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

M14 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 19-48-4042-1-2-3-11-14PM1000, DATED 8 FEBRUARY 1963 AND REVISION 1, DATED 29 AUGUST 1969, AS PERTAINS TO THE M14 SERIES CONTAINER.

DO NOT SCALE

REVISIONS				DRAFTSMAN	TYPIST	CHECKER	TECHNICIAN	ENGINEER
		DEV / DEO / DE			TM		R. Arnold	
		DEV / DEO / DE		SMCAC – DEV	SMCAC – DEV		SMCAC – DE	
		DEV / DEO / DE		APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND: David E. Hardwick				
		DEV / DEO / DE		APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC): John L. Byrd, U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL				
		DEV / DEO / DE		U.S. ARMY MATERIEL COMMAND				
		DEV / DEO / DE		DECEMBER 1991				
		DEV / DEO / DE		CLASS	DIVISION	DRAWING	FILE	
		DEV / DEO / DE		19	48	4042B/3	5PM 1000	

PROJECT FSA 438/3-63

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 M14 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" OR A 40" X 48" PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE U.S. AMC DRAWING NO. 19-48-4042A/3-20PM1001 FOR UNITIZATION PROCEDURES FOR THE M14 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 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 127 FOR GUIDANCE.

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

F. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS POSSIBLE 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 100 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.

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

H. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 128 FOR GUIDANCE.

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

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

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

WIRE ---------- : FED SPEC QQ-W-461.

HARDBOARD --------- : ANSI/AHA A135.4, CLASS 1.

SOLID FIBERBOARD --- : FED SPEC PP-F-320. TYPE SF, CLASS DOMESTIC, GRADE 175 OR STRONGER; OR TYPE SF, CLASS WEATHER-RESISTANT, GRADE W6S OR STRONGER.

(GENERAL NOTES CONTINUED)

L. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH PALLET 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.

M. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS 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".

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

O. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATIONS 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.

P. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 130 FOR GUIDANCE.

Q. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDEWALL, HAVE BEEN OMITTED FROM THE LOAD VIEW FOR CLARITY PURPOSES.

R. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED, HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.

S. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

T. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "N" ABOVE.

U. NOTICE: WHEN POSITIONING PALLET UNITS IN A CAR, THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE 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 PALLET UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF CONTAINERS ON THE UNIT. PADDING, OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.

(CONTINUED ON PAGE 3)

(GENERAL NOTES FOR CONVENTIONAL TYPE BOX CARS CONTINUED)

V. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN IN THE LOADS ON PAGES 68, 70, 82, AND 84. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

W.. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 130 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 STUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.

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

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

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

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

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

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

CC. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVINGS IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF PROPELLING CHARGES. NOTICE: ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST FIFTEEN INCHES (15") OF TRAVEL ARE ACCEPTABLE.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

DD. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED, HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 136 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 136, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

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

FF. 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 "GG-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 135.

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

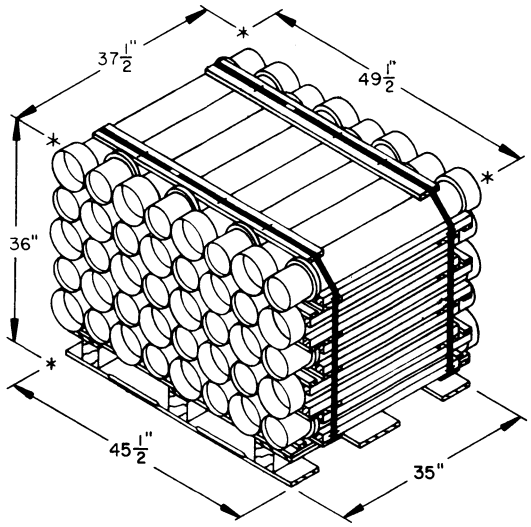
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 108 THRU 111.

2. THE "GATES AND STRUTS" METHOD OF OMITTING A PALLET UNIT MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGES 102 THRU 107 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 122, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 118.

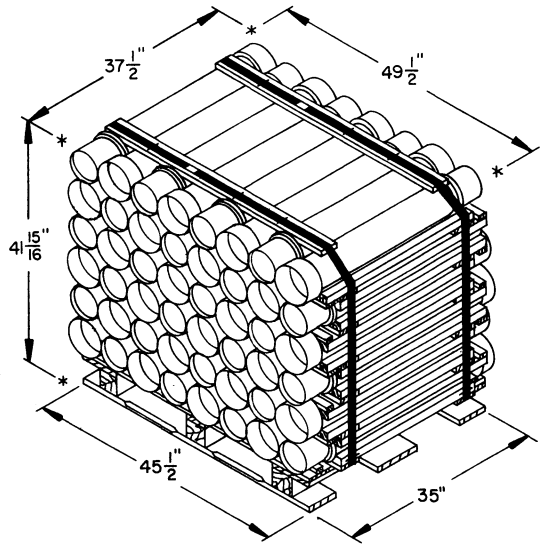
HH. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

CONTAINER ---------- 40 EACH @ 29 LBS (APPROX)
CUBE ---------- 38.7 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 1,304 LBS (APPROX)

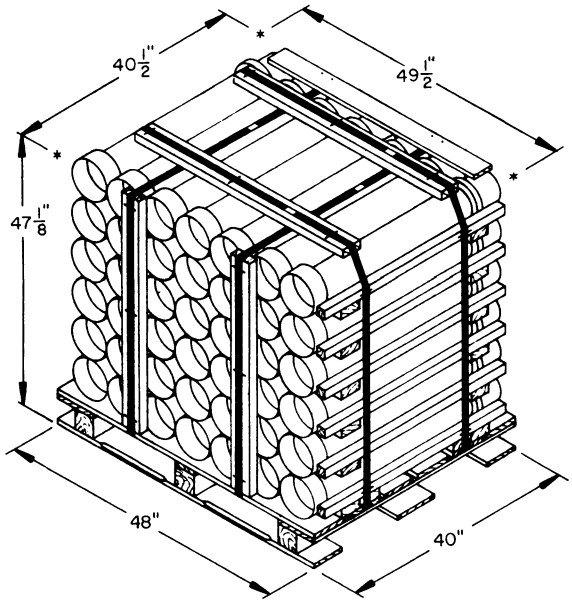
REFER TO PAGES 6 THRU 17 FOR OUTLOADING PROCEDURES.



ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

CONTAINER --------- 48 EACH @ 29 LBS (APPROX)
CUBE ---------- 45.1 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,553 LBS (APPROX)

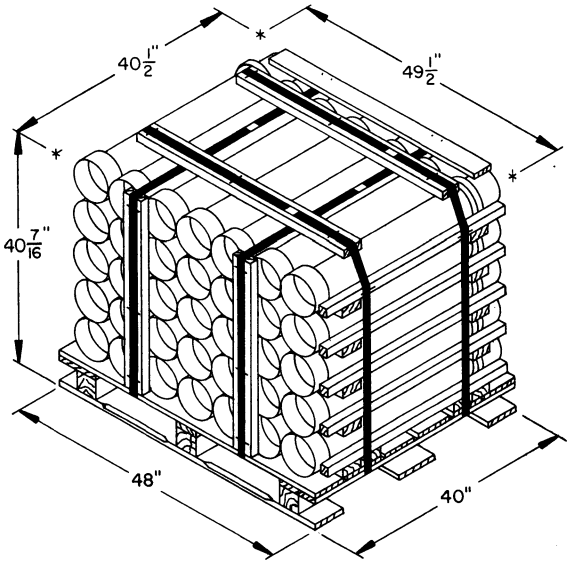
REFER TO PAGES 24 THRU 35 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ---------- 42 EACH @ 29 LBS (APPROX)
CUBE ---------- 54.7 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,433 LBS (APPROX)

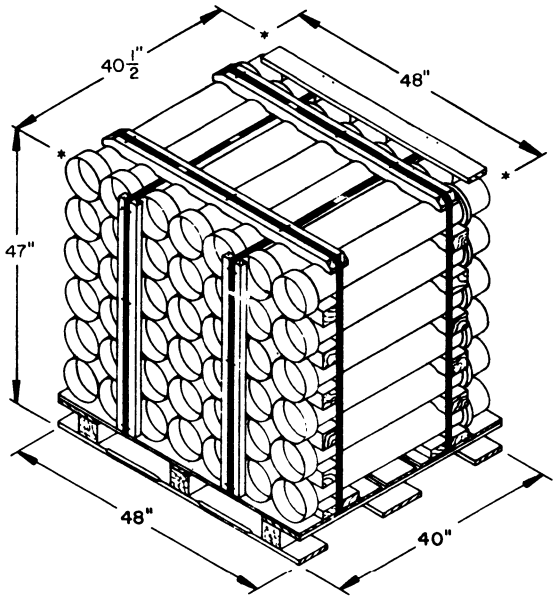
REFER TO PAGES 40 THRU 49 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER --------- 35 EACH @ 29 LBS (APPROX)
CUBE ---------- 46.9 CUBIC FEET (APPROX)
GROSS WEIGHT ------ 1,217 LBS (APPROX)

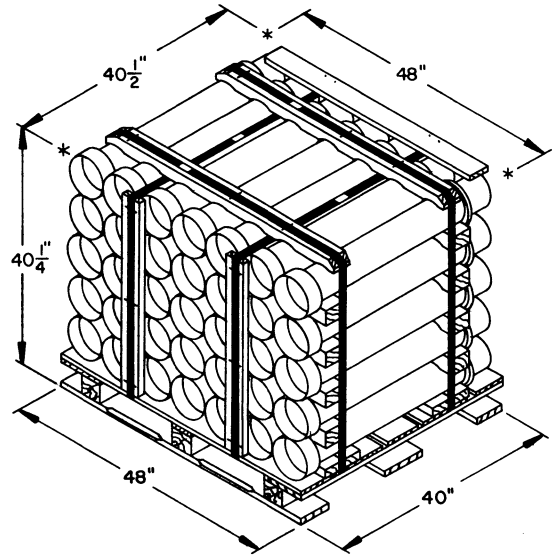
REFER TO PAGES 54 THRU 63 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER---------- 42 EACH @ 29 LBS (APPROX)
CUBE ---------- 52.9 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 1,435 LBS (APPROX)

REFER TO PAGES 68 THRU 77 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ---------- 35 EACH @ 29 LBS (APPROX)
CUBE ---------- 45.3 CUBIC FEET (APPROX)
GROSS WEIGHT ------- 1,216 LBS (APPROX)

REFER TO PAGES 82 THRU 91 FOR OUTLOADING PROCEUDRES.

NOTE:

WHEN REFERRING TO THE PALLET UNIT LENGTH OR UNIT WIDTH THE 35" AND 40" DIMENSIONS OF THE PALLET BASE CONSTITUTE THE LENGTH AND THE 45-1/2" AND 48" DIMENSIONS CONSTITUTE THE WIDTH.

KEY NUMBERS FOR BOX CAR EQUIPPED WITH PLUG DOORS

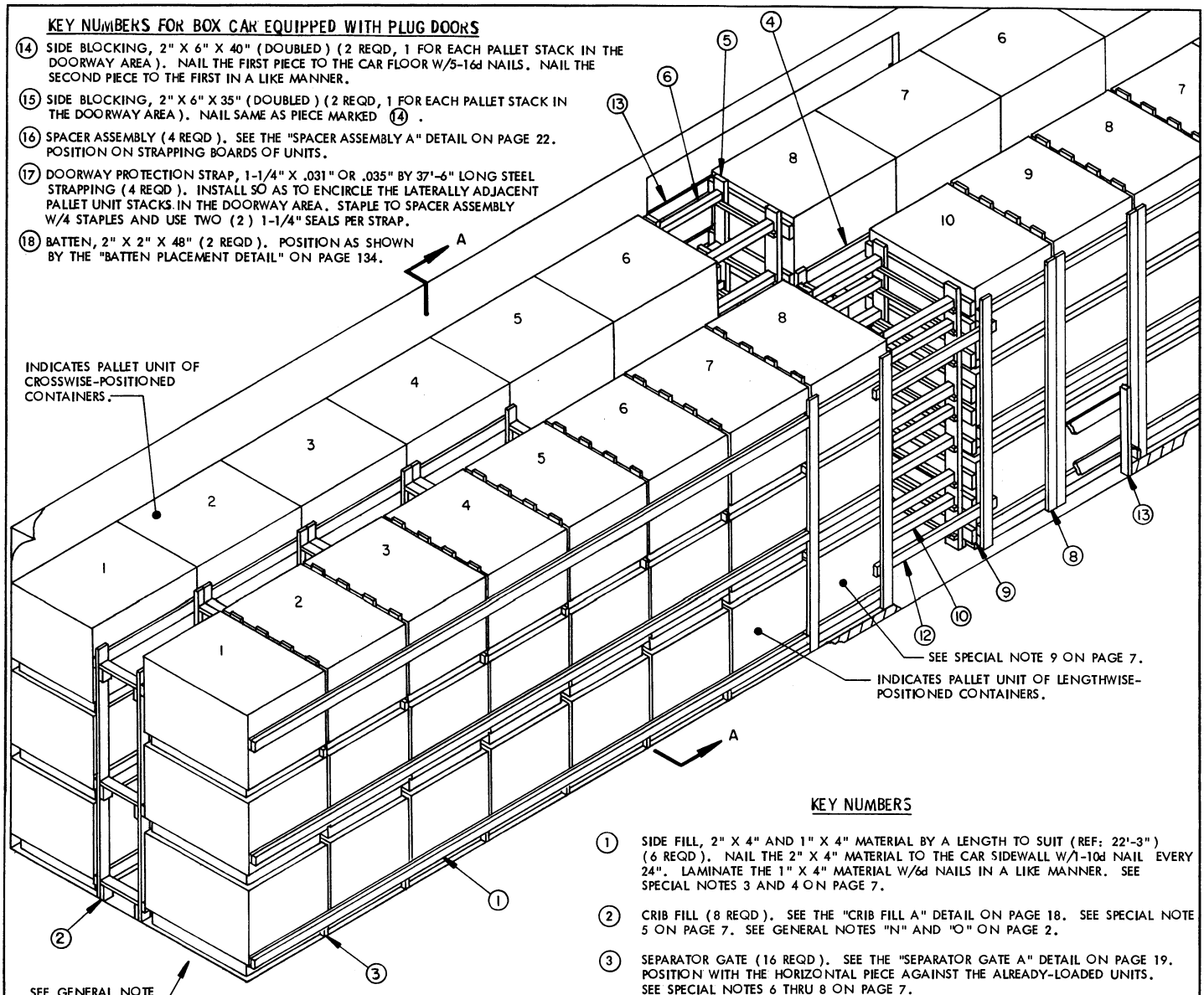
(14) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (2 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (2 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA). NAIL SAME AS PIECE MARKED (14).

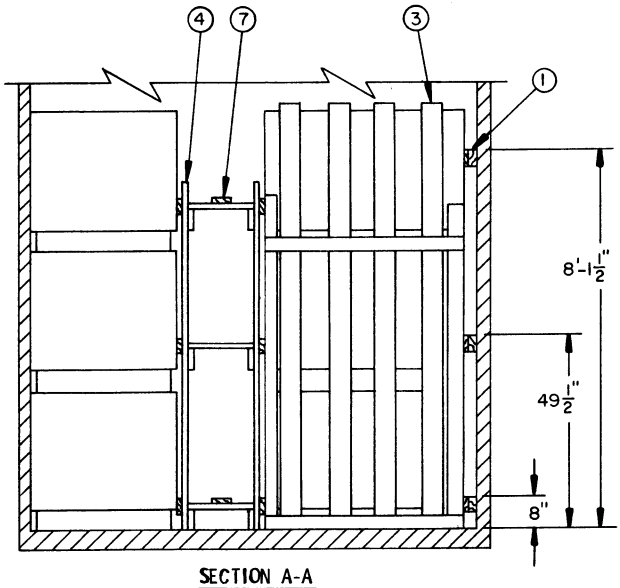
(16) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 22. POSITION ON STRAPPING BOARDS OF UNITS.

(17) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 37'-6" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

(18) BATTEN, 2" X 2" X 48" (2 REQD). POSITION AS SHOWN BY THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) SIDE FILL, 2" X 4" AND 1" X 4" MATERIAL BY A LENGTH TO SUIT (REF: 22'-3") (6 REQD). NAIL THE 2" X 4" MATERIAL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE 1" X 4" MATERIAL W/6d NAILS IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 7.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 5 ON PAGE 7. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 7.

(4) CRIB FILL (6 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 18.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 18. SEE SPECIAL NOTE 10 ON PAGE 7.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (12 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 46") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "B" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 7.

(8) SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY D" DETAIL ON PAGE 21. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.

(9) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE B" DETAIL ON PAGE 19.

(10) STRUT, 4" X 4" BY CUT TO FIT (REF: 35") (18 REQD). TOENAIL TO PIECES MARKED (9) W/2-16d NAILS AT EACH END.

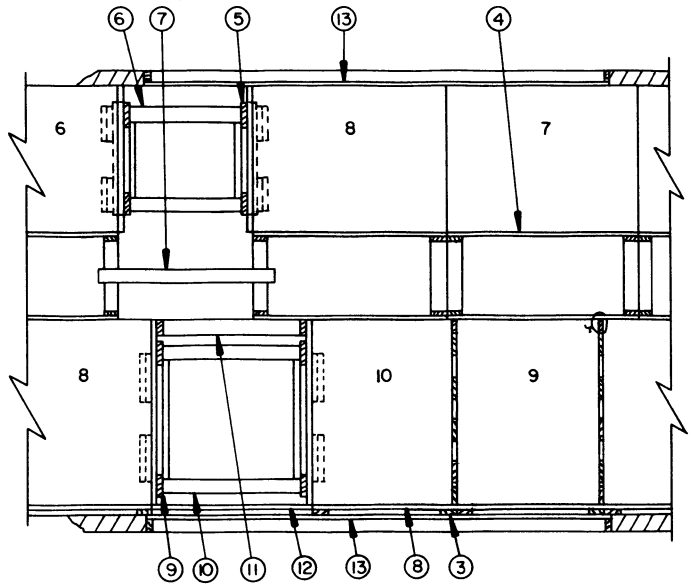
(11) STRUT, 2" X 4" BY CUT TO FIT (REF: 35") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (9) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 7.

(12) SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 54") (2 REQD). POSITION AT 20" AND 7'-8" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (8) W/3-6d NAILS AT EACH END.

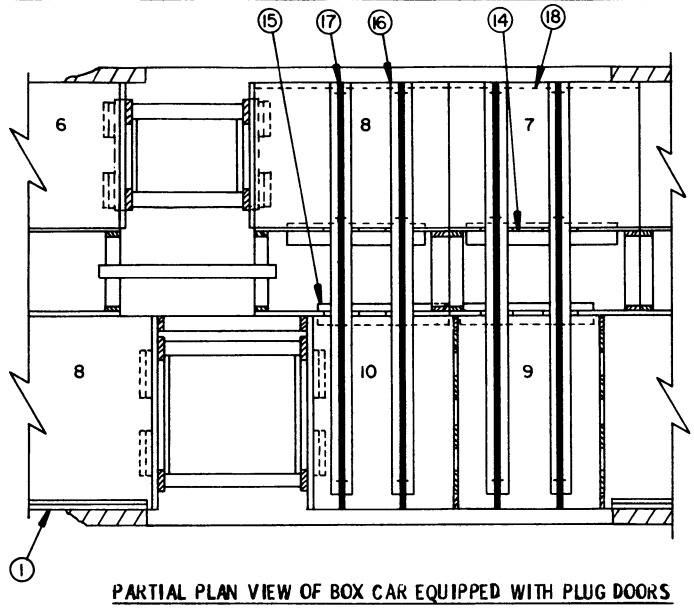
(13) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 7.

(CONTINUED AT LEFT)

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



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-EIGHT (78) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 101,712 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY-THREE (63) UNITS, FOR A LADING WEIGHT OF 82,152 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED ① , IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑧ ON PAGE 6, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ① .

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDEFILL, PIECE MARKED ① , TO THE DOOR. OMIT THE SIDEFILL ASSEMBLIES, PIECE MARKED ⑧ , AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED ⑫ .

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ②, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. THE SEPARATOR GATES ARE SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 6. WHEN LOADING THE CAR, POSITION A PALLET UNIT STACK AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE BOTTOM AND TOP PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

7. WHEN PROCEDURES FOR PLUG DOORS ARE USED IN A CAR WITH CONVENTIONAL SLIDING DOORS AND HAVING NAILABLE SIDEWALLS, SEPARATOR GATES IN THE DOORWAY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 3-LAYER LOAD ARE NOT ECONOMICALLY FEASIBLE. CONSTRUCT EACH SEPARATOR GATE FOR ONE OR TWO-HIGH LOADS FROM 48" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.

9. WHEN PLACING PALLET UNITS OF LENGTHWISE POSITIONED CONTAINERS IN THE NEAR-END STACK NO. 8, CARE MUST BE TAKEN TO ENSURE THAT THE STACK IS AT LEAST 2-1/2" FROM THE CAR SIDEWALL. THIS WILL ALLOW THE SIDE FILL ASSEMBLY, PIECE MARKED ⑧ , AT THAT LOCATION TO BE SLID OUT FAR ENOUGH TO PERMIT NAILING OF THE END OF THE SIDE FILL ASSEMBLY RETAINER, PIECE MARKED ⑫ , AND TO ALLOW THE ASSEMBLY TO BE RETURNED TO THE PROPER POSITION.

10. 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 129 FOR GUIDANCE.

11. 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 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ④ , MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING, PIECES MARKED ⑮ , SO THE CRIB WILL REST EVENLY. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY BUNDLING STRAPS, AS SHOWN ON PAGE 41. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

(CONTINUED ON PAGE 8)

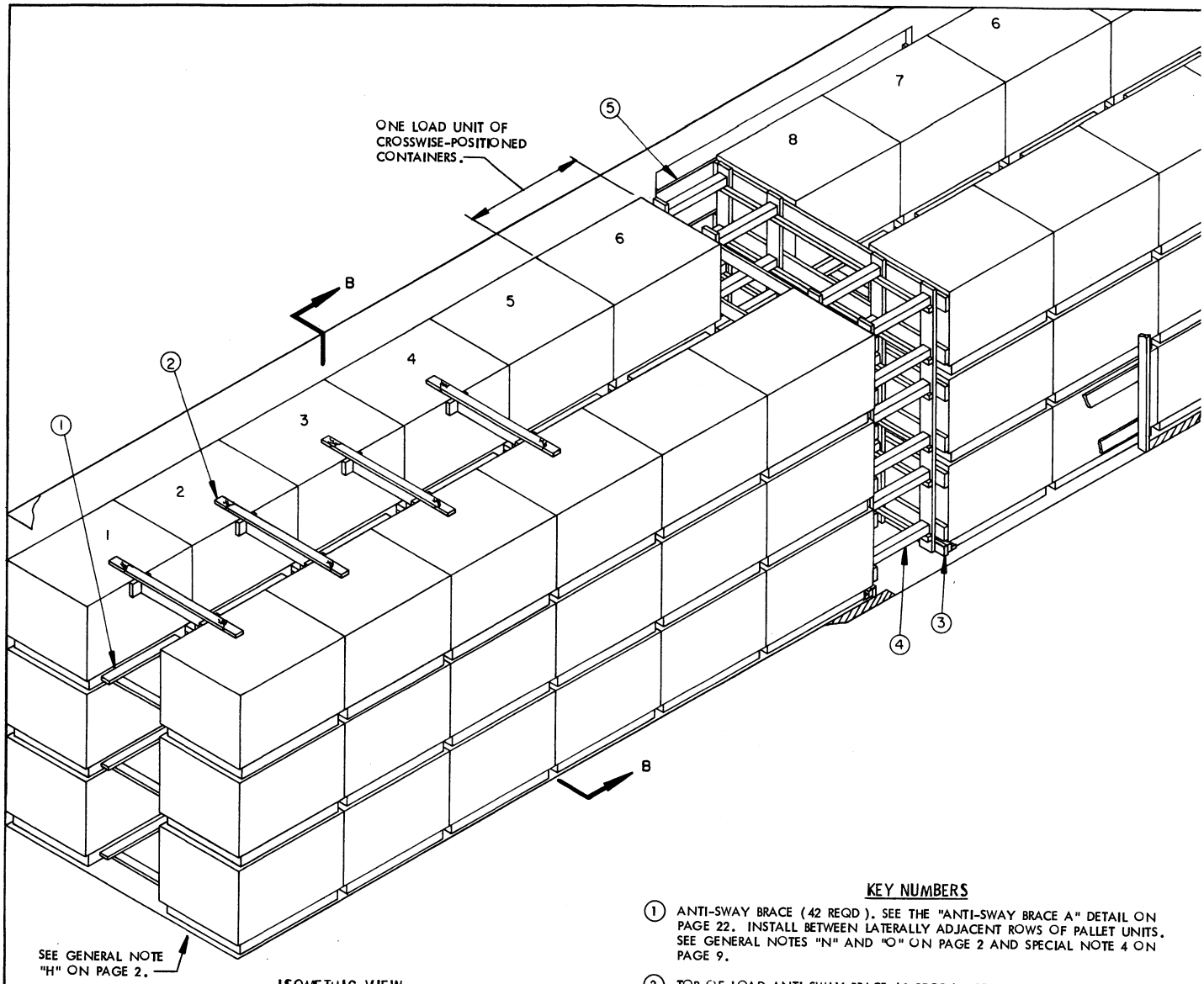
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	547	182
1" X 6"	696	348
2" X 2"	95	32
2" X 3"	42	21
2" X 4"	1205	804
2" X 6"	201	201
4" X 4"	82	110
NAILS	**NO. REQD**	**POUNDS**
6d (2")	732	4-1/2
10d (3")	1606	24-3/4
12d (3-1/4")	48	1
16d (3-1/2")	136	3
WIRE, NO. 14 GAGE	6' REQD	NIL

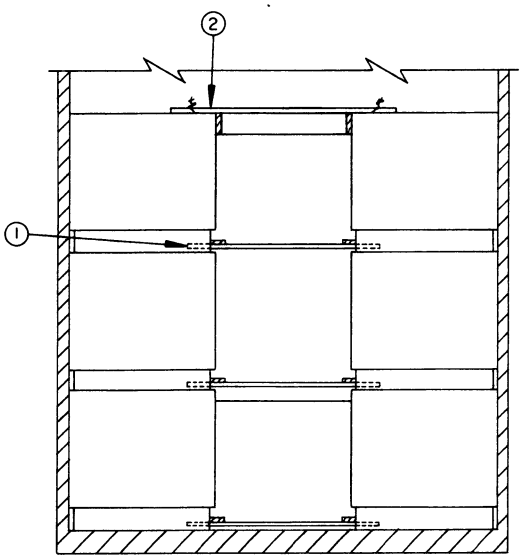
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	96	125,184 LBS
DUNNAGE		3,430 LBS
TOTAL WEIGHT		128,614 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
96-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 (42 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 9.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 9.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 9.

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

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 9.

(SPECIAL NOTES CONTINUED FROM PAGE 7)

12. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGE 102 OR 103. THE ENTIRE ONE OR TWO TOP TIERS MAY ALSO BE OMITTED.

13. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 118 AND 119.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE-CONTAINERS UNITS AND PAGES 123 AND 126 FOR CROSSWISE-CONTAINERS UNITS.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

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

(SPECIAL NOTES CONTINUED)

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN ON PAGE 16, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. ALSO NOTE THAT BATTENS ARE REQUIRED UNDER THE DOORWAY PROTECTION STRAPS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

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 8 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 86,064 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 70,416 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" CAR. SEE GENERAL NOTE "V" ON PAGE 3. IF IT IS DESIRED TO SHIP A LARGER LOAD, SEE THE LOAD ON PAGE 10 AND SPECIAL NOTE 2 ON PAGE 11.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 16 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS 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 A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.

6. CENTER GATE "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 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 8, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 18. 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 129.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

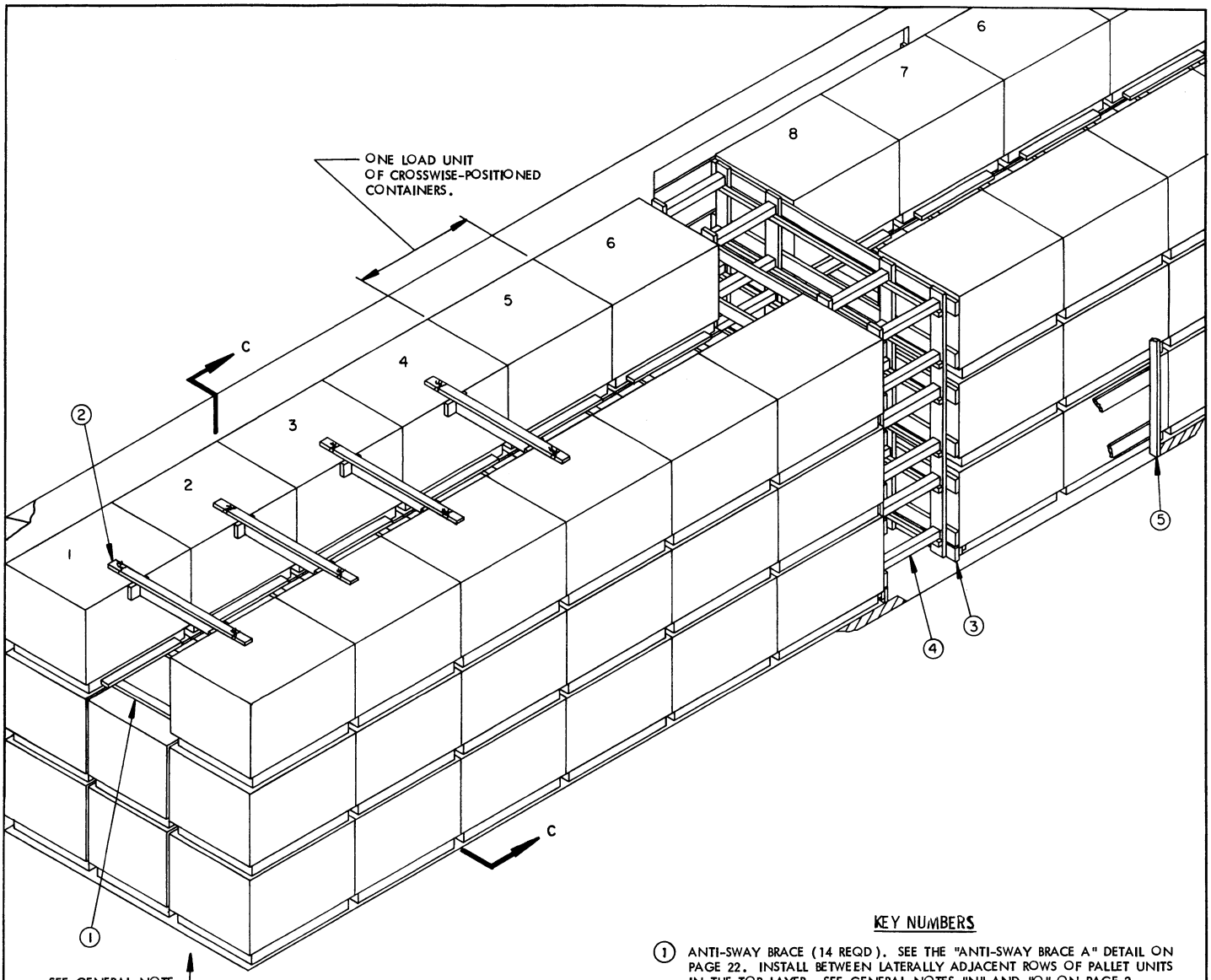
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	104	35
2" X 3"	35	18
2" X 4"	644	430
2" X 6"	236	236
4" X 4"	58	78
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	916	14
12d (3-1/4")	36	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 48' REQD ---------- 3/4 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	109,536 LBS
DUNNAGE		1,738 LBS
TOTAL WEIGHT		111,269 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

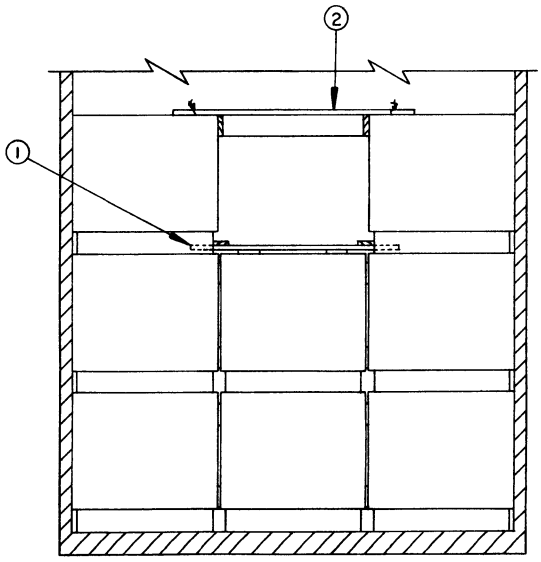
(1) ANTI-SWAY BRACE (14 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IN THE TOP LAYER. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO A STRAPPING BOARD OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 11.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20. SEE SPECIAL NOTES 5 AND 6 ON PAGE 11.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (32 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 11.



SECTION C-C

CENTER GATE, PIECE MARKED (3), OMITTED FOR CLARITY.

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
112-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

PROJECT FSA 43B/3-63

(SPECIAL NOTES CONTINUED)

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH . THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 10, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN ON PAGE 16, IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. ALSO NOTE THAT BATTENS ARE REQUIRED UNDER THE DOORWAY PROTECTION STRAPS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF EIGHT (8) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123 AND 126 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. A CAR LESS THAN 9'-6" WIDE CANNOT BE USED. CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2 AND SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 10 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF EIGHTY-EIGHT (88) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 114,752 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. SEVENTY-TWO (72) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 93,888 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" CAR. SEE GENERAL NOTE "V" ON PAGE 2. IF THE CAPACITY OF THE CAR PERMITS, AND IF DESIRED, A FULL 3-LAYERS MAY BE LOADED. THIS WILL PROVIDE FOR A MAXIMUM OF ONE-HUNDRED AND TWENTY-SIX (126) UNITS IN A 60'-8" LONG CAR AND AN APPROXIMATE LADING WEIGHT OF 164,304 POUNDS. IN A 50'-6" LONG CAR, ONE-HUNDRED AND TWO (102) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 133,008 POUNDS CAN BE LOADED. IN A 40'-6" LONG CAR, EIGHTY-SIX (86) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 112,144 POUNDS CAN BE LOADED. THE ANTI-SWAY BRACES AND TOP-OF-LOAD ANTI-SWAY BRACES, PIECES MARKED ① AND ② , WILL NOT BE REQUIRED.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-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. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.

5. CENTER GATE "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 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 10, INSTALL THREE (3) "CENTER GATES A" AS SHOWN ON PAGE 18. 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 129.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" HOLD DOWNS NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

(CONTINUED AT LEFT)

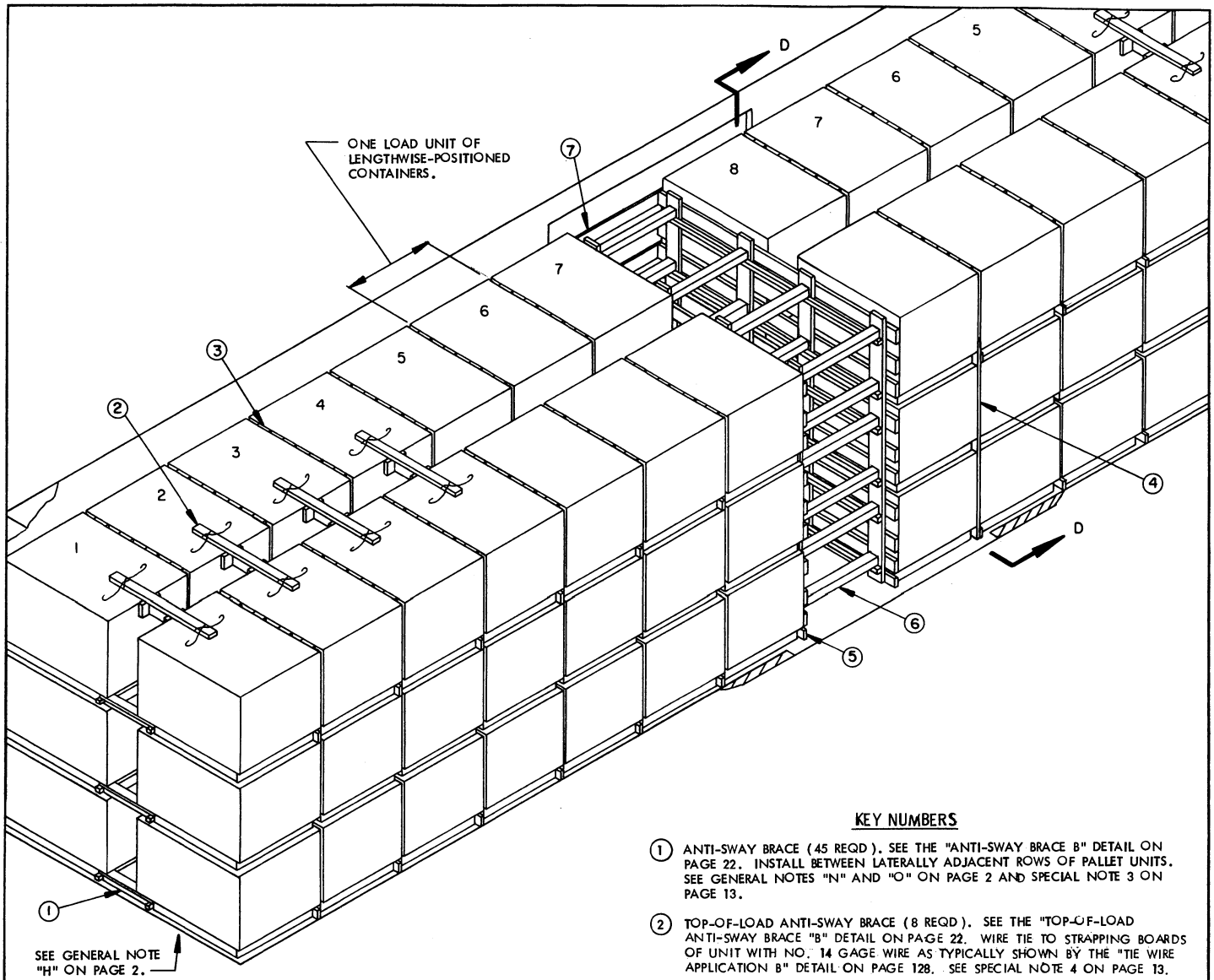
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	108	36
2" X 3"	35	18
2" X 4"	257	172
2" X 6"	274	274
4" X 4"	78	104
NAILS	**NO. REQD**	**POUNDS**
6d (2")	72	1/2
10d (3")	628	9-3/4
12d (3-1/4")	36	3/4
16d (3-1/2")	128	3
WIRE, NO. 14 GAGE	48' REQD	3/4 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	112	146,048 LBS
DUNNAGE		1,343 LBS
TOTAL WEIGHT		147,391 LBS

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
112-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (45 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 13.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE "B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 13.

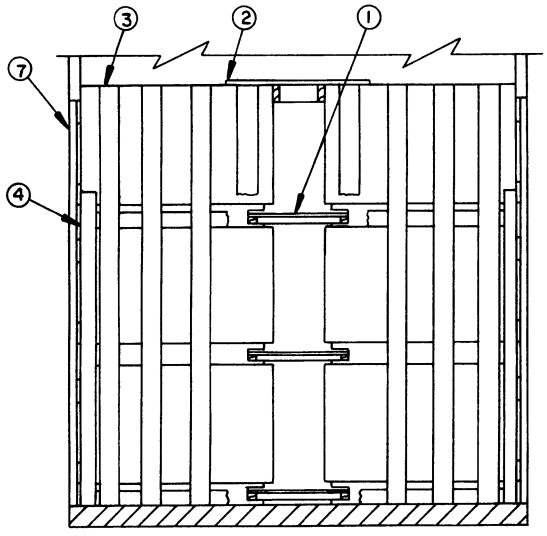
(3) SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY LOADED UNITS. SEE SPECIAL NOTES 5 THRU 8 ON PAGE 13.

(4) STOP PIECE, 1" X 4" X 6'-9" (2 REQD). POSITION AT END OF HORIZONTAL PIECES OF SEPARATOR GATE, PIECE MARKED (3), IN THE DOORWAY AREA, ON THE SAME SIDE AS THE VERTICAL PIECES AND NAIL W/3-6d NAILS AT EACH JOINT AND CLINCH.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 21. SEE SPECIAL NOTES 9, 10, AND 11 ON PAGE 13.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 27") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 13.



SECTION D-D

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

PROJECT FSA 43B/3-63

(SPECIAL NOTES CONTINUED)

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "D", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 12 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN ON PAGE 16, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

13. 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 98 THRU 126 FOR GUIDANCE.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	413	138
1" X 6"	1,032	516
2" X 2"	379	127
2" X 3"	42	21
2" X 4"	191	128
2" X 6"	252	252
4" X 4"	54	72
NAILS	NO. REQD	POUNDS
6d (2")	1,338	8
10d (3")	824	12-3/4
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 50'-6" LONG BY 9'-2" 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.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 93,888 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-2" OR WIDER CAR IS AVAILABLE, ONE HUNDRED AND EIGHT (108) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 140,832 POUNDS CAN BE LOADED, LOAD LIMIT OF THE CAR PERMITTING. WHEN USING A60'-8" LONG CAR, SIX (6) STRUTS WILL BE REQUIRED FOR EACH ROW/LAYER. SEE THE PHANTOMED STRUT LEDGERS WHICH MUST BE ADDED TO THE GATES AS SHOWN ON THE "CENTER GATE D" DETAIL ON PAGE 21.

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 16 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 12.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" CAR OR A 50'-6" CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.

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 OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO THREE SEPARATOR GATES. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 16 ARE USED IN CARS EQUIPPED WITH SLIDING DOORS, THE STOP PIECES MARKED ④ MUST BE APPLIED TO THE HORIZONTAL PIECES OF A SEPARATOR GATE ON THE SIDE OPPOSITE THE SIDE THE VERTICAL PIECES ARE APPLIED AND SO AS TO BE IN CONTACT WITH THE PALLET UNITS ADJACENT TO THE VOID BETWEEN THE ROWS.

7. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE ADJACENT SEPARATOR GATES MUST BE MODIFIED. SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 23. THE USE OF THIS MODIFIED GATE WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. NOTE THAT THE STOP PIECES, PIECE MARKED ④, WILL BE 46" FOR A 3-HIGH OR 2-HIGH LOAD AND 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "G" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

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 128 FOR CONSTRUCTION GUIDANCE.

9. 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 129 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 D", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 12, INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 19. 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 129. OMIT THE STOP PIECE FROM "CENTER GATE B".

(CONTINUED AT LEFT)

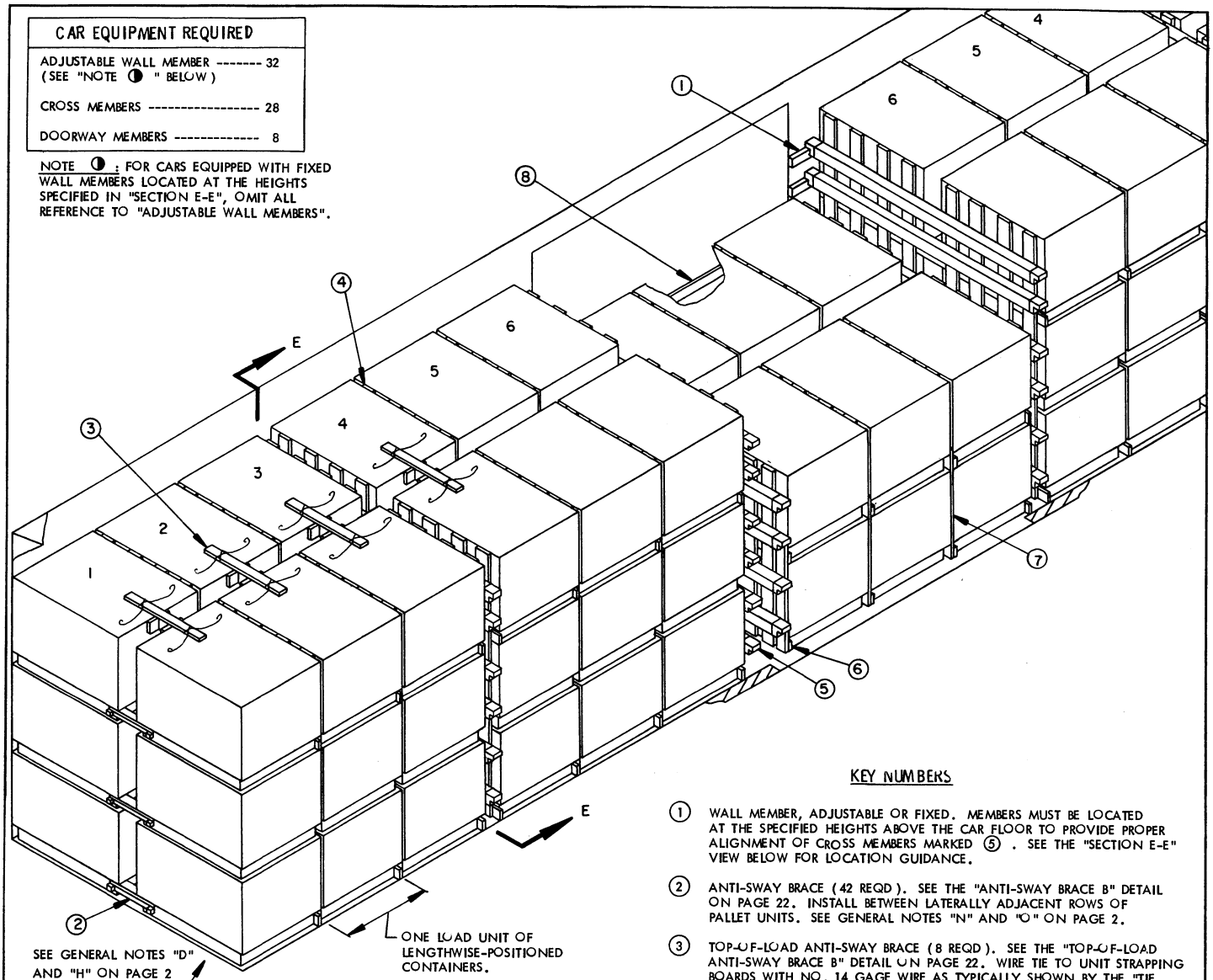
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	90	117,360 LBS
DUNNAGE		2,533 LBS
TOTAL WEIGHT		119,893 LBS

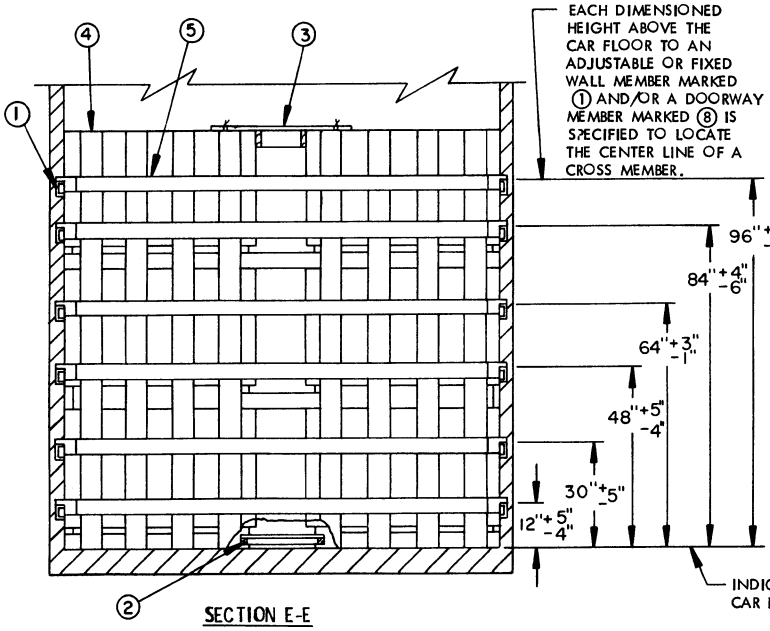
ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
90-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	32
CROSS MEMBERS	28
DOORWAY MEMBERS	8

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



ISOMETRIC VIEW



SECTION E-E

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 E-E" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 15.

④ SEPARATOR GATE FOR 3-HIGH (14 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 15.

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

⑥ SEPARATOR GATE FOR 2-HIGH (4 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

⑦ STOP PIECE, 1" X 4" X 44" (6 REQD). POSITION AT END OF HORIZONTAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ④ , IN THE DOORWAY AREA, ON THE SAME SIDE AS THE VERTICAL PIECES AND NAIL W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 15.

⑧ DOORWAY MEMBER (8 REQD). SEE THE "SECTION E-E" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 15.

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
84-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 14 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 86,064 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 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 B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR A 50'-6" CAR.

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

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑦. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO EIGHT 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 128 FOR CONSTRUCTION GUIDANCE.

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

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 96 AND 97 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

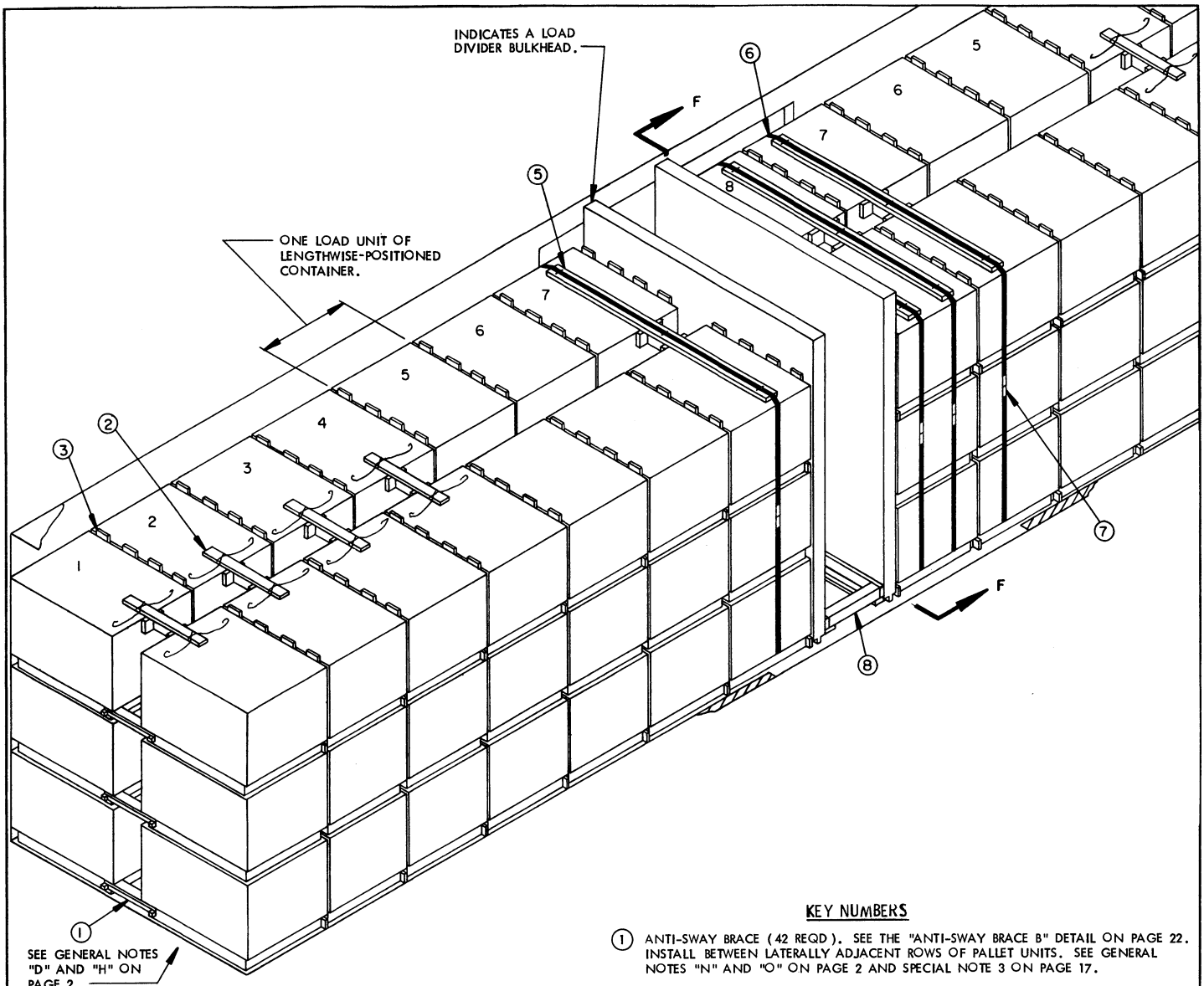
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	487	163
1" X 6"	1,200	600
2" X 2"	256	86
2" X 4"	153	102
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,488	9
10d (3")	416	6-1/2
WIRE, NO. 14 GAGE ---------- 80' REQD ---------- 1-1/4 LB		

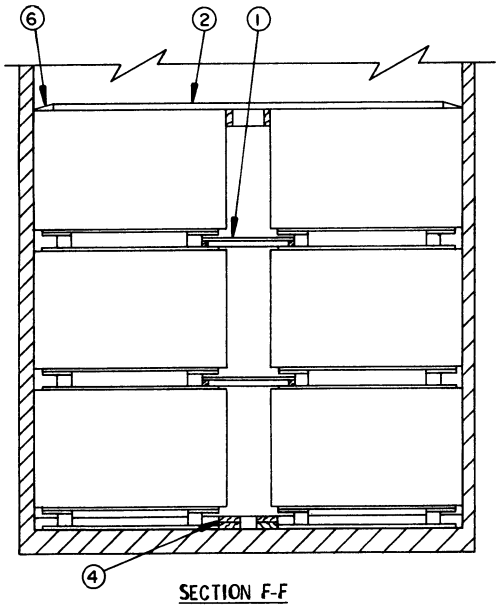
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	109,536 LBS
DUNNAGE		1,919 LBS
TOTAL WEIGHT		111,455 LBS

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



ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

(1) ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 17.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 17.

(3) SEPARATOR GATE (15 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 19. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 17.

(4) SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (6 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (S) AT FLOOR LEVEL.

(5) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 22. POSITION ON STRAPPING BOARDS OF UNITS.

(6) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 38'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 17.

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

(8) STRUT ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 135. SEE SPECIAL NOTE 9 ON PAGE 17.

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

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 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 102 THRU 107 GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123, 124, AND/OR 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 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 16 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF ONE-HUNDRED EIGHT (108) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 140,832 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 93,888 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 8 IS EMPLOYED, EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 109,536 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY-SIX (66) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 86,064 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 70,416 POUNDS.

3. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS, THE WOODEN GATE TYPE DOORWAY PROTECTION MAY BE USED IN LIEU OF PIECE MARKED ④ THRU ⑦. ANTI-SWAY BRACES, PIECES MARKED ①, WILL THEN BE REQUIRED IN THE DOORWAY AREA.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 16, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" CAR.

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

6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY NAILING THE HORIZONTAL PIECES TO THE LONGITUDINAL PIECES OF THE ANTI-SWAY BRACE, PIECE MARKED ①, AND/OR THE SIDE BLOCKING PIECE MARKED ④, W/1-10d NAIL AT EACH JOINT.

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 128 FOR CONSTRUCTION GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 12 IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS, PIECES MARKED ④ THRU ⑦, MUST BE USED. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 16, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

(CONTINUED AT LEFT)

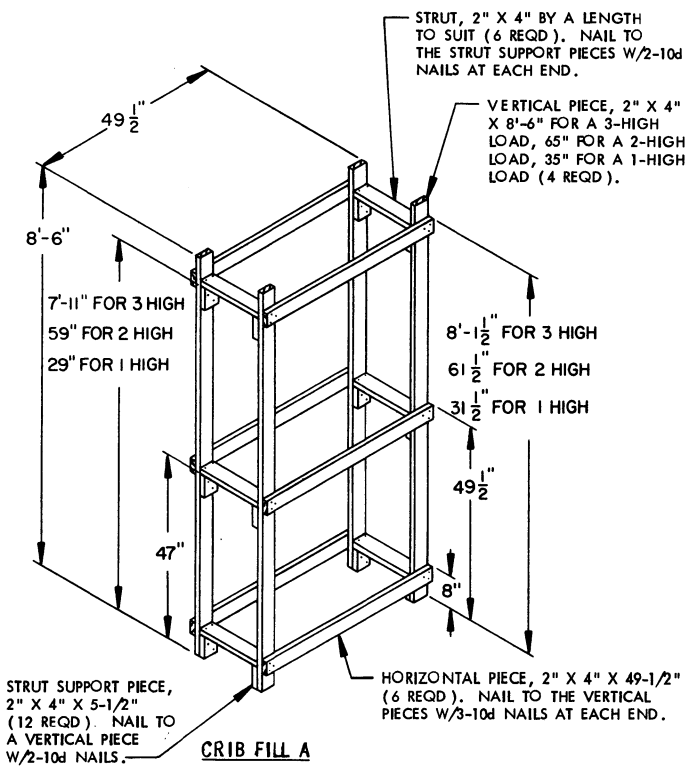
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	425	142
1" X 6"	1,080	540
1" X 8"	16	11
2" X 2"	256	86
2" X 4"	206	138
2" X 6"	63	63
4" X 4"	6	8
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,324	8
10d (3")	436	6-3/4
12d (3-1/4")	64	1-1/4
16d (3-1/2")	60	1-1/2
STEEL STRAPPING, 1-1/4" X .031" OR .035" -	152' REQD ---	22 LBS
SEAL FOR 1-1/4" STRAPPING ----------	8 REQD ---	NIL
WIRE, NO. 14 GAGE ----------	60' REQD ---	1 LB

LOAD AS SHOWN

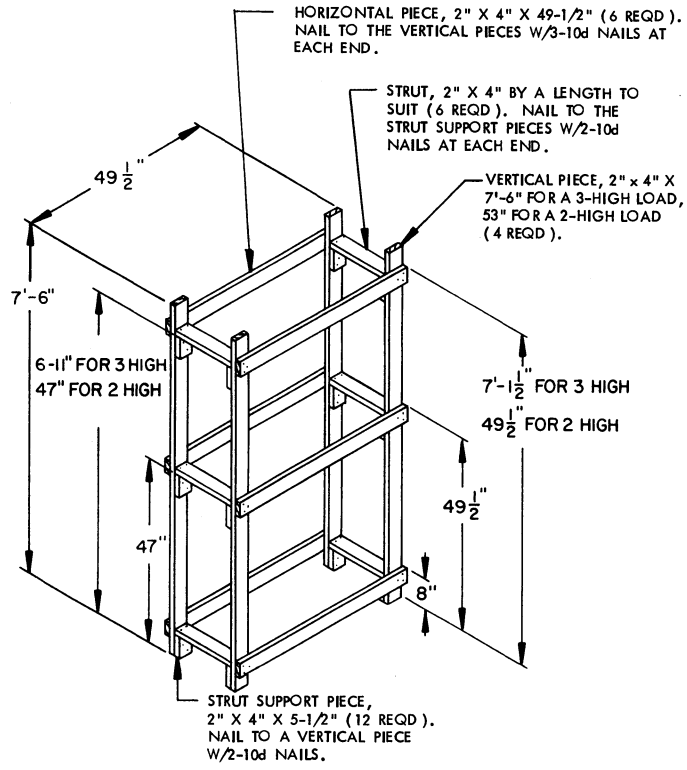
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	90	117,360 LBS
DUNNAGE		2,017 LBS
TOTAL WEIGHT		119,377 LBS

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



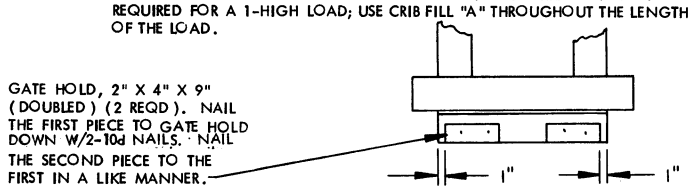
CRIB FILL A

CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PREFABRICATED. 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.

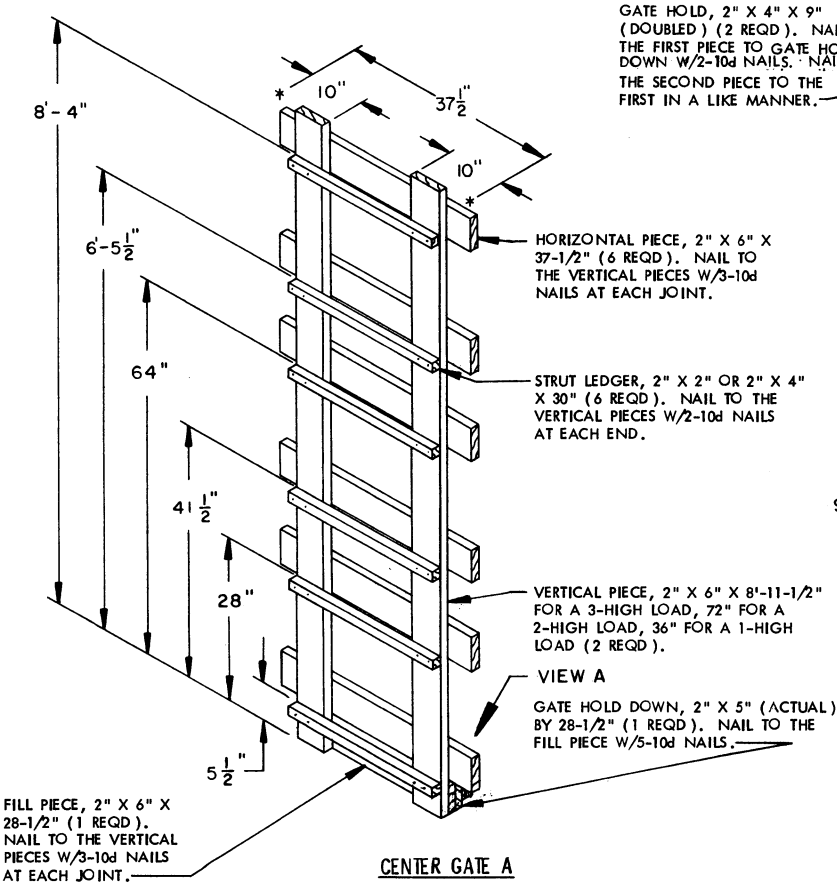


CRIB FILL B

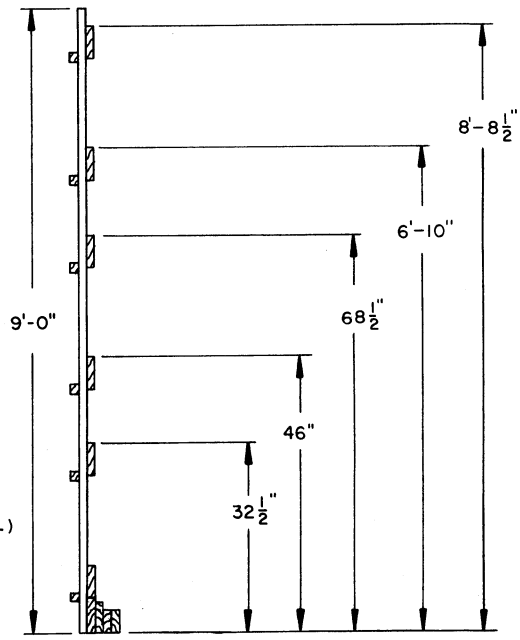
OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 2-HIGH LOAD. CRIB FILL "B" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "A" THROUGHOUT THE LENGTH OF THE LOAD.



VIEW A

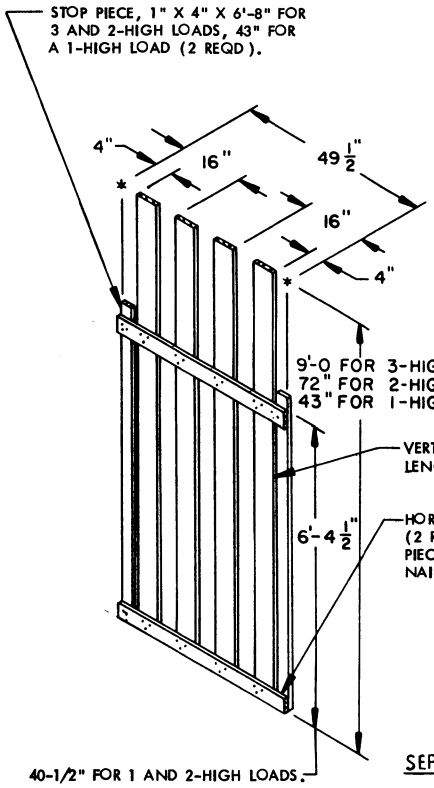


CENTER GATE A

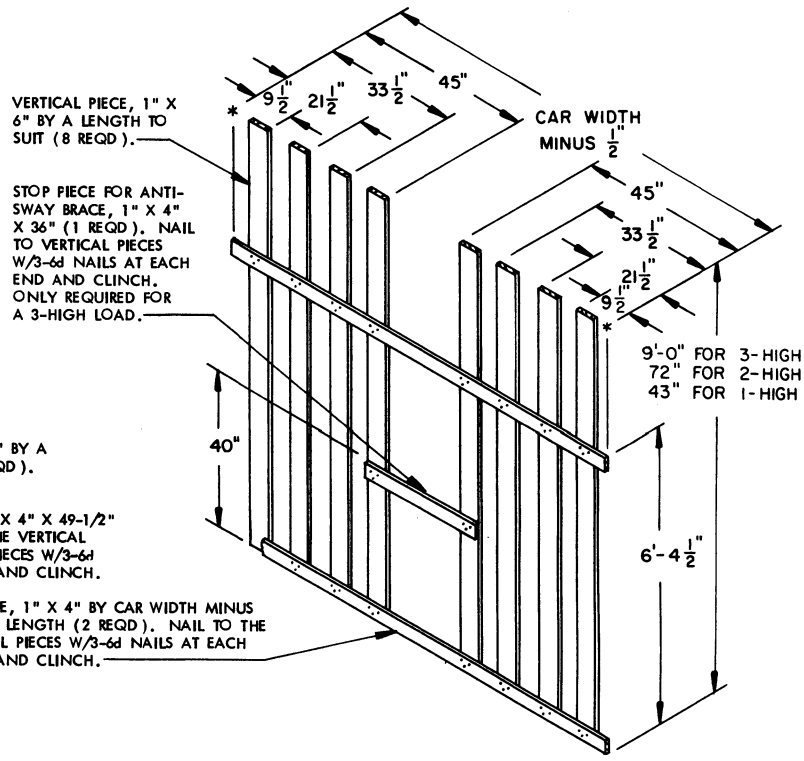


END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



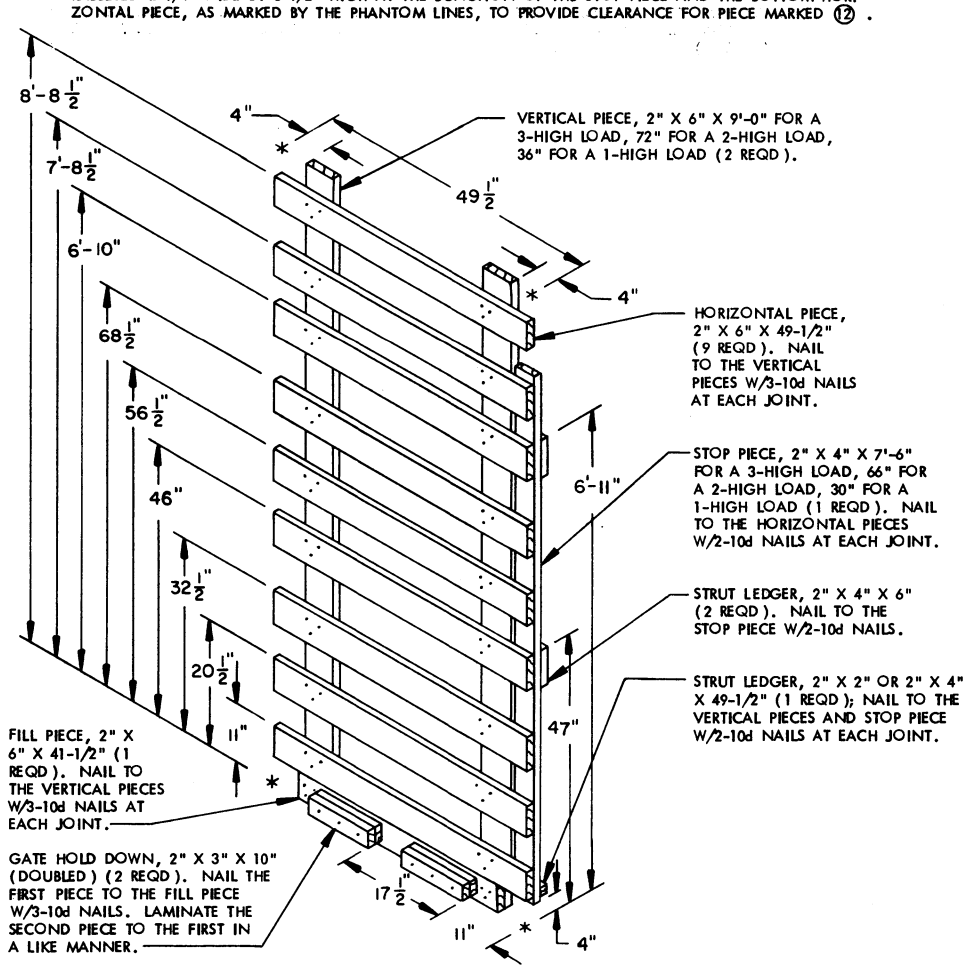
SEPARATOR GATE A



SEPARATOR GATE B

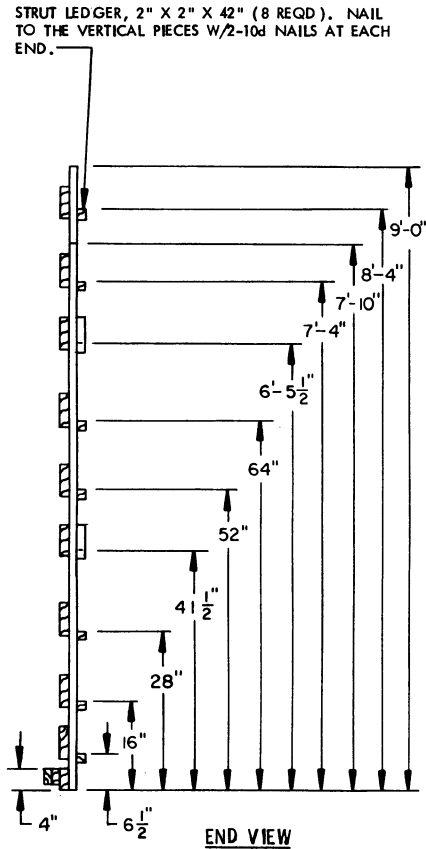
SEE SPECIAL NOTE 7 ON PAGE 13

WHEN NAILED FLOORLINE DOORWAY PROTECTION IS USED, THE ADJACENT SEPARATOR GATES MUST BE RABBETED 2-1/4" WIDE BY 3-1/2" HIGH AT THE JUNCTION OF THE STOP PIECE AND THE BOTTOM HORIZONTAL PIECE, AS MARKED BY THE PHANTOM LINES, TO PROVIDE CLEARANCE FOR PIECE MARKED (12).



