


APPROVED BY
 BUREAU OF EXPLOSIVES
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 SUPERVISOR, MILITARY & INTERMODAL SERVICES
 DATE 8/19/91

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

PA93 SERIES CONTAINER

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

REVISIONS				DRAFTSMAN	PROJ/ENG
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APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND					
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APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY AMMUNITION CENTER AND SCHOOL (AMC)					
<i>John L. Byrd</i>					
U.S. ARMY AMC DRAWING					
FEBRUARY 1992					
CLASS	DIVISION	DRAWING	FILE		
19	48	4042B/ 14	5PM 1000		

DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA93 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGE 4. REFER TO THE U.S. AMC DRAWING 19-48-4042A/15-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA93 SERIES CONTAINER.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX CARS, FOR SHIPMENTS IN BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
- D. **CAUTION:** METAL PROPELLING CHARGE CONTAINERS THAT OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL SIDEWALLS OR END WALLS OF BOX CARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOX CARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 61 FOR GUIDANCE.
- E. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHARTS ON PAGE 36 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.
- 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 BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 62 FOR GUIDANCE.
- H. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. **CAUTION:** DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.
- K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED UNITS OF PROPELLING CHARGES, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.
- L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- M. **NOTICE:** A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN IN TO 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. **NOTE:** STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 5 FOR GUIDANCE.
- P. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.
- Q. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. **NOTICE:** A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- R. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

- S. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "M" ABOVE.
- T. **NOTICE:** WHEN POSITIONING 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.
- 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 "TYPICAL STRUT BRACING" DETAIL ON PAGE 64. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

(CONTINUED ON PAGE 3)

MATERIAL SPECIFICATIONS

LUMBER	SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
NAILS	COMMON, FED SPEC FF-N-105.
STRAPPING, STEEL	ASTM D 3953; PLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.
STRAP SEAL	ASTM D 3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.
STRAP, STAPLE	COMMERCIAL GRADE.
PLYWOOD	GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE G-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-P-320; TYPE SF, CLASS DOMESTIC, GRADE 175 CR STRONGER; OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

GENERAL NOTES

(GENERAL NOTES FOR CONVENTIONAL TYPE BOX CARS CONTINUED)

- V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL 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 64 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- W. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

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

GENERAL NOTES

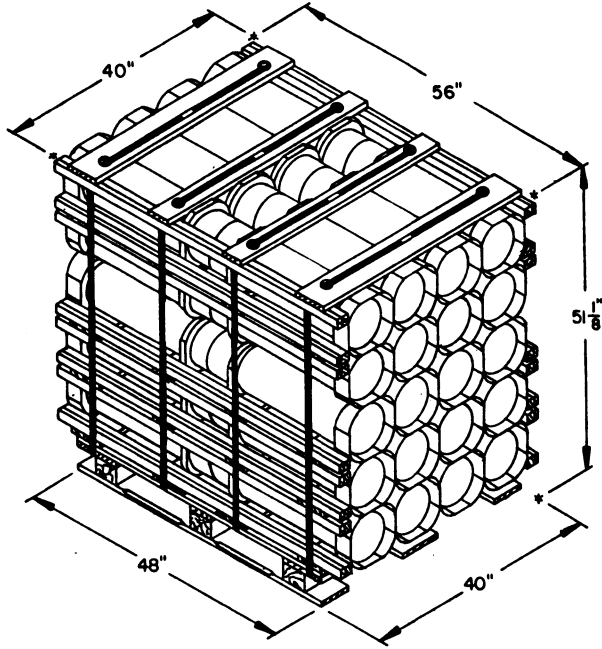
(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- AA. **CAUTION:** FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN "THE OFFICIAL RAILWAY EQUIPMENT REGISTER", WILL BE RBL, XL, XLI.
- BB. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVING IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF PROPELLING CHARGES. **NOTICE:** ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.
- CC. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 70 FOR GUIDANCE. IF THE BACK OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ON PAGE 70, 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

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(GENERAL NOTES CONTINUED)

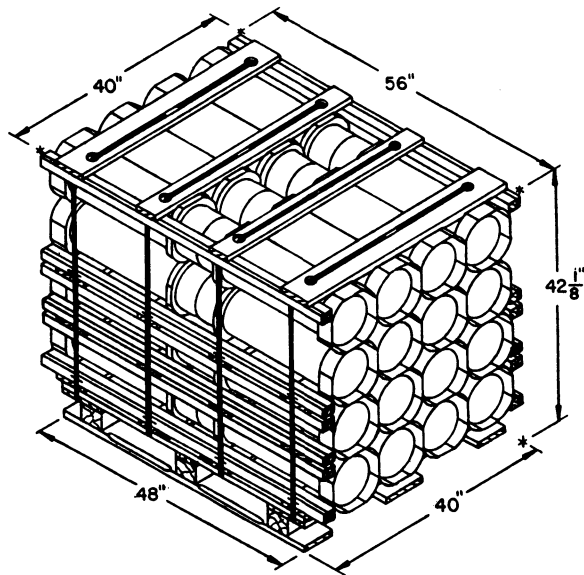
- LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.
- EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY 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 69.
- 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 LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
- ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 42 AND 43.
 - 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 OF PAGES 38 THRU 41 FOR GUIDANCE.
 - AT LOCATION (5) WHERE K-BRACES MIGHT NORMALLY BE USED IN A LOAD IN A CONVENTIONAL CAR, LOAD DIVIDER BULKHEADS CAN BE POSITIONED. LOADING CAN THEN CONTINUE TOWARD THE CENTER OF THE CAR FROM EACH INSTALLED LOAD DIVIDER BULKHEAD, IN EVEN LAYERS WHICH ARE ONE OR MORE LESS IN HEIGHT THAN THE LOAD IN THE ENDS OF THE CAR. INSTALL CENTER GATES, STRUTS AND GATE HOLD DOWNS AS SHOWN IN THE APPLICABLE CONVENTIONAL BOX CAR DRAWING HEREIN, TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.
 - ONE OR MORE UNITS CAN BE POSITIONED IN CONTACT WITH A LOAD DIVIDER BULKHEAD ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 56, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 52.
- GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



PALLET UNIT (BASIC HEIGHT)

CONTAINER ----- 40 EACH @ 48 LBS (APPROX)
 CUBE ----- 66.3 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 2,137 LBS (APPROX)

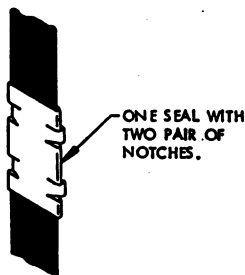
REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES.



PALLET UNIT (DECREASED HEIGHT)

CONTAINER ----- 32 EACH @ 48 LBS (APPROX)
 CUBE ----- 54.6 CUBIC FEET (APPROX)
 GROSS WEIGHT ----- 1,723 LBS (APPROX)

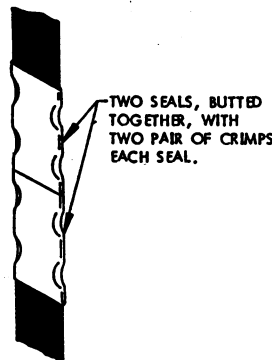
REFER TO PAGES 20 THRU 29 FOR OUTLOADING PROCEDURES.



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

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



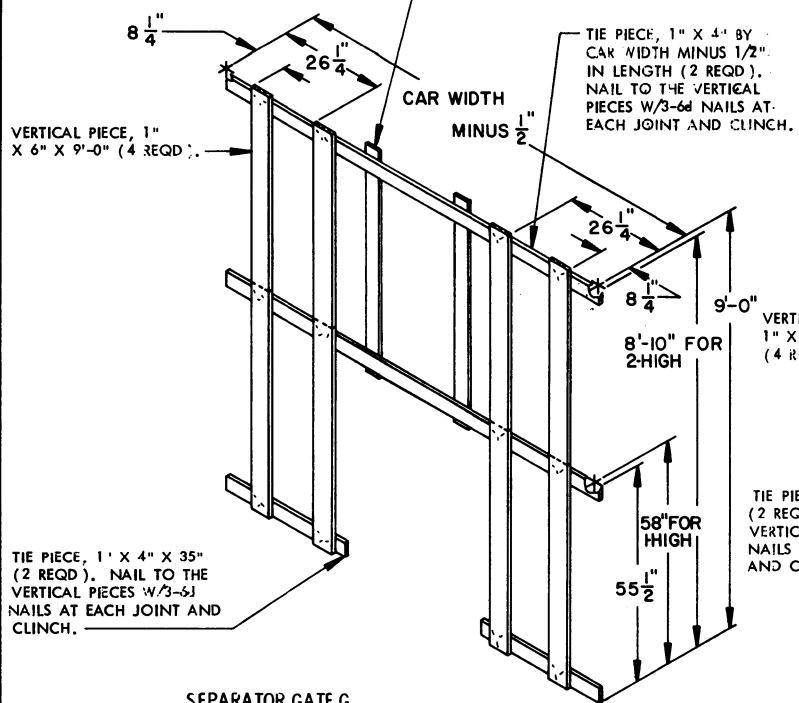
TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

STRAP JOINT B

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

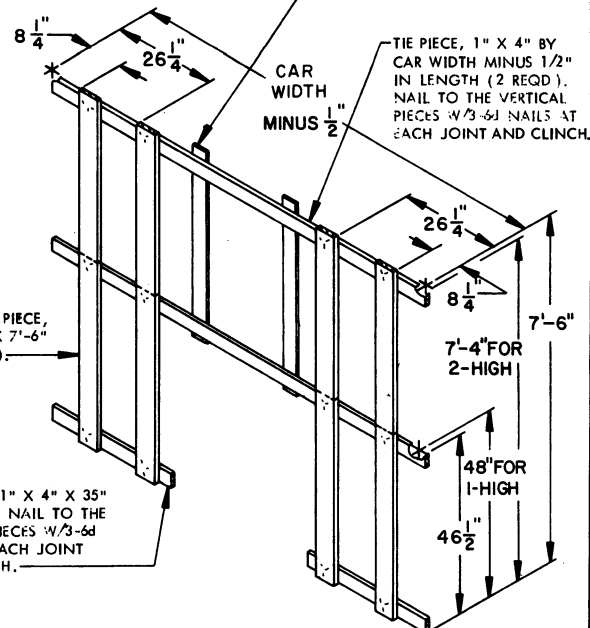
STOP PIECE, PIECE MARKED ④ ON PAGE 8. SEE SPECIAL NOTE 7 ON PAGE 9.

STOP PIECE, PIECE MARKED ④ ON PAGE 22. SEE SPECIAL NOTE 7 ON PAGE 23.



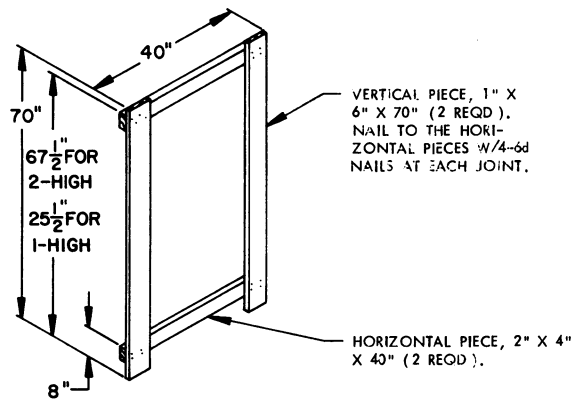
SEPARATOR GATE G

SEE SPECIAL NOTE 17 ON PAGE 9.



SEPARATOR GATE H

SEE SPECIAL NOTE 17 ON PAGE 23.

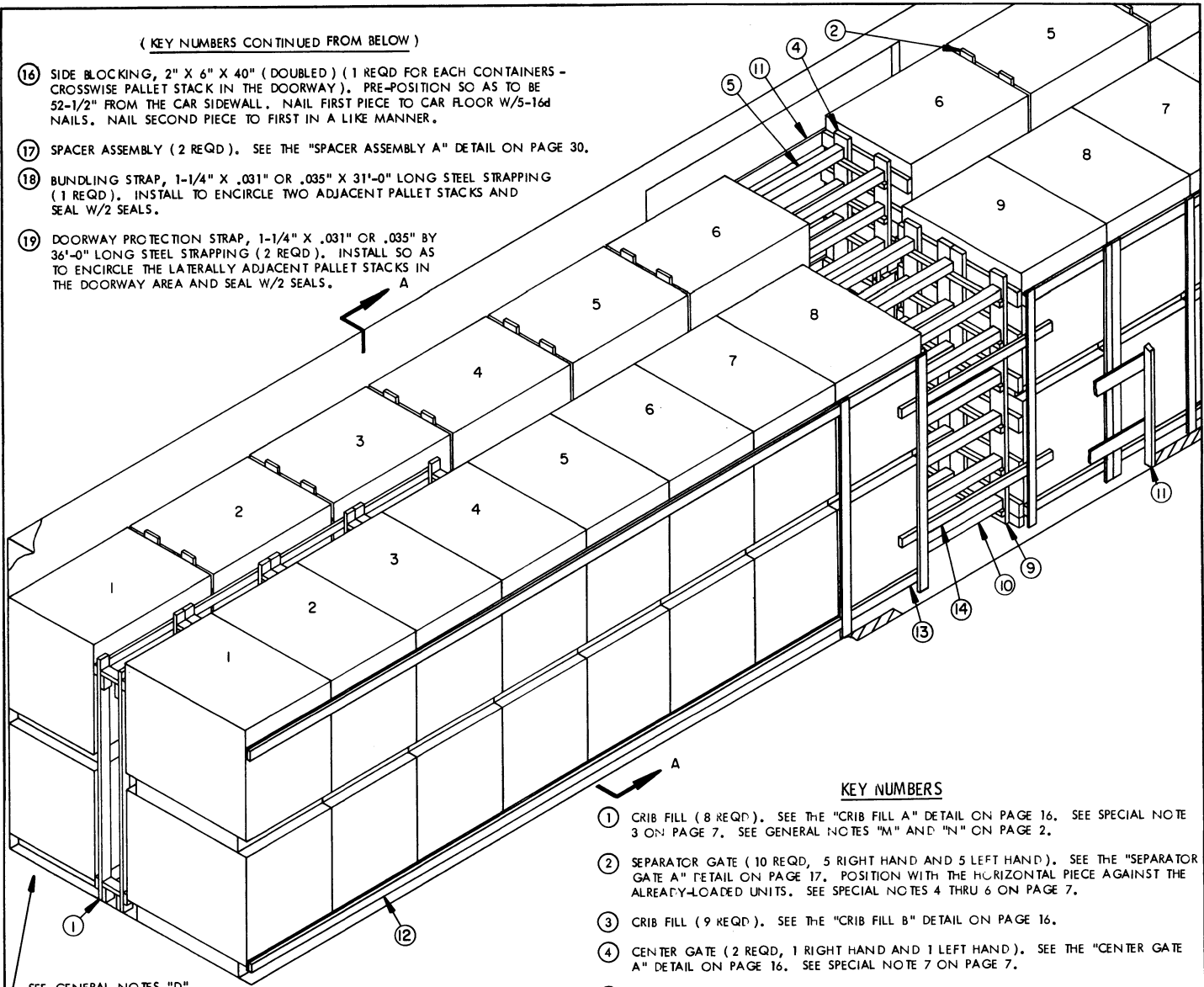


SIDE FILL ASSEMBLY B

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 20.

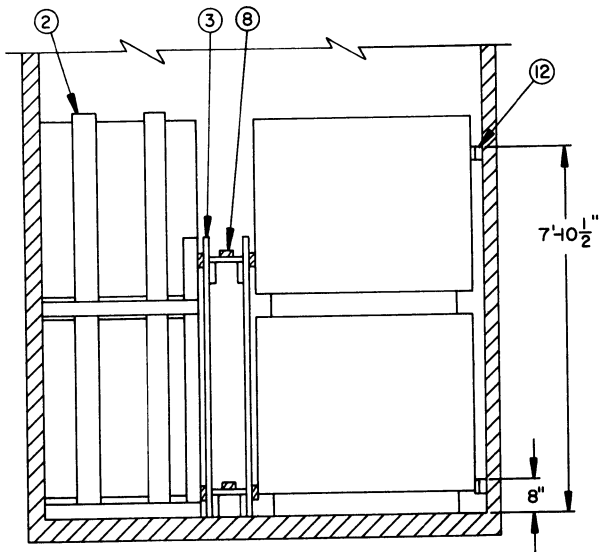
(KEY NUMBERS CONTINUED FROM BELOW)

- ⑮ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CONTAINERS - CROSSWISE PALLET STACK IN THE DOORWAY). PRE-POSITION SO AS TO BE 52-1/2" FROM THE CAR SIDEWALL. NAIL FIRST PIECE TO CAR FLOOR W/5-16d NAILS. NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.
- ⑯ SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 30.
- ⑰ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-0" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE TWO ADJACENT PALLET STACKS AND SEAL W/2 SEALS.
- ⑱ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET STACKS IN THE DOORWAY AREA AND SEAL W/2 SEALS.



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

ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

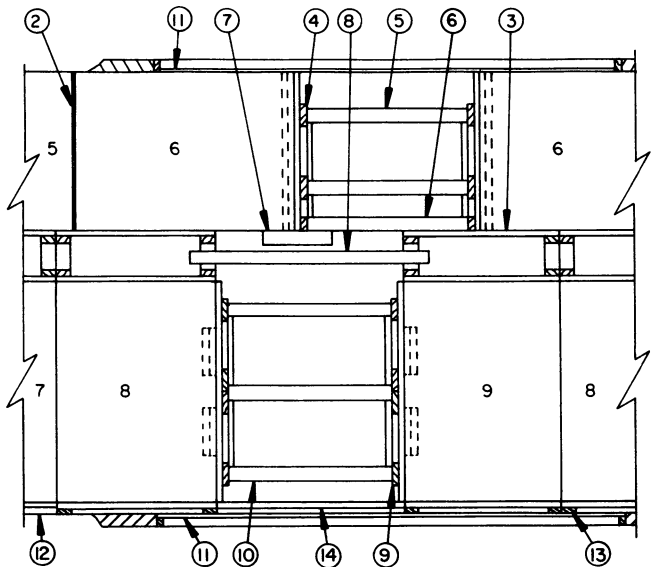
- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 3 ON PAGE 7. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② SEPARATOR GATE (10 REQD, 5 RIGHT HAND AND 5 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 7.
- ③ CRIB FILL (9 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16.
- ④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 7 ON PAGE 7.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (12 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- ⑥ STRUT, 2" X 4" BY CUT-TO-FIT (REF: 42") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED ④ W/2-12d NAILS AT EACH END.
- ⑦ SIDE BLOCKING FOR CENTER GATE "A", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 7.
- ⑧ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 60") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 7.
- ⑨ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL AND THE ACCOMPANYING RABBIT NOTE ON PAGE 17.
- ⑩ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (18 REQD). TOENAIL TO PIECES MARKED ⑨ W/2-16d NAILS AT EACH END.
- ⑪ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 7.
- ⑫ SIDE FILL, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (4 EACH REQD). NAIL THE 2" X 4" PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24".

(CONTINUED ON PAGE 7)

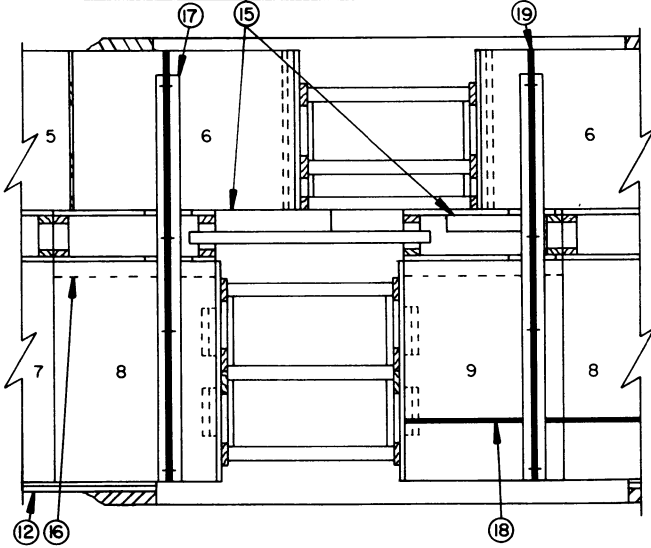
KEY NUMBERS FOR BOXCARS EQUIPPED WITH PLUG DOORS

- ⑮ SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD FOR EACH CONTAINERS-LENGTH-WISE PALLET STACK IN THE DOORWAY). POSITION TO EXTEND 6" PAST THE VERTICAL PIECE ON CENTER GATE "A". NAIL THE FIRST PIECE TO THE FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(KEY NUMBERS CONTINUED UPPER LEFT)



PARTIAL PLAN VIEW OF BOXCAR EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW OF BOXCAR EQUIPPED WITH PLUG DOORS

(KEY NUMBERS CONTINUED FROM PAGE 6)

NAIL THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 24". SEE SPECIAL NOTES 12 THRU 14 ON PAGE 9.

13 SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL ON PAGE 17.

14 SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF. 60") (2 REQD). POSITION AT 24-1/2" AND 6'-5-1/2" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED 13 W/4-6d NAILS AT EACH JOINT.

(CONTINUED ON PAGE 6)

SPECIAL NOTES:

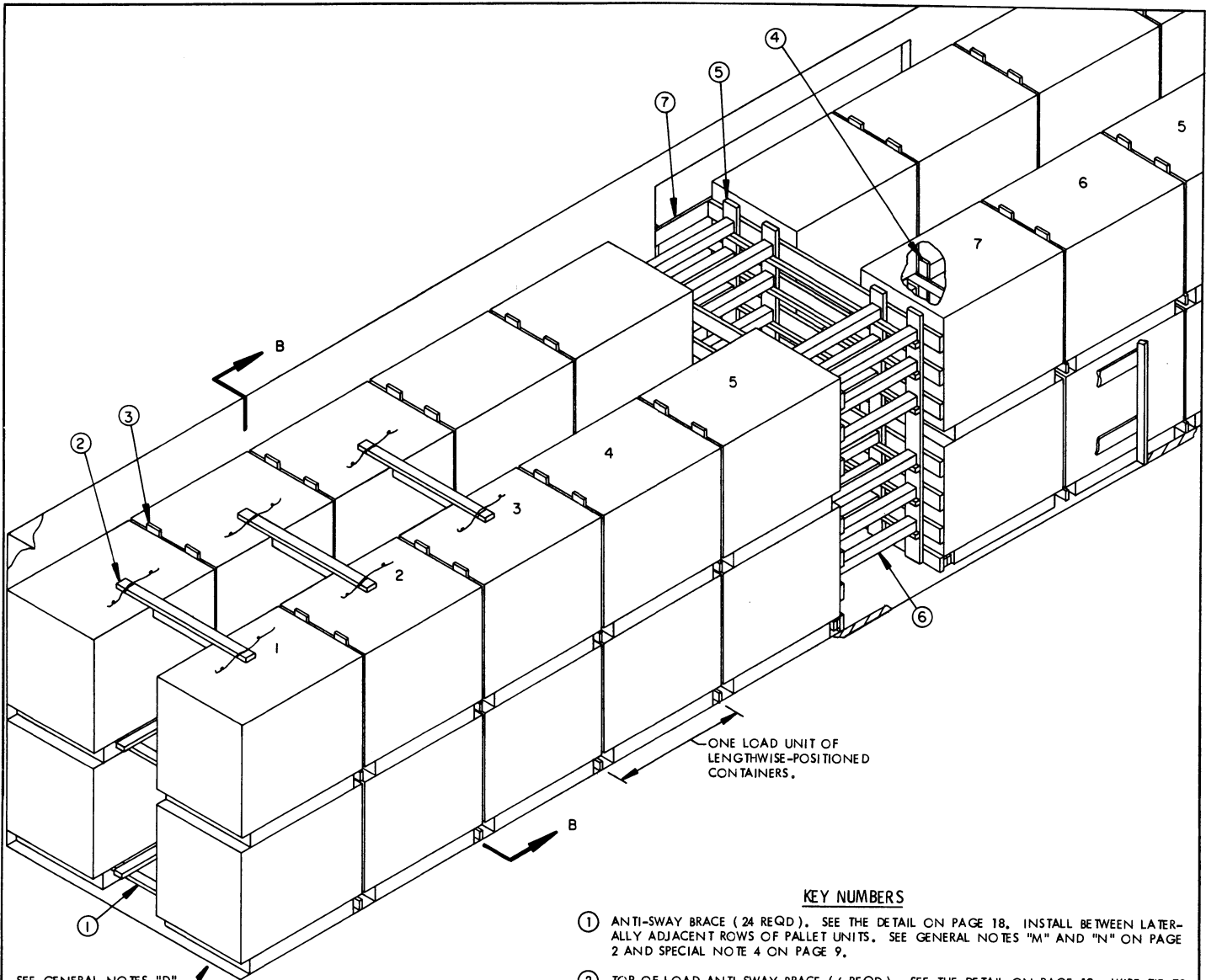
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 6. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 102,576 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 81,206 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-HIGH LOADS FROM 40" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.
6. IF A DIFFERENT SIZE CAR IS USED, ALL SEPARATOR GATES, PIECES MARKED ②, WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
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 63 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑩ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" FOR GUIDANCE. NOTE THAT THE VERTICAL PIECES AND BOTTOM STRUT SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ③, IN THE DOORWAY MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF SOME OF THE PIECES SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING. ALSO NOTE THAT THE CENTER GATES "A" MUST BE WIRE TIED TO PIECE MARKED ⑧ OR THE ADJACENT CRIB FILL, AS APPLICABLE TO PREVENT DISPLACEMENT. NOTE: TWO DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY A BUNDLING STRAP, PIECE MARKED ⑪. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET LENGTH OR WIDTH. BATTENS WILL BE REQUIRED UNDER THE OUTSIDE BELL ENDS OF THE CONTAINERS CROSSWISE STACKS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 68.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 39. TWO (2) PALLET UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE CROSSWISE STACK NO. 9 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED ⑩, AND AN ADDITIONAL PIECE MARKED ⑦ WILL BE REQUIRED FOR THE OTHER CENTER GATE MARKED ④. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 52 AND 53.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED. REFER TO PAGE 57 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 58 AND 60 FOR CROSSWISE UNITS.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.

(CONTINUED ON PAGE 9)

LOAD AS SHOWN

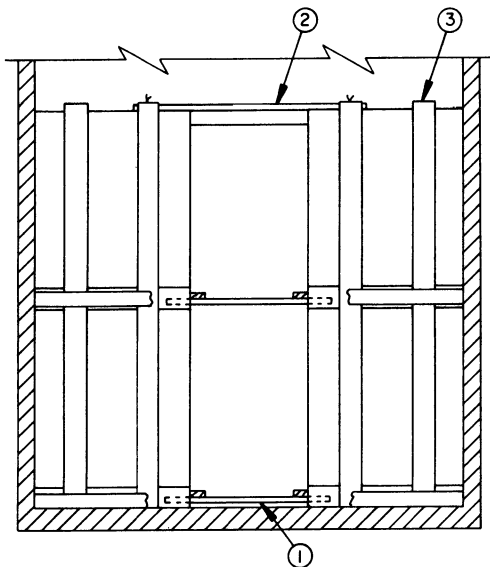
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	58	123,946 LBS
DUNNAGE		2,589 LBS
TOTAL WEIGHT		126,535 LBS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	241	81
1" X 6"	302	151
2" X 2"	78	26
2" X 3"	49	25
2" X 4"	977	652
2" X 6"	203	203
4" X 4"	106	142
NAILS	NO. REQD	POUNDS
6d (2")	340	2
10d (3")	1,460	22-1/2
12d (3-1/4")	40	3/4
16d (3-1/2")	128	3



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

ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

- ① ANTI-SWAY BRACE (24 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 9.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. SEE SPECIAL NOTE 5 ON PAGE 9.
- ③ SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 6, 8, AND 17 ON PAGE 9.
- ④ STOP PIECE, 1" X 4" X 60" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 9.
- ⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTES 9, 10, AND 13 ON PAGE 9.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- ⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 9.

(SPECIAL NOTES CONTINUED)

13. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES SHOWN ON PAGE 68 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑦, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CENTER GATE, TWO (2) DOUBLED 2" X 6" X 12" PIECES POSITIONED ON THE BOTTOM HORIZONTAL PIECE OF THE TOP LAYER. STOP PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE OPENING.
14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 36 THRU 60 FOR GUIDANCE.
15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 57 FOR SHIPPING GUIDANCE.
16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 5. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

(SPECIAL NOTES CONTINUED FROM PAGE 7)

12. THE SIDE FILL, PIECE MARKED ⑫ ON PAGE 6, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑬ ON PAGE 6, MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑫.
13. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 7 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ⑫, TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑬, AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ⑭.
14. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, THE SIDE FILL, PIECE MARKED ⑫ ON PAGE 6, WILL BE DOUBLED 2" X 4" MATERIAL IN LIEU OF 1" X 4" AND 2" X 4" MATERIAL AND THE SIDE FILL ASSEMBLY, PIECE MARKED ⑬, WILL BE CONSTRUCTED WITH 2" X 4" VERTICAL PIECES IN LIEU OF 1" X 6".

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 8. A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,480 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,384 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 10'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 68 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 12.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
6. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
7. SEPARATOR GATES IN THE DOORWAY OF CARS EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 62 FOR CONSTRUCTION GUIDANCE.
9. CENTER GATE "C" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 63 FOR GUIDANCE.
10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 16. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 63. OMIT THE STOP PIECES FROM "CENTER GATE A".
11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 65 FOR GUIDANCE.
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 68 FOR GUIDANCE. SEE SPECIAL NOTE 13.

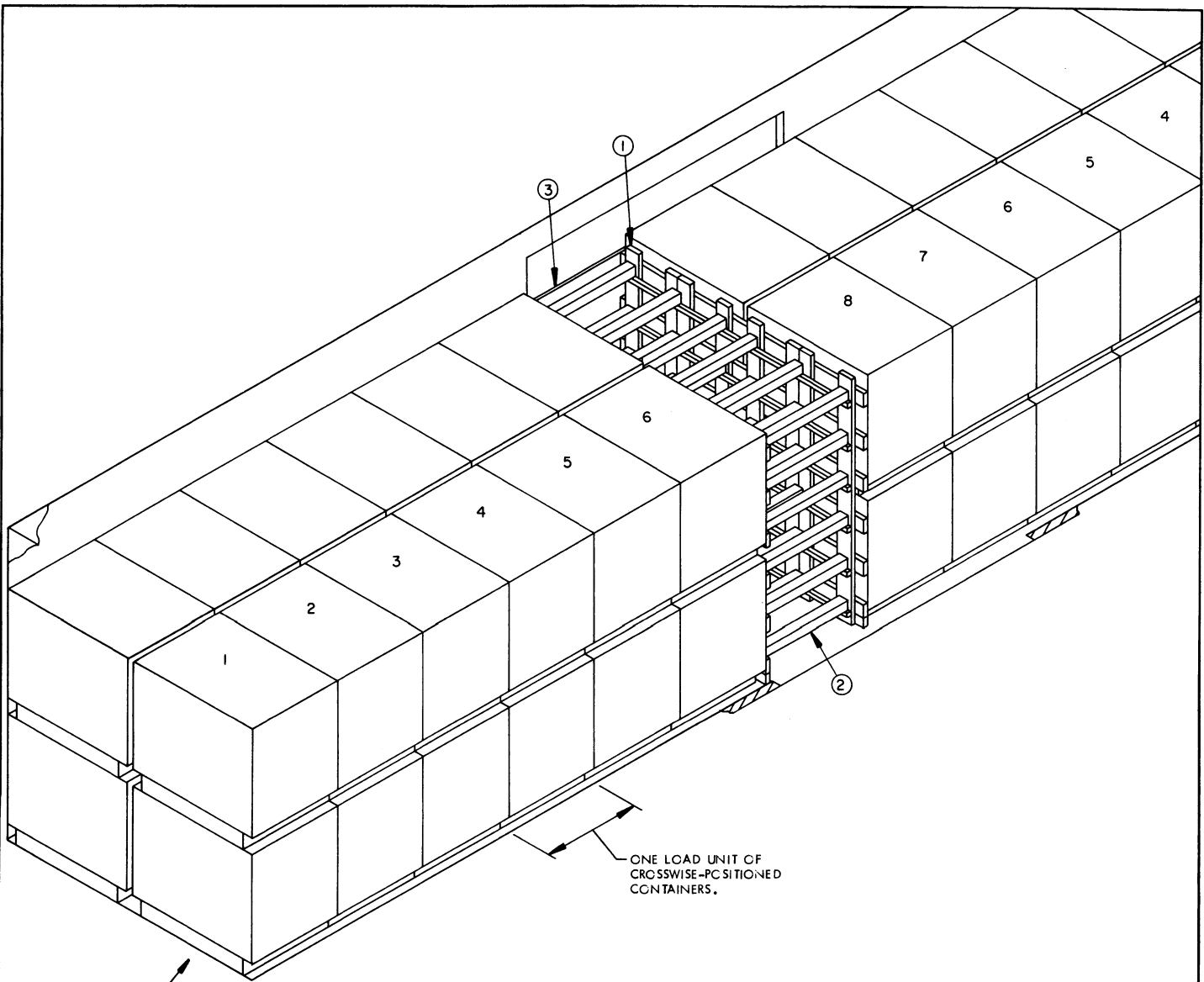
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BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	193	65
1" X 6"	427	214
2" X 2"	96	32
2" X 3"	32	16
2" X 4"	381	254
2" X 6"	189	189
4" X 4"	85	114
NAILS	NO. REQD	POUNDS
6d (2")	300	2
10d (3")	592	9-1/4
12d (3-1/4")	62	1-1/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ----- 65' REQD ----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	48 -----	102,576 LBS
DUNNAGE -----	-----	1,784 LBS
TOTAL WEIGHT -----		104,360 LBS

PALLET UNIT (BASIC HEIGHT) 48-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR



SEE GENERAL NOTE "G" ON PAGE 2.

ISOMETRIC VIEW

ONE LOAD UNIT OF CROSSWISE-PCOSITIONED CONTAINERS.

