

APPROVED BY
 HAZARDOUS MATERIALS SYSTEMS
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 RAILROADS
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 DATE 8/19/91

LOADING AND BRACING (CL & LCL) IN BOX CARS OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS M19 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.

THIS DRAWING SUPERSEDES THE CARLOADING PORTIONS DELINEATED ON PAGES 42 THRU 73 OF DRAWING 19-48-4042-1-2-5-11-14PM1000, DATED 8 FEBRUARY 1965 AND REVISION 1, DATED 29 AUGUST 1969.

DO NOT SCALE

REVISIONS				DRAFTSMAN	PT	PROJ ENG	CHKR
				<i>Dir</i>	pt	<i>WB</i>	<i>WRF</i>
				CHECKER		LCL ENGINE OFFICER	
				<i>GRB</i>		<i>W J D</i>	<i>W J D</i>
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U.S. ARMY AMC DRAWING							
JANUARY 1992							
CLASS	DIVISION	DRAWING	FILE				
19	48	4042B/ 6	5PM 1000				

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AT 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE M19 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGE 4. REFER TO THE U.S. ARMY DARCOM (AMC) DRAWING 19-48-4042A/6-20PM1001 FOR UNITIZATION PROCEDURES FOR THE M19 SERIES CONTAINER.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOXCARS, FOR SHIPMENTS IN BOXCARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOXCARS 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 BOXCARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOXCARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 77 FOR GUIDANCE.
- E. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES HEREIN. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED.
- F. 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.
- G. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOXCARS 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 78 FOR GUIDANCE.
- H. BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN, HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED UNITS OF PROPELLING CHARGES, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" 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/1-10# NAIL EVERY 6".
- M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR SIDEWALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS OR SIDEWALL BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTICE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 5 FOR GUIDANCE.
- P. 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.
- 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 BOXCAR WHEN LOADED OR THE QUANTITY TO BE SHIPPED, HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOXCARS)

- S. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30# NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "M" ABOVE.
- T. NOTICE: WHEN POSITIONING PALLETIZED UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLETIZED UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. CAUTION: WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE PALLETIZED UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER -----: FED SPEC MM-L-751; DUNNAGE LUMBER. SEE TM 743-200-1.
- NAILS -----: FED SPEC FF-N-105; COMMON.
- STAPLES -----: FED SPEC FF-N-105; SENCO QUALITY OR EQUAL.
- 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 D, STYLE I, II, OR IV.
- STRAP STAPLE -----: COMMERCIAL GRADE.
- PLYWOOD -----: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D, FED SPEC NN-P-530. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- WIRE -----: FED SPEC QQ-W-461.
- HARDBOARD -----: ANSI/AHA A135.4, CLASS 1.
- SOLID FIBERBOARD --: FED SPEC PP-F-320; TYPE SF, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

(GENERAL NOTES CONTINUED)

- U. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY THE "STRUT BRACING" IN THE LOAD VIEWS, AND BY THE "STRUT BRACING" DETAIL ON PAGE 80. 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 UNDERSIDE OF THOSE STRUTS.
- V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOE-NAILED 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 80 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- W. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

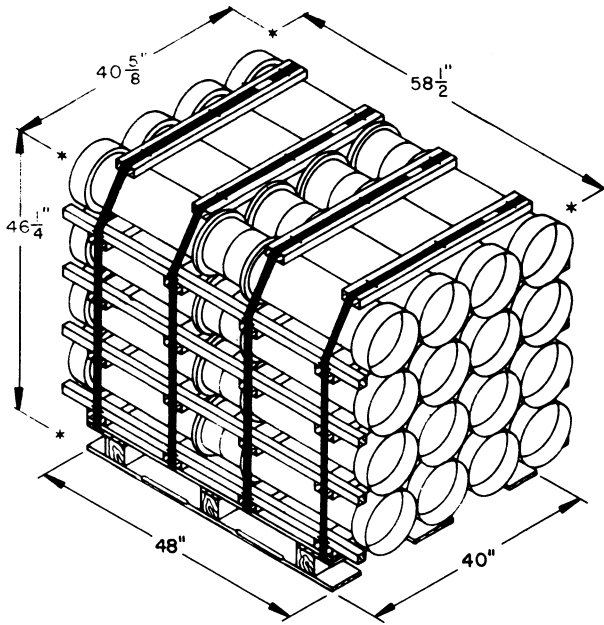
(FOR BOXCARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

- X. THE OUTLOADING PROCEDURES FOR BOXCARS EQUIPPED WITH MECHANICAL BRACING DEVICES MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOXCARS 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:** BOXCARS 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.
- Y. IN A CAR EQUIPPED WITH ADJUSTABLE WALL MEMBERS, PROVIDING THE FIXED WALL MEMBERS WHICH ARE PRESENT IN SOME "ADJUSTABLE" CARS ARE NOT PROPERLY POSITIONED TO PROVIDE SIDE BEARING SURFACES BETWEEN THE UNITS AND THE CAR SIDEWALLS, ADJUSTABLE WALL MEMBERS (AS REQUIRED) MUST BE INSTALLED TO PROVIDE A MINIMUM OF ONE SURFACE AREA FOR SIDE BEARING AT SOME LOCATION WITHIN THE UPPER HALF OF EACH UNIT.
- Z. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

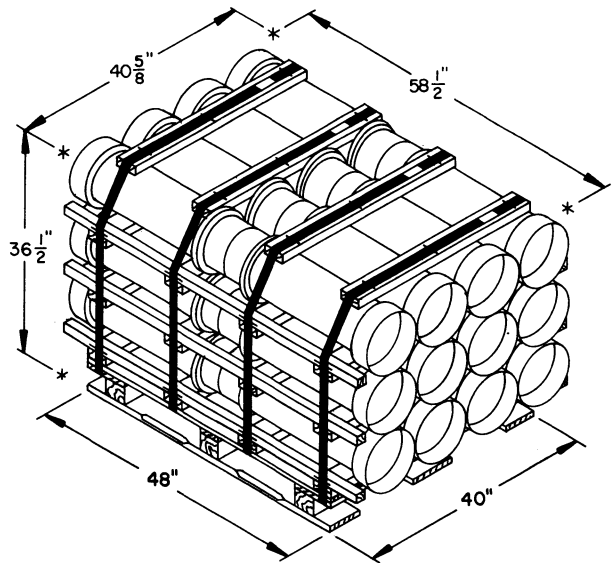
- AA. **CAUTION:** FOR CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN "THE OFFICIAL RAILWAY EQUIPMENT REGISTER", WILL BE RBL, XL, OR XLI.
- BB. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOXCAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVING IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF PROPELLING CHARGES. **NOTICE:** ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.
- CC. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOXCARS 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 86 FOR GUIDANCE. IF THE BACK OF THE SIDE FILL PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ON PAGE 86, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- DD. **NOTICE:** AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED IN TO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.
- EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 85.
- FF. THE NORMAL LOADING PATTERN IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS IS TO POSITION THE LADING BETWEEN A CAR END WALL AND A LOAD DIVIDER BULKHEAD IN FULL LAYERS. OBVIOUSLY, A LOAD QUANTITY MUST THEN BE A MULTIPLE OF THE NUMBER OF PALLETIZED UNITS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
 - 1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 60 AND 61.
 - 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 57 THRU 59 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 BOXCAR 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 70 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 68.
- GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----- 32 EACH @ 52 LBS (APPROX)
 CUBE ----- 63.6 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,672 LBS (APPROX)

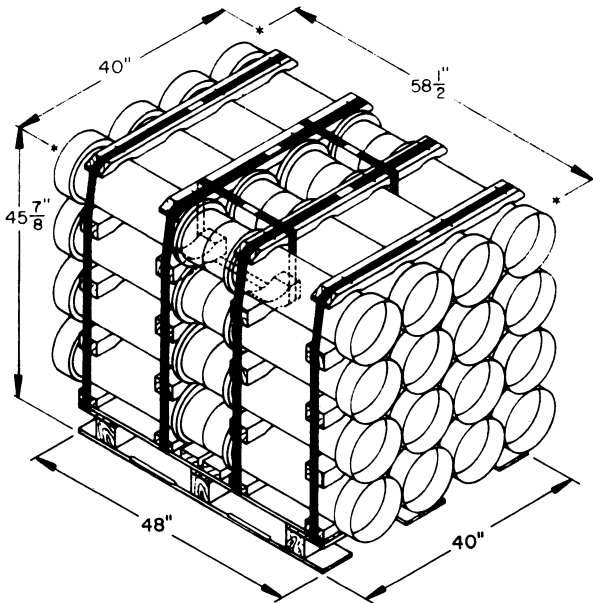
REFER TO PAGES 6 THRU 13 FOR OUTLOADING PROCEDURES



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ----- 24 EACH @ 52 LBS (APPROX)
 CUBE ----- 50.2 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,430 LBS (APPROX)

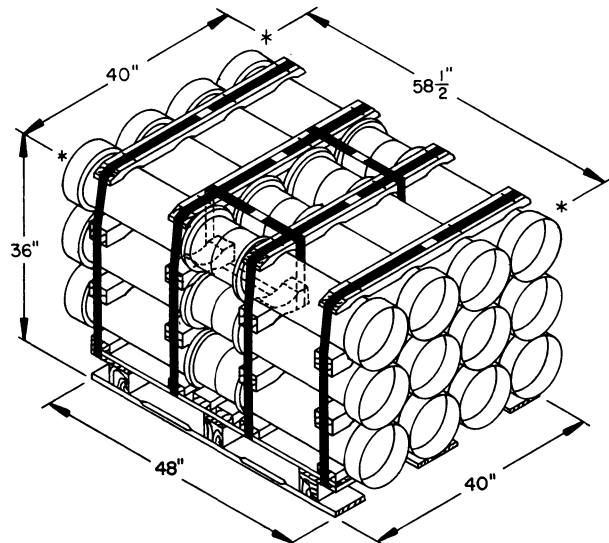
REFER TO PAGES 18 THRU 25 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----- 32 EACH @ 52 LBS (APPROX)
 CUBE ----- 62.1 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,673 LBS (APPROX)

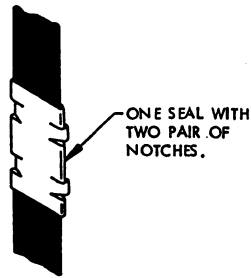
REFER TO PAGES 30 THRU 37 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ----- 24 EACH @ 52 LBS (APPROX)
 CUBE ----- 48.8 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,429 LBS (APPROX)

REFER TO PAGES 42 THRU 49 FOR OUTLOADING PROCEDURES.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

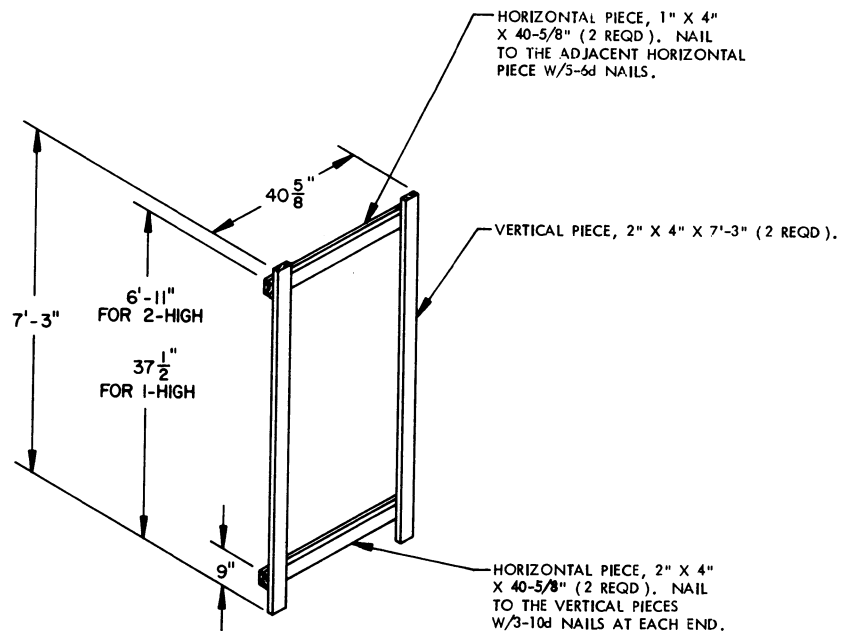
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



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

STRAP JOINT B

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



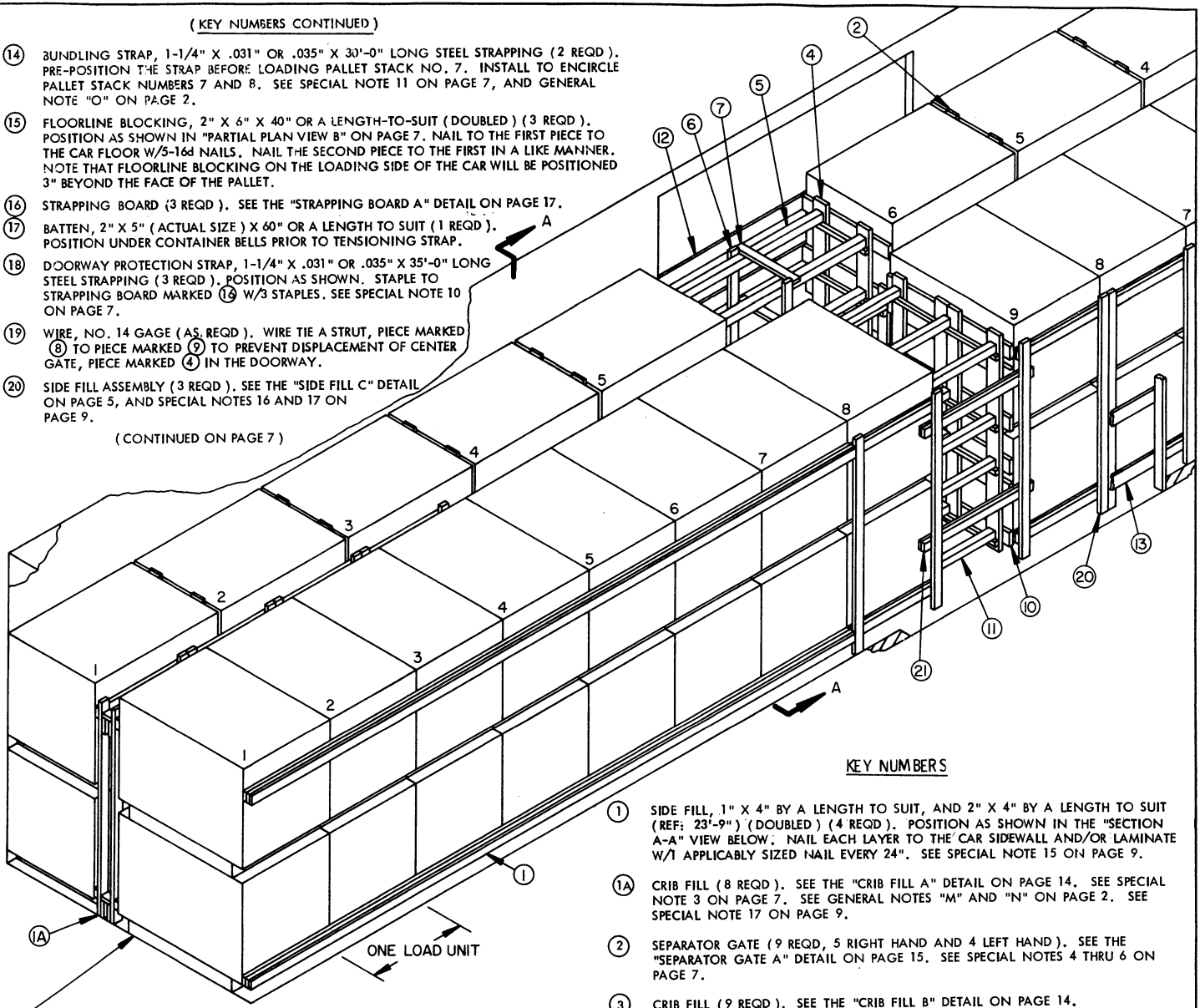
SIDE FILL ASSEMBLY C

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 5.

(KEY NUMBERS CONTINUED)

- ⑭ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 30'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION THE STRAP BEFORE LOADING PALLET STACK NO. 7. INSTALL TO ENCIRCLE PALLET STACK NUMBERS 7 AND 8. SEE SPECIAL NOTE 11 ON PAGE 7, AND GENERAL NOTE "O" ON PAGE 2.
- ⑮ FLOORLINE BLOCKING, 2" X 6" X 40" OR A LENGTH-TO-SUIT (DOUBLED) (3 REQD). POSITION AS SHOWN IN "PARTIAL PLAN VIEW B" ON PAGE 7. NAIL TO THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT FLOORLINE BLOCKING ON THE LOADING SIDE OF THE CAR WILL BE POSITIONED 3" BEYOND THE FACE OF THE PALLET.
- ⑯ STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 17.
- ⑰ BATTEN, 2" X 5" (ACTUAL SIZE) X 60" OR A LENGTH TO SUIT (1 REQD). POSITION UNDER CONTAINER BELLS PRIOR TO TENSIONING STRAP.
- ⑱ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 35'-0" LONG STEEL STRAPPING (3 REQD). POSITION AS SHOWN. STAPLE TO STRAPPING BOARD MARKED ⑲ W/3 STAPLES. SEE SPECIAL NOTE 10 ON PAGE 7.
- ⑳ WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED ⑧ TO PIECE MARKED ⑨ TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED ④ IN THE DOORWAY.
- ㉑ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL C" DETAIL ON PAGE 5, AND SPECIAL NOTES 16 AND 17 ON PAGE 9.

(CONTINUED ON PAGE 7)



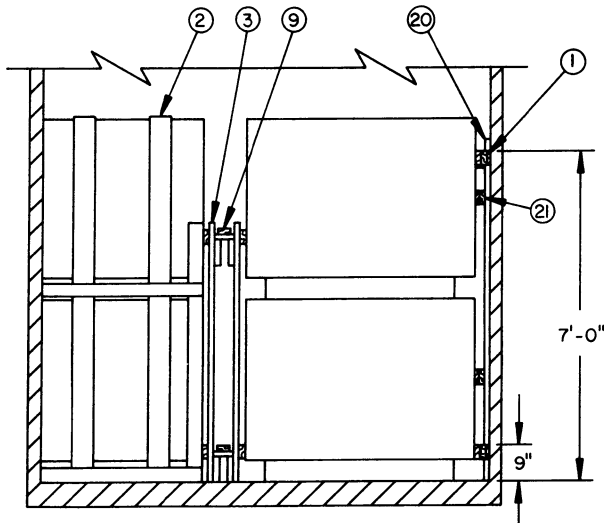
SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE FILL, 1" X 4" BY A LENGTH TO SUIT, AND 2" X 4" BY A LENGTH TO SUIT (REF: 23'-9") (DOUBLED) (4 REQD). POSITION AS SHOWN IN THE "SECTION A-A" VIEW BELOW. NAIL EACH LAYER TO THE CAR SIDEWALL AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 24". SEE SPECIAL NOTE 15 ON PAGE 9.
- ①A CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 14. SEE SPECIAL NOTE 3 ON PAGE 7. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 17 ON PAGE 9.
- ② SEPARATOR GATE (9 REQD, 5 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 7.
- ③ CRIB FILL (9 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 14.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 14. SEE SPECIAL NOTE 7 ON PAGE 7.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 72") (8 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 3, AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 7'-0" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" X 27" (4 REQD). NAIL TO STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT.
- ⑧ STRUT, 2" X 4" BY CUT-TO-FIT (REF: 6'-0") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED ④ W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW A" DETAIL ON PAGE 7.
- ⑨ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 48") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW A" ON PAGE 7.
- ⑩ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 15.
- ⑪ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 32") (12 REQD). TOENAIL TO PIECES MARKED ⑩ W/2-16d NAILS AT EACH END.
- ⑫ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 16. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 7.
- ⑬ DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 16. NAIL TO THE DOOR POSTS W/12d NAILS.

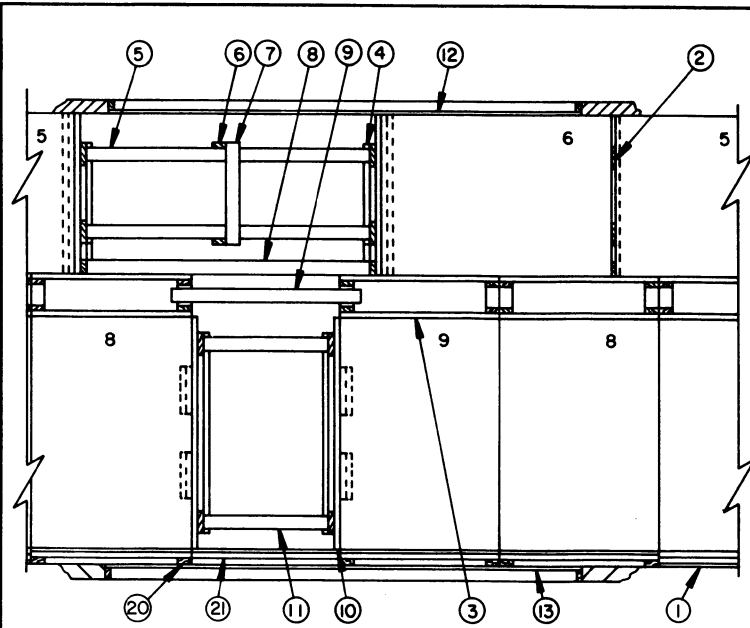
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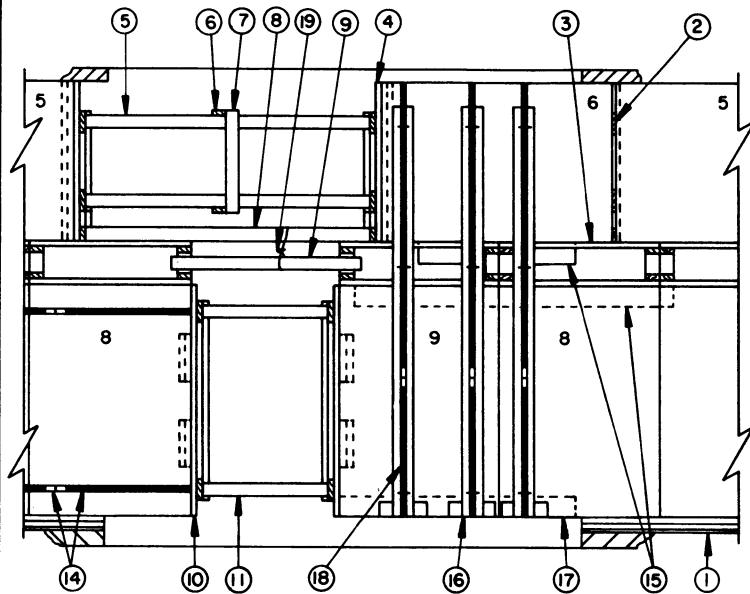
SECTION A-A

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

56-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOXCAR



PARTIAL PLAN VIEW A



PARTIAL PLAN VIEW B

(KEY NUMBERS CONTINUED)

21 SIDE FILL RETAINER, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (2 EACH REQD). LAMINATE THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 8". POSITION AT 28" AND 74" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 20 W/3-10d NAILS AT EACH JOINT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	242	81
1" X 6"	220	110
2" X 2"	52	18
2" X 3"	37	19
2" X 4"	1106	738
2" X 6"	181	181
4" X 4"	80	107
NAILS	NO. REQD	POUNDS
6d (2")	300	1-3/4
10d (3")	1550	24
12d (3-1/4")	36	3/4
16d (3-1/2")	80	1-3/4
WIRE, NO. 14 GAGE-----3' REQD-----		NIL

SPECIAL NOTES:

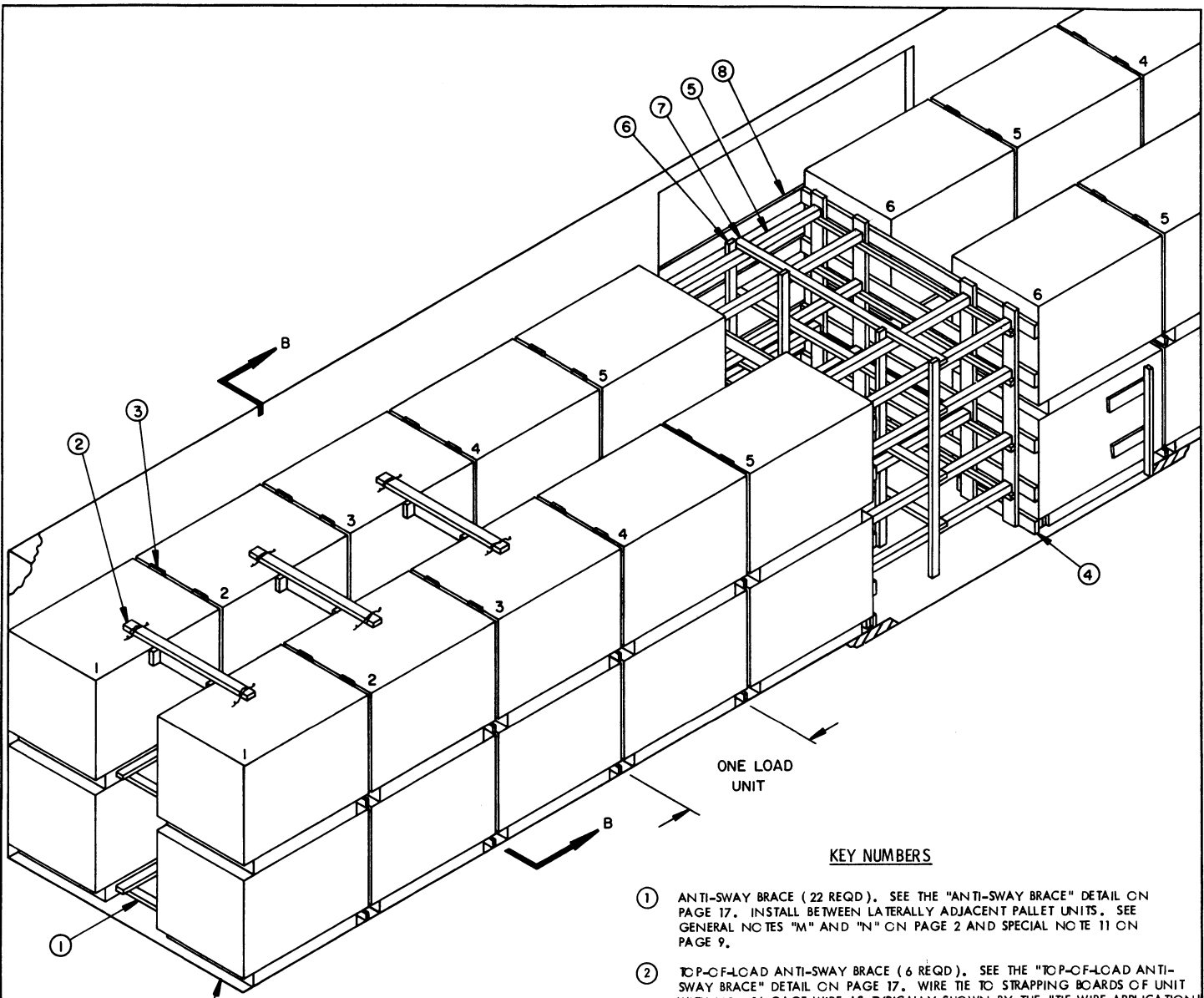
1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-SIX (46) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 86,112 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES, THIRTY-SIX (36) UNITS, FOR A LADING WEIGHT OF 67,392 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (A), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "VERTICAL" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES ARE POSITIONED WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS, THEY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE A STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 40" WIDE BY 8'-0" LONG.
7. CENTER GATES "A" AND "B" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 79 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (13) IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS, SHOWN IN "PARTIAL PLAN VIEW B" AT LEFT, MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW B" DETAIL AT LEFT, AND KEY NUMBERS (14) THRU (18) ON PAGE 6 FOR GUIDANCE. NOTE THAT THE CRIB FILL MARKED (6) MUST HAVE 3" CUT OFF EACH VERTICAL AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING; ALSO, PIECE MARKED (8) MUST BE WIRE TIED TO PIECE MARKED (9) TO PREVENT DISPLACEMENT OF CENTER GATE "A" IN THE DOORWAY.
10. TWO (2) DOORWAY PROTECTION STRAPS, SHOWN AS PIECES MARKED (18) IN "PARTIAL PLAN VIEW B", ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OF 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.
11. IF THE PALLET STACKS IN THE DOORWAY ARE POSITIONED SO THE FORKLIFT OPENINGS ARE NOT CLOSE ENOUGH IN ALIGNMENT TO RECEIVE TWO (2) BUNDLING STRAPS ACROSS THE LOAD WIDTH; THAT PALLET STACK MUST BE UNITIZED TO THE LONGITUDINALLY ADJACENT PALLET STACK AS SHOWN IN THE "PARTIAL PLAN VIEW B" DETAIL AT LEFT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 57, OR TWO (2) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE CROSSWISE STACK NO. 9 AND THE ADJACENT CRIB FILL. NOTE THAT ADDITIONAL STRUT BRACING WILL THEN BE REQUIRED. ALSO, THE CENTER GATE, PIECE MARKED (4) MUST BE RESTRAINED FROM LATERAL MOVEMENT BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE STOP PIECE OF THE CENTER GATE; THE ENTIRE TOP TIER CAN BE OMITTED, OR A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 68 AND 69.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS, AND PAGES 74 AND 76 FOR CROSSWISE UNITS.
14. FOR SHIPMENT OF ONE OR MORE LEFT-OVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFT-OVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

(CONTINUED ON PAGE 9)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS -----	56	104,832 LBS
DUNNAGE -----		2,537 LBS
TOTAL WEIGHT -----		107,369 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOXCAR.

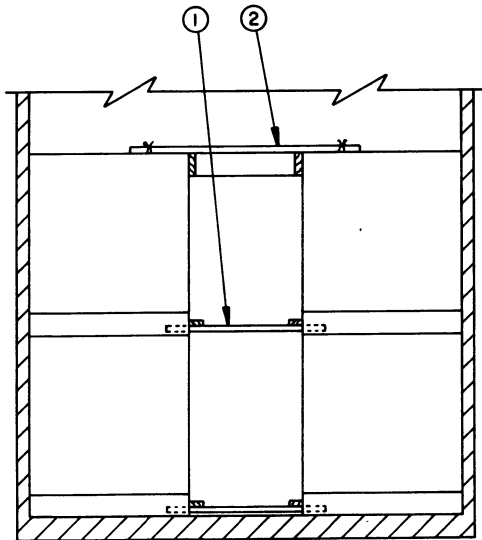


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 11 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 9.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 15. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 9.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE SPECIAL NOTES 7 THRU 9 ON PAGE 9.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 72") (16 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2 AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 7'-4" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 12" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 16. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 9.



SECTION B-B

NOTE: SEPARATOR GATES, PIECES MARKED ③, HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

(SPECIAL NOTES CONTINUED)

12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 76 FOR GUIDANCE.
13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

(SPECIAL NOTES CONTINUED FROM PAGE 7)

15. THE SIDE FILL, PIECE MARKED ① IN THE LOAD ON PAGE 6, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLY "C", PIECE MARKED ②, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD, IN LIEU OF PIECE MARKED ①.
16. IF THE CAR TO BE LOADED IS EQUIPPED WITH PLUG TYPE DOORS AND HAS NAILABLE SIDEWALLS, THE SIDE FILL ASSEMBLIES AND THE SIDE FILL RETAINERS, PIECES MARKED ② AND ③ WILL NOT BE REQUIRED; EXTEND THE LENGTH OF THE SIDE FILL, PIECE MARKED ①, TO THE DOOR AS SHOWN IN THE "PARTIAL PLAN VIEW B" DETAIL ON PAGE 7.
17. IF A 9'-2" OR 9'-4" WIDE CAR IS TO BE LOADED, OMIT THE 1" X 4" SIDE FILL PIECES NAILED TO THE CAR SIDEWALL, AND OMIT THE 1" X 4" HORIZONTAL PIECES NAILED TO THE SIDE FILL "C" ASSEMBLY, PIECE MARKED ②. ADDITIONALLY, THE ALTERNATIVE CRIB FILL DETAILED ON PAGE 17, WILL BE USED IN LIEU OF PIECES MARKED ①A AND ③ ON PAGE 6.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF THIRTY-SIX (36) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 67,392 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; TWENTY-EIGHT (28) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 52,416 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES ARE POSITIONED IN THE DOORWAY, THEY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④ IN THE LOAD ON PAGE 10. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 FOR CONSTRUCTION GUIDANCE.
7. 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 79 FOR GUIDANCE.
8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C" SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 14. 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 79. OMIT THE STOP PIECES FROM "CENTER GATE A".
9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO "CENTER GATE C" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 81 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OF WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
11. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED; OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED ⑧, USE PIECES MARKED ⑤ THRU ⑦ ON PAGE 12. SEE SPECIAL NOTES 8 AND 9 ON PAGE 13 FOR GUIDANCE. NOTE THAT THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT BY THE APPLICATION OF STOP PIECES AS SHOWN BY THE "CENTER GATE C" DETAIL ON PAGE 16, OR BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECES OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING, OR WITHIN SIX INCHES (6") OF IT.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	359	180
2" X 2"	63	21
2" X 3"	29	15
2" X 4"	397	265
2" X 6"	165	165
4" X 4"	96	128
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	668	10-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE	60' REQD	1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	44	82,368 LBS
DUNNAGE		1,674 LBS

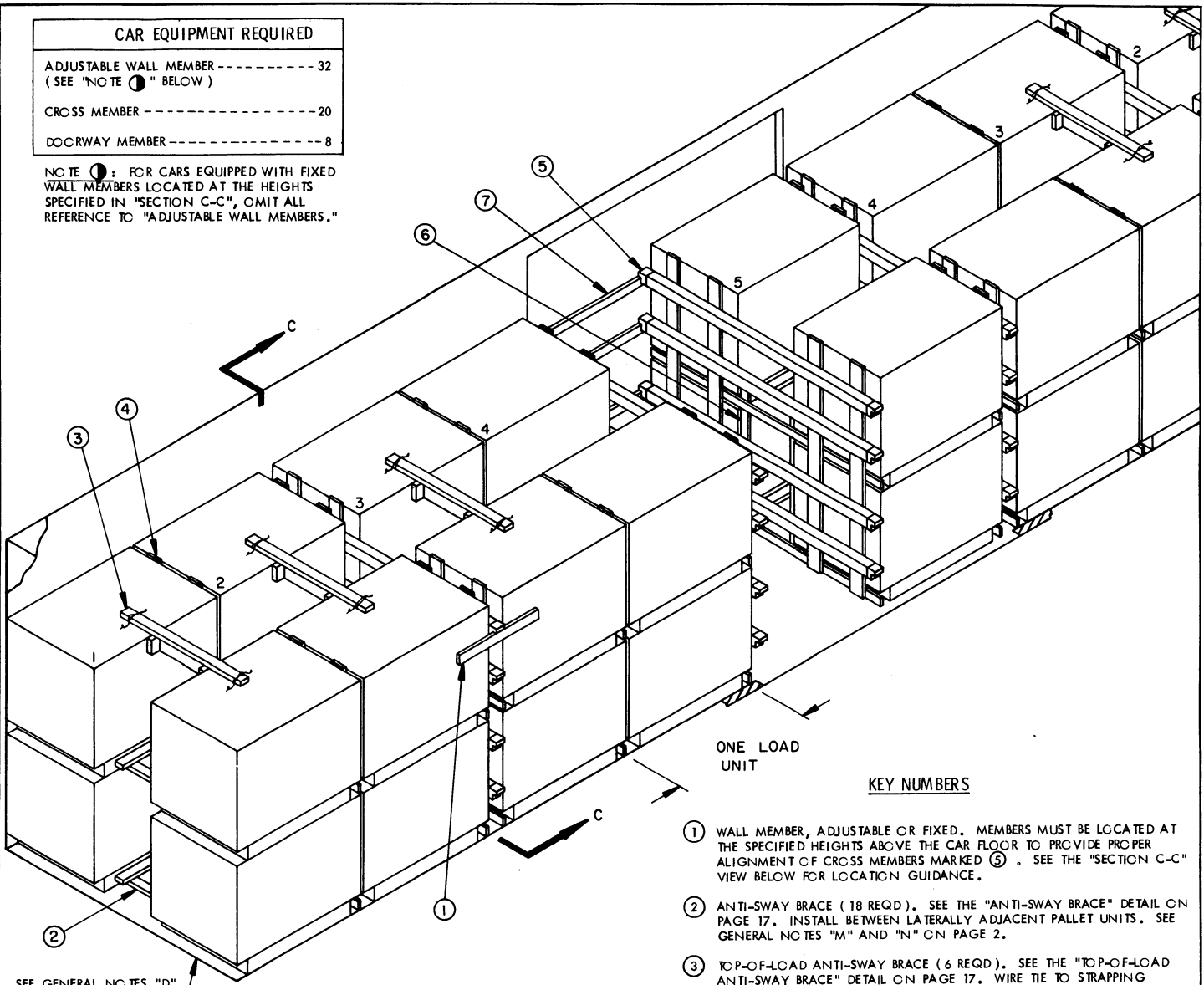
TOTAL WEIGHT ----- 84,042 LBS (APPROX)

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

CAR EQUIPMENT REQUIRED

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

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



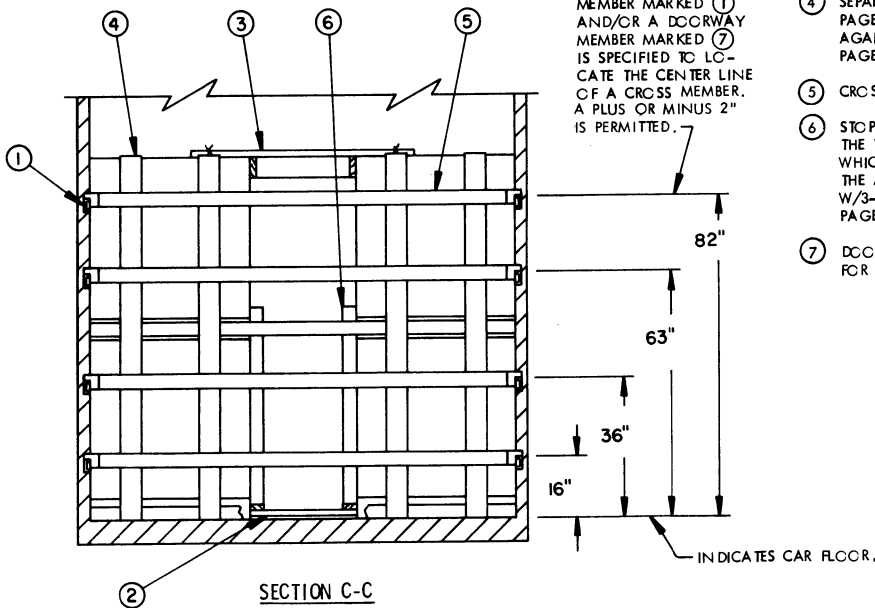
ISOMETRIC VIEW

SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 11.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 7 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER. A PLUS OR MINUS 2" IS PERMITTED.

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 4 ON PAGE 11.
- 4 SEPARATOR GATE (12 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 15. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 11.
- 5 CROSS MEMBER (20 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 STOP PIECE, 1" X 4" X 54" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATES, PIECES MARKED 4, WHICH ARE IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 11.
- 7 DOORWAY MEMBER (8 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE.



SECTION C-C

INDICATES CAR FLOOR.

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

36-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOXCAR 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 10 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF TWENTY-EIGHT (28) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 52,416 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑥. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 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 54 AND 55 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	233	78
1" X 6"	372	186
2" X 4"	269	180
2" X 6"	20	20
NAILS	NO. REQ'D	POUNDS
6d (2")	312	2
10d (3")	300	4-3/4
WIRE, NO. 14 GAGE-----60' REQ'D-----		1 LB

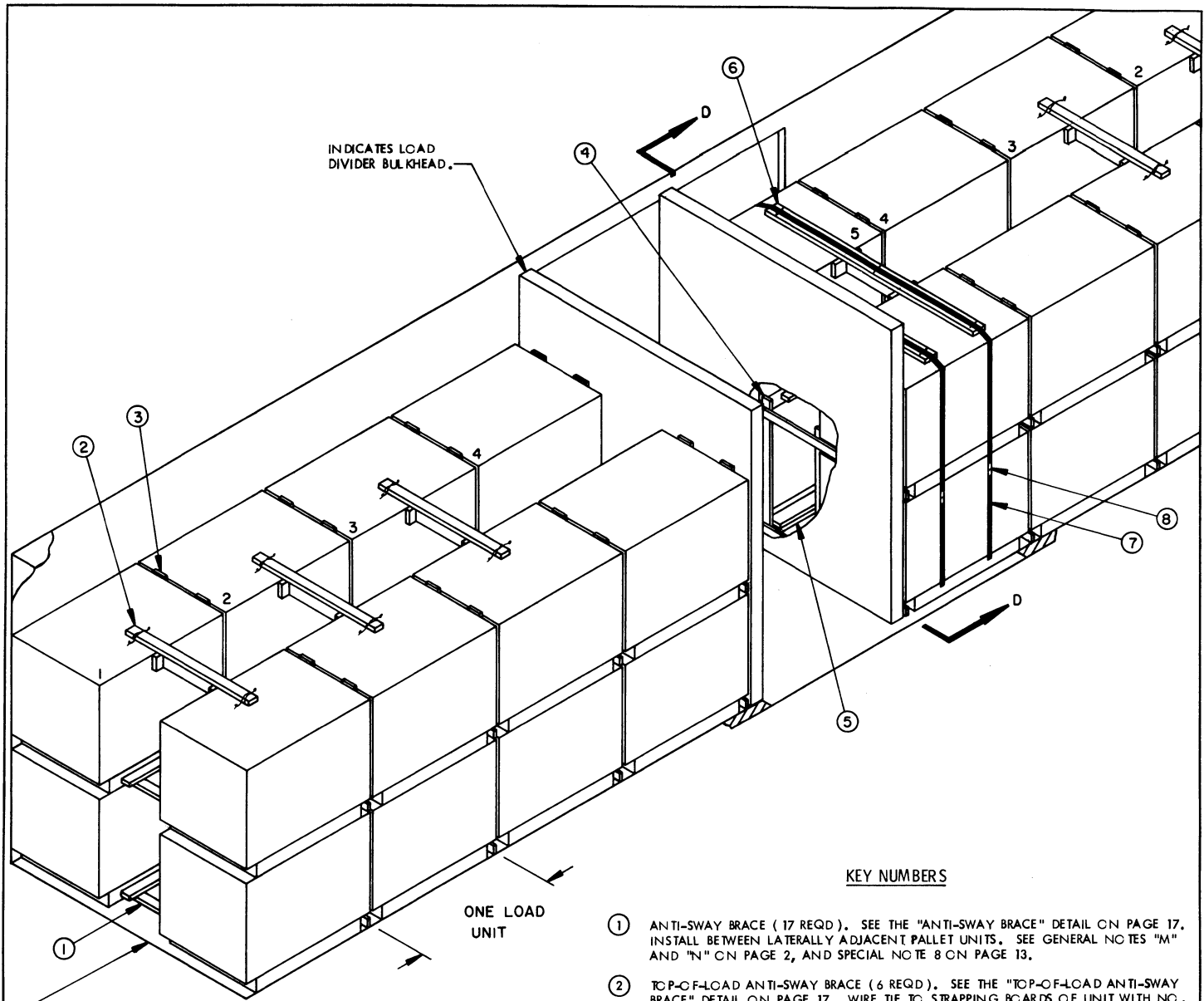
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	36	67,392 LBS
DUNNAGE		936 LBS
TOTAL WEIGHT		68,328 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

36-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES

PAGE 11

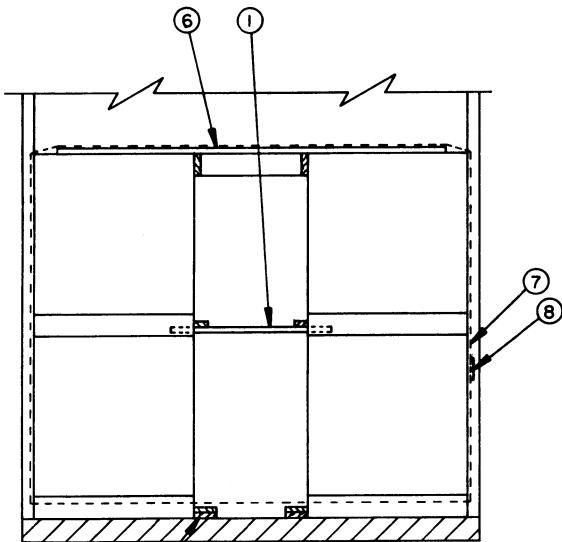


ISOMETRIC VIEW

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

KEY NUMBERS

- ① ANTI-SWAY BRACE (17 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 13.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 13.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 15. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 13.
- ④ STOP PIECE, 1" X 4" X 54" (2 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 13.
- ⑤ FLOORLINE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 7 ON PAGE 13.
- ⑥ STRAPPING BOARD ASSEMBLY "B" (2 REQD). SEE THE DETAIL ON PAGE 17.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .031" X 35'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 13.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "D" ON PAGE 2.



