APPROVED BY
HAZARDOUS MATERIALS SYSTEMS
(BOE) ASSOCIATION OF AMERICAN
RAILROADS
G. H. Fleshman
DATE 3/5/87

LOADING AND BRACING (CL & LCL) IN BOX CARS ⌖ OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS PA66 SERIES CONTAINER

INDEX

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

DO NOT SCALE

REVISIONS				DRAFTSMAN pt	PROJ ENG RSH / WRF
				CHECKER FSB	LOG ENGRG OFFICE W.F.Ernst
				APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND: B. Q. Graham	
				APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC): William F. Ernst, U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	
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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 PA66 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON 35" X 45-1/2" OR 40" X 48" FOUR WAY ENTRY PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE US ARMY DARCOM DRAWING 19-48-4042A/10-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA66 SERIES CONTAINER.

C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX CARS, FOR SHIPMENTS IN BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES, AND FOR SHIPMENTS IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

D. CAUTION: METAL PROPELLING CHARGE CONTAINERS THAT OVERHANG THE PALLET END MUST NOT BE ALLOWED TO CONTACT STEEL SIDEWALLS OR END WALLS OF BOX CARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOX CARS HAVING WOOD SIDEWALLS AND/OR END WALLS. IF CARS WITH WOOD SIDEWALLS AND/OR END WALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE SIDEWALLS AND/OR END WALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 121 FOR GUIDANCE.

E. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND AS TO THE EASE OF LOADING, FOR THE QUANTITY TO BE SHIPPED. THE LOAD PLANNING CHARTS ON PAGE 94 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.

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

G. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 122 FOR GUIDANCE.

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

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

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

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

NAILS ---------- : COMMON, FED SPEC FF-N-105.

STRAPPING, STEEL-- : CLASS 1, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C FED SPEC QQ-S-781.

STRAP SEAL -------- : TYPE D, STYLE I, II, OR IV, CLASS H, FINISH A, B (GRADE 2), OR C. FED SPEC QQ-S-781.

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 ------- : FED SPEC LL-B-810.

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

(GENERAL NOTES CONTINUED)

L. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS "STRUTS" WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSABLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".

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

N. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED CAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD-RESTRAINING FLOOR DUNNAGE APPLICATION.

O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT.

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

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

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

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

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

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

U. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY THE "STRUT BRACING" DETAIL ON PAGE 124. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

V. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 124 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.

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

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

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

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

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

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

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

CC. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 130 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 130, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

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

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(GENERAL NOTES CONTINUED)

EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 129.

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

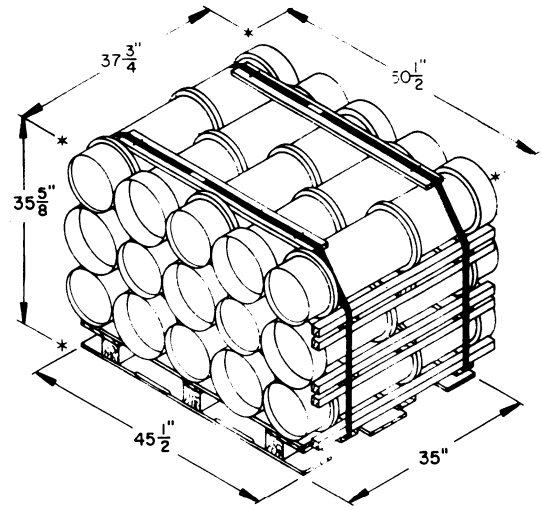
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 102 THRU 105.

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 96 THRU 101 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 116, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 112.

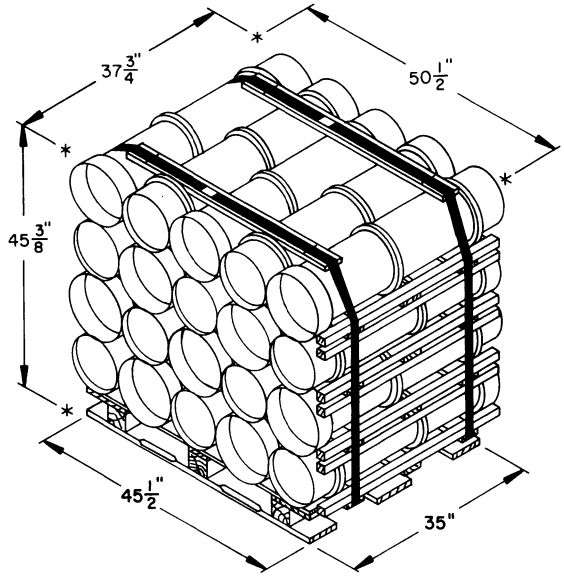
GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

CONTAINER ---------- 15 EACH @ 77 LBS (APPROX)
CUBE ---------- 39.3 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,275 LBS (APPROX)

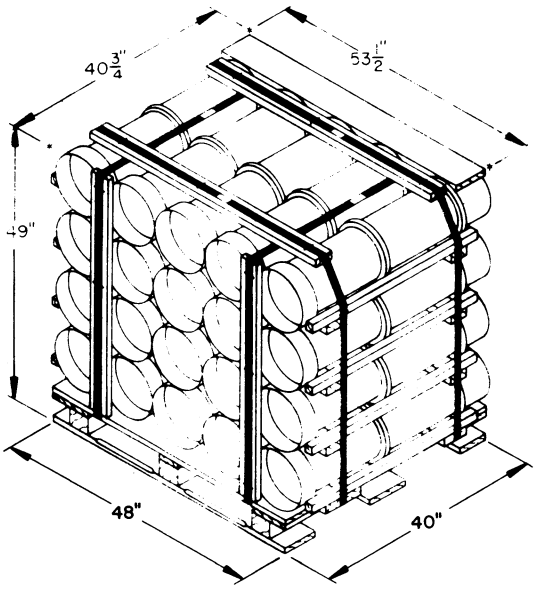
REFER TO PAGES 6 THRU 15 FOR OUTLOADING PROCEDURES.



ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

CONTAINER ---------- 20 EACH @ 77 LBS (APPROX)
CUBE ---------- 50.1 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,677 LBS (APPROX)

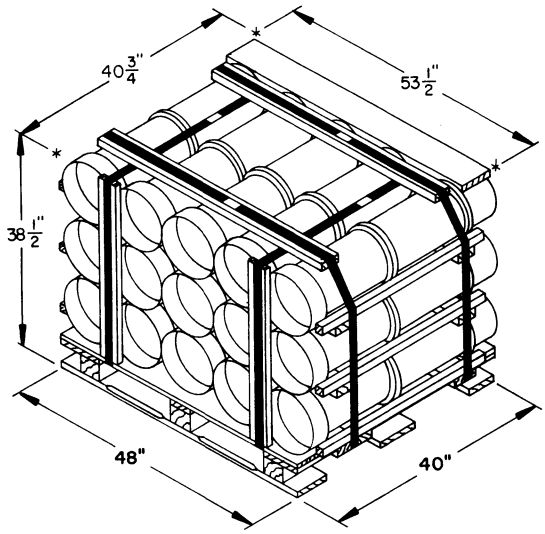
REFER TO PAGES 20 THRU 29 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ---------- 20 EACH @ 77 LBS (APPROX)
CUBE ---------- 61.8 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,738 LBS (APPROX)

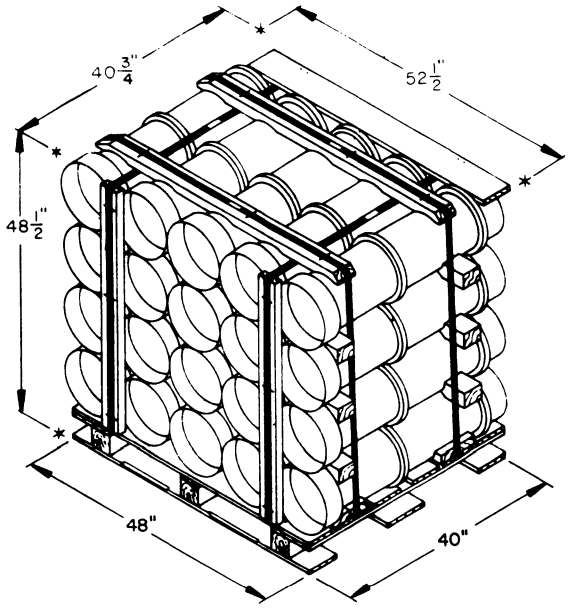
REFER TO PAGES 34 THRU 43 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ---------- 15 EACH @ 77 LBS (APPROX)
CUBE ---------- 48.6 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,331 LBS (APPROX)

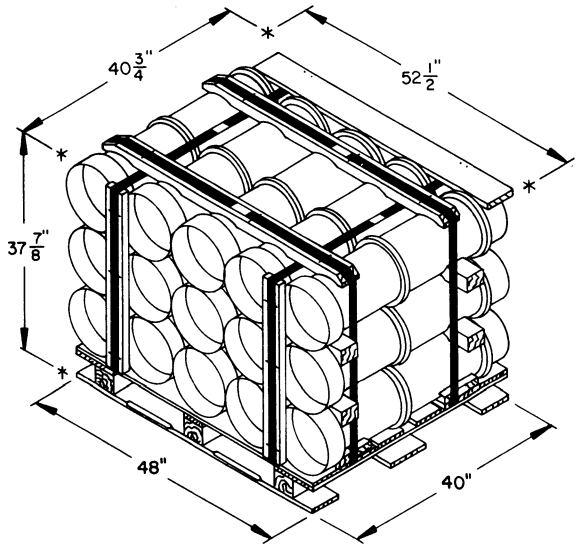
REFER TO PAGES 48 THRU 57 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----------20 EACH @ 77 LBS (APPROX)
CUBE ----------60.1 CUBIC FEET (APPROX)
GROSS WEIGHT ----------1,736 LBS (APPROX)

REFER TO PAGES 62 THRU 71 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ----------15 EACH @ 77 LBS (APPROX)
CUBE ----------46.9 CUBIC FEET (APPROX)
GROSS WEIGHT ----------1,331 LBS (APPROX)

REFER TO PAGES 76 THRU 85 FOR OUTLOADING PROCEDURES.

NOTE:

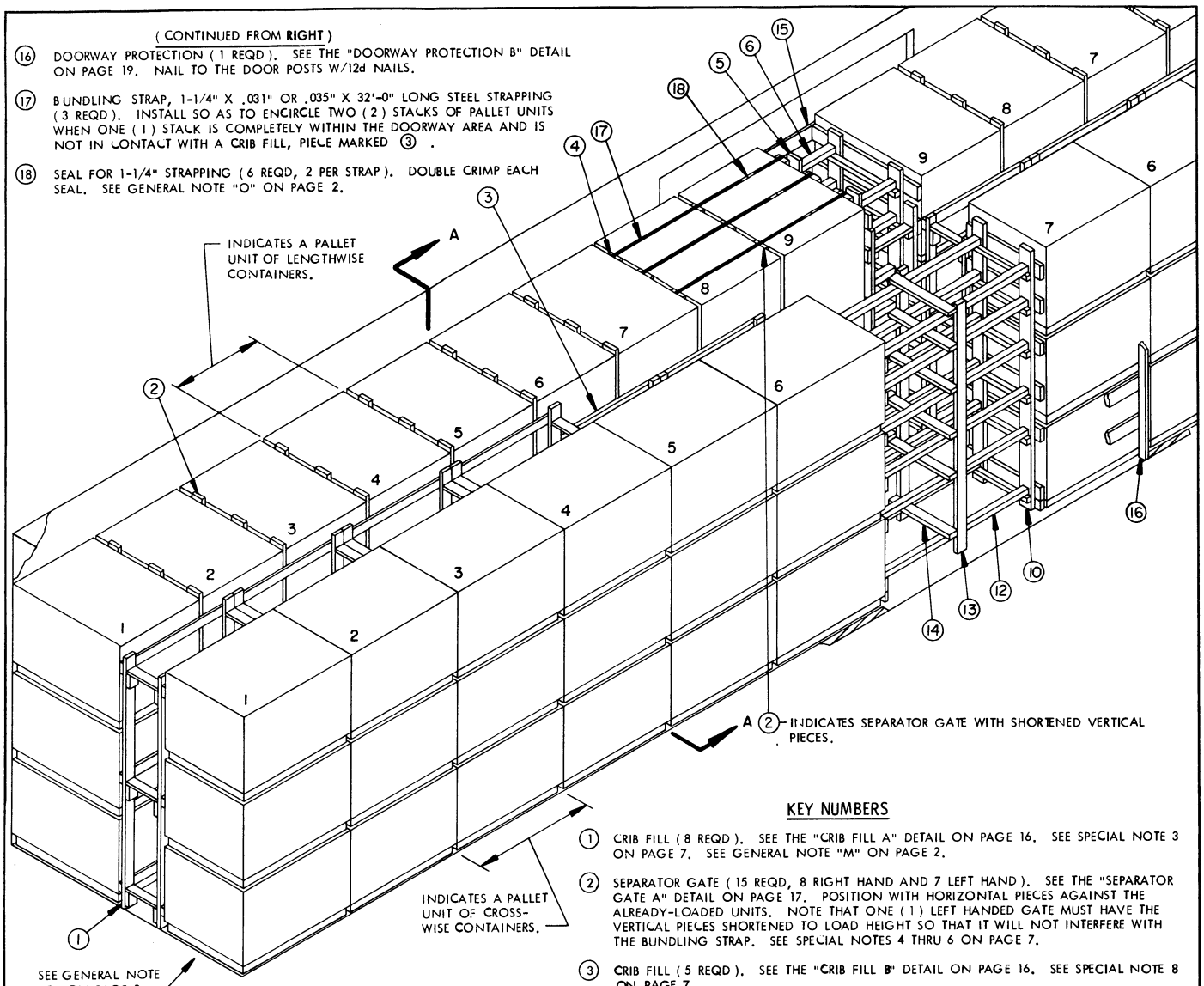
WHEN REFERRING TO THE PALLET UNIT LENGTH OR UNIT WIDTH THE 40" OR 35" DIMENSION OF THE PALLET BASE CONSTITUTES THE LENGTH AND THE 48" OR 45-1/2" DIMENSION CONSTITUTES THE WIDTH.

(CONTINUED FROM RIGHT)

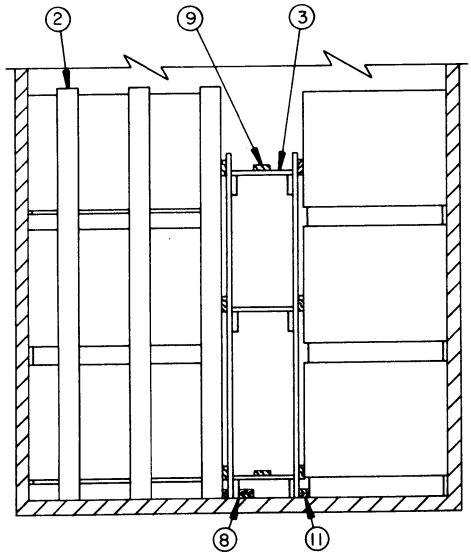
(16) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS.

(17) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 32'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) STACKS OF PALLET UNITS WHEN ONE (1) STACK IS COMPLETELY WITHIN THE DOORWAY AREA AND IS NOT IN CONTACT WITH A CRIB FILL, PIECE MARKED (3).

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



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 16. SEE SPECIAL NOTE 3 ON PAGE 7. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SEPARATOR GATE (15 REQD, 8 RIGHT HAND AND 7 LEFT HAND). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 17. POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. NOTE THAT ONE (1) LEFT HANDED GATE MUST HAVE THE VERTICAL PIECES SHORTENED TO LOAD HEIGHT SO THAT IT WILL NOT INTERFERE WITH THE BUNDLING STRAP. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 7.

(3) CRIB FILL (5 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 16. SEE SPECIAL NOTE 8 ON PAGE 7.

(4) STRAPPING BOARD (6 REQD). SEE THE "STRAPPING BOARD B" DETAIL ON PAGE 33.

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

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 28") (12 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

(7) STRUT, 2" X 4" BY CUT TO FIT (REF: 28") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (5) W/2-12d NAILS AT EACH END.

(8) SIDE BLOCKING, 2" X 6" X 36" (DOUBLED) (1 REQD). POSITION SO AS TO CONTACT THE PALLET OF A STACK WHICH IS IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" ON PAGE 7.

(9) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 7'-0") (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" ON PAGE 7.

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

(11) SIDE BLOCKING FOR CENTER GATE "B", 2" X 4" X 18" (DOUBLED) (2 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" AND SPECIAL NOTE 8 ON PAGE 7.

(12) STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (12 REQD). TOENAIL TO PIECES MARKED (10) W/2-16d NAILS AT EACH END.

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

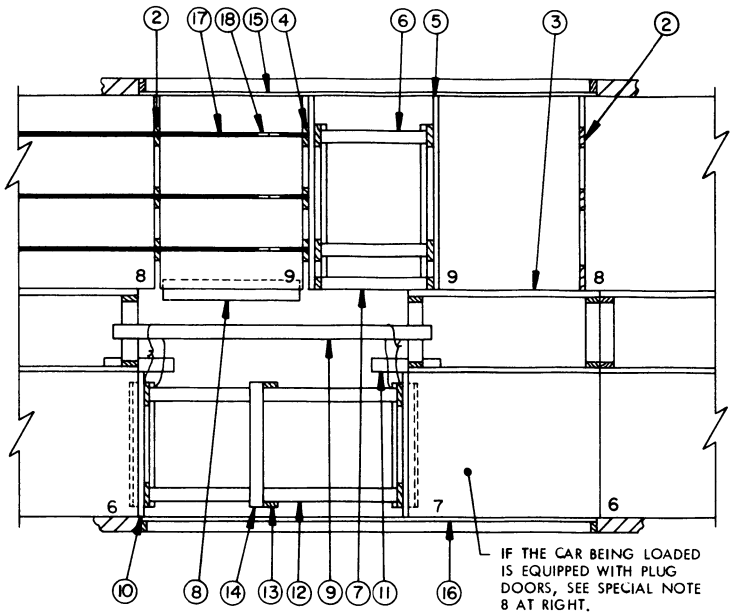
(14) HORIZONTAL STRUT BRACING, 2" X 4" X 32" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(15) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ABOVE LEFT)

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

PROJECT FSA 43B/9-63



PARTIAL PLAN VIEW

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-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 91,800 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES, SIXTY-THREE (63) UNITS, FOR A LADING WEIGHT OF 80,325 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

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

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

6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, FOR ONE OR TWO-LAYER LOADS; PLYWOOD SEPARATOR GATES FOR A 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.

7. CENTER GATES "A" AND "B" MAY BE 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 123 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑮ AND ⑯ IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" AND "ALTERNATIVE DOORWAY PROTECTION F" DETAILS ON PAGE 128 FOR GUIDANCE; A COMBINATION OF THE TWO METHODS MUST BE USED. NAILED SIDE BLOCKING WILL BE USED UNDER THE CRIB FILL SHOWN IN THE DOORWAY AREA OF THE LOAD. POSITION DOUBLED 2" X 6" X 40" PIECES AGAINST THE LENGTHWISE STACK NUMBERED 9, AND PRE-POSITION DOUBLED 2" X 4" X 48" PIECES (APPROXIMATELY 37" FROM THE NEAR SIDE CAR WALL) SO AS TO BE AGAINST THE CROSSWISE STACK NUMBERED 7. A SPACER ASSEMBLY AS SHOWN IN THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL, MUST BE MODIFIED FOR USE BY CHANGING THE END WHICH EXTENDS OVER THE CROSSWISE CONTAINERS TO BE LIKE THE NEAR END OF THE STRAPPING BOARD SHOWN IN THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL. 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 CROSSWISE CONTAINER UNITS. ALSO NOTE THAT THE CENTER GATES "B" MUST BE WIRE TIED TO PIECE MARKED ⑨ OR THE ADJACENT CRIB FILL, AS APPLICABLE, TO PREVENT DISPLACEMENT.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. THE LOAD CAN BE REDUCED BY ONE OR TWO PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 96. THREE (3) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT ONE LENGTHWISE STACK NO. 9. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED ⑥ , AND AN ADDITIONAL PIECE ⑪ WILL BE REQUIRED FOR THE OTHER CENTER GATE MARKED ⑩ , OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 112 AND 113.

10. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSSWISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

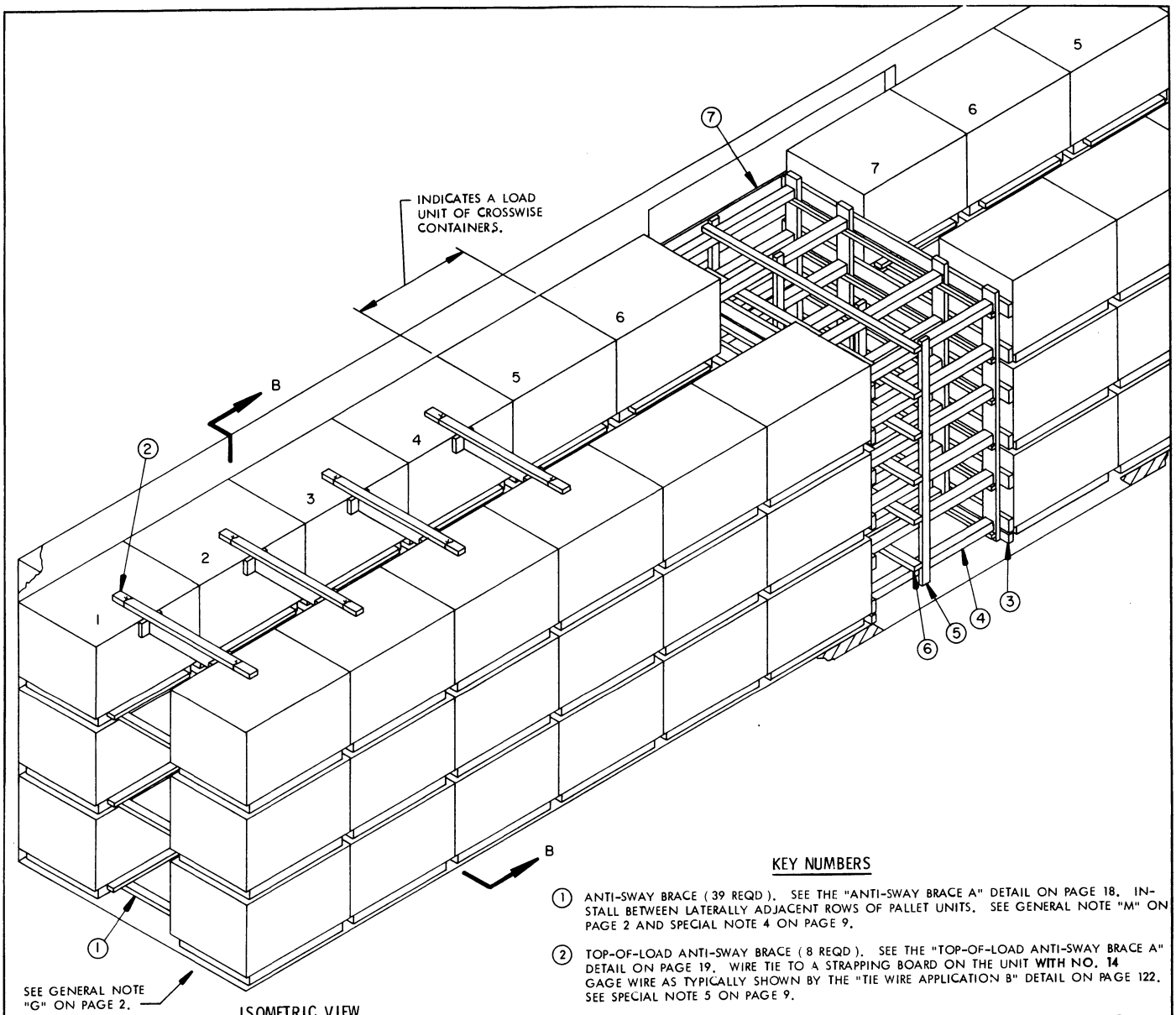
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	130	44
1" X 6"	525	263
2" X 2"	89	30
2" X 3"	42	21
2" X 4"	1,006	671
2" X 6"	222	222
4" X 4"	93	124
NAILS	**NO. REQD**	**POUNDS**
6d (2")	352	2
10d (3")	1,546	23-3/4
12d (3-1/4")	44	3/4
16d (3-1/2")	124	2-3/4

STRAP, STEEL, 1-1/4" X .031" OR .035" ------- 96' REQD ----- 14 LBS
SEAL FOR 1-1/4" STRAP ---------- 6 REQD ------ NIL

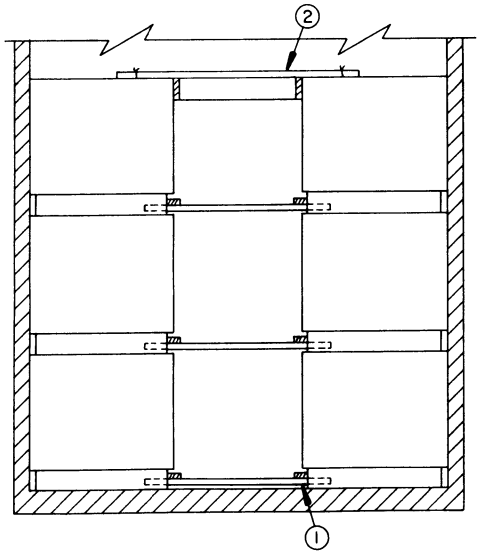
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	93	118,575 LBS
DUNNAGE		2,793 LBS
	TOTAL WEIGHT ------	121,368 LBS

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



ISOMETRIC VIEW



SECTION B-B

CENTER GATE, PIECE MARKED ③, OMITTED FOR CLARITY.

KEY NUMBERS

① ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 9.

② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT **WITH NO. 14** GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 5 ON PAGE 9.

③ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 9.

④ STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

⑤ VERTICAL STRUT BRACE, 2" X 4" X 8'-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 6" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 19. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 9.

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,150 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 68,850 POUNDS, CAN BE OUT-LOADED IN A 40'-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ , NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9 BELOW.

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 PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 123 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 B" AS SHOWN ON PAGE 17. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" AND 1" X 4" MATERIAL NAILED TO CENTER GATE C, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 8, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE. SEE SPECIAL NOTE 10.

10. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑦ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 92 THRU 120 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

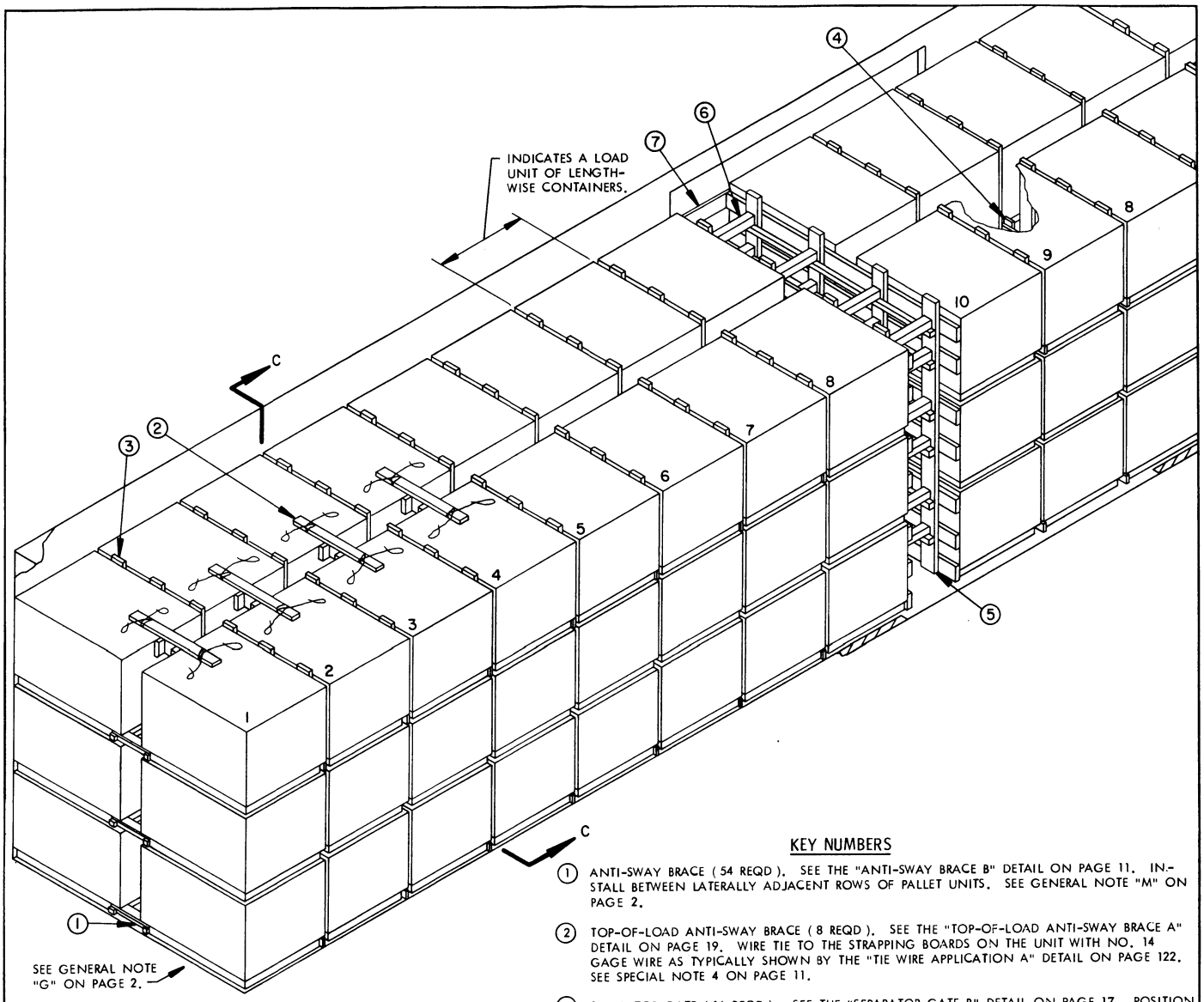
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	6	2
1" X 6"	120	60
2" X 2"	102	34
2" X 3"	33	17
2" X 4"	701	468
2" X 6"	210	210
4" X 4"	130	174
NAILS	**NO. REQD**	**POUNDS**
6d (2")	84	1/2
10d (3")	904	14
12d (3-1/4")	16	1/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 24' REQD ---------- 1/4 LB		

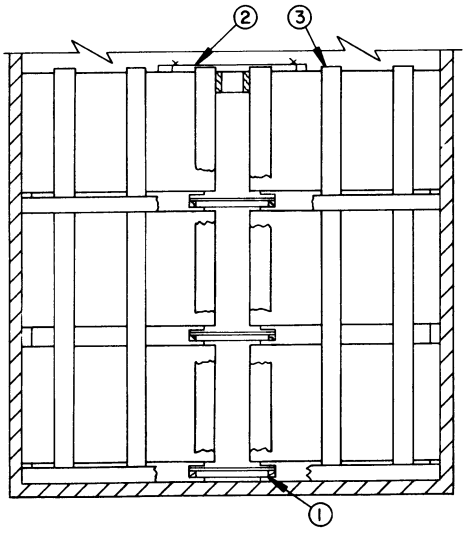
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	78	99,450 LBS
DUNNAGE		1,948 LBS
TOTAL WEIGHT		101,398 LBS

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



ISOMETRIC VIEW



SECTION C-C

CENTER GATE, PIECE MARKED ⑤ , OMITTED FOR CLARITY.

KEY NUMBERS

① ANTI-SWAY BRACE (54 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. IN-STALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO THE STRAPPING BOARDS ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 4 ON PAGE 11.

③ SEPARATOR GATE (16 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 11.

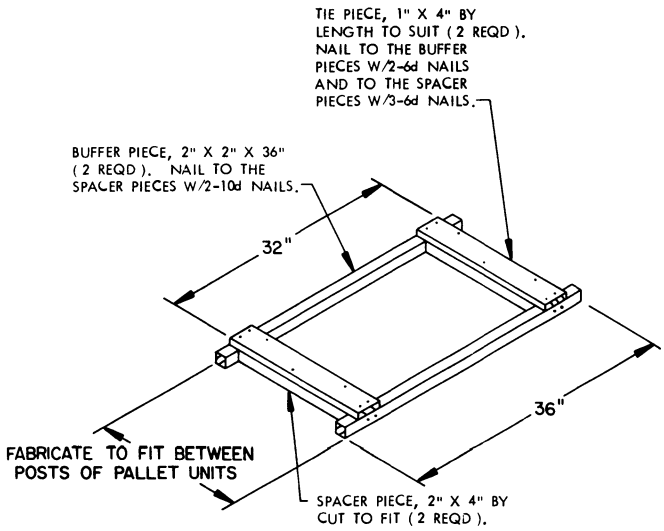
④ STOP PIECE, 1" X 4" X 6'-6" (4 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③ , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 11.

⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 19. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 11.

⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 30") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 18. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 11.

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



ANTI-SWAY BRACE ASSEMBLY B

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	444	148
1" X 6"	984	492
2" X 2"	419	140
2" X 3"	41	22
2" X 4"	141	94
2" X 6"	227	227
4" X 4"	60	80
NAILS	NO. REQD	POUNDS
6d (2")	1,416	8-1/2
10d (3")	832	12-3/4
12d (3-1/4")	16	1/4
16d (3-1/2")	96	2-1/4
WIRE, NO. 14 GAGE ---------- 48' REQD ---------- 2 LBS		

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. 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 SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 84,150 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 50'-6" LONG BY 9'-2" OR WIDER CAR IS AVAILABLE, EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WIEGHT OF 107,100 POUNDS CAN BE LOADED.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE NINE (9) 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 TWO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED 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 MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED, 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 122 FOR CONSTRUCTION GUIDANCE.

8. 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 123.

9. 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 10, INSTALL TWO (2) "CENTER GATES A" AS SHOWN ON PAGE 16. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123. OMIT THE STOP PIECES FROM "CENTER GATE A".

10. 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 125 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 10 IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 92 THRU 120 FOR GUIDANCE.

13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 118 AND 120 FOR SHIPPING GUIDANCE.

14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

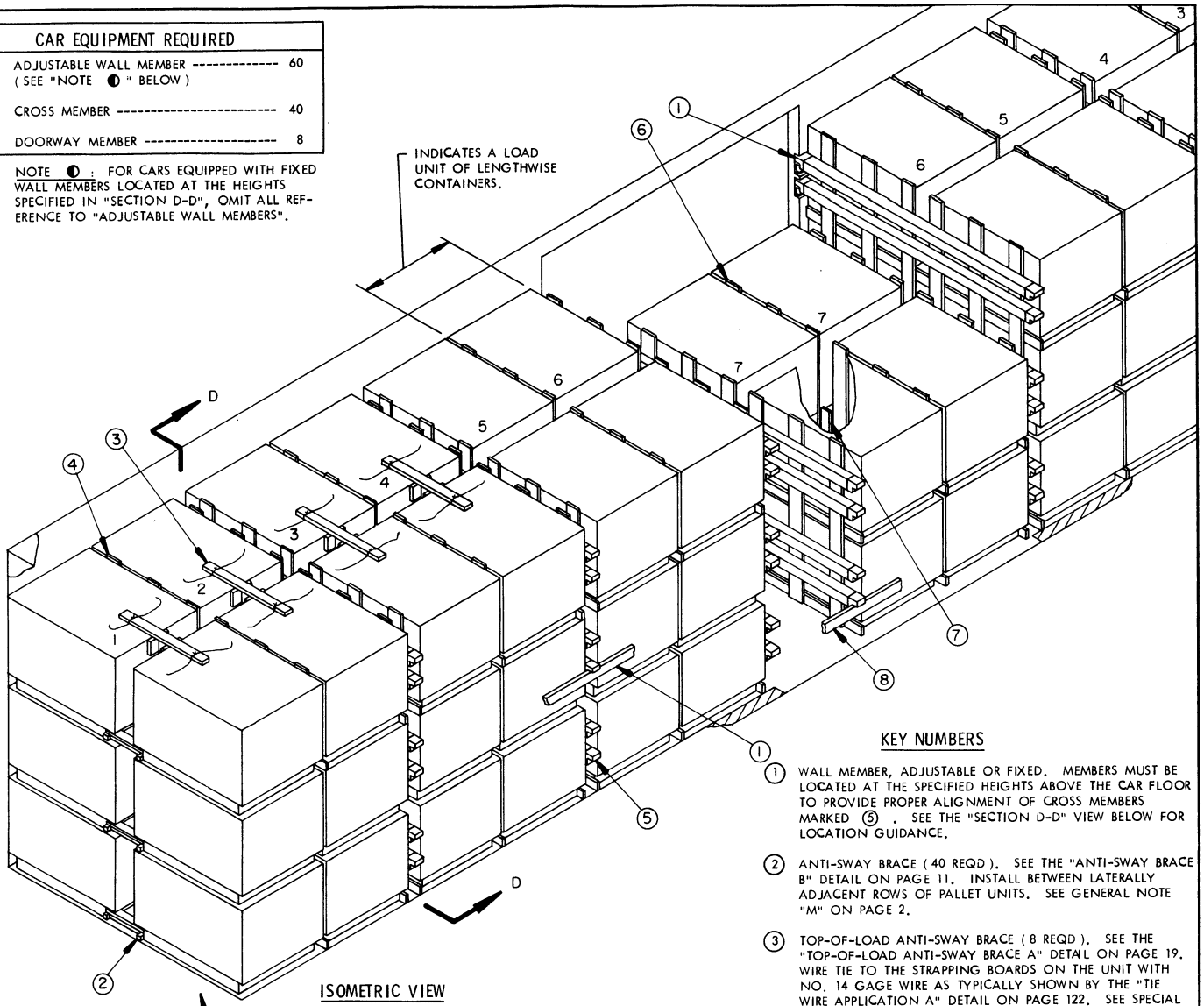
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	108	137,700 LBS
DUNNAGE		2,432 LBS
TOTAL WEIGHT		140,132 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	60
CROSS MEMBER	40
DOORWAY MEMBER	8

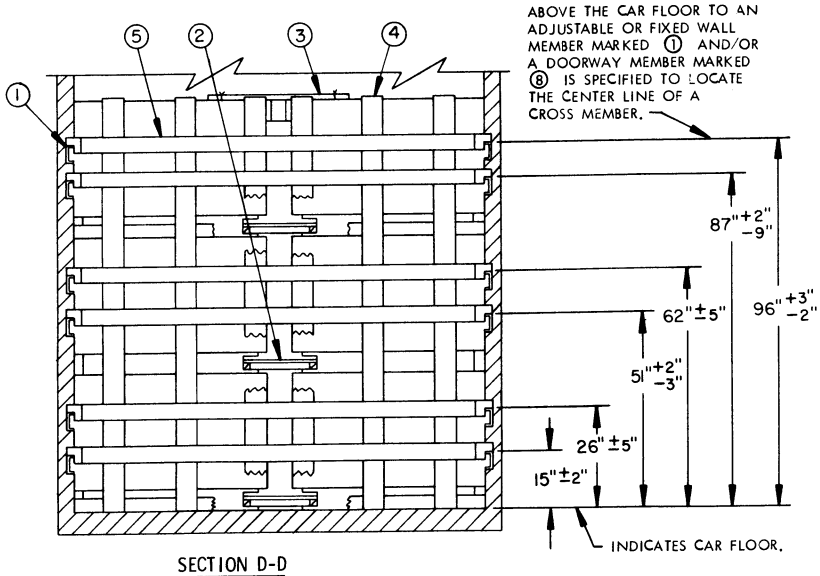
NOTE ◐ : FOR CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT THE HEIGHTS SPECIFIED IN "SECTION D-D", OMIT ALL REFERENCE TO "ADJUSTABLE WALL MEMBERS".



ISOMETRIC VIEW

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

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



SECTION D-D

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 D-D" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (40 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO THE STRAPPING BOARDS ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 4 ON PAGE 13.

④ SEPARATOR GATE FOR 3-HIGH (16 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5 AND 7 ON PAGE 13.

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

⑥ SEPARATOR GATE FOR 2-HIGH (3 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. AS APPLICABLE, POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTE 6 ON PAGE 13.

⑦ STOP PIECE, 1" X 4" X 42" (4 REQD). POSITION AGAINST PALLET UNIT IN THE DOORWAY AND NAIL TO THE HORIZONTAL PIECES ON PIECE MARKED ⑥ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 13.

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

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
80-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES

PROJECT FSA 43B/9-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-SIX (56) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,400 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 OF FROM FLOOR-TO-FLOOR, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "G" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED ④ , MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO TWO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED ④, SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE 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 ELEVEN (11) 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 122 FOR CONSTRUCTION GUIDANCE.

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

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

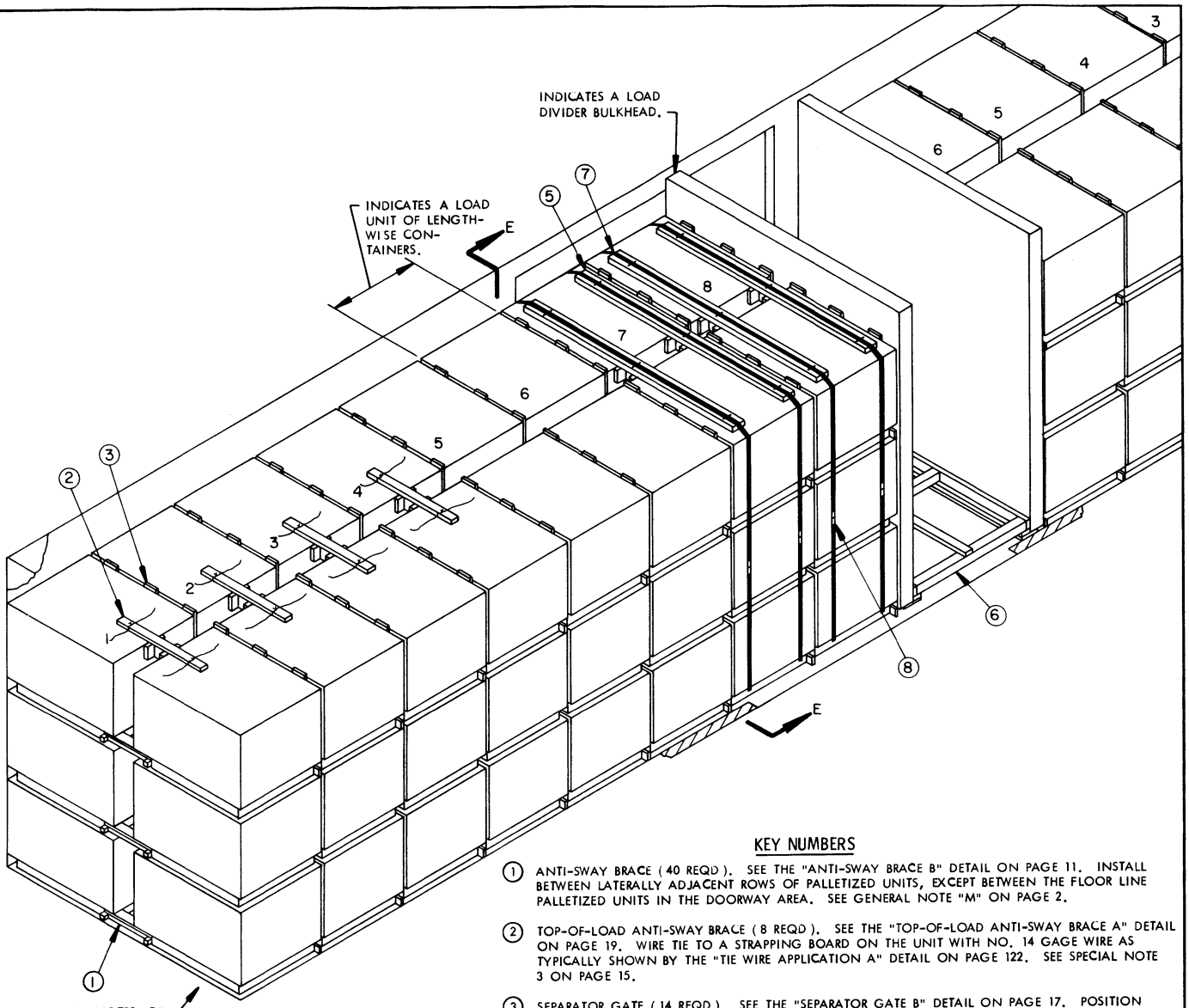
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	454	151
1" X 6"	972	486
2" X 2"	240	80
2" X 4"	103	69
2" X 6"	18	18
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,268	7-1/2
10d (3")	432	6-1/2
WIRE, NO. 14 GAGE ---------- 24' REQD ---------- 1 LB		

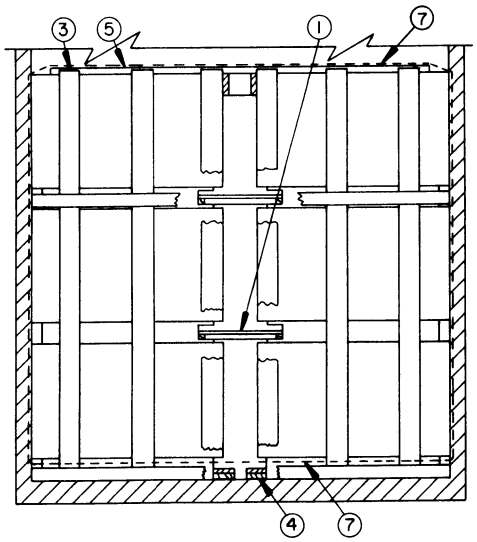
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	80	102,000 LBS
DUNNAGE		1,623 LBS
TOTAL WEIGHT		103,623 LBS

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
80-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

(1) ANTI-SWAY BRACE (40 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLETIZED UNITS, EXCEPT BETWEEN THE FLOOR LINE PALLETIZED UNITS IN THE DOORWAY AREA. SEE GENERAL NOTE "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 3 ON PAGE 15.

(3) SEPARATOR GATE (14 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. POSITION WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 4 AND 5 ON PAGE 15.

(4) DOORWAY BLOCKING, 2" X 6" X 36" (DOUBLED) (4 REQD). PRE-POSITION SO AS TO BE CENTERED AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 6 ON PAGE 15.

(5) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33.

(6) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 129. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 15.

(7) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 38'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 15.

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

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)
84-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 "AA" THRU "EE" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 14 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF ONE-HUNDRED-EIGHT (108) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 137,700 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SIXTY-SIX (66) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 84,150 POUNDS, WHEN USING THE DEPICTED PROCEDURES.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO TWO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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

5. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 122 FOR CONSTRUCTION GUIDANCE. NOTE THAT THE BOTTOM OF THE PLYWOOD GATES MUST BE MODIFIED TO CLEAR THE DOORWAY BLOCKING, PIECES MARKED ④ .

6. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT LENGTH. DOORWAY PROTECTION WILL CONSIST OF NAILED-DOWN BLOCKING BETWEEN THE STACKS, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THAN HALF OF THE UNIT LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 10 MAY BE USED.

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

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, 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 ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 118 AND 120 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

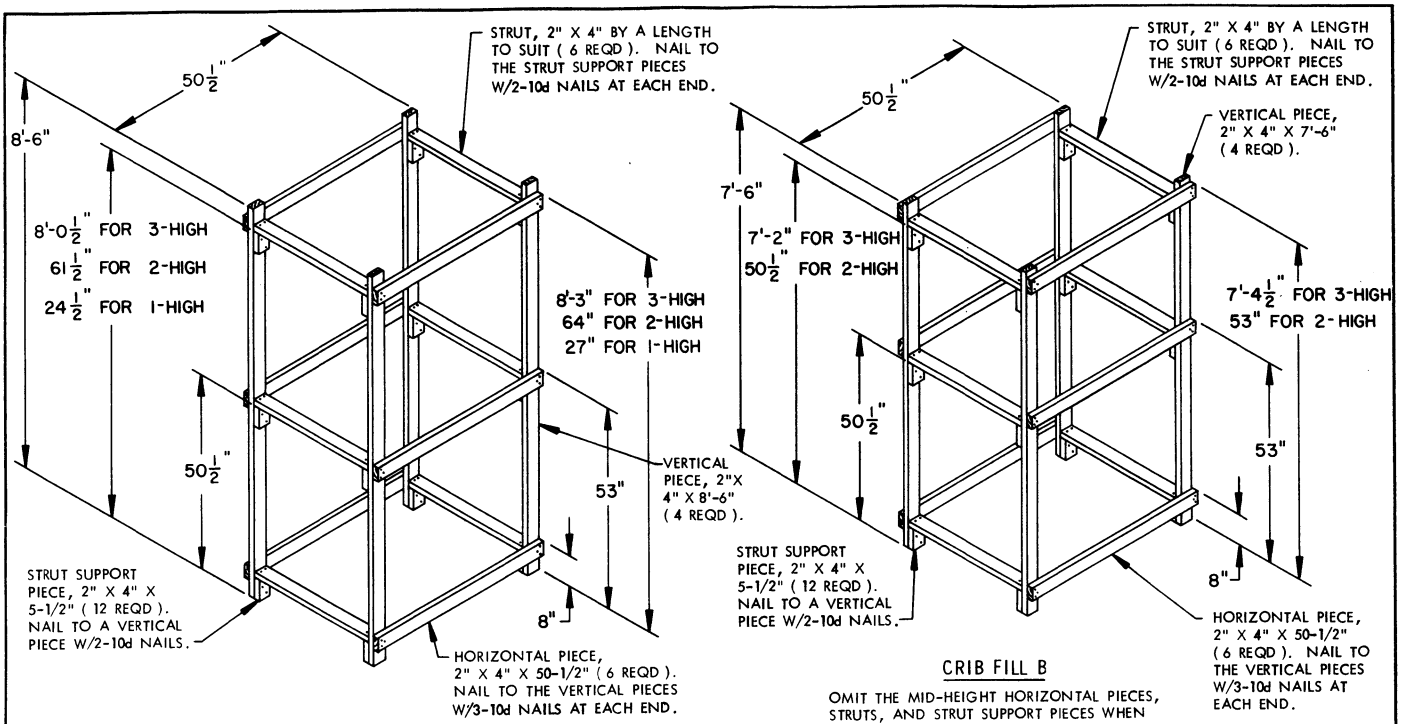
LUMBER	BOARD FEET	LINEAR FEET
1" X 4"	349	116
1" X 6"	756	378
1" X 8"	18	12
2" X 2"	240	80
2" X 4"	149	100
2" X 6"	84	84
4" X 4"	17	23
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,082	6-1/2
10d (3")	462	7
12d (3-1/4")	27	1/2
16d (3-1/2")	32	1

STRAP, STEEL, 1-1/4" X .031" OR .035"--- 152' REQD ----- 21-3/4 LBS
STAPLE FOR 1-1/4" STRAP---------- 12 REQD -------- NIL
SEAL FOR 1-1/4" STRAP---------- 8 REQD -------- 1/2 LB
WIRE, NO. 14 GAGE ----------24' REQD ---------- 1 LB

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT ---------	84----------	107,100 LBS
DUNNAGE ----------		1,624 LBS
	TOTAL WEIGHT--------	108,724 LBS

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

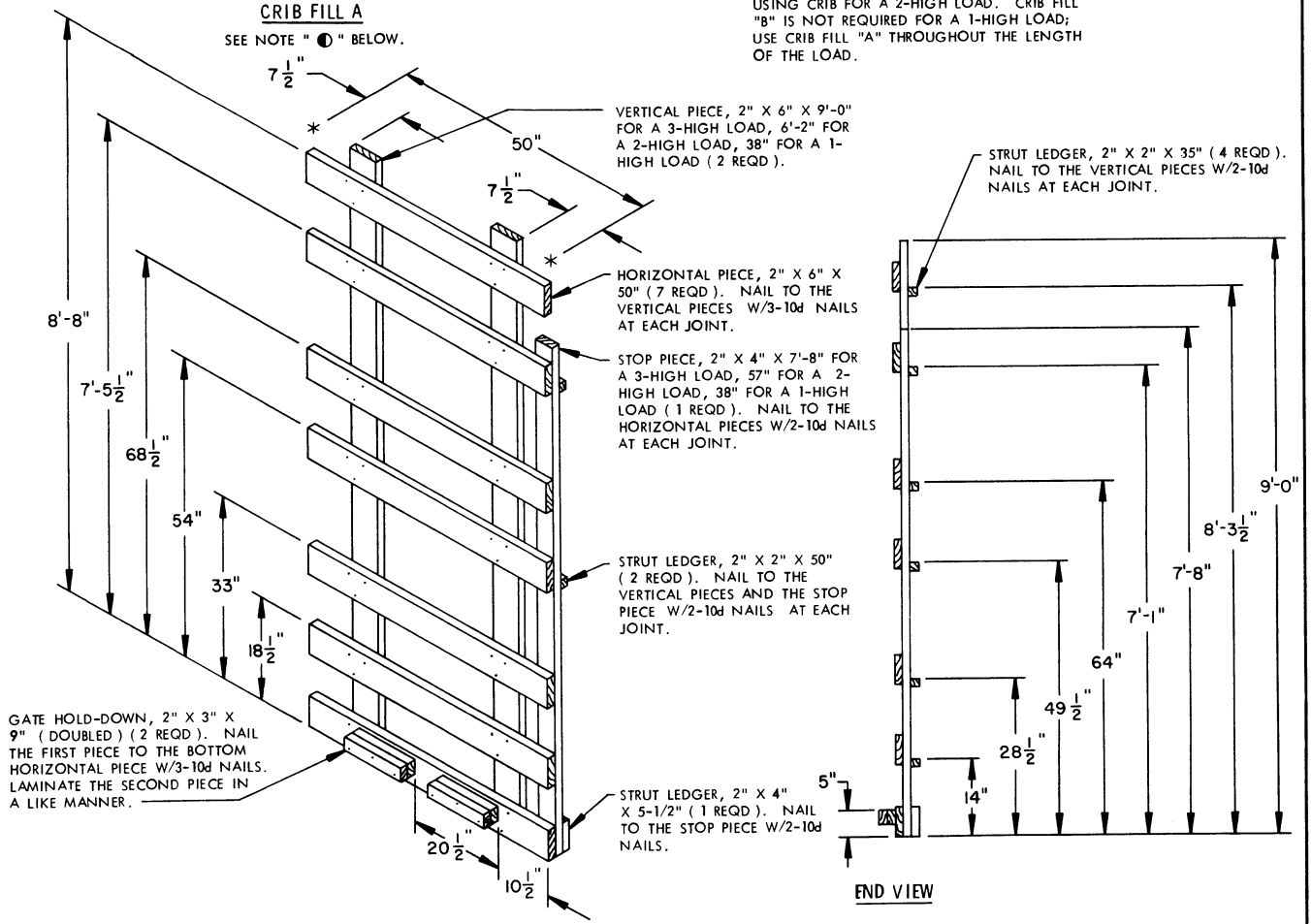


CRIB FILL B

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.

CRIB FILL A

SEE NOTE " ◐ " BELOW.



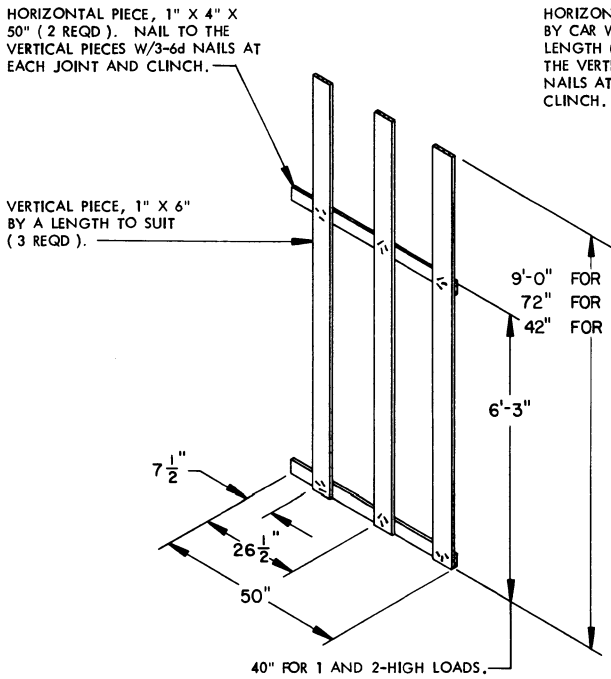
CENTER GATE A

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. NOTE THAT THE SECOND 2" X 2" STRUT LEDGER FROM THE BOTTOM MUST BE 50" LONG FOR A 1-HIGH LOAD.

END VIEW

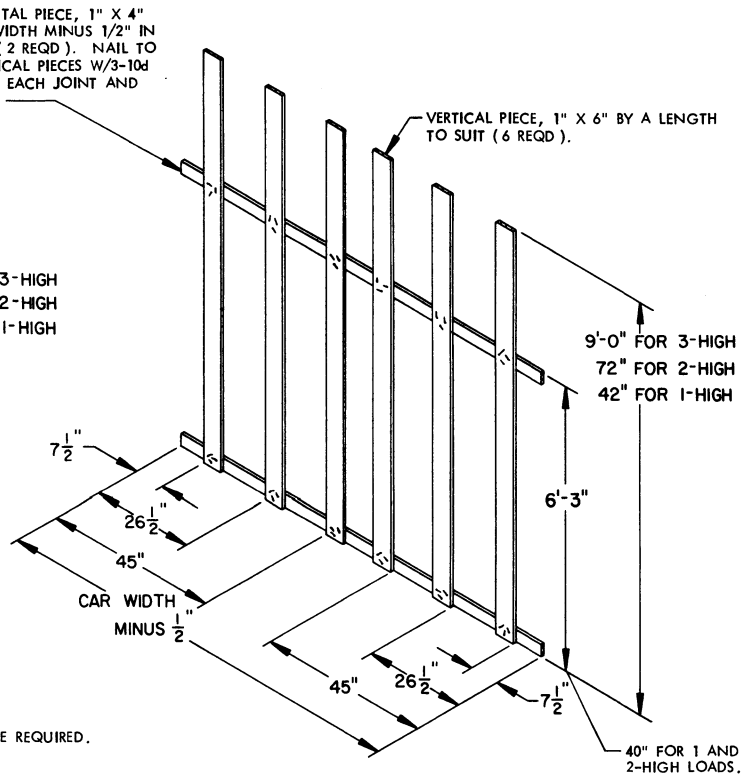
◐ CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE PREFABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2-HIGH LOAD.

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

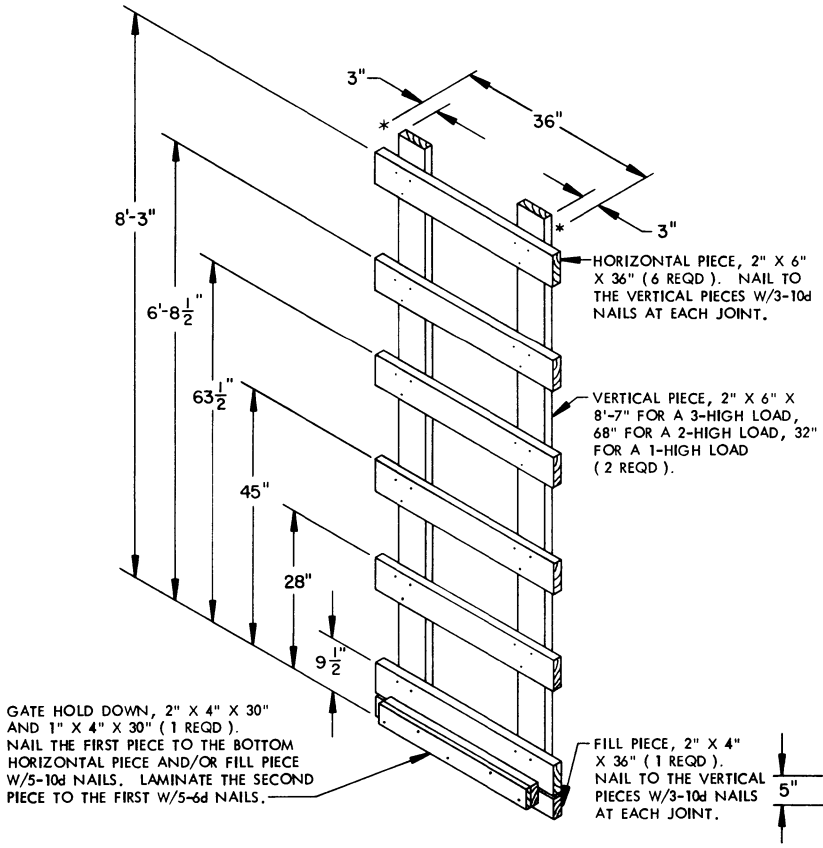


SEPARATOR GATE A

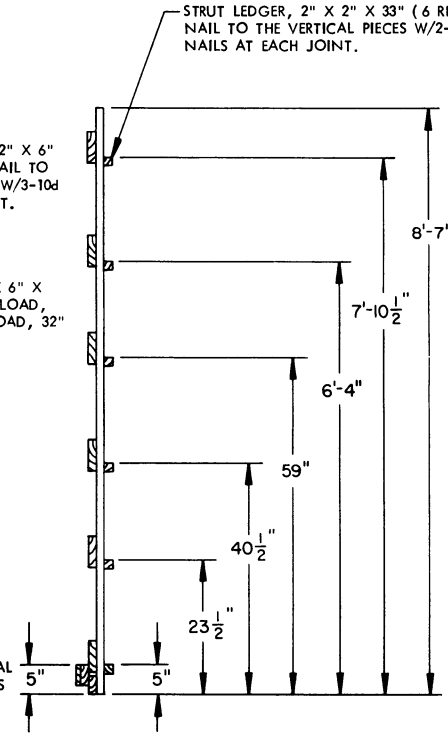
RIGHT HAND AND LEFT GATES ARE REQUIRED. A RIGHT HAND GATE IS SHOWN.



SEPARATOR GATE B

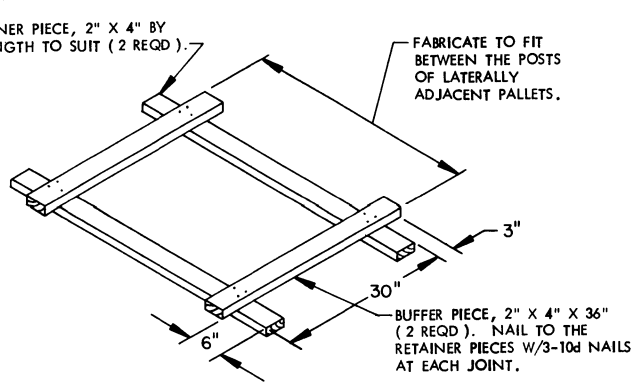


CENTER GATE B



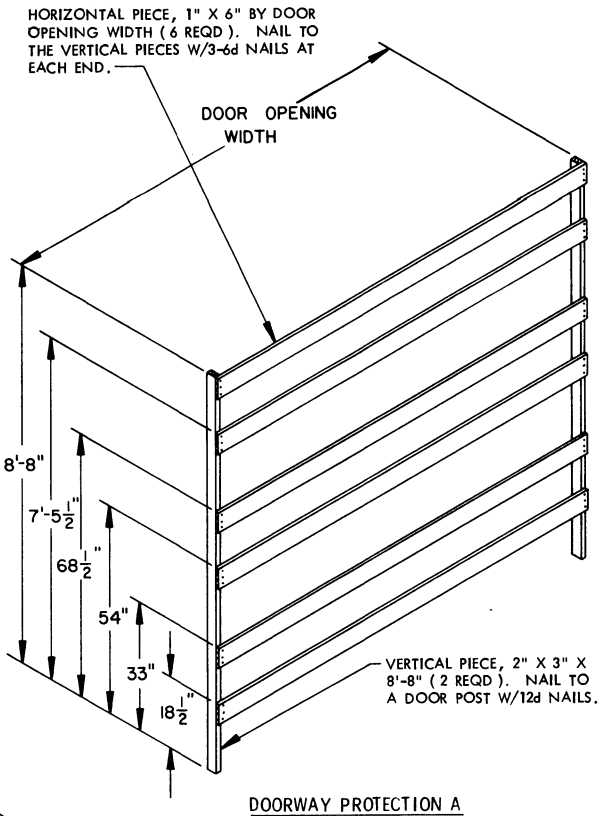
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

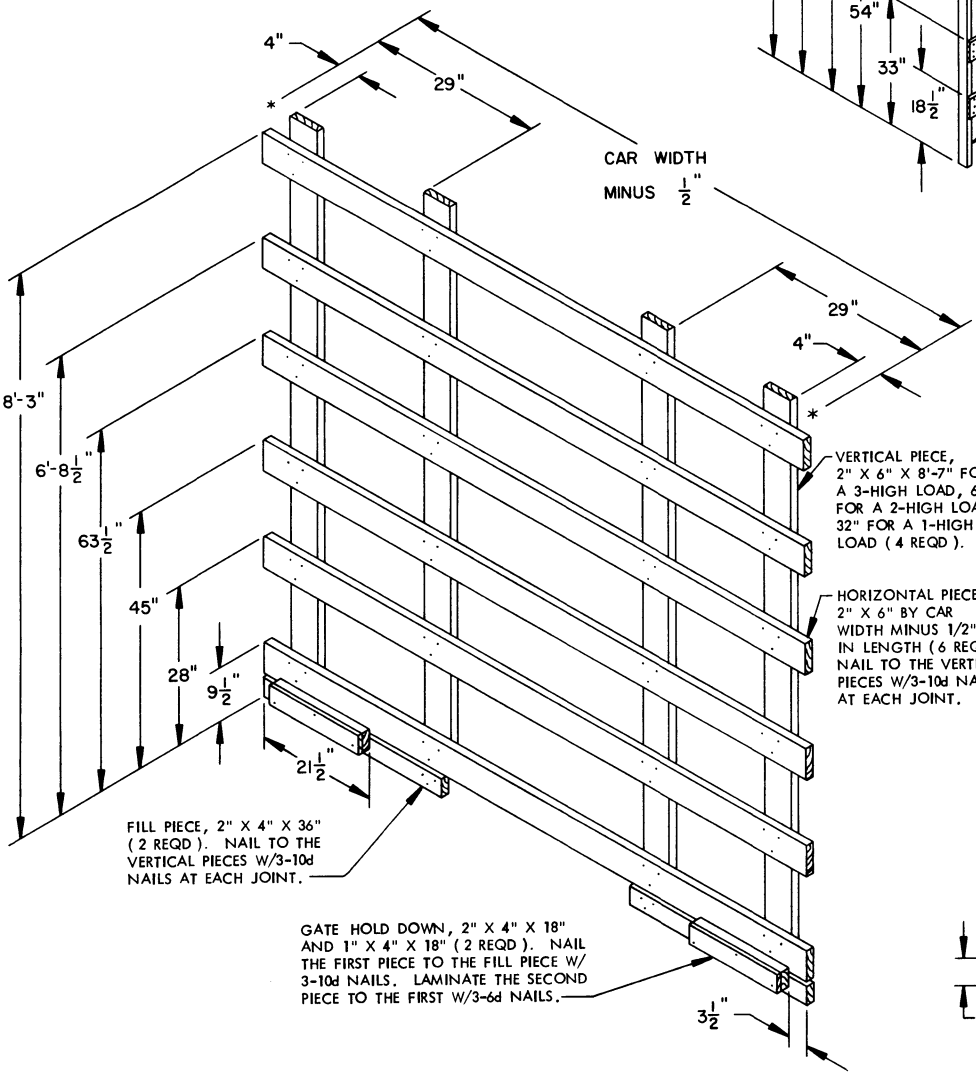


ANTI-SWAY BRACE A

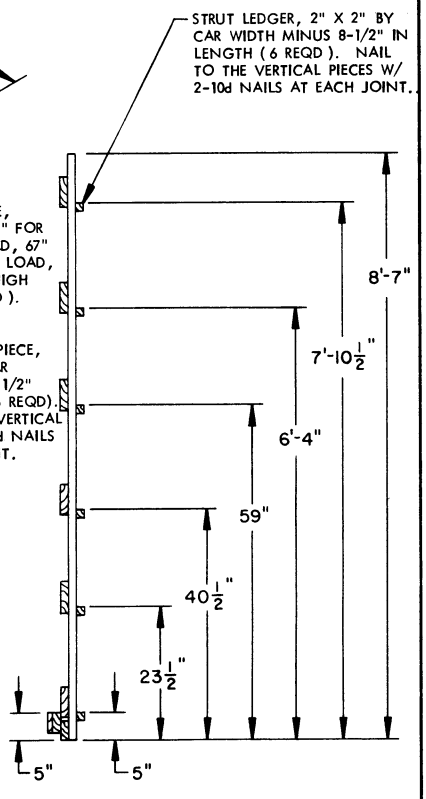
IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING OF THE LATERALLY ADJACENT PALLET.