KEY NUMBERS

- ① CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTES 5 THRU 8 ON PAGE 11.
- ② STRUT, 4" X 4" BY CUT-TO-FIT (REF: 40") (36 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- ③ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 11.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. NARROWER CARS (9'-5" MINIMUM), AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 10. A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 94,028 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-6" WIDE CAR IS AVAILABLE, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 145,316 POUNDS CAN BE LOADED, LOAD LIMIT OF THE CAR PERMITTING.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED.
5. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG DOORS OR COMBINATION PLUG AND SLIDING DOORS, THE CENTER-OF-CAR END OF THE FILL PIECES AND THE ADJACENT VERTICAL PIECES OF CENTER GATE "D" MUST BE RABBETED 1-1/2" WIDE BY 3-1/2" HIGH. THIS WILL PROVIDE CLEARANCE FOR THE NAILED SIDE BLOCKING SPECIFIED BY THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 68 DURING THE NORMAL LONGITUDINAL SHIFTING OF THE LOAD.
6. CENTER GATE "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 63 FOR GUIDANCE.
7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE D", SHOWN AS PIECE MARKED ① IN THE LOAD ON PAGE 10, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 17. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "PIECE APPLICATION" DETAIL ON PAGE 63.
8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "D", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 65 FOR GUIDANCE.
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 68 FOR GUIDANCE.
10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 36 THRU 60 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 58 AND 60 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
13. A CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 56-UNIT OFFSET LOAD MUST HAVE A LOAD LIMIT OF AT LEAST 122,000 POUNDS; AN EVENLY DISTRIBUTED 56-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 120,700 POUNDS OR GREATER. A 44-UNIT LOAD IN A 40'-6" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 95,900 POUNDS. A 68-UNIT LOAD IN A 60'-8" LONG CAR WILL REQUIRE A LOAD LIMIT OF 147,700 POUNDS OR GREATER.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	110	37
2" X 3"	41	21
2" X 6"	247	247
4" X 4"	120	160
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	552	8-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	150	3-1/2

LOAD AS SHOWN

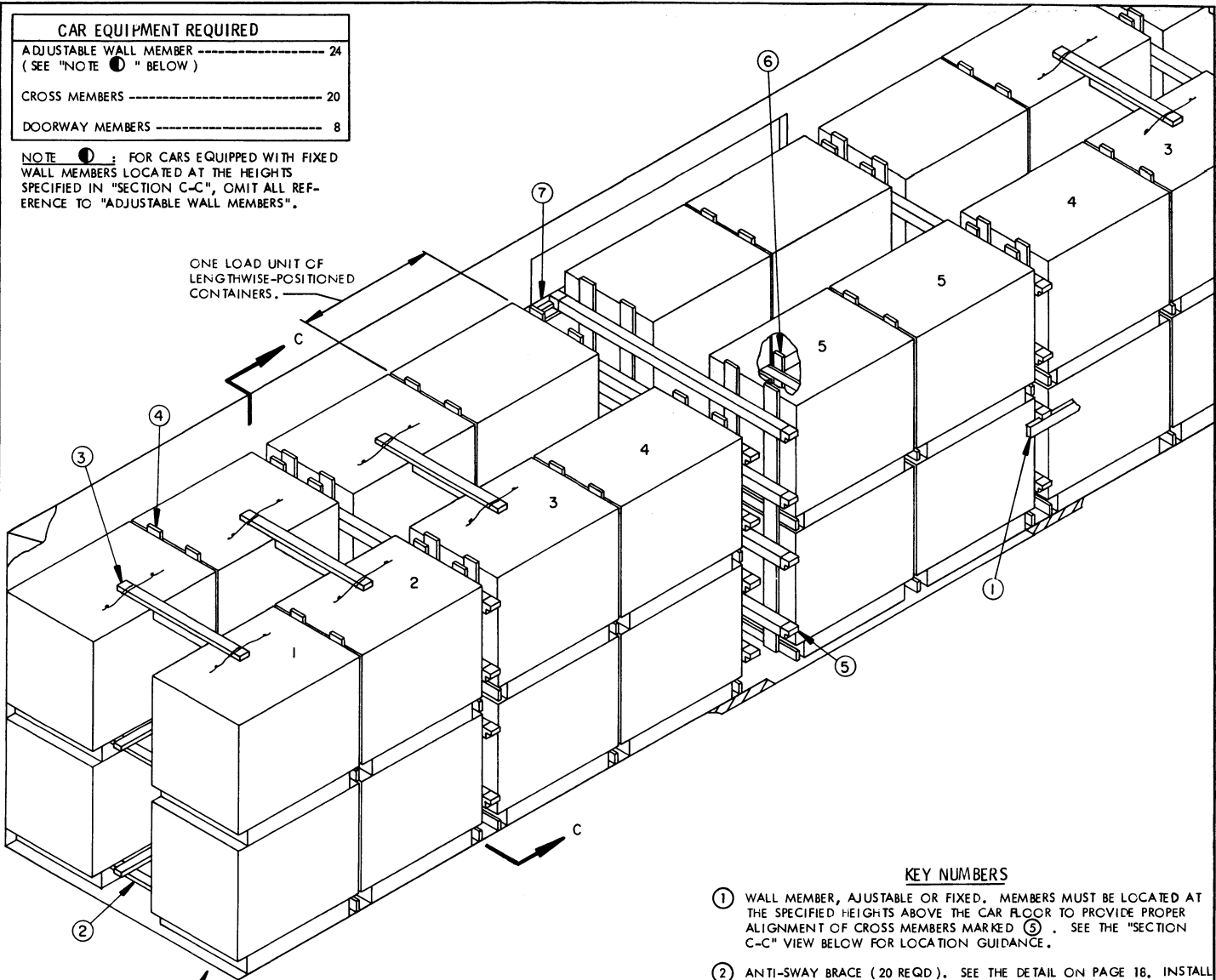
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	56 -----	119,672 LBS
DUNNAGE -----		982 LBS
TOTAL WEIGHT -----		120,654 LBS

PALLET UNIT (BASIC HEIGHT) 56-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE CONVENTIONAL BOXCAR

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	24
(SEE "NOTE 1" BELOW)	
CROSS MEMBERS -----	20
DOORWAY MEMBERS -----	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".

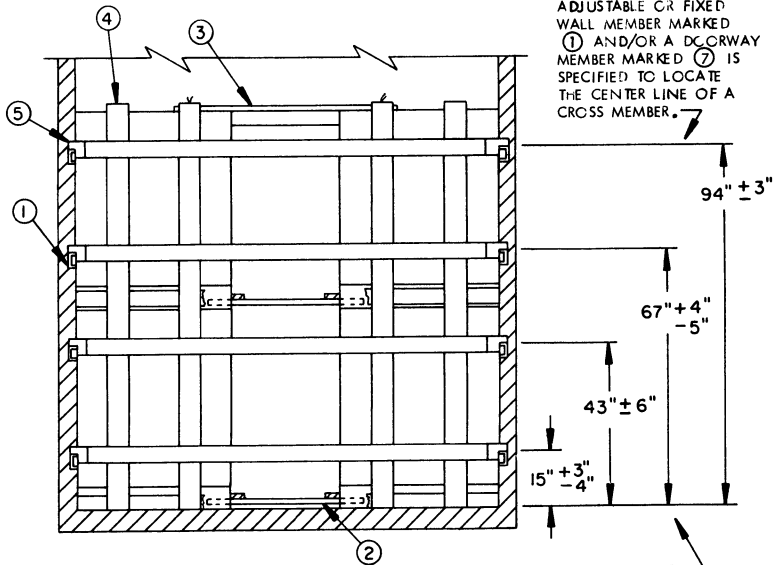


ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.

ISOMETRIC VIEW

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

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



SECTION C-C

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 C-C" VIEW BELOW FOR LOCATION GUIDANCE.
- ② ANTI-SWAY BRACE (20 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. SEE SPECIAL NOTE 4 ON PAGE 13.
- ④ SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17, AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.
- ⑤ CROSS MEMBER. (20 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- ⑥ STOP PIECE, 1" X 4" X 60" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ④ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 13.
- ⑦ DOORWAY MEMBER (8 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE.

PALLET UNIT (BASIC HEIGHT)

40-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 BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 12. A MAXIMUM OF THIRTY-TWO (32) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,384 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.
3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. 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 62 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 34 AND 35 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.

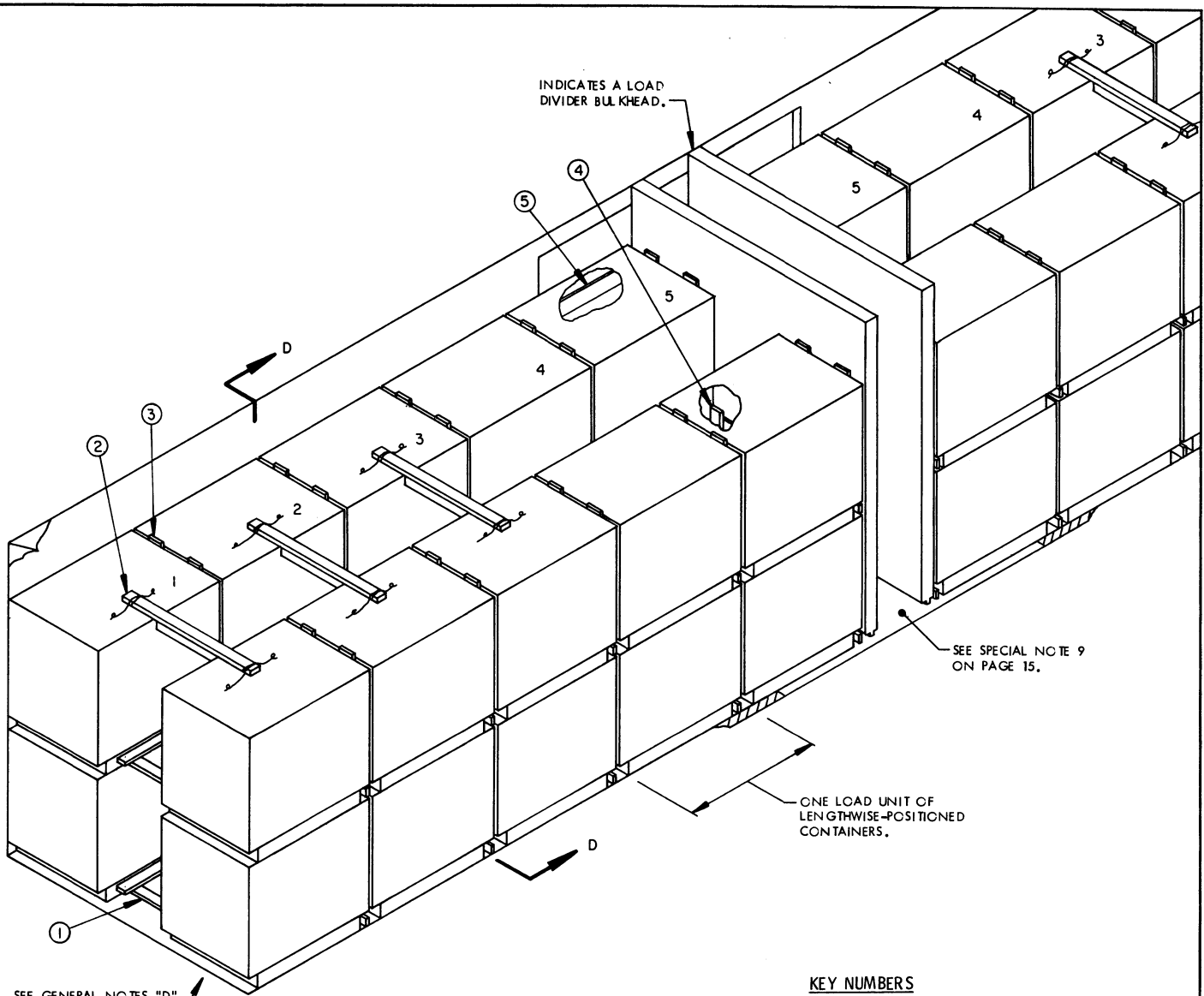
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	253	85
1" X 6"	451	226
2" X 4"	307	205
NAILS	NO. REQD	POUNDS
6d (2")	336	2
10d (3")	240	3-3/4
12d (3-1/4")	30	1/2
WIRE, NO. 14 GAGE ----- 65' REQD ----- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	40 -----	85,480 LBS
DUNNAGE -----	-----	1,040 LBS
TOTAL WEIGHT -----		86,520 LBS

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

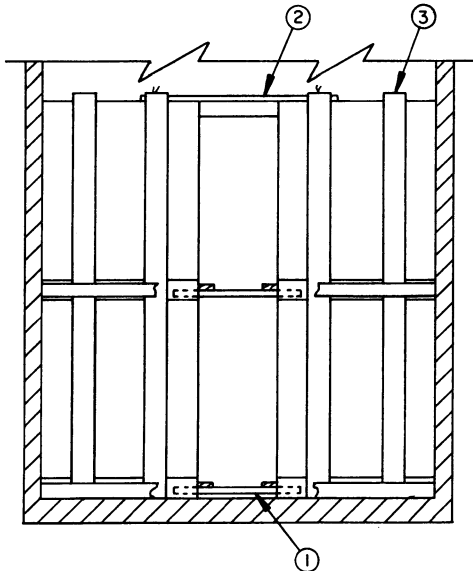


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (20 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 15.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. SEE SPECIAL NOTE 4 ON PAGE 15.
- ③ SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 15.
- ④ STOP PIECE, 1" X 4" X 60" (4 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 6 ON PAGE 15.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 15.



SECTION D-D

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 36 THRU 44 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 57 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
13. IF THE PALLET UNITS ARE LOADED WITH THE CONTAINERS CROSSWISE IN THE CAR, REFER TO THE LOAD ON PAGE 28 AND THE SPECIAL NOTES ON PAGE 29 FOR GUIDANCE.
14. FOR SHIPMENT OF A 68-UNIT CROSSWISE LOAD, A 60'-8" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 148,500 POUNDS. A 56-UNIT CROSSWISE LOAD IN A 50'-6" LONG CAR LOADED IN AN OFFSET LOADING PATTERN WILL REQUIRE A LOAD LIMIT OF AT LEAST 126,800 POUNDS; A 56-UNIT EVENLY DISTRIBUTED LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 119,900 POUNDS OR GREATER. A 40'-6" LONG CAR FOR SHIPMENT OF A 44-UNIT LOAD MUST HAVE A LOAD LIMIT OF 96,600 POUNDS OR GREATER.

SPECIAL NOTES:

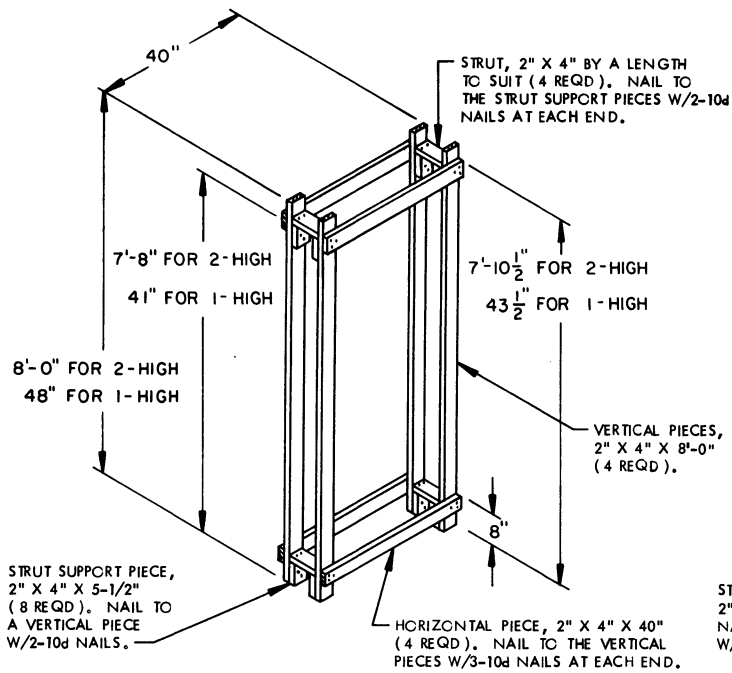
1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDE DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 14. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 102,576 POUNDS, CAN BE PLACED IN AN 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-TWO (32) UNITS CAN BE LOADED IN AN 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,384 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF CARS 9'-5" OR 9'-6" WIDE ARE AVAILABLE, THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 10 MAY BE EMPLOYED. THEN SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 145,316 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FIFTY-SIX (56) UNITS CAN BE LOADED IN 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 119,672 POUNDS, AND FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 94,028 POUNDS.
3. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 68 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (3), NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACES IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES OF THE TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. 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 (3), SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (4). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.
7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 62 FOR CONSTRUCTION GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (5) IN THE LOAD ON PAGE 14, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 68 FOR GUIDANCE IF THE PALLET UNITS ARE POSITIONED AS SHOWN ON PAGE 14. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON THAT PAGE IF THE PALLET UNITS ARE POSITIONED CROSSWISE.
9. A STRUT ASSEMBLY 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' OR LONGER CARS.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	203	68
1" X 6"	427	214
2" X 3"	32	16
2" X 4"	315	210
NAILS	NO. REQD	POUNDS
6d (2")	312	2
10d (3")	240	3-3/4
12d (3-1/4")	62	1-1/4
WIRE, NO. 14 GAGE ----- 65' REQD ----- 1 LB		

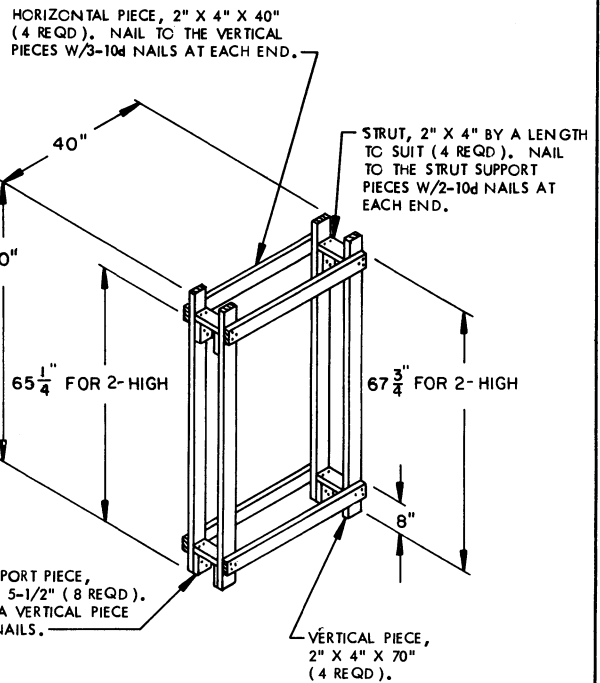
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	40 -----	85,480 LBS
DUNNAGE -----	-----	1,024 LBS
TOTAL WEIGHT -----		86,504 LBS



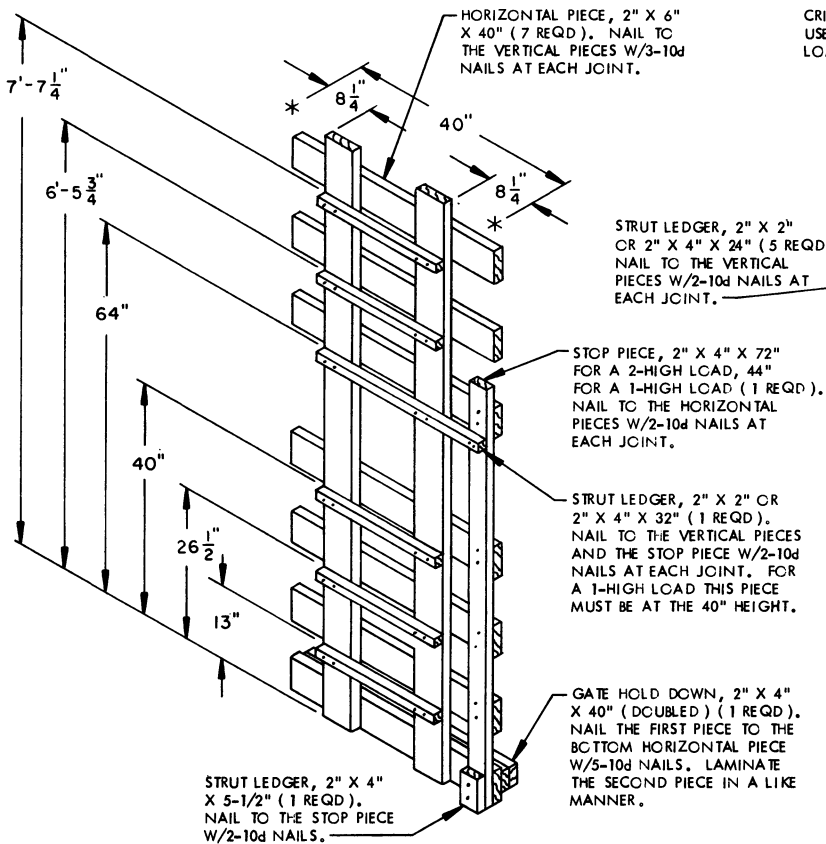
CRIB FILL A

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



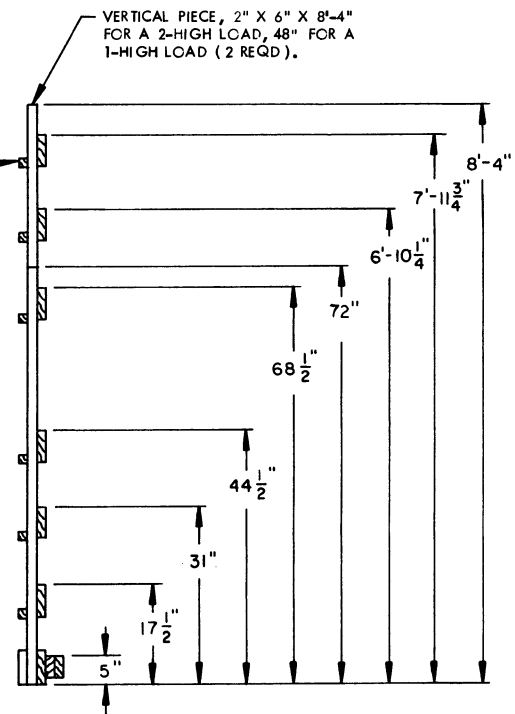
CRIB FILL B

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



CENTER GATE A

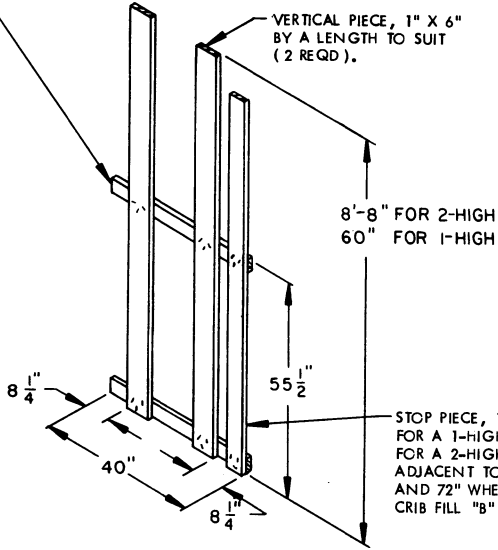
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



END VIEW

DETAILS FOR PALLET UNIT (BASIC HEIGHT)

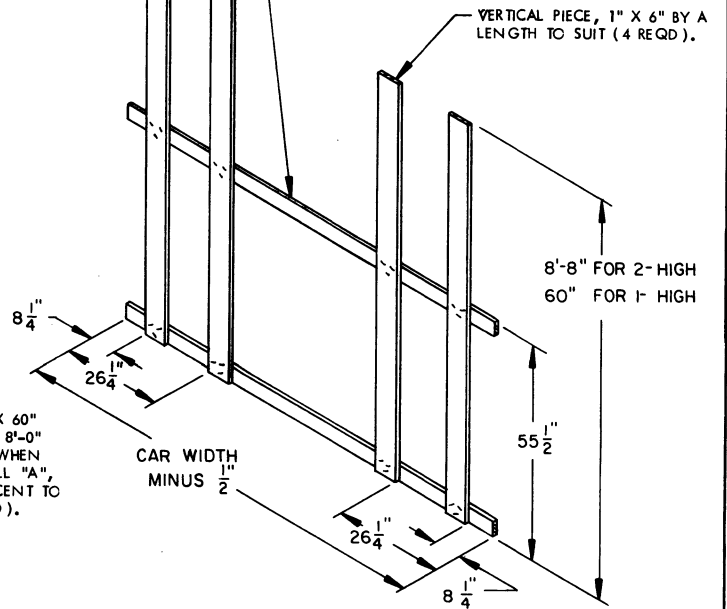
HORIZONTAL PIECE, 1" X 4" X 40" (2 REQD).
NAIL TO THE VERTICAL PIECES AND THE STOP
PIECE W/3-6d NAILS AT EACH JOINT AND CLINCH.



SEPARATOR GATE A

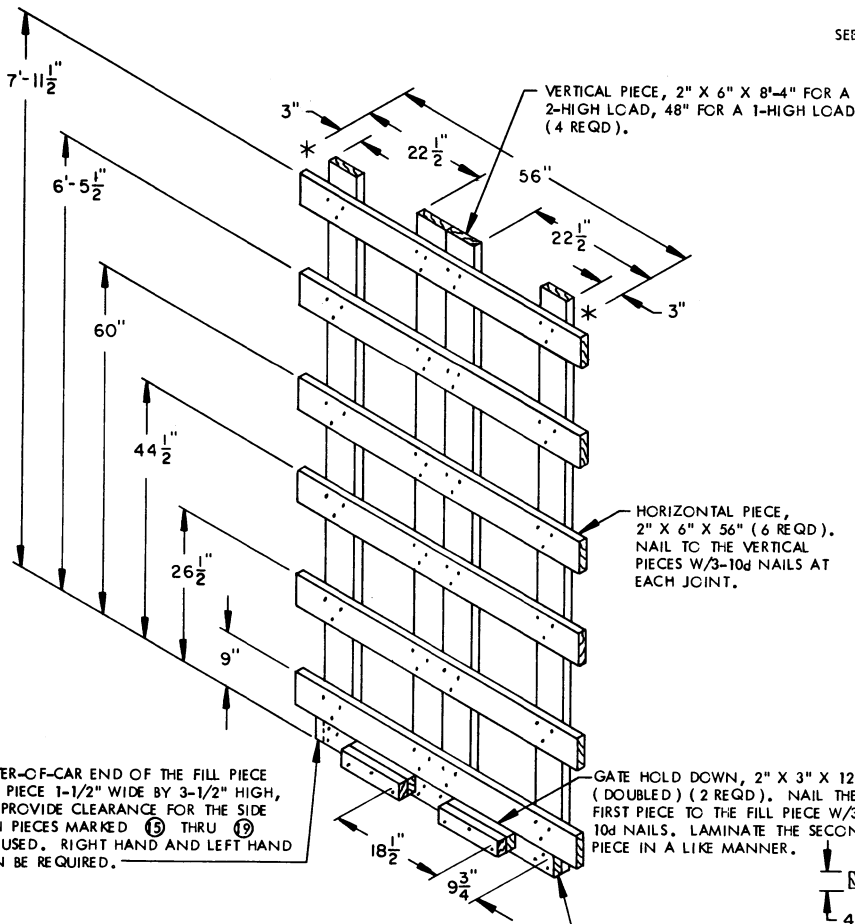
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.

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



SEPARATOR GATE B

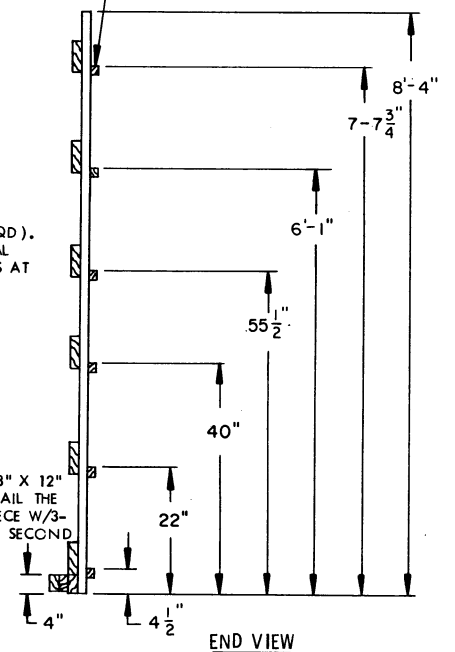
SEE SPECIAL NOTE 17 ON PAGE 9.



CENTER GATE B

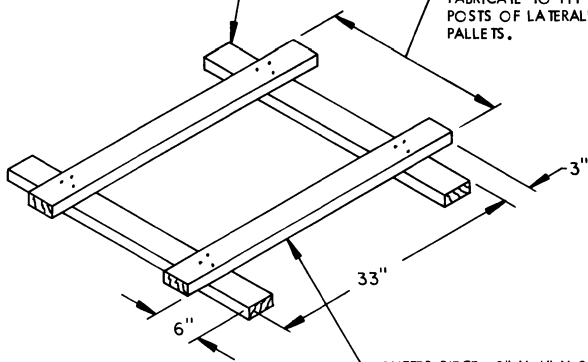
RIGHT HAND AND LEFT HAND GATES MAY BE REQUIRED. SEE THE "RABBET" LEADER ABOVE.

STRUT LEDGER, 2" X 2" OR 2" X 4" X 52" (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



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

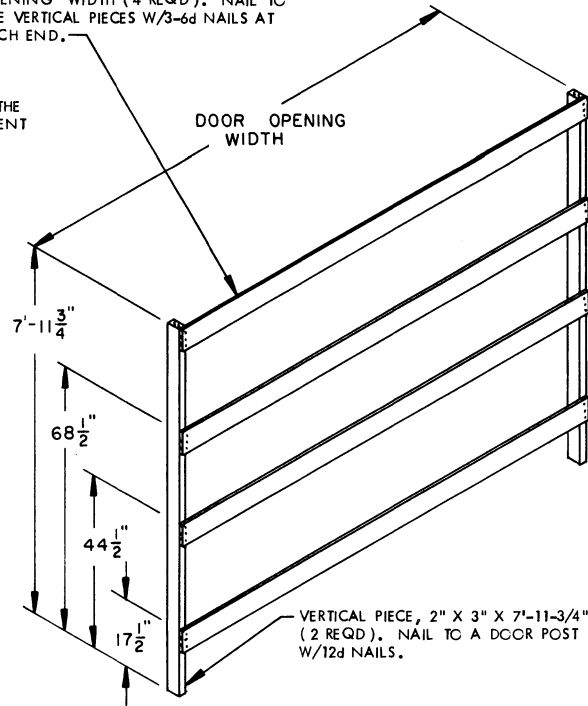
FABRICATE TO FIT BETWEEN THE POSTS OF LATERALLY ADJACENT PALLETS.



ANTI-SWAY BRACE

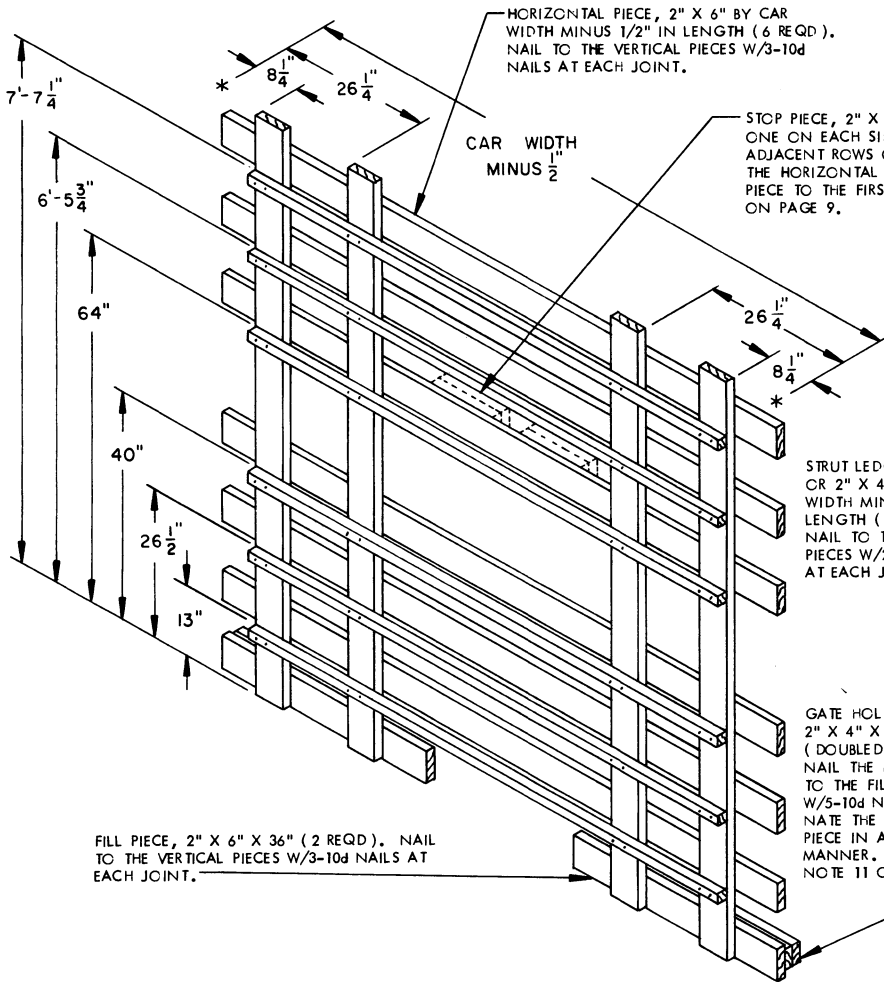
IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.

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



DOORWAY PROTECTION A

VERTICAL PIECE, 2" X 3" X 7'-11-3/4" (2 REQD). NAIL TO A DOOR POST W/12d NAILS.



CENTER GATE C

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

DETAILS FOR PALLET UNIT (BASIC HEIGHT)

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

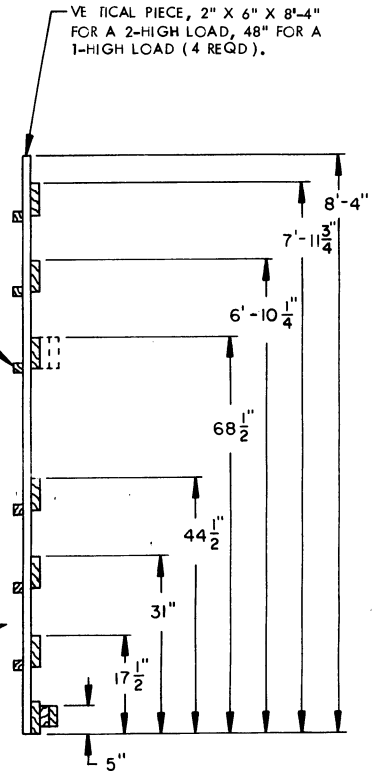
STOP PIECE, 2" X 6" X 12" (DOUBLED) (2 REQD). POSITION ONE ON EACH SIDE OF THE VOID BETWEEN TWO LATERALLY ADJACENT ROWS OF PALLET UNITS. NAIL THE FIRST PIECE TO THE HORIZONTAL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 13 ON PAGE 9.

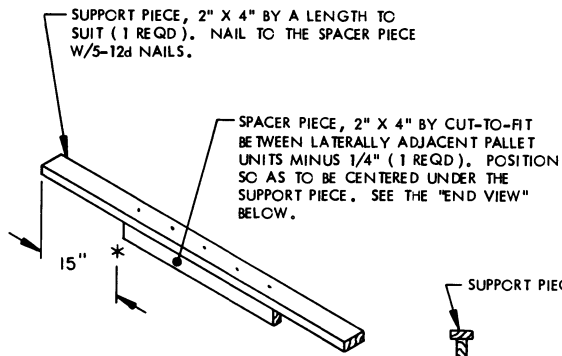
STRUT LEDGER, 2" X 2" OR 2" X 4" BY CAR WIDTH MINUS 15" IN LENGTH (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 4" X 18" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE FILL PIECE W/5-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 11 ON PAGE 9.

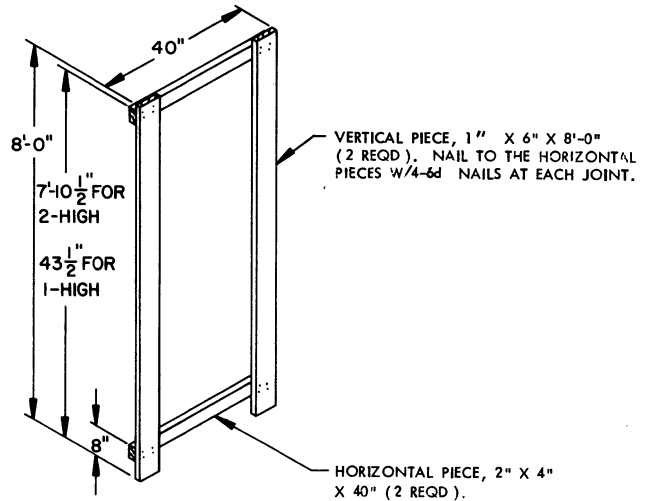
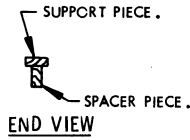
FILL PIECE, 2" X 6" X 36" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" X 8'-4" FOR A 2-HIGH LOAD, 48" FOR A 1-HIGH LOAD (4 REQD).