CENTER GATE B

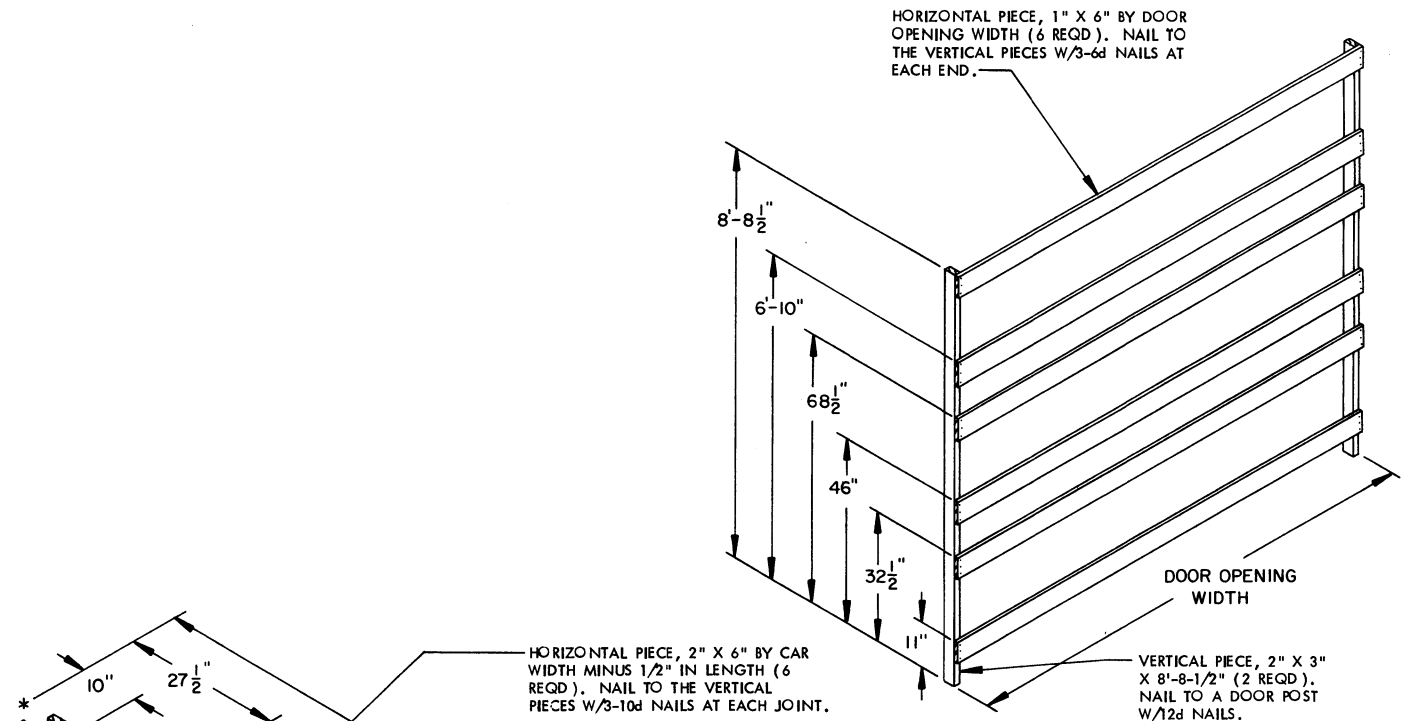
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED



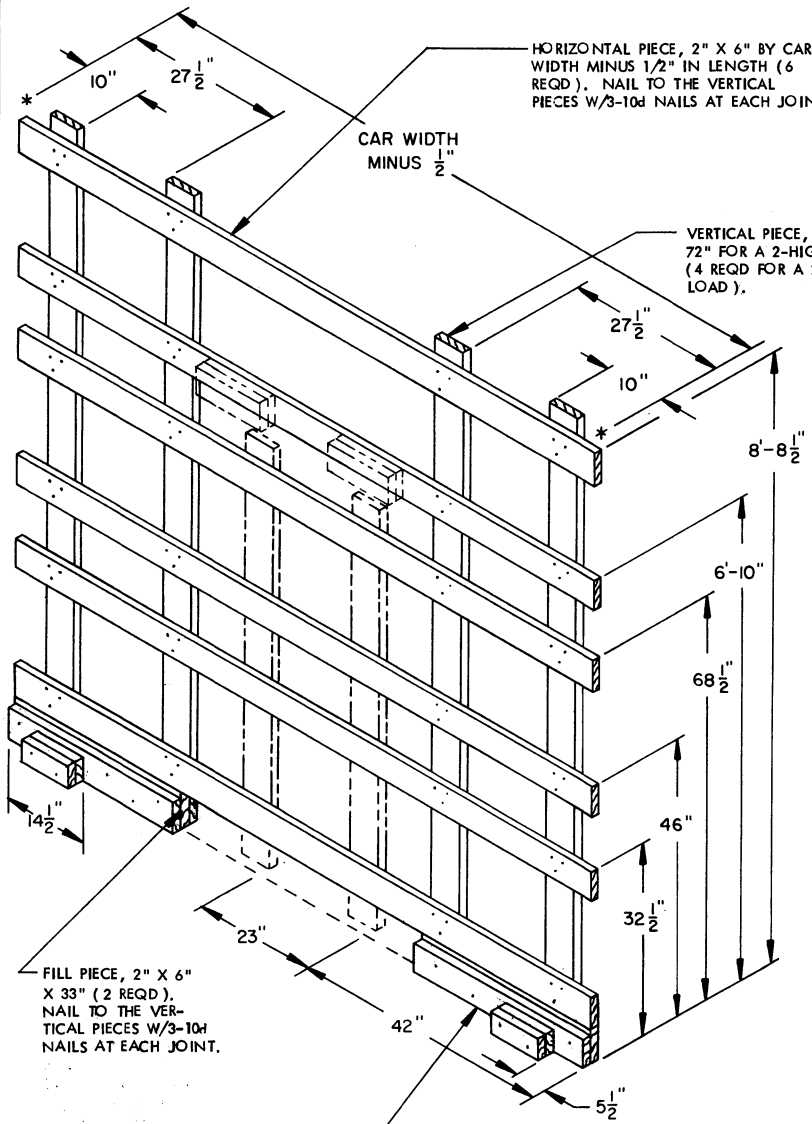
END VIEW

THE STRUT LEDGERS AT THE 16", 52" AND 7'-4" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60'-8" LONG CAR.

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

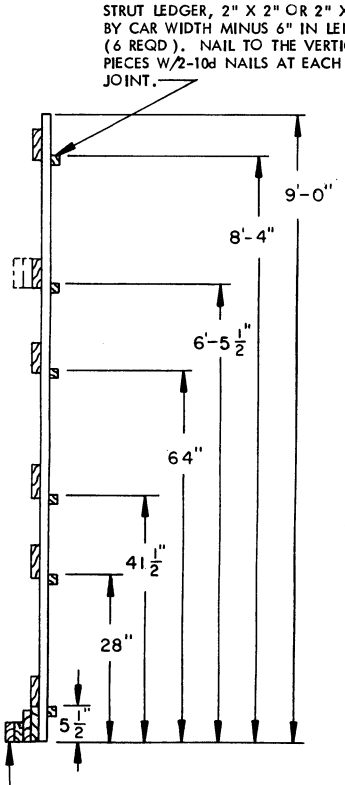


DOORWAY PROTECTION A



CENTER GATE C

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 8 AND 10.

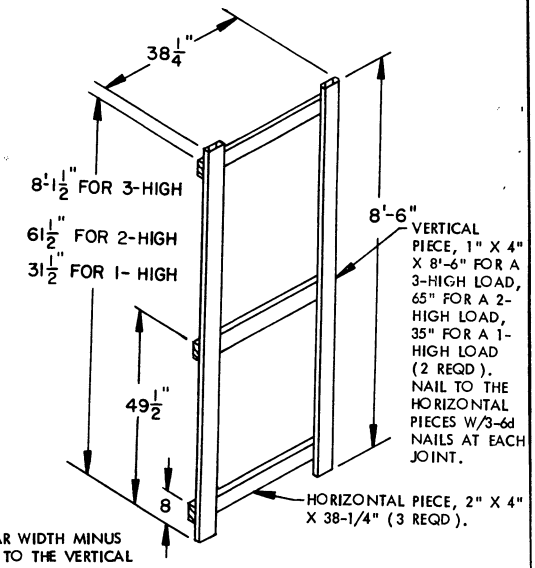


END VIEW

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

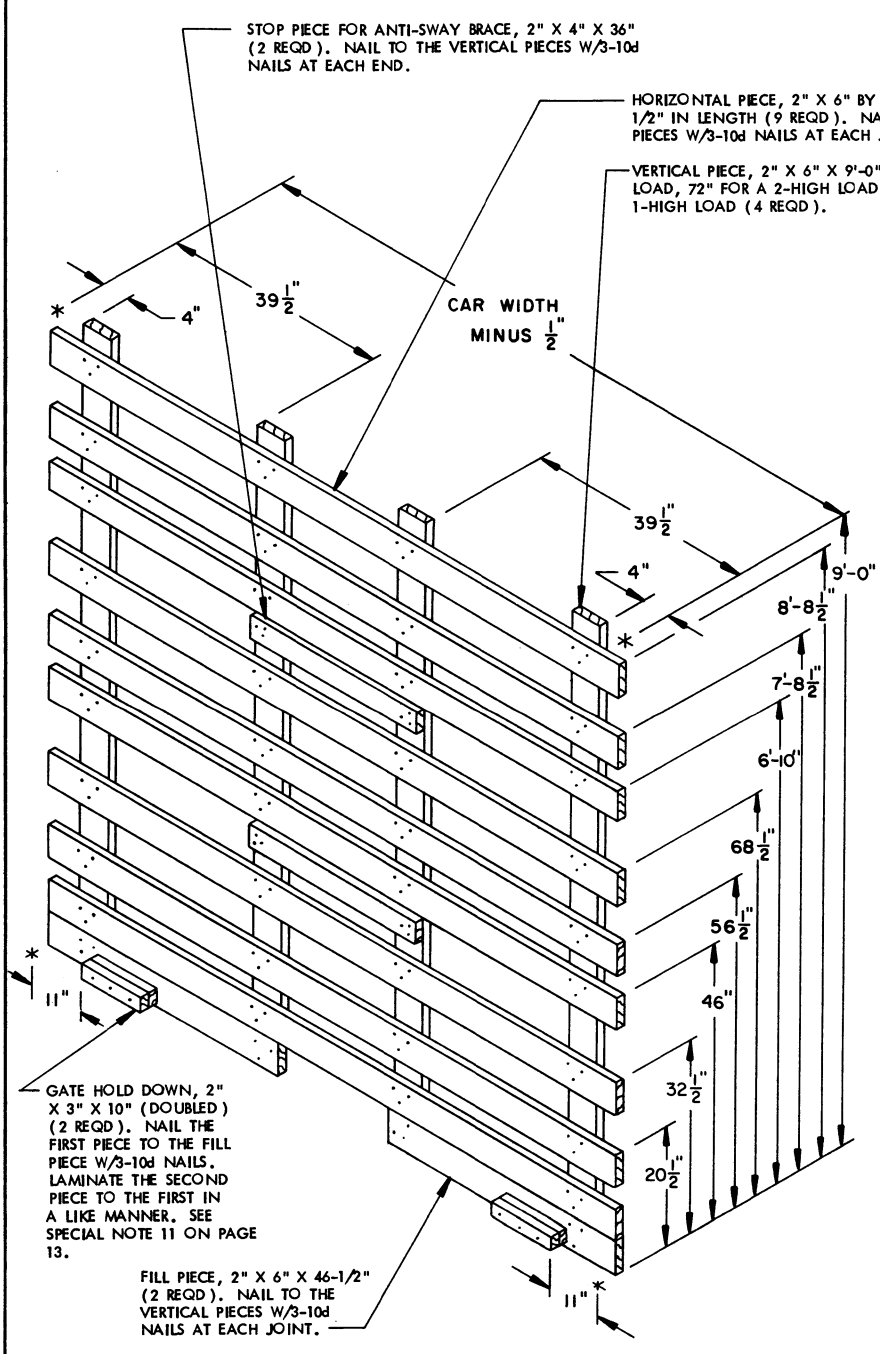
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

PROJECT FSA 43B/3-63



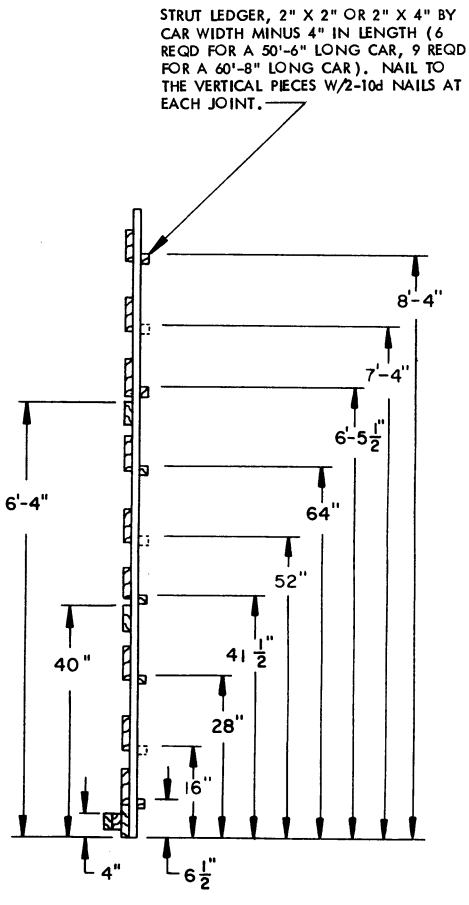
SIDE FILL ASSEMBLY D

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



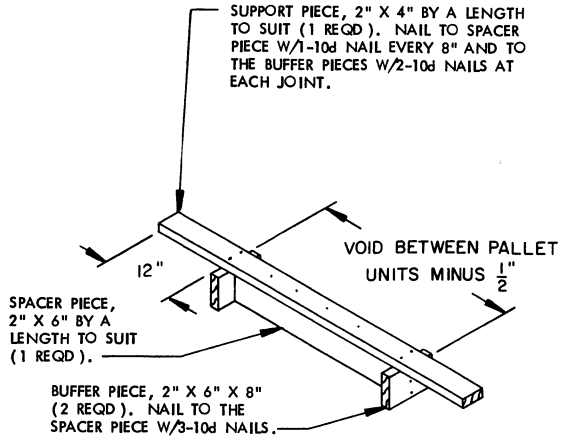
CENTER GATE D

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 12.

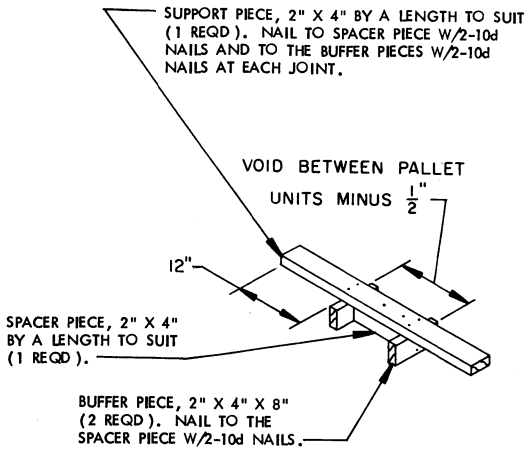


END VIEW

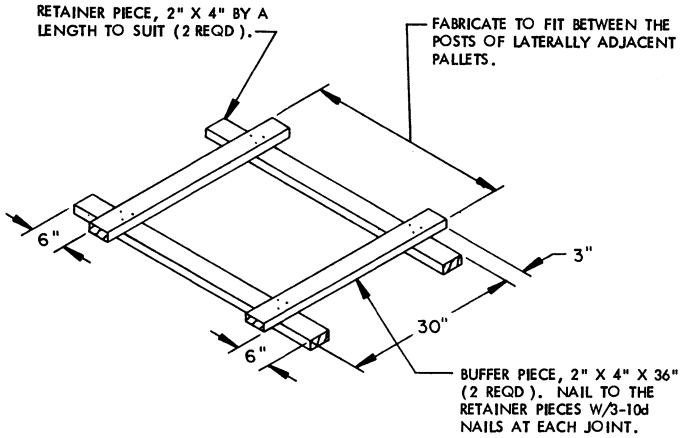
THE STRUT LEDGERS AT THE 16", 52" AND 7'-4" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60'-8" LONG CAR.



TOP-OF-LOAD ANTI-SWAY BRACE A



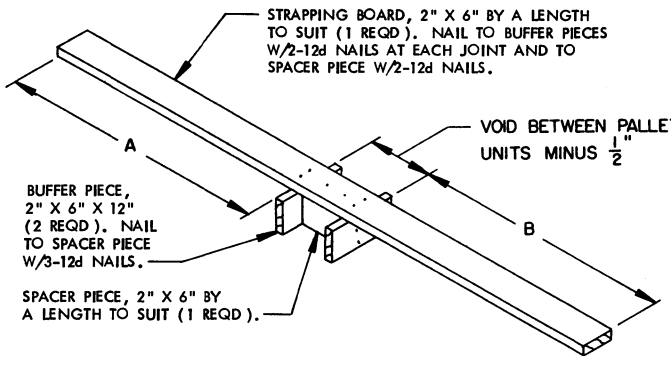
TOP-OF-LOAD ANTI-SWAY BRACE B



ANTI-SWAY BRACE A

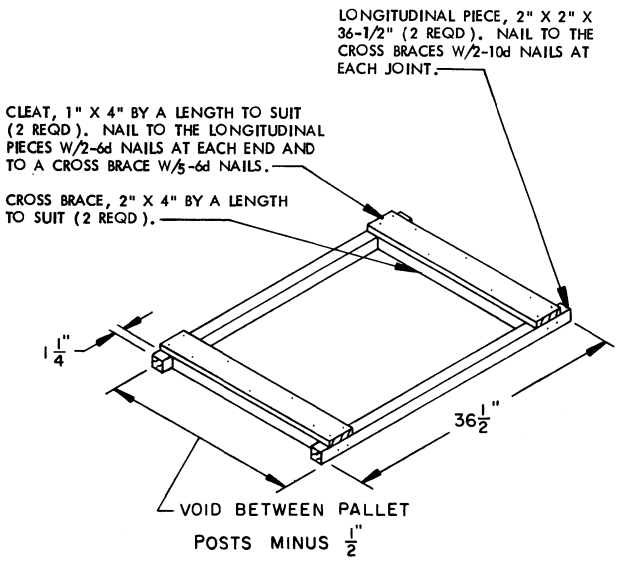
IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.

SPACER ASSEMBLY A		
LOAD PAGES	DIMENSION	
	A	B
6, 7, 24, 25	37-1/4"	46-1/2"
8, 10, 26	37-1/4"	37-1/4"
12, 16, 30, 34	46-1/2"	46-1/2"
42, 56, 70, 77, 84	40-1/4"	40-1/4"
68	40-1/4"	45"
72, 76	45"	45"
82	40-1/4"	12"



SPACER ASSEMBLY A

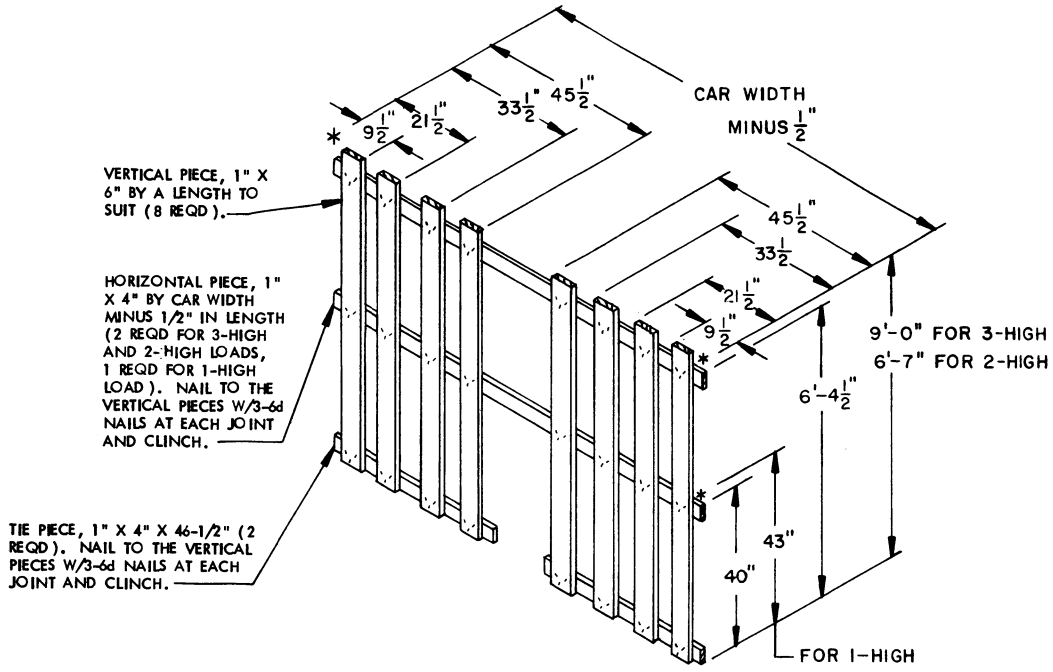
A SPACER ASSEMBLY SHOULD BE POSITIONED ON THE STRAPPING BOARDS OF UNITS. SEE THE "SPACER ASSEMBLY A" CHART ABOVE FOR FIGURES FOR THE LETTERED DIMENSIONS.



ANTI-SWAY BRACE B

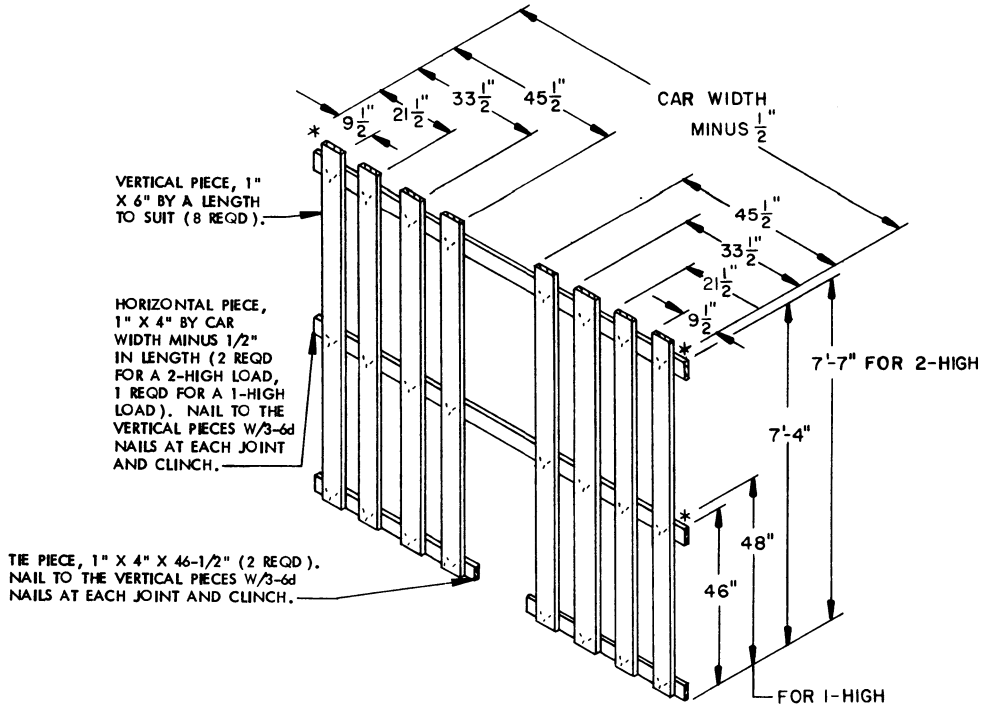
THIS ASSEMBLY IS FOR USE BETWEEN ROWS OF PALLET UNITS OF ALTERNATED CONTAINERS UNITS WHEN THE CONTAINERS ARE LENGTHWISE IN THE CAR.

DETAILS FOR ALTERNATIVE CONTAINERS UNIT (BASIC HEIGHT)



SEPARATOR GATE G

SEE SPECIAL NOTE 7 ON PAGE 13.



SEPARATOR GATE H

SEE SPECIAL NOTE 6 ON PAGE 31

(CONTINUED FROM BOTTOM RIGHT)

(14) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 39. NAIL TO THE DOOR POSTS W/12d NAILS.

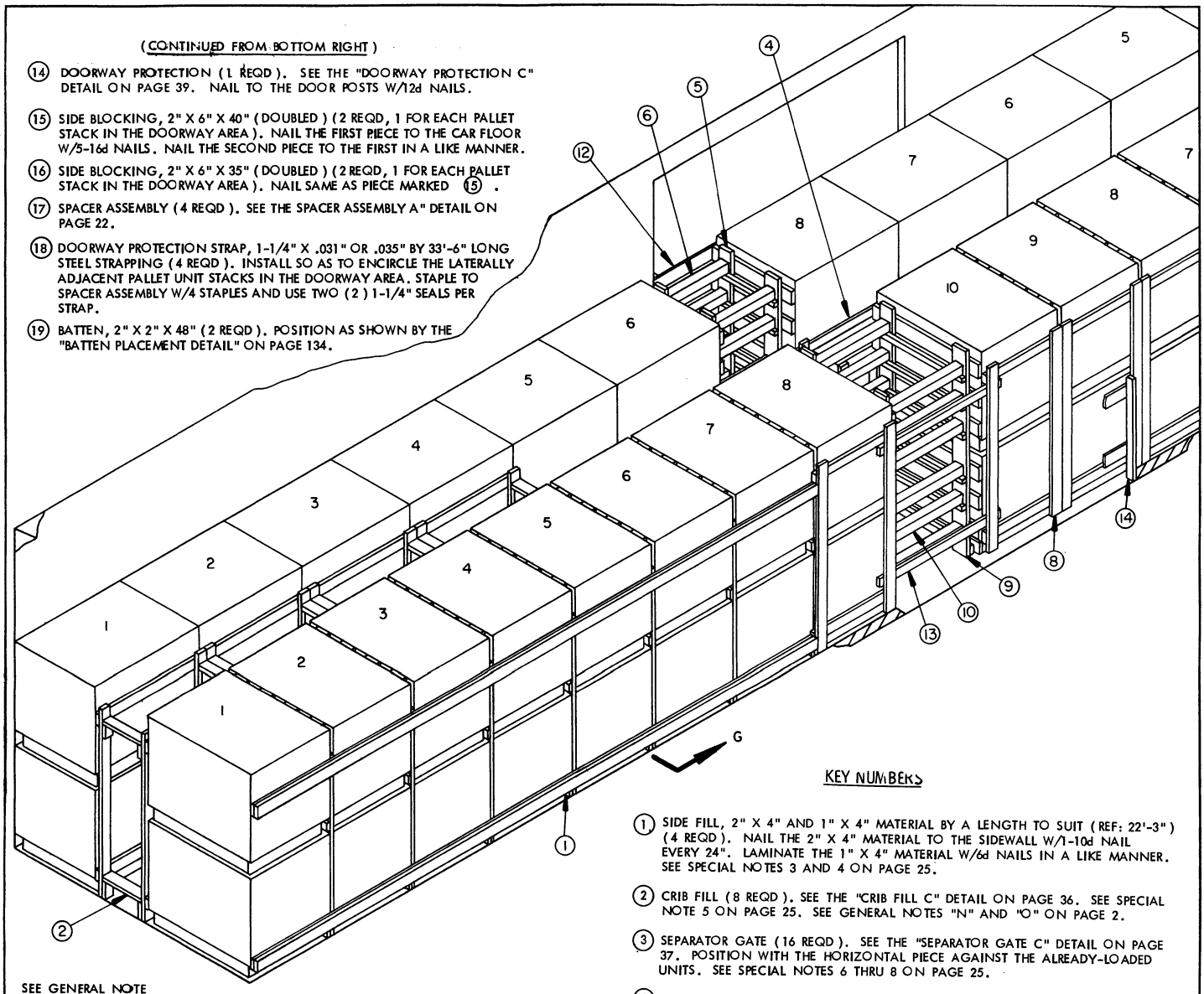
(15) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (2 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(16) SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (2 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA). NAIL SAME AS PIECE MARKED (15).

(17) SPACER ASSEMBLY (4 REQD). SEE THE SPACER ASSEMBLY A" DETAIL ON PAGE 22.

(18) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 33'-6" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

(19) BATTEN, 2" X 2" X 48" (2 REQD). POSITION AS SHOWN BY THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.



SEE GENERAL NOTE "H" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

(1) SIDE FILL, 2" X 4" AND 1" X 4" MATERIAL BY A LENGTH TO SUIT (REF: 22'-3") (4 REQD). NAIL THE 2" X 4" MATERIAL TO THE SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE 1" X 4" MATERIAL W/6d NAILS IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 25.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 36. SEE SPECIAL NOTE 5 ON PAGE 25. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 37. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 25.

(4) CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 36.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 36. SEE SPECIAL NOTE 10 ON PAGE 25.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (12 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 46") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 25.

(8) SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY E" DETAIL ON PAGE 38. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.

(9) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE F" DETAIL ON PAGE 37.

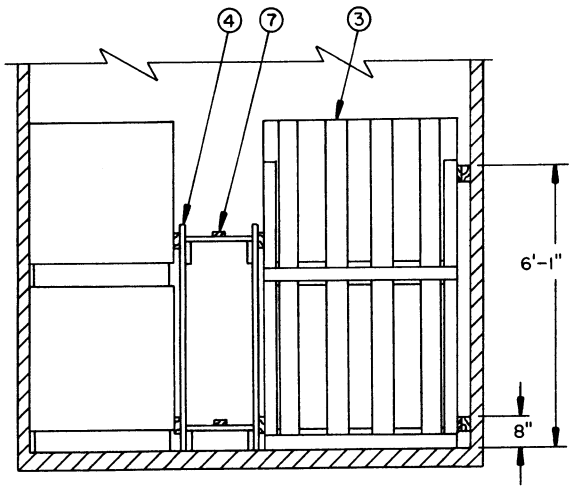
(10) STRUT, 4" X 4" BY CUT TO FIT (REF: 35") (12 REQD). TOENAIL TO PIECES MARKED (9) W/2-16d NAILS AT EACH END.

(11) STRUT, 2" X 4" BY CUT TO FIT (REF: 35") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (9) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 25.

(12) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 38. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 25.

(13) SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 54") (2 REQD). POSITION AT 14" AND 68" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (8) W/3-6d NAILS AT EACH END.

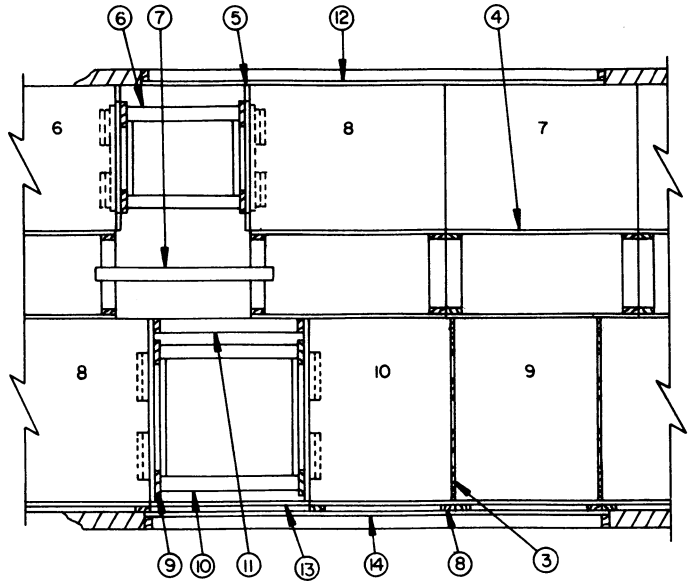
(CONTINUED AT LEFT)



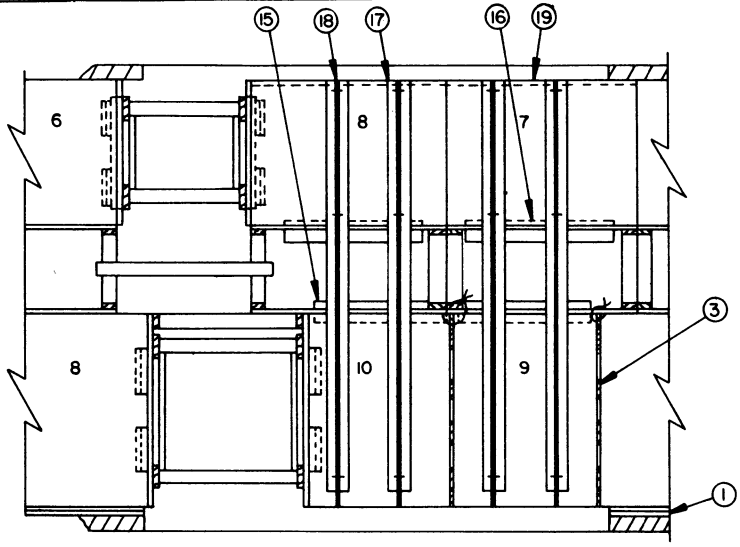
SECTION G-G

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

PROJECT FSA 43B/3-63



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,756 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-TWO (42) UNITS, FOR A LADING WEIGHT OF 65,226 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED ①, IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑧ ON PAGE 24, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ①.

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDEFILL, PIECE MARKED ①, TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑧, AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED ⑬.

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ②, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. THE SEPARATOR GATES ARE SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 24. WHEN LOADING THE CAR, POSITION A SEPARATOR GATE SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE PALLET UNITS IN THE FIRST STACK. REPEAT THIS PROCEDURE FOR THE REMAINING STACKS.

7. WHEN PROCEDURES FOR PLUG DOORS ARE USED IN A CAR WITH CONVENTIONAL SLIDING DOORS AND HAVING NAILABLE SIDEWALLS, SEPARATOR GATES IN DOORWAY MUST BE WIRE TIED TO THE ADJACENT CRIB FILL TO PREVENT DISPLACEMENT. ENCIRCLE THE STOP PIECE OF THE SEPARATOR GATE AND THE UPPER HORIZONTAL PIECE OF THE CRIB FILL WITH NO. 14 GAGE WIRE AND TWIST TAUT.

8. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE 48" WIDE BY 7'-0" LONG.

9. WHEN PLACING PALLET UNITS OF LENGTHWISE-POSITIONED CONTAINERS IN THE NEAR-END STACK NO. 8, CARE MUST BE TAKEN TO ENSURE THAT THE STACK IS AT LEAST 2-1/2" FROM THE CAR SIDEWALL. THIS WILL ALLOW THE SIDE FILL ASSEMBLY, PIECE MARKED ⑧, AT THAT LOCATION, TO BE SLID OUT FAR ENOUGH TO PERMIT NAILING OF THE END OF THE SIDE FILL ASSEMBLY RETAINER, PIECE MARKED ⑬, AND TO ALLOW THE ASSEMBLY TO BE RETURNED TO THE PROPER POSITION.

10. 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 129 FOR GUIDANCE.

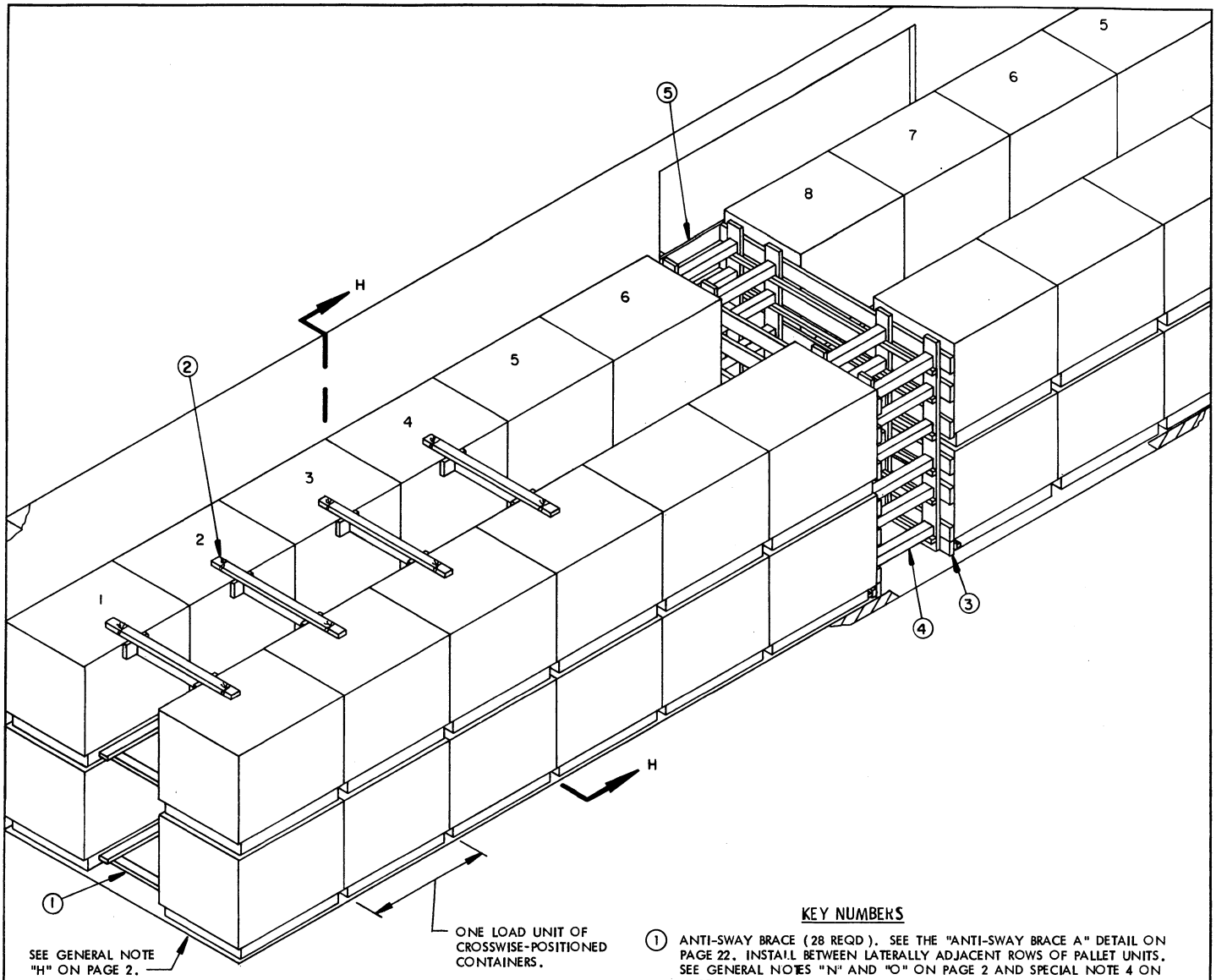
11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑫ AND ⑭ IN THE LOAD ON PAGE 24, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. BATTENS WILL BE REQUIRED TO PROTECT THE CONTAINER ENDS OF THE CROSSWISE POSITIONED CONTAINERS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 134. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL; PIECES MARKED ④, MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF EACH PIECE WHERE THE CRIB FILL RESTS ON THE SIDE BLOCKING PIECES MARKED ⑮, SO THE CRIB WILL REST EVENLY. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED ON PAGE 27)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	470	157
1" X 6"	528	264
2" X 2"	74	25
2" X 3"	34	17
2" X 4"	824	550
2" X 6"	160	160
4" X 4"	64	86
NAILS	NO. REQD	POUNDS
6d (2")	732	4-1/2
10d (3")	1,186	18-1/4
12d (3-1/4")	32	3/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 6' REQD ---------- NIL		

ITEM	QUANTITY	WEIGHT (APPRXO)
PALLET UNIT	64	99,392 LBS
DUNNAGE		2,544 LBS
TOTAL WEIGHT		101,936 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

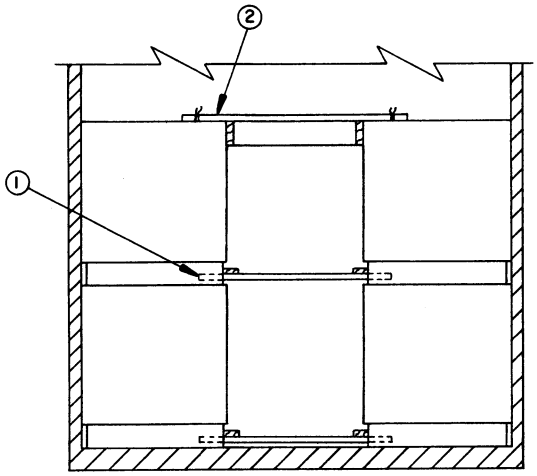
(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 27.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 27.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 38. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 27.

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

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 38. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 27.



SECTION H-H

CENTER GATE, PIECE MARKED (3), OMITTED FOR CLARITY

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

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

PROJECT FSA 43B/3-63

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

(SPECIAL NOTES CONTINUED FROM PAGE 25)

NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY BUNDLING STRAPS, AS SHOWN ON PAGE 41. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

12. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHOD SHOWN ON PAGES 102 OR 103. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.

13. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 118 AND 119.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE CONTAINERS UNITS, AND PAGES 123 AND 126 FOR CROSSWISE CONTAINERS UNITS.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

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 26 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,332 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 55,908 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" LONG CAR. SEE GENERAL NOTE "V" ON PAGE 2. IF IT IS DESIRED TO SHIP A LARGER LOAD, SEE THE LOAD ON PAGE 28 AND SPECIAL NOTE 2 ON PAGE 29.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 34 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR.

6. CENTER GATE "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE G", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 26, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 36. 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 129.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO CENTER GATE G, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 26, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN ON PAGE 34, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. ALSO, NOTE THAT BATTENS ARE REQUIRED UNDER THE DOORWAY PROTECTION STRAPS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.

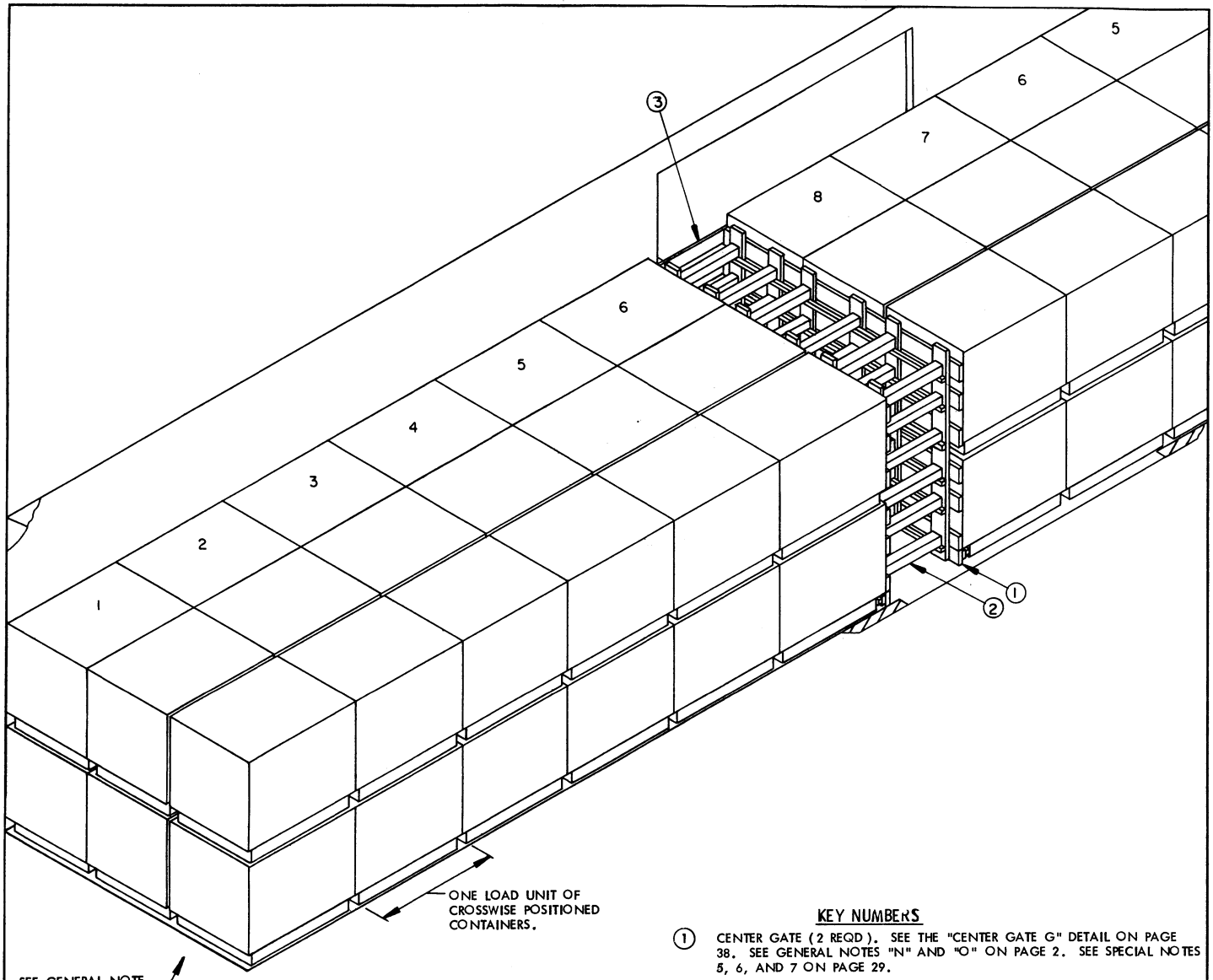
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	105	35
2" X 3"	27	14
2" X 4"	447	298
2" X 6"	223	223
4" X 4"	59	79
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	732	11-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 48' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	86,968 LBS
DUNNAGE		1,414 LBS
TOTAL WEIGHT		88,382 LBS

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
56-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 G" DETAIL ON PAGE 38. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 29.

(2) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (36 REQD). TOENAIL TO PIECES MARKED (1) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(3) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 38. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 29.

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

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. A CAR LESS THAN 9'-6" WIDE CANNOT BE USED. 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 28 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 102,498 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-FOUR (54) UNITS, FOR A LADING WEIGHT OF 83,862 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" LONG CAR. SEE GENERAL NOTE "V" ON PAGE 2.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

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

5. CENTER GATE "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE G", SHOWN AS PIECE MARKED ① IN THE LOAD ON PAGE 28, INSTALL THREE (3) "CENTER GATES E" AS SHOWN ON PAGE 36. 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 129.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" HOLD DOWNS ON CENTER GATES "G" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 28, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, THE STACKS IN THE DOORWAY AREA MUST BE ENCIRCLED WITH TWO (2) DOORWAY PROTECTION STRAPS SIMILAR TO PIECE MARKED ⑥ ON PAGE 34. NOTE THAT LOAD WIDTH STRAPPING BOARDS MUST BE INSTALLED UNDER EACH STRAP, AND THE STRAPS WILL BE STAPLED TO A STRAPPING BOARD W/3 STAPLES EACH. NOTE THAT BATTENS ARE REQUIRED UNDER THE DOORWAY PROTECTION STRAPS. SEE THE "BATTEN PLACEMENT DETAIL" ON PAGE 134.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123 AND 126 FOR SHIPPING GUIDANCE.

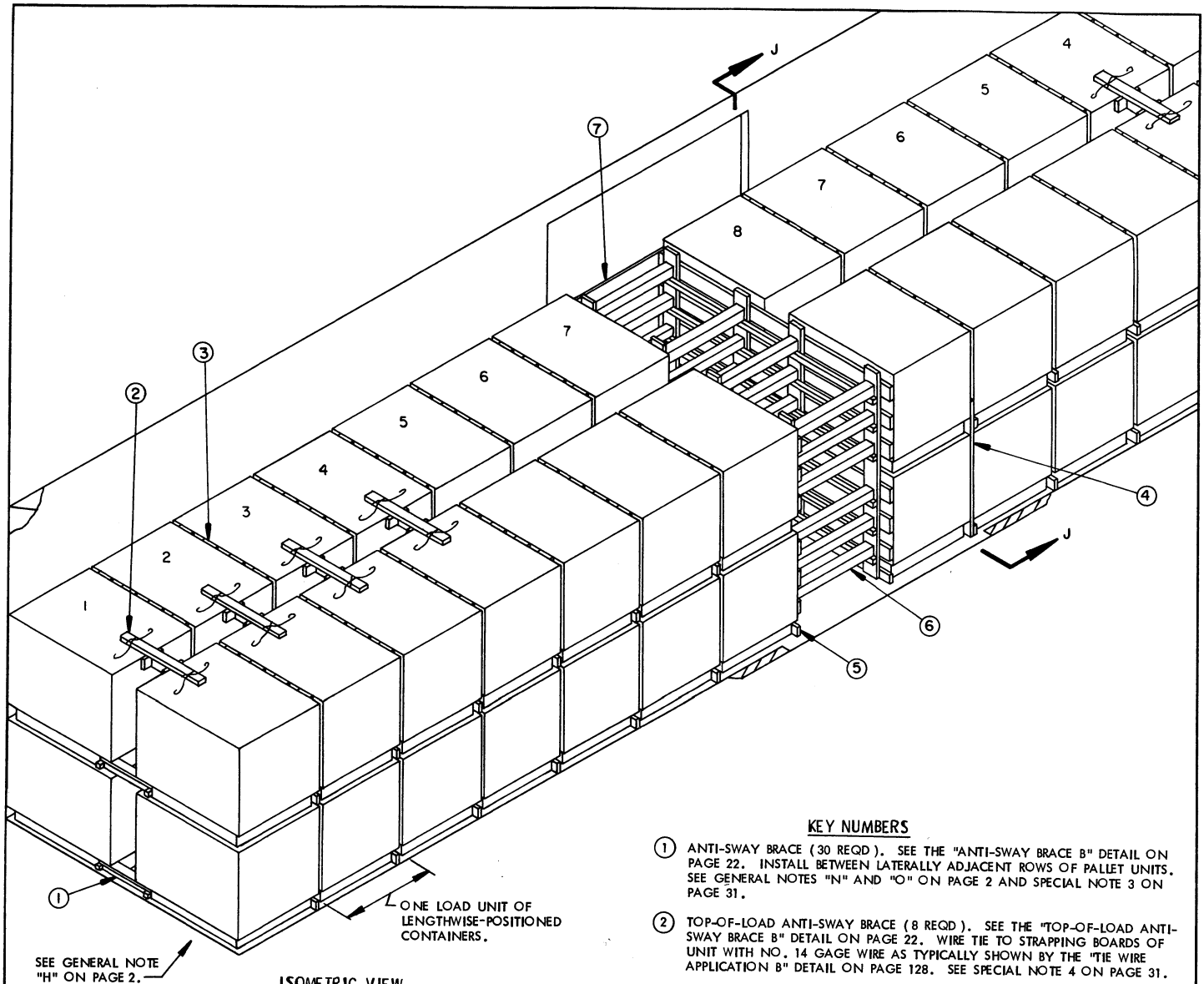
11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	108	36
2" X 3"	27	14
2" X 4"	6	4
2" X 6"	221	221
4" X 4"	87	116
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	372	5-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	144	3-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	130,452 LBS
DUNNAGE		872 LBS
TOTAL WEIGHT		131,324 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
84-UNIT LOAD IN A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR



ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 31.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 31.

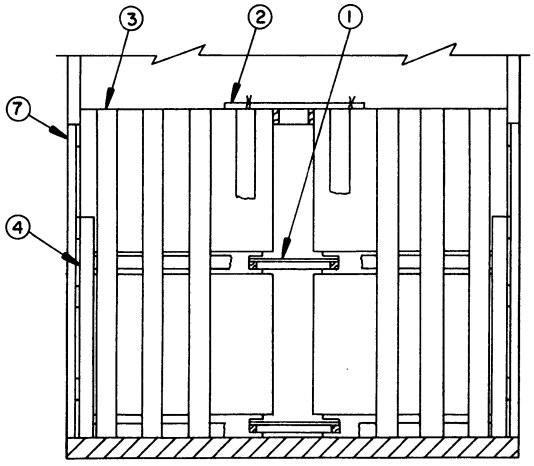
(3) SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 37. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5, 6, AND 8 ON PAGE 31.

(4) STOP PIECE, 1" X 4" X 57" (2 REQD). POSITION AT END OF HORIZONTAL PIECE OF SEPARATOR GATE, PIECE MARKED (3), IN THE DOORWAY AREA, ON THE SAME SIDE AS THE VERTICAL PIECES AND NAIL W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 7 ON PAGE 31.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 39. SEE SPECIAL NOTES 9, 10, AND 11 ON PAGE 31.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 27") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 39. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 12 ON PAGE 31.



SECTION J-J

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

(SPECIAL NOTES CONTINUED)

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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 30, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED AS SHOWN ON PAGE 34, IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

13. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. 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 30 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,544 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG BY 9'-2" OR WIDER CAR IS AVAILABLE, SEVENTY-TWO (2) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 111,816 POUNDS CAN BE LOADED.

3. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 34 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 12.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 30, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" CAR OR A 50'-6" CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.

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. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 23. 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 52" LONG FOR A 2-HIGH LOAD AND 12" FOR A 1-HIGH LOAD WHEN SEPARATOR GATE "H" IS BEING USED IN A CAR EQUIPPED WITH SLIDING DOORS. STOP PIECES ARE NOT REQUIRED IN CARS EQUIPPED WITH PLUG DOORS.

7. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO THREE SEPARATOR GATES. IF THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 16 ARE USED IN CARS EQUIPPED WITH SLIDING DOORS, THE STOP PIECES MARKED ④ MUST BE APPLIED TO THE HORIZONTAL PIECE OF A SEPARATOR GATE ON THE SIDE OPPOSITE THE SIDE THE VERTICAL PIECES ARE APPLIED AND SO AS TO BE IN CONTACT WITH THE PALLET UNITS ADJACENT TO THE VOID BETWEEN THE ROWS.

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 128 FOR CONSTRUCTION GUIDANCE.

9. 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 129 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 H", SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 30, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 37. 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 129. OMIT THE STOP PIECE FROM "CENTER GATE F".

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "H", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	355	119
1" X 6"	792	396
2" X 2"	289	97
2" X 3"	34	17
2" X 4"	139	93
2" X 6"	181	181
4" X 4"	54	72
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1134	6-3/4
10d (3")	620	9-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE----------60' REQD----------1 LB		

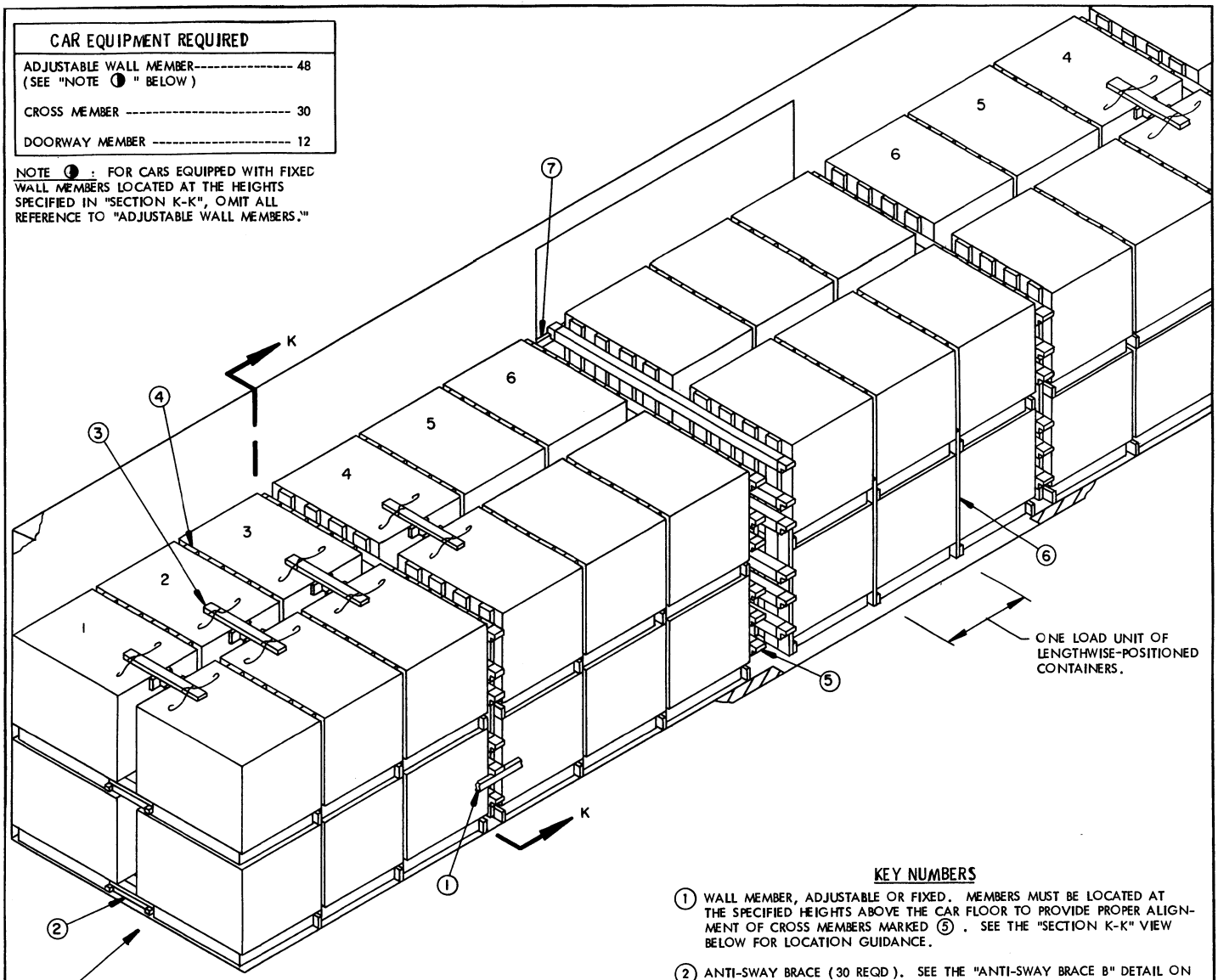
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	93,180 LBS
DUNNAGE		1,947 LBS
TOTAL WEIGHT		95,127 LBS (APPROX)

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	48
CROSS MEMBER	30
DOORWAY MEMBER	12

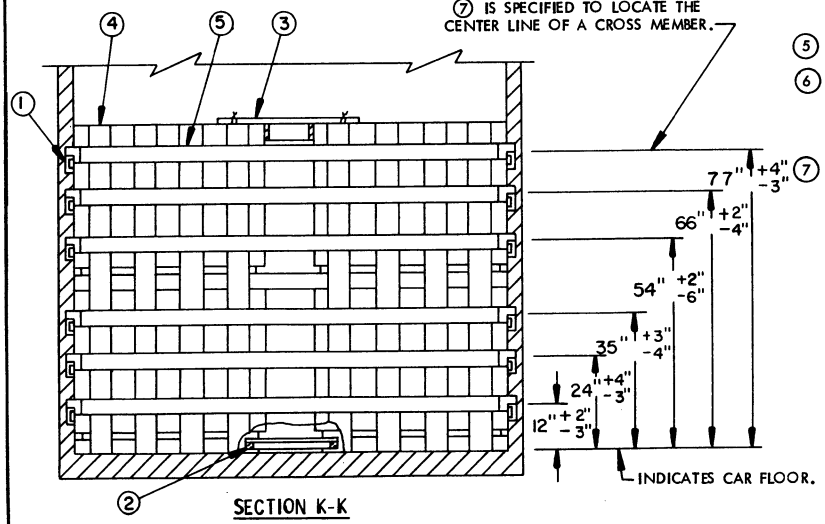
NOTE ◑ : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION K-K", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS."



ISOMETRIC VIEW

SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 33.

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



SECTION K-K

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 K-K" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 33.

④ SEPARATOR GATE (18 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 37. AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 33.

⑤ CROSS MEMBER (30 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑥ STOP PIECE, 1" X 4" X 48" (6 REQD). POSITION AT END OF THE HORIZONTAL PIECES OF SEPARATOR GATE, PIECE MARKED ④ , IN THE DOORWAY AREA, ON THE SAME SIDE AS THE VERTICAL PIECES AND NAIL W/3-6d NAILS AT EACH JOINT. SEE SPECIAL NOTE 6 ON PAGE 33.

⑦ DOORWAY MEMBER (12 REQD). SEE THE "SECTION K-K" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 33.

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

PROJECT FSA 43B/3-63

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 32 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,544 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 8 BELOW.

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 32, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR A 50'-6" LONG CAR.

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

6. SEPARATOR GATES IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ⑥ . IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO EIGHT 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 128 FOR CONSTRUCTION GUIDANCE.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH ONLY EIGHT (8) DOORWAY MEMBERS, THE LOAD IN THE DOORWAY AREA WILL BE LIMITED TO FOUR (4) PALLET UNITS PER LAYER/BAY, WITH TWO CROSS MEMBERS PLACED AGAINST EACH LAYER.

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 96 AND 97 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

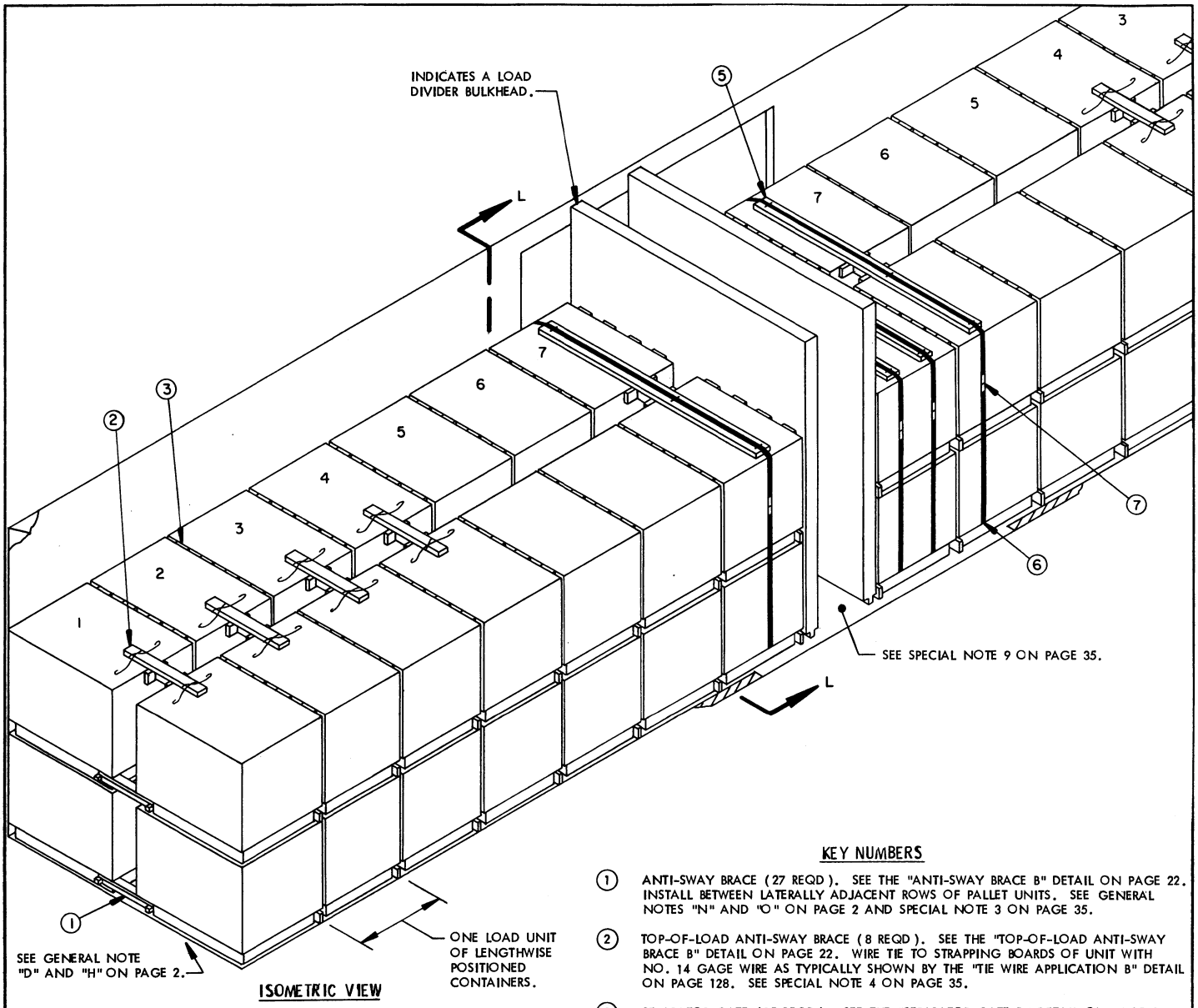
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	447	149
1" X 6"	1008	504
2" X 2"	183	61
2" X 4"	120	80
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1320	8
10d (3")	320	5
WIRE, NO. 14 GAGE----------80' REQD----------1-1/4 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT---------	60 ----------	93,180 LBS
DUNNAGE ----------		1,603 LBS
TOTAL WEIGHT ----------		94,783 LBS (APPROX)

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
60-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 (27 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 35.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 35.

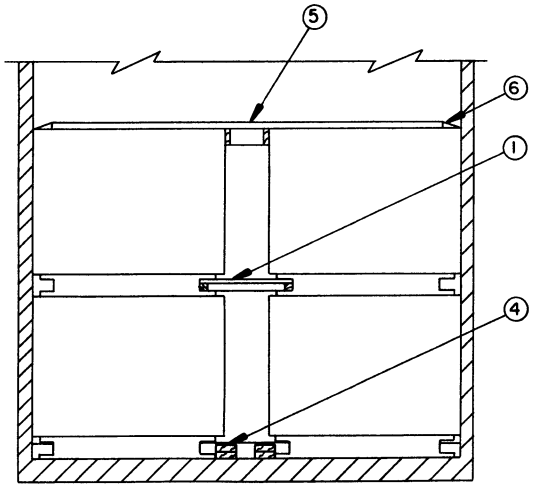
(3) SEPARATOR GATE (15 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 37. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 THRU 7 ON PAGE 35.

(4) SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (6 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (S) AT FLOOR LEVEL. SEE SPECIAL NOTE 3 ON PAGE 35.

(5) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 22.

(6) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 34'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/3 STAPLES. SEE SPECIAL NOTE 8 ON PAGE 35.

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



SECTION L-L

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
60-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 ⑧ IN THE LOAD ON PAGE 16, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

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 100 THRU 111 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 123, 124 , AND/OR 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 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 34 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 111,816 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 74,544 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE CROSS-WISE LOADING PATTERN SHOWN ON PAGE 26 IS EMPLOYED, FIFTY-SIX (56) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 86,968 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,332 POUNDS, AND THIRTY-SIX (36) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 55,908 POUNDS.

3. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING DOORS, THE WOODEN GATE TYPE DOORWAY PROTECTION MAY BE USED IN LIEU OF PIECES MARKED ④ THRU ⑦ . ANTI-SWAY BRACES, PIECES MARKED ① , WILL THEN BE REQUIRED IN THE DOORWAY AREA.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 50'-6" OR 40'-6" LONG CAR.

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

6. SEPARATOR GATES IN THE DOORWAY OF A CAR EQUIPPED WITH SLIDING DOORS MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY NAILING THE HORIZONTAL PIECES TO THE LONGITUDINAL PIECES OF THE ANTI-SWAY BRACE, PIECE MARKED ① , AND/OR TO THE SIDE BLOCKING, PIECE MARKED ④ , W/1-10d NAIL AT EACH JOINT.

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 128 FOR CONSTRUCTION GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 30, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL

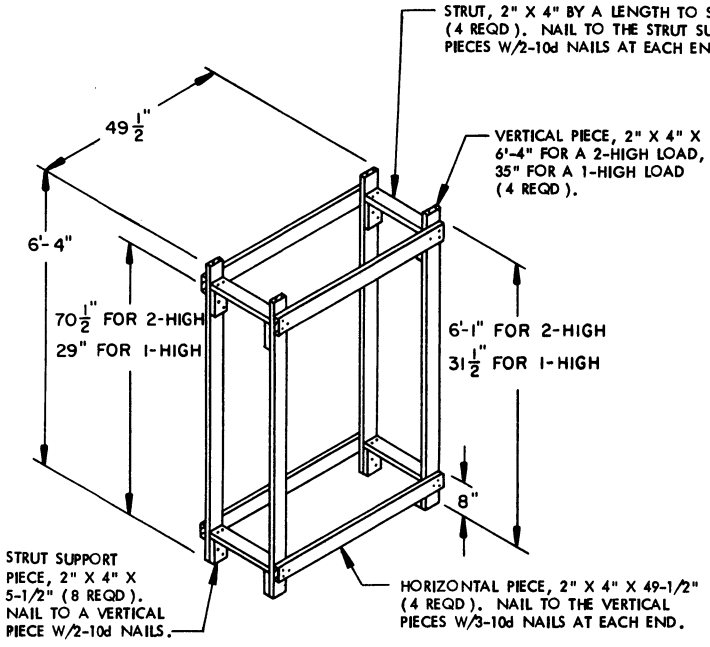
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	371	124
1" X 6"	840	420
2" X 2"	165	55
2" X 4"	123	82
2" X 6"	81	81
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1098	6-1/2
10d (3")	296	4-3/4
12d (3-1/4")	48	1
16d (3-1/2")	60	1-1/2

STEEL STRAPPING, 1-1/4" X .031" OR .035"----136' REQD------20 LBS
SEAL FOR 1-1/4" STRAPPING---------- 8 REQD------- NIL
WIRE, NO. 14 GAGE ---------- 60' REQD------ 1 LB

LOAD AS SHOWN

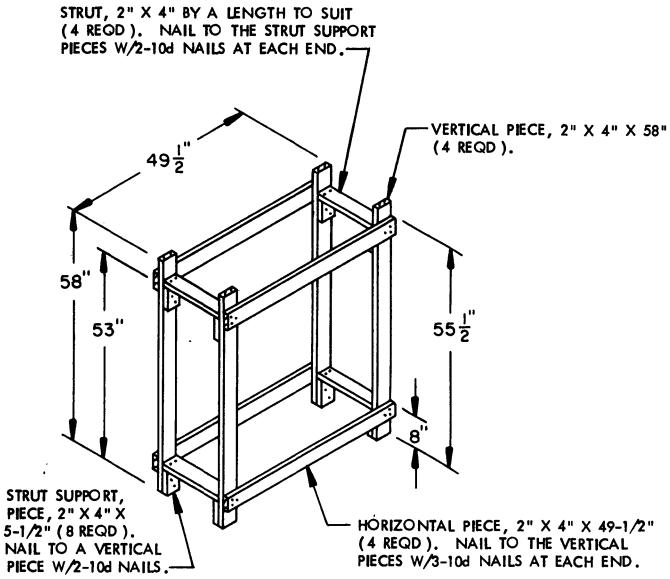
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	93,180 LBS
DUNNAGE		1,559 LBS
TOTAL WEIGHT		94,739 LBS (APPROX)

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



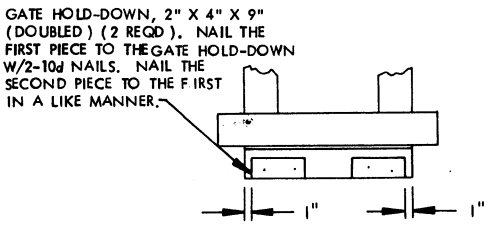
CRIB FILL C

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

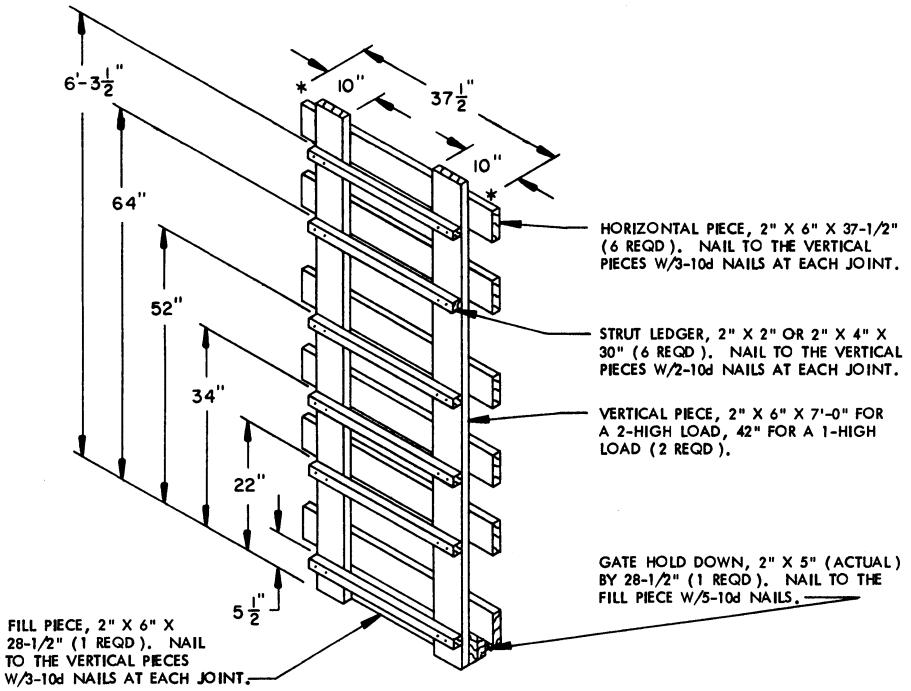


CRIB FILL D

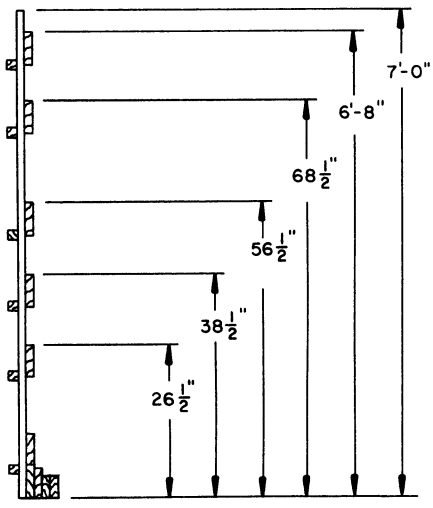
CRIB FILL "D" IS NOT REQUIRED FOR A 1-HIGH LOAD; CRIB FILL "C" WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.



