APPROVED BY
BUREAU OF EXPLOSIVES
DATE 8/19/91

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

M13 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 42 THRU 73 OF DRAWING 19-48-4042-1-2-5-11-14PM1000, DATED 8 FEBRUARY 1965 AND REVISION 1, DATED 29 AUGUST 1969, AS PERTAINS TO THE M13 SERIES CONTAINERS.

DO NOT SCALE

REVISIONS				DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
		DEV DEO DE		D/M	SD		R. Arnold	
		DEV DEO DE		SMCAC-DEV	SMCAC-DEO		SMCAC-DE	
		DEV DEO DE		APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND				
		DEV DEO DE		APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)				
		DEV DEO DE		U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL				
		DEV DEO DE		U.S. ARMY MATERIEL COMMAND				
				FEBRUARY 1992				
				CLASS	DIVISION	DRAWING	FILE	
				19	48	4042B/2	5PM 1000	

PROJECT FSA 43B/2-63

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 M13 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGE 4. REFER TO THE U.S. AMC DRAWING 19-48-4042A/2-20PM1001 FOR UNITIZATION PROCEDURES FOR THE M13 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 93 FOR GUIDANCE.

E. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHARTS ON PAGE 66 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.

F. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF PALLETIZED UNITS OF PROPELLING CHARGES IS THE RESPONSIBLITY 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 94 FOR GUIDANCE.

H. BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS HAVE BEEN SHOWN. HOWEVER, THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE FOR CARS EQUIPPED WITH PLUG DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN. ALSO, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF CAR SEALS, A PIECE OF WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH EACH CAR SEAL USED TO SEAL THE CAR. THE WIRE WILL BE THREADED THRU THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.

J. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DO SO, A FULL LOAD SHOULD BE BUILT USING AN OFFSET LOADING PATTERN. FOR INSTANCE, A LOAD CONSISTING OF AN EVEN NUMBER OF LOAD UNITS AND HAVING TWO MORE LOAD UNITS IN ONE END OF THE CAR THAN IN THE OPPOSITE END, OR A LOAD CONSISTING OF AN ODD NUMBER OF LOAD UNITS AND HAVING ONE MORE LOAD UNIT IN ONE END THAN IN THE OTHER IS CONSIDERED TO BE AN OFFSET LOAD.

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

(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 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.

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

STRAP STAPLE --------: COMMERCIAL GRADE.

PLYWOOD ----------: FED SPEC NN-P-530; GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. 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 W6S 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 PERMISSABLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".

M. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN 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 CARLOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY 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) 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 100 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 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.

T. NOTICE: WHEN POSITIONING PALLETIZED UNITS IN A CAR, THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE PALLETIZED UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. CAUTION: WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE PALLETIZED UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.

U. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS TYPICALLY SHOWN BY PIECES MARKED ⑥ , ⑦ , ⑬ AND ⑭ ON PAGE 6 AND PIECES MARKED ⑦ AND ⑧ ON PAGE 8. 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, 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.

(CONTINUED ON PAGE 3)

SEE THE "BEVEL CUT" DETAIL ON PAGE 96 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, EQUIPCO, OR PRECO MAY BE USED. LOAD DIVIDERS MANUFACTURED BY TRANSCO ARE NOT ACCEPTABLE, WHETHER OF ALUMINUM OR STEEL CONSTRUCTION. THE DEPICTED PROCEDURES ARE APPLICABLE FOR CARS OF VARIOUS LENGTHS AND WIDTHS. THE AAR MECHANICAL DESIGNATION CLASS FOR THESE CARS, AS IDENTIFIED IN " THE OFFICIAL RAILWAY EQUIPMENT REGISTER ",WILL BE RBL, XL, OR XLI.

BB. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL 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 102 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 102, 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 CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 101.

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

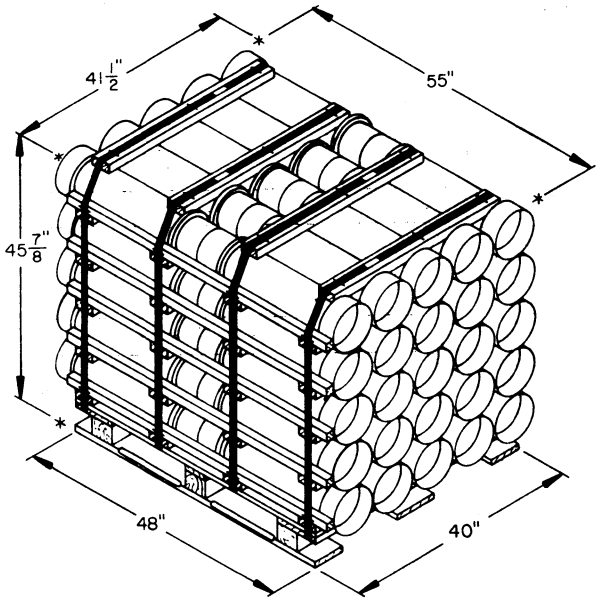
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 74 THRU 77.

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 OF PAGES 68 THRU 73 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 88, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 84.

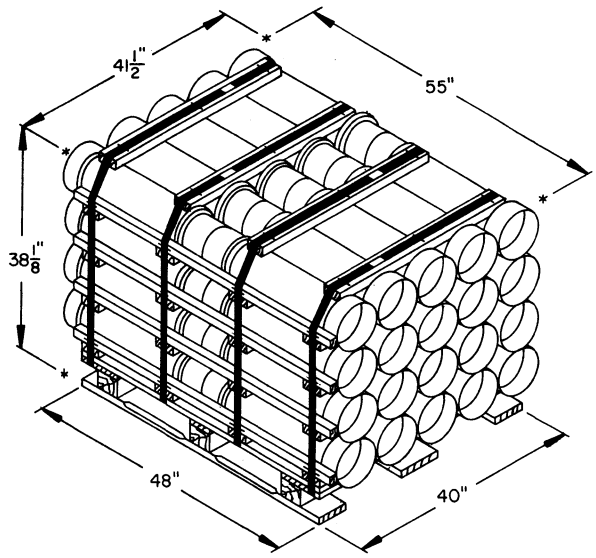
GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER -------- 50 EACH @ 30.5 LBS (APPROX)
CUBE ---------- 60.6 CUBIC FEET (APPROX)
GROSS WEIGHT ----- 1,747 LBS (APPROX)

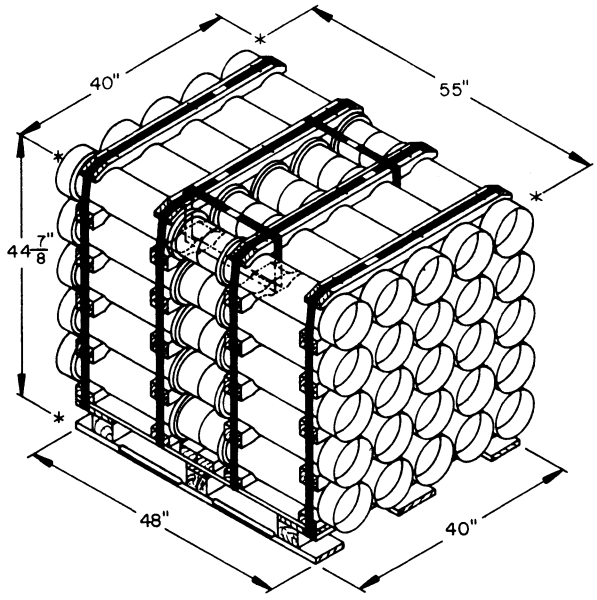
REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER -------- 40 EACH @ 30.5 LBS (APPROX)
CUBE ---------- 50.4 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,421 LBS (APPROX)

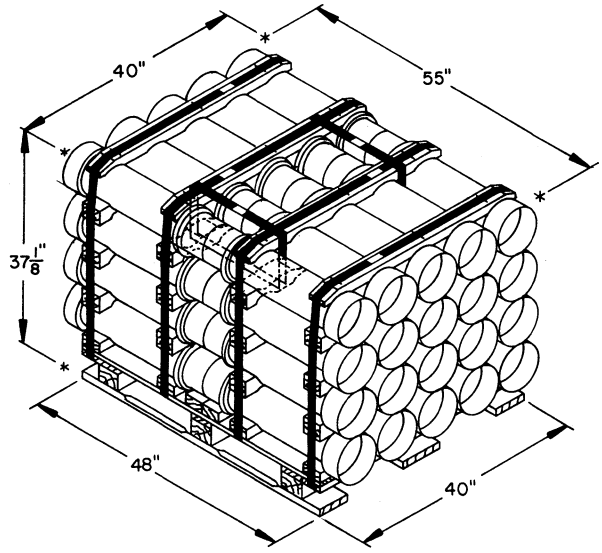
REFER TO PAGES 20 THRU 29 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER -------- 50 EACH @ 30.5 LBS (APPROX)
CUBE ---------- 57.1 CUBIC FEET (APPROX)
GROSS WEIGHT ----- 1,761 LBS (APPROX)

REFER TO PAGES 34 THRU 43 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER -------- 40 EACH @ 30.5 LBS (APPROX)
CUBE ---------- 47.3 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,432 LBS (APPROX)

REFER TO PAGES 48 THRU 57 FOR OUTLOADING PROCEDURES.

BILL OF MATERIAL (FOR PAGE 20)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	112	38
1" X 6"	444	222
2" X 2"	86	29
2" X 3"	36	18
2" X 4"	1,308	872
2" X 6"	225	225
4" X 4"	142	190
NAILS	NO. REQD	POUNDS
6d (2")	320	2
10d (3")	2,090	32-1/4
12d (3-1/4")	52	1
16d (3-1/2")	128	3
WIRE, NO. 14 GAGE ---------- 3' REQD ---------- NIL		

BILL OF MATERIAL (FOR PAGE 6)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	105	35
1" X 6"	337	169
2" X 2"	55	19
2" X 3"	29	15
2" X 4"	925	617
2" X 6"	184	184
4" X 4"	94	126
NAILS	NO. REQD	POUNDS
6d (2")	284	1-3/4
10d (3")	1,828	20-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	104	2-1/2
WIRE, NO. 14 GAGE ---------- 3' REQD ---------- NIL		

(SPECIAL NOTES CONTINUED FROM PAGE 21)

13. THE SIDE FILL, PIECE MARKED (17), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT WILL CONTACT ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (18), MUST BE USED THROUGHOUT THE LENGTH OF THE CAR IN LIEU OF PIECE MARKED (17).

14. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 21 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND TO SIDE FILL PIECE MARKED (17), TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (18), AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED (19).

15. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, A 1" X 4" BY LENGTH TO SUIT PIECE MUST BE LAMINATED TO EACH SIDE FILL, PIECE MARKED (17), W/1-6d NAIL EVERY 24". ALSO, THE HORIZONTAL PIECES OF THE SIDE FILL ASSEMBLY, PIECE MARKED (18), WILL BE CHANGED FROM 1" X 4" TO 2" X 4" AND THE SIDE FILL ASSEMBLY RETAINER WILL BE CHANGED FROM 1" X 4" MATERIAL TO 2" X 4".

(SPECIAL NOTES CONTINUED FROM PAGE 7)

UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (18), MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (17).

14. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 7 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (17), TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (18), AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED (19).

15. IF A 9'-4" OR 9'-6" WIDE CAR IS TO BE LOADED, A 1" X 4" BY LENGTH TO SUIT PIECE MUST BE LAMINATED TO EACH SIDE FILL, PIECE MARKED (17), W/1-6d NAIL EVERY 24". ALSO, THE HORIZONTAL PIECES OF THE SIDE FILL ASSEMBLY, PIECE MARKED (18), WILL BE CHANGED FROM 1" X 4" TO 2" X 4" AND THE SIDE FILL ASSEMBLY RETAINER WILL BE CHANGED FROM 1" X 4" MATERIAL TO 2" X 4".

KEY NUMBERS FOR PLUG TYPE DOORWAY PROTECTION

(20) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

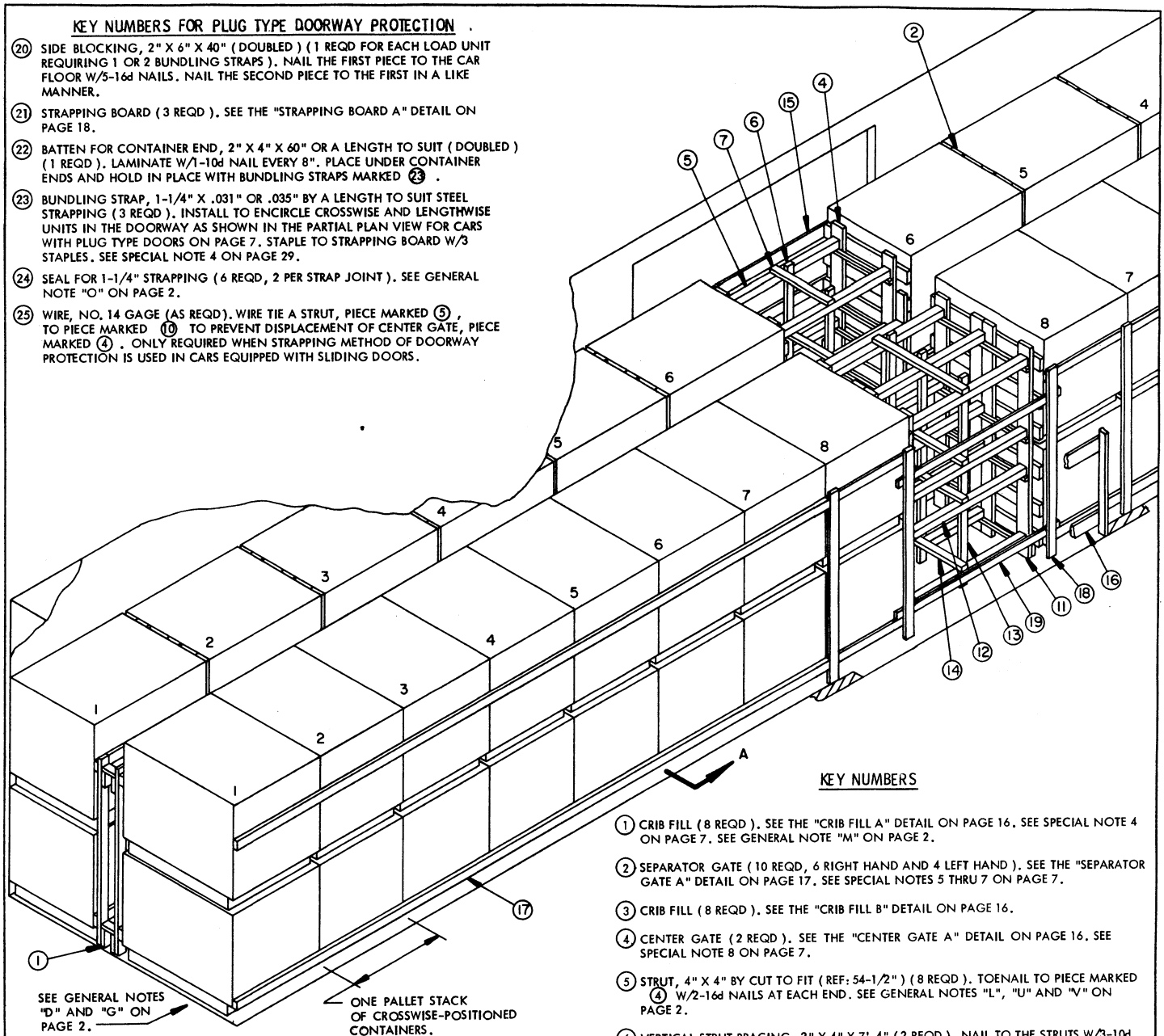
(21) STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 18.

(22) BATTEN FOR CONTAINER END, 2" X 4" X 60" OR A LENGTH TO SUIT (DOUBLED) (1 REQD). LAMINATE W/1-10d NAIL EVERY 8". PLACE UNDER CONTAINER ENDS AND HOLD IN PLACE WITH BUNDLING STRAPS MARKED (23) .

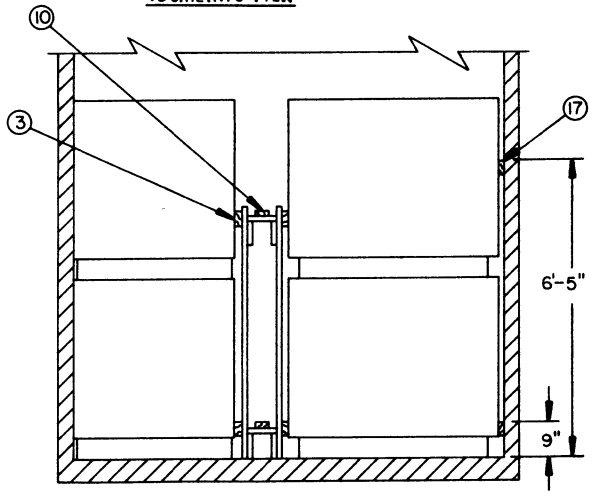
(23) BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE CROSSWISE AND LENGTHWISE UNITS IN THE DOORWAY AS SHOWN IN THE PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS ON PAGE 7. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 29.

(24) SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

(25) WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED (5) , TO PIECE MARKED (10) TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED (4) . ONLY REQUIRED WHEN STRAPPING METHOD OF DOORWAY PROTECTION IS USED IN CARS EQUIPPED WITH SLIDING DOORS.



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 4 ON PAGE 7. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SEPARATOR GATE (10 REQD, 6 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 17. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 7.

(3) CRIB FILL (8 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 8 ON PAGE 7.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (8 REQD). TOENAIL TO PIECE MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

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

(7) HORIZONTAL STRUT BRACING, 2" X 4" X 34" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(8) STRUT, 2" X 4" BY CUT TO FIT (REF: 54-1/2") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED (4) W/2-12d NAILS AT EACH END.

(9) SIDE BLOCKING FOR CENTER GATE "A", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 7.

(10) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 6'-5") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS.

(11) CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 17.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 58") (12 REQD). TOENAIL TO PIECES MARKED (11) W/2-16d NAILS AT EACH END.

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

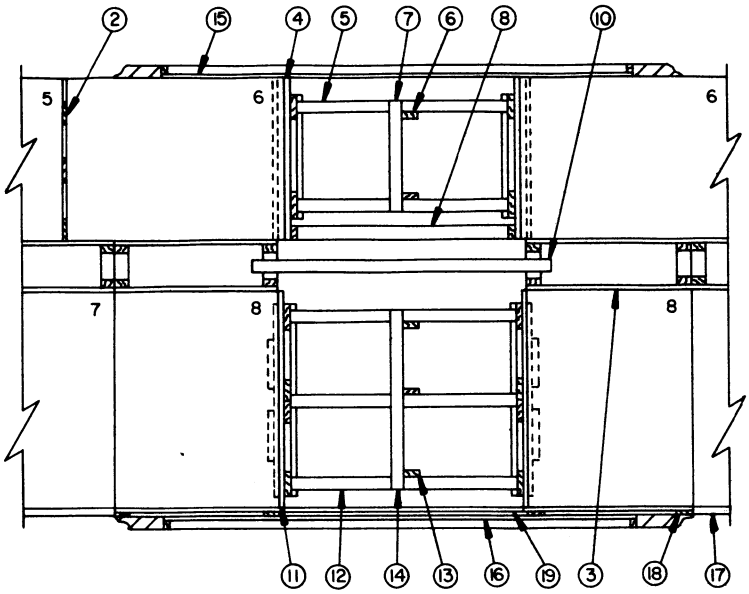
(14) HORIZONTAL STRUT BRACING, 2" X 4" X 48" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(15) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 7.

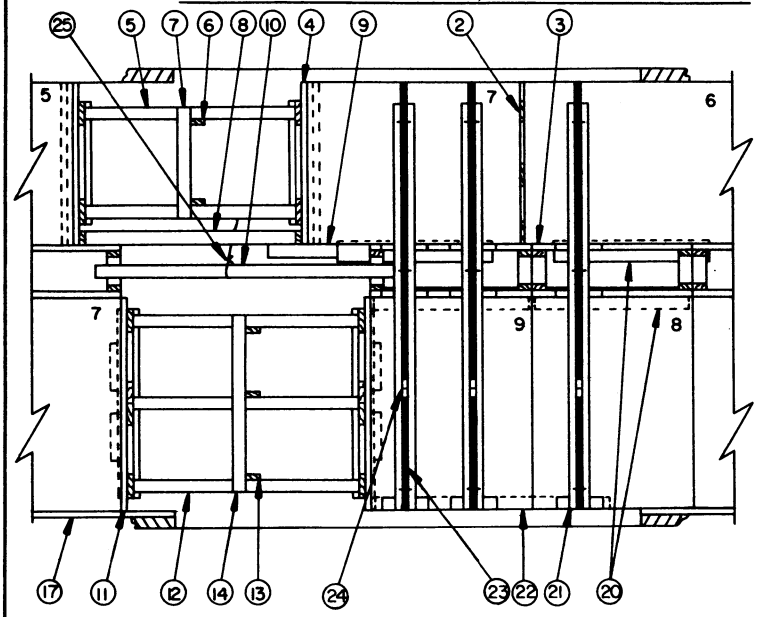
(16) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ON PAGE 7)

SUPERSEDES SHOP ITEM 6, 1 NOV 85



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS

(KEY NUMBERS CONTINUED FROM PAGE 6)

⑰ SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 24'-2-1/2") (4 REQD). NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". SEE SPECIAL NOTES 13 AT RIGHT AND 14 AND 15 ON PAGE 5.

⑱ SIDE FILL ASSEMBLY (2 REQD). SEE THE "SIDE FILL ASSEMBLY C" DETAIL ON PAGE 63.

⑲ SIDE FILL ASSEMBLY RETAINER, 1" X 4" BY A LENGTH TO SUIT (REF: 6'-5") (2 REQD). POSITION AT 12-1/2" AND 70" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑱ W/ 4-6d NAILS AT EACH JOINT.

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 SPECIAL NOTE 3 BELOW AND GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-SIX (46) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,362 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR A LADING WEIGHT OF 62,892 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. NOTE THAT IN A 50'-6" CAR THE LOADING PATTERN SHOULD BE FIVE (5) UNITS OF LENGTHWISE POSITIONED CONTAINERS IN EACH END OF THE CAR AND SIX (6) AND SEVEN (7) UNITS OF CROSSWISE CONTAINERS.

3 THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS AS NARROW AS 8'-0" . IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE LENGTHWISE UNITS SHOULD BE LOADED SIX (6) STACKS LONG IN EACH END OF THE CAR AND THE CROSS WISE STACKS SHOULD BE LOADED EIGHT (8) STACKS LONG IN EACH END.

4 THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. THE SEPARATOR GATES , SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 6, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

6. ALL SEPARATOR GATES WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS, MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 41-1/2" WIDE BY 8'-0" LONG.

8 CENTER GATES "A" AND "B" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 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 OF MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑮ AND ⑯ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD-BUNDLING STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS" AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECE MARKED ③ , MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING, PIECE MARKED ⑰ . ALSO NOTE THAT A STRUT, PIECE MARKED ⑤ , MUST BE WIRE TIED TO PIECE MARKED ⑩ TO PREVENT DISPLACEMENT OF THE CENTER GATE, PIECE MARKED ④ , WHEN LOADING IN A CAR 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 ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 68. FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACK NO. 7 AND THE CROSSWISE STACK NO. 9. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 84 AND 85.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 90 AND 92 FOR CROSSWISE UNITS.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

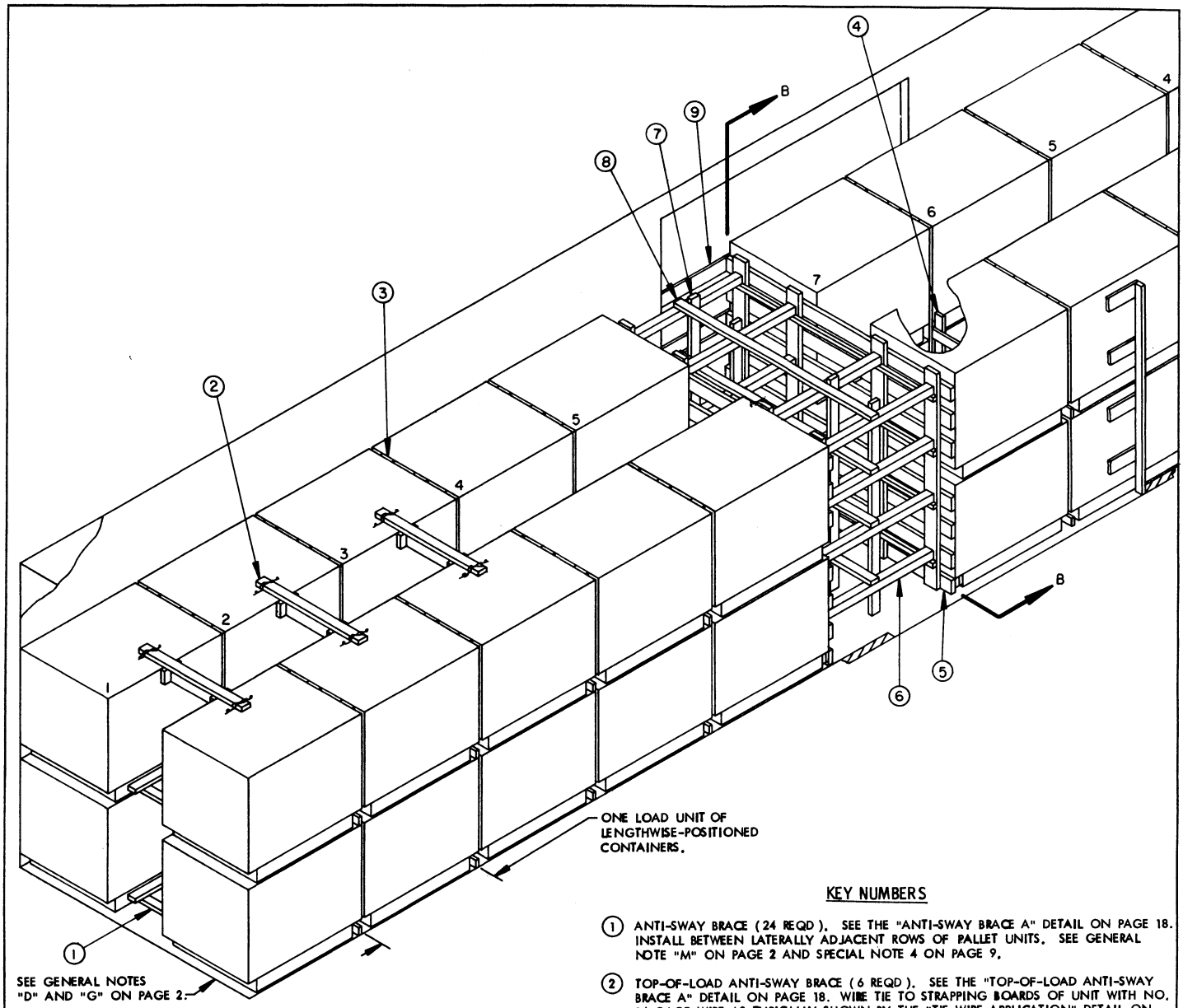
13. THE SIDE FILL, PIECE MARKED ⑰ , IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET

(CONTINUED ON PAGE 5)

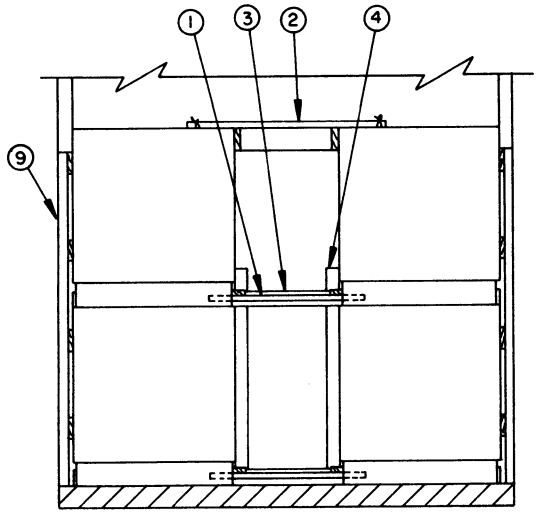
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	56	97,832 LBS
DUNNAGE		2,402 LBS
TOTAL WEIGHT		100,234 LBS

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



ISOMETRIC VIEW



SECTION B-B

KEY NUMBERS

(1) ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 9.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 5 ON PAGE 9.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 AND 17 ON PAGE 9.

(4) STOP PIECE, 1" X 4" X 54" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3), WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 9.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTES 9, 10, AND 13 ON PAGE 9.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (16 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGE 2.

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

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

(9) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 9.

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

SMCAC FORM 6, 1 NOV 86

PROJECT FSA 43B/2-63

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 FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXMIATE LADING WEIGHT OF 69,880 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 55,904 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAP DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED (9), 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.

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 A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

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

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

9. CENTER GATE "C" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 FOR GUIDANCE.

10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C" SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 16. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 95. OMIT THE STOP PIECE AND 2" X 4" STRUT LEDGERS FROM "CENTER GATE A".

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "C", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 97 FOR GUIDANCE.

12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (9) IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED (4), (6), (7), AND (8) ON PAGE 14 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. SEE SPECIAL NOTE 13.

(CONTINUED AT LEFT)

(SPECIAL NOTES CONTINUED)

13. IF THE NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAP DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION PIECES MARKED (9), THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING. IF NAILING TO THE CAR FLOOR IS NOT FEASIBLE OR DESIRABLE, DOUBLED 2" X 6" X 12" STOP PIECES MAY BE NAILED TO EACH GATE AS DEPICTED BY THE PHANTOM LINES ON THE "CENTER GATE C" DETAIL ON PAGE 18. NAIL THE FIRST PIECE TO A HORIZONTAL PIECE ON THE GATE W/3-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS 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 64 THRU 92 FOR GUIDANCE.

15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE K" DETAIL ON PAGE 69. 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 12" LONG FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "K" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

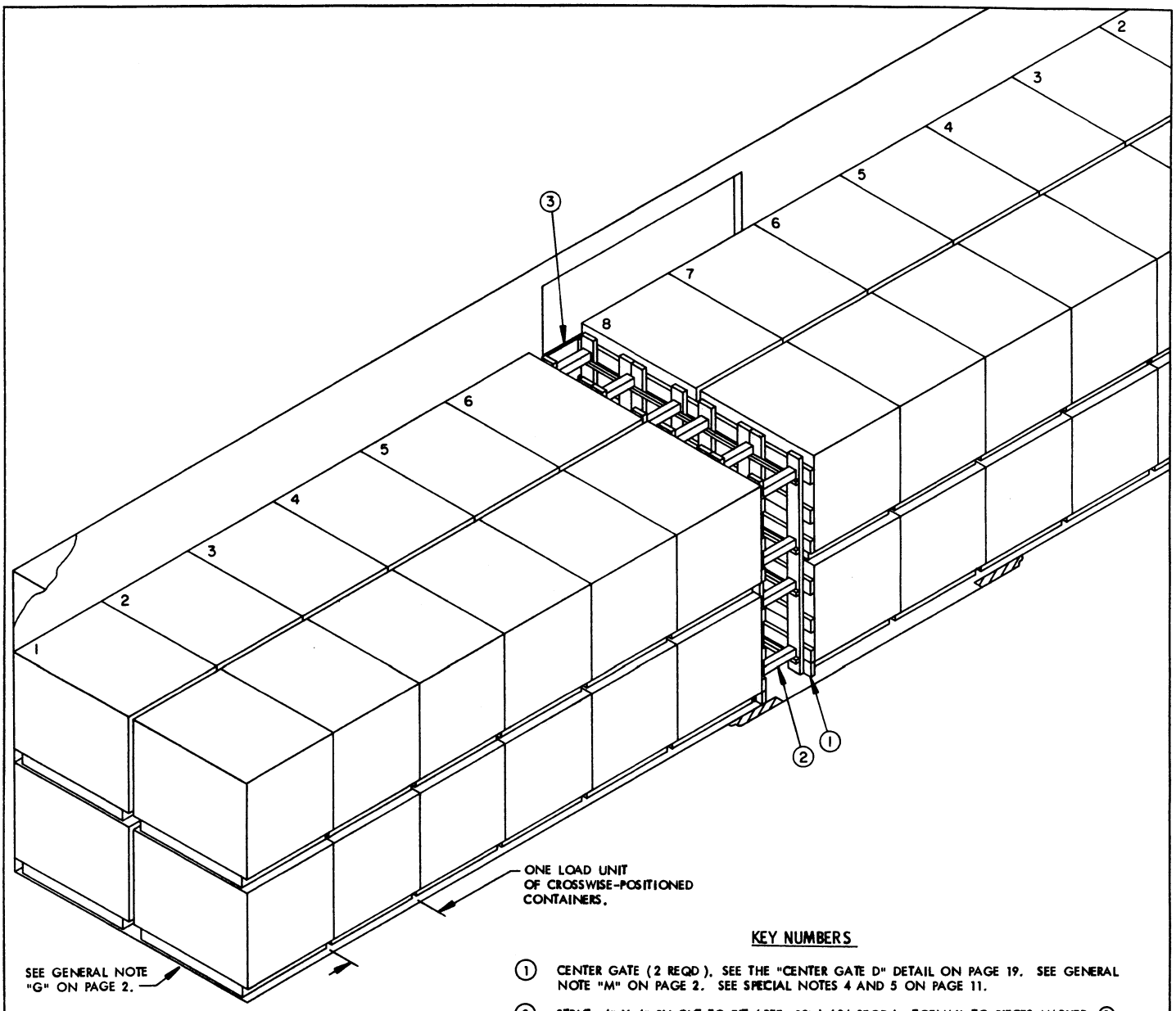
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	192	64
1" X 6"	540	270
2" X 2"	70	24
2" X 3"	29	15
2" X 4"	422	282
2" X 6"	205	205
4" X 4"	73	98
NAILS	**NO. REQD**	**POUNDS**
6d (2")	420	2-1/2
10d (3")	718	11-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE --------60' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	48	83,856 LBS
DUNNAGE		1,932 LBS
TOTAL WEIGHT		85,788 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

① CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE GENERAL NOTE "M" ON PAGE 2. SEE SPECIAL NOTES 4 AND 5 ON PAGE 11.

② STRUT, 4" X 4" BY CUT TO FIT (REF: 19") (24 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

③ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 6 ON PAGE 11.

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

SMCAC FORM 6, 1 NOV 66

PROJECT FSA 43B/2-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 10 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,868 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-4" OR WIDER CAR IS AVAILABLE, SIXTY-FOUR (64) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 111,808 POUNDS CAN BE LOADED.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED REGARDLESS OF THE WIDTH OF THE CAR BEING LOADED.

4. 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 95 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE D", SHOWN AS PIECE MARKED ① IN THE LOAD ON PAGE 10, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 17. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 95.

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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ② THRU ⑤ ON PAGE 28 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 64 THRU 92 FOR GUIDANCE.

8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

10. A 50'-6" LONG CAR FOR SHIPMENT OF A 56-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 102,400 POUNDS. A FULL LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 98,700 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE POSITIONED IN EACH END OF THE CAR.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	16	6
1" X 6"	64	32
2" X 2"	73	25
2" X 3"	29	15
2" X 6"	251	251
4" X 4"	38	51
NAILS	**NO. REQD**	**POUNDS**
6d (2")	80	1/2
10d (3")	476	7-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4

LOAD AS SHOWN

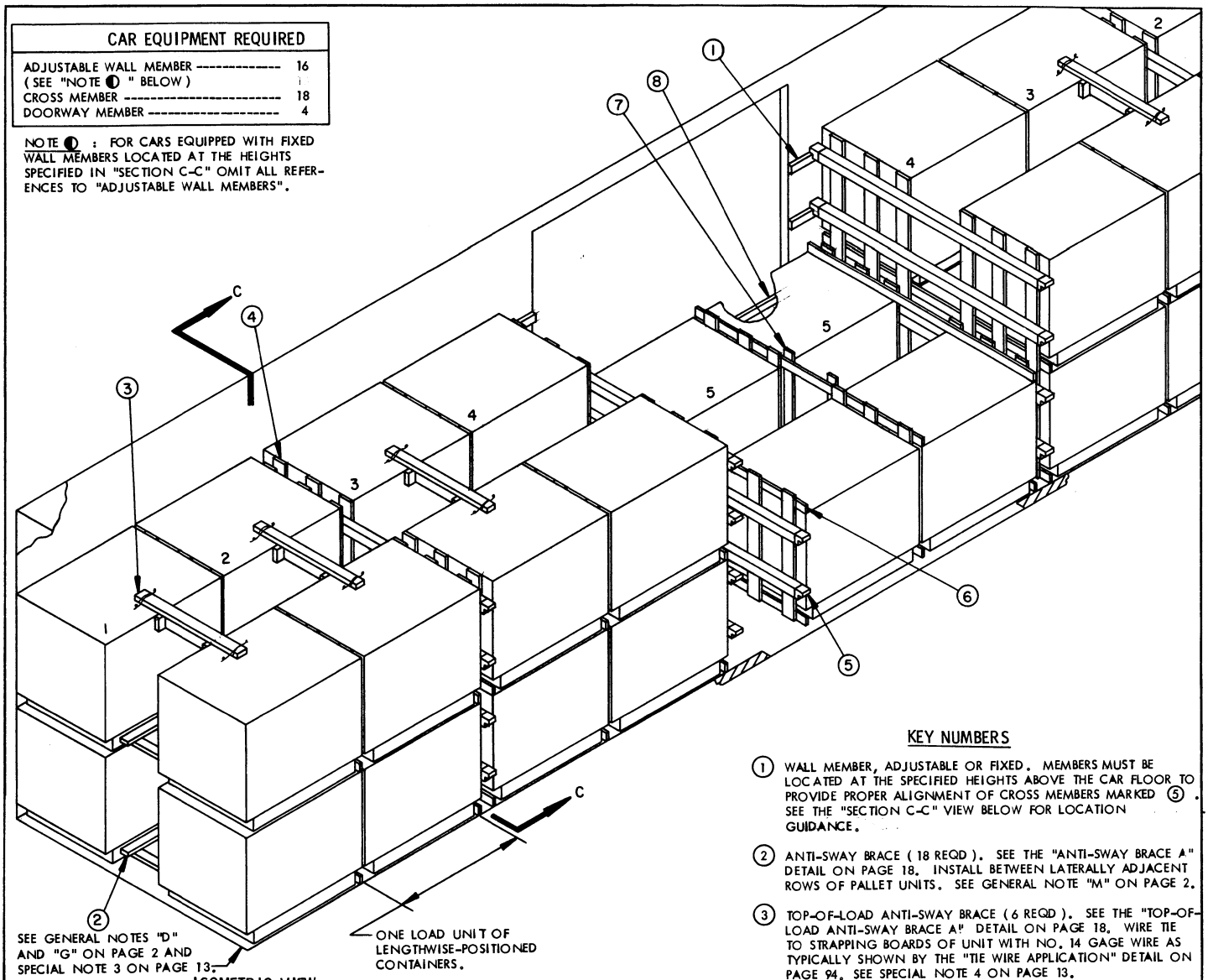
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	56	97,832 LBS
DUNNAGE		771 LBS
TOTAL WEIGHT		98,603 LBS

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	16
CROSS MEMBER	18
DOORWAY MEMBER	4

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



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

ONE LOAD UNIT OF LENGTHWISE-POSITIONED CONTAINERS.

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 (5). SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE.

(2) ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 13.

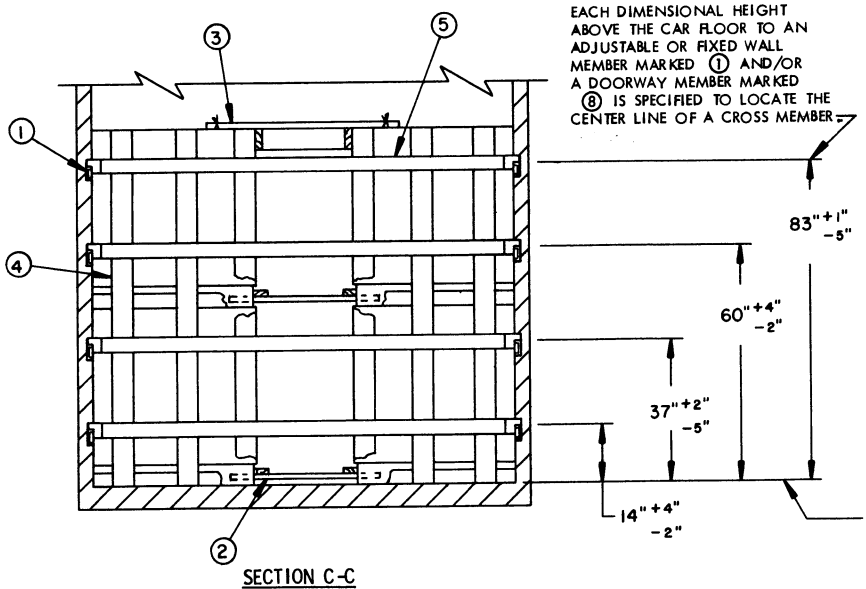
(4) SEPARATOR GATE FOR 2-HIGH (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.

(5) CROSS MEMBER (18 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

(6) SEPARATOR GATE FOR 1-HIGH (3 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 13.

(7) STOP PIECE, 1" X 4" X 54" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECES MARKED (6) W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 13.

(8) DOORWAY MEMBER (4 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 13.



SECTION C-C

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF TWENTY-EIGHT (28) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 48,916 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 GENRAL 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 12, 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" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

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

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 62 AND 63 FOR GUIDANCE.

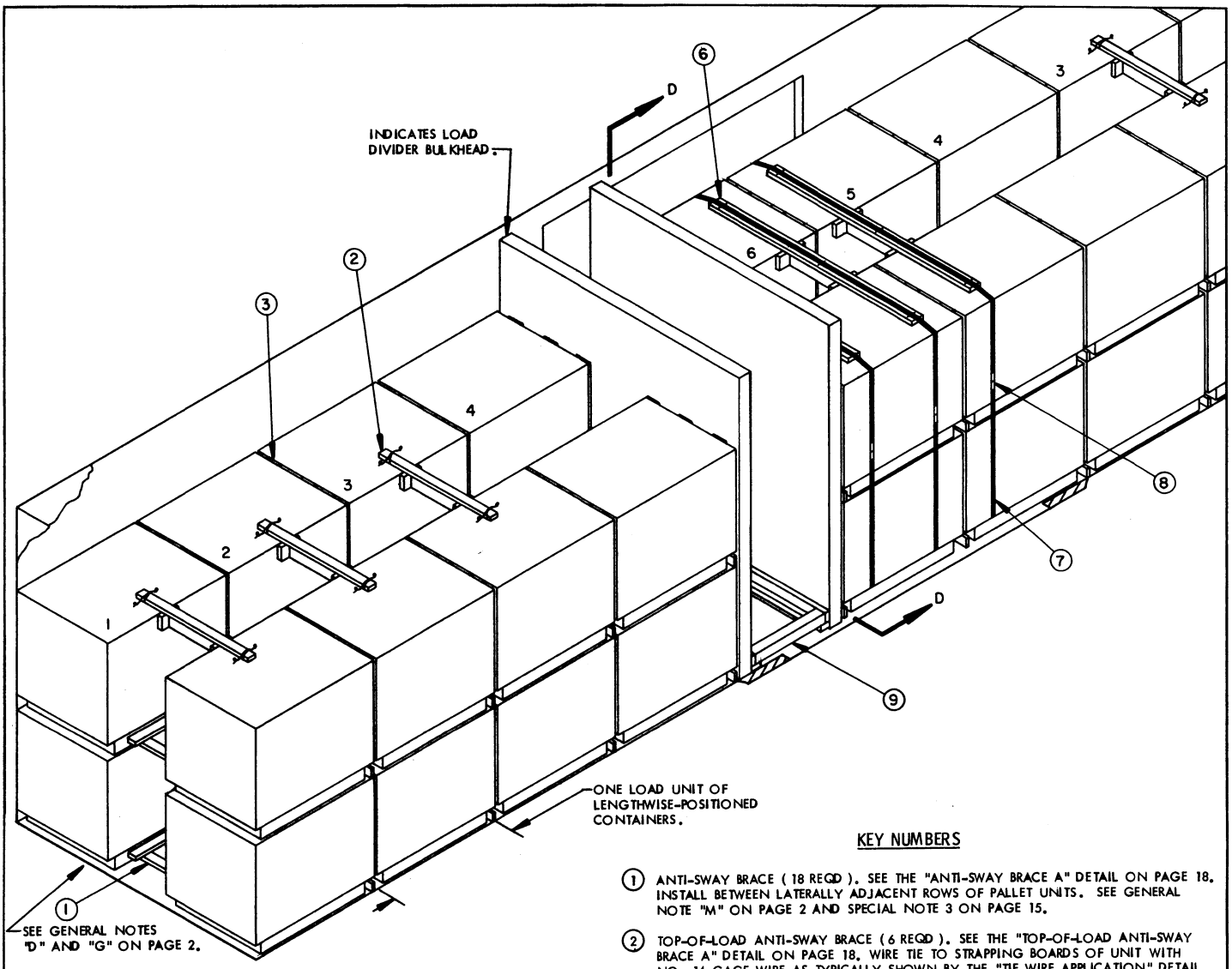
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	251	84
1" X 6"	538	269
2" X 4"	261	174
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	492	3
10d (3")	292	4-1/2
WIRE, NO. 14 GAGE ---------- 60' REQD ---------- 1 LB		

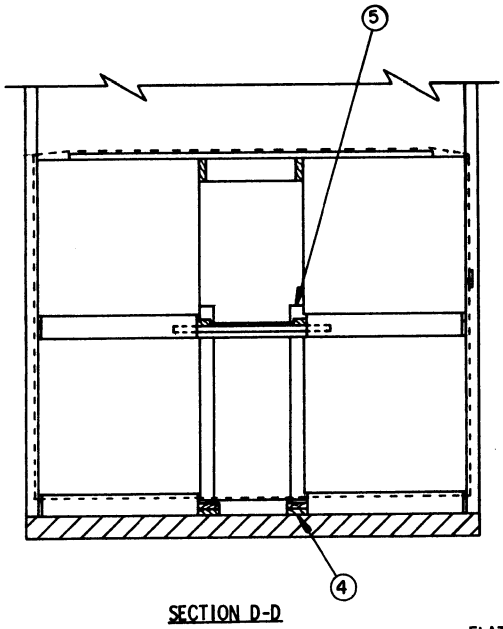
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	36	62,892 LBS
DUNNAGE		1,105 LBS
TOTAL WEIGHT		63,997 LBS

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



ISOMETRIC VIEW



SECTION D-D

KEY NUMBERS

(1) ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 15.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 15.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 15.

(4) SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (4 REQD). POSITION AGAINST PALLETS IN THE DOORWAY AREA AS SHOWN IN "SECTION D-D" VIEW BELOW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACES AT FLOOR LEVEL. SEE GENERAL NOTE "S" ON PAGE 2.

(5) STOP PIECE, 1" X 4" X 54" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED (3) W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 15.

(6) STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD B" DETAIL ON PAGE 18.

(7) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 34'-6" LONG STEEL STRAPPING (3 REQD). ENCIRCLE THE PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN THE ISOMETRIC VIEW. STAPLE STRAP TO STRAPPING BOARD, PIECE MARKED (6) , W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 15.

(8) SEAL FOR 1-1/4" STEEL STRAPPING (6 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(9) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 101. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 9 ON PAGE 15.

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

(SPECIAL NOTES CONTINUED)

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 AND/OR PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 14 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,856 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-TWO (32) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 55,907 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF CARS 9'-3" OR WIDER ARE AVAILABLE, THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 28 MAY BE EMPLOYED. THEN, SIXTY-FOUR (64) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 111,808 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FIFTY-TWO (52) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 90,844 POUNDS, AND FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 69,880 POUNDS.

3. IF THE WOODEN GATE TYPE DOORWAY PROTECTION, PIECE MARKED ⑨ ON PAGE 8, IS USED IN LIEU OF THE NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAP PROCEDURE,, THE LOWER ANTI-SWAY BRACES IN THE DOORWAY AREA ARE REQUIRED.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION " DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

6. SEPARATOR GATES IN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS, MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑤. 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 94 FOR CONSTRUCTION GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑨ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE LOAD UNIT LENGTH OR WIDTH. IF THE PALLET UNITS ARE POSITIONED IN A CROSSWISE LOADING PATTERN, SEE PIECES MARKED ① THRU ⑤ ON PAGE 28 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑨ IN THE LOAD ON PAGE 14, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD PATTERN, THE STRUT ASSEMBLY WOULD NOT BE REQUIRED. IF A CROSSWISE LOADING PATTERN IS BEING USED, A STRUT ASSEMBLY WILL BE REQUIRED IF ONE END OF THE LOAD CONTAINS MORE THAN SEVEN (7) 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 66 THRU 77 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	201	67
1" X 6"	460	230
2" X 4"	266	178
2" X 6"	92	92
NAILS	**NO. REQD**	**POUNDS**
6d (2")	372	2-1/4
10d (3")	294	4-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	40	1

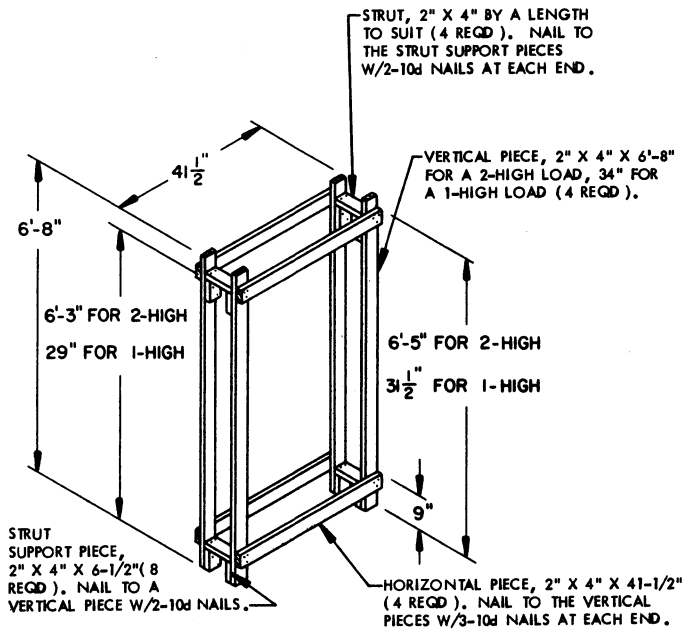
STEEL STRAPPING, 1-1/4" X .035" OR .031" — 104' REQD — 15 LBS
SEAL FOR 1-1/4" STRAPPING — 6 REQD — 1/4 LB
WIRE, NO. 14 GAGE — 60' REQD — 1 LB
STAPLES — 9 REQD — NIL

THE LUMBER AND NAILS FOR THE STRUT ASSEMBLY, PIECE MARKED ⑨, ARE NOT INCLUDED IN THIS BILL OF MATERIAL.