DOORWAY PROTECTION A

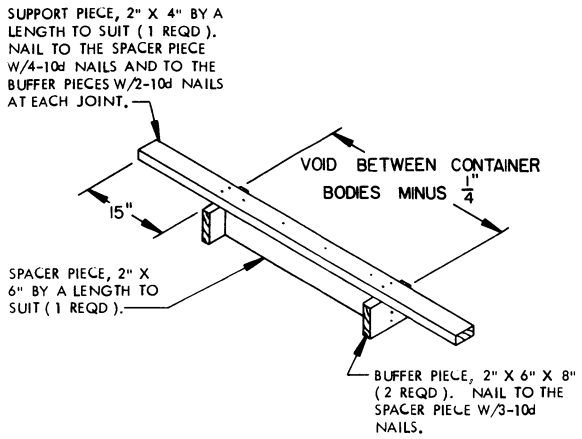


CENTER GATE C

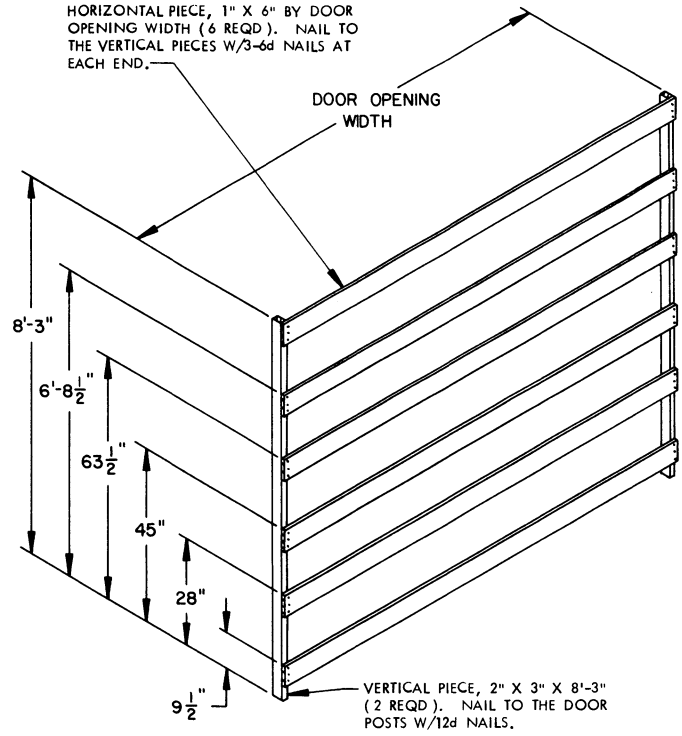


END VIEW

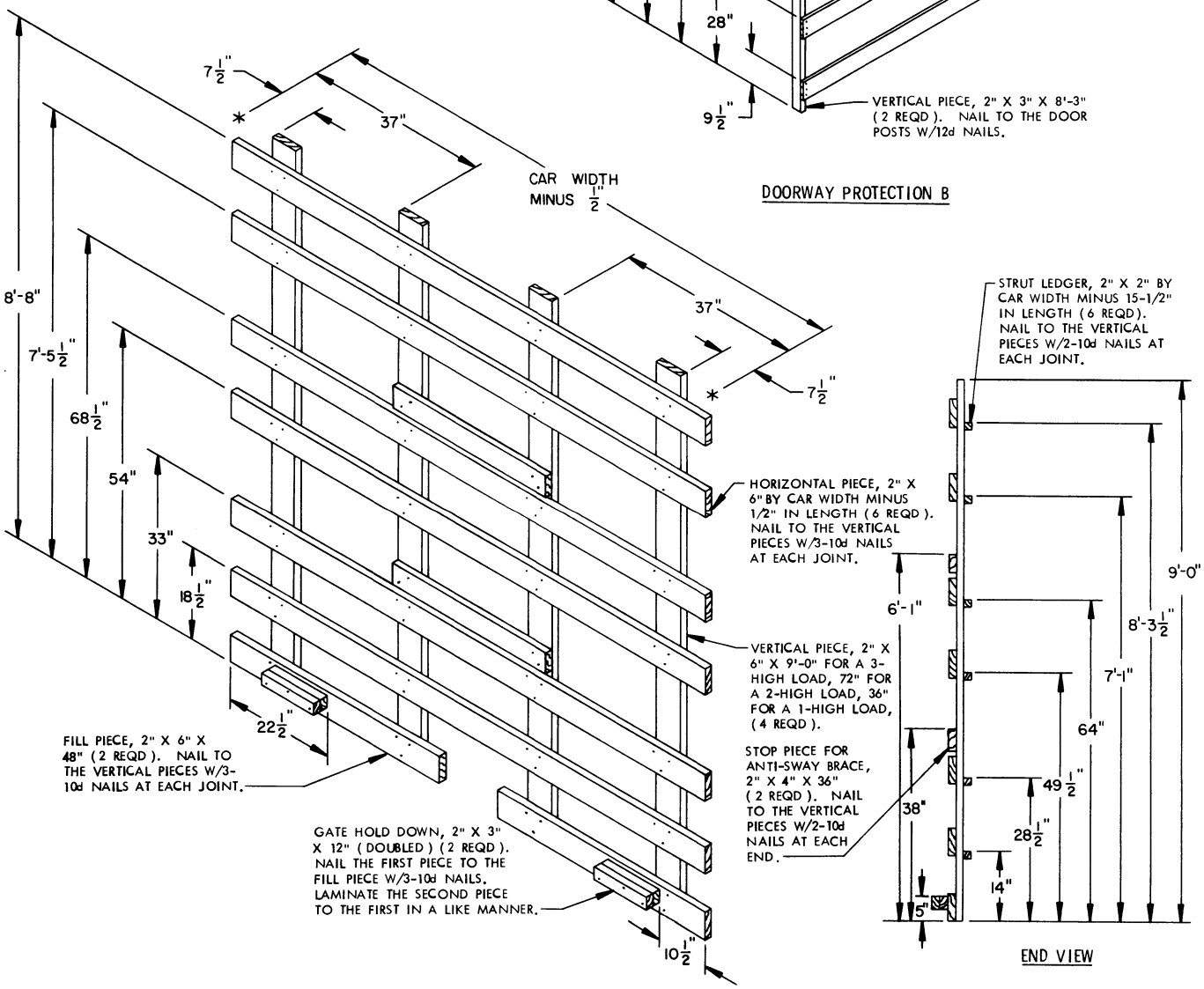
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



TOP-OF-LOAD ANTI-SWAY BRACE A



DOORWAY PROTECTION B



CENTER GATE D

END VIEW

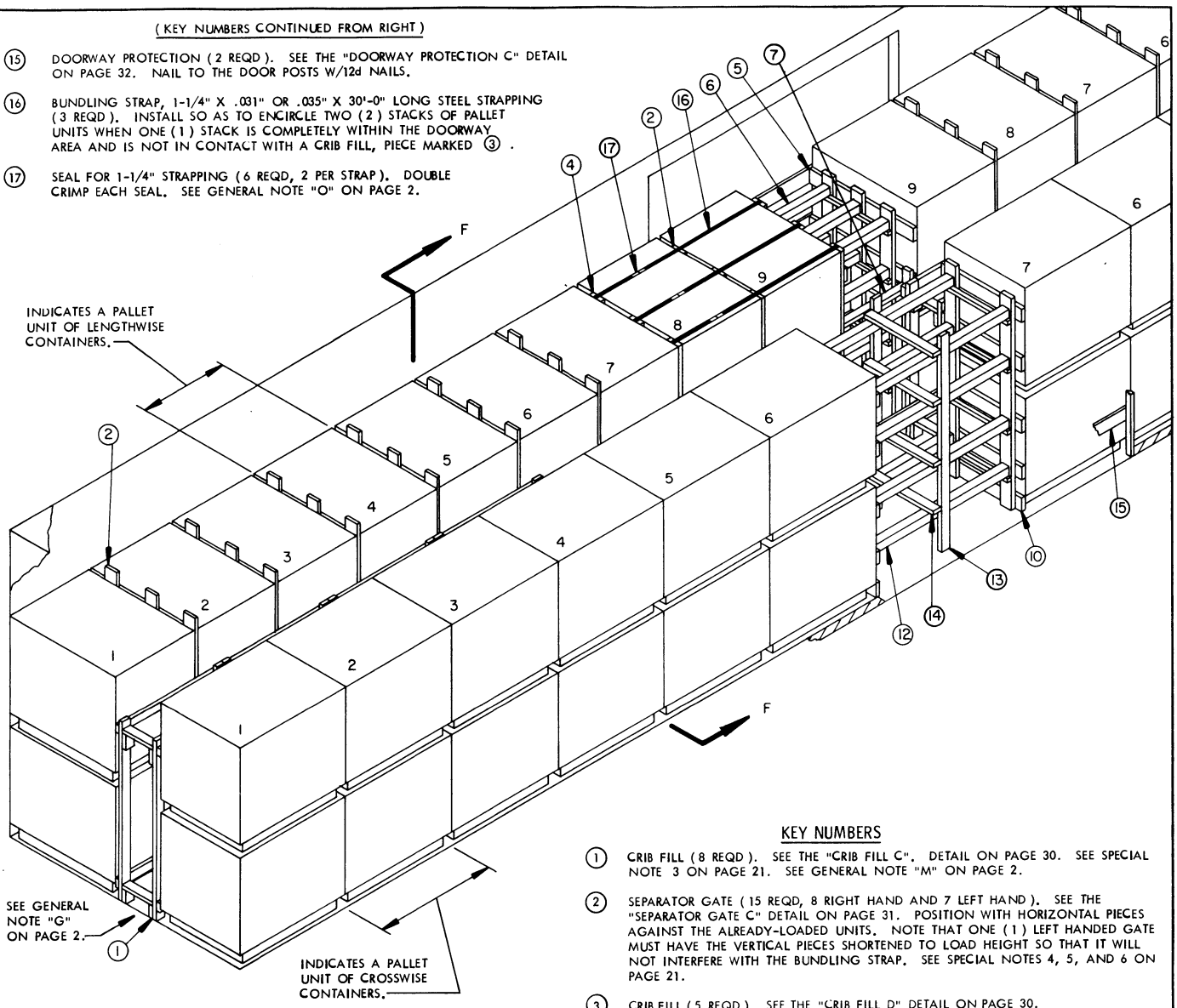
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

(KEY NUMBERS CONTINUED FROM RIGHT)

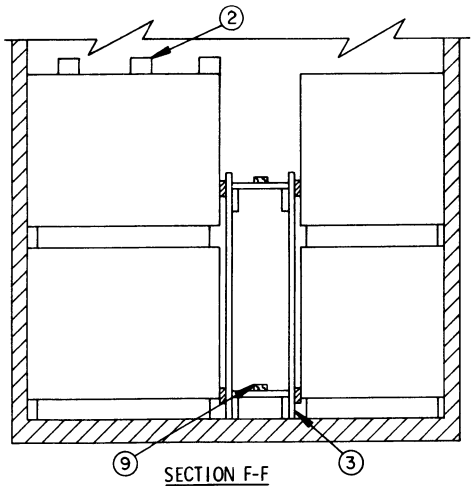
⑮ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS.

⑯ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 30'-0" LONG STEEL STRAPPING (3 REQD). INSTALL SO AS TO ENCIRCLE TWO (2) STACKS OF PALLET UNITS WHEN ONE (1) STACK IS COMPLETELY WITHIN THE DOORWAY AREA AND IS NOT IN CONTACT WITH A CRIB FILL, PIECE MARKED ③.

⑰ SEAL FOR 1-1/4" STRAPPING (6 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.



ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

① CRIB FILL (8 REQD). SEE THE "CRIB FILL C". DETAIL ON PAGE 30. SEE SPECIAL NOTE 3 ON PAGE 21. SEE GENERAL NOTE "M" ON PAGE 2.

② SEPARATOR GATE (15 REQD, 8 RIGHT HAND AND 7 LEFT HAND). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 31. POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. NOTE THAT ONE (1) LEFT HANDED GATE MUST HAVE THE VERTICAL PIECES SHORTENED TO LOAD HEIGHT SO THAT IT WILL NOT INTERFERE WITH THE BUNDLING STRAP. SEE SPECIAL NOTES 4, 5, AND 6 ON PAGE 21.

③ CRIB FILL (5 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 30.

④ STRAPPING BOARD (6 REQD). SEE THE "STRAPPING BOARD B" DETAIL ON PAGE 33.

⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 30. SEE SPECIAL NOTE 7 ON PAGE 21.

⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 28") (12 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

⑦ STRUT, 2" X 4" BY CUT TO FIT (REF: 28") (3 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED ⑤ W/2-12d NAILS AT EACH END.

⑧ SIDE BLOCKING, 2" X 6" X 36" (DOUBLED) (1 REQD). POSITION SO AS TO CONTACT THE PALLET OF A STACK WHICH IS IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" ON PAGE 21.

⑨ CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 7'-0") (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" ON PAGE 21.

⑩ CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 31.

⑪ SIDE BLOCKING FOR CENTER GATE "F", 2" X 4" X 18" (DOUBLED) (2 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" ON PAGE 21.

⑫ STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (8 REQD). TOENAIL TO PIECES MARKED ⑩ W/2-16d NAILS AT EACH END.

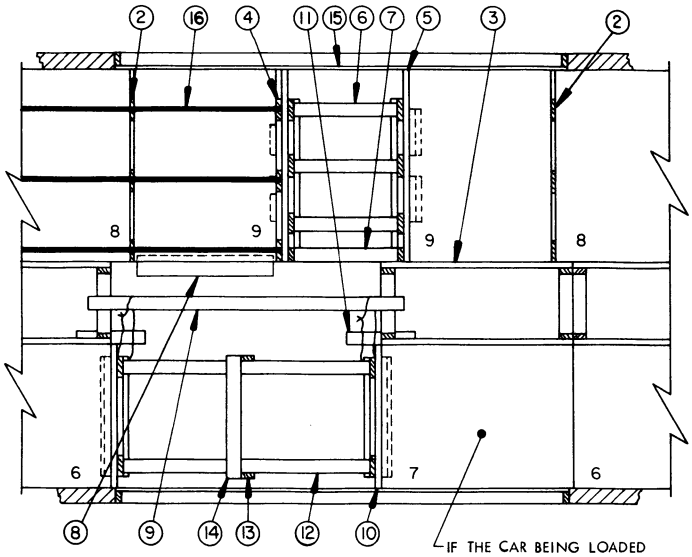
⑬ VERTICAL STRUT BRACING, 2" X 4" X 7'-3" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑭ HORIZONTAL STRUT BRACING, 2" X 4" X 32" (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(CONTINUED ABOVE LEFT)

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

PROJECT FSA 43B/9-63



PARTIAL PLAN VIEW

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 20 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,204 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 67,080 POUNDS, CAN BE OUT-LOADED IN A 40'-6" LONG CAR.

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

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

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

6. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. CONSTRUCT EACH SEPARATOR GATE FROM 48" WIDE PLYWOOD OF AN APPROPRIATE LENGTH.

7. CENTER GATES "E" AND "F" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 123 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑮ IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" AND "ALTERNATIVE DOORWAY PROTECTION F" DETAILS ON PAGE 128 FOR GUIDANCE; A COMBINATION OF THE TWO METHODS MUST BE USED. NAILED SIDE BLOCKING WILL BE USED UNDER THE CRIB FILL SHOWN IN THE DOORWAY AREA OF THE LOAD. POSITION DOUBLED 2" X 6" X 40" PIECES AGAINST THE LENGTHWISE STACK NUMBERED 9, AND PRE-POSITION DOUBLED 2" X 4" X 48" PIECES (APPROXIMATELY 37" FROM THE NEAR SIDE OF THE CAR WALL) SO AS TO BE AGAINST THE CROSSWISE STACK NUMBERED 7. A SPACER ASSEMBLY AS SHOWN IN THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL, MUST BE MODIFIED FOR USE BY CHANGING THE END WHICH EXTENDS OVER THE CROSSWISE CONTAINERS TO BE LIKE THE NEAR END OF THE STRAPPING BOARD SHOWN IN THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL. 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 CROSSWISE CONTAINER UNITS. ALSO NOTE THAT THE CENTER GATES "F" MUST BE WIRE TIED TO PIECE MARKED ⑨ OR THE ADJACENT CRIB FILL, AS APPLICABLE, TO PREVENT DISPLACEMENT.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE PALLET UNIT BY EMPLOYING THE PROCEDURES ON PAGE 96. TWO (2) PALLET UNITS CAN BE OMITTED BY LEAVING OUT LENGTHWISE STACK NO. 9. NOTE THAT STRUT BRACING MUST BE APPLIED TO THE STRUTS, PIECES MARKED ⑥ . OR THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 112 AND 113.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSSWISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

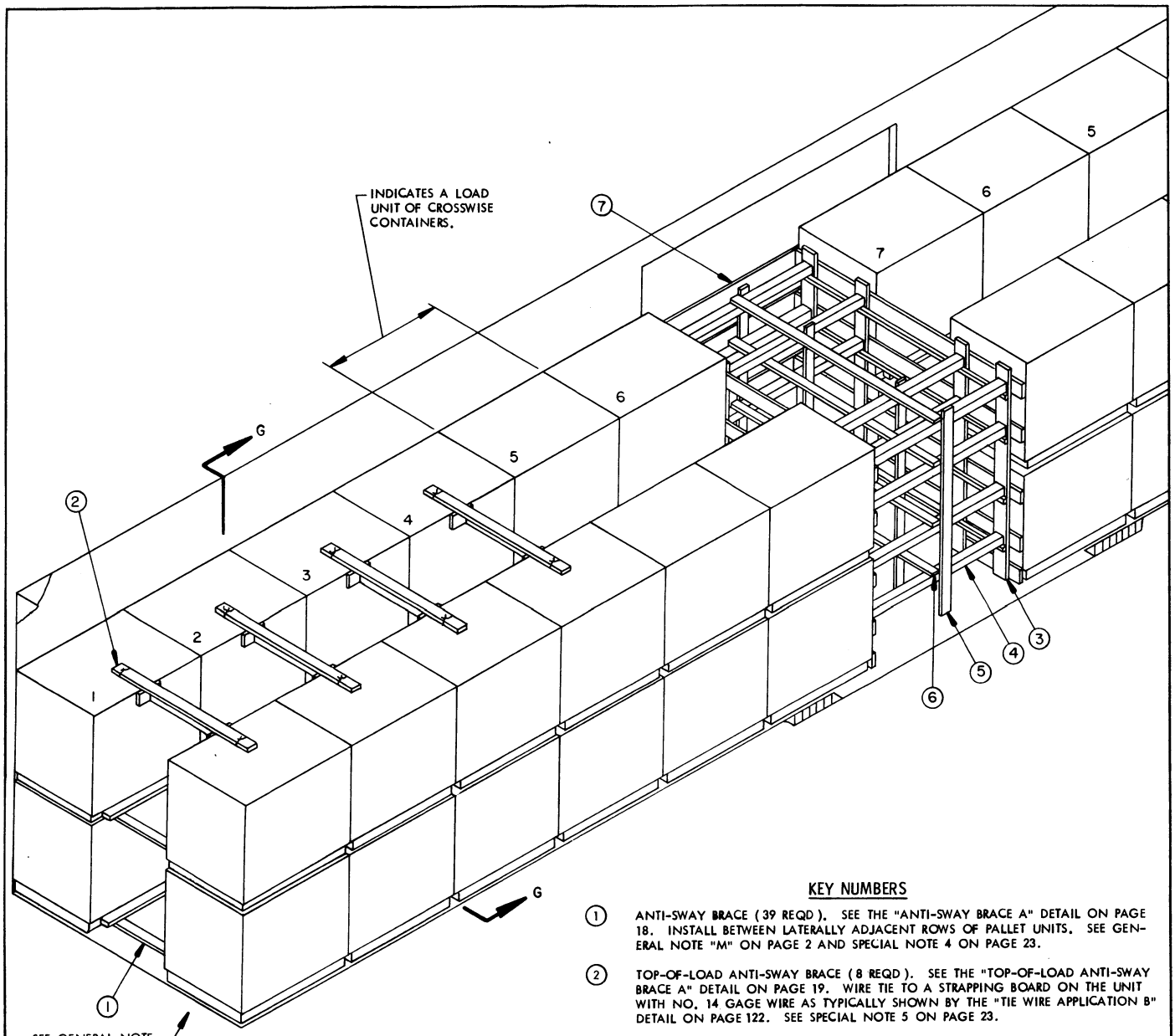
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	130	44
1" X 6"	440	220
2" X 2"	61	20
2" X 3"	18	9
2" X 4"	682	455
2" X 6"	187	187
4" X 4"	71	95
NAILS	**NO. REQD**	**POUNDS**
6d (2")	328	2
10d (3")	1,106	17
12d (3-1/4")	44	3/4
16d (3-1/2")	88	2

STRAP, STEEL, 1-1/4" X .031" OR .035"---90' REQD----- 13 LBS
SEAL FOR 1-1/4" STRAP ----------6 REQD------ NIL

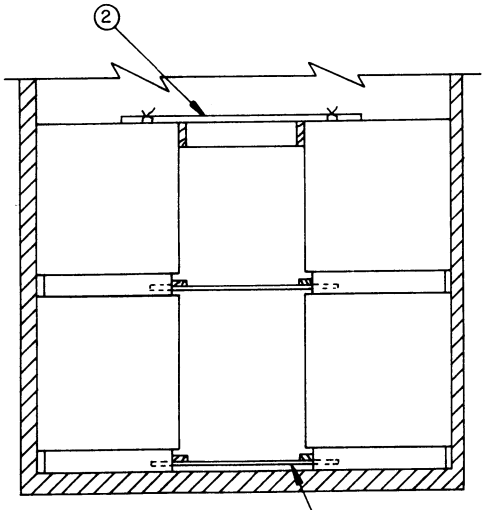
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	62	103,974 LBS
DUNNAGE		2,095 LBS
TOTAL WEIGHT		106,069 LBS

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



ISOMETRIC VIEW



SECTION G-G

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

KEY NUMBERS

(1) ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 23.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 5 ON PAGE 23.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 32. SEE SEE SPECIAL NOTES 6, 7, AND 10 ON PAGE 23.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

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

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

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 32. SEE SPECIAL NOTE 9 ON PAGE 23.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
52-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 OPENING IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 22 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,788 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-SIX (36) UNITS, FOR AN APPROXIMATE WEIGHT OF 60,372 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦ , NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR. SEE SPECIAL NOTE 9 BELOW.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 22, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 123 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 22, INSTALL TWO (2) "CENTER GATES F" AS SHOWN ON PAGE 31. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" AND 1" X 4" MATERIAL NAILED TO CENTER GATE G, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 22, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THROUGH 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE.

10. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑦ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THROUGH 120 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

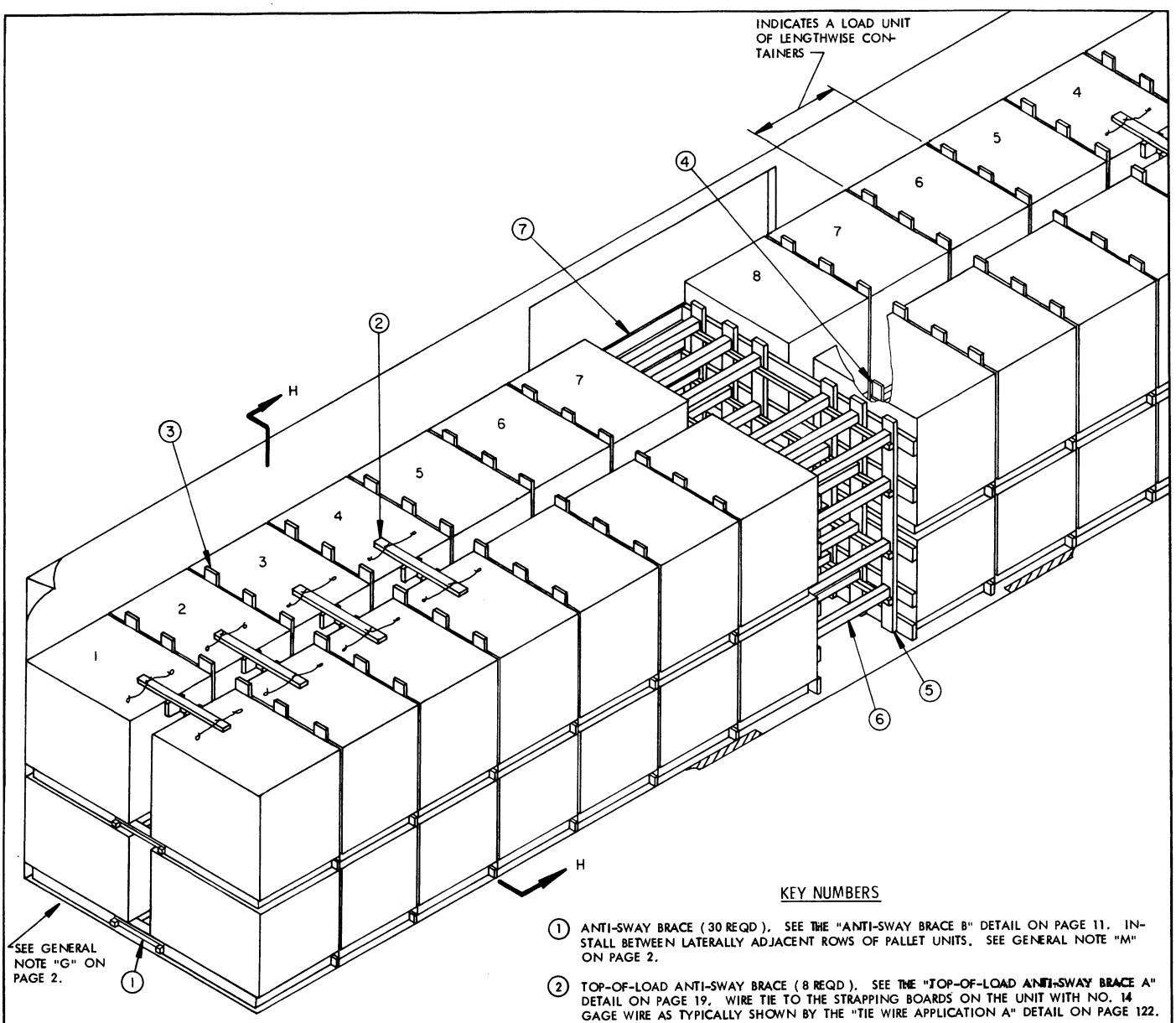
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	6	2
1" X 6"	80	40
2" X 2"	68	23
2" X 3"	28	5
2" X 4"	657	438
2" X 6"	173	173
4" X 4"	87	116
NAILS	**NO. REQD**	**POUNDS**
6d (2")	60	1/2
10d (3")	872	13-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE ------ 24' REQD ---------- 1 LB		

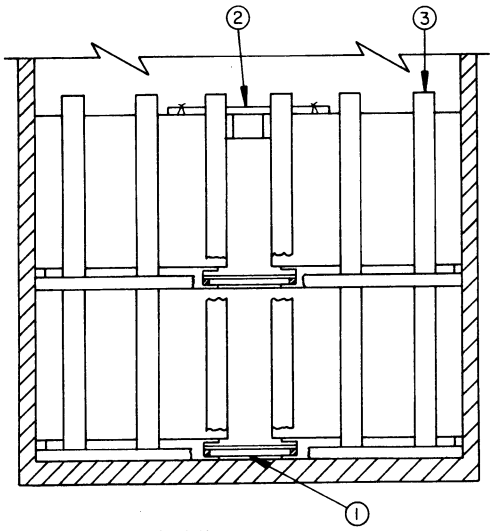
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	52	87,204 LBS
DUNNAGE		1,611 LBS
TOTAL WEIGHT		88,815 LBS

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



ISOMETRIC VIEW



SECTION H-H

CENTER GATE, PIECE MARKED ⑤ OMITTED FOR CLARITY

KEY NUMBERS

① ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO THE STRAPPING BOARDS ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 4 ON PAGE 25.

③ SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. POSITION WITH THE HORIZONTAL PIECE AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 25.

④ STOP PIECE, 1" X 4" X 56" (2 REQD). INSTALL ON THE SIDE OPPOSITE THE VERTICAL PIECES OF THE SEPARATOR GATE, PIECE MARKED ③ , WHICH IS IN THE DOORWAY AREA. POSITION IN CONTACT WITH THE ADJACENT PALLET UNITS AND NAIL TO THE HORIZONTAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 25.

⑤ CENTER GATE (2 REQD). SEE THE "CENTER GATE H" DETAIL ON PAGE 33. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 25.

⑥ STRUT, 4" X 4" BY CUT TO FIT (REF: 30") (24 REQD). TOENAIL TO PIECES MARKED ⑤ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

⑦ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 32. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 11 ON PAGE 25.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,496 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-SIX (76) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 127,452 POUNDS CAN BE LOADED.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 24, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO TWO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE, SHOWN AS PIECE MARKED 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 MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF THE STOP PIECES, PIECES MARKED ④ . IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 122 FOR CONSTRUCTION GUIDANCE.

8. 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 123.

9. 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 24, INSTALL TWO (2) "CENTER GATES E" AS SHOWN ON PAGE 30. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123. OMIT THE STOP PIECE ON "CENTER GATE E".

10. 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 125 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 24 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BYA 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 92 THRU 120 FOR GUIDANCE.

13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 118 AND 120 FOR SHIPPING GUIDANCE.

14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	321	107
1" X 6"	704	352
2" X 2"	65	22
2" X 3"	36	18
2" X 4"	83	55
2" X 6"	189	189
4" X 4"	60	80
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,180	7
10d (3")	352	5-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2
WIRE, NO. 14 GAGE ------- 40' REQD ---------- 2 LBS		

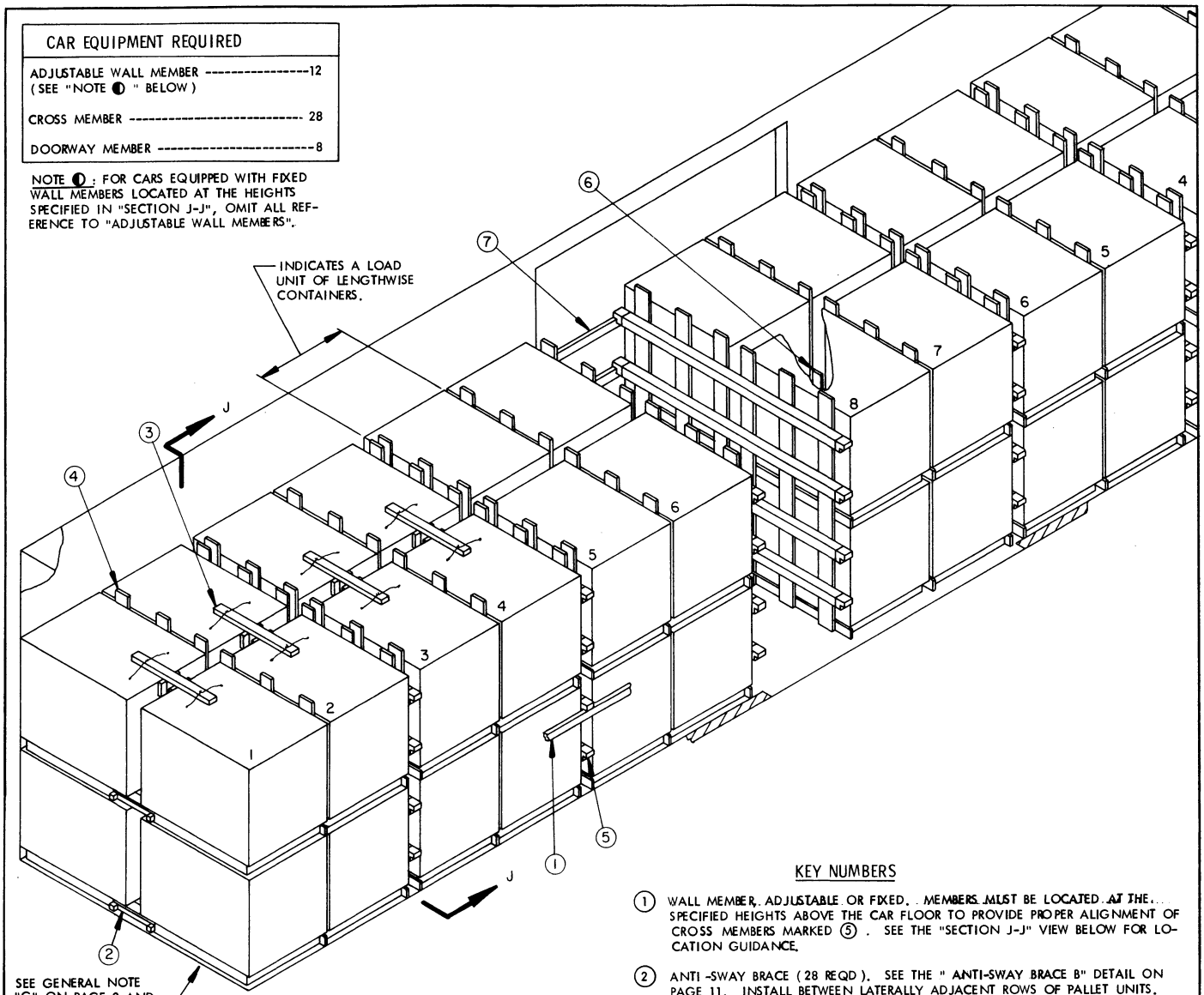
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	60	100,620 LBS
DUNNAGE		1,663 LBS
TOTAL WEIGHT		102,283 LBS

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

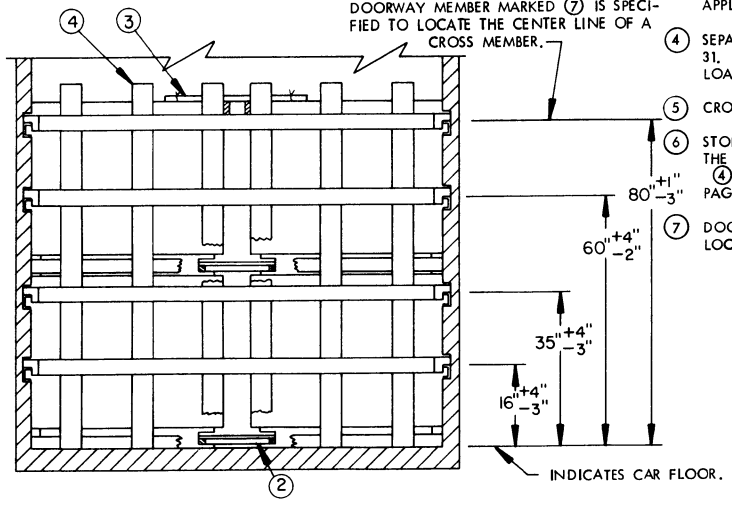
CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	12
CROSS MEMBER	28
DOORWAY MEMBER	8

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



ISOMETRIC VIEW

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



SECTION J-J

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 J-J" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (28 REQD). SEE THE " ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO THE STRAPPING BOARDS ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. SEE SPECIAL NOTE 4 ON PAGE 27.

④ SEPARATOR GATE (19 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 31. AS APPLICABLE, POSITION WITH HORIZONTAL PIECES AGAINST THE ALREADY-LOADED UNITS. SEE SPECIAL NOTES 5, 6, AND 7 ON PAGE 27.

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

⑥ STOP PIECE, 1" X 4" X52" (4 REQD). POSITION AGAINST PALLET UNITS IN THE DOORWAY AREA AND NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ④ W/3-6d NAILS AT EACH JOINT AND CLINCH. SEE SPECIAL NOTE 6 ON PAGE 27.

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

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 26 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 67,080 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ IN THE LOAD ON PAGE 26, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO TWO PALLET UNIT STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 122. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. TO FACILITATE POSITIONING OF THE PALLET UNITS AS LOADING PROGRESSES, POSITION PALLET UNIT STACKS AGAINST THE END WALL, THEN POSITION A SEPARATOR GATE SHOWN AS PIECES MARKED ④ SO THE 1" X 4" TIE PIECES ARE LOCATED UNDER THE "OVERHANG" OF THE 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 ELEVEN (11) 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 122 FOR CONSTRUCTION GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

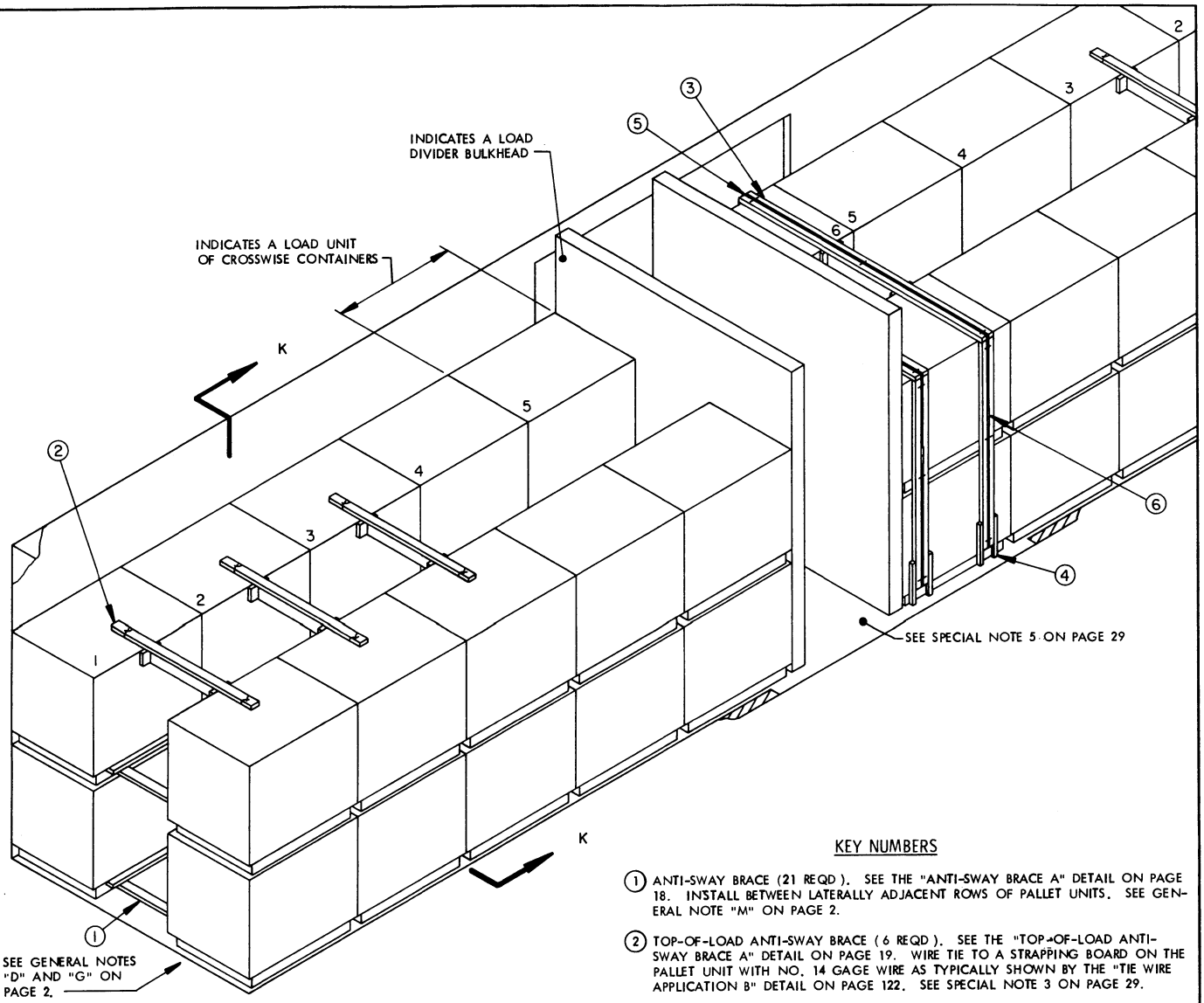
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	436	145
1" X 6"	912	456
2" X 2"	168	56
2" X 4"	79	53
2" X 6"	16	16
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,100	6-1/2
10d (3")	336	5-1/4
WIRE, NO. 14 GAGE -------- 40' REQD ---------- 2 LBS		

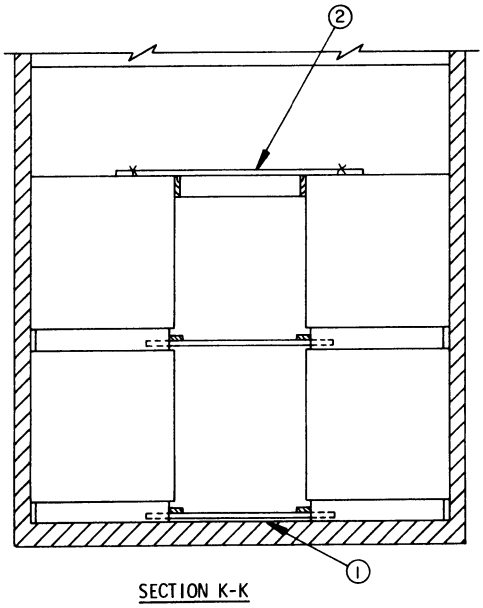
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	56	93,912 LBS
DUNNAGE		1,466 LBS
TOTAL WEIGHT		95,378 LBS

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
56-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE BOX CAR EQUIPPED WITH MECHANICAL BRACING DEVICES



ISOMETRIC VIEW



SECTION K-K

KEY NUMBERS

(1) ANTI-SWAY BRACE (21 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE PALLET UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 3 ON PAGE 29.

(3) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33. NOTE: WHEN USING STRAPPING BOARD "A" FOR THIS LOAD, THE LENGTH OF THE STRAP BEARING PIECE WILL BE INCREASED TO CAR WIDTH MINUS 1/2".

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

(5) DOORWAY PROTECTION STRAP, 1-1/4 X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARDS, PIECES MARKED (3) AND (4) W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 29.

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

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
44-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 "AA" THRU "EE" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 28 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,204 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF THIRTY-SIX (36) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 60,372 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF DESIRED, THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 24 MAY BE EMPLOYED. THEN, SEVENTY-TWO (72) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 120,744 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, FIFTY-SIX (56) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 93,912 POUNDS, AND FORTY-FOUR (44) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 73,788 POUNDS.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 28, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. THREE (3) BRACES ARE REQUIRED IN EACH END OF A 40'-6" OR 50'-6" LONG CAR AND FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR.

4. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT WIDTH. DOORWAY PROTECTION WILL CONSIST OF ANTI-SWAY BRACES BETWEEN THE STACKS, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THAN HALF OF THE UNIT WIDTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 22 MAY BE USED.

5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 14, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SEVEN (7) LOAD UNITS.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) 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 RECUDING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 AND/OR PAGES 118 AND 120 FOR SHIPPING GUIDANCE.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

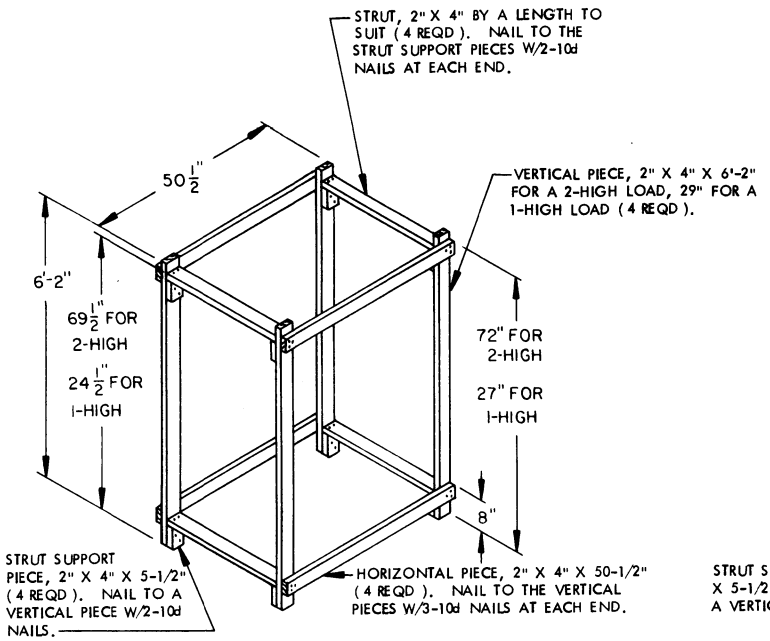
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	11	4
2" X 4"	326	217
2" X 6"	79	79
NAILS	NO. REQUIRED	POUNDS
10d (3")	382	5-3/4

STRAP: STEEL, 1-1/4" X .031" OR .035 ---- 72' REQD ---- 7 LBS
SEAL FOR 1-1/4" STRAP ---------- 4 REQD ---- NIL
STAPLE FOR 1-1/4" STRAP ---------- 18 REQD ---- NIL
NO. 14 GAGE WIRE ---------- 18' REQD ---- 1 LB

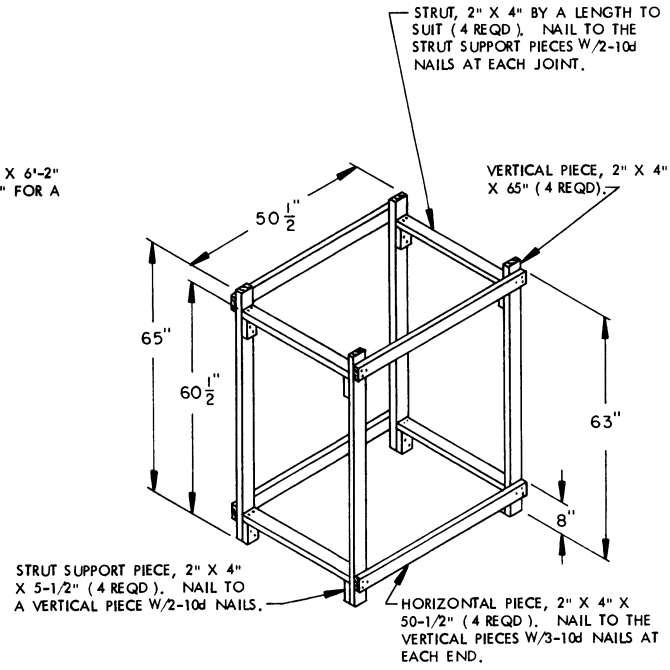
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	44	73,788 LBS
DUNNAGE		614 LBS
	TOTAL WEIGHT	74,402 LBS

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



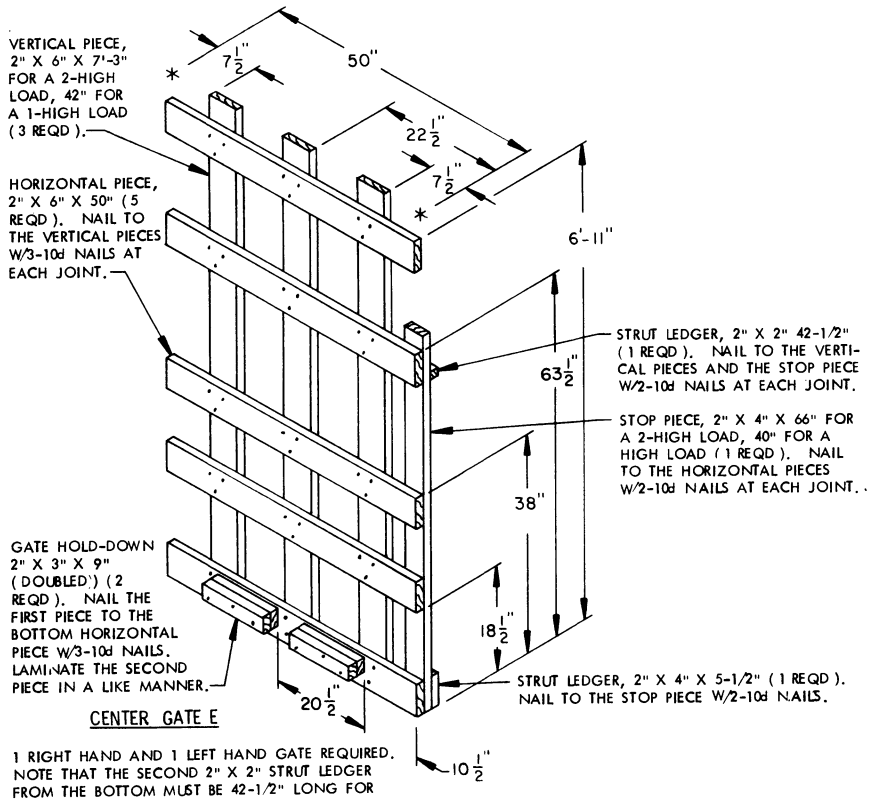
CRIB FILL C



CRIB FILL D

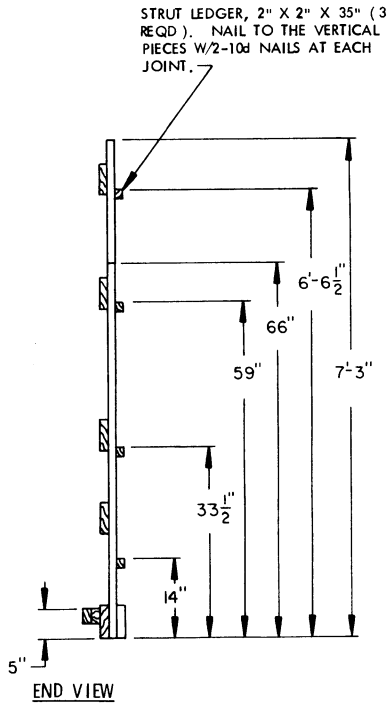
CRIB FILL ASSEMBLIES "C" AND "D" SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

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



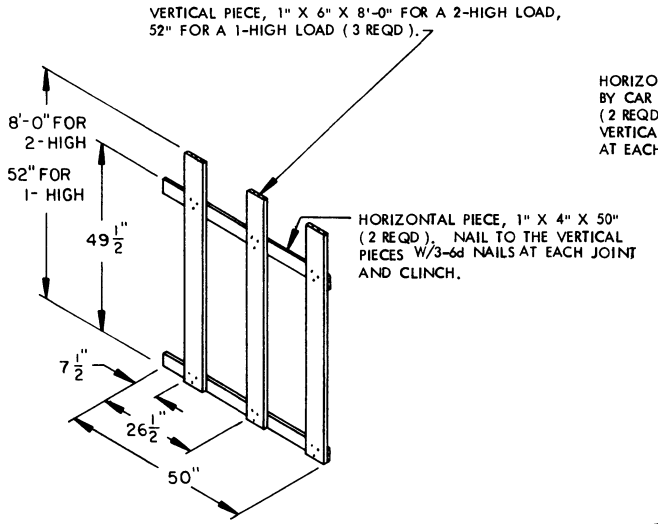
CENTER GATE E

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. NOTE THAT THE SECOND 2" X 2" STRUT LEDGER FROM THE BOTTOM MUST BE 42-1/2" LONG FOR A 1-HIGH LOAD.



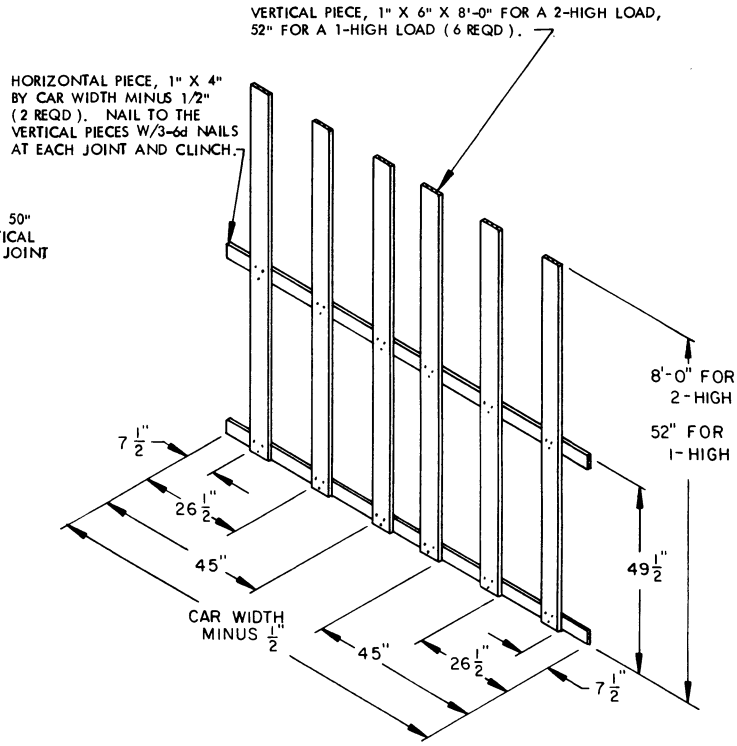
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

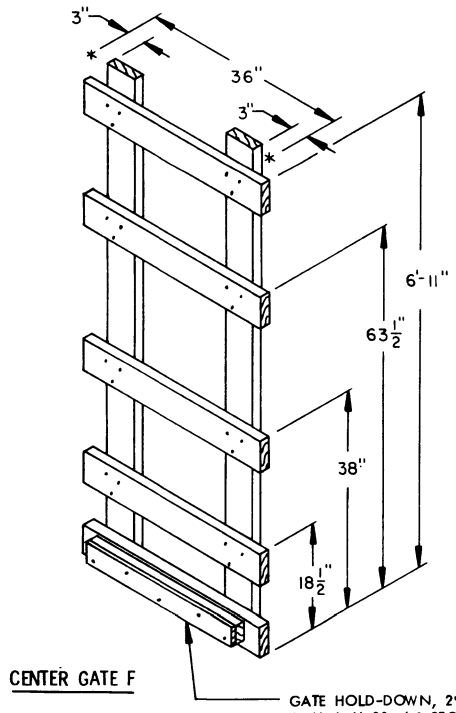


SEPARATOR GATE C

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

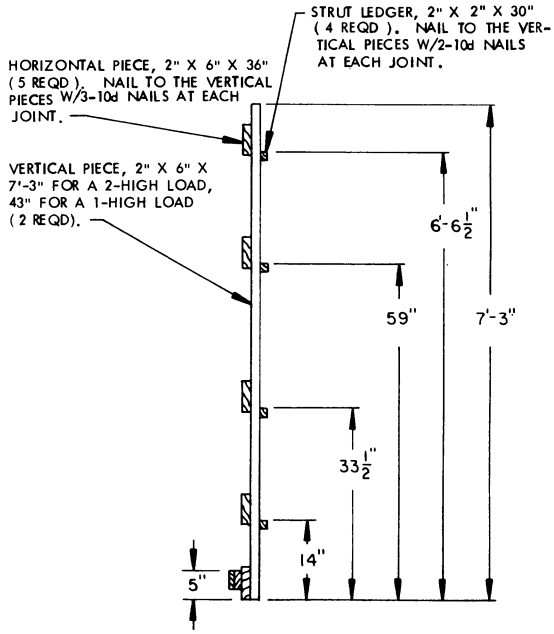


SEPARATOR GATE D



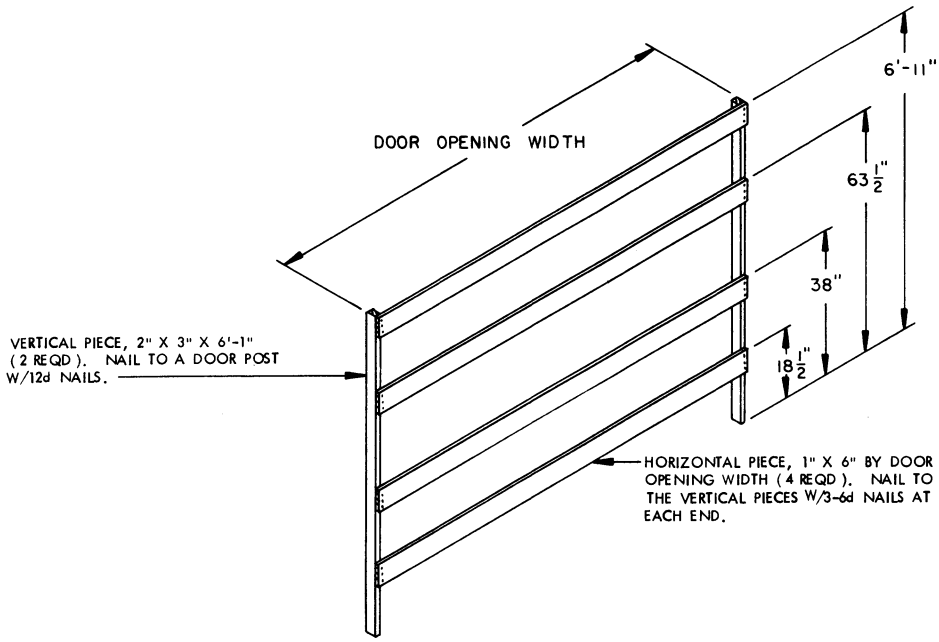
CENTER GATE F

GATE HOLD-DOWN, 2" X 4" X 30" AND 1" X 4" X 30" (1 REQD). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/5-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST W/5-6d NAILS.