VIEW A

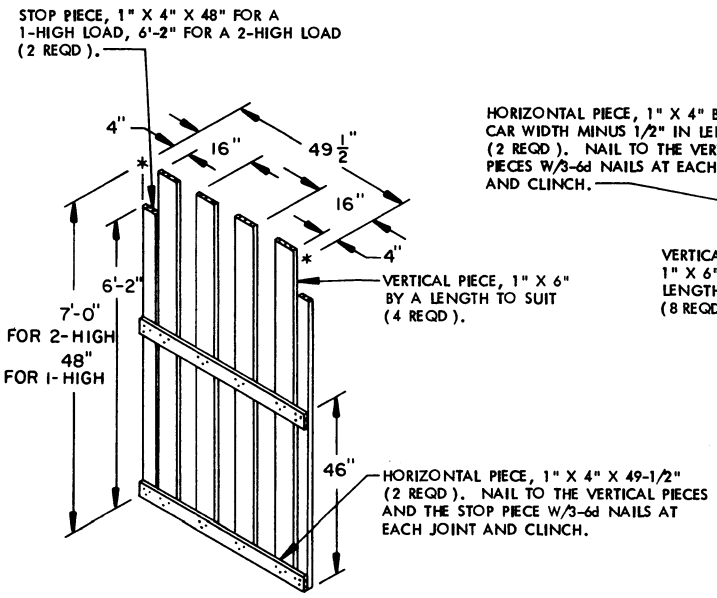


CENTER GATE E



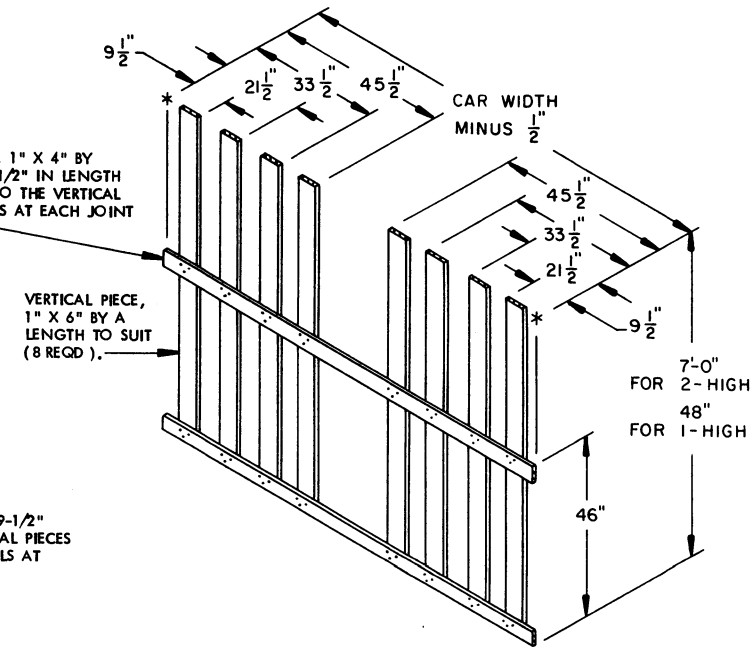
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



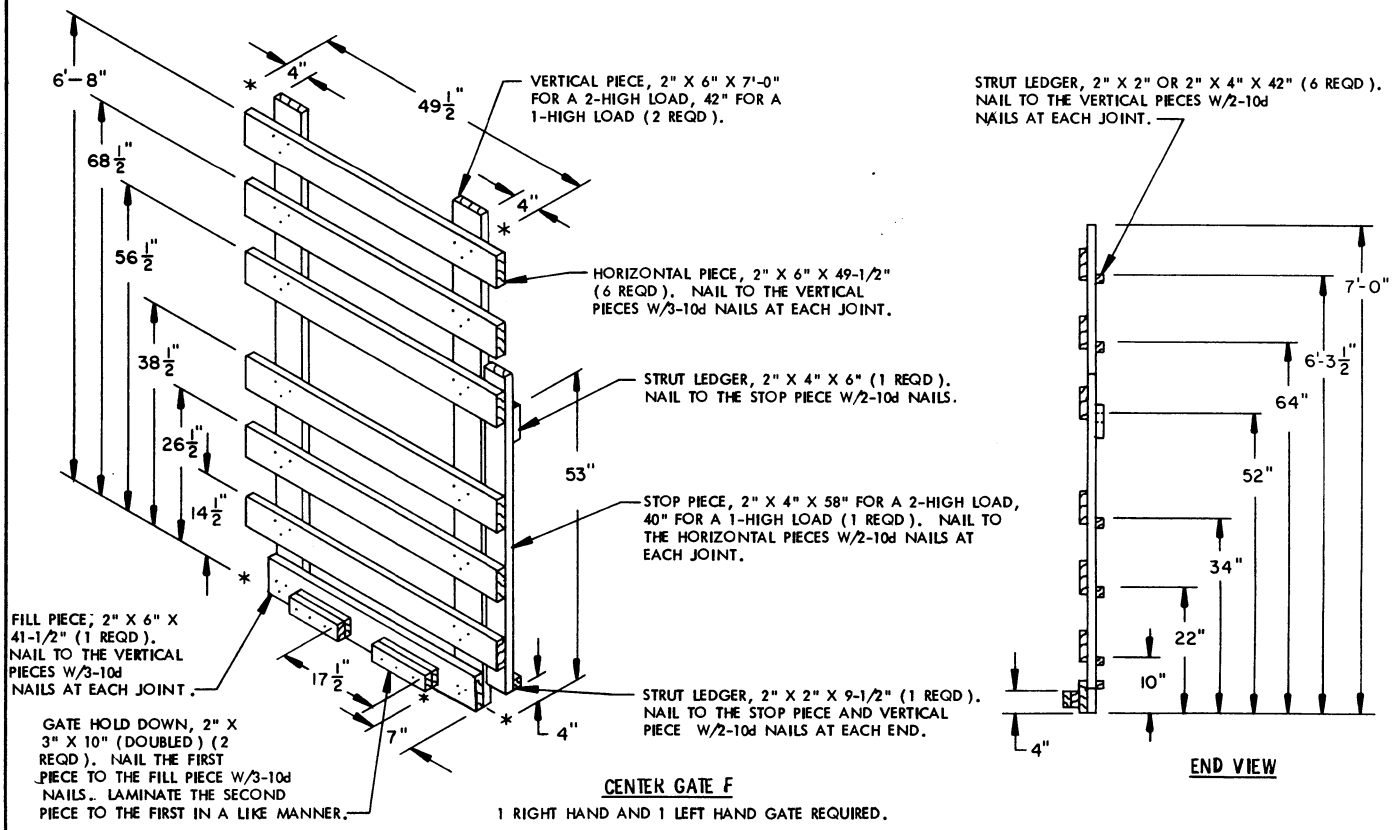
SEPARATOR GATE C

WHEN NAILED FLOORLINE BLOCKING IS USED, THE ADJACENT SEPARATOR GATES MUST BE RABBETED 2-1/4" WIDE BY 3-1/2" HIGH AT THE JUNCTION OF THE STOP PIECE AND THE BOTTOM HORIZONTAL PIECE, AS MARKED BY THE PHANTOM LINES, TO PROVIDE CLEARANCE FOR PIECE MARKED (13).



SEPARATOR GATE D

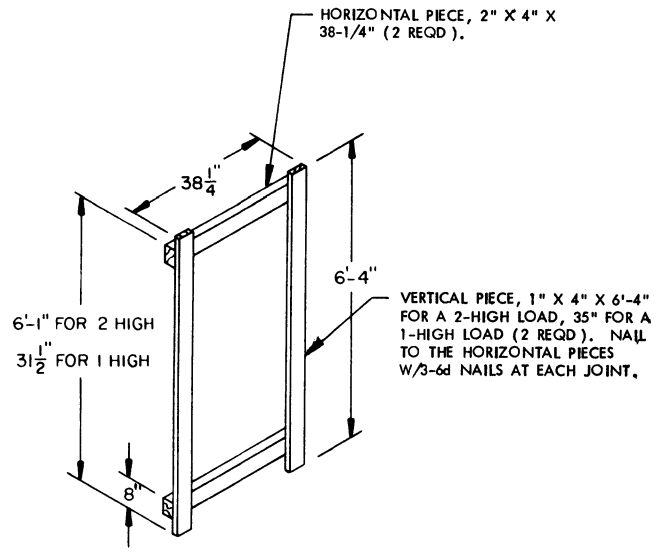
SEE SPECIAL NOTE 6 ON PAGE 31.



CENTER GATE F

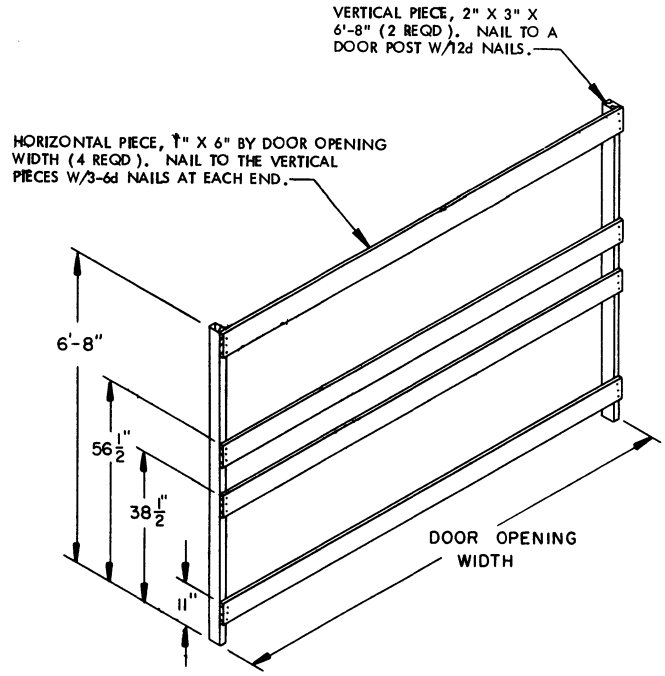
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



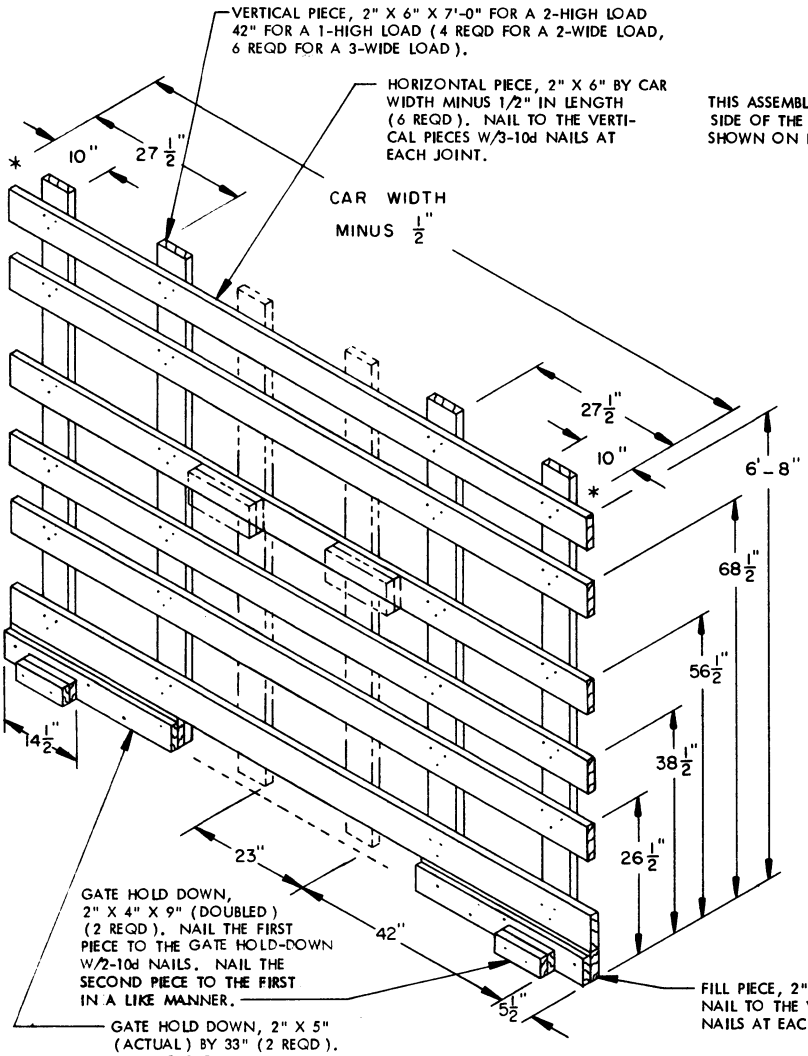
SIDE FILL ASSEMBLY E

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



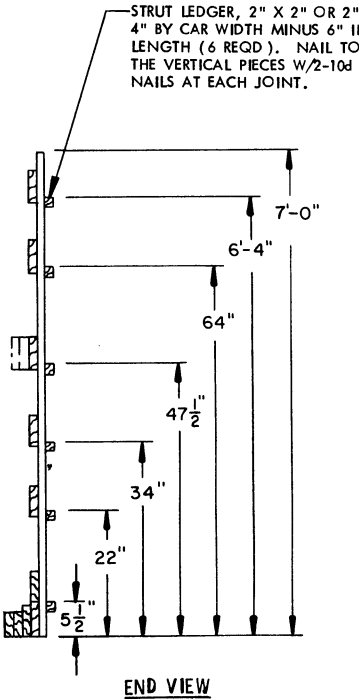
DOORWAY PROTECTION B

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 24, AND FOR THE LOADS SHOWN ON PAGES 26 AND 28.



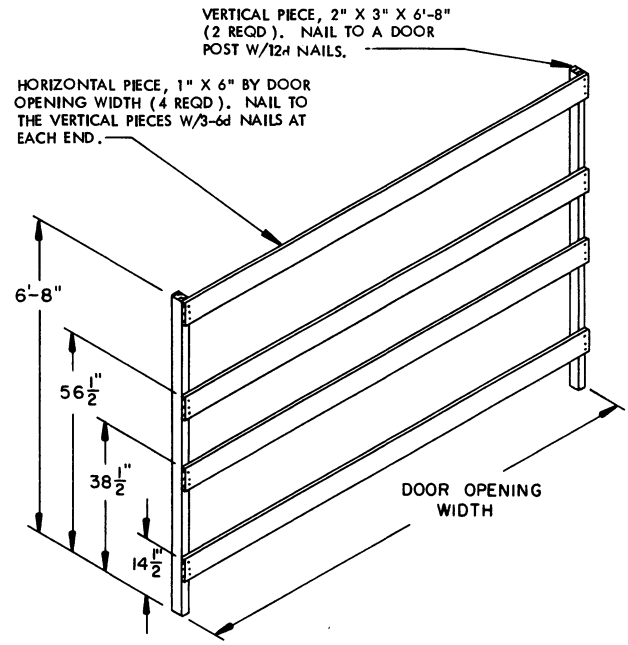
CENTER GATE G

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 26 AND 28.



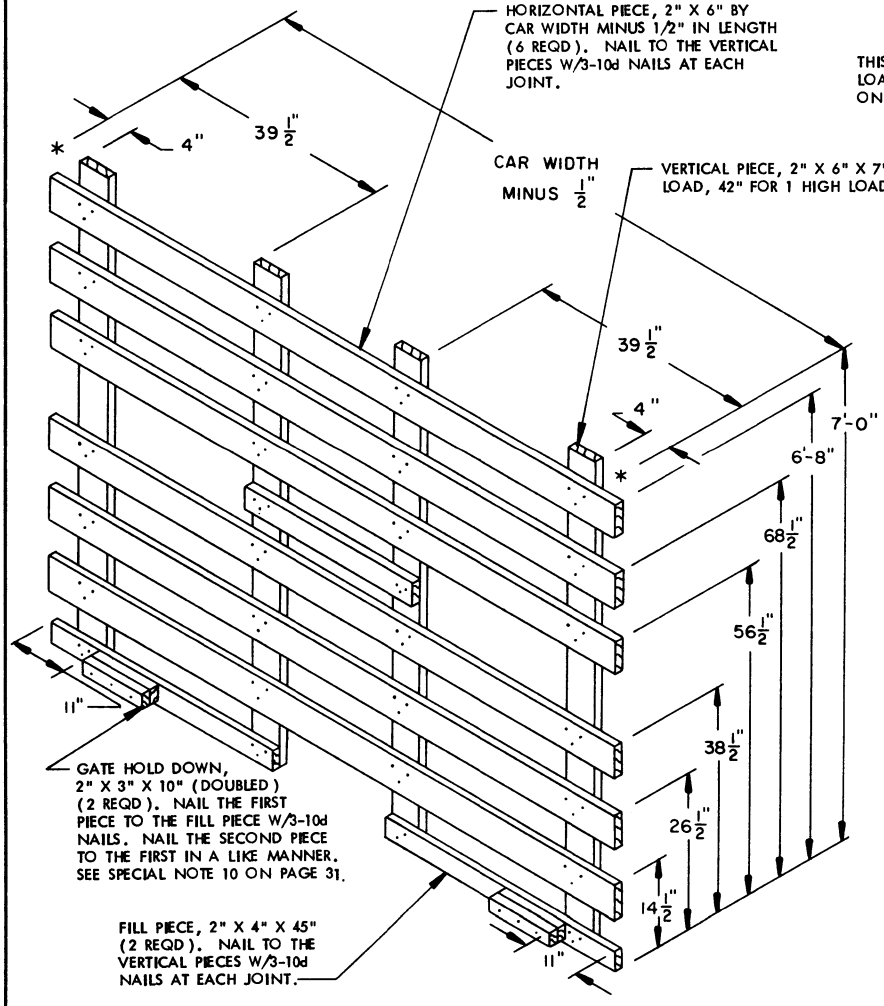
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNITS (INCREASED HEIGHT)



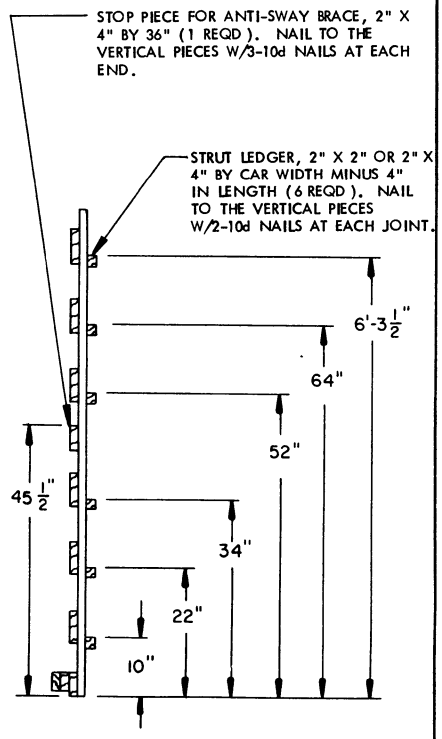
DOORWAY PROTECTION C

THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 24, AND FOR THE LOAD SHOWN ON PAGE 30.



CENTER GATE H

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 30.



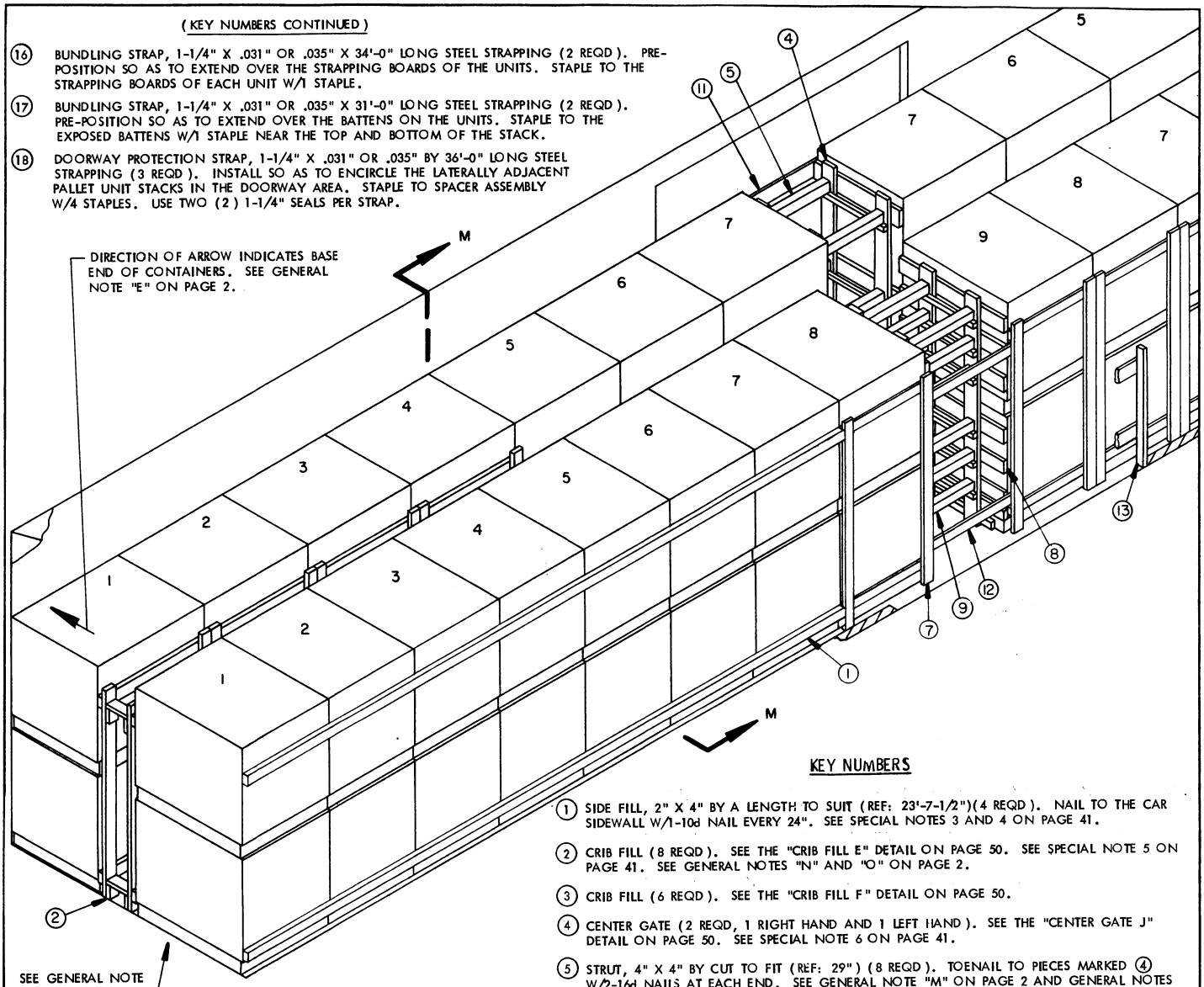
END VIEW

(KEY NUMBERS CONTINUED)

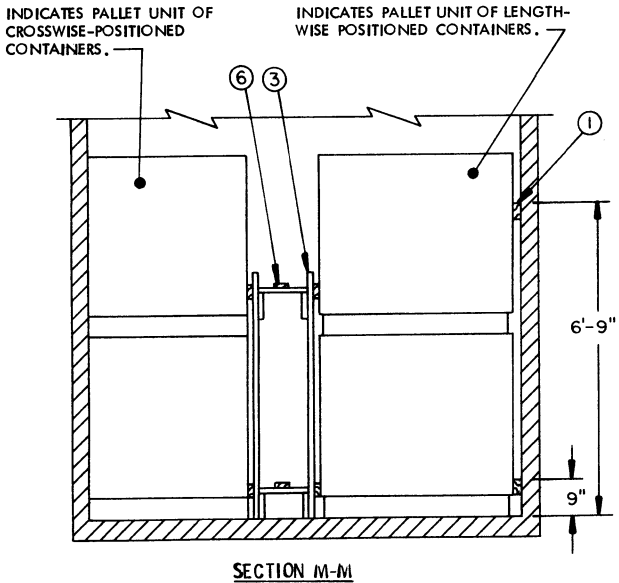
(16) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 34'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT W/1 STAPLE.

(17) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE BATTENS ON THE UNITS. STAPLE TO THE EXPOSED BATTENS W/1 STAPLE NEAR THE TOP AND BOTTOM OF THE STACK.

(18) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES. USE TWO (2) 1-1/4" SEALS PER STRAP.



ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

(1) SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-7-1/2")(4 REQD). NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". SEE SPECIAL NOTES 3 AND 4 ON PAGE 41.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 50. SEE SPECIAL NOTE 5 ON PAGE 41. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) CRIB FILL (6 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 50.

(4) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE J" DETAIL ON PAGE 50. SEE SPECIAL NOTE 6 ON PAGE 41.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (8 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 45") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "F" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 41.

(7) SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY F" DETAIL ON PAGE 51. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.

(8) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE K" DETAIL ON PAGE 51.

(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 33-1/2") (12 REQD). TOENAIL TO PIECES MARKED (8) W/2-16d NAILS AT EACH END.

(10) STRUT, 2" X 4" BY CUT TO FIT (REF: 33-1/2") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (8) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 41.

(11) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 51. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 41.

(12) SIDE FILL ASSEMBLY RETAINER PIECE, 1" X 4" BY A LENGTH TO SUIT (REF: 53") (2 REQD). POSITION AT 15" AND 6'-3" ABOVE THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (7) W/3-6d NAILS AT EACH END.

(13) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 52. NAIL TO THE DOOR POSTS W/12d NAILS.

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

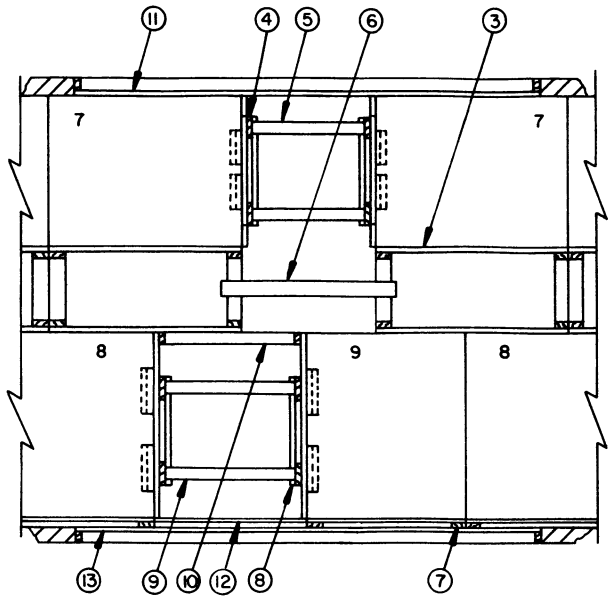
(14) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (5 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 67.

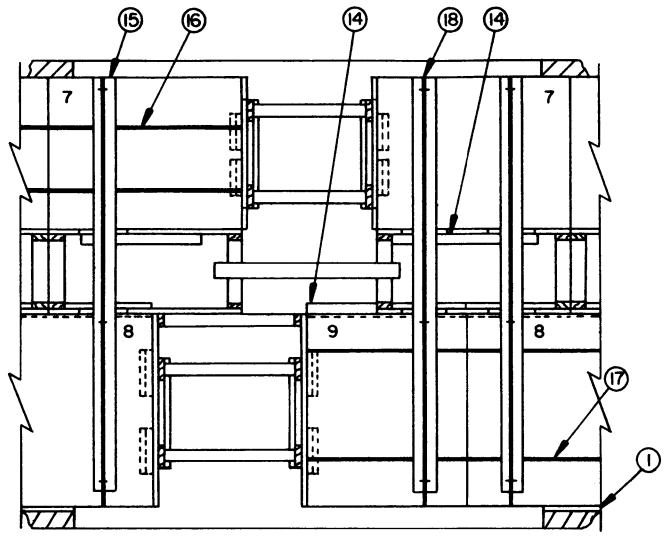
(CONTINUED AT LEFT)

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

PROJECT FSA 43B/3-63



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 40 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,650 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 57,320 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECES MARKED (7) ON PAGE 40, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDEFILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDEFILL ASSEMBLIES, PIECE MARKED (7), AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECES MARKED (12).

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. 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 129 FOR GUIDANCE.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (11) AND (13) IN THE LOAD ON PAGE 40, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED (3), MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF ONE SIDE SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING WHICH IS ADJACENT TO THE CONTAINERS-LENGTHWISE UNITS IN THE DOORWAY AREA. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY BUNDLING STRAPS, PIECES MARKED (16) AND (17). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

8. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHODS SHOWN ON PAGE 102 OR 103. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.

9. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 118 AND 119.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE-CONTAINERS UNITS AND PAGES 123 AND 126 FOR CROSSWISE-CONTAINERS UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

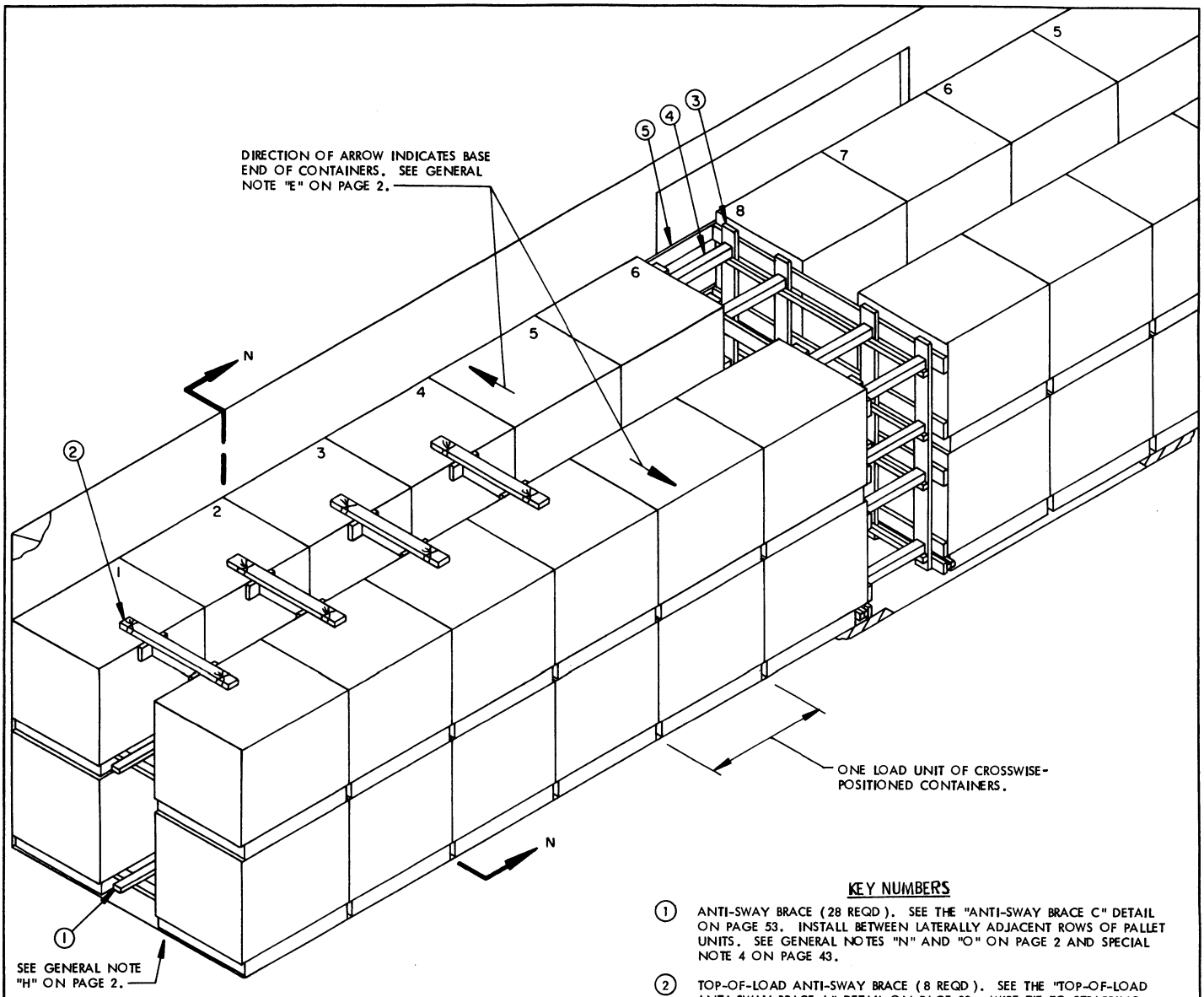
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	72	24
1" X 6"	80	40
2" X 2"	53	18
2" X 3"	38	19
2" X 4"	838	559
2" X 6"	145	145
4" X 4"	53	71
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
10d (3")	1156	18
12d (3-1/4")	36	3/4
16d (3-1/2")	80	1-3/4

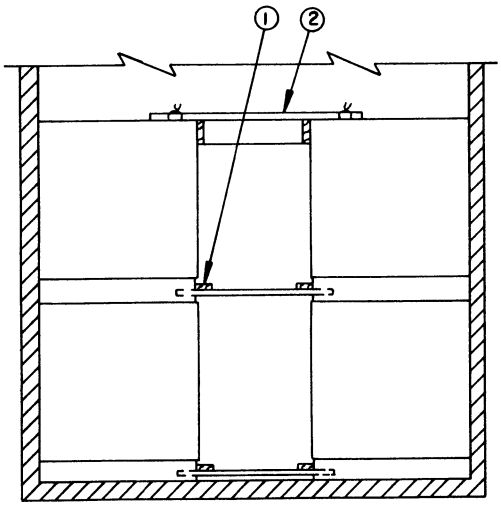
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	88,846 LBS
DUNNAGE		1,774 LBS
TOTAL WEIGHT		90,620 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION N-N

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 43.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 43.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 52. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 43.

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

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 51. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 43.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,052 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 51,588 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" LONG CAR. SEE GENERAL NOTE "V" ON PAGE 2.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-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 SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

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

5. 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 A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR.

6. 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 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE L" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 42, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 50. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 129.

8. 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 131 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 42, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. THIS WILL BE SIMILAR TO THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 62 BY PIECES MARKED ③, ⑤, AND ⑧ EXCEPT THAT SPACER ASSEMBLY "A" WILL BE USED IN LIEU OF SPACER ASSEMBLY "B". NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

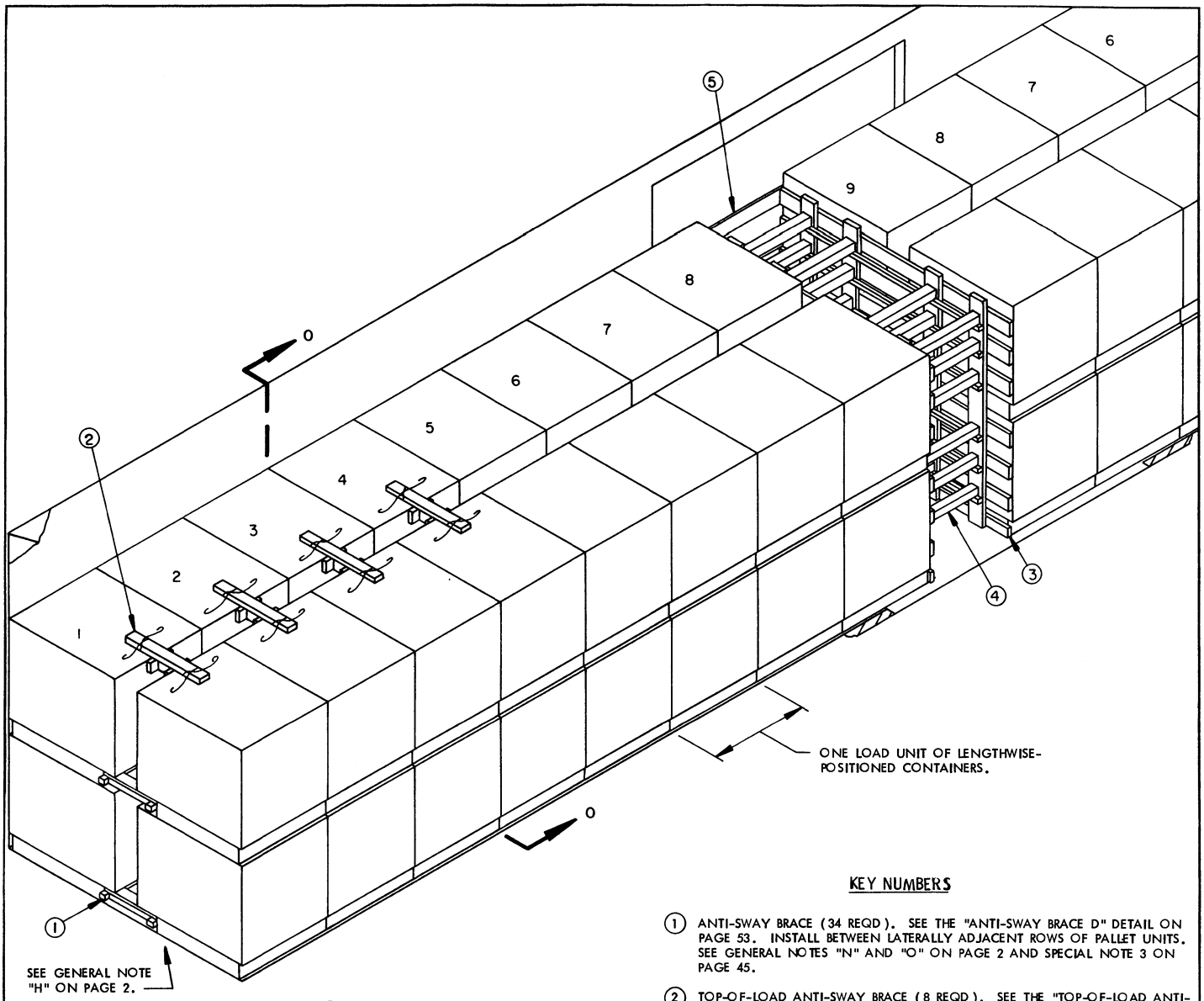
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	31	16
2" X 4"	435	290
2" X 6"	163	163
4" X 4"	39	52
NAILS	**NO. REQD.**	**POUNDS**
6d (2")	48	1/2
10d (3")	648	10
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------48' REQD----------1 LB		

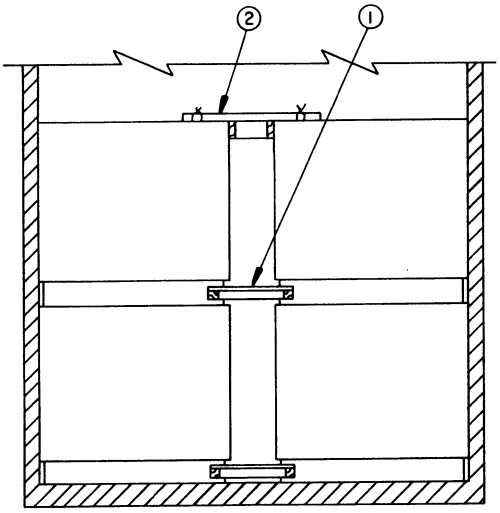
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	80,248 LBS
DUNNAGE		1,182 LBS
TOTAL WEIGHT		81,430 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 0-0

KEY NUMBERS

(1) ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 45.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 45.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 53. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 45.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 33-1/2") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 52. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 45.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 44 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,248 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-FOUR (44) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 63,052 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 50' OR 40' LONG CAR.

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 8.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 44, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE M" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 44, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 51. 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 129. OMIT THE STOP PIECE FROM CENTER GATE "K".

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE M", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 44, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED AS SHOWN BY PIECES MARKED ③, ⑤, AND ⑧ ON PAGE 62. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	110	37
1" X 6"	80	40
2" X 2"	319	107
2" X 3"	39	20
2" X 4"	140	94
2" X 6"	187	187
4" X 4"	67	90
NAILS	**NO. REQD**	**POUNDS**
6d (2")	524	3-1/4
10d (3")	652	10-1/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE----------60' REQD----------1 LB		

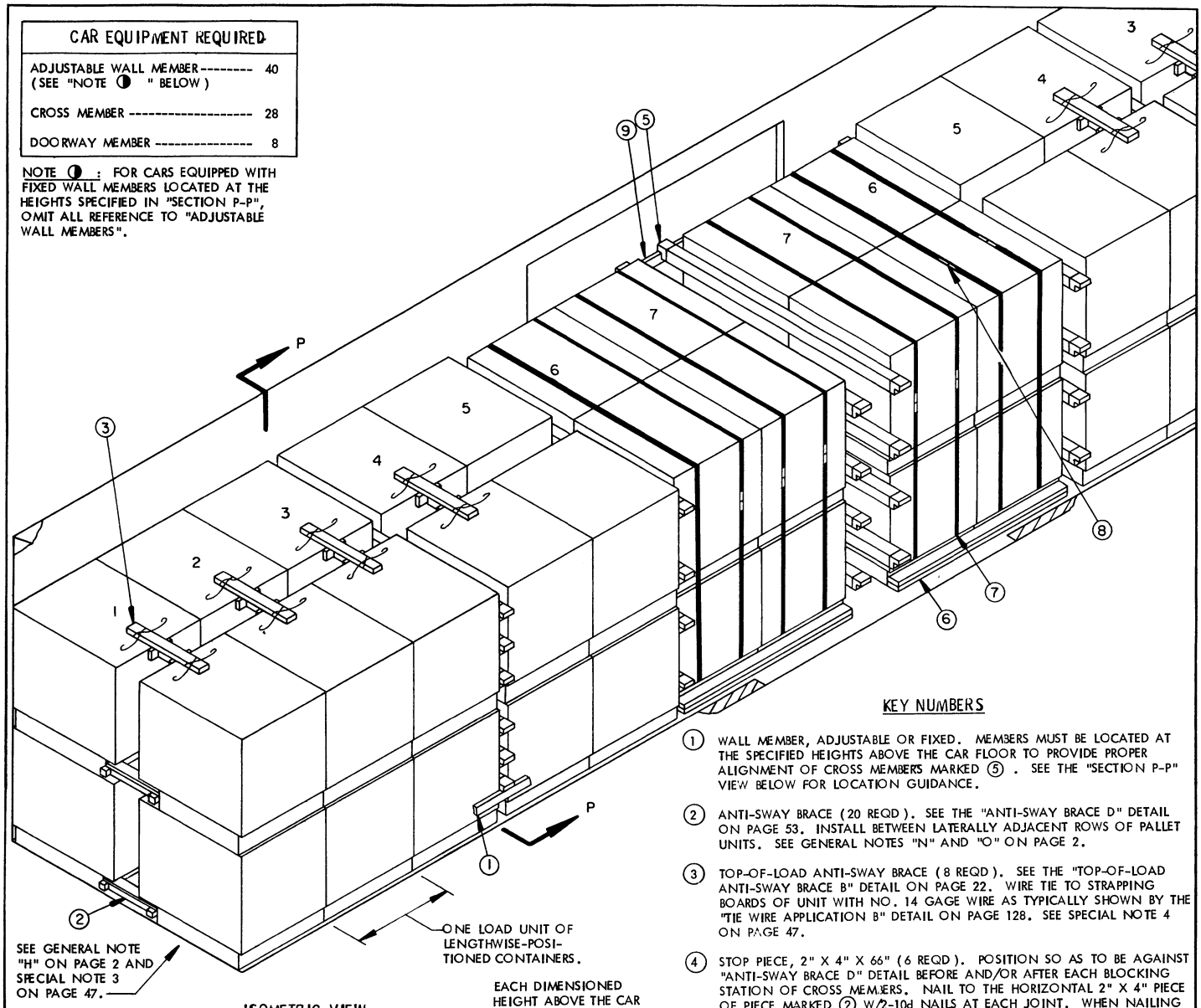
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	97,444 LBS
DUNNAGE		1,172 LBS
TOTAL WEIGHT		98,616 LBS (APPROX)

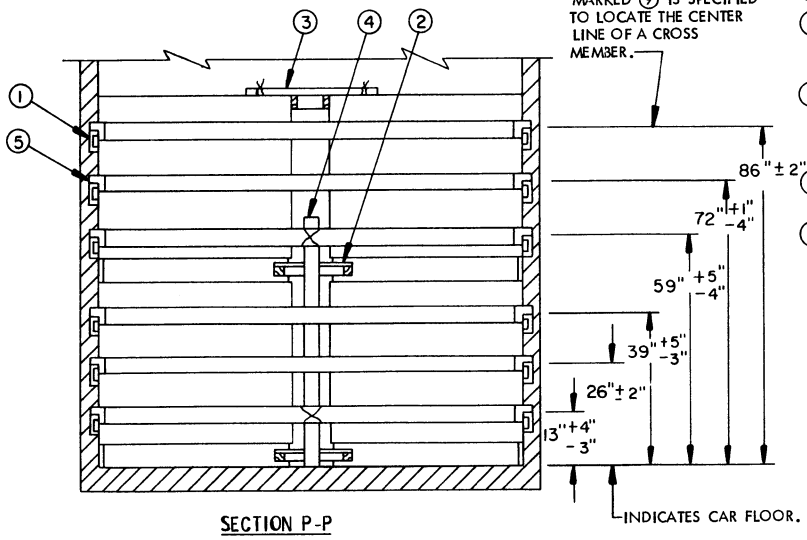
FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

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

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



ISOMETRIC VIEW



SECTION P-P

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 (20 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 47.

④ STOP PIECE, 2" X 4" X 66" (6 REQD). POSITION SO AS TO BE AGAINST "ANTI-SWAY BRACE D" DETAIL BEFORE AND/OR AFTER EACH BLOCKING STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECE OF PIECE MARKED ② W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE AT TWO LOCATIONS. SEE SPECIAL NOTE 5 ON PAGE 47.

⑤ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 2.

⑥ SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-6" LONG STEEL STRAPPING (8 REQD). STAPLE TO STRAPPING BOARDS OF PALLET UNITS W/2 STAPLES EACH. PRE-POSITION THOSE STRAPS WHICH ARE NOT WITHIN THE DOOR OPENING.

⑧ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

⑨ DOORWAY MEMBER (8 REQD). SEE THE "SECTION P-P" VIEW AT LEFT FOR LOCATION GUIDANCE.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 46 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,052 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 46, 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 B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 46, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE ANTI-SWAY BRACE, PIECE MARKED ② , FROM MOVING INTO THE CROSS MEMBER AREA.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 96 AND 97 FOR GUIDANCE.

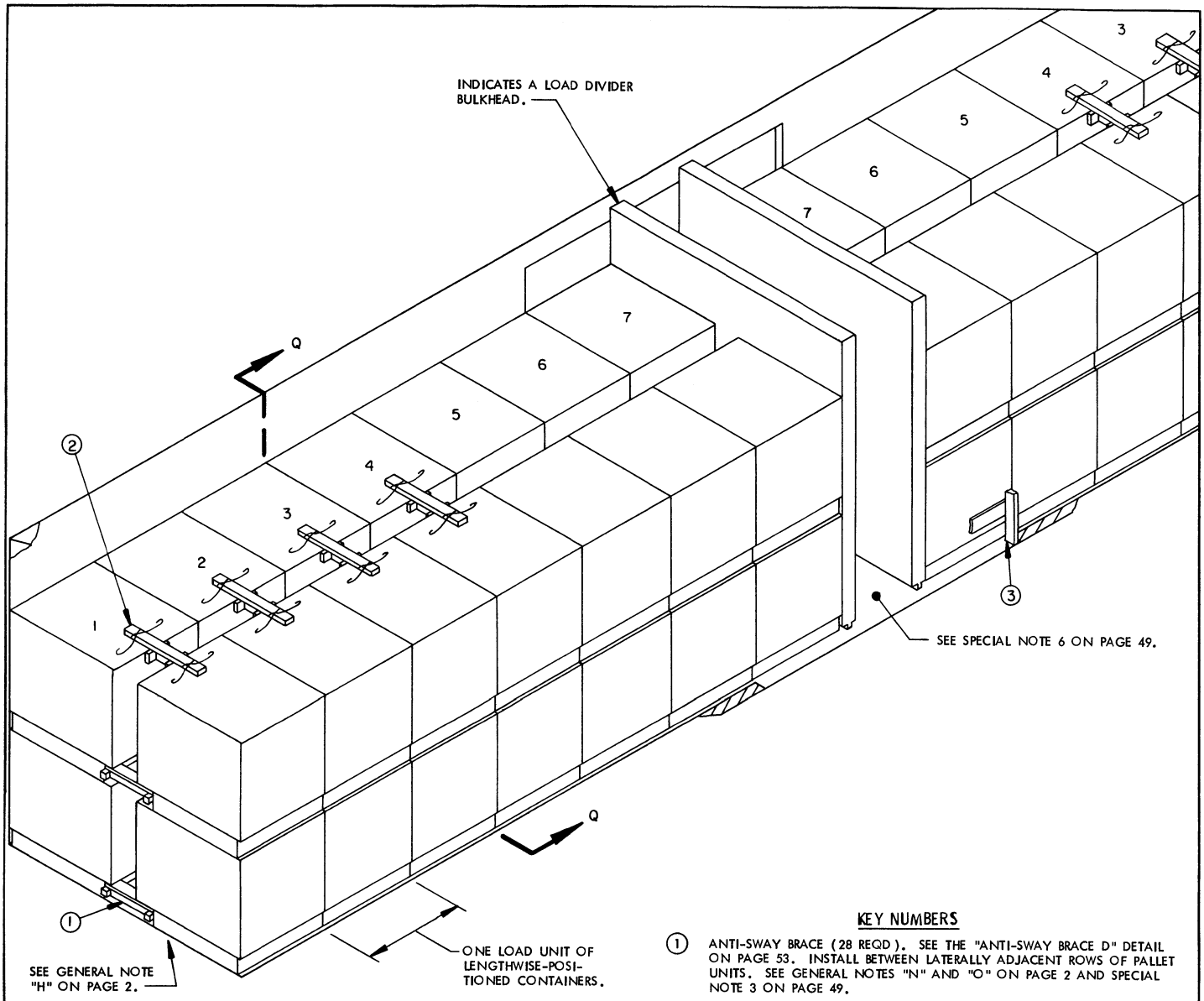
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 2" 2" X 4"	58 135 177	20 45 118
NAILS	NO. REQD	POUNDS
6d (2") 10d (3") 16d (3-1/2")	280 256 72	1-3/4 4 1-3/4
STEEL STRAPPING, 1-1/4" X .031" OR .035" -- 268' REQD --------39 LBS SEAL FOR 1-1/4" STRAPPING ---------- 16 REQD---------- NIL WIRE, NO. 14 GAGE ---------- 72' REQD --------NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	80,248 LBS
DUNNAGE		414 LBS
TOTAL WEIGHT		80,662 LBS (APPROX)

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



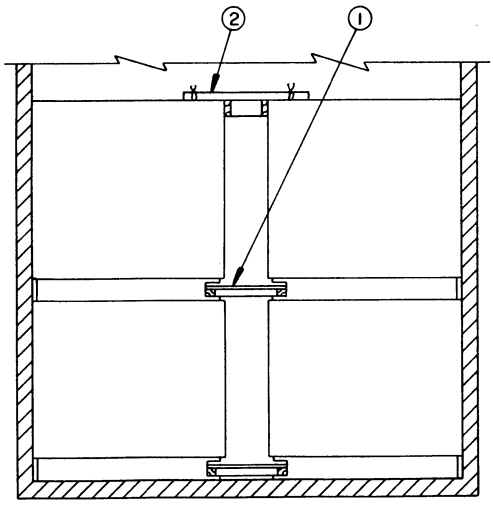
ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 49.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 49.

(3) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 52. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 5 ON PAGE 49.



SECTION Q-Q

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

PROJECT FSA 43B/3-63

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 48 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 97,444 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 63,052 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 42 IS EMPLOYED, FIFTY-SIX (56) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 80,248 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 63,052 POUNDS, AND THIRTY-SIX (36) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 51,588 POUNDS.

3. IF DOORWAY PROTECTION PROCEDURES SIMILAR TO THOSE SHOWN ON PAGE 34 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ③, NAILED FLOORLINE BLOCKING MUST BE USED BETWEEN THE ROWS IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH ON EITHER SIDE OF THE CAR.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 48, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 48, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. SEE THE DOORWAY PROTECTION SHOWN AS PIECES MARKED ③, ⑤, AND ⑧ ON PAGE 62 FOR GUIDANCE. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

6. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 16, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE.

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 100 THRU 111 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123, 124, AND/OR 126 FOR SHIPPING GUIDANCE.

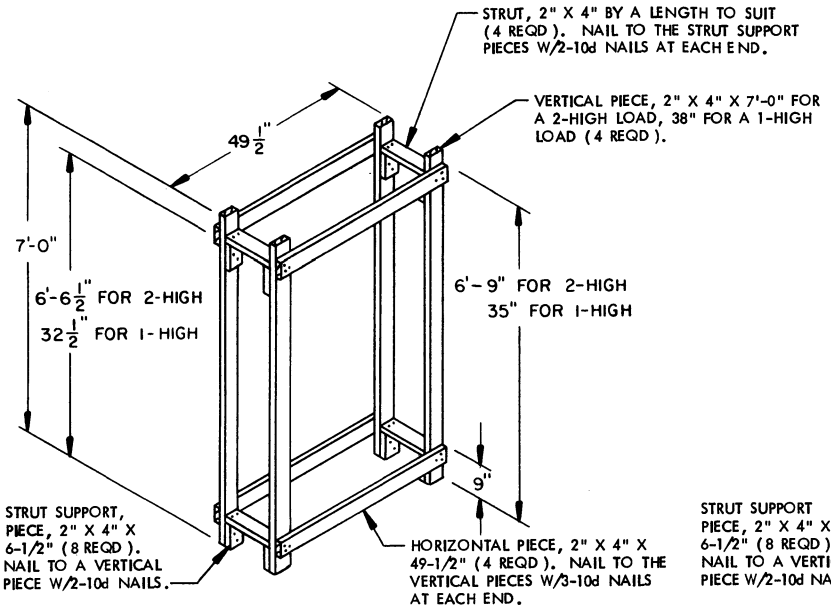
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	89	30
1" X 6"	80	40
2" X 2"	188	63
2" X 3"	31	16
2" X 4"	116	78
NAILS	NO. REQD	POUNDS
6d (2")	440	2-3/4
10d (3")	304	4-3/4
12d (3-1/4")	28	1/2
WIRE, NO. 14 GAGE----------60' REQD----------1 LB		

LOAD AS SHOWN

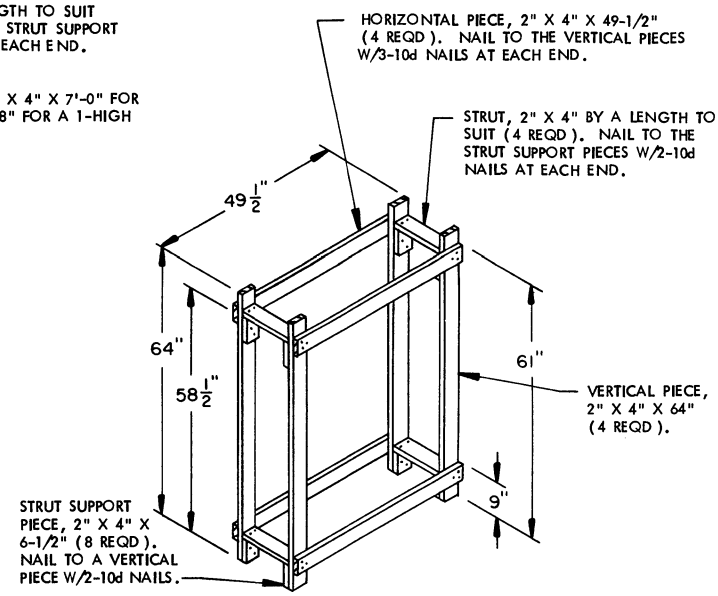
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	80,248 LBS
DUNNAGE		463 LBS
TOTAL WEIGHT		81,711 LBS

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



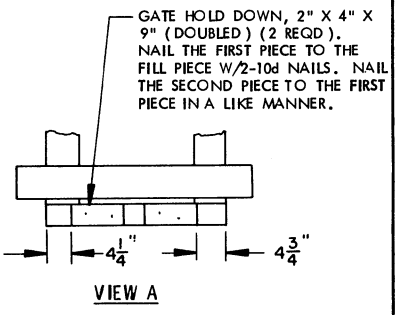
CRIB FILL E

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

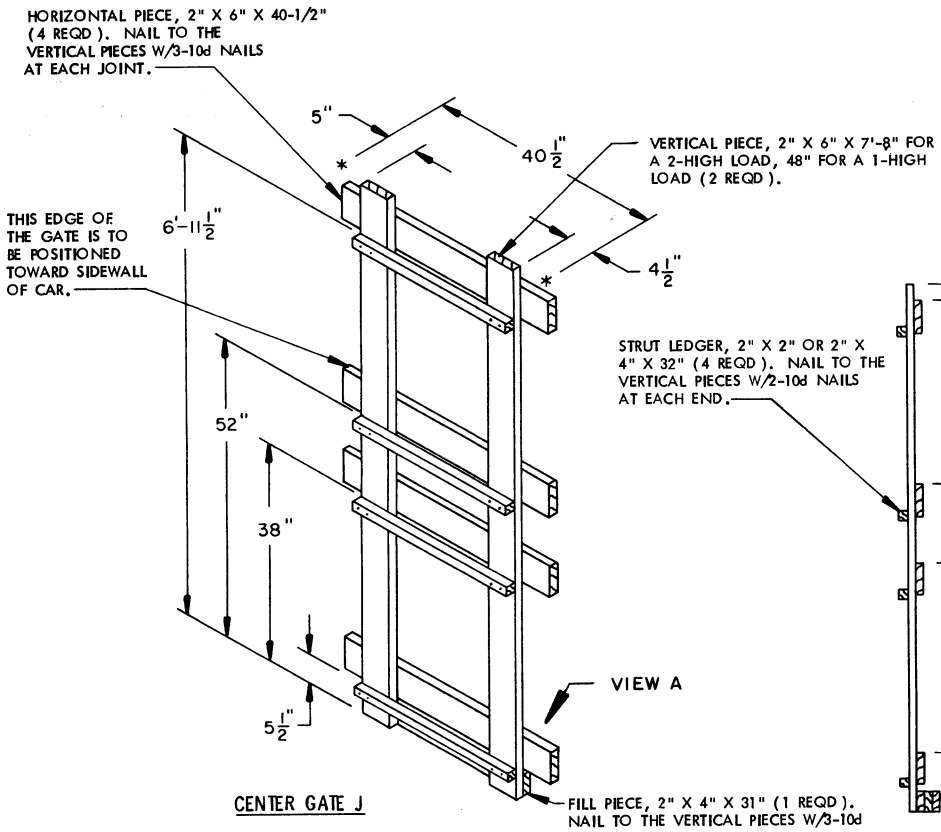


CRIB FILL F

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



VIEW A

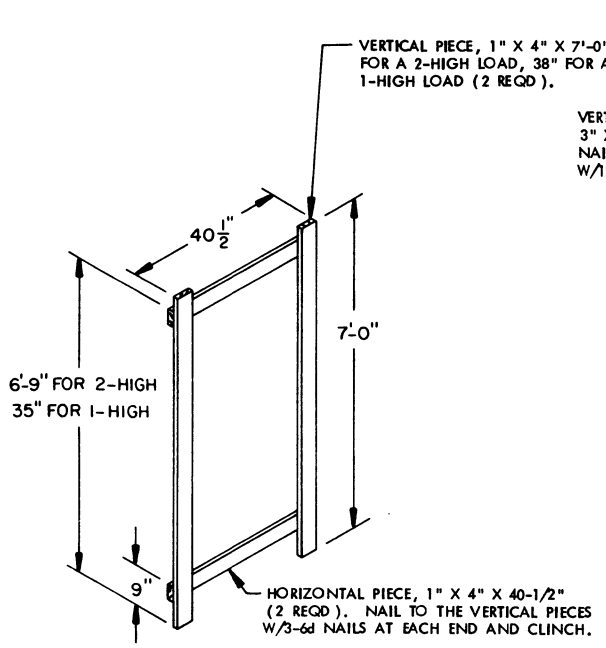


CENTER GATE J

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

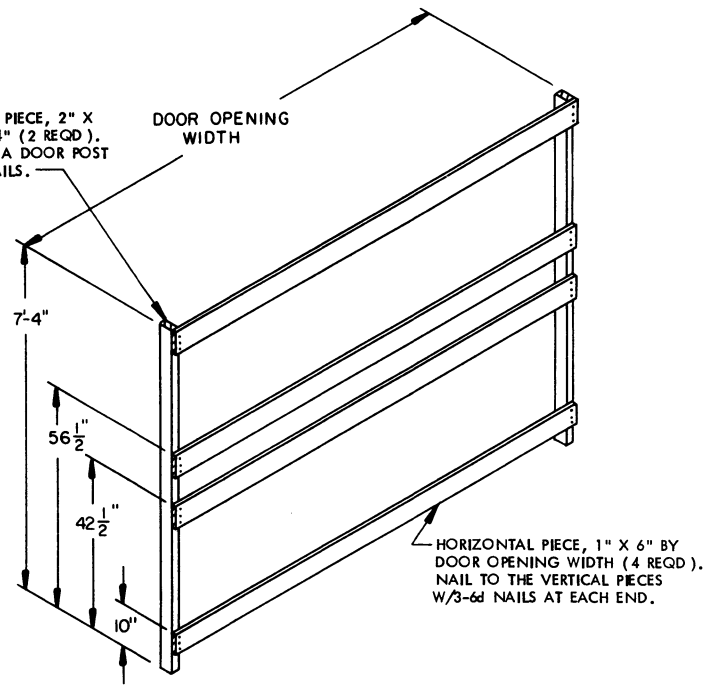
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



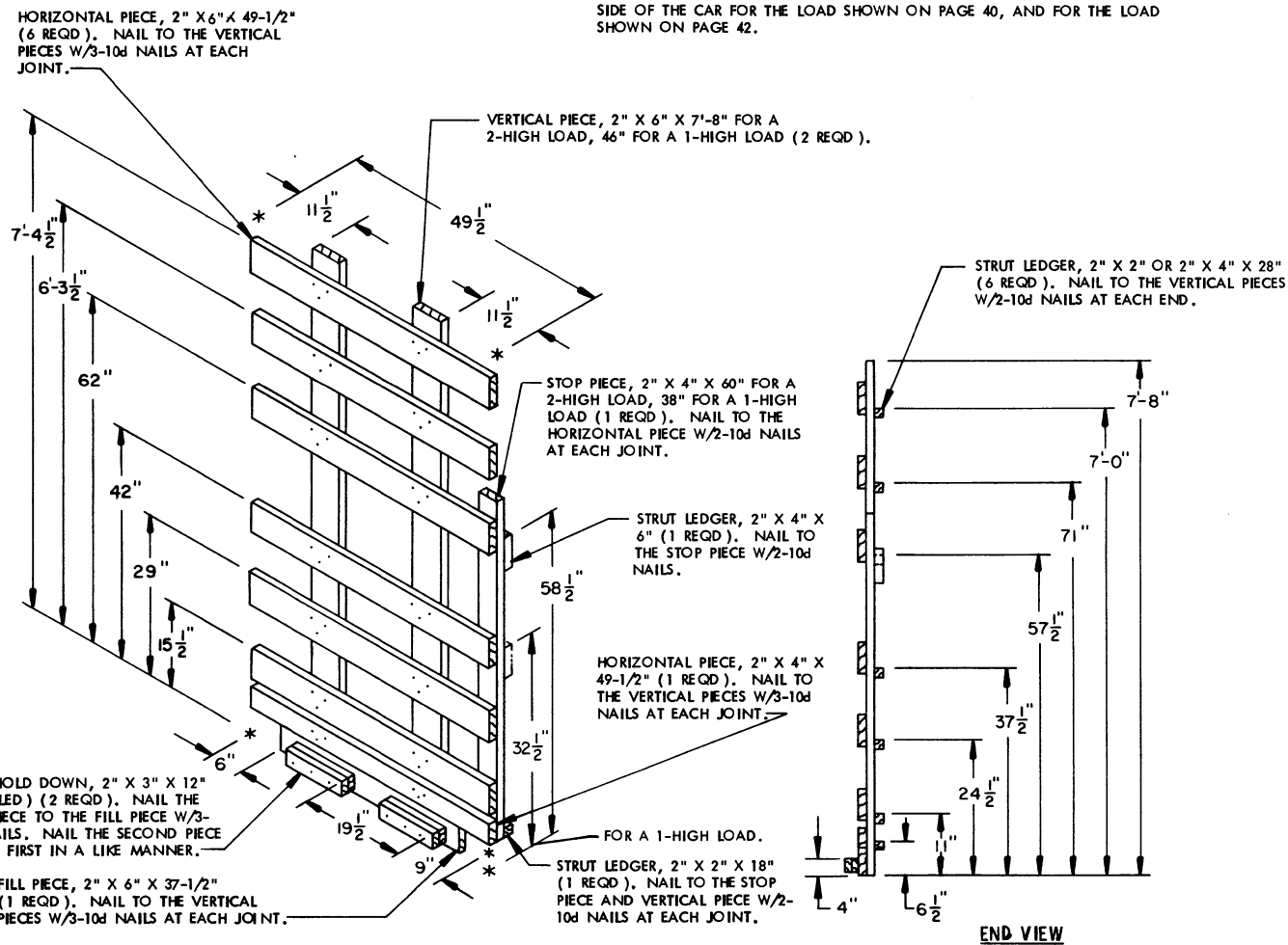
SIDE FILL ASSEMBLY F

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



DOORWAY PROTECTION D

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 40, AND FOR THE LOAD SHOWN ON PAGE 42.

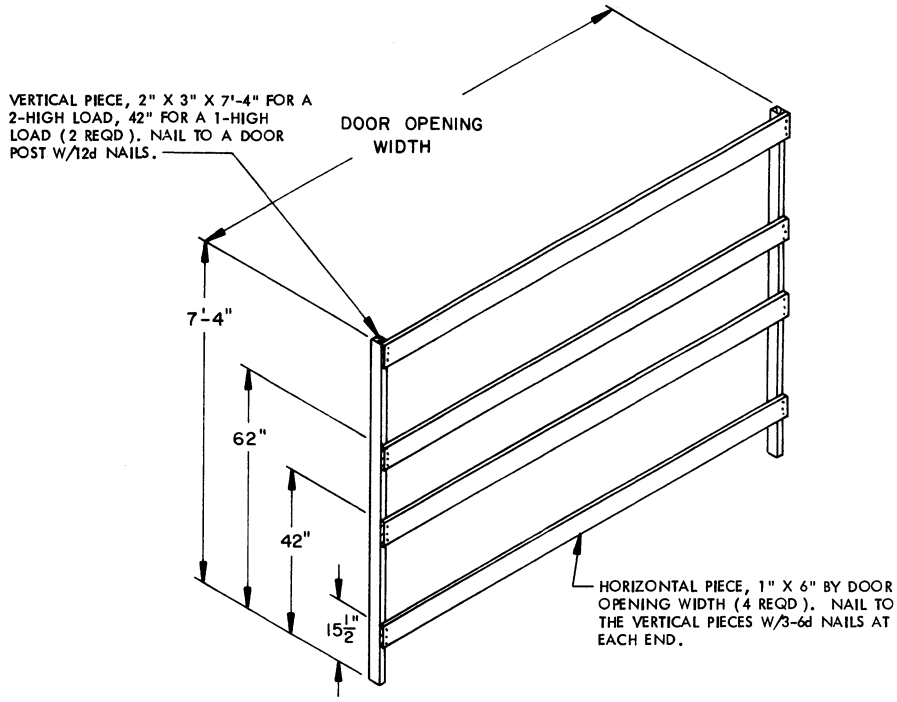


CENTER GATE K

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED

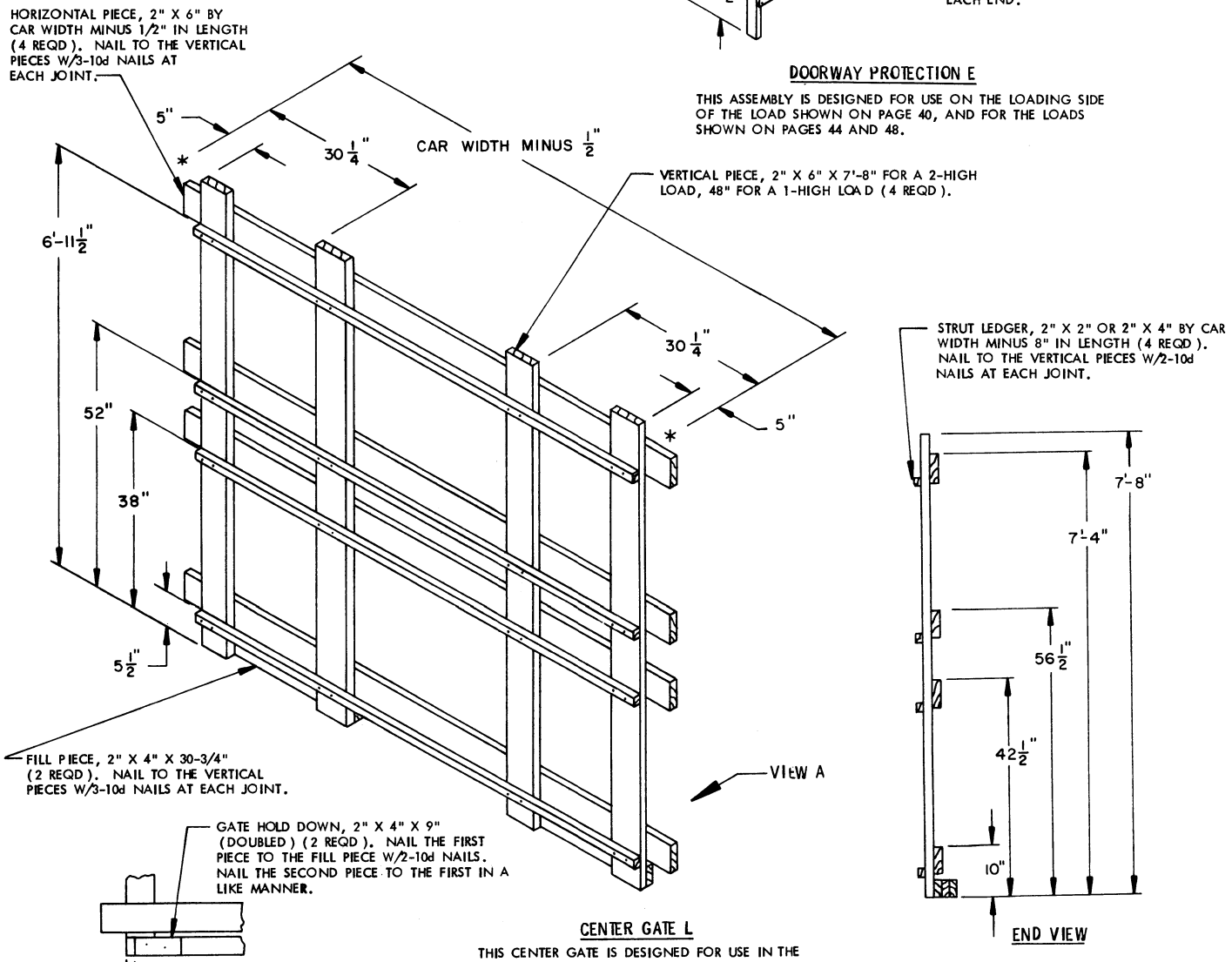
END VIEW

THE STRUT LEDGERS AT THE 24-1/2" AND 71" HEIGHTS ARE ONLY REQUIRED FOR LOAD IN A 60'-8" LONG CAR.



DOORWAY PROTECTION E

THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE LOAD SHOWN ON PAGE 40, AND FOR THE LOADS SHOWN ON PAGES 44 AND 48.



CENTER GATE L

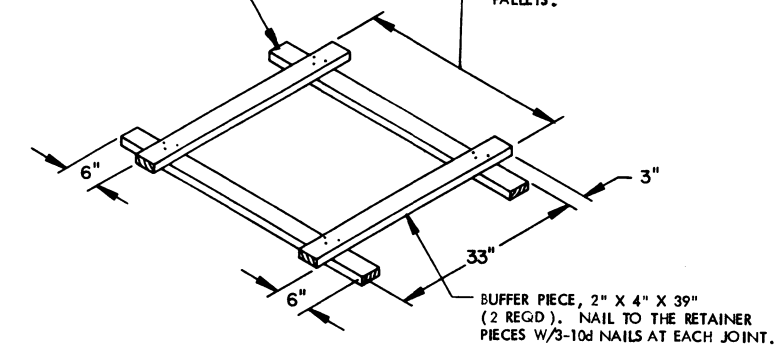
THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 42.