LOAD AS SHOWN

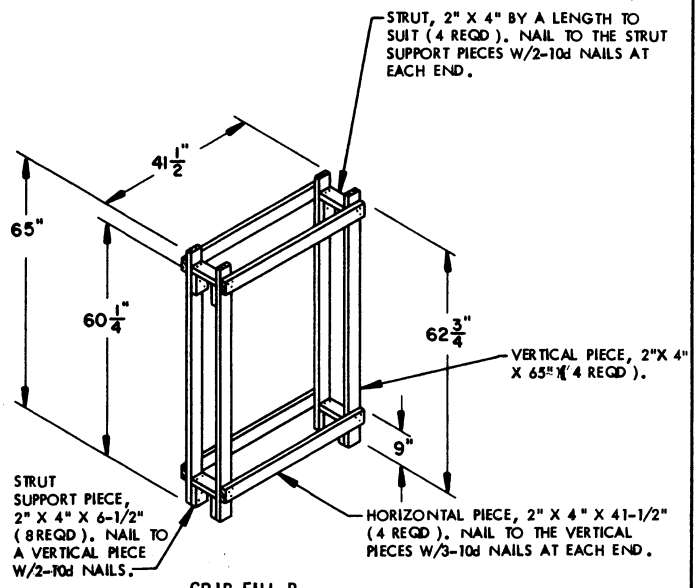
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	40	69,880 LBS
DUNNAGE		1,160 LBS
TOTAL WEIGHT		71,040 LBS

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



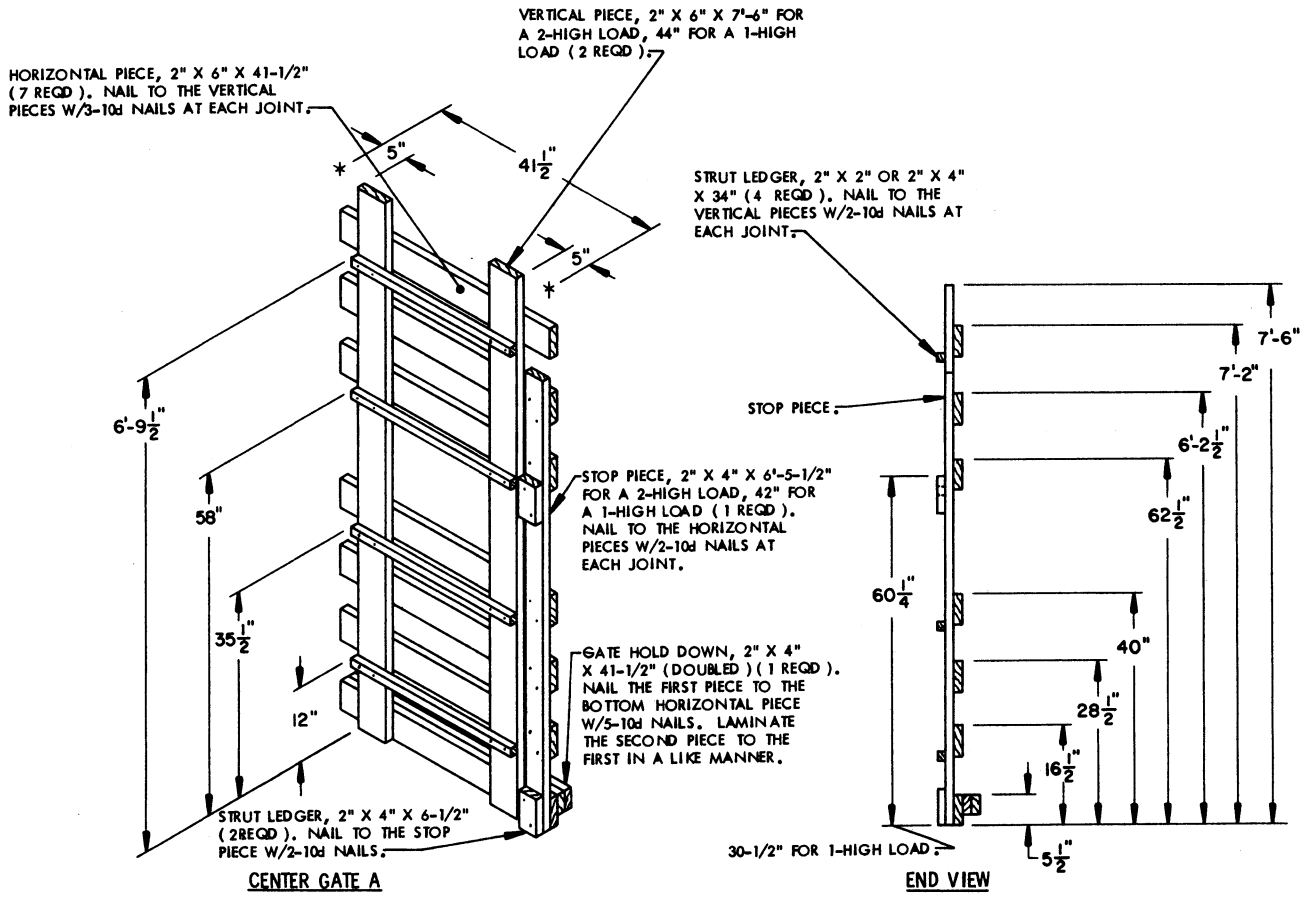
CRIB FILL A

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



CRIB FILL B

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



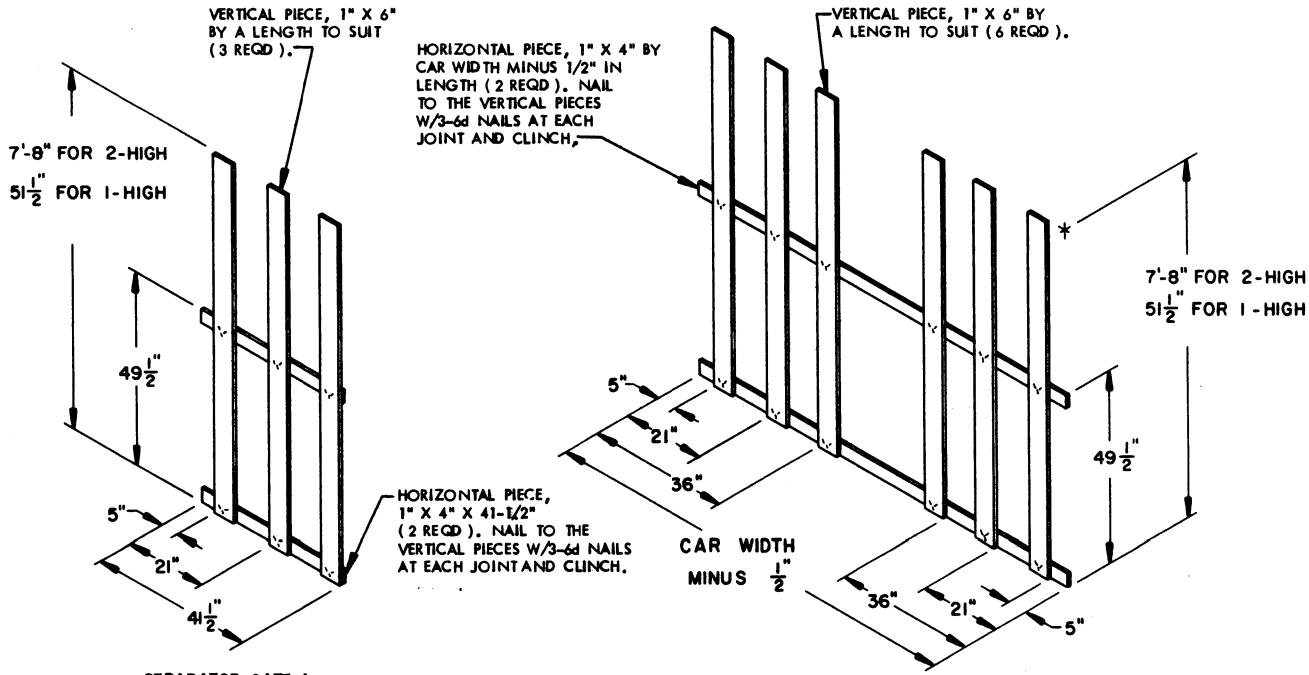
CENTER GATE A

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED

END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

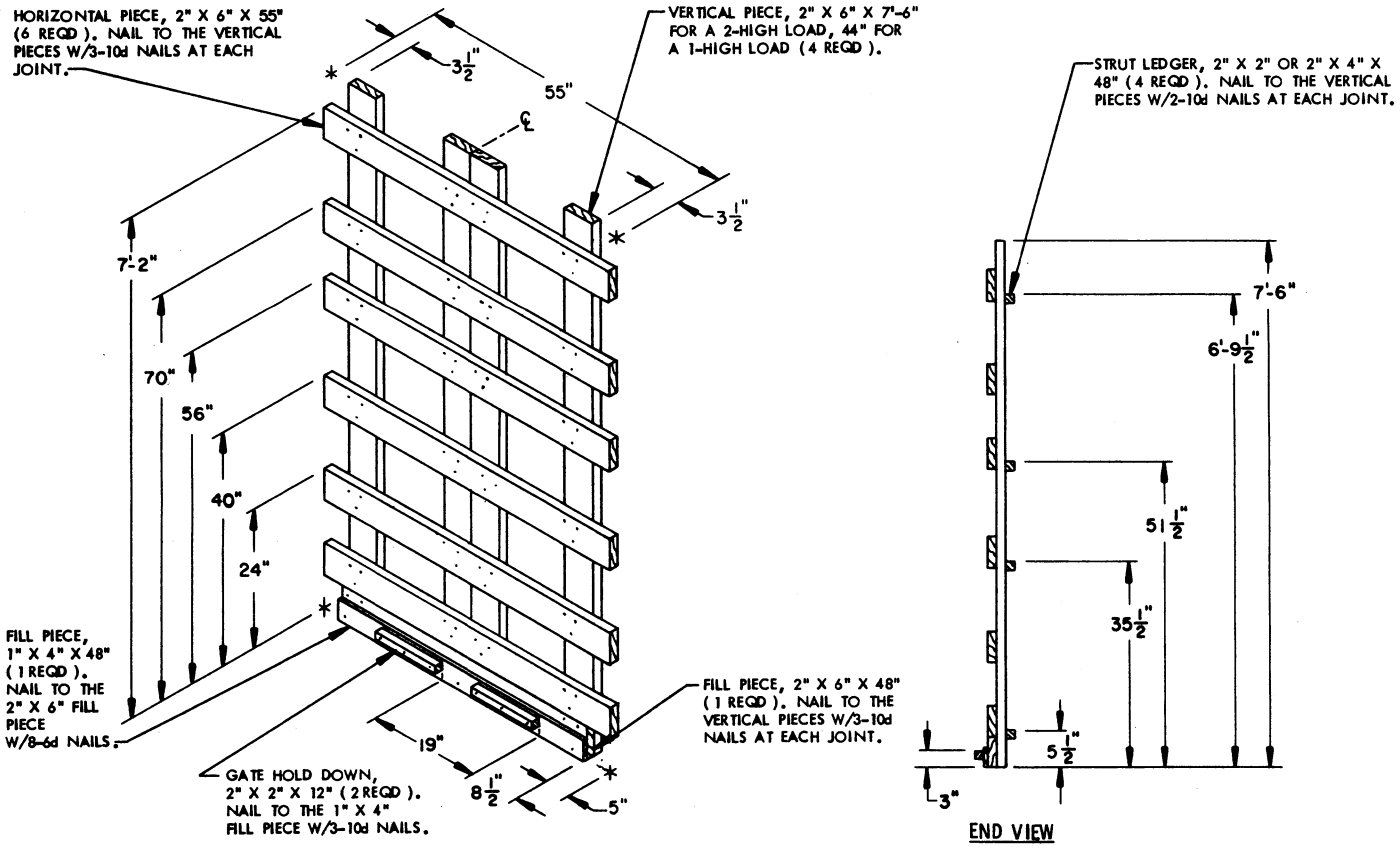
PROJECT FSA 43B/2-63



SEPARATOR GATE A

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

SEPARATOR GATE B

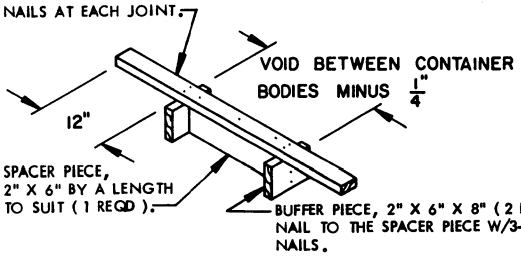


CENTER GATE B

END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE SPACER PIECE W/3-10d NAILS AND TO THE BUFFER PIECES W/2-10d NAILS AT EACH JOINT.

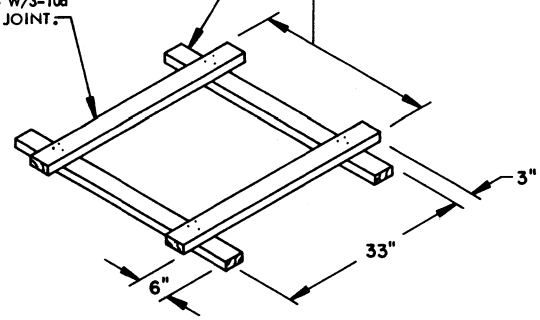


TOP-OF-LOAD ANTI-SWAY BRACE A

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

FABRICATE TO FIT BETWEEN THE POSTS OF LATERALLY ADJACENT PALLETS.

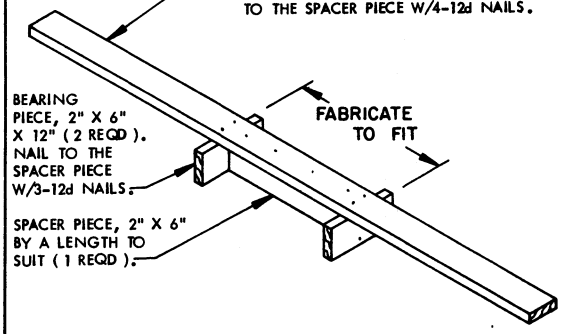
BUFFER PIECE, 2" X 4" X 39" (2 REQD). NAIL TO THE RETAINER PIECES W/3-10d NAILS AT EACH JOINT.



ANTI-SWAY BRACE A

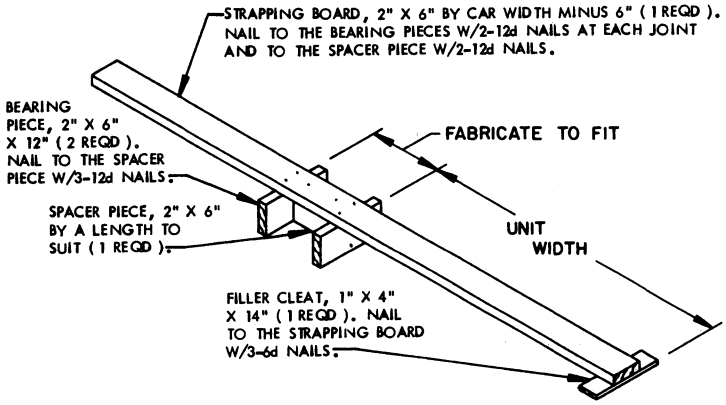
IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENINGS OF A LOADED PALLET UNIT PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET UNIT.

STRAPPING BOARD, 2" X 6" BY CAR WIDTH MINUS 8" (1 REQD). NAIL TO THE BEARING PIECES W/2-12d NAILS AT EACH JOINT AND TO THE SPACER PIECE W/4-12d NAILS.



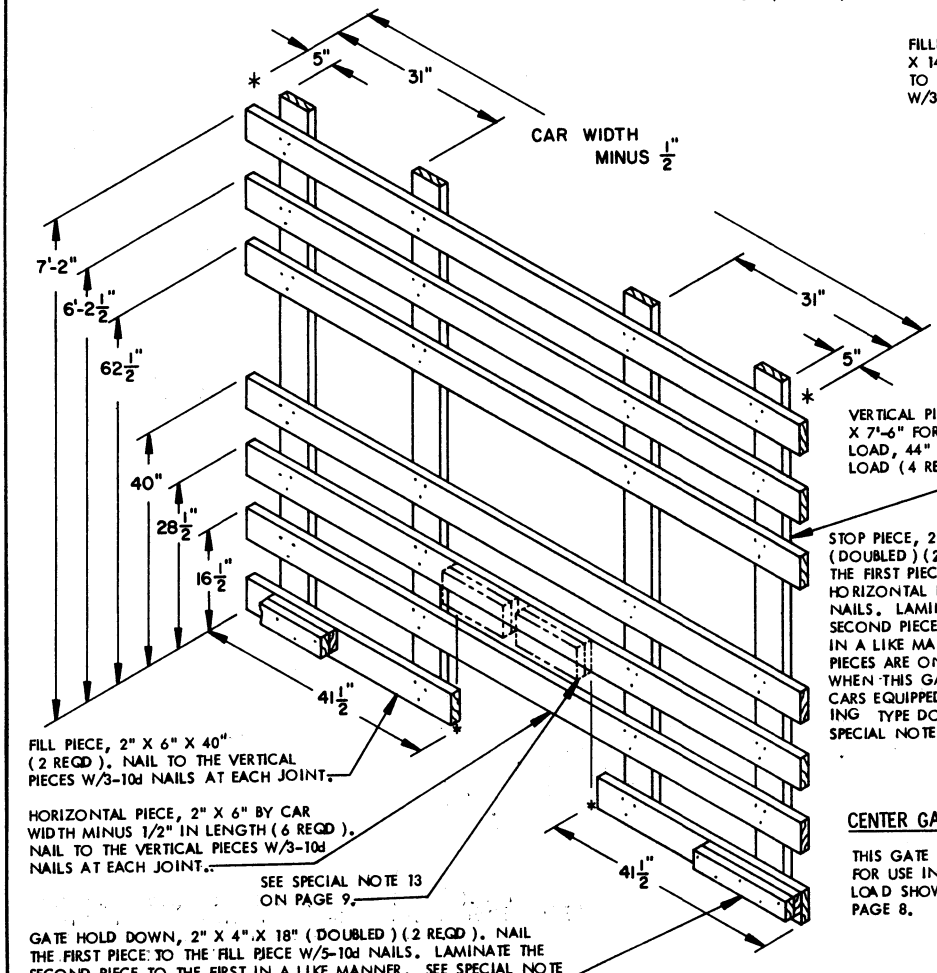
STRAPPING BOARD B

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

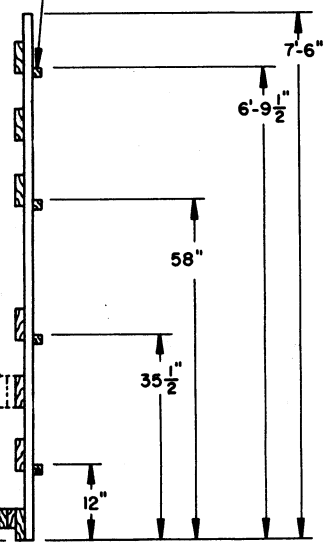


STRAPPING BOARD A

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



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



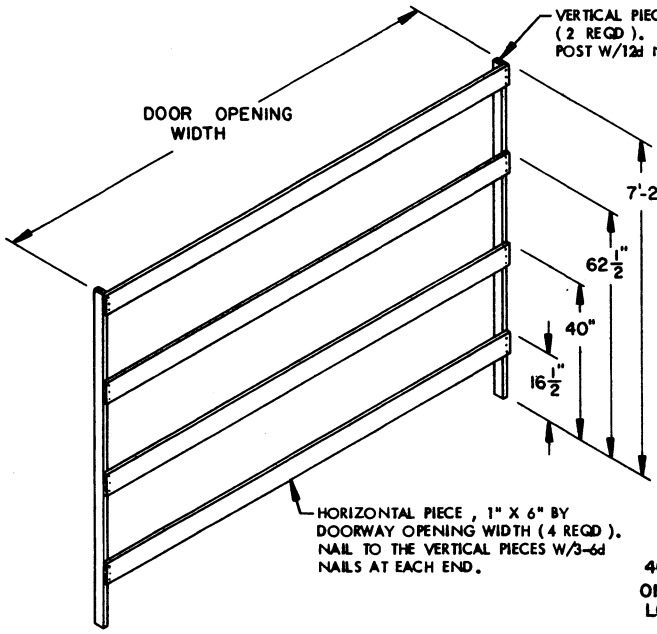
END VIEW

CENTER GATE C

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

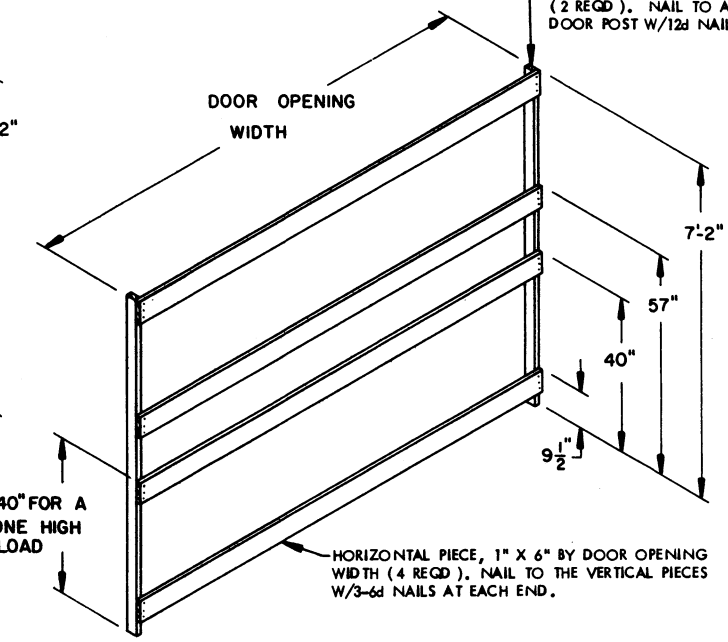
DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

PROJECT FSA 43B/2-63



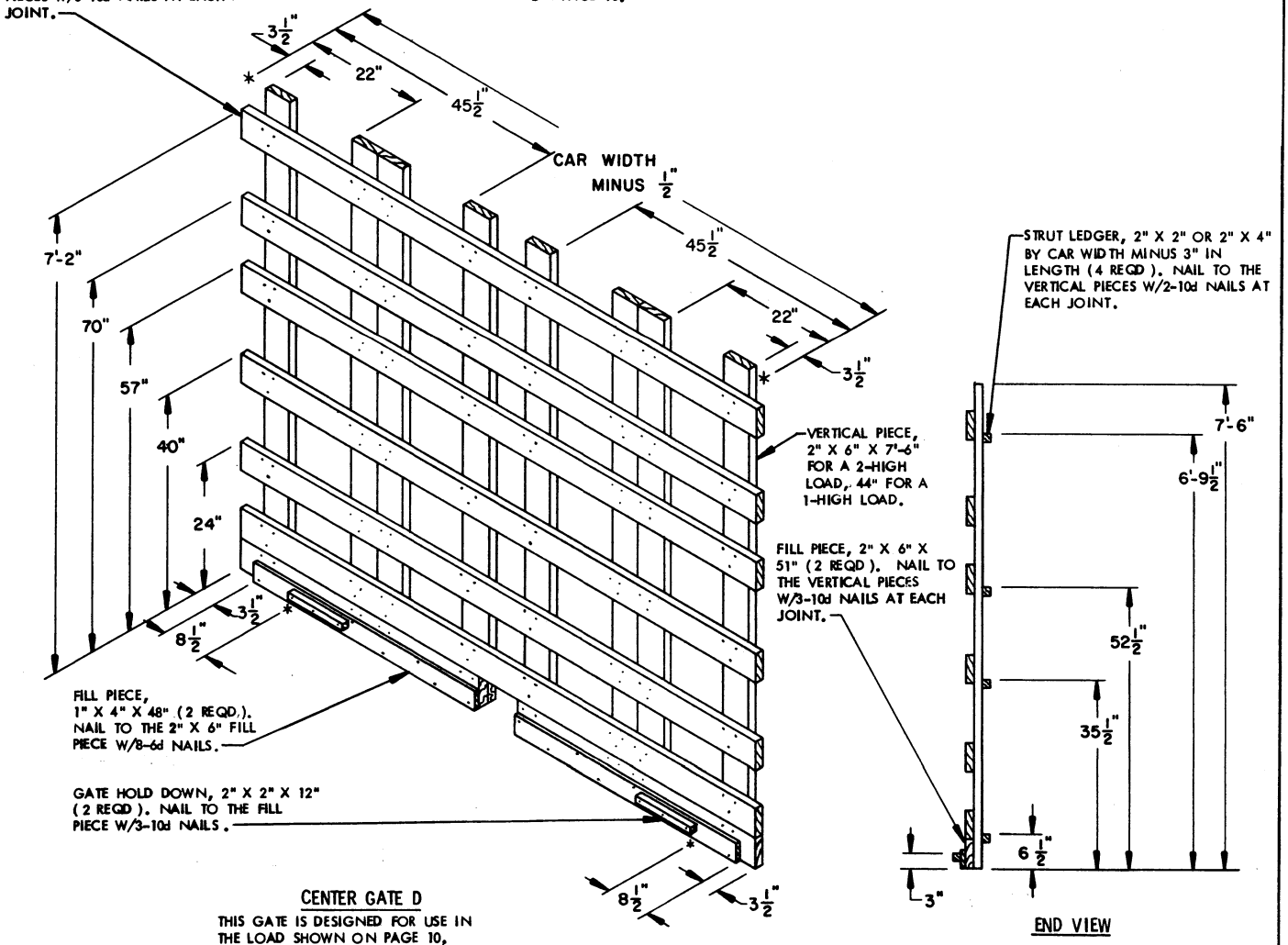
DOORWAY PROTECTION A

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



DOORWAY PROTECTION B

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



CENTER GATE D

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

END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

KEY NUMBERS FOR PLUG TYPE DOORWAY PROTECTION

(20) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

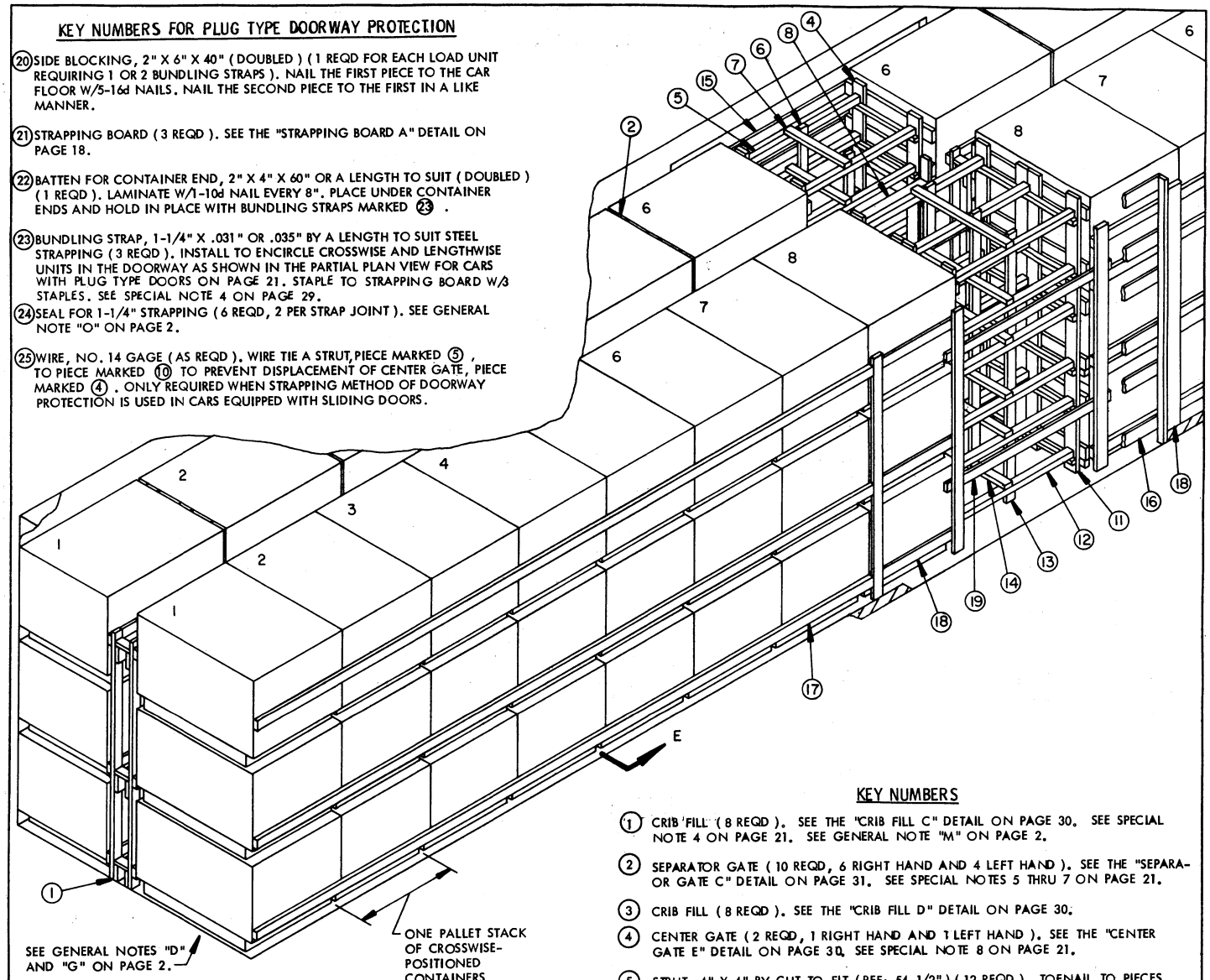
(21) STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 18.

(22) BATTEN FOR CONTAINER END, 2" X 4" X 60" OR A LENGTH TO SUIT (DOUBLED) (1 REQD). LAMINATE W/1-10d NAIL EVERY 8". PLACE UNDER CONTAINER ENDS AND HOLD IN PLACE WITH BUNDLING STRAPS MARKED (23).

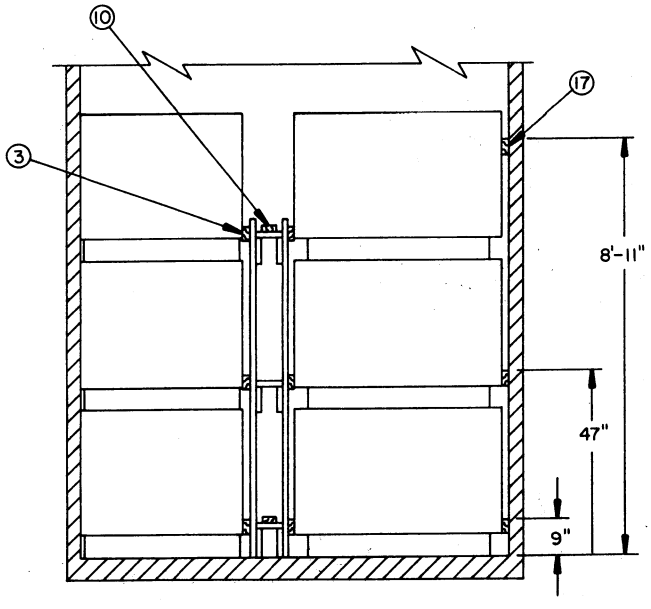
(23) BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE CROSSWISE AND LENGTHWISE UNITS IN THE DOORWAY AS SHOWN IN THE PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS ON PAGE 21. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 29.

(24) SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

(25) WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED (5), TO PIECE MARKED (10) TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED (4). ONLY REQUIRED WHEN STRAPPING METHOD OF DOORWAY PROTECTION IS USED IN CARS EQUIPPED WITH SLIDING DOORS.



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 30. SEE SPECIAL NOTE 4 ON PAGE 21. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SEPARATOR GATE (10 REQD, 6 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 31. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 21.

(3) CRIB FILL (8 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 30.

(4) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE E" DETAIL ON PAGE 30. SEE SPECIAL NOTE 8 ON PAGE 21.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (12 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

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

(7) HORIZONTAL STRUT BRACING, 2" X 4" X 34" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(8) STRUT, 2" X 4" BY CUT TO FIT (REF: 54-1/2") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED (4) W/2-12d NAILS AT EACH END.

(9) SIDE BLOCKING FOR CENTER GATE "E", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 21.

(10) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 6'-5") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS.

(11) CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 31.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 58") (18 REQD). TOENAIL TO PIECES MARKED (11) W/2-16d NAILS AT EACH END. POSITION MIDDLE STRUT SO AS TO CENTER ON JOINT OF THE TWO 2" X 6" VERTICAL PIECES.

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

(14) HORIZONTAL STRUT BRACING, 2" X 4" X 48" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

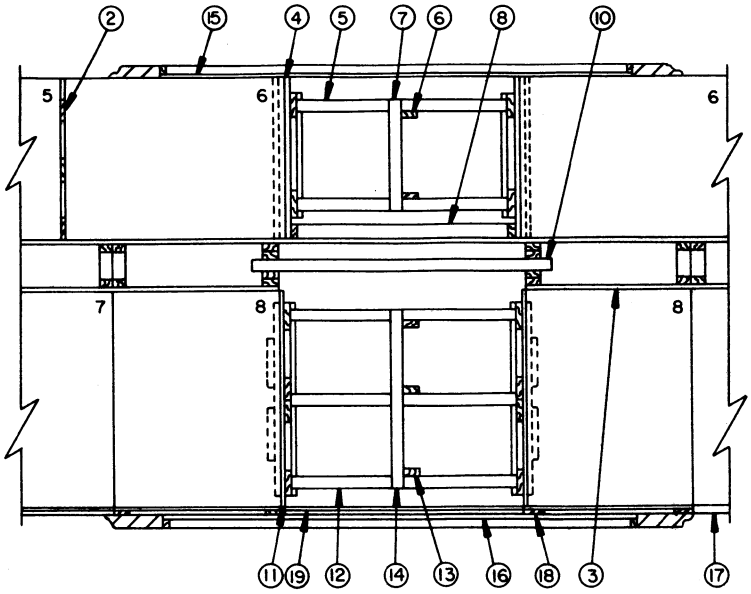
(15) DOORWAY PROTECTION (1 REQD). SEE THE DOORWAY "PROTECTION C" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 21.

(16) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 33. NAIL TO THE DOOR POSTS W/12d NAILS.

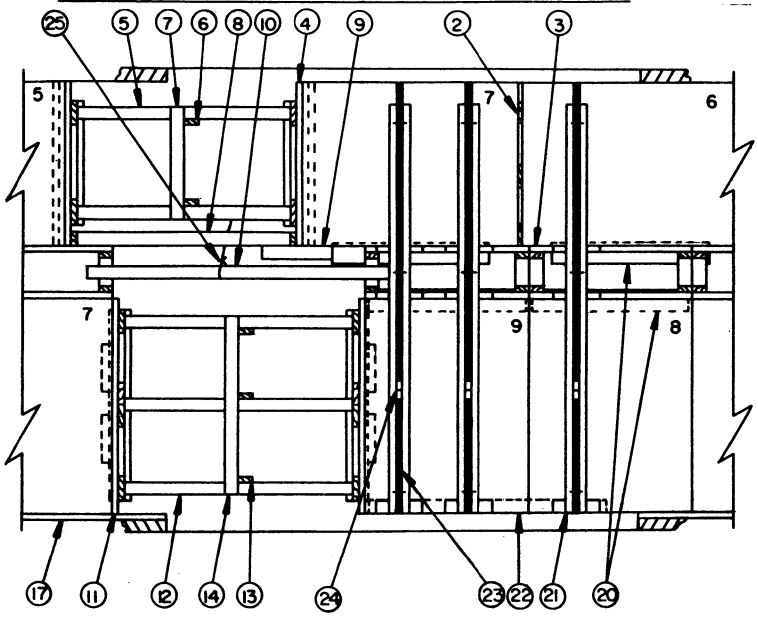
(CONTINUED ON PAGE 21)

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

SMCAC FORM 6-1, 1 NOV 87
PROJECT FSA 43B/2-63
SUPERSEDES SMCAC FORM 6, 1 NOV 85



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS

(KEY NUMBERS CONTINUED FROM PAGE 20)

(17) SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 24'-2-1/2") (6 REQD). NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". SEE SPECIAL NOTES 13 THRU 15 ON PAGE 5.

(18) SIDE FILL ASSEMBLY (2 REQD). SEE THE "SIDE FILL ASSEMBLY D" DETAIL ON PAGE 63.

(19) SIDE FILL ASSEMBLY RETAINER, 1" X 4" BY A LENGTH TO SUIT (REF: 6'-5") (2 REQD). POSITION AT 31" AND 7'-1" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (18) W/4-6d NAILS AT EACH JOINT.

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 20 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-NINE (69) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 98,049 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR A LADING WEIGHT OF 76,734 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. NOTE THAT IN A 50'-6" CAR THE LOADING PATTERN SHOULD BE FIVE (5) UNITS OF LENGTHWISE POSITIONED CONTAINERS IN EACH END OF THE CAR AND SIX (6) AND SEVEN (7) UNITS OF CROSSWISE CONTAINERS.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS AS NARROW AS 8'-0". IF A CAR HAVING DOOR OPENINGS LESS THAN 8'-0" WIDE IS TO BE LOADED, THE LENGTHWISE UNITS SHOULD BE LOADED SIX (6) STACKS LONG IN EACH END OF THE CAR AND THE CROSSWISE UNITS SHOULD BE LOADED EIGHT (8) STACKS LONG IN EACH END.

4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 20, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

6. ALL SEPARATOR GATES, PIECES MARKED (2), WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

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. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-LAYER LOADS FROM 41-1/2" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.

8. CENTER GATES "E" AND "F" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 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 OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (15) AND (16) IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD-BUNDLING STRAPS MUST BE USED AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS". AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECE MARKED (3), MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING, PIECE MARKED (17). ALSO NOTE THAT A STRUT, PIECE MARKED (5), MUST BE WIRE TIED TO PIECE MARKED (10) TO PREVENT DISPLACEMENT OF THE CENTER GATE, PIECE MARKED (4), WHEN LOADING IN A CAR EQUIPPED WITH SLIDING DOORS.

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 68. SIX (6) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACK NUMBERED 7, THE CROSSWISE STACK NUMBERED 9 AND THE ADJACENT CRIB FILL. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 84 AND 85.

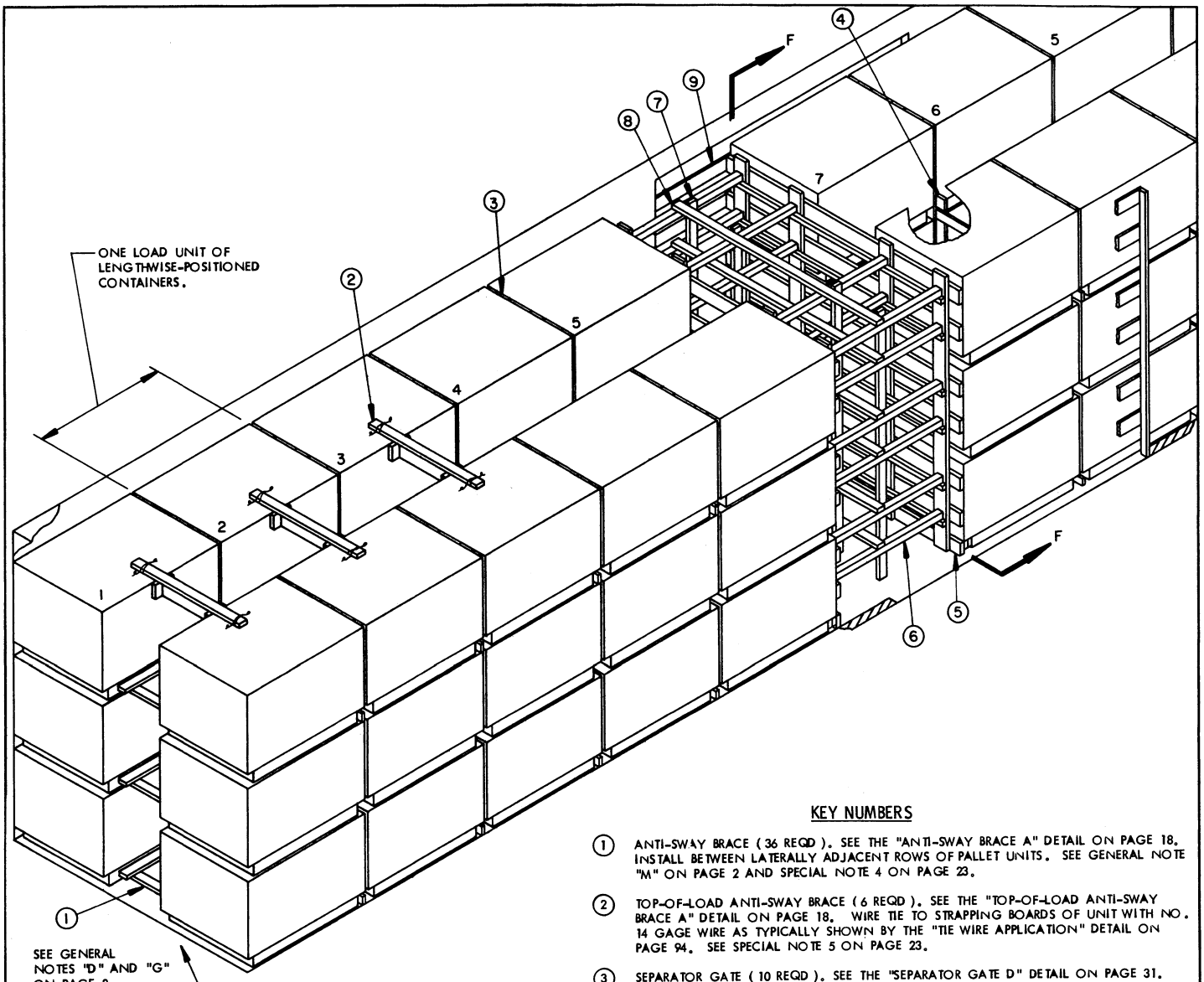
11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 90 AND 92 FOR CROSSWISE UNITS.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

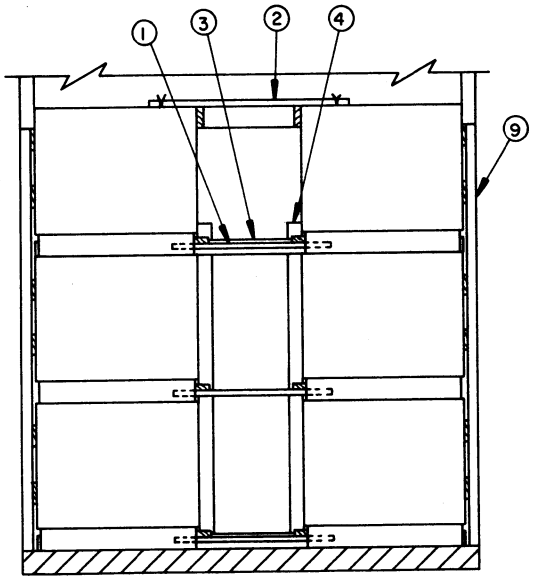
(CONTINUED ON PAGE 5)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	119,364 LBS
DUNNAGE		3,227 LBS
TOTAL WEIGHT		122,591 LBS

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



ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

(1) ANTI-SWAY BRACE (36 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 23.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 5 ON PAGE 23.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6, 8, AND 17 ON PAGE 23.

(4) STOP PIECE, 1" X 4" X 7'-0" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3), WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 23.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 32. SEE SPECIAL NOTES 9, 10, AND 13 ON PAGE 23.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

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

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

(9) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 23.

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

PROJECT FSA 43B/2-63

(SPECIAL NOTES CONTINUED)

13. IF THE NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAP ALTERNATIVE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑨ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING. IF NAILING TO THE CAR FLOOR IS NOT FEASIBLE OR DESIRABLE, DOUBLED 2" X 6" X 12" MATERIAL STOP PIECES MAY BE NAILED TO EACH GATE AS DEPICTED BY THE PHANTOM LINES ON THE "CENTER GATE G" DETAIL ON PAGE 32. NAIL THE FIRST PIECE TO A HORIZONTAL PIECE ON THE GATE W/3-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNIT, 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 64 THRU 92 FOR GUIDANCE.

15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE L" DETAIL ON PAGE 92. 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 48" FOR A 2 OR 3-HIGH LOAD, OR WILL BE 12" LONG FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "L" IS USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. 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 FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 85,260 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-EIGHT (48) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,208 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAP ALTERNATIVE DOORWAY PROTECTION PROCEDURES, AS SHOWN ON PAGE 14 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑨ , 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.

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 A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

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

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

9. CENTER GATE "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 FOR GUIDANCE.

10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE G" SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 22, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 30. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 95. OMIT THE STOP PIECE AND 2" X 4" STRUT LEDGERS FROM "CENTER GATE E".

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "G", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 97 FOR GUIDANCE.

12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑨ IN THE LOAD ON PAGE 22, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ④ , ⑥ , ⑦ AND ⑧ ON PAGE 14 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. SEE SPECIAL NOTE 13.

(CONTINUED AT LEFT)

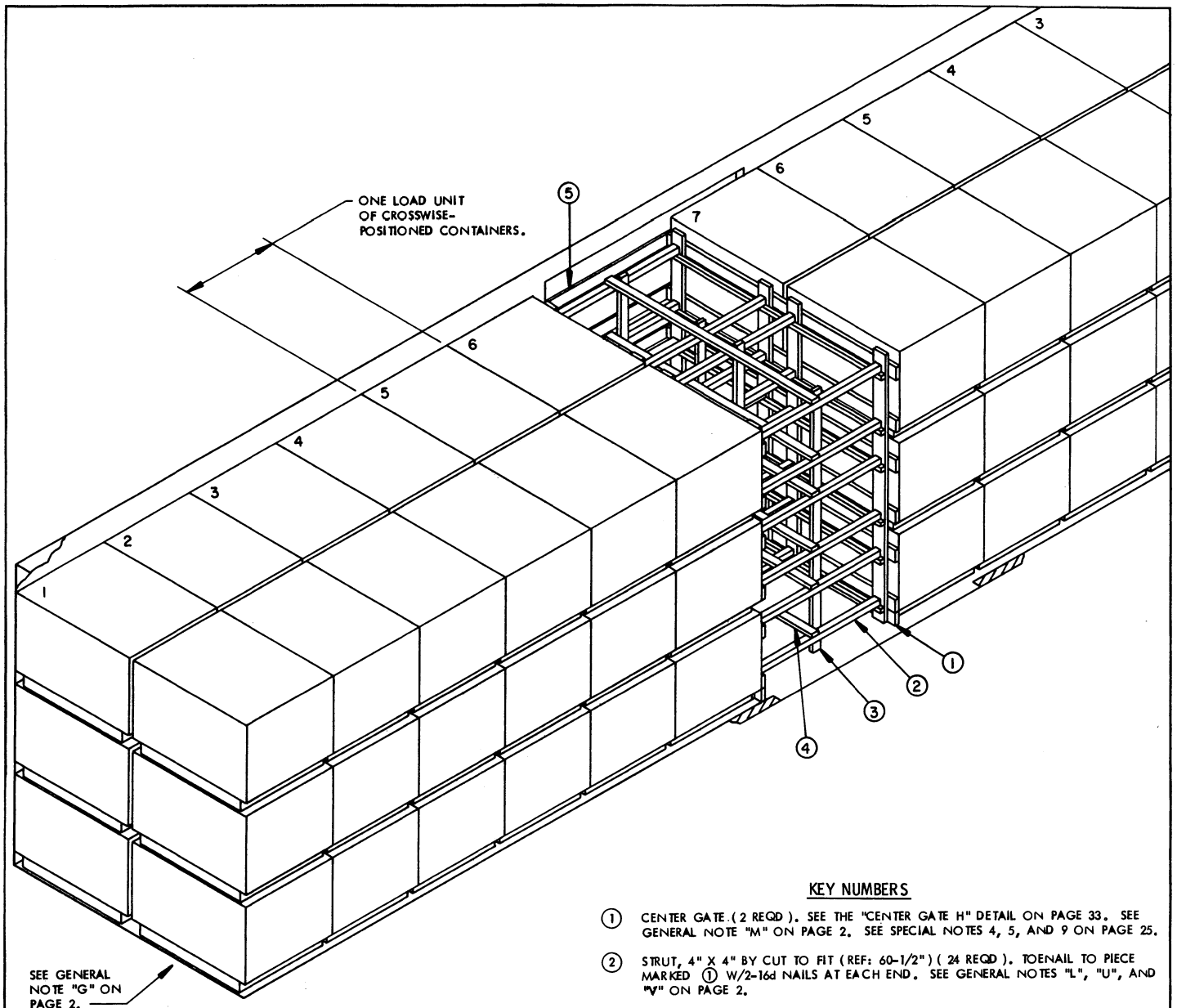
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	197	66
1" X 6"	693	347
2" X 2"	104	35
2" X 3"	36	18
2" X 4"	605	404
2" X 6"	220	220
4" X 4"	109	146
NAILS	**NO. REQD**	**POUNDS**
6d (2")	444	2-3/4
10d (3")	958	14-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 60' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	102,312 LBS
DUNNAGE		2,494 LBS
TOTAL WEIGHT		104,806 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

(1) CENTER GATE. (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 33. SEE GENERAL NOTE "M" ON PAGE 2. SEE SPECIAL NOTES 4, 5, AND 9 ON PAGE 25.

(2) STRUT, 4" X 4" BY CUT TO FIT (REF: 60-1/2") (24 REQD). TOENAIL TO PIECE MARKED (1) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U", AND "V" ON PAGE 2.

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

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

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 33. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 25.

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
78-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

PROJECT FSA 43B/2-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 8 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,260 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-4" OR WIDER CAR IS AVAILABLE, NINETY-SIX (96) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 136,416 POUNDS CAN BE LOADED. SEE SPECIAL NOTE 9 FOR CENTER GATE MODIFICATIONS WHICH MUST BE MADE IF 60'-LONG CARS ARE TO BE USED.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED REGARDLESS OF THE WIDTH OF THE CAR BEING LOADED.

4. 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 95 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE H", SHOWN AS PIECE MARKED (1) IN THE LOAD ON PAGE 24, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 31. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 95.

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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (5) IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED (2) THRU (5) ON PAGE 28 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 64 THRU 92 FOR GUIDANCE.

8. IF A FULL LOAD IS TO BE SHIPPED IN A 60' LONG CAR, SIX (6) STRUTS ARE REQUIRED FOR EACH ROW/TIER. TO ACCOMMODATE THESE ADDITIONAL STRUTS, FOUR (4) 2" X 6" VERTICAL PIECES MUST BE ADDED TO CENTER GATE H AS SHOWN BY THE PHANTOM LINES ON THE DETAIL ON PAGE 33. A 4" X 4" STRUT WILL BE INSTALLED SO AS TO BE CENTERED ON THESE VERTICAL PIECES AT TWO (2) LOCATIONS FOR EACH ROW/TIER.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

11. A 50'-6" LONG CAR FOR SHIPMENT OF A 78-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 120,300 POUNDS. AN 84-UNIT LOAD CAN ALSO BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 120,300 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE POSITIONED IN EACH END OF THE CAR; A LOAD LIMIT OF AT LEAST 124,800 POUNDS IS REQUIRED IF LOADED WITH EIGHT (8) LOAD UNITS IN ONE END.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	16	6
1" X 6"	96	48
2" X 2"	113	38
2" X 3"	36	18
2" X 4"	91	61
2" X 6"	206	206
4" X 4"	121	162
NAILS	NO. REQD	POUNDS
6d (2")	104	3/4
10d (3")	420	6-1/2
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4

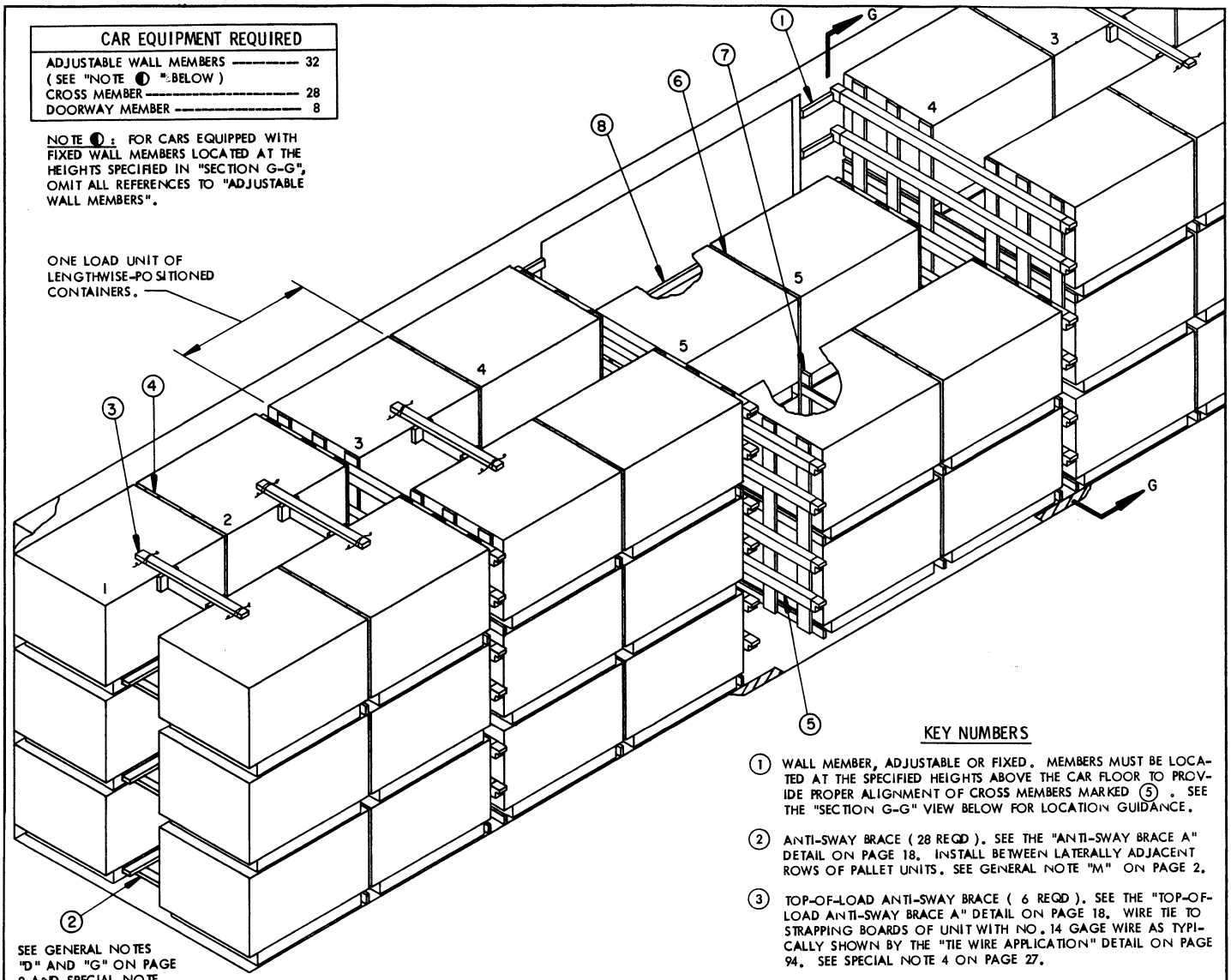
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	78	110,838 LBS
DUNNAGE		1,089 LBS
TOTAL WEIGHT		111,927 LBS

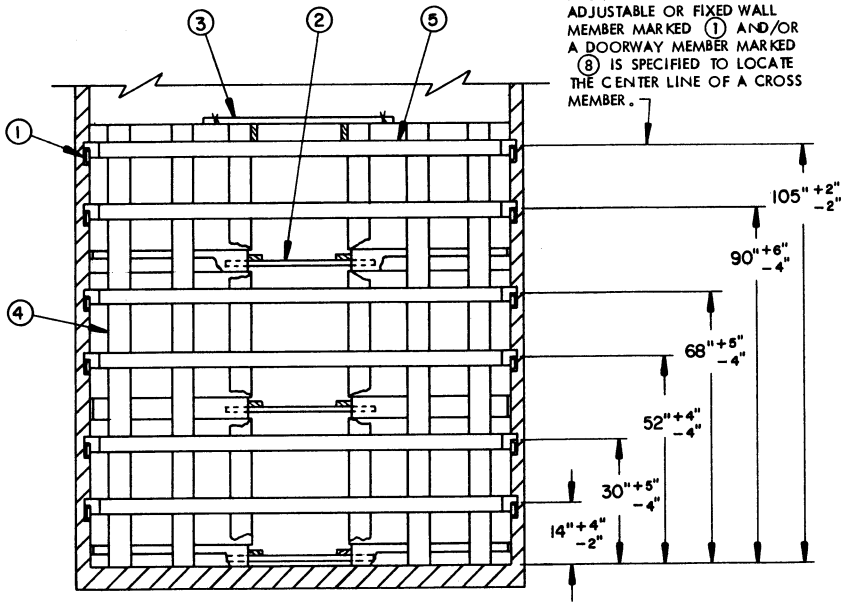
FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
78-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBERS (SEE "NOTE ◐" BELOW)	32
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 REFERENCES TO "ADJUSTABLE WALL MEMBERS".



ISOMETRIC VIEW



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 (28 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 27.

(4) SEPARATOR GATE FOR 3-HIGH (10 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 27.

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

(6) SEPARATOR GATE FOR 2-HIGH (3 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 27.

(7) STOP PIECE, 1" X 4" X 48". (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED (6) W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 27.

(8) DOORWAY MEMBER (8 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 27.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 26 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 62,524 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 26, 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" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED (7). IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE:" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL FOUR 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 62 AND 63 FOR GUIDANCE.

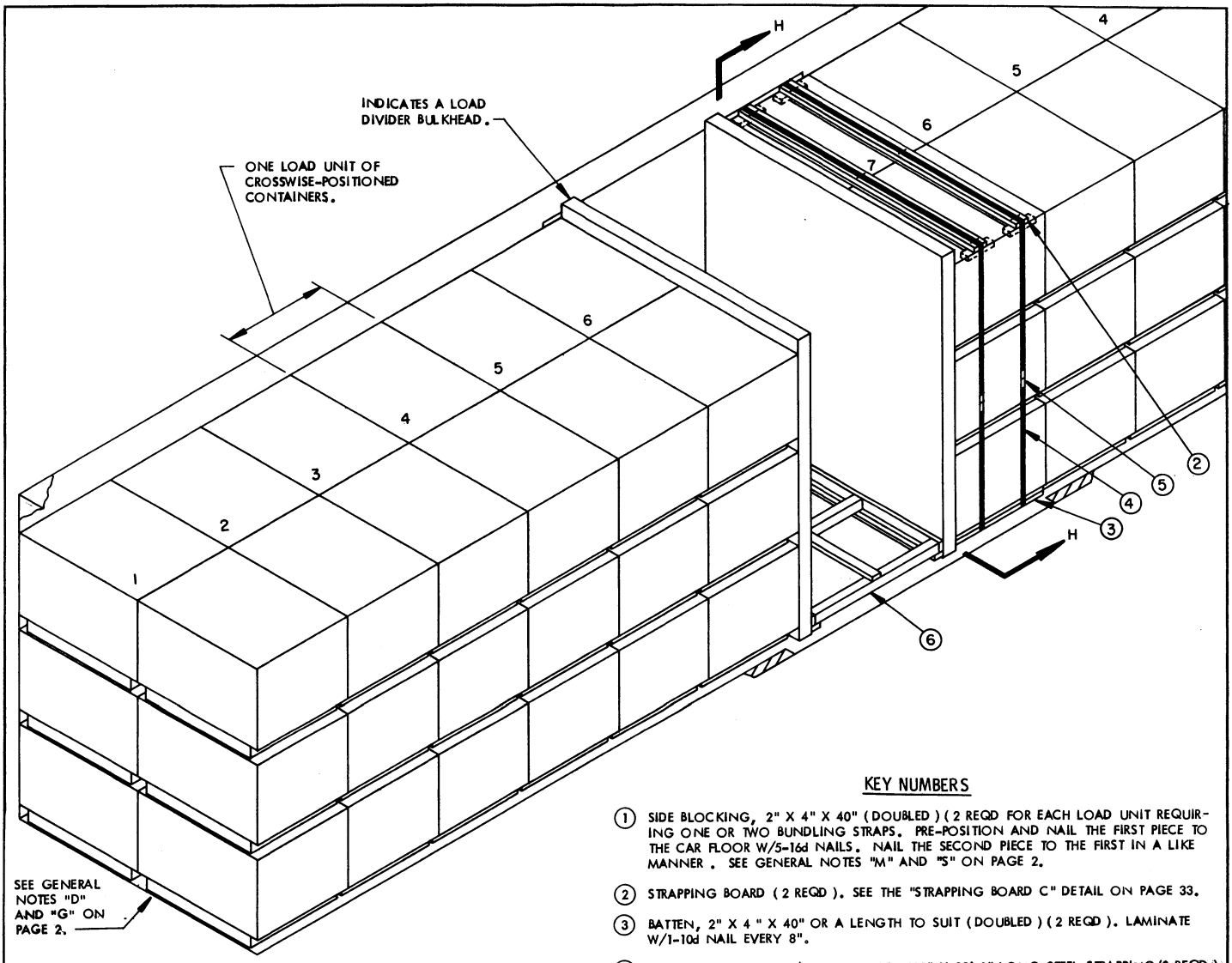
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	252	84
1" X 6"	688	344
2" X 4"	391	261
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	492	3
10d (3")	414	6-1/2
WIRE, NO. 14 GAGE ---------- 60' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	79,576 LBS
DUNNAGE		1,431 LBS
TOTAL WEIGHT		81,007 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

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

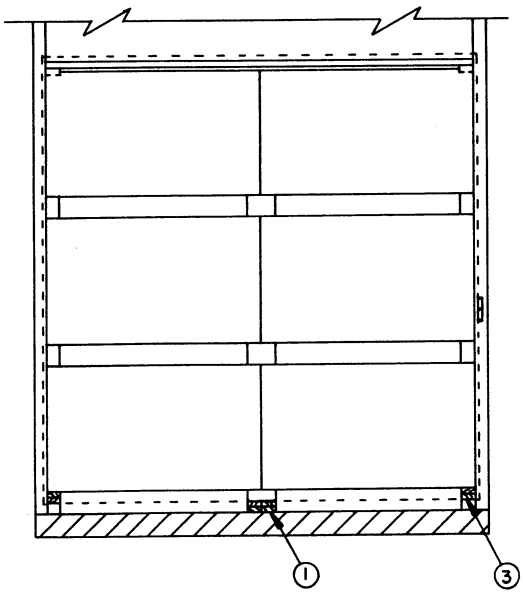
(2) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 33.

(3) BATTEN, 2" X 4" X 40" OR A LENGTH TO SUIT (DOUBLED) (2 REQD). LAMINATE W/1-10d NAIL EVERY 8".

(4) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 39'-0" LONG STEEL STRAPPING (2 REQD.), ENCIRCLE THE PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN THE ISOMETRIC VIEW. STAPLE TO STRAPPING BOARD, PIECE MARKED (2), W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 29.

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

(6) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 101. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 5 ON PAGE 29.



