APPROVED BY
BUREAU OF EXPLOSIVES
J. H. Heshman
DATE 11/9/92

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

M16 SERIES CONTAINER

INDEX

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

THIS DRAWING SUPERSEDES THE CARLOADING PORTIONS DELINEATED ON PAGES 47 THRU 73 OF DRAWING 19-48-4042-1-2-5-11-14PM1000, DATED 8 FEBRUARY 1965 AND REVISION 1, DATED 29 AUGUST 1969.

DO NOT SCALE

REVISIONS				DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
		DEV DEO DE		PJB	pt	PJB	E.Arnold	
		DEV DEO DE		SMCAC-DEV	SMCAC-DEO	SMCAC-DE		
		DEV DEO DE		GAK	W. Smith	W. Ernst		
		DEV DEO DE		APPROVED: U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND Timothy R. Fore				
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				CLASS	DIVISION	DRAWING	FILE	
		DEV DEO DE		19	48	4042B/4	5PM 1000	

PROJECT FSA 43B/4-63

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).

B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE M16 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 40" x 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE U.S. AMC DRAWING 19-48-4042A/4-20PM1001 FOR UNITIZATION PROCEDURES FOR THE M16 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 109 FOR GUIDANCE.

E. EXCEPT FOR PALLET UNITS OF ALTERNATED CONTAINERS, UNITS WILL BE POSITIONED WITH THE BASE ENDS OF CONTAINERS AGAINST THE CAR END WALL OR SIDEWALL AS APPLICABLE TO THE LOAD BEING SHIPPED. LONGITUDINALLY ADJACENT LENGTHWISE UNITS WILL BE POSITIONED WITH BASE END AGAINST BASE END OR BELL END AGAINST BELL END, EXCEPT FOR UNITS HAVING ALTERNATED CONTAINERS.

F. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLET UNITS OF PROPELLING CHARGES IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE IN OTHERWISE PROPER CONDITION, IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENTS, WILL BE SELECTED.

G. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 110 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 THEN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.

K. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLETIZED UNITS OF PROPELLING CHARGES, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN. MIXED ITEMS TO BE SHIPPED IN CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST BE SEPARATELY BLOCKED, USING THE PROCEDURES SHOWN FOR THESE CARS AS GUIDANCE.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

NAILS: COMMON, FED SPEC FF-N-105

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

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

STRAP STAPLE: COMMERCIAL GRADE.

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

WIRE: FED SPEC QQ-W-461

HARDBOARD: ANSI/AHA A135.4 CLASS 1.

SOLID FIBERBOARD: FED SPEC PP-F-320. TYPE SF, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W65 OR STRONGER.

(GENERAL NOTES CONTINUED)

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 NAILS.

M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OR SIDEWALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. THE NAILING PATTERN WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL DOES NOT PENETRATE INTO OR NEAR A CRACK BETWEEN FLOOR BOARDS OR SIDEWALL BOARDS. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. 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 116 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 PALLET UNITS IN A CAR THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLET UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. CAUTION: WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE PALLET UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.

U. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED,

(CONTINUED ON PAGE 3)

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 112 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.

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

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

AA. CAUTION: FOR CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS, ONLY CARS EQUIPPED WITH LOAD DIVIDERS MANUFACTURED BY EVANS, EQUIFCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN "THE OFFICIAL RAILWAY EQUIPMENT REGISTER," WILL BE RBL, XL, OR XLI.

BB. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL 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 118 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 118,.. THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

DD. NOTICE: AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.

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EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED BY GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 117.

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 PALLET UNITS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.

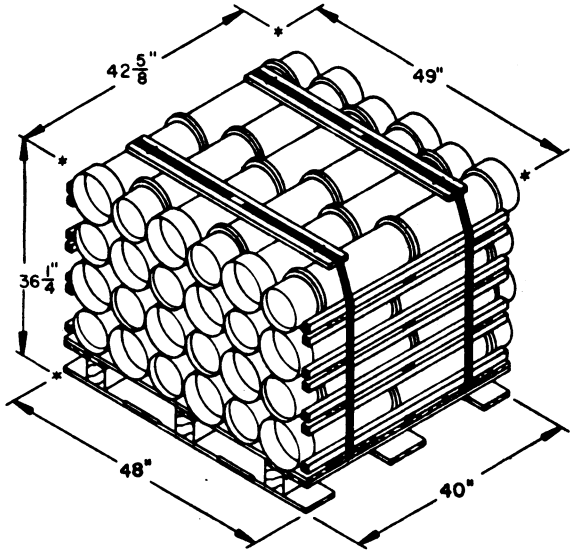
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 90 THRU 93.

2. THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGES 84 THRU 89 FOR GUIDANCE.

3. AT LOCATION (S) WHERE K-BRACES MIGHT NORMALLY BE USED IN A LOAD IN A CONVENTIONAL CAR, LOAD DIVIDER BULKHEADS CAN BE POSITIONED. LOADING CAN THEN CONTINUE TOWARD THE CENTER OF THE CAR FROM EACH INSTALLED LOAD DIVIDER BULKHEAD, IN EVEN LAYERS WHICH ARE ONE OR MORE LESS IN HEIGHT THAN THE LOAD IN THE ENDS OF THE CAR. INSTALL CENTER GATES, STRUTS AND GATE HOLD DOWNS AS SHOWN IN THE APPLICABLE CONVENTIONAL BOX CAR DRAWING HEREIN, TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.

4. ONE OR MORE UNITS CAN BE POSITIONED IN CONTACT WITH A LOAD DIVIDER BULKHEAD ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 104 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 100.

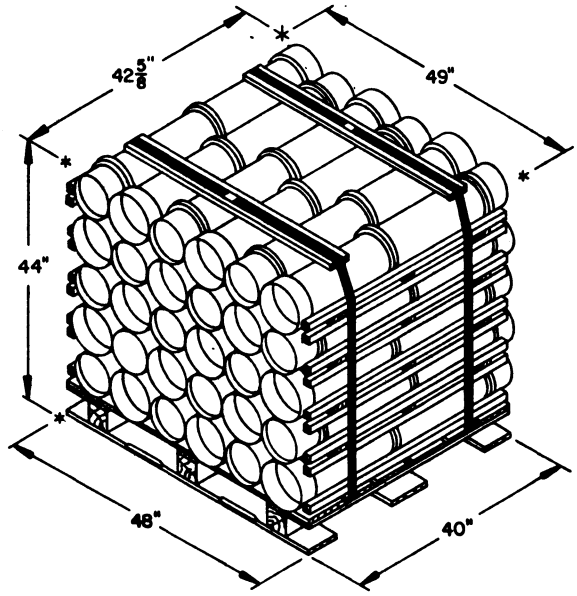
GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

CONTAINER----------24 EACH @ 55 LBS (APPROX)
CUBE----------43.8 CUBIC FEET (APPROX)
GROSS WEIGHT--------1,472 LBS (APPROX)

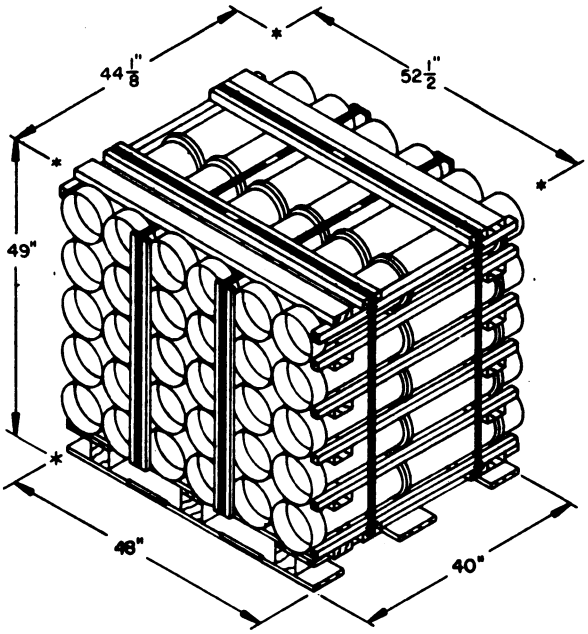
REFER TO PAGES 6 THRU 13 FOR OUTLOADING PROCEDURES.



ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

CONTAINER---------- 30 EACH @ 55 LBS (APPROX)
CUBE ---------- 53.2 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,820 LBS (APPROX)

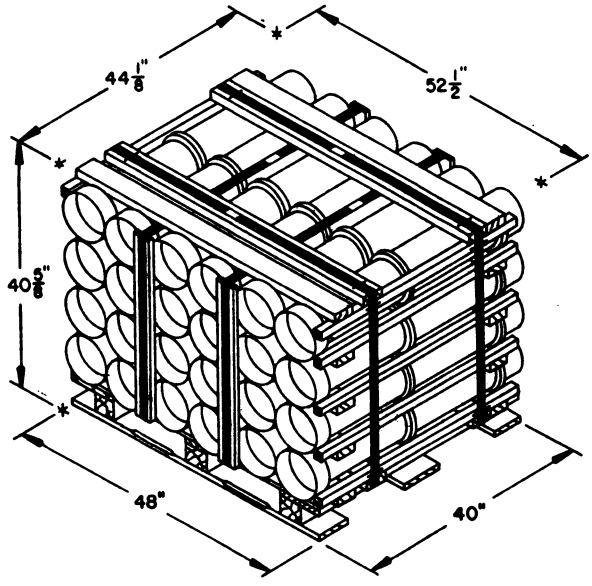
REFER TO PAGES 20 THRU 27 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ---------- 30 EACH @ 55 LBS (APPROX)
CUBE ---------- 65.7 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 1,870 LBS (APPROX)

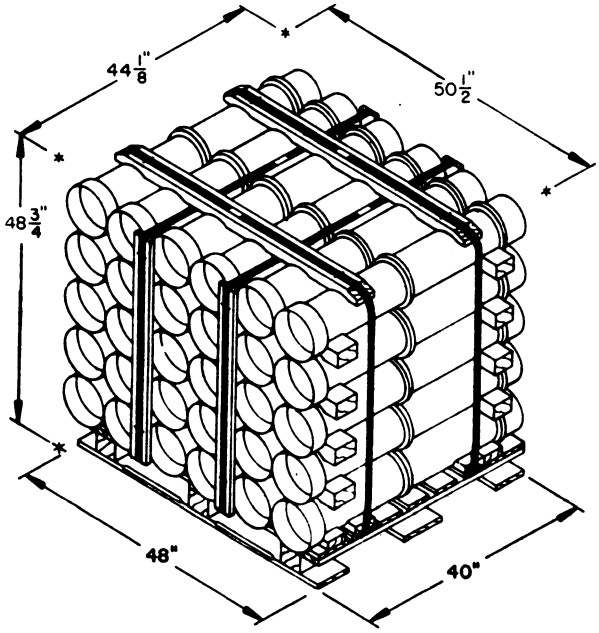
REFER TO PAGES 32 THRU 39 FOR OUTLOADING PROCEDURES



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ---------- 24 EACH @ 55 LBS (APPROX)
CUBE ---------- 54.5 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 1,521 LBS (APPROX)

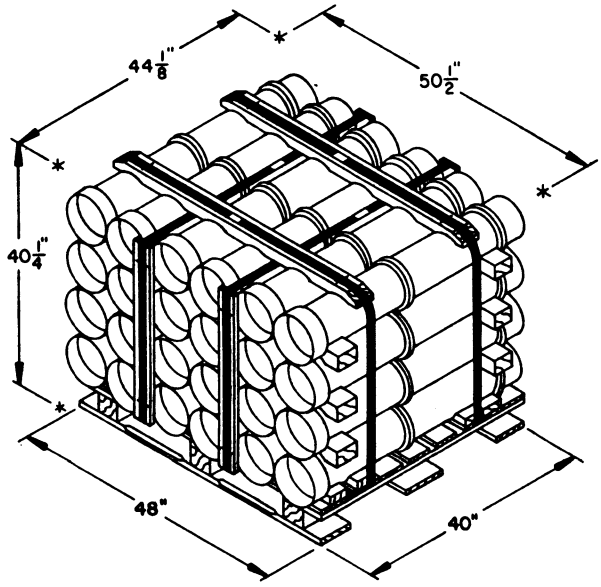
REFER TO PAGES 44 THRU 51 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ——— 30 EACH @ 55 LBS (APPROX)
CUBE ——————— 62.9 CUBIC FEET (APPROX)
GROSS WEIGHT ——— 1,848 LBS (APPROX)

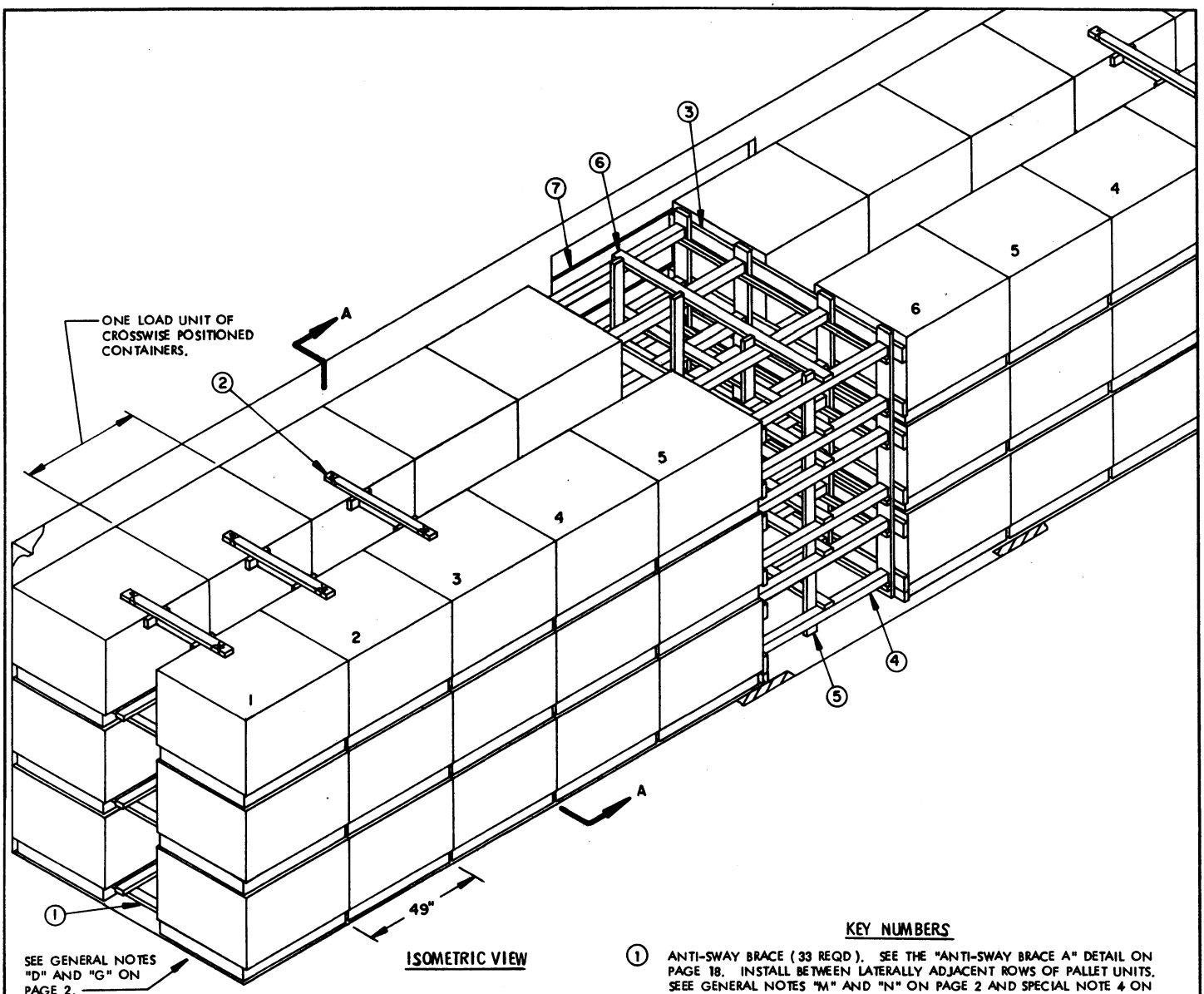
REFER TO PAGES 56 THRU 63 FOR OUTLOADING PROCEDURES.



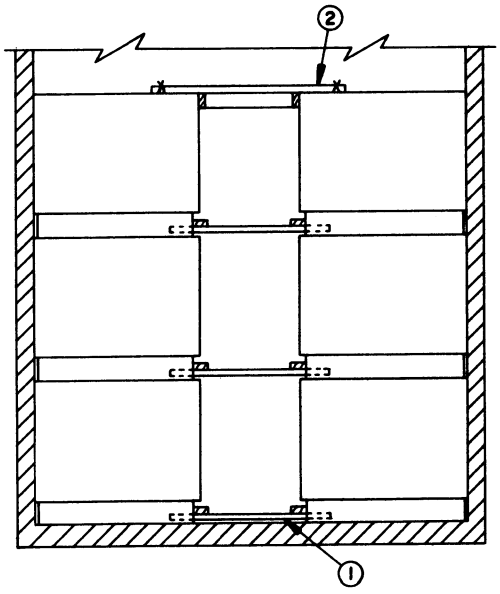
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ——— 24 EACH @ 55 LBS (APPROX)
CUBE ——————— 51.9 CUBIC FEET (APPROX)
GROSS WEIGHT ——— 1,499 LBS (APPROX)

REFER TO PAGES 68 THRU 75 FOR OUTLOADING PROCEDURES.



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 7.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 7.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 7.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 61") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 8'-10" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(6) HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 4" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 16. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 7.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF EIGHT-FOUR (84) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 123,648 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES: FIFTY-FOUR (54) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 79,488 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 12.

3. IF DOORWAY PROTECTION PROCEDURE AS SHOWN ON PAGE 12 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 8.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD. IF A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IF A 60'-8" CAR IS USED.

5. 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 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 6, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 14. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION DETAIL ON PAGE 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 2" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 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. REFER TO PIECES MARKED ③ , ④ , ⑤ , ⑦ , AND ⑧ ON PAGE 12 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

12. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 66-UNIT LOAD IN A 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 107,500 POUNDS. AN 84-UNIT LOAD IN A 60'-8" LONG CAR POSITIONED IN AN OFFSET LOADING PATTERN WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 132,400 POUNDS. AN EQUALLY DISTRIBUTED 84-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 125,400 POUNDS OR GREATER. A 54-UNIT LOAD IN A 40'-6" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 88,500 POUNDS.

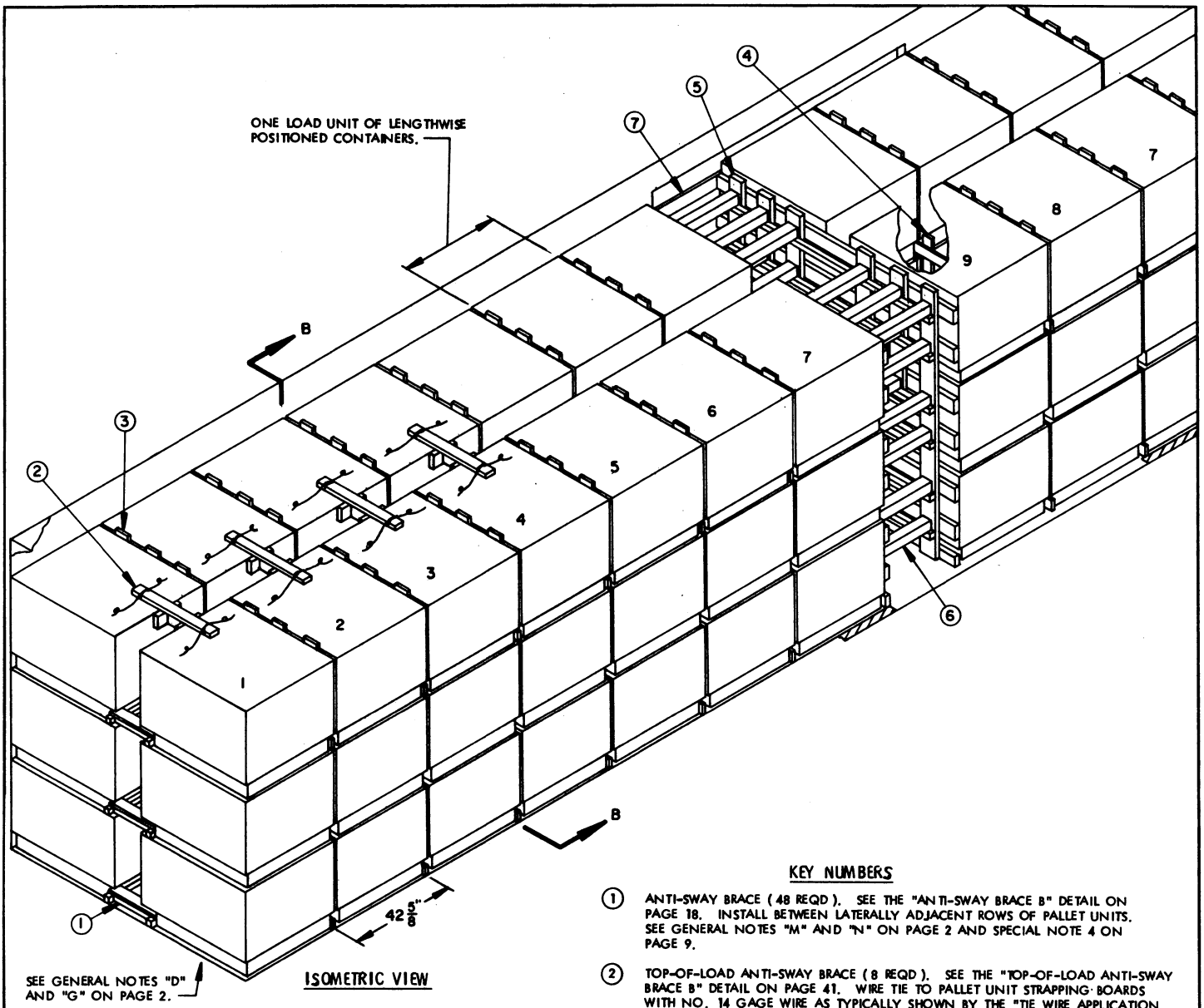
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	96	48
2" X 2"	106	36
2" X 3"	35	18
2" X 4"	564	376
2" X 6"	182	182
4" X 4"	122	163
NAILS	**NO. REQD**	**POUNDS**
6d (2")	72	1/2
10d (3")	868	13-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE----------	36' REQD----------	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	97,152 LBS
DUNNAGE		1,663 LBS
TOTAL WEIGHT		98,815 LBS

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
66-UNIT LOAD IN A 50'-6" 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 (48 REQD). SEE THE "ANTI-SWAY BRACE B" 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 (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 9.

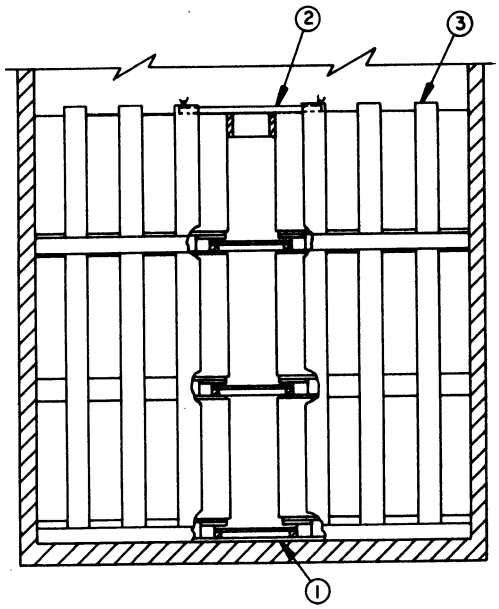
(3) SEPARATOR GATE (14 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6, 8, AND 9 ON PAGE 9.

(4) STOP PIECE, 1" X 4" X 6'-8" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3) , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 9.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 17. SEE SPECIAL NOTES 10, 11, AND 12 ON PAGE 9.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (36 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 17. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 13 AND 14 ON PAGE 9.



SECTION B-B

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

PROJECT FSA 43B/4-63

(SPECIAL NOTES CONTINUED)

14. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, REFER TO PAGE 26 FOR GUIDANCE. SIDE BLOCKING, PIECE MARKED ⑤ , SPACER ASSEMBLY "B", PIECE MARKED ⑥ , AND DOORWAY PROTECTION STRAP, PIECE MARKED ⑧ , MUST BE USED. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IF RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT LENGTH. SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 18. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

15. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

16. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

17. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

18. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 96-UNIT LOAD IN A 60'-8" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 152,900 POUNDS WHEN POSITIONED IN AN OFFSET LOADING PATTERN AS SHOWN. AN EQUALLY DISTRIBUTED 96-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 144,200 POUNDS OR GREATER. A 78-UNIT LOAD IN A 50'-6" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF 125,500 POUNDS OR GREATER. A 60-UNIT LOAD IN A 40'-6" LONG CAR POSITIONED IN AN OFFSET LOADING PATTERN WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 101,200 POUNDS. AN EQUALLY DISTRIBUTED 60-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 89,700 POUNDS OR GREATER.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE ALTERNATED CONTAINER UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-EIGHT (78) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 114,816 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES SIXTY (60) UNITS, FOR AN APPROXIMATE WEIGHT OF 88,320 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 18.

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 EIGHT (8) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN IN THE LOAD ON PAGE 26 ARE USED IN LIEU OFTHE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ , NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 12.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112, FOUR (4) 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. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED ④ , WILL BE 46" LONG FOR A 2-HIGH OR 3-HIGH LOAD OR 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "B" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

9. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 110 FOR CONSTRUCTION GUIDANCE.

10. CENTER GATE "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

11. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE D", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 15. 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 111.

12. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "D", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

13. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	488	163
1" X 6"	897	449
2" X 2"	442	148
2" X 3"	43	22
2" X 4"	178	119
2" X 6"	255	255
4" X 4"	87	116
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1356	8
10d (3")	924	14-1/4
12d (3-1/4")	32	3/4
16d (3-1/2")	144	3-1/4
WIRE, NO. 14 GAGE----------110' REQD----------2 LBS		

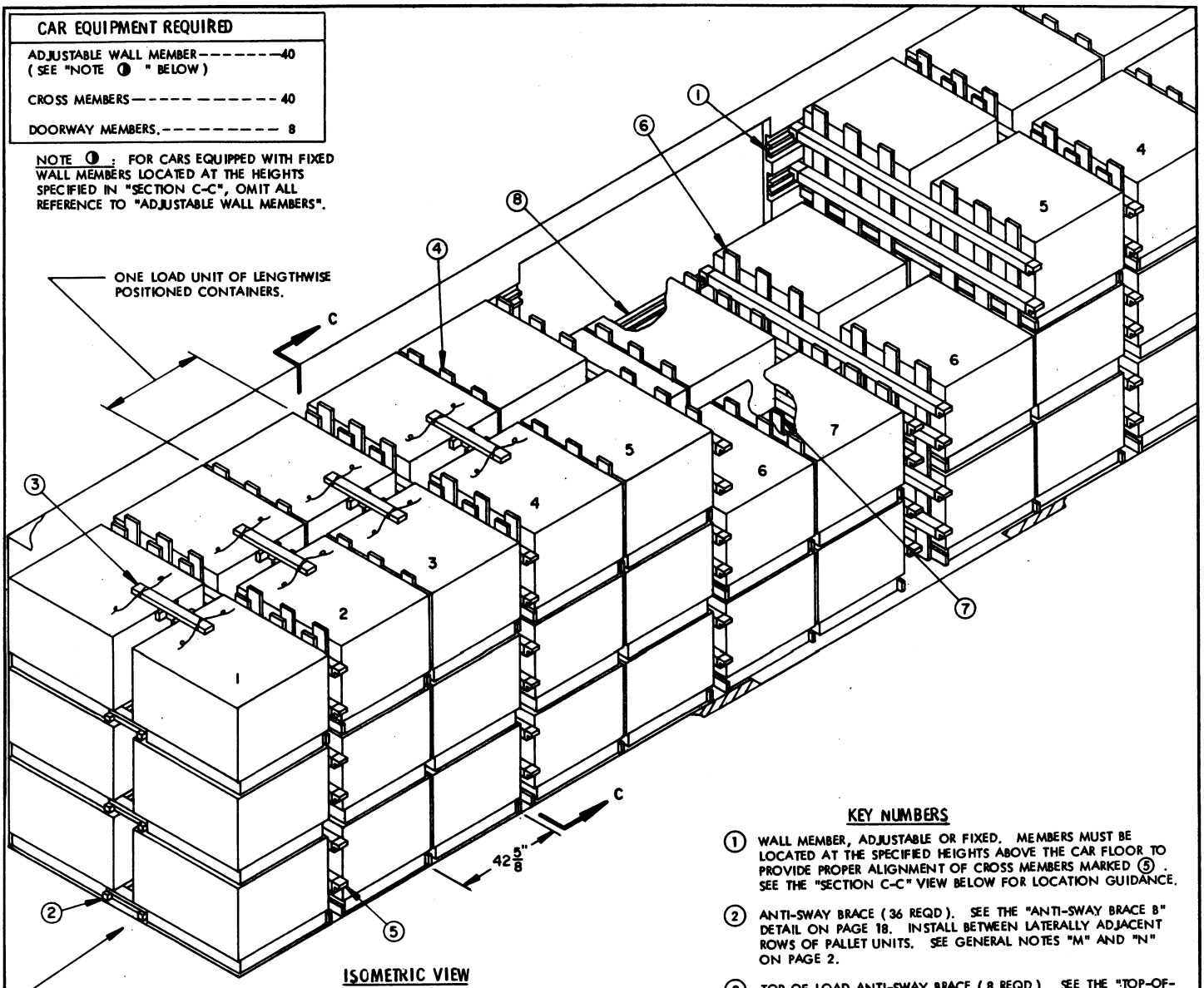
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-------	96 ----------	141,312 LBS
DUNNAGE----------		2,573 LBS
TOTAL WEIGHT-------		143,885 LBS (APPROX)

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

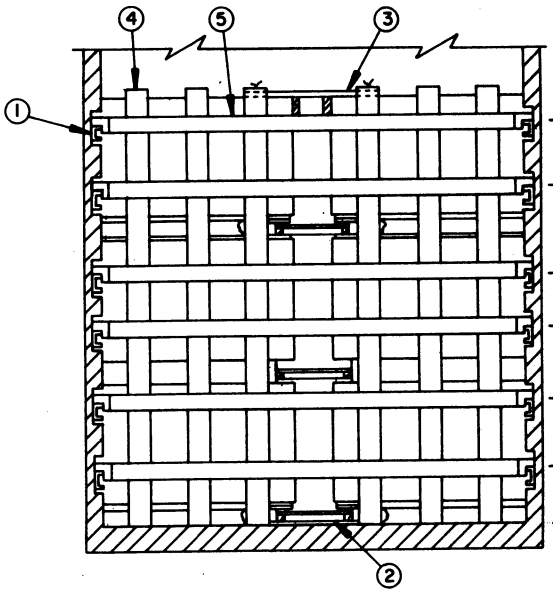
CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	40
CROSS MEMBERS	40
DOORWAY MEMBERS.	8

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

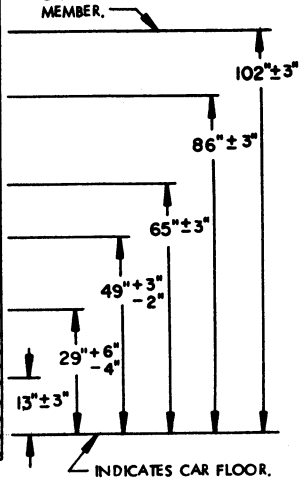


ISOMETRIC VIEW

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



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



SECTION C-C

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 (36 REQD). SEE THE "ANTI-SWAY BRACE B" 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 (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 11.

④ SEPARATOR GATE FOR 3-HIGH (14 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 11.

⑤ CROSS MEMBER (40 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑥ SEPARATOR GATE FOR 2-HIGH (4 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

⑦ STOP PIECE, 1" X 4" X 42" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AND NAIL TO THE HORIZONTAL PIECES ON PIECE MARKED ⑥ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 11.

⑧ DOORWAY MEMBER (8 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 11.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 10 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 82,432 POUNDS, CAN PLACED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 11.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED ④ , MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. FOUR (4) 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 PIECES MARKED ④ SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED 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, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 110 FOR CONSTRUCTION GUIDANCE

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL SIX PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 84 AND 85 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

11. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 72-UNIT LOAD IN A 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 109,700 POUNDS. A 56-UNIT LOAD IN A 40'-6" LONG CAR WILL REQUIRE A LOAD LIMIT OF 83,800 POUNDS OR GREATER.

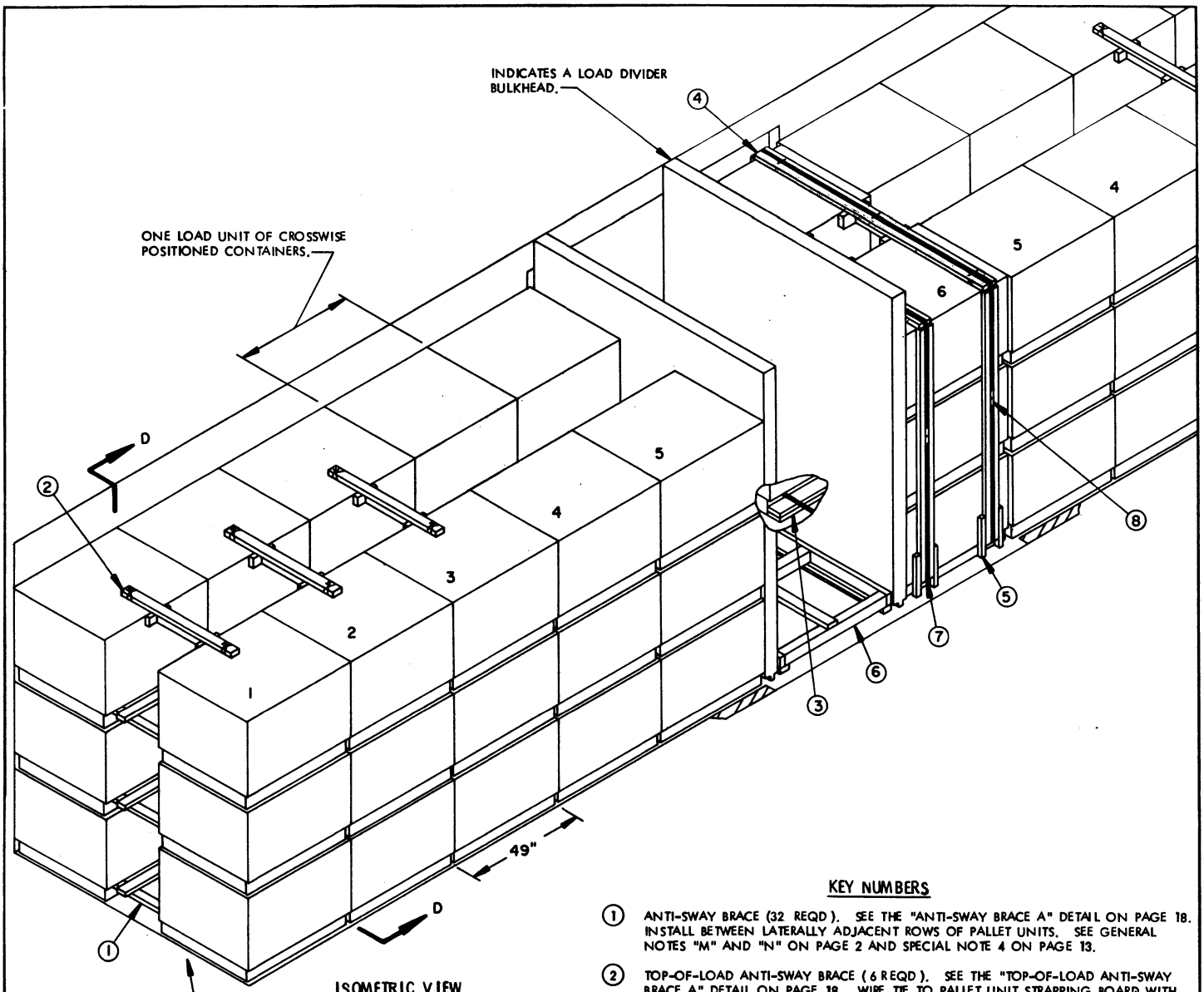
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 1" X 6" 2" X 2" 2" X 4" 2" X 6"	451 921 256 118 21	151 461 86 79 21
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	1284 392	7-3/4 6-1/4
WIRE, NO. 14 GAGE----------110' REQD----------2 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT----------	72----------	105,984 LBS
DUNNAGE----------		1,612 LBS

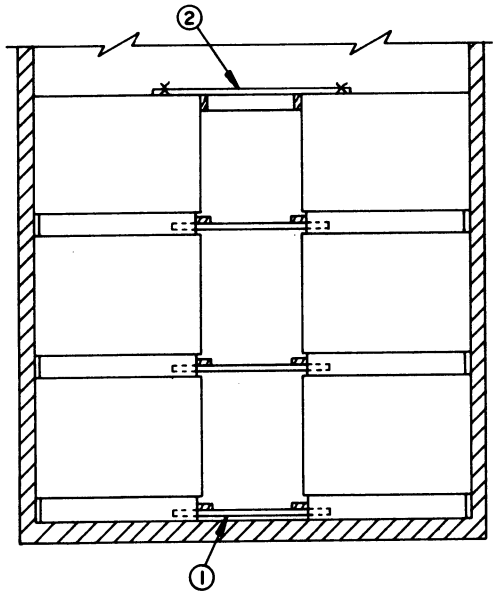
TOTAL WEIGHT----------107,596 LBS (APPROX)

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



ISOMETRIC VIEW

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



SECTION D-D

KEY NUMBERS

(1) ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE A" 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 13.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 3 ON PAGE 13.

(3) SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 4 ON PAGE 13.

(4) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 18.

(5) STRAPPING BOARD ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 18.

(6) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 117. SEE SPECIAL NOTE 6 ON PAGE 13.

(7) DOORWAY PROTECTION STRAP, 1-1/4" X .035" P R .031" X 37'-6" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE LOAD UNIT IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTES 5 AND 6 ON PAGE 13.

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

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "EE" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). THE FOLLOWING TABLE INDICATES THE QUANTITY OF UNITS, THE GROSS WEIGHT, THE LOAD PATTERN, AND THE LOAD LIMIT REQUIRED FOR A LOAD WHEN UNITS ARE POSITIONED AS SHOWN IN THE LOAD VIEW ON PAGE 12 FOR THE THREE MOST COMMON CAR LENGTHS. THE TABLE ALSO PROVIDES THE SAME DATA FOR LOADS IN WHICH THE UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR.

CONTAINERS CROSSWISE LOADS

CAR LENGTH	NO. UNITS	GROSS WEIGHT (LBS)	LOAD PATTERN	MINIMUM LOAD LIMIT (LBS)
40'-6"	54	79,488	5-4	88,600
50'-6"	66	97,152	6-5	107,100
60'-8"	84	123,648	8-6	132,600
			7-7	124,700

CONTAINERS LENGTHWISE LOADS

40'-6"	60	88,320	6-4	100,800
			5-5	89,600
50'-6"	78	114,816	7-6	125,300
60'-8"	96	141,312	9-7	152,900
			8-8	143,200

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IF A 60'-8" CAR IS USED.

4. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION IS USED, PIECES MARKED ④, ⑤, ⑦, AND ⑧ WILL NOT BE REQUIRED. AN ADDITIONAL ANTI-SWAY BRACE, PIECE MARKED ① MAY BE USED IN LIEU OF THE SIDE BLOCKING, PIECE MARKED ③, IF DESIRED.

5. IN LIEU OF USING STRAPPING BOARD ASSEMBLIES, PIECE MARKED ⑤, BATTENS MAY BE USED UNDER THE CONTAINERS OF THE OUTER BOTTOM PALLET UNIT OF A LOAD UNIT IN THE DOORWAY. SEE THE "BATTEN PLACEMENT" DETAIL ON PAGE 116 FOR GUIDANCE.

6. 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. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE AS SHOWN ON PAGE 12, THE DEPICTED PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ WILL BE USED. IF THE CONTAINERS ARE LENGTHWISE IN THE CAR, PIECES MARKED ⑤, ⑥, ⑧, AND ⑨ ON PAGE 26 WILL BE USED. TWO (2) STRAPS ARE 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. IF THE IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS, USE DOORWAY PROTECTION "B" AS DETAILED ON PAGE 17; FOR CONTAINERS-CROSSWISE LOADS, USE DOORWAY PROTECTION "A" AS DETAILED ON PAGE 16.

7. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 12, 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 REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN FIVE (5) LOAD UNITS.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 108 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 8"	16	11
2" X 2"	11	4
2" X 4"	491	328
2" X 6"	73	73
4" X 4"	18	24
NAILS	**NO. REQD**	**POUNDS**
6d (2")	16	NIL
10d (3")	498	7-3/4
12d (3-1/4")	30	1/2
16d (3-1/2")	20	1/2

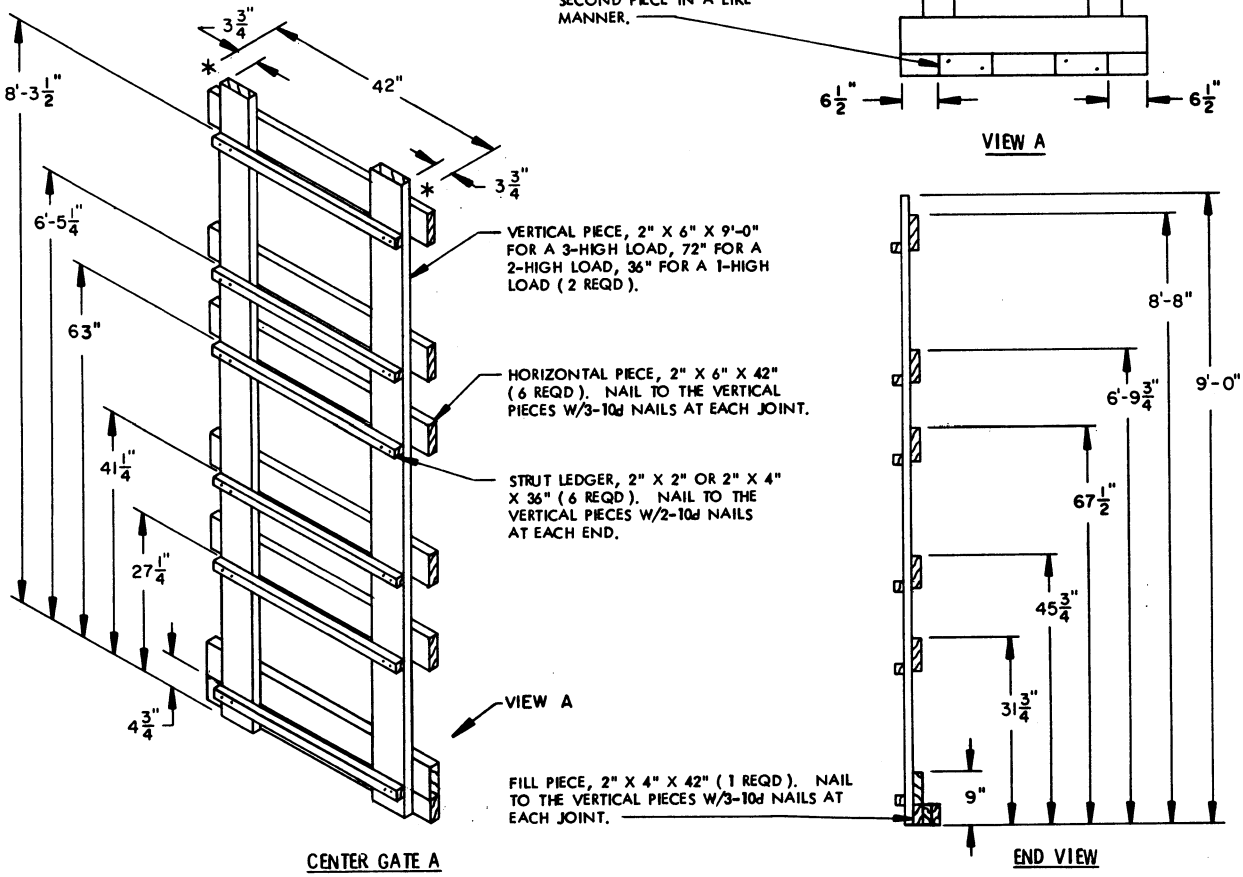
WIRE, NO. 14 GAGE----------36' REQD -------- NIL
STEEL STRAPPING, 1-1/4" X .035" OR .031"----75'REQD ---------11 LBS
SEAL FOR 1-1/4" STRAPPING----------4 REQD -------- NIL
STAPLE FOR 1-1/4" STRAPPING----------6 REQD -------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT--------	66----------	97,152 LBS
DUNNAGE----------		900 LBS

TOTAL WEIGHT----------98,052 LBS (APPROX)

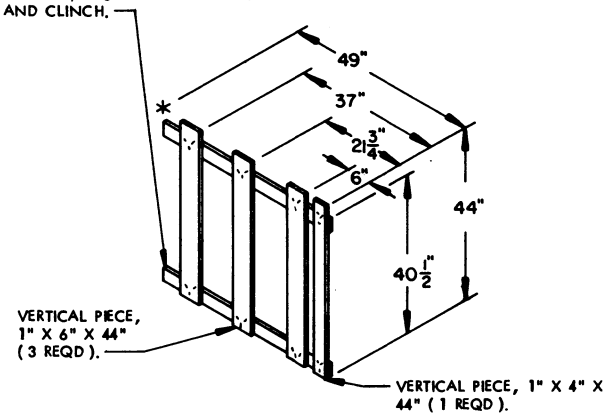
ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
66-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



CENTER GATE A

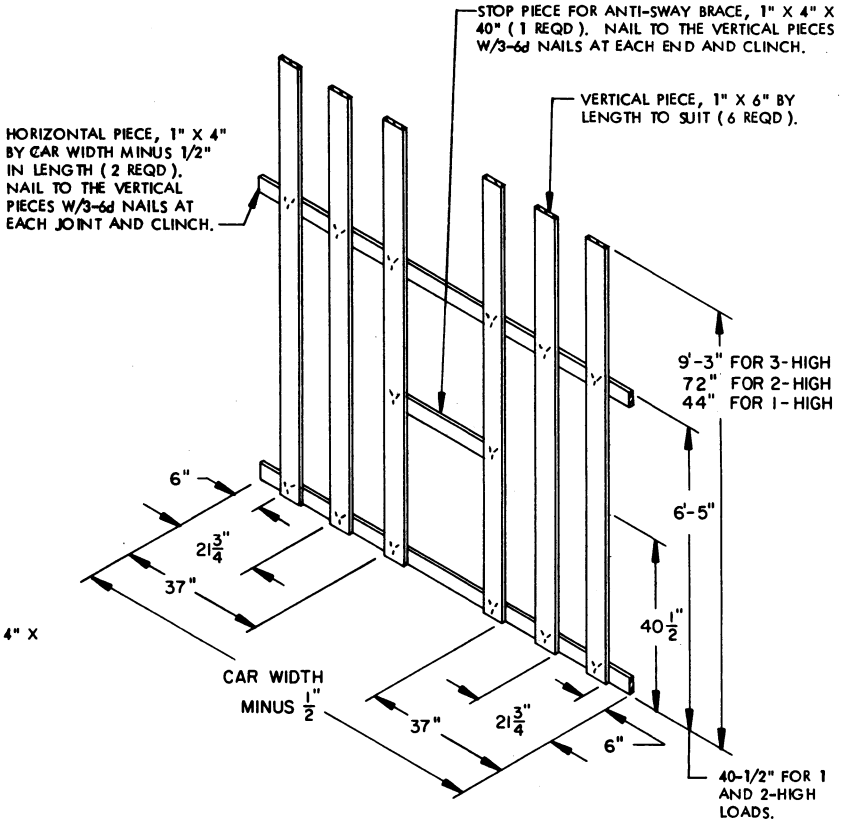
SEE SPECIAL NOTE 6 ON PAGE 7.

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



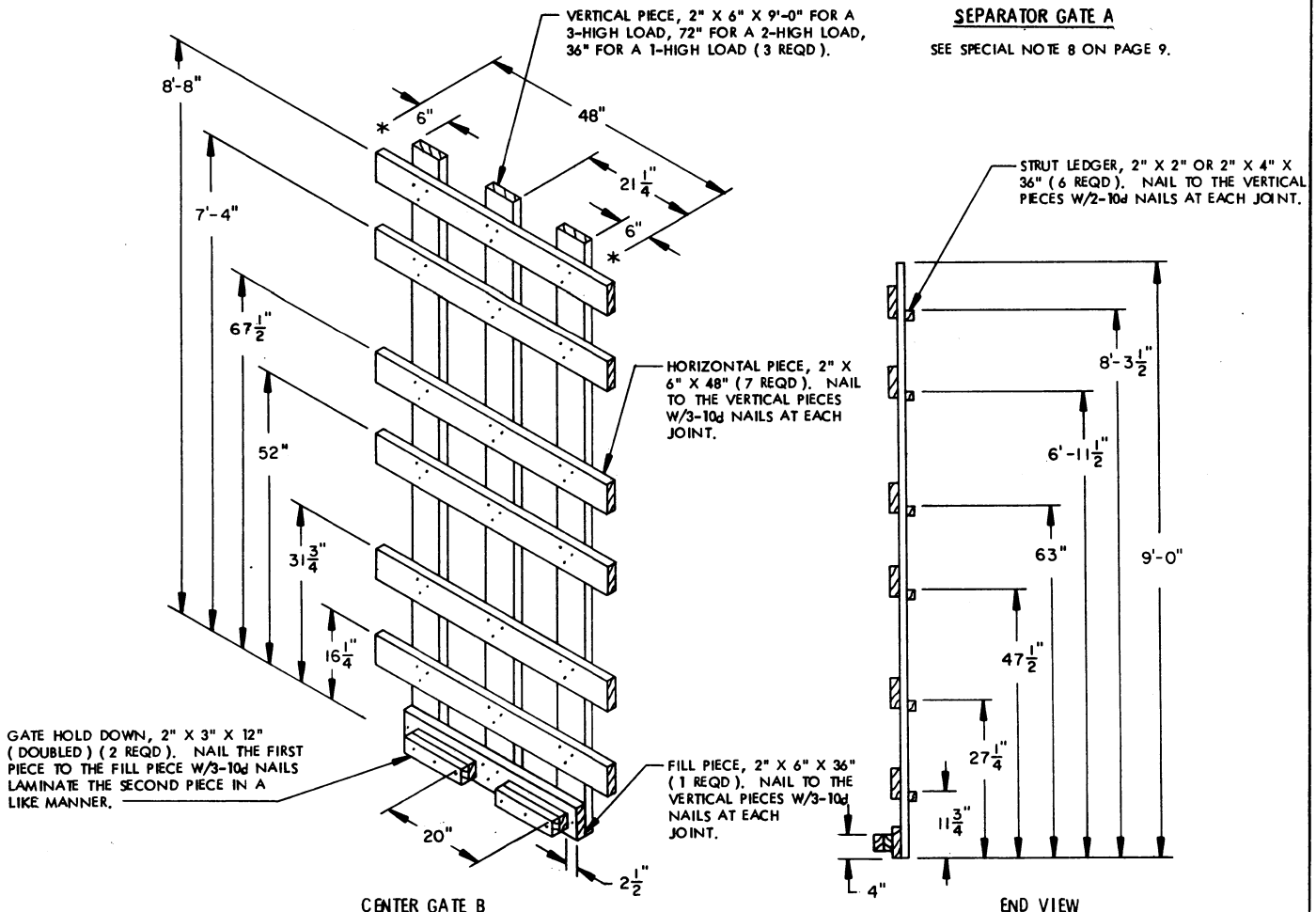
SEPARATOR GATE E

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 80 WHEN SHIPPING THE BASIC HEIGHT ALTERNATED CONTAINERS UNIT.



SEPARATOR GATE A

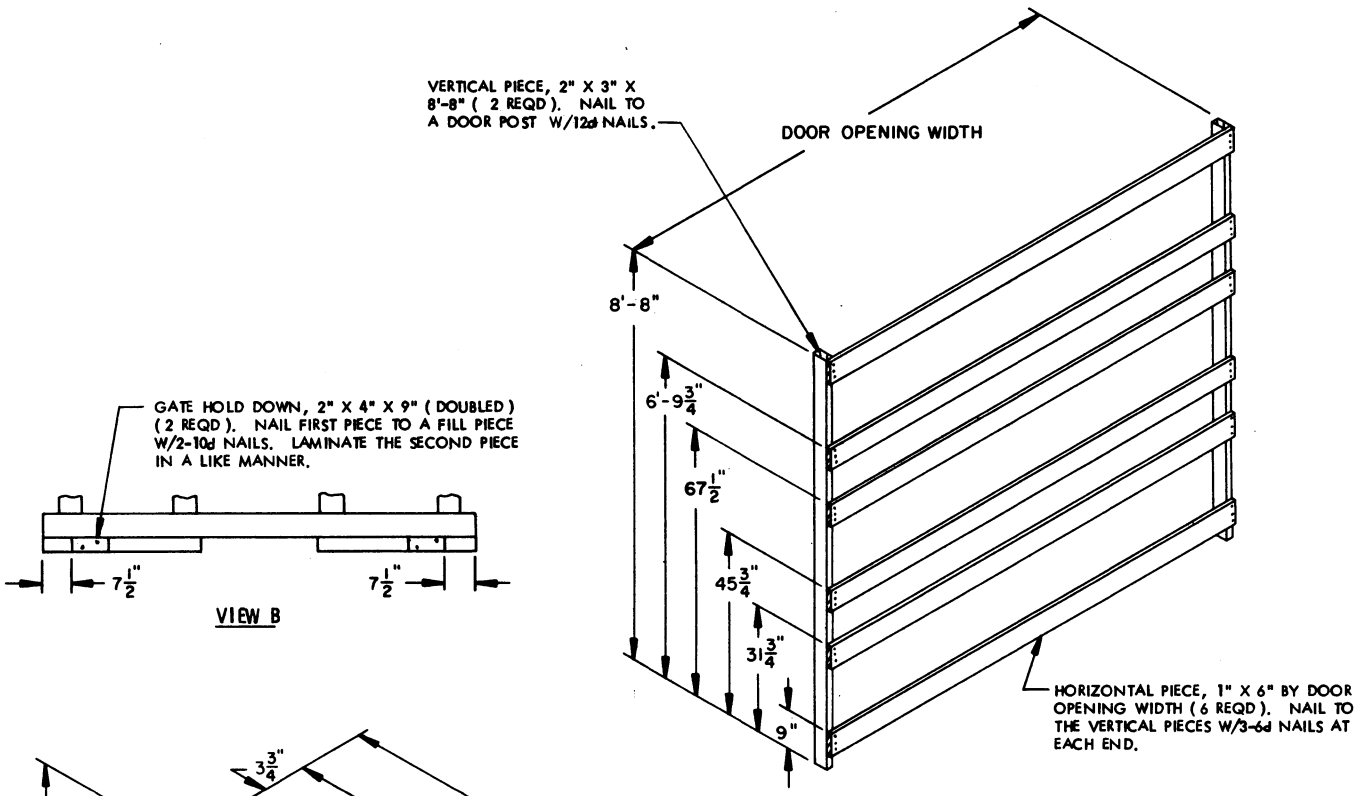
SEE SPECIAL NOTE 8 ON PAGE 9.



CENTER GATE B

SEE SPECIAL NOTE 11 ON PAGE 9

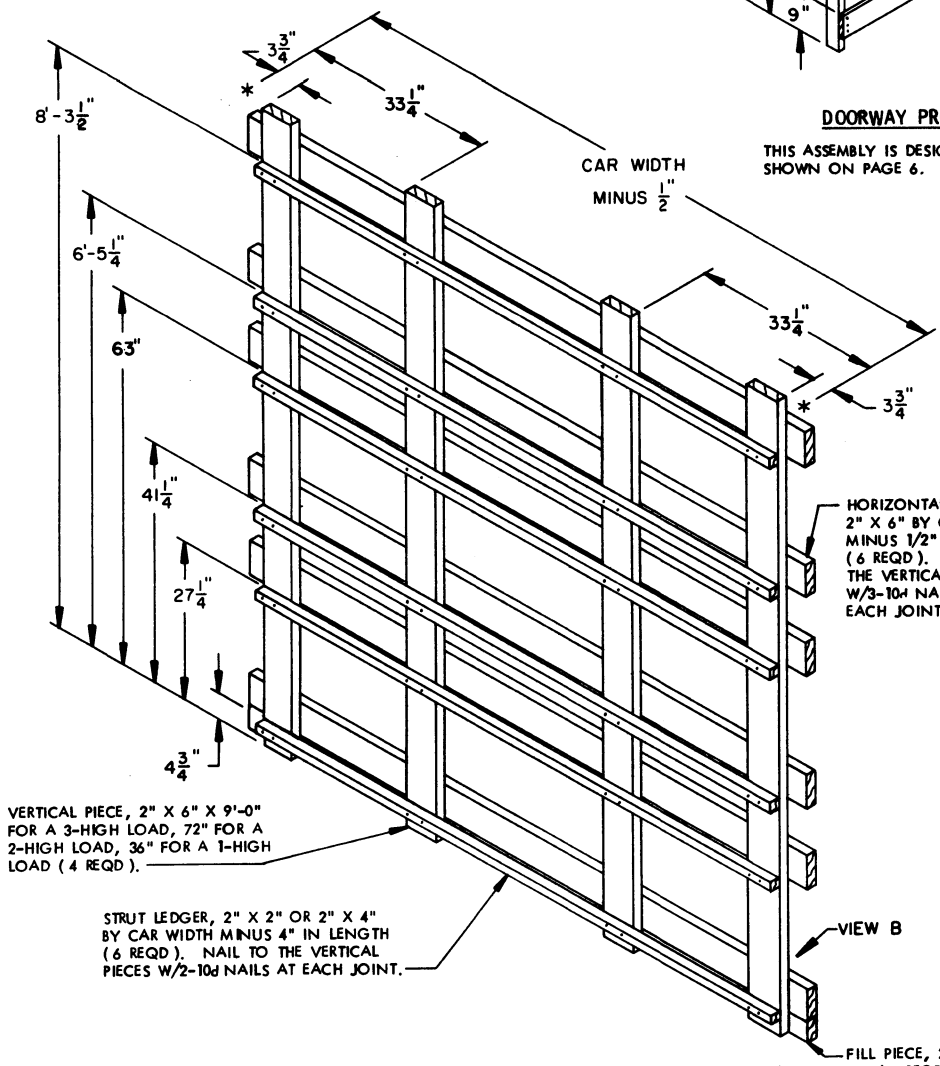
END VIEW



VIEW B

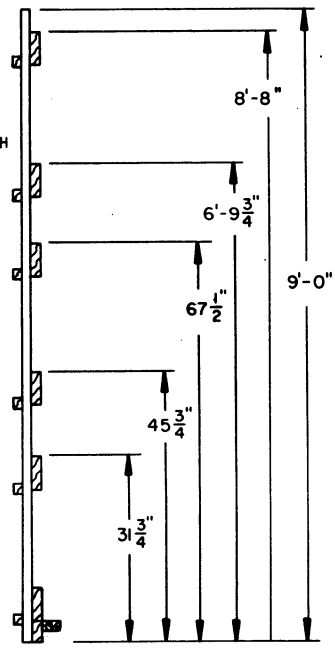
DOORWAY PROTECTION A

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



CENTER GATE C

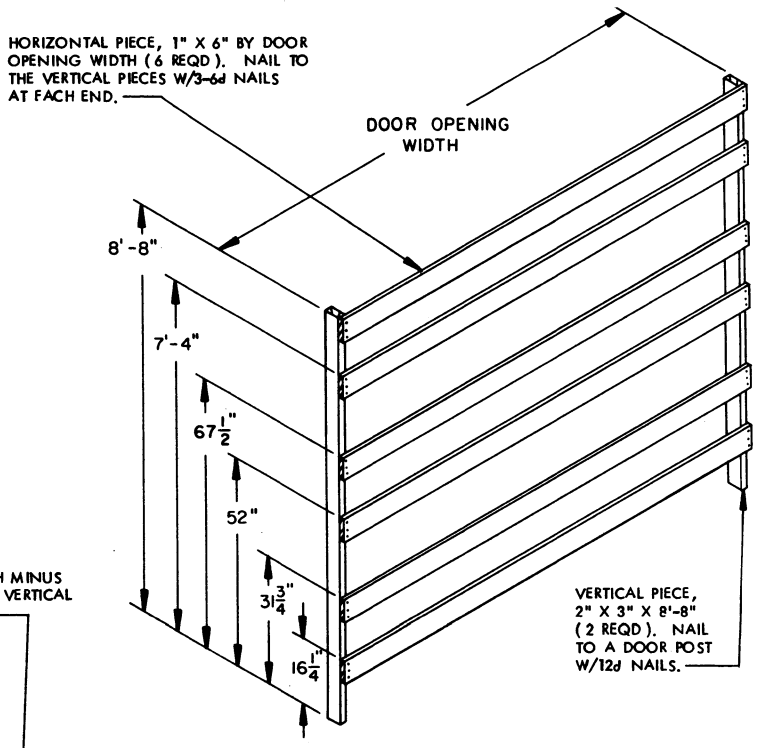
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 6.



