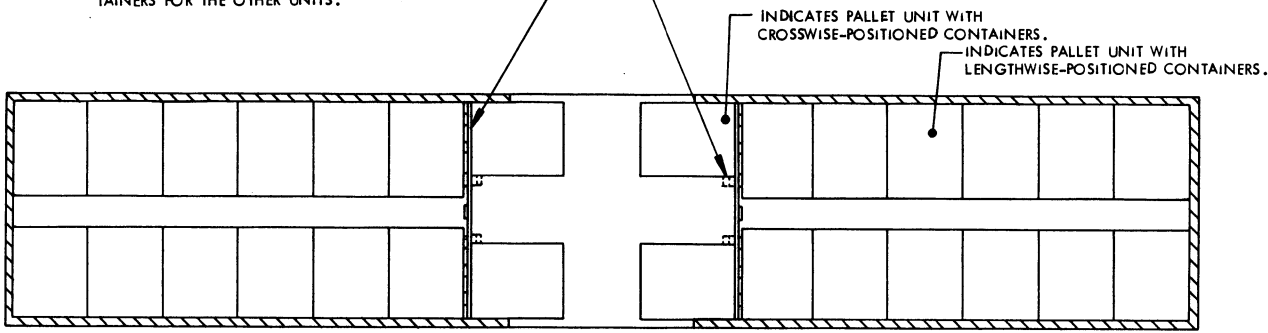
1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR 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 "C" USED IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS 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, WILL 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 ⑨, MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

- ① CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTE 5 AT LEFT.
- ② CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18.
- ③ STRUT, 4" X 4" BY CUT TO FIT (16 REQD). TOENAIL TO PIECES MARKED ① AND ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ④ CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18.
- ⑤ SUPPORT PIECE, 2" X 3" BY CAR WIDTH MINUS 12" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "C", SHOWN AS PIECE MARKED ④.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PIECES MARKED ② AND ④ W/2-16d NAILS AT EACH END.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED ③ AND ⑥ W/3-10d NAILS AT EACH JOINT.
- ⑧ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (8 REQD). NAIL TO THE STRUTS MARKED ⑥ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑨ W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 6 AT LEFT.
- ⑨ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.
- ⑩ HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (10 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

SEPARATOR GATE (1 OR 2 REQD), AS APPLICABLE). SEE THE " SEPARATOR GATE E " DETAIL ON PAGE 97. POSITION AS SHOWN WITH THE VERTICAL PIECES AGAINST THE ENDS OF THE LENGTHWISE-POSITIONED CONTAINERS ON THE ALTERNATED CONTAINERS UNITS; POSITION AGAINST THE SIDES OF THE OTHER CONTAINERS FOR THE OTHER UNITS.

STOP PIECE, 2" X 4" BY A LENGTH TO SUIT (DOUBLED) (AS 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 LOORWAY OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE LOOR OPENING.



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

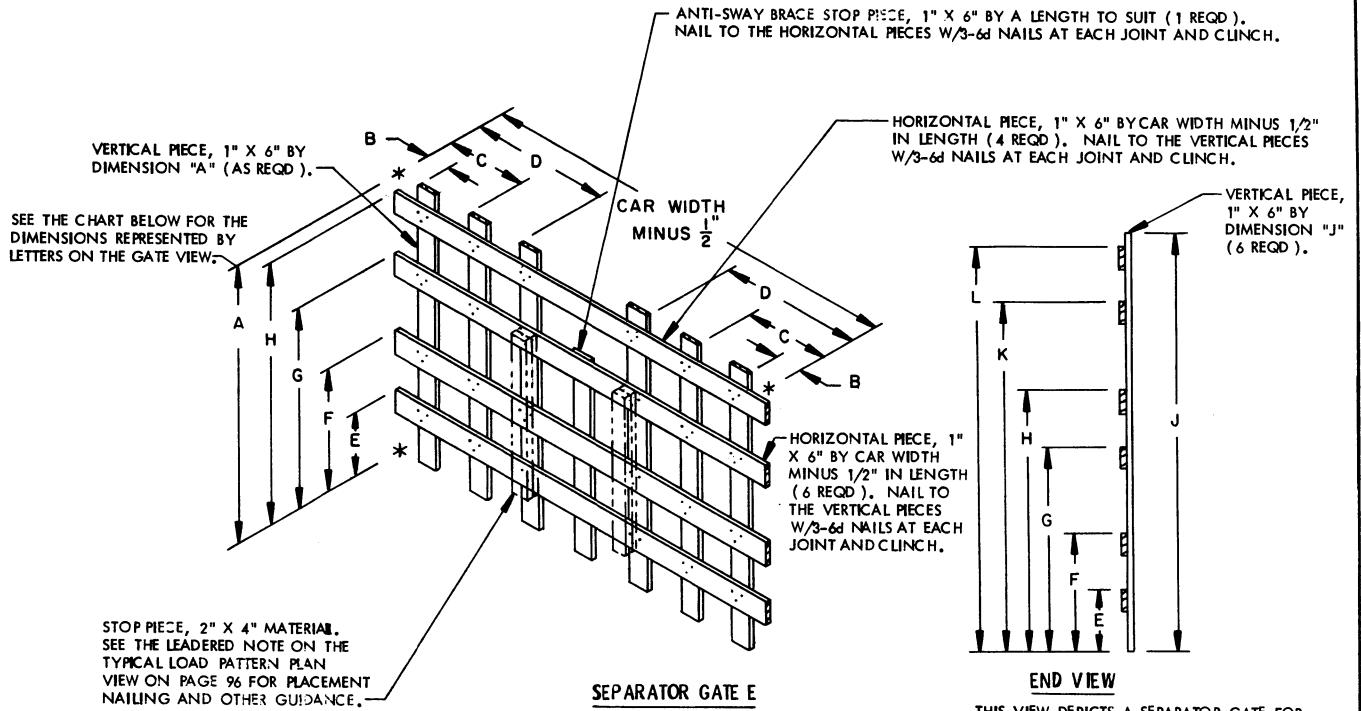
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR IS SHOWN. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE AND ON PAGE 97 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE " E " HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE " E " MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE LENGTHWISE CONTAINERS OF THE ALTERNATED CONTAINERS UNITS AND/OR AGAINST THE CROSSWISE CONTAINERS OF THE FLAT DUNNAGE AND ROUTED DUNNAGE METHOD UNITS.
4. A CHART FOR EACH OF THE THREE TYPES OF PALLET UNITS IS SHOWN ON THIS PAGE. 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.

ALTERNATED CONTAINERS UNIT			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 10 OR 24	48"
	22	9 LONG AT 38" PLUS 2 WIDE AT 48-1/2"	27"
	20	5 LONG AT 38" PLUS 5 WIDE AT 48-1/2"	40"
	20	4 LONG AT 38" PLUS 6 WIDE AT 48-1/2"	31"
	18	CROSSWISE LOAD ON PAGE 8 OR 22	43"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 10 OR 24	50"
	28	11 LONG AT 38" PLUS 3 WIDE AT 48-1/2"	20"
	26	8 LONG AT 38" PLUS 5 WIDE AT 48-1/2"	41"
	26	6 LONG AT 38" PLUS 7 WIDE AT 48-1/2"	23"
	25	COMBINATION LOAD ON PAGE 6 OR 20	66" AND 50"
	24	2 LONG AT 38" PLUS 10 WIDE AT 48-1/2"	33"
22	CROSSWISE LOAD ON PAGE 8 OR 22	66"	
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 10 OR 24	53"
	34	15 LONG AT 38" PLUS 2 WIDE AT 48-1/2"	40"
	34	14 LONG AT 38" PLUS 3 WIDE AT 48-1/2"	31"
	32	10 LONG AT 38" PLUS 6 WIDE AT 48-1/2"	43"
	32	9 LONG AT 38" PLUS 7 WIDE AT 48-1/2"	34"
	30	4 LONG AT 38" PLUS 11 WIDE AT 48-1/2"	37"
	30	3 LONG AT 38" PLUS 12 WIDE AT 48-1/2"	28"
	28	CROSSWISE LOAD ON PAGE 8 OR 22	43"

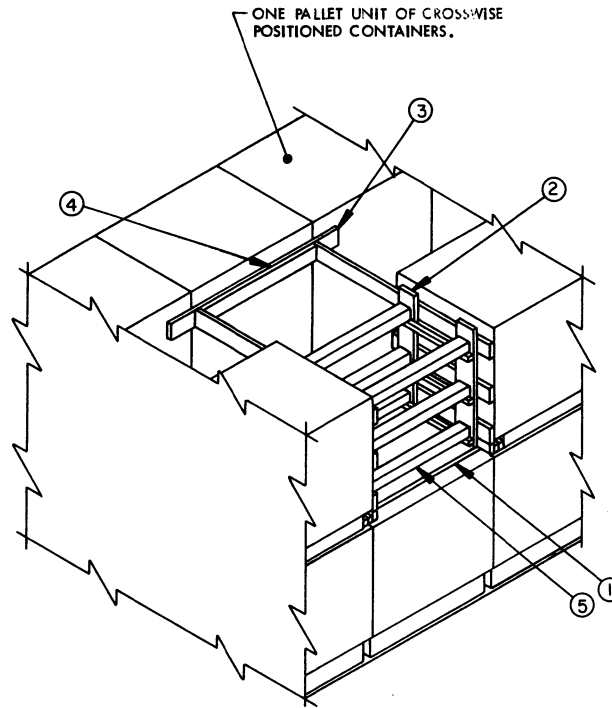
FLAT DUNNAGE METHOD UNIT			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 40 OR 54	29"
	20	8 LONG AT 41" PLUS 2 WIDE AT 51-1/2"	46"
	20	7 LONG AT 41" PLUS 3 WIDE AT 51-1/2"	35"
	19	COMBINATION LOAD ON PAGE 36 OR 50	68" AND 29"
	18	3 LONG AT 41" PLUS 6 WIDE AT 51-1/2"	45"
	18	2 LONG AT 41" PLUS 7 WIDE AT 51-1/2"	34"
	16	CROSSWISE LOAD ON PAGE 38 OR 52	68"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 40 OR 54	26"
	26	10 LONG AT 41" PLUS 3 WIDE AT 51-1/2"	32"
	25	COMBINATION LOAD ON PAGE 36 OR 50	33" AND 26"
	24	6 LONG AT 41" PLUS 6 WIDE AT 51-1/2"	42"
	22	CROSSWISE LOAD ON PAGE 38 OR 52	33"
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 40 OR 54	25"
	32	14 LONG AT 41" PLUS 2 WIDE AT 51-1/2"	42"
	32	13 LONG AT 41" PLUS 3 WIDE AT 51-1/2"	31"
	30	9 LONG AT 41" PLUS 6 WIDE AT 51-1/2"	41"
	30	8 LONG AT 41" PLUS 7 WIDE AT 51-1/2"	30"
	28	4 LONG AT 41" PLUS 10 WIDE AT 51-1/2"	40"

ROUTED DUNNAGE METHOD UNIT			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 68 OR 82	29"
	20	7 LONG AT 41" PLUS 3 WIDE AT 50-1/2"	38"
	20	6 LONG AT 41" PLUS 4 WIDE AT 50-1/2"	29"
	18	2 LONG AT 41" PLUS 7 WIDE AT 50-1/2"	41"
	18	CROSSWISE LOAD ON PAGE 66 OR 80	25"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 68 OR 82	26"
	26	11 LONG AT 41" PLUS 2 WIDE AT 50-1/2"	45"
	26	10 LONG AT 41" PLUS 3 WIDE AT 50-1/2"	35"
	25	COMBINATION LOAD ON PAGE 64 OR 78	50" AND 26"
	24	6 LONG AT 41" PLUS 6 WIDE AT 50-1/2"	48"
	24	5 LONG AT 41" PLUS 7 WIDE AT 50-1/2"	38"
22	CROSSWISE LOAD ON PAGE 66 OR 80	44"	
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 68 OR 82	25"
	32	14 LONG AT 41" PLUS 2 WIDE AT 50-1/2"	44"
	30	9 LONG AT 41" PLUS 6 WIDE AT 50-1/2"	47"
	30	8 LONG AT 41" PLUS 7 WIDE AT 50-1/2"	37"
	28	4 LONG AT 41" PLUS 10 WIDE AT 50-1/2"	50"
	28	3 LONG AT 41" PLUS 11 WIDE AT 50-1/2"	40"
	26	CROSSWISE LOAD ON PAGE 66 OR 80	65"



THIS GATE IS DESIGNED FOR USE IN A LOAD WHEN THE COMBINATION LOAD PATTERN AS SHOWN ON PAGE 96 IS EMPLOYED. A GATE WILL BE INSTALLED AT EACH LOCATION WHERE THE ORIENTATION OF THE PALLET UNITS CHANGES.

PALLET UNIT IDENTIFICATION	DIMENSIONS										
	A	B	C	D	E	F	G	H	J	K	L
ALTERNATED CONTAINERS (BASIC HEIGHT)	72"	6"	21-1/2"	36-3/4"	16"	31-1/4"	46"	68-1/4"	9'-0"	6'-10-3/4"	8'-9"
ALTERNATED CONTAINERS (INCREASED HEIGHT)	7'-0"	6"	21-1/2"	36-3/4"	16"	38-3/4"	53-1/2"	6'-11"	-	-	-
FLAT DUNNAGE (BASIC HEIGHT)	6'-9"	6-1/4"		31-1/4"	17"	34"	58"	6'-7"	-	-	-
FLAT DUNNAGE (INCREASED HEIGHT)	7'-8"	6-1/4"		31-1/4"	17"	42"	65"	7'-6"	-	-	-
ROUTED DUNNAGE (BASIC HEIGHT)	6'-4"	5-3/4"		31"	17"	34"	57"	6'-2"	-	-	-
ROUTED DUNNAGE (INCREASED HEIGHT)	7'-9"	5-3/4"		31"	17"	42-1/2"	65"	7'-7"	-	-	-



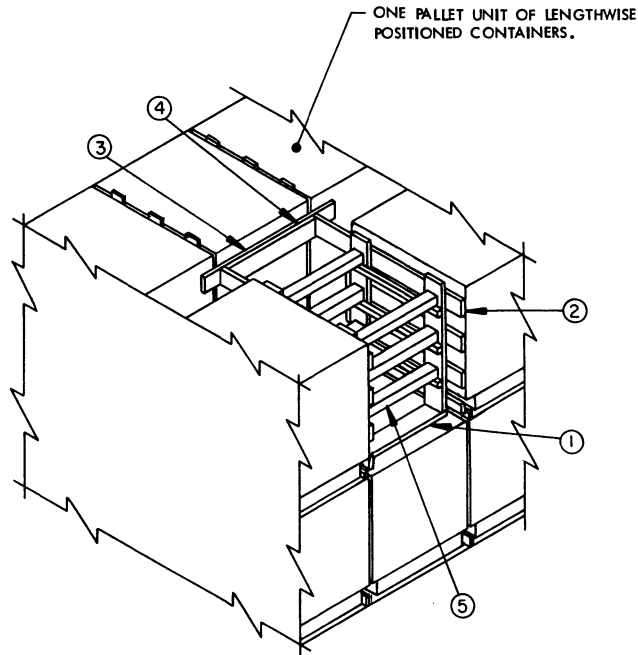
ISOMETRIC VIEW

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 ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). 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. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER PALLET UNIT FROM A 3-LAYER LOAD.
4. THE OMITTED-UNIT PROCEDURE SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN; REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

- ① SUPPORT PIECE, 2" X 6" BY UNIT WIDTH (2 REQD). POSITION SO AS TO BE UNDER THE 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 100 OR 101. NAIL TO THE FILLER PIECE, PIECE MARKED ④ W/3-10d NAILS. 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 ANTI-SWAY BEARING PIECE, 2" X 6" X 66" (1 REQD).
- ④ FILLER PIECE, 2" X 6" BY CUT TO FIT (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ③, W/5-10d NAILS.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (6 REQD). TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END.



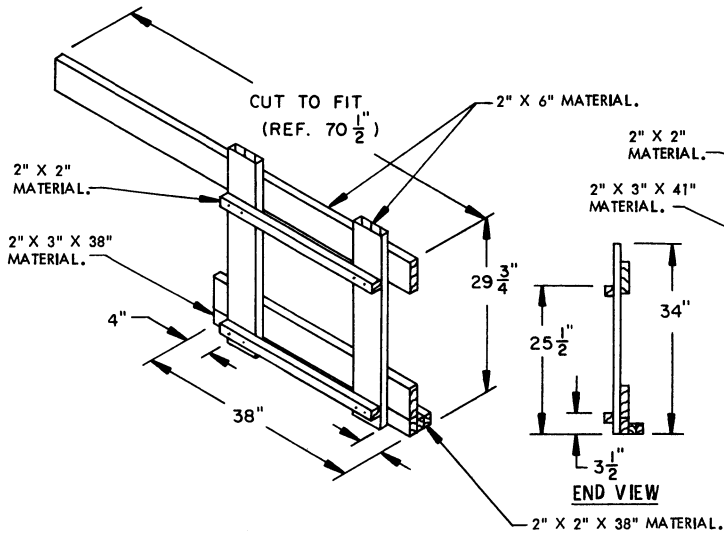
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. SEE SPECIAL NOTE 6.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER PALLET UNIT FROM A 3-LAYER LOAD.
4. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
6. THE SEPARATOR GATE SHOWN IN THE LOAD VIEW IS APPLICABLE ONLY FOR SHIPMENTS OF THE ALTERNATED CONTAINERS UNITS. NOTE THAT THE TOP HORIZONTAL PIECE OF EACH SEPARATOR GATE WHICH IS ADJACENT TO THE OMITTED UNIT AREA MUST BE 1" X 2" MATERIAL IN LIEU OF 1" X 4" AND MAY NEED TO BE ADJUSTED IN HEIGHT SO AS TO PROVIDE CLEARANCE BETWEEN IT AND THE CONTAINERS ON THE UNIT BELOW AS WELL AS CLEARANCE BETWEEN IT AND THE LOAD BEARING GATE, PIECE MARKED ②.
7. PIECES MARKED ③ AND ④ ARE ONLY APPLICABLE FOR SHIPMENTS OF ALTERNATED CONTAINERS UNITS; THEY ARE NOT REQUIRED FOR SHIPMENTS OF FLAT DUNNAGE OR ROUTED DUNNAGE METHOD UNITS.

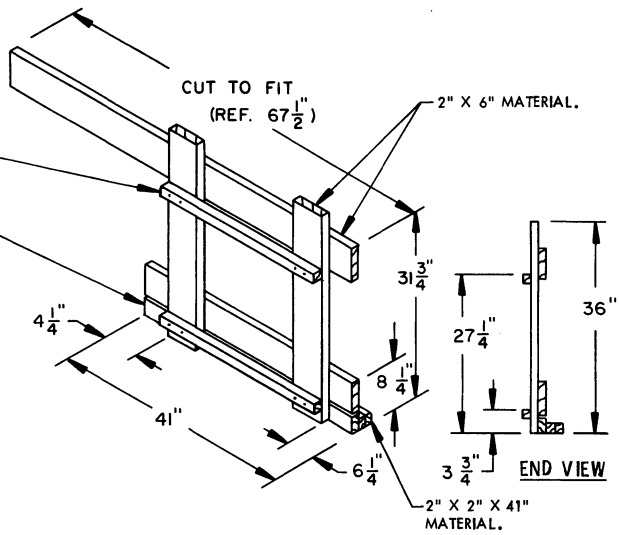
KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (2 REQD). POSITION BENEATH THE OUTSIDE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ②, AS APPLICABLE.
- ② LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 102 OR 103. 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 ANTI-SWAY BEARING PIECE, 2" X 6" X 56" (1 REQD). SEE SPECIAL NOTE 7 AT LEFT.
- ④ FILLER PIECE, 2" X 6" X 35" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ③ W/5-10d NAILS.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (AS REQD). TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END.



