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RAILROADS
DATE 6/24/88

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

PA75 SERIES CONTAINER

INDEX

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

THIS DRAWING SUPERSEDES THE CARLOADING PORTIONS DELINEATED ON PAGES 42 THRU 73 OF DRAWING 19-48-4042-1-2-5-11-14PM1000, DATED 8 FEBRUARY 1965 AND REVISION 1, DATED 29 AUGUST 1969, AS PERTAINS TO THE PA 75 SERIES CONTAINERS.

DO NOT SCALE

REVISIONS			

DRAFTSMAN PB / dh — PROJ ENG PB / WRF
CHECKER GPG — LOG ENGRG OFFICE W.F. Ernst

APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
[signature]

APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)
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U.S. ARMY AMC DRAWING
DECEMBER 1988

CLASS	DIVISION	DRAWING	FILE
19	48	4042B/11	5PM 1000

PROJECT FSA 43B/11-63

GENERAL NOTES

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

B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR THE PA75 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" PALLET. SEE THE PICTORIAL VIEWS ON PAGES 4 AND 5. REFER TO THE U.S. ARMY AMC (DARCOM) DRAWING 19-48-4042A/12-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA75 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 111 FOR GUIDANCE.

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

F. 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 84 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.

G. 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.

H. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 112 FOR GUIDANCE.

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

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

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

STAPLES ---------- : FED SPEC FF-N-105; SENCO QUALITY OR EQUAL.

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

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

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 W6S OR STRONGER..

(GENERAL NOTES CONTINUED)

K. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. WHEN POSSIBLE TO DOSO, 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.

L. 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.

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

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

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

P. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 91 FOR GUIDANCE.

Q. 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.

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

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

(FOR CONVENTIONAL TYPE BOX CAR)

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

U. NOTICE: WHEN POSITIONING 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 IN TO 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.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED)

V. 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 114. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUTS AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

W. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 114 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.

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

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

Y. THE OUTLOADING PROCEDURES FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS 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 CROSS MEMBERS ARE OFF-CENTER. NOTE: IT IS RECOMMENDED THAT EACH CROSS MEMBER BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CAR).

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

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

CC. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE 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.

DD. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 120 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 120, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

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

FF. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "GG" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 119.

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

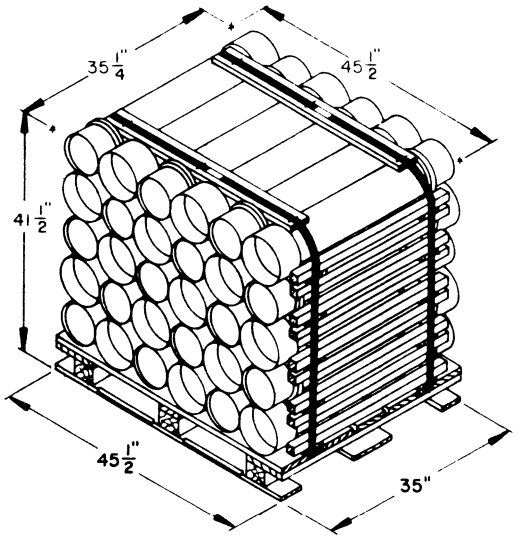
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 92 THRU 95.

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 86 THRU 90 FOR GUIDANCE.

3. AT LOCATION (S) WHERE K-BRACE 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 ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 106, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 102.

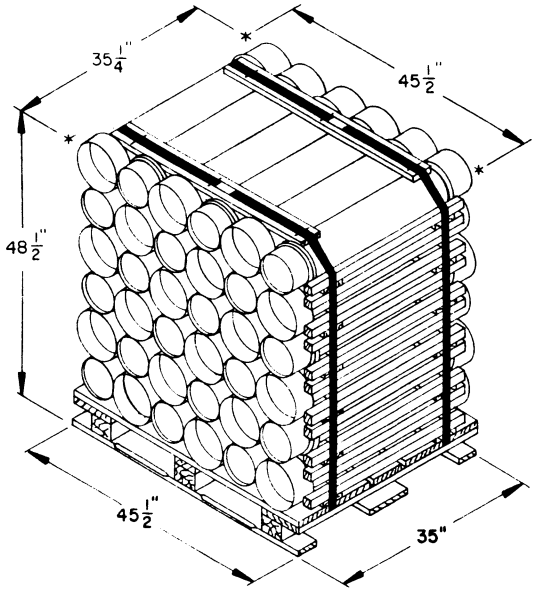
HH. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

CONTAINER ---------- 30 EACH @ 37 LBS (APPROX)
CUBE ---------- 38.5 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,240 LBS (APPROX)

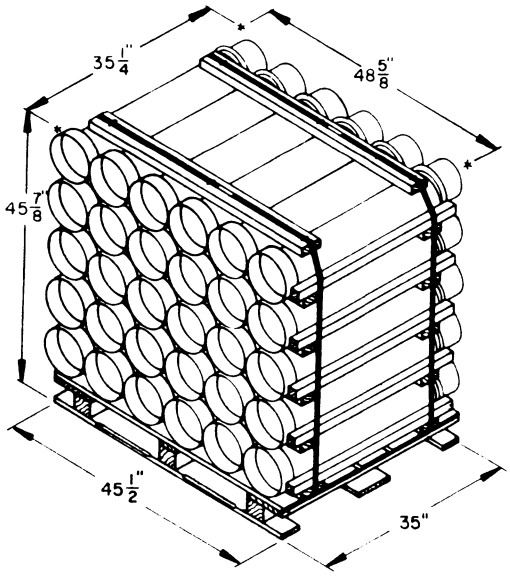
REFER TO PAGES 6 THRU 13 FOR OUTLOADING PROCEDURES.



ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

CONTAINER ---------- 36 EACH @ 37 LBS (APPROX)
CUBE ---------- 45.0 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,474 LBS (APPROX)

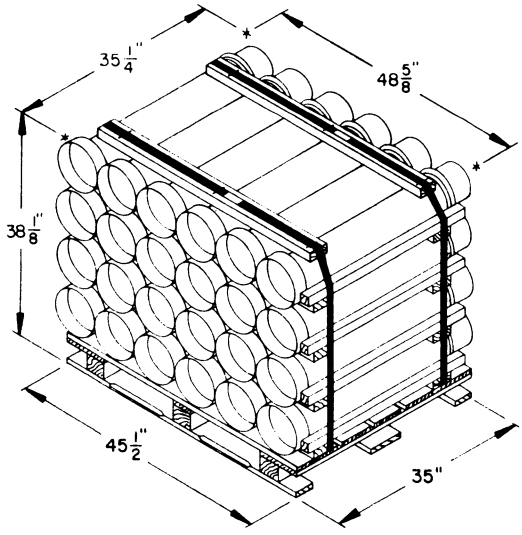
REFER TO PAGES 18 THRU 25 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ---------- 30 EACH @ 37 LBS (APPROX)
CUBE ---------- 45.5 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,262 LBS (APPROX)

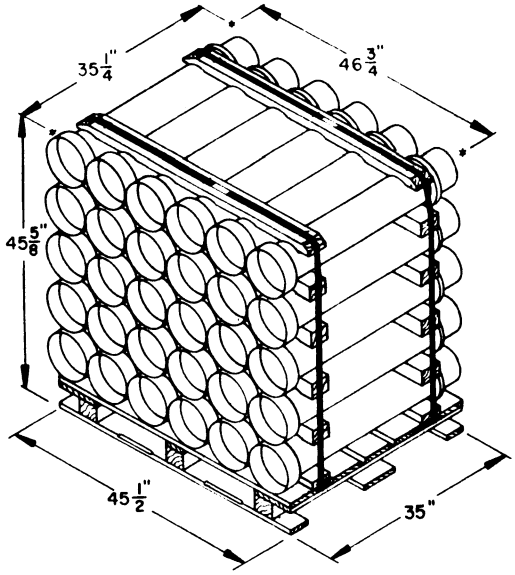
REFER TO PAGES 30 THRU 37 FOR OUTLOADING PROCEDURES.



FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ---------- 24 EACH @ 37 LBS (APPROX)
CUBE ---------- 37.8 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,025 LBS (APPROX)

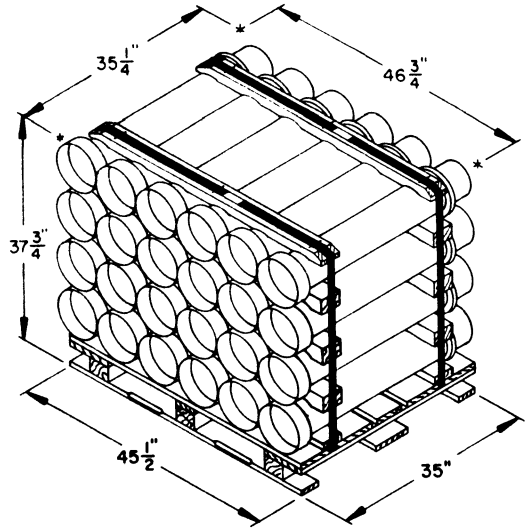
REFER TO PAGES 42 THRU 49 FOR OUTLOADING PROCEDURES.



ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

CONTAINER ----------30 EACH @ 37 LBS (APPROX)
CUBE ----------43.5 CUBIC FEET (APPROX)
GROSS WEIGHT ----------1,263 LBS (APPROX)

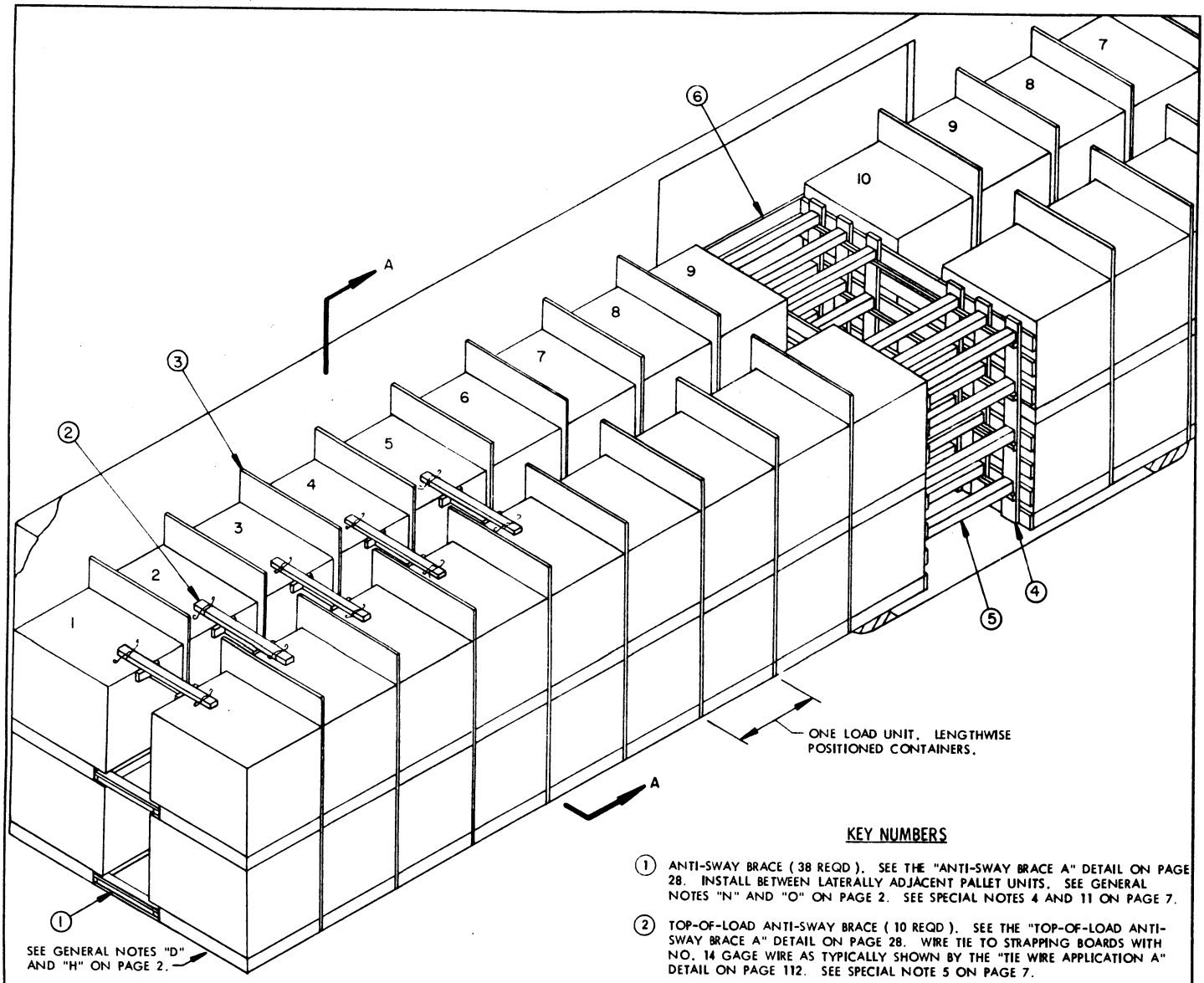
REFER TO PAGES 54THRU61 FOR OUTLOADING PROCEDURES.



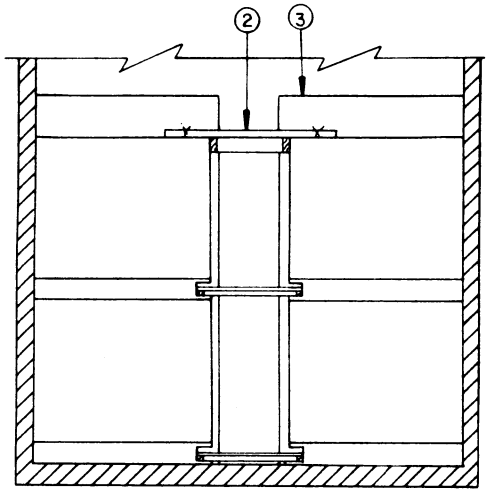
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

CONTAINER ----------24 EACH @ 37 LBS (APPROX)
CUBE ----------36.0 CUBIC FEET (APPROX)
GROSS WEIGHT ----------1,025 LBS (APPROX)

REFER TO PAGES 66 THRU 73 FOR OUTLOADING PROCEDURES.



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTES 4 AND 11 ON PAGE 7.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 7.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 6 AND 16 ON PAGE 7.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 14. SEE SPECIAL NOTES 7, 8, AND 9 ON PAGE 7.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 45") (24 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 14. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 10 AND 11 ON PAGE 7.

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

(SPECIAL NOTES CONTINUED)

11. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED (6) , USE PIECES MARKED (5) THRU (8) ON PAGE 12. SEE SPECIAL NOTES 9 AND 10 ON PAGE 13 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) 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, REFER TO PAGES 84 THRU 106 FOR GUIDANCE.

13. IF THE DOOR HEIGHT PERMITS ENTRY OF A 3-HIGH PALLET STACK THE DEPICTED LOAD CAN BE INCREASED BY ONE COMPLETE LAYER, OR IT CAN BE INCREASED BY THIRTY-TWO (32) UNITS IF THE STRUT BRACING METHOD OF PARTIAL TIER BRACING IS USED. REFER TO PAGE 83 FOR GUIDANCE. NOTE THAT IN A 3-TIER LOAD "SEPARATOR GATE A", DETAIL ON PAGE 14, MUST BE USED IN COMBINATION WITH SEPARATOR GATE MARKED (3) . ALSO, THE HEIGHT OF SEPARATOR GATES MARKED (3) MUST BE DECREASED TO ACCOMODATE THE STRUTS FOR PARTIAL TIER BRACING.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

16. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUT OUT AT LEAST 3-1/2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 79,360 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 59,520 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR. SEE SPECIAL NOTE 13.

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' WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLET UNITS SHOULD BE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6' WIDE CAN BE USED, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "A" AS SHOWN ON THE DETAIL ON PAGE 14.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 6, MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 40' CAR.

6. SEPARATOR GATES MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED.

7. CENTER GATE "A" 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 113 FOR GUIDANCE.

8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE A" SHOWN AS PIECE MARKED (4) IN THE LOAD ON PAGE 6, CONSTRUCT TWO (2) CENTER GATES "B" AS SHOWN ON PAGE 15. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE A, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (6) IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

(CONTINUED AT LEFT)

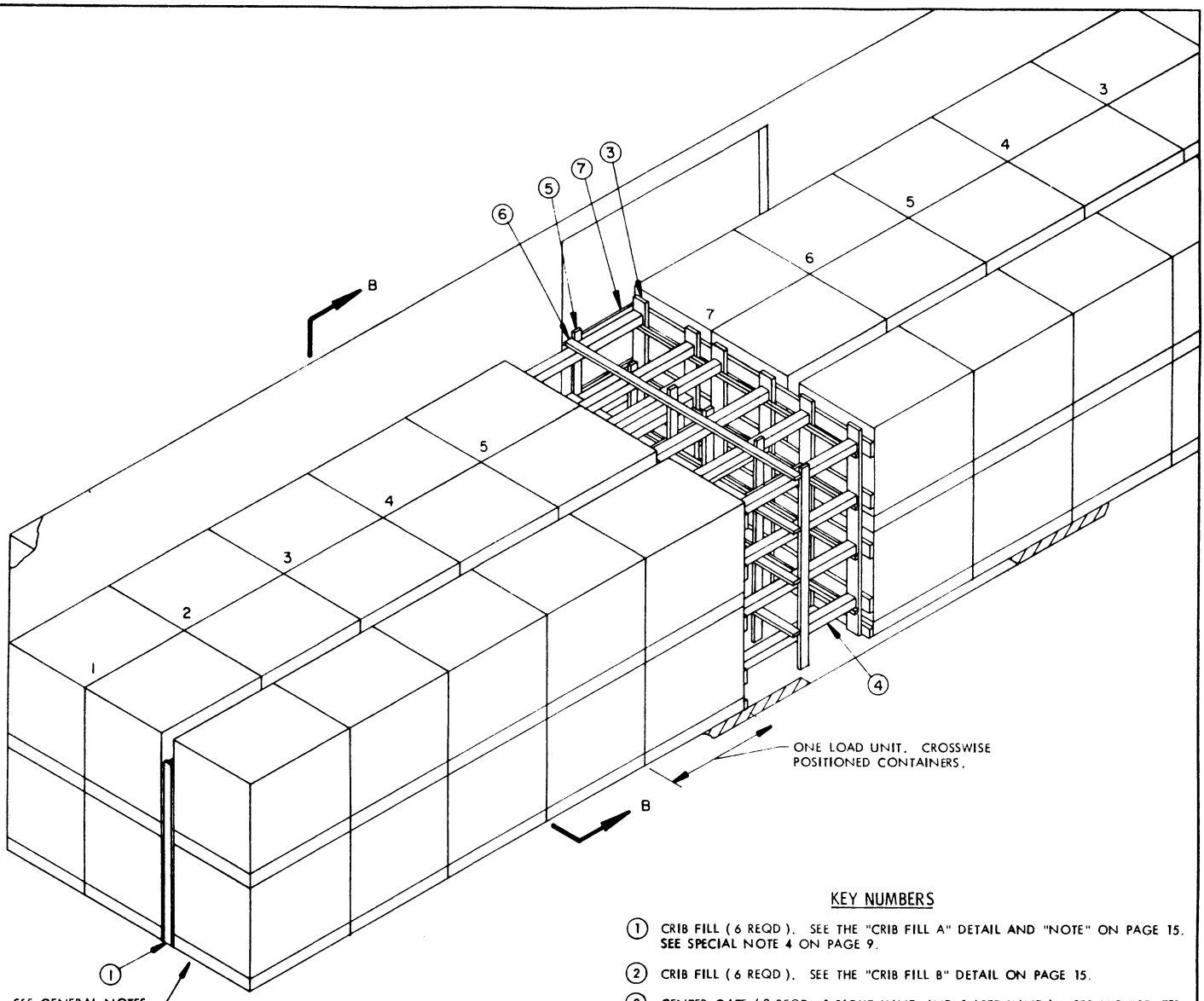
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	80	40
2" X 2"	289	97
2" X 3"	34	17
2" X 4"	215	144
2" X 6"	207	207
4" X 4"	90	120
NAILS	**NO. REQD**	**POUNDS**
6d (2")	572	3-1/2
10d (3")	804	12-1/2
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2
PLYWOOD, 3/8" (34 SHEETS)	1088 SQ FT REQD	1,122 LBS
WIRE, NO. 14 GAGE	200' REQD	4 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	94,240 LBS
DUNNAGE		2,504 LBS
TOTAL WEIGHT		96,744 LBS

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



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

ISOMETRIC VIEW

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL A" DETAIL AND "NOTE" ON PAGE 15. SEE SPECIAL NOTE 4 ON PAGE 9.

(2) CRIB FILL (6 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 15.

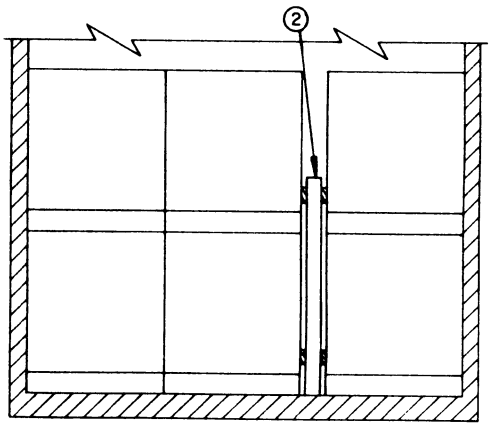
(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE SPECIAL NOTES 5, 6, 7, AND 10 ON PAGE 9.

(4) STRUT 4" X 4" BY CUT TO FIT (REF 54") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 6'-8" (6 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 A" DETAIL ON PAGE 14. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 9.



SECTION B-B

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

(SPECIAL NOTES CONTINUED)

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD, IF USED, CAN BE REDUCED BY A MULTIPLE OF NINE (9) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2 OR 3-TIER LOAD CAN BE REDUCED BY TWELVE (12) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED. REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

14. THE DEPICTED LOAD CAN BE INCREASED BY THIRTY-SIX (36) UNITS IF THE DOOR HEIGHT IS AT LEAST 10'-7" HIGH TO PERMIT ENTRY OF A 3-HIGH PALLET STACK.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 14.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,400 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; NINETY (90) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 111,600 POUNDS, CAN BE OUT-LOADED IN A 60'-8" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT 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. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT THE HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION IN LIEU OF USING THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").

5. CENTER GATE "C" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT ON 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 D", AND TWO (2) "CENTER GATES E" 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 113.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATE "C", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9 IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED ⑦ , REFER TO KEY NUMBERS ③ THRU ⑥ ON PAGE 24, AND SPECIAL NOTES 5 AND 6 ON PAGE 25 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATE "C" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE C" DETAIL ON PAGE 16. IF SPLIT CENTER GATES "D" AND "E" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	91	31
1" X 6"	64	32
2" X 2"	70	24
2" X 3"	32	16
2" X 4"	309	206
2" X 6"	156	156
4" X 4"	108	144
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
10d (3")	520	8
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2

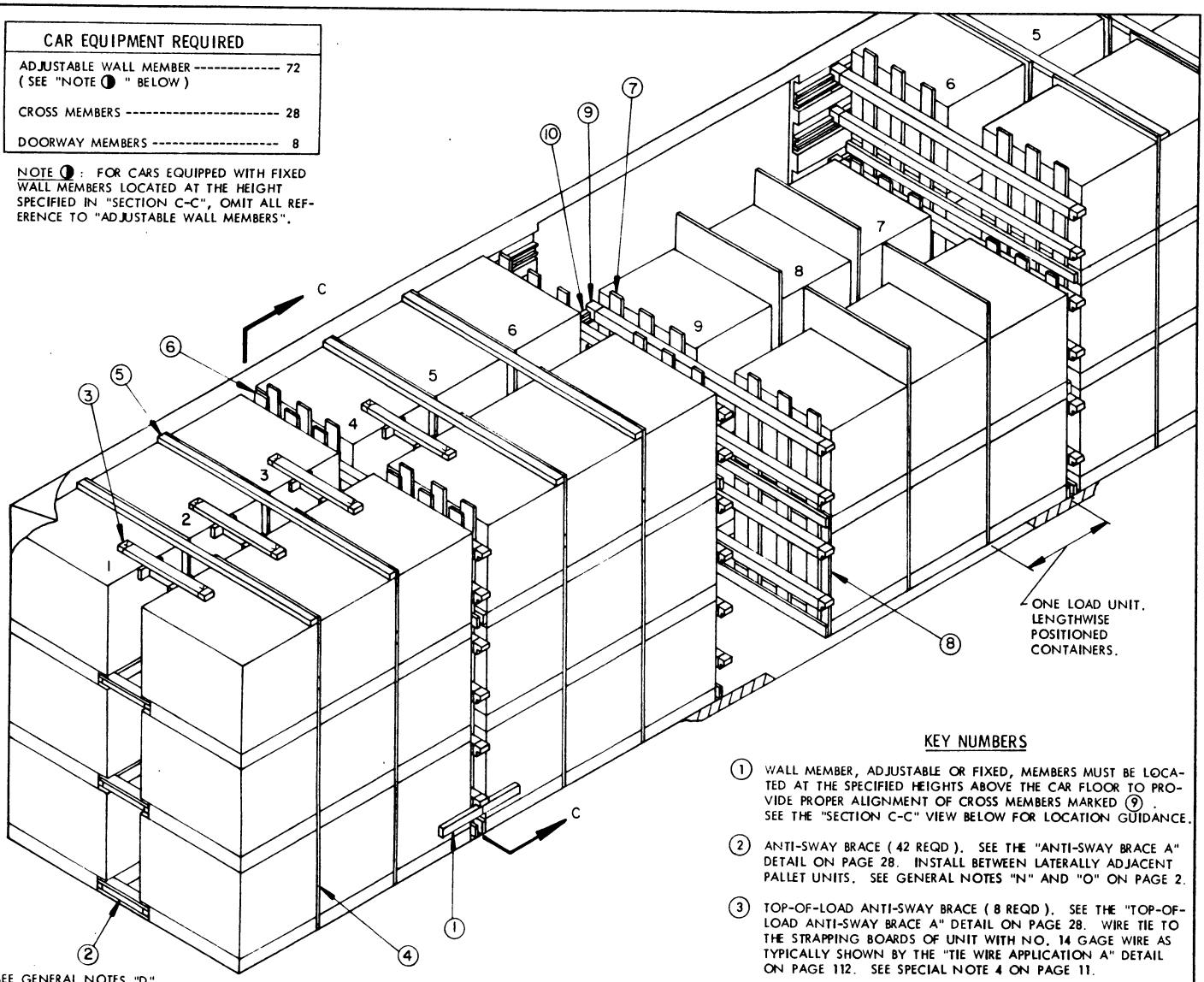
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	89,280 LBS
DUNNAGE		1,229 LBS
	TOTAL WEIGHT	90,509 LBS

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

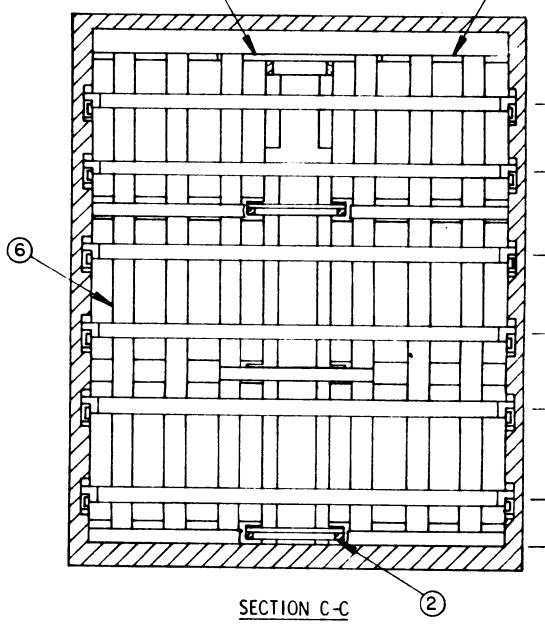
CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	72
CROSS MEMBERS	28
DOORWAY MEMBERS	8

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

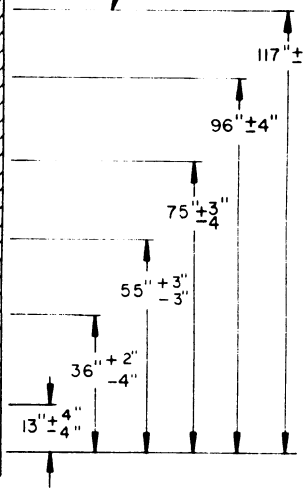


SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 11.

ISOMETRIC VIEW



EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED (1) AND/OR A DOORWAY MEMBER MARKED (10) IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION C-C

KEY NUMBERS

(1) WALL MEMBER, ADJUSTABLE OR FIXED, MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED (9) . SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE.

(2) ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO THE STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 11.

(4) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (20 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED (2) W/1-6d NAIL EACH.

(5) SEPARATOR GATE (8 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 14 AND SPECIAL NOTE 5 ON PAGE 11.

(6) SEPARATOR GATE FOR 3-HIGH (6 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. SEE SPECIAL NOTE 6 ON PAGE 11.

(7) SEPARATOR GATE FOR 2-HIGH (2 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 17. SEE SPECIAL NOTE 7 ON PAGE 11.

(8) STOP PIECE, 1" X 4" X 48" (2 REQD). POSITION AS SHOWN ABOVE. NAIL TO THE HORIZONTAL PIECES OF SEPARATOR GATE, PIECE MARKED (7) , W/3-6d NAILS AT EACH JOINT.

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

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

ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 10 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 79,360 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED (6) , MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF THE LOAD REGARDLESS OF THE CAR LENGTH.

5. ONE (1) SEPARATOR GATE "A", PIECE MARKED (5) MUST BE POSITIONED ABOVE EACH PAIR OF 4' X 8' PLYWOOD SHEETS, PIECES MARKED (4) . SEPARATOR GATE "A" IS REQUIRED FOR 3-HIGH LOAD UNITS ONLY.

6. SEPARATOR GATES SHOWN AS PIECES MARKED (6) AND (7) MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION, WITH THE VERTICAL PIECES AGAINST THE UNITS.

7. SEPARATOR GATE "B" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (8) , PRIOR TO POSITIONING IN THE DOORWAY. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AND THE DOOR HEIGHT PERMITS ENTRY OF A 3-HIGH PALLET STACK, AN ADDITIONAL SIX PALLET UNITS CAN BE LOADED IN THE DOORWAY AREA.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 78 AND 79 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

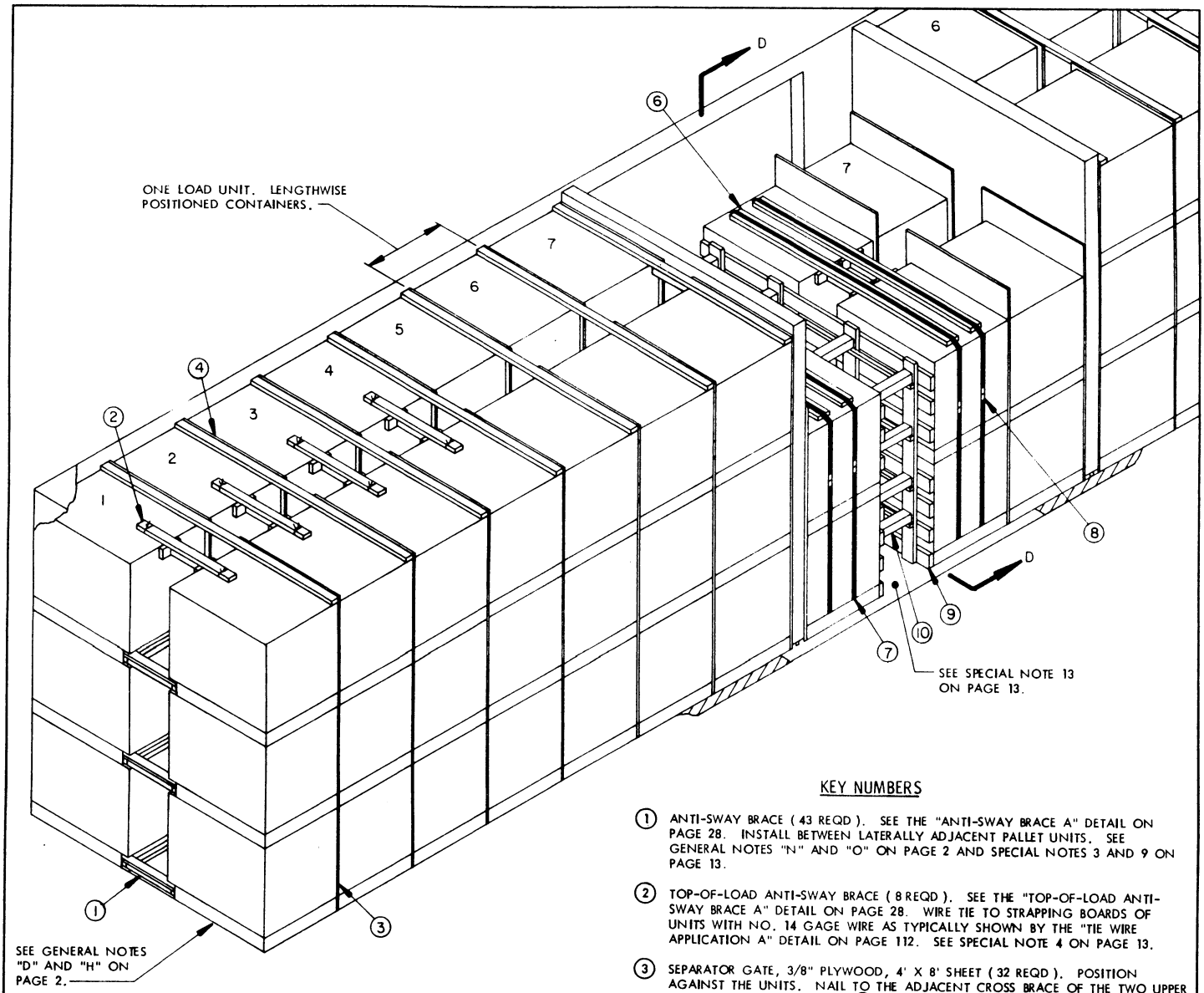
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	341	114
1" X 6"	462	231
2" X 2"	247	83
2" X 4"	266	178
NAILS	**NO. REQD**	**POUNDS**
6d (2")	976	15
10d (3")	432	6-3/4
PLYWOOD, 3/8" (24 SHEETS) ---- 768 SQ FT REQD -------- 792 LBS		
WIRE, NO. 14 GAGE ---------- 160' REQD ---------- 3 LBS		

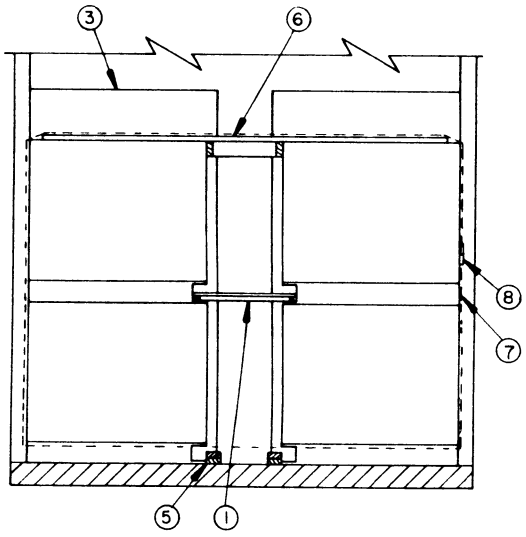
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	104,160 LBS
DUNNAGE		2,029 LBS
TOTAL WEIGHT		106,189 LBS

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



ISOMETRIC VIEW



SECTION D-D

KEY NUMBERS

(1) ANTI-SWAY BRACE (43 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTES 3 AND 9 ON PAGE 13.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNITS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 13.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (32 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE THE "STOP PIECE LOCATION DETAIL" ON PAGE 16 AND SPECIAL NOTES 5 AND 6 ON PAGE 13.

(4) SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE A" DETAIL AND "NOTE" ON PAGE 14. SEE SPECIAL NOTE 7 ON PAGE 13.

(5) SIDE BLOCKING, 2" X 4" X 35" (DOUBLED) (4 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 SPECIAL NOTES 8 AND 9 ON PAGE 13.

(6) STRAPPING BOARD/SPACER ASSEMBLY "A" (4 REQD). SEE THE DETAIL ON PAGE 16.

(7) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 33'-6" LONG STEEL STRAPPING (4 REQD). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 10 ON PAGE 13.

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

(9) CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 14. SEE SPECIAL NOTES 11 AND 12 ON PAGE 13.

(10) STRUT, 4" X 4" BY CUT TO FIT (REF: 18") (16 REQD). TOENAIL TO PIECES MARKED (9) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

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

PROJECT FSA 43B/11-63

(SPECIAL NOTES CONTINUED)

13. A "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS", DETAIL SHOWN ON PAGE 119 IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN CENTER GATES ARE NOT USED, AND THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN SIX (6) LOAD UNITS. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 50' OR LONGER CARS.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

15. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE ALTERNATED CONTAINERS UNIT (BASIC HEIGHT). A MAXIMUM OF ONE HUNDRED-EIGHT (108) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 133,920 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 81,840 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 8 IS EMPLOYED, THEN, ONE-HUNDRED-TWENTY SIX (126) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 156,240 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, NINETY-NINE (99) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 122,760 POUNDS, AND SEVENTY-FIVE (75) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXMIATE LADING WEIGHT OF 93,000 POUNDS.

3. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "A" AS SHOWN ON THE DETAIL ON PAGE 14.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 12 MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

5. SEPARATOR GATES SHOWN AS PIECES MARKED (3) , WHICH ARE POSITIONED IN THE CAR PRIOR TO POSITIONING THE PALLET UNITS, MUST BE PREVENTED FROM LATERAL DISPLACEMENT BY APPLICATION OF A STOP PIECE. STOP PIECES ARE REQUIRED ON FOUR (4) GATES IN THE LOAD ON PAGE 12.

6. SEPARATOR GATES SHOWN AS PIECES MARKED (3) AND (4) , MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED.

7. IF THE CAR IS EQUIPPED WITH SLIDING DOORS, SEPARATOR GATES "A" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY APPLICATION OF A STOP PIECE AS SHOWN BY THE DETAIL ON PAGE 14. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR (4) SEPARATOR GATES.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE DOORWAY PROTECTION, SHOWN AS PIECES MARKED (6) IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. SIDE BLOCKING SHOWN AS PICES MARKED (5) IN THE LOAD ON PAGE 12, MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1) , FOR ALL UNITS REQUIRING BUNDLING STRAPS; IF THE PALLET UNITS ARE POSITIONED CROSSWISE, REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 24, AND SPECIAL NOTES 5 AND 6 ON PAGE 25 FOR GUIDANCE.

10. 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.

11. NOTE THAT THE TWO (2) VERTICAL PIECES WHICH BEAR AGAINST THE CENTER OF THE UNITS, ARE NOT REQUIRED FOR CENTER GATE "A" IN THE LOAD ON PAGE 12; ALSO, CENTER GATE "A" 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 113 FOR GUIDANCE.

12. 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 A", INSTALL TWO (2) "CENTER GATES B" AS SHOWN ON PAGE 15. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113

(CONTINUED AT LEFT)

BILL OF MATERIAL

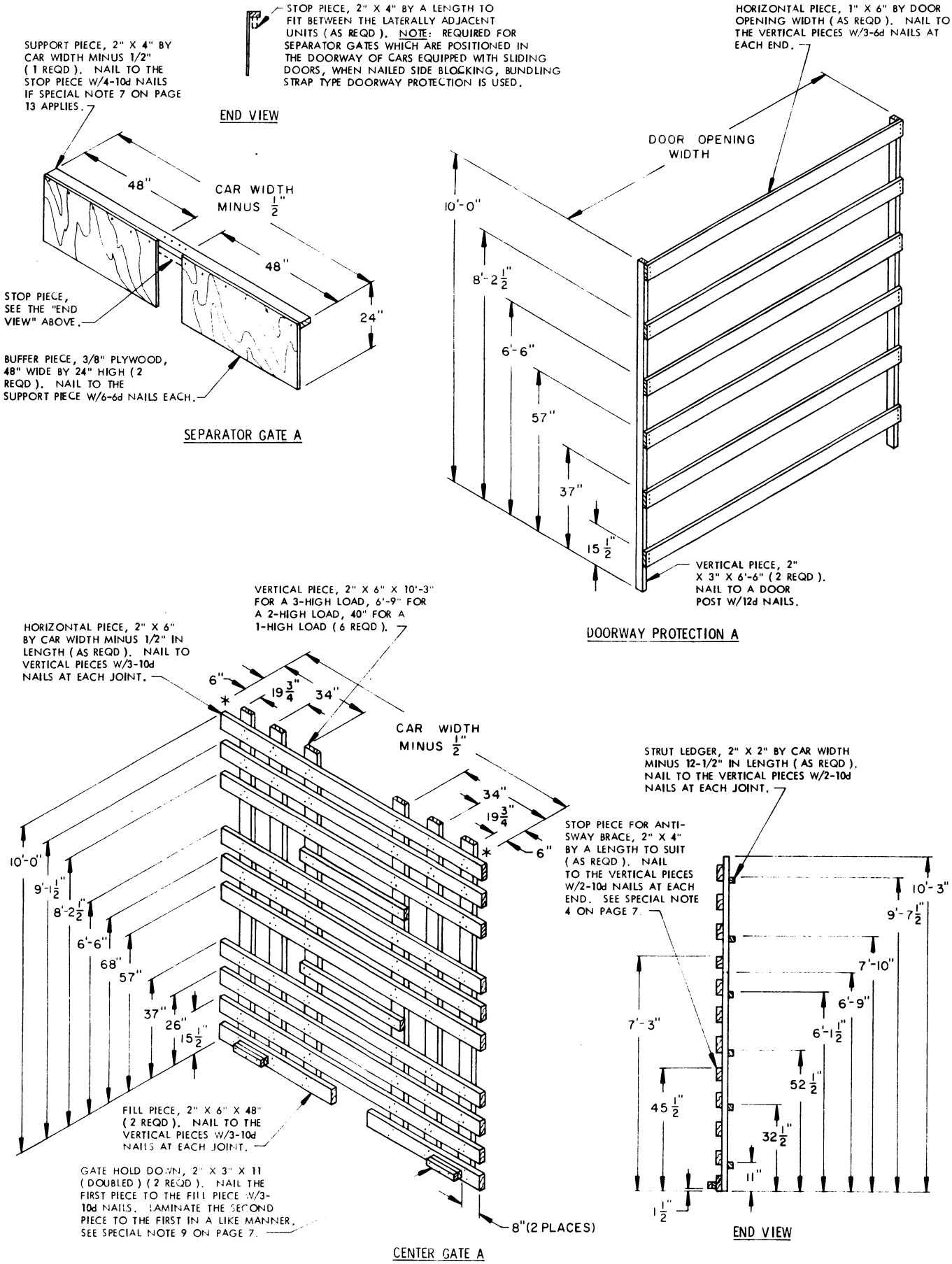
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	187	63
2" X 2"	319	107
2" X 3"	8	4
2" X 4"	376	251
2" X 6"	159	159
4" X 4"	24	32
NAILS	**NO. REQD**	**POUNDS**
6d (2")	752	4-1/2
10d (3")	768	6
16d (3-1/2")	96	2

PLYWOOD, 3/8" (39 SHEETS)---1,264 SQ FT REQD------1,287 LBS
STEEL STRAPPING, 1-1/4" ----------134' REQD---------20 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD---------- NIL
STAPLE FOR 1-1/4" STRAPPING ---------- 12 REQD---------- NIL
WIRE, NO. 14 GAGE ----------160' REQD---------3 LBS

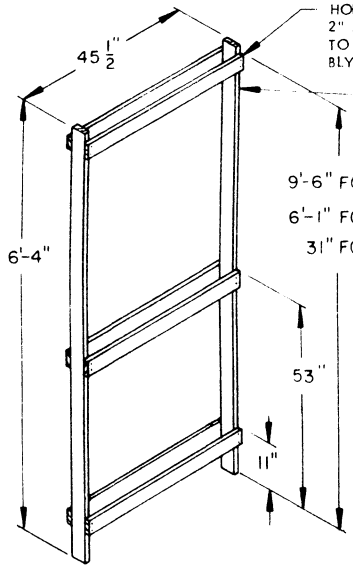
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	90	111,600 LBS
DUNNAGE		2,555 LBS
TOTAL WEIGHT		114,155 LBS

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



DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



HORIZONTAL PIECE, 1" X 4" AND/OR 2" X 4" X 45-1/2" (6 REQD). NAIL TO THE VERTICAL PIECES W/2 APPLICABLY SIZED NAILS AT EACH END.

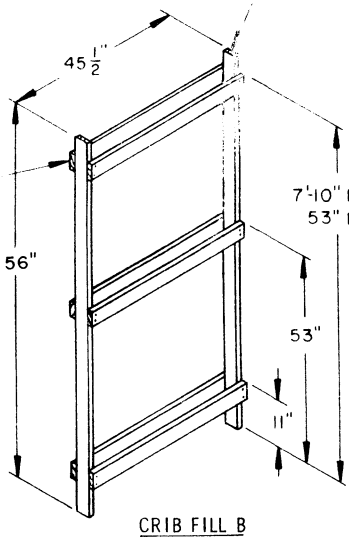
VERTICAL PIECE, 2" X 4" X 9'-9" FOR A 3-HIGH LOAD, 6'-4" FOR A 2-HIGH LOAD, 34" FOR 1-HIGH LOAD (2 REQD).

9'-6" FOR 3 HIGH
6'-1" FOR 2 HIGH
31" FOR 1 HIGH

CRIB FILL A

NOTE: THE DEPICTED CRIB FILL IS DESIGNED FOR USE IN A 9'-4" WIDE CAR. 2" X 6" VERTICAL PIECES WILL BE USED IN A 9'-6" WIDE CAR. IF THE CAR IS 9'-2" WIDE, NAIL THE HORIZONTAL PIECES TO THE FLAT SIDE OF THE 2" X 4" VERTICAL PIECES W/3-APPLICABLY SIZED NAILS.

VERTICAL PIECE, 2" X 4" X 8'-0" FOR A 3-HIGH LOAD, 56" FOR A 2-HIGH LOAD (2 REQD).



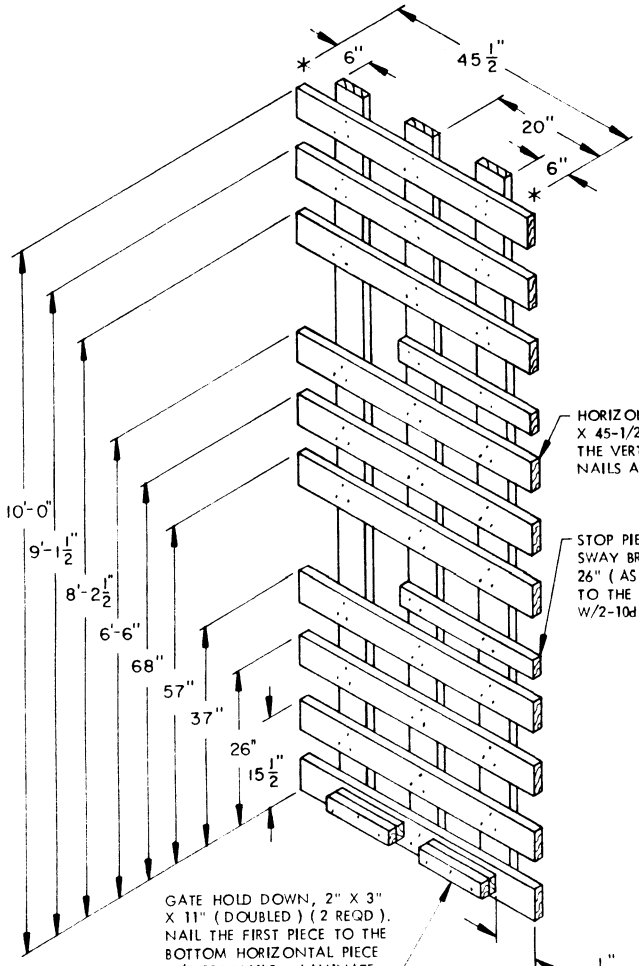
HORIZONTAL PIECE, 1" X 4" AND/OR 2" X 4" X 45-1/2" (6 REQD). NAIL TO THE VERTICAL PIECES W/2 APPLICABLY SIZED NAILS AT EACH END.

7'-10" FOR 3 HIGH
53" FOR 2 HIGH

CRIB FILL B

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

OMIT THE MID-HEIGHT HORIZONTAL PIECES WHEN USING CRIB FOR A 2-HIGH LOAD. CRIB "B" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "A" THROUGH OUT THE LENGTH OF THE LOAD.



HORIZONTAL PIECE, 2" X 6" X 45-1/2" (AS REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STOP PIECE FOR ANTI-SWAY BRACE, 2" X 4" X 26" (AS REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

GATE HOLD DOWN, 2" X 3" X 11" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/3-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

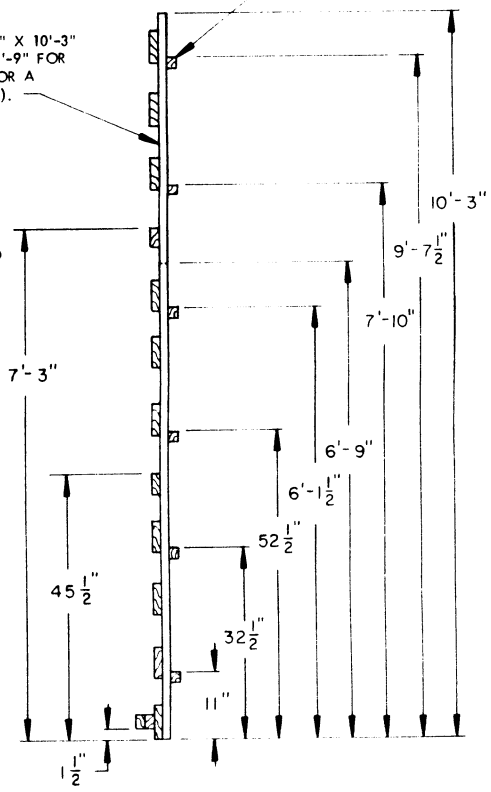
8 1/4" (2 PLACES)

CENTER GATE B

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

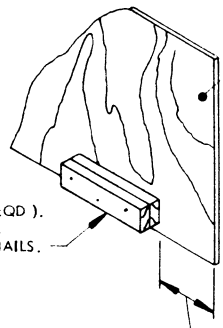
STRUT LEDGER, 2" X 2" X 33-1/2" (AS REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

VERTICAL PIECE, 2" X 6" X 10'-3" FOR A 3-HIGH LOAD, 6'-9" FOR A 2-HIGH LOAD, 40" FOR A 1-HIGH LOAD (3 REQD).

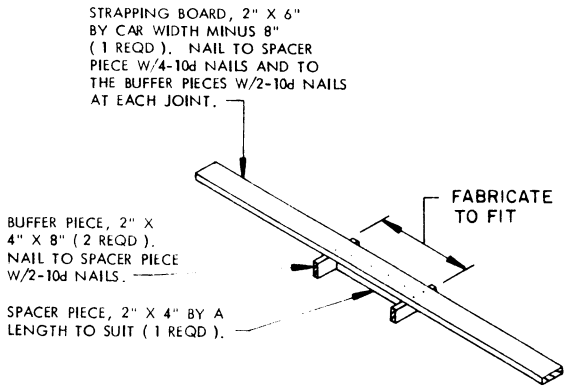


END VIEW

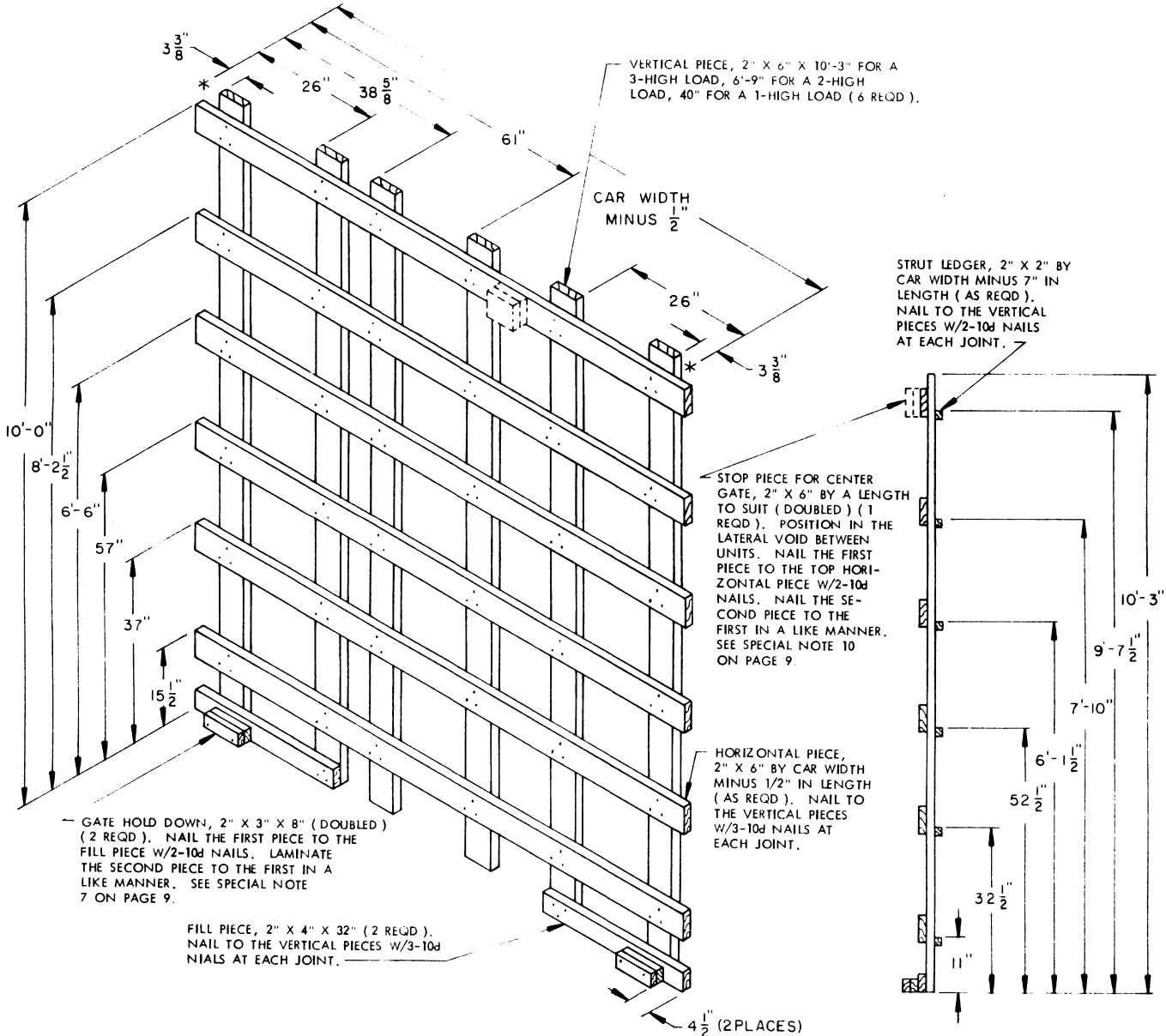
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



STOP PIECE LOCATION DETAIL



STRAPPING BOARD/SPACER ASSEMBLY A

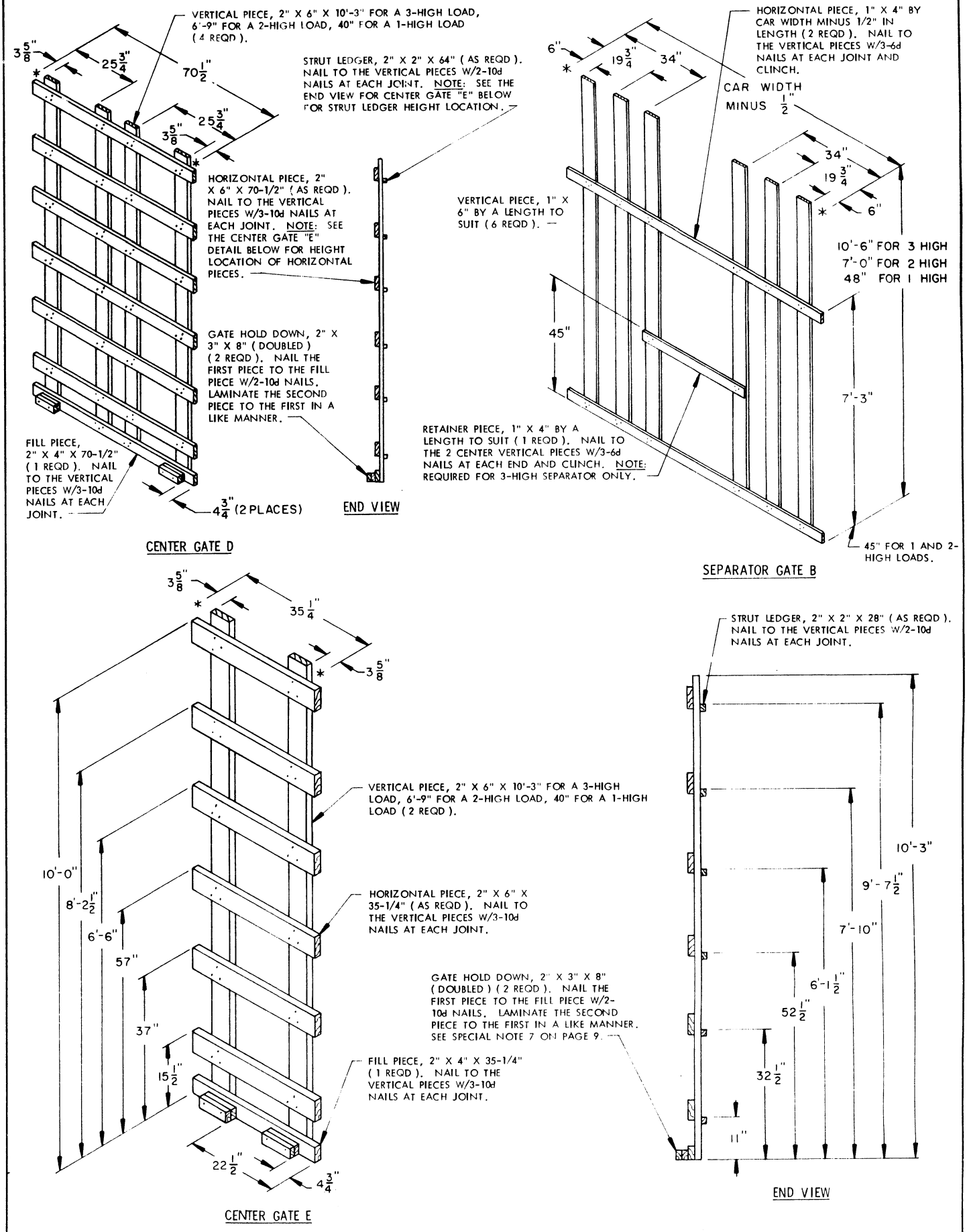


CENTER GATE C

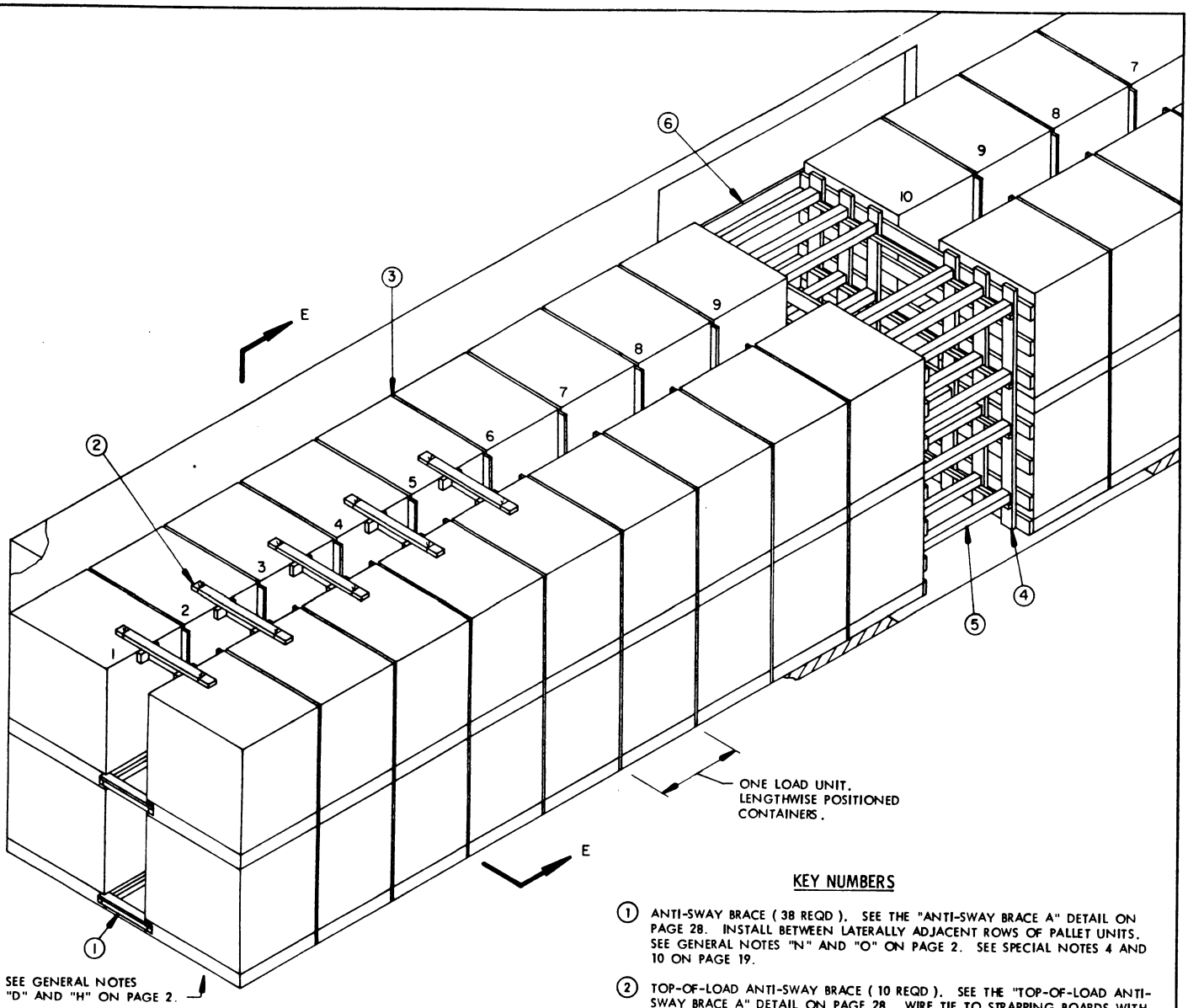
(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED).