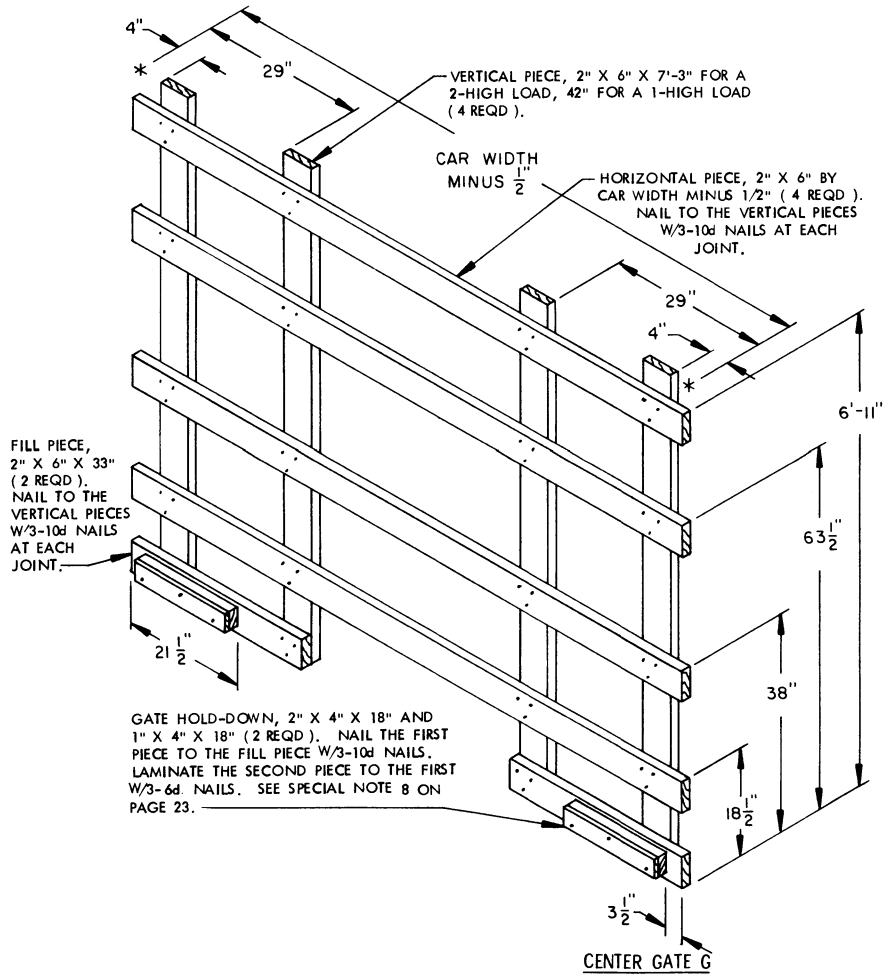


END VIEW

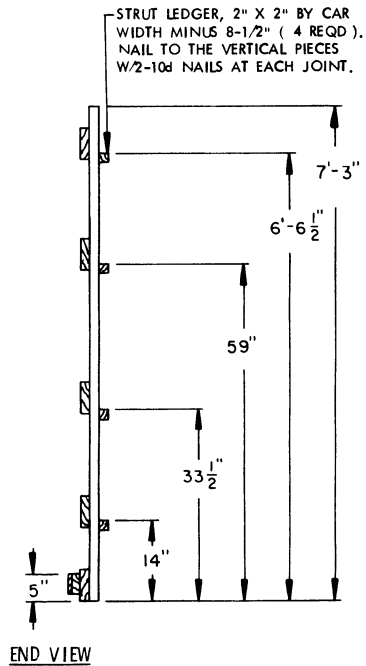
DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



DOORWAY PROTECTION C

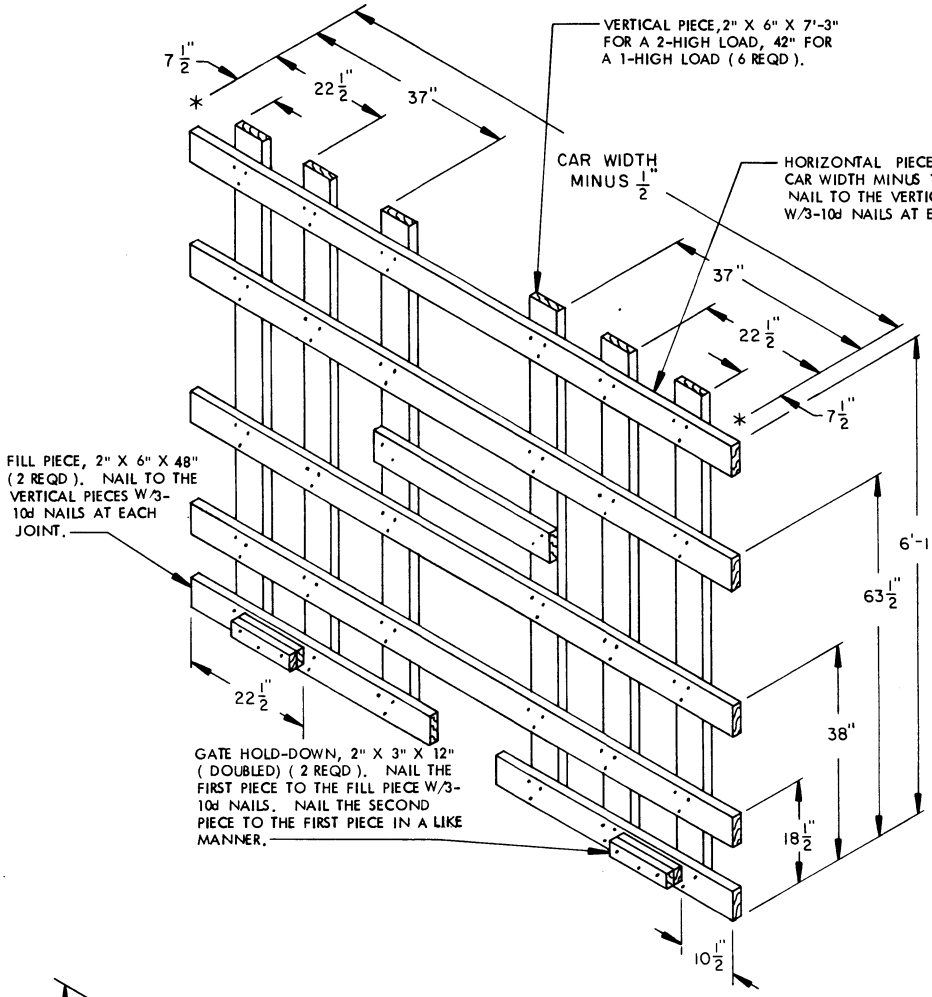


CENTER GATE G

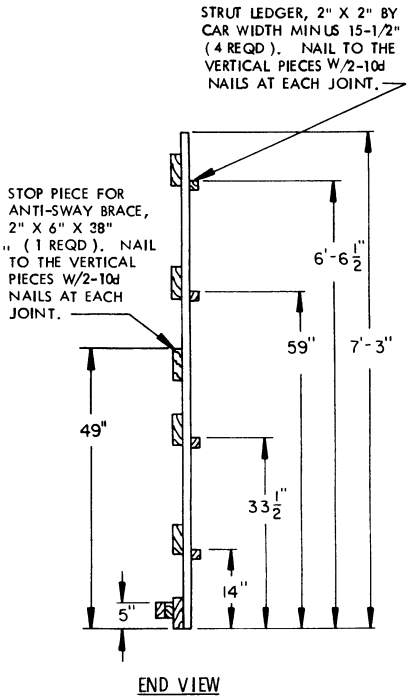


END VIEW

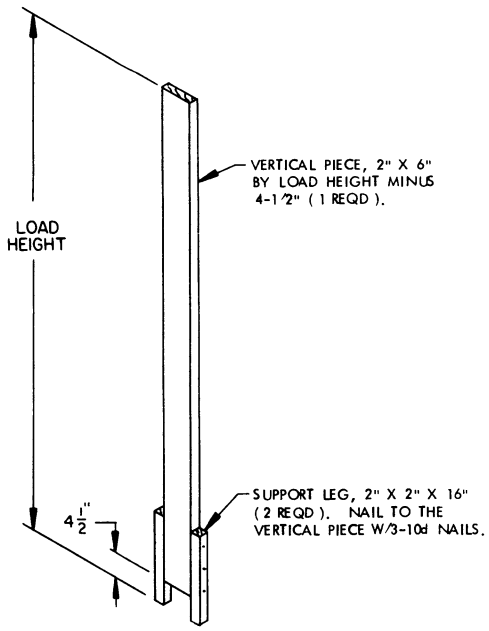
DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



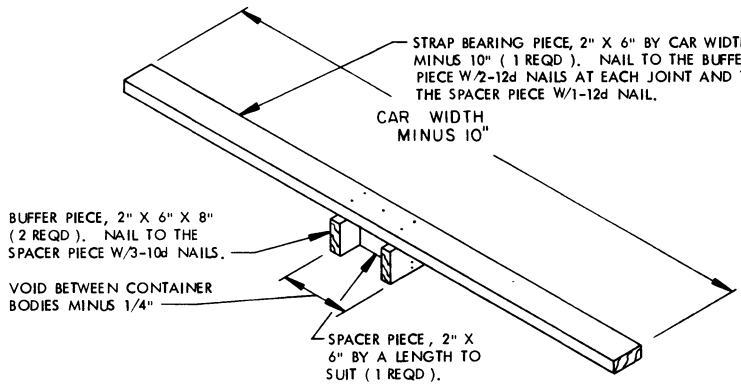
CENTER GATE H



END VIEW

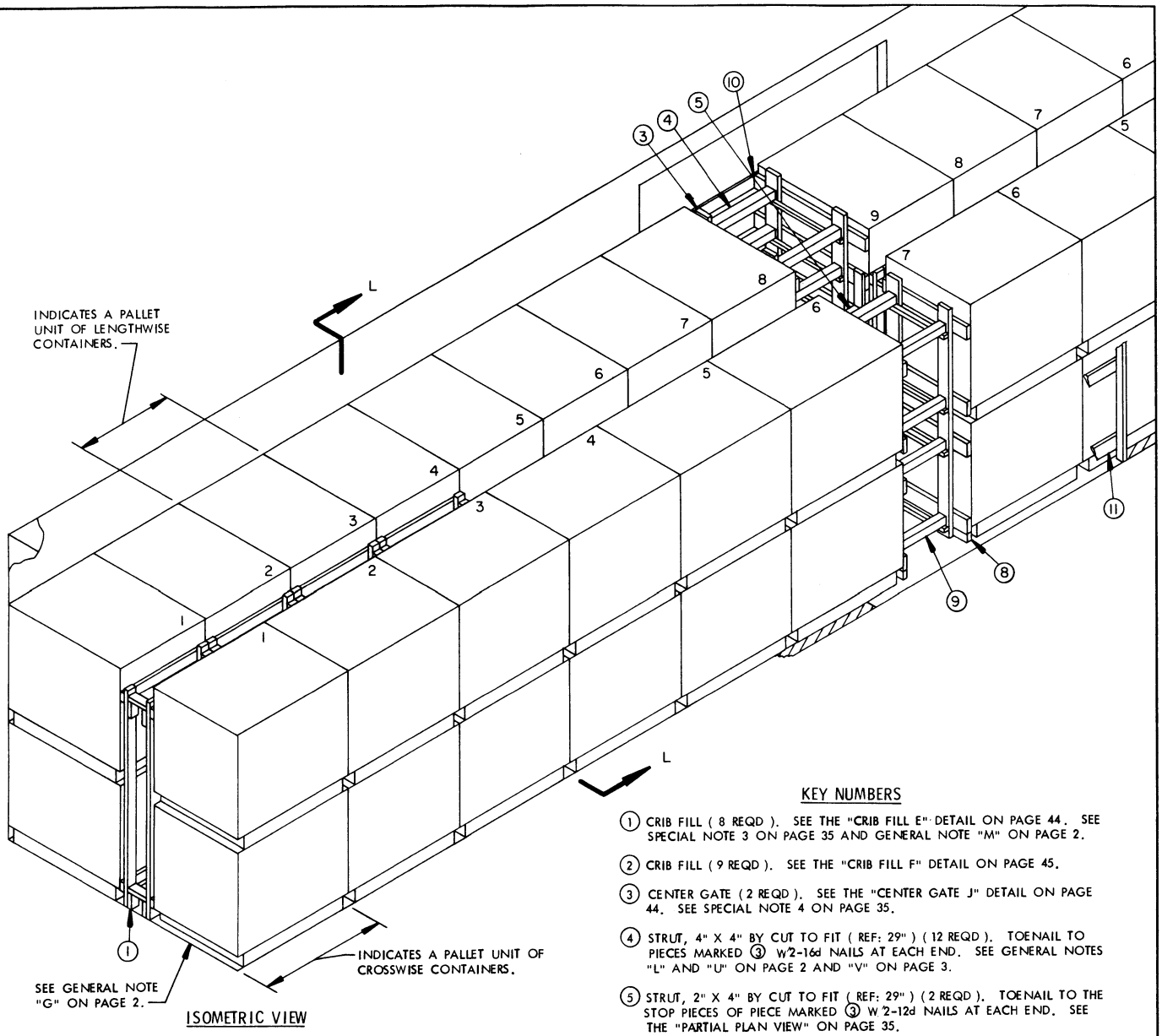


STRAPPING BOARD B

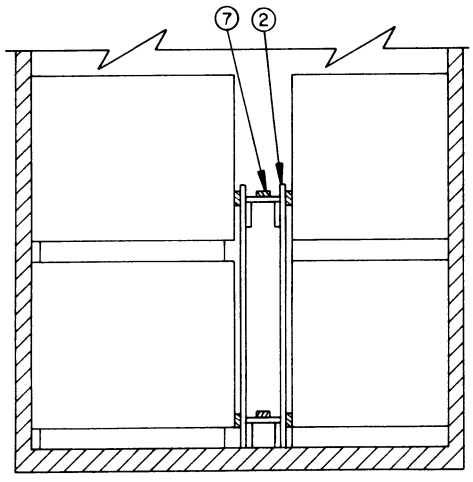


STRAPPING BOARD A

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)



ISOMETRIC VIEW



SECTION L-L

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL E" DETAIL ON PAGE 44. SEE SPECIAL NOTE 3 ON PAGE 35 AND GENERAL NOTE "M" ON PAGE 2.

(2) CRIB FILL (9 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 45.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE J" DETAIL ON PAGE 44. SEE SPECIAL NOTE 4 ON PAGE 35.

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

(5) STRUT, 2" X 4" BY CUT TO FIT (REF: 29") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECE MARKED (3) W 2-12d NAILS AT EACH END. SEE THE "PARTIAL PLAN VIEW" ON PAGE 35.

(6) SIDE BLOCKING FOR CENTER GATE "K", 2" X 4" X 18" (DOUBLED) (2 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 ON PAGE 35.

(7) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 48") (2 REQD) POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "F" ASSEMBLIES AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 35.

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

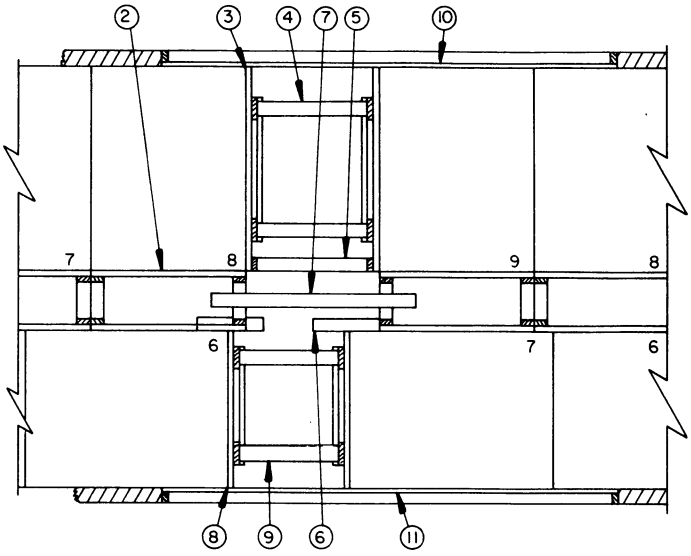
(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (8 REQD). TOENAIL TO PIECES MARKED (8) W/2-16d NAILS AT EACH END.

(10) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 46. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 5 ON PAGE 35.

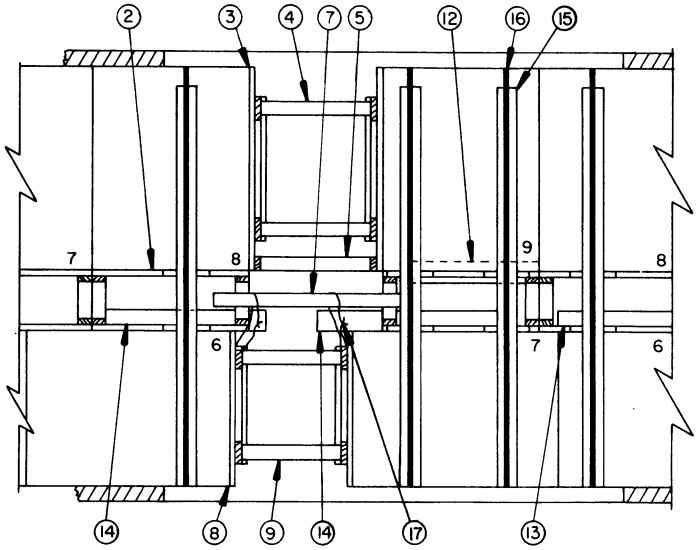
(11) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ON PAGE 35)

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
60-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

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, PIECE MARKED (18). 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.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	5	2
1" X 6"	80	40
2" X 2"	48	16
2" X 3"	38	19
2" X 4"	852	568
2" X 6"	154	154
4" X 4"	46	61
NAILS	NO. REQD	POUNDS
6d (2")	58	1/2
10d (3")	1,182	18
12d (3-1/4")	40	1/2
16d (3-1/2")	96	2

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 34 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,424 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY (40) UNITS, FOR A LADING WEIGHT OF 69,520 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4. 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 123 FOR GUIDANCE.

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 WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (10) AND (11) IN THE LOAD ON PAGE 34, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT AND KEY NUMBERS (12) THRU (17) BELOW FOR GUIDANCE.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 96. FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE CROSSWISE STACK NO. 7 AND THE LENGTHWISE STACK NO. 9. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED OR, THE ENTIRE TOP TIER CAN BE OMITTED.

7. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSSWISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

(KEY NUMBERS CONTINUED)

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

(12) SIDE-BLOCKING, 2" X 6" X 34" (DOUBLED) (1 REQD). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ABOVE.

(13) SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(14) SIDE-BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLETS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33. NOTE THAT THE LENGTH OF THE STRAP BEARING PIECE WILL BE CAR WIDTH MINUS 5".

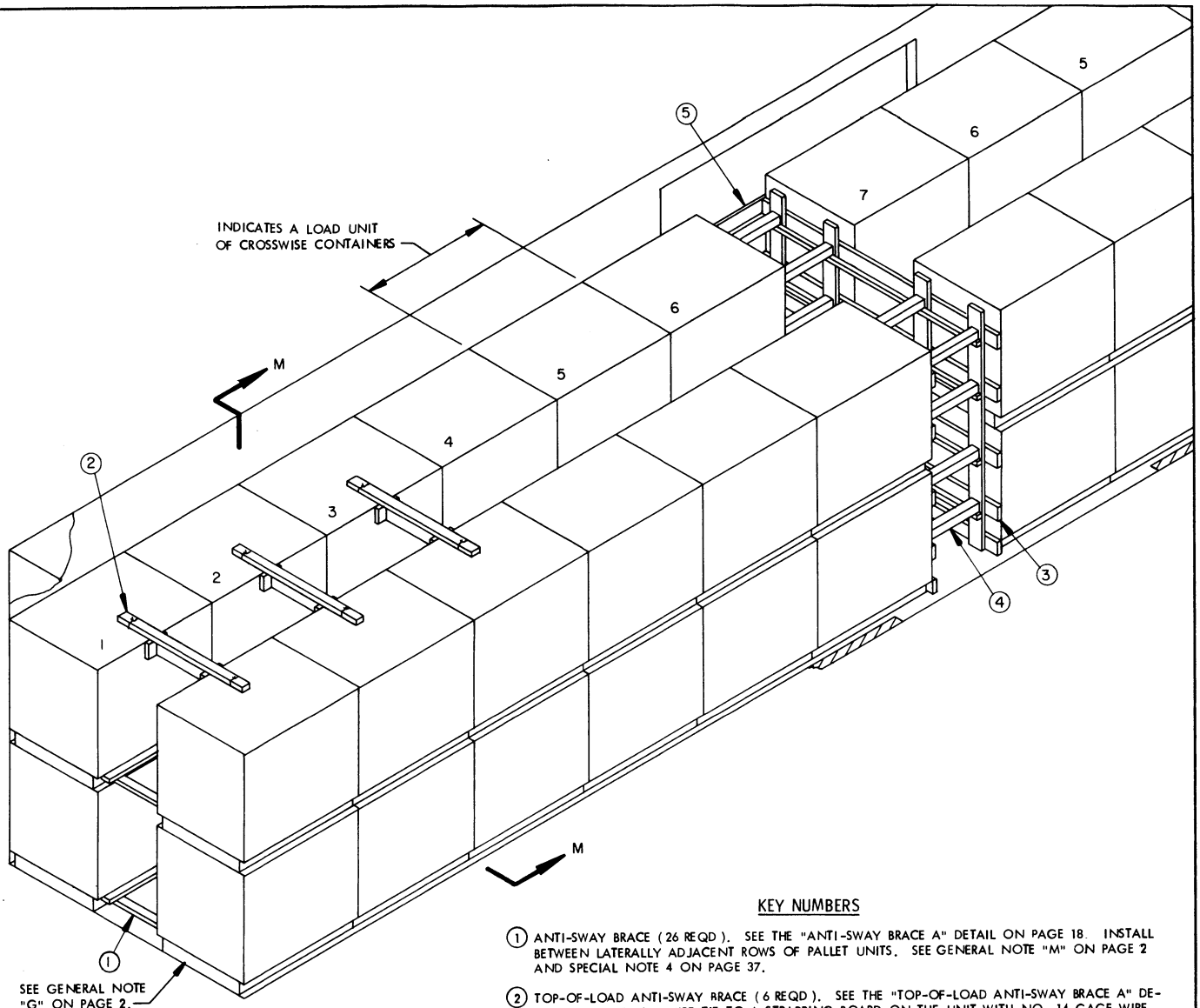
(16) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP. SEE GENERAL NOTE "O" ON PAGE 2.

(17) TIE WIRE, NO. 14 GAGE WIRE BY LENGTH AS REQUIRED (2 REQD). INSTALL SO AS TO ENCIRCLE A VERTICAL PIECE OF CENTER GATE "K" AND THE CRIB FILL RETAINER AS SHOWN.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	60	104,280 LBS
DUNNAGE		1,741 LBS
TOTAL WEIGHT		106,021 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

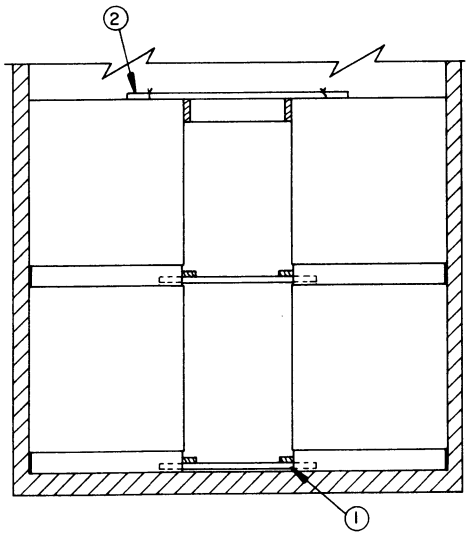
(1) ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 37.

(2) TOP-OF-LOAD ANTI-SWAY RRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 5 ON PAGE 37.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 46. SEE SPECIAL NOTES 6, 7, AND 10 ON PAGE 37.

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

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" ON PAGE 46. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 37.



SECTION M-M

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

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,472 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THRITY-TWO (32) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 55,616 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 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 36, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 123 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 36, INSTALL TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 45. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 1" X 4" AND 2" X 4" MATERIAL NAILED TO CENTER GATE "L", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 FOR GUIDANCE.

9. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA CR 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 36, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE.

10. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

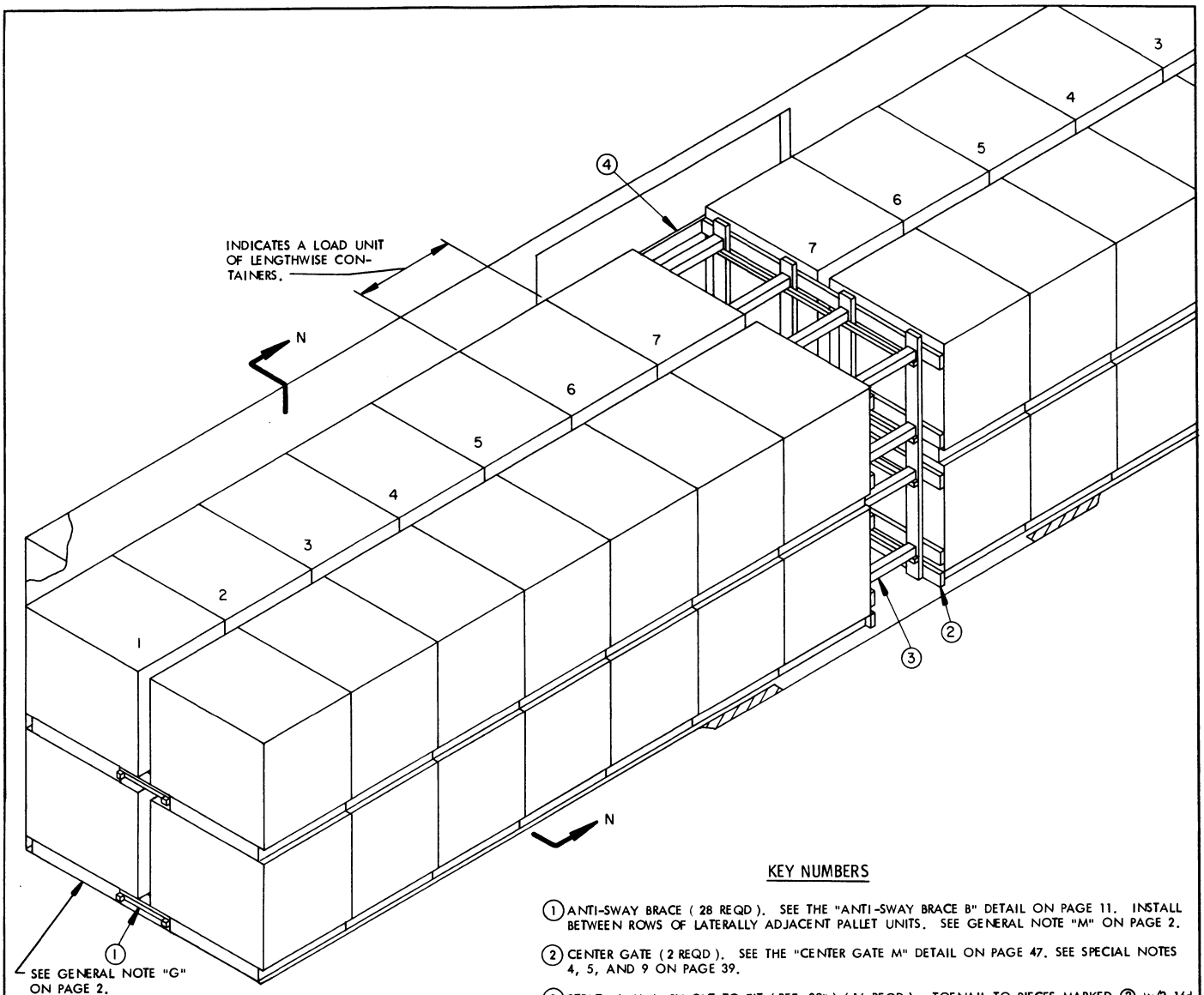
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	4	2
1" X 6"	80	40
2" X 2"	66	22
2" X 3"	32	16
2" X 4"	363	242
2" X 6"	176	176
4" X 4"	35	47
NAILS	**NO. REQD**	**POUNDS**
6d (2")	60	1/2
10d (3")	592	9
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE -- 18' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	52	90,376 LBS
DUNNAGE		1,103 LBS
	TOTAL WEIGHT	91,479 LBS

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



ISOMETRIC VIEW

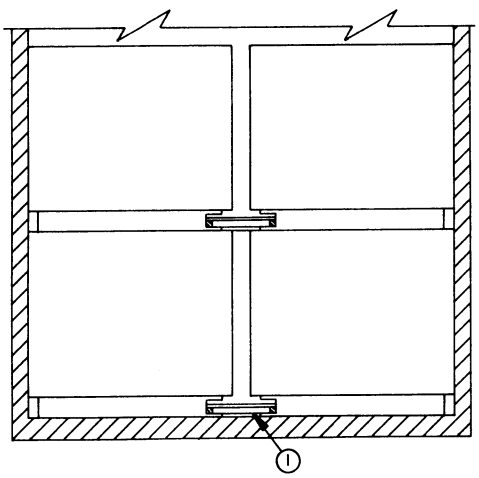
KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN ROWS OF LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(2) CENTER GATE (2 REQD). SEE THE "CENTER GATE M" DETAIL ON PAGE 47. SEE SPECIAL NOTES 4, 5, AND 9 ON PAGE 39.

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

(4) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 47. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 39.



SECTION N-N

CENTER GATE, PIECE MARKED (2), OMITTED FOR CLARITY.

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 38 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,472 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 118,184 POUNDS CAN BE LOADED. NOTE THAT SIX (6) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 60' CAR; SEE THE PHANTOMED STRUT LEDGERS AND HORIZONTAL PIECES WHICH MUST BE ADDED TO THE GATES, AS SHOWN ON THE "CENTER GATE M" DETAIL ON PAGE 47.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

4. 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 123 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE M" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 38, INSTALL TWO (2) "CENTER GATES J" AS SHOWN ON PAGE 44. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123. OMIT THE STOP PIECE ON "CENTER GATE J".

6. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "M" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ IN THE LOAD ON PAGE 38, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

9. IF A FULL LOAD IS TO BE SHIPPED IN A 60' LONG CAR, SIX (6) STRUTS WILL BE REQUIRED PER ROW/TIER. TO ACCOMMODATE THESE ADDITIONAL STRUTS, A STRUT LEDGER AND HORIZONTAL PIECE MUST BE ADDED TO CENTER GATE "M" FOR EACH TIER AS SHOWN BY THE PHANTOMED LINES ON THE DETAIL ON PAGE 47.

10. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	49	17
1" X 6"	80	40
2" X 2"	232	77
2" X 3"	38	19
2" X 4"	35	24
2" X 6"	159	159
4" X 4"	39	52
NAILS	**NO. REQD**	**POUNDS**
6d (2")	440	2-1/2
10d (3")	400	6
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2

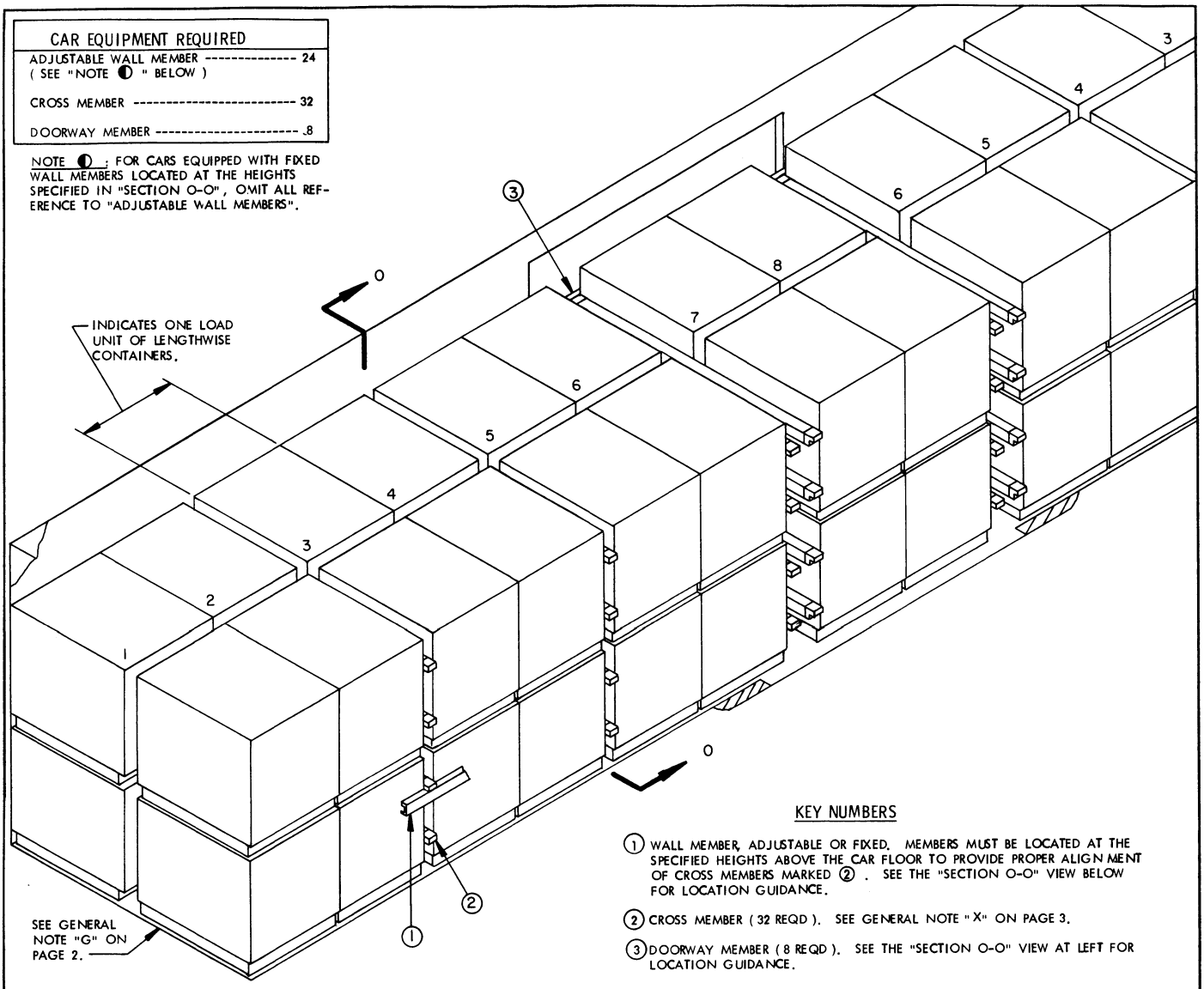
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	56	97,328 LBS
DUNNAGE		787 LBS
	TOTAL WEIGHT	98,115 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	24
CROSS MEMBER	32
DOORWAY MEMBER	8

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



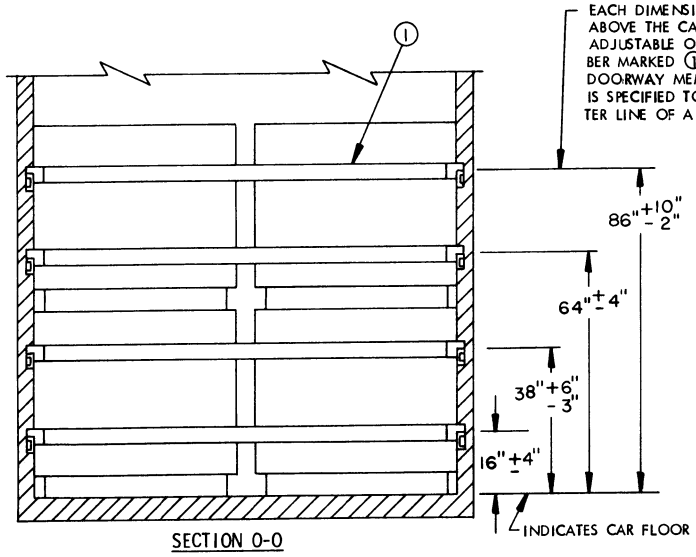
ISOMETRIC VIEW

KEY NUMBERS

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

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

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



SECTION O-O

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
56-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. SEE GENERAL NOTE "D" ON PAGE 2.

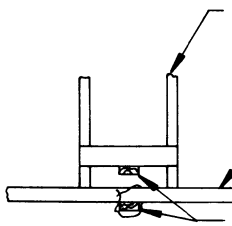
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 40 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,520 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD UNIT BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

5. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED ② ON PAGE 26 AND THE "STOP DETAIL" AT LEFT.

6. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE



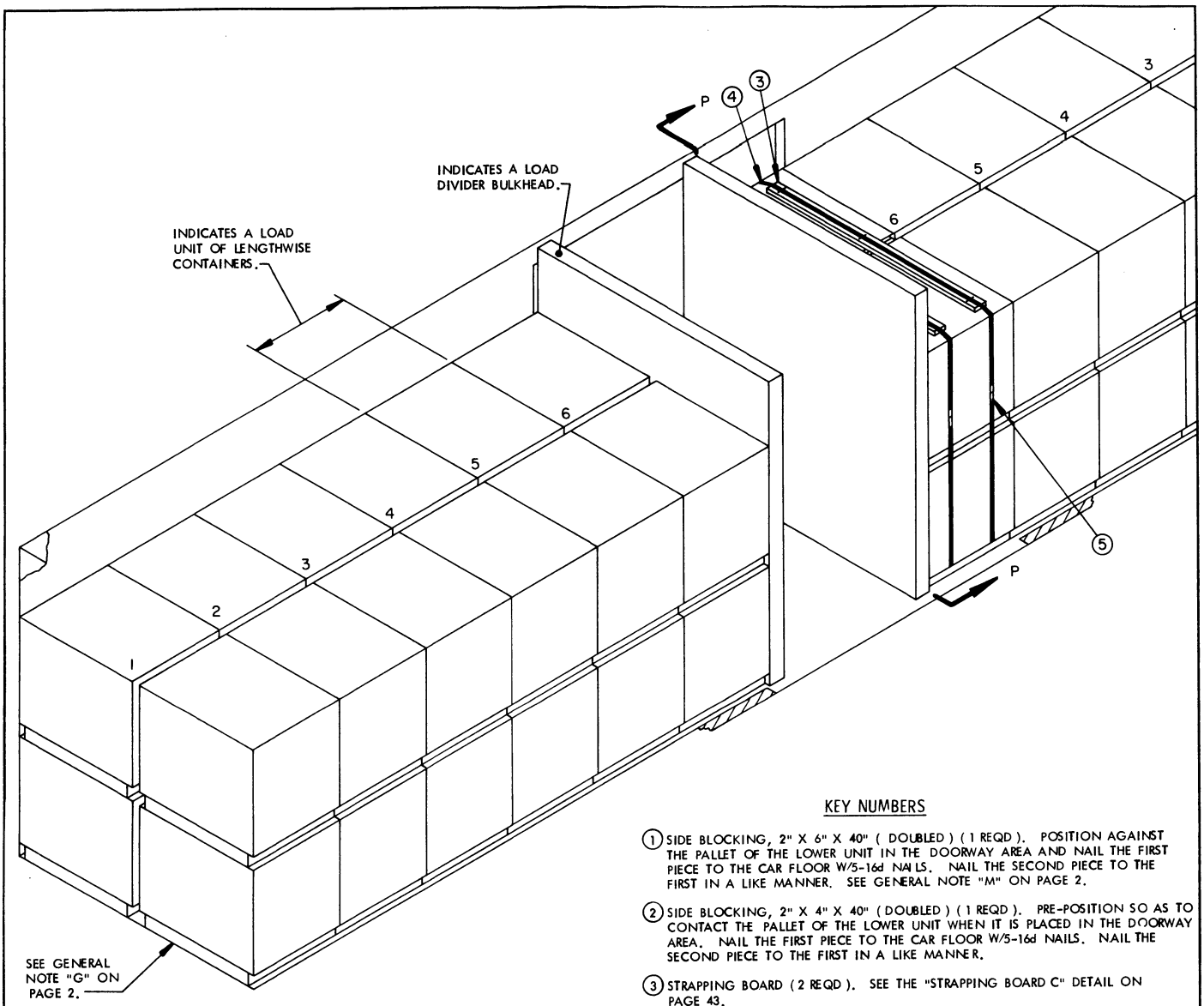
STOP DETAIL

THE ABOVE DETAIL DEPICTS THE METHOD OF INSTALLING STOP PIECES FOR THE ANTI-SWAY BRACES WHEN USING A BOX CAR WHICH IS 9'-4" OR MORE IN WIDTH.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	56	97,328 LBS

FLAT 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

KEY NUMBERS

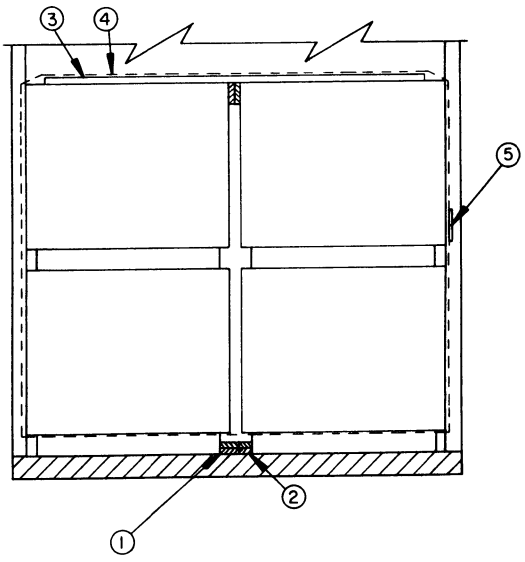
(1) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET OF THE LOWER UNIT IN THE DOORWAY AREA AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "M" ON PAGE 2.

(2) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (1 REQD). PRE-POSITION SO AS TO CONTACT THE PALLET OF THE LOWER UNIT WHEN IT IS PLACED 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.

(3) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 43.

(4) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARDS W/3 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 43.

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



SECTION P-P

FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

52-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

PROJECT FSA 43B/9-63

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 "AA" THRU "EE" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 118,184 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" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 76,472 POUNDS, WHEN USING THE DEPICTED PROCEDURES.

3. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT LENGTH. DOORWAY PROTECTION WILL CONSIST OF NAILED FLOORLINE BLOCKING, STRAPPING BOARD, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THAN HALF OF THE UNIT LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 38 MAY BE USED.

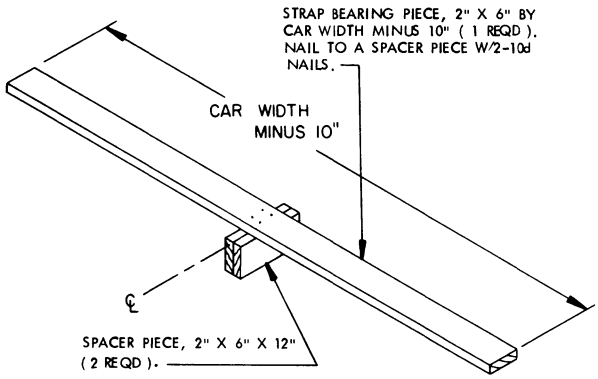
4. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑥ IN THE LOAD ON PAGE 14, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD ON EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SEVEN (7) LOAD UNITS.

5. 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 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

6. IF PALLET UNITS WHICH DO NOT CONATIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

8. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED ① ON PAGE 70.



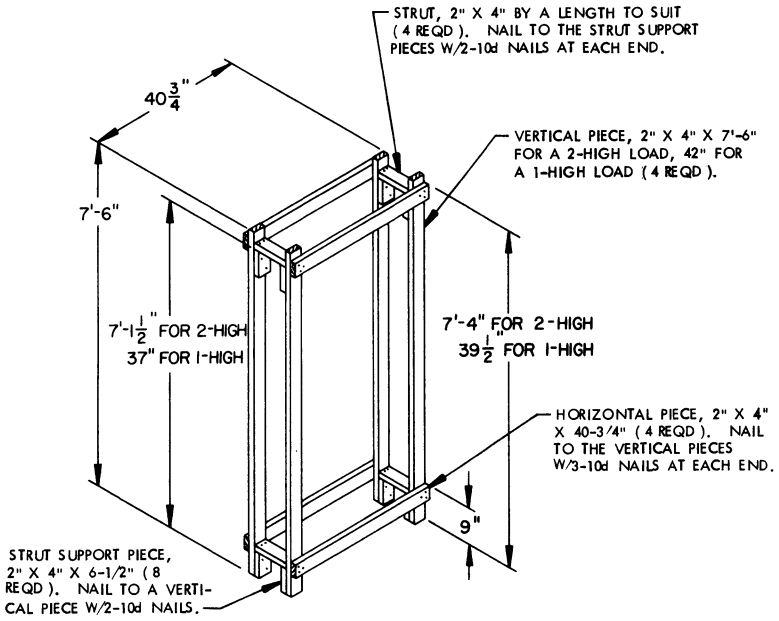
STRAPPING BOARD C

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4" 2" X 6"	21 28	14 28
NAILS	NO. REQD	POUNDS
10d (3") 16d (3-1/2")	8 34	NIL 3/4
STRAP, STEEL, 1-1/4" X .031" OR .035" -----36' REQD-----5 LBS SEAL FOR 1-1/4" STRAP---------- 4 REQD------ 1/2 LB STAPLE FOR 1-1/4" STRAP----------6 REQD-----NIL		

LOAD AS SHOWN

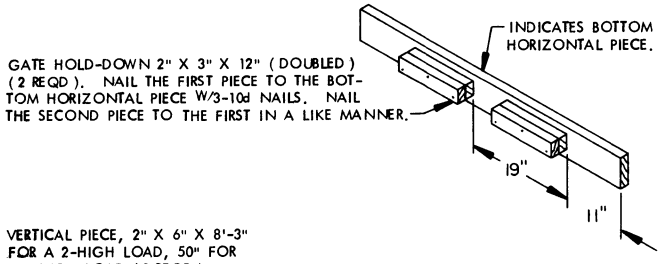
ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT----------	52 ----------	90,376 LBS
DUNNAGE ----------		90 LBS
TOTAL WEIGHT ------		90,466 LBS

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

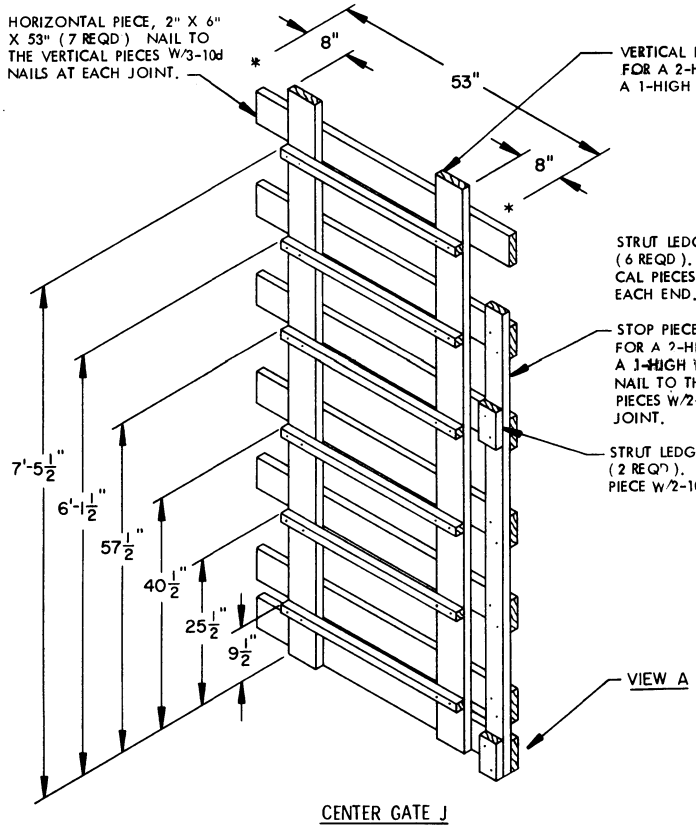


CRIB FILL E

CRIB FILL ASSEMBLIES "E" (ABOVE) AND "F" (PAGE 45) 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.

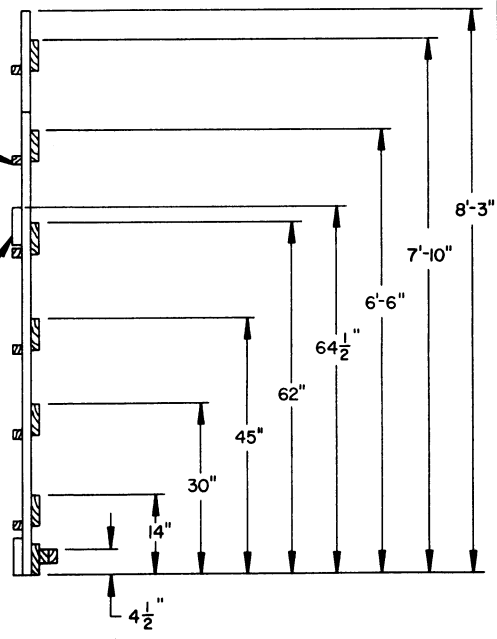


VIEW A



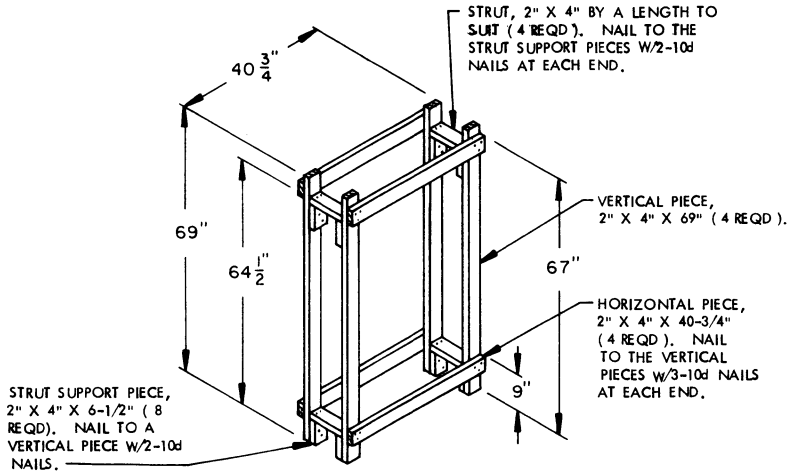
CENTER GATE J

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED



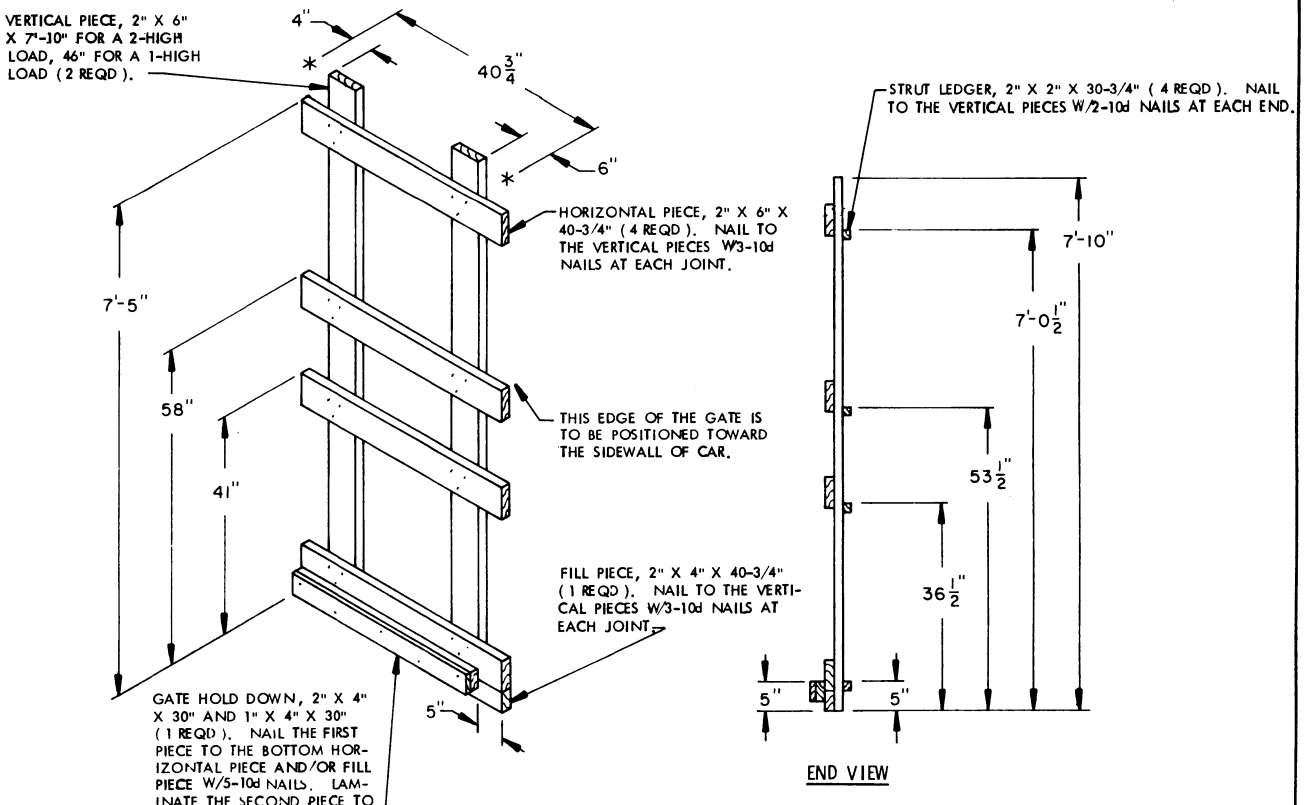
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



CRIB FILL F

CRIB FILL "F" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "E" (PAGE 44) THROUGHOUT THE LENGTH OF THE LOAD.

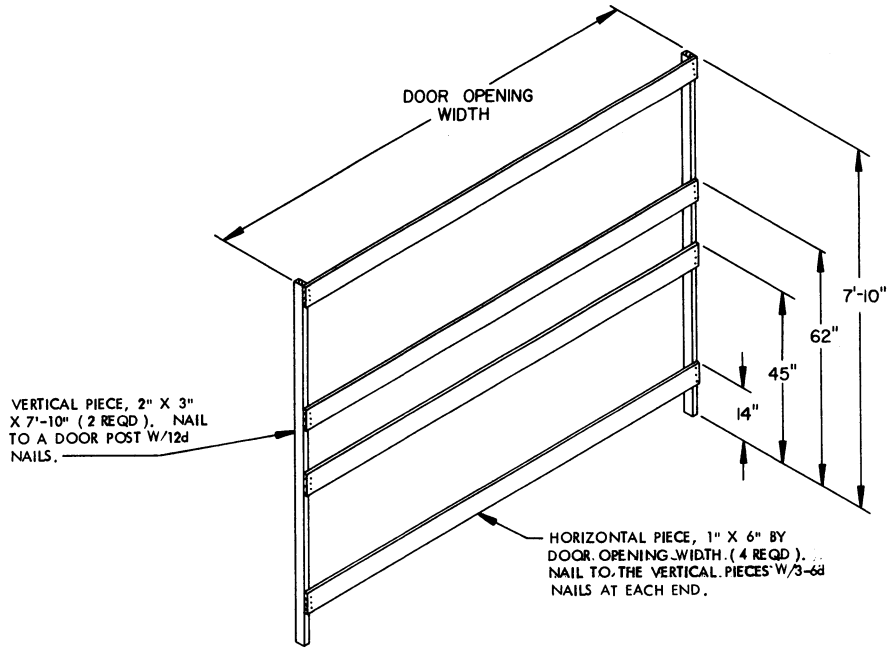


END VIEW

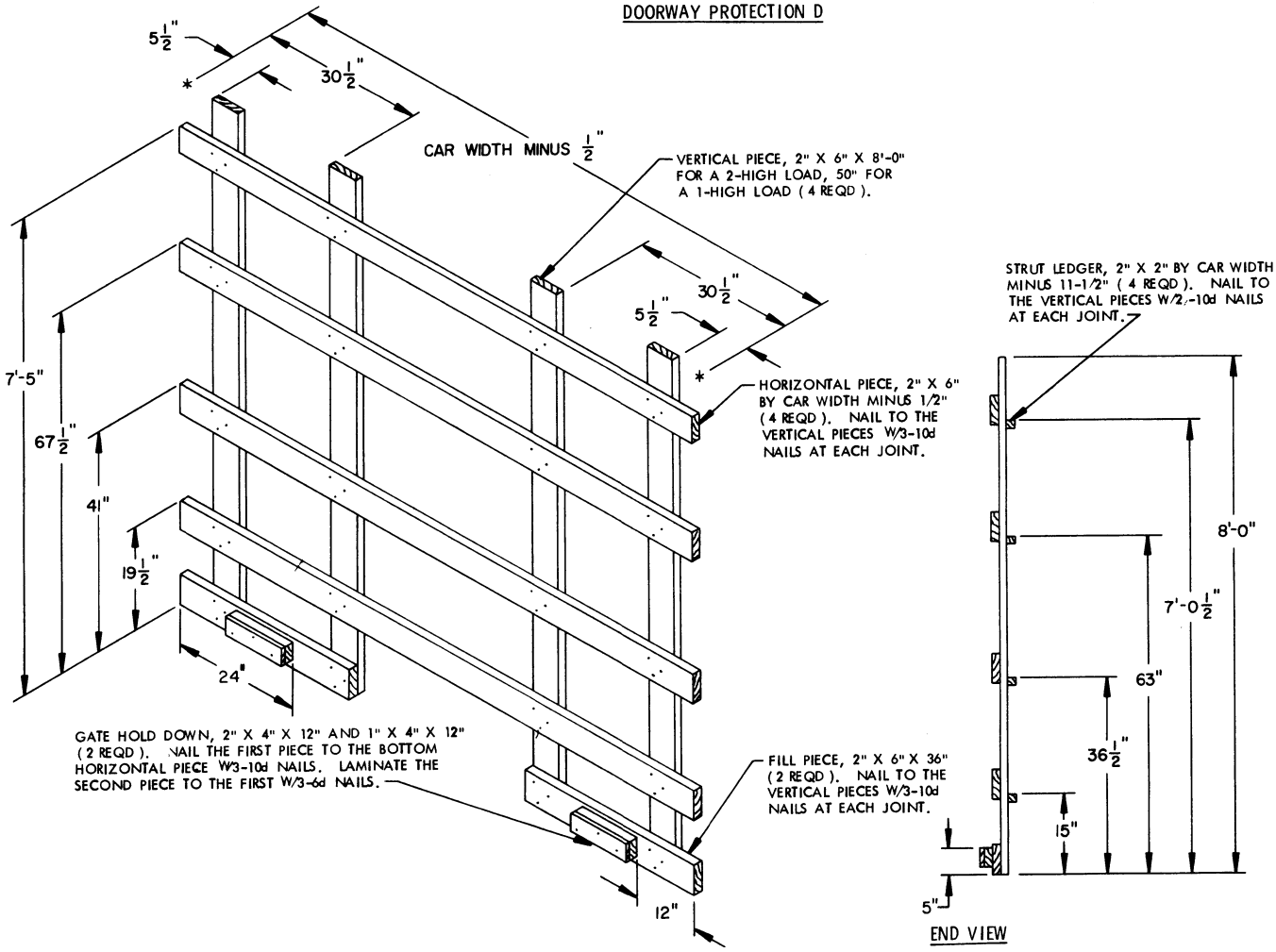
CENTER GATE K

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



DOORWAY PROTECTION D

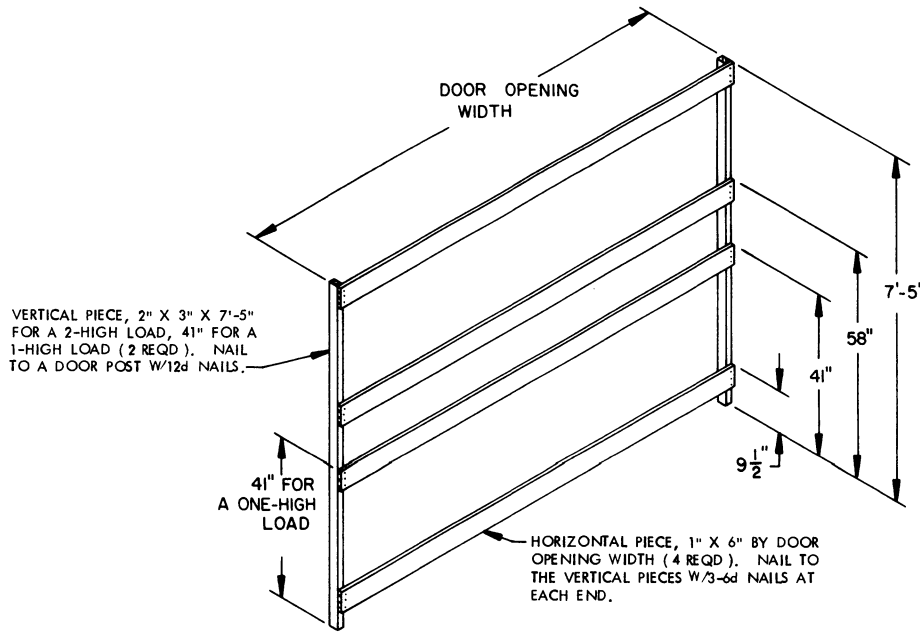


CENTER GATE L

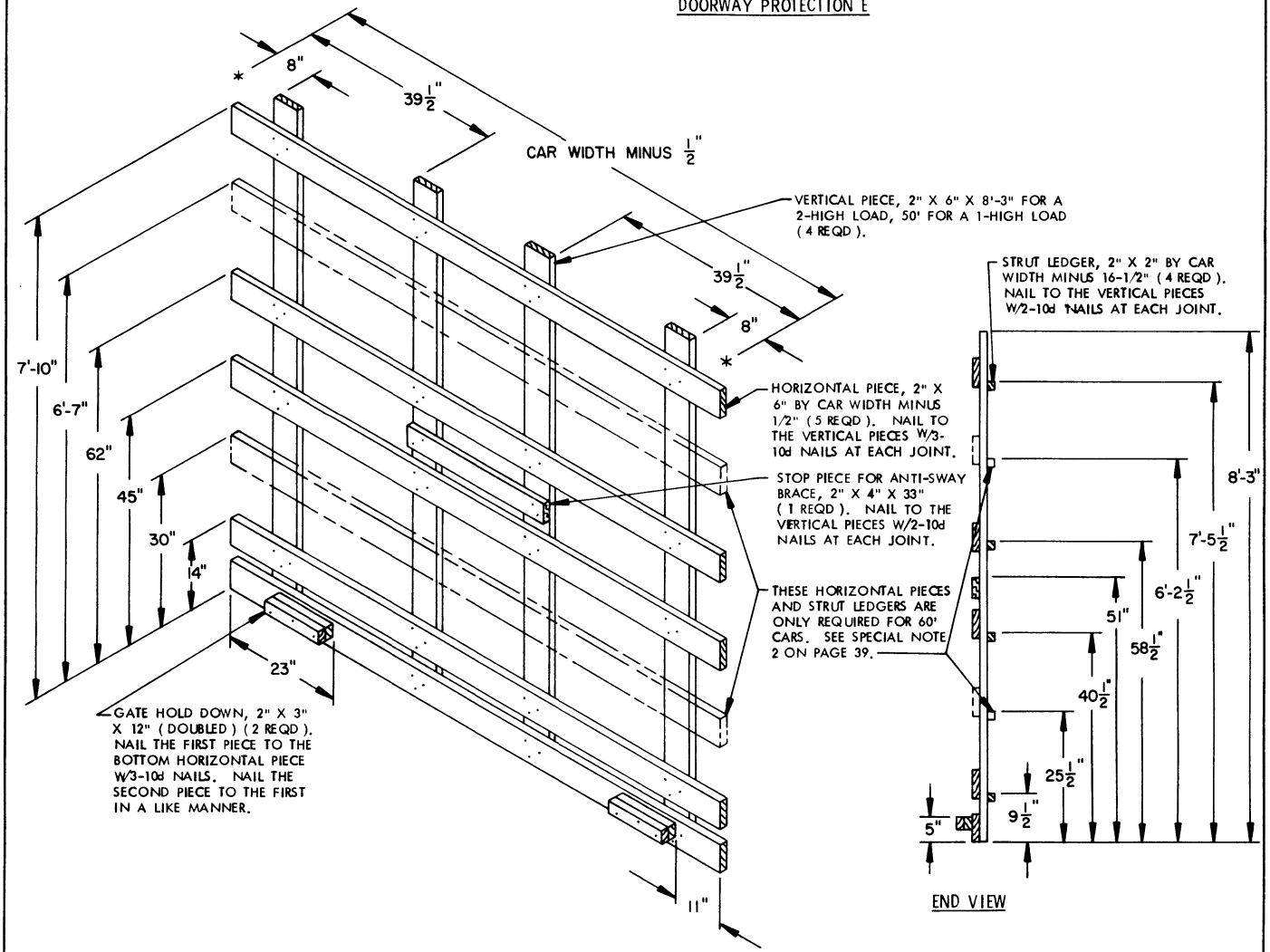
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

PROJECT FSA 43B/9-63



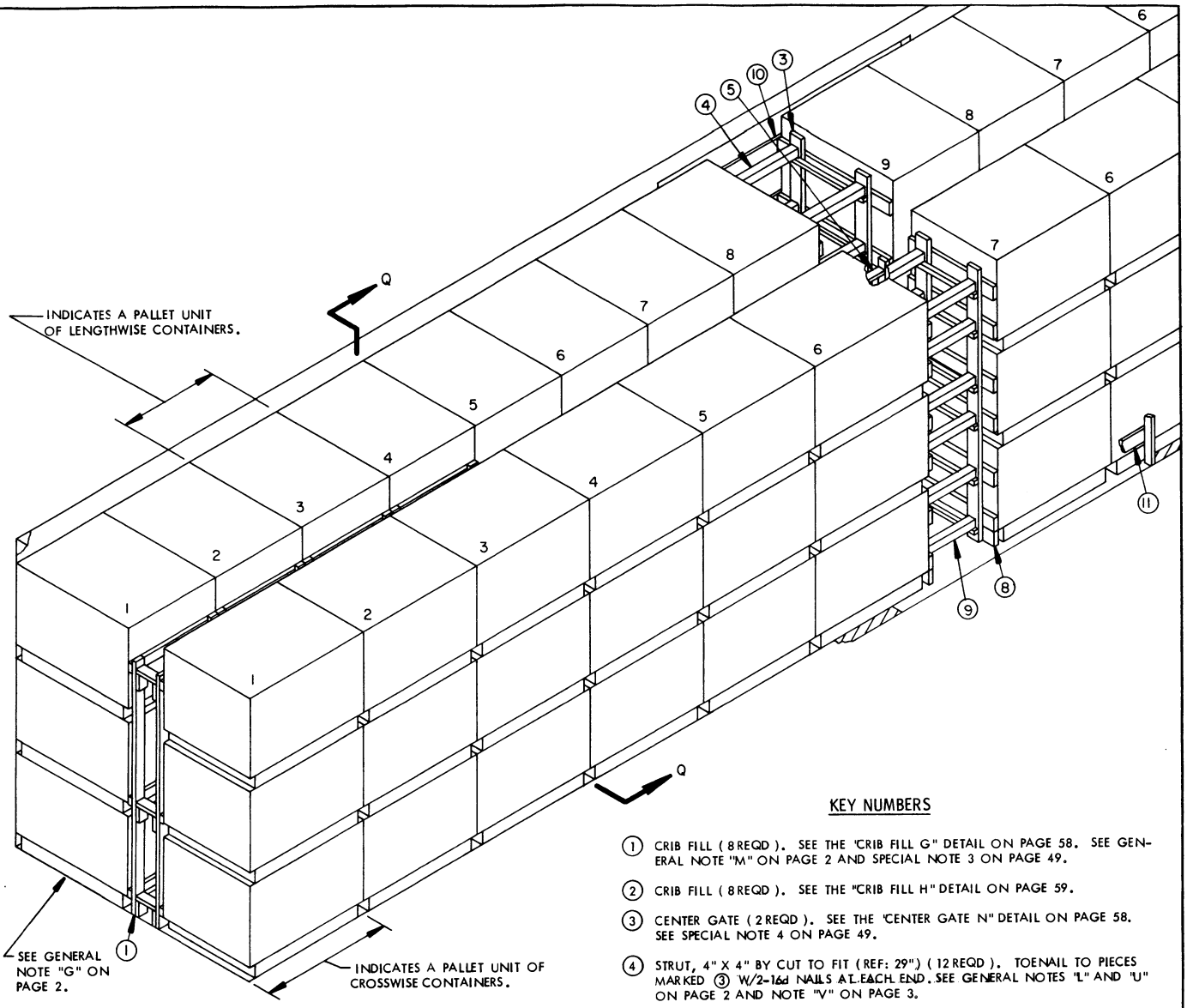
DOORWAY PROTECTION E



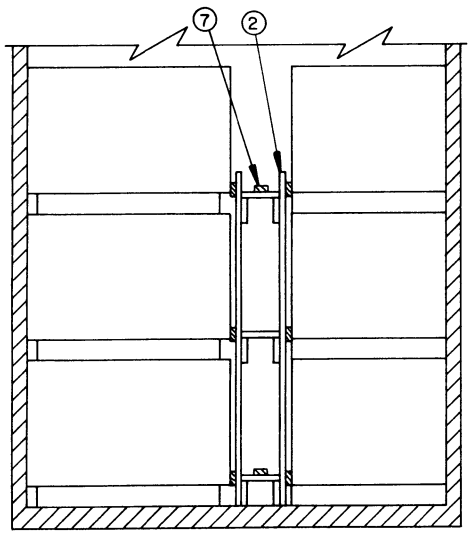
END VIEW

CENTER GATE M

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION Q-Q

KEY NUMBERS

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

(2) CRIB FILL (8 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 59.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE N" DETAIL ON PAGE 58. SEE SPECIAL NOTE 4 ON PAGE 49.

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

(5) STRUT, 2" X 4" BY CUT TO FIT (REF: 29") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (3) W/2-12d NAILS AT EACH END.

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

(7) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 48") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "H" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d. NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 49.

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

(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 26") (12 REQD). TOENAIL TO PIECES MARKED (8) W/2-16d NAILS AT EACH END.

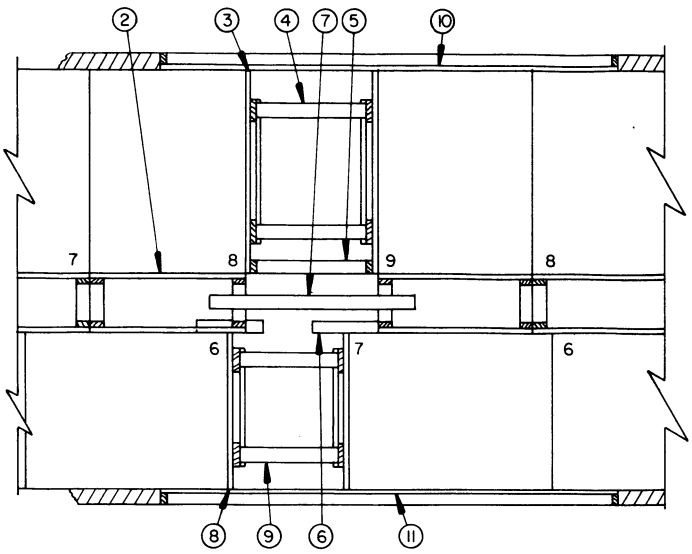
(10) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 60. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 5 ON PAGE 49.

(11) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 61. NAIL TO THE DOOR POSTS W/12d NAILS.

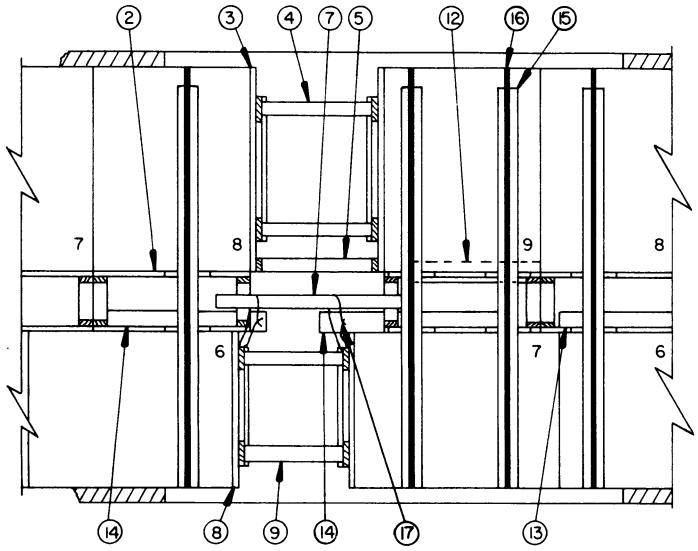
(CONTINUED ON PAGE 49)

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

PROJECT FSA 43B/9-63



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG 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, PIECE MARKED (16). 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.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CONVENTICNAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 48 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SEVENTY-TWO (72) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,832 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY (60) UNITS FOR A LADING WEIGHT OF 79,860 POUNDS CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1), MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. 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 123 FOR GUIDANCE.
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 WIDTH OR LENGTH. THE WOODEN GATE TYPE PROTECTION, SHOWN AS PIECES MARKED (10) AND (11) IN THE LOAD ON PAGE 48, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG TYPE DOORS" AT LEFT AND KEY NUMBERS (12) THRU (17) BELOW FOR GUIDANCE.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 96. SIX (6) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACK NUMBERED 9, THE CROSSWISE STACK NUMBERED 7 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED, OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED.
7. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSS WISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.
8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

(KEY NUMBERS CONTINUED)

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

(12) SIDE BLOCKING, 2" X 6" 34" (DOUBLED) (1 REQD). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ABOVE.