END VIEW

VIEW A

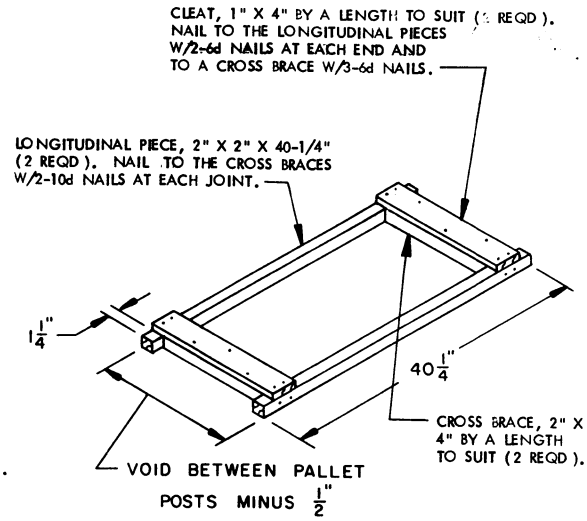
GATE HOLD DOWNS ARE REQUIRED AT BOTH ENDS OF THE GATE.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



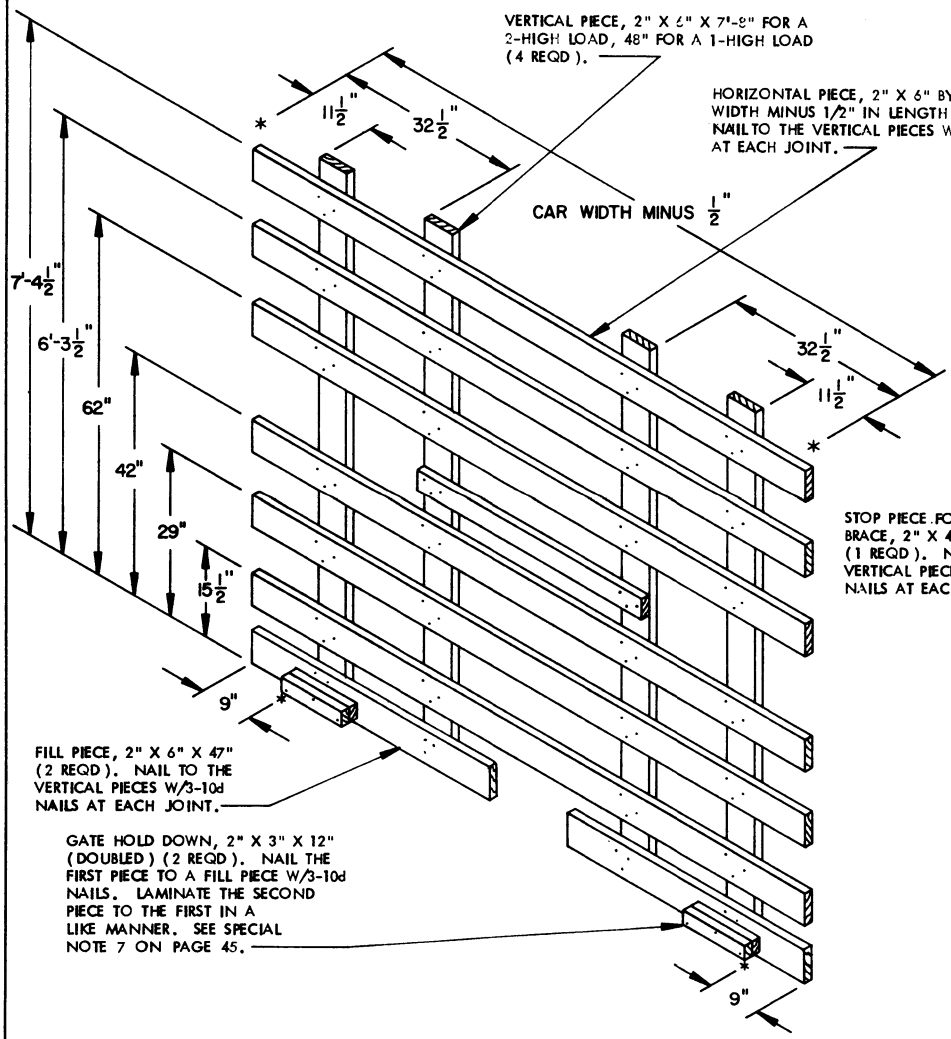
ANTI-SWAY BRACE C

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



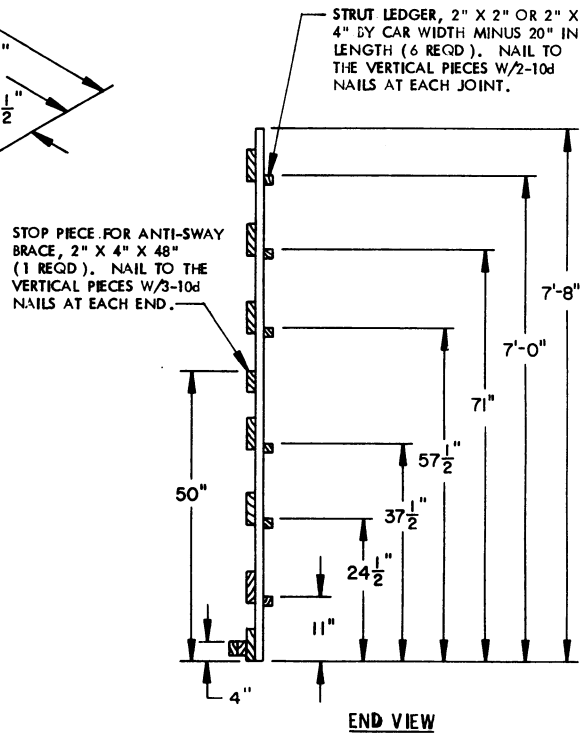
ANTI-SWAY BRACE D

THIS ASSEMBLY IS FOR USE BETWEEN ROWS OF PALLET UNITS OF FLAT OR ROUTED DUNNAGE METHOD UNITS WHEN THE CONTAINERS ARE LENGTHWISE IN THE CAR.



CENTER GATE M

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 44.



END VIEW

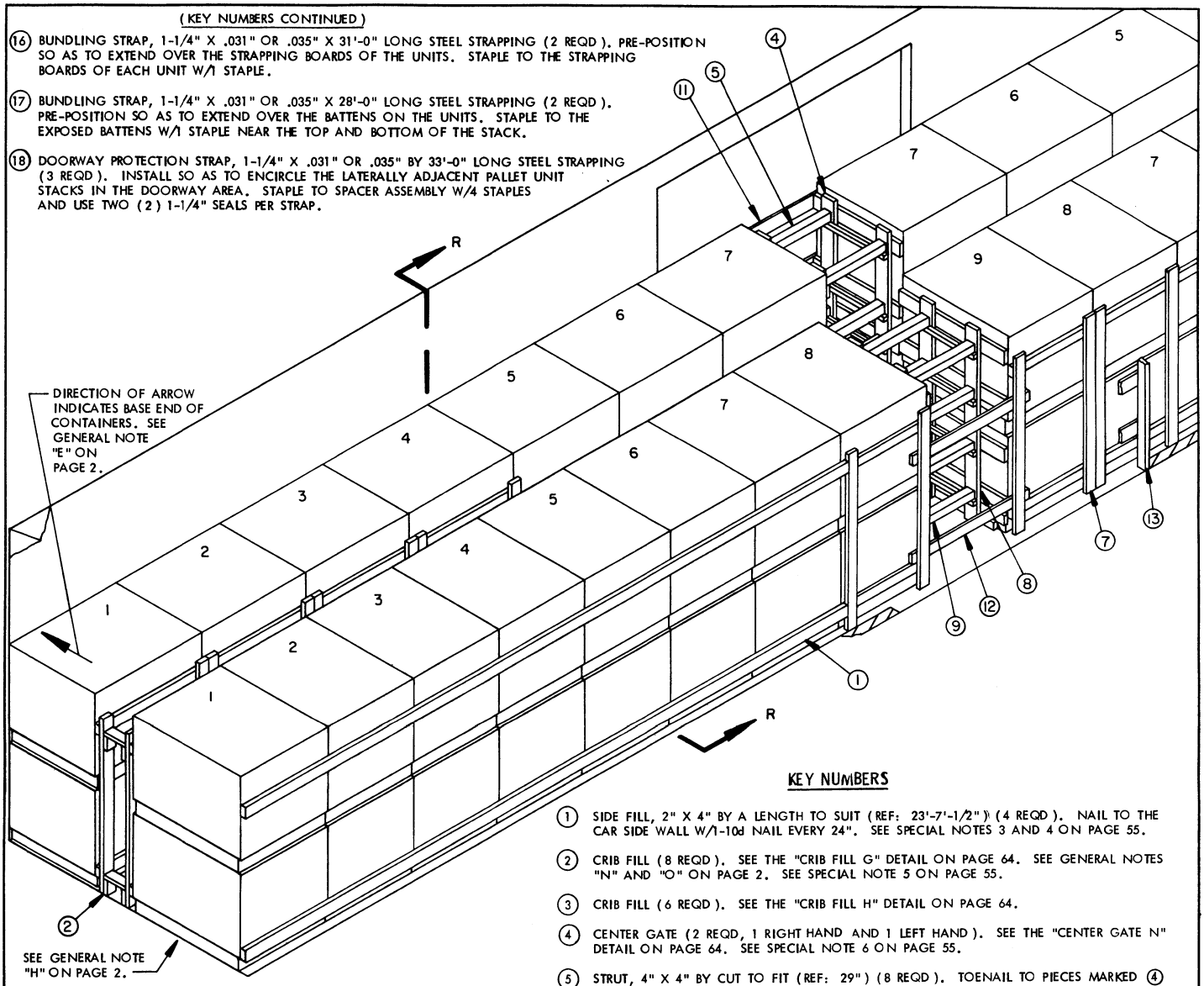
THE STRUT LEDGERS AT THE 24-1/2" AND 71" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60'-8" LONG CAR.

(KEY NUMBERS CONTINUED)

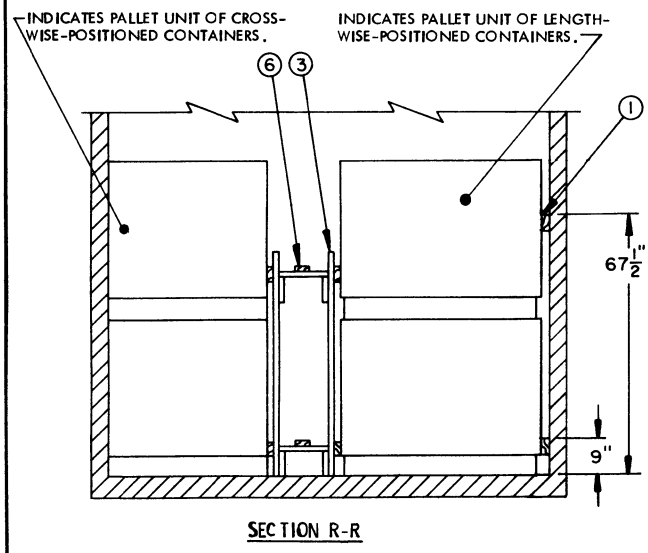
(16) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARDS OF EACH UNIT W/1 STAPLE.

(17) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 28'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE BATTENS ON THE UNITS. STAPLE TO THE EXPOSED BATTENS W/1 STAPLE NEAR THE TOP AND BOTTOM OF THE STACK.

(18) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 33'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.



ISOMETRIC VIEW



SECTION R-R

KEY NUMBERS

(1) SIDE FILL, 2" X 4" BY A LENGTH TO SUIT (REF: 23'-7'-1/2") (4 REQD). NAIL TO THE CAR SIDE WALL W/1-10d NAIL EVERY 24". SEE SPECIAL NOTES 3 AND 4 ON PAGE 55.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL G" DETAIL ON PAGE 64. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 5 ON PAGE 55.

(3) CRIB FILL (6 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 64.

(4) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE N" DETAIL ON PAGE 64. SEE SPECIAL NOTE 6 ON PAGE 55.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (8 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 45") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "H" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 55.

(7) SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY G" DETAIL ON PAGE 65. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.

(8) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE O" DETAIL ON PAGE 65.

(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 33-1/2") (8 REQD). TOENAIL TO PIECES MARKED (8) W/2-16d NAILS AT EACH END.

(10) STRUT, 2" X 4" BY CUT TO FIT (REF: 33-1/2") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (8) W/2-12d NAILS AT EACH END.

(11) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 65. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 55.

(12) SIDE FILL ASSEMBLY RETAINER PIECE, 1" X 4" BY A LENGTH TO SUIT (REF: 53") (2 REQD). POSITION AT 15" AND 55" FROM THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECES OF PIECE MARKED (7) W/3-6d NAILS AT EACH END.

(13) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 66. NAIL TO THE DOOR POSTS W/12d NAILS.

KEY NUMBERS FOR BOX CAR EQUIPPED WITH PLUG DOORS

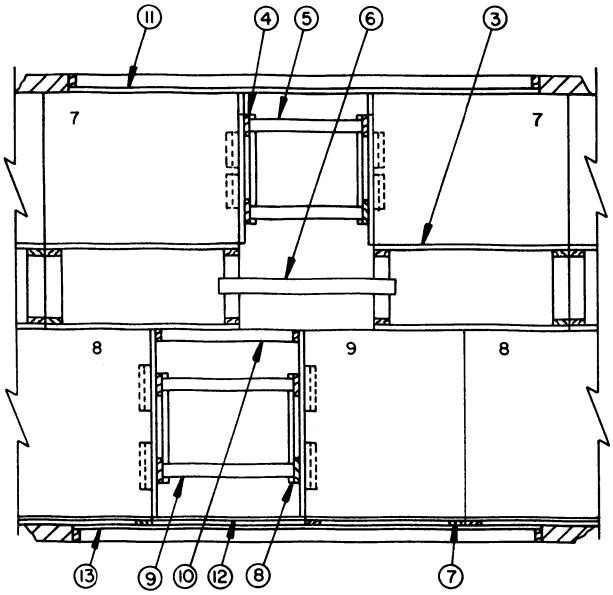
(14) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (5 REQD, 1 FOR EACH PALLET STACK IN THE DOORWAY AREA. CENTER ON PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) SPACER ASSEMBLY (3 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 67.

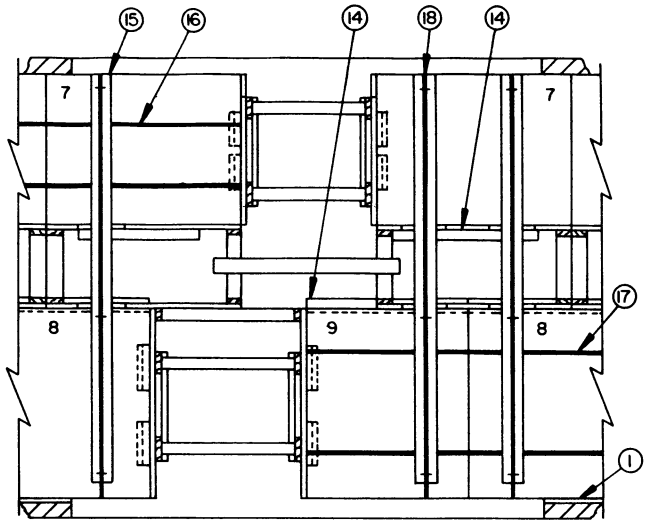
(CONTINUED AT LEFT)

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

PROJECT FSA 43B/3-63



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 54 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,850 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 48,680 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED ① , IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED ⑦ ON PAGE 54, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ① .

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDEFILL, PIECE MARKED ① , TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED ⑦ , AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED ⑫ .

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ② , MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. 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 129 FOR GUIDANCE.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑪ AND ⑬ IN THE LOAD ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT IN LIEU OF THE WOODEN GATE TYPE DOORWAY PROTECTION. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED ③ , MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF ONE SIDE SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING WHICH IS ADJACENT TO THE CONTAINERS-LENGTHWISE UNITS. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY BUNDLING STRAPS, PIECES MARKED ⑯ AND/OR ⑰ . ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

8. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHODS SHOWN ON PAGE 102 OR 103. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.

9. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGE 118 AND 119.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 123 AND 126 FOR CROSSWISE-CONTAINERS UNITS.

11. FOR SHIPMENT OF ONE OF MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

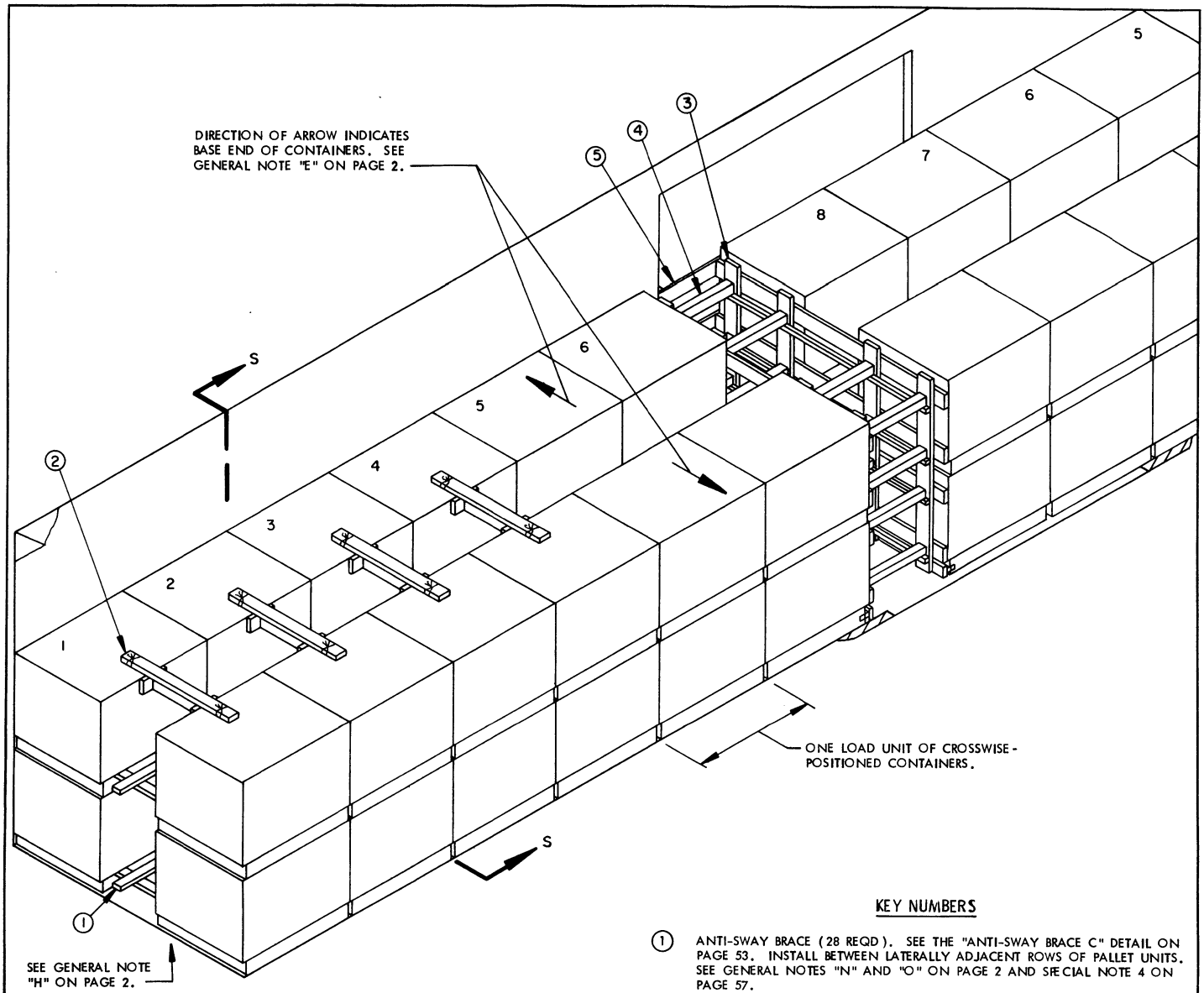
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	57	19
1" X 6"	80	40
2" X 2"	44	15
2" X 3"	34	17
2" X 4"	796	531
2" X 6"	120	120
4" X 4"	42	56
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
10d (3")	1108	17
12d (3-1/4")	32	3/4
16d (3-1/2")	64	1-1/2

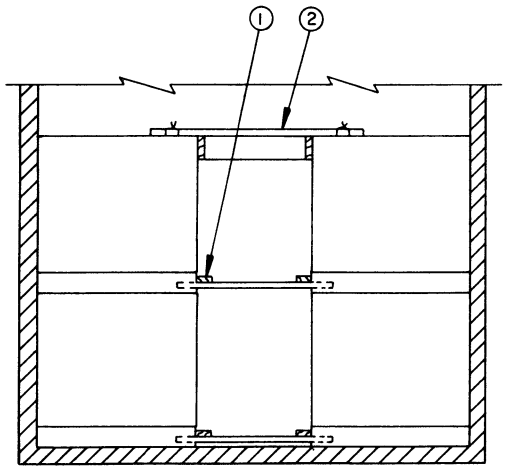
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	75,454 LBS
DUNNAGE		1,617 LBS
TOTAL WEIGHT		77,071 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION S-S

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 57.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 57.

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

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

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

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

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(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 53,548 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 43,812 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR. STRUT BRACING WILL BE REQUIRED WHEN USING A 50'-6" LONG CAR. SEE GENERAL NOTE "V" ON PAGE 2.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 9' OR 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, 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 56, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR.

6. CENTER GATE "P" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE P", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 56, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 64. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 129.

8. 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 131 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 56, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. THIS WILL BE SIMILAR TO THE DOORWAY PROTECTION PROCEDURES SHOWN BY PIECES MARKED ③, ⑤, AND ⑧ ON PAGE 62 EXCEPT THAT SPACER ASSEMBLY "A" WILL BE USED IN LIEU OF SPACER ASSEMBLY "B". NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

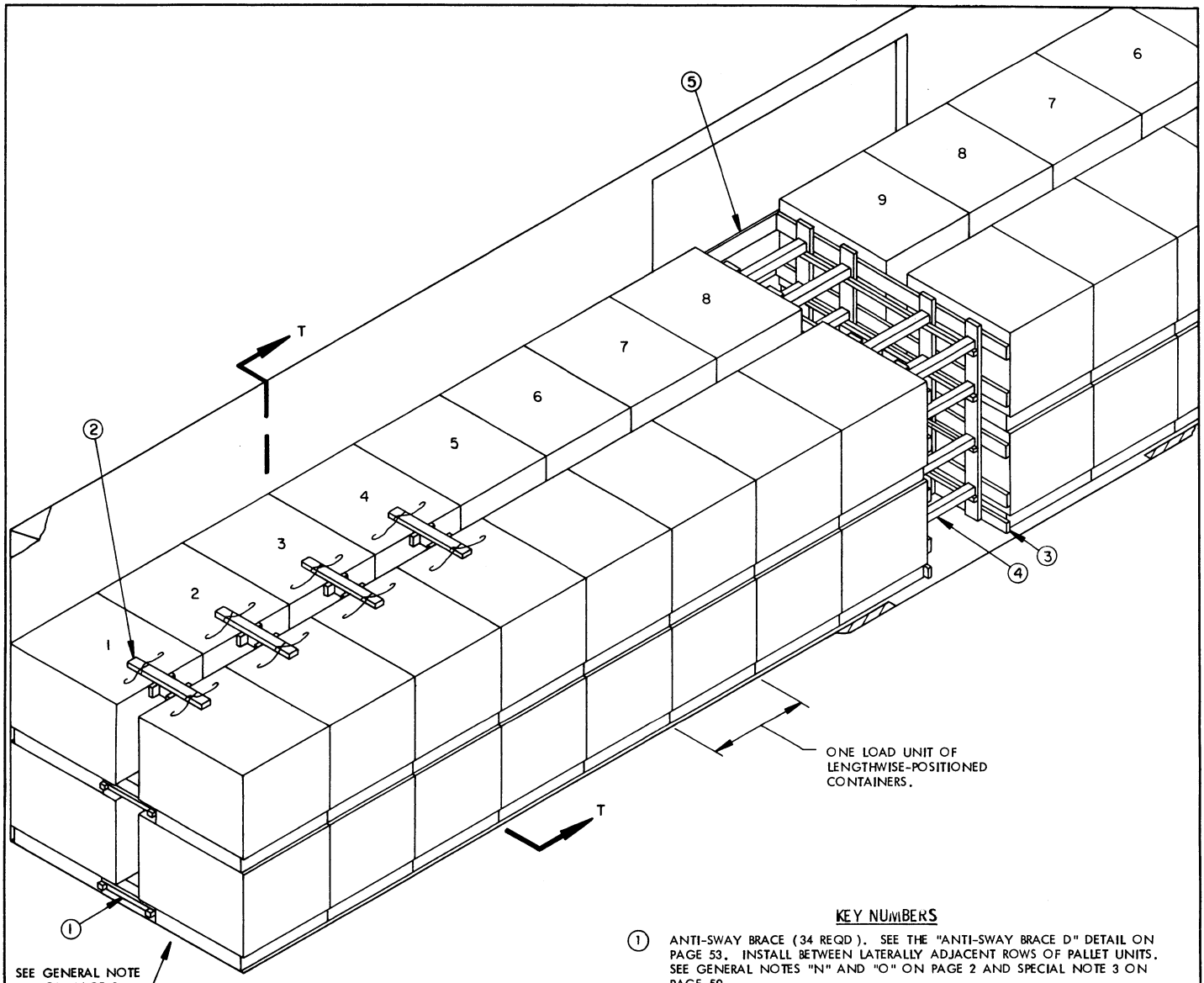
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	26	13
2" X 4"	433	289
2" X 6"	159	159
4" X 4"	39	52
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	648	10
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------48' REQD----------1 LB		

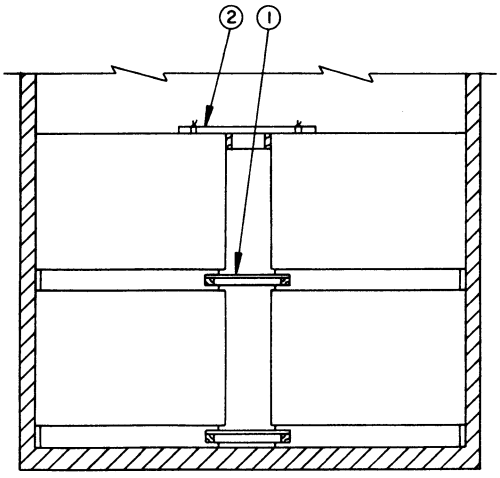
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	68,152 LBS
DUNNAGE		1,166 LBS
TOTAL WEIGHT		69,318 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION T-T

KEY NUMBERS

(1) ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 59.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE128. SEE SPECIAL NOTE 4 ON PAGE 59.

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

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 33-1/2") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 66. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 59.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 58 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,152 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-FOUR (44) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 53,548 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑤, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 8.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 58, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. CENTER GATE "Q" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Q", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 58, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 65. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 129. OMIT THE STOP PIECE FROM CENTER GATE "O".

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE Q", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAIL ON PAGE 131 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 58, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS, MUST BE USED AS SHOWN BY PIECES MARKED ③, ⑤, AND ⑧ ON PAGE 62. NOTE THAT THE DOORWAY PROTECTION FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	110	37
1" X 6"	80	40
2" X 2"	289	97
2" X 3"	34	17
2" X 4"	140	94
2" X 6"	142	142
4" X 4"	45	60
NAILS	**NO. REQD**	**POUNDS**
6d (2")	524	3-1/4
10d (3")	572	9
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------60' REQD----------1 LB		

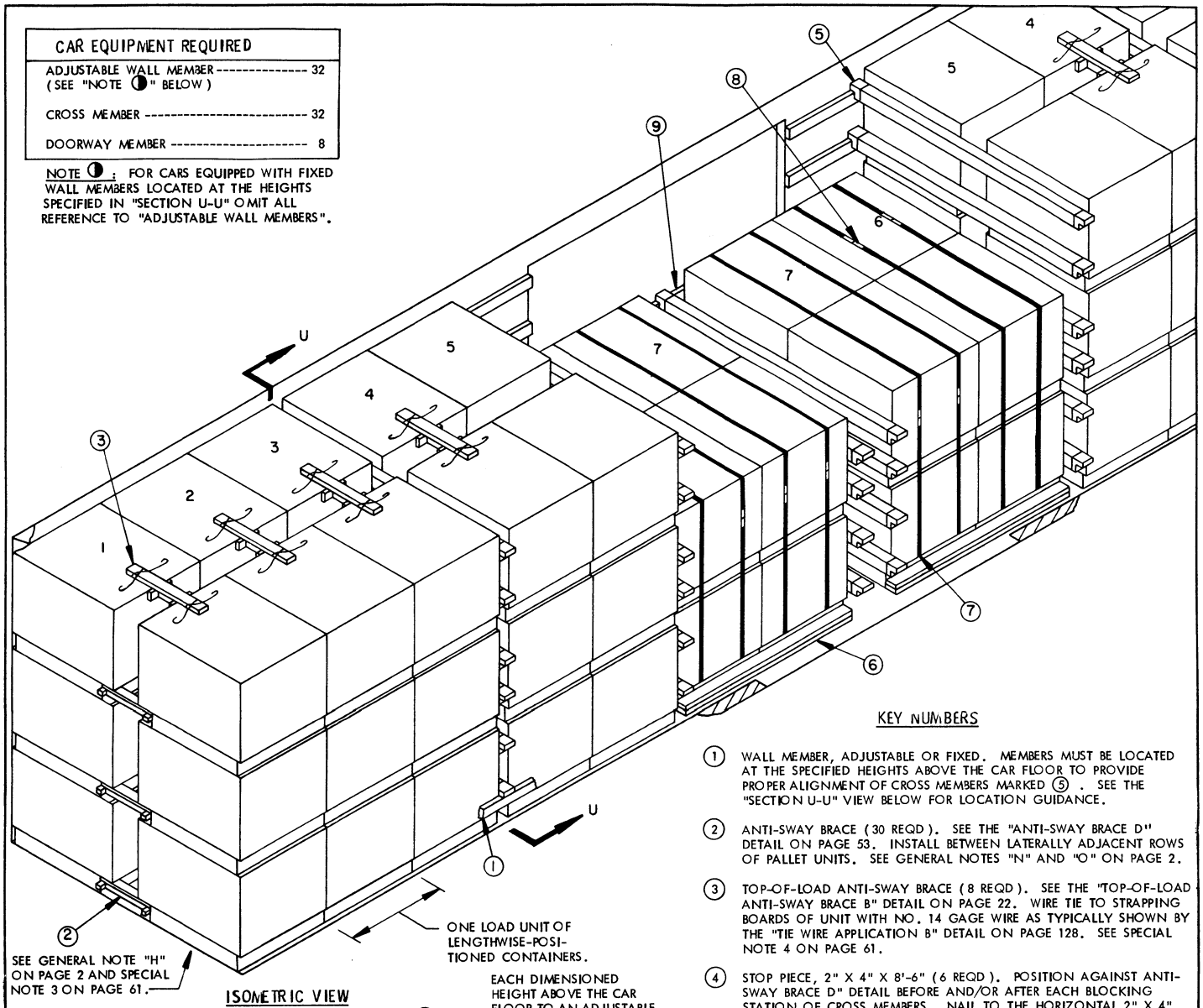
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	82,756 LBS
DUNNAGE		990 LBS
TOTAL WEIGHT		83,746 LBS (APPROX)

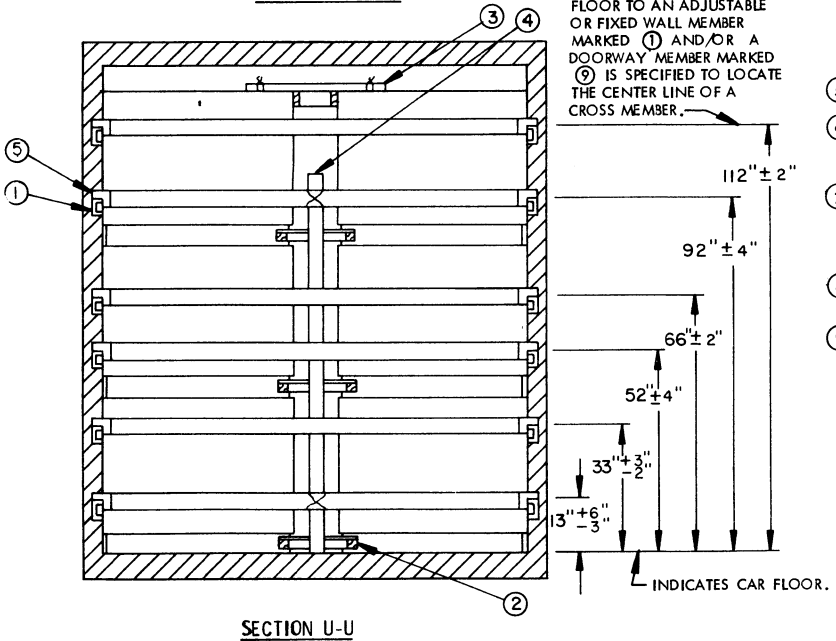
FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

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

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



ISOMETRIC VIEW



SECTION U-U

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 U-U" VIEW BELOW FOR LOCATION GUIDANCE.

(2) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 61.

(4) STOP PIECE, 2" X 4" X 8'-6" (6 REQD). POSITION AGAINST ANTI-SWAY BRACE D" DETAIL BEFORE AND/OR AFTER EACH BLOCKING STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECE OF PIECE MARKED (2) W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE AT TWO LOCATIONS.

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

(6) SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(7) BUNDLING STRAP, 1-1/4" X .035" OR .031" BY 31'-0" LONG STEEL STRAPPING (8 REQD). STAPLE TO STRAPPING BOARDS OF PALLET UNITS W/2 STAPLES EACH. PRE-POSITION THOSE STRAPS WHICH ARE NOT WITHIN THE DOOR OPENING.

(8) SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

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

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 60 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,020 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 60, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 60, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE "ANTI-SWAY BRACE, PIECE MARKED ② , FROM MOVING INTO THE CROSS MEMBER AREA.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP 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 96 AND 97 FOR GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	87	29
2" X 2"	202	68
2" X 4"	220	147
NAILS	**NO. REQD**	**POUNDS**
6d (2")	420	2-1/2
10d (3")	328	5-1/4
16d (3-1/2")	72	1-3/4

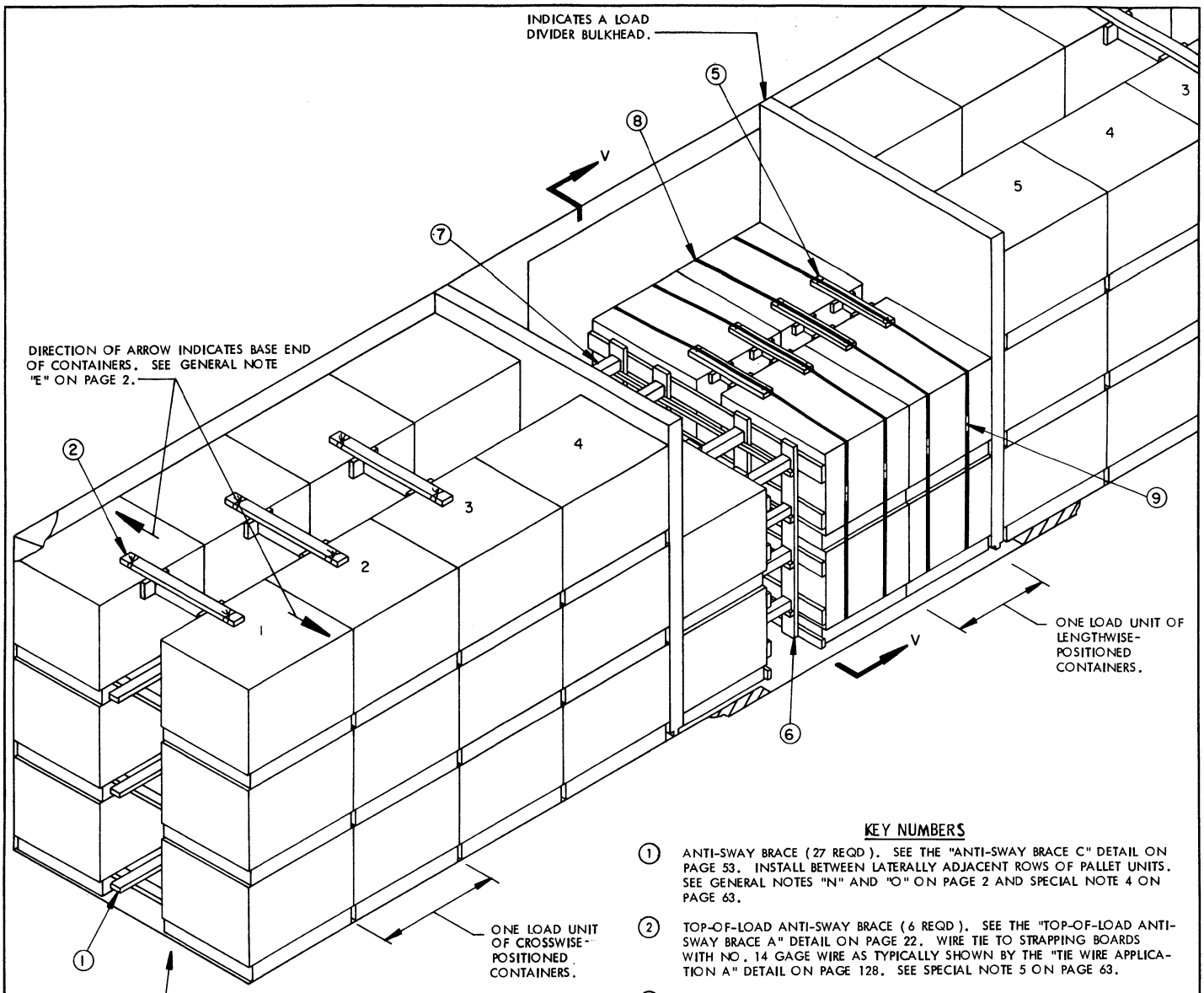
STEEL STRAPPING, 1-1/4" . 031" X .035" --- 248' REQD --------36 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 16 REQD --------- NIL
WIRE, NO. 14 GAGE ---------- 72' REQD -------- 1 LB

LOAD AS SHOWN

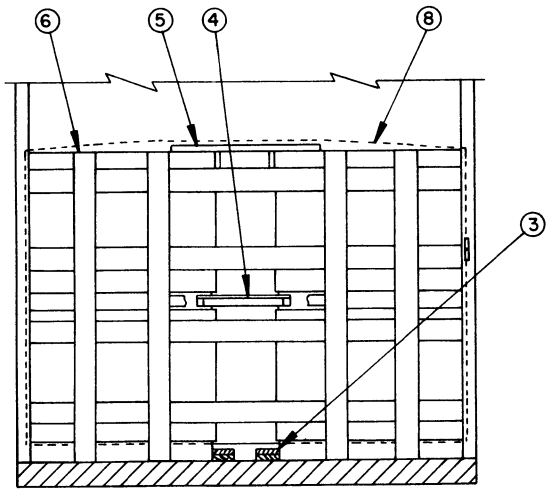
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	92,492 LBS
DUNNAGE		507 LBS

TOTAL WEIGHT---------92,999 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION V-V

KEY NUMBERS

(1) ANTI-SWAY BRACE (27 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 63.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 63.

(3) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (4 REQD, 2 FOR EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (S) AT FLOOR LEVEL.

(4) ANTI-SWAY BRACE (4 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 6 ON PAGE 63.

(5) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY B" DETAIL ON PAGE 67. POSITION ON TOP OF STRAPPING BOARDS OF PALLET UNITS.

(6) CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 67. SEE SPECIAL NOTES 7 AND 8 ON PAGE 63.

(7) STRUT, 4" X 4" BY CUT TO FIT (REF: 21") (16 REQD). TOENAIL TO PIECES MARKED (6) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(8) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY "B" W/2 STAPLES AND TO THE STRAPPING BOARDS OF THE PALLET UNIT W/1 STAPLE AT EACH END OF STRAP. SEE SPECIAL NOTE 9 ON PAGE 63.

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

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

PROJECT FSA 43B/3-63

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) 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 LOAD BEHIND THE LOAD DIVIDER BULKHEADS. OR, THE ENTIRE TOP TIER CAN BE OMITTED FROM THE CENTER PORTION OF THE LOAD REDUCING A LOAD BY SIX (6) UNITS OR ALL TWELVE (12) UNITS IN THE CENTER OF THE LOAD CAN BE OMITTED AND A STRUT ASSEMBLY INSTALLED AS DETAILED ON PAGE 135, IF APPLICABLE. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 100 THRU 111 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 123, 124, AND/OR 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 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 62 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). USING THIS PROCEDURE THE FOLLOWING LOADS CAN BE ACHIEVED.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS BULKHEAD DIVIDER	NO. OF STACKS IN DOORWAY AREA
60'-8"	78	94,926	5 AND 6	3 LENGTHWISE
40'-6"	44	53,548	3 AND 3	2 LENGTHWISE

IF A CONTAINERS-LENGTHWISE LOADING PATTERN BEHIND THE DIVIDERS IS USED, THE FOLLOWING DATA APPLIES.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS BULKHEAD DIVIDER	NO. OF STACKS IN DOORWAY AREA
60'-8"	92	111,964	7 AND 7	2 CROSSWISE
50'-6"	74	90,058	5 AND 6	2 CROSSWISE
40'-6"	56	68,152	4 AND 4	2 CROSSWISE

3. THE DIRECTION OF THE LOAD UNIT DETERMINES THE TYPE OF DETAILS TO BE USED. FOR CONTAINERS-CROSSWISE LOAD UNITS, REFER TO PAGE 56. REFER TO PAGE 58 FOR CONTAINERS-LENGTHWISE LOAD UNITS.

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

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 62, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" IN LENGTH CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" CAR.

6. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE "D" BETWEEN THE UPPER UNITS BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THOSE UNITS ARE POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Q" AS SHOWN ON THE DETAIL ON PAGE 67.

7. CENTER GATE "Q" OR CENTER GATE "P", AS APPLICABLE, 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 129 FOR GUIDANCE.

8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Q", SHOWN AS PIECE MARKED (4) IN THE LOAD ON PAGE 62, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 65. OR, IN LIEU OF EACH "CENTER GATE P" USED WHEN UNITS BETWEEN THE LOAD DIVIDERS ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR, INSTALL TWO (2) "CENTER GATES N" AS DETAILED ON PAGE 64. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 129. OMIT THE STOP PIECE FROM "CENTER GATE O".

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGES 56 OR 58, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

BILL OF MATERIAL

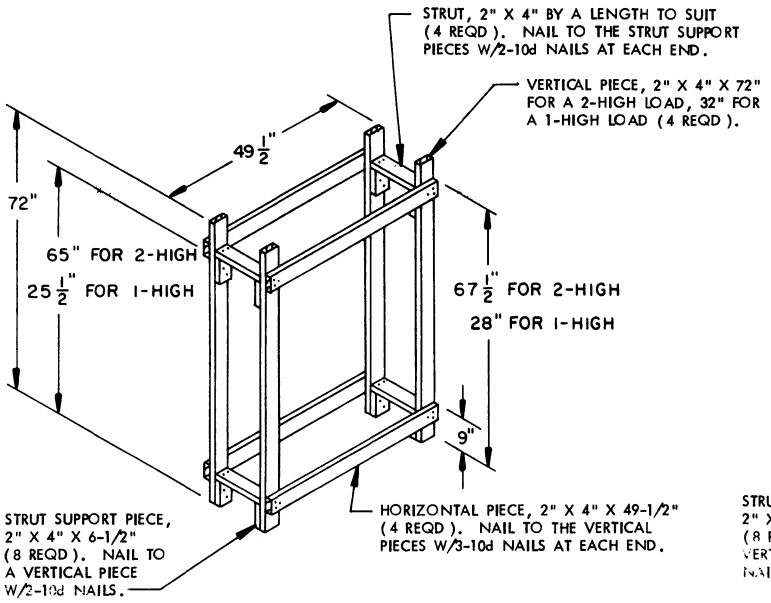
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	13	5
2" X 2"	87	29
2" X 3"	8	4
2" X 4"	411	274
2" X 6"	217	217
4" X 4"	28	38
NAILS	**NO. REQD**	**POUNDS**
6d (2")	56	1/2
10d (3")	676	10-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	104	2-1/2

STEEL STRAPPING, 1-1/4" X .031" OR .035" ----132' REQD-------19 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD-------- NIL
WIRE, NO. 14 GAGE ---------- 36' REQD ------- NIL
STAPLE---------- 16 REQD---------NIL

LOAD AS SHOWN

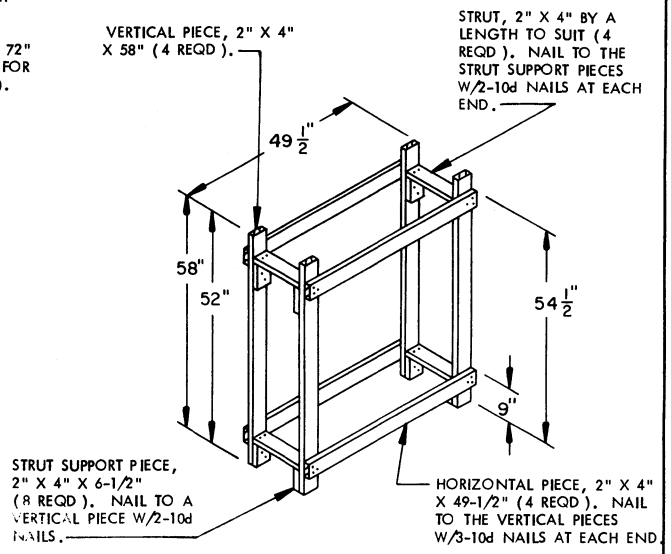
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	80,322 LBS
DUNNAGE		1,167 LBS
TOTAL WEIGHT		81,489 LBS (APPROX)

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



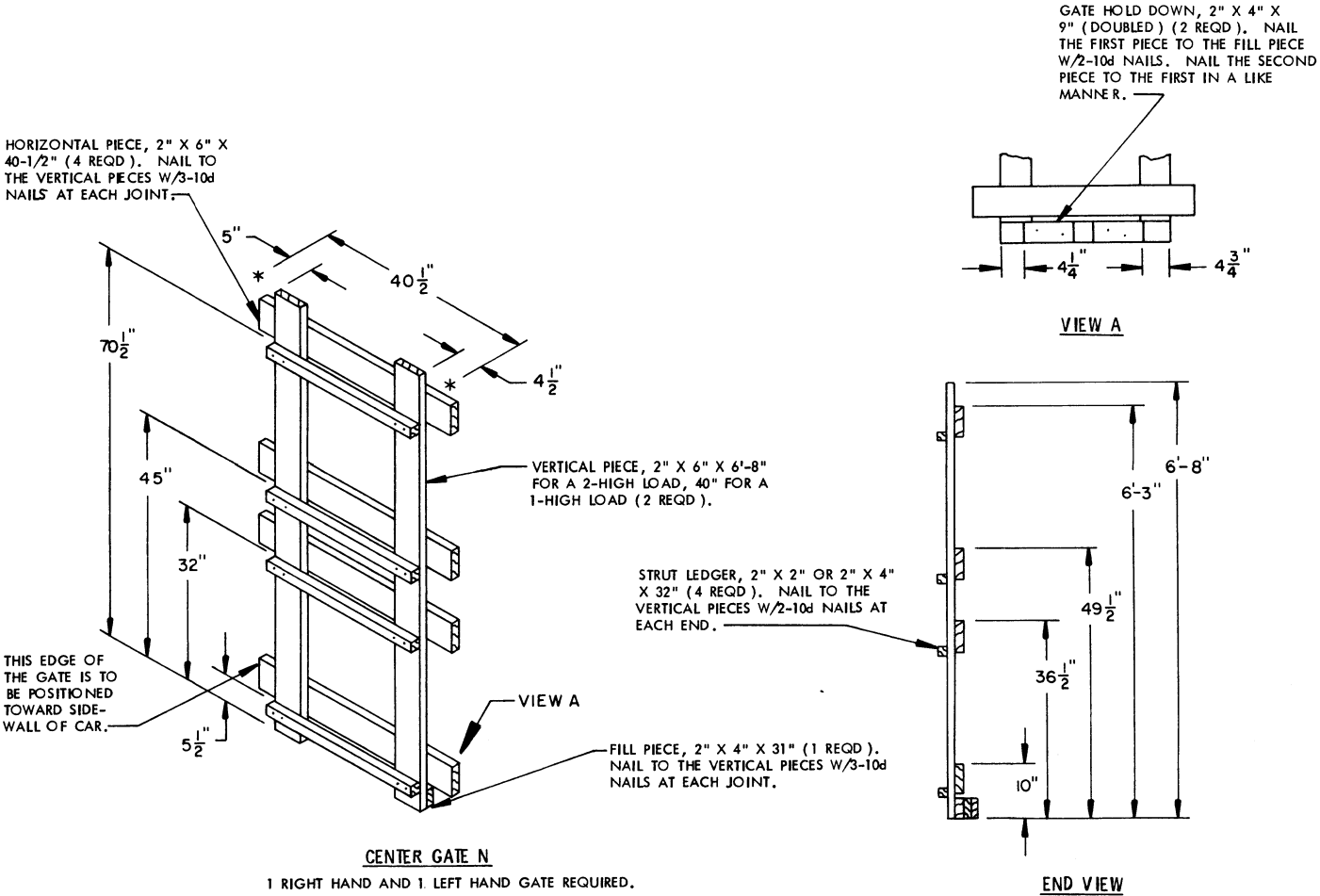
CRIB FILL G

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



CRIB FILL H

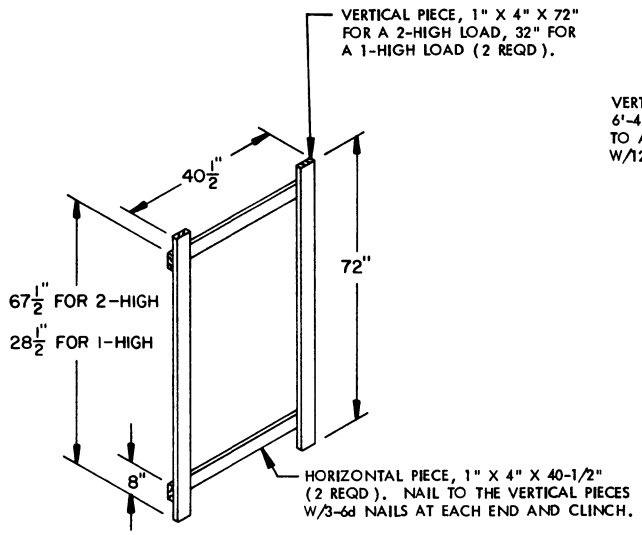
CRIB FILL "H" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "G" THROUGHOUT THE LENGTH OF THE LOAD.



CENTER GATE N

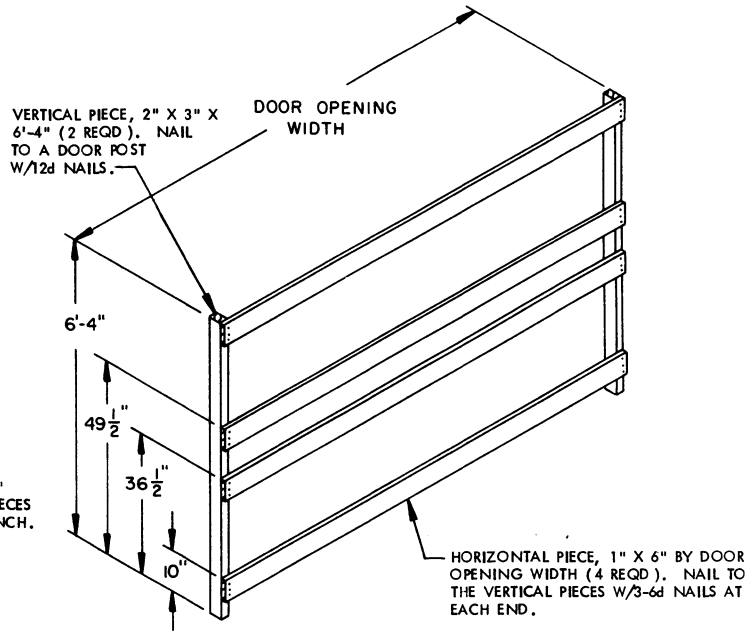
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



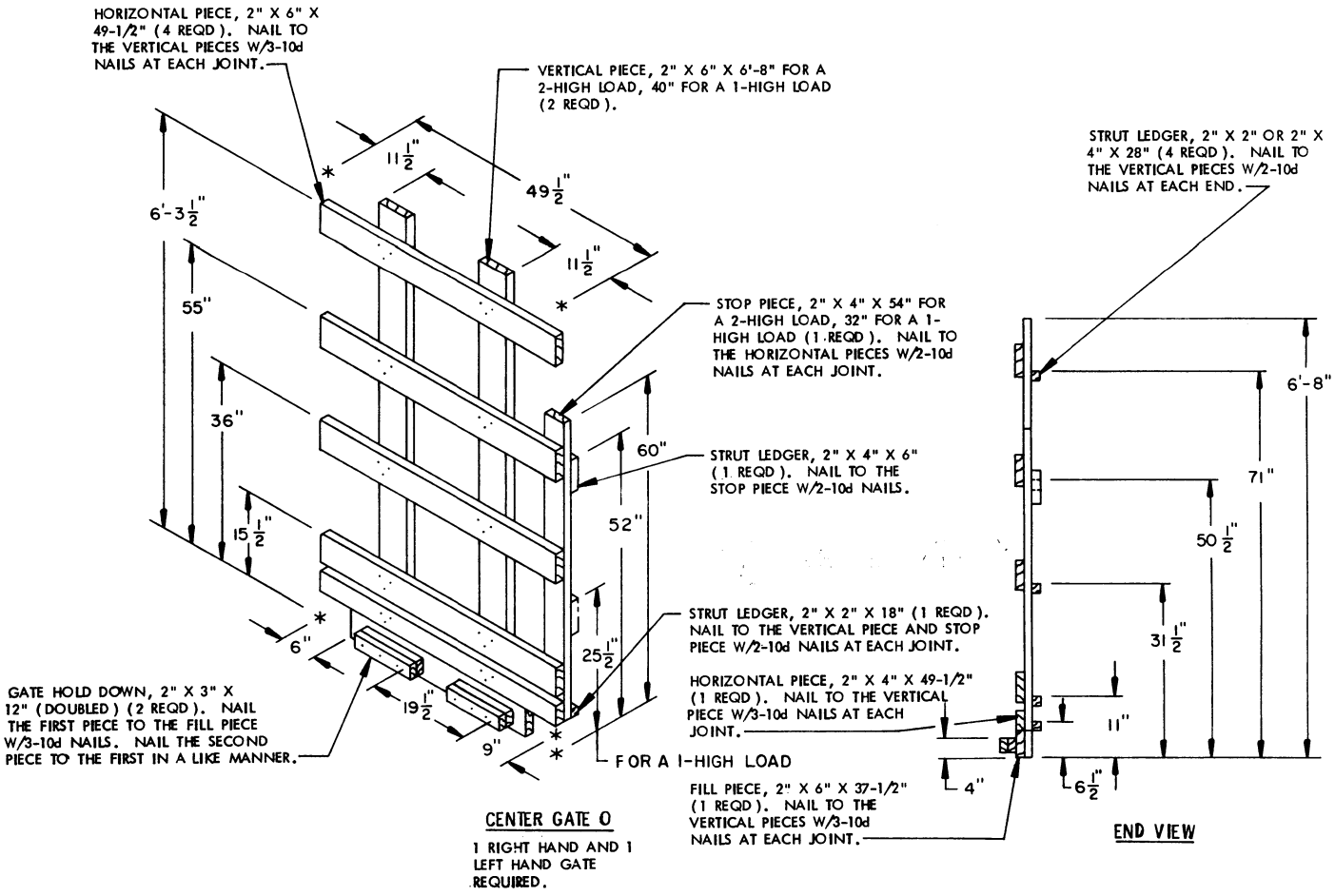
SIDE FILL ASSEMBLY G

THIS ASSEMBLY IS DESIGNED FOR USE IN THE LOAD ON PAGE 54.



DOORWAY PROTECTION F

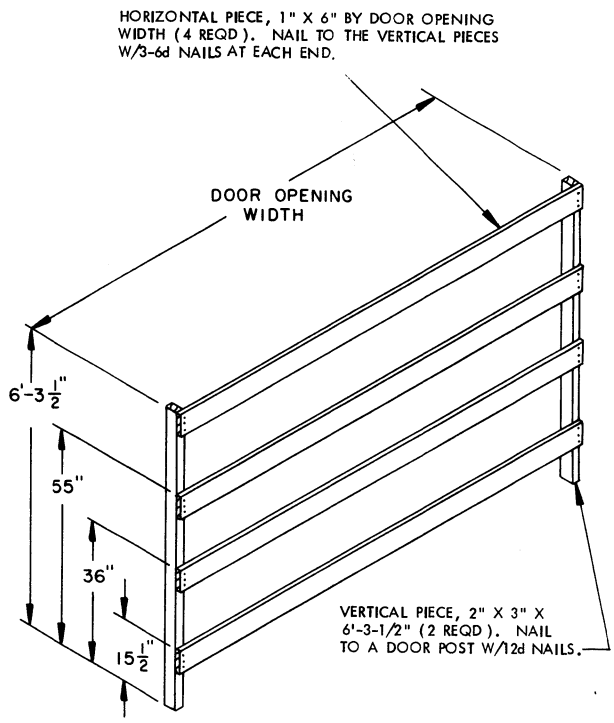
THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 54, AND FOR THE LOAD SHOWN ON PAGE 56.



CENTER GATE O

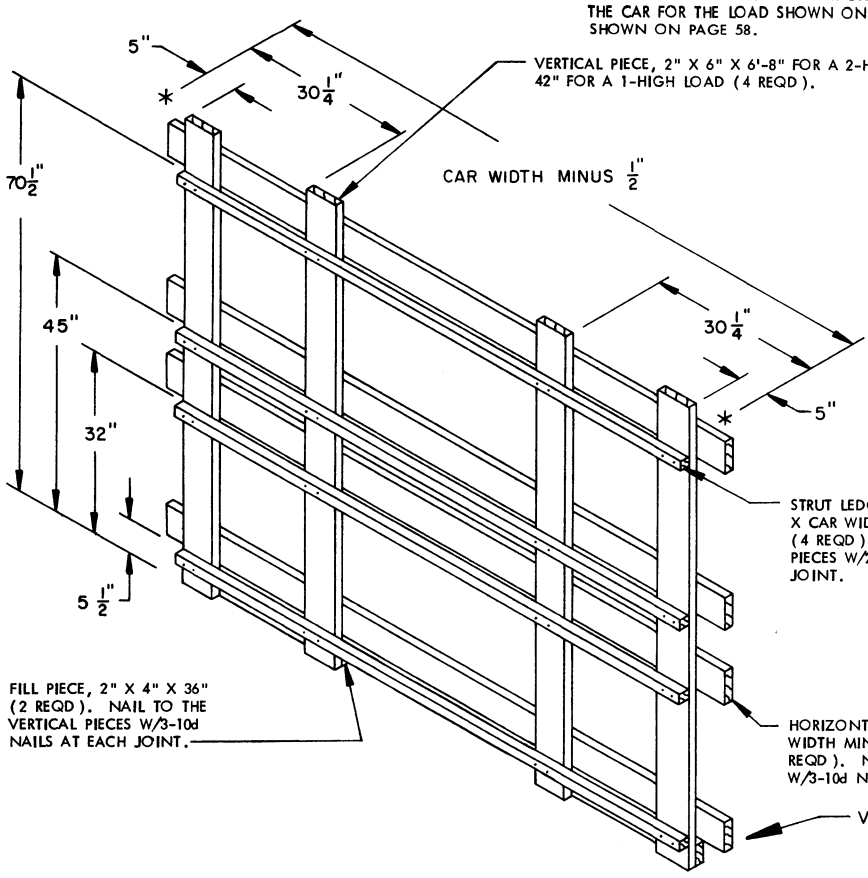
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

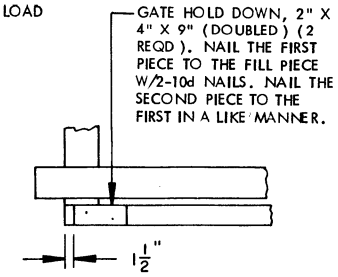
DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DOORWAY PROTECTION G

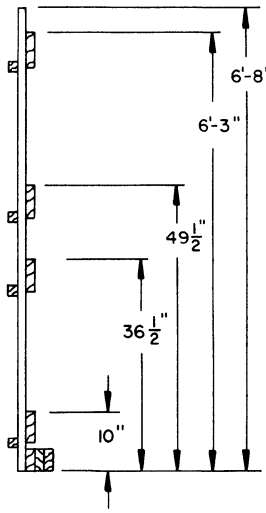
THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 54, AND FOR THE LOAD SHOWN ON PAGE 58.





VIEW A

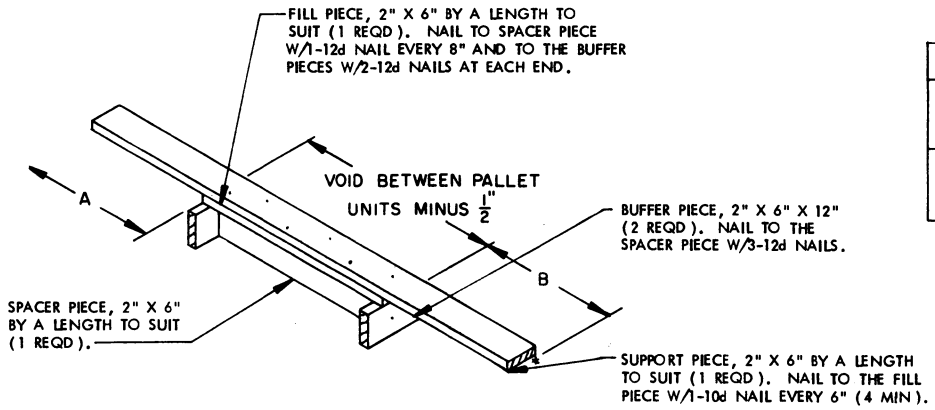
GATE HOLD DOWNS ARE REQUIRED AT BOTH ENDS OF THE GATE.



END VIEW

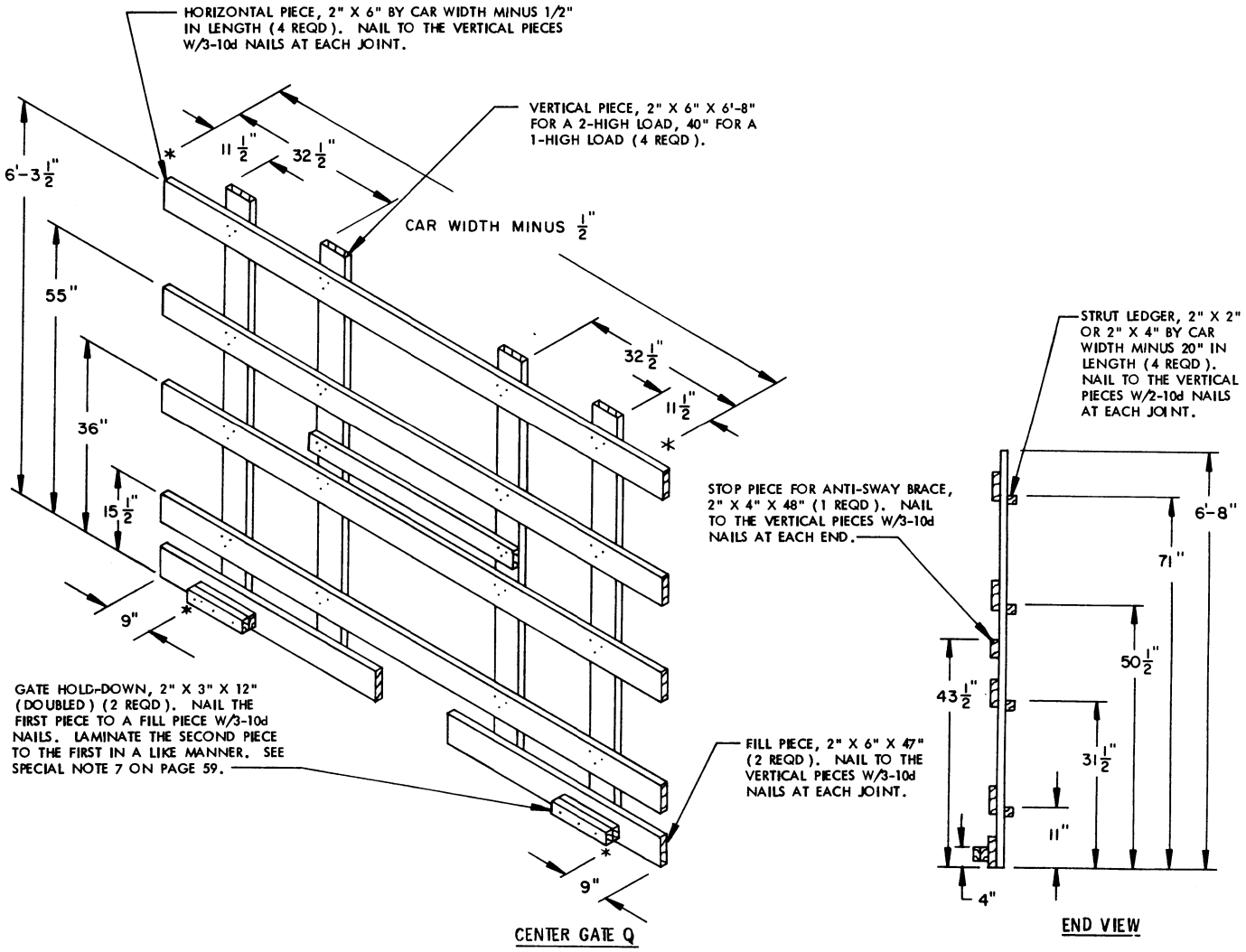
CENTER GATE P

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 56, AND MAY BE USED IN THE CENTER AREA OF THE LOAD SHOWN ON PAGE 62, IF APPLICABLE.



SPACER ASSEMBLY B		
LOAD PAGE	DIMENSION	
	A	B
40, 41, 54	40-1/4"	45-1/2"
44, 48, 58, 62	45-1/2"	45-1/2"

SPACER ASSEMBLY B



CENTER GATE Q

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 58, AND MAY BE USED IN THE CENTER AREA OF THE LOAD SHOWN ON PAGE 62, IF APPLICABLE.

(KEY NUMBERS CONTINUED)

PIECES OF PIECE MARKED (9) W/3-6d NAILS AT EACH END.

(16) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 80. NAIL TO THE DOOR POSTS W/12d NAILS.

(17) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 24'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACK AS SHOWN. POSITION ON TOP OF STRAPPING BOARD OF UNIT. STAPLE TO STRAPPING BOARD W/2-STAPLES.

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

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

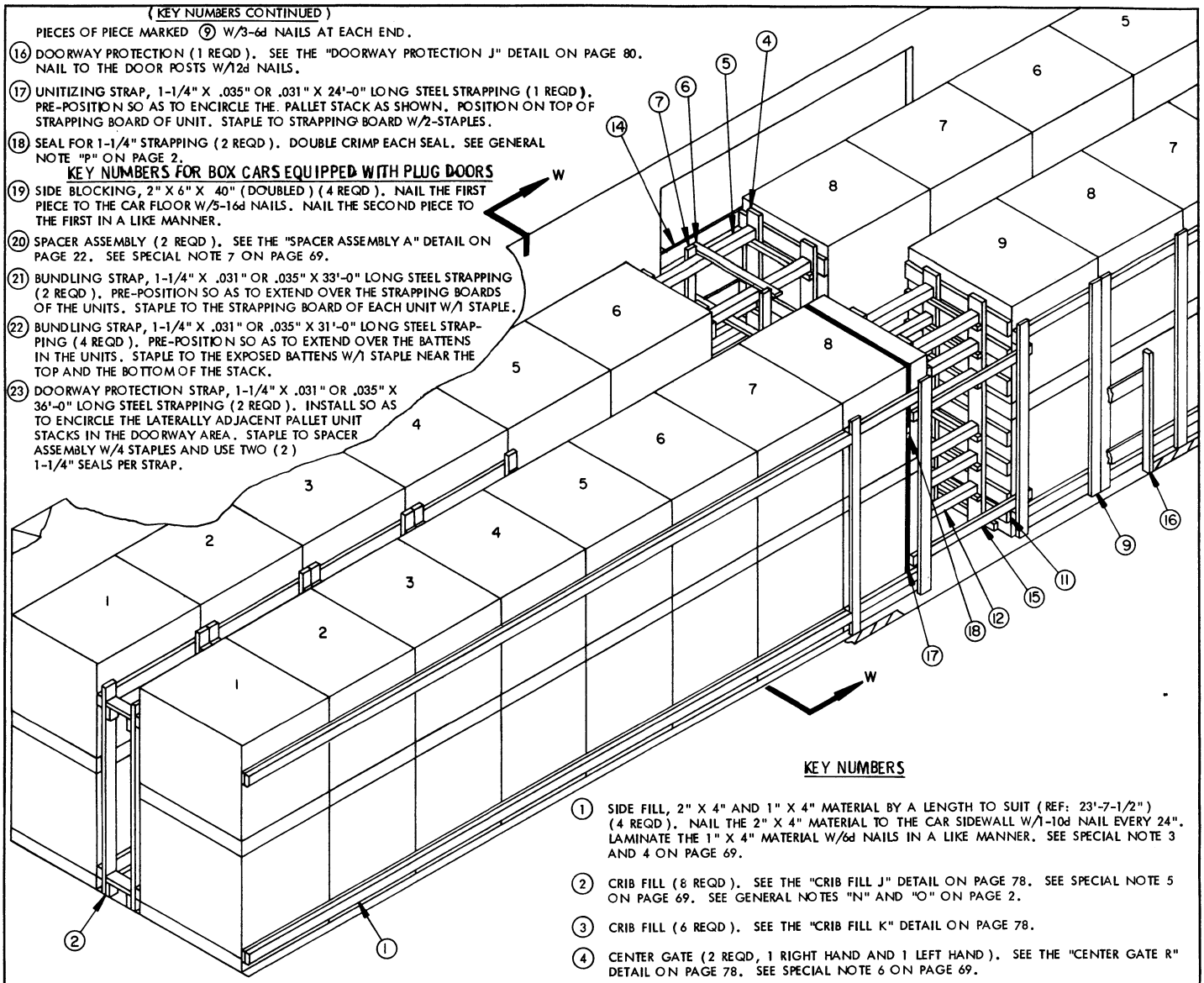
(19) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(20) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 22. SEE SPECIAL NOTE 7 ON PAGE 69.

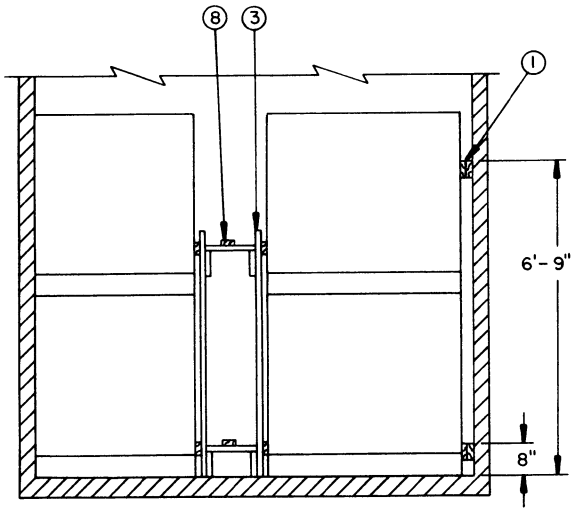
(21) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARD OF EACH UNIT W/1 STAPLE.

(22) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 31'-0" LONG STEEL STRAPPING (4 REQD). PRE-POSITION SO AS TO EXTEND OVER THE BATTENS IN THE UNITS. STAPLE TO THE EXPOSED BATTENS W/1 STAPLE NEAR THE TOP AND THE BOTTOM OF THE STACK.

(23) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.



ISOMETRIC VIEW



SECTION W-W

KEY NUMBERS

(1) SIDE FILL, 2" X 4" AND 1" X 4" MATERIAL BY A LENGTH TO SUIT (REF: 23'-7-1/2") (4 REQD). NAIL THE 2" X 4" MATERIAL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE 1" X 4" MATERIAL W/6d NAILS IN A LIKE MANNER. SEE SPECIAL NOTE 3 AND 4 ON PAGE 69.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL J" DETAIL ON PAGE 78. SEE SPECIAL NOTE 5 ON PAGE 69. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) CRIB FILL (6 REQD). SEE THE "CRIB FILL K" DETAIL ON PAGE 78.

(4) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE R" DETAIL ON PAGE 78. SEE SPECIAL NOTE 6 ON PAGE 69.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 50") (8 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

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

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

(8) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 66") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "K" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 69.

(9) SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY H" DETAIL ON PAGE 79. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDE WALL.

(10) SIDE BLOCKING, 2" X 4" X 36" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 69.

(11) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE S" DETAIL ON PAGE 79.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 33") (12 REQD). TOENAIL TO PIECES MARKED (11) W/2-16d NAILS AT EACH END.

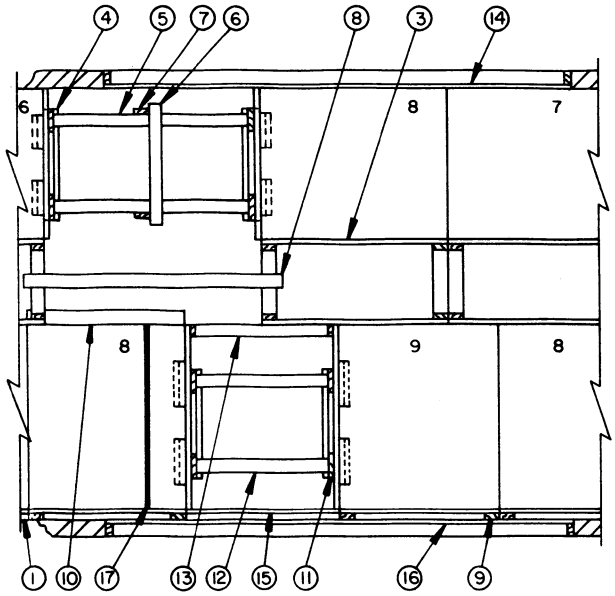
(13) STRUT, 2" X 4" BY CUT TO FIT (REF: 33") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (11) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 69.