END VIEW

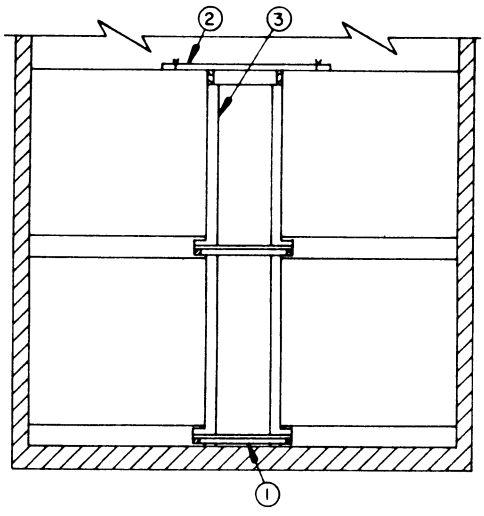
DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



DETAILS FOR ALTERNATED CONTAINERS UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTES 4 AND 10 ON PAGE 19.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 19.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 6 AND 15 ON PAGE 19.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 26. SEE SPECIAL NOTES 7, 8, AND 9 ON PAGE 19.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 45") (24 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 26. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 10 AND 11 ON PAGE 19.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
76-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 BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 18 IS THE ALTERNATED CONTAINER UNIT (INCREASED HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 94,336 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 70,752 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' WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLET UNITS SHOULD BE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6' WIDE CAN BE USED, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "F" AS SHOWN ON THE DETAIL ON PAGE 26.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 18 MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A 40' CAR.

6. SEPARATOR GATES MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED.

7. CENTER GATE "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 113 FOR GUIDANCE.

8. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE F" SHOWN AS PIECE MARKED (4) IN THE LOAD ON PAGE 18, INSTALL TWO (2) "CENTER GATES G" AS SHOWN ON PAGE 27. 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 113.

9. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE F, PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

10. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (6) IN THE LOAD ON PAGE 18 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

(CONTINUED AT LEFT)

(SPECIAL NOTES CONTINUED)

11. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED (6) , USE PIECES MARKED (5) THRU (8) ON PAGE 12. SEE SPECIAL NOTES 9 AND 10 ON PAGE 13 FOR GUIDANCE. NOTE THAT THE BUNDLING STRAPS SHOWN AS PIECE MARKED (7) WILL BE 36'-0" LONG FOR THE DEPICTED LOAD. NOTE THAT THE BUNDLING STRAPS SHOWN AS PIECE MARKED (7) WILL BE 36'-0" LONG FOR THE DEPICTED LOAD.

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) UNITS, OR 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, REFER TO PAGES 83 THRU 106 FOR GUIDANCE.

13. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

14. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

15. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED FLOORLINE BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUT OUT AT LEAST 3-1/2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

BILL OF MATERIAL

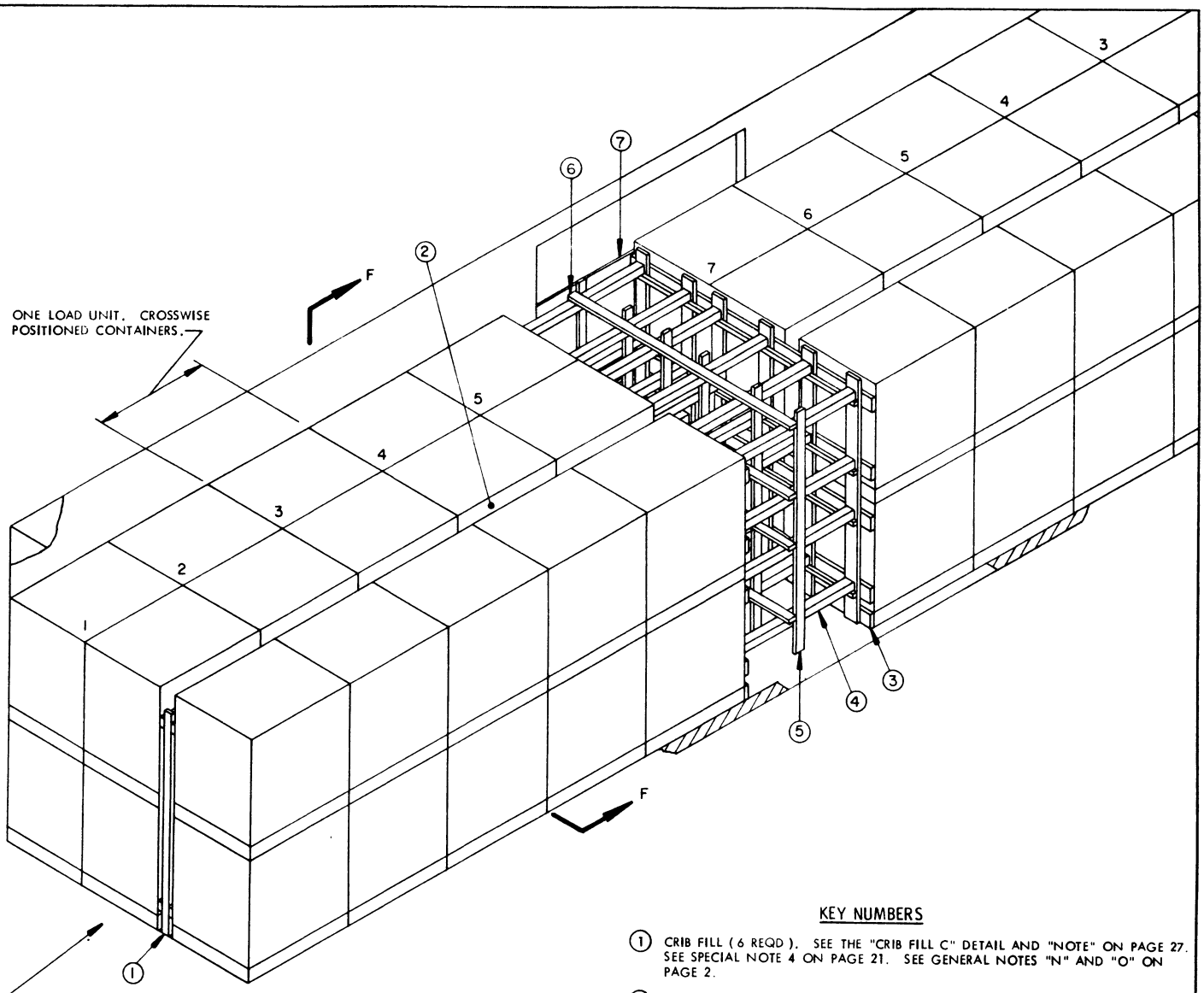
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	165	55
1" X 6"	80	40
2" X 2"	289	97
2" X 3"	39	20
2" X 4"	215	144
2" X 6"	222	222
4" X 4"	90	120
NAILS	**NO. REQD**	**POUNDS**
6d (2")	572	3-1/2
10d (3")	804	12
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2

PLYWOOD, 3/8" (34 SHEETS)---1088 SQ FT REQD -------1122 LBS
WIRE, NO. 14 GAGE ---------- 200' REQD ----------4 LBS

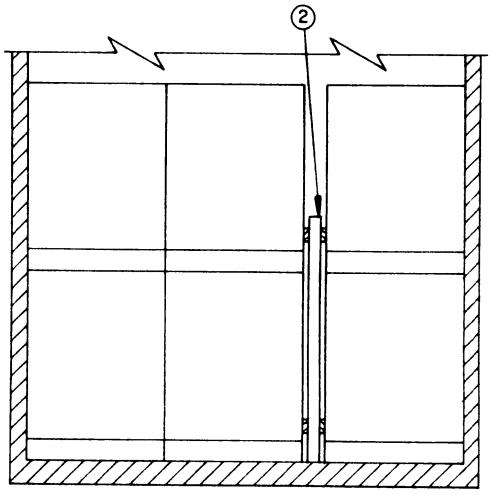
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	112,024 LBS
DUNNAGE		2,540 LBS
TOTAL WEIGHT		114,564 LBS

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



ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL C" DETAIL AND "NOTE" ON PAGE 27. SEE SPECIAL NOTE 4 ON PAGE 21. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 27.

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE H" DETAIL ON PAGE 28. SEE SPECIAL NOTES 5, 6, 7, AND 10 ON PAGE 21.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 54") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 8'-0" (6 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 B" DETAIL ON PAGE 26. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 21.

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

(SPECIAL NOTES CONTINUED)

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 SIX (6) PALLET UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2-TIER LOAD CAN BE REDUCED BY TWELVE (12) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-0" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 20 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF SIXTY (60) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 88,440 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; NINETY (90) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 132,660 POUNDS, CAN BE OUT-LOADED IN A 60'-8" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT 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" CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT THE HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION, IN LIEU OF THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").

5. 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 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT ON 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 ③ IN THE LOAD ON PAGE 20, INSTALL TWO (2) "CENTER GATES J" AND TWO (2) "CENTER GATES K" AS SHOWN ON PAGE 29. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

7. 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 HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECES MARKED ⑦ IN THE LOAD ON PAGE 20 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED ⑦ , REFER TO KEY NUMBERS ③ THRU ⑥ ON PAGE 24, AND SPECIAL NOTES 5 AND 6 ON PAGE 25 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATES "H" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE H" DETAIL ON PAGE 28. IF SPLIT CENTER GATES "J" AND "K" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	91	31
1" X 6"	64	32
2" X 2"	70	24
2" X 3"	36	18
2" X 4"	332	222
2" X 6"	174	174
4" X 4"	108	144

NAILS	NO. REQD	POUNDS
6d (2")	144	1
10d (3")	520	8
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2

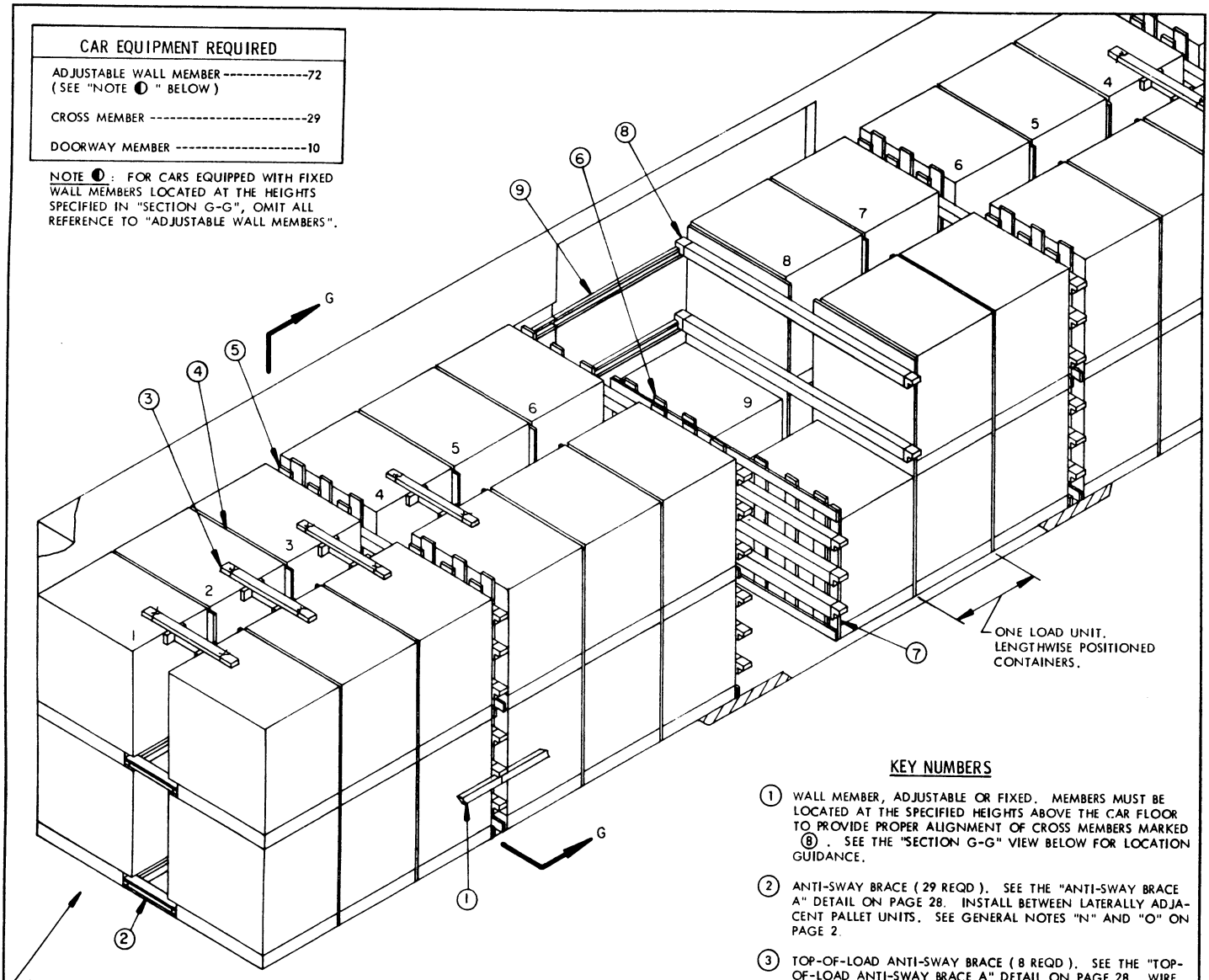
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	106,128 LBS
DUNNAGE		1,302 LBS
TOTAL WEIGHT		107,430 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	72
CROSS MEMBER	29
DOORWAY MEMBER	10

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



ISOMETRIC VIEW

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 (8). SEE THE "SECTION G-G" VIEW BELOW FOR LOCATION GUIDANCE.

(2) ANTI-SWAY BRACE (29 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 23.

(4) SEPARATOR GATE, 3/8" THICK PLYWOOD, 4' X 8' SHEET (20 REQD). POSITION AGAINST UNIT. NAIL TO THE ADJACENT CROSS BRACES OF ANTI-SWAY BRACE MARKED (2) W/1-6d NAIL EACH.

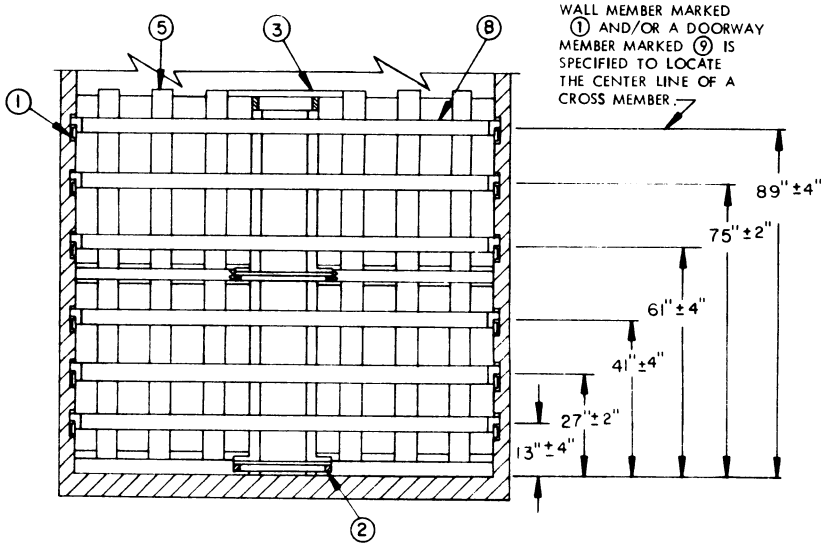
(5) SEPARATOR GATE FOR 2-HIGH (7 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 29. SEE SPECIAL NOTES 5 AND 7 ON PAGE 23.

(6) SEPARATOR GATE FOR 1-HIGH (1 REQD). SEE THE "SEPARATOR GATE C" DETAIL ON PAGE 29. SEE SPECIAL NOTE 6 ON PAGE 23.

(7) STOP PIECE, 1" X 4" X 53" (2 REQD). NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED (6) W/3-6d NAILS AT EACH JOINT AND CLINCH.

(8) CROSS MEMBER (29 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

(9) DOORWAY MEMBER (10 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 8 ON PAGE 23.



SECTION G-G

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 22 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF FORTY-SIX (46) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 67,904 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE SHOWN AS PIECE MARKED ⑤ , 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 22 MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF THE LOAD REGARDLESS OF THE CAR LENGTH.

5. SEPARATOR GATES SHOWN AS PIECES MARKED ⑤ AND ⑥ MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION WITH THE VERTICAL PIECES AGAINST THE UNITS.

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

7. SEPARATOR GATE "C" MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 112 FOR CONSTRUCTION GUIDANCE. NOTE THAT THE GATE MUST BE POSITIONED SO THE TIE PIECES ARE ON THE SIDE OF THE GATE THAT BEARS AGAINST THE CROSS MEMBER.

8. IF THE CAR BEING LOADED IS EQUIPPED WITH AT LEAST TWELVE (12) DOORWAY MEMBERS, AN ADDITIONAL TWO (2) 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 CAN BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGE 78 AND 79 FOR GUIDANCE.

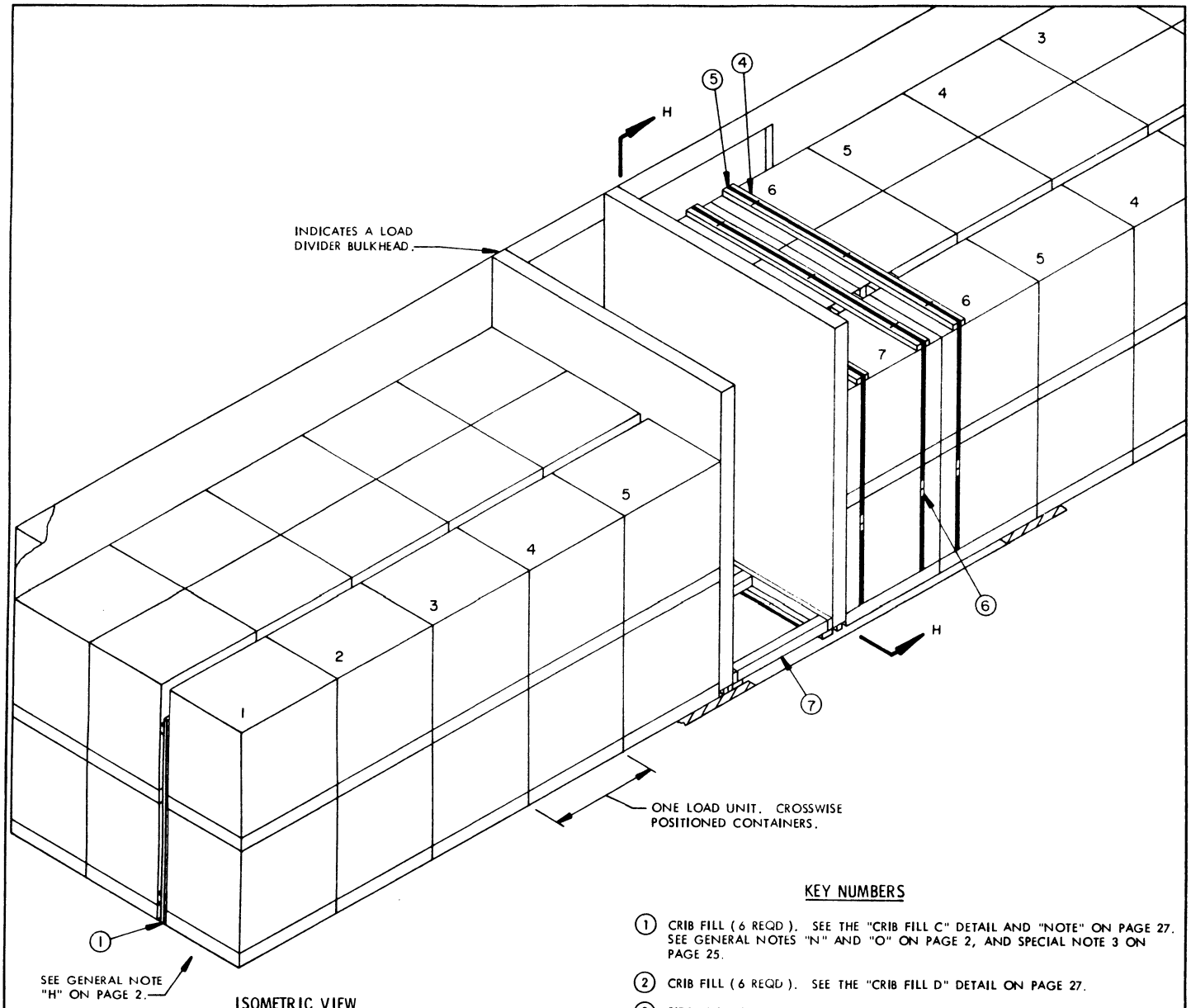
10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 1" X 6" 2" X 2" 2" X 4"	268 374 171 149	90 187 57 100
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	688 328	4 5
PLYWOOD, 3/8" (20 SHEETS)----640 SQ FT REQD ------- 660 LBS WIRE, NO. 14 GAGE ----------160 FT REQD ---------- 3 LBS		

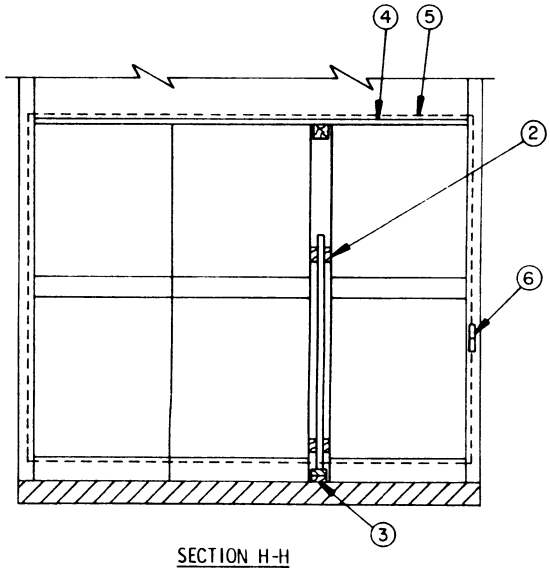
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	58	85,492 LBS
DUNNAGE		1,540 LBS
TOTAL WEIGHT		87,032 LBS

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



ISOMETRIC VIEW



SECTION H-H

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL C" DETAIL AND "NOTE" ON PAGE 27. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 25.

(2) CRIB FILL (6 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 27.

(3) SIDE BLOCKING, 2" X 4" BY A LENGTH TO SUIT (REF: 66") (DOUBLED) (1 REQD). PRE-POSITION ABOUT 35-1/2" FROM THE NEAR SIDE CAR WALL. NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTE 5 ON PAGE 25.

(4) STRAPPING BOARD/SPACER ASSEMBLY "B" (3 REQD). SEE THE DETAIL ON PAGE 26.

(5) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 36'-0" LONG STEEL STRAPPING (3 REQD). STAPLE TO STRAPPING BOARD MARKED 4 W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 25.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 119 INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 25.

ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
72-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 "BB" THRU "FF" ON PAGE 3.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT). A MAXIMUM OF NINETY (90) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 132,660 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 79,596 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 12 IS EMPLOYED, THEN SEVENTY-SIX (76) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 112,024 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY-FOUR (64) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 94,336 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 70,752 POUNDS.

3 THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1) MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF 40' AND 50' CARS. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR.

4 DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (7) IN THE LOAD ON PAGE 20, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

5 SIDE BLOCKING SHOWN AS PIECE MARKED (3) IN THE LOAD VIEW, IS REQUIRED FOR ALL UNITS REQUIRING BUNDLING STRAPS. NOTE THAT CRIB FILL SHOWN AS PIECE MARKED (2) MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF EACH VERTICAL PIECE THAT RESTS ON THE SIDE BLOCKING.

6. 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 THE 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.

7. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 24, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF THE LOAD CONSISTED OF FIVE (5) LOAD UNITS IN EACH END OF THE CAR. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 50' OR LONGER CARS.

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 SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2-TIER LOAD CAN BE REDUCED BY TWELVE (12) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80; OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL

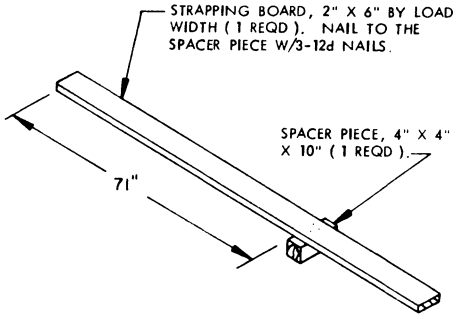
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	91	31
1" X 8"	17	12
2" X 4"	285	190
2" X 6"	28	28
4" X 4"	18	24
NAILS	**NO. REQD**	**POUNDS**
6d (2")	114	3/4
10d (3")	114	1-3/4
16d (3-1/2")	14	1/4

STEEL STRAPPING, 1-1/4" -------- 108' REQD ---------- 16 LBS
SEAL FOR 1-1/4" STRAPPING ------- 6 REQD ---------- NIL
STAPLE FOR 1-1/4" STRAPPING ----- 9 REQD ---------- NIL

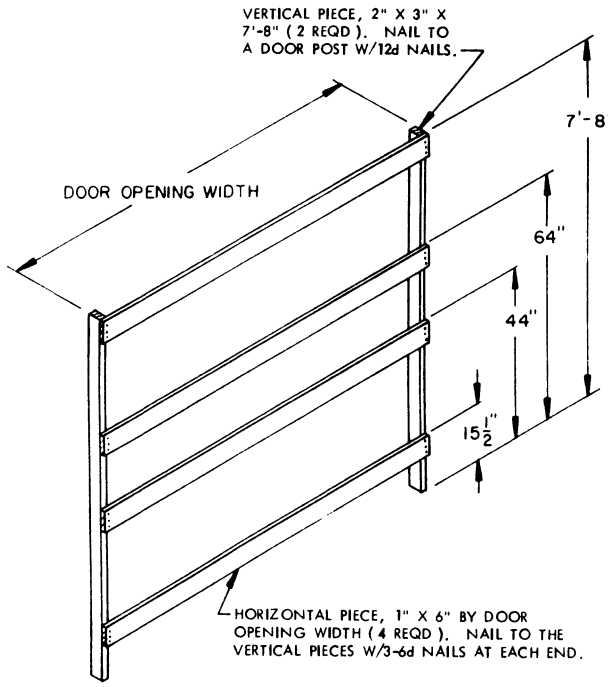
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	106,128 LBS
DUNNAGE		590 LBS
TOTAL WEIGHT		106,718 LBS

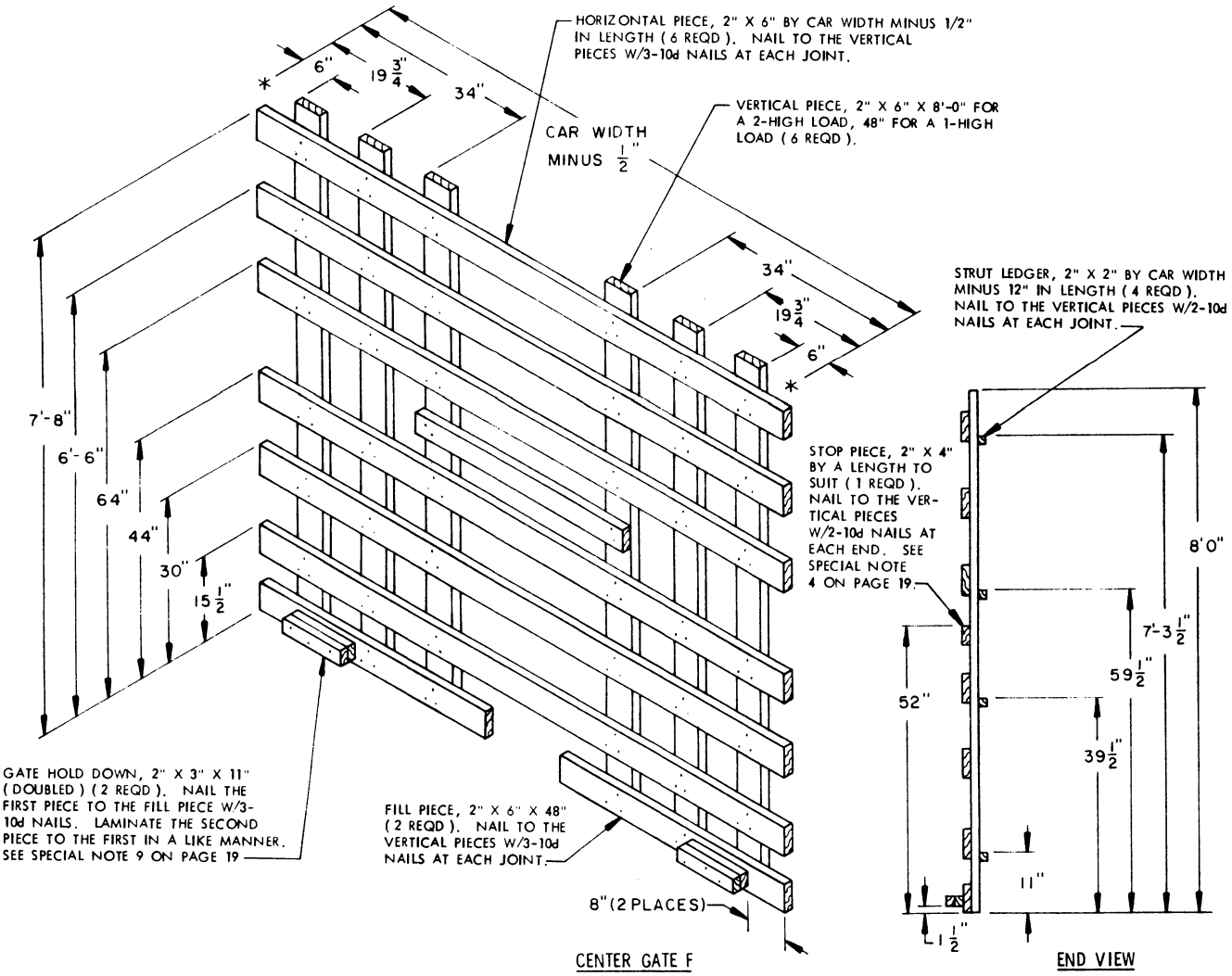
ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)
72-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



STRAPPING BOARD/SPACER ASSEMBLY B



DOORWAY PROTECTION B



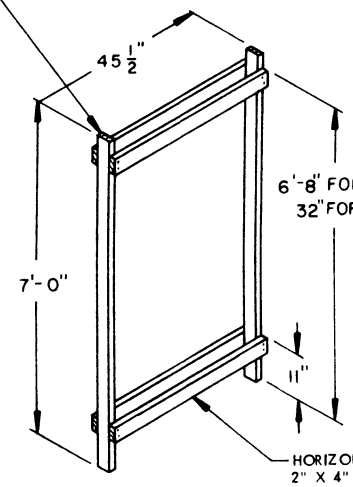
CENTER GATE F

END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

VERTICAL PIECE, 2" X 4" X 7'-0" FOR A 2-HIGH LOAD, 32" FOR A 1-HIGH LOAD (2 REQD). SEE NOTE AT RIGHT.

NOTE: THE DEPICTED CRIB FILL IS DESIGNED FOR USE IN A 9'-4" WIDE CAR. 2" X 6" VERTICAL PIECES WILL BE USED IN A 9'-6" WIDE CAR. IF THE CAR IS 9'-2" WIDE, NAIL THE HORIZONTAL PIECES TO THE FLAT SIDE OF THE 2" X 4" VERTICAL PIECES W/3-APPLICABLY SIZED NAILS.

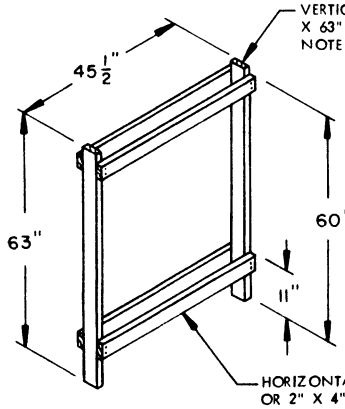


HORIZONTAL PIECE, 1" X 4" AND/OR 2" X 4" X 45-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

CRIB FILL C

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

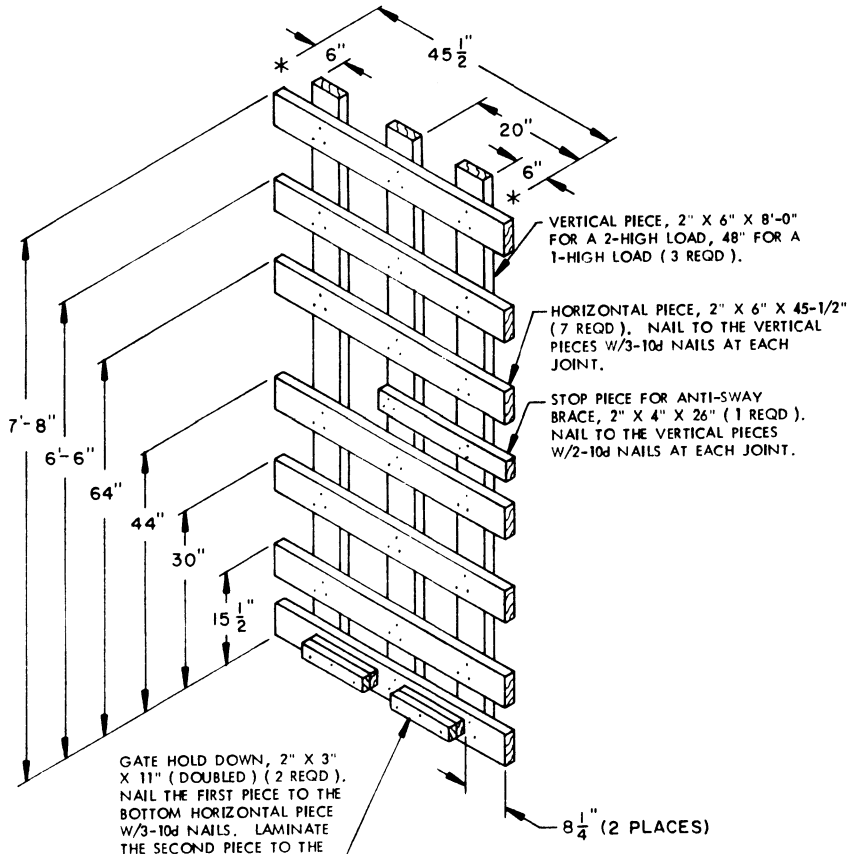
VERTICAL PIECE, 2" X 4" X 63" (2 REQD). SEE NOTE AT LEFT.



HORIZONTAL PIECE, 1" X 4" AND/OR 2" X 4" X 45-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-APPLICABLY SIZED NAILS AT EACH END.

CRIB FILL D

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



VERTICAL PIECE, 2" X 6" X 8'-0" FOR A 2-HIGH LOAD, 48" FOR A 1-HIGH LOAD (3 REQD).

HORIZONTAL PIECE, 2" X 6" X 45-1/2" (7 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STOP PIECE FOR ANTI-SWAY BRACE, 2" X 4" X 26" (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

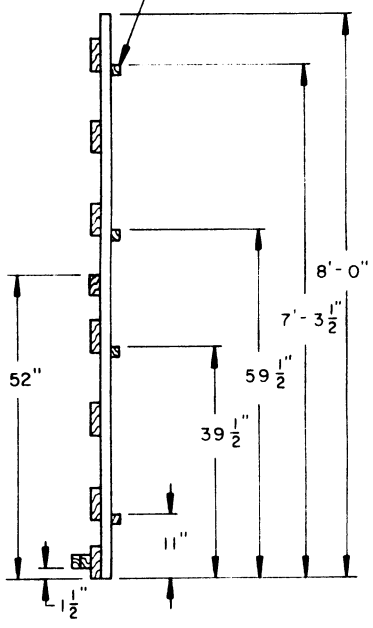
GATE HOLD DOWN, 2" X 3" X 11" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE BOTTOM HORIZONTAL PIECE W/3-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

8 1/4" (2 PLACES)

CENTER GATE G

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

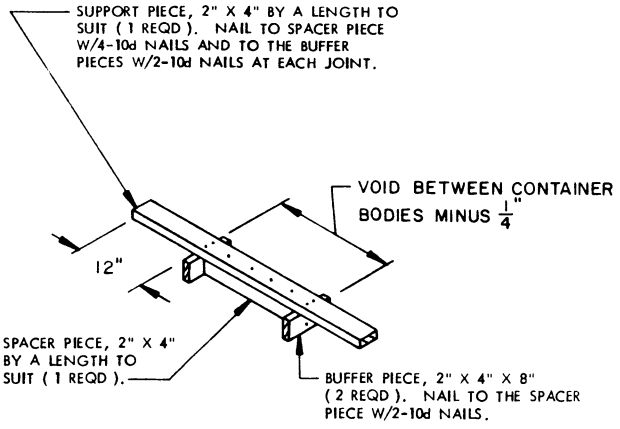
STRUT LEDGER, 2" X 2" X 33-1/2" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



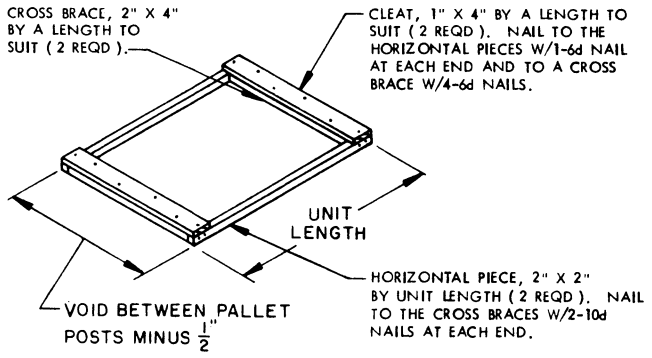
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

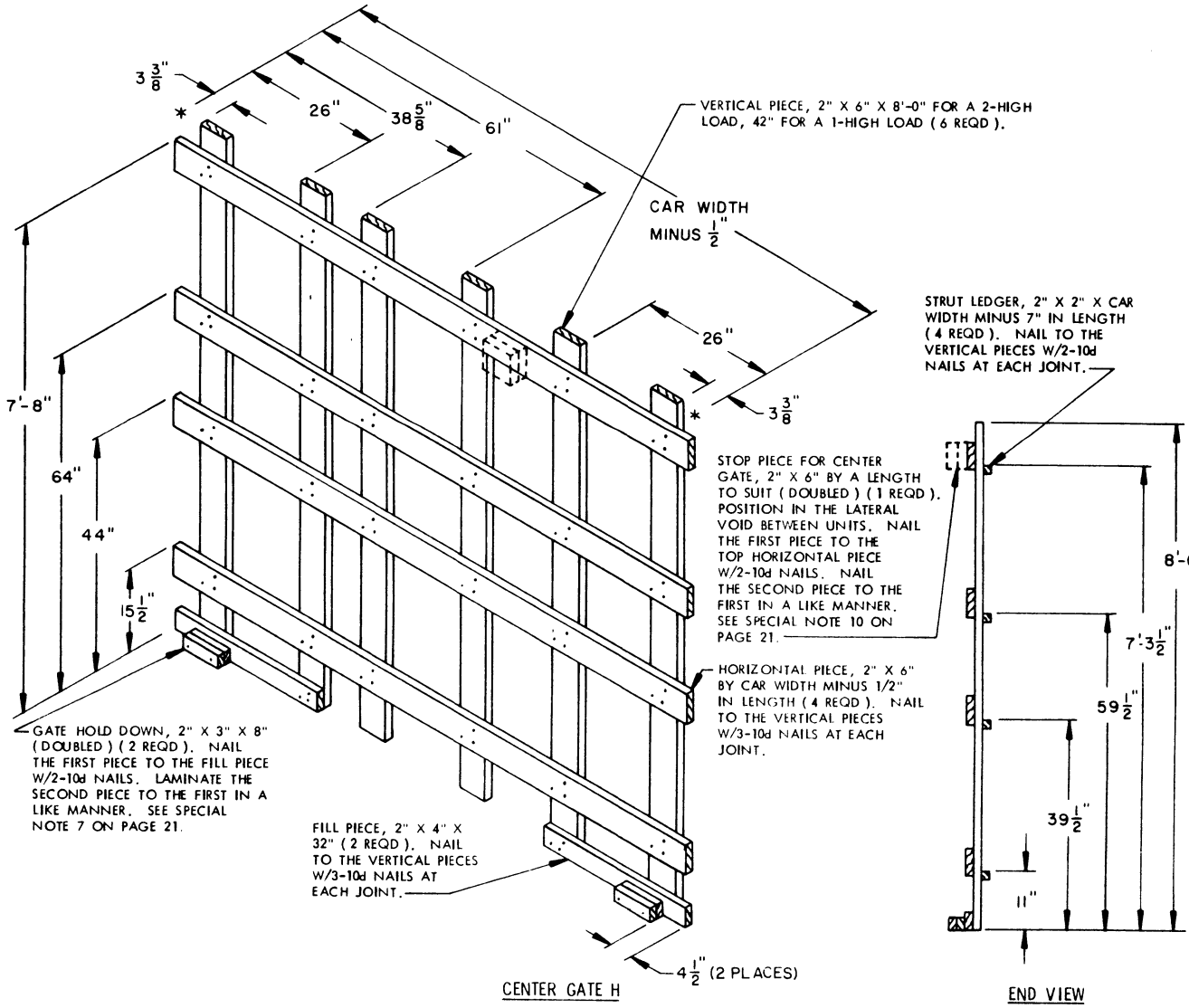
PROJECT FSA 43B/11-63



TOP-OF-LOAD ANTI-SWAY BRACE A



ANTI-SWAY BRACE A

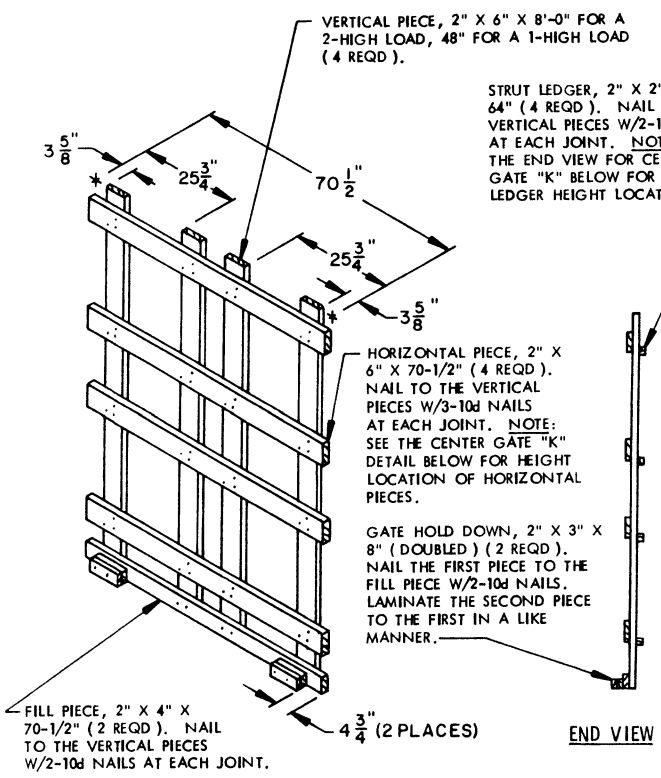


CENTER GATE H

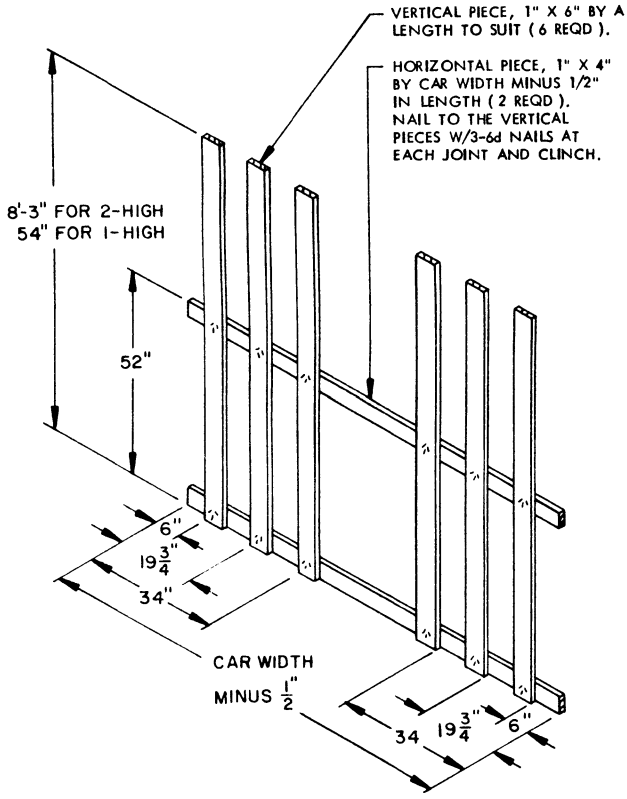
(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

END VIEW

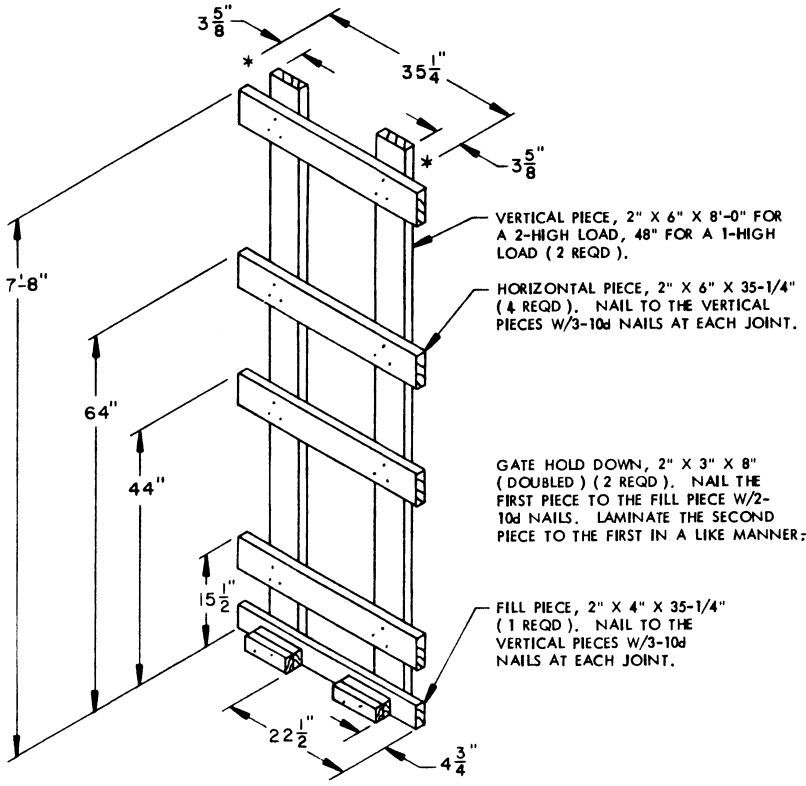
DETAILS FOR ALTERNATED CONTAINERS UNITS (INCREASED HEIGHT)



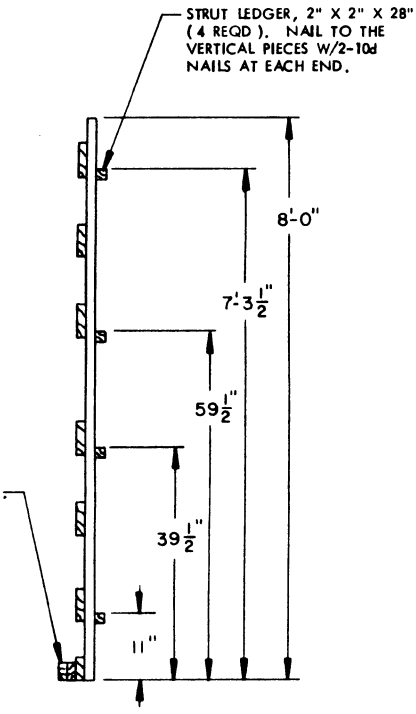
CENTER GATE J



SEPARATOR GATE C



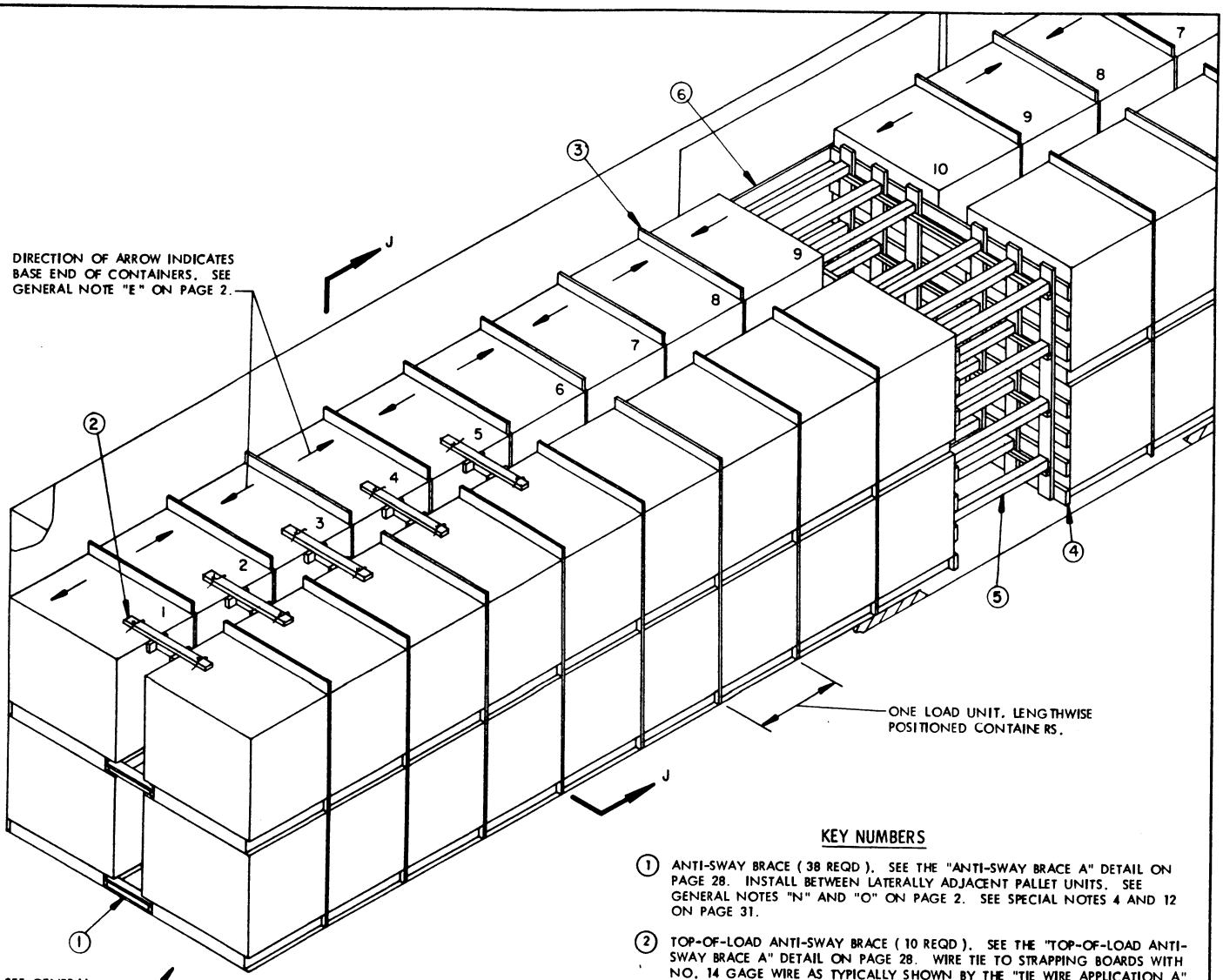
CENTER GATE K



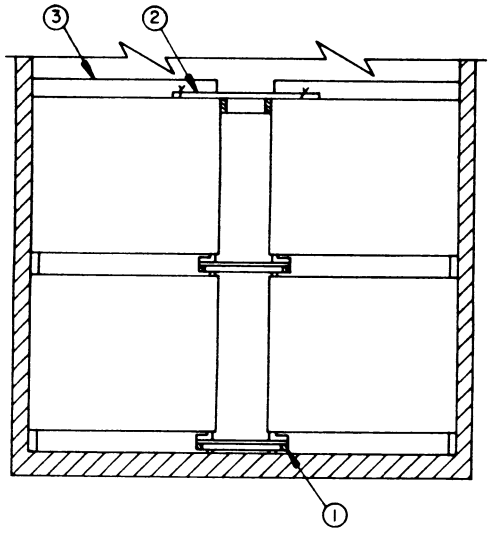
END VIEW

DETAILS FOR ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT)

PROJECT FSA 43B/11-63



ISOMETRIC VIEW



SECTION J-J

KEY NUMBERS

(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTES 4 AND 12 ON PAGE 31.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 31.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 6, 7 AND 16 ON PAGE 31.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" DETAIL ON PAGE 38. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 31.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 45") (24 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 38. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 11 AND 12 ON PAGE 31.

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

(SPECIAL NOTES CONTINUED)

12. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED ⑥ , USE PIECES MARKED ④ THRU ⑦ ON PAGE 36. SEE SPECIAL NOTES 6 AND 7 ON PAGE 37 FOR GUIDANCE.

13. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, REFER TO PAGES 83 THRU 106 FOR GUIDANCE.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

16. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED FLOORLINE BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUT OUT AT LEAST 2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 30 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,768 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 60,576 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' WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLET UNITS SHOULD BE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6' WIDE CAN BE USED, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "L" AS SHOWN ON THE DETAIL ON PAGE 38.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 30, MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

6. IF DESIRED, SEPARATOR GATES SHOWN AS PIECES MARKED ③ MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED.

8. CENTER GATE "L" 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 113 FOR GUIDANCE.

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 L", SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 30, CONSTRUCT TWO (2) CENTER GATES "M" AS SHOWN ON PAGE 39. 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 113.