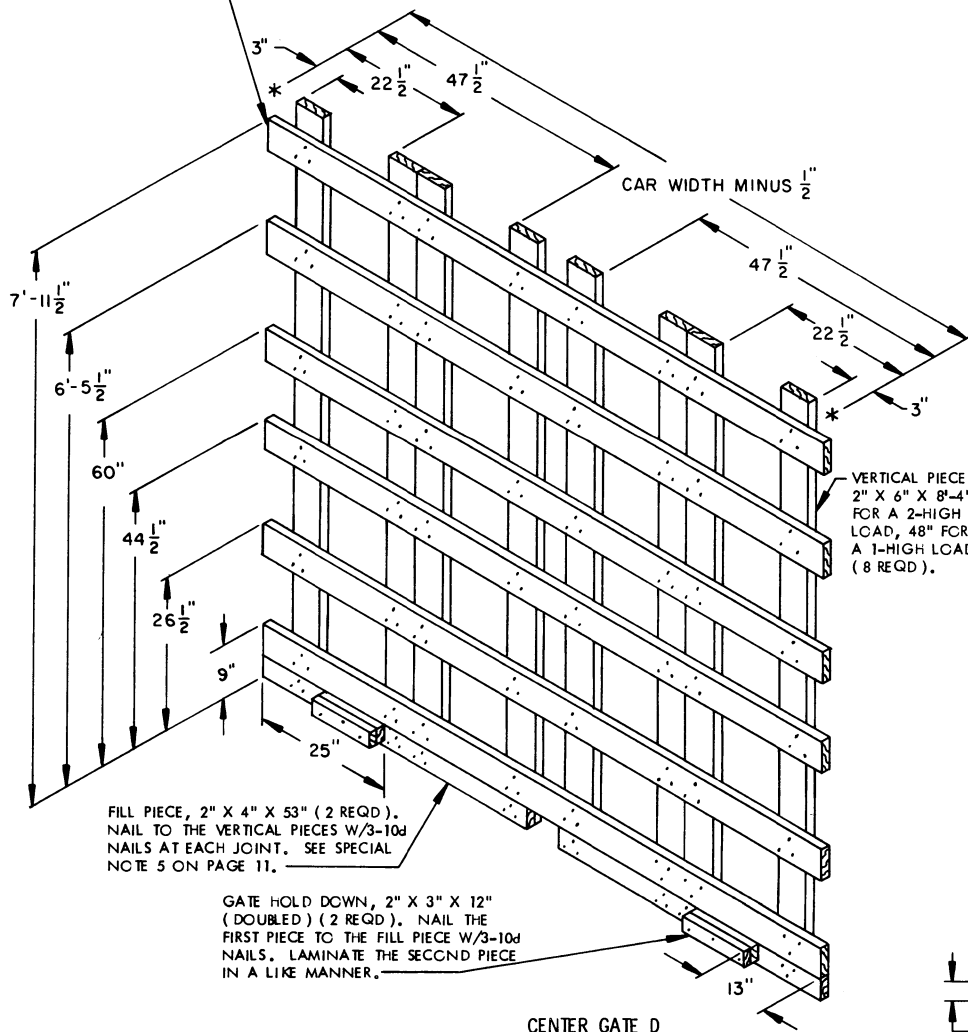
TOP-OF-LOAD ANTI-SWAY BRACE



SIDE FILL ASSEMBLY A

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

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



CENTER GATE D

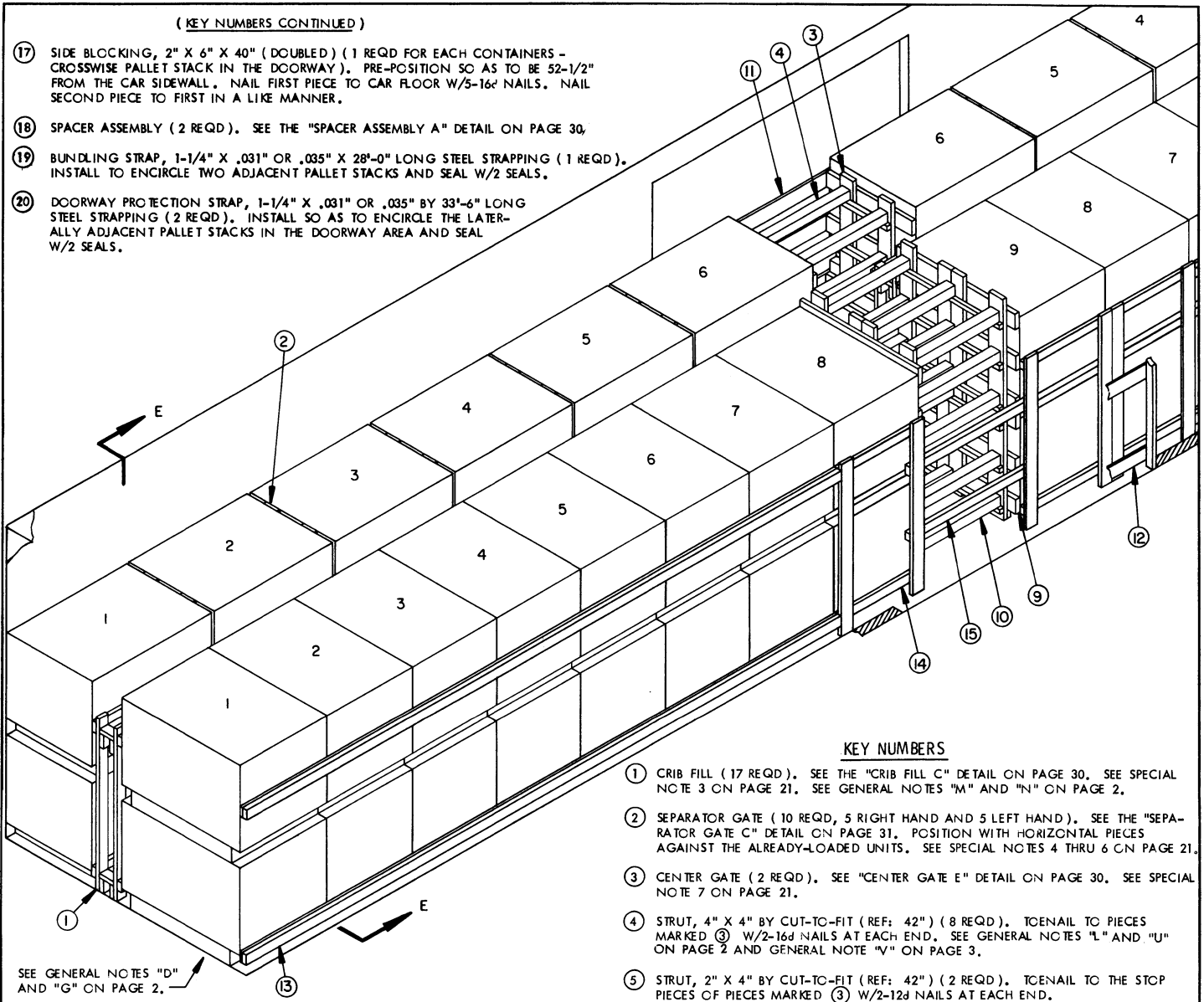
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 10.

END VIEW

DETAILS FOR PALLET UNIT (BASIC HEIGHT)

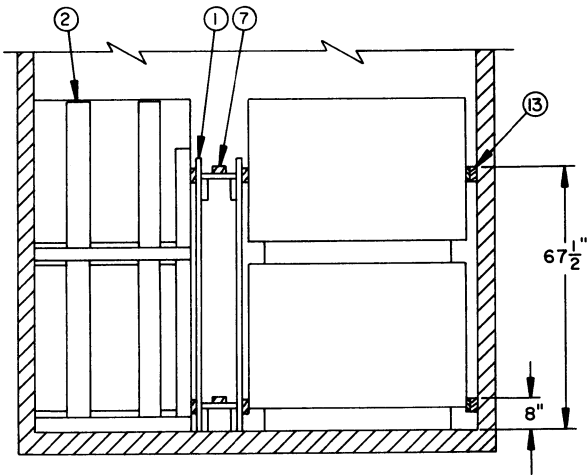
(KEY NUMBERS CONTINUED)

- 17 SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH CONTAINERS - CROSSWISE PALLET STACK IN THE DOORWAY). PRE-POSITION SO AS TO BE 52-1/2" FROM THE CAR SIDEWALL. NAIL FIRST PIECE TO CAR FLOOR W/5-16d NAILS. NAIL SECOND PIECE TO FIRST IN A LIKE MANNER.
- 18 SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 30.
- 19 BUNDLING STRAP, 1-1/4" X .031" OR .035" X 28'-0" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE TWO ADJACENT PALLET STACKS AND SEAL W/2 SEALS.
- 20 DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 33'-6" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET STACKS IN THE DOORWAY AREA AND SEAL W/2 SEALS.



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

ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

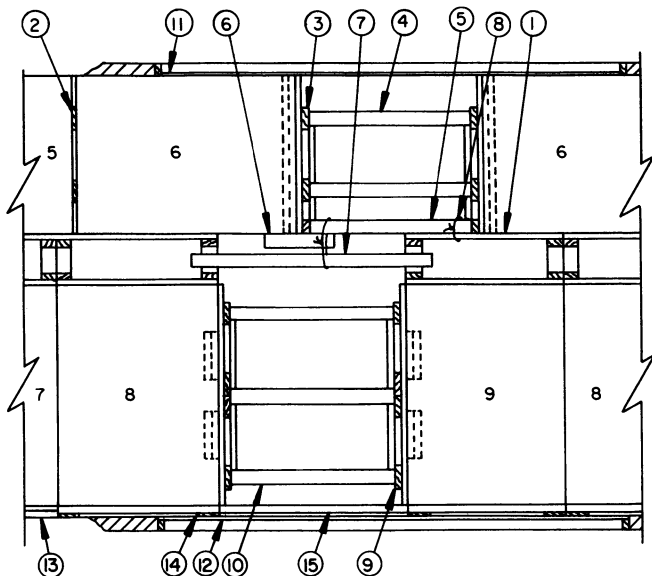
- 1 CRIB FILL (17 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 30. SEE SPECIAL NOTE 3 ON PAGE 21. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 2 SEPARATOR GATE (10 REQD, 5 RIGHT HAND AND 5 LEFT HAND). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 31. POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 21.
- 3 CENTER GATE (2 REQD). SEE "CENTER GATE E" DETAIL ON PAGE 30. SEE SPECIAL NOTE 7 ON PAGE 21.
- 4 STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (8 REQD). TCENAIL TO PIECES MARKED 3 W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- 5 STRUT, 2" X 4" BY CUT-TO-FIT (REF: 42") (2 REQD). TCENAIL TO THE STOP PIECES OF PIECES MARKED 3 W/2-12d NAILS AT EACH END.
- 6 SIDE BLOCKING FOR CENTER GATE "E", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 21.
- 7 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 "C" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH SLIDING DOORS" ON PAGE 21.
- 8 WIRE, NO. 14 GAGE, BY A LENGTH TO SUIT (2 REQD). FORM A LOOP AROUND THE STRUT, PIECE MARKED 5, AND THE HORIZONTAL PIECE OF THE CRIB FILL, PIECE MARKED 1 OR AROUND THE STRUT AND THE CRIB FILL RETAINER, PIECE MARKED 7, AS NECESSARY, AND TWIST TIGHT. NOTE: ONLY REQUIRED IN CARS EQUIPPED WITH SLIDING DOORS.
- 9 CENTER GATE (2 REQD). SEE "CENTER GATE F" DETAIL ON PAGE 31.
- 10 STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (18 REQD). TCENAIL TO PIECES MARKED 9 W/2-16d NAILS AT EACH END.
- 11 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 21.
- 12 DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 33. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ON PAGE 21)

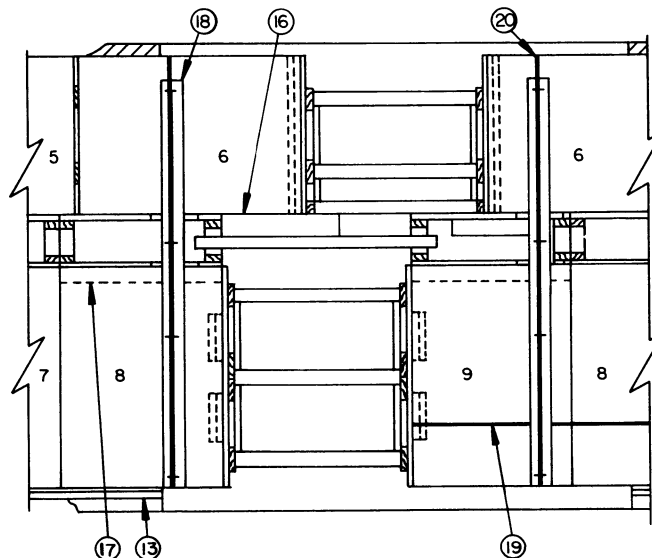
KEY NUMBERS FOR BOX CAR EQUIPPED WITH PLUG DOORS

- 16 SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD FOR EACH CONTAINERS - LENGTHWISE PALLET STACK IN THE DOORWAY). POSITION TO EXTEND 6" PAST THE VERTICAL PIECE ON CENTER GATE "E". NAIL THE FIRST PIECE TO THE FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(CONTINUED UPPER LEFT)



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	221	74
1" X 6"	255	128
2" X 2"	68	23
2" X 3"	36	18
2" X 4"	884	590
2" X 6"	177	177
4" X 4"	91	122
NAILS	NO. REQD	POUNDS
6d (2")	340	2
10d (3")	1,452	22-1/2
12d (3-1/4")	34	3/4
16d (3-1/2")	112	2-1/2
WIRE, NO. 14 GAGE ----- 5' REQD ----- NIL		

(KEY NUMBERS CONTINUED FROM PAGE 20)

- ⑬ SIDE FILL, 2" X 4" AND 1" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (4 EACH REQD). NAIL THE 2" X 4" PIECE TO THE CAR SIDEWALL. W/1-10d NAIL EVERY 24". NAIL THE 1" X 4" TO THE 2" X 4" W/1-6d NAIL EVERY 24". SEE SPECIAL NOTES 12 THRU 14 ON PAGE 23.

(CONTINUED AT RIGHT)

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 20. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 82,704 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 65,474 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.
3. CRIB FILL "C", SHOWN AS PIECE MARKED ①, IS USED THROUGHOUT THE LENGTH OF THE LOAD. ALIGN WITH THE CROSSWISE POSITIONED PALLET UNIT AS SHOWN.
4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ②, IN THE LOAD ON PAGE 20, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
5. IF A DIFFERENT SIZE CAR IS USED, ALL SEPARATOR GATES, PIECES MARKED ②, WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.
6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 40" WIDE BY 8'-0" LONG.
7. CENTER GATES "E" AND "F" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 63 FOR GUIDANCE.
8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑪ AND ⑫ IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILABLE FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" FOR GUIDANCE. NOTE THAT THE VERTICAL PIECES AND BOTTOM STRUT SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ①, IN THE DOORWAY MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF SOME OF THE PIECES SO THE CRIB WILL REST EVENLY ON THE NAILABLE SIDE BLOCKING. NOTE: TWO DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY A BUNDLING STRAP, PIECE MARKED ⑯. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF OF THE PALLET LENGTH OR WIDTH. BATTENS WILL BE REQUIRED UNDER THE OUTSIDE BELL ENDS OF THE CONTAINERS CROSSWISE STACKS. SEE THE "BATTENS PLACEMENT DETAIL" ON PAGE 68.
9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE PALLET UNIT BY EMPLOYING THE PROCEDURES ON PAGE 39. TWO (2) PALLET UNITS CAN BE OMITTED BY LEAVING OUT CROSSWISE STACK NO. 9 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED ⑩, AND AN ADDITIONAL PIECE MARKED ⑥ WILL BE REQUIRED FOR THE OTHER CENTER GATE MARKED ③. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 52 AND 53.
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 57 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 58 AND 60 FOR CROSSWISE UNITS.
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
(CONTINUED ON PAGE 23)
(KEY NUMBERS CONTINUED FROM LEFT)

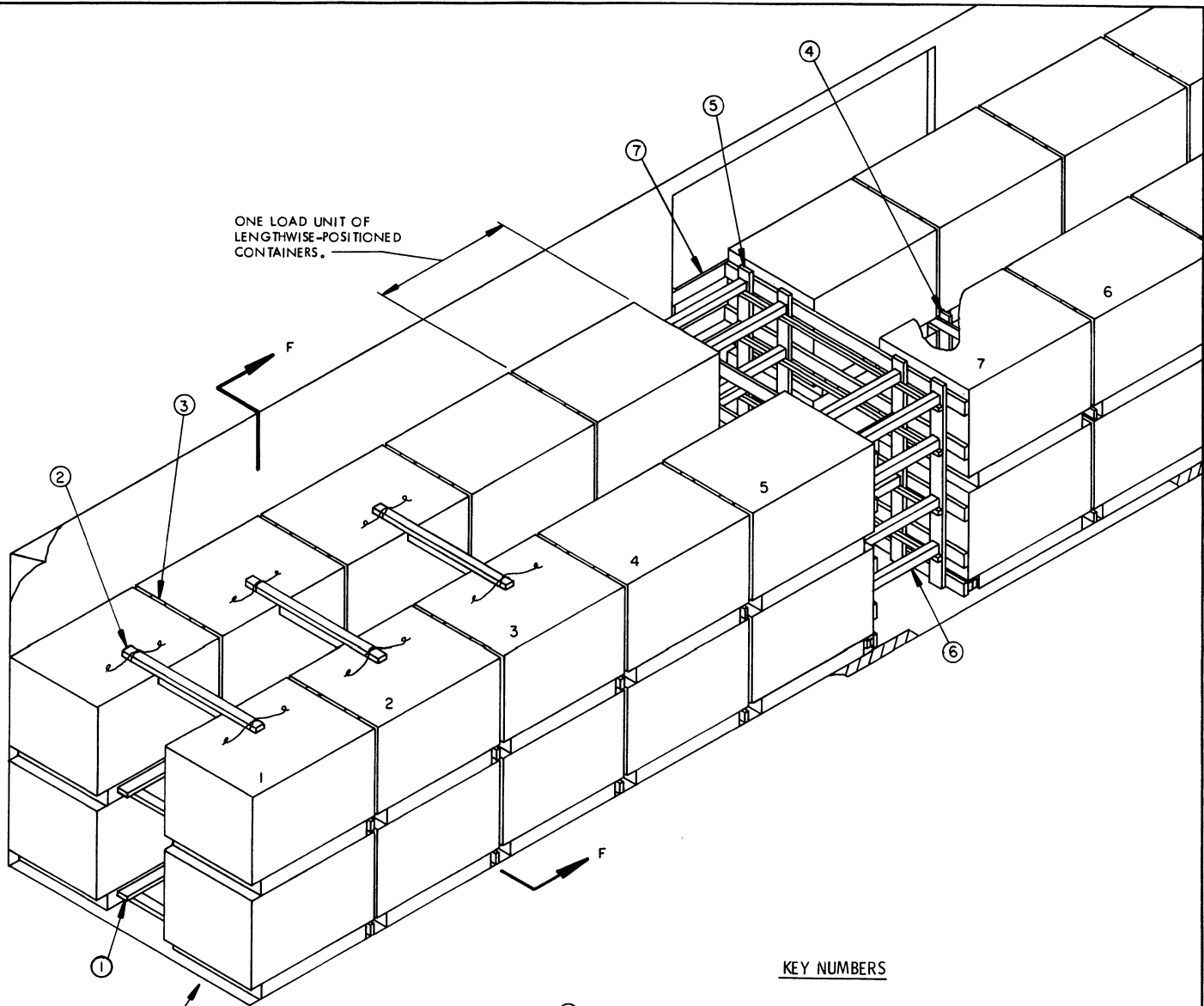
- ⑭ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY B" DETAIL ON PAGE 5.

- ⑮ SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 60") (2 REQD). POSITION AT 24-1/2" AND 51" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑬ W/4-6d NAILS AT EACH JOINT.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	58	99,934 LBS
DUNNAGE -----		2,292 LBS
TOTAL WEIGHT -----		102,226 LBS

PALLET UNIT (DECREASED HEIGHT) 58-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

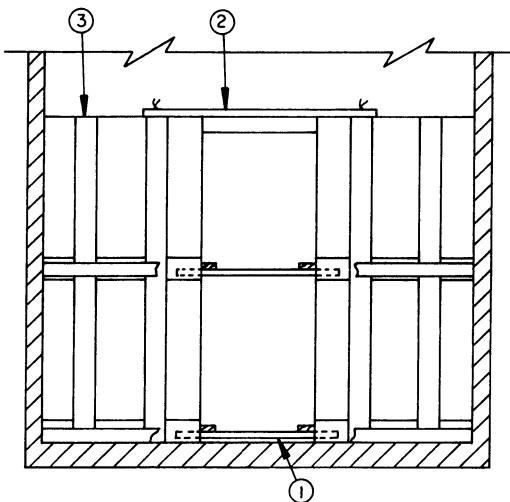


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (24 REQ'D). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 23.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQ'D). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. SEE SPECIAL NOTE 5 ON PAGE 23.
- ③ SEPARATOR GATE (10 REQ'D). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 31. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 AND 8 ON PAGE 23.
- ④ STOP PIECE, 1" X 4" X 48" (2 REQ'D). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③, WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 23.
- ⑤ CENTER GATE (2 REQ'D). SEE THE "CENTER GATE G" DETAIL ON PAGE 32. SEE SPECIAL NOTES 9, 10, AND 13 ON PAGE 23.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 42") (16 REQ'D). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- ⑦ DOORWAY PROTECTION (2 REQ'D). SEE THE "DOORWAY PROTECTION" DETAIL ON PAGE 33. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 23.



SECTION F-F

(SPECIAL NOTES CONTINUED)

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OF 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 36 THRU 60 FOR GUIDANCE.
15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 57 FOR SHIPPING GUIDANCE.
16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 5. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

(SPECIAL NOTES CONTINUED FROM PAGE 21)

12. THE SIDE FILL, PIECE MARKED ⑬ ON PAGE 20, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑭ ON PAGE 20, MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑬.
13. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 21 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ⑬ TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑭, AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ⑮.
14. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, THE SIDE FILL, PIECE MARKED ⑬ ON PAGE 20, WILL BE DOUBLED 2" X 4" MATERIAL IN LIEU OF 1" X 4" AND 2" X 4" MATERIAL AND THE SIDE FILL ASSEMBLY, PIECE MARKED ⑭, WILL BE CONSTRUCTED WITH 2" X 4" VERTICAL PIECES IN LIEU OF 1" X 6".

SPECIAL NOTES:

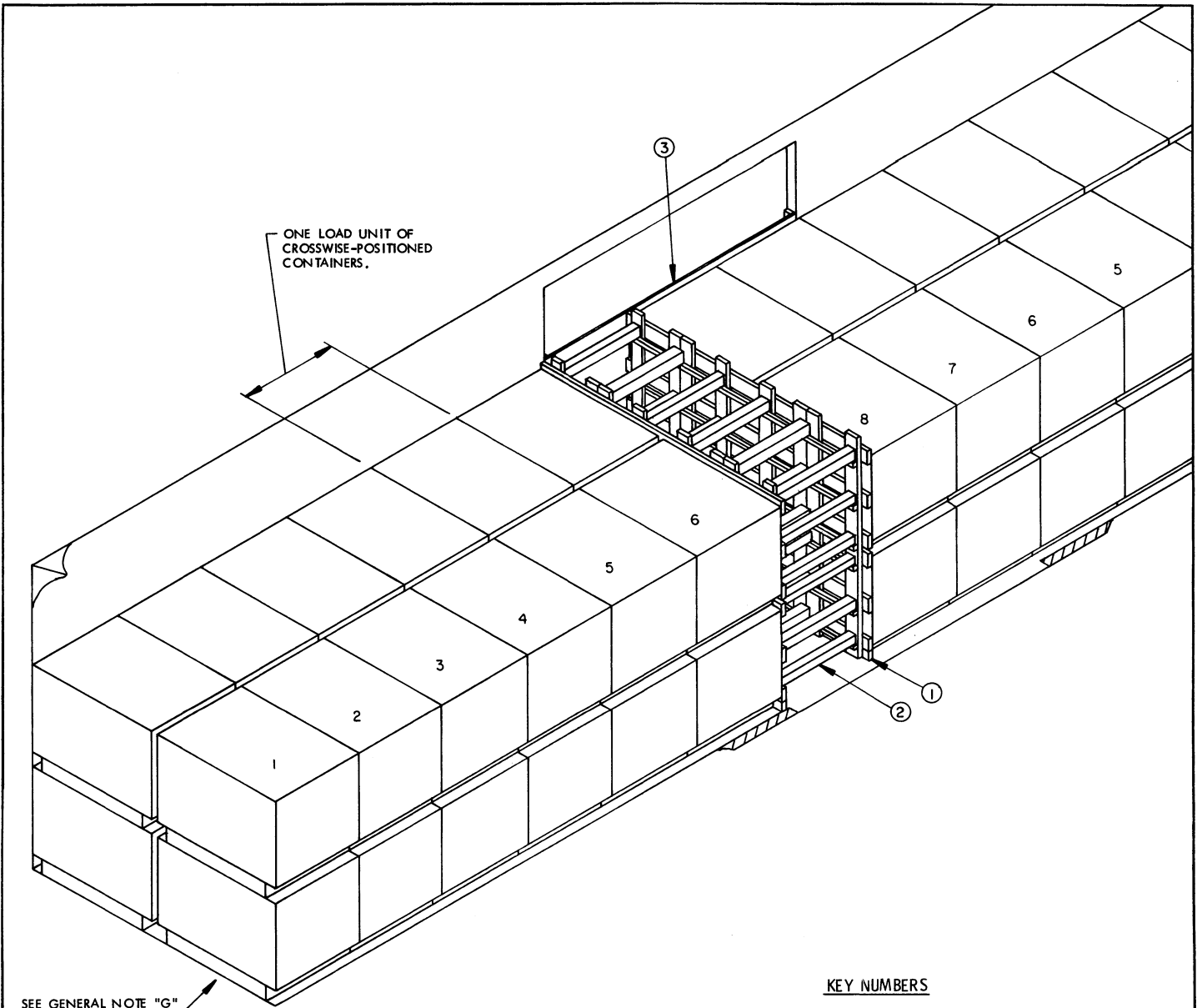
1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 22. A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,920 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE PECTICED PROCEDURES; THIRTY-TWO UNITS, FOR AN APPROXIMATE WEIGHT OF 55,136 POUNDS CAN BE LOADED IN A 40'-6" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 10'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 68 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 12.
5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 22, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
6. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, WHEN LOADING THE BOX CAR, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ③, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.
7. 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.
8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 62 FOR CONSTRUCTION GUIDANCE.
9. CENTER GATE "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 63 FOR GUIDANCE.
10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE G", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 22, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 30. 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 63. OMIT THE STOP PIECES FROM "CENTER GATE E".
11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE G, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 65 FOR GUIDANCE.
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 68 FOR GUIDANCE. SEE SPECIAL NOTE 13.
13. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 68 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑦, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CENTER GATE, TWO (2) DOUBLED 2" X 6" X 12" PIECES POSITIONED ON THE BOTTOM HORIZONTAL OF THE TOP LAYER. STOP PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	48	82,704 LBS
DUNNAGE		1,510 LBS
TOTAL WEIGHT		84,214 LBS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	191	64
1" X 6"	360	180
2" X 2"	64	21
2" X 3"	26	13
2" X 4"	381	254
2" X 6"	140	140
4" X 4"	57	76
NAILS	N.O. REQD	POUNDS
6d (2")	300	1-3/4
10d (3")	512	8
12d (3-1/4")	54	1
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE ----- 65' REQD ----- 1 LB		



SEE GENERAL NOTE "G"
ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

- ① CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 33. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTES 5 THRU 8 ON PAGE 25.
- ② STRUT, 4" X 4" BY CUT-TO-FIT (REF: 40") (36 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3.
- ③ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 25.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. NARROWER CARS (9'-5" MINIMUM), CARS OF OTHER LENGTHS, AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.
2. THE DECREASED HEIGHT PALLET UNITS ARE SHOWN IN THE TYPICAL LOAD ON PAGE 24. A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 75,812 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-6" WIDE CAR IS AVAILABLE, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 117,164 POUNDS CAN BE LOADED.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.
4. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED.
5. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG DOORS OR COMBINATION PLUG AND SLIDING DOORS, THE CENTER-OF-CAR END OF THE FILL PIECES AND THE ADJACENT VERTICAL PIECES OF CENTER GATE "H" MUST BE RABBETED 1-1/2" WIDE BY 3-1/2" HIGH. THIS WILL PROVIDE CLEARANCE FOR THE NAILED SIDE BLOCKING SPECIFIED BY THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 68 DURING THE NORMAL LONGITUDINAL SHIFTING OF THE LOAD.
6. CENTER GATE "H" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 63 FOR GUIDANCE.
7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE H", SHOWN AS PIECE MARKED (1) IN THE LOAD ON PAGE 24, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 31. 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 63.
8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "H" PROVIDING THE CAR BEING LOADED HAS AVAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 65 FOR GUIDANCE.
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 68 FOR GUIDANCE.
10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 36 THRU 60 FOR GUIDANCE.
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 58 AND 60 FOR SHIPPING GUIDANCE.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	110	37
2" X 3"	37	19
2" X 6"	234	234
4" X 4"	120	160
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	552	8-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	144	3-1/4

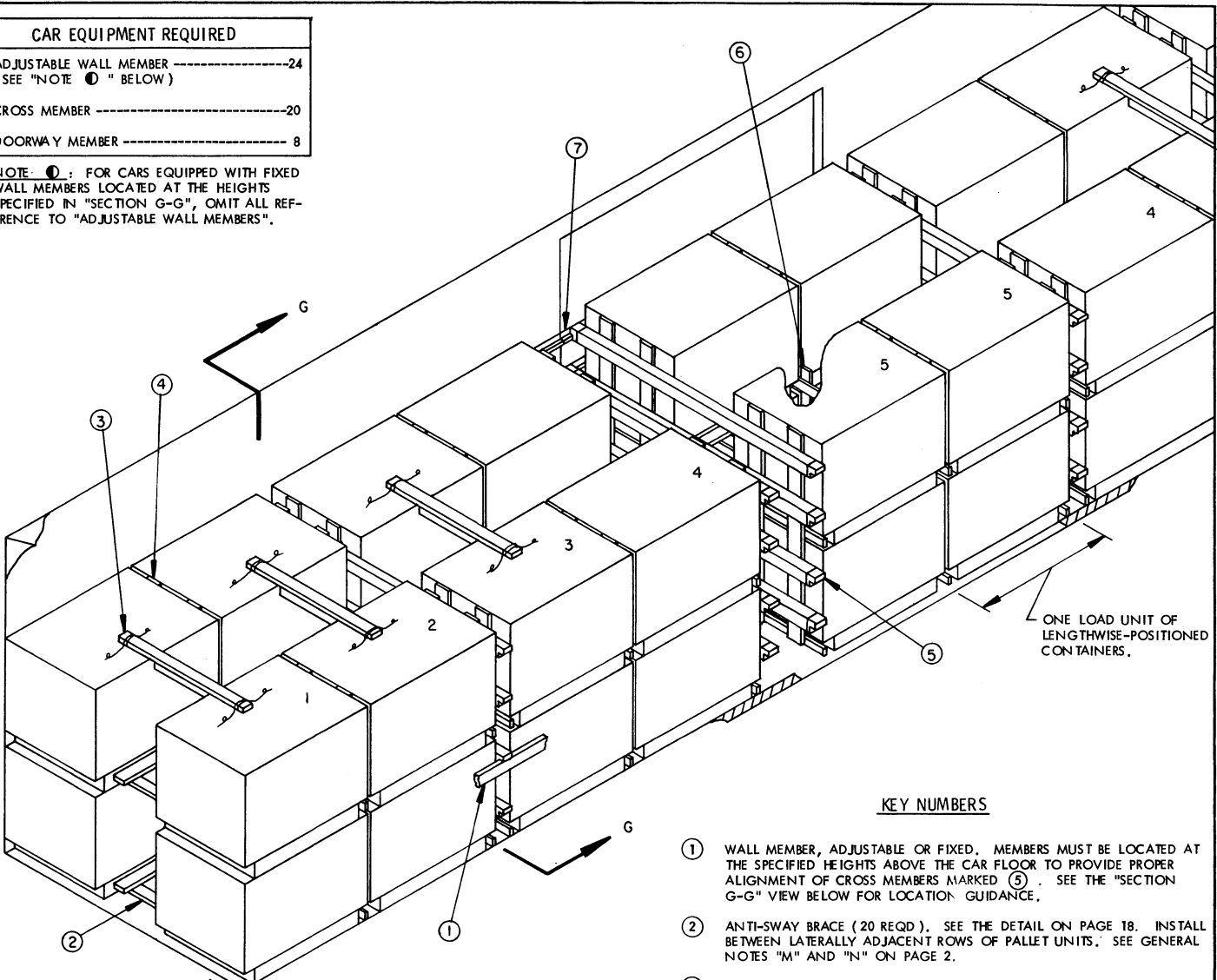
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	56 -----	96,488 LBS
DUNNAGE -----	-----	993 LBS
TOTAL WEIGHT -----		97,481 LBS

CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBER -----	24
(SEE "NOTE 1" BELOW)	
CROSS MEMBER -----	20
DOORWAY MEMBER -----	8

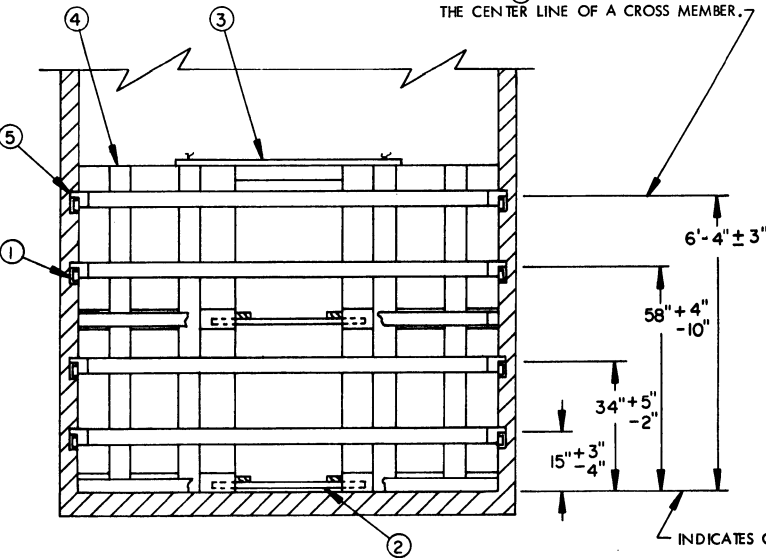
NOTE: 1: FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION G-G", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



ISOMETRIC VIEW

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

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



SECTION G-G

PALLET UNIT (DECREASED HEIGHT)

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

KEY NUMBERS

- 1 WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED 5. SEE THE "SECTION G-G" VIEW BELOW FOR LOCATION GUIDANCE.
- 2 ANTI-SWAY BRACE (20 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- 3 TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. SEE SPECIAL NOTE 4 ON PAGE 27.
- 4 SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 27.
- 5 CROSS MEMBER (20 REQD). SEE GENERAL NOTE "X" ON PAGE 3.
- 6 STOP PIECE, 1" X 4" X 48" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED 4 W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 27.
- 7 DOORWAY MEMBER (8 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE DECREASED HEIGHT UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 26. A MAXIMUM OF THIRTY-TWO (32) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 55,136 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 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62. 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 62 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 34 AND 35 FOR GUIDANCE.
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.

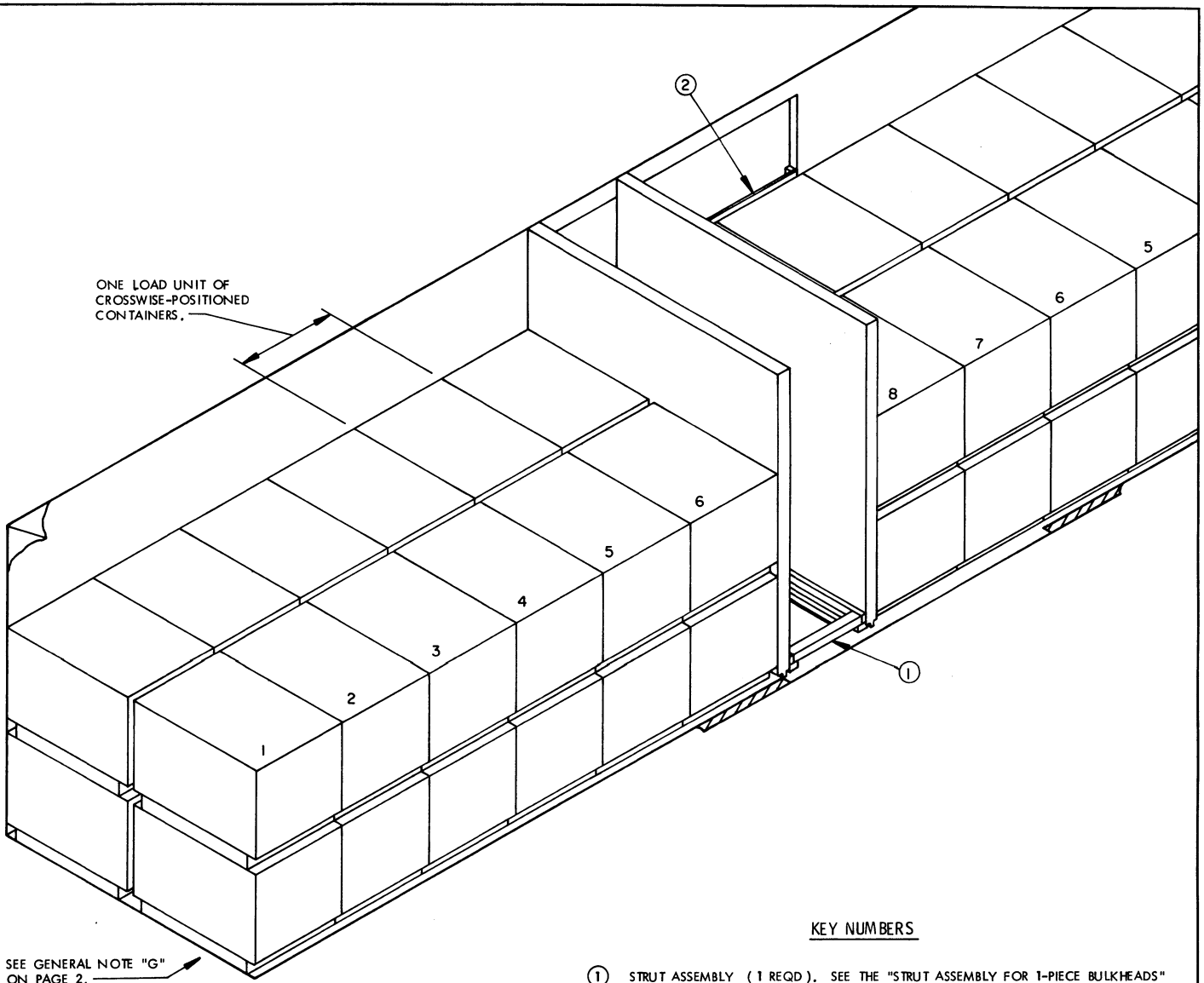
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	249	83
1" X 6"	364	182
2" X 4"	307	205
NAILS	NO. REQD	POUNDS
6d (2")	336	2
10d (3")	240	3-3/4
12d (3-1/4")	30	1/2
WIRE, NO. 14 GAGE ----- 65' REQD -----		1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	40 -----	68,920 LBS
DUNNAGE -----		948 LBS
TOTAL WEIGHT -----		69,868 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

- ① STRUT ASSEMBLY (1 REQD), SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 69. SEE SPECIAL NOTE 5 ON PAGE 29. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② DOORWAY PROTECTION (2 REQD), SEE THE "DOORWAY PROTECTION 8 " DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 4 ON PAGE 29.