(14) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 79. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 69.

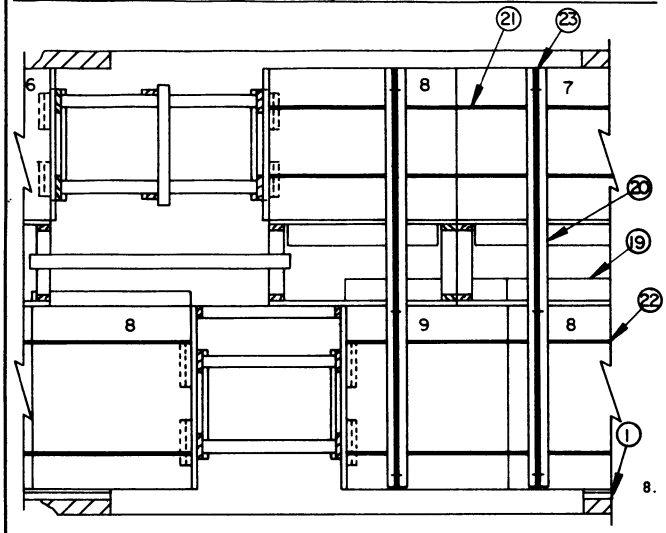
(15) SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 52") (2 REQD). POSITION AT 15" AND 6'-3" FROM THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL

(CONTINUED AT LEFT)

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



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	217	73
1" X 6"	80	40
2" X 2"	50	17
2" X 3"	38	19
2" X 4"	880	587
2" X 6"	145	145
4" X 4"	67	90
NAILS	NO. REQD	POUNDS
6d (2")	144	1
10d (3")	1188	18-1/2
12d (3-1/4")	36	3/4
16d (3-1/2")	90	2
STEEL STRAPPING, 1-1/4" X .031" OR .035" ---- 24' REQD --- 4 LBS		
SEAL FOR 1-1/4" STRAPPING ---------- 2 REQD ---- NIL		
STAPLES ---------- 2 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 SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 68 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,620 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY (40) UNITS, FOR A LADING WEIGHT OF 57,400 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED 9 ON PAGE 68, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (9), AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED (15).

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. CENTER GATES "R" AND "S" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (14) AND (16) IN THE LOAD ON PAGE 68, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT. IF THE SPACER ASSEMBLY CAN BE PLACED ON THE STRAPPING BOARD OF THE PALLET UNIT OF LENGTHWISE-POSITIONED CONTAINERS, SPACER ASSEMBLY "B", AS DETAILED ON PAGE 67, WILL BE USED IN LIEU OF THE SPACER ASSEMBLY SHOWN AT LEFT. NOTE THAT THE VERTICAL PIECES AND BOTTOM SUPPORT PIECES OF THE CRIB FILL, PIECES MARKED (3), MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM END OF ONE SIDE SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING WHICH IS ADJACENT TO THE CONTAINERS-LENGTHWISE UNITS. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLIES AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACKS BY A BUNDLING STRAP, PIECES MARKED (21) AND (22). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

(CONTINUED)

(CONTINUED FROM ABOVE)

8. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHODS SHOWN ON PAGE 102 AND 103. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.

9. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 118 AND 119.

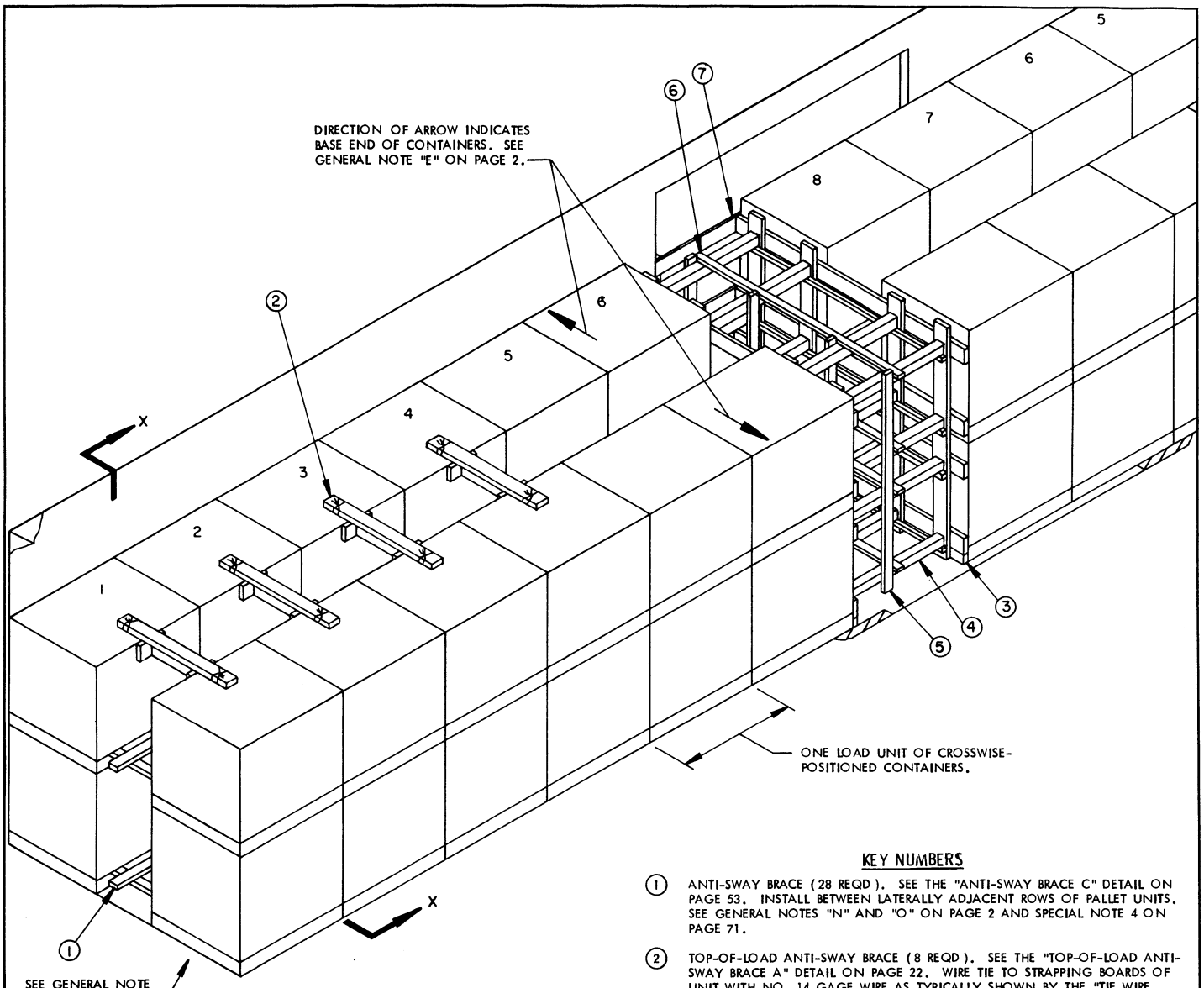
10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 123 AND 126 FOR CROSSWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	88,970 LBS
DUNNAGE		1,969 LBS
TOTAL WEIGHT		90,969 LBS (APPROX)

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



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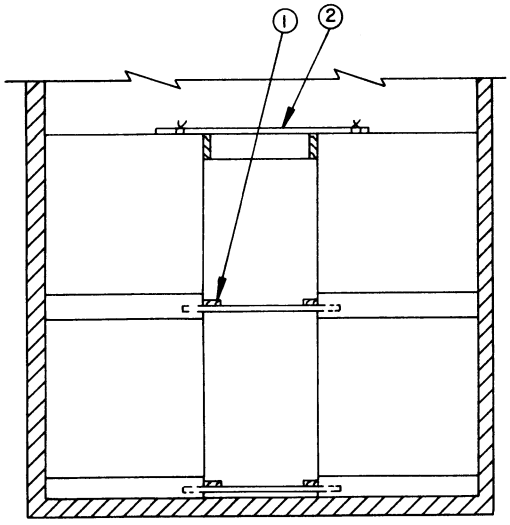


SECTION X-X

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 71.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 71.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE T" DETAIL ON PAGE 80. SEE SPECIAL NOTES 6, 7, 8, AND 10 ON PAGE 71.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 50") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

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

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

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 79. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 71.

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

PROJECT FSA 43B/3-63

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 SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 70 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,880 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 51,660 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

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, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 70, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR.

6. CENTER GATE "T" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE T", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 70, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 78. 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 129.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "T", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 70, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. THIS WILL BE SIMILAR TO THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 62 BY PIECES MARKED ③, ⑤, AND ⑧ EXCEPT THAT SPACER ASSEMBLY "A" WILL BE USED IN LIEU OF SPACER ASSEMBLY "B". NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

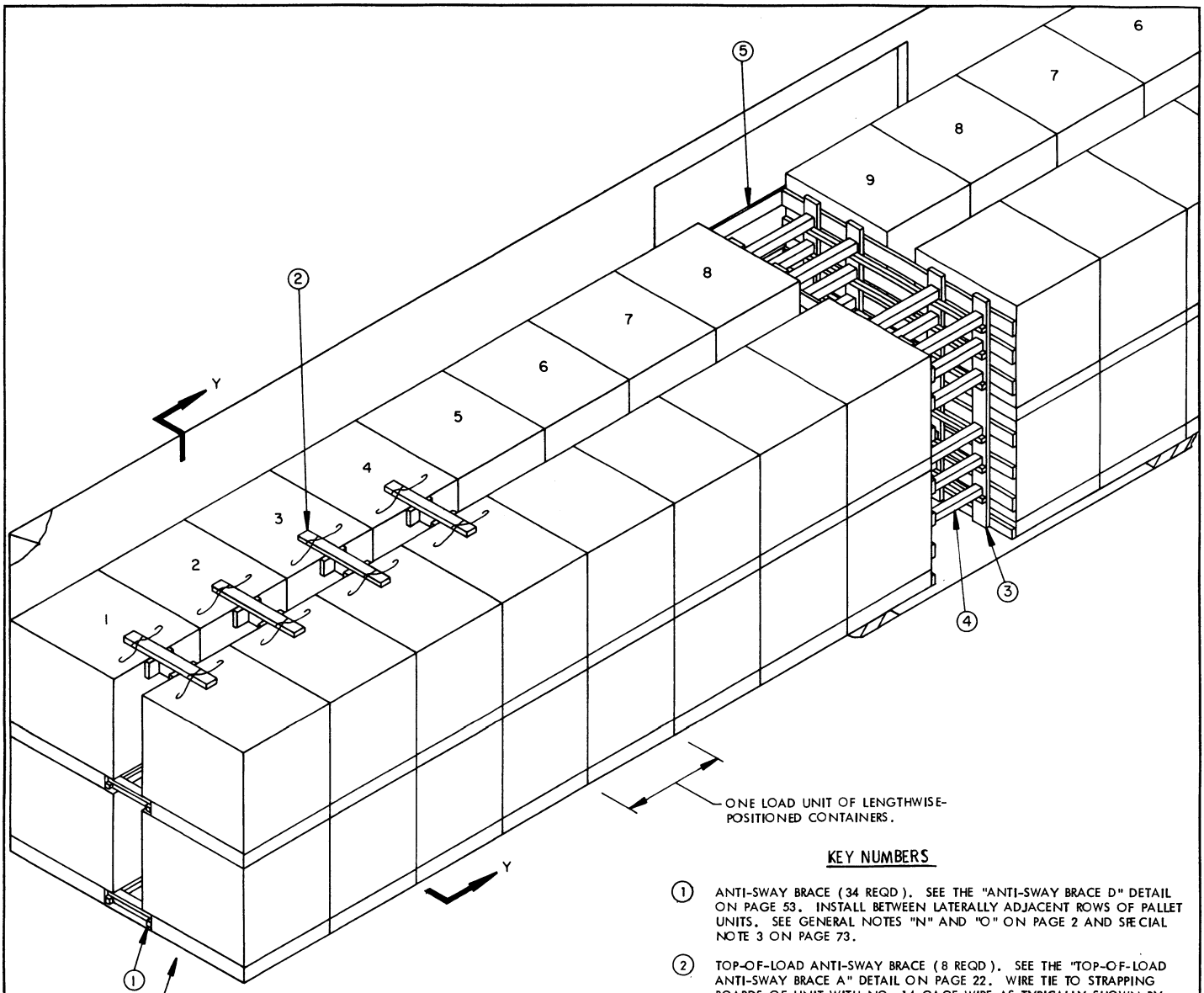
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	30	15
2" X 4"	499	333
2" X 6"	167	167
4" X 4"	67	90
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	744	11-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE	48' REQD	3/4 LB

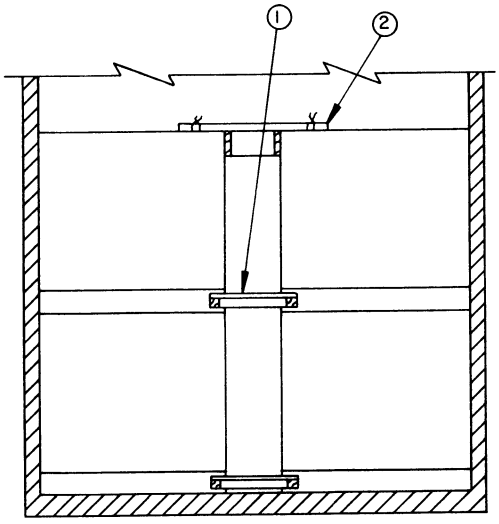
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET	56	80,360 LBS
DUNNAGE		1,351 LBS
TOTAL WEIGHT		81,711 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION Y-Y

KEY NUMBERS

(1) ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 73.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 73.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 81. SEE SPECIAL NOTE 5 AND 6 ON PAGE 73.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 33-1/2") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 80. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 23.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 72 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,360 POUNDS CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-FOUR (44) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 63,140 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR. NOTE THAT ONLY FOUR (4) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 50' OR 40' LONG CAR.

3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE "ANTI-SWAY BRACE D" BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "U" AS SHOWN ON THE DETAIL ON PAGE 81.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 72, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. CENTER GATE "U" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE U", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 72, INSTALL TWO (2) "CENTER GATES S" AS SHOWN ON PAGE 79. 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 129. OMIT THE STOP PIECE FROM CENTER GATE "S".

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE U", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 72, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. THIS WILL BE SIMILAR TO THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 62 BY PIECE MARKED ③, ⑤, AND ⑧, EXCEPT THAT THE SPACER ASSEMBLY "A" WILL BE USED IN LIEU OF SPACER ASSEMBLY "B". NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	112	38
1" X 6"	80	40
2" X 2"	321	107
2" X 3"	38	19
2" X 4"	143	96
2" X 6"	219	219
4" X 4"	67	90
NAILS	**NO. REQD**	**POUNDS**
6d (2")	524	3-1/4
10d (3")	684	10-3/4
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE,----------60' REQD----------1 LB		

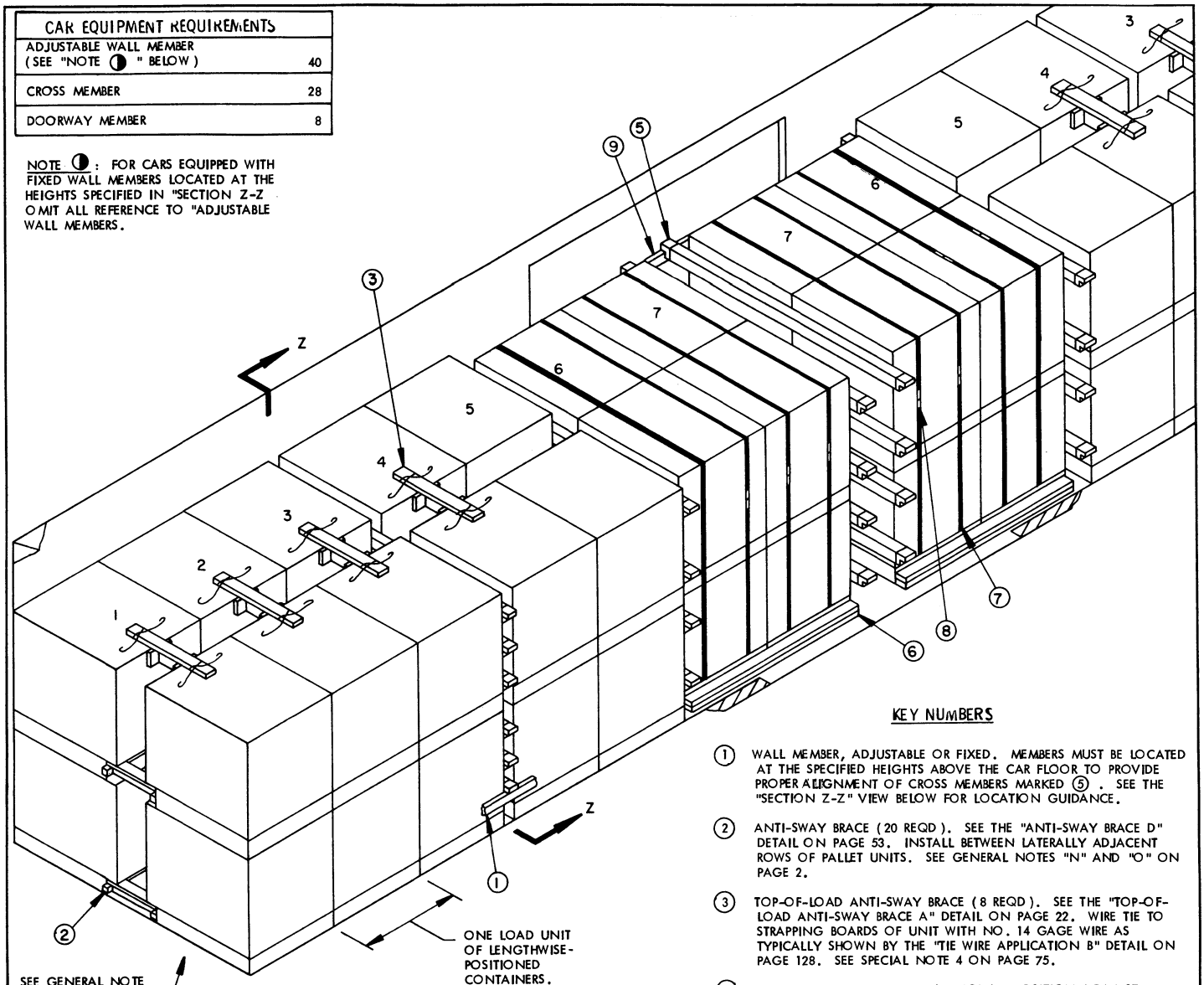
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	97,580 LBS
DUNNAGE		1,236 LBS
TOTAL WEIGHT		98,816 LBS (APPROX)

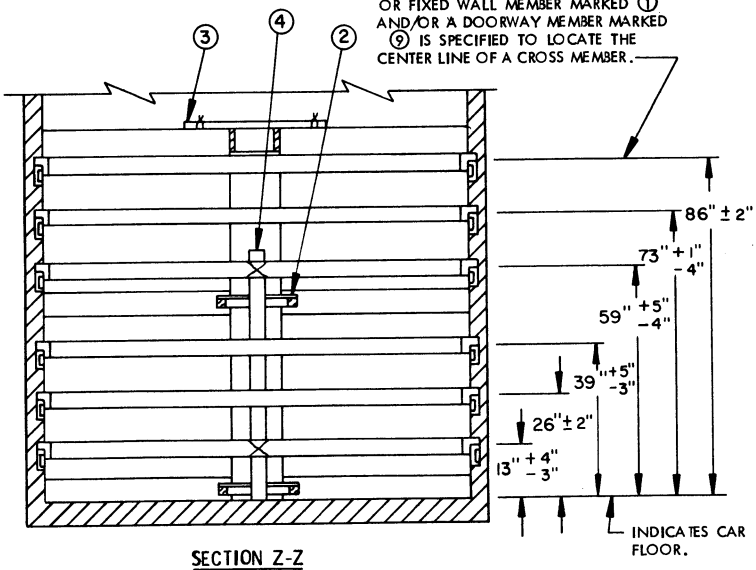
ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
68-UNIT LOAD IN 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

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

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



ISOMETRIC VIEW



SECTION Z-Z

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 Z-Z" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (20 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 75.

④ STOP PIECE, 2" X 4" X 66" (6 REQD). POSITION AGAINST "ANTI-SWAY BRACE D" BEFORE AND/OR AFTER EACH BLOCKING STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECES OF PIECE MARKED ② W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE AT TWO LOCATIONS.

⑤ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 2.

⑥ SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 33'-0" LONG STEEL STRAPPING (8 REQD). POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS AND STAPLE TO EACH STRAPPING BOARD W/2 STAPLES. PRE-POSITION THOSE STRAPS WHICH ARE NOT WITHIN THE DOOR OPENING.

⑧ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

⑨ DOORWAY MEMBER (8 REQD). SEE THE "SECTION Z-Z" VIEW AT LEFT FOR LOCATION GUIDANCE.

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

PROJECT FSA 43B/3-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 74 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,140 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 THECROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 74, 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 B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 74, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE ANTI-SWAY BRACE, PIECE MARKED ② , FROM MOVING INTO THE CROSS MEMBER AREA.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 96 AND 97 FOR GUIDANCE.

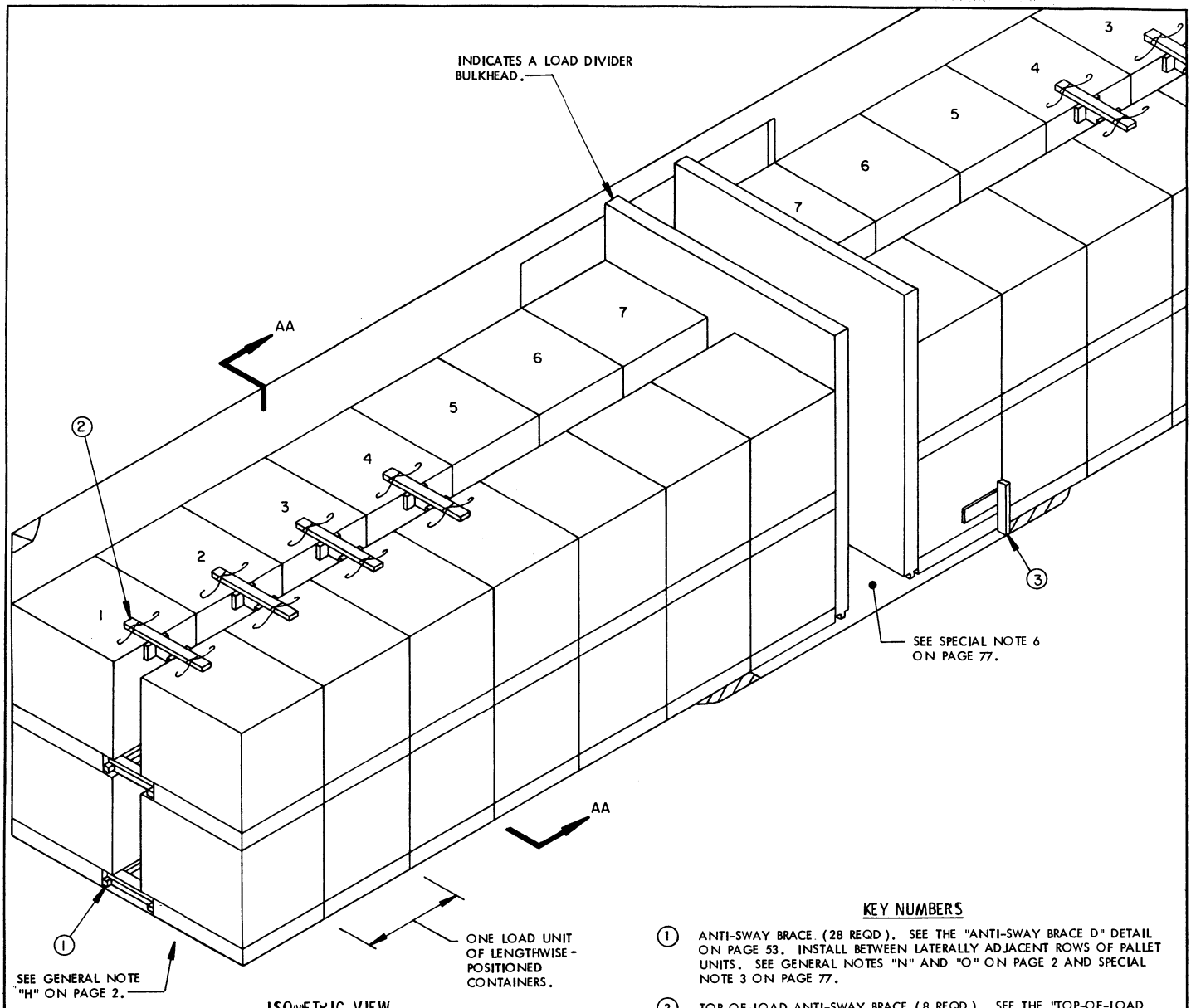
7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 2" 2" X 4" 2" X 6"	58 135 178 32	20 45 119 32
NAILS	NO. REQD	POUNDS
6d (2") 10d (3") 16d (3-1/2")	280 288 72	1-3/4 4-1/2 1-1/2
STEEL STRAPPING, 1-1/4" X .031" OR .035"-----264' REQD ----- 38 LBS SEAL FOR 1-1/4" STRAPPING---------- 16 REQD -------NIL WIRE, NO. 14 GAGE---------- 72' REQD -------NIL		

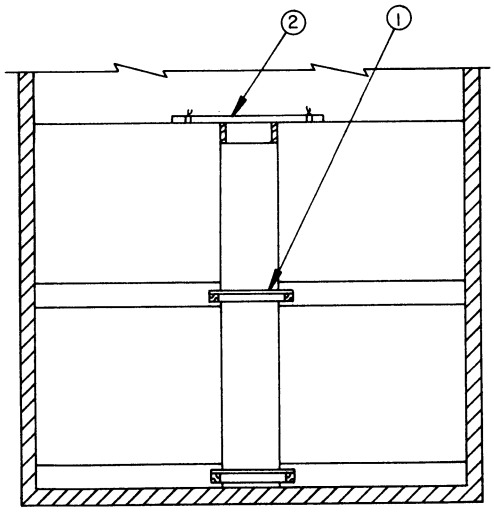
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	80,360 LBS
DUNNAGE		479 LBS
TOTAL WEIGHT		80,839 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION AA-AA

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 77.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 77.

(3) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 80. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 5 ON PAGE 77.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 76 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 97,580 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 63,140 POUNDS, WHEN USING THE DEPICTED PROCEDURES. WHEN THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 70 IS EMPLOYED, FIFTY-SIX (56) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 80,360 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FORTY-FOUR (44) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 63,140 POUNDS, AND THIRTY-SIX (36") UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 51,660 POUNDS.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 76, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH OR WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 76, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED. THIS WILL BE SIMILAR TO THE DOORWAY PROTECTION PROCEDURES SHOWN ON PAGE 62 BY PIECES MARKED ③, ⑤, AND ⑧ EXCEPT THAT THE SPACER ASSEMBLY "C", AS DETAILED ON PAGE 95, WILL BE USED IN LIEU OF SPACER ASSEMBLY "B". IF THE CONTAINERS ARE POSITIONED CROSSWISE IN THE CAR, THE SIDE BLOCKING WILL BE 48" LONG IN LIEU OF 40" AND SPACER ASSEMBLY "A", AS DETAILED ON PAGE 22, WILL BE USED IN LIEU OF SPACER ASSEMBLY "C". NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR PLUG DOOR CARS CAN ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

6. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑧ IN THE LOAD ON PAGE 16, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE.

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 100 THRU 111 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

8. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 123, 124, AND/OR 126 FOR SHIPPING GUIDANCE.

9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

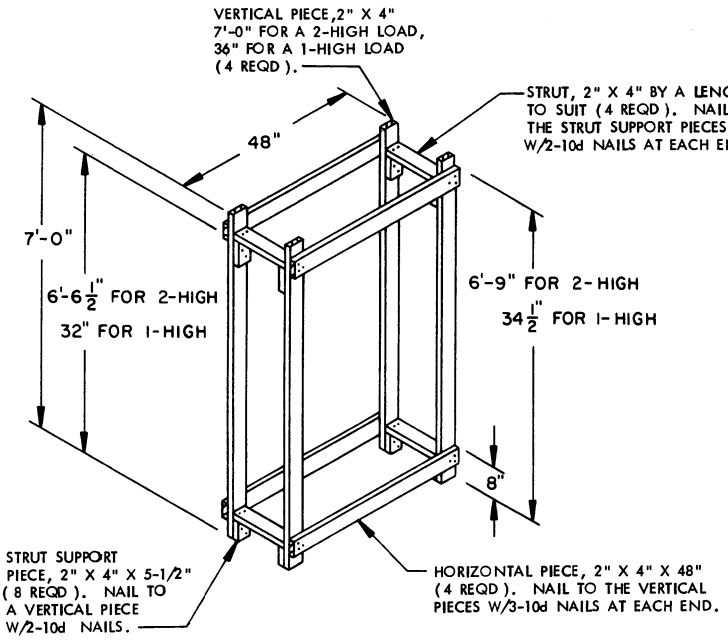
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	90	30
1" X 6"	80	40
2" X 2"	188	63
2" X 3"	30	15
2" X 4"	115	77
2" X 6"	32	32
NAILS	**NO. REQD**	**POUNDS**
6d (2")	440	2-3/4
10d (3")	336	5-1/4
12d (3-1/4")	28	3/4
WIRE, NO. 14 GAGE----------	60' REQD----------	1 LB

LOAD AS SHOWN

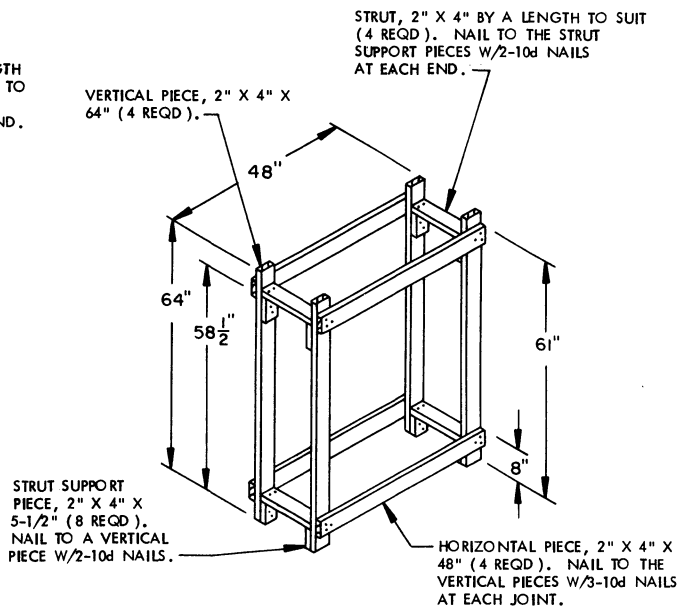
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	80,360 LBS
DUNNAGE		524 LBS
TOTAL WEIGHT		80,884 LBS (APPROX)

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



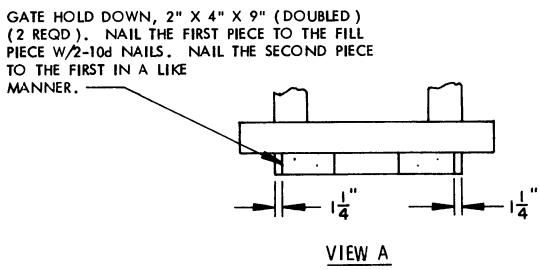
CRIB FILL J

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



CRIB FILL K

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



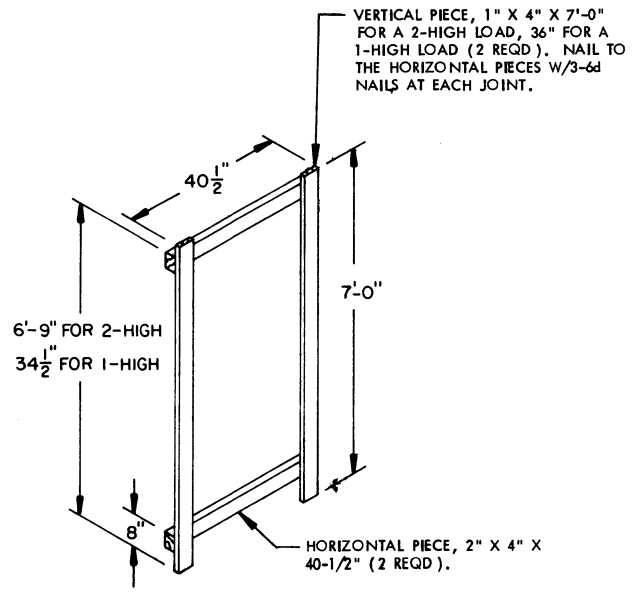
VIEW A

CENTER GATE R

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

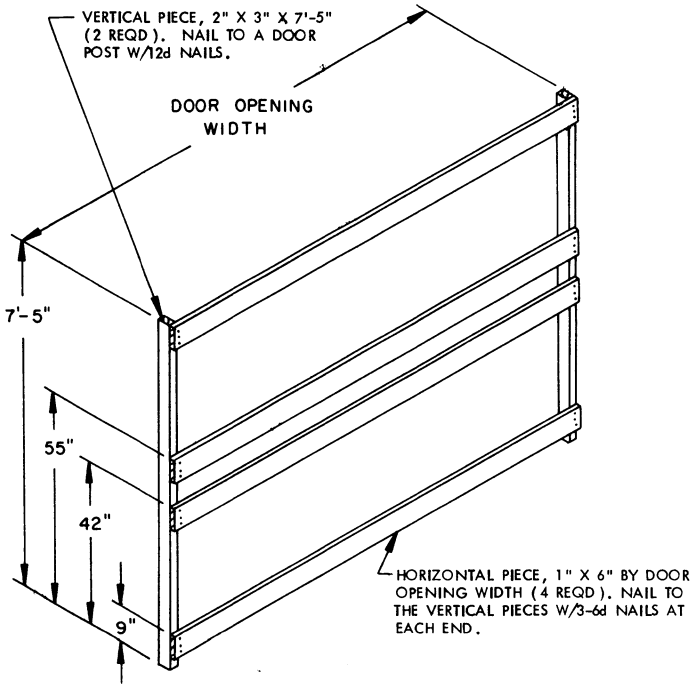
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



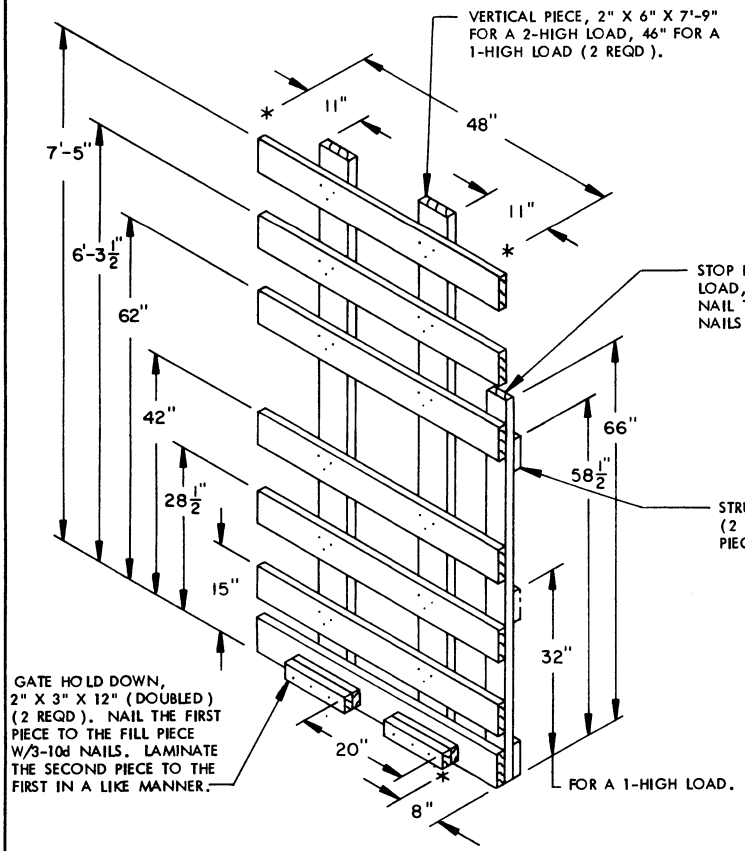
SIDE FILL ASSEMBLY H

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



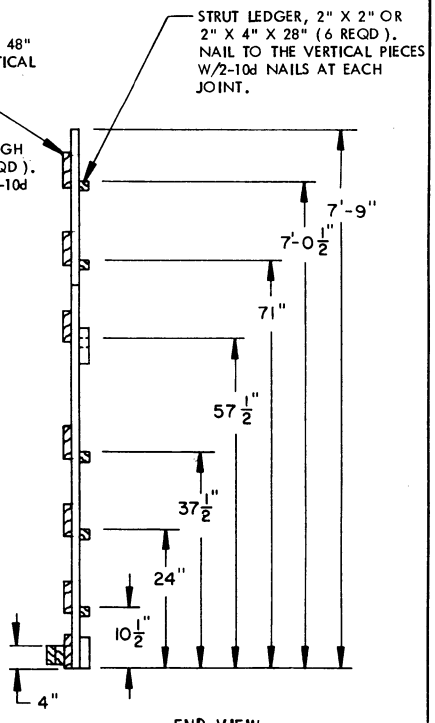
DOORWAY PROTECTION H

THIS ASSEMBLY IS DESIGNED FOR USE ON THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 68, AND FOR THE LOAD SHOWN ON PAGE 70.



CENTER GATE S

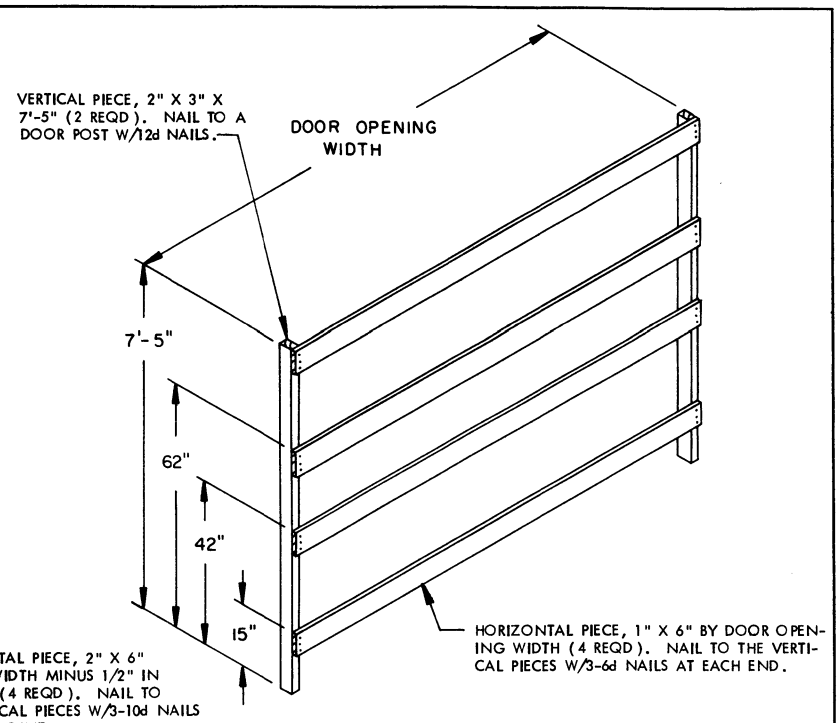
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



END VIEW

THE STRUT LEDGERS AT THE 24" AND 71" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60'-8" LONG CAR.

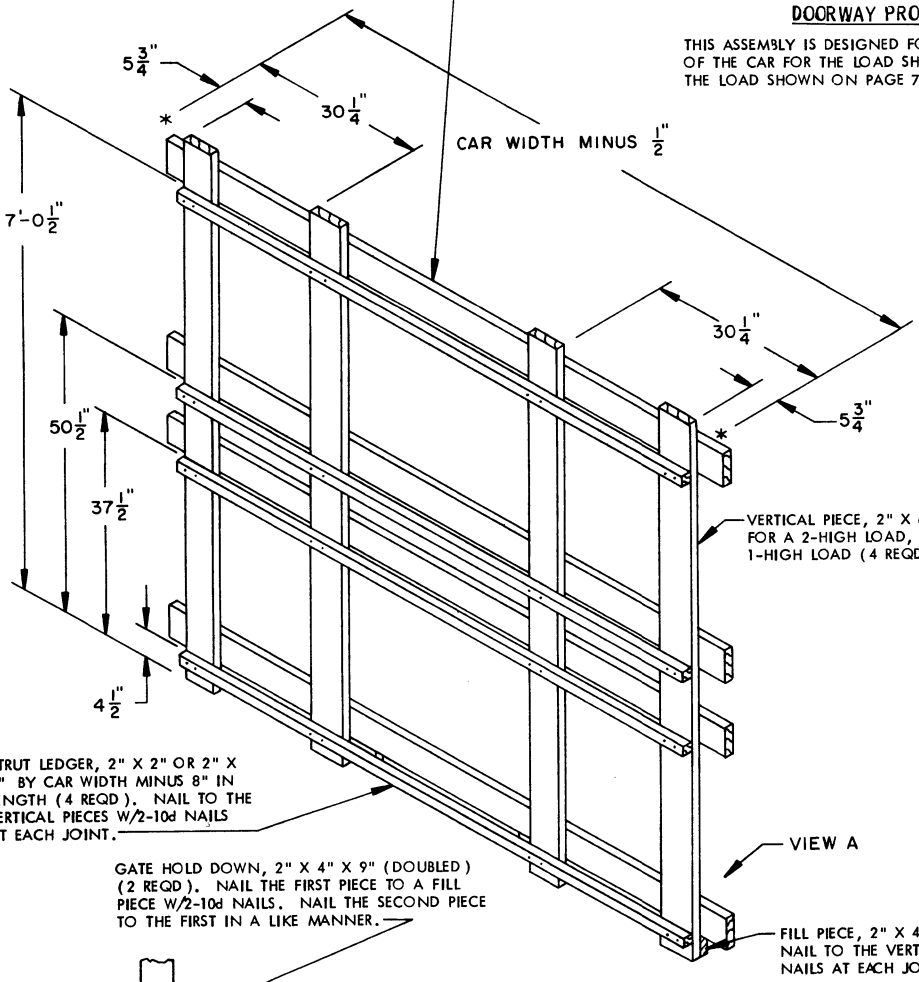
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

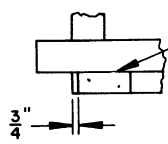


HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

DOORWAY PROTECTION J

THIS ASSEMBLY IS DESIGNED FOR USE ON THE LOADING SIDE OF THE CAR FOR THE LOAD SHOWN ON PAGE 68, AND FOR THE LOAD SHOWN ON PAGE 72.

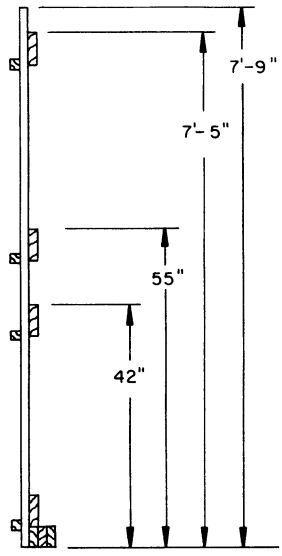




VIEW A

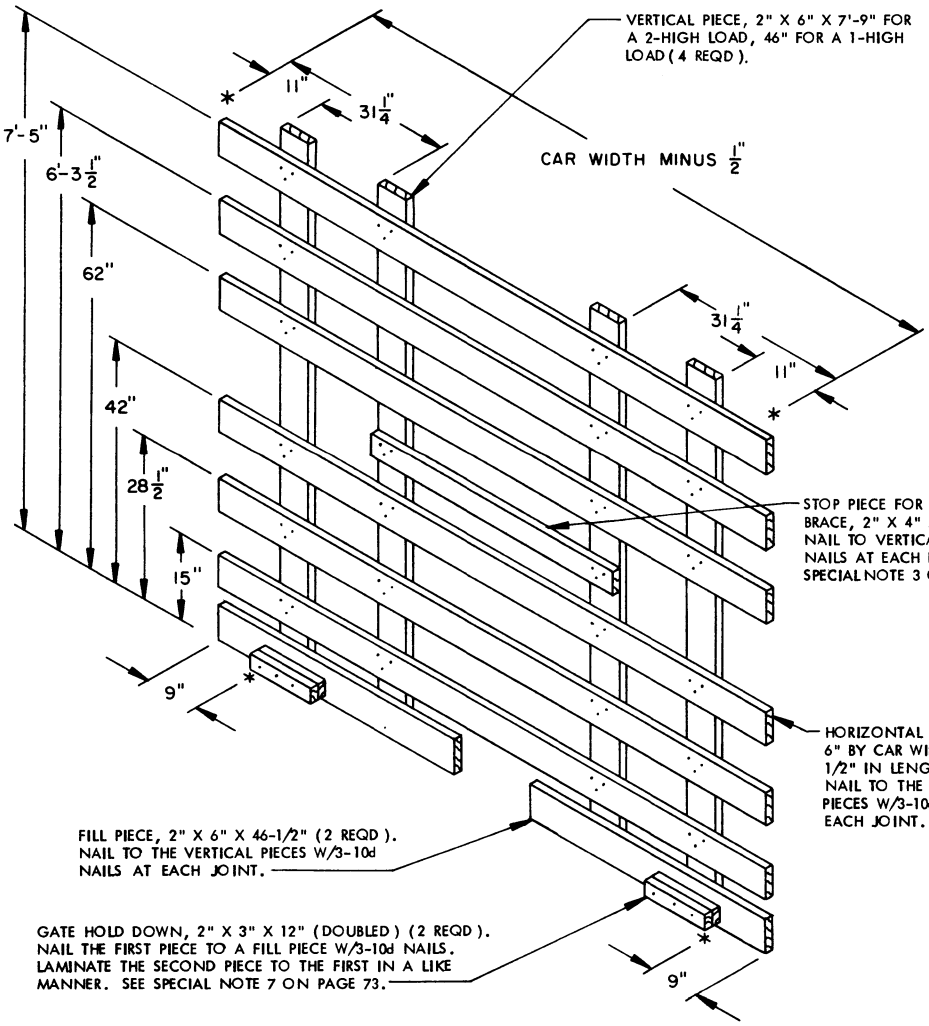
CENTER GATE T

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



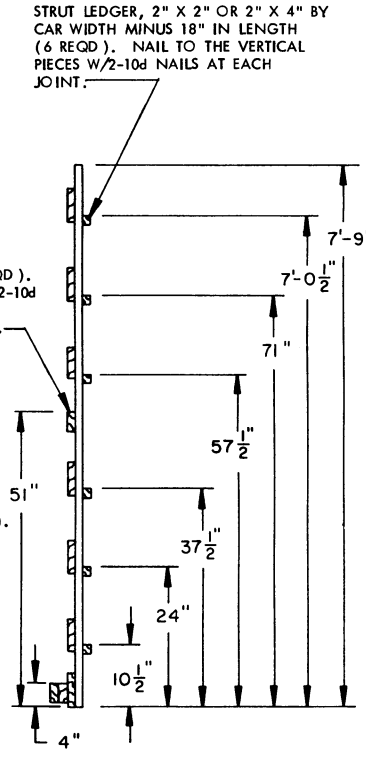
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



CENTER GATE U

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOAD SHOWN ON PAGE 72.



END VIEW

THE STRUT LEDGERS AT THE 24" AND 71" HEIGHTS ARE ONLY REQUIRED FOR A LOAD IN A 60'-8" LONG CAR.

(KEY NUMBERS CONTINUED)

(16) UNITIZING STRAP, 1-1/4" X .035" OR .031" X 24'-0" LONG STEEL STRAPPING (1 REQD). PRE-POSITION SO AS TO ENCIRCLE THE PALLET STACKS AS SHOWN. POSITION ON TOP OF STRAPPING BOARD OF UNIT. STAPLE TO STRAPPING BOARD W/2 STAPLES.

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

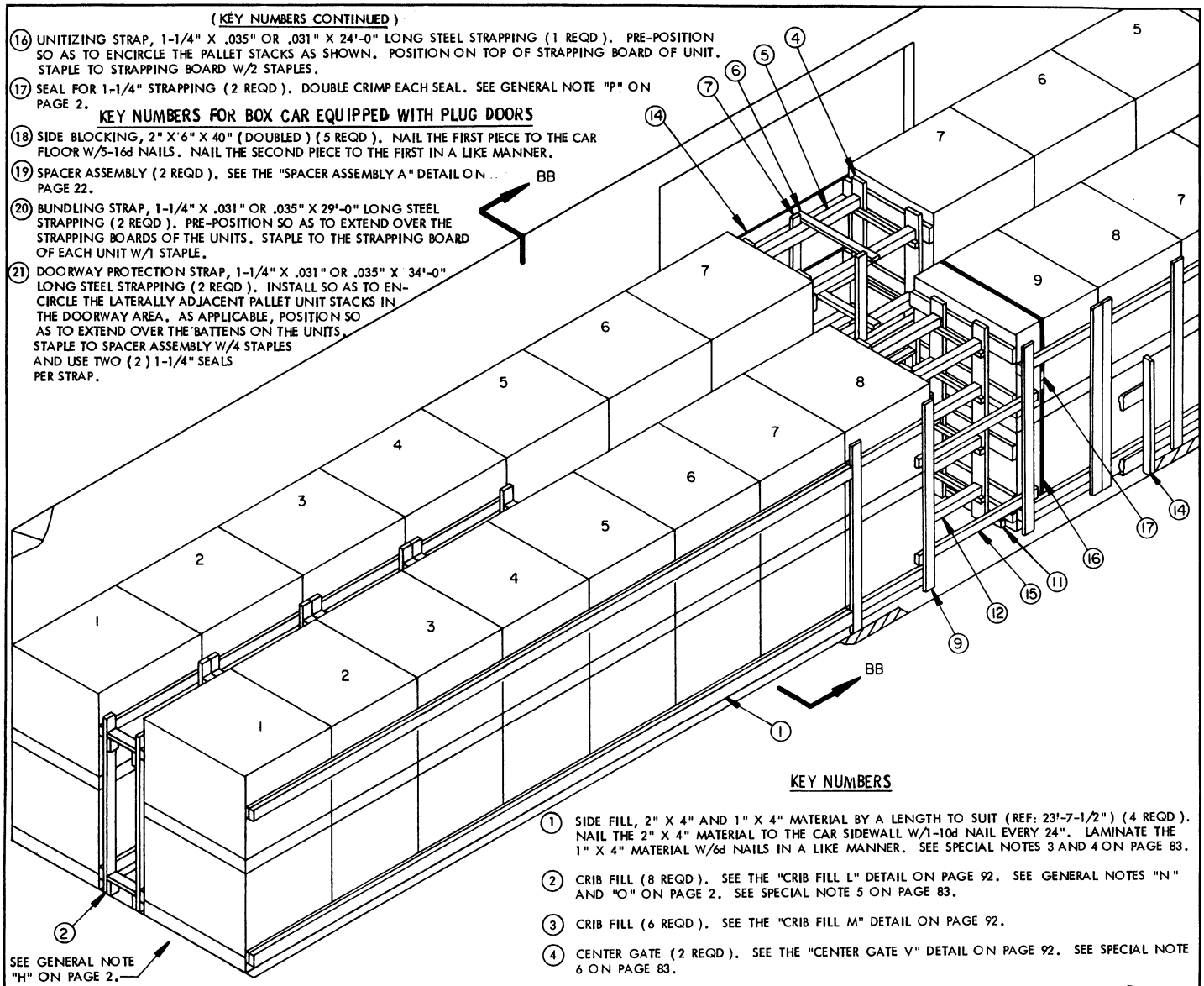
KEY NUMBERS FOR BOX CAR EQUIPPED WITH PLUG DOORS

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

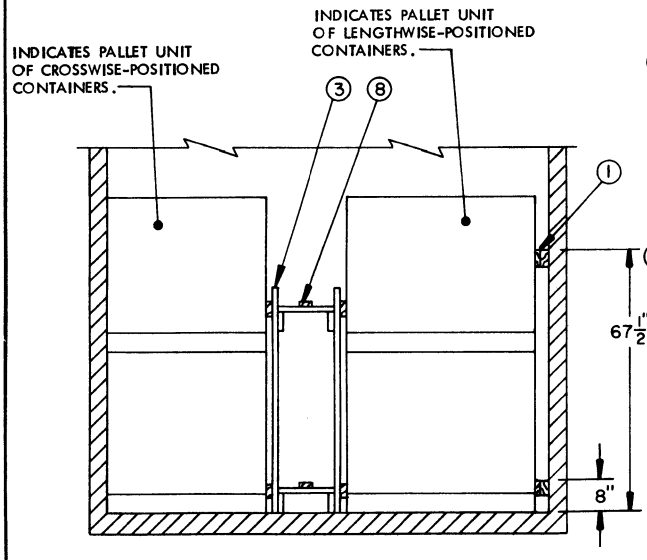
(19) SPACER ASSEMBLY (2 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 22.

(20) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 29'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS. STAPLE TO THE STRAPPING BOARD OF EACH UNIT W/1 STAPLE.

(21) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 34'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. AS APPLICABLE, POSITION SO AS TO EXTEND OVER THE BATTENS ON THE UNITS. STAPLE TO SPACER ASSEMBLY W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.



ISOMETRIC VIEW



SECTION BB-BB

KEY NUMBERS

(1) SIDE FILL, 2" X 4" AND 1" X 4" MATERIAL BY A LENGTH TO SUIT (REF: 23'-7-1/2") (4 REQD). NAIL THE 2" X 4" MATERIAL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". LAMINATE THE 1" X 4" MATERIAL W/6d NAILS IN A LIKE MANNER. SEE SPECIAL NOTES 3 AND 4 ON PAGE 83.

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL L" DETAIL ON PAGE 92. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 5 ON PAGE 83.

(3) CRIB FILL (6 REQD). SEE THE "CRIB FILL M" DETAIL ON PAGE 92.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE V" DETAIL ON PAGE 92. SEE SPECIAL NOTE 6 ON PAGE 83.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 50") (8 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

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

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

(8) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 66") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "M" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 83.

(9) SIDE FILL ASSEMBLY (3 REQD). SEE THE "SIDE FILL ASSEMBLY J" DETAIL ON PAGE 93. POSITION WITH THE VERTICAL PIECES AGAINST THE CAR SIDEWALL.

(10) SIDE BLOCKING, 2" X 4" X 28" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 83.

(11) CENTER GATE (2 REQD). SEE THE "CENTER GATE W" DETAIL ON PAGE 93.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 33") (8 REQD). TOENAIL TO PIECES MARKED (11) W/2-16d NAILS AT EACH END.

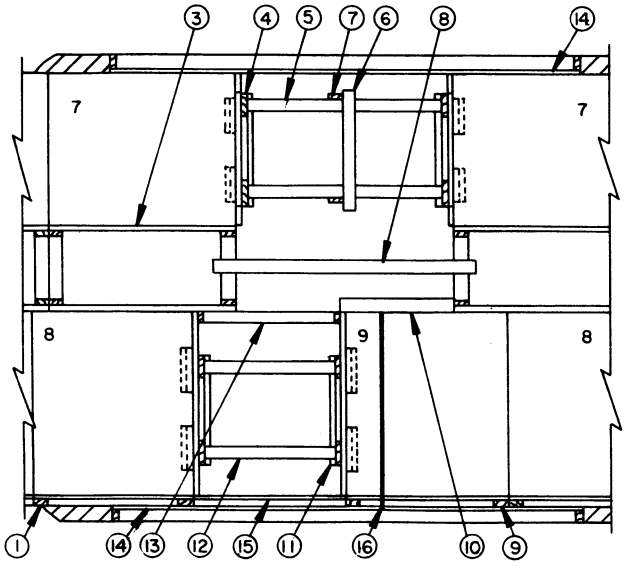
(13) STRUT, 2" X 4" BY CUT TO FIT (REF: 33") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (11) W/2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS" ON PAGE 83.

(14) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 93. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 83.

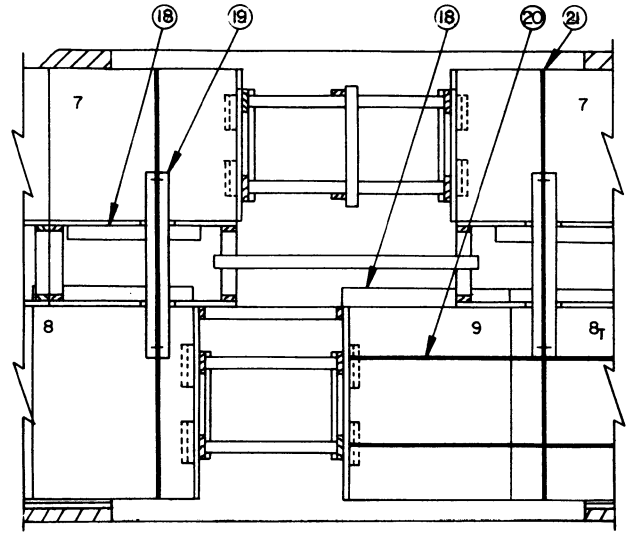
(15) SIDE FILL ASSEMBLY RETAINER PIECE, 2" X 4" X 52" (2 REQD). POSITION AT 14" AND 54" FROM THE CAR FLOOR. SECURE BY NAILING THRU THE VERTICAL PIECE OF PIECE MARKED (9) W/3-6d NAILS AT EACH END.

(CONTINUED AT LEFT)

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



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 82 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY (50) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,800 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 48,640 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT CONTACTS ALL PALLET UNIT STACKS WHICH DO NOT EXTEND INTO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES, PIECE MARKED (9) ON PAGE 82, WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED (1).

4. WHEN USING THE PLUG DOOR PROCEDURES IN A CAR WITH NAILABLE SIDEWALLS, EXTEND THE SIDE FILL, PIECE MARKED (1), TO THE DOOR. OMIT THE SIDE FILL ASSEMBLIES, PIECE MARKED (9), AND THE SIDE FILL ASSEMBLY RETAINER PIECES, PIECE MARKED (15).

5. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (2), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. CENTER GATES "V" AND "W" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (14) IN THE LOAD ON PAGE 82, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS OR COMBINATION PLUG AND SLIDING DOORS, NAILED FLOORLINE BLOCKING AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN IN THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT. 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 ONE SIDE SO THE CRIB WILL REST EVENLY ON THE NAILED SIDE BLOCKING WHICH IS ADJACENT TO THE CONTAINERS-LENGTHWISE UNITS. ALSO NOTE THAT THE NAILED FLOORLINE BLOCKING, SPACER ASSEMBLIES AND DOORWAY PROTECTION STRAPS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS. NOTE: TWO (2) DOORWAY PROTECTION STRAPS ARE REQUIRED FOR EACH PALLET STACK WHICH COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL. WHEN TWO (2) DOORWAY PROTECTION STRAPS CANNOT BE INSTALLED, A PALLET STACK MUST BE SECURED TO THE ADJACENT STACK BY BUNDLING STRAPS, PIECE MARKED (20). ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH OR WIDTH.

8. THE DEPICTED LOAD CAN BE REDUCED BY ONE OR TWO UNITS BY EMPLOYING THE METHODS SHOWN ON PAGE 102 OR 103. THE ENTIRE TOP TIER MAY ALSO BE OMITTED.

9. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 118 AND 119.

10 IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE FOR LENGTHWISE UNITS AND PAGES 123 AND 126 FOR CROSSWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	131	44
1" X 6"	80	40
2" X 2"	41	14
2" X 3"	33	17
2" X 4"	842	562
2" X 6"	121	121
4" X 4"	56	75
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
10d (3")	1132	17-1/2
12d (3-1/4")	32	3/4
16d (3-1/2")	72	1-3/4

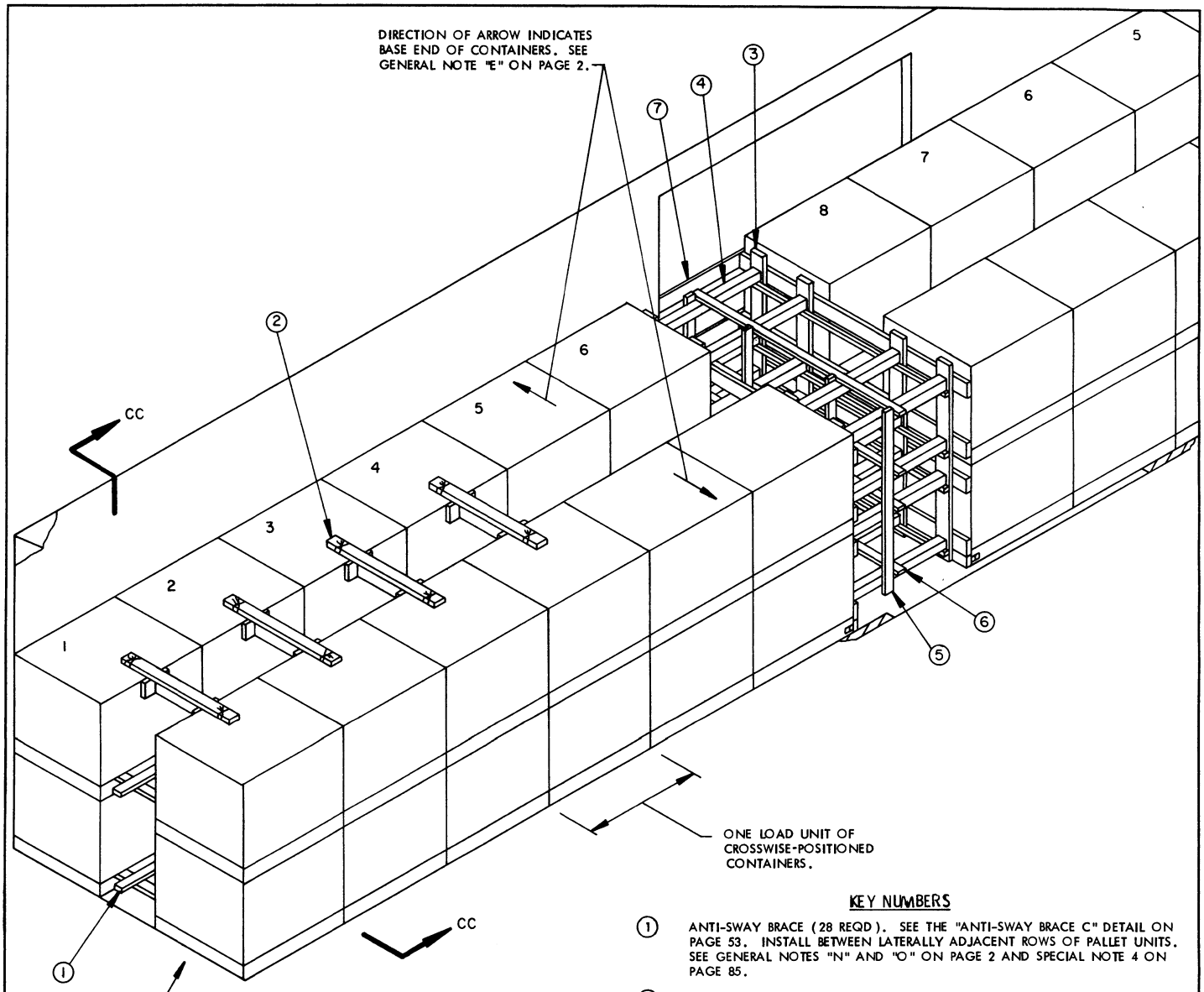
STEEL STRAPPING, 1-1/4" X .031" OR .035" - 24' REQD ------ 4 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 2 REQD ------- NIL
STAPLES ---------- 2 REQD ------ NIL

LOAD AS SHOWN

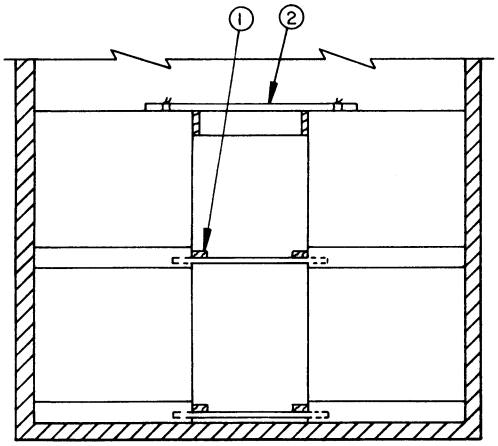
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	75,392 LBS
DUNNAGE		1,771 LBS

TOTAL WEIGHT ---------- 77,163 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION CC-CC

KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 85.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO THE STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 85.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE X" DETAIL ON PAGE 94. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 85.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 50") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

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

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

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 93. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 85.

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

PROJECT FSA 43B/3-63

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 SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 84 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 58,368 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE LADING WEIGHT 43,776 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING 9' OR 10' WIDE DOORS. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 9'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE SEVEN (7) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. IF THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 62 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 84, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A STRAPPING BOARD WITH NO. 14 GAGE WIRE AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 128. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 40'-6" OR 50'-6" LONG CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD IN A 60'-8" LONG CAR.

6. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 84, INSTALL TWO (2) "CENTER GATES V" AS SHOWN ON PAGE 92. 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 129.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 4" MATERIAL NAILED TO CENTER GATE "X", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 84, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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 CONSISTING OF DOUBLED 2" X 6" X 40", SPACER ASSEMBLIES "A", AND DOORWAY PROTECTION STRAPS MUST BE USED IN LIEU OF THE WOODEN DOOR GATE TYPE DOORWAY PROTECTION. NOTE THAT THE DOORWAY PROTECTION FOR CARS EQUIPPED WITH PLUG TYPE DOORS MAY ALSO BE USED IN CARS EQUIPPED WITH SLIDING DOORS.

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

11. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 123 AND 126 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

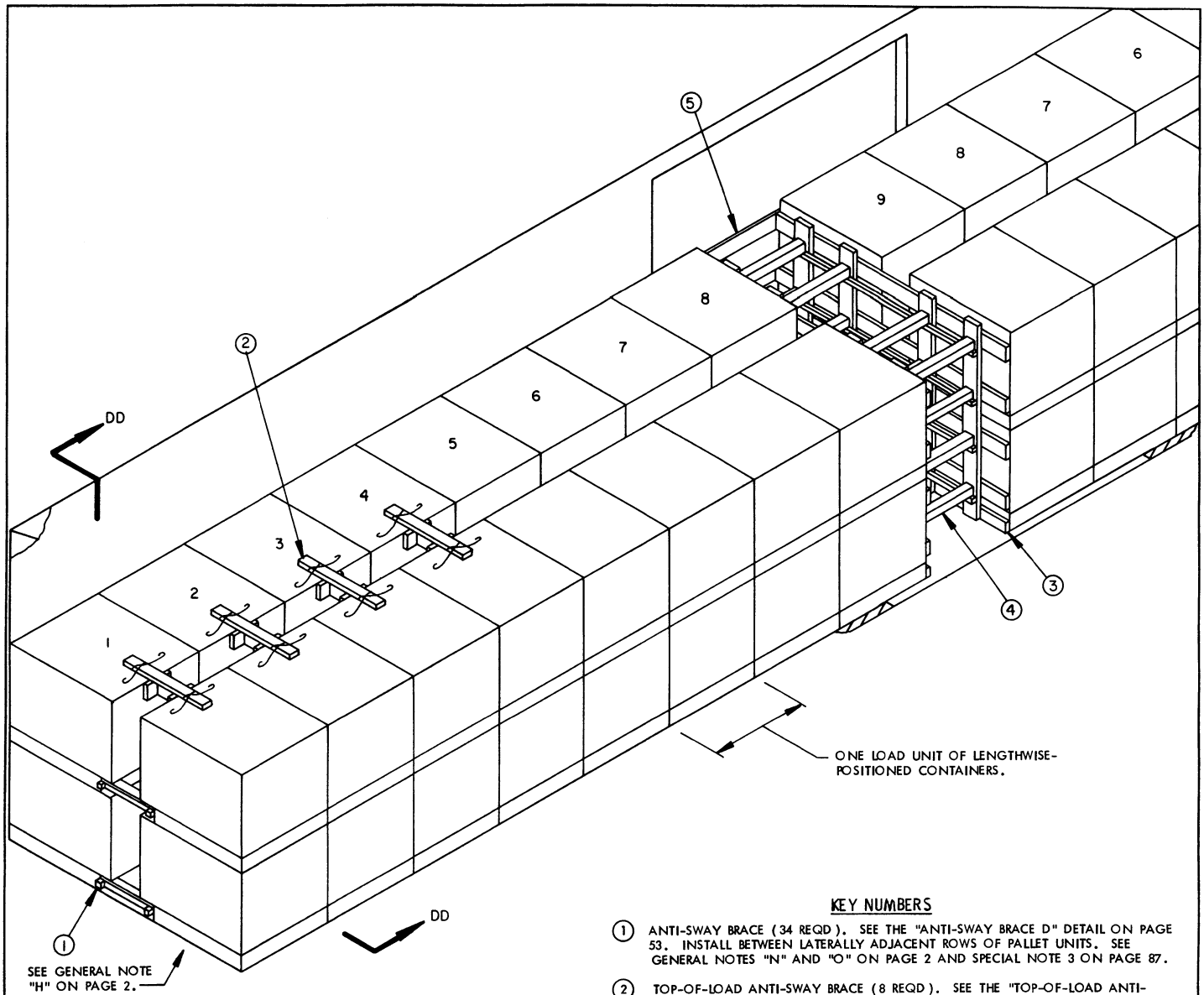
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	25	13
2" X 4"	489	326
2" X 6"	159	159
4" X 4"	67	90
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	747	11-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------48' REQD----------3/4 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	68,096 LBS
DUNNAGE		1,317 LBS
TOTAL WEIGHT		69,413 LBS (APPROX)

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



ISOMETRIC VIEW

KEY NUMBERS

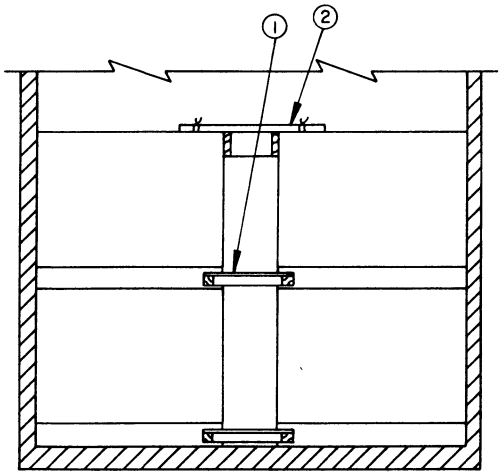
(1) ANTI-SWAY BRACE (34 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 87.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 87.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE Y" DETAIL ON PAGE 95. SEE SPECIAL NOTES 5 AND 6 ON PAGE 87.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 33") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 93. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 87.



SECTION DD-DD

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 86 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,096 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. FORTY-FOUR (44) PALLET UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 53,504 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR.

3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE "ANTI-SWAY BRACE D" BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Y" AS SHOWN ON THE DETAIL ON PAGE 95.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 86, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. CENTER GATE "Y" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE Y" SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 86, INSTALL TWO (2) "CENTER GATES W" AS SHOWN ON PAGE 93. 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 129. OMIT THE STOP PIECE FROM CENTER GATE "W".