10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "L" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑥ IN THE LOAD ON PAGE 30, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

(CONTINUED AT LEFT)

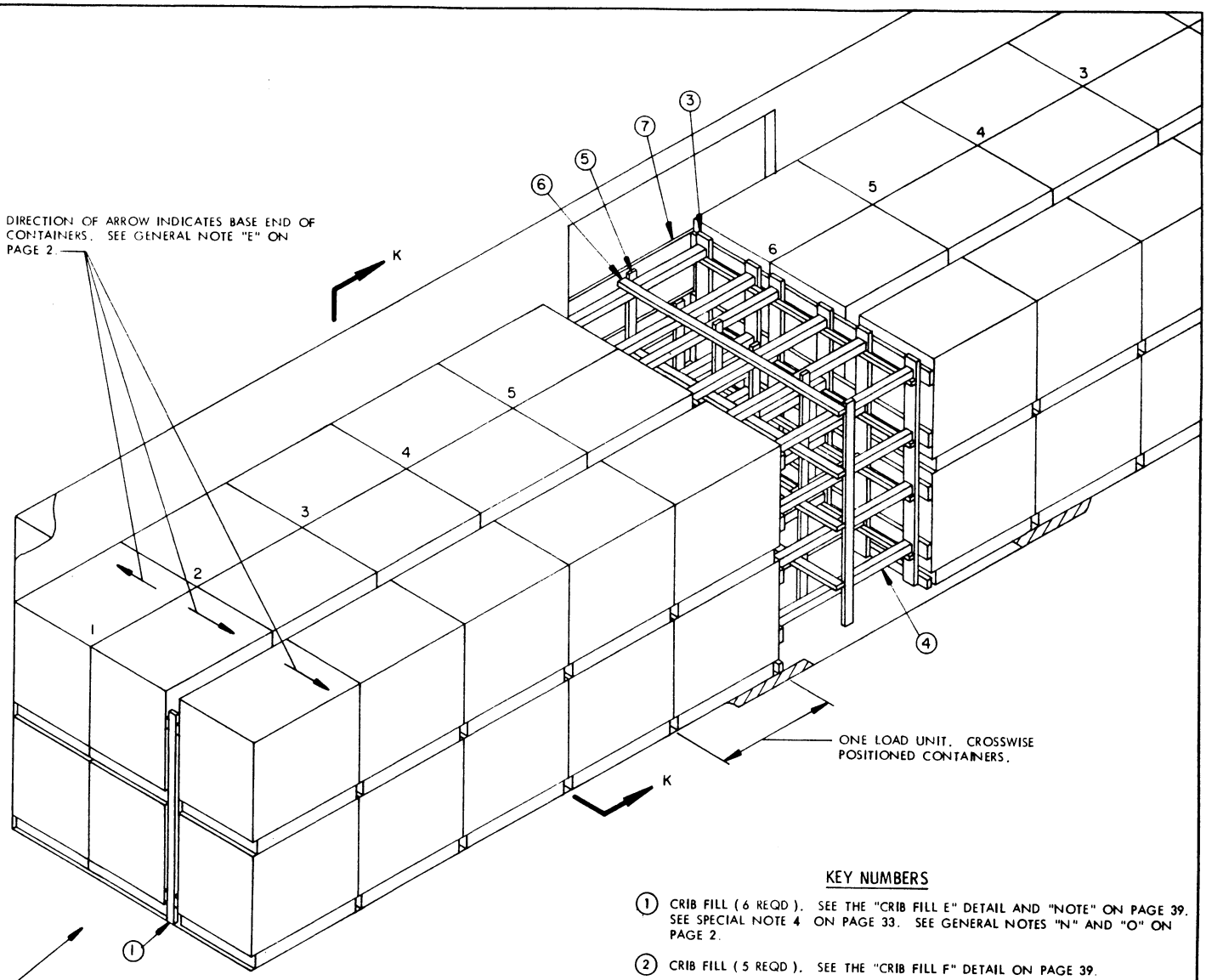
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	127	43
1" X 6"	80	40
2" X 2"	289	97
2" X 3"	37	19
2" X 4"	167	112
2" X 6"	216	216
4" X 4"	90	120
NAILS	**NO. REQD**	**POUNDS**
6d (2")	572	3-1/2
10d (3")	804	12-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2
PLYWOOD, 3/8" (34 SHEETS) ---- 1088 SQ FT REQD ------- 1,122 LBS		
WIRE, NO. 14 GAGE ---------- 200' REQD ---------- 4 LBS		

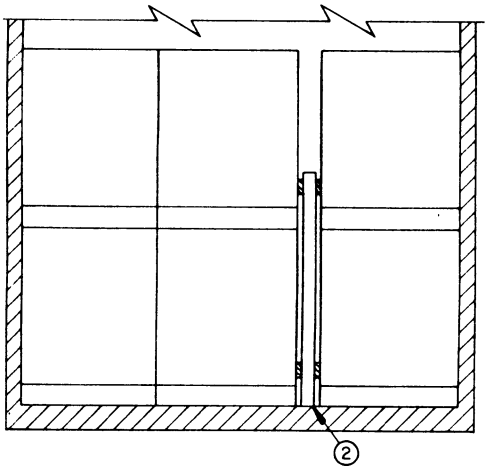
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	95,912 LBS
DUNNAGE		2,436 LBS
TOTAL WEIGHT		98,348 LBS

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



ISOMETRIC VIEW



SECTION K-K

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL E" DETAIL AND "NOTE" ON PAGE 39. SEE SPECIAL NOTE 4 ON PAGE 33. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) CRIB FILL (5 REQD). SEE THE "CRIB FILL F" DETAIL ON PAGE 39.

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE N" DETAIL ON PAGE 40. SEE SPECIAL NOTES 5, 6, 7, AND 10 ON PAGE 33.

(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 NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 7'-6" (6 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 D" DETAIL ON PAGE 40. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 33.

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

(SPECIAL NOTES CONTINUED)

11. THE DEPICTED LOAD CAN REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2-TIER LOAD CAN BE REDUCED BY ELEVEN (11) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 32 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,148 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; EIGHTY-FOUR (84) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 106,008 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE FIVE (5) 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. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50'-0" LONG CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION IN LIEU OF USING THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE (3").

5. CENTER GATE "N" 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 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT ON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE N", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 32, INSTALL TWO (2) "CENTER GATES O", AND TWO (2) "CENTER GATES P" AS SHOWN ON PAGE 41. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "N", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 32 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED ⑦ , REFER TO KEY NUMBERS ③ THRU ⑥ ON PAGE 48, AND SPECIAL NOTES 5 AND 6 ON PAGE 49 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATE "N" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE N" DETAIL ON PAGE 40. IF SPLIT CENTER GATES "O" AND "P" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	90	30
1" X 6"	64	32
2" X 2"	69	23
2" X 3"	35	18
2" X 4"	322	215
2" X 6"	165	165
4" X 4"	130	174
NAILS	NO. REQD	POUNDS
6d (2")	136	3/4
10d (3")	512	8
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2

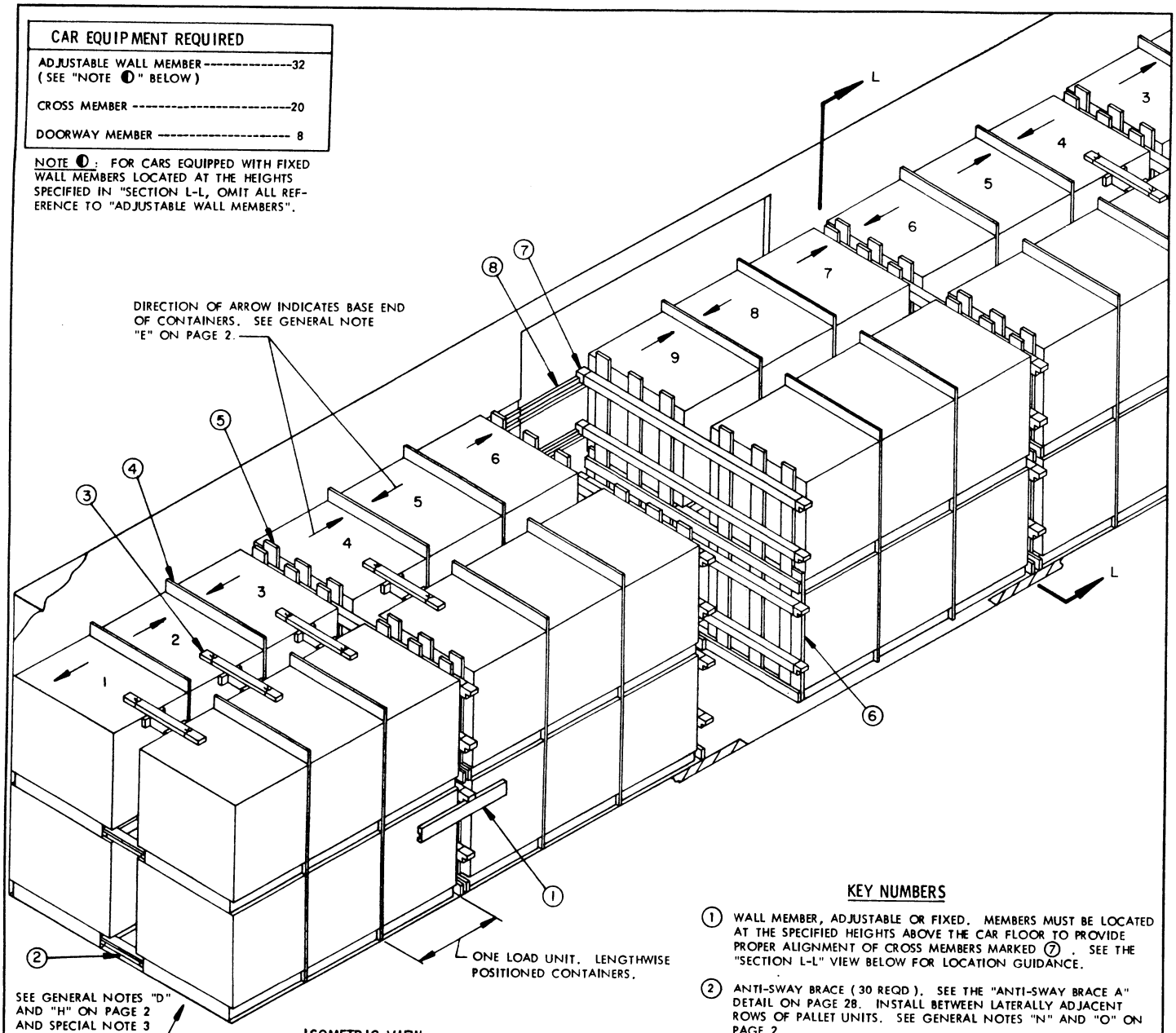
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	83,292 LBS
DUNNAGE		1,326 LBS
TOTAL WEIGHT		84,618 LBS

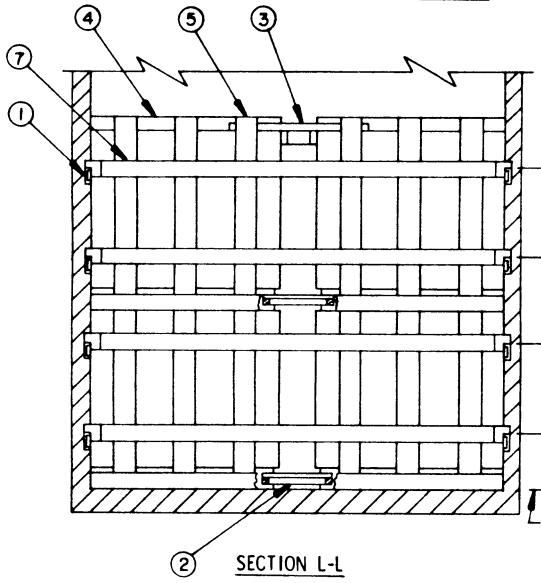
FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)
66-UNIT LOAD IN A 50'-6" LONG BY A 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐" BELOW)	32
CROSS MEMBER	20
DOORWAY MEMBER	8

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



ISOMETRIC VIEW



② SECTION L-L

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 ⑦ . SEE THE "SECTION L-L" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO THE STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 35.

④ SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (20 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH. SEE SPECIAL NOTE 5 ON PAGE 35.

⑤ SEPARATOR GATE FOR 2-HIGH (8 REQD). SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 41. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 35.

⑥ STOP PIECE, 1" X 4" X 53" (2 REQD). NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ⑤ W/3-6d NAILS AT EACH JOINT AND CLINCH.

⑦ CROSS MEMBER, (20 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

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

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLETIZED 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 60,576 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (5) MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING. SEE SPECIAL NOTE 6 BELOW.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 34, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. SEPARATOR GATES SHOWN AS PIECES MARKED (4) MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED; ALSO THEY MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

6. SEPARATOR GATES SHOWN AS PIECES MARKED (5) MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION, WITH THE VERTICAL PIECES AGAINST THE UNITS.

7. SEPARATOR GATE "D" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (6) , PRIOR TO POSITIONING IN THE DOORWAY. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR (4) SEPARATOR GATES.

8. SEPARATOR GATE "D" MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 112 FOR CONSTRUCTION GUIDANCE. NOTE THAT THE GATE MUST BE POSITIONED SO THE TIE PIECES ARE ON THE SIDE OF THE GATE THAT BEARS AGAINST THE CROSS MEMBER.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 78 AND 79 FOR GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

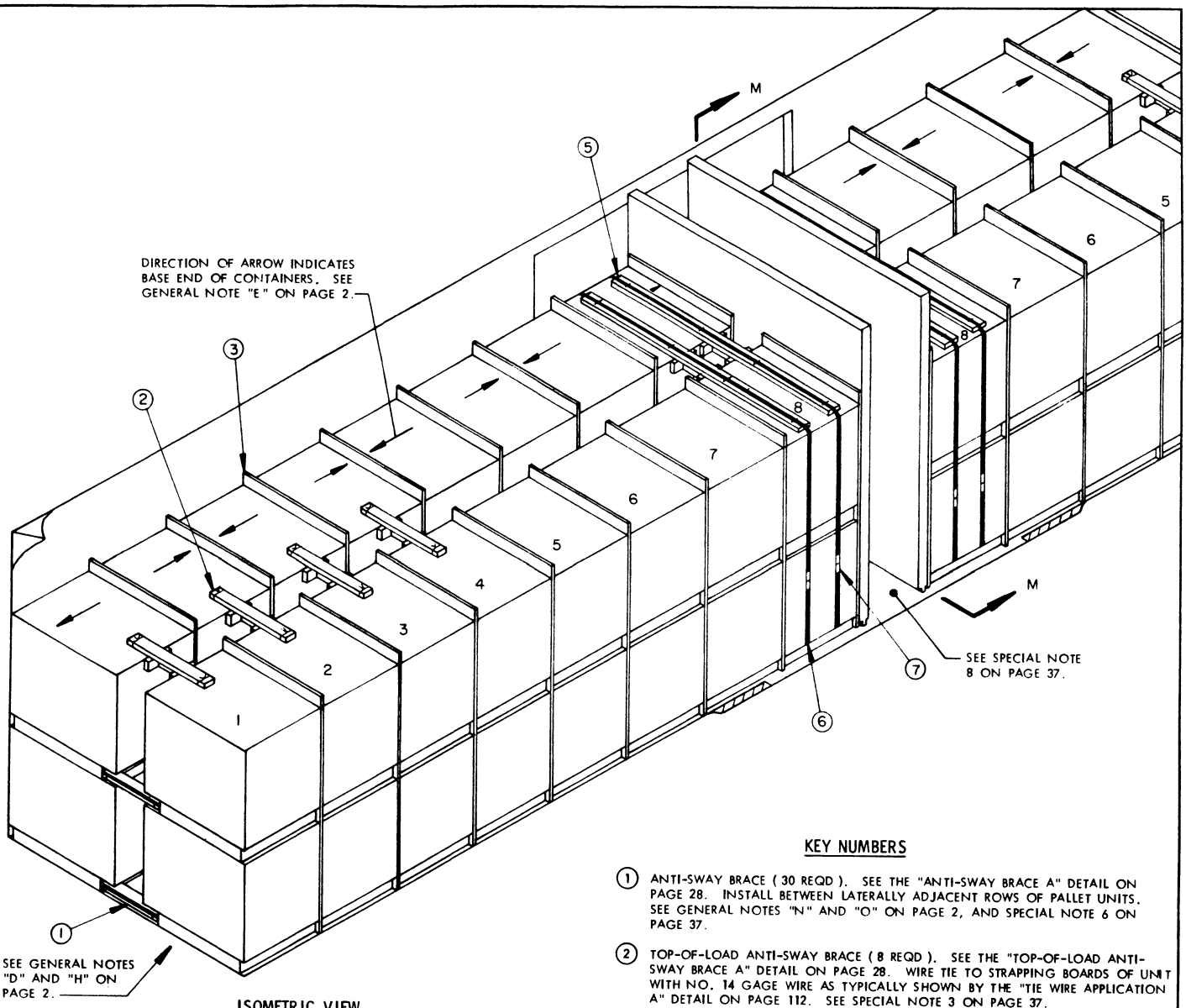
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	243	81
1" X 6"	384	192
2" X 2"	177	59
2" X 4"	115	77
NAILS	**NO. REQD**	**POUNDS**
6d (2")	700	4
10d (3")	328	5
PLYWOOD, 3/8" (20 SHEETS) --- 640 SQ FT REQD --------- 660 LBS		
WIRE, NO. 14 GAGE ---------- 160' REQD ---------- 3 LBS		

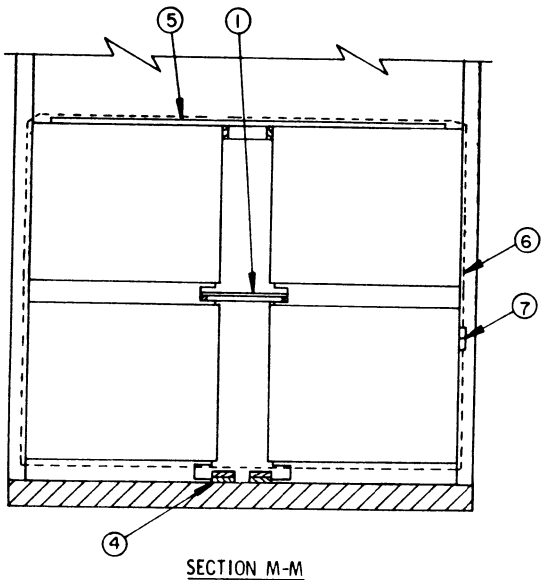
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	75,720 LBS
DUNNAGE		1,490 LBS
TOTAL WEIGHT		77,210 LBS

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



ISOMETRIC VIEW



SECTION M-M

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTE 6 ON PAGE 37.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 3 ON PAGE 37.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (32 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACE MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTE 4 ON PAGE 37.

(4) SIDE BLOCKING, 2" X 6" X 35" (DOUBLED) (4 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 SPECIAL NOTES 5 AND 6 ON PAGE 37.

(5) STRAPPING BOARD/SPACER ASSEMBLY "A" (4 REQD). SEE THE DETAIL ON PAGE 16.

(6) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 35'-0" LONG STEEL STRAPPING (4 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 37.

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

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 36 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-SIX (76) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,912 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 60,576 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 32 IS EMPLOYED, EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 106,008 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY-SIX (66) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 83,292 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,148 POUNDS.

3. 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. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

4. SEPARATOR GATES SHOWN AS PIECES MARKED (3) MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED; ALSO, THEY MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (6) IN THE LOAD ON PAGE 30, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

6. SIDE BLOCKING SHOWN AS PIECE MARKED (4) IN THE LOAD ON PAGE 36, MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1), FOR ALL UNITS REQUIRING BUNDLING STRAPS; IF THE PALLET UNITS ARE POSITIONED CROSSWISE, REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 48, AND SPECIAL NOTES 5 AND 6 ON PAGE 49 FOR GUIDANCE.

7. 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 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.

8. A "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS", DETAIL SHOWN ON PAGE 119 IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY IS NOT REQUIRED. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL

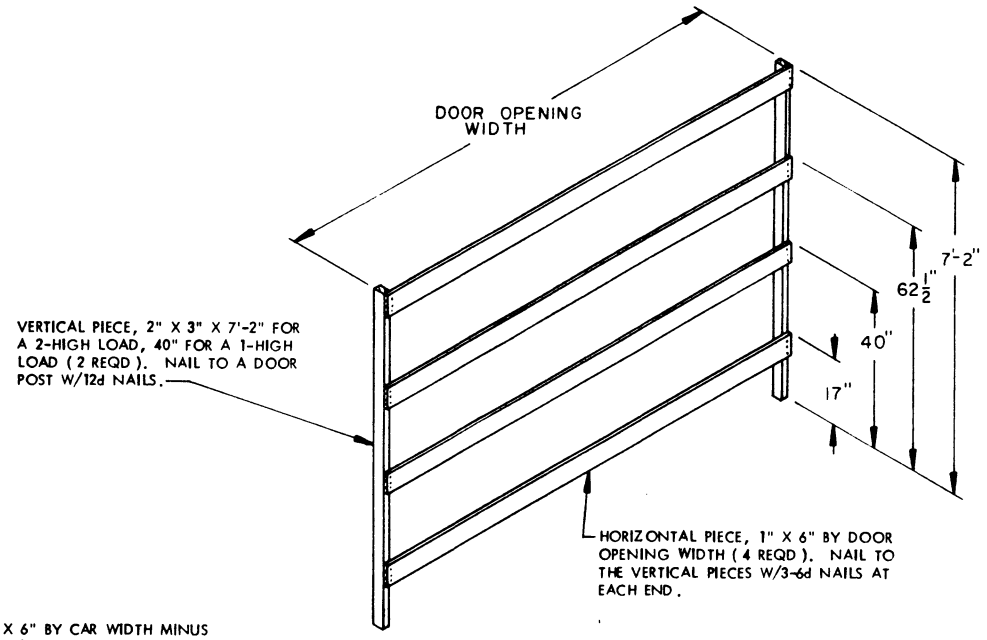
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	100	34
2" X 2"	177	59
2" X 4"	332	222
2" X 6"	34	34
NAILS	**NO. REQD**	**POUNDS**
6d (2")	424	2-1/2
10d (3")	372	5-3/4
16d (3-1/2")	32	3/4

PLYWOOD, 3/8" (32 SHEETS) --- 1,024 SQ FT REQD ------ 1,056 LBS
STEEL STRAPPING, 1-1/4" ---------- 140' REQD ---------- 20 LBS
SEAL FOR 1-1/4" STRAPPING ---------- 8 REQD ---------- NIL
STAPLE FOR 1-1/4" STRAPPING ---------- 12 REQD ---------- NIL
WIRE, NO. 14 GAGE ---------- 160' REQD ---------- 3 LBS

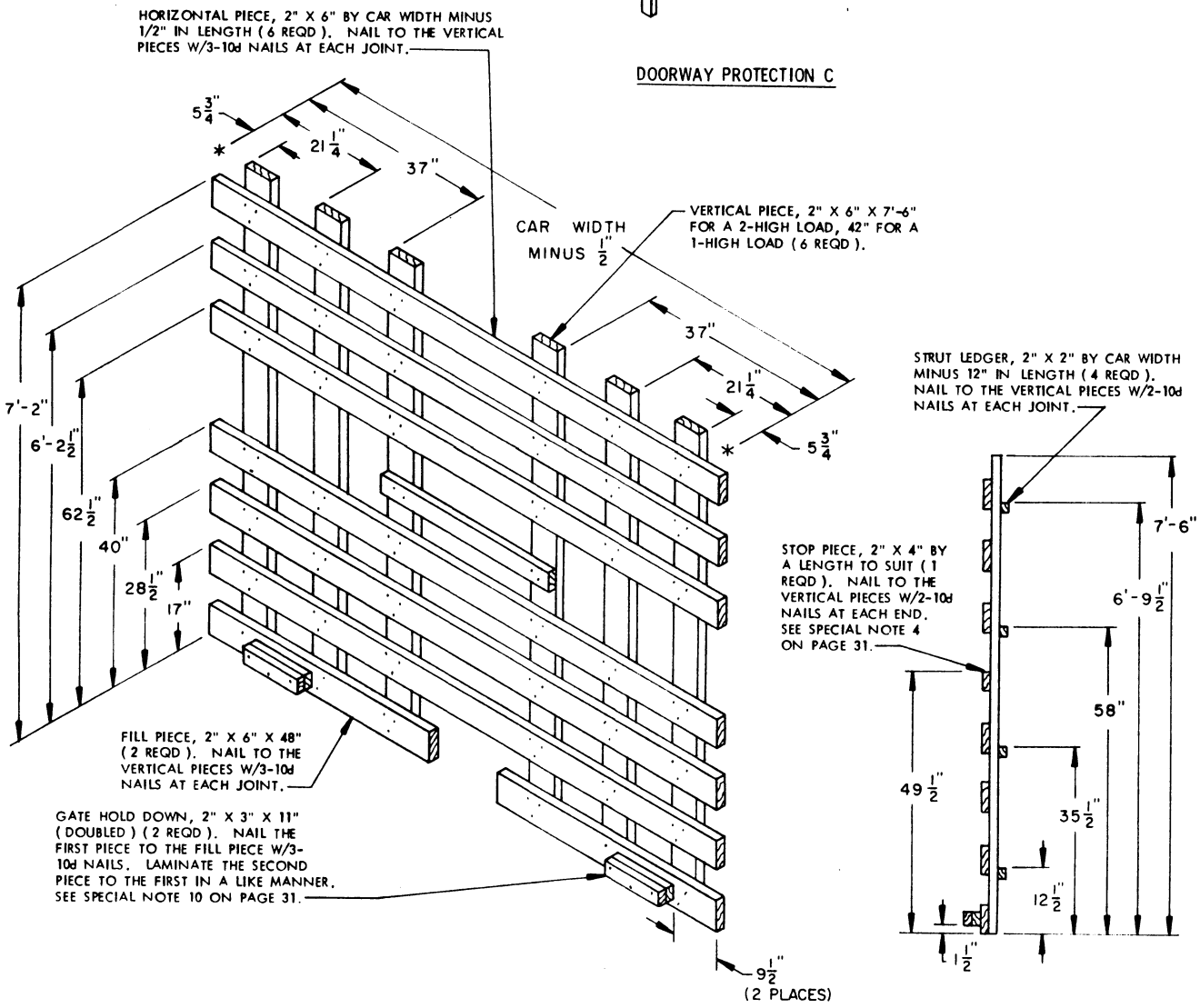
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	64	80,768 LBS
DUNNAGE		1,786 LBS
TOTAL WEIGHT		82,554 LBS

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

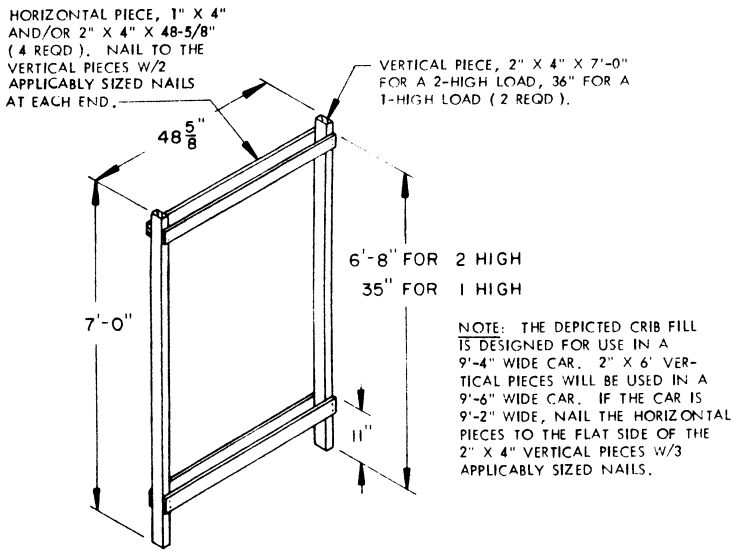


DOORWAY PROTECTION C



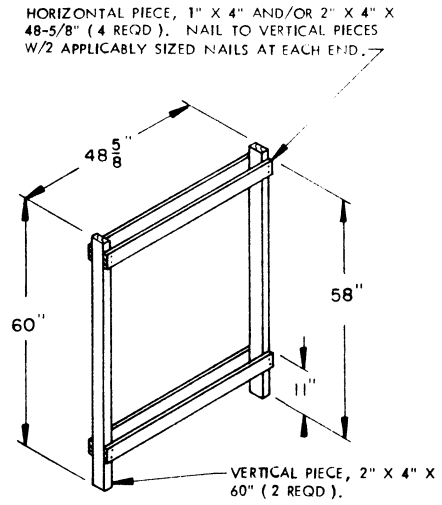
CENTER GATE L

DETAILS FOR FLAT DUNNAGE METHOD (BASIC HEIGHT)



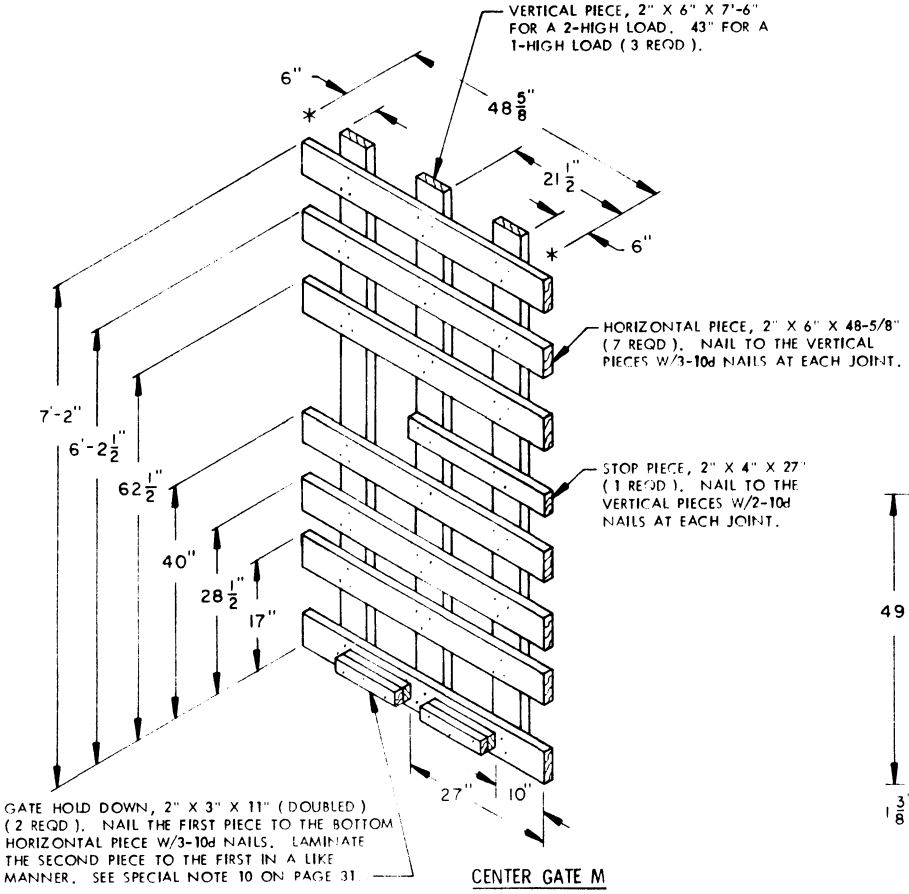
CRIB FILL E

CRIB FILL ASSEMBLIES "E" AND "F" 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.



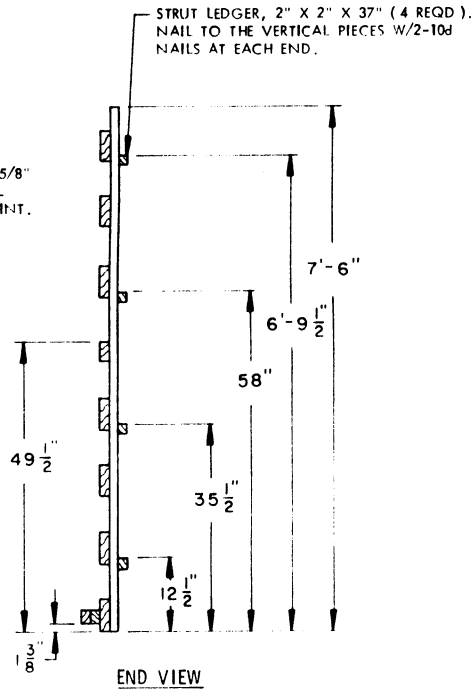
CRIB FILL F

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



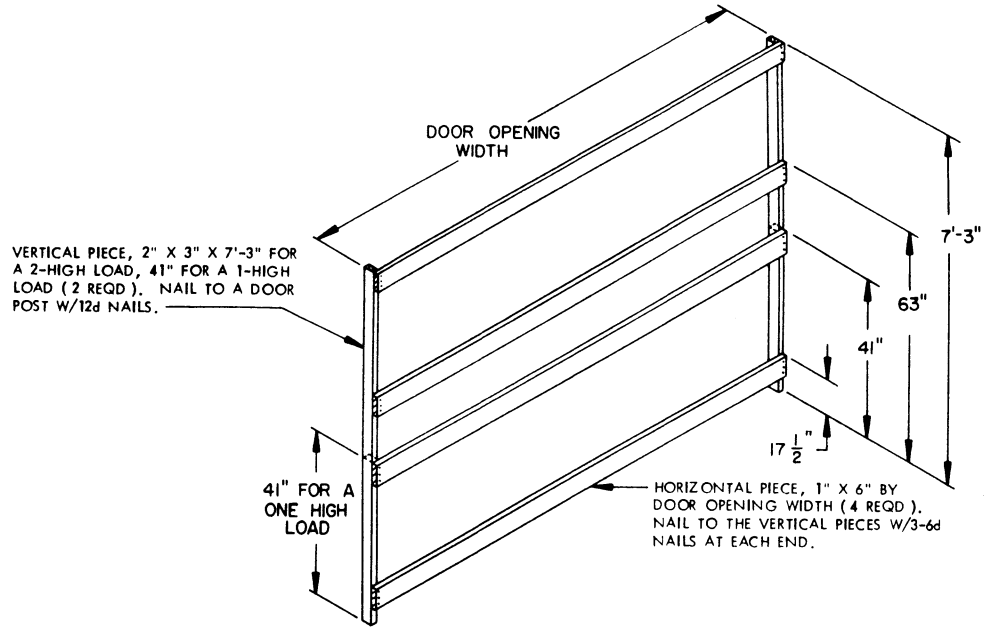
CENTER GATE M

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

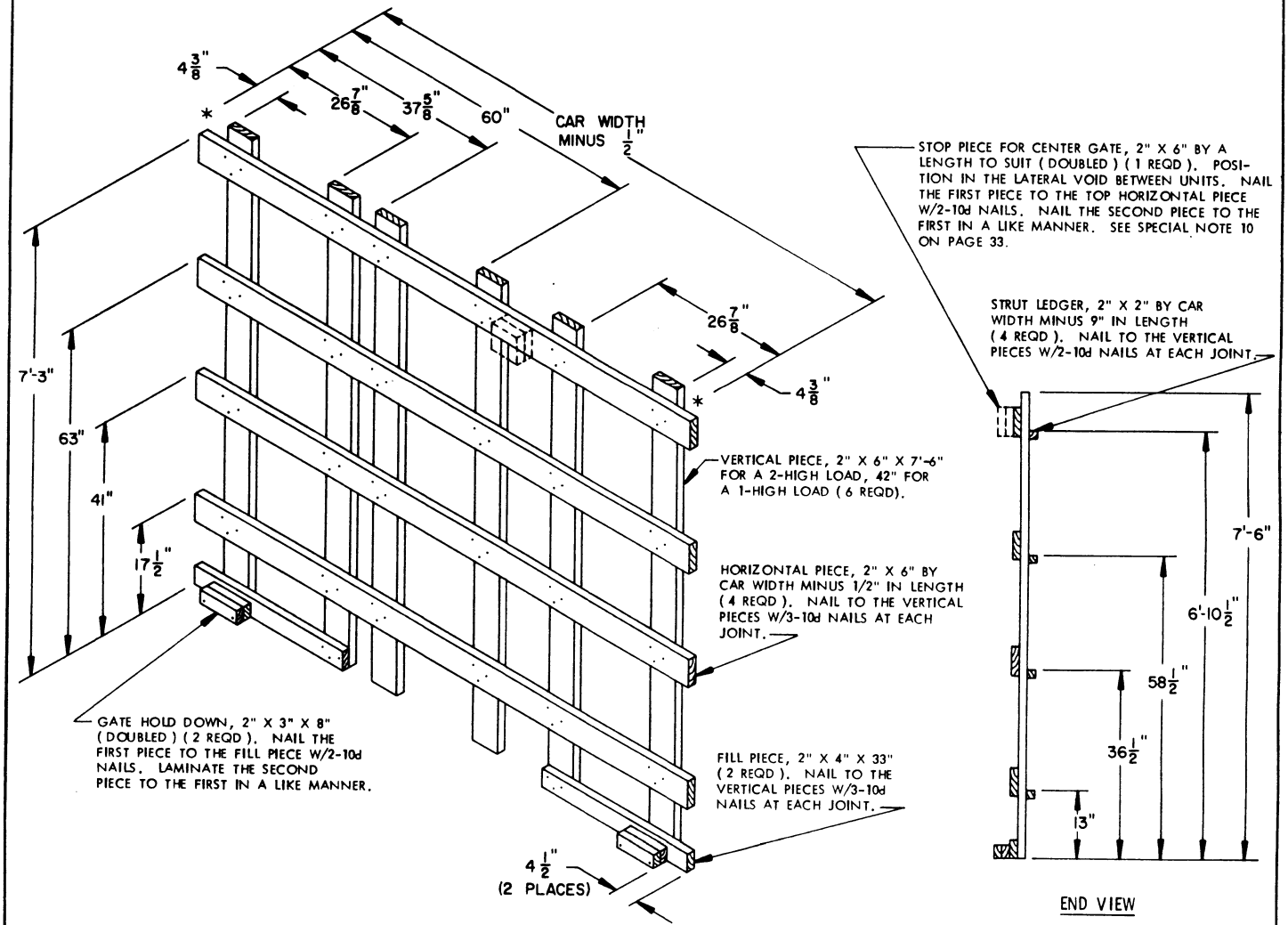


END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



DOORWAY PROTECTION D

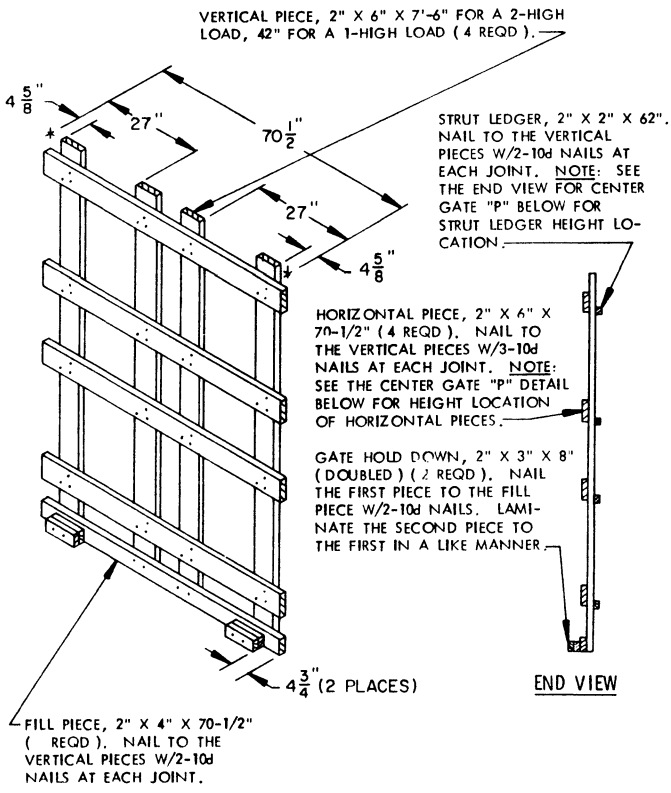


END VIEW

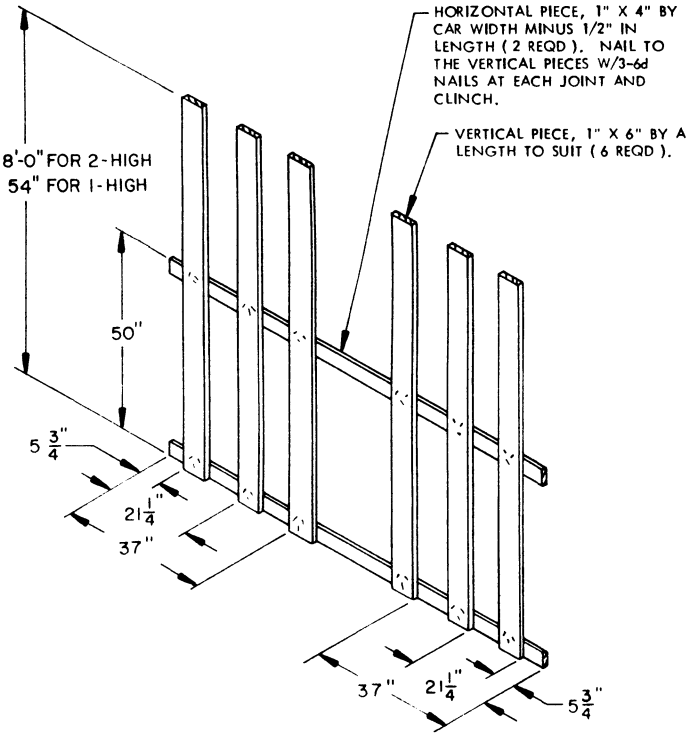
CENTER GATE N

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)

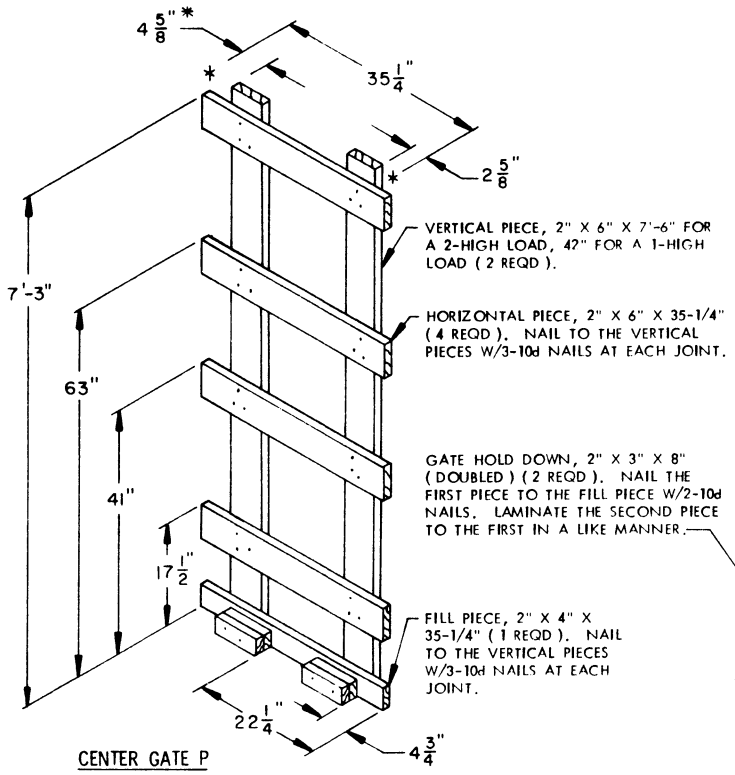
DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



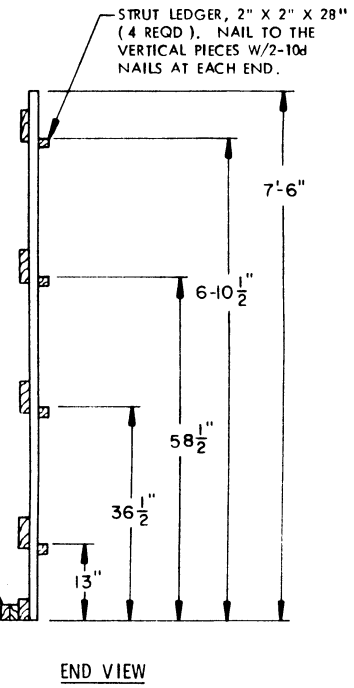
CENTER GATE O



SEPARATOR GATE D



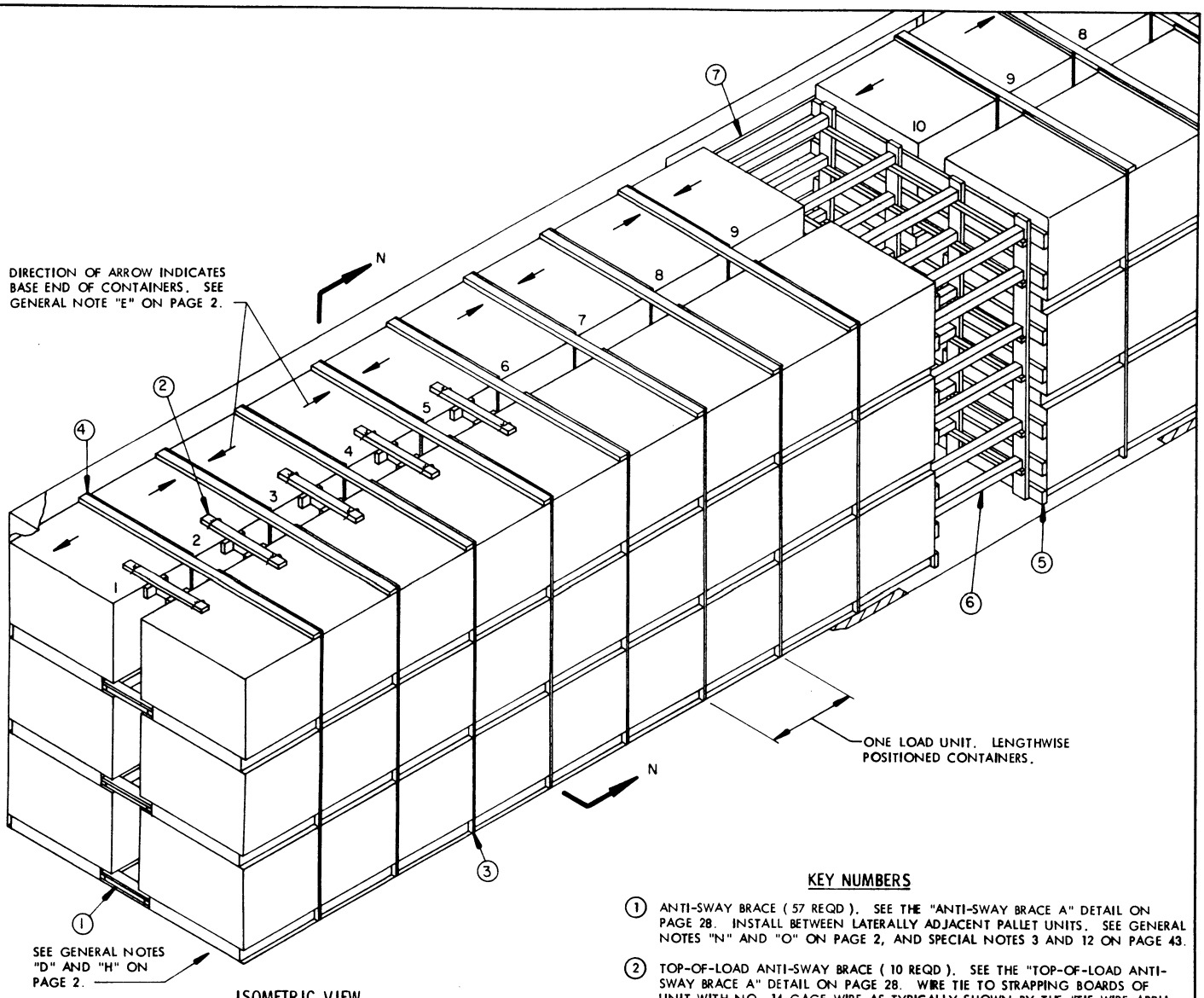
CENTER GATE P



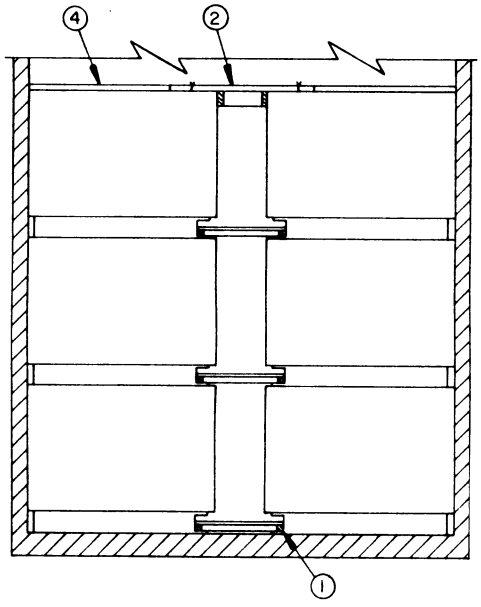
END VIEW

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)
* POSITION THE 4-5/8" DIMENSION AGAINST THE BASE END OF THE CONTAINERS.

DETAILS FOR FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION N-N

KEY NUMBERS

(1) ANTI-SWAY BRACE (57 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2, AND SPECIAL NOTES 3 AND 12 ON PAGE 43.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 43.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 5 AND 16 ON PAGE 43.

(4) SEPARATOR GATE (17 REQD). SEE THE "SEPARATOR GATE F" DETAIL AND "NOTE" ON PAGE 76. SEE SPECIAL NOTES 6 AND 7 ON PAGE 43.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE Q" DETAIL ON PAGE 50. SEE SPECIAL NOTES 8 THRU 10 ON PAGE 43.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 45") (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION E" DETAIL ON PAGE 50. NAIL TO THE DOOR POSTS W/12d NAILS. SEE GENERAL NOTES 11 AND 12 ON PAGE 43.

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

PROJECT FSA 43B/11-63

(SPECIAL NOTES CONTINUED)

13. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, 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 83 THRU 106 FOR GUIDANCE.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

16. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED FLOORLINE BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OR EACH PLYWOOD WHEET MUST BE CUT OUT AT LEAST 2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 98,400 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SEVENTY-TWO (72) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,800 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

3. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "Q" AS SHOWN ON THE DETAIL ON PAGE 50.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 42, MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

5. IF DESIRED, PLYWOOD SEPARATOR GATES SHOWN AS PIECES MARKED (3) MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

6. ONE (1) SEPARATOR GATE "F", SHOWN AS PIECE MARKED (4) MUST BE POSITIONED ABOVE EACH PAIR OF 4' X 8' PLYWOOD SHEETS MARKED (3) . SEPARATOR GATE "F" IS REQUIRED FOR 3-HIGH LOAD UNITS ONLY.

7. IF SPECIAL NOTE 12 APPLIES AND THE CAR IS EQUIPPED WITH SLIDING DOORS, SEPARATOR GATES "F" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY APPLICATION OF STOP PIECES AS SHOWN ON THE DETAIL ON PAGE 76. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

8. 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 113 FOR GUIDANCE.

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 Q", SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 42, INSTALL TWO (2) "CENTER GATES R" AS SHOWN ON PAGE 51. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "Q" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 42, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

12. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. IN LIEU OF PIECES MARKED (7) , USE PIECES MARKED (4) THRU (7) ON PAGE 36. SEE SPECIAL NOTES 6 AND 7 ON PAGE 37 FOR GUIDANCE.

(CONTINUED AT LEFT)

BILL OF MATERIAL

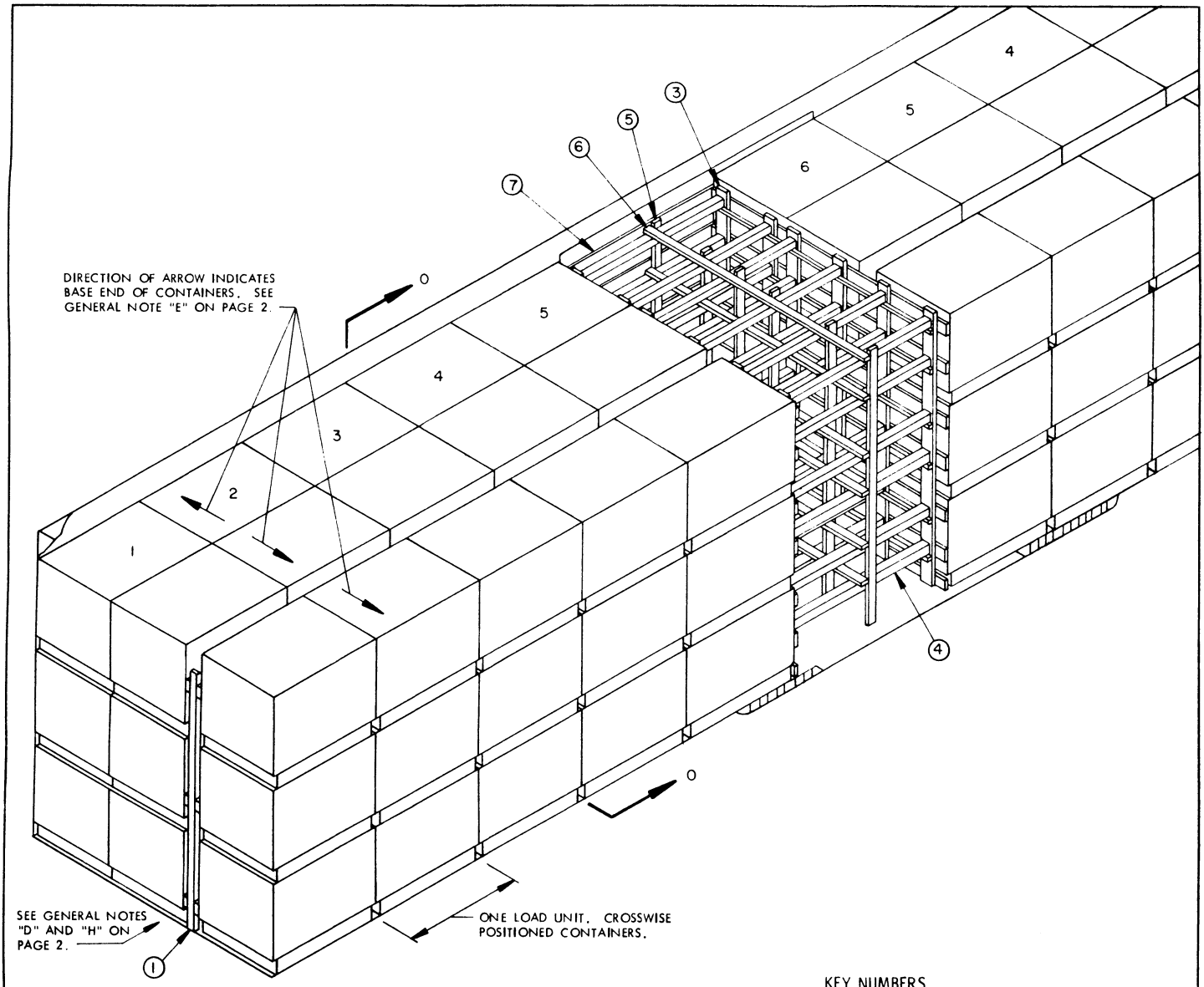
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	190	64
1" X 6"	120	60
2" X 2"	433	145
2" X 3"	45	23
2" X 4"	383	255
2" X 6"	201	201
4" X 4"	90	120
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,028	6
10d (3")	873	13-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2

PLYWOOD, 3/8" (40 SHEETS)----1,280 SQ FT REQD ----- 1,320 LBS
WIRE, NO. 14 GAGE ---------- 200' REQD ---------4 LBS

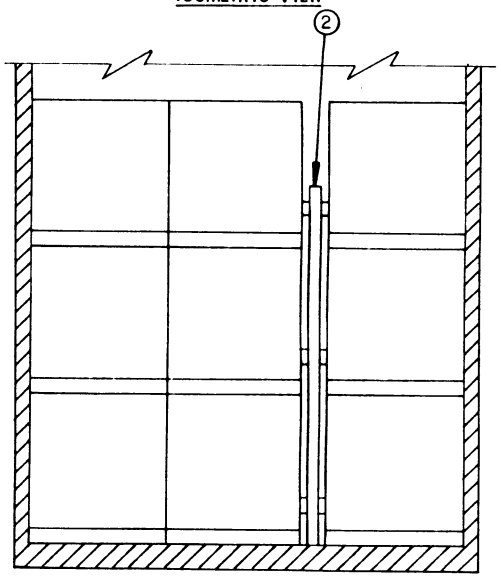
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	114	116,850 LBS
DUNNAGE		3,082 LBS
TOTAL WEIGHT		119,932 LBS

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



ISOMETRIC VIEW



SECTION 0-0

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL G" DETAIL AND "NOTE" ON PAGE 51. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 4 ON PAGE 45.

(2) CRIB FILL (5 REQD). SEE THE "CRIB FILL H" DETAIL ON PAGE 51.

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE S" DETAIL ON PAGE 52. SEE SPECIAL NOTES 5, 6, 7, AND 10 ON PAGE 45.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 65") (36 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) VERTICAL STRUT BRACING, 2" X 4" X 9'-3" (6 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 F" DETAIL ON PAGE 52. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 45.

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

(SPECIAL NOTES CONTINUED)

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 NINE (9) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2 OR 3-TIER LOAD CAN BE REDUCED BY ELEVEN (11) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80; OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	134	45
1" X 6"	96	48
2" X 2"	103	35
2" X 3"	42	21
2" X 4"	435	290
2" X 6"	224	224
4" X 4"	195	260
NAILS	NO. REQD	POUNDS
6d (2")	204	1-1/4
10d (3")	748	11-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	144	3-1/4

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 44 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF EIGHTY-ONE (81) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,025 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. ONE HUNDRED TWENTY-SIX (126) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 129,150 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR.