(13) SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(14) SIDE BLOCKING, 2" X 6" X 48" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLETS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33. NOTE THAT THE LENGTH OF THE STRAP BEARING PIECE WILL BE CAR WIDTH MINUS 5".

(16) DOORWAY PROTECTION STRAP, 1-1/4" X .031 OR .035" BY 39'-6" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP. SEE GENERAL NOTE "O" ON PAGE 2.

(17) TIE WIRE, NO. 14 GAGE WIRE BY LENGTH AS REQUIRED (2 REQD). INSTALL SO AS TO ENCIRCLE A VERTICAL PIECE OF CENTER GATE "O" AND THE CRIB FILL RETAINER AS SHOWN.

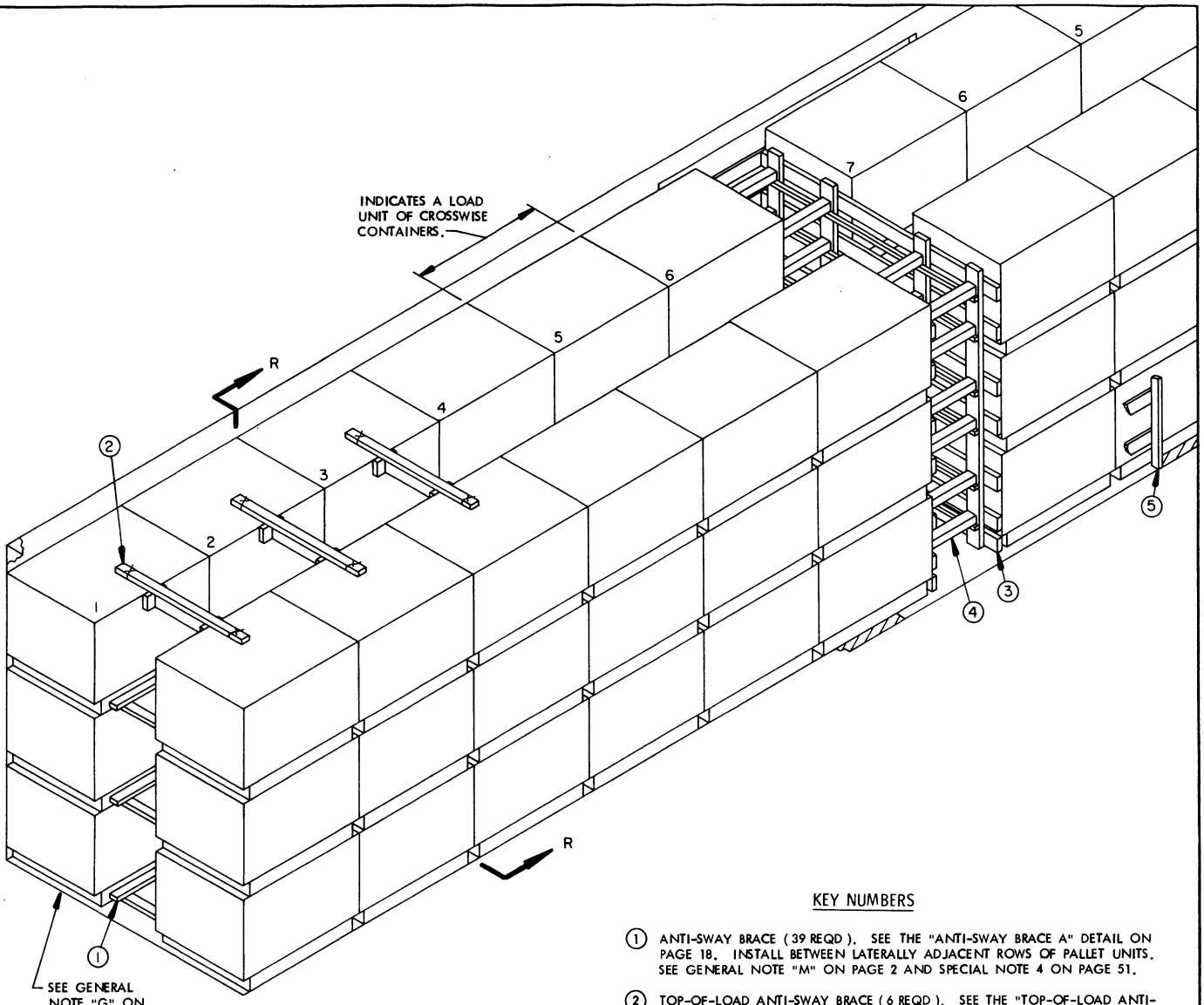
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	5	2
1" X 6"	120	60
2" X 2"	73	24
2" X 3"	44	22
2" X 4"	1,054	703
2" X 6"	201	201
4" X 4"	55	73
NAILS	**NO. REQUIRED**	**POUNDS**
6d (2")	82	1/2
10d (3")	1,730	26-1/2
12d (3-1/4")	40	3/4
16d (3-1/2")	104	2-1/4

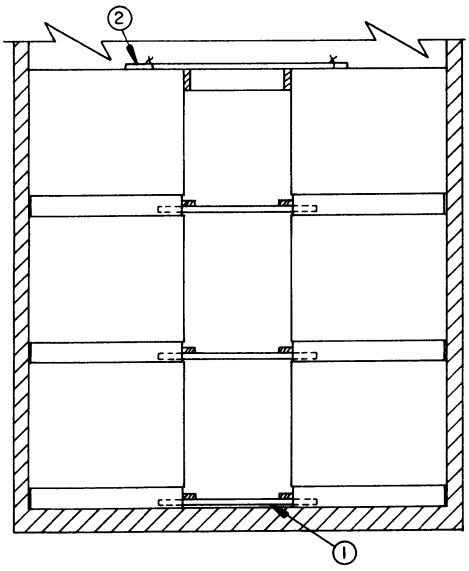
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	90	119,790 LBS
DUNNAGE		2,200 LBS
TOTAL WEIGHT		121,990 LBS

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



ISOMETRIC VIEW



SECTION R-R

CENTER GATE, PIECE MARKED ③, OMITTED FOR CLARITY.

KEY NUMBERS

① ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 51.

② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 5 ON PAGE 51.

③ CENTER GATE (2 REQD). SEE THE "CENTER GATE P" DETAIL ON PAGE 60. SEE SPECIAL NOTES 6, 7, AND 10 ON PAGE 51.

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

⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION F" DETAIL ON PAGE 60. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 51.

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 50 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,846 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FORTY-EIGHT (48) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 63,888 POUNDS, CAN BE OUTLOADED IN A 40-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 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 BY ONE-HALF OR MORE OF THE STACK WIDTH ON EITHER SIDE OF THE CAR.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 50, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 123 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 50, INSTALL TWO (2) "CENTER GATES O" AS SHOWN ON PAGE 59. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123.

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" MATERIAL NAILED TO CENTER GATE "P", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 50, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE.

10. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECE MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE

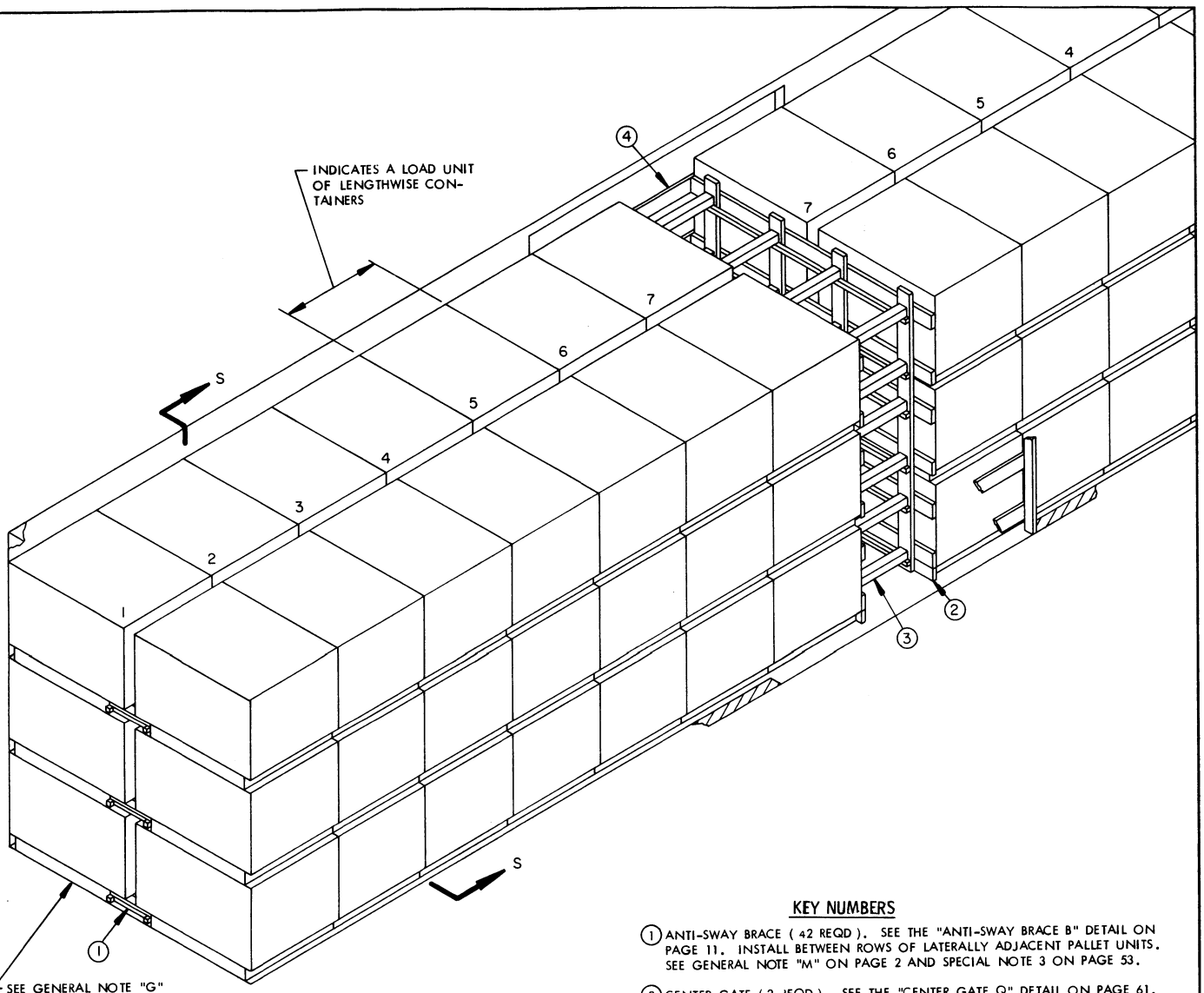
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	94	31
2" X 3"	48	24
2" X 4"	585	390
2" X 6"	230	230
4" X 4"	52	69
NAILS	**NO. REQD**	**POUNDS**
6d (2")	36	1/4
10d (3")	820	12-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2
WIRE, NO. 14 GAGE --- 24' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	78	103,818 LBS
DUNNAGE		1,624 LBS
TOTAL WEIGHT		105,442 LBS

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



ISOMETRIC VIEW

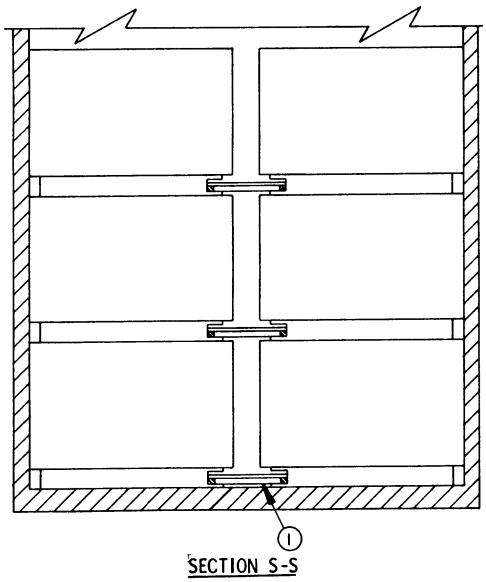
KEY NUMBERS

(1) ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN ROWS OF LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 53.

(2) CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 61. SEE SPECIAL NOTES 4, 5, AND 6 ON PAGE 53.

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

(4) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 61 . NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 53.



SECTION S-S

CENTER GATE, PIECE MARKED (2), OMITTED FOR CLARITY.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH A 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 52 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,846 POUNDS, CAN BE PLACED IN A 40-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, ONE-HUNDRED-TWO (102) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 135,762 POUNDS CAN BE LOADED.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

4. 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 123 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE Q", SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 52, INSTALL TWO (2) "CENTER GATES N" AS SHOWN ON PAGE 58. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 123. OMIT THE STOP PIECE ON "CENTER GATE N".

6. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" HOLD DOWNS ON CENTER GATES "Q" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ IN THE LOAD ON PAGE 52, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

9. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	84	30
1" X 6"	120	60
2" X 2"	35	12
2" X 3"	40	20
2" X 4"	77	52
2" X 6"	209	209
4" X 4"	58	77
NAILS	NO. REQD	POUNDS
6d (2")	660	4
10d (3")	612	9-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2

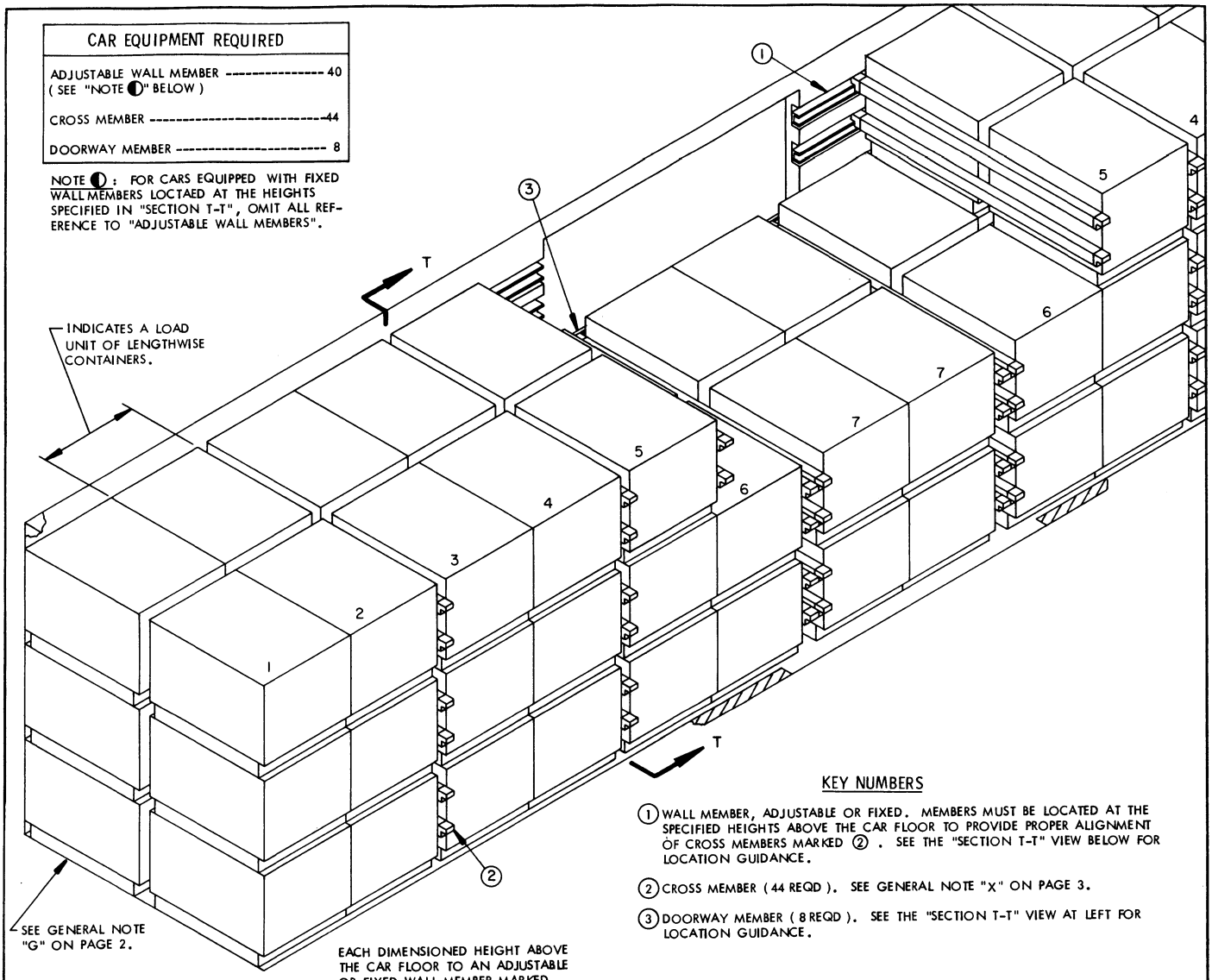
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	84	111,804 LBS
DUNNAGE		936 LBS
	TOTAL WEIGHT	112,740 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐" BELOW)	40
CROSS MEMBER	44
DOORWAY MEMBER	8

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



ISOMETRIC VIEW

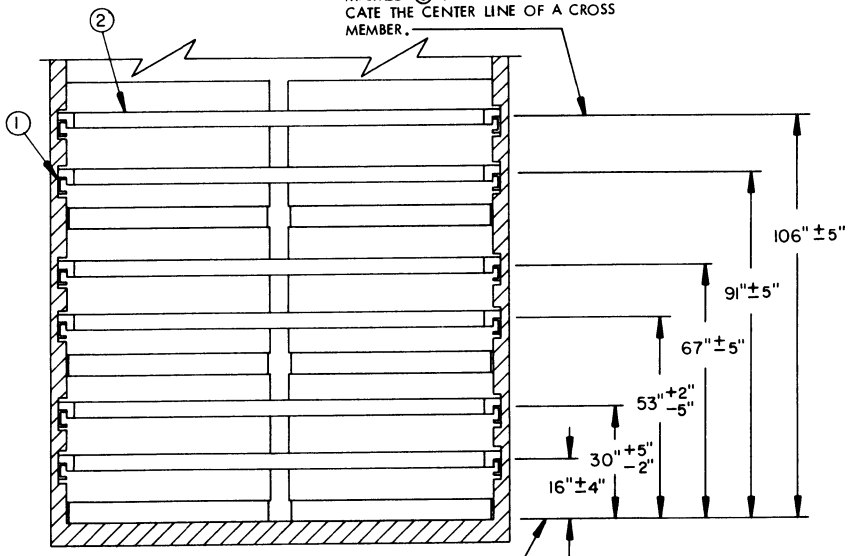
KEY NUMBERS

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

(2) CROSS MEMBER (44 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

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

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED (1) AND/OR A DOORWAY MEMBER MARKED (3) IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION T-T

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

PROJECT FSA 43B/9-63

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. SEE GENERAL NOTE "D" ON PAGE 2.

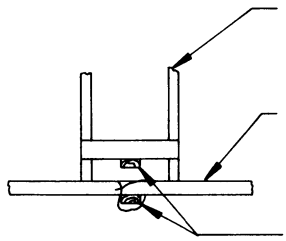
2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 54 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,212 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD UNIT BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

5. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED ② ON PAGE 26 AND THE "STOP DETAIL" AT LEFT.

6. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.



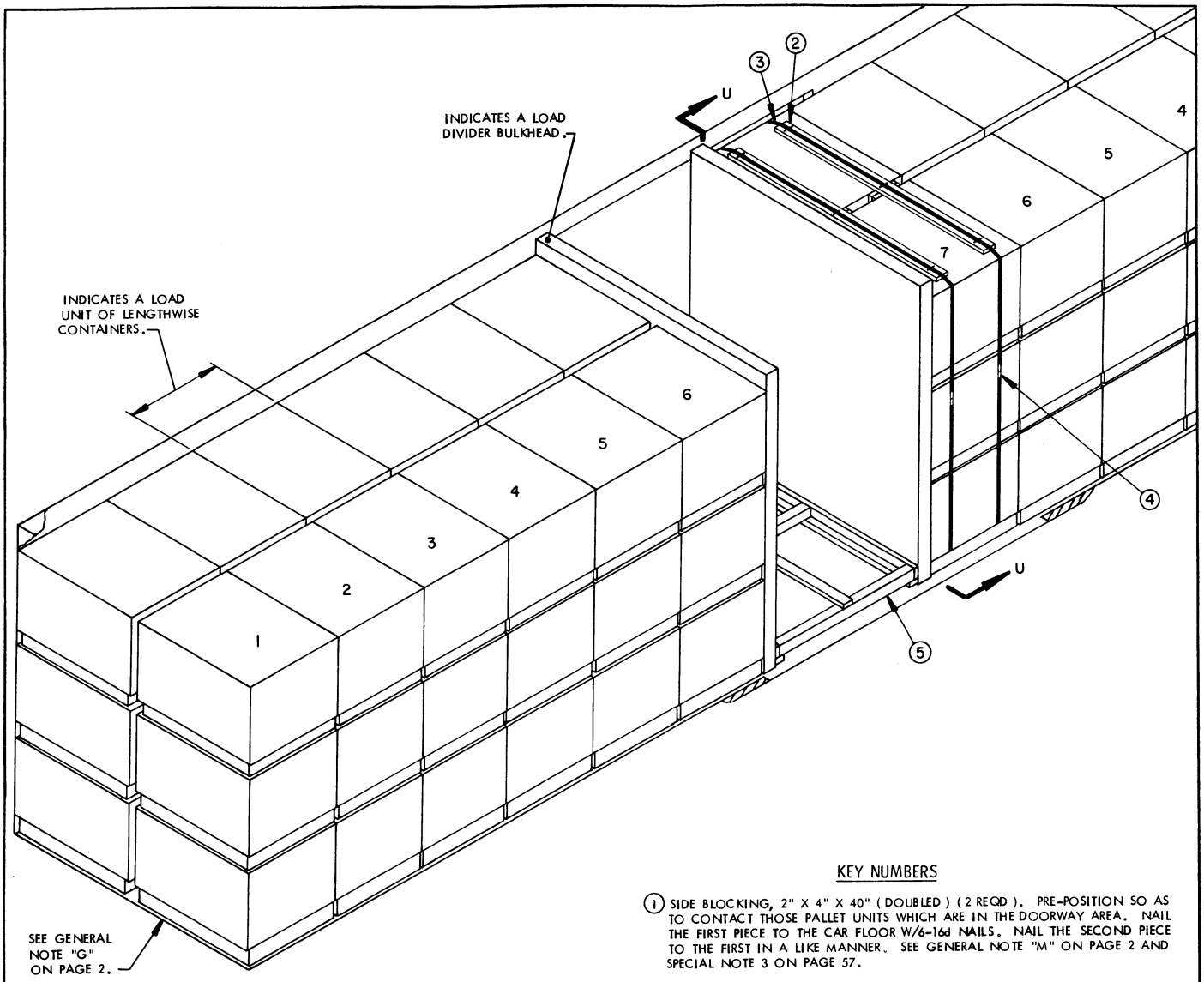
STOP DETAIL

THE ABOVE DETAIL DEPICTS THE METHOD OF INSTALLING STOP PIECES FOR THE ANTI-SWAY BRACES WHEN USING A BOX CAR WHICH IS 9'-4" OR MORE IN WIDTH.

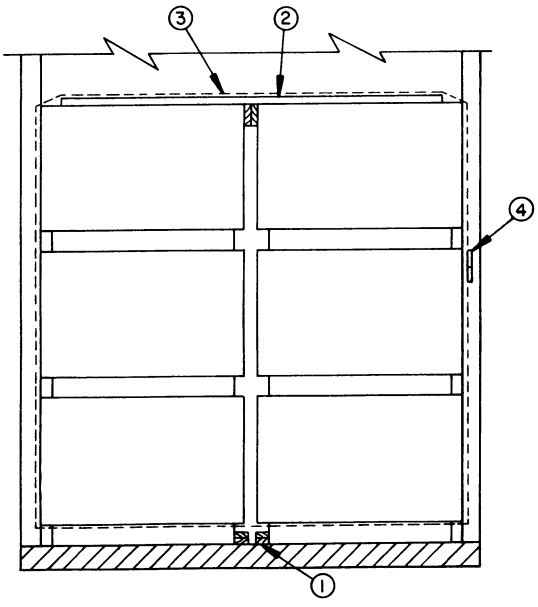
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	76	101,156 LBS

FLAT 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 U-U

KEY NUMBERS

(1) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (2 REQD). PRE-POSITION SO AS TO CONTACT THOSE PALLET UNITS WHICH ARE IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 57.

(2) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 43.

(3) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 38'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 57.

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

(5) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 129. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 4 ON PAGE 57.

FLAT 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:

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 WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF ONE-HUNDRED-TWO (102) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 135,762 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SIXTY-SIX (66) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 87,846 POUNDS WHEN USING THE DEPICTED PROCEDURES.

3. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT WIDTH. DOORWAY PROTECTION WILL CONSIST OF NAILED FLOORLINE BLOCKING, STRAPPING BOARD, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THAN HALF OF THE UNIT LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 52 MAY BE USED.

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

5. 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 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

6. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

8. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED ① ON PAGE 70.

BILL OF MATERIAL

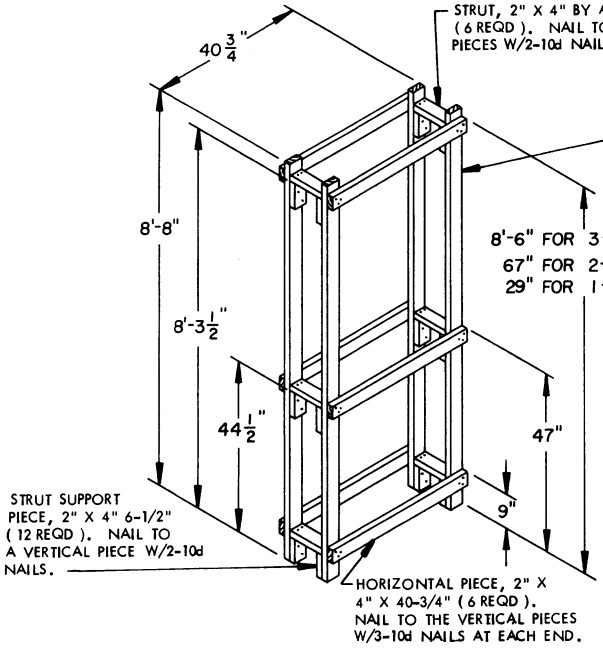
LUMBER	LINEAR FEET	BOARD FEET
1" X 8"	18	12
2" X 4"	50	33
2" X 6"	21	21
4" X 4"	40	53
NAILS	**NO. REQD**	**POUNDS**
6d (2")	18	1/4
10d (3")	26	1/2
12d (3-1/4")	16	1/2
16d (3-1/2")	24	3/4

STRAP, 1-1/4" X .031" OR .035" ------ 76' REQD ---- 11 LBS
SEAL FOR 1-1/4" STRAP ---------- 4 REQD ----- NIL
STAPLE FOR 1-1/4" STRAP ---------- 6 REQD ----- NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	78	103,818 LBS
DUNNAGE		251 LBS
TOTAL WEIGHT		104,069 LBS

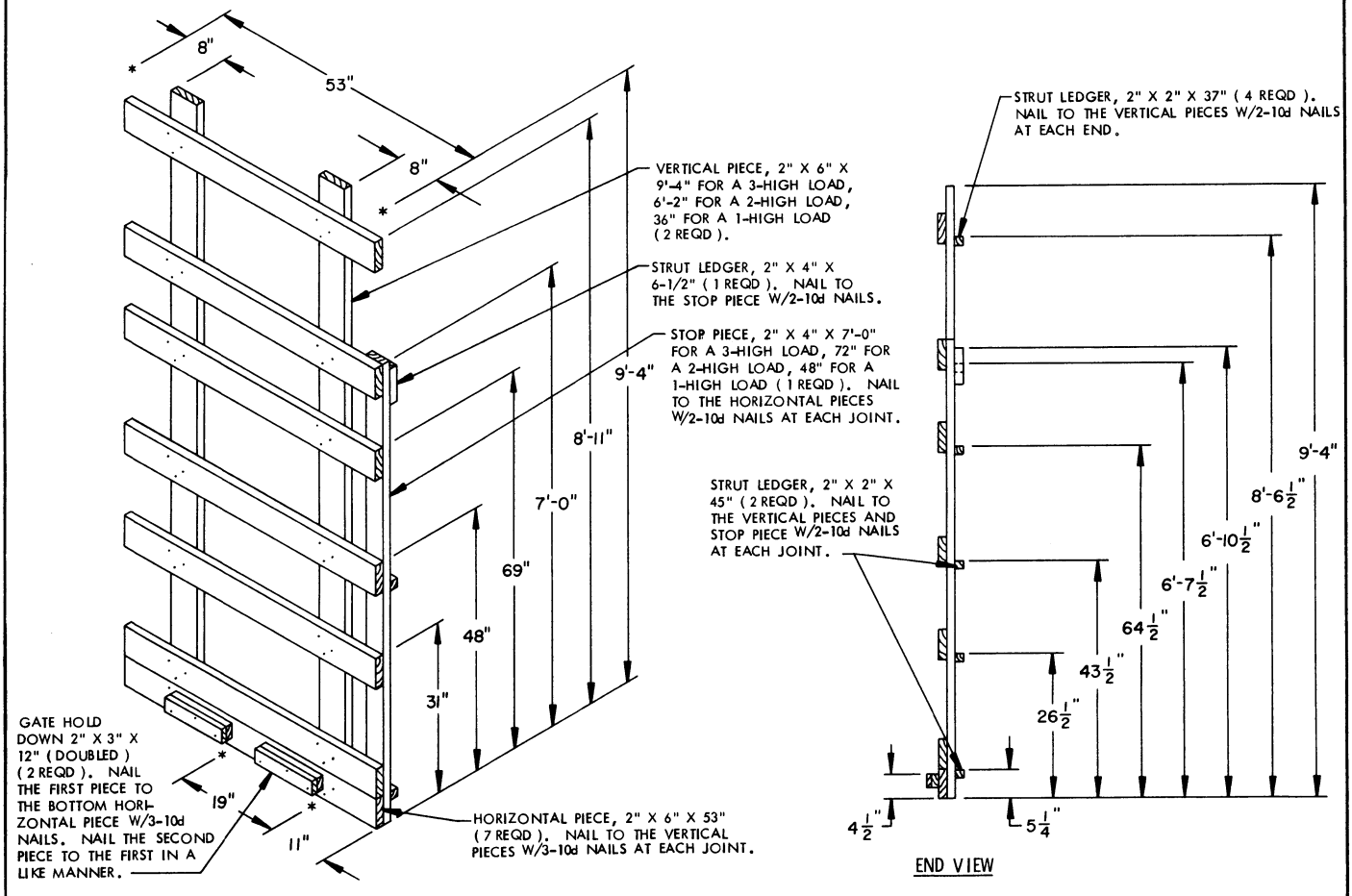
FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)
78-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



CRIB FILL G

NOTE:
CRIB FILL ASSEMBLIES "G" (LEFT) AND "H" (PAGE 59) SHOULD BE PRE-FABRICATED. CONSTRUCT TO BE 1/2" to 3/4" LESS IN WIDTH THAN THE DISTANCE BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2 HIGH LOAD.

SEE NOTE AT RIGHT

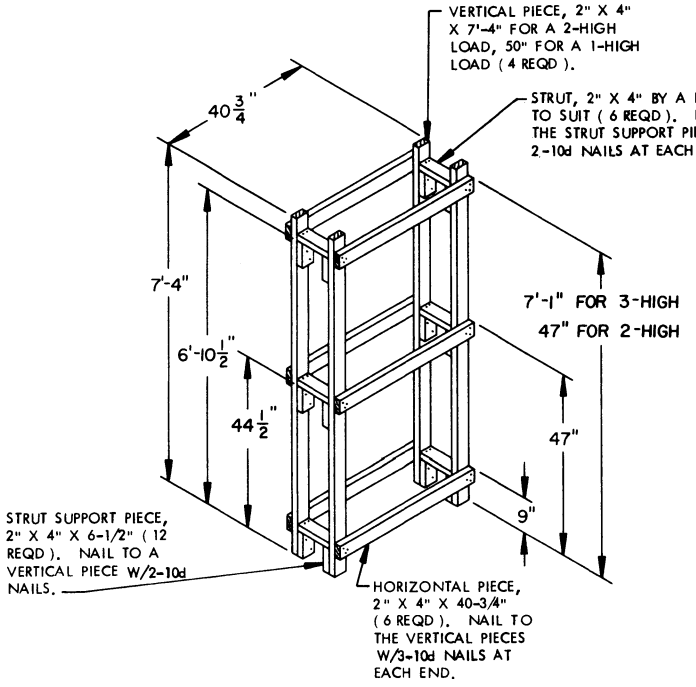


CENTER GATE N

END VIEW

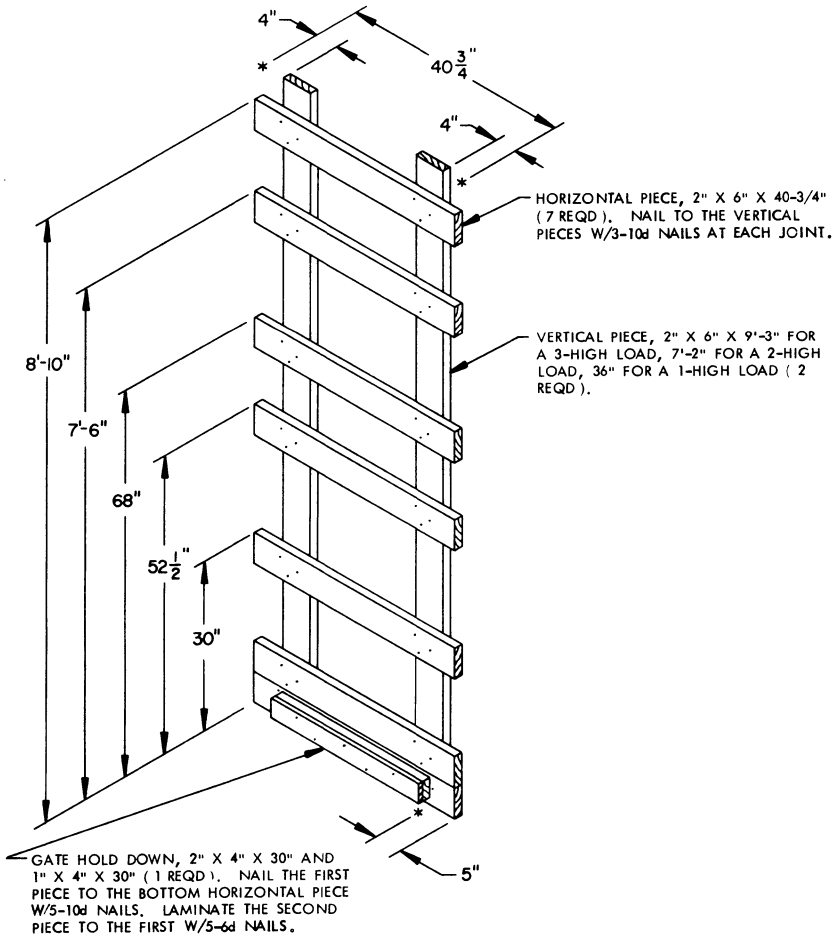
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

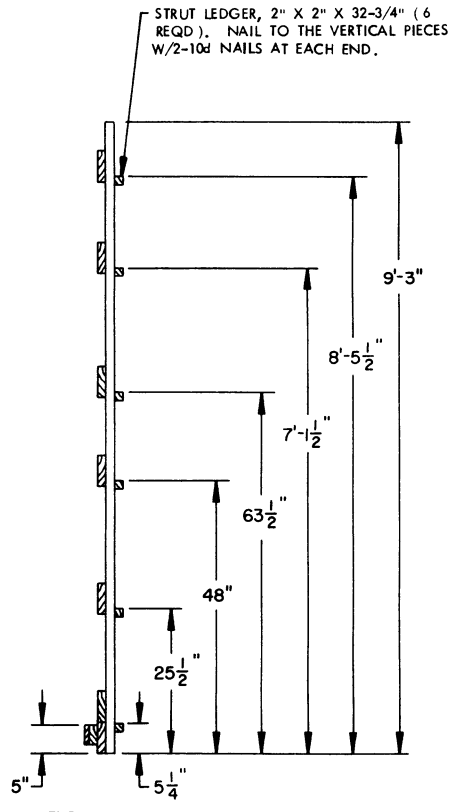


CRIB FILL H

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

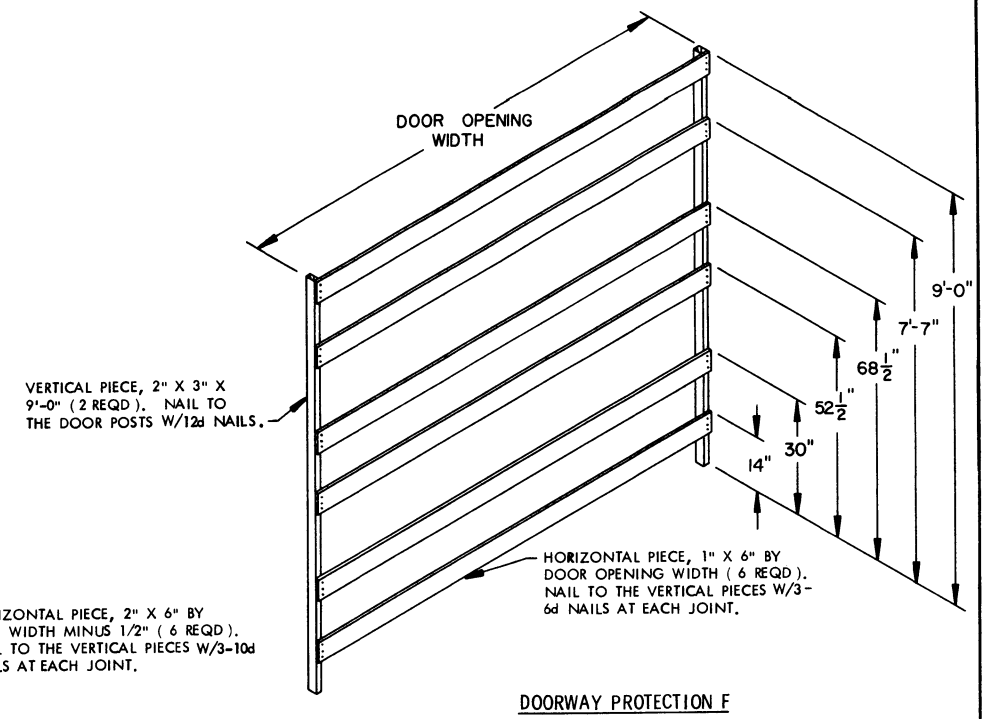


CENTER GATE O

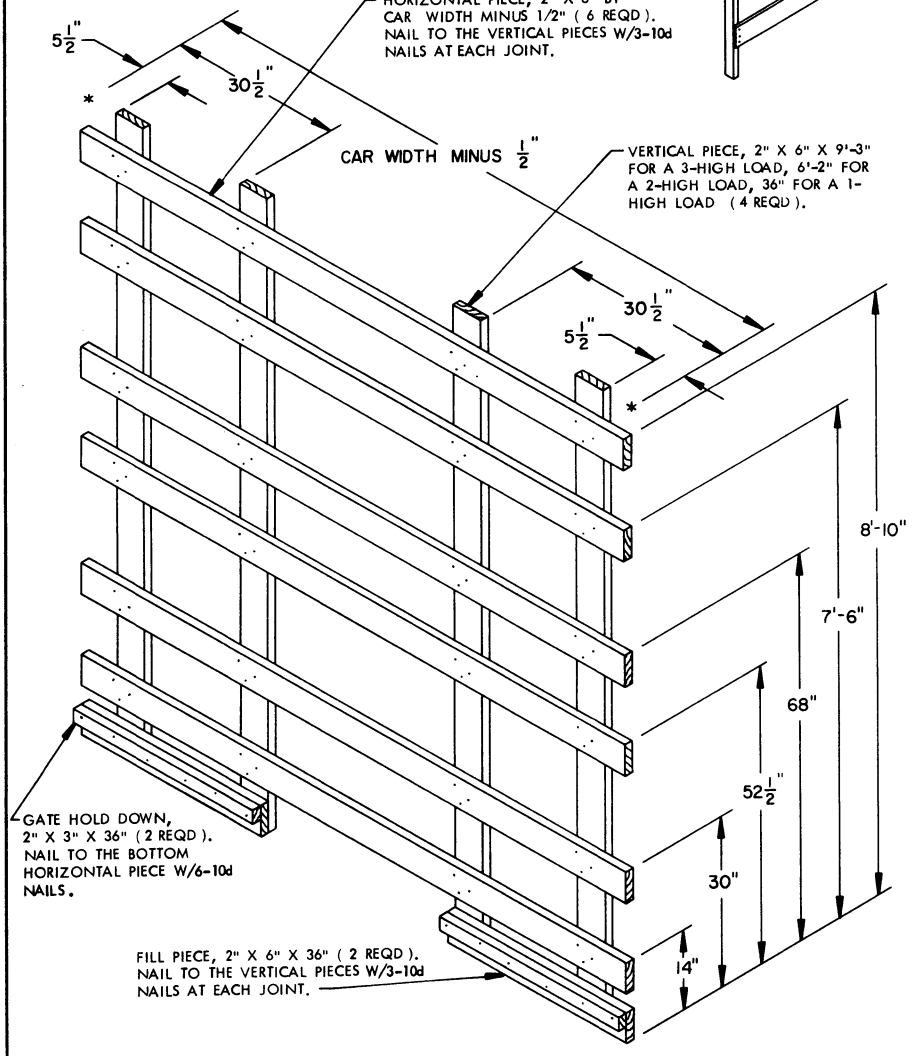


END VIEW

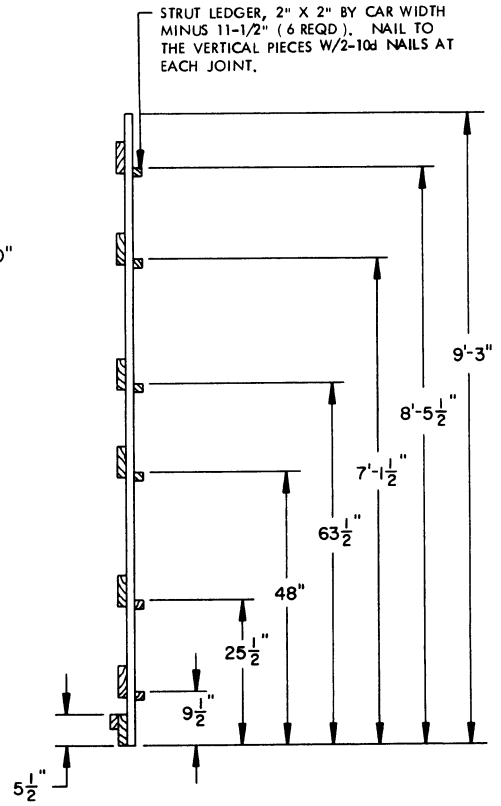
DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DOORWAY PROTECTION F

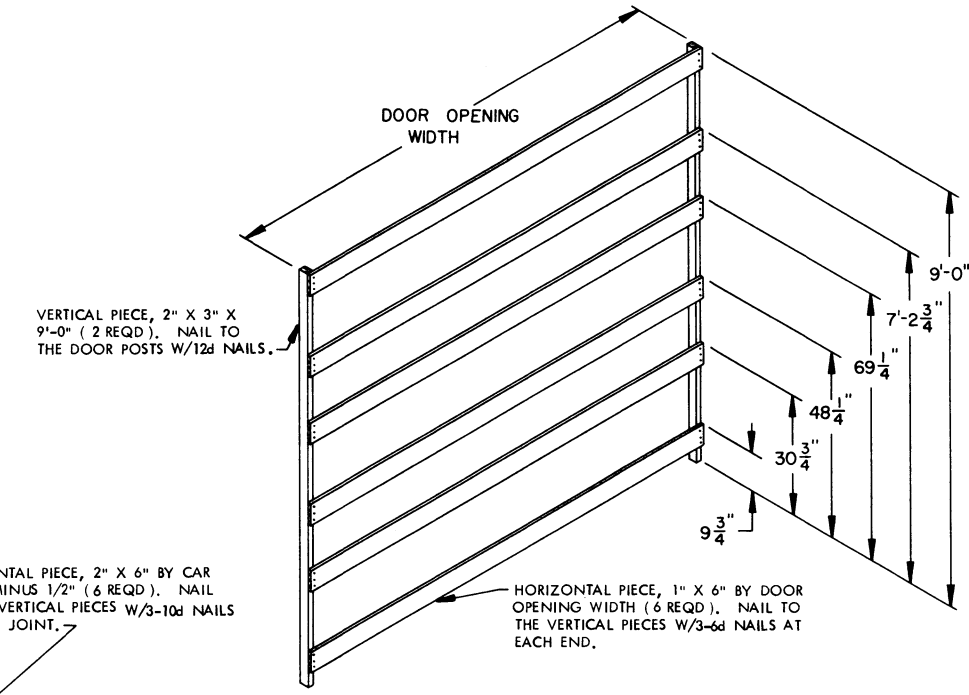


CENTER GATE P

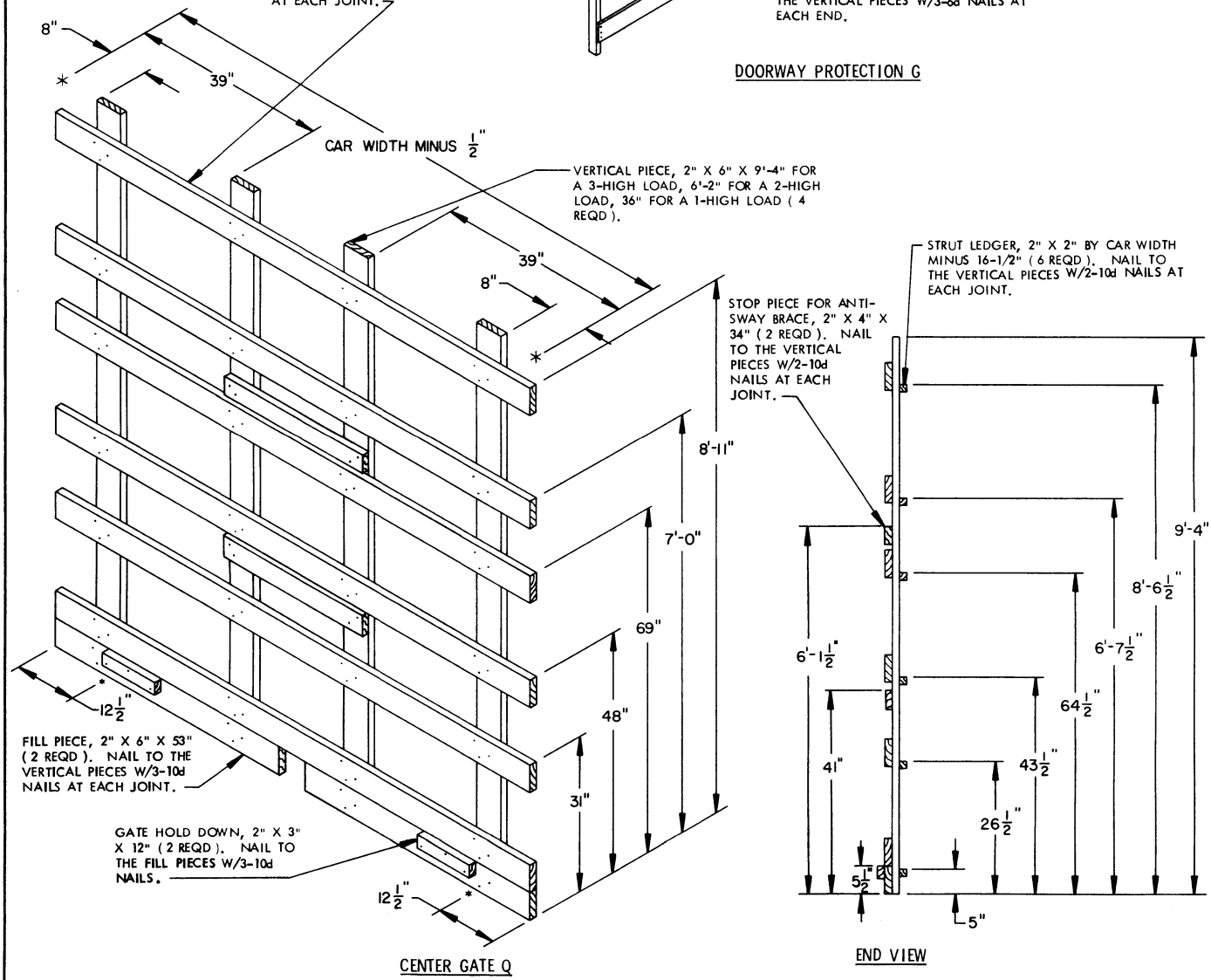


END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



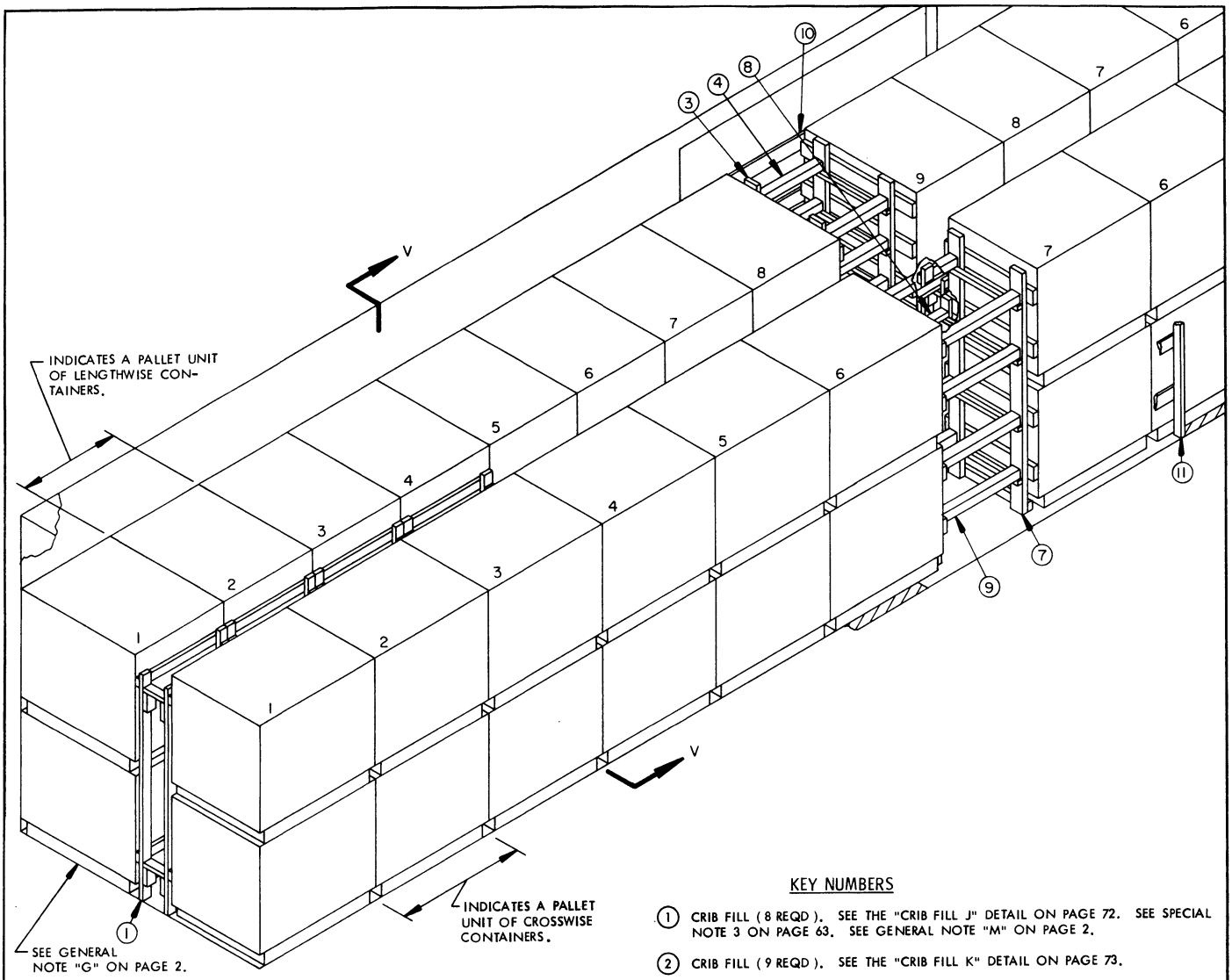
DOORWAY PROTECTION G



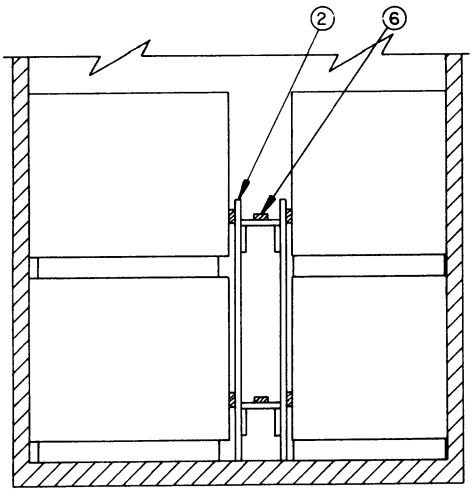
CENTER GATE Q

END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW



SECTION V-V

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL J" DETAIL ON PAGE 72. SEE SPECIAL NOTE 3 ON PAGE 63. SEE GENERAL NOTE "M" ON PAGE 2.

(2) CRIB FILL (9 REQD). SEE THE "CRIB FILL K" DETAIL ON PAGE 73.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE R" DETAIL ON PAGE 72. SEE SPECIAL NOTE 4 ON PAGE 63.

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

(5) SIDE BLOCKING FOR CENTER GATE, 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST PIECE IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" ON PAGE 63.

(6) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF : 54") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "K" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 63.

(7) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE S" DETAIL ON PAGE 73.

(8) STRUT, 2" X 4" BY CUT TO FIT (REF: 39") (2 REQD). TOENAIL TO THE STOP PIECES OF PIECES MARKED (7) W/2-12d NAILS AT EACH END.

(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (8 REQD). TOENAIL TO PIECES MARKED (7) W/2-16d NAILS AT EACH END.

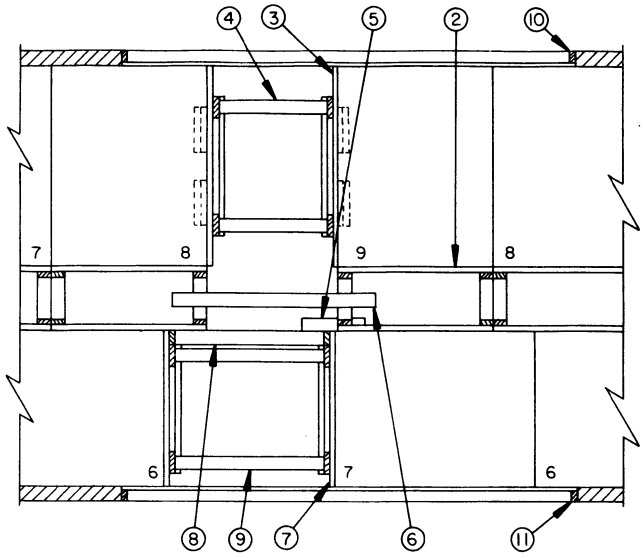
(10) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 74. NAIL TO THE DOOR POSTS W/12d NAILS.

(11) DOORWAY PROTECTION (1 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 75. NAIL TO THE DOOR POSTS W/12d NAILS.

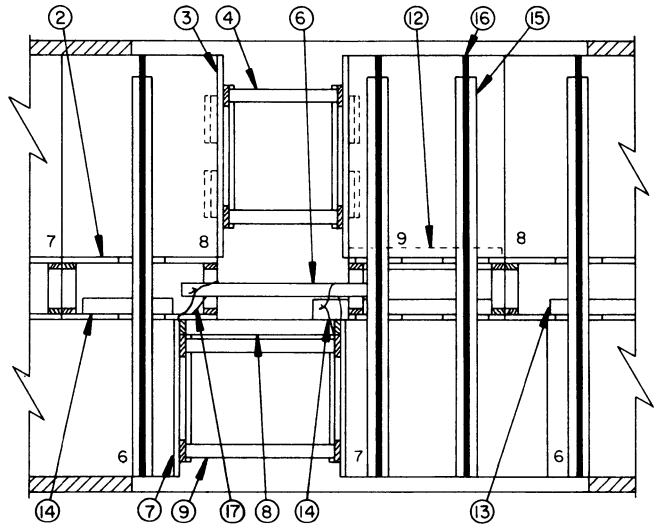
(CONTINUED ON PAGE 63)

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

PROJECT FSA 43B/9-63



PARTIAL PLAN VIEW OF BOX CARS EQUIPPED WITH CONVENTIONAL DOORS



PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG 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, PIECE MARKED (16). 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.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	61	21
2" X 3"	39	20
2" X 4"	850	567
2" X 6"	153	153
4" X 4"	55	74
NAILS	NO. REQD	POUNDS
6d (2")	48	1/4
10d (3")	1,280	19-1/2
12d (3-1/4")	40	3/4
16d (3-1/2")	88	2

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 62 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,328 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; THIRTY-EIGHT (38) UNITS, FOR A LADING WEIGHT OF 65,968 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4 CENTER GATES "R" AND "S" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LEIU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 123 FOR GUIDANCE.

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 WIDTH OR LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION; SHOWN AS PIECES MARKED (10) AND (11) IN THE LOAD ON PAGE 62, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT AND KEY NUMBERS (12) THRU (17) ON PAGE 62 FOR GUIDANCE.

6 THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 96. FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE CROSSWISE STACK NO. 7 AND THE LENGTHWISE STACK NO. 9. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED. OR, THE ENTIRE TOP TIER CAN BE OMITTED.

7 IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSS WISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.

8 FOR SHIPMENT OF ONE OR MORE LEFT OVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

(KEY NUMBERS CONTINUED)

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

(12) SIDE BLOCKING, 2" X 6" X 34" (DOUBLED) (1 REQD). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 5 ABOVE.

(13) SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(14) SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLETS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(15) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33. NOTE THAT THE LENGTH OF THE STRAP BEARING PIECE WILL BE CAR WIDTH MINUS 5".

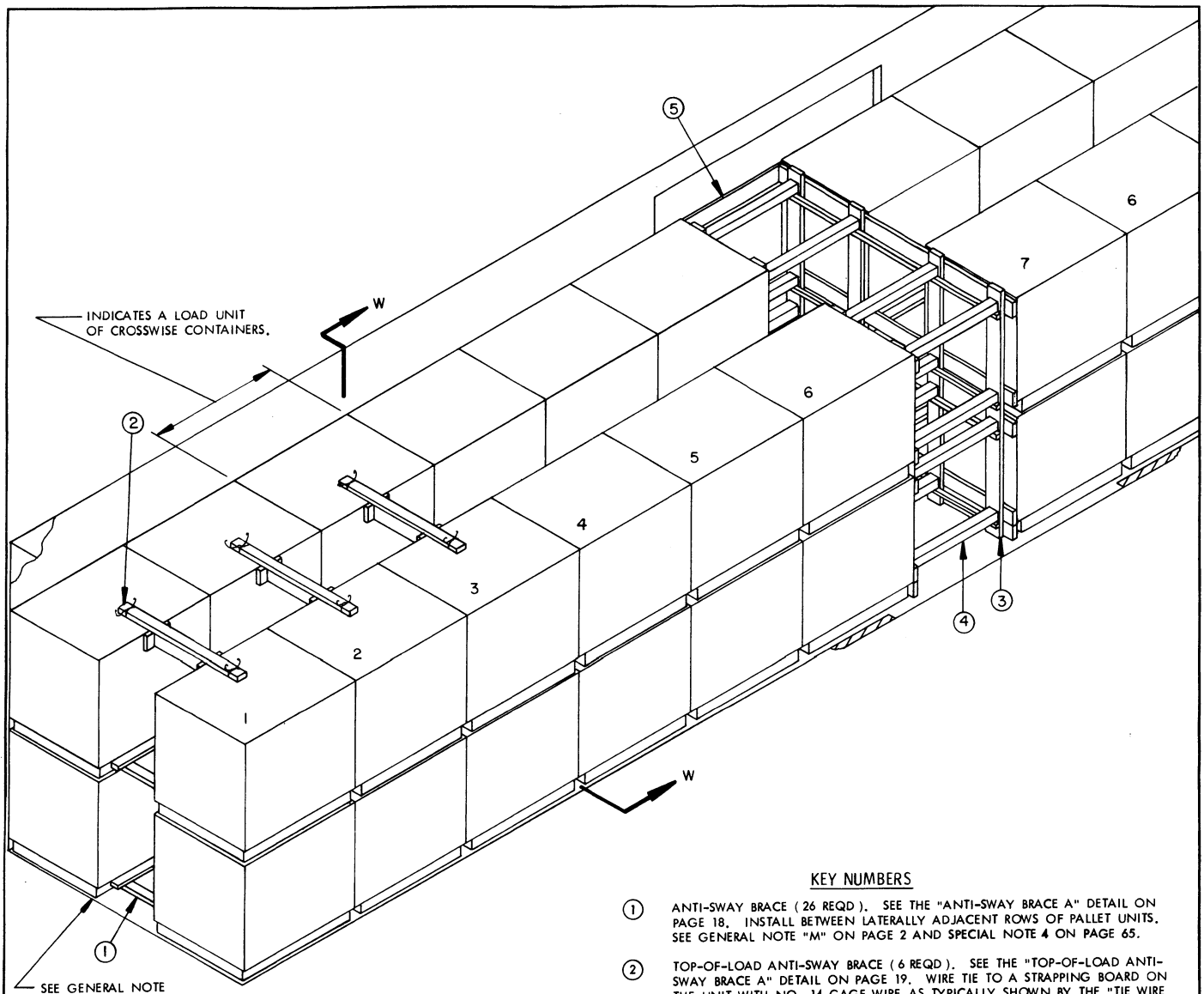
(16) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 36'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP. SEE GENERAL NOTE "O" ON PAGE 2.

(17) TIE WIRE, NO. 14 GAGE WIRE BY LENGTH AS REQUIRED (2 REQD). INSTALL SO AS TO ENCIRCLE A VERTICAL PIECE OF CENTER GATE "S" AND THE CRIB FILL RETAINER AS SHOWN.

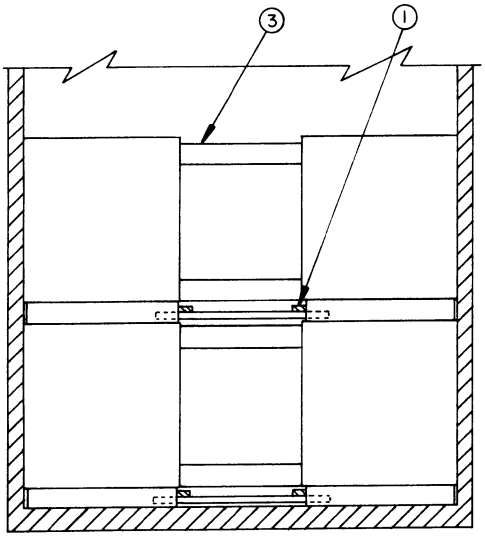
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	104,160 LBS
DUNNAGE		1,772 LBS
TOTAL WEIGHT		105,932 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION W-W

KEY NUMBERS

(1) ANTI-SWAY BRACE (26 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 65.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. SEE SPECIAL NOTE 5 ON PAGE 65.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE T" DETAIL ON PAGE 74. SEE SPECIAL NOTES 6, 7, AND 10 ON PAGE 65.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (16 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 74. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 65.

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

PROJECT FSA 43B/9-63

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 MAY BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 64 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76,384 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 62,496 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 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 64, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

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 123 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 64, INSTALL TWO (2) CENTER GATES "S" AS SHOWN ON PAGE 73 . 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 123. OMIT THE STOP PIECES FROM "CENTER GATES S".

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO CENTER GATE "T", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 64, IS APPLICALBE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE.

10. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECES MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

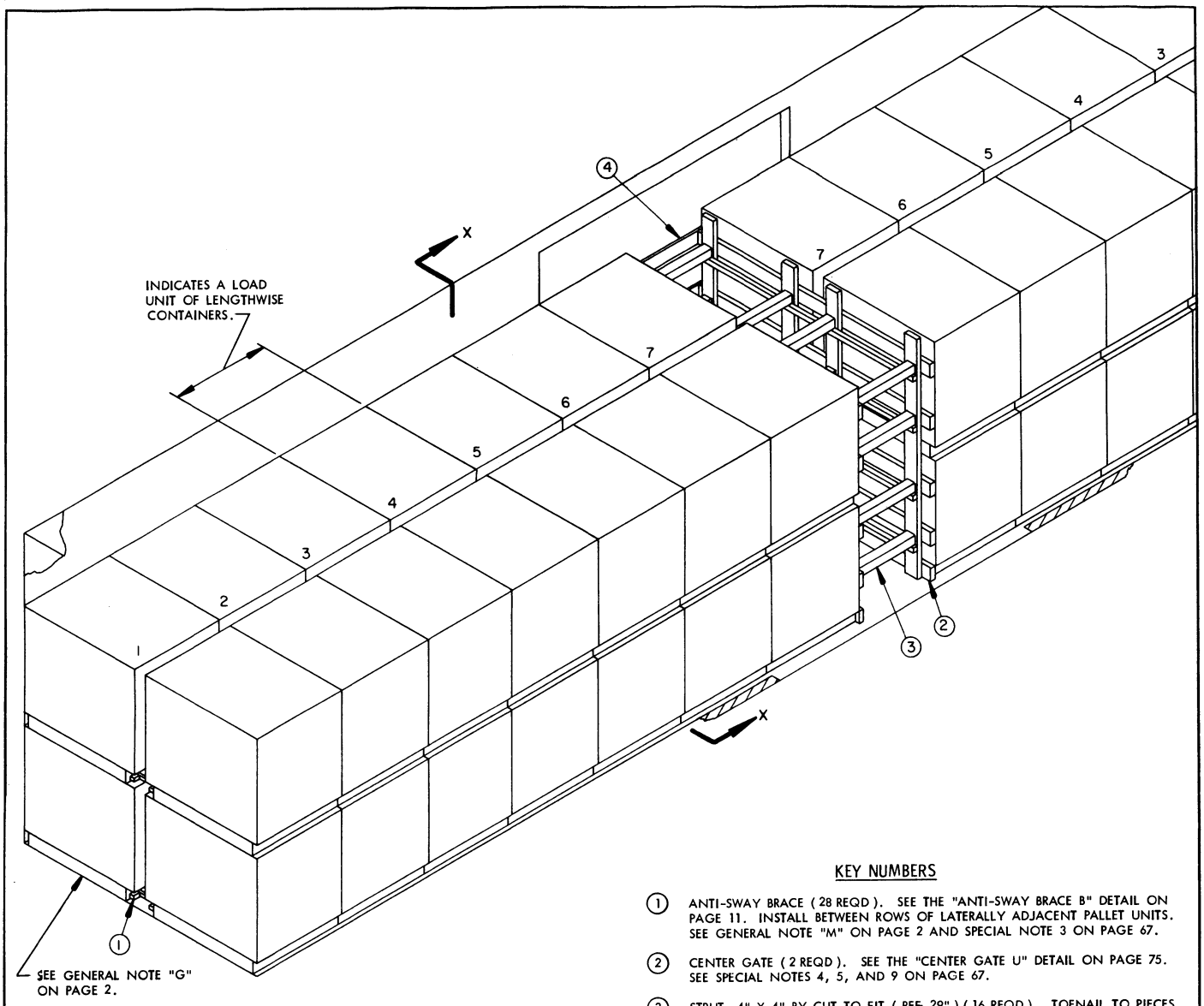
13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFT OVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	80	40
2" X 2"	69	23
2" X 3"	32	16
2" X 4"	369	246
2" X 6"	234	234
4" X 4"	54	72
NAILS	NO. REQD	POUNDS
6d (2")	48	1/4
10d (3")	600	9-1/4
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2
WIRE, NO. 14 GAGE --- 18' REQD ---------- 1 LB		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	52	90,272 LBS
DUNNAGE		1,275 LBS
TOTAL WEIGHT		91,547 LBS

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



ISOMETRIC VIEW

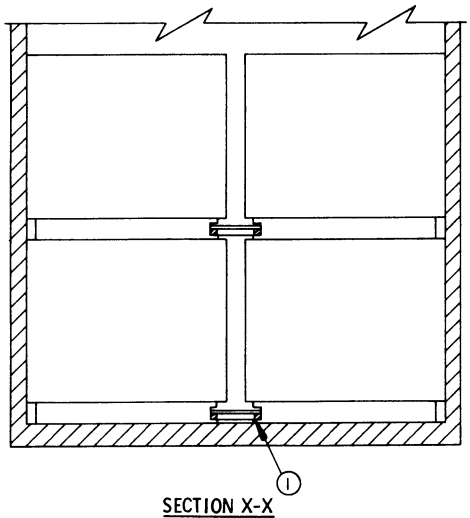
KEY NUMBERS

(1) ANTI-SWAY BRACE (28 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN ROWS OF LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 67.

(2) CENTER GATE (2 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 75. SEE SPECIAL NOTES 4, 5, AND 9 ON PAGE 67.

(3) STRUT, 4" X 4" BY CUT TO FIT (REF: 29") (16 REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 43.

(4) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION J" DETAIL ON PAGE 75. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 7 ON PAGE 67.



SECTION X-X

CENTER GATE, PIECE MARKED (2) , OMITTED FOR CLARITY.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE 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 PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 66 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-FOUR (44) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 76, 384 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, SIXTY-EIGHT (68) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 118,048 POUNDS CAN BE LOADED. NOTE THAT SIX (6) STRUTS ARE REQUIRED FOR EACH ROW/LAYER IN A 60' CAR; SEE THE PHANTOMED STRUT LEDGERS AND HORIZONTAL PIECES WHICH MUST BE ADDED TO THE GATES, AS SHOWN ON THE "CENTER GATE U" DETAIL ON PAGE 75.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

4. 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 123 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE U" SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 66, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 72. 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 123.

6. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" HOLD DOWNS ON CENTER GATES "U" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 123 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ IN THE LOAD ON PAGE 66, IS APPLICALBE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 124 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

9. IF A FULL LOAD IS TO BE SHIPPED IN A 60' LONG CAR, SIX (6) STRUTS WILL BE REQUIRED PER ROW/TIER. TO ACCOMMODATE THESE ADDITIONAL STRUTS, A STRUT LEDGER AND HORIZONTAL PIECE MUST BE ADDED TO CENTER GATE "U" FOR EACH TIER AS SHOWN BY THE PHANTOMED LINES ON THE DETAIL ON PAGE 75.

10. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	98	33
1" X 6"	80	40
2" X 2"	237	79
2" X 3"	34	17
2" X 4"	88	59
2" X 6"	154	154
4" X 4"	39	52
NAILS	**NO. REQD**	**POUNDS**
6d (2")	440	2-1/2
10d (3")	428	6-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	64	1-1/2

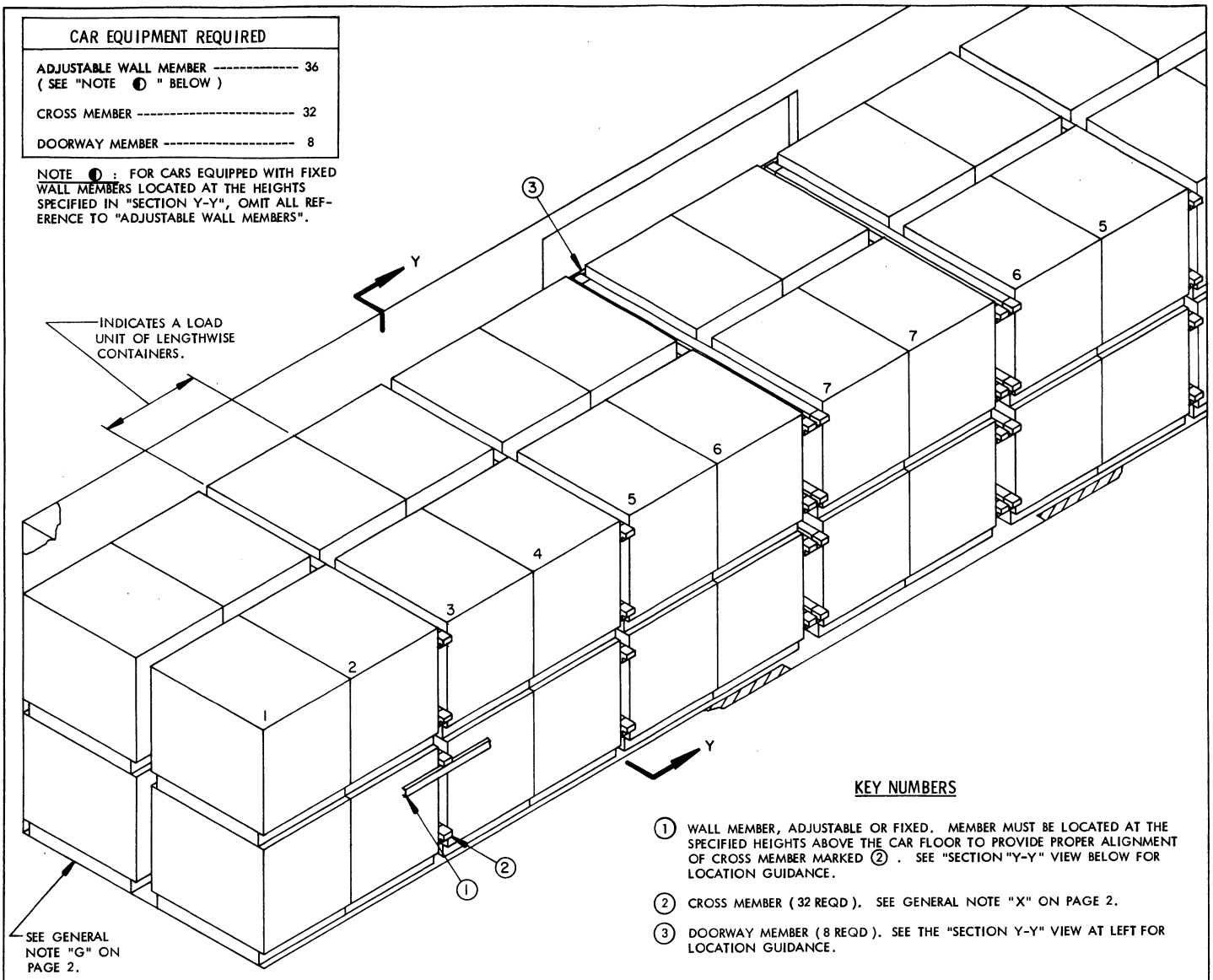
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	56	97,216 LBS
DUNNAGE		879 LBS
TOTAL WEIGHT		98,095 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	36
CROSS MEMBER	32
DOORWAY MEMBER	8

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



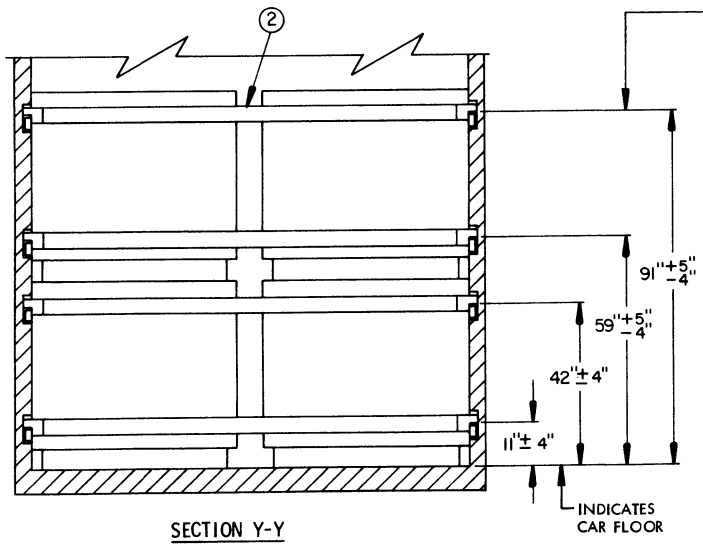
ISOMETRIC VIEW

KEY NUMBERS

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

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

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



SECTION Y-Y

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED (1) AND/OR A DOORWAY MEMBER MARKED (3) IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.

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/9-63

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 DOORS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

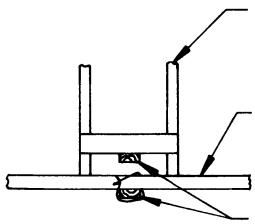
2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 68 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY (40) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,440 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD UNIT BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

5. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED (2) ON PAGE 26 AND THE "STOP DETAIL" AT LEFT.

6. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINFRS SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.



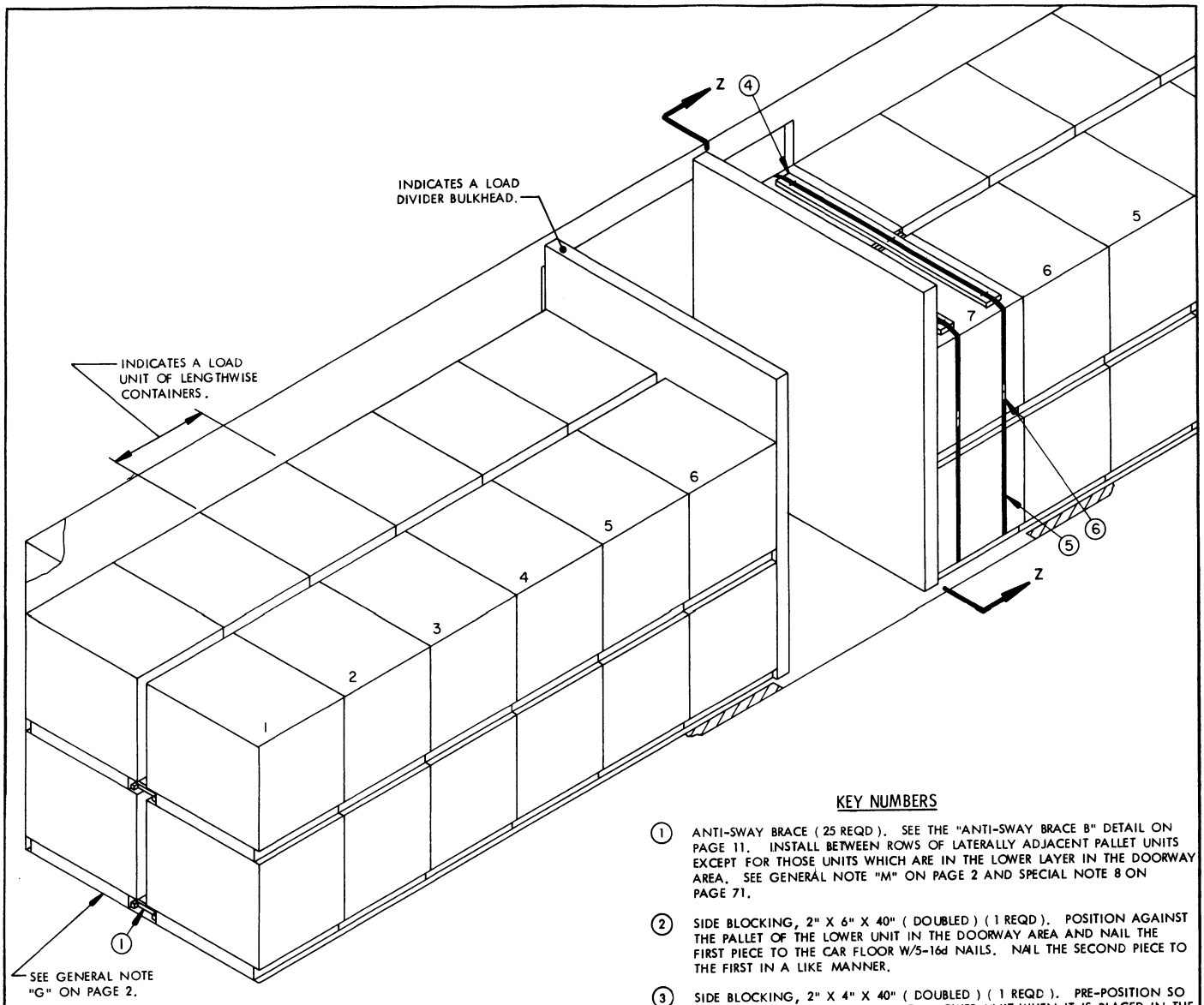
STOP DETAIL

THE ABOVE DETAIL DEPICTS THE METHOD OF INSTALLING STOP PIECES FOR THE ANTI-SWAY BRACES WHEN USING A BOX CAR WHICH IS 9'-4" OR MORE IN WIDTH.

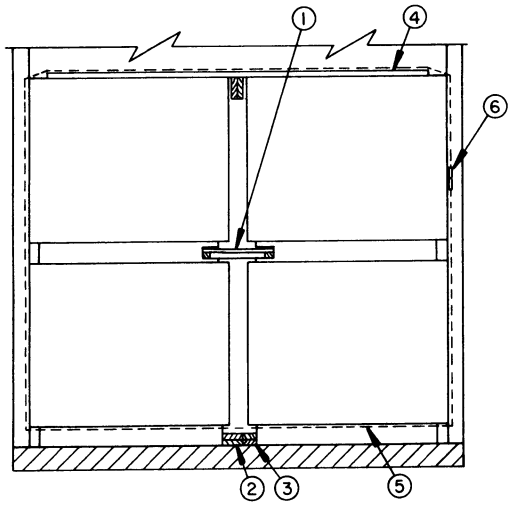
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	56	97,216 LBS

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 Z-Z

KEY NUMBERS

(1) ANTI-SWAY BRACE (25 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN ROWS OF LATERALLY ADJACENT PALLET UNITS EXCEPT FOR THOSE UNITS WHICH ARE IN THE LOWER LAYER IN THE DOORWAY AREA. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 8 ON PAGE 71.

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

(3) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (1 REQD). PRE-POSITION SO AS TO CONTACT THE PALLET OF THE LOWER UNIT WHEN IT IS PLACED 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.

(4) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 43.

(5) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 35'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARDS W/3 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 71.

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

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 70 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-EIGHT (68) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 118,048 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" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 76,384 POUNDS, WHEN USING THE DEPICTED PROCEDURES.

3. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT LENGTH. DOORWAY PROTECTION WILL CONSIST OF NAILED FLOORLINE BLOCKING, STRAPPING BOARD, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THEN HALF OF THE UNIT LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 66 MAY BE USED.

4. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 56, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SEVEN (7) LOAD UNITS.

5. 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 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

6. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

8. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

BILL OF MATERIAL

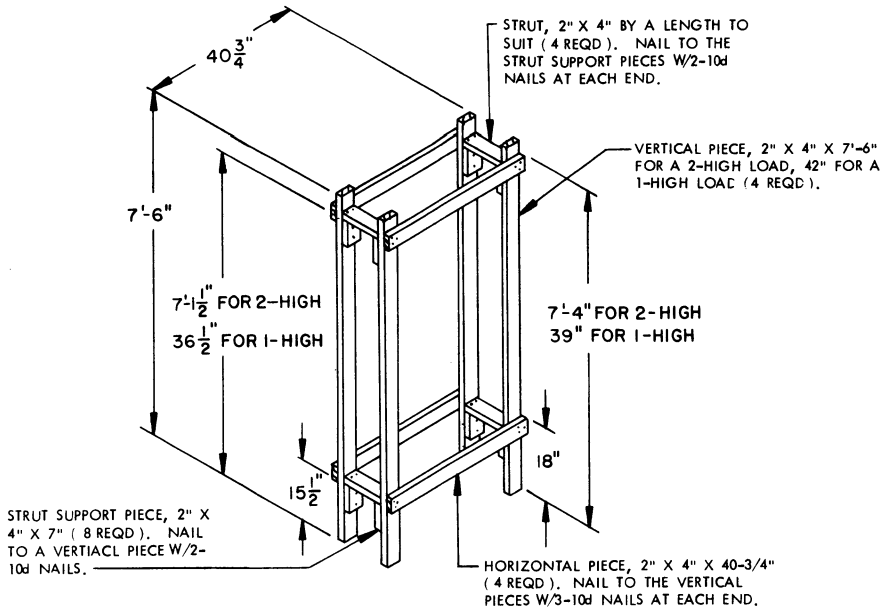
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	88	29
2" X 2"	150	50
2" X 4"	82	55
2" X 6"	28	28
NAILS	**NO. REQD**	**POUNDS**
6d (2")	350	2
10d (3")	208	3-1/4
16d (3-1/2")	20	1/2

STRAP, STEEL, 1-1/4" X .031" OR .035" ---- 70' REQD ---- 10 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 4 REQD ---- NIL
STAPLE FOR 1-1/4" STRAP---------- 6 REQD ---- NIL

LOAD AS SHOWN

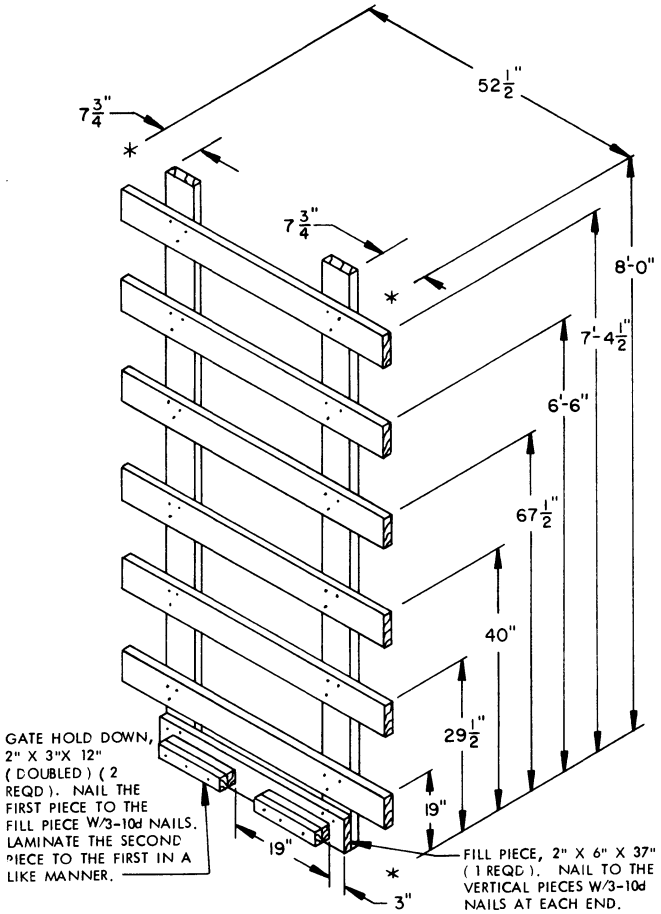
ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	52	90,272 LBS
DUNNAGE		340 LBS
TOTAL WEIGHT		90,612 LBS

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

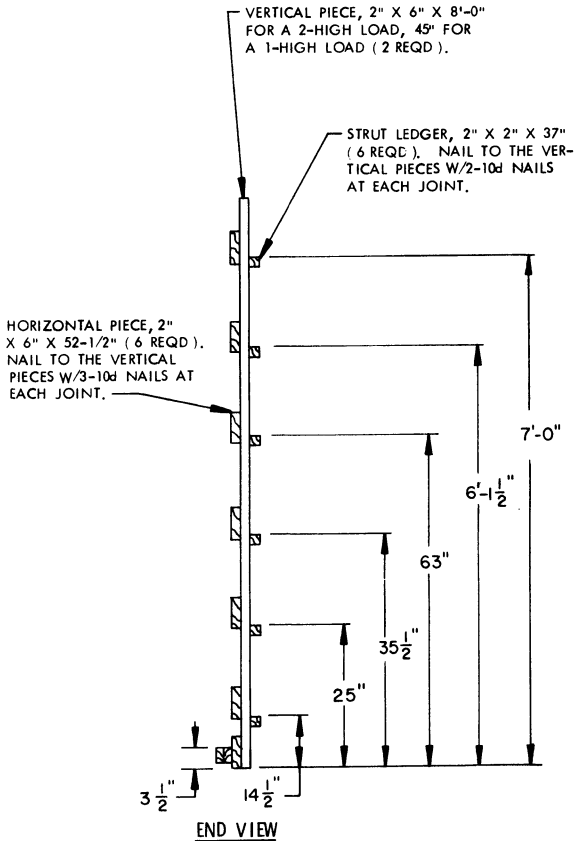


CRIB FILL J

CRIB FILL ASSEMBLIES "J" (ABOVE) AND "K" (PAGE 73) 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.



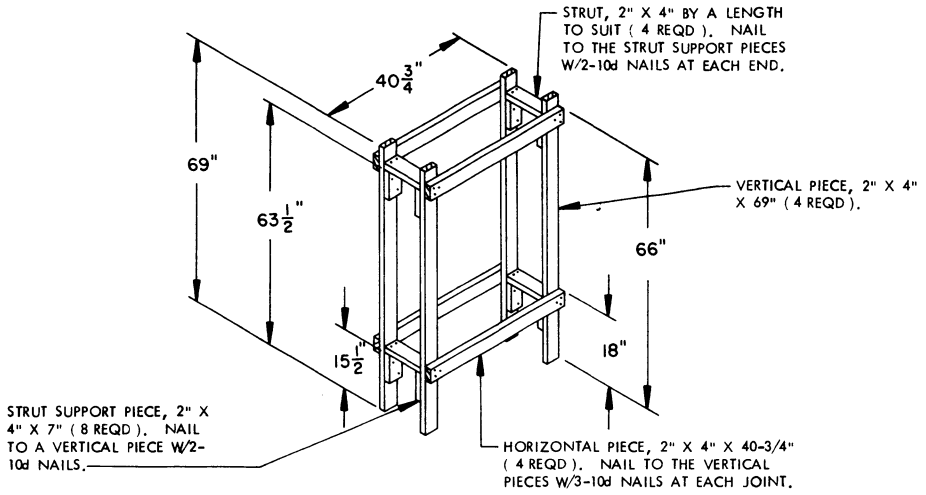
CENTER GATE R



END VIEW

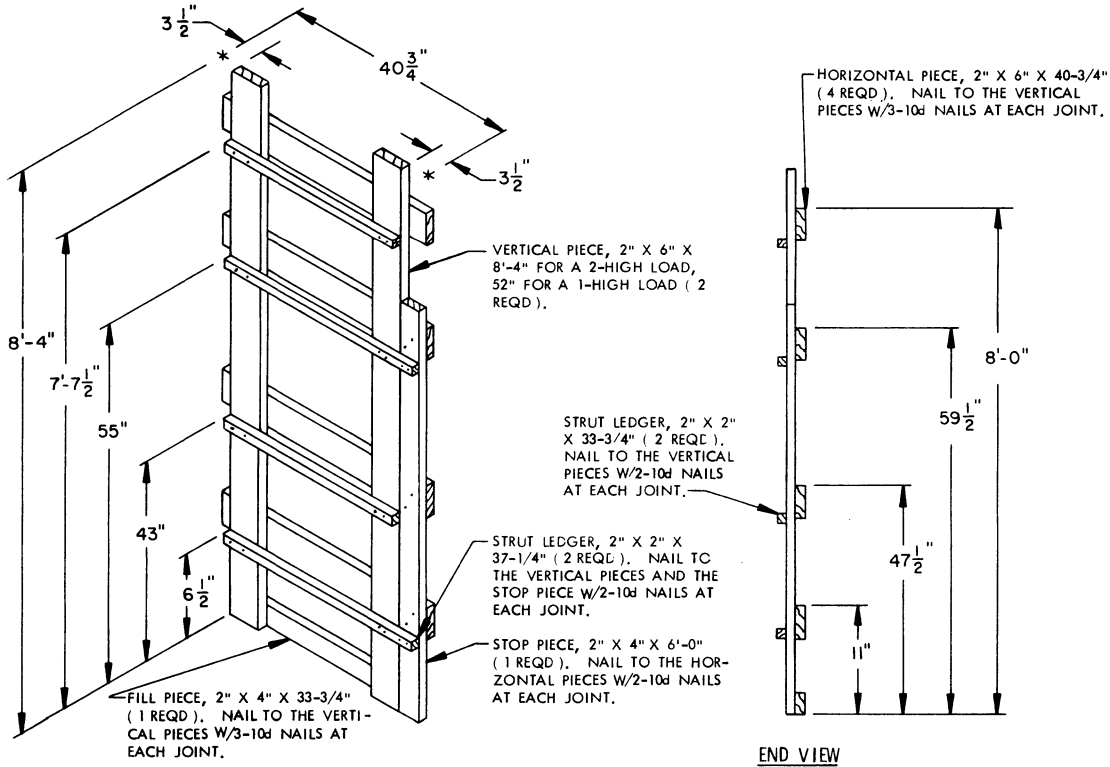
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

PROJECT FSA 43B/9-63



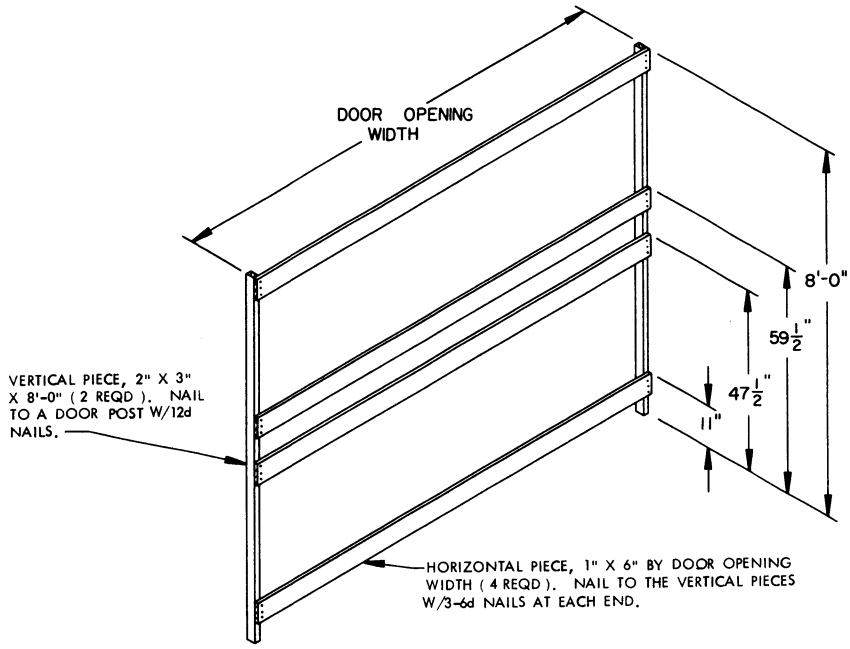
CRIB FILL K

CRIB FILL "K" IS NOT REQUIRED FOR A 1-HIGH LOAD; THE CRIB FILL "J" (PAGE 72) WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.

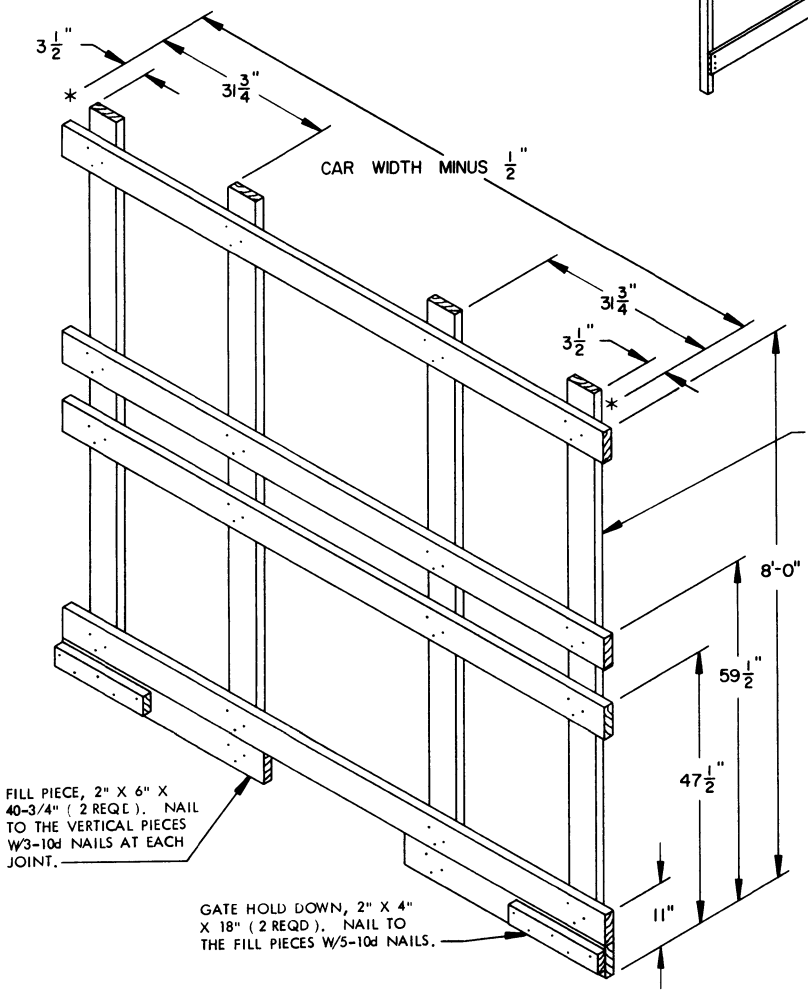


CENTER GATE S

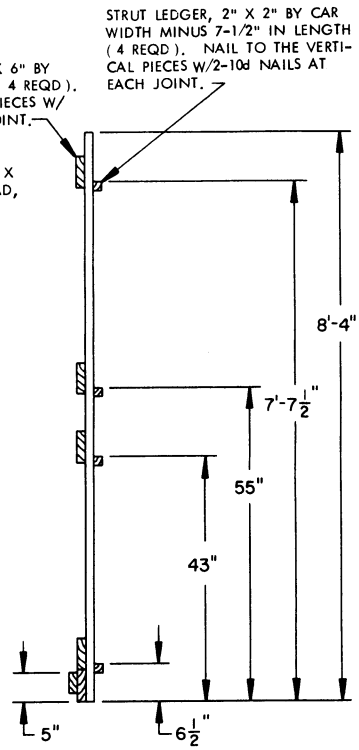
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.



DOORWAY PROTECTION H



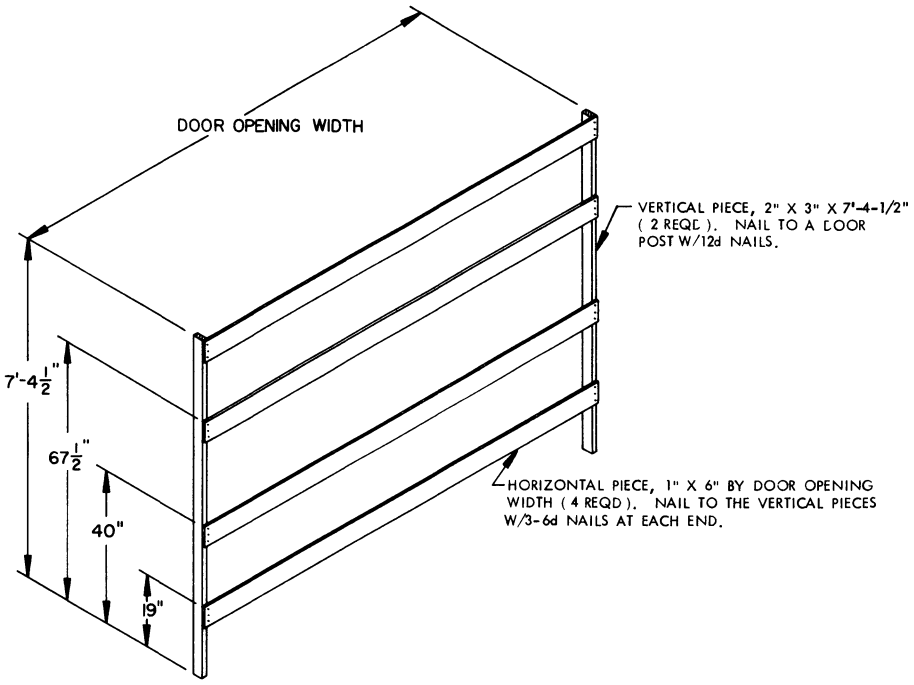
CENTER GATE T



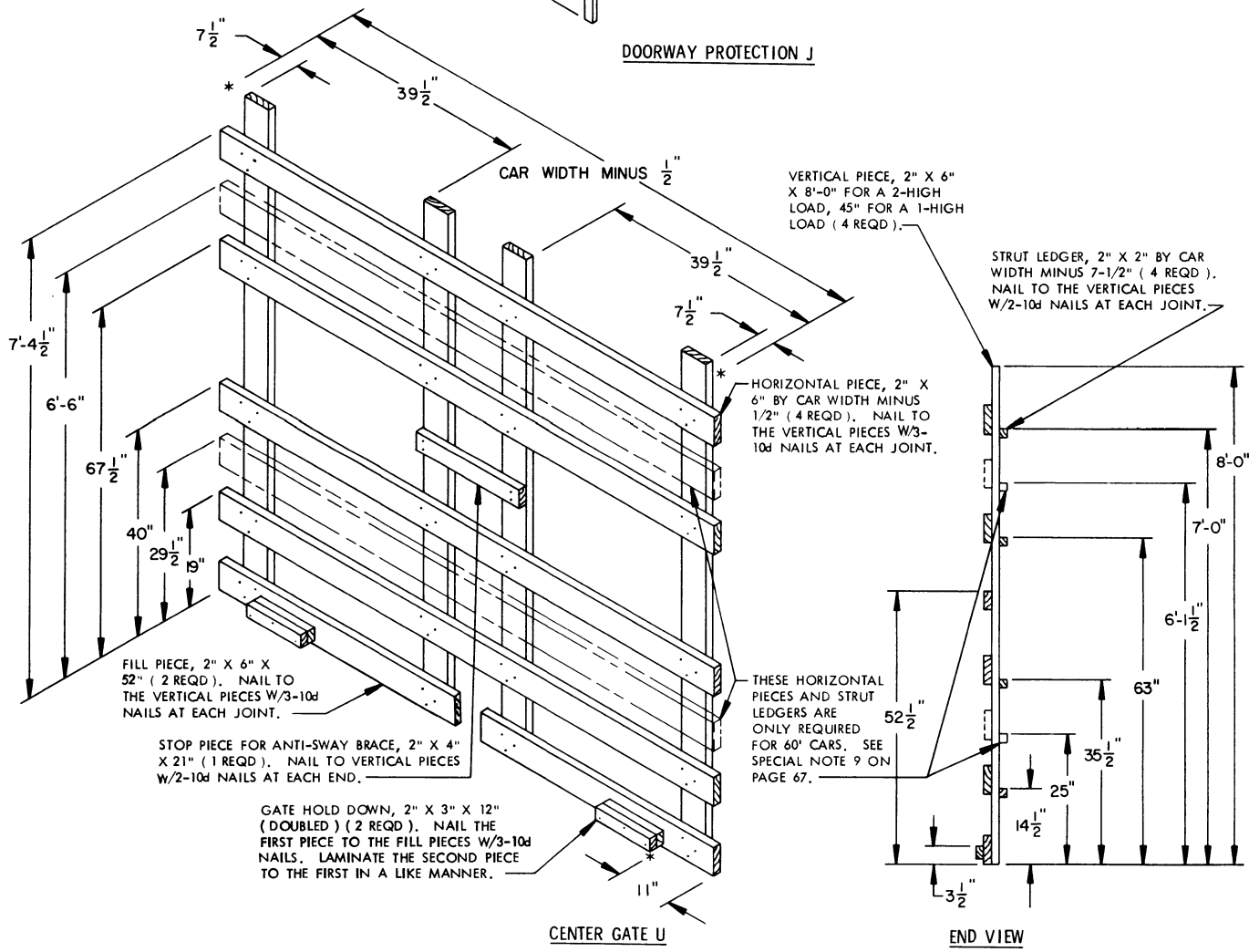
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

PROJECT FSA 43B/9-63



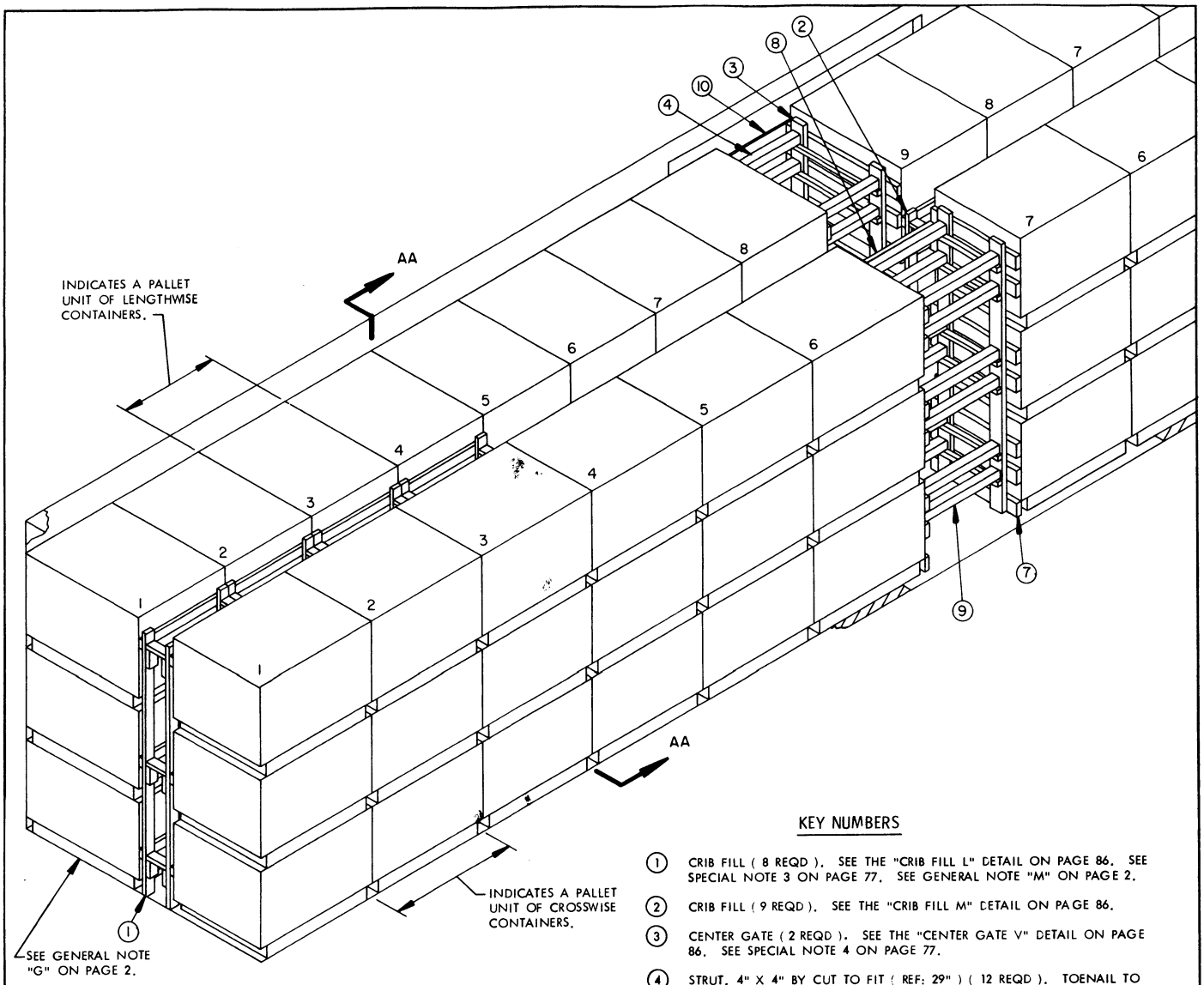
DOORWAY PROTECTION J



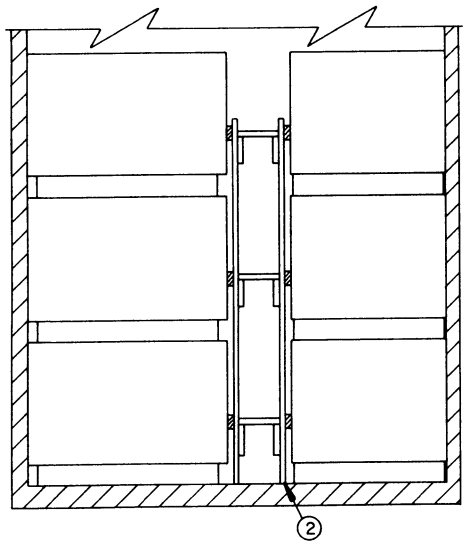
CENTER GATE U

END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION AA-AA

KEY NUMBERS

(1) CRIB FILL (8 REQD). SEE THE "CRIB FILL L" DETAIL ON PAGE 86. SEE SPECIAL NOTE 3 ON PAGE 77. SEE GENERAL NOTE "M" ON PAGE 2.

(2) CRIB FILL (9 REQD). SEE THE "CRIB FILL M" DETAIL ON PAGE 86.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE V" DETAIL ON PAGE 86. SEE SPECIAL NOTE 4 ON PAGE 77.

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

(5) SIDE BLOCKING FOR CENTER GATE, 2" X 4" X 18" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW " ON PAGE 77.

(6) CRIB FILL RETAINER, 2" X 4" BY A LENGTH TO SUIT (REF: 54") (2 REQD). POSITION TO SPAN THE UPPER AND LOWER STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "M" ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH STRUT W/3-10d NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 77.

(7) CENTER GATE (2 REQD , 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE W" DETAIL ON PAGE 87.

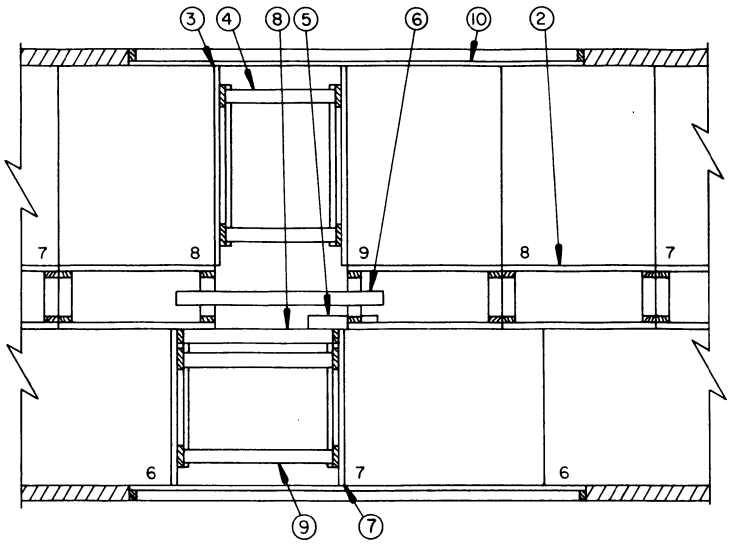
(8) STRUT, 2" X 4" BY CUT TO FIT (REF : 39") (3 REQD). TOENAIL TO THE STOP PIECES OF MARKED (7) W/2-12d NAILS AT EACH END.

(9) STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (12 REQD). TOENAIL TO PIECES MARKED (7) W/2-16d NAILS AT EACH END.

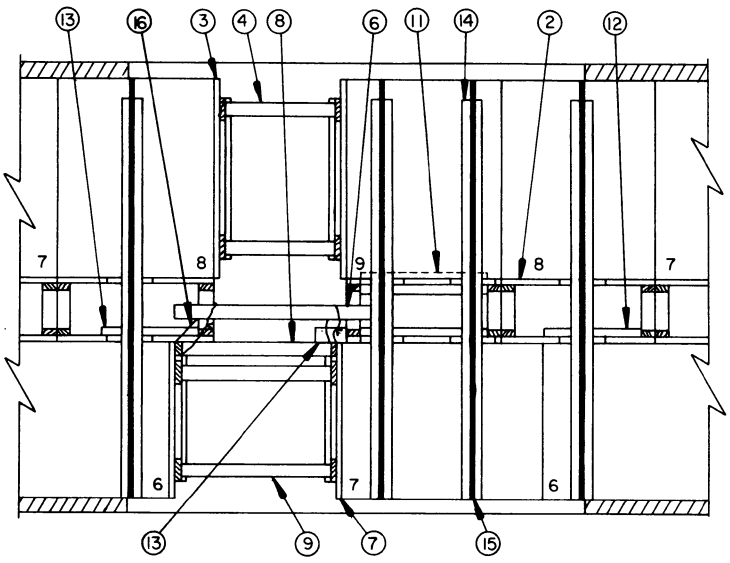
(10) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 88. NAIL TO THE DOOR POSTS W/12d NAILS.

(CONTINUED ON PAGE 77)

ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
90-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

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, PIECE MARKED (15). 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.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	76	25
2" X 3"	40	20
2" X 4"	1,168	779
2" X 6"	183	183
4" X 4"	68	91
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	1,762	27
12d (3-1/4")	44	3/4
16d (3-1/2")	104	2-1/4

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 DOORS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 76 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SEVENTY-FIVE (75) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 99,825 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; FIFTY-SEVEN (57) UNITS FOR AN APPROXIMATE LADING WEIGHT OF 75,867 POUNDS CAN BE OUTLOADED IN A 40'-6" LONG CAR.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1) , MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.
4. 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 123 FOR GUIDANCE.
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 WIDTH OR LENGTH. THE WOODEN GATE TYPE PROTECTION, SHOWN AS PIECES MARKED (10) IN THE LOAD ON PAGE 76, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD-BUNDLING STRAPS MUST BE USED. SEE THE "PARTIAL PLAN VIEW OF BOX CAR EQUIPPED WITH PLUG DOORS" AT LEFT AND KEY NUMBERS (11) THRU (16) BELOW FOR GUIDANCE.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGES 96. SIX (6) PALLET UNITS CAN BE OMITTED FROM A 3-TIER LOAD BY LEAVING OUT THE LENGTHWISE NUMBERED 9, THE CROSSWISE STACK NUMBERED 7 AND THE ADJACENT CRIB FILL. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED. OR, THE ONE OR TWO TOP TIERS CAN BE OMITTED.
7. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE FOR CROSSWISE UNITS AND PAGES 118 AND 120 FOR LENGTHWISE UNITS.
8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

(KEY NUMBERS CONTINUED)

KEY NUMBERS FOR BOX CARS EQUIPPED WITH PLUG DOORS

(11) SIDE BLOCKING, 2" X 6" X 34" (DOUBLED) (1 REQD). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ABOVE.

(12) SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (1 REQD). POSITION AGAINST THE PALLET AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(13) SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (2 REQD). POSITION AGAINST THE PALLETS AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(14) STRAPPING BOARD (4 REQD). SEE THE "STRAPPING BOARD A" DETAIL ON PAGE 33. NOTE THAT THE LENGTH OF THE STRAP BEARING PIECE WILL BE CAR WIDTH MINUS 5".

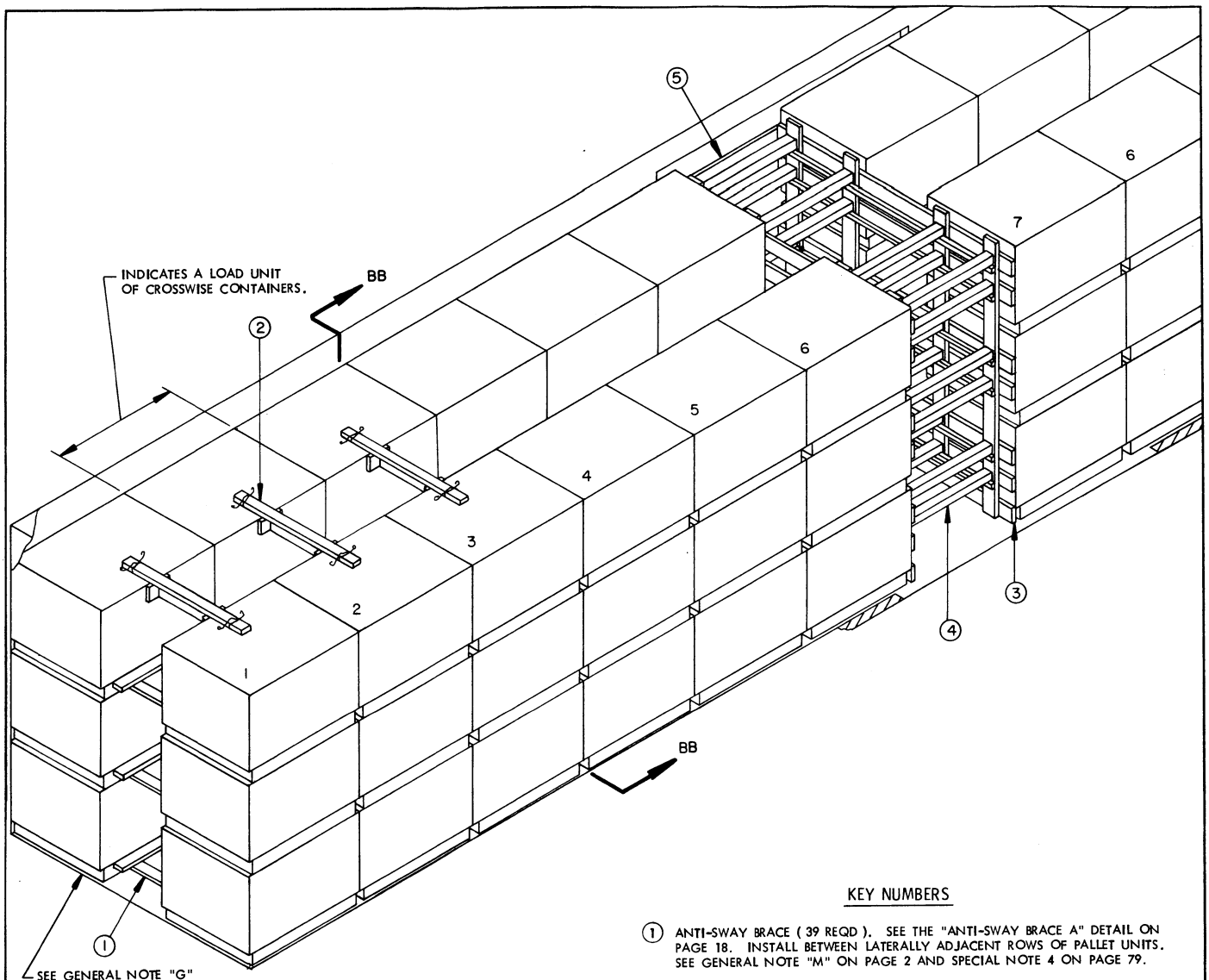
(15) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" BY 38'-0" LONG STEEL STRAPPING (4 REQD). INSTALL SO AS TO ENCIRCLE THE LATERALLY ADJACENT PALLET UNIT STACKS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/4 STAPLES AND USE TWO (2) 1-1/4" SEALS PER STRAP.

(16) TIE WIRE, NO. 14 GAGE WIRE BY LENGTH AS REQUIRED (2 REQD). INSTALL SO AS TO ENCIRCLE A VERTICAL PIECE OF CENTER GATE "W" AND THE CRIB FILL RETAINER AS SHOWN.

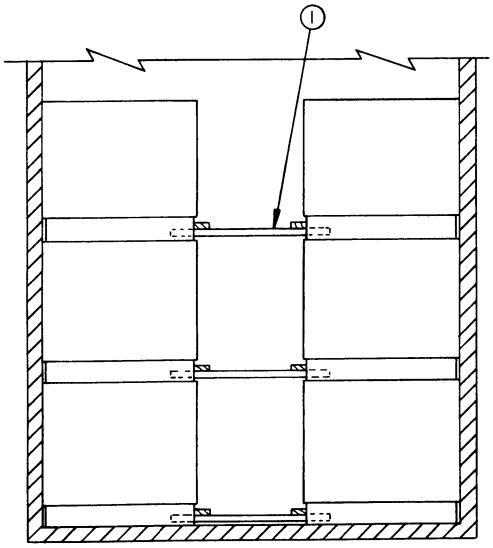
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	90	119,790 LBS
DUNNAGE		2,347 LBS
TOTAL WEIGHT		122,137 LBS

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



ISOMETRIC VIEW



SECTION BB-BB

CENTER GATE, PIECE MARKED ③ , OMITTED FOR CLARITY.

KEY NUMBERS

① ANTI-SWAY BRACE (39 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 18. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 79.

② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN. BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 127. SEE SPECIAL NOTE 5 ON PAGE 79.

③ CENTER GATE (2 REQD). SEE THE "CENTER GATE Y" DETAIL ON PAGE 89. SEE SPECIAL NOTES 6, 7, AND 10 ON PAGE 79.

④ STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (24 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 88. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 9 ON PAGE 79.

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

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	100	34
2" X 3"	36	18
2" X 4"	538	359
2" X 6"	221	221
4" X 4"	78	104
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	844	13
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2
WIRE, NO. 14 GAGE ----------18' REQD---------- 1 LB		

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 78 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,846 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 71,874, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

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

4. IF THE "ALTERNATIVE DOORWAY PROTECTION F" PROCEDURES AS SHOWN ON PAGE 128 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 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 78, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A PALLET UNIT STRAPPING BOARD WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

6. 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 123 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 Y", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 78, INSTALL TWO (2) "CENTER GATES W" AS SHOWN ON PAGE 87. 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 123. OMIT THE STOP PIECES FROM "CENTER GATE W".

8. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 4" MATERIAL NAILED TO CENTER GATE "Y", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 TYPEOF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑤ IN THE LOAD ON PAGE 78, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION F" DETAIL ON PAGE 128 FOR GUIDANCE.

10. IF THE ALTERNATIVE DOORWAY PROTECTION "F" PROCEDURES SHOWN ON PAGE 128 ARE USED IN LIEU OF THE WOODEN DOORWAY PROTECTION, PIECE MARKED ⑤ , THE CENTER GATES MUST BE RESTRAINED FROM LATERAL MOVEMENT. THIS CAN BE ACCOMPLISHED BY NAILING TO THE CAR FLOOR A DOUBLED 2" X 4" X 18" PIECE POSITIONED LONGITUDINALLY SO AS TO BE CENTERED AGAINST THE FILL PIECE OF A CENTER GATE. TWO (2) PIECES WILL BE REQUIRED FOR EACH CENTER GATE WHICH IS IN THE DOOR OPENING OR WITHIN SIX INCHES (6") OF BEING IN THE DOOR OPENING.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

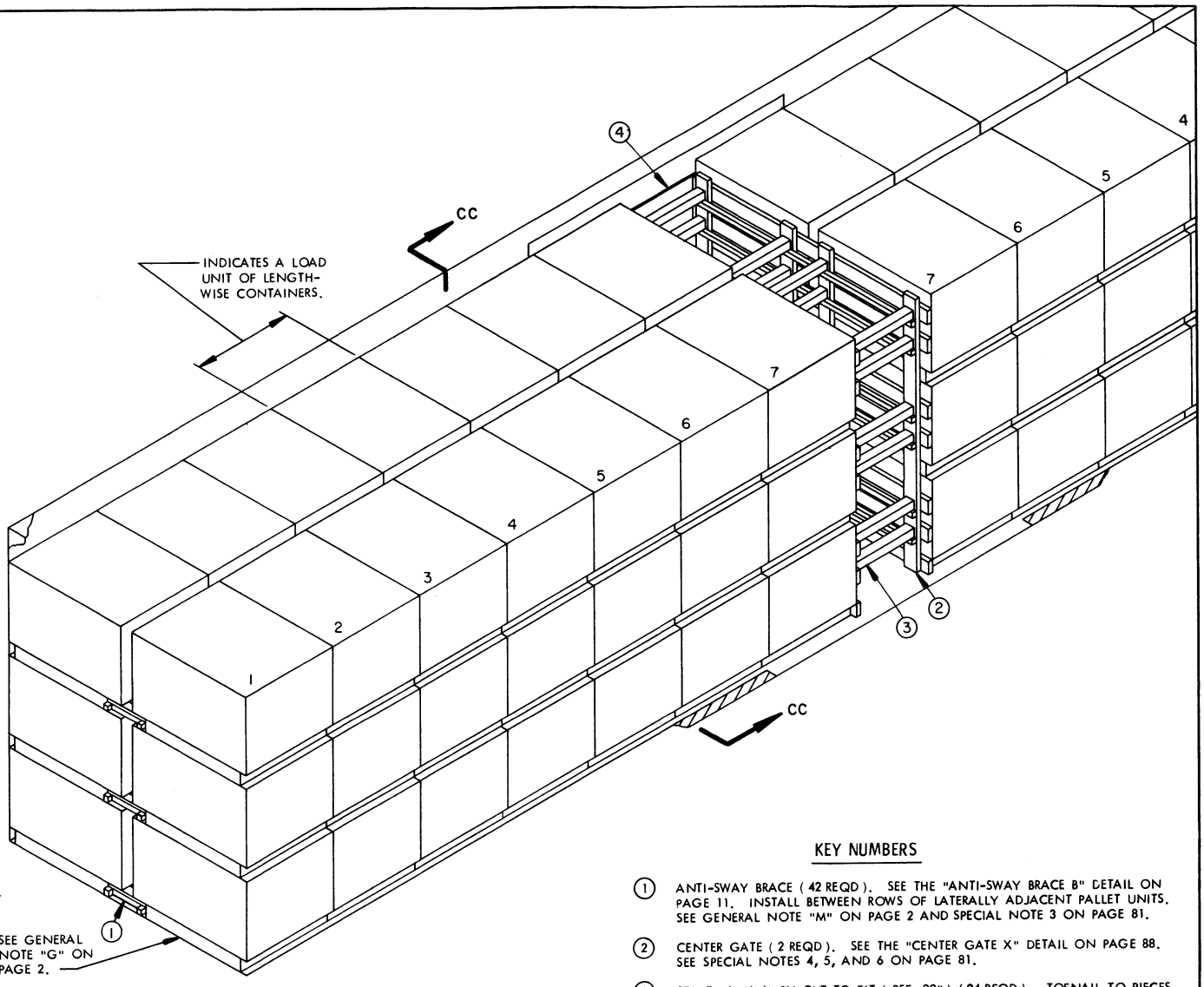
12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 117 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	78	103,818 LBS
DUNNAGE		1,609 LBS
TOTAL WEIGHT		105,427 LBS

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



ISOMETRIC VIEW

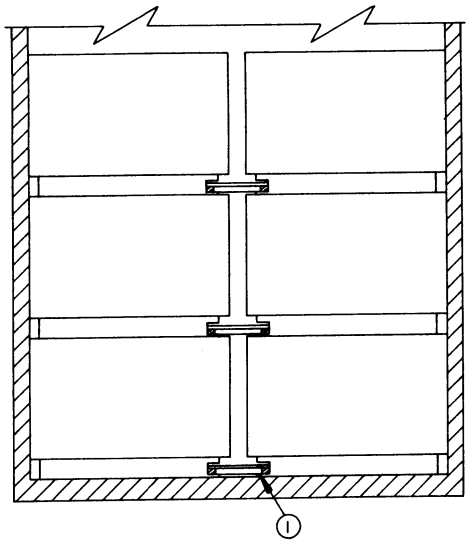
KEY NUMBERS

(1) ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN ROWS OF LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 81.

(2) CENTER GATE (2 REQD). SEE THE "CENTER GATE X" DETAIL ON PAGE 88. SEE SPECIAL NOTES 4, 5, AND 6 ON PAGE 81.

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

(4) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION K" DETAIL ON PAGE 88. SEE SPECIAL NOTE 7 ON PAGE 81.



SECTION CC-CC

CENTER GATE, PIECE MARKED (2) , OMITTED FOR CLARITY.

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

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOORS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 80 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-SIX (66) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 87,846 POUNDS CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. IF A 60'-8" LONG CAR IS AVAILABLE, ONE-HUNDRED-TWO (102) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 135,762 POUNDS CAN BE LOADED.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

4. 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 123 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 80, INSTALL TWO (2) "CENTER GATES V" AS SHOWN ON PAGE 86. 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 123.

6. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE 2" X 3" HOLD DOWNS ON CENTER GATES "X" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 125 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 LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ④ IN THE LOAD ON PAGE 80, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 126 THRU 128 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE "ALTERNATIVE DOORWAY PROTECTION E" DETAIL ON PAGE 128 FOR GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 92 THRU 120 FOR GUIDANCE.

9. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	105	35
1" X 6"	120	60
2" X 2"	355	119
2" X 3"	40	20
2" X 4"	84	56
2" X 6"	191	191
4" X 4"	58	78
NAILS	**NO. REQD**	**POUNDS**
6d (2")	660	4
10d (3")	612	9-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2

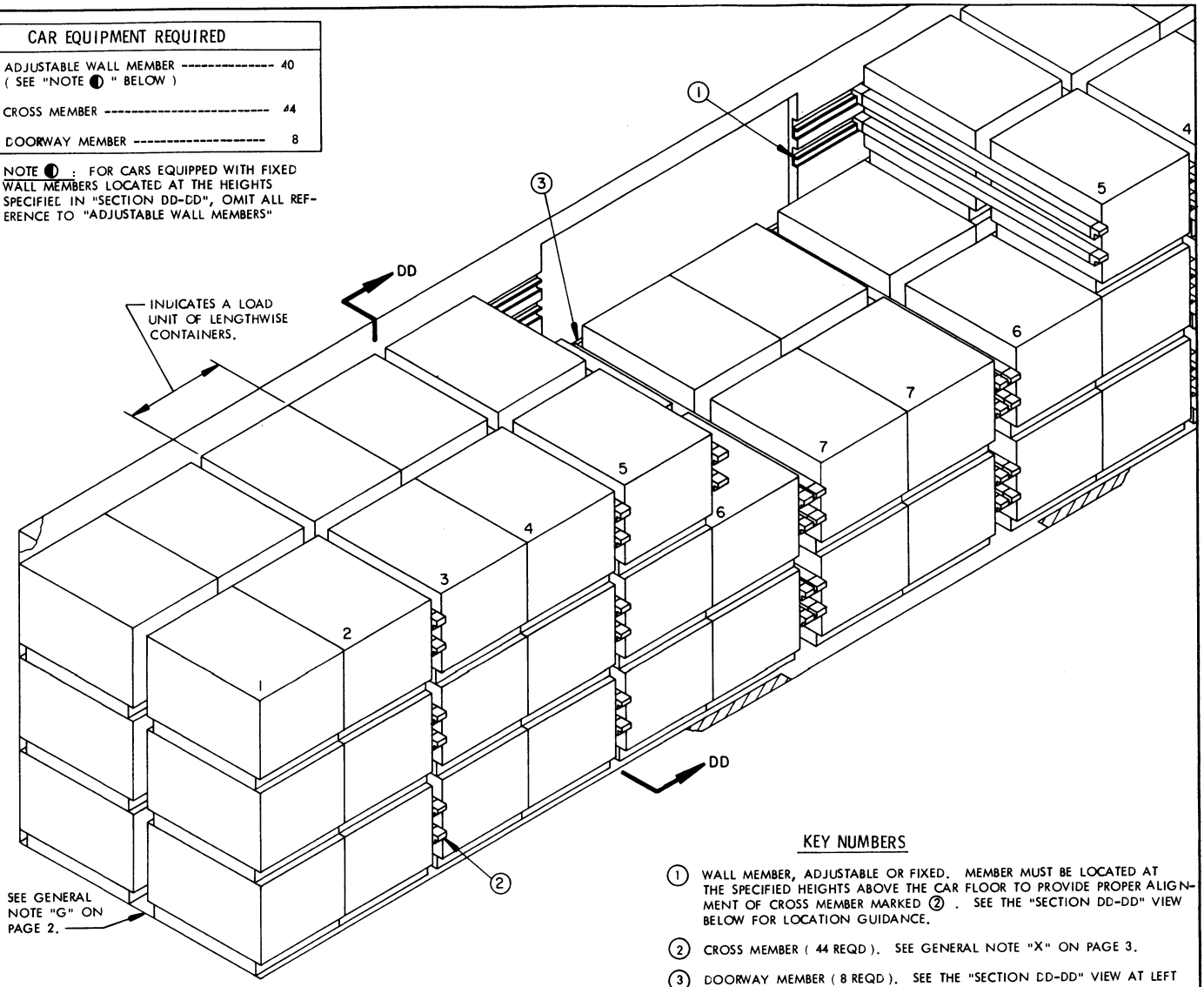
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROXIMATE)
PALLET UNIT	84	111,804 LBS
DUNNAGE		1,134 LBS
	TOTAL WEIGHT	112,938 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	40
CROSS MEMBER	44
DOORWAY MEMBER	8

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



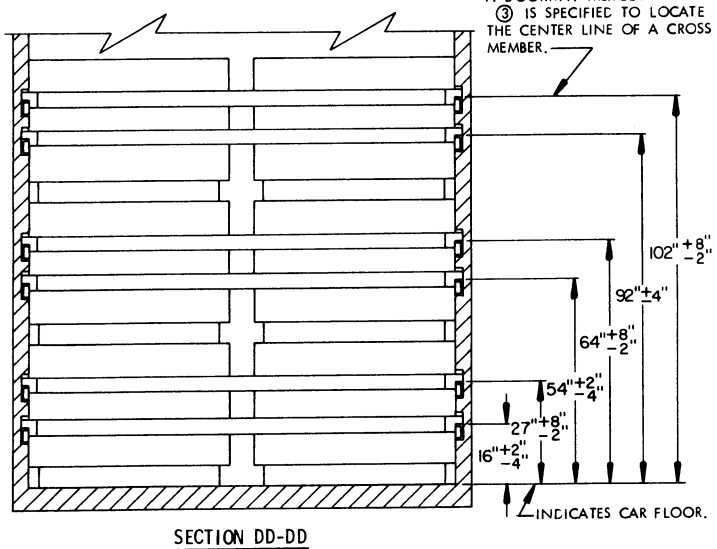
ISOMETRIC VIEW

KEY NUMBERS

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

② CROSS MEMBER (44 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

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



SECTION DD-DD

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

PROJECT FSA 43B/9-63

SPECIAL NOTES:

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

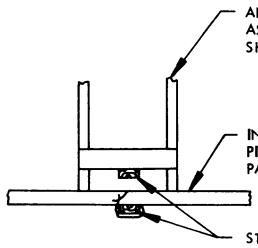
2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 82 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF FIFTY-TWO (52) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 69,212 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD UNIT BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 90 AND 91 FOR GUIDANCE.