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE Y", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 131 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 86, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN BY PIECES MARKED ③, ④, AND ⑦ ON PAGE 90, IN LIEU OF THE WOODEN GATE TYPE PROTECTION. NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 98 THRU 126 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 124 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	110	37
1" X 6"	80	40
2" X 2"	290	97
2" X 3"	33	17
2" X 4"	140	94
2" X 6"	174	174
4" X 4"	44	59
NAILS	**NO. REQD**	**POUNDS**
6d (2")	524	3-1/4
10d (3")	592	9-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE----------60' REQD----------1 LB		

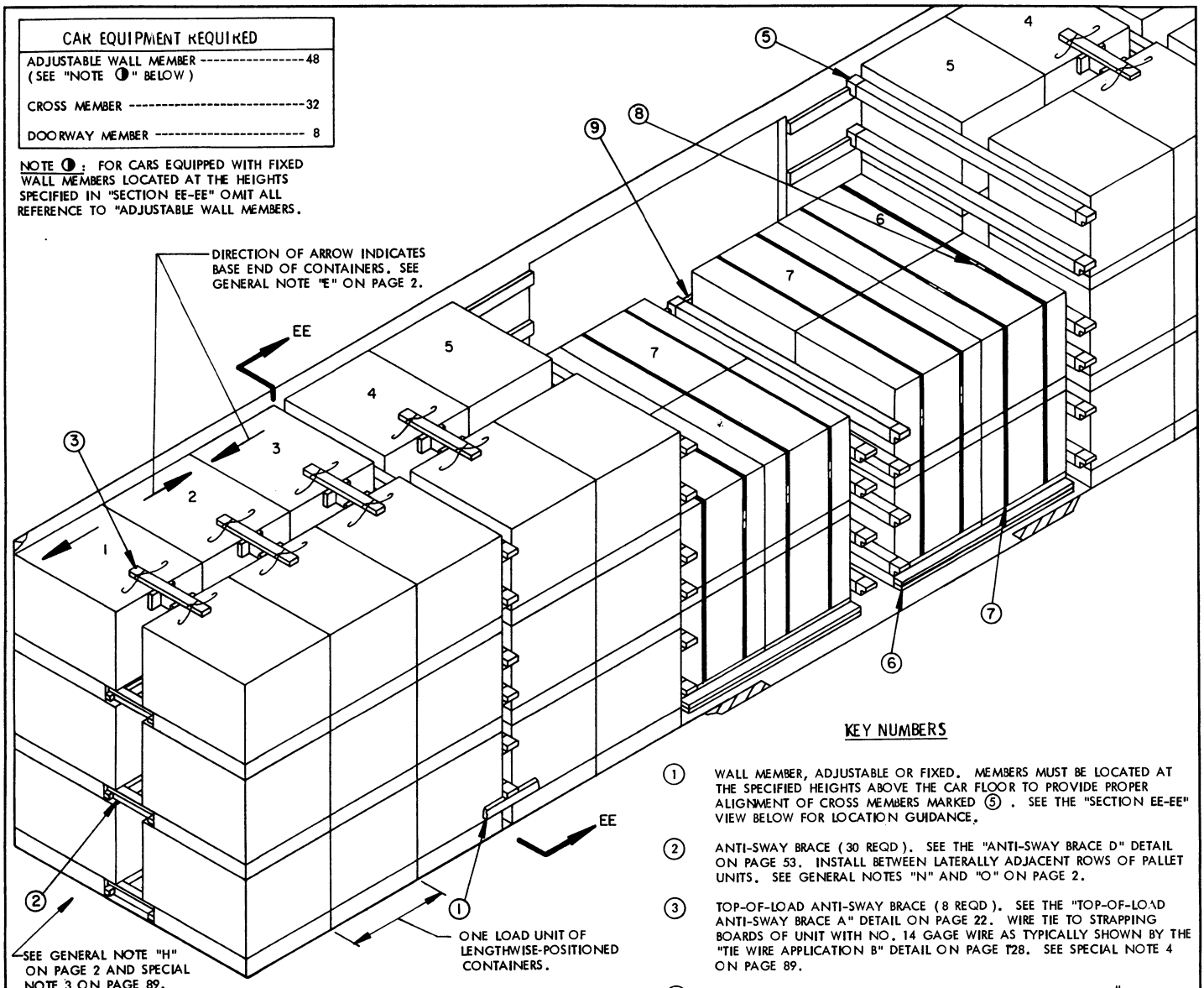
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	68	82,688 LBS
DUNNAGE		1,052 LBS
TOTAL WEIGHT		83,740 LBS (APPROX)

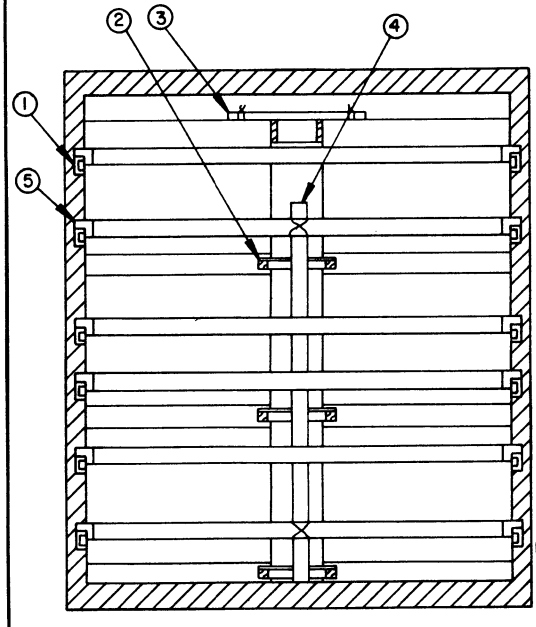
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
68-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑" BELOW)	48
CROSS MEMBER	32
DOORWAY MEMBER	8

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

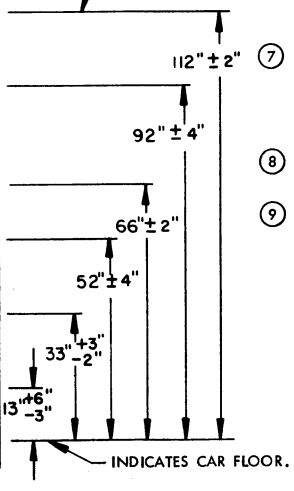


ISOMETRIC VIEW



SECTION EE-EE

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED ① AND/OR A DOORWAY MEMBER MARKED ⑨ IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



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 EE-EE" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 4 ON PAGE 89.

④ STOP PIECE, 2" X 4" X 8'-4" (6 REQD). POSITION AGAINST "ANTI-SWAY BRACE D" DETAIL BEFORE AND/OR AFTER EACH BLOCKING STATION OF CROSS MEMBERS. NAIL TO THE HORIZONTAL 2" X 4" PIECE OF PIECE MARKED ② W/2-10d NAILS AT EACH JOINT. WHEN NAILING CANNOT BE ACCOMPLISHED, WIRE TIE TO CROSS MEMBER WITH NO. 14 GAGE WIRE AT TWO LOCATIONS.

⑤ CROSS MEMBER (32 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑥ SIDE BLOCKING, 2" X 4" X 6'-9" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/9-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

⑦ BUNDLING STRAP, 1-1/4" X .035" OR .031" BY 31'-0" LONG STEEL STRAPPING (8 REQD). POSITION SO AS TO EXTEND OVER THE STRAPPING BOARDS OF THE UNITS AND STAPLE TO EACH STRAPPING BOARD W/2 STAPLES. PRE-POSITION THOSE STRAPS WHICH ARE NOT WITHIN THE DOOR OPENING.

⑧ SEAL FOR 1-1/4" STRAPPING (16 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

⑨ DOORWAY MEMBER (8 REQD). SEE THE "SECTION EE-EE" VIEW AT LEFT FOR LOCATION GUIDANCE.

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

76-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 88 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 72,960 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 88, 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 B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. WHEN LOADING PALLET UNIT STACKS, A STOP PIECE, SHOWN AS PIECE MARKED ④ IN THE SECTION VIEW ON PAGE 88, WILL BE POSITIONED BEFORE AND AFTER EACH STATION OF CROSS MEMBERS TO PREVENT THE ANTI-SWAY BRACE, PIECE MARKED ② FROM MOVING INTO THE CROSS MEMBER AREA.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP 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 96 AND 97 FOR GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL

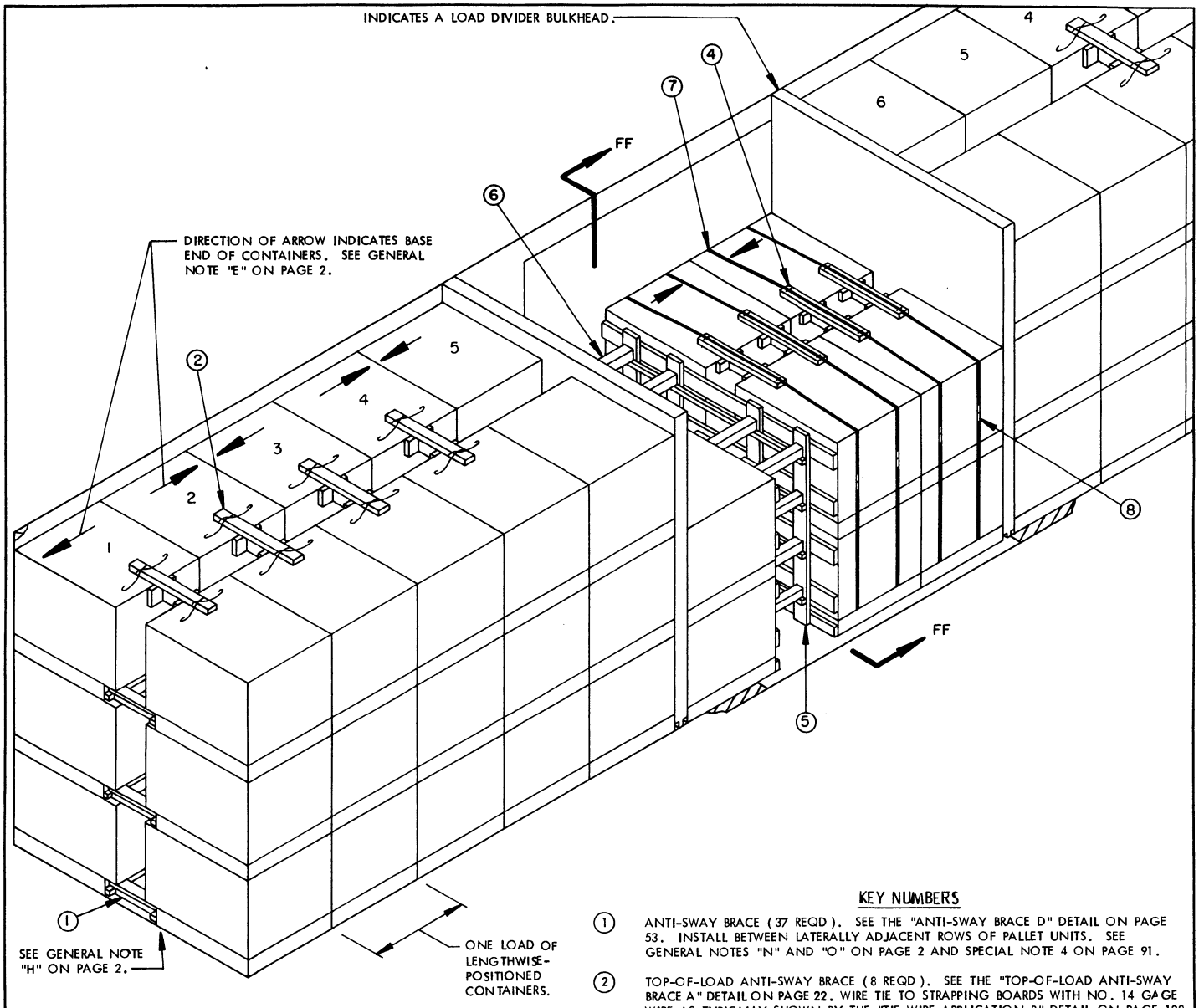
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	87	29
2" X 2"	202	68
2" X 4"	220	147
2" X 6"	32	32
NAILS	**NO. REQD**	**POUNDS**
6d (2")	420	2-1/2
10d (3")	368	5-3/4
16d (3-1/2")	72	1-3/4

STEEL STRAPPING, 1-1/4" X .031" OR .035" ---- 248' REQD ----- 36 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 16 REQD ----- NIL
WIRE, NO. 14 GAGE ---------- 72' REQD ------ 1 LB

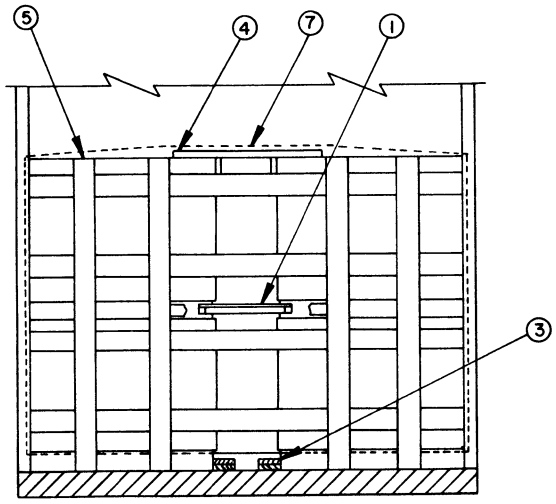
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	92,416 LBS
DUNNAGE		599 LBS
TOTAL WEIGHT		93,015 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION FF-FF

KEY NUMBERS

(1) ANTI-SWAY BRACE (37 REQD). SEE THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 91.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. SEE SPECIAL NOTE 5 ON PAGE 91.

(3) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (4 REQD, 2 ON EACH LOAD UNIT WITHIN THE DOORWAY AREA). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. OMIT ANTI-SWAY BRACE (S) AT FLOOR LEVEL.

(4) SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY C" DETAIL ON PAGE 95. POSITION ON TOP OF STRAPPING BOARDS OF PALLET UNITS.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE Y" DETAIL ON PAGE 95. SEE SPECIAL NOTES 7 AND 8 ON PAGE 91.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 21") (16 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 33'-0" LONG STEEL STRAPPING (4 REQD). INSTALL OVER THE STRAPPING BOARDS OF THE UNITS AND SO AS TO ENCIRCLE THE LOAD UNIT IN THE DOORWAY AREA. STAPLE TO SPACER ASSEMBLY "C" W/2 STAPLES AND TO THE STRAPPING BOARDS OF THE PALLET UNITS W/1 STAPLE EACH. SEE SPECIAL NOTE 9 ON PAGE 91.

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

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

(SPECIAL NOTES CONTINUED)

10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR THE ENTIRE TOP TIER CAN BE OMITTED FROM THE CENTER PORTION OF THE LOAD REDUCING A LOAD BY SIX (6) UNITS, OR ALL TWELVE (12) UNITS IN THE CENTER OF THE LOAD CAN BE OMITTED AND A STRUT ASSEMBLY INSTALLED AS DETAILED ON PAGES 135 AND 136. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 100 THRU 111 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 124 FOR SHIPPING GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 125 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	119	40
2" X 2"	310	104
2" X 3"	8	4
2" X 4"	148	99
2" X 6"	227	227
4" X 4"	28	38
NAILS	NO. REQD	POUNDS
6d (2")	518	3-1/4
10d (3")	648	10
12d (3-1/4")	24	1/2
16d (3-1/2")	104	2-1/2
STEEL STRAPPING, 1-1/4" X .031" OR .035" --132' REQD ----- 19 LBS		
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD ------ NIL		
WIRE, NO. 14 GAGE ---------- 72' REQD ------ 1 LB		
STAPLE ---------- 16 REQD ------ NIL		

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 90 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). USING THIS PROCEDURE THE FOLLOWING LOADS CAN BE ACHIEVED.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS BEHIND DIVIDERS	NO. OF STACKS IN DOORWAY AREA
60'-8"	96	116,736	7 AND 7	3 LENGTHWISE
40'-6"	60	72,960	4 AND 4	3 LENGTHWISE

IF A CONTAINERS-CROSSWISE LOADING PATTERN BEHIND THE DIVIDERS IS USED, THE FOLLOWING DATA APPLIES.

CAR LENGTH	TOTAL NO. OF UNITS	POUNDS (APPROX)	NO. OF STACKS BEHIND DIVIDERS	NO. OF STACKS IN DOORWAY AREA
60'-8"	80	97,280	6 AND 6	2 LENGTHWISE
50'-6"	68	82,688	5 AND 5	2 LENGTHWISE
40'-6"	50	60,800	3 AND 4	2 LENGTHWISE

3. THE DIRECTION OF THE LOAD UNIT DETERMINES THE TYPE OF DETAILS TO BE USED. FOR CONTAINERS-LENGTHWISE LOAD UNITS, REFER TO PAGE 86. REFER TO PAGE 84 FOR CONTAINERS-CROSSWISE LOAD UNITS.

4. NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA WHEN THE DOORWAY PROTECTION PROCEDURES AS SHOWN ON PAGE 90 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 90, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE, PIECE MARKED (1), BETWEEN THE UPPER UNITS IN THE DOORWAY AREA, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Y" AS SHOWN ON THE DETAIL ON PAGE 95.

7. CENTER GATE "Y" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 129 FOR GUIDANCE.

8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE Y" SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 90, INSTALL TWO (2) "CENTER GATES W" AS SHOWN ON PAGE 93. 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 129. OMIT THE STOP PIECE FROM "CENTER GATE W".

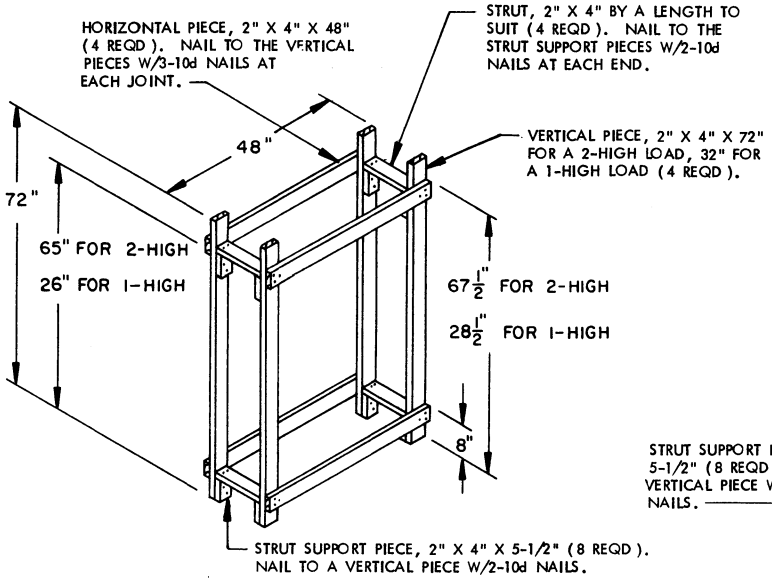
9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 86, MAY BE USED FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 132 THRU 134 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, SPACER ASSEMBLIES, AND DOORWAY PROTECTION STRAPS MUST BE USED, AS SHOWN. NOTE THAT SPACER ASSEMBLY "A", AS DETAILED ON PAGE 22, WILL BE USED IN LIEU OF SPACER ASSEMBLY "C" WHEN THE PALLET UNITS IN THE DOORWAY ARE POSITIONED WITH THE CONTAINERS CROSSWISE IN THE CAR. TWO (2) STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) DOORWAY PROTECTION STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET UNIT LENGTH. ALSO, NOTE THAT THE DOORWAY PROTECTION PROCEDURES FOR CARS EQUIPPED WITH PLUG DOORS CAN ALSO BE USED FOR CARS EQUIPPED WITH SLIDING DOORS.

(CONTINUED AT LEFT)

LOAD AS SHOWN

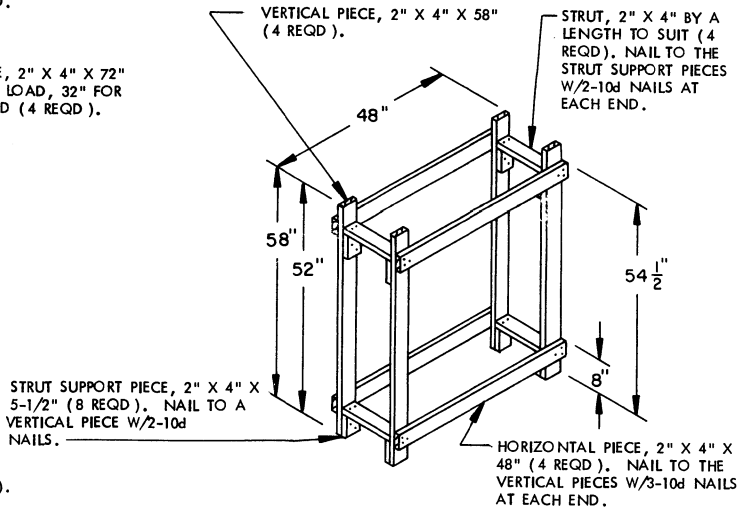
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNITS	78	94,848 LBS
DUNNAGE		1,061 LBS
TOTAL WEIGHT		95,909 LBS (APPROX)

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



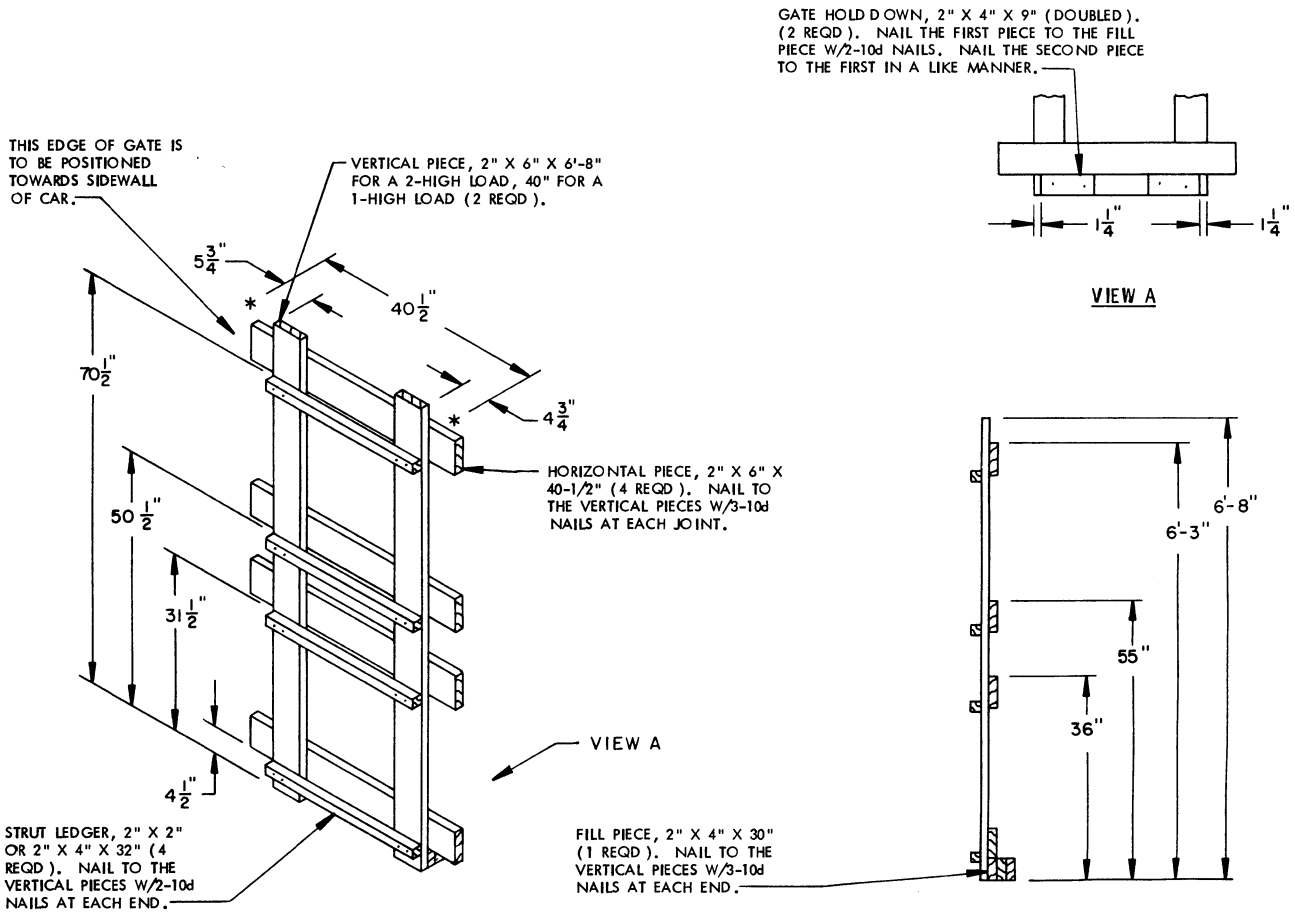
CRIB FILL L

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



CRIB FILL M

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

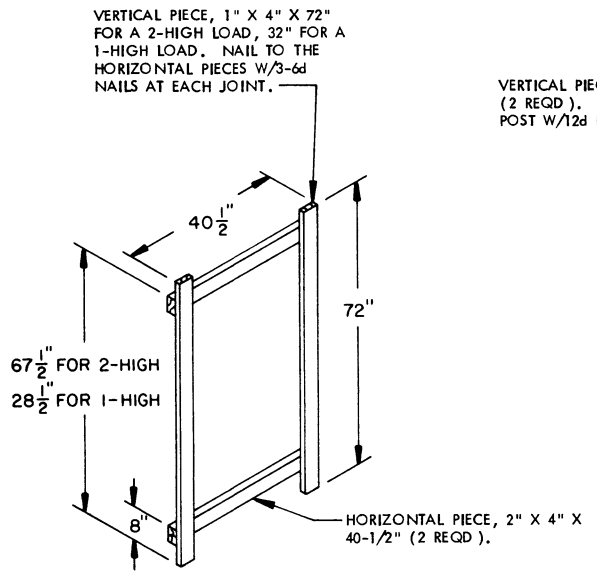


CENTER GATE V

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED

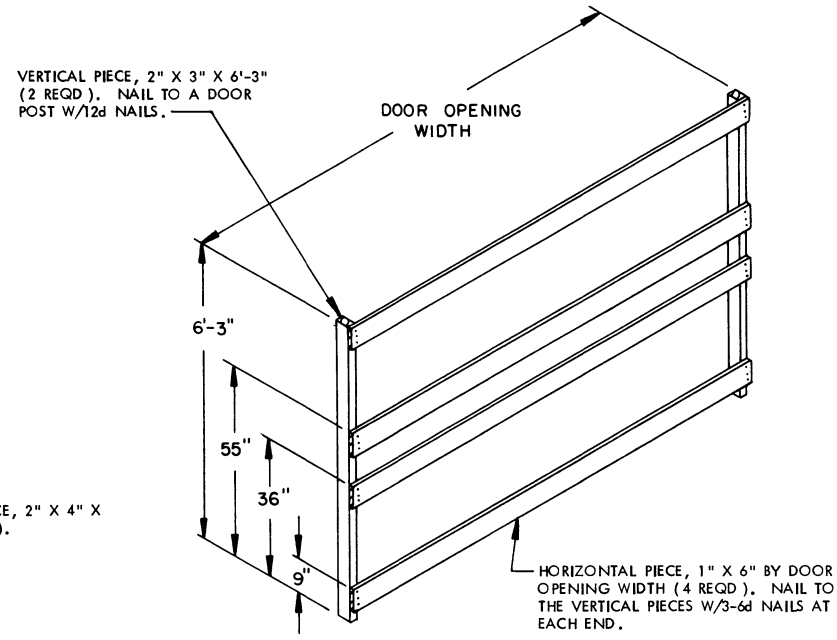
END VIEW

DETAILS FOR ROUTED METHOD UNIT (DECREASED HEIGHT)

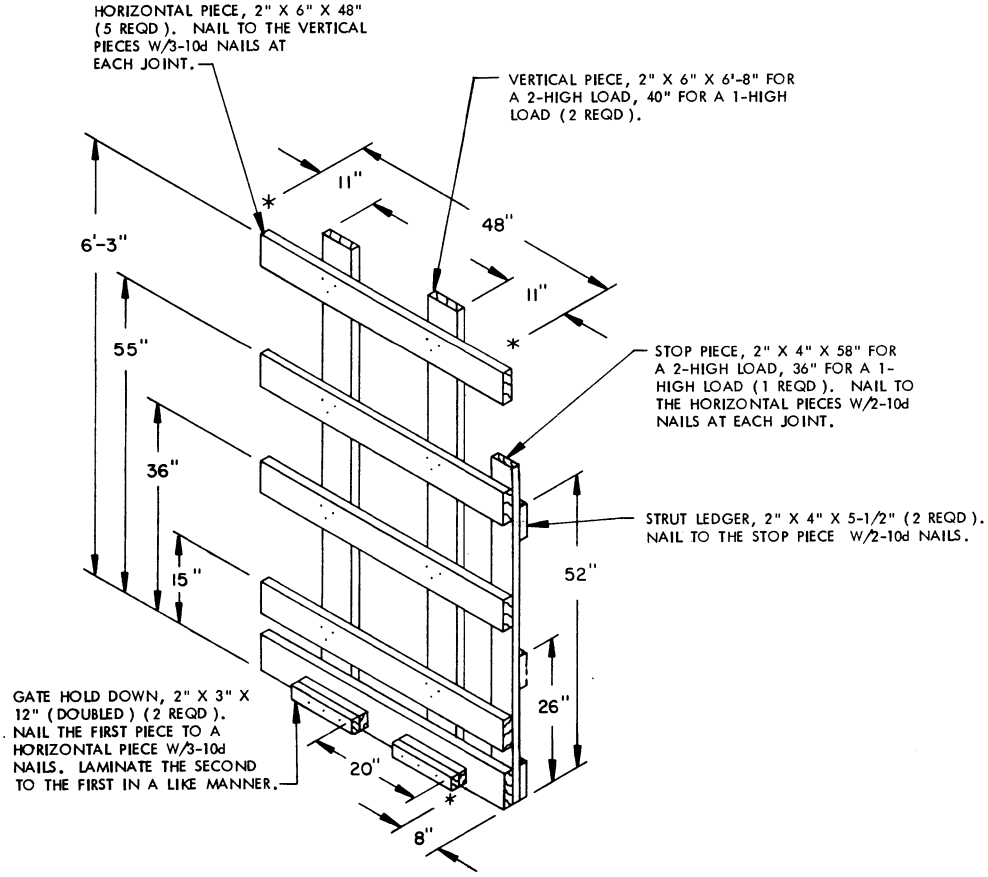


SIDE FILL ASSEMBLY J

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

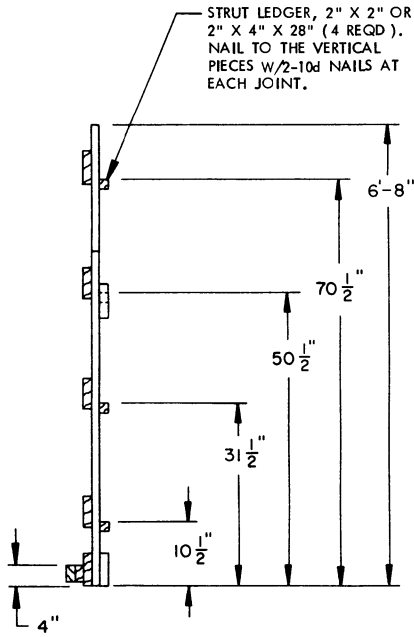


DOORWAY PROTECTION K



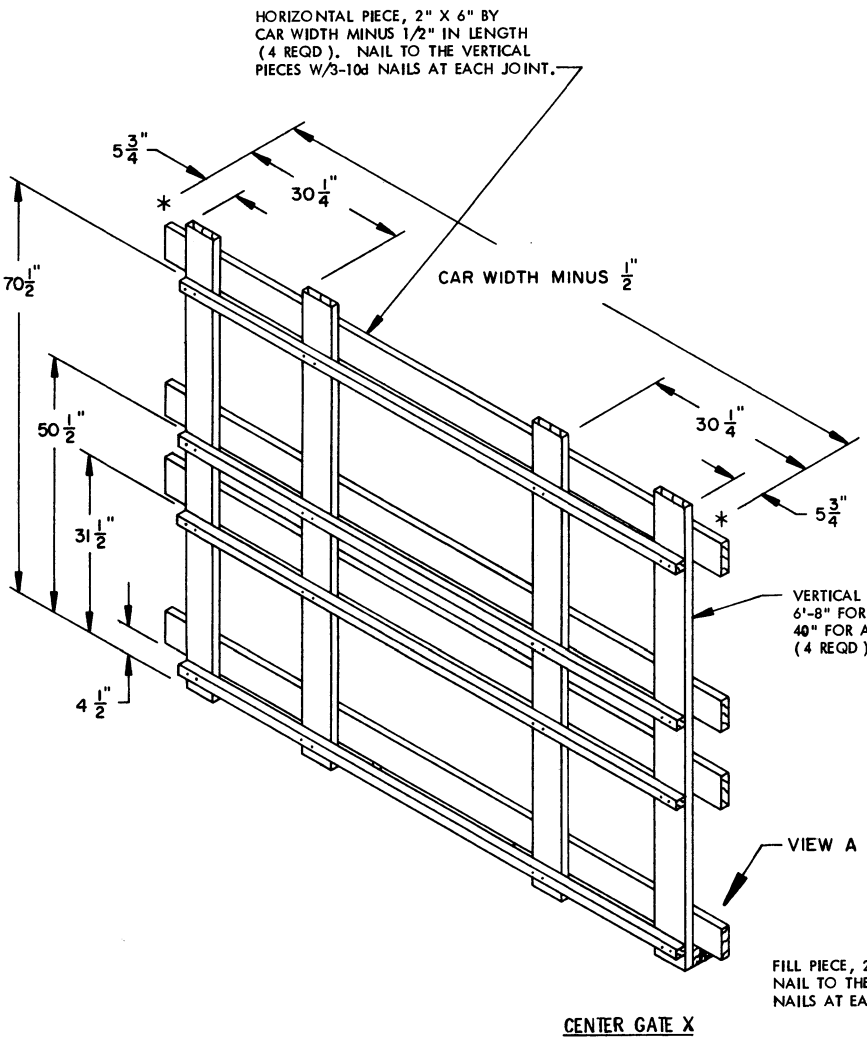
CENTER GATE W

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED

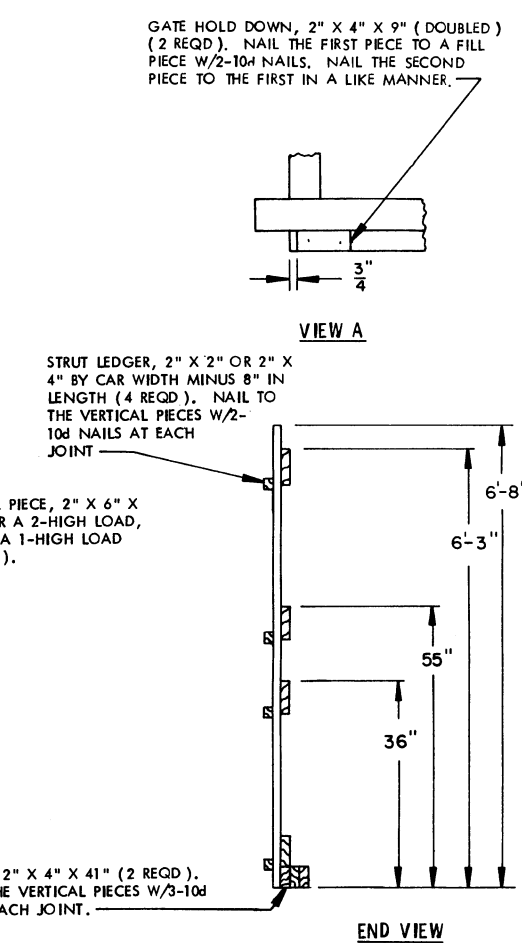


END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



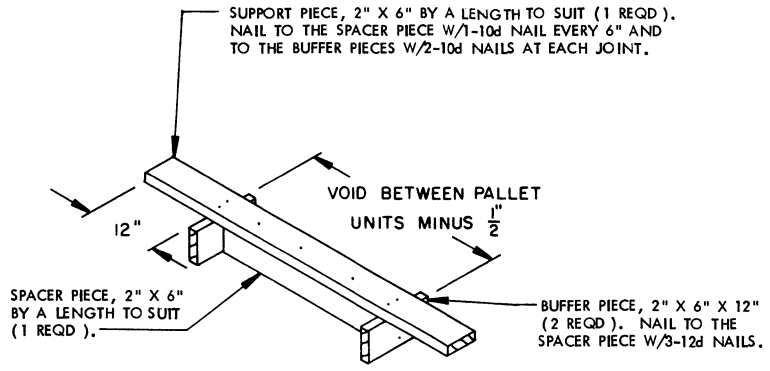
CENTER GATE X



END VIEW

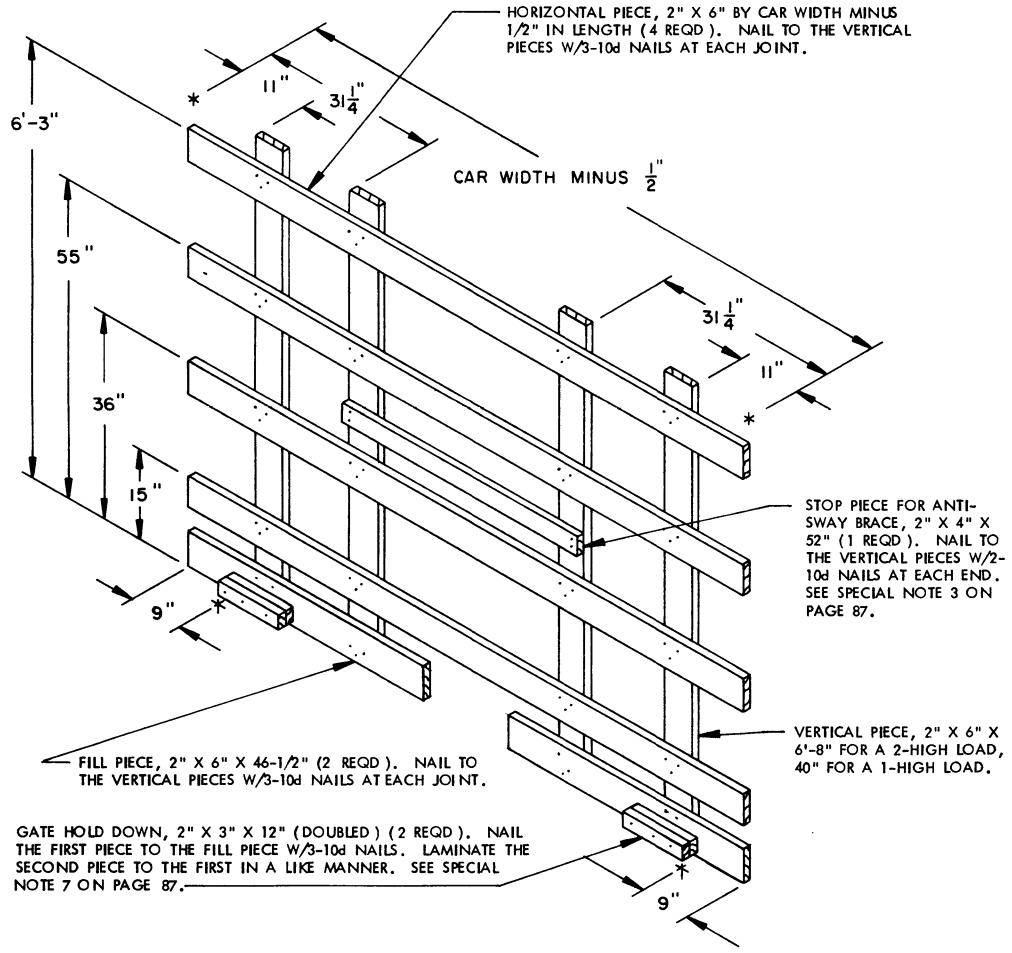
THIS CENTER GATE IS DESIGNED. FOR USE IN THE LOAD SHOWN ON PAGE 84.

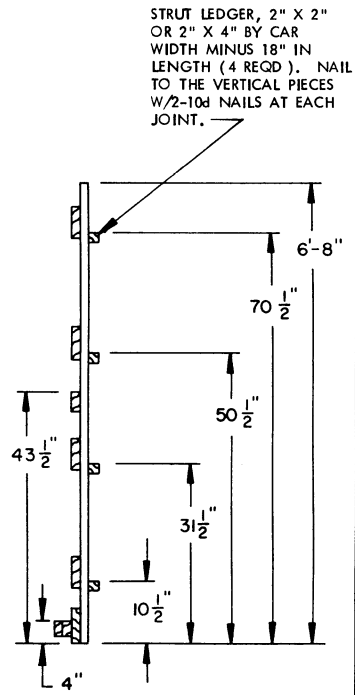
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



SPACER ASSEMBLY C

THIS ASSEMBLY IS FOR USE UNDER DOORWAY PROTECTION STRAPS IN LOADS OF LENGTHWISE POSITIONED CONTAINERS IN THE ROUTED DUNNAGE METHOD UNIT.



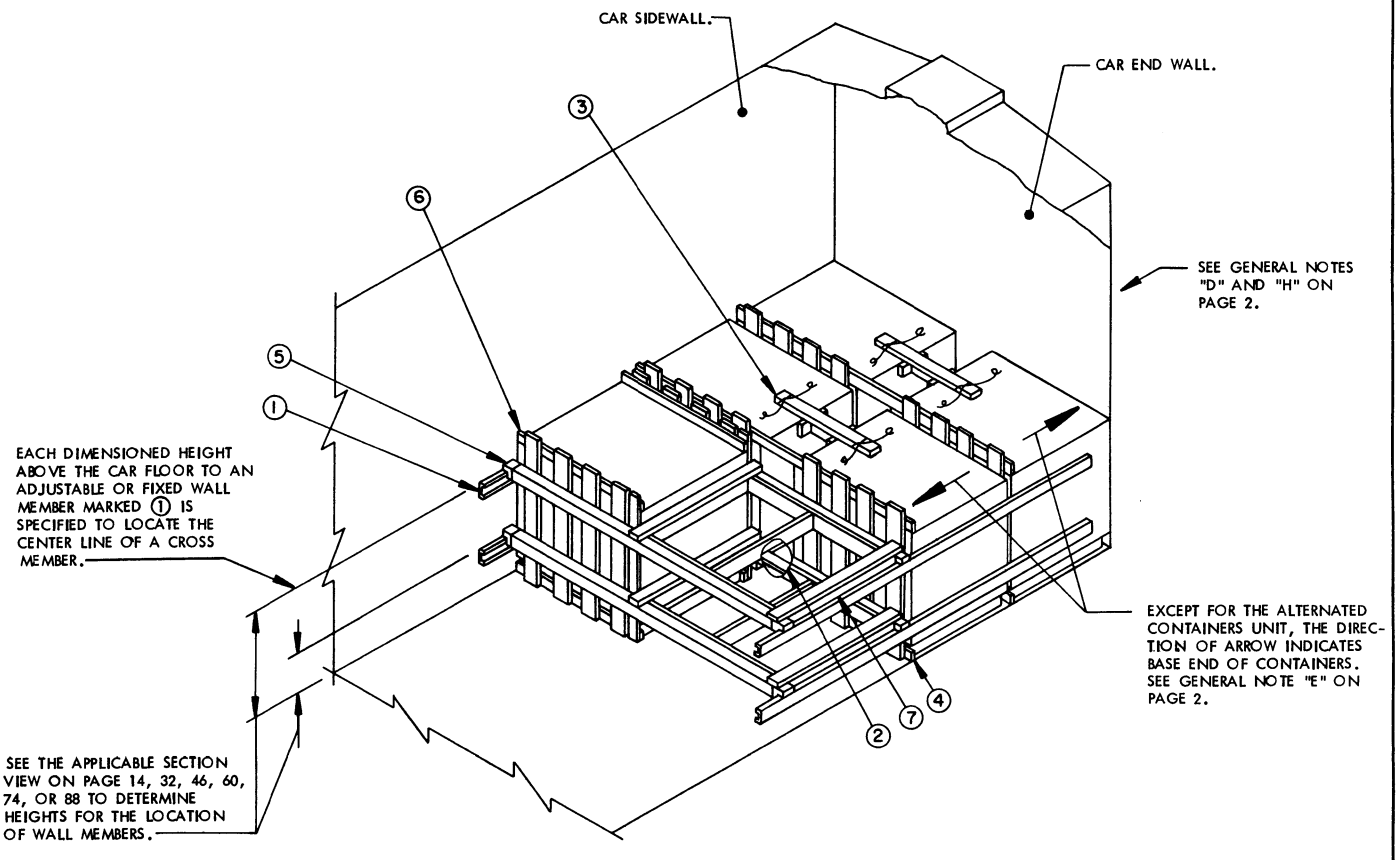


END VIEW

CENTER GATE Y

THIS CENTER GATE IS DESIGNED FOR USE IN THE LOADS SHOWN ON PAGES 86 AND 90.

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 ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH, IF LENGTH OF THE LOAD CALLS FOR THEM.
5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH GATE TO BE CAR WIDTH MINUS 1/2" IN LENGTH BY UNIT HEIGHT, OR UNIT LENGTH IN WIDTH BY UNIT HEIGHT, AS APPLICABLE.
6. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED ⑦, MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER, AND THE END WALL IS WOOD-LINED, CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE. EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS. IF THE END WALL IS NON-NAILABLE, CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES.

KEY NUMBERS

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

② ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22 IS APPLICABLE FOR THE ALTERNATED CONTAINERS UNITS AND THE FLAT DUNNAGE METHOD UNITS. THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22 WILL BE USED FOR ROUTED DUNNAGE METHOD UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 128.

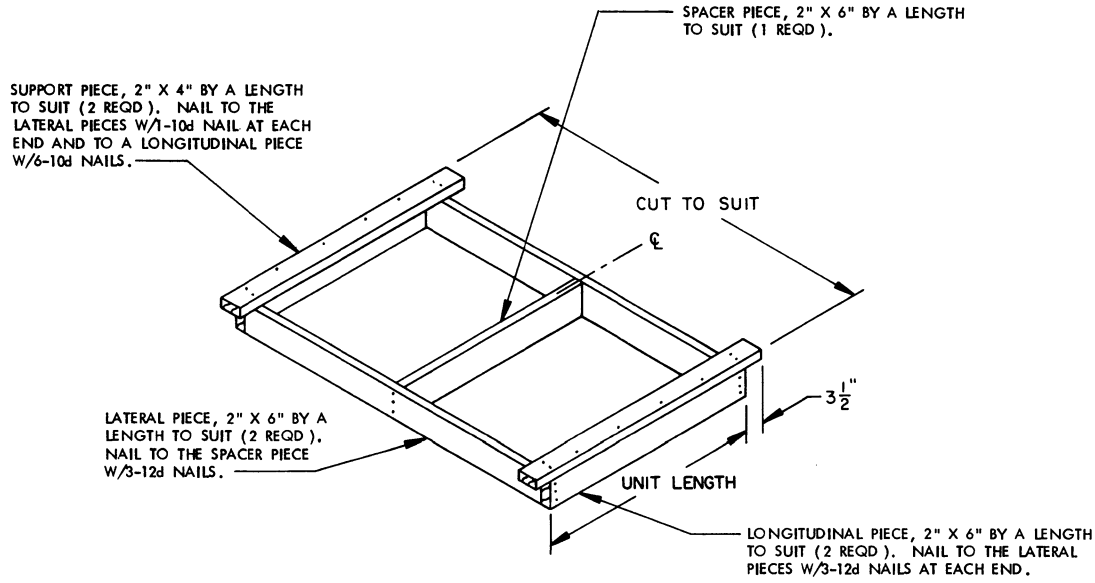
④ SEPARATOR GATE FOR 1-HIGH AND 2-WIDE (2 REQD). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 19 OR 37. POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEPARATOR GATES ARE ONLY REQUIRED FOR ALTERNATED CONTAINERS UNITS.

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

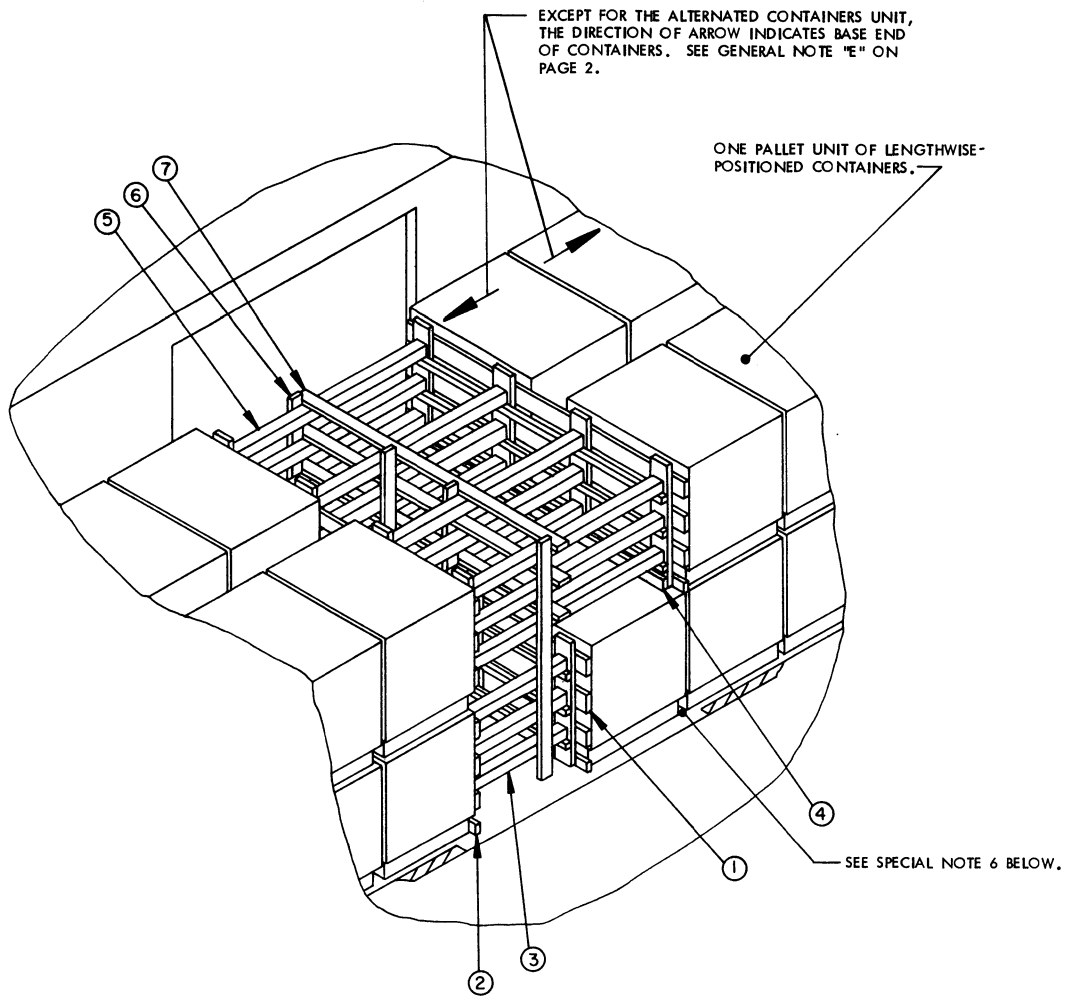
⑥ SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR ONE UNIT WIDE ON PAGE 19 OR 37. AS APPLICABLE, POSITION WITH THE 1" X 4" HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS.

⑦ SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 97 AND SPECIAL NOTE 6 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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



SPACER ASSEMBLY



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. WIDER CARS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM A 2-HIGH LOAD ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF THE TOP ONE OR TWO LAYERS FROM A 3-HIGH LOAD.
4. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN.
5. THE CENTER GATE "H" USED IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.
6. WHEN A SEPARATOR GATE IS REQUIRED BETWEEN THE 1-HIGH AND 2-HIGH LOAD UNIT, OMIT THE TOP HORIZONTAL AND SHORTEN THE VERTICALS TO A HEIGHT WHICH WILL NOT INTERFERE WITH THE 1-HIGH CENTER GATE IN THE SECOND LAYER.

KEY NUMBERS

(1) CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 39. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 AT LEFT.

(2) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 39.

(3) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED (1) AND (2), IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

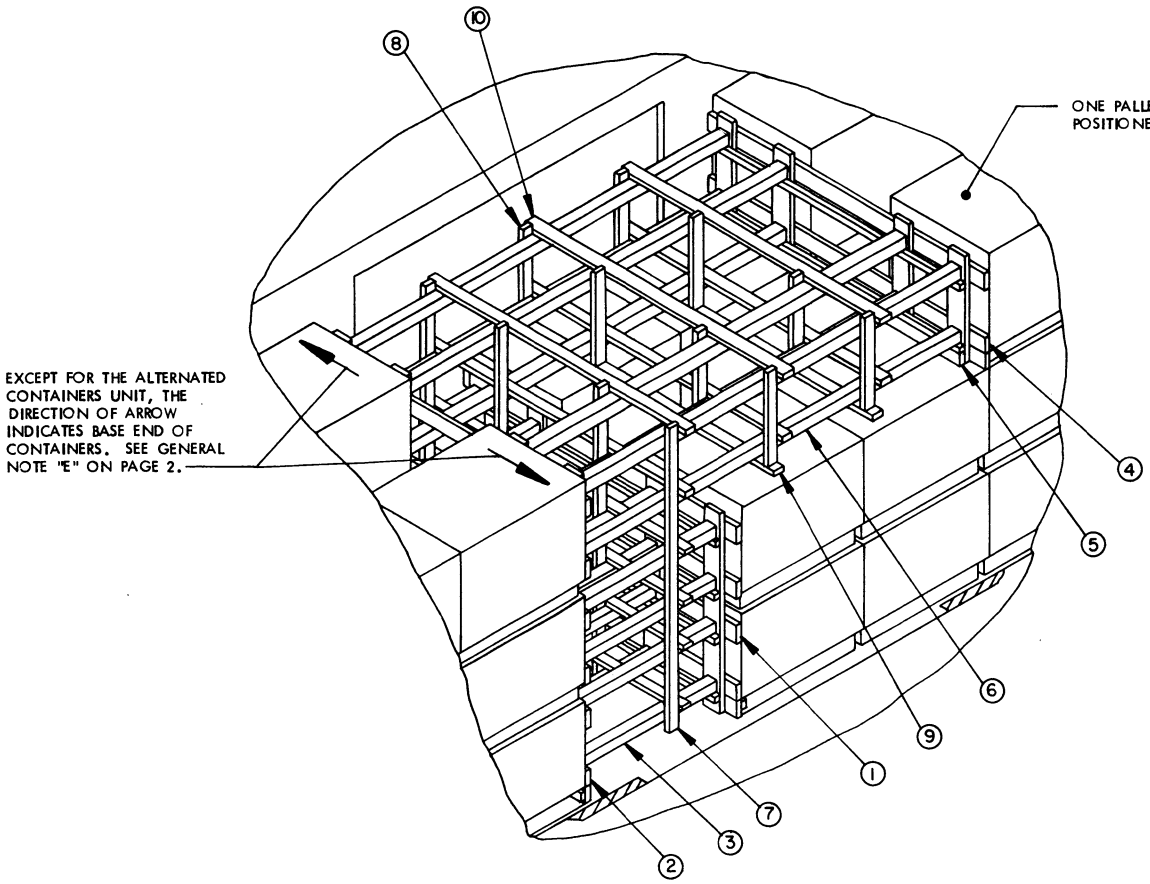
(4) GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.

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

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

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

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

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

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

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

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

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

KEY NUMBERS

(1) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20. SEE SPECIAL NOTE 5 AT LEFT.

(2) CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20.

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

(4) CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 20.

(5) SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 9" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "C", SHOWN AS PIECE MARKED (4), W/3-10d NAILS AT EACH JOINT.

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

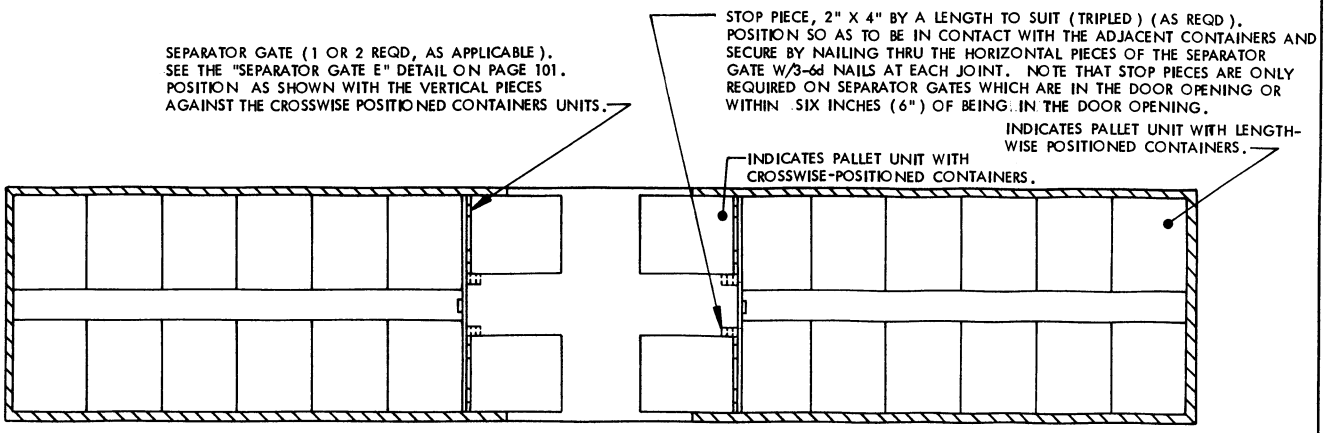
(7) VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED (3) AND (6) W/3-10d NAILS AT EACH JOINT.

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

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

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

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



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" 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 101 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "E", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "E" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES.
4. A CHART FOR EACH OF THE THREE TYPES OF PALLET UNITS IS SHOWN ON THIS PAGE. THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES, ARE SPECIFIED. FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHARTS.

ALTERNATED CONTAINERS UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	24	LENGTHWISE LOAD ON PAGE 12 OR 30	22"
	22	9 LONG AT 37-1/2" PLUS 2 WIDE AT 49-1/2"	35"
	22	8 LONG AT 37-1/2" PLUS 3 WIDE AT 49-1/2"	24"
	21	COMBINATION LOAD ON PAGE 6 OR 24	34" & 22"
	20	5 LONG AT 37-1/2" PLUS 5 WIDE AT 49-1/2"	39"
	19	4 LONG AT 37-1/2" PLUS 6 WIDE AT 49-1/2"	28"
	18	CROSSWISE LOAD ON PAGE 8 AND 26	34"
50'-6" CAR	30	LENGTHWISE LOAD ON PAGE 12 OR 30	27"
	28	12 LONG AT 37-1/2" PLUS 2 WIDE AT 49-1/2"	40"
	28	11 LONG AT 37-1/2" PLUS 3 WIDE AT 49-1/2"	29"
	26*	7 LONG AT 37-1/2" PLUS 6 WIDE AT 49-1/2"	33"
	26	6 LONG AT 37-1/2" PLUS 7 WIDE AT 49-1/2"	22"
	24	3 LONG AT 37-1/2" PLUS 9 WIDE AT 49-1/2"	38"
	24	2 LONG AT 37-1/2" PLUS 10 WIDE AT 49-1/2"	27"
	22	CROSSWISE LOAD ON PAGE 8 AND 26	55"
60'-8" CAR	36	LENGTHWISE LOAD ON PAGE 12 OR 30	34"
	34	14 LONG AT 37-1/2" PLUS 3 WIDE AT 49-1/2"	36"
	34	13 LONG AT 37-1/2" PLUS 4 WIDE AT 49-1/2"	25"
	32*	10 LONG AT 37-1/2" PLUS 6 WIDE AT 49-1/2"	41"
	32	9 LONG AT 37-1/2" PLUS 7 WIDE AT 49-1/2"	29"
	30	6 LONG AT 37-1/2" PLUS 9 WIDE AT 49-1/2"	45"
	30	4 LONG AT 37-1/2" PLUS 11 WIDE AT 49-1/2"	23"
	28	CROSSWISE LOAD ON PAGE 8 AND 26	29"

*THE COMBINATION LOAD ON PAGE 6 OR 24, MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 55" AND 24" LONG IN A 50'-6" LONG CAR, AND 29" AND 35" LONG IN A 60'-8" LONG CAR.

FLAT DUNNAGE METHOD UNIT

CAR LENGTH	UNITS PER LAYERS	LOAD PATTERN	APPROX STRUT LENGTH
40"-6" CAR	22	LENGTHWISE LOAD ON PAGE 44 AND 58	34"
	20*	6 LONG AT 40-1/2" PLUS 4 WIDE AT 49-1/2"	36"
	20	4 LONG AT 40-1/2" PLUS 6 WIDE AT 49-1/2"	18"
	18	CROSSWISE LOAD ON PAGE 42 AND 56	34"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 44 AND 58	33"
	26	10 LONG AT 40-1/2" PLUS 3 WIDE AT 49-1/2"	43"
	26	8 LONG AT 40-1/2" PLUS 5 WIDE AT 49-1/2"	25"
	25	COMBINATION LOAD ON PAGE 40 AND 54	55" & 33"
	24	4 LONG AT 40-1/2" PLUS 8 WIDE AT 49-1/2"	39"
	24	2 LONG AT 40-1/2" PLUS 10 WIDE AT 49-1/2"	21"
	22	CROSSWISE LOAD ON PAGE 42 AND 56	55"
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 44 AND 58	33"
	32	13 LONG AT 40-1/2" PLUS 3 WIDE AT 49-1/2"	44"
	32	11 LONG AT 40-1/2" PLUS 5 WIDE AT 49-1/2"	26"
	31	COMBINATION LOAD ON PAGE 40 AND 54	29" & 33"
	30	6 LONG AT 40-1/2" PLUS 9 WIDE AT 49-1/2"	30"
	30	5 LONG AT 40-1/2" PLUS 10 WIDE AT 49-1/2"	21"
	28	CROSSWISE LOAD ON PAGE 42 AND 56	29"

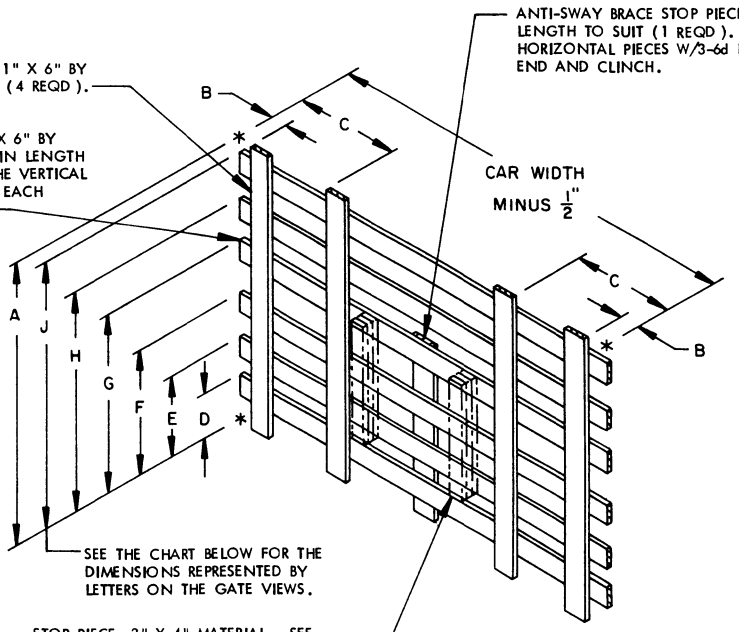
*THE COMBINATION LOAD ON PAGE 40 OR 54 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 34" LONG.

ROUTED DUNNAGE METHOD UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 72 AND 86	34"
	20*	6 LONG AT 40-1/2" PLUS 4 WIDE AT 48"	42"
	20	4 LONG AT 40-1/2" PLUS 6 WIDE AT 48"	27"
	18	CROSSWISE LOAD ON PAGE 70 AND 84	48"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 72 AND 86	33"
	26*	9 LONG AT 40-1/2" PLUS 4 WIDE AT 48"	40"
	26	7 LONG AT 40-1/2" PLUS 6 WIDE AT 48"	25"
	24	3 LONG AT 40-1/2" PLUS 9 WIDE AT 48"	43"
	24	CROSSWISE LOAD ON PAGE 70 AND 84	24"
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 72 AND 86	33"
	32	12 LONG AT 40-1/2" PLUS 4 WIDE AT 48"	41"
	32	10 LONG AT 40-1/2" PLUS 6 WIDE AT 48"	26"
	31	COMBINATION LOAD ON PAGE 68 AND 82	50" & 33"
	30	5 LONG AT 40-1/2" PLUS 10 WIDE AT 48"	36"
	30	3 LONG AT 40-1/2" PLUS 12 WIDE AT 48"	21"
	28	CROSSWISE LOAD ON PAGE 70 AND 84	50"

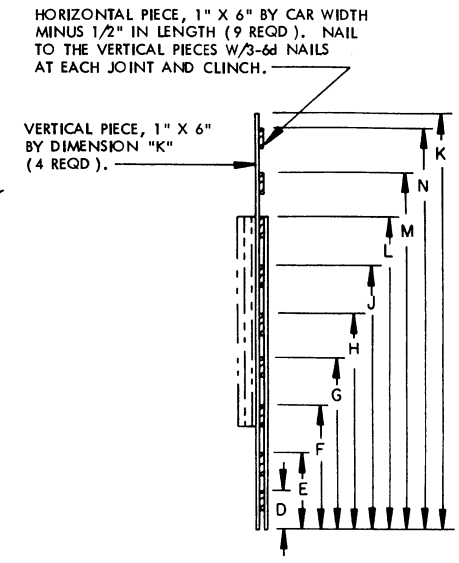
*THE COMBINATION LOAD ON PAGE 68 OR 82 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 48" AND 34" LONG IN A 40'-6" LONG CAR, AND 24" AND 33" LONG IN A 50'-6" LONG CAR.

TYPICAL COMBINATION LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR



SEPARATOR GATE

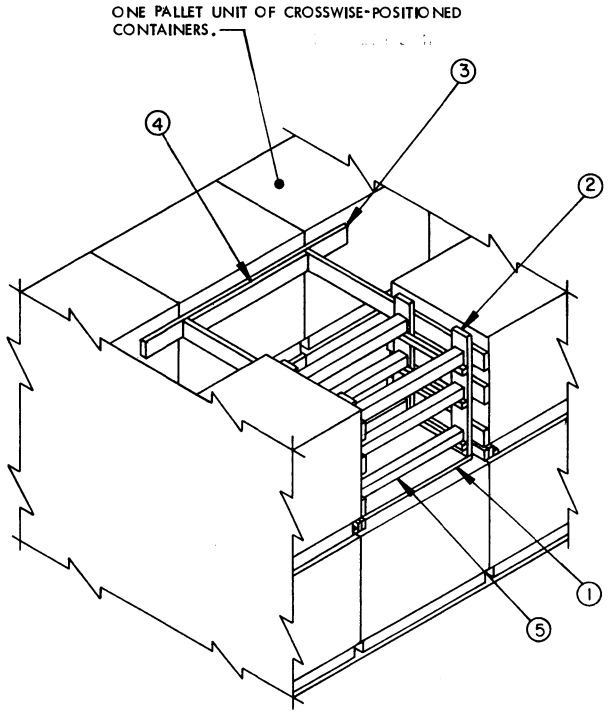
THIS VIEW DEPICTS A SEPARATOR GATE FOR A 2-HIGH LOAD, APPLICABLE TO ANY OF THE UNITS COVERED BY THIS DOCUMENT. SEE THE "END VIEW" AT RIGHT FOR HEIGHT DIMENSIONS FOR THE BASIC HEIGHT ALTERNATED CONTAINERS UNITS WHICH CAN BE LOADED 3-HIGH.



END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD.

PALLET UNIT IDENTIFICATION	DIMENSIONS												
	A	B	C	D	E	F	G	H	J	K	L	M	N
ALTERNATED CONTAINERS (BASIC HEIGHT)	72"	4-1/2"	27-1/2"	11"	20-1/2"	32-1/2"	46"	56-1/2"	68-1/2"	9'-0"	6'-10"	7'-8-1/2"	8'-8-1/2"
ALTERNATED CONTAINERS (INCREASED HEIGHT)	7'-0"	4-1/2"	27-1/2"	14-1/2"	26-1/2"	38-1/2"	56-1/2"	68-1/2"	6'-8-1/2"	—	—	—	—
FLAT DUNNAGE (BASIC HEIGHT)	7'-7"	5"	30-1/2"	15-1/2"	29"	42"	62"	6'-3-1/2"	7'-4-1/2"	—	—	—	—
FLAT DUNNAGE (DECREASED HEIGHT)	6'-6"	5'	30-1/2"	15-1/2"	—	36"	55"	—	6'-3-1/2"	—	—	—	—
ROUTED DUNNAGE (BASIC HEIGHT)	7'-7"	5-1/2"	30"	15"	28-1/2"	42"	62"	6'-3-1/2"	7'-5"	—	—	—	—
ROUTED DUNNAGE (DECREASED HEIGHT)	6'-6'	5-1/2"	30"	15"	—	36"	55"	—	6'-3"	—	—	—	—



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
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 WIDTH (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2).

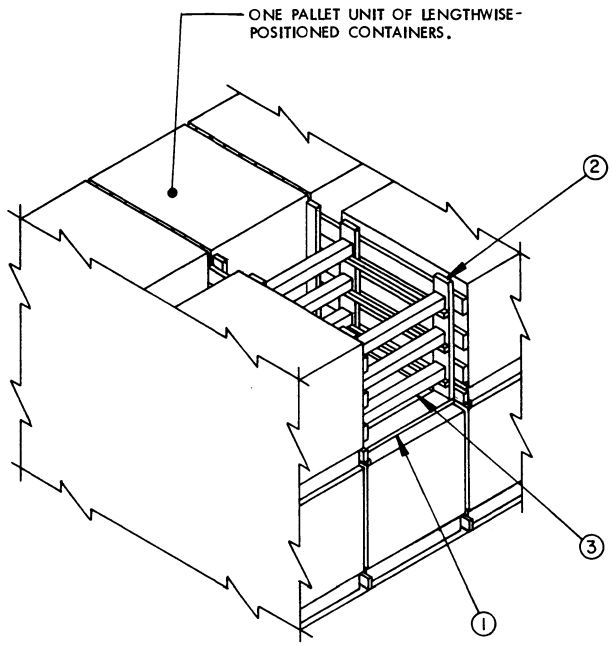
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 104 OR 105. NAIL TO THE FILLER PIECE, PIECE MARKED (4), W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1) W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

(3) ANTI-SWAY BEARING PIECE, 2" X 6" X 7'-3" (1 REQD).

(4) FILLER PIECE, 2" X 6" BY UNIT WIDTH MINUS 3" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (3), W/5-10d NAILS.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 43-1/2") (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

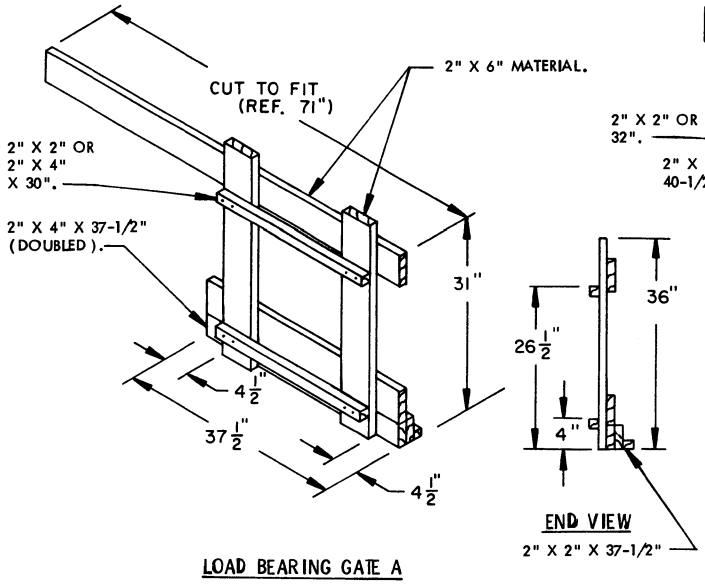
KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (2 REQD). POSITION SO AS TO BE 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 106 OR 107. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1), W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

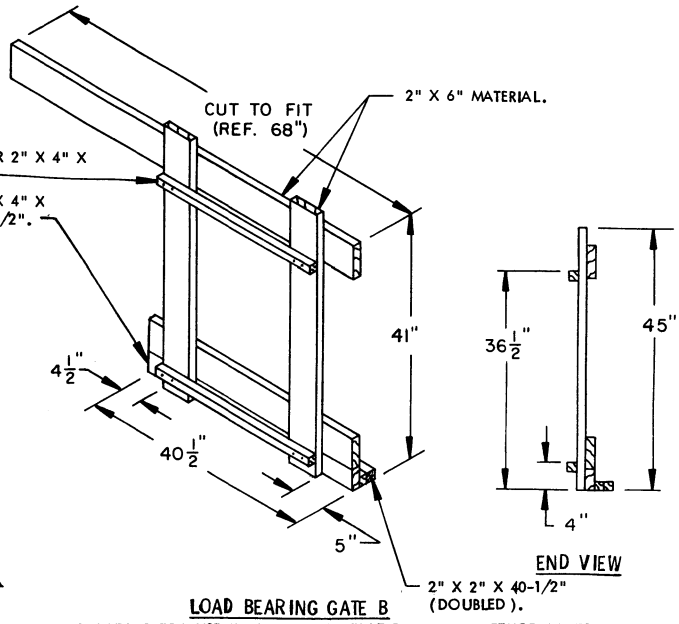
(3) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.