SECTION H-H

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

PROJECT FSA 43B/2-63

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. CAUTION: A CAR HAVING A DOOR OPENING HEIGHT OF AT LEAST 9'-9" IS REQUIRED FOR THE DEPICTED LOAD. IF THE CAR FURNISHED HAS A DOOR OPENING LESS THAN 9'-9" IT WILL BE NECESSARY TO OMIT THE LOAD UNIT MARKED "7" AND POSSIBLY THE LOAD UNIT MARKED "6". SEE GENERAL NOTES "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 28 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 136,416 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SIXTY (60) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 85,260 POUNDS, WHEN USING THE DEPICTED PROCEDURES. A LENGTHWISE LOADING PATTERN SHOWN ON PAGE 14 MAY BE EMPLOYED. THEN, SEVENTY-TWO (72) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 102,312 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY (60) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 85,260 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,208 POUNDS.

3. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, AND THE UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR, THE DEPICTED NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. IF THE UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR, REFER TO PIECES MARKED ④, ⑥, ⑦, AND ⑧ ON PAGE 14 FOR GUIDANCE. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND NAILABLE DOOR POSTS, PIECE MARKED ⑤ ON PAGE 24 WILL BE USED FOR A LOAD OF CROSSWISE POSITIONED CONTAINERS OR PIECE MARKED ⑨ ON PAGE 22 WILL BE USED FOR A LOAD OF LENGTHWISE POSITIONED CONTAINERS. REFER TO PAGES 98 THRU 100 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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

5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 28, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN FIVE (5) LOAD UNITS OF SIX (6) PALLET UNITS, OR MORE THAN THIRTY-FIVE (35) PALLET UNITS.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN 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 66 THRU 77 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 AND/OR PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

9. A 50'-6" LONG CAR FOR SHIPMENT OF A 78-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 119,800 POUNDS. THE LOAD CANNOT BE INCREASED; THERE WILL NOT BE ENOUGH SPACE REMAINING FOR THE REQUIRED STRUT ASSEMBLY, PIECE MARKED ⑥.

BILL OF MATERIAL

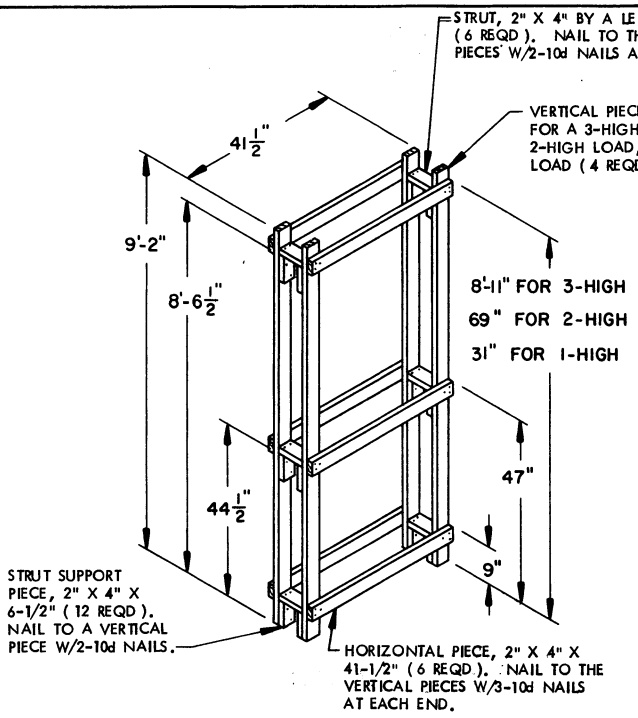
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	18	9
1" X 8"	18	12
2" X 4"	78	52
2" X 6"	19	19
4" X 4"	17	23
NAILS	**NO. REQD**	**POUNDS**
6d (2")	38	1/4
10d (3")	50	1
12d (3-1/4")	16	1/2
16d (3-1/2")	20	1/2

STEEL STRAPPING, 1-1/4" X .035" OR .031" ----- 78' REQD ---- 11 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 4 REQD ---- 1/4 LB
STAPLES ---------- 6 REQD ----- NIL

LOAD AS SHOWN

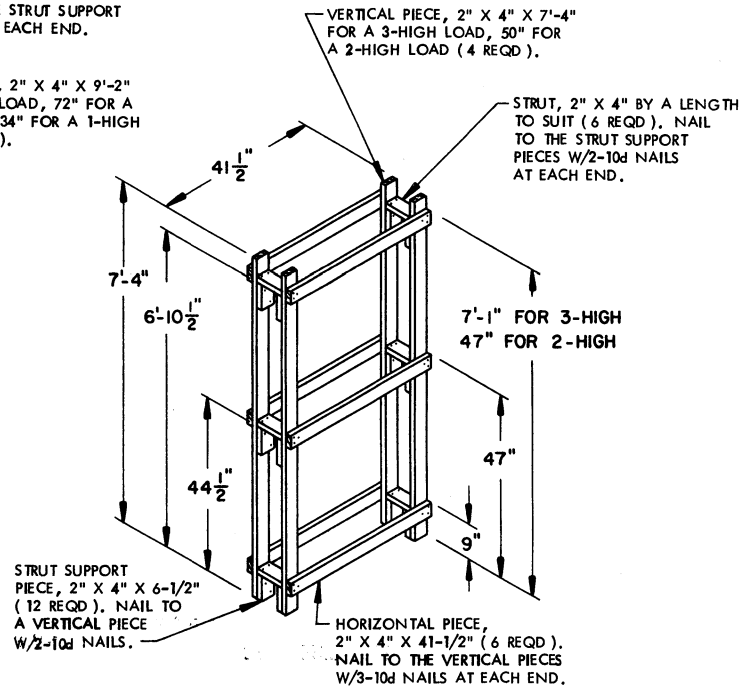
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	78	110,838 LBS
DUNNAGE		244 LBS
TOTAL WEIGHT		111,082 LBS

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



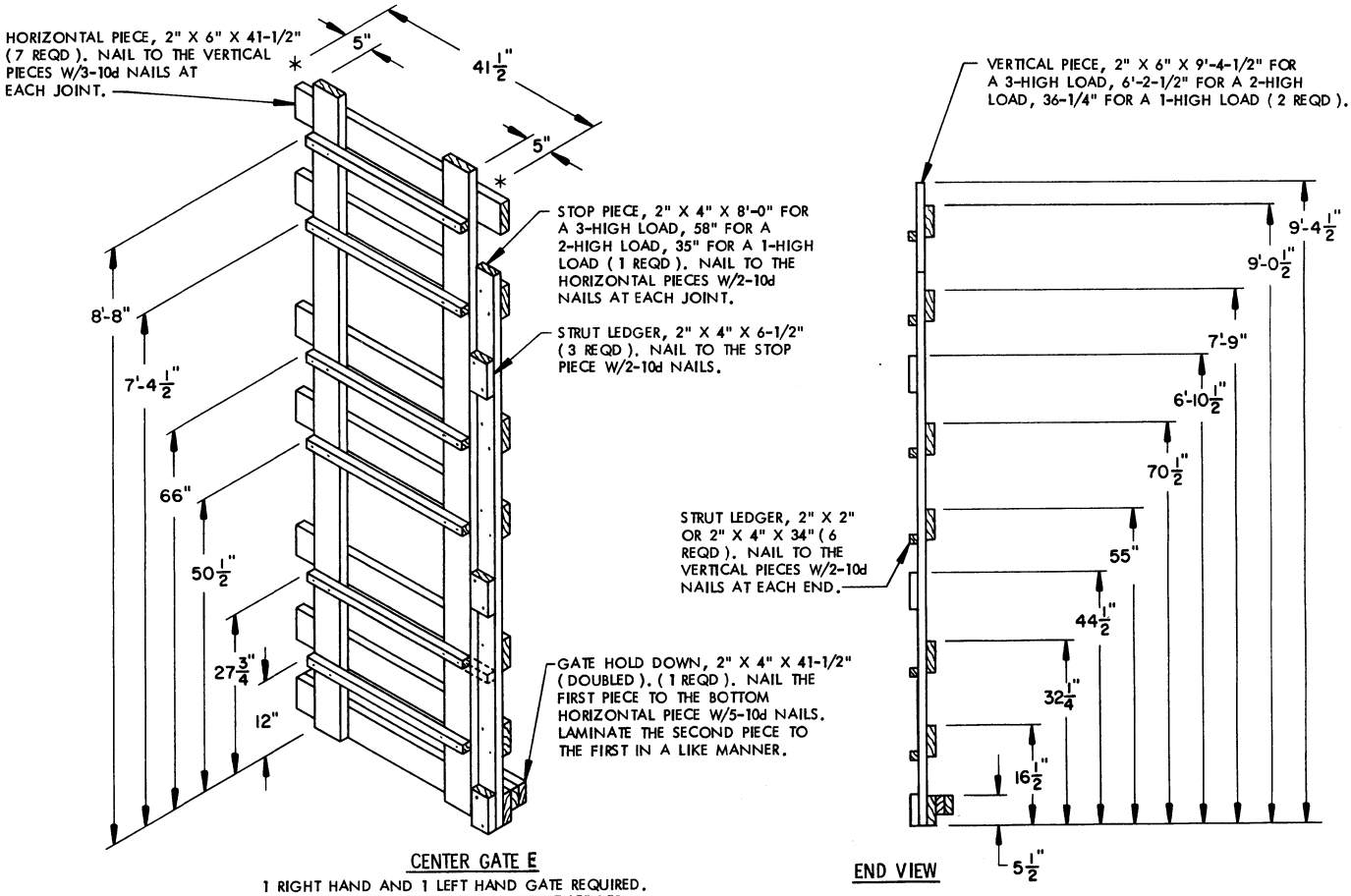
CRIB FILL C

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



CRIB FILL D

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

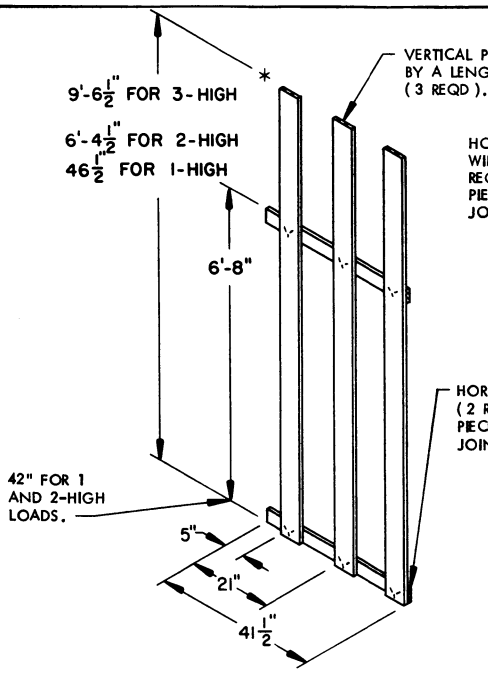


CENTER GATE E

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. NOTE THAT THE SECOND 2" X 2" STRUT LEDGER FROM THE BOTTOM MUST BE 36-1/2" LONG, AS SHOWN BY THE PHANTOM LINES, FOR A 1-HIGH LOAD.

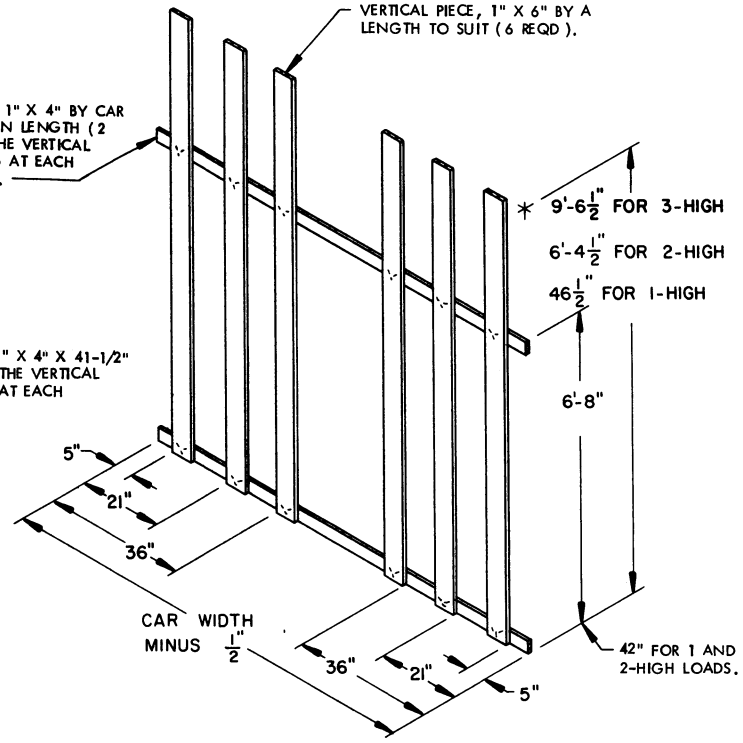
DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

PROJECT FSA 43B/2-63

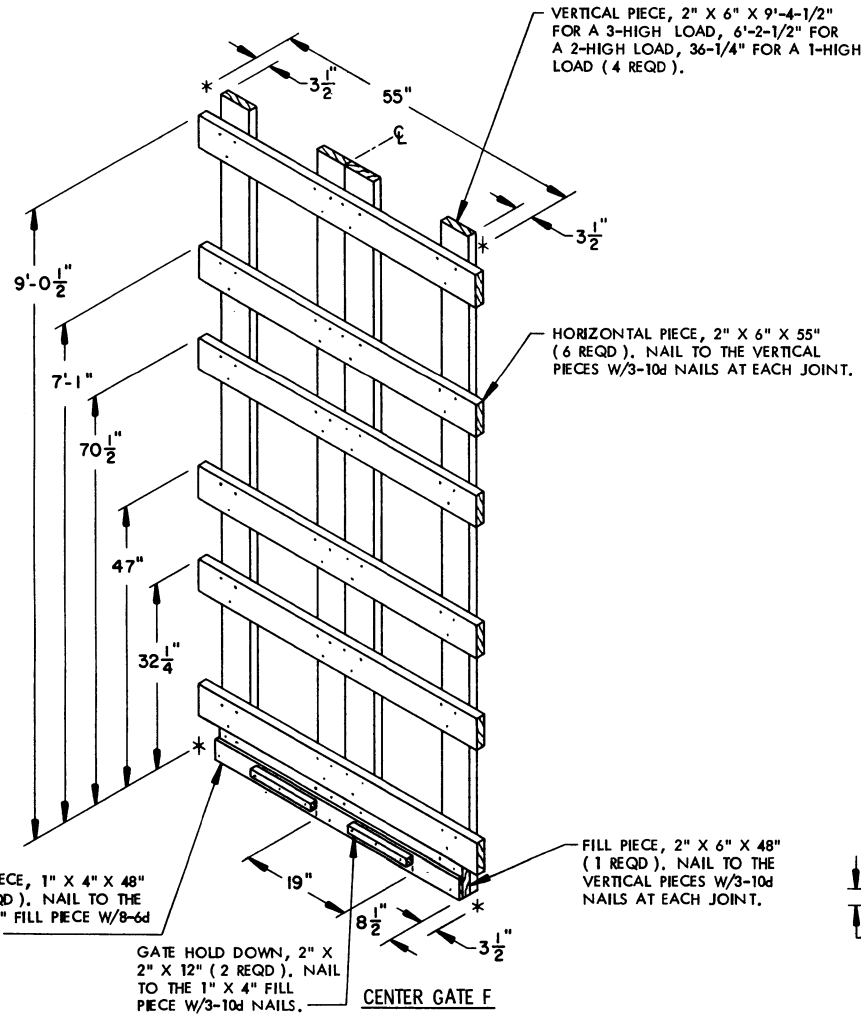


SEPARATOR GATE C

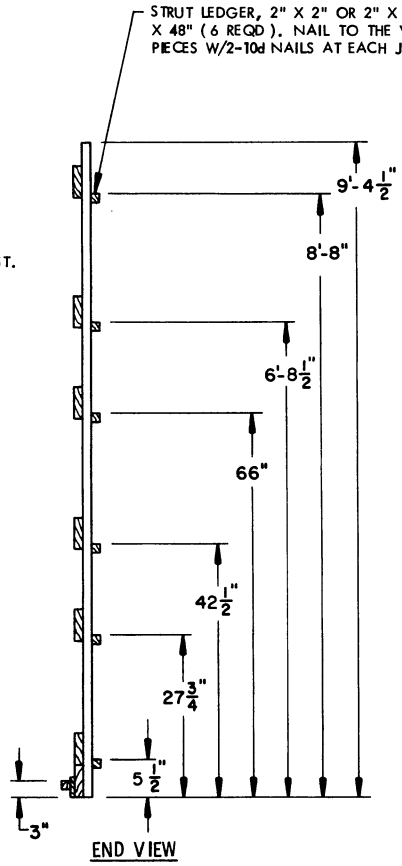
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



SEPARATOR GATE D

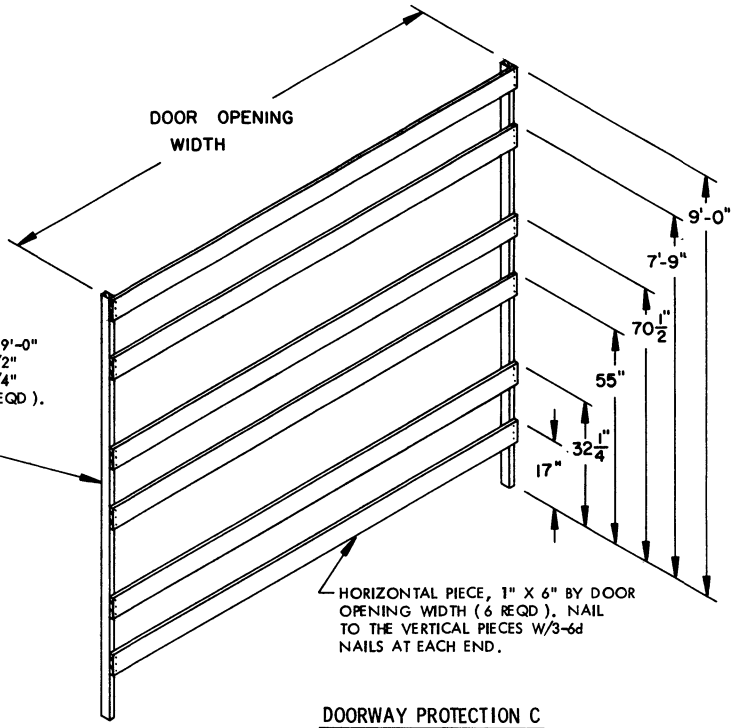


CENTER GATE F



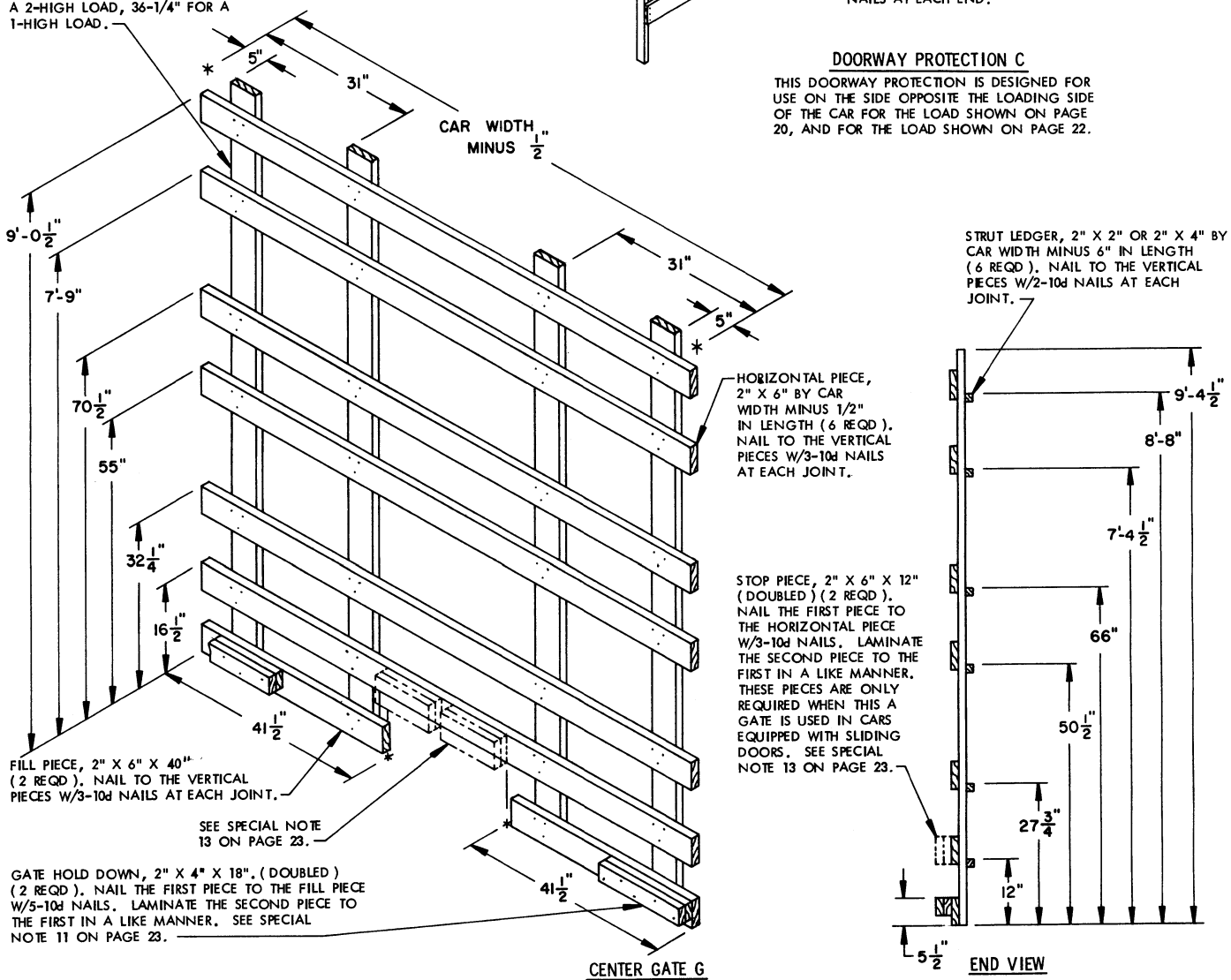
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DOORWAY PROTECTION C

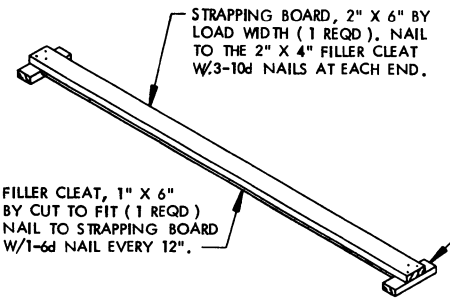
THIS DOORWAY PROTECTION IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 20, AND FOR THE LOAD SHOWN ON PAGE 22.



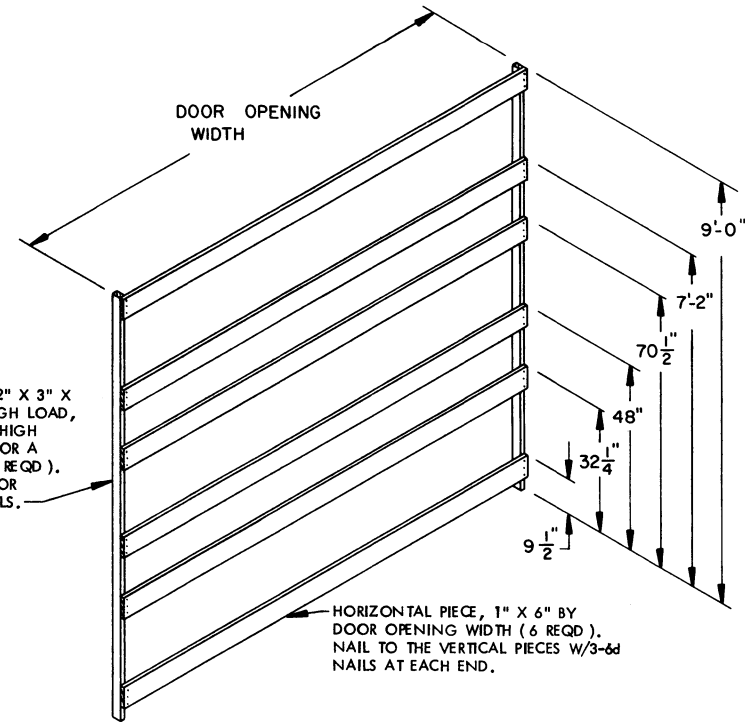
CENTER GATE G

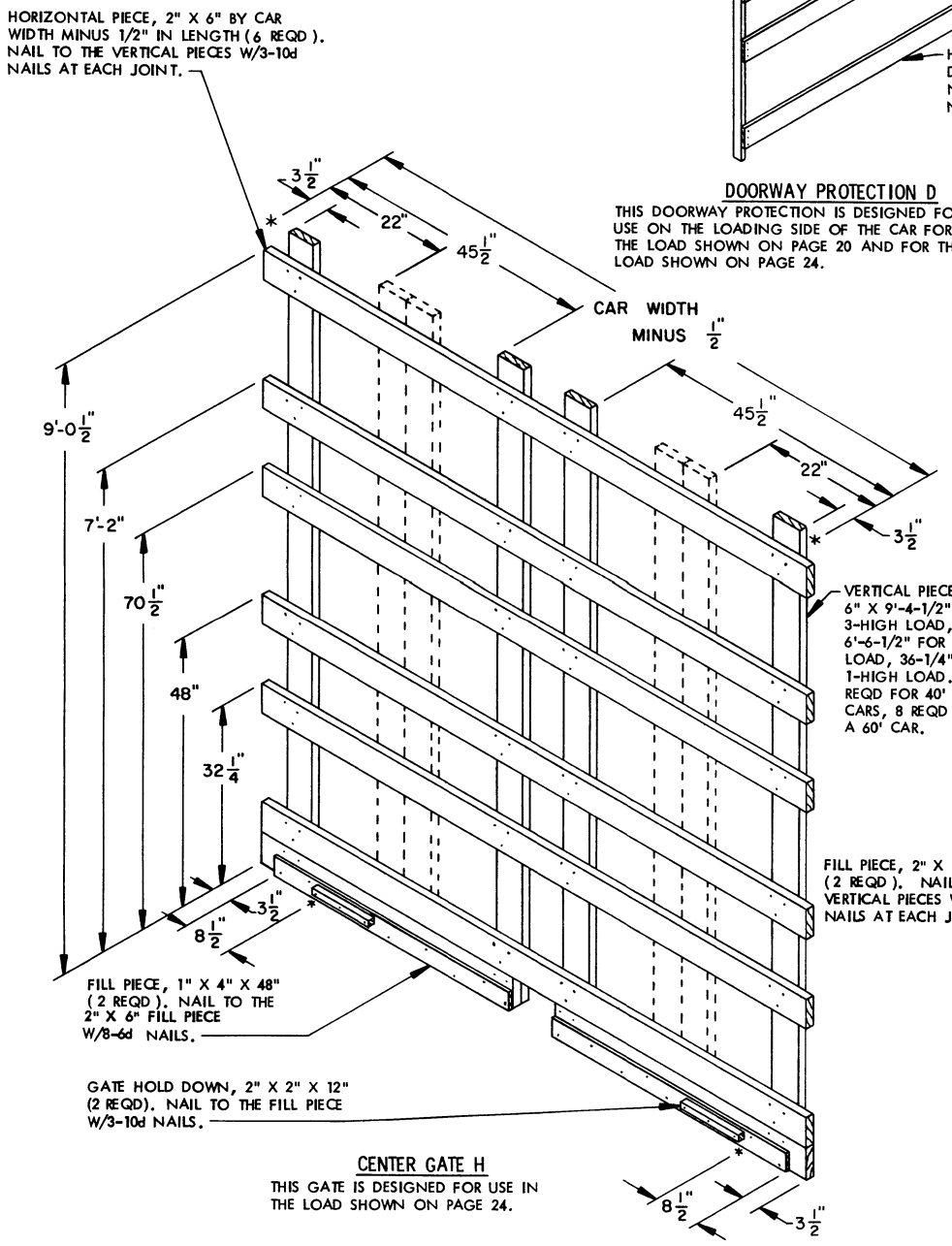
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 22.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



STRAPPING BOARD C



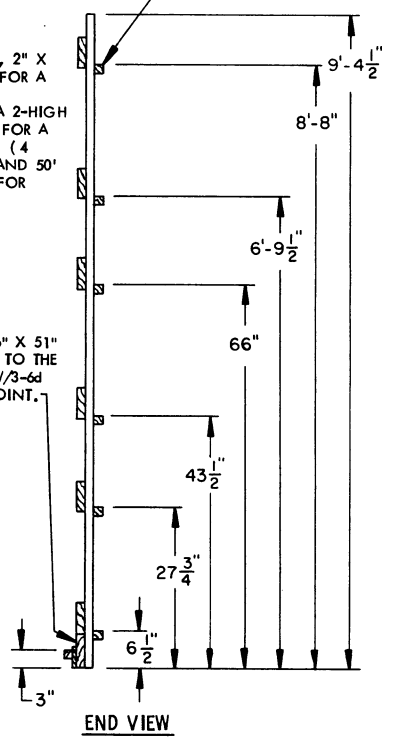


DOORWAY PROTECTION D

THIS DOORWAY PROTECTION IS DESIGNED FOR USE ON THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 20 AND FOR THE LOAD SHOWN ON PAGE 24.

CENTER GATE H

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



END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

(KEY NUMBERS CONTINUED)

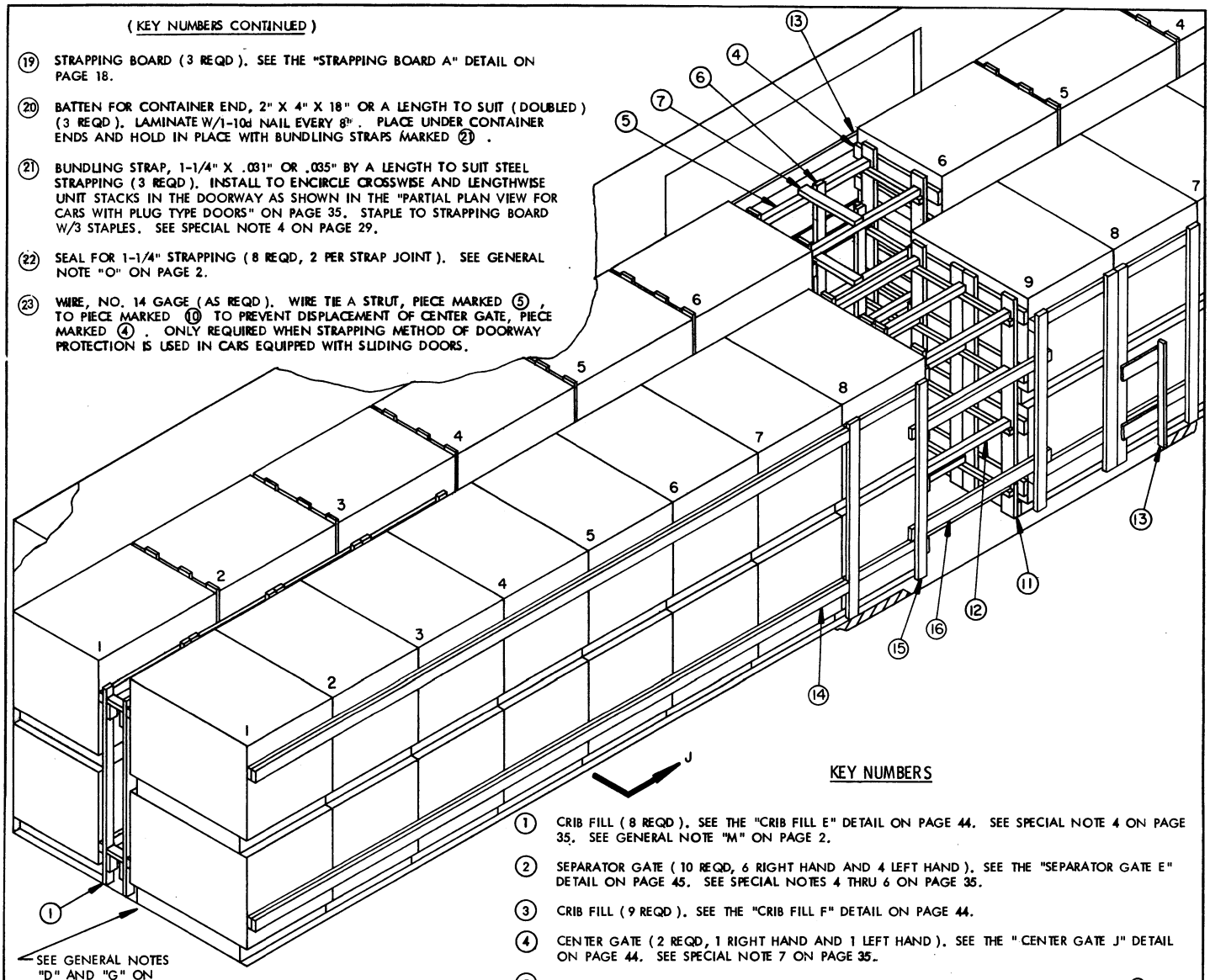
⑲ STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 18.

⑳ BATTEN FOR CONTAINER END, 2" X 4" X 18" OR A LENGTH TO SUIT (DOUBLED) (3 REQD). LAMINATE W/1-10d NAIL EVERY 8". PLACE UNDER CONTAINER ENDS AND HOLD IN PLACE WITH BUNDLING STRAPS MARKED ㉑ .

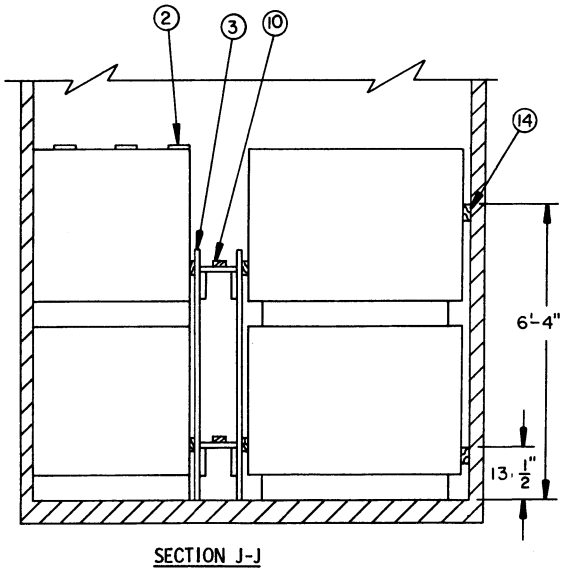
㉑ BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE CROSSWISE AND LENGTHWISE UNIT STACKS IN THE DOORWAY AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS" ON PAGE 35. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 29.

㉒ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

㉓ WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED ⑤ , TO PIECE MARKED ⑩ TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED ④ . ONLY REQUIRED WHEN STRAPPING METHOD OF DOORWAY PROTECTION IS USED IN CARS EQUIPPED WITH SLIDING DOORS.



ISOMETRIC VIEW



SECTION J-J

KEY NUMBERS

① CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 44. SEE SPECIAL NOTE 4 ON PAGE 35. SEE GENERAL NOTE "M" ON PAGE 2.

② SEPARATOR GATE (10 REQD, 6 RIGHT HAND AND 4 LEFT HAND). SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 45. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 35.

③ CRIB FILL (9 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 44.

④ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE J" DETAIL ON PAGE 44. SEE SPECIAL NOTE 7 ON PAGE 35.

⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (12 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

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

⑦ HORIZONTAL STRUT BRACING, 2" X 4" X 32" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑧ STRUT, 2" X 4" BY CUT TO FIT (REF: 54-1/2") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED ④ W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 35.

⑨ SIDE BLOCKING FOR CENTER GATE "J", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 35.

⑩ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 60") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "F" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS.

⑪ CENTER GATE (2 REQD). SEE THE "CENTER GATE K" DETAIL ON PAGE 45.

⑫ STRUT, 4" X 4" BY CUT TO FIT (REF: 42") (12 REQD). TOENAIL TO PIECES MARKED ⑪ W/2-16d NAILS AT EACH END.

⑬ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 35.
(CONTINUED ON PAGE 35)

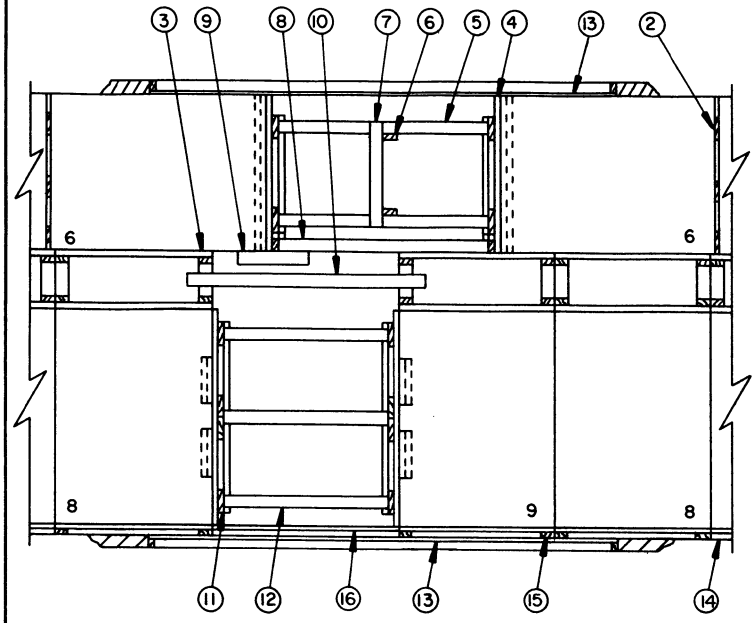
KEY NUMBERS FOR PLUG TYPE DOORWAY PROTECTION

⑰ SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

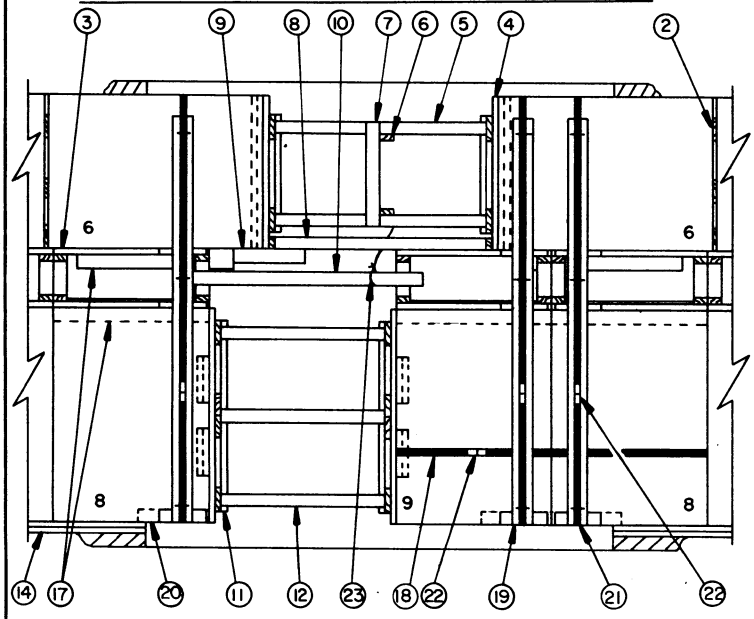
⑱ BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE CROSSWISE PALLET UNIT STACKS 8 AND 9 AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS" ON PAGE 35.
(CONTINUED AT LEFT)

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

PROJECT FSA 43B/2-63



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	67	23
1" X 6"	308	154
2" X 2"	54	18
2" X 3"	36	18
2" X 4"	1076	718
2" X 6"	181	181
4" X 4"	97	130
NAILS	NO. REQD	POUNDS
6d (2")	228	1-1/2
10d (3")	1496	23
12d (3-1/4")	36	3/4
16d (3-1/2")	104	2-1/2
WIRE, NO. 14 GAGE -------- 3' REQD ---------- NIL		

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 34 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,528 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 66,918 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED ② , IN THE LOAD ON PAGE 34, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" HORIZONTAL PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

5. ALL SEPARATOR GATES, PIECES MARKED ② , WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 40" WIDE BY 8'-0" LONG.

7. CENTER GATES "J" AND "K" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑬ IN THE LOAD ON PAGE 34, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 98 THRU 100 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 LOAD-BUNDLING STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF CARS EQUIPPED WITH PLUG TYPE DOORS" AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES OF THE CRIB FILL, PIECE MARKED ③ , MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING, PIECE MARKED ⑨ , SO THE CRIB FILL WILL REST EVENLY. NOTE THAT A STRUT, PIECE MARKED ⑤ , MUST BE WIRE TIED TO PIECE MARKED ⑩ TO PREVENT DISPLACEMENT OF THE CENTER GATE, PIECE MARKED ④ , WHEN LOADING IN A CAR 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 ONE PALLET UNIT BY EMPLOYING THE PROCEDURES ON PAGE 68. TWO (2) PALLET UNITS CAN BE OMITTED BY LEAVING OUT CROSSWISE STACK NO. 9 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED ⑫ , AND AN ADDITIONAL PIECE MARKED ⑨ WILL BE REQUIRED FOR THE OTHER CENTER GATE MARKED ④. OR, THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 84 AND 85.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 90 AND 92 FOR CROSSWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

(CONTINUED ON PAGE 37)

(KEY NUMBERS CONTINUED FROM PAGE 34)

⑭ SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 12 AND 13 ON PAGE 51.

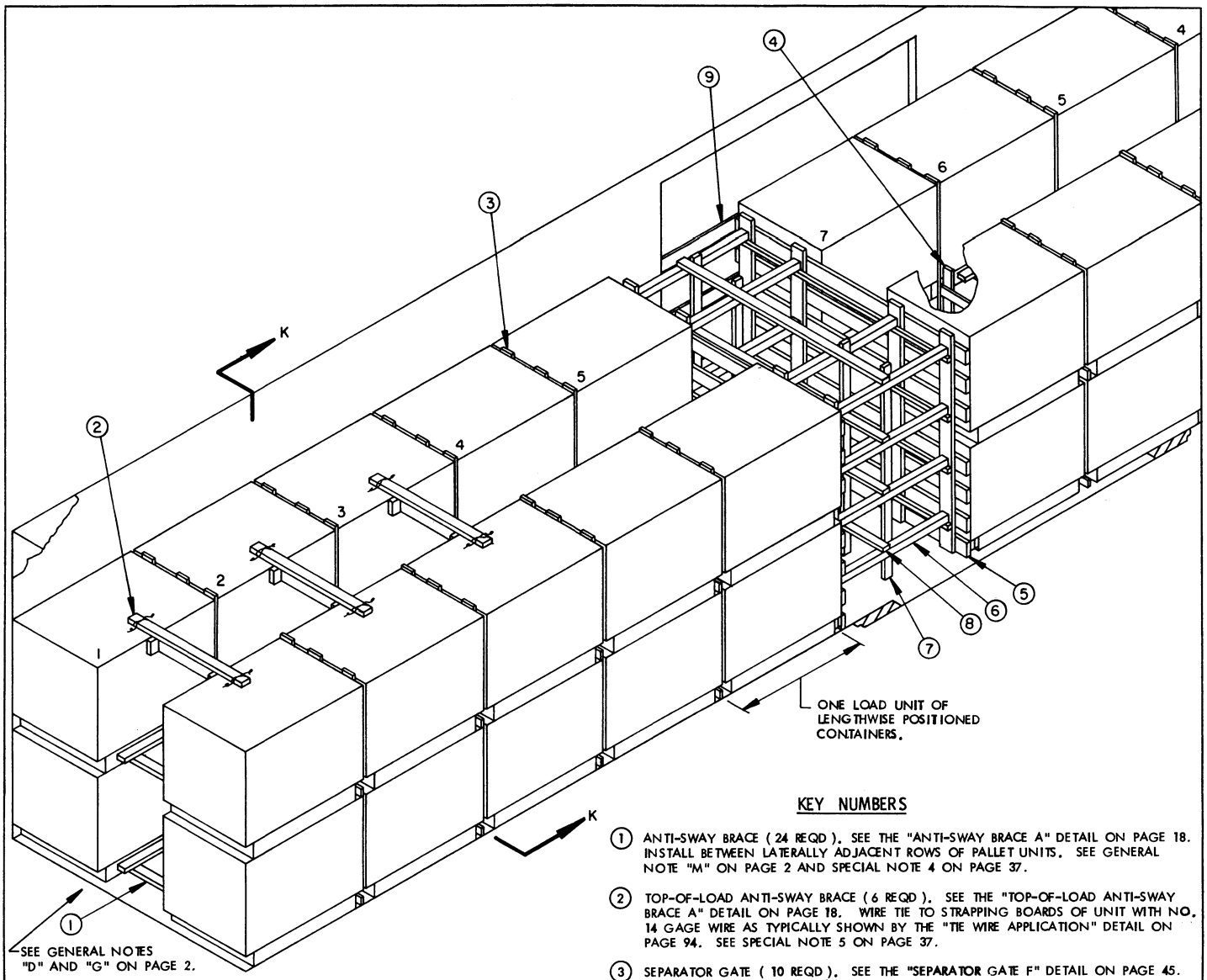
⑮ SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY E" DETAIL ON PAGE 63.

⑯ SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 62") (2 REQD). POSITION AT 17" AND 61" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED ⑮ W/3-10d NAILS AT EACH JOINT.

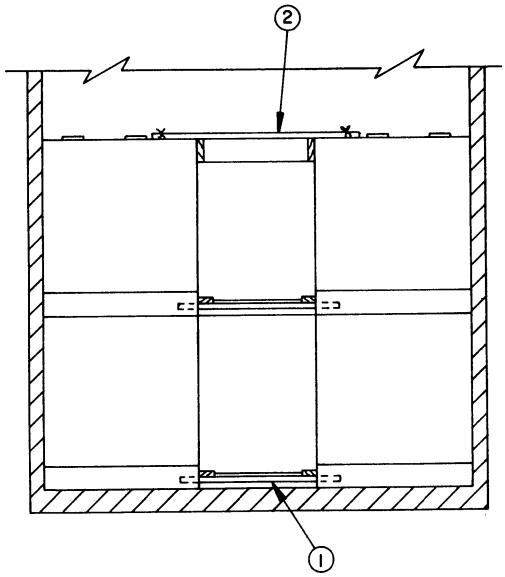
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	58	102,138 LBS
DUNNAGE		2,512 LBS
TOTAL WEIGHT		104,650 LBS

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



ISOMETRIC VIEW



SECTION K-K

KEY NUMBERS

(1) ANTI-SWAY BRACE (24 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 37.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 5 ON PAGE 37.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 45. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8, AND 17 ON PAGE 39.

(4) STOP PIECE, 1" X 4" X 56" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3) , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 37.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 46. SEE SPECIAL NOTES 9 AND 10 ON PAGE 37.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (16 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

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

(8) HORIZONTAL STRUT BRACING, 2" X 4" X 8'-11" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(9) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 37.

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

SMCAC FORM 6, 1 NOV 85

PROJECT FSA 43B/2-63

(SPECIAL NOTES CONTINUED)

13. IF THE NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAP DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 42 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑨ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING. IF NAILING TO THE CAR FLOOR IS NOT FEASIBLE OR DESIRABLE, DOUBLED 2" X 6" X 12" STOP PIECES MAY BE NAILED TO EACH GATE AS DEPICTED BY THE PHANTOM LINES ON THE "CENTER GATE L" DETAIL ON PAGE 46. NAIL THE FIRST PIECE TO A HORIZONTAL PIECE ON THE GATE W/3-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS 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 64 THRU 92 FOR GUIDANCE.

15. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE M" DETAIL ON PAGE 47. 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 PIECE, PIECE MARKED ④ , WILL BE 12" LONG FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "M" IS USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

(SPECIAL NOTES CONTINUED FROM PAGE 35)

12. THE SIDE FILL, PIECE MARKED ⑭ , IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑮ , MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑭ .

13. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 35 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ⑭ , TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑮ , AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ⑯ .

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 70,440 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-TWO (32) UNITS, FOR AN APPROXIMATE WEIGHT OF 56,352 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10', OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SIX (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAP DOORWAY PROTECTION PROCEDURES, AS SHOWN ON PAGE 42, ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑨ , 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.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 36, MUST BE INSTALLED IN EACH END OF THE CAR 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 REGARDLESS OF THE CAR LENGTH.

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

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

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

9. 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 95 FOR GUIDANCE.

10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE L" , SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 36, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 44. 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 95. OMIT THE STOP PIECES AND THE 2" X 4" STRUT LEDGER FROM "CENTER GATES J".

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "L", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 97 FOR GUIDANCE.

12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑨ IN THE LOAD ON PAGE 36, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ④ , ⑥ , ⑦ AND ⑧ ON PAGE 42 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. SEE SPECIAL NOTE 13.

(CONTINUED AT LEFT)

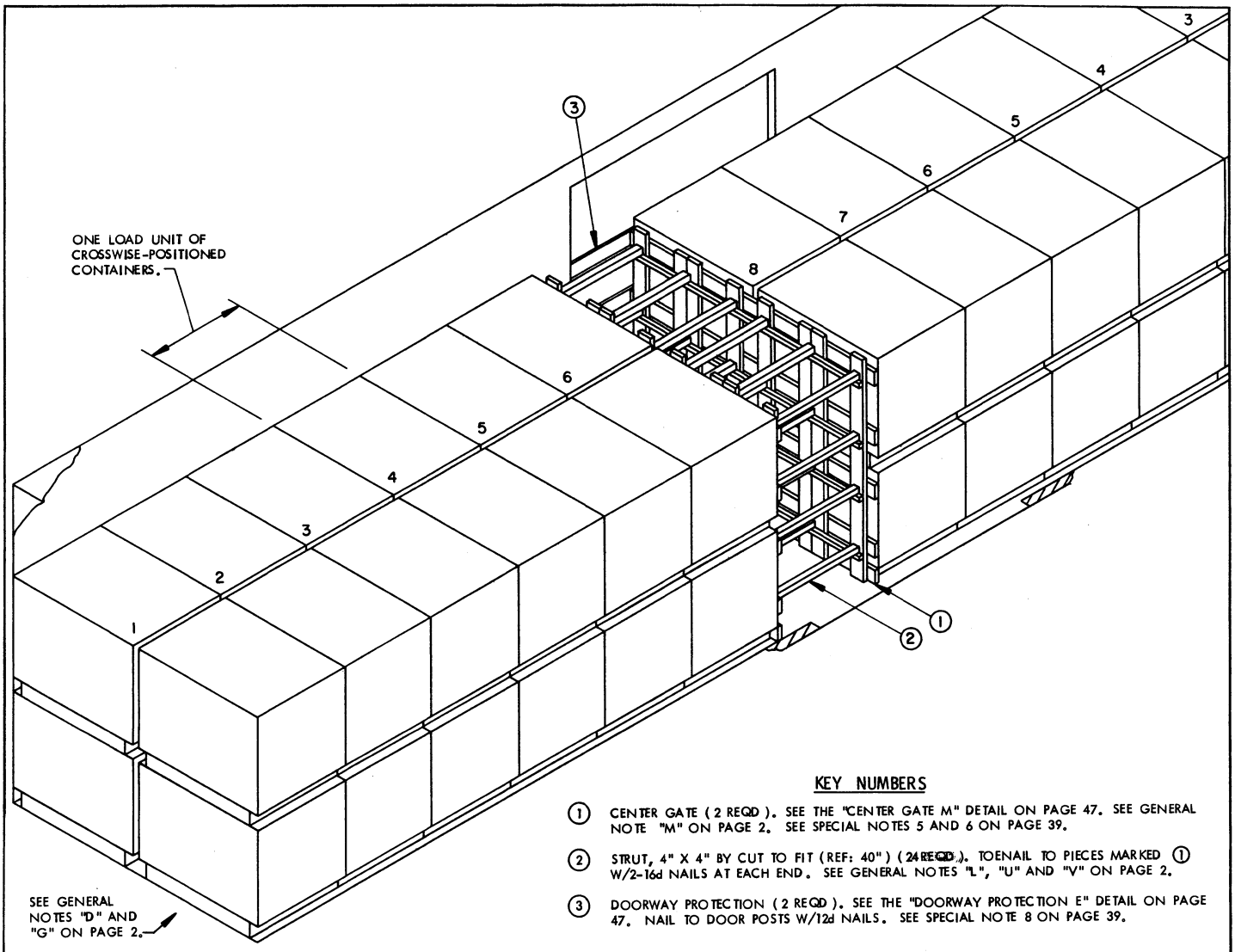
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	192	64
1" X 6"	535	268
2" X 2"	70	24
2" X 3"	28	14
2" X 4"	426	284
2" X 6"	205	205
4" X 4"	73	98
NAILS	**NO. REQD**	**POUNDS**
6d (2")	420	2-1/2
10d (3")	734	11-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE -------- 60' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	48	84,528 LBS
DUNNAGE		1,931 LBS
TOTAL WEIGHT		86,459 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

(1) CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 47. SEE GENERAL NOTE "M" ON PAGE 2. SEE SPECIAL NOTES 5 AND 6 ON PAGE 39.

(2) STRUT, 4" X 4" BY CUT TO FIT (REF: 40") (24 REQD). TOENAIL TO PIECES MARKED (1) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

(3) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 39.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 4 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 38 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 77,484 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-4" OR WIDER CAR IS AVAILABLE, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 119,748 POUNDS CAN BE LOADED.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED IF A CAR WHICH IS WIDER THAN 9'-4" IS FURNISHED FOR LOADING. SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 46 FOR CONSTRUCTION GUIDANCE . TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "M" AS SHOWN ON THE DETAIL ON PAGE 47. IF DESIRED IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION HORIZONTAL PIECES, IN LIEU OF USING THE ANTI-SWAY BRACES. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED TWO INCHES (2").

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 95 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 38, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 45. 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 95.

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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION , SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 38, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ④ , ⑥ , ⑦ AND ⑧ ON PAGE 42 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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 64 THRU 92 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

11. A 50'-6" LONG CAR FOR SHIPMENT OF A 56-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 107,000 POUNDS. A FULL LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 99,500 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE POSITIONED IN EACH END OF THE CAR.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	64	32
2" X 2"	73	25
2" X 3"	36	18
2" X 4"	4	3
2" X 6"	211	211
4" X 4"	80	107
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	400	6-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4

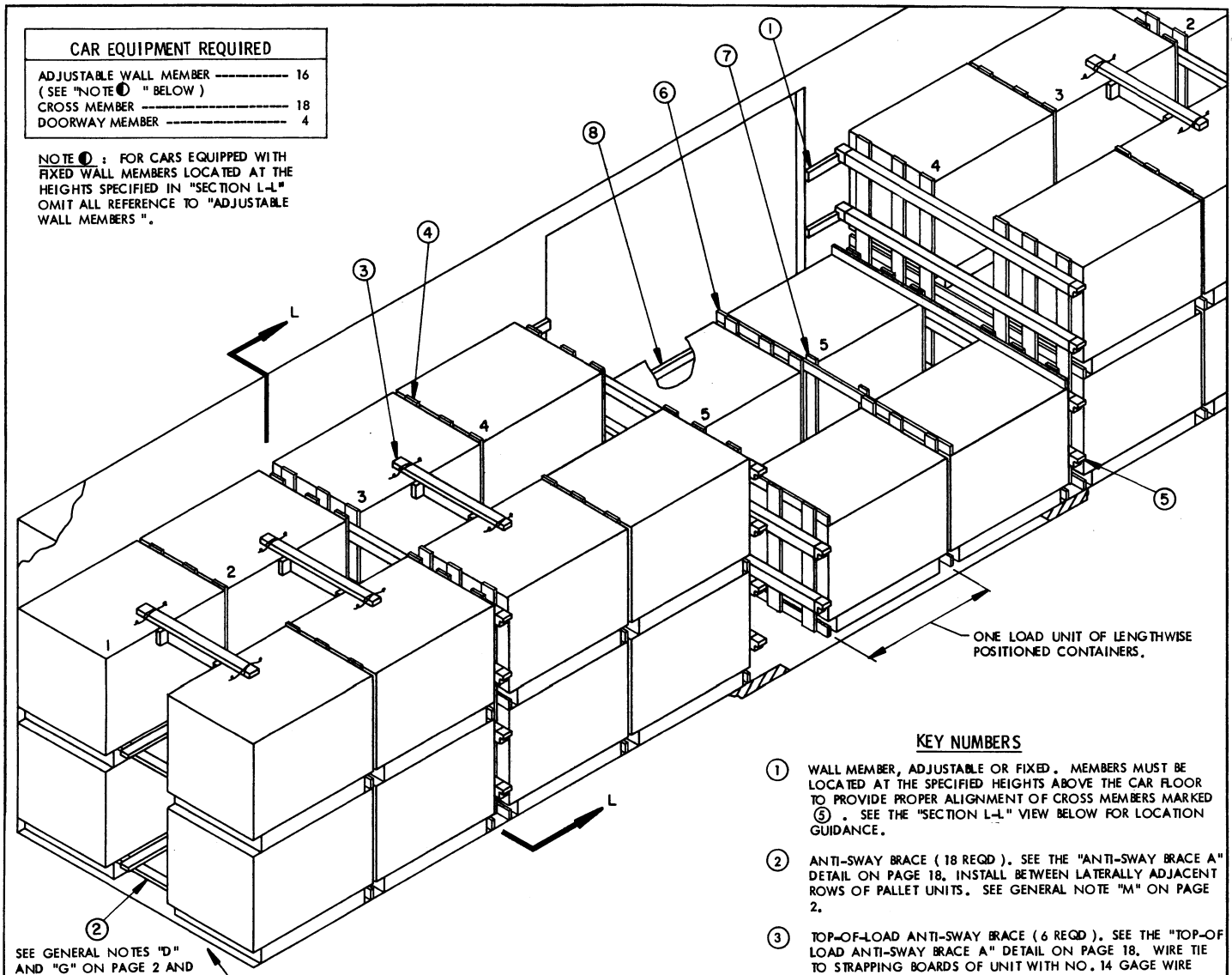
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	98,616 LBS
DUNNAGE		802 LBS
TOTAL WEIGHT		99,418 LBS

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	16
CROSS MEMBER	18
DOORWAY MEMBER	4

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 (5). SEE THE "SECTION L-L" VIEW BELOW FOR LOCATION GUIDANCE.