SECTION D-D

NOTE: SEPARATOR GATES, PIECES MARKED ③, HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 82,368 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF TWENTY-EIGHT (28) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 52,416 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (8) IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND AVAILABLE DOOR POST; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MARKED (5) THRU (8) ON PAGE 12 MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. FLOORLINE BLOCKING MARKED (5) IN THE LOAD VIEW MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1) FOR ALL UNITS REQUIRING DOORWAY PROTECTION STRAPS.
9. 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 WIDTH.
10. A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED IF MORE THAN SIX (6) LOAD UNITS ARE POSITIONED IN ONE END OF THE CAR. SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 85.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 61 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 AND/OR PAGES 74 AND 76 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFT-OVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFT-OVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

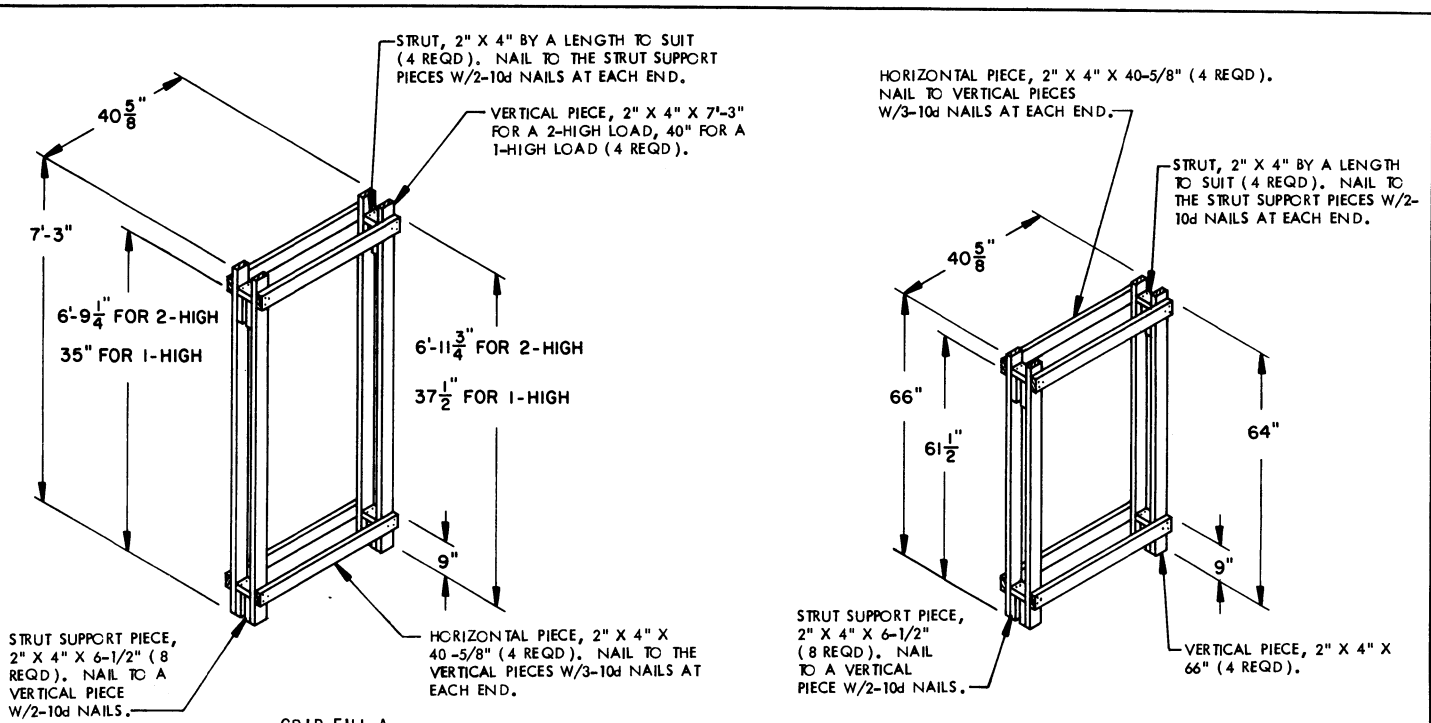
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	174	58
1" X 6"	279	140
2" X 4"	256	171
2" X 6"	62	62
NAILS	NO. REQD	POUNDS
6d (2")	228	1-1/2
10d (3")	288	4-1/2
12d (3-1/4")	26	1/2
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4"-----	70' REQD-----	10 LBS
SEAL FOR 1-1/4" STRAPPING-----	4 REQD-----	NIL
STAPLE-----	6 REQD-----	NIL
WIRE, NO. 14 GAGE-----	60' REQD-----	1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	36-----	67,392 LBS
DUNNAGE-----	-----	880 LBS
TOTAL WEIGHT-----		68,272 LBS (APPROX)

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

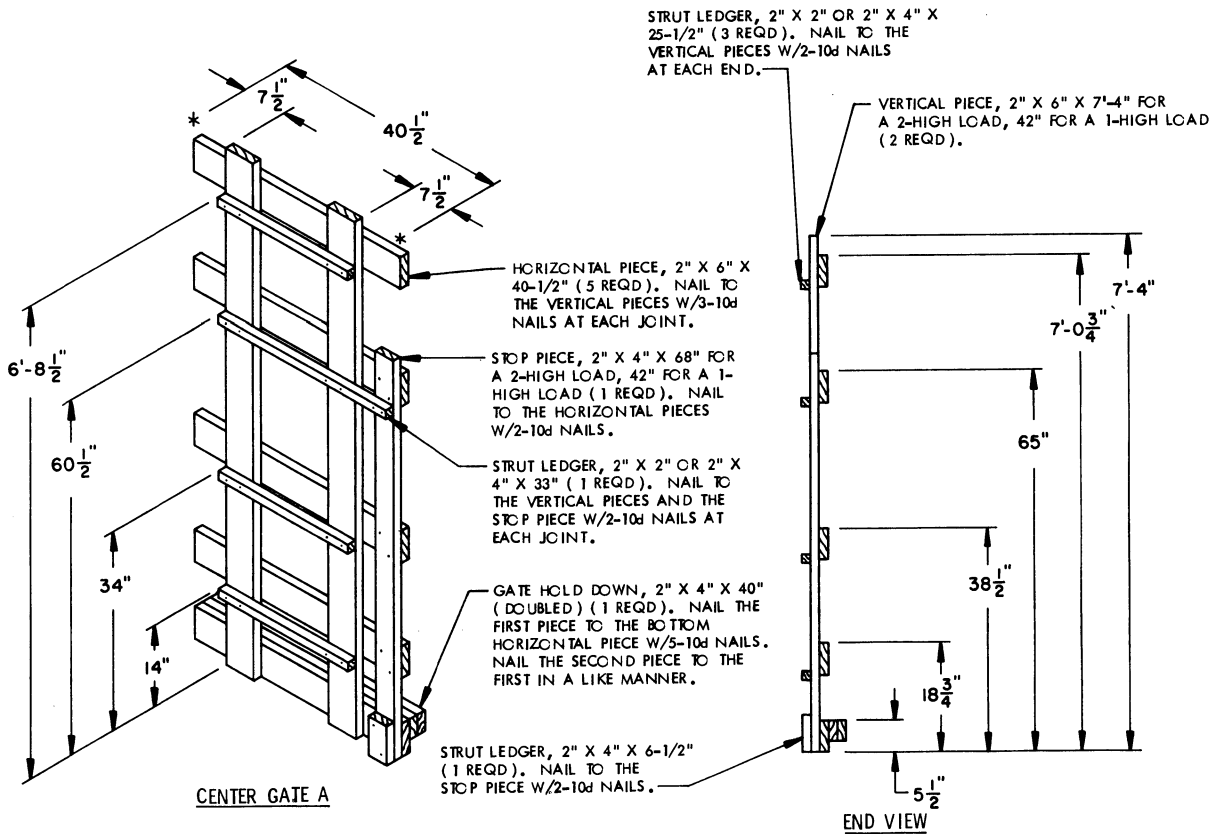


CRIB FILL A

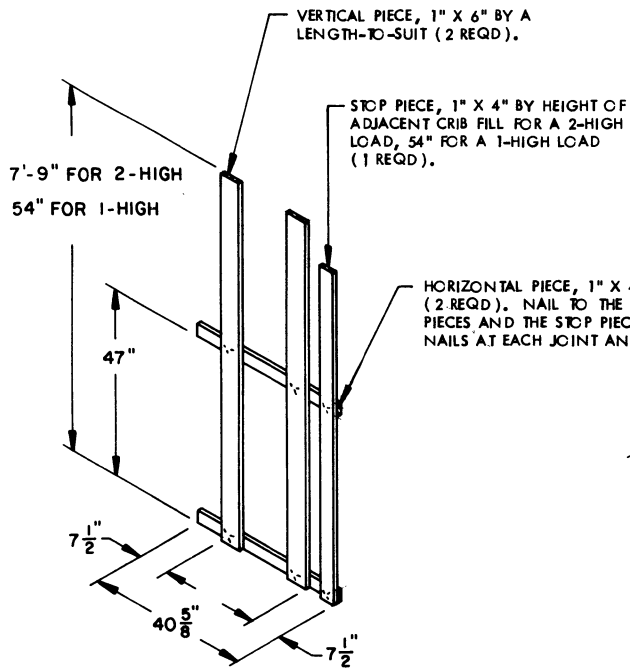
CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PREFABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

CRIB FILL B

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

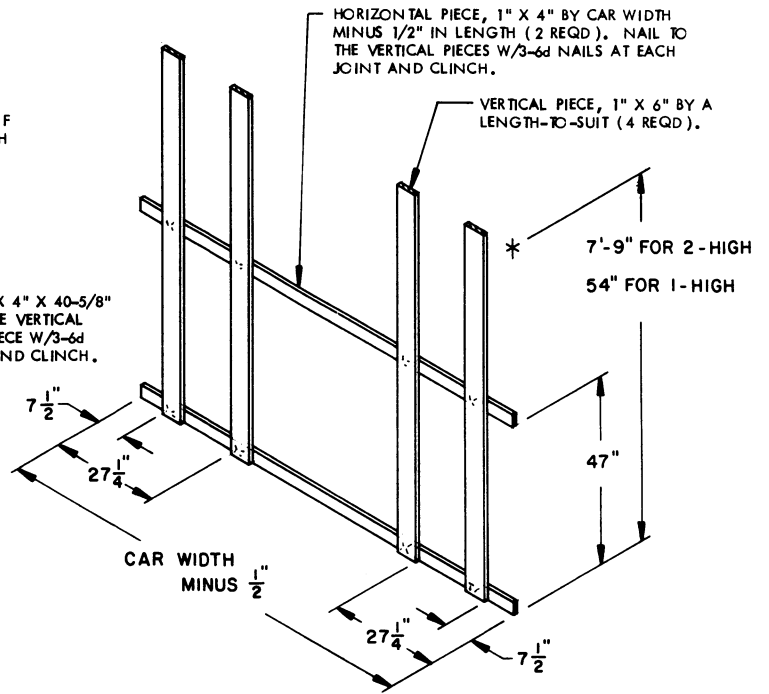


1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

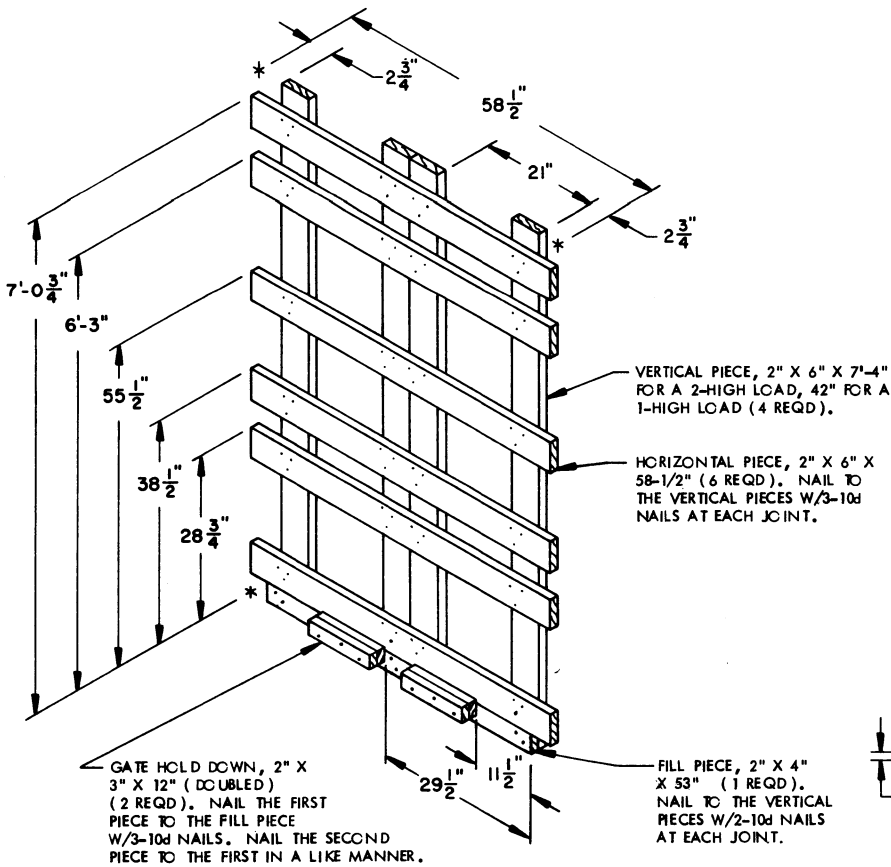


SEPARATOR GATE A

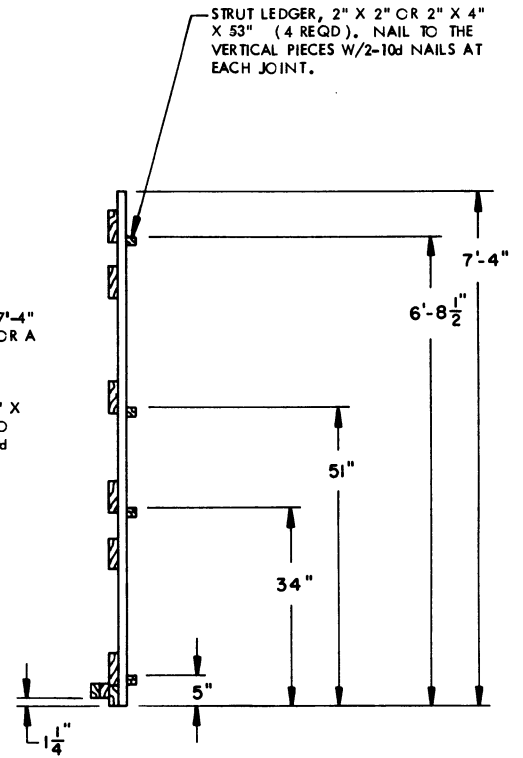
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



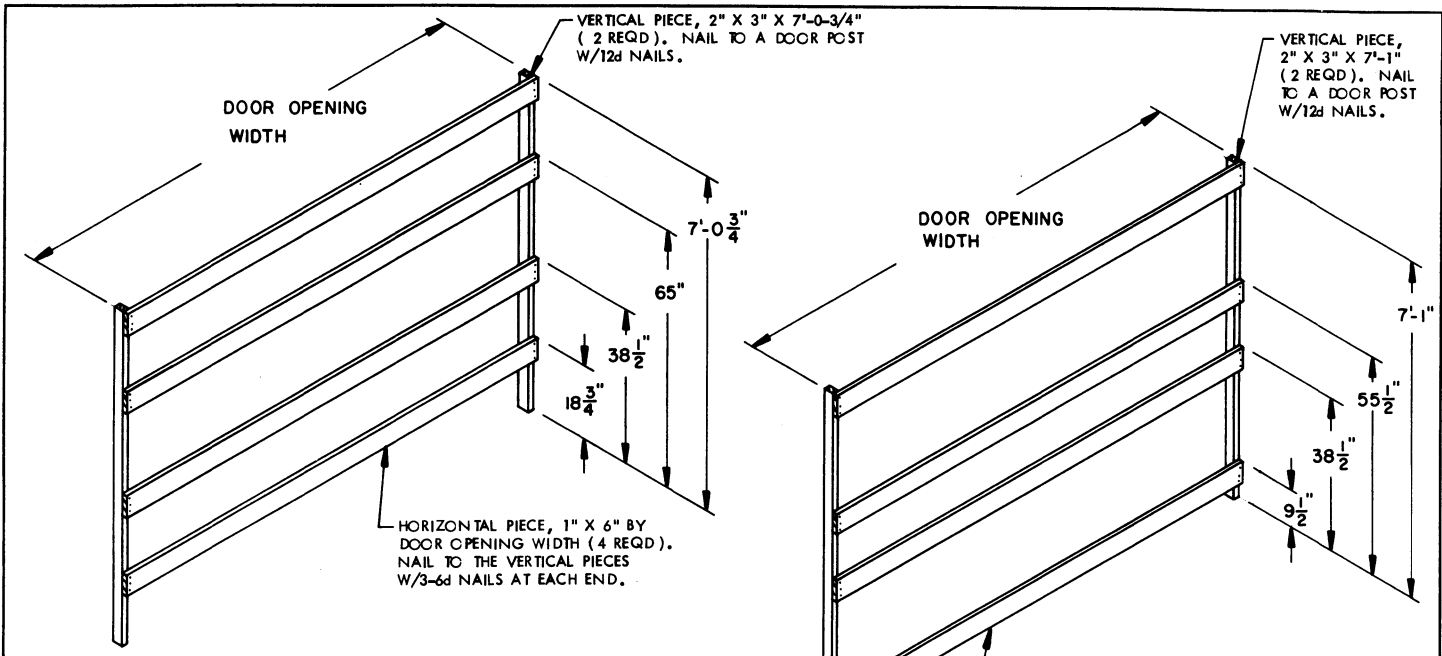
SEPARATOR GATE B



CENTER GATE B

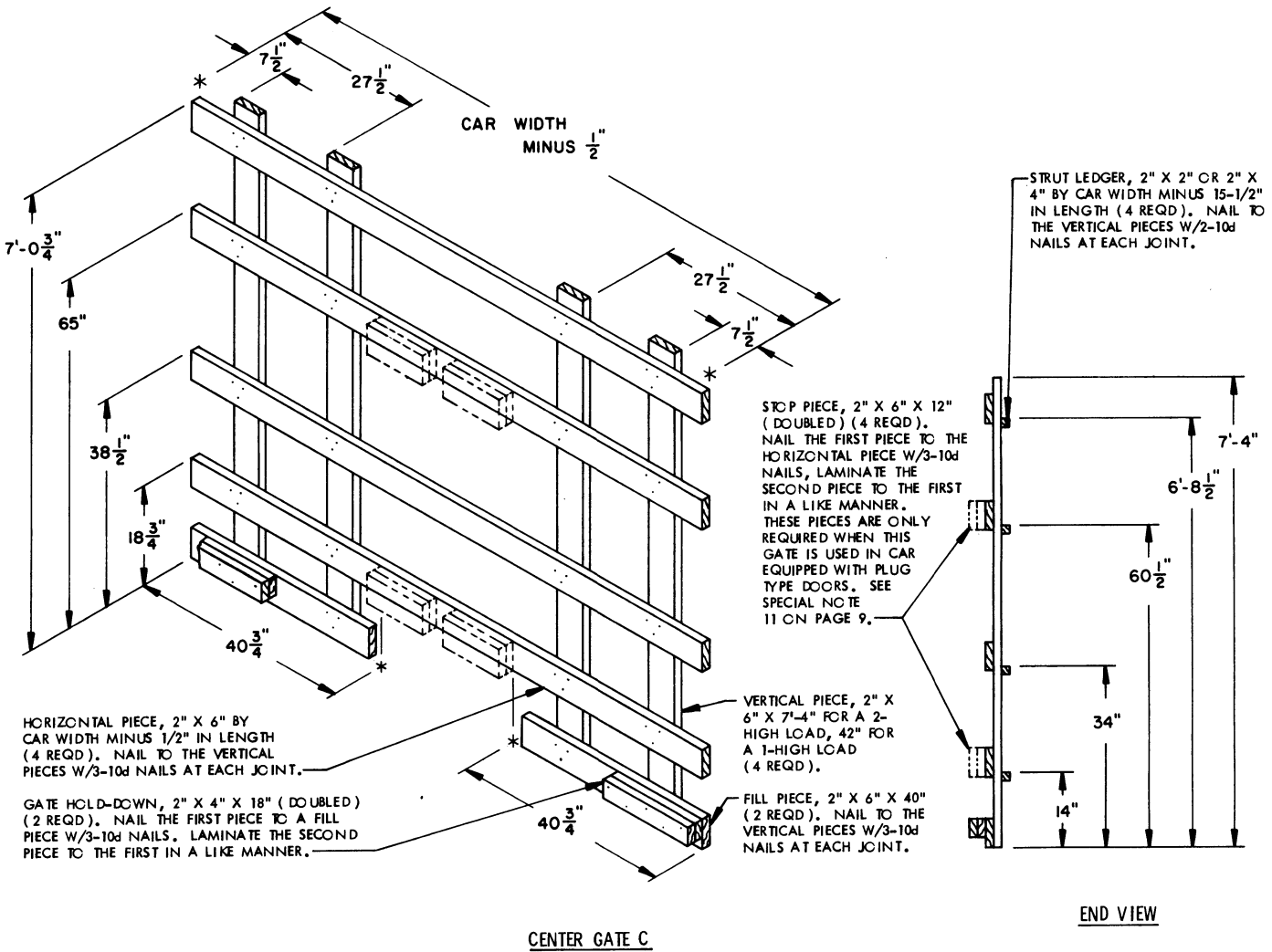


END VIEW



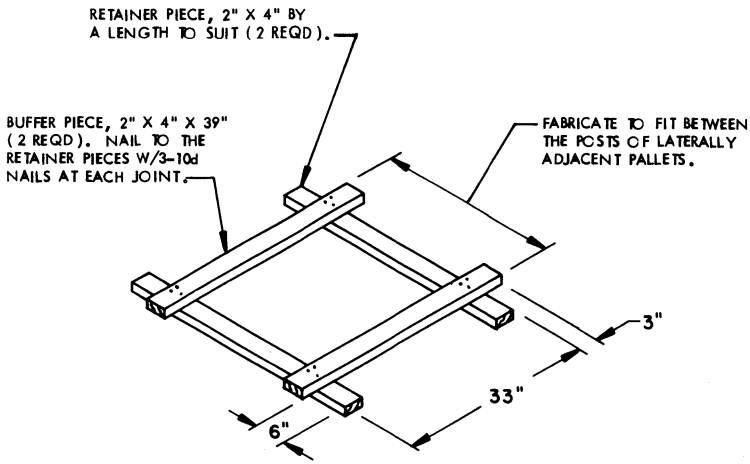
DOORWAY PROTECTION A

DOORWAY PROTECTION B



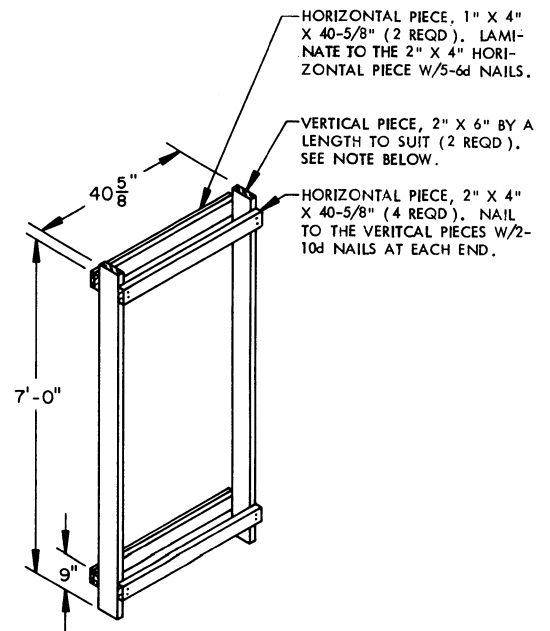
CENTER GATE C

END VIEW



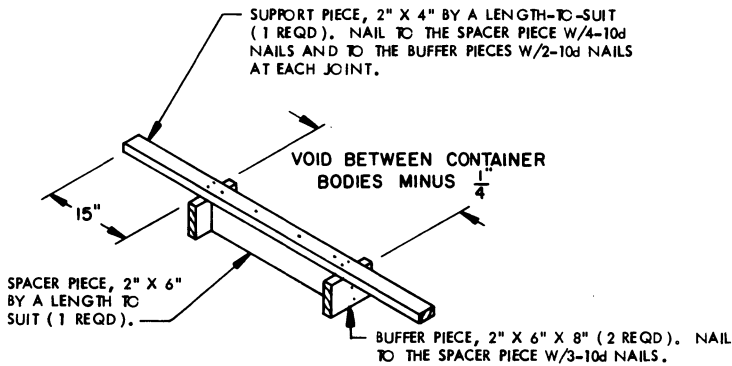
ANTI-SWAY BRACE

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.

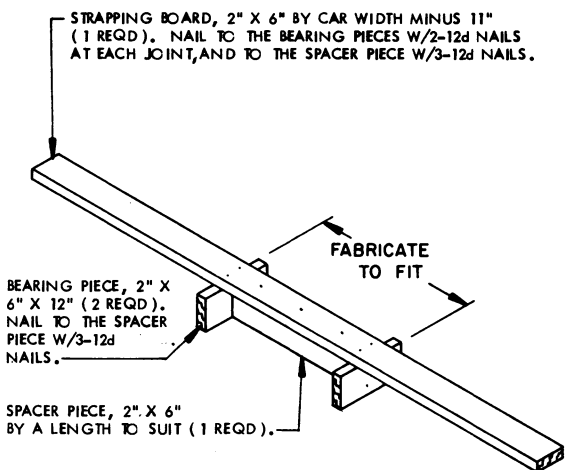


ALTERNATIVE CRIB FILL

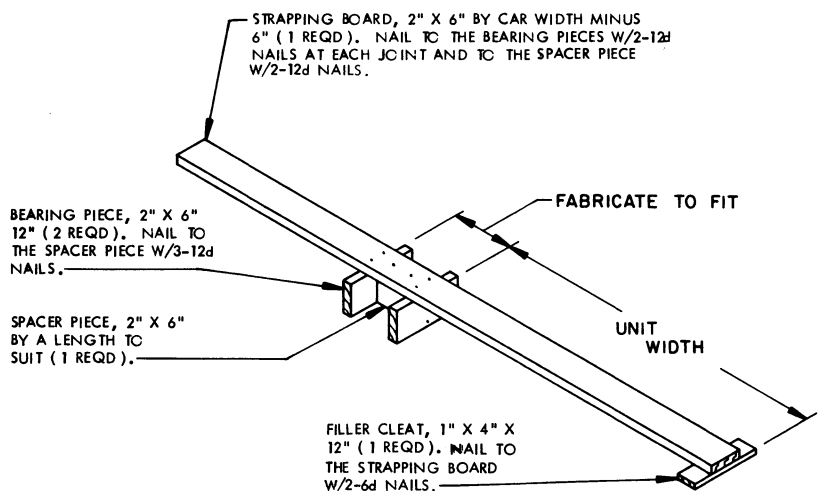
THE CRIB FILL ABOVE IS CONSTRUCTED FOR USE IN A 9'-4" WIDE CAR; FOR A 9'-2" WIDE CAR THE VERTICAL PIECES WILL BE 2" X 4" MATERIAL. REFER TO CRIB FILL A" OR "CRIB FILL B" DETAIL ON PAGE 14 FOR LENGTH OF VERTICAL PIECES AND HEIGHT LOCATION OF THE HORIZONTAL PIECES.



TOP-OF-LOAD ANTI-SWAY



STRAPPING BOARD B

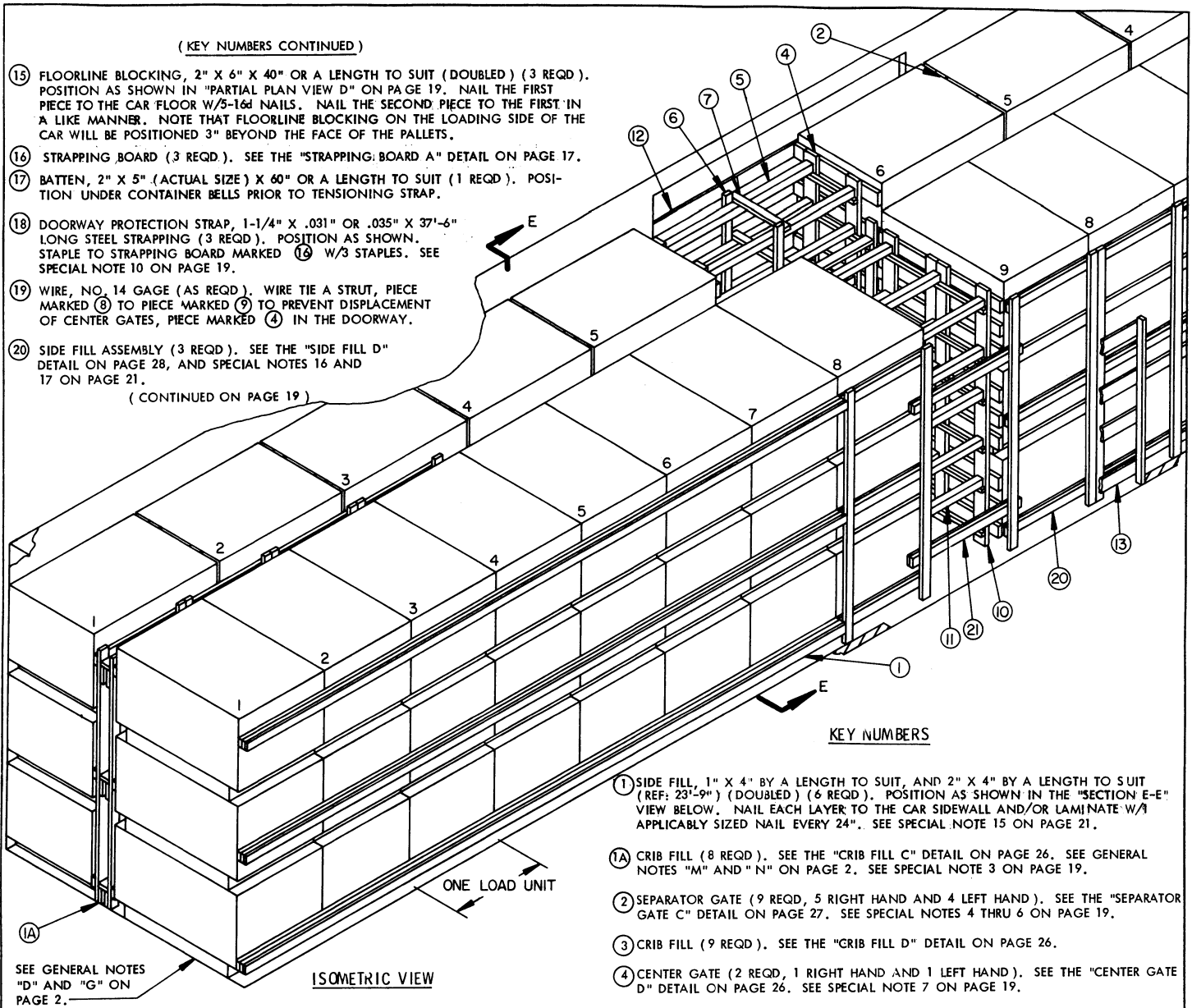


STRAPPING BOARD A

(KEY NUMBERS CONTINUED)

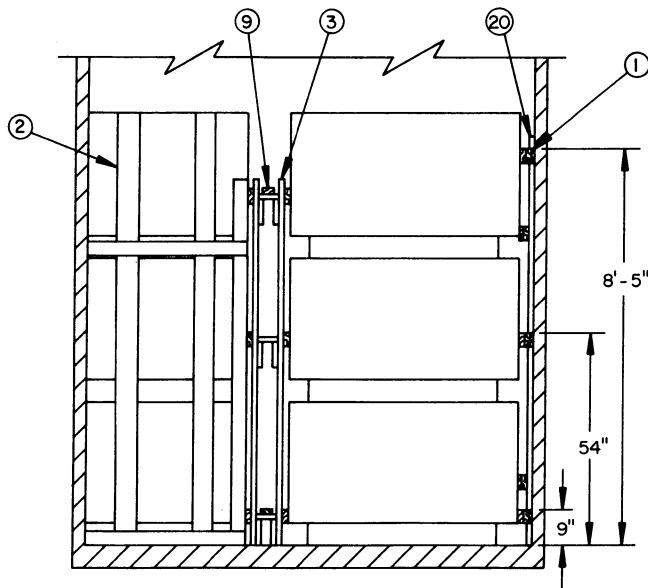
- 15 FLOORLINE BLOCKING, 2" X 6" X 40" OR A LENGTH TO SUIT (DOUBLED) (3 REQD). POSITION AS SHOWN IN "PARTIAL PLAN VIEW D" ON PAGE 19. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT FLOORLINE BLOCKING ON THE LOADING SIDE OF THE CAR WILL BE POSITIONED 3" BEYOND THE FACE OF THE PALLETS.
- 16 STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 17.
- 17 BATTEN, 2" X 5" (ACTUAL SIZE) X 60" OR A LENGTH TO SUIT (1 REQD). POSITION UNDER CONTAINER BELLS PRIOR TO TENSIONING STRAP.
- 18 DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 37'-6" LONG STEEL STRAPPING (3 REQD). POSITION AS SHOWN. STAPLE TO STRAPPING BOARD MARKED 19 W/3 STAPLES. SEE SPECIAL NOTE 10 ON PAGE 19.
- 19 WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED 8 TO PIECE MARKED 9 TO PREVENT DISPLACEMENT OF CENTER GATES, PIECE MARKED 4 IN THE DOORWAY.
- 20 SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL D" DETAIL ON PAGE 28, AND SPECIAL NOTES 16 AND 17 ON PAGE 21.

(CONTINUED ON PAGE 19)



ISOMETRIC VIEW

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



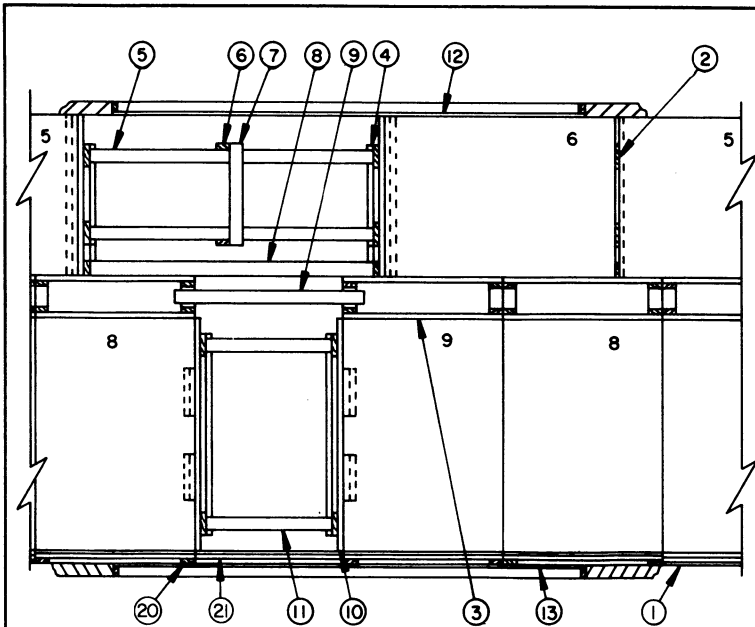
SECTION E-E

KEY NUMBERS

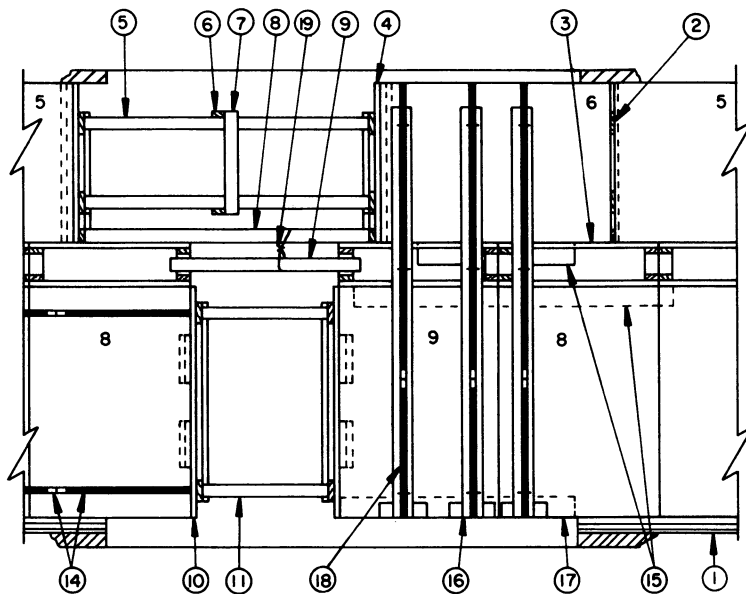
- 1 SIDE FILL, 1" X 4" BY A LENGTH TO SUIT, AND 2" X 4" BY A LENGTH TO SUIT (REF: 23'-9") (DOUBLED) (6 REQD). POSITION AS SHOWN IN THE "SECTION E-E" VIEW BELOW. NAIL EACH LAYER TO THE CAR SIDEWALL AND/OR LAMINATE W/ APPLICABLY SIZED NAIL EVERY 24". SEE SPECIAL NOTE 15 ON PAGE 21.
- 1A CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 26. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 19.
- 2 SEPARATOR GATE (9 REQD, 5 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 27. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 19.
- 3 CRIB FILL (9 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 26.
- 4 CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE D" DETAIL ON PAGE 26. SEE SPECIAL NOTE 7 ON PAGE 19.
- 5 STRUT, 4" X 4" BY CUT-TO-FIT (REF: 72") (12 REQD). TOENAIL TO PIECES MARKED 4 W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2, AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- 6 VERTICAL STRUT BRACING, 2" X 4" X 9'-2" (2 REQD). NAIL TO THE STRUTS MARKED 5 W/3-10d NAILS AT EACH JOINT.
- 7 HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (REF: 27") (6 REQD). NAIL TO STRUTS MARKED 5 W/3-10d NAILS AT EACH JOINT.
- 8 STRUT, 2" X 4" BY CUT-TO-FIT (REF: 72") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED 4 W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW C" ON PAGE 19.
- 9 CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 48") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW C" ON PAGE 19.
- 10 CENTER GATE (2 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 27.
- 11 STRUT, 4" X 4" BY CUT-TO-FIT (REF: 32") (18 REQD). TOENAIL TO PIECES MARKED 10 W/2-16d NAILS AT EACH END.
- 12 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 29. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 19.
- 13 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 29. NAIL TO THE DOOR POSTS W/12d NAILS.
- 14 BUNDLING STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION THE STRAP BEFORE LOADING PALLET STACK NO. 7. INSTALL TO ENIRCLE PALLET STACK NUMBERS 7 AND 8. SEE SPECIAL NOTE 11 ON PAGE 19, AND GENERAL NOTE "O" ON PAGE 2.

(CONTINUED ABOVE)

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84- UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOXCAR



PARTIAL PLAN VIEW C



PARTIAL PLAN VIEW D

(KEY NUMBERS CONTINUED)

21. SIDE FILL RETAINER, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (2 EACH REQD). LAMINATE THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 8". POSITION AT 18" AND 61-9" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 20 W/3-10d NAILS AT EACH JOINT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	303	101
1" X 6"	282	141
2" X 2"	79	27
2" X 3"	43	22
2" X 4"	1,530	1,020
2" X 6"	241	241
4" X 4"	119	159
NAILS	NO. REQD	POUNDS
6d (2")	363	2-1/4
10d (3")	2,272	35
12d (3-1/4")	48	1
16d (3-1/2")	120	2-3/4
WIRE, NO. 14 GAGE	3' REQD	NIL

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR 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 18 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-NINE (69) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 98,670 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR. FIFTY-FOUR (54) UNITS FOR A LADING WEIGHT OF 77,220 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (A), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 18, 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. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES ARE POSITIONED WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS, THEY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE A STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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-LAYER LOADS FROM 40" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.
7. CENTER GATES "D" AND "E" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 79 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (13) IN THE LOAD ON PAGE 18, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW D" DETAIL AT LEFT, AND KEY NUMBERS (14) THRU (18) ON PAGE 18 FOR GUIDANCE. NOTE THAT CRIB FILL MARKED (3) MUST HAVE 3" CUT OFF EACH VERTICAL AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING; ALSO, PIECE MARKED (8) MUST BE WIRE TIED TO PIECE MARKED (7) TO PREVENT DISPLACEMENT OF "CENTER GATE D" IN THE DOORWAY.
10. TWO (2) DOORWAY PROTECTION STRAPS, SHOWN AS PIECES MARKED (18) IN "PARTIAL PLAN VIEW D" 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.
11. IF THE PALLET STACKS IN THE DOORWAY ARE POSITIONED SO THE FORKLIFT OPENINGS ARE NOT CLOSE ENOUGH IN ALIGNMENT FOR EACH PALLET STACK TO RECEIVE TWO (2) DOORWAY PROTECTION STRAPS ACROSS THE LOAD WIDTH; THAT PALLET STACK MUST BE UNITIZED TO THE LONGITUDINALLY ADJACENT PALLET STACK AS SHOWN IN THE "PARTIAL PLAN VIEW D" DETAIL AT LEFT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 57. SIX (6) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE CRIB NUMBERED 6, THE CROSSWISE STACK NUMBERED 9 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO ALL THE STRUTS, AND THE CENTER GATE, PIECE MARKED (4) MUST BE RESTRAINED FROM LATERAL MOVEMENT BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE STOP PIECE OF THE CENTER GATE, OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 68 AND 69.
13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 74 AND 76 FOR CROSSWISE UNITS.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

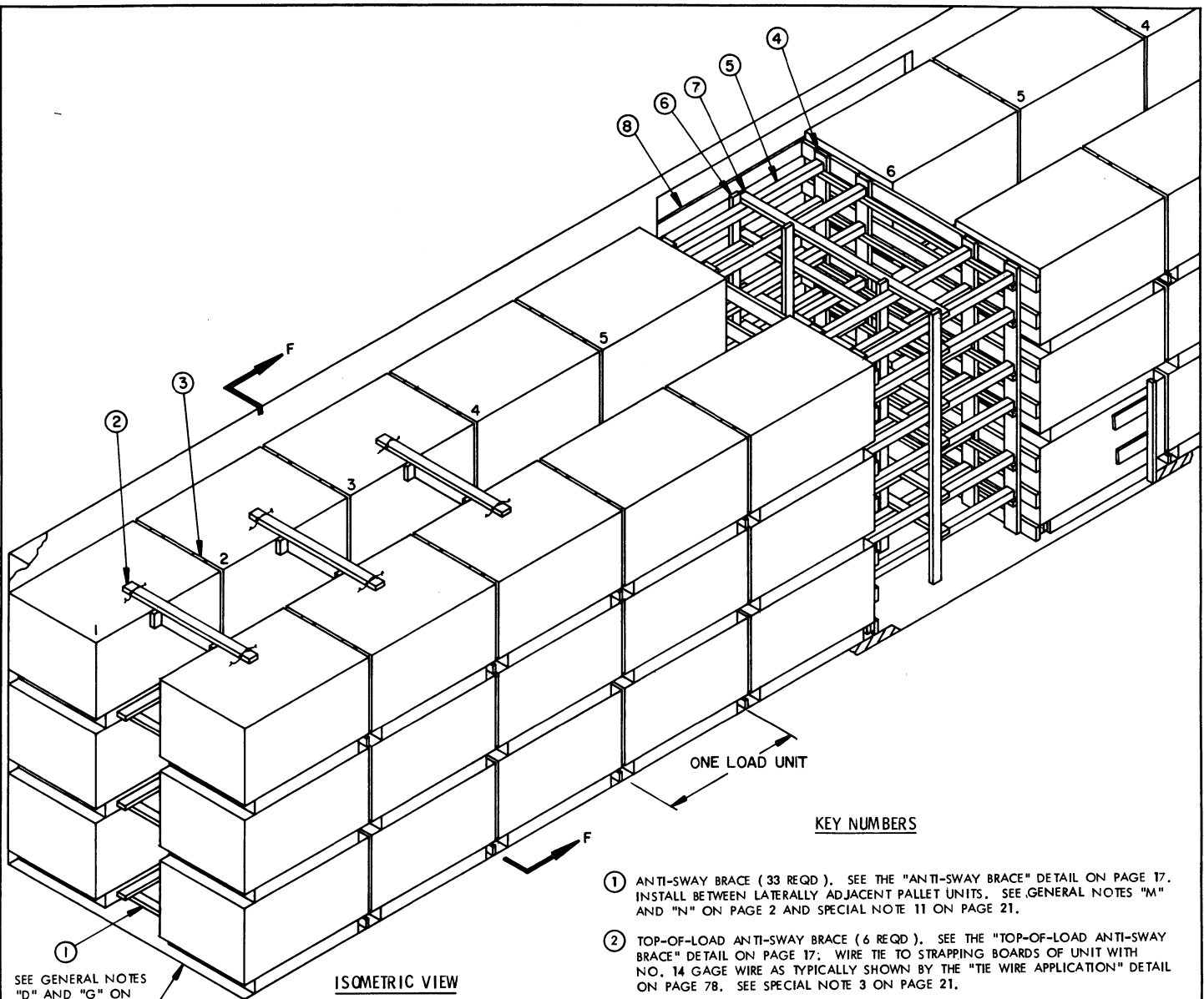
(CONTINUED ON PAGE 21)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	120,120 LBS
DUNNAGE		3,463 LBS

TOTAL WEIGHT----- 123,583 LBS (APPROX.)

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



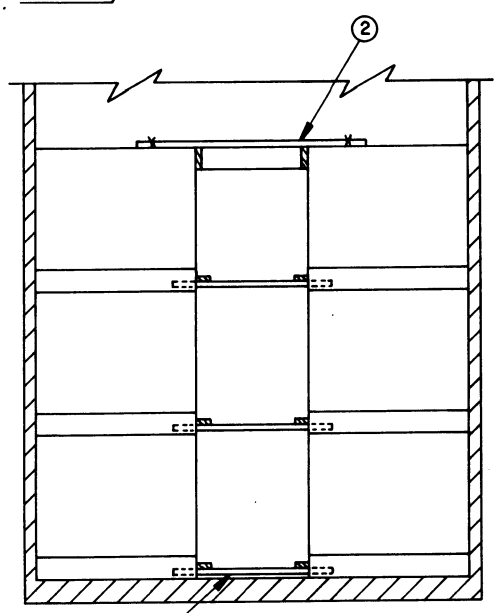
ISOMETRIC VIEW

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

KEY NUMBERS

- ① ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 11 ON PAGE 21.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17; WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 21.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 27. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 21.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE "F" DETAIL ON PAGE 28. SEE SPECIAL NOTES 7 THRU 9 ON PAGE 21.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 72") (24 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2 AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 12" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 29. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 21.

NOTE: SEPARATOR GATES, PIECES MARKED ③, HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.



SECTION F-F

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

(SPECIAL NOTES CONTINUED FROM PAGE 19.)

15. THE SIDE FILL, PIECE MARKED ① IN THE LOAD ON PAGE 18, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLY "D", PIECE MARKED ②, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD, IN LIEU OF PIECE MARKED ①.
16. IF THE CAR TO BE LOADED HAS PLUG TYPE DOORS, AND HAS NAILABLE SIDEWALLS, THE SIDE FILL ASSEMBLIES AND THE SIDE FILL RETAINERS, PIECES MARKED ② AND ③ WILL NOT BE REQUIRED; EXTEND THE LENGTH OF THE SIDE FILL, PIECE MARKED ① TO THE DOOR AS SHOWN IN THE "PARTIAL PLAN VIEW D" DETAIL ON PAGE 19.
17. IF A 9'-2" OR 9'-4" WIDE CAR IS TO BE LOADED, OMIT THE 1" X 4" SIDE FILL PIECES NAILED TO THE CAR SIDEWALL, AND OMIT THE 1" X 4" HORIZONTAL PIECES NAILED TO THE SIDE FILL "D" ASSEMBLY, PIECE MARKED ②. ADDITIONALLY, THE ALTERNATIVE CRIB FILL DETAILED ON PAGE 28, WILL BE USED IN LIEU OF PIECES MARKED ①A AND ③ ON PAGE 18.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 20 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-FOUR (54) POUNDS OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 77,220 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-TWO (42) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,060 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 20, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECES 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.
5. IF SEPARATOR GATES ARE POSITIONED IN THE DOORWAY, THEY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④ IN THE LOAD ON PAGE 24. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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 78 FOR CONSTRUCTION GUIDANCE.
7. CENTER GATE "F" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 79 FOR GUIDANCE.
8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE F", SHOWN AS PIECES MARKED ④, IN THE LOAD ON PAGE 20, INSTALL TWO (2) "CENTER GATES D" AS SHOWN ON PAGE 26. 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 79. OMIT THE STOP PIECES FROM "CENTER GATE D".
9. DOOR SPANNER TYPE HOLD DOWN AS SHOWN BY THE DETAILS ON PAGE 81 MAY BE USED IF THE CAR HAS NAILABLE SIDEWALLS, OR HOLD DOWN PIECES MAY BE APPLIED TO THE CENTER GATES AS SHOWN BY THE CENTER GATE "F" DETAIL ON PAGE 28.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OF WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX-CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
11. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED; OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA, IN LIEU OF PIECE MARKED ⑧, USE PIECES MARKED ⑤ THRU ⑧ ON PAGE 24. SEE SPECIAL NOTES 8 AND 9 ON PAGE 25 FOR GUIDANCE. NOTE THAT THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT BY THE APPLICATION OF STOP PIECES AS SHOWN BY THE "CENTER GATE F" DETAIL ON PAGE 28, OR BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECES OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING, OR WITHIN SIX INCHES (6") OF IT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 76 FOR GUIDANCE.
13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	444	222
2" X 2"	95	32
2" X 3"	36	18
2" X 4"	568	379
2" X 6"	215	215
4" X 4"	144	192
NAILS	NO. REQD	POUNDS
6d (2")	288	1-3/4"
10d (3")	928	14-1/2"
12d (3-1/4")	36	3/4"
16d (3-1/2")	96	2-1/4"
WIRE, NO. 14 GAGE	-----60' REQD-----	-----1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	-----66-----	94,380 LBS
DUNNAGE	-----	2,246 LBS

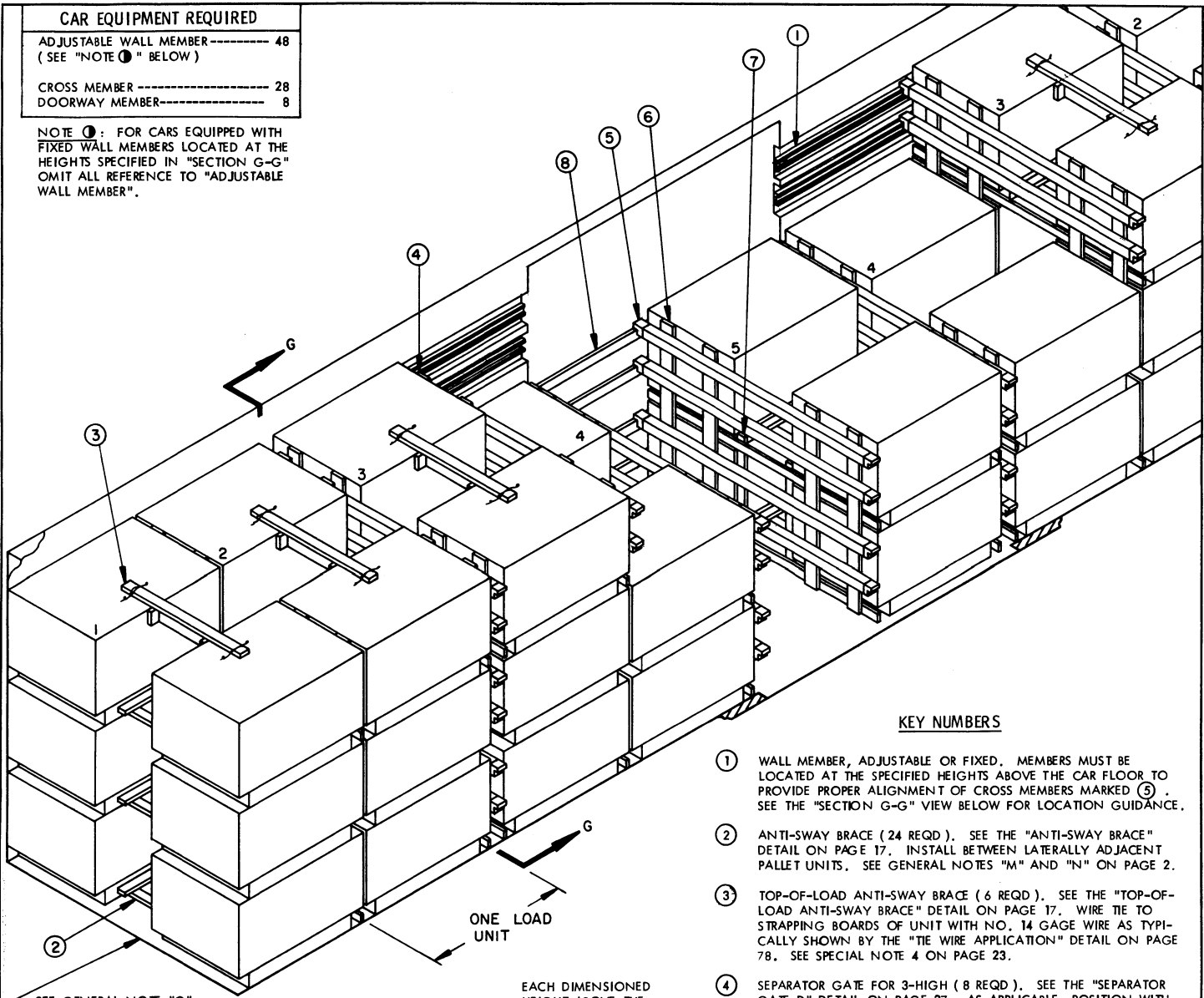
TOTAL WEIGHT----- 96,626 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER-----	48
(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 G-G" OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBER".