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



LOAD BEARING GATE A

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



LOAD BEARING GATE B

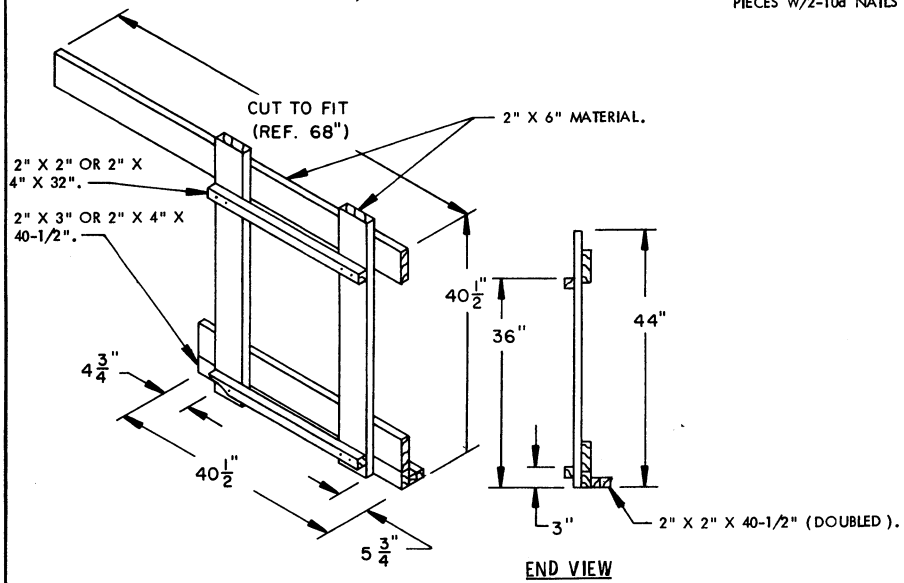
THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (BASIC HEIGHT), WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 102. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED CONTAINERS.

2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT TO FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.

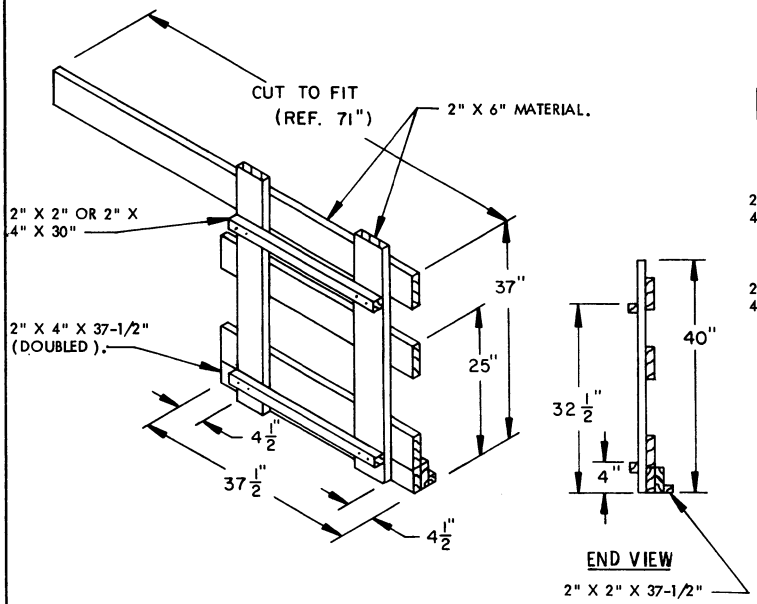
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3", 2" X 4", OR 2" X 6" HORIZONTAL PIECE (S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE 2" X 4" OR 2" X 2" GATE HOLD DOWN PIECES TO A 2" X 3" OR 2" X 4" HORIZONTAL PIECE, AS APPLICABLE, W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.



LOAD BEARING GATE C

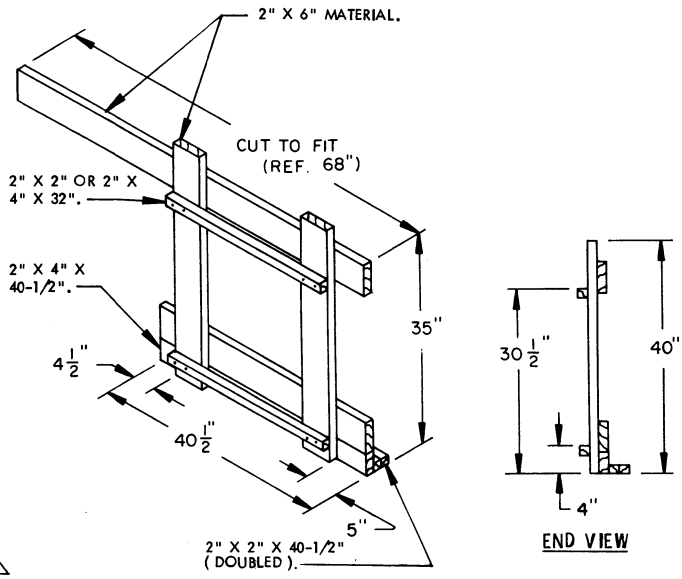
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT), WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

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



LOAD BEARING GATE D

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

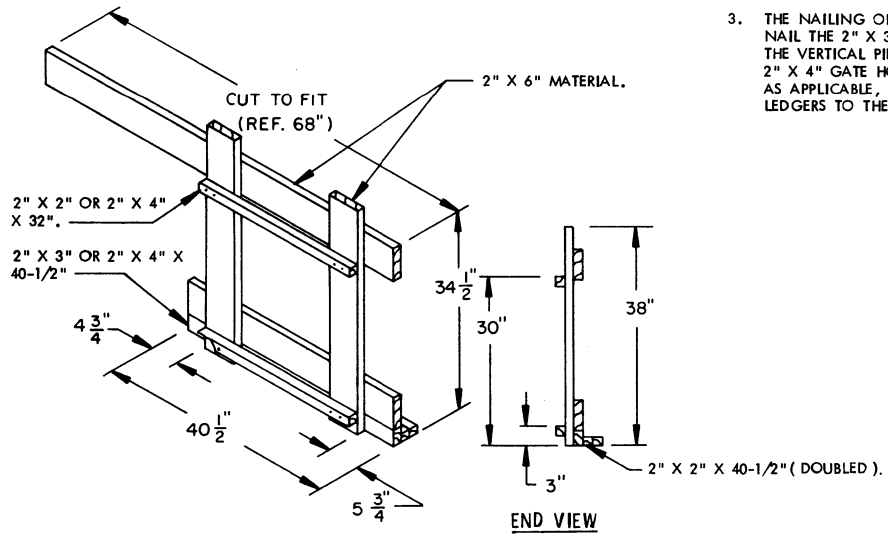


LOAD BEARING GATE E

THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (DECREASED HEIGHT), WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. SEE SPECIAL NOTE 3 BELOW FOR NAILING GUIDANCE. A RIGHT HAND GATE IS SHOWN.

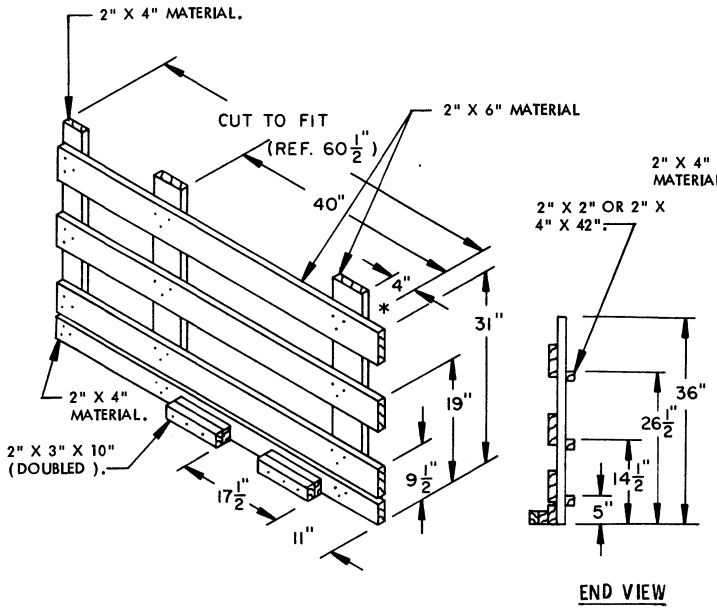
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH INCREASED AND/OR DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 102. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED CONTAINERS.
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT TO FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3", 2" X 4", OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE 2" X 2" OR 2" X 4" GATE HOLD DOWN PIECES TO A 2" X 4" OR 2" X 3" HORIZONTAL PIECE, AS APPLICABLE, W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



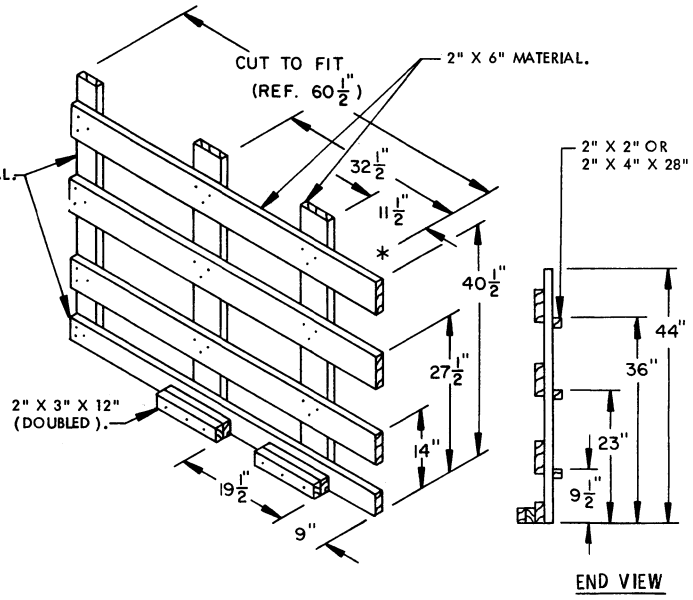
LOAD BEARING GATE F

THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (DECREASED HEIGHT), WHEN THE CONTAINERS ARE CROSSWISE IN THE CAR. SEE SPECIAL NOTE 3 AT RIGHT FOR GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.



LOAD BEARING GATE G

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

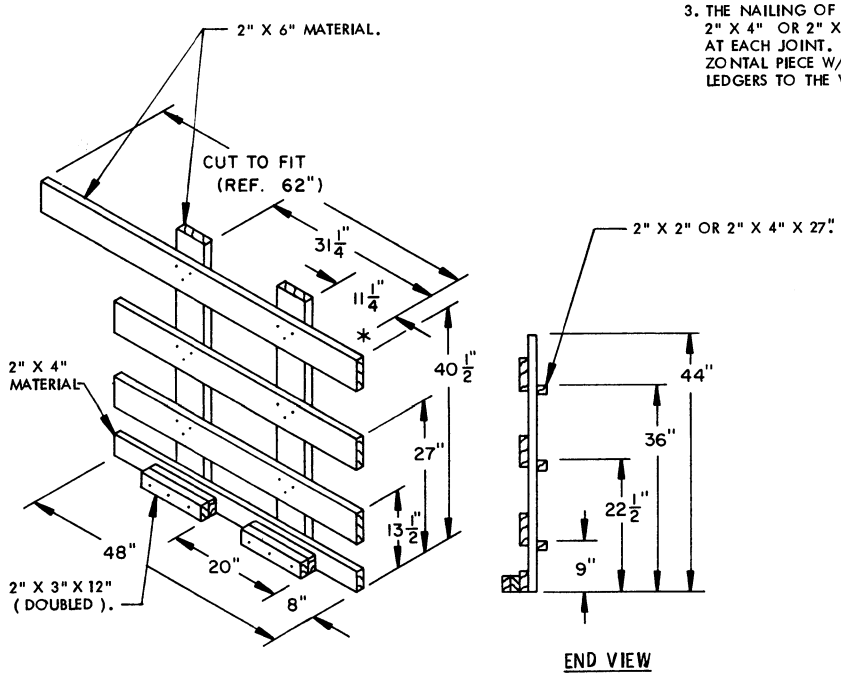


LOAD BEARING GATE H

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

SPECIAL NOTES:

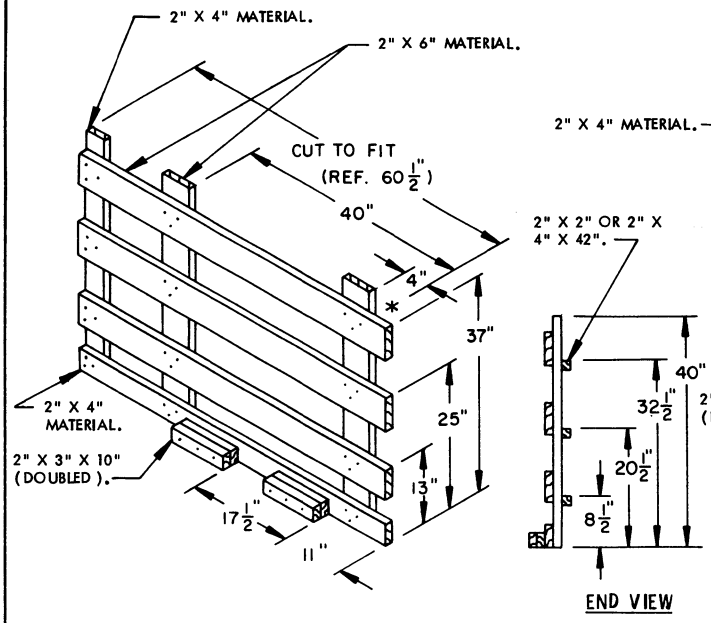
1. THE GATES ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 103. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE POSITIONED CONTAINERS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT TO FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. 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" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



LOAD BEARING GATE J

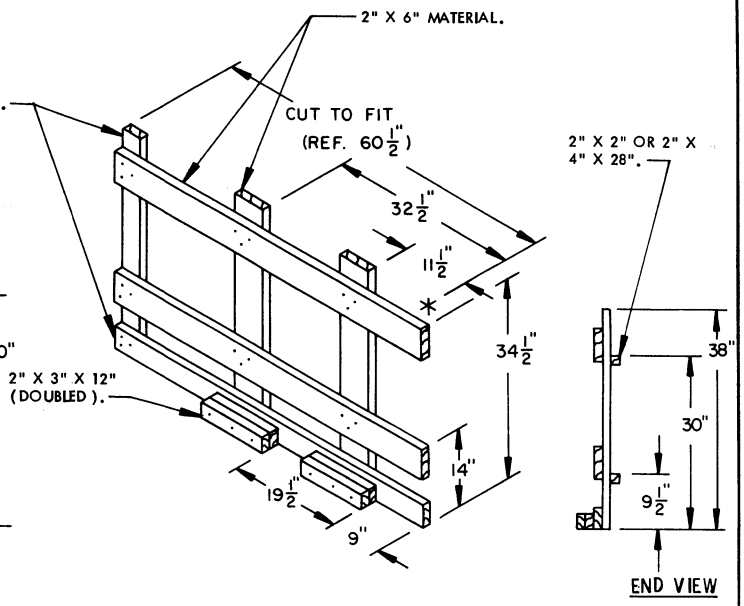
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT), WHEN THE CONTAINERS ARE LENGTHWISE IN THE CAR. SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.

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



LOAD BEARING GATE K

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

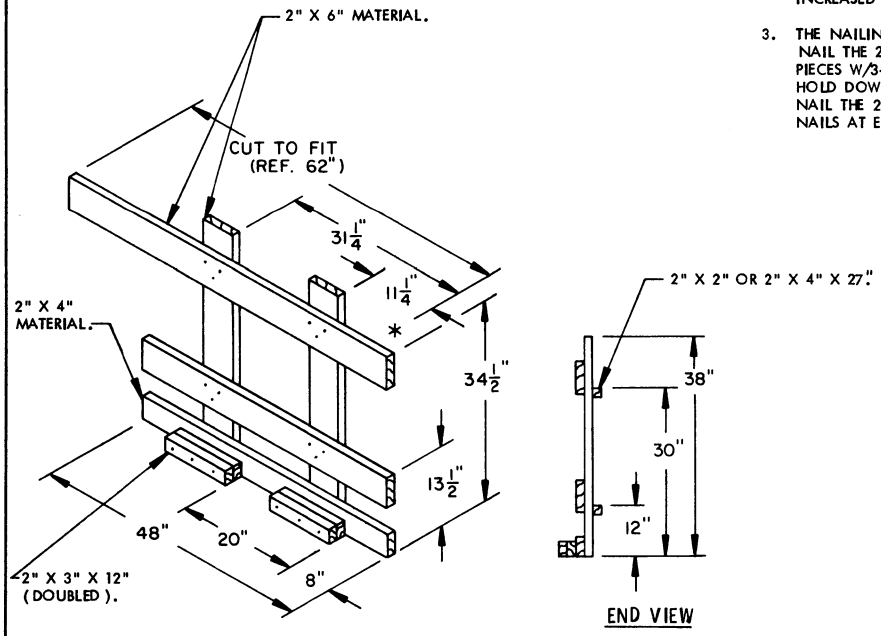


LOAD BEARING GATE L

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

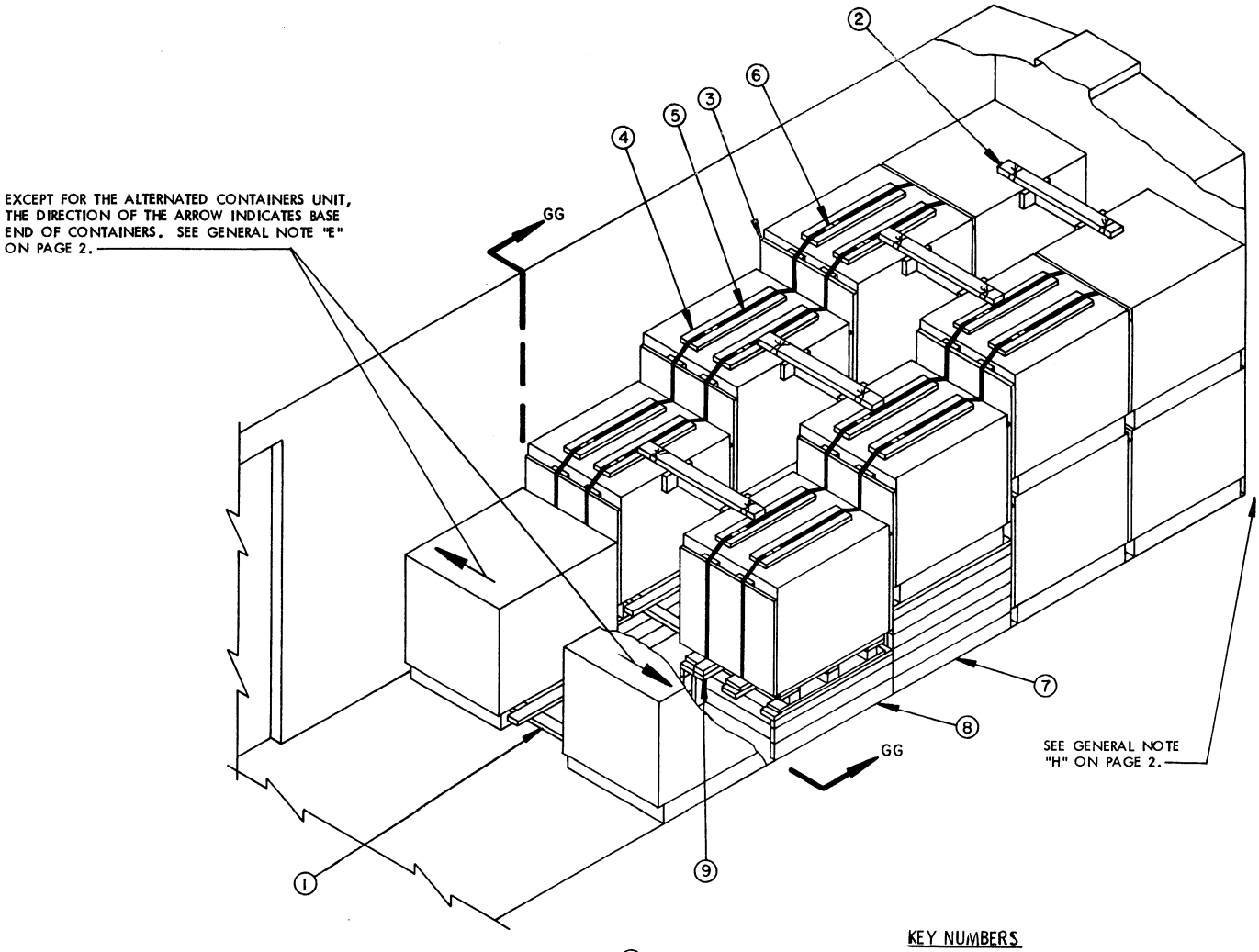
SEPCIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH INCREASED AND/OR DECREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 103. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED CONTAINERS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT TO FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. 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" OR 2" X 4" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

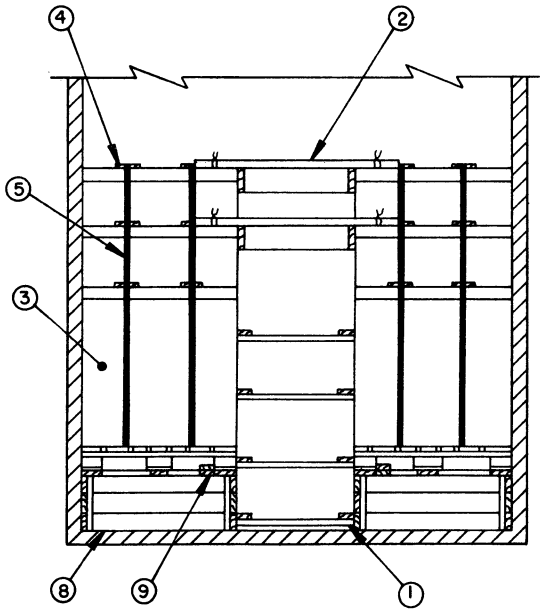


LOAD BEARING GATE M

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



ISOMETRIC VIEW

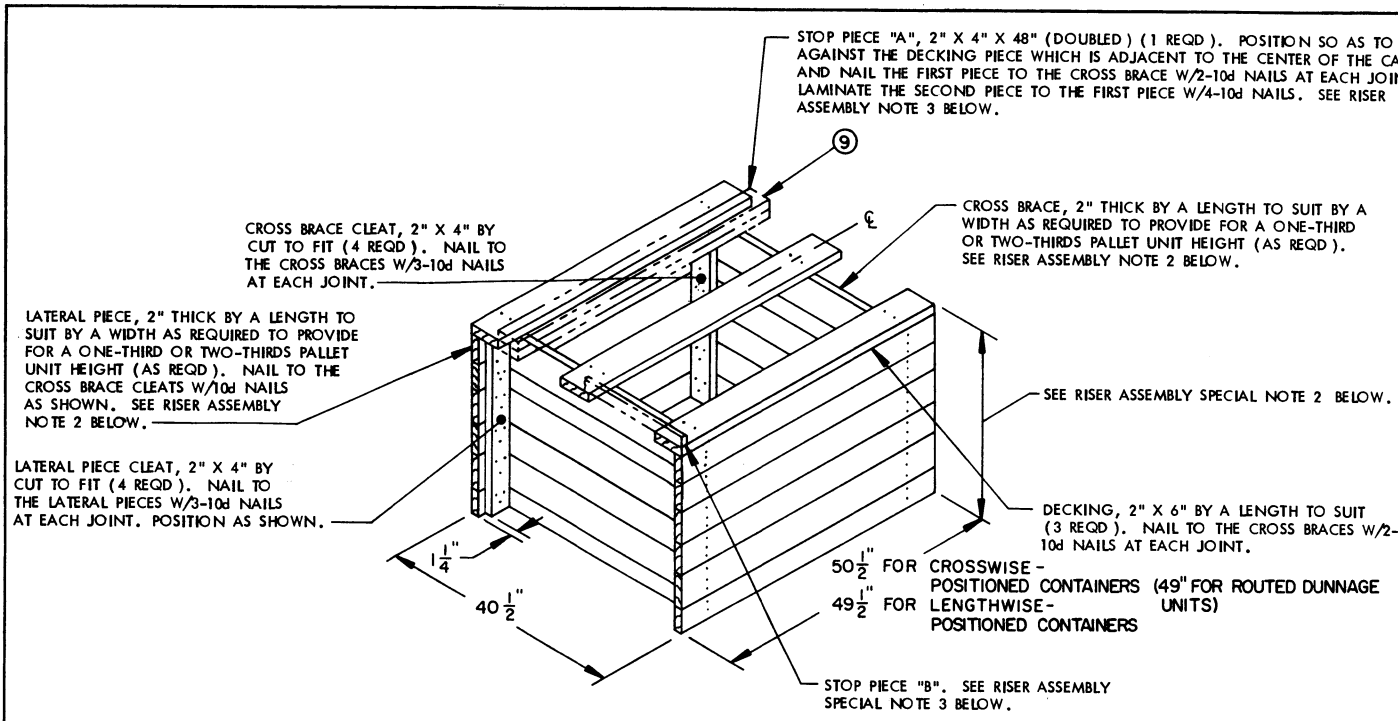


SECTION GG-GG

KEY NUMBERS

1. ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 109.
2. TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22 FOR ALL THE CROSSWISE-POSITIONED CONTAINERS AND THE ROUTED DUNNAGE METHOD UNIT OF LENGTHWISE CONTAINERS. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22 FOR THE ALTERNATED CONTAINERS AND FLAT DUNNAGE METHOD UNITS OF LENGTHWISE-POSITIONED CONTAINERS. (TOP-OF-LOAD ANTI-SWAY BRACE "A" IS SHOWN). WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 128.
3. SIDE FILL ASSEMBLY (12 REQD). SEE THE "SIDE FILL ASSEMBLY B" DETAIL ON PAGE 111. SEE SPECIAL NOTE 6 ON PAGE 109.
4. STRAPPING BOARD, 1" X 6" X 42" (12 REQD, 2 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD C" DETAIL ON PAGE 111. SEE SPECIAL NOTE 6 ON PAGE 109.
5. REINFORCING STRAP, 1-1/4" X .035" X 17'-0" LONG (REF) STEEL STRAPPING (12 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT, THE STRAPPING BOARDS, AND THE SIDE FILL ASSEMBLIES. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD C" DETAIL ON PAGE 111.
6. SEAL FOR 1-1/4" STRAPPING (24 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.
7. RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 109.
8. RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 109.
9. STOP PIECE "A" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 109 FOR LOCATION AND NAILING GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

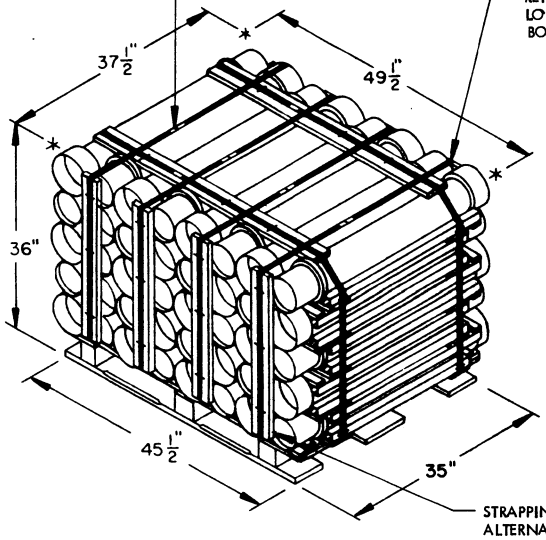
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 108 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED SO THE CONTAINERS ARE CROSSWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE-POSITIONED CONTAINERS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. ANTI-SWAY BRACE "C", AS DETAILED ON PAGE 53, IS APPLICABLE FOR THE FLAT DUNNAGE AND ROUTED DUNNAGE UNITS OF CROSSWISE-POSITIONED CONTAINERS. ANTI-SWAY BRACE "A", AS DETAILED ON PAGE 22, WILL BE USED FOR ALTERNATED CONTAINERS UNITS OF CROSSWISE POSITIONED CONTAINERS. WHEN THE CONTAINERS ARE LENGTHWISE-POSITIONED, ANTI-SWAY BRACE "B" AS DETAILED ON PAGE 22, WILL BE USED FOR THE ALTERNATED CONTAINERS UNITS AND ANTI-SWAY BRACE "D", AS DETAILED ON PAGE 53, WILL BE USED FOR THE FLAT DUNNAGE AND ROUTED DUNNAGE UNITS.
6. USE "METHOD B" AS SHOWN ON PAGE 110, "METHOD C", OR "METHOD D" AS SHOWN ON PAGE 111, WHEN LOADING UNITS OF CROSSWISE POSITIONED CONTAINERS. "METHOD A", AS SHOWN ON PAGE 110, AND STOP PIECE "B", AS SHOWN ON THE RISER DETAIL ABOVE WILL BE USED WHEN LOADING UNITS OF LENGTHWISE POSITIONED CONTAINERS.

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 47-1/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 108. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FIVE (5) PIECES OF 2" X 6" MATERIAL AND ONE (1) PIECE OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 32-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑧ IN THE LOAD ON PAGE 108 WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 16" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE PALLET UNIT BEING LOADED AND THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. NOTE: A PLUS OR MINUS 1" TOLERANCE IS 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 SO THAT THE CONTAINERS ARE CROSSWISE IN THE CAR, AS SHOWN IN THE LCL LOAD ON PAGE 108. IF ALTERNATED CONTAINERS PALLET UNITS ARE POSITIONED SO THAT THE CONTAINERS ARE LENGTHWISE IN THE CAR, POSITION A 1" 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. FOR LOADS OF FLAT DUNNAGE OR ROUTED DUNNAGE METHOD UNITS, THE RISER ASSEMBLIES MUST BE RESTRAINED FROM LATERAL MOVEMENT BY NAILING DOUBLED 2" X 4" X 18" LONG PIECES SO AS TO BE POSITIONED LENGTHWISE ALONG SIDE AND CENTERED AGAINST THE CROSS BRACE PIECES OF EACH RISER ASSEMBLY.

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

REINFORCING STRAP, 1-1/4" X .035" X 14'-6" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 15'-6" LONG FOR 6-LAYER UNITS (4 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.



NOTE:
THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINER LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 108. THE BASIC HEIGHT ALTERNATED CONTAINERS UNIT IS SHOWN. THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT. FOR MODIFICATION OF UNITS TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL BELOW AND/OR THE "METHOD C" OR "METHOD D" DETAIL ON PAGE 111.

STRAPPING BOARD, 2" X 4" X 28" FOR 5-LAYER ALTERNATED CONTAINERS UNITS, 32-1/2" FOR 6-LAYER ALTERNATED CONTAINERS UNITS, 34" LONG FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS, AND 40" FOR 6-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (8 REQD). POSITION SO AS TO CENTER ON THE JOINTS OF CONTAINERS.

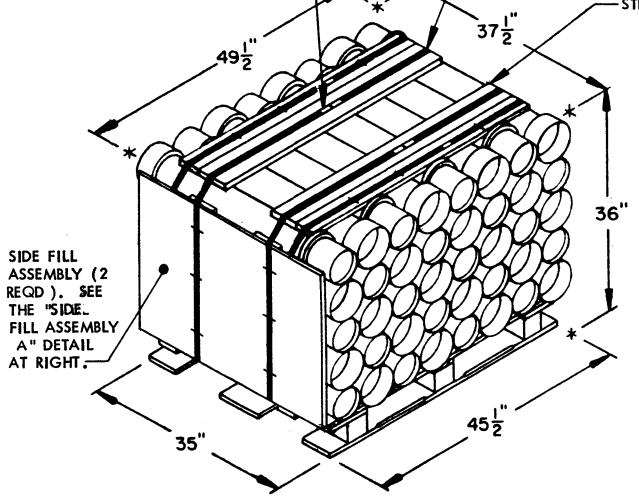
METHOD A

FOR ALL PALLET UNITS HAVING THE CONTAINERS LENGTHWISE IN THE CAR. THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT) IS SHOWN.

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

REINFORCING STRAP, 1-1/4" X .035" X 15'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS, 16'-0" FOR 6-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.

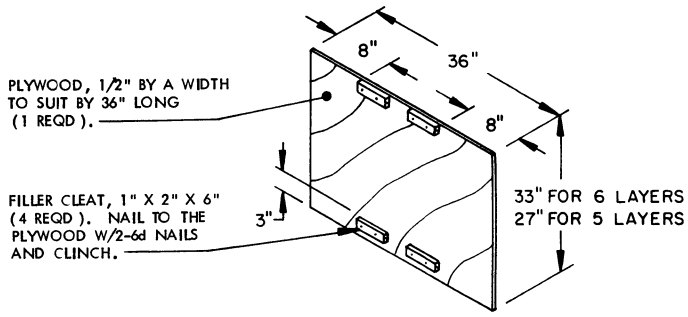
STRAPPING BOARD, 1" X 6" X 42-1/2" (2 REQD). POSITION AS SHOWN.



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

METHOD B

FOR ALTERNATED CONTAINERS UNITS WITH THE CONTAINERS CROSSWISE IN THE CAR. THE BASIC HEIGHT UNIT IS SHOWN.

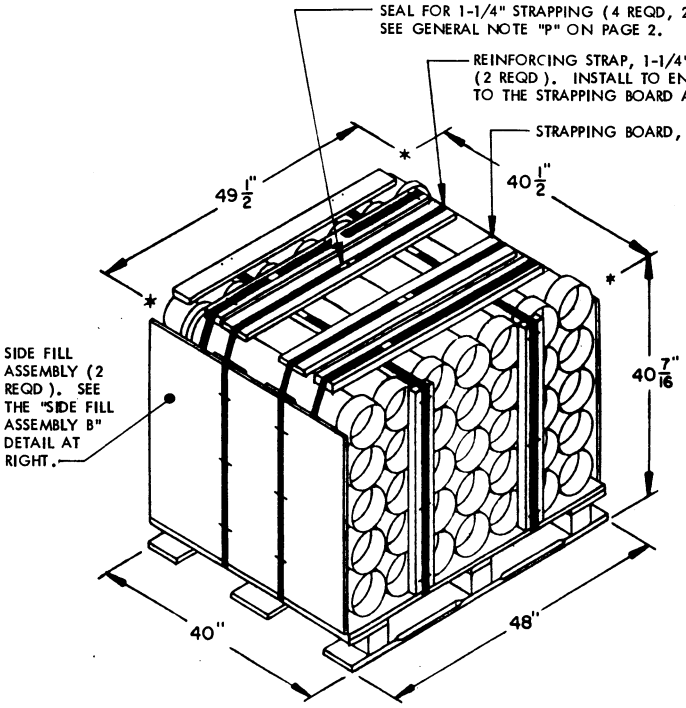


SIDE FILL ASSEMBLY A

FOR METHOD "B" AT LEFT.

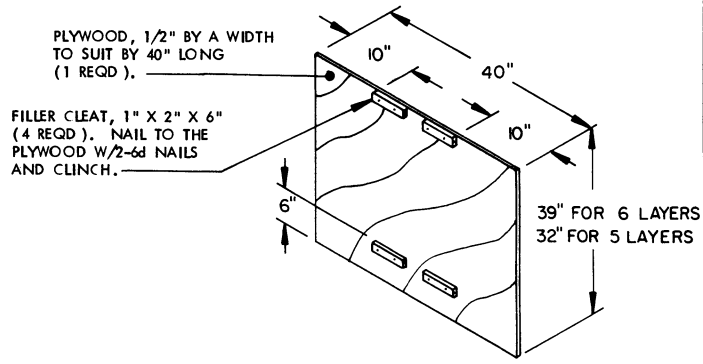
NOTE:
THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE ALTERNATED CONTAINERS UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 108. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE INCREASED HEIGHT UNIT. FOR MODIFICATION OF ALTERNATED CONTAINERS UNITS, TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL ABOVE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



METHOD C

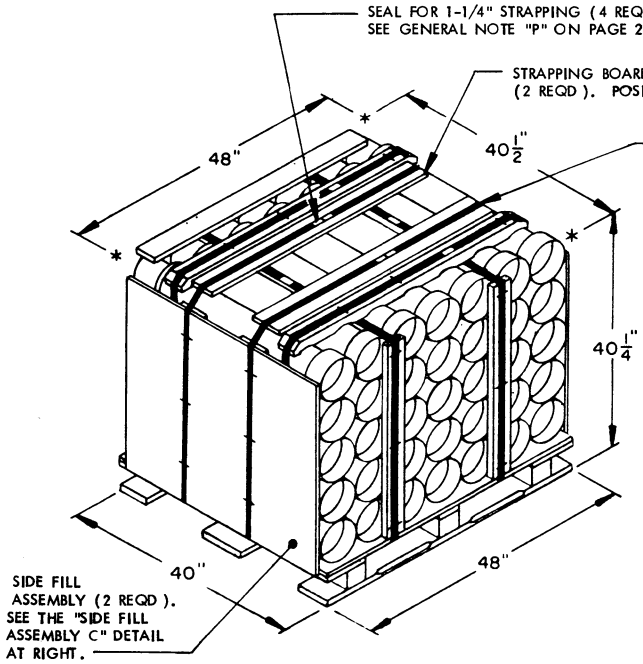
FOR FLAT DUNNAGE METHOD UNITS WITH THE CONTAINERS CROSSWISE IN THE CAR. THE DECREASED HEIGHT UNIT IS SHOWN.



SIDE FILL ASSEMBLY B

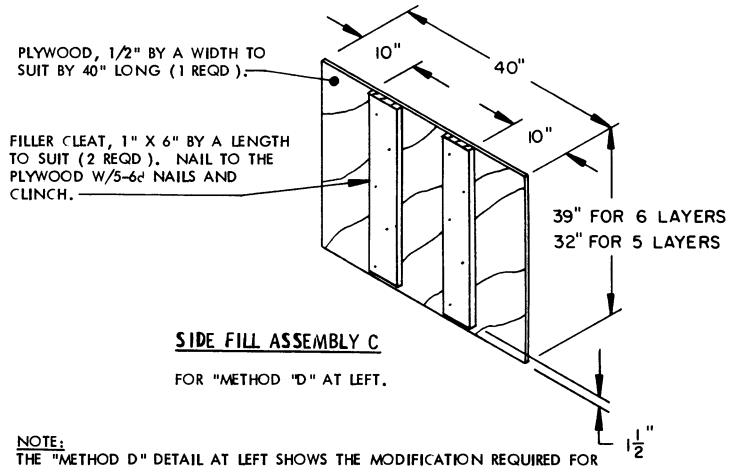
FOR METHOD "C" AT LEFT

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 108. THE DECREASED HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE BASIC 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 PAGE 110.



METHOD D

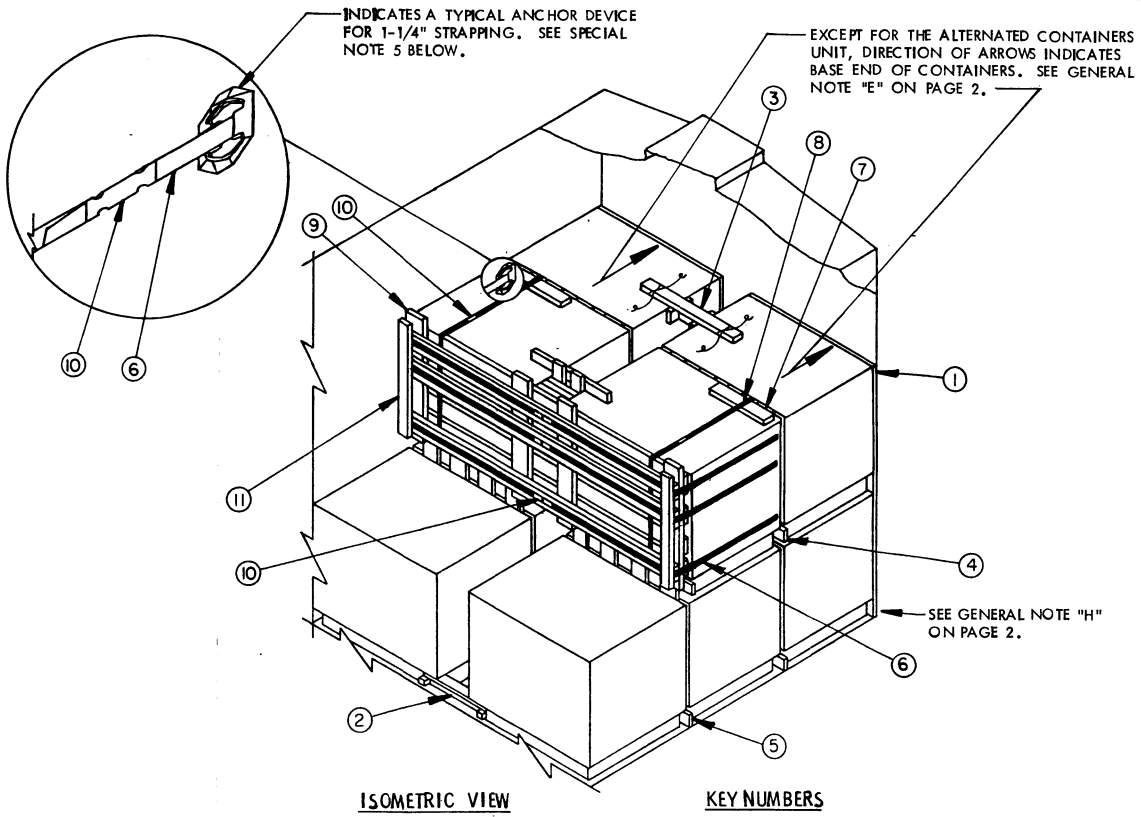
FOR ROUTED DUNNAGE METHOD UNITS WITH THE CONTAINERS CROSSWISE IN THE CAR. THE DECREASED HEIGHT UNIT IS SHOWN.



SIDE FILL ASSEMBLY C

FOR "METHOD "D" AT LEFT.

NOTE:
THE "METHOD D" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE ROUTED DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED WITH THE CONTAINERS CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 108. THE DECREASED HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE BASIC HEIGHT UNIT. FOR MODIFICATION OF ROUTED DUNNAGE METHOD UNITS TO BE POSITIONED WITH THE CONTAINERS LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL AT THE TOP OF PAGE 110.



ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. A 9'-2" WIDE ALL-METAL BOX CAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

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

4. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 7,500 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 5,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS. SEE THE "MAXIMUM NUMBER OF UNITS" CHART BELOW FOR GUIDANCE IN THE QUANTITIES OF THE PALLET UNITS COVERED BY THIS DOCUMENT WHICH CAN BE RETAINED USING THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING.

5. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST THIRTY-SIX INCHES (36") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CAR SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE GATES WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 98 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 103 FOR A SINGLE UNIT.

6. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 113 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

MAXIMUM NUMBER OF UNITS						
NO. OF STRAPS	ALTERNATED		FLAT		ROUTED	
	BASIC	INCR	BASIC	DECR	BASIC	DECR
3	5	4	5	6	5	6
2	3	3	3	4	3	4

(1) END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 127. SEE GENERAL NOTE "D" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 128 IS USED, THE END-WALL LINING IS NOT REQUIRED.

(2) ANTI-SWAY BRACE (5 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 22 FOR THE ALTERNATED CONTAINERS UNITS OR THE "ANTI-SWAY BRACE D" DETAIL ON PAGE 53 FOR THE FLAT OR ROUTED DUNNAGE METHOD UNITS. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22 FOR THE ALTERNATED CONTAINERS UNIT OR THE FLAT DUNNAGE METHOD UNITS. USE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 22 FOR THE ROUTED DUNNAGE METHOD UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 128.

(4) SEPARATOR GATE FOR 2-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 19 OR 37. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY LOADED UNITS.

(5) SEPARATOR GATE FOR 1-HIGH LOAD (1 REQD). SEE THE APPLICABLE DETAIL ON PAGE 19 OR 37.

(6) BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 113 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 AND 5 AT LEFT.

(7) STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 113.

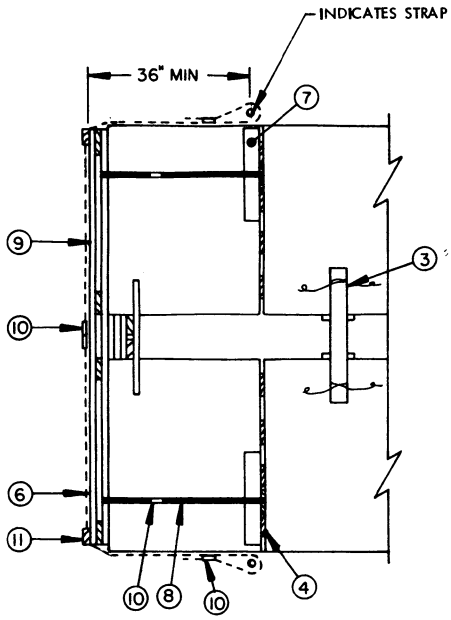
(8) BUNDLING STRAP, 1-1/4" X .035" X 15'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES ON THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED (7). TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED (6).

(9) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 113. 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 "P" ON PAGE 2.

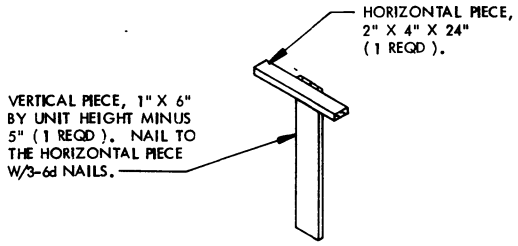
(11) STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

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

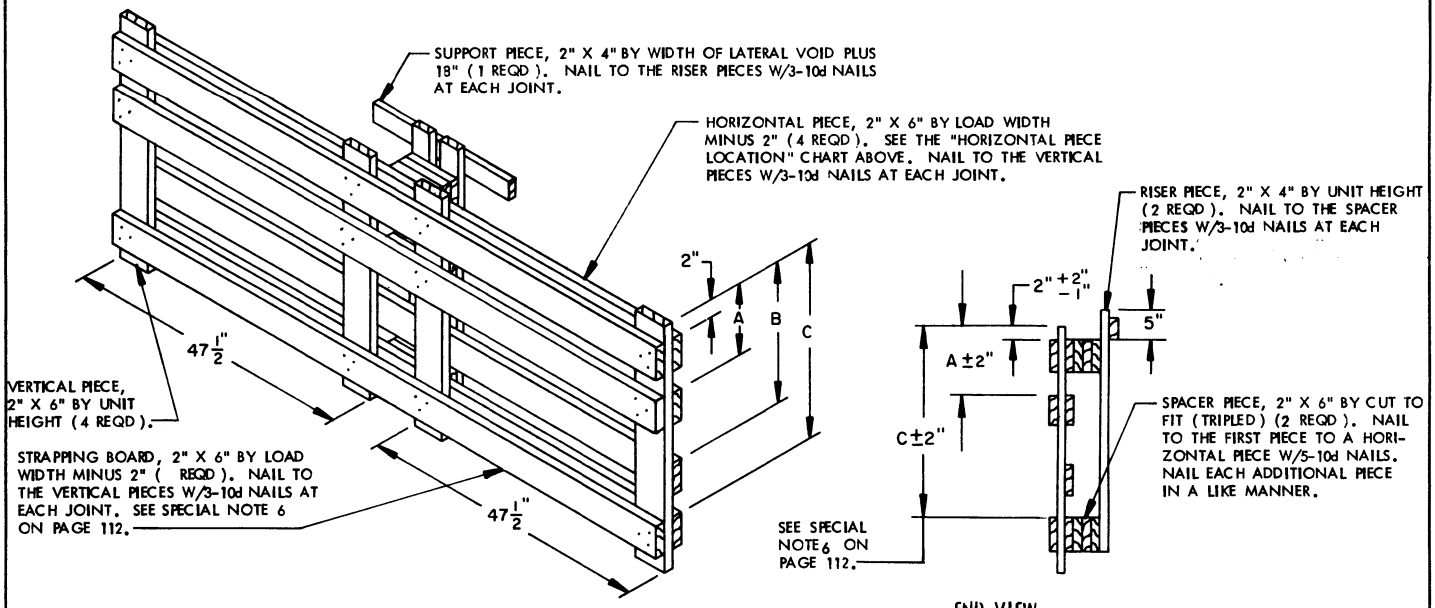


STRAP APPLICATION PLAN VIEW

HORIZONTAL PIECE LOCATION						
UNIT	5-HIGH UNIT			6-HIGH UNIT		
	DIM A	DIM B	DIM C	DIM A	DIM B	DIM C
ALTERNATED CONTAINERS	11-1/2"	18"	27-1/2"	11-1/2"	23-1/2"	33"
FLAT DUNNAGE	11-1/2"	18"	32"	11-1/2"	24-1/2"	38-1/2"
ROUTED DUNNAGE	11-1/2"	18"	31-1/2"	11-1/2"	24"	38"

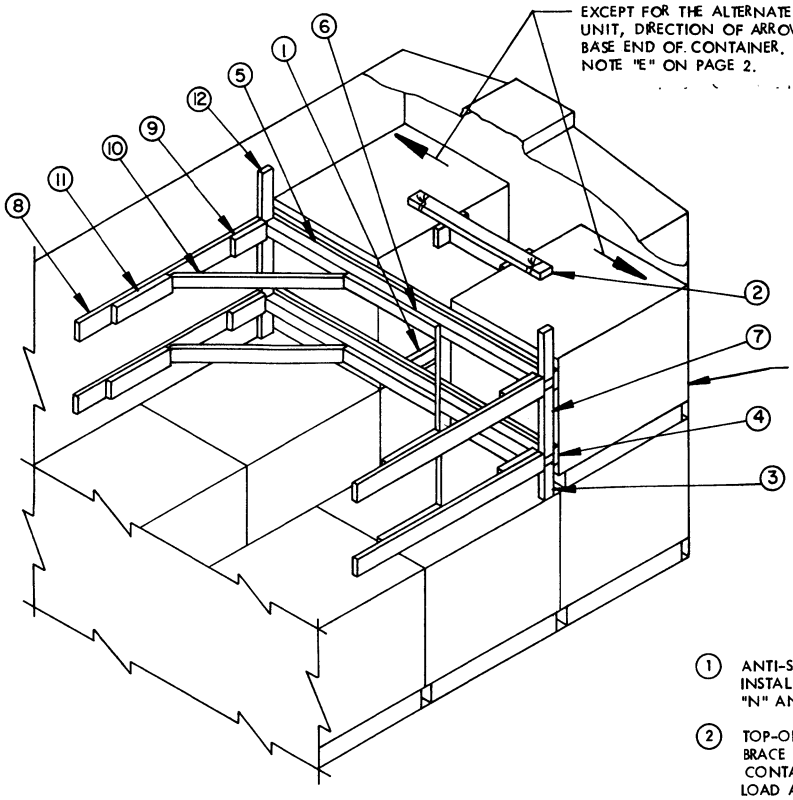


STRAPPING BOARD



BULKHEAD GATE

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.

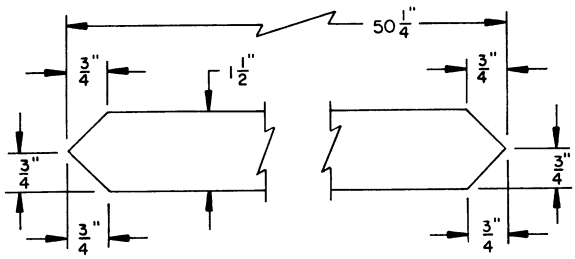
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CAR-LOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A CONTAINER CROSS WISE LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR LENGTHWISE LOADS. NOTE THAT FOR A PARTIAL TIER, THE PIECES MARKED (4) 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 8,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 115, AND 116 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED (3), (4), (5), (7), (9), 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 (10) TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED (8) MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 60"), TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED (9) TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU

(CONTINUED AT RIGHT ABOVE)



DIAGONAL BRACE

(SPECIAL NOTES CONTINUED)

THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED (8) IS DOUBLED.

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

KEY NUMBERS

(1) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE C" DETAIL ON PAGE 53. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" 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 22 FOR ALL CONTAINERS CROSSWISE PALLET UNITS AND CONTAINERS LENGTHWISE ROUTED DUNNAGE METHOD UNITS, OR THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 22 FOR THE CONTAINERS LENGTHWISE ALTERNATED CONTAINERS LENGTHWISE UNITS AND FLAT DUNNAGE METHOD UNITS. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 128. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

(3) SUPPORT CLEAT, 2" X 4" X 9" (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED (4) AND (5) ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.

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

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

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

(7) SPACER CLEAT, 2" X 4" X 25-3/4" FOR 6-LAYER ALTERNATED CONTAINERS UNITS OR 28-3/4" FOR 6-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS; 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS OR 22" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

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

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

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

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

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

SPECIAL NOTES:

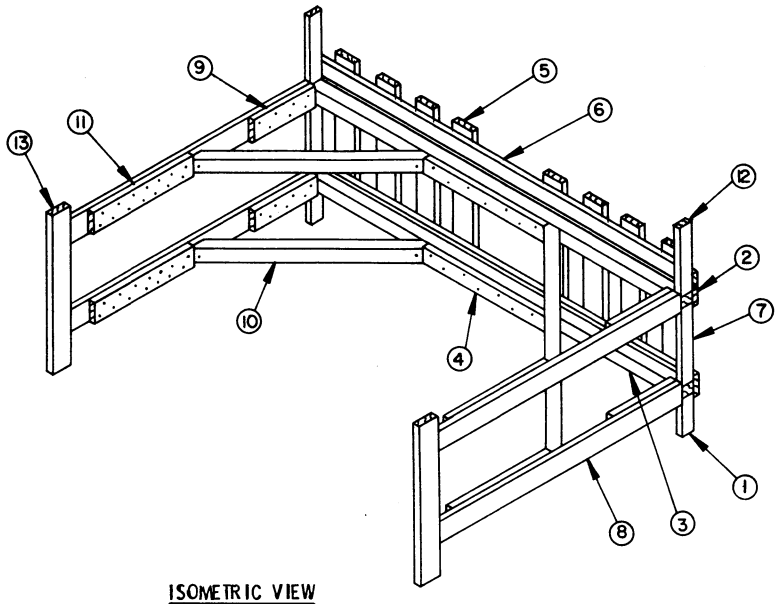
1. THE TYPE "B" K-BRACE AS SHOWN IS DESIGNED FOR BLOCKING AND BRACING LOADS OF LENGTHWISE-POSITIONED CONTAINERS, FOR LOADS OF CROSSWISE-POSITIONED CONTAINERS, PIECES MARKED ⑤ AND ⑥ WILL NOT BE REQUIRED.

2. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN TEN (10) 5-LAYER UNITS OR EIGHT (8) 6-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 116 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 114 MAY BE USED.

3. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ① , ② , ③ , ⑦ , ⑨ , ⑫ , 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 ⑩ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑧ 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 ⑧ 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 ⑧ IS DOUBLED.

4. 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.

5. REFER TO PAGE 114 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 9" (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d 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 3 AT LEFT.

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

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

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

⑤ VERTICAL PIECE, 2" X 6" X 42" FOR 6-LAYER UNITS, 2" X 6" X 32" FOR 5-LAYER UNITS (8 REQD). CENTER ON JOINTS OF CONTAINERS. FOR THE FLAT AND ROUTED DUNNAGE METHOD UNITS, THE VERTICAL PIECES WILL BE POSITIONED SO AS TO REST ON THE TOP OF THE PALLET.

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

⑦ SPACER CLEAT, 2" X 4" X 25-3/4" FOR 6-LAYER ALTERNATED CONTAINERS UNITS OR 28-3/4" FOR 6-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS; 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS OR 22" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

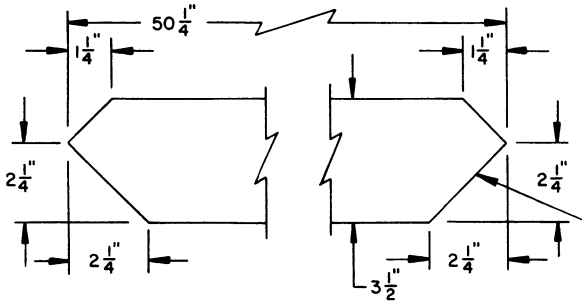
⑨ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑧ , W/7-16d NAILS.

⑩ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑧ , W/1-60d NAIL AT EACH END.

⑪ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑧ , W/14-16d NAILS.

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

⑬ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.

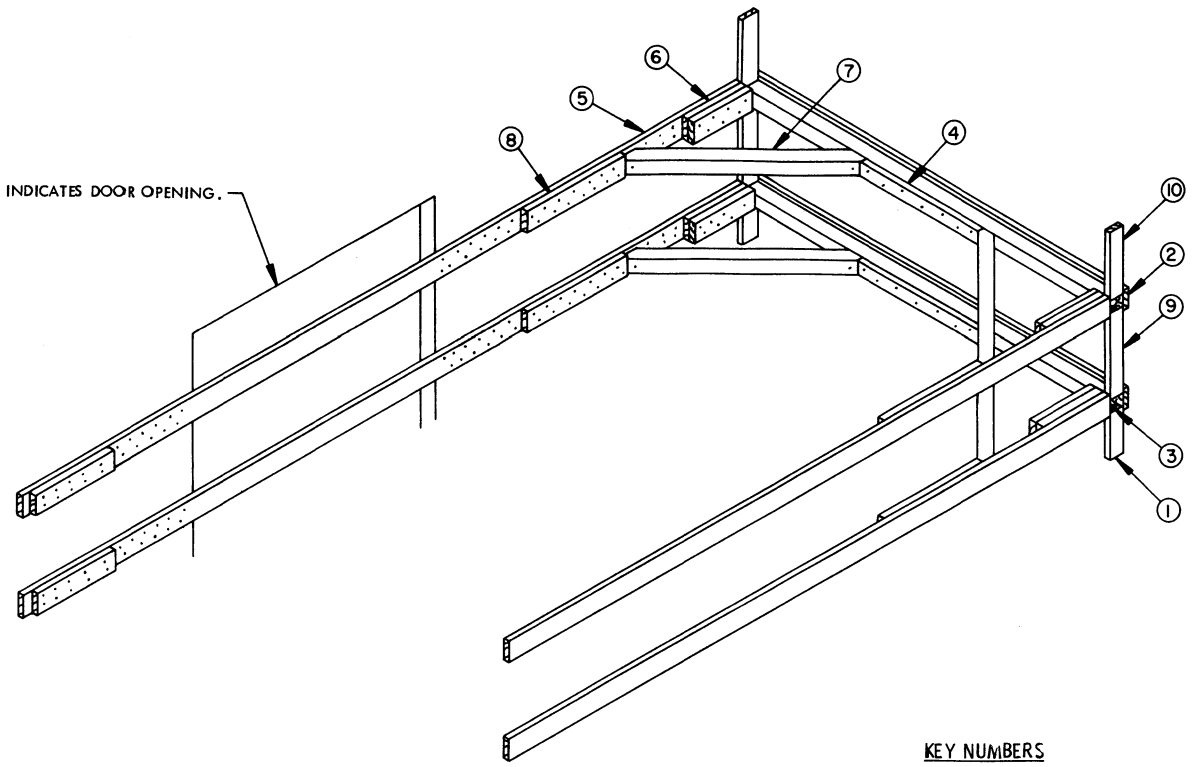


DIAGONAL BRACE

SEE SPECIAL NOTE 3 ABOVE

THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A CROSS CAR BRACE, PIECE MARKED ③ , OR A HORIZONTAL WALL CLEAT, PIECE MARKED ⑧ .

TYPE "B" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE AS SHOWN IS DESIGNED FOR BLOCKING AND BRACING LOADS OF CROSSWISE POSITIONED CONTAINERS. FOR LOADS OF LENGTHWISE POSITIONED CONTAINERS, THE PIECES MARKED ⑤ AND ⑥ SHOWN ON PAGE 115 MUST BE USED.

2. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN FOURTEEN (14) 5-LAYER UNITS OF ALTERNATED CONTAINERS UNITS OR 6-LAYER UNITS OF FLAT OR ROUTED DUNNAGE METHOD UNITS. THE BRACE WILL RETAIN NOT MORE THAN TWELVE (12) 6-LAYER UNITS OF ALTERNATED CONTAINERS UNITS OR SIXTEEN (16) 5-LAYER UNITS OF FLAT OR ROUTED DUNNAGE METHOD UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" BRACE DEPICTED ON PAGE 115 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 114 WILL BE ADEQUATE.

3. 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.

4. 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.

(CONTINUED AT RIGHT)

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 9" (2 REQD). NAIL TO THE CAR SIDEWALL W/3-12d 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 3 AT LEFT.

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

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

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

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

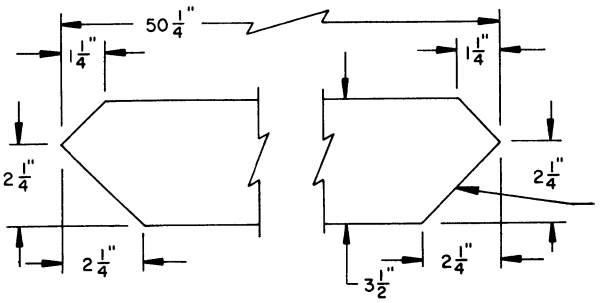
⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

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

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

⑨ SPACER CLEAT, 2" X 4" X 25-3/4" FOR 6-LAYER ALTERNATED CONTAINERS UNITS OR 28-3/4" FOR 6-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS; 2" X 4" X 20" FOR 5-LAYER ALTERNATED CONTAINERS UNITS OR 22" FOR 5-LAYER FLAT OR ROUTED DUNNAGE METHOD UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

(SPECIAL NOTES CONTINUED)

5. 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.

TYPE "C" K-BRACE

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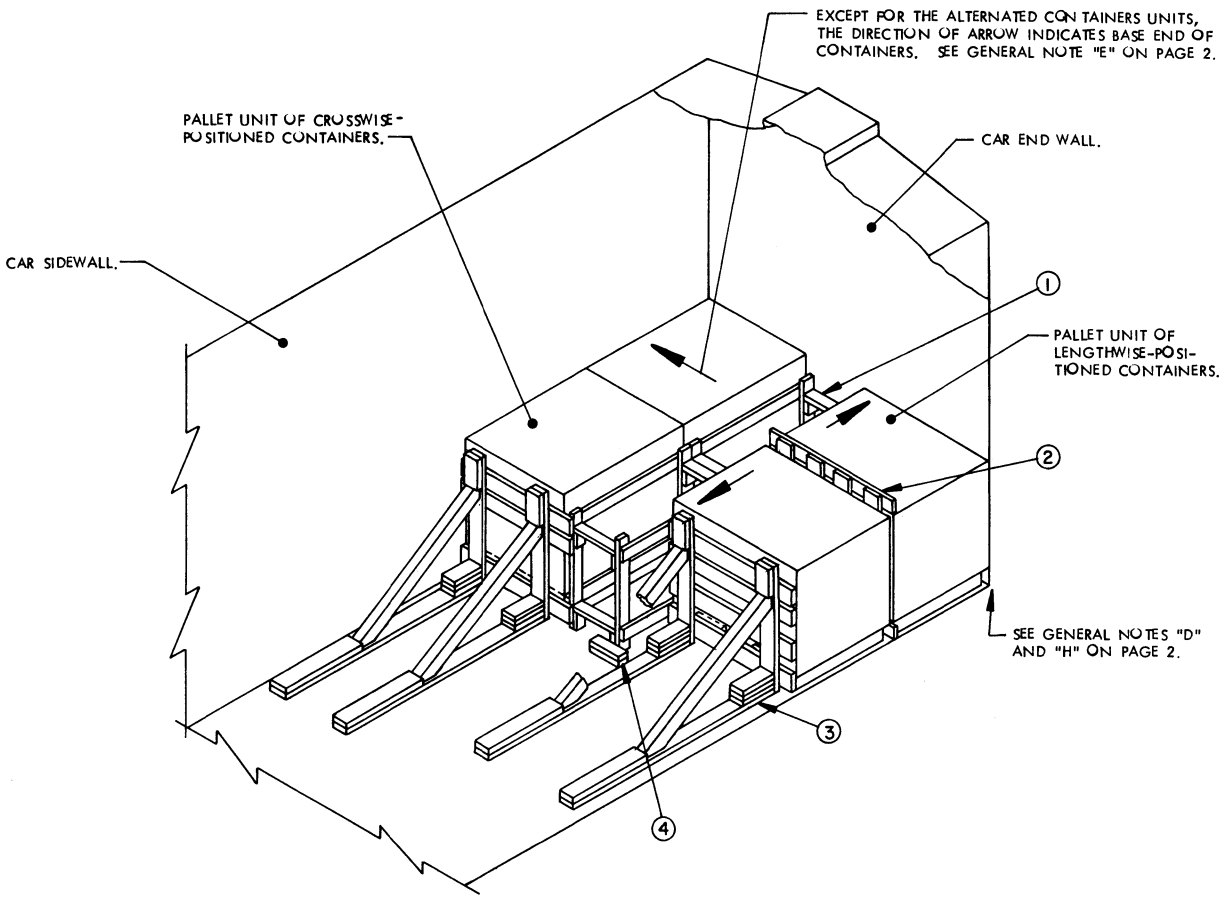


ISOMETRIC VIEW

SPECIAL NOTES:

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

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

3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOTE 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 CROSSWISE-POSITIONED CONTAINERS, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 18 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE J" DETAIL ON PAGE 50 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE V" DETAIL ON PAGE 92 FOR THE ROUTED DUNNAGE METHOD UNITS. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE LENGTHWISE-POSITIONED CONTAINERS, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 19 FOR ALTERNATED CONTAINERS UNITS, THE "CENTER GATE K" DETAIL ON PAGE 51 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE W" DETAIL ON PAGE 93 FOR THE ROUTED DUNNAGE METHOD UNITS.

KEY NUMBERS

(1) CRIB FILL (2 REQD). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 18, 36, 50, 64, 78, OR 92. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) SEPARATOR GATE (1 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 19 OR THE "SEPARATOR GATE C" DETAIL ON PAGE 37, AS APPLICABLE. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNIT.

(3) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 119 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

(4) BLOCKING FOR CRIB FILL, 2" X 4" X 12" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/2-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

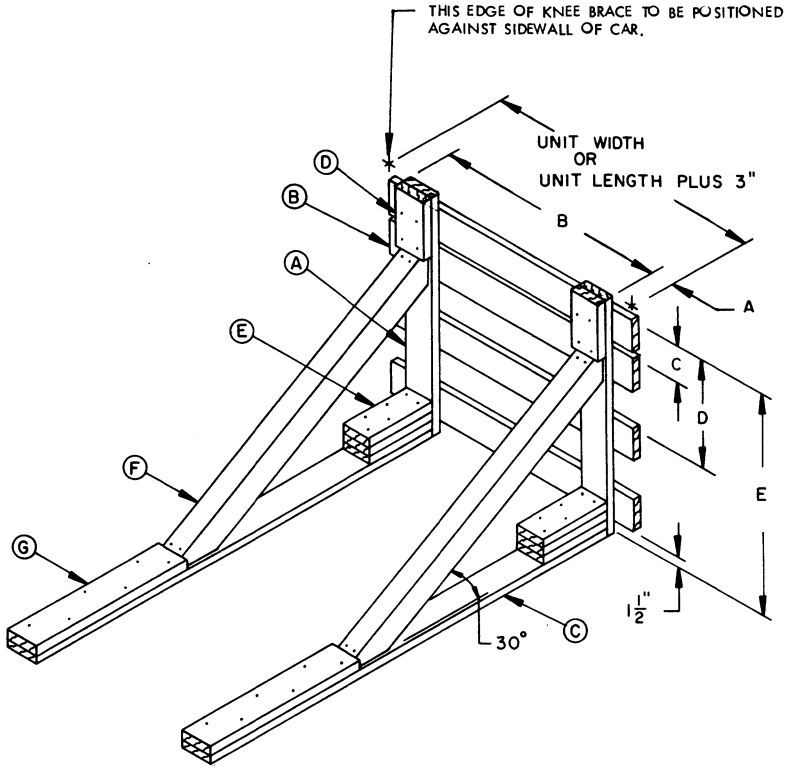
TYPICAL LCL LOAD USING KNEE BRACE METHOD OF PARTIAL-LAYER BRACING

VERTICAL PIECE PLACEMENT FOR CONTAINERS-CROSSWISE UNITS.		
UNIT	DIM A	DIM B
ALTERNATED CONTAINERS	4-1/2"	28-1/2"
FLAT DUNNAGE	4-1/2"	31"
ROUTED DUNNAGE	4-3/4"	30"

VERTICAL PIECE PLACEMENT FOR CONTAINERS-LENGTHWISE UNITS		
UNIT	DIM A	DIM B
ALTERNATED CONTAINERS	4"	41-1/2"
FLAT DUNNAGE	11-1/2"	26-1/2"
ROUTED DUNNAGE	11"	26"

HORIZONTAL PIECE PLACEMENT FOR CONTAINERS-CROSSWISE UNITS			
UNIT	DIM C	DIM D	DIM E
ALTERNATED CONTAINERS			
BASIC HEIGHT	6"	—	32-1/2"
INCREASED HEIGHT	6"	—	38-1/4"
FLAT DUNNAGE			
BASIC HEIGHT	6-3/4"	—	36-1/2"
DECREASED HEIGHT	6-3/4"	—	29-3/4"
ROUTED DUNNAGE			
BASIC HEIGHT	6-3/4"	—	35-1/4"
DECREASED HEIGHT	6-3/4"	—	28-1/2"

HORIZONTAL PIECE PLACEMENT FOR CONTAINERS-LENGTHWISE UNITS			
UNIT	DIM C	DIM D	DIM E
ALTERNATED CONTAINERS			
BASIC HEIGHT	6"	12"	32-1/2"
INCREASED HEIGHT	6"	18"	38-1/4"
FLAT DUNNAGE			
BASIC HEIGHT	6-3/4"	—	35-3/4"
DECREASED HEIGHT	6-3/4"	—	29"
ROUTED DUNNAGE			
BASIC HEIGHT	6-3/4"	—	35-1/4"
DECREASED HEIGHT	6-3/4"	—	28-1/2"



KNEE BRACE ASSEMBLY

KEY LETTERS

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

Ⓑ HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT WIDTH (48" OR 49-1/2") OR PALLET UNIT LENGTH PLUS 3" (40-1/2" OR 43-1/2") AS APPLICABLE. NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

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

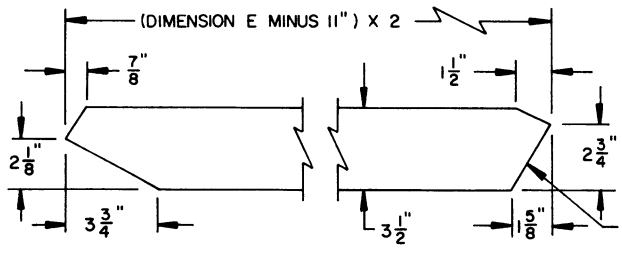
Ⓓ HOLD-DOWN CLEAT, 2" X 6" X 10" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

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

Ⓕ BRACE, 4" X 4" BY CUT TO FIT (DIMENSION "E" MINUS 11" 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 Ⓐ AND Ⓒ, W/2-16d NAILS AT EACH JOINT.

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

Ⓗ HOLD DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 118.

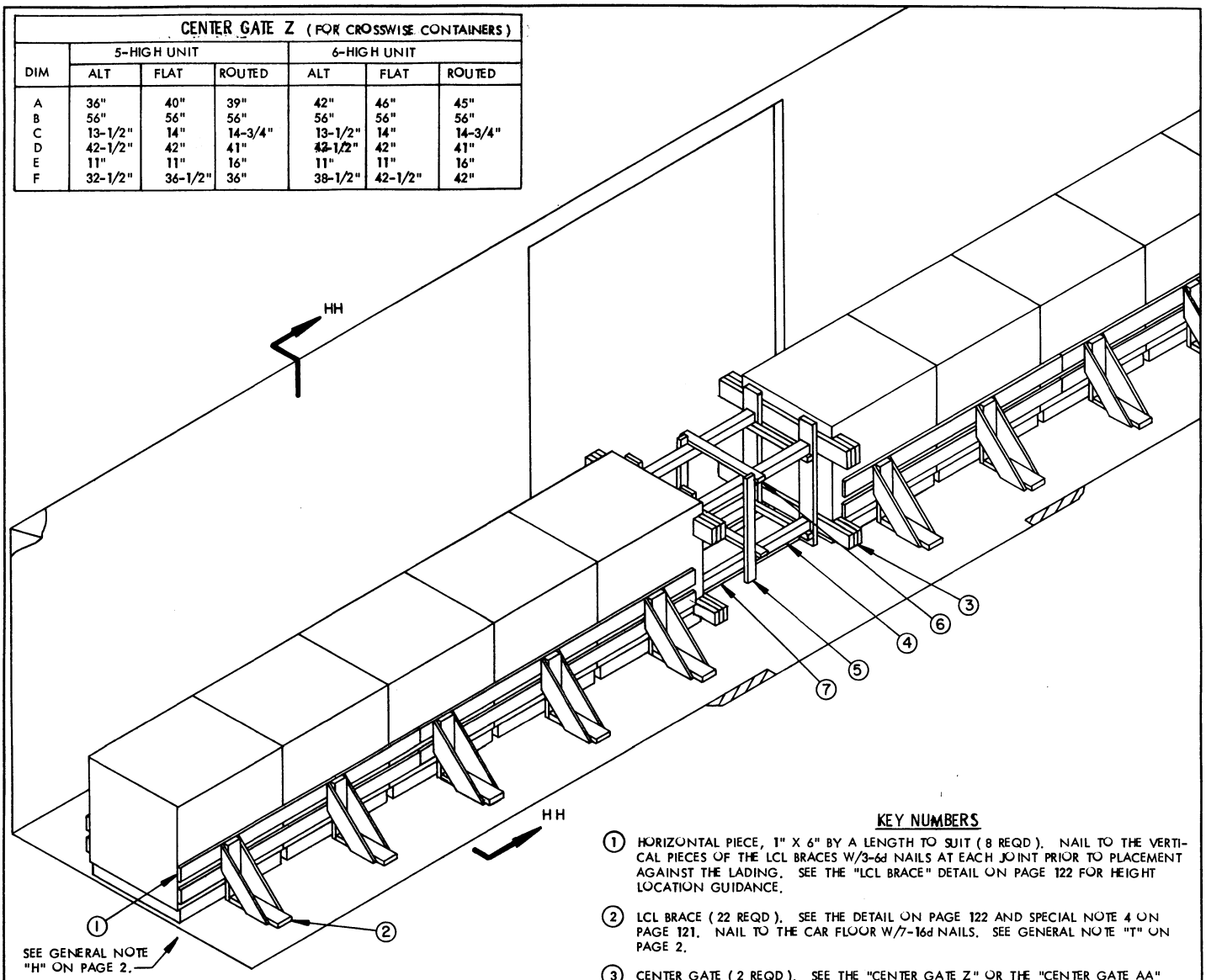


BRACE

4" X 4" MATERIAL.