LOAD BEARING GATE A

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

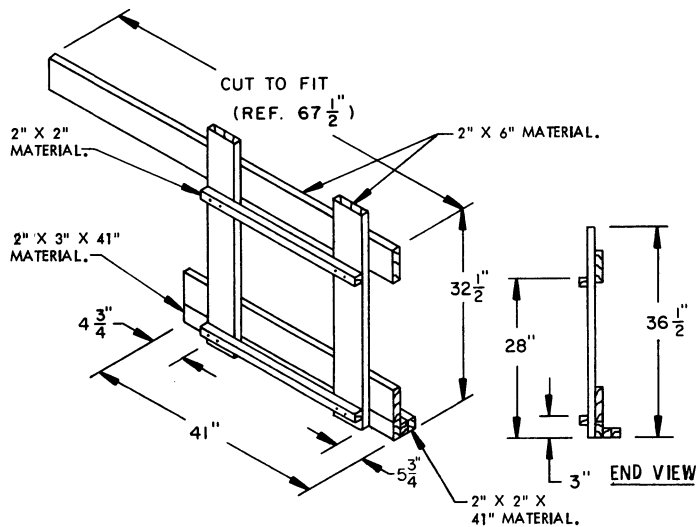


LOAD BEARING GATE B

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

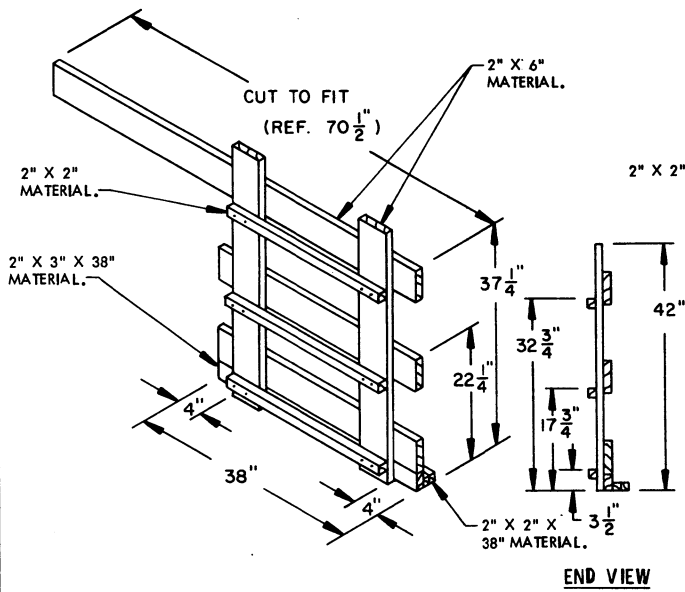
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 98. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED CONTAINERS LOAD.
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 3" OR 2" X 6" HORIZONTAL PIECE (5) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO A 2" X 3" HORIZONTAL PIECE W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.



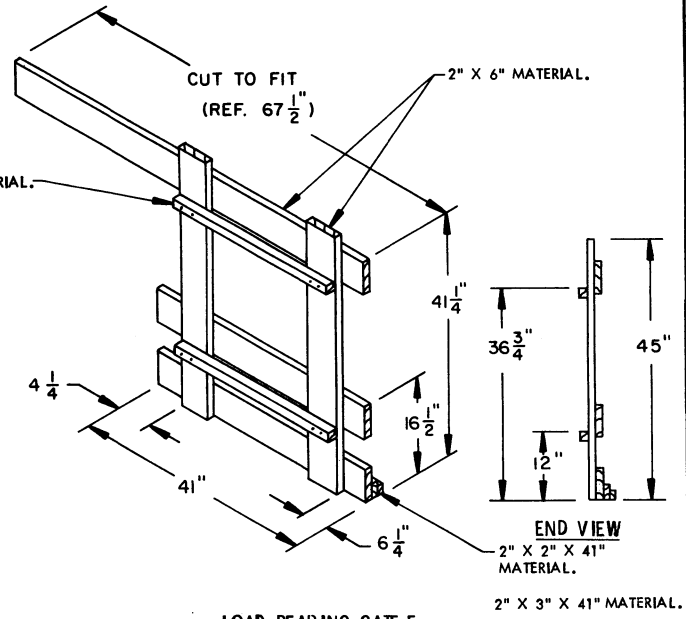
LOAD BEARING GATE C

THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.



LOAD BEARING GATE D

THIS GATE IS FOR USE IN A LOAD OF ALTERNATED CONTAINER UNITS (INCREASED HEIGHT). SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

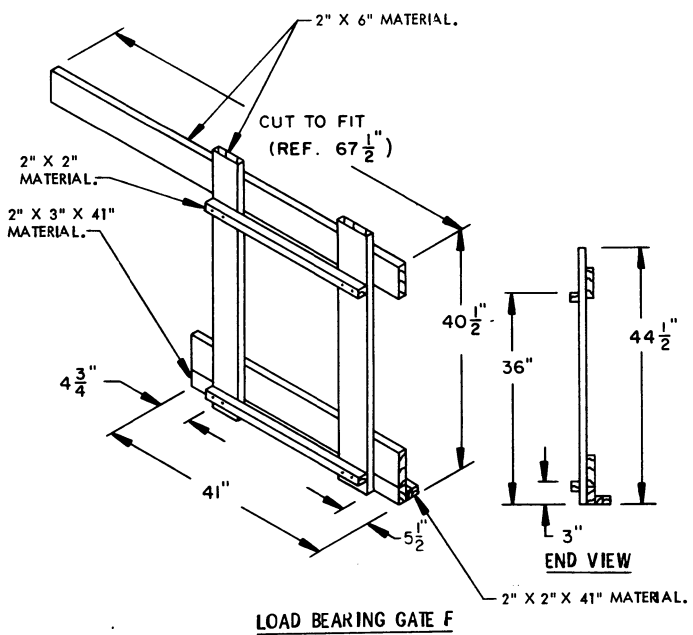


LOAD BEARING GATE E

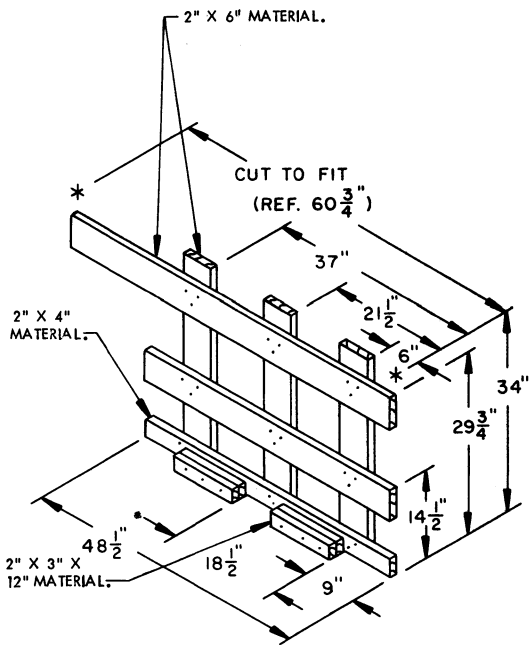
THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (INCREASED HEIGHT). SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH INCREASED HEIGHT UNITS IN THE ICL PROCEDURES SHOWN ON PAGE 98. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED CONTAINERS LOAD.
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 3" 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 3" HORIZONTAL PIECE W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

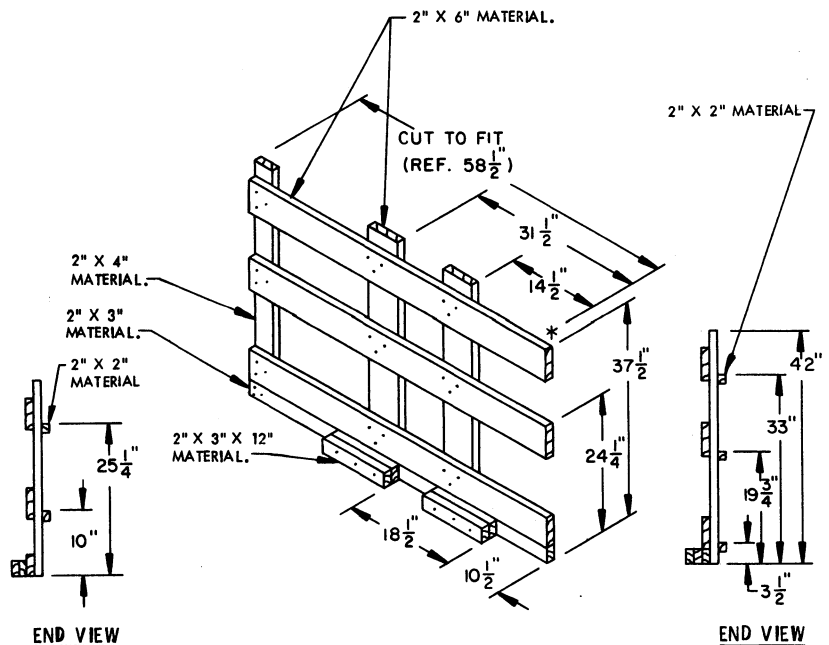


LOAD BEARING GATE F



LOAD BEARING GATE G

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

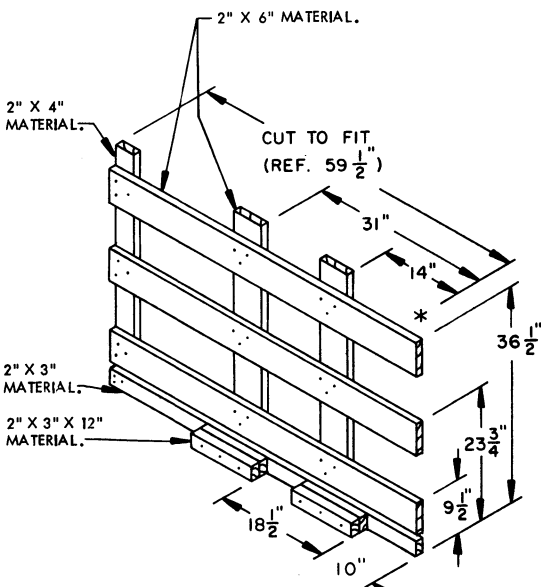


LOAD BEARING GATE H

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

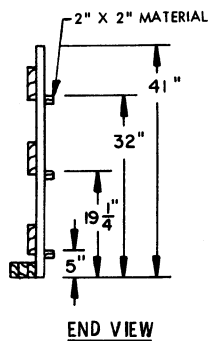
SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE ICL PROCEDURES SHOWN ON PAGE 99. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED CONTAINERS LOAD.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3", 2" X 4", OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

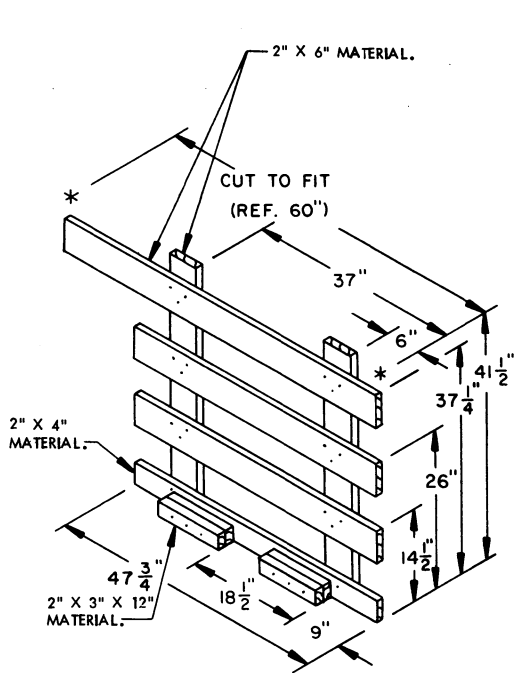


LOAD BEARING GATE J

THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.

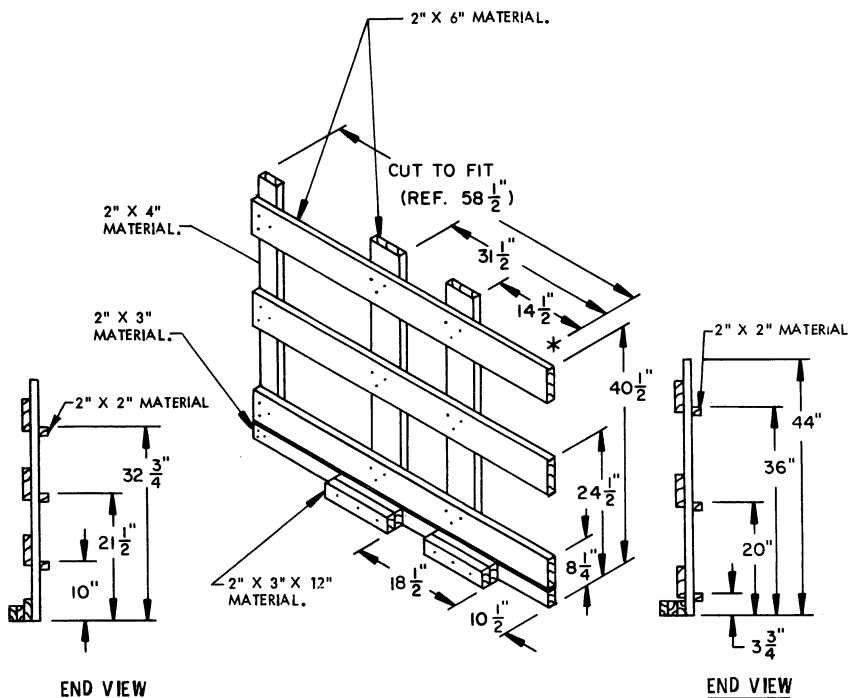


END VIEW



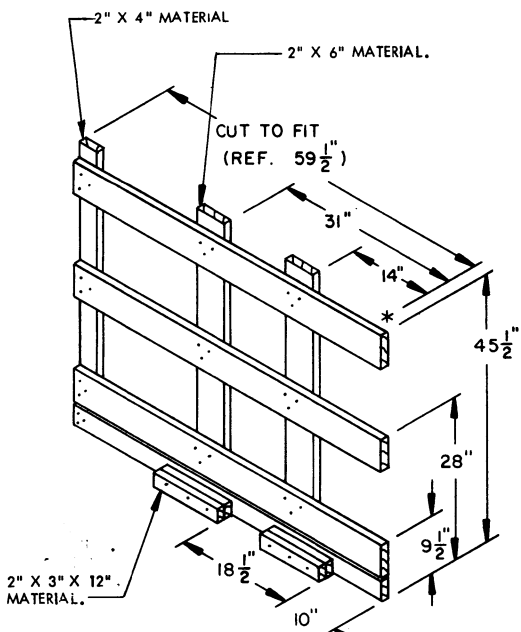
LOAD BEARING GATE K

THIS GATE IS FOR USE IN A LOAD OF ALTERNATED CONTAINERS UNITS (INCREASED HEIGHT). SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.



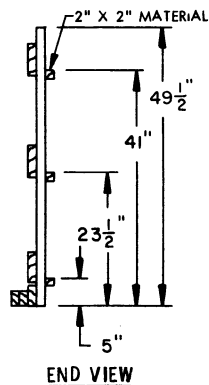
LOAD BEARING GATE L

THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (INCREASED HEIGHT). 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 M

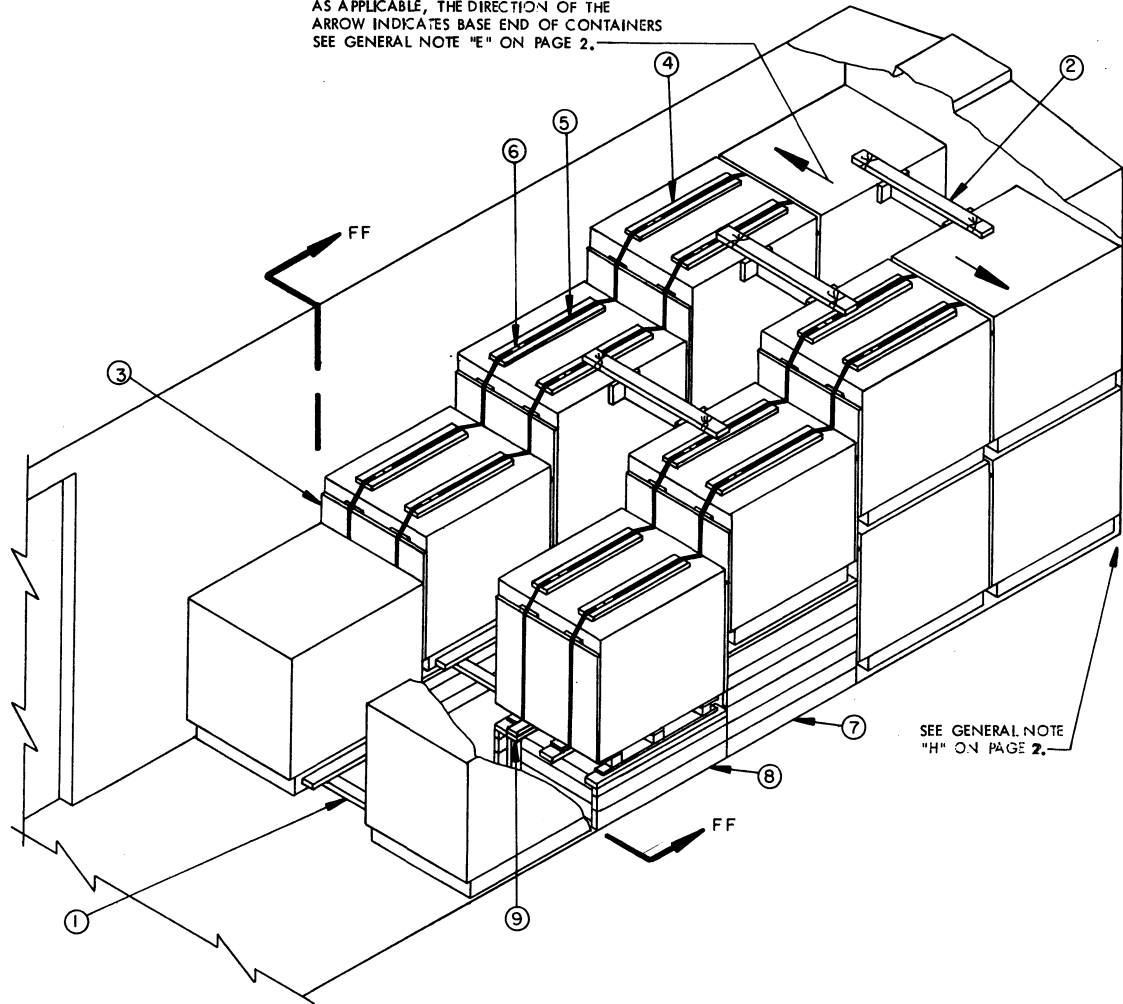
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (INCREASED HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.



SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH INCREASED HEIGHT UNITS IN THE LCI PROCEDURES SHOWN ON PAGE 99. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED CONTAINERS LOADS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3", 2" X 4", OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10# NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10# NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10# NAILS AT EACH JOINT.

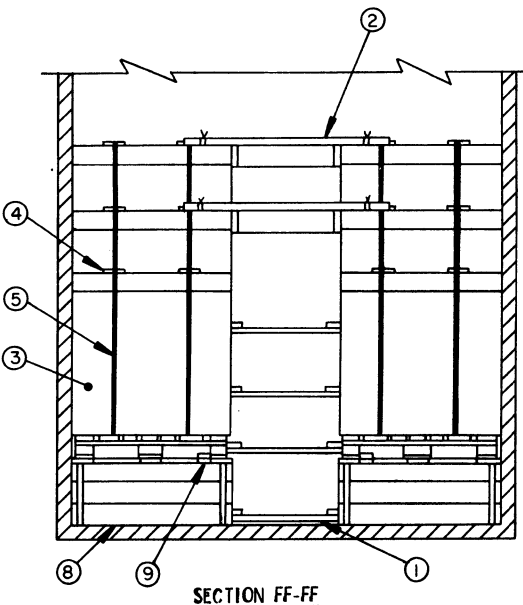
AS APPLICABLE, THE DIRECTION OF THE ARROW INDICATES BASE END OF CONTAINERS
SEE GENERAL NOTE "E" ON PAGE 2.