(2) ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 41.

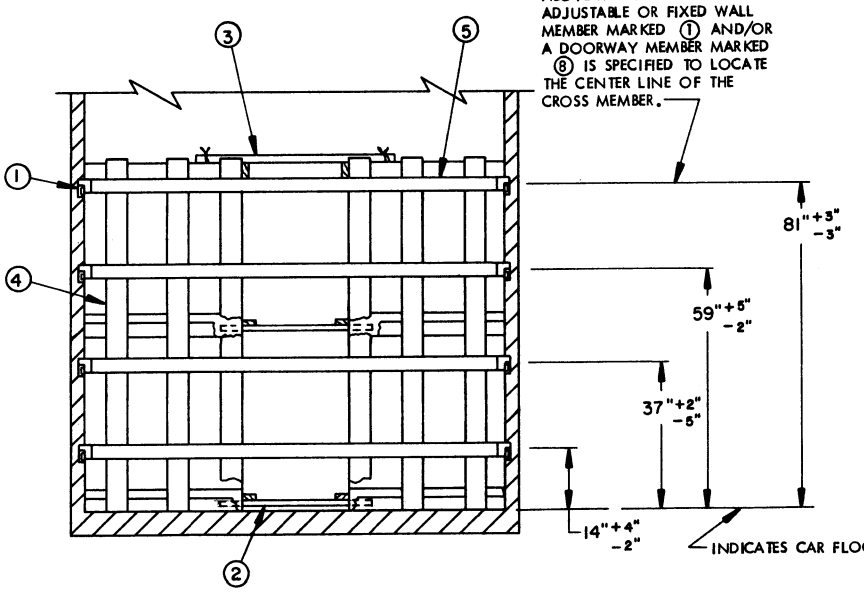
(4) SEPARATOR GATE FOR 2-HIGH (10 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 45. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 41.

(5) CROSS MEMBER (18 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

(6) SEPARATOR GATE FOR 1-HIGH (3 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 45. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 41.

(7) STOP PIECE, 1" X 4" X 51" (4 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 41.

(8) DOORWAY MEMBER (4 REQD). SEE THE "SECTION L-L" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 41.



SECTION L-L

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

PROJECT FSA 43B/2-63

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. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 40 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF TWENTY-EIGHT (28) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 49,308 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 "SQUARE END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED 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 40, 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" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1"X 4" HORIZONTAL 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 ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

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

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 62 AND 63 FOR GUIDANCE.

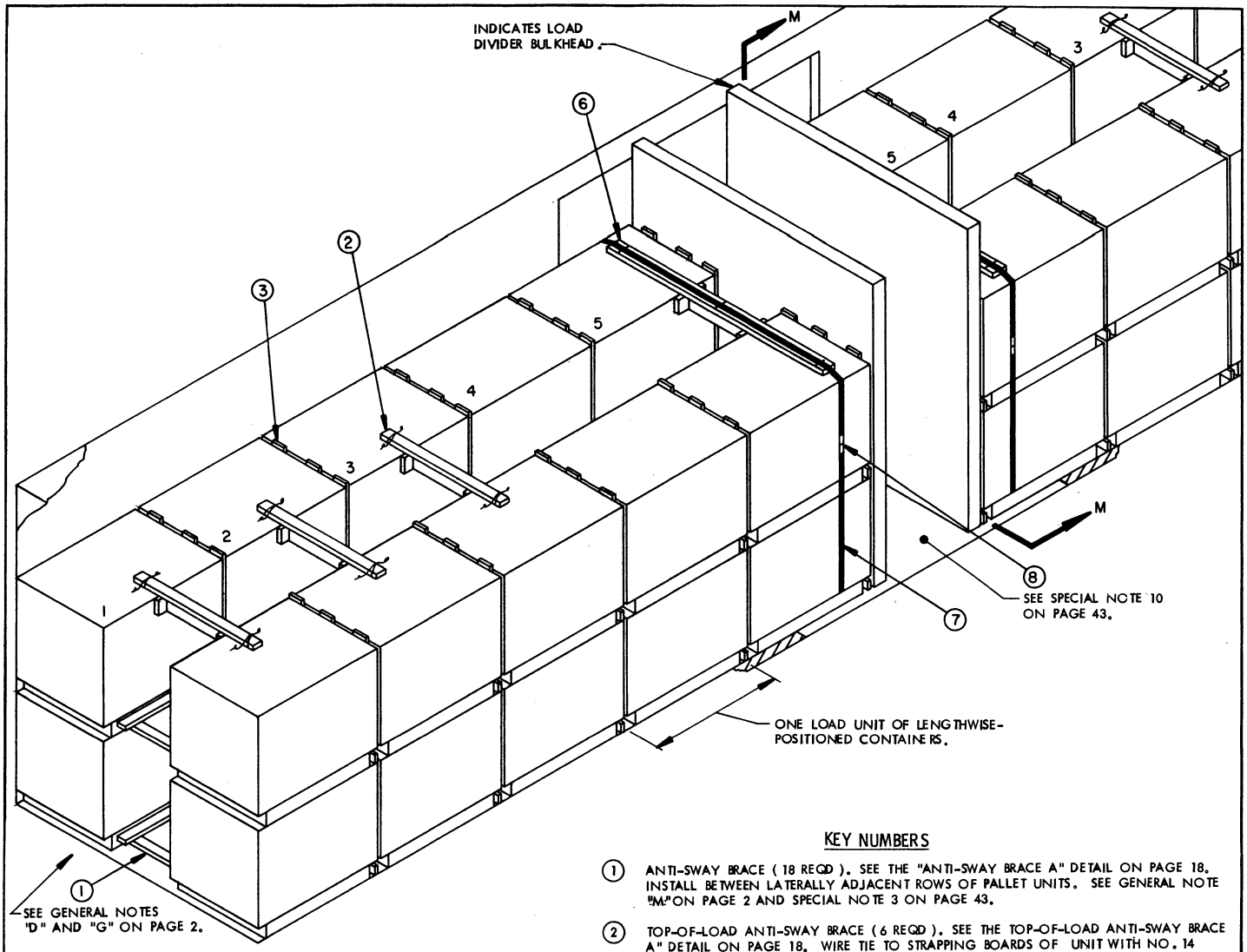
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	255	85
1" X 6"	532	266
2" X 4"	263	176
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	492	3
10d (3")	300	4-3/4
WIRE, NO. 14 GAGE ---------- 60' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	36	63,396 LBS
DUNNAGE		1,105 LBS
TOTAL WEIGHT		64,501 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (18 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 43.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 43.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE F" DETAIL ON PAGE 45. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 43.

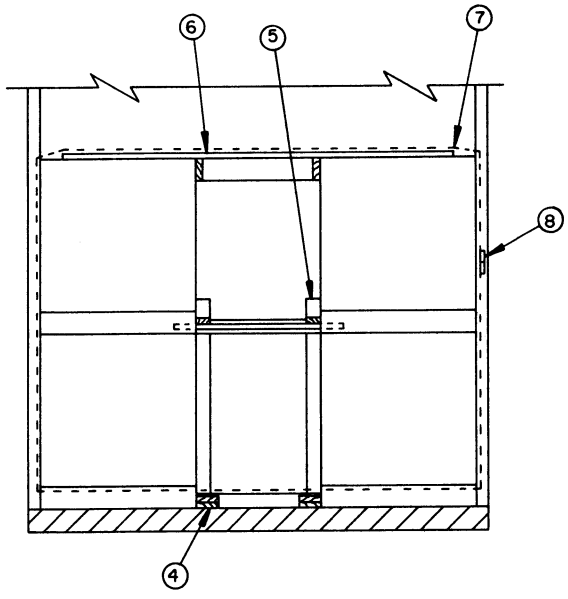
(4) SIDE BLOCKING, 2" X 6" X 42" (DOUBLED) (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN "SECTION MM" VIEW BELOW. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACES AT FLOOR LEVEL IN DOORWAY. SEE GENERAL NOTE "S" ON PAGE 2.

(5) STOP PIECE, 1" X 4" X 54" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED (3) W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 43.

(6) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD B" DETAIL ON PAGE 18.

(7) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 34'-6" LONG STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN THE ISOMETRIC VIEW. STAPLE TO THE STRAPPING BOARD, PIECE MARKED (6) , W/3 STAPLES. SEE SPECIAL NOTE 9 ON PAGE 43.

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



SECTION M-M

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

(SPECIAL NOTES CONTINUED)

9. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑨ IN THE LOAD ON PAGE 15, 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 PATTERN THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF A CROSSWISE LOADING PATTERN IS BEING USED. A STRUT ASSEMBLY WILL BE REQUIRED IF ONE END OF THE LOAD CONTAINS MORE THAN SEVEN (7) 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 66 THRU 77 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 AND/OR PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,528 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-TWO (32) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 56,352 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF CARS 9'-3" OR WIDER ARE AVAILABLE, THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 56 MAY BE EMPLOYED. THEN, SIXTY-FOUR (64) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 112,704 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FIFTY-TWO (52) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 91,572 POUNDS, AND FORTY (40) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 70,440 POUNDS.

3. IF THE WOODEN GATE TYPE DOORWAY PROTECTION, PIECE MARKED ⑨ ON PAGE 36, IS USED IN LIEU OF THE NAILED FLOORLINE BLOCKING AND LOAD BUNLDING PROCEDURE, THE LOWER ANTI-SWAY BRACES IN THE DOORWAY AREA ARE REQUIRED.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 42, 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" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECE MARKED ③, SO THE 1" X 4" HORIZONTAL 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 ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OF MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑨ IN THE LOAD ON PAGE 36, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE LOAD UNIT LENGTH OR WIDTH. IF THE PALLET UNITS ARE POSITIONED IN A CROSSWISE LOADING PATTERN, SEE PIECES MARKED ① THRU ⑤ ON PAGE 56 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL

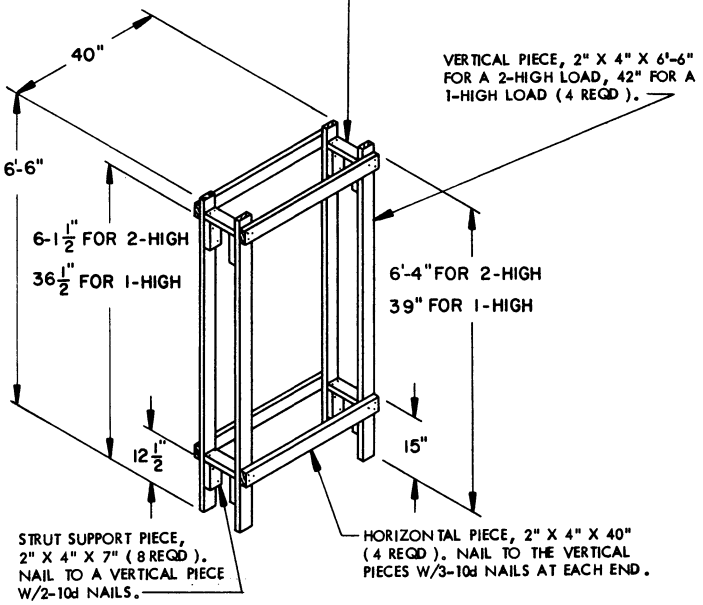
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	201	67
1" X 6"	455	228
2" X 4"	266	178
2" X 6"	79	79
NAILS	**NO. REQD**	**POUNDS**
6d (2")	384	2-1/2
10d (3")	294	4-3/4
12d (3-1/4")	16	1/2
16d (3-1/2")	40	1

STEEL STRAPPING, 1-1/4" X .035" OR .031" — 69' REQD —— 10 LBS
SEALS FOR 1-1/4" STRAPPING —— 4 REQD ——— 1/4 LB
WIRE, NO. 14 GAGE —— 60' REQD —— 1 LB
STAPLES —— 6 REQD —— NIL

LOAD AS SHOWN

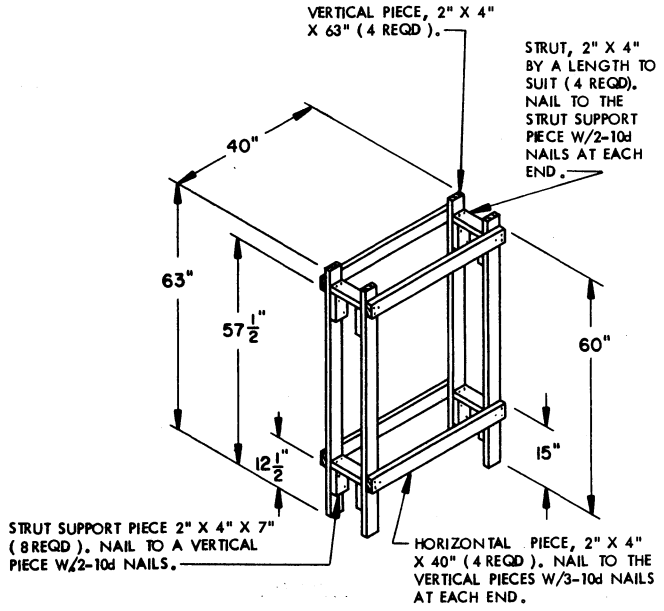
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	40	70,440 LBS
DUNNAGE		1,113 LBS
TOTAL WEIGHT		71,653 LBS

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



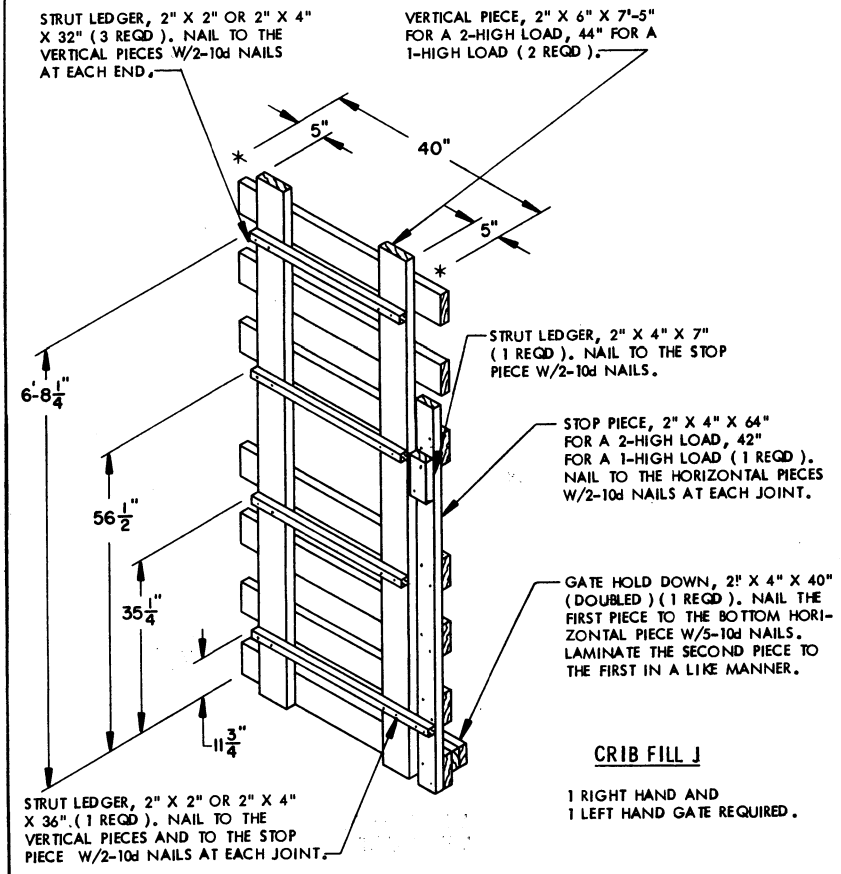
CRIB FILL E

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



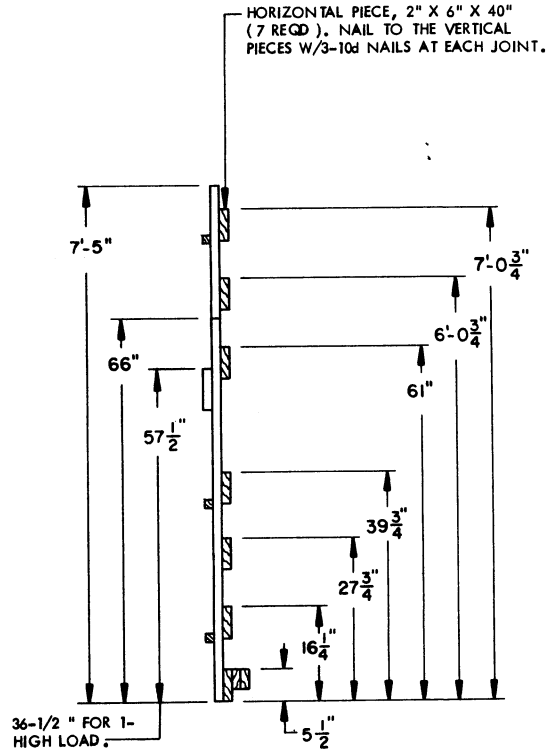
CRIB FILL F

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



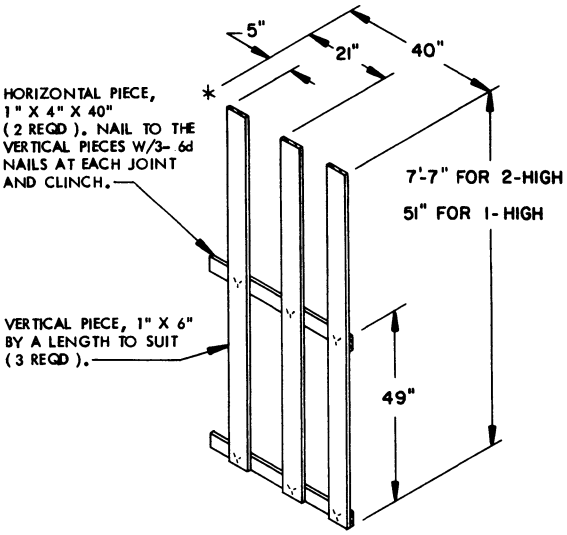
CRIB FILL J

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



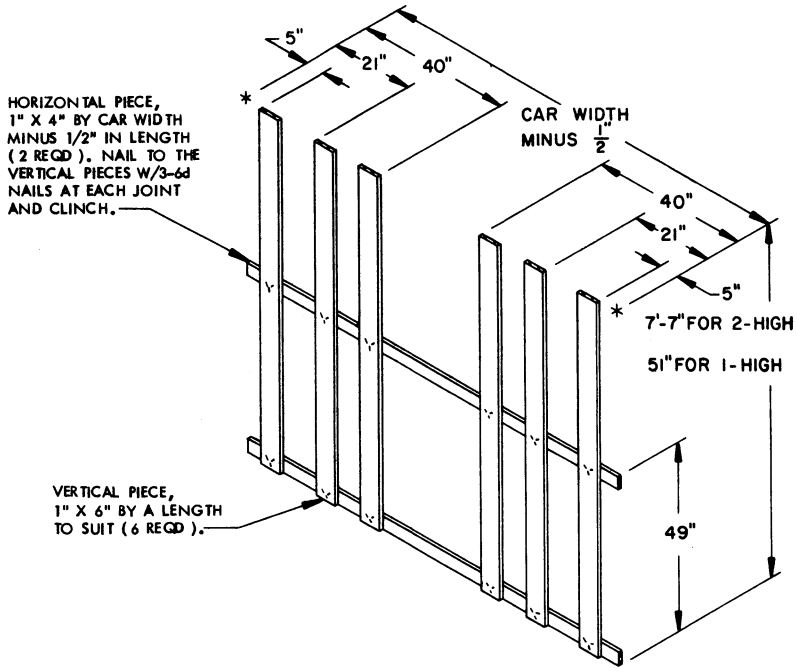
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

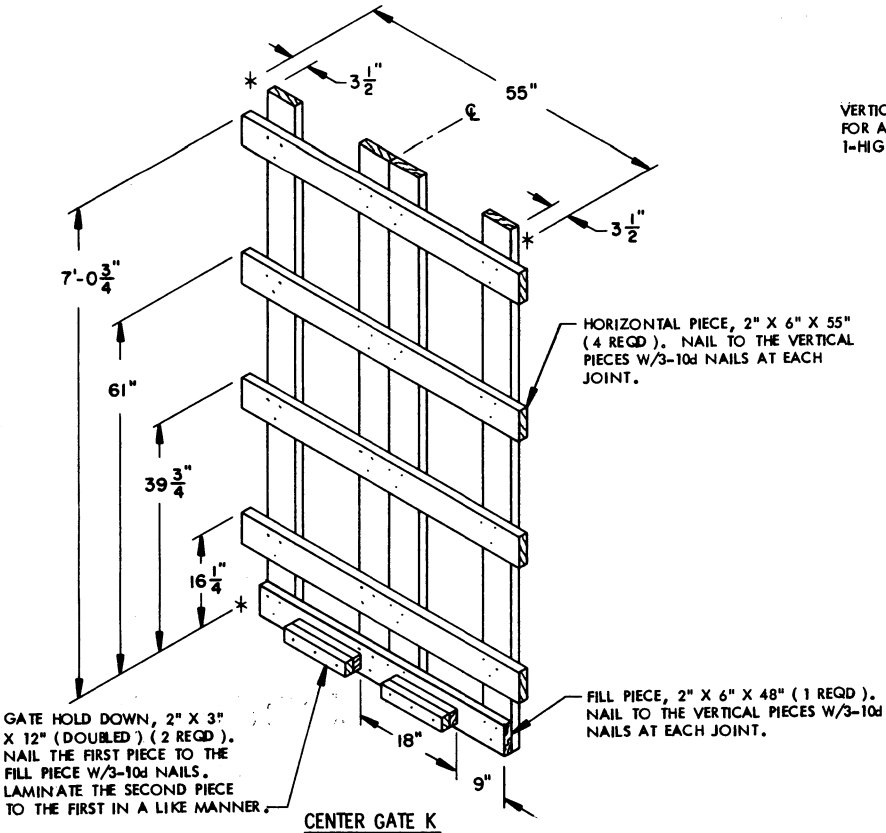


SEPARATOR GATE E

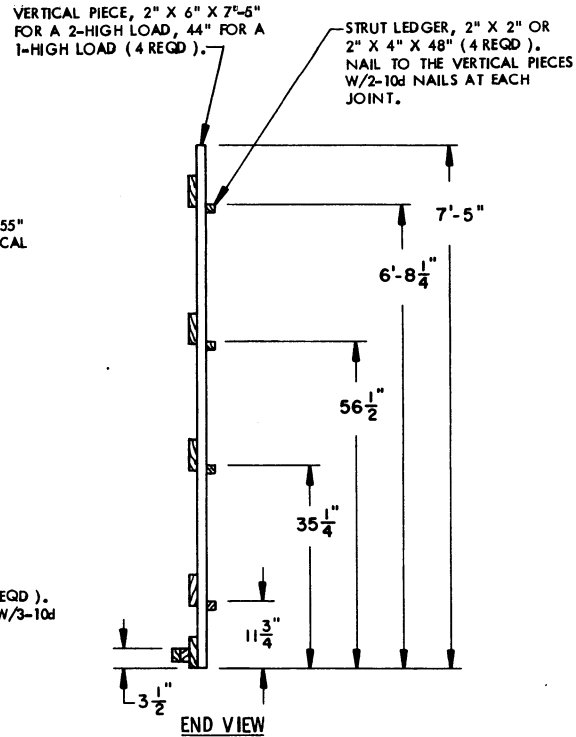
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



SEPARATOR GATE F

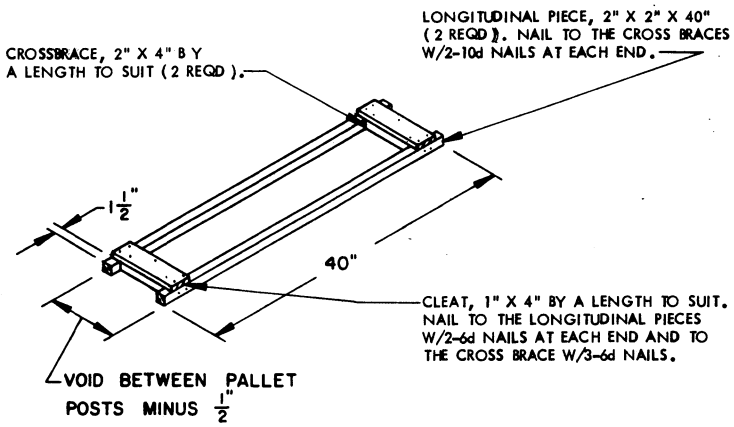


CENTER GATE K



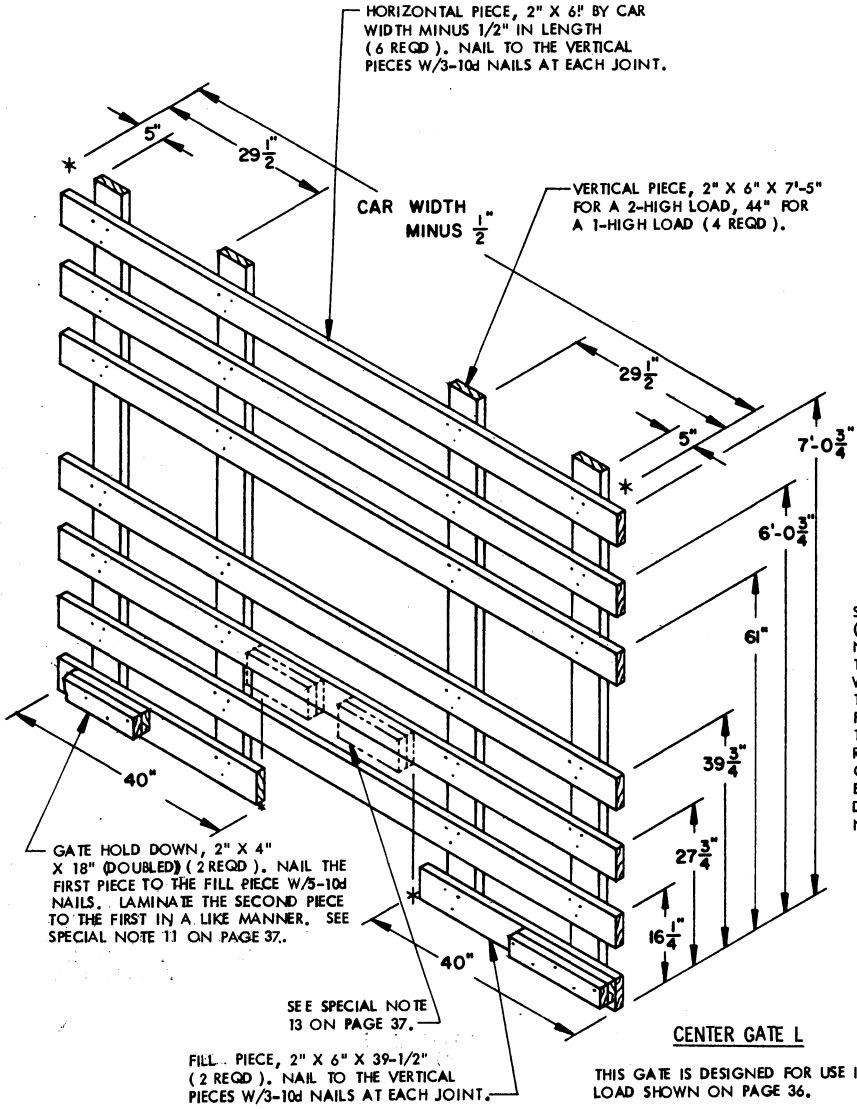
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



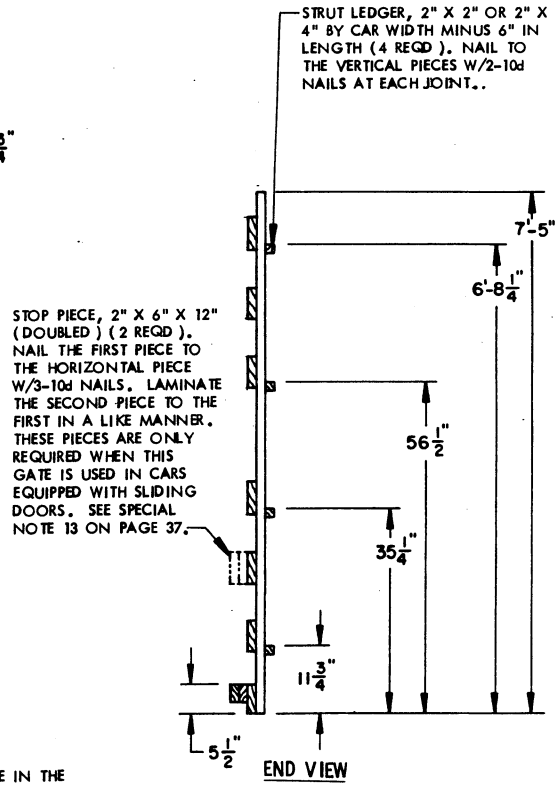
ANTI-SWAY BRACE B

SEE SPECIAL NOTE 3 ON PAGE 39 AND/OR PAGE 53.



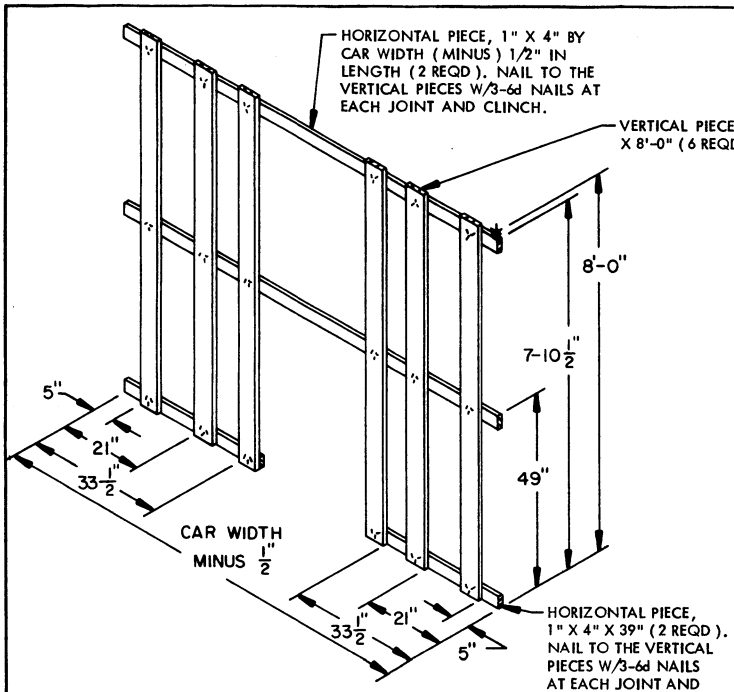
CENTER GATE L

THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 36.



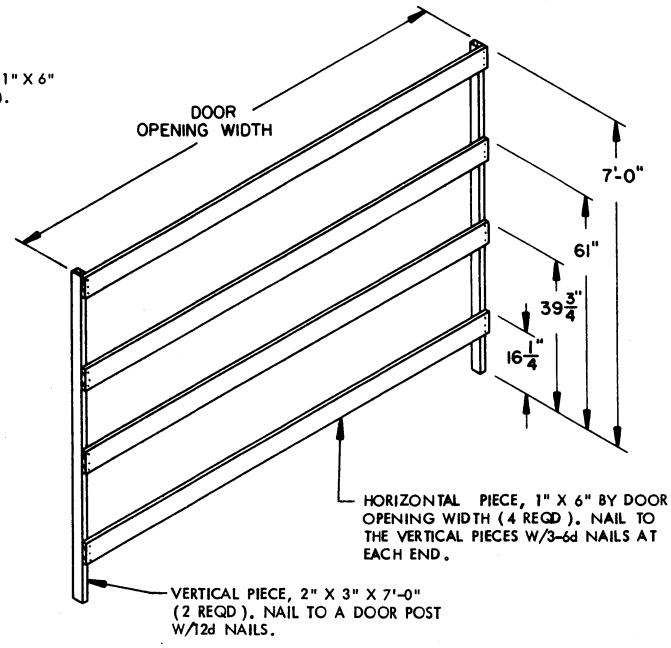
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

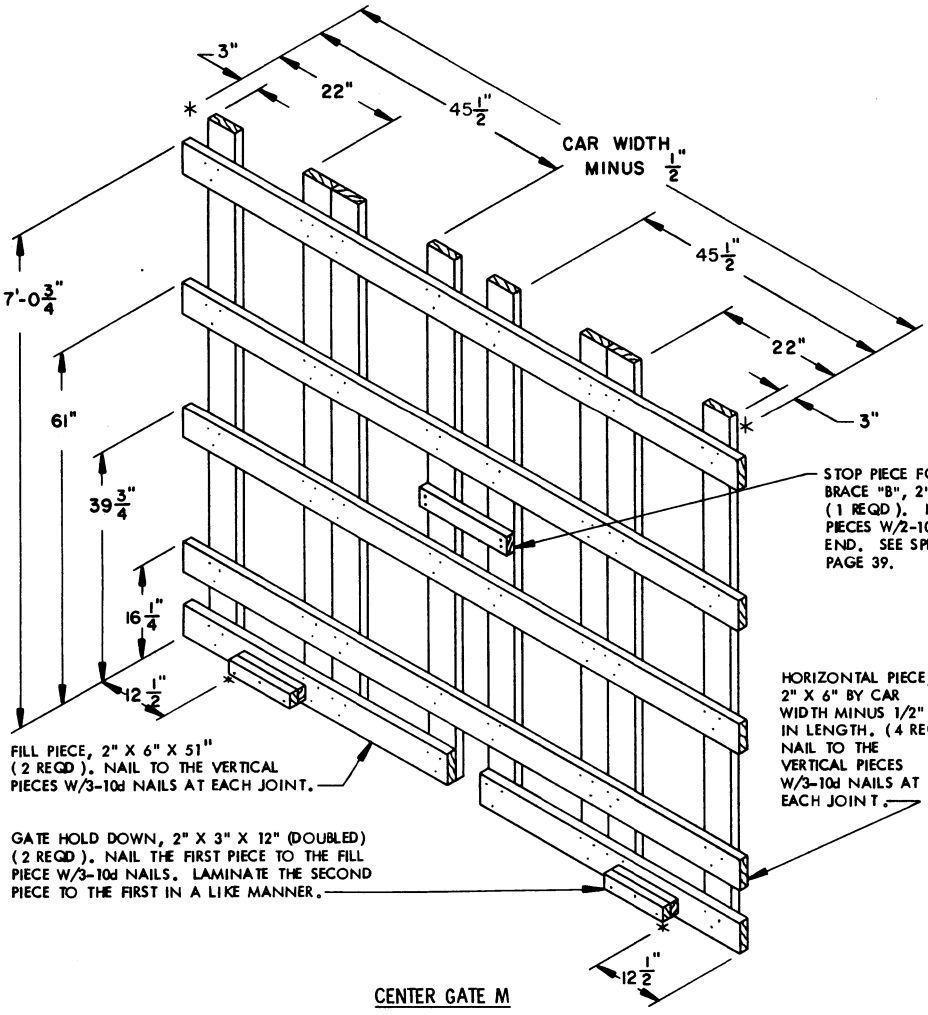


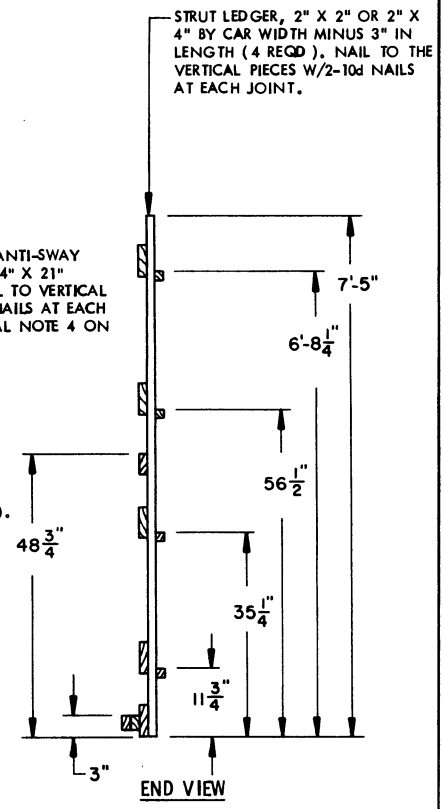
SEPARATOR GATE M

SEE SPECIAL NOTE 17 ON PAGE 37.



DOORWAY PROTECTION E





END VIEW

CENTER GATE M

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

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

(KEY NUMBERS CONTINUED)

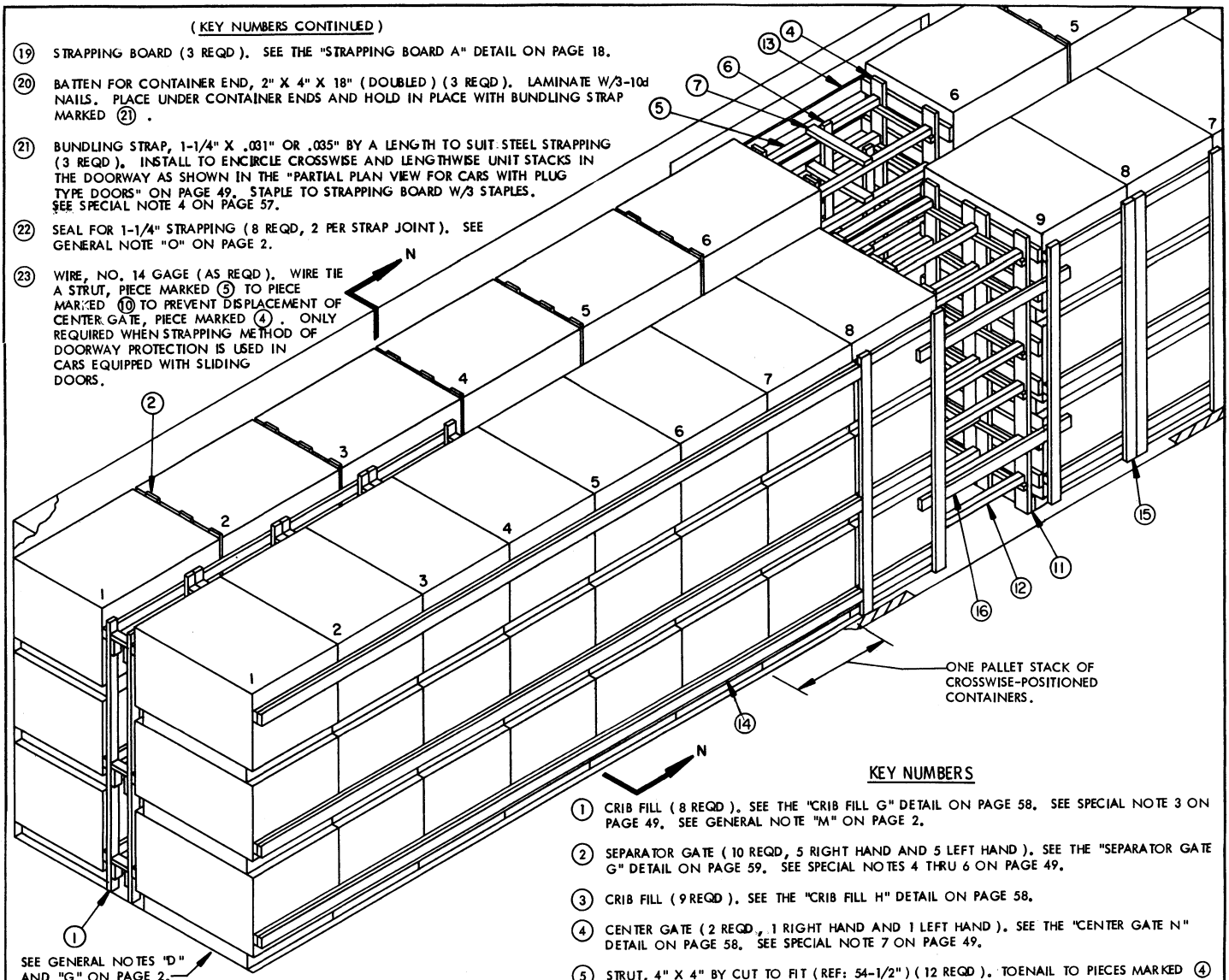
(19) STRAPPING BOARD (3 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 18.

(20) BATTEN FOR CONTAINER END, 2" X 4" X 18" (DOUBLED) (3 REQD). LAMINATE W/3-10d NAILS. PLACE UNDER CONTAINER ENDS AND HOLD IN PLACE WITH BUNDLING STRAP MARKED (21).

(21) BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL TO ENCIRCLE CROSSWISE AND LENGTHWISE UNIT STACKS IN THE DOORWAY AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS" ON PAGE 49. STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 57.

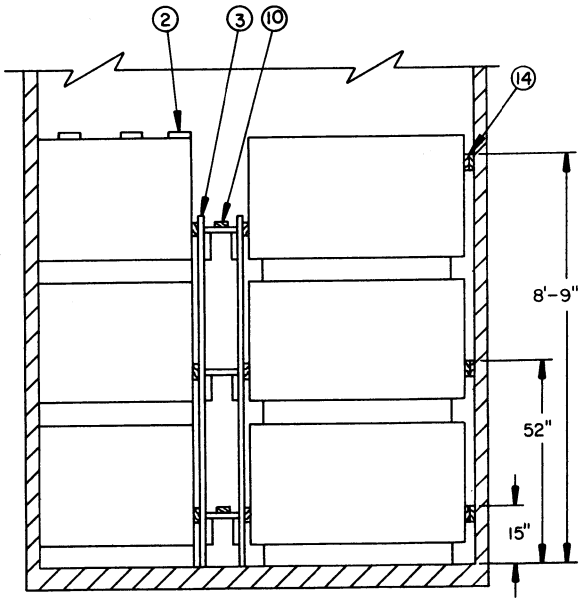
(22) SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

(23) WIRE, NO. 14 GAGE (AS REQD). WIRE TIE A STRUT, PIECE MARKED (5) TO PIECE MARKED (10) TO PREVENT DISPLACEMENT OF CENTER GATE, PIECE MARKED (4). ONLY REQUIRED WHEN STRAPPING METHOD OF DOORWAY PROTECTION IS USED IN CARS EQUIPPED WITH SLIDING DOORS.



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

ISOMETRIC VIEW



SECTION N-N

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL G" DETAIL ON PAGE 58. SEE SPECIAL NOTE 3 ON PAGE 49. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SEPARATOR GATE (10 REQD, 5 RIGHT HAND AND 5 LEFT HAND). SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 59. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 49.

(3) CRIB FILL (9 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 58.

(4) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE N" DETAIL ON PAGE 58. SEE SPECIAL NOTE 7 ON PAGE 49.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (12 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

(6) VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(7) HORIZONTAL STRUT BRACING, 2" X 4" X 32" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(8) STRUT, 2" X 4" BY CUT TO FIT (REF: 57-1/2") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED (4) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 49.

(9) SIDE BLOCKING FOR CENTER GATE "N", 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS" ON PAGE 49.

(10) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 62") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "H" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS.

(11) CENTER GATE (2 REQD). SEE THE "CENTER GATE O" DETAIL ON PAGE 59.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 42") (18 REQD). TOENAIL TO PIECES MARKED (11) W/2-16d NAILS AT EACH END. POSITION MIDDLE STRUT SO AS TO CENTER ON THE JOINT OF THE TWO 2" X 6" VERTICAL PIECES.

(13) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 60. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 49.

(CONTINUED ON PAGE 49)

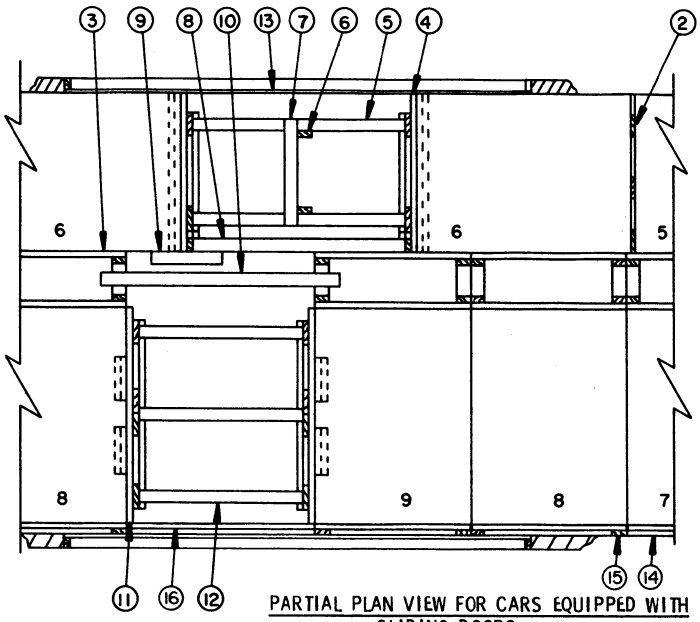
KEY NUMBERS FOR PLUG TYPE DOORWAY PROTECTION

(17) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD FOR EACH LOAD UNIT REQUIRING 1 OR 2 BUNDLING STRAPS). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

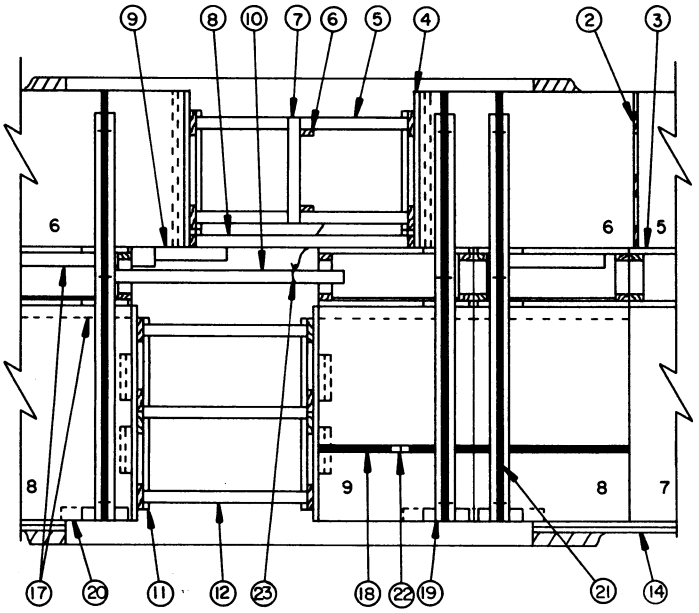
(18) BUNDLING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE CROSSWISE PALLET UNIT STACKS 8 AND 9 AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS WITH PLUG TYPE DOORS" ON PAGE 49.

(CONTINUED AT LEFT)

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



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH SLIDING DOORS



PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 48 IF THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 103,104 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-SEVEN (57) UNIT, FOR A LADING WEIGHT OF 81,624 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

4. THE SEPARATOR GATES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 48, ARE DESIGNATED "RIGHT HAND" AND "LEFT HAND" TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" HORIZONTAL PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

5. ALL SEPARATOR GATES, PIECES MARKED (2), WHICH ARE WITHIN THE DOORWAY AREA OF A CAR EQUIPPED WITH CONVENTIONAL SLIDING DOORS MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A THREE-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-LAYER LOADS FROM 40" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.

7. CENTER GATES "N" AND "O" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 95 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (13) IN THE LOAD ON PAGE 48, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR TO BE LOAD IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED AS SHOWN IN THE "PARTIAL PLAN VIEW FOR CARS EQUIPPED WITH PLUG TYPE DOORS" AT LEFT, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES OF THE CRIB FILL, PIECE MARKED (3), MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING, PIECE MARKED (14), SO THE CRIB FILL WILL REST EVENLY. ALSO NOTE THAT A STRUT, PIECE MARKED (5), MUST BE WIRE TIED TO PIECE MARKED (10) TO PREVENT DISPLACEMENT OF THE CENTER GATE, PIECE MARKED (4), WHEN LOADING CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 68. THREE (3) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE CROSSWISE STACK NO. 9 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED (12), AND AN ADDITIONAL PIECE MARKED (9) WILL BE REQUIRED FOR THE OTHER CENTER GATE MARKED (4). OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 84 AND 85.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 90 AND 92 FOR CROSSWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

(CONTINUED ON PAGE 51)

(KEY NUMBERS CONTINUED FROM PAGE 48)

(14) SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-4") (DOUBLED) (6 REQD). NAIL THE FIRST PIECE TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTES 12 AND 13 ON PAGE 51.

(15) SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY F" DETAIL ON PAGE 63.

(16) SIDE FILL ASSEMBLY RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 62") (2 REQD). POSITION AT 31" AND 7'-6" ABOVE THE CAR FLOOR AND SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (15) W/3-10d NAILS AT EACH JOINT.

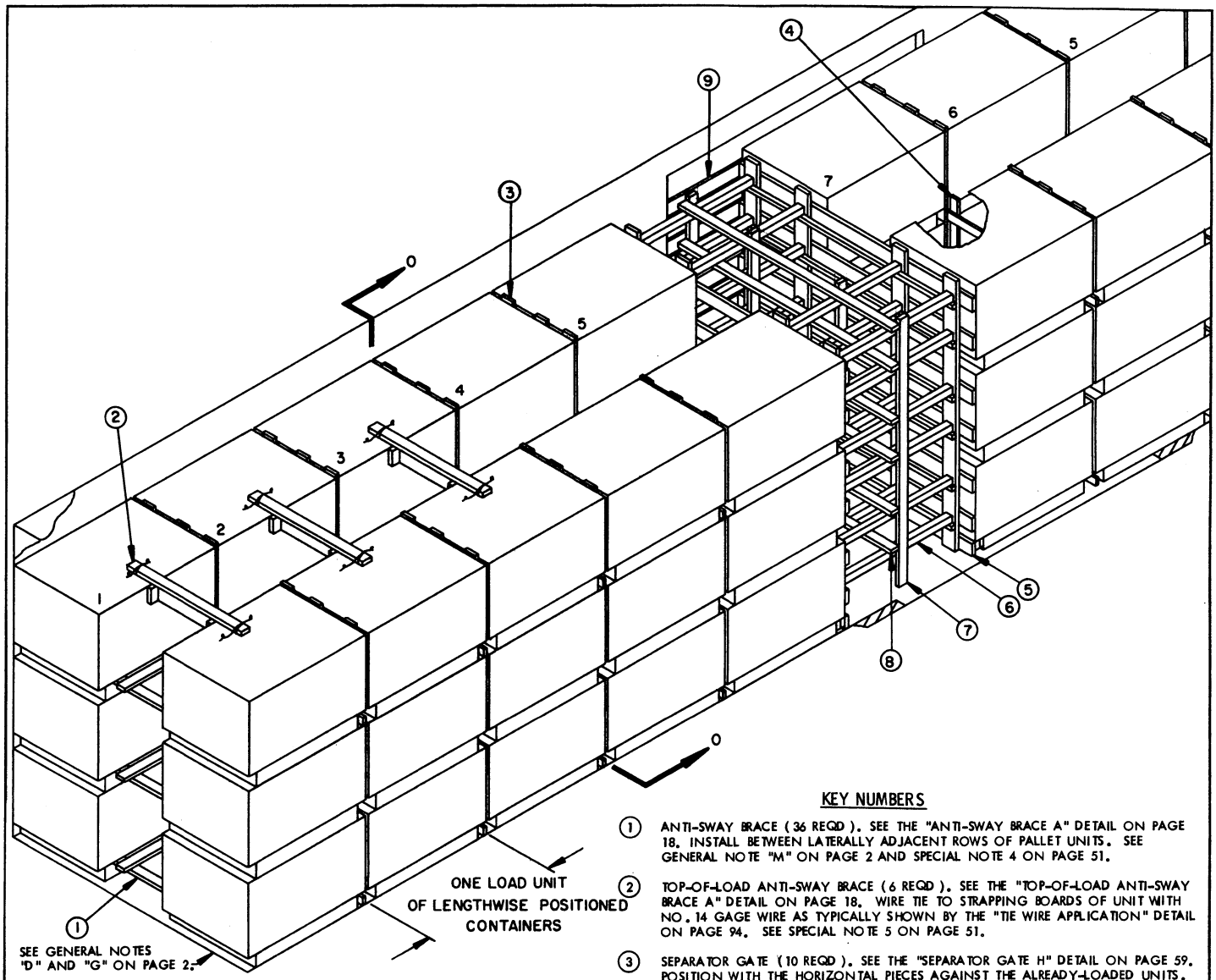
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	67	23
1" X 6"	400	200
2" X 2"	82	28
2" X 3"	44	22
2" X 4"	1552	1035
2" X 6"	222	222
4" X 4"	118	158
NAILS	**NO. REQD**	**POUNDS**
6d (2")	252	1-1/2
10d (3")	2114	32-3/4
12d (3-1/4")	52	1
16d (3-1/2")	128	3
WIRE, NO. 14 GAGE ---------- 3' REQD ----------NIL		

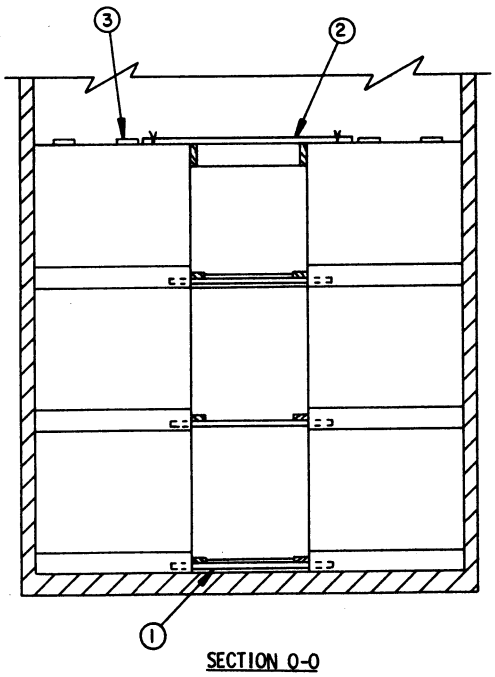
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	87	124,584 LBS
DUNNAGE		3,414 LBS
TOTAL WEIGHT		127,998 LBS

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



ISOMETRIC VIEW



SECTION O-O

KEY NUMBERS

(1) ANTI-SWAY BRACE (36 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 51.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 5 ON PAGE 51.

(3) SEPARATOR GATE (10 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 59. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 AND 17 ON PAGE 51.

(4) STOP PIECE, 1" X 4" X 7'-0" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED (3) , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 51.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE P" DETAIL ON PAGE 60. SEE SPECIAL NOTES 9 AND 10 ON PAGE 51.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 54-1/2") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

(7) VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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

(9) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 60. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 51.

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

(SPECIAL NOTES CONTINUED)

13. IF THE NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAP ALTERNATIVE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 42 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑨, THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE OPENING. IF NAILING TO THE CAR FLOOR IS NOT FEASIBLE OR DESIRABLE, DOUBLED 2" X 6" X 12" STOP PIECES MAY BE NAILED TO EACH GATE AS DEPICTED BY THE PHANTOM LINES ON THE "CENTER GATE P" DETAIL ON PAGE 60. NAIL THE FIRST PIECE TO A HORIZONTAL PIECE ON THE GATE W/3-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 64 THRU 92 FOR GUIDANCE.

15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE N" DETAIL ON PAGE 61. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

(SPECIAL NOTES CONTINUED FROM PAGE 49)

12. THE SIDE FILL, PIECE MARKED ⑭, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERAIL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑮, MUST BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑭.

13. WHEN USING THE PLUG DOOR PROCEDURES SHOWN ON PAGE 49 IN A CAR HAVING NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED ⑭, TO THE DOOR OPENING. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑮, AND THE SIDE FILL ASSEMBLY RETAINERS, PIECE MARKED ⑯.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	197	66
1" X 6"	680	340
2" X 2"	104	35
2" X 3"	36	18
2" X 4"	604	403
2" X 6"	218	218
4" X 4"	109	146
NAILS	**NO. REQD**	**POUNDS**
6d (2")	444	2-3/4
10d (3")	958	14-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 60' REQD ---------- 1 LB		

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 50 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 85,920 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-EIGHT (48) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,736 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' THRU 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE 5 1X (6) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAP ALTERNATIVE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 42 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑨, 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.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 50, 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 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" HORIZONTAL PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

7. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES. A 7'-0" LONG STOP PIECE IS REQUIRED FOR A 3-LAYER LOAD AND 48" LONG STOP PIECES ARE REQUIRED FOR 1 AND 2-LAYER LOADS. SEE PIECE MARKED ④ ON PAGE 50 FOR A TYPICAL INSTALLATION. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR 3-HIGH LOADS ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

9. 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 95 FOR GUIDANCE.