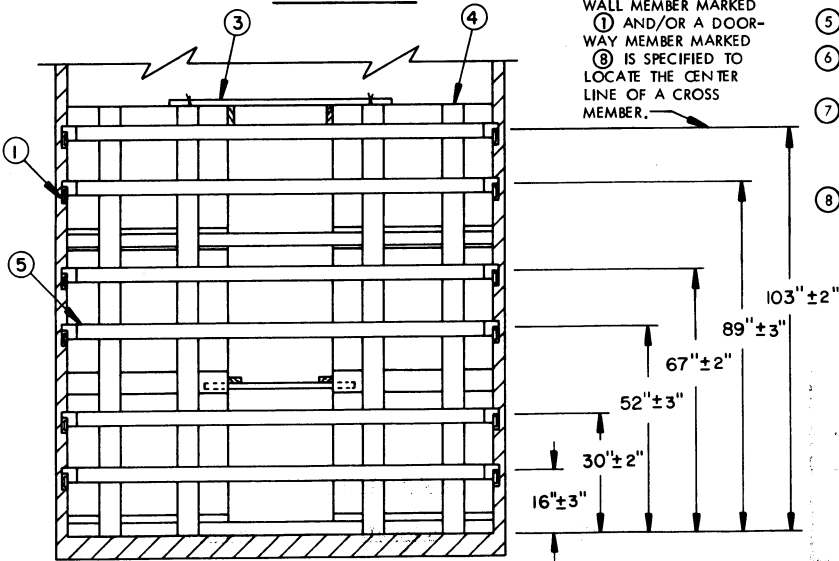
KEY NUMBERS

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤. SEE THE "SECTION G-G" VIEW BELOW FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 4 ON PAGE 23.
- ④ SEPARATOR GATE FOR 3-HIGH (8 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 27. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 23.
- ⑤ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 2-HIGH (4 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 27.
- ⑦ STOP PIECE, 1" X 4" X 42" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY 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 23.
- ⑧ DOORWAY MEMBER (8 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 23.

SEE GENERAL NOTE "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 23.

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 G-G

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

48-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 22 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF THIRTY-SIX (36) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 51,480 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 22, MUST BE INSTALLED IN EACH END OF THE CAR, THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 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, PIECES MARKED ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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 78 FOR CONSTRUCTION GUIDANCE.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AND THE DOOR OPENING IS AT LEAST 9'-6" HIGH, 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 54 AND 55 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

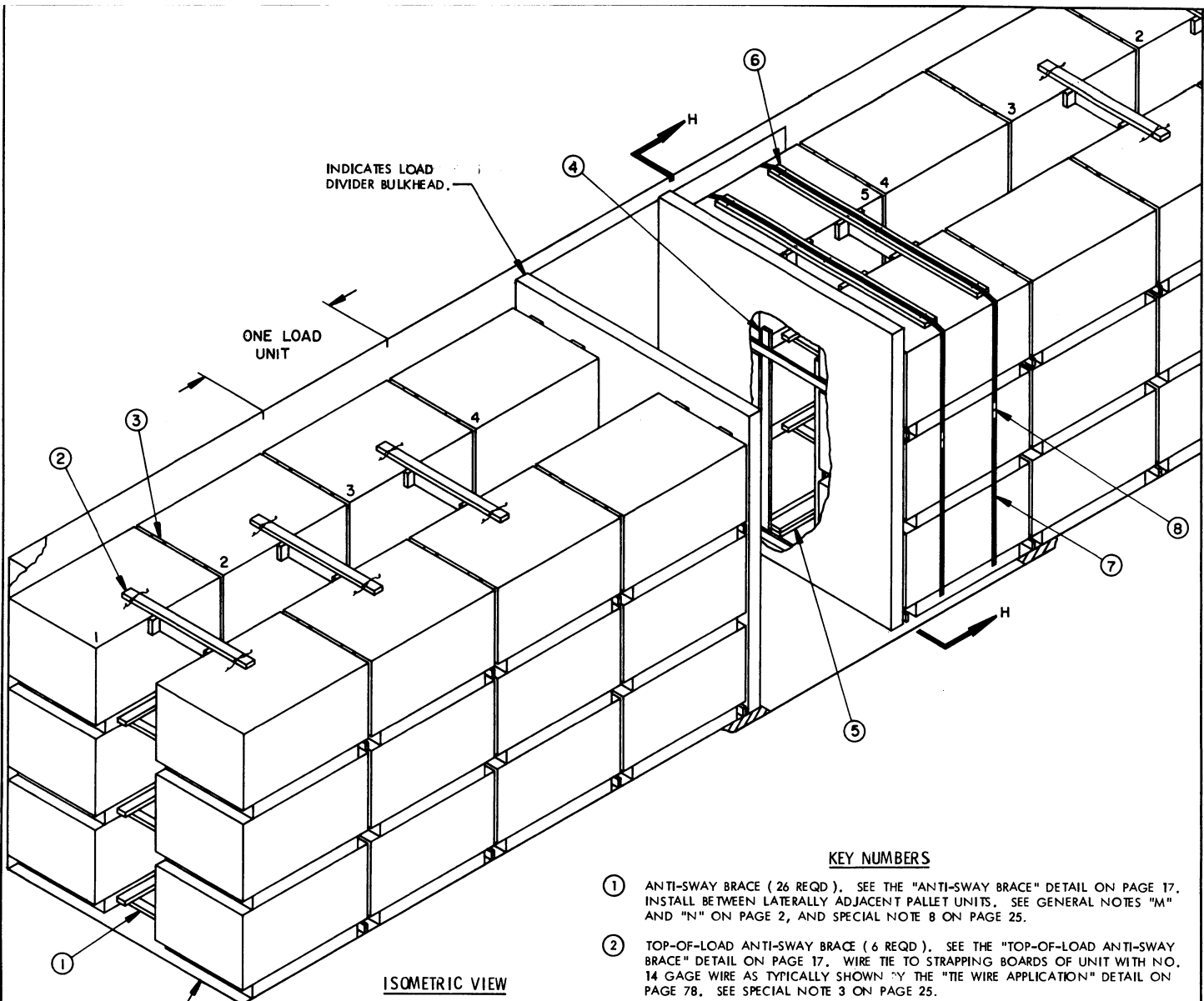
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	229	77
1" X 6"	386	193
2" X 4"	349	232
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	312	2
10d (3")	372	5-3/4
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1 LB		

LOAD AS SHOWN

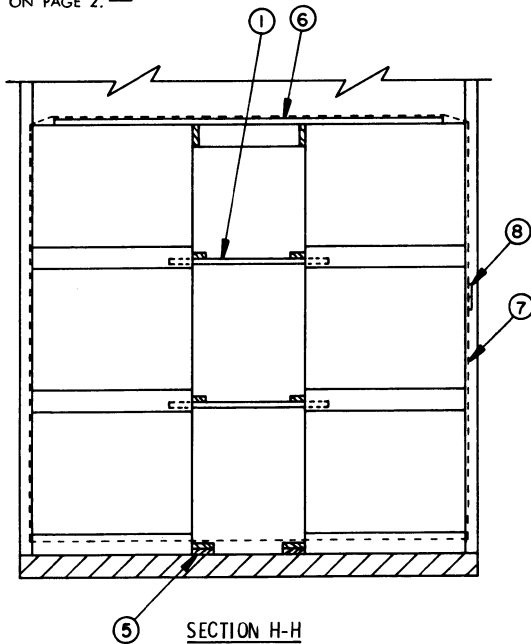
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	48-----	68,640 LBS
DUNNAGE-----	-----	1,055 LBS
TOTAL WEIGHT-----		69,695 LBS (APPROX)

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



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

ISOMETRIC VIEW



SECTION H-H

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 25.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 25.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 27. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 25.
- ④ STOP PIECE, 1" X 4" X 7'-0" (2 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 25.
- ⑤ FLOOR LINE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 8 ON PAGE 25.
- ⑥ STRAPPING BOARD ASSEMBLY "B" (2 REQD). SEE THE DETAIL ON PAGE 17.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .031" X 37'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 25.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

NOTE: SEPARATOR GATES, PIECES MARKED ③, HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDERS BULKHEADS AND WITH 10'-0" WIDE BY 10'-0" HIGH DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND OTHER DOOR SIZES CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 94,380 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-TWO (42) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 60,080 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 24, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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 78 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (8) IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MARKED (5) THRU (8) ON PAGE 24 MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYRE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. FLOOR LINE BLOCKING MARKED (5) IN THE LOAD VIEW MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1) FOR ALL UNITS REQUIRING DOORWAY PROTECTION STRAPS.
9. 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 WIDTH.
10. A "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL SHOWN ON PAGE 85 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 FIVE (5) LOAD UNITS. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60'-0" OR LONGER CARS.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 2-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 56 THRU 61 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 AND/OR PAGES 74 AND 76 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

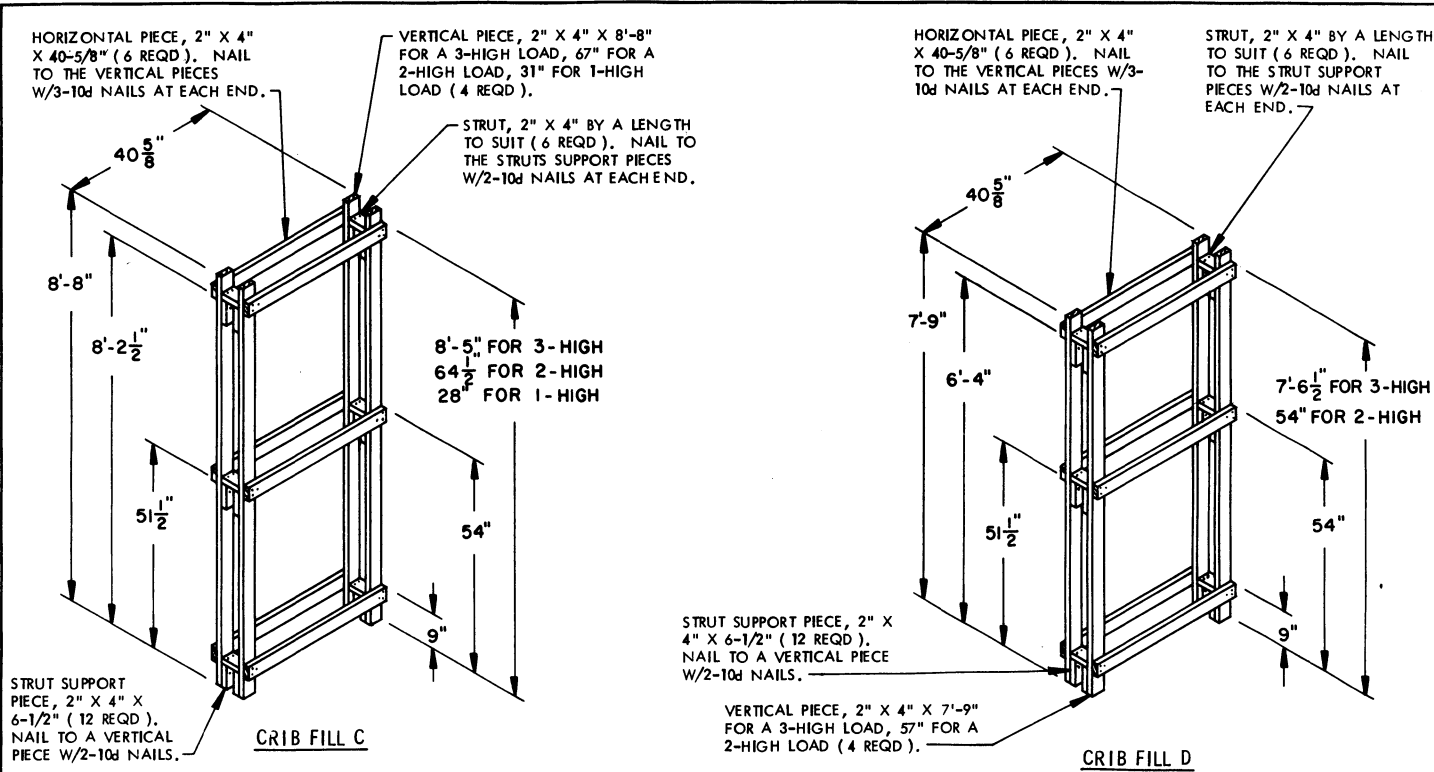
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	179	60
1" X 6"	324	162
2" X 4"	375	250
2" X 6"	62	62
NAILS	NO. REQD	POUNDS
6d (2")	228	1-1/4
10d (3")	396	10-1/2
12d (3-1/4")	20	1/2
16d (3-1/2")	20	
STEEL STRAPPING, 1-1/4" -----	74' REQD -----	11 LBS
SEAL FOR 1-1/4" STRAP -----	4 REQD -----	NIL
STAPLE -----	6 REQD -----	NIL
WIRE, NO. 14 GAGE -----	60' REQD -----	1 LB

LOAD AS SHOWN

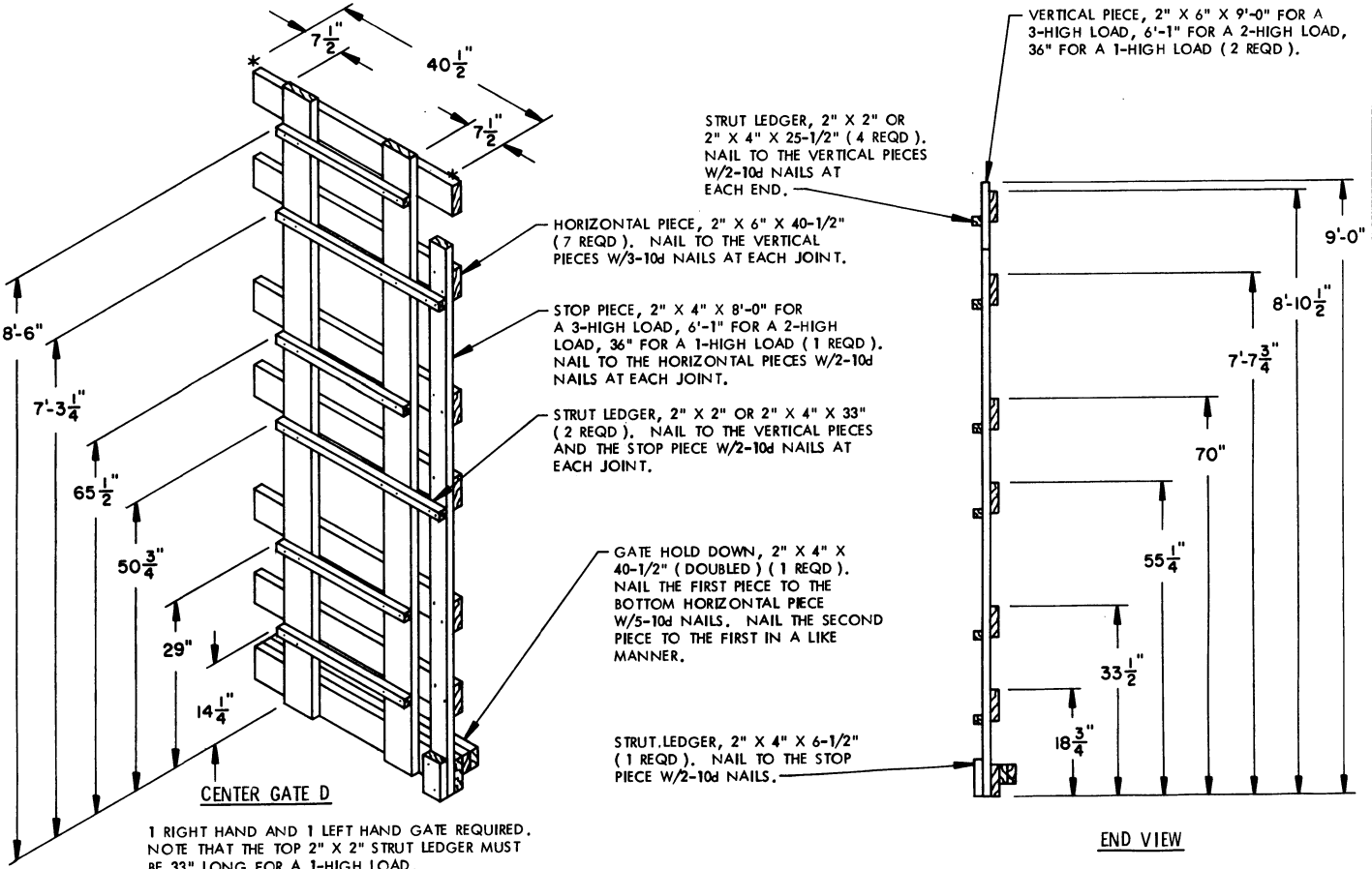
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	54-----	77,220 LBS (APPROX)
DUNNAGE-----		1,093 LBS
TOTAL WEIGHT-----		78,313 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
54-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDERS



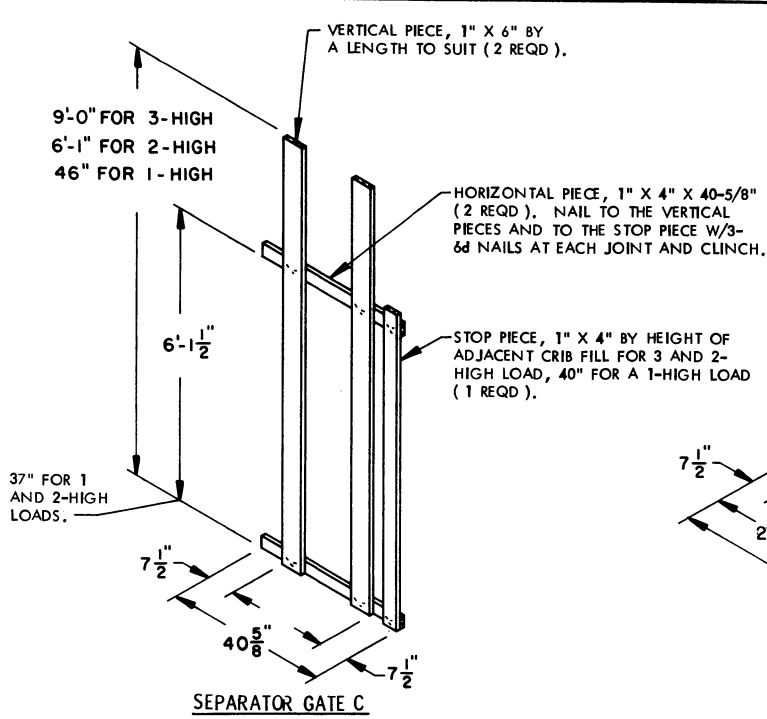
CRIB FILL ASSEMBLIES "C" AND "D" SHOULD BE PRE-POSITIONED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2-HIGH LOAD.

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



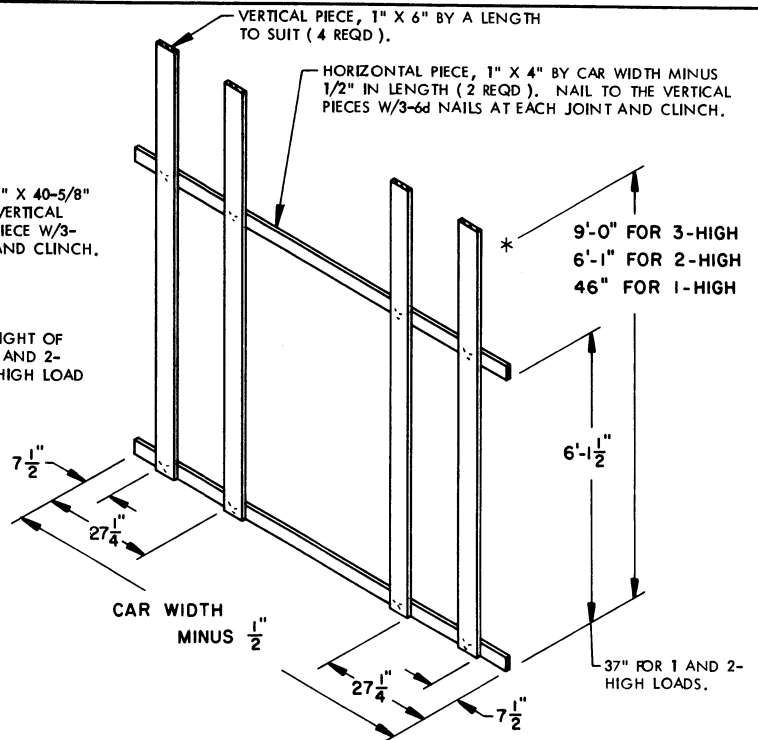
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. NOTE THAT THE TOP 2" X 2" STRUT LEDGER MUST BE 33" LONG FOR A 1-HIGH LOAD.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

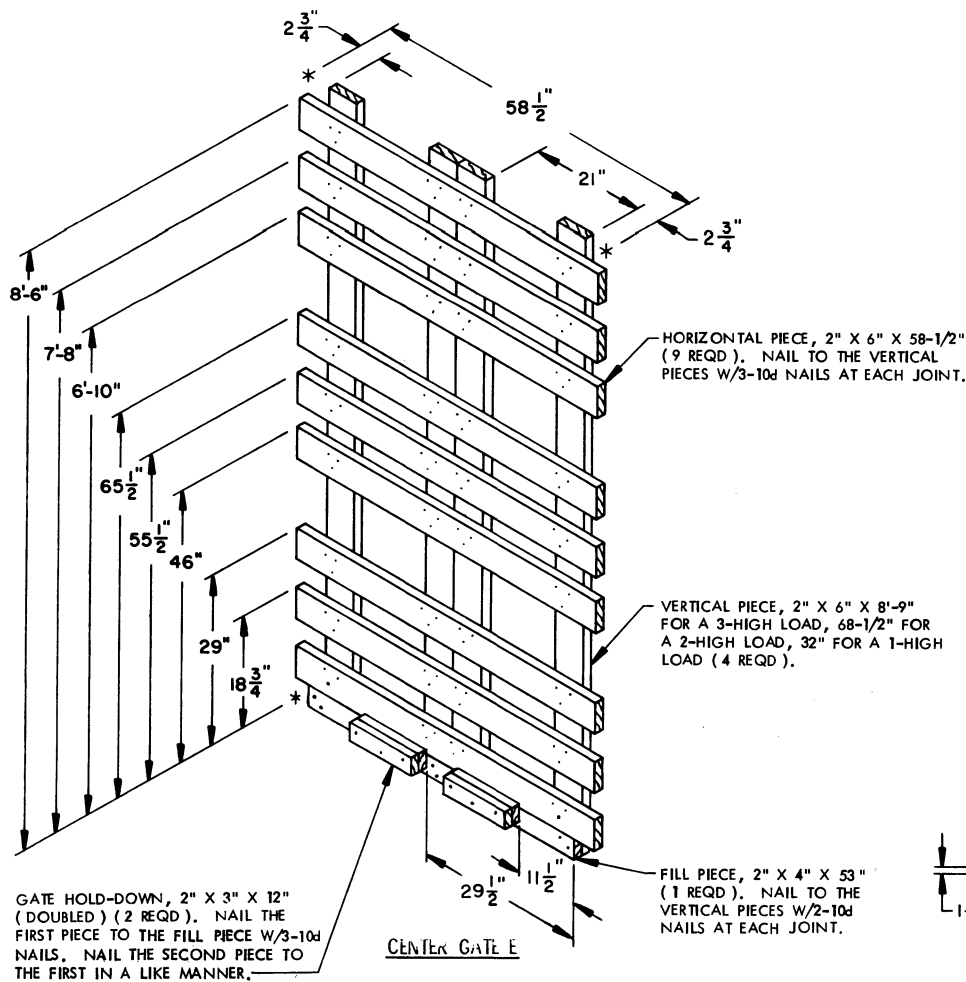


SEPARATOR GATE C

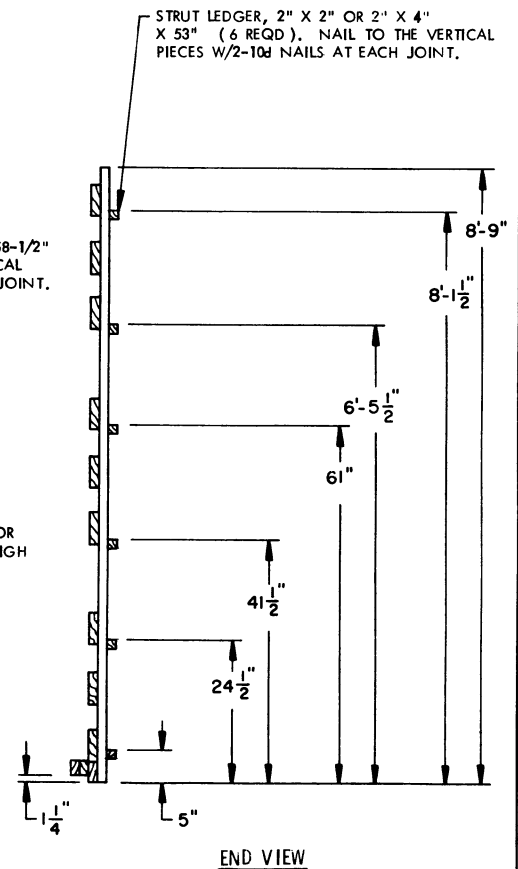
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



SEPARATOR GATE D

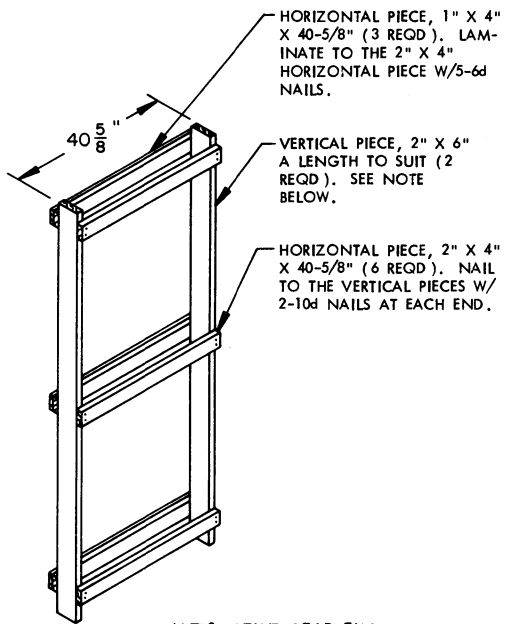


CENTER GATE E



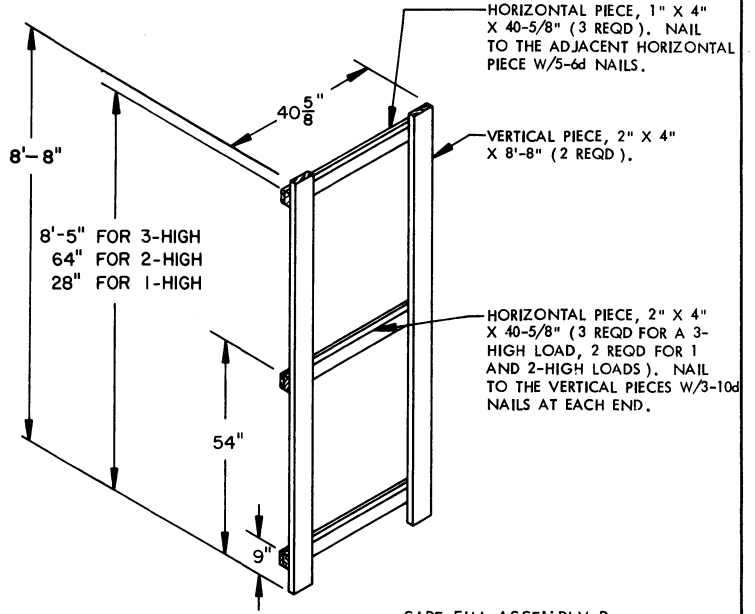
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



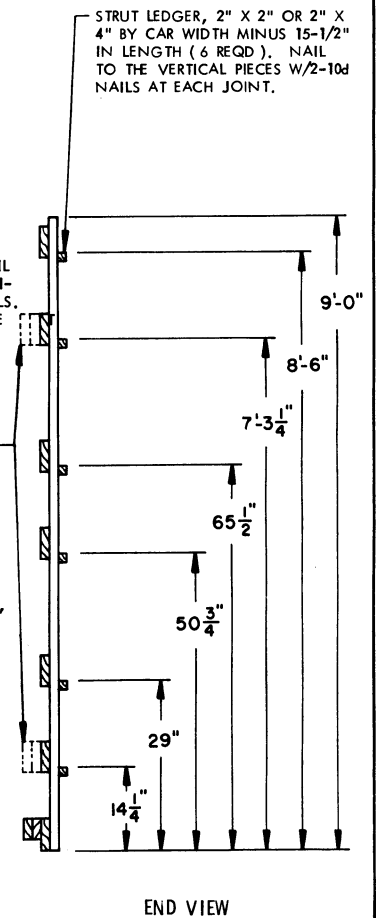
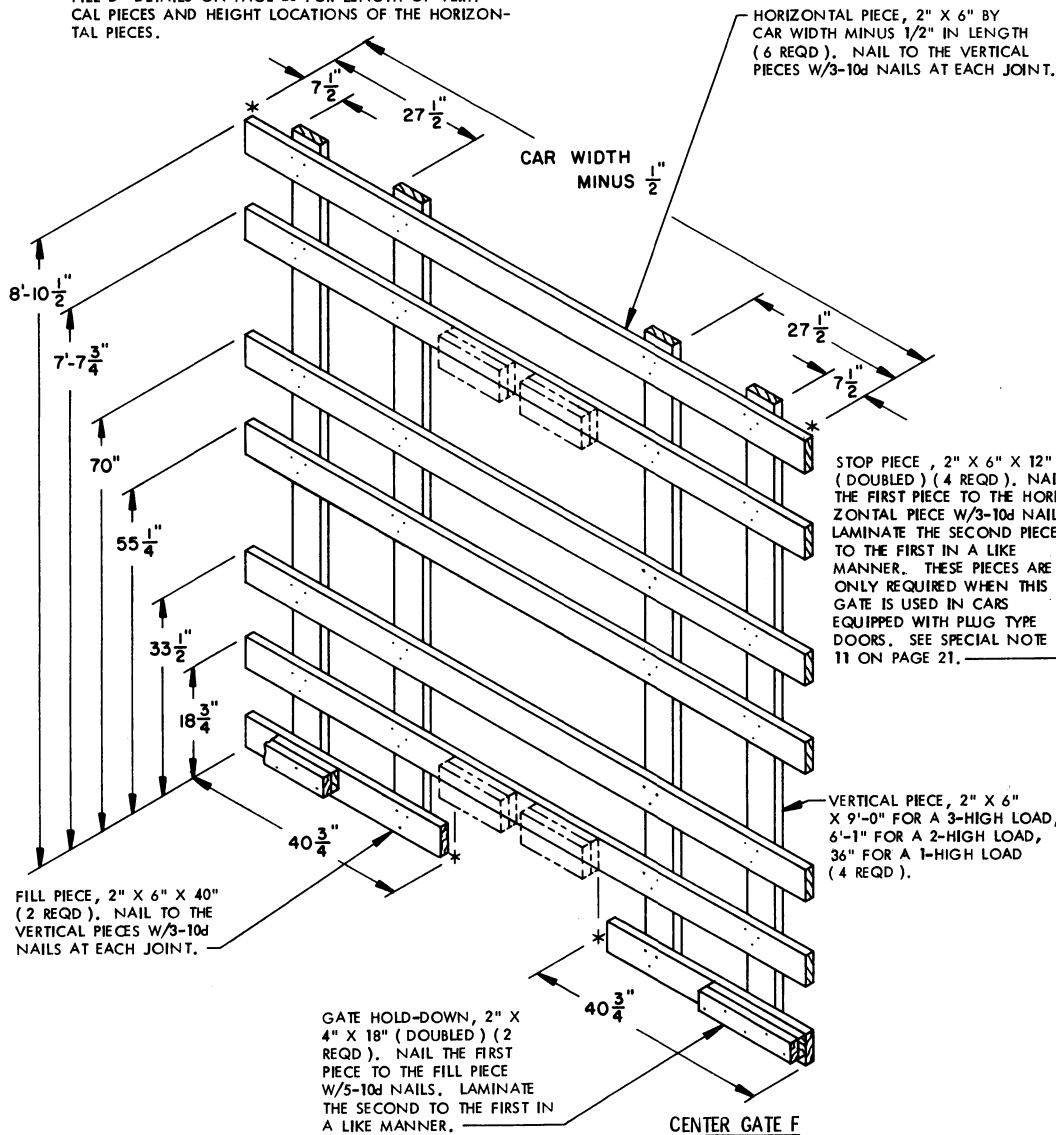
ALTERNATIVE CRIB FILL

THE CRIB FILL ABOVE IS FOR USE IN A 9'-4" WIDE CAR; FOR A 9'-2" WIDE CAR THE VERTICAL PIECES WILL BE 2" X 4" MATERIAL. REFER TO "CRIB FILL C" OR "CRIB FILL D" DETAILS ON PAGE 26 FOR LENGTH OF VERTICAL PIECES AND HEIGHT LOCATIONS OF THE HORIZONTAL PIECES.

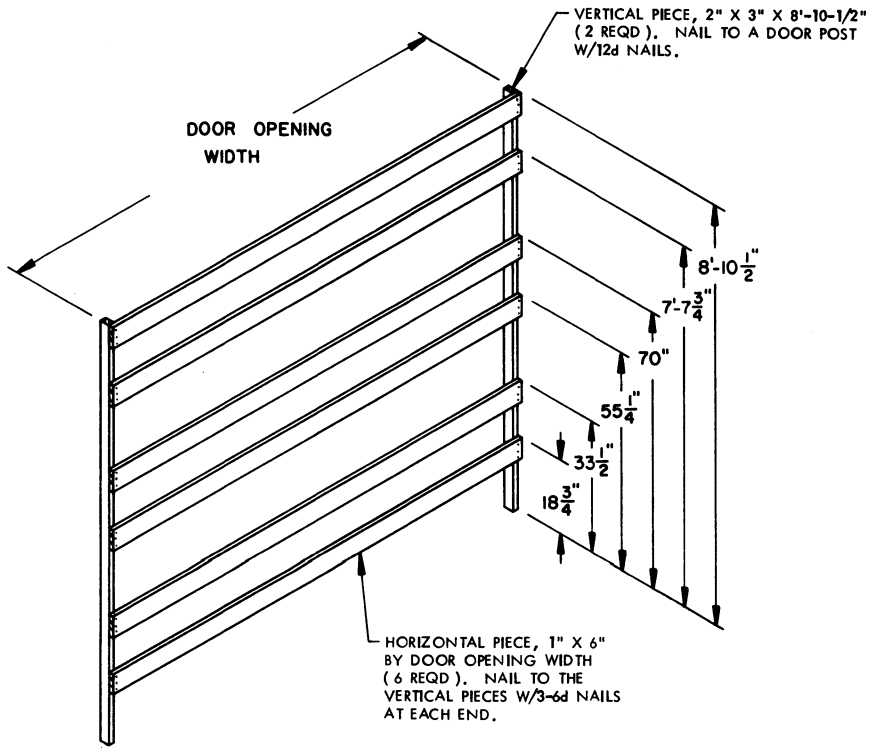


SIDE FILL ASSEMBLY D

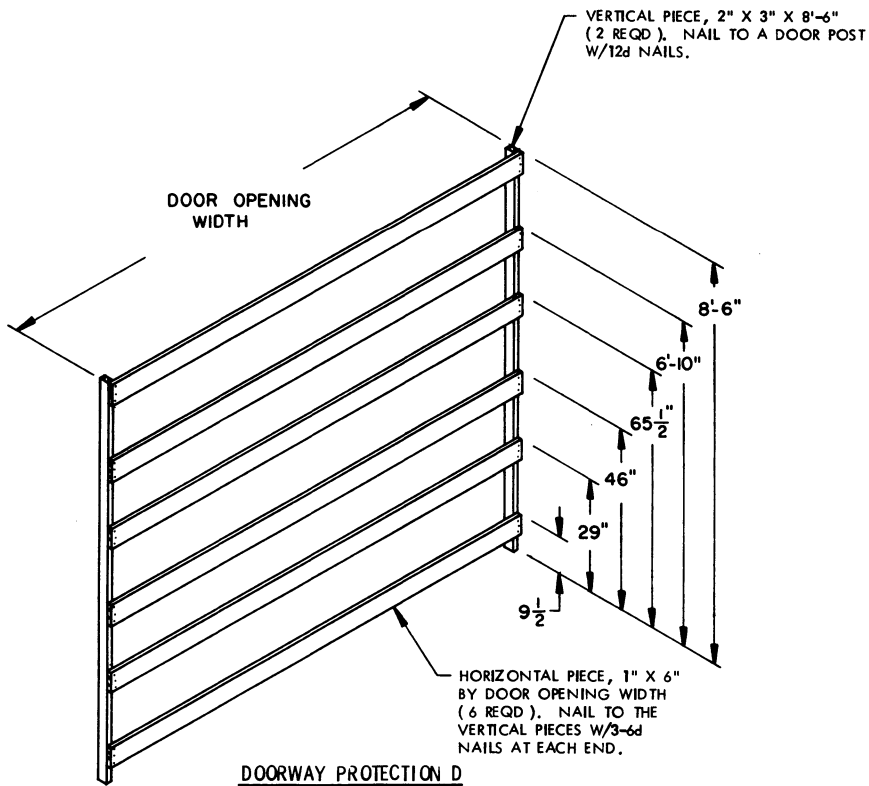
THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 18.



DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DOORWAY PROTECTION C

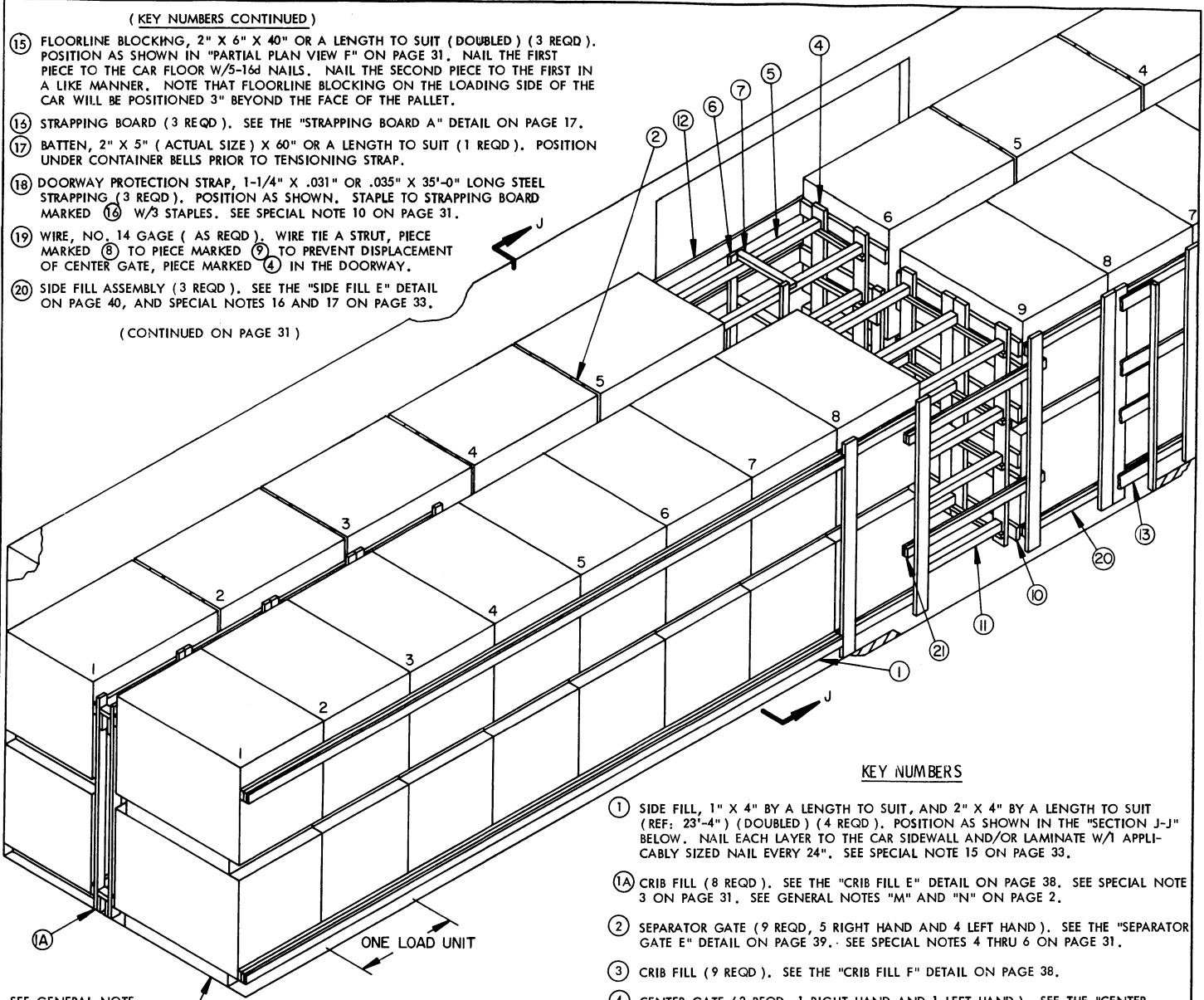


DOORWAY PROTECTION D

(KEY NUMBERS CONTINUED)

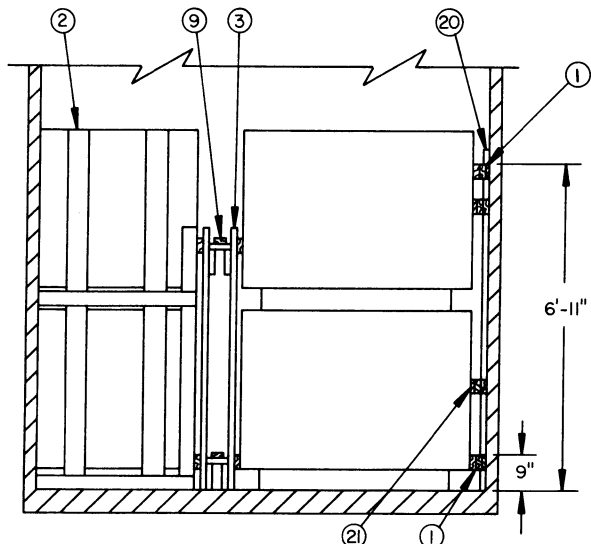
- 15 FLOORLINE BLOCKING, 2" X 6" X 40" OR A LENGTH TO SUIT (DOUBLED) (3 REQD). POSITION AS SHOWN IN "PARTIAL PLAN VIEW F" ON PAGE 31. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT FLOORLINE BLOCKING ON THE LOADING SIDE OF THE CAR WILL BE POSITIONED 3" BEYOND THE FACE OF THE PALLET.
- 16 STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 17.
- 17 BATTEN, 2" X 5" (ACTUAL SIZE) X 60" OR A LENGTH TO SUIT (1 REQD). POSITION UNDER CONTAINER BELLS PRIOR TO TENSIONING STRAP.
- 18 DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 35'-0" LONG STEEL STRAPPING (3 REQD). POSITION AS SHOWN. STAPLE TO STRAPPING BOARD MARKED 16 W/3 STAPLES. SEE SPECIAL NOTE 10 ON PAGE 31.
- 19 WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED 8 TO PIECE MARKED 9 TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED 4 IN THE DOORWAY.
- 20 SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL E" DETAIL ON PAGE 40, AND SPECIAL NOTES 16 AND 17 ON PAGE 33.

(CONTINUED ON PAGE 31)



ISOMETRIC VIEW

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

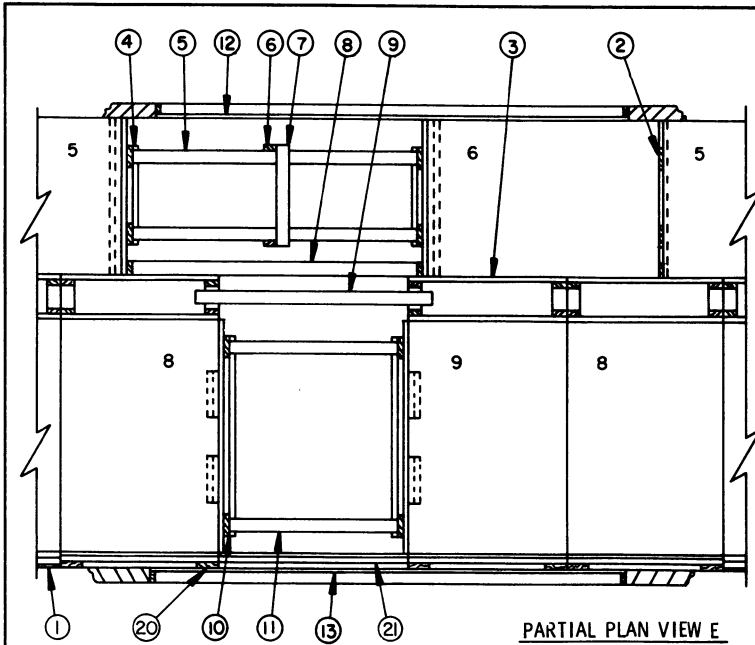


SECTION J-J

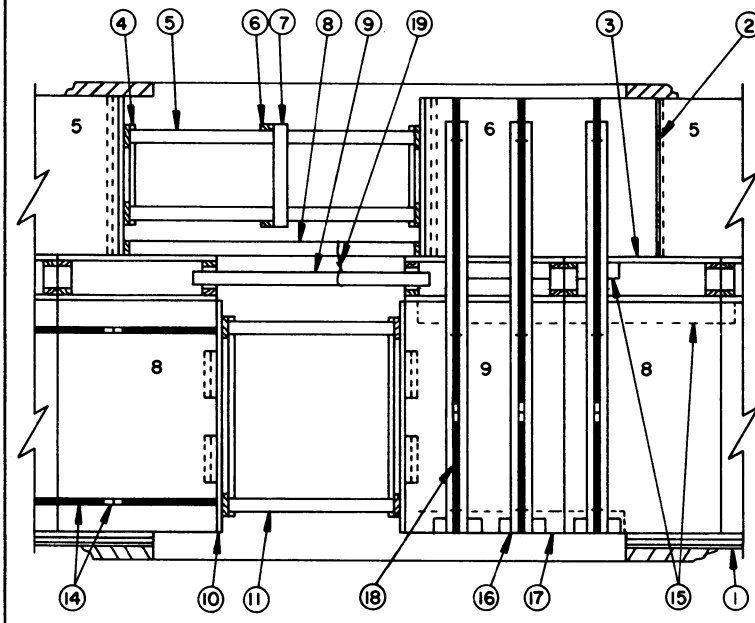
KEY NUMBERS

- 1 SIDE FILL, 1" X 4" BY A LENGTH TO SUIT, AND 2" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (DOUBLED) (4 REQD). POSITION AS SHOWN IN THE "SECTION J-J" BELOW. NAIL EACH LAYER TO THE CAR SIDEWALL AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 24". SEE SPECIAL NOTE 15 ON PAGE 33.
- 1A CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 38. SEE SPECIAL NOTE 3 ON PAGE 31. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 2 SEPARATOR GATE (9 REQD, 5 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 39. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 31.
- 3 CRIB FILL (9 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 38.
- 4 CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE G" DETAIL ON PAGE 38. SEE SPECIAL NOTE 7 ON PAGE 31.
- 5 STRUT, 4" X 4" BY CUT TO FIT (REF: 72") (8 REQD). TOENAIL TO PIECES MARKED 4 W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2, AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- 6 VERTICAL STRUT BRACING, 2" X 4" X 68" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 7 HORIZONTAL STRUT BRACING, 2" X 4" X 28" (4 REQD). NAIL TO THE STRUTS, PIECES MARKED 5 W/3-10d NAILS AT EACH JOINT.
- 8 STRUT, 2" X 4" BY CUT TO FIT (REF: 6'-0") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED 4 W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW E" DETAIL ON PAGE 31.
- 9 CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 54") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "F" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW E" DETAIL ON PAGE 31.
- 10 CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 39.
- 11 STRUT, 4" X 4" BY CUT TO FIT (REF: 42") (12 REQD). TOENAIL TO PIECES MARKED 10 W/2-16d NAILS AT EACH END.
- 12 DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 41. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 31.
- 13 DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 41. NAIL TO THE DOOR POSTS W/12d NAILS.
- 14 BUNDLING STRAP, 1-1/4" X .031" OR .035" X 30'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION THE STRAP, ENCIRCLE PALLET STACK NUMBERS 7 AND 8. TENSION AND SEAL. SEE SPECIAL NOTE 11 ON PAGE 31; AND GENERAL NOTE "O" ON PAGE 2.