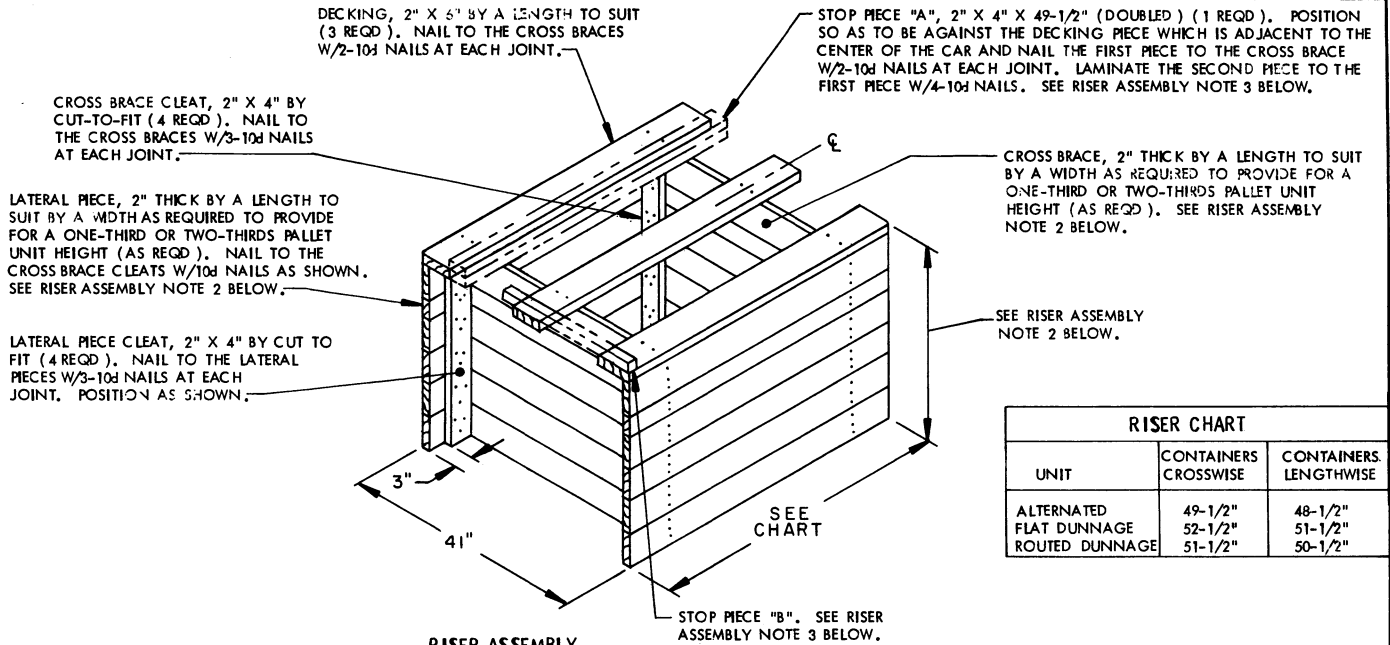
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 105.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 126.
- ③ SIDE FILL ASSEMBLY (12 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 106. SEE SPECIAL NOTE 6 ON PAGE 105.
- ④ STRAPPING BOARD, 1" X 6" X 42" OR 40", AS APPLICABLE (12 REQD/2 PER PALLET UNIT). POSITION AS SHOWN IN THE DETAILS ON PAGE 106. SEE SPECIAL NOTE 7 ON PAGE 105.
- ⑤ REINFORCING STRAP, 1-1/4" X .035" X 13'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT, THE STRAPPING BOARD, AND THE SIDE FILL ASSEMBLIES. SECURE TO A STRAPPING BOARD W/3 STAPLES.
- ⑥ SEAL FOR 1-1/4" STRAPPING (32 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
- ⑦ 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 105.
- ⑧ 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 105.
- ⑨ STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 105 FOR LOCATION AND NAILING GUIDANCE. SEE SPECIAL NOTE 6 ON PAGE 105.



SECTION FF-FF



RISER CHART		
UNIT	CONTAINERS CROSSWISE	CONTAINERS LENGTHWISE
ALTERNATED	49-1/2"	48-1/2"
FLAT DUNNAGE	52-1/2"	51-1/2"
ROUTED DUNNAGE	51-1/2"	50-1/2"

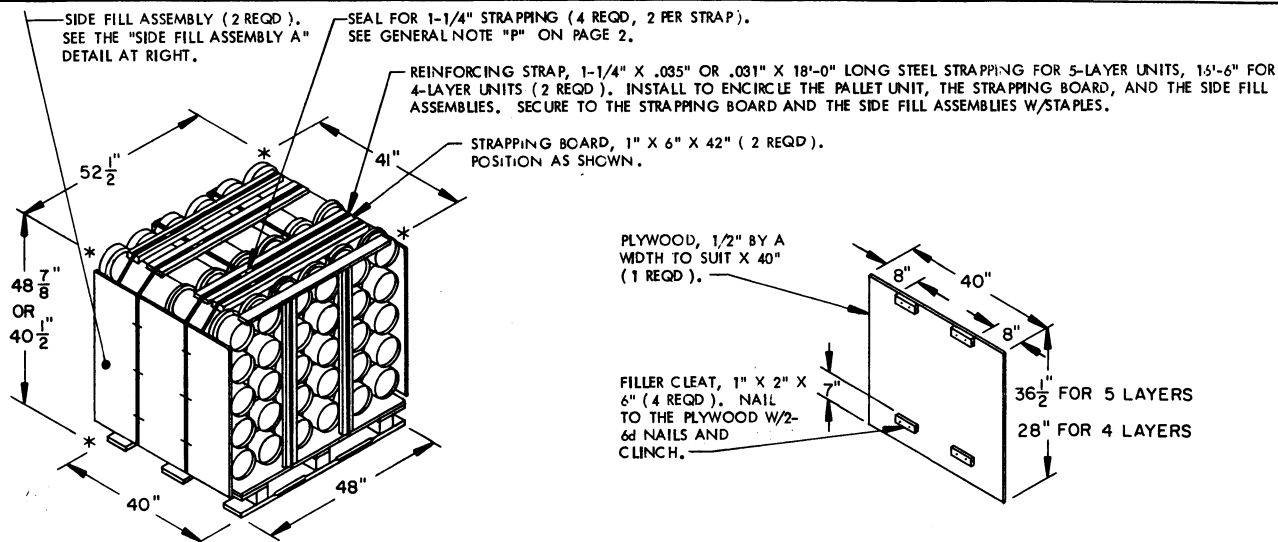
RISER ASSEMBLY

SPECIAL NOTES:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 104 IS THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). 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 CROSSWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE-POSITIONED CONTAINERS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. ANTI-SWAY BRACE "C", PIECE MARKED ① IS APPLICABLE FOR FLAT DUNNAGE AND ROUTED DUNNAGE METHOD UNITS HAVING THE CONTAINERS CROSSWISE IN THE CAR; ANTI-SWAY BRACE "A" AS DETAILED ON PAGE 20 WILL BE USED FOR THE ALTERNATED CONTAINERS UNITS HAVING THE CONTAINERS CROSSWISE IN THE CAR. FOR LOADS OF ALTERNATED CONTAINERS UNITS HAVING THE CONTAINERS LENGTHWISE IN THE CAR, ANTI-SWAY BRACE "B" AS DETAILED ON PAGE 49 WILL BE USED FOR LOADS OF FLAT OR ROUTED DUNNAGE METHOD UNITS HAVING THE CONTAINERS LENGTHWISE.
6. USE "METHOD A", "METHOD B", OR "METHOD C" DETAILS ON PAGES 106 OR 107 AND STOP PIECE "A" WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR. USE "METHOD D" DETAIL ON PAGE 107 AND STOP PIECE "B", AS SHOWN ON THE RISER DETAIL ABOVE, WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR.
7. THE STRAPPING BOARDS, PIECE MARKED ④ WILL NOT BE REQUIRED WHEN LOADING UNITS HAVING THE CONTAINERS LENGTHWISE IN THE CAR.

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE FLAT DUNNAGE METHOD UNIT (INCREASED HEIGHT). THE HEIGHT OF THE BASIC UNIT IS 48-7/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 104. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FIVE (5) PIECES OF 2" X 6" MATERIAL AND ONE (1) PIECE OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 32-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑧ IN THE LOAD ON PAGE 104, WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 15" 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 TOP 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, AS SHOWN IN THE LCL LOAD ON PAGE 104. IF THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR, POSITION A 2" X 2" BY A LENGTH TO SUIT PIECE ACROSS THE DECKING, ON THE END WHICH IS AGAINST THE CAR SIDEWALL, AND NAIL TO THE DECKING W/2-10d NAILS AT EACH JOINT. SEE STOP PIECE "B" ON THE RISER ASSEMBLY ABOVE FOR LOCATION GUIDANCE. NOTE THAT STOP PIECE "B" IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS UNITS AND THE FLAT DUNNAGE METHOD UNITS. WHEN SHIPPING ROUTED DUNNAGE METHOD UNITS, IN LIEU OF STOP PIECE "B", DOUBLED 2" X 4" X 19" PIECES MUST BE POSITIONED SO AS TO BE CENTERED ON A RISER ASSEMBLY ON THE CENTER-OF-CAR SIDE. NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.



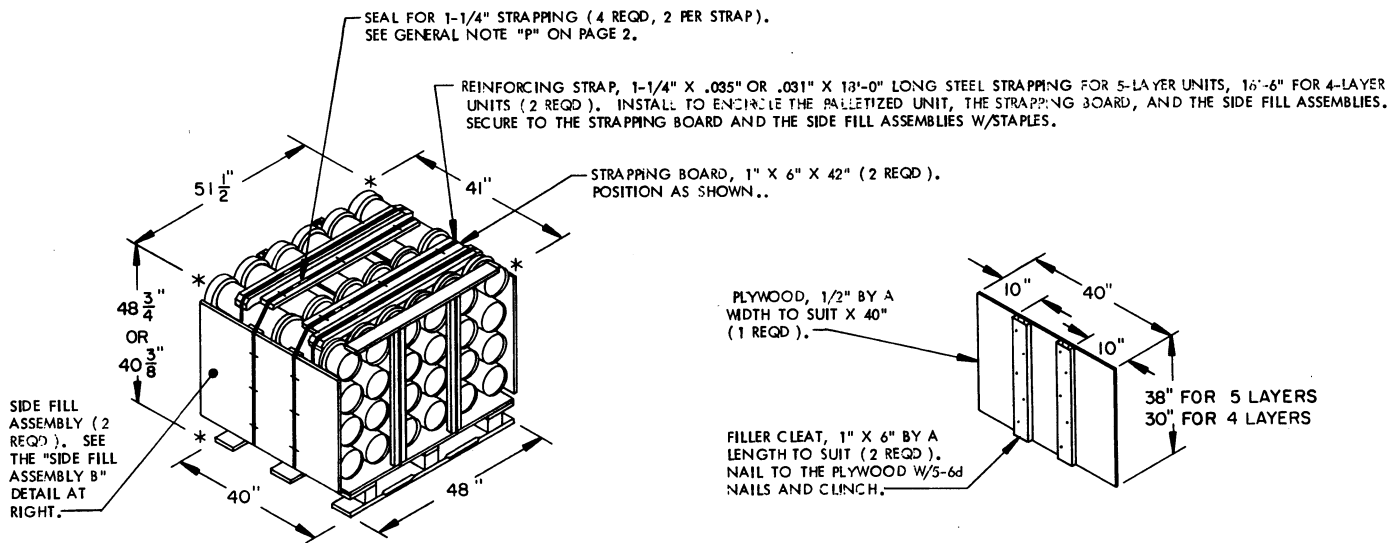
METHOD A

FOR FLAT DUNNAGE METHOD UNITS. THE INCREASED HEIGHT UNIT IS SHOWN.

SIDE FILL ASSEMBLY A

FOR METHOD "A" AT LEFT

NOTE:
THE "METHOD A" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE FLAT DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 104. THE INCREASED HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE BASIC HEIGHT UNIT.



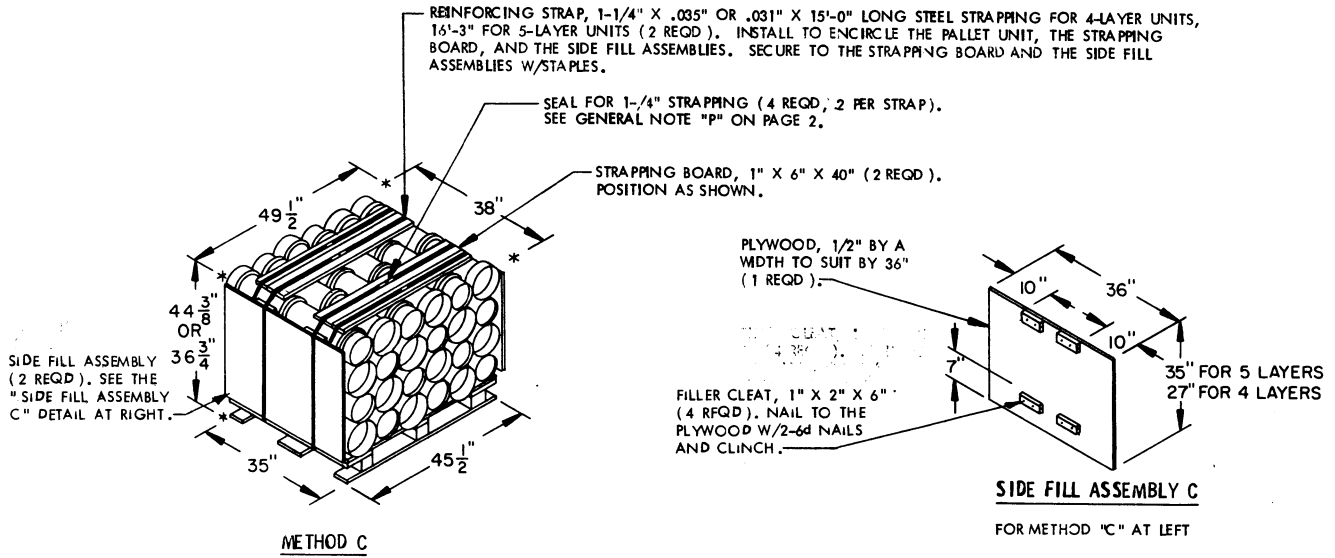
METHOD B

FOR ROUTED DUNNAGE METHOD UNITS. THE BASIC HEIGHT UNIT IS SHOWN.

SIDE FILL ASSEMBLY B

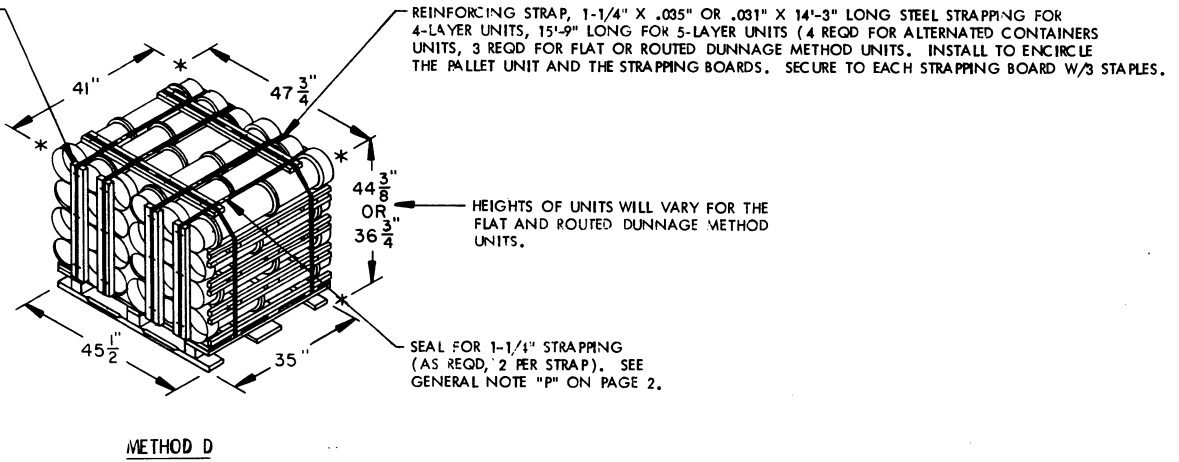
FOR METHOD B AT LEFT

NOTE:
THE "METHOD B" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE ROUTED DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 104. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE INCREASED HEIGHT UNIT. FOR MODIFICATION OF UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD D" DETAIL ON PAGE 107.

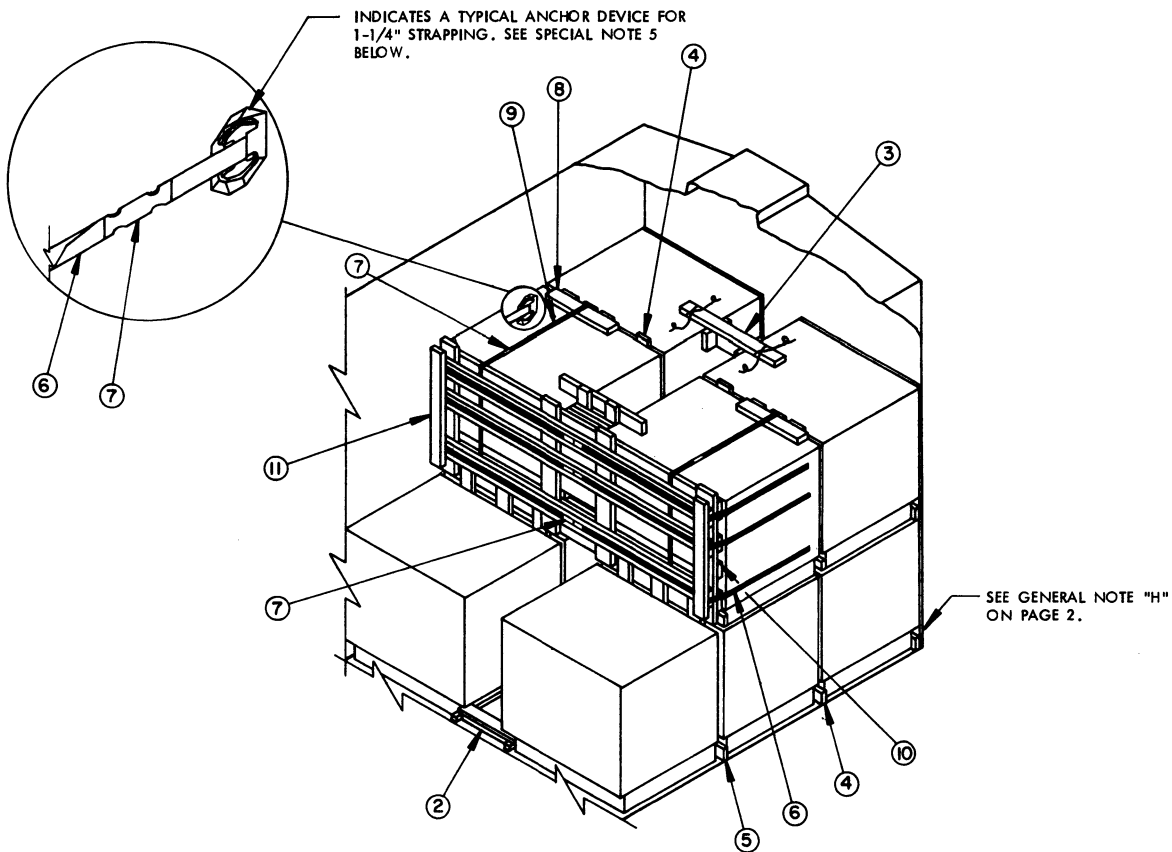


NOTE:
THE "METHOD C" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE ALTERNATED CONTAINERS UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 104. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE INCREASED HEIGHT UNIT. FOR MODIFICATION OF ALTERNATED CONTAINERS UNITS TO BE POSITIONED LENGTHWISE IN A CAR, REFER TO THE "METHOD D" DETAIL BELOW.

STRAPPING BOARD FOR 4-LAYER UNITS, 2" X 4' X 31" FOR ALTERNATED CONTAINERS OR 2" X 4" X 33-1/2" FOR FLAT OR ROUTED DUNNAGE METHOD UNITS, STRAPPING BOARD FOR 5-LAYER UNITS, 2" X 4" X 39" FOR ALTERNATED CONTAINERS OR 2" X 4" X 42" FOR FLAT OR ROUTED DUNNAGE METHOD UNITS (8 REQD FOR ALTERNATED CONTAINERS, 6 REQD FOR FLAT OR ROUTED DUNNAGE METHOD UNITS. POSITION SO AS TO CENTER ON THE JOINTS OF CONTAINERS.



NOTE:
THE "METHOD D" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 104. THE BASIC HEIGHT ALTERNATED CONTAINERS UNIT IS SHOWN. THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT. FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD C" DETAIL ABOVE AND/OR THE "METHOD A" OR "METHOD B" DETAIL ON PAGE 106.