10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE P", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 50, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 58. 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 95. OMIT THE STOP PIECES FROM "CENTER GATE N" AND SHORTEN THE 35" STRUT LEDGERS TO 32".

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "P" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 97 FOR GUIDANCE.

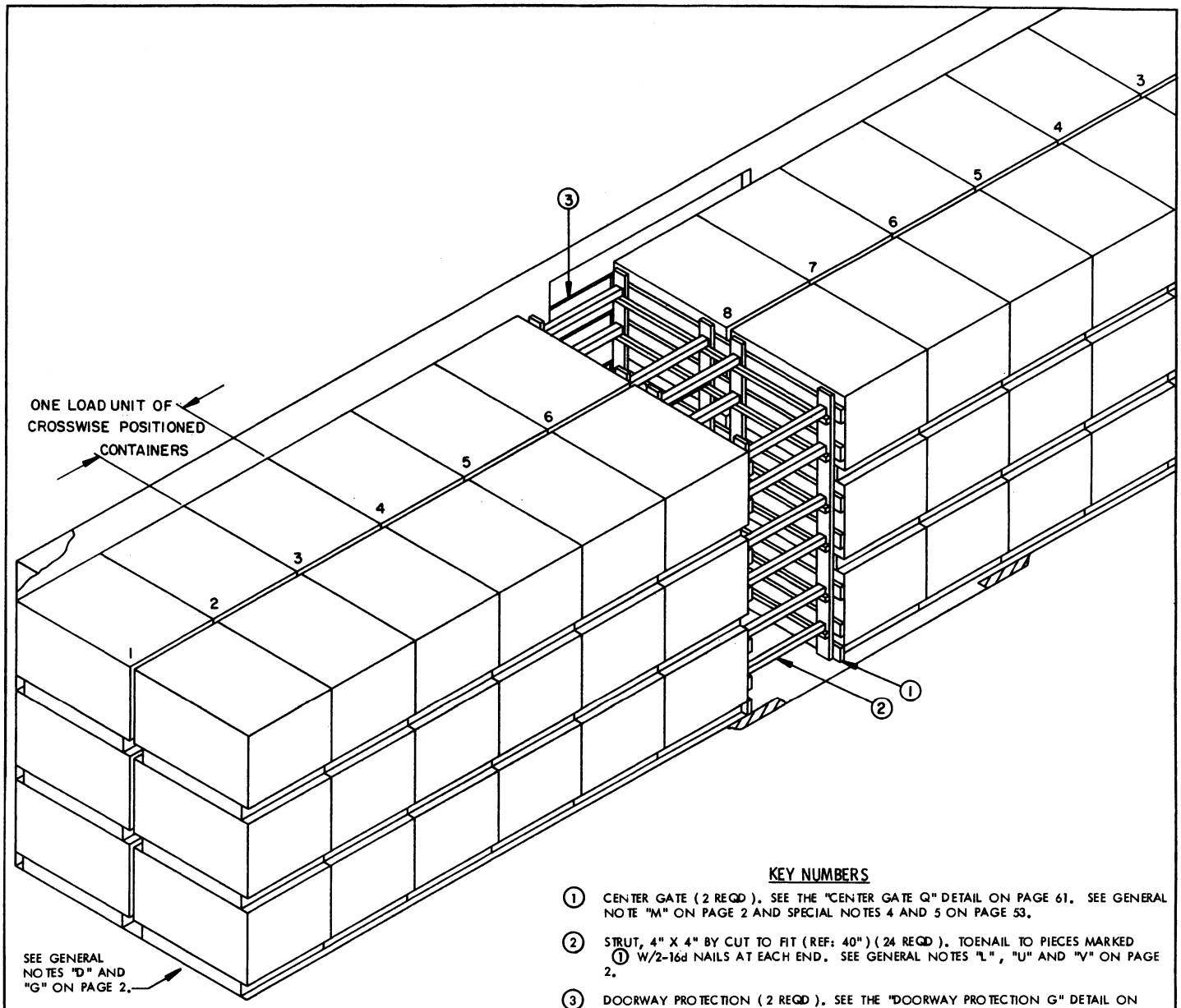
12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑨ IN THE LOAD ON PAGE 50, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ④, ⑥, ⑦ AND ⑧ ON PAGE 42 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	103,104 LBS
DUNNAGE		2,474 LBS
TOTAL WEIGHT		105,578 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

(1) CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 61. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTES 4 AND 5 ON PAGE 53.

(2) STRUT, 4" X 4" BY CUT TO FIT (REF: 40") (24 REQD). TOENAIL TO PIECES MARKED (1) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

(3) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 60. SEE SPECIAL NOTE 7 ON PAGE 53.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 4 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 52 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXMIATE LADING WEIGHT OF 94,512 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-4" OR WIDER CAR IS AVAILABLE, ONE HUNDRED AND TWO (102) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 146,064 POUNDS, CAN BE LOADED. SEE SPECIAL NOTE 9 FOR CENTER GATE MODIFICATIONS WHICH MUST BE MADE IF 60' LONG CARS ARE TO BE USED.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED IF A CAR WHICH IS WIDER THAN 9'-4" IS FURNISHED FOR LOADING. SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 46 FOR CONSTRUCTION GUIDANCE. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Q" AS SHOWN ON THE DETAIL ON PAGE 61. IF DESIRED IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION HORIZONTAL PIECES, IN LIEU OF USING THE ANTI-SWAY BRACES. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED TWO INCHES (2").

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 95 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 ① IN THE LOAD ON PAGE 52, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 59. 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 95.

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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 52, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 98 THRU 100 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 LOAD BUNDLING STRAPS MUST BE USED. SEE PIECES MARKED ① THRU ⑤ ON PAGE 56 FOR GUIDANCE. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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, 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 64 THRU 92 FOR GUIDANCE.

9. IF A FULL LOAD IS TO BE SHIPPED IN A 60' LONG CAR, SIX (6) STRUTS ARE REQUIRED FOR EACH ROW/TIER. TO ACCOMMODATE THESE ADDITIONAL STRUTS, FOUR VERTICAL PIECES MUST BE ADDED TO CENTER GATE "Q" FOR EACH ROW AS SHOWN BY THE PHANTOMED LINES ON THE DETAIL ON PAGE 61.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

12. A 50'-6" LONG CAR FOR SHIPMENT OF AN 84-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 130,500 POUNDS. A FULL LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT OF 121,200 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE POSITIONED IN EACH END OF THE CAR.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	96	48
2" X 2"	110	37
2" X 3"	44	22
2" X 4"	7	5
2" X 6"	203	203
4" X 4"	80	107
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	304	4-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4

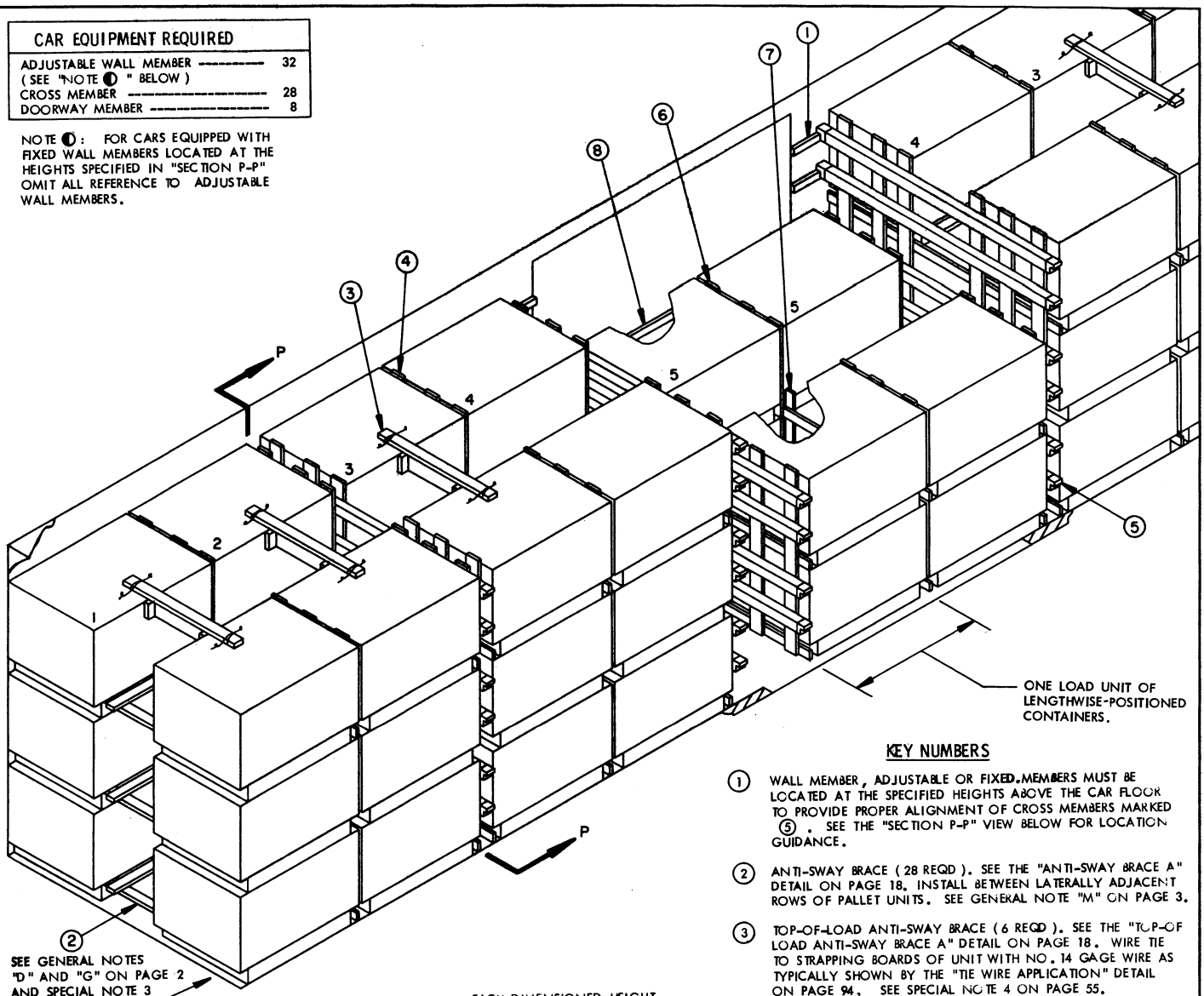
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	120,288 LBS
DUNNAGE		853 LBS
TOTAL WEIGHT		121,141 LBS

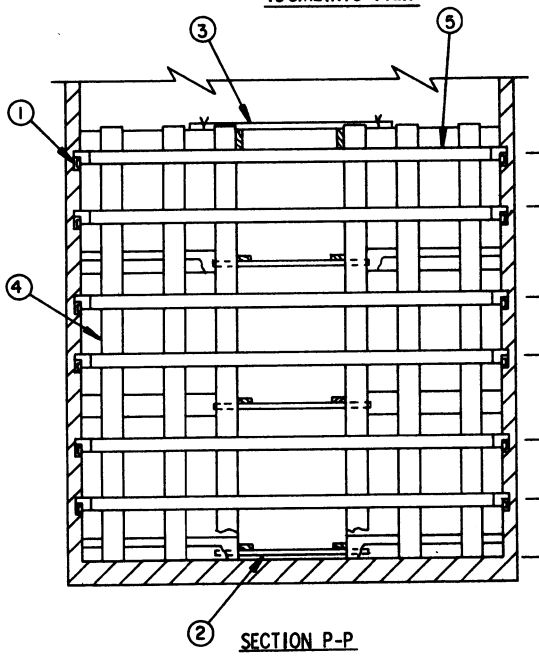
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	32
CROSS MEMBER	28
DOORWAY MEMBER	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.

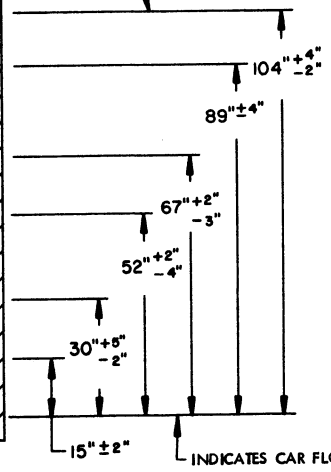


ISOMETRIC VIEW



SECTION P-P

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.



KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑤. SEE THE "SECTION P-P" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 3.

③ TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. SEE SPECIAL NOTE 4 ON PAGE 55.

④ SEPARATOR GATE FOR 3-HIGH (10 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 59. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 55.

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

⑥ SEPARATOR GATE FOR 2-HIGH (3 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 59. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 55.

⑦ STOP PIECE, 1" X 4" X 48" (4 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 55.

⑧ DOORWAY MEMBER (8 REQD). SEE THE "SECTION P-P" VIEW AT LEFT FOR PROPER LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 55.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 54 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,008 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 54, 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" DETAIL ON PAGE 94. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑦ . IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94 FOR CONSTRUCTION GUIDANCE.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL FOUR 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. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 62 AND 63 FOR GUIDANCE.

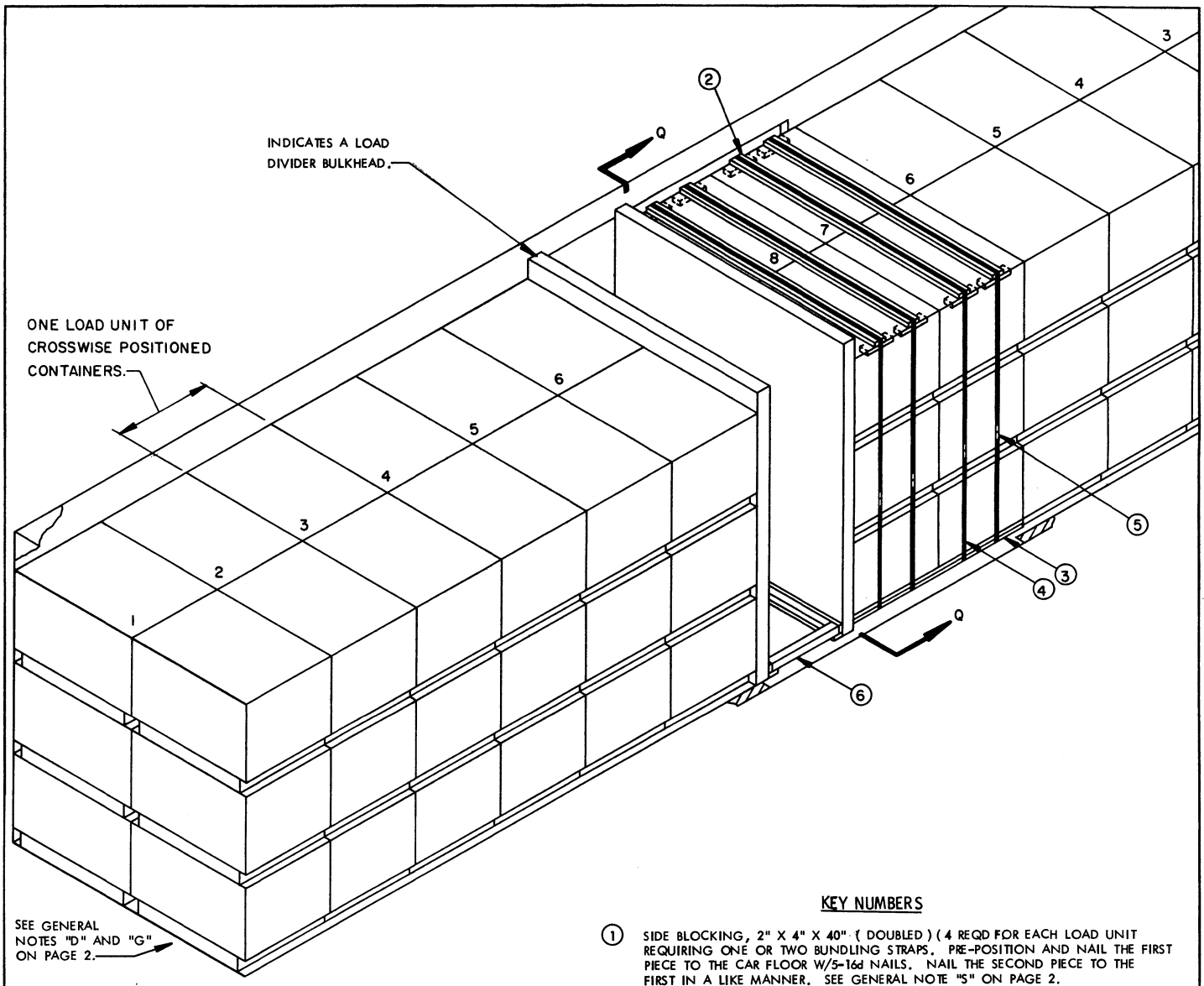
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	249	83
1" X 6"	674	337
2" X 4"	395	264
2" X 6"	21	21
NAILS	NO. REQD	POUNDS
6d (2")	492	3
10d (3")	414	6-1/2
WIRE, NO. 14 GAGE --------60' REQD ---------- 1 LB		

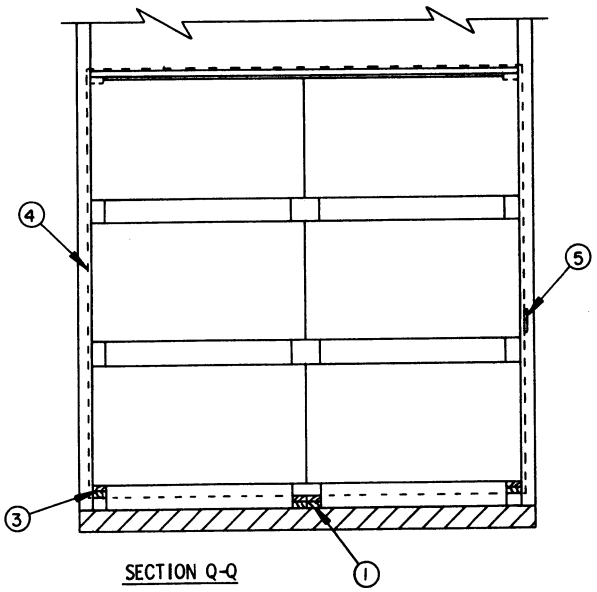
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT --------	56 ----------	80,192 LBS
DUNNAGE ----------		1,421 LBS
	TOTAL WEIGHT ---	81,613 LBS

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
56-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) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (4 REQD FOR EACH LOAD UNIT REQUIRING ONE OR TWO BUNDLING STRAPS. PRE-POSITION AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "S" ON PAGE 2.

(2) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 33.

(3) BATTEN, 2" X 4" X 6'-8" OR A LENGTH TO SUIT (DOUBLED) (2 REQD). LAMINATE W/1-10d NAIL EVERY 8".

(4) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 39'-0" LONG (REF) STEEL STRAPPING (4 REQD). ENCIRCLE THE PALLET UNITS IN THE DOORWAY AREA AS SHOWN IN THE ISOMETRIC VIEW. STAPLE TO STRAPPING BOARD, PIECE MARKED (2) , W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 57.

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

(6) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 101. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 5 ON PAGE 57.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
84-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.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS FOR AN APPROXIMATE LADING WEIGHT OF 137,472 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR OR A MAXIMUM OF SIXTY (60) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 85,920 POUNDS, WHEN USING THE DEPICTED PROCEDURES. A LENGTHWISE LOADING PATTERN SHOWN ON PAGE 42 MAY BE EMPLOYED. THEN, SEVENTY-TWO (72) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 103,104 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY (60) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 85,920 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,736 POUNDS.

3. 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 BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, AND THE UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR, THE DEPICTED NAILED FLOORLINE BLOCKING AND BUNDLING STRAPS MUST BE USED. IF THE UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR, REFER TO PIECES MARKED ④ , ⑥ , ⑦ AND ⑧ ON PAGE 42 FOR GUIDANCE. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS AND NAILABLE DOOR POSTS, PIECE MARKED ③ ON PAGE 52 WILL BE USED FOR A LOAD OF CROSSWISE-POSITIONED CONTAINERS OR PIECES MARKED ⑨ ON PAGE 50 WILL BE USED FOR A LOAD OF LENGTHWISE POSITIONED CONTAINERS. REFER TO PAGES 98 THRU 100 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. NOTE THAT NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

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

5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 56, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN FIVE (5) LOAD UNITS.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 66 THRU 77 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 89 AND/OR PAGES 90 AND 92 FOR SHIPPING GUIDANCE.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 91 FOR GUIDANCE.

9. A 50'-6" LONG CAR FOR SHIPMENT OF AN 84-UNIT LOAD USING THE DEPICTED LOADING PATTERN MUST HAVE A LOAD LIMIT OF AT LEAST 130,600 POUNDS. A FULL LOAD CAN BE SHIPPED IN A CAR HAVING A LOAD LIMIT 120,700 POUNDS OR GREATER IF SEVEN (7) LOAD UNITS ARE POSITIONED IN EACH END OF THE CAR.

BILL OF MATERIAL

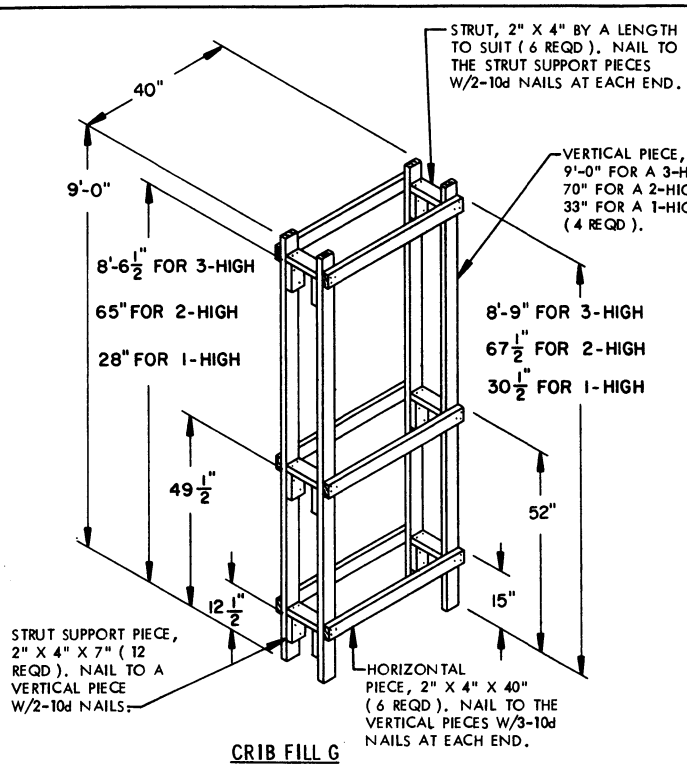
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	35	18
1" X 8"	17	12
2" X 4"	99	66
2" X 6"	37	37
4" X 4"	11	15
NAILS	**NO. REQD**	**POUNDS**
6d (2")	54	1/2
10d (3")	64	1
12d (3-1/4")	16	1/2
16d (3-1/2")	40	1

STEEL STRAPPING, 1-1/4" X .035" OR .031" --- 156" REQD ---- 23 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD ---- 1/2 LB
STAPLES ---------- 12 REQD ---- NIL

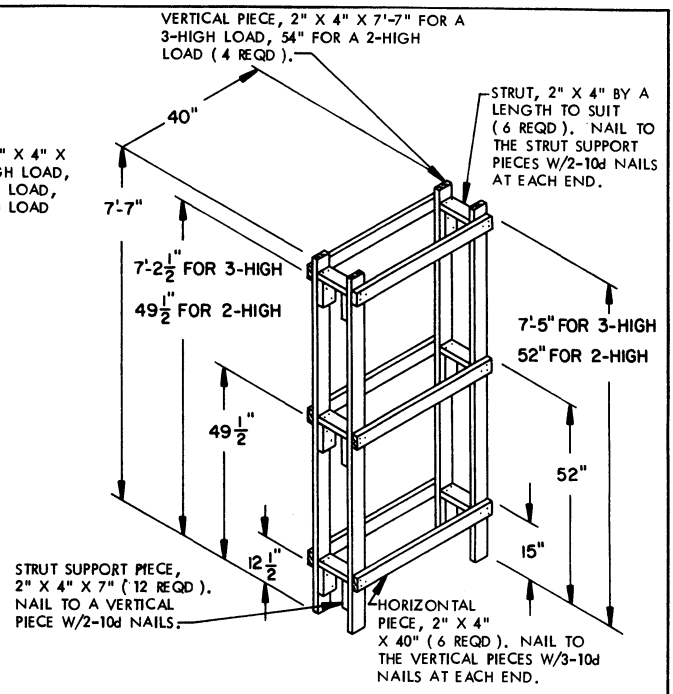
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	84	120,288 LBS
DUNNAGE		323 LBS
TOTAL WEIGHT		120,611 LBS

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



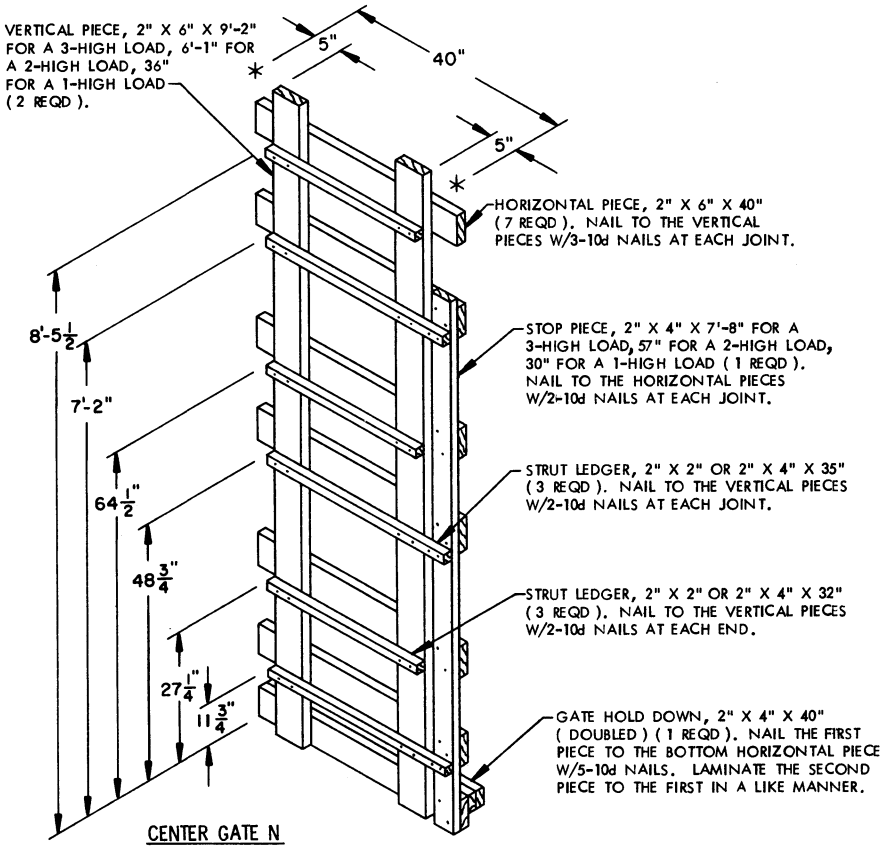
CRIB FILL G



CRIB FILL H

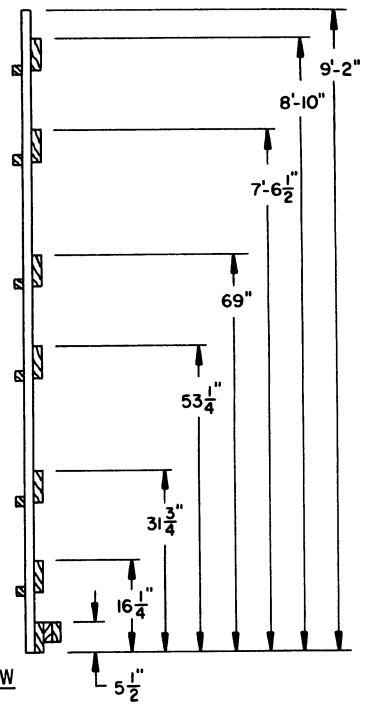
CRIB FILL ASSEMBLIES "G" AND "H" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS AND STRUT SUPPORT PIECES WHEN USING CRIB FOR 1 OR 2-HIGH LOADS.

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



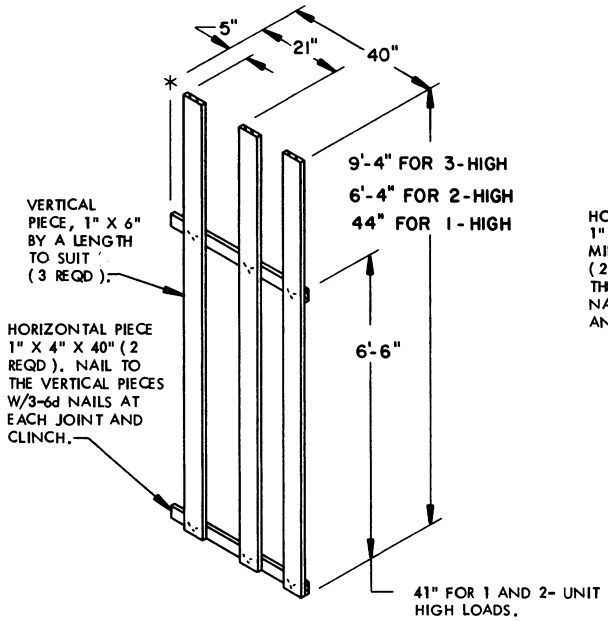
CENTER GATE N

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



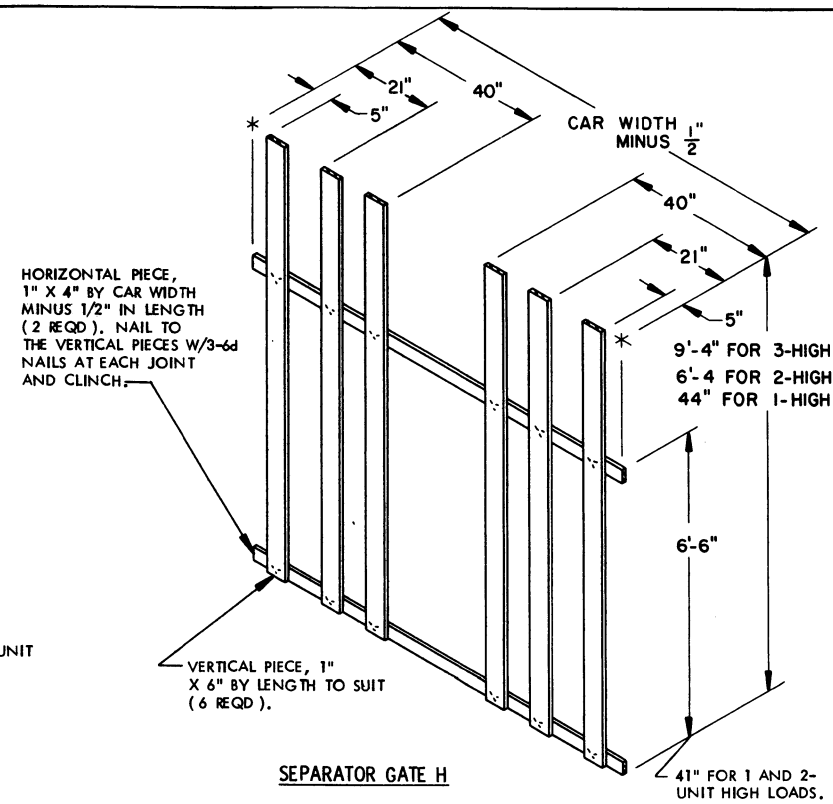
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

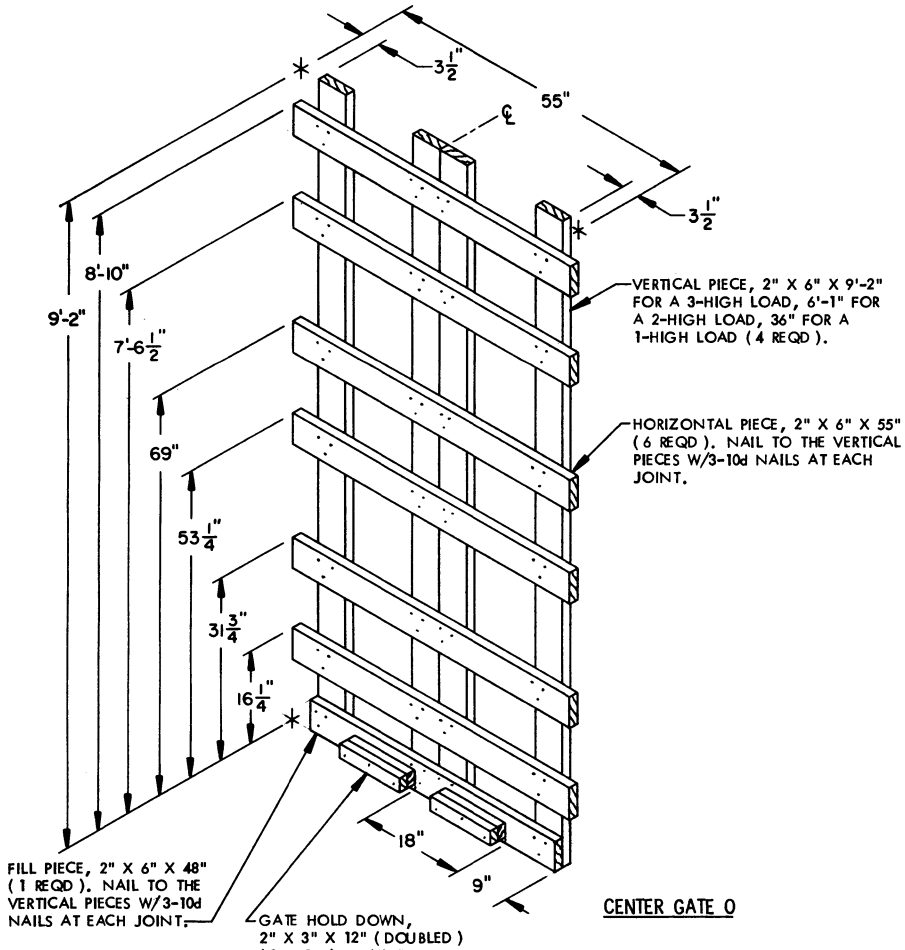


SEPARATOR GATE G

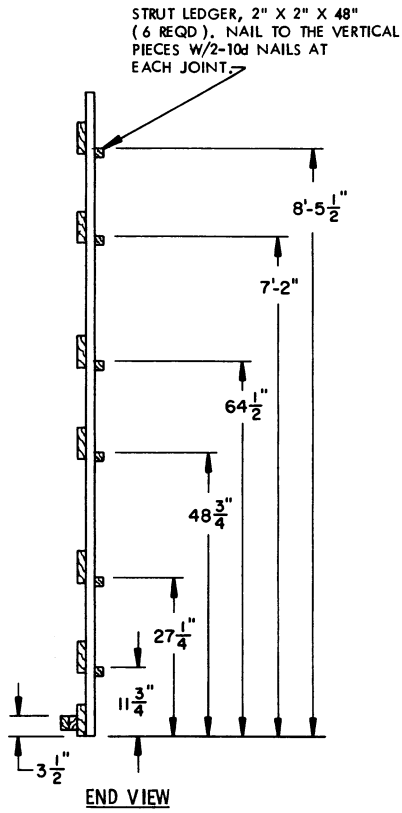
RIGHT HAND AND LEFT HAND GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



SEPARATOR GATE H

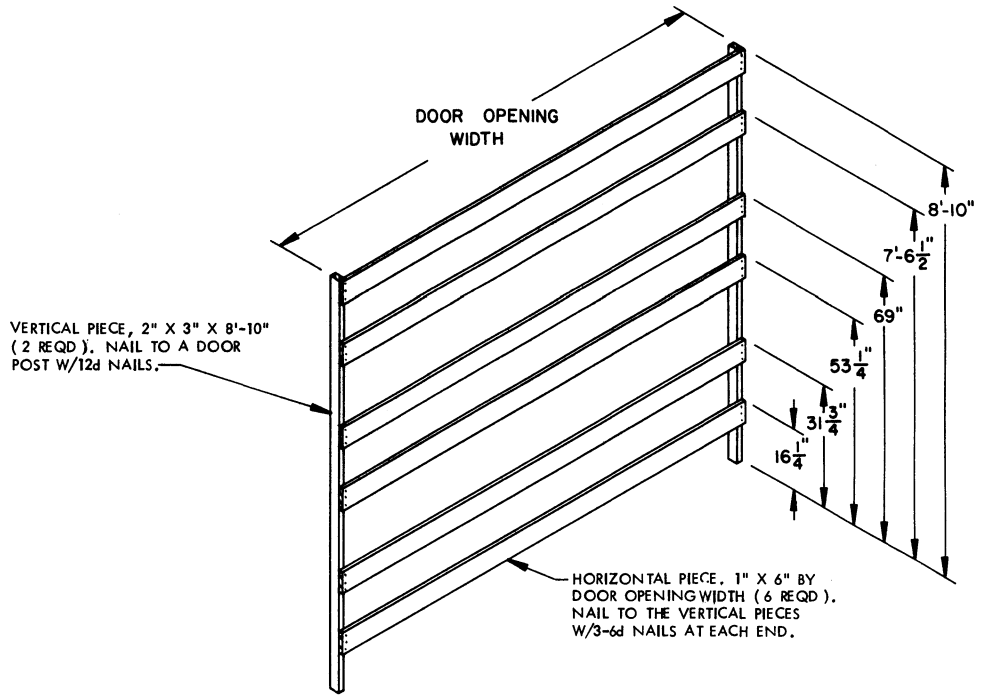


CENTER GATE O

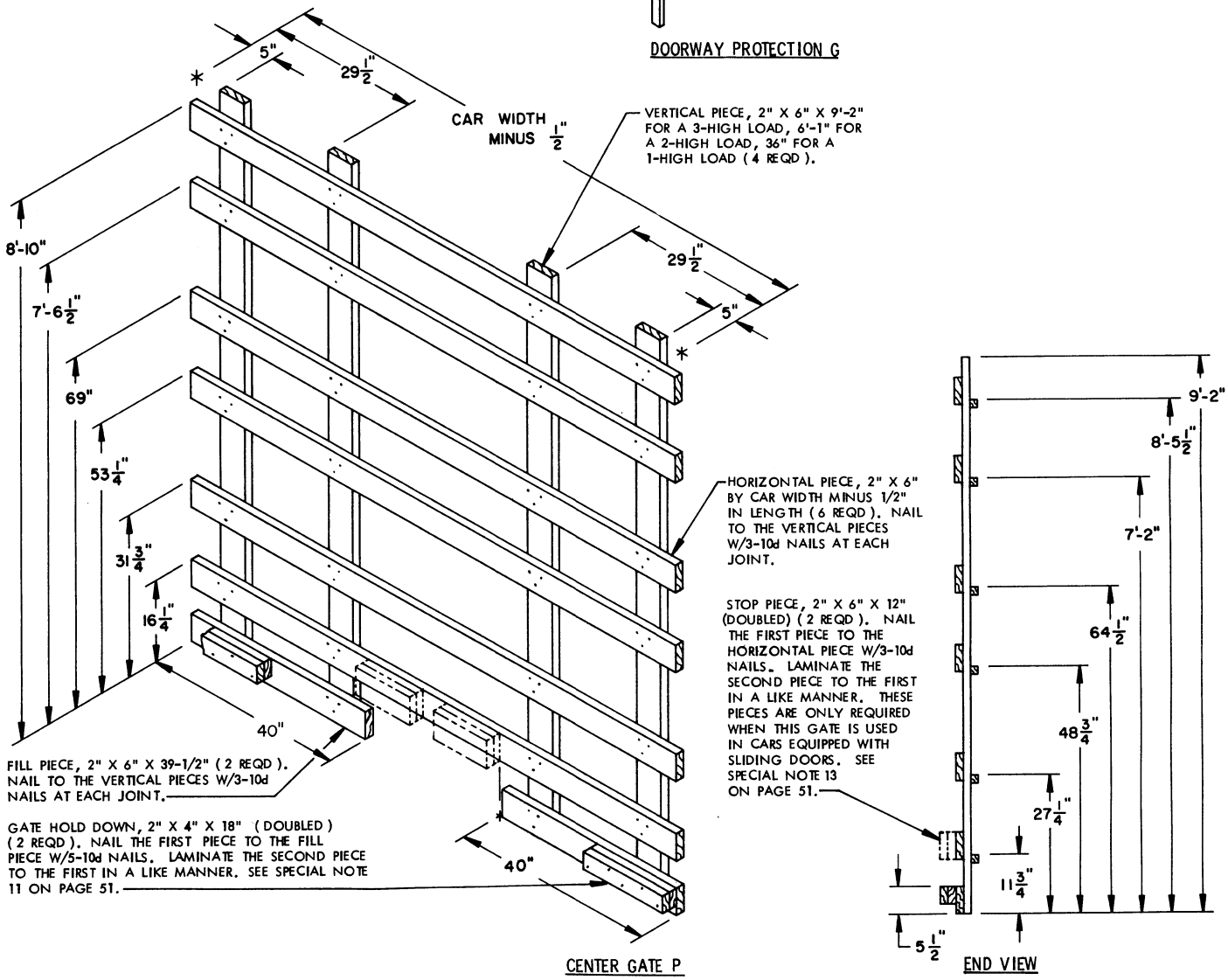


END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



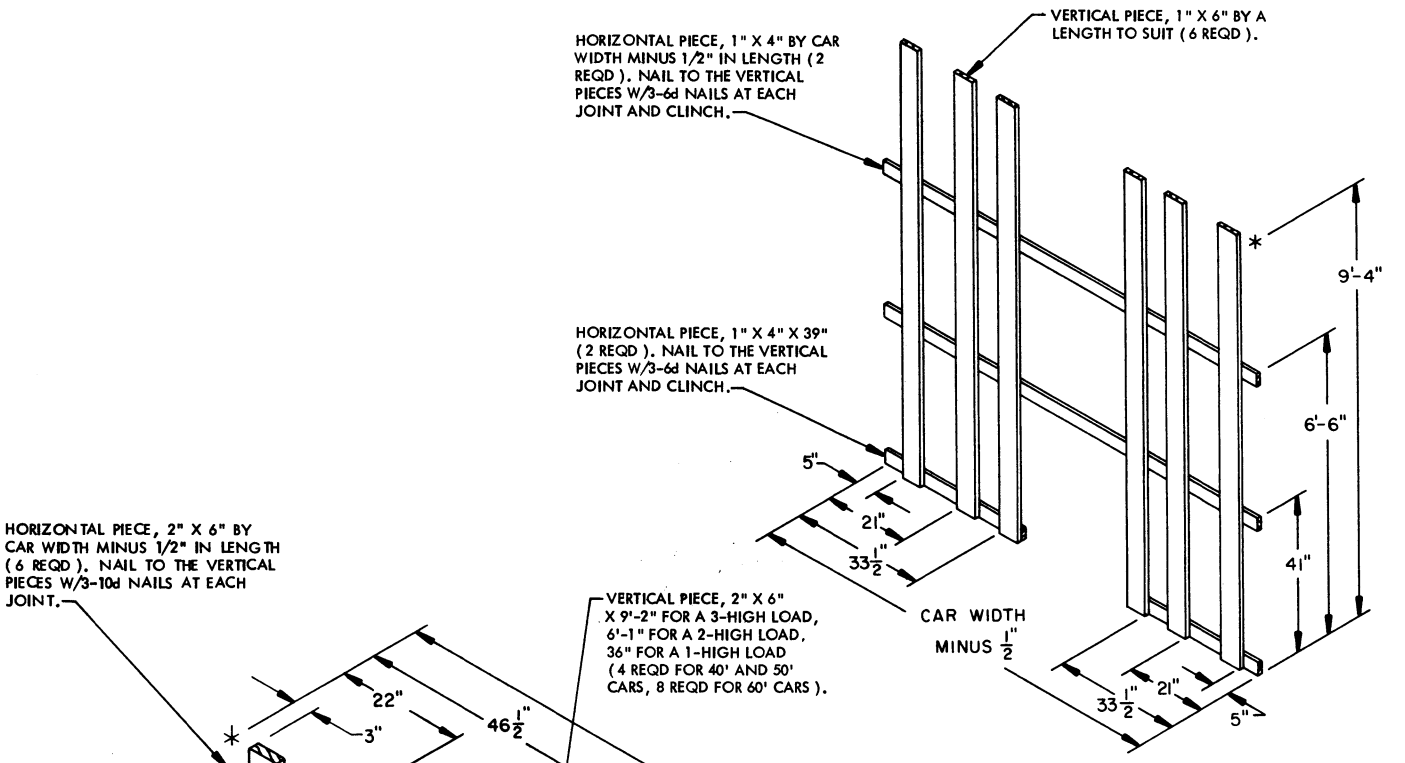
DOORWAY PROTECTION G



CENTER GATE P

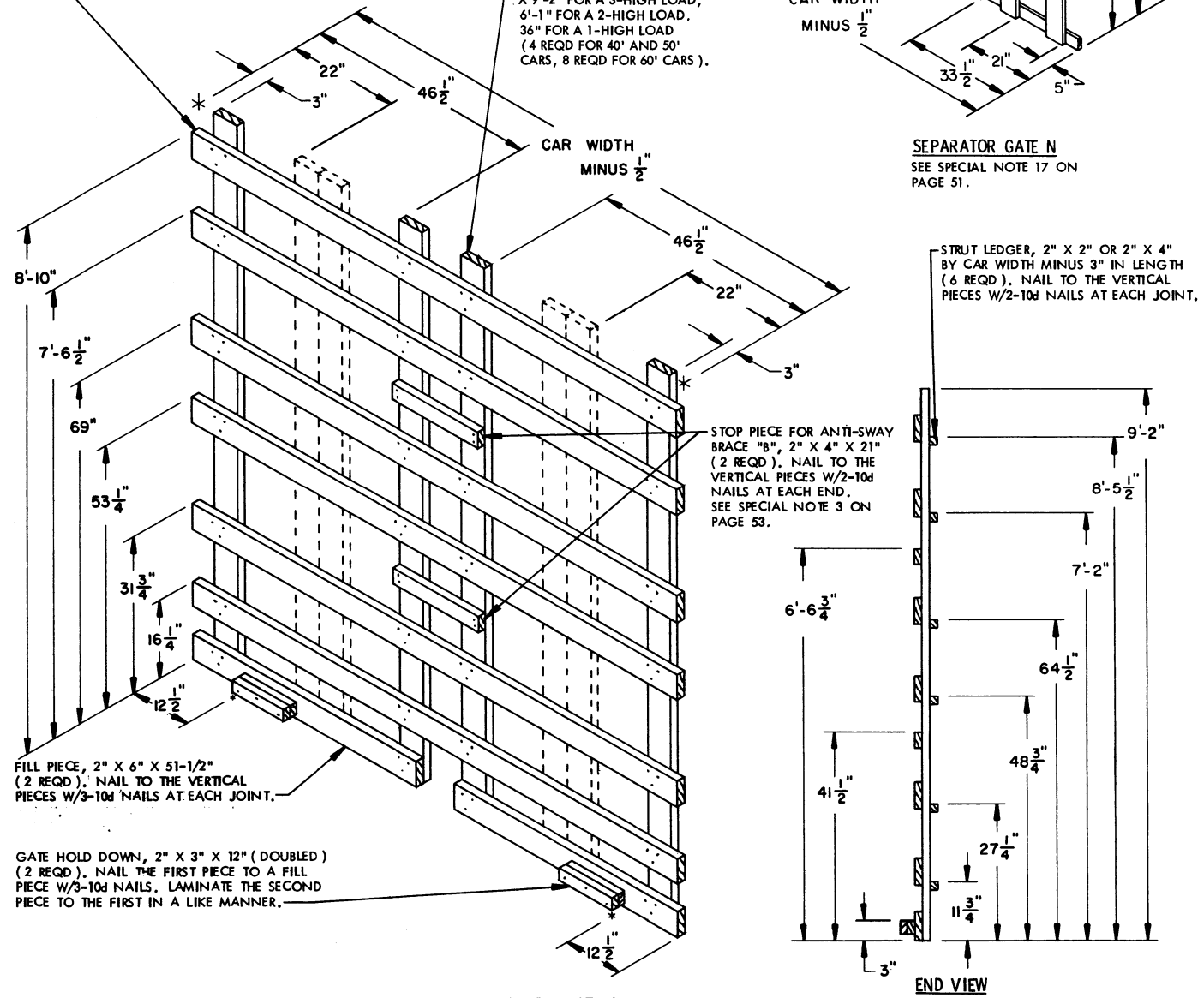
THIS GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 50.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



SEPARATOR GATE N

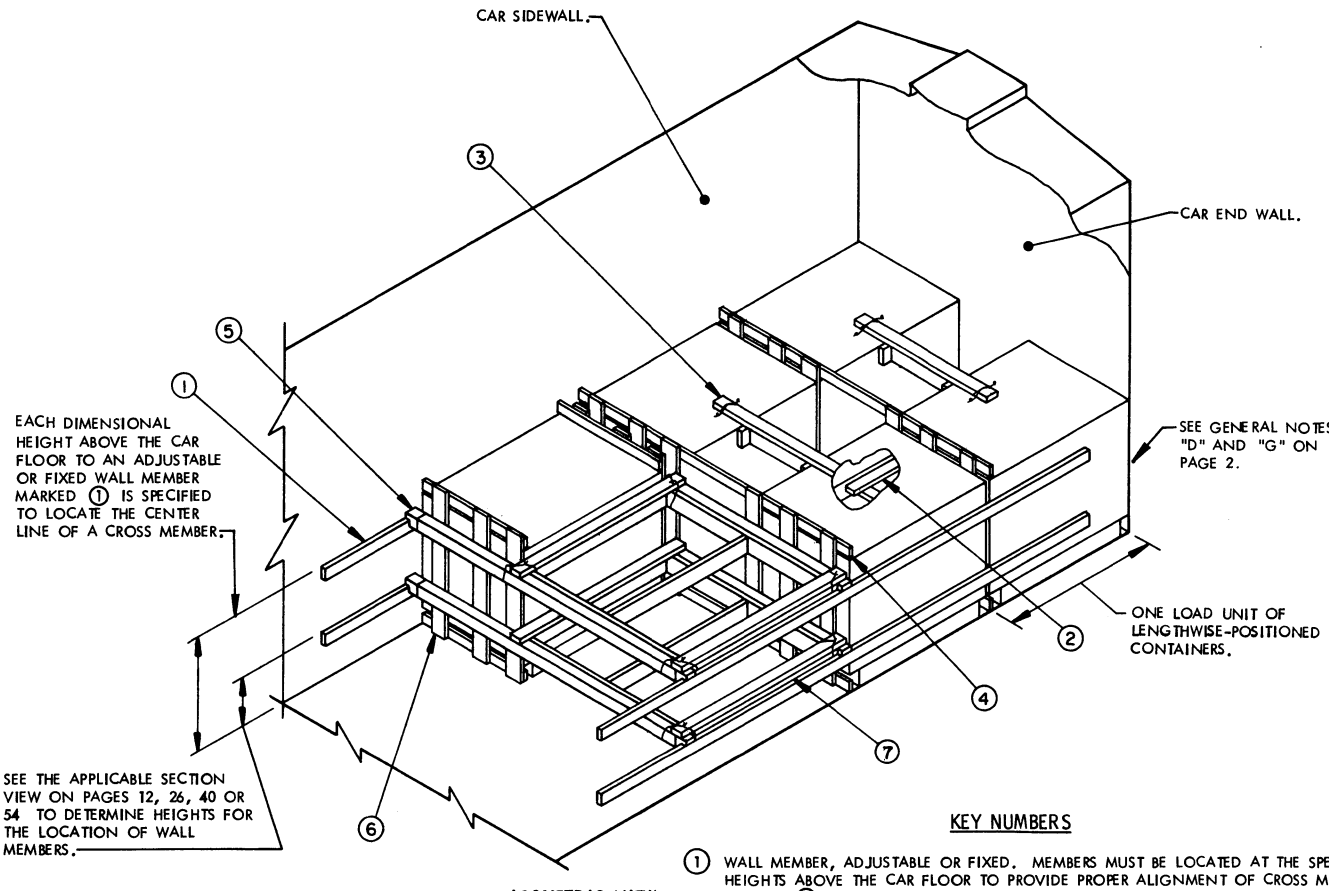
SEE SPECIAL NOTE 17 ON PAGE 51.



CENTER GATE Q

THIS GATE IS DESIGNED FOR USE IN THE LOAD SOWN ON PAGE 52.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) , MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED (7) , MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER , AND THE CAR 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 A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

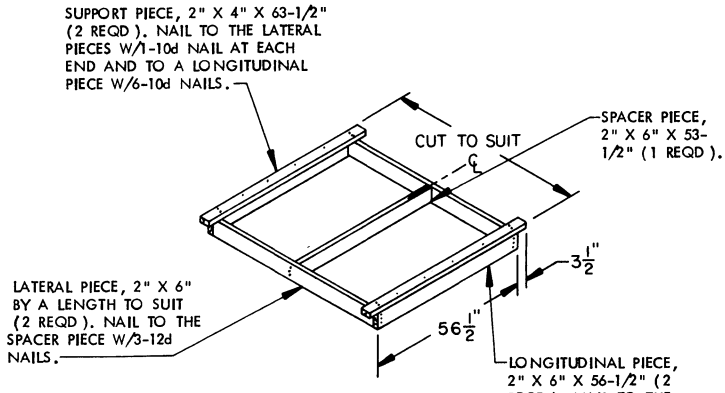
(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94.

(4) SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 17, 31, 45 OR 59. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

(5) CROSS MEMBER (4 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

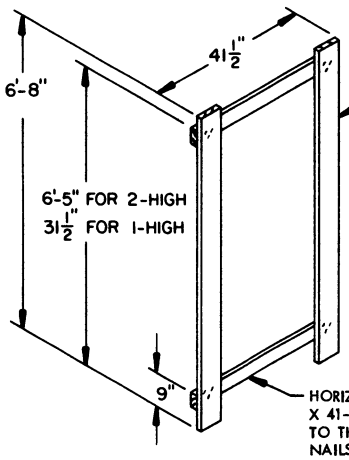
(6) SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR ONE UNIT WIDE ON PAGE 17, 31, 45 OR 59. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

(7) SPACER ASSEMBLY (2 REQD). SEE THE DETAIL BELOW AND SPECIAL NOTE 6 AT LEFT. WIRE TIE TO CROSS MEMBERS W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.