5. IF THE CAR BEING LOADED IS 9'-4" OR MORE IN WIDTH, ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS REQUIRED. SEE PIECE MARKED ② ON PAGE 26 AND "STOP DETAIL" AT LEFT.

6. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.



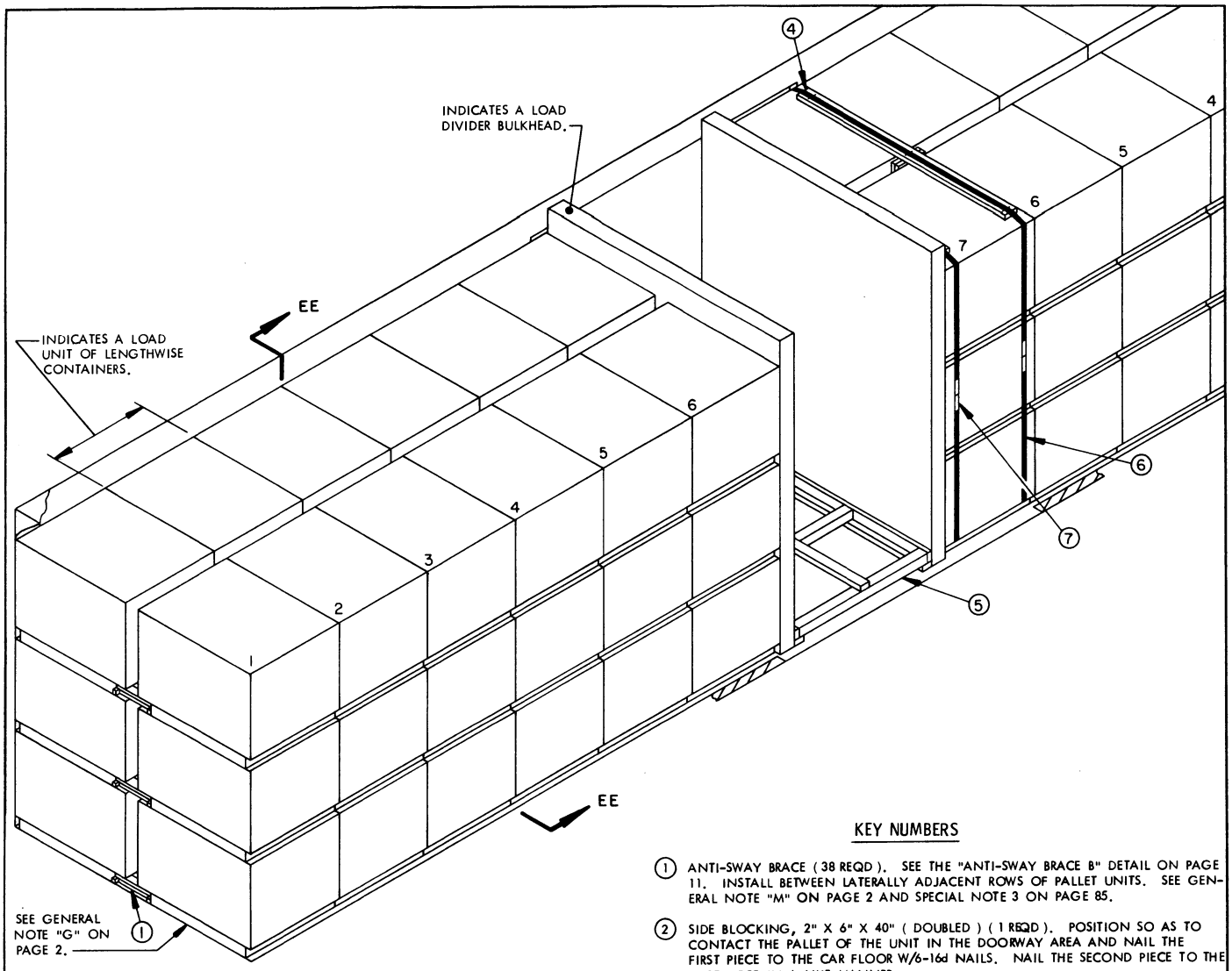
STOP DETAIL

THE ABOVE DETAIL DEPICTS THE METHOD OF INSTALLING STOP PIECES FOR THE ANTI-SWAY BRACES WHEN USING A BOX CAR WHICH IS 9'-4" OR MORE IN WIDTH.

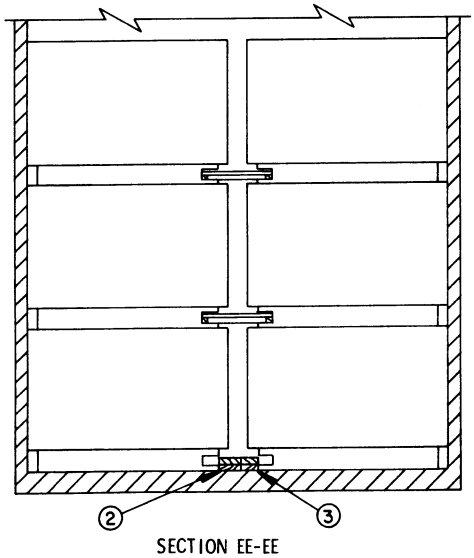
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	101,156 LBS

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 EE-EE

KEY NUMBERS

(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 85.

(2) SIDE BLOCKING, 2" X 6" X 40" (DOUBLED) (1 REQD). POSITION SO AS TO CONTACT THE PALLET OF THE UNIT IN THE DOORWAY AREA AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST PIECE IN A LIKE MANNER.

(3) SIDE BLOCKING, 2" X 4" X 40" (DOUBLED) (1 REQD). PRE-POSITION SO AS TO CONTACT THE PALLET UNIT TO BE PLACED IN THE DOORWAY AREA. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) STRAPPING BOARD (2 REQD). SEE THE "STRAPPING BOARD C" DETAIL ON PAGE 43.

(5) DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 38'-0" LONG STEEL STRAPPING (2 REQD). INSTALL SO AS TO ENCIRCLE THE LOAD UNITS IN THE DOORWAY AREA. STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 85.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 129. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 5 ON PAGE 85.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 84 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF ONE-HUNDRED-TWO (102) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 135,762 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF SIXTY-SIX (66) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 87,846 POUNDS WHEN USING THE DEPICTED PROCEDURES.

3. ANTI-SWAY BRACING BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS IS NOT REQUIRED WHEN THE WIDTH OF THE CAR USED IS LESS THAN 9'-4".

4. DOORWAY PROTECTION IS REQUIRED FOR ALL THE LOAD UNITS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE UNIT WIDTH. DOORWAY PROTECTION WILL CONSIST OF NAILED FLOORLINE BLOCKING, STRAPPING BOARD, AND STEEL STRAPPING ENCIRCLING THE LOAD UNIT. TWO (2) STRAPS ARE REQUIRED AROUND A LOAD UNIT WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE CAR SIDEWALL ON BOTH SIDES OF THE LOAD, AND ONE (1) STRAP IS REQUIRED AROUND A LOAD UNIT WHICH IS RETAINED BY AT LEAST SIX INCHES (6") BUT LESS THAN HALF OF THE UNIT LENGTH. IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS A WOODEN GATE TYPE OF DOORWAY PROTECTION SUCH AS SHOWN IN THE LOAD ON PAGE 80 MAY BE USED.

5. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 84, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS.

6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 94 THRU 105 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 118 AND 120 FOR SHIPPING GUIDANCE.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 119 FOR GUIDANCE.

BILL OF MATERIAL

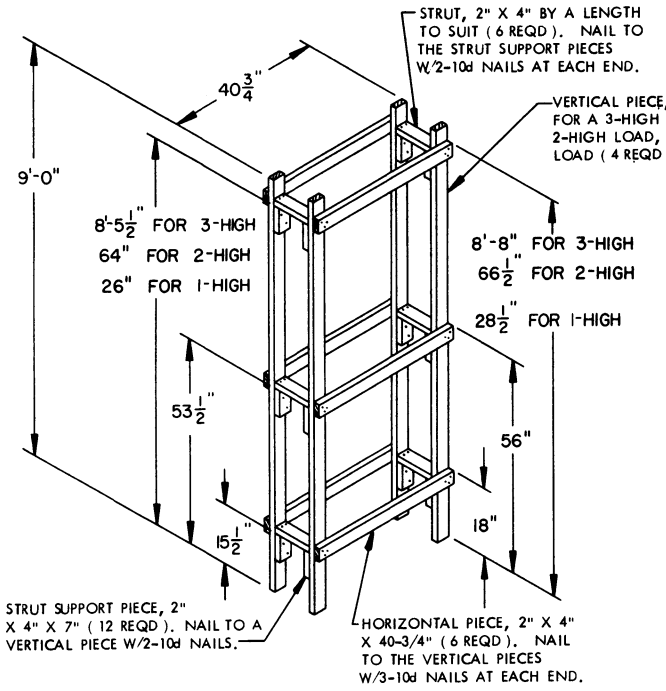
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	95	32
1" X 8"	17	12
2" X 2"	228	76
2" X 4"	129	86
2" X 6"	28	28
4" X 4"	21	28
NAILS	**NO. REQD**	**POUNDS**
6d (2")	548	3-1/4
10d (3")	342	5-1/4
12d (3-1/4")	16	1/4
16d (3-1/2")	24	1/2

STRAP, STEEL, 1-1/4" X .031" OR .035" ---- 76' REQD --- 11 LBS
STAPLE FOR 1-1/4" STRAP ---------- 6 REQD --- NIL
SEAL FOR 1-1/4" STRAP ---------- 4 REQD --- NIL

LOAD AS SHOWN

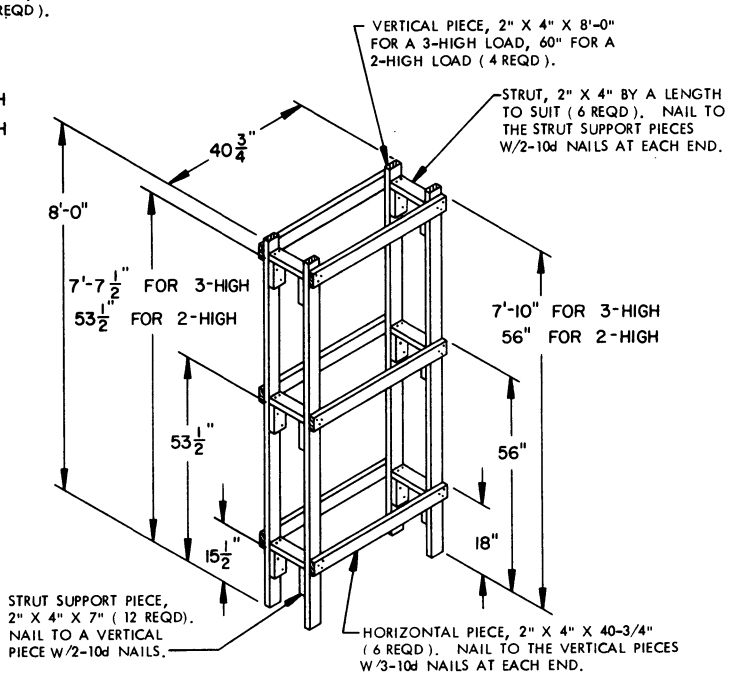
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	78	103,818 LBS
DUNNAGE		544 LBS
TOTAL WEIGHT		104,362 LBS

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



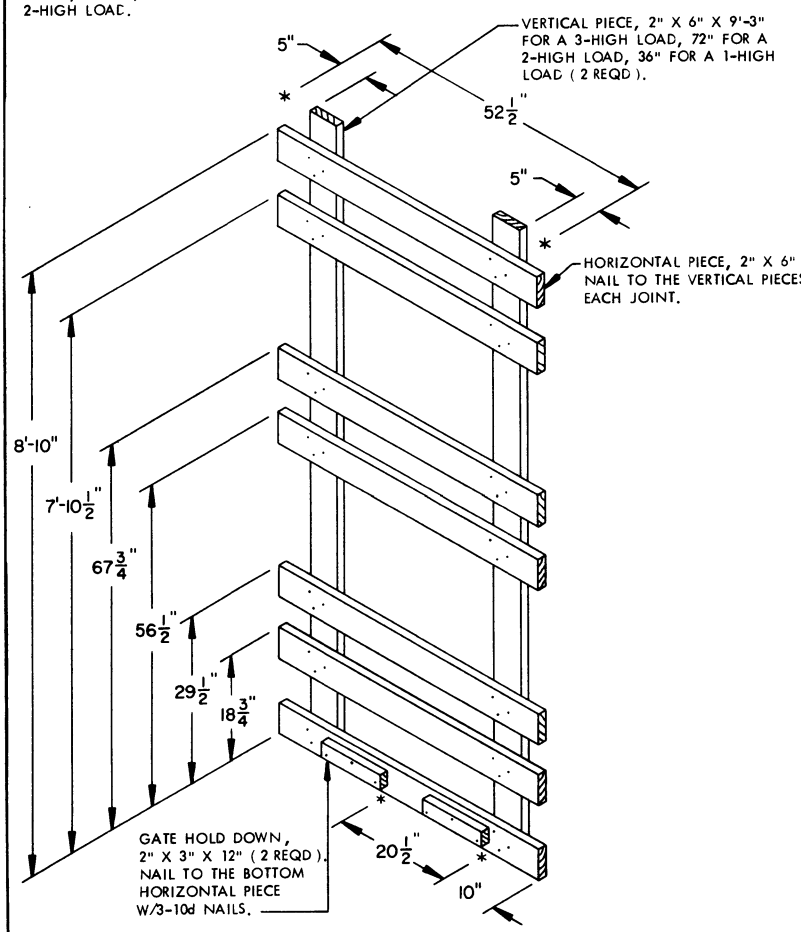
CRIB FILL L

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. OMIT THE MID-HEIGHT HORIZONTAL PIECES, STRUTS, AND STRUT SUPPORT PIECES WHEN USING CRIB FOR A 1 OR 2-HIGH LOAD.

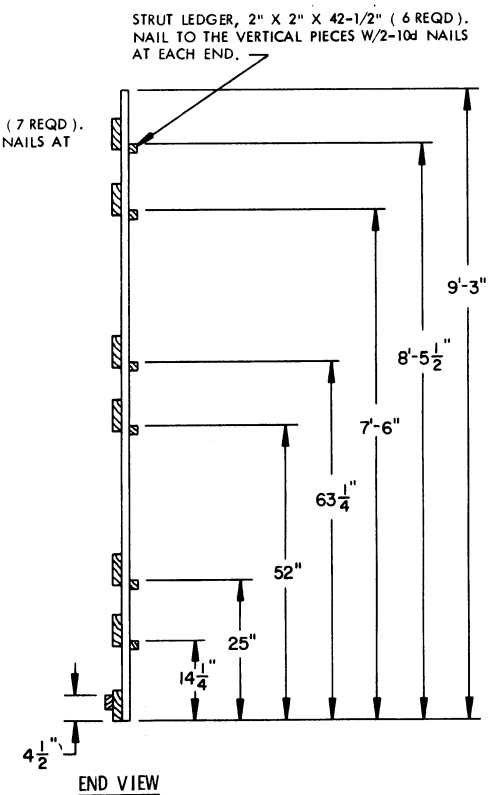


CRIB FILL M

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

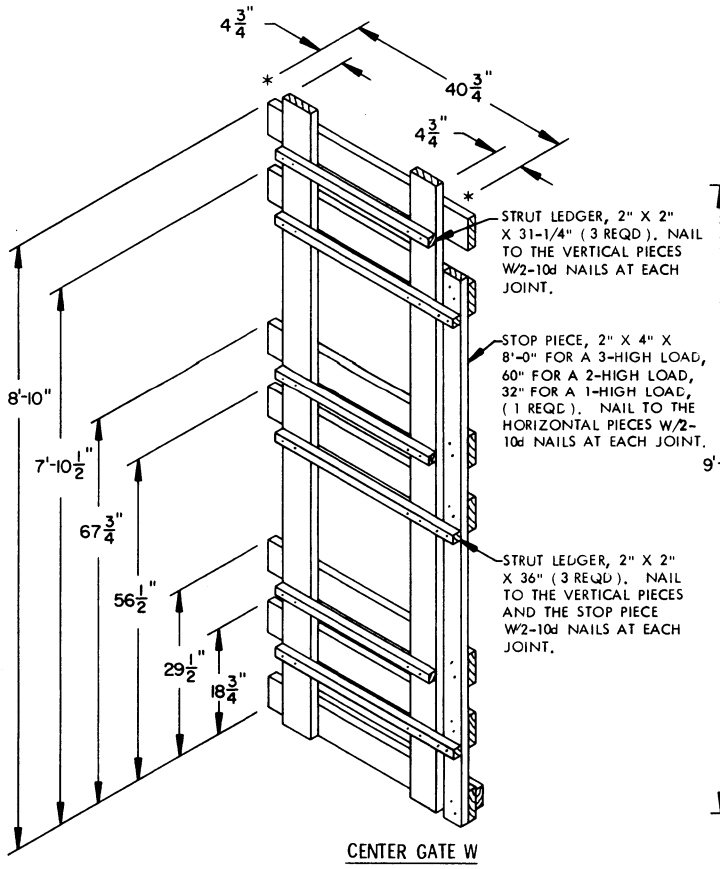


CENTER GATE V



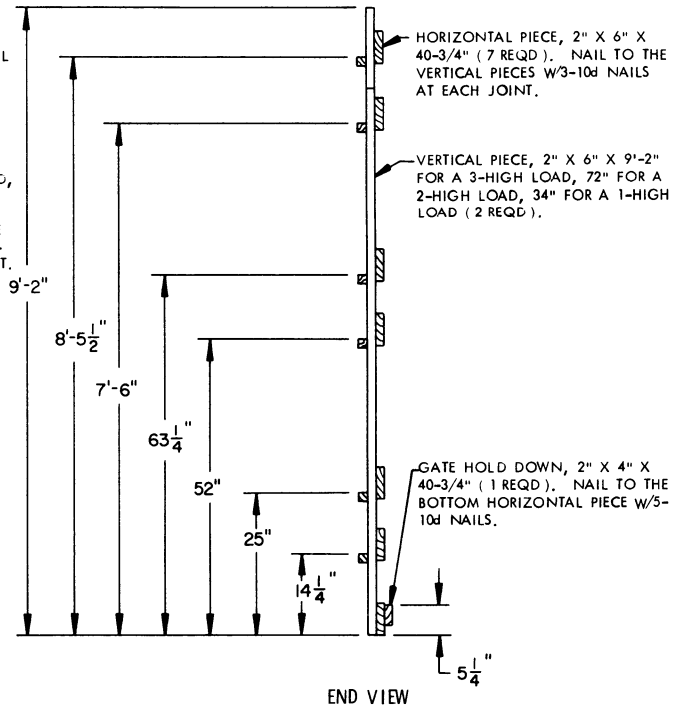
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



CENTER GATE W

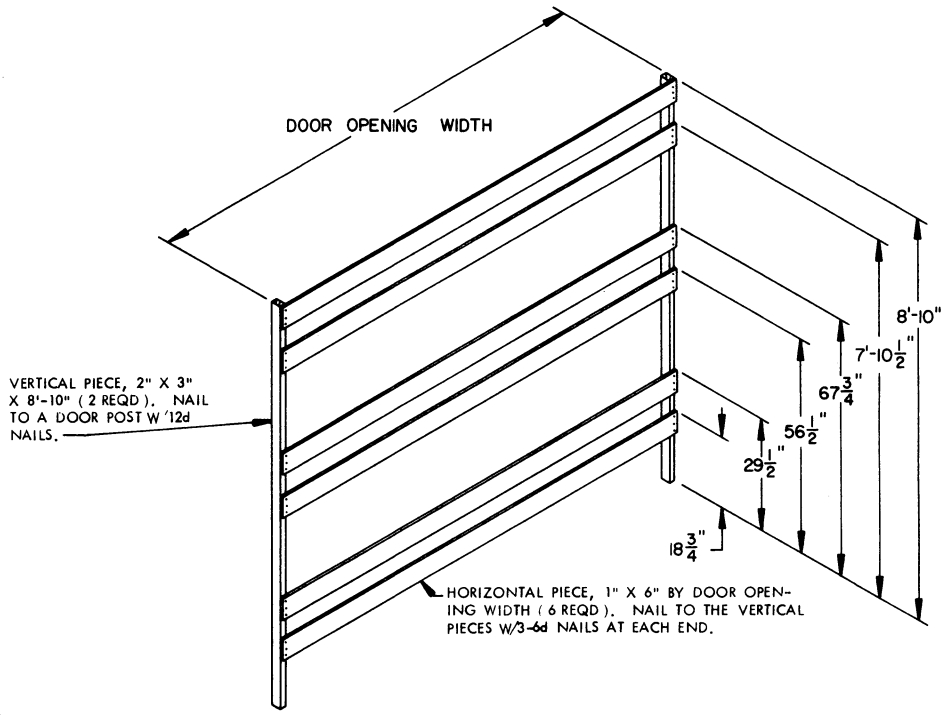
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED. NOTE THAT THE SECOND STRUT LEDGER FROM THE BOTTOM MUST BE 36" LONG FOR A 1-HIGH LOAD.



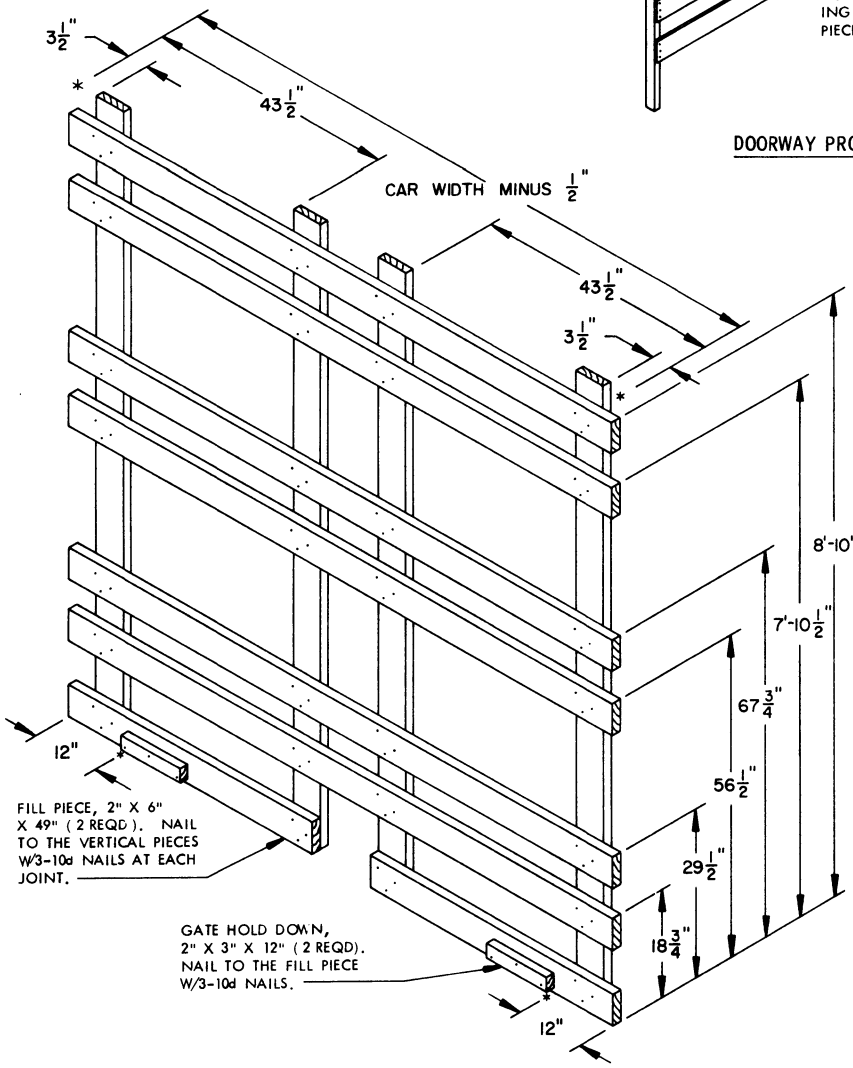
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

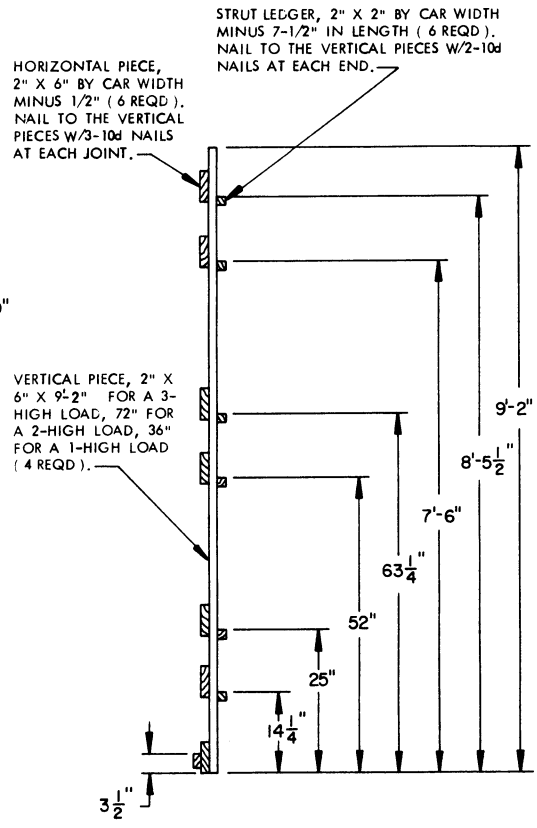
PROJECT FSA 43B/9-63



DOORWAY PROTECTION K



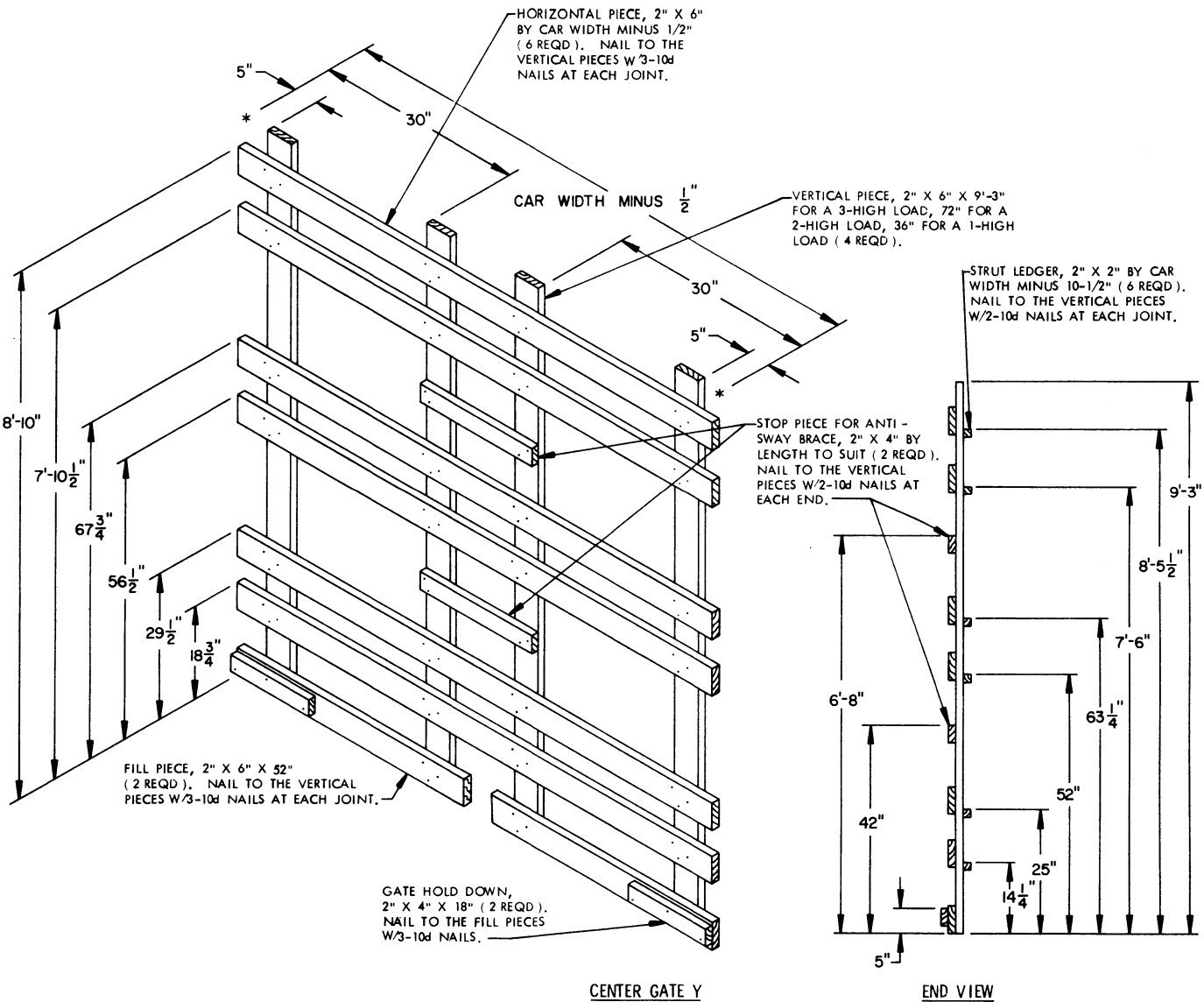
CENTER GATE X



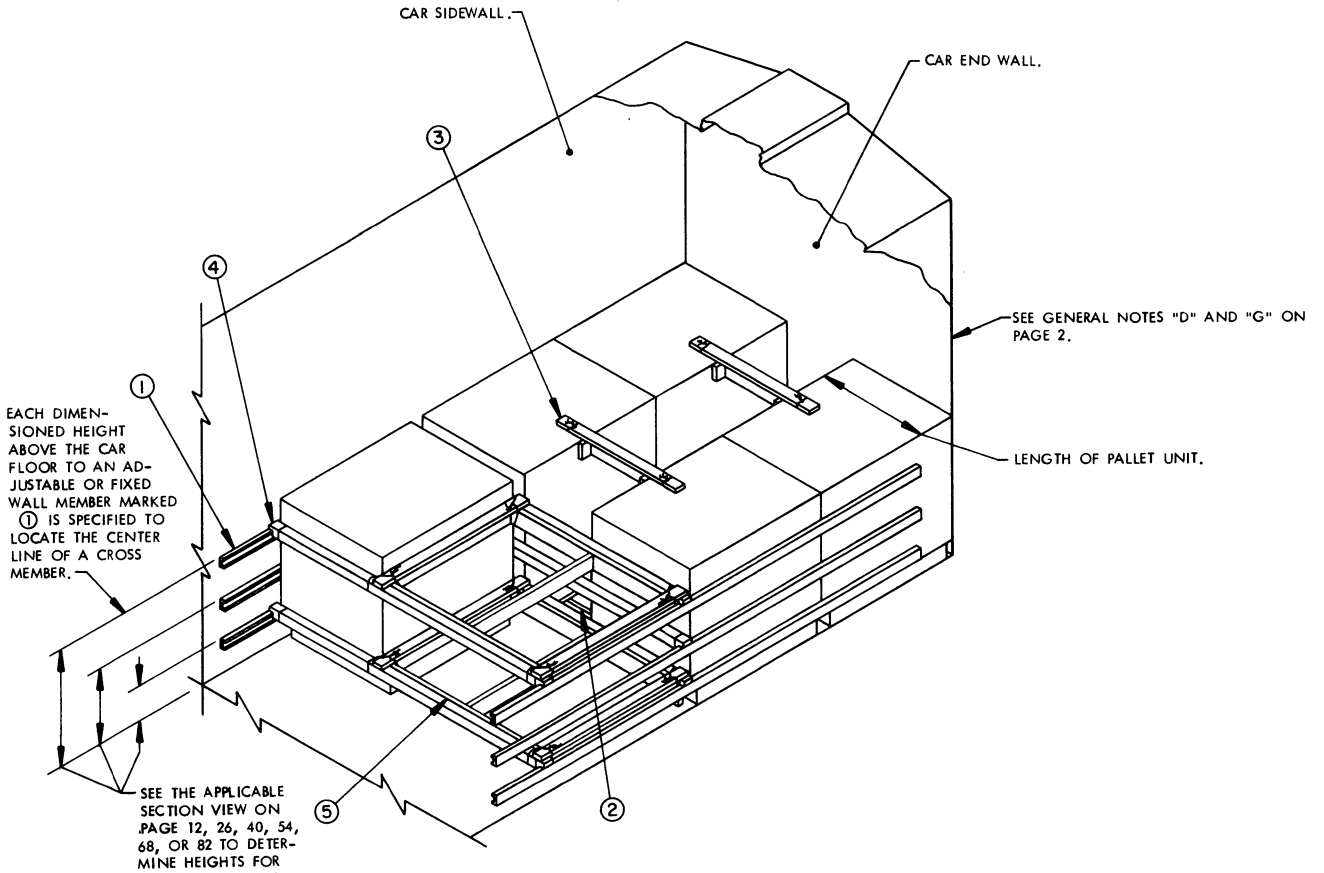
END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

PROJECT FSA 43B/9-63



DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.

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

3. FIVE (5) UNITS ARE SHOWN AS A TYPICAL LOAD QUANTITY. THE NUMBER OF UNITS CAN BE ADJUSTED TO SUIT THE QUANTITY TO BE SHIPPED.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ③ , MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO A UNIT WITH NO. 14 GAGE WIRE. THREE (3) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH. SEE NOTE ● BELOW.

5. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED ⑤ , 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 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 ④ .

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

③ TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 122.

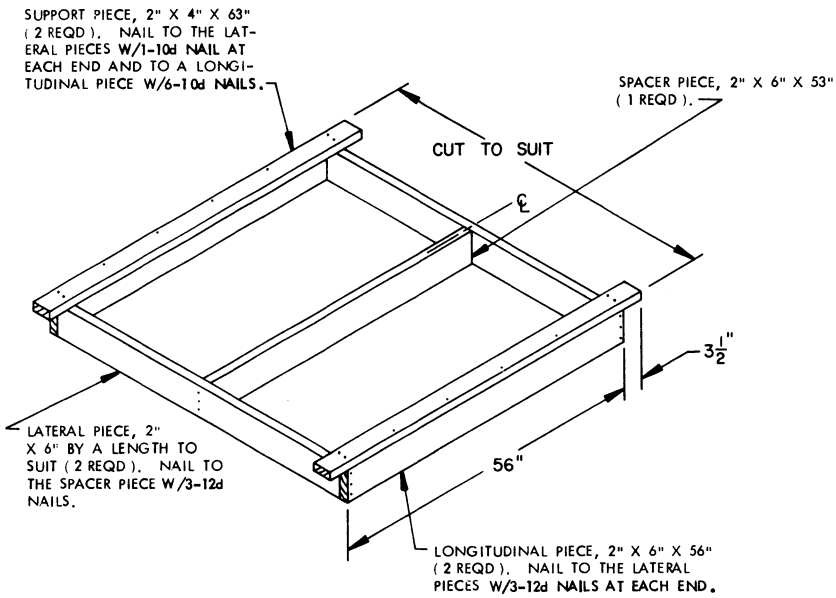
④ CROSS MEMBER (5 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

⑤ SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 91 AND SPECIAL NOTES AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

NOTE ● :

ALTHOUGH SPECIAL NOTE 4 SPECIFIES THAT THREE (3) TOP-OF-LOAD ANTI-SWAY BRACES ARE REQUIRED IN EACH END OF A LOAD, THIS MAY NOT ALWAYS APPLY SUCH AS SHOWN IN THE ISOMETRIC VIEW ABOVE. THE THREE (3) BRACE REQUIREMENT WILL ONLY APPLY TO A LOAD OF SIX (6) OR MORE PALLET UNITS.

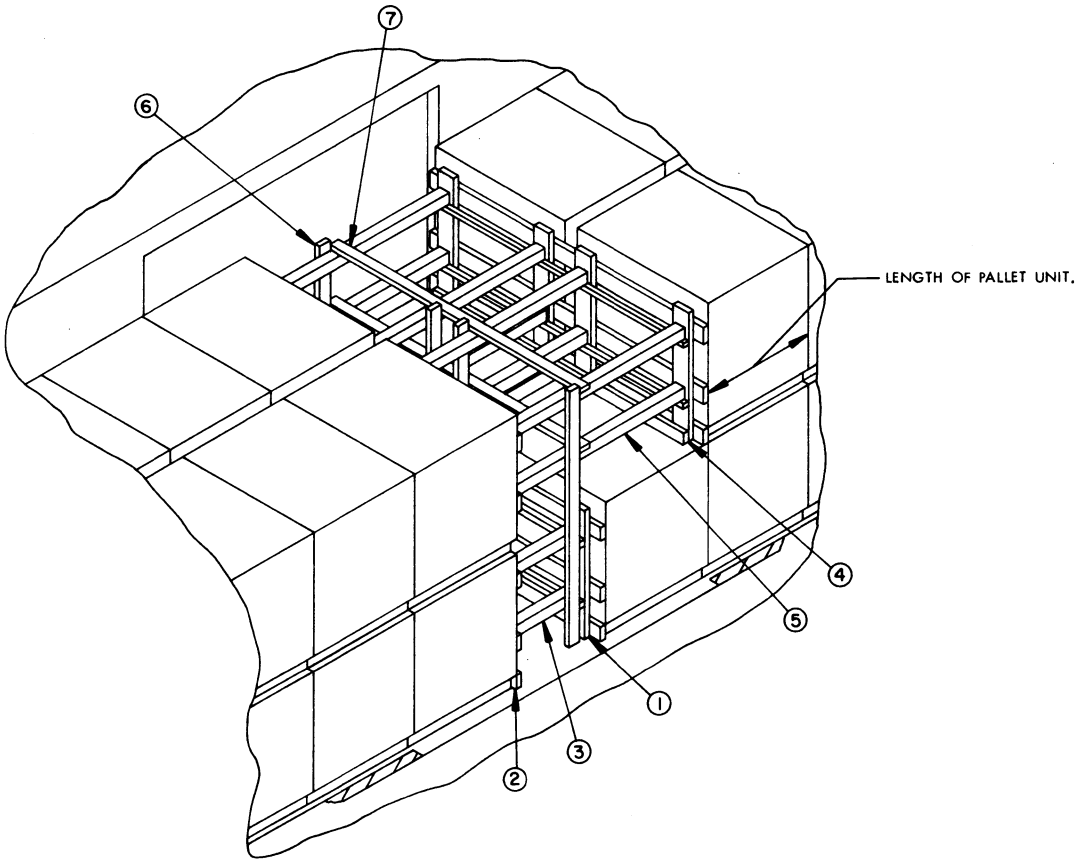
TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES HAVING ADJUSTABLE OR FIXED WALL MEMBERS



SPACER ASSEMBLY

THE DIMENSIONS GIVEN ARE BASED ON THE UNIT SPECIFIED IN SPECIAL NOTE 2 ON PAGE 90. MODIFICATIONS MAY BE MADE SO AS TO APPLY TO THE OTHER PALLET UNITS AS DETAILED WITHIN THIS DOCUMENT.

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER CARS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE 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 "U" USED IS ONLY APPLICABLE FOR THE ROUTED DUNNAGE METHOD UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES, WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED.

KEY NUMBERS

(1) CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 75. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 5 AT THE LEFT.

(2) CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE U" DETAIL ON PAGE 75.

(3) STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED (1) AND (2) , IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "L" AND "U" ON PAGE 2 AND "V" ON PAGE 3.

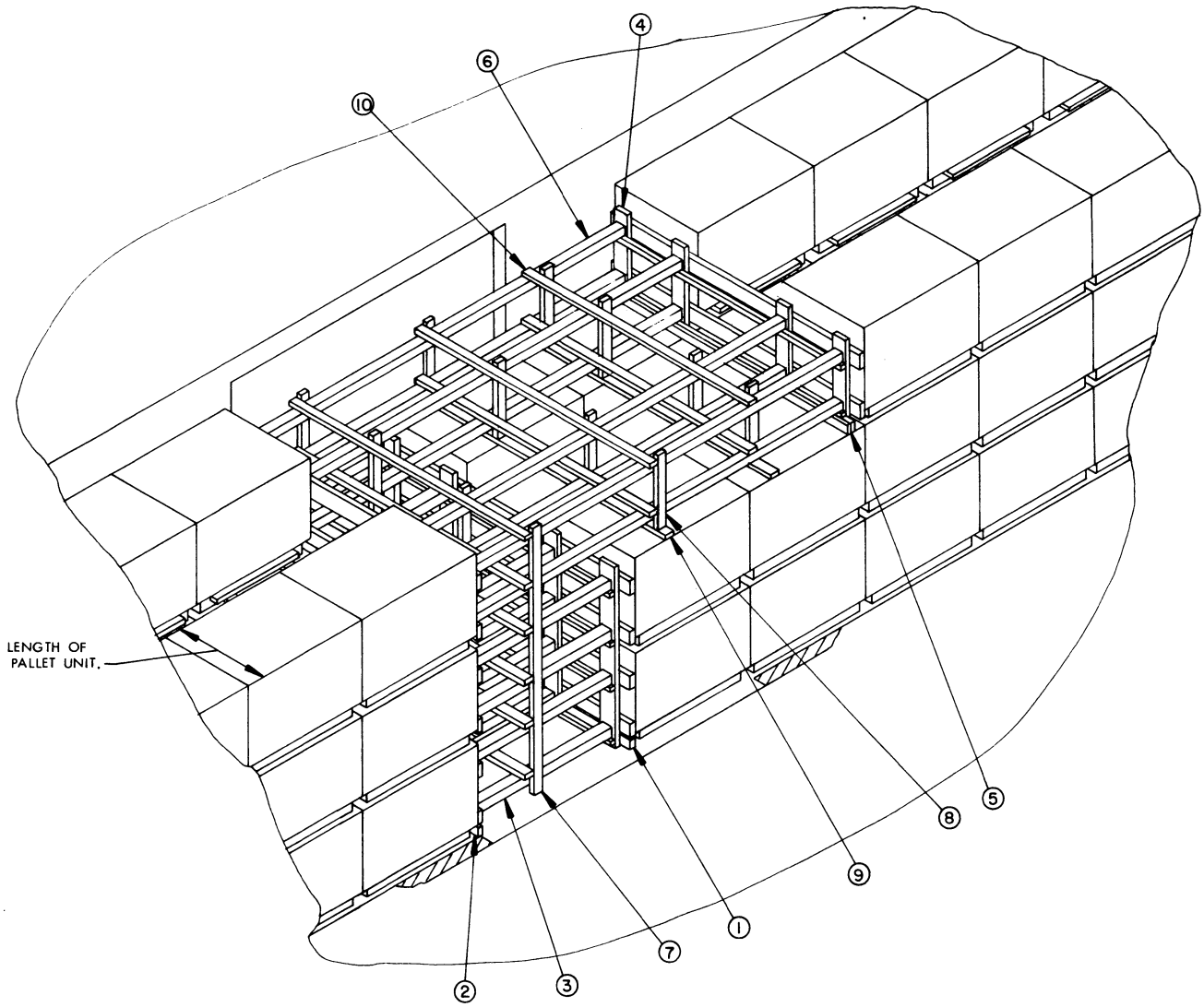
(4) GATE SUPPORT PIECE, 2" X 4" BY A LENGTH TO SUIT (1 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATE USED IN THE SECOND LAYER W/3-10d NAILS AT EACH JOINT.

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

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

(7) HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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



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 18. SEE SPECIAL NOTE 5 AT LEFT. SEE GENERAL NOTE "M" ON PAGE 2.

② CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18.

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

④ CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 18.

⑤ SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES ON CENTER GATE "C", SHOWN AS PIECE MARKED ④ , W/3-10d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE TO THE FIRST W/1-10d NAIL EVERY 12".

⑥ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PIECES MARKED ② AND ④ W/2-10d 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.

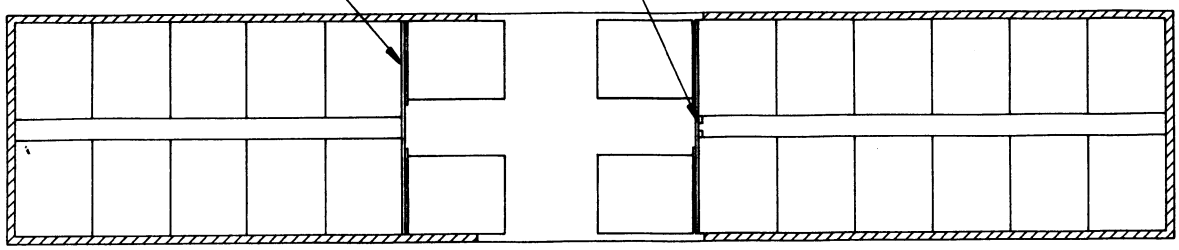
⑨ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.

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

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

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE). SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 95. POSITION AS SHOWN WITH THE VERTICAL PIECES AGAINST THE CROSSWISE POSITIONED PALLET UNITS.

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



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

AN 11 LONG PLUS 2 WIDE LOAD IS SHOWN

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. WIDER CARS AND CARS OF OTHER LENGTHS CAN BE USED.
2. THE PROCEDURES ON THIS PAGE AND ON PAGE 95 ARE PRESENTED TO PROVIDE A METHOD OF OBTAINING A LOAD QUANTITY WHICH MAY NOT BE READILY ATTAINABLE BY ANY OF THE OTHER METHODS OF ADJUSTING A LOAD QUANTITY SPECIFIED HEREIN, INCLUDING THE DEPICTED LCL PROCEDURES.
3. THE BLOCKING AND BRACING FOR THE COMBINATION LOAD, OTHER THAN SEPARATOR GATE "E", HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE "E" MUST BE INSTALLED AT EVERY LOCATION WHERE THE DIRECTION OF THE UNITS CHANGES. THE GATE MUST BE POSITIONED SO THAT THE VERTICAL PIECES ARE AGAINST THE CROSSWISE UNITS OF THE LOAD.
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.

FLAT DUNNAGE METHOD UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 38 OR 52	29"
	20	8 LONG AT 40-3/4" PLUS 2 WIDE AT 53-1/2"	44"
	18	3 LONG AT 40-3/4" PLUS 4 WIDE AT 53-1/2"	59"
	16	CROSSWISE LOAD ON PAGE 36 OR 50	52"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 38 OR 52	29"
	26	12 LONG AT 40-3/4" PLUS 1 WIDE AT 53-1/2"	56"
	26	10 LONG AT 40-3/4" PLUS 3 WIDE AT 53-1/2"	28"
	24	6 LONG AT 40-3/4" PLUS 6 WIDE AT 53-1/2"	30"
	22	CROSSWISE LOAD ON PAGE 36 OR 50	18"
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 38 OR 52	29"
	32	14 LONG AT 40-3/4" PLUS 2 WIDE AT 53-1/2"	41"
	30*	11 LONG AT 40-3/4" PLUS 4 WIDE AT 53-1/2"	56"
	30*	9 LONG AT 40-3/4" PLUS 6 WIDE AT 53-1/2"	31"
	28	5 LONG AT 40-3/4" PLUS 9 WIDE AT 53-1/2"	33"
	26	3 LONG AT 40-3/4" PLUS 10 WIDE AT 53-1/2"	61"
	26	CROSSWISE LOAD ON PAGE 36 OR 50	26"

* THE COMBINATION LOAD ON PAGE 34 OR 48 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 29" AND 26" LONG.

ALTERNATED CONTAINERS UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 10 OR 24	52"
	20	9 LONG AT 37-3/4" PLUS 2 WIDE AT 50-1/2"	32"
	20	7 LONG AT 37-3/4" PLUS 3 WIDE AT 50-1/2"	59"
	21	COMBINATION LOAD ON PAGE 6 OR 20	19" AND 25"
	18	CROSSWISE LOAD ON PAGE 8 OR 22	25"
50'-6" CAR	30	LENGTHWISE LOAD ON PAGE 10 OR 24	24"
	28	11 LONG AT 37-3/4" PLUS 3 WIDE AT 50-1/2"	23"
	26	9 LONG AT 37-3/4" PLUS 4 WIDE 50-1/2"	50"
	24	9 WIDE AT 50-1/2" PLUS 3 LONG AT 37-3/4"	30"
	24*	8 WIDE AT 50-1/2" PLUS 4 LONG AT 37-3/4"	48"
	22	CROSSWISE LOAD ON PAGE 8 OR 22	65"
60'-8" CAR	36	LENGTHWISE LOAD ON PAGE 10 OR 24	30"
	32	10 LONG AT 37-3/4" PLUS 6 WIDE AT 50-1/2"	32"
	30	8 LONG AT 37-3/4" PLUS 7 WIDE AT 50-1/2"	60"
	30	COMBINATION LOAD ON PAGE 6 OR 20	28" AND 65"
	28	6 LONG AT 37-3/4" PLUS 8 WIDE AT 50-1/2"	87"
	26	CROSSWISE LOAD ON PAGE 8 OR 22	65"

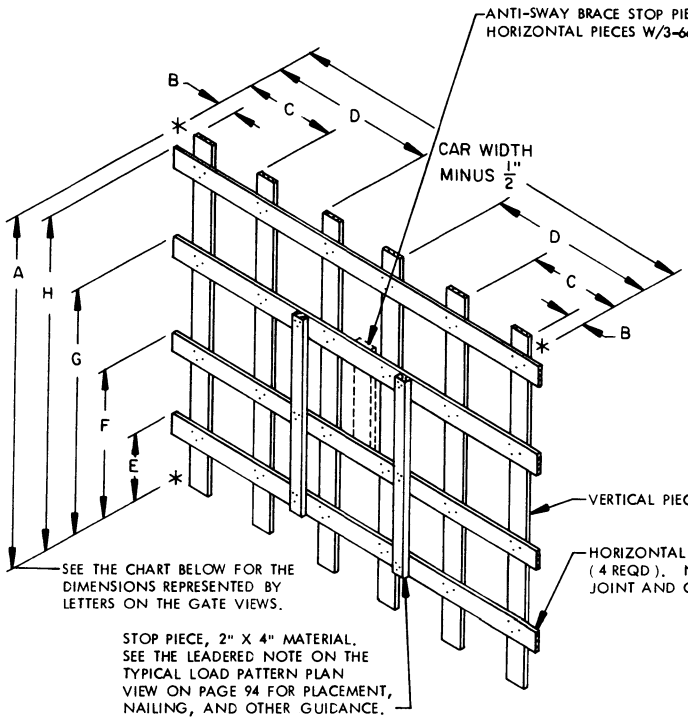
* THE COMBINATION LOAD ON PAGE 6 OR 20, MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 28" AND 65" LONG.

ROUTED DUNNAGE METHOD UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	22	LENGTHWISE LOAD ON PAGE 66 OR 80	31"
	20	6 LONG AT 40-3/4" PLUS 4 WIDE AT 52-1/2"	24"
	18	3 LONG AT 40-3/4" PLUS 6 WIDE AT 52-1/2"	40"
	18	CROSSWISE LOAD ON PAGE 64 OR 78	60"
	19	COMBINATION LOAD ON PAGE 62 OR 76	31" AND 60"
	16	8 WIDE AT 52-1/2"	60"
50'-6" CAR	28	LENGTHWISE LOAD ON PAGE 66 OR 80	29"
	26	11 LONG AT 40-3/4" PLUS 2 WIDE AT 52-1/2"	45"
	26	9 LONG AT 40-3/4" PLUS 4 WIDE AT 52-1/2"	21"
	24	7 LONG AT 40-3/4" PLUS 5 WIDE AT 52-1/2"	50"
	24	6 LONG AT 40-3/4" PLUS 6 WIDE AT 52-1/2"	38"
	22	3 LONG AT 40-3/4" PLUS 8 WIDE AT 52-1/2"	55"
	22	CROSSWISE LOAD ON PAGE 64 OR 78	22"
60'-8" CAR	34	LENGTHWISE LOAD ON PAGE 66 OR 80	29"
	32	14 LONG AT 40-3/4" PLUS 2 WIDE AT 52-1/2"	42"
	30*	11 LONG AT 40-3/4" PLUS 4 WIDE AT 52-1/2"	60"
	30*	9 LONG AT 40-3/4" PLUS 6 WIDE AT 52-1/2"	36"
	28	6 LONG AT 40-3/4" PLUS 8 WIDE AT 52-1/2"	52"
	26	CROSSWISE LOAD ON PAGE 64 OR 78	39"

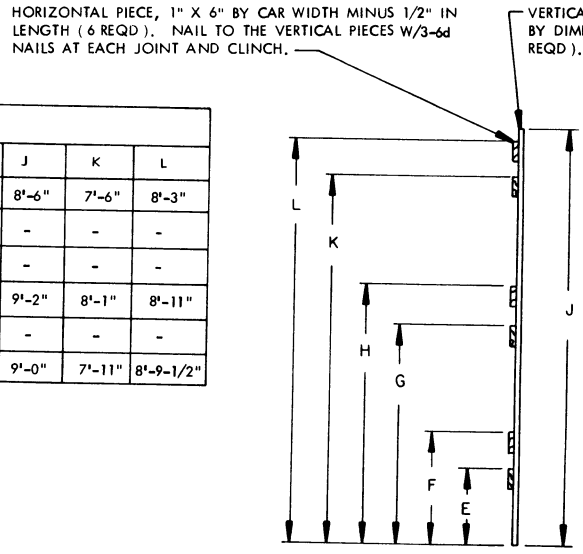
* THE COMBINATION LOAD ON PAGE 62 OR 76 MAY BE USED, IF DESIRED. STRUTS FOR THE COMBINATION LOAD WILL BE APPROXIMATELY 29" AND 39" LONG.

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



SEPARATOR GATE E

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



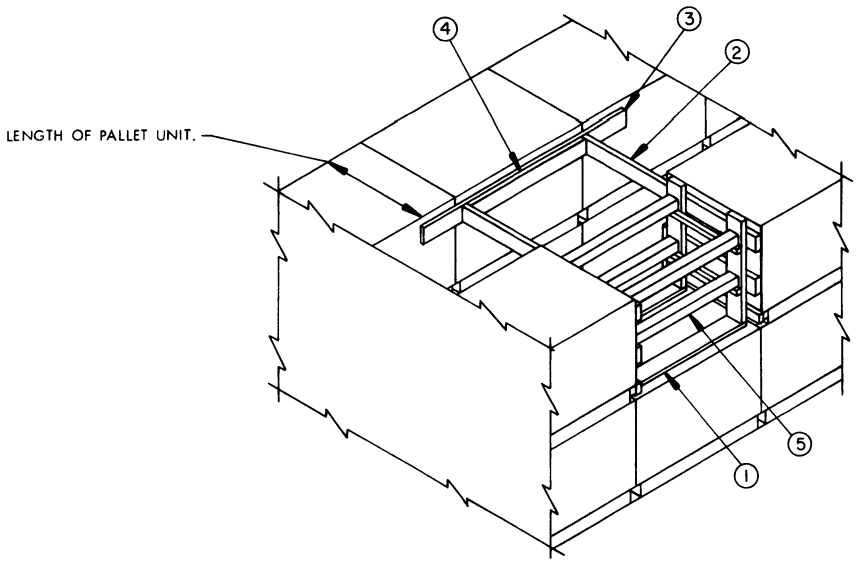
PALLET UNIT NUMBER	DIMENSIONS										
	A	B	C	D	E	F	G	H	J	K	L
1	66"	4-1/2"	28"	38-1/2"	19"	28"	54"	63-1/2"	8'-6"	7'-6"	8'-3"
2	7'-2"	4-1/2"	28"	38-1/2"	19"	37"	63-1/2"	6'-11"	-	-	-
3	7'-8"	4-1/2"	30"	41"	20"	40"	69"	7'-5"	-	-	-
4	72"	4-1/2"	30"	41"	20"	30"	58"	68-1/2"	9'-2"	8'-1"	8'-11"
5	7'-8"	5"	31-1/2"	41"	19"	40"	67"	7'-4-1/2"	-	-	-
6	72"	5"	31-1/2"	41"	19"	29-1/2"	57"	67-1/2"	9'-0"	7'-11"	8'-9-1/2"

PALLET UNIT IDENTIFICATION	SHOWN AS UNIT NUMBER
ALTERNATED CONTAINERS (BASIC HEIGHT)	1
ALTERNATED CONTAINERS (INCREASED HEIGHT)	2
FLAT DUNNAGE METHOD (BASIC HEIGHT)	3
FLAT DUNNAGE METHOD (DECREASED HEIGHT)	4
ROUTED DUNNAGE METHOD (BASIC HEIGHT)	5
ROUTED DUNNAGE METHOD (DECREASED HEIGHT)	6

END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD WHICH IS ONLY APPLICABLE FOR UNITS 1, 4, AND 6 AS IDENTIFIED AT THE LEFT. STOP PIECES HAVE NOT BEEN SHOWN FOR CLARITY.

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" 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.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" X 50-1/2" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2) .

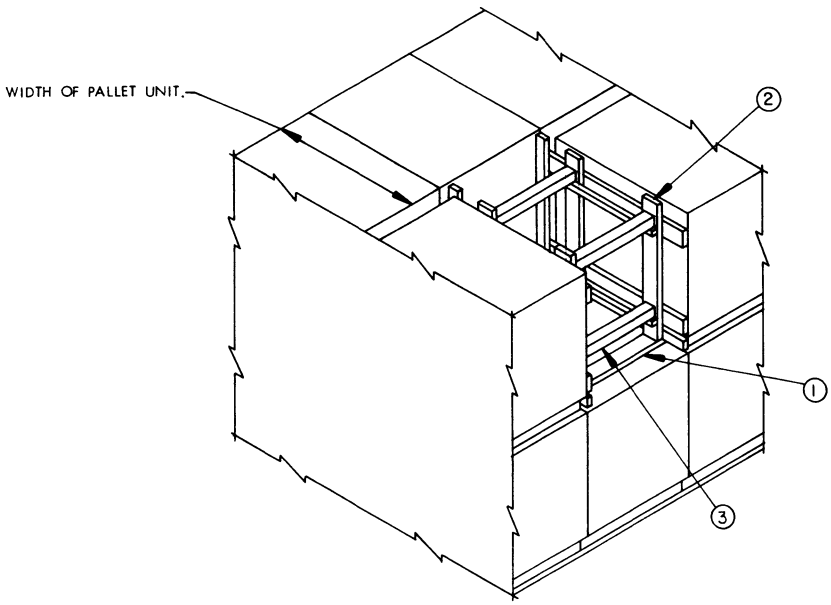
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 98 OR 99. NAIL TO THE FILLER PIECE, PIECE MARKED (4) , W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1) , W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

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

(4) FILLER PIECE, 2" X 6" X 47-1/2" (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: 44-1/2") (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 CROSSWISE CONTAINER LOAD



ISOMETRIC VIEW

SPECIAL NOTES:

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

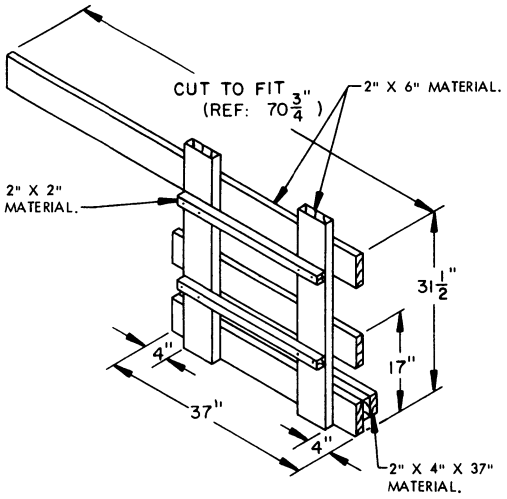
KEY NUMBERS

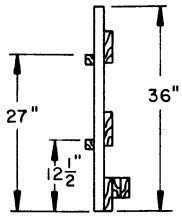
(1) SUPPORT PIECE, 2" X 6" BY UNIT LENGTH (2 REQD). POSITION SO AS TO BE UNDER THE 2" X 6" VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2) .

(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE APPLICABLE DETAIL ON PAGE 100 OR 101. 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 LENGTHWISE CONTAINER LOAD

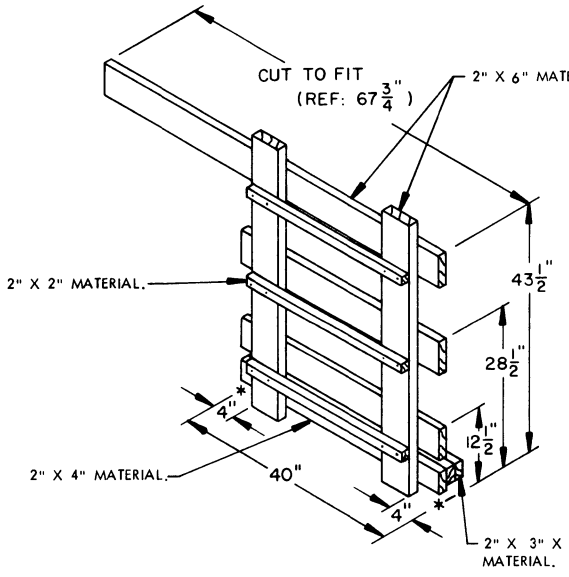


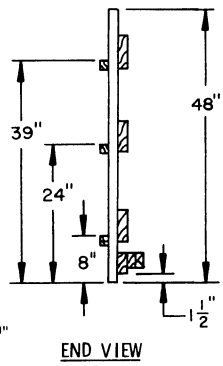


END VIEW

LOAD BEARING GATE A

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





END VIEW

LOAD BEARING GATE B

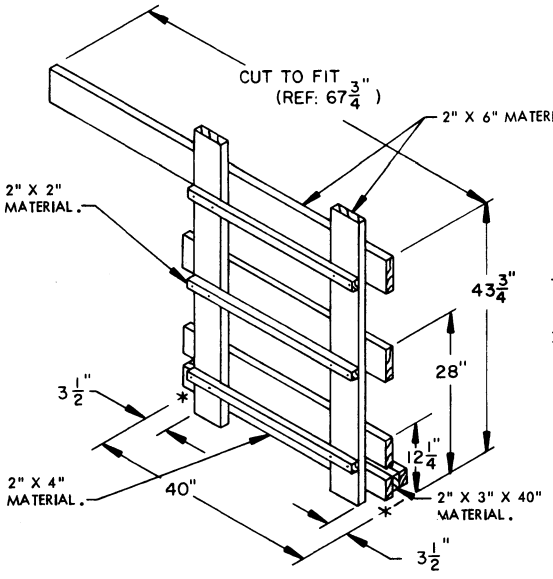
THIS GATE IS FOR USE IN A LOAD OF FLAT DUNNAGE METHOD UNITS (BASIC HEIGHT). SEE SPECAIL NOTE 3 BELOW FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

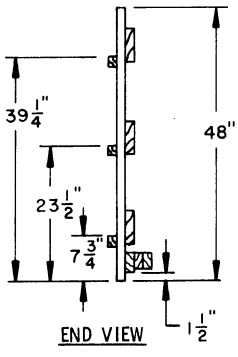
SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 96. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED PALLET UNITS.

2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.

3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 4" OR 2" X 3" GATE HOLD DOWN PIECES TO A 2" X 4" OR 2" X 6" HORIZONTAL PIECE, AS APPLICABLE, W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/ 2-10d NAILS AT EACH END.