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

4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1) , MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION IN LIEU OF THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").

5. CENTER GATES "S" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE S", SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 44, INSTALL TWO (2) "CENTER GATES T" AND TWO (2) "CENTER GATES U" AS SHOWN ON PAGE 53. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "S", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 44 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED (7) , REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 48, AND SPECIAL NOTES 5 AND 6 ON PAGE 49 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATES "S" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE S" DETAIL ON PAGE 52. IF SPLIT CENTER GATES "T" AND "U" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

LOAD AS SHOWN

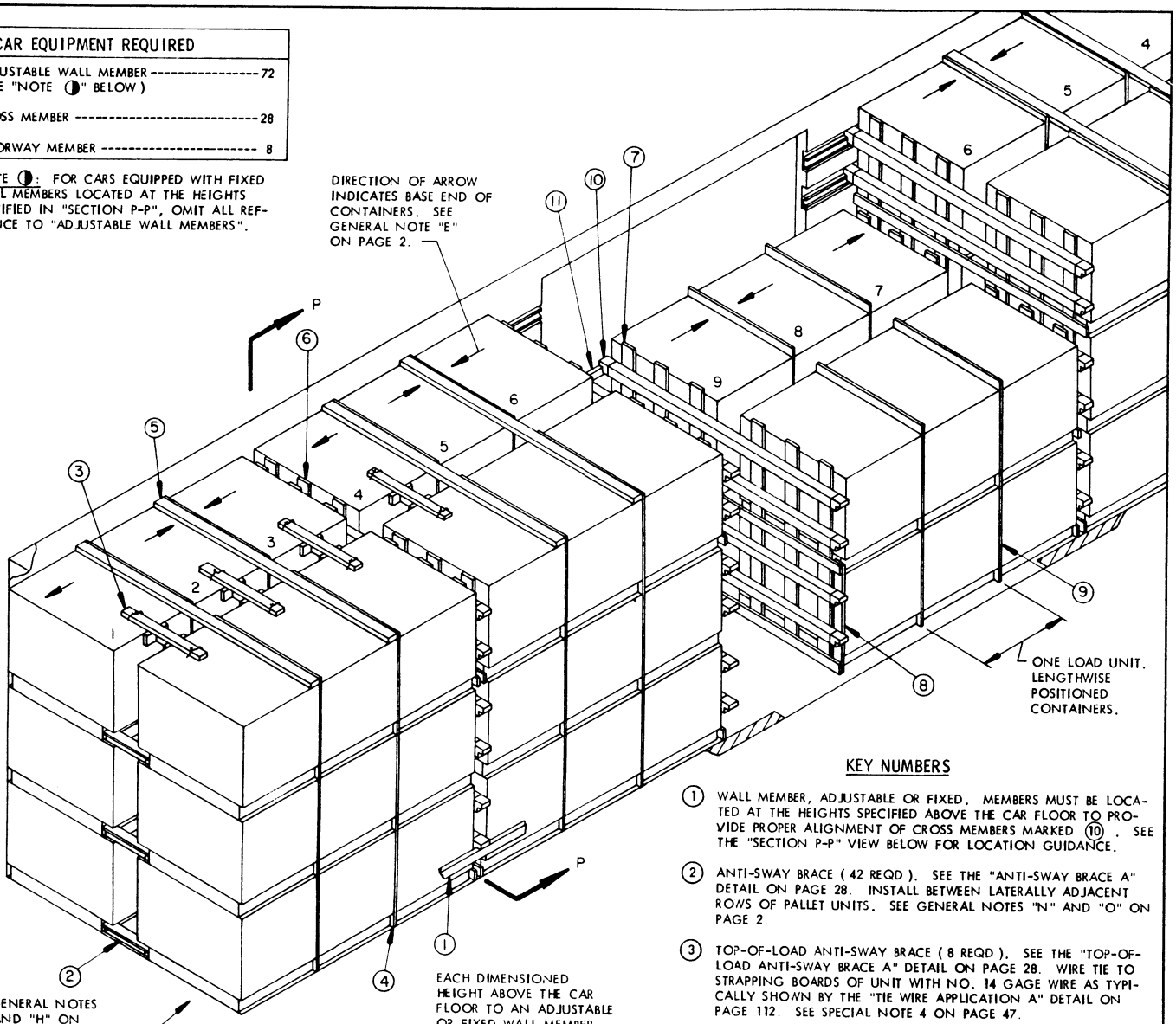
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	99	101,475 LBS
DUNNAGE		1,863 LBS
TOTAL WEIGHT		103,338 LBS

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

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑" BELOW)	72
CROSS MEMBER	28
DOORWAY MEMBER	8

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

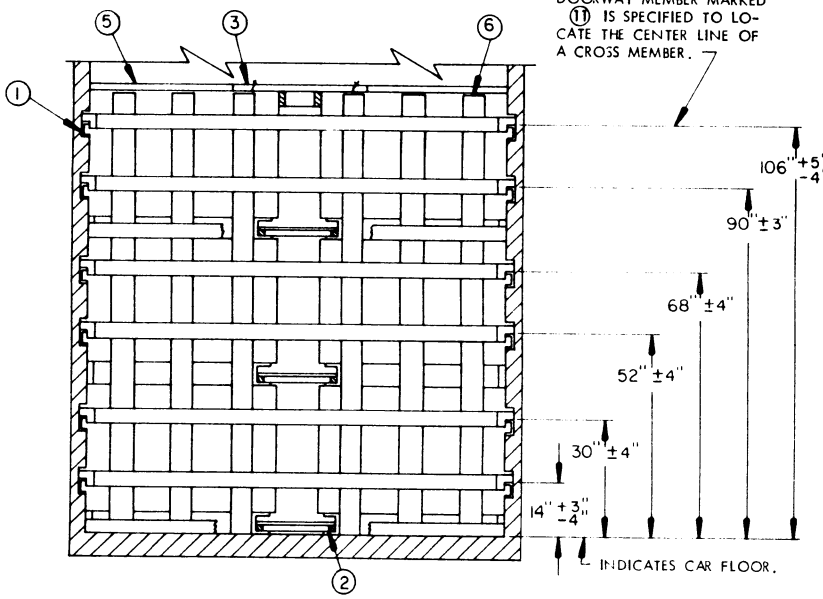
DIRECTION OF ARROW INDICATES BASE END OF CONTAINERS. SEE GENERAL NOTE "E" ON PAGE 2.



ISOMETRIC VIEW

SEE GENERAL NOTES "D" AND "H" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 47.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED ① AND/OR A DOORWAY MEMBER MARKED ⑪ IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION P-P

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE HEIGHTS SPECIFIED ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑩. SEE THE "SECTION P-P" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 47.

④ SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (16 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH. SEE SPECIAL NOTE 5 ON PAGE 47.

⑤ SEPARATOR GATE (8 REQD). SEE THE "SEPARATOR GATE F" DETAIL AND "NOTE" ON PAGE 76. SEE SPECIAL NOTES 6 AND 7 ON PAGE 47.

⑥ SEPARATOR GATE FOR 3-HIGH (6 REQD). SEE THE SEPARATOR GATE E" DETAIL ON PAGE 53. SEE SPECIAL NOTE 8 ON PAGE 47.

⑦ SEPARATOR GATE FOR 2-HIGH (2 REQD). SEE THE "SEPARATOR GATE E" DETAIL ON PAGE 53. SEE SPECIAL NOTE 9 ON PAGE 47.

⑧ STOP PIECE, 1" X 4" X 42" (2 REQD). POSITION AS SHOWN. NAIL TO THE HORIZONTAL PIECES OF SEPARATOR GATE, PIECE MARKED ⑦, W/3-6d NAILS AT EACH JOINT.

⑨ SEPARATOR GATE, 3/8" PLYWOOD, 48" WIDE BY 6'-8" HIGH (4 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH.

⑩ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑪ DOORWAY MEMBER (8 REQD). SEE THE SECTION P-P" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 10 ON PAGE 47.

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 46 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 65,600 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (6) MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING. SEE SPECIAL NOTE 8 BELOW.

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

5. IF DESIRED, PLYWOOD SEPARATOR GATES MARKED (4) AND (9) MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

6. ONE SEPARATOR GATE "F", PIECE MARKED (5) MUST BE POSITIONED ABOVE EACH PAIR OF 4' X 8' PLYWOOD SEPARATORS SHOWN AS PIECES MARKED (4) . SEPARATOR "F" IS REQUIRED FOR 3-HIGH LOAD UNITS ONLY.

7. TO CONSERVE PLYWOOD, THE 16" PIECES WHICH WILL REMAIN FROM THE FOUR FULL SHEETS OF PLYWOOD CUT TO FORM SEPARATOR GATES MARKED (9) MAY BE USED TO CONSTRUCT TWO OF THE SEPARATOR GATES "F", PIECES MARKED (5) .

8. SEPARATOR GATES SHOWN AS PIECES MARKED (6) AND (7) MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION, WITH THE VERTICAL PIECES AGAINST THE UNITS.

9. SEPARATOR GATE "E" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (8) , PRIOR TO POSITIONING IN THE DOORWAY. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR (4) SEPARATOR GATES.

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

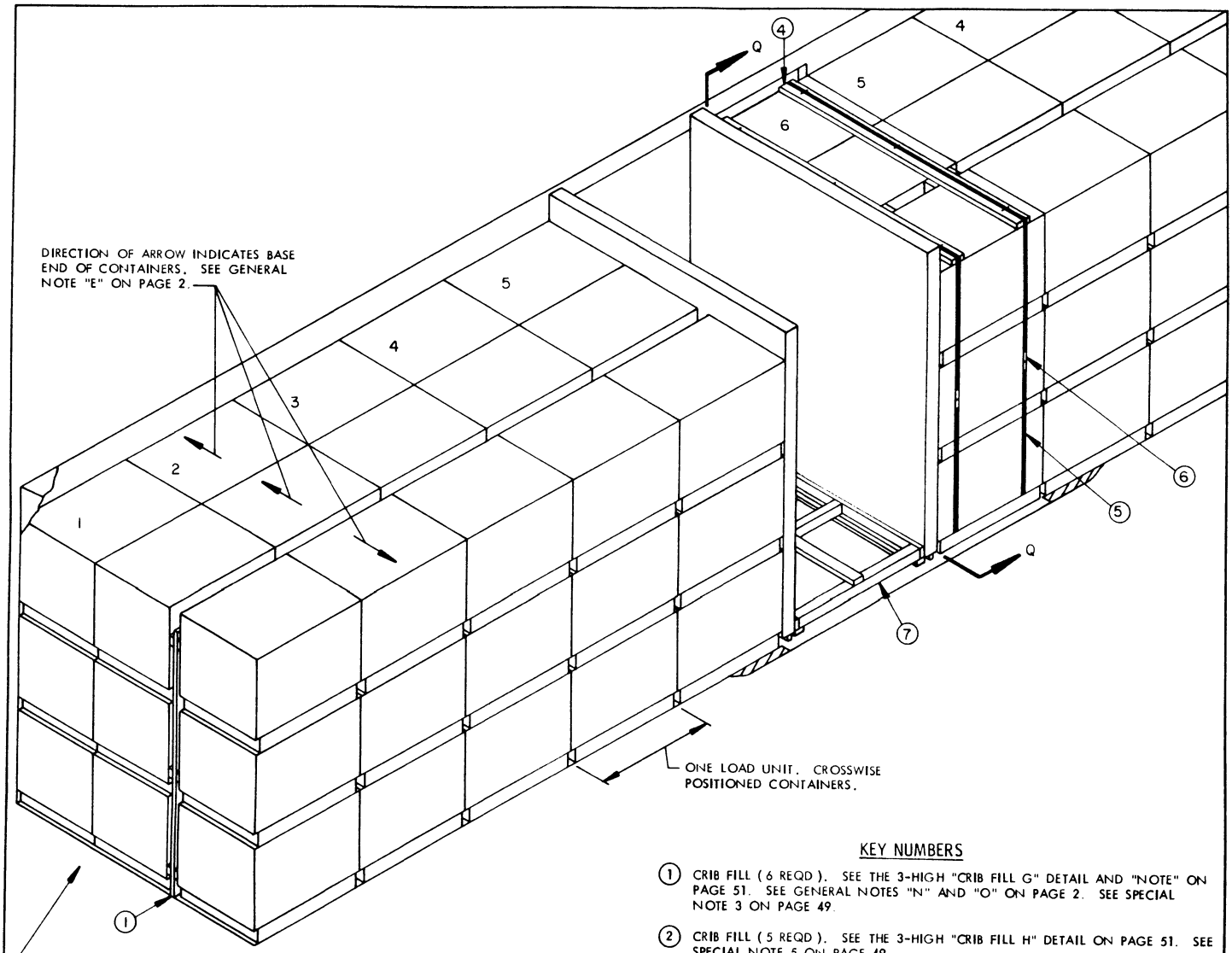
11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP ONE OR TWO LAYERS OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF SIX (6) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGES 78 AND 79 FOR GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

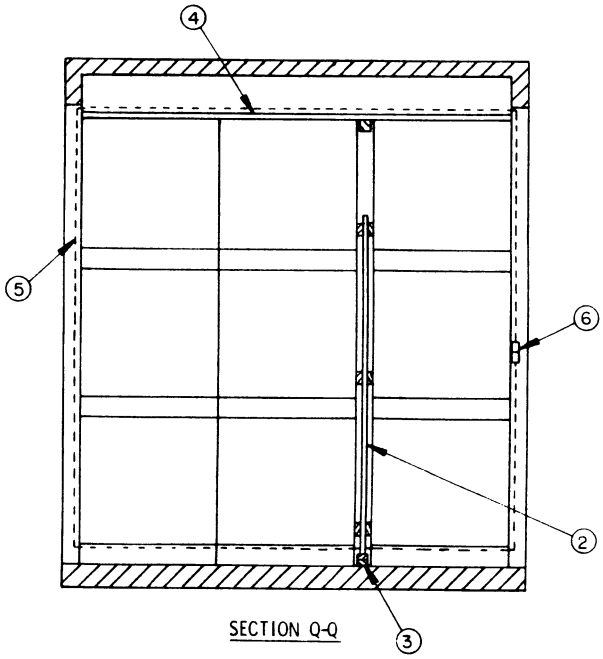
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	299	100
1" X 6"	420	210
2" X 2"	247	83
2" X 4"	208	139
NAILS	NO. REQD	POUNDS
6d (2")	988	6
10d (3")	416	6-1/2
PLYWOOD, 3/8" (20 SHEETS)----640 SQ FT REQD --------- 660 LBS		
WIRE, NO. 14 GAGE ----------160' REQD ---------- 3 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	86,100 LBS
DUNNAGE		1,740 LBS
TOTAL WEIGHT		87,840 LBS



ISOMETRIC VIEW



SECTION Q-Q

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE 3-HIGH "CRIB FILL G" DETAIL AND "NOTE" ON PAGE 51. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 49.

(2) CRIB FILL (5 REQD). SEE THE 3-HIGH "CRIB FILL H" DETAIL ON PAGE 51. SEE SPECIAL NOTE 5 ON PAGE 49.

(3) SIDE BLOCKING, 2" X 4" X 48" (DOUBLED) (1 REQD). PRE-POSITION 35-1/2" FROM THE NEAR SIDE CAR WALL. 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 NOTES 4 AND 5 ON PAGE 49.

(4) STRAPPING BOARD /SPACER ASSEMBLY "B" (2 REQD). SEE THE DETAIL ON PAGE 28.

(5) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 38'-6" LONG STEEL STRAPPING (2 REQD). STAPLE TO STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 49.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 119. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 49.

FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 48 IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF ONE HUNDRED TWENTY-SIX (126) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 129,150 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF EIGHTY-ONE (81) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING OF 83,025 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 42 IS EMPLOYED, ONE-HUNDRED-FOURTEEN (114) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 116,850 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, NINETY-SIX (96) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 98,400 POUNDS, AND SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 73,800 POUNDS.

3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1) MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF 40' AND 50' CARS. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR.

4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 44, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

5. SIDE BLOCKING SHOWN AS PIECE MARKED (3) IN THE LOAD VIEW, IS REQUIRED FOR ALL UNITS REQUIRING BUNDLING STRAPS. NOTE THAT THE CRIB FILL SHOWN AS PIECES MARKED (2) MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF EACH VERTICAL PIECE THAT RESTS ON THE SIDE BLOCKING.

6. 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 THE 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.

7. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 48, IS REQUIRED WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF THE LOAD CONSISTED OF FIVE (5) LOAD UNITS IN EACH END OF THE CAR. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 50' OR LONGER CARS.

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 NINE (9) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2 OR 3-TIER LOAD CAN BE REDUCED BY ELEVEN (11) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL

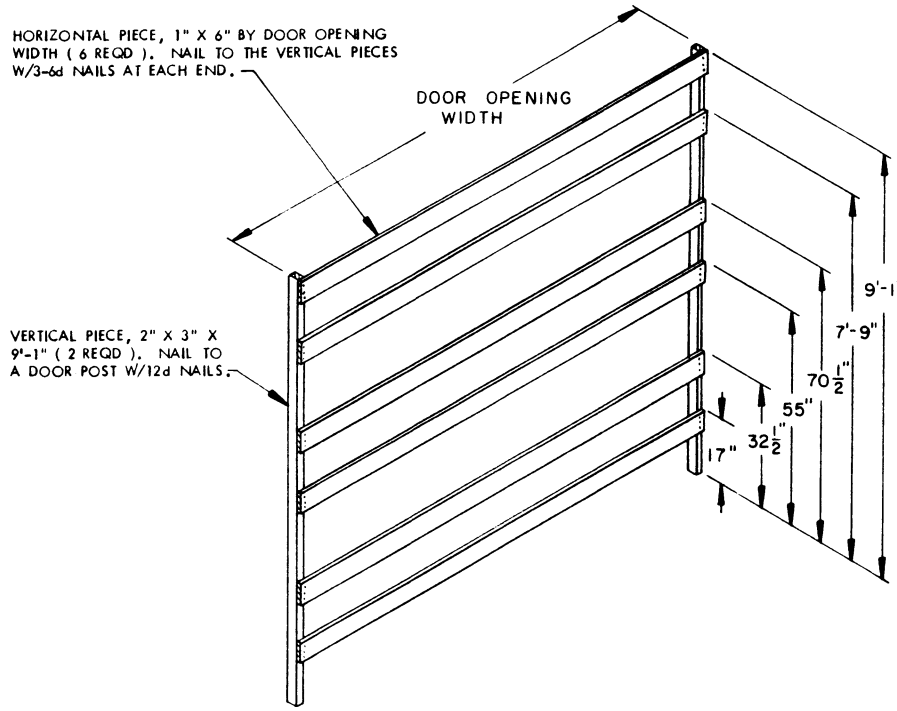
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	134	45
1" X 8"	17	23
2" X 4"	370	247
2" X 6"	19	19
4" X 4"	21	28
NAILS	**NO. REQD**	**POUNDS**
6d (2")	150	1
10d (3")	162	2-1/2
12d (3-1/4")	22	1/4
16d (3-1/2")	10	1/4

STEEL STRAPPING, 1-1/4" ---------- 77' REQD --------- 11 LBS
SEAL FOR 1-1/4" STRAPPING -------- 4 REQD ---------- NIL
STAPLE FOR 1-1/4" STRAPPING ------- 6 REQD ---------- NIL

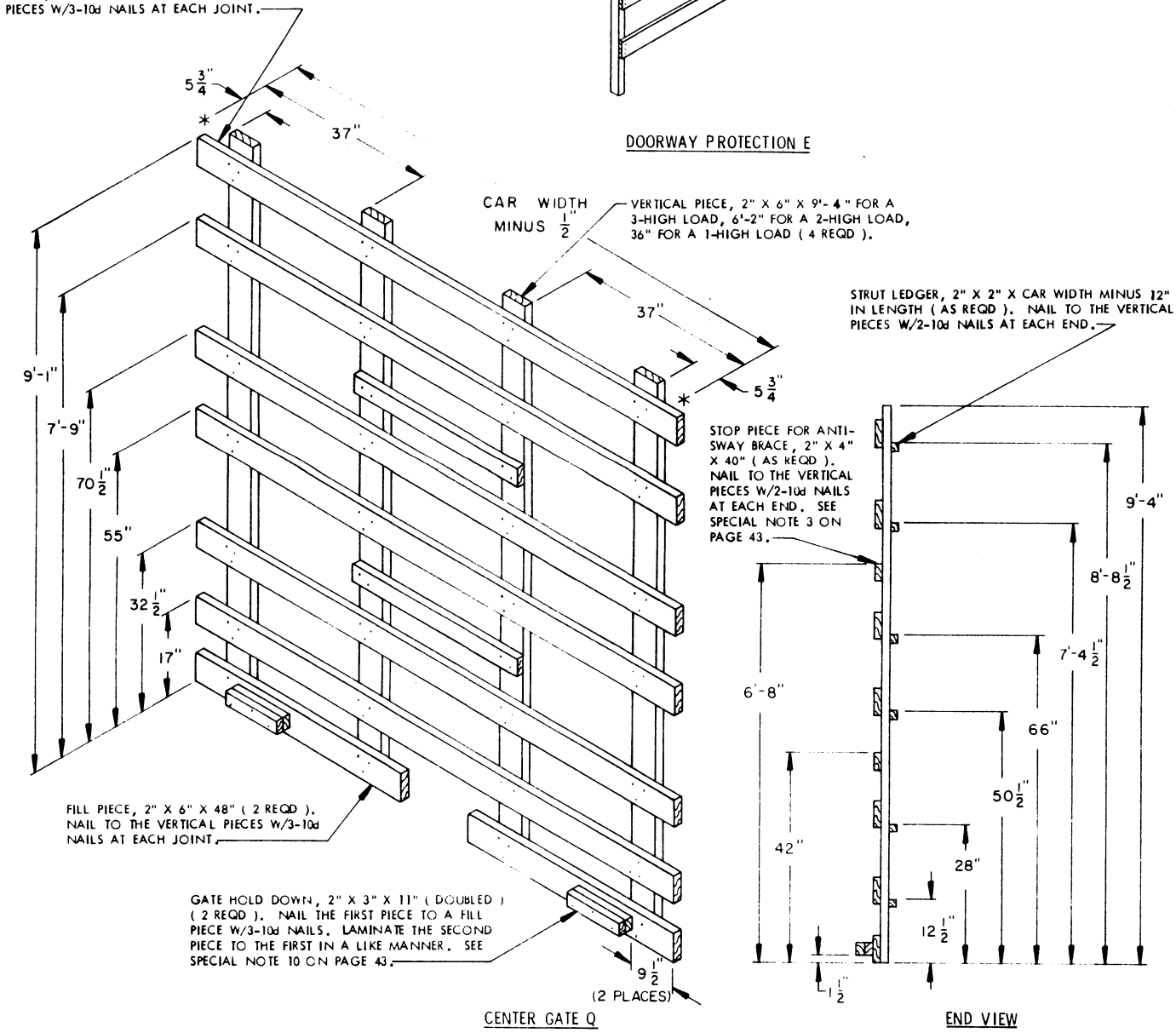
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	99	101,475 LBS
DUNNAGE		690 LBS
TOTAL WEIGHT		102,165 LBS

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



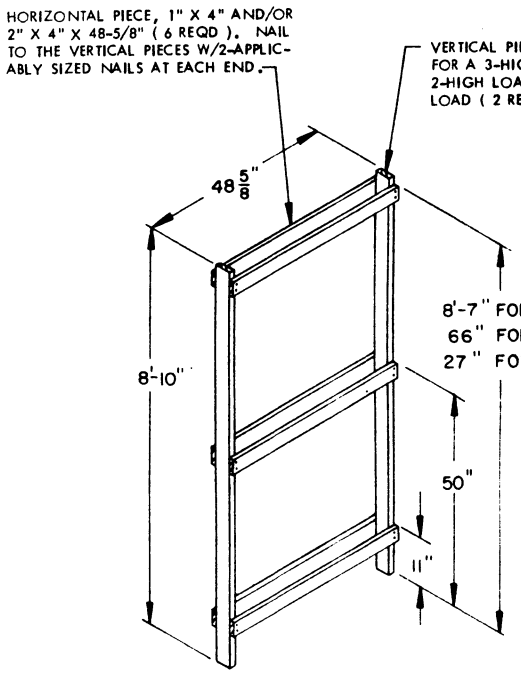
DOORWAY PROTECTION E



CENTER GATE Q

END VIEW

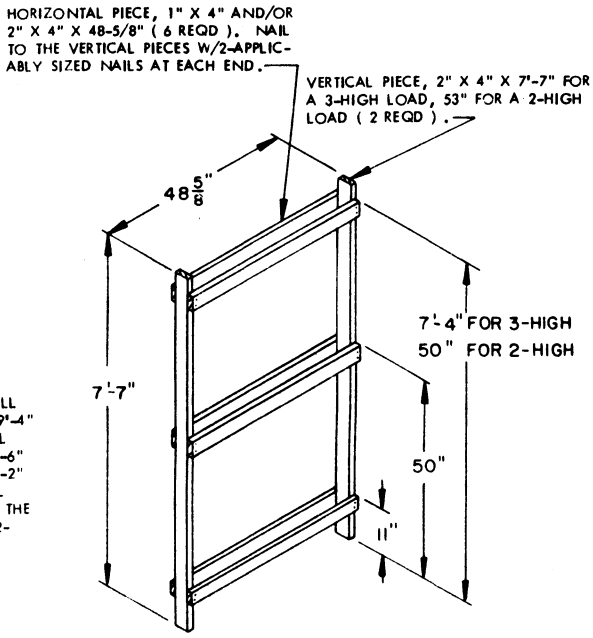
DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



CRIB FILL G

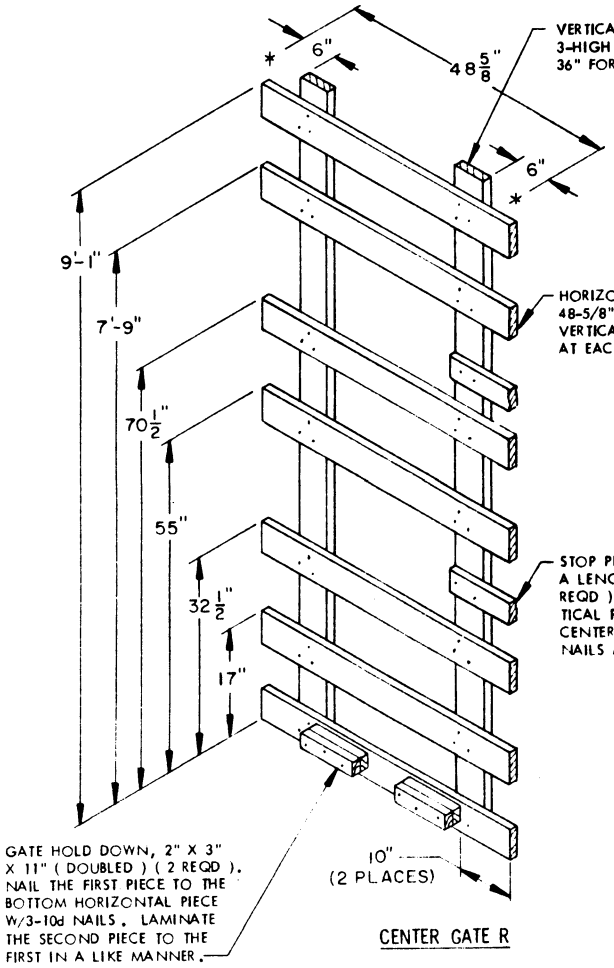
NOTE: THE DEPICTED CRIB FILL IS DESIGNED FOR USE IN A 9'-4" WIDE CAR. 2" X 6" VERTICAL PIECES WILL BE USED IN A 9'-6" WIDE CAR. IF THE CAR IS 9'-2" WIDE, NAIL THE HORIZONTAL PIECES TO THE FLAT SIDE OF THE 2" X 4" VERTICAL PIECES W/2-APPLICABLY SIZED NAILS.

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

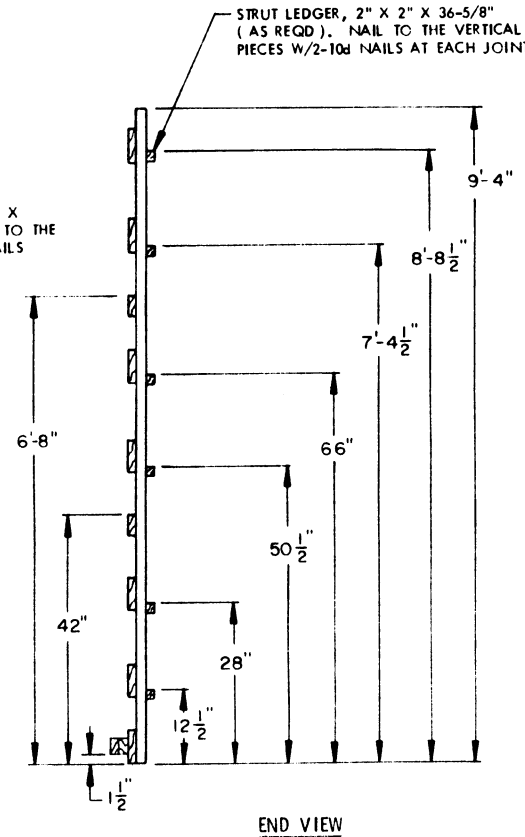


CRIB FILL H

OMIT THE MID-HEIGHT HORIZONTAL PIECES WHEN USING CRIB FOR A 2-HIGH LOAD. CRIB FILL "H" IS NOT REQUIRED FOR A 1-HIGH LOAD; USE CRIB FILL "G" THROUGH-OUT THE LENGTH OF THE LOAD.



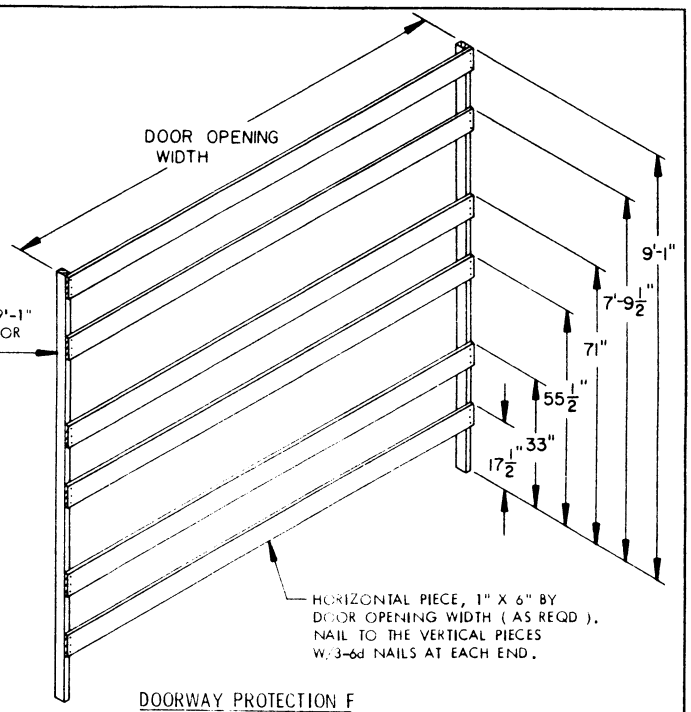
CENTER GATE R



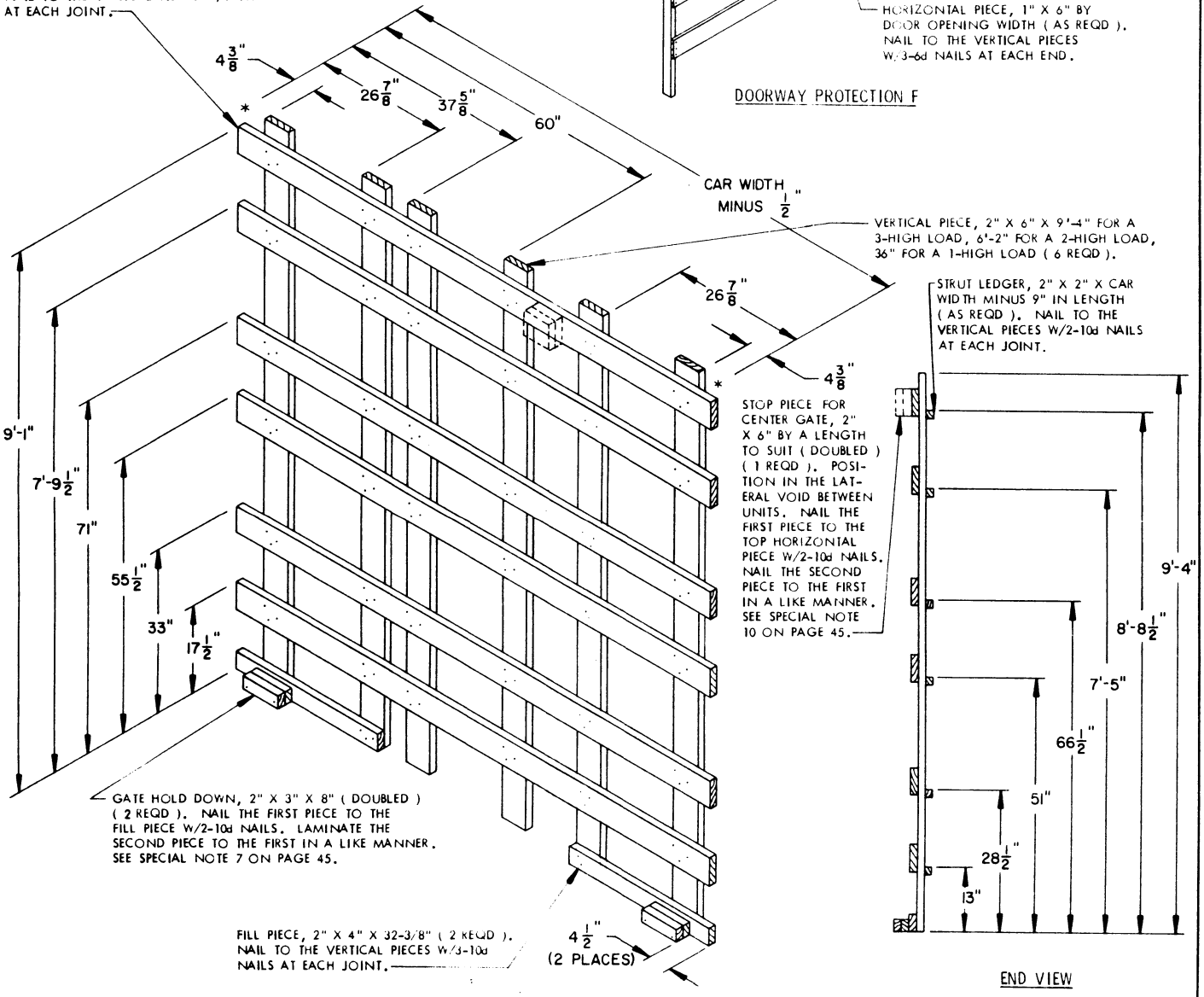
END VIEW

DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)

PROJECT FSA 43B/11-63



DOORWAY PROTECTION F

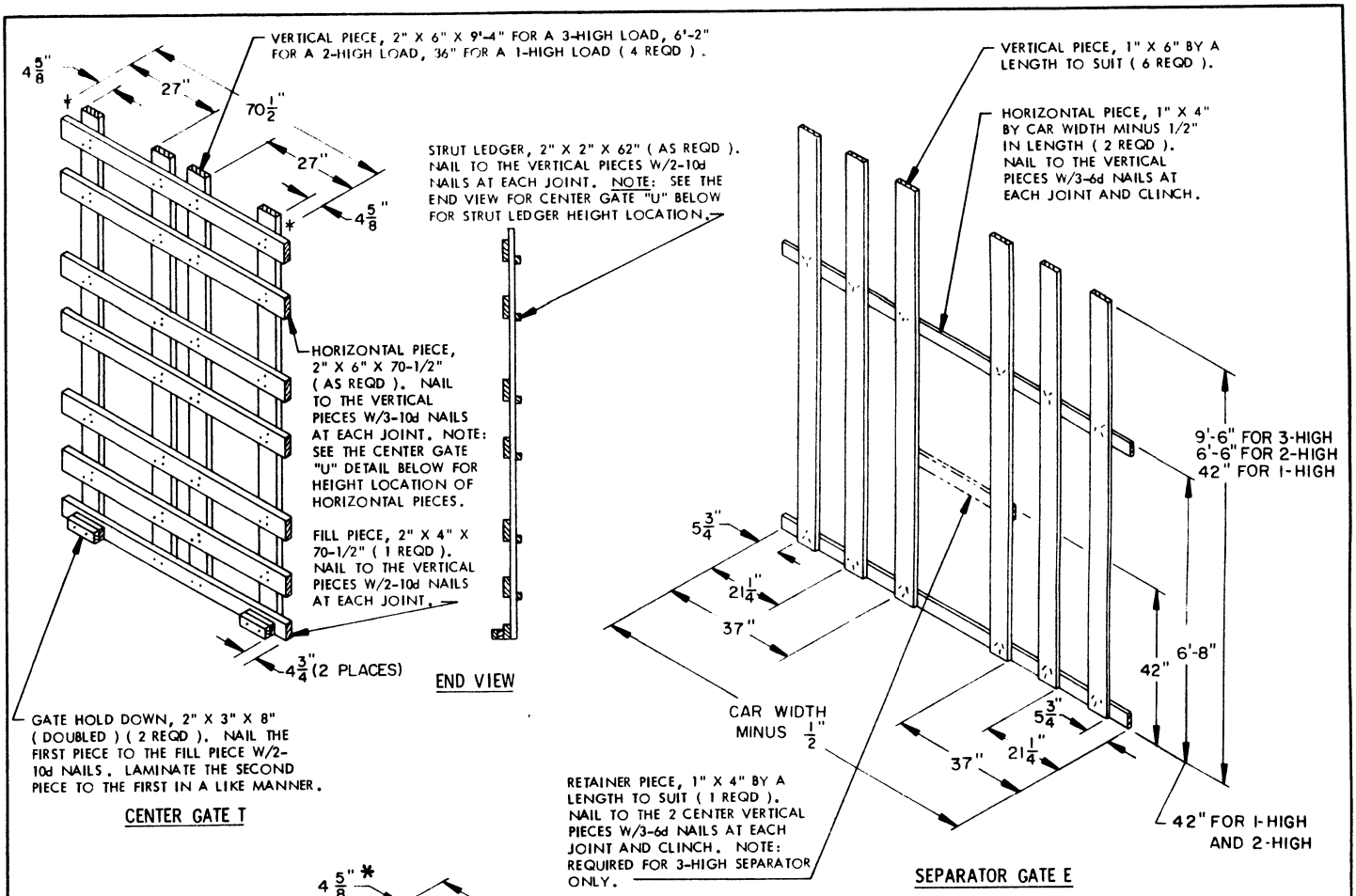


END VIEW

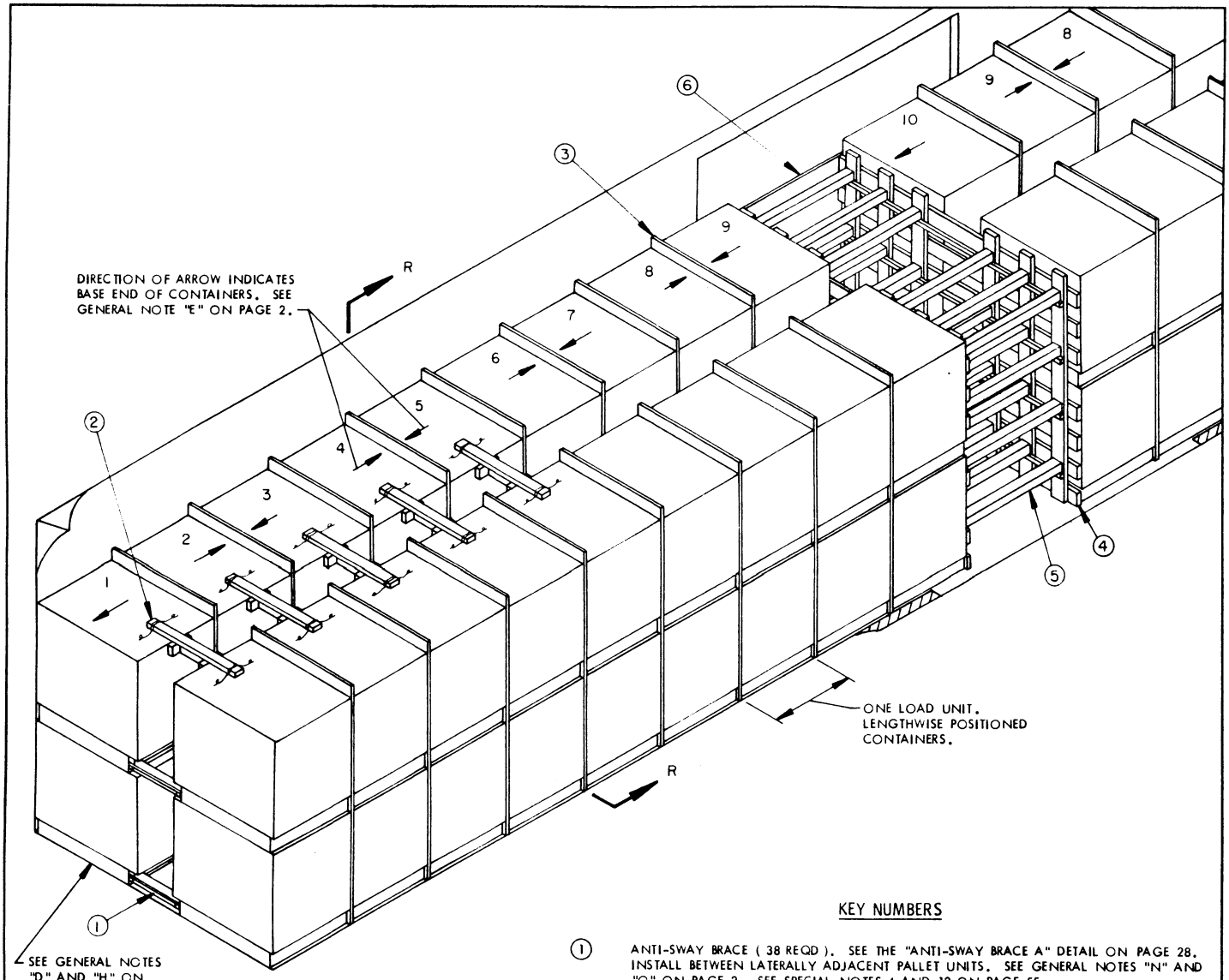
CENTER GATE S

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED).

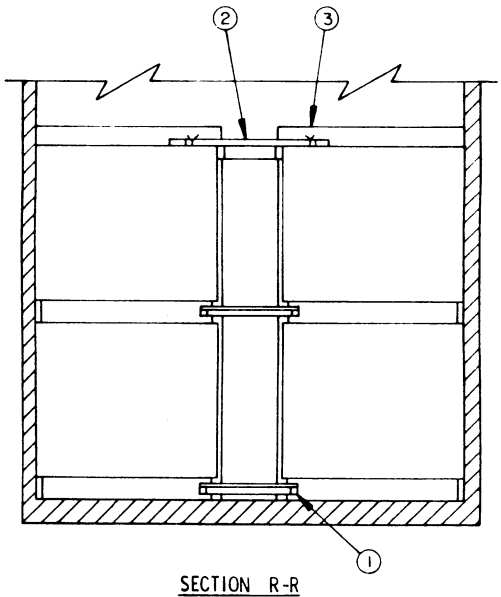
DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



DETAILS FOR FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT)



ISOMETRIC VIEW



SECTION R-R

KEY NUMBERS

(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTES 4 AND 12 ON PAGE 55.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 5 ON PAGE 55.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 6, 7 AND 16 ON PAGE 55.

(4) CENTER GATE (2 REQD). SEE THE "CENTER GATE V" DETAIL ON PAGE 62. SEE SPECIAL NOTES 8, 9, AND 10 ON PAGE 55.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF; 45") (24 REQD). TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(6) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 62. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 11 AND 12 ON PAGE 55.

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

PROJECT FSA 43B/11-63

(SPECIAL NOTES CONTINUED)

12. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECE MARKED ⑥ , USE PIECES MARKED ④ THRU ⑦ ON PAGE 60. SEE SPECIAL NOTES 6 AND 7 ON PAGE 61 FOR GUIDANCE.

13. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, REFER TO PAGES 83 THRU 106 FOR GUIDANCE.

14. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

15. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

16. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED FLOORLINE BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OF EACH PLYWOOD SHEET MUST BE CUT OUT AT LEAST 2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 54 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,832 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 60,624 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' WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLET UNITS SHOULD BE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN EACH END. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6' WIDE CAN BE USED, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. ANTI-SWAY BRACING IS REQUIRED BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. TO PREVENT DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "V" AS SHOWN ON THE DETAIL ON PAGE 62.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② IN THE LOAD ON PAGE 54 MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

6. IF DESIRED, SEPARATOR GATES SHOWN AS PIECES MARKED ③ MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

7. SEPARATOR GATES MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED.

8. CENTER GATE "V" 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 113 FOR GUIDANCE.

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 V", SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 54, CONSTRUCT TWO (2) CENTER GATES "W" AS SHOWN ON PAGE 63. 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 113.

10. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO CENTER GATE "V", PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

11. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED ⑥ IN THE LOAD ON PAGE 54, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLE STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

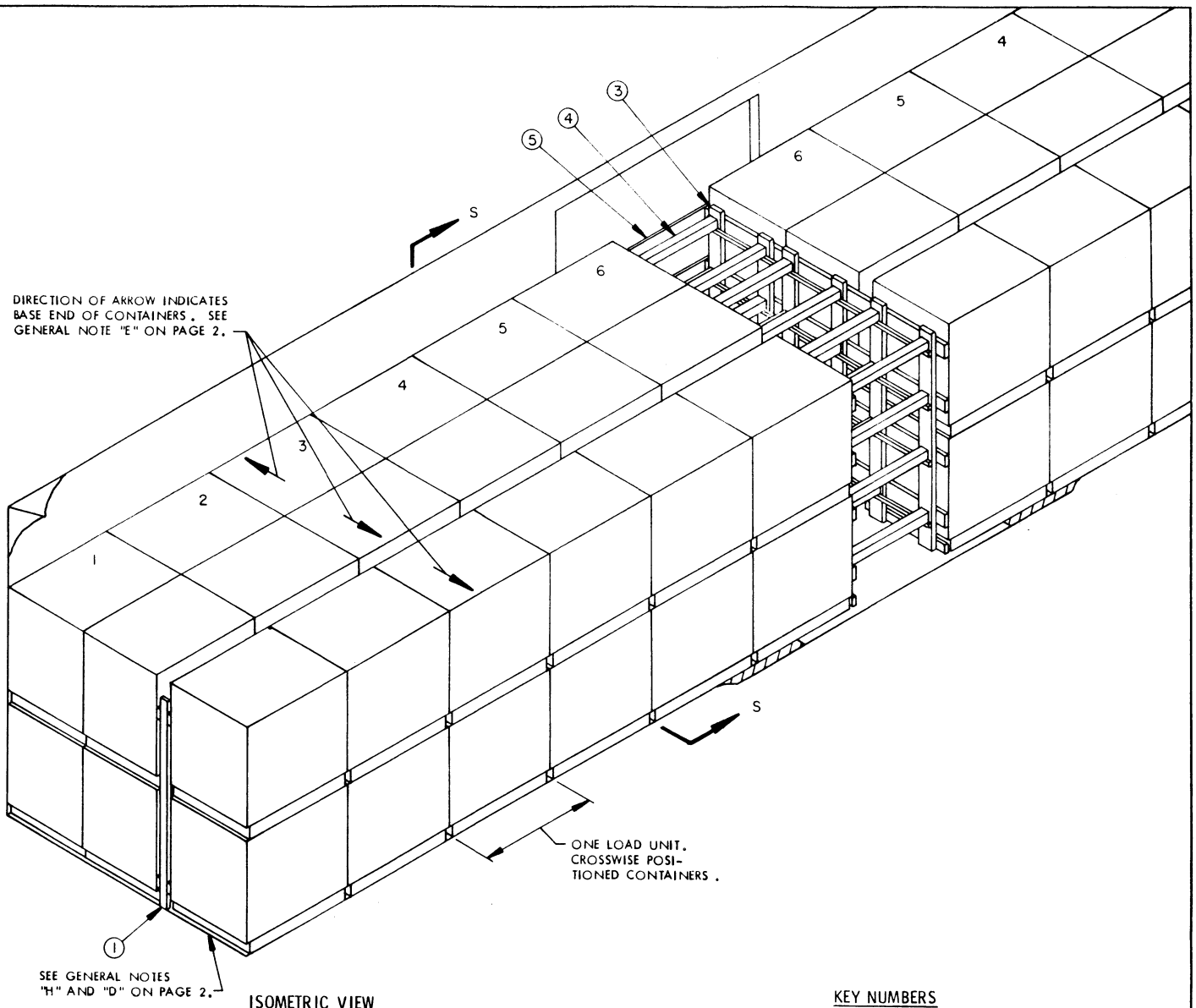
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	146	49
1" X 6"	80	40
2" X 2"	256	86
2" X 3"	37	19
2" X 4"	204	136
2" X 6"	216	216
4" X 4"	90	120
NAILS	NO. REQD	POUNDS
6d (2")	572	3-1/2
10d (3")	794	12-1/4
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2
PLYWOOD, 3/8" (34 SHEETS)-----1088 SQ FT REQD-------1122 LBS		
WIRE, NO. 14 GAGE ---------- 200' REQD ----------4 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	96,748 LBS
DUNNAGE		2,477 LBS
TOTAL WEIGHT		99,225 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

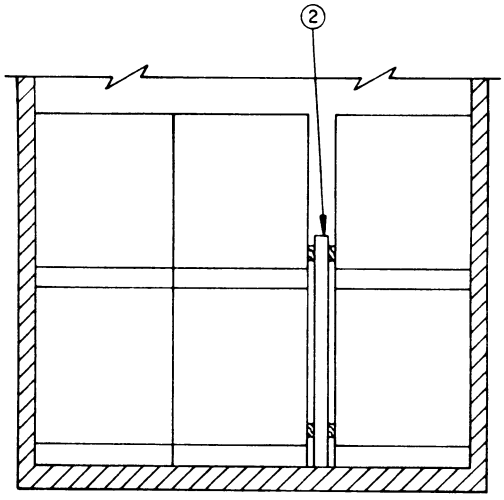
(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL J" DETAIL AND "NOTE" ON PAGE 64. SEE SPECIAL NOTE 4 ON PAGE 57. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) CRIB FILL (6 REQD). SEE THE "CRIB FILL K" DETAIL ON PAGE 64.

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE X" DETAIL ON PAGE 64. SEE SPECIAL NOTE 5 ON PAGE 57. .

(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 NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION G" DETAIL ON PAGE 62. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 57.



SECTION S-S

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

(SPECIAL NOTES CONTINUED)

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 SIX (6) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2-TIER LOAD CAN BE REDUCED BY ELEVEN (11) UNITS BY OMITTING THE CENTER ROW OF THE TOP LAYER AS SHOWN ON PAGE 80, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 56 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 68,202 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; NINETY (90) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 113,670 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE FIVE (5) LOAD UNITS IN ONE END OF THE CAR, AND SIX (6) IN THE OPPOSITE 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. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ① , MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50'-0" LONG CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION IN LIEU OF USING THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").

5. CENTER GATE "X" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT ON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE X", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 56, INSTALL TWO (2) "CENTER GATES Y", AND TWO (2) "CENTER GATES Z" AS SHOWN ON PAGE 65. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "X", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECE MARKED ⑤ IN THE LOAD ON PAGE 56 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED ⑤ , REFER TO KEY NUMBERS ③ THRU ⑥ ON PAGE 72, AND SPECIAL NOTES 5 AND 6 ON PAGE 73 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATE "X" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE X" DETAIL ON PAGE 64. IF SPLIT CENTER GATES "Y" AND "Z" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	94	32
1" X 6"	64	32
2" X 2"	69	23
2" X 3"	34	17
2" X 4"	29	20
2" X 6"	173	173
4" X 4"	78	104
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
10d (3")	376	5-3/4
12d (3-1/4")	24	1/2
16d (3-1/2")	96	2

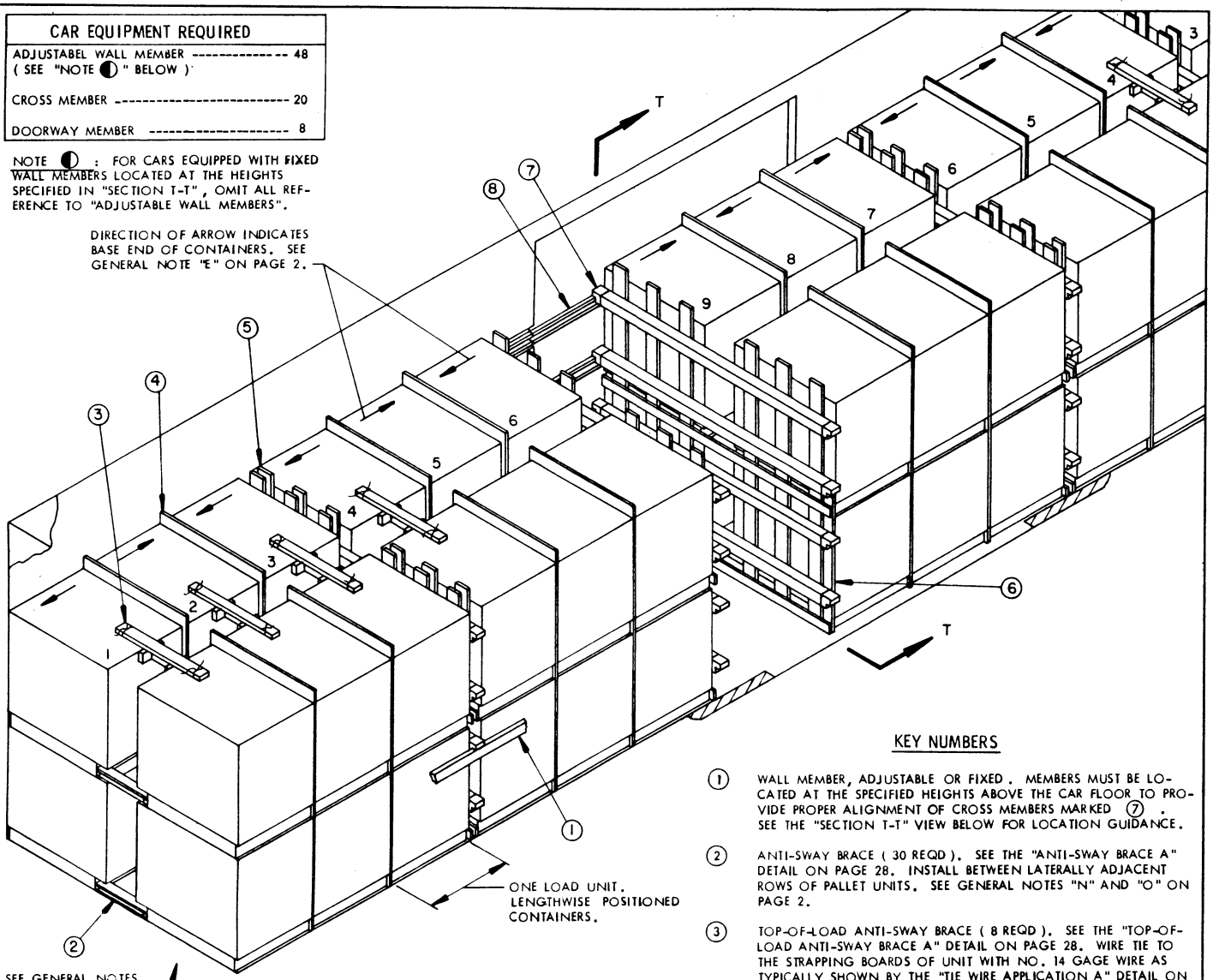
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	90,936 LBS
DUNNAGE		812 LBS
TOTAL WEIGHT		91,748 LBS (APPROX)

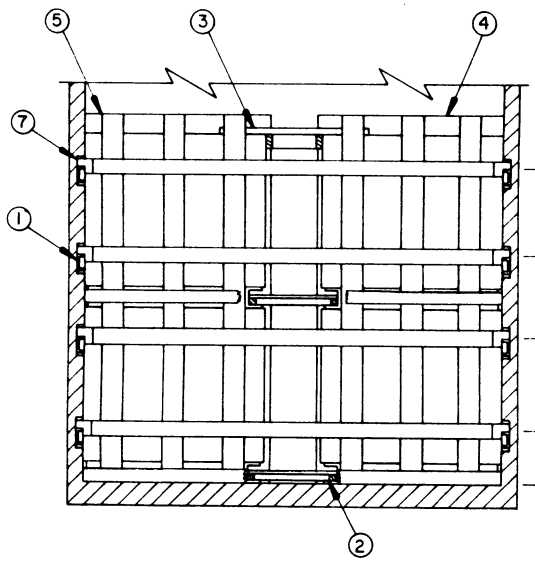
ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)
72-UNIT LOAD IN 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABEL WALL MEMBER (SEE "NOTE ◐ " BELOW)	48
CROSS MEMBER	20
DOORWAY MEMBER	8

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



ISOMETRIC VIEW



SECTION T-T

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 ⑦. SEE THE "SECTION T-T" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO THE STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 59.

④ SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (20 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH. SEE SPECIAL NOTE 5 ON PAGE 59.

⑤ SEPARATOR GATE FOR 2-HIGH (8 REQD). SEE THE "SEPARATOR GATE G" DETAIL ON PAGE 65. SEE SPECIAL NOTES 6 THRU 8 ON PAGE 59.

⑥ STOP PIECE, 1" X 4" X 53" (2 REQD). NAIL TO THE HORIZONTAL PIECES OF PIECE MARKED ⑤ W/3-6d NAILS AT EACH JOINT AND CLINCH.

⑦ CROSS MEMBER, (20 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

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

ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 58 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 60,624 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR HAS BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (5) MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING. SEE SPECIAL NOTE 6 BELOW.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 58, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. SEPARATOR GATES SHOWN AS PIECES MARKED (4) MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED; ALSO, THEY MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

6. SEPARATOR GATES SHOWN AS PIECES MARKED (5) MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION, WITH THE VERTICAL PIECES AGAINST THE UNITS.