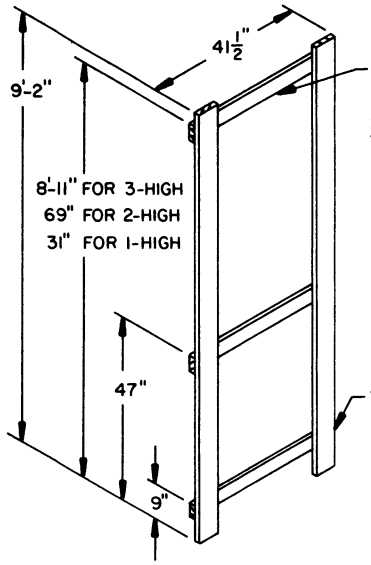
SPACER ASSEMBLY

TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



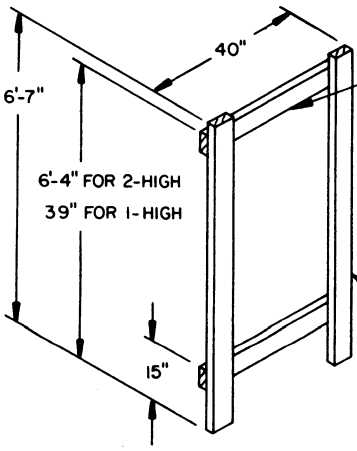
SIDE FILL ASSEMBLY C

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



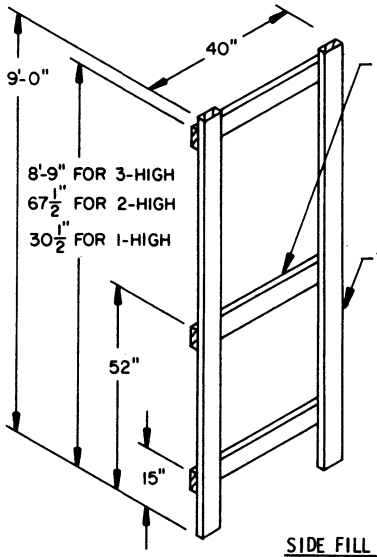
SIDE FILL ASSEMBLY D

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



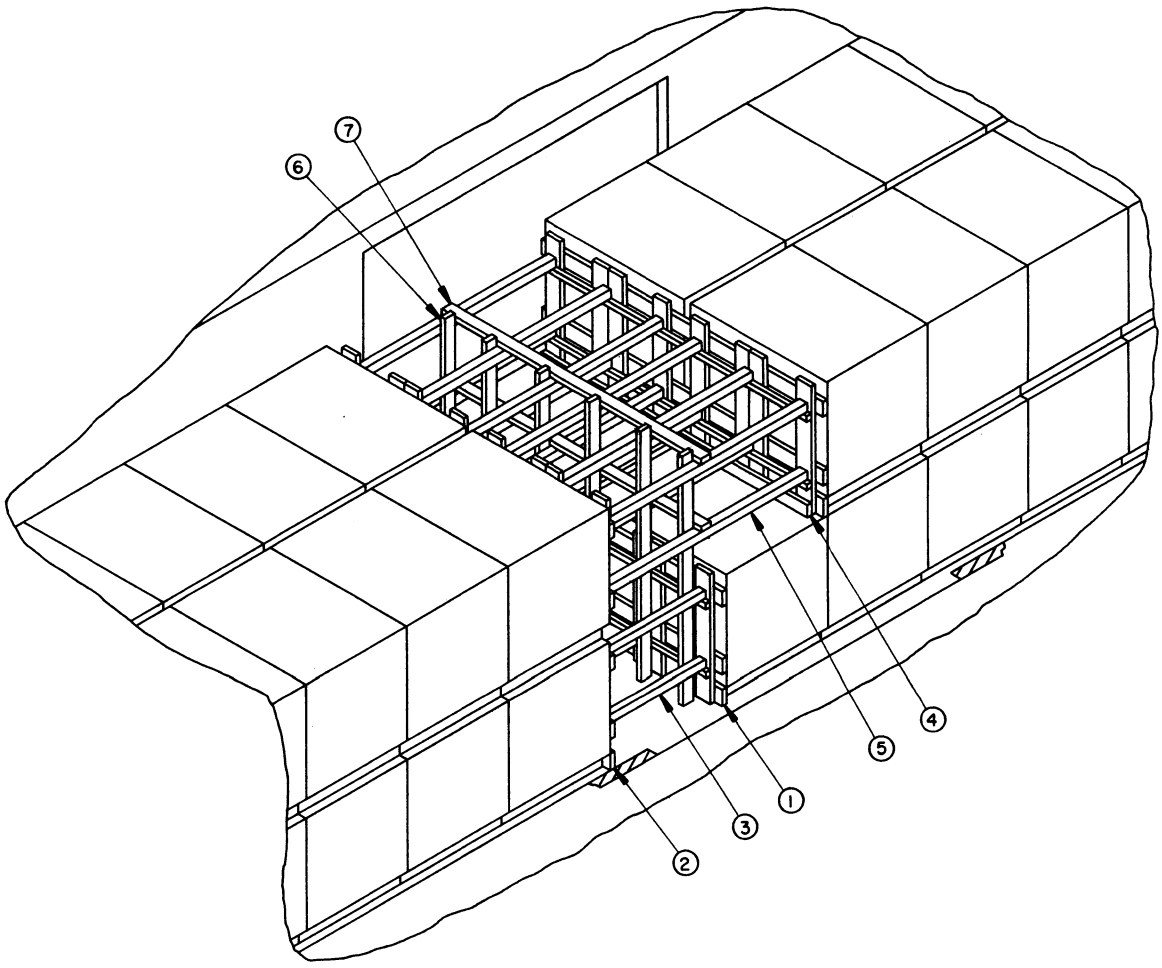
SIDE FILL ASSEMBLY E

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



SIDE FILL ASSEMBLY F

THIS ASSEMBLY IS FOR USE IN THE LOAD SHOWN ON PAGE 48.



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 CARS CAN ALSO BE USED.

2. THE PALLET UNIT SHOWN IS THE ROUTED 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 ROUTED DUNNAGE METHOD UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, WILL ALSO VARY DEPENDING UPON THE UNIT BEING LOADED.

KEY NUMBERS

(1) CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 47. SEE GENERAL NOTE "M" 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 47.

(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 PAGE 2.

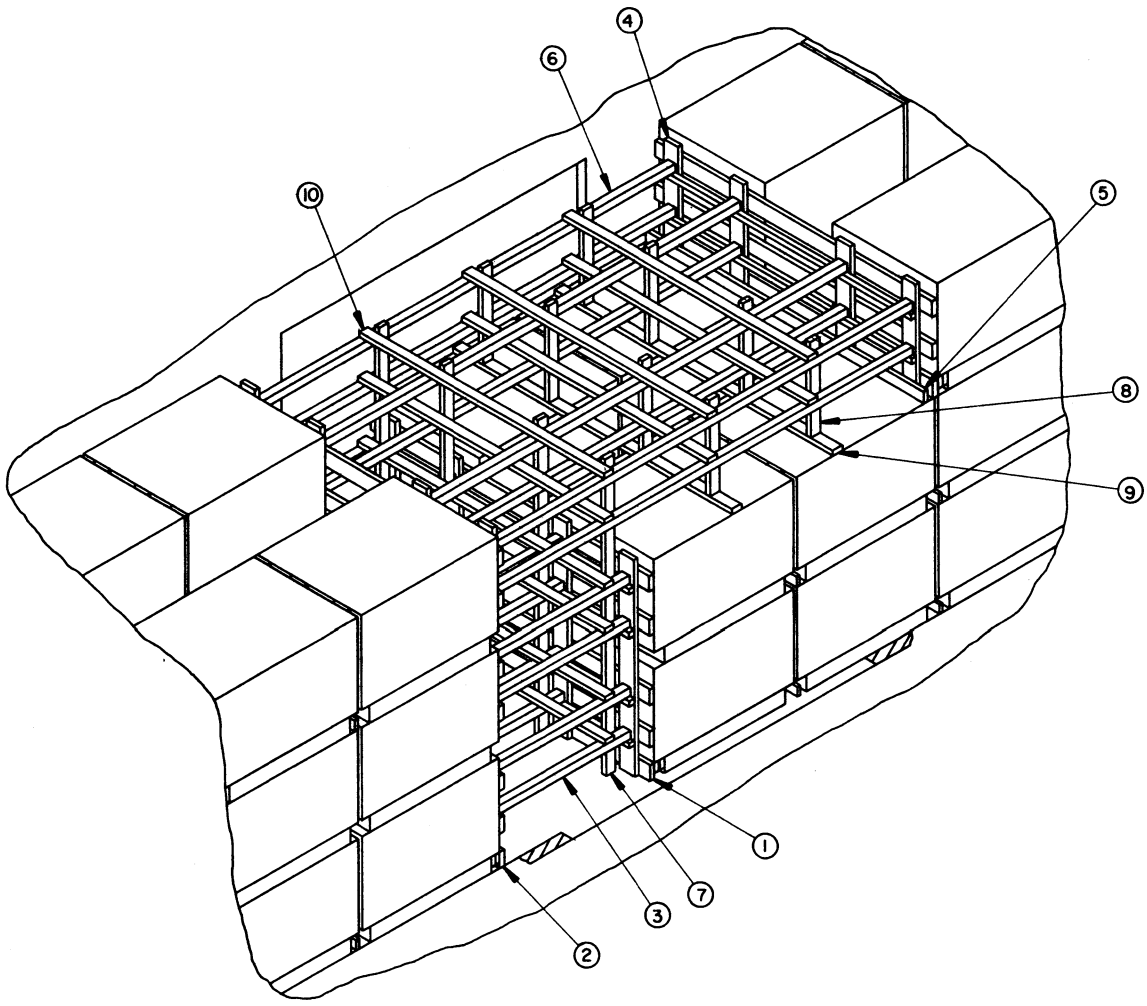
(4) GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

(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 CAR WIDTH MINUS 4" IN LENGTH (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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



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 FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). THE DEPICTED PROCEDRUES 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 "G" 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 DEPENDING UPON THE UNIT BEING LOADED.

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

KEY NUMBERS

(1) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 32. SEE SPECIAL NOTE 5 AT LEFT. SEE GENERAL NOTE "M" ON PAGE 2.

(2) CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 32.

(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 PAGE 2.

(4) CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 32.

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

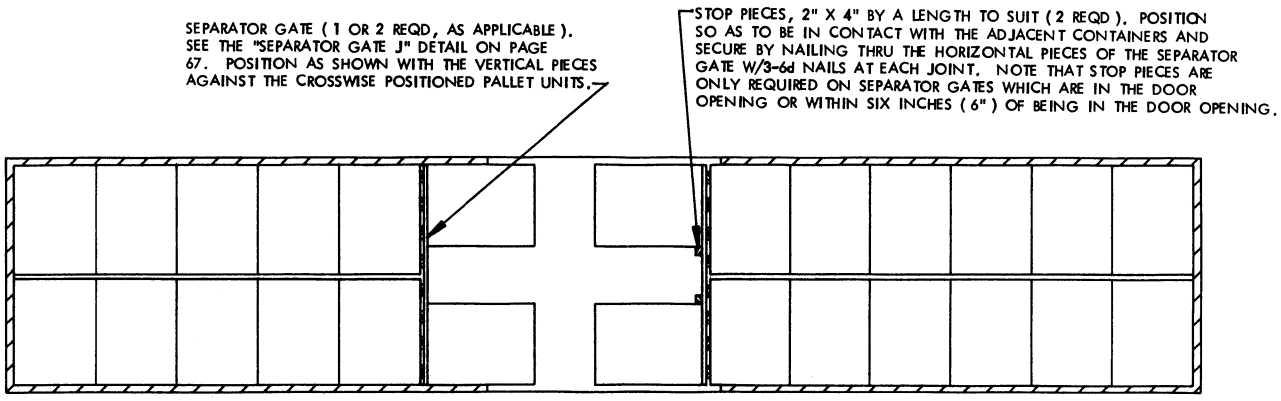
(7) VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUT MARKED (3) AND (6) W/3-10d NAILS AT EACH JOINT.

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

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

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

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



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

AN 11 LONG PLUS 2 WIDE LOAD IS SHOWN

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE AND ON PAGE 67 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "J", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "J" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE CROSSWISE UNITS OF THE LOAD.
4. A CHART FOR EACH OF THE TWO TYPES OF PALLET UNITS IS SHOWN ON THIS PAGE. THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES, ARE SPECIFIED. FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHARTS.

FLAT DUNNAGE METHOD UNIT

CAR LENGTH	UNIT PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22 & 20	CROSSWISE LOAD ON PAGE 10 OR 24	23 & 65
	20	9 LONG AT 41-1/2" PLUS 1 WIDE AT 55"	50
	18*	6 LONG AT 41-1/2" PLUS 4 WIDE AT 55"	49
	18*	4 LONG AT 41-1/2" PLUS 5 WIDE AT 55"	36
	16	LENGTHWISE LOAD ON PAGE 8 OR 22	46
50'-6" CAR	28 & 26	CROSSWISE LOAD ON PAGE 10 OR 24	19 & 60
	26	12 LONG AT 41-1/2" PLUS 1 WIDE AT 55"	45
	24	9 LONG AT 41-1/2" PLUS 3 WIDE AT 55"	58
	24	8 LONG AT 41-1/2" PLUS 4 WIDE AT 55"	45
	23	COMBINATION LOAD ON PAGE 6 OR 20	60 & 50
	22	4 LONG AT 41-1/2" PLUS 7 WIDE AT 55"	46
	22	3 LONG AT 41-1/2" PLUS 8 WIDE AT 55"	32
	20	LENGTHWISE LOAD ON PAGE 8 OR 22	50
60'-8" CAR	32	CROSSWISE LOAD ON PAGE 10 OR 24	58
	30	12 LONG AT 41-1/2" PLUS 3 WIDE AT 55"	56
	30	11 LONG AT 41-1/2" PLUS 4 WIDE AT 55"	42
	28*	7 LONG AT 41-1/2" PLUS 7 WIDE AT 55"	43
	26	3 LONG AT 41-1/2" PLUS 10 WIDE AT 55"	44
	24	LENGTHWISE LOAD ON PAGE 8 OR 22	62

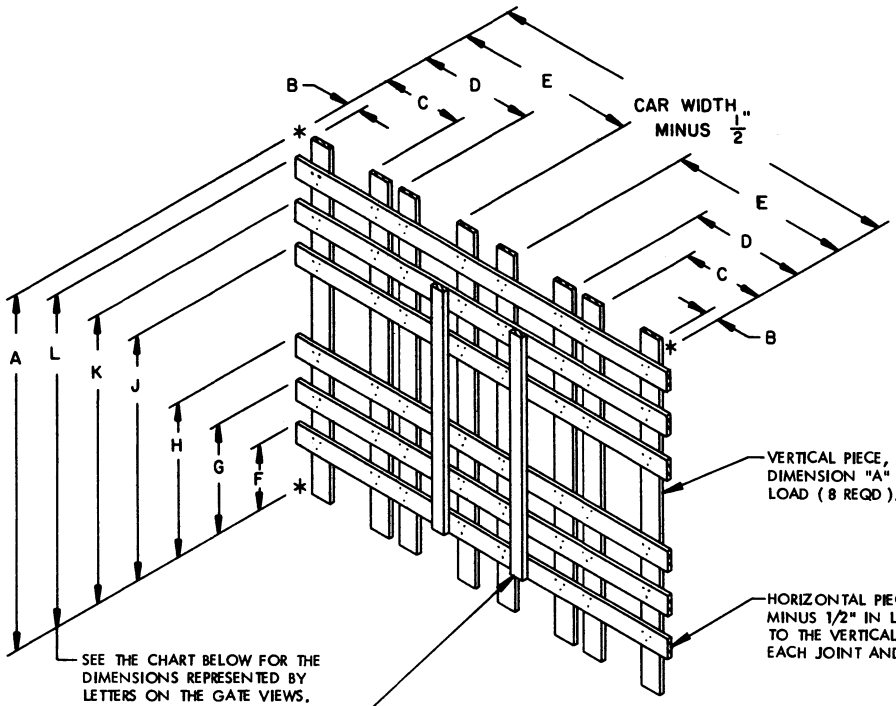
* THE COMBINATION LOAD ON PAGE 6 OR 20 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 35" AND 65", AND 54" AND 58" IN 40' AND 60' CARS, RESPECTIVELY.

ROUTED DUNNAGE METHOD UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	CROSSWISE LOAD ON PAGE 38 OR 52	40
	22	10 LONG AT 40" PLUS 1 WIDE AT 55"	23
	20	8 LONG AT 40" PLUS 2 WIDE AT 55"	47
	18●	5 LONG AT 40" PLUS 4 WIDE AT 55"	57
	18●	4 LONG AT 40" PLUS 5 WIDE AT 55"	42
	16	LENGTHWISE LOAD ON PAGE 36 OR 50	40
50'-6" CAR	28	CROSSWISE LOAD ON PAGE 38 OR 52	40
	28	13 LONG AT 40" PLUS 1 WIDE AT 55"	23
	26	11 LONG AT 40" PLUS 2 WIDE AT 55"	47
	24	8 LONG AT 40" PLUS 4 WIDE AT 55"	57
	24	7 LONG AT 40" PLUS 5 WIDE AT 55"	42
	22	4 LONG AT 40" PLUS 7 WIDE AT 55"	52
	20	LENGTHWISE LOAD ON PAGE 36 OR 50	50
60'-8" CAR	34	CROSSWISE LOAD ON PAGE 38 OR 52	42
	32	13 LONG AT 40" PLUS 3 WIDE AT 55"	34
	30	11 LONG AT 40" PLUS 4 WIDE AT 55"	59
	28●	7 LONG AT 40" PLUS 7 WIDE AT 55"	54
	28●	6 LONG AT 40" PLUS 8 WIDE AT 55"	39
	26	3 LONG AT 40" PLUS 10 WIDE AT 55"	49
	26	2 LONG AT 40" PLUS 11 WIDE AT 55"	34
	24	LENGTHWISE LOAD ON PAGE 36 OR 50	62

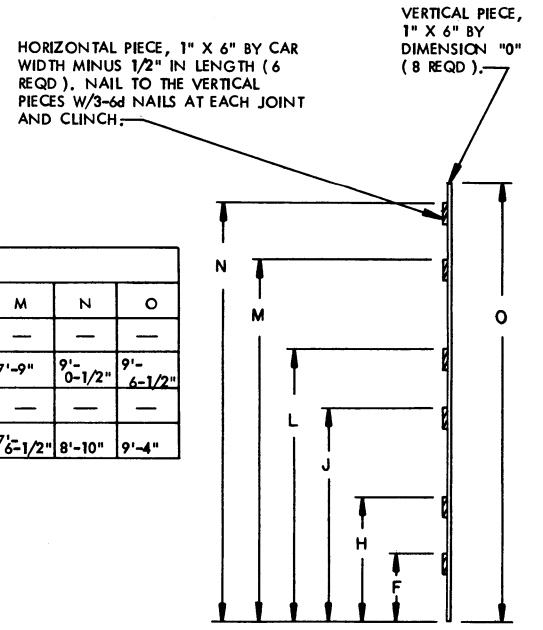
● THE COMBINATION LOAD ON PAGE 34 OR 48 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 35" AND 6'-8" LONG IN A 40'-6" LONG CAR, AND 54" AND 6'-8" LONG IN A 60'-8" LONG CAR.

TYPICAL COMBINATION LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR



SEPARATOR GATE J

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



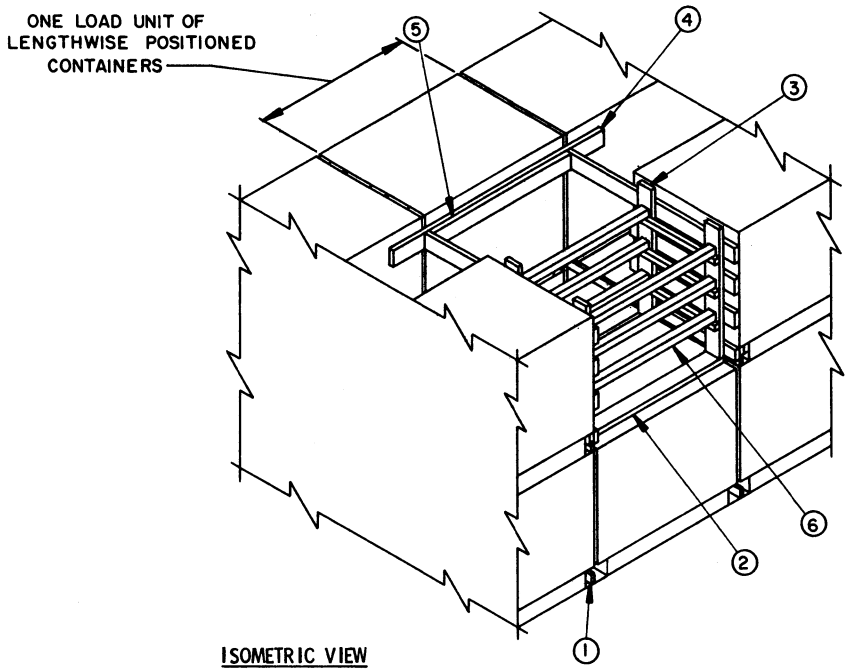
END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD WHICH IS ONLY APPLICABLE FOR UNITS 2 AND 4 AS IDENTIFIED AT THE LEFT.

PALLET UNIT NO.	DIMENSIONS													
	A	B	C	D	E	F	G	H	J	K	L	M	N	O
1	7'-8"	3-1/4"	17-3/4"	29"	46-1/4"	16-1/2"	28-1/2"	40"	62-1/2"	6'-2-1/2"	7'-2"	—	—	—
2	—	3-1/4"	17-3/4"	29"	46-1/4"	16-1/2"	—	32-1/4"	55"	—	70-1/2"	7'-9"	9'-0-1/2"	9'-6-1/2"
3	7'-7"	3-1/2"	17-1/2"	29"	46-1/2"	16-1/4"	27-3/4"	39-3/4"	61"	6'-0-3/4"	7'-0-3/4"	—	—	—
4	—	3-1/2"	17-1/2"	29"	46-1/2"	16-1/4"	—	31-3/4"	53-1/4"	—	69"	7'-6-1/2"	8'-10"	9'-4"

PALLET UNIT IDENTIFICATION	SHOWN AS UNIT NUMBER
FLAT DUNNAGE METHOD (BASIC HEIGHT)	1
FLAT DUNNAGE METHOD (DECREASED HEIGHT)	2
ROUTED DUNNAGE METHOD (BASIC HEIGHT)	3
ROUTED DUNNAGE METHOD (DECREASED HEIGHT)	4

TYPICAL COMBINATION LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER PALLET UNIT FROM A 3-LAYER LOAD.
4. THE OMITTED-UNIT 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. NOTE THAT THE TOP HORIZONTAL PIECE OF EACH SEPARATOR GATE WHICH IS 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 SO AS TO PROVIDE CLEARANCE BETWEEN IT AND THE CONTAINERS ON THE UNIT BELOW AS WELL AS CLEARANCE BETWEEN IT AND THE LOAD BEARING GATE, PIECE MARKED ③ .

KEY NUMBERS

① MODIFIED SEPARATOR GATE (2 REQD). SEE THE SEPARATOR GATE DETAIL ON PAGES 17, 31, 45 OR 59, FOR POSITIONING OF THE VERTICAL PIECES. SEE SPECIAL NOTE 6 AT LEFT FOR GATE MODIFICATIONS. POSITION GATE SO THE HORIZONTAL PIECES ARE AWAY FROM THE OMITTED UNIT AREA.

② SUPPORT PIECE, 2" X 6" X 55" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED ③ .

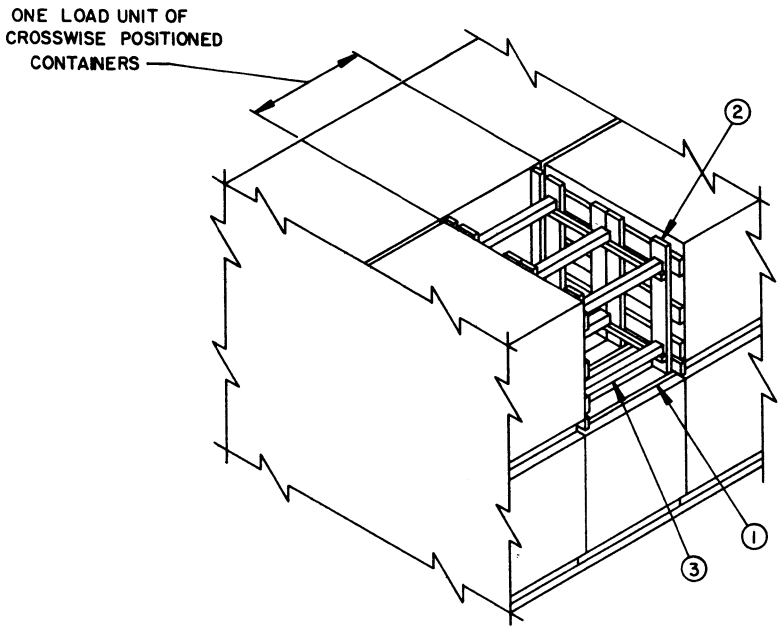
③ LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 70 OR 71. NAIL TO THE FILLER PIECE, PIECE MARKED ⑤ , W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED ② , W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

④ ANTI-SWAY BEARING PIECE, 2" X 6" X 7'-0" (1 REQD).

⑤ FILLER PIECE, 2" X 6" X 52" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ④ , W/5-10d NAILS.

⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 49") (AS REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END.

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



ISOMETRIC VIEW

SPECIAL NOTES:

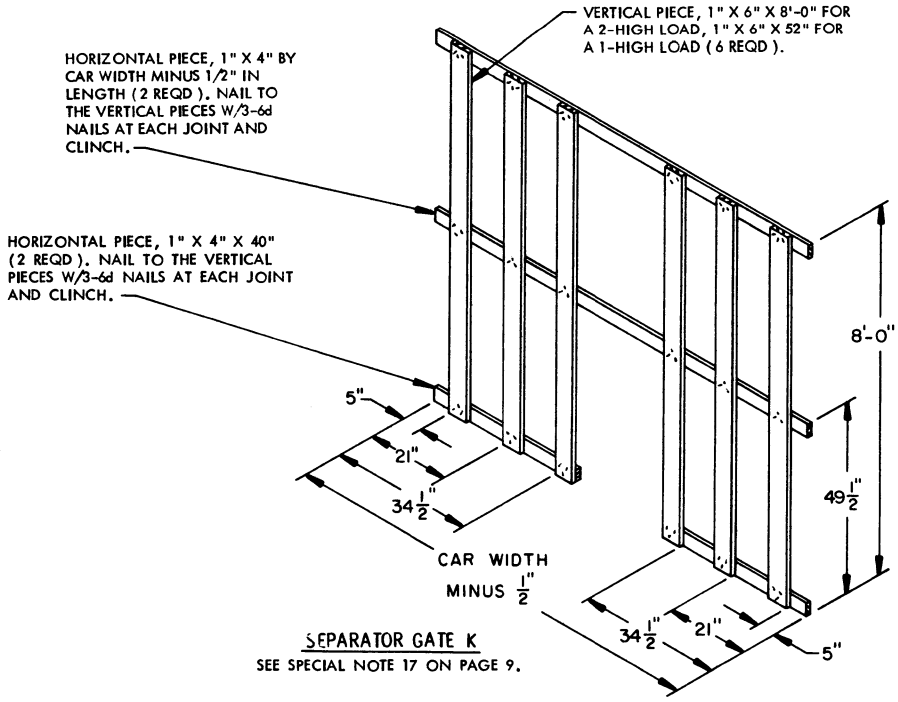
1. A PARTIAL VIEW OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER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

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (4 REQD). POSITION BENEATH THE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2).

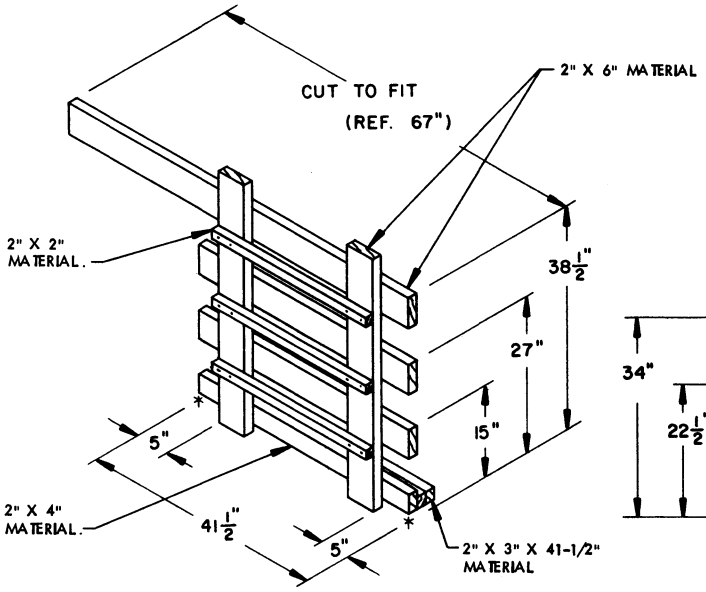
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 72 OR 73. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1), W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

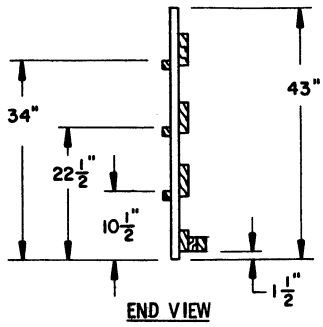
(3) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.



SEPARATOR GATE K
SEE SPECIAL NOTE 17 ON PAGE 9.

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





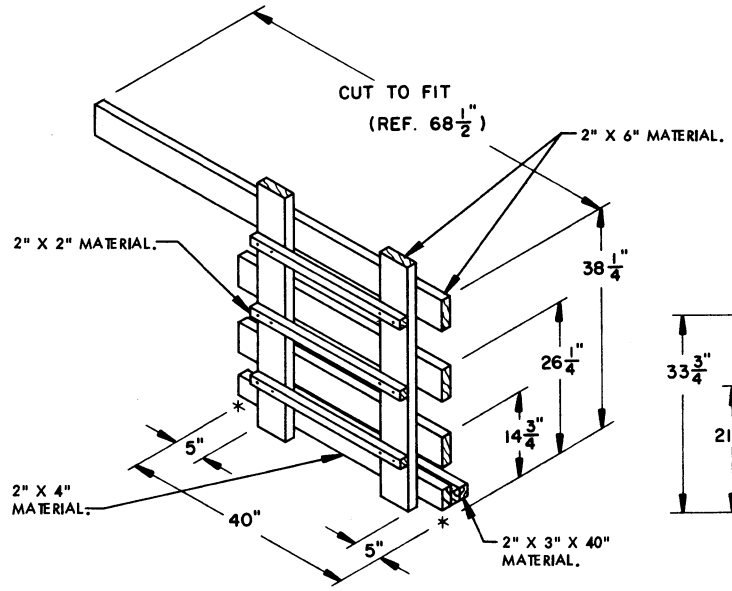
END VIEW

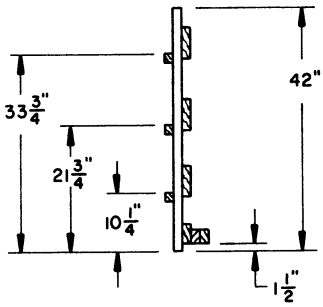
LOAD BEARING GATE A

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

SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 68. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A 2" X 4" HORIZONTAL PIECE, AS APPLICABLE, W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

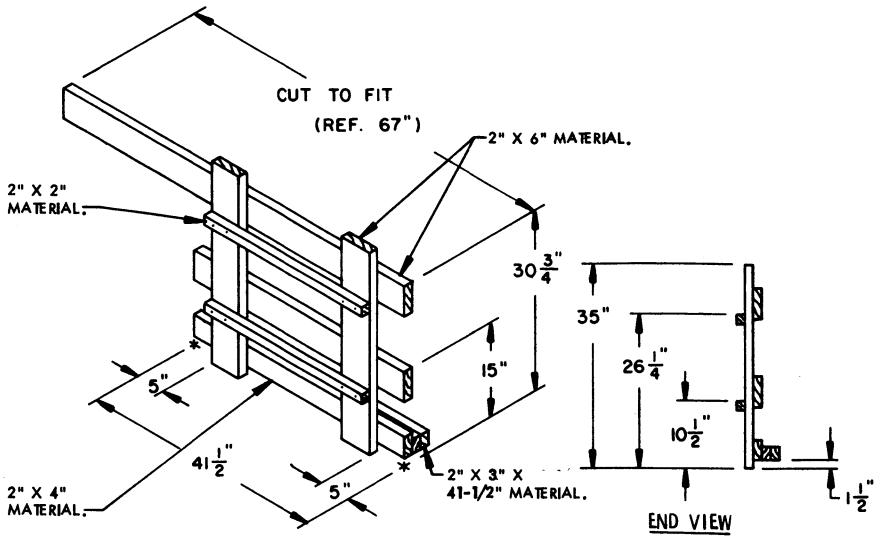




END VIEW

LOAD BEARING GATE B

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

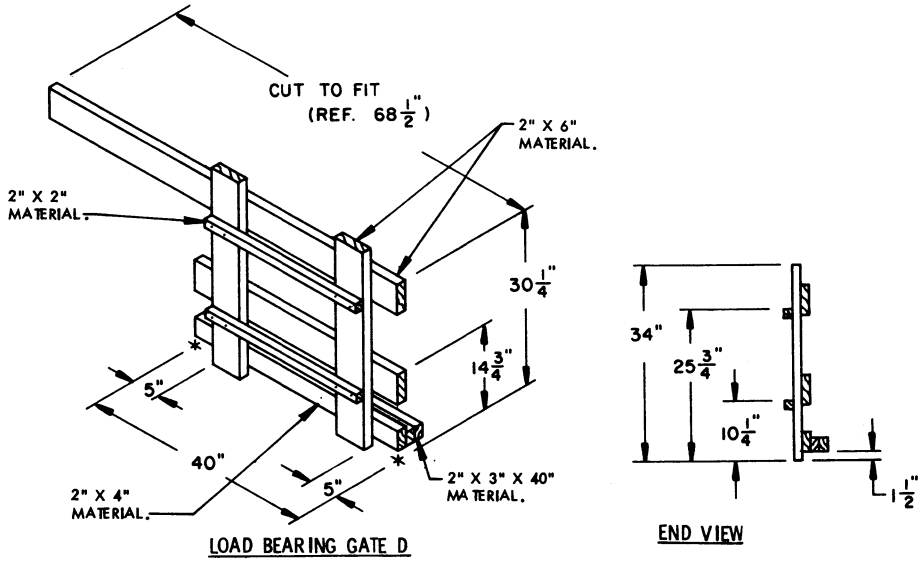


LOAD BEARING GATE C

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

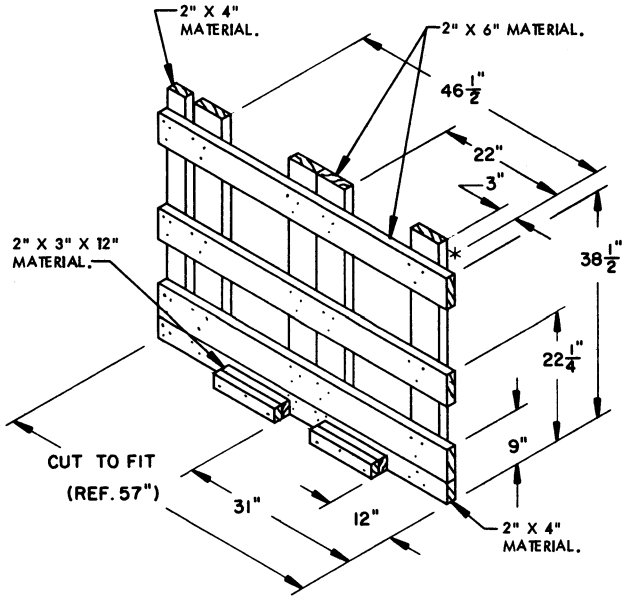
SPECIAL NOTES:

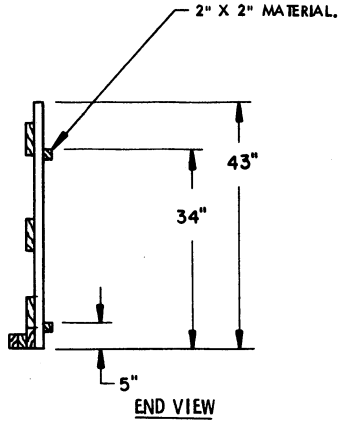
1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 68. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE 2" X 3" GATE HOLD DOWN PIECES TO A 2" X 6" HORIZONTAL PIECE, AS APPLICABLE, W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT..



LOAD BEARING GATE D

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



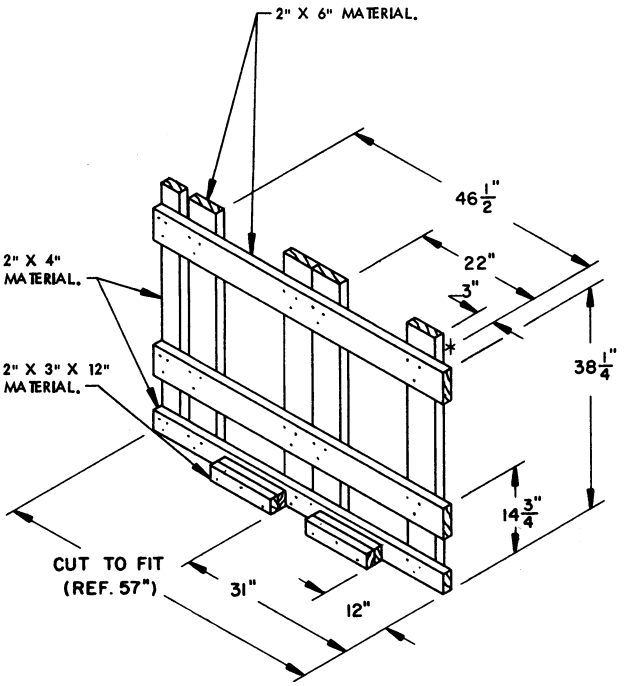


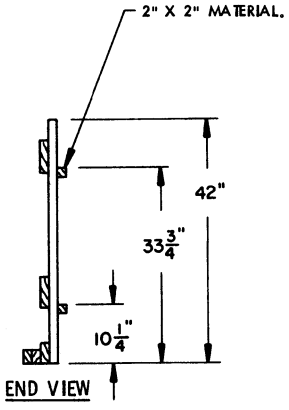
LOAD BEARING GATE E

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

SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 69. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4". 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. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

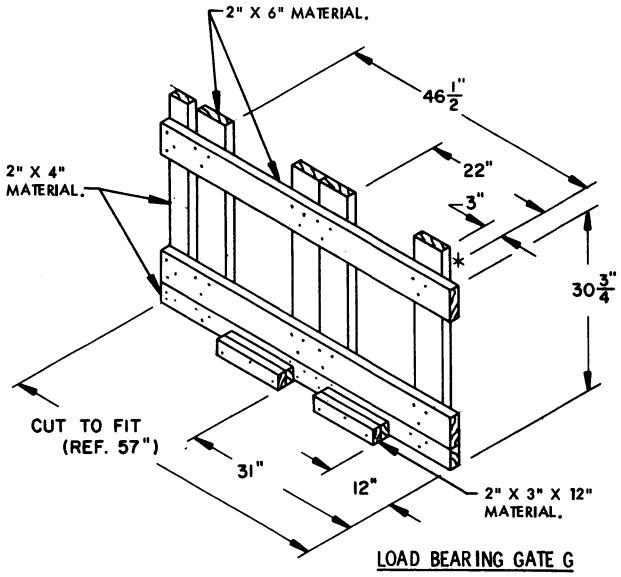




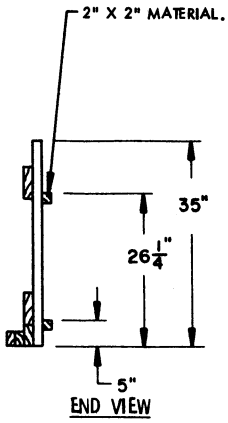
LOAD BEARING GATE D

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 CROSSWISE LOAD



LOAD BEARING GATE G

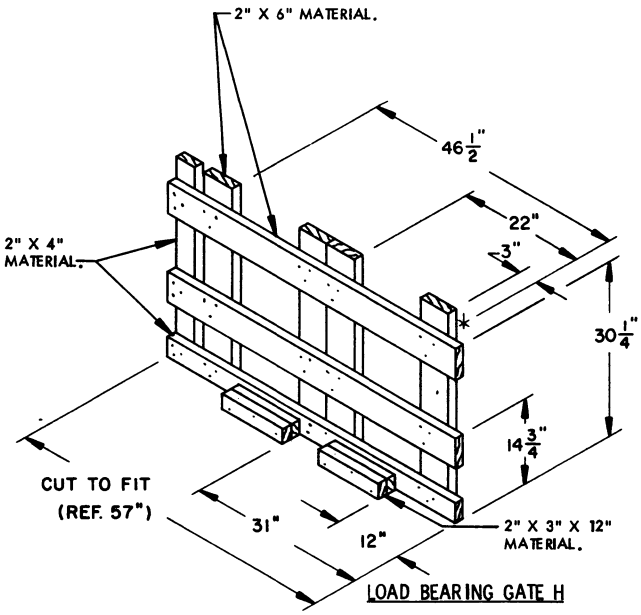


END VIEW

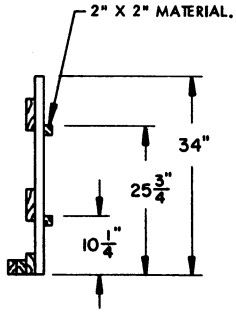
THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (DECREASED HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 69. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4" . 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 . NAIL THE DOULBED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



LOAD BEARING GATE H

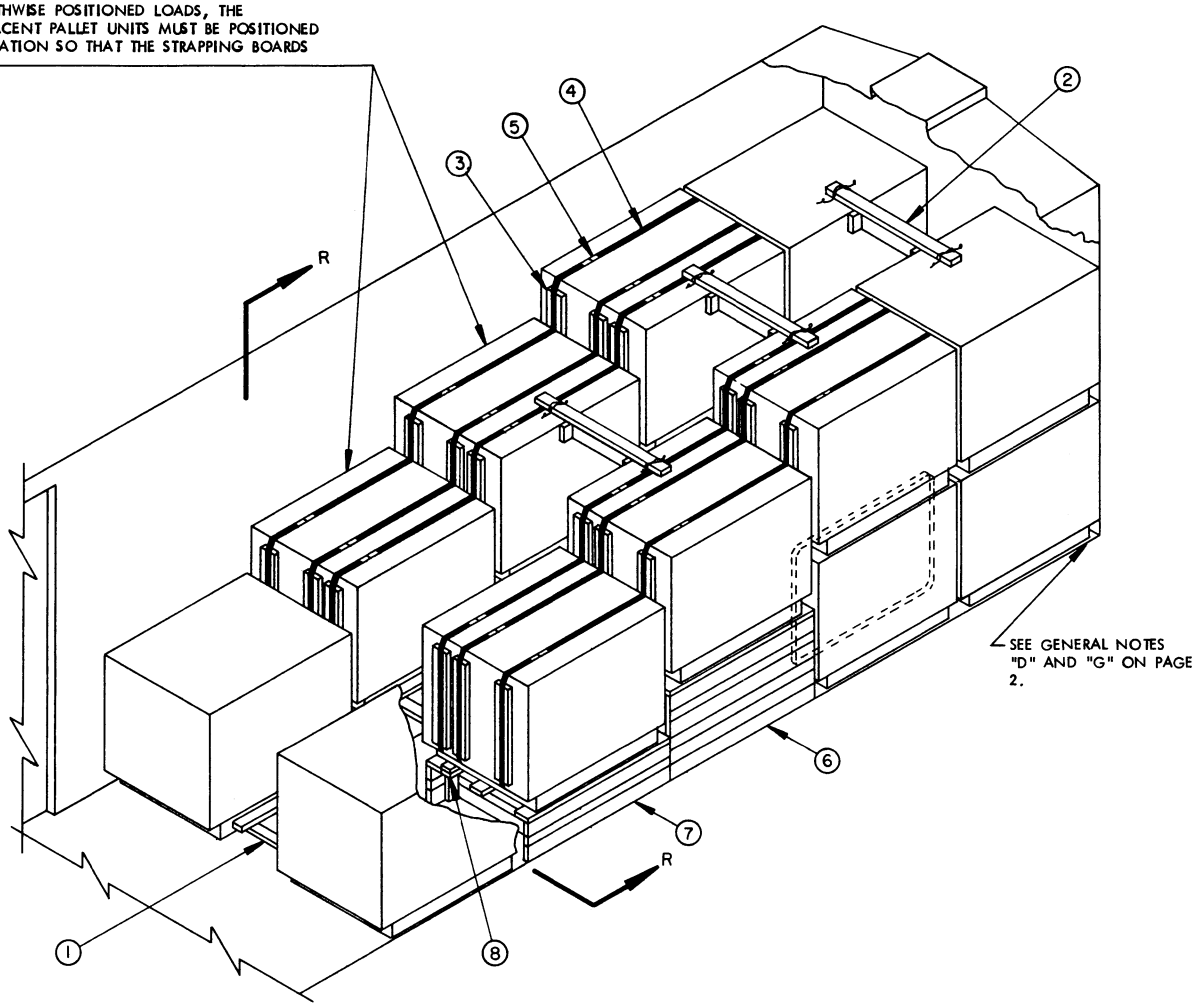


END VIEW

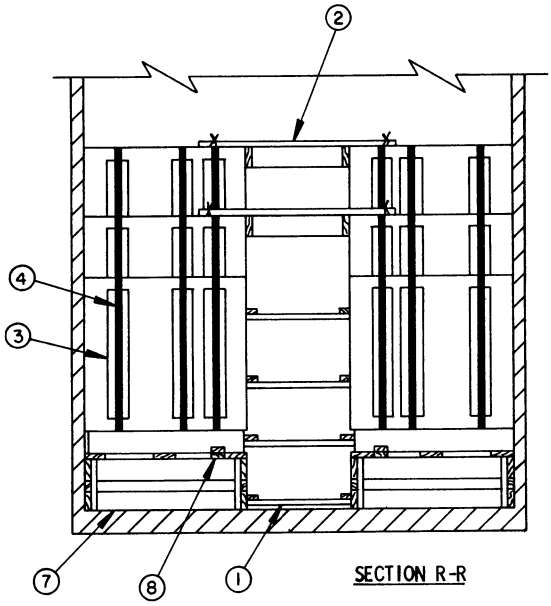
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (DECREASED HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

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

NOTICE: FOR LENGTHWISE POSITIONED LOADS, THE LONGITUDINAL ADJACENT PALLET UNITS MUST BE POSITIONED IN THE SAME ORIENTATION SO THAT THE STRAPPING BOARDS WILL ALIGN.



ISOMETRIC VIEW

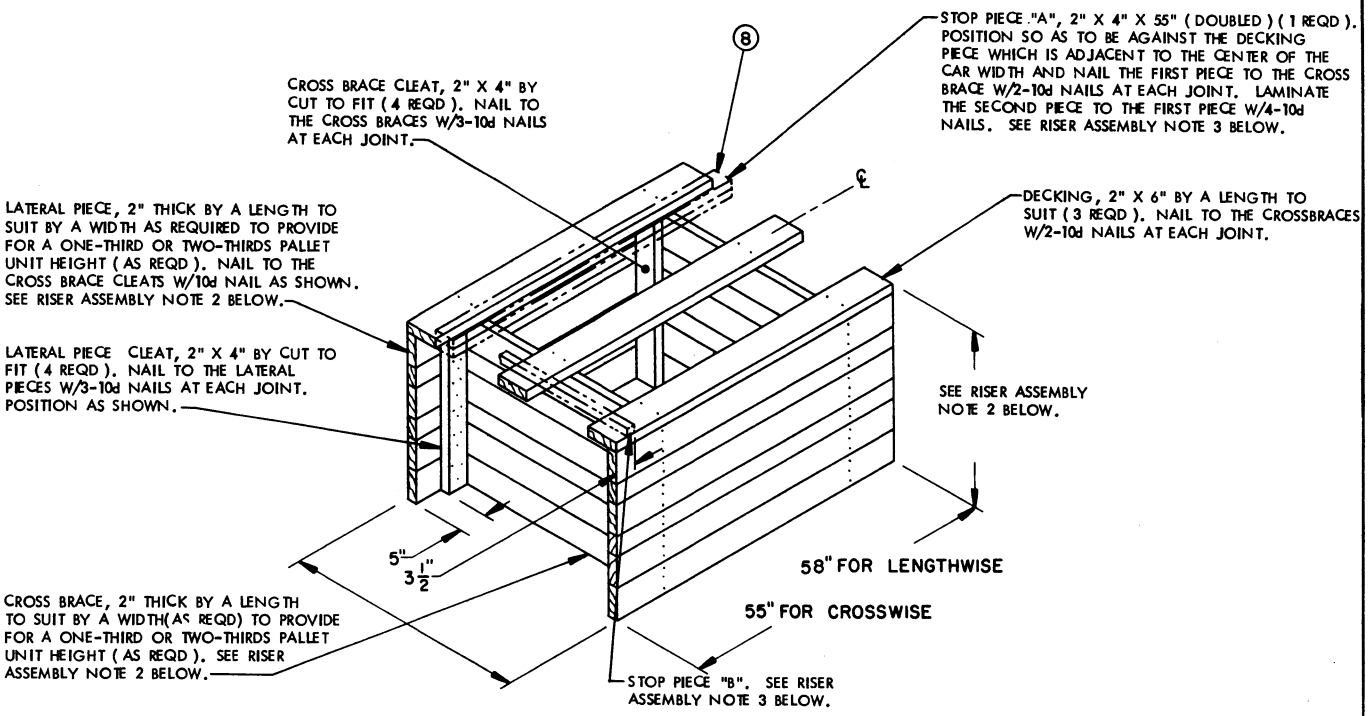


SECTION R-R

KEY NUMBERS

1. ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 75.
2. TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94.
3. STRAPPING BOARD, 2" X 6" X 34" (48 REQD/6 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 76. SEE SPECIAL NOTE 6 ON PAGE 75.
4. REINFORCING STRAP, 1-1/4" X .035" OR .031" X 18'-0" LONG STEEL STRAPPING (24 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE "METHOD A" DETAIL ON PAGE 76.
5. SEAL FOR 1-1/4" STRAPPING (48 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.
6. RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 75.
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 75.
8. STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 75 FOR LOCATION AND NAILING.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

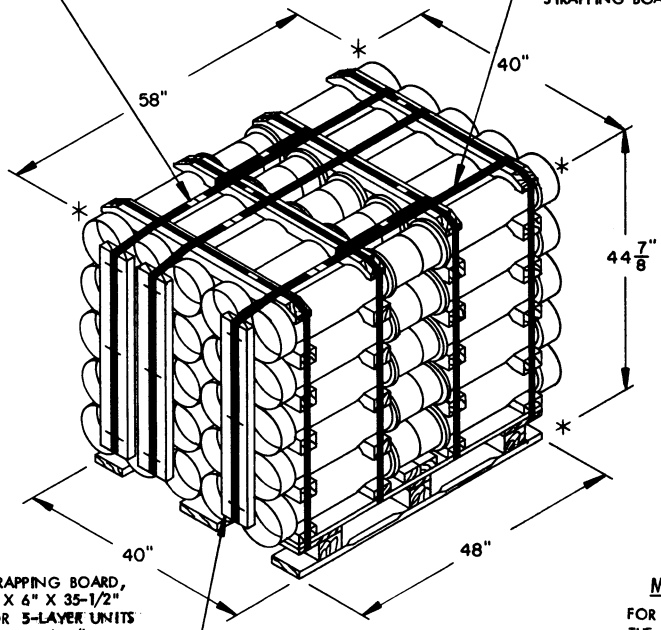
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 74 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE 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. ANTI-SWAY BRACE "A" IS APPLICABLE FOR ALL THE LENGTHWISE POSITIONED UNITS. ANTI-SWAY BRACE "B", AS DETAILED ON PAGE 46, WILL BE USED FOR CROSSWISE POSITIONED ROUTED DUNNAGE METHOD UNITS OR CROSSWISE POSITIONED FLAT DUNNAGE METHOD UNITS IN CARS WIDER THAN 9'-4".
6. FOR CROSSWISE POSITIONED UNITS, THE STRAPPING BOARDS SHOWN AS PIECES MARKED ③ WILL NOT BE REQUIRED. SEE THE "METHOD B" AND "METHOD C", DETAILS ON PAGES 76 AND 77 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS, WHEN THE PALLET UNITS ARE TO BE POSITIONED CROSSWISE IN THE CAR. ALSO, FOR LOADS OF CROSSWISE UNITS, STOP PIECE "B", AS SHOWN ON THE RISER DETAIL ABOVE, WILL BE USED IN LIEU OF STOP PIECE "A".

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE HEIGHT OF THE BASIC UNIT IS 45-7/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 74. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FOUR (4) PIECES OF 2" X 6" MATERIAL AND TWO (2) PIECES OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 30-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 74, WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 3" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 15" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE PALLET UNIT BEING LOADED AND THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. NOTE: A PLUS OR MINUS 1" TOLERANCE IS PERMISSIBLE ON THE RISER HEIGHT.
3. THE STOP PIECE "A" SHOWN ON THE RISER ASSEMBLY ABOVE, IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 74. IF THE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR, POSITION A 2" X 2" BY A LENGTH TO SUIT PIECE ACROSS THE DECKING, ON THE END WHICH IS **AGAINST** THE CAR SIDEWALL, AND NAIL TO THE DECKING W/2-10d NAILS AT EACH JOINT. SEE STOP PIECE "B" ON THE RISER ASSEMBLY ABOVE FOR LOCATION GUIDANCE.

SEAL FOR 1-1/4 STRAPPING (6 REQD, 2 PER STRAP). SEE GENERAL NOTE "O" ON PAGE 2.

REINFORCING STRAP, 1-1/4" X .035" OR .031" X 18'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 17'-0" LONG FOR 4-LAYER UNITS (3 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.



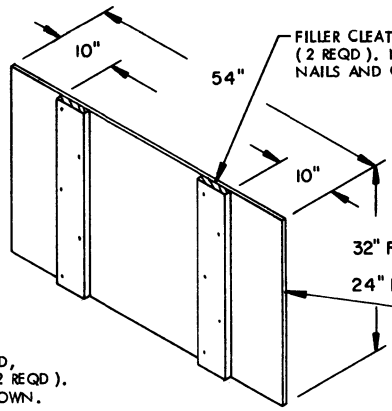
STRAPPING BOARD, 2" X 6" X 35-1/2" FOR 5-LAYER UNITS 2" X 6" X 28" FOR 4-LAYER UNITS (6 REQD). POSITION SO AS TO CENTER ON THE JOINTS OF THE CONTAINERS AS SHOWN.

NOTE:

THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 74. THE BASIC HEIGHT ROUTED DUNNAGE METHOD UNIT IS SHOWN. THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT. FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL BELOW AND/OR THE "METHOD C" DETAIL ON PAGE 77.

METHOD A

FOR ALL PALLET UNITS. THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) IS SHOWN.



FILLER CLEAT, 1" X 6" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE PLYWOOD W/5-6d NAILS AND CLINCH.

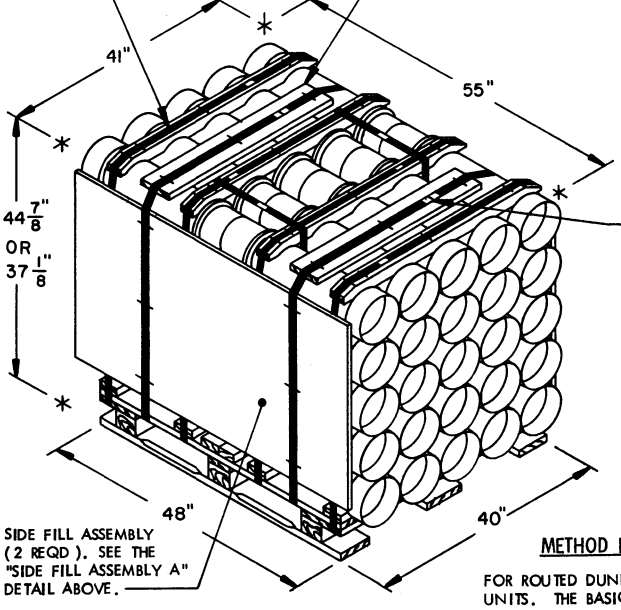
PLYWOOD, 1/2" BY A WIDTH TO SUIT X 54" (1 REQD).

SIDE FILL ASSEMBLY A

FOR METHOD "B" BELOW.

REINFORCING STRAP, 1-1/4" X .035" OR .031" X 15'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 14'-0" FOR 4-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT, THE STRAPPING BOARD, AND THE SIDE FILL ASSEMBLIES. SECURE TO THE STRAPPING BOARD AND THE SIDE FILL ASSEMBLIES W/3 STAPLES EACH.

STRAPPING BOARD, 1" X 6" X 32" (2 REQD). POSITION AS SHOWN.



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

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

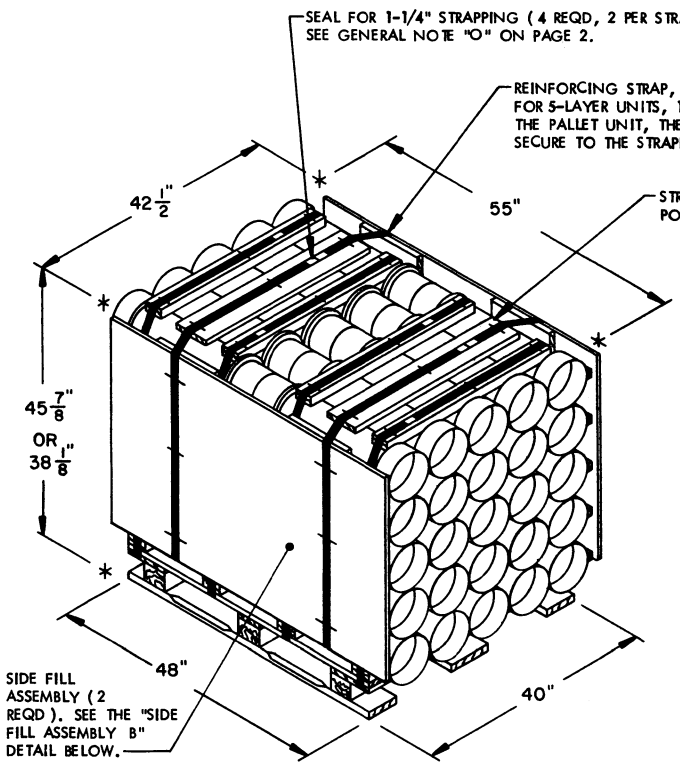
NOTE:

THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE ROUTED DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 74. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF ROUTED DUNNAGE METHOD UNITS, TO BE POSITIONED LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL ABOVE. FOR MODIFICATION OF FLAT DUNNAGE METHOD UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD C" DETAIL ON PAGE 77.