(CONTINUED ABOVE)



PARTIAL PLAN VIEW E



PARTIAL PLAN VIEW F

(KEY NUMBERS CONTINUED)

(21) SIDE FILL RETAINER, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (2 EACH REQD.). LAMINATE THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 8". POSITION AT 28" AND 74" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (20) W/3-10d NAILS AT EACH JOINT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	242	81
1" X 6"	218	109
2" X 2"	51	17
2" X 3"	36	18
2" X 4"	1,103	736
2" X 6"	179	179
4" X 4"	90	120
NAILS	NO. REQD	POUNDS
6d (2")	300	1-3/4
10d (3")	1,550	24
12d (3-1/4")	36	3/4
16d (3-1/2")	80	1-1/4
WIRE, NO. 14 GAGE-----3' REQD-----NIL		

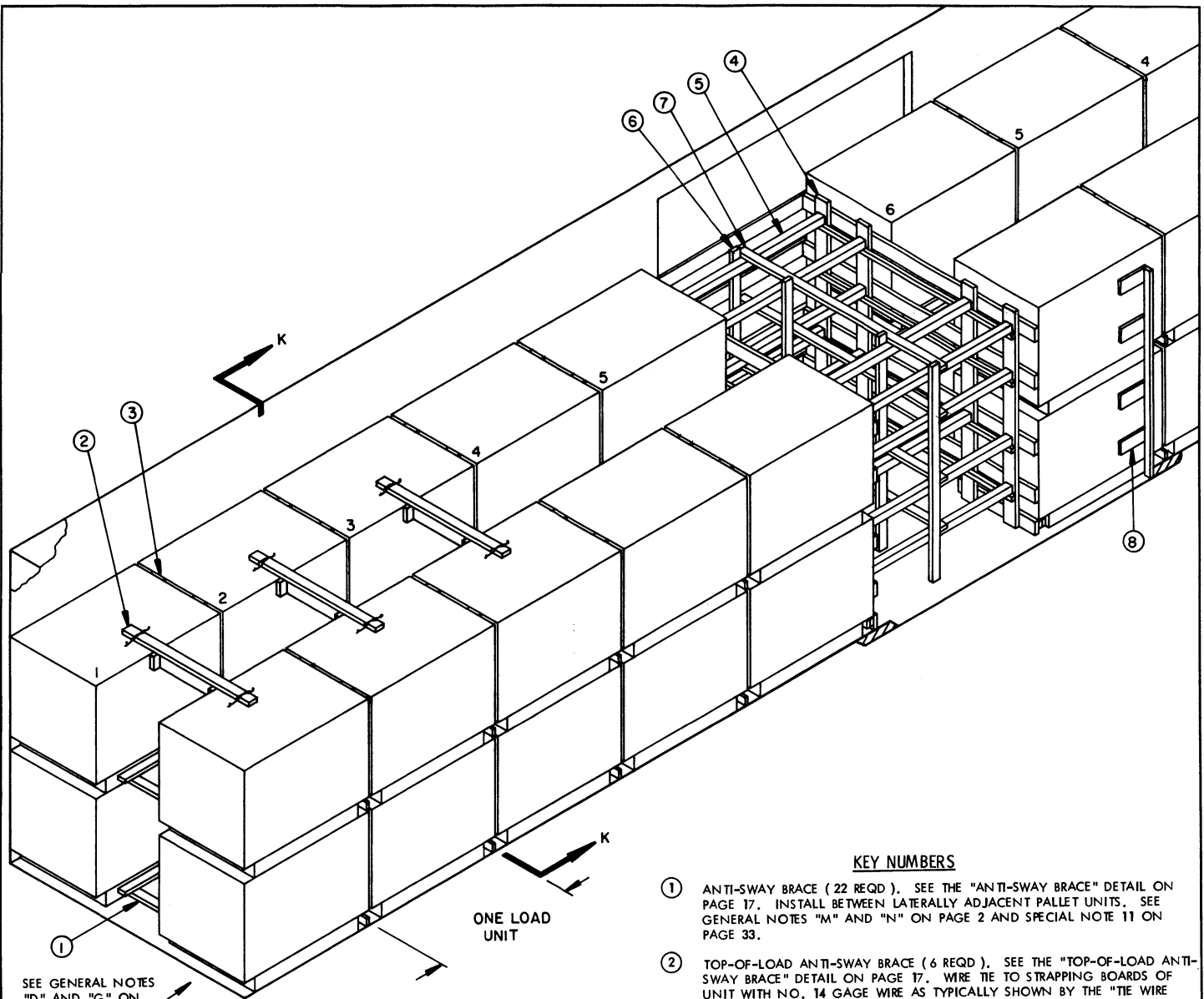
SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENING 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 30 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-SIX (46) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 86,158 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES, THIRTY-SIX (36) UNITS, FOR A LADING WEIGHT OF 67,428 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (A), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 30, 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 "OVERHAND" OF THE PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES, PIECES MARKED (2), ARE POSITIONED WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS, THEY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE A STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 40" WIDE BY 8'-0" LONG.
7. CENTER GATES "G" AND "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 79 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (13) IN THE LOAD ON PAGE 30, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW F" DETAIL AT LEFT, AND KEY NUMBERS (14) THRU (18) ON PAGE 30 FOR GUIDANCE. NOTE THAT THE CRIB FILL MARKED (3) MUST HAVE 3" CUT OFF EACH VERTICAL AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING; ALSO PIECES MARKED (8) MUST BE WIRE TIED TO PIECE MARKED (9) TO PREVENT DISPLACEMENT OF CENTER GATE "G" IN THE DOORWAY.
10. TWO (2) DOORWAY PROTECTION STRAPS, SHOWN AS PIECES MARKED (18) IN PARTIAL PLAN VIEW "F", 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.
11. IF THE PALLET STACKS IN THE DOORWAY ARE POSITIONED SO THE FORKLIFT OPENINGS ARE NOT CLOSE ENOUGH IN ALIGNMENT TO RECEIVE TWO (2) BUNDLING STRAPS ACROSS THE LOAD WIDTH; THAT PALLET STACK MUST BE UNITIZED TO THE LONGITUDINALLY ADJACENT PALLET STACK AS SHOWN BY KEY NUMBER (14) IN THE "PARTIAL PLAN VIEW F" DETAIL AT LEFT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 57. TWO (2) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT CROSSWISE STACK NO. 8 AND THE ADJACENT CRIB FILL. NOTE THAT ADDITIONAL STRUT BRACING WILL THEN BE REQUIRED. ALSO, THE CENTER GATE, PIECE MARKED (4) MUST BE RESTRAINED FROM LATERAL MOVEMENT BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE STOP PIECE OF THE CENTER GATE; OR, THE ENTIRE TOP TIER CAN BE OMITTED, OR A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 68 AND 69.
13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE. FOR LENGTHWISE UNITS AND PAGES 74 AND 76 FOR CROSSWISE UNITS.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE. (CONTINUED ON PAGE 33)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	56 -----	104,888 LBS
DUNNAGE -----		2,548 LBS
		TOTAL WEIGHT -- 107,436 LBS

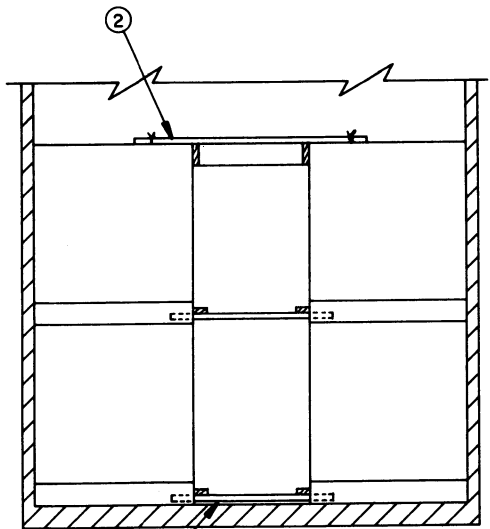
ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



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

ISOMETRIC VIEW

ONE LOAD UNIT



SECTION K-K

KEY NUMBERS

- ① ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 11 ON PAGE 33.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 33.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 39. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 33.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 40. SEE SPECIAL NOTES 7 AND 8 ON PAGE 33.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 6'-0") (16 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2, AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 7'-3" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 12" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ DOORWAY PROTECTION (2 REQD). SEE "DOORWAY PROTECTION E" DETAIL ON PAGE 41. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 10 ON PAGE 33.

NOTE: SEPARATOR GATES, PIECES MARKED ③ HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

(SPECIAL NOTES CONTINUED FROM PAGE 31)

15. THE SIDE FILL PIECE MARKED ① IN THE LOAD ON PAGE 30, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLY "E", PIECE MARKED ②, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD, IN LIEU OF PIECE MARKED ①.
16. IF THE CAR TO BE LOADED HAS PLUG TYPE DOORS, AND HAS NAILABLE SIDEWALLS, THE SIDE FILL ASSEMBLIES AND THE SIDE FILL RETAINERS, PIECES MARKED ② AND ③ WILL NOT BE REQUIRED; EXTEND THE LENGTH OF THE SIDE FILL, PIECE MARKED ① TO THE DOOR AS SHOWN IN THE "PARTIAL PLAN VIEW F" DETAIL ON PAGE 31.
17. IF A 9'-2" OR 9'-4" WIDE CAR IS TO BE LOADED, OMIT THE 1" X 4" SIDE FILL PIECES NAILED TO THE CAR SIDEWALL, AND OMIT THE 1" X 4" HORIZONTAL PIECES NAILED TO THE SIDE FILL "E" ASSEMBLY, PIECE MARKED ②. ADDITIONALLY, THE ALTERNATIVE CRIB FILL DETAILED ON PAGE 40, WILL BE USED IN LIEU OF PIECES MARKED ④ AND ③ ON PAGE 30.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 32 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF THIRTY-SIX (36) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 67,428 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; TWENTY-EIGHT (28) UNITS, FOR AN APPROXIMATE WEIGHT OF 52,444 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 32 MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES ARE POSITIONED IN THE DOORWAY, THIS MUST BE PREVENTED FROM SHIFTING INTO DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④ IN THE LOAD ON PAGE 34. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 FOR CONSTRUCTION GUIDANCE.
7. CENTER GATE "J" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 79 FOR GUIDANCE.
8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE J", SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 32, INSTALL TWO (2) "CENTER GATES G" AS SHOWN ON PAGE 38. 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 79. OMIT THE STOP PIECES FROM "CENTER GATE G".
9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "J", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 81 FOR GUIDANCE.
10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 32, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE FLOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
11. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED; OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. IN LIEU OF PIECE MARKED ⑧ USE PIECES MARKED ⑤ THRU ⑧ ON PAGE 36. SEE SPECIAL NOTES 8 AND 9 ON PAGE 37 FOR GUIDANCE. ALSO, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT BY THE APPLICATION OF STOP PIECES AS SHOWN BY THE "CENTER GATE J" DETAIL ON PAGE 40, OR BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECES OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING, OR WITHIN SIX INCHES (6") OF IT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 76 FOR GUIDANCE.
13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	356	178
2" X 2"	63	21
2" X 3"	28	16
2" X 4"	400	267
2" X 6"	165	165
4" X 4"	96	128
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	668	10-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE-----60' REQD-----		1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	44-----	82,412 LBS
DUNNAGE-----		1,678 LBS

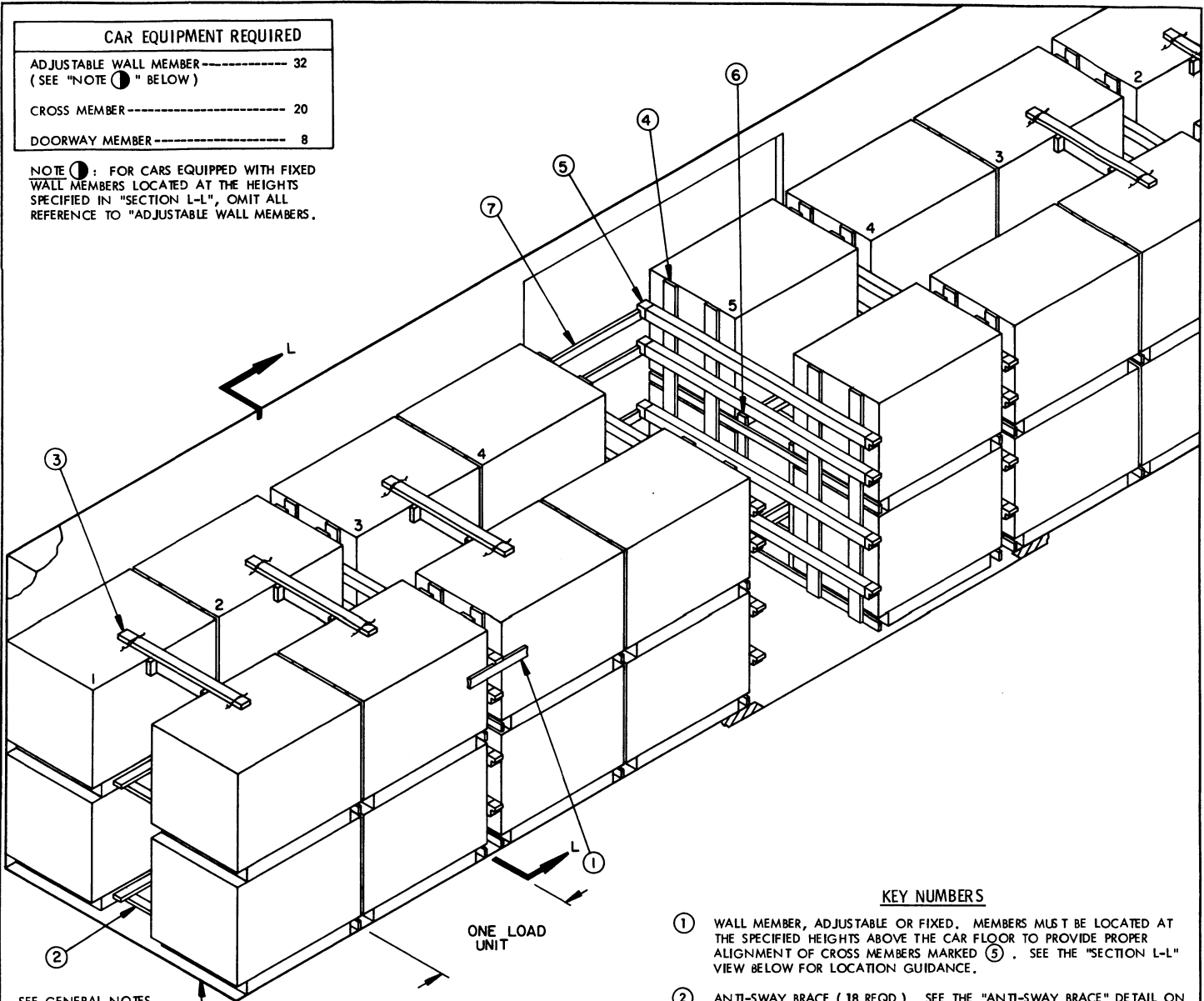
TOTAL WEIGHT----- 84,090 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
44-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 -----	20
DOORWAY MEMBER -----	8

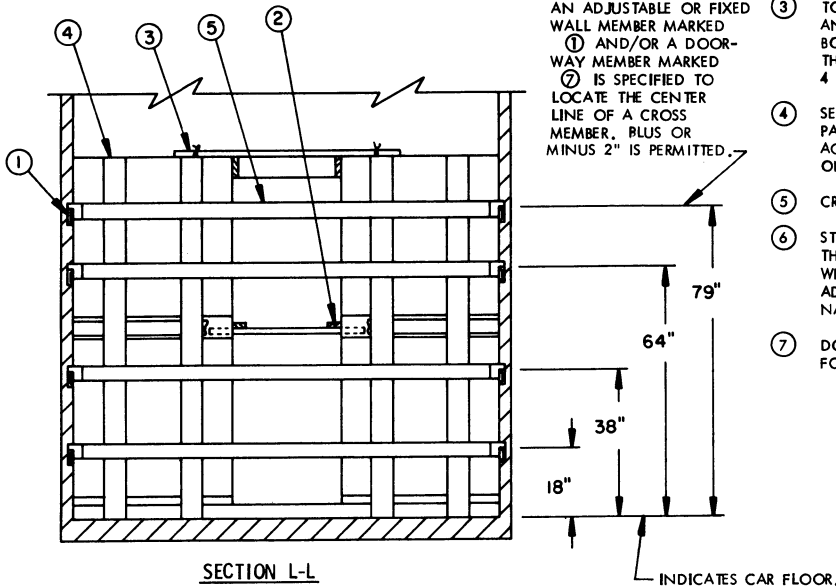
NOTE 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION L-L", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS."



SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 35.

ISOMETRIC VIEW

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED 1 AND/OR A DOORWAY MEMBER MARKED 7 IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER, PLUS OR MINUS 2" IS PERMITTED.



SECTION L-L

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 L-L" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 4 ON PAGE 35.
- 4 SEPARATOR GATE (12 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 39. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 35.
- 5 CROSS MEMBER (20 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 STOP PIECE, 1" X 4" X 54" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATES, PIECES MARKED 4 WHICH ARE IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 35.
- 7 DOORWAY MEMBER (8 REQD). SEE THE "SECTION L-L" VIEW AT LEFT FOR LOCATION GUIDANCE.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

36-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 BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 34 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF TWENTY-EIGHT (28) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 52,444 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHT AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑥. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 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 FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 54 AND 55 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

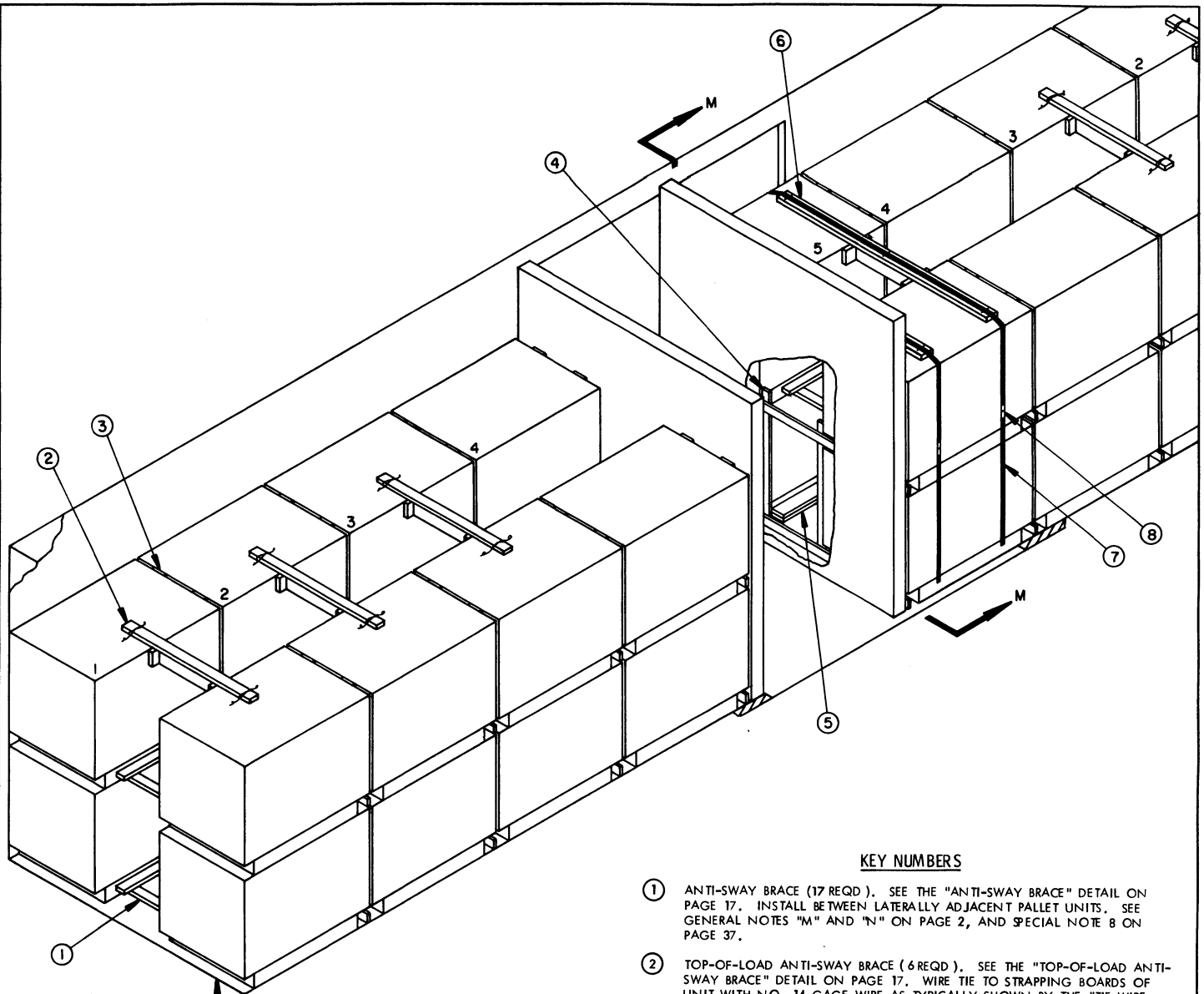
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	233	78
1" X 6"	368	184
2" X 4"	266	178
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	312	2
10d (3")	300	4-3/4
WIRE, NO. 14 GAGE-----60' REQD-----1 LB		

LOAD AS SHOWN

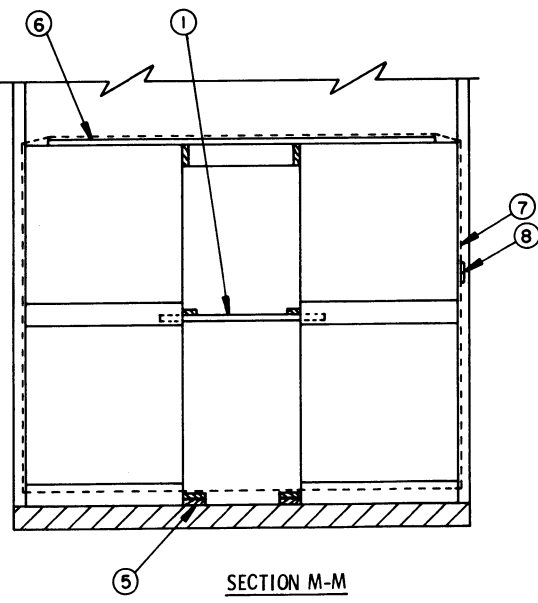
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	36-----	67,428 LBS
DUNNAGE-----	-----	930 LBS
TOTAL WEIGHT-----		68,358 LBS (APPROX)

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



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

ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

- ① ANTI-SWAY BRACE (17 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 37.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 37.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 39. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 37.
- ④ STOP PIECE, 1" X 4" X 54" (2 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 37.
- ⑤ SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 7 ON PAGE 37.
- ⑥ STRAPPING BOARD ASSEMBLY "B" (2 REQD). SEE THE DETAIL ON PAGE 17.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 35'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLE. SEE SPECIAL NOTE 9 ON PAGE 37.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

36-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 82,412 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF TWENTY-EIGHT (28) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 52,444 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 36, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 32 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MARKED (6) THRU (8) ON PAGE 36 MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. FLOORLINE BLOCKING MARKED (5) IN THE LOAD VIEW MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1) FOR ALL UNITS REQUIRING DOORWAY PROTECTION STRAPS.
9. 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 WIDTH.
10. A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED IF MORE THEN SIX (6) LOAD UNITS ARE POSITIONED IN ONE END OF THE CAR. SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 85.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 61 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 AND/OR PAGES 74 AND 76 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

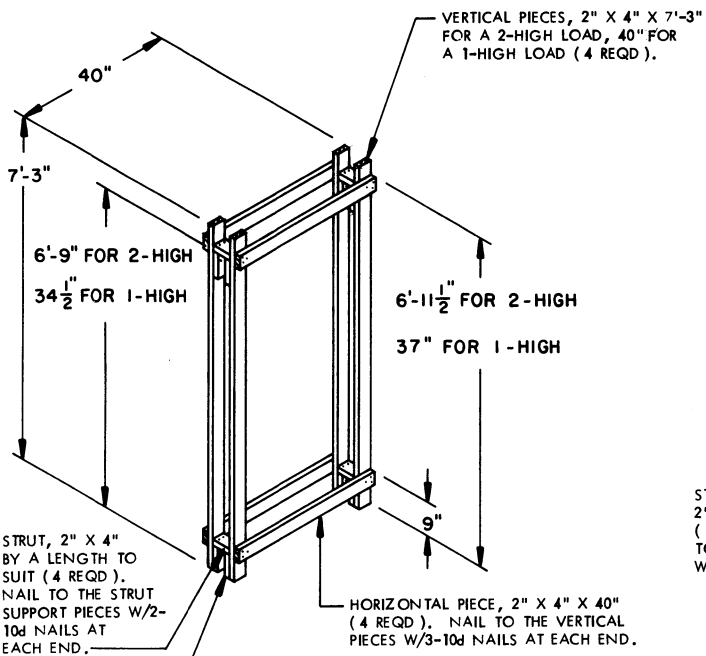
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	174	58
1" X 6"	276	138
2" X 4"	260	174
2" X 6"	63	63
NAILS	NO. REQD	POUNDS
6d (2")	228	1-1/2
10d (3")	288	4-1/2
12d (3-1/4")	20	1/2
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4"-----70' REQD-----	10	LBS
SEAL FOR 1-1/4" STRAPPING-----	4	REQD-----NIL
STAPLE-----	6	REQD-----NIL
WIRE, NO. 14 GAGE-----	60'	REQD-----1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	36-----	67,428 LBS
DUNNAGE-----	-----	884 LBS

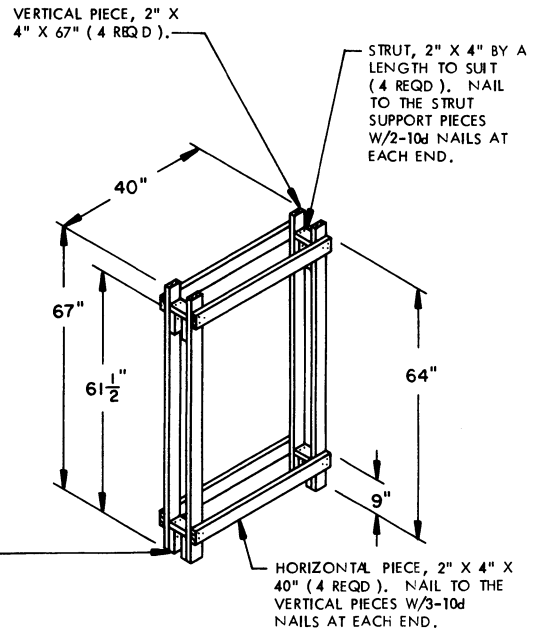
TOTAL WEIGHT-----68,312 LBS (APPROX)

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



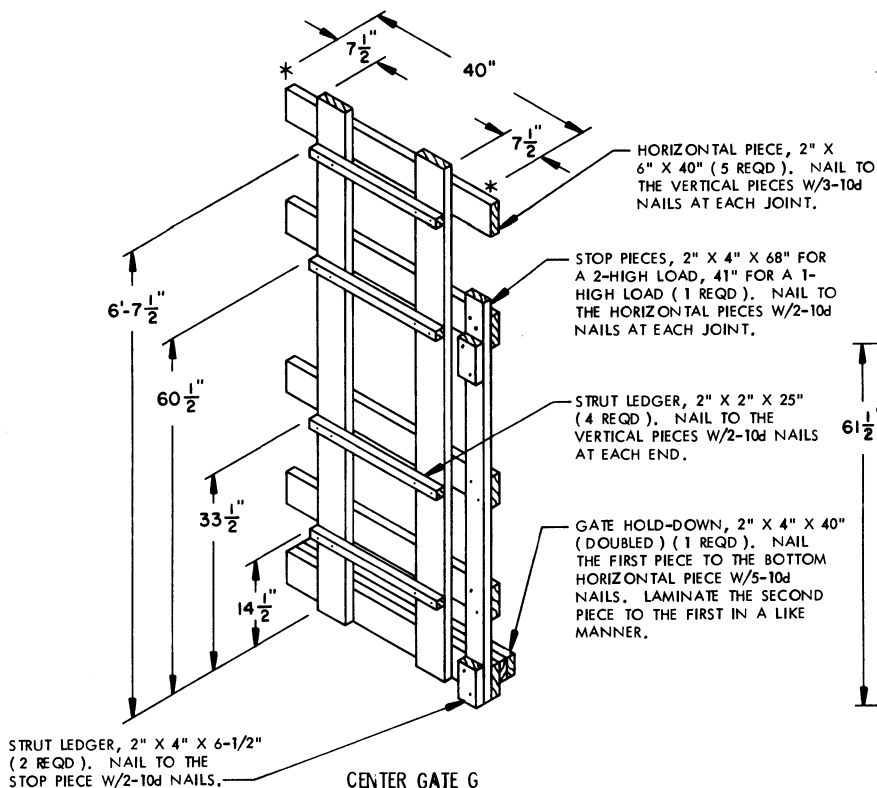
CRIB FILL E

CRIB FILL ASSEMBLIES "E" AND "F" 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.

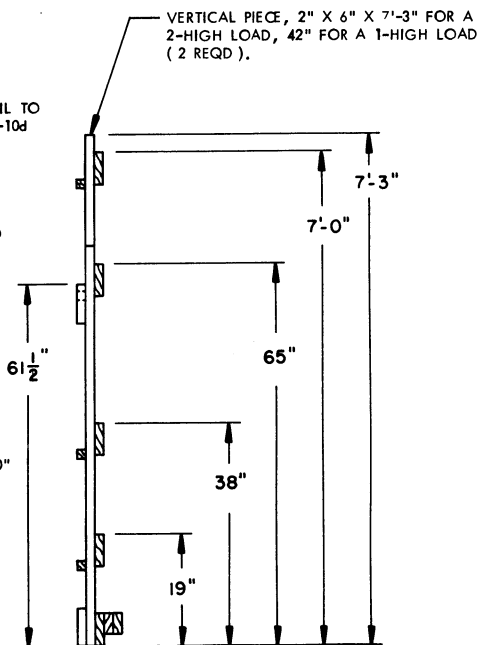


CRIB FILL F

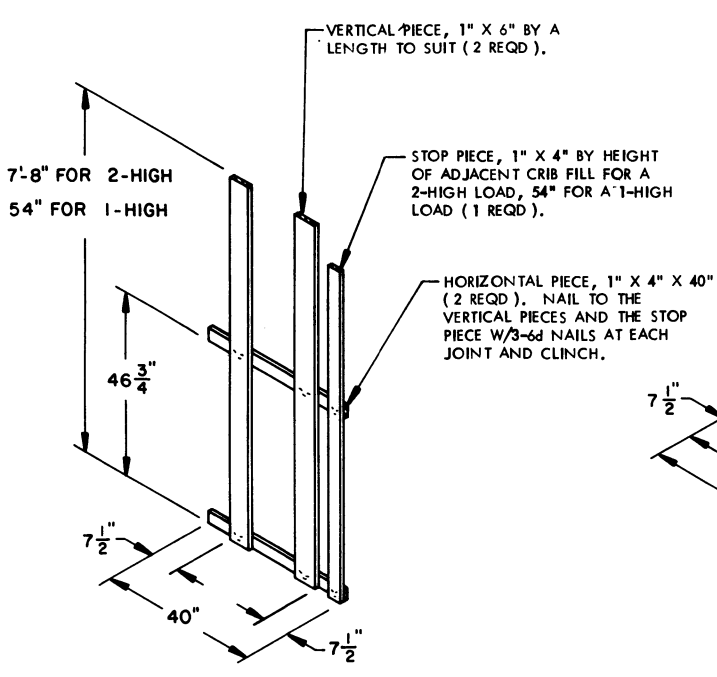
CRIB FILL "F" IS NOT REQUIRED FOR A 1-HIGH LOAD; CRIB FILL "E" WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.



1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

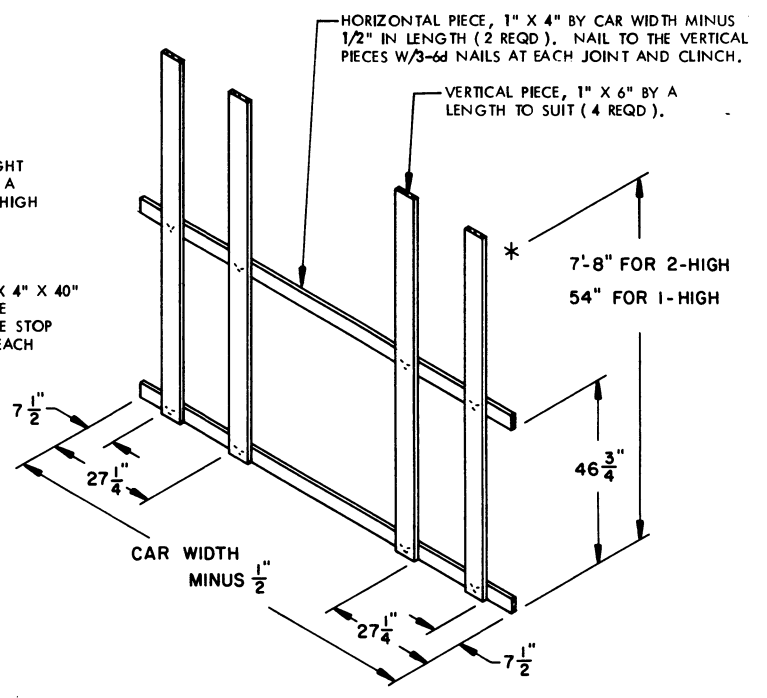


END VIEW

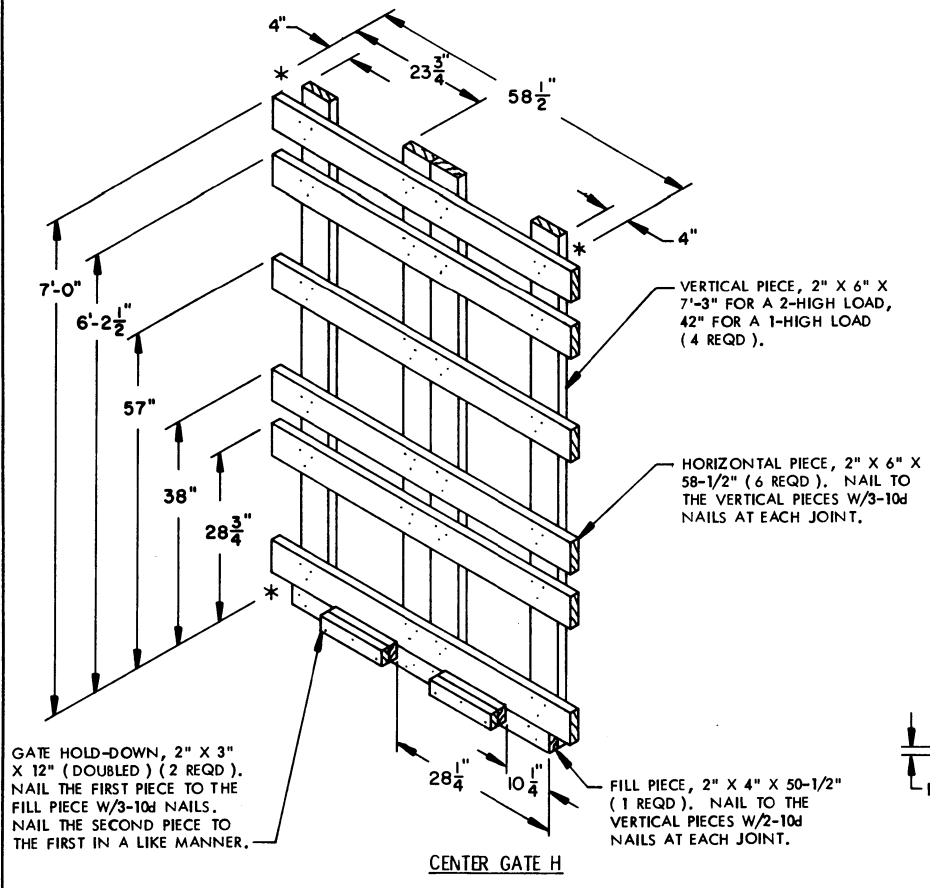


SEPARATOR GATE E

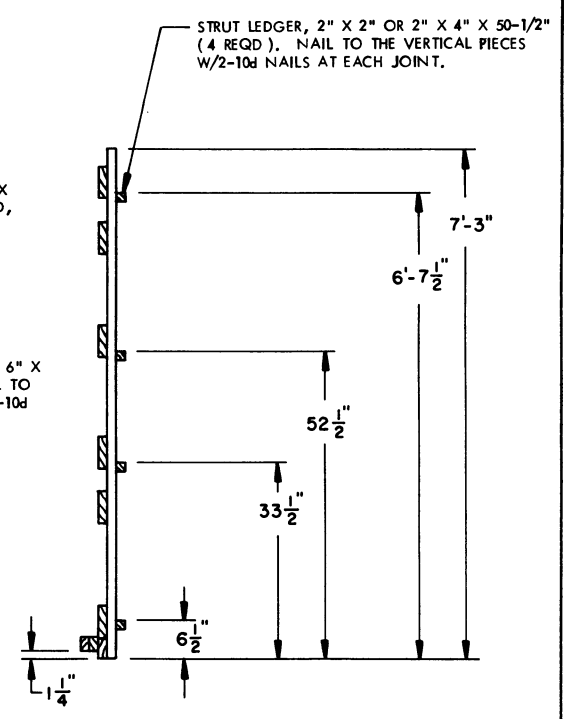
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



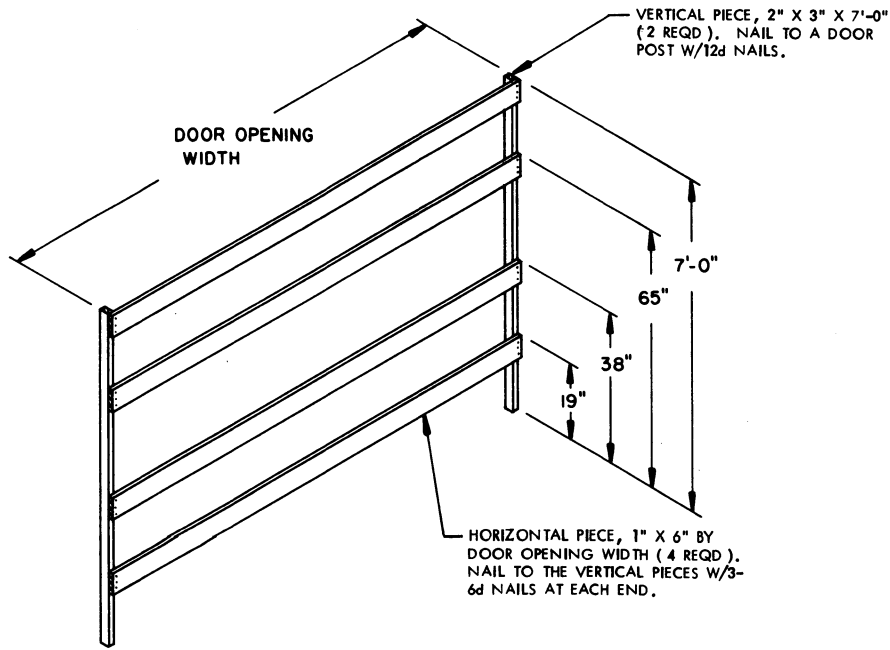
SEPARATOR GATE F



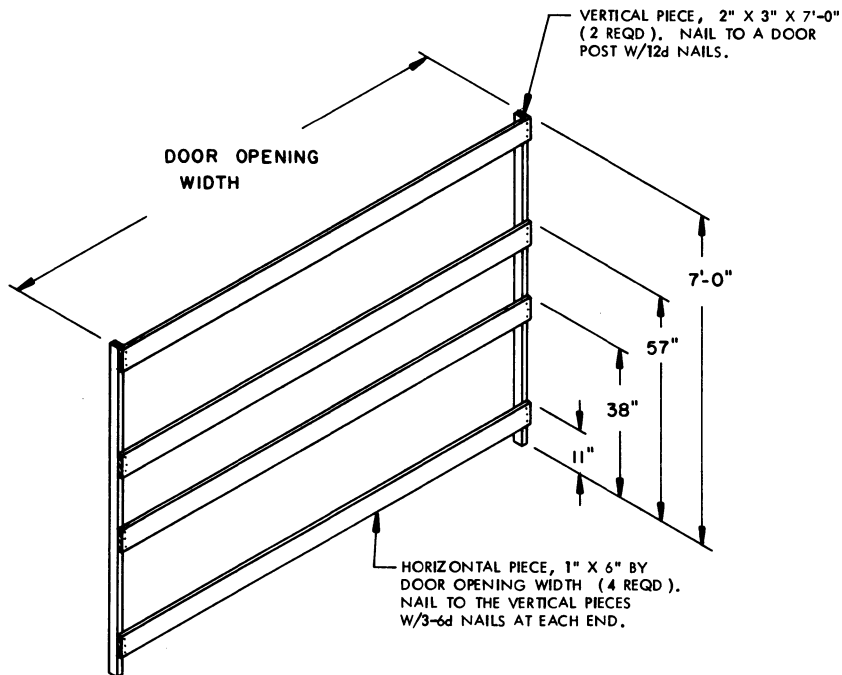
CENTER GATE H



END VIEW



DOORWAY PROTECTION E

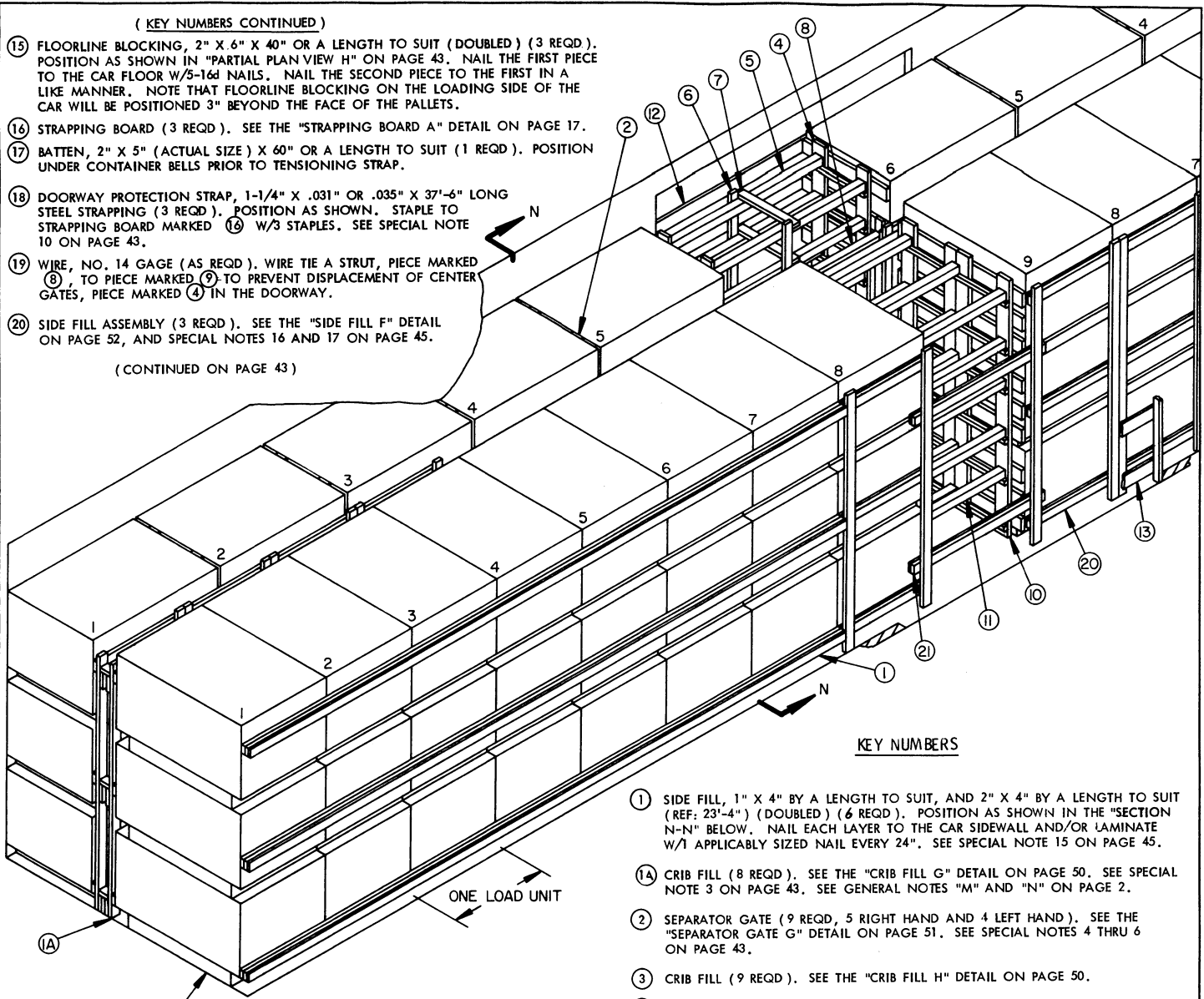


DOORWAY PROTECTION F

(KEY NUMBERS CONTINUED)

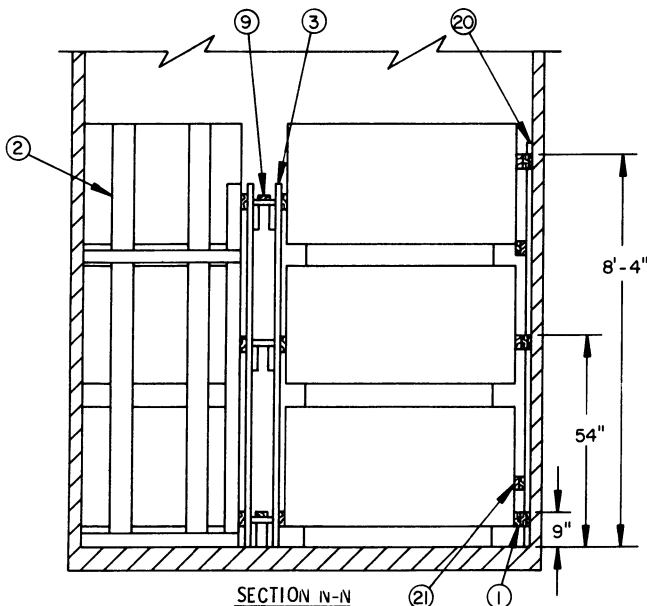
- 15 FLOORLINE BLOCKING, 2" X 6" X 40" OR A LENGTH TO SUIT (DOUBLED) (3 REQD). POSITION AS SHOWN IN "PARTIAL PLAN VIEW H" ON PAGE 43. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE THAT FLOORLINE BLOCKING ON THE LOADING SIDE OF THE CAR WILL BE POSITIONED 3" BEYOND THE FACE OF THE PALLETS.
- 16 STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 17.
- 17 BATTEN, 2" X 5" (ACTUAL SIZE) X 60" OR A LENGTH TO SUIT (1 REQD). POSITION UNDER CONTAINER BELLS PRIOR TO TENSIONING STRAP.
- 18 DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 37'-6" LONG STEEL STRAPPING (3 REQD). POSITION AS SHOWN. STAPLE TO STRAPPING BOARD MARKED 16 W/3 STAPLES. SEE SPECIAL NOTE 10 ON PAGE 43.
- 19 WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED 8, TO PIECE MARKED 9 TO PREVENT DISPLACEMENT OF CENTER GATES, PIECE MARKED 4 IN THE DOORWAY.
- 20 SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL F" DETAIL ON PAGE 52, AND SPECIAL NOTES 16 AND 17 ON PAGE 45.