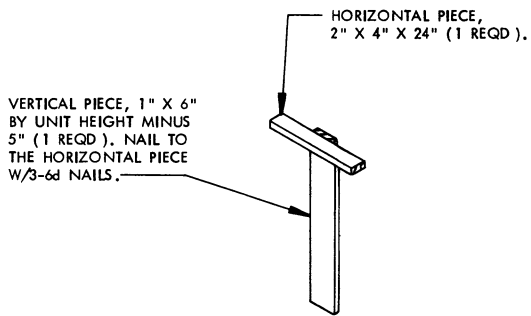
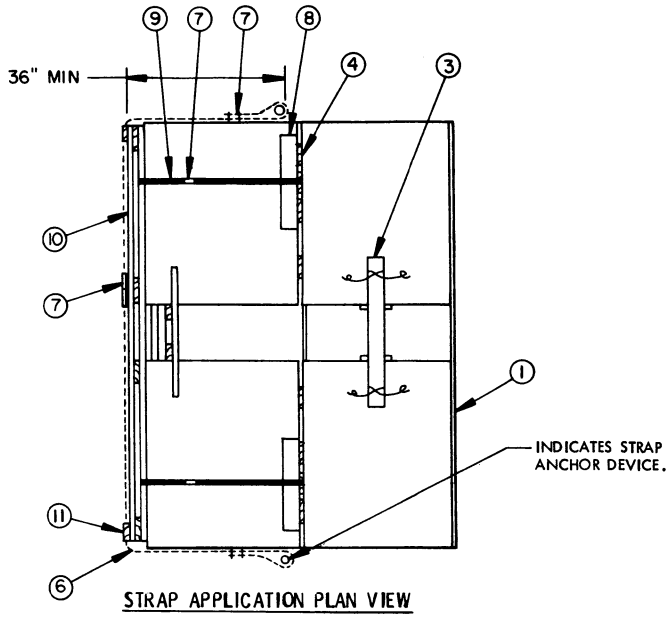
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

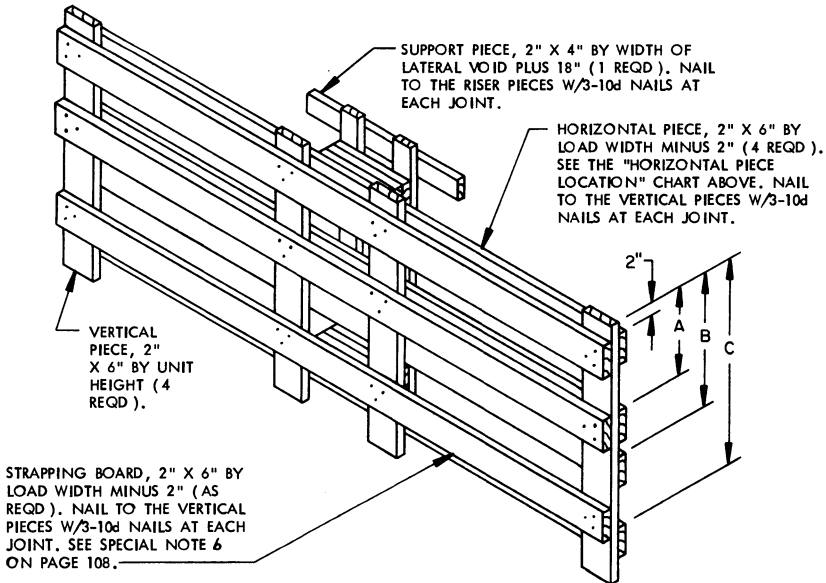
1. A 9'-2" WIDE ALL-METAL BOX CAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF LENGTHWISE POSITIONED CONTAINERS PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CROSSWISE POSITIONED CONTAINERS 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 PALLET UNITS; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 5 BASIC HEIGHT UNITS OR 4 INCREASED HEIGHT UNITS.
5. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST THIRTY-SIX INCHES (36") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CAR SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 94 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 99 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 109 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.

- ① END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 123. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 124 IS USED, THE END-WALL LINING IS NOT REQUIRED.
- ② ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 20 FOR ALTERNATED CONTAINERS UNITS OR THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 49 FOR THE FLAT DUNNAGE OR ROUTED DUNNAGE METHOD UNITS. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 126.
- ④ SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17 OR 33 AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 124. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEPARATOR GATES ARE ONLY REQUIRED WHEN THE LOAD IS THE ALTERNATED CONTAINERS UNITS.
- ⑤ SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17 OR 33.
- 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 109 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 ⑦, AND 1 PER BUNDLING STRAP, PIECE MARKED ⑧).
- ⑧ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 109.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" X 16'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑨. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑥.
- ⑩ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 109. 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.

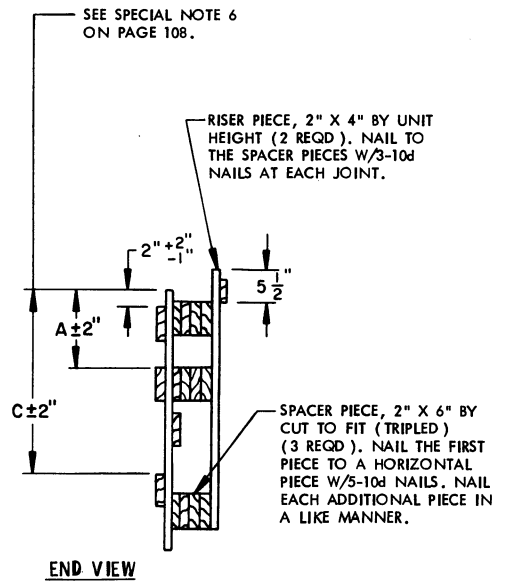


UNIT	HORIZONTAL PIECE LOCATION					
	4-LAYER UNIT			5-LAYER UNIT		
	DIM A	DIM B	DIM C	DIM A	DIM B	DIM C
ALTERNATED CONTAINERS	13" ± 1"	—	25" ± 1/3"	13" ± 1"	20" ± 1"	38" ± 1/3"
FLAT DUNNAGE	15" ± 1"	—	29-1/2" ± 1/3"	15" ± 1"	23" ± 1"	37" ± 1/3"
ROUTED DUNNAGE	15" ± 1"	—	29" ± 1/3"	14-1/2" ± 1"	23" ± 1"	37" ± 1/3"

STRAPPING BOARD



BULKHEAD GATE



END VIEW

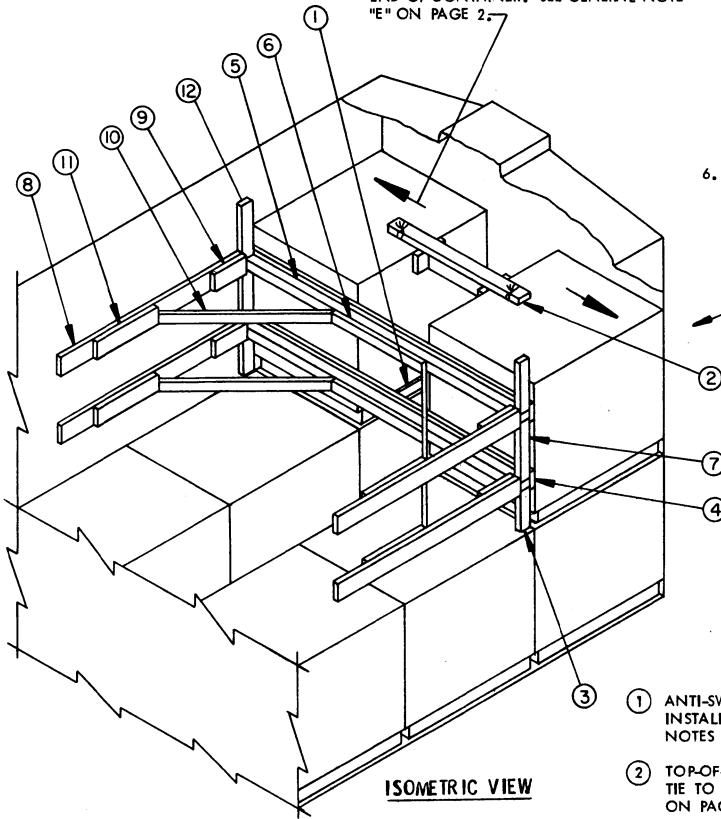
EXCEPT FOR THE ALTERNATED CONTAINERS UNIT, DIRECTION OF ARROW INDICATES BASE END OF CONTAINER. SEE GENERAL NOTE "E" ON PAGE 2.

(SPECIAL NOTES CONTINUED)

ADJACENT PIECE MARKED ⑧ 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 ⑧ TO THE FIRST W/15-16d 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 ⑧ IS DOUBLED.

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

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 124.



ISOMETRIC VIEW

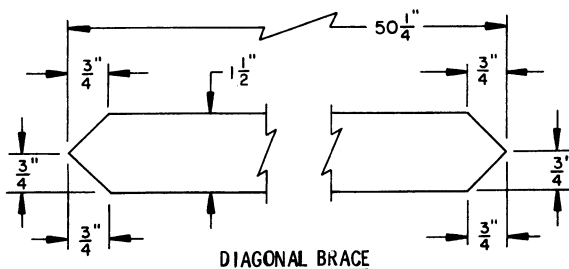
SPECIAL NOTES:

- A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOX CAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.
- THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
- PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A CONTAINERS CROSSWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR CONTAINERS LENGTHWISE LOADS. NOTE THAT FOR A CROSSWISE PARTIAL TIER, THE PIECES MARKED ④ SHOULD BE LOCATED TO AS TO BEAR AGAINST THE PALLET UNITS IN THE SAME LOCATION AS THE HORIZONTAL PIECES OF A CENTER GATE. VERTICAL PIECES AS SHOWN ON THE TYPE "B" K-BRACE MUST CONTACT EACH ROW OF CONTAINERS WHEN A LENGTHWISE LOAD IS SHIPPED.
- THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, THIRD TIER, OR FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 111 AND 112 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.
- CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ④, ⑤, ⑦, ⑨, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑩ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE

(CONTINUED AT RIGHT ABOVE)

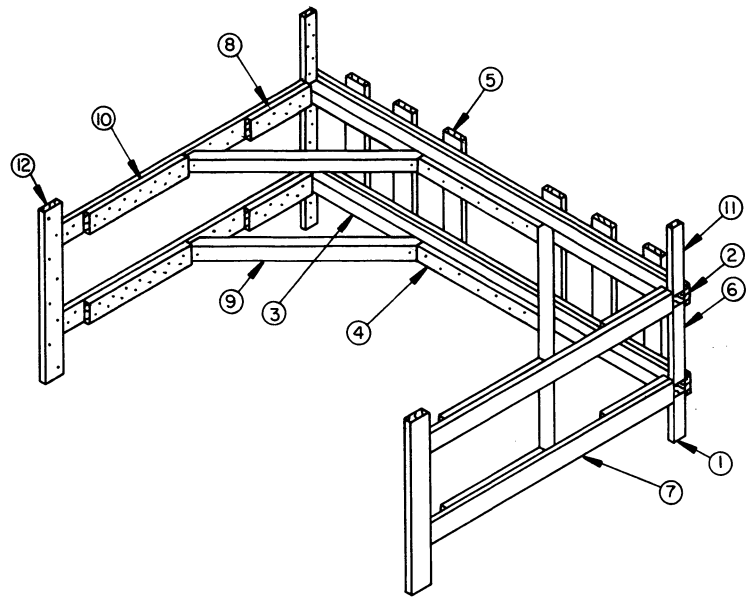
KEY NUMBERS

- ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 49. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 20. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 125. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.
- SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ④ AND ⑤ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.
- HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑤, W/1-12d NAIL EVERY 6". SEE SPECIAL NOTE 3 AT LEFT.
- CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (2 REQD).
- CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑤, W/7-16d NAILS. SEE SPECIAL NOTE 6 ABOVE.
- SPACER CLEAT, 2" X 4" X 12" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 13-1/4" FOR FLAT OR ROUTED DUNNAGE 4-LAYER UNITS, 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 25-1/2" FOR FLAT OR ROUTED DUNNAGE 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/15-12d NAILS.
- POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT PIECE MARKED ⑧, W/4-16d NAILS.
- 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 ⑤, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑧, W/2-16d NAILS AT EACH END.
- BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑧, W/8-16d NAILS.
- HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.



DIAGONAL BRACE

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



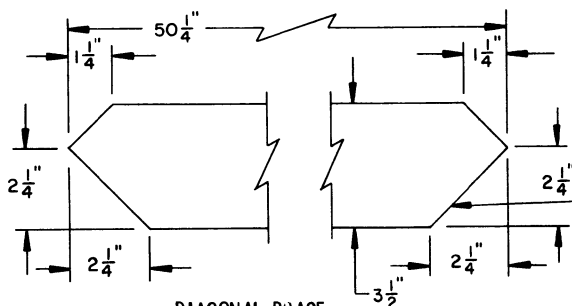
ISOMETRIC VIEW

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 TEN (10) 4-LAYER UNITS OR EIGHT (8) 5-LAYER UNITS FOR LENGTHWISE OR CROSSWISE POSITIONED PALLET UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 112 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 110 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, ⑧, ⑩, 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 ⑦ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑦ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑦ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 110 FOR A TYPICAL INSTALLATION OF A K-BRACE.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "N" AND "O" 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 VERTICAL PIECE, 2" X 6" X 33" FOR 4-LAYER UNITS, 2" X 6" X 42" FOR 5-LAYER UNITS (6 REQD). CENTER ON JOINTS OF CONTAINERS. SECURELY NAILING THRU THE LOAD BEARING PIECE W/2-10d NAILS AT EACH JOINT. NOTE THAT FOR THE FLAT AND ROUTED DUNNAGE METHOD UNITS, THE VERTICAL PIECES MAY BE POSITIONED TO REST ON THE PALLET.
- ⑥ SPACER CLEAT, 2" X 4" X 12" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 13-1/4" FOR FLAT OR ROUTED DUNNAGE 4-LAYER UNITS, 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 25-1/2" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑦ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/15-12d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/1-60d NAIL AT EACH END.
- ⑩ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑦, W/14-16d NAILS.
- ⑪ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑫ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/9-12d NAILS.

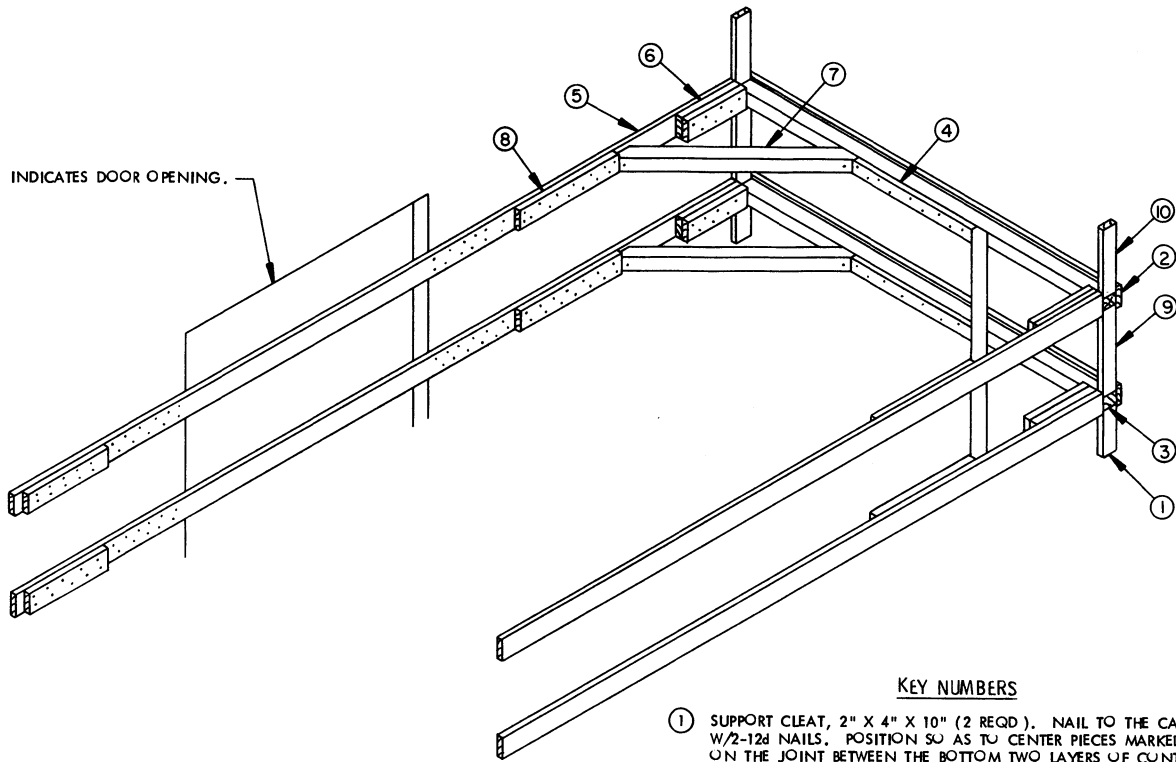


DIAGONAL BRACE

SEE SPECIAL NOTE 3 ABOVE

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

INDICATES DOOR OPENING.



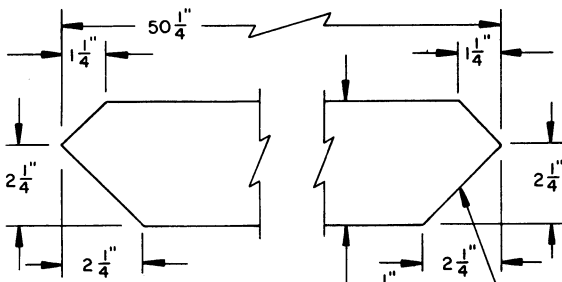
ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "N" AND "O" 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 OPENINGS TO CONTACT PIECE MARKED ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. THENAIL 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 12" FOR 4-LAYER ALTERNATED CONTAINERS UNIT, 2" X 4" X 13" FOR 4-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 25-1/2" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD 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:

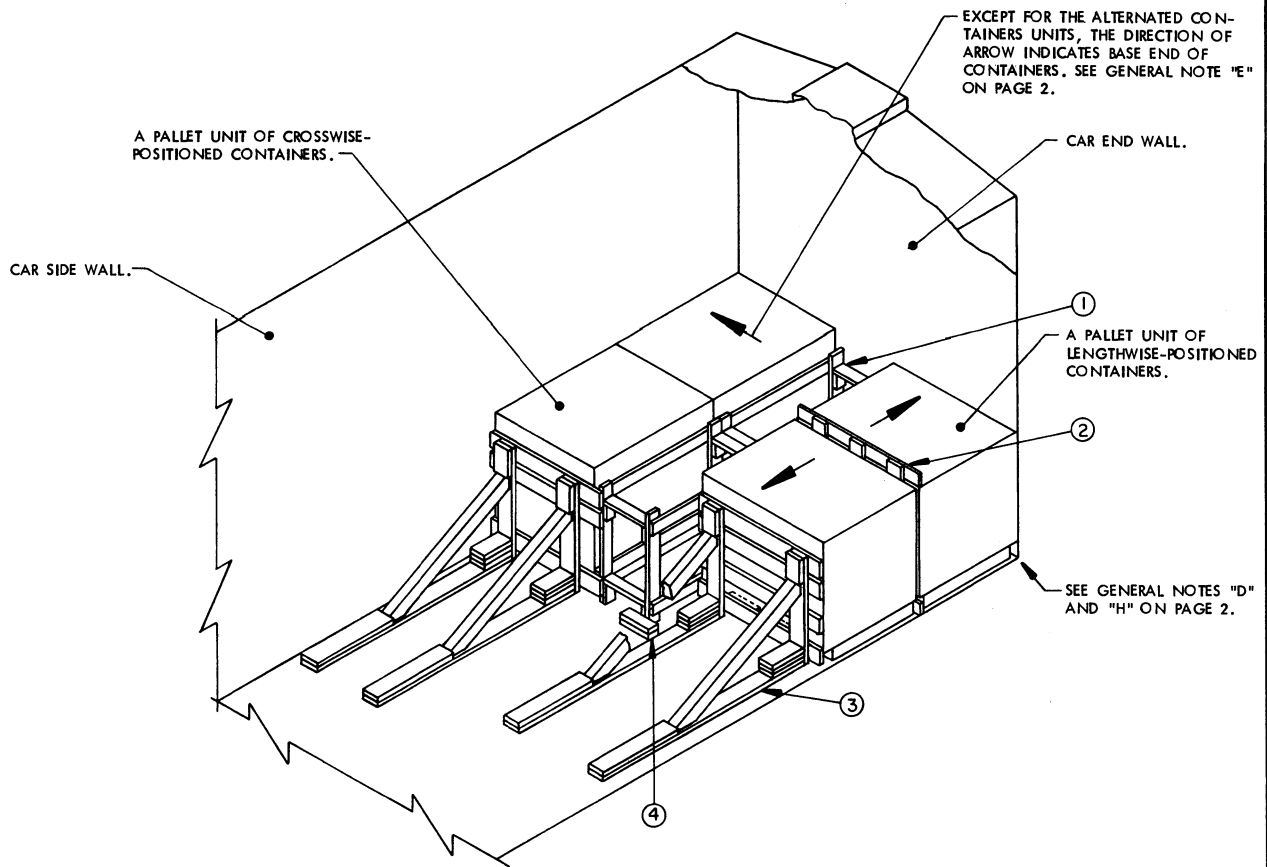
1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN FOURTEEN (14) 4-LAYER UNITS, TWELVE (12) 5-LAYER ALTERNATED CONTAINERS UNITS, OR TEN (10) 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 111 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 110 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 ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.
5. WHEN BLOCKING AND BRACING AN ALTERNATED CONTAINERS (INCREASED HEIGHT) LENGTHWISE LOAD, SEE KEY NUMBER ⑤ AND SPECIAL NOTE 1 ON PAGE 111.