7. SEPARATOR GATE "G" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (6) , PRIOR TO POSITIONING IN THE DOORWAY. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR (4) SEPARATOR GATES.

8. SEPARATOR GATE "G" MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER, IF DESIRED. SEE THE "ALTERNATIVE SEPARATOR GATE" DETAIL ON PAGE 112 FOR CONSTRUCTION GUIDANCE. NOTE THAT THE GATE MUST BE POSITIONED SO THE TIE PIECES ARE ON THE SIDE OF THE GATE THAT BEARS AGAINST THE CROSS MEMBER.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. TO REDUCE A LOAD BY ONE (1) PALLET UNIT, REFER TO THE LCL PROCEDURES ON PAGE 78 AND 79 FOR GUIDNACE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

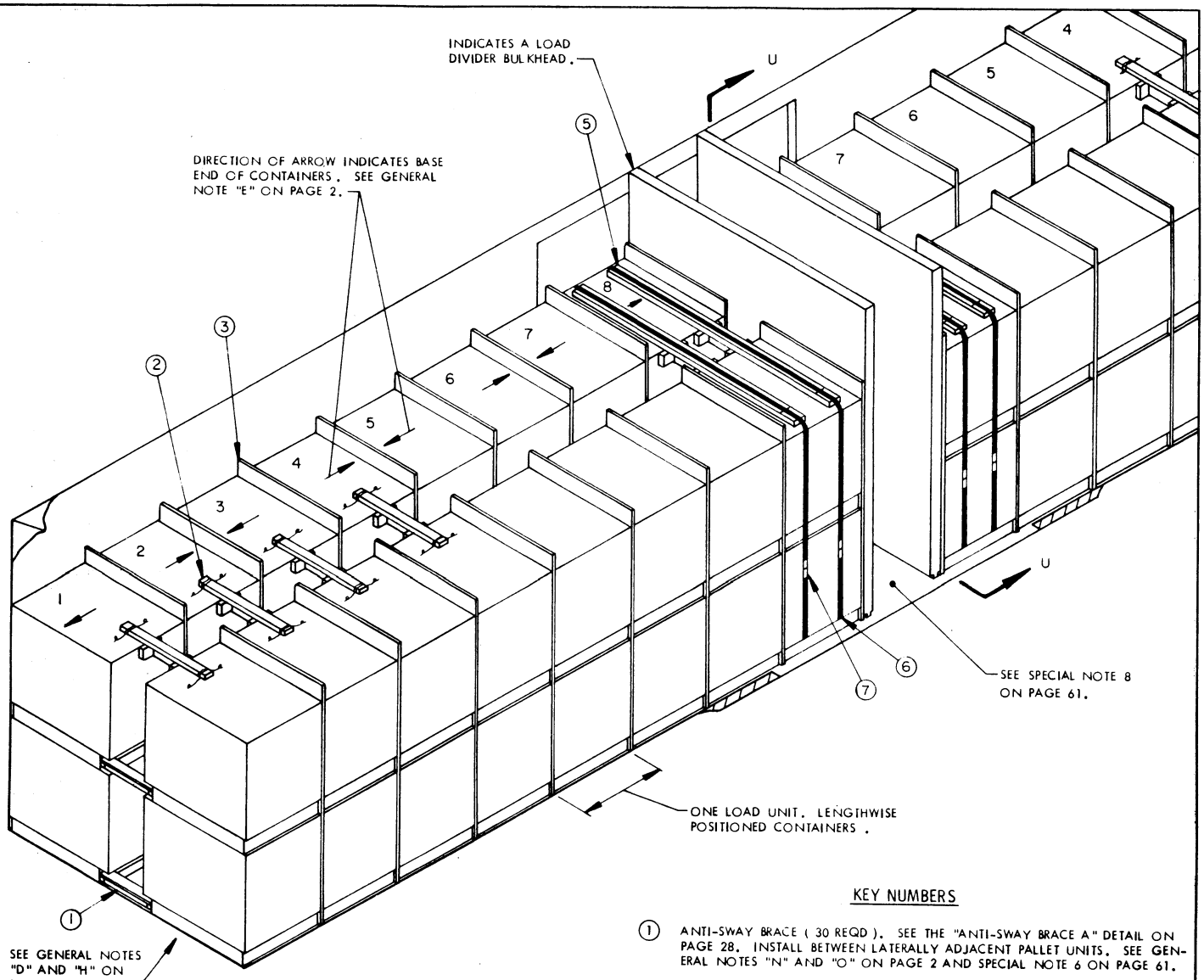
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	258	86
1" X 6"	384	192
2" X 2"	177	59
2" X 4"	134	89
NAILS	NO. REQD	POUNDS
6d (2")	700	4
10d (3")	336	5-1/4
PLYWOOD 3/8" (20 SHEETS) ----- 640 SQ FT REQD ------ 660 LBS		
WIRE, NO. 14 GAGE ---------- 160' REQD ---------- 2 LBS		

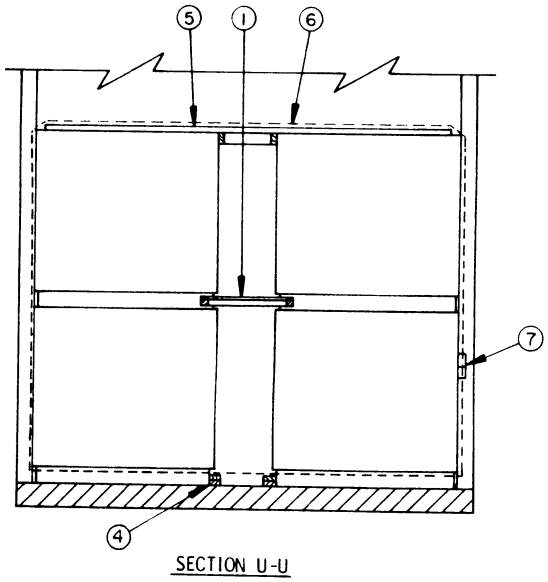
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	75,780 LBS
DUNNAGE		1,524 LBS
TOTAL WEIGHT		77,304 LBS

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



ISOMETRIC VIEW



SECTION U-U

KEY NUMBERS

(1) ANTI-SWAY BRACE (30 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 6 ON PAGE 61.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION" DETAIL ON PAGE 112. SEE SPECIAL NOTE 3 ON PAGE 61.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (32 REQD). POSITION AGAINST THE UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTE 4 ON PAGE 61.

(4) SIDE BLOCKING, 2" X 4" X 35" (DOUBLED) (4 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 SPECIAL NOTES 5 AND 6 ON PAGE 61.

(5) STRAPPING BOARD/SPACER ASSEMBLY "A" (4 REQD). SEE THE DETAIL ON PAGE 16.

(6) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 35'-0" LONG STEEL STRAPPING (4 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 61.

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

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

PROJECT FSA 43B/11-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 60 IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT). A MAXIMUM OF SEVENTY-SIX (76) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,988 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING WEIGHT OF 60,624 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE CROSSWISE LOADING PATTERN ON PAGE 56 IS EMPLOYED, EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 106,092 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 89,936 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 68,102 POUNDS.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 60 MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

4. SEPARATOR GATES SHOWN AS PIECES MARKED (3) MAY BE FORMED FROM 1/2" OR THICKER PLYWOOD IN LIEU OF 3/8", IF DESIRED; ALSO, THEY MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK LENGTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (6) IN THE LOAD ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

6. SIDE BLOCKING SHOWN AS PIECE MARKED (4) IN THE LOAD ON PAGE 60, MUST BE USED IN LIEU OF THE LOWER ANTI-SWAY BRACE MARKED (1), FOR ALL UNITS REQUIRING BUNDLING STRAPS; IF THE PALLET UNITS ARE POSITIONED CROSSWISE, REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 72, AND SPECIAL NOTES 5 AND 6 ON PAGE 73 FOR GUIDANCE.

7. 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 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.

8. A "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS", DETAIL SHOWN ON PAGE 119 IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 OR MORE FOR THE DEPICTED LOAD THE STRUT ASSEMBLY IS NOT REQUIRED. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 60' OR LONGER CARS.

9. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) PALLET UNITS OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO (2) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. OR, THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

10. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

11. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL

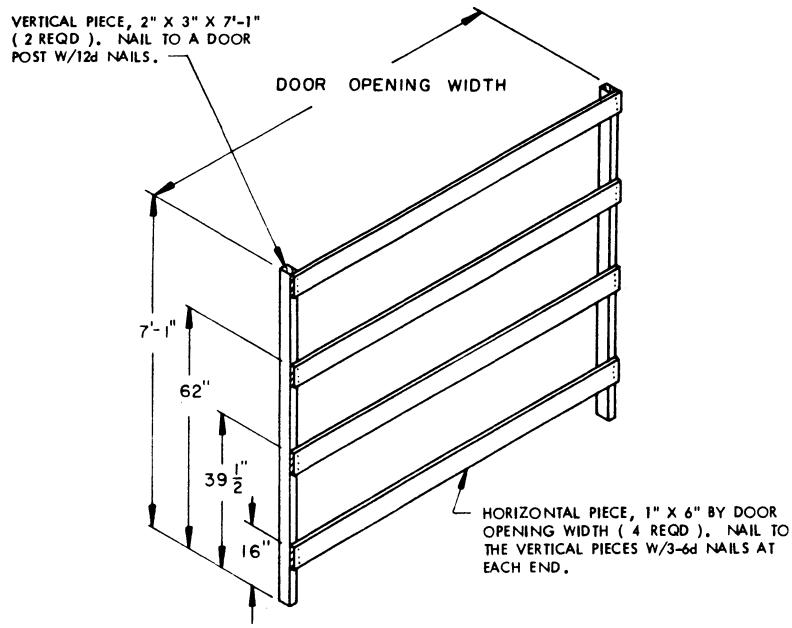
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	115	39
2" X 2"	177	59
2" X 4"	170	114
2" X 6"	34	34
NAILS	**NO. REQD**	**POUNDS**
6d (2")	424	2-1/2
10d (3")	384	6
16d (3-1/2")	16	1/4

PLYWOOD, 3/8" (32 SHEETS)	1024 SQ FT REQD	1,056 LBS
STEEL STRAPPING, 1-1/4"	140' REQD	20 LBS
SEAL FOR 1-1/4" STRAPPING	8 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	12 REQD	NIL
WIRE, NO. 14 GAGE	160' REQD	2 LBS

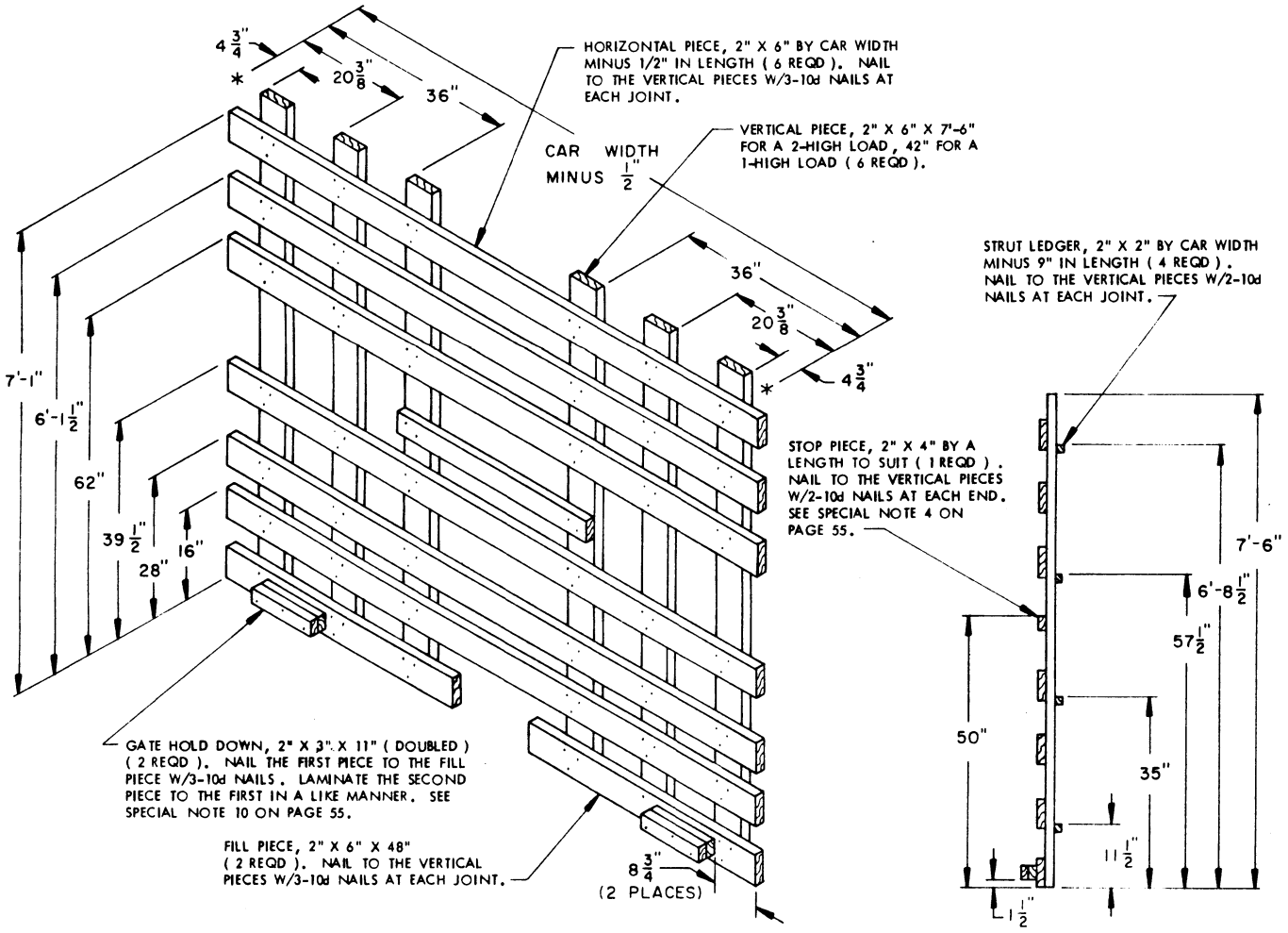
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	64	80,832 LBS
DUNNAGE		1,579 LBS
TOTAL WEIGHT		82,411 LBS (APPROX)

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



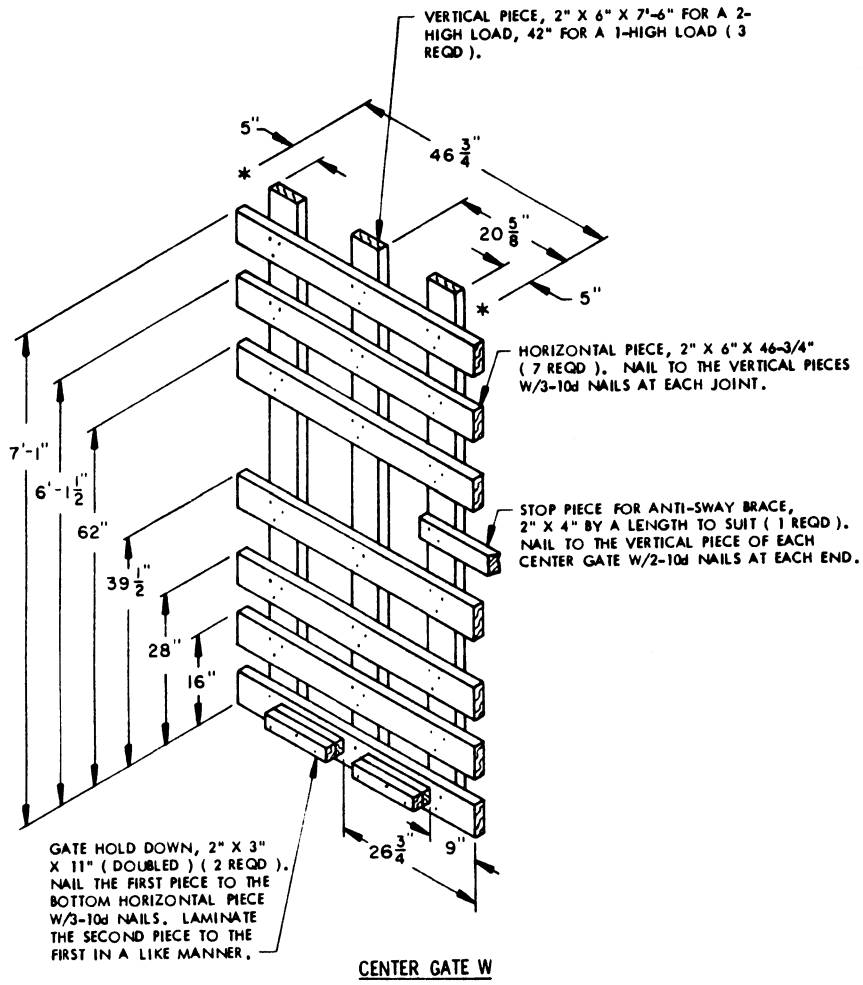
DOORWAY PROTECTION G



CENTER GATE V

END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



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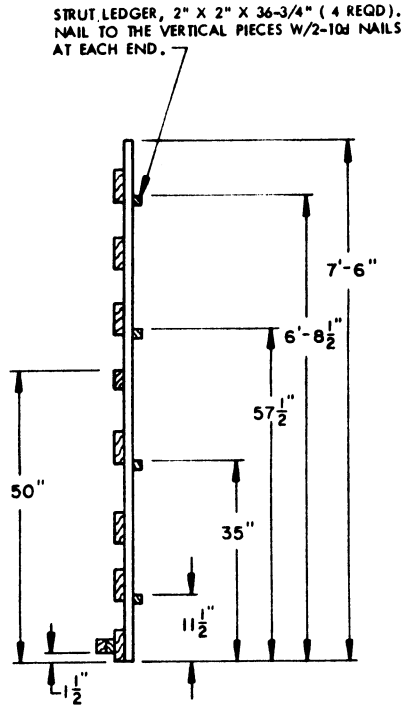
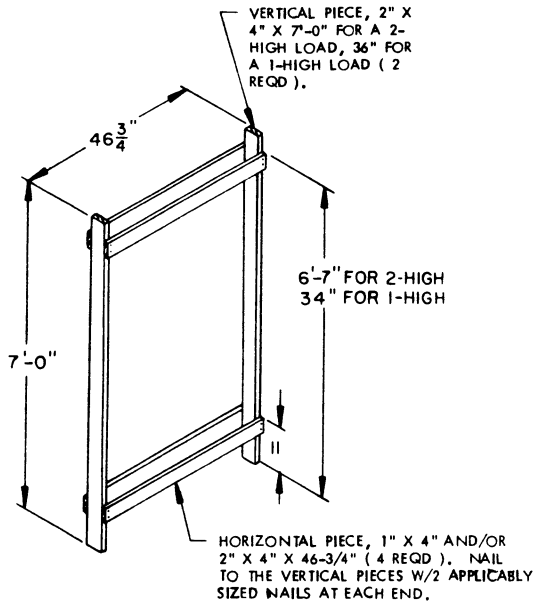
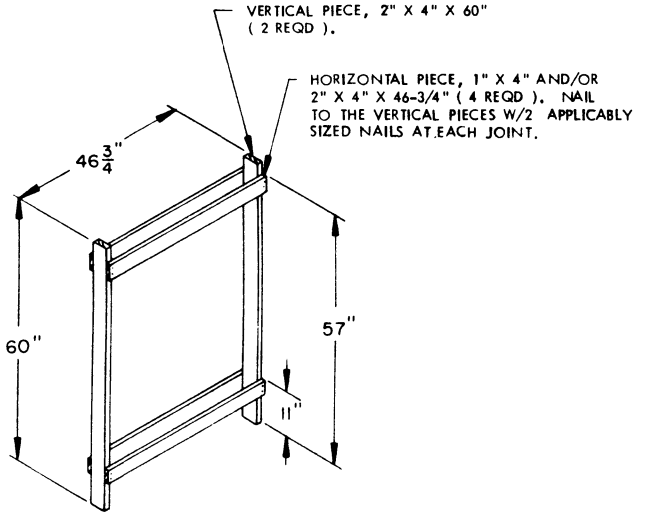


END VIEW

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



CRIB FILL J

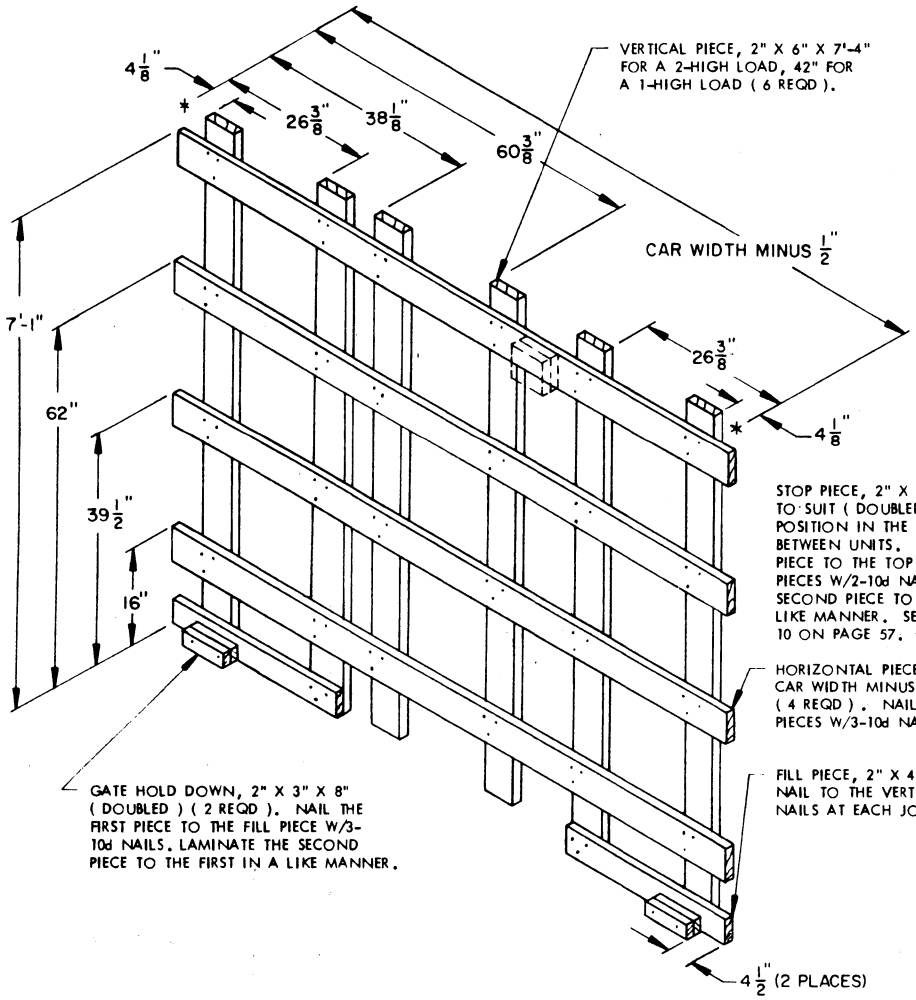


CRIB FILL K

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

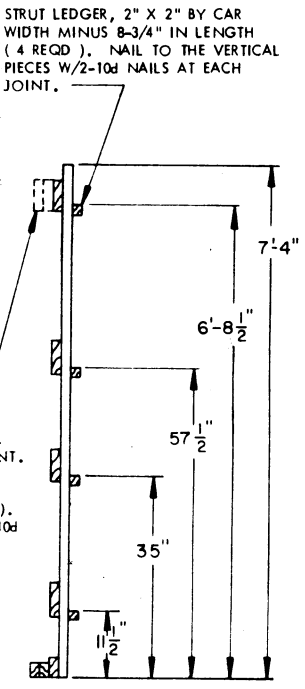
CRIB FILL "K" IS NOT REQUIRED FOR A 1-HIGH LOAD; THE CRIB FILL "J" WILL BE USED THROUGHOUT THE LENGTH OF THE LOAD.

NOTE: THE DEPICTED CRIB FILL IS DESIGNED FOR USE IN A 9'-4" WIDE CAR. 2" X 6" VERTICAL PIECES WILL BE USED IN A 9'-6" WIDE CAR. IF THE CAR IS 9'-2" WIDE, NAIL THE HORIZONTAL PIECES TO THE FLAT SIDE OF THE 2" X 4" VERTICAL PIECES W/3-APPLICABLY SIZED NAILS.



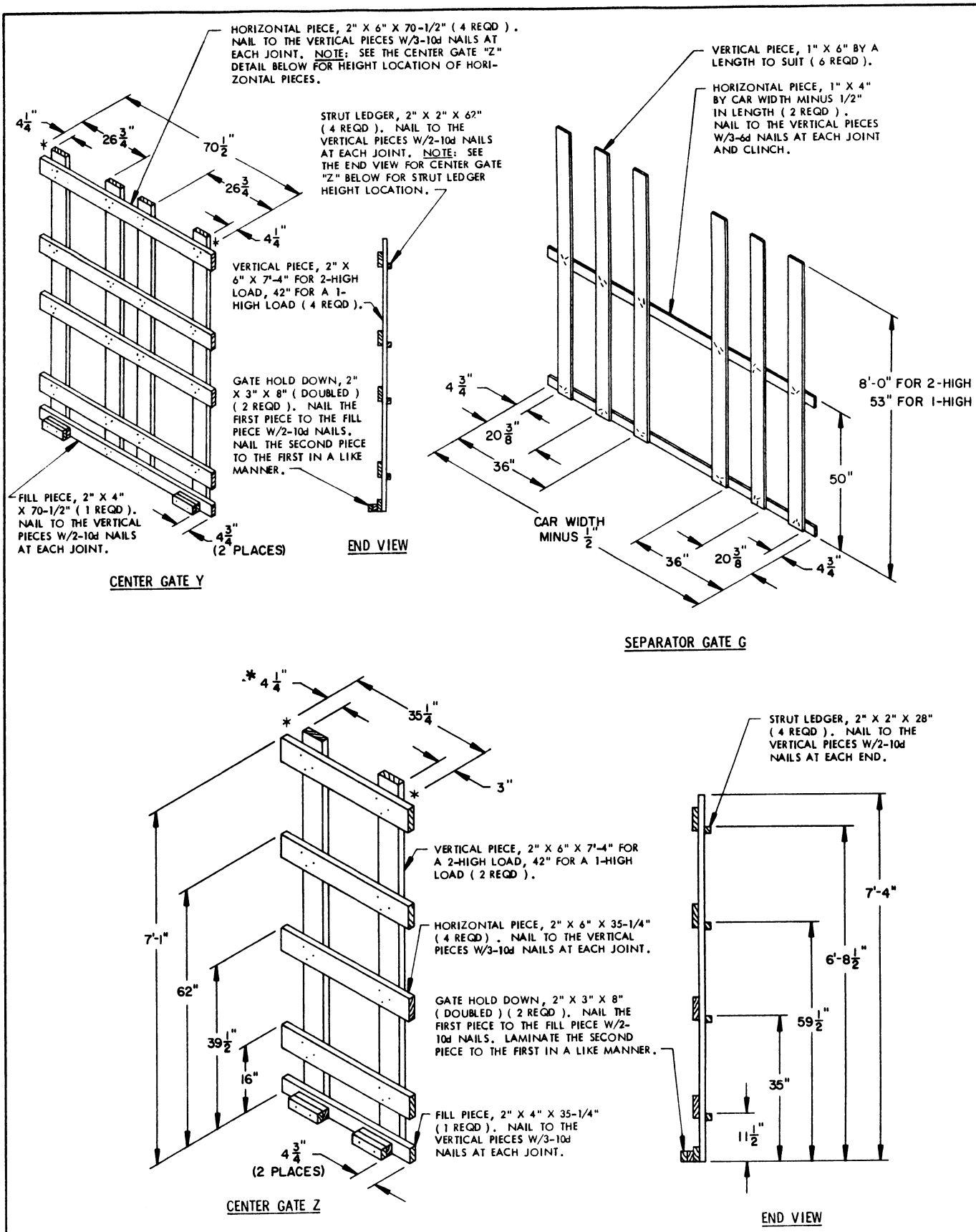
CENTER GATE X

(ONE RIGHT HAND AND ONE LEFT HAND REQUIRED)



END VIEW

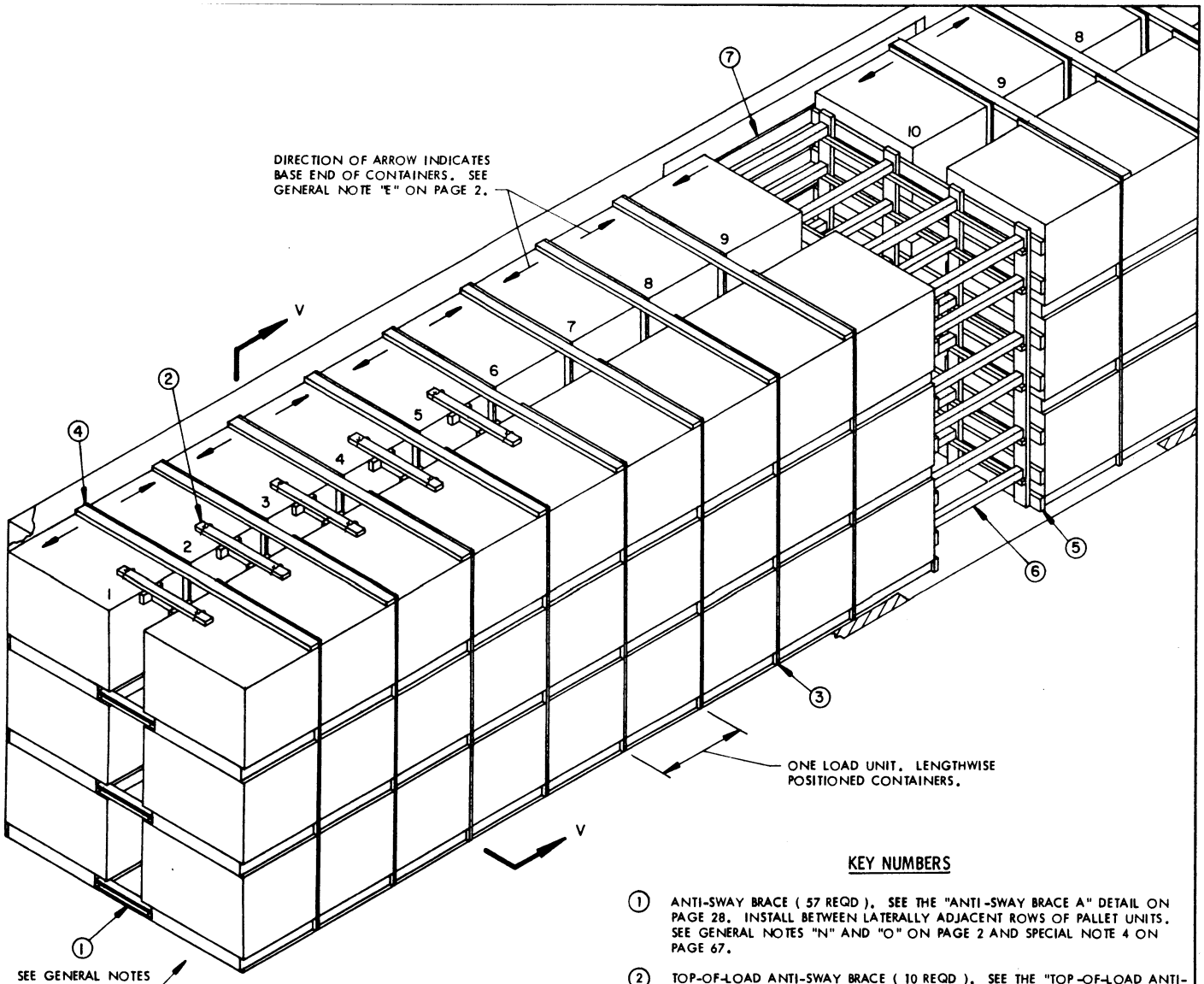
DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



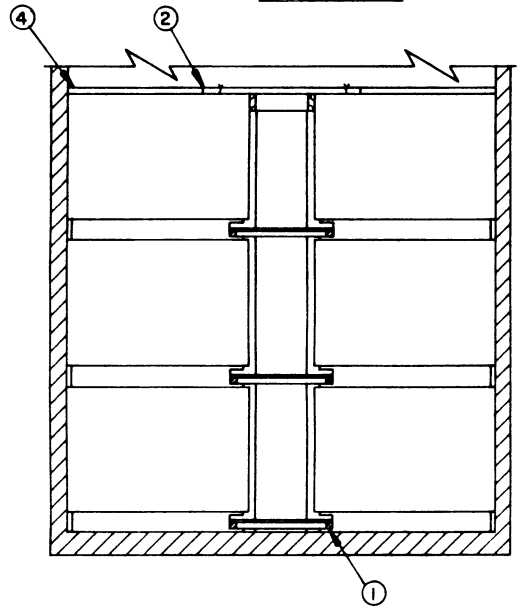
(ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED)

* NOTE: POSITION THE 4-1/4" DIMENSION AGAINST THE BASE END OF THE CONTAINER.

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT)



ISOMETRIC VIEW



SECTION V-V

KEY NUMBERS

(1) ANTI-SWAY BRACE (57 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 4 ON PAGE 67.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLITION A" DETAIL ON PAGE 112. SEE GENERAL NOTE 5 ON PAGE 67.

(3) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (34 REQD). POSITION AGAINST UNITS. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED (1) W/1-6d NAIL EACH. SEE SPECIAL NOTES 6 AND 17 ON PAGE 67.

(4) SEPARATOR GATE (17 REQD). SEE THE "SEPARATOR GATE F" DETAIL AND "NOTE" ON PAGE 76. SEE SPECIAL NOTES 7 AND 8 ON PAGE 67.

(5) CENTER GATE (2 REQD). SEE THE "CENTER GATE AA" DETAIL ON PAGE 74. SEE SPECIAL NOTES 9 AND 10 ON PAGE 67.

(6) STRUT, 4" X 4" BY CUT TO FIT (REF: 45°) (24 REQD). TOENAIL TO PIECES MARKED (5) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(7) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 74. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 12 AND 13 ON PAGE 67.

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

PROJECT FSA 43B/11-63

(SPECIAL NOTES CONTINUED)

13. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED, OMIT EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA; IN LIEU OF PIECES MARKED (7), USE PIECES MARKED (4) THRU (7) ON PAGE 60. SEE SPECIAL NOTES 6 AND 7 ON PAGE 61 FOR GUIDANCE. NOTE THAT THE BUNDLING STRAP SHOWN AS PIECE MARKED (6) WILL BE 38'-6" LONG.

14. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 2-TIER CAN BE REDUCED BY A MULITPLE 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 83 THRU 106 FOR GUIDANCE.

15. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 FOR SHIPPING GUIDANCE.

16. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

17. WHEN NAILED FLOORLINE BLOCKING IS USED FOR DOORWAY PROTECTION, THE SEPARATOR GATES ADJACENT TO THE NAILED FLOORLINE BLOCKING MUST BE MODIFIED. THE BOTTOM INSIDE CORNER OR EACH PLYWOOD SHEET MUST BE CUT OUT AT LEAST 2" WIDE BY 3-1/2" HIGH. THIS WILL ALLOW THE SEPARATOR GATE TO CLEAR THE NAILED FLOORLINE BLOCKING DURING THE NORMAL SHIFTING OF THE LOAD.

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 66 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF NINETY-SIX (96) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 98,400 POUNDS, CAN BE PLACED IN A 50'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SEVENTY-TWO (72) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 73,800 POUNDS, CAN BE OUTLOADED IN A 40'-6" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING ANY SIZE DOORS. HOWEVER, IF THE CAR TO BE LOADED HAS DOOR OPENINGS AT LEAST 8'-0" WIDE AND OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT THE CAR OVER THE TOP OF THE LOAD, WHEN NECESSARY, LOADING AND UNLOADING WILL BE EASIER IF THE PALLETS ARE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN ONE END OF THE CAR AND TEN (10) LOAD UNITS IN THE OPPOSITE END.

4. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACE BETWEEN THE UPPER UNITS, A STOP PIECE MUST BE NAILED TO EACH CENTER GATE "AA" AS SHOWN ON THE DETAIL ON PAGE 74.

5. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 66, MUST BE INSTALLED IN EACH END OF THE CAR. FIVE (5) BRACES ARE REQUIRED IN EACH END OF A 60' CAR. FOUR (4) ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

6. IF DESIRED, PLYWOOD SEPARATOR GATES SHOWN AS PIECES MARKED (3) MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER SURFACE FOR THE SPECIFIED NAILING OF GATES.

7. ONE (1) SEPARATOR GATE "F", PIECE MARKED (5) MUST BE POSITIONED ABOVE EACH PAIR OF 4' X 8' PLYWOOD SHEETS MARKED (4). SEPARATOR GATE "F" IS REQUIRED FOR 3-HIGH LOAD UNITS ONLY.

8. IF SPECIAL NOTE 13 APPLIES AND THE CAR IS EQUIPPED WITH SLIDING DOORS, SEPARATOR GATES "F" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY APPLICATION OF STOP PIECES AS SHOWN BY THE DETAIL ON PAGE 76. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR SEPARATOR GATES.

9. CENTER GATE "AA" 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 113 FOR GUIDANCE.

10. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE AA", SHOWN AS PIECE MARKED (5) IN THE LOAD ON PAGE 66, INSTALL TWO (2) "CENTER GATES BB" AS SHOWN ON PAGE 75. 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 113.

11. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" MATERIAL NAILED TO "CENTER GATE AA" PROVIDING THE CAR BEING LOADED HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

12. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT 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 66, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	219	73
1" X 6"	120	60
2" X 2"	435	145
2" X 3"	45	23
2" X 4"	417	278
2" X 6"	196	196
4" X 4"	90	120
NAILS	**NO. REQD**	**POUNDS**
6d (2")	1,028	6
10d (3")	873	13-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	96	2

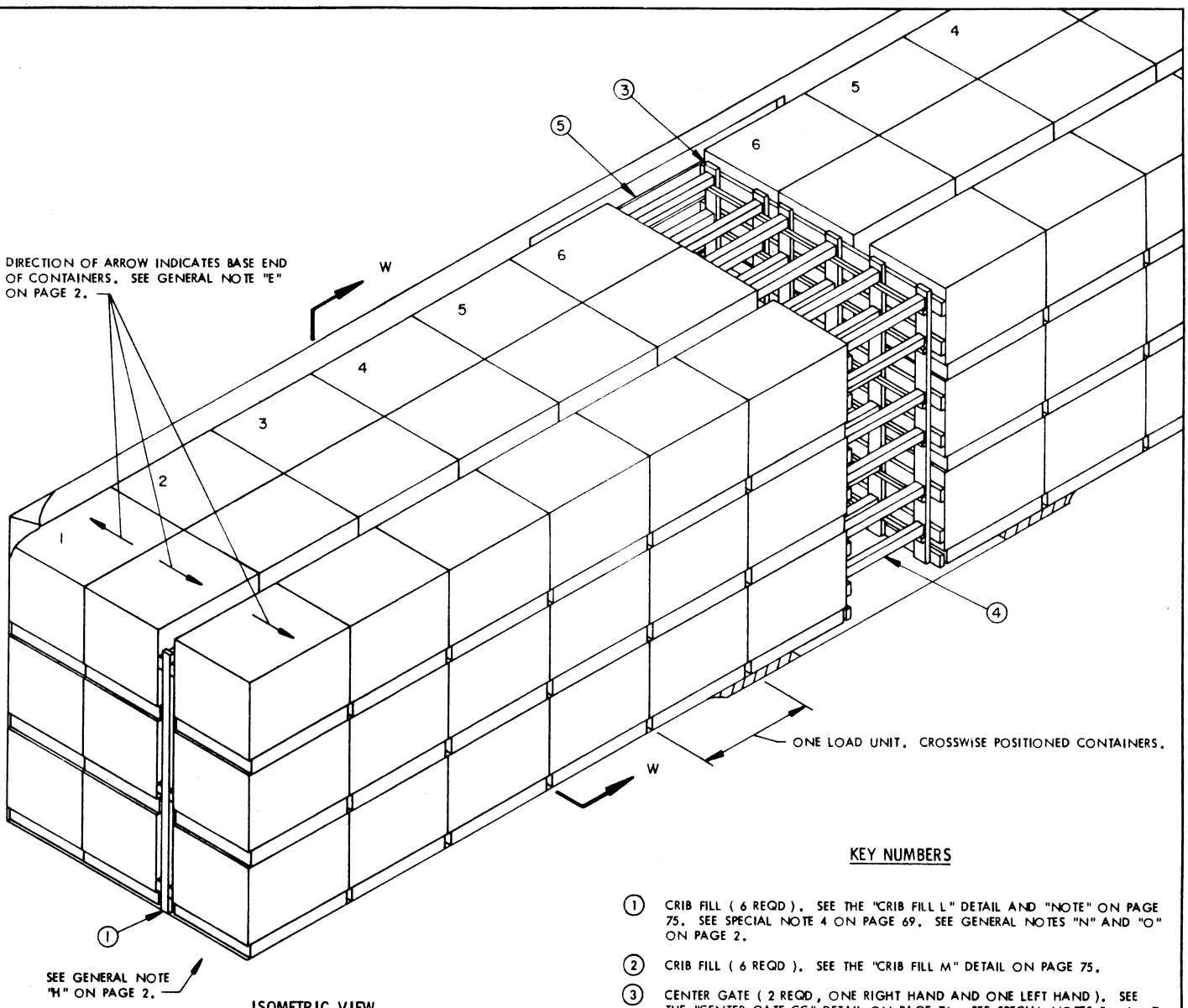
PLYWOOD, 3/8" (40 SHEETS) 1280 SQ FT REQD ----------1,320 LBS
WIRE, NO. 14 GAGE ----------200' REQD ----------4 LBS

LOAD AS SHOWN

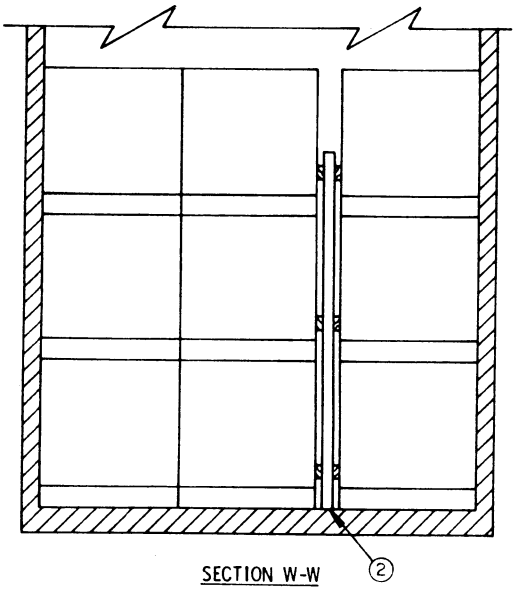
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	114	116,850 LBS
DUNNAGE		3,136 LBS

TOTAL WEIGHT ----------119,986 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION W-W

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL L" DETAIL AND "NOTE" ON PAGE 75. SEE SPECIAL NOTE 4 ON PAGE 69. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(2) CRIB FILL (6 REQD). SEE THE "CRIB FILL M" DETAIL ON PAGE 75.

(3) CENTER GATE (2 REQD, ONE RIGHT HAND AND ONE LEFT HAND). SEE THE "CENTER GATE CC" DETAIL ON PAGE 76. SEE SPECIAL NOTES 5 , 6 , 7 , AND 10 ON PAGE 69.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 39") (36 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "M" ON PAGE 2. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION H" DETAIL ON PAGE 74. NAIL TO THE DOOR POSTS W/12 NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 69.

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

PROJECT FSA 43B/11-63

(SPECIAL NOTES CONTINUED)

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 NINE (9) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2 OR 3-TIER LOAD CAN BE REDUCED BY TWELVE (12) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80; OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 82 THRU 106 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER CARS OF OTHER LENGTHS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 68 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF EIGHTY-ONE (81) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 83,025 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES. ONE HUNDRED THRITY-FIVE (135) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 138,375 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR.

3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 8'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE FIVE (5) LOAD UNITS IN ONE END, AND SIX (6) IN THE OPPOSITE END.

4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1), MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT HEIGHTS SPECIFIED FOR THE DOORWAY PROTECTION IN LIEU OF THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").

5. CENTER GATE "CC" 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 113 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE CC", SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 68, INSTALL TWO (2) "CENTER GATES DD" AND TWO (2) "CENTER GATES EE" AS SHOWN ON PAGE 77. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 113.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "CC", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 115 FOR GUIDANCE.

8. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION SHOWN AS PIECES MARKED (5) IN THE LOAD ON PAGE 68 IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

9. IF THE SIDE BLOCKING/BUNDLING STRAP TYPE DOORWAY PROTECTION IS USED IN LIEU OF THE WOODEN GATE TYPE MARKED (5), REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 72, AND SPECIAL NOTES 5 AND 6 ON PAGE 73 FOR GUIDANCE.

10. IF SPECIAL NOTE 9 APPLIES, STOP PIECES MUST BE APPLIED TO CENTER GATES "CC" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE CC" DETAIL ON PAGE 76. IF SPLIT CENTER GATES "DD" AND "EE" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE (9") BEYOND THE GATES TO PREVENT DISPLACEMENT.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	141	47
1" X 6"	96	48
2" X 2"	104	35
2" X 3"	42	21
2" X 4"	347	232
2" X 6"	223	223
4" X 4"	117	156
NAILS	**NO. REQD**	**POUNDS**
6d (2")	216	1-1/4
10d (3")	544	8-1/2
12d (3-1/4")	32	1/2
16d (3-1/2")	144	3-1/4

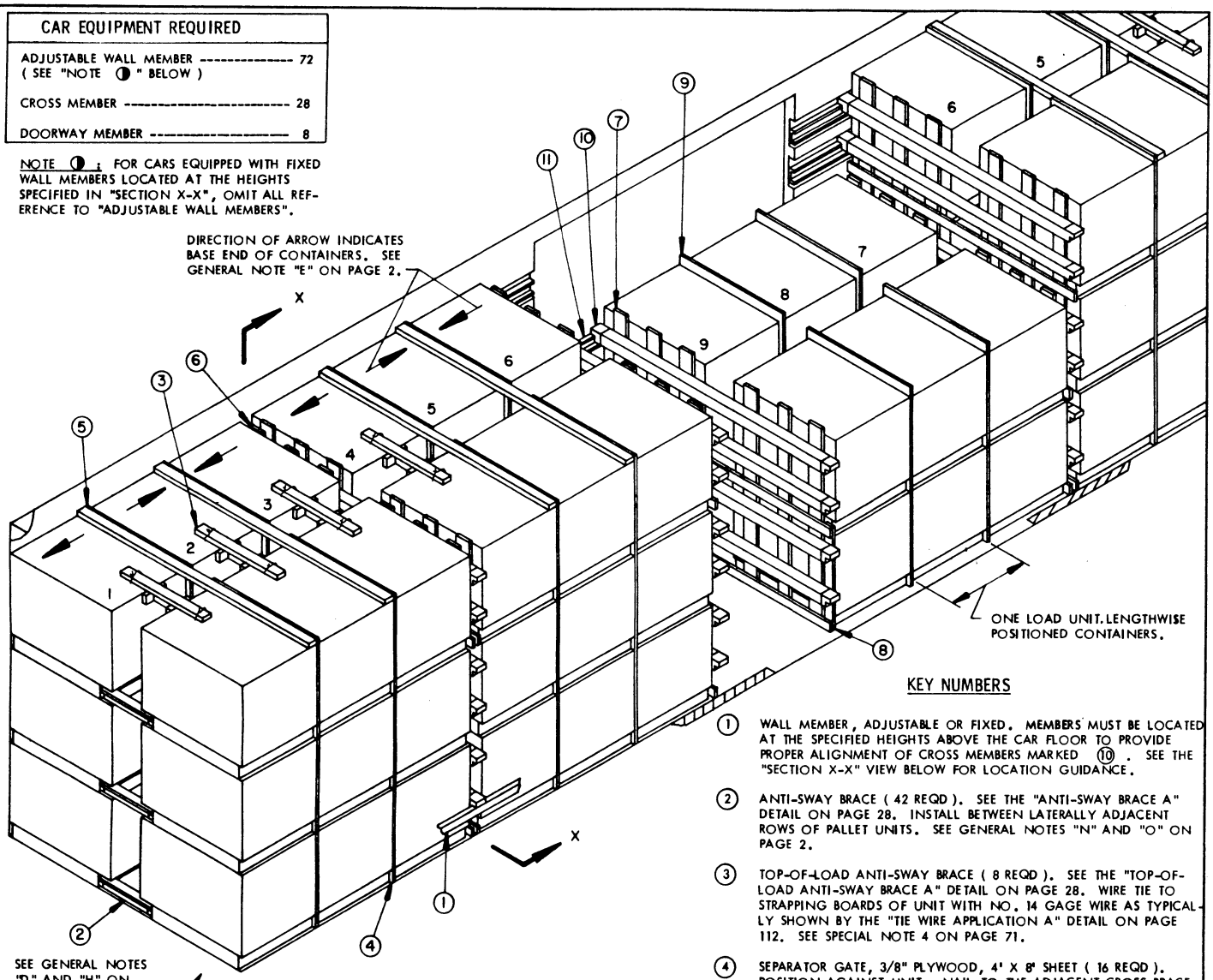
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	108	110,700 LBS
DUNNAGE		1,538 LBS
TOTAL WEIGHT		112,238 LBS (APPROX)

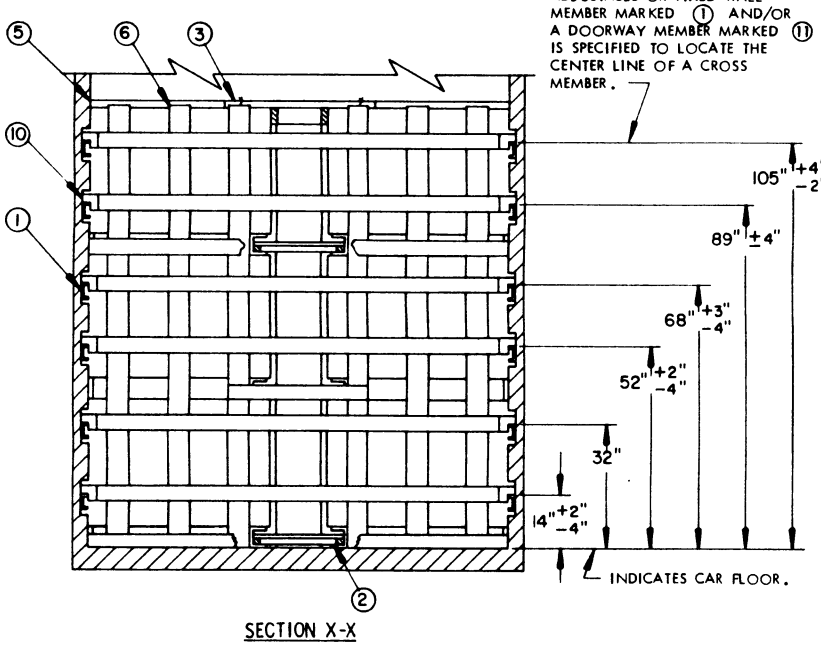
ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)
108-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◑ " BELOW)	72
CROSS MEMBER	28
DOORWAY MEMBER	8

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



ISOMETRIC VIEW



SECTION X-X

KEY NUMBERS

① WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ⑩. SEE THE "SECTION X-X" VIEW BELOW FOR LOCATION GUIDANCE.

② ANTI-SWAY BRACE (42 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112. SEE SPECIAL NOTE 4 ON PAGE 71.

④ SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET (16 REQD). POSITION AGAINST UNIT. NAIL TO THE ADJACENT CROSS BRACE OF THE TWO UPPER ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH. SEE SPECIAL NOTE 5 ON PAGE 71.

⑤ SEPARATOR GATE (8 REQD). SEE THE "SEPARATOR GATE F" DETAIL AND "NOTE" ON PAGE 76. SEE SPECIAL NOTES 6 AND 7 ON PAGE 71.

⑥ SEPARATOR GATE FOR 3-HIGH (6 REQD). SEE SPECIAL NOTE 8 ON PAGE 71. SEE "SEPARATOR GATE H" DETAIL ON PAGE 77.

⑦ SEPARATOR GATE FOR 2-HIGH (2 REQD). SEE THE "SEPARATOR GATE H" DETAIL ON PAGE 77. SEE SPECIAL NOTE 9 ON PAGE 71.

⑧ STOP PIECE, 1" X 4" X 42" (2 REQD). POSITION AS SHOWN. NAIL TO THE HORIZONTAL PIECES OF SEPARATOR GATE, PIECE MARKED ⑦ W/3-6d NAILS AT EACH JOINT..

⑨ SEPARATOR GATE, 3/8" PLYWOOD, 48" WIDE BY 6'-8" HIGH (4 REQD). NAIL TO THE ANTI-SWAY BRACES MARKED ② W/1-6d NAIL EACH.

⑩ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "Y" ON PAGE 3.

⑪ DOORWAY MEMBER (8 REQD). SEE THE "SECTION X-X" VIEW AT LEFT FOR GUIDANCE. SEE SPECIAL NOTE 10 ON PAGE 71.

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

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 70 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 65,600 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

3. IF A CAR BOWED END WALLS WHICH ARE BOWED OUTWARD TWO INCHES (2") OR MORE EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, CROSS MEMBERS CAN BE INSTALLED NEAR THE END WALL OF THE CAR TO PROVIDE A "SQUARED END" RATHER THAN INSTALLING DUNNAGE AS SPECIFIED IN GENERAL NOTE "H" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS. A SEPARATOR GATE, SHOWN AS PIECE MARKED (6) MUST BE POSITIONED AGAINST THESE CROSS MEMBERS PRIOR TO LOADING. SEE SPECIAL NOTE 8 BELOW.

4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (3) IN THE LOAD ON PAGE 70, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH.

5. IF DESIRED, PLYWOOD SEPARATOR GATES MARKED (4) AND (9) MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDEWALL, TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES.

6. ONE SEPARATOR GATE "F", PIECE MARKED (5) MUST BE POSITIONED ABOVE EACH PAIR OF 4' X 8' PLYWOOD SEPARATORS SHOWN AS PIECES MARKED (4). SEPARATOR "F" IS REQUIRED FOR 3-HIGH LOAD UNITS ONLY.

7. TO CONSERVE PLYWOOD, THE 16" PIECES WHICH WILL REMAIN FROM THE FOUR FULL SHEETS OF PLYWOOD CUT TO FORM SEPARATOR GATES MARKED (9) MAY BE USED TO CONSTRUCT TWO OF THE SEPARATOR GATES "F", PIECES MARKED (5).

8. SEPARATOR GATES SHOWN AS PIECES MARKED (6) AND (7) MUST BE POSITIONED AT EACH CROSS MEMBER LOCATION, WITH THE VERTICAL PIECES AGAINST THE UNITS.

9. SEPARATOR GATE "H" IN THE DOORWAY MUST BE PREVENTED FROM SHIFTING INTO A DOOR OPENING BY THE APPLICATION OF STOP PIECES, PIECES MARKED (8), PRIOR TO POSITIONING IN THE DOORWAY. IN CARS EQUIPPED WITH STAGGERED DOORS, STOP PIECES MAY BE REQUIRED ON UP TO FOUR (4) SEPARATOR GATES.

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

11. 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 78 AND 79 FOR GUIDANCE.