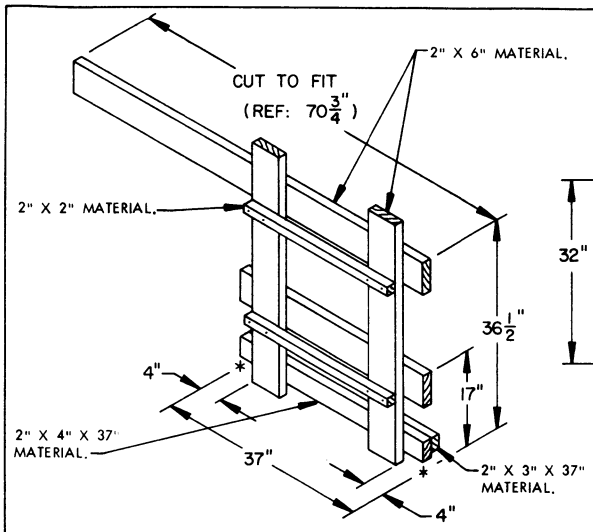


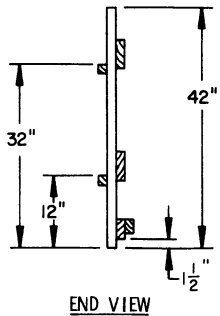
END VIEW

LOAD BEARING GATE C

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

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

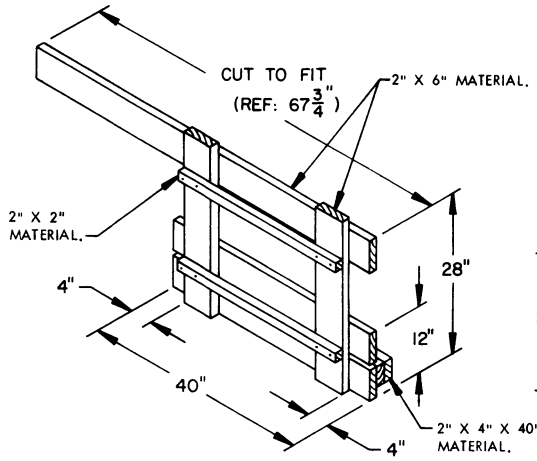


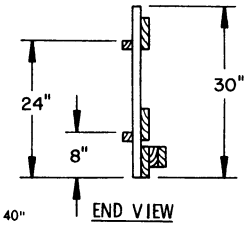


END VIEW

LOAD BEARING GATE D

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

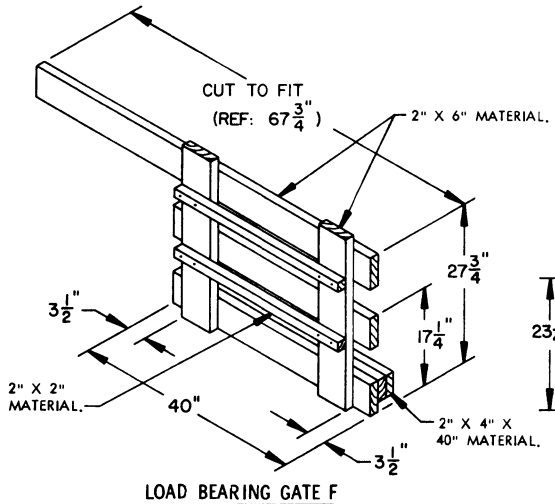


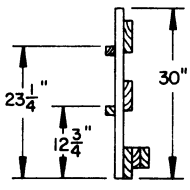


END VIEW

LOAD BEARING GATE E

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





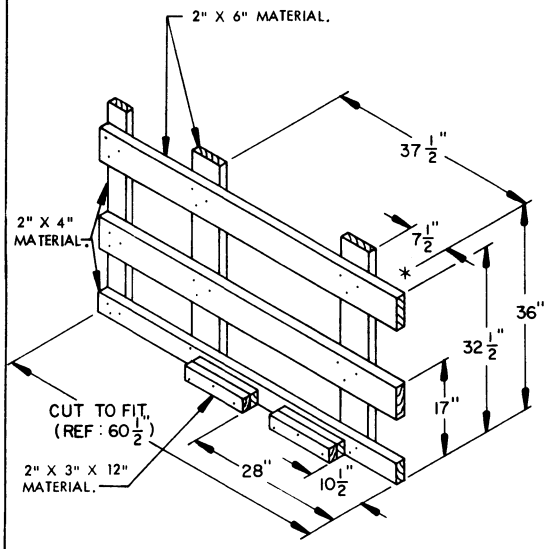
END VIEW

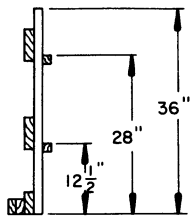
LOAD BEARING GATE F

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

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

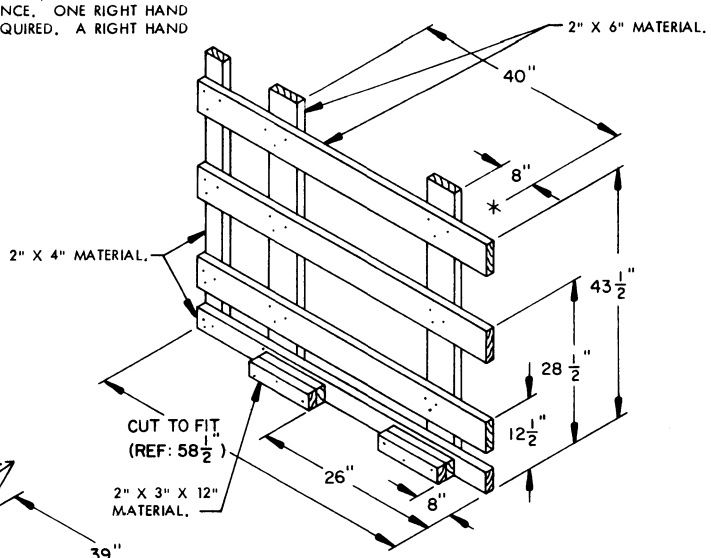


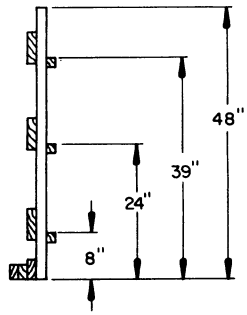


END VIEW

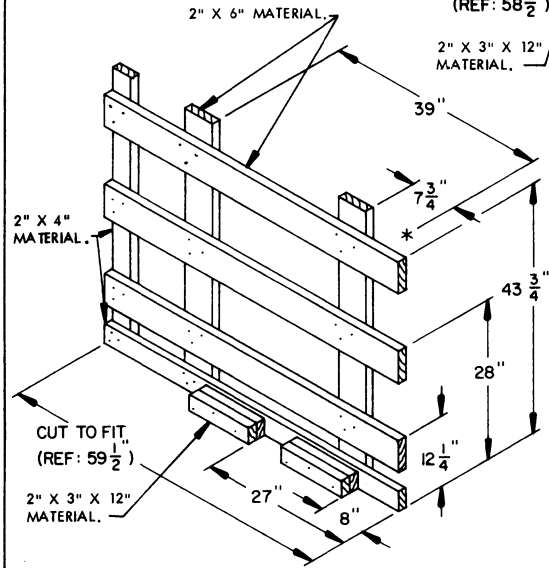
LOAD BEARING GATE G

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



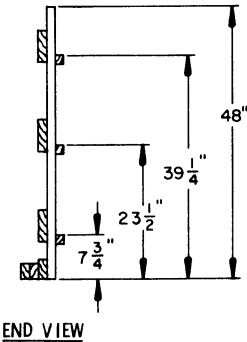


END VIEW



LOAD BEARING GATE H

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



END VIEW

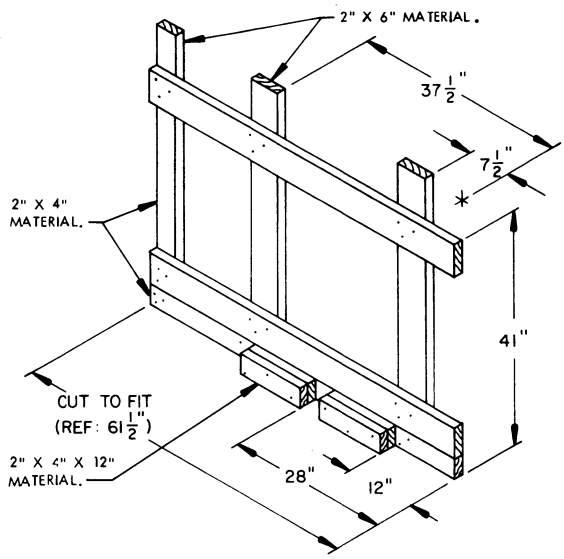
SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH BASIC-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 97. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. THE NAILING OF THE VARIOUS PARTS OF THE GATE WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 3" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

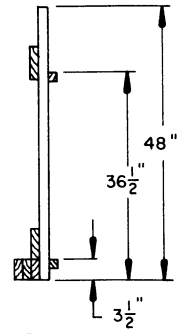
LOAD BEARING GATE J

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

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

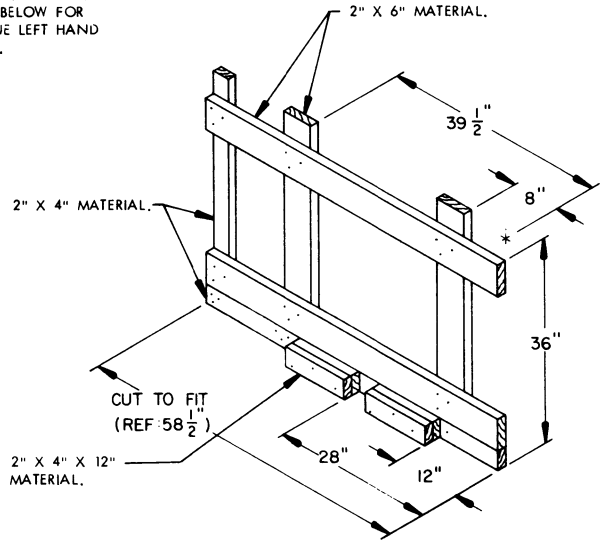


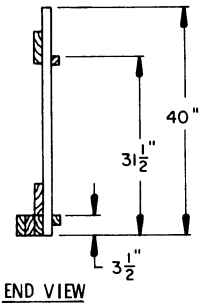
LOAD BEARING GATE K



END VIEW

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

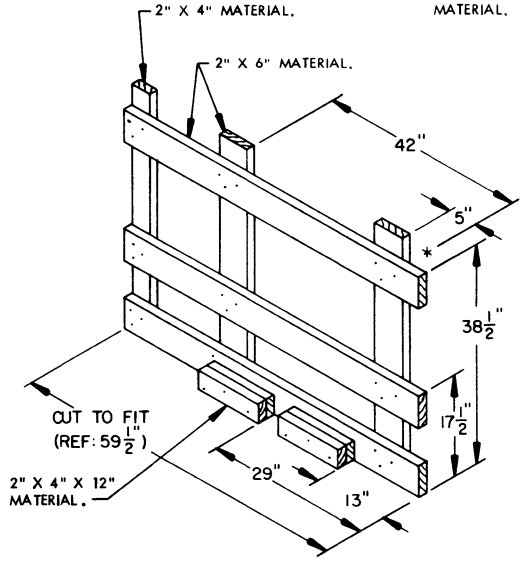


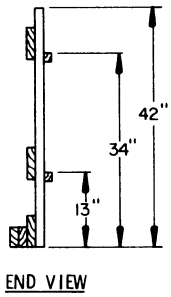


END VIEW

LOAD BEARING GATE L

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





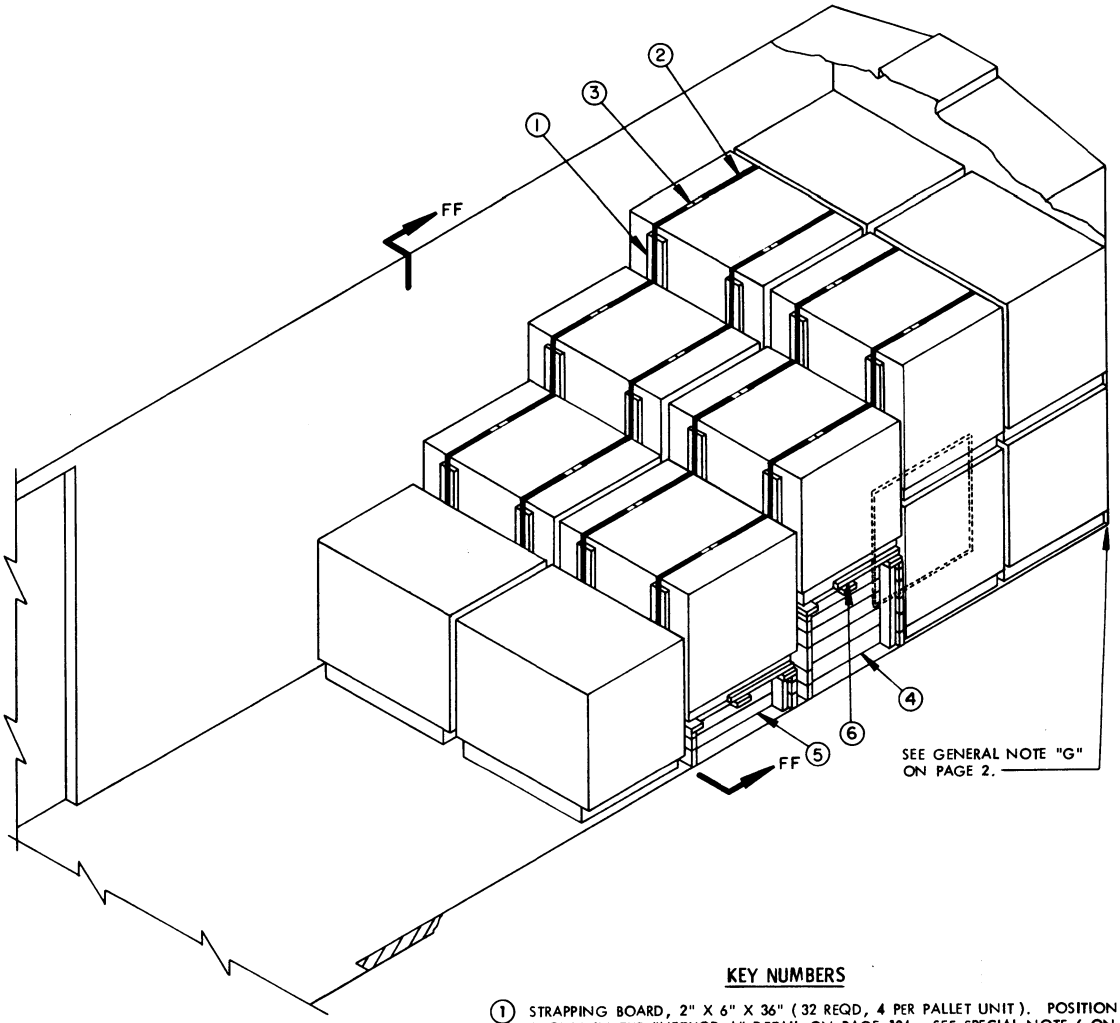
END VIEW

LOAD BEARING GATE M

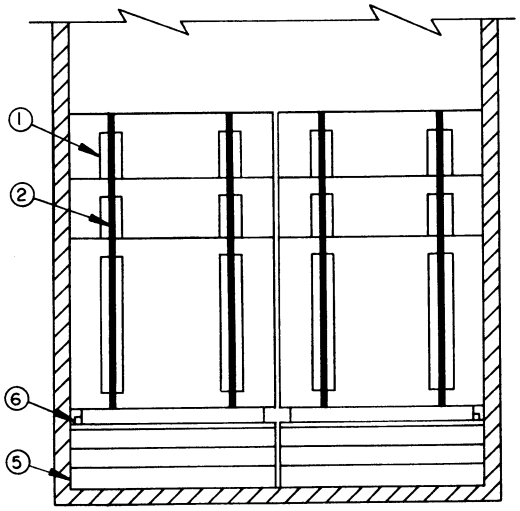
THIS GATE IS FOR USE IN A LOAD OF ROUTED DUNNAGE METHOD UNITS (DECREASED HEIGHT). SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

SPECIAL NOTES:

1. THE GATES ON THIS PAGE ARE FOR USE WITH INCREASED AND/OR DE-CREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 97. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4". THE 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 4" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW



SECTION FF-FF

KEY NUMBERS

(1) STRAPPING BOARD, 2" X 6" X 36" (32 REQD, 4 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 104. SEE SPECIAL NOTE 6 ON PAGE 103.

(2) REINFORCING STRAP, 1-1/4" X .031" OR .035" X 18'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 104.

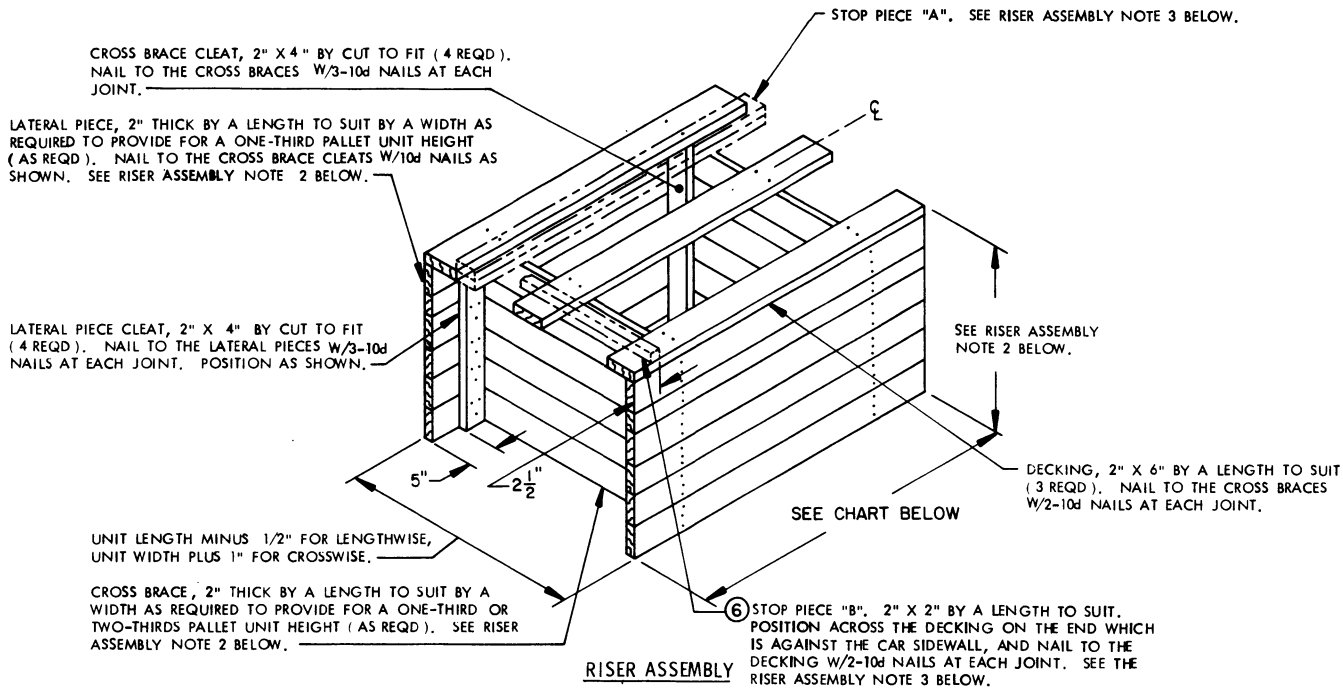
(3) SEAL FOR 1-1/4" STRAPPING (32 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(4) 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 103.

(5) 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 103.

(6) STOP PIECE "B" (4 REQD). SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 103 FOR LOCATION AND NAILING GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

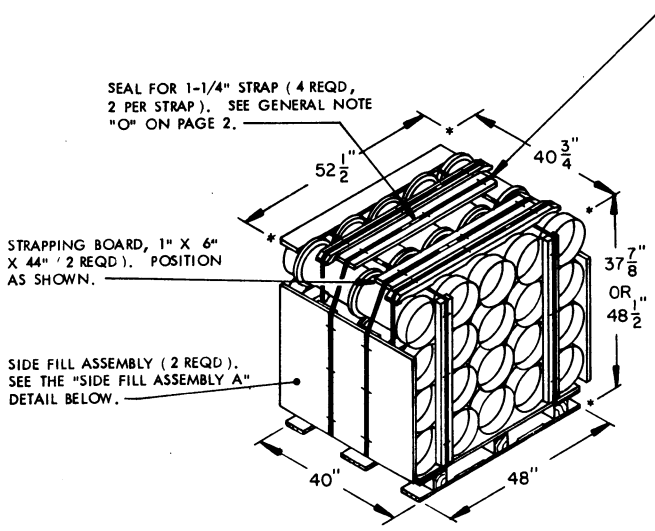
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 102 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.
3. THE RISER METHOD OF PARTIAL LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. WITH MODIFICATIONS, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE POSITIONED UNITS. SEE SPECIAL NOTES 5 AND 6.
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL - LAYER BRACING IS SHOWN. REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. ANTI-SWAY BRACES AS SHOWN IN SOME CAR LOADS DEPICTED WITHIN THIS DRAWING ARE NOT APPLICABLE TO THE LOAD SHOWN ON PAGE 102. ANTI-SWAY BRACING IS REQUIRED WHEN THE DISTANCE BETWEEN LATERALLY ADJACENT PALLET UNITS IS MORE THAN SIX INCHES (6").
6. FOR CROSSWISE POSITIONED UNITS, THE STRAPPING BOARDS SHOWN AS PIECES MARKED ① WILL NOT BE REQUIRED. SEE THE "METHOD A", "METHOD B", AND "METHOD C" DETAILS ON PAGE 105 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS, WHEN THE PALLET UNITS ARE TO BE POSITIONED CROSSWISE IN THE CAR. ALSO, FOR LOADS OF CROSSWISE UNITS, STOP PIECE "A", AS SHOWN ON THE RISER DETAIL ABOVE, WILL BE USED IN LIEU OF STOP PIECE "B".

UNIT	DIMENSION	
	LENGTHWISE	CROSSWISE
ALTERNATED CONTAINERS	50-1/2"	53-1/2"
FLAT DUNNAGE	53-1/2"	56-1/2"
ROUTED DUNNAGE	52-1/2"	55-1/2"

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 HEIGHT IS 49". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ④ IN THE LOAD ON PAGE 102. 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 ⑤ IN THE LOAD ON PAGE 102, 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 TO 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 "B" SHOWN ON THE RISER ASSEMBLY ABOVE IS ONLY FOR USE WHEN THE PALLET UNITS ARE POSITIONED LENGTHWISE IN THE CAR AS SHOWN IN THE LCL LOAD ON PAGE 102. IF THE PALLET UNITS ARE POSITIONED CROSSWISE IN THE CAR, POSITION A DOUBLED 2" X 4" BY UNIT WIDTH SO AS TO BE AGAINST THE DECKING PIECE WHICH IS ADJACENT TO THE CENTER OF THE CAR AND NAIL THE FIRST PIECE TO THE CROSS BRACE W/2-10d NAILS AT EACH JOINT. LAMINATE THE SECOND PIECE TO THE FIRST PIECE W/4-10d NAILS. SEE STOP PIECE "A" ON THE RISER ASSEMBLY ABOVE FOR LOCATION GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING

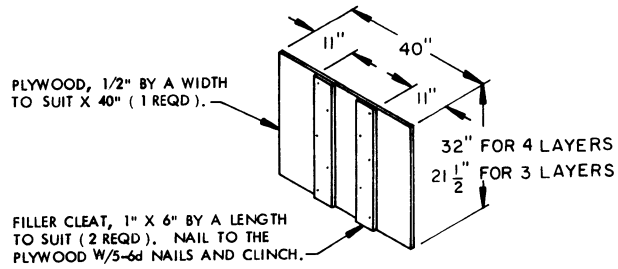


METHOD A

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

NOTE:

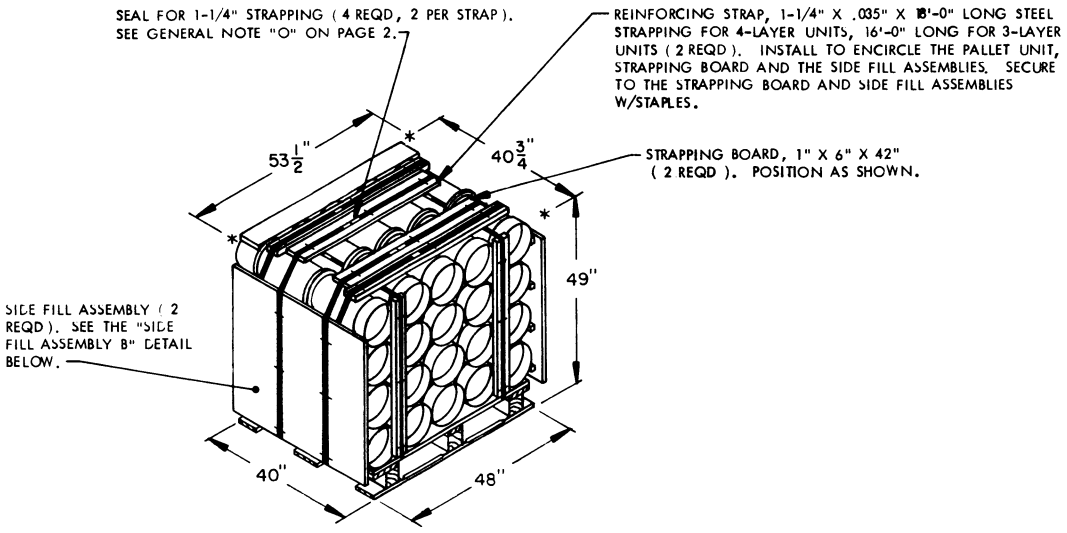
THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE ROUTED DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 102. THE BASIC HEIGHT ROUTED DUNNAGE METHOD UNIT IS SHOWN. THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT.



SIDE FILL ASSEMBLY A

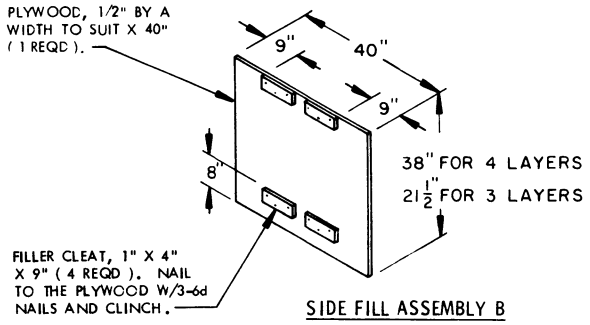
FOR METHOD "A" ABOVE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



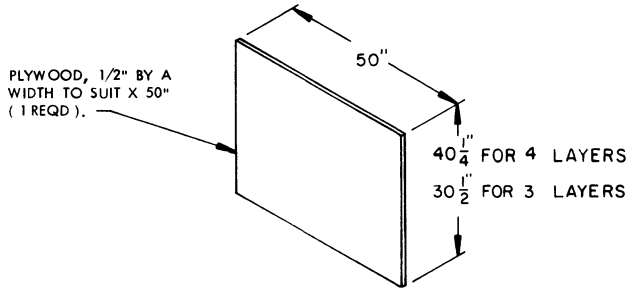
METHOD B

FOR FLAT DUNNAGE METHOD UNITS.



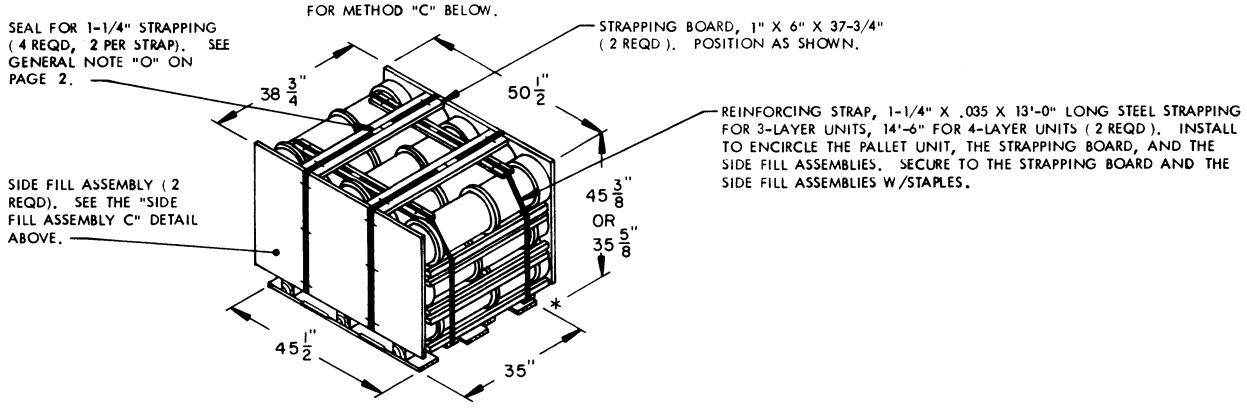
SIDE FILL ASSEMBLY B

FOR METHOD "B" ABOVE.



SIDE FILL ASSEMBLY C

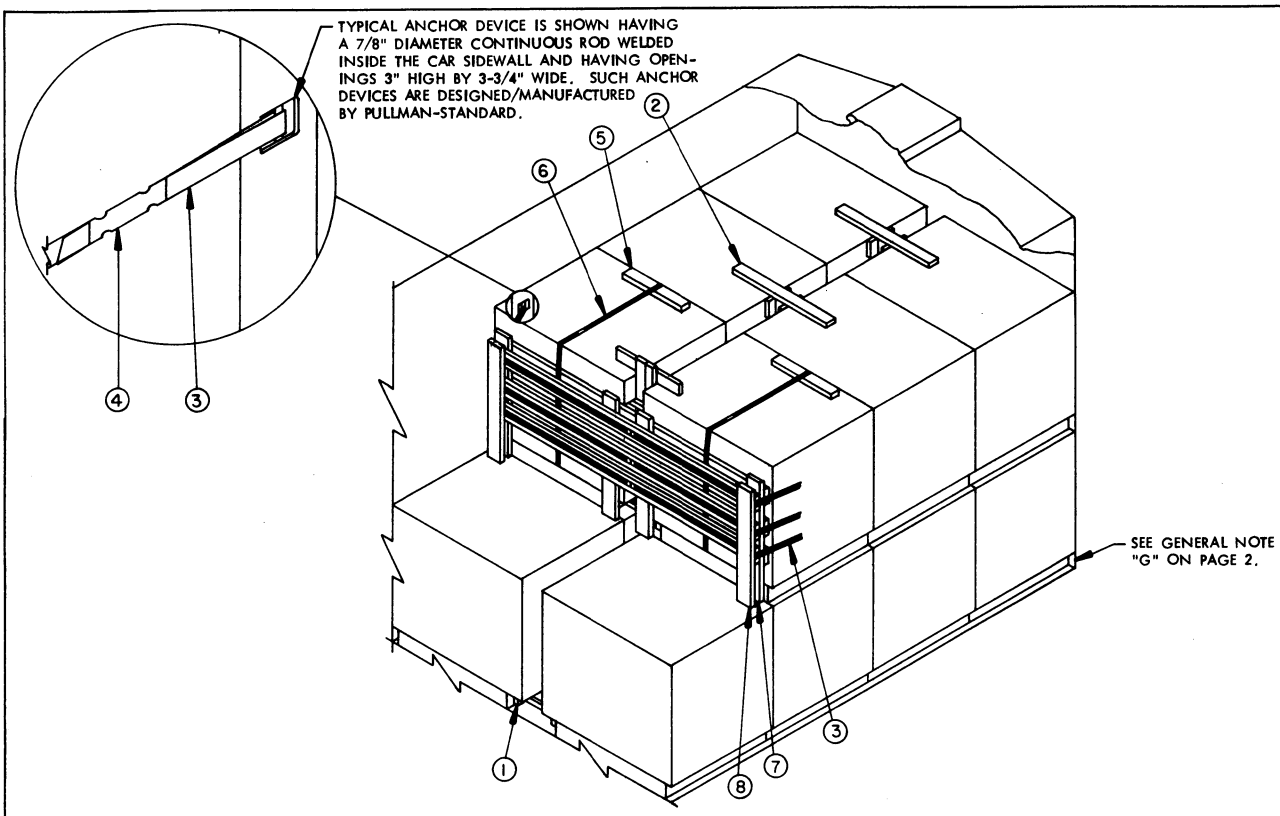
FOR METHOD "C" BELOW.



METHOD C

FOR ALTERNATED CONTAINERS UNITS.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

SPECIAL NOTES:

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

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

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

4. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 18,000 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 12,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS.

5. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST SIX INCHES (6") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE.

6. BULKHEAD STRAPS WILL BE TWO INCH (2") WIDE STEEL STRAPPING; 1-1/4" STRAPPING MUST NOT BE USED. A BULKHEAD STRAP WILL BE OF A LENGTH TO SUIT AND WILL BE THREADED THRU THE ANCHOR DEVICE (PRIOR TO POSITIONING THE ADJACENT UNITS) FAR ENOUGH TO PROVIDE FOR ONE LEG BEING APPROXIMATELY 48" LONGER THAN THE OTHER. THE STRAP ATTACHED TO THE MATING ANCHOR DEVICE WILL HAVE THE OPPOSITE LEG EXTENDING 48". THE TWO LEGS OF EACH HALF OF A STRAP WILL BE SECURED NEAR THE ANCHOR DEVICE WITH ONE DOUBLE CRIMPED SEAL. NOTE THAT THIS SEAL MUST BE POSITIONED EITHER CLOSE ENOUGH TO OR FAR ENOUGH AWAY FROM THE ANCHOR DEVICE SO AS NOT TO BE AT THE POINT WHERE THE STRAP BENDS AROUND THE CORNER OF THE ADJACENT UNIT. THE STRAP ENDS OF EACH PAIR OF LONG AND SHORT LEGS WILL BE SECURED WITH TWO (2) SEALS BUTTED TOGETHER AND DOUBLE CRIMPED.

7. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 107 FOR THE LOCATION OF THE HORIZONTAL PIECES IN RELATION TO THE LOCATION OF THE STRAPPING BOARDS. THE STRAPPING BOARDS/HORIZONTAL PIECES SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

KEY NUMBERS

(1) ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 11. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTE "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO PALLET UNITS AS SHOWN BE THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 122.

(3) BULKHEAD STRAP, 2" X .050" X 23'-0" LONG (REF) STEEL STRAPPING (1 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 107 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 THRU 6 AT LEFT.

(4) SEAL FOR 2" STRAPPING (18 REQD, 6 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "O" ON PAGE 2.

(5) STRAPPING BOARD (2 REQD). SEE THE DETAIL ON PAGE 107.

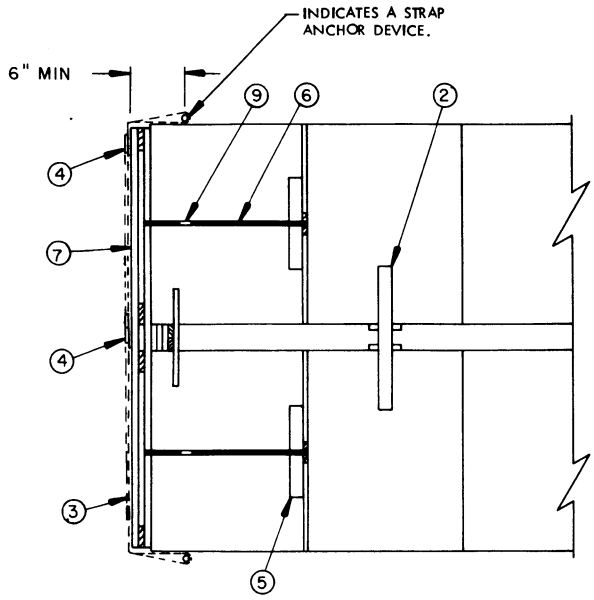
(6) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 16'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT, THE HORIZONTAL PIECES OF THE BULKHEAD GATE, AND A STRAPPING BOARD, PIECE MARKED (5). TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED (3).

(7) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 107. SEE SPECIAL NOTE 3 AT LEFT.

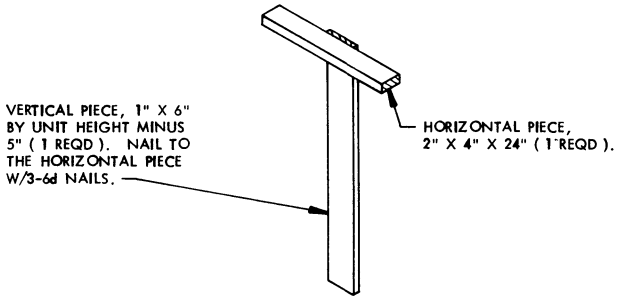
(8) STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

(9) SEAL FOR 1-1/4" STEEL STRAPPING (2 REQD, 1 PER STRAP). DOUBLE CRIMP EACH SEAL.

TYPICAL LCL USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING

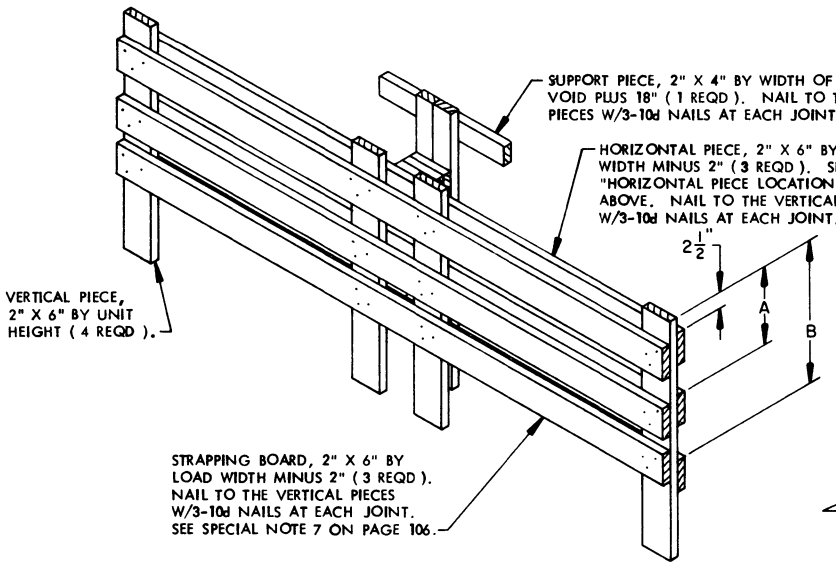


STRAP APPLICATION PLAN VIEW

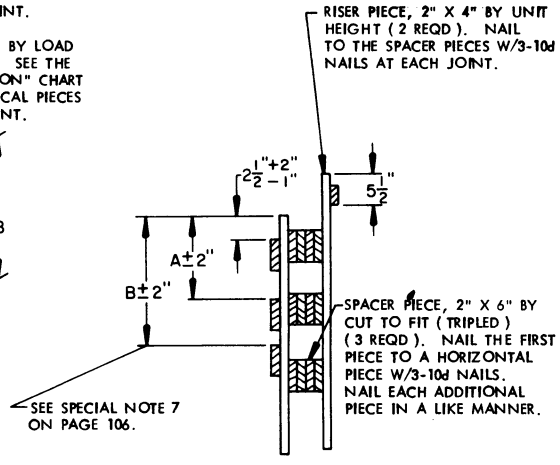


STRAPPING BOARD

HORIZONTAL PIECE LOCATION				
UNIT	3-HIGH		4-HIGH	
	DIM A	DIM B	DIM A	DIM B
ALTERNATED CONTAINERS	13" ± 5"	22" ± 5"	17" ± 1"	32" ± 5"
FLAT DUNNAGE	12-1/2" ± 5"	23" ± 5"	18" ± 1"	34" ± 5"
ROUTED DUNNAGE	12-1/2" ± 5"	23" ± 5"	18" ± 1"	34" ± 5"

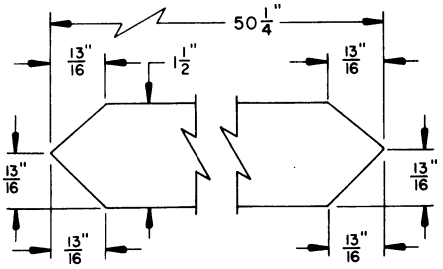


BULKHEAD GATE

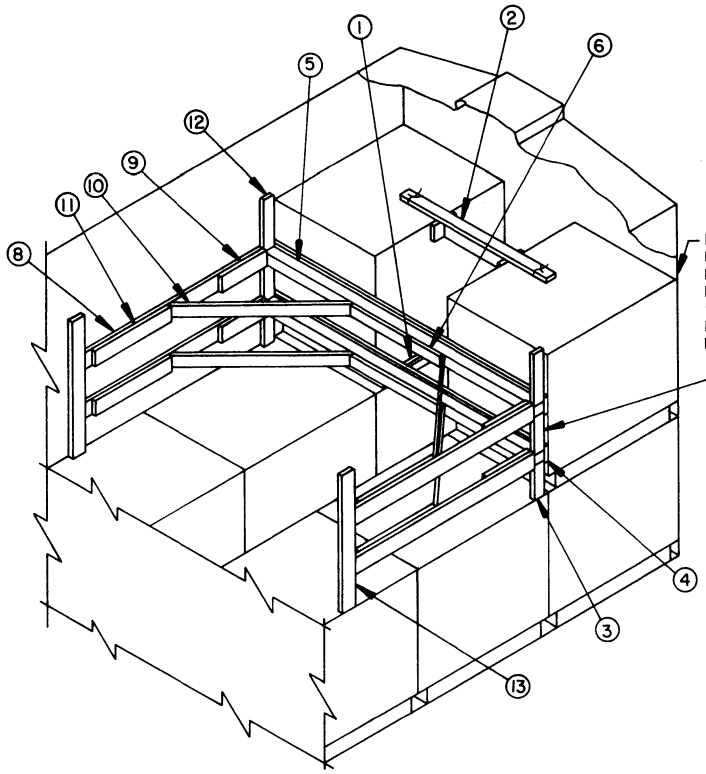


END VIEW

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



DIAGONAL BRACE



IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 122.

ISOMETRIC VIEW

SPECIAL NOTES:

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

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

3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN EXCEPT THE COMBINATION LOADS (1 ROW LENGTHWISE AND 1 ROW CROSSWISE). A CROSSWISE CONTAINER LOAD IS SHOWN AS TYPICAL. THE BLOCKING AND BRACING WILL VARY FOR LENGTHWISE CONTAINER LOADS. NOTE THAT FOR A LENGTHWISE CONTAINER 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 PAGES 109, 110, AND 111 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATION 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 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.

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

KEY NUMBERS

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

② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 19. WIRE TIE TO A STRAPPING BOARD ON THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 122. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

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

⑦ SPACER CLEAT, 2" X 4" X 14-3/4" FOR 4-LAYER UNITS, 10" FOR 3-LAYER 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 ABOVE 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.

⑬ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.

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

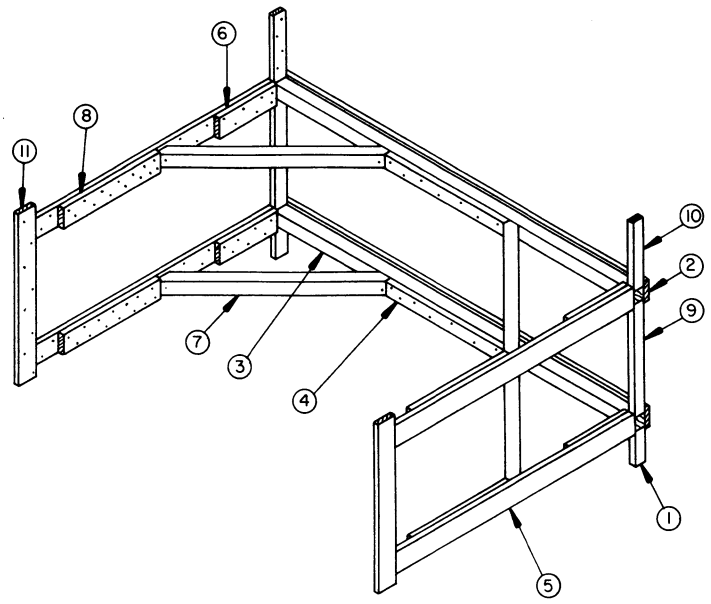
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL-TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN TEN (10) 3-LAYER UNITS OR EIGHT (8) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGE 110 AND 111 FOR SELECTION OF THE APPLICABLE SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 108 MAY BE USED.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ① , ② , ③ , ⑥ , ⑨ , ⑩ , AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

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

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



KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 7" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

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

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

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

⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.

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

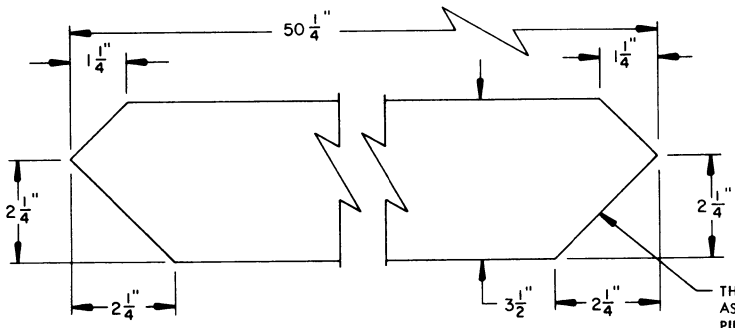
⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③ , AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/1-60d NAIL AT EACH END.

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

⑨ SPACER CLEAT, 2" X 4" X 14-3/4" FOR 4-LAYER UNITS, 10" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

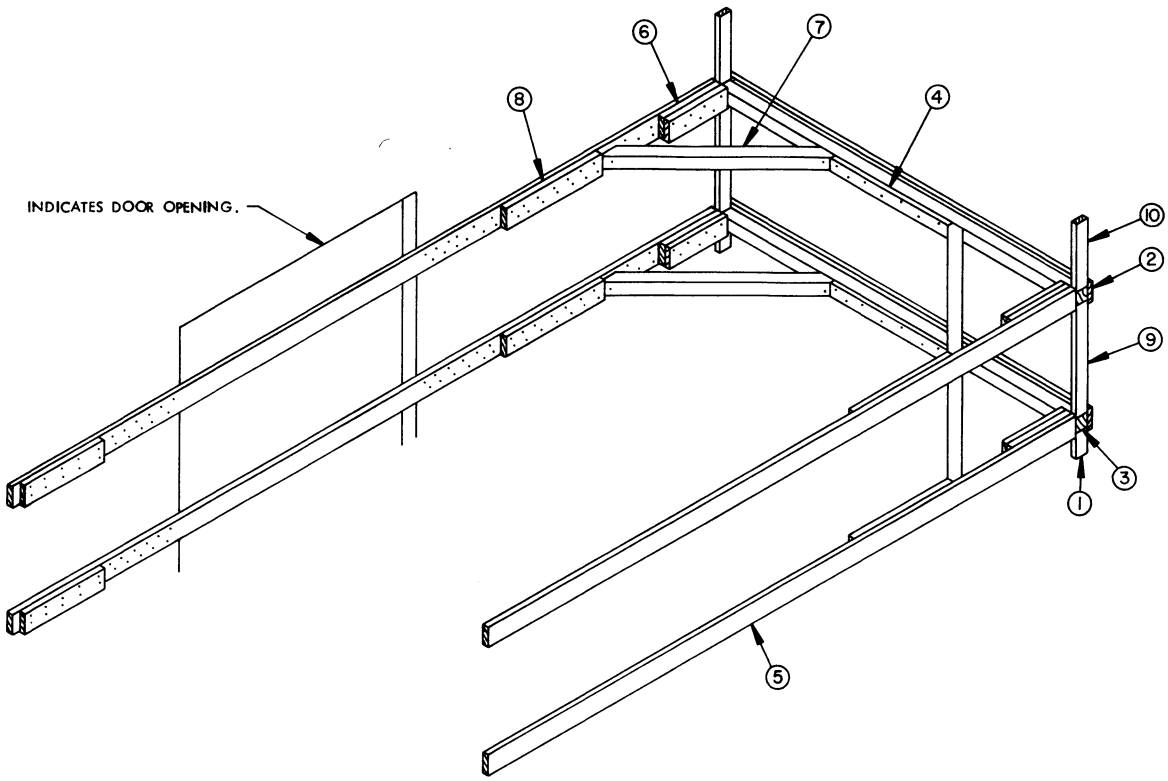
⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "B" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN FOURTEEN (14) 3-LAYER UNITS OR TEN (10) 4-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 111 FOR THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 8,000 POUNDS AND 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 109 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 108 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ① , ② , ③ , ⑥ , ⑨ , AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

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

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

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 7" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

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

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

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

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

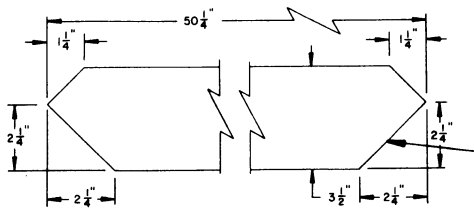
⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ , W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

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 CLEAT, PIECE MARKED ⑤ , W/14-16d NAILS.

⑨ SPACER CLEAT, 2" X 4" X 14-3/4" FOR 4-LAYER UNITS, 10" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

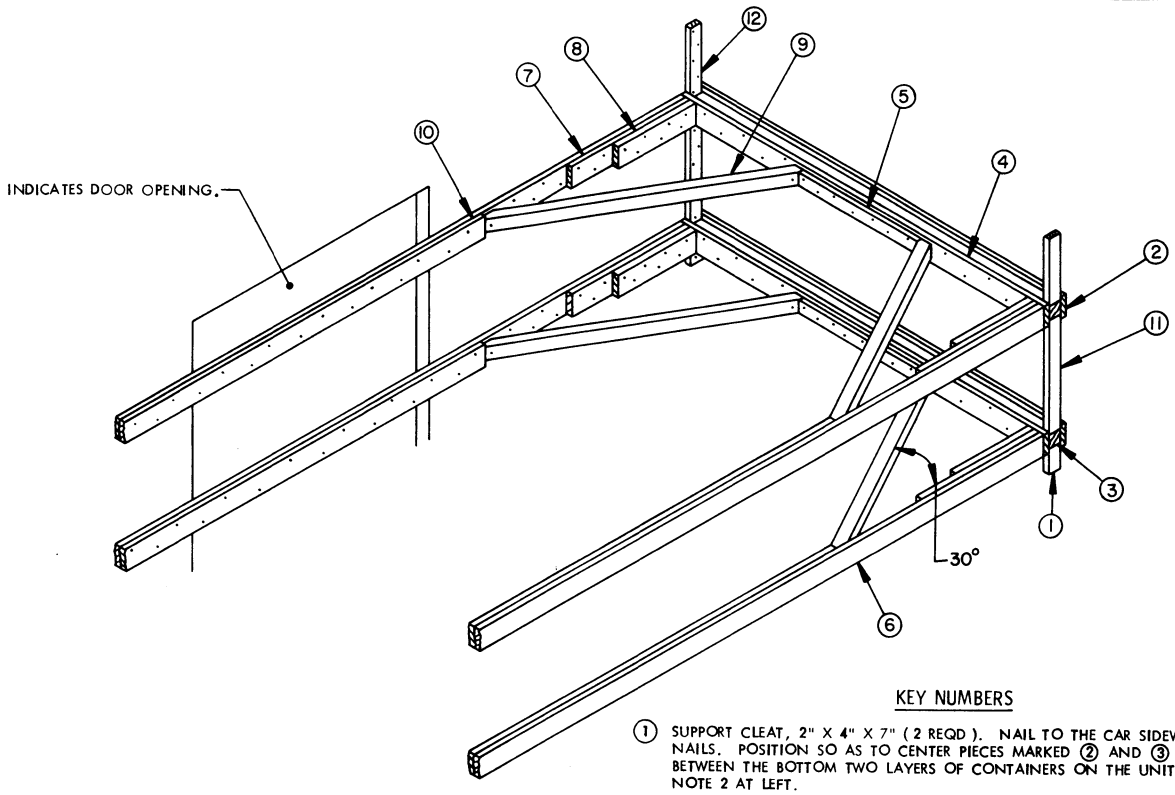


THIS BEARING SURFACE MUST BE POSITIONED SO AS TO BE IN CONTACT WITH A CROSS BRACE, PIECE MARKED ③ , OR A HORIZONTAL WALL CLEAT, PIECE MARKED ⑤ .

DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "C" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS. THIS WILL NOT BE MORE THAN EIGHTEEN (18) 3-LAYER UNITS OR FOURTEEN (14) 4-LAYER UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 110 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 109 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 108 WILL BE ADEQUATE.

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

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

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

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 7" (2 REQD). NAIL TO THE CAR SIDEWALL W/2-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTE 2 AT LEFT.

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

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

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

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

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

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

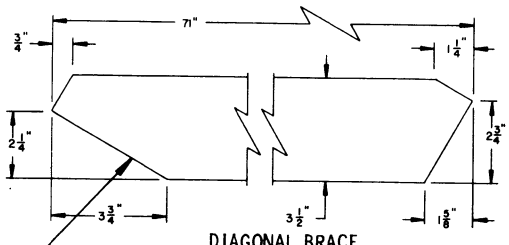
⑧ POCKET CLEAT, 2" X 6" X 24" (4 REQD). NAIL TO THE POCKET CLEAT, PIECE MARKED ⑦ , W/7-16d NAILS.

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

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

⑪ SPACER CLEAT, 2" X 4" X 14-3/4" FOR 4-LAYER UNITS, 10" FOR 3-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

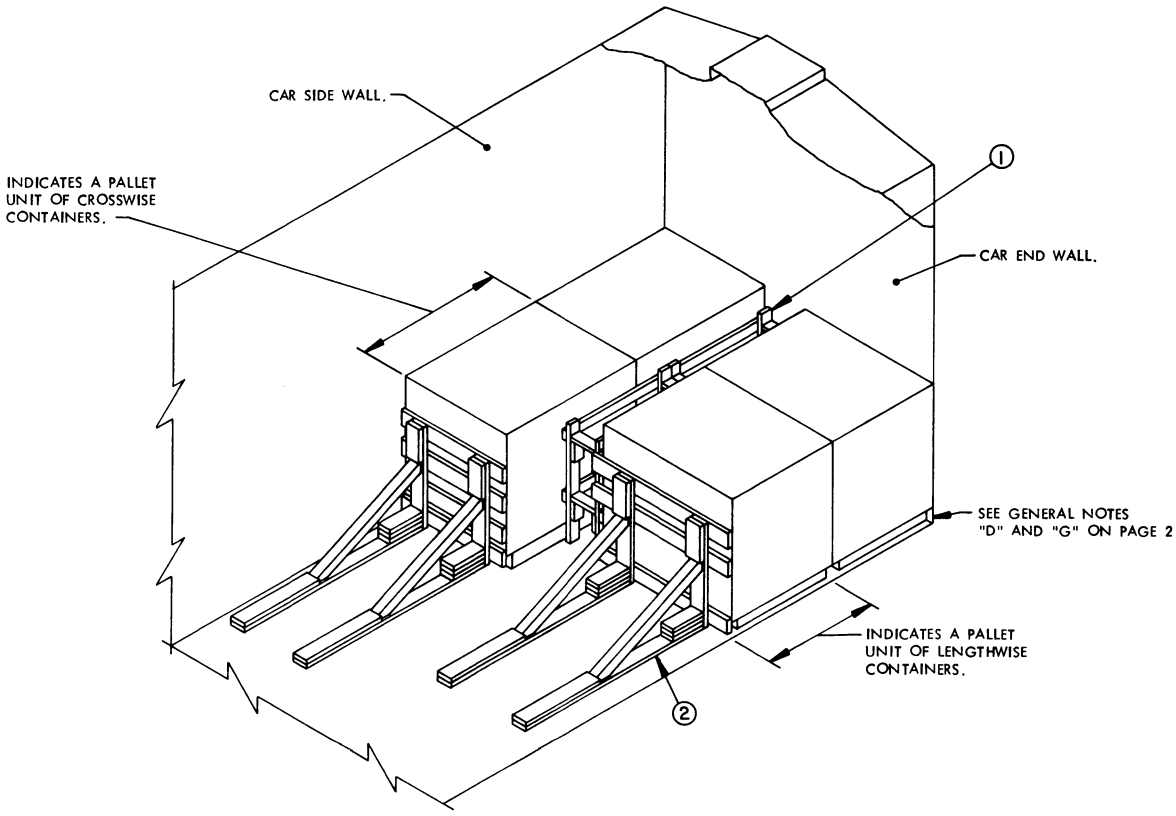


DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

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

TYPE "D" K-BRACE



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. SEE GENERAL NOTE "D" ON PAGE 2

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

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

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

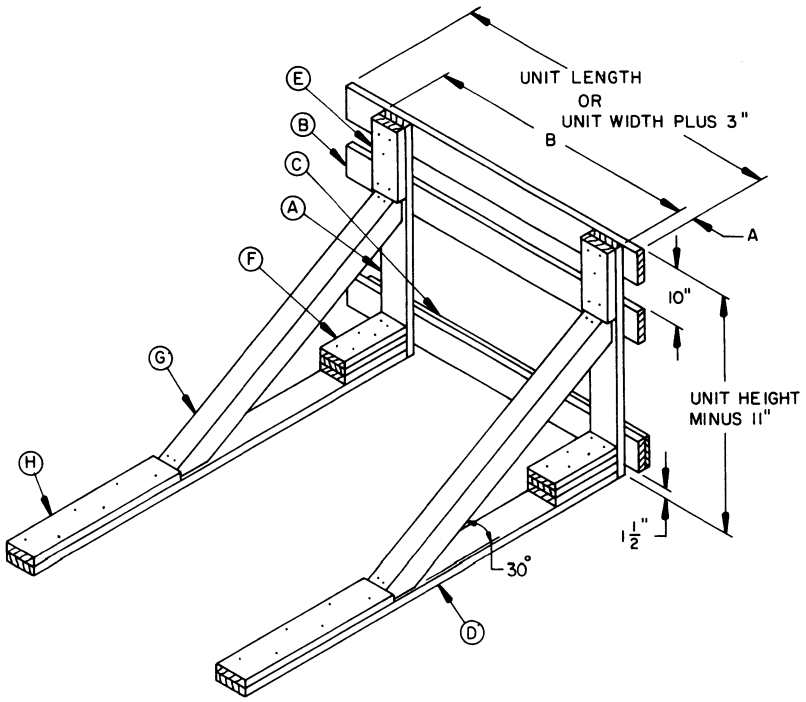
5. HOLD-DOWN CLEATS (GATE HOLD DOWN) MUST BE APPLIED TO THE BOTTOM HORIZONTAL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE LENGTHWISE ROW, REFER TO THE "CENTER GATE A" DETAIL ON PAGE 16 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE J" DETAIL ON PAGE 44 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE R" DETAIL ON PAGE 72 FOR THE ROUTED DUNNAGE METHOD UNITS. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CROSSWISE ROW, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 17 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE K" DETAIL ON PAGE 45 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE S" DETAIL ON PAGE 73 FOR THE ROUTED DUNNAGE METHOD UNITS.

KEY NUMBERS

(1) CRIB FILL (2 REQD). SEE THE APPLICABLE CRIB FILL DETAIL ON PAGE 16, 30, 44, 45, 58, 59, 72, 73, OR 86. SEE GENERAL NOTE "M" ON PAGE 2.

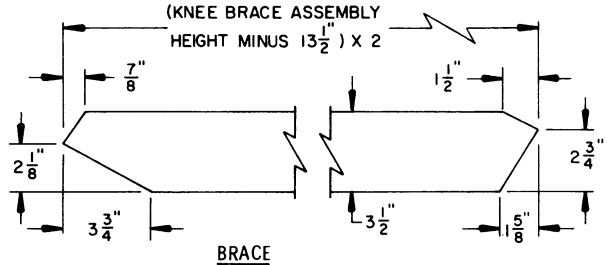
(2) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 113 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

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



VERTICAL PIECE PLACEMENT FOR CROSSWISE UNITS		
UNIT	DIM A	DIM B
ALTERNATED CONTAINERS	4"	30"
FLAT DUNNAGE	5"	30-1/2"
ROUTED DUNNAGE	5"	29-3/4"

VERTICAL PIECE PLACEMENT FOR LENGTHWISE UNITS		
UNIT	DIM A	DIM B
ALTERNATED CONTAINER	7-1/4"	36"
FLAT DUNNAGE	7-3/4"	38"
ROUTED DUNNAGE	7-3/4"	37"



BRACE

4" X 4" MATERIAL.

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" BY UNIT HEIGHT MINUS 11" (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.

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

(C) HORIZONTAL PIECE, 1" X 6" BY PALLET UNIT WIDTH OR LENGTH (1 REQD FOR ROUTED DUNNAGE METHOD UNITS ONLY). NAIL TO THE BOTTOM HORIZONTAL PIECE MARKED (B) W/1-6d NAIL EVERY 12".

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

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

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

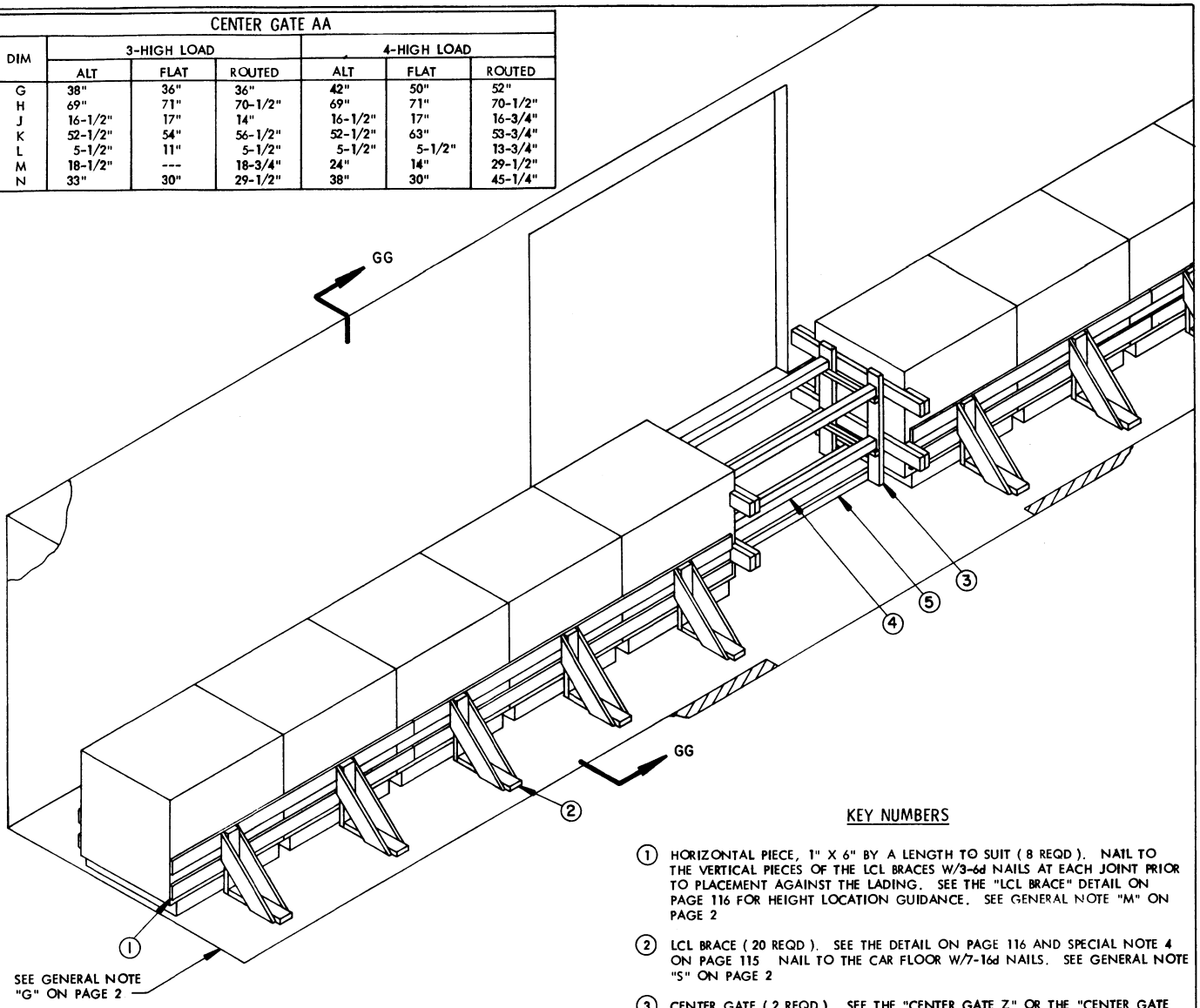
(G) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2", TIMES 2) (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES (A) AND (D) , W/2-16d NAILS AT EACH JOINT.

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

(J) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 112

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

CENTER GATE AA						
DIM	3-HIGH LOAD			4-HIGH LOAD		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
G	38"	36"	36"	42"	50"	52"
H	69"	71"	70-1/2"	69"	71"	70-1/2"
J	16-1/2"	17"	14"	16-1/2"	17"	16-3/4"
K	52-1/2"	54"	56-1/2"	52-1/2"	63"	53-3/4"
L	5-1/2"	11"	5-1/2"	5-1/2"	5-1/2"	13-3/4"
M	18-1/2"	---	18-3/4"	24"	14"	29-1/2"
N	33"	30"	29-1/2"	38"	30"	45-1/4"



ISOMETRIC VIEW

KEY NUMBERS

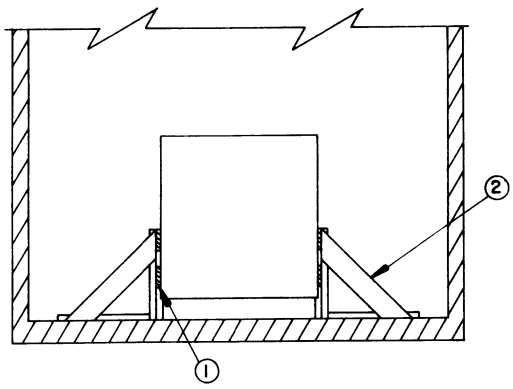
(1) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 116 FOR HEIGHT LOCATION GUIDANCE. SEE GENERAL NOTE "M" ON PAGE 2

(2) LCL BRACE (20 REQD). SEE THE DETAIL ON PAGE 116 AND SPECIAL NOTE 4 ON PAGE 115 NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "S" ON PAGE 2

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE Z" OR THE "CENTER GATE AA" DETAIL ON PAGE 115 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY

(4) STRUT, 4" X 4" BY CUT TO FIT (4 REQD FOR LENGTHWISE, 6 REQD FOR MOST CROSSWISE). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "U" ON PAGE 2 AND GENERAL NOTE "V" ON PAGE 3

(5) GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE Z" DETAIL ON PAGE 115 FOR LOCATION GUIDANCE.