(CONTINUED ON PAGE 43)



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

ISOMETRIC VIEW



SECTION N-N

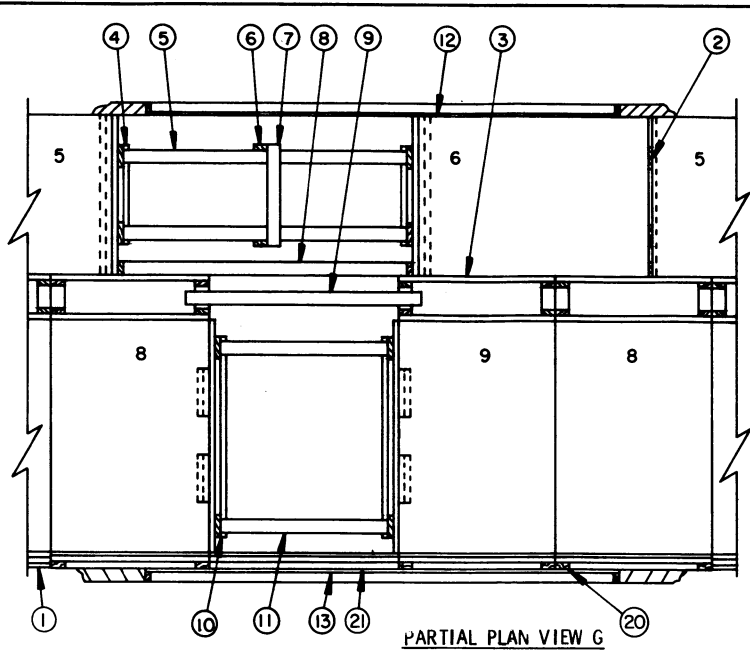
KEY NUMBERS

- 1 SIDE FILL, 1" X 4" BY A LENGTH TO SUIT, AND 2" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (DOUBLED) (6 REQD). POSITION AS SHOWN IN THE "SECTION N-N" BELOW. NAIL EACH LAYER TO THE CAR SIDEWALL AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 24". SEE SPECIAL NOTE 15 ON PAGE 45.
- 1A CRIB FILL (8 REQD). SEE THE "CRIB FILL G" DETAIL ON PAGE 50. SEE SPECIAL NOTE 3 ON PAGE 43. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 2 SEPARATOR GATE (9 REQD, 5 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 51. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 43.
- 3 CRIB FILL (9 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 50.
- 4 CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE K" DETAIL ON PAGE 50. SEE SPECIAL NOTE 7 ON PAGE 43.
- 5 STRUT, 4" X 4" BY CUT TO FIT (REF: 72") (12 REQD). TOENAIL TO PIECES MARKED 4 W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2 AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- 6 VERTICAL STRUT BRACING, 2" X 4" X 8'-9" (2 REQD). NAIL TO THE STRUTS MARKED 5 W/3-10d NAILS AT EACH JOINT.
- 7 HORIZONTAL STRUT BRACING, 2" X 4" X 27" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- 8 STRUT, 2" X 4" BY CUT-TO-FIT (REF: 72") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED 4 W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW G" DETAIL ON PAGE 43.
- 9 CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 60") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "H" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE "PARTIAL PLAN VIEW G" ON PAGE 43.
- 10 CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 51.
- 11 STRUT, 4" X 4" BY CUT TO FIT (REF: 42") (18 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 53. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 43.
- 13 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 53. NAIL TO THE DOOR POSTS W/12d NAILS.
- 14 BUNDLING STRAP, 1-1/4" X .031" OR .035" X 32'-6" LONG STEEL STRAPPING (2 REQD). PRE-POSITION THE STRAP, ENCIRCLE PALLET STACK NUMBERS 7 AND 8. TENSION AND SEAL. SEE SPECIAL NOTE 11 ON PAGE 43.

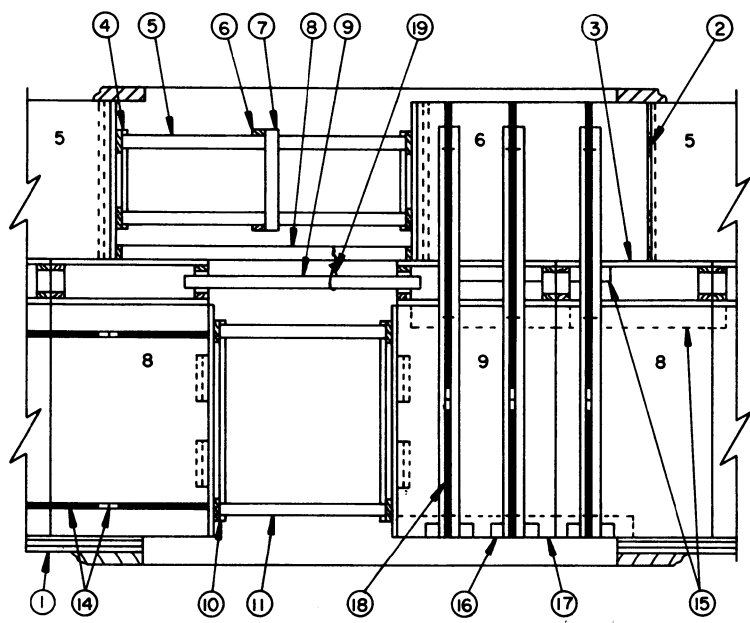
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

(CONTINUED ABOVE)

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



PARTIAL PLAN VIEW G



PARTIAL PLAN VIEW H

(KEY NUMBERS CONTINUED)

21 SIDE FILL RETAINER, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (2 EACH REQD). LAMINATE THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 8". POSITION AT 18" AND 78" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 20 W/3-10d NAILS AT EACH JOINT.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	299	100
1" X 6"	282	141
2" X 2"	78	26
2" X 3"	43	22
2" X 4"	1,522	1,015
2" X 6"	240	240
4" X 4"	135	180
NAILS	NO. REQD	POUNDS
6d (2")	363	2-1/4
10d (3")	2,272	35
12d (3-1/4")	48	1
16d (3-1/2")	120	2-3/4"
WIRE, NO. 14 GAGE	3' REQD	NIL

SPECIAL NOTES:

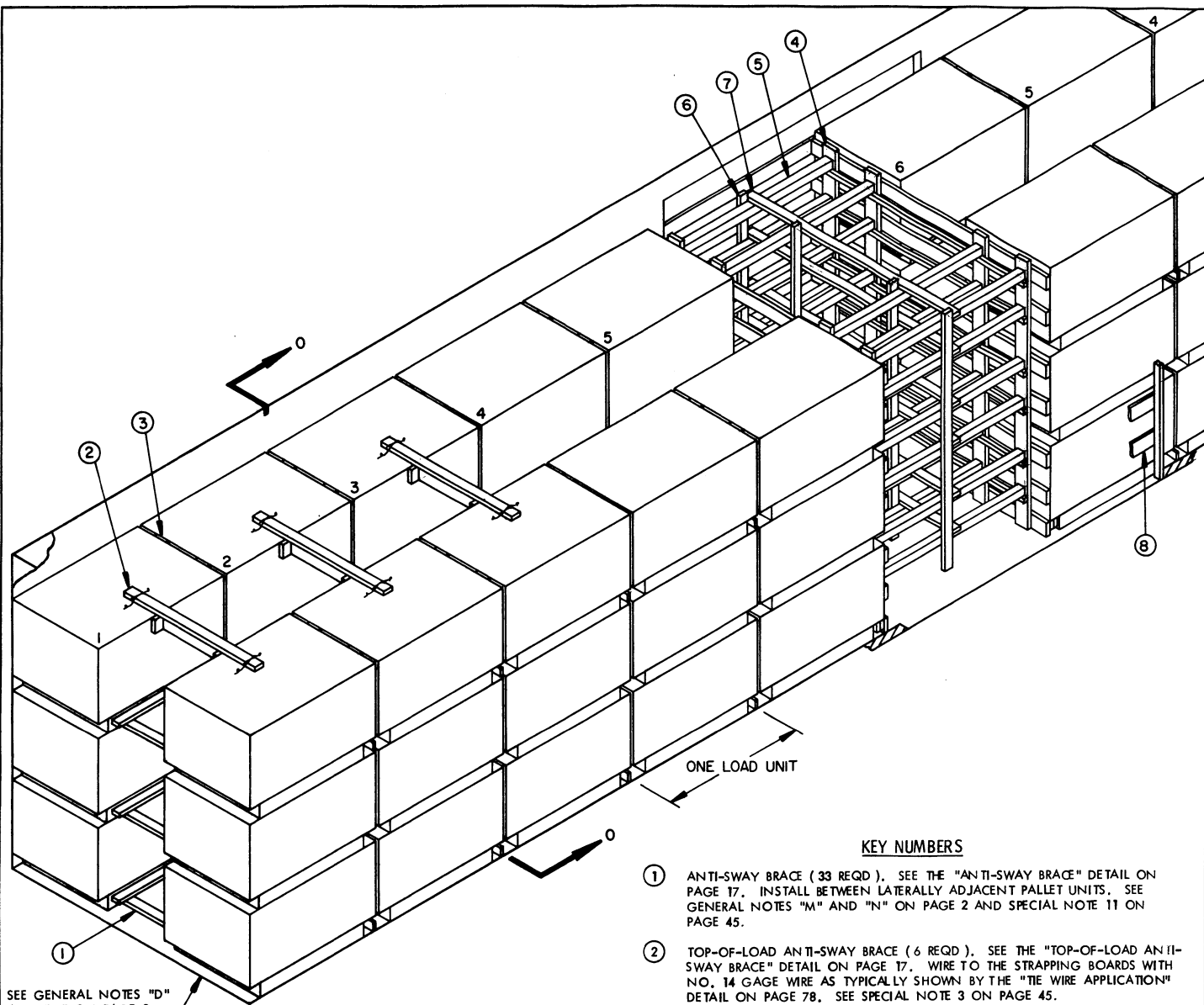
1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-NINE (69) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 98,601 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR A LADING WEIGHT OF 77,166 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (A), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 42, 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. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF SEPARATOR GATES, PIECES MARKED (2), ARE POSITIONED WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS: THEY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE A VERTICAL PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A THREE-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-LAYER LOADS FROM 40" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.
7. CENTER GATES "K" AND "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 79 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (12) AND (13) IN THE LOAD ON PAGE 42, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW H" DETAIL AT LEFT AND KEY NUMBERS (14) THRU (18) ON PAGE 42 FOR GUIDANCE. NOTE THAT THE CRIB FILL MARKED (3) MUST HAVE 3" CUT OFF EACH VERTICAL AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING; ALSO PIECE MARKED (8) MUST BE WIRE TIED TO PIECE MARKED (9) TO PREVENT DISPLACEMENT OF CENTER GATE "K" IN THE DOORWAY.
10. TWO (2) DOORWAY PROTECTION STRAPS, SHOWN AS PIECES MARKED (19) IN PARTIAL PLAN VIEW "H", 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.
11. IF THE PALLET STACKS IN THE DOORWAY ARE POSITIONED SO THE FORKLIFT OPENINGS ARE NOT CLOSE ENOUGH IN ALIGNMENT TO RECEIVE TWO (2) DOORWAY PROTECTION STRAPS ACROSS THE LOAD WIDTH; THAT PALLET STACK MUST BE UNITIZED TO THE LONGITUDINALLY ADJACENT PALLET STACK AS SHOWN IN THE "PARTIAL PLAN VIEW H" DETAIL AT LEFT.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 57. SIX (6) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACK NUMBERED 6, THE CROSSWISE STACK NUMBERED 9, AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO ALL THE STRUTS. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 68 AND 69.
13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 74 AND 76 FOR CROSSWISE UNITS.
14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

(CONTINUED ON PAGE 45)

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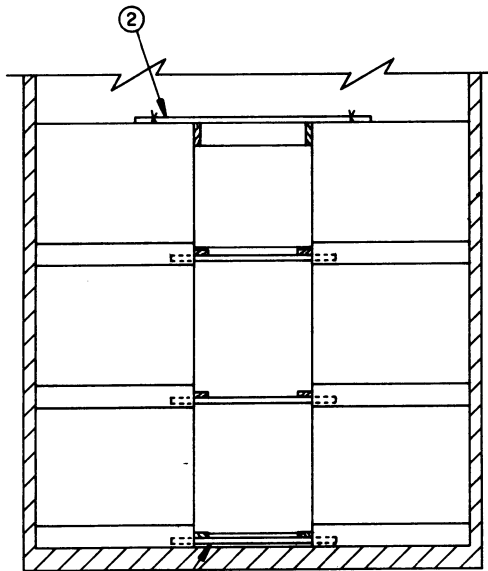
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	120,036 LBS
DUNNAGE		3,489 LBS
TOTAL WEIGHT		123,525 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOXCAR



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

ISOMETRIC VIEW



SECTION 0-0

KEY NUMBERS

- ① ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 11 ON PAGE 45.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 45.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 51. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 45.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 52. SEE SPECIAL NOTES 7 THRU 9 ON PAGE 45.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 72") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "L" ON PAGE 2 AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 12" (6 REQD). NAIL TO THE STRUT W/3-10d NAILS AT EACH JOINT.
- ⑧ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 53. SEE SPECIAL NOTES 10 AND 11 ON PAGE 45.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

(SPECIAL NOTES CONTINUED)

- 12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 56 THRU 76 FOR GUIDANCE.
- 13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 73 FOR SHIPPING GUIDANCE.
- 14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

(SPECIAL NOTES CONTINUED FROM PAGE 43)

- 15. THE SIDE FILL, PIECE MARKED ① IN THE LOAD ON PAGE 42, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLY "F", PIECE MARKED ②, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD, IN LIEU OF PIECE MARKED ①.
- 16. IF THE CAR TO BE LOADED HAS PLUG TYPE DOORS, AND HAS NAILABLE SIDEWALLS, THE SIDE FILL ASSEMBLIES AND THE SIDE FILL RETAINERS, PIECES MARKED ② AND ③ WILL NOT BE REQUIRED; EXTEND THE LENGTH OF THE SIDE FILL, PIECE MARKED ① TO THE DOOR AS SHOWN IN THE "PARTIAL PLAN VIEW H" DETAIL ON PAGE 43.
- 17. IF A 9'-2" OR 9'-4" WIDE CAR IS TO BE LOADED, OMIT THE 1" X 4" SIDE FILL PIECES NAILED TO THE CAR SIDEWALL, AND OMIT THE 1" X 4" HORIZONTAL PIECES NAILED TO THE SIDE FILL "F" ASSEMBLY, PIECE MARKED ②. ADDITIONALLY, THE ALTERNATIVE CRIB FILL DETAILED ON PAGE 52, WILL BE USED IN LIEU OF PIECES MARKED ①A AND ③ ON PAGE 42.

SPECIAL NOTES:

- 1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR 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 44 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 77,166 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES: FORTY-TWO (42) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,018 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.
- 3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 44, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
- 4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
- 5. IF SEPARATOR GATES ARE POSITIONED IN THE DOORWAY, THEY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES. A 7'-0" LONG STOP PIECE IS REQUIRED FOR A 3-LAYER LOAD AND 42" LONG STOP PIECES ARE REQUIRED FOR 1 AND 2-LAYER LOADS. SEE PIECE MARKED ⑦ ON PAGE 46 FOR A TYPICAL INSTALLATION. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
- 6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR 3-HIGH LOADS ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78 FOR CONSTRUCTION GUIDANCE.
- 7. 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 79 FOR GUIDANCE.
- 8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE M", SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 44, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 50. 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 79. OMIT THE STOP PIECES FROM "CENTER GATE K".
- 9. DOORWAY SPANNER TYPE GATE HOLD-DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "M", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 81 FOR GUIDANCE.
- 10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 44, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
- 11. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED; OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED ⑧, USE PIECES MARKED ⑤ THRU ⑦ ON PAGE 48. SEE SPECIAL NOTES 8 AND 9 ON PAGE 49 FOR GUIDANCE. ALSO, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT BY THE APPLICATION OF STOP PIECES AS SHOWN BY THE "CENTER GATE M" DETAIL ON PAGE 52, OR BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECES OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING, OR WITHIN SIX INCHES (6") OF IT.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	444	222
2" X 2"	95	32
2" X 3"	35	18
2" X 4"	572	382
2" X 6"	215	215
4" X 4"	144	192
NAILS	NO. REQD	POUNDS
6d (2")	288	1-3/4
10d (3")	928	14-1/2
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE-----	60' REQD-----	1 LB

LOAD AS SHOWN

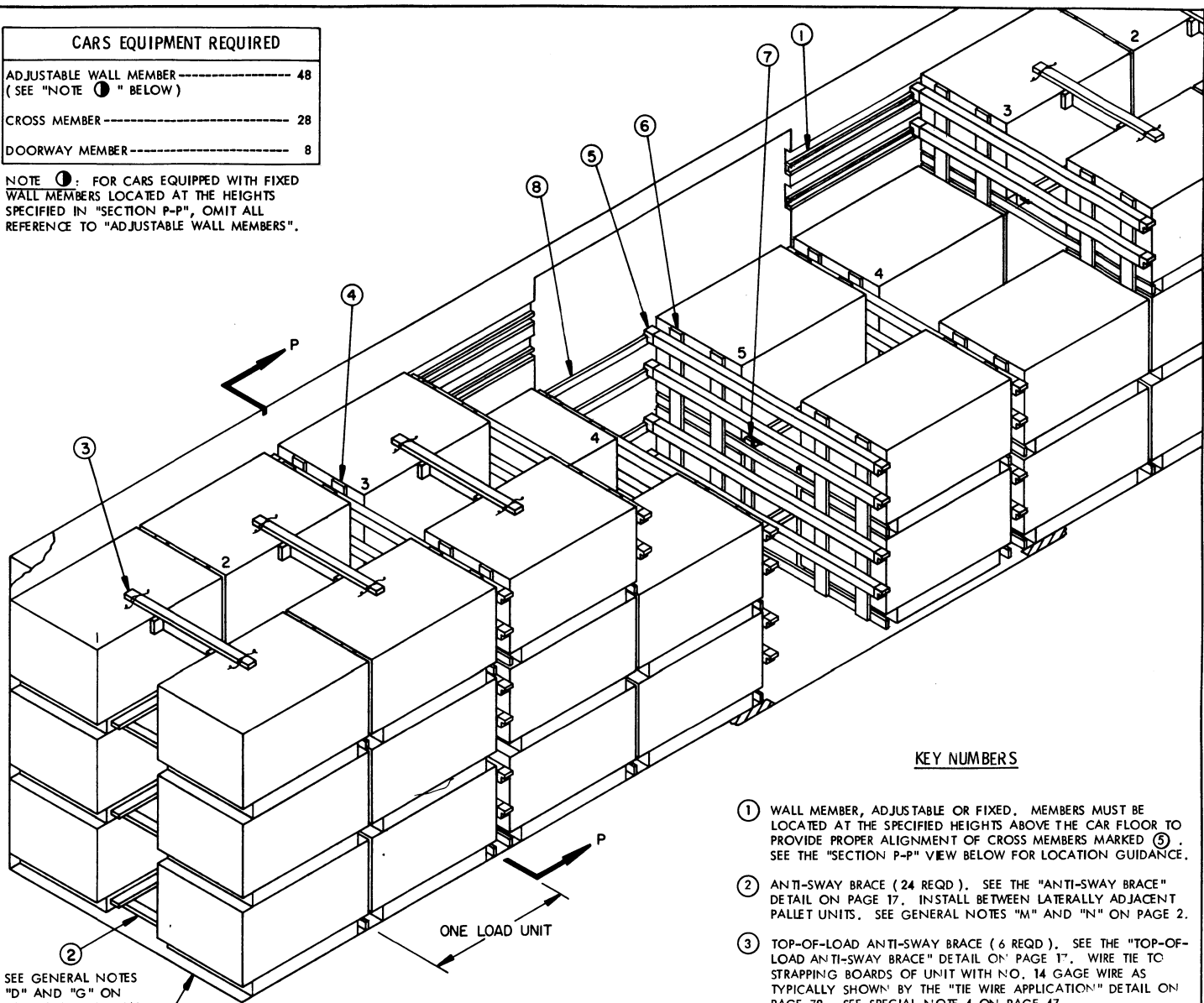
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	56-----	94,314 LBS
DUNNAGE-----	-----	2,253 LBS
TOTAL WEIGHT-----	-----	96,567 LBS

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

CARS EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	48
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	28
DOORWAY MEMBER -----	8

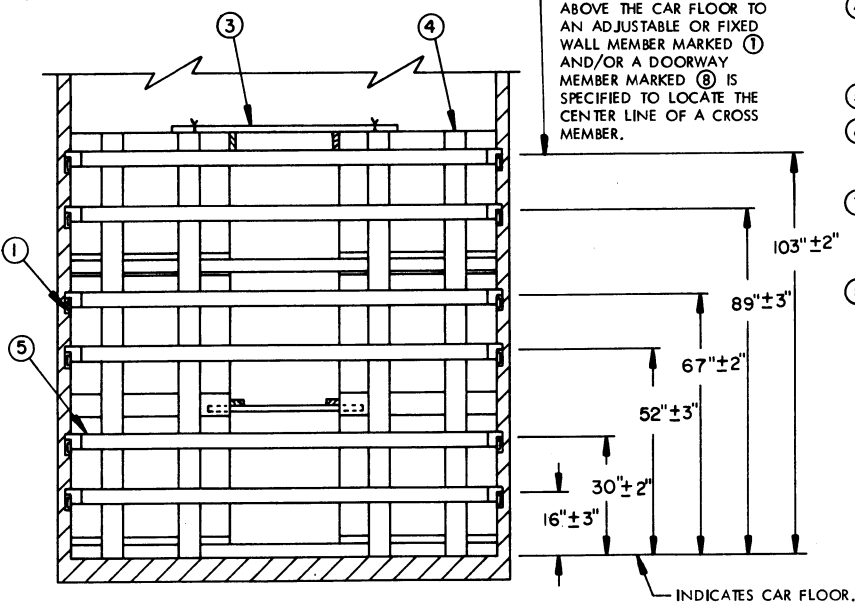
NOTE 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION P-P", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 47.

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 P-P

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 P-P" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 4 ON PAGE 47.
- 4 SEPARATOR GATE FOR 3-HIGH (8 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 51. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 47.
- 5 CROSS MEMBER (28 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 SEPARATOR GATE FOR 2-HIGH (4 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 51. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- 7 STOP PIECE, 1" X 4" X 42" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED 4 W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 47.
- 8 DOORWAY MEMBER (8 REQD). SEE THE "SECTION P-P" VIEW AT LEFT FOR PROPER LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 47.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

48-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) BOXCAR 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 46 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF THIRTY-SIX (36) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 51,444 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 46, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 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, PIECES MARKED ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER 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 '8 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 54 AND 55 FOR GUIDANCE.
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

BILL OF MATERIAL

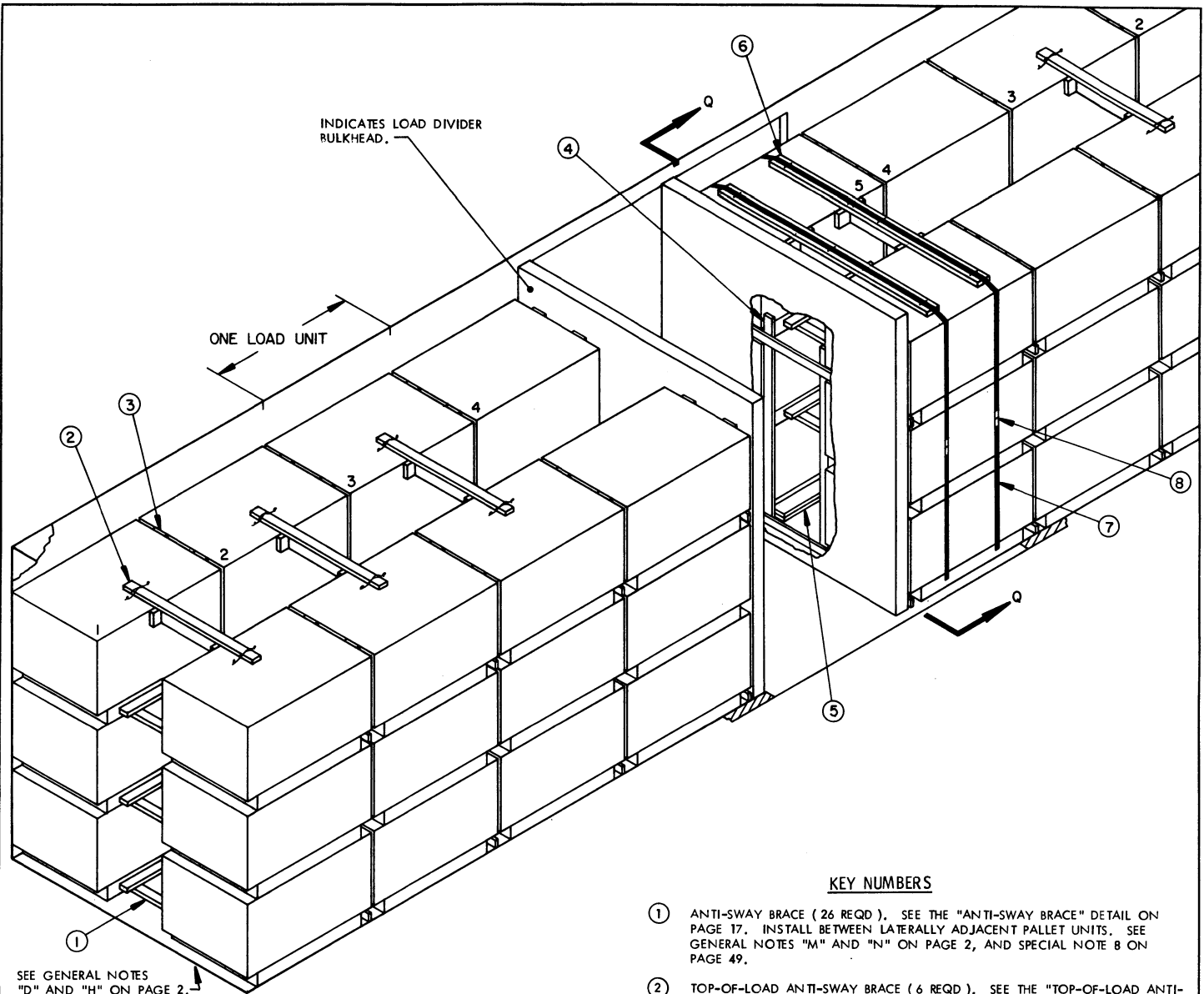
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	229	78
1" X 6"	385	193
2" X 4"	345	230
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	312	2
10d (3")	372	5-3/4
WIRE, NO. 14 GAGE-----60' REQD----- 1 LB		

LOAD AS SHOWN

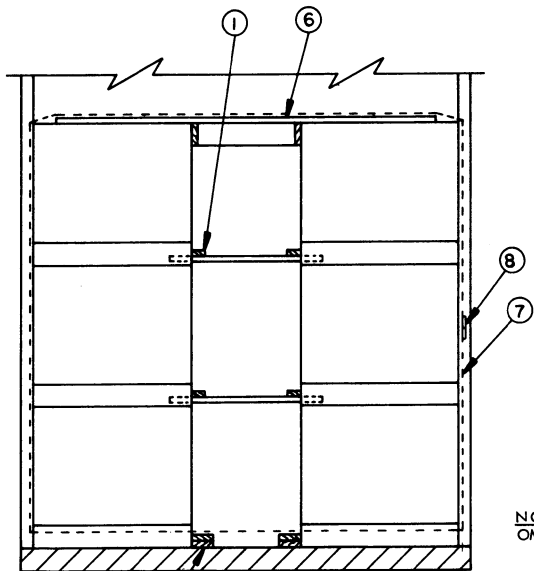
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	48-----	68,592 LBS
DUNNAGE-----	-----	1,053 LBS
TOTAL WEIGHT-----		69,645 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

48-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW



SECTION Q-Q

KEY NUMBERS

- ① ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2, AND SPECIAL NOTE 8 ON PAGE 49.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY" BRACE" DETAIL ON PAGE 17. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. SEE SPECIAL NOTE 3 ON PAGE 49.
- ③ SEPARATOR GATE (9 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 51. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 AND 6 ON PAGE 49.
- ④ STOP PIECE, 1" X 4" X 7'-0" (2 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ③ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 49.
- ⑤ FLOOR LINE BLOCKING, 2" X 4" X 48" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 8 ON PAGE 49.
- ⑥ STRAPPING BOARD ASSEMBLY "B" (2 REQD). SEE THE DETAIL ON PAGE 17.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031 X 37'-6" LONG STEEL STRAPPING (2 REQD). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 49.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

NOTE: SEPARATOR GATES, PIECES MARKED ③ HAVE BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

54-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 48 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 94,314 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-TWO (42) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 60,018 POUNDS, WHEN USING THE DEPICTED PROCEDURES.
3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 48, MUST BE INSTALLED IN EACH END OF THE CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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 78 FOR CONSTRUCTION GUIDANCE.
7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (8) IN THE LOAD ON PAGE 44 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MARKED (5) THRU (8) ON PAGE 48 MAY BE USED. REFER TO PAGES 82 THRU 84 FOR OTHER TYPES OF DOORWAY PROTECTION.
8. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. FLOORLINE BLOCKING MARKED (5) IN THE LOAD VIEW MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1) FOR ALL UNITS REQUIRING DOORWAY PROTECTION STRAPS.
9. 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 WIDTH.
10. A "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL SHOWN ON PAGE 85, 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 FIVE (5) LOAD UNITS. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60'-0" OR LONGER CARS.
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF 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 OR REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 56 THRU 61 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 73 AND/OR PAGES 74 AND 76 FOR SHIPPING GUIDANCE.
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 75 FOR GUIDANCE.

BILL OF MATERIAL

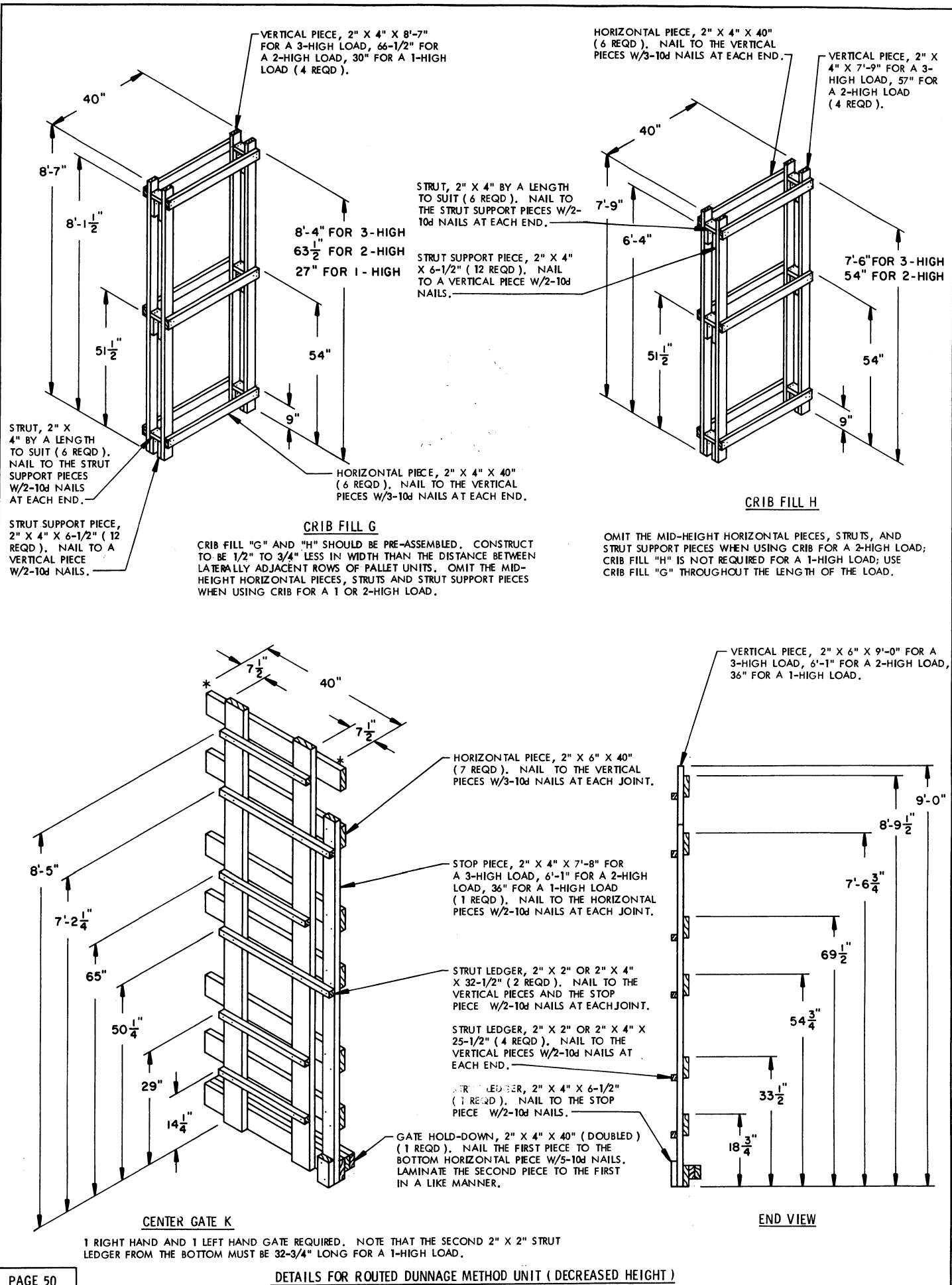
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	179	60
1" X 6"	324	162
2" X 4"	381	254
2" X 6"	63	63
NAILS	NO. REQD	POUNDS
6d (2")	228	1-1/2
10d (3")	396	6-1/4
12d (3-1/4")	20	1/2
16d (3-1/2")	20	1/2
STEEL STRAPPING, 1-1/4" -----	74' REQD-----	11 LBS
SEAL FOR 1-1/4" STRAPPING-----	4 REQD-----	NIL
STAPLE-----	6 REQD-----	NIL
WIRE, NO. 14 GAGE-----	60' REQD-----	1 LB

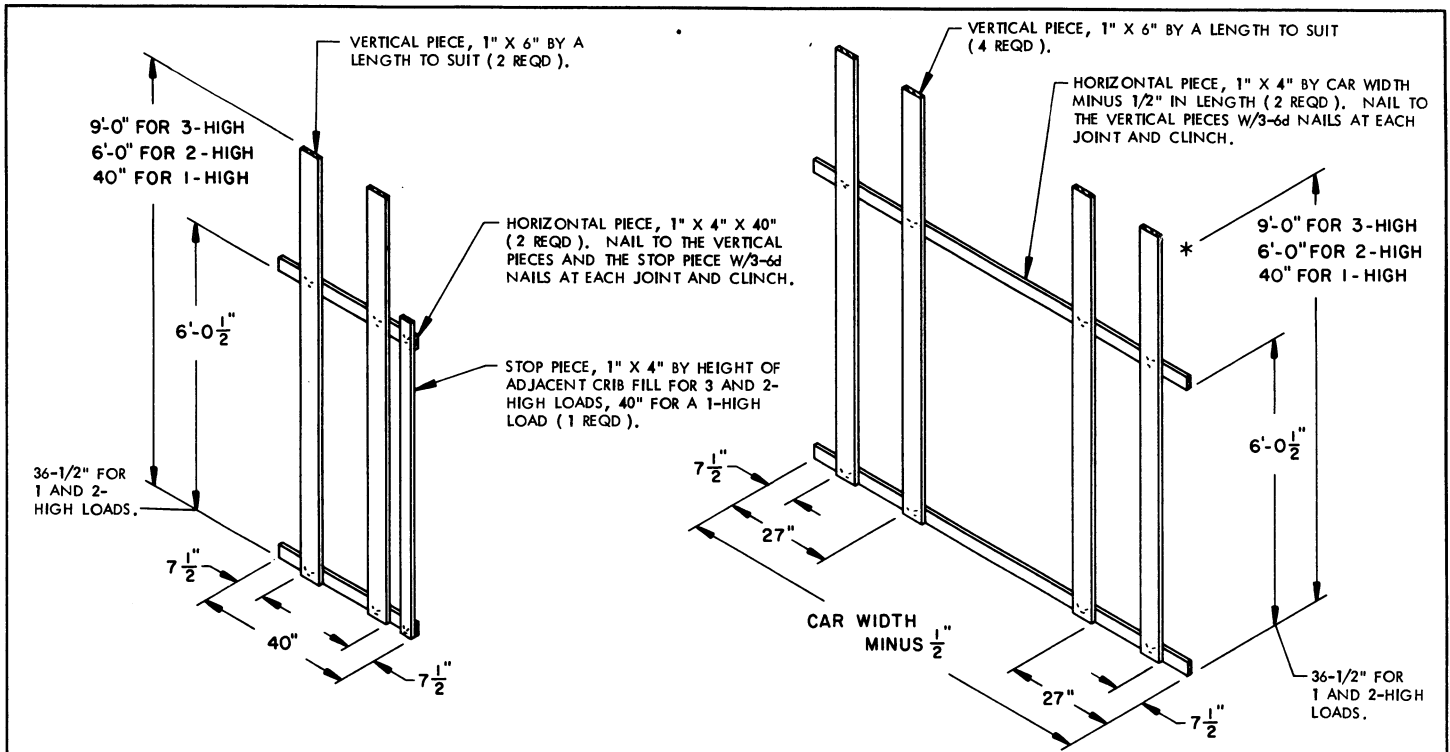
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	54-----	77,166 LBS
DUNNAGE-----	-----	1,099 LBS

TOTAL WEIGHT----- 78,265 LBS (APPROX)

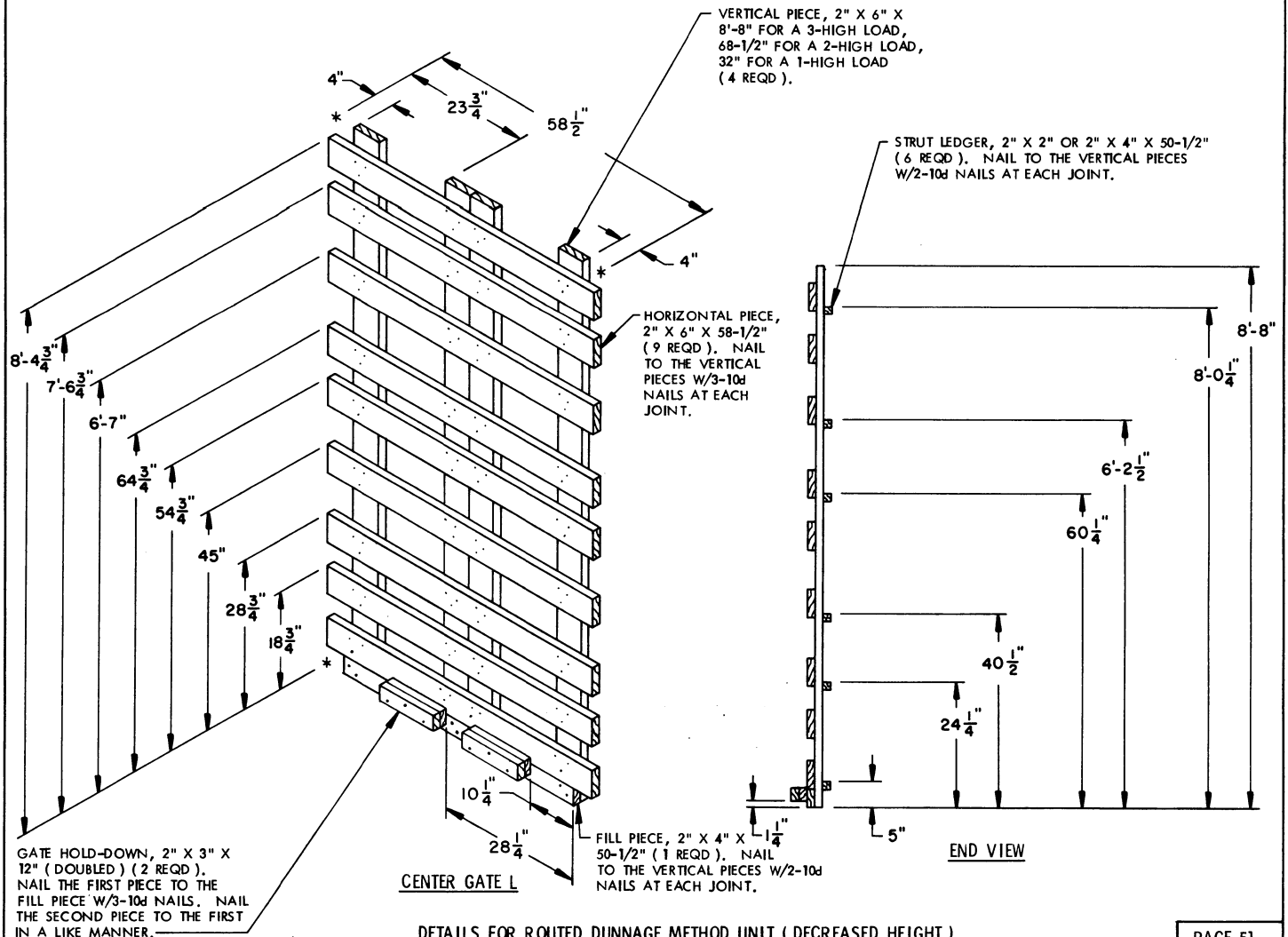
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
54-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDERS



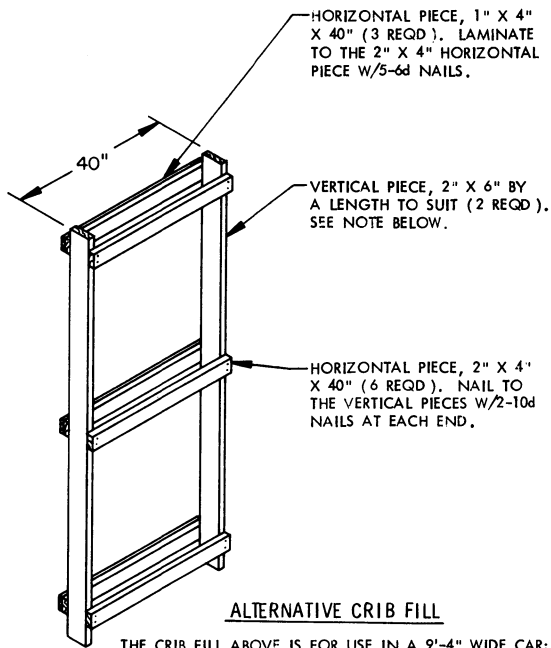


SEPARATOR GATE G

SEPARATOR GATE H

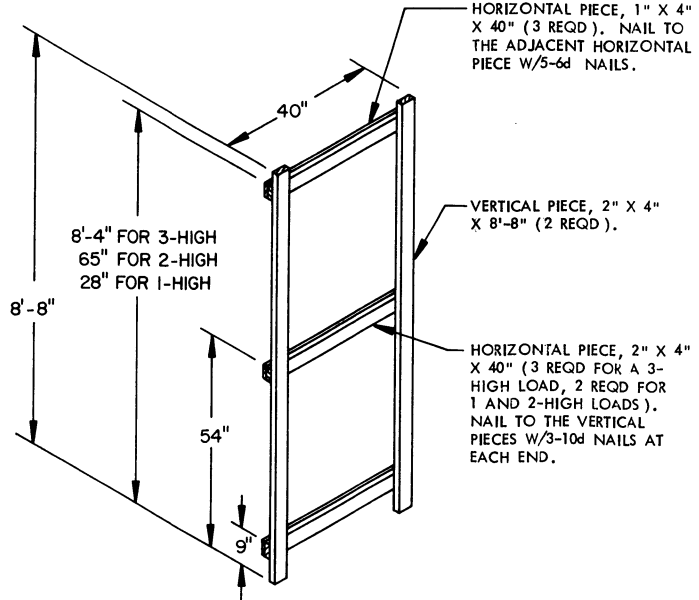


DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



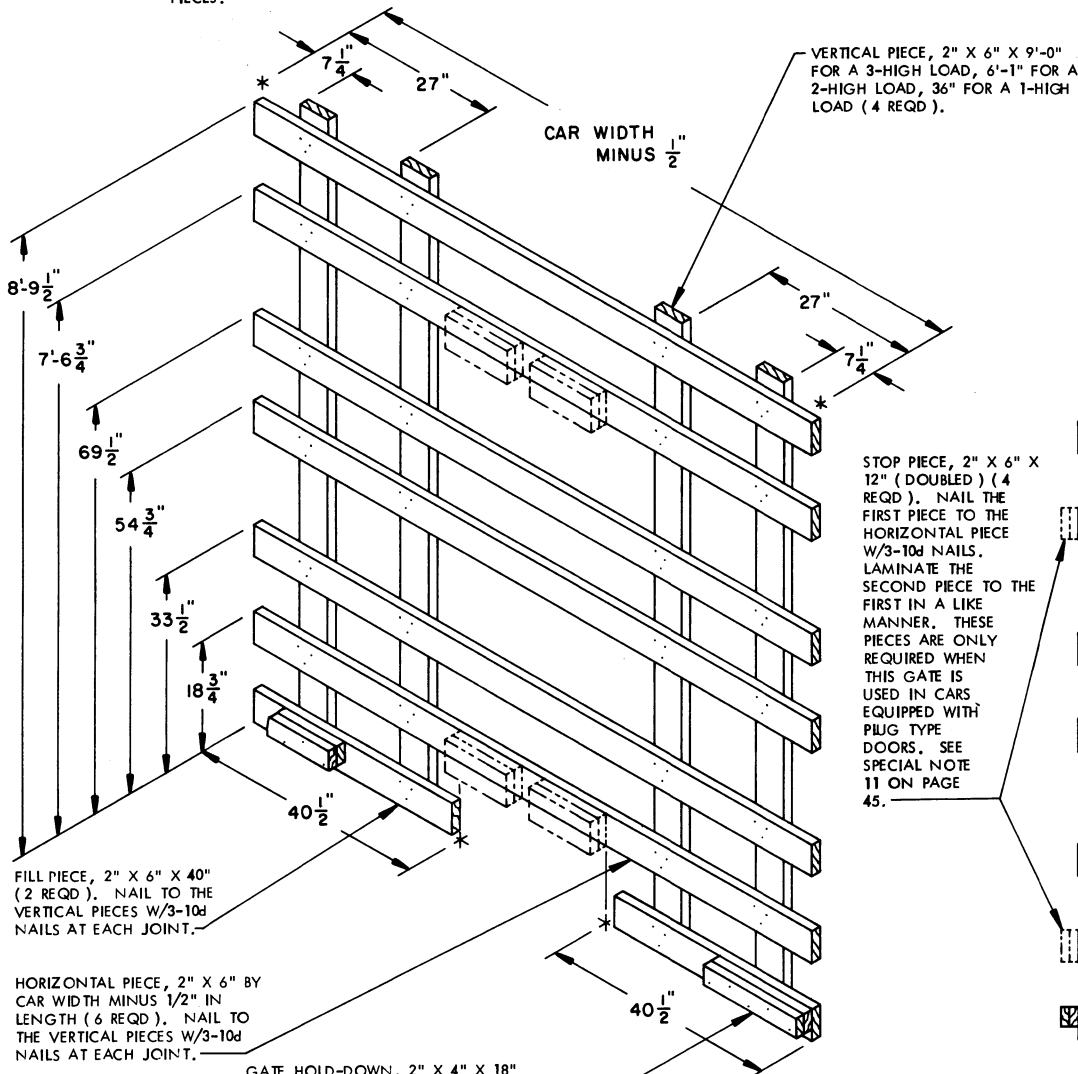
ALTERNATIVE CRIB FILL

THE CRIB FILL ABOVE IS FOR USE IN A 9'-4" WIDE CAR; FOR A 9'-2" WIDE CAR, THE VERTICAL PIECES WILL BE 2" X 4" MATERIAL. REFER TO "CRIB FILL G" OR "CRIB FILL H" DETAILS ON PAGE 50 FOR LENGTH OF VERTICAL PIECES AND HEIGHT LOCATION OF THE HORIZONTAL PIECES.