METHOD B

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

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING

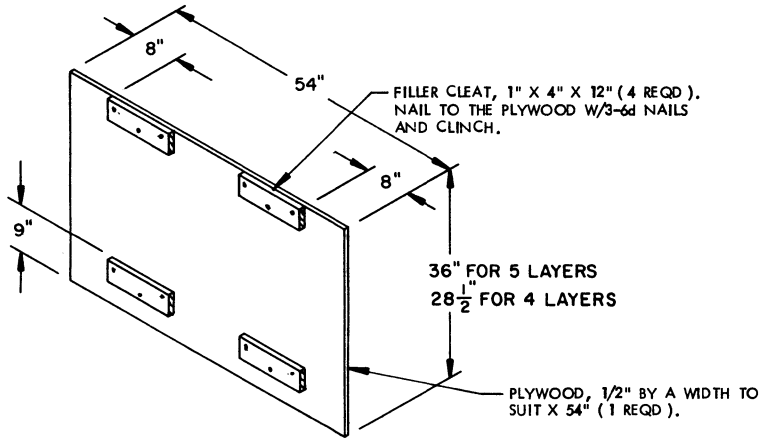


METHOD C

FOR FLAT DUNNAGE METHOD UNITS.

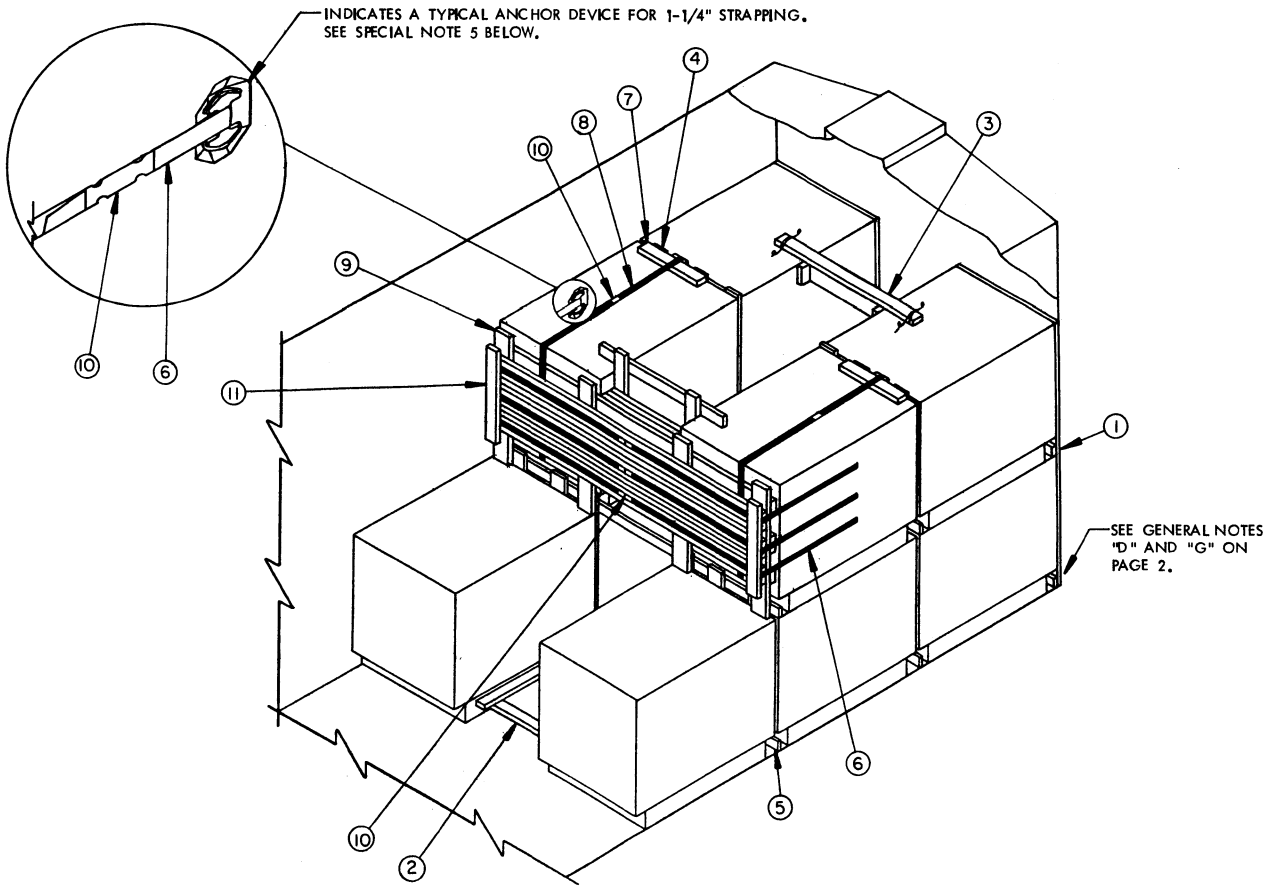
NOTE :

THE "METHOD C" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE FLAT DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 74. 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 LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL AT THE TOP OF THE PAGE 76. FOR MODIFICATION OF ROUTED DUNNAGE METHOD UNITS, REFER TO THE "METHOD B" DETAIL ON PAGE 76.



SIDE FILL ASSEMBLY B

FOR METHOD "C" ABOVE.



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.

3. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF LENGTHWISE POSITIONED PALLET UNITS AS SHOWN IN THE VIEW ABOVE. PARTIAL LAYERS OF CROSSWISE POSITIONED PALLET UNITS WILL NOT BE RETAINED BY THE BULKHEAD GATE METHOD.

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

5. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST THIRTY-SIX INCHES (36") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CAR SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 65 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 68 FOR A SINGLE UNIT.

(CONTINUED ON PAGE 79)

KEY NUMBERS

(1) END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 93. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 94 IS USED, THE END-WALL LINING IS NOT REQUIRED.

(2) ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94.

(4) SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17, 31, 45, OR 59. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

(5) SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON THE AFOREMENTIONED PAGES.

(6) BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM 2 EQUAL PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 79 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.

(7) STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 79.

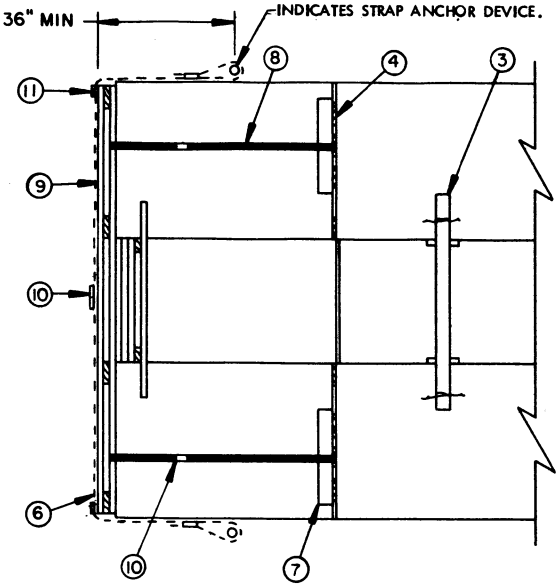
(8) BUNDLING STRAP, 1-1/4" X .035" X 19'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION TO ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE AND A STRAPPING BOARD, PIECE MARKED (7). TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED (6).

(9) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 79. SEE SPECIAL NOTE 3 AT LEFT.

(10) SEAL FOR 1-1/4" STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED (6), AND 1 PER BUNDLING STRAP, PIECE MARKED (8)). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

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

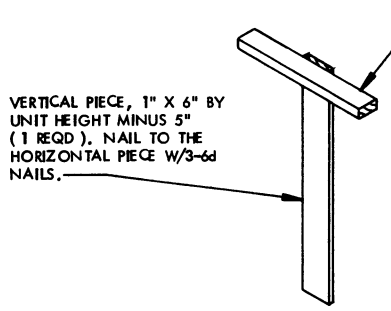
TYPICAL LCL LOAD USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING



STRAP APPLICATION PLAN VIEW

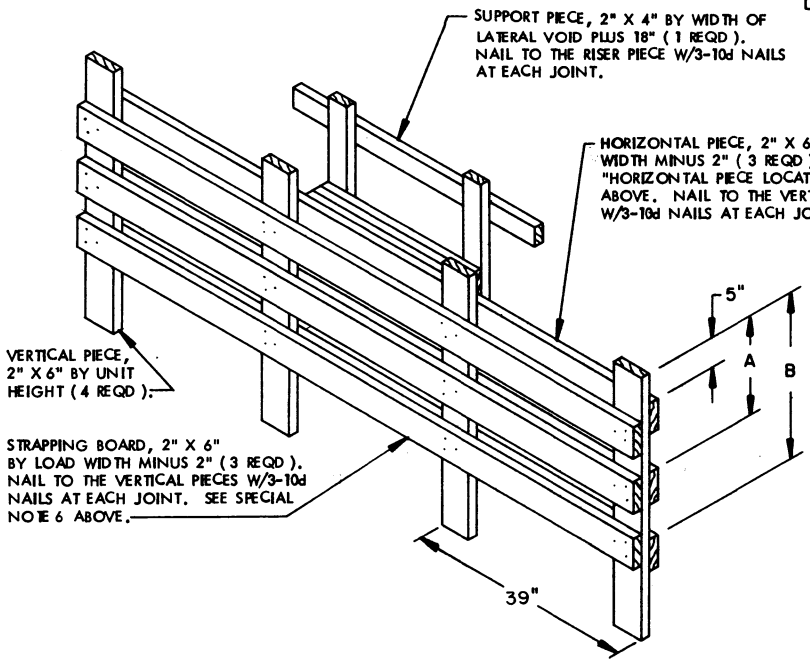
(SPECIAL NOTES CONTINUED FROM PAGE 78)

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

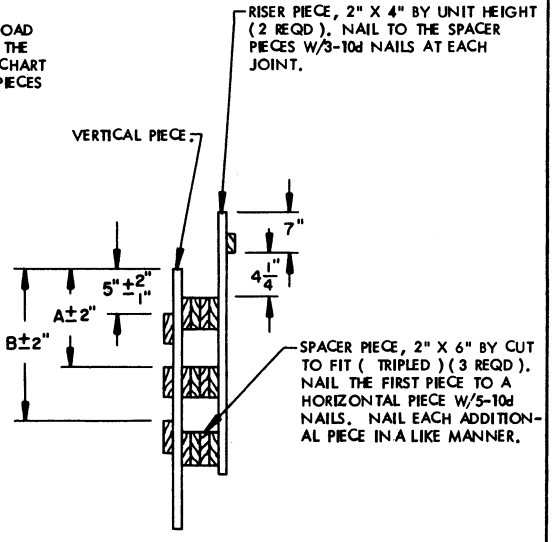


STRAPPING BOARD

HORIZONTAL PIECE LOCATION				
UNIT	4- HIGH		5-HIGH	
	DIM A	DIM B	DIM A	DIM B
FLAT DUNNAGE	16-1/2" ± 1"	27" ± 1"	16-1/2" ± 1"	29" ± 1"
ROUTED DUNNAGE	15-1/2" ± 1"	26" ± 1"	17" ± 1"	28-1/2" ± 1"

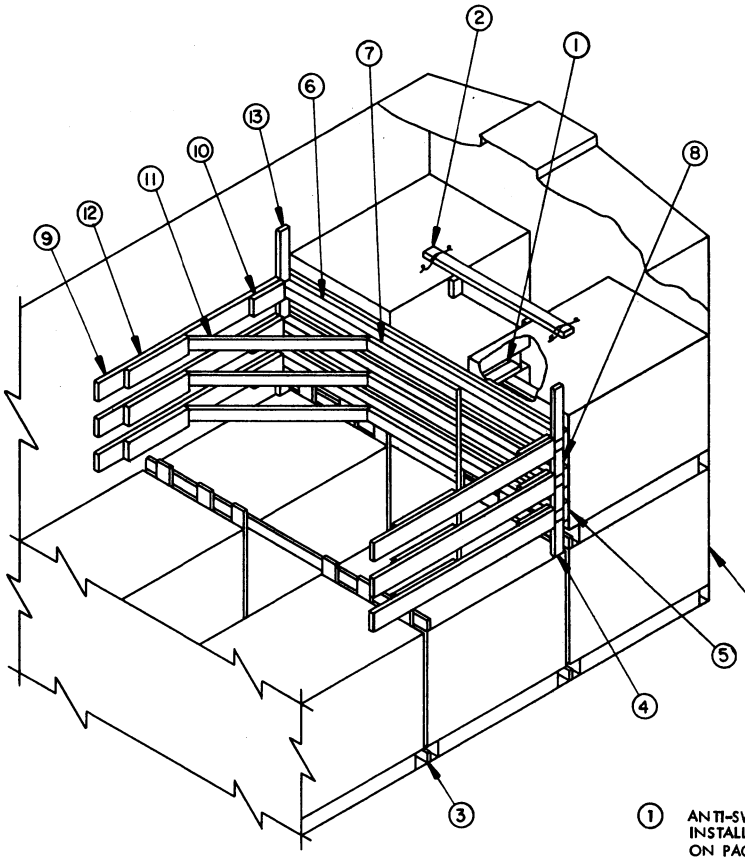


BULKHEAD GATE



END VIEW

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

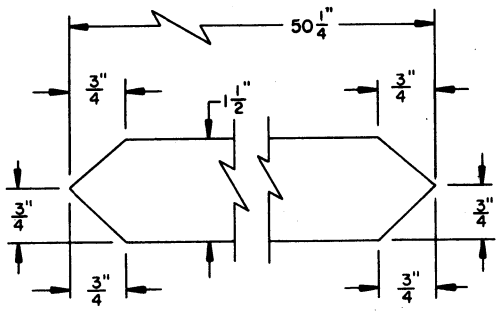
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTH-WISE AND 1 ROW CROSSWISE). A LENGTHWISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR CROSSWISE LOADS. NOTE THAT FOR A CROSSWISE PARTIAL TIER, THE PIECES MARKED ⑤ SHOULD BE LOCATED SO AS TO BEAR AGAINST THE PALLET UNITS IN THE SAME LOCATION AS THE HORIZONTAL PIECES OF A CENTER GATE.

4. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, THIRD TIER, OR FIRST. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 12,000 POUNDS WHEN USING 3 K'S (AS SHOWN) OR NOT MORE THAN 8,000 POUNDS WHEN USING 2 K'S. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 81, 82 AND 83 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

5. THE K-BRACING DEPICTED ON PAGES 80 THRU 83 EACH SHOW THREE (3) K's. THE CAPACITY OF EACH TYPE BRACE IS SPECIFIED WITHIN THE SPECIAL NOTES ON EACH PAGE FOR A BRACE AS SHOWN. THE CENTER

(SPECIAL NOTES CONTINUED ABOVE)



DIAGONAL BRACE

(SPECIAL NOTES CONTINUED)

LEVEL "K" OF A K-BRACE ASSEMBLY MAY BE OMITTED IF THE WEIGHT OF THE PARTIAL TIER DOES NOT REQUIRE ITS USE. A K-BRACE ASSEMBLY WITH TWO (2) K's WILL RETAIN TWO THIRDS OF THE WEIGHT WHICH CAN BE RETAINED WHEN USING A K-BRACE ASSEMBLY HAVING THREE (3) K's. HOWEVER, IF THE LOAD IN WHICH K-BRACING IS BEING INSTALLED CONSISTS OF UNITS OF LENGTHWISE POSITIONED CONTAINERS, A LOAD BEARING GATE MUST BE INSTALLED. SEE THE "LOAD BEARING GATE J" AND THE "INSTALLATION OF LOAD BEARING GATE J" DETAILS ON PAGE 96.

6. 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 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.

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

IF THE CAR HAS BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 94.

KEY NUMBERS

① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" 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 A" DETAIL ON PAGE 18. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 94. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

③ SEPARATOR GATE (2 REQD). SEE THE APPLICABLE DETAIL ON PAGE 17, 31, 45, OR 59 AND/OR THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 94.

④ SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ⑤ AND ⑥ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNIT. SEE SPECIAL NOTE 6 ABOVE.

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

⑥ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (3 REQD).

⑦ CENTER CLEAT, 2" X 4" X 36" (3 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥ , W/7-16d NAILS. SEE SPECIAL NOTE 7 ABOVE.

⑧ SPACER CLEAT, 2" X 4" X 8-1/2" FOR 5-LAYER UNITS USING 3 K'S (4 REQD), 20" FOR 5-LAYER UNITS USING 2 K'S (2 REQD), 2" X 4" X 12" FOR 4-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

⑨ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (6 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.

⑩ POCKET CLEAT, 2" X 6" X 12" (6 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨ , W/4-16d NAILS.

⑪ DIAGONAL BRACE, 2" X 4" X 50-1/4" (6 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑥ AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨ , W/2-16d NAILS AT EACH END.

⑫ BACK-UP CLEAT, 2" X 6" X 24" (6 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑨ , W/16d NAILS.

⑬ 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:

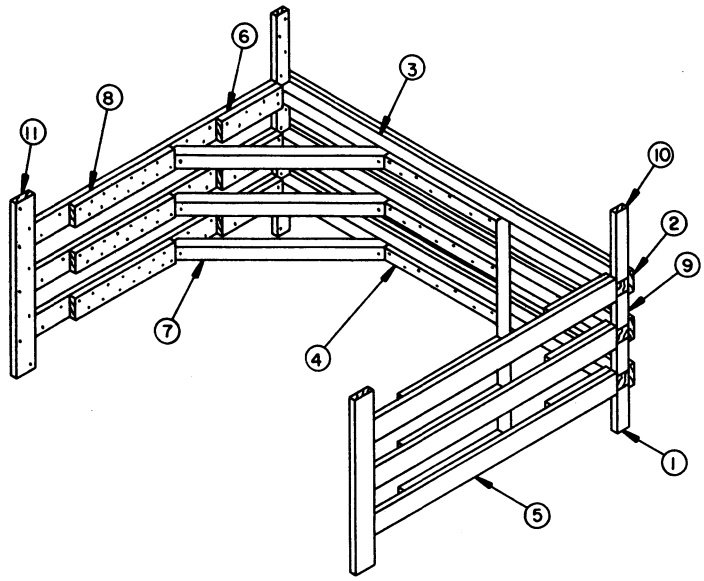
1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 21,000 POUNDS WHEN USING 3K's (AS SHOWN) OR NOT MORE THAN 14,000 POUNDS WHEN USING 2 K's. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 82 AND 83 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 12,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 80 MAY BE USED. SEE SPECIAL NOTE 5 BELOW.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, ⑩, AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR 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 AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

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

4. REFER TO PAGE 80 FOR A TYPICAL INSTALLATION OF A K-BRACE.

5. THE K-BRACING DEPICTED ON PAGES 80 THRU 83 EACH SHOW THREE (3) K's. THE CAPACITY OF EACH TYPE BRACE IS SPECIFIED WITHIN THE SPECIAL NOTES ON EACH PAGE FOR A BRACE AS SHOWN. THE CENTER LEVEL "K" OF A K-BRACE ASSEMBLY MAY BE OMITTED IF THE WEIGHT OF THE PARTIAL TIER DOES NOT REQUIRE ITS USE. A K-BRACE ASSEMBLY WITH TWO (2) K's WILL RETAIN TWO THIRDS OF THE WEIGHT WHICH CAN BE RETAINED WHEN USING A K-BRACE ASSEMBLY HAVING THREE (3) K's. HOWEVER, IF THE LOAD IN WHICH K-BRACING IS BEING INSTALLED CONSISTS OF UNITS OF LENGTHWISE POSITIONED CONTAINERS, A LOAD BEARING GATE MUST BE INSTALLED. SEE THE "LOAD BEARING GATE J" AND THE "INSTALLATION OF LOAD BEARING GATE J" DETAILS ON PAGE 96.



ISOMETRIC VIEW

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED 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) (3 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.

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

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

⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (6 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.

⑥ POCKET CLEAT, 2" X 6" X 18" (6 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.

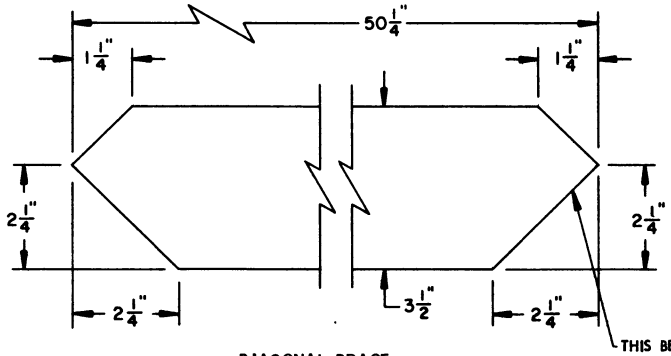
⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (6 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.

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

⑨ SPACER CLEAT, 2" X 4" X 8-1/2" FOR 5-LAYER UNITS USING 3 K's (4 REQD), 2" X 4" X 20" FOR 5-LAYER UNITS USING 2 K's (2 REQD), 2" X 4" X 12" FOR 4-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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

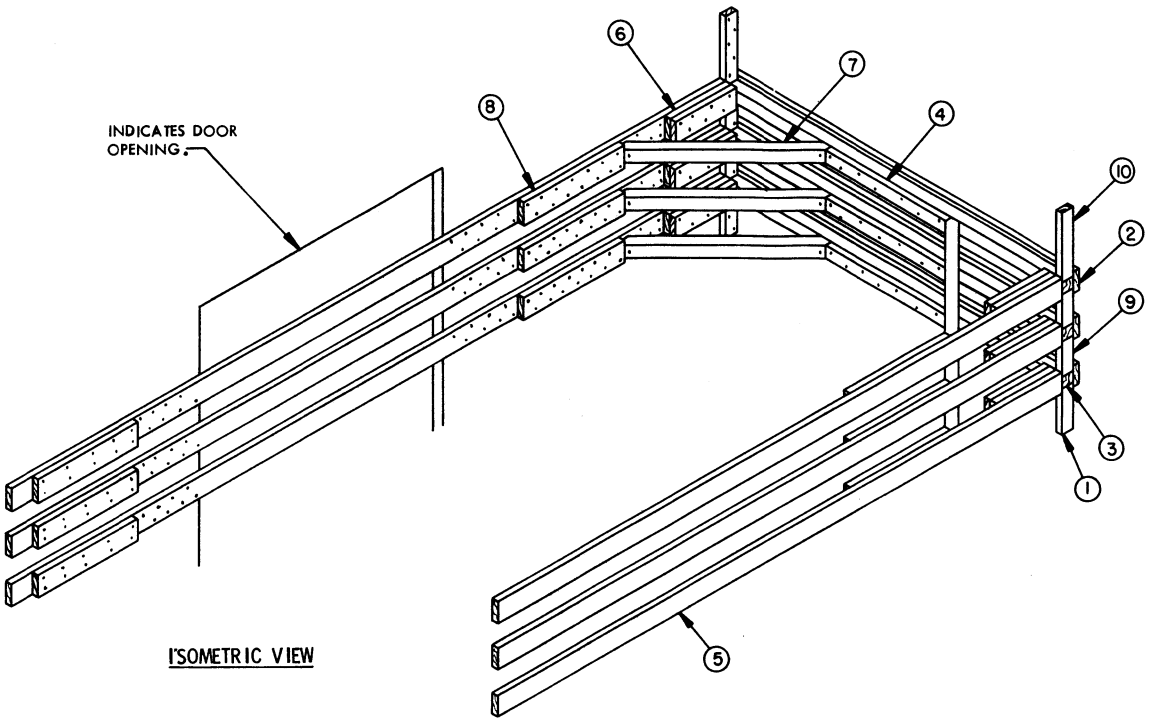
⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE

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

TYPE "B" K-BRACES



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 30,000 POUNDS WHEN USING 3 K's (AS SHOWN) OR NOT MORE THAN 20,000 POUNDS WHEN USING 2 K's. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 83 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 12,000 POUNDS AND 21,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 81 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 12,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 80 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.

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.

(SPECIAL NOTES CONTINUED BELOW)

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED 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) (3 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.

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

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

⑤ HORIZONTAL WALL CLEAT, 2" X 6" BY CUT TO FIT (6 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.

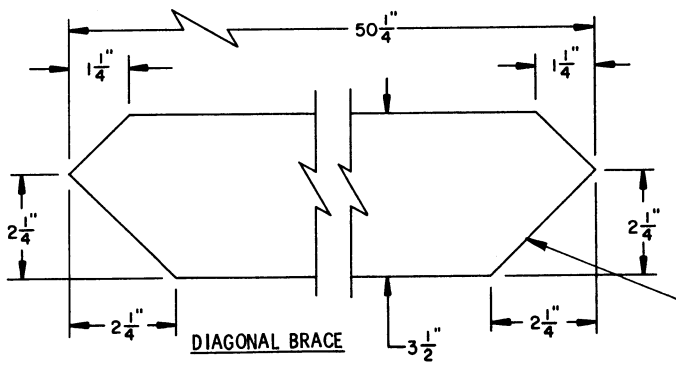
⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (6 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (6 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" (6 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.

⑨ SPACER CLEAT, 2" X 4" X 8-1/2" FOR 5-LAYER UNITS USING 3 K's (4 REQD), 2" X 4" X 20" FOR 5-LAYER UNITS USING 2 K's (2 REQD), 2" X 4" X 12" FOR 4-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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



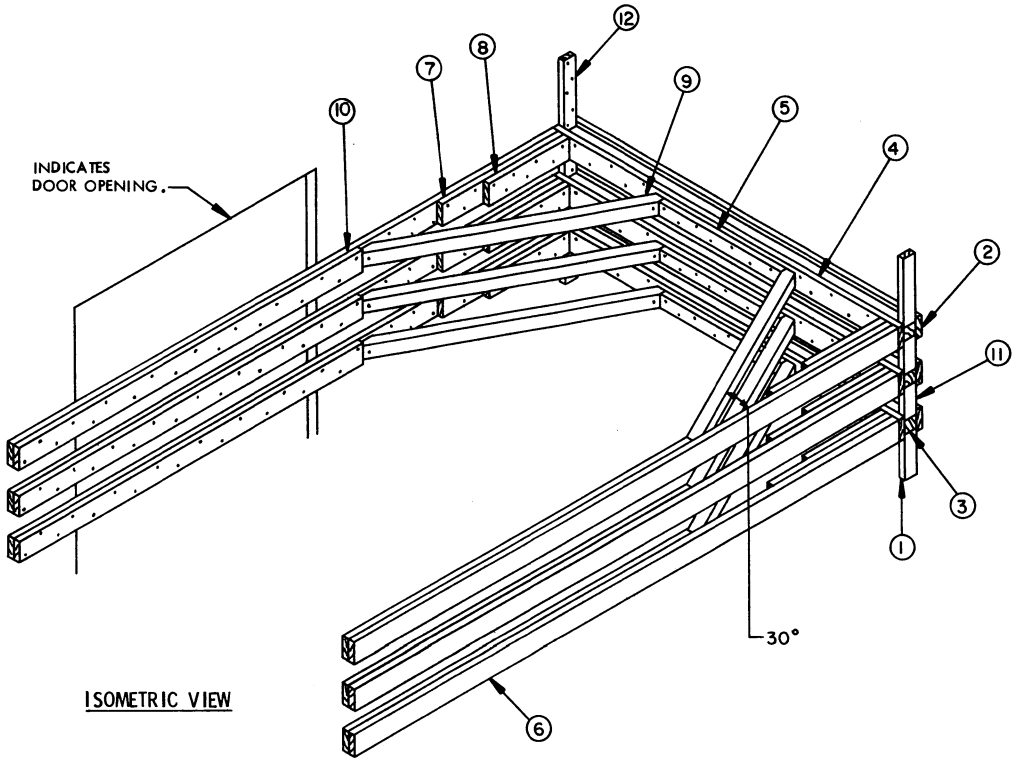
DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

(SPECIAL NOTES CONTINUED)

5. THE K-BRACING DEPICTED ON PAGES 80 THRU 83 EACH SHOW THREE (3) K's. THE CAPACITY OF EACH TYPE BRACE IS SPECIFIED WITHIN THE SPECIAL NOTES ON EACH PAGE FOR A BRACE AS SHOWN. THE CENTER LEVEL "K" OF A K-BRACE ASSEMBLY MAY BE OMITTED IF THE WEIGHT OF THE PARTIAL TIER DOES NOT REQUIRE ITS USE. A K-BRACE ASSEMBLY WITH TWO (2) K's WILL RETAIN TWO THIRDS OF THE WEIGHT WHICH CAN BE RETAINED WHEN USING A K-BRACE ASSEMBLY HAVING THREE (3) K's, HOWEVER, IF THE LOAD IN WHICH K-BRACING IS BEING INSTALLED CONSISTS OF UNITS OF LENGTH-WISE POSITIONED CONTAINERS, A LOAD BEARING GATE MUST BE INSTALLED. SEE THE "LOAD BEARING GATE J" AND THE "INSTALLATION OF LOAD BEARING GATE J" DETAILS ON PAGE 96.

TYPE "C" K-BRACES



ISOMETRIC VIEW

SPECIAL NOTES:

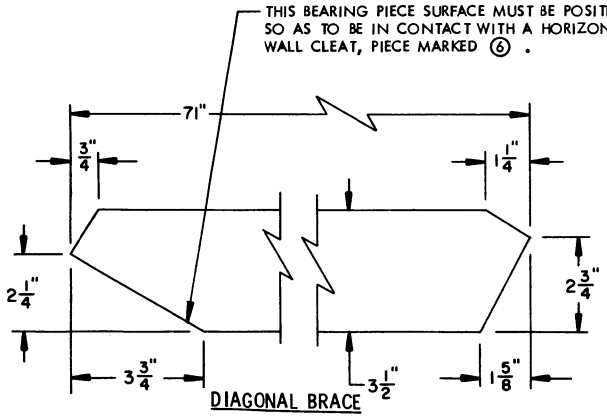
1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 37,500 POUNDS WHEN USING 3 K's (AS SHOWN) OR NOT MORE THAN 25,000 POUNDS WHEN USING 2 K's. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 21,000 POUNDS AND 30,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 82 MAY BE USED. FOR A PARTIAL TIER OF 12,000 POUNDS TO 21,900 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 81 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 12,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 80 WILL BE ADEQUATE.

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

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

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.

(SPECIAL NOTES CONTINUED BELOW)



DIAGONAL BRACE

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 10" (2 REQD). NAIL TO THE CAR SIDE WALL 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) (3 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "M" ON PAGE 2.

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

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

⑤ CENTER CLEAT, 2" X 4" X 36" (3 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 (6 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"(6 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/10-16d NAILS.

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

⑨ DIAGONAL BRACE, 4"X 4" X 71" (6 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 (6 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.

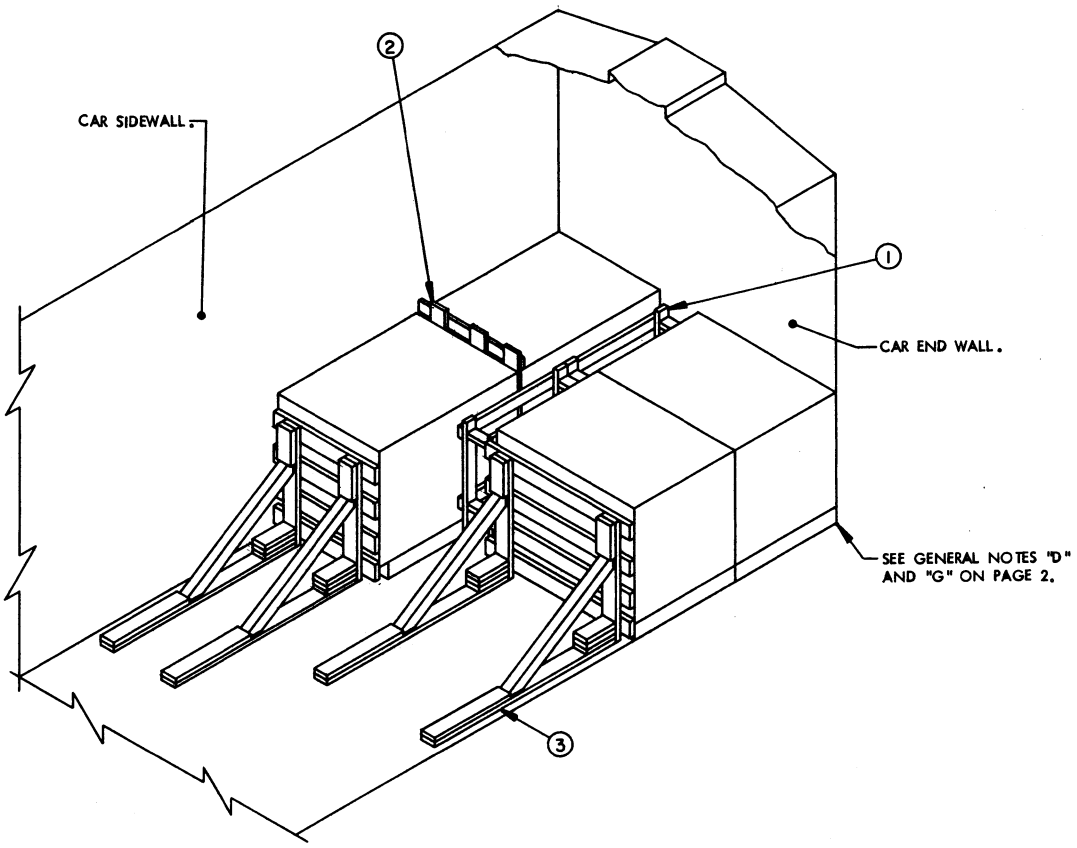
⑪ SPACER CLEAT, 2" X 4" X 8-1/2" FOR 5-LAYER UNITS USING 3 K's (4 REQD), 2" X 4" X 20" FOR 5-LAYER UNITS USING 2 K's (2 REQD), 2"X 4" X 12" FOR 4-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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

(SPECIAL NOTES CONTINUED)

5. THE K-BRACING DEPICTED ON PAGES 80 THRU 83 EACH SHOW THREE (3) K's. THE CAPACITY OF EACH TYPE BRACE IS SPECIFIED WITHIN THE SPECIAL NOTES ON EACH PAGE FOR A BRACE AS SHOWN. THE CENTER LEVEL "K" OF A K-BRACE ASSEMBLY MAY BE OMITTED IF THE WEIGHT OF THE PARTIAL TIER DOES NOT REQUIRE ITS USE. A K-BRACE ASSEMBLY WITH TWO (2) K's WILL RETAIN TWO THIRDS OF THE WEIGHT WHICH CAN BE RETAINED WHEN USING A K-BRACE ASSEMBLY HAVING THREE (3) K's. HOWEVER, IF THE LOAD IN WHICH K-BRACING IS BEING INSTALLED CONSISTS OF UNITS OF LENGTHWISE POSITIONED CONTAINERS, A LOAD BEARING GATE MUST BE INSTALLED. SEE THE "LOAD BEARING GATE J" AND THE "INSTALLATION OF LOAD BEARING GATE J" DETAILS ON PAGE 96.

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 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 KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTHWISE ROWS, OR TWO CROSSWISE ROWS IN LIEU OF ONE OF EACH AS DEPICTED.

4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.

5. HOLD-DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE LENGTHWISE ROW, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 16 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE J" DETAIL ON PAGE 44 FOR THE ROUTED DUNNAGE METHOD UNITS. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CROSSWISE ROW, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 17 FOR THE FLAT DUNNAGE METHOD UNITS OR THE "CENTER GATE K" DETAIL ON PAGE 45 FOR THE ROUTED DUNNAGE METHOD UNITS.

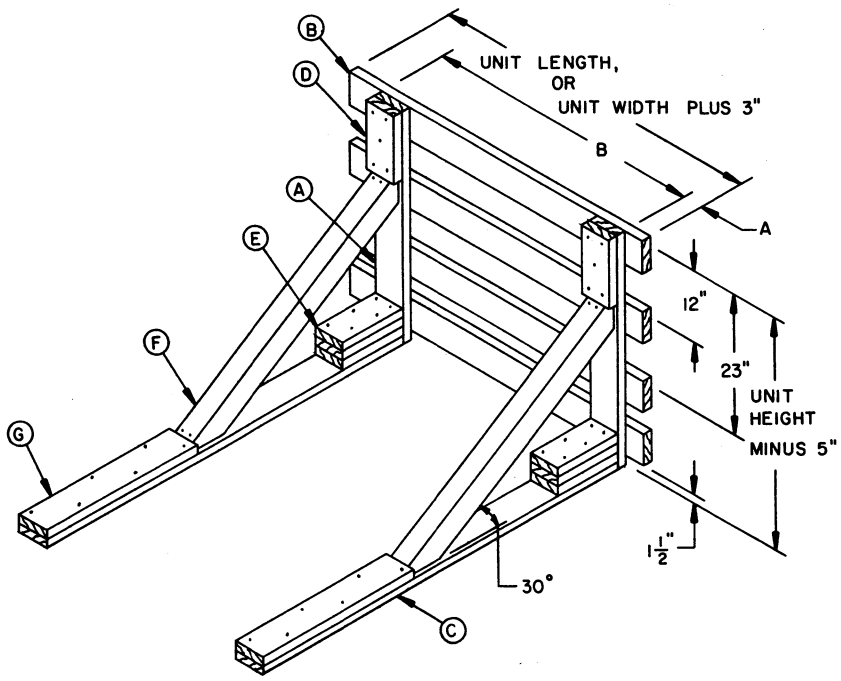
KEY NUMBERS

(1) CRIB FILL (2 REQD). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 16, 30, 44, OR 58. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SEPARATOR GATE (1 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL ON PAGE 17, 31, 45, OR 59. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.

(3) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 85 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

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



KNEE BRACE ASSEMBLY

VERTICAL PIECE PLACEMENT FOR CROSSWISE UNITS		
UNIT	DIM A	DIM B
FLAT DUNNAGE	3-1/2"	48"
ROUTED DUNNAGE	3-1/2"	48"

VERTICAL PIECE PLACEMENT FOR LENGTHWISE UNITS		
UNIT	DIM A	DIM B
FLAT DUNNAGE	5"	31-1/2"
ROUTED DUNNAGE	5"	30"

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" BY UNIT HEIGHT MINUS 5" (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMEN

(B) HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH PLUS 3", AS APPLICABLE. NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "M" ON PAGE 2.

(C) FLOOR CLEAT, 2" X 6" BY LENGTH TO SUIT (.87 OR 7/8 TIMES LENGTH OF PIECE MARKED (F) , PLUS 30") (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "S" ON PAGE 2.

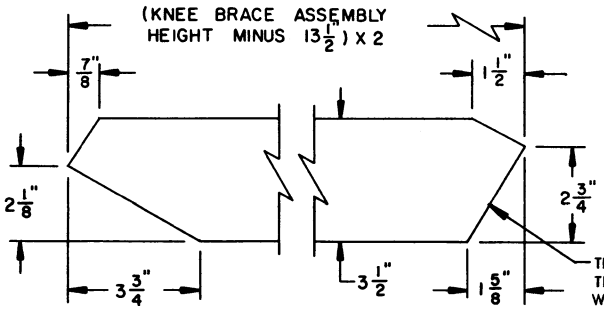
(D) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

(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 TOE-NAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED (A) W/2-16d NAILS.

(F) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2", TIMES 2). (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C) , W/2-16d NAILS AT EACH JOINT.

(G) BACK UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (C) , W/6-40d NAILS.

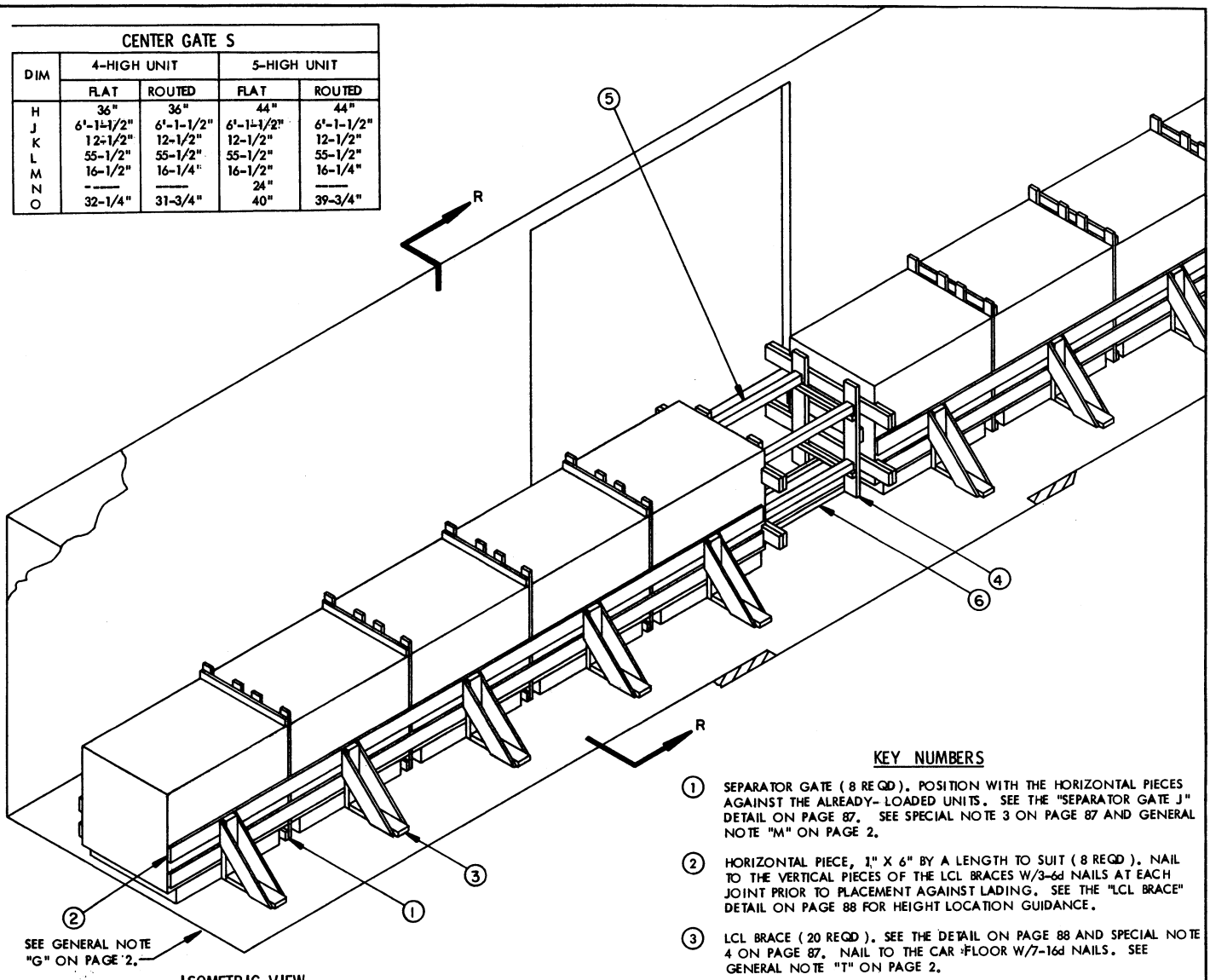
(H) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 84.



BRACE

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

CENTER GATE S				
DIM	4-HIGH UNIT		5-HIGH UNIT	
	FLAT	ROUTED	FLAT	ROUTED
H	36"	36"	44"	44"
J	6'-1-1/2"	6'-1-1/2"	6'-1-1/2"	6'-1-1/2"
K	12-1/2"	12-1/2"	12-1/2"	12-1/2"
L	55-1/2"	55-1/2"	55-1/2"	55-1/2"
M	16-1/2"	16-1/4"	16-1/2"	16-1/4"
N	———	———	24"	———
O	32-1/4"	31-3/4"	40"	39-3/4"



ISOMETRIC VIEW

KEY NUMBERS

(1) SEPARATOR GATE (8 REQD). POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY- LOADED UNITS. SEE THE "SEPARATOR GATE J" DETAIL ON PAGE 87. SEE SPECIAL NOTE 3 ON PAGE 87 AND GENERAL NOTE "M" ON PAGE 2.

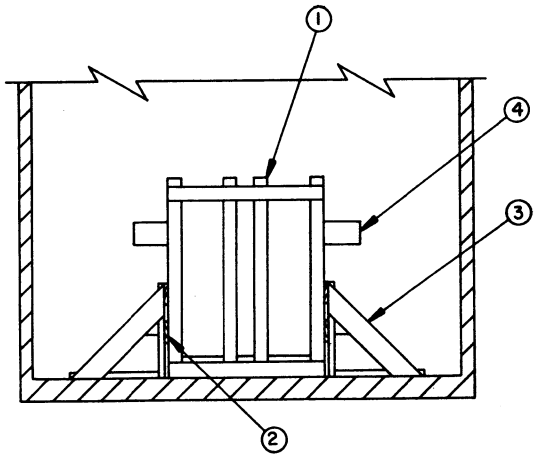
(2) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 88 FOR HEIGHT LOCATION GUIDANCE.

(3) LCL BRACE (20 REQD). SEE THE DETAIL ON PAGE 88 AND SPECIAL NOTE 4 ON PAGE 87. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "T" ON PAGE 2.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE R" OR THE "CENTER CATE S" DETAIL ON PAGE 87 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.

(5) STRUT, 4" X 4" BY CUT TO FIT (4 REQD FOR LENGTHWISE LOAD, 6 REQD FOR CROSSWISE). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L", "U" AND "V" ON PAGE 2.

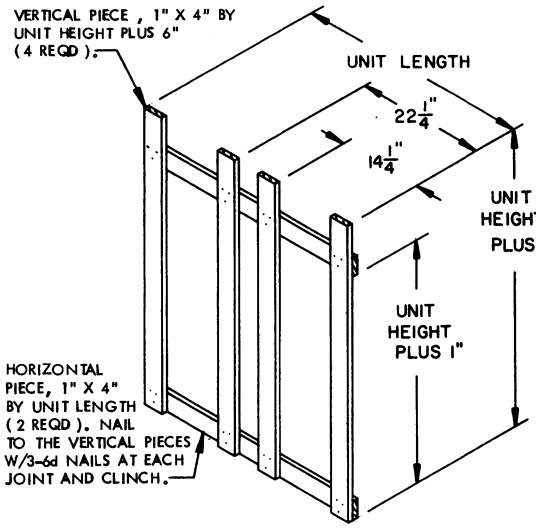
(6) GATE HOLD-DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE R" DETAIL ON PAGE 87 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CROSSWISE UNITS, THE GATE HOLD-DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 6 ON PAGE 87.



SECTION R-R

CENTER GATE R				
DIM	4-HIGH UNIT		5-HIGH UNIT	
	FLAT	ROUTED	FLAT	ROUTED
A	36"	36"	44"	44"
B	60"	58-1/2"	60"	58-1/2"
C	14"	14"	14"	14"
D	46"	44"	46"	44"
E	16-1/2"	16-1/4"	16-1/2"	16-1/4"
F	———	———	28-1/2"	27-3/4"
G	32-1/4"	31-3/4"	40"	39-3/4"

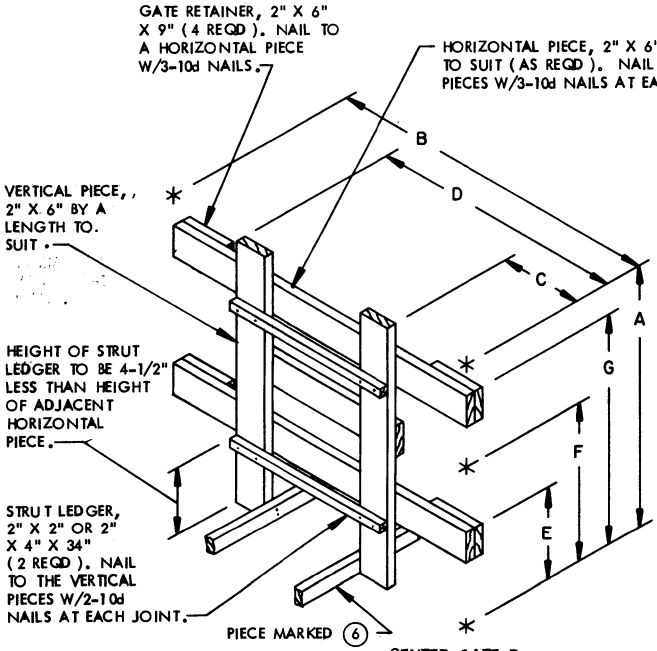
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



SEPARATOR GATE J

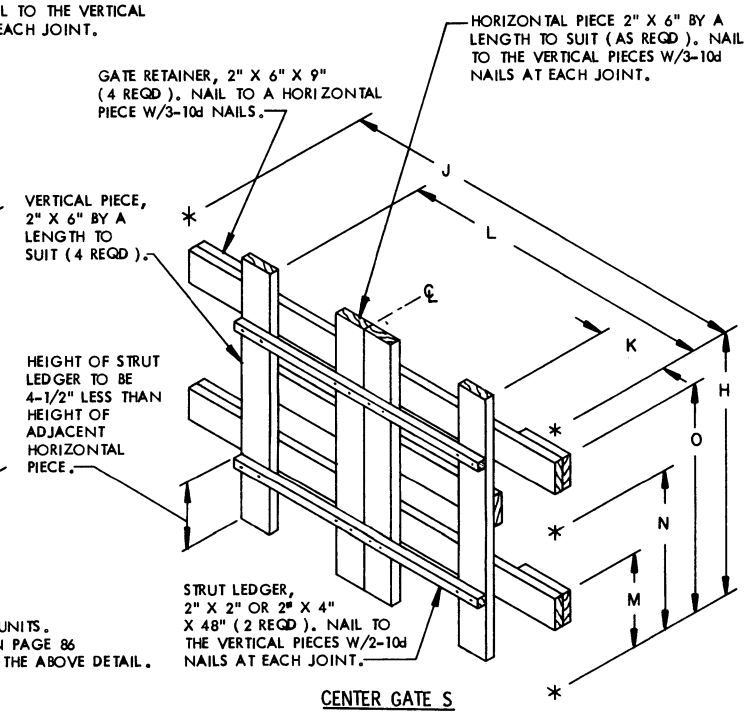
SPECIAL NOTES:

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



CENTER GATE R

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE R" CHART ON PAGE 86 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.



CENTER GATE S

THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE S" CHART AT THE TOP OF PAGE 86 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.

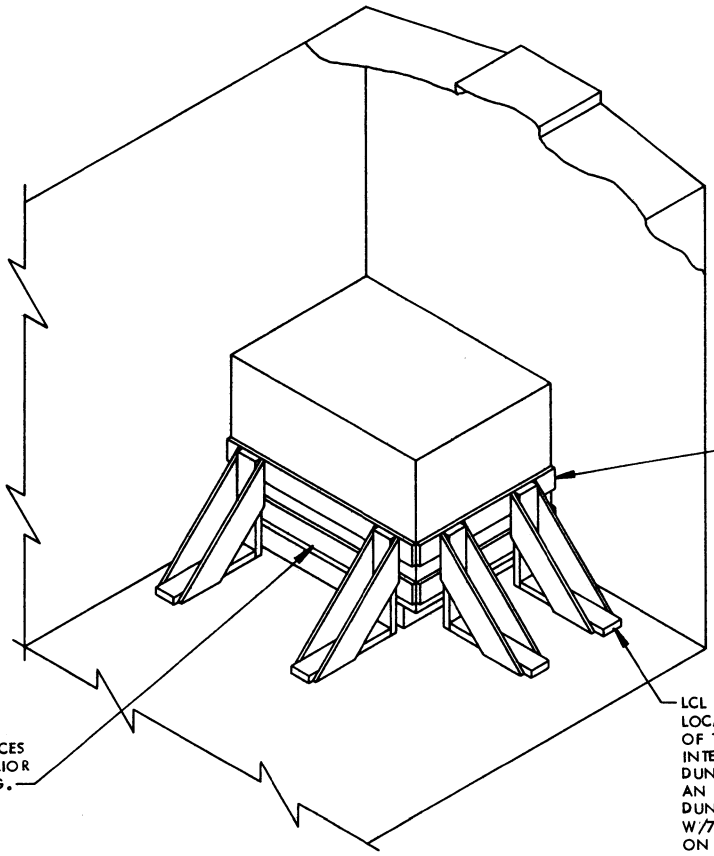
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	189	63
1" X 6"	285	143
2" X 2"	15	5
2" X 3"	12	6
2" X 6"	123	123
4" X 4"	22	30
NAILS	**NO. REQD**	**POUNDS**
6d (2")	312	2
8d (2-1/2")	240	2-1/2
10d (3")	92	1-1/2
16d (3-1/2")	24	3/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	10	17,610 LBS
DUNNAGE		747 LBS
TOTAL WEIGHT		18,357 LBS

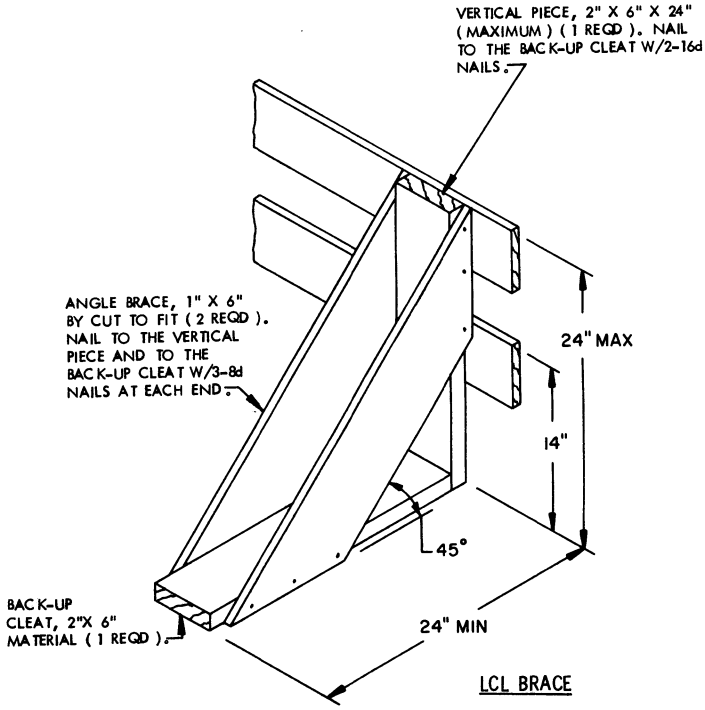
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

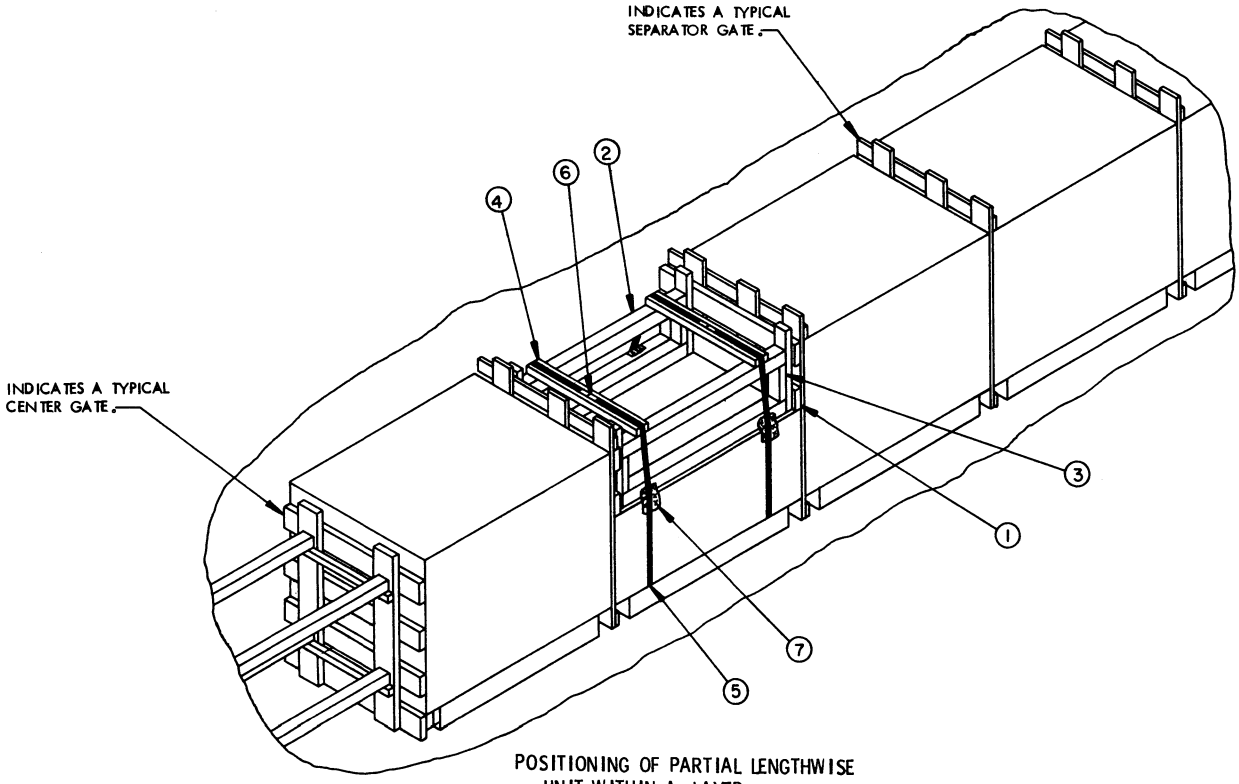
SPECIAL NOTES:

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



LCL BRACE

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



POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.

2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS 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 FIVE (5) CONTAINERS, OR ELSE AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/2-20PM1001, 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 "POSITIOINING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

7. THE PARTIAL UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

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

(2) STRUT, 4" X 4" X 49" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED (1), W/2-16d NAILS AT EACH END.