DIAGONAL BRACE

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.

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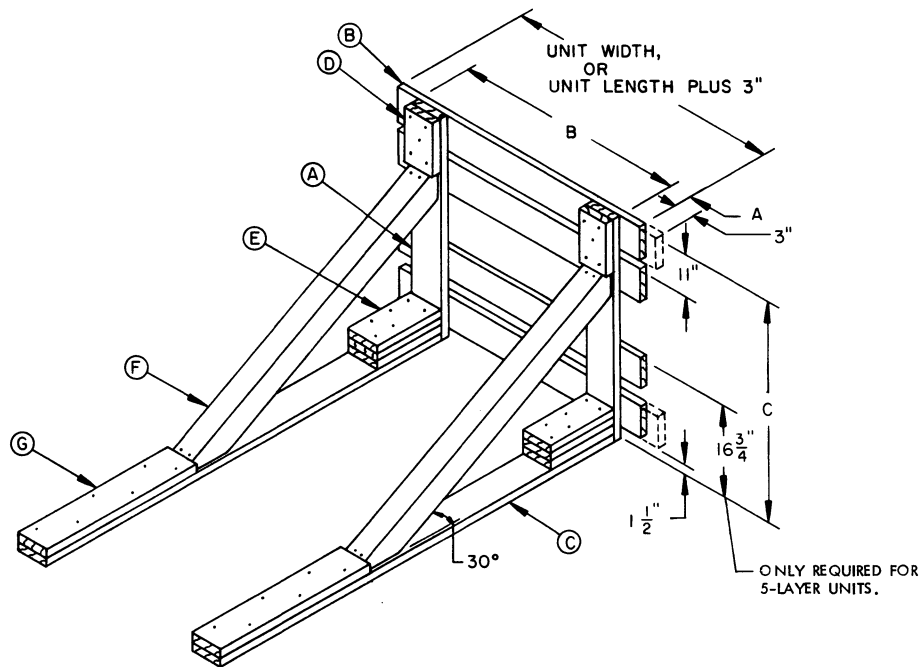
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTHWISE ROWS, OR TWO CROSSWISE ROWS IN LIEU OF ONE OF EACH AS DEPICTED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.
5. HOLD-DOWN CLEATS (GATE HOLD-DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD-DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CONTAINERS LENGTHWISE ROW, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 16 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE J" DETAIL ON PAGE 46 FOR THE FLAT DUNNAGE METHOD UNITS OR THE "CENTER GATE R" DETAIL ON PAGE 74 FOR ROUTED DUNNAGE METHOD UNITS. FOR HOLD-DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CONTAINERS CROSSWISE ROW, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 17 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE K" DETAIL ON PAGE 47 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE S" DETAIL ON PAGE 75 FOR THE ROUTED DUNNAGE METHOD UNITS. NOTE THAT IT MAY BE NECESSARY TO ADD ANOTHER HORIZONTAL PIECE (2" X 4") TO THE KNEE BRACE ASSEMBLY TO PROVIDE FOR NAILING OF THE HOLD DOWN PIECES.

KEY NUMBERS

- ① CRIB FILL (2 REQD). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 16, 32, 46, 60, 74, OR 88. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17 OR 31. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT. ONLY REQUIRED FOR THE ALTERNATED CONTAINERS UNITS.
- ③ KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 115 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.
- ④ END BLOCKING FOR CRIB FILL, 2" X 4" X 12" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/2-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



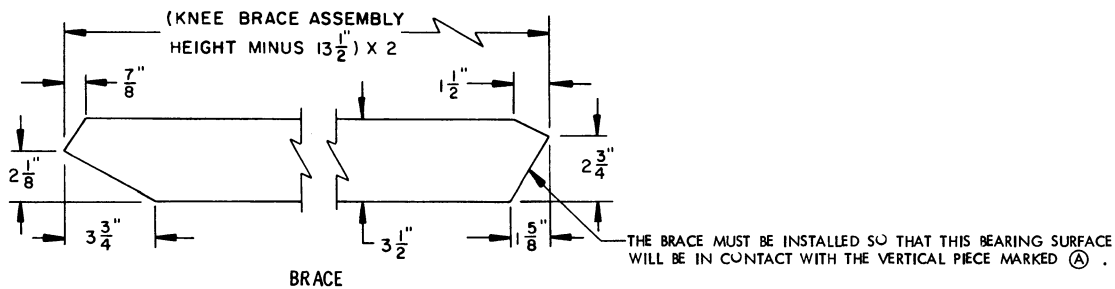
KNEE BRACE ASSEMBLY

VERTICAL PIECE PLACEMENT FOR LENGTHWISE UNITS				
UNIT	DIM A	DIM B	DIM C	
			BASIC	INCREASED
ALTERNATED CONTAINERS	6"	36-1/2"	36"	43-3/4"
FLAT DUNNAGE	14-1/2"	22-1/2"	39"	47-1/4"
ROUTED DUNNAGE	14	22-1/2"	38-1/2"	47"

DIMENSIONS FOR CONTAINERS CROSSWISE UNITS				
UNIT	DIM A	DIM B	DIM C	
			BASIC	INCREASED
ALTERNATED CONTAINERS	4"	30"	34-3/4"	42-1/2"
FLAT DUNNAGE	6-1/4"	30-1/2"	37"	45-1/4"
ROUTED DUNNAGE	4-3/4"	30-1/2"	36-1/4"	44-3/4"

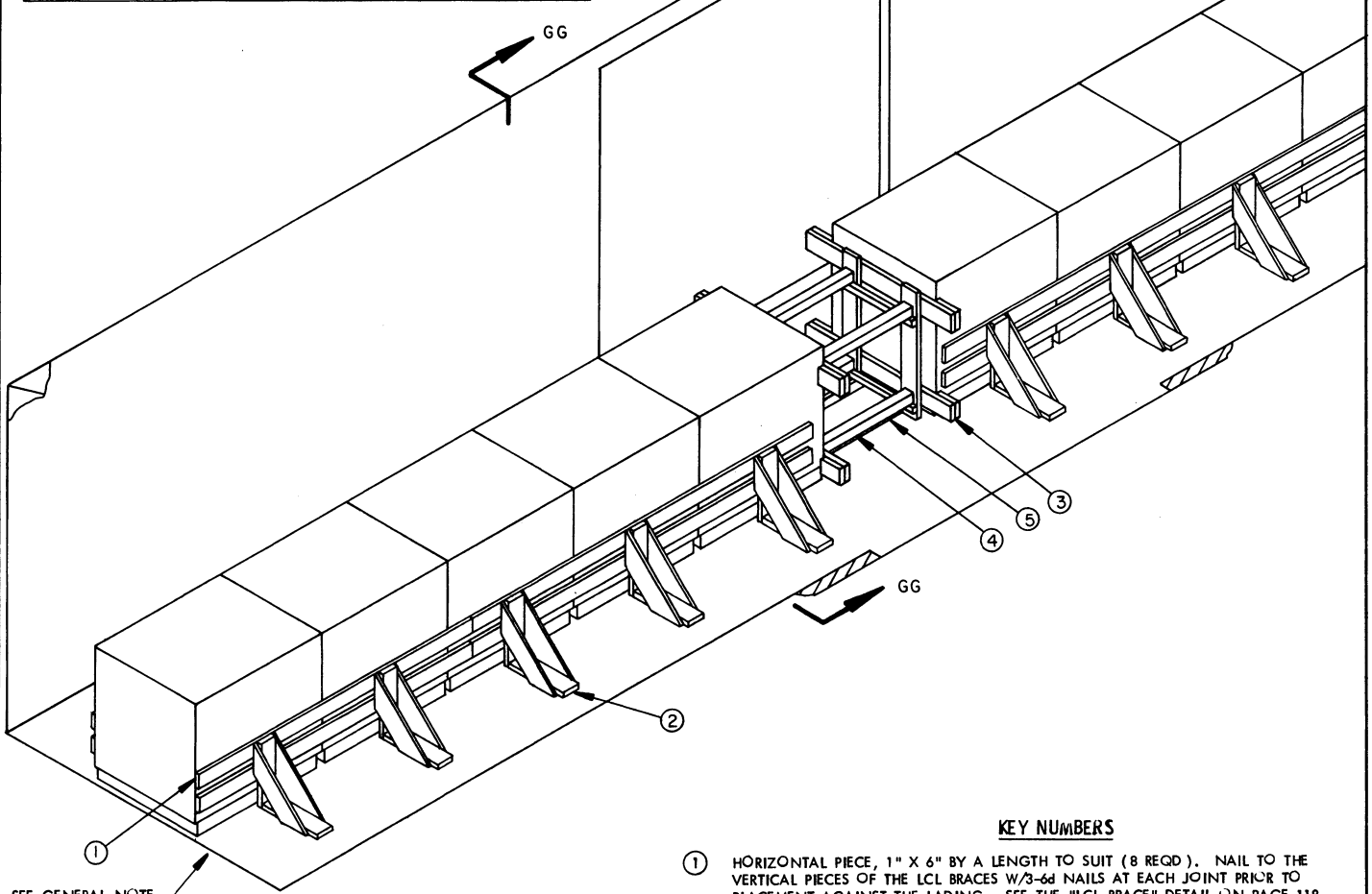
KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" BY DIMENSION "C" (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT WIDTH, OR PALLET UNIT LENGTH PLUS 3", AS APPLICABLE (3 REQD FOR 4-LAYER UNITS, 4 REQD FOR 5-LAYER UNITS). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "N" AND "O" 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 TOENAIL 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" TIME 2) (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECE MARKED (A) AND (C), W/2-16d NAILS AT EACH JOINT.
- (G) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), W/6-40d NAILS.
- (H) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 114.



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

CENTER GATE Z (FOR CONTAINERS CROSSWISE)						
DIM	4-HIGH UNIT			5-HIGH UNIT		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
A	36"	37"	38"	42"	46"	48"
B	56-1/2"	59-1/2"	59-1/2"	56-1/2"	59-1/2"	59-1/2"
C	13"	15-1/4"	14-3/4"	13"	15-1/4"	14-3/4"
D	43"	44"	44-1/2"	43"	44"	44-1/2"
E	9-1/4"	9-3/4"	9"	9-1/4"	18"	9"
F	31-1/4"	33-1/4"	34"	38-3/4"	42-3/4"	42"

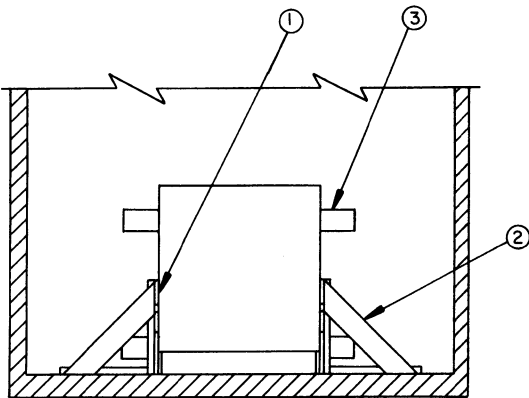


SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

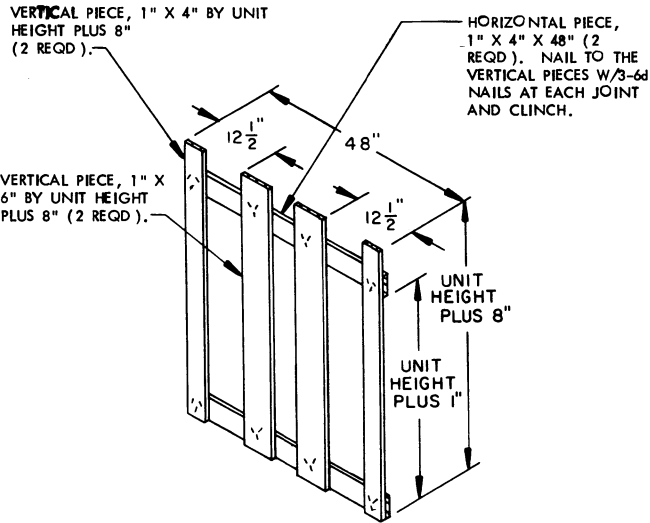
KEY NUMBERS

- ① HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 118 FOR HEIGHT LOCATION GUIDANCE.
- ② LCL BRACE (22 REQD). SEE THE DETAIL ON PAGE 118 AND SPECIAL NOTE 4 ON PAGE 117. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "I" ON PAGE 2.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE Z" OR THE "CENTER GATE AA" DETAIL ON PAGE 117 FOR CONTAINERS LENGTHWISE OR CONTAINERS CROSSWISE UNITS, RESPECTIVELY.
- ④ STRUT, 4" X 4" BY CUT TO FIT (4 REQD FOR CONTAINERS CROSSWISE, 6 REQD FOR MOST CONTAINERS LENGTHWISE). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.
- ⑤ 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 Z" DETAIL ON PAGE 117 FOR LOCATION GUIDANCE. NOTE THAT FOR THE LENGTHWISE UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 6 ON PAGE 117.



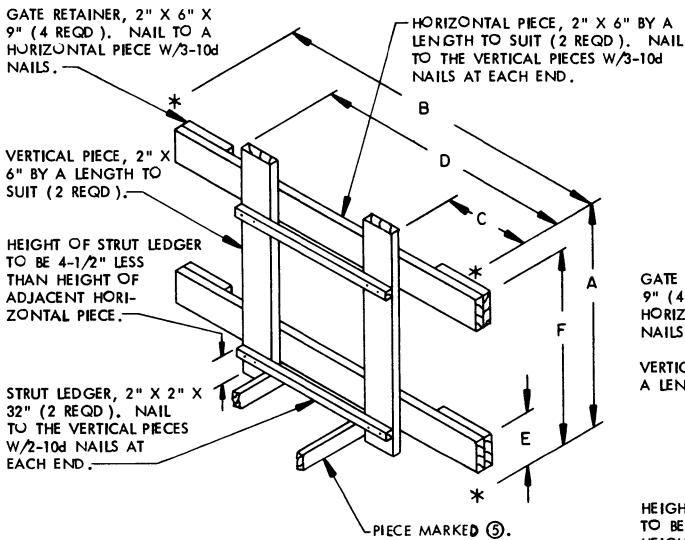
SECTION GG-GG

CENTER GATE AA (FOR CONTAINERS LENGTHWISE)						
DIM	4-HIGH UNIT			5-HIGH UNIT		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
G	36"	42"	42"	43"	46"	51"
H	67"	70"	69"	67"	70"	69"
J	15"	23-1/2"	23"	15"	23-1/2"	23"
K	52"	46"	46"	52"	46"	46"
L	16"	9-3/4"	11"	16"	9-3/4"	11"
M	----	25-1/4"	25-1/4"	27-1/2"	26"	29-1/2"
N	31-1/4"	39"	38"	38-3/4"	42"	47"



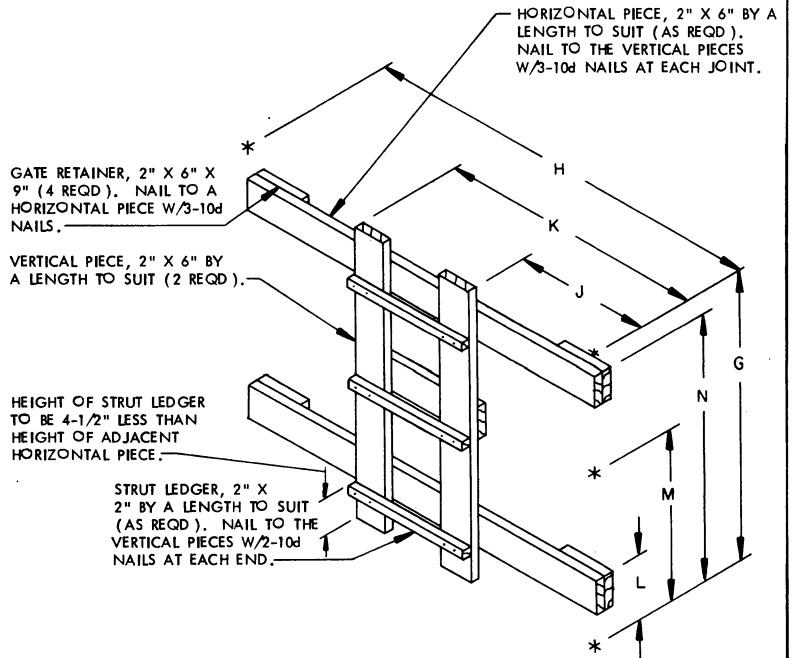
SEPARATOR GATE F

THIS ASSEMBLY IS ONLY FOR USE IN LOADS OF LENGTHWISE POSITIONED ALTERNATED CONTAINERS UNITS.



CENTER GATE Z

THIS GATE IS FOR USE WITH CONTAINERS CROSSWISE UNITS. REFER TO THE "CENTER GATE Z" CHART ON PAGE 116 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.



CENTER GATE AA

THIS GATE IS FOR USE WITH CONTAINERS LENGTHWISE UNITS. REFER TO THE "CENTER GATE AA" CHART AT BOTTOM OF PAGE 116 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	337	169
2" X 2"	10	4
2" X 3"	13	9
2" X 6"	129	129
4" X 4"	15	20
NAILS	NO. REQD	POUNDS
6d (2")	132	1
8d (2-1/2")	264	2-3/4
10d (3")	72	1-1/4
16d (3-1/2")	214	4-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	11	18,821 LBS
DUNNAGE		668 LBS
TOTAL WEIGHT		19,489 LBS (APPROX)

SPECIAL NOTES

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A 1-WIDE CONTAINERS CROSSWISE 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 LENGTHWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE "SEPARATOR GATE E", AS DETAILED AT LEFT, IS ONLY REQUIRED FOR LOADS OF ALTERNATED CONTAINERS UNITS WHEN THE CONTAINERS ARE LENGTHWISE IN THE CAR. NOTE THAT THE QUANTITY OF LCL BRACES, PIECE MARKED ②, IS NOT CORRECT FOR A CONTAINERS LENGTHWISE LOAD.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR CONTAINERS CROSSWISE PALLET UNITS, THE BRACES WILL BE CENTRED ON THE WIDTH OF THE UNIT. FOR THE CONTAINERS LENGTHWISE UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT LENGTH.
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 GATE FOR A SINGLE ROW, MAY BE USED IN LIEU OF PIECES MARKED ⑤.

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

SEE GENERAL NOTE "H" ON PAGE 2.

LCL BRACE (4 REQD). SEE THE DETAIL BELOW. LOCATE SO AS TO BE CENTERED ON THE JOINTS OF THE CONTAINER ENDS AND/OR AGAINST THE BATTENS OF THE FLAT DUNNAGE OR ROUTED DUNNAGE METHOD UNIT, OR AGAINST THE INTERMEDIATE DUNNAGE PIECES OF THE ROUTED DUNNAGE METHOD UNIT, OR THE CROSS PIECE OF AN INTERMEDIATE DUNNAGE ASSEMBLY OF THE FLAT DUNNAGE METHOD UNIT AND/OR ALTERNATED CONTAINERS UNIT. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTES "N", "O", AND "T" ON PAGE 2.

ISOMETRIC VIEW

SPECIAL NOTES:

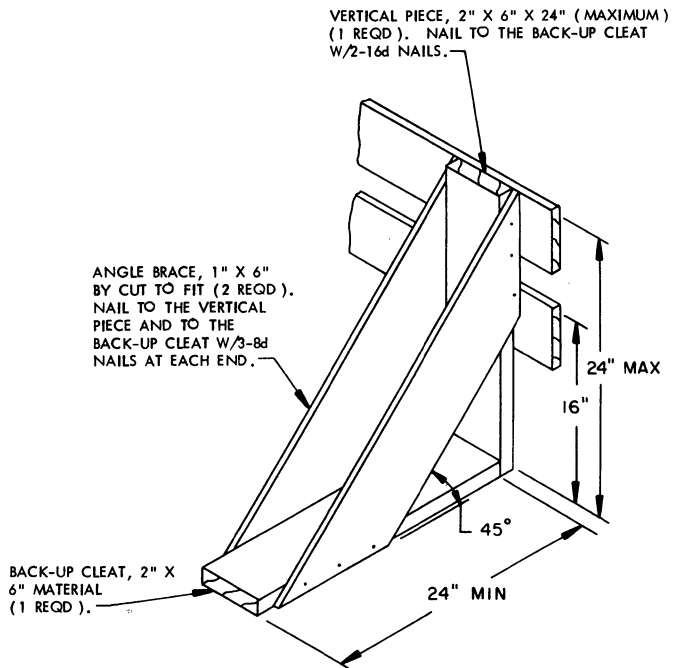
1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "T" AND "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES 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 CONTAINER 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.