END VIEW

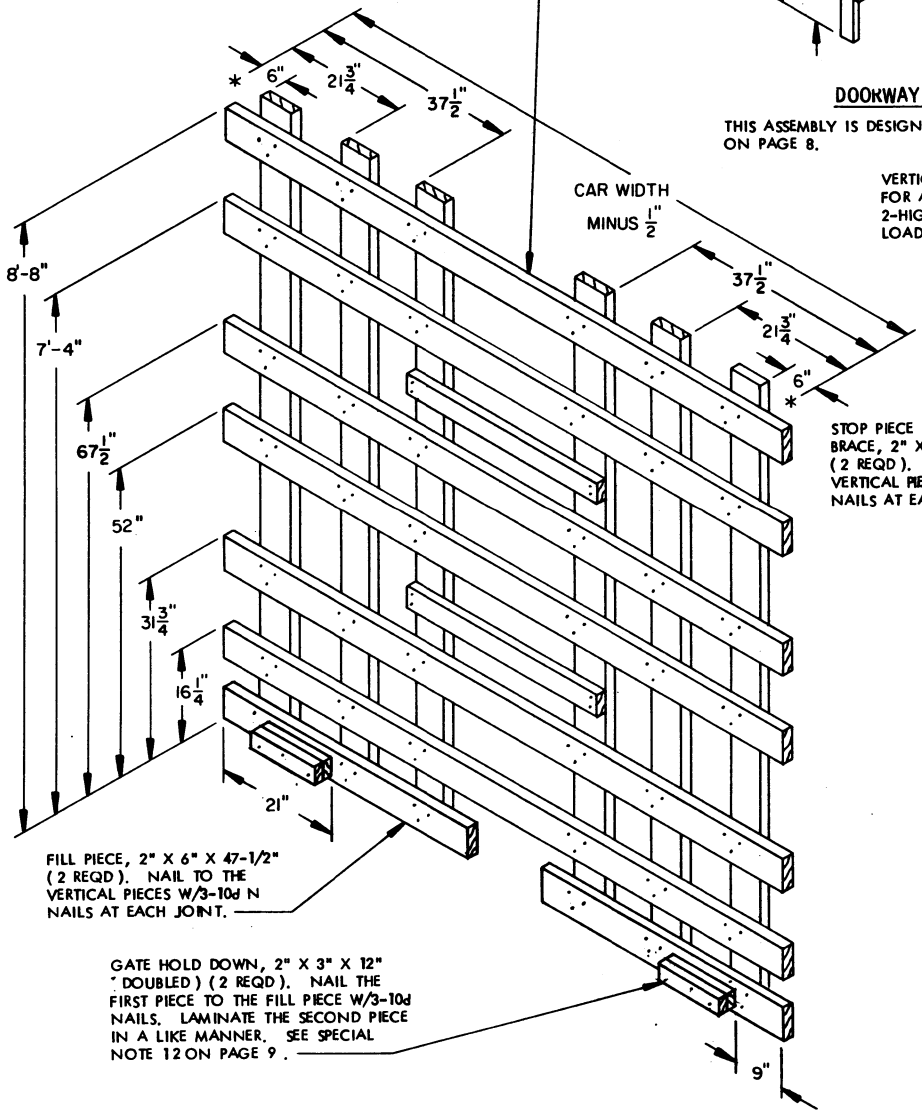
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

PROJECT FSA 43B/4-63



DOORWAY PROTECTION B

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



CENTER GATE D

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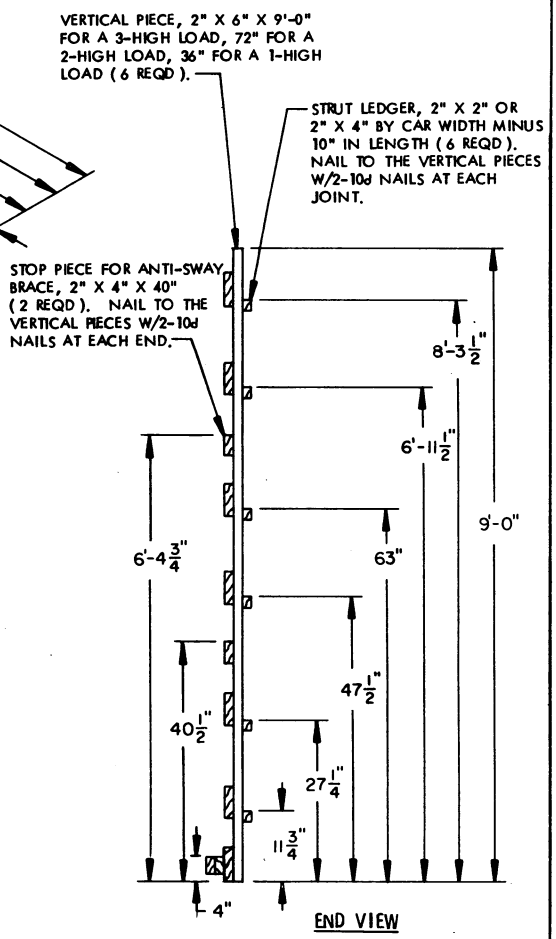
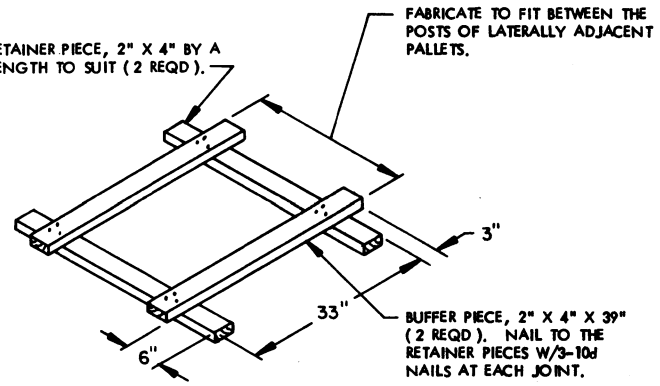


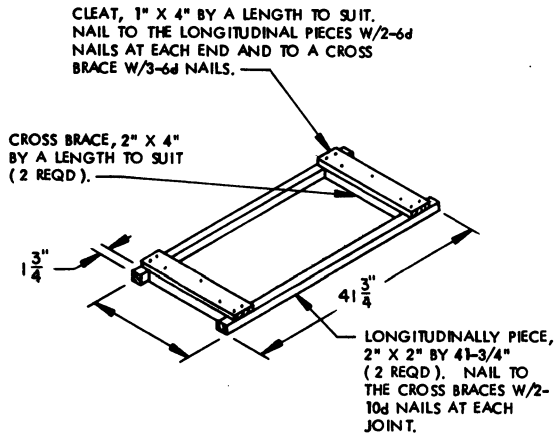
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

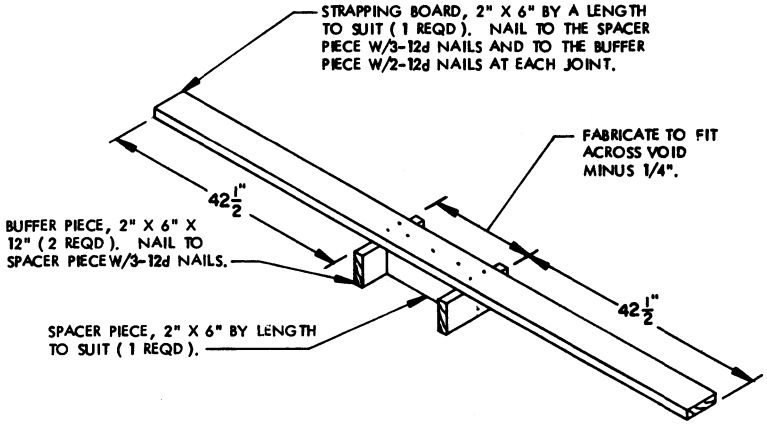


ANTI-SWAY BRACE A

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

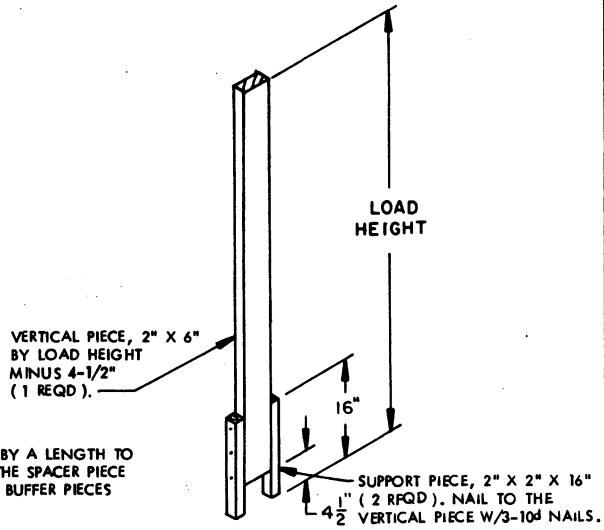


ANTI-SWAY BRACE B

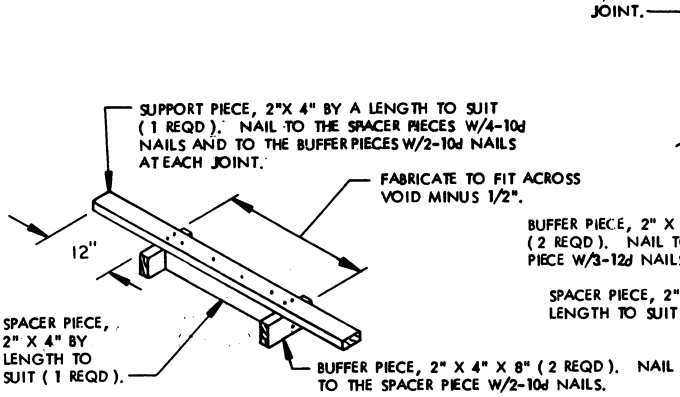


SPACER ASSEMBLY A

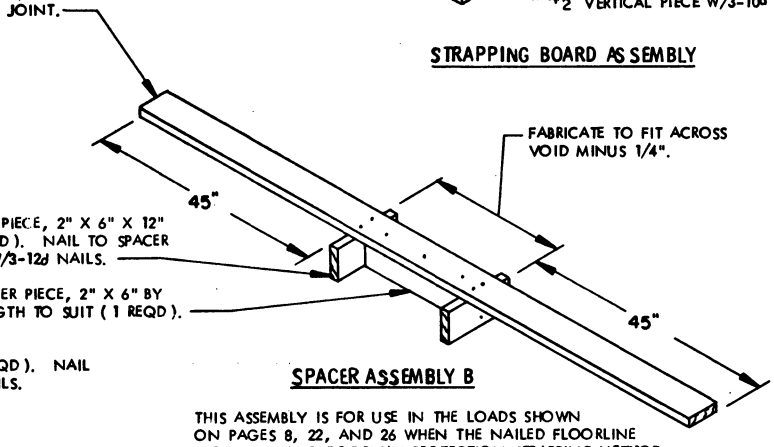
THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGE 6, 12, AND 20 WHEN THE CAR IS EQUIPPED WITH PLUG TYPE DOORS, OR AS AN ALTERNATIVE TO THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION WHEN USED IN CONJUNCTION WITH STEEL STRAPPING.



STRAPPING BOARD ASSEMBLY

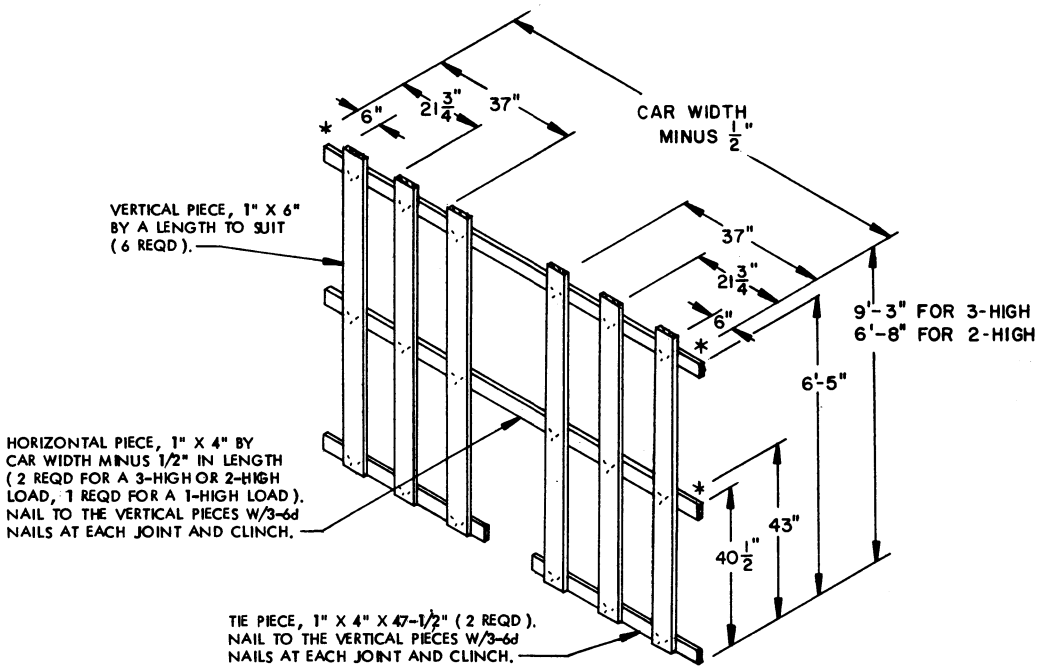


TOP-OF-LOAD ANTI-SWAY BRACE ASSEMBLY .A



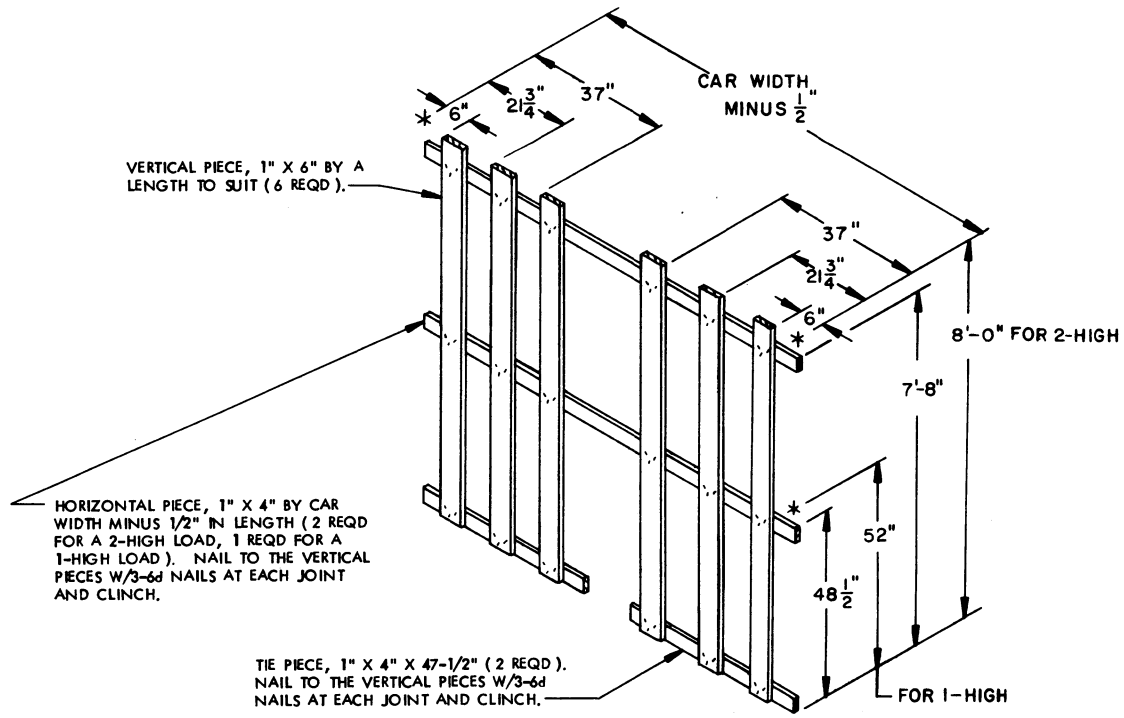
SPACER ASSEMBLY B

THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 8, 22, AND 26 WHEN THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE.



SEPARATOR GATE B

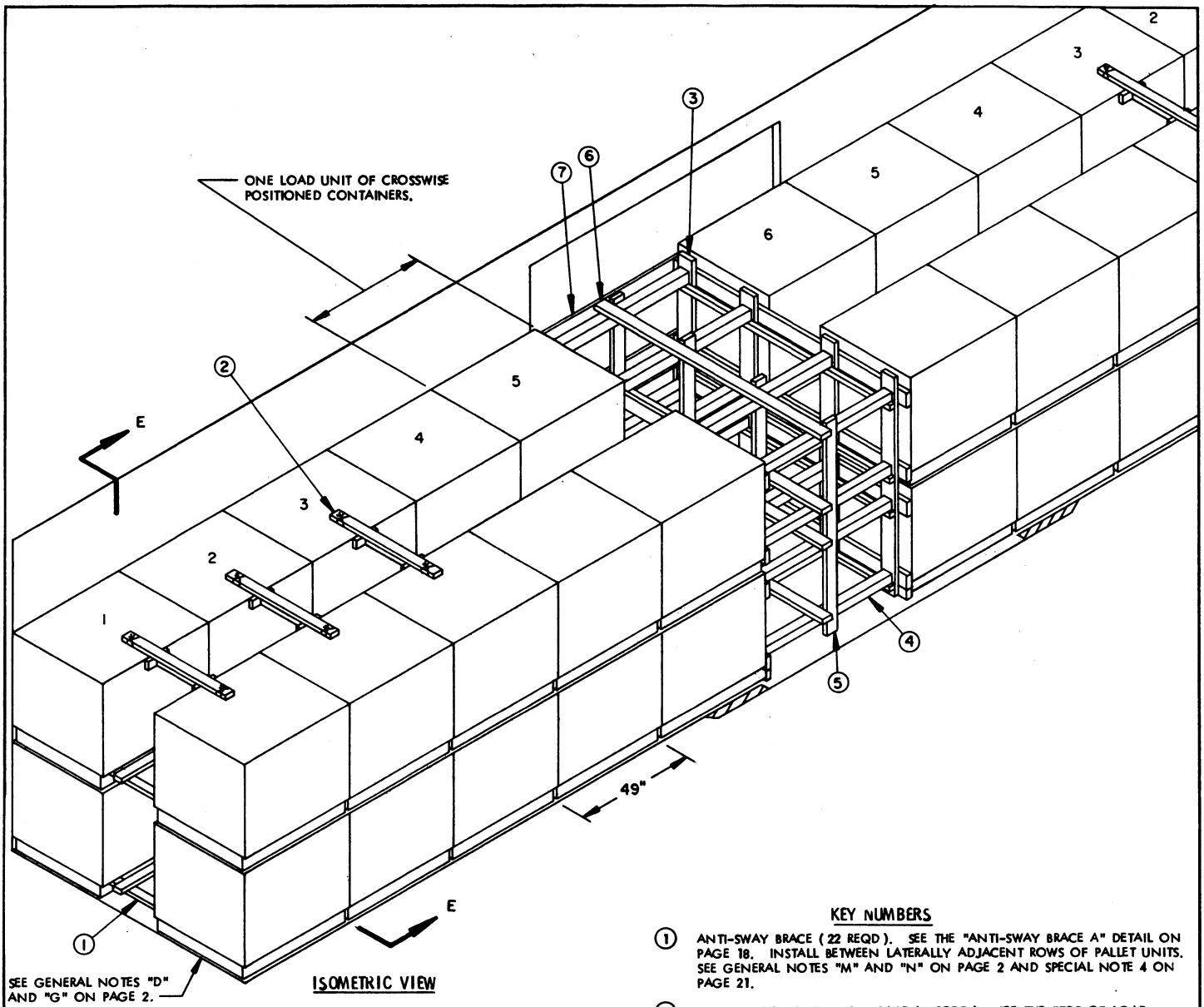
SEE SPECIAL NOTE 8 ON PAGE 9.



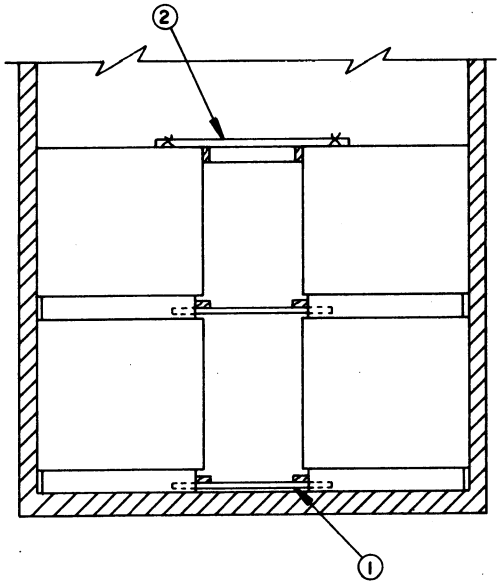
SEPARATOR GATE D

SEE SPECIAL NOTE 8 ON PAGE 23.

DETAILS FOR ALTERNATED CONTAINERS UNITS



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

① ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE A" 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 21.

② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 21.

③ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 30. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 21.

④ STRUT, 4" X 4" BY CUT TO FIT (REF: 61") (16 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

⑤ VERTICAL STRUT BRACING, 2" X 4" X 7'-3" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 6" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 30. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 21.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER 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 PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 20 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 101,920 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 65,520 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF DOORWAY PROTECTION PROCEDURES AS SHOWN IN THE LOAD ON PAGE 12 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECES 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 8.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 20, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IF A 60'-8" CAR IS USED.

5. 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 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE G", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 24, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 28. 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 111.

7. DOCR SPANNER 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 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 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. REFER TO PIECES MARKED ③ , ④ , ⑤ , ⑦ , AND ⑧ ON PAGE 12 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

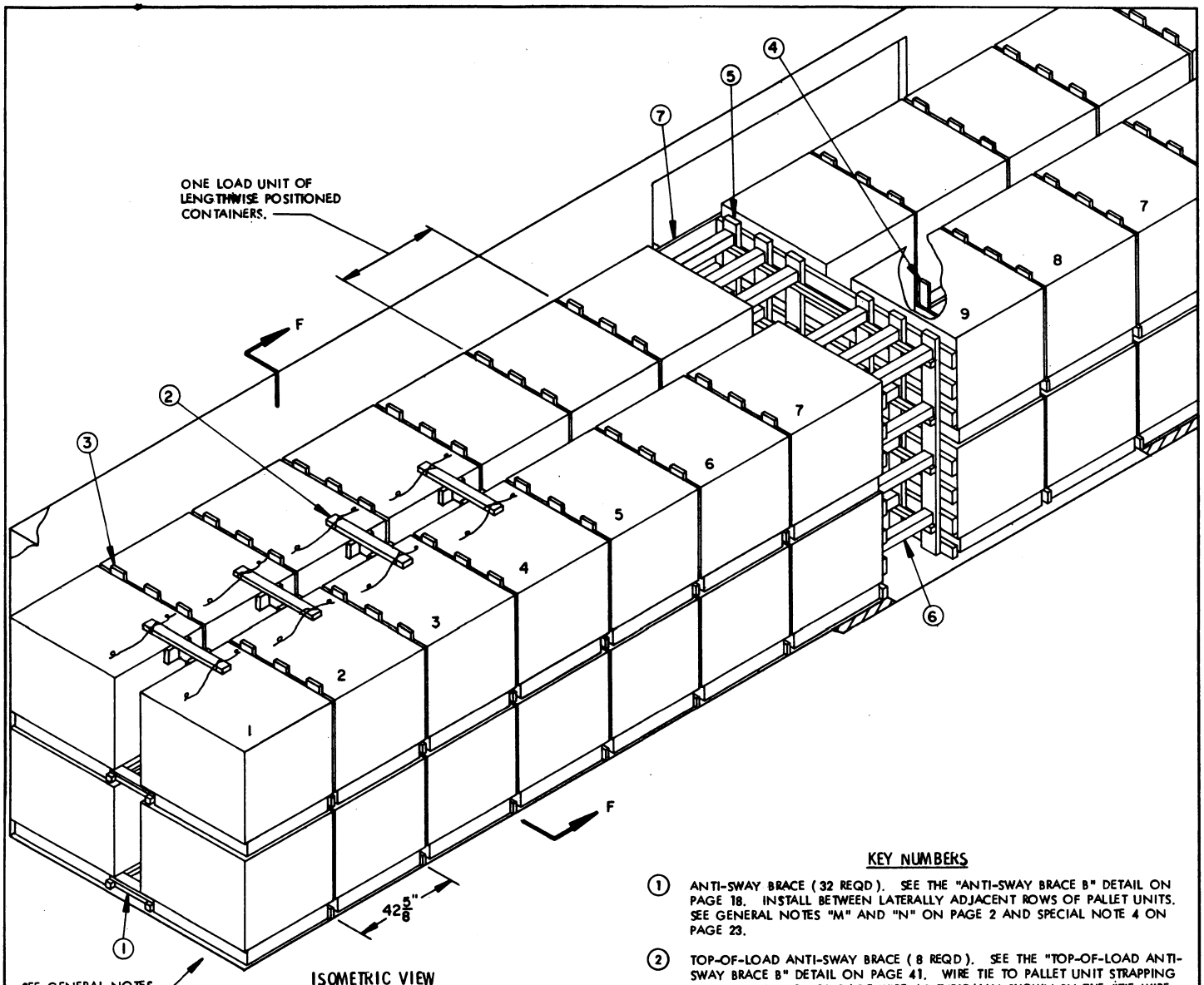
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	71	24
2" X 3"	28	14
2" X 4"	399	266
2" X 6"	131	131
4" X 4"	82	110
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	608	9-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------	36' REQD----------	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT---------	44----------	80,080 LBS
DUNNAGE----------		1,181 LBS
TOTAL WEIGHT--------		81,261 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE B" 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 (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 23.

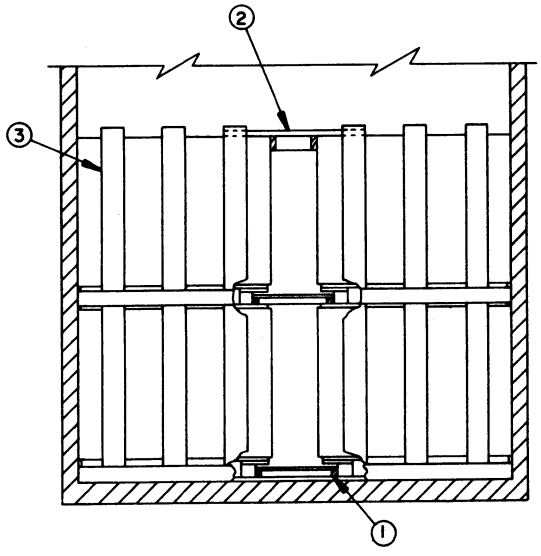
(3) SEPARATOR GATE (14 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 29. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6, 8, AND 9 ON PAGE 23.

(4) STOP PIECE, 1" X 4" X 60" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3) , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 23.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 31. SEE SPECIAL NOTES 10, 11, AND 12 ON PAGE 23.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 31. NAIL TO THE DOOR POSTS W/12-J NAILS. SEE SPECIAL NOTE 13 ON PAGE 23.



SECTION F-F

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

(SPECIAL NOTES CONTINUED)

14. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, REFER TO PAGE 26 FOR GUIDANCE. SIDE BLOCKING, PIECE MARKED ⑤ , SPACER ASSEMBLY "B", PIECE MARKED ⑥ , AND DOORWAY PROTECTION STRAPS, PIECE MARKED ⑧ , MUST BE USED. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) 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. SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 18. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

15. 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 82 THRU 108 FOR GUIDANCE.

16. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

17. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

18. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 64-UNIT LOAD IN A 60'-8" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 125,700 POUNDS WHEN POSITIONED IN AN OFFSET LOADING PATTERN AS SHOWN. AN EQUALLY DISTRIBUTED 64-UNIT LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 118,800 POUNDS OR GREATER. A 52-UNIT LOAD IN A 50'-6" LONG CAR WILL REQUIRE A CAR HAVING A LOAD LIMIT OF 103,200 POUNDS OR GREATER. A 40-UNIT LOAD IN A 40'-6" LONG CAR POSITIONED IN AN OFFSET LOADING PATTERN WILL REQUIRE A CAR HAVING A LOAD LIMIT OF AT LEAST 83,400 POUNDS. AN QUALLY DISTRIBUTED LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 73,800 POUNDS OR GREATER.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 22 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 94,640 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR AN APPROXIMATE WEIGHT OF 72,300 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 18 AT LEFT.

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 EIGHT (8) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN IN THE LOAD ON PAGE 26 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 LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 13.

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 PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. FOUR (4) 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. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 19. THE USE OF THIS GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED ④ , WILL BE 53" LONG FOR A 2-HIGH LOAD OR 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "G" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

9. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 110 FOR CONSTRUCTION GUIDANCE.

10. 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 111 FOR GUIDANCE.

11. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE H", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 22, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 29. 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 111.

12. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "H", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

13. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	382	128
1" X 6"	710	355
2" X 2"	295	99
2" X 3"	36	18
2" X 4"	127	85
2" X 6"	234	234
4" X 4"	59	79
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1024	6-1/4
10d (3")	740	11-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE	110' REQD	2 LBS

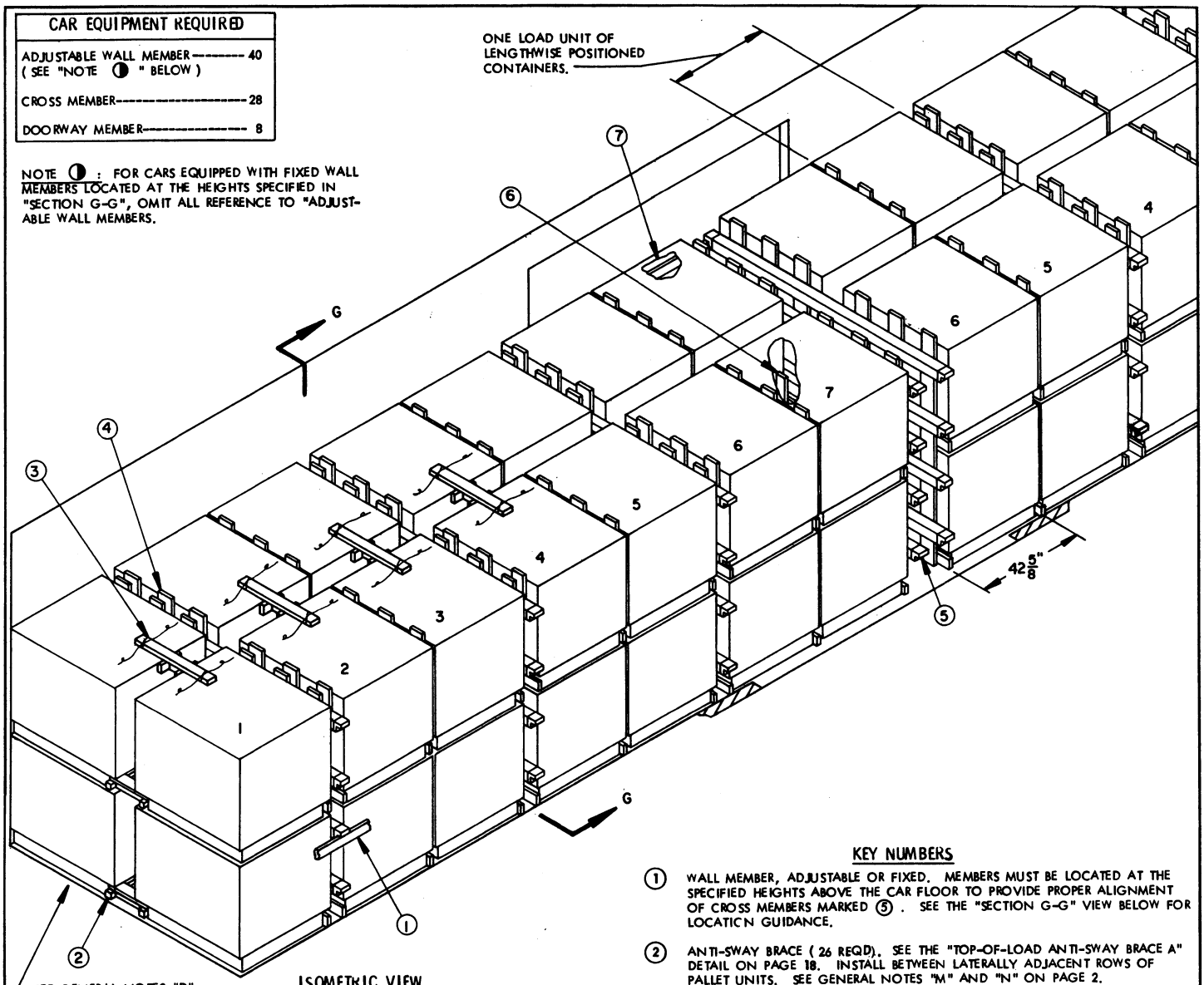
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	64	116,480 LBS
DUNNAGE		2,019 LBS
TOTAL WEIGHT		118,499 LBS (APPROX)

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	40
CROSS MEMBER	28
DOORWAY MEMBER	8

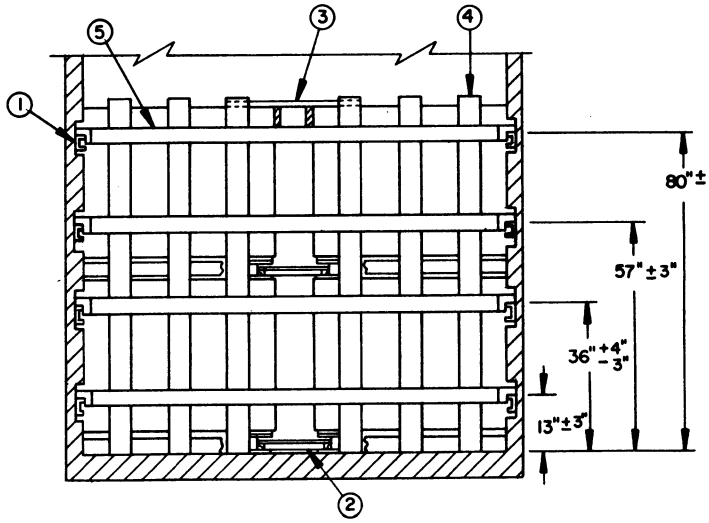
NOTE ◑ : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION G-G", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS.



SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 25.

ISOMETRIC VIEW

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



SECTION G-G

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 (26 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" 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 (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 25.

④ SEPARATOR GATE (17 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 29. AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 25.

⑤ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑥ STOP PIECE, 1" X 4" X 60" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ④ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 25.

⑦ DOORWAY MEMBER (8 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 72,800 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE, EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED ④ , MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 24, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 124. FOUR (4) 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 110 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 UNIT BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 80 AND 81 FOR GUIDANCE.

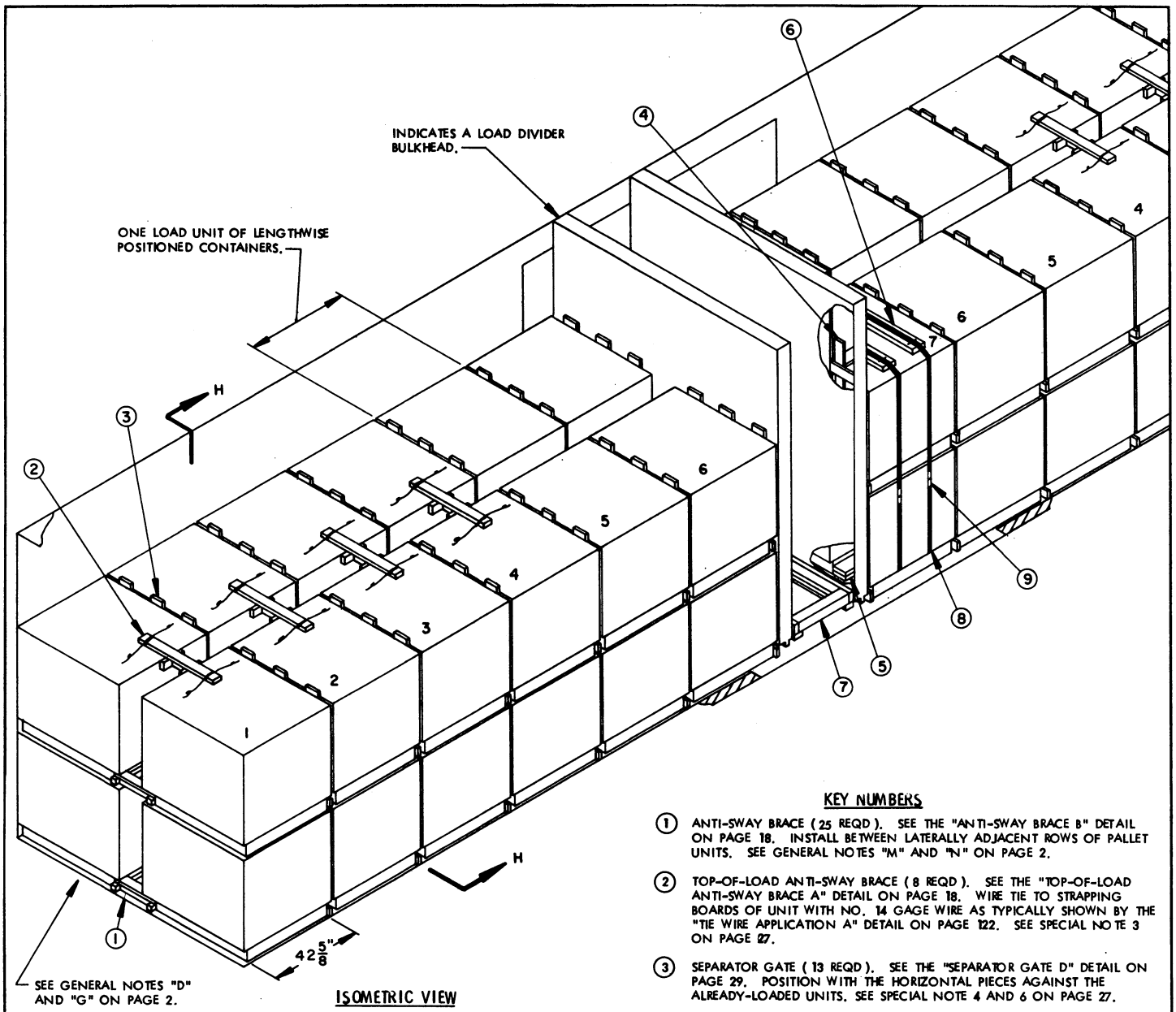
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	412	128
1" X 6"	765	383
2" X 2"	185	62
2" X 4"	93	62
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	1012	6
10d (3")	312	5
WIRE, NO. 14 GAGE----------110' REQD----------2 LBS		

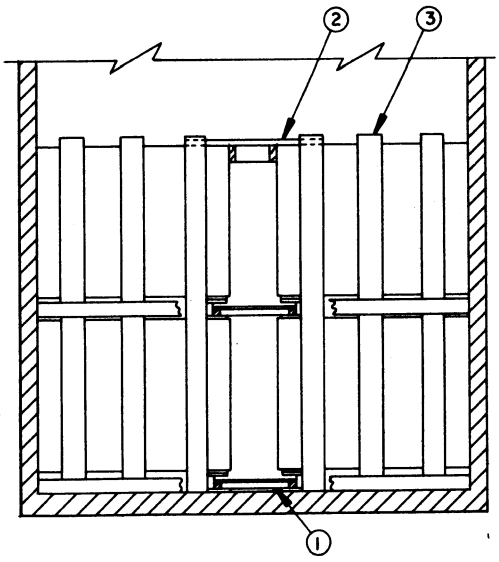
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	94,640 LBS
DUNNAGE		1,325 LBS
TOTAL WEIGHT		95,965 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION H-H

KEY NUMBERS

(1) ANTI-SWAY BRACE (25 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 3 ON PAGE 27.

(3) SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 29. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 4 AND 6 ON PAGE 27.

(4) STOP PIECE, 1" X 4" X 60" (6 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED (3) W/3-6d NAILS AT EACH END AND CLINCH. SEE SPECIAL NOTE 5 ON PAGE 27.

(5) SIDE BLOCKING 2" X 6" X 40" (DOUBLED) (2 REQD). POSITION AGAINST PALLET UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(6) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 18.

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 117. SEE SPECIAL NOTE 9 ON PAGE 27.

(8) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 34'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE LOAD UNIT IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 27.

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

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 26 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 116,480 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 72,800 POUNDS, USING THE DEPICTED PROCEDURES. A CONTAINERS-CROSSWISE LOADING PATTERN, AS SHOWN ON PAGE 12, MAY ALSO BE EMPLOYED. IF THE CROSSWISE PATTERN IS USED, FIFTY-SIX (56) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 101,920 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 80,080 POUNDS AND THIRTY-SIX (36) UNITS CAN BE LOADED INTO A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 65,520 POUNDS.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IF A 60'-8" CAR IS USED.

4. TO FACILITATE POSITIONING OR THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED ③ , SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

5. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④ . IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 110 FOR CONSTRUCTION GUIDANCE.

7. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION IS USED, PIECES MARKED ⑥ , ⑧ , AND ⑨ WILL NOT BE REQUIRED. AN ADDITIONAL ANTI-SWAY BRACE, PIECE MARKED ① , MAY BE USED IN LIEU OF THE SIDE BLOCKING, PIECE MARKED ⑤ IF DESIRED.

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. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE AS SHOWN ON PAGE 26, THE DEPICTED PIECES MARKED ⑤ , ⑥ , ⑧ , AND ⑨ WILL BE USED. IF THE CONTAINERS ARE CROSSWISE IN THE CAR, PIECES MARKED ③ , ④ , ⑤ , ⑦ , AND ⑧ ON PAGE 12 WILL BE USED. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN 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) 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. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS USE DOORWAY PROTECTION "D" AS DETAILED ON PAGE 31; FOR CONTAINERS-CROSSWISE LOADS USE DOORWAY PROTECTION "C" AS DETAILED ON PAGE 30.

9. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 26, 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 REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS.

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 84 THRU 108 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 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

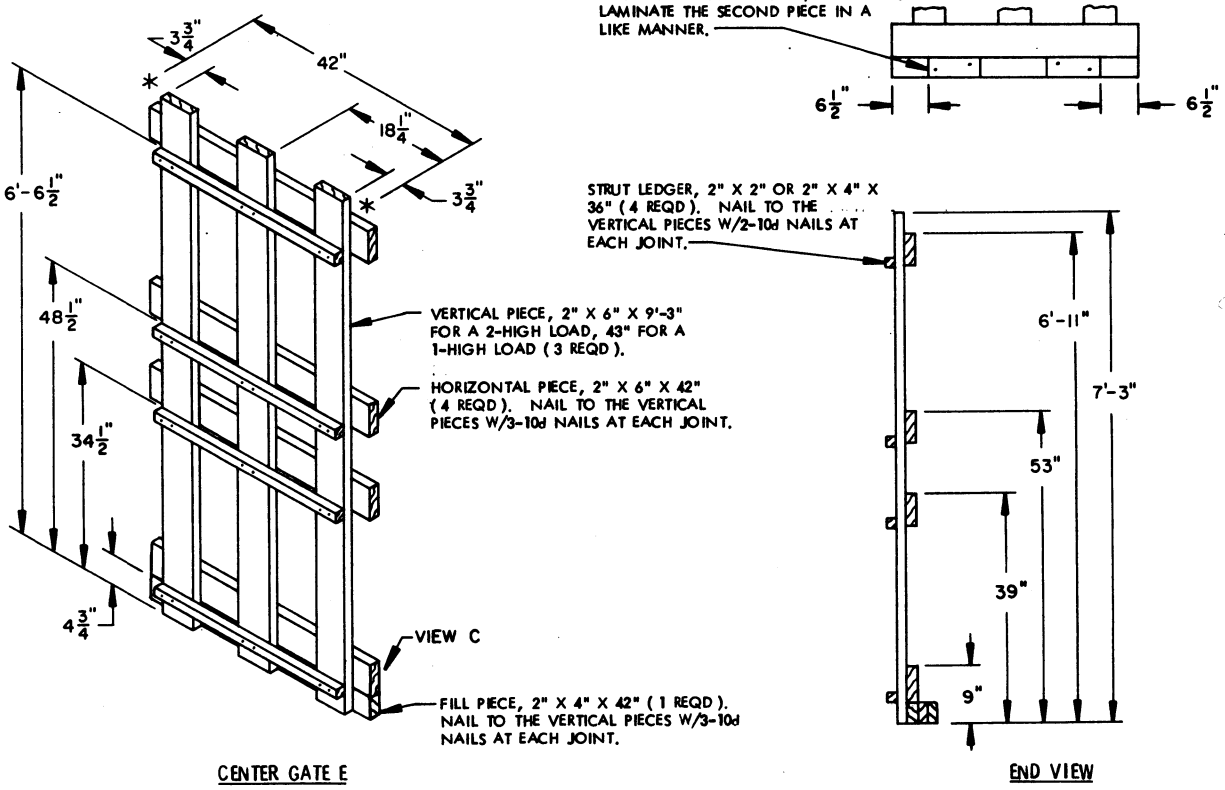
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	354	118
1" X 6"	585	293
1" X 8"	16	11
2" X 2"	187	63
2" X 4"	127	85
2" X 6"	58	58
4" X 4"	9	12
NAILS	**NO. REQD**	**POUNDS**
6d (2")	884	5-1/4
10d (3")	330	5-1/4
12d (3-1/4")	38	3/4
16d (3-1/2")	16	1/2

WIRE, NO. 14 GAGE	110' REQD	2 LBS
STEEL STRAPPING, 1-1/4" X .035" OR .031"	68' REQD	10 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	6 REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	94,640 LBS
DUNNAGE		1,304 LBS
TOTAL WEIGHT		95,944 LBS

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

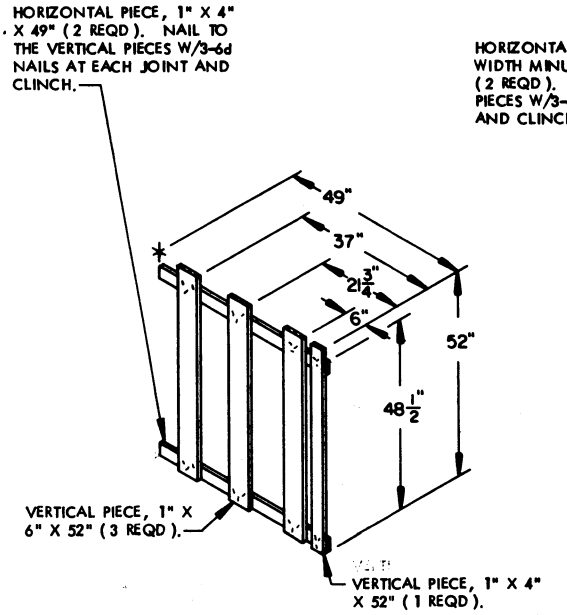


CENTER GATE E

END VIEW

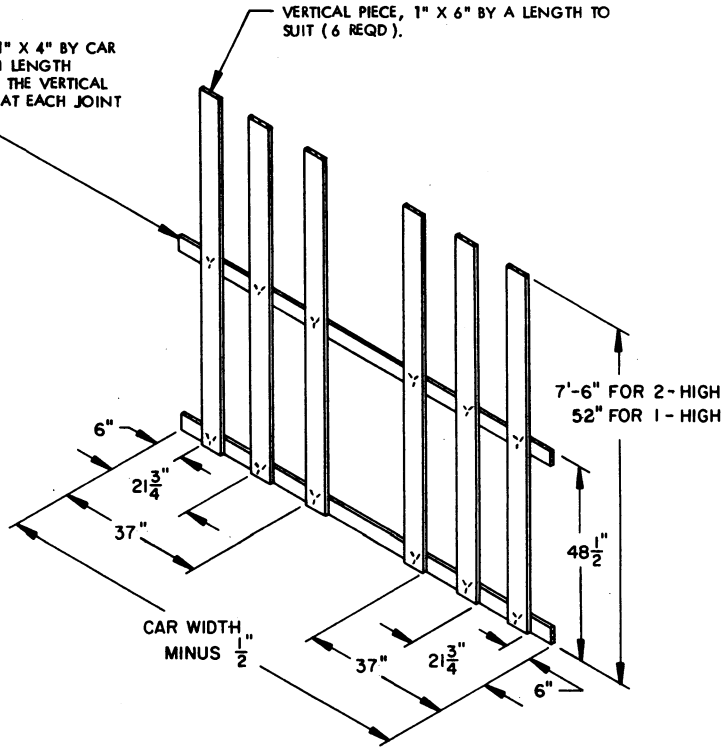
SEE SPECIAL NOTE 6 ON PAGE 21.

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



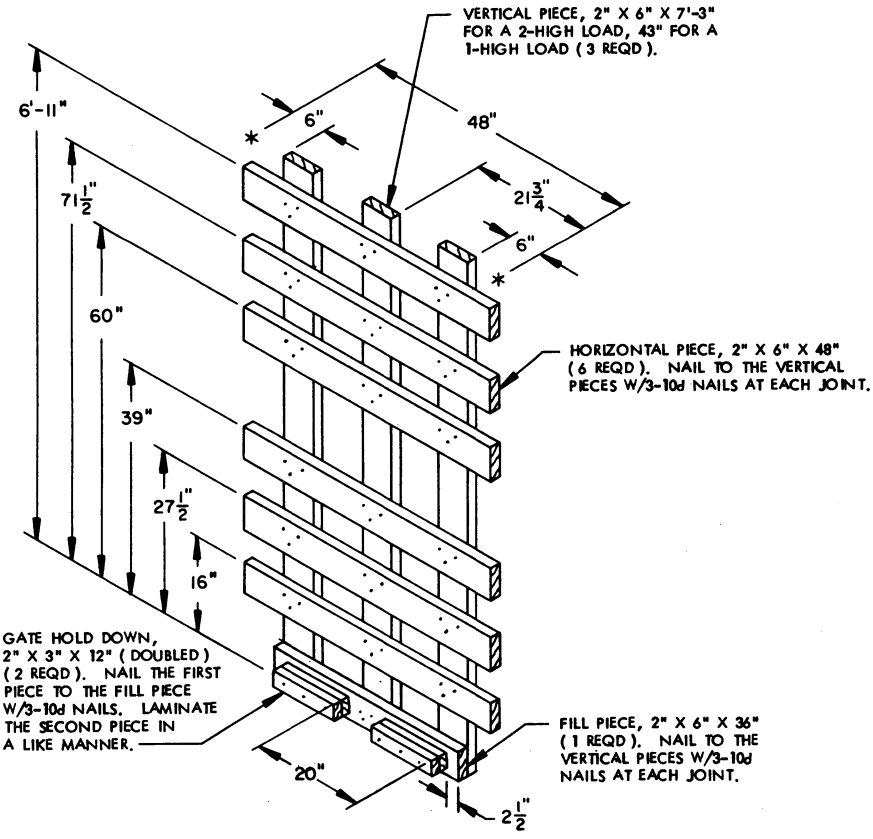
SEPARATOR GATE F

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 80 WHEN SHIPPING THE INCREASED HEIGHT ALTERNATED CONTAINERS UNIT.



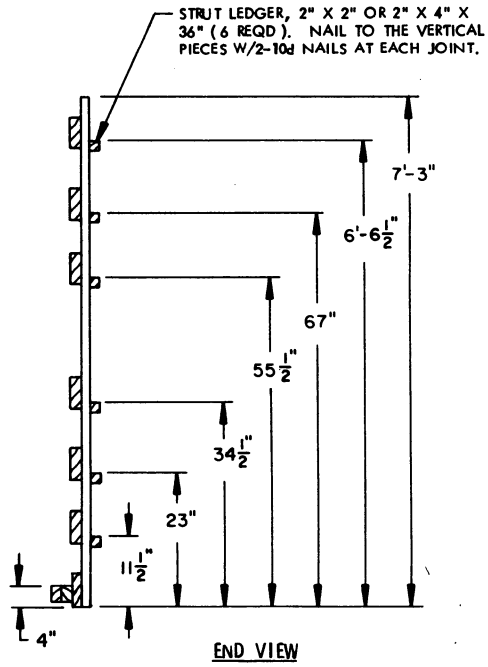
SEPARATOR GATE C

SEE SPECIAL NOTE 8 ON PAGE 23.



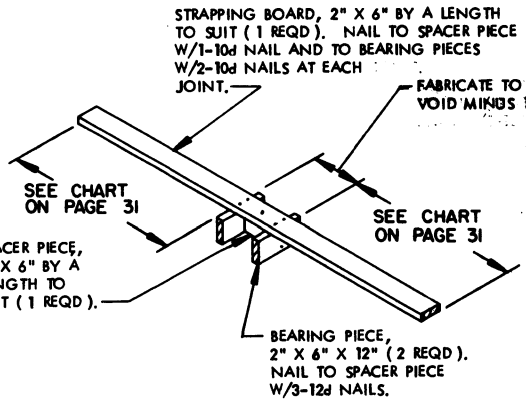
CENTER GATE F

SEE SPECIAL NOTE 11 ON PAGE 23.



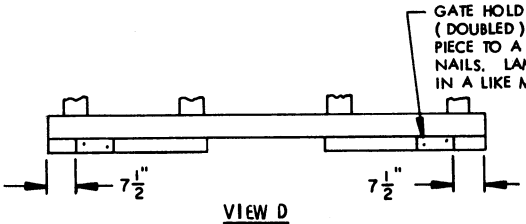
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

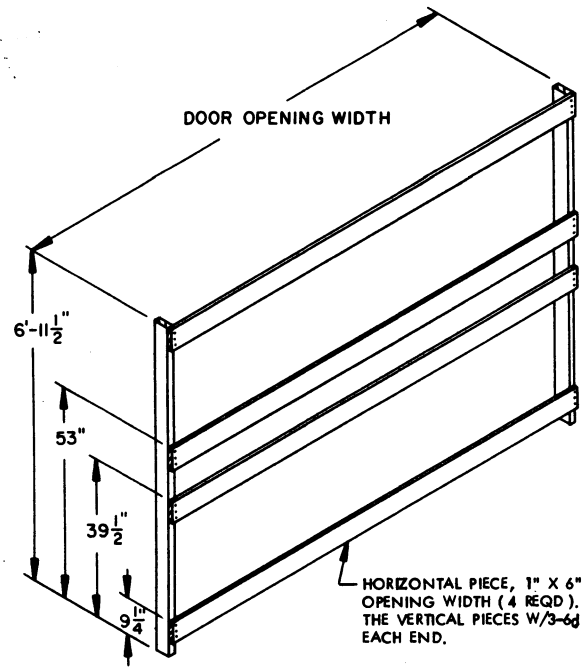


SPACER ASSEMBLY C

THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 8, 22, AND WHEN THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE.

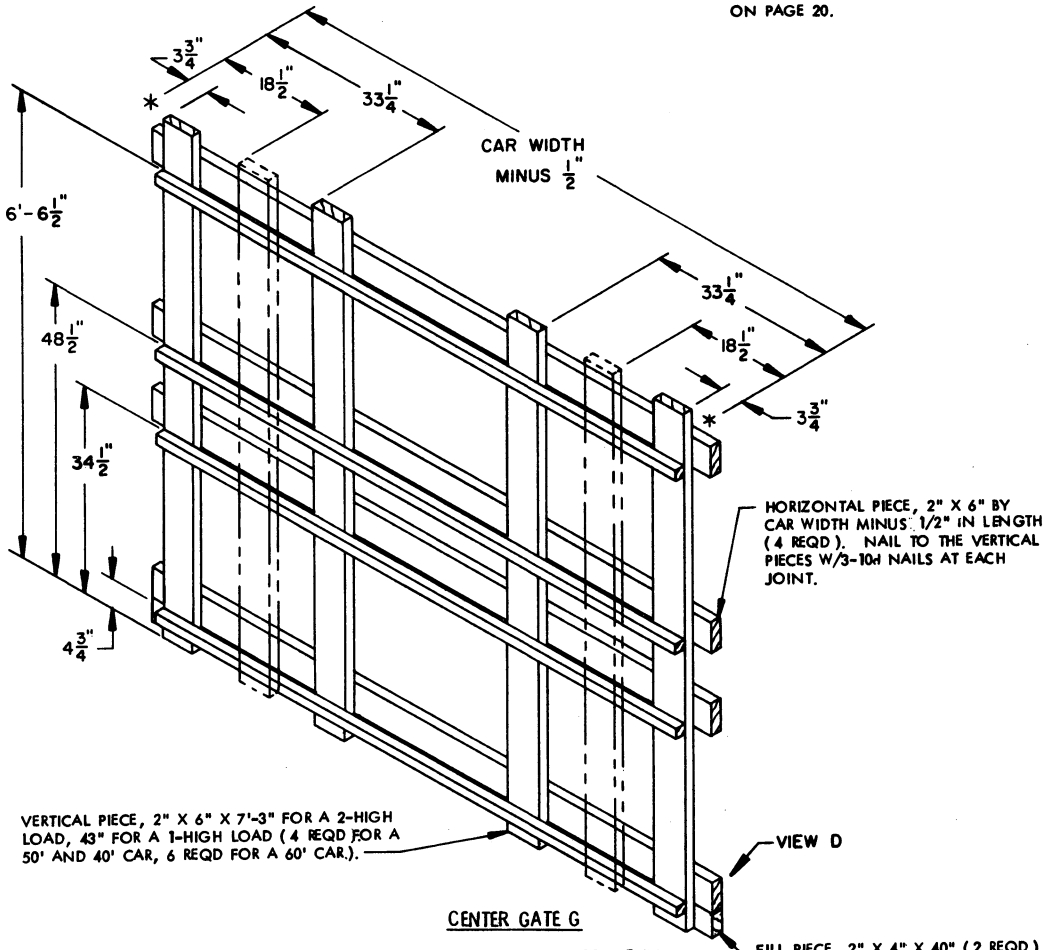


VIEW D



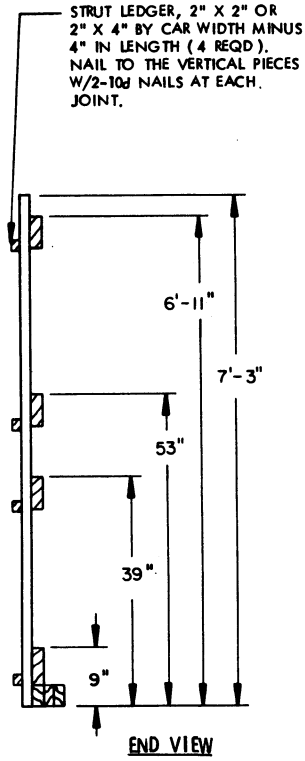
DOORWAY PROTECTION C

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



CENTER GATE G

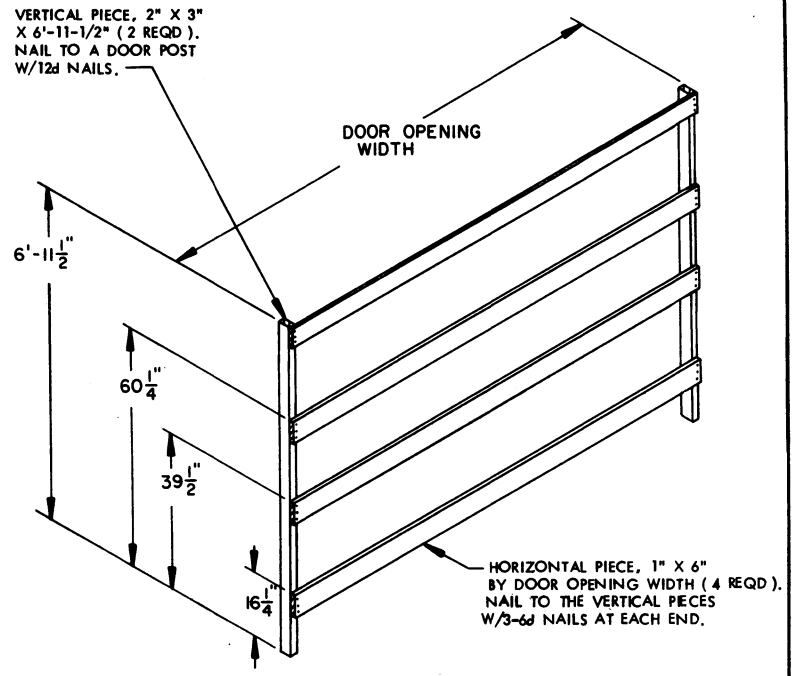
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 24.