SPECIAL NOTES:

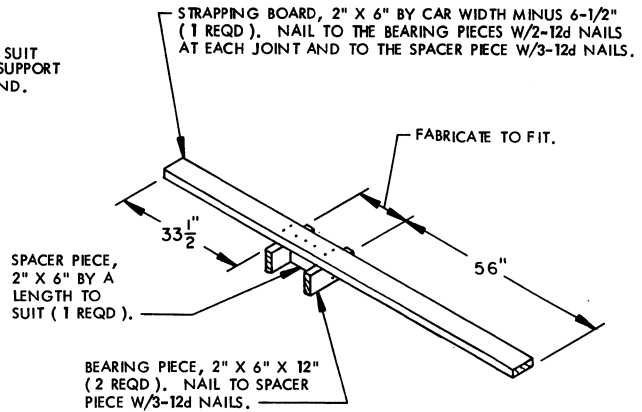
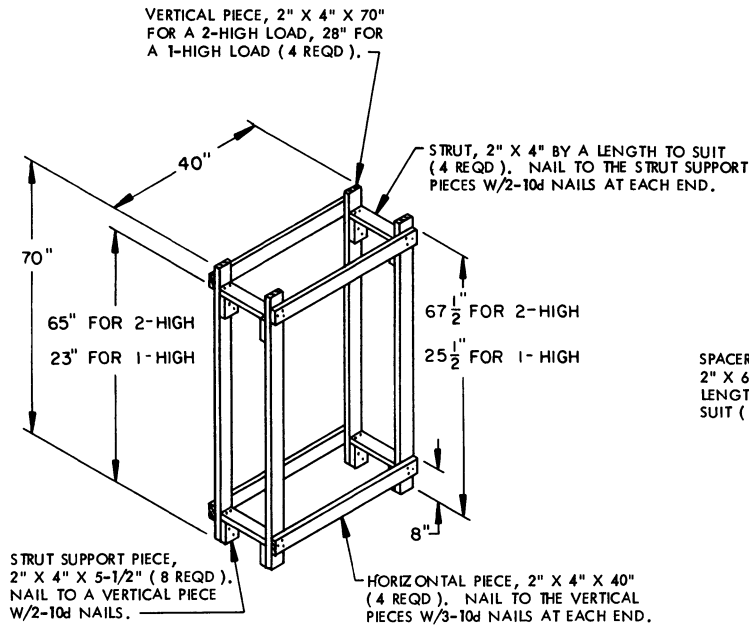
1. A 50'-6" LONG BY 9'-6" WIDE WOOD-LINED, CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. NARROWER CARS (9'-5" MINIMUM) AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 28. A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 117,164 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 75,812 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF CARS 9'-5" OR WIDER ARE NOT AVAILABLE, THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 14 MAY BE EMPLOYED. THEN, FORTY-EIGHT (48) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 82,704 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY (40) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,920 POUNDS, AND THIRTY-TWO (32) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 55,136 POUNDS. SEE SPECIAL NOTE 9.
3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED FOR THE DEPICTED LOAD.
4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 28, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 66 THRU 68 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 68 FOR GUIDANCE IF THE PALLET UNITS ARE POSITIONED AS SHOWN ON PAGE 28. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON THAT PAGE IF THE PALLET UNITS ARE POSITIONED LENGTHWISE.
5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED (1) IN THE LOAD ON PAGE 28, 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 IS NOT REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF NO MORE THAN SEVEN (7) LOAD UNITS, WHICH WOULD BE THE CASE IF AN EVEN LOADING PATTERN IS EMPLOYED. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 36 THRU 41 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.
7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 58 AND 60 FOR SHIPPING GUIDANCE.
8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 59 FOR GUIDANCE.
9. IF THE PALLET UNITS ARE LOADED WITH THE CONTAINERS LENGTHWISE IN THE CAR, REFER TO THE LOAD ON PAGE 14 AND THE SPECIAL NOTES ON PAGE 15 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
1" X 8"	17	12
2" X 3"	29	15
2" X 4"	38	26
4" X 4"	11	15
NAILS	NO. REQD	POUNDS
6d (2")	66	1/2
10d (3")	18	1/2
12d (3-1/4")	44	3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	56 -----	96,488 LBS
DUNNAGE -----		218 LBS
TOTAL WEIGHT -----		96,706 LBS

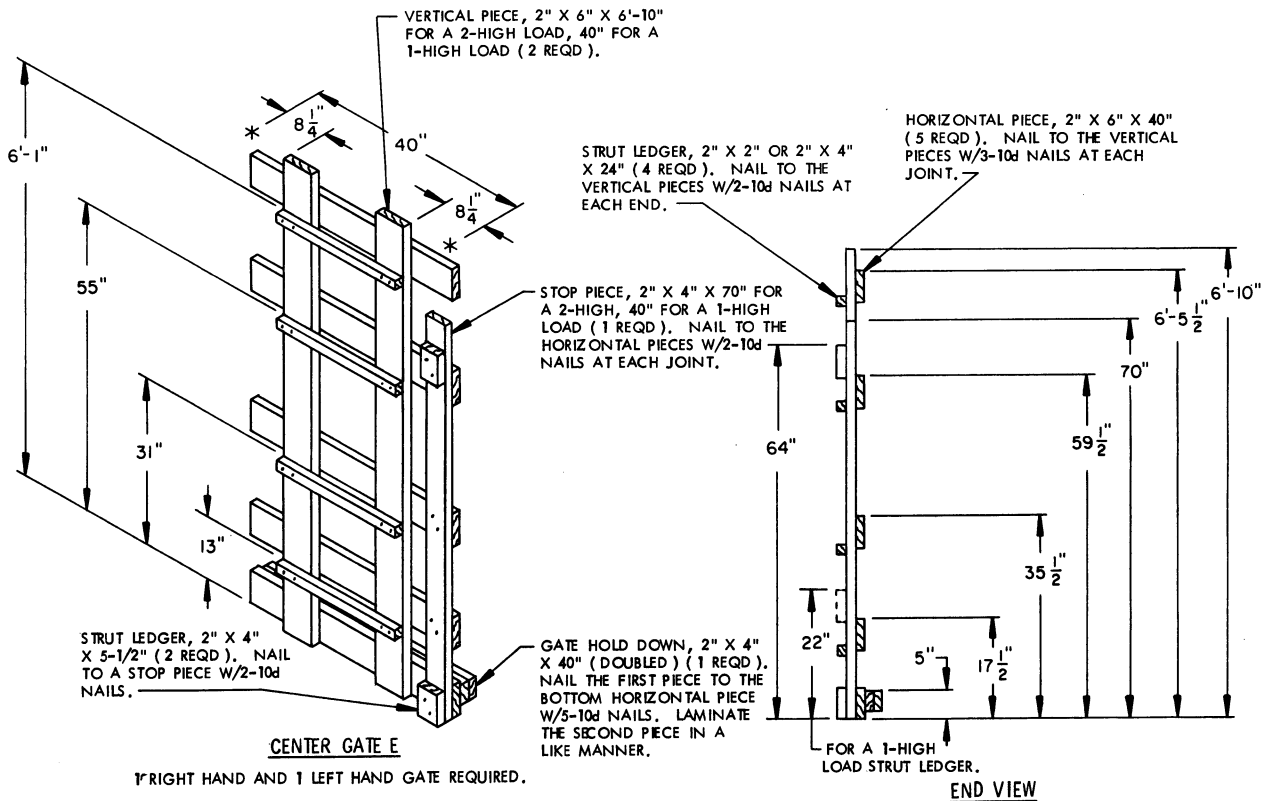
PALLET UNIT (DECREASED HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



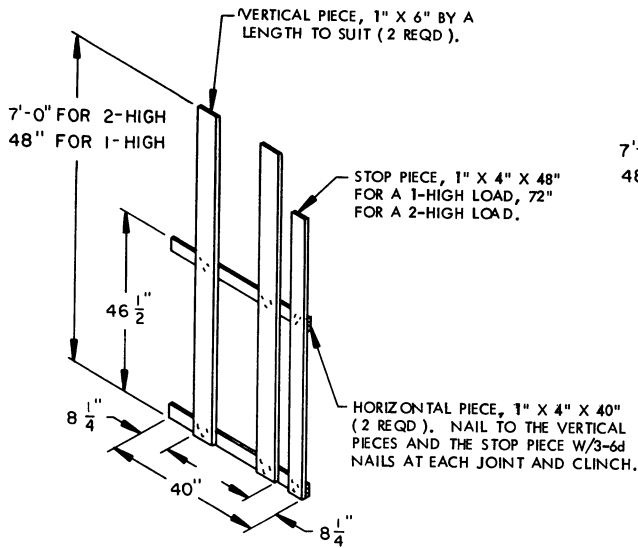
SPACER ASSEMBLY A

CRIB FILL C

CRIB FILL ASSEMBLY "C" 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.

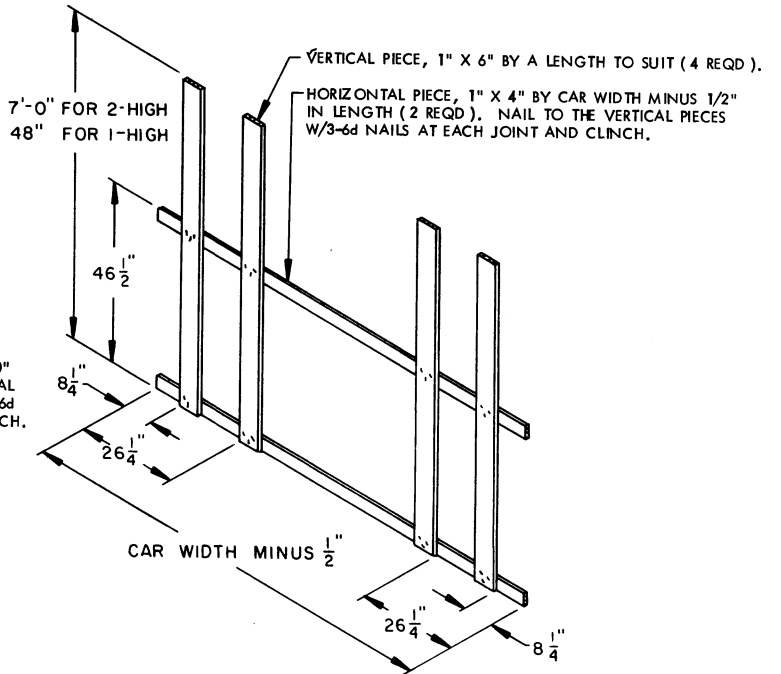


1*RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



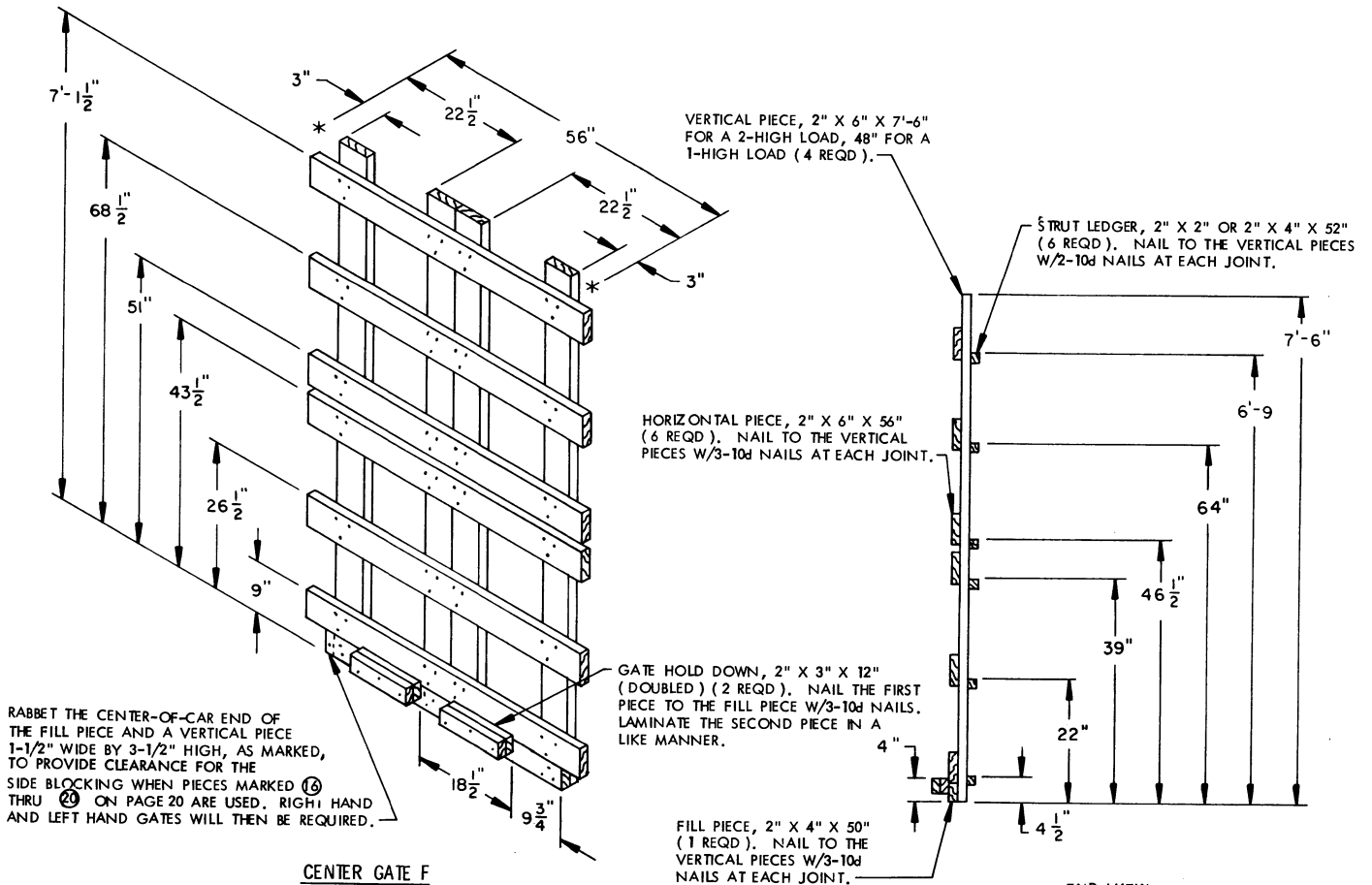
SEPARATOR GATE C

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



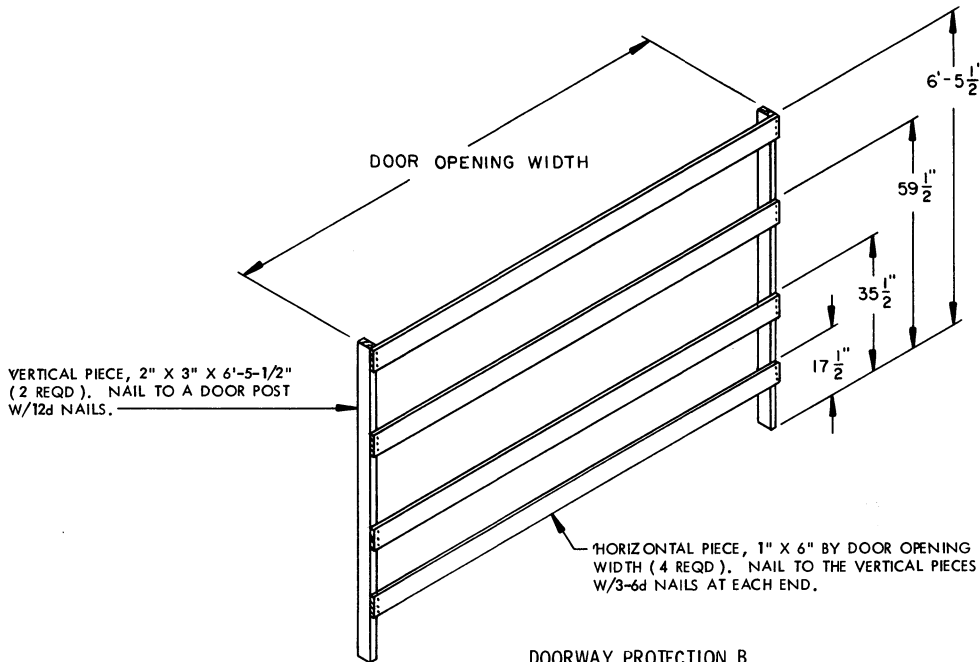
SEPARATOR GATE C

SEE SPECIAL NOTE 7 ON PAGE 23.



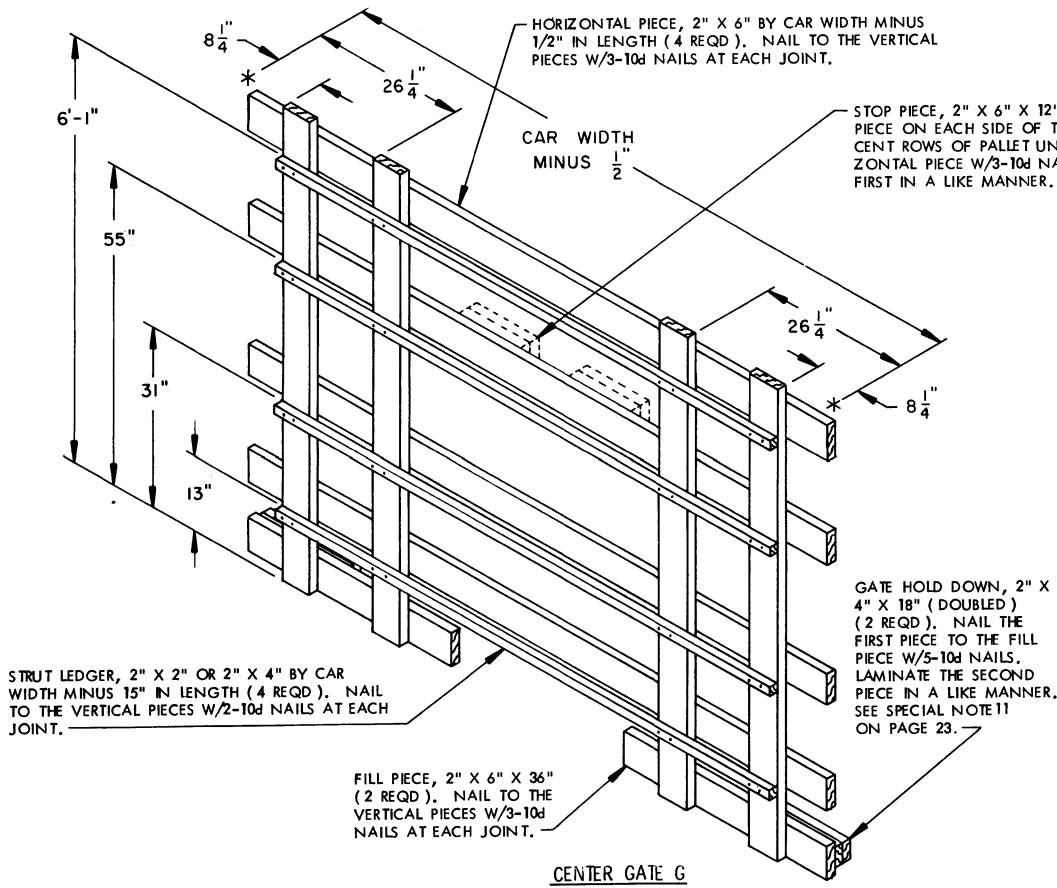
RIGHT HAND AND LEFT HAND GATES MAY BE
REQUIRED. SEE THE "RABBIT" LEADER ABOVE.

DETAILS FOR PALLET UNIT (DECREASED HEIGHT)



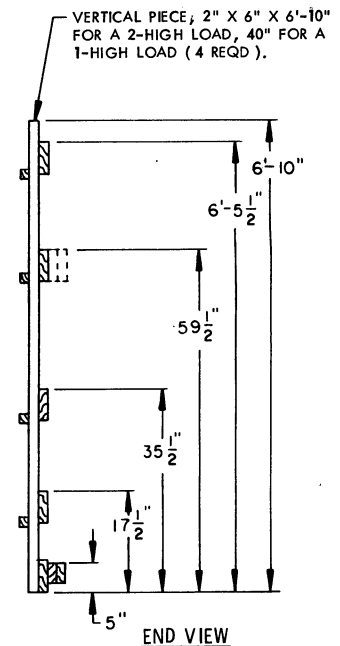
DOORWAY PROTECTION B

THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 20 AND FOR THE LOAD SHOWN ON PAGE 24 AND FOR THE LOAD SHOWN ON PAGE 28.



CENTER GATE G

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



VERTICAL PIECE, 2" X 3" X 7'-0"
(2 REQD.). NAIL TO A DOOR
POST W/12d NAILS.

DOOR OPENING
WIDTH

7'-1 1/2"

51"

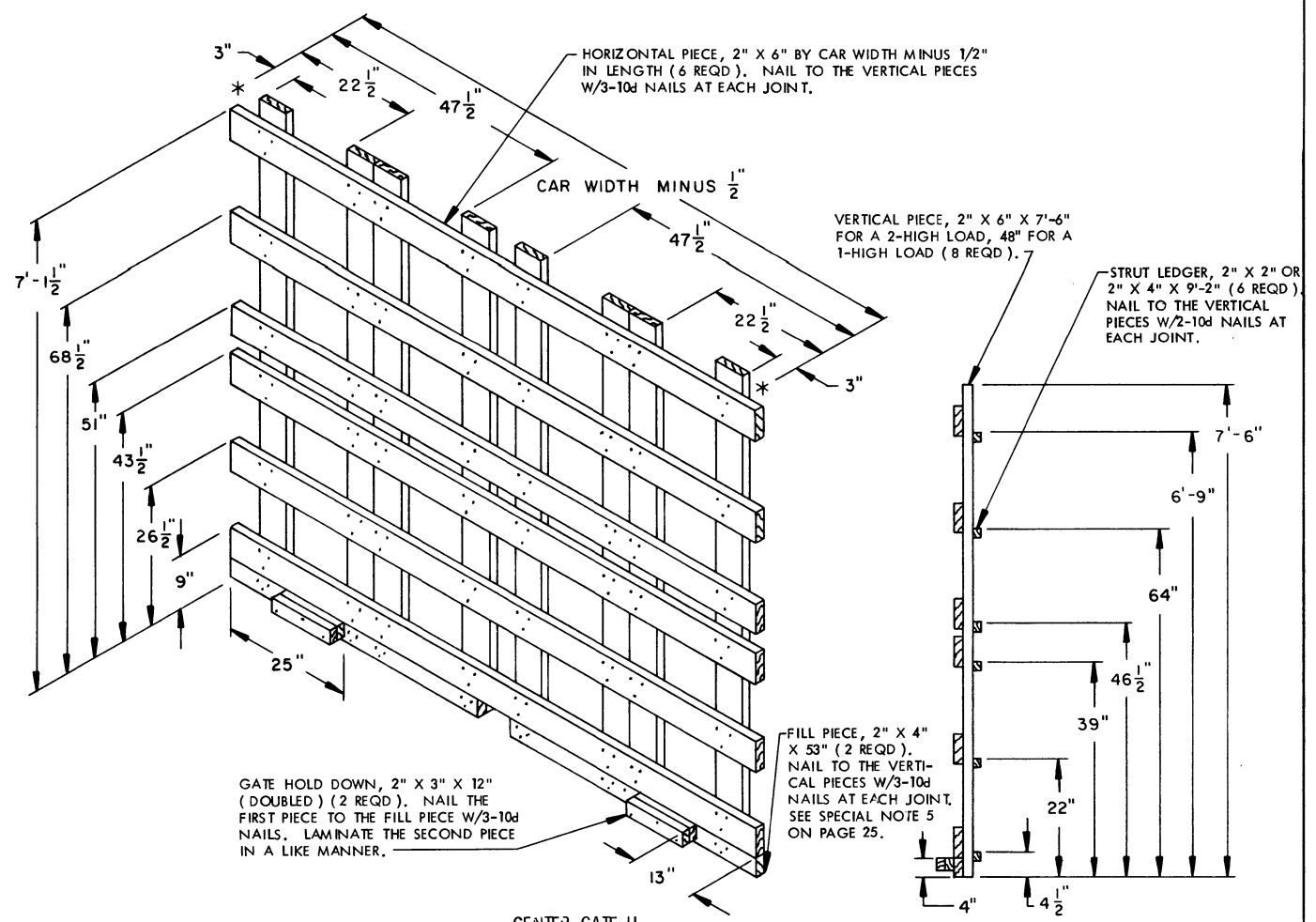
43 1/2"

9"

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

DOORWAY PROTECTION C

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING
SIDE OF THE LOAD SHOWN ON PAGE 20 AND FOR THE LOAD SHOWN ON
PAGE 22.

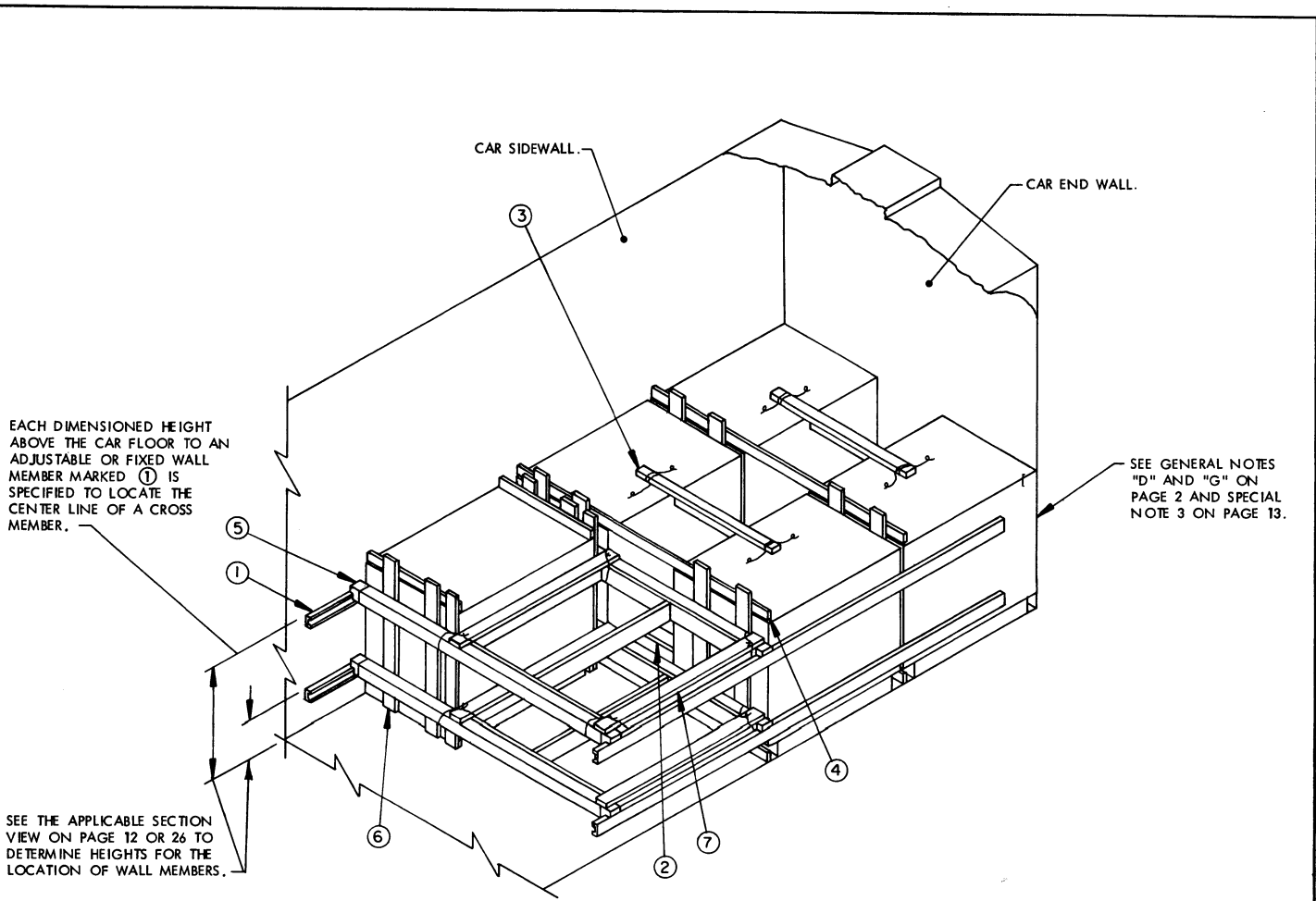


CENTER GATE H

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

END VIEW

DETAILS FOR PALLET UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LCL LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT PALLET UNIT.
3. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3), MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED (7), MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

KEY NUMBERS

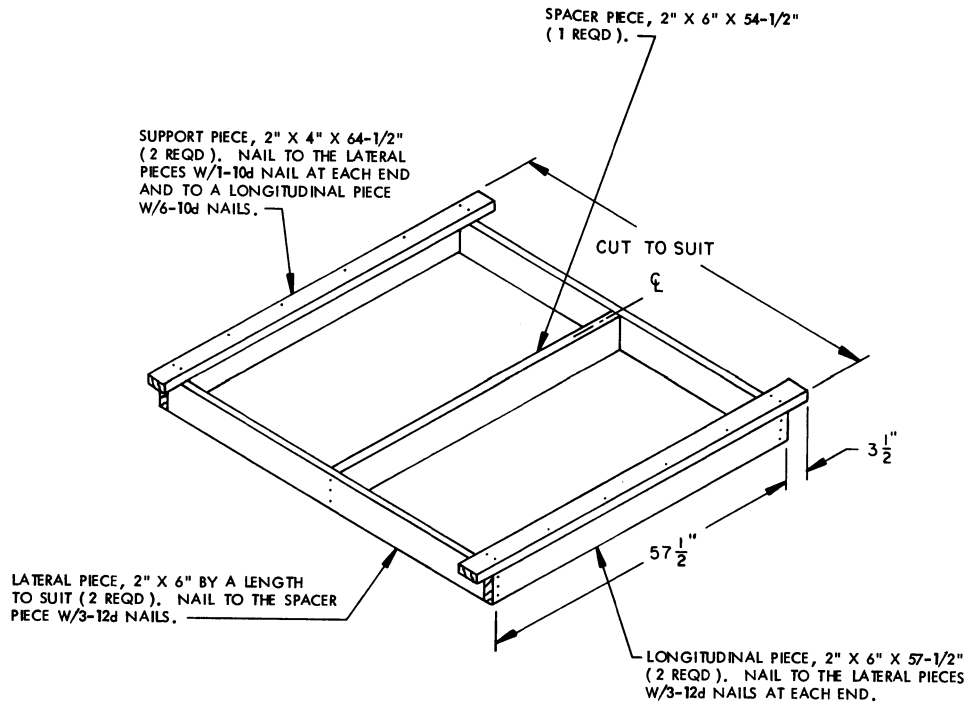
- (1) WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED (5).
- (2) ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- (3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62.
- (4) SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 17 OR 31. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- (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 17 OR 31. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
- (7) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 35 AND SPECIAL NOTE 6 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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

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

SEE THE APPLICABLE SECTION VIEW ON PAGE 12 OR 26 TO DETERMINE HEIGHTS FOR THE LOCATION OF WALL MEMBERS.

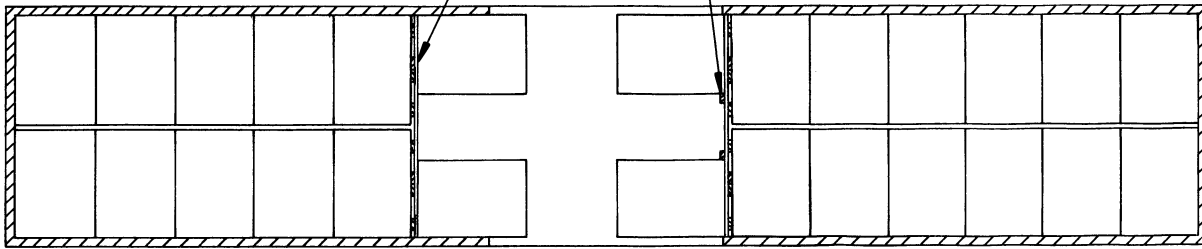
TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES HAVING ADJUSTABLE OR FIXED WALL MEMBERS



SPACER ASSEMBLY B

SEPARATOR GATE (1 OR 2 REQD. AS APPLICABLE).
SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 37.
POSITION AS SHOWN WITH THE VERTICAL PIECES
AGAINST THE CROSSWISE POSITIONED PALLET UNITS.

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



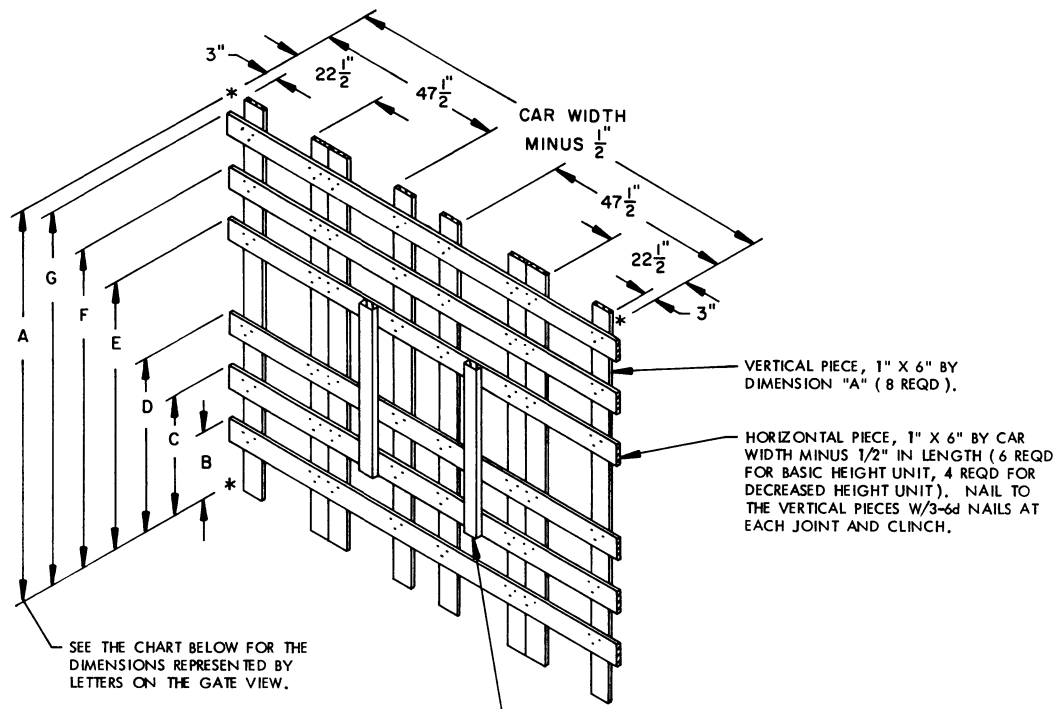
TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

AN 11 LONG PLUS 2 WIDE LOAD IS SHOWN.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-6" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE AND ON PAGE 37 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "E", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "E" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE CONTAINERS-CROSSWISE UNITS OF THE LOAD.
4. THE CHART AT RIGHT SHOW THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES. FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHARTS.

PALLET UNIT QUANTITY			
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6"	22	CROSSWISE LOAD ON PAGE 10 OR 24	40"
	20	8 LONG AT 40" PLUS 2 WIDE AT 56"	45"
	20	7 LONG AT 40" PLUS 3 WIDE AT 56"	28"
	19	COMBINATION LOAD ON PAGE 6 OR 20	40" & 27"
	18	5 LONG AT 40" PLUS 4 WIDE AT 56"	52"
	18	4 LONG AT 40" PLUS 5 WIDE AT 56"	34"
50'-6"	16	LENGTHWISE LOAD ON PAGE 8 OR 22	24"
	28	CROSSWISE LOAD ON PAGE 10 OR 24	40"
	26	11 LONG AT 40" PLUS 2 WIDE AT 56"	45"
	26	10 LONG AT 40" PLUS 3 WIDE AT 56"	28"
	24	COMBINATION LOAD ON PAGE 6 OR 20	40" & 34"
	24	7 LONG AT 40" PLUS 5 WIDE AT 56"	34"
60'-8"	22	3 LONG AT 40" PLUS 8 WIDE AT 56"	24"
	20	LENGTHWISE LOAD ON PAGE 8 OR 22	34"
	34	CROSSWISE LOAD ON PAGE 10 OR 24	42"
	32	14 LONG AT 40" PLUS 2 WIDE AT 56"	47"
	30	10 LONG AT 40" PLUS 5 WIDE AT 56"	36"
	29	COMBINATION LOAD ON PAGE 6 OR 20	42" & 42"
	28	7 LONG AT 40" PLUS 7 WIDE AT 56"	43"
	28	6 LONG AT 40" PLUS 8 WIDE AT 56"	26"
26	3 LONG AT 40" PLUS 10 WIDE AT 56"	33"	
24	LENGTHWISE LOAD ON PAGE 8 OR 22	42"	
SEE GENERAL NOTE "U" ON PAGE 2.			