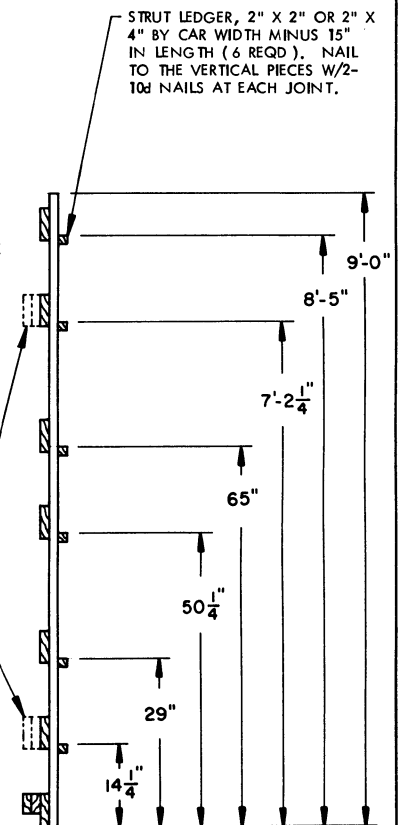
SIDE FILL ASSEMBLY F

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 42.

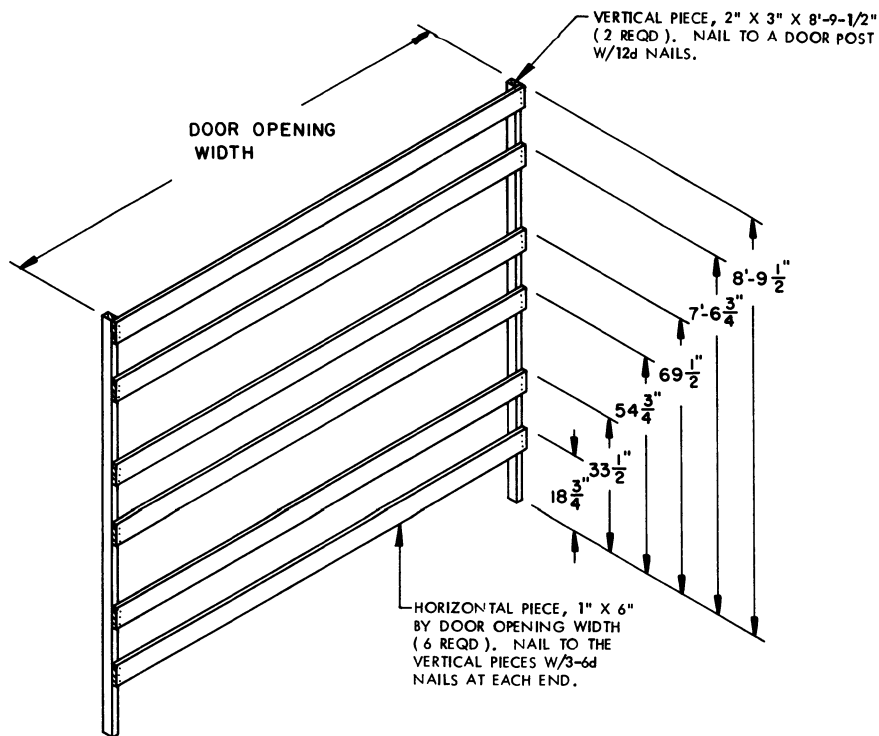


CENTER GATE M

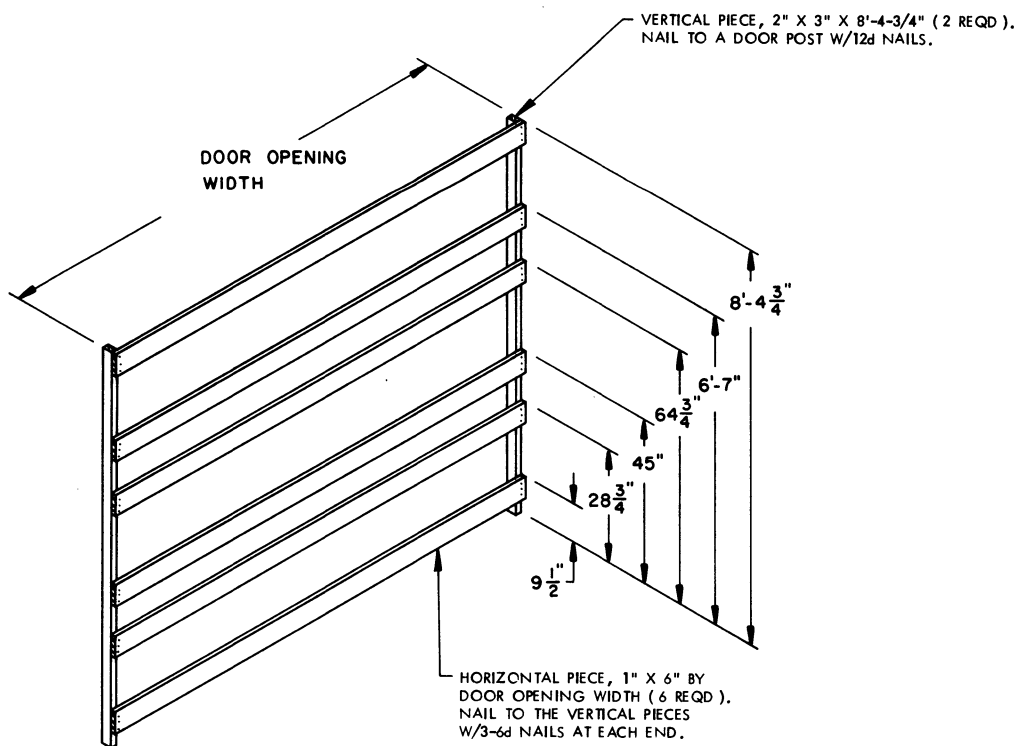
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



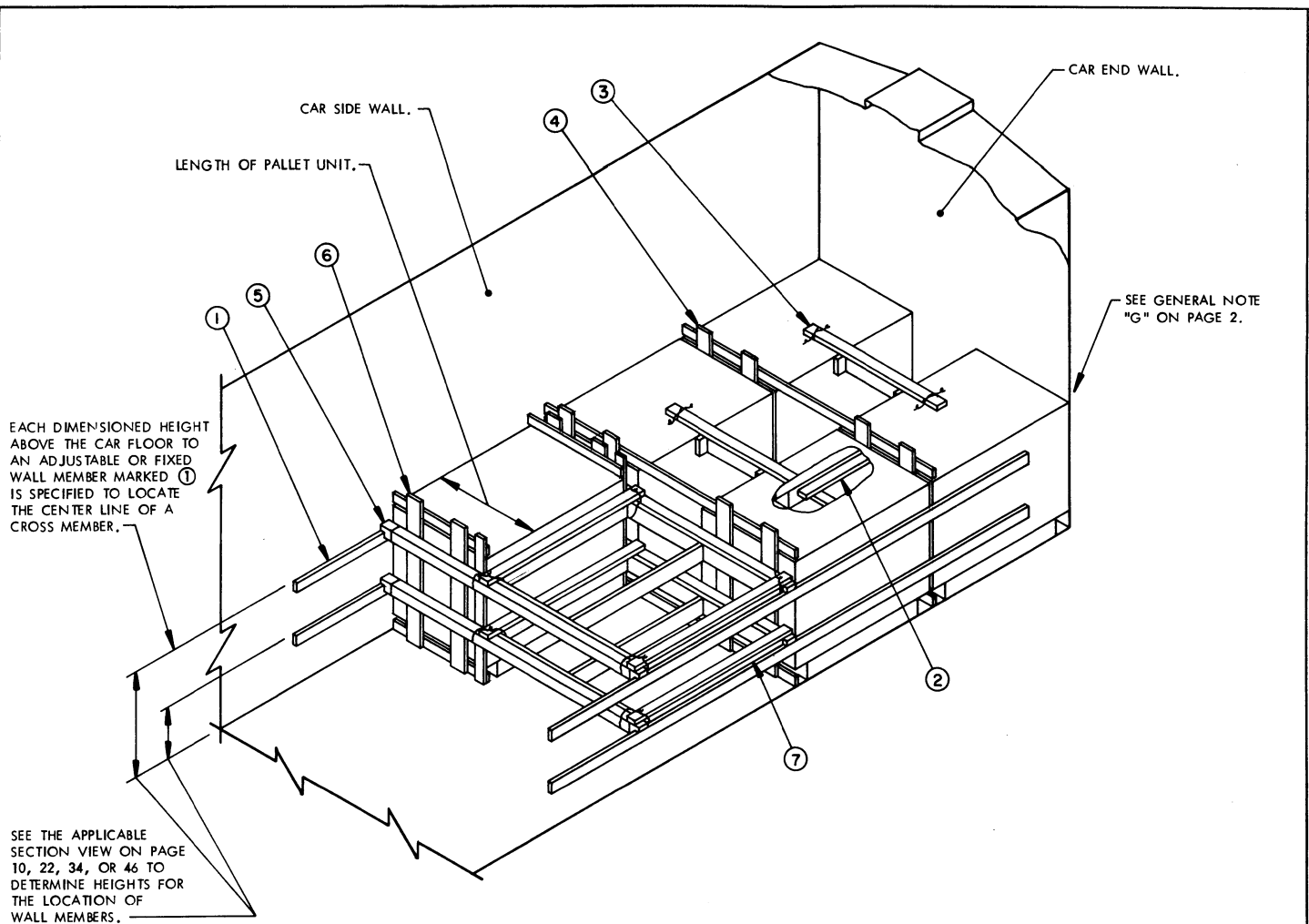
END VIEW



DOORWAY PROTECTION G



DOORWAY PROTECTION H



ISOMETRIC VIEW

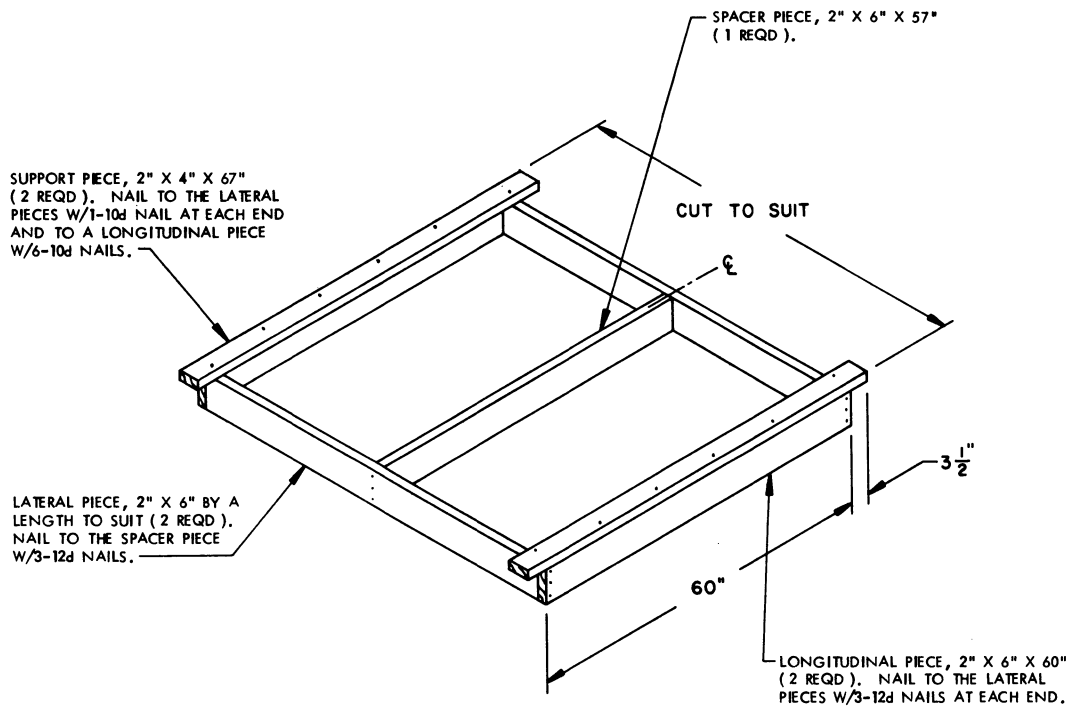
KEY NUMBERS

SPECIAL NOTES:

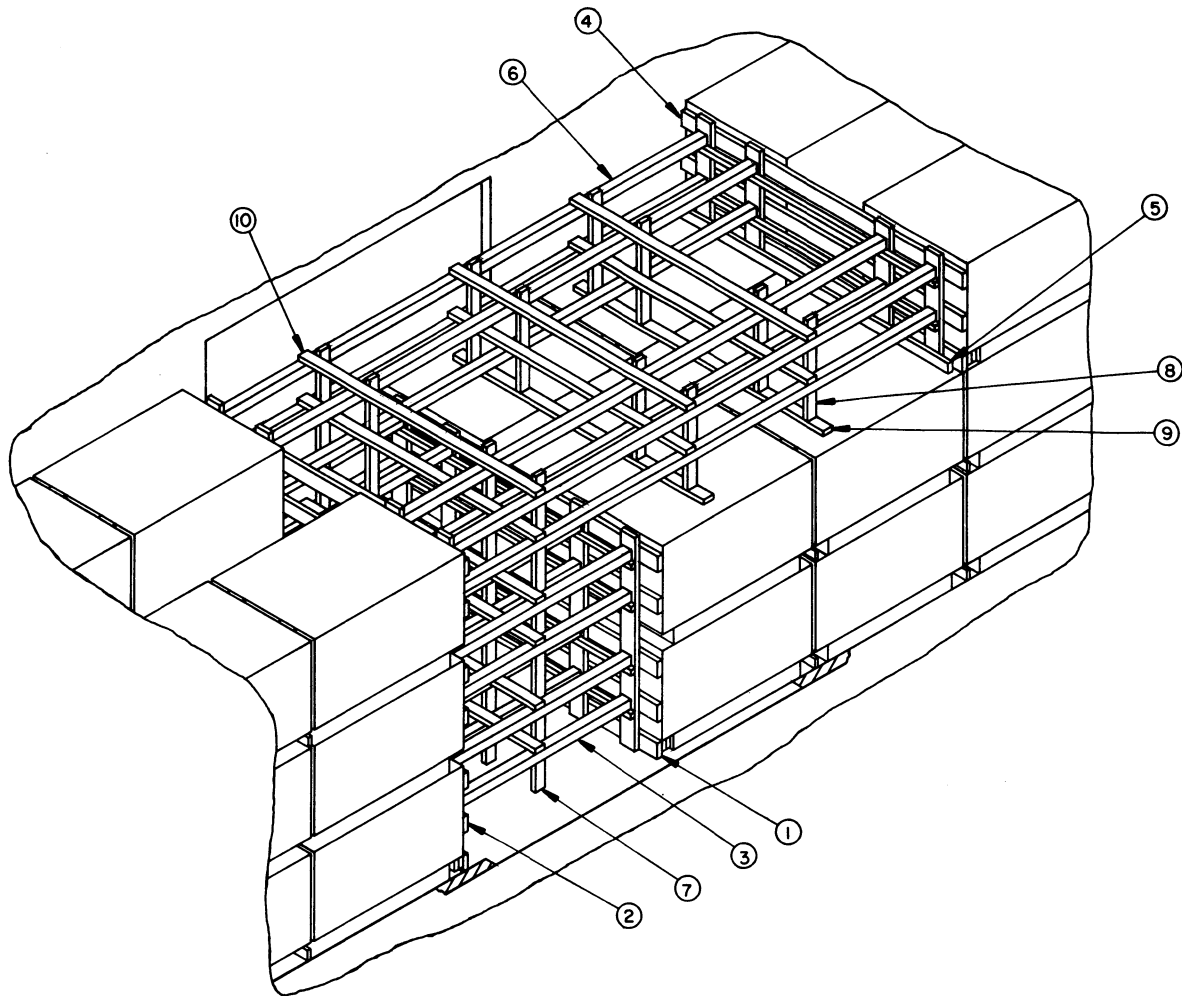
1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOXCAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES 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. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED ⑦, MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OF IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

- ① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤.
- ② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78.
- ④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 15, 27, 39, OR 51. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 5 AT LEFT.
- ⑤ CROSS MEMBER (4 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR ONE UNIT WIDE ON PAGE 15, 27, 39, OR 51. 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 55 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 BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES HAVING ADJUSTABLE OR FIXED WALL MEMBERS



SPACER ASSEMBLY



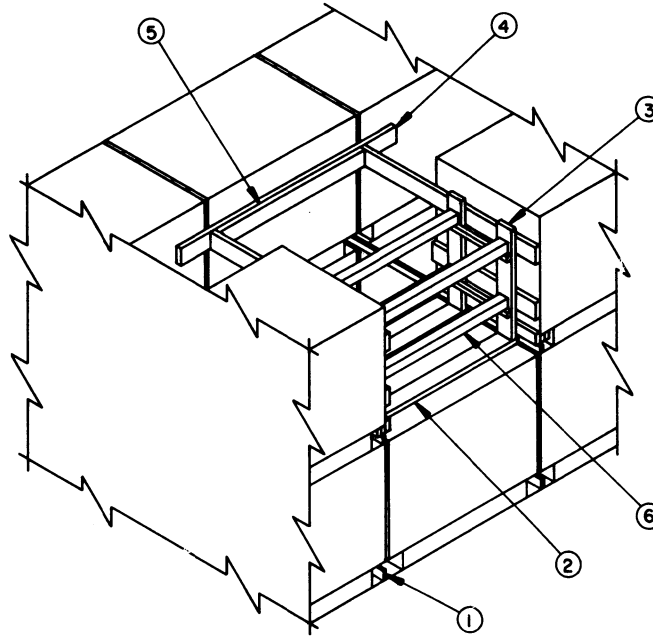
ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOXCAR 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 ROUTED DUNNAGE METHOD UNIT (DECREASED 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 "M" USED IS ONLY APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS NUMBER OF STRUTS ON 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 M" DETAIL ON PAGE 52. SEE SPECIAL NOTE 5 AT LEFT.
- (2) CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 52.
- (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 "L" ON PAGE 2, AND GENERAL NOTES "U" AND "V" ON PAGE 3.
- (4) CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 52.
- (5) GATE SUPPORT, 2" X 4" BY CAR WIDTH MINUS 6" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES OF CENTER GATE MARKED (4) W/3-10d NAILS EACH.
- (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" X 8'-9" (4 REQD). NAIL TO THE STRUTS MARKED (3) AND (6) W/3-10d NAILS AT EACH JOINT.
- (8) VERTICAL STRUT BRACING, 2" X 4" X 34" (8 REQD). NAIL TO THE 4" X 4" 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 CAR WIDTH MINUS 9" (10 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



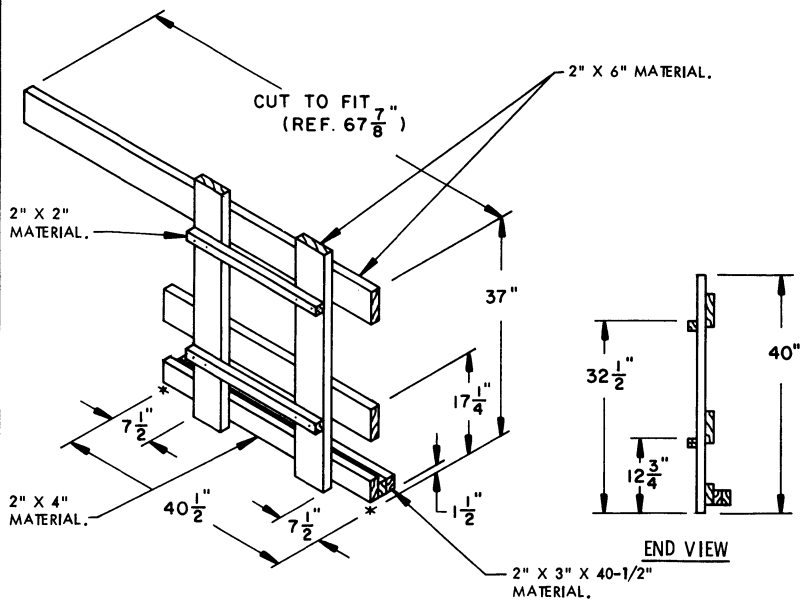
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX-CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (BASIC 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.
6. NOTE THAT THE TOP HORIZONTAL PIECE OF EACH SEPARATOR GATE WHICH IS ADJACENT TO THE OMITTED UNIT AREA MUST BE 1" X 2" MATERIAL IN LIEU OF 1" X 4" AND MAY NEED TO BE ADJUSTED IN HEIGHT SO AS TO PROVIDE CLEARANCE BETWEEN IT AND THE CONTAINERS ON THE UNIT BELOW AS WELL AS CLEARANCE BETWEEN IT AND THE LOAD BEARING GATE, PIECE MARKED (3).

KEY NUMBERS

- (1) MODIFIED SEPARATOR GATE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 15, 27, 39, OR 51 FOR POSITIONING OF THE VERTICAL PIECES. SEE SPECIAL NOTE 6 AT LEFT FOR GATE MODIFICATIONS. POSITION GATE SO THE HORIZONTAL PIECES ARE AWAY FROM THE OMITTED UNIT AREA.
- (2) SUPPORT PIECE, 2" X 6" X 58-1/2" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (3).
- (3) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 58 OR 59. NAIL TO THE FILLER PIECE, PIECE MARKED (5), W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (2), W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.
- (4) ANTI-SWAY BEARING PIECE, 2" X 6" X 7'-0" (1 REQD).
- (5) FILLER PIECE, 2" X 6" X 55-1/2" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (4), W/5-10d NAILS.
- (6) STRUT, 4" X 4" BY CUT-TO-FIT (REF: 52-1/2") (AS REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END.

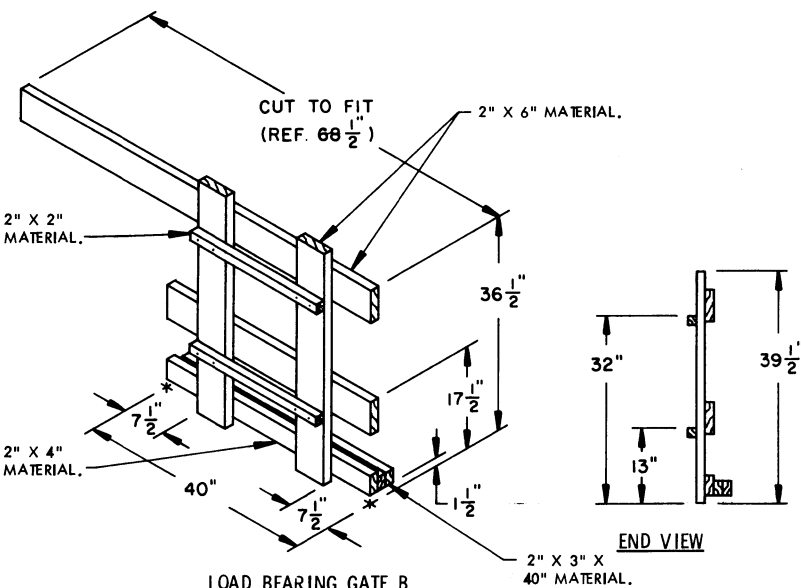


LOAD BEARING GATE A

THIS GATE IS FOR USE IN A LOAD OF FLAT 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.

SPECIAL NOTES:

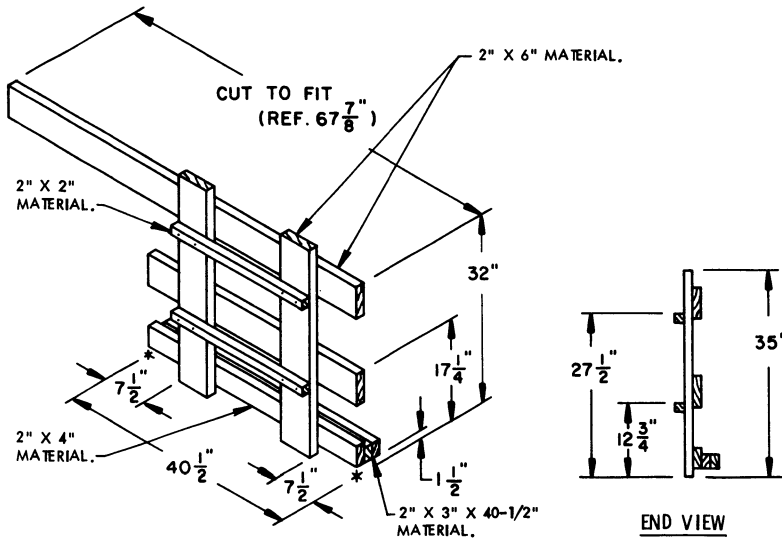
1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 57. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE(S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD-DOWN PIECES TO THE 2" X 4" HORIZONTAL PIECE, AS APPLICABLE, 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 B

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 GATES FOR USE WITH BASIC-HEIGHT UNITS IN A LENGTHWISE LOAD

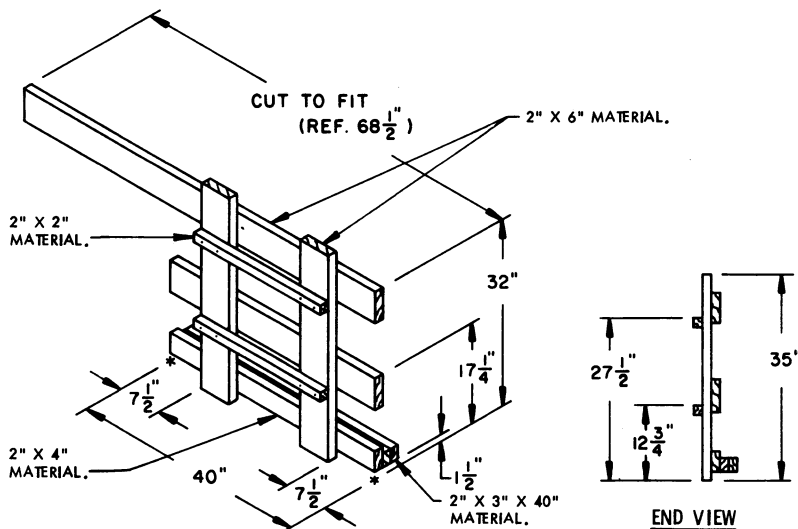


LOAD BEARING GATE C

THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (DECREASED 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.

SPECIAL NOTES:

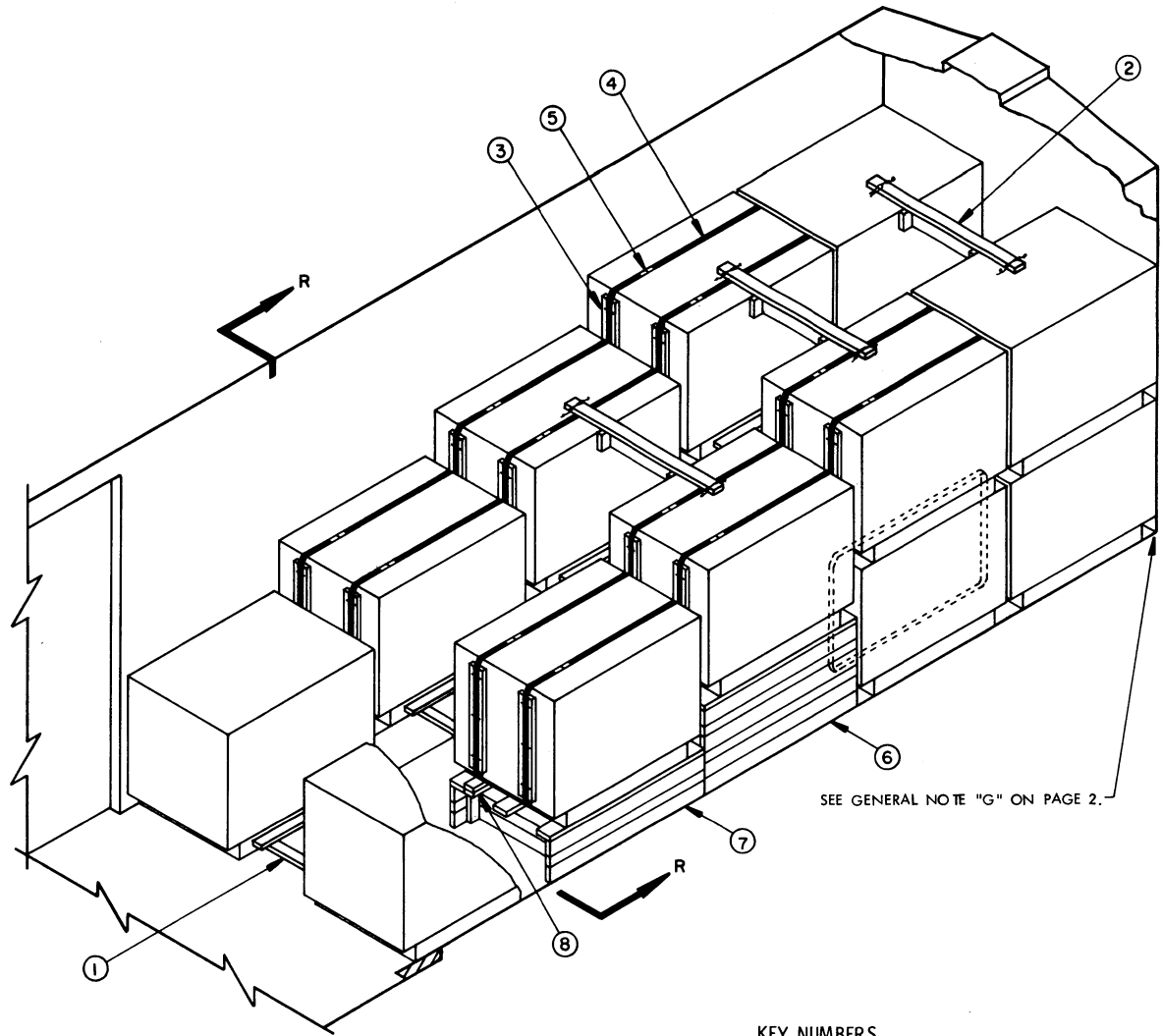
1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH DECREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 57. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE(S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD-DOWN PIECES TO THE 2" X 4" HORIZONTAL PIECE, AS APPLICABLE, 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 D

THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (DECREASED 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.

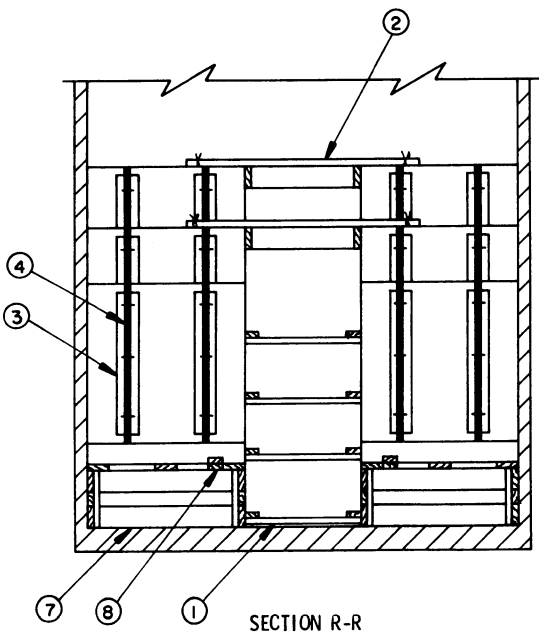
LOAD BEARING GATES FOR USE WITH DECREASED-HEIGHT UNITS IN A LENGTHWISE LOAD



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 61.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78.
- ③ STRAPPING BOARD, 2" X 6" X 36" (32 REQD/4 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 61.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 18'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 61.
- ⑤ SEAL FOR 1-1/4" STRAPPING (32 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑥ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 61.
- ⑦ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 61.
- ⑧ STOP PIECE (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 61 FOR LOCATION AND NAILING GUIDANCE.



SECTION R-R

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

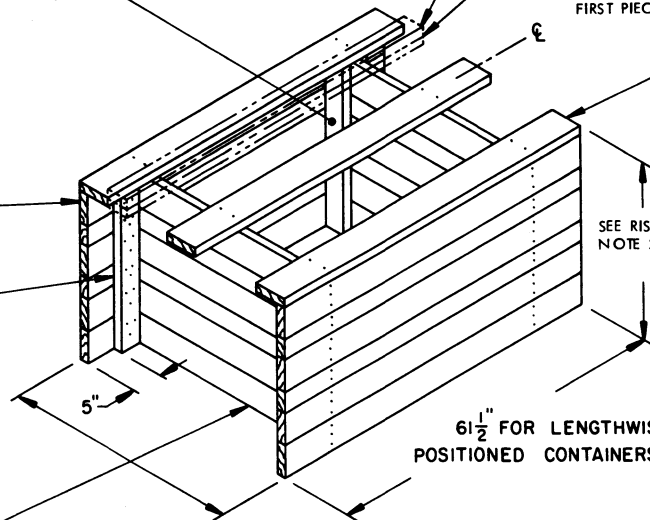
STOP PIECE, 2" X 4" X 61-1/2" (DOUBLED) (1 REQD). POSITION SO AS TO BE AGAINST THE DECKING PIECE WHICH IS ADJACENT TO THE CENTER OF CAR AND NAIL THE FIRST PIECE TO THE CROSS BRACE W/2-10d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/4-10d NAILS.

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

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

DECKING, 2" X 6" BY A LENGTH TO SUIT (3 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

SEE RISER ASSEMBLY NOTE 2 BELOW.



61 1/2" FOR LENGTHWISE POSITIONED CONTAINERS

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

RISER ASSEMBLY

SPECIAL NOTES:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOXCAR 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 60 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. 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.

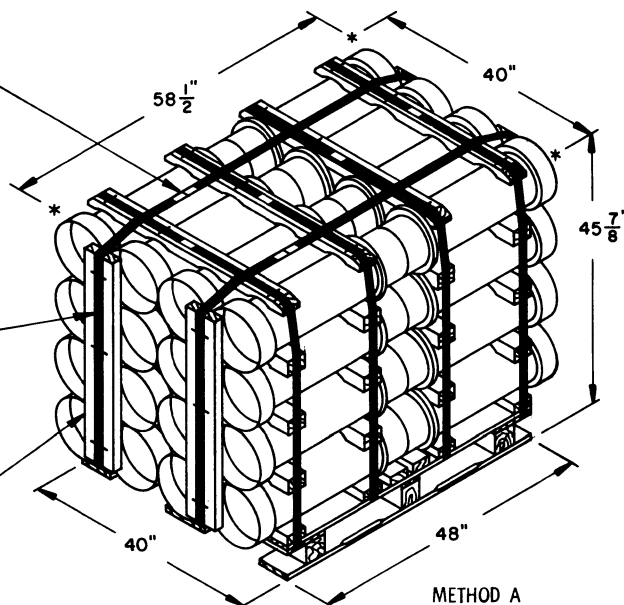
SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE HEIGHT OF THE BASIC UNIT IS 45-7/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 60. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FOUR (4) PIECES OF 2" X 6" MATERIAL AND TWO (2) PIECES OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 30-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 60, WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE (1) PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 16" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE 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.

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

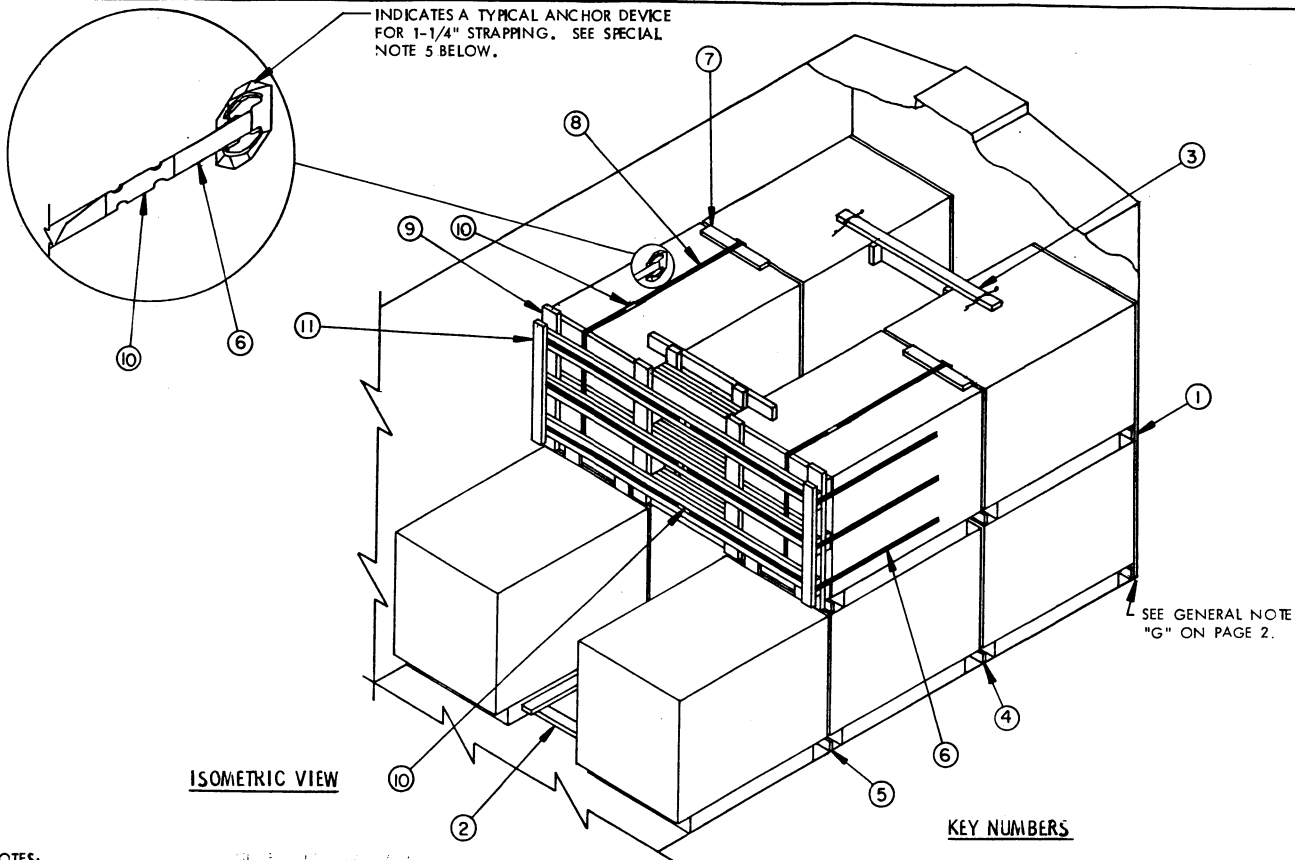
REINFORCING STRAP, 1-1/4" X .035" X 18'-0" LONG STEEL STRAPPING FOR 4-LAYER UNITS, 16'-0" LONG FOR 3-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.

STRAPPING BOARD, 2" X 6" X 36" FOR 4-LAYER UNITS, 2" X 6" X 26" FOR 3-LAYER UNITS (4 REQD). POSITION SO AS TO CENTER ON THE JOINT OF CONTAINERS.



NOTE:

THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE POSITIONED LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 60. THE BASIC HEIGHT ROUTED DUNNAGE METHOD UNIT IS SHOWN. THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT.



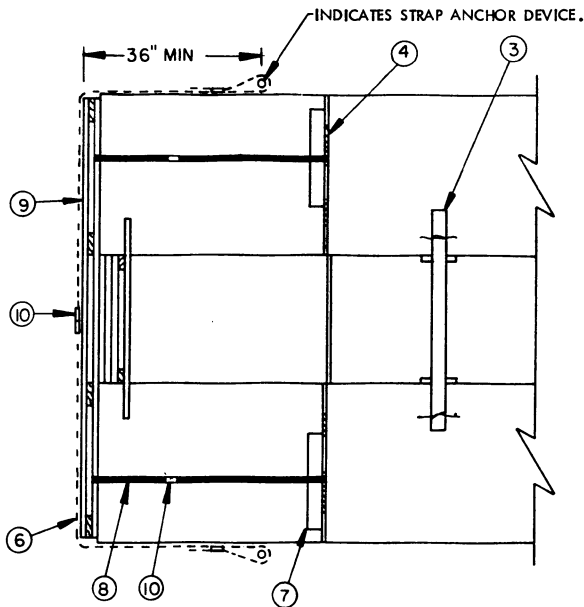
SPECIAL NOTES:

1. A 9'-4" WIDE ALL-METAL BOXCAR 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 ROUTED DUNNAGE METHOD UNIT (BASIC 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 PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CROSSWISE POSITIONED PALLET UNITS WILL NOT BE RETAINED BY THE BULKHEAD GATE METHOD.
4. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. SEE THE "MAXIMUM NUMBER OF UNITS" CHART BELOW FOR GUIDANCE IN THE QUANTITIES OF THE PALLET UNITS COVERED BY THIS DOCUMENT WHICH CAN BE RETAINED USING THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING.
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 GATES WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE THE STRUTTED GATE METHOD SHOWN ON PAGE 56 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 57 FOR A SINGLE UNIT.

(CONTINUED ON PAGE 63)

- ① END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 77. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 78 IS USED, THE END-WALL LINING IS NOT REQUIRED.
- ② ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN THE LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78.
- ④ SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGES 15, 27, 39, OR 51. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- ⑤ SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON THE AFOREMENTIONED PAGES.
- ⑥ BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 63 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.
- ⑦ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 63.
- ⑧ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 19'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑦. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑥.
- ⑨ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 63. SEE SPECIAL NOTE 3 AT LEFT.
- ⑩ SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED ⑥, AND 1 PER BUNDLING STRAP, PIECE MARKED ⑧). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
- ⑪ STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

MAXIMUM NUMBER OF UNITS		
NO. OF STRAPS	UNIT	
	BASIC	DECREASED
3	4	5
2	2	3

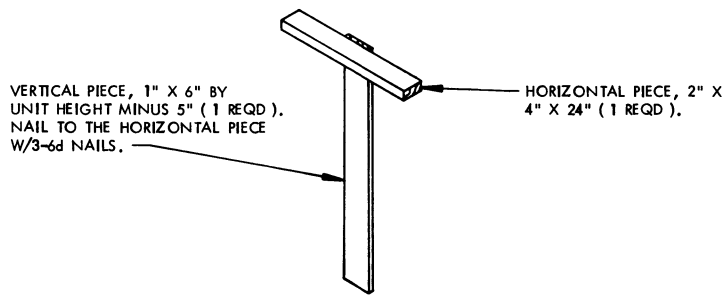


STRAP APPLICATION PLAN VIEW

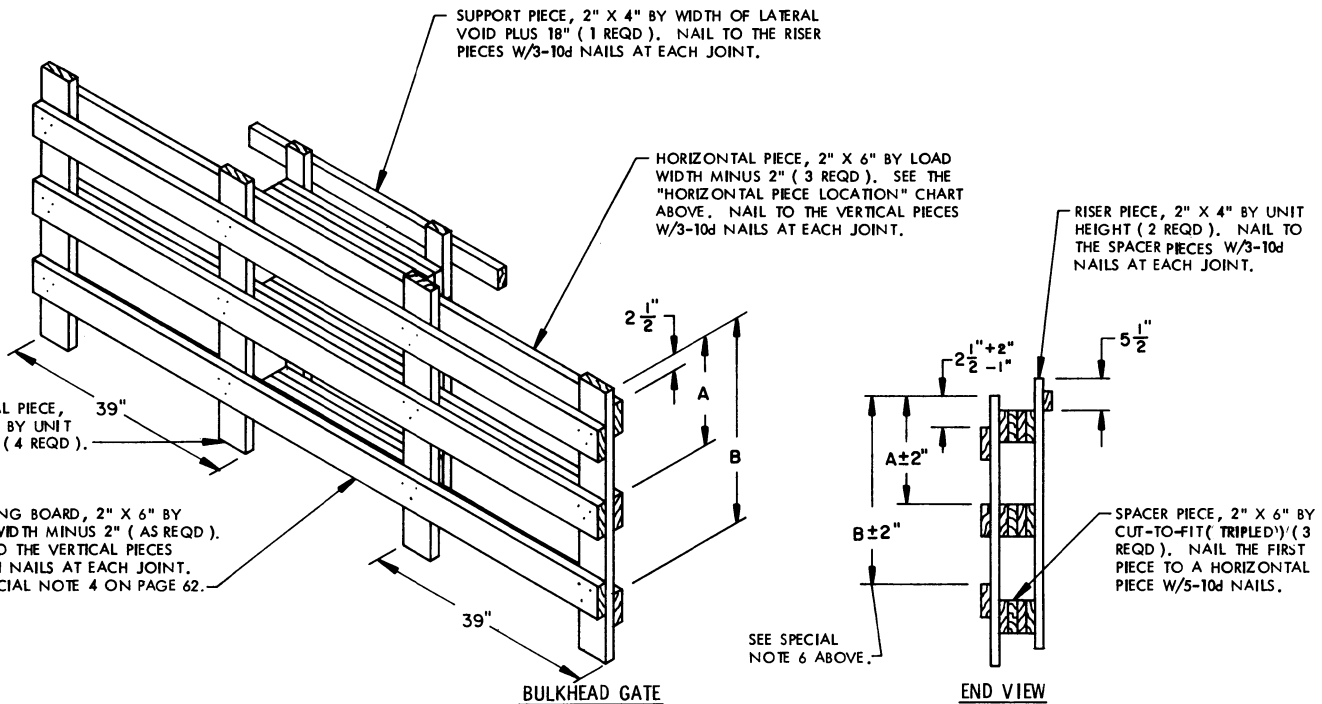
(SPECIAL NOTES CONTINUED)

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

HORIZONTAL PIECE LOCATION				
UNIT	3-HIGH		4-HIGH	
	DIM A	DIM B	DIM A	DIM B
FLAT OR ROUTED DUNNAGE	$12-1/2" \pm 5"$	$23" \pm 5"$	$18" \pm 1"$	$31" \pm 5"$



STRAPPING BOARD



BULKHEAD GATE

END VIEW

(SPECIAL NOTES CONTINUED)

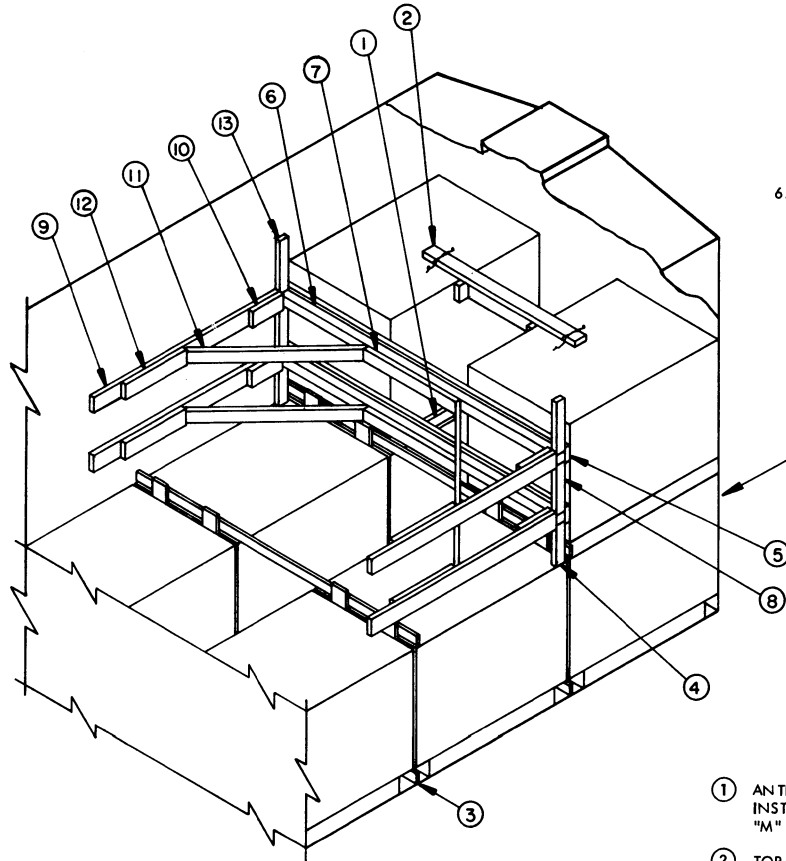
ADJACENT PIECE MARKED ⑨ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60"), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑨ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑨ IS DOUBLED.

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

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 78.