END VIEW

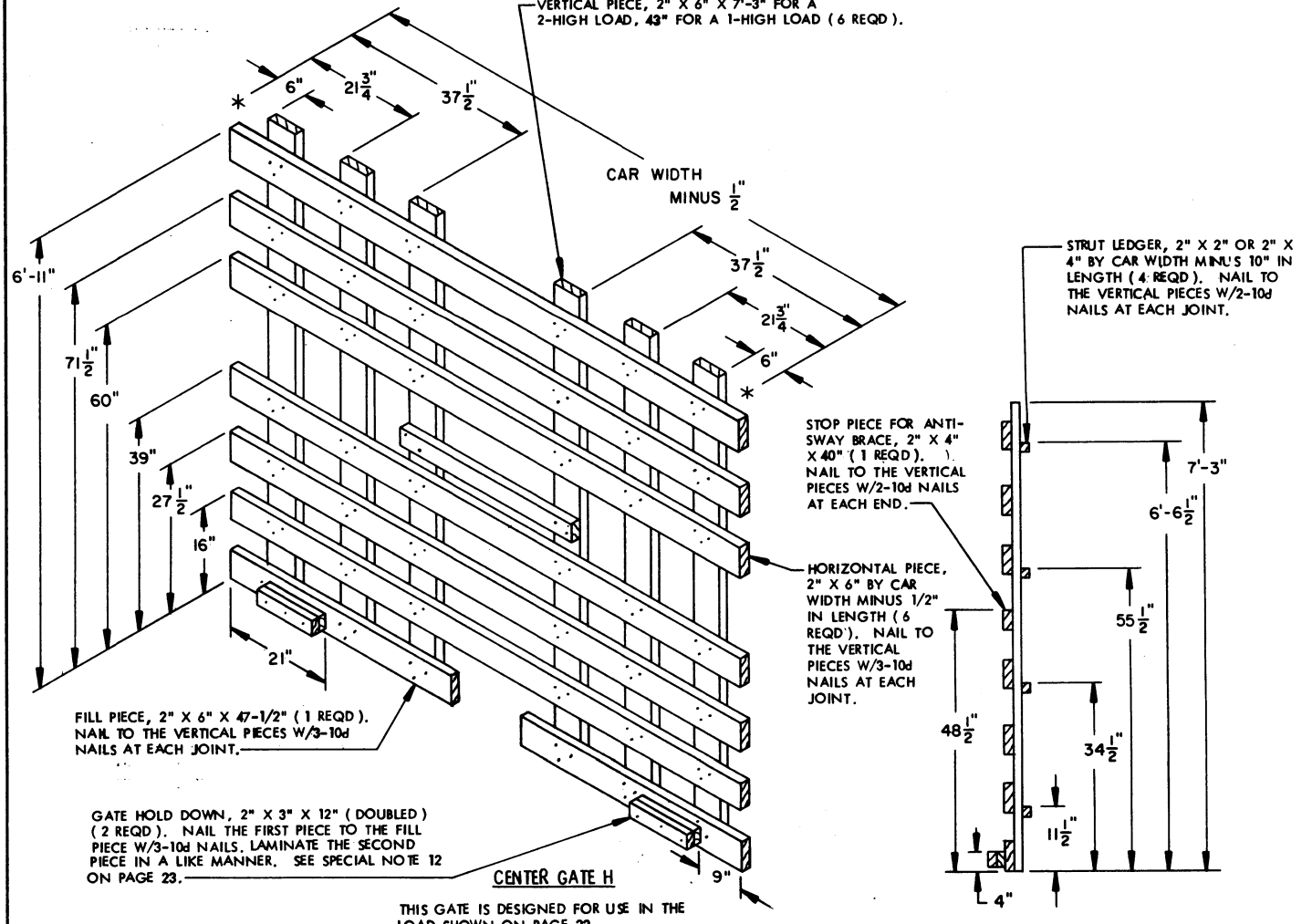
DETAILS FOR ALTERNATED CONTAINERS UNITS (INCREASED HEIGHT)

SPACER ASSEMBLY "C" CHART	
LOAD PAGE	DIMENSION
32	44"
44	44"
50	44"
56	44"
58	46-1/2"
62	46-1/2"
68	44"
70	46-1/2"
74	44"



DOORWAY PROTECTION D

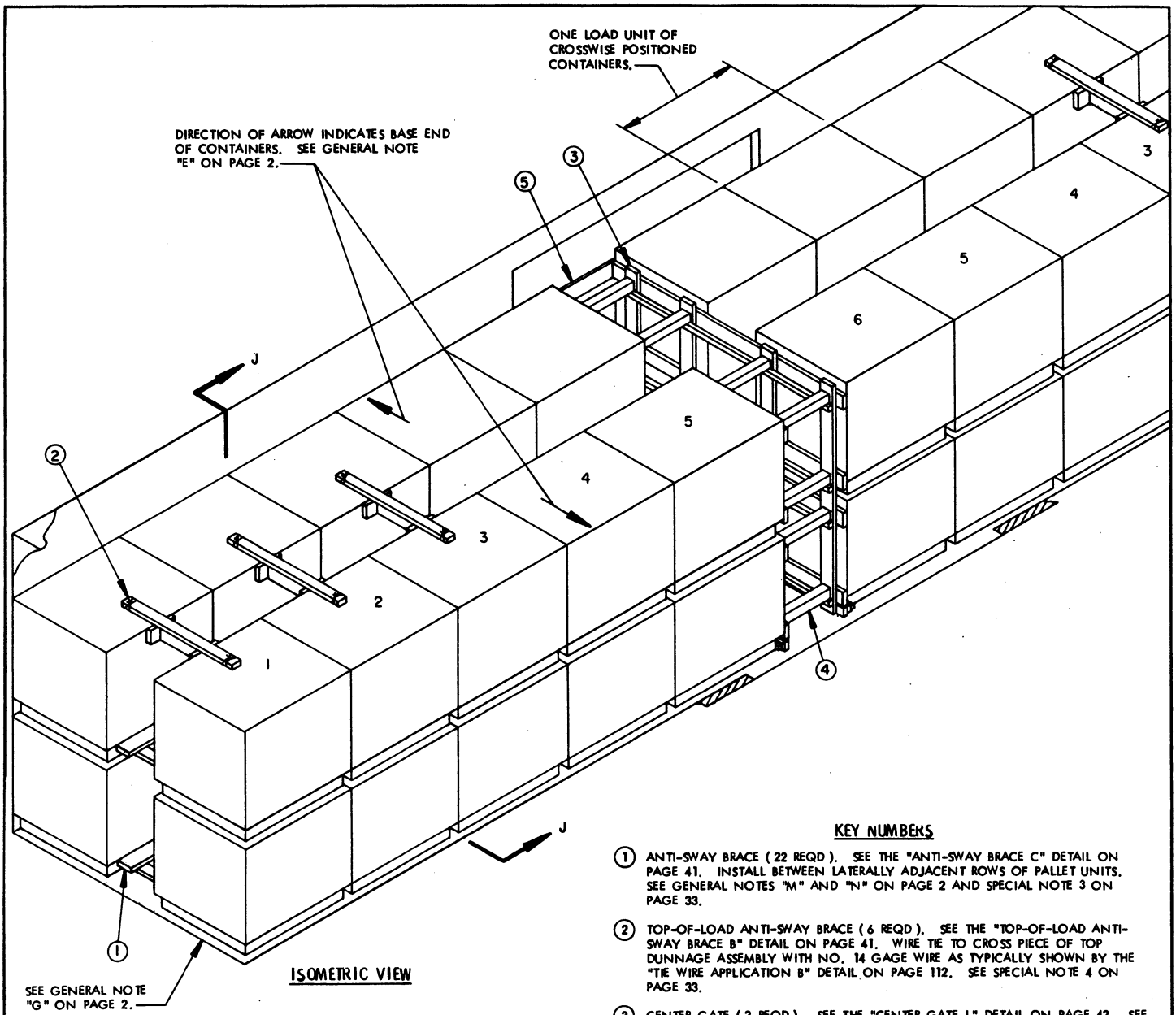
THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 22.



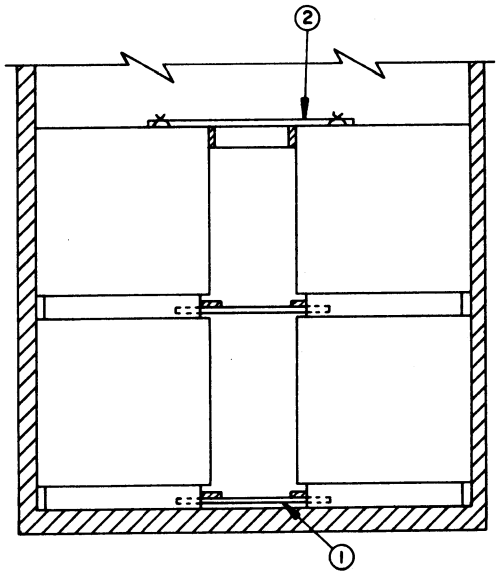
CENTER GATE H

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

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



ISOMETRIC VIEW



SECTION J-J

KEY NUMBERS

(1) ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 33.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 33.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 42. SEE SPECIAL NOTES 5, 6, 7, AND 9 ON PAGE 33.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 22") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 42. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 33.

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 32 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF THIRTY-TWO (32) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 59,840 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, FIFTY-TWO (52) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 97,240 POUNDS, CAN BE LOADED. NOTE THAT SIX (6) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 60' CAR; SEE THE PHANTOMED HORIZONTAL PIECES AND STRUT LEDGERS WHICH MUST BE ADDED TO THE GATES AS SHOWN ON THE "CENTER GATE L" DETAIL ON PAGE 42.

3. IF THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAP METHOD OF DOORWAY PROTECTION, SIMILAR TO THAT SHOWN ON PAGE 12, IS USED, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 32, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION 'B'" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. CENTER GATE "L" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE L" SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 32, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 40. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" AND 2" X 2" MATERIAL NAILED TO CENTER GATE "L", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 32, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 112 THRU 116 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. REFER TO PIECES MARKED (3), (5), (8), AND (9) ON PAGE 50 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 50 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION PIECES MARKED (5), THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. TO ACCOMPLISH THIS, NAIL A DOUBLED 2" X 6" BY CUT TO FIT PIECE ON THE BOTTOM HORIZONTAL OF THE TOP LAYER AS SHOWN ON THE CENTER GATE "L" DETAIL ON PAGE 42. A DOUBLED PIECE WILL BE REQUIRED FOR EACH CENTER GATE IN THE DOORWAY OR WITHIN SIX INCHES (6") OF BEING IN THE DOORWAY.

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 82 THRU 108 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	73	25
2" X 3"	37	19
2" X 4"	247	165
2" X 6"	225	225
4" X 4"	30	40

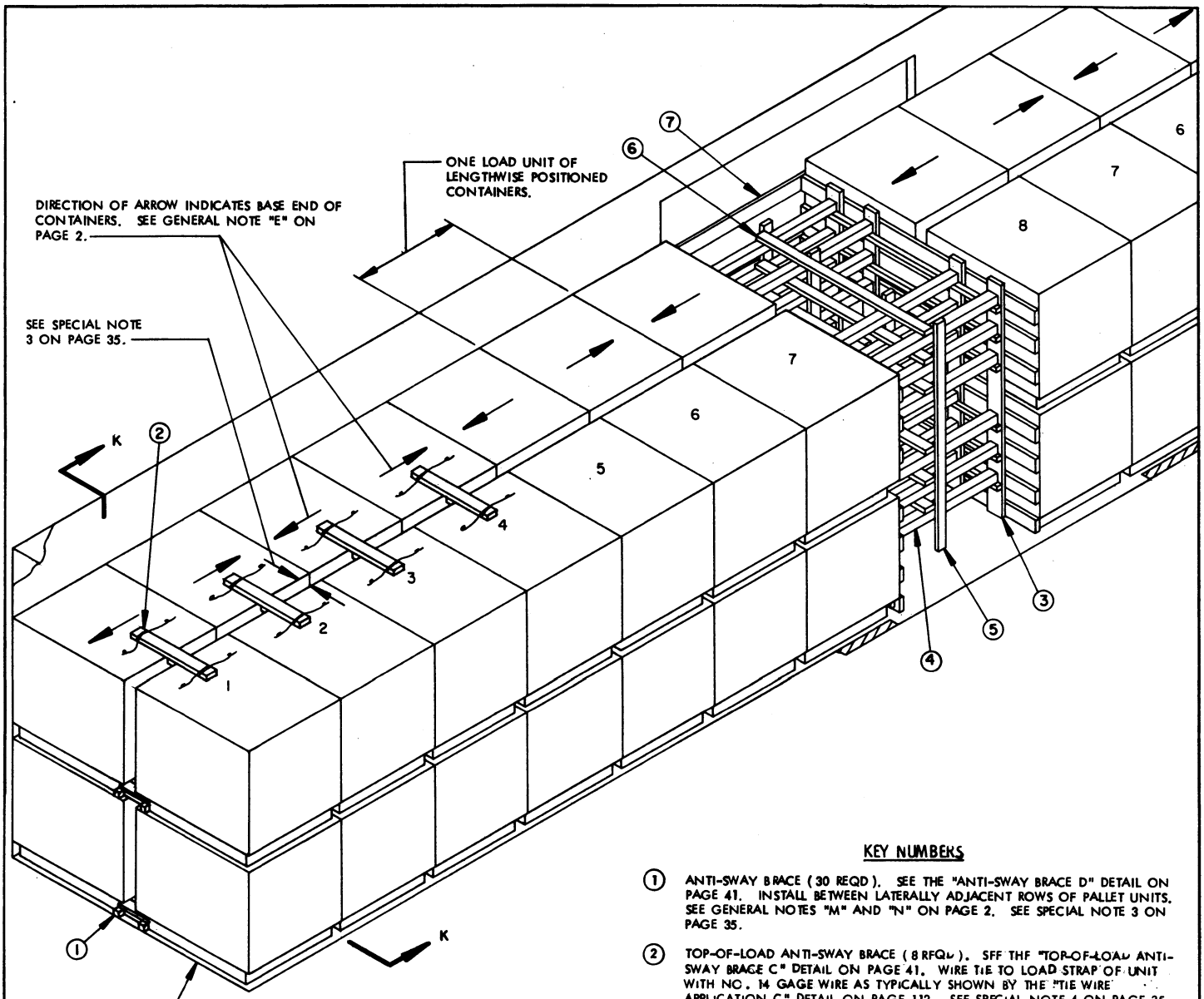
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	564	8-3/4
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2

WIRE, NO. 14 GAGE----------36' REQD----------NIL

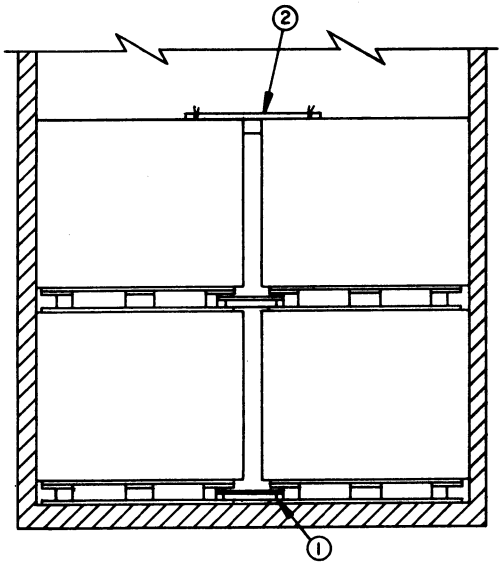
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	44	82,280 LBS"
DUNNAGE		1,080 LBS
TOTAL WEIGHT		83,360 LBS (APPROX)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW



SECTION K-K

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 35.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41. WIRE TIE TO LOAD STRAP OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 35.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 43.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 60") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 7'-9" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(6) HORIZONTAL STRUT BRACING, 2" X 4" X 7'-0" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 43. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 35.

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

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 34 IS THE FLAT DUNNAGE METHOD (BASIC HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 97,240 POUNDS CAN BE PLACED IN A 50'-6" CAR USING THE DEPICTED PROCEDURES; FORTY (40) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 74,800 POUNDS CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TRANSPORT.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE LOAD IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

5. CENTER GATE "M" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE M" SHOWN AS PIECE MARKED ① IN THE LOAD ON PAGE 34, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 41. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 6" AND 2" X 3" MATERIAL NAILED TO CENTER GATE "M", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 34, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.

9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOOR-LINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ ON PAGE 38 FOR GUIDANCE. TWO (2) DOORWAY 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) 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. NOTE THAT THE DOORWAY PROTECTION FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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 82 THRU 108 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	59	20
1" X 6"	80	40
2" X 2"	305	102
2" X 3"	35	18
2" X 4"	150	100
2" X 6"	204	204
4" X 4"	120	160
NAILS	**NO. REQD**	**POUNDS**
6d (2")	468	3
10d (3")	716	11
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE----------48' REQD----------1 LB		

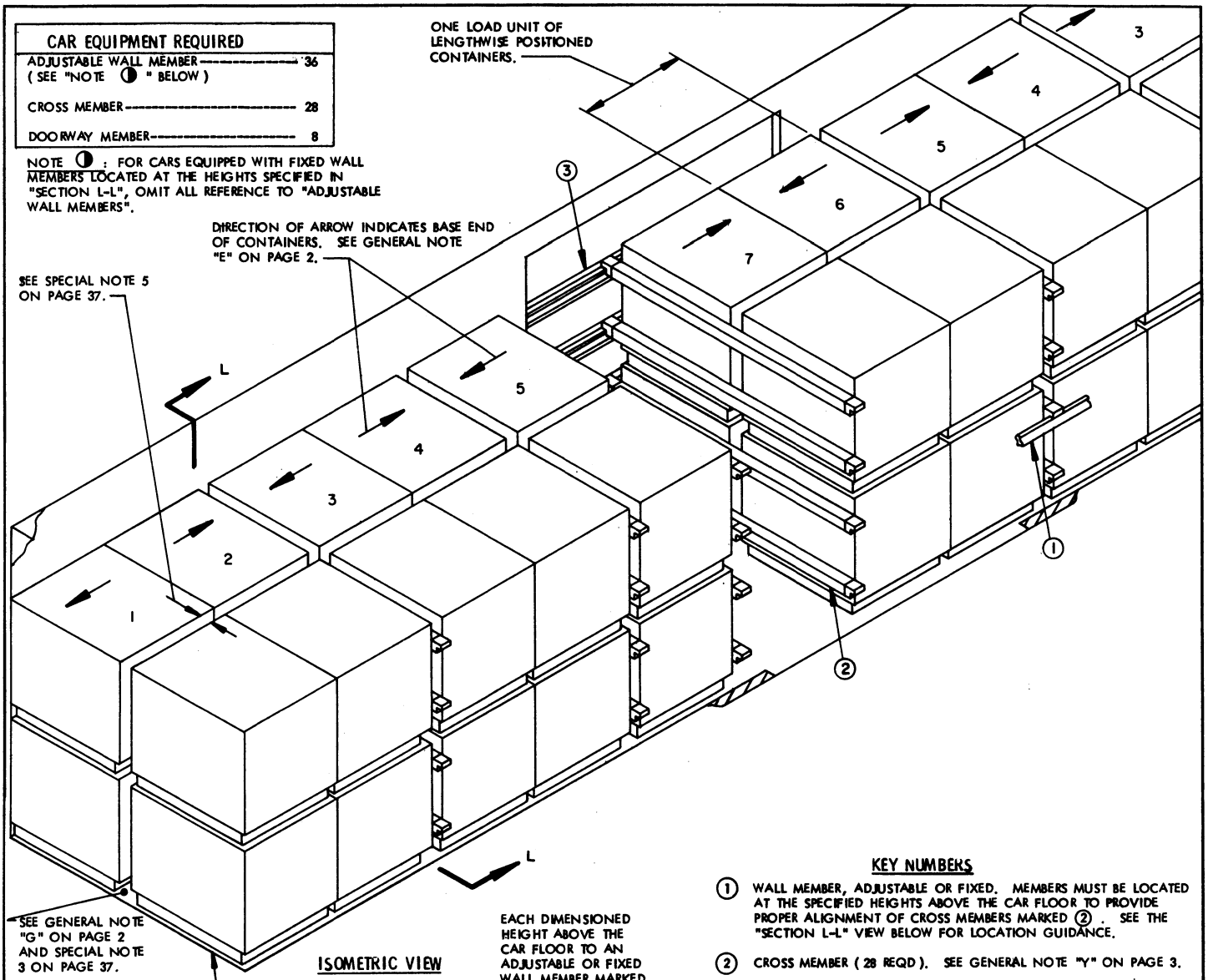
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	60	112,200 LBS
DUNNAGE		1,306 LBS
TOTAL WEIGHT		113,506 LBS (APPROX)

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	36
CROSS MEMBER	28
DOORWAY MEMBER	8

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



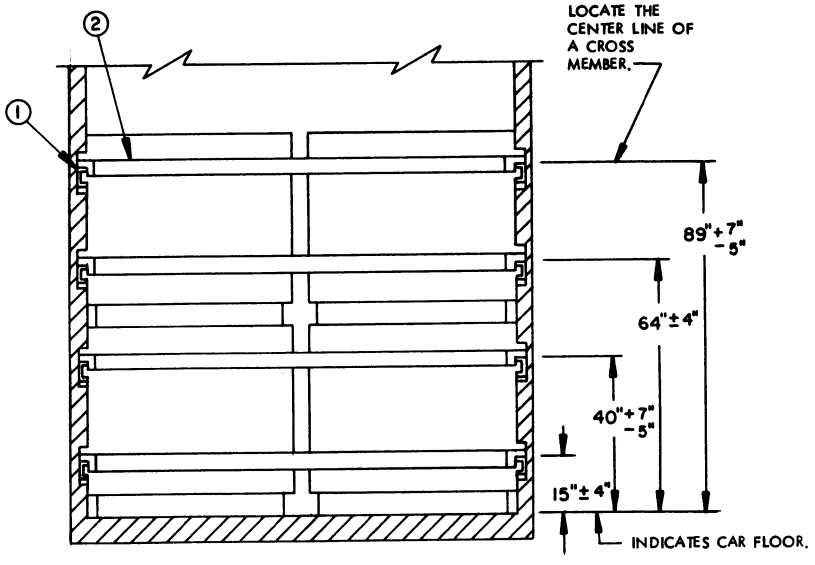
ISOMETRIC VIEW

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ② . SEE THE "SECTION L-L" VIEW BELOW FOR LOCATION GUIDANCE.

② CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

③ DOORWAY MEMBER (8 REQD). SEE THE "SECTION L-L" VIEW AT LEFT FOR LOCATION GUIDANCE.



SECTION L-L

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,800 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TRANSPORT. SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41 FOR CONSTRUCTION GUIDANCE. A 72" LONG STOP PIECE MUST BE INSTALLED ON EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACES, IF USED. SEE PIECE MARKED ④ ON PAGE 60 FOR INSTALLATION GUIDANCE.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE LOAD IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

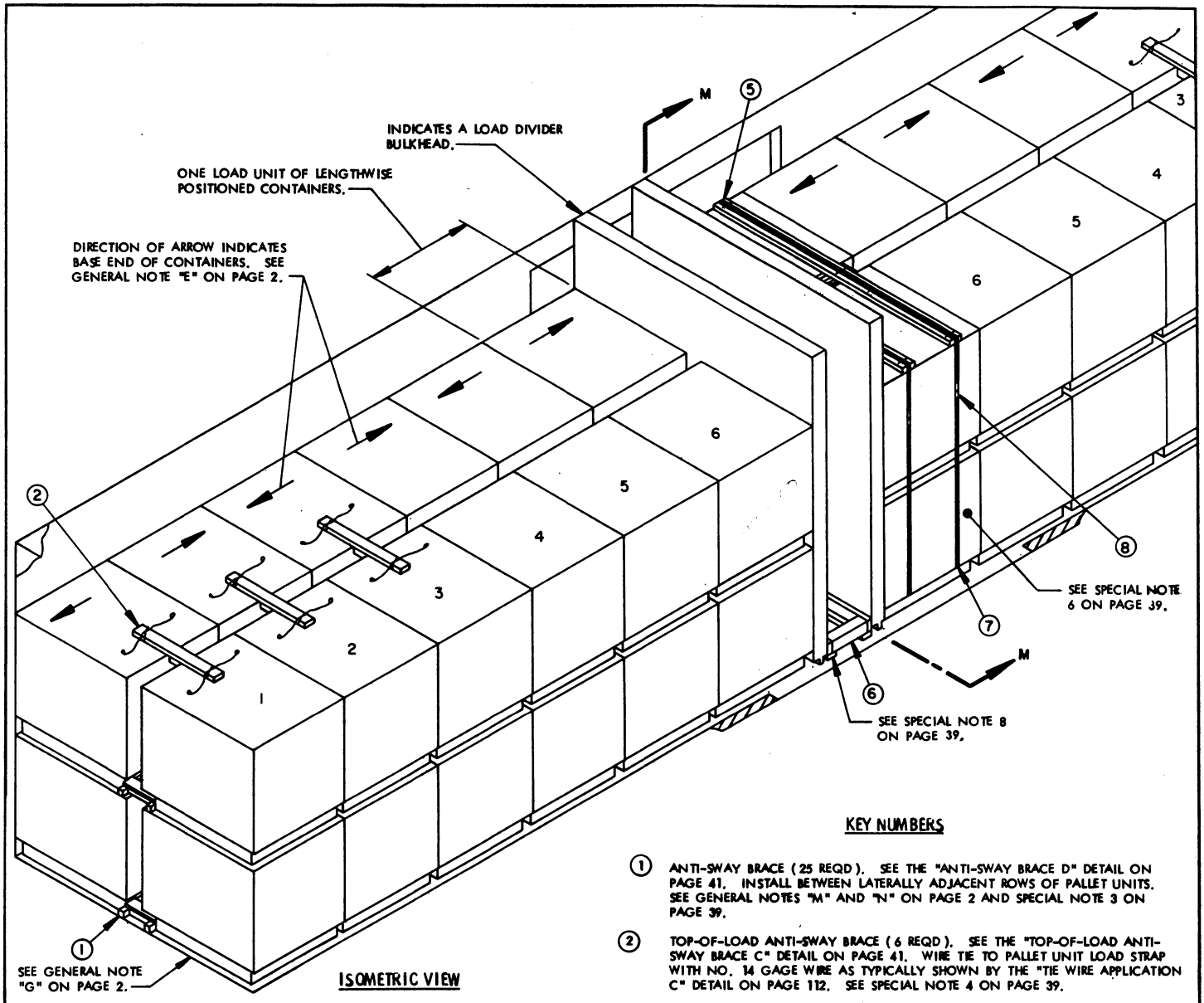
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 80 AND 81 FOR GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

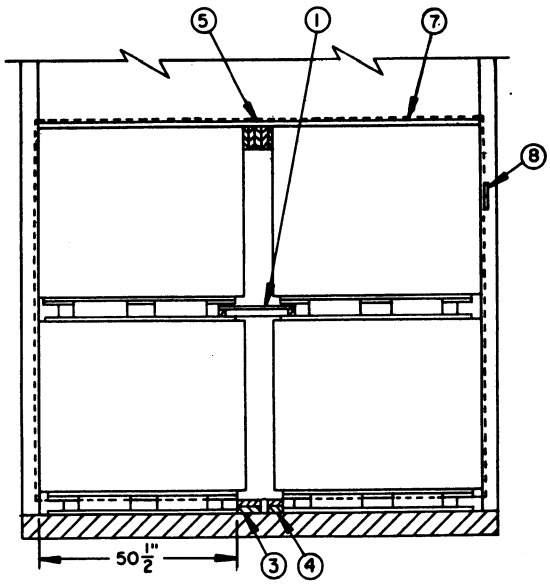
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	48	89,760 LBS
TOTAL WEIGHT		89,760 LBS

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



ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

(1) ANTI-SWAY BRACE (25 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 39.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNIT LOAD STRAP WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 39.

(3) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (1 REQD). PRE-POSITION AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(5) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY D" DETAIL ON PAGE 43.

(6) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 117. SEE SPECIAL NOTE 8 ON PAGE 39.

(7) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE PALLET UNITS IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 39.

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

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3 AND SPECIAL NOTE 6 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 38 IS THE FLAT DUNNAGE UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 112,200 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 74,800 POUNDS USING THE DEPICTED PROCEDURES. A CONTAINERS CROSSWISE LOADING PATTERN, AS SHOWN ON PAGE 32, MAY ALSO BE EMPLOYED. IF THE CROSSWISE PATTERN IS USED, FIFTY-TWO (52) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 97,240 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 74,800 POUNDS AND THIRTY-TWO (32) UNITS CAN BE LOADED INTO A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 59,840 POUNDS.

3. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TANSPORT.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 38, MUST BE INSTALLED IN EACH END OF THE CAR IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

5. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION IS USED, PIECES MARKED ⑤, ⑦, AND ⑧ WILL NOT BE REQUIRED. AN ADDITIONAL ANTI-SWAY BRACE, PIECE MARKED ①, MAY BE USED IN LIEU OF THE SIDE BLOCKING PIECES MARKED ③ AND ④.

6. NOTE: THE PALLET UNITS INDICATED AS STACK NO. 7, LOCATED IN THE DOORWAY OF THE LOAD SHOWN ON PAGE 38 MUST BE OMITTED IF THE OPERATING MECHANISM OF THE LOAD DIVIDER BULKHEAD IS NOT LOCATED ON THE OUTSIDE EDGE OF THE BULKHEAD. PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ WILL THEN NOT BE REQUIRED.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE AS SHOWN ON PAGE 38, THE DEPICTED PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ WILL BE USED. IF THE CONTAINERS ARE CROSSWISE IN THE CAR, PIECES MARKED ③, ⑤, ⑧, AND ⑨ ON PAGE 50 WILL BE USED. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN 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) 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. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS, USE DOORWAY PROTECTION "F" AS DETAILED ON PAGE 43; FOR CONTAINERS-CROSSWISE LOADS, USE DOORWAY PROTECTION "E" AS DETAILED ON PAGE 42.

8. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 38, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD, THE STRUT ASSEMBLY IS REQUIRED IF THE LOAD CONSISTS OF MORE THAN SIX (6) LOAD UNITS IN ONE END OF THE CAR.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 108 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

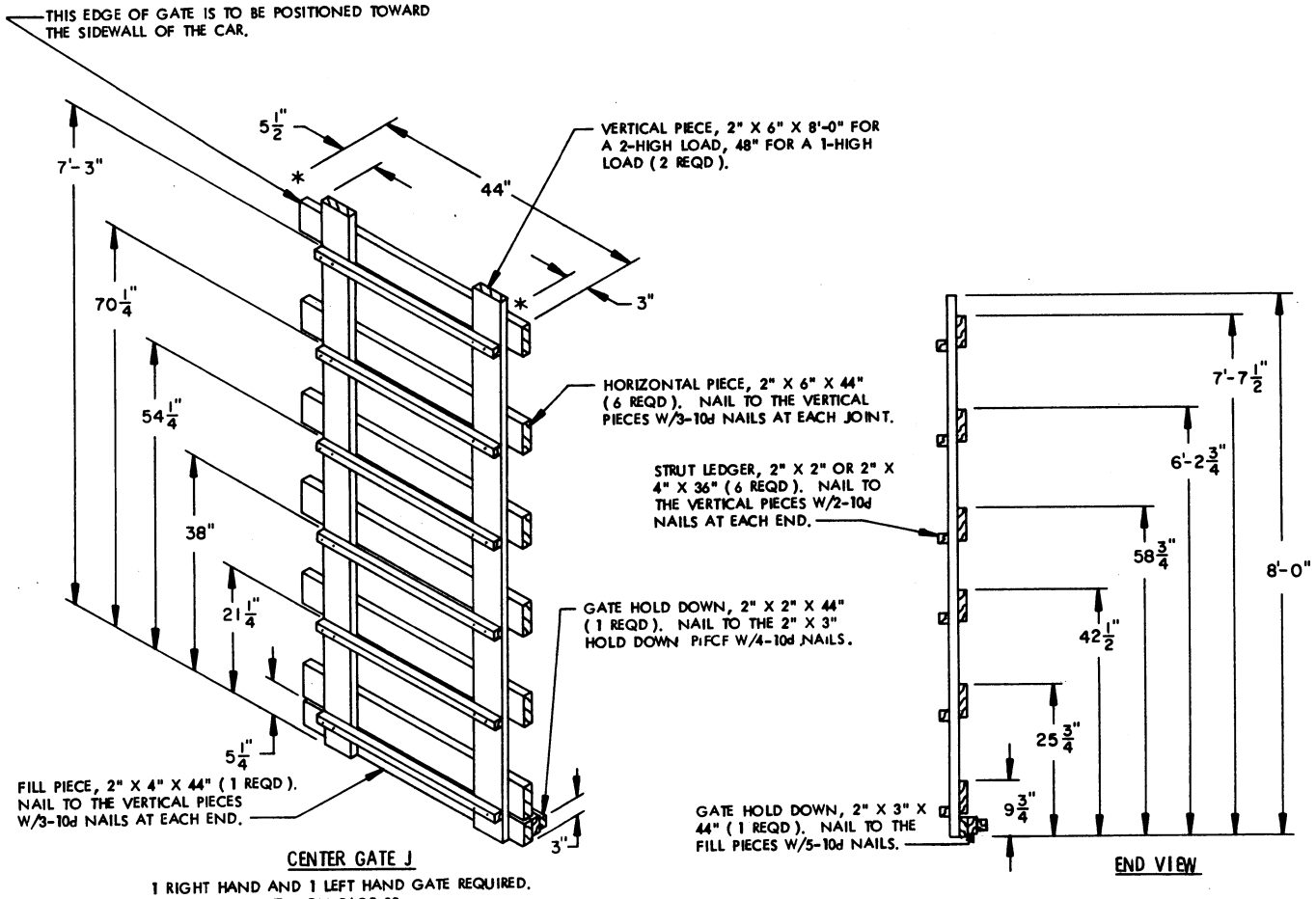
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	58	20
1" X 8"	17	12
2" X 2"	184	62
2" X 4"	110	74
2" X 6"	18	18
4" X 4"	6	8
NAILS	**NO. REQD**	**POUNDS**
6d (2")	366	2-1/4
10d (3")	236	3-3/4
12d (3-1/4")	38	3/4
16d (3-1/2")	20	1/2

STEEL STRAPPING, 1-1/4" X .035"------72' REQD----------11 LBS
SEAL FOR 1-1/4" STRAPPING---------- 4 REQD ---------- NIL
STAPLES FOR 1-1/4" STRAPPING------- 4 REQD ---------- NIL
WIRE, NO. 14 GAGE----------36' REQD---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	97,240 LBS
DUNNAGE		407 LBS
TOTAL WEIGHT		97,647 LBS (APPROX)

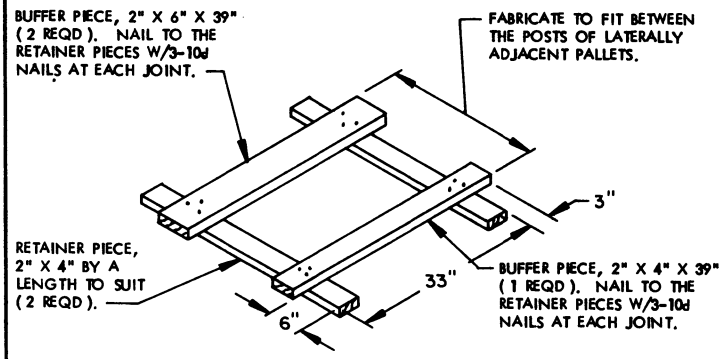
FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



CENTER GATE J

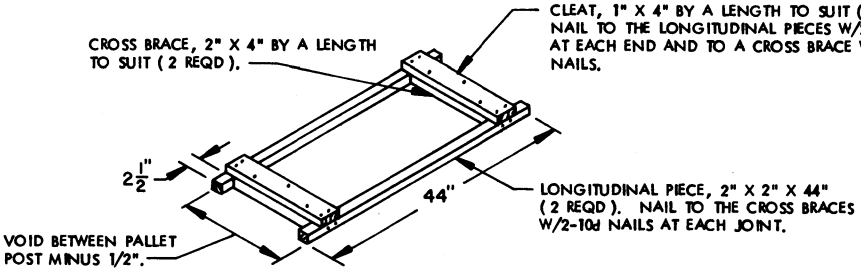
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.
SEE SPECIAL NOTE 6 ON PAGE 33.

DETAILS FOR FLAT DUNNAGE METHOD (BASIC HEIGHT)

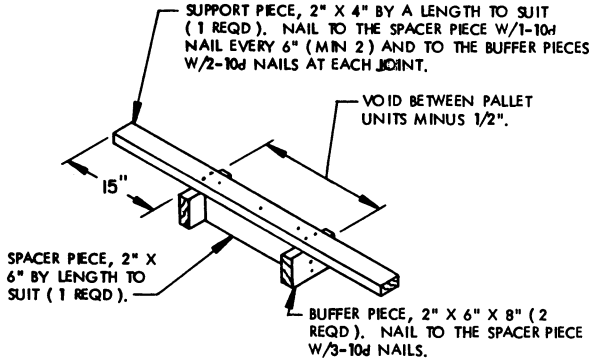


ANTI-SWAY BRACE C

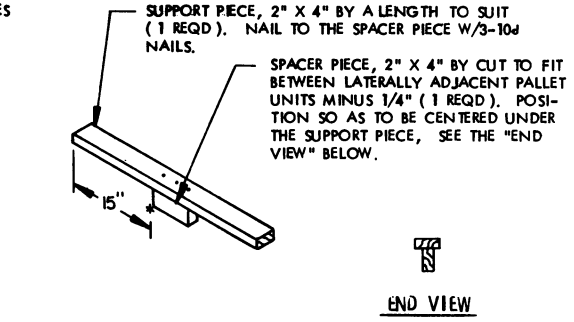
IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; THE 2" X 4" BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.



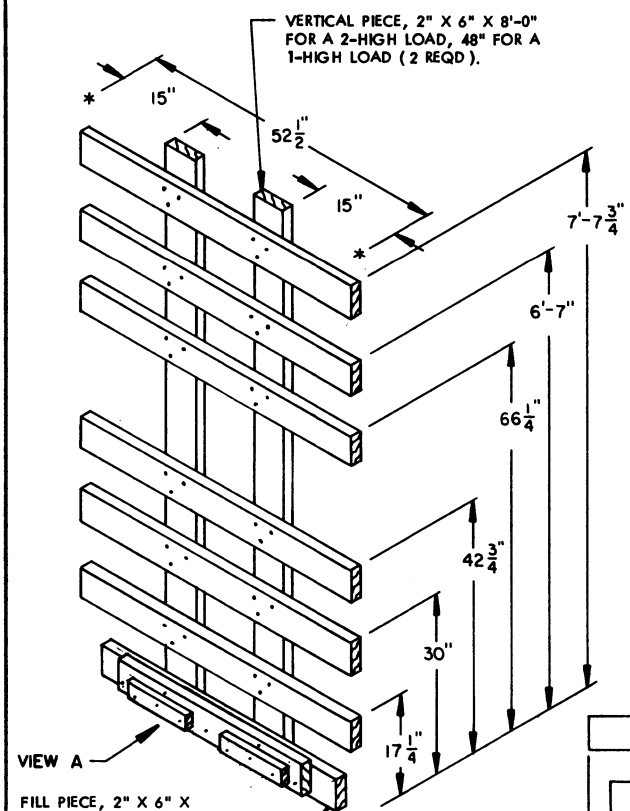
ANTI-SWAY BRACE D

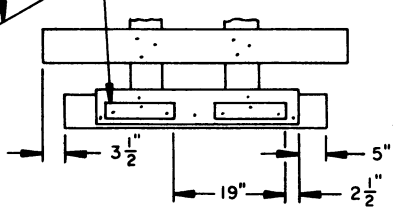


TOP-OF-LOAD ANTI-SWAY BRACE B

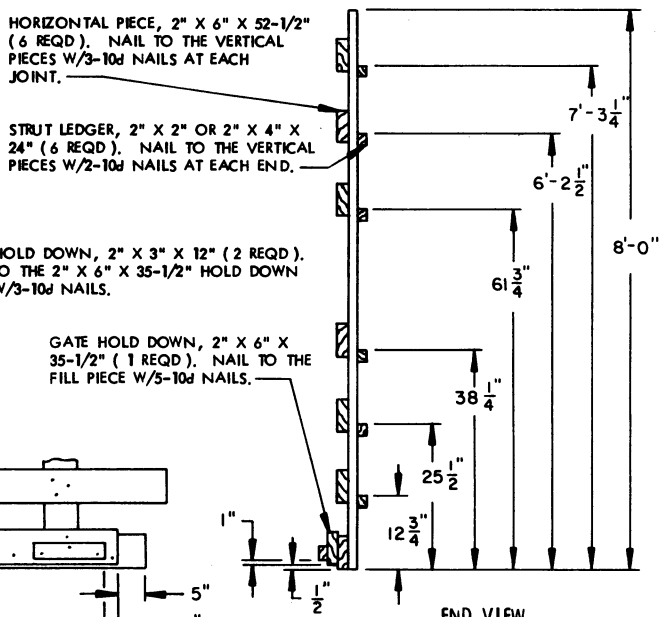


TOP-OF-LOAD ANTI-SWAY BRACE C





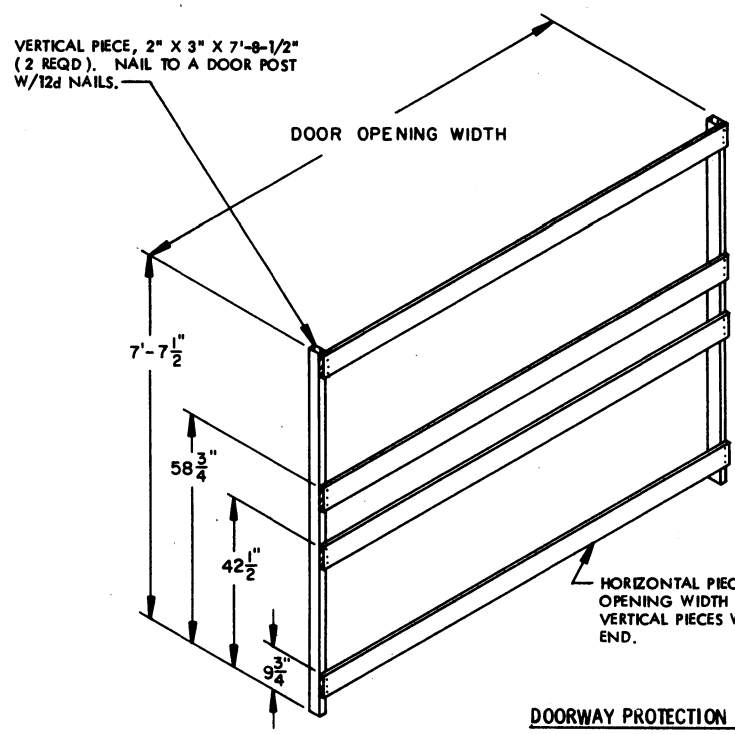
VIEW A



END VIEW

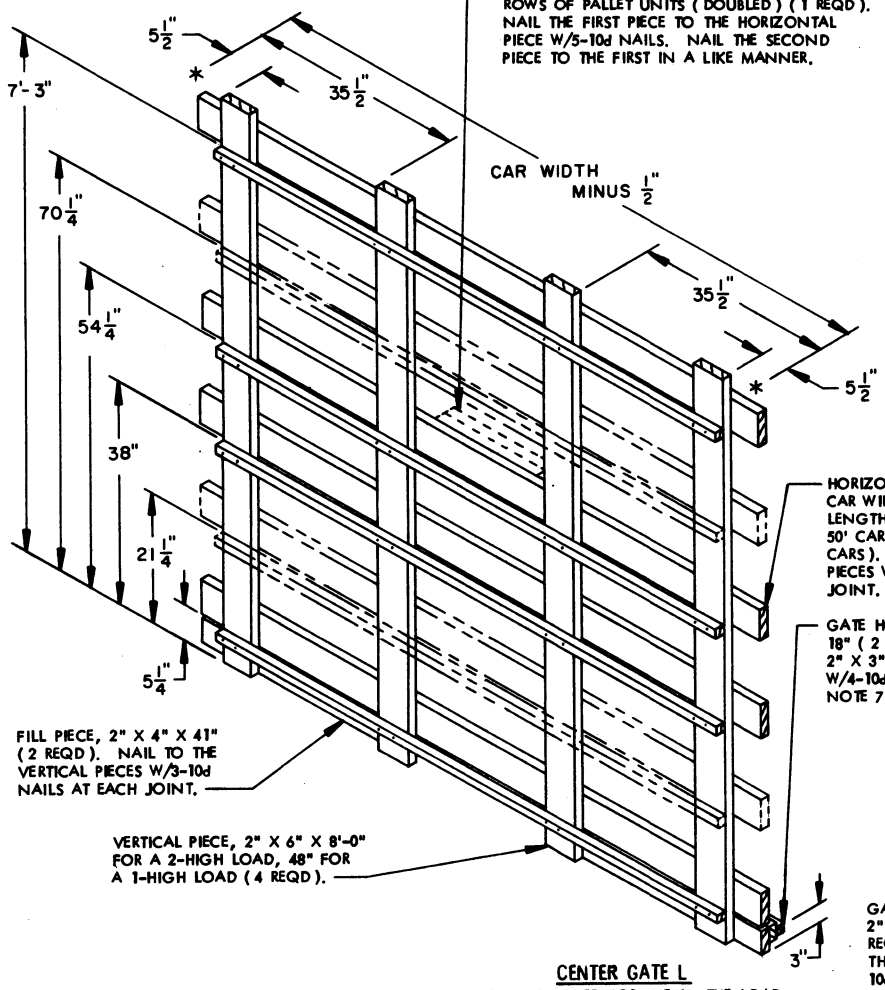
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. SEE SPECIAL NOTE 6 ON PAGE 35.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



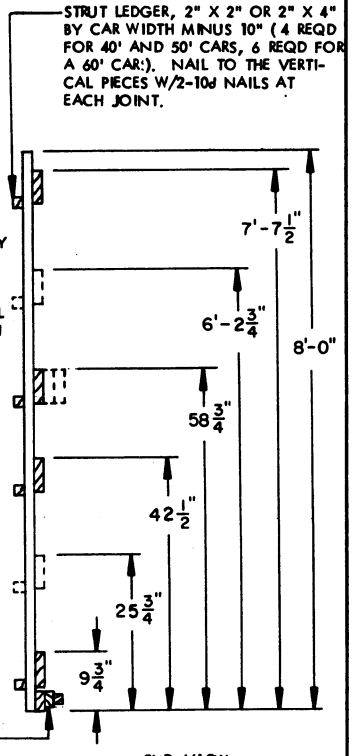
DOORWAY PROTECTION E

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 32.



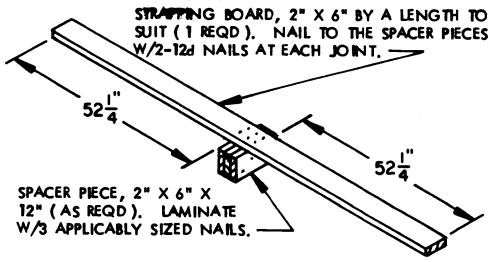
CENTER GATE L

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 32.



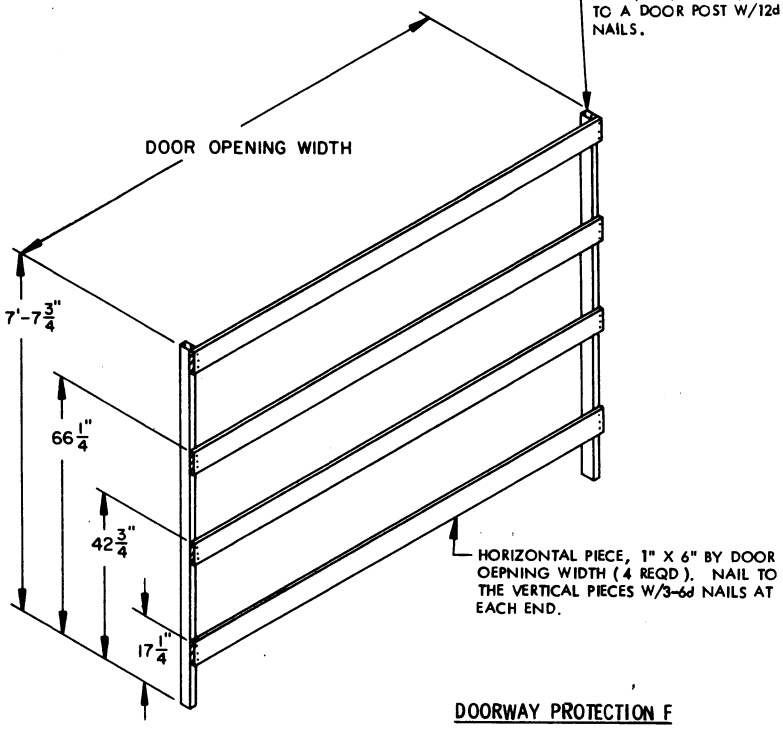
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



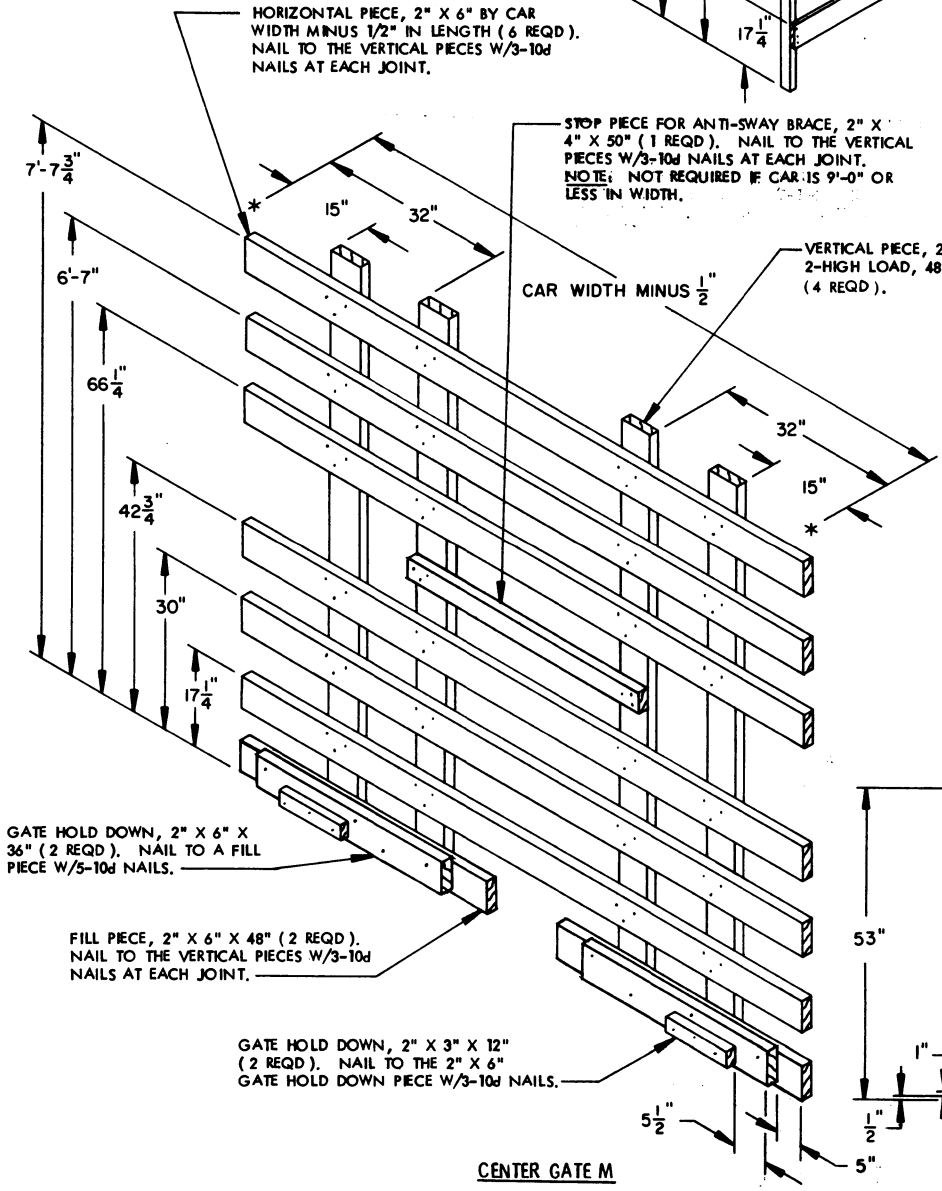
SPACER ASSEMBLY D

FOR USE IN CARS LESS THAN 9'-6" WIDE ONLY. THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 34, 38, AND 46, AND THE LOAD ON PAGE 50 IF THE UNITS IN THE DOORWAY ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR. THE ASSEMBLY IS FOR USE WHEN THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPPING METHOD OF DOORWAY PROTECTION ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE.



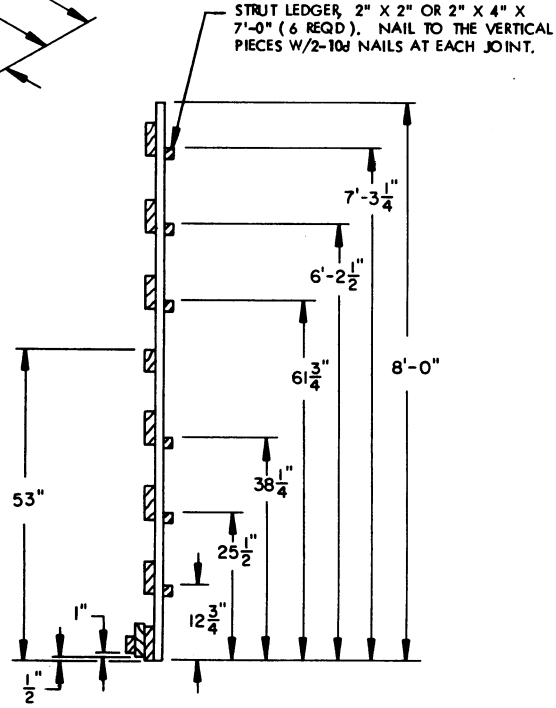
DOORWAY PROTECTION F

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 34.



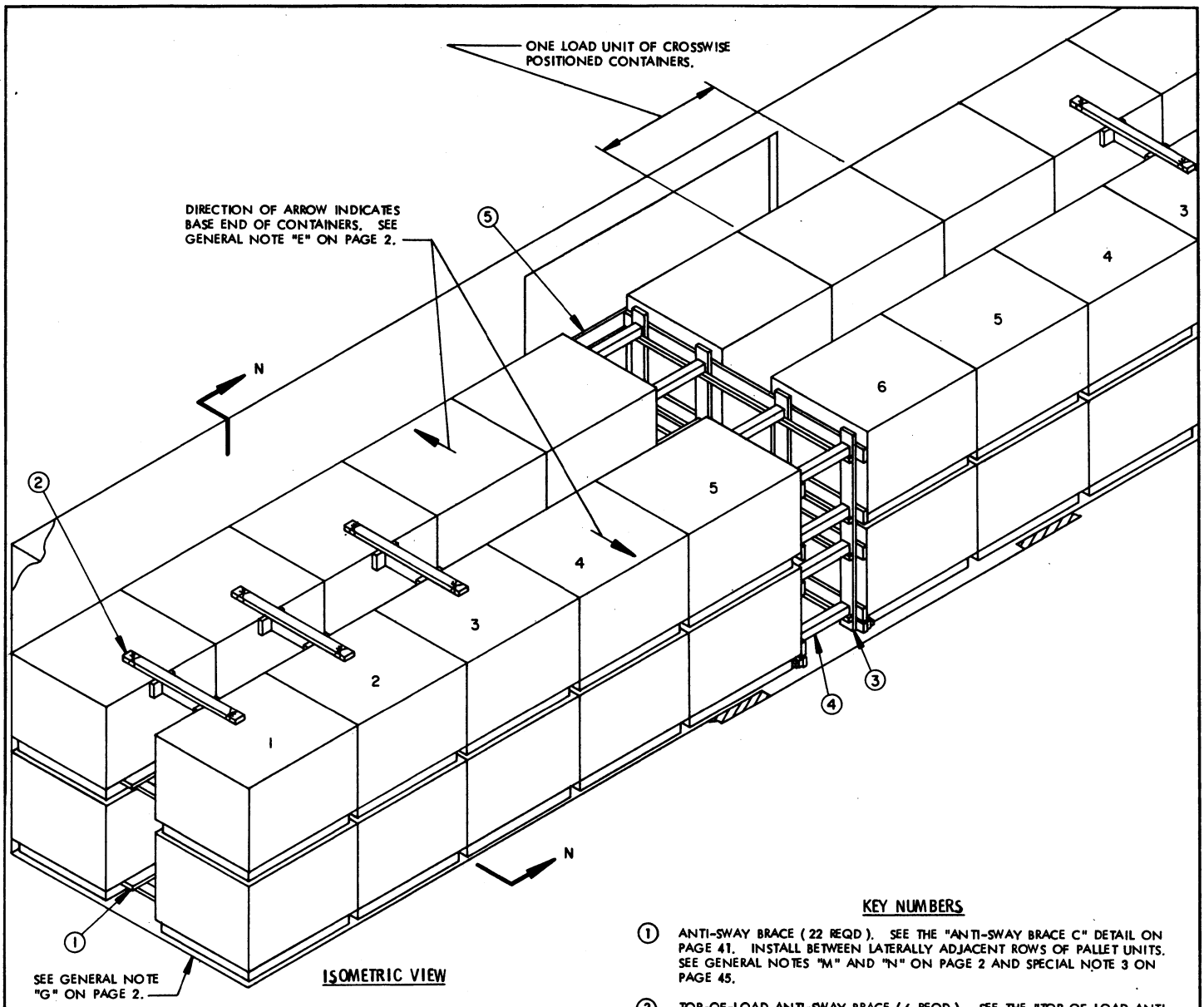
CENTER GATE M

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 34.

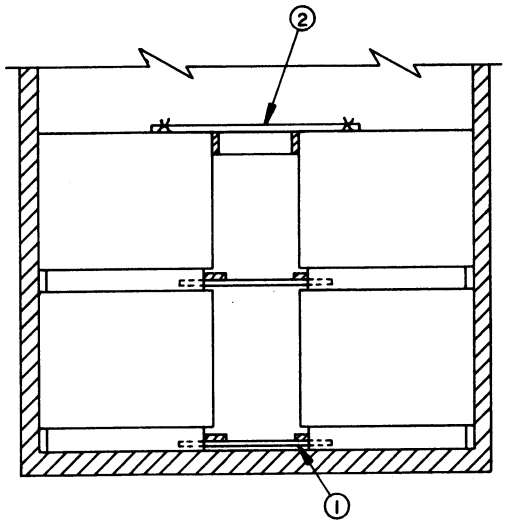


END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION N-N

KEY NUMBERS

(1) ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 45.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 45.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE P" DETAIL ON PAGE 54. SEE SPECIAL NOTES 5, 6, 7, AND 9 ON PAGE 45.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 22") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 54. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 45.

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 44, IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF THIRTY-TWO (32) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 48,672 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, FIFTY-TWO (52) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 79,092 POUNDS CAN BE LOADED.

3. IF THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAP METHOD OF DOORWAY PROTECTION, SUCH AS PIECES MARKED ③ , ⑤ , ⑧ , AND ⑨ ON PAGE 50 IS USED, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 44, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A CROSS PIECE OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. CENTER GATE "P" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE P" SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 44, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 52. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" AND 2" X 2" MATERIAL NAILED TO CENTER GATE "P", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 44, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③ , ⑤ , ⑧ , AND ⑨ ON PAGE 50 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 50 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. TO ACCOMPLISH THIS, NAIL A DOUBLED 2" X 6" BY CUT TO FIT PIECE ON THE BOTTOM HORIZONTAL OF THE TOP LAYER AS SHOWN ON THE CENTER GATE "P" DETAIL ON PAGE 54. A DOUBLED PIECE WILL BE REQUIRED FOR EACH CENTER GATE IN THE DOORWAY OR WITHIN SIX (6") OF BEING IN THE DOORWAY.