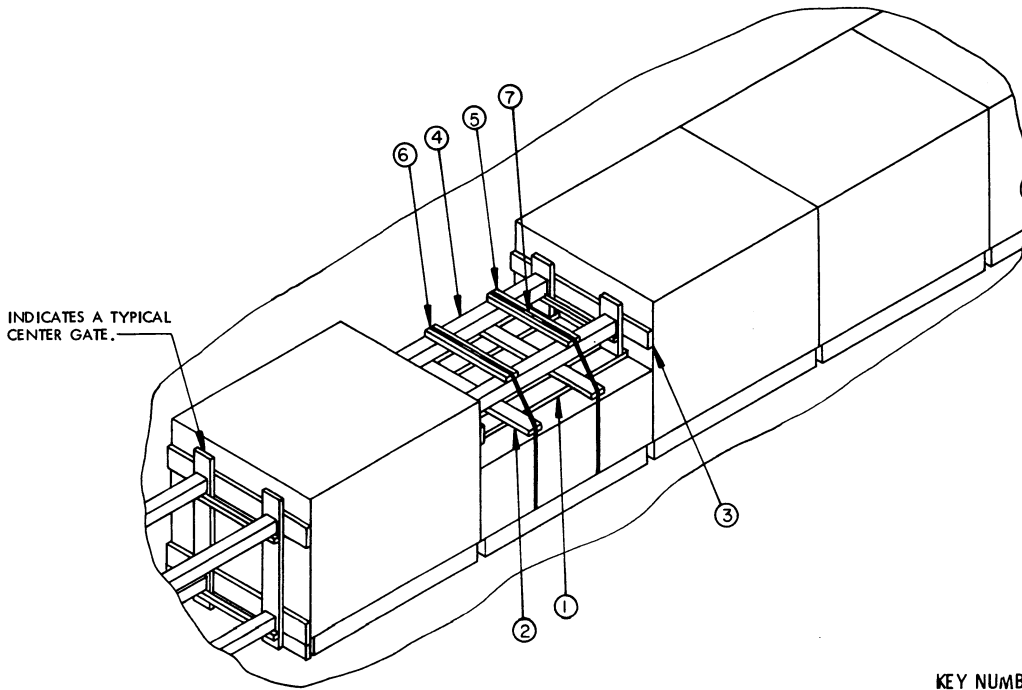
VERTICAL PIECE, 2" X 6" X 24" (MAXIMUM) (1 REQD). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.

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





POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER

SPECIAL NOTES:

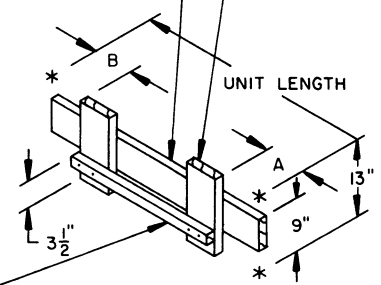
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CROSSWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. WHEN THE PALLET UNIT IS THE ALTERNATED CONTAINERS UNIT, REFER TO PAGE 130 FOR THE INSTALLATION OF BATTENS TO PROTECT THE BASE AND BELL ENDS OF CONTAINERS.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 4-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/11-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
6. THE "POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARSEQUIPPED WITH LOAD DIVIDER BULKHEADS.
7. FOR SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 122 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" BY UNIT WIDTH (2 REQD). POSITION ON TOP OF THE STRAPPING BOARD OF A PALLET UNIT.
- ② RETAINER PIECE, 2" X 4" X 41" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED ①, W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ④ STRUT, 4" X 4" BY UNIT WIDTH MINUS 6" (2 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED ③, W/2-16d NAILS AT EACH END.
- ⑤ STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④, W/3-10d NAILS AT EACH JOINT.
- ⑥ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑦ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.

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

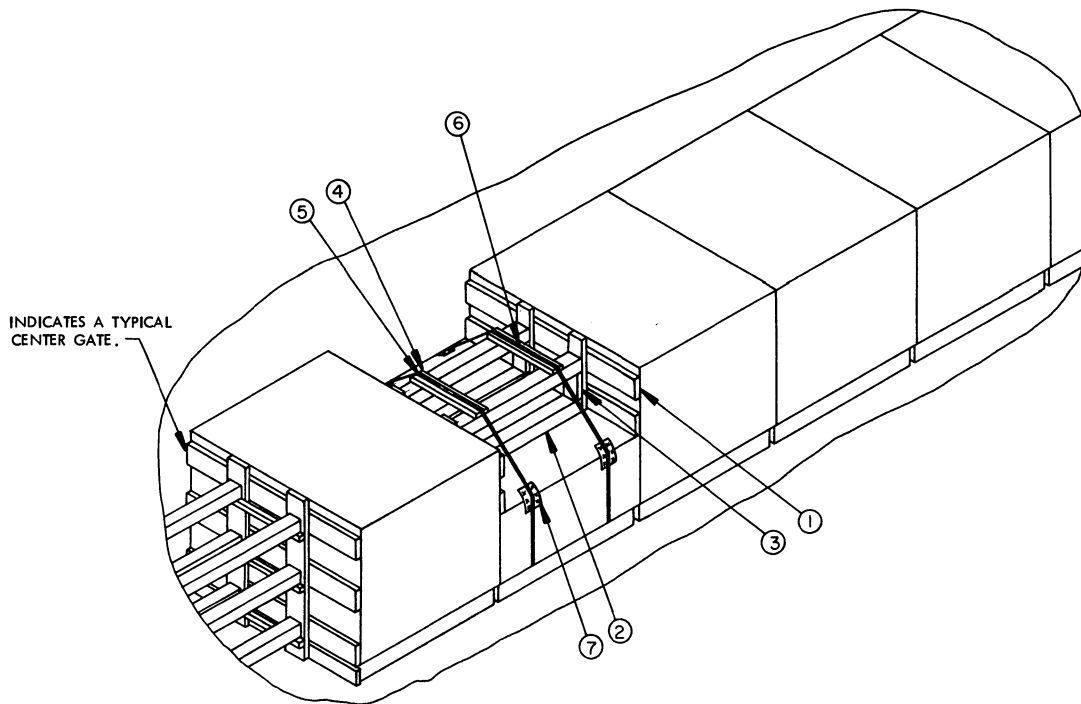
VERTICAL PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD).



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

PALLET-UNIT GATE A

PALLET UNIT GATE A			
DIM	ALT	FLAT	ROUTED
A	4"	6-1/4"	5-3/4"
B	4"	4-1/4"	4-3/4"



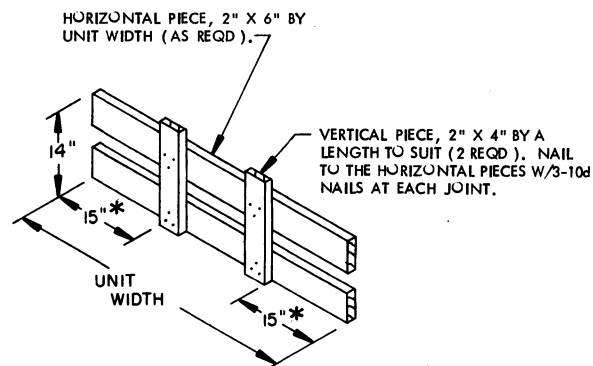
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

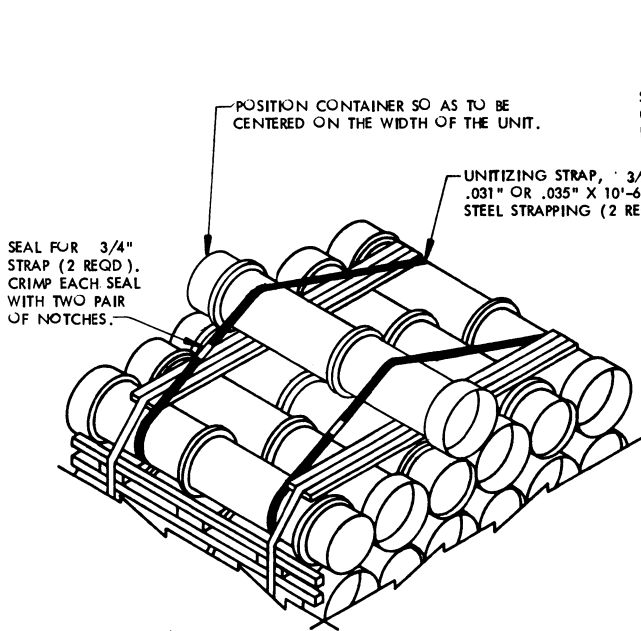
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 4-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/11-20PM1001, 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 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

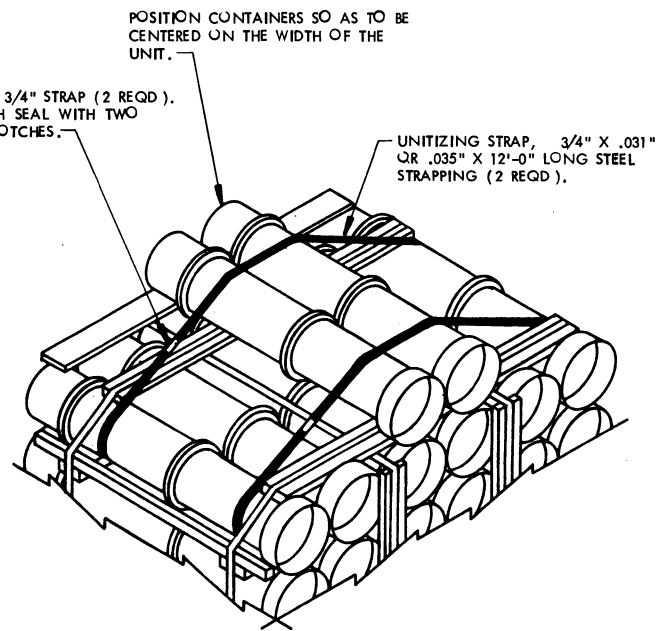
- ① PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② STRUT, 4" X 4" BY UNIT LENGTH MINUS 6" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/2-16d NAILS AT EACH END.
- ③ STRUT SUPPORT PIECE, 2" X 4" X 6" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.
- ④ STRAPPING BOARD, 2" X 4" X 34-1/2" FOR ALTERNATED CONTAINERS, 21-1/2" FOR FLAT DUNNAGE AND 20-1/2" FOR ROUTED DUNNAGE UNITS (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ②, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" X .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.
- ⑦ ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



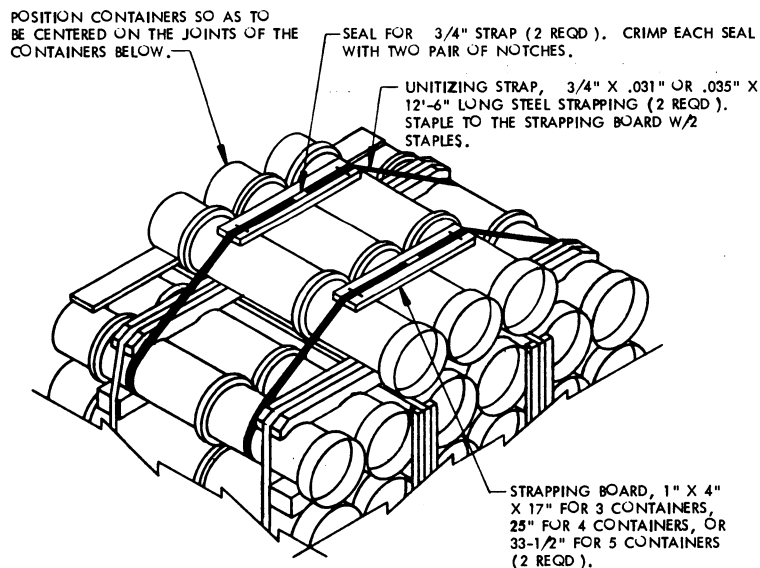
PARTIAL UNIT GATE B



SECUREMENT OF ONE CONTAINER



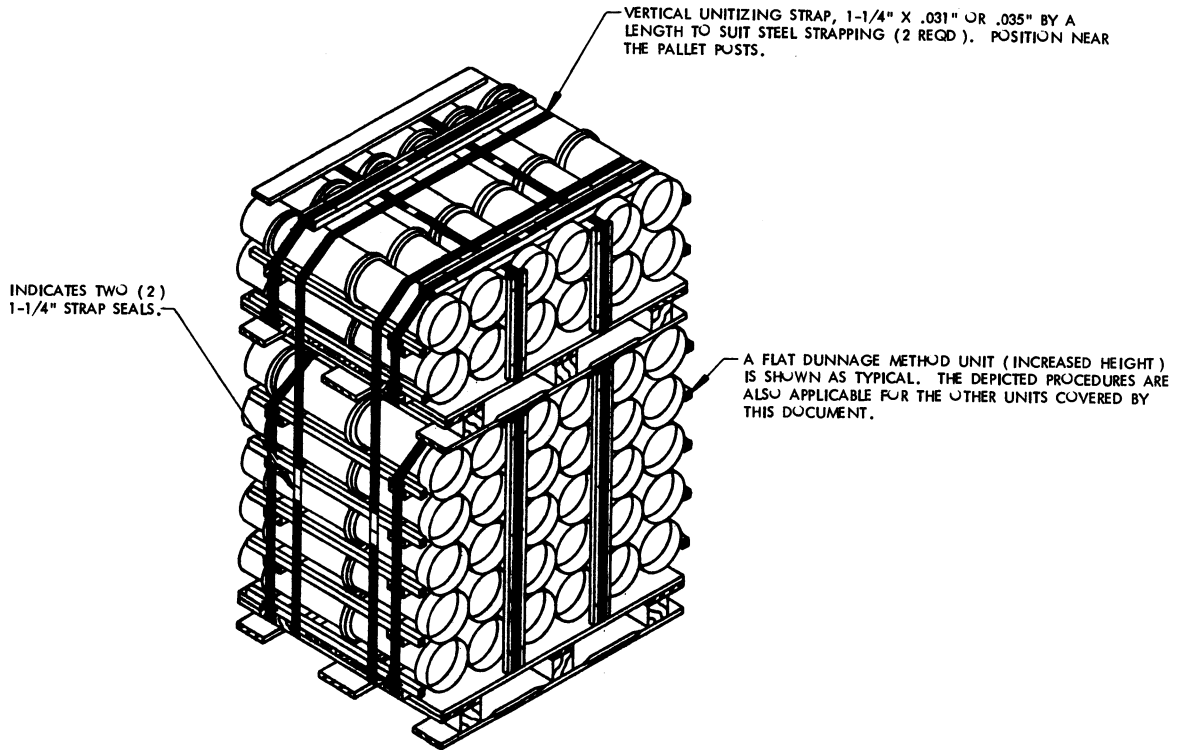
SECUREMENT OF TWO CONTAINERS



SECUREMENT OF THREE CONTAINERS

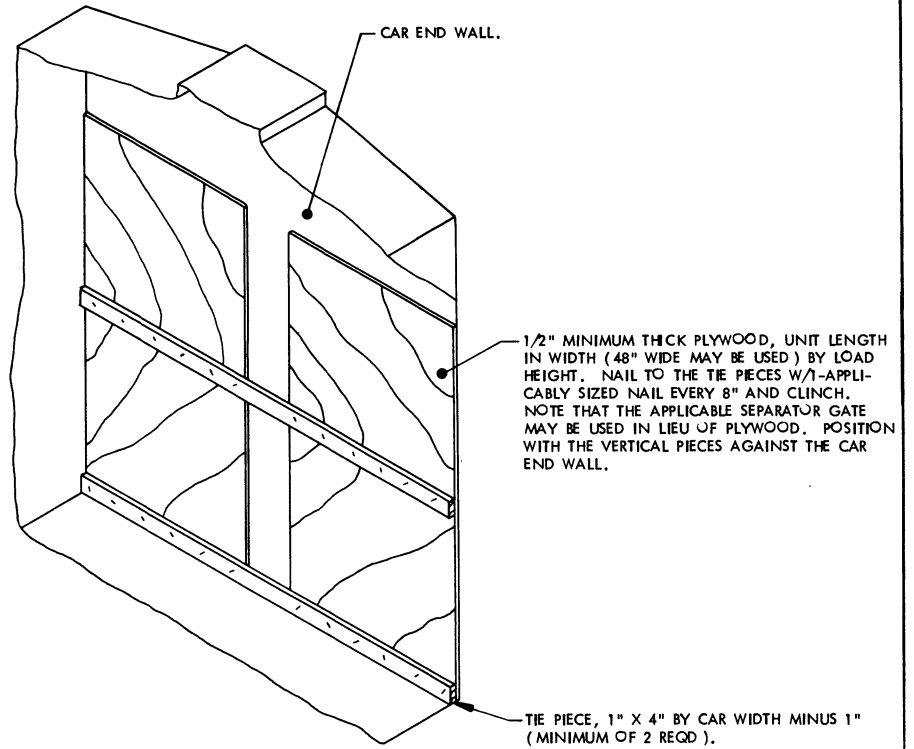
SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 122 OR WITHIN A LAYER AS SHOWN ON PAGES 119 AND 120.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM A LOAD, ASSEMBLY, AND PACK PLANTS TO DEPOTS. **CAUTION:** A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. FOR THE ALTERNATED CONTAINERS UNITS AND FOR THE FLAT DUNNAGE METHOD UNITS, THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY. THE STRAP MUST BE THROWN BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES, AS SHOWN ABOVE.
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.



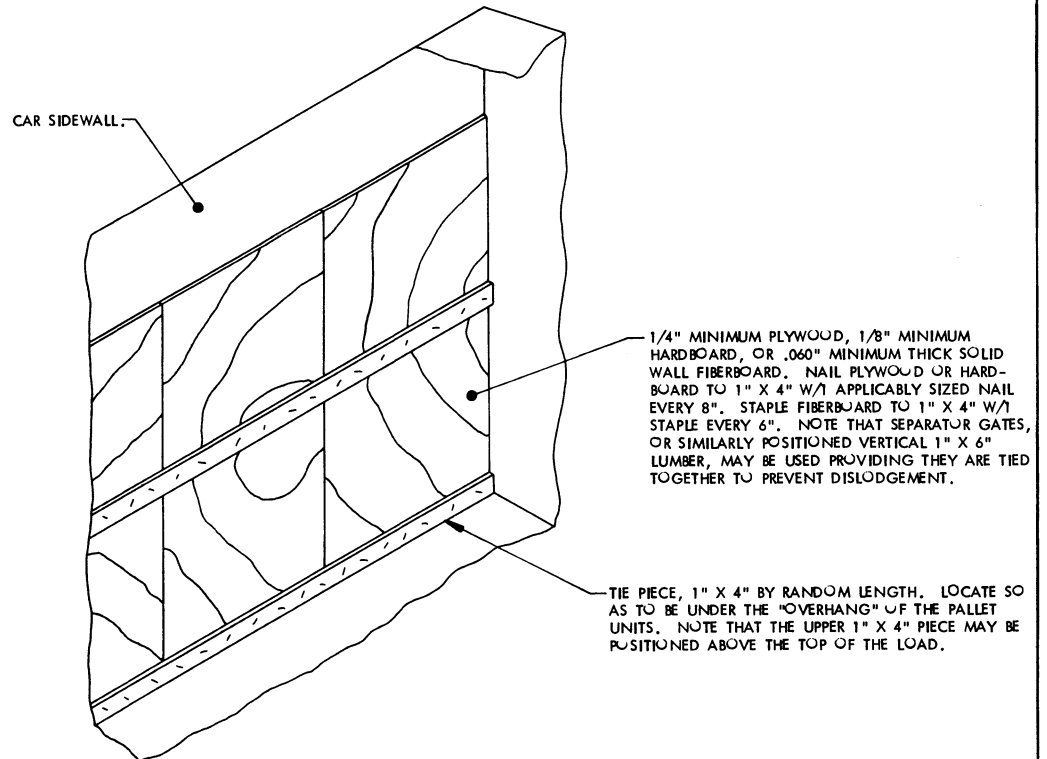
SECUREMENT OF PARTIAL UNIT ON TOP

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 119.