KEY NUMBERS

- ① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE" DETAIL ON PAGE 17. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 17. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 78. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.
- ③ SEPARATOR GATE (2 REQD). SEE THE APPLICABLE DETAIL ON PAGE 15, 27, 39, OR 51 AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 78.
- ④ SUPPORT CLEAT, 2" X 4" X 11" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ⑤ AND ⑥ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.
- ⑤ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥ W/1-12d NAIL EVERY 6".
- ⑥ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (2 REQD).
- ⑦ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥, W/7-16d NAILS. SEE SPECIAL NOTE 6 ABOVE.
- ⑧ SPACER CLEAT, 2" X 4" X 16" FOR 4-LAYER UNITS, 13" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑨ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑩ POCKET CLEAT, 2" X 6" X 12" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨, W/4-16d NAILS.
- ⑪ DIAGONAL BRACE, 2" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥ AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨ W/2-16d NAILS AT EACH END.
- ⑫ BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨, W/8-16d NAILS.
- ⑬ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

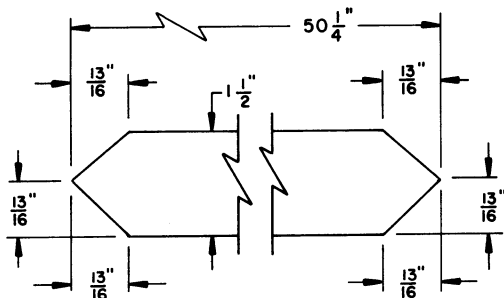


ISOMETRIC VIEW

SPECIAL NOTES:

- 1. A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOXCAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.
- 2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
- 3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A LENGTHWISE LOAD IS SHOWN AS TYPICAL.
- 4. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, THIRD TIER, OR FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 65, 66, AND 67 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.
- 5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ④, ⑤, ⑥, ⑧, ⑩, AND ⑬ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑪ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE

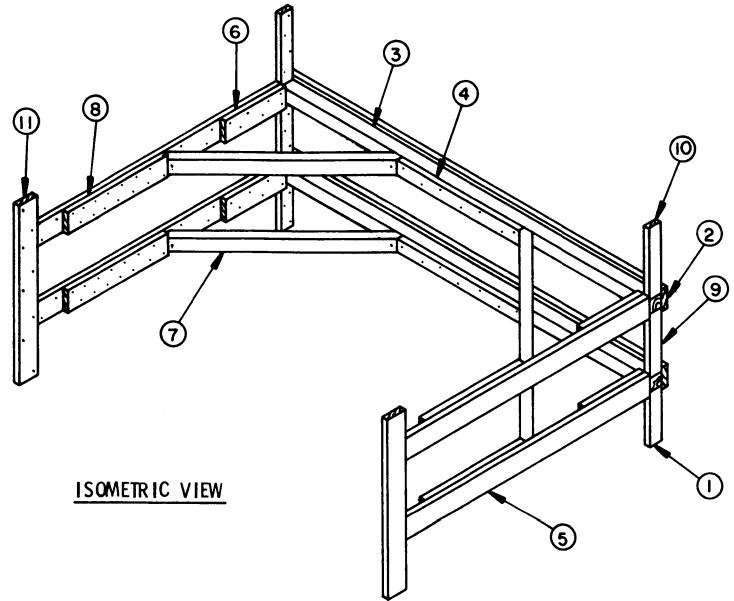
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DIAGONAL BRACE

SPECIAL NOTES:

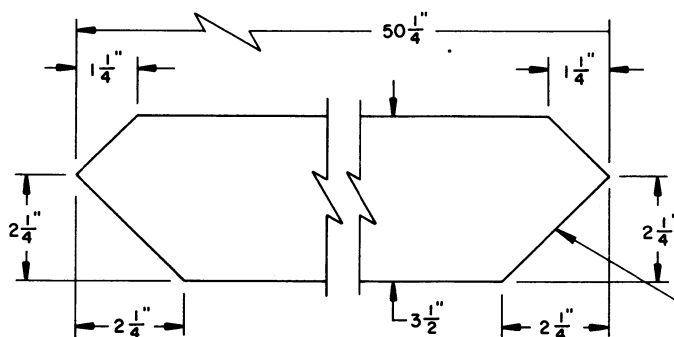
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN NINE (9) 3-LAYER UNITS OR SEVEN (7) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 66 AND 67 FOR SELECTION OF THE APPLICABLE SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 64 MAY BE USED.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, ⑩, AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. INDICATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 64 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

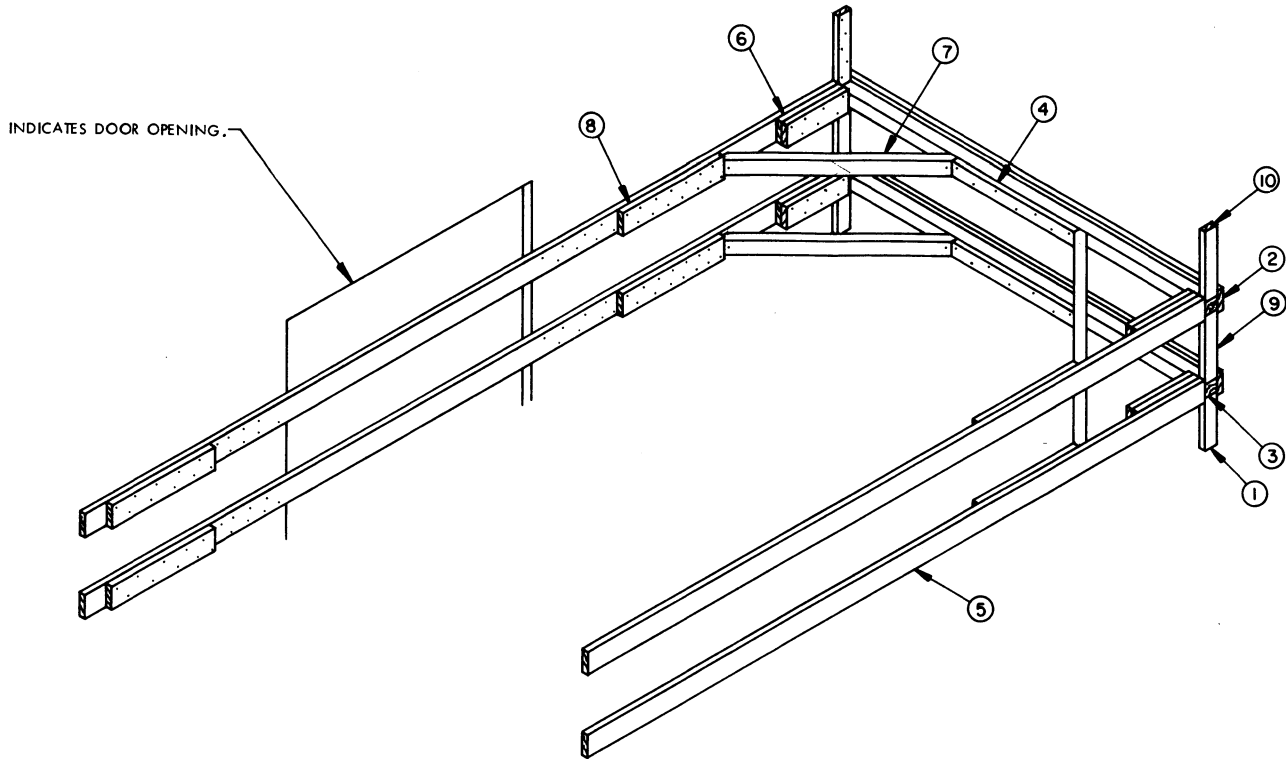
- ① SUPPORT CLEAT, 2" X 4" X 11" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT-TO-FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 16" FOR 4-LAYER UNITS, 13" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

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



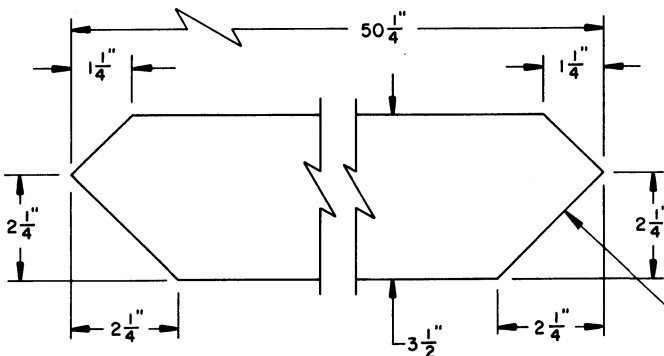
ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 11" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT-TO-FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 BELOW.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENINGS TO CONTACT PIECE MARKED ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 4" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 16" FOR 4-LAYER UNITS, 13" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN THIRTEEN (13) 3-LAYER UNITS OR TEN (10) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 67 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 65 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 64 WILL BE ADEQUATE.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑥, ⑧, ⑨, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR A 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. **CAUTION:** A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

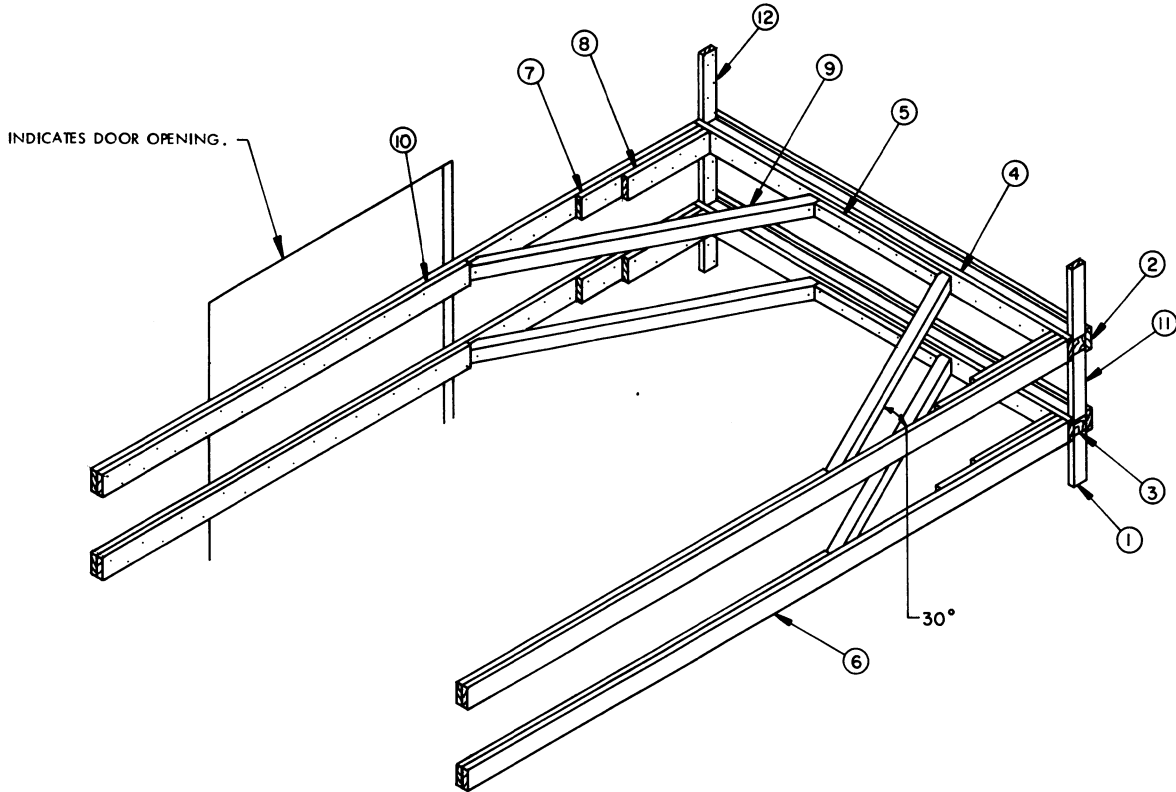


DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "C" K-BRACE

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



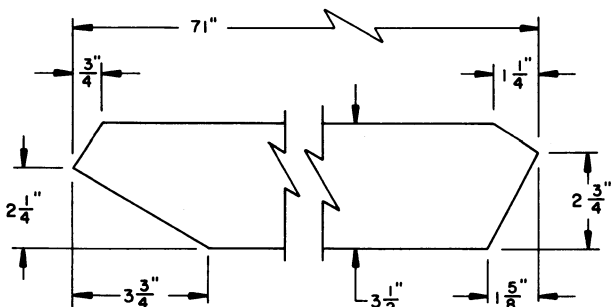
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS. THIS WILL BE NOT MORE THAN SEVENTEEN (17) 3-LAYER UNITS OR THIRTEEN (13) 4-LAYER UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 66 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS THE TYPE "B" K-BRACE DEPICTED ON PAGE 65 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 64 WILL BE ADEQUATE.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑦, ⑧, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤ WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. **CAUTION:** A TYPE "D" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑥ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

- ① SUPPORT CLEAT, 2" X 4" X 11" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT-TO-FIT) (2 REQD).
- ④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6".
- ⑤ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④ W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO CONTACT PIECE MARKED ④ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16 NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④ AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/1-60d NAIL AT EACH END.
- ⑩ BACK-UP CLEAT, 2" X 5" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND TO CONTACT THE DIAGONAL BRACE, PIECE MARKED ⑨, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/18-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING, IF APPLICABLE.
- ⑪ SPACER CLEAT, 2" X 4" X 16" FOR 4-LAYER UNITS, 13" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑫ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

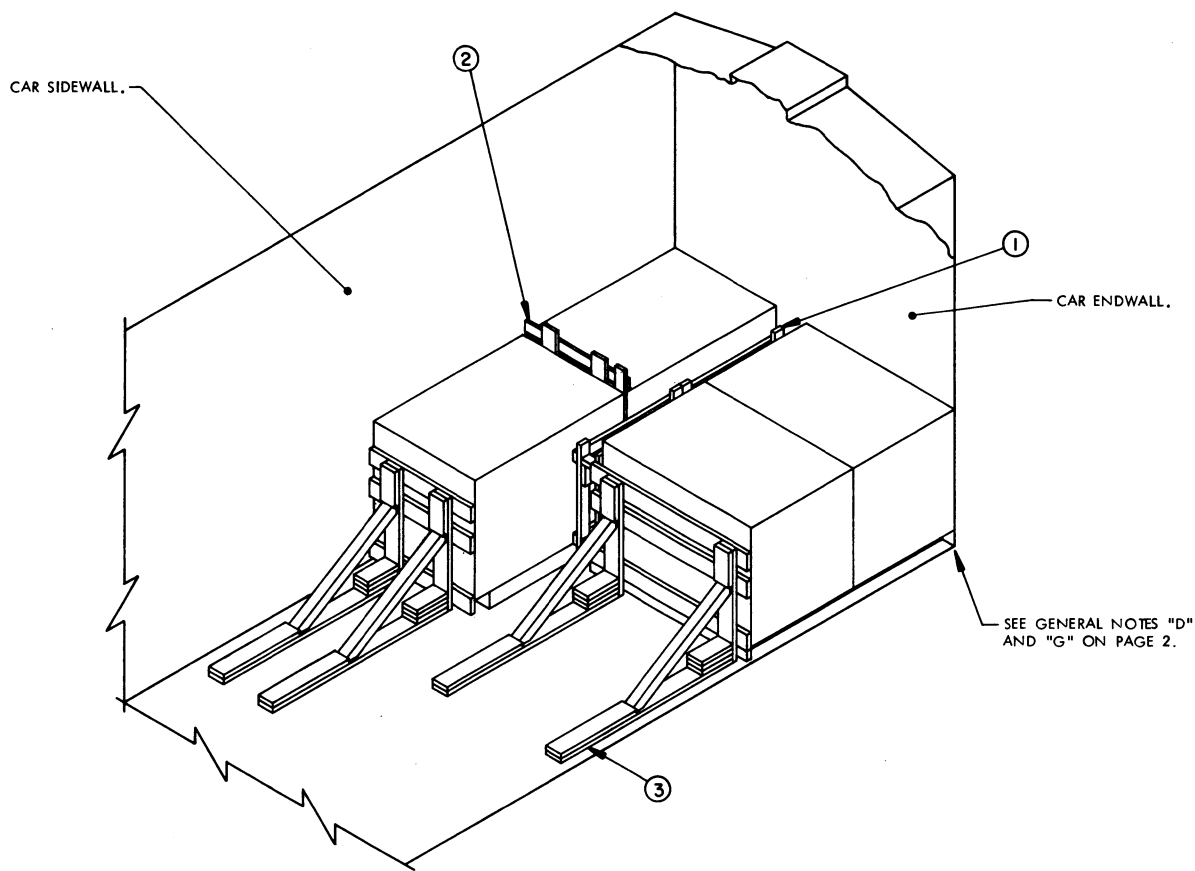


DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE

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

TYPE "D" K-BRACE



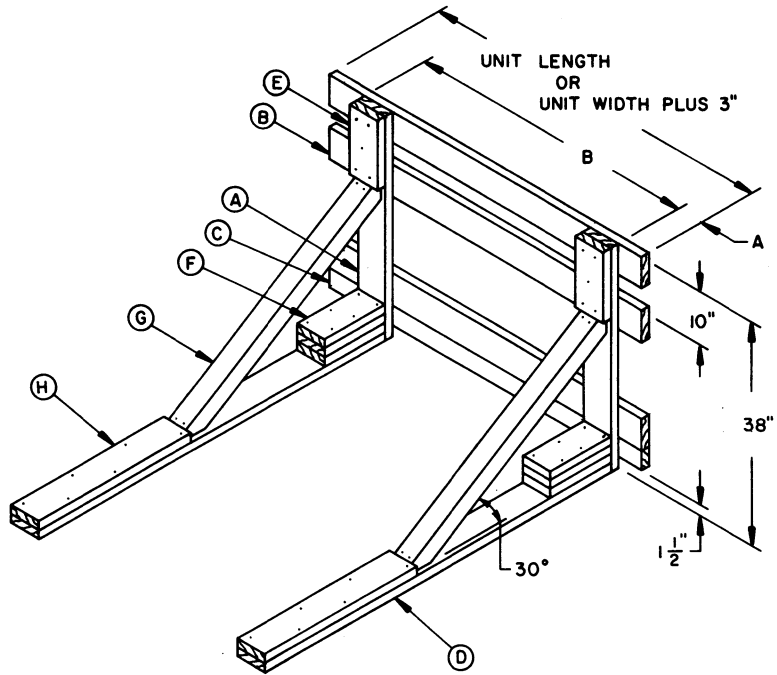
SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR HAVING A WOOD OR AVAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE 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 LIMITATION OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTHWISE ROWS IN LIEU OF ONE OF EACH AS DEPICTED. NOTE THAT THE DECREASED HEIGHT UNITS MUST ONLY BE POSITIONED LENGTHWISE IN THE CAR.
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 LENGTHWISE ROW, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 14 FOR THE FLAT DUNNAGE METHOD UNITS, THE "CENTER GATE G" DETAIL ON PAGE 38 FOR THE ROUTED DUNNAGE METHOD UNITS. FOR HOLD-DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CROSSWISE ROW, REFER TO THE CENTER GATE B" DETAIL ON PAGE 15 FOR THE FLAT DUNNAGE METHOD UNITS, THE "CENTER GATE H" DETAIL ON PAGE 39 FOR THE ROUTED DUNNAGE METHOD UNITS.

ISOMETRIC VIEW

KEY NUMBERS

- ① CRIB FILL (2 REQD.). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 14, 26, 38, OR 50. SEE GENERAL NOTE "M" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD.). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 15, 27, 39, OR 51. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS.
- ③ KNEE BRACE ASSEMBLY (2 REQD.). SEE THE DETAIL ON PAGE 69 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.



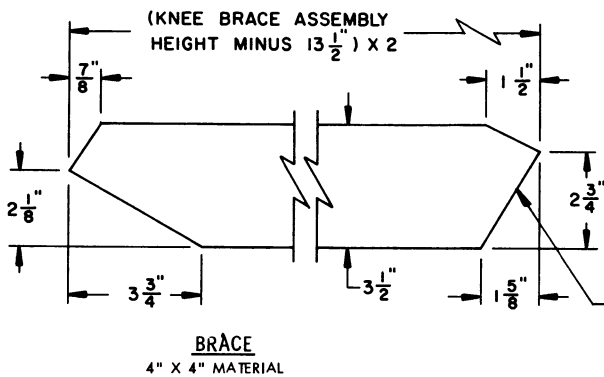
VERTICAL PIECE PLACEMENT FOR CROSSWISE CONTAINERS		
UNIT	DIM A	DIM B
FLAT OR ROUTED DUNNAGE	4"	50-1/2"

VERTICAL PIECE PLACEMENT FOR LENGTHWISE CONTAINERS		
UNIT	DIM A	DIM B
FLAT DUNNAGE	7-1/2"	25-1/2"
ROUTED DUNNAGE	7-1/2"	25"

KNEE BRACE ASSEMBLY

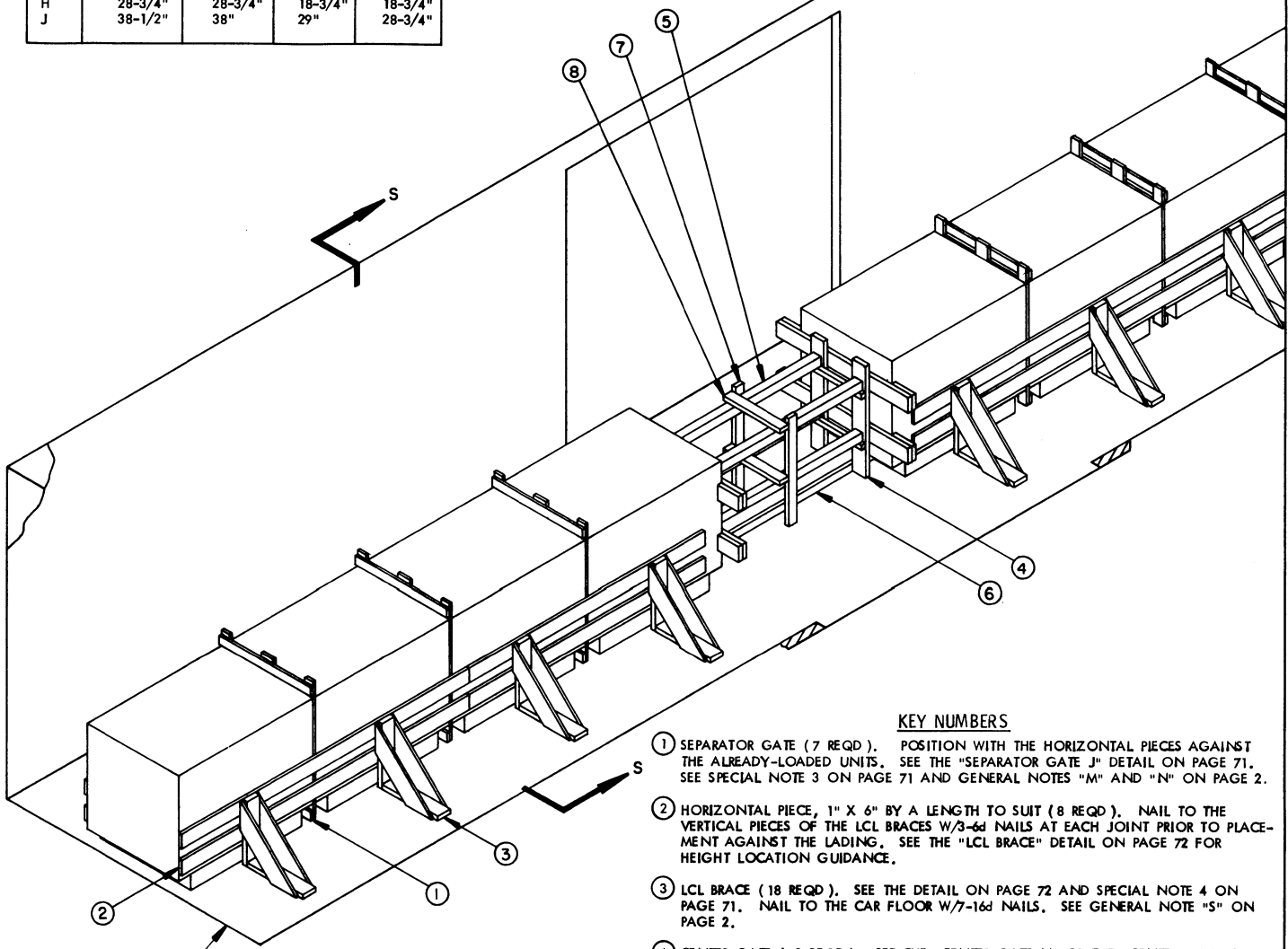
KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" BY UNIT HEIGHT MINUS 8" (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH PLUS 3", AS APPLICABLE (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "M" ON PAGE 2.
- (C) HORIZONTAL PIECE, 2" X 4" BY PALLET UNIT WIDTH (1 REQD FOR EACH CROSSWISE UNIT KNEE BRACE ASSEMBLY ONLY). NAIL TO THE VERTICAL PIECES MARKED (A) W/3-10d NAILS.
- (D) FLOOR CLEAT, 2" X 6" BY LENGTH-TO-SUIT (.87 OR 7/8 TIMES LENGTH OF PIECE MARKED (C), PLUS 30") (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "S" ON PAGE 2.
- (E) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (D), W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), W/2-16d NAILS.
- (G) BRACE, 4" X 4" BY CUT-TO-FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2", TIMES 2) (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (D), W/2-16d NAILS AT EACH JOINT.
- (H) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (D), W/6-40d NAILS.
- (J) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 68.



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

CENTER GATE O				
DIM	BASIC HEIGHT		DECREASED HEIGHT	
	FLAT	ROUTED	FLAT	ROUTED
G	42"	42"	32"	32"
H	28-3/4"	28-3/4"	18-3/4"	18-3/4"
J	38-1/2"	38"	29"	28-3/4"

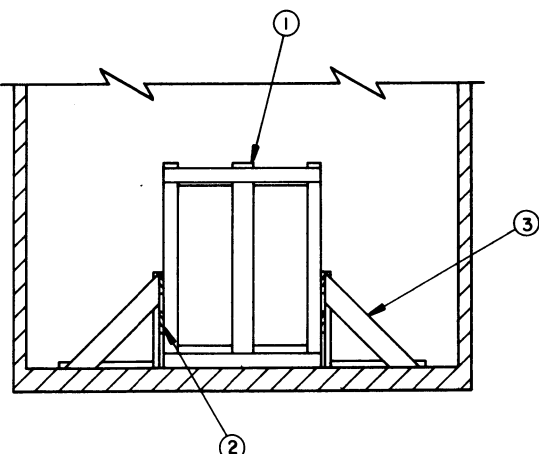


ISOMETRIC VIEW

SEE GENERAL NOTE "G" ON PAGE 2.

KEY NUMBERS

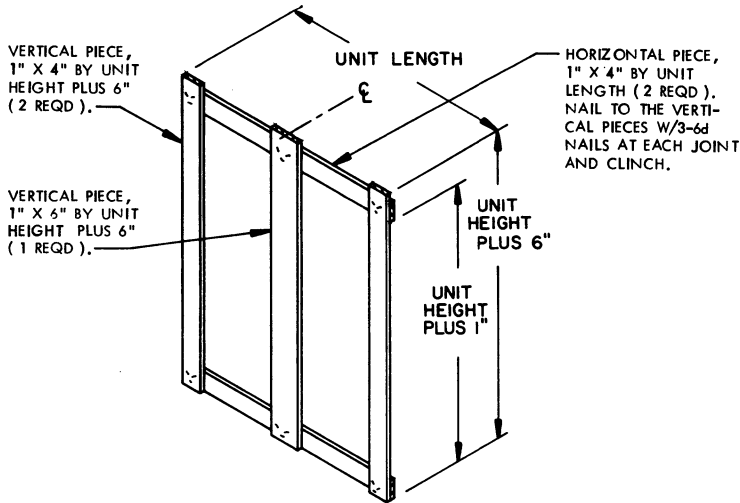
- ① SEPARATOR GATE (7 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE J" DETAIL ON PAGE 71. SEE SPECIAL NOTE 3 ON PAGE 71 AND GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 72 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (18 REQD). SEE THE DETAIL ON PAGE 72 AND SPECIAL NOTE 4 ON PAGE 71. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "S" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE N" OR THE "CENTER GATE O" DETAIL ON PAGE 71 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (4 REQD FOR LENGTHWISE, 6 REQD FOR MOST CROSSWISE). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "U" AND "V" ON PAGE 3.
- ⑥ GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE N" DETAIL ON PAGE 71 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CROSSWISE UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 6 ON PAGE 71.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" BY LENGTH-TO-SUIT (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ HORIZONTAL STRUT BRACING, 2" X 4" BY LENGTH-TO-SUIT (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



SECTION S-S

CENTER GATE N				
DIM	BASIC HEIGHT		DECREASED HEIGHT	
	FLAT	ROUTED	FLAT	ROUTED
A	42"	42"	36"	36"
B	59"	58-1/2"	59"	58-1/2"
C	16-1/4"	16-1/2"	16-3/4"	16-1/2"
D	42-1/4"	42"	42-1/8"	42"
E	18-3/4"	18-3/4"	18-3/4"	18-3/4"
F	38-1/2"	38"	33-1/2"	33-1/2"

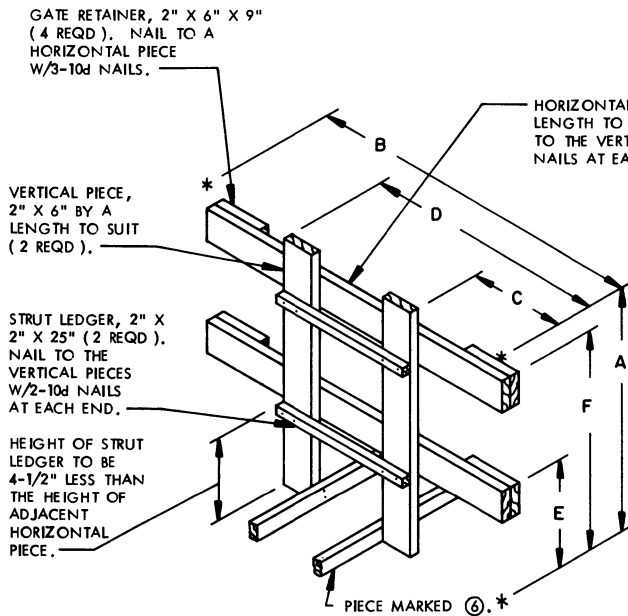
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



SEPARATOR GATE J

SPECIAL NOTES:

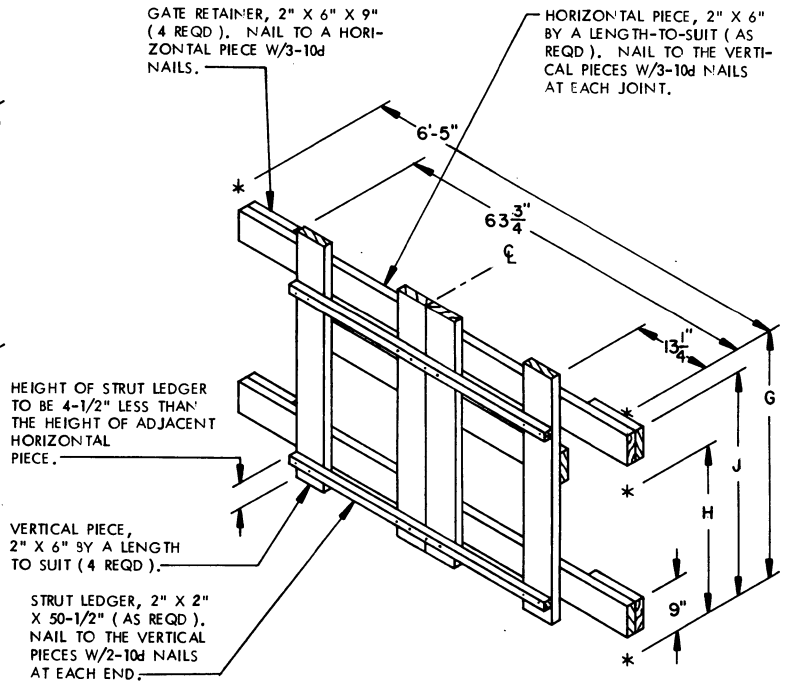
1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A 1-WIDE LENGTHWISE LOAD IS SHOWN AS TYPICAL. A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE CROSSWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE SEPARATOR GATES, PIECES MARKED ①, ARE NOT REQUIRED, AND THE QUANTITY OF LCL PRICES, PIECES MARKED ③, ARE NOT CORRECT FOR CROSSWISE LOADS.
4. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL.
5. 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 ⑥.



CENTER GATE N

THIS GATE IS FOR USE WITH LENGTHWISE CONTAINERS. REFER TO "CENTER GATE N" CHART ON PAGE 70 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	108	36
1" X 6"	330	165
2" X 2"	9	3
2" X 3"	17	9
2" X 4"	12	8
2" X 6"	112	112
4" X 4"	23	31
NAILS	NO. REQD	POUNDS
6d (2")	234	1-1/2
8d (2-1/2")	216	2-1/4
10d (3")	96	1-1/2
16d (3-1/2")	142	3-1/4



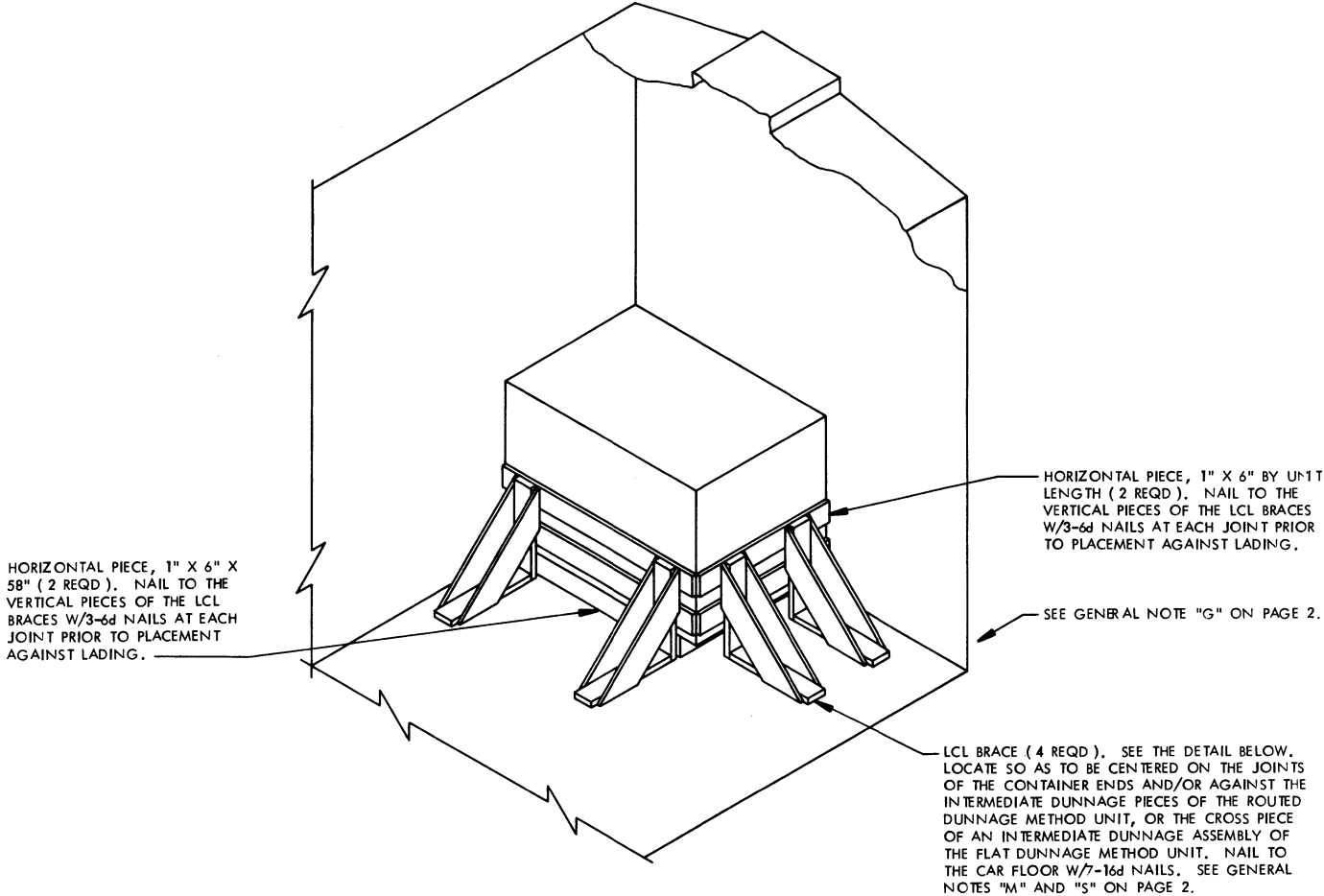
CENTER GATE O

THIS GATE IS FOR USE WITH CROSSWISE CONTAINERS. REFER TO THE "CENTER GATE O" CHART ON PAGE 70 FOR DIMENSIONS WHICH ARE NOT SHOWN ABOVE.

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	9	16,857 LBS
DUNNAGE		737 LBS

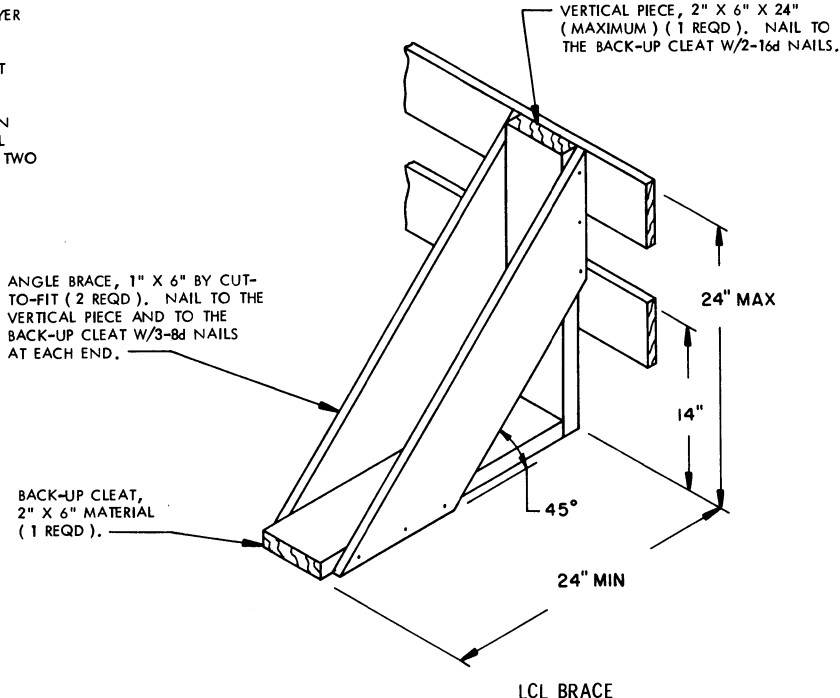
TOTAL WEIGHT----- 17,594 LBS (APPROX)



ISOMETRIC VIEW

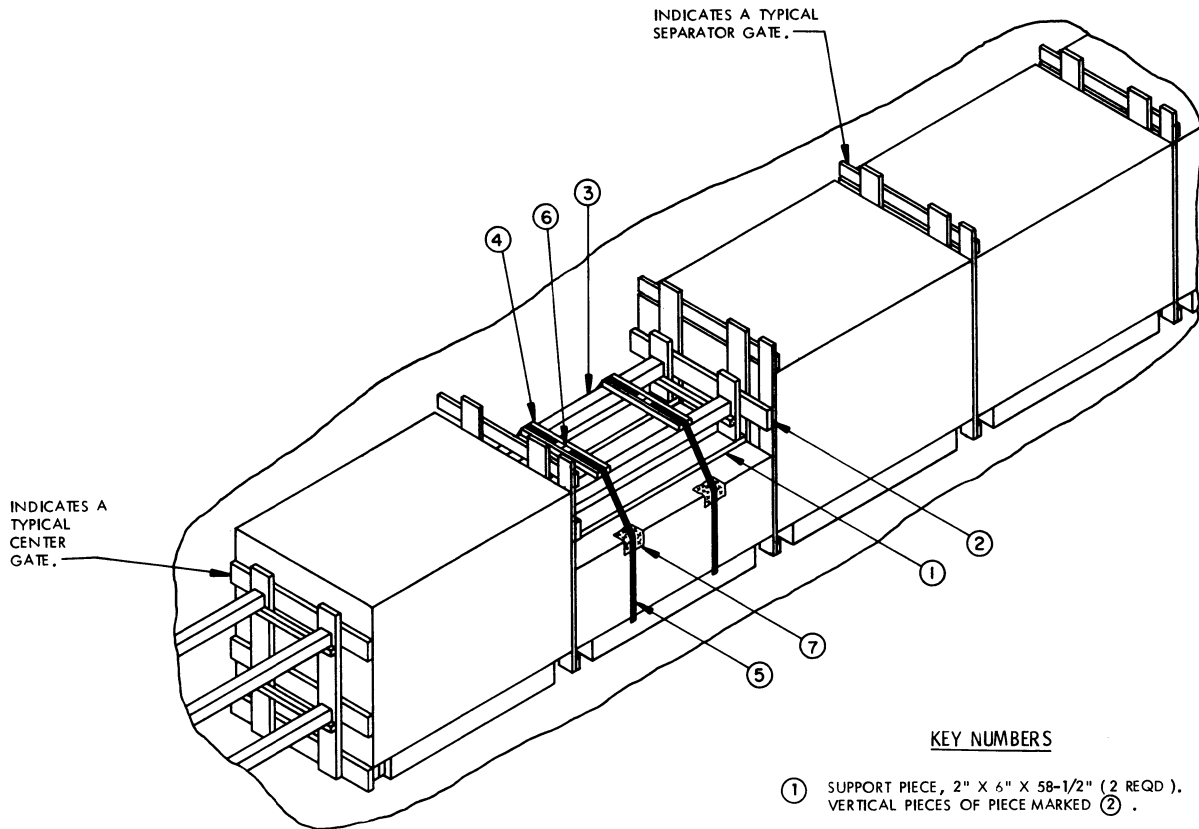
SPECIAL NOTES:

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



LCL BRACE

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



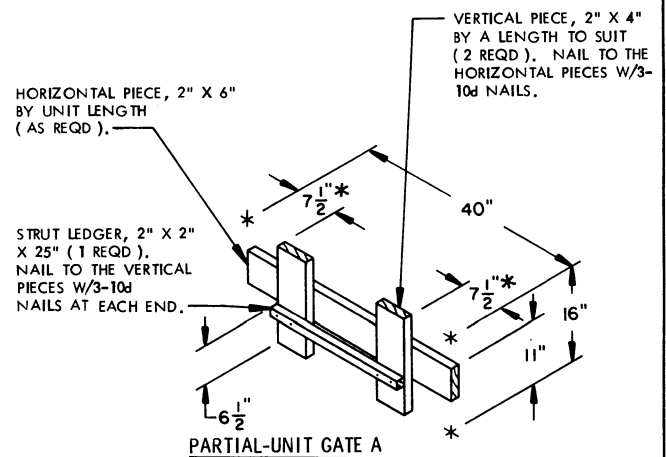
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

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 OR 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 EIGHT (8) CONTAINERS, OR AN APPROVED FILL ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/6-20PM1001, 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 BOXCAR 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. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

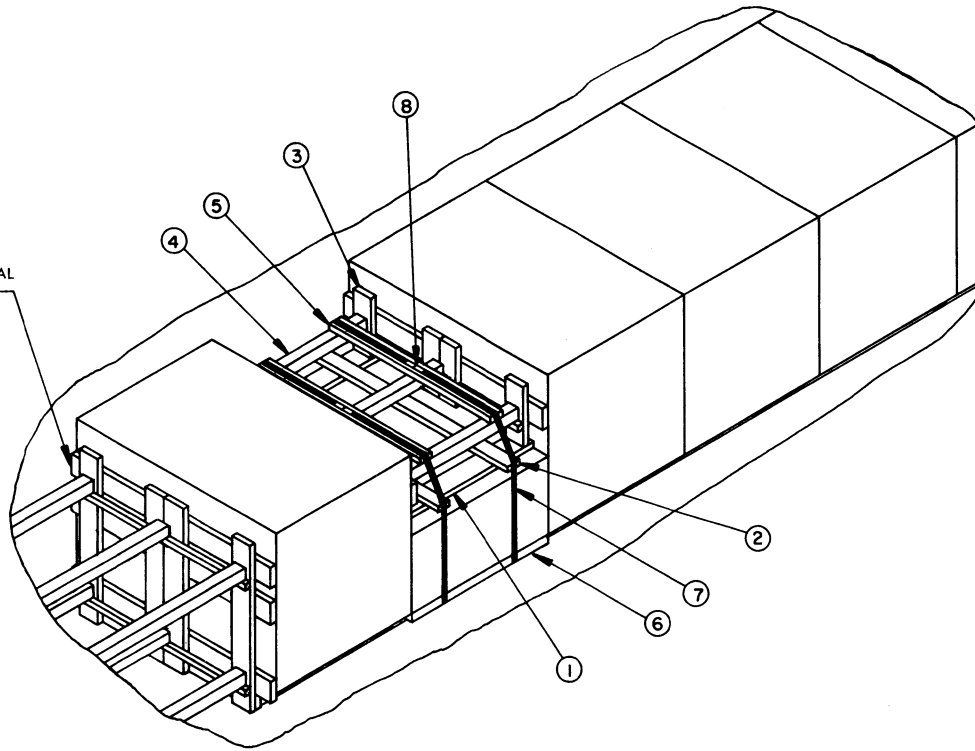
KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 58-1/2" (2 REQD). POSITION UNDER THE VERTICAL PIECES OF PIECE MARKED ②.
- ② PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ③ STRUT, 4" X 4" X 52-1/2" (2 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ②, W/2-16d NAILS AT EACH END.
- ④ STRAPPING BOARD, 2" X 4" X 23" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ③, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.
- ⑦ ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



*THESE DIMENSIONS MUST BE ADJUSTED AS NECESSARY TO ALIGN THE VERTICAL PIECE WITH THE ADJACENT SEPARATOR GATES.

INDICATES A TYPICAL CENTER GATE.



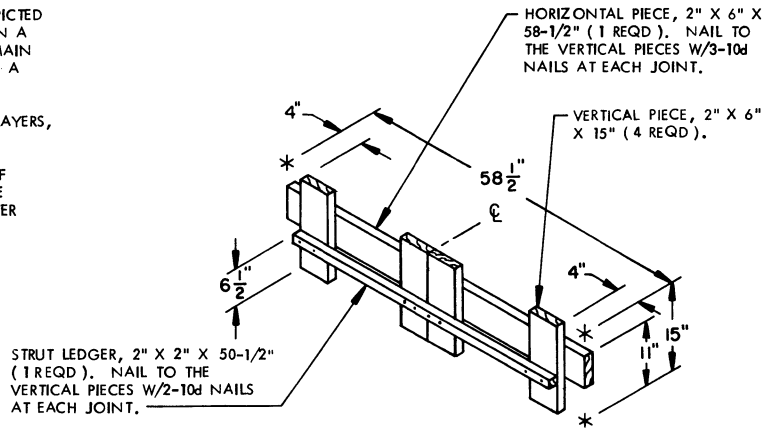
POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER

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 COMBINATION LOAD, OR WITHIN A 1-WIDE 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 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 EIGHT (8) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/6-20PM1001, 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. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 76 MAY BE MORE ECONOMICAL.
7. THE PARTIAL-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH BUT NOT IN THE DOORWAY. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (2 REQD). POSITION ON TOP OF THE STRAPPING BOARD OF A PALLET UNIT.
- ② RETAINER PIECE, 2" X 4" X 58-1/2" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED ①, W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ④ STRUT, 4" X 4" BY UNIT LENGTH MINUS 6" (3 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED ③, W/2-16d NAILS AT EACH END.
- ⑤ STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④, W/3-10d NAILS AT EACH JOINT.
- ⑥ BATTEN, 2" X 5" (ACTUAL SIZE) BY A LENGTH TO SUIT (2 REQD). POSITION UNDER CONTAINER BELL PRIOR TO TENSIONING STRAP.
- ⑦ UNITIZING STRAP, 1-1/4" X .035" OR ".031" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

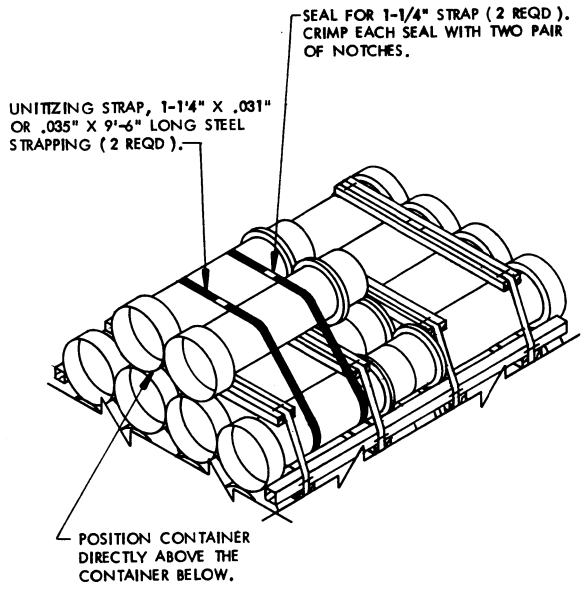


PARTIAL-UNIT GATE B

THE LOCATION OF THE VERTICAL PIECES MUST BE ADJUSTED TO MATCH THE VERTICAL PIECES OF THE APPLICABLE CENTER GATE, SO AS TO ALIGN WITH THE DUNNAGE PIECES OF A UNIT.