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 82 THRU 108 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

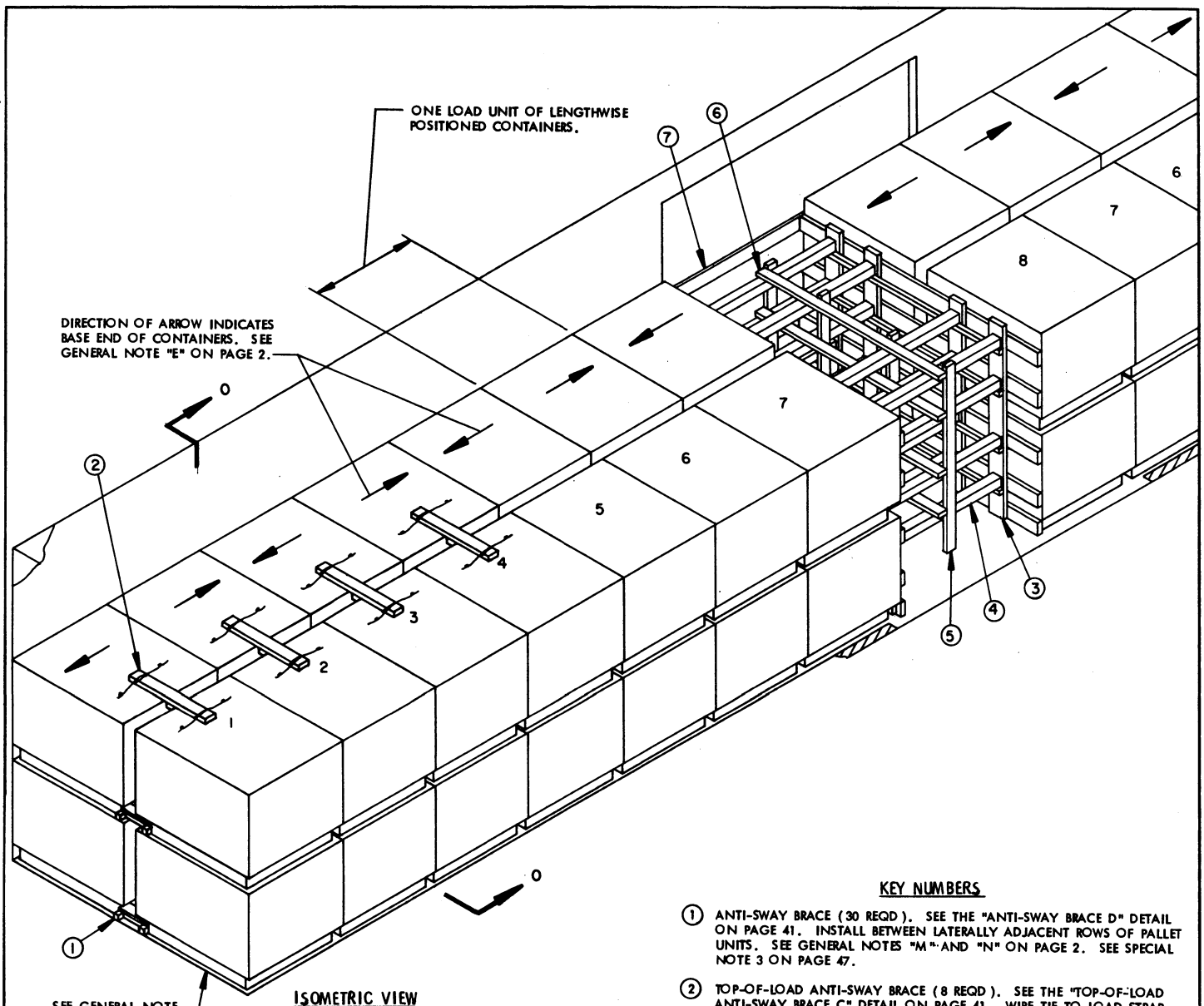
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	67	23
2" X 3"	31	16
2" X 4"	247	165
2" X 6"	143	143
4" X 4"	30	40
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	562	8-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1/2
WIRE, NO. 14 GAGE ----------36' REQD----------		NIL

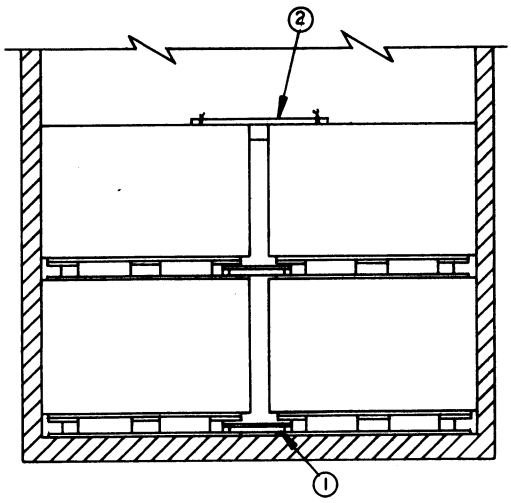
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	66,924 LBS
DUNNAGE		866 LBS
TOTAL WEIGHT		67,790 LBS

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW



SECTION 0-0

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 47.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41. WIRE TIE TO LOAD STRAP OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 47.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 55. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 47.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 60") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGE 2.

(5) VERTICAL STRUT BRACING, 2" X 4" X 6'-4" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(6) HORIZONTAL STRUT BRACING, 2" X 4" X 7'-0" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 55. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 47.

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

PROJECT FSA 43B/4-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE LOAD ON PAGE 46 IS THE FLAT DUNNAGE METHOD (DECREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 79,092 POUNDS CAN BE PLACED IN A 50'-6" CAR USING THE DEPICTED PROCEDURES; FORTY (40) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 60 840 POUNDS CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TRANSPORT.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 46, MUST BE INSTALLED IN EACH END OF THE LOAD IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

5. CENTER GATE "Q" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Q", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 46, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 53. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 6" AND 2" X 3" MATERIAL NAILED TO CENTER GATE "Q", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 46, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.

9. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③, ④, ⑤, ⑦, AND ⑨ ON PAGE 38 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) 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. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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 82 THRU 108 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	59	20
1" X 6"	80	40
2" X 2"	277	93
2" X 3"	29	15
2" X 4"	163	109
2" X 6"	162	162
4" X 4"	80	107
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	656	10-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------48' REQD----------NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	91,260 LBS
DUNNAGE		1,105 LBS
TOTAL WEIGHT		92,365 LBS

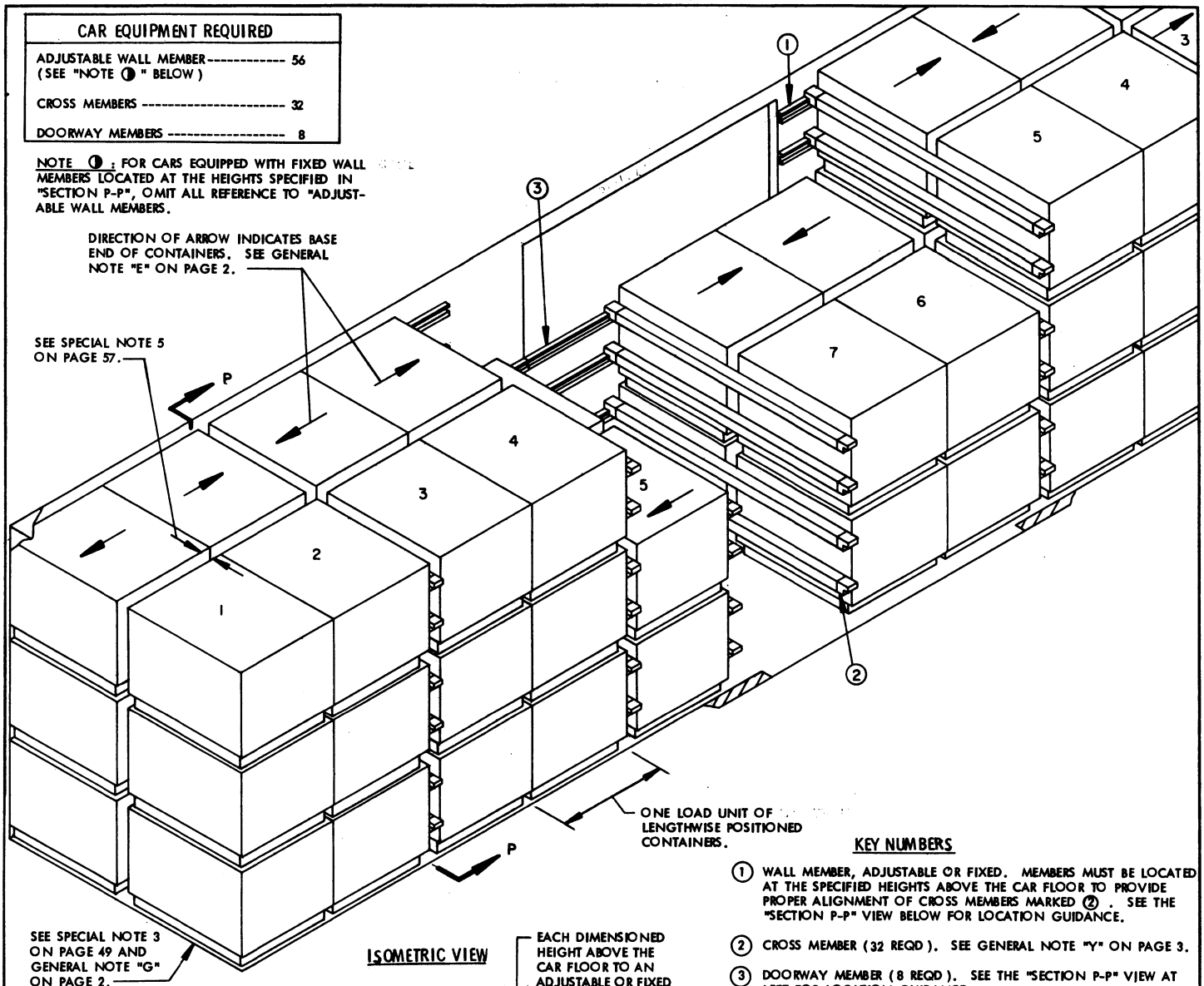
FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
60-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	56
CROSS MEMBERS	32
DOORWAY MEMBERS	8

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

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

SEE SPECIAL NOTE 5 ON PAGE 57.



SEE SPECIAL NOTE 3 ON PAGE 49 AND GENERAL NOTE "G" ON PAGE 2.

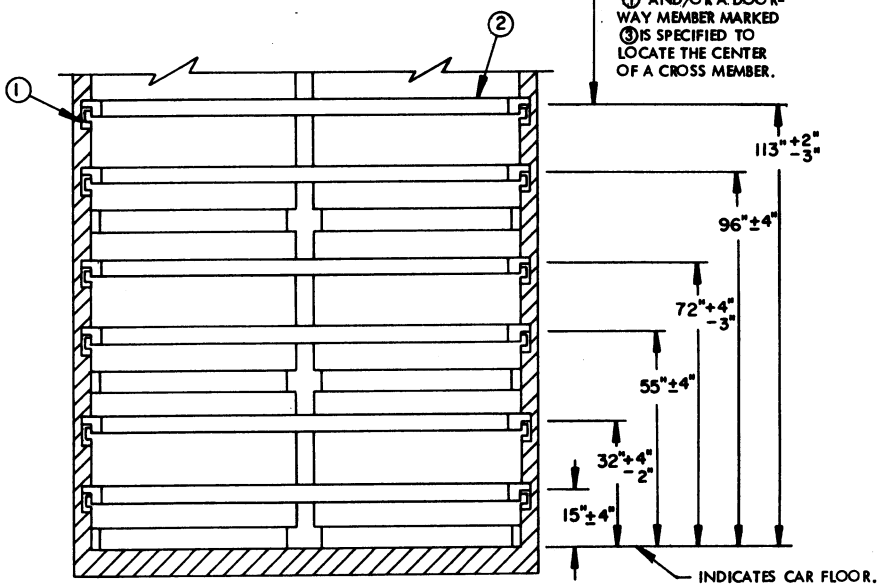
ISOMETRIC VIEW

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ② . SEE THE "SECTION P-P" VIEW BELOW FOR LOCATION GUIDANCE.

② CROSS MEMBER (32 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

③ DOORWAY MEMBER (8 REQD). SEE THE "SECTION P-P" VIEW AT LEFT FOR LOCATION GUIDANCE.



SECTION P-P

FLAT DUNNAGE METHOD (DECREASED HEIGHT)

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

PROJECT FSA 43B/4-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 48 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,840 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBER USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TRANSPORT. SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41 FOR CONSTRUCTION GUIDANCE. AN 8'-9" LONG STOP PIECE FOR THE 3-HIGH PORTION OF THE LOAD, OR A 64" LONG STOP PIECE FOR THE 2-HIGH PORTION OF THE LOAD, MUST BE INSTALLED ON EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACES, IF USED. SEE PIECE MARKED ④ ON PAGE 62 FOR INSTALLATION GUIDANCE.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE LOAD IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 80 AND 81 FOR GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

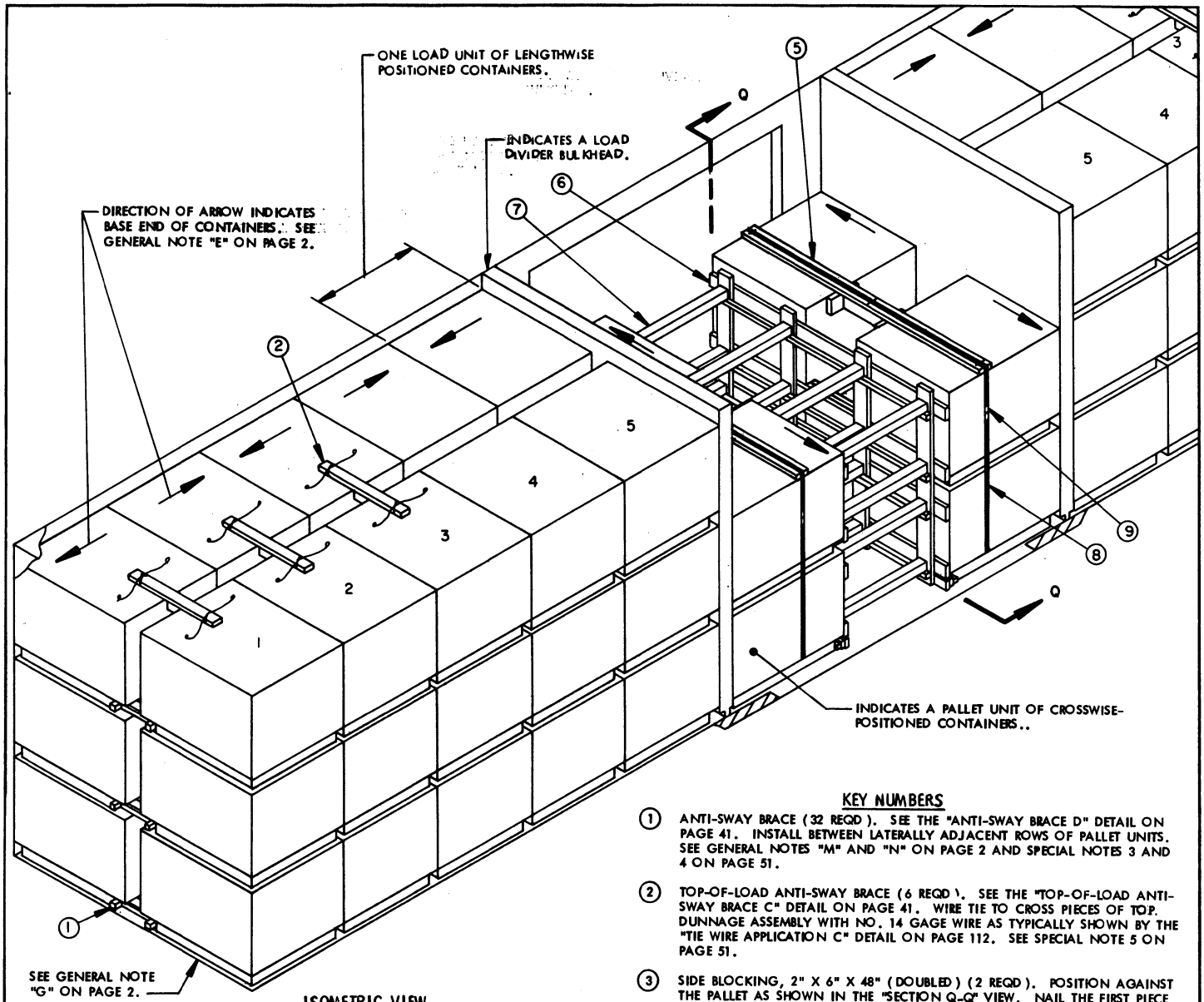
8. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 66-UNIT LOAD IN A 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 110,900 POUNDS.

LOAD AS SHOWN

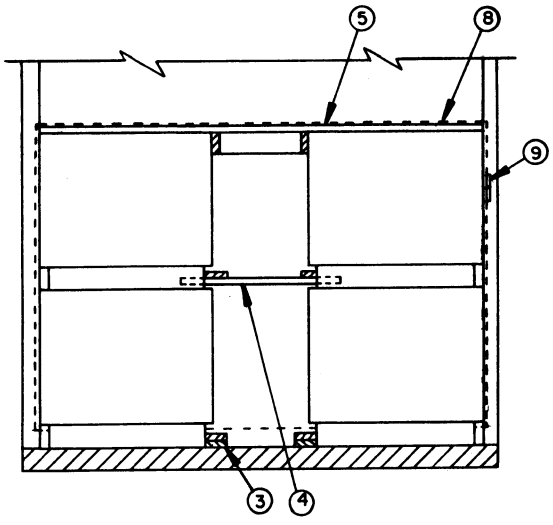
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	100,386 LBS

TOTAL WEIGHT---------- 100,386 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION Q-Q

KEY NUMBERS

(1) ANTI-SWAY BRACE (32 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTES 3 AND 4 ON PAGE 51.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41. WIRE TIE TO CROSS PIECES OF TOP DUNNAGE ASSEMBLY WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 51.

(3) SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLET AS SHOWN IN THE "SECTION Q-Q" VIEW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS AS SHOWN IN THE "SECTION Q-Q" VIEW.

(5) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 30. SEE SPECIAL NOTE 8 ON PAGE 51.

(6) CENTER GATE (2 REQD). SEE THE "CENTER GATE P" DETAIL ON PAGE 62. SEE SPECIAL NOTE 6 AND 7 ON PAGE 51.

(7) STRUT, 4" X 4" BY CUT TO FIT (REF: 41") (16 REQD). TOENAIL TO PIECES MARKED 6 W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(8) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 32'-6" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE LOAD UNITS IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLS. SEE SPECIAL NOTE 9 ON PAGE 51.

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

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

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. TO REDUCE THE LOAD BY FOUR (4) OR EIGHT (8) PALLET UNITS, OMIT THE TOP LAYER OR ALL OF THE PALLET UNITS IN THE DOORWAY AREA, AS APPLICABLE. IF IT IS NECESSARY TO OMIT ADDITIONAL PALLET UNITS, A 3-TIER LOAD UNIT CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 108 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 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS, ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	98	33
2" X 2"	302	101
2" X 3"	6	3
2" X 4"	137	92
2" X 6"	171	171
4" X 4"	55	74
NAILS	NO. REQD	POUNDS
6d (2")	448	2-3/4
10d (3")	518	8
12d (3-1/4")	26	1/2
16d (3-1/2")	84	2
STEEL STRAPPING, 1-1/4" X .035" OR .031" --- 65' REQD ------ 10 LBS		
SEAL FOR 1-1/4" STRAPPING ---------- 4 REQD -------- NIL		
STAPLES FOR 1-1/4" STRAPPING ---------- 6 REQD -------- NIL		
WIRE, NO. 14 GAGE ---------- 36' REQD ------- NIL		

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 50 IS THE FLAT DUNNAGE METHOD UNIT. (DECREASED HEIGHT). USING THIS PROCEDURE, THE FOLLOWING CONTAINERS-LENGTHWIAE LOADS CAN BE ACHIEVED.

CAR LENGTH	TOTAL NO. OF UNITS	APPROX NO. POUNDS	LENGTHWISE NO. EA. END	NO. IN DOORWAY
60'-8"	86	130,806	7 AND 6	2 CROSSWISE
40'-6"	56	85,176	4 AND 4	2 LENGTHWISE

IF DESIRED, A CONTAINERS-CROSSWISE LOADING PATTERN CAN BE ACHIEVED USING THE FOLLOWING TABLE.

CAR LENGTH	TOTAL NO. OF UNITS	APPROX NO. POUNDS	LENGTHWISE NO. EA. END	NO. IN DOORWAY
60'-8"	74	112,554	6 AND 5	2 CROSSWISE
50'-6"	62	94,302	5 AND 4	2 LENGTHWISE
40'-6"	48	73,008	3 AND 3	3 LENGTHWISE

3. THE DIRECTION OF THE LOAD UNIT DETERMINES THE TYPE OF DETAILS TO BE USED. PAGE 50 PRESENTS THE CONTAINERS POSITIONED LENGTHWISE WITH CROSSWISE POSITIONED CONTAINERS IN THE DOORWAY AREA. IF THE CONTAINERS ARE POSITIONED LENGTHWISE IN THE DOORWAY, REFER TO THE LOAD ON PAGE 38. SIDE BLOCKING, PIECES MARKED ③ AND ④, SPACER ASSEMBLY "D", PIECE MARKED ⑤, AND DOORWAY PROTECTION STRAP, PIECE MARKED ⑦ ON PAGE 38, MUST BE USED IF THE CAR IS EQUIPPED WITH PLUG DOORS. SEE PAGE 55 FOR "CENTER GATE Q" DETAIL TO BE USED WITH THE LENGTHWISE-POSITIONED CONTAINERS.

4. IF THE CAR BEING LOADED IS MORE THAN 9'-0" WIDE, ANTI-SWAY BRACES MUST BE INSTALLED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS TO PREVENT INTERLOCKING OF LONGITUDINALLY ADJACENT PALLET UNITS DURING TRANSPORT.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 50, MUST BE INSTALLED IN EACH END OF THE CAR IF THE CAR IS MORE THAN 9'-0" WIDE. BRACES WILL BE WIRE TIED TO A LOAD STRAP WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION C" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN 40' AND 50' CARS; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60' LONG CAR.

6. CENTER GATE "P" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 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 P", SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 50, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 52. 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 111.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION IS USED, PIECES MARKED ⑤, ⑧, AND ⑨, WILL NOT BE REQUIRED. TWO (2) ADDITIONAL ANTI-SWAY BRACES, PIECE MARKED ①, MAY BE USED IN LIEU OF THE SIDE BLOCKING, PIECES MARKED ③ AND ④.

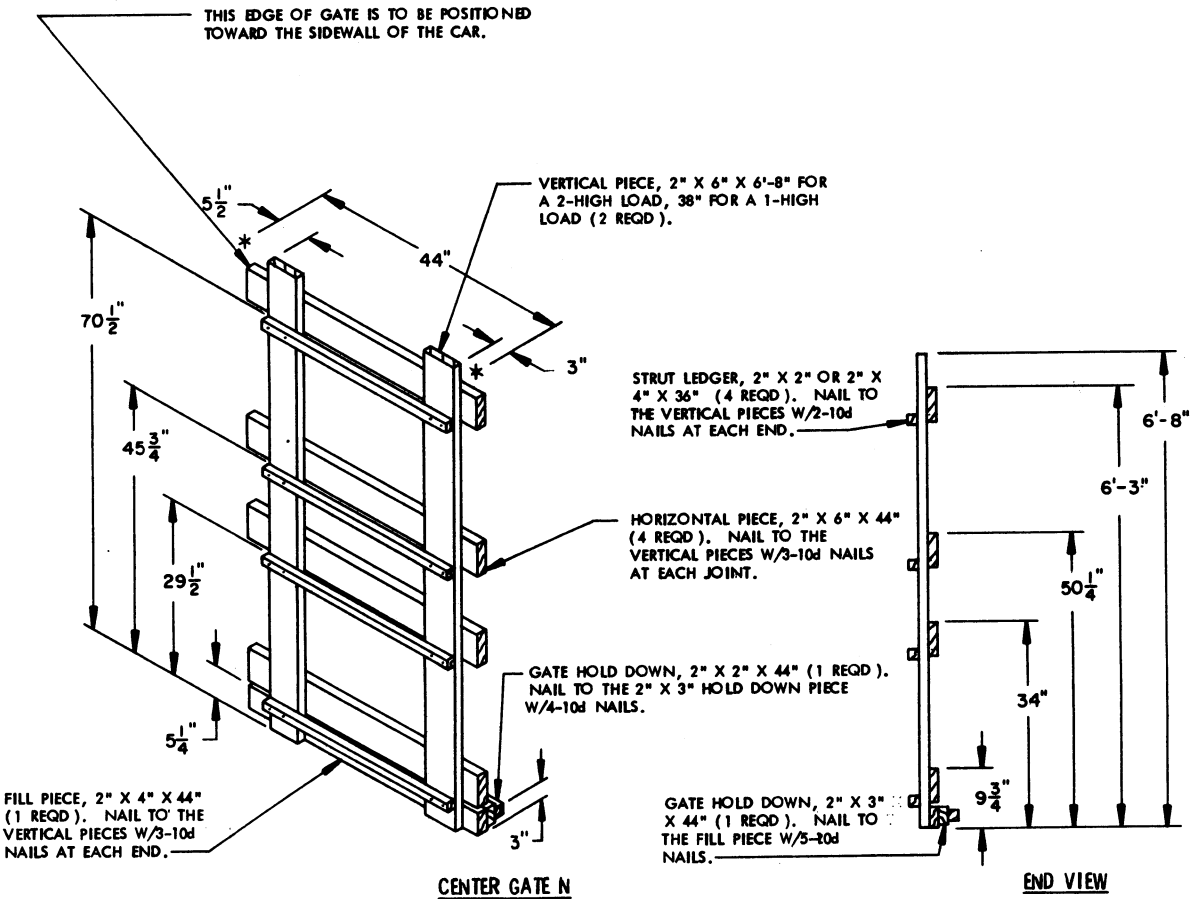
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS IN THE DOORWAY ARE POSITIONED WITH THE CONTAINERS CROSSWISE AS SHOWN ON PAGE 50, THE DEPICTED PIECES MARKED ③, ⑤, ⑧, AND ⑨ WILL BE USED. IF THE CONTAINERS ARE LENGTHWISE IN THE CAR, PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ ON PAGE 38, WILL BE USED. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN 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) 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. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS USE DOORWAY PROTECTION "G" AS DETAILED ON PAGE 55; FOR CONTAINERS-CROSSWISE LOADS USE DOORWAY PROTECTION "F" AS DETAILED ON PAGE 54.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	103,428 LBS
DUNNAGE		972 LBS
TOTAL WEIGHT		104,400 LBS (APPROX)

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

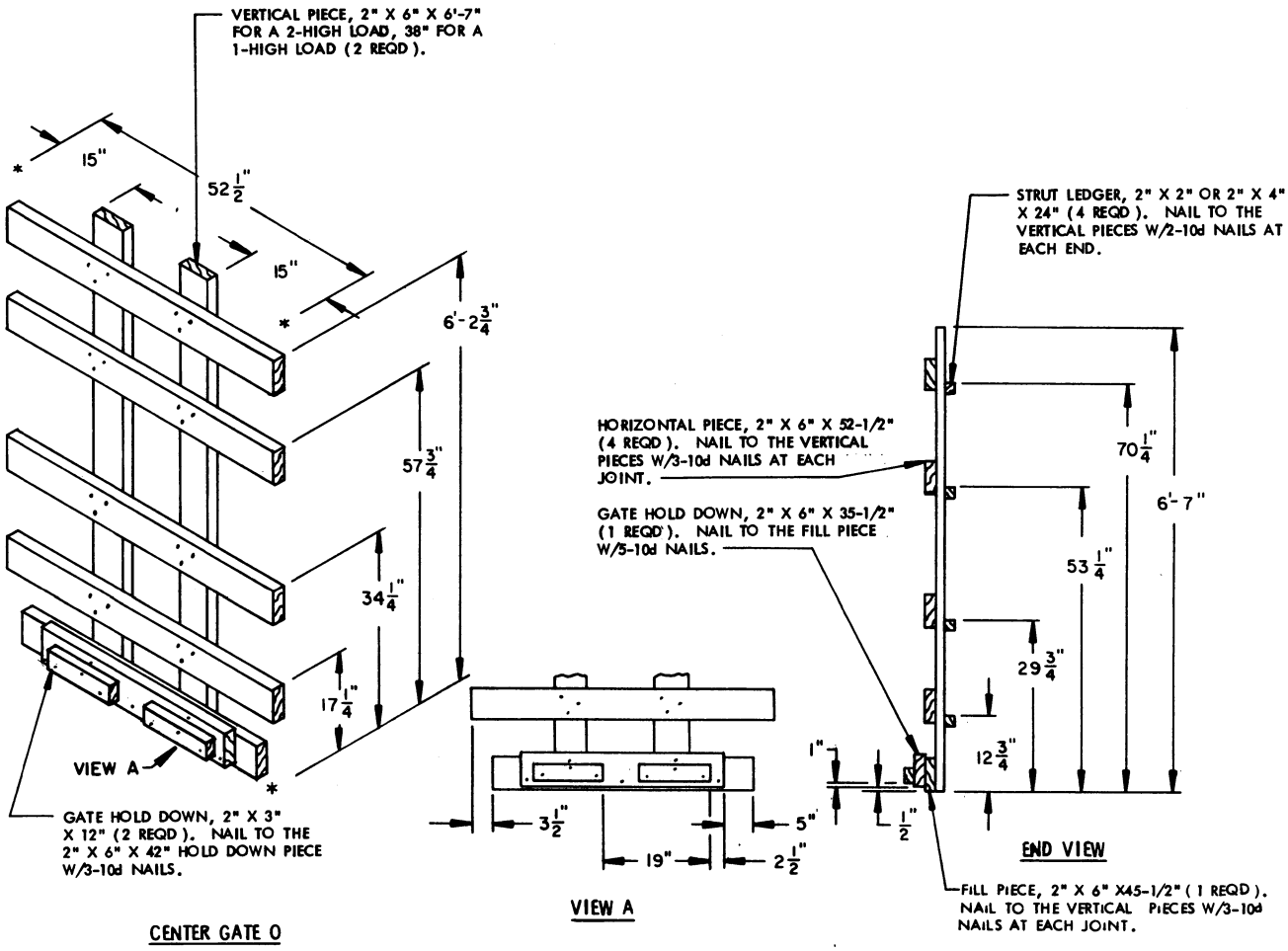


CENTER GATE N

END VIEW

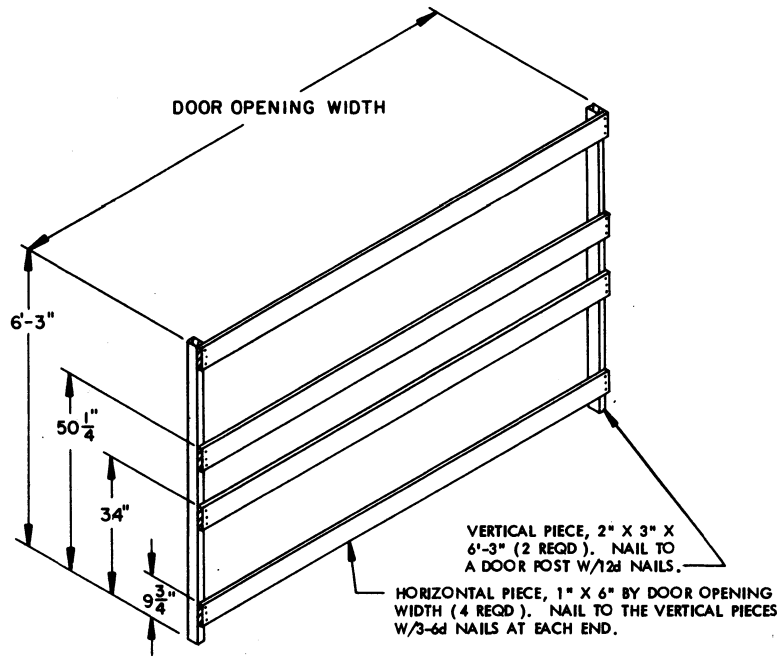
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.
SEE SPECIAL NOTE 6 ON PAGE 45.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



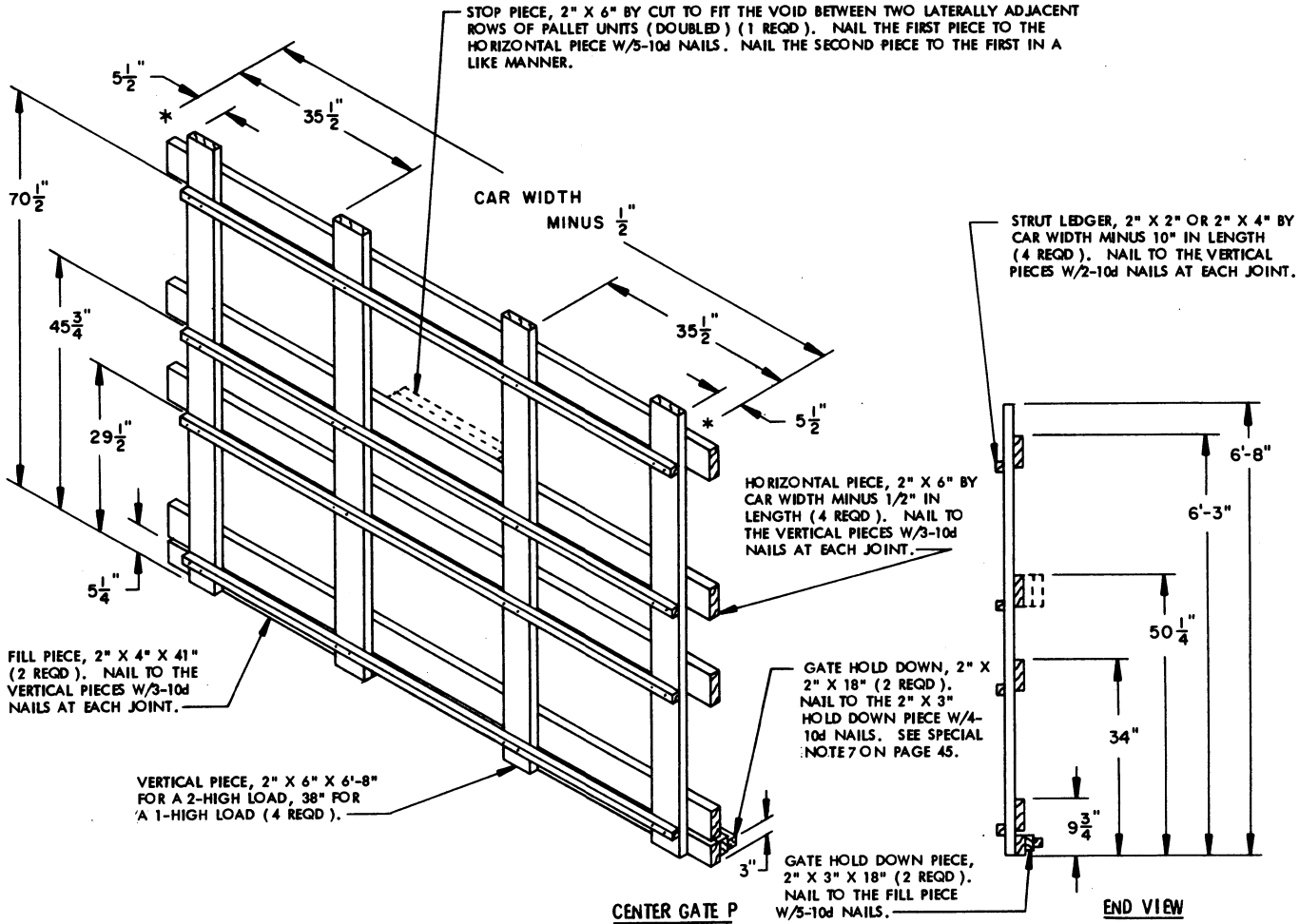
CENTER GATE O

SEE SPECIAL NOTE 6 ON PAGE 47.



DOORWAY PROTECTION F

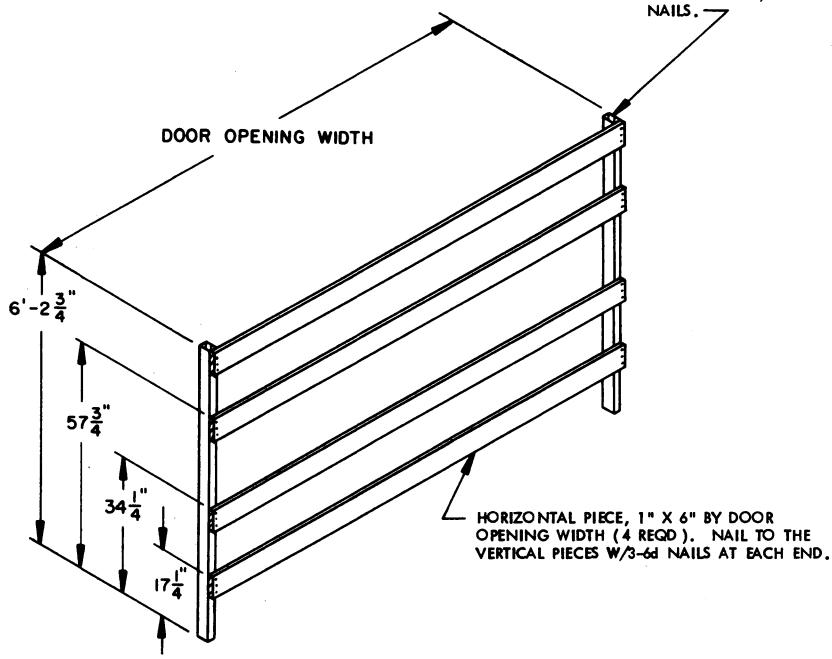
THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 44.



CENTER GATE P

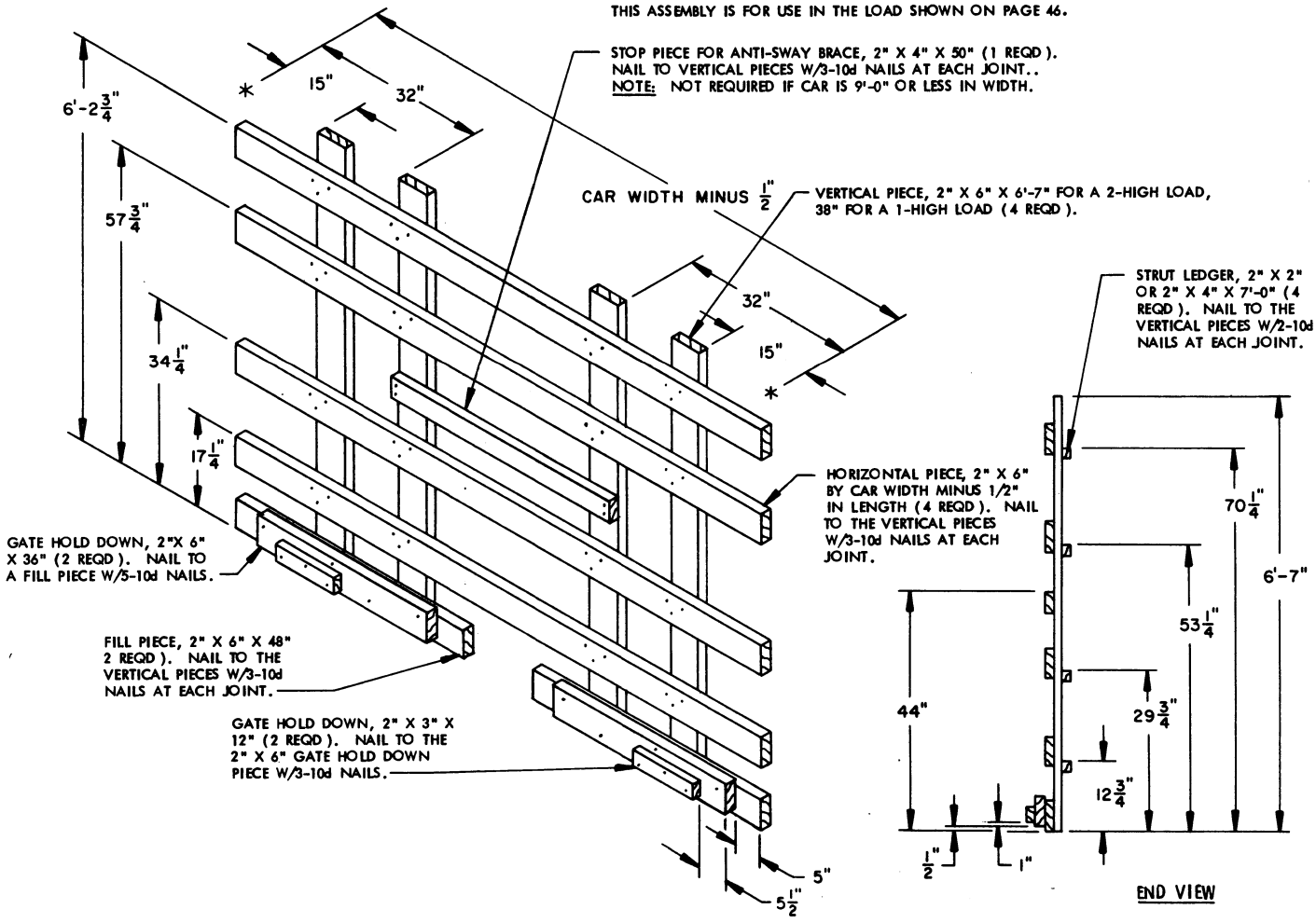
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGES 44 AND 50.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DOORWAY PROTECTION G

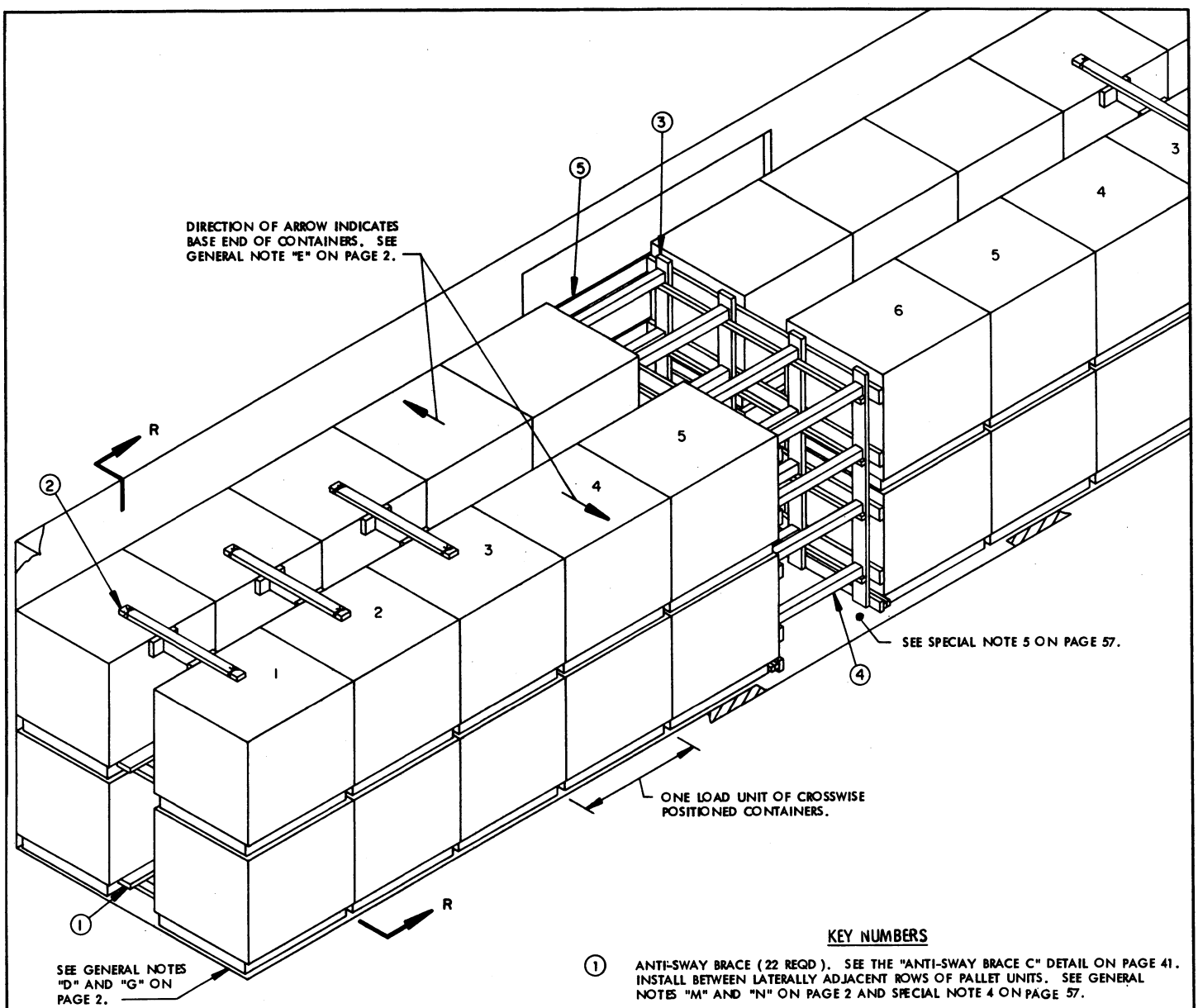
THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 46.



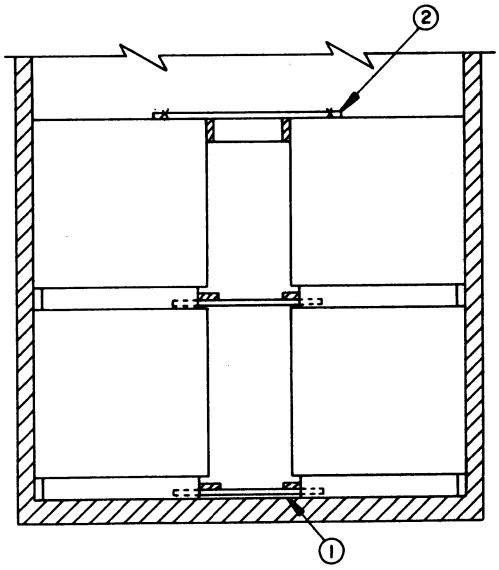
CENTER GATE Q

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 46.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW



SECTION R-R

KEY NUMBERS

(1) ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 57.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARD OF UNIT WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 57.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE T" DETAIL ON PAGE 66. SEE SPECIAL NOTES 6, 7, 8, AND 10 ON PAGE 57.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 44") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3 AND SPECIAL NOTE 5 ON PAGE 57.

(5) DOORWAY PROTECTION (2 REQD). SEE "DOORWAY PROTECTION H" DETAIL ON PAGE 65. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 57.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

(SPECIAL NOTES CONTINUED)

10. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 74 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. TO ACCOMPLISH THIS, NAIL A DOUBLED 2" X 6" BY CUT TO FIT PIECE ON THE BOTTOM HORIZONTAL OF THE TOP LAYER AS SHOWN ON THE CENTER GATE "T" DETAIL ON PAGE 66. A DOUBLED PIECE WILL BE REQUIRED FOR EACH CENTER GATE IN THE DOORWAY OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRF TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 96,096 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 66,528 POUNDS CAN BE LOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 5 FOR CENTER GATE "T" MODIFICATIONS IF A 60' LONG CAR IS USED.

3. IF THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAP METHOD OF DOORWAY PROTECTION, SIMILAR TO PIECES MARKED ③ , ④ , ⑤ , ⑦ , AND ⑧ ON PAGE 62 IS USED, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 56, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" AND A 40'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

5. IF A FULL LOAD IS TO BE SHIPPED IN A 60'-8" LONG CAR, 6 STRUTS WILL BE REQUIRED PER ROW/TIER. TO ACCOMODATE THESE ADDITIONAL STRUTS, A HORIZONTAL PIECE AND A STRUT LEDGER MUST BE ADDED TO CENTER GATE "T" FOR EACH UNIT. REFER TO THE PHANTOMED LINES ON THE CENTER GATE "T" DETAIL ON PAGE 66. VERTICAL AND HORIZONTAL STRUT BRACING WILL ALSO BE REQUIRED, SIMILAR TO PIECES MARKED ⑤ AND ⑥ ON PAGE 54 EXCEPT THAT THE HORIZONTAL STRUT BRACING WILL BE CAR WIDTH MINUS 9" IN LIEU OF 36" LONG.

6. CENTER GATE "T" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 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 T", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 56, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 64. 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 111.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 2" MATERIAL NAILED TO CENTER GATE "T", PROVIDING CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 56, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 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. REFER TO PIECES MARKED ③ , ⑤ , ⑧ AND ⑨ ON PAGE 74 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

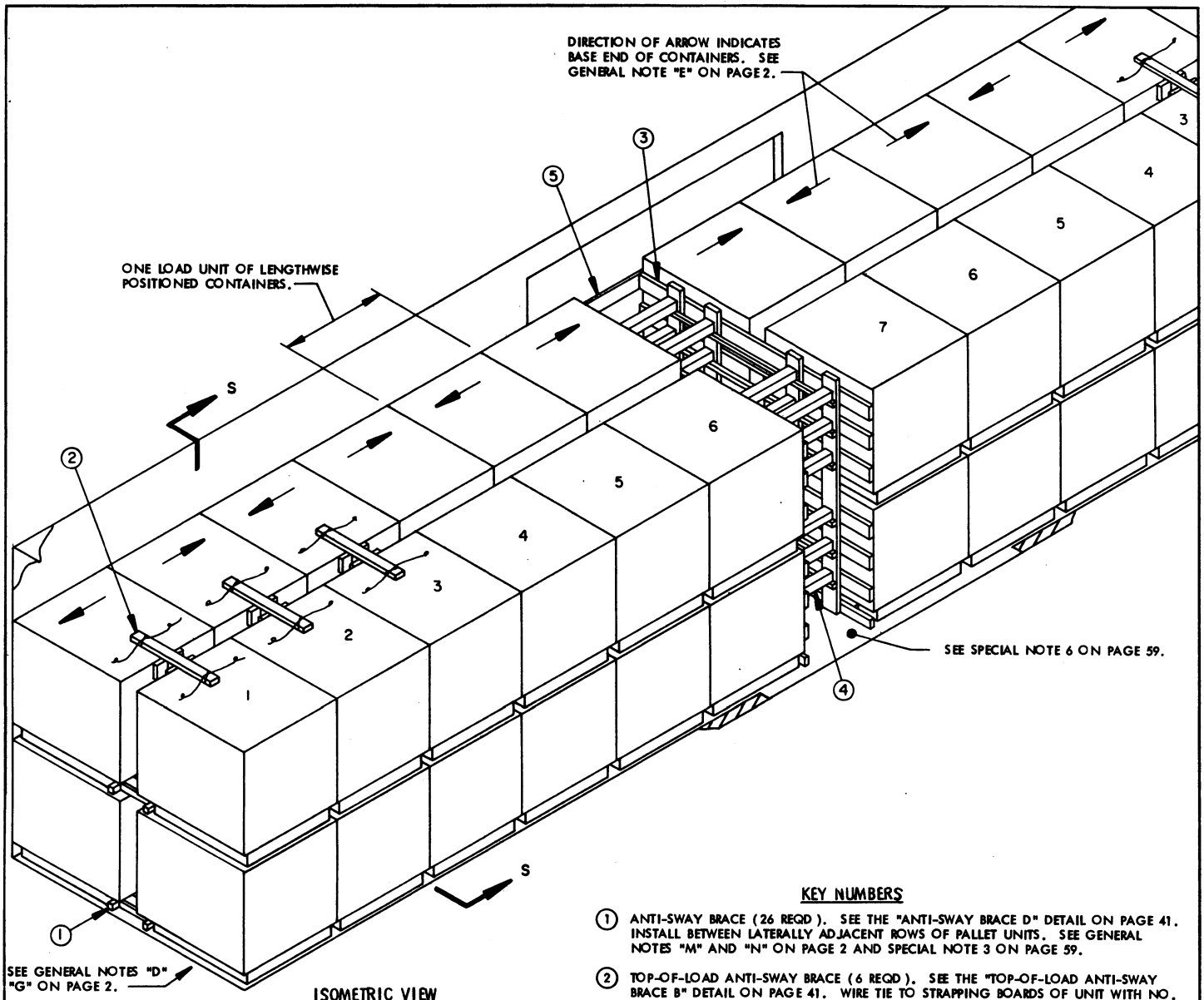
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	67	23
2" X 3"	31	16
2" X 4"	247	166
2" X 6"	225	225
4" X 4"	60	80
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	558	8-3/4
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE ----------24' REQD----------		NIL

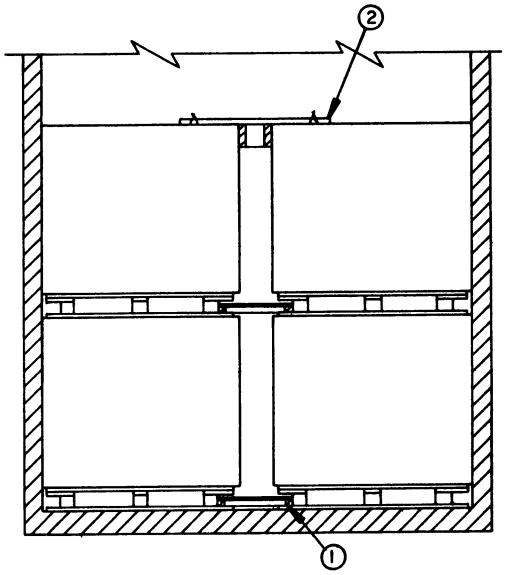
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	81,312 LBS
DUNNAGE		1,112 LBS
TOTAL WEIGHT		82,424 LBS

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW



SECTION S-S

KEY NUMBERS

(1) ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 59.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 59.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 67. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 59.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 65. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 59.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 58 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 110,880 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,920 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOOR LINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 58, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" AND A 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

5. CENTER GATE "U" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE U", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 58, INSTALL TWO (2) "CENTER GATES S" AS SHOWN ON PAGE 65. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "U" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 58, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③, ④, ⑤ ⑦, AND ⑧ ON PAGE 62 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) 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. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

12. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 52-UNIT LOAD IN A 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 102,300 POUNDS.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	71	24
1" X 6"	80	40
2" X 2"	275	92
2" X 3"	39	20
2" X 4"	102	68
2" X 6"	185	185
4" X 4"	53	71
NAILS	**NO. REQD**	**POUNDS**
6d (2")	412	2-1/2
10d (3")	582	9
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE----------36' REQD----------NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	96,096 LBS
DUNNAGE		1,015 LBS
TOTAL WEIGHT		97,111 LBS

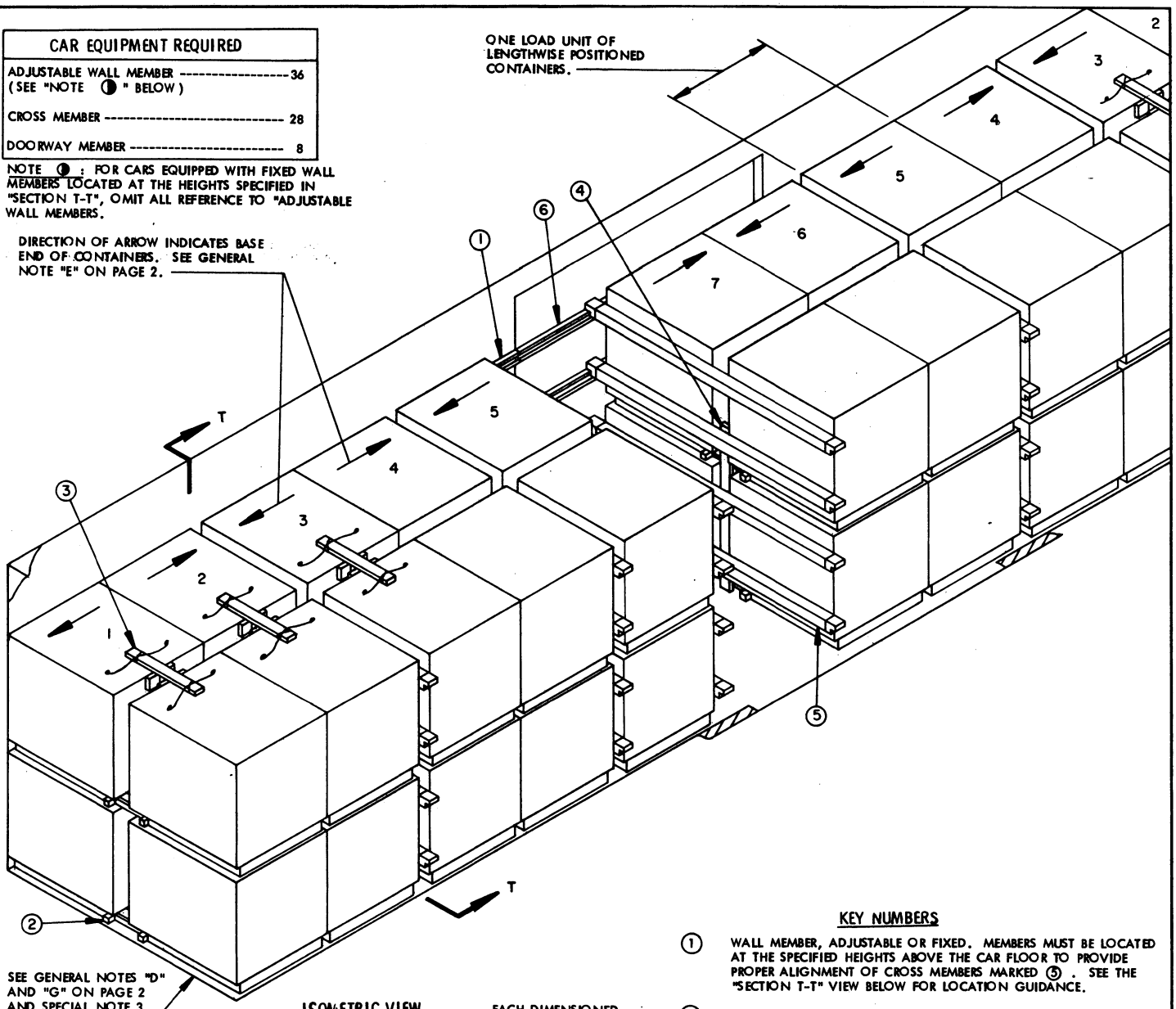
ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
52-UNIT LOAD IN 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	36
CROSS MEMBER	28
DOORWAY MEMBER	8

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

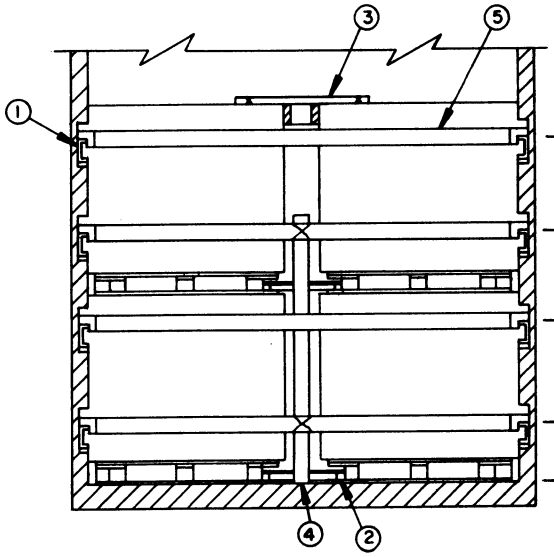
ONE LOAD UNIT OF LENGTHWISE POSITIONED CONTAINERS.

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



SEE GENERAL NOTES "D" AND "G" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 61.

ISOMETRIC VIEW



SECTION T-T

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

88"±4"

63"±4"

40"±5"

14"±4"

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 T-T" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 61.

③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 61.

④ STOP PIECE, 2" X 4" X 72" (12 REQD). INSTALL AT EACH LOAD SIDE A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF ANTI-SWAY BRACES, PIECE MARKED ② . NAIL TO THE CROSS PIECE OF THE ANTI-SWAY BRACES W/2-10d NAILS AT EACH JOINT. ON NEAR SIDE OF CROSS MEMBERS, WIRE TIE THE TOP AND BOTTOM OF THE STOP PIECE TO THE ADJACENT CROSS MEMBER WITH NO. 14 GAGE WIRE AS SHOWN IN THE "SECTION T-T" VIEW.

⑤ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "V" ON PAGE 3.

⑥ DOORWAY MEMBER (8 REQD). SEE THE "SECTION T-T" 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 PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 60 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,920 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 60, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A 40'-6" OR 50'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF 60'-8" LONG CAR.

5. A STOP PIECE, PIECE MARKED ④, IS REQUIRED ON EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 80 AND 81 FOR GUIDANCE.