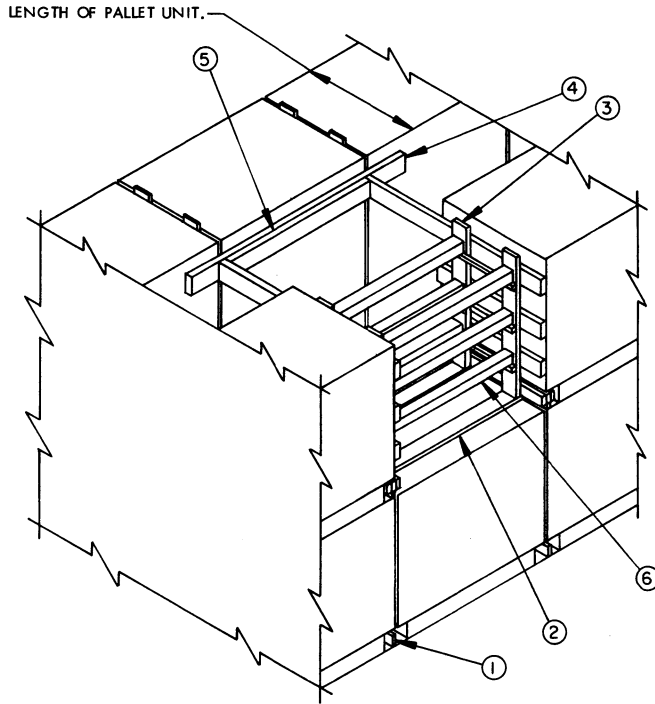


SEE THE CHART BELOW FOR THE DIMENSIONS REPRESENTED BY LETTERS ON THE GATE VIEW.

STOP PIECE, 2" X 4" MATERIAL. SEE THE LEADERED NOTE ON THE TYPICAL LOAD PATTERN PLAN VIEW ON PAGE 36 FOR PLACEMENT, NAILING, AND OTHER GUIDANCE.

SEPARATOR GATE E

PALLET UNIT	DIMENSIONS						
	A	B	C	D	E	F	G
(BASIC HEIGHT)	8'-4"	17-1/2"	31"	44-1/2"	68-1/2"	6'-10-1/4"	7'-11-3/4"
(DECREASED HEIGHT)	6'-9"	17-1/2"	35-1/2"	-----	59-1/2"	-----	6'-5-1/2"



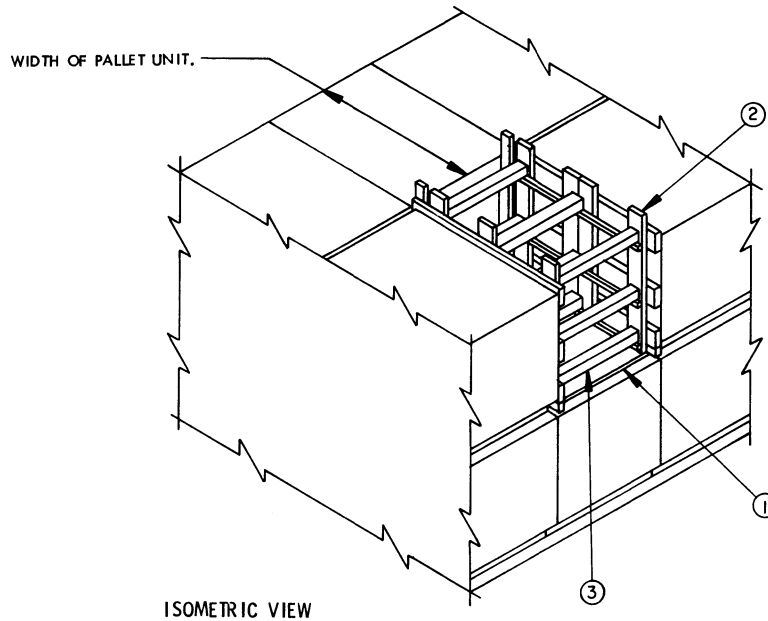
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT PALLET UNIT.
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 PALLET UNIT FROM A 1-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).

- (1) MODIFIED SEPARATOR GATE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17 OR 31 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 56" (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 40. 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 54-1/2" (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: 51-1/2") (AS REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END.



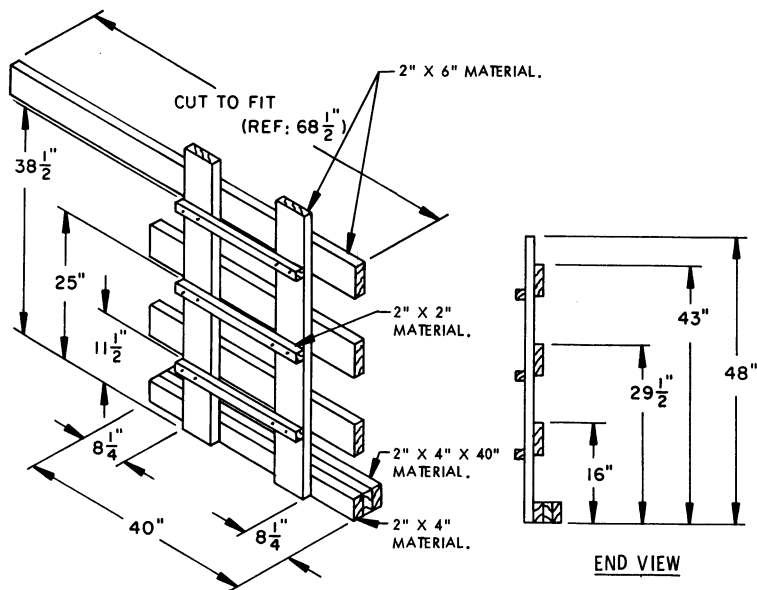
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-6" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. WIDER CARS CAN BE USED.
2. THE DECREASED PALLET UNIT IS SHOWN. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.
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 PALLET UNIT FROM A 1-LAYER LOAD.
4. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" X 40" (2 REQD). POSITION BENEATH THE OUTSIDE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ②.
- ② LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 41. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ①, W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.
- ③ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 34") (6 REQD). TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END.

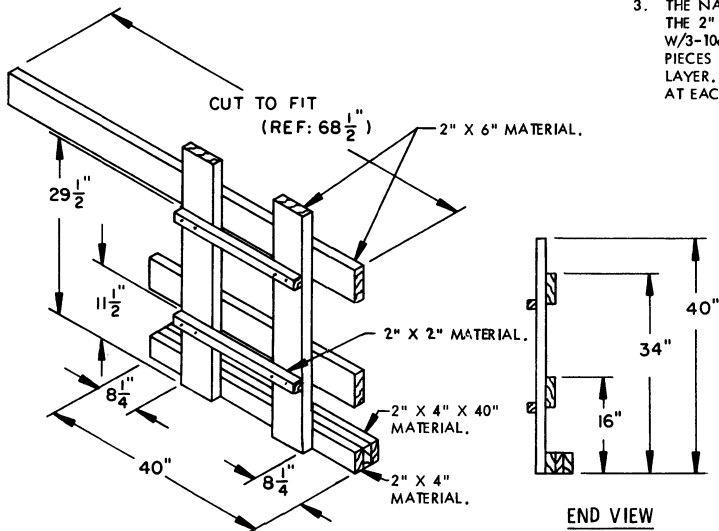


LOAD BEARING GATE

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

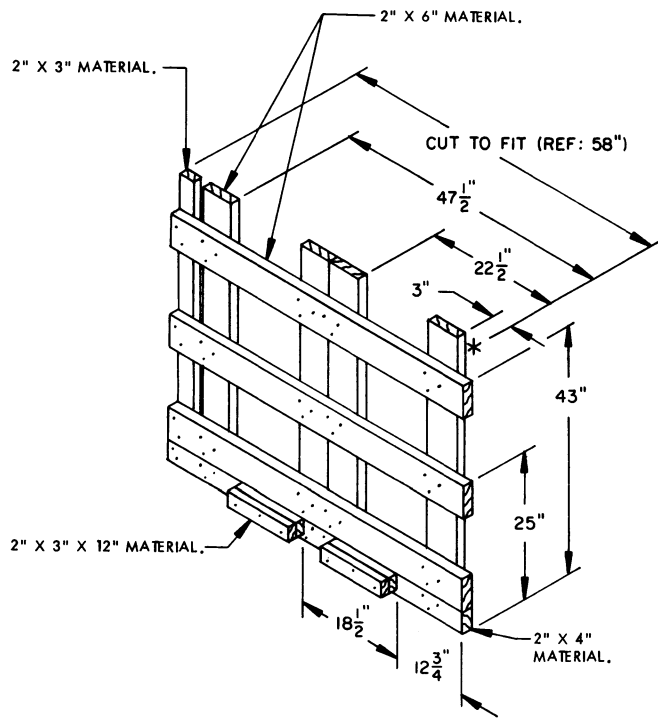
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC AND DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 38. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS LENGTHWISE 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 4" GATE HOLD DOWN PIECES TO A 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.



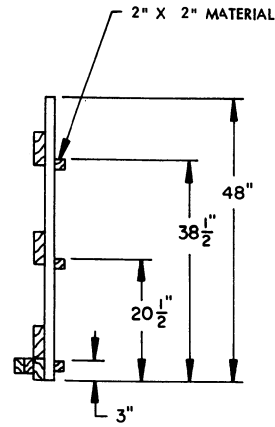
LOAD BEARING GATE B

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



LOAD BEARING GATE C

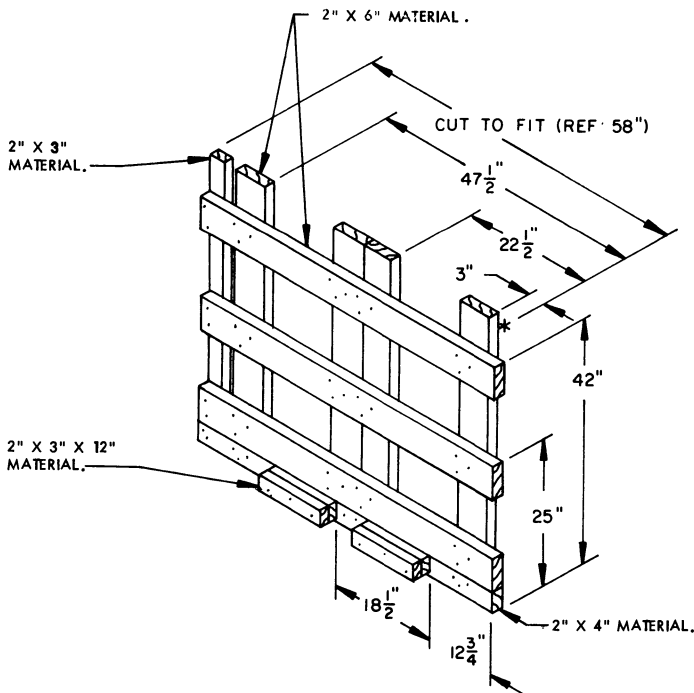
THIS GATE IS FOR USE IN A LOAD OF BASIC HEIGHT PALLET UNITS. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.



END VIEW

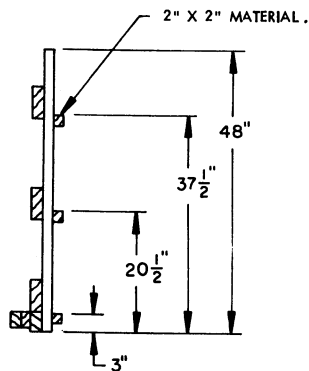
SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH INCREASED AND/OR DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 39. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-CROSSWISE PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-6\".
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

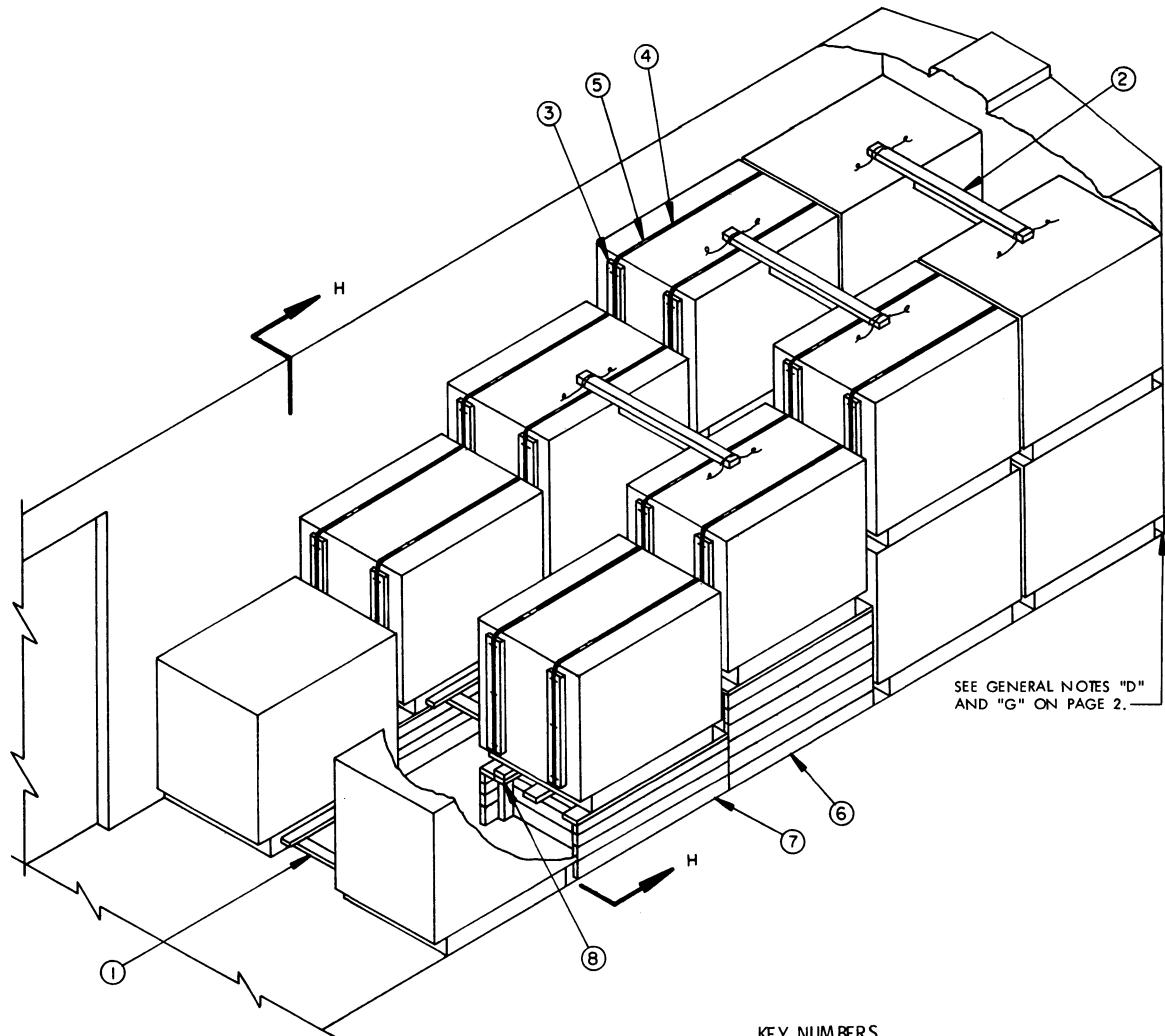


LOAD BEARING GATE M

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



END VIEW

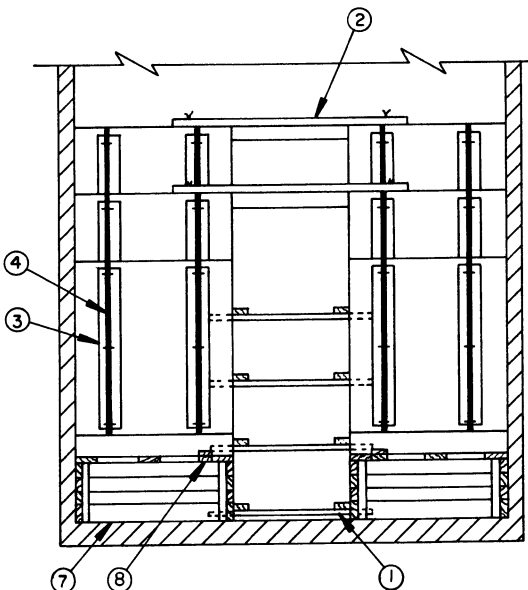


SEE GENERAL NOTES "D"
AND "G" ON PAGE 2.

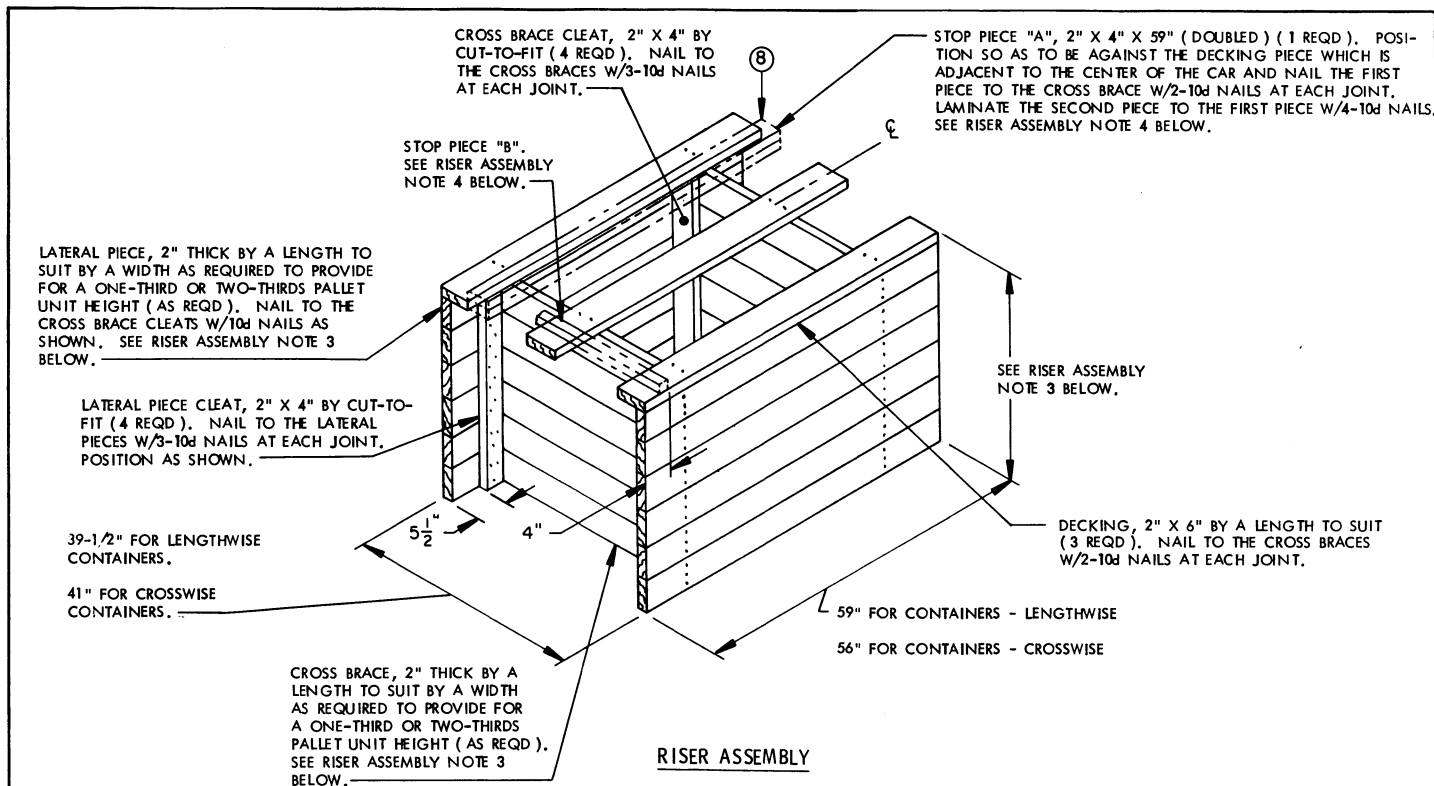
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (7 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 43.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62.
- ③ STRAPPING BOARD, 2" X 6" X 43-3/4" (32 REQD/4 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 44. SEE SPECIAL NOTE 6 ON PAGE 43.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 19'-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 44.
- 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 OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL AND SPECIAL NOTES FOR RISER ASSEMBLY NUMBERED 1 AND 2 ON PAGE 43.
- ⑦ RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 43.
- ⑧ STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 43 FOR LOCATION AND NAILING GUIDANCE.



SECTION H-H



SPECIAL NOTES FOR LOAD:

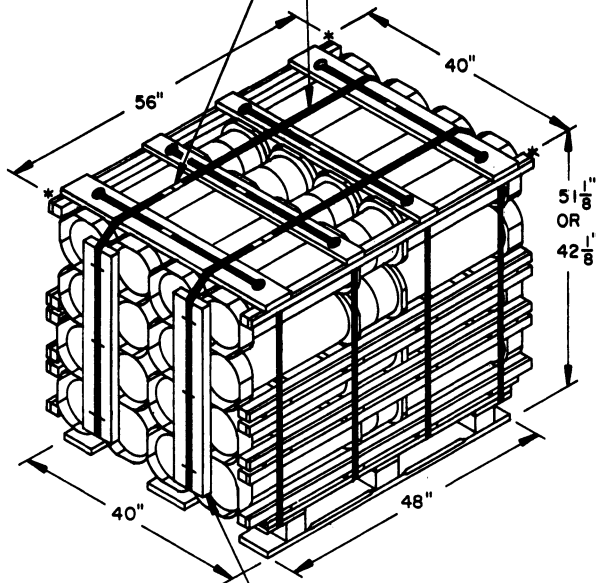
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOXCAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED FOR THE DEPICTED LOAD; CARS AT LEAST 9'-5" WIDE ARE REQUIRED FOR CONTAINERS-CROSSWISE LOADS.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LOAD ON PAGE 42. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED WITH THE CONTAINERS-LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CONTAINERS-CROSSWISE UNITS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. THE ANTI-SWAY BRACE IS APPLICABLE FOR THE CONTAINERS-LENGTHWISE UNITS. ANTI-SWAY BRACING WILL NOT BE REQUIRED FOR CONTAINERS-CROSSWISE UNITS.
6. FOR CONTAINERS-CROSSWISE UNITS, THE STRAPPING BOARDS SHOWN AS PIECES MARKED (3) WILL NOT BE REQUIRED. SEE THE "METHOD B" DETAIL ON PAGE 44 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS. ALSO, FOR LOADS OF CONTAINERS-CROSSWISE UNITS, STOP PIECE "B", AS SHOWN ON THE RISER DETAIL ABOVE, WILL BE USED IN LIEU OF STOP PIECE "A".

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE BASIC HEIGHT PALLET UNIT. THE HEIGHT OF THE BASIC UNIT IS 51-1/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER (6) IN THE LOAD ON PAGE 42. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM SIX (6) PIECES OF 2" X 6" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 34-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER (7) IN THE LOAD ON PAGE 42, WILL BE FABRICATED FROM ONE (1) PIECE OF 2" X 6" AND THREE PIECES OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 17-1/2" AFTER THE DECKING IS IN PLACE.
2. THE DECREASED HEIGHT PALLET UNIT WILL REQUIRE THREE (3) PIECES OF 2" X 6" MATERIAL AND THREE (3) PIECES OF 2" X 4" MATERIAL FOR THE TWO-THIRDS HEIGHT RISER, AND ONE (1) 2" X 6" PIECE PLUS TWO (2) 2" X 4" PIECES OF MATERIAL FOR THE ONE-THIRD HEIGHT RISER.
3. 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.
4. THE STOP PIECE "A" SHOWN ON THE RISER ASSEMBLY ABOVE IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS-LENGTHWISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 42. IF THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS-CROSSWISE IN THE CAR, POSITION A 2" X 2" BY A LENGTH TO SUIT PIECE ACROSS THE DECKING, ON THE END WHICH IS AGAINST THE CAR SIDEWALL, AND NAIL TO THE DECKING W/2-10d NAILS AT EACH JOINT. SEE STOP PIECE "B" ON THE RISER ASSEMBLY ABOVE FOR LOCATION GUIDANCE.

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 19'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 17'-6" LONG FOR 4-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 43-3/4" FOR 5-LAYER UNITS, 2" X 6" X 34-3/4" FOR 4-LAYER UNITS (4 REQD). POSITION SO AS TO CENTER ON THE JOINTS OF CONTAINERS.

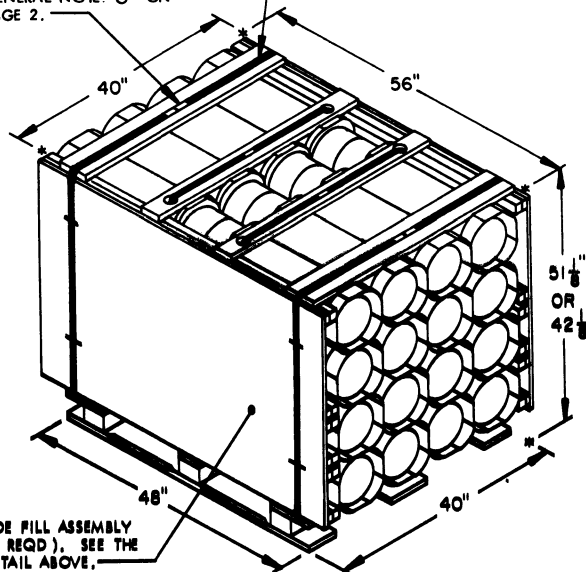
METHOD A

THE DECREASED HEIGHT PALLET UNIT IS SHOWN. THIS METHOD IS ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.

NOTE:
THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS-LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 42. THE DECREASED HEIGHT PALLET UNIT IS SHOWN. THE PROCEDURE ALSO APPLIES TO THE BASIC HEIGHT PALLET UNIT. FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL BELOW.

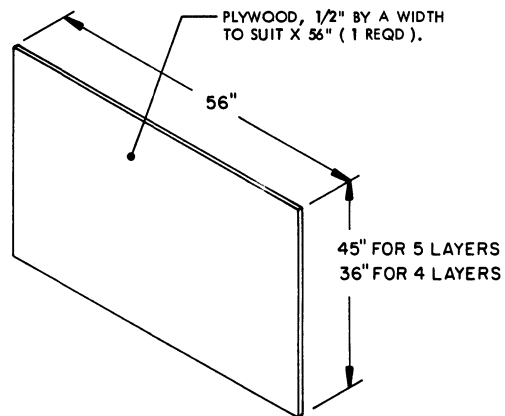
REINFORCING STRAP, 1-1/4" X .035" X 16'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 14'-6" FOR 4-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE SIDE FILL ASSEMBLIES. SECURE TO THE SIDE FILL ASSEMBLIES WITH 2 STAPLES.

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



METHOD B

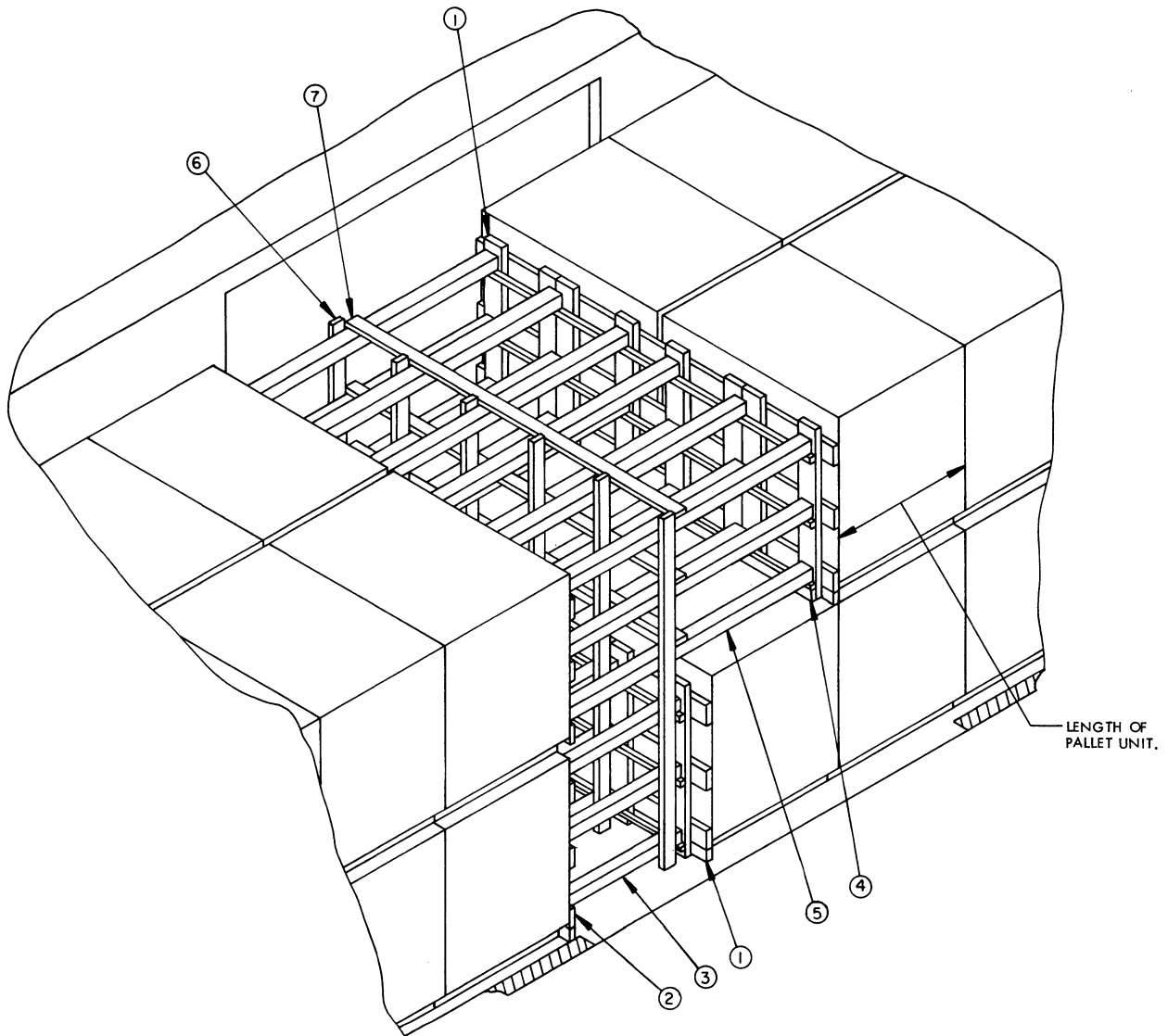
THE DECREASED HEIGHT PALLET UNIT IS SHOWN. THIS METHOD IS ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.



SIDE FILL ASSEMBLY

FOR METHOD "B" BELOW.

NOTE:
THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR UNITS POSITIONED WITH THE CONTAINERS-CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 42. THIS PROCEDURE ALSO APPLIES TO THE BASIC HEIGHT PALLET UNIT.



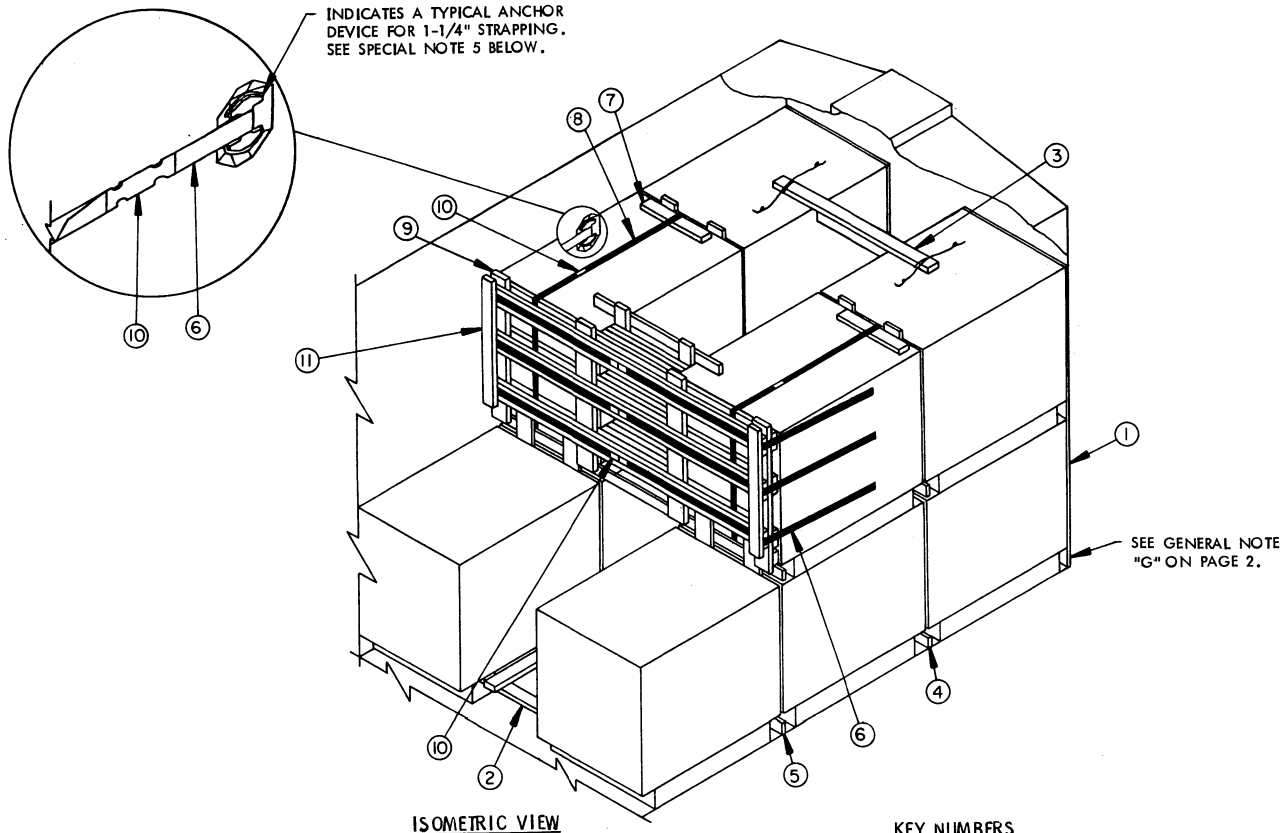
ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-6" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE DECREASED HEIGHT PALLET UNIT.
3. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
4. THE DEPICTED PROCEDURES ARE APPLICABLE FOR LOADS WITH THE CONTAINERS CROSSWISE IN THE CAR. IF THE CONTAINERS IN THE LOAD ARE LENGTHWISE IN THE CAR, CENTER GATE "C" WILL BE USED FOR PIECES MARKED ① AND ②, AND THE HORIZONTAL STRUT BRACING, PIECE MARKED ⑦, WILL BE CAR WIDTH MINUS 15" IN LENGTH.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19.
- ③ STRUT, 4" X 4" BY CUT-TO-FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND GENERAL NOTE "W" ON PAGE 3.
- ④ GATE SUPPORT PIECE, 2" X 3" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ②, IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND A MINIMUM OF 2" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" X 9'-2" (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.