12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

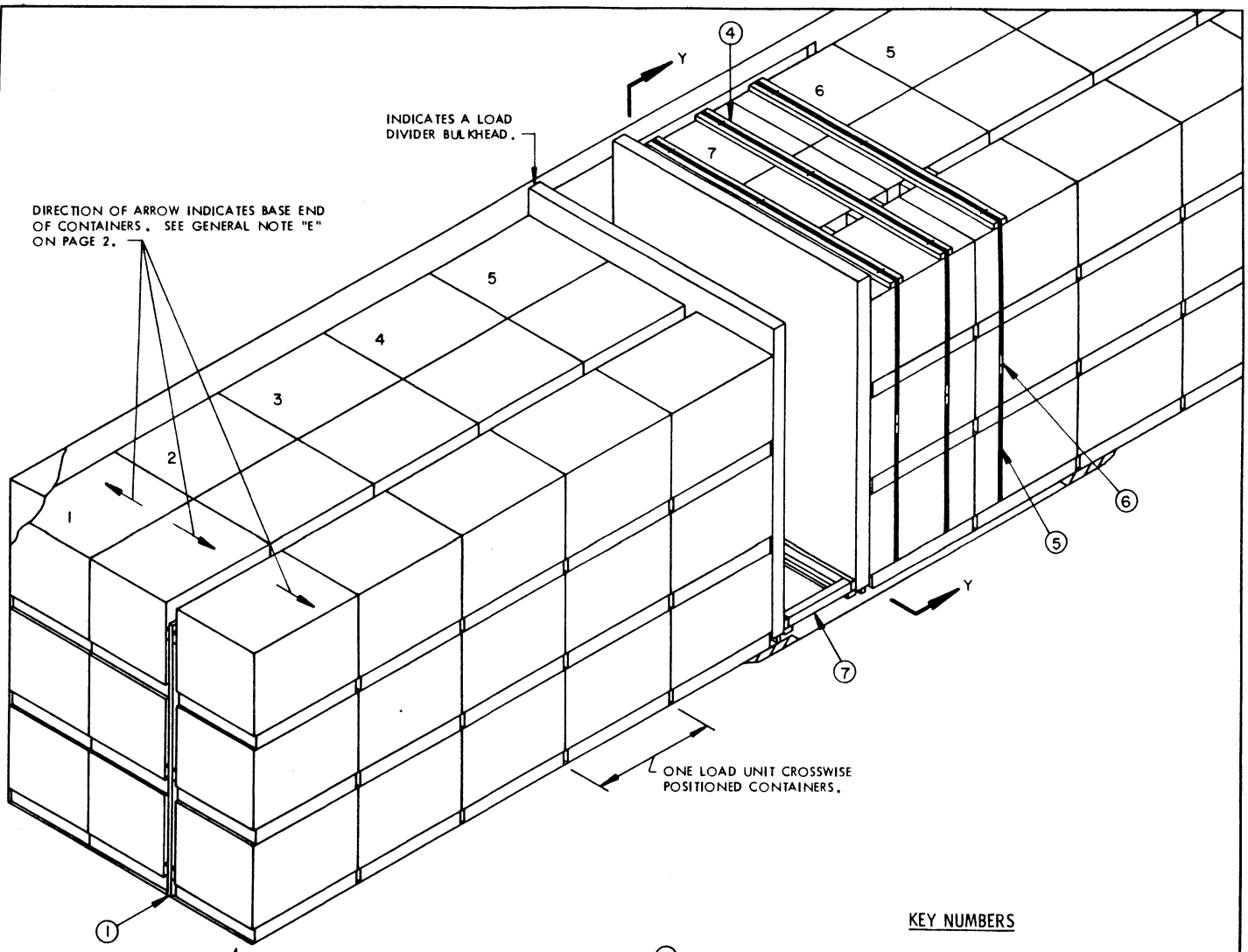
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	320	107
1" X 6"	420	210
2" X 2"	247	83
2" X 4"	233	156
NAILS	NO. REQD	POUNDS
6d (2")	988	6
10d (3")	416	6-1/2
PLYWOOD, 3/8" (20 SHEETS) -------- 640 SQ FT REQD --- 660 LBS		
WIRE, NO. 14 GAGE ---------- 160 REQD ---------- 3 LBS		

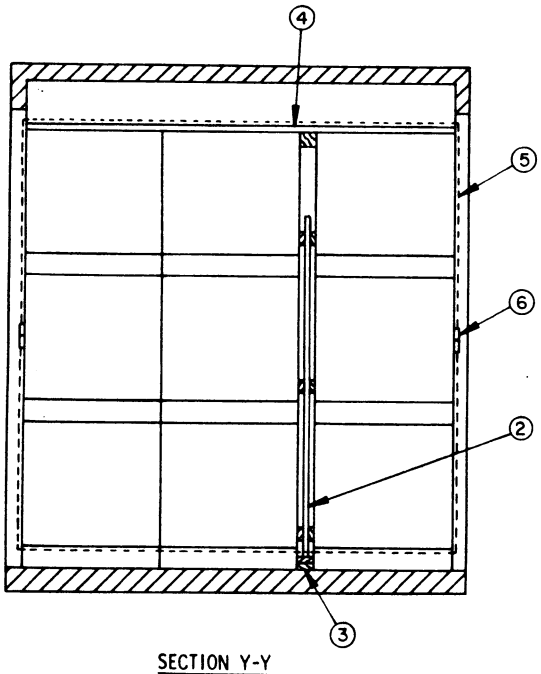
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	84	86,100 LBS
DUNNAGE		1,788 LBS
TOTAL WEIGHT		87,888 LBS (APPROX)

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



ISOMETRIC VIEW



SECTION Y-Y

KEY NUMBERS

(1) CRIB FILL (6 REQD). SEE THE 3-HIGH "CRIB FILL L" DETAIL ON PAGE 75. SEE GENERAL NOTES "N" AND "O" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 73.

(2) CRIB FILL (6 REQD). SEE THE 3-HIGH "CRIB FILL M" DETAIL ON PAGE 75.

(3) SIDE BLOCKING, 2" X 4" X 7'-6" (DOUBLED) (1 REQD). PRE-POSITION 35-1/2" FROM THE NEAR SIDE CAR WALL. 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 NOTES 4 AND 5 ON PAGE 73.

(4) STRAPPING BOARD/SPACER ASSEMBLY "B" (3 REQD). SEE THE DETAIL ON PAGE 26.

(5) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 38'-6" LONG STEEL STRAPPING (3 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 73.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 119. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 73.

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

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 72 IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). A MAXIMUM OF ONE HUNDRED TWENTY-SIX (126) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 129,150 POUNDS, CAN BE PLACED IN A 60'-8" LONG CAR, OR A MAXIMUM OF EIGHTY-ONE (81) UNITS CAN BE LOADED IN A 40'-6" CAR FOR AN APPROXIMATE LADING OF 83,025 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 66 IS EMPLOYED, ONE HUNDRED-FOURTEEN (114) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 116,850 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, NINETY-SIX (96) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 98,400 POUNDS, AND SEVENTY-TWO (72) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 73,800 POUNDS.

3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED (1) MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF 40' AND 50' CARS. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR.

4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECES MARKED (5) IN THE LOAD ON PAGE 68, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. REFER TO PAGES 116 THRU 118 FOR OTHER TYPES OF DOORWAY PROTECTION. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED.

5. SIDE BLOCKING SHOWN AS PIECE MARKED (3) IN THE LOAD VIEW, IS REQUIRED FOR ALL UNITS REQUIRING BUNDLING STRAPS. NOTE THAT THE CRIB FILL SHOWN AS PIECES MARKED (2) MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF EACH VERTICAL PIECE THAT RESTS ON THE SIDE BLOCKING.

6. 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 THE 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.

7. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 72, IS REQUIRED WHEN THE LOAD IN EITHER END OF A CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED LOAD THE STRUT ASSEMBLY WOULD NOT BE REQUIRED IF THE LOAD CONSISTED OF FIVE (5) LOAD UNITS IN EACH END OF THE CAR. THE STRUT ASSEMBLY WILL ALWAYS BE REQUIRED FOR FULL LOADS IN 50' OR LONGER CARS.

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 NINE (9) PALLET UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2 OR 3-TIER LOAD CAN BE REDUCED BY TWELVE (12) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 80, OR THE ENTIRE ONE OR TWO TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 84 THRU 95 AND GENERAL NOTE "GG" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 107 AND/OR PAGES 108 AND 110 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 109 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	141	47
1" X 8"	17	12
2" X 4"	392	262
2" X 6"	28	28
4" X 4"	13	18

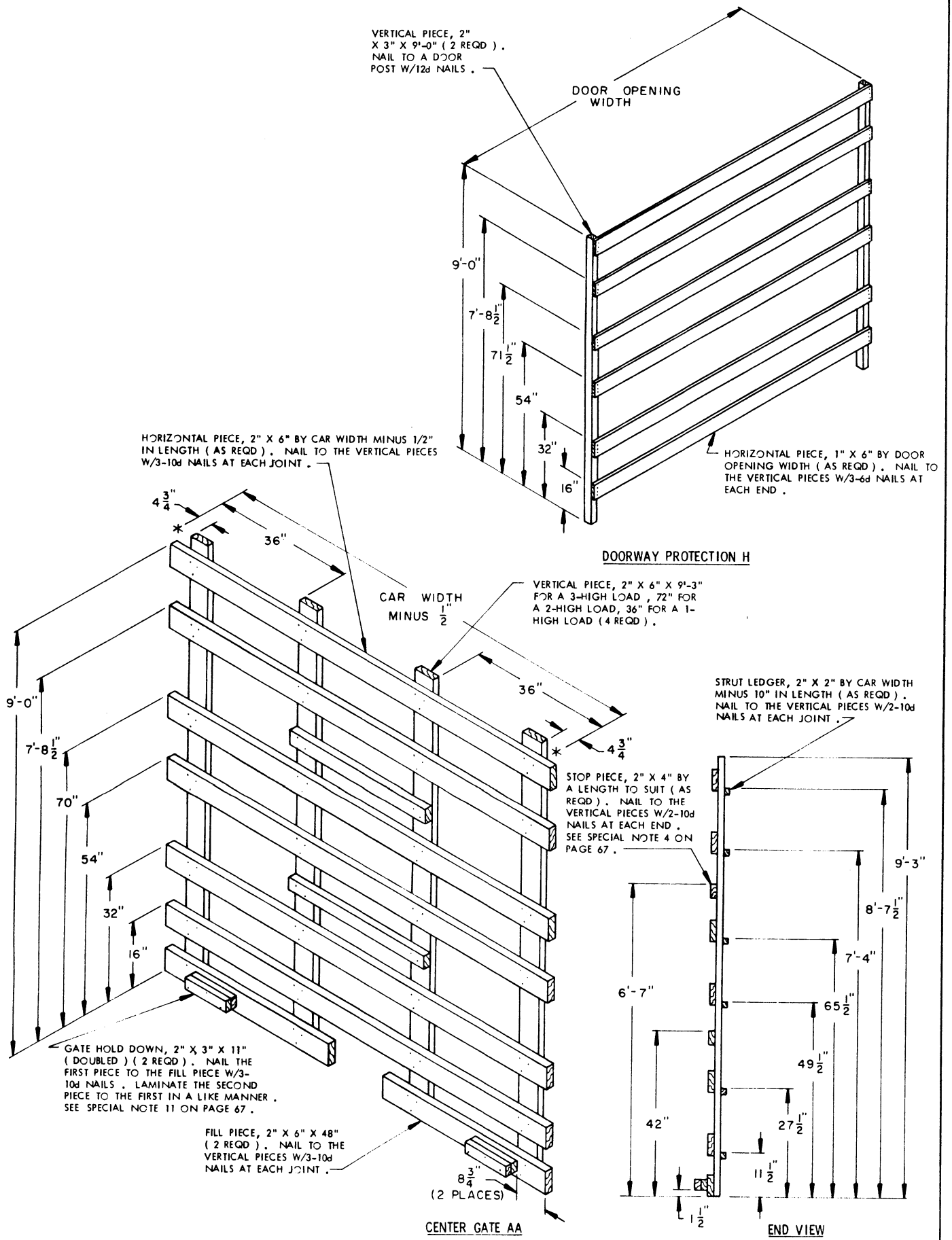
NAILS	NO. REQD	POUNDS
6d (2")	160	1
10d (3")	160	2-1/2
12d (3-1/4")	25	1/2
16d (3-1/2")	16	1/2

STEEL STRAPPING, 1-1/4"	116 REQD	17
SEAL FOR 1-1/4" STRAPPING	6 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	9 REQD	NIL

LOAD AS SHOWN

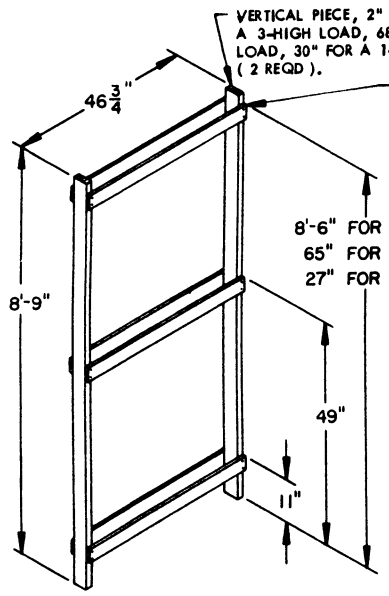
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	108	110,700 LBS
DUNNAGE		756 LBS
TOTAL WEIGHT		111,456 LBS (APPROX)

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



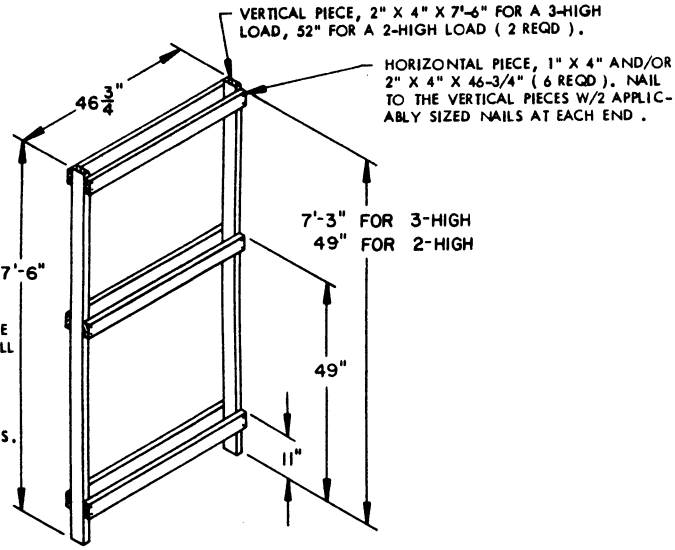
DOORWAY PROTECTION H

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



CRIB FILL L

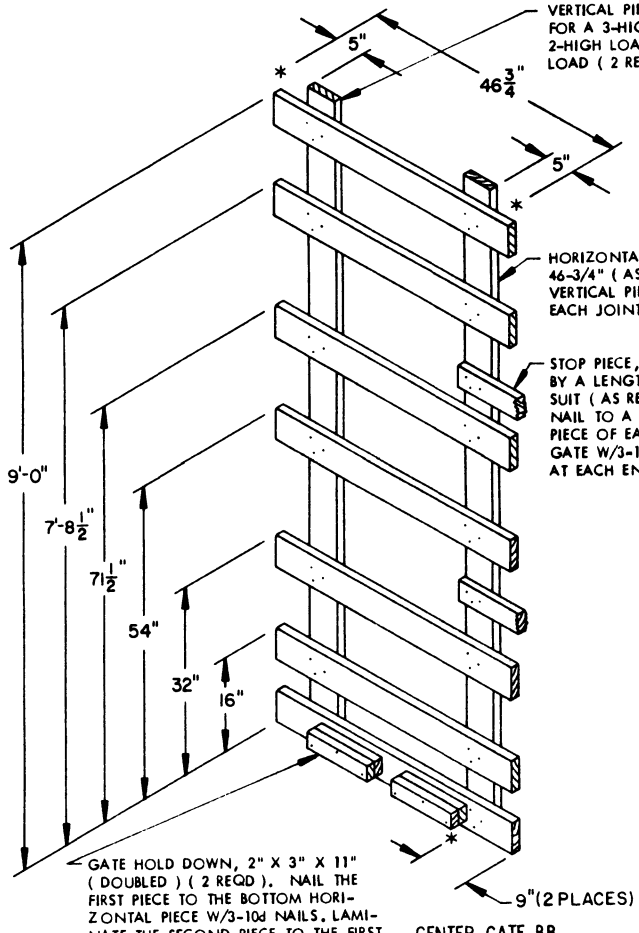
NOTE: THE DEPICTED CRIB FILL IS DESIGNED FOR USE IN A 9'-4" WIDE CAR . 2" X 6" VERTICAL PIECES WILL BE USED IN A 9'-6" WIDE CAR . IF THE CAR IS 9'-2" WIDE, NAIL THE HORIZONTAL PIECES TO THE FLAT SIDE OF THE 2" X 4" VERTICAL PIECES W/3 APPLICABLY SIZED NAILS.



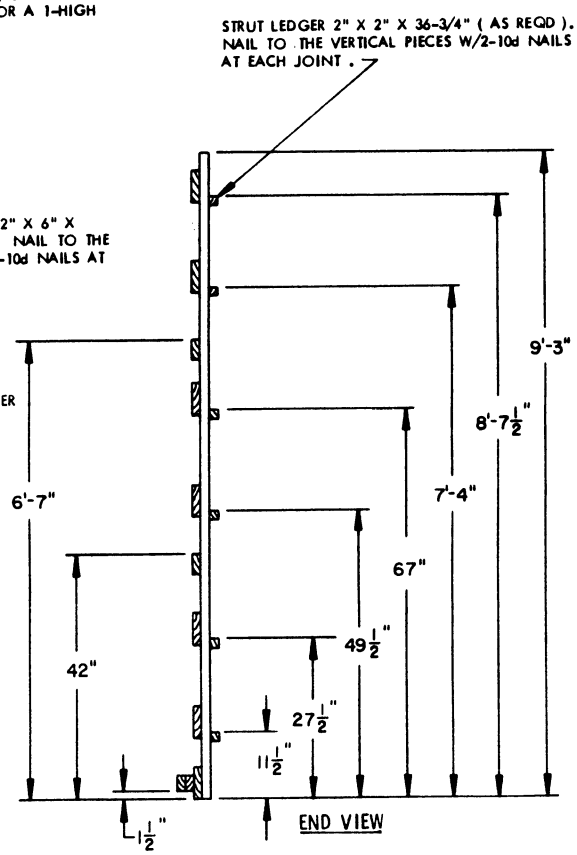
CRIB FILL M

OMIT THE MID-HEIGHT HORIZONTAL PIECES WHEN USING CRIB FOR A 2-HIGH LOAD. CRIB FILL "M" IS NOT REQUIRED FOR A 1-HIGH LOAD. USE CRIB FILL "L" THROUGH-OUT THE LENGTH OF THE LOAD.

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 WHEN USING CRIB FOR A 1-HIGH OR 2-HIGH LOAD.

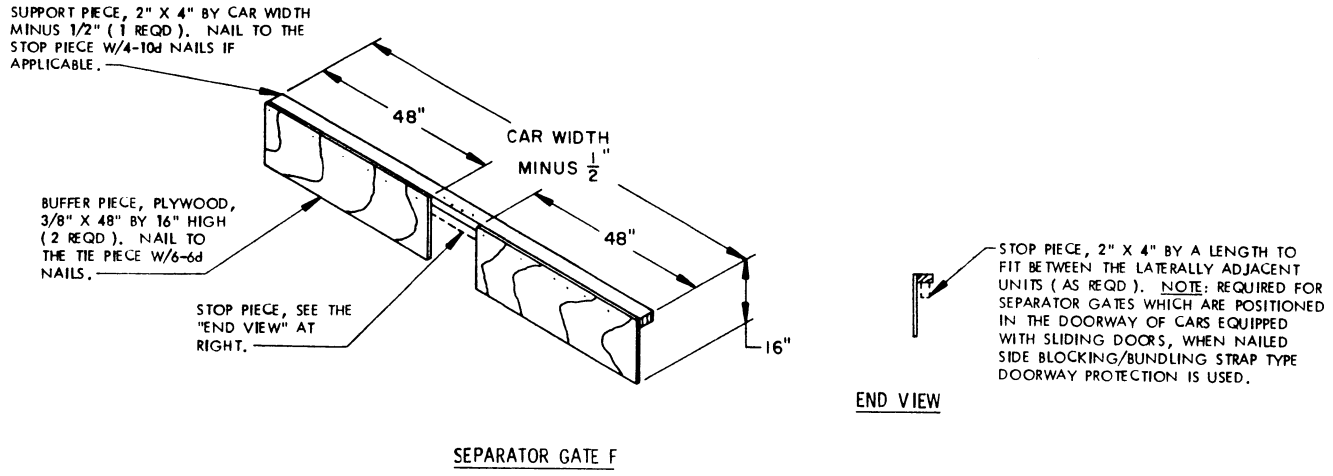


CENTER GATE BB

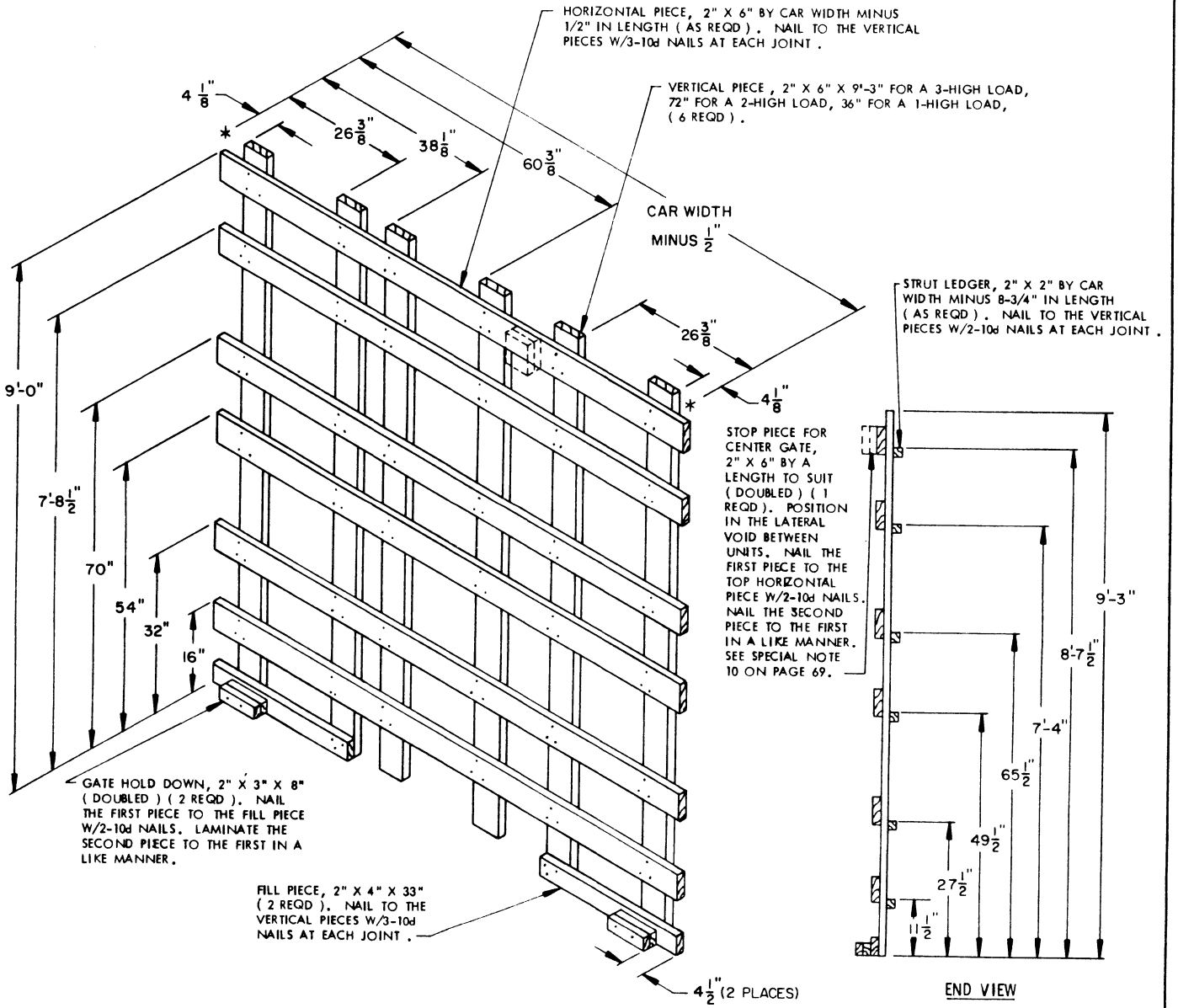


NOTE THAT THE UPPER STRUT LEDGER FOR EACH TIER ON ONE GATE MAY NEED TO BE APPLIED AFTER THE NEXT LOWER LEVEL STRUTS HAVE BEEN INSTALLED .

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)



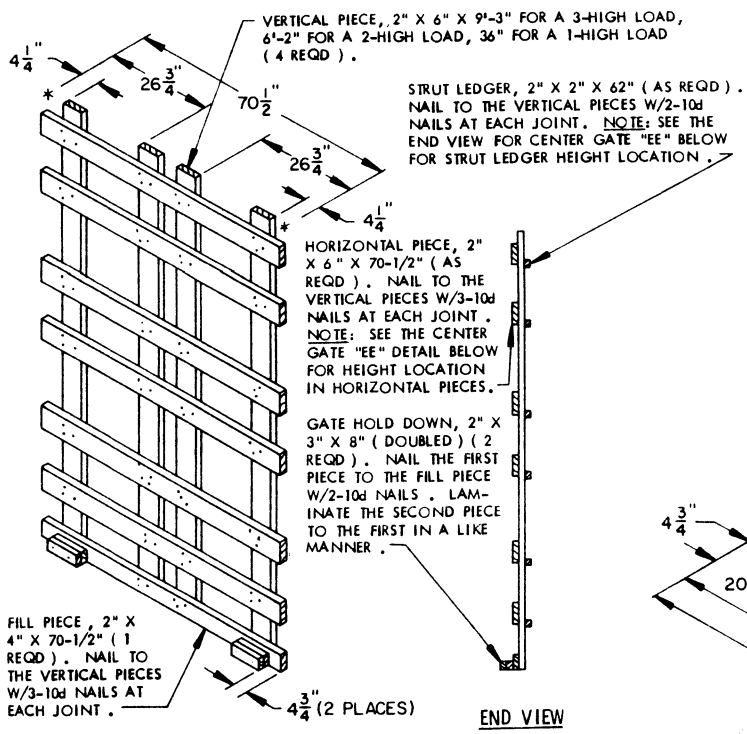
SEPARATOR GATE F

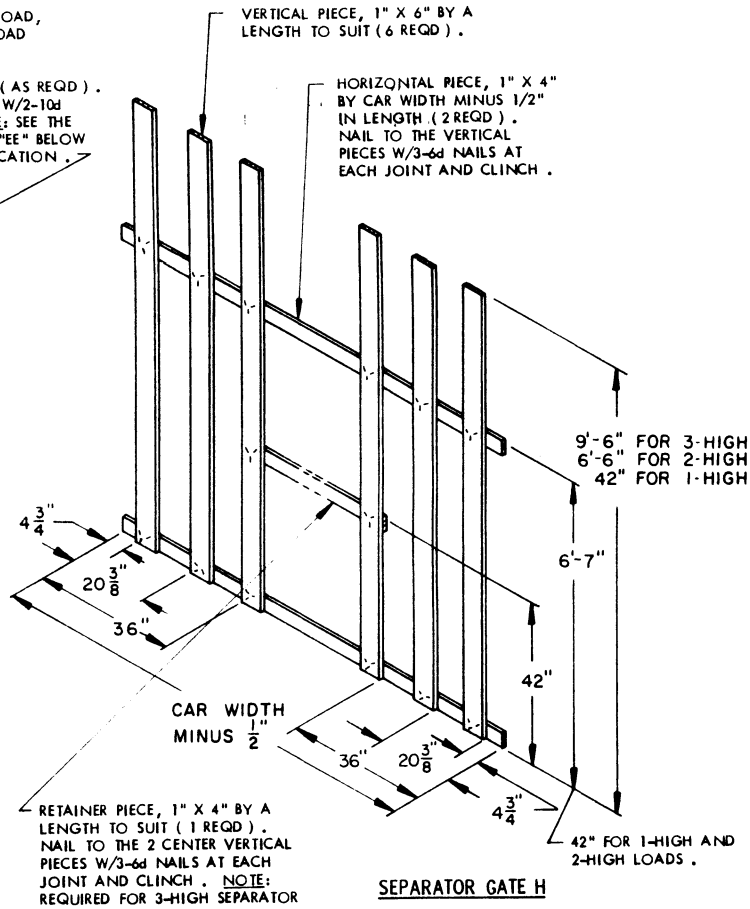


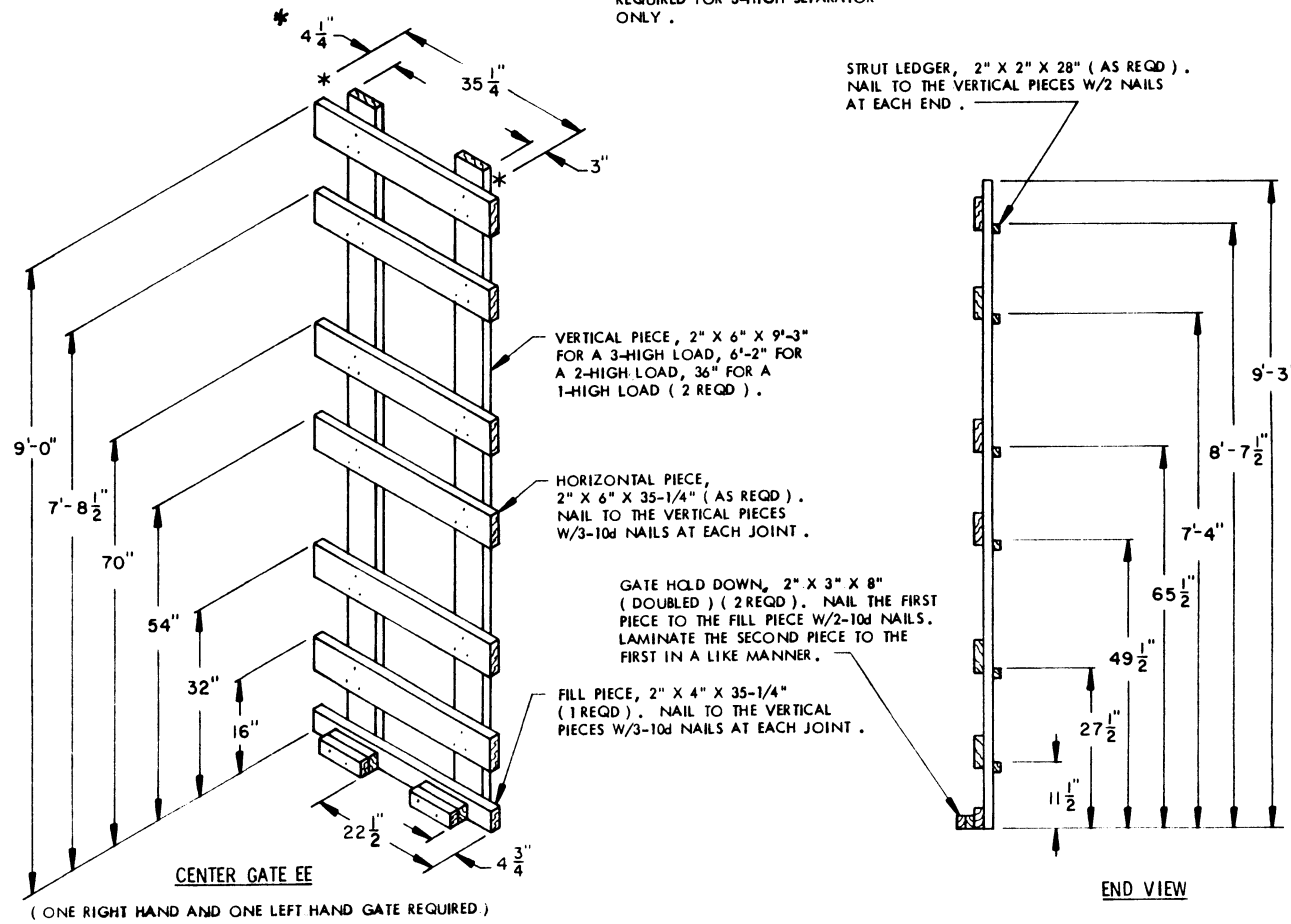
CENTER GATE CC

(ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED)

DETAILS FOR ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT)

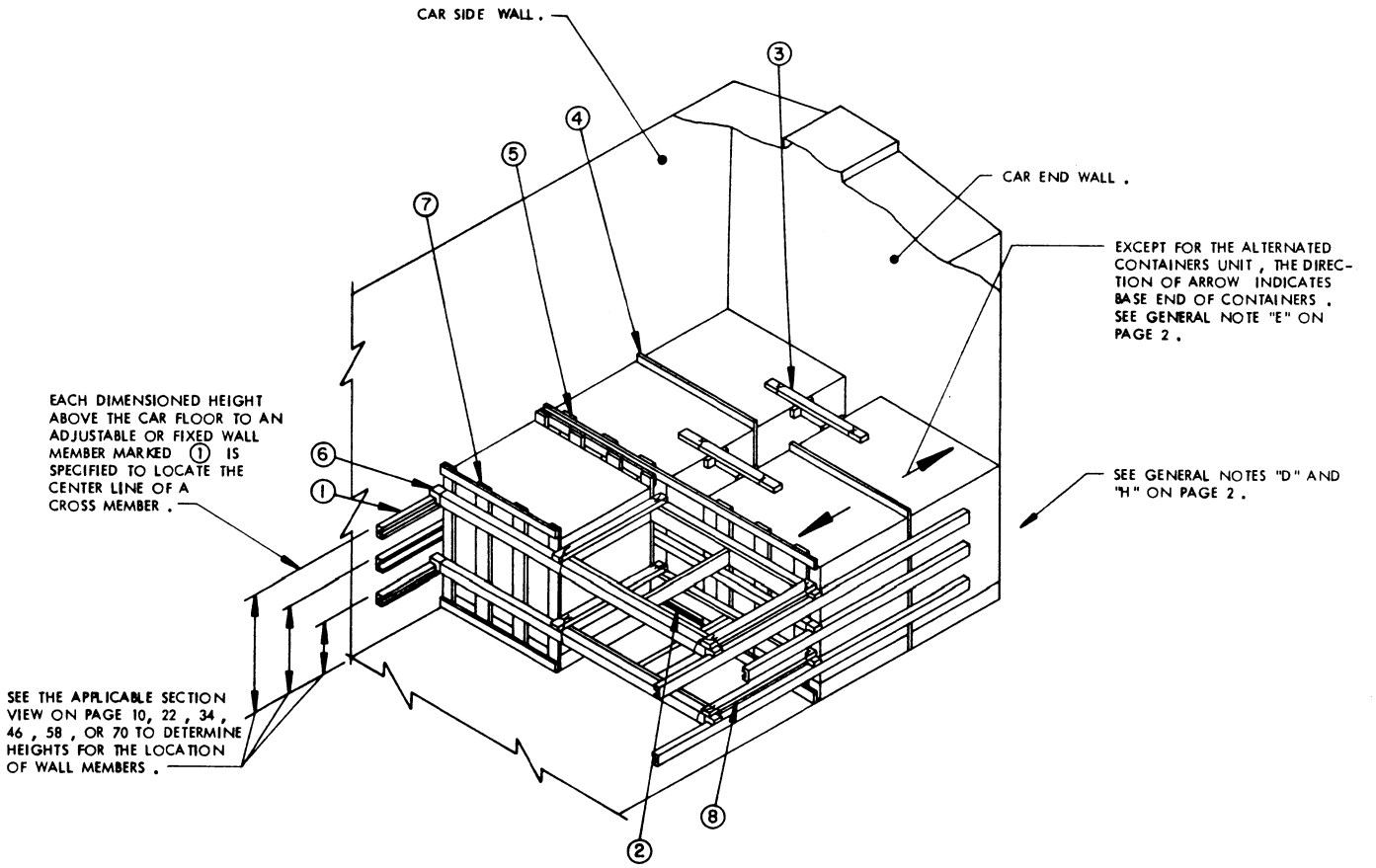






* NOTE: POSITION THE 4-1/4" DIMENSION AGAINST THE BASE END OF THE CONTAINER .

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 .
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 . FOUR (4) BRACES ARE REQUIRED IN EACH END OF A LOAD REGARDLESS OF THE CAR LENGTH .
5. IF DESIRED , PLYWOOD SEPARATOR GATES MARKED (4) MAY BE POSITIONED AN INCH OR TWO FROM THE CAR SIDE WALL , TO PROVIDE A LARGER BEARING SURFACE FOR THE SPECIFIED NAILING OF GATES .
6. SEPARATOR GATES MARKED (5) AND (7) MAY BE FORMED FROM 3/8" OR THICKER PLYWOOD IN LIEU OF DIMENSIONAL LUMBER , IF DESIRED . CONSTRUCT EACH GATE TO BE UNIT WIDTH BY UNIT HEIGHT , OR 4' X 4' AS APPLICABLE .
7. THE SPACER ASSEMBLIES , SHOWN AS PIECES MARKED (8) , MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT . IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL IN EITHER A FIRST LAYER OR IN AN UPPER LAYER , AND THE END WALL IS WOOD-LINED , CUT THE ADJACENT ENDS OFF THE SUPPORT PIECES FLUSH WITH THE LATERAL PIECE . EACH ASSEMBLY CAN THEN BE SUPPORTED BY NAILING THE LATERAL PIECE TO THE CAR END WALL W/6-10d NAILS . IF THE END WALL IS NON-NAILABLE CROSS MEMBERS MUST BE INSTALLED AT THE END OF THE LOAD TO SUPPORT THE SPACER ASSEMBLIES .

KEY NUMBERS

(1) WALL MEMBER , ADJUSTABLE OR FIXED . MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED (6) .

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

(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD) . SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28 . WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112.

(4) SEPARATOR GATE , 3/8" THICK PLYWOOD , 4' X 8' SHEET (2 REQD) . POSITION AS SHOWN IN THE LOAD VIEW ABOVE . NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACE MARKED (2) W/1-6d NAIL . SEE SPECIAL NOTE 5 AT LEFT .

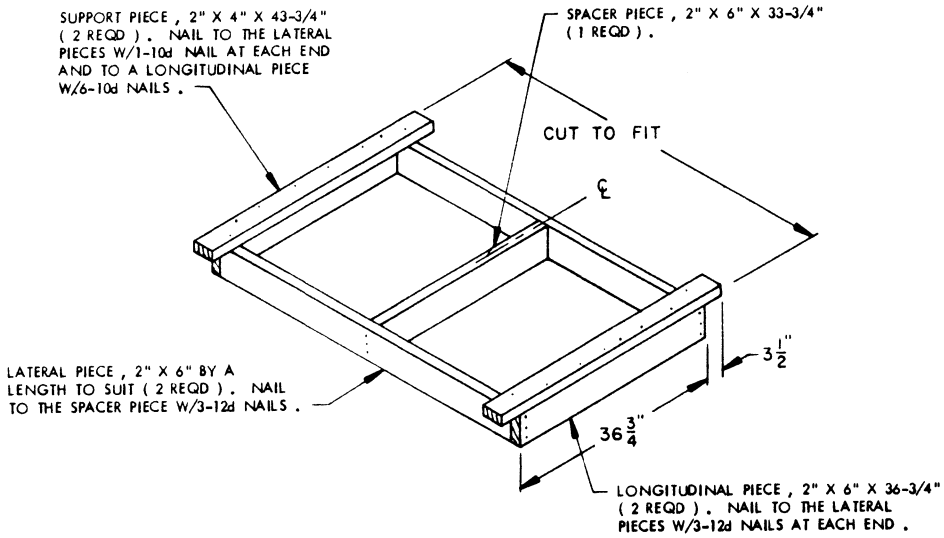
(5) SEPARATOR GATE FOR 1-HIGH AND 2-HIGH (1 REQD) . SEE THE APPLICABLE SEPARATOR GATE DETAIL FOR TWO UNITS WIDE ON PAGE 17 , 29 , 41 , 53 , 65 , OR 77 . POSITION WITH THE 1' X 6" VERTICAL PIECES AGAINST THE UNITS .

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

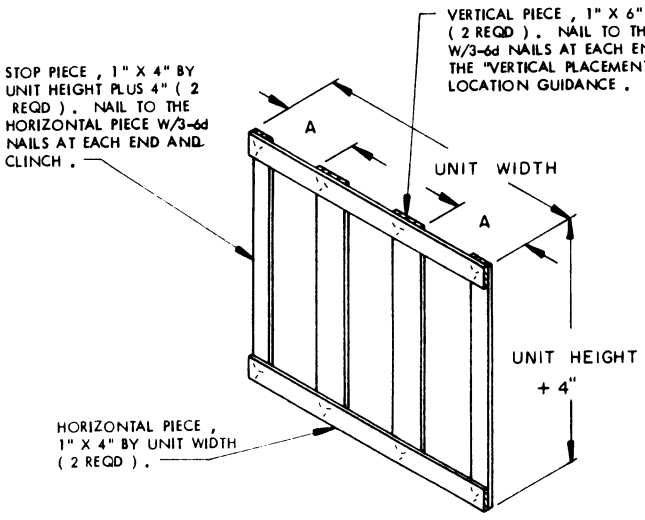
(7) SEPARATOR GATE FOR 1-HIGH AND 1-WIDE (2 REQD) . SEE THE "SEPARATOR GATE J " DETAIL ON PAGE 79 . POSITION WITH THE 1" X 6" VERTICAL PIECES AGAINST THE UNITS .

(8) SPACER ASSEMBLY (2 REQD) . SEE THE DETAIL ON PAGE 79 AND SPECIAL NOTE 7 AT LEFT . WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER .

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



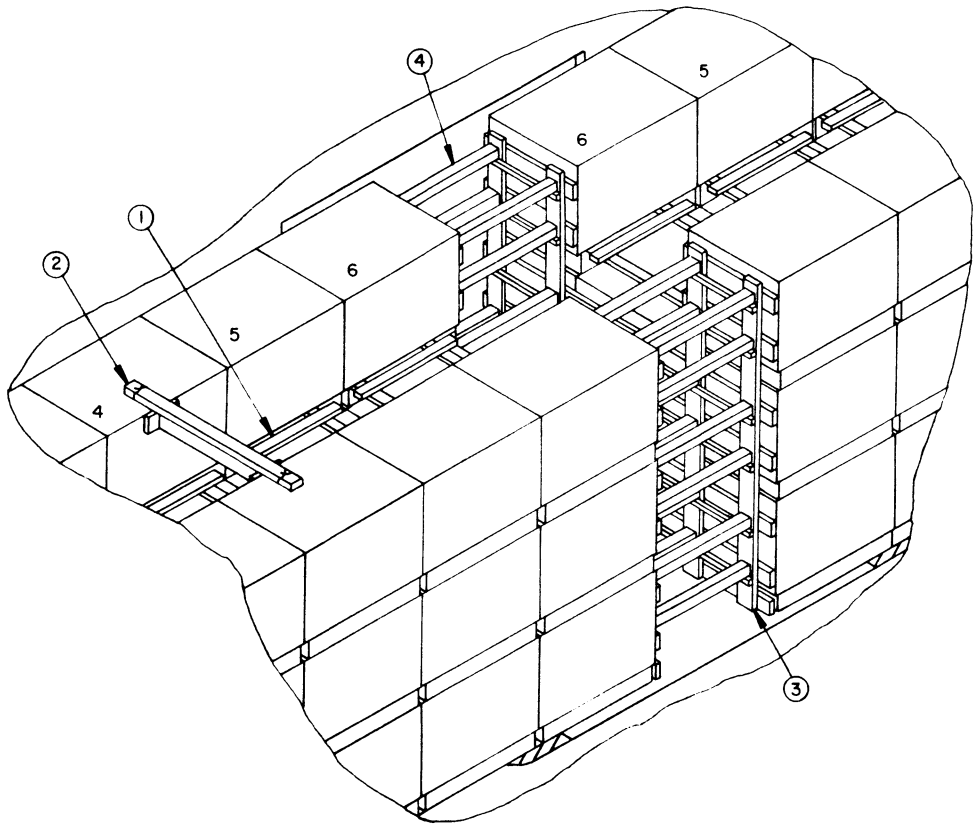
SPACER ASSEMBLY



SEPARATOR GATE J

VERTICAL PLACEMENT	
UNIT TYPE	DIMENSION A
ALTERNATED	12-1/2"
FLAT	13-7/8"
ROUTED	12-7/8"

TYPICAL LCL (5-UNIT LOAD) IN A BOX CAR EQUIPPED WITH
MECHANICAL BRACING DEVICES 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 METHOD OF OMITTING THE CENTER ROW OF UNITS FROM THE TOP LAYER. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (DECREASED HEIGHT). THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER CROSSWISE POSITIONED UNITS COVERED BY THIS DOCUMENT .

2. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE CENTER ROW OF UNITS FROM THE TOP LAYER OF A 3-HIGH LOAD ARE SHOWN AS TYPICAL.. THE PRINCIPLES MAY ALSO BE APPLIED FOR A 2- HIGH LOAD.

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

4. TOP-OF-LOAD ANTI-SWAY BRACES , SHOWN AS PIECES MARKED ② ABOVE MUST BE INSTALLED IN EACH END OF THE CAR . FIVE (5) BRACES ARE REQUIRED IN EACH END OF THE LOAD IN A 60' CAR . FOUR (4) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS .

5. THE CENTER GATE "CC" (MODIFIED) 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 , ANTI-SWAY BRACES , AND CRIB FILL PIECES WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED . NOTE THAT 2-HIGH CRIB FILL WILL BE USED IN LIEU OF THE DEPICTED 3-HIGH CRIB FILL PIECES SHOWN IN THE LOAD VIEWS .

KEY NUMBERS

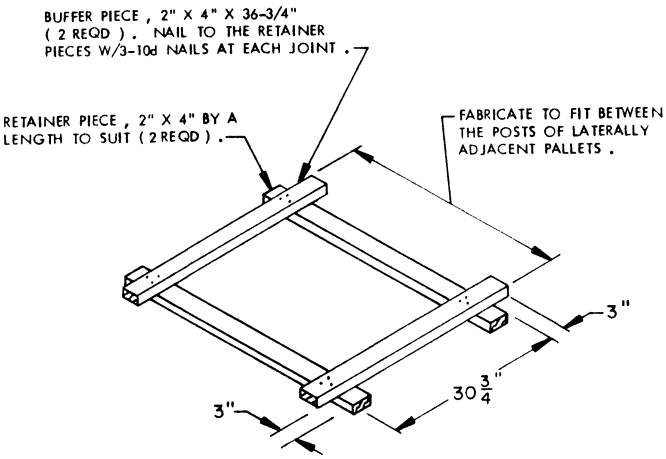
① ANTI-SWAY BRACE (12 REQD) . SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 81 . INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 , AND SPECIAL NOTE 3 AT LEFT.

② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD) . SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 118. WIRE TIE TO PALLET STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 118 . SEE SPECIAL NOTE 4 AT LEFT .

③ CENTER GATE (2 REQD , 1 RIGHT HAND AND 1 LEFT HAND) . SEE THE "CENTER GATE CC" DETAIL ON PAGE 76 . SEE SPECIAL NOTE 5 AT LEFT , AND THE "CENTER GATE MODIFICATION" DETAIL ON PAGE 81.

④ STRUT , 4" X 4" BY CUT TO FIT (REF: 39") (32 REQD) . TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END . SEE GENERAL NOTE "M" ON PAGE 2 . SEE GENERAL NOTES "V" AND "W" ON PAGE 3 .

CROSSWISE POSITIONED PALLET UNITS
METHOD OF OMITTING THE CENTER ROW OF UNITS FROM THE TOP TIER

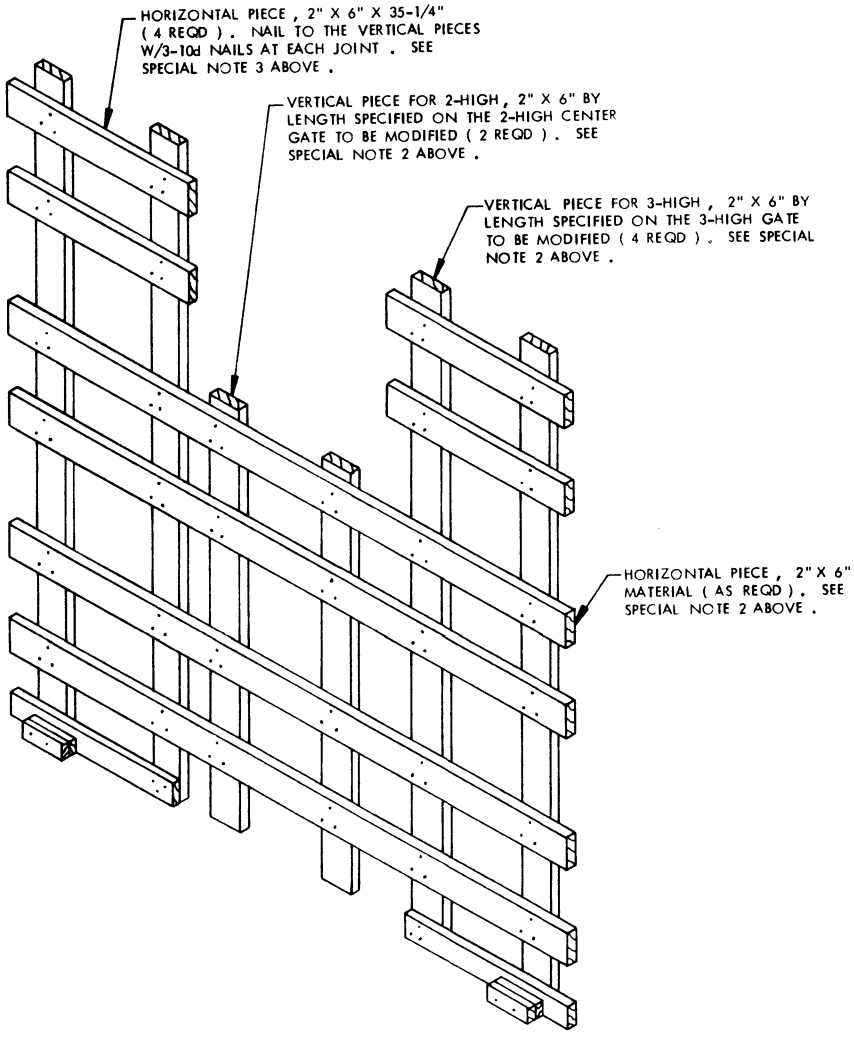


ANTI-SWAY BRACE B

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

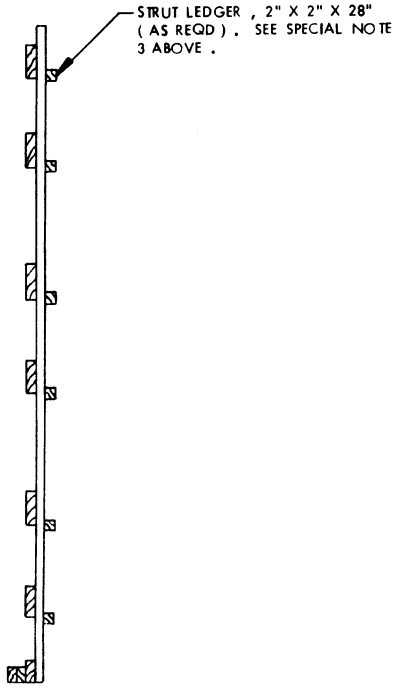
SPECIAL NOTES:

1. THE PROCEDURES FOR THE MODIFICATION OF A 3-HIGH CENTER GATE ARE SHOWN AS TYPICAL . HOWEVER, THE PRINCIPLES MAY ALSO BE APPLIED FOR A 2-HIGH CENTER GATE .
2. THE "CENTER GATE MODIFICATION" DETAIL BELOW ONLY SPECIFIES THE CHANGES NECESSARY TO MODIFY A CENTER GATE FOR USE IN A LOAD WHERE THE CENTER ROW OF THE TOP TIER IS OMITTED . REFER TO THE PROPER CENTER GATE TO BE USED FOR THE PALLET UNIT TO BE SHIPPED FOR DIMENSIONS AND NAILING GUIDANCE NOT SPECIFIED HEREIN .
3. THE LENGTH OF THE 2" X 6" X 35-1/4" HORIZONTAL PIECES , AND THE 2" X 2" X 28" STRUT LEDGERS WILL BE THE SAME FOR ALL MODIFIED CENTER GATES.

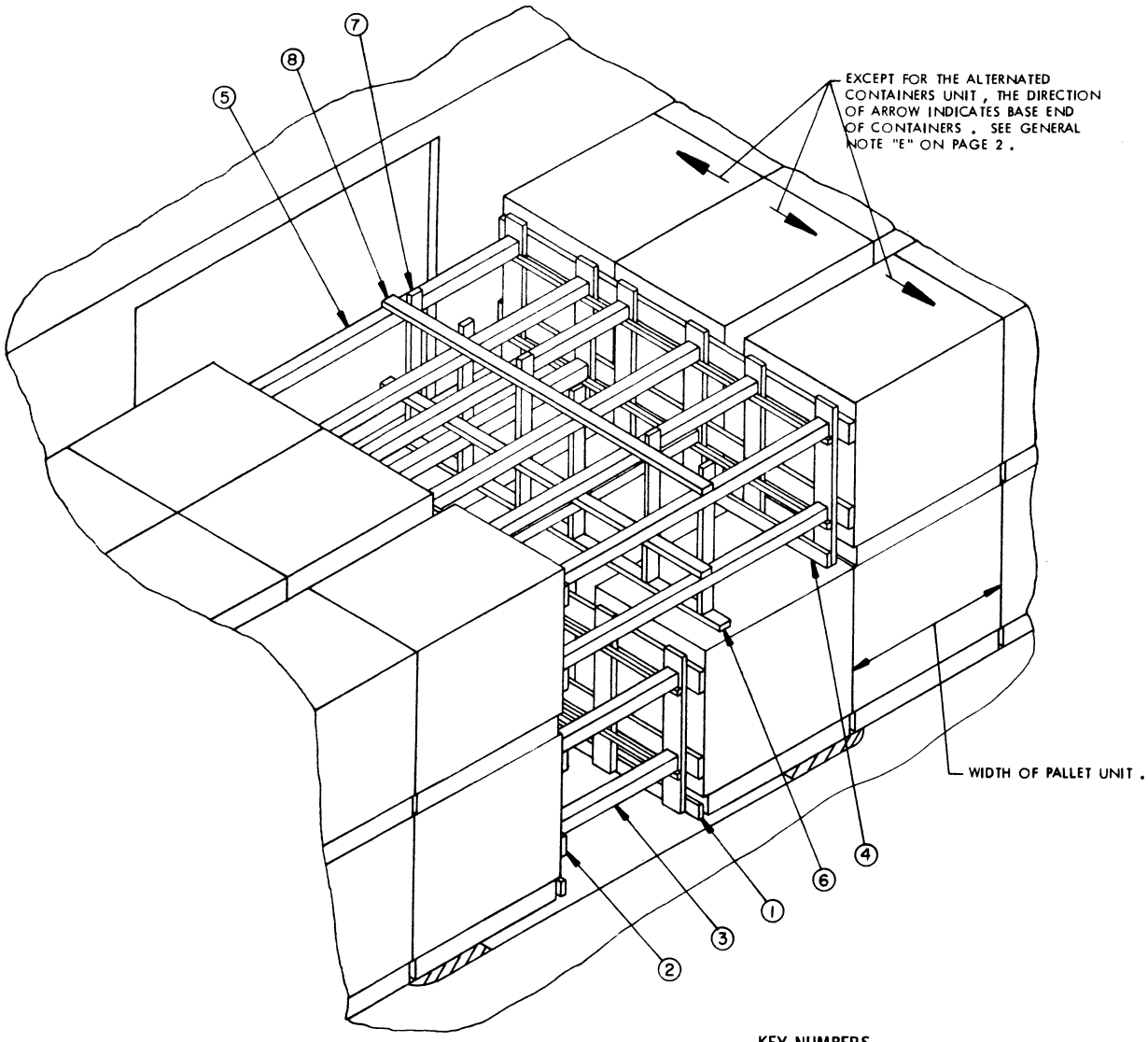


CENTER GATE MODIFICATION

(ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED)
SEE SPECIAL NOTE 1 ABOVE .



END VIEW



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING . WIDER OR NARROWER CARS CAN ALSO BE USED .
2. THE PALLET UNIT SHOWN IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT .
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM ONE (1) LOAD UNIT 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 "X" 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 X" DETAIL ON PAGE 64 . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 AT THE LEFT .

(2) CENTER GATE FOR 2-HIGH (1 REQD) . SEE THE "CENTER GATE X" DETAIL ON PAGE 64.

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

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

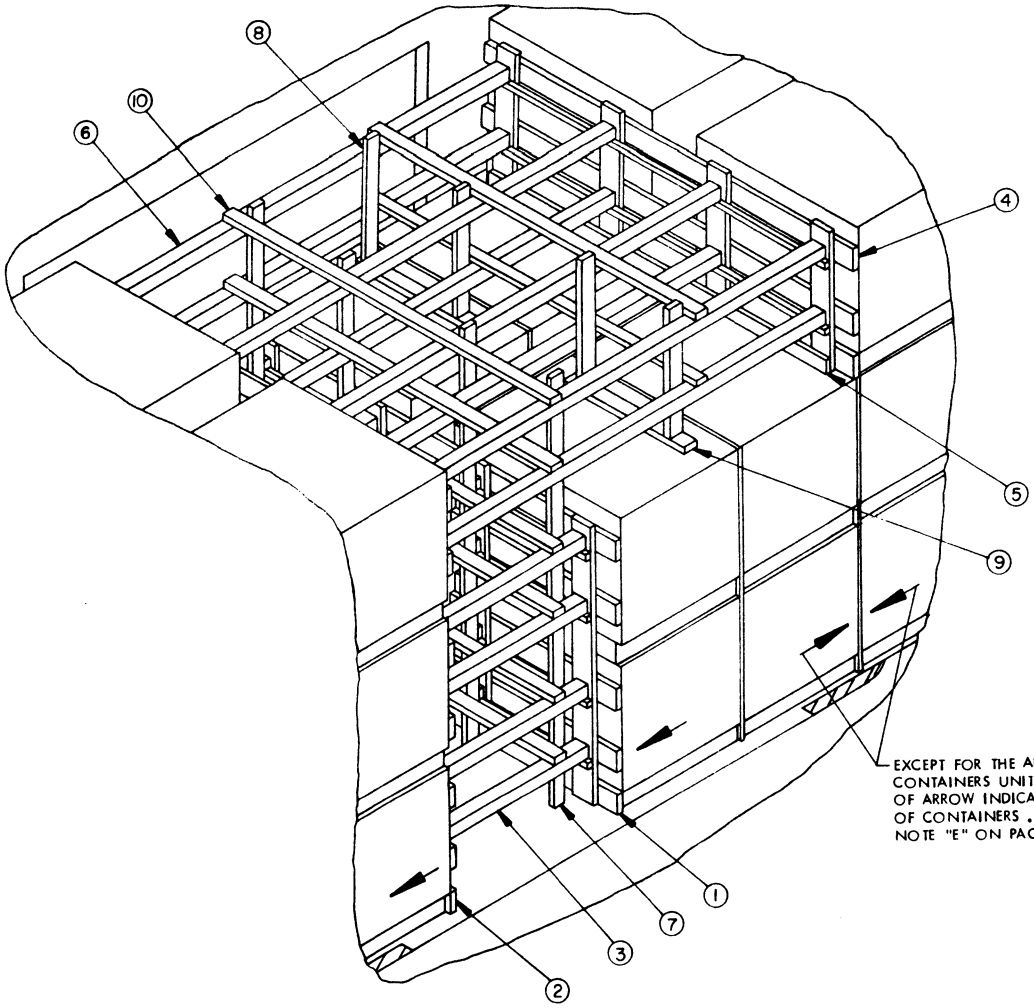
(5) STRUT , 4" X 4" BY CUT TO FIT (AS REQD) . POSITION BETWEEN THE CENTER GATES , PIECES MARKED (1) AND (2), IN THE SECOND LAYER AND TOE-NAIL W/2-16d NAILS AT EACH END .

(6) STRUT BRACING PAD , 2" X 4" BY LENGTH TO SUIT (1 REQD) . POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN .

(7) 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 .