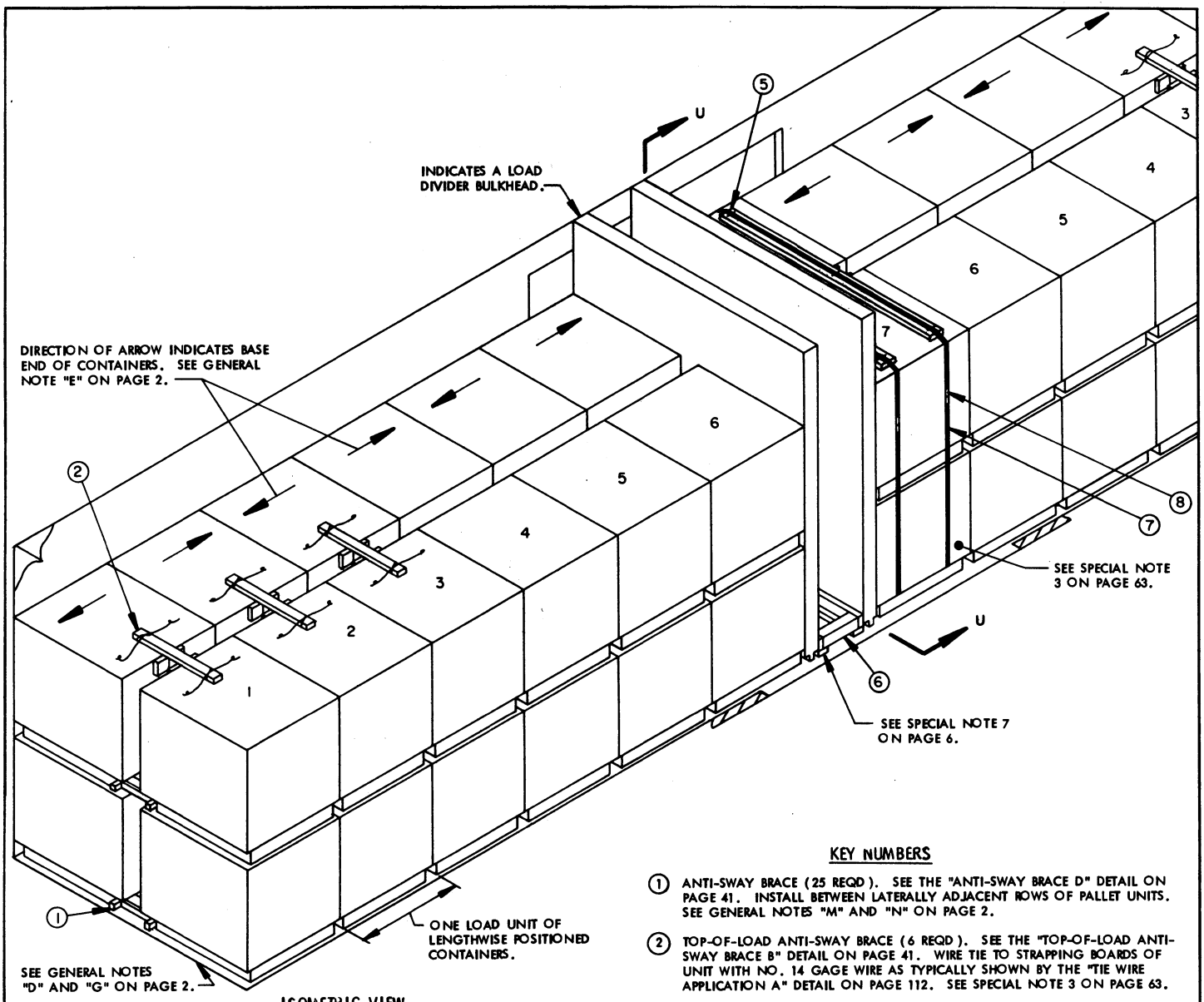
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 2" 2" X 4" 2" X 6"	62 177 143 16	21 59 96 16
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	336 298	2 4-3/4
WIRE, NO. 14 GAGE----------36' REQD----------NIL		

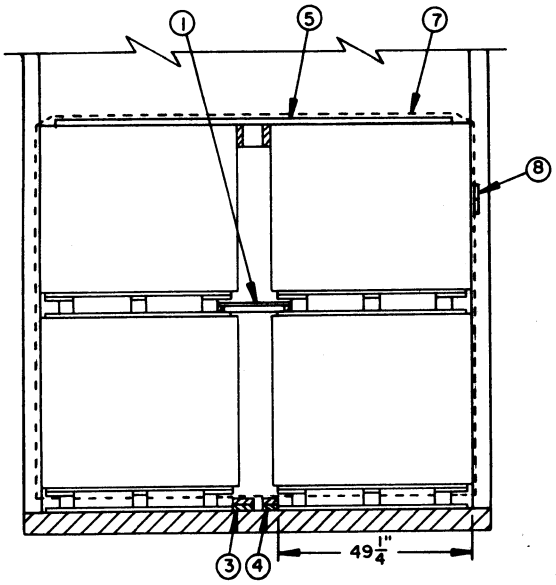
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	48	88,704 LBS
DUNNAGE		391 LBS
TOTAL WEIGHT		89,095 LBS

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



ISOMETRIC VIEW



SECTION U-U

KEY NUMBERS

(1) ANTI-SWAY BRACE (25 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 3 ON PAGE 63.

(3) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) SIDE BLOCKING, 2" X 4" X 40" (DOUBELD) (1 REQD). PRE-POSITION AS SHOWN IN "SECTION U-U" AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(5) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 117. SEE SPECIAL NOTE 7 ON PAGE 63.

(6) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE PALLET UNITS IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 63.

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

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 62 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 110,880 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 73,920 POUNDS, USING THE DEPICTED PROCEDURES. A CONTAINERS-CROSSWISE LOADING PATTERN AS SHOWN ON PAGE 66 MAY ALSO BE EMPLOYED. IF THE CROSSWISE PATTERN IS USED, FIFTY-TWO (52) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 96,096 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 81,312 POUNDS AND THIRTY-SIX (36) UNITS CAN BE LOADED INTO A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 66,528 POUNDS.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 62, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

4. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION IS USED, PIECES MARKED ⑤, ⑦, AND ⑧ WILL NOT BE REQUIRED. AN ADDITIONAL ANTI-SWAY BRACE, PIECE MARKED ①, MAY BE USED IN LIEU OF THE SIDE BLOCKING, PIECES MARKED ③ AND ④.

5. NOTE: THE PALLET UNITS INDICATED AS STACK NO. 7 LOCATED IN THE DOORWAY OF THE LOAD SHOWN ON PAGE 62, MUST BE DELETED IF THE OPERATING MECHANISM OF THE LOAD DIVIDER BULKHEAD IS NOT LOCATED ON THE OUTSIDE EDGE OF THE BULKHEAD.

6. 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. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE AS SHOWN ON PAGE 62, THE DEPICTED PIECES MARKED ③, ④, ⑤, ⑦ AND ⑧ WILL BE USED. IF CONTAINERS ARE CROSSWISE IN THE CAR, PIECES MARKED ③, ⑤, ⑧, AND ⑨ ON PAGE 74, WILL BE USED. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN 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) 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. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS USE DOORWAY PROTECTION "H" AS DETAILED ON PAGE 65; FOR CONTAINERS-CROSSWISE LOADS ALSO USE DOORWAY PROTECTION "H".

7. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 62, 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 LOAD, THE STRUT ASSEMBLY IS REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS.

8. 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 84 THRU 108 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

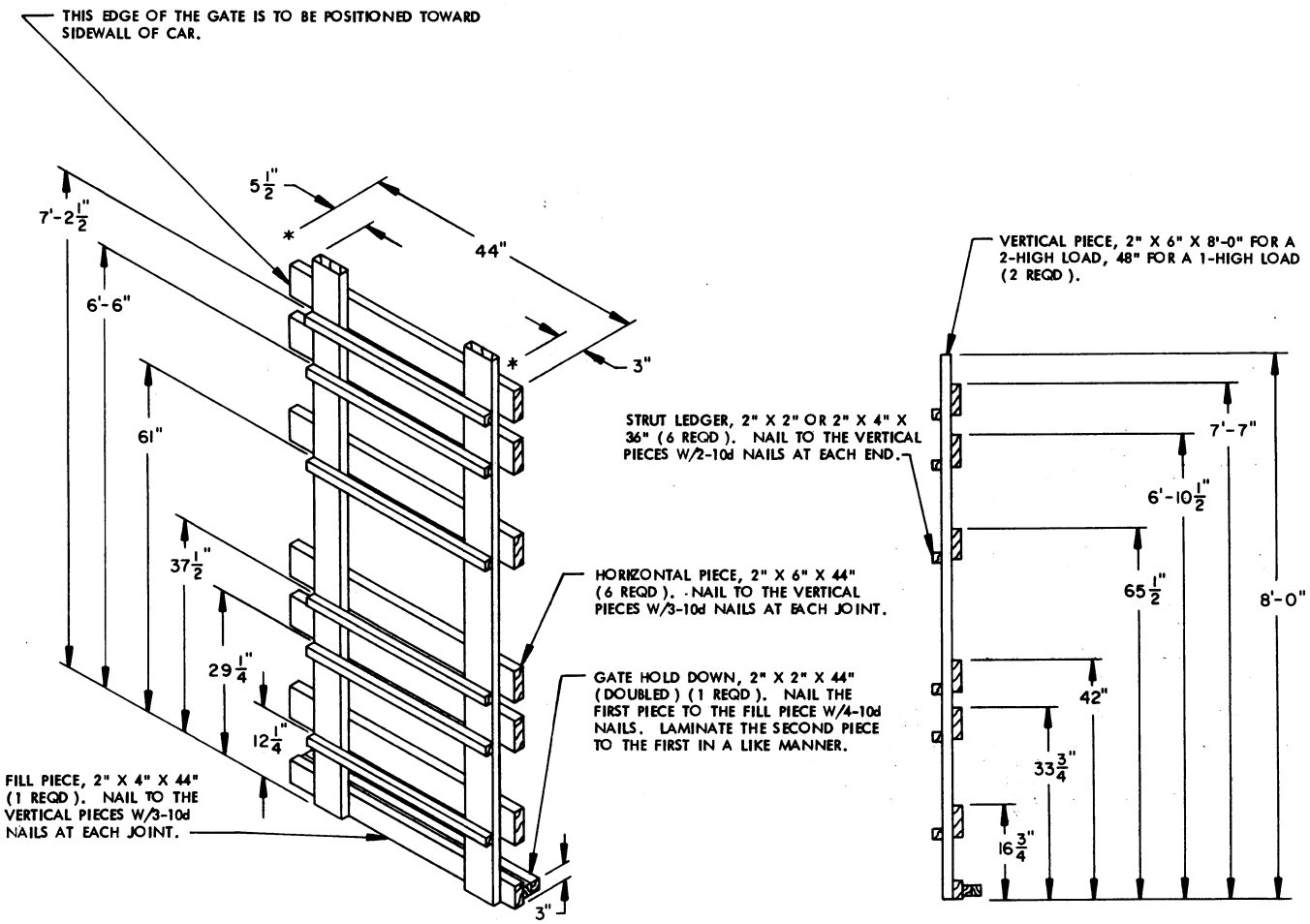
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	68	23
1" X 8"	17	12
2" X 2"	184	62
2" X 4"	117	78
2" X 6"	39	39
4" X 4"	6	8
NAILS	**NO. REQD**	**POUNDS**
6d (2")	366	2-1/4
10d (3")	296	4-3/4
12d (3-1/4")	42	3/4
16d (3-1/2")	20	1/2

STEEL STRAPPING, 1-1/4" X .035" ------ 72' REQD ---------- 11 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 4 REQD ---------- NIL
STAPLES FOR 1-1/4" STRAPPING --------- 6 REQD ---------- NIL
WIRE, NO. 14 GAGE ---------- 36' REQD ---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	96,096 LBS
DUNNAGE		464 LBS
TOTAL WEIGHT		96,560 LBS (APPROX)

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

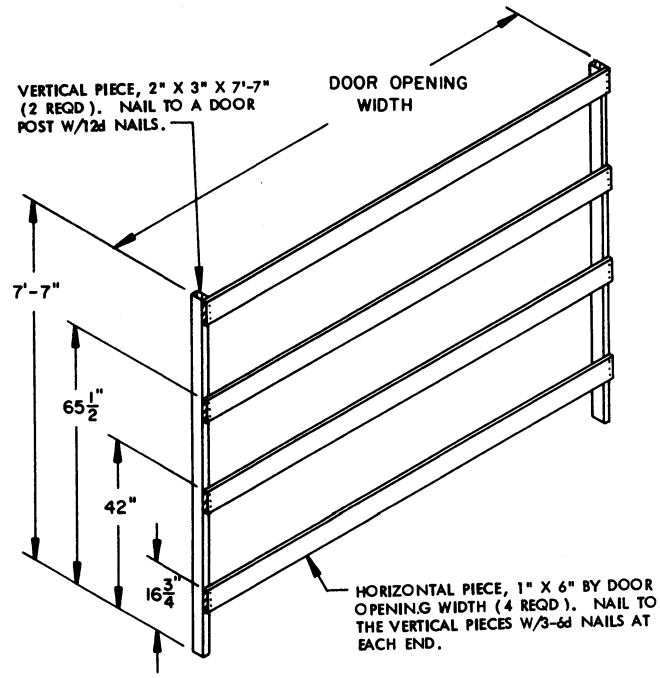


CENTER GATE R

END VIEW

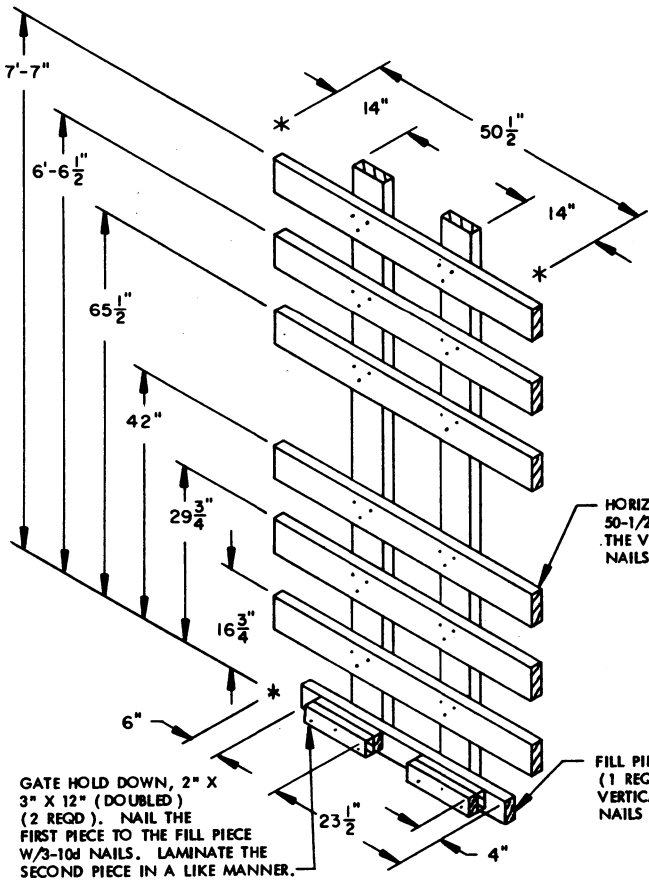
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.
SEE SPECIAL NOTE 7 ON PAGE 57.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



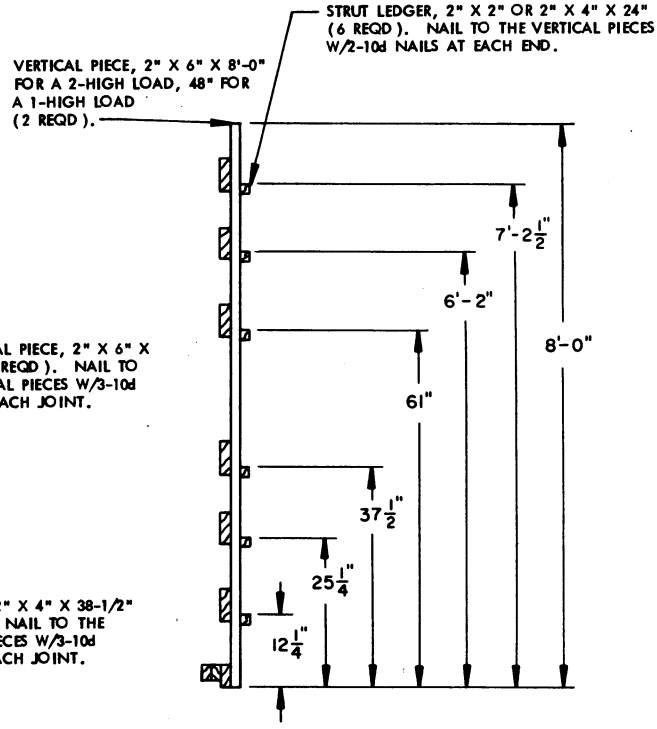
DOORWAY PROTECTION H

THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 56 AND 58.

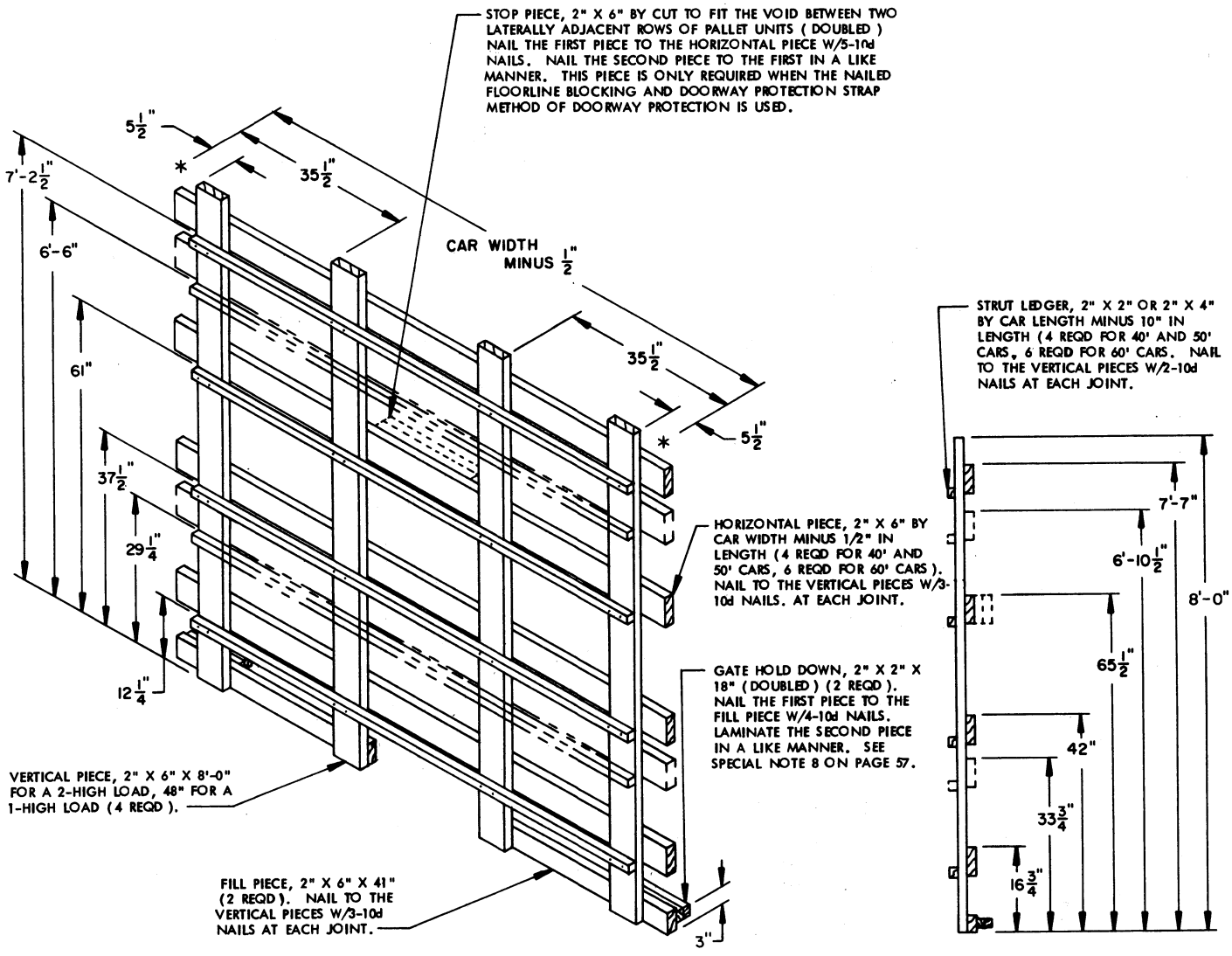


CENTER GATE S

SEE SPECIAL NOTE 6 ON PAGE 58.



END VIEW

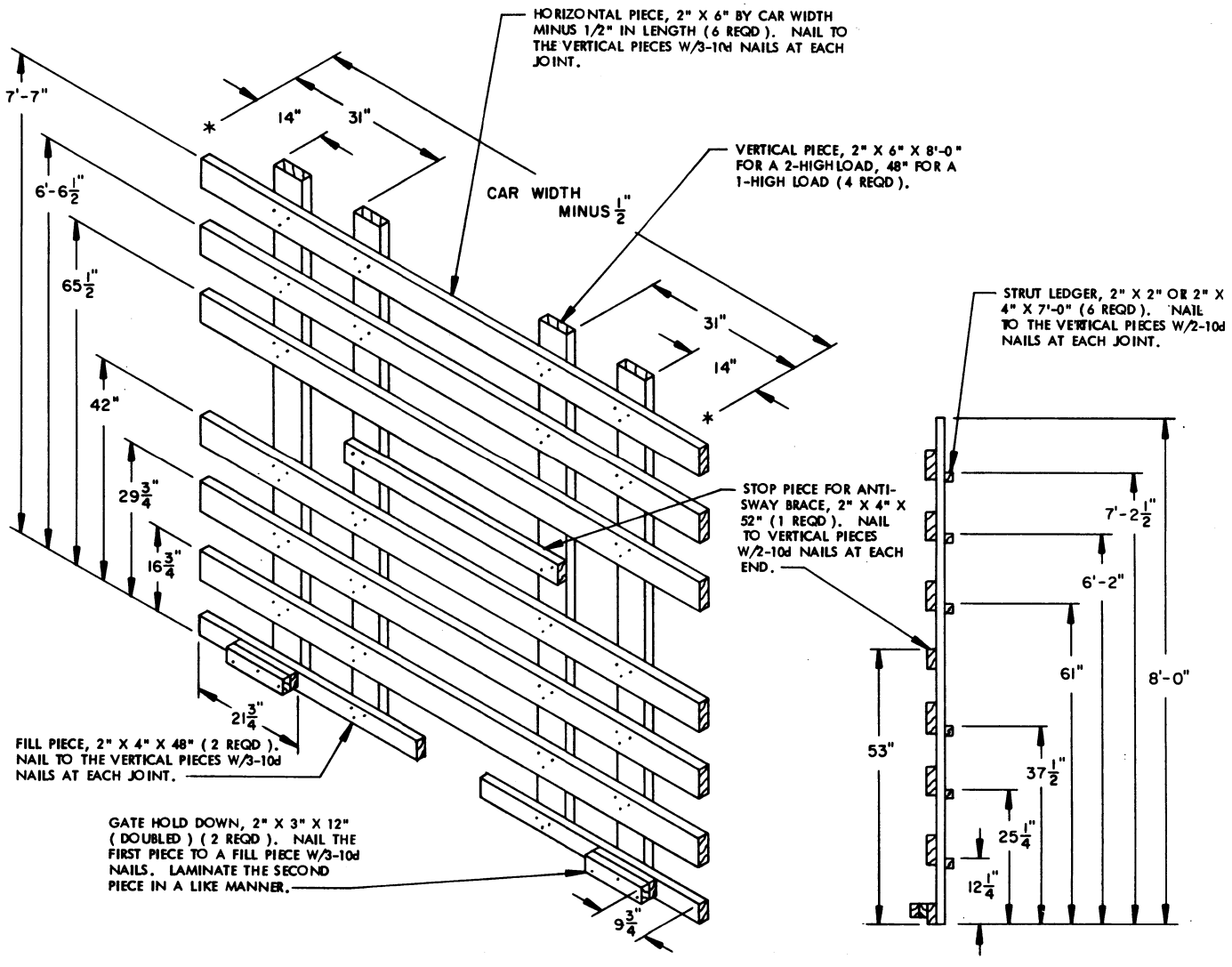


CENTER GATE T

END VIEW

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 56.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

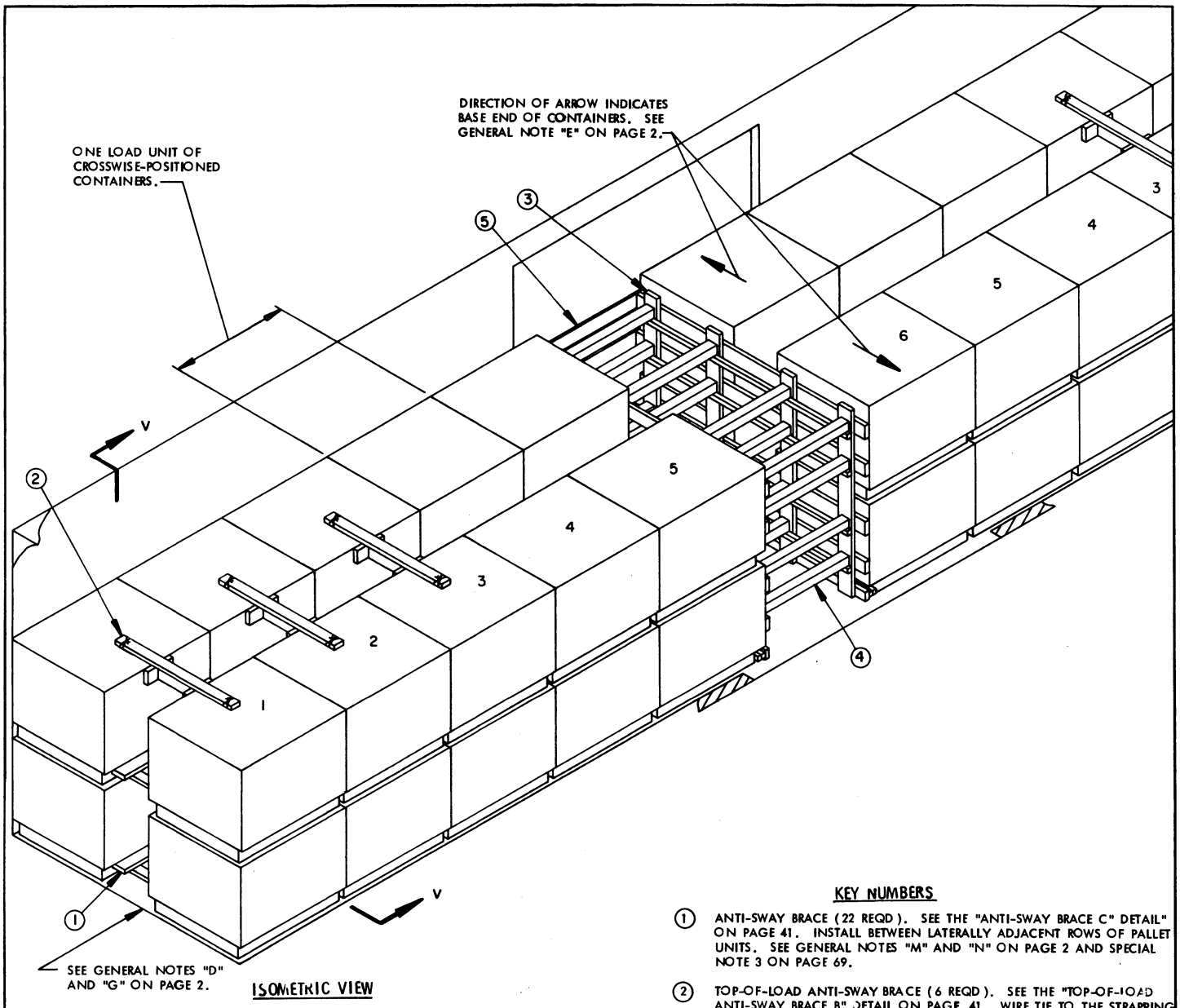


CENTER GATE U

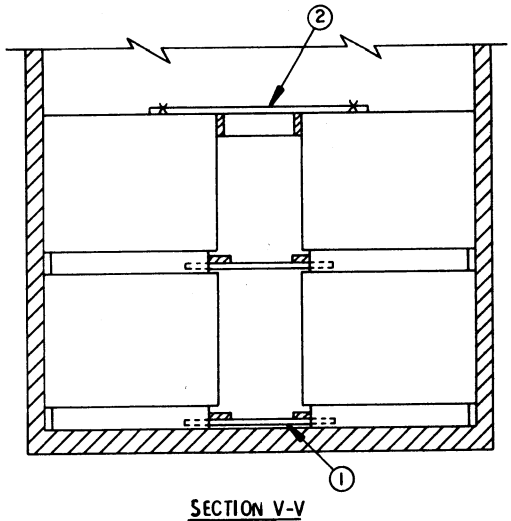
END VIEW

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 58.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION V-V

KEY NUMBERS

(1) ANTI-SWAY BRACE (22 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL" ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 69.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 124. SEE SPECIAL NOTE 4 ON PAGE 69.

(3) CENTER GATE (2 READ). SEE THE "CENTER GATE X" DETAIL ON PAGE 78. SEE SPECIAL NOTES 5, 6, 7, AND 10 ON PAGE 69.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF 44") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 77. SEE SPECIAL NOTE 8 ON PAGE 69.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 68 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 77,948 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 53,964 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAP METHOD OF DOORWAY PROTECTION, SIMILAR TO PIECES MARKED ③, ⑤, ⑧, AND ⑨ ON PAGE 74 IS USED. NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 68, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

5. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 68, INSTALL TWO (2) "CENTER GATES V" AS SHOWN ON PAGE 76. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 2" MATERIAL NAILED TO CENTER GATE "X", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE 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 68, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOOR LINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED. REFER TO PIECES MARKED ③, ⑤, ⑧, AND ⑨ ON PAGE 74 FOR GUIDANCE. TWO (2) DOORWAY 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) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS.

9. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 74 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑤, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. TO ACCOMPLISH THIS, NAIL A DOUBLED 2" X 6" BY CUT TO FIT PIECE ON THE BOTTOM HORIZONTAL OF THE TOP LAYER AS SHOWN ON THE CENTER GATE "X" DETAIL ON PAGE 78. A DOUBLED PIECE WILL BE REQUIRED FOR EACH CENTER GATE IN THE DOORWAY OR WITHIN SIX INCHES (6") OF BEING IN THE DOORWAY

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 82 THRU 108 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 106 AND 108 FOR GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

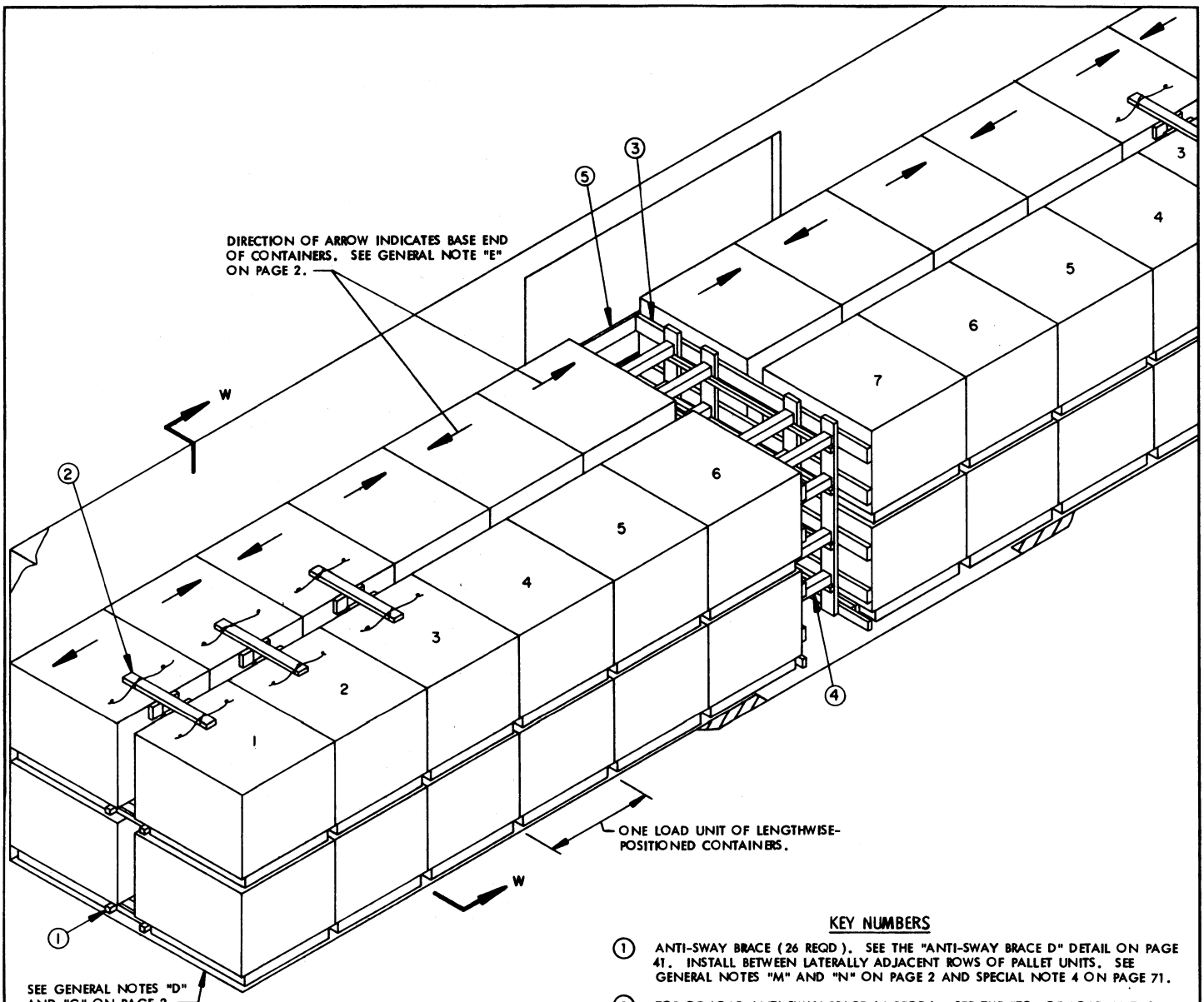
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	67	23
2" X 3"	25	13
2" X 4"	247	165
2" X 6"	213	213
4" X 4"	59	79
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	558	8-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------24' REQD----------NIL		

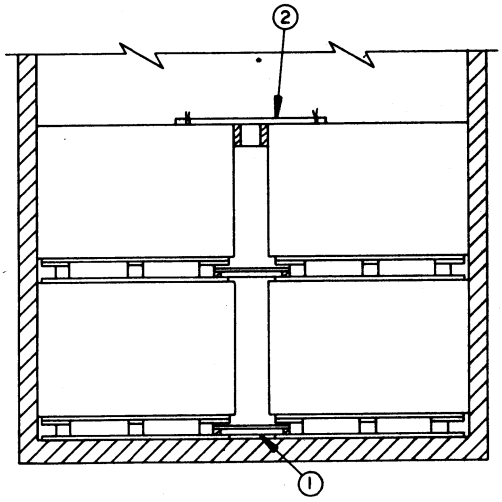
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	44	65,956 LBS
DUNNAGE		1,078 LBS
TOTAL WEIGHT		67,034 LBS

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
44-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW



SECTION W-W

KEY NUMBERS

(1) ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 71.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 124. SEE SPECIAL NOTE 4 ON PAGE 71.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE Y" DETAIL ON PAGE 79. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 71.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGES 2 AND 3.

(5) DOORWAY PROTECTION (2 REQD). SEE "DOORWAY PROTECTION K" DETAIL ON PAGE 77. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 71.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 70 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OR THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 89,940 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 59,960 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62, ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 70, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

5. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 70, INSTALL TWO (2) "CENTER GATES W" AS SHOWN ON PAGE 77. 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 111.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "X", PROVIDING THE CAR BEING LOADED HAD NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 113 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 70, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 114 THRU 116 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. REFER TO PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ ON PAGE 62 FOR GUIDANCE. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) 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. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 108 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	69	23
1" X 6"	80	40
2" X 2"	247	83
2" X 3"	33	17
2" X 4"	87	58
2" X 6"	136	136
4" X 4"	35	47
NAILS	**NO. REQD**	**POUNDS**
6d (2")	412	2-1/2
10d (3")	496	7-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE	36' REQD	NIL

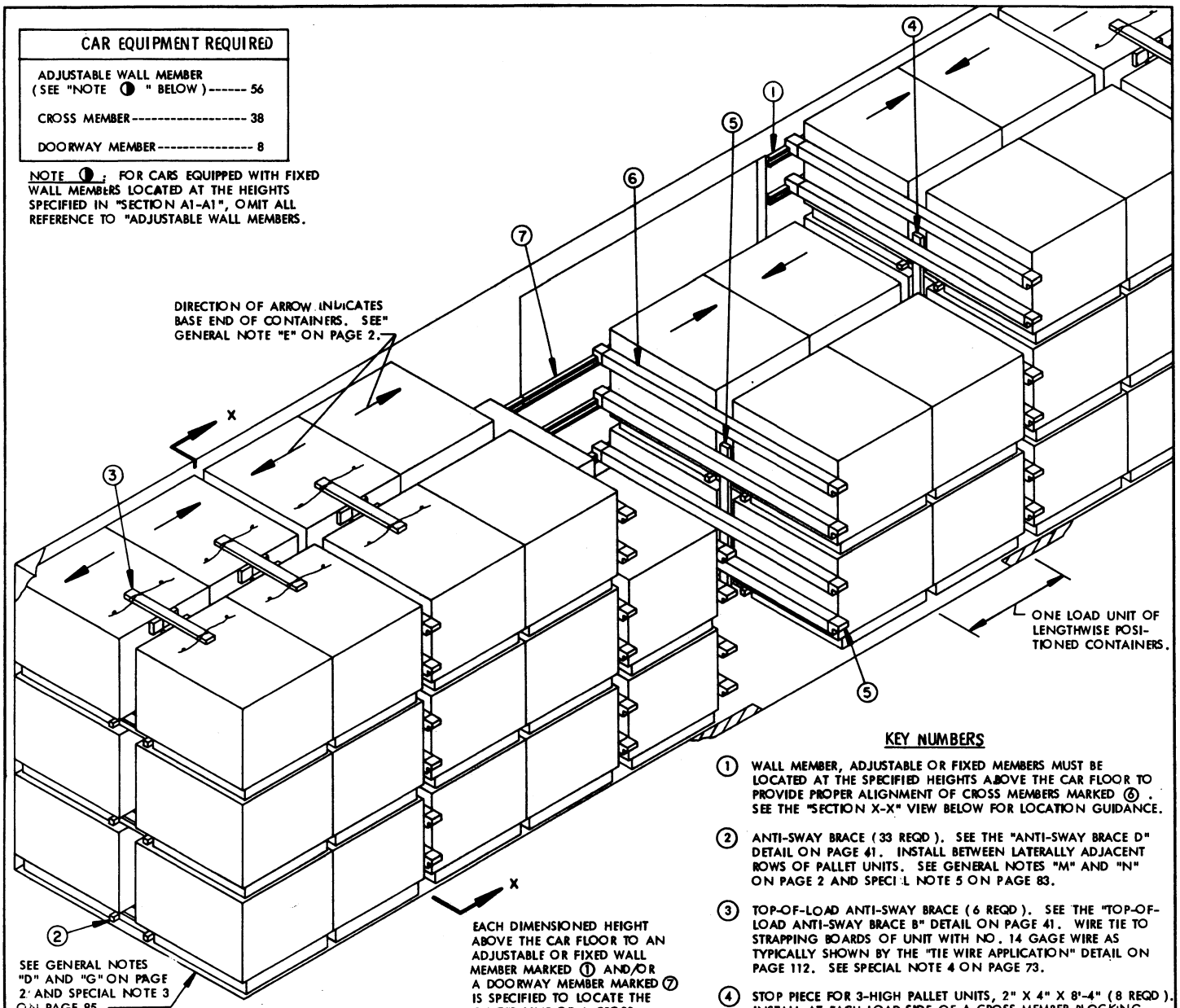
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	77,948 LBS
DUNNAGE		701 LBS
TOTAL WEIGHT		78,649 LBS (APPROX)

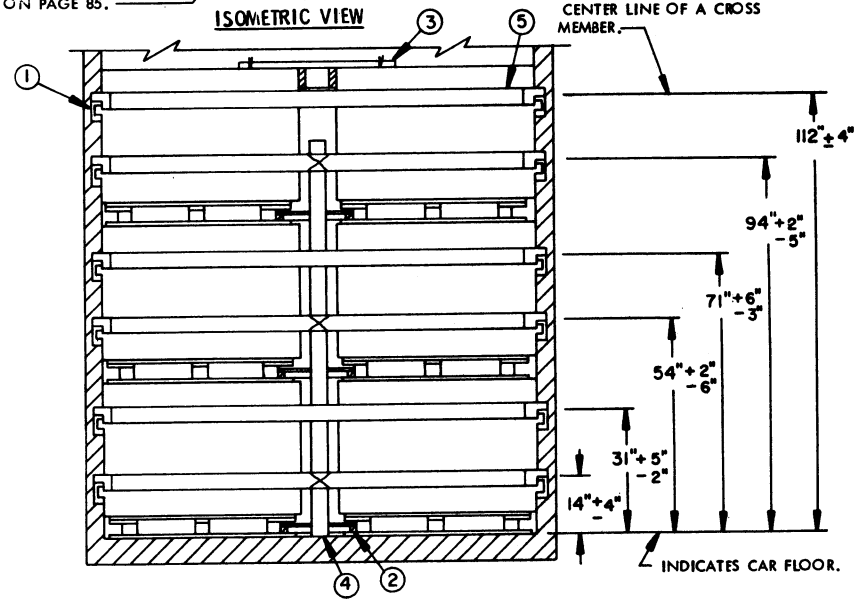
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	56
CROSS MEMBER	38
DOORWAY MEMBER	8

NOTE ◑ : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION A1-A1", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS.



ISOMETRIC VIEW



SECTION X-X

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑥. SEE THE "SECTION X-X" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (33 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 83.

③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 73.

④ STOP PIECE FOR 3-HIGH PALLET UNITS, 2" X 4" X 8'-4" (8 REQD). INSTALL AT EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF ANTI-SWAY BRACES, PIECE MARKED ②. NAIL TO THE CROSS PIECE OF THE TOP AND BOTTOM ANTI-SWAY BRACES W/2-10d NAILS AT EACH JOINT. ON NEAR SIDE OF CROSS MEMBERS, WIRE TIE THE TOP AND BOTTOM OF THE STOP PIECE TO THE ADJACENT CROSS MEMBER WITH NO. 14 GAGE WIRE AS SHOWN IN THE "SECTION X-X" VIEW.

⑤ STOP PIECE FOR 2-HIGH PALLET UNITS, 2" X 4" X 60" (4 RFQD). INSTALL AT EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF ANTI-SWAY BRACES, PIECE MARKED ②. NAIL TO THE CROSS PIECE OF THE ANTI-SWAY BRACES W/2-10d NAILS AT EACH JOINT. ON NEAR SIDE OF CROSS MEMBERS, WIRE TIE THE TOP AND BOTTOM OF THE STOP PIECE TO THE ADJACENT CROSS MEMBER WITH NO. 14 GAGE WIRE AS SHOWN IN THE "SECTION X-X" VIEW.

⑥ CROSS MEMBER (38 REQD). SEE GENERAL NOTE "W" ON PAGE 2.

⑦ DOORWAY MEMBER (8 REQD). SEE THE "SECTION X-X" VIEW AT LEFT FOR PROPER LOCATION GUIDANCE.

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

PROJECT FSA 43B/4-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS, IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 72 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 59,960 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 72, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A 40'-6" OR 50'-6" CAR; FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" CAR.

5. A STOP PIECE, PIECE MARKED ④, IS REQUIRED ON EACH LOAD SIDE OF A CROSS MEMBER BLOCKING STATION TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 80 AND 81 FOR GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

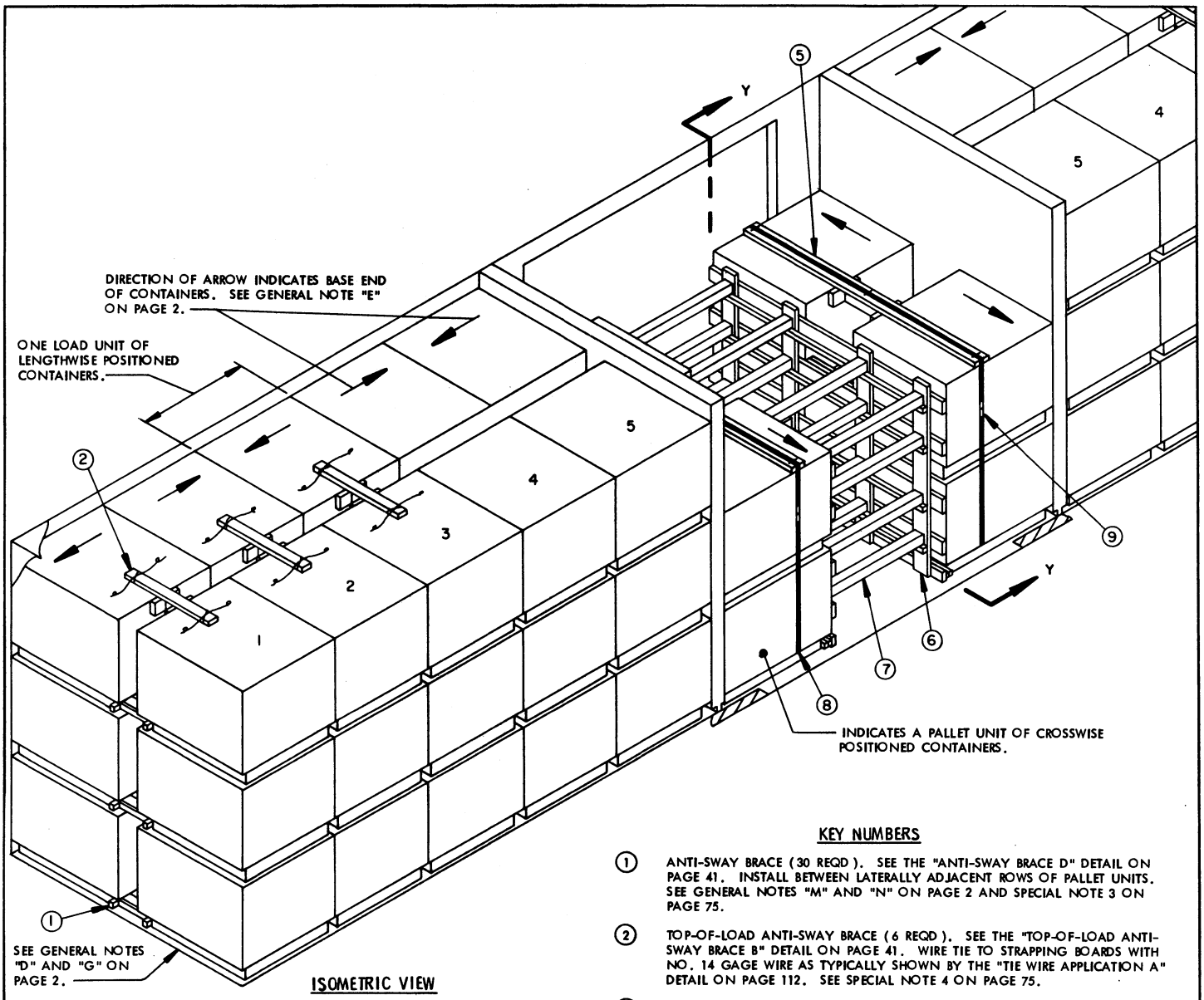
8. THE CAR TO BE USED FOR SHIPMENT OF THE DEPICTED 66-UNIT LOAD IN A 50'-6" LONG CAR MUST HAVE A LOAD LIMIT OF AT LEAST 109,800 POUNDS.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	171	57
2" X 2"	243	81
2" X 4"	90	60
2" X 6"	16	16
NAILS	NO. REQD	POUNDS
6d (2")	462	2-3/4
10d (3")	370	5-3/4
WIRE, NO. 14 GAGE----------36' REQD----------NIL		

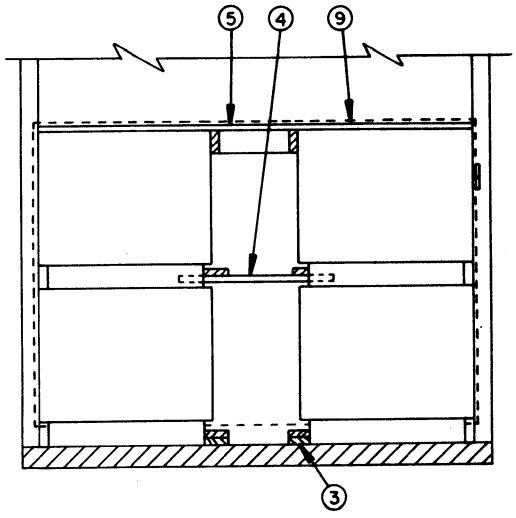
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	98,934 LBS
DUNNAGE		437 LBS
TOTAL WEIGHT		99,371 LBS (APPROX)

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
66-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW



SECTION Y-Y

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 75.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 75.

(3) SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (4 REQD). POSITION AGAINST THE PALLET AS SHOWN IN THE "SECTION E-E" VIEW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS AS SHOWN IN THE "SECTION Y-Y" VIEW.

(5) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 30.

(6) CENTER GATE (2 REQD). SEE THE "CENTER GATE X" DETAIL ON PAGE 78. SEE SPECIAL NOTES 5 AND 6 ON PAGE 75.

(7) STRUT, 4" X 4" BY CUT TO FIT (REF: 45") (16 REQD). TOENAIL TO PIECES MARKED (6) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGE 2 AND 3.

(8) DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE LOAD UNITS IN DOORWAY. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 75.

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

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

(SPECIAL NOTES CONTINUED)

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 105 AND/OR PAGES 106 AND 108 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 107 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR PENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING NARROWER OR WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 74 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). USING THIS PROCEDURE, THE FOLLOWING CONTAINERS-LENGTHWISE LOADS CAN BE ACHIEVED:

3.

CAR LENGTH	TOTAL NO. OF UNITS	APPROX NO. POUNDS	LENGTHWISE NO. EACH END	NO. IN DOORWAY
60'-8"	86	128,914	7 AND 6	2 CROSSWISE
40'-6"	56	83,944	4 AND 4	2 LENGTHWISE

IF DESIRED, A CONTAINERS-CROSSWISE LOADING PATTERN CAN BE ACHIEVED USING THE FOLLOWING TABLE.

CAR LENGTH	TOTAL NO. OF UNITS	APPROX NO. POUNDS	LENGTHWISE NO. EACH END	NO. IN DOORWAY
60'-8"	78	116,922	6 AND 5	3 LENGTHWISE
50'-6"	62	92,938	5 AND 4	2 CROSSWISE
40'-6"	50	74,950	4 AND 3	2 LENGTHWISE

3. THE DIRECTION OF THE LOAD UNIT DETERMINES THE DETAILS TO BE USED. PAGE 74 SHOWS THE CONTAINERS POSITIONED LENGTHWISE WITH CROSSWISE POSITIONED CONTAINERS IN THE DOORWAY AREA. IF THE CONTAINERS ARE POSITIONED LENGTHWISE IN THE DOORWAY, REFER TO THE LOAD ON PAGE 60. SIDE BLOCKING, PIECES MARKED ③ AND ④, SPACER ASSEMBLY "D", PIECES MARKED ⑤ AND DOORWAY PROTECTION STRAP, PIECE MARKED ⑥, MUST BE USED. SEE PAGE 67 FOR THE CENTER GATE "U" DETAIL TO BE USED WITH LENGTHWISE-POSITIONED CONTAINERS.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 74, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR; FOUR (4) BRACES ARE REQUIRED IN A 60'-8" LONG CAR.

5. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 111. FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 74, INSTALL TWO (2) "CENTER GATES V" AS SHOWN ON PAGE 76. 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 111.

7. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND THE WOODEN DOORWAY PROTECTION IS USED, PIECES MARKED ⑤, ⑧, AND ⑨ WILL NOT BE REQUIRED. TWO (2) ADDITIONAL ANTI-SWAY BRACES, PIECE MARKED ① MAY BE USED IN LIEU OF THE SIDE BLOCKING, PIECE MARKED ③.

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. IF THE CAR IS EQUIPPED WITH PLUG DOORS AND THE PALLET UNITS IN THE DOORWAY ARE POSITIONED WITH THE CONTAINERS CROSSWISE AS SHOWN ON PAGE 74, THE DEPICTED PIECES MARKED ③, ⑤, ⑧, AND ⑨ WILL BE USED. IF THE CONTAINERS ARE LENGTHWISE IN THE CAR, PIECES MARKED ③, ④, ⑤, ⑦, AND ⑧ ON PAGE 62, WILL BE USED. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY IN 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) 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. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION MAY BE USED. FOR CONTAINERS-LENGTHWISE LOADS, USE DOORWAY PROTECTION "K" AS DETAILED ON PAGE 89; FOR CONTAINERS-CROSSWISE LOADS ALSO USE DOORWAY PROTECTION "K" AS DETAILED ON PAGE 77.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. TO REDUCE THE LOAD BY FOUR (4) OR EIGHT (8) PALLET UNITS, OMIT THE TOP LAYER OR ALL OF THE PALLET UNITS IN THE DOORWAY AREA, AS APPLICABLE. IF IT IS NECESSARY TO OMIT ADDITIONAL PALLET UNITS, A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MUTLIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 108 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL

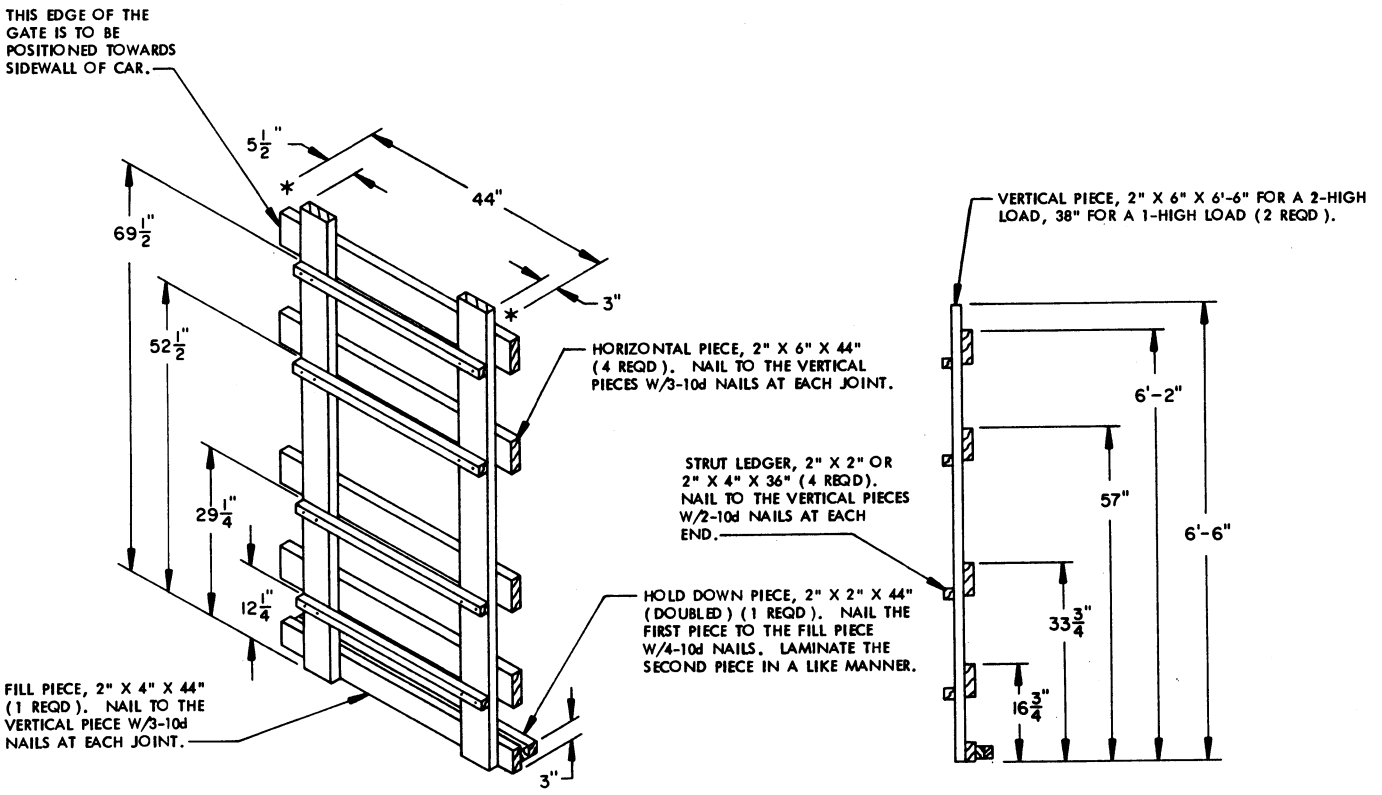
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	79	27
2" X 2"	288	96
2" X 4"	117	78
2" X 6"	200	200
4" X 4"	67	82
NAILS	**NO. REQD**	**POUNDS**
6d (2")	420	2-1/2
10d (3")	552	8-1/2
12d (3-1/4")	26	1/2
16d (3-1/2")	104	2-1/2

STEEL STRAPPING, 1-1/4" X .035" --- 66' REQD ----------10 LBS
SEAL FOR 1-1/4" STRAPPING ----------4 REQD ---------- NIL
STAPLES FOR 1-1/4" STRAPPING -------- 6 REQD ---------- NIL
WIRE, NO. 14 GAGE ----------36' REQD ---------- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	68	101,932 LBS
DUNNAGE		990 LBS
TOTAL WEIGHT		102,922 LBS

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

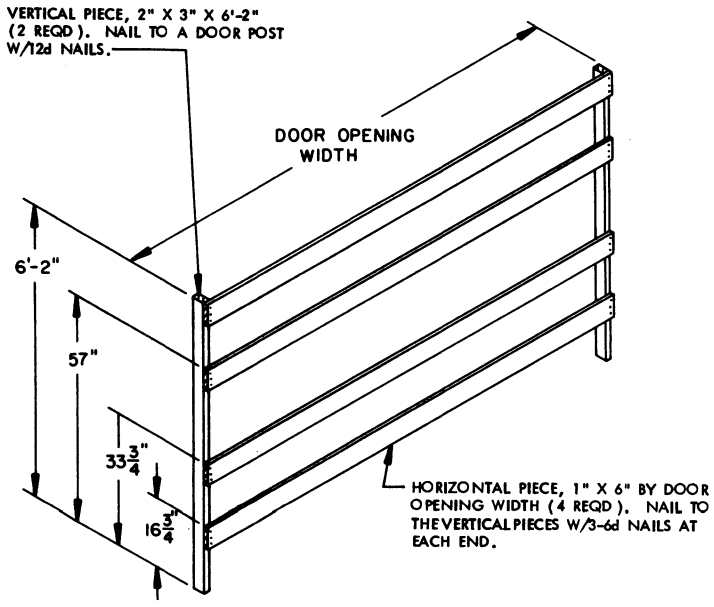


CENTER GATE V

END VIEW

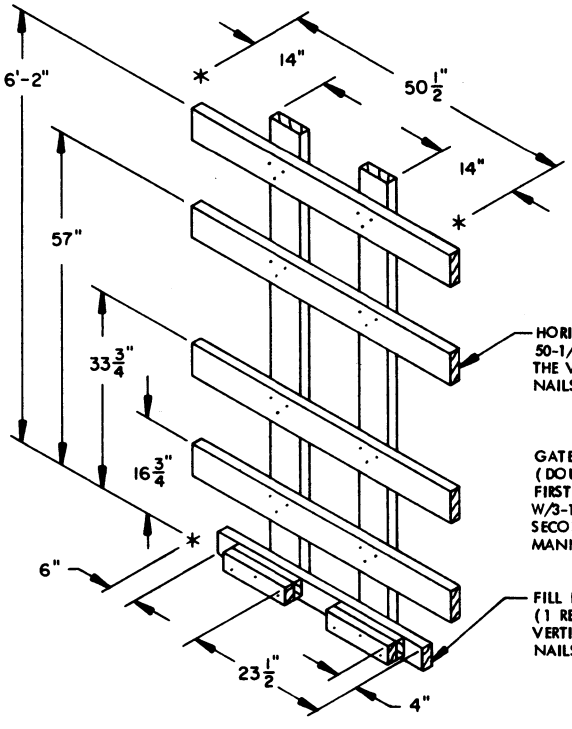
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. SEE SPECIAL NOTE 6 ON PAGES 69 AND 75.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

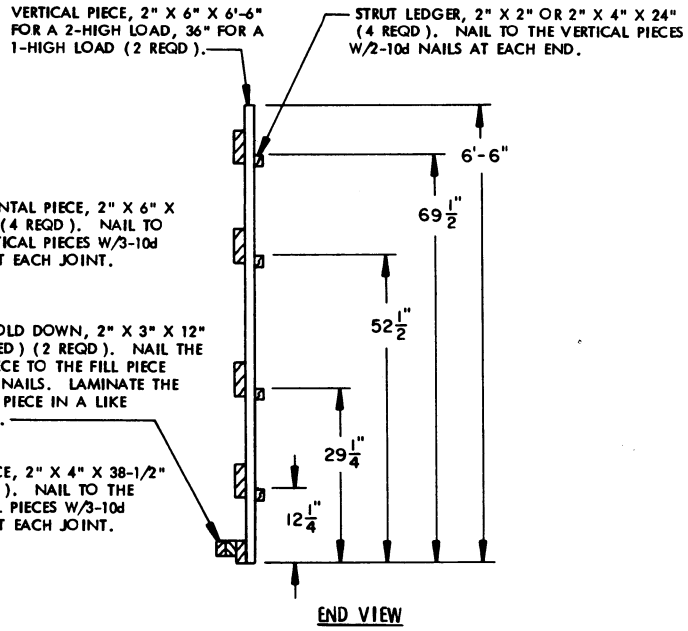


DOORWAY PROTECTION K

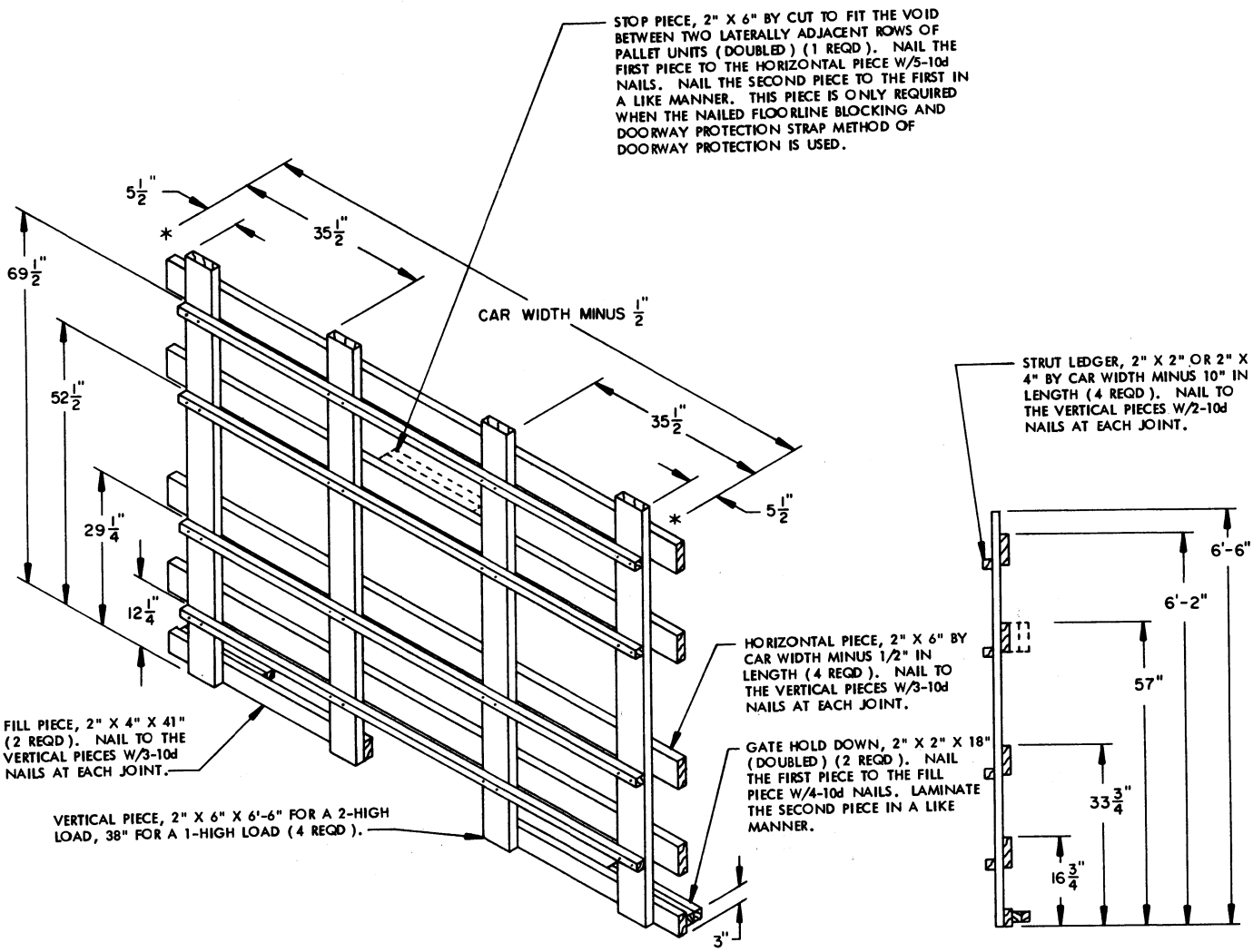
THIS ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 68 AND 70.