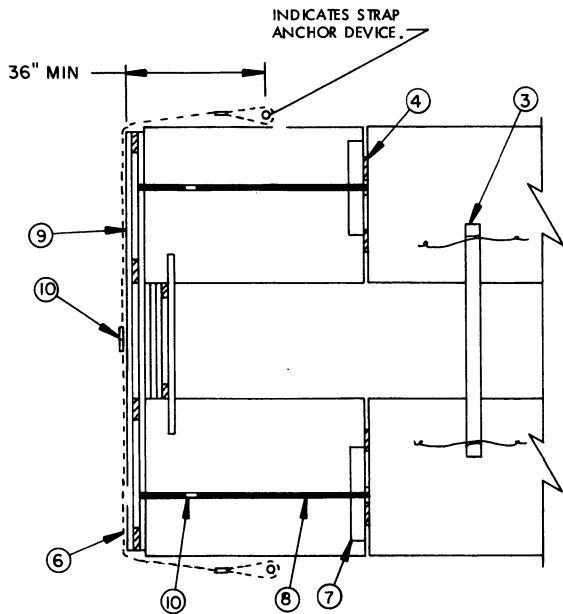
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

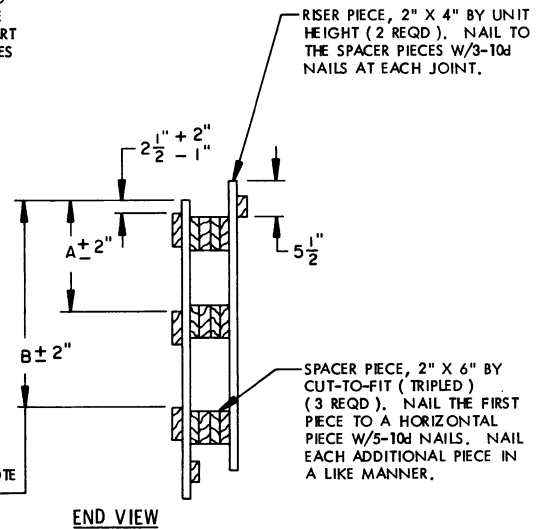
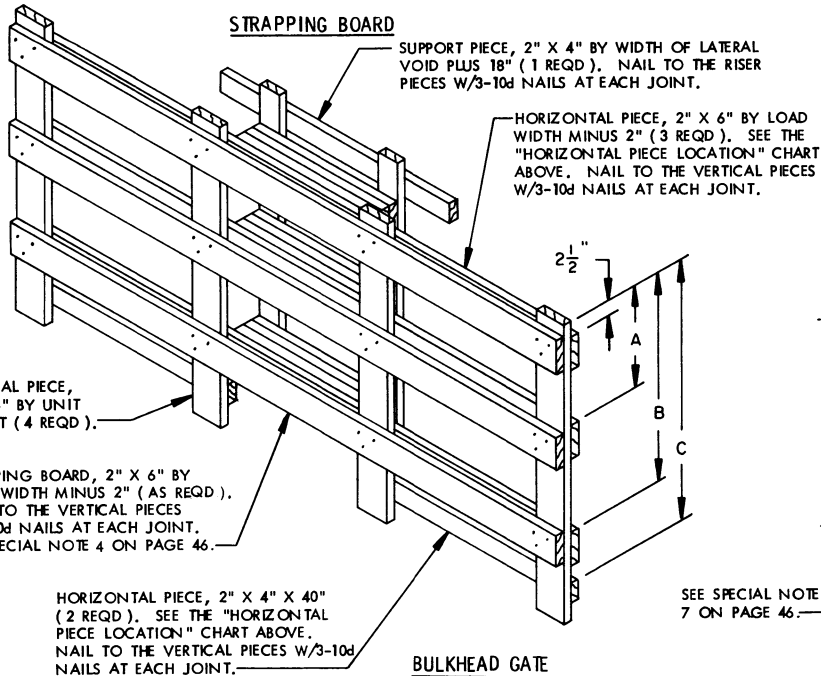
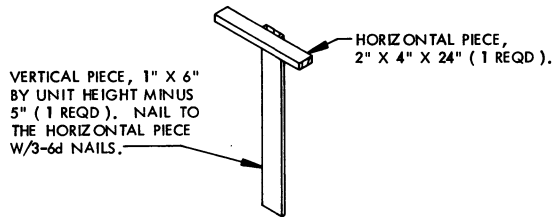
1. A 9'-2" WIDE ALL-METAL BOXCAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE DECREASED HEIGHT UNIT IS SHOWN IN THE TYPICAL LCL LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.
3. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF LENGTHWISE POSITIONED PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CROSSWISE POSITIONED PALLET UNITS WILL NOT BE RETAINED BY THE BULKHEAD GATE METHOD.
4. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. A BULKHEAD GATE WITH 2 STRAPS WILL RETAIN 2 BASIC HEIGHT PALLET UNITS OR 2 DECREASED HEIGHT UNITS; A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 3 BASIC HEIGHT PALLET UNITS OR 4 DECREASED HEIGHT UNITS.
5. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST THIRTY-SIX INCHES (36") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CAR SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 45 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 38 FOR A SINGLE UNIT.
6. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 47 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

- ① END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 61. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 62 IS USED, THE END-WALL LINING IS NOT REQUIRED.
- ② ANTI-SWAY BRACE (5 REQD). SEE THE DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 62.
- ④ SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17 OR 31. 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 47 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.
- ⑦ STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 47.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 19'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED ⑦. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑥.
- ⑨ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 47. SEE SPECIAL NOTE 3 AT LEFT.
- ⑩ SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED ④, 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.



STRAP APPLICATION PLAN VIEW

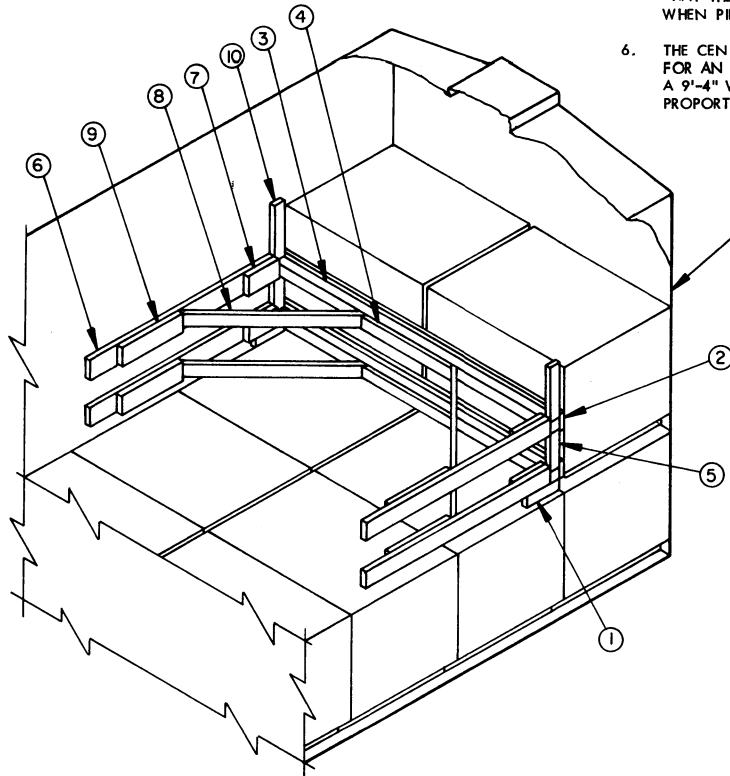
HORIZONTAL PIECE LOCATION		
	BASIC HEIGHT	DECREASED HEIGHT
DIM A	15-1/2" ± 1"	15-1/2" ± 1"
DIM B	33-1/2" ± 1"	36" ± 0"
DIM C	45" ± 0"	-----



(SPECIAL NOTES CONTINUED)

LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED (6) 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 (6) IS DOUBLED.

6. THE CENTER CLEAT, SHOWN AS PIECE MARKED (4), WILL 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR AND 40" FOR A 9'-6" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

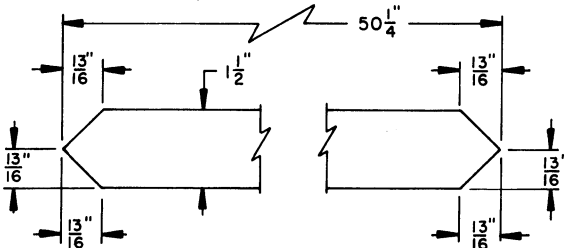


ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-6" WIDE CONVENTIONAL WOOD-LINED BOXCAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LCL LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT UNIT.
3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A CROSSWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR LENGTHWISE LOADS. NOTE THAT ONLY FOR A BASIC HEIGHT LENGTHWISE LOAD, 2" X 6" X 40" VERTICAL PIECES MUST BE NAILED TO THE LOWER HORIZONTAL PIECE, PIECE MARKED (2) W/3-10d NAILS IN THE SAME POSITION AS ON CENTER GATE "C" ON PAGE 18, PRIOR TO PLACING THE ASSEMBLED PIECES MARKED (2) AND (3).
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, OR A FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 49, 50, AND 51 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 (1), (2), (3), (5), (7), AND (10) MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED (8) TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED (6) MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60"), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE.

(CONTINUED AT RIGHT ABOVE)



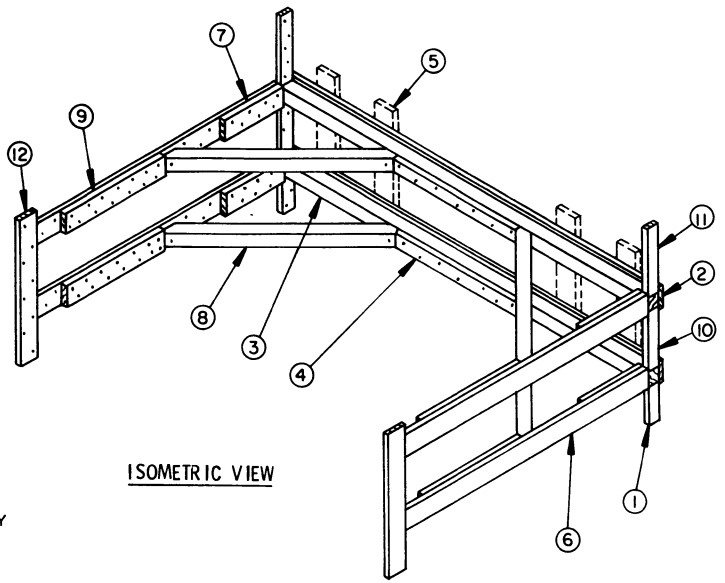
DIAGONAL BRACE

KEY NUMBERS

- (1) SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). FOR CROSSWISE 4-LAYER UNITS POSITION AS SHOWN 1" ABOVE THE LOWER PALLET UNIT, POSITION VERTICALLY FOR 5-LAYER UNITS AND 3-3/4" ABOVE LOWER PALLET UNIT. FOR LENGTHWISE 4-LAYER OR 5-LAYER UNITS POSITION VERTICALLY 3-3/4" ABOVE LOWER PALLET UNIT. NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- (2) HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (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 AND SPECIAL NOTE 3 AT LEFT.
- (3) CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (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 6 ABOVE.
- (5) SPACER CLEAT FOR CROSSWISE UNITS, 2" X 4" X 16-3/4" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS; FOR LENGTHWISE UNITS, 2" X 4" X 14-1/2" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- (6) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- (7) POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (6), W/4-16d NAILS.
- (8) 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 (3), AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (6), W/2-16d NAILS AT EACH END.
- (9) BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (6), W/8-16d NAILS.
- (10) HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

SPECIAL NOTES:

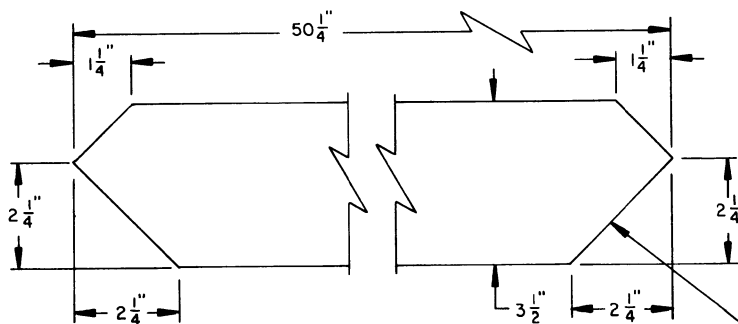
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN EIGHT (8) 4-LAYER UNITS OR SIX (6) 5-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 50 AND 51 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 48 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, ⑦, ⑩, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑧ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF. 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑥ 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 ⑥ 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", 38" LONG FOR A 9'-4", AND 40" LONG FOR A 9'-6" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.



ISOMETRIC VIEW

KEY NUMBERS

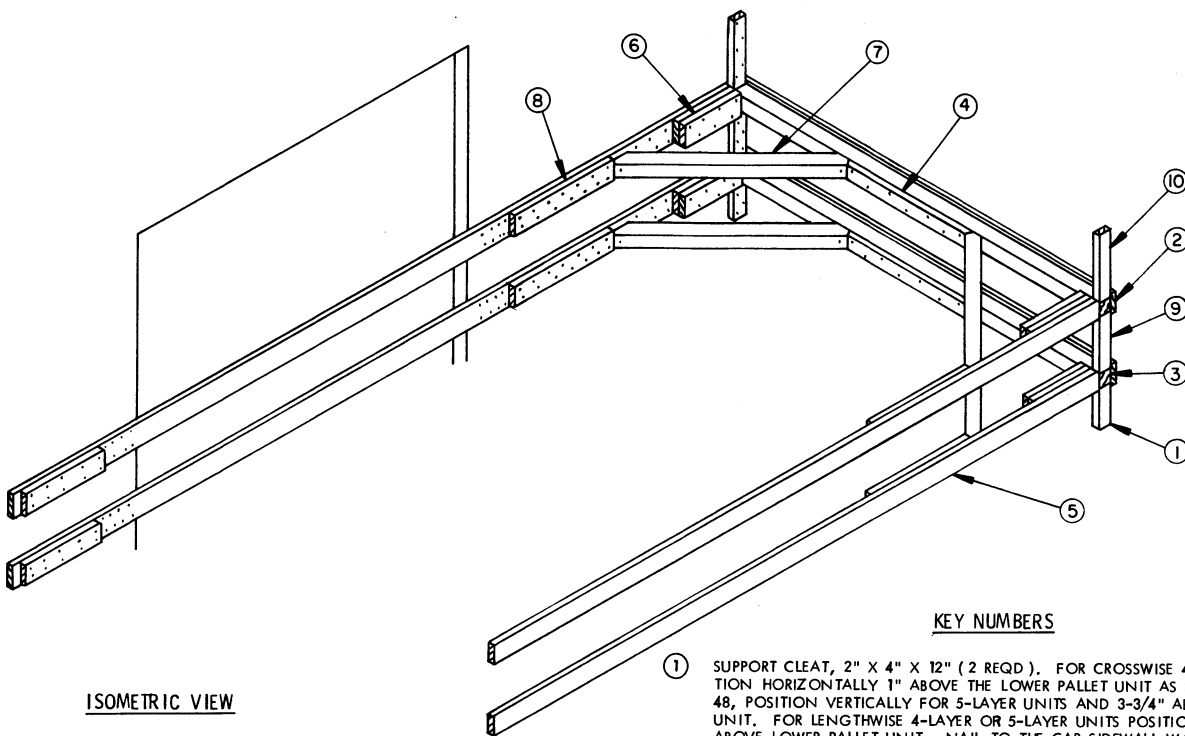
- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). FOR CROSSWISE 4-LAYER UNITS POSITION HORIZONTALLY 1" ABOVE THE LOWER PALLET UNIT AS SHOWN ON PAGE 48, POSITION VERTICALLY FOR 5-LAYER UNITS AND 3-3/4" ABOVE LOWER PALLET UNIT. FOR LENGTHWISE 4-LAYER OR 5-LAYER UNITS, POSITION VERTICALLY 3-3/4" ABOVE LOWER PALLET UNIT. NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL 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 VERTICAL PIECE, 2" X 6" X 40" (4 REQD). LOCATE SAME AS VERTICAL PIECES ON CENTER GATE "C" ON PAGE 18 AND NAIL TO THE LOWER LOAD BEARING PIECE, PIECE MARKED ②, PRIOR TO PLACING THE ASSEMBLED PIECES MARKED ② AND ③. ONLY REQUIRED FOR THE BASIC HEIGHT UNIT.
- ⑥ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/7-16d NAILS.
- ⑧ 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 ⑥, W/1-60d NAIL AT EACH END.
- ⑨ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/14-16d NAILS.
- ⑩ SPACER CLEAT FOR CROSSWISE UNITS, 2" X 4" X 16-3/4" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS; FOR LENGTHWISE UNITS, 2" X 4" X 14-1/2" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑪ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑫ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



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 ⑥.



ISOMETRIC VIEW

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). FOR CROSSWISE 4-LAYER UNITS POSITION HORIZONTALLY 1" ABOVE THE LOWER PALLET UNIT AS SHOWN ON PAGE 48, POSITION VERTICALLY FOR 5-LAYER UNITS AND 3-3/4" ABOVE LOWER PALLET UNIT. FOR LENGTHWISE 4-LAYER OR 5-LAYER UNITS POSITION VERTICALLY 3-3/4" ABOVE LOWER PALLET UNIT. NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT-TO-FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 BELOW.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENINGS TO CONTACT PIECE MARKED ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT FOR CROSSWISE UNITS, 2" X 4" X 16-3/4" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS; FOR LENGTHWISE UNITS, 2" X 4" X 14-1/2" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

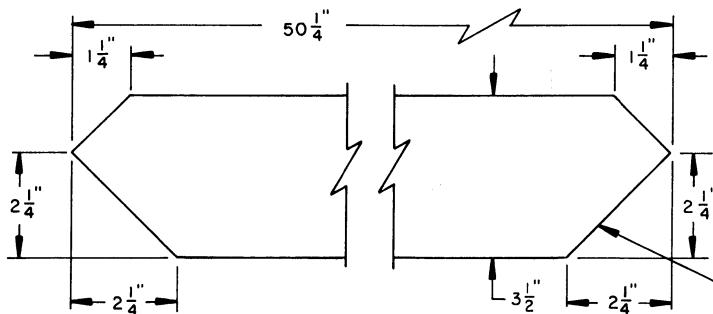
SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN TEN (10) 4-LAYER UNITS OR EIGHT (8) 5-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 51 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 49 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 48 WILL BE ADEQUATE.
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑤, ⑥, ⑦, ⑧, ⑨, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

(CONTINUED AT RIGHT)

(SPECIAL NOTES CONTINUED)

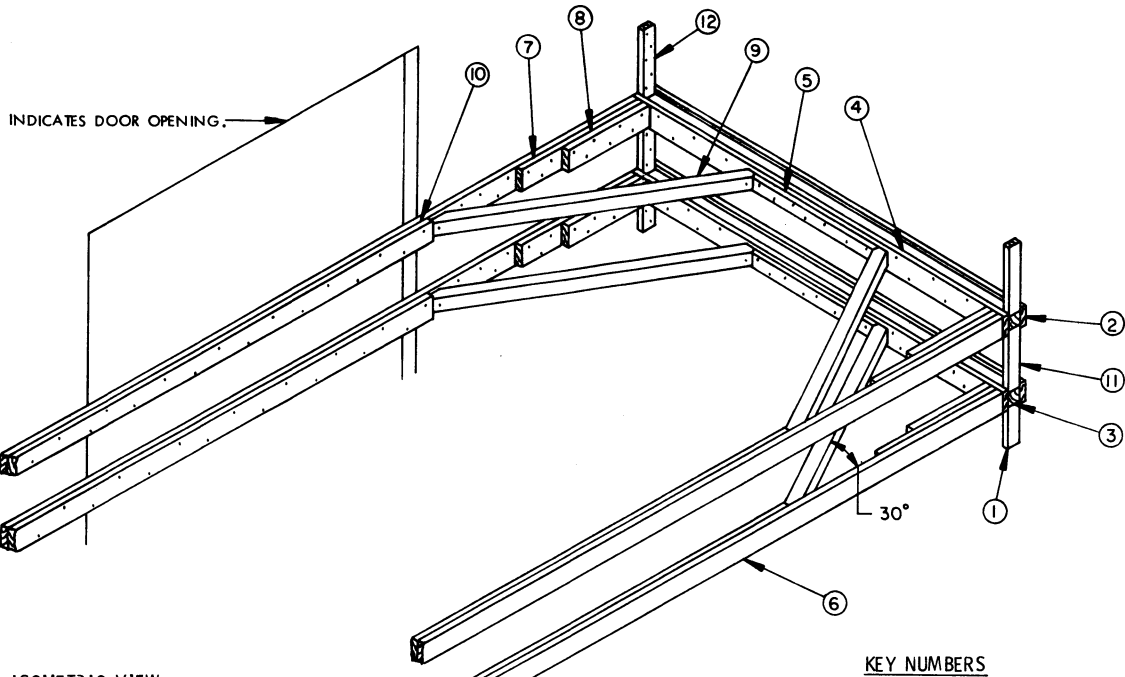
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", 38" LONG FOR A 9'-4", AND 40" FOR A 9'-6" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR. THE BRACE IS 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.

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.



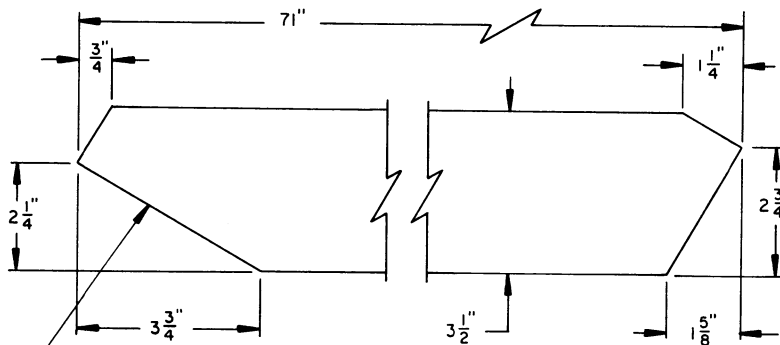
ISOMETRIC VIEW

KEY NUMBERS

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 FOURTEEN (14) 4-LAYER UNITS OR TEN (10) 5-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 50 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 49 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 48 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 ALLRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", 38" LONG FOR A 9'-4" AND 40" FOR A 9'-6" 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 ④ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). FOR CROSSWISE 4-LAYER UNITS POSITION HORIZONTALLY 1" ABOVE THE LOWER PALLET UNIT AS SHOWN ON PAGE 48, POSITION VERTICALLY FOR 5-LAYER UNITS AND 3-3/4" ABOVE LOWER PALLET UNIT. FOR LENGTHWISE 4-LAYER OR 5-LAYER UNITS POSITION VERTICALLY 3-3/4" ABOVE LOWER PALLET UNIT. NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD) NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT-TO-FIT) (2 REQD).
- ④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT-TO-FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6".
- ⑤ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑥ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO CONTACT PIECE MARKED ④ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.
- ⑦ POCKET CLEAT, 2" X 6" X 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16d NAILS.
- ⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.
- ⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/1-60d NAIL AT EACH END.
- ⑩ BACK-UP CLEAT, 2" X 6" BY CUT-TO-FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND TO CONTACT THE DIAGONAL BRACE, PIECE MARKED ⑨, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/18-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING, IF APPLICABLE.
- ⑪ SPACER CLEAT FOR CROSSWISE UNITS, 2" X 4" X 16-3/4" FOR 4-LAYER UNITS, 23-1/2" FOR 5-LAYER UNITS; FOR LENGTHWISE UNITS, 2" X 4" X 14-1/2" FOR 4-LAYER UNITS, 23-1/2" FOR 5-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.

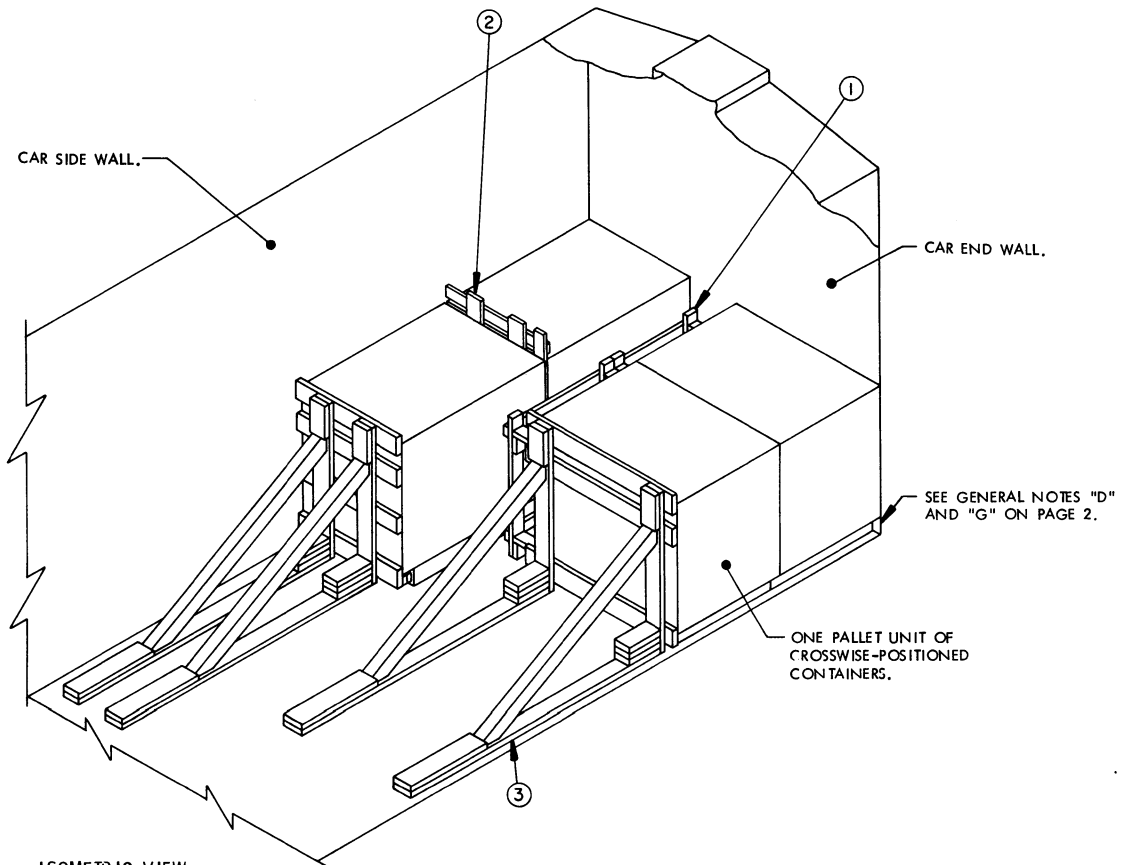


DIAGONAL BRACE

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



ISOMETRIC VIEW

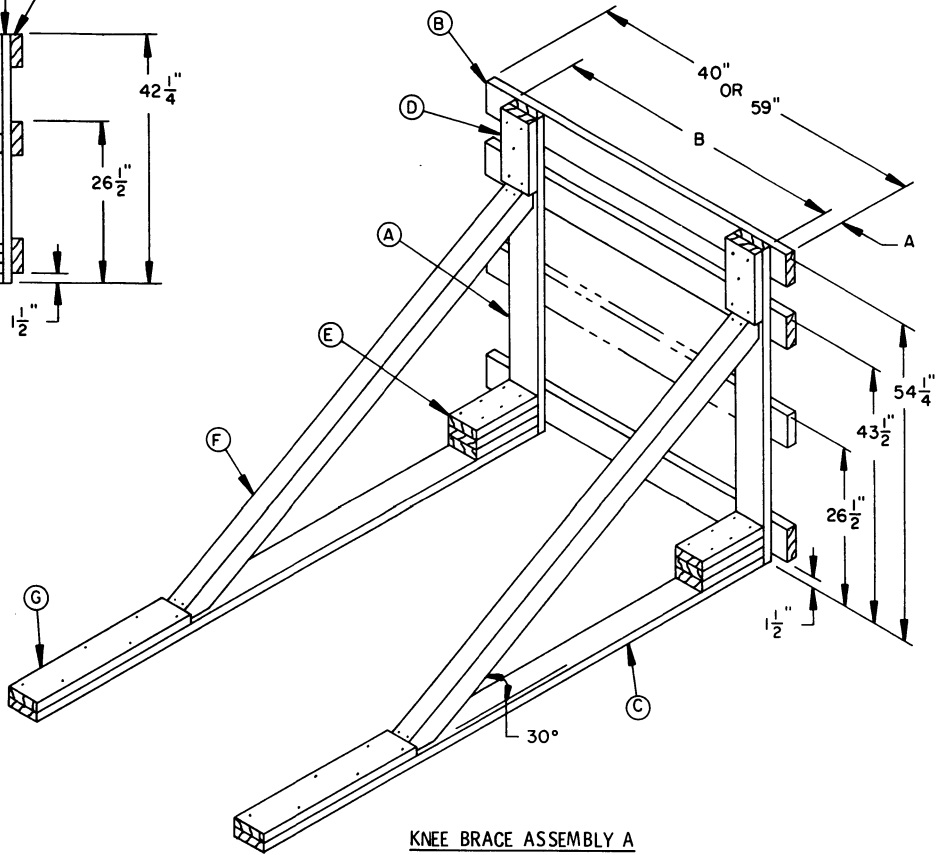
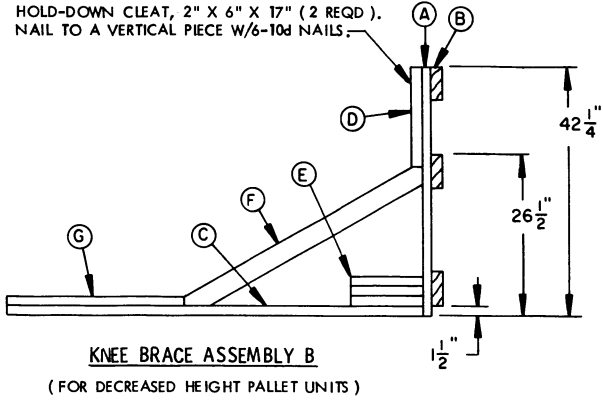
KEY NUMBERS

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE BASIC HEIGHT PALLET UNIT IS DEPICTED USING KNEE BRACE ASSEMBLY "A". FOR THE DECREASED HEIGHT PALLET UNIT, USE KNEE BRACE ASSEMBLY "B".
3. THE COMBINATION LOADING PATTERN IS SHOWN ONLY TO DEPICT LCL BLOCKING AGAINST BOTH SIDES OF THE UNIT, HOWEVER, THE PREFERRED LOADING PATTERN WOULD BE EITHER TWO ROWS OF CROSSWISE-POSITIONED UNITS OR TWO ROWS OF LENGTHWISE-POSITIONED UNITS. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.
5. HOLD-DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. 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 16. 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 17.

- ① CRIB FILL (2 REQD). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 16 OR 30. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.
- ② SEPARATOR GATE (1 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17 OR 31. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.
- ③ KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 53 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS. SEE SPECIAL NOTE 4 AT LEFT.

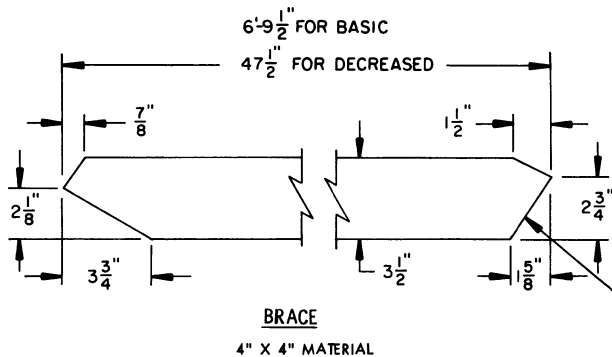
HOLD-DOWN CLEAT, 2" X 6" X 17" (2 REQD).
NAIL TO A VERTICAL PIECE W/6-10d NAILS.



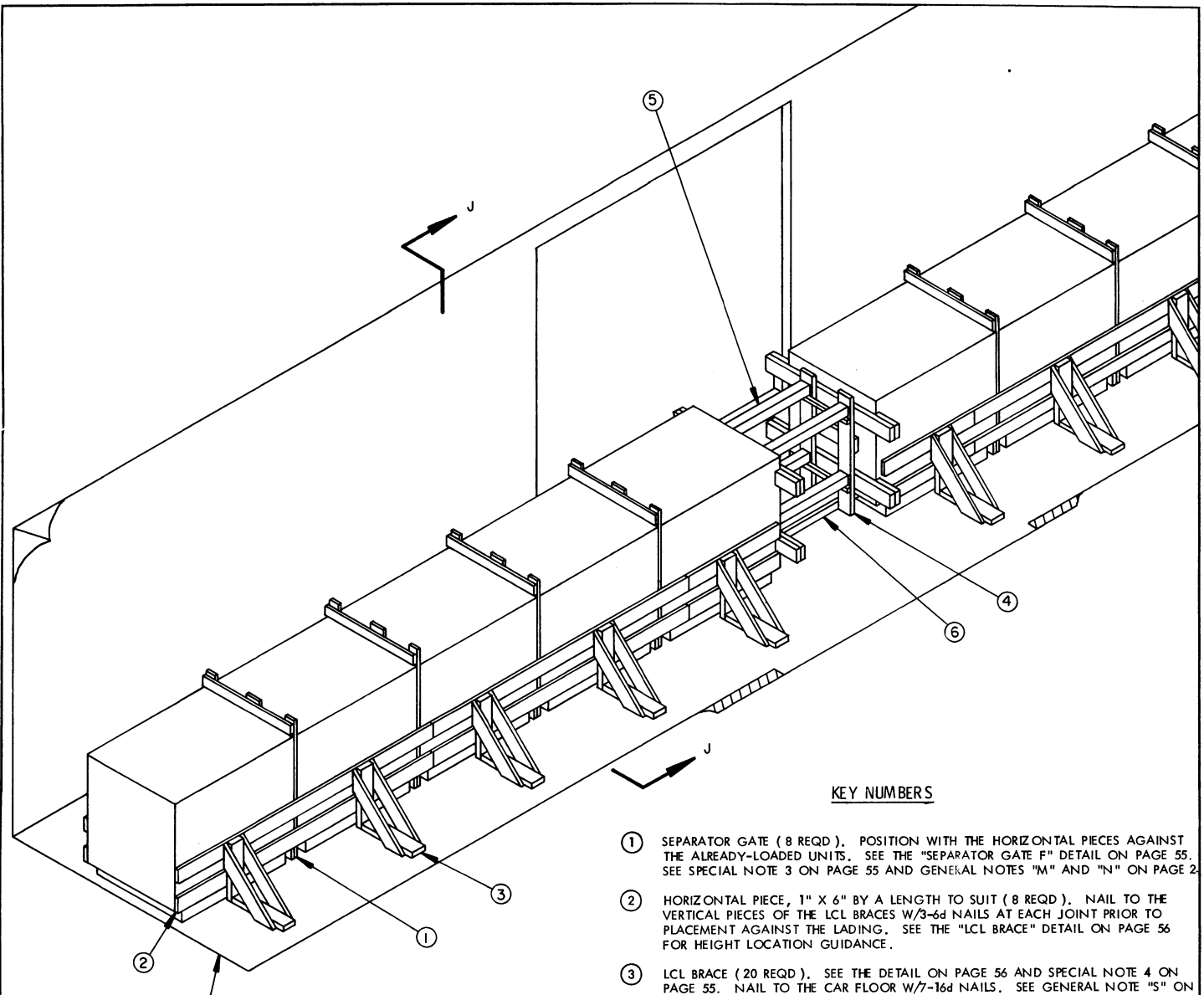
KEY LETTERS

- (A) VERTICAL PIECE, 2" X 6" X 54-1/4" FOR BASIC HEIGHT, 42-1/4" FOR DECREASED HEIGHT UNIT (2 REQD). SEE THE CHART AT LEFT FOR PLACEMENT DIMENSIONS.
- (B) HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH PLUS 3", AS APPLICABLE (3 REQUIRED FOR CROSSWISE-POSITIONED CONTAINERS, 4 REQUIRED FOR LENGTHWISE-POSITIONED CONTAINERS AS SHOWN BY THE PHANTOM LINES). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 52.
- (C) FLOOR CLEAT, 2" X 6" X 8'-6" FOR BASIC HEIGHT, 72" FOR DECREASED HEIGHT UNIT (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "S" ON PAGE 2.
- (D) HOLD-DOWN CLEAT, 2" X 6" X 12" FOR BASIC HEIGHT, 17" FOR DECREASED HEIGHT UNIT (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.
- (E) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C), W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A), W/2-16d NAILS.
- (F) BRACE, 4" X 4" X 6'-9-1/2" FOR BASIC HEIGHT, 47-1/2" FOR DECREASED HEIGHT (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C), W/2-16d NAILS AT EACH JOINT.
- (G) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C), W/6-40d NAILS.
- (H) HOLD-DOWN CLEAT, (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 52.

VERTICAL PIECE PLACEMENT		
BASIC OR DECREASED HEIGHT	DIM A	DIM B
CROSSWISE UNIT	3"	50"
LENGTHWISE UNIT	8-1/4"	31-3/4"



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

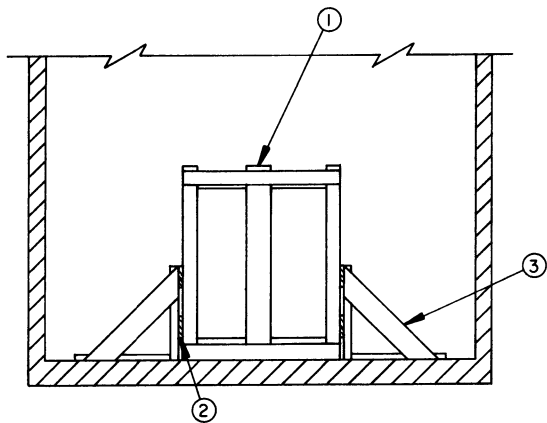


SEE GENERAL NOTES "D" AND "G" ON PAGE 2.