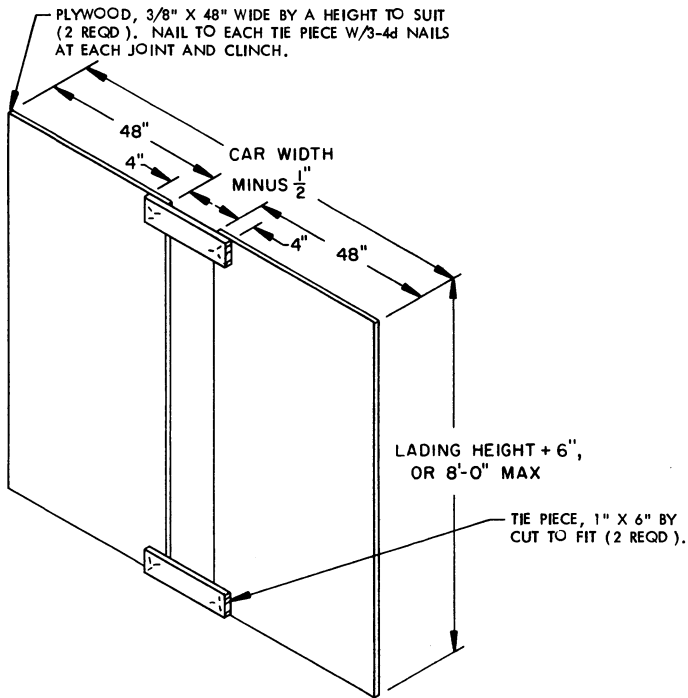
END-WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CONTAINERS LENGTHWISE LOAD OF ALTERNATED CONTAINERS UNITS OR A CONTAINERS CROSSWISE LOAD OF ROUTED DUNNAGE METHOD UNITS IN A CAR EQUIPPED WITH A STEEL END WALL. END WALL LINING IS NOT REQUIRED FOR FLAT DUNNAGE METHOD UNITS.



SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CONTAINERS CROSSWISE LOAD OF ALTERNATED CONTAINERS UNITS OR A CONTAINER LENGTHWISE LOAD OF ROUTED DUNNAGE METHOD UNITS 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. SIDEWALL LINING IS NOT REQUIRED FOR FLAT DUNNAGE METHOD UNITS.



ALTERNATIVE SEPARATOR GATE

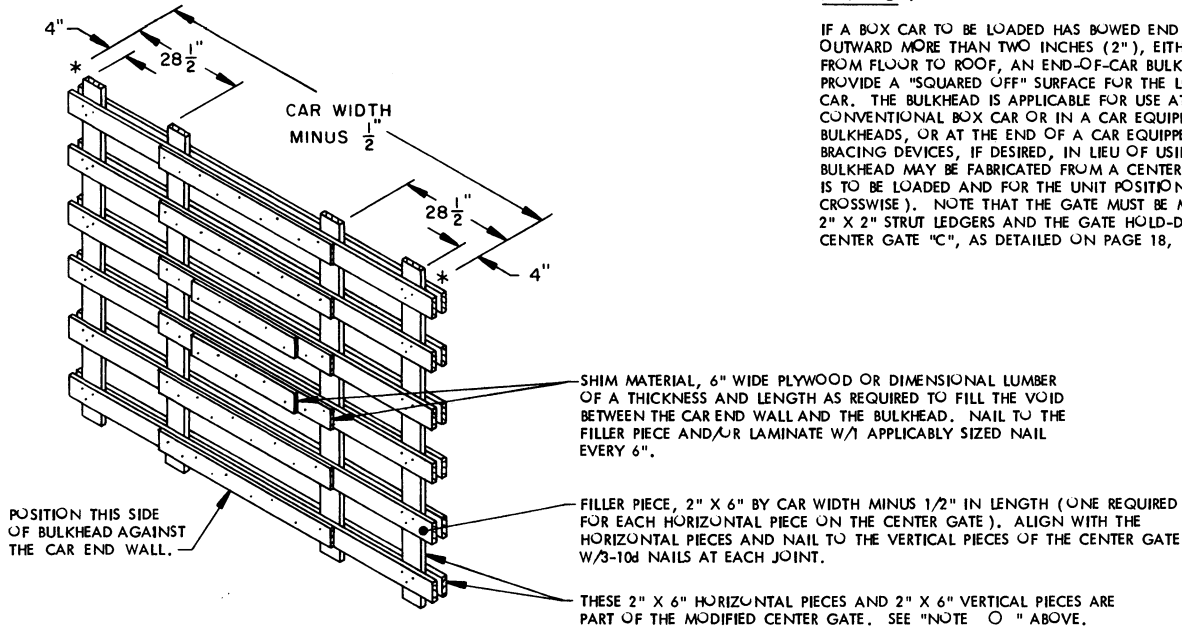
SEE "NOTE ①" AT RIGHT

NOTE ① :

THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 1" X 4" AND 1" X 6" MATERIAL. THE ALTERNATIVE SEPARATOR GATE CAN ONLY BE USED IN LOADS WHICH ARE ONE OR TWO PALLET UNITS IN HEIGHT; PLYWOOD SEPARATOR GATES ARE NOT ECONOMICALLY FEASIBLE FOR A 3-LAYER LOAD. SEPARATOR GATES ARE ONLY REQUIRED IN A LOAD OF LENGTHWISE POSITIONED ALTERNATED CONTAINERS UNITS. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE ALTERNATIVE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. FOR A 2-HIGH LOAD, THE LOWER TIE PIECE MUST BE CHANGED TO 1" X 4" MATERIAL AND MOVED SO THE TOP IS AT 40-1/2" FOR THE BASIC HEIGHT UNIT OR AT 48" FOR THE INCREASED HEIGHT UNIT. FOR A 1-HIGH LOAD, ONLY THE TOP TIE PIECE WILL BE USED.

NOTE ② :

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.

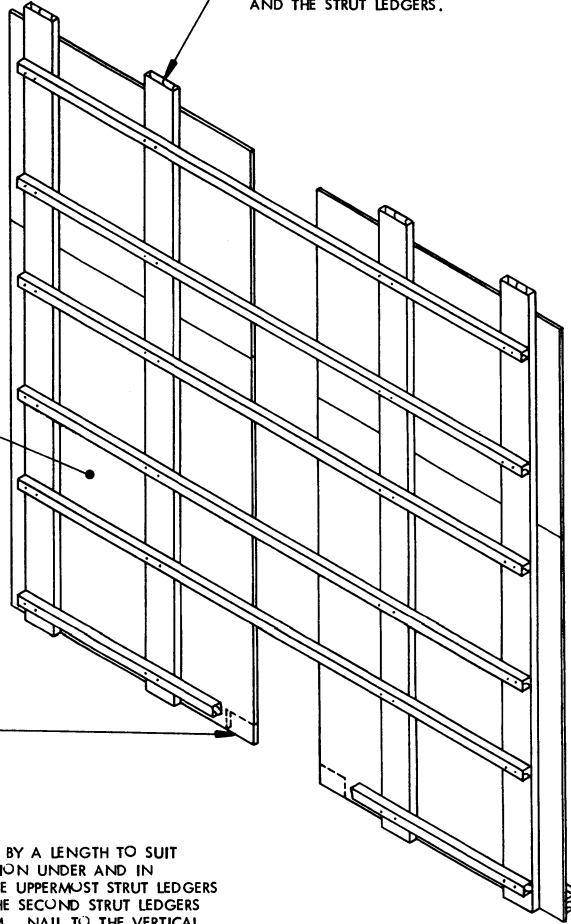


END-OF-CAR BULKHEAD
SEE "NOTE ②" AT RIGHT

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

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

WHEN NAILING FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, EACH PLYWOOD SHEET MUST HAVE A CUTOUT AT THE LOWER INSIDE CORNER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. THE CUTOUT MUST BE 3-1/2" HIGH AND OF SUFFICIENT WIDTH SO THAT THE REMAINING PLYWOOD AT THE FLOOR IS 36" FOR ALTERNATED CONTAINERS CROSSWISE UNITS, 40" FOR FLAT DUNNAGE AND ROUTED DUNNAGE CROSSWISE UNITS; FOR ALL LENGTHWISE UNITS THE PLYWOOD CAN BE 48" WIDE AT THE FLOOR.

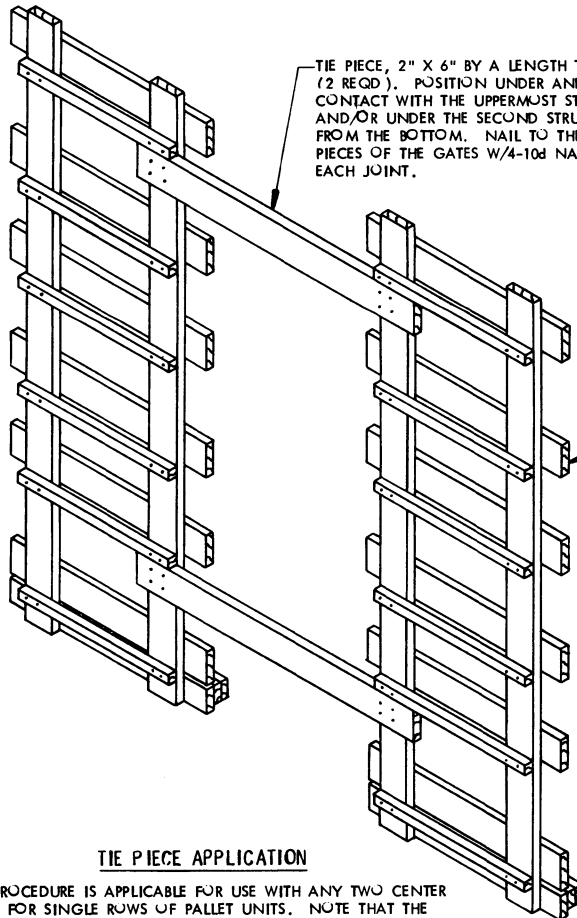


GATE HOLD-DOWN PIECE MUST BE SECURED TO THE PLYWOOD.

PLYWOOD CENTER GATE ALTERNATIVE

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

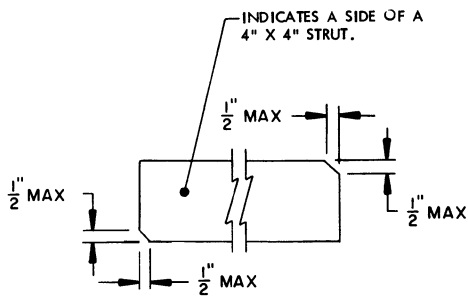
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



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

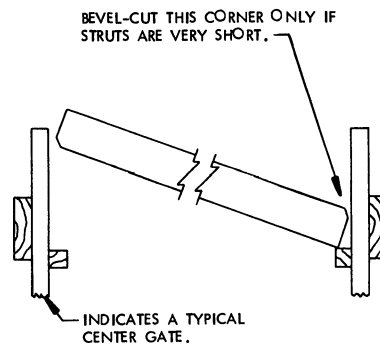
TIE PIECE APPLICATION

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



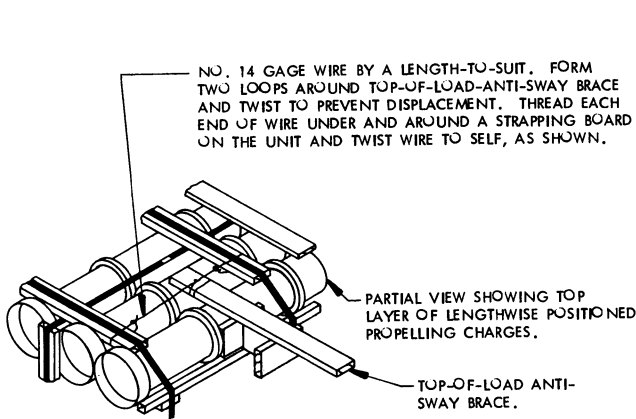
BEVEL-CUT

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

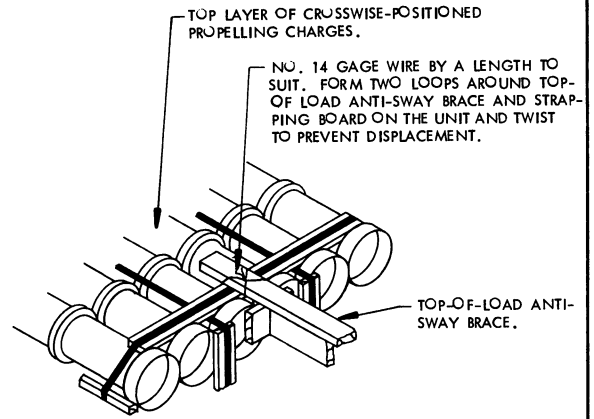


STRUT INSTALLATION

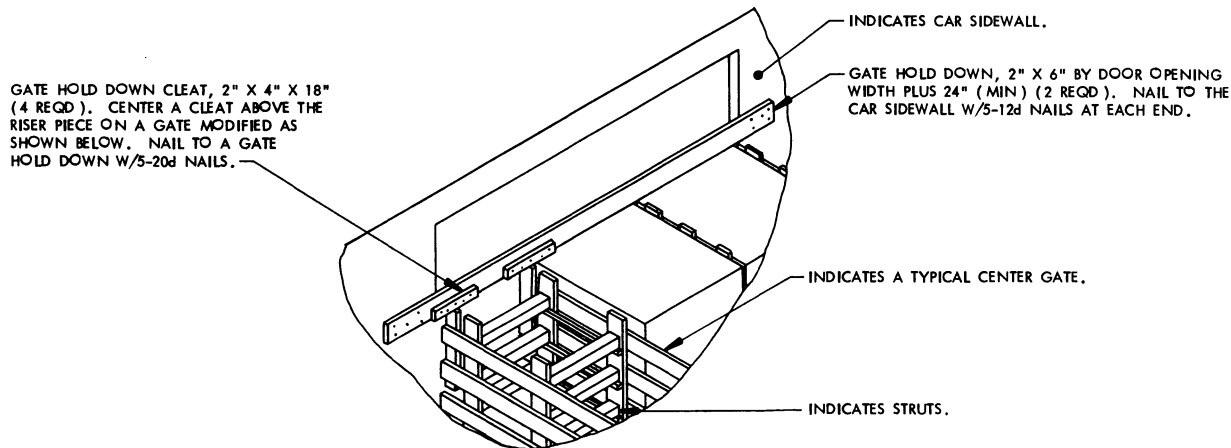
SEE GENERAL NOTE "W" ON PAGE 2 FOR ADDITIONAL STRUT INSTALLATION GUIDANCE.



TIE WIRE APPLICATION A

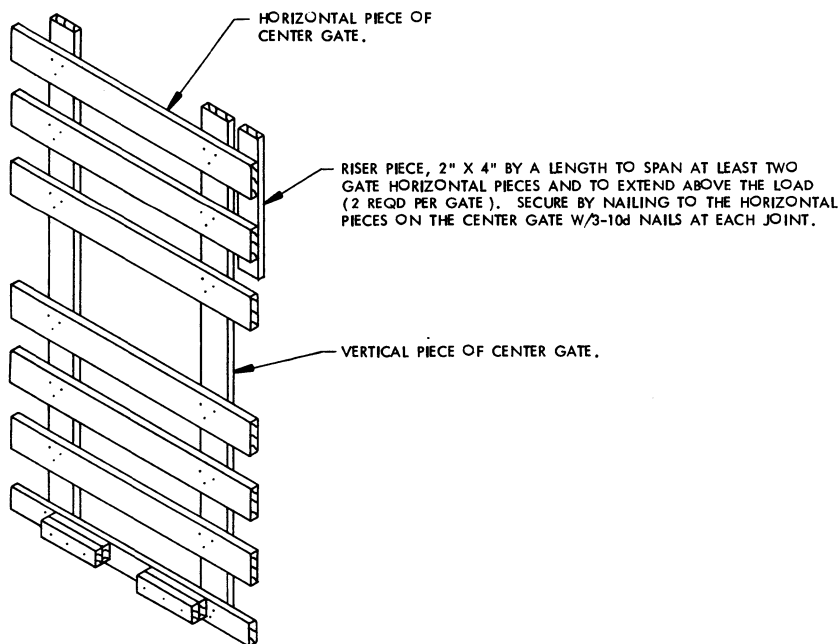


TIE WIRE APPLICATION B



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, OR IN LIEU OF THE 2" X 4" GATE HOLD DOWN PIECES WHICH SPAN THE CENTER VOID AREA AND ARE NAILED TO THE CENTER GATES. NOTE: FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD-DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD-DOWN.



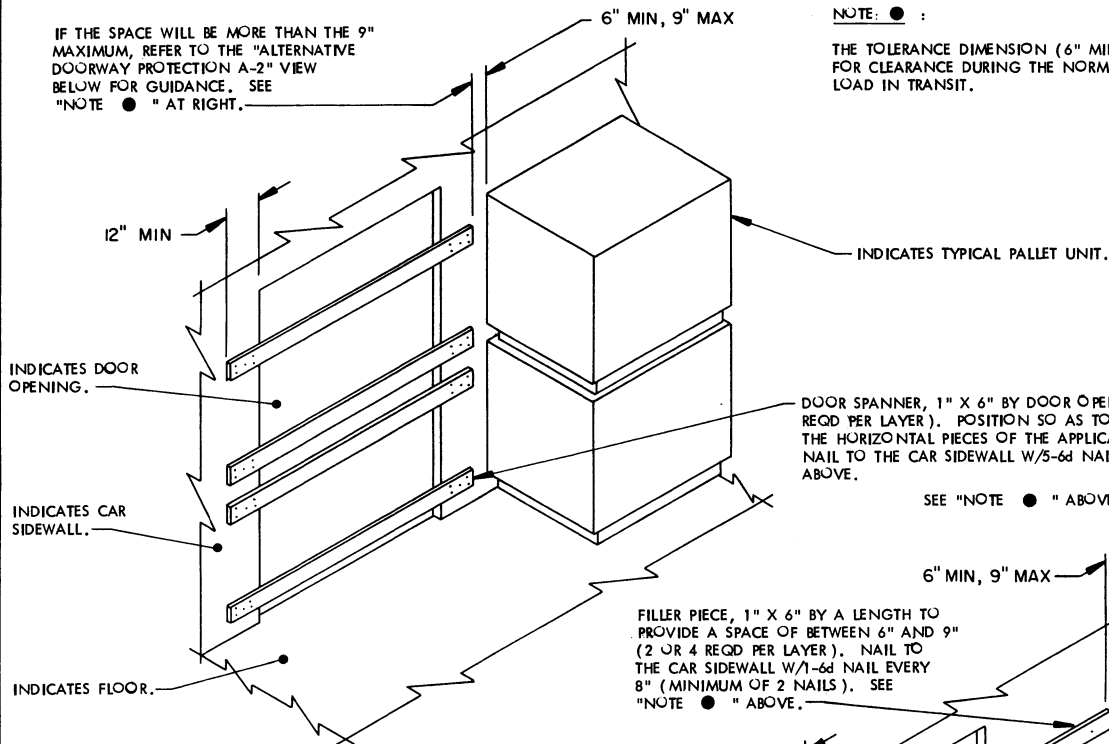
CENTER GATE MODIFICATION

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

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

NOTE: ● :

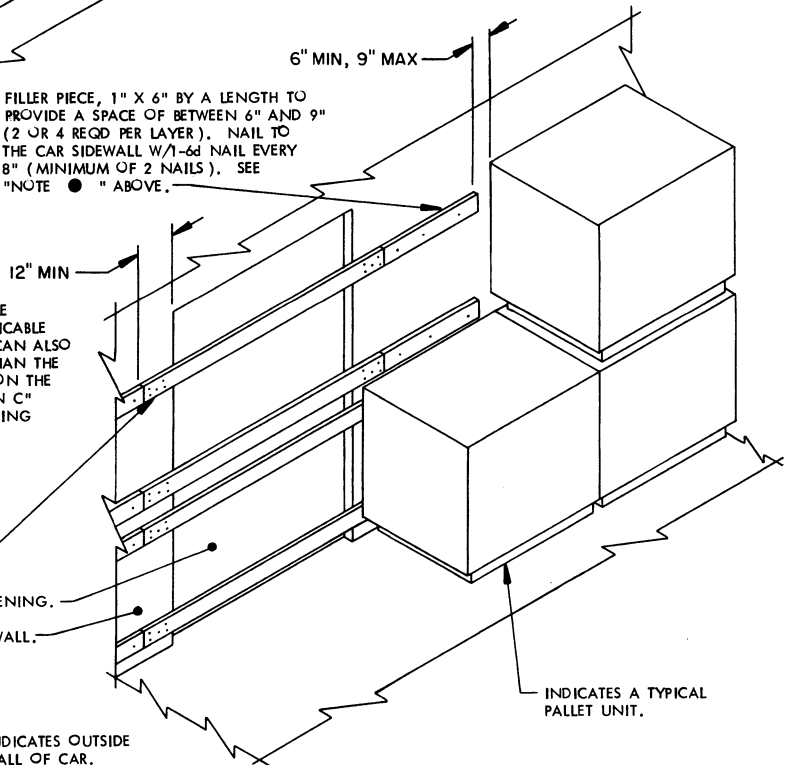
THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT.



ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS, HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 129 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED IN THE LOAD ON PAGES 14, 30, 44, 58, 72, OR 86.

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

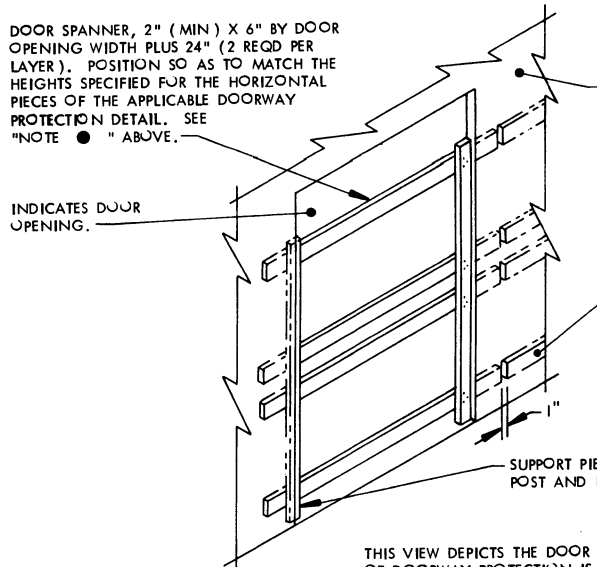


ALTERNATIVE DOORWAY PROTECTION A-2

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

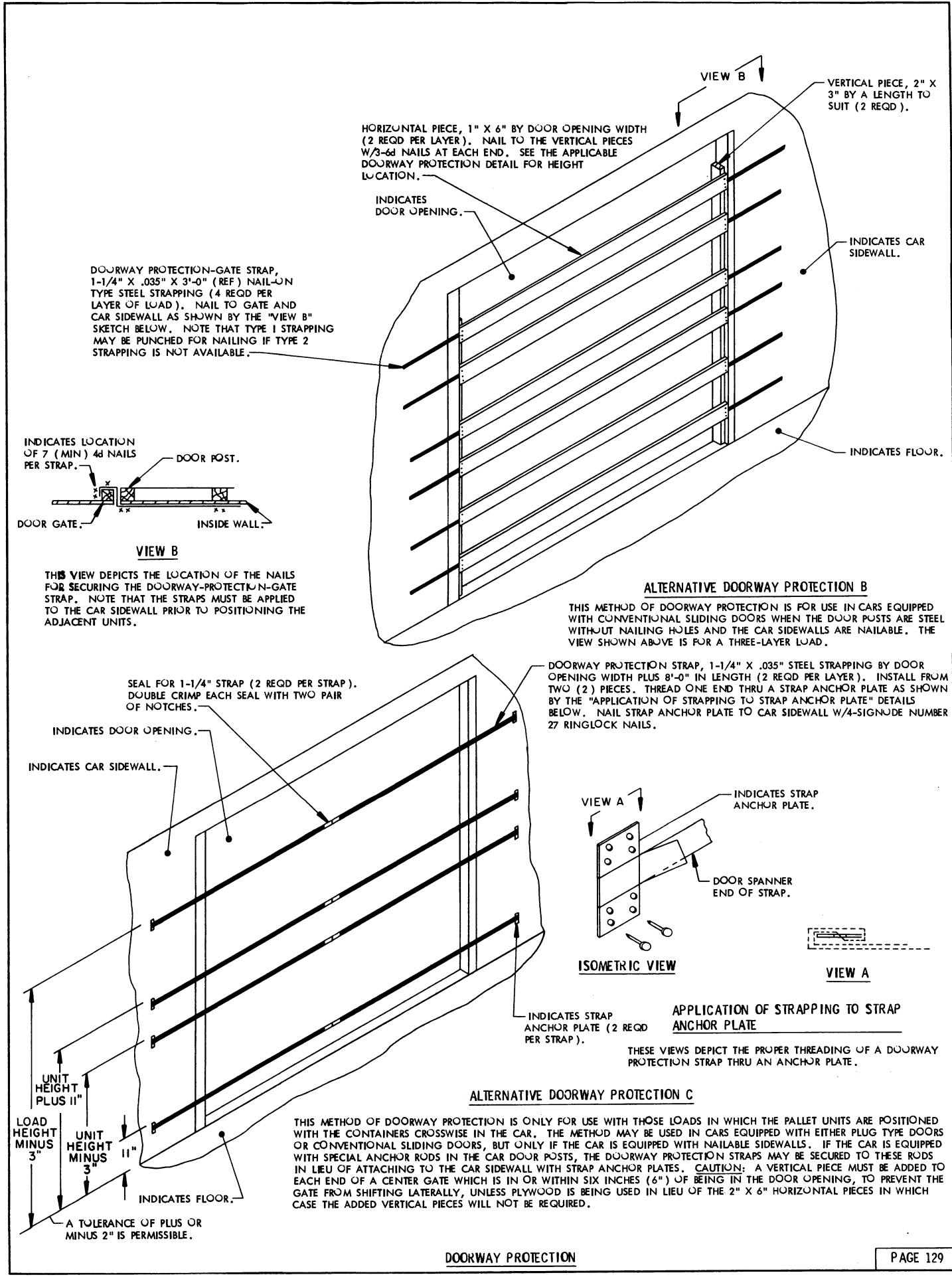
DOOR SPANNER, 2" (MIN) X 6" BY DOOR OPENING WIDTH PLUS 24" (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE APPLICABLE DOORWAY PROTECTION DETAIL. SEE "NOTE ●" ABOVE.

INDICATES DOOR OPENING.

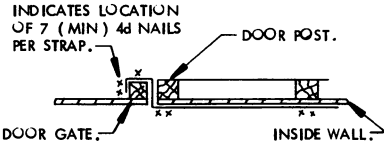


ALTERNATIVE DOORWAY PROTECTION A-3

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



DOORWAY PROTECTION-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.



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.

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.

ALTERNATIVE DOORWAY PROTECTION B

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

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

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.

VIEW A

INDICATES STRAP ANCHOR PLATE.

DOOR SPANNER END OF STRAP.

ISOMETRIC VIEW

VIEW A

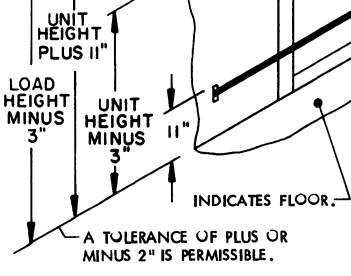
INDICATES STRAP ANCHOR PLATE (2 REQD PER STRAP).

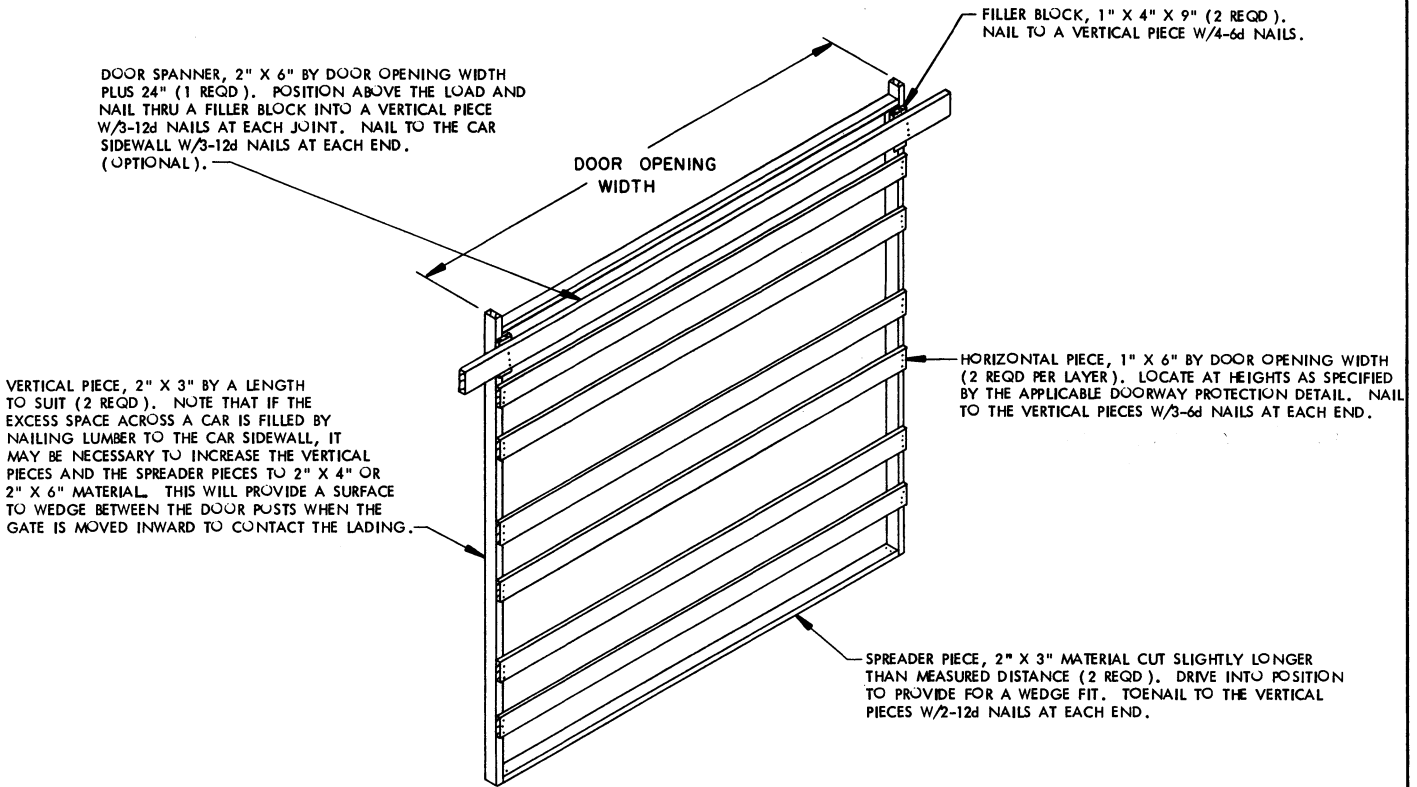
APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

ALTERNATIVE DOORWAY PROTECTION C

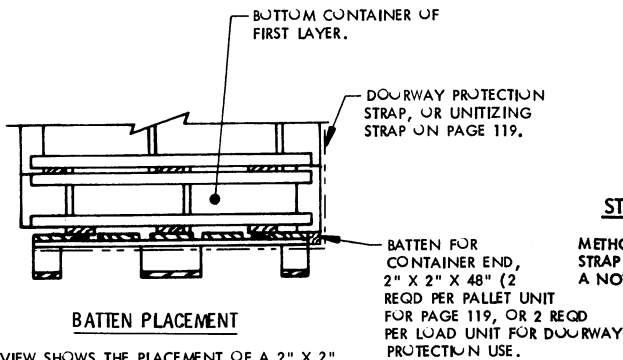
THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. 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.





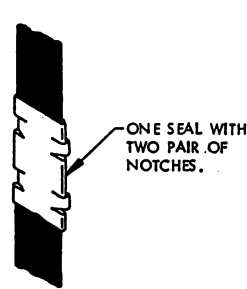
ALTERNATIVE DOORWAY PROTECTION D

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 129 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 127.



BATTEN PLACEMENT

THIS VIEW SHOWS THE PLACEMENT OF A 2" X 2" BATTEN UNDER A STRAP. THE BATTEN IS REQUIRED WHEN SHIPPING A PARTIAL PALLET UNIT OF CONTAINERS CROSSWISE ALTERNATED CONTAINERS UNITS AS SHOWN ON PAGE 119, AND IS ALSO REQUIRED WHEN THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAP METHOD OF DOORWAY PROTECTION IS USED IN A LOAD OF CONTAINERS CROSSWISE ALTERNATED CONTAINERS UNITS.



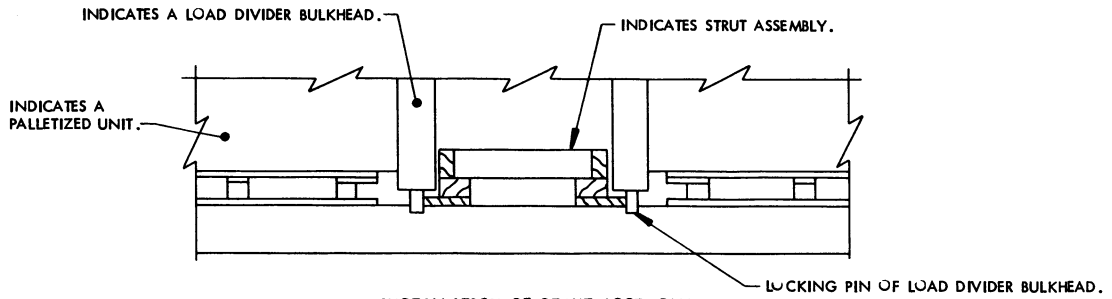
STRAP JOINT A

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



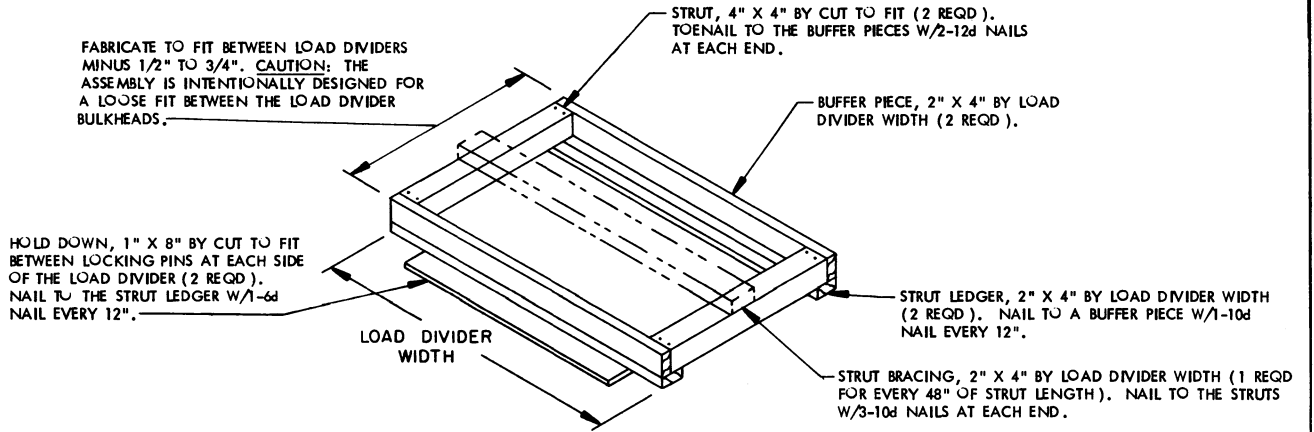
STRAP JOINT B

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



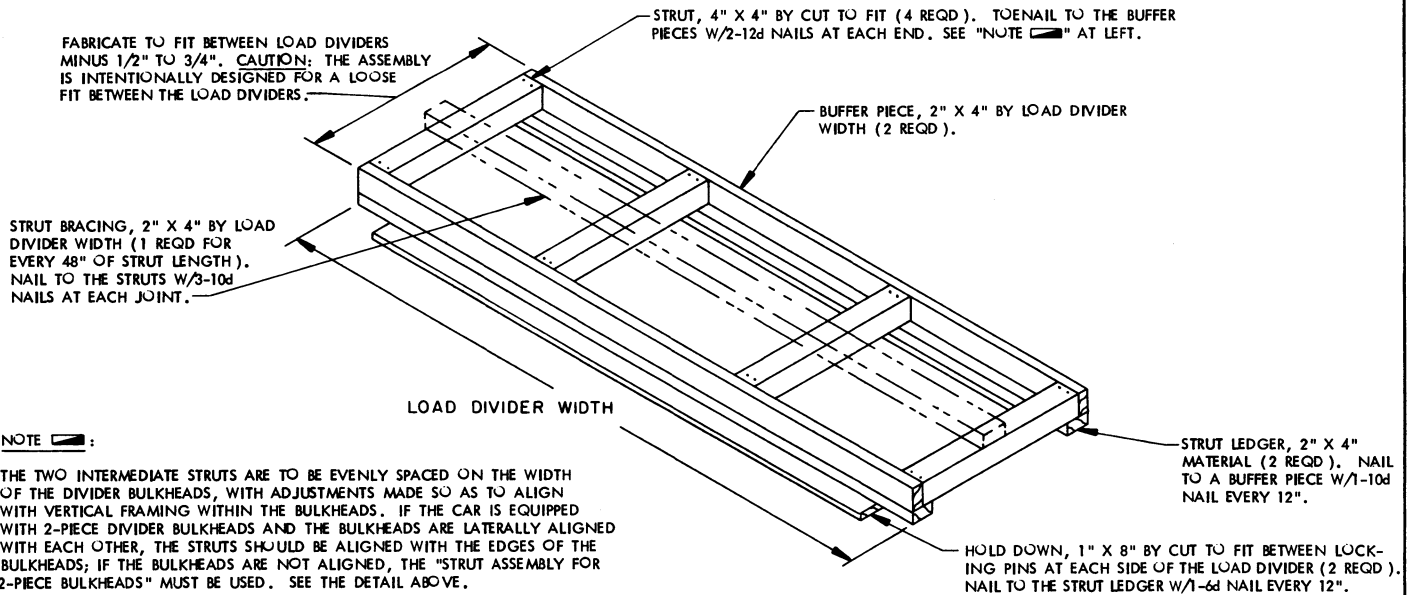
INSTALLATION OF STRUT ASSEMBLY

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 THE 2-PIECE BULKHEADS, WITH TWO (2) ASSEMBLIES BEING REQUIRED PER LOAD. SEE GENERAL NOTE "FF" ON PAGE 3.

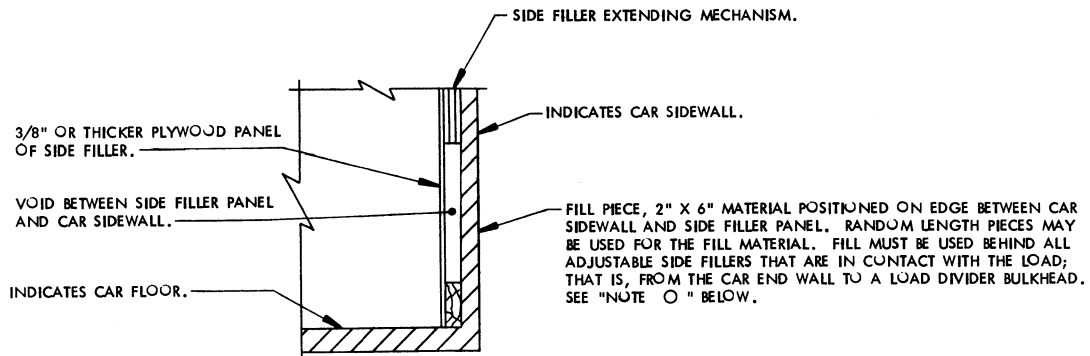


NOTE [] :

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. IF THE CAR IS EQUIPPED WITH 2-PIECE DIVIDER BULKHEADS AND THE BULKHEADS ARE LATERALLY ALIGNED WITH EACH OTHER, THE STRUTS SHOULD BE ALIGNED WITH THE EDGES OF THE BULKHEADS; IF THE BULKHEADS ARE NOT ALIGNED, THE "STRUT ASSEMBLY FOR 2-PIECE BULKHEADS" MUST BE USED. SEE THE DETAIL ABOVE.

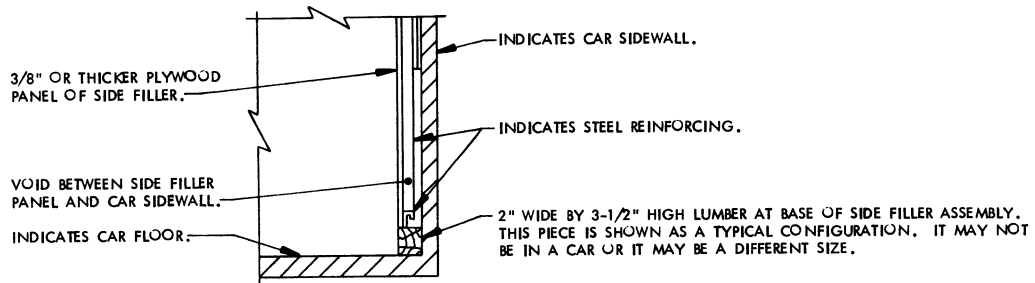
STRUT ASSEMBLY B

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.



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.