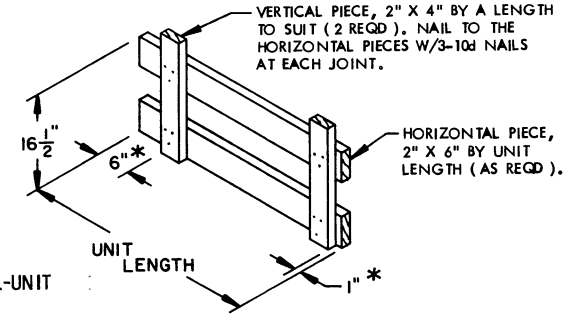
(3) STRUT SUPPORT PIECE, 2" X 4" X 7-1/2" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.

(4) STRAPPING BOARD, 2" X 4" X 33" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (3), W/3-10d NAILS AT EACH END.

(5) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.

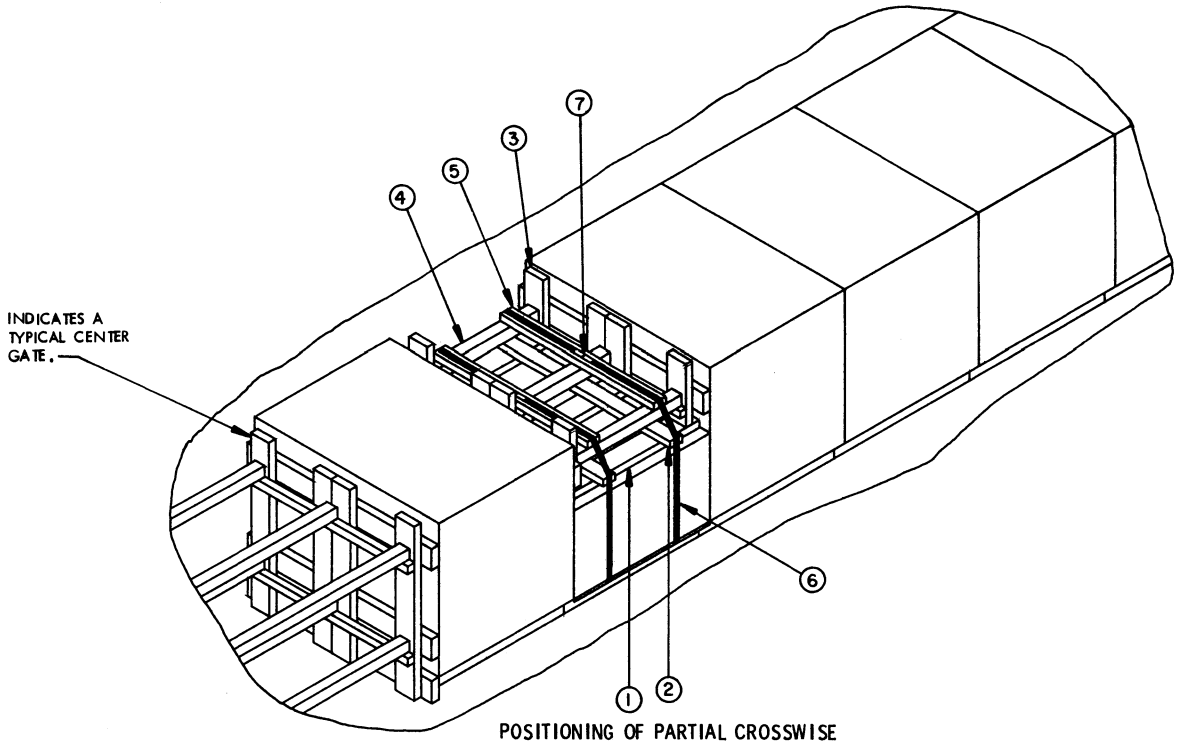
(6) SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.

(7) ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT.



PARTIAL-UNIT GATE A

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



POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A CROSSWISE LOAD.

2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

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 FIVE (5) CONTAINERS, OR ELSE AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/2-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

5. THE FILLERS, AS REFERENCED IN SPECIAL NOTE 4, AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT, MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION, OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.

6. THE "POSITIONING OF PARTIAL CROSSWISE UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

7. FOR THIS SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 92 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 LENGTH (4 REQD). POSITION SO AS TO BE CENTERED UNDER THE VERTICAL PIECES OF THE PARTIAL UNIT GATE, PIECE MARKED (3).

(2) RETAINER PIECE, 2" X 4" X 55" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED (1), W/2-10d NAILS AT EACH JOINT.

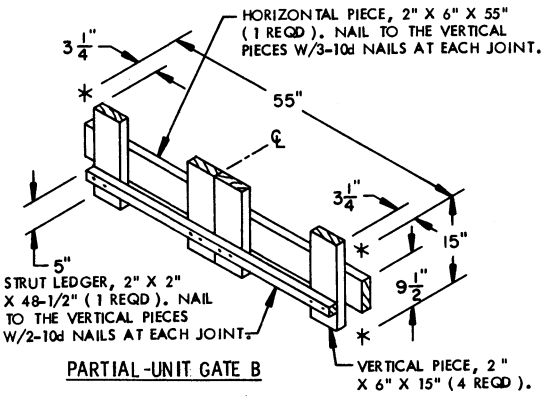
(3) PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(4) STRUT, 4" X 4" BY UNIT LENGTH MINUS 6" (3 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED (3), W/2-16d NAILS AT EACH END.

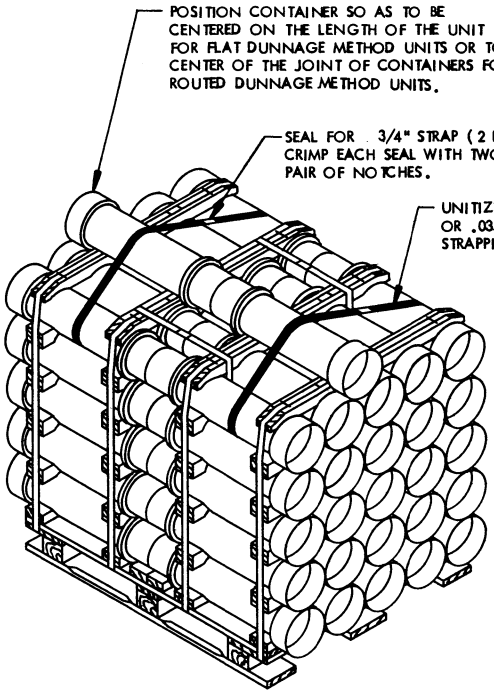
(5) STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (4), W/3-10d NAILS AT EACH JOINT.

(6) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.

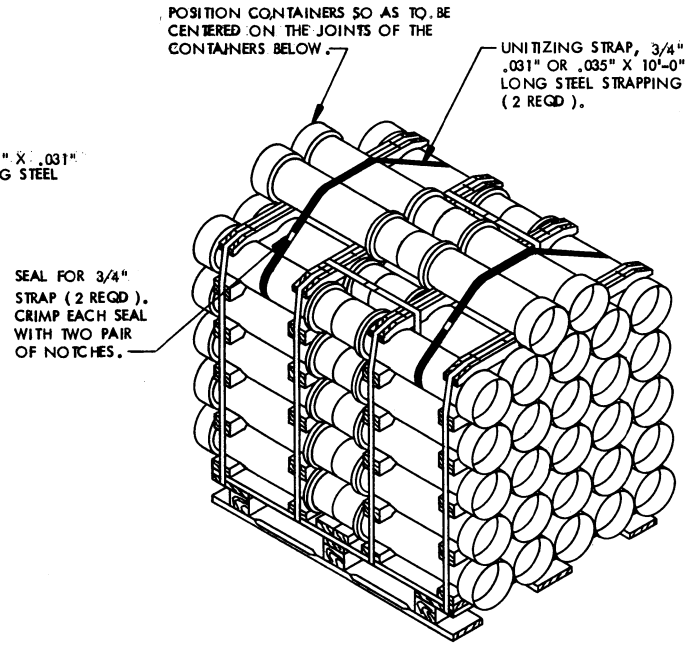
(7) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2.



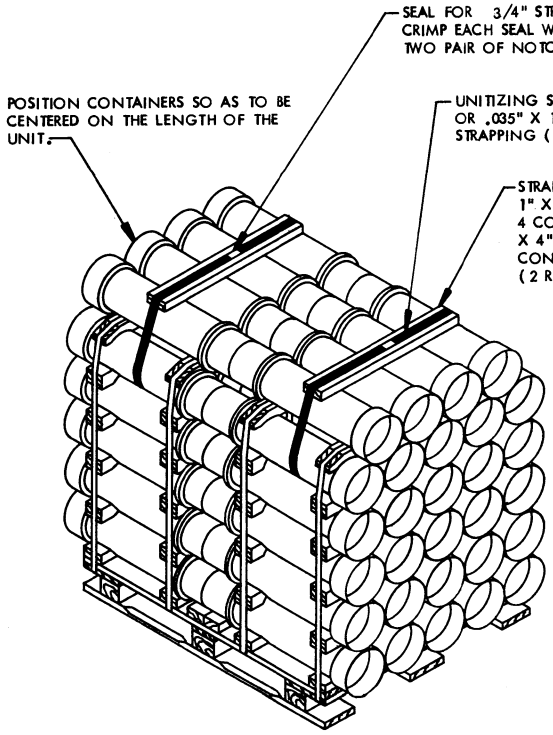
PARTIAL-UNIT GATE B



SECUREMENT OF TWO CONTAINERS



SECUREMENT OF FOUR CONTAINERS



SECUREMENT OF EIGHT 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 92 OR WITHIN A LAYER AS SHOWN ON PAGES 89 AND 90.

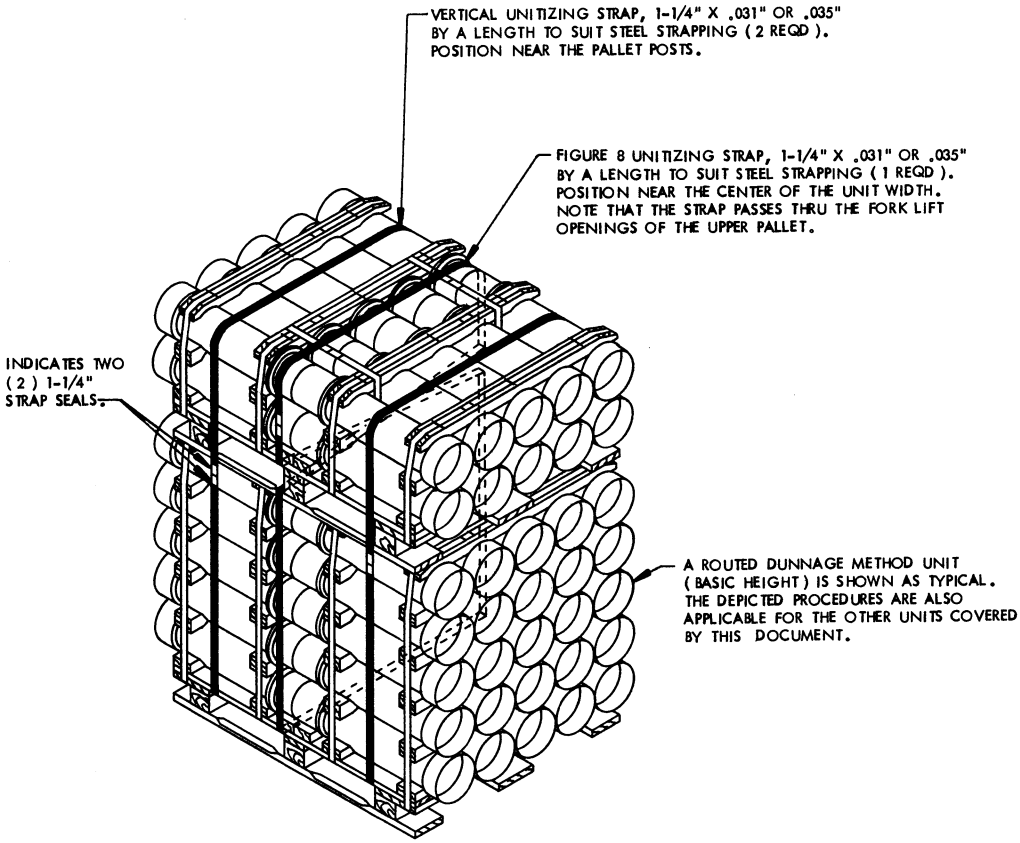
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.

3. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNIT COVERED BY THIS DOCUMENT.

4. FOR THE FLAT DUNNAGE METHOD UNIT, THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY; THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.

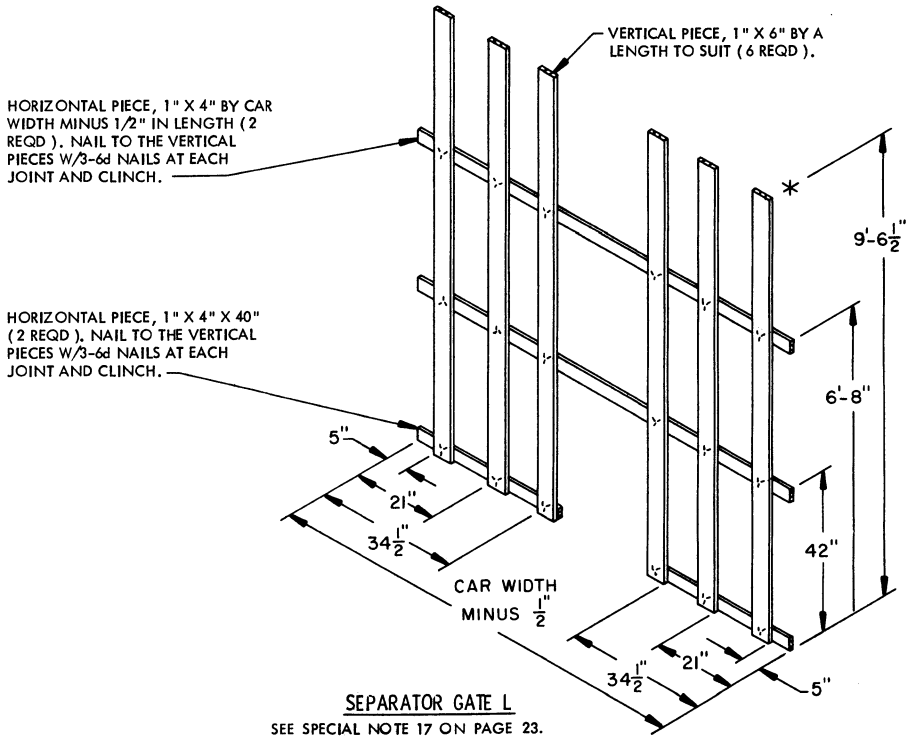
5. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.

6. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFT-OVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



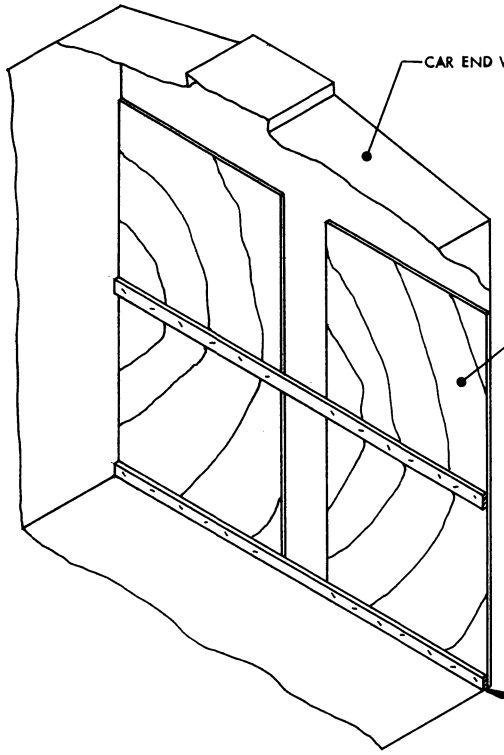
SECUREMENT OF PARTIAL UNIT ON TOP

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 90.



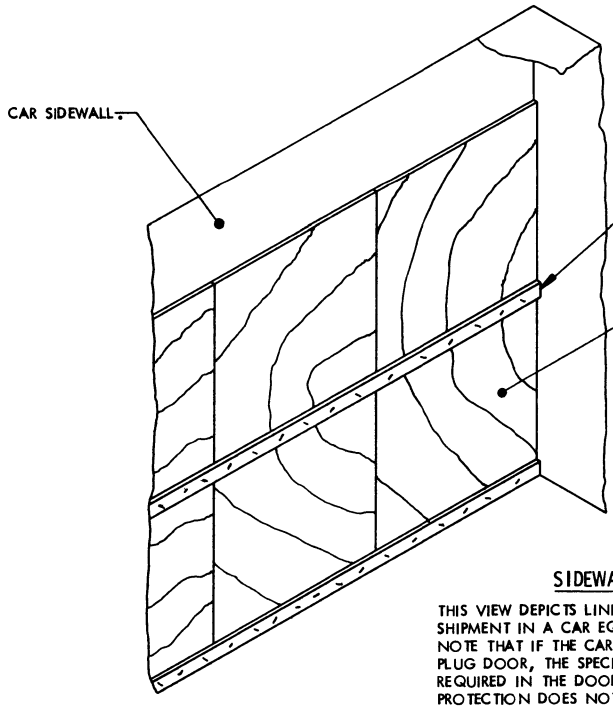
SEPARATOR GATE L

SEE SPECIAL NOTE 17 ON PAGE 23.



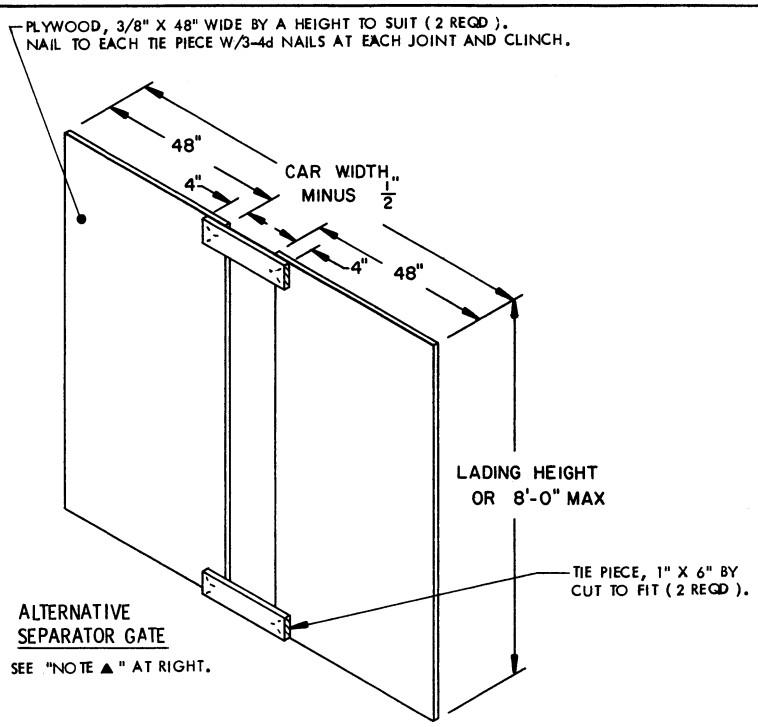
END-WALL LINING

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



SIDEWALL LINING

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



ALTERNATIVE SEPARATOR GATE

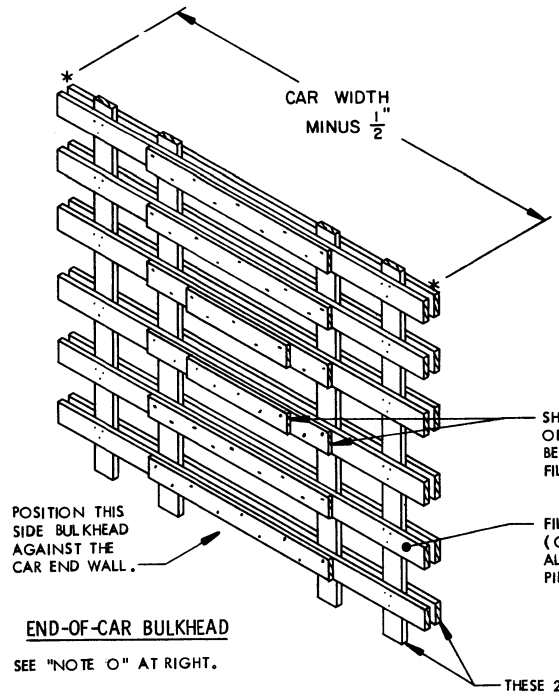
SEE "NOTE ▲" AT RIGHT.

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

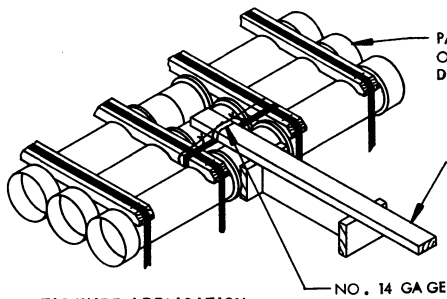
NOTE O:

IF A BOXCAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOXCAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "L", AS DETAILED ON PAGE 46, IS SHOWN AS TYPICAL.

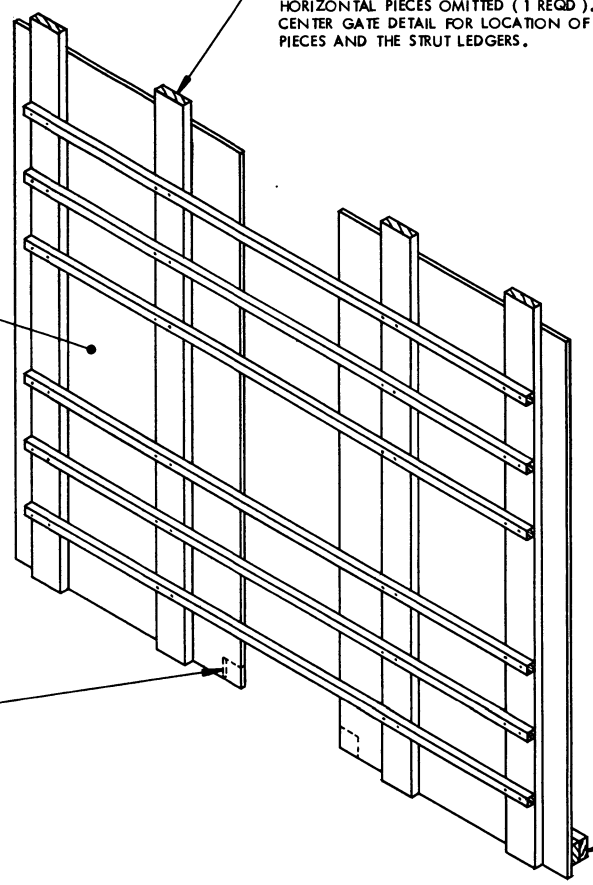


END-OF-CAR BULKHEAD

SEE "NOTE O" AT RIGHT.



TIE-WIRE APPLICATION



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

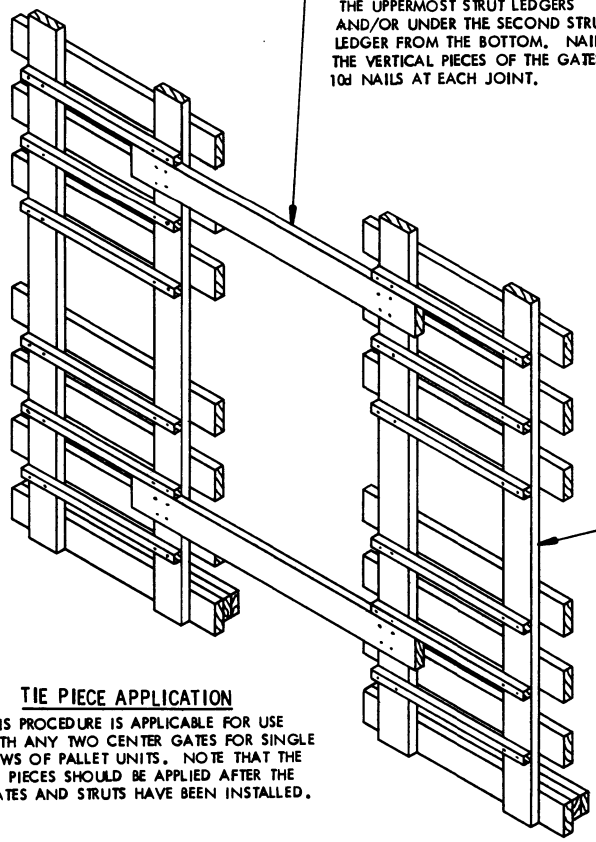
PLYWOOD, 1/2" THICK BY THE UNIT WIDTH OR LENGTH BY THE LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6". NOTE: THE WIDTH OF THE PLYWOOD WILL BE UNIT WIDTH IF THE LENGTH OF THE UNIT IS PARALLEL WITH THE SIDEWALL OF A CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 10, OR UNIT LENGTH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

WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, EACH PLYWOOD SHEET MUST HAVE A CUTOUT AT THE LOWER INSIDE CORNER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. THE CUTOUT MUST BE 3-1/2" HIGH AND OF SUFFICIENT WIDTH SO THAT THE REMAINING PLYWOOD AT THE FLOOR IS 39-1/2" FOR LENGTHWISE UNITS OR 51" FOR CROSSWISE UNITS.

GATE HOLD DOWN PIECES MUST BE SECURED TO THE PLYWOOD.

PLYWOOD CENTER GATE ALTERNATIVE

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

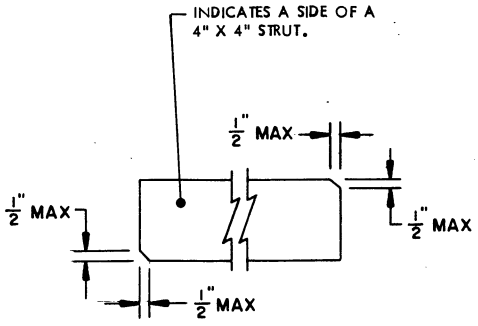


TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGER FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.

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.

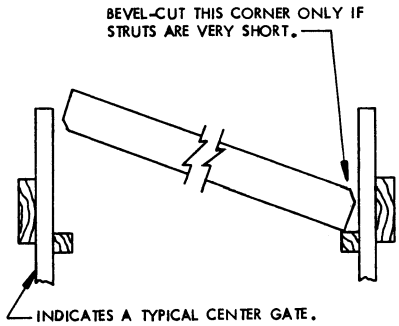
TIE PIECE APPLICATION

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.



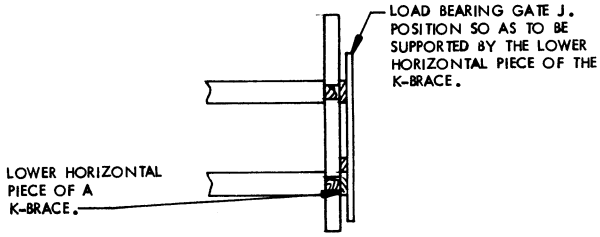
BEVEL CUT

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").



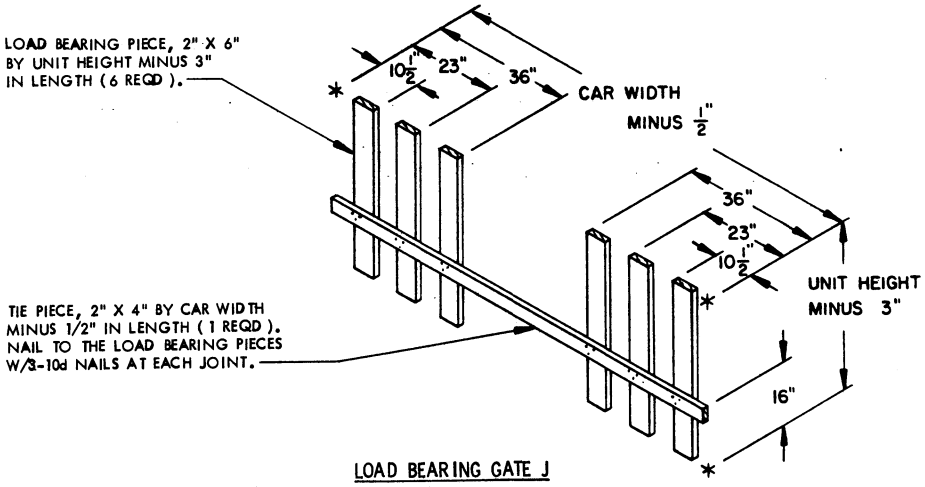
STRUT INSTALLATION

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



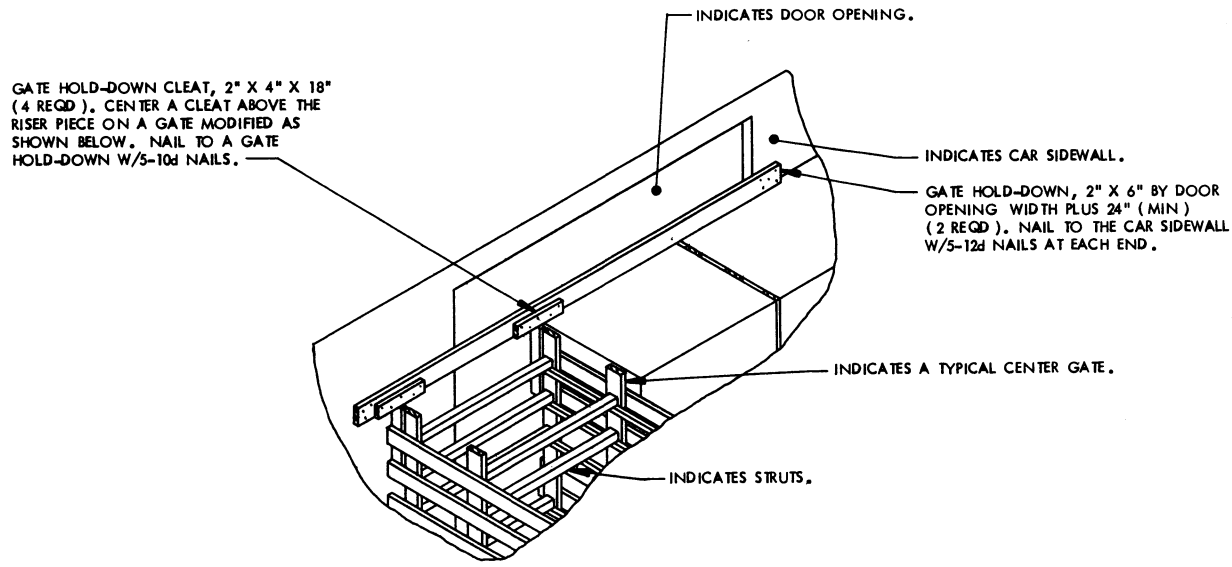
INSTALLATION OF LOAD BEARING GATE J

(PARTIAL SIDE ELEVATION)



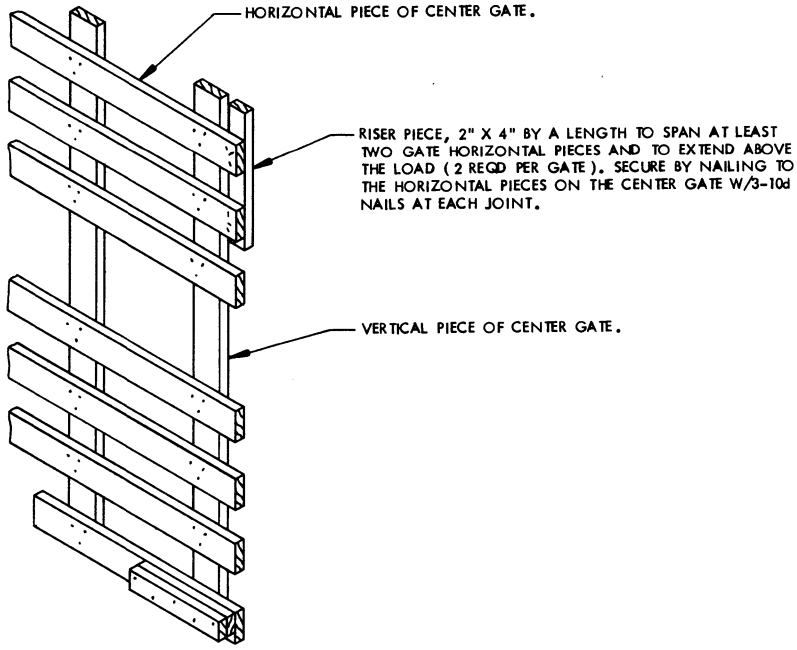
LOAD BEARING GATE J

THIS GATE IS FOR USE WITH A K-BRACE ASSEMBLY. SEE SPECIAL NOTE 5 ON PAGE 81.



ALTERNATIVE GATE HOLD-DOWN

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

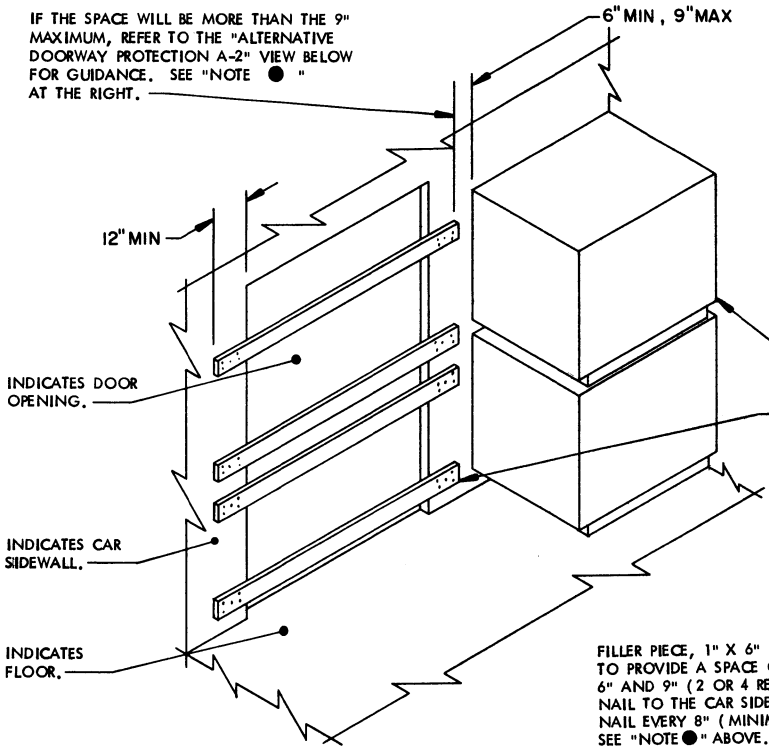


CENTER GATE MODIFICATION

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

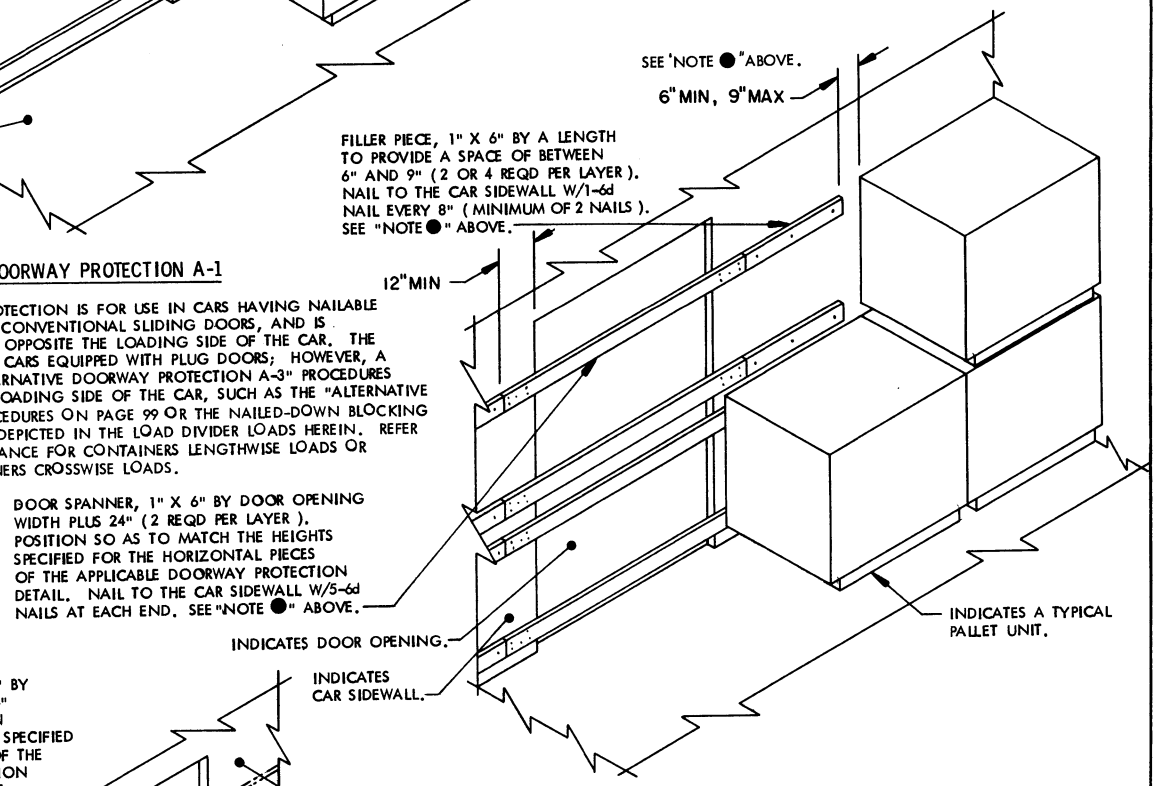
NOTE ● :

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. IF AN EXCESS LATERAL SPACE IS FILLED BY NAILING LUMBER TO THE CAR SIDEWALL, AS IS PERMITTED FOR THE LOADS ON PAGES 66 AND 70, THE DOOR SPANNERS WILL BE POSITIONED TO BUTT AGAINST THE FILL MATERIAL AND THE TOLERANCE DIMENSION WILL NOT APPLY. ALSO, THE FILLER PIECES SHOWN IN THE ALTERNATIVE DOORWAY PROTECTION A-2 VIEW WILL NOT BE USED. NOTE THAT THE THICKNESS OF THE DOOR SPANNER PIECES MUST EQUAL THE THICKNESS OF THE LUMBER FILL MATERIAL THAT IS NAILED TO THE CAR SIDEWALL.



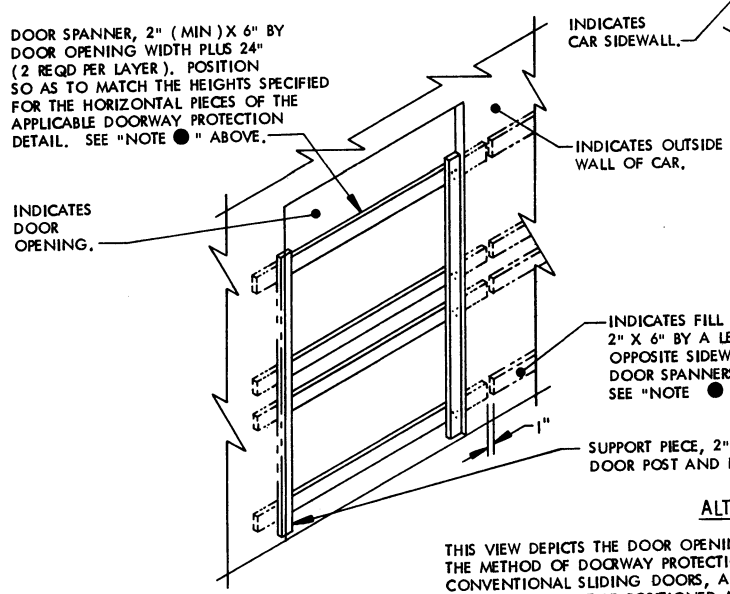
ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 99 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED IN THE LOAD DIVIDER LOADS HEREIN. REFER TO PAGES 14 AND 42 FOR GUIDANCE FOR CONTAINERS LENGTHWISE LOADS OR PAGES 28 AND 56 FOR CONTAINERS CROSSWISE LOADS.



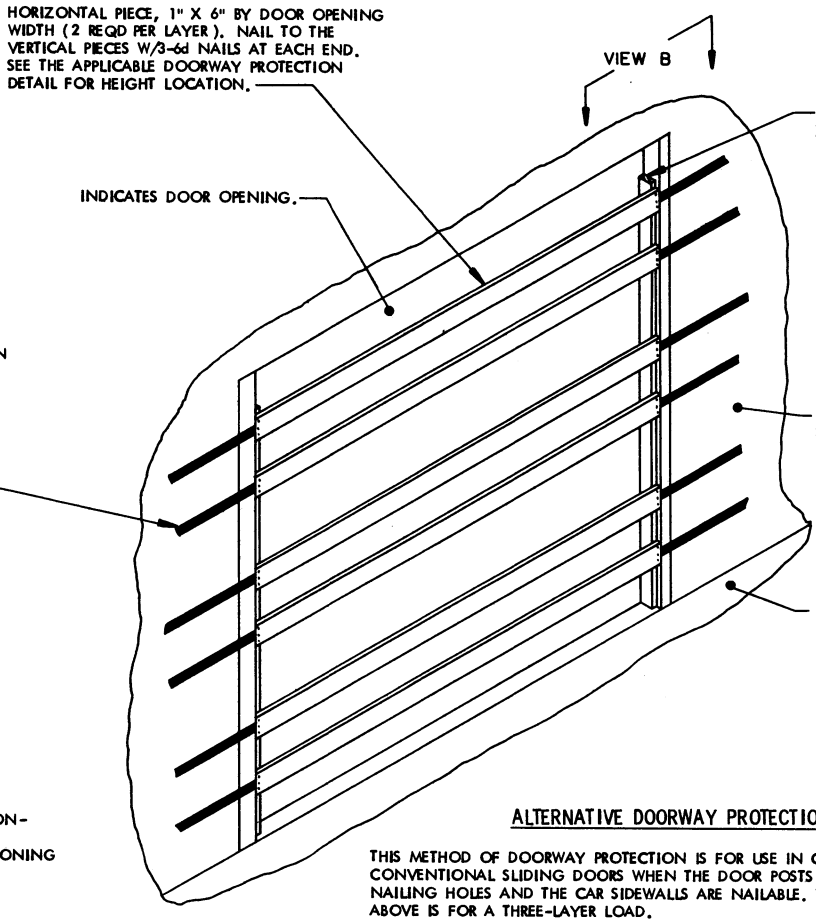
ALTERNATIVE DOORWAY PROTECTION A-2

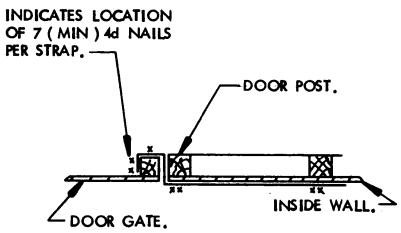
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. SEE THE NOTE UNDER THE "A-1" PROCEDURES.



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.



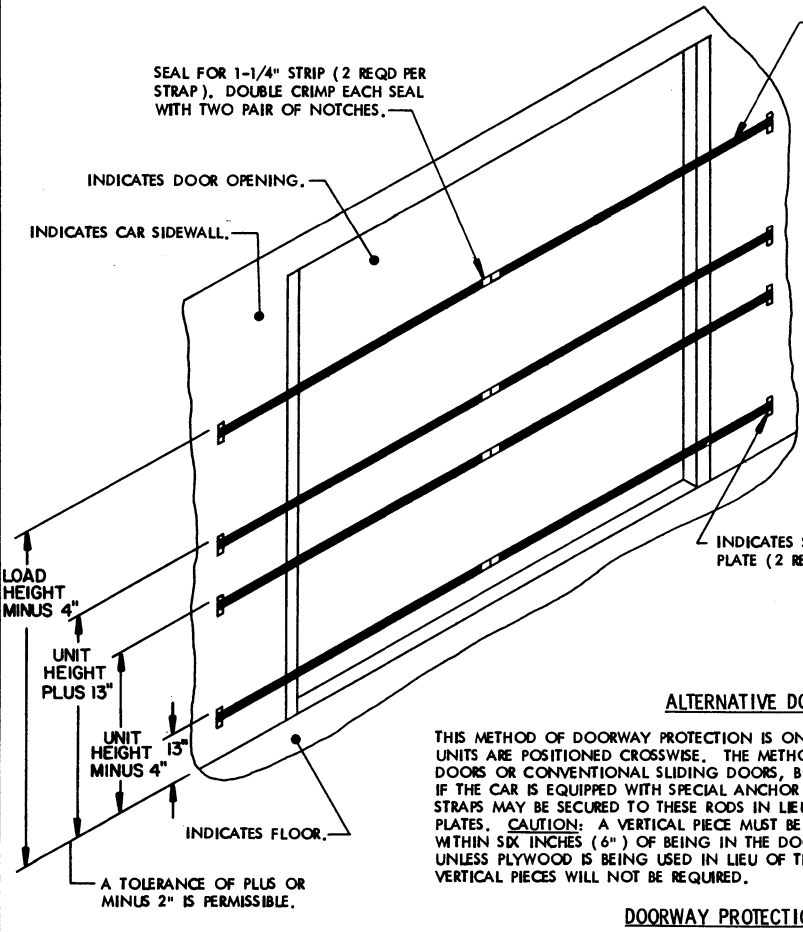


VIEW B

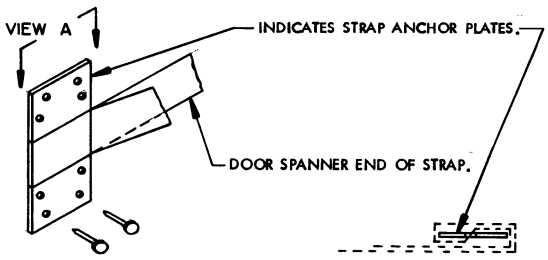
THIS VIEW DEPICTS THE LOCATION OF THE NAILS FOR SECURING THE DOORWAY PROTECTION-GATE STRAP. NOTE THAT THE STRAPS MUST BE APPLIED TO THE CAR SIDEWALL PRIOR TO POSITIONING THE ADJACENT UNITS.

ALTERNATIVE DOORWAY PROTECTION B

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



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



ISOMETRIC VIEW

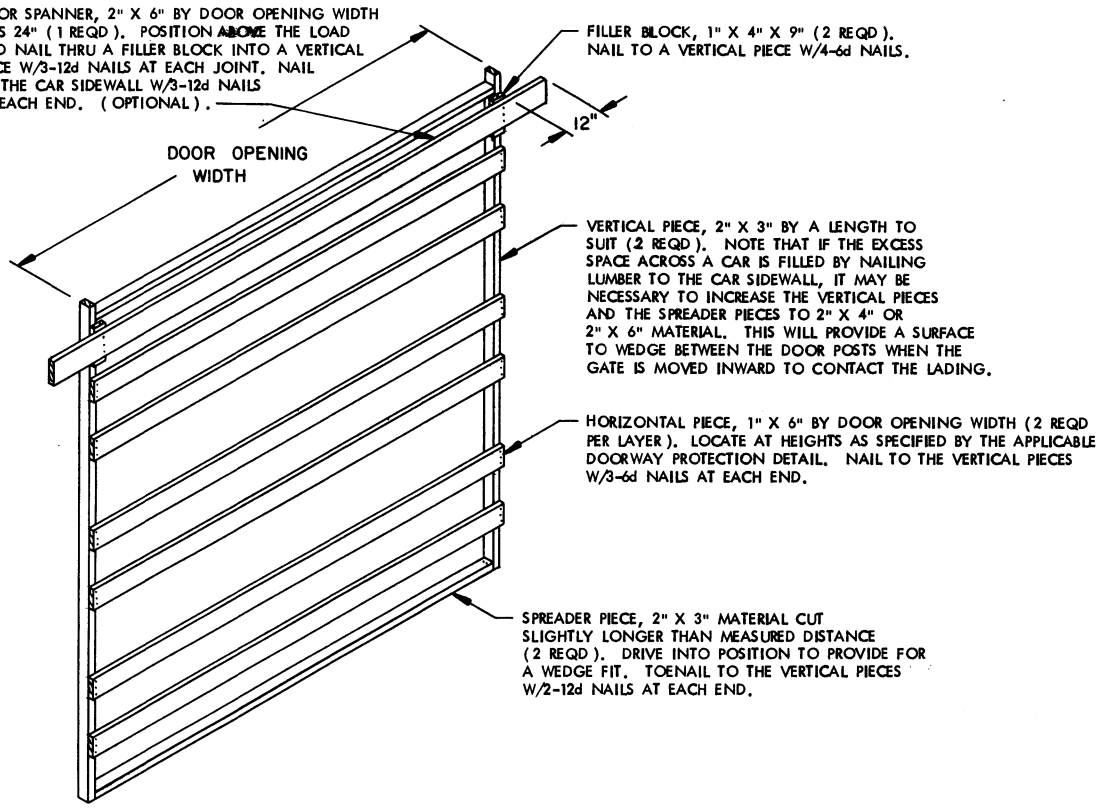
VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

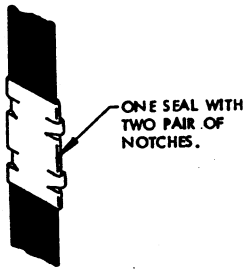
ALTERNATIVE DOORWAY PROTECTION C

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



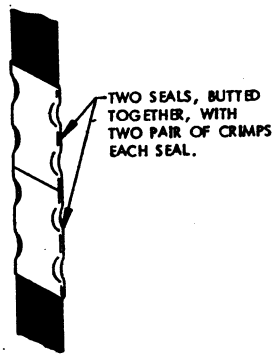
ALTERNATIVE DOORWAY PROTECTION D

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 99 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 97.



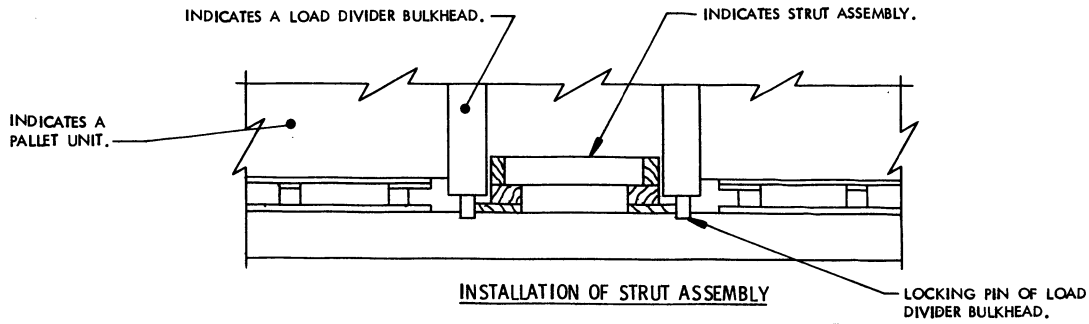
STRAP JOINT A

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



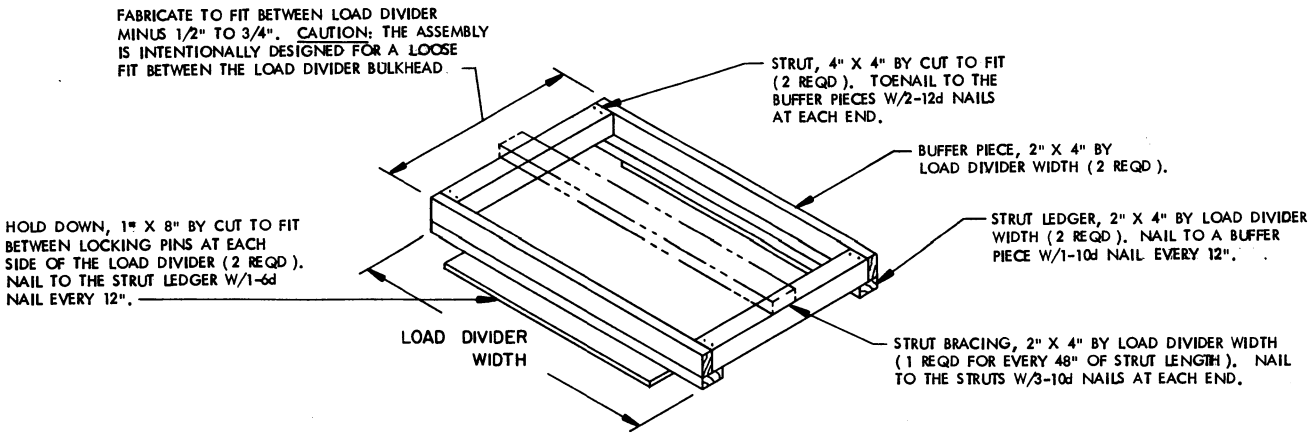
STRAP JOINT B

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



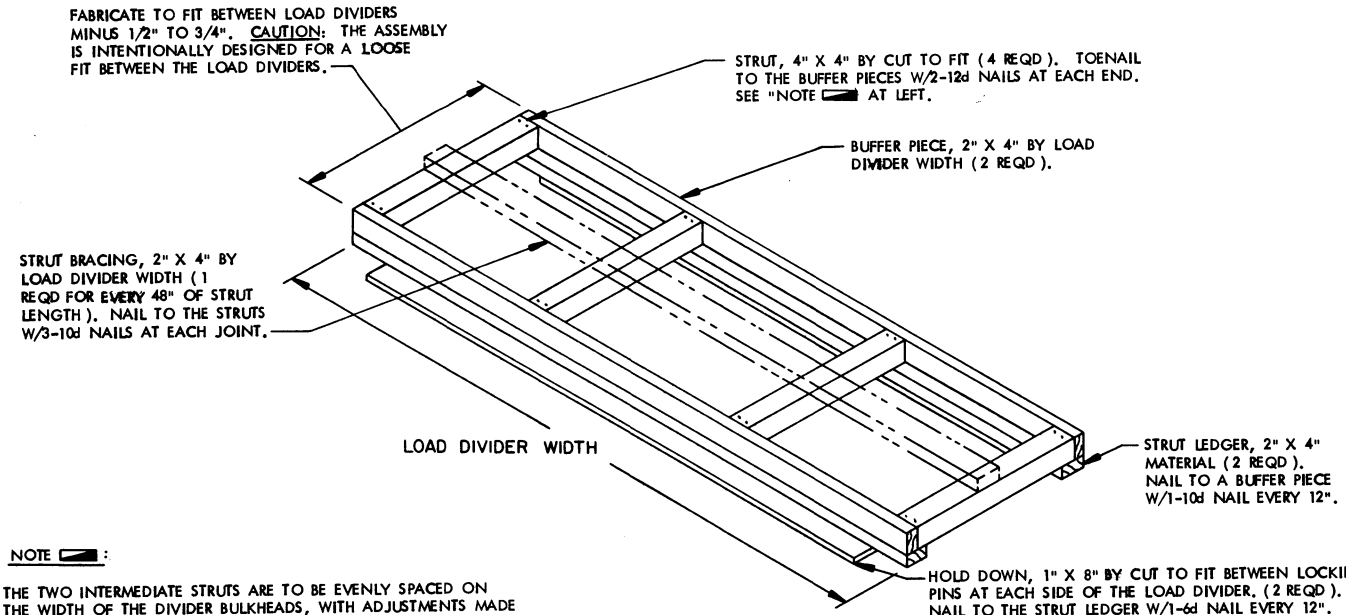
INSTALLATION OF STRUT ASSEMBLY

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



STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

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

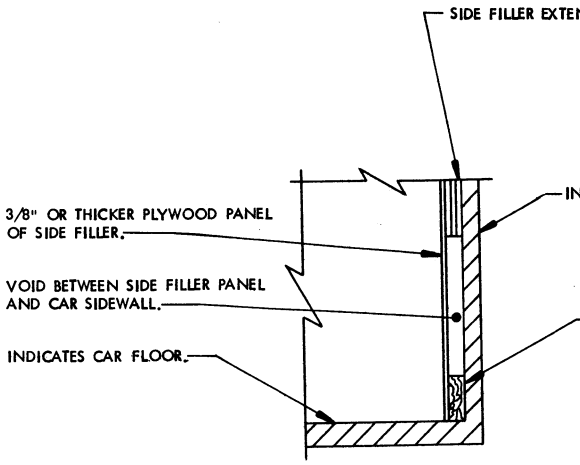


NOTE ▬:

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

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

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

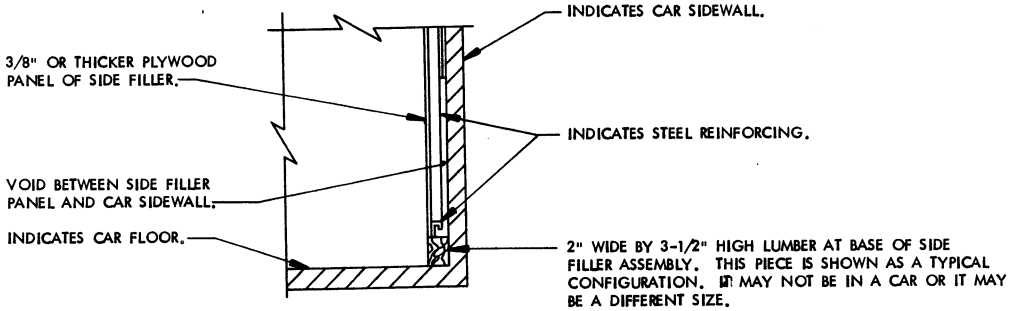


TYPICAL TYPE A

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

NOTE ◑:

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.