ISOMETRIC VIEW

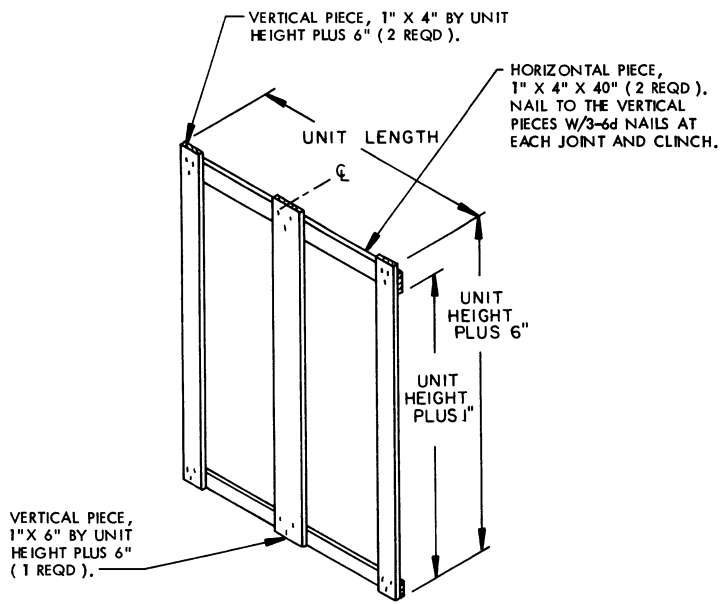
KEY NUMBERS

- ① SEPARATOR GATE (8 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 55. SEE SPECIAL NOTE 3 ON PAGE 55 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 56 FOR HEIGHT LOCATION GUIDANCE.
- ③ LCL BRACE (20 REQD). SEE THE DETAIL ON PAGE 56 AND SPECIAL NOTE 4 ON PAGE 55. 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 J" OR THE "CENTER GATE K" DETAIL ON PAGE 55 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (6 REQD FOR 5-HIGH LENGTHWISE, 4 REQD FOR 4-HIGH LENGTHWISE, 9 REQD FOR CROSSWISE). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "U" ON PAGE 2 AND GENERAL NOTE "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 J" DETAIL ON PAGE 55 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 55.

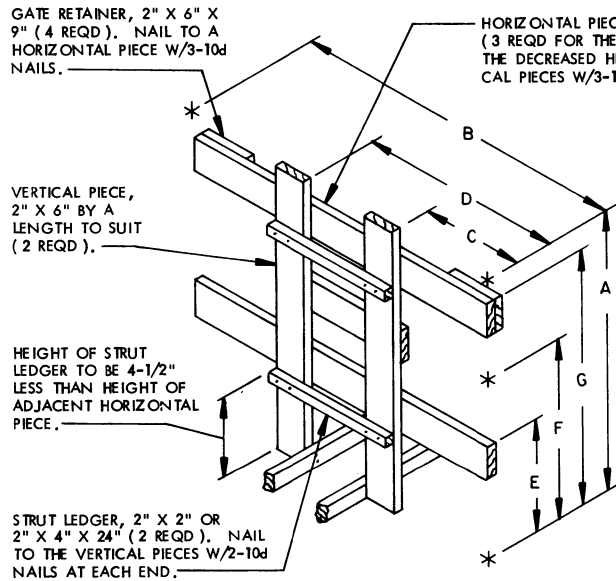


SECTION J-J

CENTER GATE J			CENTER GATE K		
DIM	4-HIGH UNIT	5-HIGH UNIT	DIM	4-HIGH UNIT	5-HIGH UNIT
A	40"	48"	H	48"	48"
B	58-1/2"	58-1/2"	J	6'-2-1/2"	6'-2-1/2"
C	17-1/4"	17-1/4"	K	12"	12"
D	35-1/4"	35-1/4"	L	31-1/2"	31-1/2"
E	17-1/2"	17-1/2"	M	56-1/2"	56-1/2"
F	31"	31"	N	9"	9"
G	35-1/2"	44-1/2"	O	26-1/2"	26-1/2"
			P	43-1/2"	44-1/2"



SEPARATOR GATE F

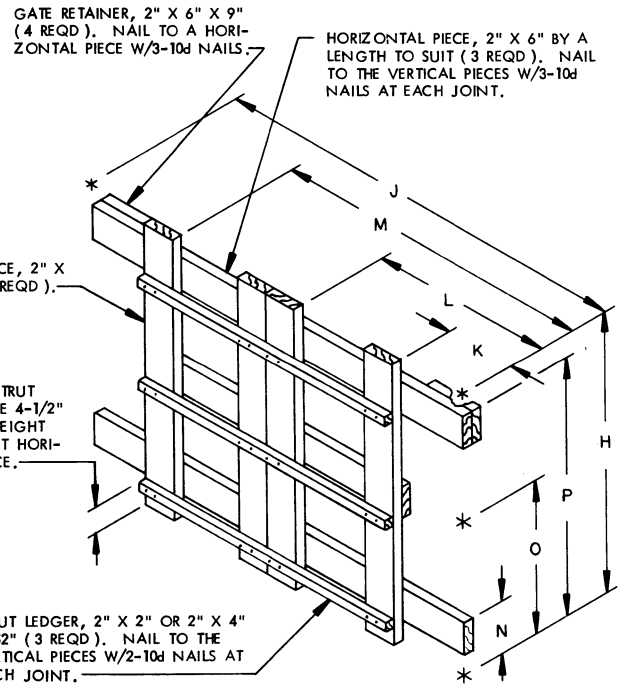


CENTER GATE J

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE "J" CHART ON PAGE 54 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.

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 BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL 1-WIDE LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT PALLET UNIT.
3. A 1-WIDE LENGTHWISE LOAD IS SHOWN AS TYPICAL. A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE CROSSWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE SEPARATOR GATES, PIECES MARKED ① ARE NOT REQUIRED, AND THE QUANTITY OF LCL BRACES, PIECES MARKED ③, IS NOT CORRECT FOR CROSSWISE LOADS.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR CROSSWISE PALLET UNITS, THE BRACES WILL BE CENTERED ON THE LENGTH OF THE UNIT. FOR THE LENGTHWISE UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT WIDTH.
5. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL.
6. IF DESIRED, GATE HOLD DOWN PIECES WITH THE ASSOCIATED FILL PIECES, AS SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATE FOR A SINGLE ROW, MAY BE USED IN LIEU OF PIECES MARKED ⑥.



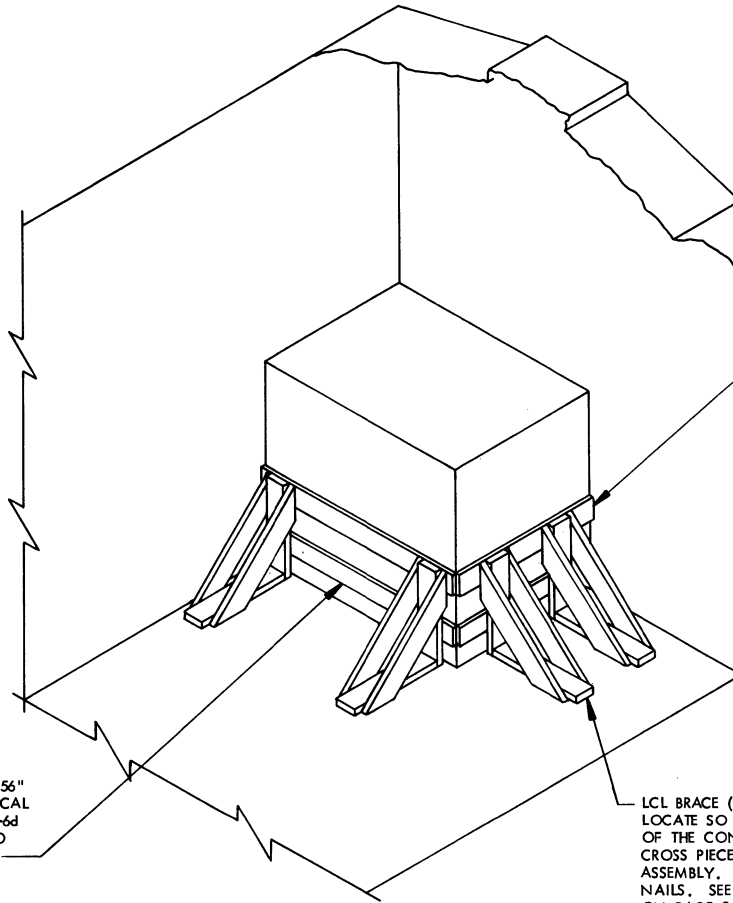
CENTER GATE K

THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE "K" CHART AT BOTTOM OF PAGE 54 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	130	43
1" X 6"	226	113
2" X 2"	12	4
2" X 3"	11	6
2" X 6"	202	202
4" X 4"	18	24
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
8d (2-1/2")	240	2-1/2
10d (3")	80	1-1/4
16d (3-1/2")	164	3-3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	10	21,370 LBS
DUNNAGE		794 LBS
TOTAL WEIGHT		22,164 LBS



HORIZONTAL PIECE, 1" X 6" X 56" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

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

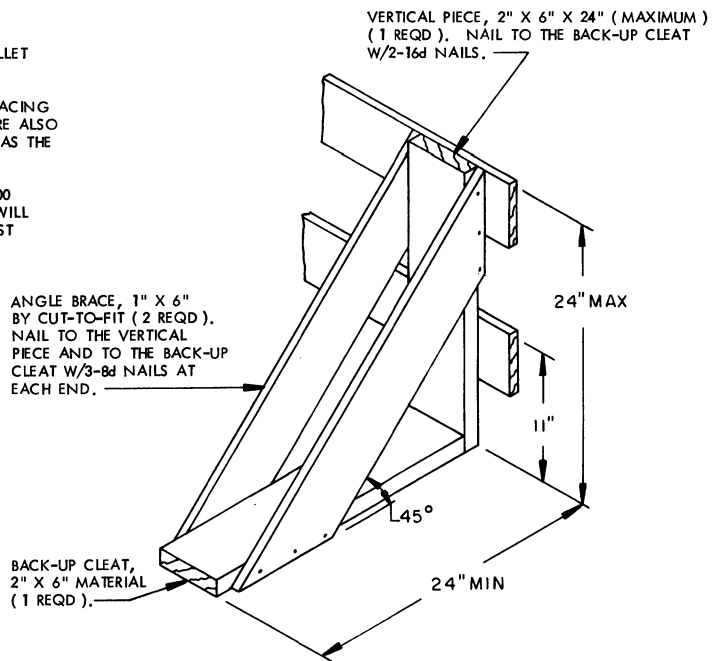
SEE GENERAL NOTE "G" ON PAGE 2.

LCL BRACE (4 REQD). SEE THE DETAIL BELOW. LOCATE SO AS TO BE CENTERED ON THE JOINTS OF THE CONTAINER ENDS AND/OR AGAINST THE CROSS PIECE OF THE INTERMEDIATE DUNNAGE ASSEMBLY. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTES "M", "N", AND "S" ON PAGE 2.

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 "S" AND "D" ON PAGE 2.
2. THE BASIC HEIGHT PALLET UNIT IS SHOWN IN THE TYPICAL LCL LOAD. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT PALLET UNIT.
3. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A CROSSWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 4.
4. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING.

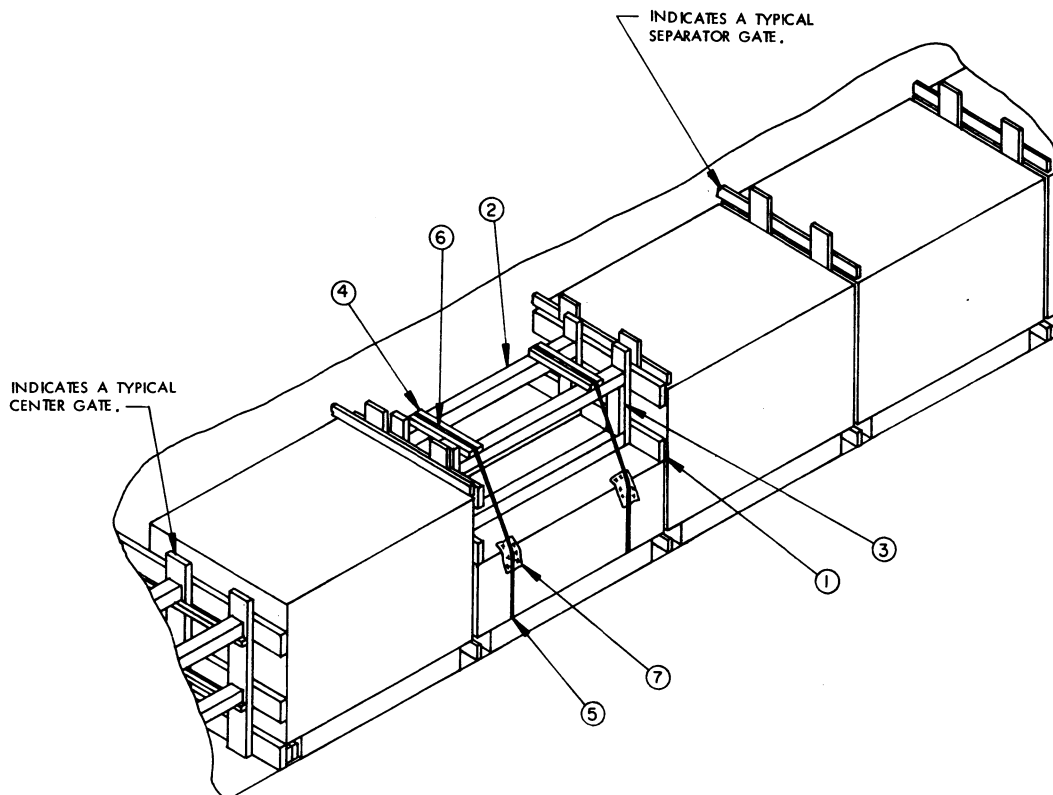


VERTICAL PIECE, 2" X 6" X 24" (MAXIMUM) (1 REQD). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.

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

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

LCL BRACE



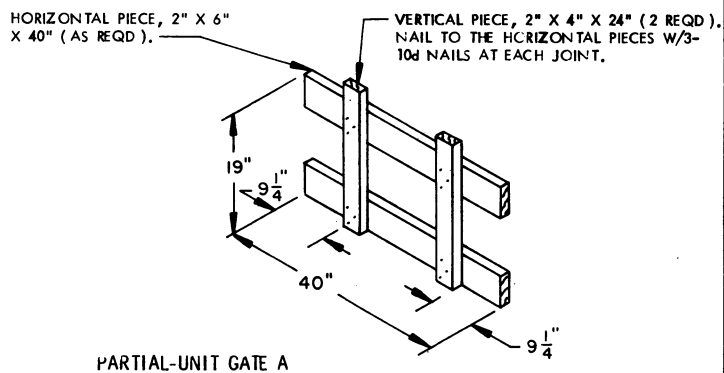
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

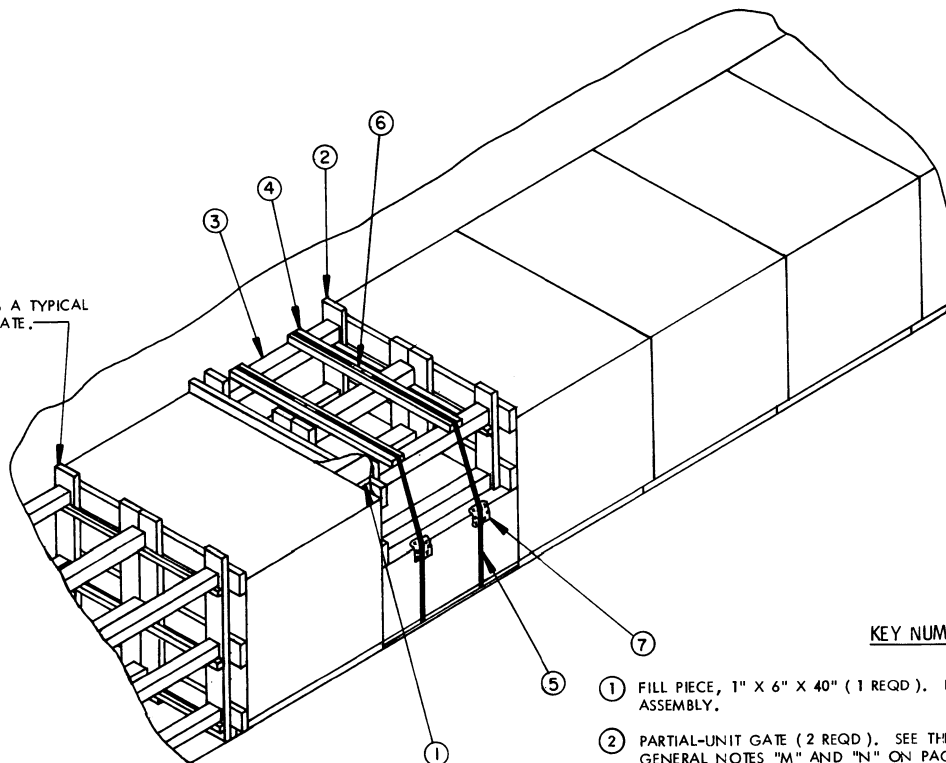
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE SHIPMENT OF PARTIAL UNITS. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 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/15-20PM1001, 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 AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② STRUT, 4" X 4" X 50" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/2-16d NAILS AT EACH END.
- ③ STRUT SUPPORT PIECE, 2" X 4" X 11" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.
- ④ STRAPPING BOARD, 2" X 4" X 21-1/2" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ③, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" X .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECE OF THE TOP DUNNAGE ASSEMBLY.
- 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.



INDICATES A TYPICAL CENTER GATE.



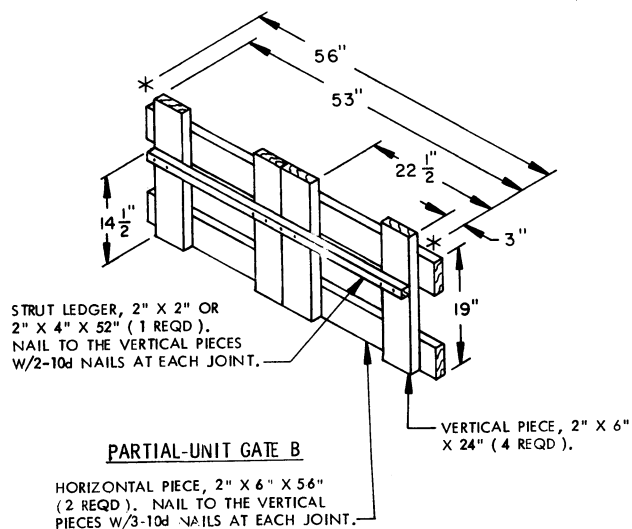
POSITIONING OF PARTIAL CROSS-WISE UNIT IN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CROSSWISE LOAD.
2. THE DECREASED HEIGHT PALLET UNIT IS SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT PALLET UNIT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 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/15-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
6. THE "POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOXCAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
7. FOR THE SHIPMENT OF A PARTIAL UNIT CROSSWISE CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 60 MAY BE MORE ECONOMICAL.
8. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① FILL PIECE, 1" X 6" X 40" (1 REQD). POSITION ON CENTER OF THE TOP DUNNAGE ASSEMBLY.
- ② PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ③ STRUT, 4" X 4" X 34" (6 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED ②, W/2-16d NAILS AT EACH END.
- ④ STRAPPING BOARD, 2" X 4" X 48" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ③, W/3-10d NAILS AT EACH JOINT.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.
- ⑦ AN ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



PARTIAL-UNIT GATE B

STRUT LEDGER, 2" X 2" OR 2" X 4" X 52" (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" X 56" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

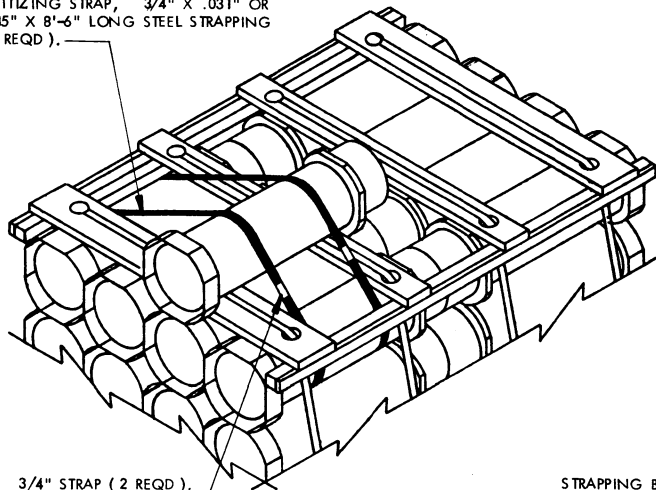
VERTICAL PIECE, 2" X 6" X 24" (4 REQD).

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 60 OR WITHIN A LAYER AS SHOWN ON PAGES 57 AND 58.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. THE UNITIZING STRAP MUST NOT GO AROUND THE TOP DUNNAGE ASSEMBLY; THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.

(CONTINUED BELOW)

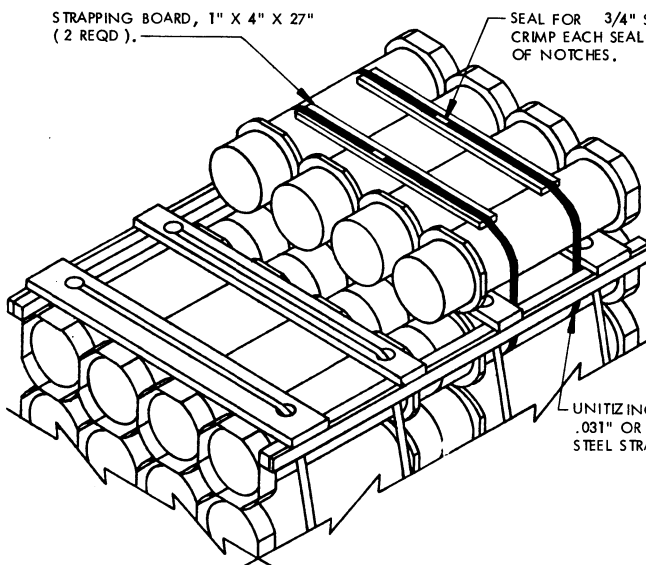
UNITIZING STRAP, 3/4" X .031" OR .035" X 8'-6" LONG STEEL STRAPPING (2 REQD).



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

SECUREMENT OF ONE CONTAINER

STRAPPING BOARD, 1" X 4" X 27" (2 REQD).



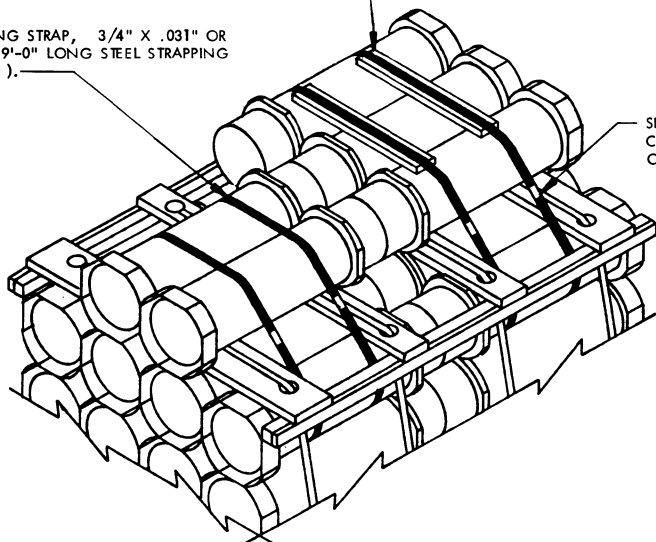
SEAL FOR 3/4" STRAP (2 REQD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

UNITIZING STRAP, 3/4" X .031" OR .035" X 9'-0" LONG STEEL STRAPPING (2 REQD).

SECUREMENT OF FOUR CONTAINERS

STRAPPING BOARD, 1" X 4" X 18" (2 REQD).

UNITIZING STRAP, 3/4" X .031" OR .035" X 9'-0" LONG STEEL STRAPPING (4 REQD).

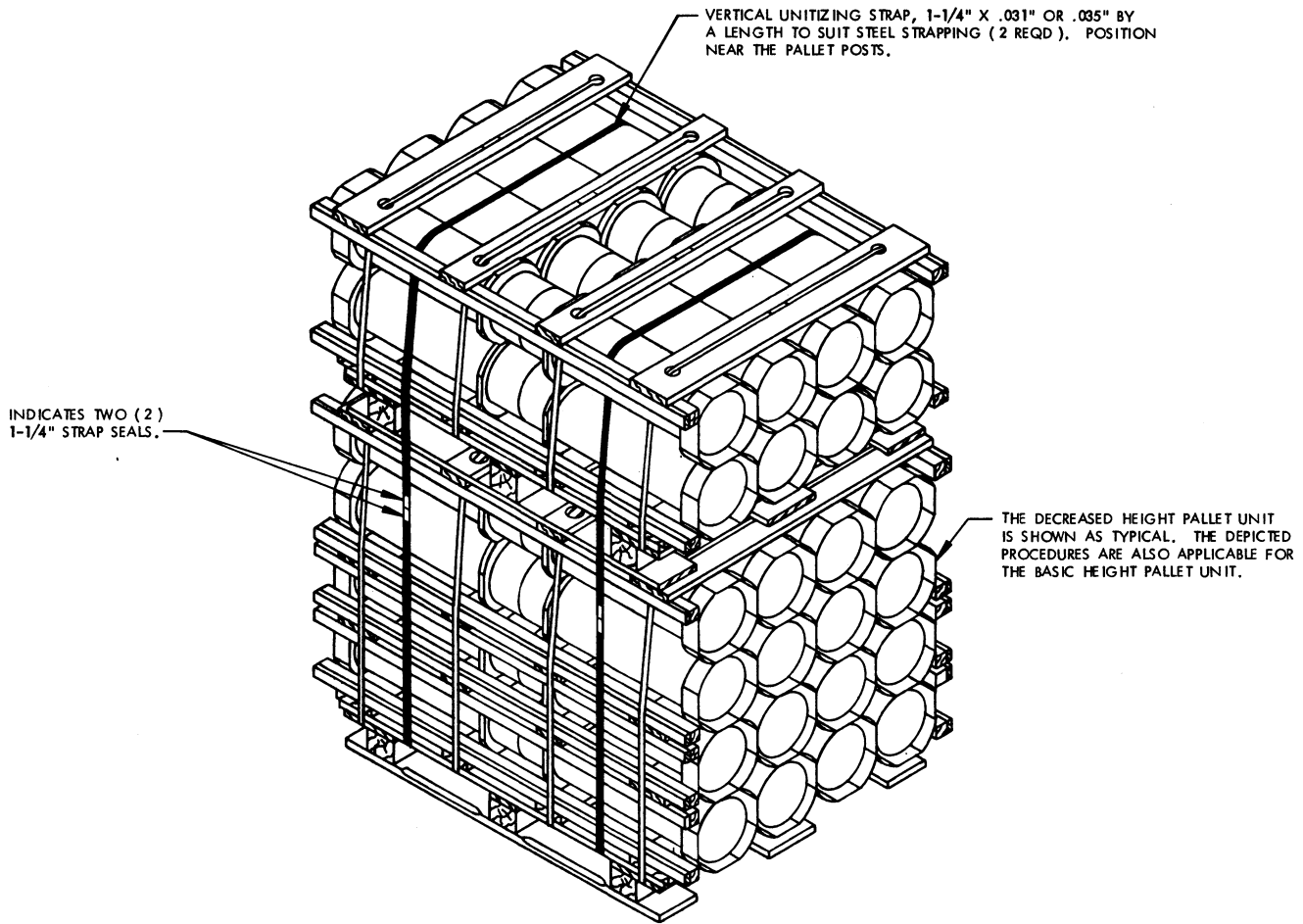


SEAL FOR 3/4" STRAP (4 REQD). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES.

SECUREMENT OF FIVE CONTAINERS

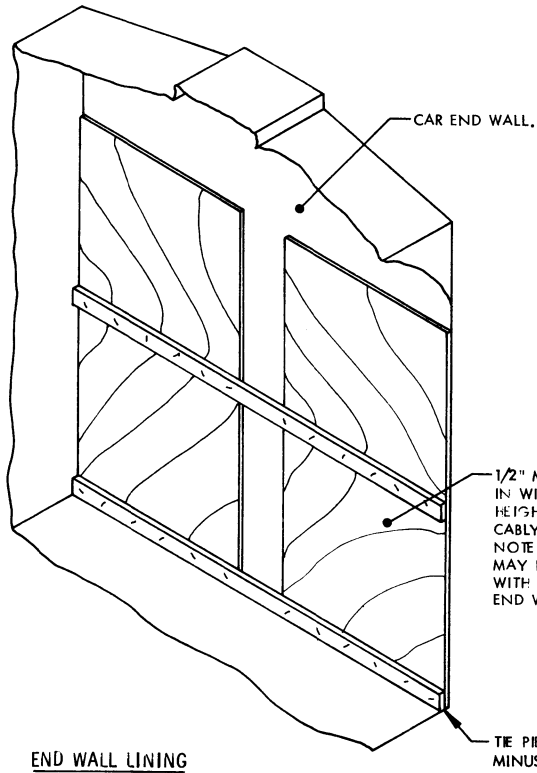
(SPECIAL NOTES CONTINUED)

4. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.
5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



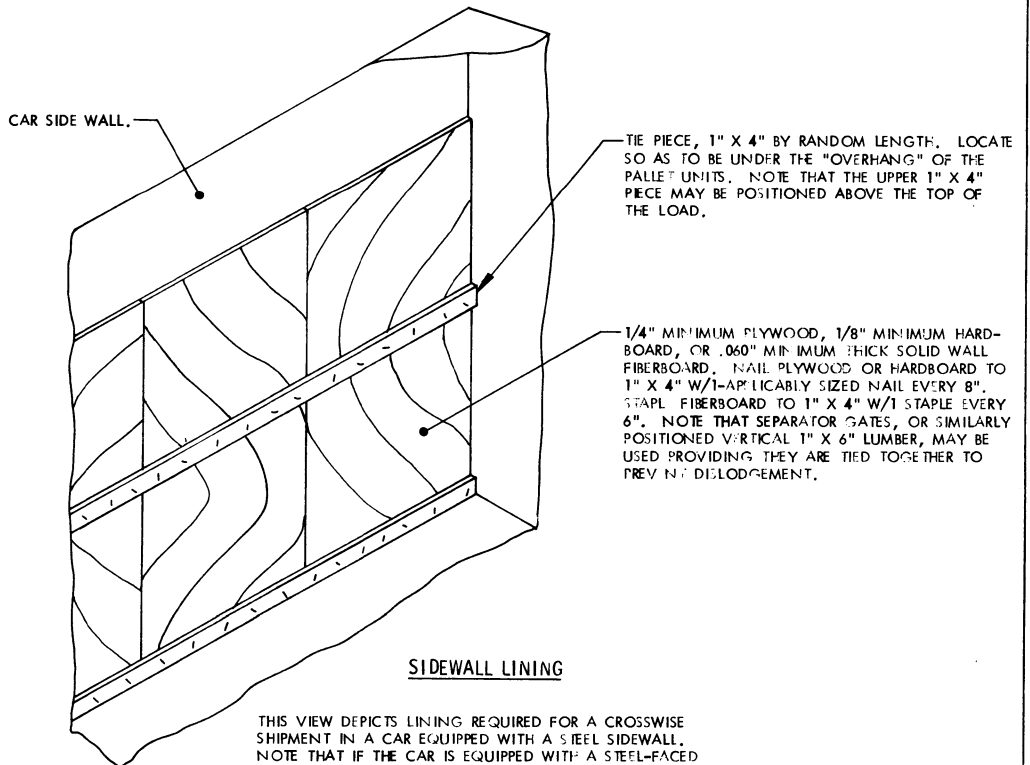
SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE LOAD.
CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN TWO (2) LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN TWO LAYERS OF CONTAINERS, OR AN ALTERNATIVE METHOD FOR ONE OR TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 58.



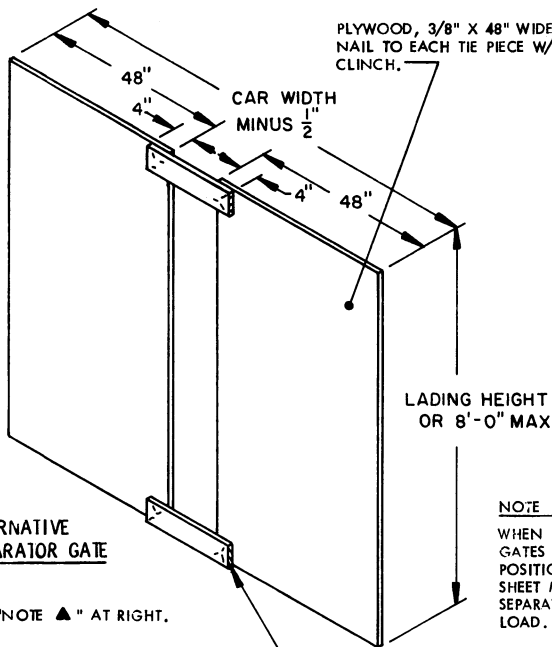
END WALL LINING

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



SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR 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.



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.

NOTE ○:
IF A BOXCAR 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 "C", AS DETAILED ON PAGE 18, IS SHOWN AS TYPICAL.

NOTE ■:
WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE ALTERNATIVE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. THE LOWER TIE PIECE MUST BE POSITIONED AT LEAST 3-1/2" OFF THE FLOOR. ALSO, THE LOWER INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUT OUT 3-1/2" HIGH BY 9" WIDE. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

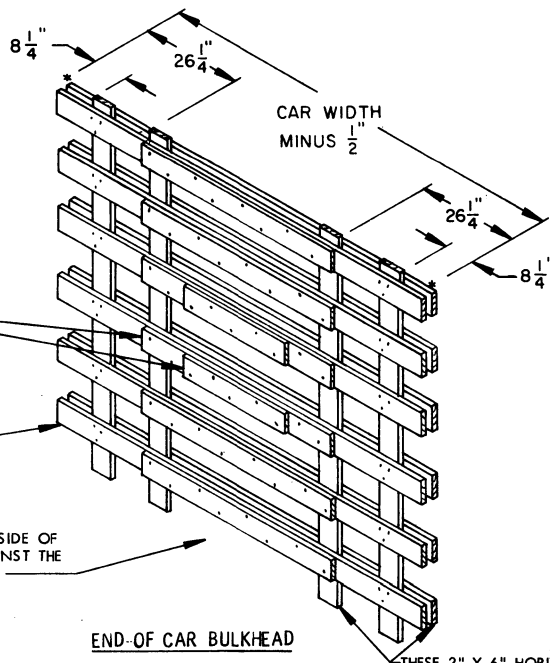
SEE "NOTE ▲" AT RIGHT.

TIE PIECE, 1" X 6" BY CUT-TO-FIT (2 REQD).
SEE "NOTE ■" AT RIGHT.

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

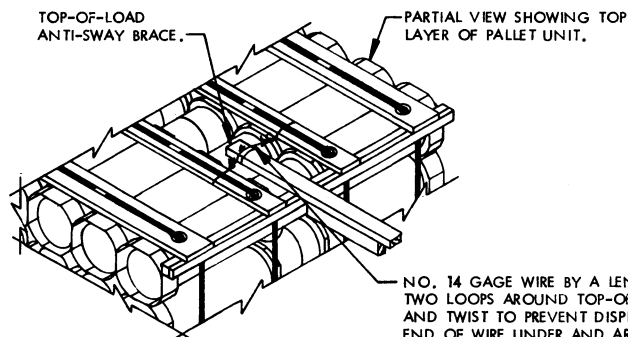
FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (ONE REQUIRED FOR EACH HORIZONTAL PIECE ON THE CENTER GATE). ALIGN WITH THE HORIZONTAL PIECES AND NAIL TO THE VERTICAL PIECES OF THE CENTER GATE W/3-10d NAILS AT EACH JOINT.

POSITION THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.



SEE "NOTE ○" ABOVE.

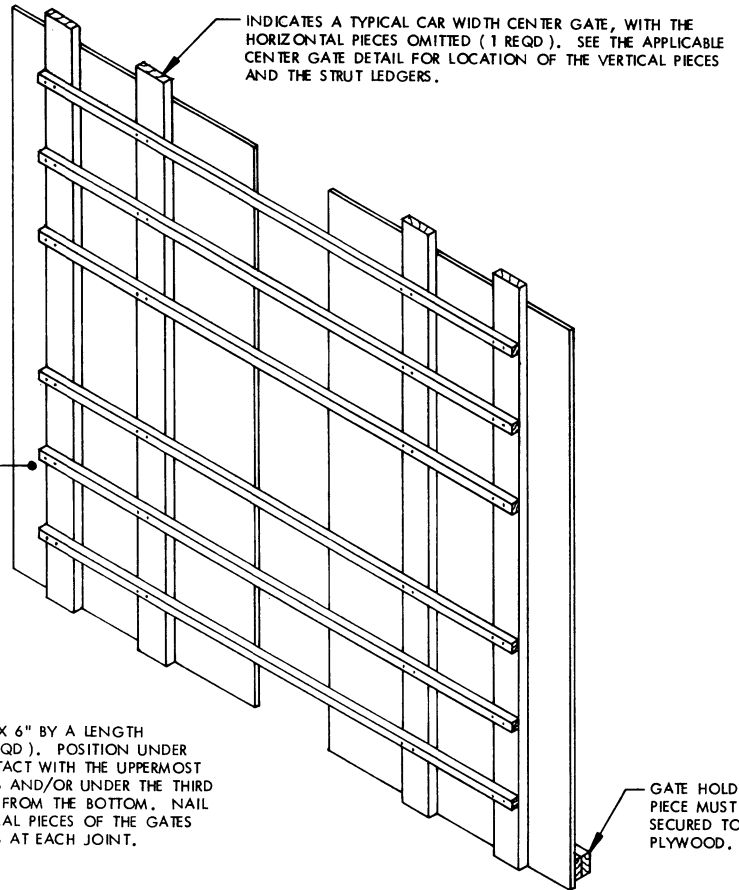
THESE 2" X 6" HORIZONTAL PIECES AND 2" X 6" VERTICAL PIECES ARE PART OF THE MODIFIED CENTER GATE. SEE "NOTE ○" ABOVE.