SECTION GG-GG

CENTER GATE Z						
DIM	3-HIGH UNIT			4-HIGH UNIT		
	ALT	FLAT	ROUTED	ALT	FLAT	ROUTED
A	32"	36"	34"	43"	46"	44"
B	54"	58-3/4"	58-3/4"	54"	58-3/4"	58-3/4"
C	12"	13"	13-3/4"	12"	15"	12-1/2"
D	42"	45-3/4"	45"	42"	45-3/4"	46-1/4"
E	9-1/2"	11"	18-3/4"	18-1/2"	9"	19"
F	28"	30"	29-1/2"	38"	41"	40"

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD

SPECIAL NOTES:

1 A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.

2 THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

3 A 1-WIDE CROSSWISE LOAD IS SHOWN AS TYPICAL. A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE LENGTHWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES. NOTE THAT THE QUANTITY OF LCL BRACES, PIECES MARKED ②, IS NOT CORRECT FOR LENGTHWISE LOADS.

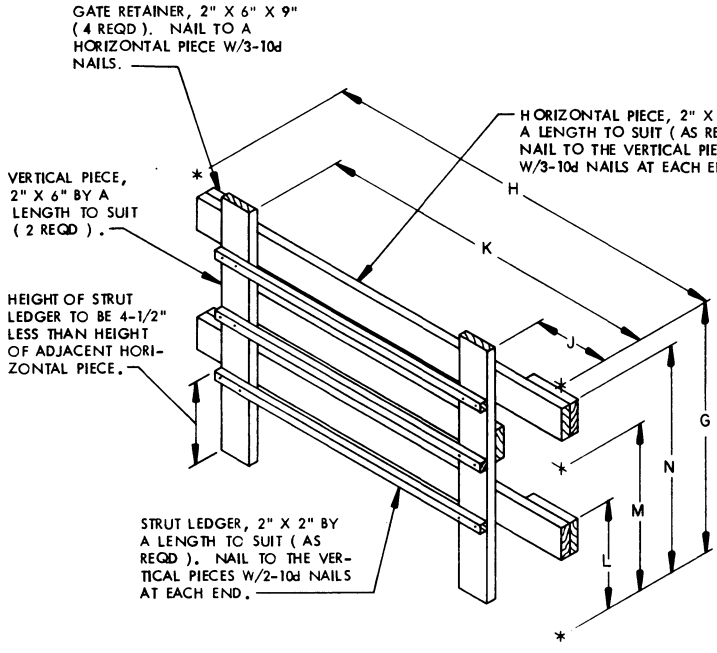
(CONTINUED AT RIGHT)

(SPECIAL NOTES CONTINUED)

4 ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR LENGTHWISE PALLET UNITS, THE BRACES WILL BE CENTERED ON THE WIDTH OF THE UNIT. FOR THE CROSSWISE UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT LENGTH, WITH SLIGHT ADJUSTMENTS AS NECESSARY TO ALIGN A BRACE WITH THE INTERMEDIATE DUNNAGE PIECES OF THE ROUTED DUNNAGE METHOD UNIT, OR THE CROSS PIECE OF AN INTERMEDIATE DUNNAGE ASSEMBLY OF THE FLAT DUNNAGE METHOD UNIT.

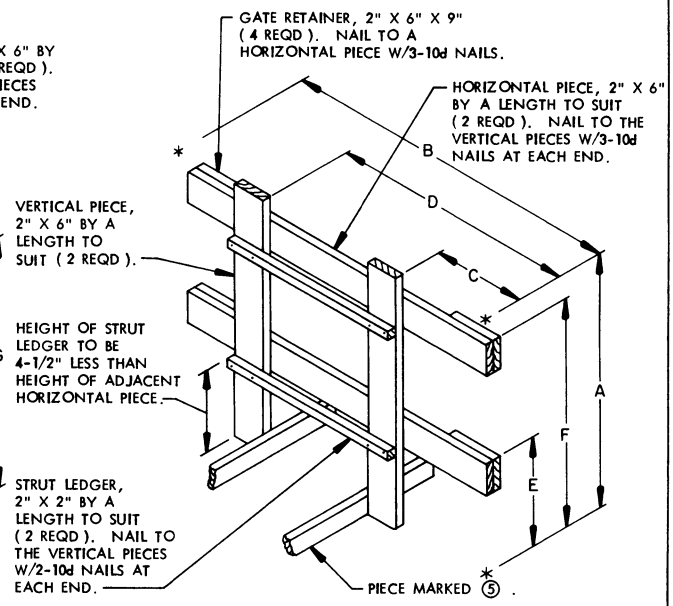
5 THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL.

6 IF DESIRED, GATE HOLD DOWN PIECES WITH THE ASSOCIATED FILL PIECES, AS SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATE FOR A SINGLE ROW, MAY BE USED IN LIEU OF PIECES MARKED ⑤.



CENTER GATE AA

THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE AA" CHART AT TOP OF PAGE 114 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE.



CENTER GATE Z

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE Z" CHART ON PAGE 114 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.

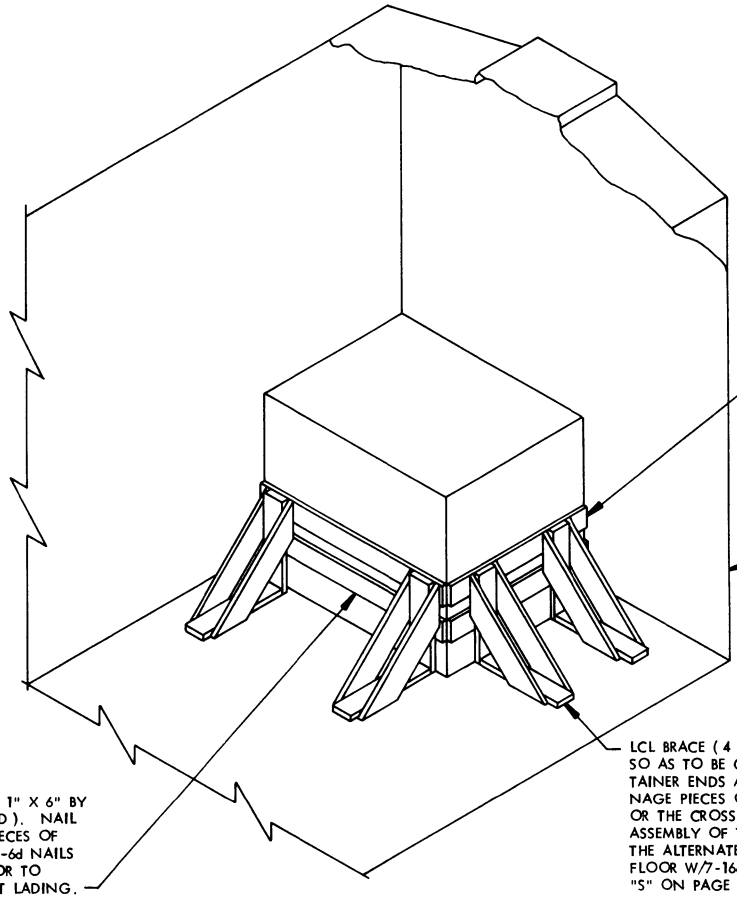
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	240	120
2" X 2"	9	3
2" X 3"	12	6
2" X 6"	101	101
4" X 4"	19	25
NAILS	**NO. REQD**	**POUNDS**
6d (2")	120	3/4
8d (2-1/2")	240	2-1/2
10d (3")	80	1-1/4
16d (3-1/2")	196	4-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	10	17,360 LBS
DUNNAGE		519 LBS
TOTAL WEIGHT		17,879 LBS

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

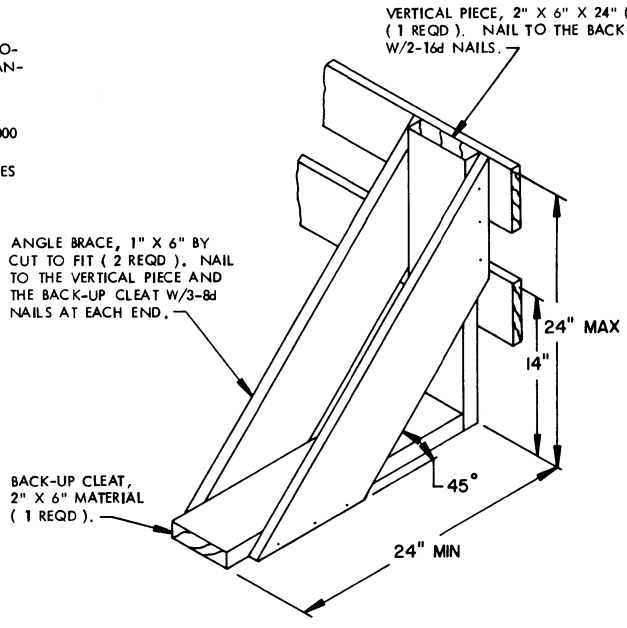
SPECIAL NOTES:

1 AN 8'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTES "D" AND "S" ON PAGE 2

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

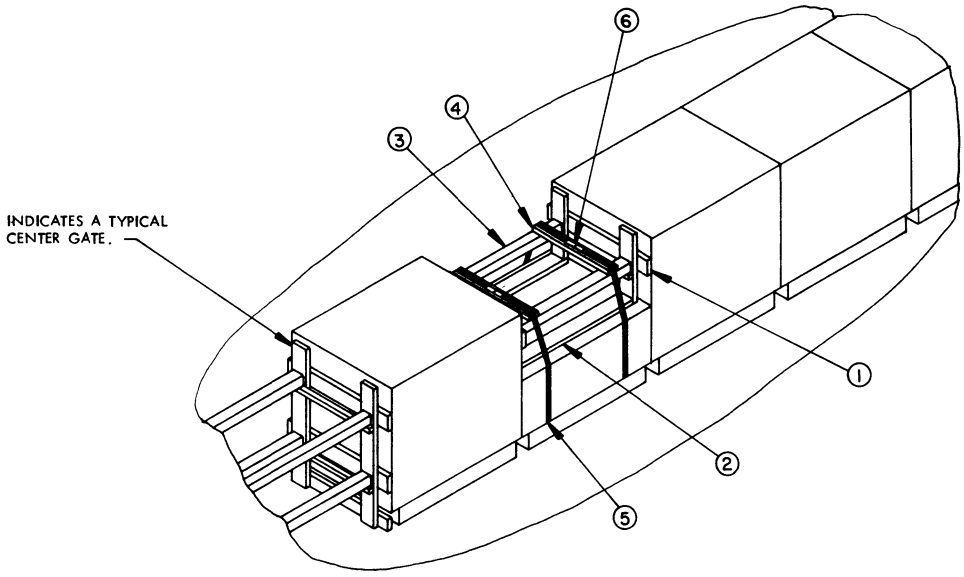
3 THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A LENGTHWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 4.

4 EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8.000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING.



LCL BRACE

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



POSITIONING OF PARTIAL CROSSWISE 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 CROSSWISE CONTAINER LOAD.

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

3 A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 4-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

4 A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF FOUR (4) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/ 10-20PM1001. MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

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

6 THE "POSITIONING OF PARTIAL CROSSWISE UNIT 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 A" DETAIL BELOW. SEE GENERAL NOTE "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

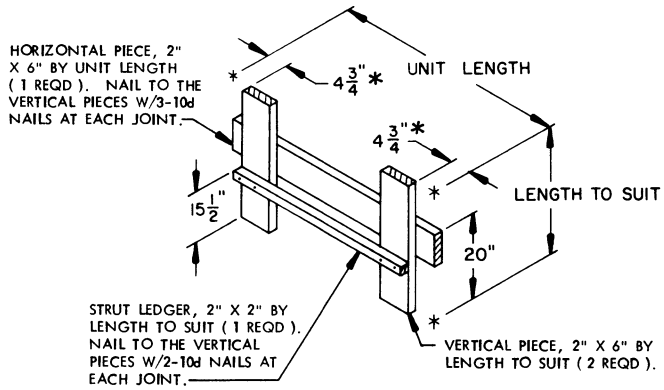
(2) GATE SUPPORT PIECE, 2" X 6" BY PALLET UNIT WIDTH (2 REQD). NAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATES W/2-16d NAILS AT EACH END.

(3) STRUT, 4" X 4" BY UNIT WIDTH MINUS 6" (2 REQD). TOENAIL TO THE PARTIAL-UNIT GATE, PIECE MARKED (1) , W/2-16d NAILS AT EACH END.

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

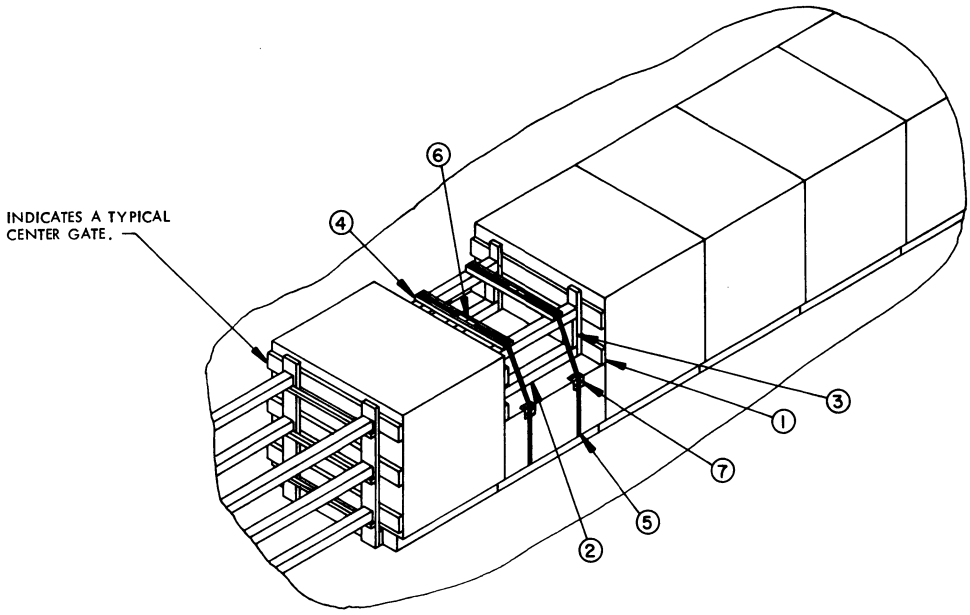
(5) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION.

(6) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" 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 A PARTIAL LENGTHWISE 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 LENGTHWISE LOAD.

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

3 A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 4-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

4 A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF FOUR (4) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/10-20PM1001. MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

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

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

7 FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 120 MAY BE MORE ECONOMICAL.

8. THE PARTIAL UNIT 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 PARTIAL UNIT AND THE CENTER GATE.

KEY NUMBERS

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

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

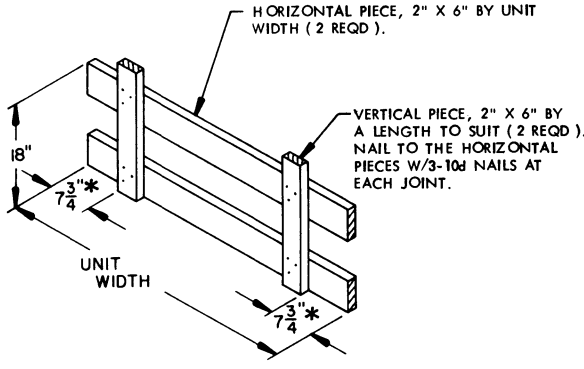
(3) STRUT SUPPORT PIECE, 2" X 4" X 12" (4 REQD). NAIL TO A VERTICLE PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.

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

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

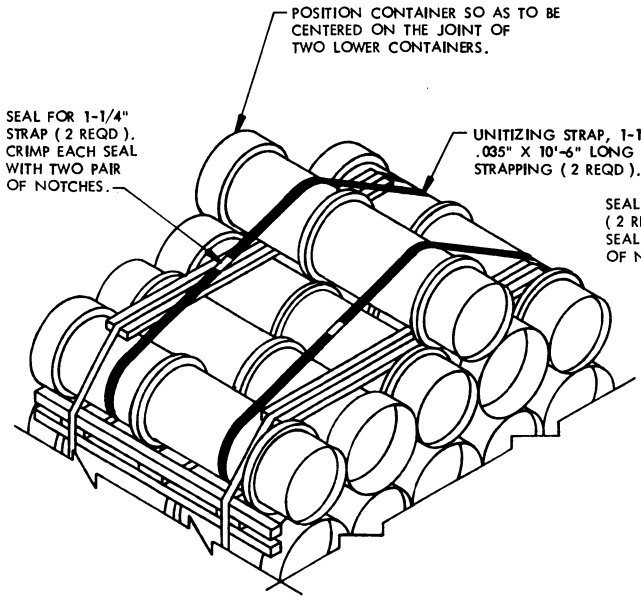
(6) SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "O" ON PAGE 2

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

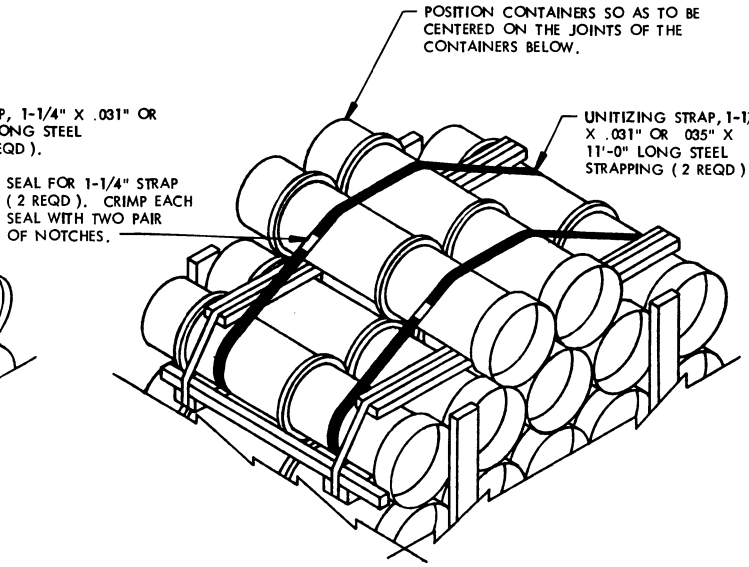


PARTIAL UNIT GATE B

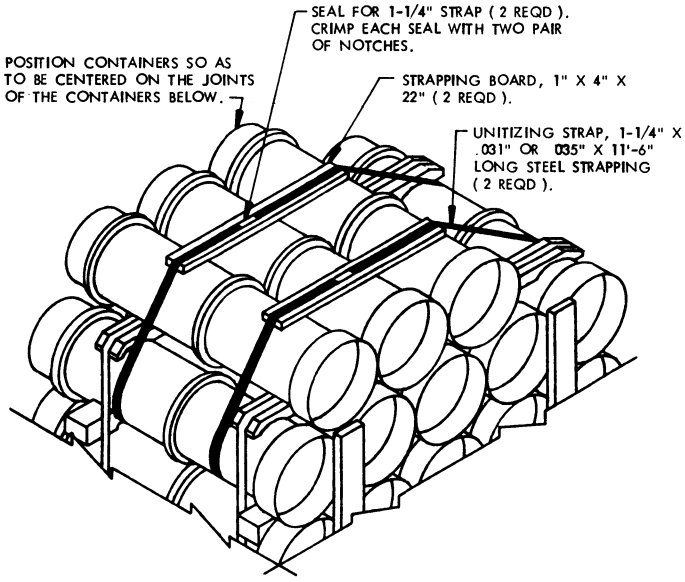
* THE LOCATION OF TH VERTICAL PIECES MUST BE ADJUSTED TO MATCH THE JOINT BETWEEN TWO CONTAINERS OR THE BATTENS ON A PALLET UNIT.



SECUREMENT OF ONE CONTAINER



SECUREMENT OF TWO CONTAINERS



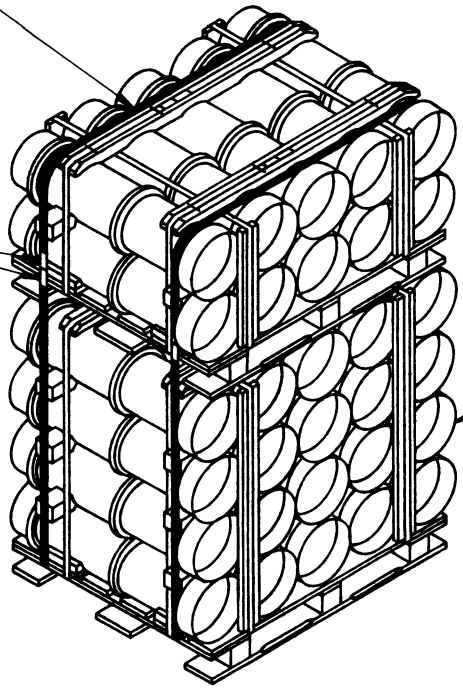
SECUREMENT OF THREE CONTAINERS

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 120 OR WITHIN A LAYER AS SHOWN ON PAGES 117 AND 118.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
3. 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.

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

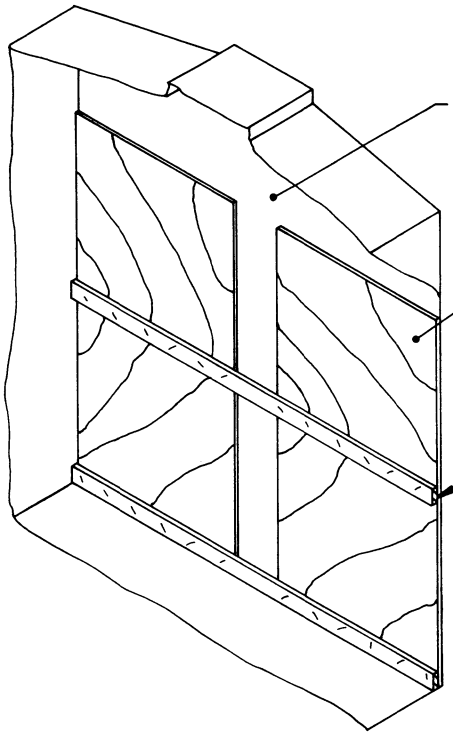
INDICATES TWO (2) 1-1/4" STRAP SEALS.



A ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT.

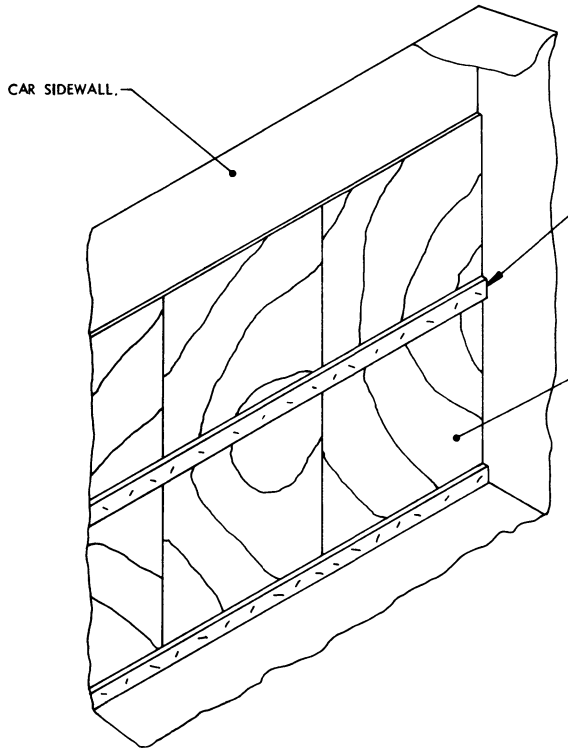
SECUREMENT OF A PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE LOAD. CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN TWO (2) LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN TWO LAYERS OF CONTAINERS, OR AN ALTERNATIVE METHOD FOR ONE OR TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 117.



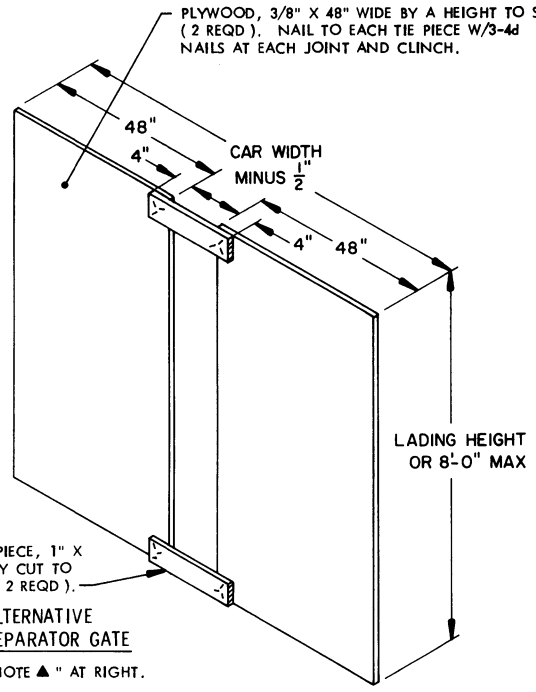
END-WALL LINING

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



SIDEWALL LINING

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

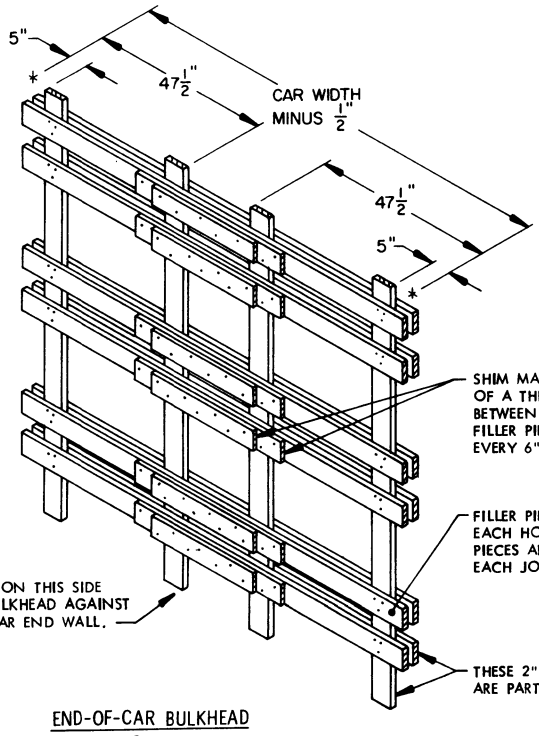


ALTERNATIVE SEPARATOR GATE

SEE "NOTE ▲ " AT RIGHT.

NOTE ▲ :

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

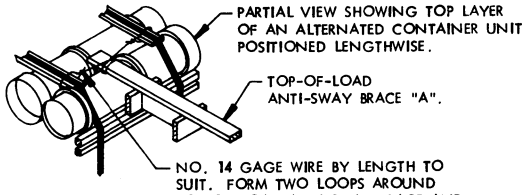


END-OF-CAR BULKHEAD

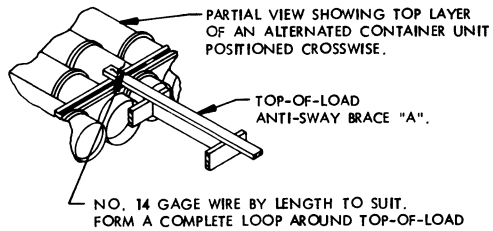
SEE "NOTE ● " AT RIGHT.

NOTE ●:

IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2") EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD DOWN PIECES. A MODIFIED CENTER GATE "C", AS DETAILED ON PAGE 18, IS SHOWN AS TYPICAL.

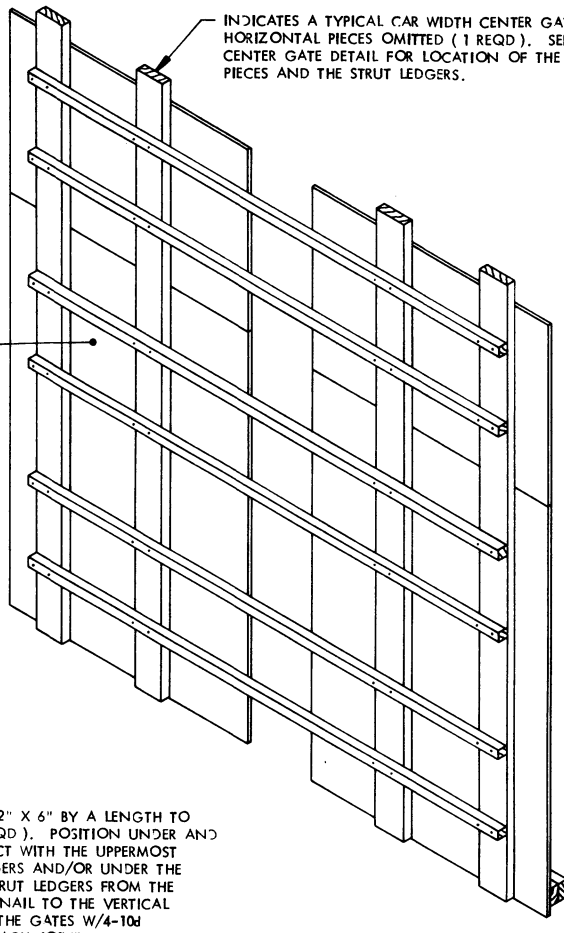


TIE WIRE APPLICATION A



TIE WIRE APPLICATION B

DETAILS



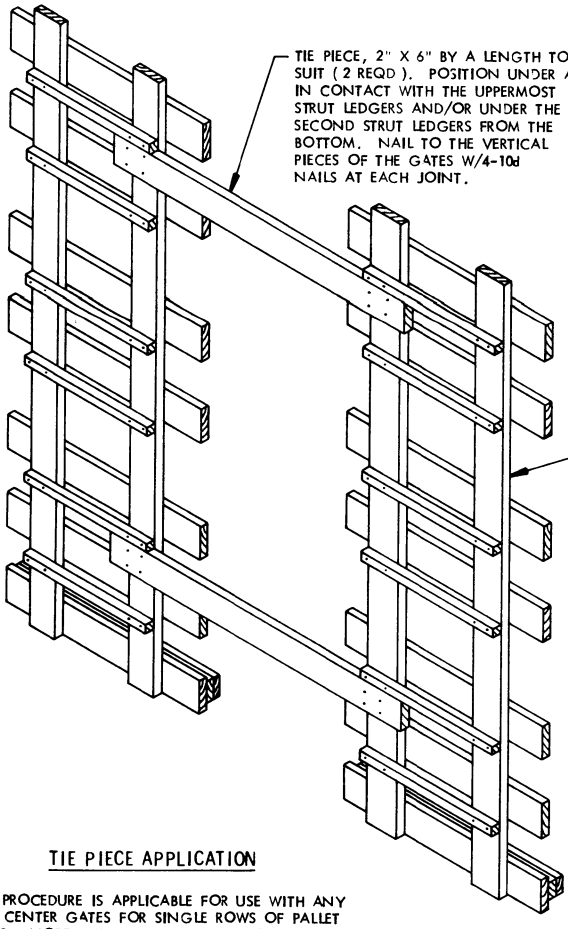
INDICATES A TYPICAL CAR WIDTH CENTER GATE, WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR LOCATION OF THE VERTICAL PIECES AND THE STRUT LEDGERS.

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

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.

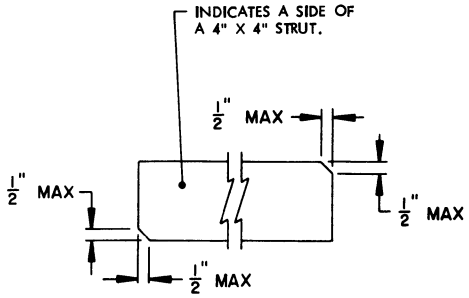


TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.

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

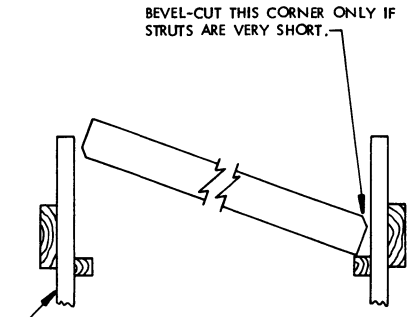
TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH ANY TWO CENTER GATES FOR SINGLE ROWS OF PALLET UNITS. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



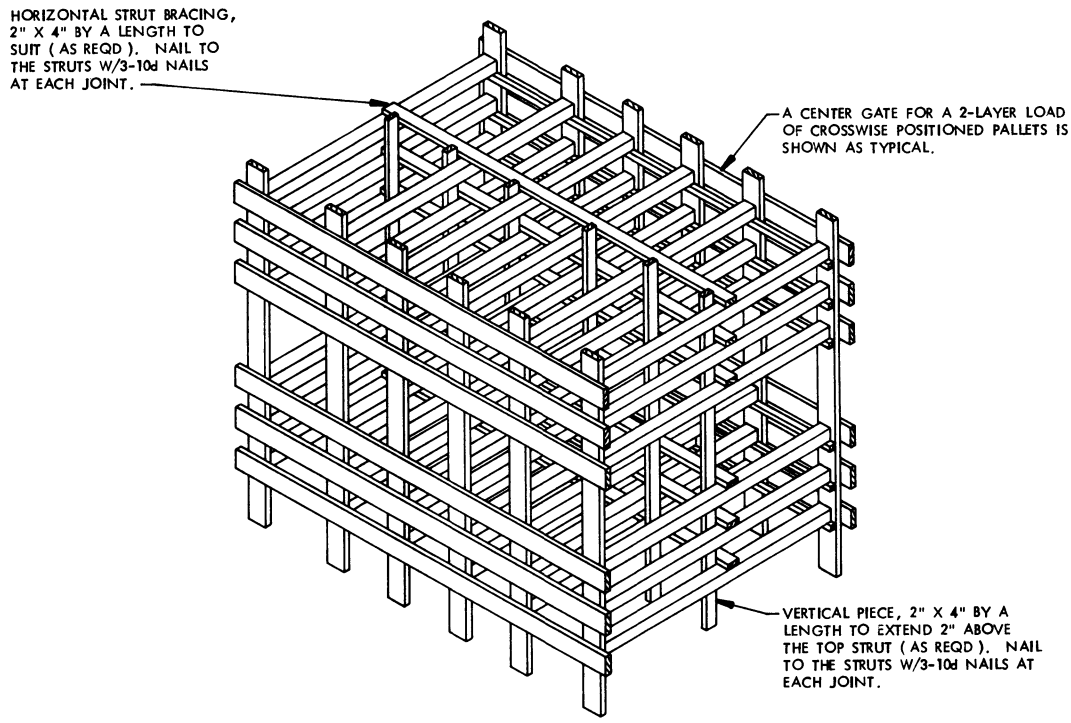
BEVEL-CUT

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



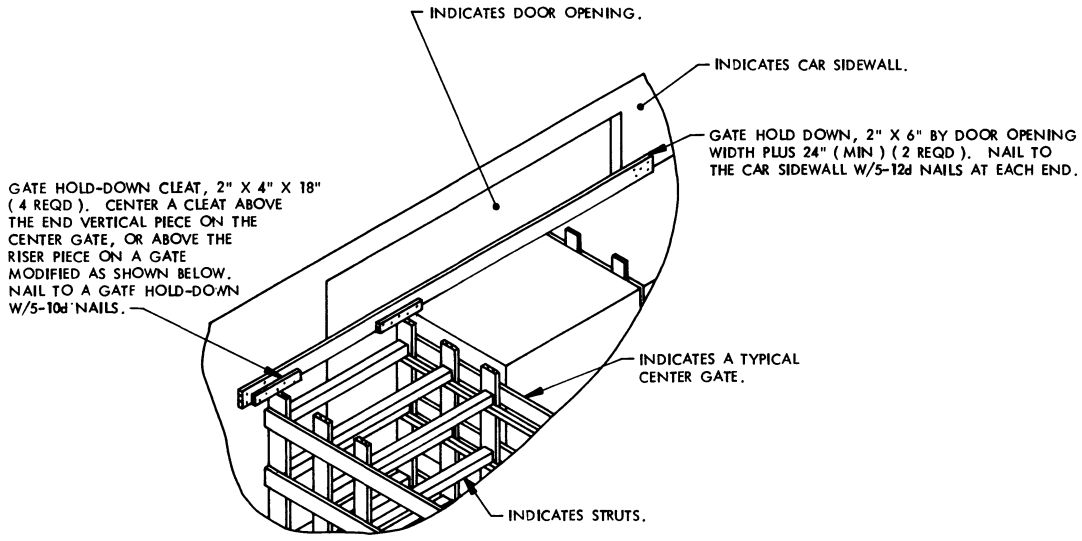
STRUT INSTALLATION

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



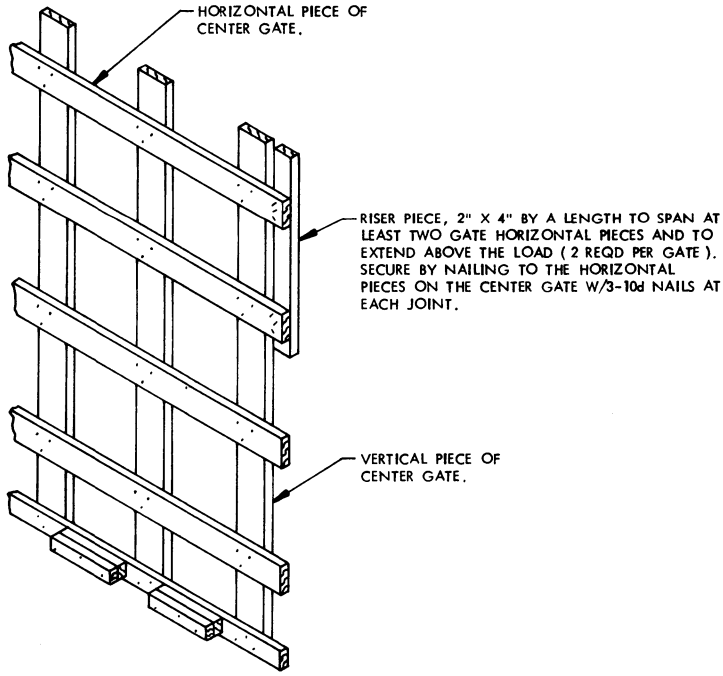
TYPICAL STRUT BRACING

SEE GENERAL NOTE "U" ON PAGE 2.



ALTERNATIVE GATE HOLD-DOWN

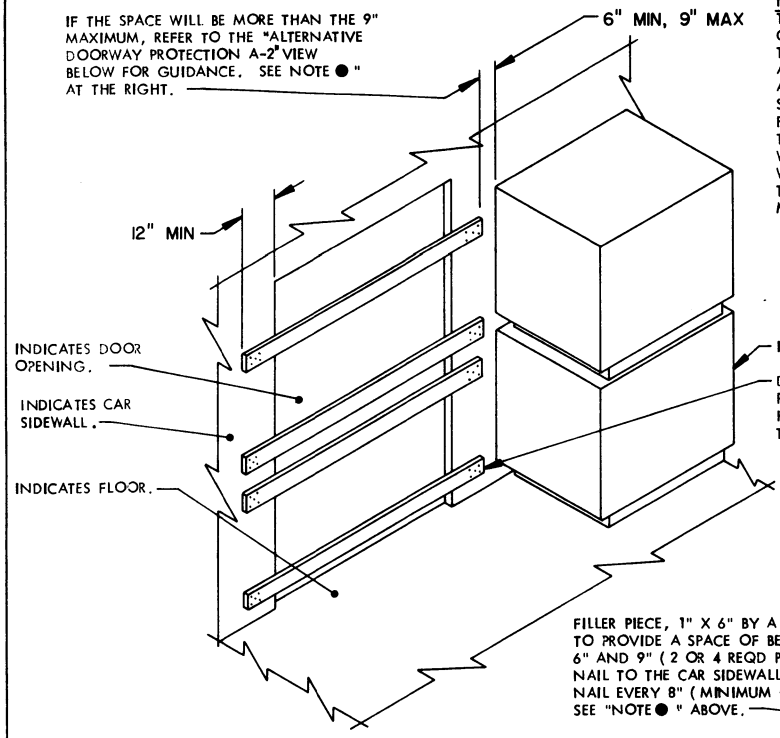
THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE, OR IN LIEU OF THE 2" X 4" GATE HOLD DOWN PIECES WHICH SPAN THE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



CENTER GATE MODIFICATION

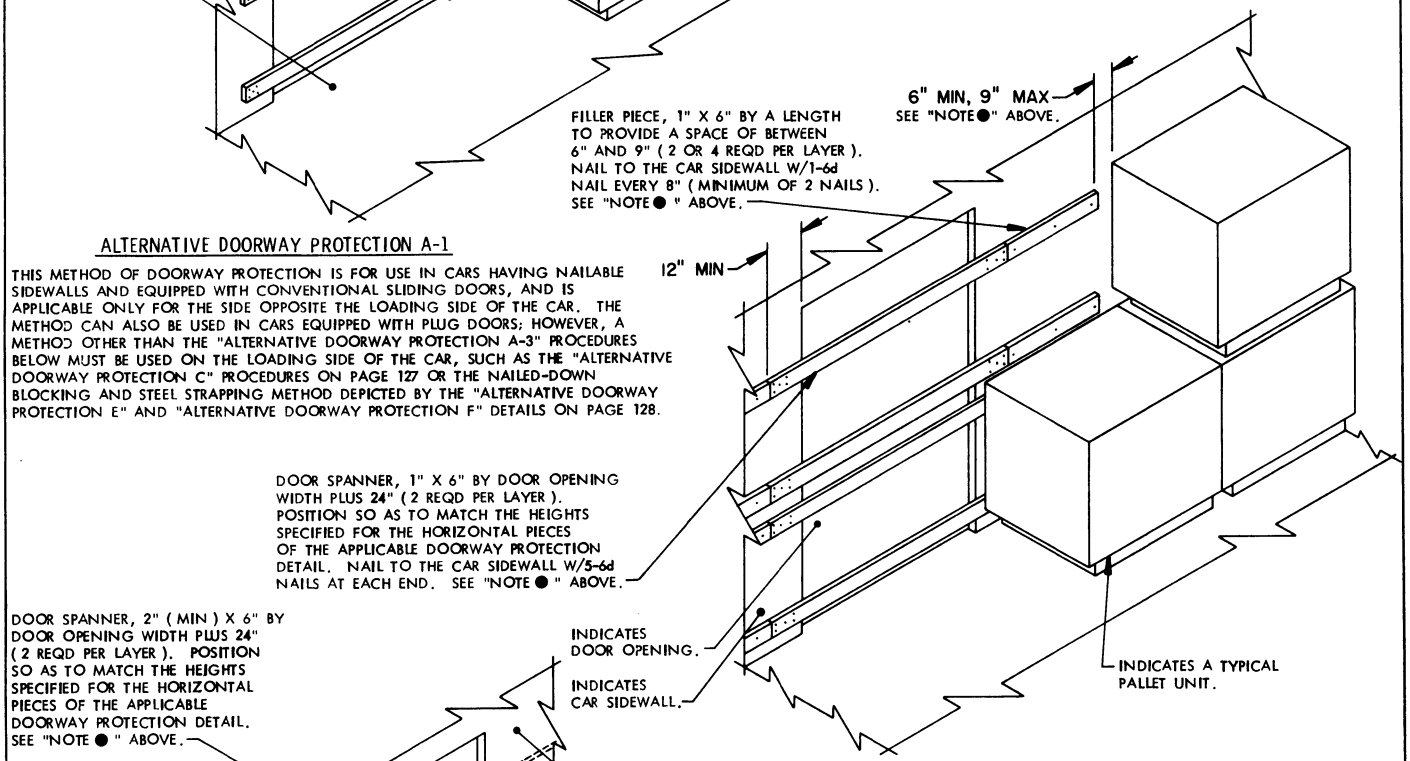
THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR THE CENTER GATES WHICH HAVE THE VERTICAL PIECES INSET FROM THE END OF THE HORIZONTAL PIECES AS SHOWN ABOVE. THE RISER PIECE WILL PROVIDE A MEANS FOR CONTACTING THE GATE WITH THE GATE HOLD-DOWN AS SHOWN IN THE "ALTERNATIVE GATE HOLD-DOWN"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

NOTE ● :
THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT, AND IS APPLICABLE WHEN ANTI-SWAY BRACING IS USED FOR A LOAD AND ALSO WHEN THE EXCESS SPACE ACROSS THE CAR IS SMALL ENOUGH THAT ANTI-SWAY BRACING OF ANY KIND IS NOT REQUIRED. IF AN EXCESS LATERAL SPACE IS FILLED BY NAILING LUMBER TO THE CAR SIDEWALL, AS IS PERMITTED FOR THE LOADS ON PAGES 66 AND 70, THE DOOR SPANNERS WILL BE POSITIONED TO BUTT AGAINST THE FILL MATERIAL AND THE TOLERANCE DIMENSION WILL NOT APPLY. ALSO, THE FILLER PIECES SHOWN IN THE ALTERNATIVE DOORWAY PROTECTION A-2 VIEW WILL NOT BE USED. NOTE THAT THE THICKNESS OF THE DOOR SPANNER PIECES MUST EQUAL THE THICKNESS OF THE LUMBER FILL MATERIAL THAT IS NAILED TO THE CAR SIDEWALL.



ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 127 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED BY THE "ALTERNATIVE DOORWAY PROTECTION E" AND "ALTERNATIVE DOORWAY PROTECTION F" DETAILS ON PAGE 128.

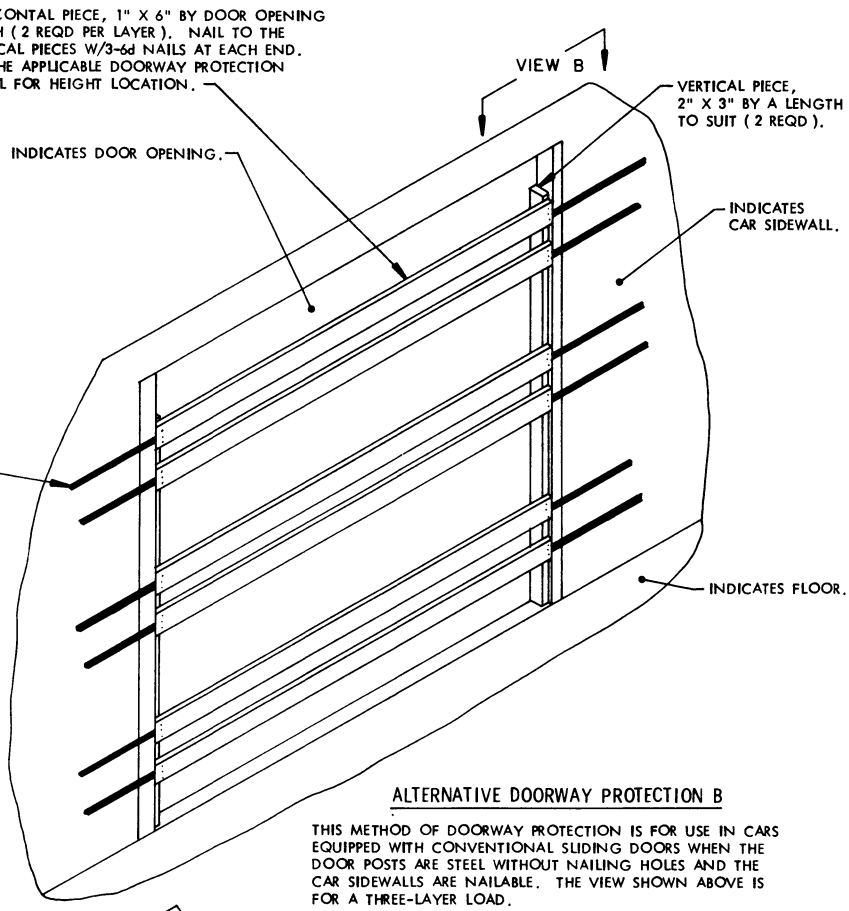


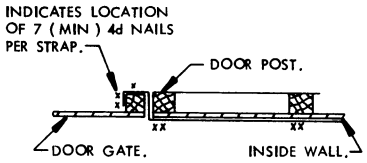
ALTERNATIVE DOORWAY PROTECTION A-2

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



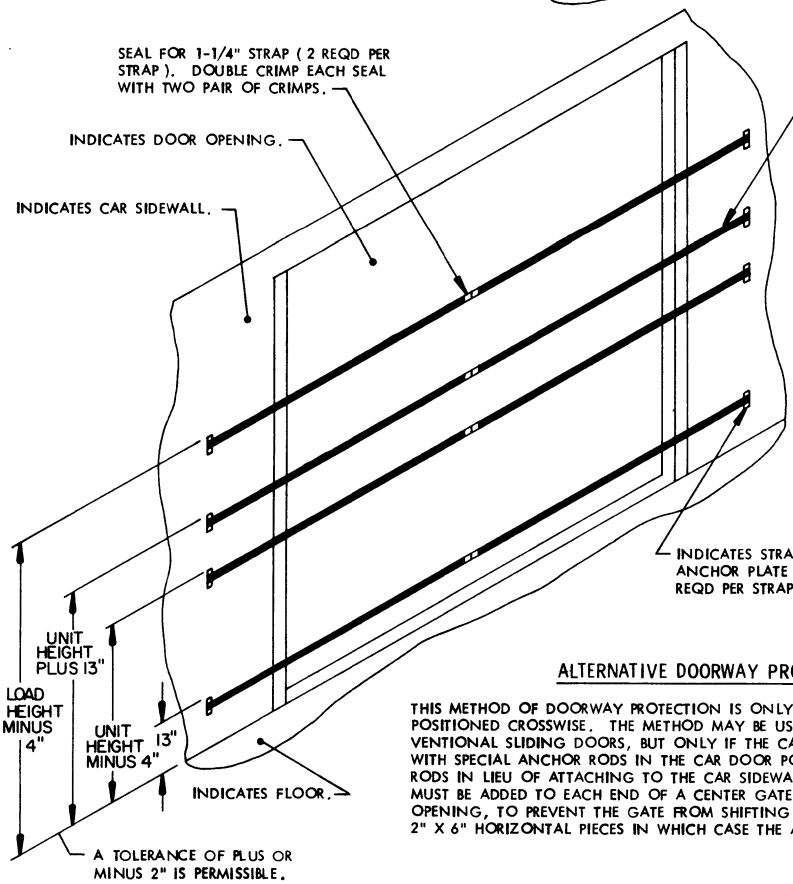


VIEW B

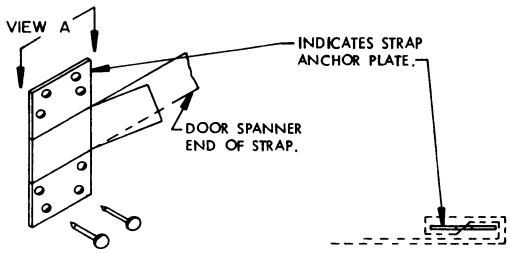
THIS VIEW DEPICTS THE LOCATION OF THE NAILS FOR SECURING THE DOORWAY-PROTECTION-GATE STRAP. NOTE THAT THE STRAPS MUST BE APPLIED TO THE CAR SIDEWALL PRIOR TO POSITIONING THE ADJACENT UNITS.

ALTERNATIVE DOORWAY PROTECTION B

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



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



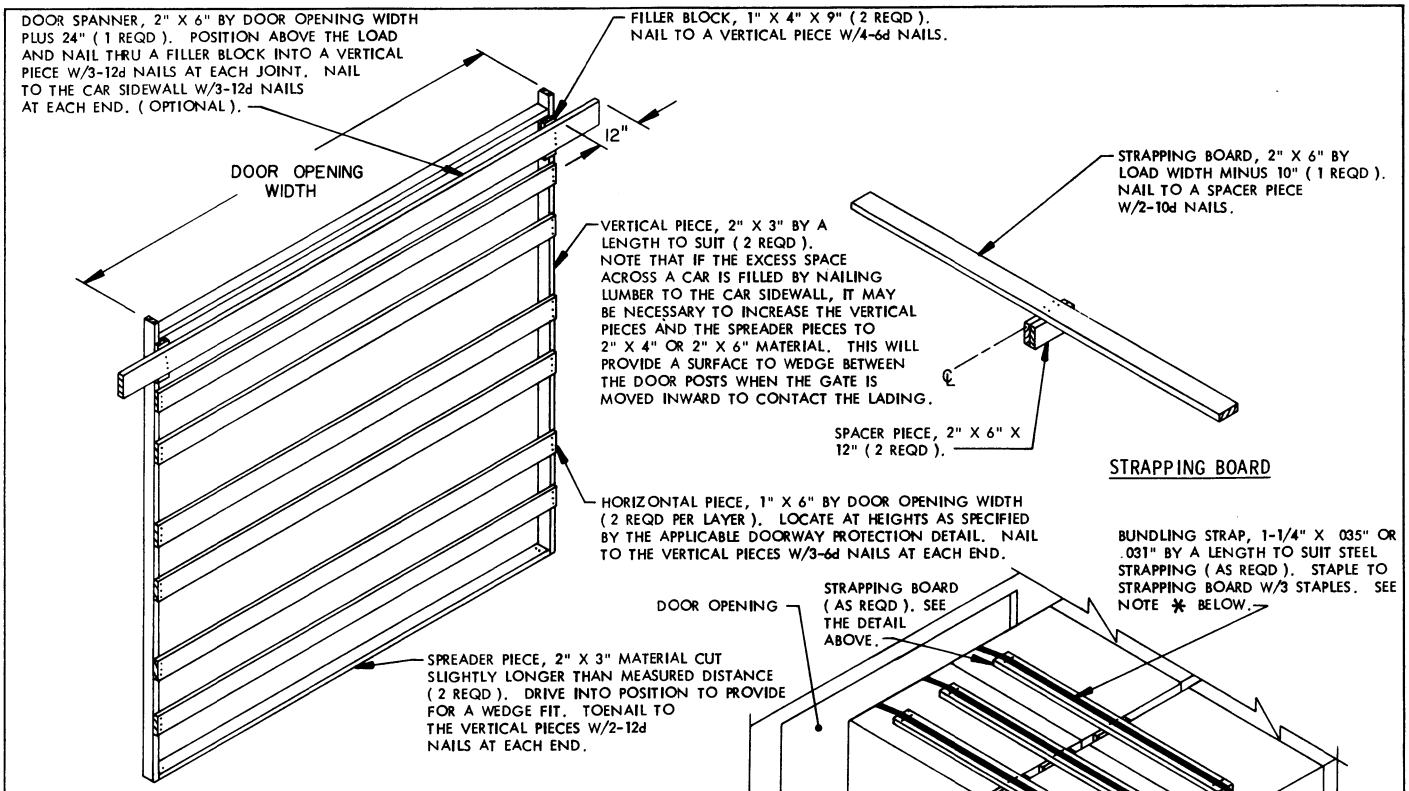
ISOMETRIC VIEW VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

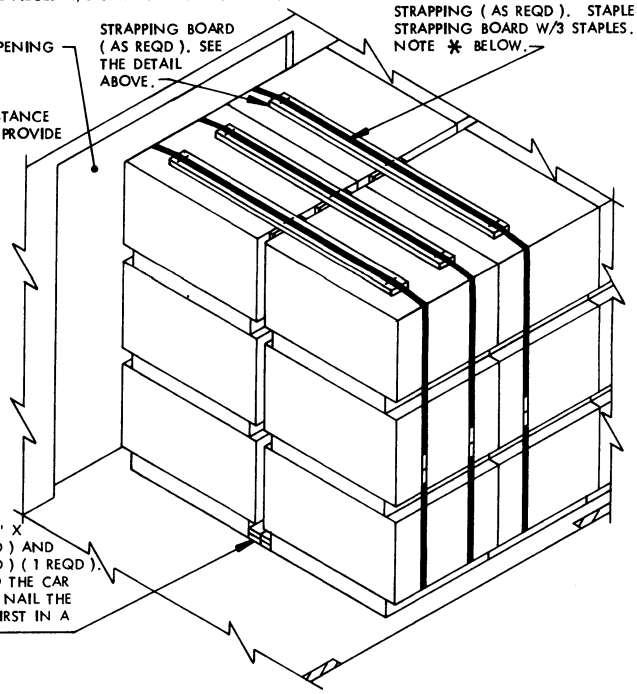
ALTERNATIVE DOORWAY PROTECTION C

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

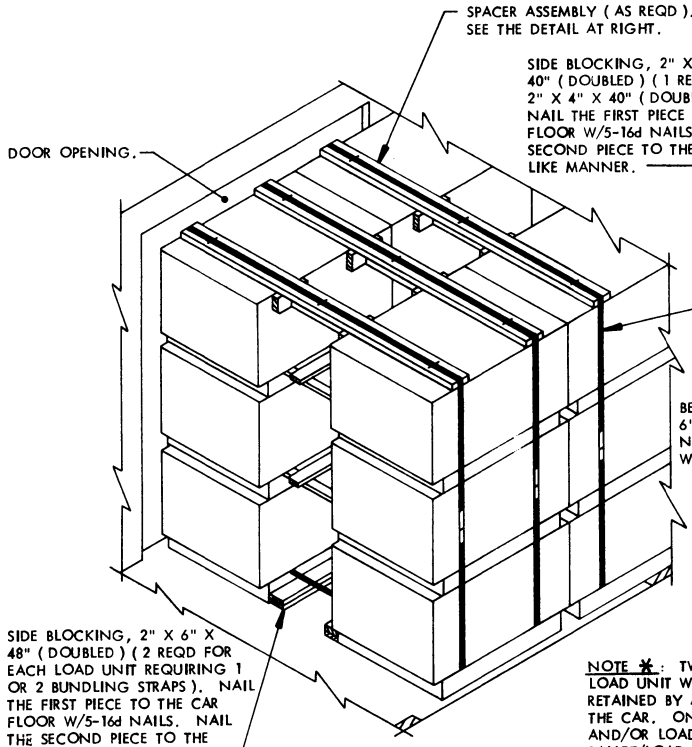


ALTERNATIVE DOORWAY PROTECTION D

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 127 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 125.



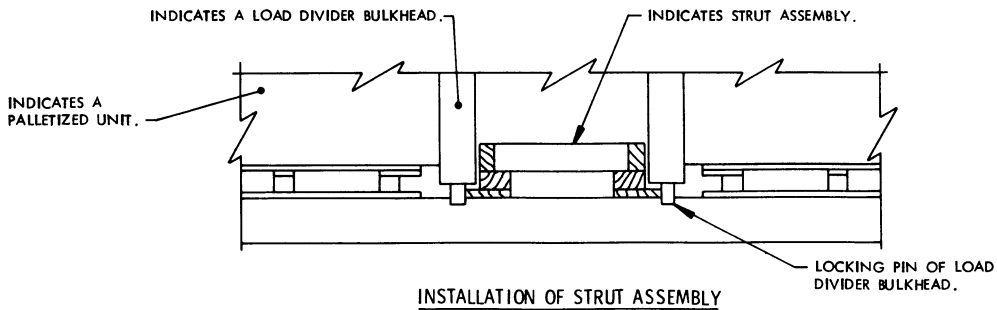
ALTERNATIVE DOORWAY PROTECTION E



ALTERNATIVE DOORWAY PROTECTION F

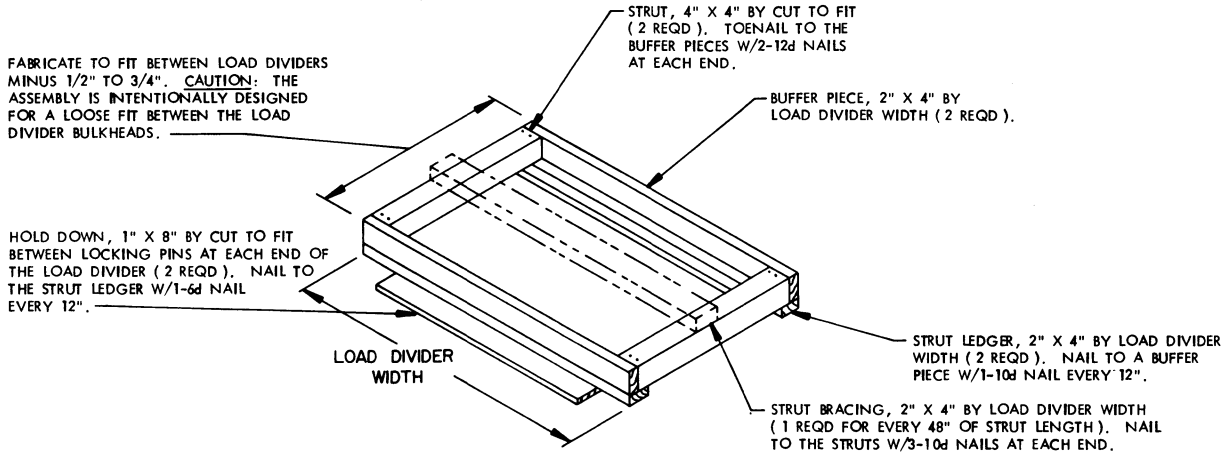
NOTE *: TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF CAR SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH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

DETAILS



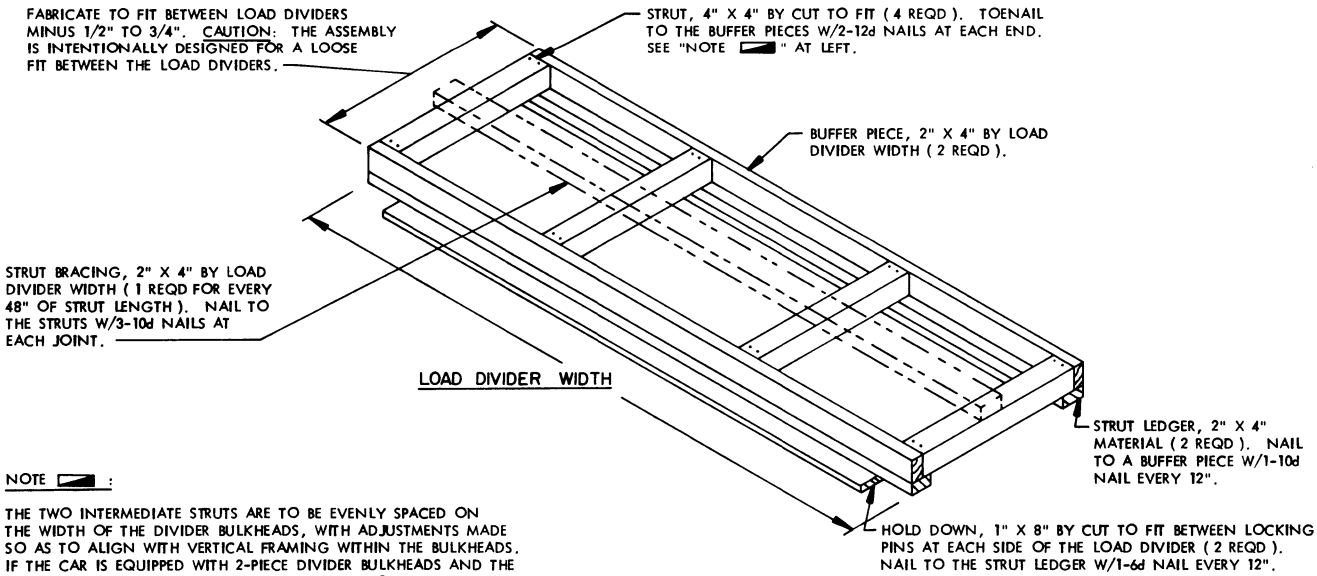
INSTALLATION OF STRUT ASSEMBLY

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



STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

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

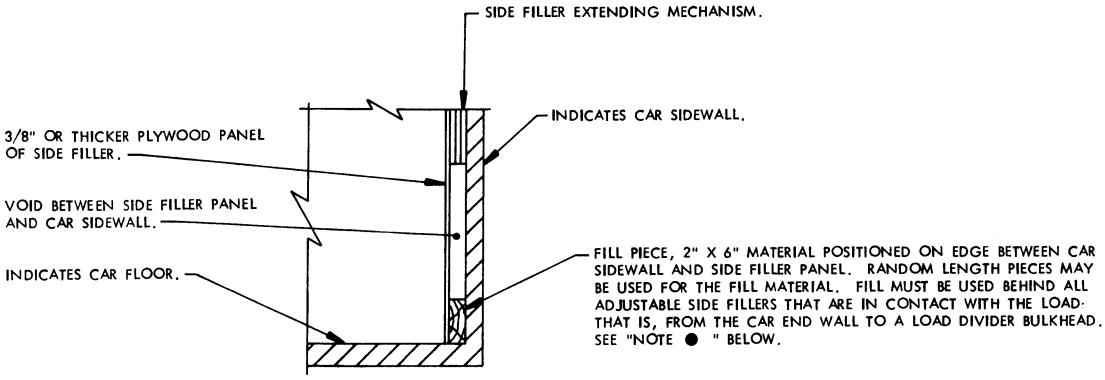


NOTE ▬:

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

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

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

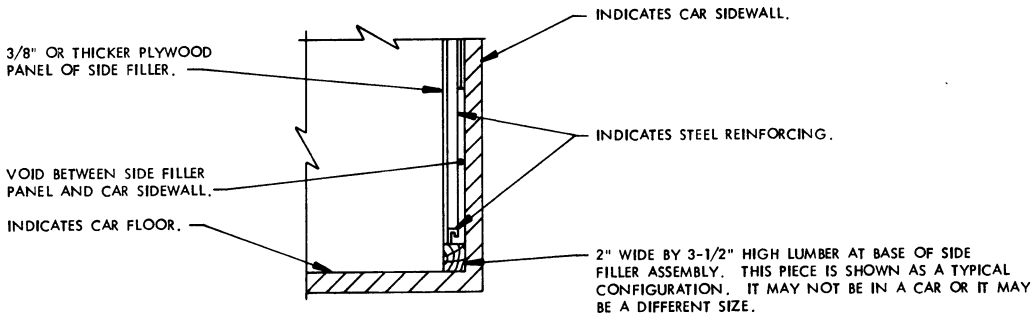


TYPICAL TYPE A

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

NOTE ● :

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



TYPICAL TYPE B

THIS VIEW SHOWN 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.