CENTER GATE W



END VIEW

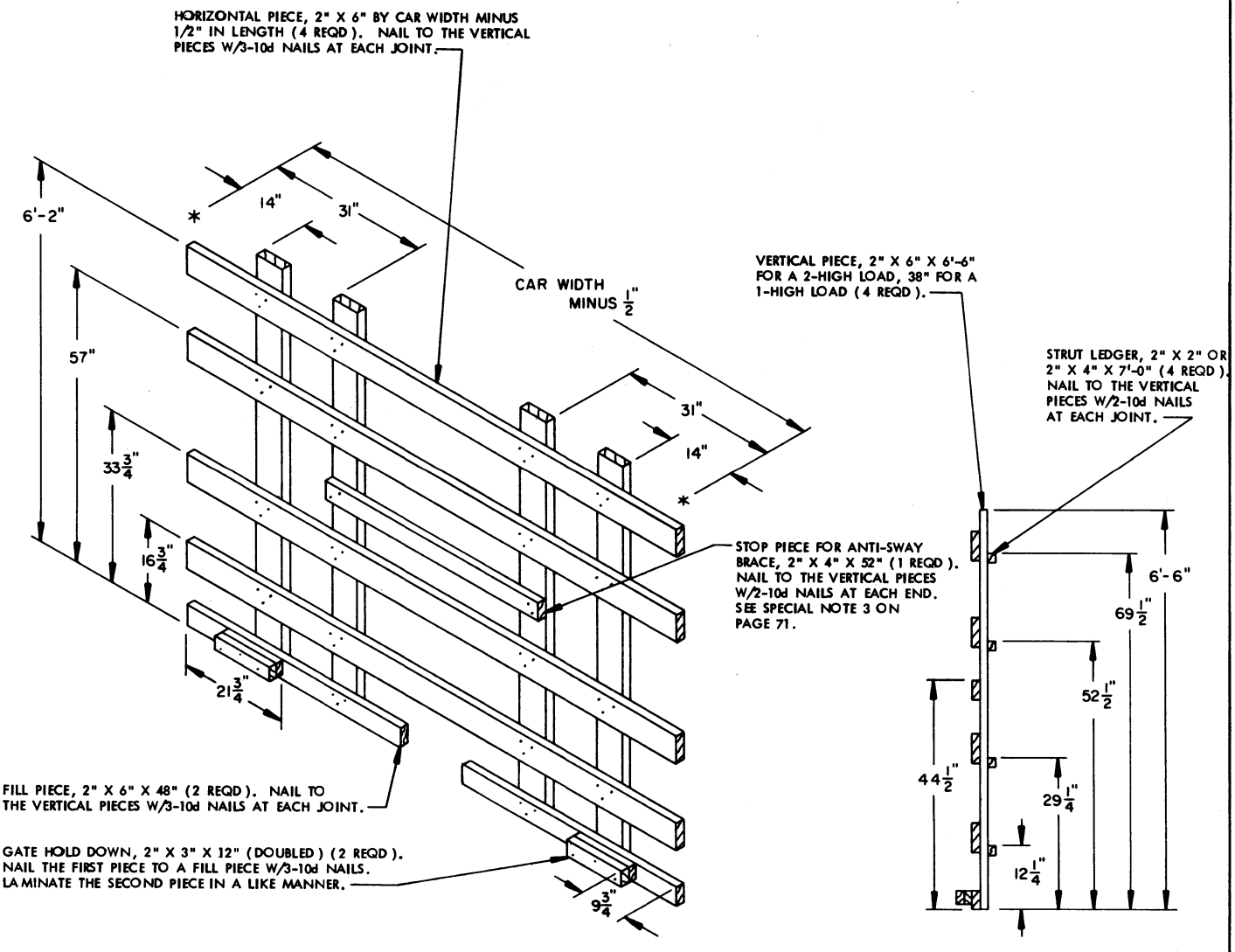


CENTER GATE X

THIS GATE IS DESIGNED FOR USE IN THE LOAD ON PAGES 68 AND 74.

END VIEW

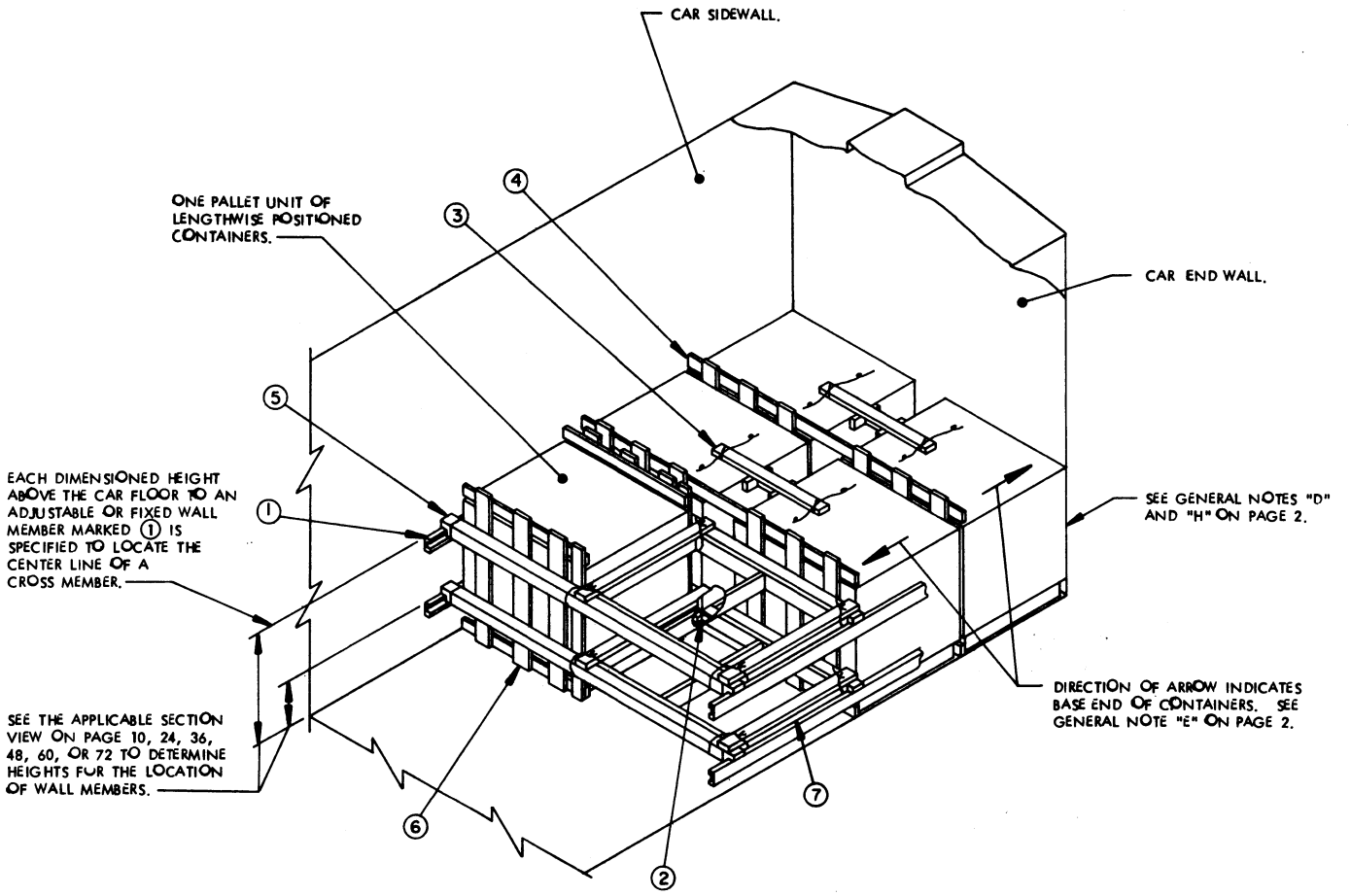
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



CENTER GATE Y

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 70.

END VIEW



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. NOTE THAT ALL PALLET UNITS MUST BE LOADED WITH THE CONTAINERS LENGTHWISE IN THE CAR.
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 OF FLAT AND ROUTED DUNNAGE METHOD UNITS IN 40' AND 50' CARS, FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT WIDTH IN WIDTH BY UNIT HEIGHT AS APPLICABLE. SEPARATOR GATES ARE ONLY REQUIRED FOR THE ALTERNATED CONTAINERS UNITS.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED (7) , MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

KEY NUMBERS

(1) WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED (5) .

(2) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 18. FOR THE ALTERNATED CONTAINERS UNITS OR THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41 FOR THE FLAT DUNNAGE AND ROUTED DUNNAGE METHOD UNITS. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41. WIRE TIE TO PALLET UNITS AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 AT LEFT.

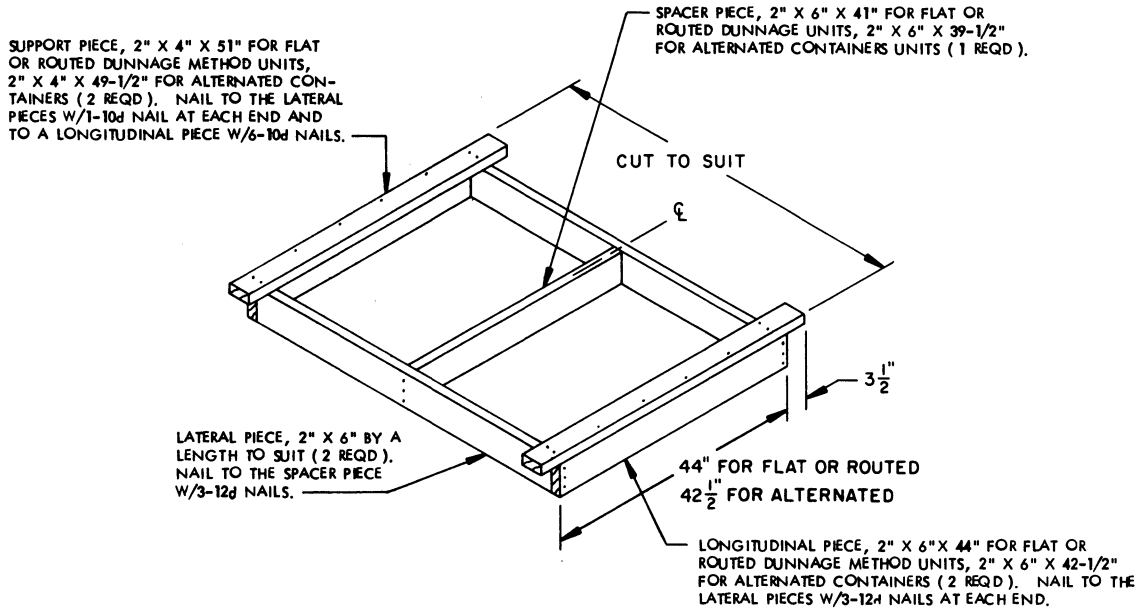
(4) SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15 FOR THE BASIC HEIGHT ALTERNATED CONTAINERS UNITS OR THE "SEPARATOR GATE C" DETAIL ON PAGE 29 FOR THE INCREASED HEIGHT ALTERNATED CONTAINERS UNITS. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

(5) CROSS MEMBER (5 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

(6) SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 15 FOR THE BASIC HEIGHT ALTERNATED CONTAINERS UNITS OR THE "SEPARATOR GATE F" DETAIL ON PAGE 29 FOR THE INCREASED HEIGHT ALTERNATED CONTAINERS UNITS. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

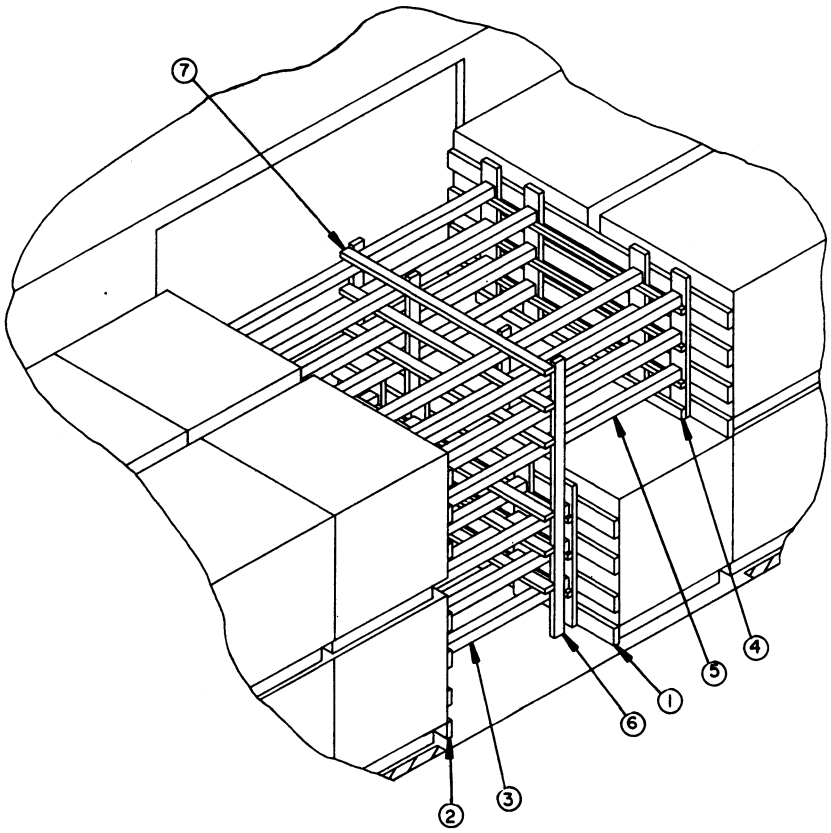
(7) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY E" DETAIL ON PAGE 81 AND SPECIAL NOTE 6 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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



SPACER ASSEMBLY E

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER OR NARROWER CARS CAN ALSO BE USED.

2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM A 2-HIGH LOAD ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP ONE OR TWO LAYERS FROM A 3-HIGH LOAD.

4. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.

5. THE CENTER GATE "M" USED IS ONLY APPLICABLE FOR THE FLAT DUNNAGE METHOD UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.

KEY NUMBERS

(1) CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 43. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 5 AT LEFT.

(2) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 43.

(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", "U", AND "V" ON PAGES 2 AND 3.

(4) GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.

(5) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED (1) AND (2), IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

(6) VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

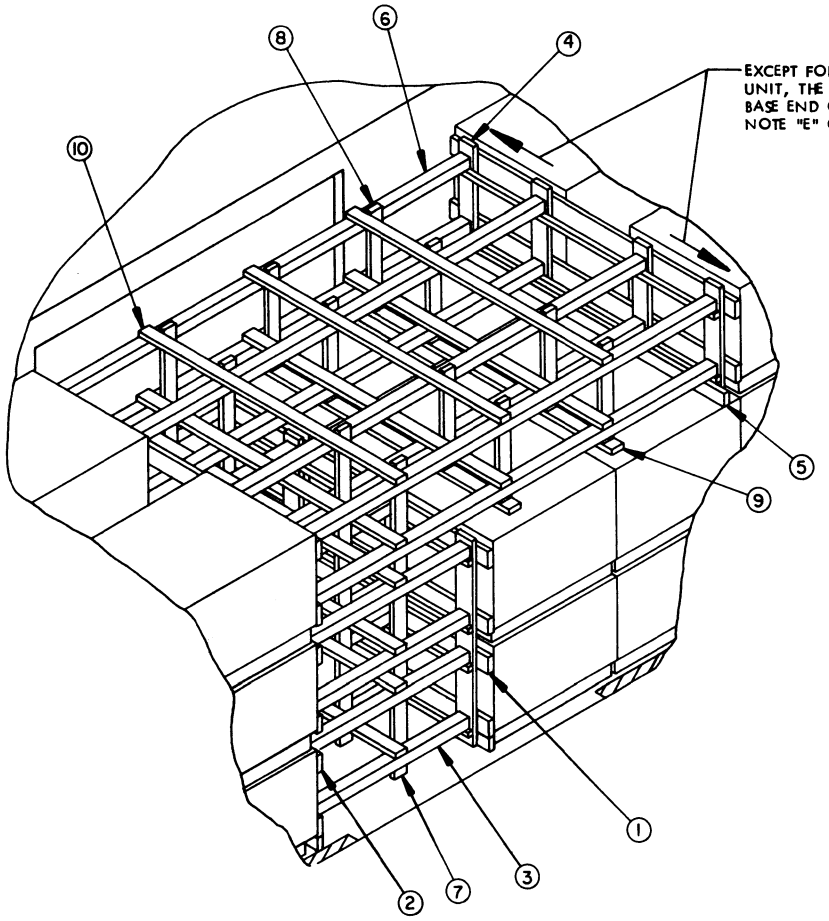
(7) HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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

SMCAC FORM 6-1, 1 NOV 87

SUPERSEDES SMCAC FORM 6, 1 NOV 85

PROJECT FSA 43B/4-63



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS CAN ALSO BE USED.

2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM TWO (2) LOAD UNITS ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP LAYER FROM JUST ONE (1) LOAD UNIT.

4. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.

5. THE CENTER GATE "C" USED IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.

6. TO PROTECT THE LADING FROM BEING PUNCTURED WHEN A SET OF VERTICAL STRUT BRACING IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN PIECE MARKED ⑨ , MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

① CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE SPECIAL NOTE 5 AT LEFT.

② CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16.

③ STRUT, 4" X 4" BY CUT TO FIT (16 REQD). TOENAIL TO PIECES MARKED ① AND ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" "U", AND "V" ON PAGES 2 AND 3.

④ CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16.

⑤ SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (1 REQD) NAIL TO THE VERTICAL PIECES ON CENTER GATE "C", SHOWN AS PIECE MARKED ④ .

⑥ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PIECES MARKED ② AND ④ W/2-16d NAILS AT EACH END.

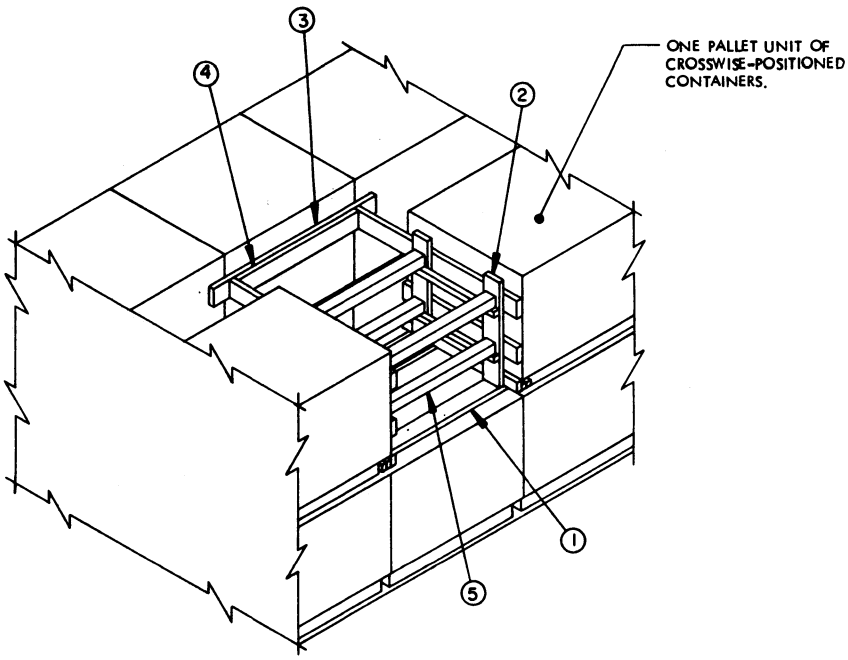
⑦ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED ③ AND ⑥ W/3-10d NAILS AT EACH JOINT.

⑧ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (8 REQD). NAIL TO THE STRUTS MARKED ⑥ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑨ W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 6 AT LEFT.

⑨ STRUT BRACING PAD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.

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

CONTAINERS-CROSSWISE PALLET UNIT
TYPICAL LCL LOAD USING STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

SPECIAL NOTES:

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

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" X 49" FOR ALTERNATED CONTAINERS, 2" X 6" X 52-1/2" FOR FLAT DUNNAGE METHOD, OR 2" X 6" X 50-1/2" FOR ROUTED DUNNAGE METHOD UNITS (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2) (UNDER THE OUTWARD VERTICAL PIECES OF LOAD BEARING GATE "D").

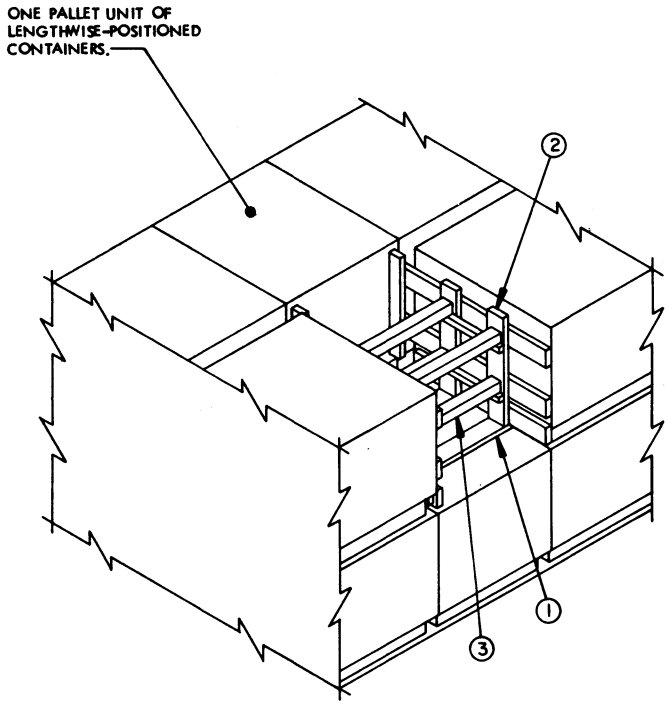
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 86 OR 87. NAIL TO THE FILLER PIECE, PIECE MARKED (4) W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1) W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

(3) ANTI-SWAY BEARING PIECE, 2" X 6" X 72" (1 REQD).

(4) FILLER PIECE, 2" X 6" X 46" FOR ALTERNATED CONTAINERS, 2" X 6" X 49-1/2" FOR FLAT DUNNAGE, OR 2" X 6" X 47-1/2" FOR ROUTED DUNNAGE METHOD UNITS (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (3) W/5-10d NAILS.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 43" FOR ALTERNATED CONTAINERS, 46-1/2" FOR FLAT DUNNAGE METHOD, OR 44-1/2" FOR ROUTED DUNNAGE METHOD UNITS) (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.

TYPICAL LCL-ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A CONTAINERS-CROSSWISE LOAD



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER PALLET UNIT FROM A 3-LAYER LOAD.
4. THE OMITTED-UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
6. SEPARATOR GATES ARE REQUIRED FOR THE LENGTHWISE POSITIONED ALTERNATED CONTAINERS UNIT ONLY. SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 15. WHEN USED, NOTE THAT THE TOP HORIZONTAL PIECE OF EACH SEPARATOR GATE ADJACENT TO THE OMITTED AREA MUST BE 1" X 2" MATERIAL IN LIEU OF 1" X 4" AND MAY NEED TO BE ADJUSTED IN HEIGHT TO PROVIDE CLEARANCE BETWEEN IT AND THE CONTAINERS ON THE UNIT BELOW, AS WELL AS CLEARANCE BETWEEN IT AND THE LOAD BEARING GATE.

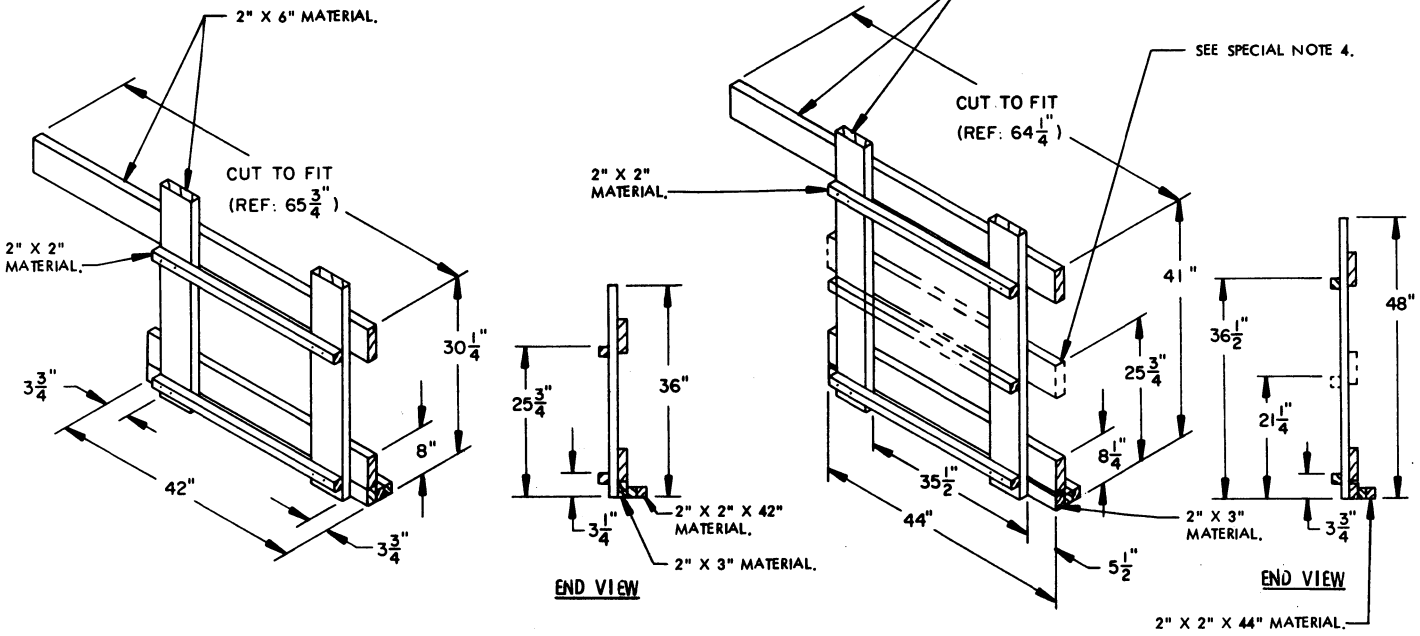
KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" X 43" FOR ALTERNATED CONTAINERS OR 2" X 6" X 44-1/2" FOR FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). POSITION BENEATH THE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2) .

(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 88 OR 89. 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 (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-6d NAILS AT EACH END.

TYPICAL LCL-ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A CONTAINERS-LENGTHWISE LOAD



LOAD BEARING GATE A

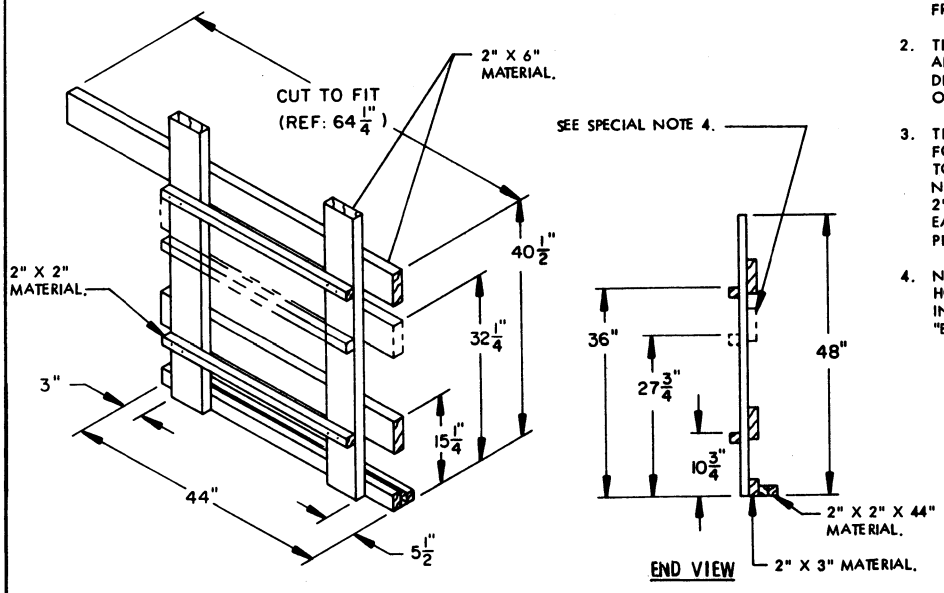
THIS GATE IS FOR USE IN A LOAD OF ALTERNATED CONTAINERS UNITS (BASIC HEIGHT). SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

LOAD BEARING GATE B

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

SPECIAL NOTES:

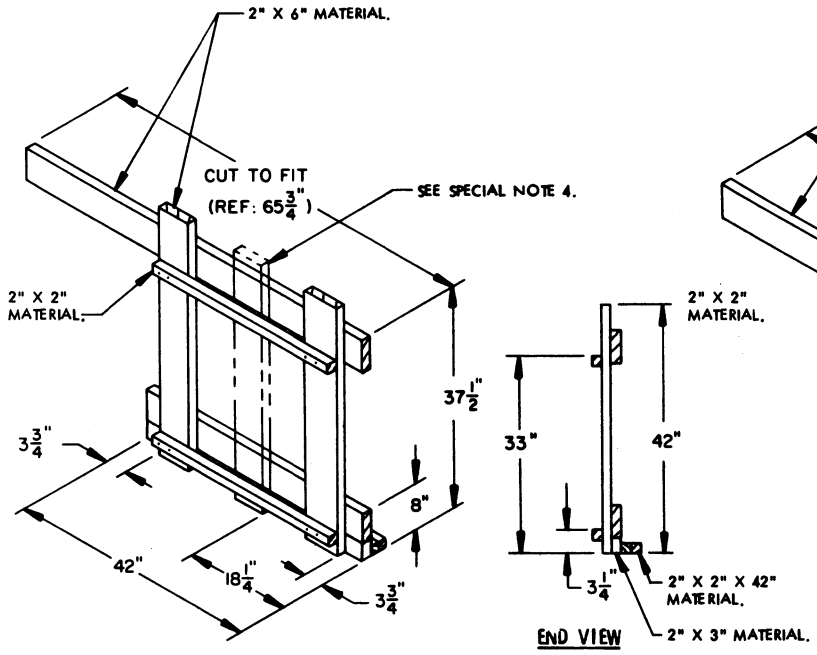
1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 84. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-CROSSWISE PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3" 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 2" GATE HOLD DOWN PIECES TO THE 2" X 3" HORIZONTAL PIECE, AS APPLICABLE, W/4-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.
4. NOTE THAT WHEN A 60'-8" CAR IS USED, AN ADDITIONAL HORIZONTAL PIECE AND STRUT LEDGER WILL BE REQUIRED AS INDICATED BY THE PHANTONED LINES ON LOAD BEARING GATES "B" AND "C".



LOAD BEARING GATE C

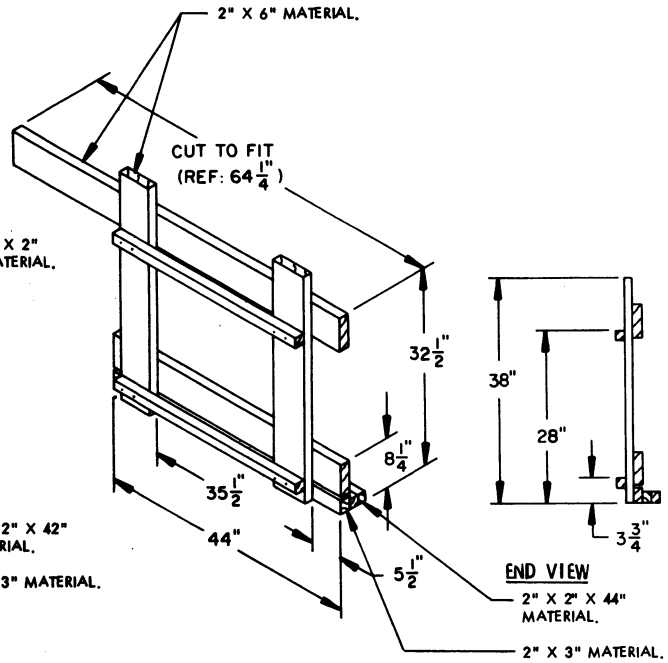
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

LOAD BEARING GATES FOR USE WITH BASIC-HEIGHT UNITS IN A CONTAINERS-CROSSWISE LOAD



LOAD BEARING GATE D

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

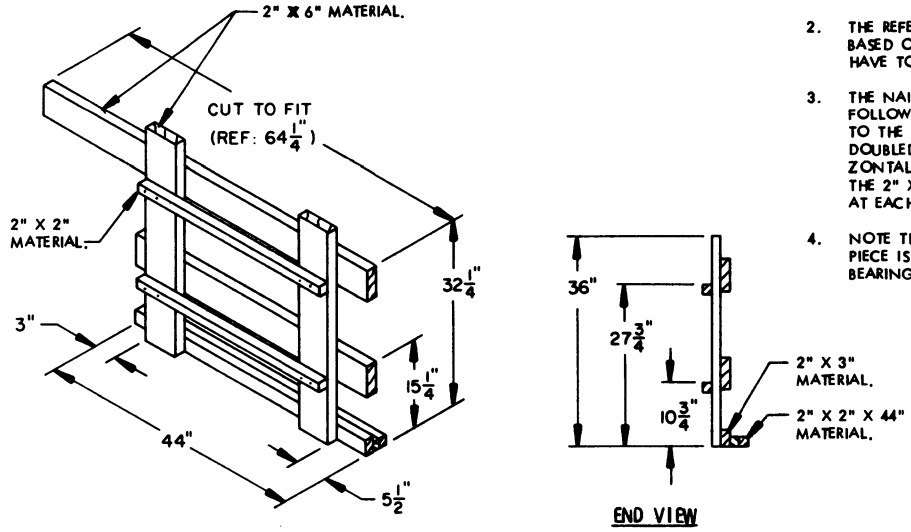


LOAD BEARING GATE E

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

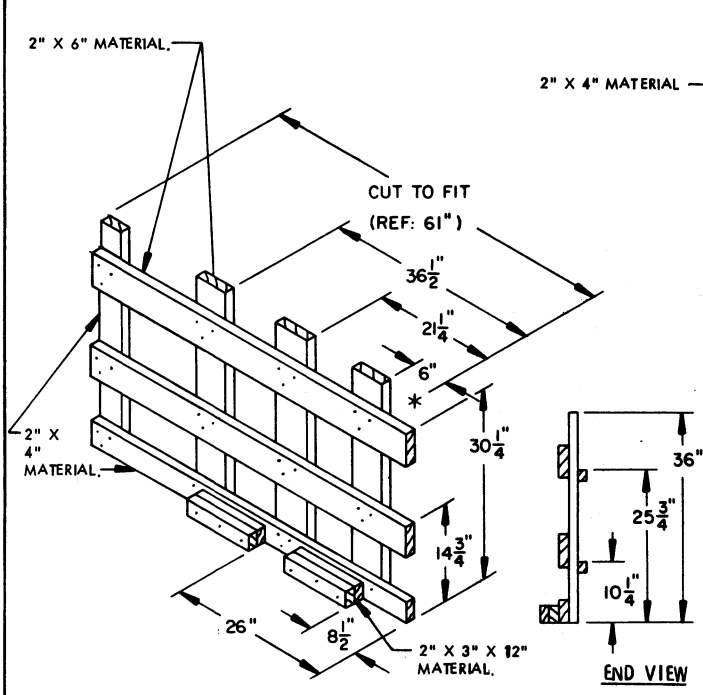
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH INCREASED AND/OR DECREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 84. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-CROSSWISE PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO THE 2" X 3" HORIZONTAL PIECE, AS APPLICABLE, W/4-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.
4. NOTE THAT WHEN A 60'-8" CAR IS USED, AN ADDITIONAL VERTICAL PIECE IS REQUIRED AS INDICATED BY THE PHANTOM LINES ON LOAD BEARING GATE "D".



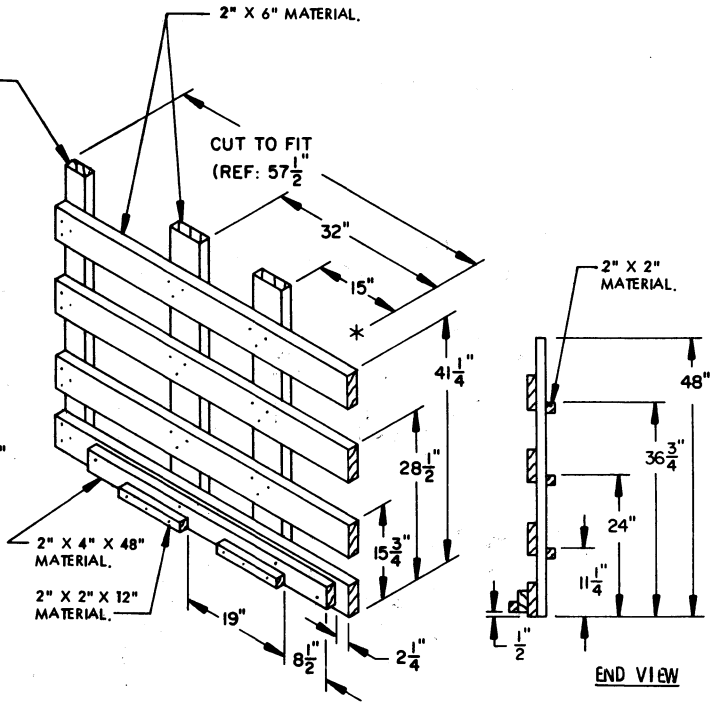
LOAD BEARING GATE F

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



LOAD BEARING GATE G

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

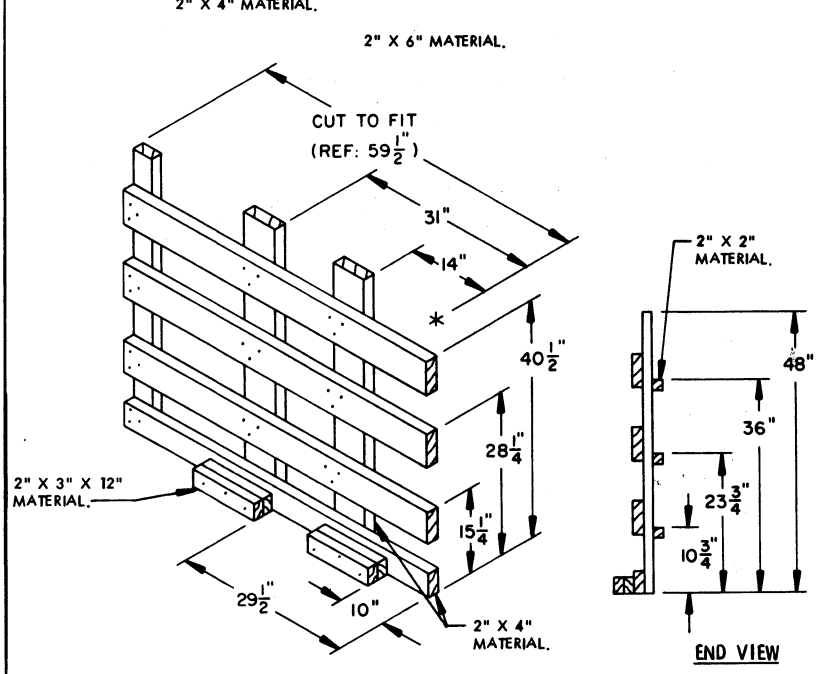


LOAD BEARING GATE H

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

SPECIAL NOTES:

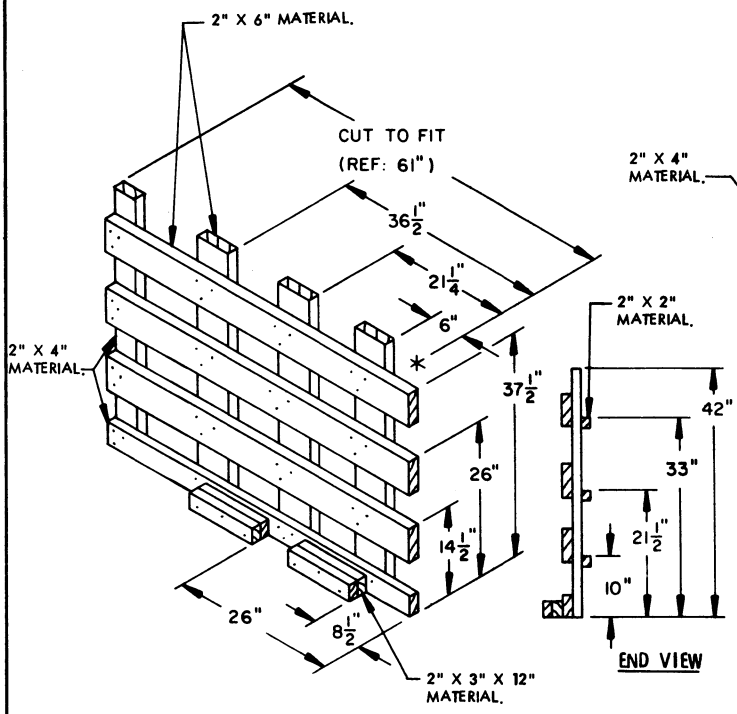
1. THE GATES ON THIS PAGE ARE FOR USE WITH BASIC HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 85. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-LENGTHWISE PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. ON LOAD BEARING GATE H, NAIL THE 2" X 4" X 48" HOLD DOWN PIECE TO THE 2" X 6" HORIZONTAL PIECE W/6-10d NAILS. NAIL THE DOUBLED 2" X 3" OR SINGLE 2" X 2" GATE HOLD PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



LOAD BEARING GATE J

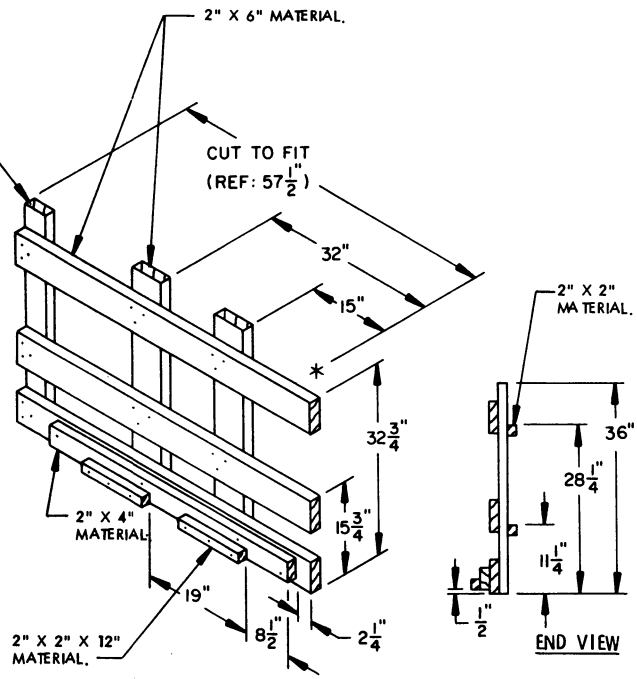
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.

LOAD BEARING GATES FOR USE WITH BASIC HEIGHT UNITS IN A CONTAINERS LENGTHWISE LOAD



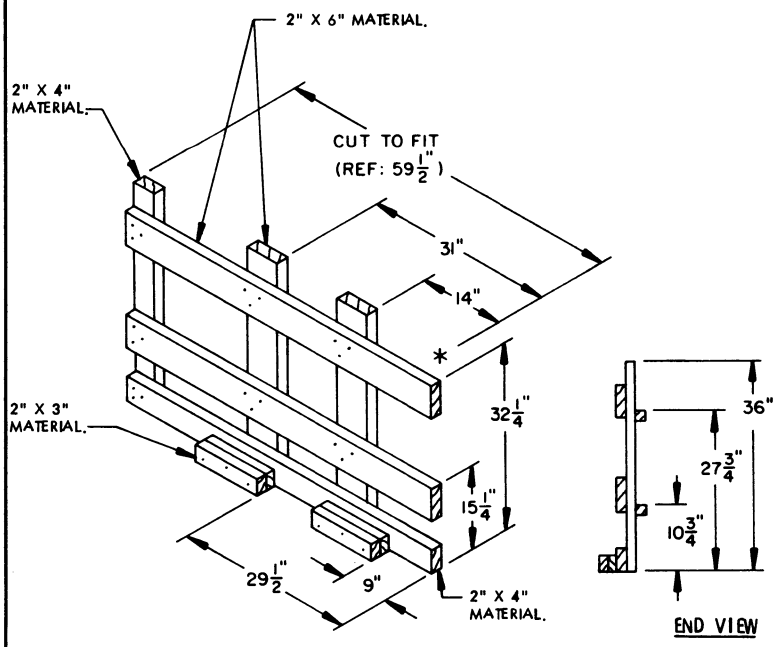
LOAD BEARING GATE K

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



LOAD BEARING GATE L

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

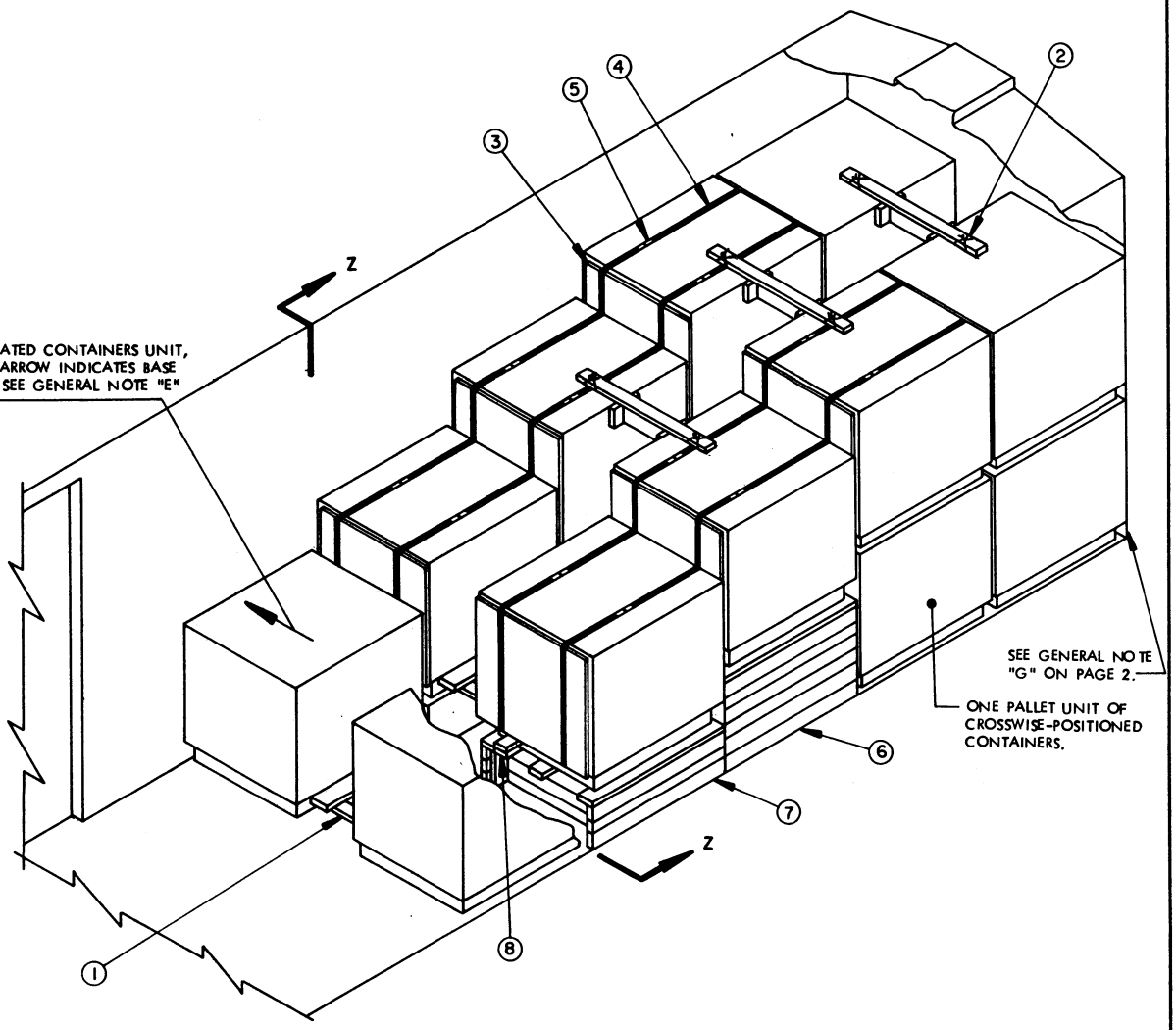


LOAD BEARING GATE M

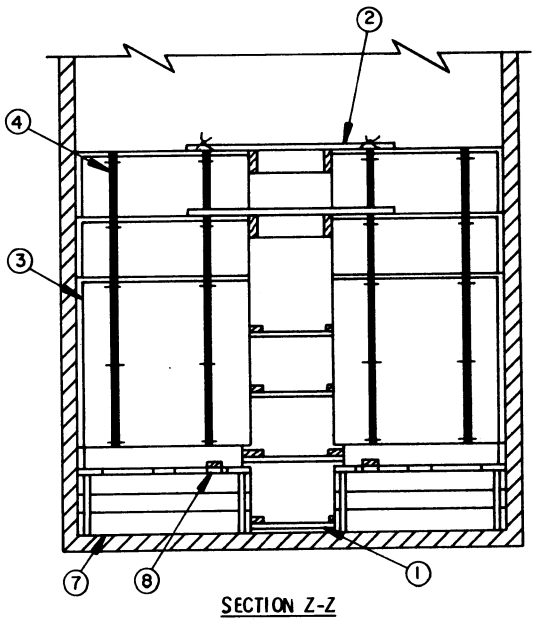
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (DECREASED HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

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 85. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CONTAINERS-LENGTHWISE PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. ON "LOAD BEARING GATE L", NAIL THE 2" X 4" X 48" HOLD DOWN PIECE TO THE 2" X 6" HORIZONTAL PIECE W/6-10d NAILS. NAIL THE DOUBLED 2" X 3" OR SINGLE 2" X 2" 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.



ISOMETRIC VIEW



SECTION Z-Z

KEY NUMBERS

(1) ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18 FOR THE ALTERNATED CONTAINERS UNITS OR THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 91.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18 FOR THE ALTERNATED CONTAINERS UNIT OR THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. (TOP-OF-LOAD ANTI-SWAY BRACE B" IS SHOWN). WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 112.

(3) SIDE FILL ASSEMBLY (16 REQD). SEE THE "SIDE FILL ASSEMBLY A" DETAIL AND THE "METHOD A" DETAIL ON PAGE 92. SEE SPECIAL NOTE 6 ON PAGE 91.

(4) REINFORCING STRAP, 1-1/4" X .035" X 18'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE SIDE FILL ASSEMBLIES. SECURE TO SIDE FILL ASSEMBLIES W/3 STAPLES EACH. SEE THE "METHOD A" DETAIL ON PAGE 92.

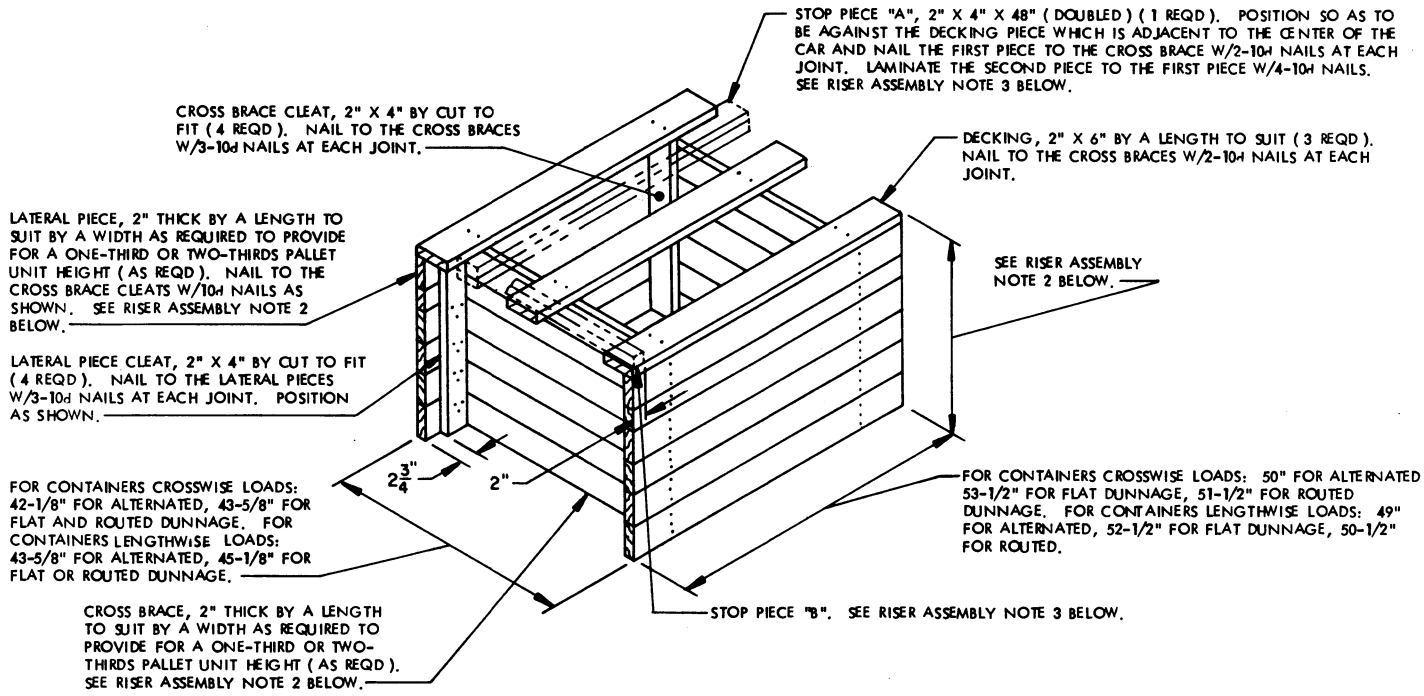
(5) SEAL FOR 1-1/4" STRAPPING (32 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

(6) RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 91.

(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 91.

(8) STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 91 FOR LOCATION AND NAILING GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 90 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED WITH THE CONTAINERS-CROSSWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CONTAINERS LENGTHWISE POSITIONED UNITS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. USE THE FOLLOWING ANTI-SWAY BRACES AS APPLICABLE:

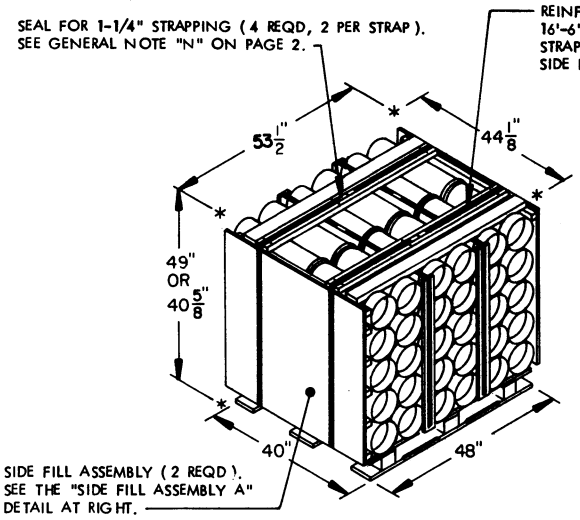
   CONTAINERS CROSSWISE:
   - ALTERNATED CONTAINERS---------- "A" ON PAGE 18
   - FLAT DUNNAGE UNITS---------- "C" ON PAGE 41
   - ROUTED DUNNAGE UNITS---------- "C" ON PAGE 41

   CONTAINERS LENGTHWISE:
   - ALTERNATED CONTAINERS---------- "B" ON PAGE 18
   - FLAT DUNNAGE UNITS---------- "D" ON PAGE 41
   - ROUTED DUNNAGE UNITS---------- "D" ON PAGE 41

6. PALLET UNITS TO BE PLACED IN THE STEPPED DOWN PORTION OF THE RISER METHOD LOAD MUST BE PREPARED FOR SHIPMENT. SEE THE "METHOD B" DETAIL ON PAGE 92 FOR THE ROUTED DUNNAGE METHOD UNITS HAVING THE CONTAINERS CROSSWISE IN THE CAR. USE "METHOD C" FOR ALTERNATED CONTAINERS UNITS WHEN THE CONTAINERS ARE CROSSWISE. "METHOD D" WILL BE USED FOR ALL PALLET UNITS WHEN THE CONTAINERS ARE LENGTHWISE IN THE CAR.

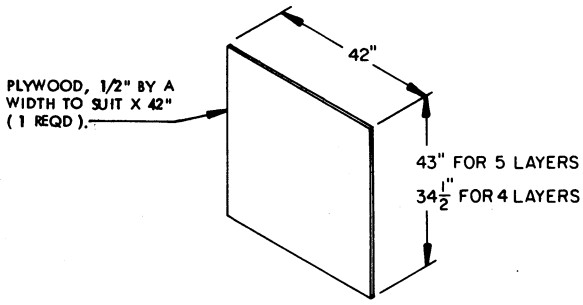
SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE HEIGHT OF THE BASIC UNIT IS 49". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 90. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FIVE (5) PIECES OF 2" X 6" MATERIAL AND ONE (1) PIECE OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 32-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 90, WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 16" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE PALLET UNIT BEING LOADED AND THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. NOTE: A PLUS OR MINUS 1" TOLERANCE IS PERMISSIABLE ON THE RISER HEIGHT.
3. THE STOP PIECE "A" SHOWN ON THE RISER ASSEMBLY ABOVE IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSS WISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 90. IF THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR, POSITION A 2" X 2" BY A LENGTH TO SUIT PIECE ACROSS THE DECKING, ON THE END WHICH IS AGASINT THE CAR SIDEWALL, AND NAIL TO THE DECKING W/2-10d NAILS AT EACH JOINT. SEE STOP PIECE "B" ON THE RISER ASSEMBLY ABOVE FOR LOCATION GUIDANCE. NOTE THAT FOR THE ROUTED DUNNAGE METHOD UNIT THERE IS NOT ROOM FOR THE 2" X 2" PIECE AT THE END OF THE RISER. THE RISER POSITION MUST BE MAINTAINED BY POSITIONING A DOUBLED 2" X 4" X 18" PIECE AGAINST THE CENTER-OF-CAR CROSS BRACE OF THE RISER AND NAILING TO THE CAR FLOOR W/3-16d NAILS EACH LAYER.