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 CROSS PIECE OF THE TOP DUNNAGE ASSEMBLY AND TWIST WIRE TO SELF, AS SHOWN.

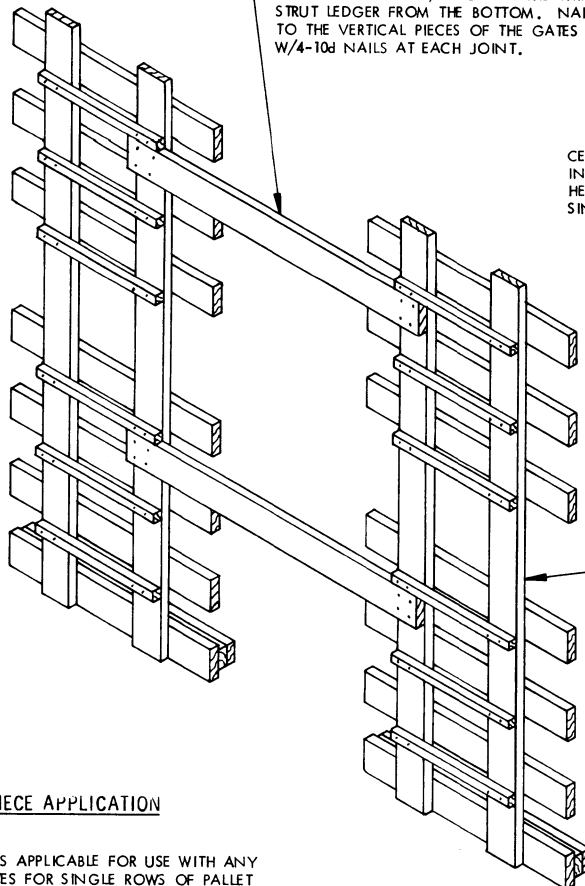
PLYWOOD, 1/2" THICK BY THE UNIT WIDTH OR LENGTH BY THE LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6". NOTE: THE WIDTH OF THE PLYWOOD WILL BE UNIT WIDTH IF THE LENGTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 10, OR UNIT LENGTH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



PLYWOOD CENTER GATE ALTERNATIVE

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

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

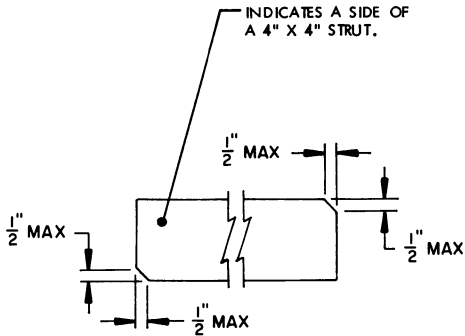


TIE PIECE APPLICATION

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.

INDICATES A TYPICAL CENTER GATE FOR A SINGLE ROW OF LENGTHWISE POSITIONED CONTAINERS (2 REQD). SEE THE CENTER GATE "A" OR "E" DETAIL ON PAGE 16 OR 30, RESPECTIVELY. FOR A SINGLE ROW OF CROSSWISE POSITIONED CONTAINERS, SEE THE CENTER GATE "B" OR "F" DETAIL ON PAGE 17 OR 31, RESPECTIVELY.

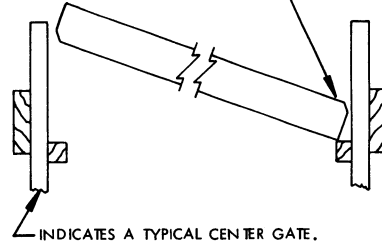
DETAILS



BEVEL CUT

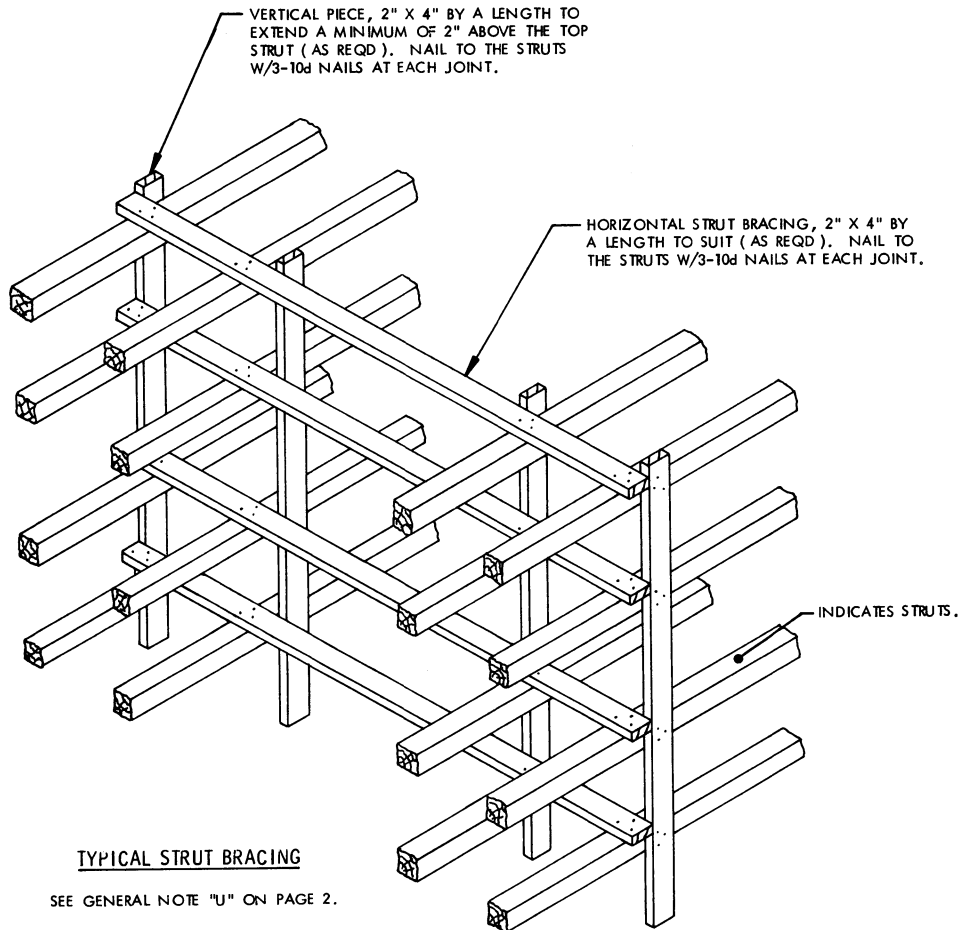
BEVEL CUTTING THE STRUTS AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". **CAUTION:** DO NOT BEVEL A CORNER MORE THAN ONE-HALF INCH (1/2").

BEVEL CUT THIS CORNER ONLY IF STRUTS ARE VERY SHORT.



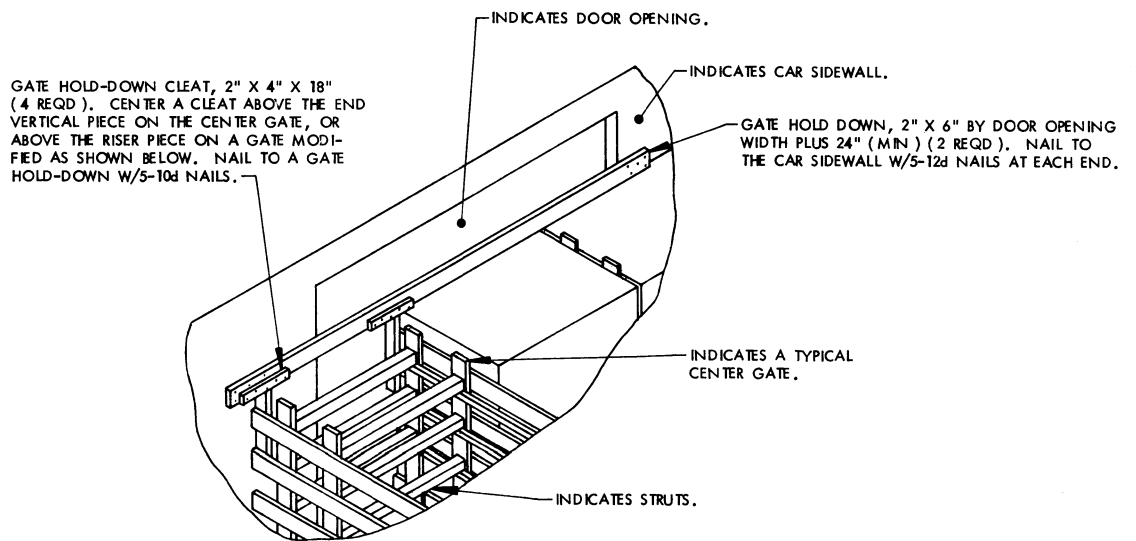
STRUT INSTALLATION

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



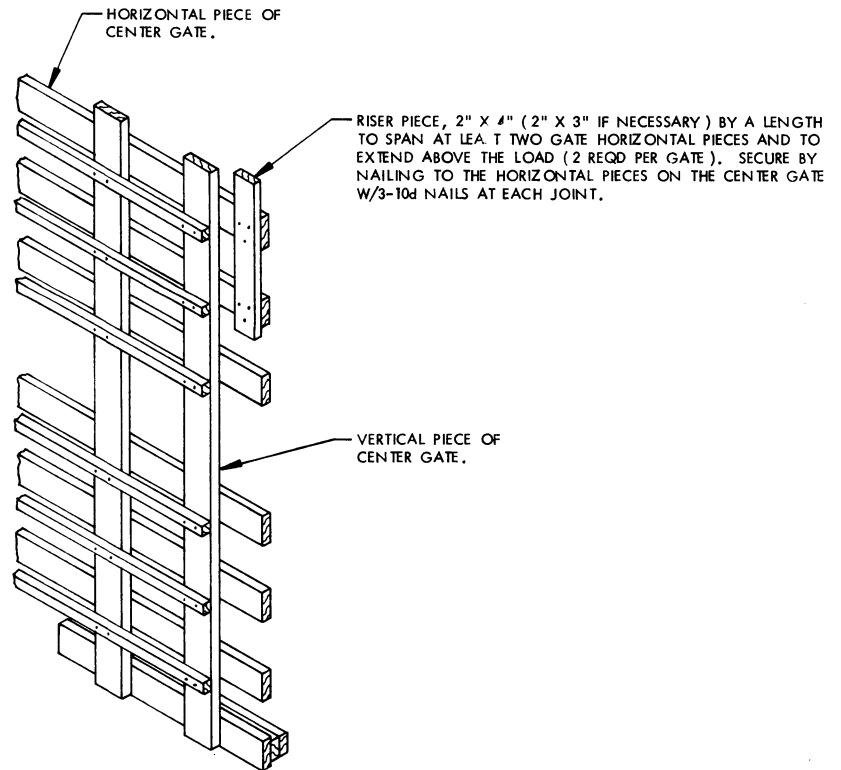
TYPICAL STRUT BRACING

SEE GENERAL NOTE "U" ON PAGE 2.



ALTERNATIVE GATE HOLD-DOWN

THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE, OR IN LIEU OF THE 2" X 4" GATE HOLD DOWN PIECES WHICH SPAN THE CENTER VOID AREA AND ARE NAILED TO THE CENTER GATES. **NOTE:** FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD-DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD-DOWN.

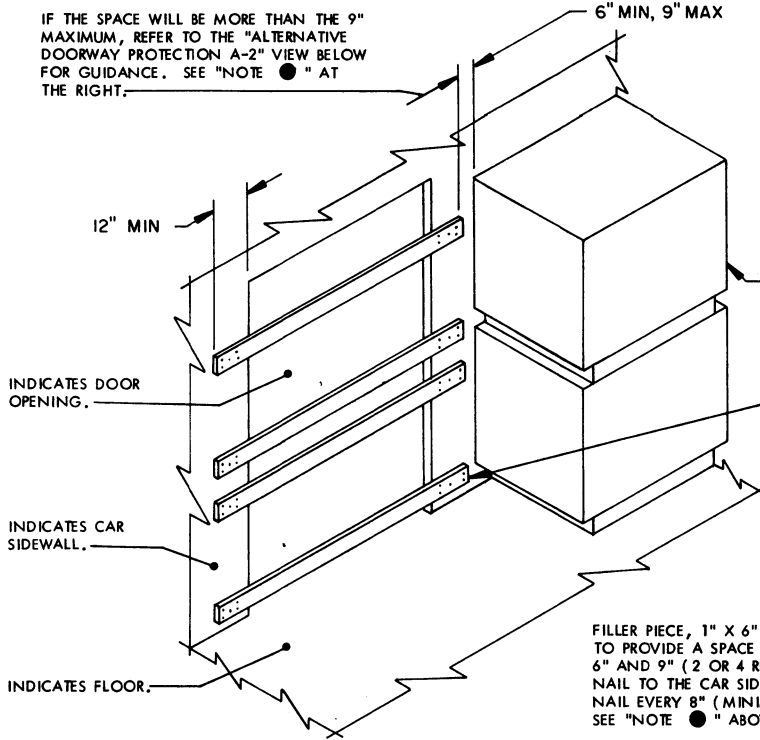


CENTER GATE MODIFICATION

THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR ALL THE CENTER GATES HEREIN, WHICH HAVE THE VERTICAL PICES INSET FROM THE END OF THE HORIZONTAL PICES AS SHOWN ABOVE. THE RISER PICE 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.

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.



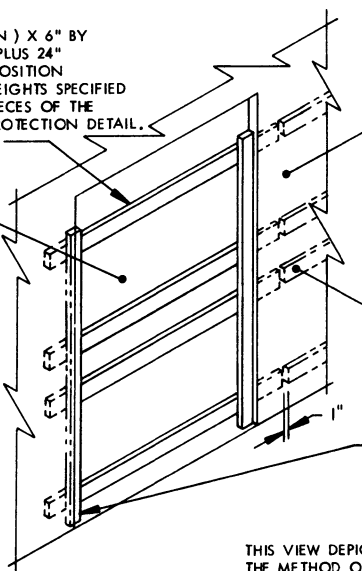
ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 67 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED BY THE "ALTERNATIVE DOORWAY PROTECTION E" AND "ALTERNATIVE DOORWAY PROTECTION F" DETAILS ON PAGE 68.

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.

INDICATES DOOR OPENING.



ALTERNATIVE DOORWAY PROTECTION A-2

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

ALTERNATIVE DOORWAY PROTECTION A-3

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

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (2 REQD PER LAYER). NAIL TO THE VERTICAL PIECES W/3-5d NAILS AT EACH END. SEE THE APPLICABLE DOORWAY PROTECTION DETAIL FOR HEIGHT LOCATION.

VIEW B

INDICATES DOOR OPENING.

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

INDICATES CAR SIDEWALL.

DOORWAY PROTECTION-GATE STRAP, 1-1/4" X .035" X 8'-0" (REF) NAIL-ON TYPE STEEL STRAPPING (4 REQD PER LAYER OF LOAD). NAIL TO GATE AND CAR SIDEWALL AS SHOWN BY THE "VIEW B" SKETCH BELOW. NOTE THAT TYPE 1 STRAPPING MAY BE PUNCHED FOR NAILING IF TYPE 2 STRAPPING IS NOT AVAILABLE.

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

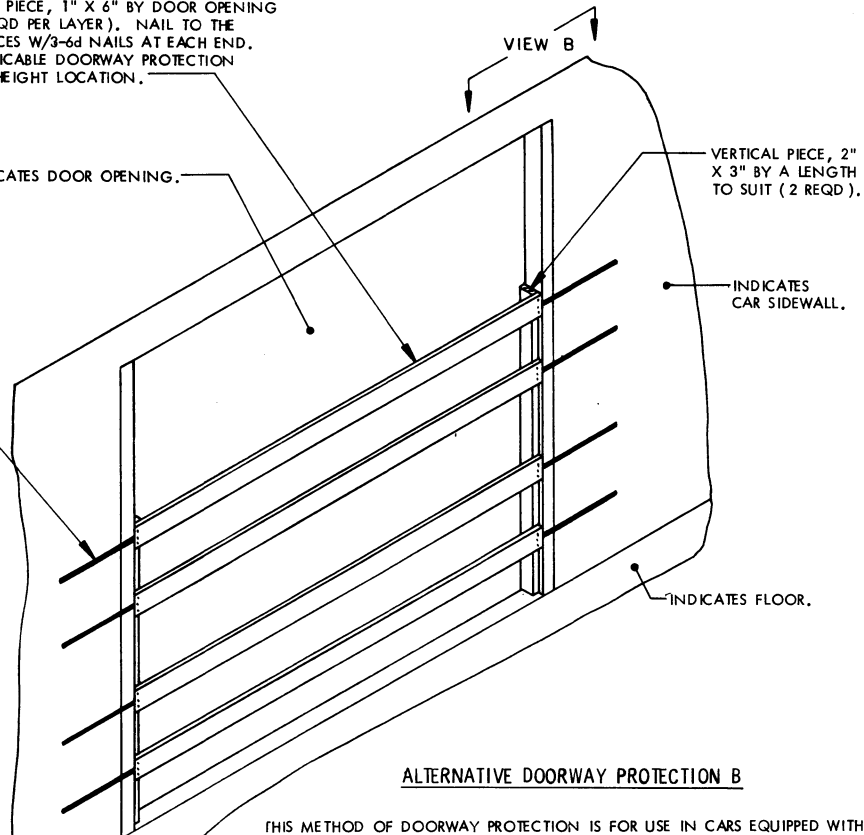
DOOR POST.

DOOR GATE.

INSIDE WALL.

VIEW B

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



ALTERNATIVE DOORWAY PROTECTION B

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

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.

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

VIEW A

INDICATES STRAP ANCHOR PLATE.

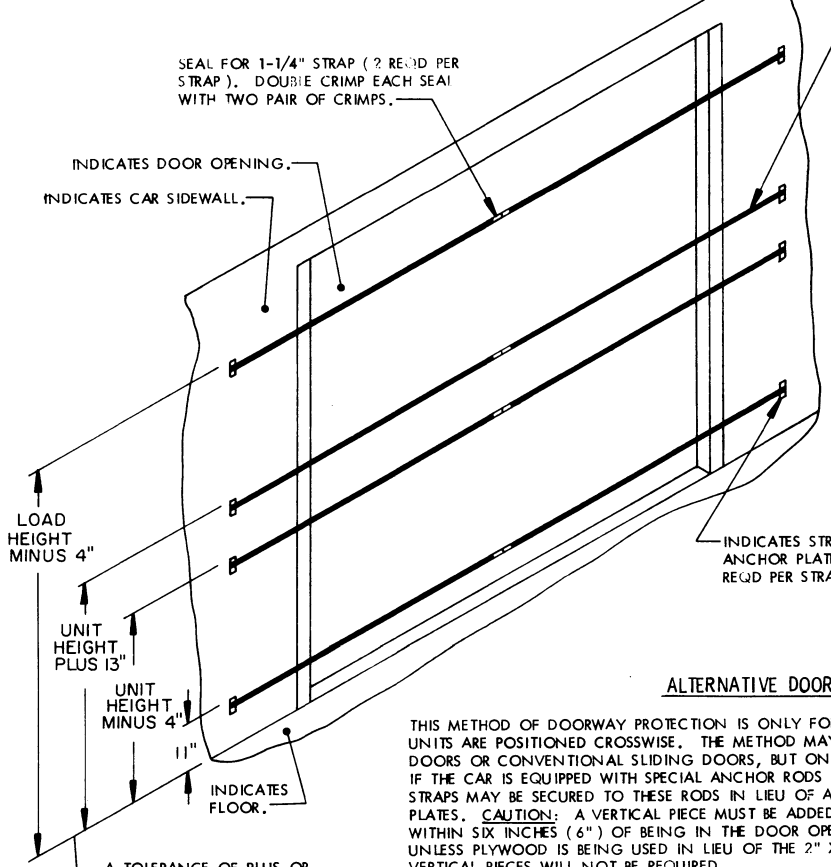
DOOR SPANNER END OF STRAP.

ISOMETRIC VIEW

VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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



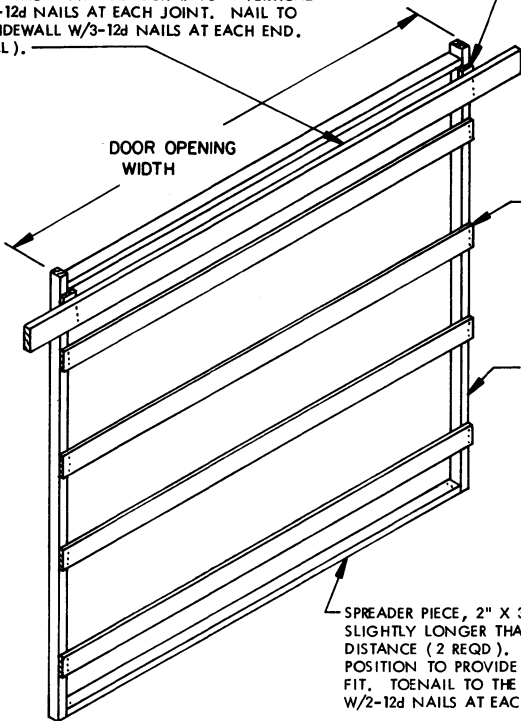
ALTERNATIVE DOORWAY PROTECTION C

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.

A TOLERANCE OF PLUS OR MINUS 2" IS PERMISSIBLE.

DOORWAY PROTECTION

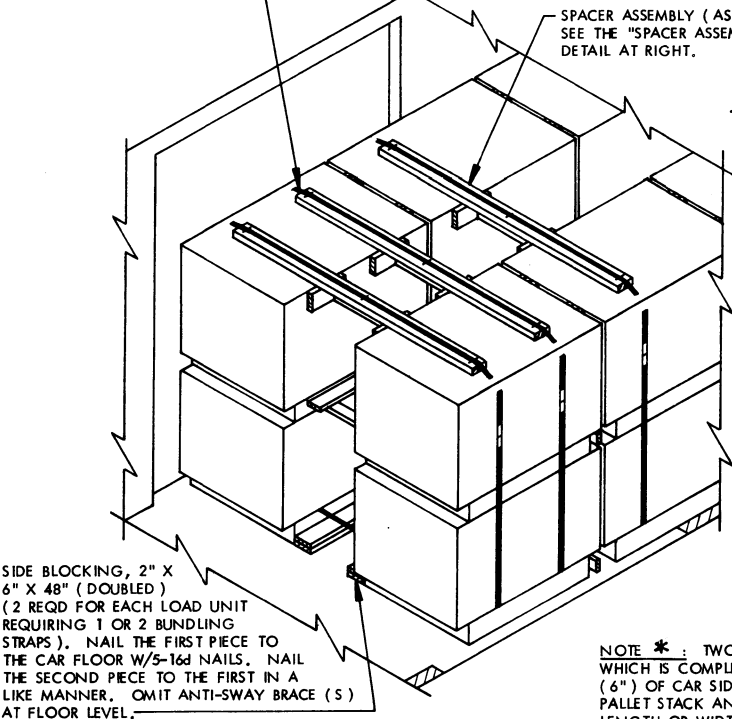
DOOR SPANNER, 2" X 6" BY DOOR OPENING WIDTH PLUS 24" (1 REQD.). POSITION ABOVE THE LOAD AND NAIL THRU A FILLER BLOCK INTO A VERTICAL PIECE W/3-12d NAILS AT EACH JOINT. NAIL TO THE CAR SIDEWALL W/3-12d NAILS AT EACH END. (OPTIONAL).



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 67 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 65.

DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .031" BY A LENGTH TO SUIT STEEL STRAPPING (AS REQD.). THE STRAP MUST NOT GO OVER THE TOP DUNNAGE ASSEMBLY. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE "NOTE * " BELOW.



ALTERNATIVE DOORWAY PROTECTION F

SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (5) AT FLOOR LEVEL.

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

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (4 REQD.). LOCATE AT HEIGHTS AS SPECIFIED BY THE APPLICABLE DOORWAY PROTECTION DETAIL. NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

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

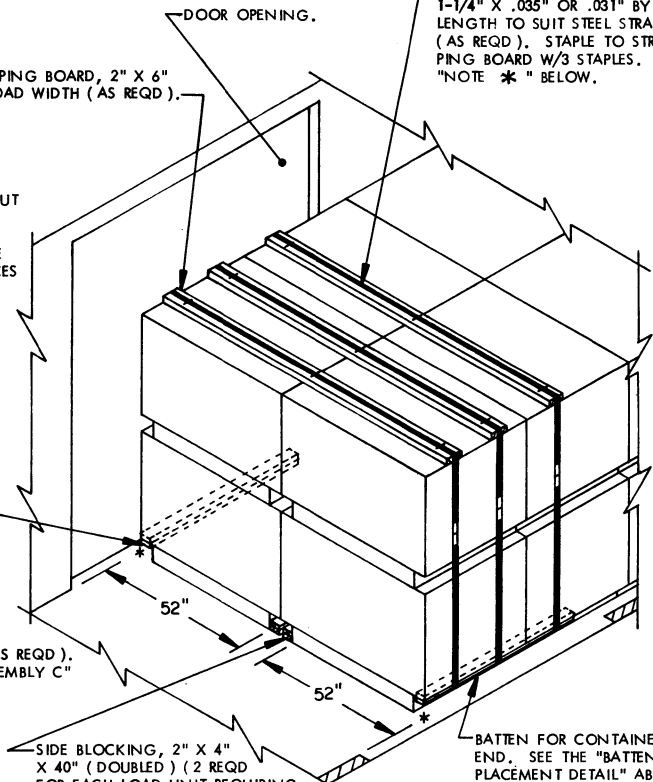
SPREADER PIECE, 2" X 3" MATERIAL CUT SLIGHTLY LONGER THAN MEASURED DISTANCE (2 REQD.). DRIVE INTO POSITION TO PROVIDE FOR A WEDGE FIT. TOENAIL TO THE VERTICAL PIECES W/2-12d NAILS AT EACH END.

STRAPPING BOARD, 2" X 6" BY LOAD WIDTH (AS REQD.).

DOOR OPENING.

DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .031" BY A LENGTH TO SUIT STEEL STRAPPING (AS REQD.). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE "NOTE * " BELOW.

BATTEN.

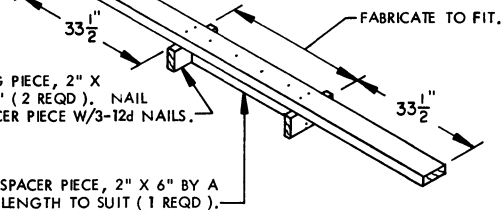


ALTERNATIVE DOORWAY PROTECTION E

SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (2 REQD FOR EACH LOAD UNIT REQUIRING ONE OR TWO BUNDLING STRAPS). PRE-POSITION AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

BATTEN FOR CONTAINER END. SEE THE "BATTEN PLACEMENT DETAIL" ABOVE.

STRAPPING BOARD, 2" X 6" BY CAR WIDTH MINUS 13" (1 REQD.). NAIL TO THE BEARING PIECE W/2-12d NAILS AT EACH JOINT AND TO THE SPACER PIECE W/4-12d NAILS.



SPACER ASSEMBLY C

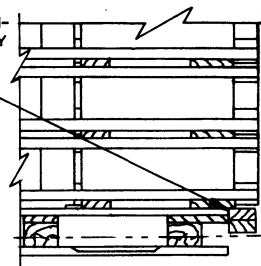
BEARING PIECE, 2" X 6" X 12" (2 REQD.). NAIL TO SPACER PIECE W/3-12d NAILS.

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

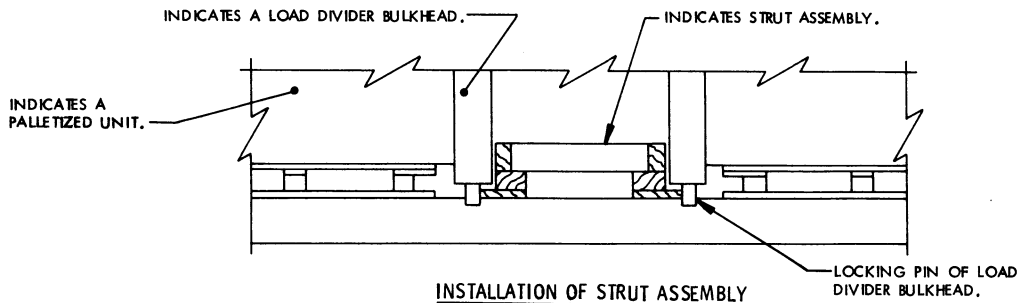
NOTE * : TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH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

INDICATES STEEL STRAPPING.

BATTEN FOR BELL ENDS, 2" X 4" X 40" OR A LENGTH TO SUIT (DOUBLED) (2 REQD FOR EACH PALLET STACK REQUIRING STEEL STRAPPING). LAMINATE W/1-10d NAIL EVERY 8".

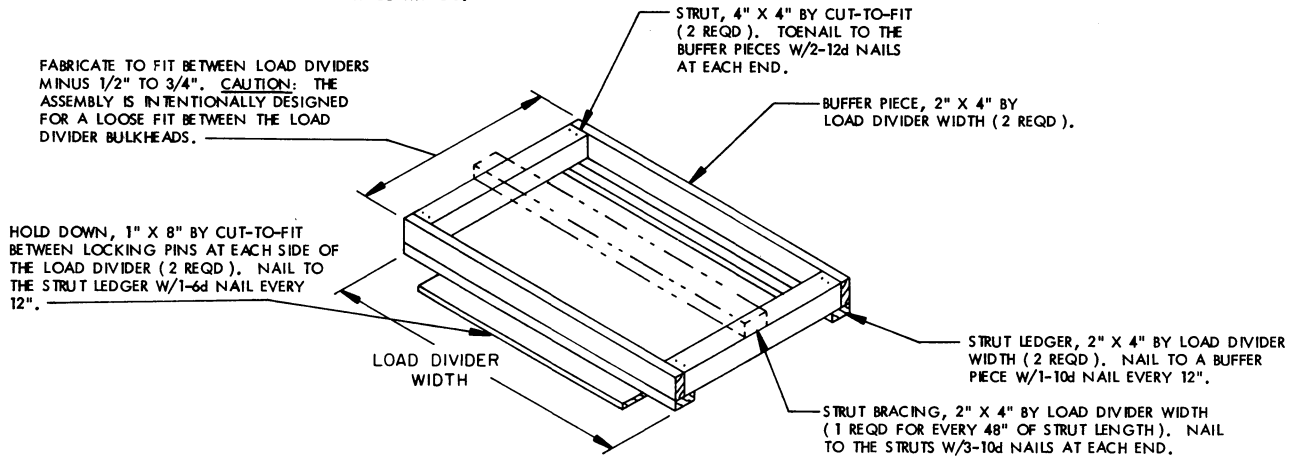


BATTEN PLACEMENT DETAIL



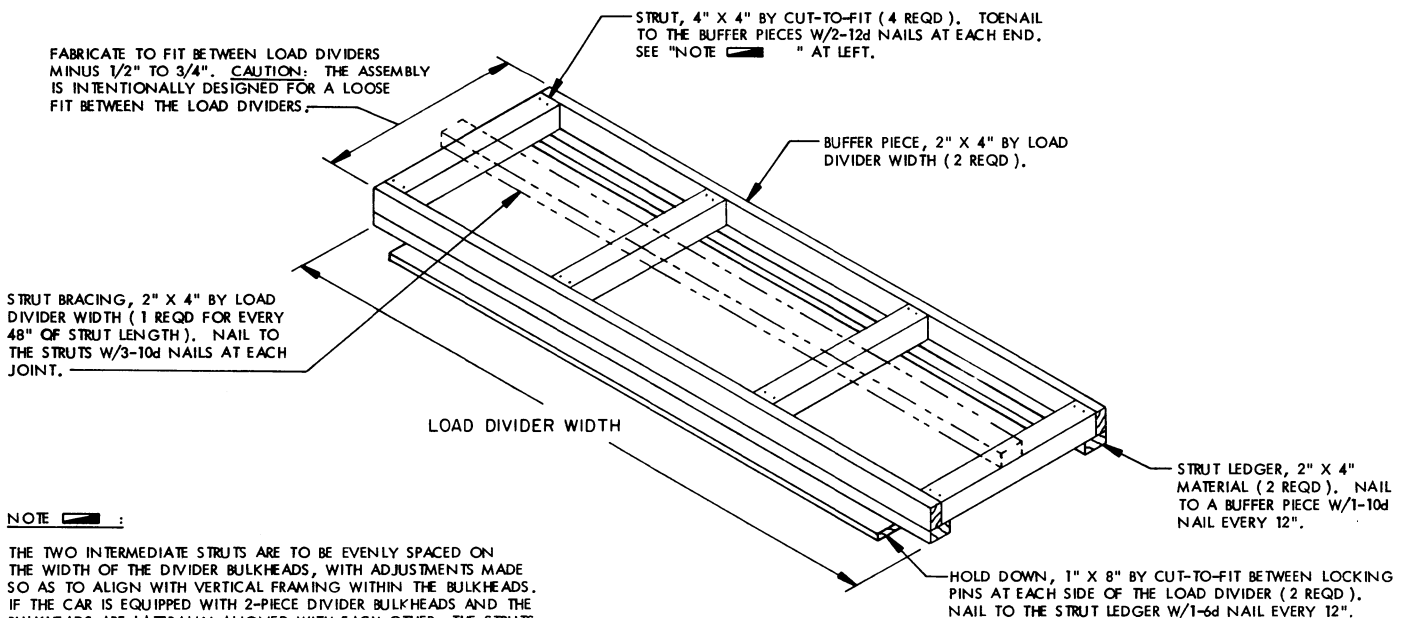
INSTALLATION OF STRUT ASSEMBLY

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.

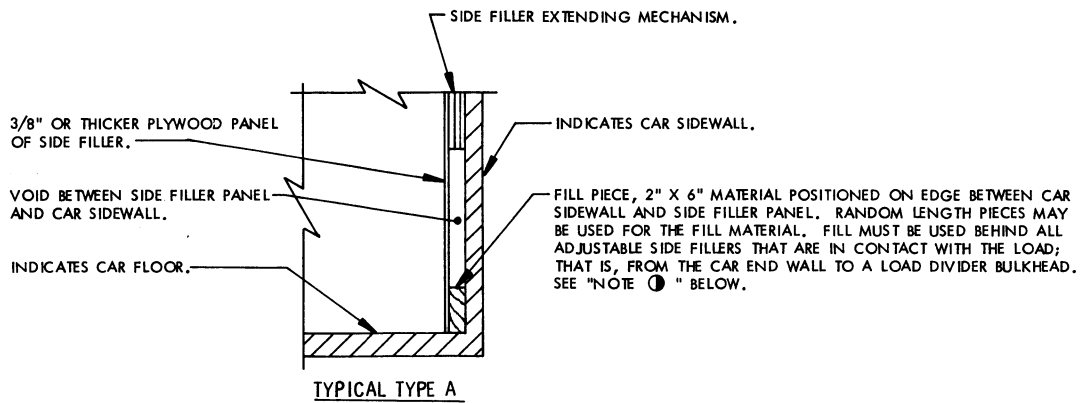


NOTE []:

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

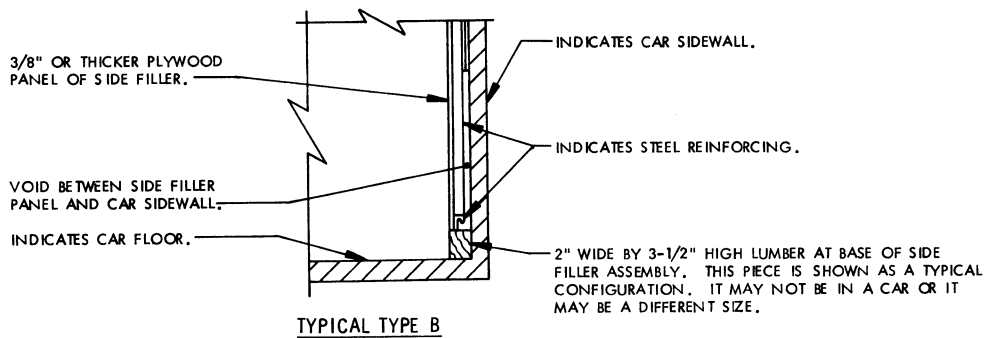
A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.



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".



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.