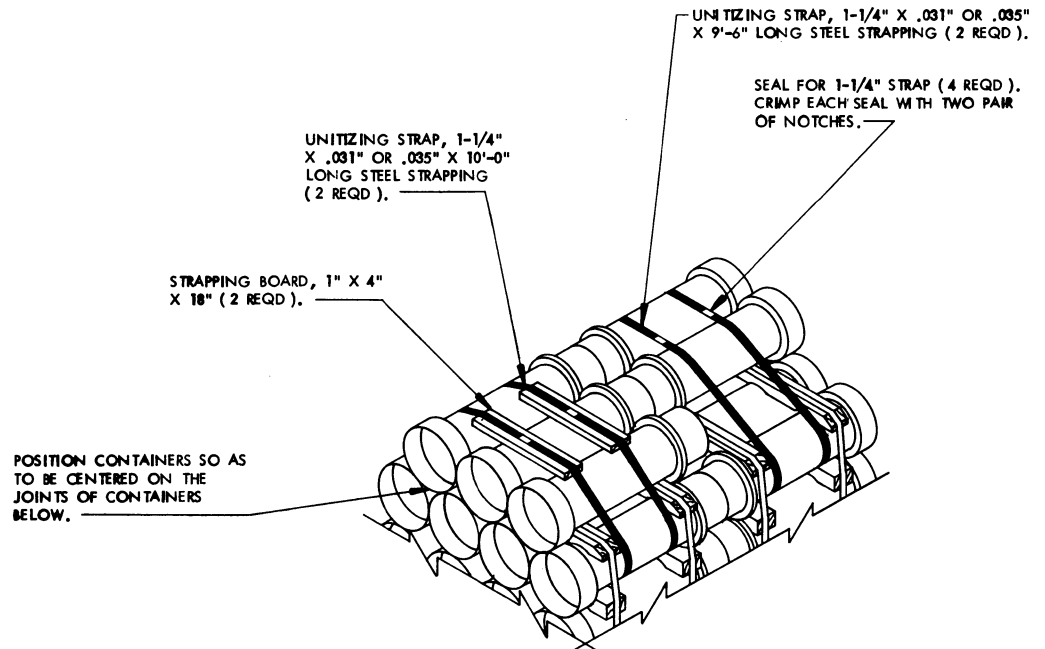
SPECIAL NOTES:

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 76 OR WITHIN A LAYER AS SHOWN ON PAGES 73 AND 74.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLY, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY FOR THE FLAT DUNNAGE METHOD UNITS. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES AS SHOWN.
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.



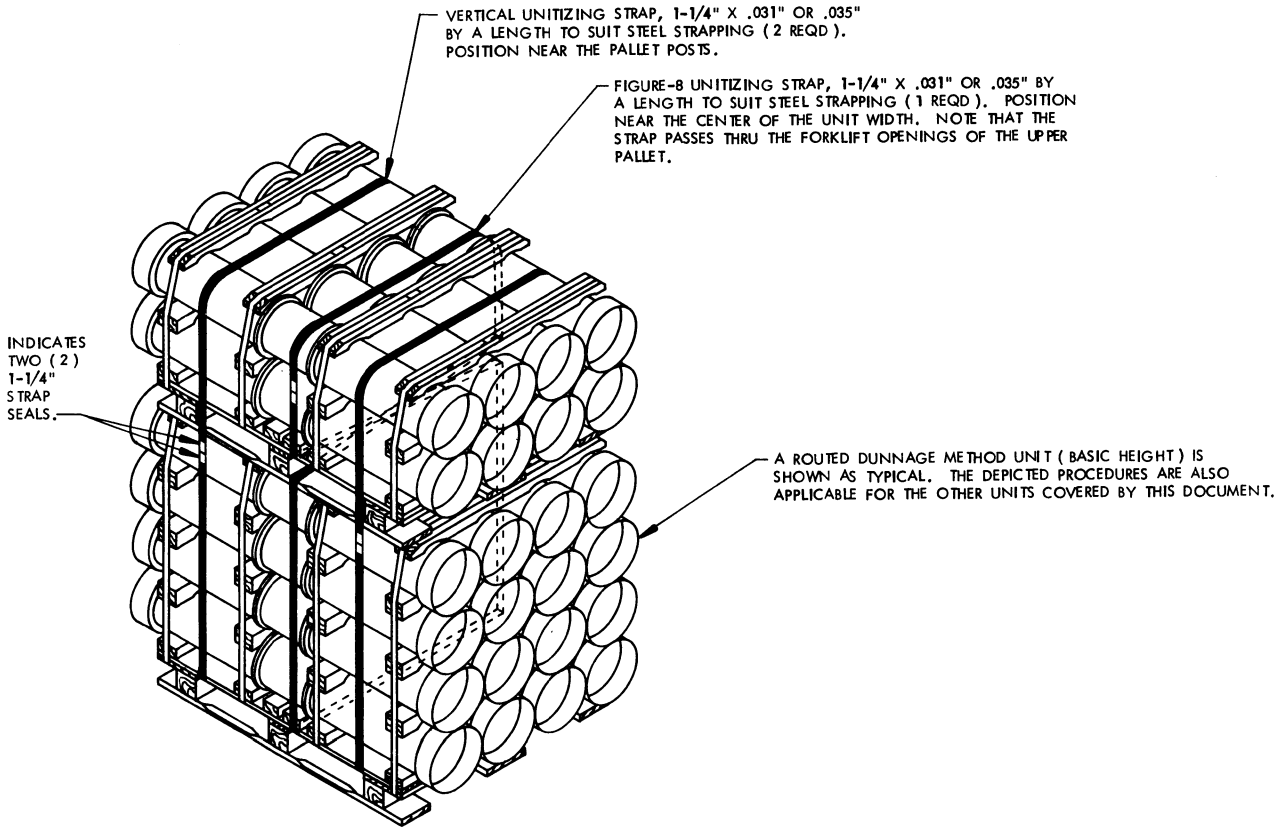
SECUREMENT OF TWO CONTAINERS

FLAT DUNNAGE METHOD UNIT SHOWN AS TYPICAL. SEE SPECIAL NOTE 3 ABOVE.



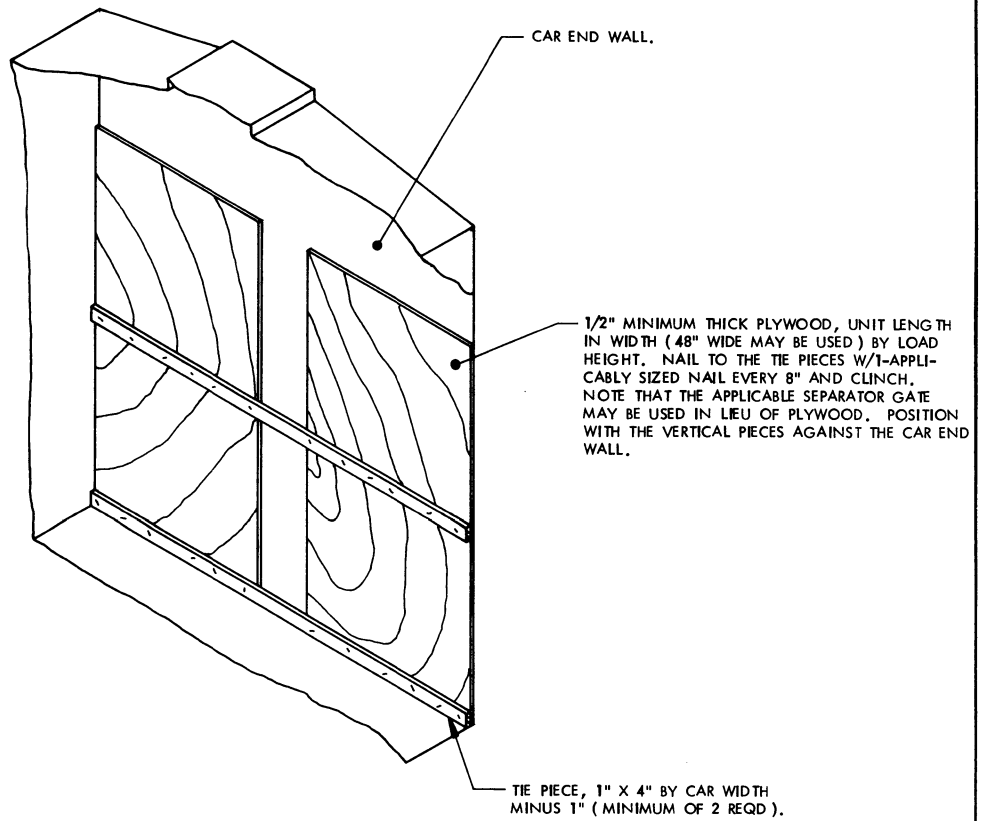
SECUREMENT OF FIVE CONTAINERS

ROUTED DUNNAGE METHOD UNIT SHOWN AS TYPICAL.



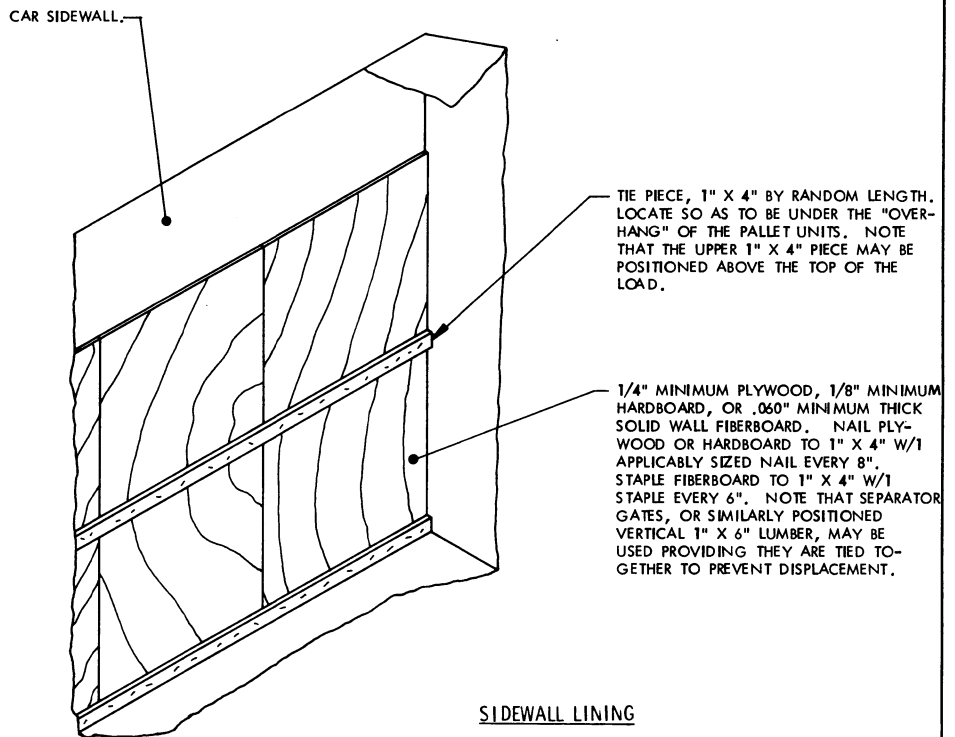
SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A COMBINATION LOAD, OR WHEN THE CONTAINERS CAN BE POSITIONED CROSSWISE IN THE CAR. 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 74.



END-WALL LINING

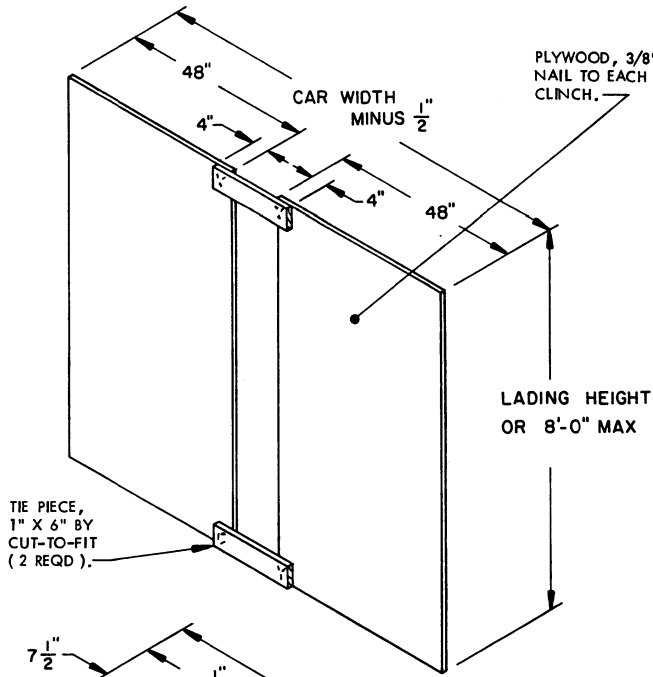
THIS VIEW DEPICTS LINING REQUIRED FOR A LENGTH-WISE LOAD IN A CAR EQUIPPED WITH A STEEL END WALL.



SIDEWALL LINING

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

DETAILS



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

NOTE ▲ :

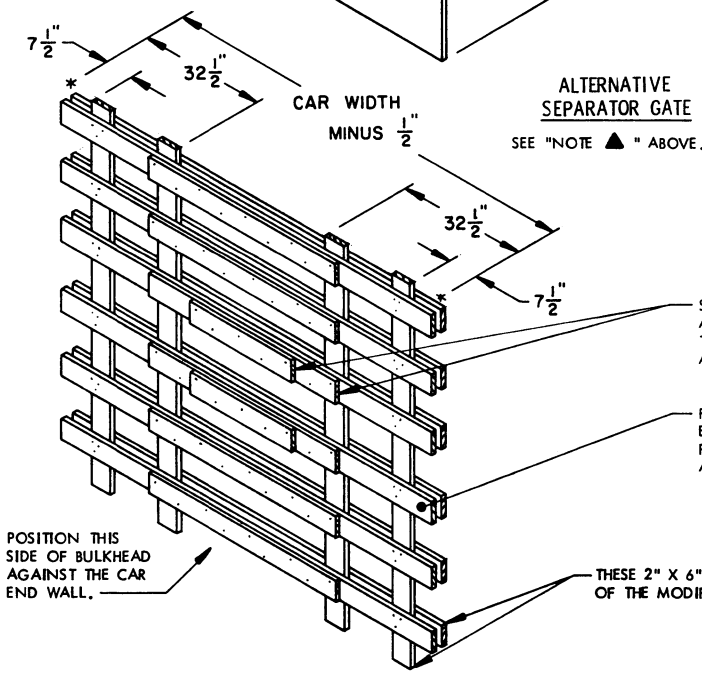
THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 1" X 4" AND 1" X 6" MATERIAL. THE ALTERNATIVE SEPARATOR GATE CAN ONLY BE USED IN LOADS WHICH ARE ONE OR TWO PALLET UNITS IN HEIGHT; PLYWOOD SEPARATOR GATES ARE NOT ECONOMICALLY FEASIBLE FOR A 3-LAYER LOAD.

TIE PIECE, 1" X 6" BY CUT-TO-FIT (2 REQD).

LADING HEIGHT OR 8'-0" MAX

NOTE ○ :

IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED-OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOXCAR 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 "F" AS DETAILED ON PAGE 28, IS SHOWN, AS TYPICAL.



ALTERNATIVE SEPARATOR GATE

SEE "NOTE ▲" ABOVE.

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

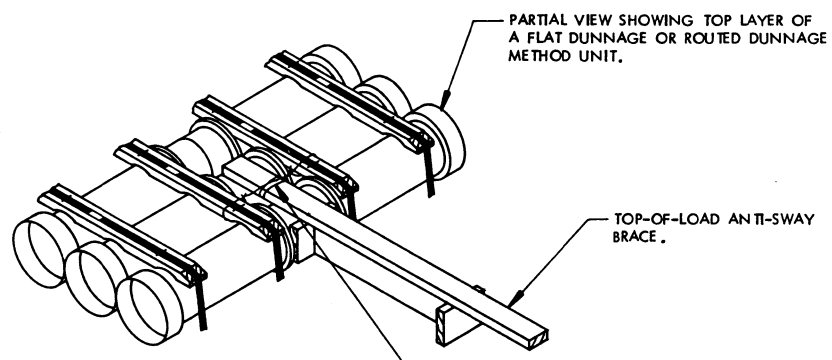
FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (ONE REQUIRED FOR EACH HORIZONTAL PIECE ON THE CENTER GATE). ALIGN WITH THE HORIZONTAL PIECES AND NAIL TO THE VERTICAL PIECES OF THE CENTER GATE W/3-10d NAILS AT EACH JOINT.

POSITION THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

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

END-OF-CAR BULKHEAD

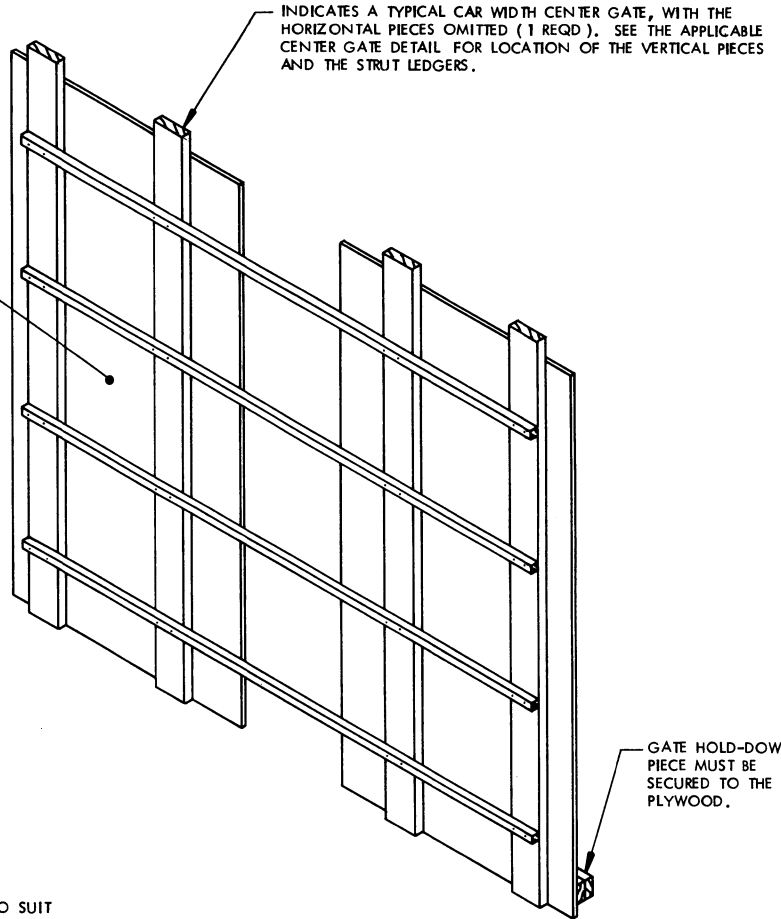
SEE "NOTE ○" ABOVE.



TIE WIRE APPLICATION

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

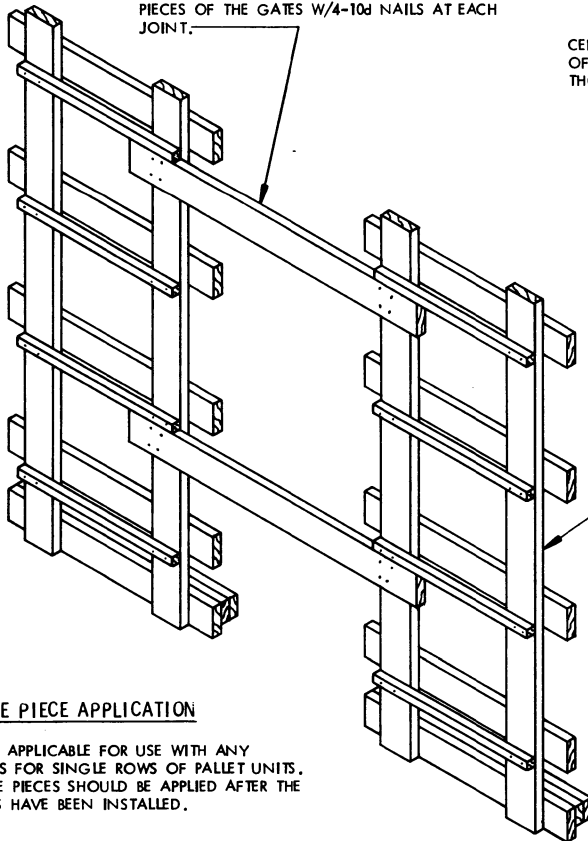
PLYWOOD, 1/2" THICK BY THE UNIT WIDTH OR LENGTH BY THE LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6".
 NOTE: THE WIDTH OF THE PLYWOOD WILL BE UNIT LENGTH IF THE WIDTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 8. PLYWOOD MAY BE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



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

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

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



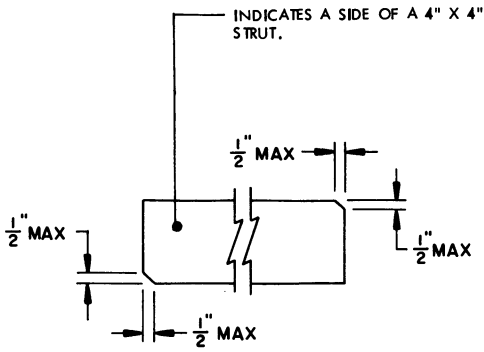
TIE PIECE APPLICATION

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.

PLYWOOD CENTER GATE ALTERNATIVE

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

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



BEVEL CUT

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

BEVEL CUT THIS CORNER ONLY IF STRUTS ARE VERY SHORT.

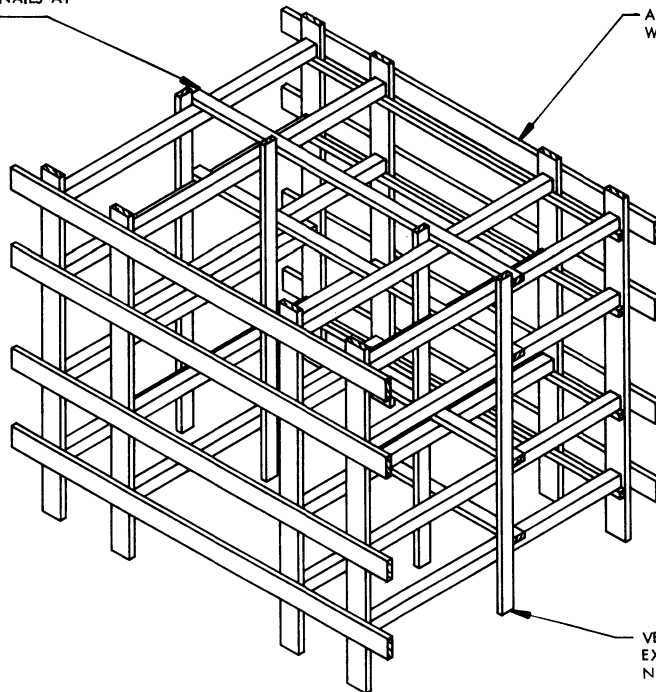
INDICATES A TYPICAL CENTER GATE.

STRUT INSTALLATION

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

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

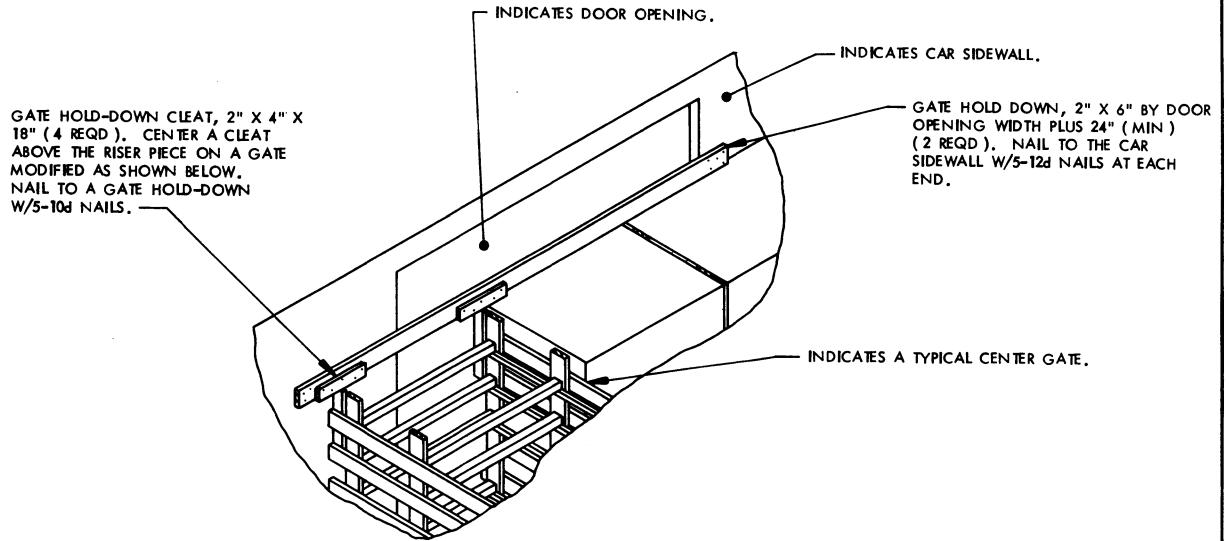
A CENTER GATE FOR A 2-LAYER LOAD OF LENGTH-WISE POSITIONED PALLETS IS SHOWN AS TYPICAL.



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

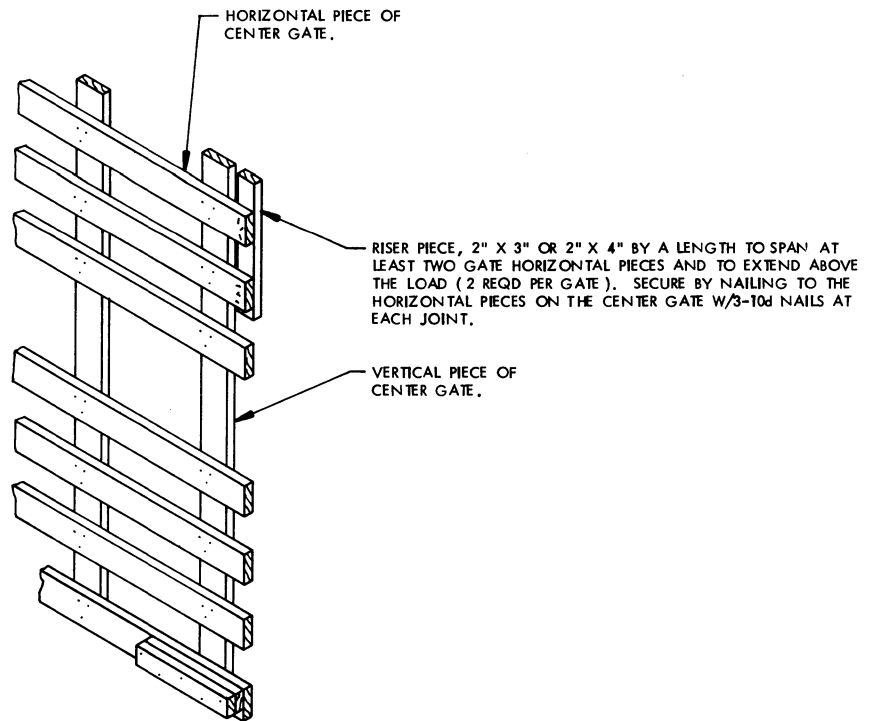
TYPICAL STRUT BRACING

SEE GENERAL NOTE "U" ON PAGE 3.



ALTERNATIVE GATE HOLD-DOWN

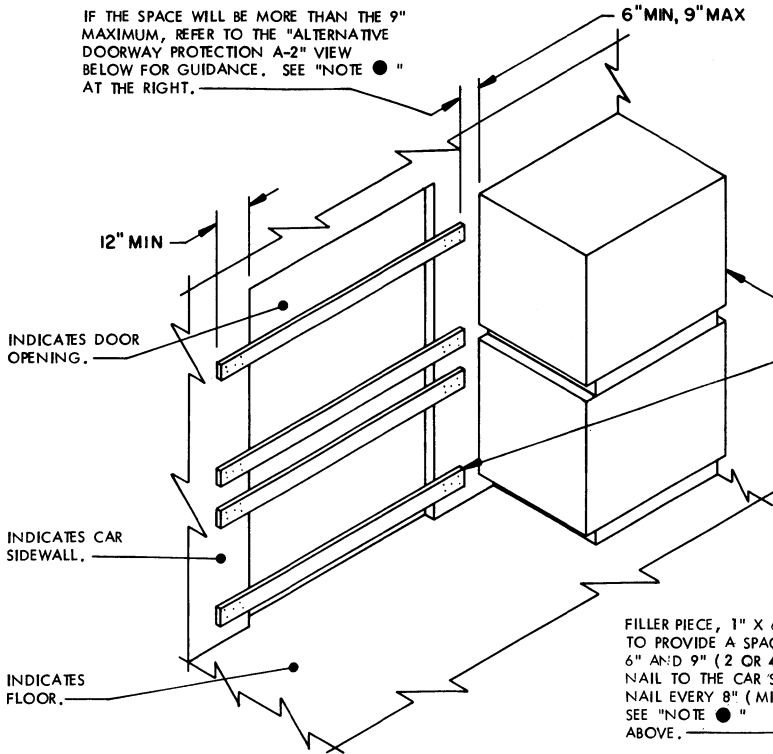
THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD-DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD-DOWN PIECES WHICH ARE PART OF A CENTER GATE. **NOTE:** FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA,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



CENTER GATE MODIFICATION

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

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



NOTE ● :

THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT, AND IS APPLICABLE WHEN ANTI-SWAY BRACING IS USED FOR A LOAD AND ALSO WHEN THE EXCESS SPACE ACROSS THE CAR IS SMALL ENOUGH THAT ANTI-SWAY BRACING OF ANY KIND IS NOT REQUIRED.

INDICATES A TYPICAL PALLET UNIT.

DOOR SPANNER, 1" X 6" BY DOOR OPENING WIDTH PLUS 24" (MIN) (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.

SEE "NOTE ●" ABOVE.

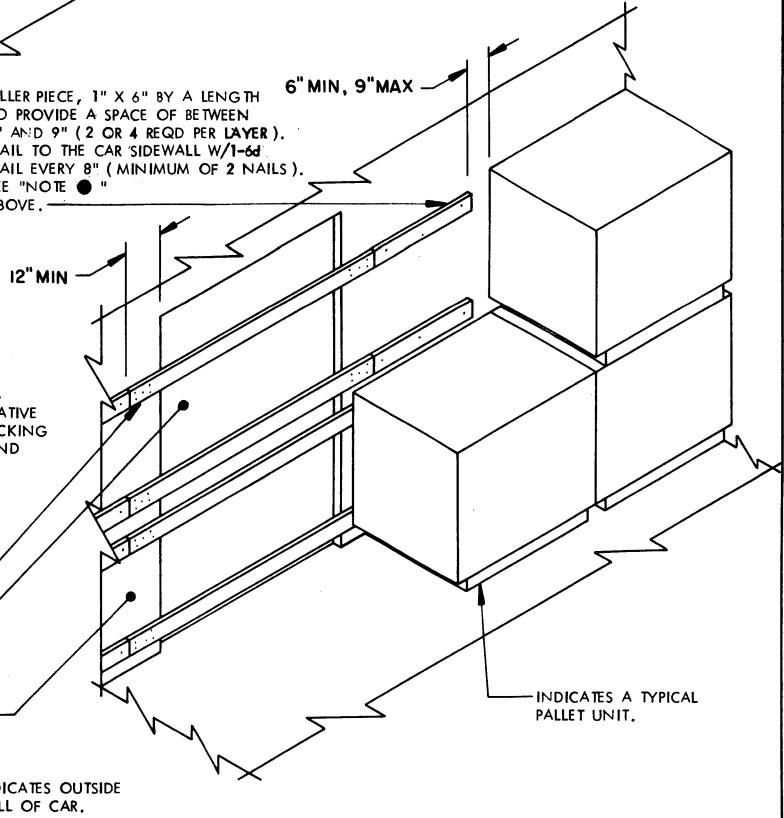
ALTERNATIVE DOORWAY PROTECTION A-1

THE 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 83 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED IN THE LOADS ON PAGES 12, 24, 36, AND 48.

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.

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.

FILLER PIECE, 1" X 6" BY A LENGTH TO PROVIDE A SPACE OF BETWEEN 6" AND 9" (2 OR 4 REQD PER LAYER). NAIL TO THE CAR SIDEWALL W/1-6d NAIL EVERY 8" (MINIMUM OF 2 NAILS). SEE "NOTE ●" ABOVE.



INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

INDICATES A TYPICAL PALLET UNIT.

INDICATES OUTSIDE WALL OF CAR.

ALTERNATIVE DOORWAY PROTECTION A-2

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

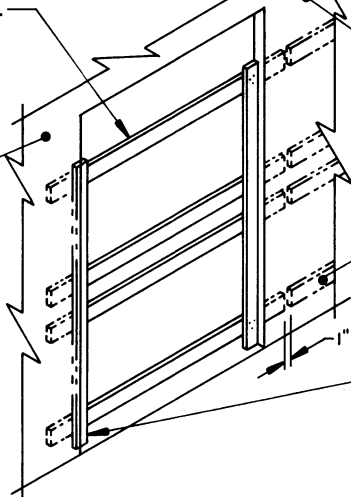
INDICATES FILL MATERIAL NAILED TO THE SIDEWALL, OR A FILLER PIECE, 2" X 6" BY A LENGTH TO EQUAL THE LENGTH OF THE FILLER PIECE ON THE OPPOSITE SIDEWALL MINUS 1" (QUANTITY TO BE THE SAME AS FOR THE DOOR SPANNERS AND/OR FILLER PIECES ON THE OPPOSITE SIDEWALL). SEE "NOTE ●" ABOVE.

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

ALTERNATIVE DOORWAY PROTECTION A-3

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

INDICATES DOOR OPENING.



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

VIEW B

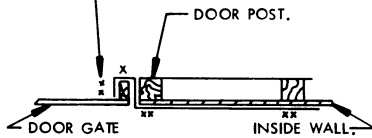
VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD).

INDICATES DOOR OPENING.

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

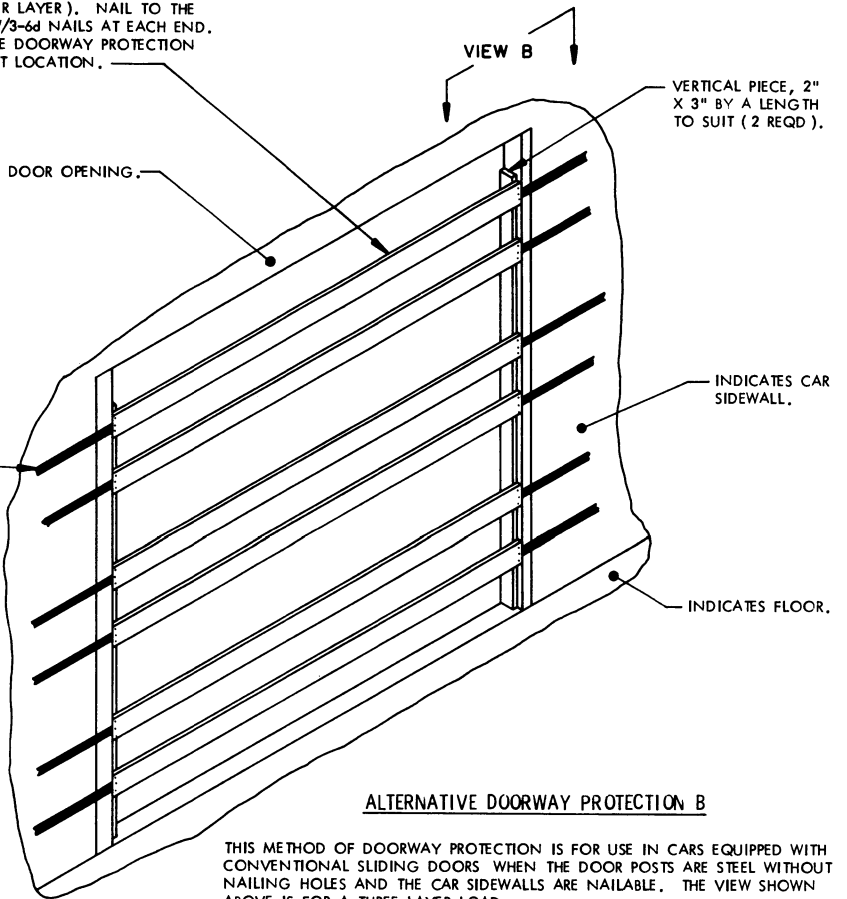
INDICATES CAR SIDEWALL.

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



VIEW B

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



ALTERNATIVE DOORWAY PROTECTION B

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

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

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

VIEW A

INDICATES STRAP ANCHOR PLATE.

DOOR SPANNER END OF STRAP.

LOAD HEIGHT MINUS 4"

UNIT HEIGHT PLUS 13"

UNIT HEIGHT MINUS 4"

INDICATES FLOOR.

A TOLERANCE OF PLUS OR MINUS 2" IS PERMISSIBLE.

INDICATES STRAP ANCHOR PLATE (2 REQD PER STRAP).

ISOMETRIC VIEW

VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

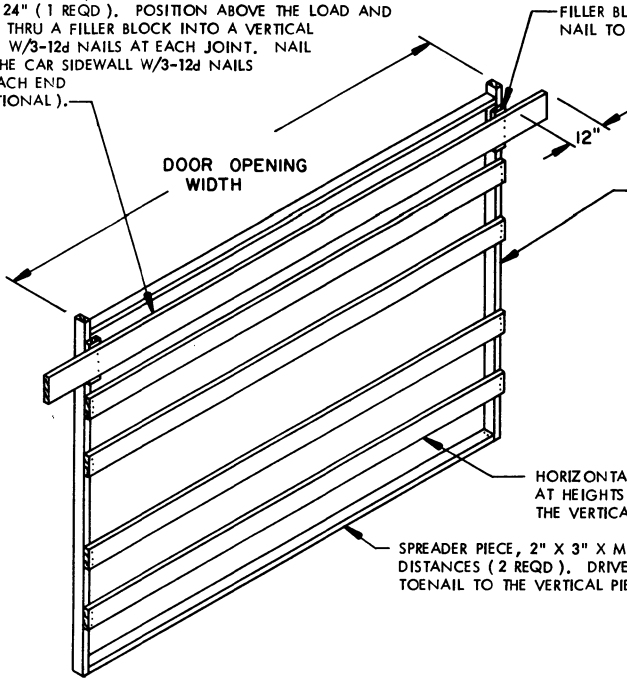
ALTERNATIVE DOORWAY PROTECTION C

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

DOORWAY PROTECTION

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

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



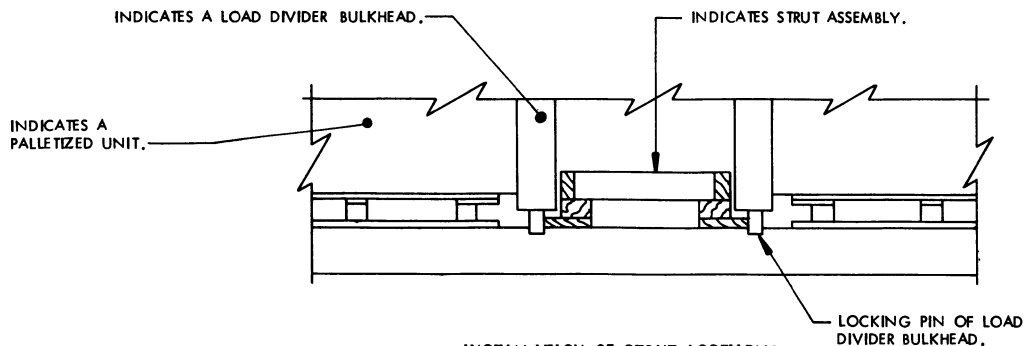
VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD). NOTE THAT IF THE EXCESS SPACE ACROSS A CAR IS FILLED BY NAILING LUMBER TO THE CAR SIDEWALL, IT MAY BE NECESSARY TO INCREASE THE VERTICAL PIECES AND THE SPREADER PIECES TO 2" X 4" OR 2" X 6" MATERIAL. THIS WILL PROVIDE A SURFACE TO WEDGE BETWEEN THE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

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

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

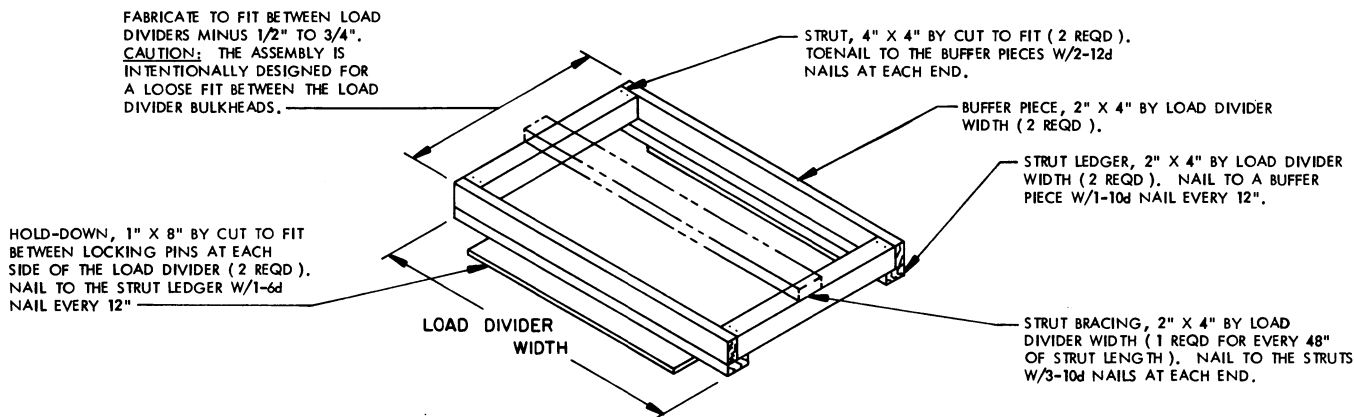
ALTERNATIVE DOORWAY PROTECTION D

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT AVAILABLE. IF THE CAR HAS AVAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 83 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 81.



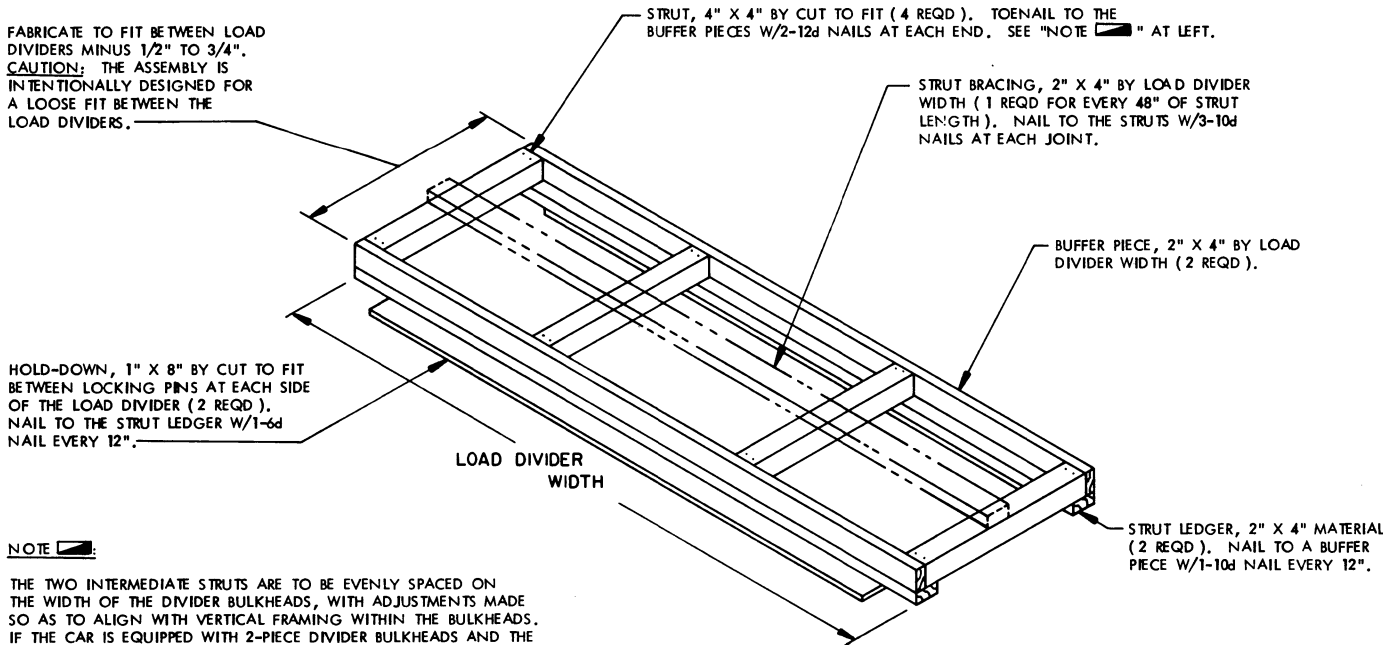
INSTALLATION OF STRUT ASSEMBLY

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



STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD. NOTE: TWO (2) ASSEMBLIES AS SHOWN ARE REQUIRED FOR A 2-PIECE BULKHEAD IF NOT LATERALLY ALIGNED. SEE "NOTE" BELOW.

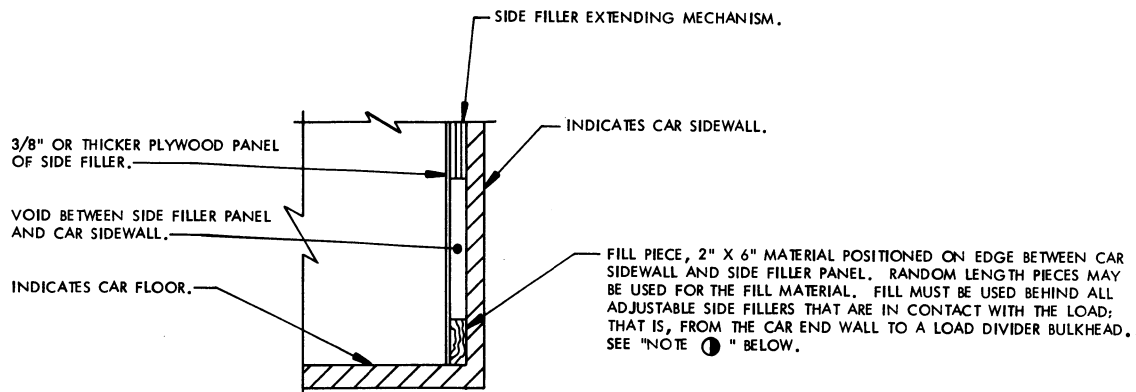


NOTE

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

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.

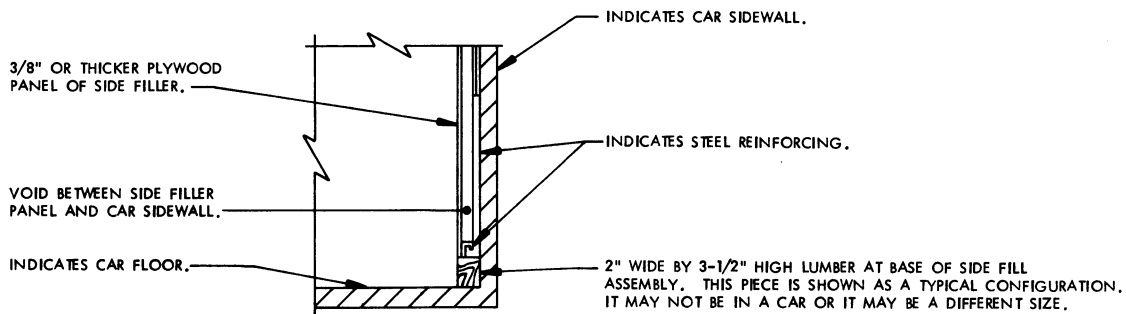


TYPICAL TYPE A

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

NOTE 1 :

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



TYPICAL TYPE B

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