METHOD A

FOR FLAT DUNNAGE METHOD UNITS.

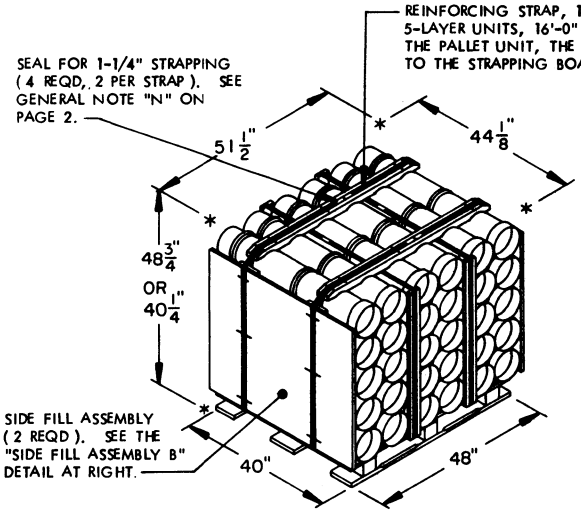


SIDE FILL ASSEMBLY A

FOR METHOD A AT LEFT.

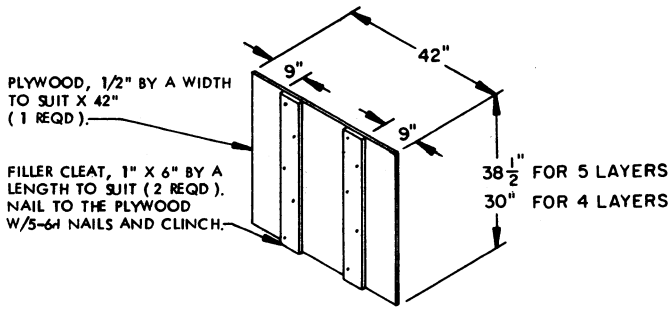
NOTE:

THE "METHOD A" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE FLAT DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 90. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF FLAT DUNNAGE METHOD UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD D" DETAIL ON PAGE 93.



METHOD B

FOR ROUTED DUNNAGE METHOD UNITS

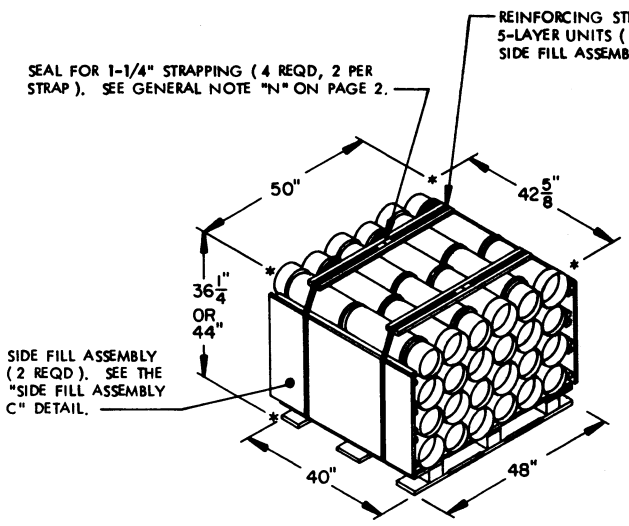


SIDE FILL ASSEMBLY B

FOR METHOD "B" AT LEFT.

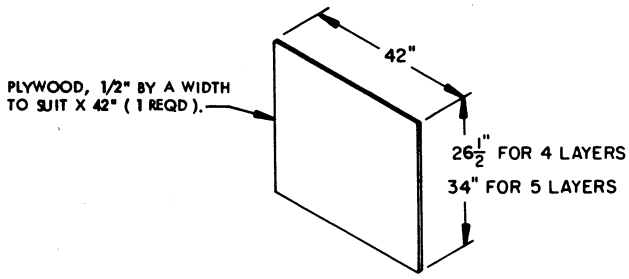
NOTE:

THE "METHOD B" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 90. THE BASIC HEIGHT ROUTED DUNNAGE METHOD UNIT IS SHOWN. THE PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF ROUTED DUNNAGE METHOD UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD D" DETAIL ON PAGE 93.



METHOD C

FOR ALTERNATED CONTAINERS UNITS. THE BASIC HEIGHT UNIT IS SHOWN.

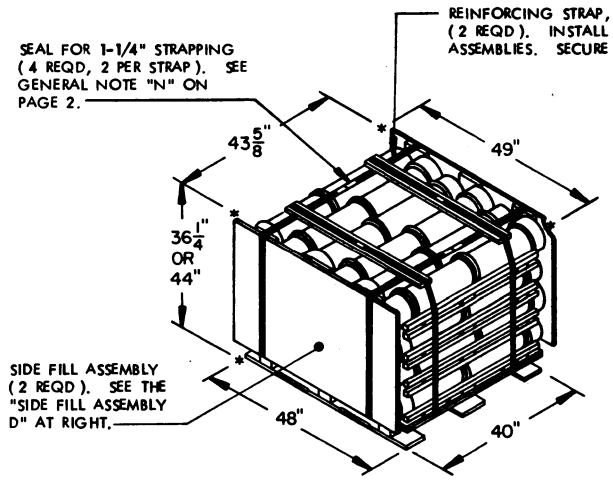


SIDE FILL ASSEMBLY C

FOR METHOD C AT LEFT.

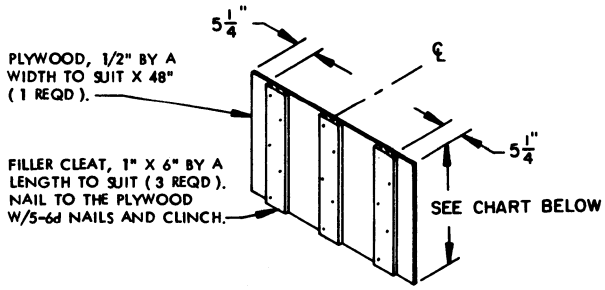
NOTE:

THE "METHCD C" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE ALTERNATED CONTAINERS UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 90. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF ALTERNATED CONTAINERS UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD D" DETAIL BELOW.



METHOD D

FOR ALL UNITS. THE BASIC HEIGHT ALTERNATED CONTAINERS UNIT IS SHOWN.



SIDE FILL ASSEMBLY D

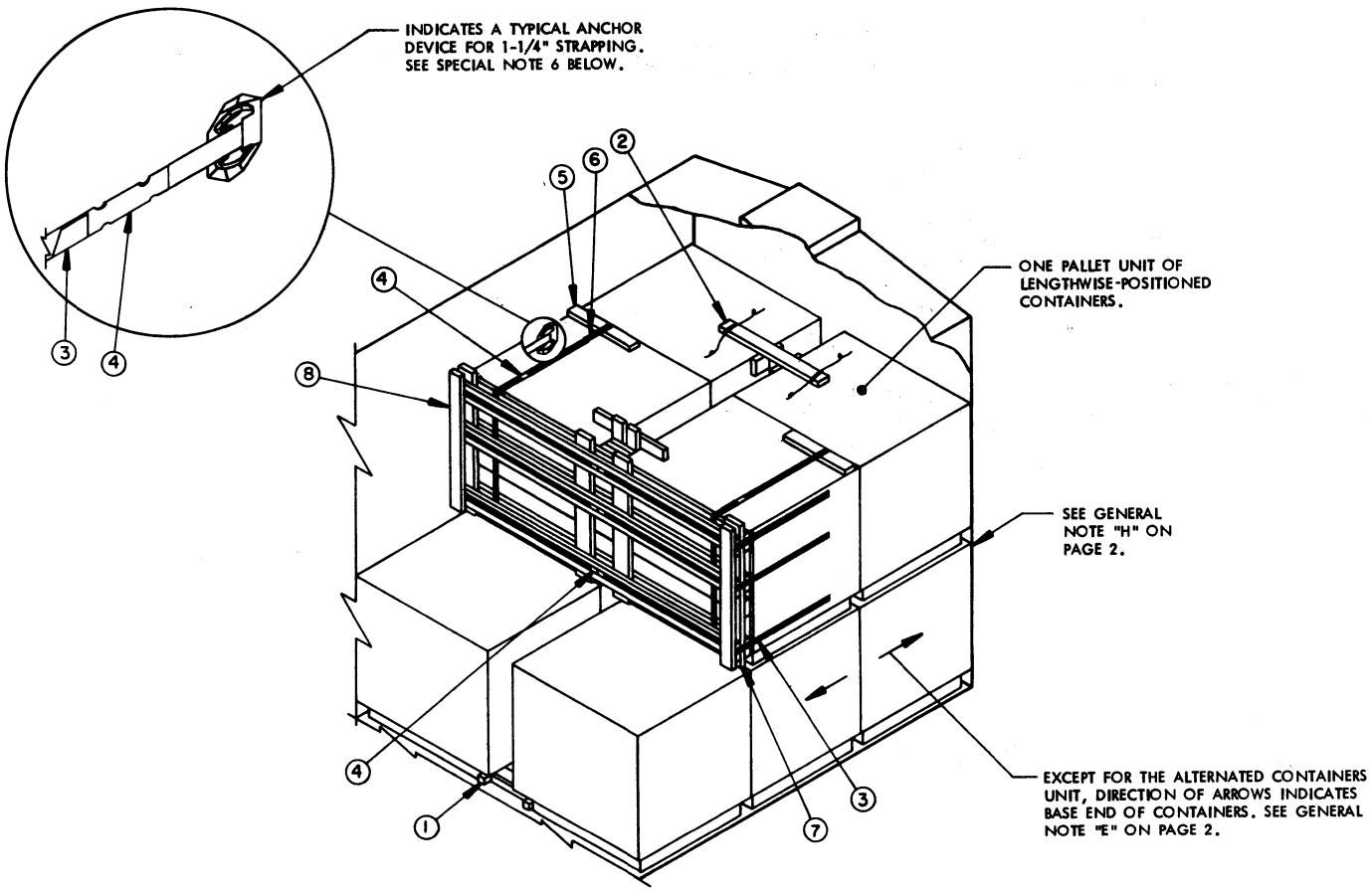
FOR ALL PALLET UNITS HAVING THE CONTAINERS POSITIONED LENGTHWISE IN THE CAR.

NOTE:

THE "METHOC D" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE ALTERNATED CONTAINERS UNITS WHICH ARE TO BE POSITIONED LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 90. THE BASIC HEIGHT UNIT IS SHOWN. THE PROCEDURE IS APPLICABLE FOR ALL UNITS BY THIS DOCUMENT. FOR MODIFICATION OF ALTERNATED CONTAINERS UNITS TO BE POSITIONED LENGTHWISE IN A CAR, REFER TO THE "METHOD C" DETAIL ABOVE.

SIDE FILL ASSEMBLY D DIMENSION CHART

UNIT	BASIC HEIGHT	DECREASED/INCREASED HEIGHT
FLAT DUNNAGE	42-3/4"	34-1/4"
ROUTED DUNNAGE	42-1/4"	33-3/4"
ALTERNATED CONTAINERS	30-3/4"	38-1/2"



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-4" WIDE ALL METAL BOX CAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. SEE SPECIAL NOTE 3.

3. SEPARATOR GATES WILL BE REQUIRED WHEN LOADING THE ALTERNATED CONTAINERS UNIT. SEE THE APPLICABLE DETAIL FOR 1, 2 AND/OR 3-HIGH SEPARATOR GATES ON PAGE 15 OR 30 AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 110. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS.

4. 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.

5. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. A BULKHEAD GATE WITH 2 STRAPS WILL RETAIN 3 BASIC HEIGHT ALTERNATED CONTAINERS UNITS OR 3 DECREASED HEIGHT FLAT OR ROUTED DUNNAGE METHOD UNITS, OR 2 INCREASED HEIGHT ALTERNATED CONTAINERS UNITS OR 2 BASIC HEIGHT FLAT OR ROUTED DUNNAGE METHOD UNITS. A BULKHEAD GATE WITH 3 STRAPS WILL RETAIN 5 BASIC HEIGHT ALTERNATED CONTAINERS UNITS OR 5 DECREASED HEIGHT FLAT OR ROUTED DUNNAGE METHOD UNITS, OR 4 INCREASED HEIGHT ALTERNATED CONTAINERS UNITS OR 4 BASIC HEIGHT FLAT OR ROUTED DUNNAGE METHOD UNITS.

6. 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 82 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 85 FOR A SINGLE UNIT.

7. 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 95 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

KEY NUMBERS

(1) ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 18 FOR THE ALTERNATED CONTAINERS UNIT OR THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41 FOR THE ALTERNATED CONTAINERS UNIT OR THE ROUTED DUNNAGE METHOD UNIT. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41 FOR THE FLAT DUNNAGE METHOD UNIT. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 112.

(3) BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM TWO EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 95 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 5 AND 6 AT LEFT.

(4) SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED (3), AND 1 PER BUNDLING STRAP, PIECE MARKED (6).

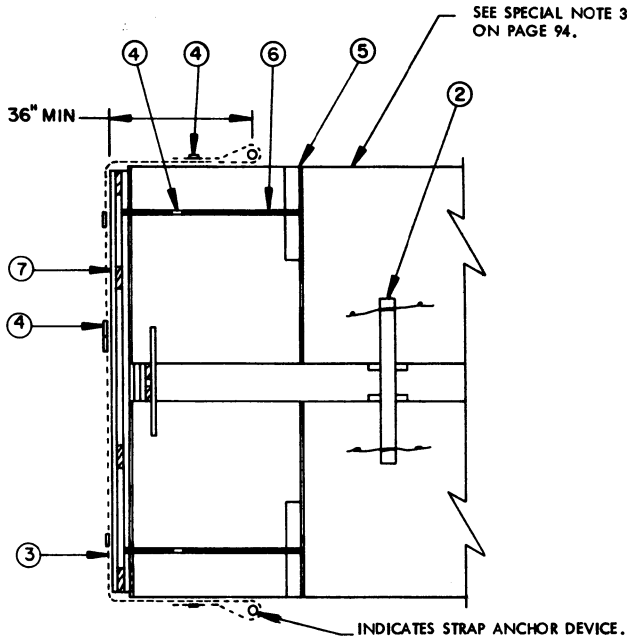
(5) STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 95.

(6) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 16'-6" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED (5). TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECE MARKED (3).

(7) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 95. SEE SPECIAL NOTE 4 AT LEFT.

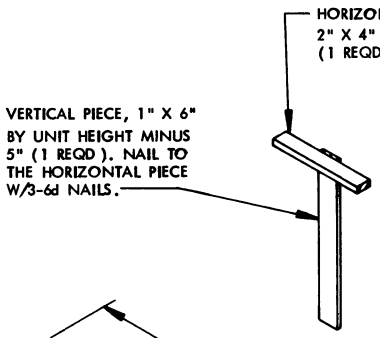
(8) STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

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

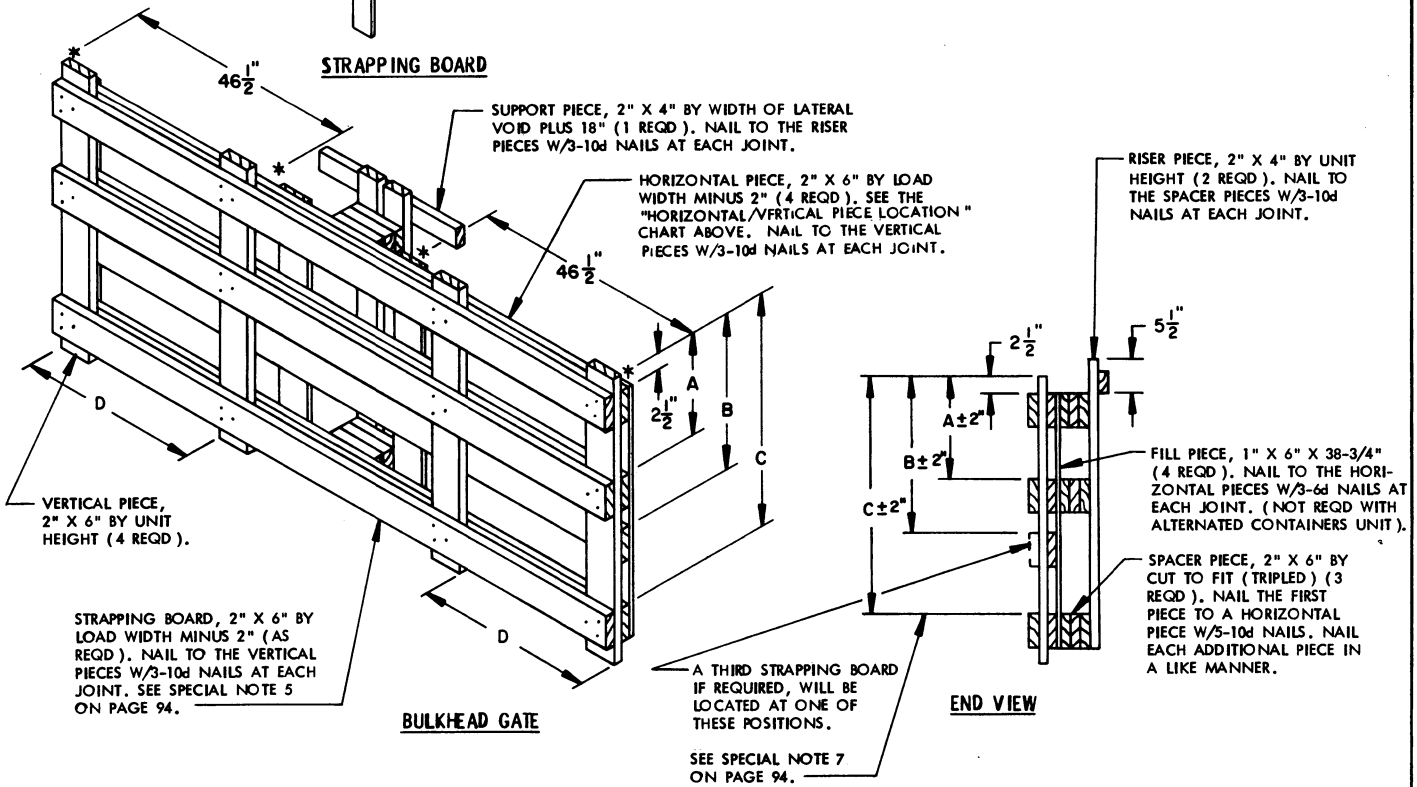


STRAP APPLICATION PLAN VIEW

HORIZONTAL/VERTICAL PIECE LOCATION								
UNIT	BASIC HEIGHT				INCREASED OR DECREASED HEIGHT			
	DIM A	DIM B	DIM C	DIM D	DIM A	DIM B	DIM C	DIM D
ALTERNATED CONTAINERS	12-1/2" ± 1"	---	25" +1" -3"	37-1/2"	12-1/2" ± 1"	20" ± 1"	33" +1" -3"	37-1/2"
FLAT DUNNAGE	15" ± 1"	23" ± 1"	38" +1" -3"	32"	15" ± 1"	---	29-1/2" +1" -3"	32"
ROUTED DUNNAGE	15" ± 1"	23-1/2" ± 1"	38" +1" -3"	31"	15" ± 1"	---	29-1/2" +1" -3"	31"



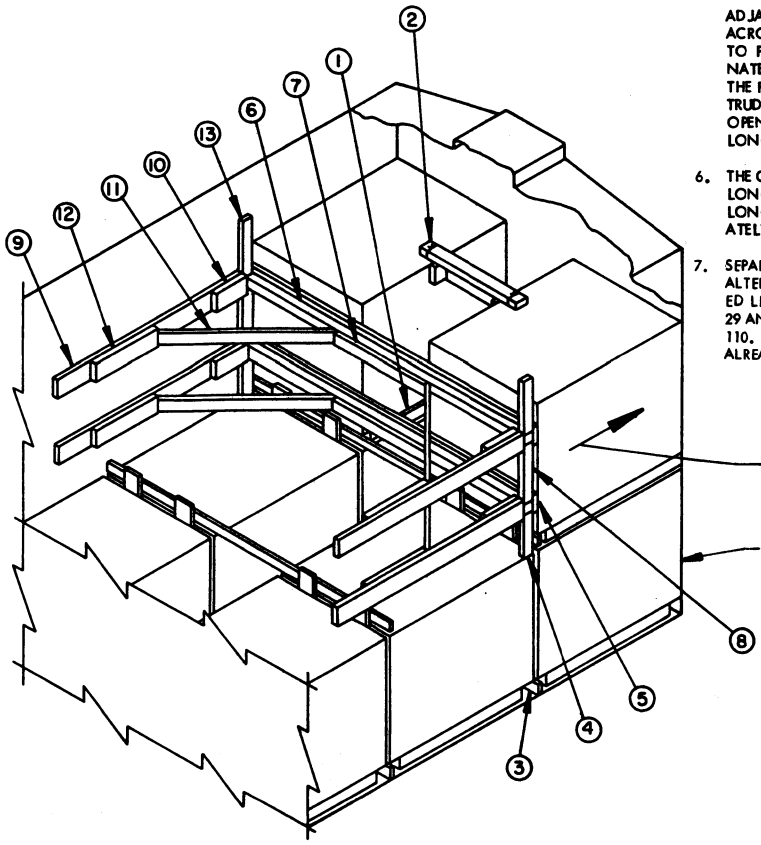
STRAPPING BOARD



BULKHEAD GATE

END VIEW

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



ISOMETRIC VIEW

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

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 110.

SPECIAL NOTES:

1. A 9'-2" WIDE CONVENTIONAL WOOD-LINED BOX CAR IS SHOWN. WOOD-LINED CARS OF OTHER WIDTHS CAN BE USED.

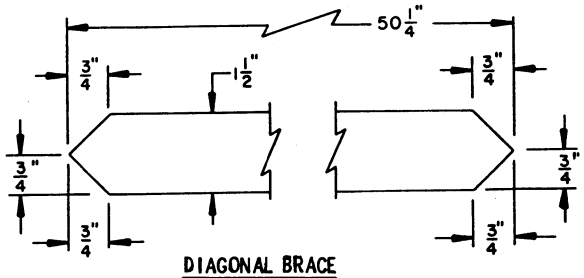
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. SFF SPFCIAL NOTF 7.

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. WHEN BLOCKING AND BRACING CONTAINERS LENGTHWISE LOADS, "LOAD BEARING GATE N" MUST BE USED FOR ALL LOADS EXCEPT THE BASIC HEIGHT ALTERNATED CONTAINERS UNITS. SEE PIECE MARKED (5) ON PAGF 97 FOR CONSTRUCTION. NOTE THAT ANTI-SWAY BRACES AND TOP-OF-LOAD ANTI-SWAY BRACES WILL VARY WITH THE UNIT BEING SHIPPED.

4. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, THIRD TIER, OR FIRST. THE TYIE "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 109, 110, AND 111 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED (4), (5), (6), (8), (10), AND (13) MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED (11) TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE

(CONTINUED AT RIGHT ABOVE)



DIAGONAL BRACE

(SPECIAL NOTES CONTINUED)

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

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

7. SEPARATOR GATES WILL BE REQUIRED WHEN LOADING THE ALTERNATED CONTAINERS UNIT WITH THE CONTAINERS POSITIONED LENGTHWISE. SEE THE APPLICABLE DETAIL ON PAGE 15 OR 29 AND/OR THE ALTERNATIVE SEPARATE GATE DETAIL ON PAGE 110. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS.

(1) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 41. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41.

(3) SUPPORT CLEAT, 2" X 4" X 11" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED (4) AND (5) ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.

(4) HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED (5), W/1-12d NAIL EVERY 6". SEE SPECIAL NOTE 3 AT LEFT.

(5) CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD).

(6) CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED (5), W/7-16d NAILS. SEE SPECIAL NOTE 6 ABOVE.

(7) SPACER CLEAT, 2" X 4" X 17-1/2" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 19-3/4" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, 2" X 4" X 9-3/4" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 11-1/2" FOR 4-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

(8) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.

(9) POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (8), W/4-16d NAILS.

(10) DIAGONAL BRACE, 2" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED (5), AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (8), W/2-16d NAILS AT EACH END.

(11) BACK-UP CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED (8), W/8-16d NAILS.

(12) HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

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

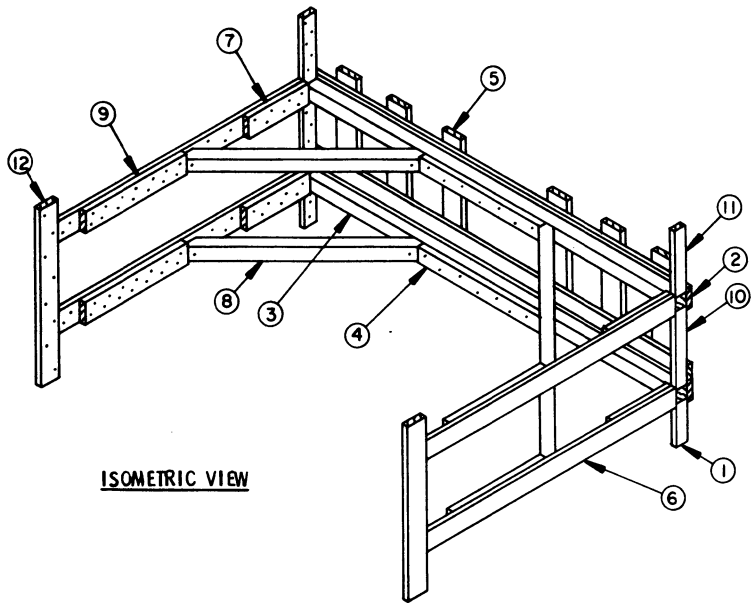
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING NOT MORE THAN EIGHT (8) 4-LAYER UNITS OR SIX (6) 5-LAYER UNITS. IF IT IS NECESSARY TO BLOCK AND BRACE A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 98 AND 99 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 96 MAY BE USED.

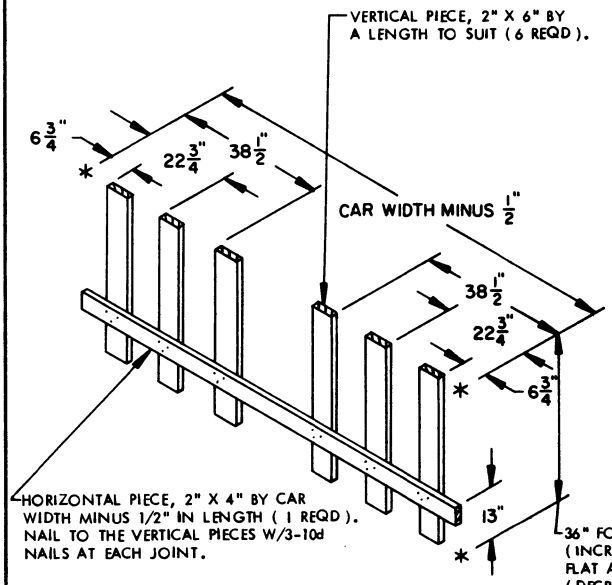
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑦, ⑩, ⑪, AND ⑫ MUST BE 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", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

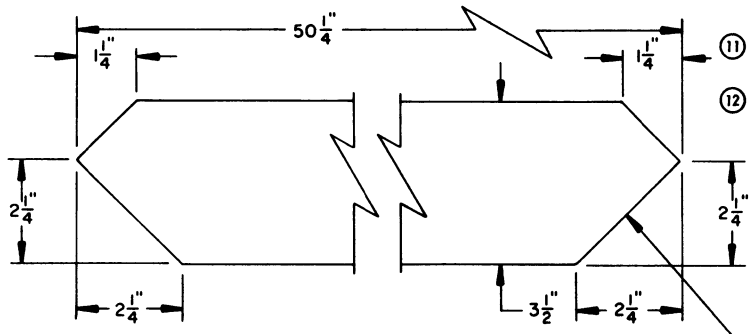
4. REFER TO PAGE 108 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW



LOAD BEARING GATE N



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.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 1 (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.

⑤ LOAD BEARING GATE (1 REQD). SEE THE "LOAD BEARING GATE N" DETAIL AT LEFT. POSITION TO REST ON TOP OF THE LOWER PIECE MARKED ② AFTER PIECES MARKED ①, ②, AND ③ ARE IN PLACE. REQUIRED FOR ALL LENGTHWISE POSITIONED CONTAINERS EXCEPT THE BASIC HEIGHT ALTERNATED CONTAINERS 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 ⑤ W/7-16d NAILS.

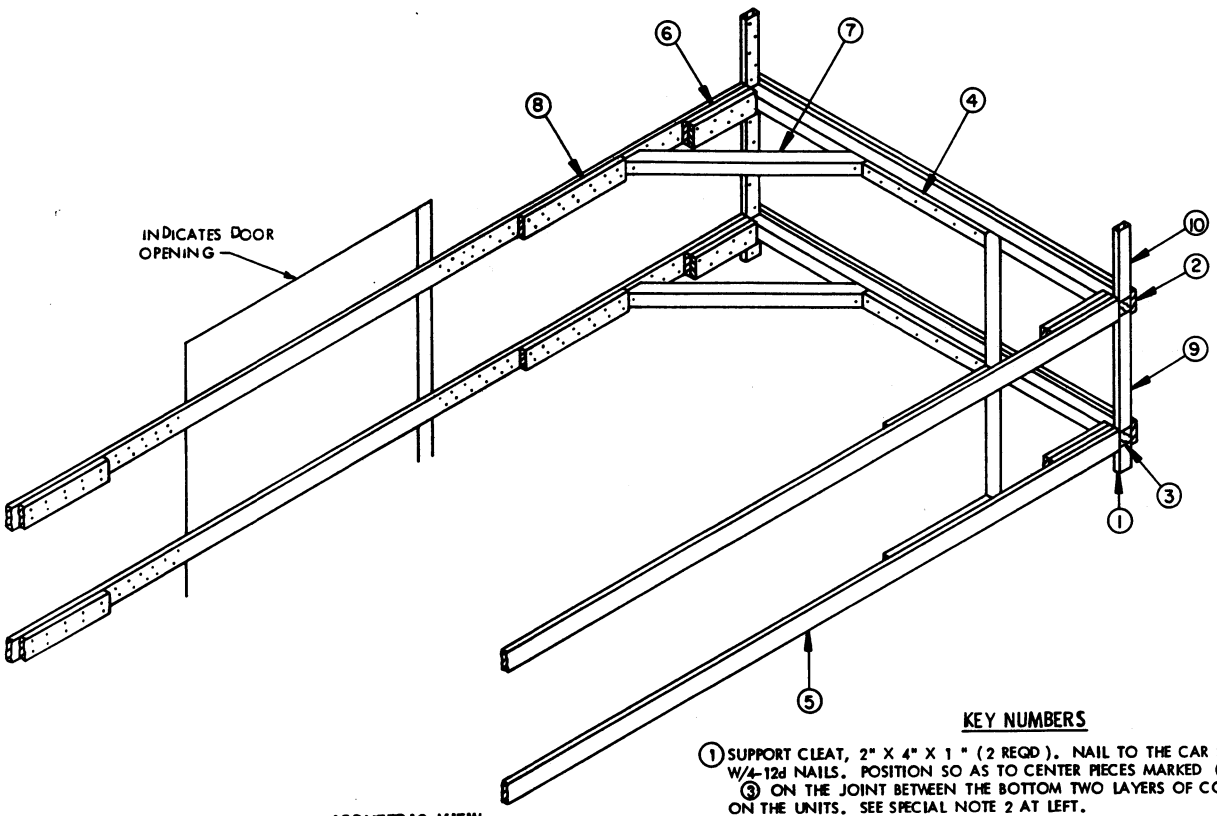
⑧ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.

⑨ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.

⑩ SPACER CLEAT, 2" X 4" X 17-1/2" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 19-3/4" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, 2" X 4" X 9-3/4" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 11-1/2" FOR 4-LAYER FLAT OR ROUTED DUNNAGE METHOD 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.



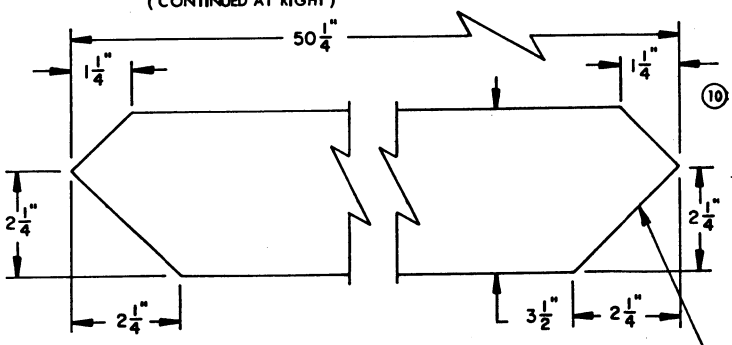
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN TWELVE (12) 4-LAYER UNITS OR TEN (10) 5-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 99 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 97 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 96 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 , ⑥ , 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)



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 1 " (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "N" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , W/7-16d NAILS. SEE SPECIAL NOTE 3 BELOW.

⑤ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENINGS TO CONTACT PIECE MARKED ③ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.

⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/1-60d NAIL AT EACH END.

⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/14-16d NAILS.

⑨ SPACER CLEAT, 2" X 4" X 17-1/2" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 19-3/4" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, 2" X 4" X 9-3/4" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 11-1/2" FOR 4-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

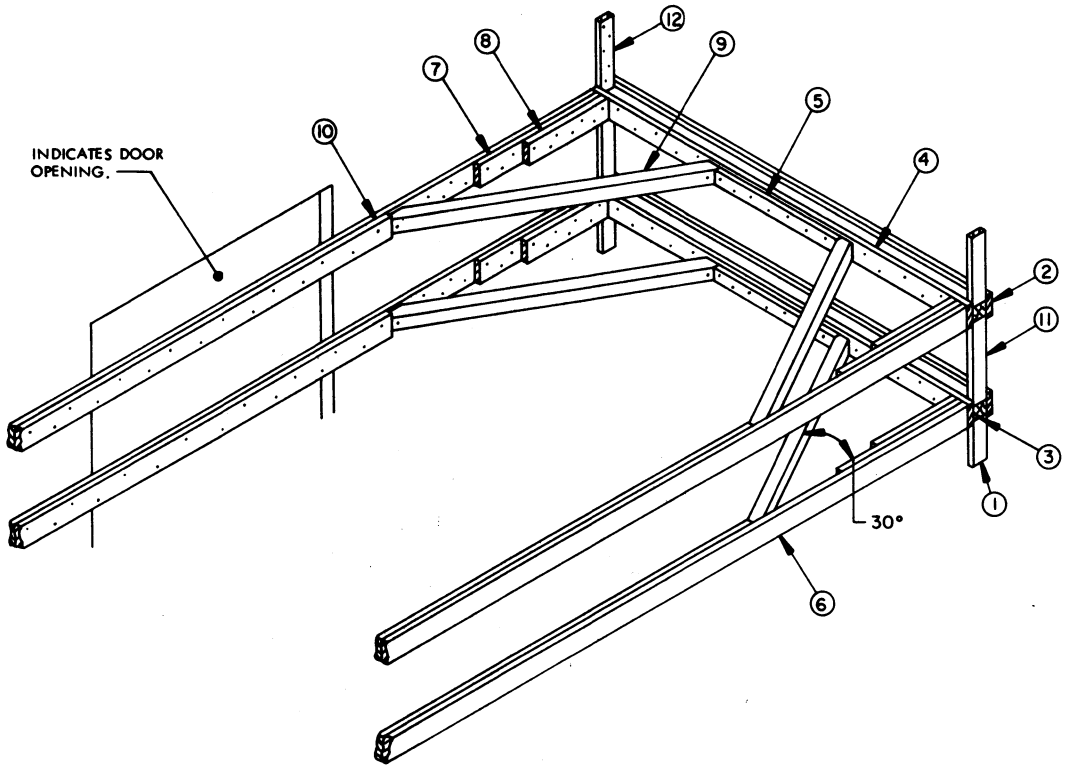
⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

(SPECIAL NOTES 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", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

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

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

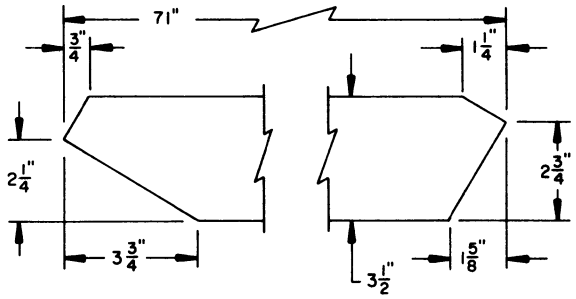
SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN SIXTEEN (16) 4-LAYER UNITS OR TWELVE (12) 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 98 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 97 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 96 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑦, ⑧, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.

3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ⑤, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CARS. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

4. CAUTION: A TYPE "D" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑥ AND ⑩, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

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

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON HE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).

④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6".

⑤ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④ W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.

⑥ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO CONTACT PIECE MARKED ④ OF THE K-BRACE IN THE OPPOSITE END OF THE CAR. NAIL TO THE CAR SIDEWALL W/40-12d NAILS.

⑦ POCKET CLEAT, 2" X 6" X 36" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16d NAILS.

⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑦, W/7-16d NAILS.

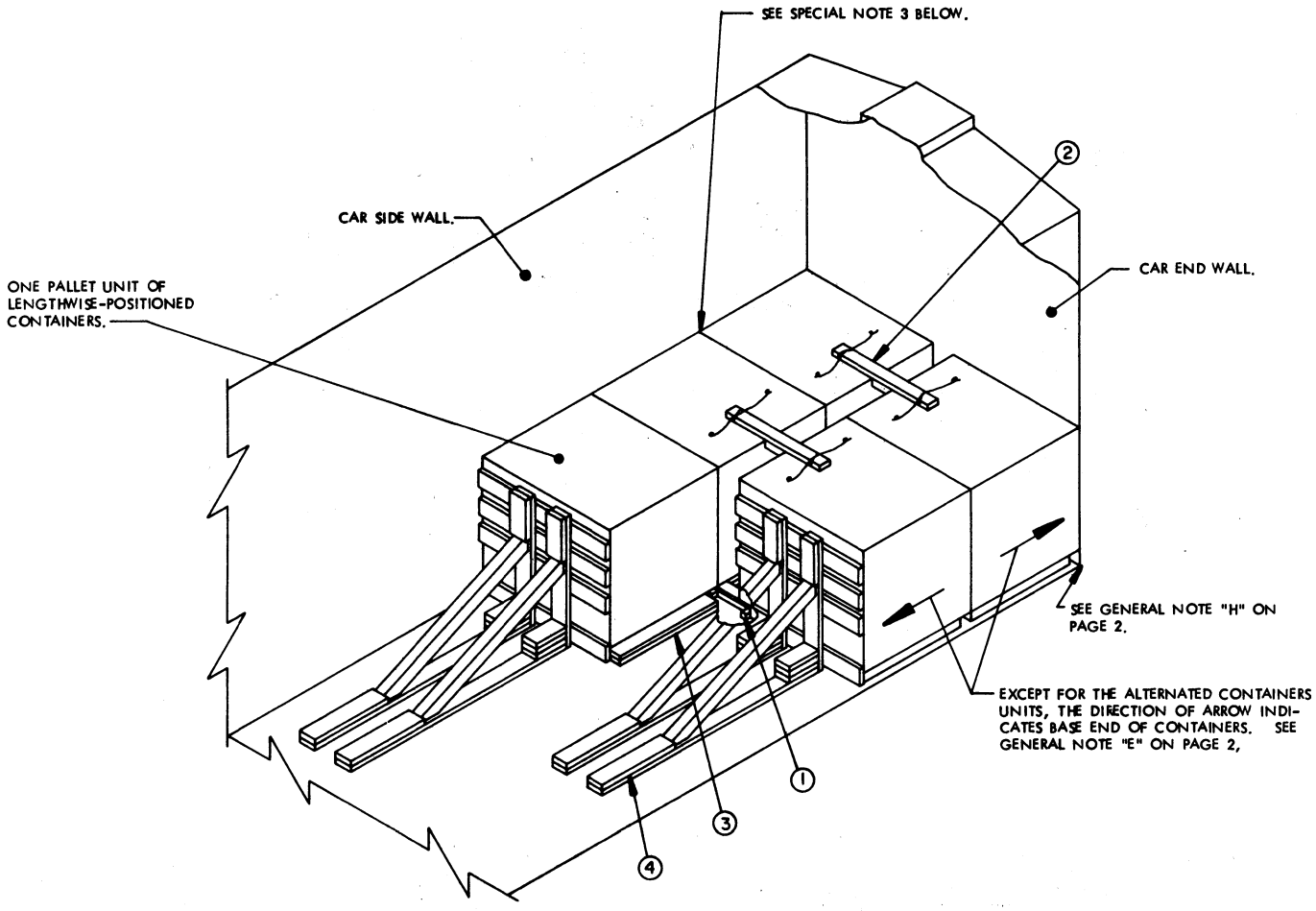
⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④ AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥ W/1-60d NAIL AT EACH END.

⑩ BACK-UP CLEAT, 2" X 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND TO CONTACT THE DIAGONAL BRACE PIECE MARKED ⑨, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/18-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING, IF APPLICABLE.

⑪ SPACER CLEAT, 2" X 4" X 17-1/2" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 19-3/4" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, 2" X 4" X 9-3/4" FOR 4-LAYER ALTERNATED CONTAINERS UNITS, 2" X 4" X 11-1/2" FOR 4-LAYER FLAT OR ROUTED DUNNAGE METHOD 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.

TYPE "D" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.

2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) WITH THE CONTAINERS ON THE UNIT POSITIONED LENGTHWISE IN THE CAR. NOTE THAT ALL UNITS MUST BE POSITIONED WITH THE CONTAINERS LENGTHWISE. CONTAINERS WILL NOT BE LOADED CROSSWISE WHEN USING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. SEE SPECIAL NOTE 3.

3. WHEN LOADING THE ALTERNATED CONTAINERS UNIT, SEPARATOR GATES WILL BE REQUIRED. SEE THE APPLICABLE DETAIL ON PAGE 15 OR 29 AND/OR THE "ALTERNATE SEPARATOR GATE" DETAIL ON PAGE 110. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

4. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 5 ARE NOT EXCEEDED.

5. 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.

6. 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 ALTERNATED CONTAINERS UNITS, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 15. SEE THE "CENTER GATE J" DETAIL ON PAGE 40 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATES " DETAIL ON PAGE 65 FOR THE ROUTED DUNNAGE METHOD UNITS.

KEY NUMBERS

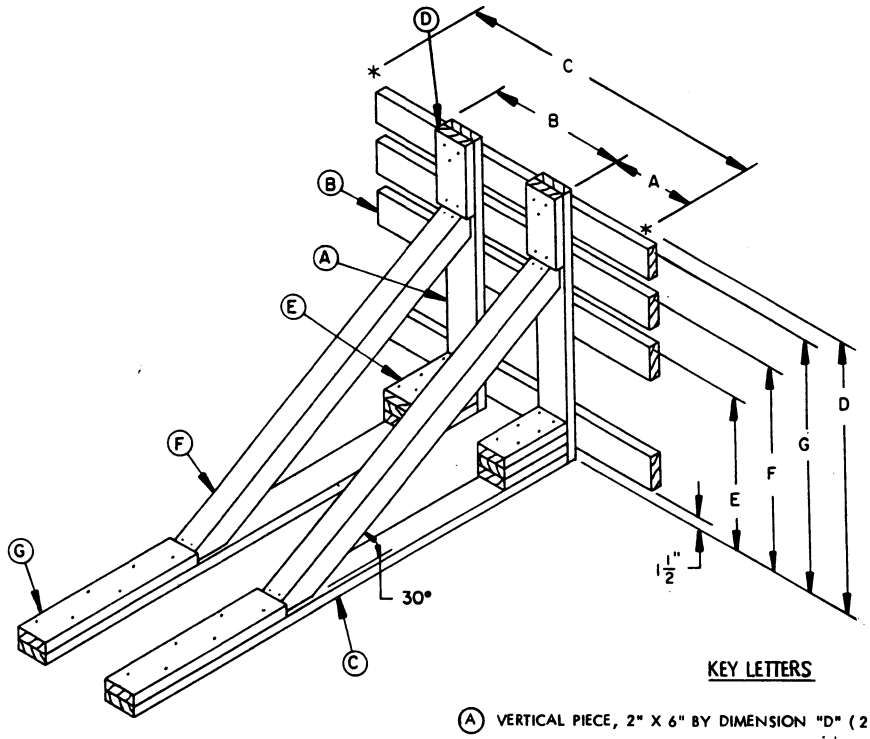
(1) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 18 FOR THE ALTERNATED CONTAINERS UNIT OR THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 41 FLAT OR ROUTED DUNNAGE METHOD UNIT. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 41 FOR THE ALTERNATED CONTAINERS UNIT OR THE ROUTED DUNNAGE METHOD UNIT. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE C" DETAIL ON PAGE 41 FOR THE FLAT DUNNAGE METHOD UNIT. WIRE TIE TO PALLET UNIT AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 112.

(3) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "N" ON PAGE 2.

(4) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 101 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

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



KNEE BRACE ASSEMBLY

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" BY DIMENSION "D" (2 REQD). SEE THE CHARTS AT LEFT.

(B) HORIZONTAL PIECE, 2" X 6" BY DIMENSION "C". NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "M" AND "N" ON PAGE 2.

(C) FLOOR CLEAT, 2" X 6" BY DIMENSION "H" (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "T" ON PAGE 2.

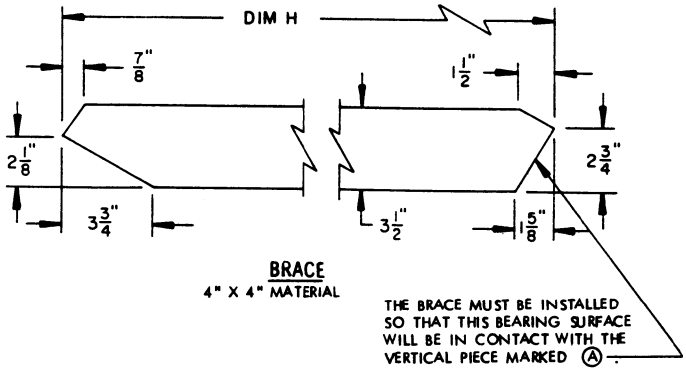
(D) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

(E) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (C) , W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE PIECE MARKED (A) , W/2-16d NAILS.

(F) BRACE, 4" X 4" BY DIMENSION "J" (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 6 ON PAGE 100.



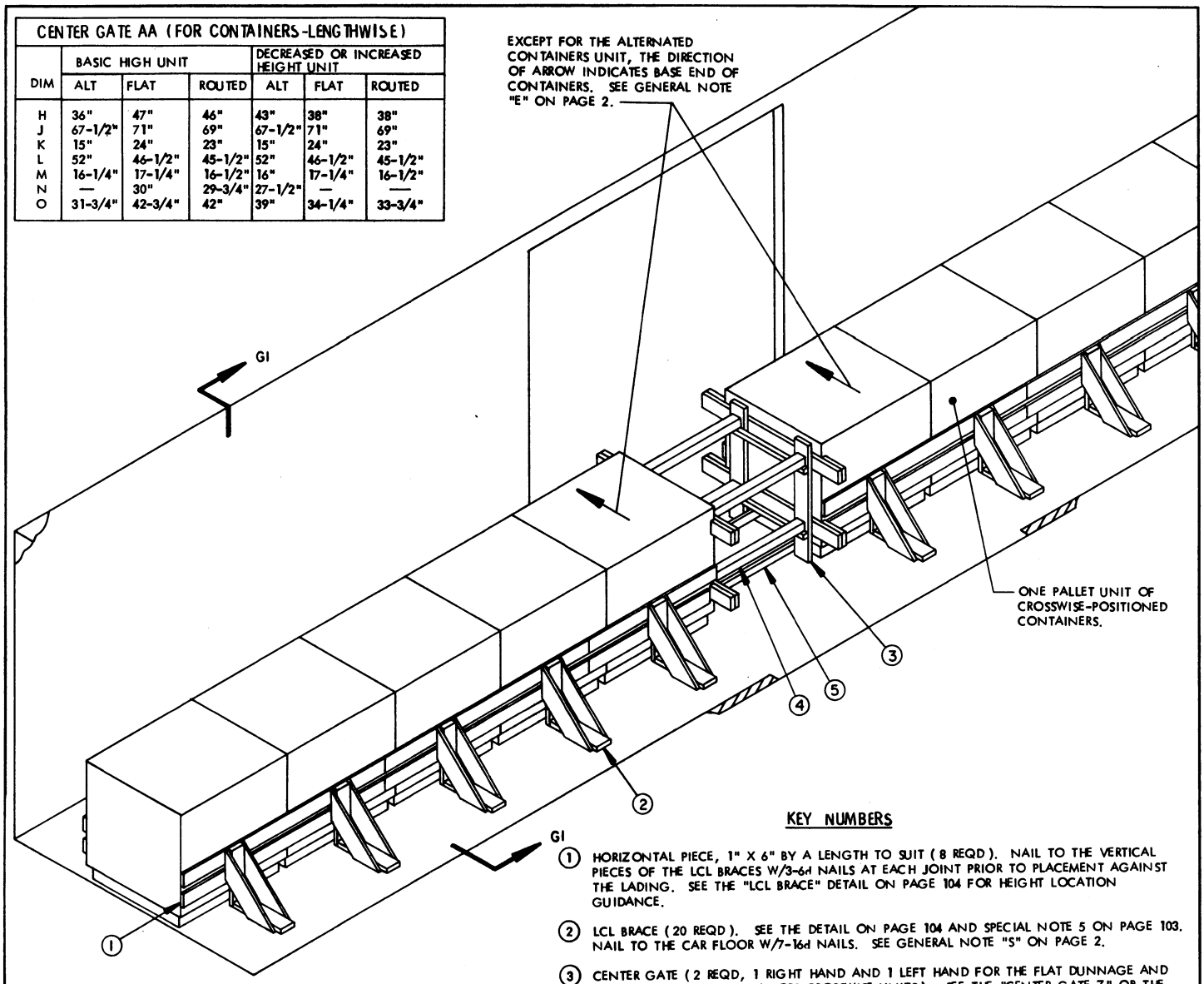
BRACE
4" X 4" MATERIAL

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

DIMENSIONS FOR BASIC HEIGHT UNITS									
UNIT	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F	DIM G	DIM H	DIM J
ALTERNATED CONTAINERS	6"	37"	49"	38"	16"	23-3/4"	35"	67"	42"
FLAT DUNNAGE	15"	22-1/2"	52-1/2"	46"	17-1/4"	30"	42-3/4"	6'-6"	54-1/2"
ROUTED DUNNAGE	14"	22-1/2"	50-1/2"	46"	17"	30"	42"	6'-6"	54-1/2"

DIMENSIONS FOR INCREASED/DECREASED HEIGHT PALLET UNITS									
UNIT	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F	DIM G	DIM H	DIM J
ALTERNATED CONTAINERS	6"	37"	49"	42"	16"	27-1/2"	39"	6'-2"	49-1/2"
FLAT DUNNAGE	15"	22-1/2"	52-1/2"	40"	17-1/4"	25-3/4"	37"	71"	46"
ROUTED DUNNAGE	14"	22-1/2"	50-1/2"	40"	16-3/4"	25-1/4"	36"	70"	45"

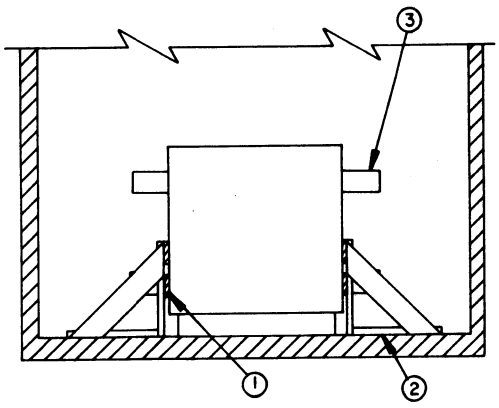
CENTER GATE AA (FOR CONTAINERS-LENGTHWISE)						
DIM	BASIC HIGH UNIT			DECREASED OR INCREASED HEIGHT UNIT		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
H	36"	47"	46"	43"	38"	38"
J	67-1/2"	71"	69"	67-1/2"	71"	69"
K	15"	24"	23"	15"	24"	23"
L	52"	46-1/2"	45-1/2"	52"	46-1/2"	45-1/2"
M	16-1/4"	17-1/4"	16-1/2"	16"	17-1/4"	16-1/2"
N	—	30"	29-3/4"	27-1/2"	—	—
O	31-3/4"	42-3/4"	42"	39"	34-1/4"	33-3/4"



ISOMETRIC VIEW

KEY NUMBERS

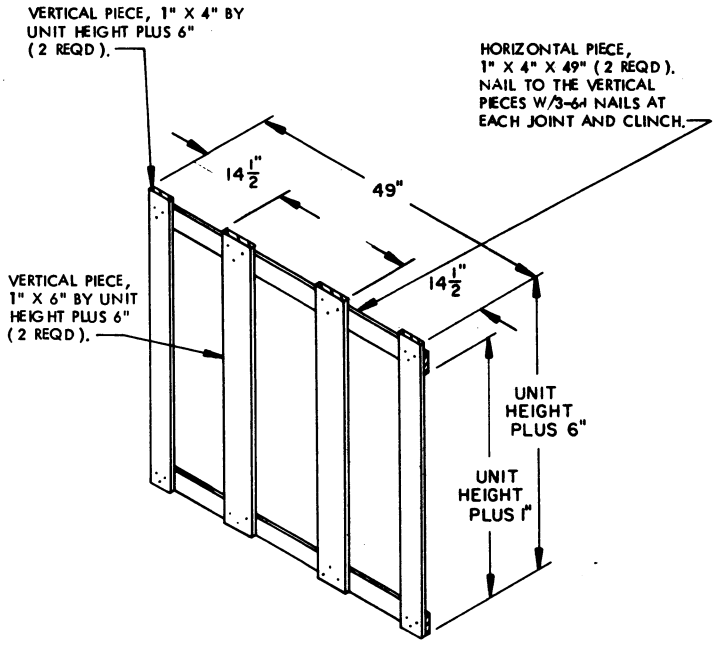
1. HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 104 FOR HEIGHT LOCATION GUIDANCE.
2. LCL BRACE (20 REQD). SEE THE DETAIL ON PAGE 104 AND SPECIAL NOTE 5 ON PAGE 103. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "S" ON PAGE 2.
3. CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND FOR THE FLAT DUNNAGE AND ROUTED DUNNAGE CONTAINERS-CROSSWISE UNITS). SEE THE "CENTER GATE Z" OR THE "CENTER GATE AA" DETAIL ON PAGE 103 FOR CONTAINERS-CROSSWISE OR CONTAINERS-LENGTHWISE, RESPECTIVELY.
4. STRUT, 4" X 4" BY CUT TO FIT (AS REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "U" AND "V" ON PAGE 2.
5. GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE Z" DETAIL ON PAGE 103 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CONTAINERS-LENGTHWISE FLAT AND ROUTED DUNNAGE METHOD UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 7 ON PAGE 103.



SECTION A1-A1

CENTER GATE Z (FOR CONTAINERS CROSSWISE)						
DIM	BASIC UNIT			DECREASED OR INCREASED HEIGHT CONTAINERS		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
A	36"	47"	46"	43"	38"	38"
B	61"	62-1/2"	62-1/2"	61"	62-1/2"	62-1/2"
C	18-1/4"	17-1/2"	17-1/2"	18-1/4"	17-1/2"	17-1/2"
D	48"	48"	48"	48"	48"	48"
E	9"	9-3/4"	16-1/2"	9"	9-3/4"	16-1/2"
F	31-3/4"	42-1/2"	42"	39"	34"	33-3/4"

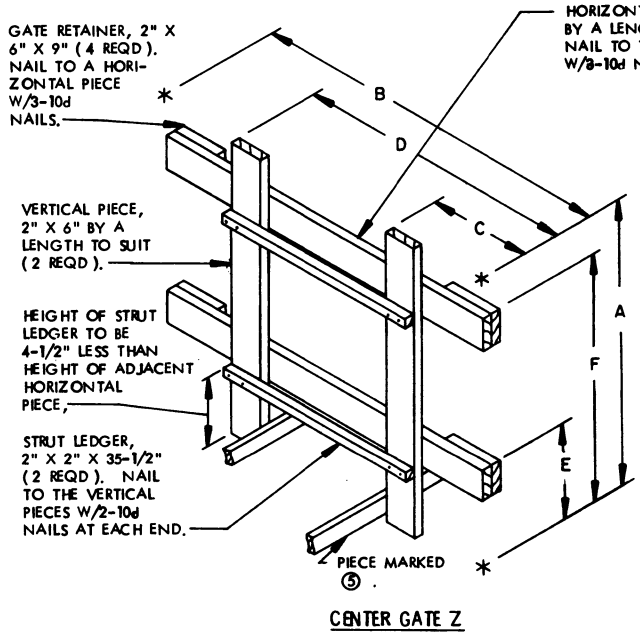
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



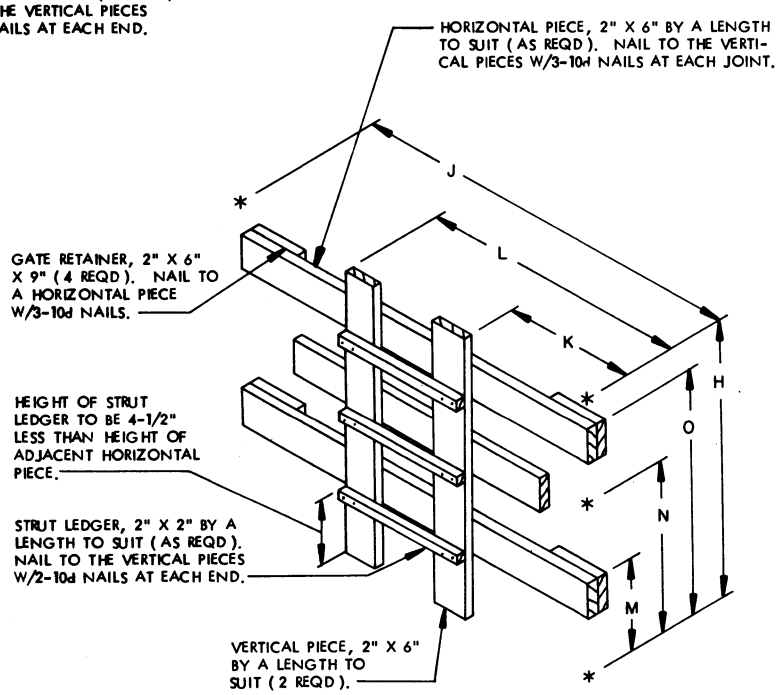
SEPARATOR GATE G

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A 1-WIDE CONTAINERS-CROSSWISE LOAD IS SHOWN AS TYPICAL. A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE LENGTHWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE QUANTITY OF LCL BRACES, PIECES MARKED ② , IS NOT CORRECT FOR CONTAINERS-LENGTHWISE LOADS.
4. NOTE THAT SEPARATOR GATES ARE REQUIRED ONLY FOR THE ALTERNATED CONTAINERS UNIT POSITIONED CONTAINERS-LENGTHWISE. WHEN REQUIRED, USE THE "SEPARATOR GATE G" DETAIL AT LEFT. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.
5. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. POSITION SO AS TO BE CENTERED ON THE LENGTH OR WIDTH OF THE UNIT, AS APPLICABLE.
6. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL.
7. IF DESIRED, GATE HOLD DOWN PIECES WITH THE ASSOCIATED FILL PIECES, AS SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATE FOR A SINGLE ROW, MAY BE USED IN LIEU OF PIECES MARKED ⑤ .



CENTER GATE Z



CENTER GATE AA

THIS GATE IS FOR USE WITH CONTAINERS LENGTHWISE UNITS. REFER TO THE "CENTER GATE AA" CHART AT TOP OF PAGE 102 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.