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

CENTER GATE Z (FOR CROSSWISE CONTAINERS)						
	5-HIGH UNIT			6-HIGH UNIT		
DIM	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
A	36"	40"	39"	42"	46"	45"
B	56"	56"	56"	56"	56"	56"
C	13-1/2"	14"	14-3/4"	13-1/2"	14"	14-3/4"
D	42-1/2"	42"	41"	42-1/2"	42"	41"
E	11"	11"	16"	11"	11"	16"
F	32-1/2"	36-1/2"	36"	38-1/2"	42-1/2"	42"



ISOMETRIC VIEW

KEY NUMBERS

(1) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 122 FOR HEIGHT LOCATION GUIDANCE.

(2) LCL BRACE (22 REQD). SEE THE DETAIL ON PAGE 122 AND SPECIAL NOTE 4 ON PAGE 121. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "T" ON PAGE 2.

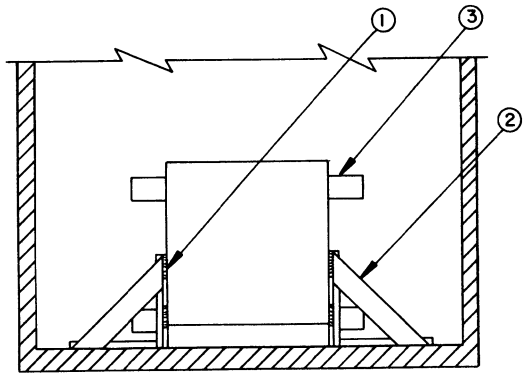
(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE Z" OR THE "CENTER GATE AA" DETAIL ON PAGE 121 FOR CROSSWISE OR LENGTHWISE-POSITIONED CONTAINERS, RESPECTIVELY.

(4) STRUT, 4" X 4" BY CUT TO FIT (4 REQD FOR CROSSWISE-POSITIONED CONTAINERS, 6 REQD FOR MOST LENGTHWISE-POSITIONED CONTAINERS UNITS). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2 AND GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) 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.

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

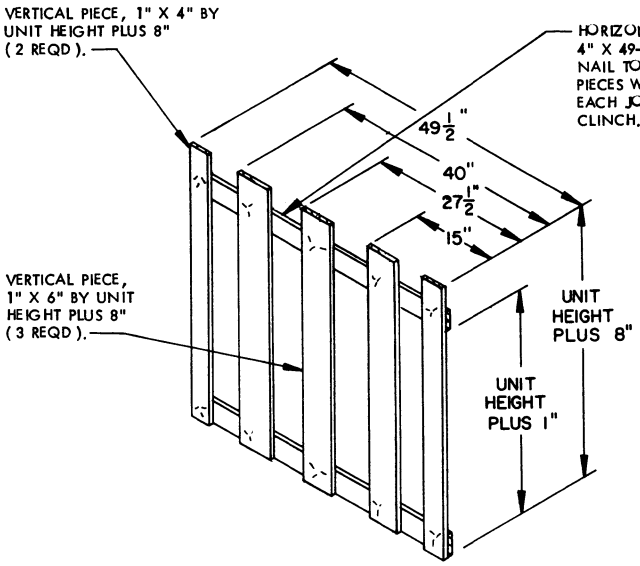
(7) GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE Z" DETAIL ON PAGE 121 FOR LOCATION GUIDANCE. NOTE THAT FOR THE LENGTHWISE UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 6 ON PAGE 121.



SECTION HH-HH

CENTER GATE AA (FOR LENGTHWISE CONTAINERS						
	5-HIGH UNIT			6-HIGH UNIT		
DIM	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
G	36"	40"	40"	42"	46"	45"
H	66"	68"	66-1/2"	66"	68"	66-1/2"
J	13"	20-1/2"	20-1/2"	13"	20-1/2"	20-1/2"
K	47-1/2"	42"	40-1/2"	47-1/2"	42"	40-1/2"
L	11"	15-1/2"	15"	14-1/2"	15-1/2"	15"
M	20-1/2"			26-1/2"	29"	28-1/2"
N	32-1/2"	36"	36"	38-1/2"	42"	42"

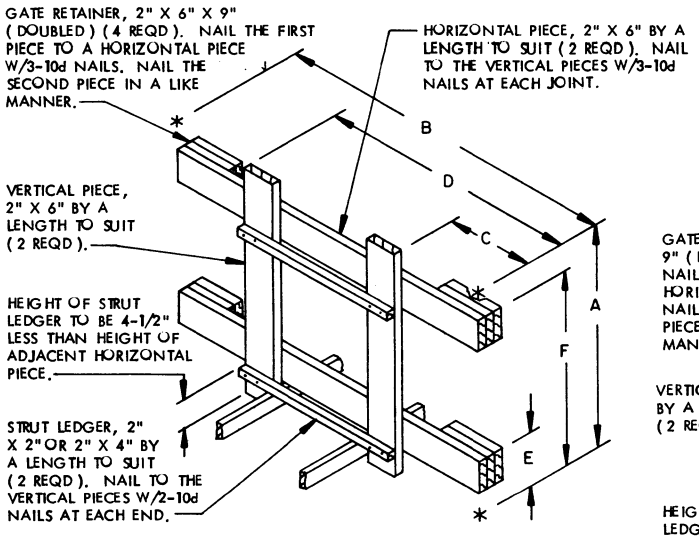
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



SEPARATOR GATE F

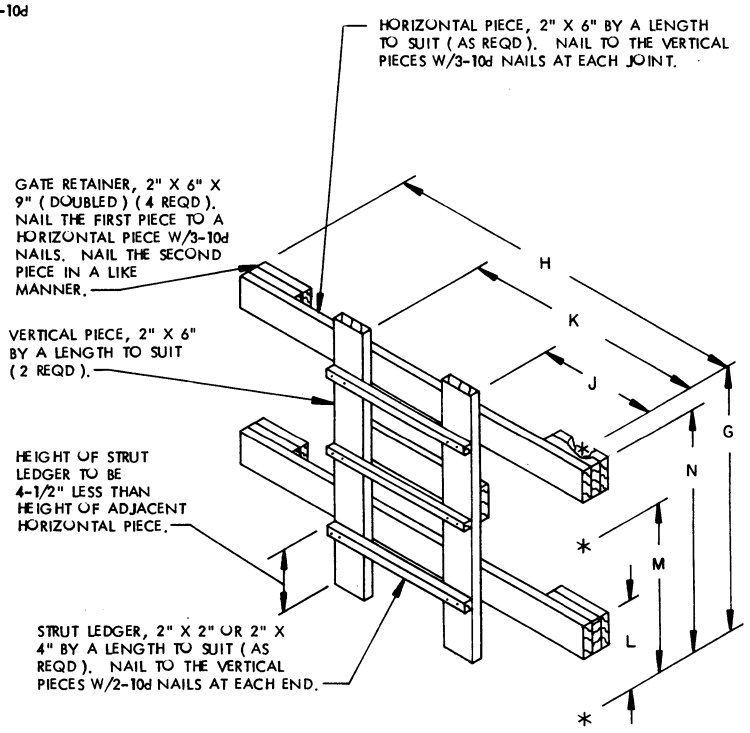
SPECIAL NOTES:

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



CENTER GATE Z

THIS GATE IS FOR USE WITH UNITS OF CROSSWISE-POSITIONED CONTAINERS. REFER TO THE "CENTER GATE Z" CHART ON PAGE 120 FOR FIGURES REPRESENTED BY LETTER ON THE ABOVE DETAIL.



CENTER GATE AA

THIS GATE IS FOR USE WITH UNITS OF LENGTHWISE-POSITIONED CONTAINERS. REFER TO THE "CENTER GATE AA" CHART ON PAGE 120 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.

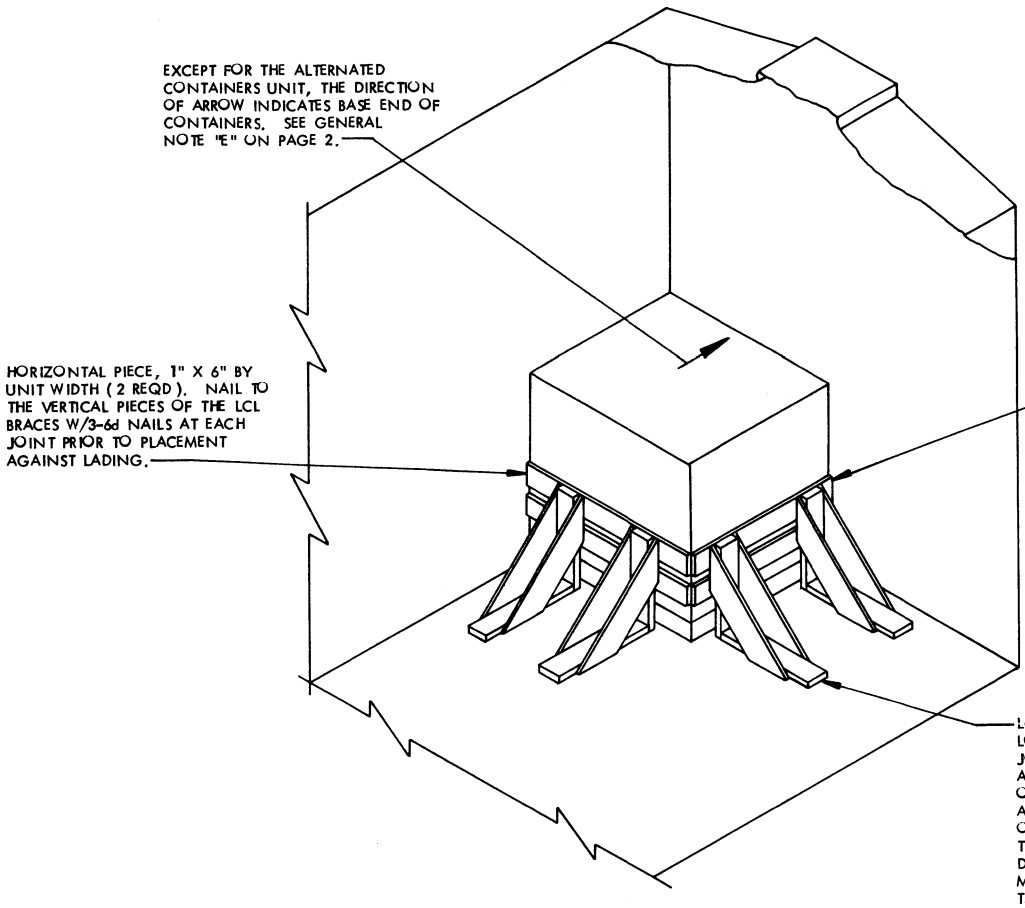
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	284	142
2" X 2"	10	4
2" X 3"	15	8
2" X 4"	14	10
2" X 6"	132	132
4" X 4"	19	26
NAILS	**NO. REQD**	**POUNDS**
6d (2")	132	1
8d (2-1/2")	264	3
10d (3")	120	2
16d (3-1/2")	60	1-1/2

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	11	15,763 LBS
DUNNAGE		652 LBS
TOTAL WEIGHT		16,415 LBS (APPROX)

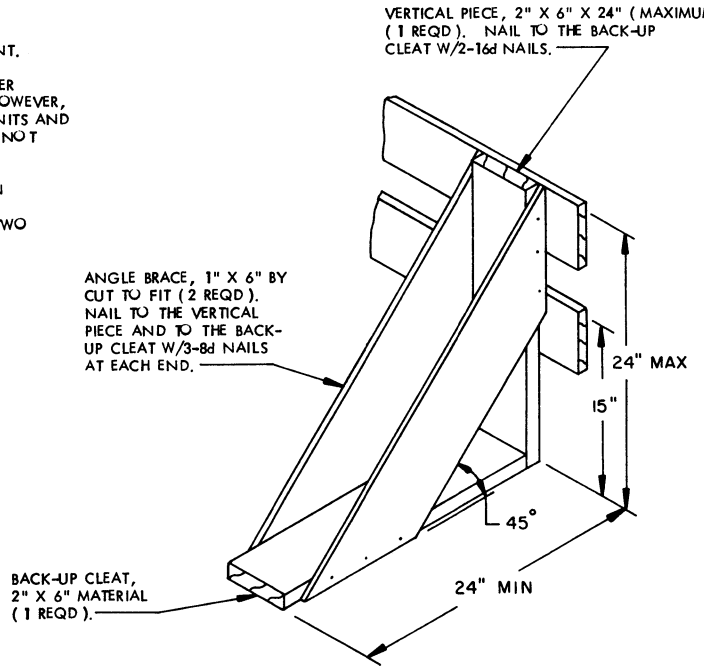
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

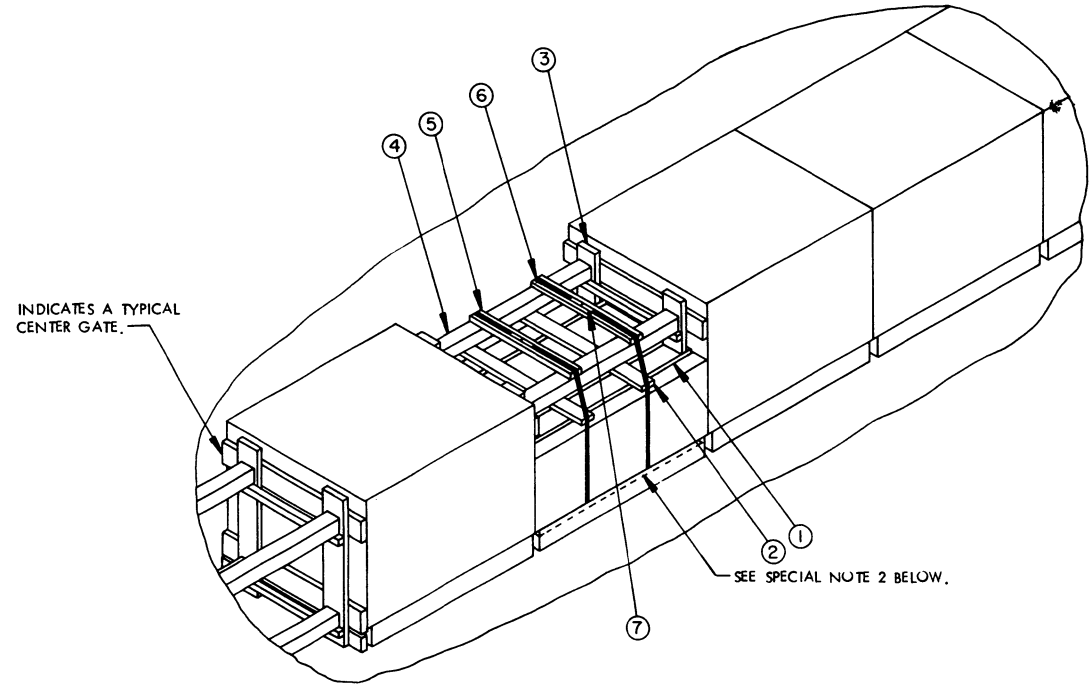
SPECIAL NOTES:

1. AN 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTES "T" AND "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A LENGTHWISE CONTAINERS UNIT IS SHOWN, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE-CONTAINERS UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 4.
4. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING.



LCL BRACE

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



POSITIONING OF PARTIAL CROSSWISE-CONTAINERS
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 FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT. WHEN THE PALLET UNIT IS THE ALTERNATED CONTAINERS UNIT, INSTALL A 2" X 2" BY 45-1/2" BATTEN NEXT TO THE PALLET AND THE BASE AND BELL ENDS OF CONTAINERS TO PROTECT THE ENDS FROM DAMAGE WHEN APPLYING THE UNITIZING STRAPS.

3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED CONTAINERS 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 ALTERNATED CONTAINERS UNIT MUST CONSIST OF FULL LAYERS OF EIGHT (8) CONTAINERS, A PARTIAL FLAT DUNNAGE METHOD UNIT OR ROUTED DUNNAGE METHOD UNIT MUST CONSIST OF FULL LAYERS OF SEVEN (7) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/3-20PM1001, 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 DESITNATION. 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 CONTAINERS UNIT IN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

7. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS OF CROSSWISE-POSITIONED CONTAINERS, THE PROCEDURES SHOWN ON PAGE 126 MAY BE MORE ECONOMICAL.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT WIDTH (2 REQD). POSITION ON TOP OF THE STRAPPING BOARD OF A PALLET UNIT.

(2) RETAINER PIECE, 2" X 4" BY UNIT LENGTH (REF: 37-1/2" OR 40-1/2") (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED (1) , W/2-10d NAILS AT EACH JOINT.

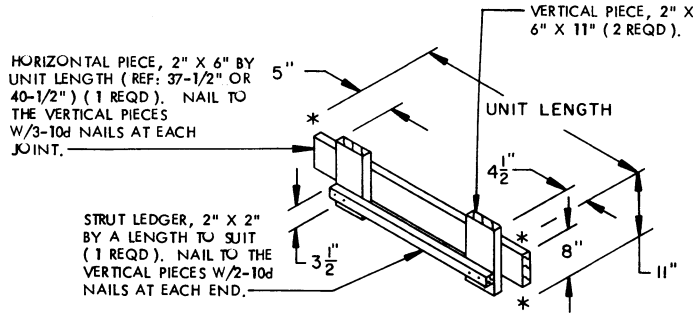
(3) PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

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

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

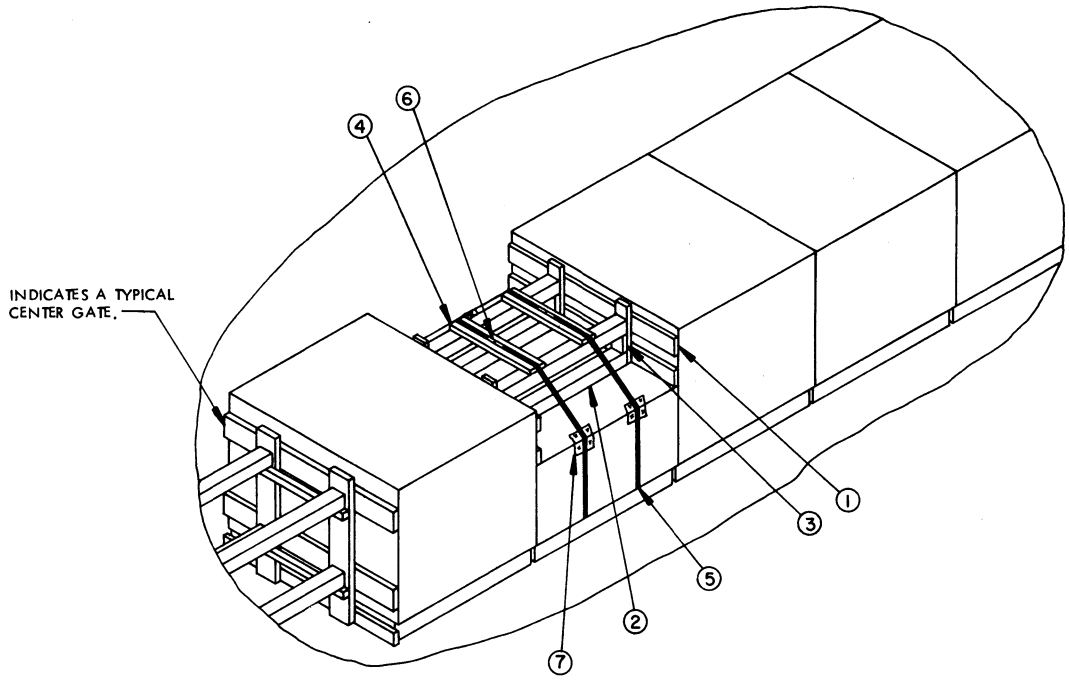
(6) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.

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



PARTIAL UNIT GATE A

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



POSITIONING OF PARTIAL LENGTHWISE-CONTAINERS 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 LENGHTWISE-CONTAINERS LOAD.

2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE FLAT DUNNAGE METHOD UNIT (DECREASED 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 CONTAINERS 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 ALTERNATED CONTAINERS UNIT MUST CONSIST OF FULL LAYERS OF EIGHT (8) CONTAINERS, A PARTIAL FLAT DUNNAGE METHOD UNIT OR ROUTED DUNNAGE METHOD UNIT MUST CONSIST OF FULL LAYERS OF SEVEN (7) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/3-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

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

6. THE "POSITIONING OF PARTIAL LENGTHWISE-CONTAINERS 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.

KEY NUMBERS

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

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

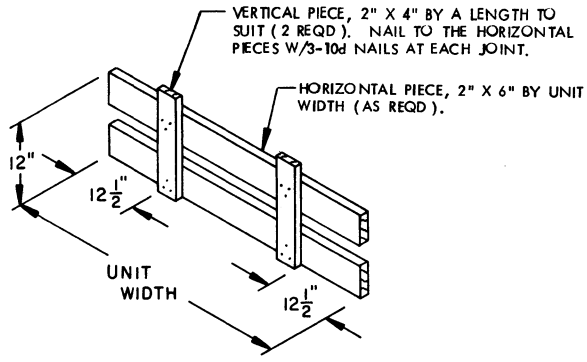
(3) STRUT SUPPORT PIECE, 2" X 4" X 4" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.

(4) STRAPPING BOARD, 2" X 4" X 24" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (2) , 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.

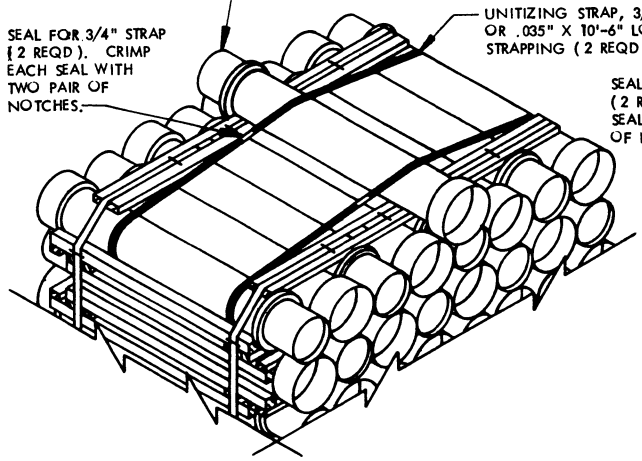
(6) SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.

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



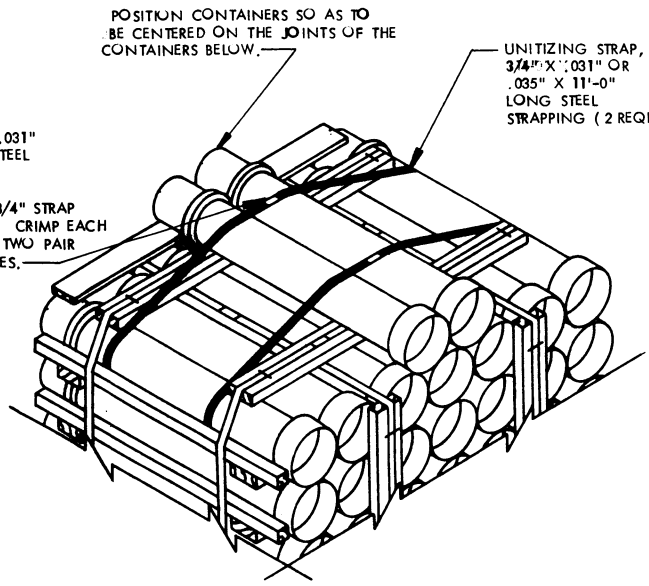
PARTIAL UNIT GATE B

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



SECUREMENT OF ONE CONTAINER

THE ALTERNATED CONTAINERS UNIT IS SHOWN.



SECUREMENT OF TWO CONTAINERS

THE FLAT DUNNAGE METHOD UNIT IS SHOWN.

SPECIAL NOTES:

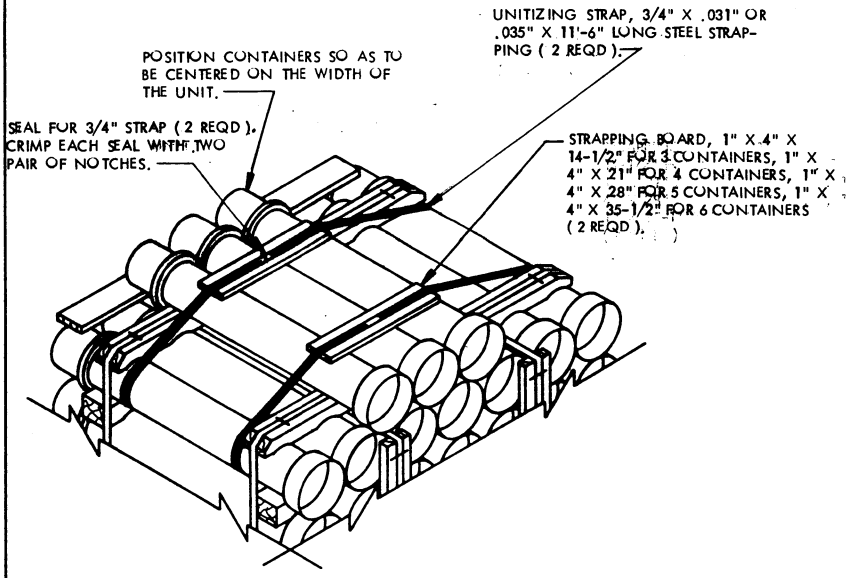
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS 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 126 OR WITHIN A LAYER AS SHOWN ON PAGES 123 AND 124.

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

3. FOR THE ALTERNATED CONTAINERS UNITS AND FOR THE FLAT DUNNAGE METHOD UNITS THE UNITIZING STRAP MUST NOT GO AROUND THE INTERMEDIATE DUNNAGE ASSEMBLY. THE STRAP MUST BE THREADED BEHIND THE 2" X 2" PIECES OF THE ASSEMBLIES.

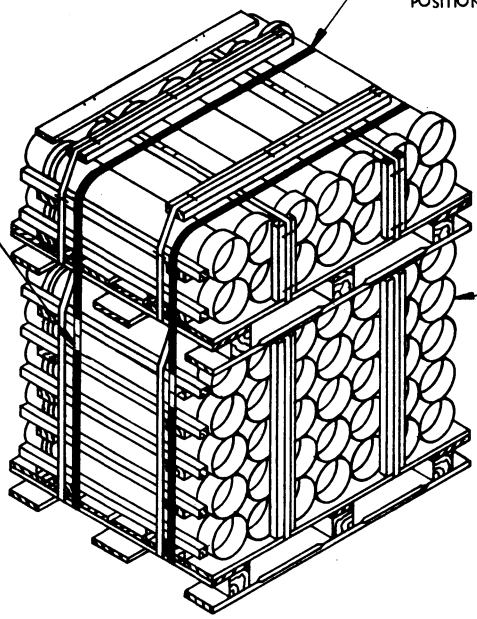
4. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.

5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



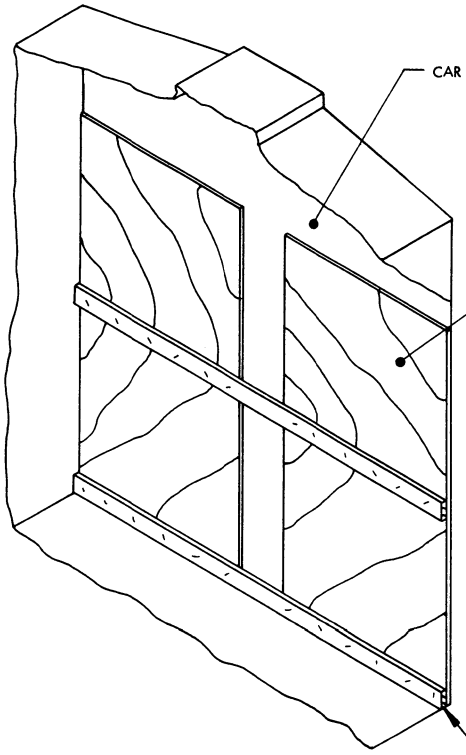
SECUREMENT OF THREE CONTAINERS

THE ROUTED DUNNAGE METHOD UNIT IS SHOWN.



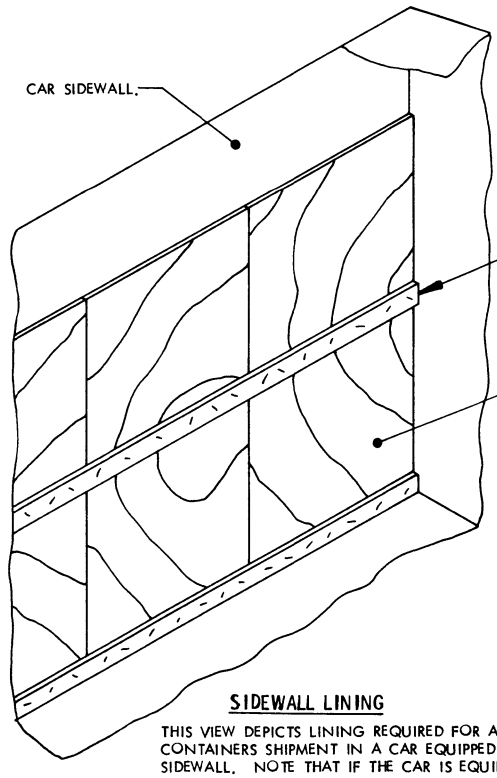
SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE-POSITIONED CONTAINERS 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 123 FOR CROSSWISE-POSITIONED CONTAINERS OR PAGE 124 FOR LENGTHWISE-POSITIONED CONTAINERS.



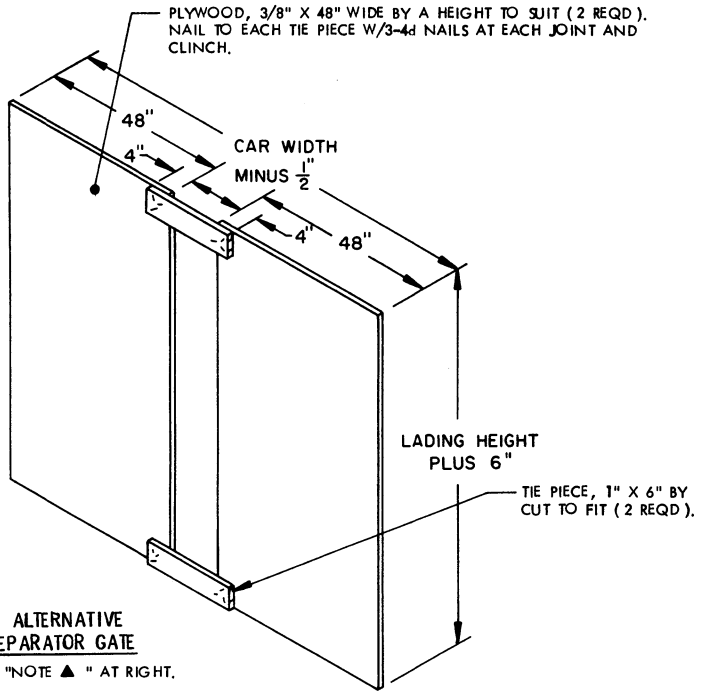
END-WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A LENGTHWISE CONTAINERS LOAD IN A CAR EQUIPPED WITH A STEEL END WALL. END-WALL LINING IS ONLY REQUIRED FOR THE ALTERNATED CONTAINERS UNITS, AND ONLY WHEN THE LENGTH OF THE CONTAINER IS LENGTHWISE IN THE CAR.



SIDEWALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A CROSSWISE-CONTAINERS 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. SIDEWALL LINING IS ONLY REQUIRED FOR THE ALTERNATED CONTAINERS UNITS, AND ONLY WHEN THE LENGTH OF THE CONTAINER IS CROSSWISE IN THE CAR.



ALTERNATIVE SEPARATOR GATE

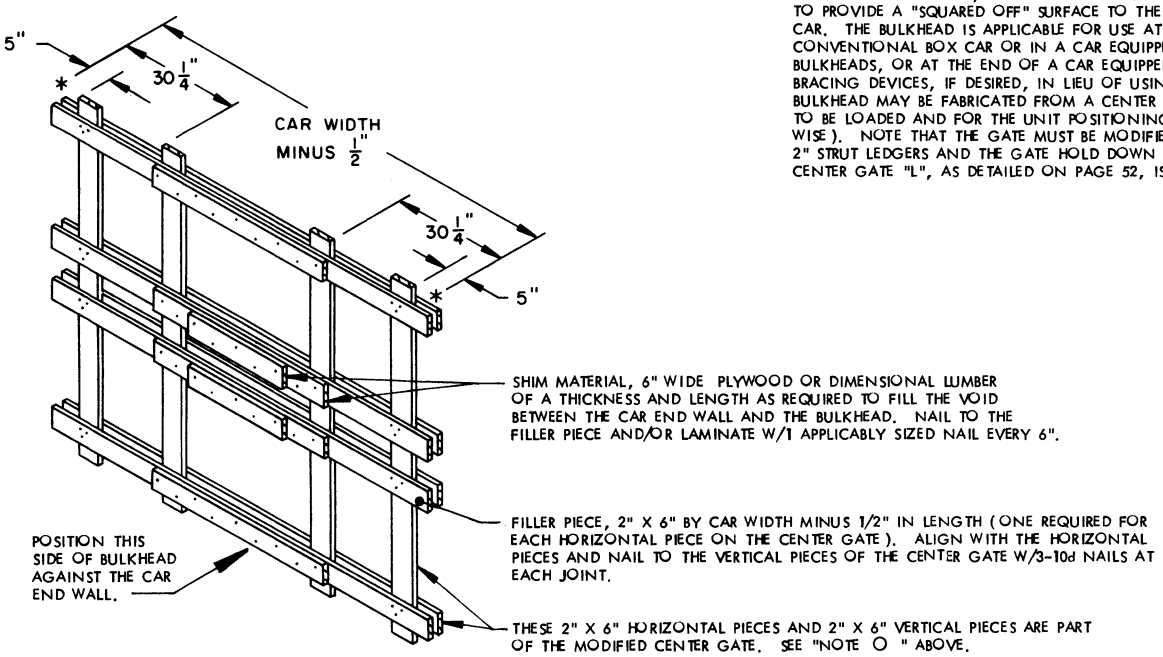
SEE "NOTE ▲ " AT RIGHT.

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 ALTERNATIVE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. FOR A 2-LAYER LOAD, THE LOWER TIE PIECE MUST BE MOVED UP TO BE 40-1/2" TO THE TOP FOR BASIC HEIGHT ALTERNATED CONTAINERS UNITS AND 46" FOR THE INCREASED HEIGHT ALTERNATED CONTAINERS UNITS. FOR A 1-LAYER LOAD, ONLY THE UPPER TIE PIECE WILL BE USED.

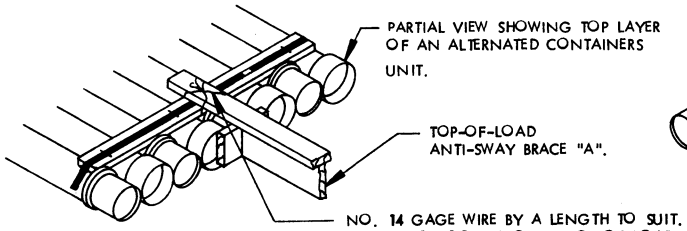
NOTE O:

IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE TO THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "L", AS DETAILED ON PAGE 52, IS SHOWN AS TYPICAL.

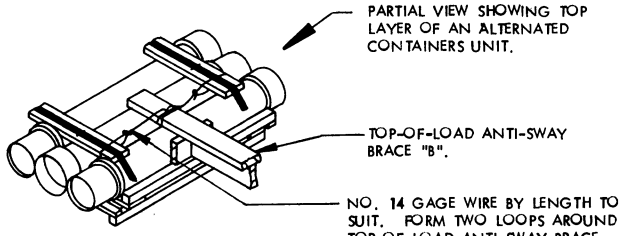


END-OF-CAR BULKHEAD

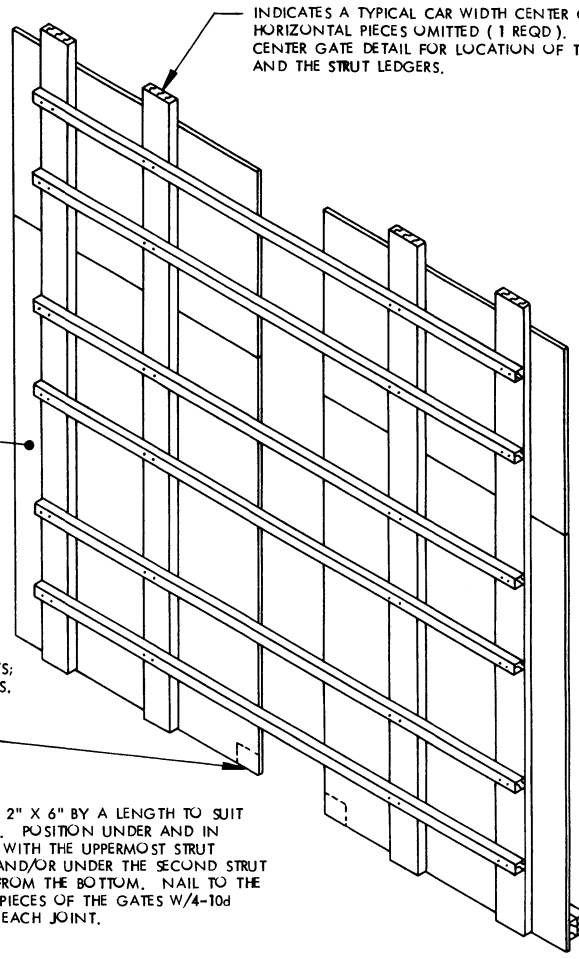
SEE "NOTE O " AT RIGHT



TIE WIRE APPLICATION A



TIE WIRE APPLICATION B



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.

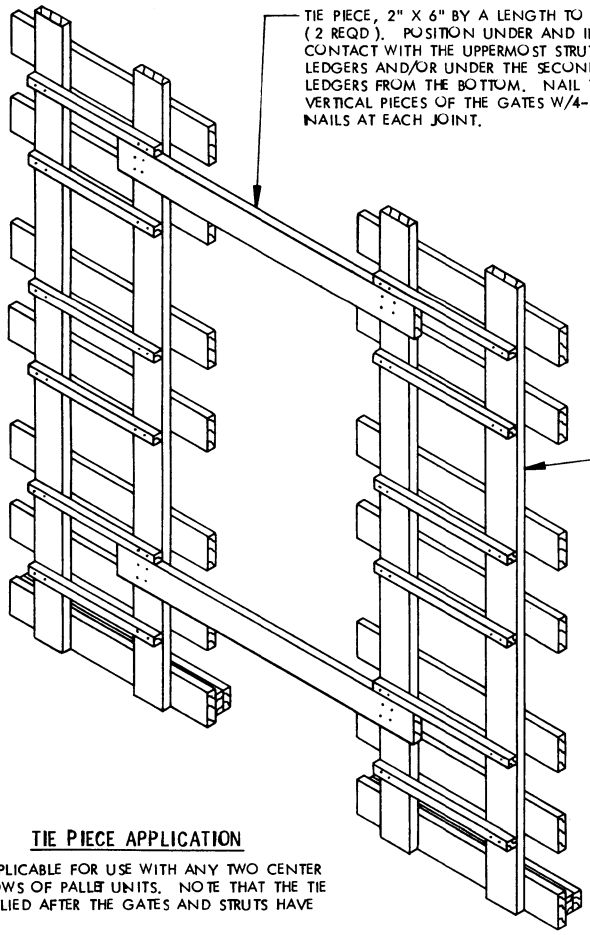
PLYWOOD, 1/2" THICK BY 48" OR UNIT LENGTH BY THE LOAD HEIGHT (2 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6". NOTE: THE WIDTH OF THE PLYWOOD WILL BE 48" IF THE CONTAINERS ARE LENGTHWISE IN THE CAR, AS TYPICALLY SHOWN IN THE LOAD ON PAGE 12, OR UNIT LENGTH IF THE CONTAINERS ARE CROSSWISE IN THE 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 CUT-OUT AT THE LOWER INSIDE CORNER TO PROVIDE CLEARANCE FOR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD. THE CUT-OUT MUST BE 3-1/2" HIGH AND OF SUFFICIENT WIDTH SO THE REMAINING PLYWOOD AT THE FLOOR IS 47" FOR LENGTHWISE CONTAINERS ALTERNATED CONTAINERS UNITS AND ROUTED DUNNAGE UNITS; PLYWOOD WILL BE 48" FOR LENGTHWISE FLAT DUNNAGE UNITS. FOR CONTAINERS CROSSWISE UNITS, THE PLYWOOD WILL BE 35-1/2" AT THE FLOOR FOR ALTERNATED CONTAINERS AND 39-1/2" FOR FLAT OR ROUTED DUNNAGE UNITS.

GATE HOLD DOWN PIECE MUST BE SECURED TO THE PLYWOOD.

PLYWOOD CENTER GATE ALTERNATIVE

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

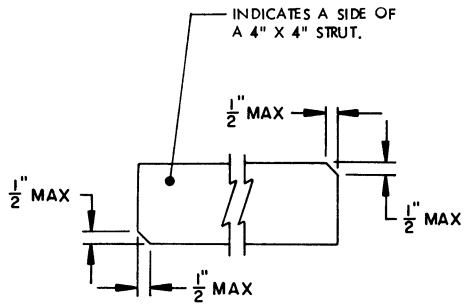


TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.

INDICATES A TYPICAL CENTER GATE FOR A SINGLE ROW (2 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR THE UNIT BEING SHIPPED.

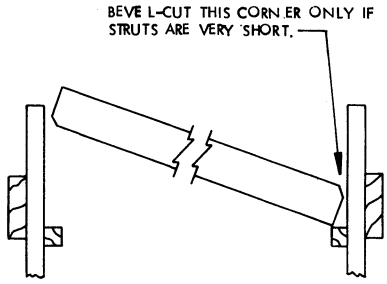
TIE PIECE APPLICATION

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



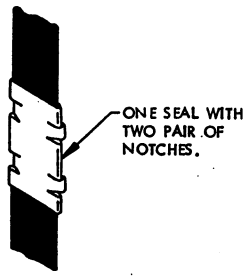
BEVEL-CUT

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



STRUT INSTALLATION

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

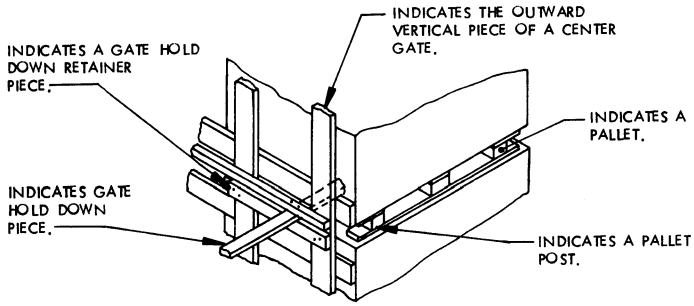


STRAP JOINT A

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

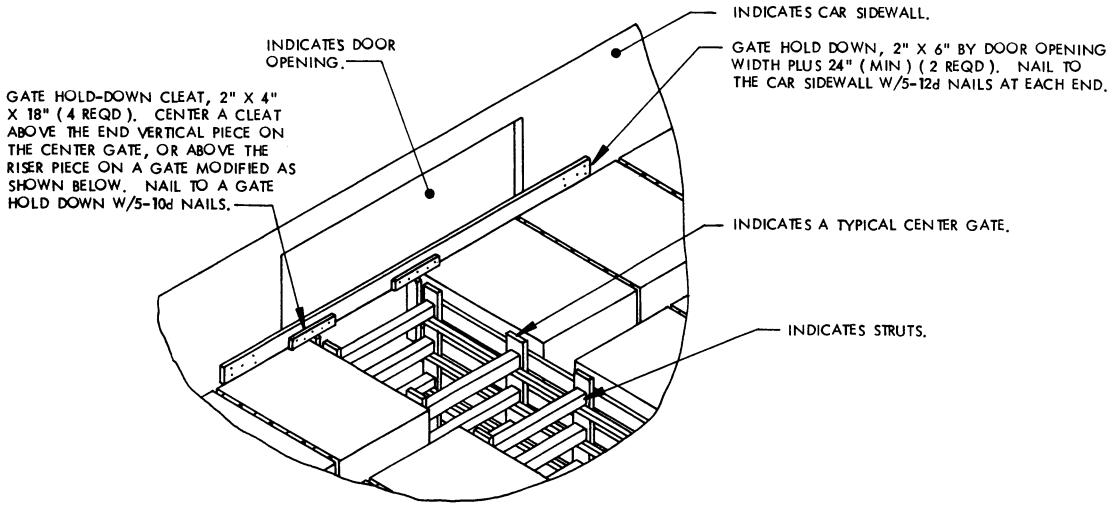
STRAP JOINT B

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



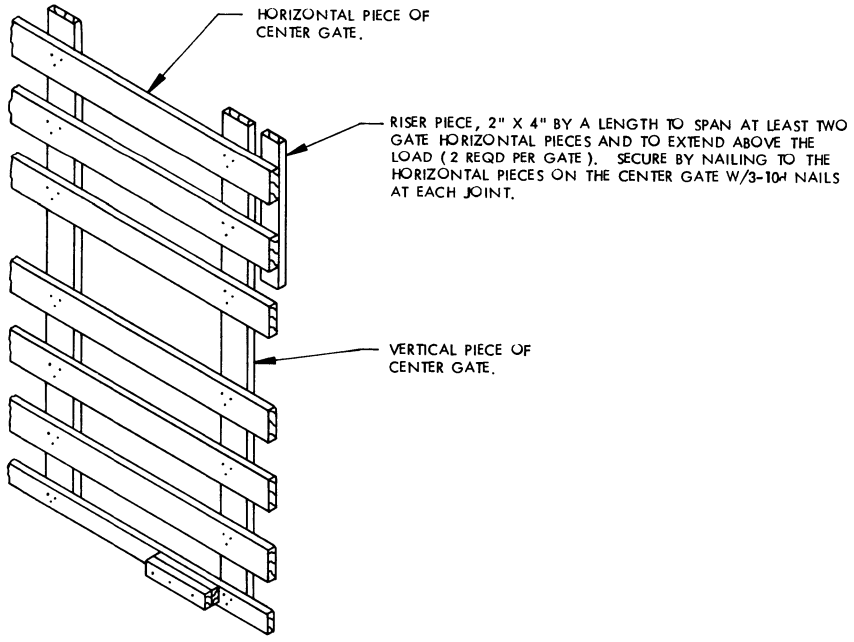
INSTALLATION OF GATE HOLD-DOWN

THIS VIEW DEPICTS A GATE HOLD-DOWN WHICH MAY BE USED IN LIEU OF THE GATE HOLD DOWN PIECES SHOWN ON THE CENTER GATE DETAILS. INSTALL UNDER A PALLET UNIT UTILIZING THE VERTICAL PIECE OF A CENTER GATE AND A RETAINER PIECE TO HOLD THE HORIZONTAL PIECE IN POSITION. FOR AN ALTERNATIVE METHOD, SEE THE "ALTERNATIVE GATE HOLD-DOWN" DETAIL ON PAGE 131.



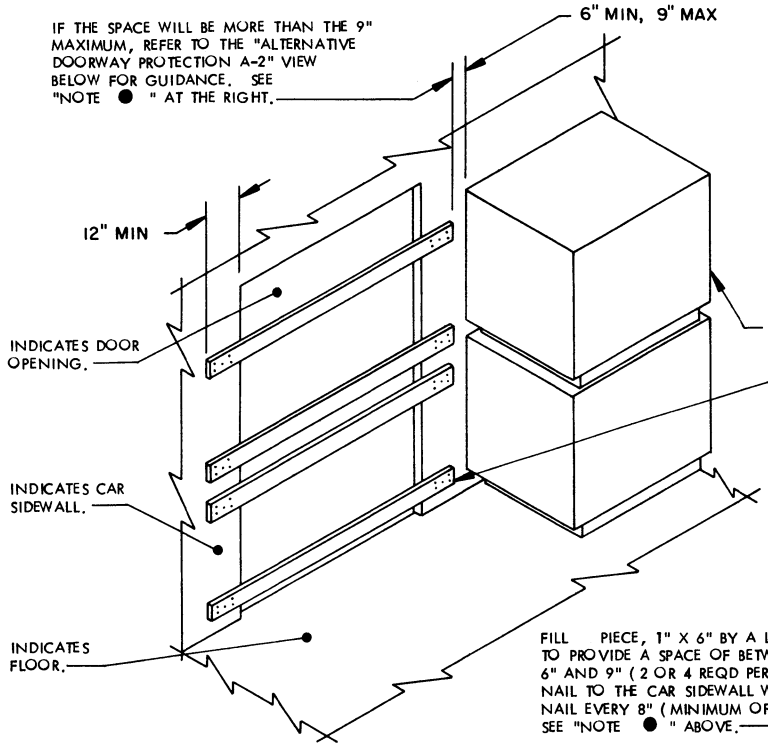
ALTERNATIVE GATE HOLD-DOWN

THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE, OR IN LIEU OF THE 2" X 4" GATE HOLD DOWN PIECES WHICH SPAN THE CENTER VOID AREA AND ARE NAILED TO THE CENTER GATES, AS SHOWN BY THE "INSTALLATION OF GATE HOLD DOWN" DETAIL ON PAGE 130.
NOTE: FOR A GATE NOT LOCATED IN OR NEAR THE DOORWAY AREA, THE GATE HOLD-DOWN CLEAT MAY BE DOUBLED AND NAILED TO THE CAR SIDEWALL TO PROVIDE A HOLD-DOWN.



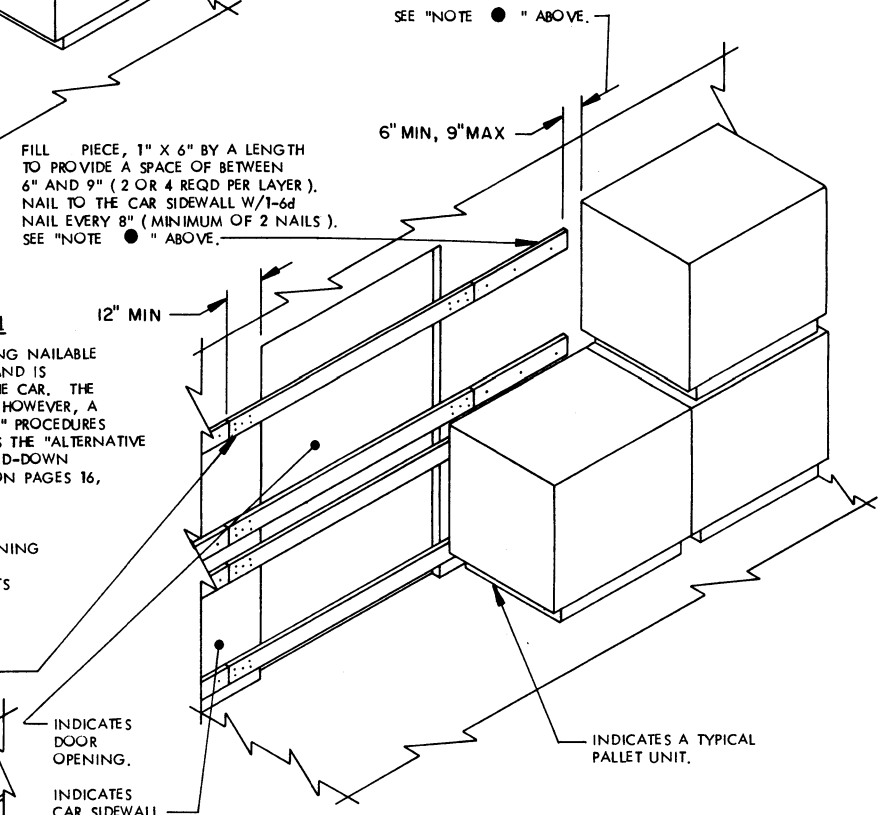
CENTER GATE MODIFICATION

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



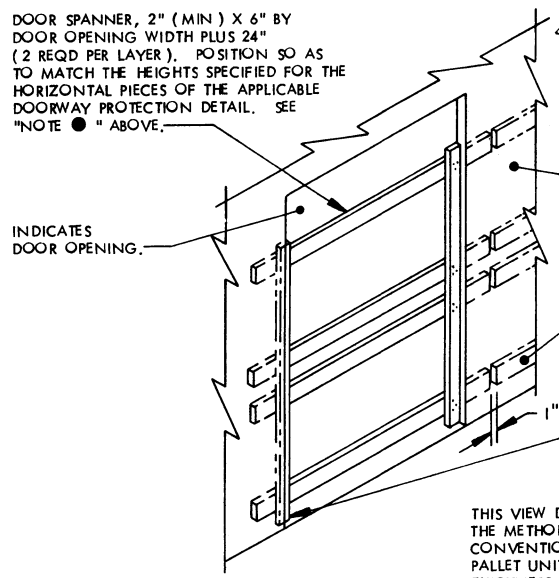
NOTE ● :

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



ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 133 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED BY THE LOAD ON PAGES 16, 34, 62, AND 90.

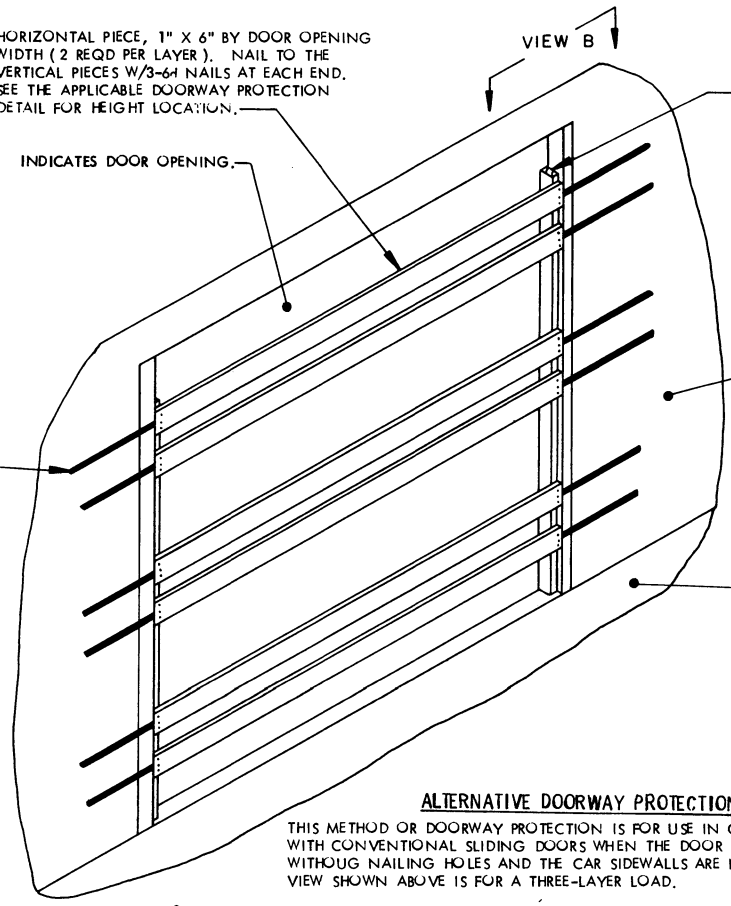


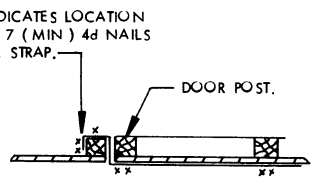
ALTERNATIVE DOORWAY PROTECTION A-2

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.



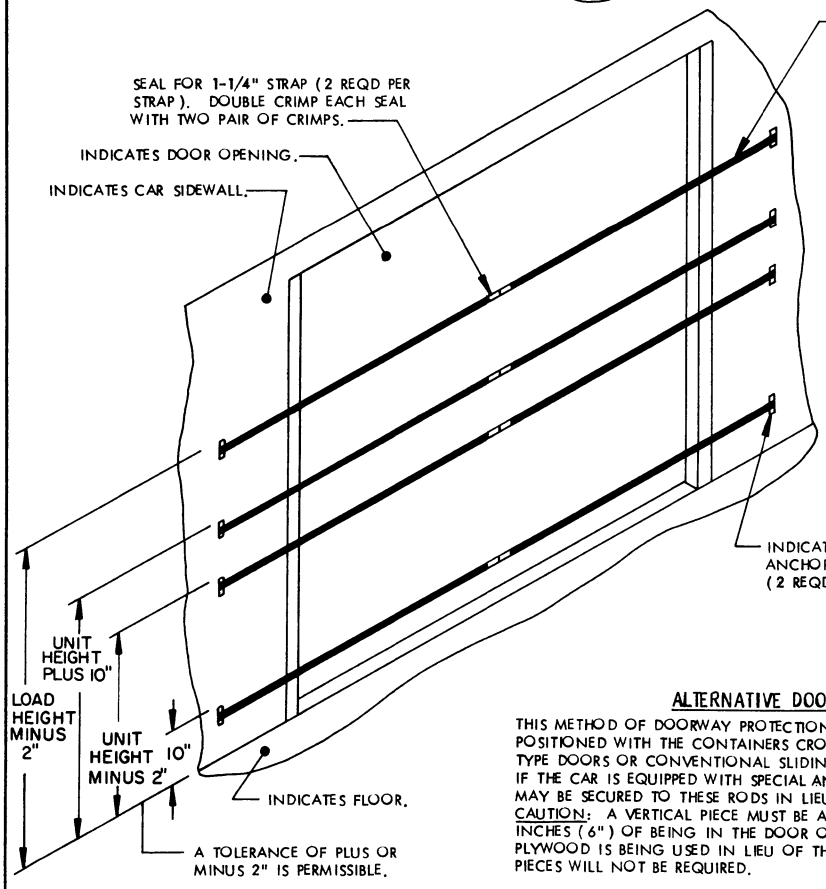


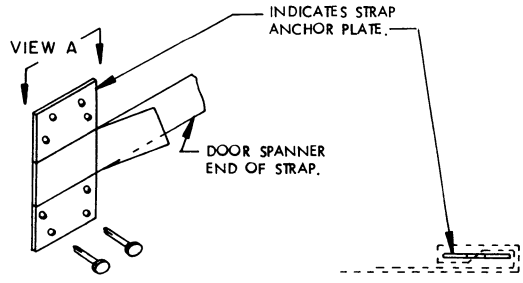
VIEW B

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 OR DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUG NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.





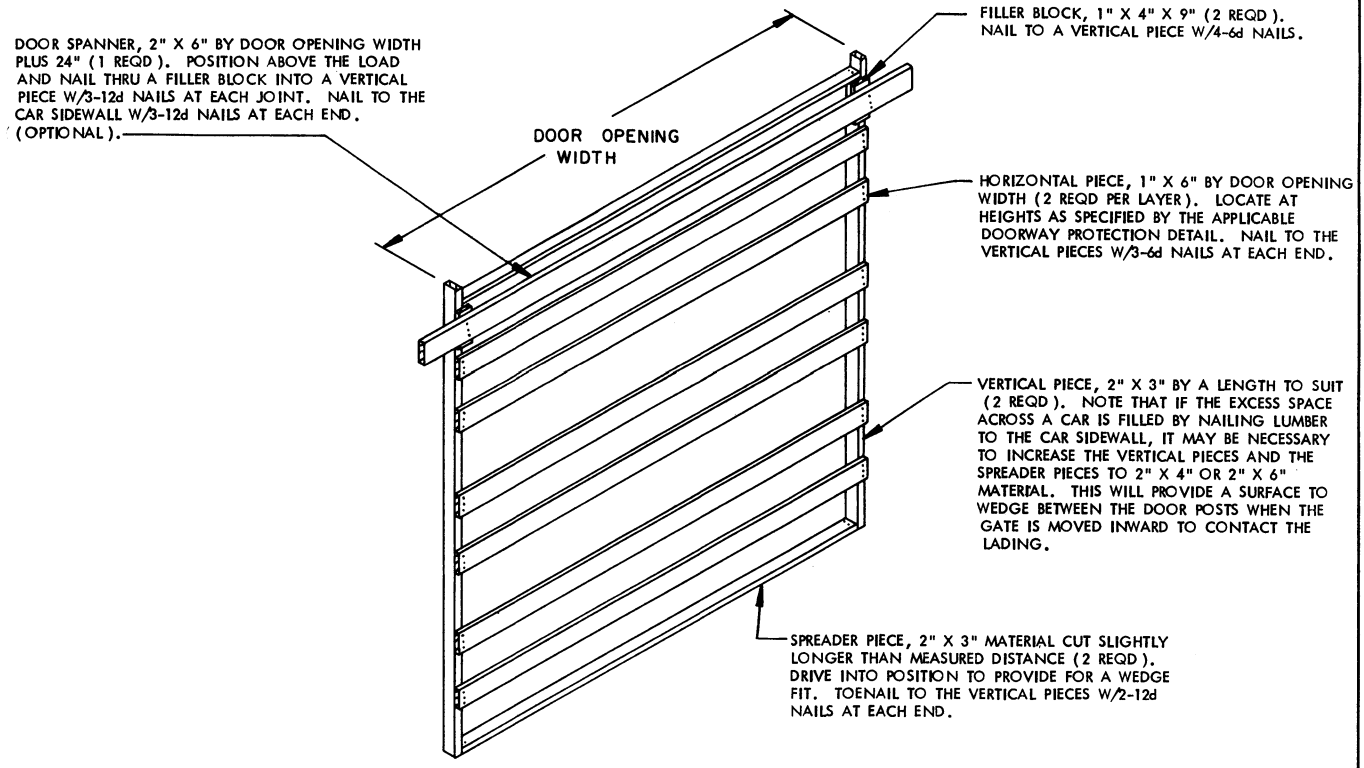
ISOMETRIC VIEW **VIEW A**

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

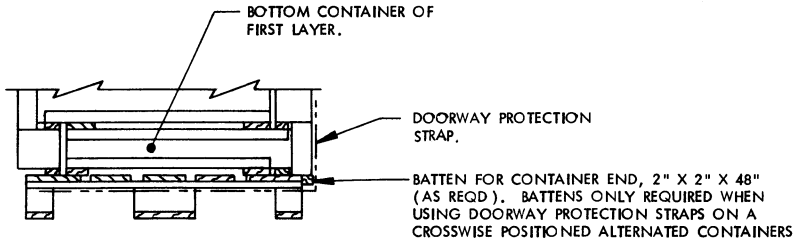
ALTERNATIVE DOORWAY PROTECTION C

THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED WITH THE CONTAINERS CROSSWISE. THE METHOD MAY BE USED IN CARS EQUIPPED WITH EITHER PLUG TYPE DOORS OR CONVENTIONAL SLIDING DOORS, BUT ONLY IF THE CAR IS EQUIPPED WITH NAILABLE SIDEWALLS. IF THE CAR IS EQUIPPED WITH SPECIAL ANCHOR RODS IN THE CAR DOOR POSTS, THE DOORWAY PROTECTION STRAPS MAY BE SECURED TO THESE RODS IN LIEU OF ATTACHING TO THE CAR SIDEWALL WITH STRAP ANCHOR PLATES. CAUTION: A VERTICAL PIECE MUST BE ADDED TO EACH END OF A CENTER GATE 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.



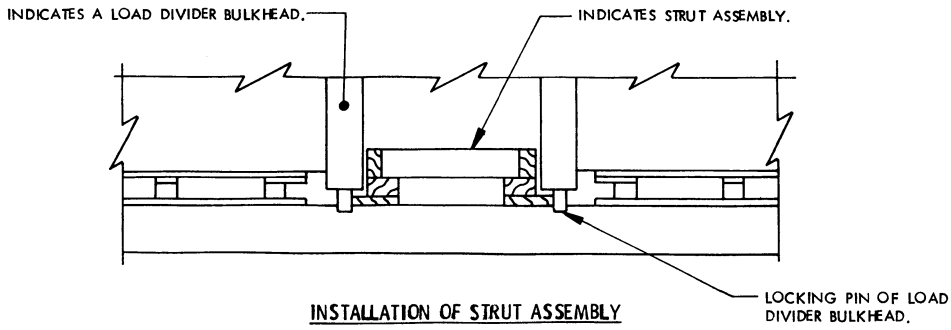
ALTERNATIVE DOORWAY PROTECTION D

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 133 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 131.



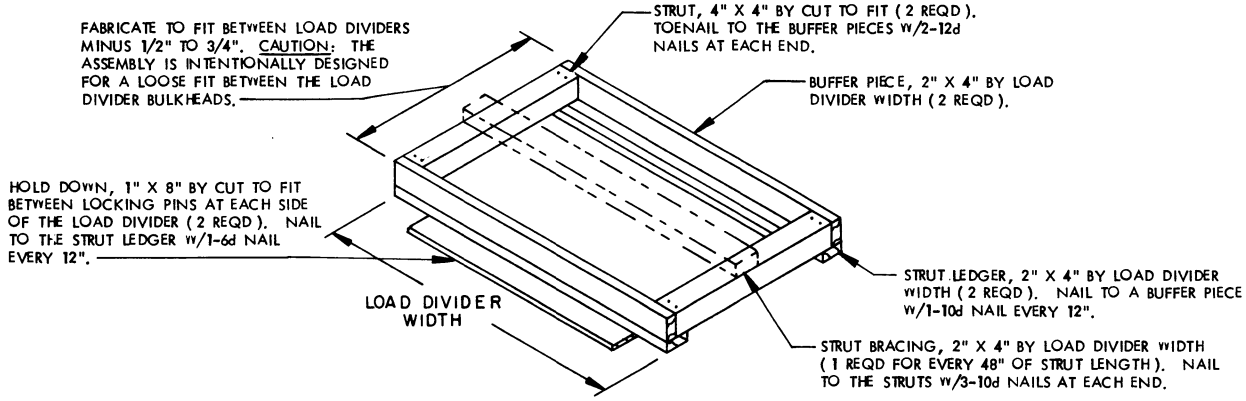
BATTEN PLACEMENT DETAIL

THIS DETAIL IS ONLY APPLICABLE FOR THE ALTERNATED CONTAINERS UNIT.



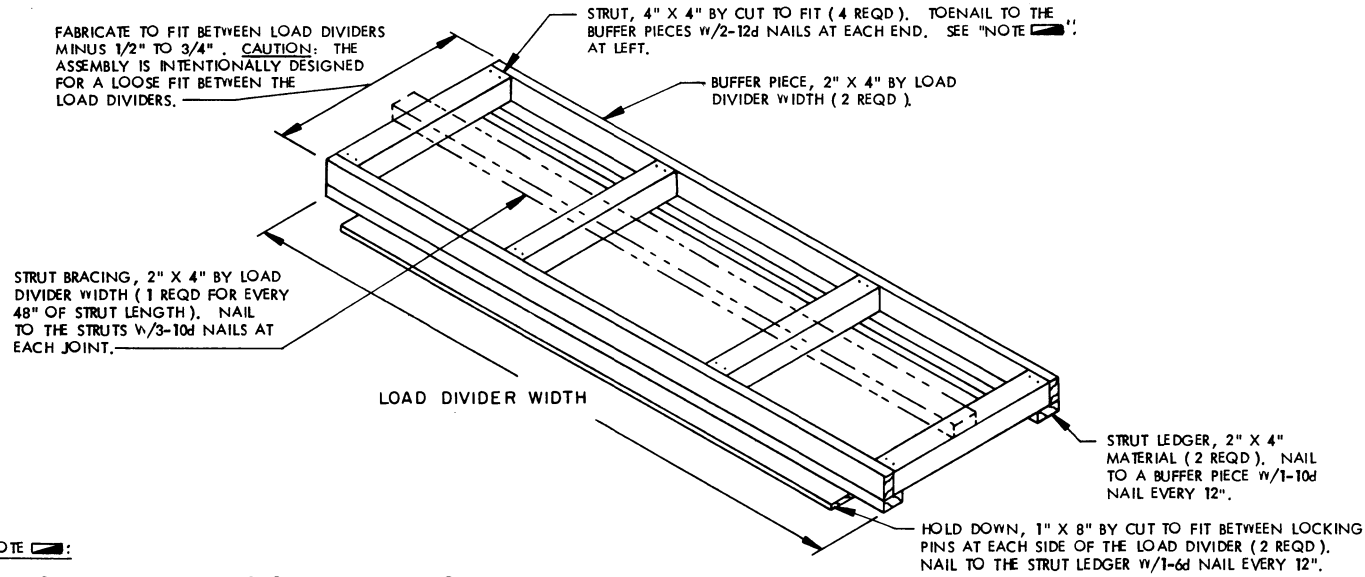
INSTALLATION OF STRUT ASSEMBLY

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



STRUT ASSEMBLY A

STRUT ASSEMBLY "A" IS DESIGNED FOR USE WITH 2-PIECE BULKHEADS, WITH TWO (2) ASSEMBLIES BEING REQUIRED FOR A LOAD. SEE GENERAL NOTE "FF" ON PAGE 3.

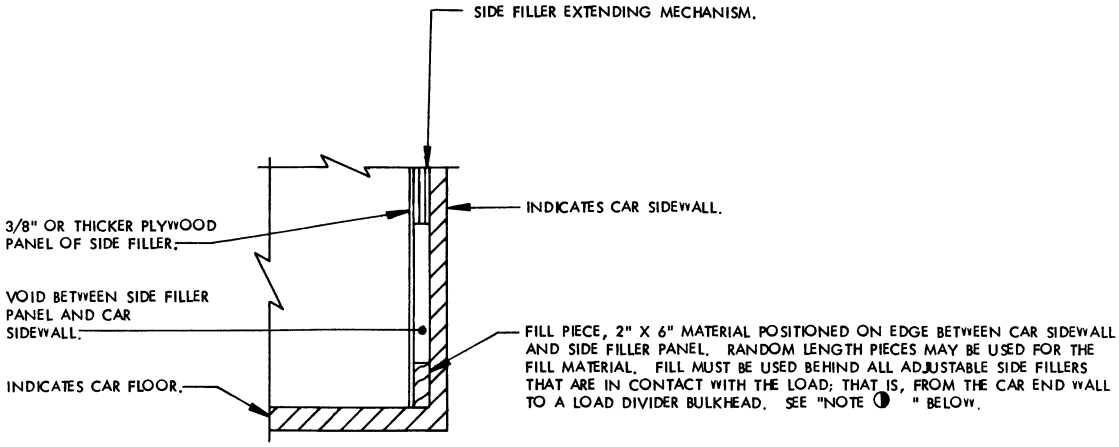


NOTE:

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

STRUT ASSEMBLY B

STRUT ASSEMBLY "B" IS DESIGNED FOR USE WITH 1-PIECE BULKHEADS. SEE GENERAL NOTE "FF" ON PAGE 3.

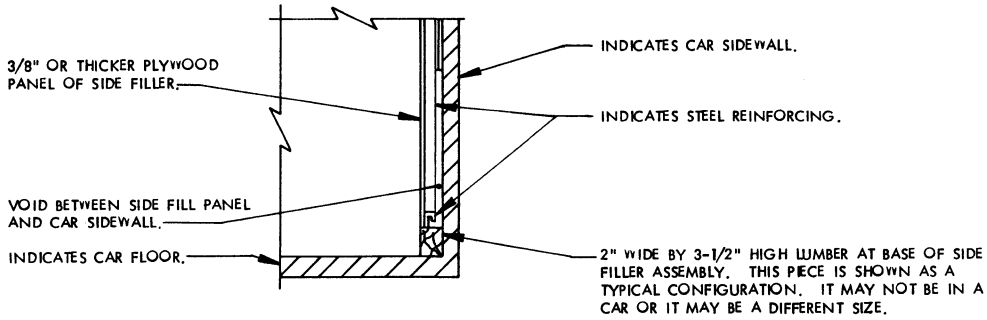


TYPICAL TYPE A

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

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.