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

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IS THE FLAT DUNNAGE METHOD UNIT (DECREASED HEIGHT) . THE DEPICTED 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 "Q" USED IS ONLY APPLICABLE FOR THE FLAT DUNNAGE METHOD UNIT DEPICTED. THE PROPER CENTER GATE TO BE USED WILL DEPEND UPON THE UNIT BEING SHIPPED . THE QUANTITY REQUIRED FOR DUNNAGE PIECES , SUCH AS THE NUMBER OF STRUTS OR THE NUMBER OF STRUT BRACING PIECES , WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED .

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 Q" DETAIL ON PAGE 50 . SEE SPECIAL NOTE 5 AT LEFT .

② CENTER GATE FOR 3-HIGH (1 REQD) . SEE THE "CENTER GATE Q" DETAIL ON PAGE 50 .

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

④ CENTER GATE FOR 1-HIGH (1 REQD) . SEE THE "CENTER GATE Q" DETAIL ON PAGE 50 .

⑤ SUPPORT PIECE , 2" X 4" BY CAR WIDTH MINUS 10" IN LENGTH (1 REQD) . NAIL TO THE VERTICAL PIECES ON CENTER GATE "Q" , SHOWN AS PIECE MARKED ④ .

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

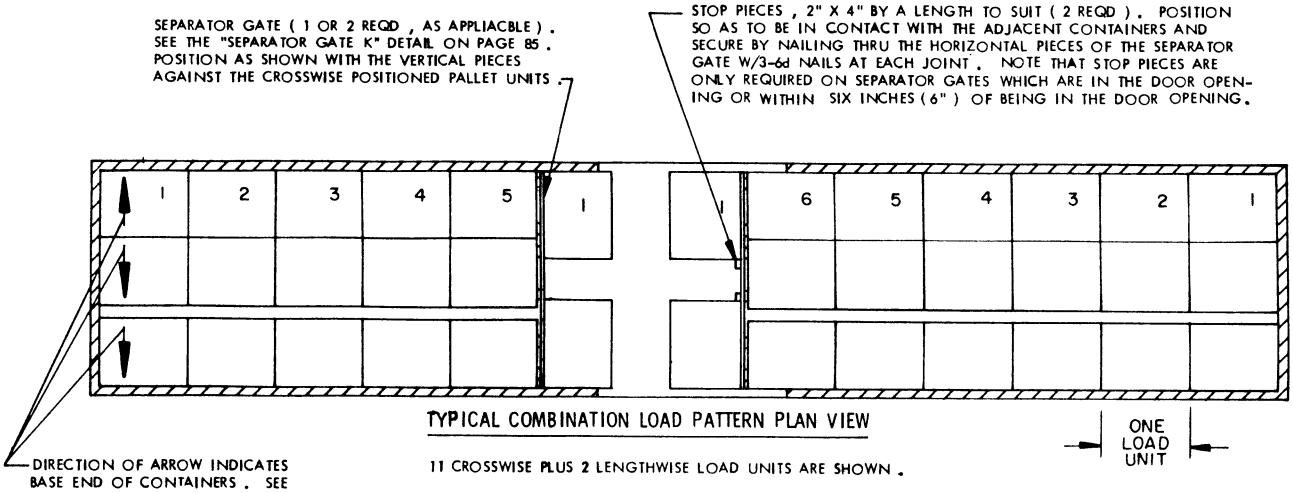
⑦ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD) . NAIL TO THE STRUTS MARKED ③ AND ⑥ W/3-10d NAILS AT EACH JOINT .

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

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

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

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



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

11 CROSSWISE PLUS 2 LENGTHWISE LOAD UNITS ARE 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 85 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 "K" , HAS NOT BEEN SHOWN . REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS . A SEPARATOR GATE "K" 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 , 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	27	CROSSWISE LOAD ON PAGE 32 OR 44	42"
	28	8 LONG AT 48-5/8" PLUS 2 AT 35-1/4"	17"
	25	5 LONG AT 48-5/8" PLUS 5 AT 35-1/4"	56"
	26	LENGTHWISE LOAD ON PAGE 30 OR 42	21"
50'-6" CAR	33	CROSSWISE LOAD ON PAGE 32 OR 44	65"
	35	11 LONG AT 48-5/8" PLUS 1 AT 35-1/4"	28"
	34	10 LONG AT 48-5/8" PLUS 2 AT 35-1/4"	40"
	32	LENGTHWISE LOAD ON PAGE 30 OR 42	36"
60'-8" CAR	42	CROSSWISE LOAD ON PAGE 32 OR 44	41"
	41	13 LONG AT 48-5/8" PLUS 1 AT 35-1/4"	53"
	40	12 LONG AT 48-5/8" PLUS 2 AT 35-1/4"	65"
	40	8 LONG AT 48-5/8" PLUS 8 AT 35-1/4"	45"
	38	LENGTHWISE LOAD ON PAGE 30 OR 42	45"

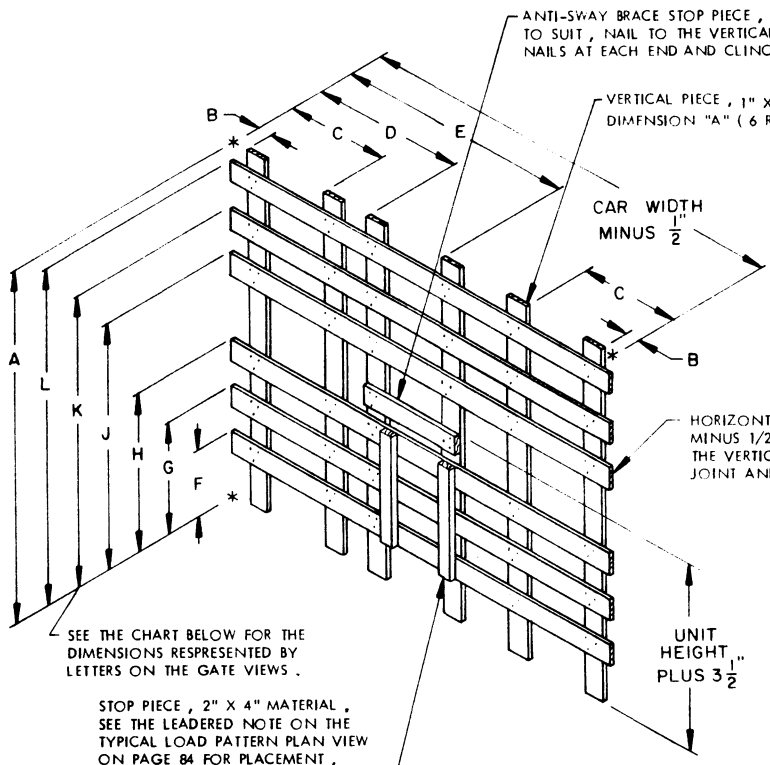
ALTERNATED CONTAINERS UNIT

CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	30	CROSSWISE LOAD ON PAGE 8 OR 20	25"
	29	9 LONG AT 45-1/2" PLUS 1 AT 35-1/4"	33"
	28	8 LONG AT 45-1/2" PLUS 2 AT 35-1/4"	42"
	27	7 LONG AT 45-1/2" PLUS 3 AT 35-1/4"	52"
	25	5 LONG AT 45-1/2" PLUS 5 AT 35-1/4"	72"
	26	LENGTHWISE LOAD ON PAGE 6 OR 18	21"
50'-6" CAR	36	CROSSWISE LOAD ON PAGE 8 OR 20	54"
	37	11 LONG AT 45-1/2" PLUS 2 AT 35-1/4"	26"
	36	10 LONG AT 45-1/2" PLUS 3 AT 35-1/4"	36"
	35	9 LONG AT 45-1/2" PLUS 4 AT 35-1/4"	46"
	34	8 LONG AT 45-1/2" PLUS 5 AT 35-1/4"	55"
	32	LENGTHWISE LOAD ON PAGE 6 OR 18	36"
60'-8" CAR	45	CROSSWISE LOAD ON PAGE 8 OR 20	39"
	44	14 LONG AT 45-1/2" PLUS 1 AT 35-1/4"	48"
	43	13 LONG AT 45-1/2" PLUS 2 AT 35-1/4"	57"
	42	10 LONG AT 45-1/2" PLUS 6 AT 35-1/4"	51"
	41	9 LONG AT 45-1/2" PLUS 7 AT 35-1/4"	60"
	40	8 LONG AT 45-1/2" PLUS 8 AT 35-1/4"	68"
	38	LENGTHWISE LOAD ON PAGE 6 OR 18	45"

ROUTED DUNNAGE METHOD UNIT

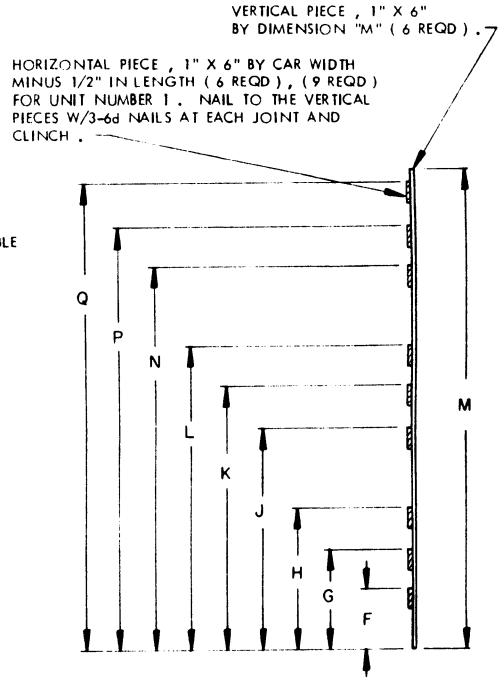
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	27	CROSSWISE LOAD ON PAGE 56 OR 68	59"
	29	9 LONG AT 46-3/4" PLUS 1 AT 35-1/4"	22"
	28	8 LONG AT 46-3/4" PLUS 2 AT 35-1/4"	32"
	25	5 LONG AT 46-3/4" PLUS 5 AT 35-1/4"	65"
	26	LENGTHWISE LOAD ON PAGE 54 OR 66	21"
50'-6" CAR	36	CROSSWISE LOAD ON PAGE 56 OR 68	39"
	35	11 LONG AT 46-3/4" PLUS 1 AT 35-1/4"	49"
	36	10 LONG AT 46-3/4" PLUS 3 AT 35-1/4"	23"
	34	8 LONG AT 46-3/4" PLUS 5 AT 35-1/4"	45"
	32	LENGTHWISE LOAD ON PAGE 54 OR 66	36"
60'-8" CAR	45	CROSSWISE LOAD ON PAGE 56 OR 68	20"
	44	14 LONG AT 46-3/4" PLUS 1 AT 35-1/4"	30"
	43	13 LONG AT 46-3/4" PLUS 2 AT 35-1/4"	40"
	42	12 LONG AT 46-3/4" PLUS 3 AT 35-1/4"	52"
	41	9 LONG AT 46-3/4" PLUS 7 AT 35-1/4"	49"
	40	8 LONG AT 46-3/4" PLUS 8 AT 35-1/4"	60"
	38	LENGTHWISE LOAD ON PAGE 54 OR 66	45"

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



SEPARATOR GATE K

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



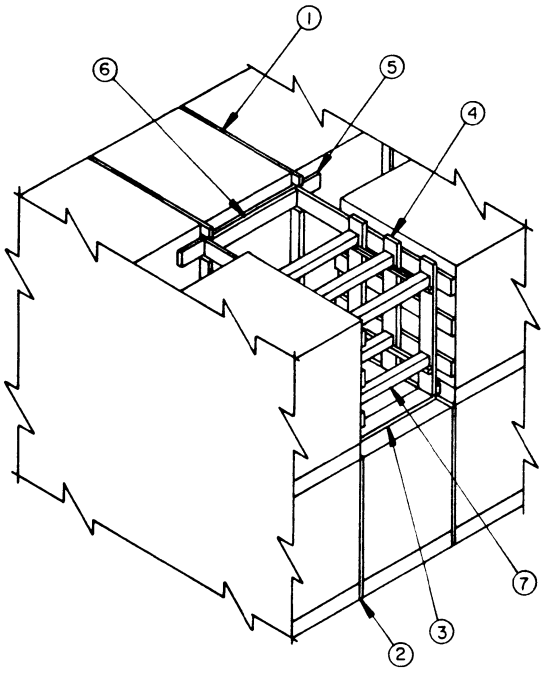
END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR A 3-HIGH LOAD WHICH IS ONLY APPLICABLE FOR UNITS 1 , 4 , AND 6 AS IDENTIFIED AT THE LEFT.

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

PALLET UNIT NUMBER	DIMENSIONS														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
1	6'-9"	3-3/8"	26"	38-5/8"	61"	15-1/2"	26"	36-1/2"	57"	68"	6'-6"	10'-3"	8'-2-1/2"	9'-1"	10'-0"
2	8'-0"	3-3/8"	26"	38-5/8"	61"	15-1/2"	30"	44"	64-1/2"	6'-6-1/2"	7'-8"	--	--	--	--
3	7'-6"	4-3/8"	26-7/8"	37-5/8"	60-1/8"	16-1/2"	28-1/2"	40"	62-1/2"	74"	86"	--	--	--	--
4	72"	4-3/8"	26-7/8"	37-5/8"	60-1/8"	16-1/2"	--	32-1/2"	55"	--	70-1/2"	9'-3"	7'-9"	--	9'-0"
5	7'-6"	4"	26-3/8"	38-1/8"	60-3/8"	16"	28"	39-1/2"	62"	73-1/2"	85"	--	--	--	--
6	72"	4"	26-3/8"	38-1/8"	60-3/8"	16"	--	32"	54"	--	69-1/2"	9'-3"	7'-7-1/2"	--	8'-11"

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 . CAR OF OTHER WIDTHS CAN BE USED .
2. THE PALLET UNIT SHOWN IS THE ALTERNATED CONTAINERS UNIT (INCREASED HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT .
3. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL . THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER PALLET UNIT FROM A 3-LAYER LOAD .
4. THE OMITTED-UNIT PROCEDURE SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH , BUT NOT IN THE DOORWAY AREA . ALSO , THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE .
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN ; REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD .
6. NOTE THAT SEPARATOR GATE MARKED (1) MUST BE NOTCHED TO ACCOMMODATE THE ANTI-SWAY BEARING PIECE MARKED (5) ; ALSO, SEPARATOR GATES MARKED (1) AND (2) MUST BE NAILED TO AN ADJACENT ANTI-SWAY BRACE AS DIRECTED ON THE APPLICABLE LOAD PAGE .

KEY NUMBERS

(1) SEPARATOR GATE , 3/8" THICK PLYWOOD , 4' X 8' SHEET (2 REQD) . POSITION AS SHOWN IN LOAD VIEW ABOVE . SEE SPECIAL NOTE 6 AT LEFT FOR GATE MODIFICATIONS AND NAILING GUIDANCE .

(2) SEPARATOR GATE , 3/8" THICK PLYWOOD , 4' X 4' SHEET (2 REQD) .

(3) SUPPORT PIECE , 2" X 6" X 36" (2 REQD) . POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE , PIECE MARKED (4) (UNDER THE OUTWARD VERTICAL PIECES OF LOAD BEARING GATE "A") .

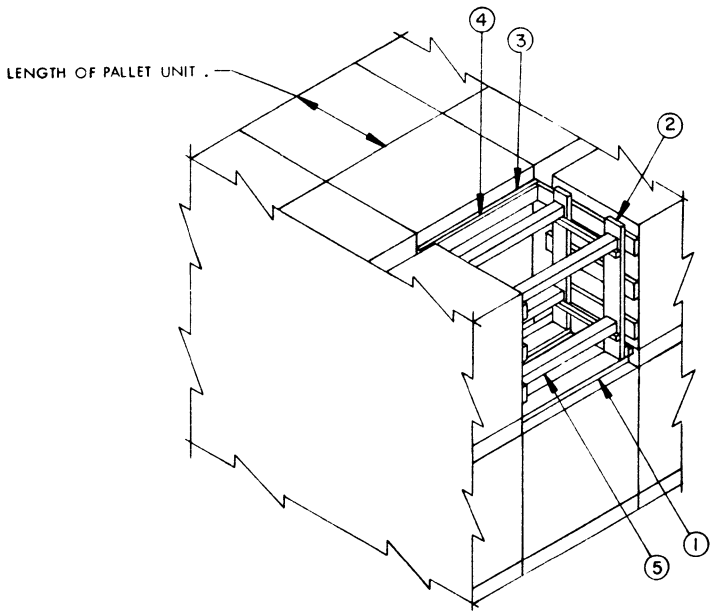
(4) LOAD BEARING GATE (2 REQD , 1 RIGHT HAND AND 1 LEFT HAND) . SEE THE APPLICABLE DETAIL ON PAGE 88 OR 89 . NAIL TO THE FILLER PIECE , PIECE MARKED (6) , W/3-10d NAILS . TOENAIL TO THE SUPPORT PIECE , PIECE MARKED (3) , W/2-10d NAILS AT EACH JOINT . CAUTION : USE CARE NOT TO TOENAIL INTO A CONTAINER .

(5) ANTI-SWAY BEARING PIECE , 2" X 6" X 54" (1 REQD) .

(6) FILLER PIECE , 2" X 6" X 33" (1 REQD) . NAIL TO THE ANTI-SWAY BEARING PIECE , PIECE MARKED (5) , W/5-10d NAILS .

(7) STRUT , 4" X 4" BY CUT TO FIT (REF: 30") (AS REQD) . TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END .

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

KEY NUMBERS

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

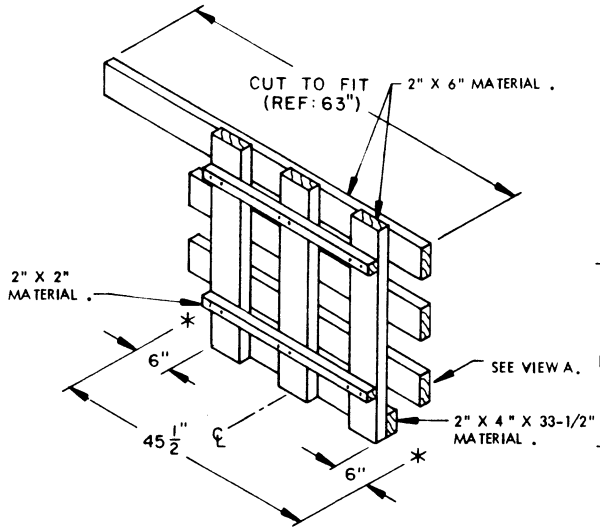
(2) LOAD BEARING GATE (2 REQD , 1 RIGHT HAND AND 1 LEFT HAND) . SEE THE APPLICABLE DETAIL ON PAGE 90. TOENAIL TO THE SUPPORT PIECE , PIECE MARKED (1) , W/2-10d NAILS AT EACH JOINT . CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER. NAIL TO PIECE MARKED (4) W/3-10d NAILS.

(3) BEARING PIECE , 2" X 6" BY PALLET WIDTH (1 REQD) .

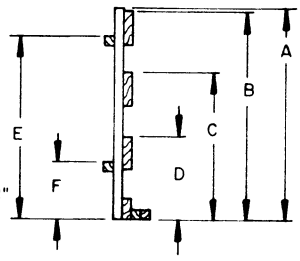
(4) FILLER PIECE, 2" X 6" BY CUT TO FIT (1 REQD) . NAIL TO THE BEARING PIECE , PIECE MARKED (3) , W/5-10d NAILS .

(5) STRUT , 4" X 4" BY CUT TO FIT (REF: 40") (4 REQD) . TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END .

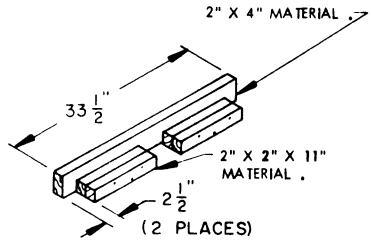
TYPICAL LCL-ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A CROSSWISE LOAD



LOAD BEARING GATE A



END VIEW



VIEW A

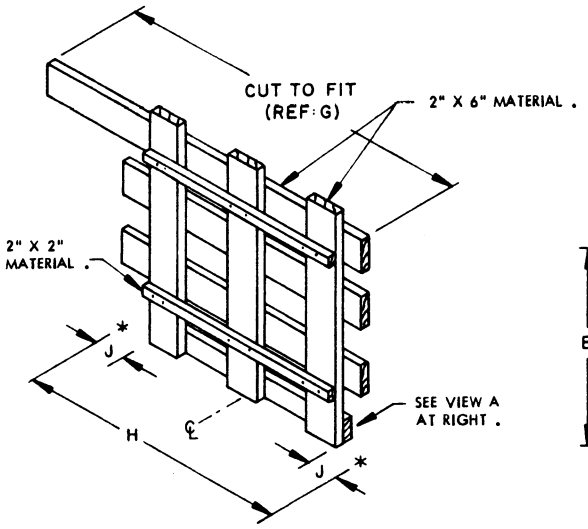
THIS GATE IS FOR USE IN A LOAD OF ALTERNATED CONTAINERS UNITS (BASIC/INCREASED-HEIGHT) . SEE SPECIAL NOTE 3 AND DIMENSIONAL CHART BELOW FOR NAILING GUIDANCE . ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED . A RIGHT HAND GATE IS SHOWN .

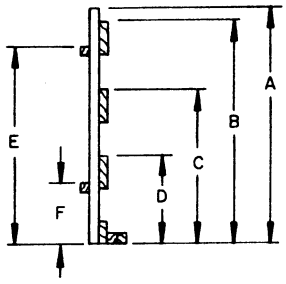
DIMENSIONAL CHART		
	ALTERNATED METHOD UNIT	
DIM	BASIC HEIGHT	INCREASED HEIGHT
A	36"	44"
B	35-1/2"	42-1/2"
C	25"	28-1/2"
D	14"	14"
E	31"	38"
F	9-1/2"	9-1/2"

SPECIAL NOTES:

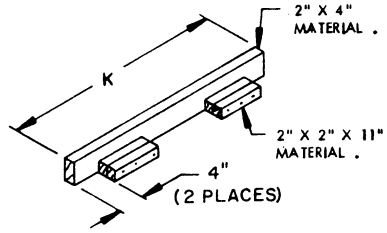
1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC/INCREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 86. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS .
2. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2" . THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS .
3. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 4" OR 2" X 6" HORIZONTAL PIECE(S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT . NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO A 2" X 4" 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 GATES FOR USE WITH BASIC/INCREASED-HEIGHT UNITS IN A LENGTHWISE LOAD





END VIEW



VIEW A

LOAD BEARING GATE B

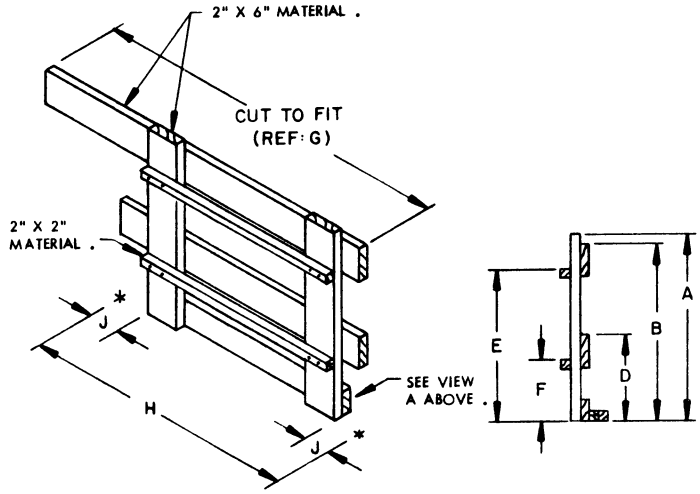
THIS GATE IS FOR USE IN A LOAD OF FLAT OR ROUTED DUNNAGE METHOD UNITS (BASIC HEIGHT) . SEE SPECIAL NOTE 3 AND DIMENSIONAL CHART AT RIGHT FOR NAILING GUIDANCE . ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.

SPECIAL NOTES:

1. THE GATES SHOWN ON THIS PAGE ARE FOR USE WITH BASIC AND/OR DE-CREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 86 . THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF LENGTHWISE-POSITIONED PALLET UNITS .

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

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

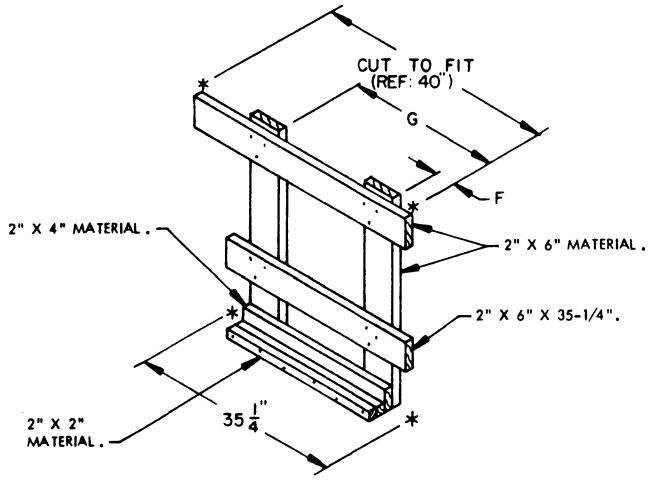


LOAD BEARING GATE C

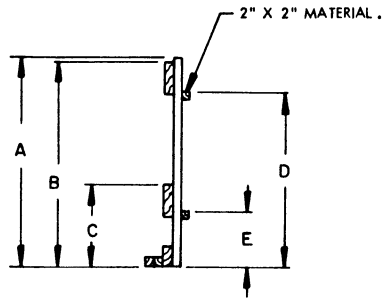
THIS GATE IS FOR USE IN A LOAD OF FLAT OR ROUTED DUNNAGE METHOD UNITS (DECREASED HEIGHT) . SEE SPECIAL NOTE 3 AND DIMENSIONAL CHART AT RIGHT FOR NAILING GUIDANCE . ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED . A RIGHT HAND GATE IS SHOWN .

DIMENSIONAL CHART

DIM	BASIC HEIGHT		DECREASED HEIGHT	
	FLAT	ROUTED	FLAT	ROUTED
A	40"	40"	32"	32"
B	38-1/2"	38"	31"	30-1/2"
C	27"	26-1/2"	---	---
D	15-1/2"	14-3/4"	15-1/2"	14-3/4"
E	34"	33-1/2"	26-1/2"	26"
F	11"	10-1/4"	11"	10-1/4"
G	60"	62"	60"	62"
H	48-5/8"	46-3/4"	48-5/8"	46-3/4"
J	6"	5"	6"	5"
K	36-5/8"	36-3/4"	36-5/8"	36-3/4"



LOAD BEARING GATE D



END VIEW

THIS GATE IS USED FOR ALL OF THE UNITS COVERED IN THIS DRAWING. SEE SPECIAL NOTE 3 AT RIGHT FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN. SEE THE CHART BELOW FOR DIMENSIONS REPRESENTED BY LETTERS.

SPECIAL NOTES:

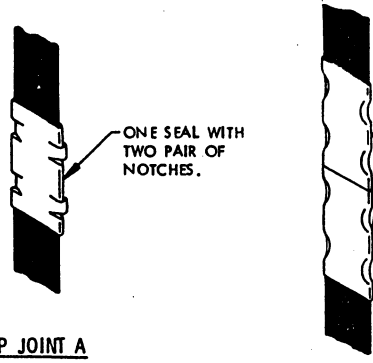
1. THE GATES ON THIS PAGE ARE FOR USE WITH ALL OF THE UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 87. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSS-POSITIONED PALLET UNITS.

2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.

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

DIMENSIONAL CHART

DIM	ALTERNATED BASIC HEIGHT	ALTERNATED INCREASED HEIGHT	FLAT BASIC HEIGHT	ROUTED BASIC HEIGHT	FLAT DECREASED HEIGHT	ROUTED DECREASED HEIGHT
A	36"	45"	40"	40"	34"	34"
B	35"	42"	38-1/2"	38"	31"	30-1/2"
C	14"	14"	15"	14-1/2"	15"	14-1/2"
D	30-1/2"	37-1/2"	34"	33-1/2"	26-1/2"	26"
E	9-1/2"	9-1/2"	10-1/2"	10"	10-1/2"	10"
F	3-5/8"	3-5/8"	4-1/8"	4-3/8"	4-1/8"	4-3/8"
G	26-1/8"	26-1/8"	26-5/8"	26-7/8"	26-5/8"	26-7/8"

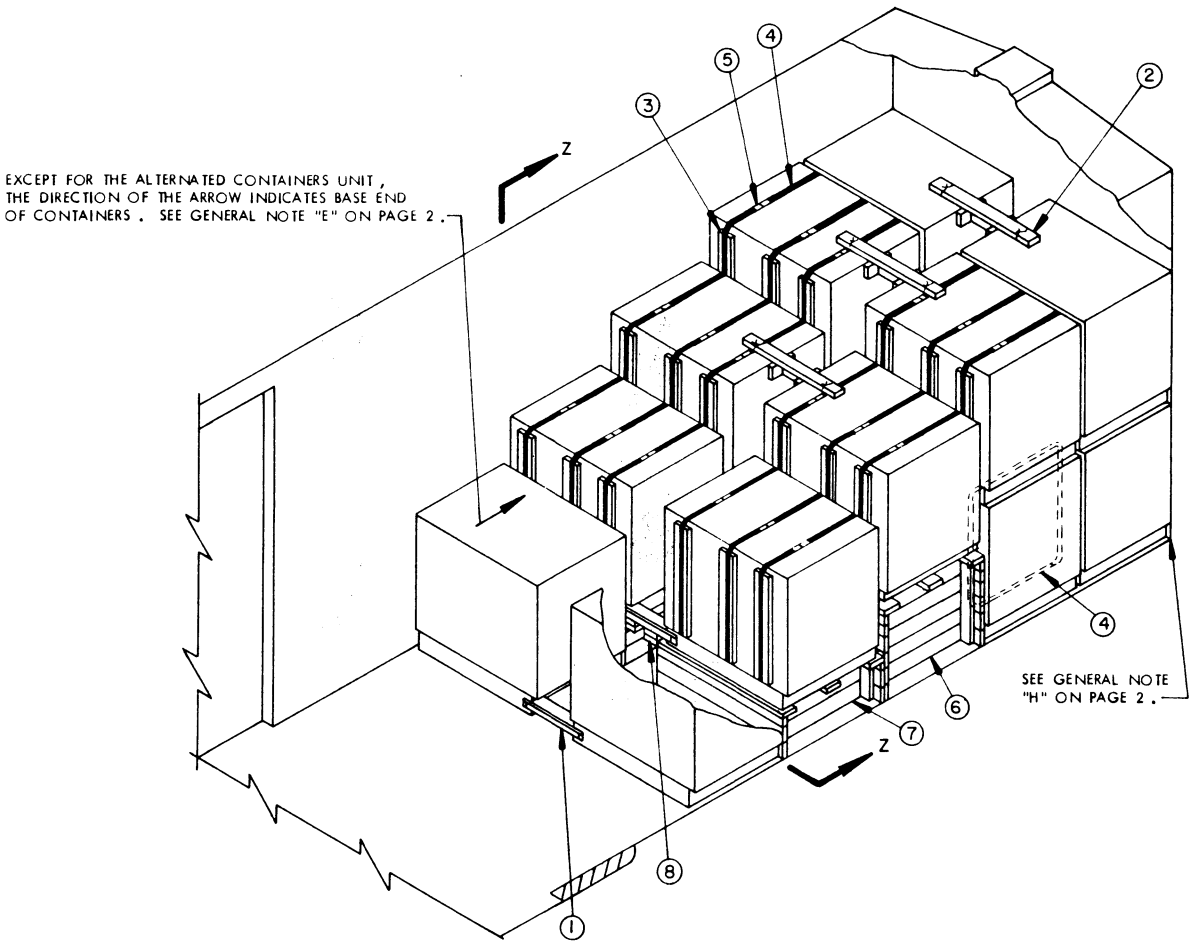


STRAP JOINT A

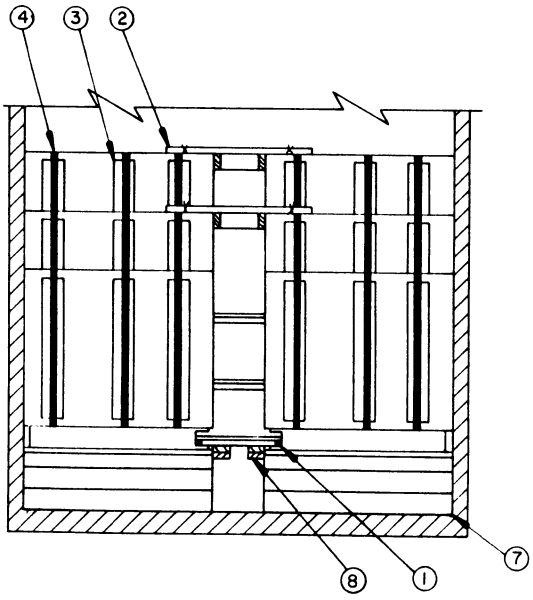
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.

STRAP JOINT B

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



ISOMETRIC VIEW



SECTION Z-Z

KEY NUMBERS

(1) ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 93.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28. WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112.

(3) STRAPPING BOARD, 2" X 6" X 36" (48 REQD, 6 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 94. SEE SPECIAL NOTE 6 ON PAGE 93.

(4) REINFORCING STRAP, 1-1/4" X .035" X 15'-6" LONG (REF) STEEL STRAPPING (24 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 94.

(5) SEAL FOR 1-1/4" STRAPPING (48 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "P" ON PAGE 2.

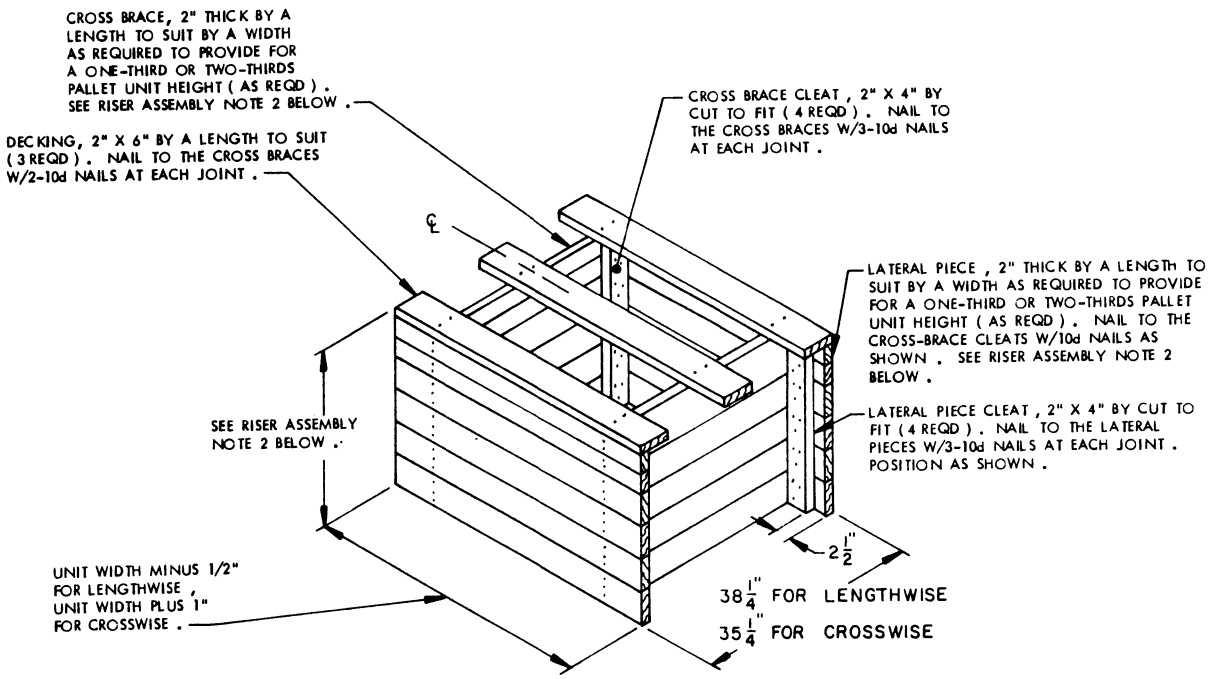
(6) RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 93.

(7) RISER ASSEMBLY (2 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 93.

(8) STOP PIECE, (4 REQD). SEE THE "STOP PIECE LOCATION" DETAIL ON PAGE 94 FOR LOCATION AND NAILING GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING

PROJECT FSA 43B/11-63



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

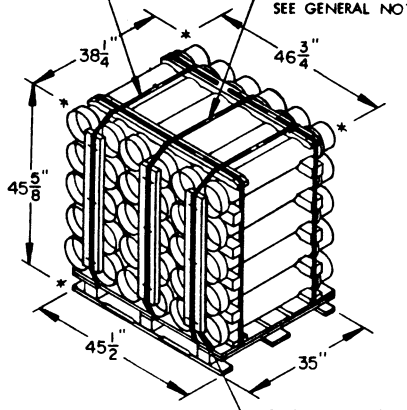
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN . CARS OF OTHER WIDTHS CAN BE USED . SEE GENERAL NOTE "D" ON PAGE 2 .
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 92 IS THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT .
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR . THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE POSITIONED UNITS . SEE SPECIAL NOTES 5 AND 6 .
4. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN . REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD .
5. ANTI-SWAY BRACE "A" IS APPLICABLE FOR ALL THE LENGTHWISE POSITIONED UNITS . NOTE THAT STOP PIECES, SHOWN AS PIECE MARKED ⑧ ON PAGE 92 , ARE REQUIRED ON THE ANTI-SWAY BRACES WHICH ARE LOCATED OVER THE LATERALLY ADJACENT RISER ASSEMBLIES .
6. FOR CROSSWISE POSITIONED UNITS , THE STRAPPING BOARDS SHOWN AS PIECES MARKED ③ WILL NOT BE REQUIRED . SEE THE "METHOD B" , "METHOD C " AND "METHOD D" DETAILS ON PAGES 94 AND 95 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS . ALSO , IF THE UNITS ARE POSITIONED CROSSWISE , 3-PALLET STACKS WILL BE POSITIONED ACROSS THE WIDTH OF THE CAR , AND CRIB FILL WILL BE POSITIONED IN THE LATERAL VOID . FOR CRIB FILL LOCATED BETWEEN THE RISER ASSEMBLIES, THE HEIGHT OF THE TOP HORIZONTAL PIECES MUST BE ADJUSTED ; USE THE SPECIFIED HEIGHT FOR A 1-HIGH CRIB FILL , PLUS THE RISER ASSEMBLY HEIGHT .

SPECIAL NOTES FOR RISER ASSEMBLY:

1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE FLAT DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE HEIGHT OF THE BASIC UNIT IS 45-7/8" . A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 92 . EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FOUR (4) PIECES OF 2" X 6" MATERIAL AND TWO (2) PIECES OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 30-1/2" AFTER THE DECKING IS IN PLACE . A ONE-THIRD HEIGHT RISER , SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 92 , WILL BE FABRICATED FROM TWO (2) PIECES OF 2" X 6" AND ONE PIECE OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE , TO PROVIDE FOR A TOTAL HEIGHT OF 16" AFTER THE DECKING IS IN PLACE .
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY , TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT , BASED ON THE PALLET UNIT BEING LOADED AND THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD . NOTE: A PLUS OR MINUS 1" TOLERANCE IS PERMISSIBLE ON THE RISER HEIGHT .
3. WHEN THE PALLET UNITS ARE POSITIONED LENGTHWISE , AS SHOWN ON PAGE 92 , A STOP PIECE WILL BE APPLIED TO THE ANTI-SWAY BRACE . SEE THE "STOP PIECES LOCATION" DETAIL ON PAGE 94 FOR GUIDANCE .

REINFORCING STRAP , 1-1/4" X .035" X 16'-0" LONG STEEL STRAPPING FOR 6-LAYER UNITS , 15'-0" LONG FOR 5-LAYER UNITS , 13'-6" LONG FOR 4-LAYER UNITS (3 REQD) . INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS . SECURE TO EACH STRAPPING BOARD W/3 STAPLES .

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



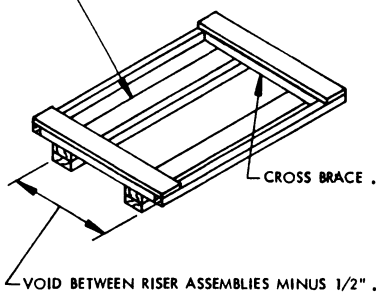
METHOD A

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

STRAPPING BOARD , 2" X 6" X 37" FOR 6-LAYER UNITS , 2" X 6" X 33" FOR 5-LAYER UNITS , 2" X 6" X 25" FOR 4-LAYER UNITS (6 REQD) . CENTER THE OUTER STRAPPING BOARDS ON THE JOINTS OF THE CONTAINERS ; POSITION THE CENTER ONE 1" OFF CENTER SO THE STRAP CLEARS THE PALLET POST.

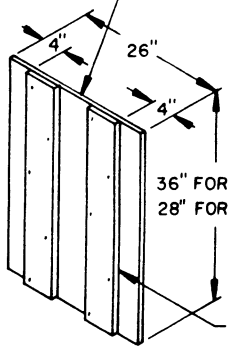
NOTE:
THE "METHOD A" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR PALLET UNITS WHICH ARE TO BE POSITIONED LENGTHWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 92 . THE BASIC HEIGHT ROUTED DUNNAGE METHOD UNIT IS SHOWN . THE PROCEDURES ARE APPLICABLE FOR ALL THE UNITS COVERED BY THIS DOCUMENT . FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR , REFER TO THE "METHOD B" DETAIL BELOW AND/OR THE "METHOD C" OR "METHOD D" DETAIL ON PAGE 95 .

STOP PIECE , 2" X 4" X 35-1/4" (DOUBLED) (2 REQD) . NAIL THE FIRST PIECE TO THE CROSS BRACE W/3-8d NAILS AT EACH END . NAIL THE SECOND PIECE TO THE FIRST W/5-10d NAILS .



STOP PIECE LOCATION DETAIL

1/2" PLYWOOD , 26" WIDE BY A HEIGHT TO SUIT , (1 REQD).



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

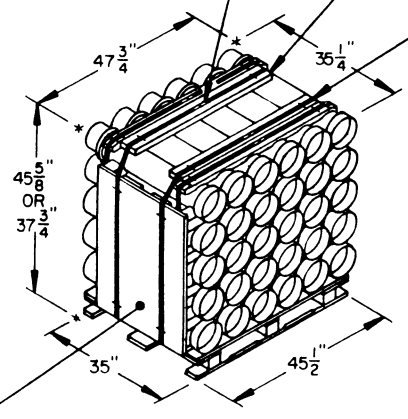
SIDE FILL ASSEMBLY A

FOR METHOD "B" BELOW

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

STRAPPING BOARD , 1" X 6" X 40" (2 REQD) . POSITION AS SHOWN .

REINFORCING STRAP , 1-1/4" X .035" X 17'-0" LONG STEEL STRAPPING FOR 5-LAYER UNITS , 15'-6" FOR 4-LAYER UNITS (2 REQD) . INSTALL TO ENCIRCLE THE PALLETIZED UNIT , THE STRAPPING BOARD , AND THE SIDE FILL ASSEMBLIES . SECURE TO THE STRAPPING BOARD AND THE SIDE FILL ASSEMBLIES W/STAPLES.



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

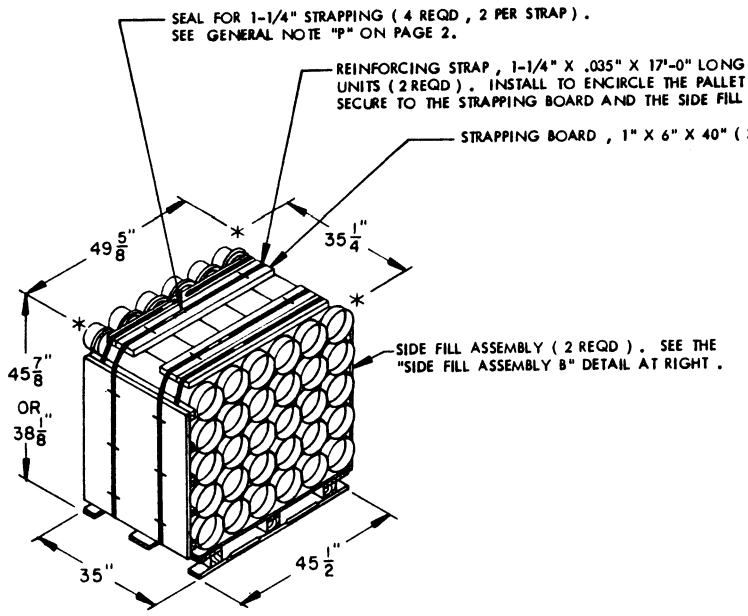
METHOD B

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

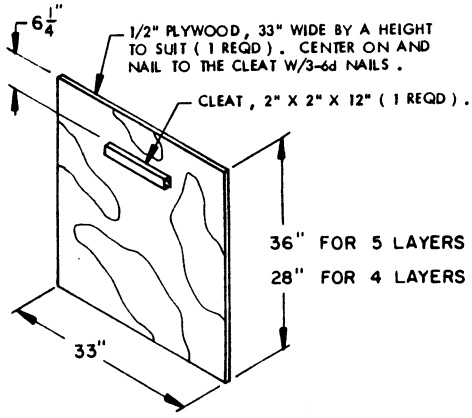
NOTE:

THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE ROUTED DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 92 . THE BASIC HEIGHT UNIT IS SHOWN , HOWEVER , THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT . FOR MODIFICATION OF ROUTED DUNNAGE METHOD UNITS , TO BE POSITIONED LENGTHWISE IN A CAR, REFER TO THE "METHOD A" DETAIL ABOVE .

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



METHOD C

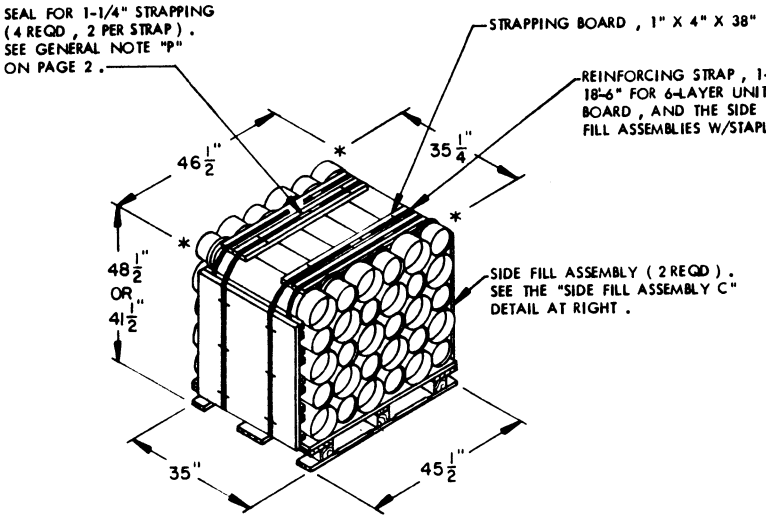


SIDE FILL ASSEMBLY B

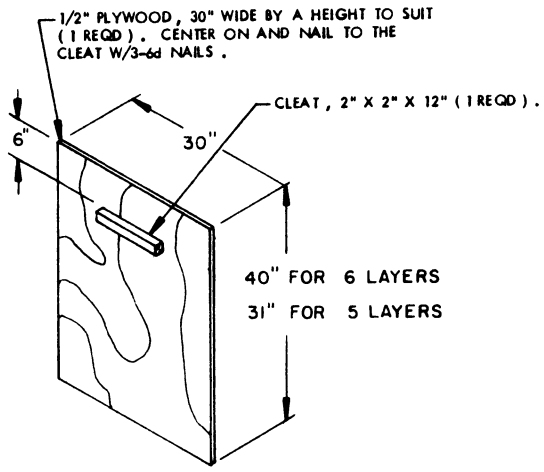
FOR METHOD "C" AT LEFT.

NOTE:

THE "METHOD C" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE FLAT DUNNAGE METHOD UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 92 . THE BASIC HEIGHT UNIT IS SHOWN , HOWEVER , THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT . FOR MODIFICATION OF FLAT DUNNAGE METHOD UNITS TO BE POSITIONED LENGTHWISE IN A CAR , REFER TO THE "METHOD A" DETAIL AT THE TOP OF PAGE 94 .



METHOD D

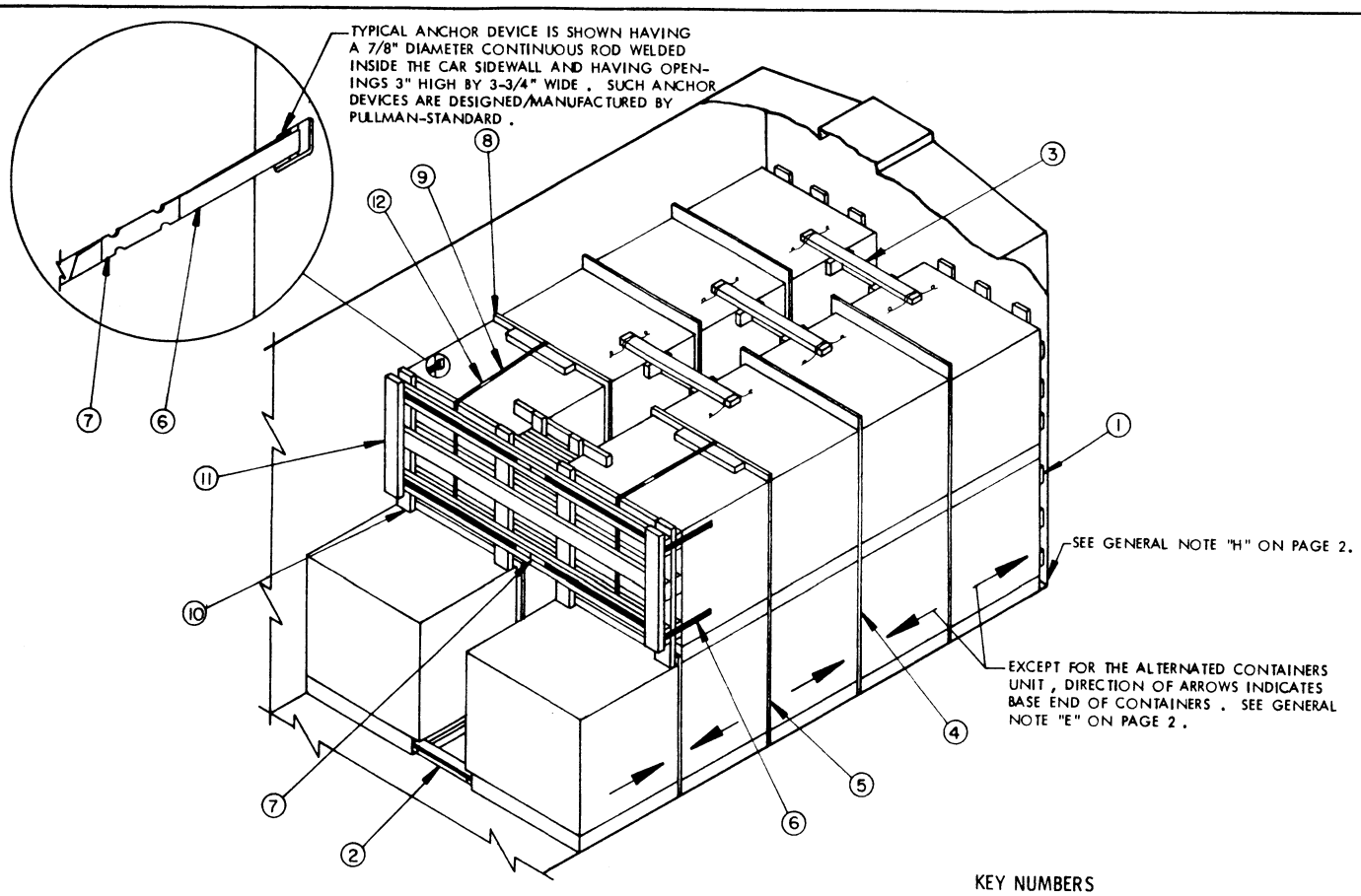


SIDE FILL ASSEMBLY C

FOR METHOD "D" AT LEFT

NOTE:

THE "METHOD D" DETAIL ABOVE SHOWS THE MODIFICATION REQUIRED FOR THE ALTERNATED CONTAINERS UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 92 . THE BASIC HEIGHT UNIT IS SHOWN , HOWEVER , THE PROCEDURE IS ALSO APPLICABLE FOR THE INCREASED HEIGHT UNIT . FOR MODIFICATION OF ALTERNATED CONTAINERS UNITS TO BE POSITIONED LENGTHWISE IN A CAR , REFER TO THE "METHOD A" DETAIL AT THE TOP OF PAGE 94 .



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 END OF THE BULKHEAD GATE OR 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 .

(CONTINUED ON PAGE 97)

KEY NUMBERS

(1) END-WALL LINING (1 REQD) . SEE THE DETAIL ON PAGE 111 . SEE GENERAL NOTE "D" ON PAGE 2 . NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 112 IS USED, THE END-WALL LINING IS NOT REQUIRED .

(2) ANTI-SWAY BRACE (9 REQD) . SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28 . INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 .

(3) TOP-OF-LOAD ANTI-SWAY BRACE , (3 REQD) . SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 28 . WIRE TIE TO STRAPPING BOARDS WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112 .

(4) SEPARATOR GATE, 3/8" PLYWOOD, 4' X 8' SHEET , (4 REQD) . POSITION AGAINST THE UNITS . NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (2) W/1-6d NAIL EACH .

(5) SEPARATOR GATE , 3/8" PLYWOOD , 4' X 4' SHEET (4 REQD) . POSITION AGAINST THE UNITS . NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED (2) W/1-6d NAIL EACH .

(6) BULKHEAD STRAP, 2" X .050" X 23'-0" LONG (REF) STEEL STRAPPING (2 REQD) . INSTALL FROM 2 EQUAL LENGTH PIECES . SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 97 FOR INSTALLATION GUIDANCE . SEE SPECIAL NOTES 4 THRU 6 AT LEFT .

(7) SEAL FOR 2" STRAPPING (12 REQD, 6 PER STRAP) . DOUBLE CRIMP EACH SEAL . SEE GENERAL NOTE "P" ON PAGE 2 .

(8) STRAPPING BOARD (2 REQD) . SEE THE DETAIL ON PAGE 97 .

(9) BUNDLING STRAP , 1-1/4" X .035" X 15'-0" LONG (REF) STEEL STRAPPING (2 REQD) . ENCIRCLE THE PALLET UNIT , THE HORIZONTAL PIECES OF THE BULKHEAD GATE , AND A STRAPPING BOARD , PIECE MARKED (8) . TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS , PIECES MARKED (6) .

(10) BULKHEAD GATE (1 REQD) . SEE THE DETAIL ON PAGE 97 . SEE SPECIAL NOTE 3 AT LEFT .

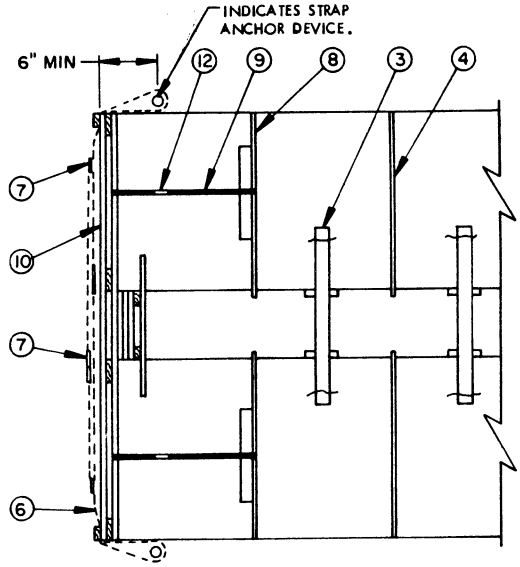
(11) STRAP RETAINER , 2" X 4" BY A LENGTH TO SUIT (2 REQD) . NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP .