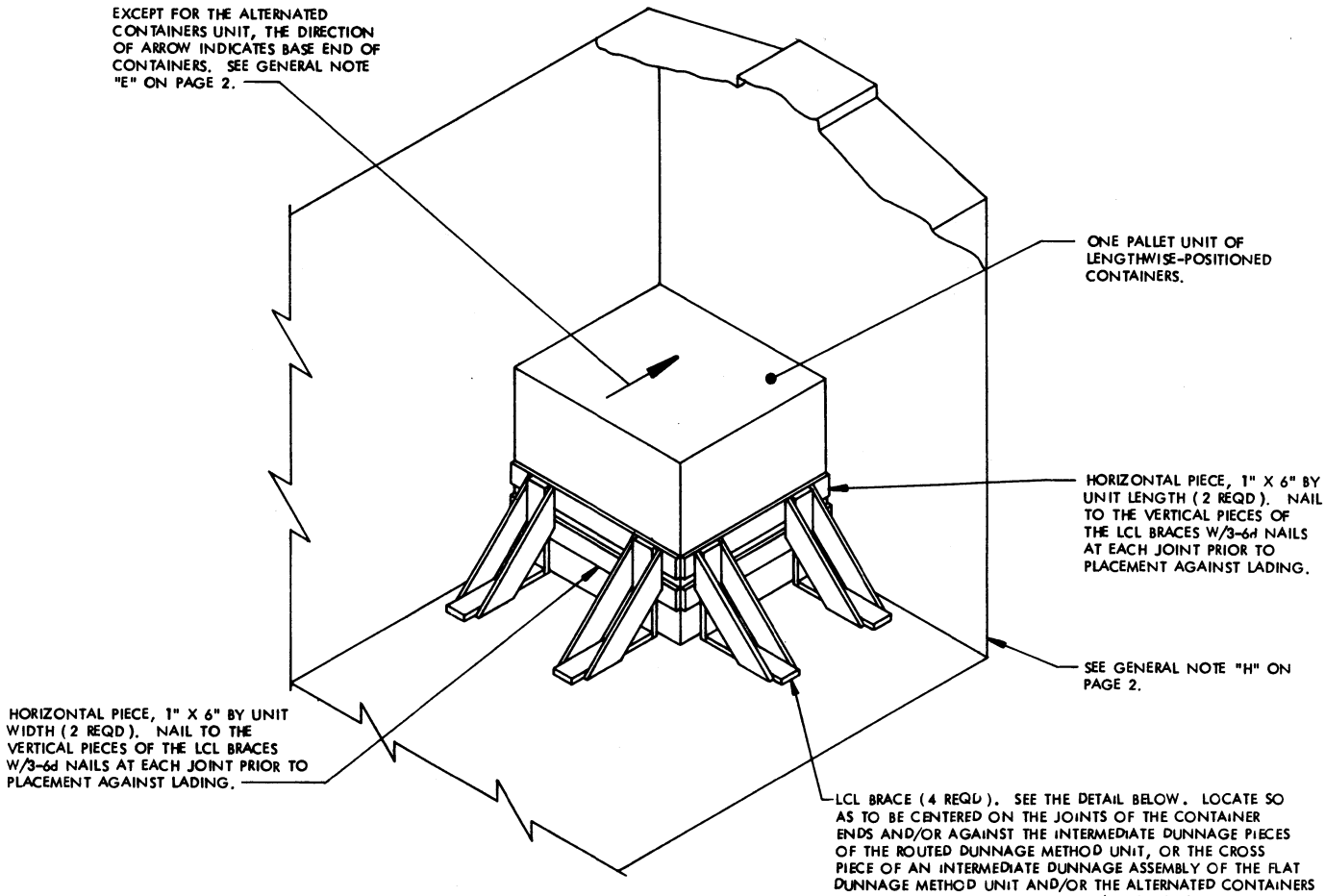
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	309	155
2" X 2"	12	4
2" X 3"	13	7
2" X 6"	131	131
4" X 4"	15	20
NAILS	**NO. REQD**	**POUNDS**
6d (2")	132	1
8d (2-1/2")	264	2-1/2
10d (3")	72	1-1/4
16d (3-1/2")	214	4-3/4

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	11	20,328 LBS
DUNNAGE		804 LBS
TOTAL WEIGHT		21,132 LBS

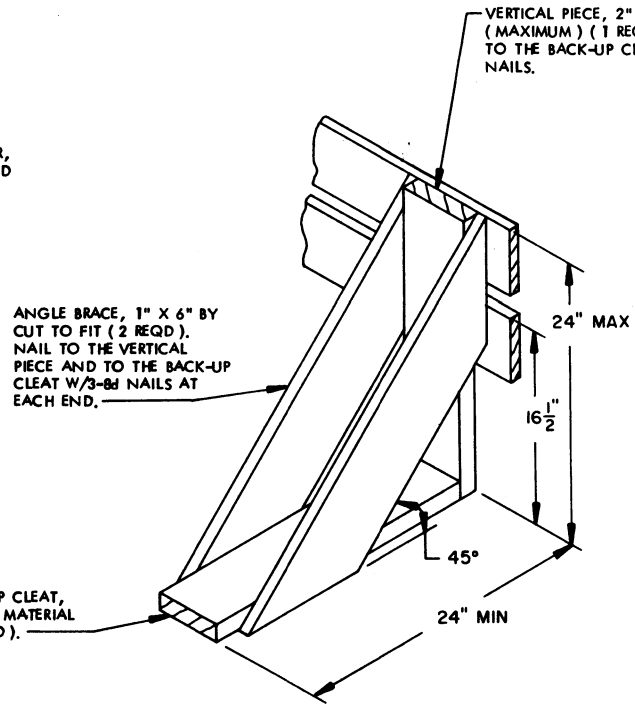
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

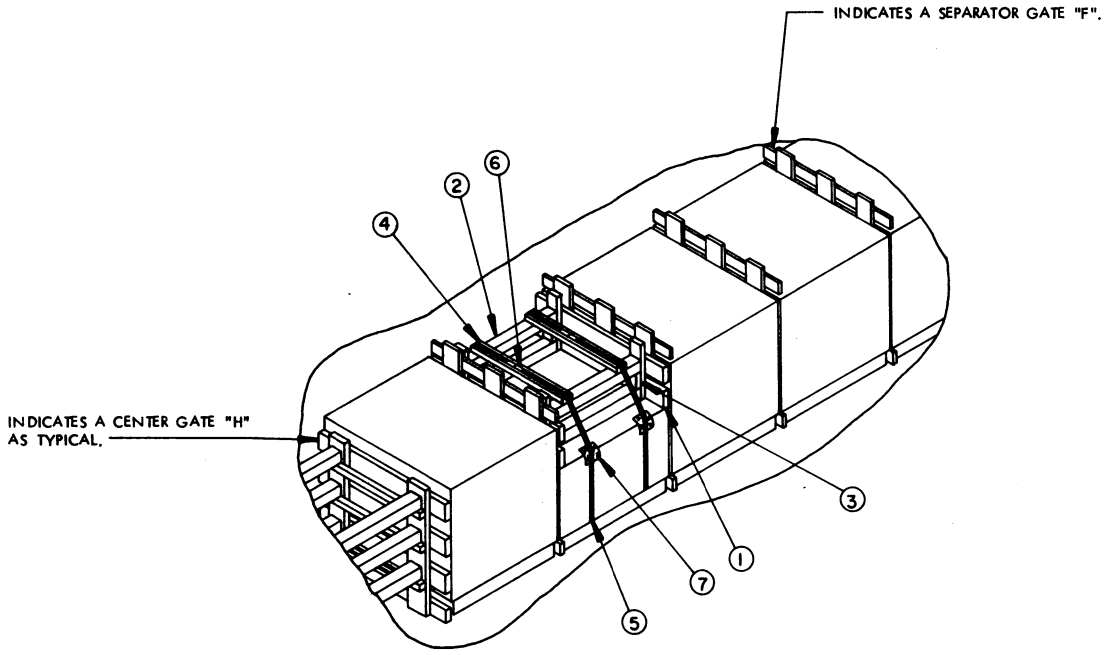
SPECIAL NOTES:

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



LCL BRACE

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



POSITIONING OF PARTIAL CONTAINERS- LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CONTAINERS LENGTHWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ALTERNATED CONTAINERS METHOD UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS. OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/4-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.
6. THE "POSITIONING OF PARTIAL CONTAINERS LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
7. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

(1) PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(2) STRUT, 4" X 4" BY UNIT LENGTH MINUS 6" (REF: 36-1/2") (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED (1) , W/2-16d NAILS AT EACH END.

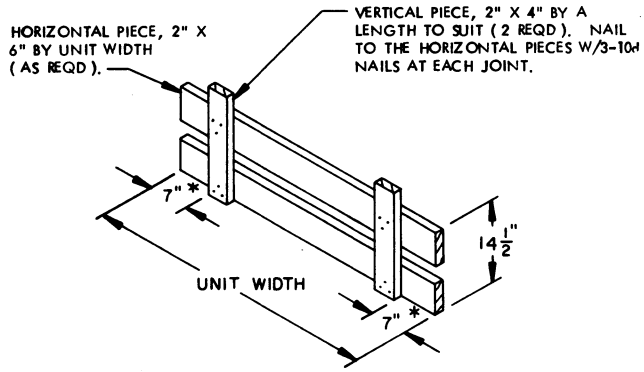
(3) STRUT SUPPORT PIECE, 2" X 4" X 6-1/2" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.

(4) STRAPPING BOARD, 2" X 4" BY LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (3) , W/3-10d NAILS AT EACH END.

(5) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.

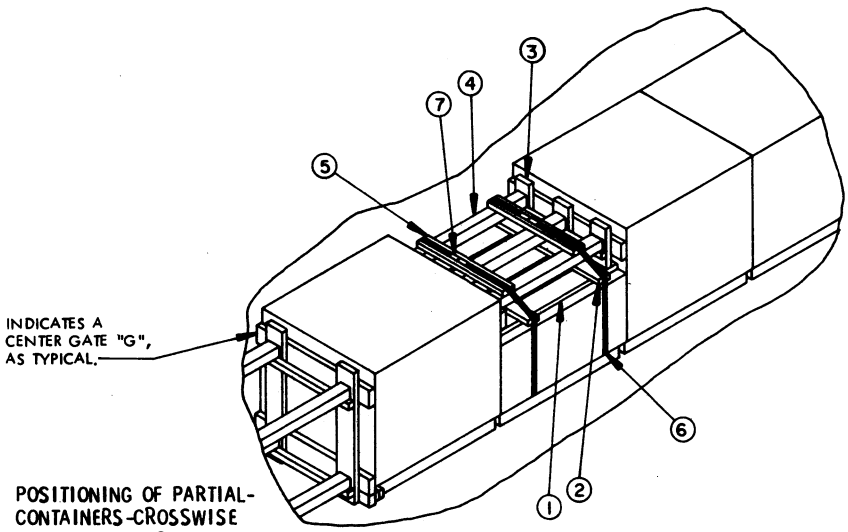
(6) SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

(7) ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



PARTIAL-UNIT GATE A

THESE DIMENSIONS WILL BE 16" AND 15" FOR THE FLAT DUNNAGE AND ROUTED DUNNAGE METHOD UNITS, RESPECTIVELY.



POSITIONING OF PARTIAL-CONTAINERS-CROSSWISE UNIT IN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CONTAINERS-CROSSWISE LOAD.

2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ALTERNATED CONTAINERS METHOD UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/4-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.

6. THE "POSITIONING OF PARTIAL CONTAINERS-CROSSWISE UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

7. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 120 MAY BE MORE ECONOMICAL.

8. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT WIDTH (3 REQD). POSITION ON TOP OF THE STRAPPING BOARD OF A PALLET UNIT, OR THE CROSS PIECE OF THE TOP DUNNAGE ASSEMBLY, AS APPLICABLE.

(2) RETAINER PIECE, 2" X 4" X 42" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED (1) , W/2-10d NAILS AT EACH JOINT.

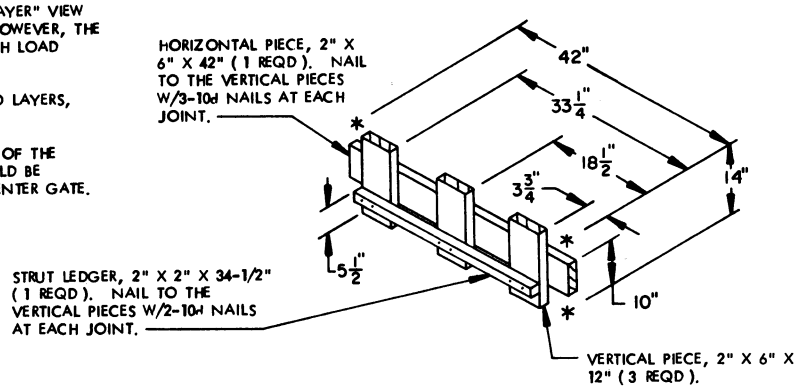
(3) PARTIAL UNIT GATE (2 REQD). SEE THE "PARTIAL UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "M" AND "N" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(4) STRUT, 4" X 4" BY UNIT WIDTH MINUS 6" (3 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED (3) , W/2-16d NAILS AT EACH END.

(5) STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (4) , W/3-10d NAILS AT EACH JOINT.

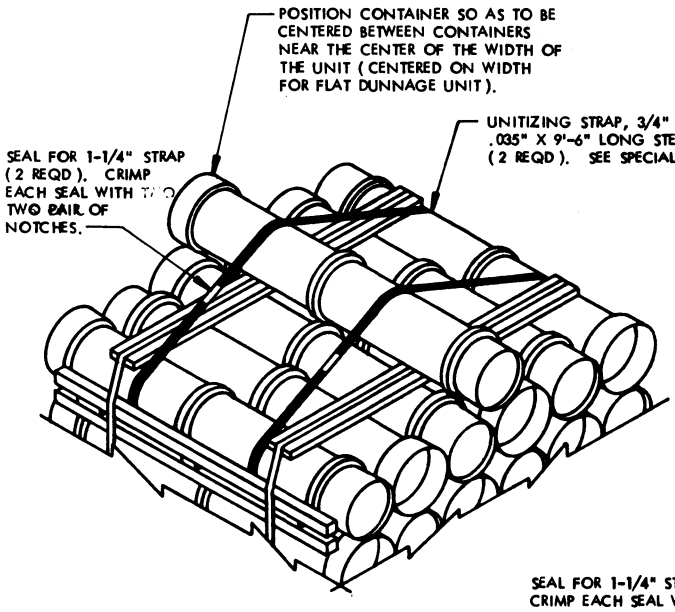
(6) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.

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

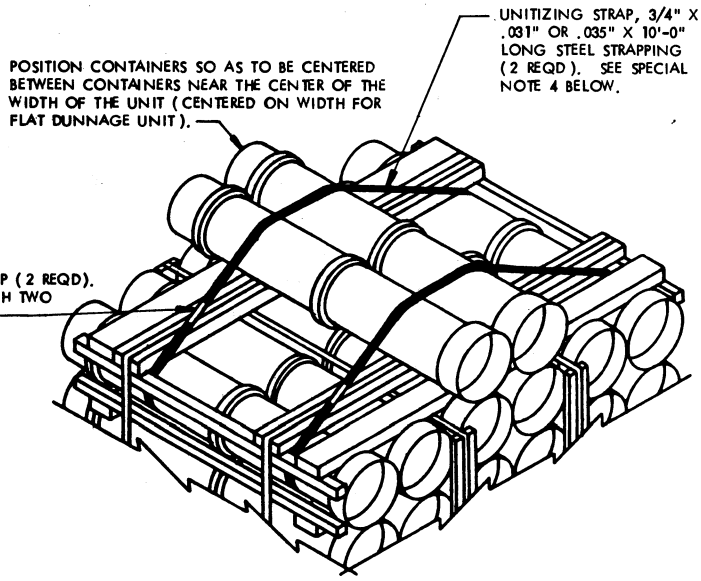


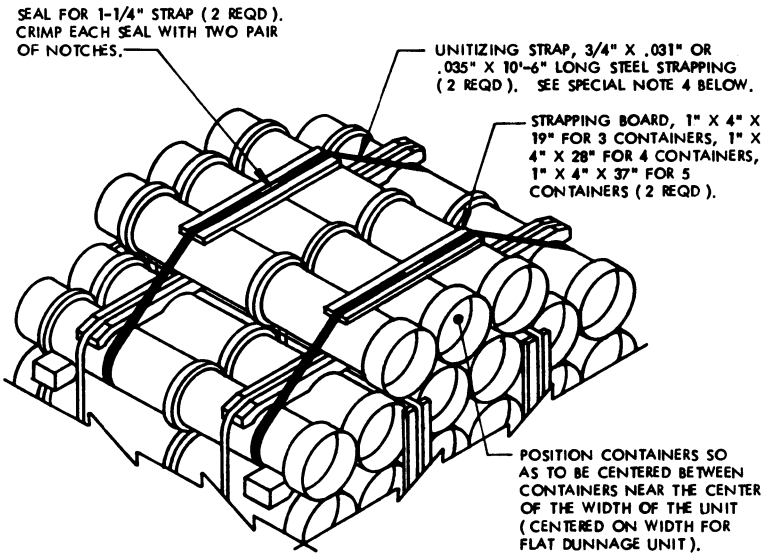
PARTIAL-UNIT GATE B

THE GATE SHOWN IS APPLICABLE FOR ALTERNATED CONTAINERS UNITS. THE LOCATION OF THE VERTICAL PIECES MUST BE ADJUSTED TO MATCH THE VERTICAL PIECES OF THE APPLICABLE CENTER GATE. ADJUST HEIGHT OF HORIZONTAL PIECE AS NECESSARY TO ALIGN WITH AN INTERMEDIATE DUNNAGE ASSEMBLY.



SECUREMENT OF ONE CONTAINER



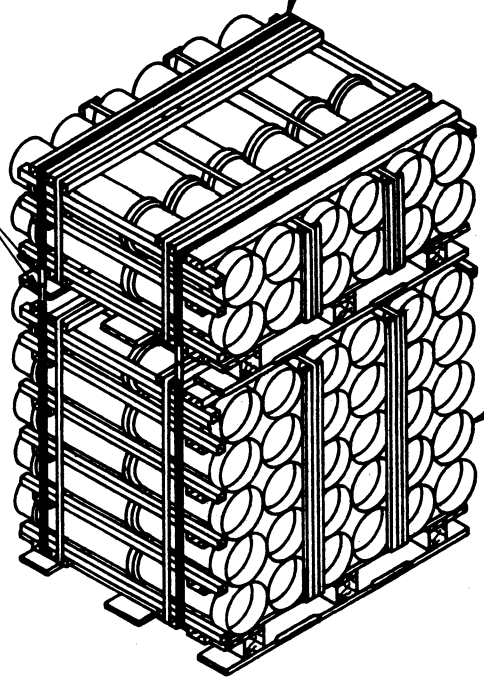


SECUREMENT OF THREE CONTAINERS

SECUREMENT OF TWO CONTAINERS

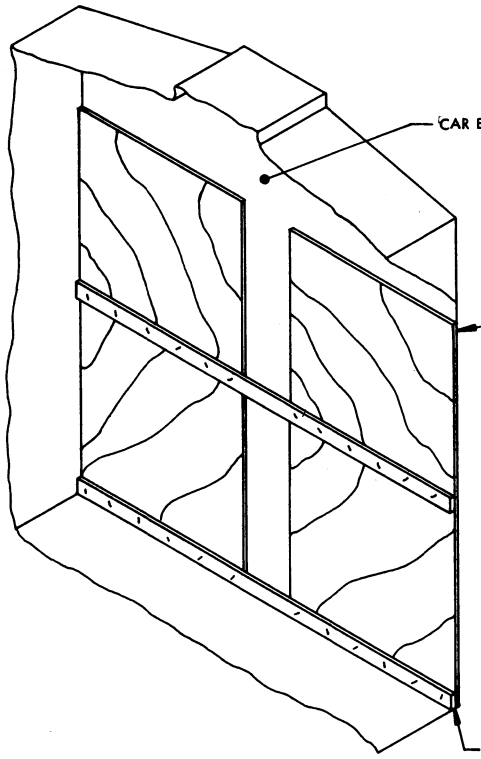
SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 108. OR WITHIN A LAYER AS SHOWN ON PAGES 105 AND 106.
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. THESE PROCEDURES ARE APPLICABLE FOR ALL THE OTHER UNITS COVERED BY THIS DOCUMENT.
4. AS APPLICABLE, FOR THE ALTERNATED CONTAINERS UNITS, AND FOR THE FLAT DUNNAGE METHOD UNITS, THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY OR THE TOP DUNNAGE ASSEMBLY; THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.
5. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.
6. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



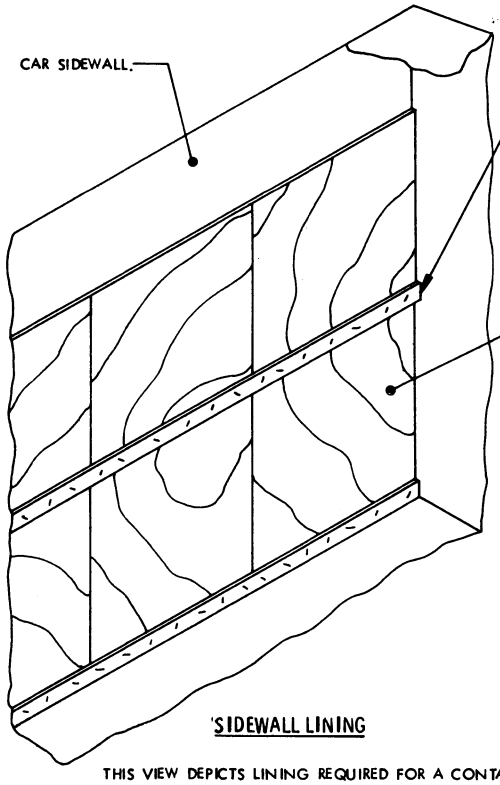
SECUREMENT OF PARTIAL UNIT ON TOP

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 106.



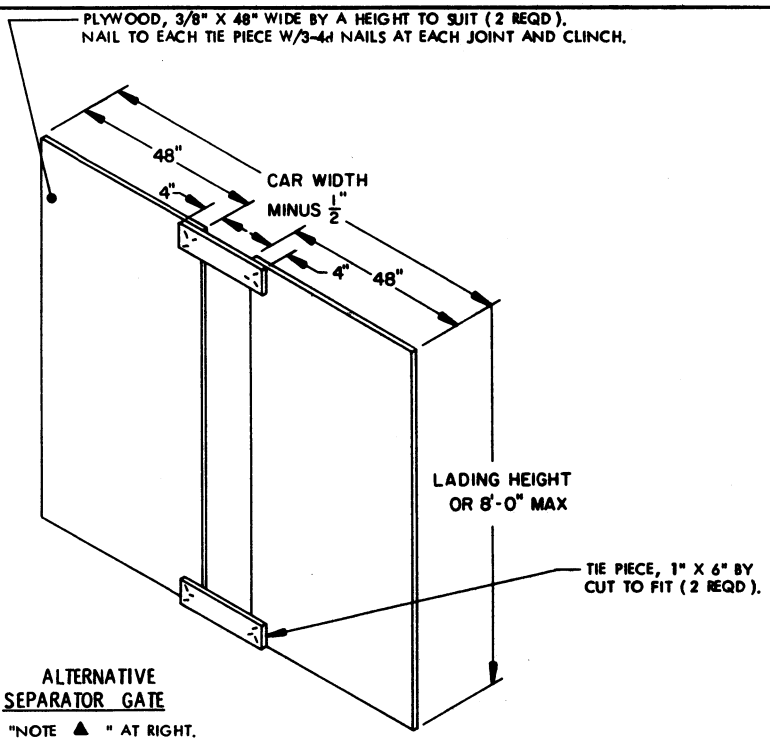
END WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CONTAINERS-LENGTHWISE LOAD IN A CAR EQUIPPED WITH A STEEL END WALL. REQUIRED FOR THE ALTERNATED CONTAINERS UNIT ONLY.



SIDEWALL LINING

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



ALTERNATIVE
SEPARATOR GATE

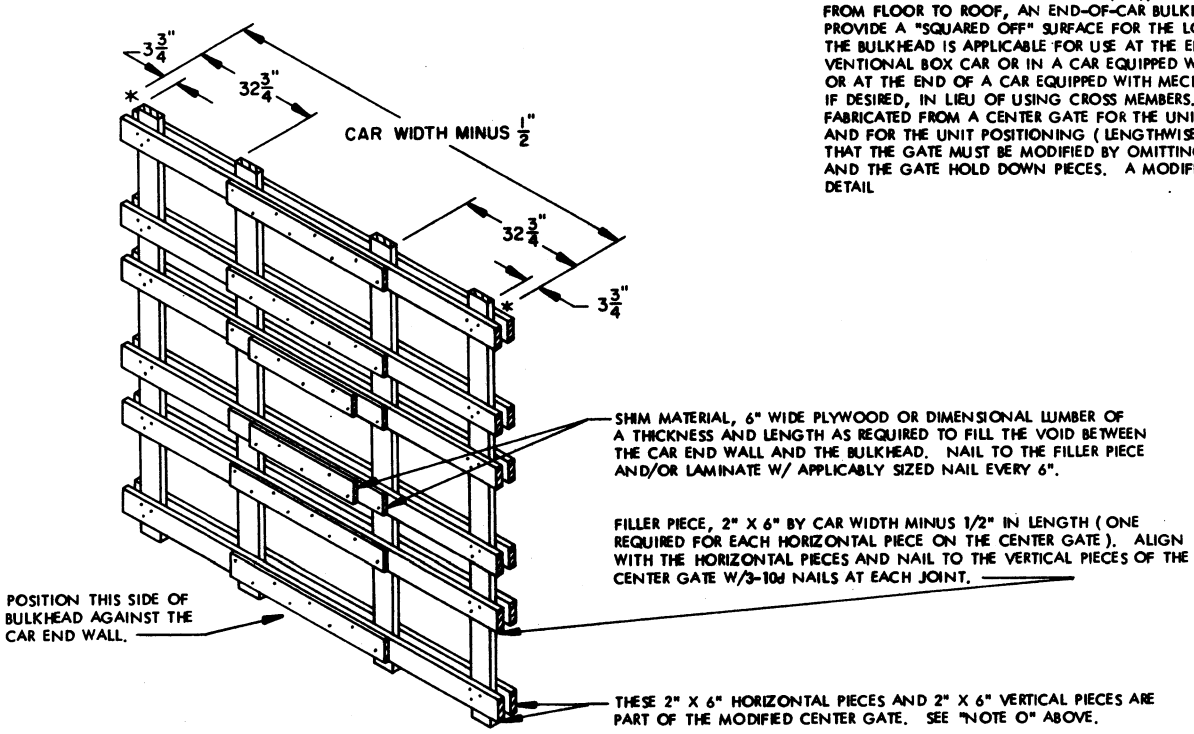
SEE "NOTE ▲ " AT RIGHT.

NOTE ▲ :

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

NOTE O:

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

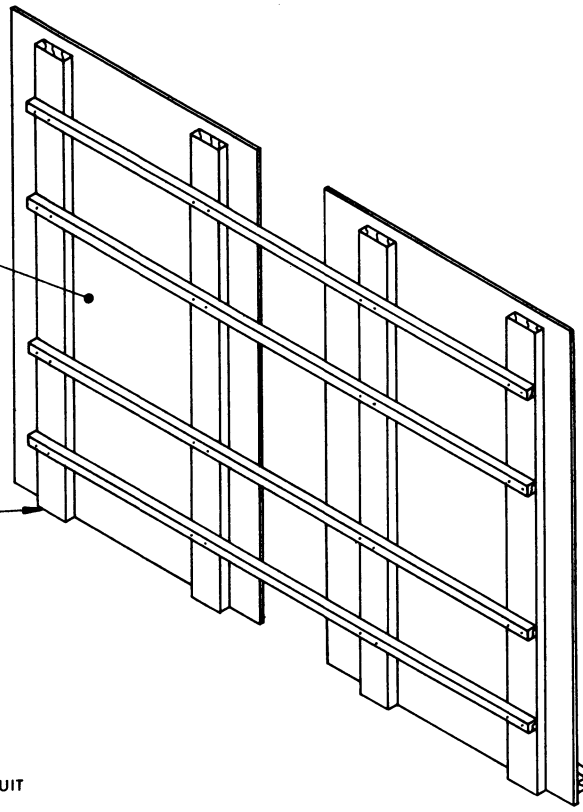


END-OF-CAR BULKHEAD

SFF "NOTE O" AT RIGHT.

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 8, OR UNIT LENGTH IS THE WIDTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 8. PLYWOOD MAY BE ALLOWED TO EXTEND BEYOND THE UNIT LENGTH OR WIDTH, IF DESIRED.

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

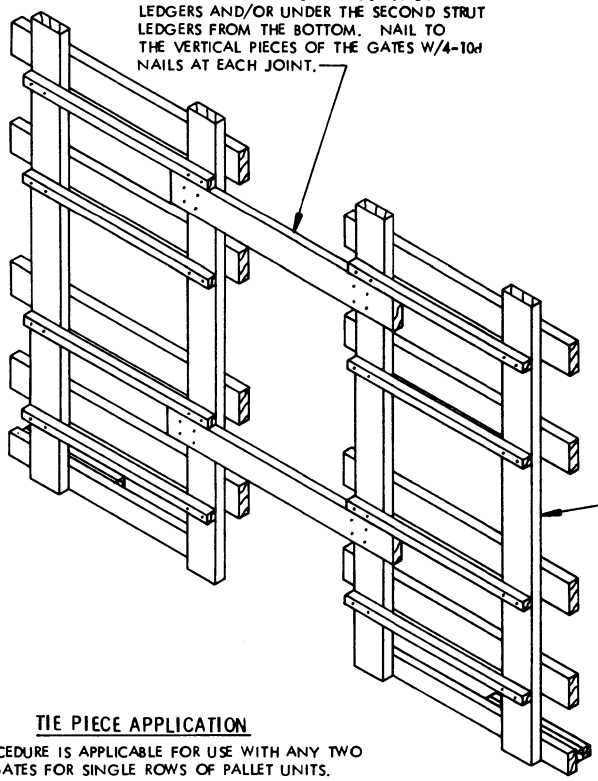


GATE HOLD DOWN PIECES MUST BE SECURED TO THE PLYWOOD.

PLYWOOD CENTER GATE ALTERNATIVE

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

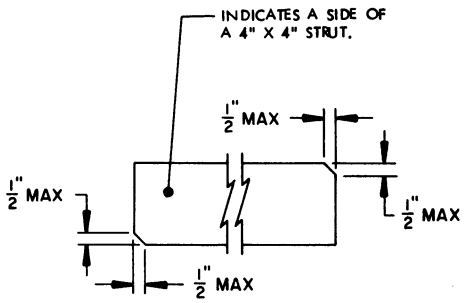
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



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

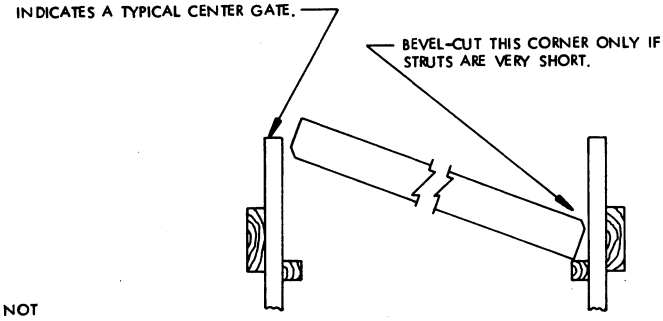
TIE PIECE APPLICATION

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



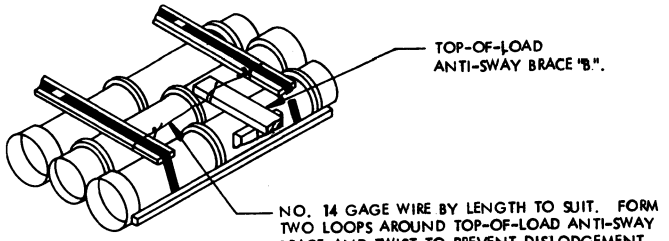
BEVEL-CUT

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

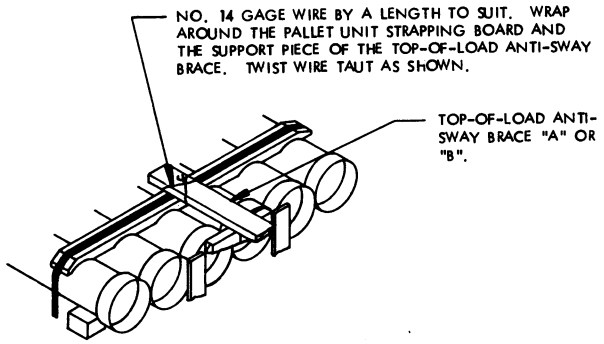


STRUT INSTALLATION

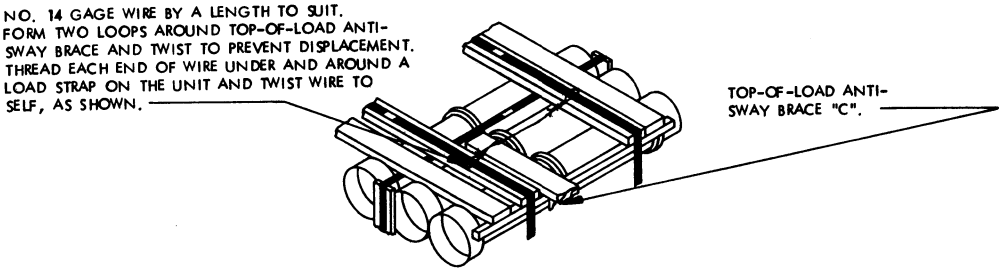
SEE GENERAL NOTE "W" ON PAGE 3 FOR ADDITIONAL STRUT INSTALLATION GUIDANCE.



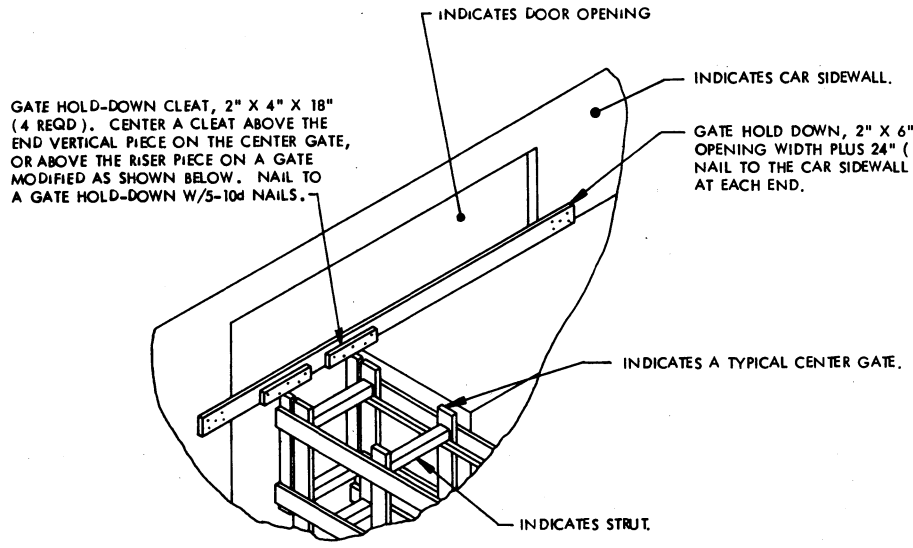
TIE WIRE APPLICATION A



TIE WIRE APPLICATION B

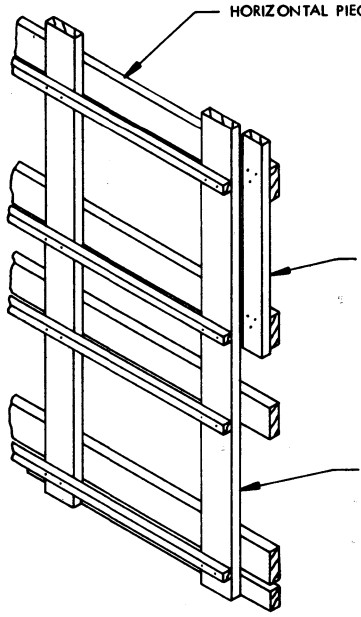


TIE WIRE APPLICATION C



ALTERNATIVE GATE HOLD-DOWN

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

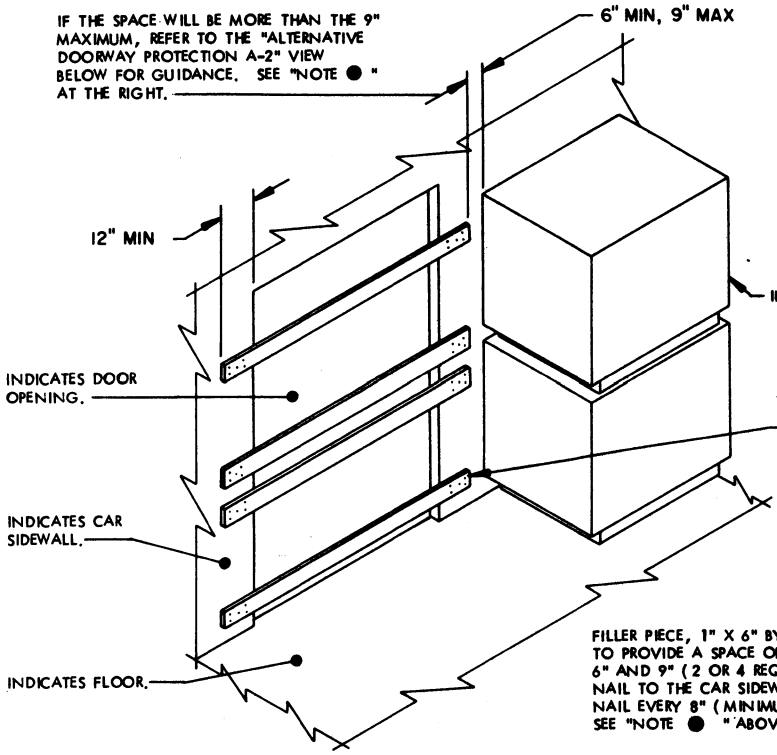


CENTER GATE MODIFICATION

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

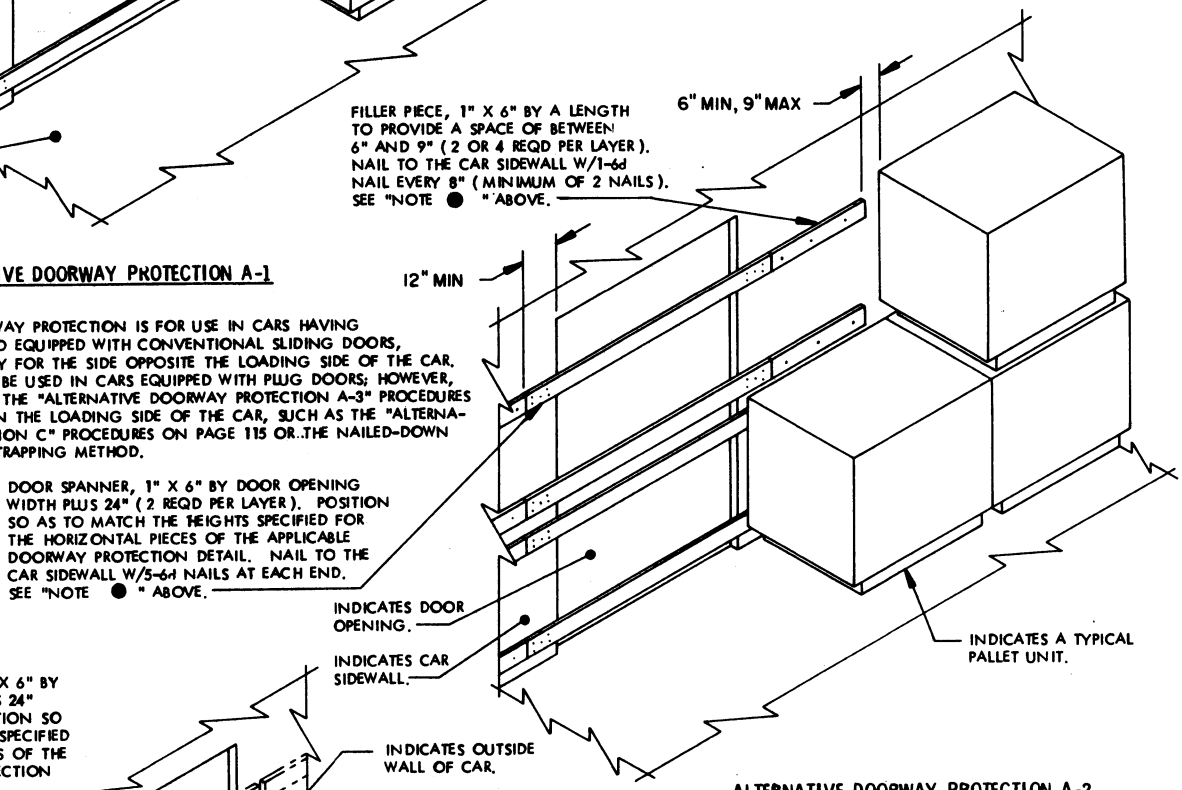
NOTE ● :

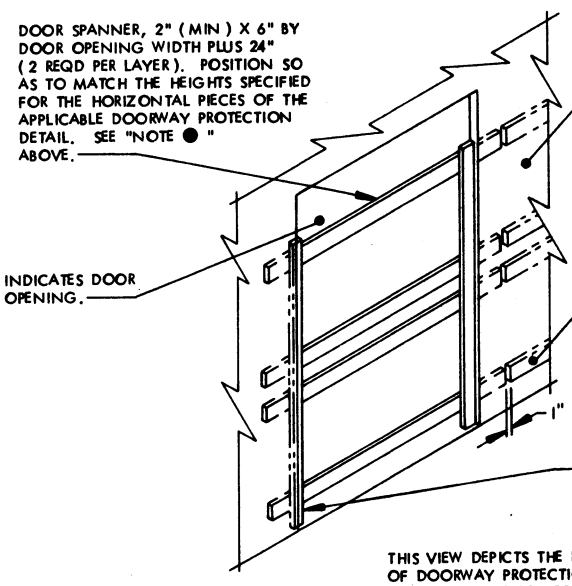
THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT, AND IS APPLICABLE WHEN ANTI-SWAY BRACING IS USED FOR A LOAD AND ALSO WHEN THE EXCESS SPACE ACROSS THE CAR IS SMALL ENOUGH THAT ANTI-SWAY BRACING OF ANY KIND IS NOT 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 115 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD.



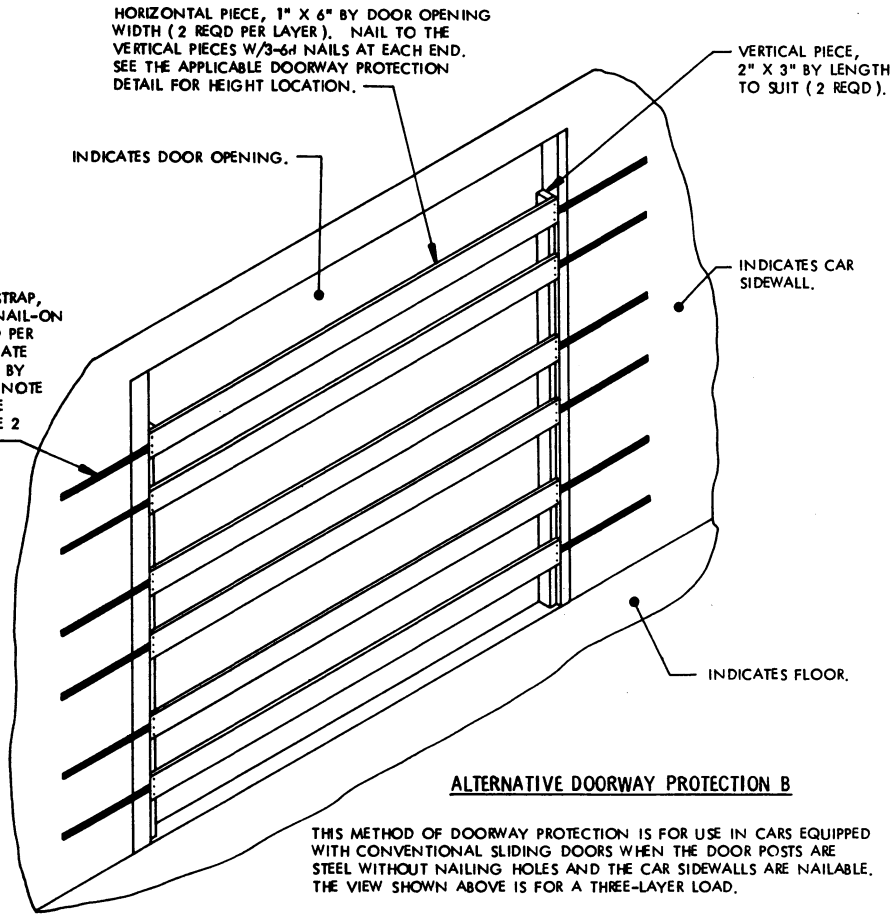


ALTERNATIVE DOORWAY PROTECTION A-2

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.

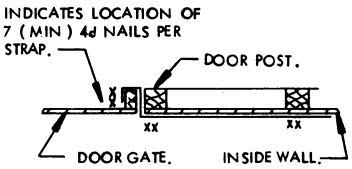
ALTERNATIVE DOORWAY PROTECTION A-3

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.



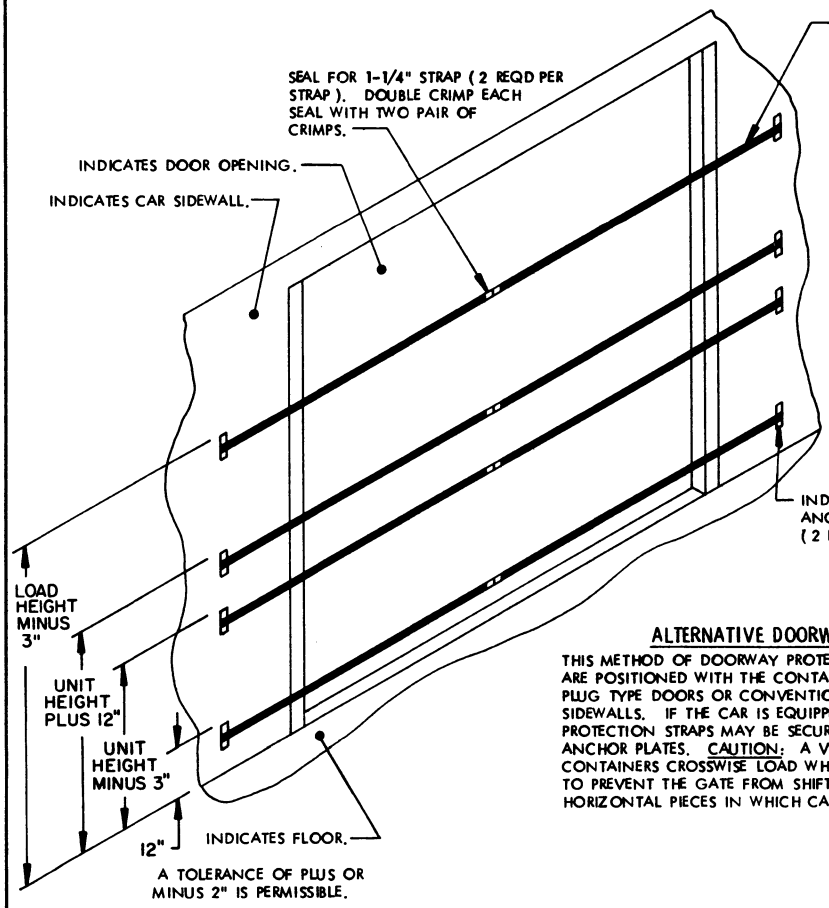
ALTERNATIVE DOORWAY PROTECTION B

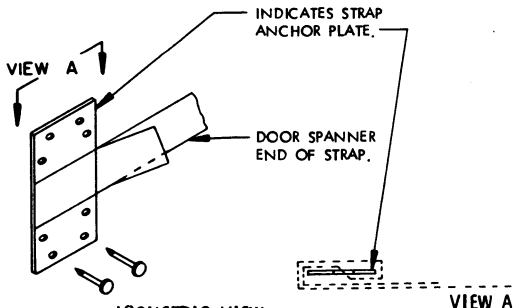
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUT NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.



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.



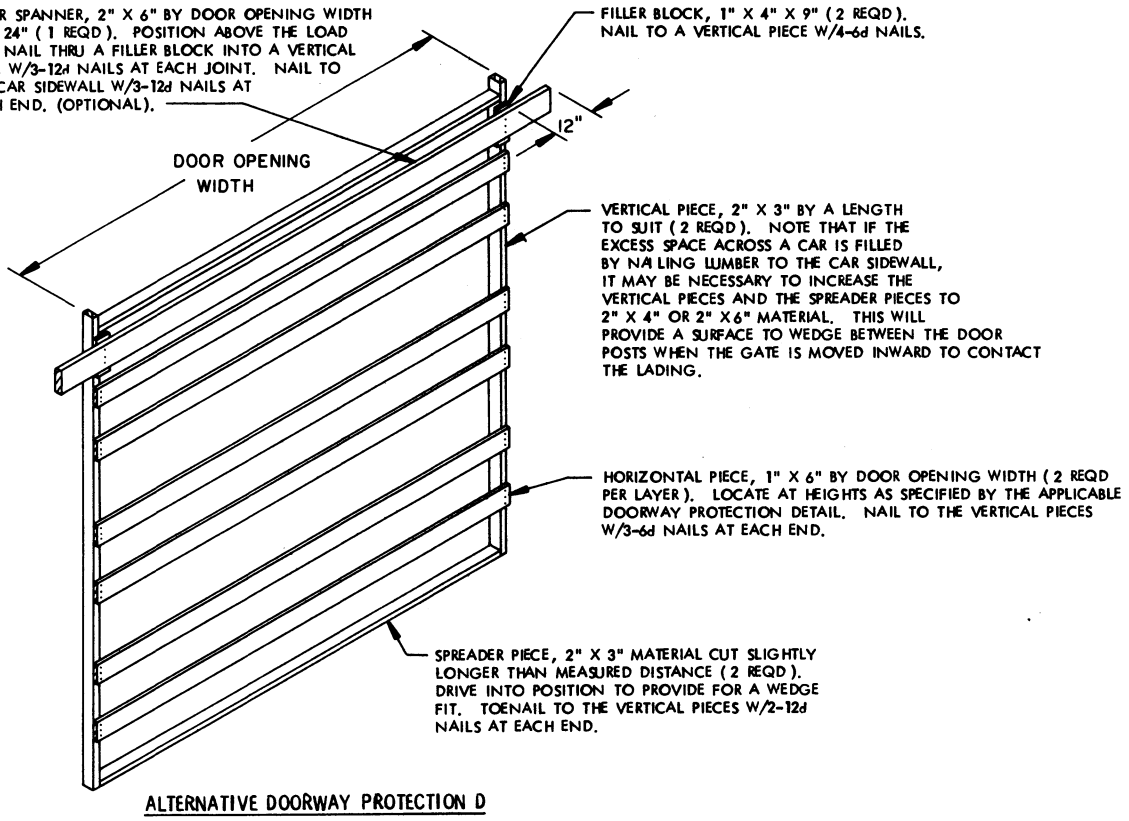


APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

ALTERNATIVE DOORWAY PROTECTION C

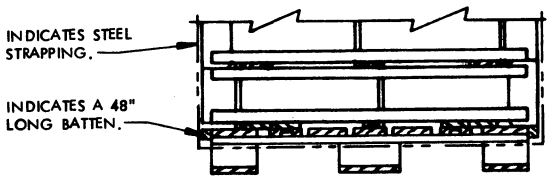
THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. IF THE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



ALTERNATIVE DOORWAY PROTECTION D

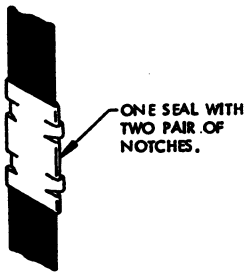
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 115 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 113.

BATTEN REQUIREMENTS		
	MATERIAL	
UNIT	BASE END	BELL END
ALTERNATED	2" THICK BY 1-1/4" WIDE (ACTUAL)	2" THICK BY 1-1/4" WIDE (ACTUAL)
FLAT	LAMINATED 2" AND 1" THICK BY 2" WIDE (ACTUAL)	2" THICK BY 2" WIDE (ACTUAL)
ROUTED	LAMINATED 2" THICK BY 2" WIDE (ACTUAL)	LAMINATED 2" AND 1" THICK BY 2" WIDE (ACTUAL)



BATTEN PLACEMENT

BATTENS, 1 OR 2, PER PALLET, AS APPLICABLE, ARE REQUIRED FOR EACH LOWER PALLET UNIT IN A STACK OF CROSSWISE POSITIONED CONTAINERS WHICH IS TO BE ENCIRCLED WITH DOORWAY PROTECTION STRAPS AND/OR UNITIZING STRAPS. SEE THE "BATTEN REQUIREMENTS" CHART ABOVE FOR MATERIAL SIZE FOR THE BATTENS.

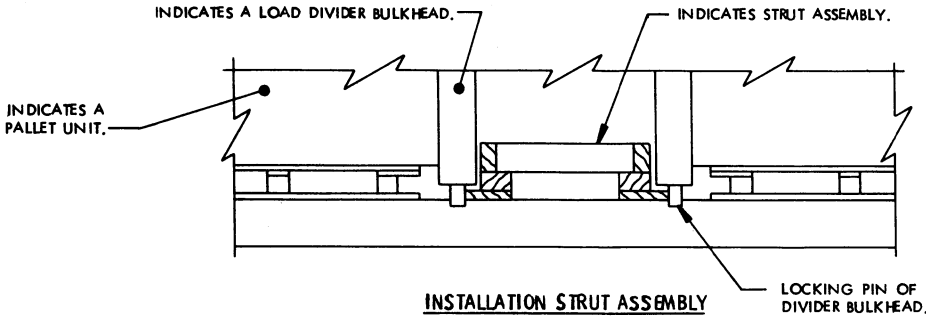


STRAP JOINT A

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

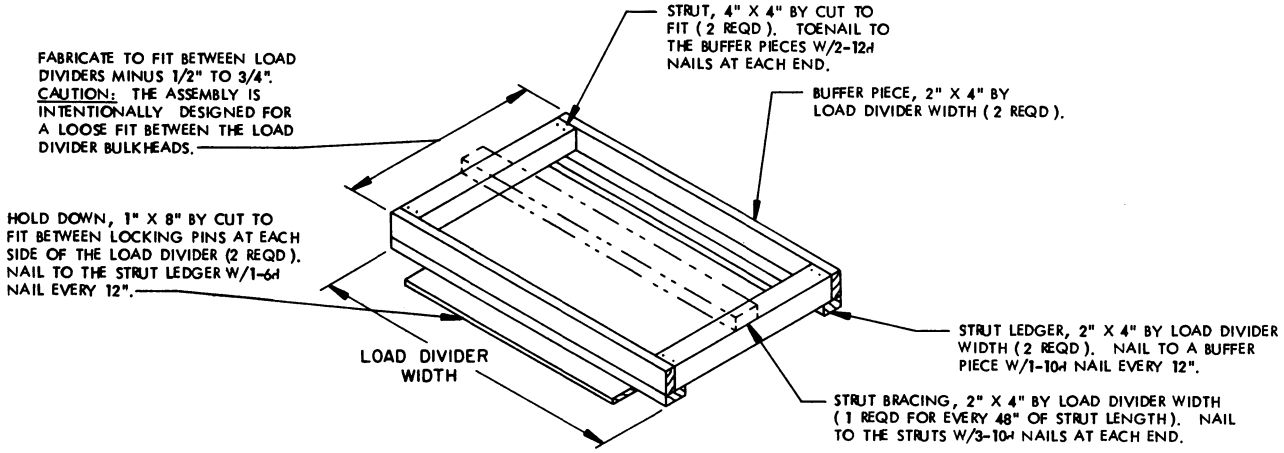
STRAP JOINT B

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



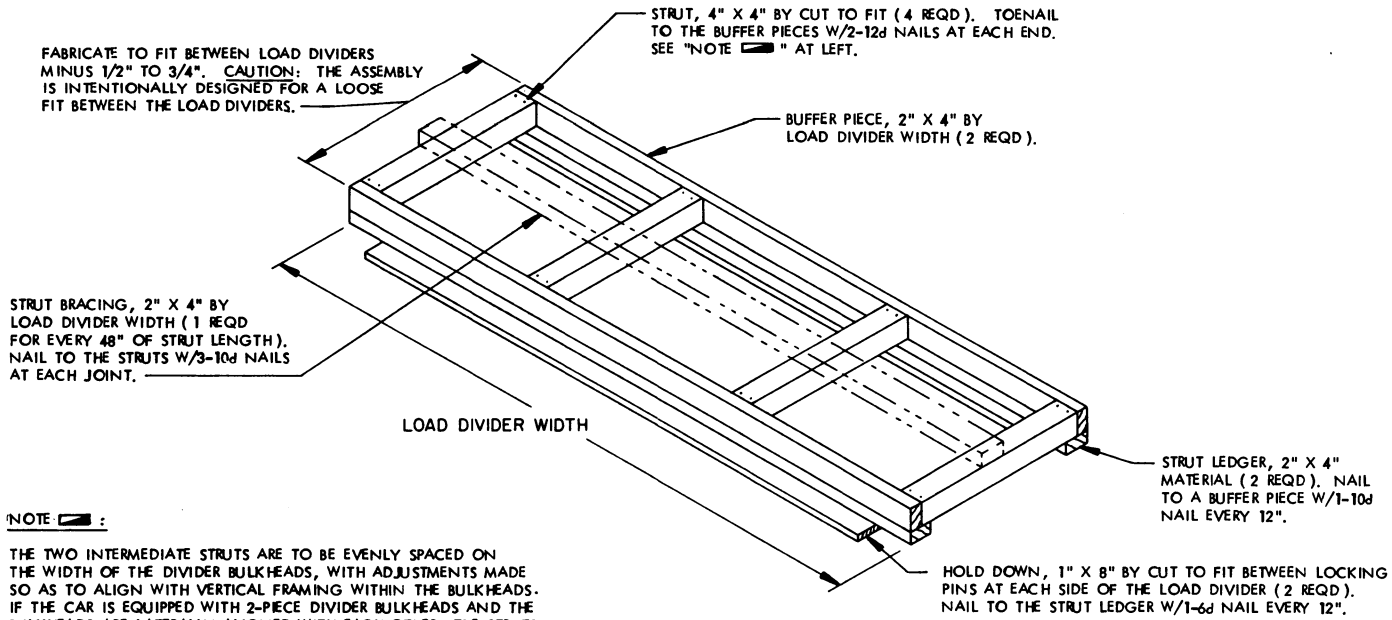
INSTALLATION STRUT ASSEMBLY

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 HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 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.

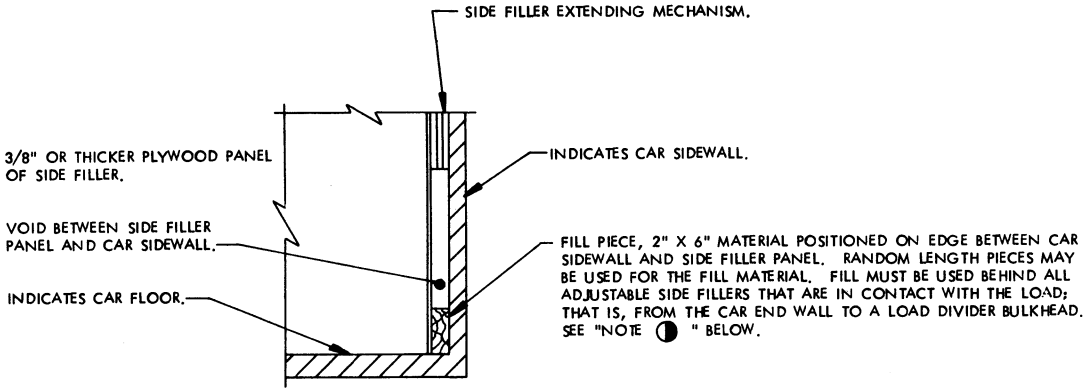


NOTE ▬:

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 HAZARD CLASS AND DIVISION 1.1, 1.2 OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.

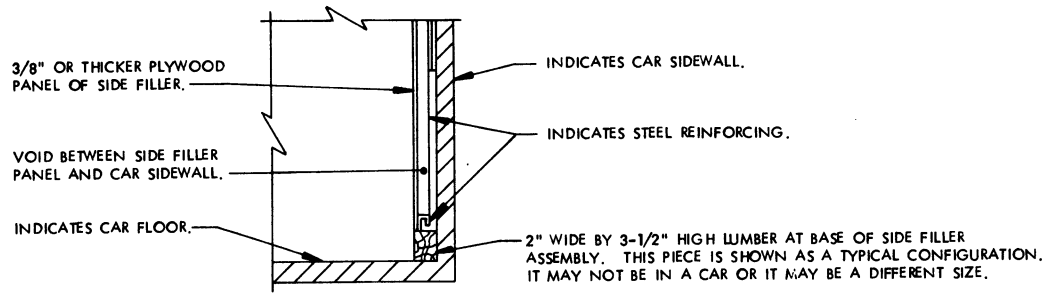


TYPICAL TYPE A

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

NOTE ◑ :

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



TYPICAL TYPE B

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