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

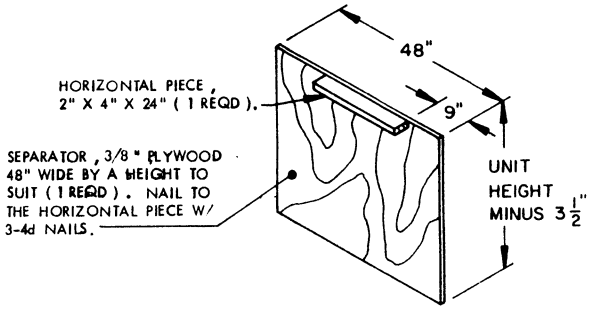
TYPICAL LCL LOAD USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING

(SPECIAL NOTES CONTINUED)

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

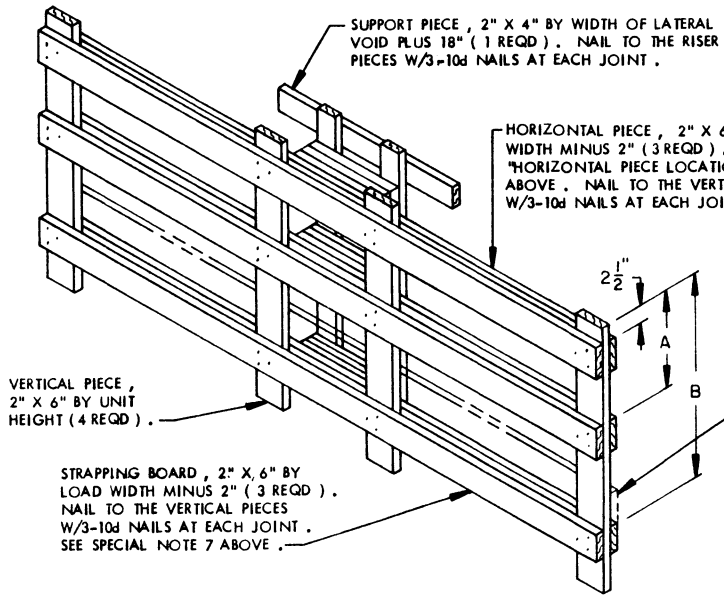


STRAP APPLICATION PLAN VIEW

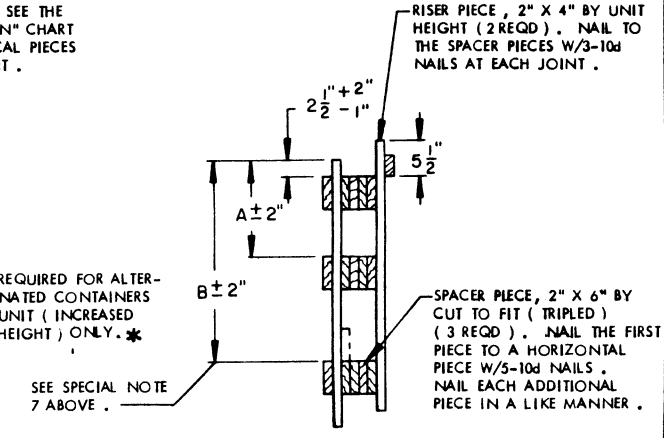


STRAPPING BOARD

HORIZONTAL PIECE LOCATION						
UNIT	6-HIGH		5-HIGH		4-HIGH	
	DIM A	DIM B	DIM A	DIM B	DIM A	DIM B
ALTERNATED CONTAINERS	* 14" ± 1"	* 34" ± 1"	14" ± 1"	28" ± 1"	----	----
FLAT DUNNAGE	----	----	16" ± 1"	31-1/2" ± 1"	16" ± 1"	28" + 2" - 4"
ROUTED DUNNAGE	----	----	15-1/2" ± 1"	31" ± 1"	15-1/2" ± 1"	27-1/2" + 2" - 4"

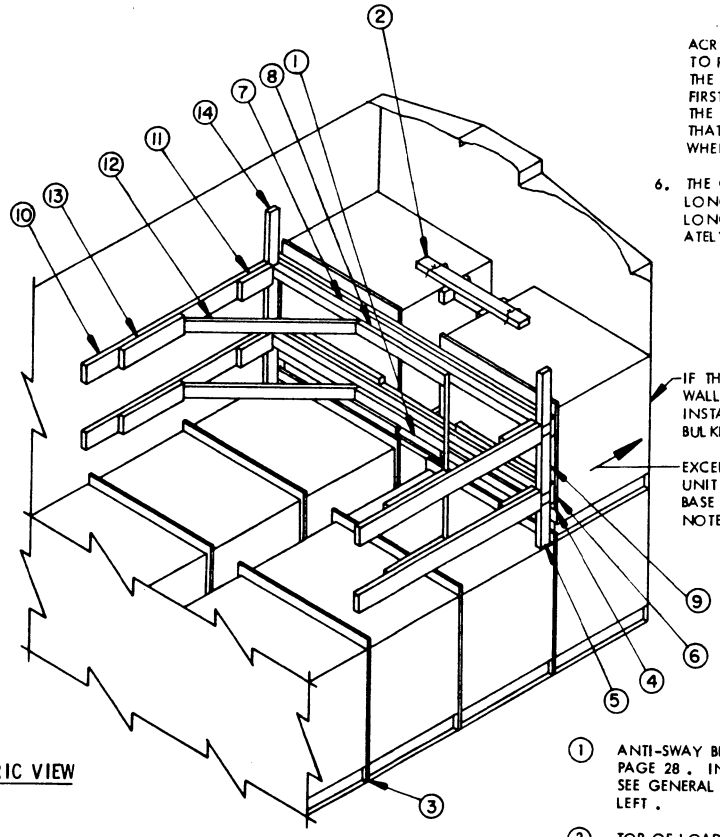


BULKHEAD GATE



END VIEW

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



ISOMETRIC VIEW

SPECIAL NOTES:

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

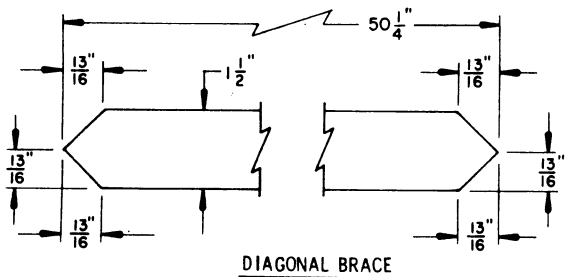
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT . REFER TO THE PALLET UNIT IDENTIFICATION CHART ON PAGE 103 TO ESTABLISH A DIMENSION FOR PIECE MARKED ⑨ .

3. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN . A LENGTHWISE LOAD IS SHOWN AS TYPICAL . THE BLOCKING AND BRACING WILL VARY FOR CROSSWISE LOADS . NOTE THAT FOR A CROSSWISE PARTIAL TIER , THE PIECES MARKED ⑥ 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 99, 100, AND 101 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE .

5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE . PIECES MARKED ⑤ , ⑥ , ⑦ , ⑨ , ⑪ , AND ⑭ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL . IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑫ TO BEAR IN FRONT OF A DOOR OPENING , HOWEVER , THE ADJACENT PIECE MARKED ⑩ MUST BE DOUBLED AND EXTENDED

(CONTINUED AT RIGHT ABOVE)



DIAGONAL BRACE

(SPECIAL NOTES CONTINUED)

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 ⑩ 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 ⑩ IS DOUBLED .

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

IF THE CAR HAS A BOWED END WALL , A BULKHEAD MUST BE INSTALLED . SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 112 .

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

KEY NUMBERS

① ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 28 . INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 . SEE 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 28 . WIRE TIE TO STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 112 . NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS .

③ SEPARATOR GATE , 3/8" PLYWOOD , 4' X 4' SHEET . POSITION AGAINST THE UNITS . NAIL TO THE ADJACENT CROSS BRACE OF THE ANTI-SWAY BRACES MARKED ① W/1-6d NAIL EACH .

④ PARTIAL LAYER GATE (2 REQD) . POSITION THE SUPPORT PIECE TO REST ON THE HORIZONTAL PIECE SHOWN AS PIECE MARKED ⑥ . SEE THE "PARTIAL-LAYER GATE" DETAIL ON PAGE 99 .

⑤ SUPPORT CLEAT , 2" X 4" X 10" (2 REQD) . NAIL TO THE CAR SIDEWALL W/4-12d NAILS . POSITION SO AS TO CENTER PIECES MARKED ⑥ AND ⑦ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS . SEE SPECIAL NOTE 5 AT LEFT .

⑥ HORIZONTAL PIECE , 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD) . NAIL TO THE CROSS CAR BRACE , PIECE MARKED ⑦ W/1-12d NAIL EVERY 6" . SEE SPECIAL NOTE 3 AT LEFT .

⑦ CROSS CAR BRACE , 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD) .

⑧ CENTER CLEAT, 2" X 4" X 36" (2 REQD) . NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑦ W/7-16d NAILS . SEE SPECIAL NOTE 6 ABOVE .

⑨ SPACER CLEAT, 2" X 4" X 12" LONG FOR UNIT NUMBERS 4 AND 6, 17" LONG FOR UNIT NUMBER 1, 19" LONG FOR UNIT NUMBERS 3 AND 5, AND 24" LONG FOR UNIT NUMBER 2 (2 REQD) . NAIL TO THE CAR SIDEWALL W/3, 4, OR 5-12d NAILS . SEE SPECIAL NOTE 2 AT LEFT .

⑩ HORIZONTAL WALL CLEAT , 2" X 6" X 72" (4 REQD) . NAIL TO THE CAR SIDEWALL W/16-12d NAILS .

⑪ POCKET CLEAT , 2" X 6" X 12" (2 REQD) . NAIL TO THE HORIZONTAL WALL CLEAT , PIECE MARKED ⑩ , W/4-16d NAILS .

⑫ DIAGONAL BRACE, 2 " X 4" X 50-1/4" (4 REQD) . SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED . TOENAIL TO THE CROSS CAR BRACE , PIECE MARKED ⑦ , AND TO THE HORIZONTAL WALL CLEAT , PIECE MARKED ⑩, W/2-16d NAILS AT EACH END .

⑬ BACK-UP CLEAT , 2" X 6" X 24" (4 REQD) . NAIL TO THE HORIZONTAL WALL CLEAT , PIECE MARKED ⑩ , W/8-16d NAILS .

⑭ HOLD-DOWN CLEAT , 2" X 4" X 18" (2 REQD) . NAIL TO THE CAR SIDEWALL W/5-12d NAILS .

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

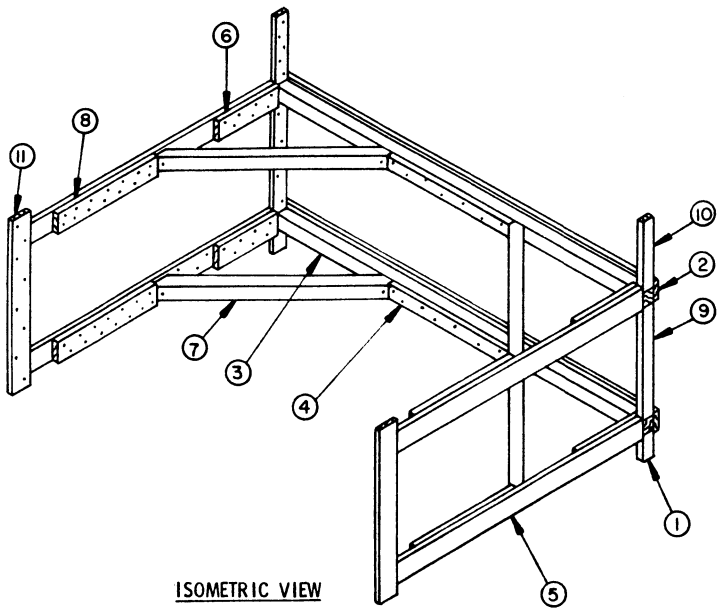
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. REFER TO THE CHART AND NOTE BELOW FOR THE MAXIMUM NUMBER OF UNITS TO BE HELD BY THE DEPICTED K-BRACE. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 100 AND 101 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 98 MAY BE USED.

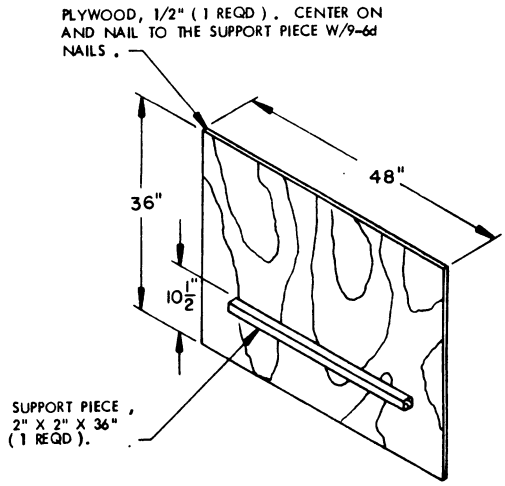
2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, ⑩, AND ⑪ MUST BE 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", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

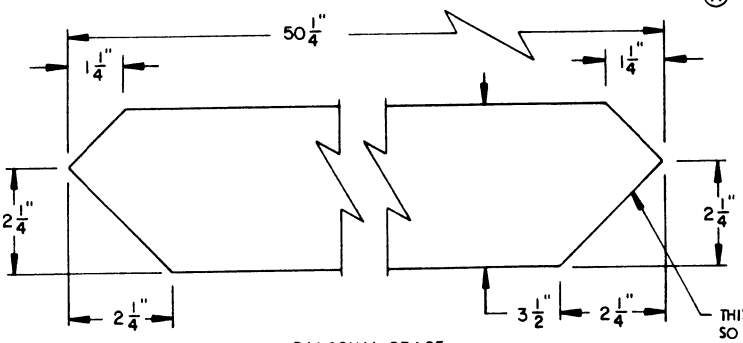
4. REFER TO PAGE 98 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW



PARTIAL-LAYER GATE



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 10" (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 NOTES "N" AND "O" ON PAGE 2.

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

④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 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" MATERIAL (2 REQD). REFER TO THE CHART AND NOTE BELOW FOR CLEAT LENGTH. NAIL TO THE CAR SIDEWALL W/3, 4, OR 5-12d 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.

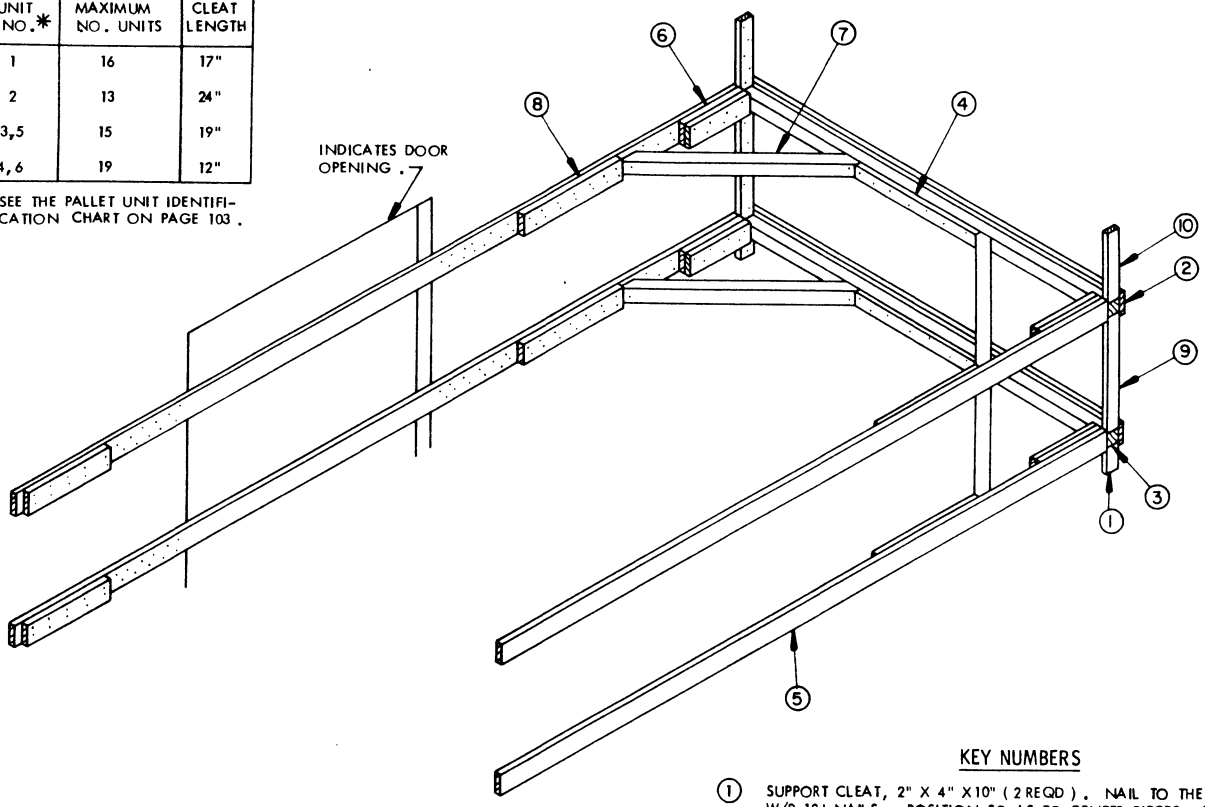
UNIT NO. *	MAXIMUM NO. UNITS	CLEAT LENGTH
1	11	17"
2	9	24"
3,5	11	19"
4,6	13	12"

* SEE THE PALLET UNIT IDENTIFICATION CHART ON PAGE 103.

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

UNIT NO.*	MAXIMUM NO. UNITS	CLEAT LENGTH
1	16	17"
2	13	24"
3,5	15	19"
4,6	19	12"

*SEE THE PALLET UNIT IDENTIFICATION CHART ON PAGE 103.



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. REFER TO THE CHART AND NOTE ABOVE FOR THE NUMBER OF UNITS K-BRACE "C" WILL RETAIN. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 101 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 99 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 98 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

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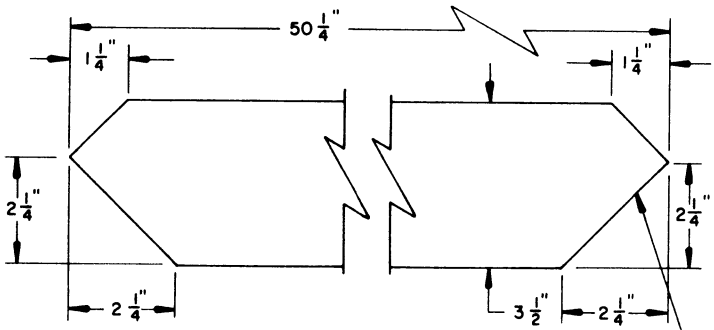


DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X10" (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 PIECES TO THE FIRST IN A LIKE MANNER.

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

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

⑨ SPACER CLEAT, 2" X 4" MATERIAL (2 REQD). REFER TO THE CHART AND NOTE ABOVE FOR CLEAT LENGTH. NAIL TO THE CAR SIDEWALL W/3, 4, OR 5-12d NAILS.

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

(SPECIAL NOTES CONTINUED)

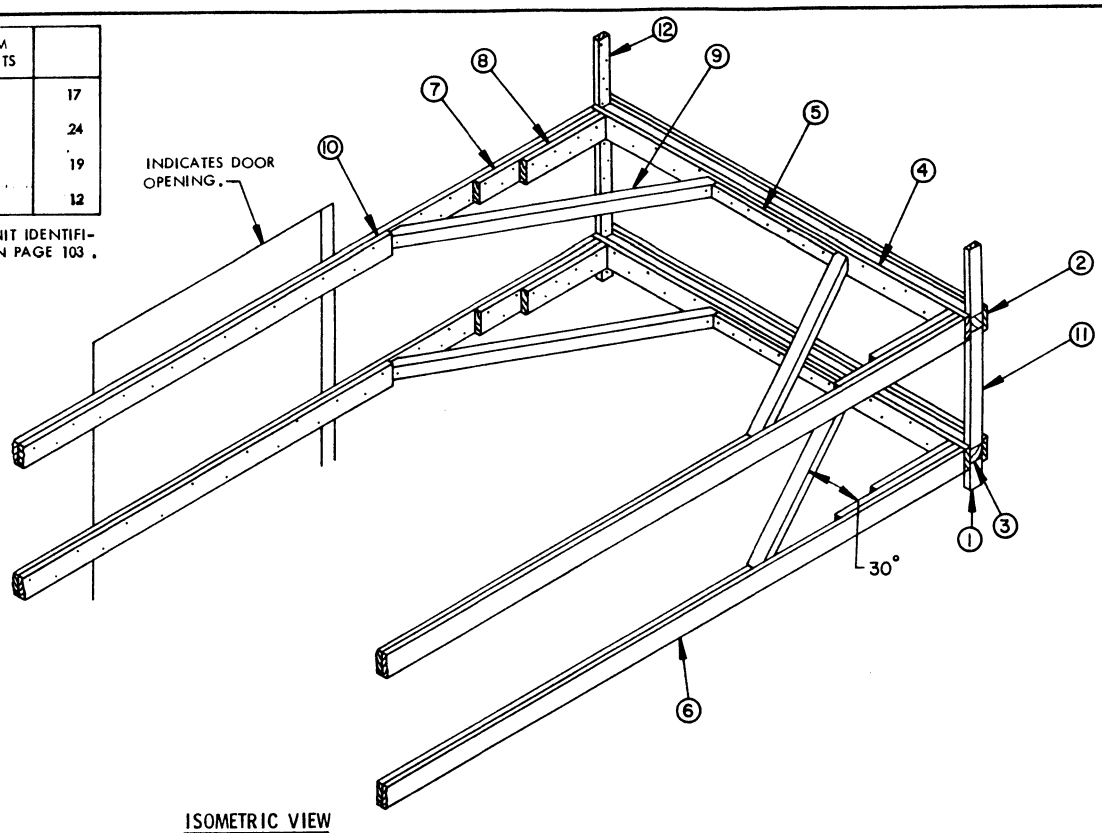
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR., 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

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

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

UNIT NO.*	MAXIMUM NO. UNITS	
1	20	17
2	19	24
3,5	19	19
4,6	24	12

* SEE THE PALLET UNIT IDENTIFICATION CHART ON PAGE 103 .



ISOMETRIC VIEW

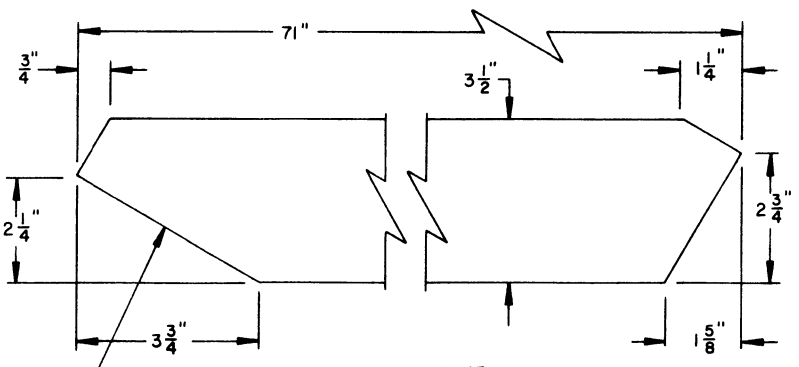
SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS . REFER TO THE CHART AND NOTE ABOVE FOR THE NUMBER OF UNITS TO BE RETAINED BY K-BRACE "D" . IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 100 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 99 MAY BE USED . IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 98 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 MARKED ⑥ IS DOUBLED .

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

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



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE .

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

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X10" (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 NOTES "N" AND "O" ON PAGE 2 .

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

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

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

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

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

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

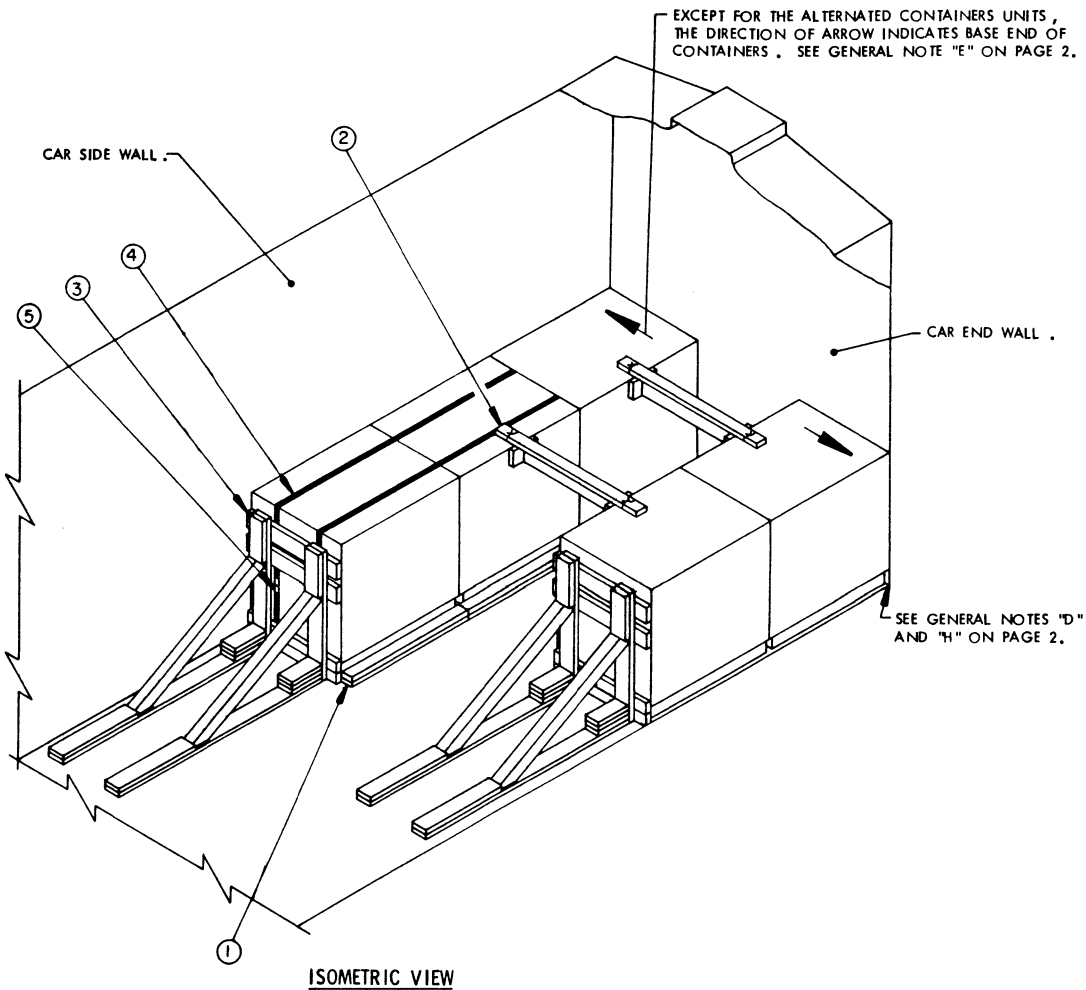
⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD) . SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED . TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④ , AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥ , W/1-60d NAIL AT EACH END.

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

⑪ SPACER CLEAT , 2" X 4" MATERIAL (2 REQD) . REFER TO THE CHART AND NOTE ABOVE FOR CLEAT LENGTH . NAIL TO THE CAR SIDEWALL W/3, 4, OR 5-12d NAILS .

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

TYPE "D" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE 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.
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, REFER TO THE "CENTER GATE E" DETAIL ON PAGE 17 FOR THE ALTERNATED CONTAINERS UNITS, THE "CENTER GATE P" DETAIL ON PAGE 41 FOR THE FLAT DUNNAGE METHOD UNITS, OR THE "CENTER GATE Z" DETAIL ON PAGE 65 FOR THE ROUTED DUNNAGE METHOD UNITS.
6. DIMENSION "A" IS LOCATED AT THE BASE END OF THE CONTAINER. ONE RIGHT HAND, AND ONE LEFT HAND KNEE BRACE ASSEMBLY IS REQUIRED FOR THE FLAT AND ROUTED DUNNAGE METHOD UNITS ONLY.

KEY NUMBERS

(1) SIDE BLOCKING, 2" X 4" X 45", OR A LENGTH TO SUIT (DOUBLED) (5 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

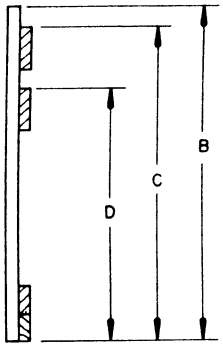
(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). WIRE TIE TO THE STRAPPING BOARDS OF UNIT WITH NO. 14 GAGE WIRE. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B", AND THE "TIE WIRE APPLICATION B" DETAILS ON PAGE 118. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(3) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 103 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS.

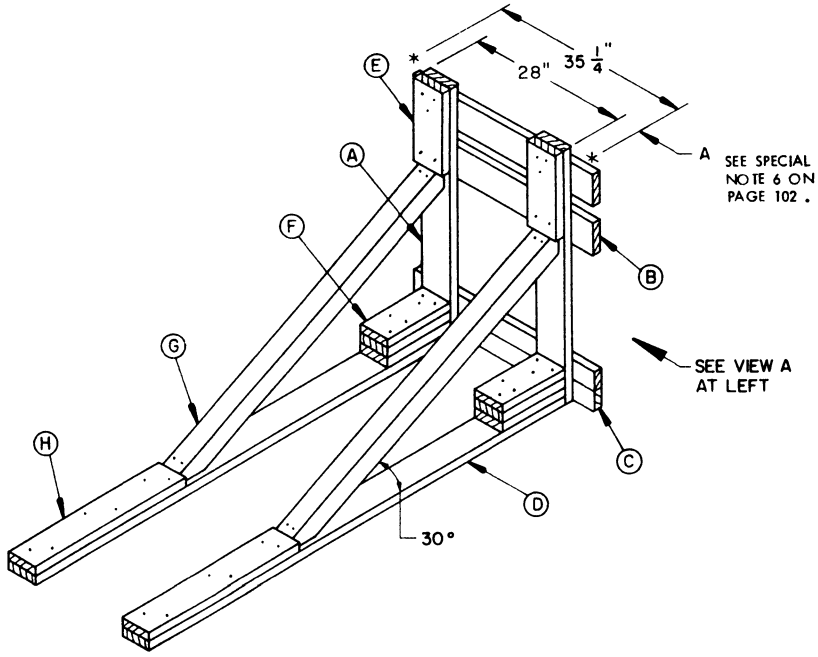
(4) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 24'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION TO ENCIRCLE THE ODD UNIT, AND THE UNIT ADJACENT TO IT.

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

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



VIEW A



KNEE BRACE ASSEMBLY

PALLET UNIT NUMBER	DIMENSIONAL CHART			
	DIM A	DIM B	DIM C	DIM D
1	3-5/8"	40-1/4"	37-1/4"	29-1/4"
2	3-5/8"	47-1/2"	44"	36"
3	4-5/8"	44"	41"	33"
4	4-5/8"	36-1/4"	33-1/4"	25-1/4"
5	4-1/4"	43-1/2"	40-1/2"	32-1/2"
6	4-1/4"	35-3/4"	32-3/4"	24-3/4"

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

KEY NUMBERS

(A) VERTICAL PIECE, 2" X 6" BY DIMENSION B (2 REQD). SEE THE CHARTS AT LEFT FOR PLACEMENT DIMENSIONS.

(B) HORIZONTAL PIECE, 2" X 6" X 35-1/4" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE "VIEW A" AND THE CHARTS AT LEFT FOR PLACEMENT GUIDANCE. SEE GENERAL NOTES "N" AND "O" ON PAGE 2.

(C) HORIZONTAL PIECE, 2" X 4" X 35-1/4" (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

(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 "T" ON PAGE 2.

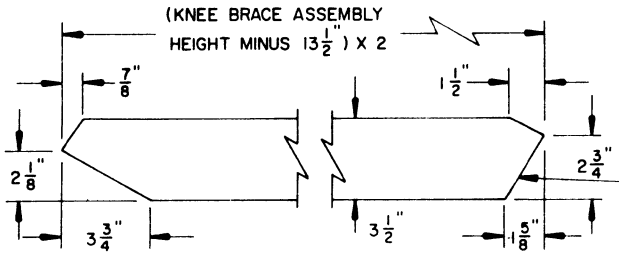
(E) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

(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 MARKED (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 102.



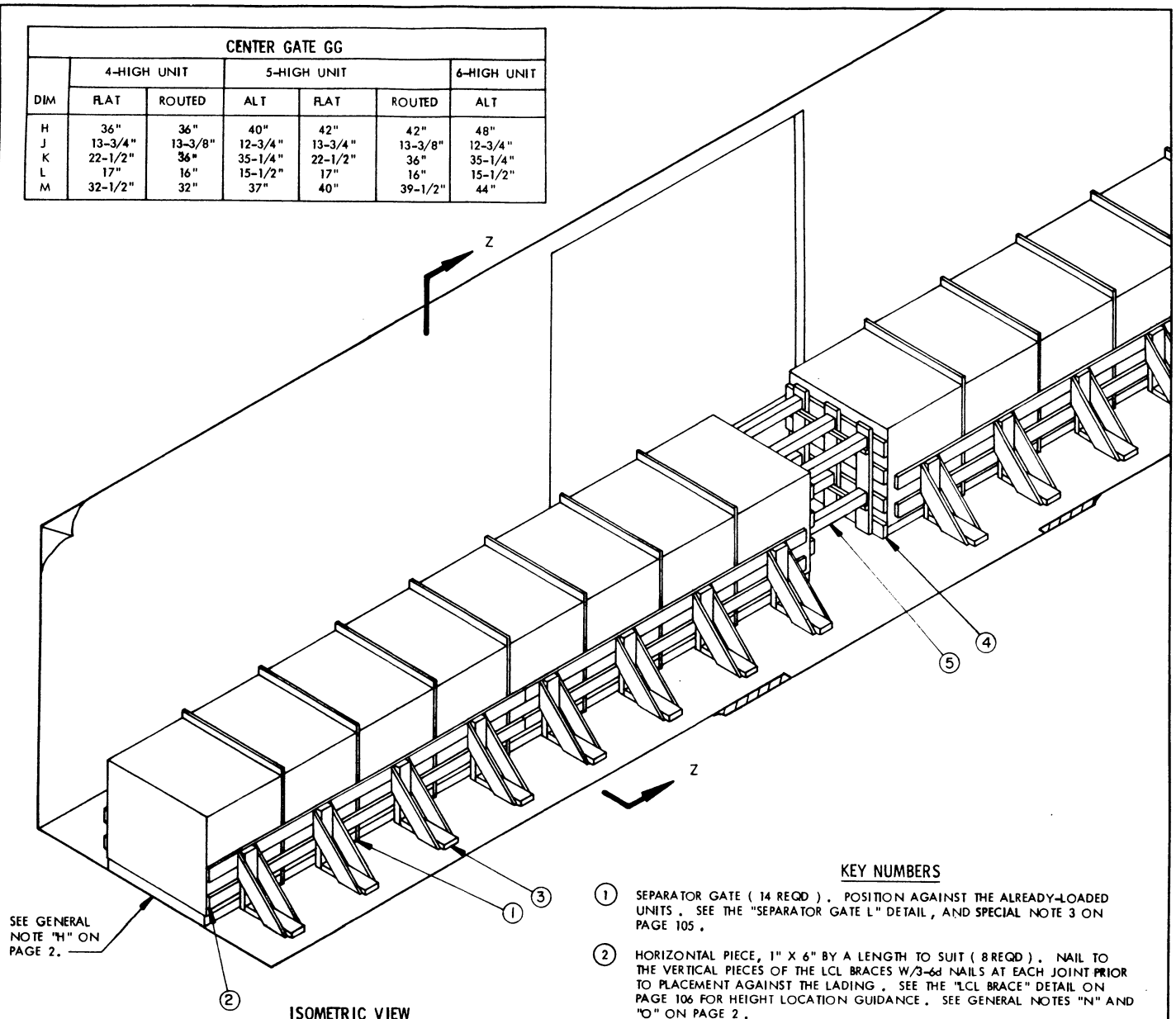
THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

BRACE

4" X 4" MATERIAL

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

CENTER GATE GG						
	4-HIGH UNIT		5-HIGH UNIT			6-HIGH UNIT
DIM	FLAT	ROUTED	ALT	FLAT	ROUTED	ALT
H	36"	36"	40"	42"	42"	48"
J	13-3/4"	13-3/8"	12-3/4"	13-3/4"	13-3/8"	12-3/4"
K	22-1/2"	36"	35-1/4"	22-1/2"	36"	35-1/4"
L	17"	16"	15-1/2"	17"	16"	15-1/2"
M	32-1/2"	32"	37"	40"	39-1/2"	44"



ISOMETRIC VIEW

KEY NUMBERS

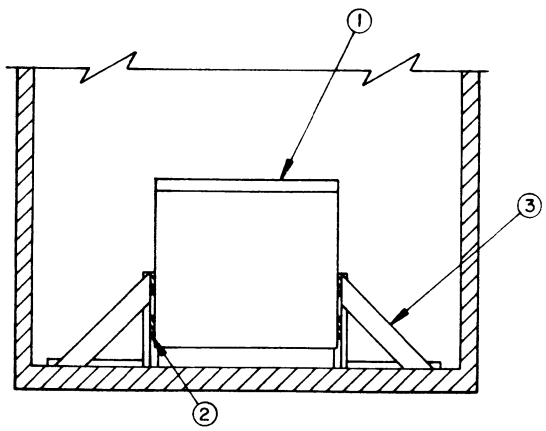
(1) SEPARATOR GATE (14 REQD) . POSITION AGAINST THE ALREADY-LOADED UNITS . SEE THE "SEPARATOR GATE L" DETAIL , AND SPECIAL NOTE 3 ON PAGE 105 .

(2) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD) . NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING . SEE THE "LCL BRACE" DETAIL ON PAGE 106 FOR HEIGHT LOCATION GUIDANCE . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 .

(3) LCL BRACE (32 REQD) . SEE THE DETAIL ON PAGE 106 AND SPECIAL NOTE 3 ON PAGE 105 . NAIL TO THE CAR FLOOR W/7-16d NAILS . SEE GENERAL NOTE "T" ON PAGE 2.

(4) CENTER GATE (2 REQD) . SEE THE "CENTER GATE FF" OR THE "CENTER GATE GG" DETAIL ON PAGE 105 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY .

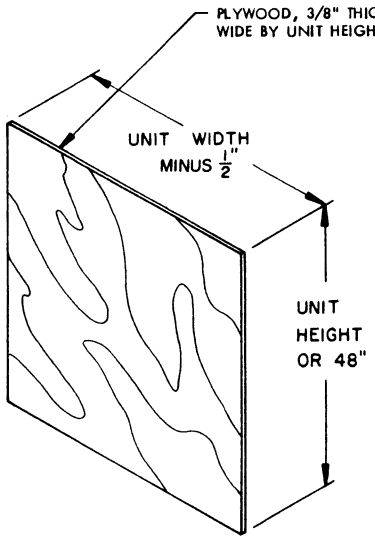
(5) STRUT, 4" X 4" BY CUT TO FIT (6 REQD FOR LENGTHWISE, 4 REQD FOR CROSSWISE) . TOENAIL TO PIECES MARKED (4) W/2-16d NAILS AT EACH END . SEE GENERAL NOTES "V" AND "W" ON PAGE 3 .



SECTION Z-Z

CENTER GATE FF						
	4-HIGH UNIT		5-HIGH UNIT			6-HIGH UNIT
DIM	FLAT	ROUTED	ALT	FLAT	ROUTED	ALT
A	36"	36"	40"	42"	42"	48"
B	48-5/8"	46-3/4"	45-1/2"	48-5/8"	46-3/4"	45-1/2"
C	6"	5"	6"	6"	5"	6"
D	-	-	20"	21-1/2"	20-1/2"	20"
E	17"	16"	15-1/2"	17"	16"	15-1/2"
F	-	-	26-1/2"	28-1/2"	28"	30"
G	32-1/2"	32"	37"	40"	39-1/2"	44"

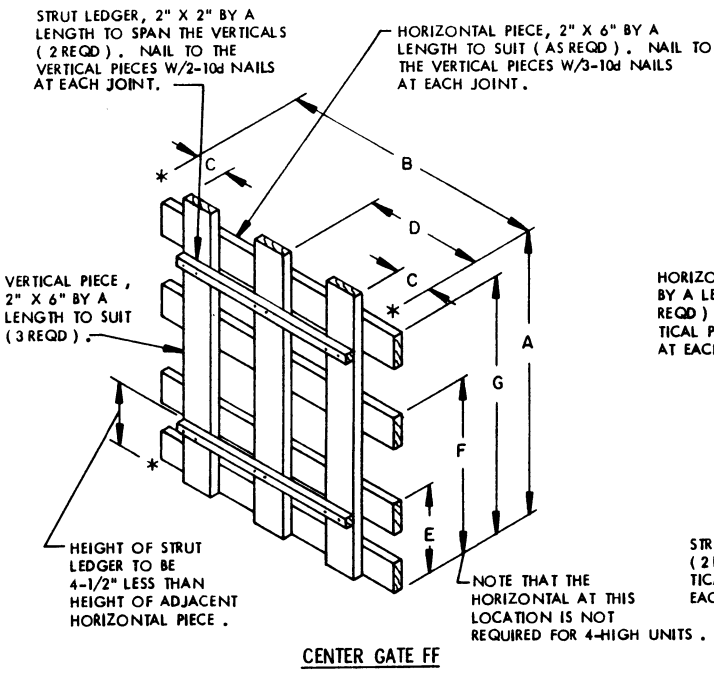
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



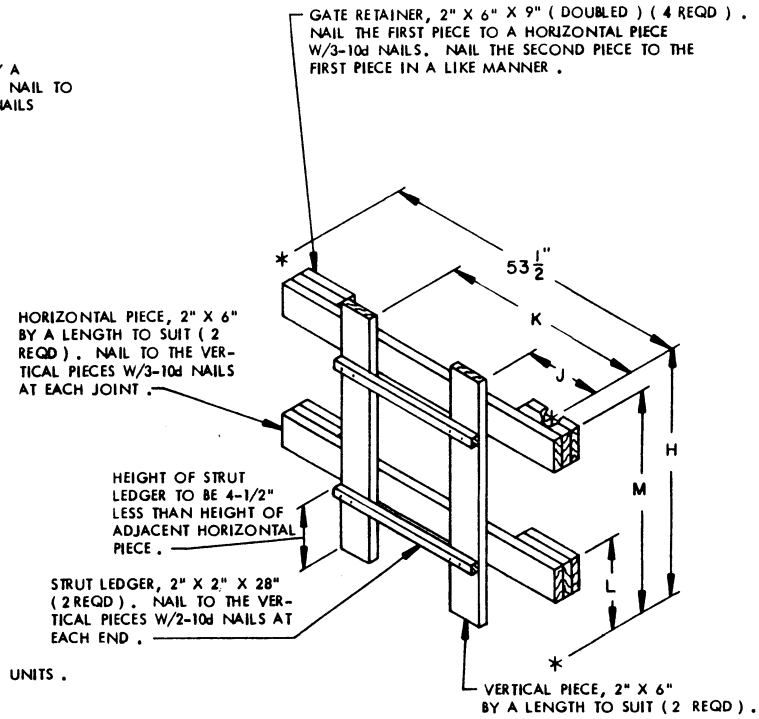
SEPARATOR GATE L

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN . CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED .
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT .
3. A 1-WIDE LENGTHWISE LOAD IS SHOWN AS TYPICAL . A CHART IS GIVEN TO SPECIFY THE PROPER DIMENSIONS FOR THE LENGTH AND POSITIONING OF PIECES FOR THE CENTER GATES . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE CROSSWISE LOADS FOR WHICH THERE IS ALSO A CHART WHICH SPECIFIES LENGTHS AND POSITIONING OF PIECES FOR THE CENTER GATES . NOTE THAT THE SEPARATOR GATES, PIECES MARKED ①, ARE NOT REQUIRED , AND THE QUANTITY OF LCL BRACES, PIECES MARKED ③ , , IS NOT CORRECT FOR CROSSWISE LOADS . ONE (1) LCL BRACE WILL BE CENTERED AT EACH SIDE OF EACH PALLET UNIT .
4. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL .
5. NOTE THAT GATE HOLD DOWN PIECES, SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATE FOR A SINGLE ROW MUST BE APPLIED TO THE BOTTOM HORIZONTAL OF CENTER GATE "FF" .



CENTER GATE FF



CENTER GATE GG

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE FF" CHART ON PAGE 104 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL . SEE SPECIAL NOTE 5 ABOVE .

THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE GG" CHART AT TOP OF PAGE 104 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE .

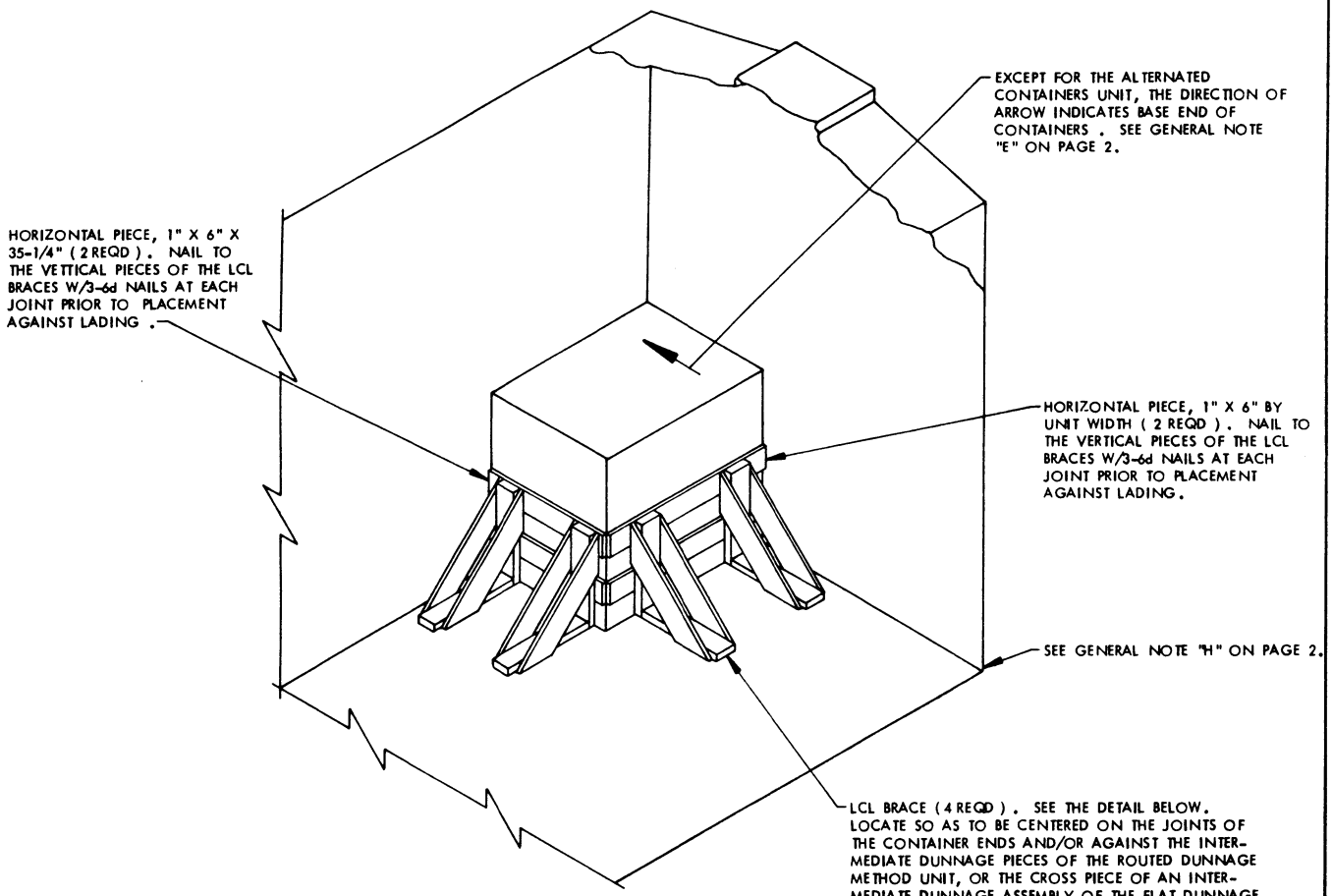
BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	414	207
2" X 2"	12	4
2" X 3"	6	3
2" X 6"	181	181
4" X 4"	15	20
NAILS	**NO. REQD**	**POUNDS**
6d (2")	192	1-1/4
8d (2-1/2")	384	4
10d (3")	112	1-3/4
16d (3-1/2")	312	6-3/4
PLYWOOD 3/8" (7 SHEETS) ---- 224 SQ FT REQD -- 231 LBS		

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	16	20,208 LBS
DUNNAGE		1,075 LBS
TOTAL WEIGHT		21,283 LBS

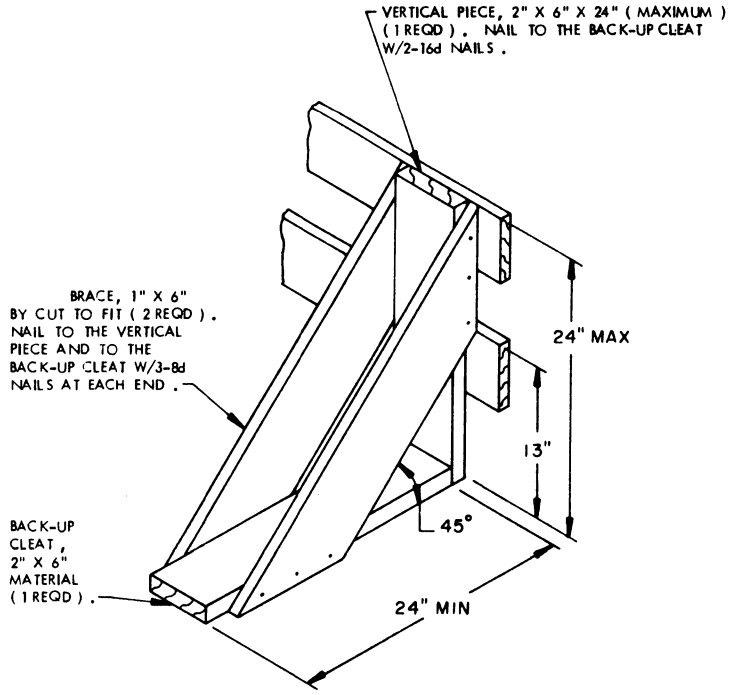
TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

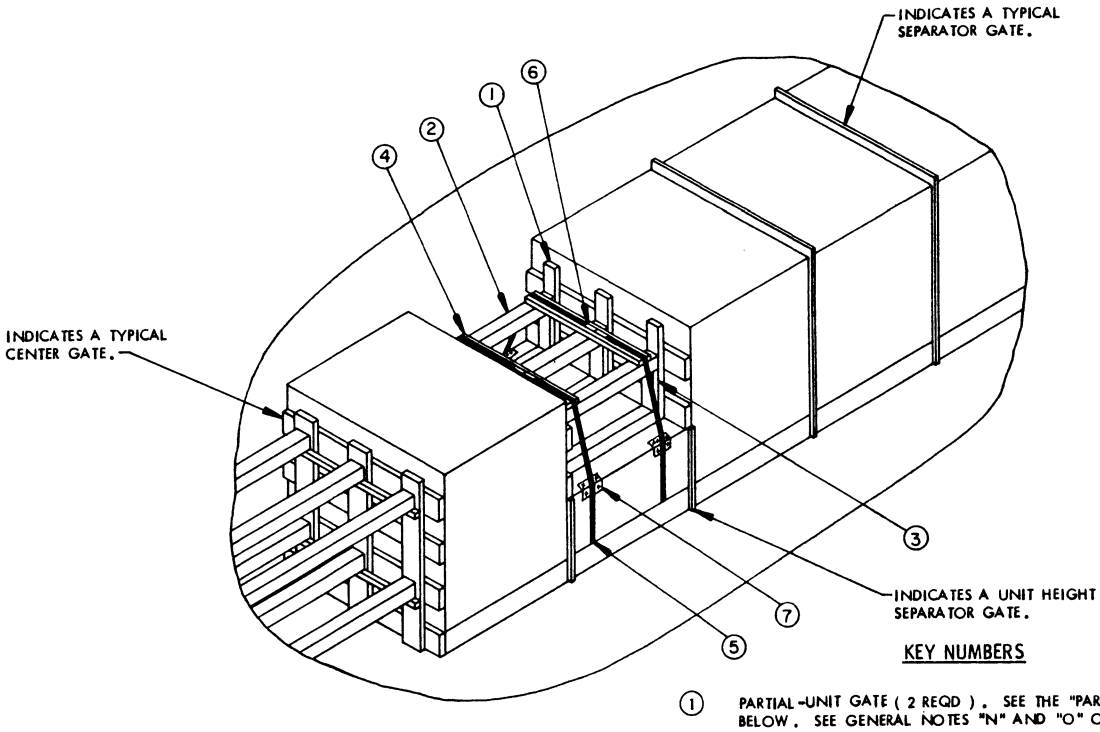
SPECIAL NOTES:

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



LCL BRACE

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

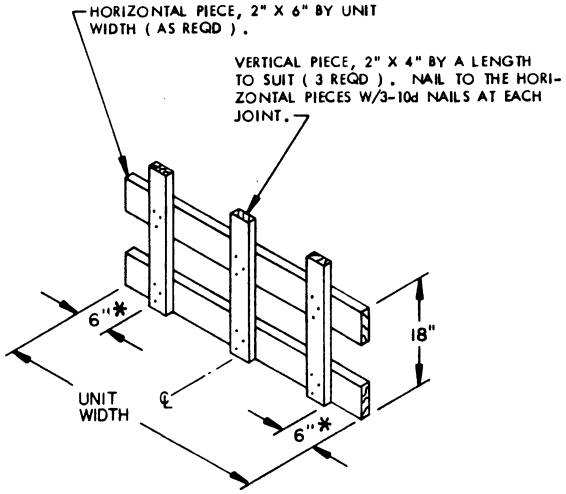


KEY NUMBERS

1. PARTIAL-UNIT GATE (2 REQD) . SEE THE "PARTIAL-UNIT GATE A" DETAIL BELOW . SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
2. STRUT, 4" X 4" X 30" (6 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 10" (4 REQD) . NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.
4. STRAPPING BOARD, 2" X 4" X 34-1/2" (2 REQD) . NAIL TO THE STRUTS , PIECES MARKED (3) , W/3-10d NAILS AT EACH END.
5. UNITIZING STRAP, 1-1/4" X .031" X .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). THREAD THRU THE STRAP SLOT OF THE PALLET.
6. SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT) . SEE GENERAL NOTE "P" ON PAGE 2.
7. ANTI-CHAFING NEUTRAL BARRIER MATERIAL . POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT .

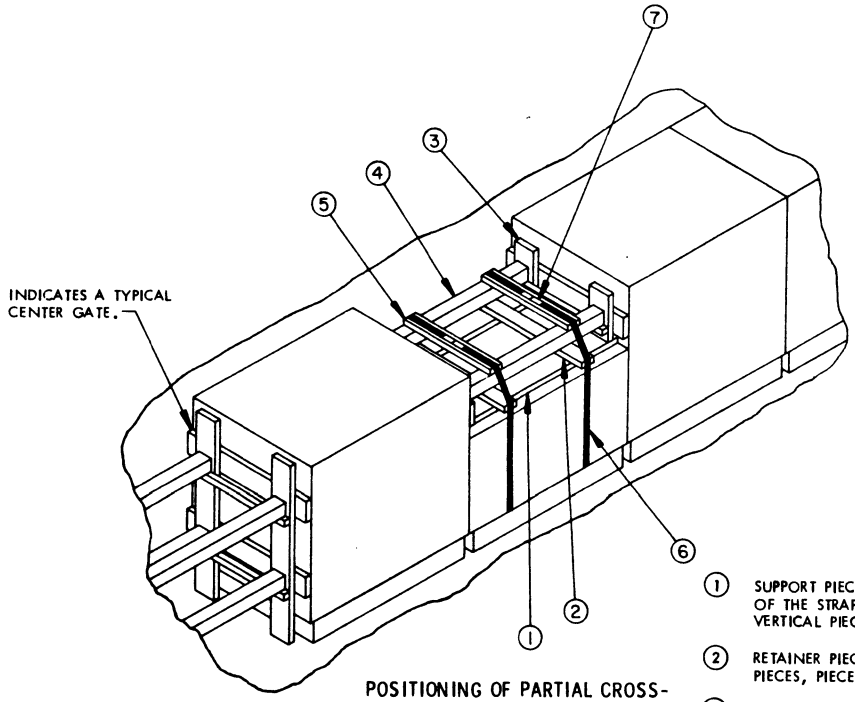
SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE ROUTED DUNNAGE METHOD UNIT (BASIC HEIGHT) . THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE OTHER UNITS COVERED BY THIS DOCUMENT .
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT . THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 5-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF FOUR (4) CONTAINERS OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/12-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS .
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION . OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT .
6. THE "POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS .



PARTIAL-UNIT GATE A

* THIS DIMENSION WILL BE 6-1/2" FOR ALTERNATED CONTAINER UNITS, AND 7" FOR THE FLAT DUNNAGE METHOD UNITS .



POSITIONING OF PARTIAL CROSS-WISE UNIT IN A LAYER

SPECIAL NOTES:

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

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

3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF CROSSWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 5-LAYER LOAD. THE PRICINPLES 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/12-20PM1001, 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 SHIPEMNT.

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

7. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 110 MAY BE MORE ECONOMICAL.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT WIDTH (2 REQD). POSITION ON TOP OF THE STRAPPING BOARD OF A PALLET UNIT TO ALIGN WITH THE VERTICAL PIECES OF PIECE MARKED (3) .

(2) RETAINER PIECE, 2" X 4" X 35-1/4" (2 REQD). NAIL TO THE SUPPORT PIECES, PIECES MARKED (1) , W/2-10d NAILS AT EACH JOINT.

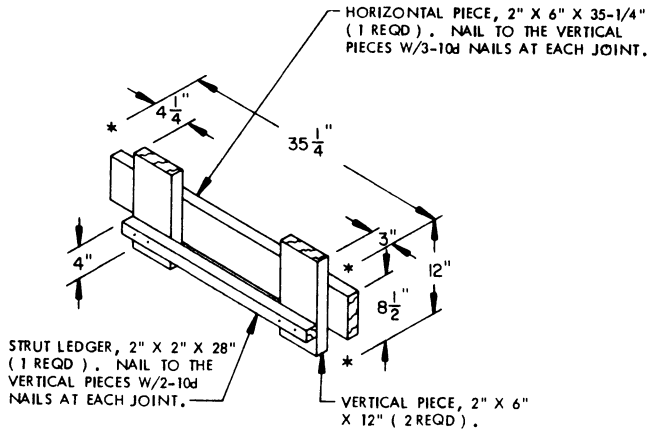
(3) PARTIAL-UNIT GATE (2 REQD , ONE RIGHT HAND AND ONE LEFT HAND). SEE THE PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "N" AND "O" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

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

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

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

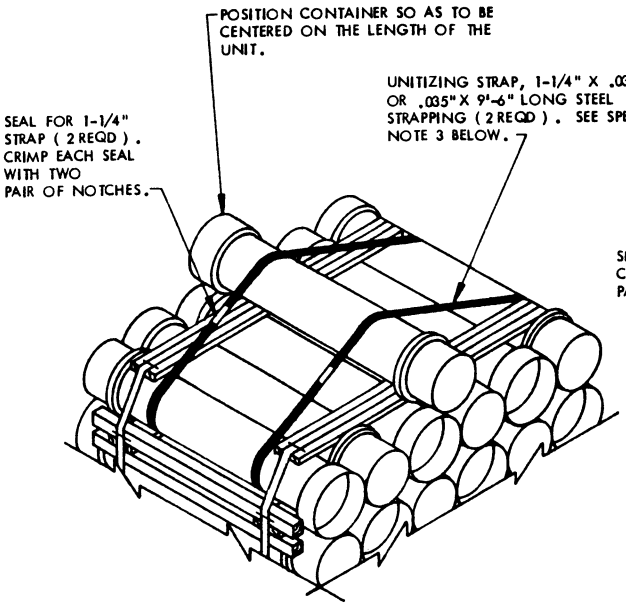
(7) SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "P" ON PAGE 2.



PARTIAL-UNIT GATE B

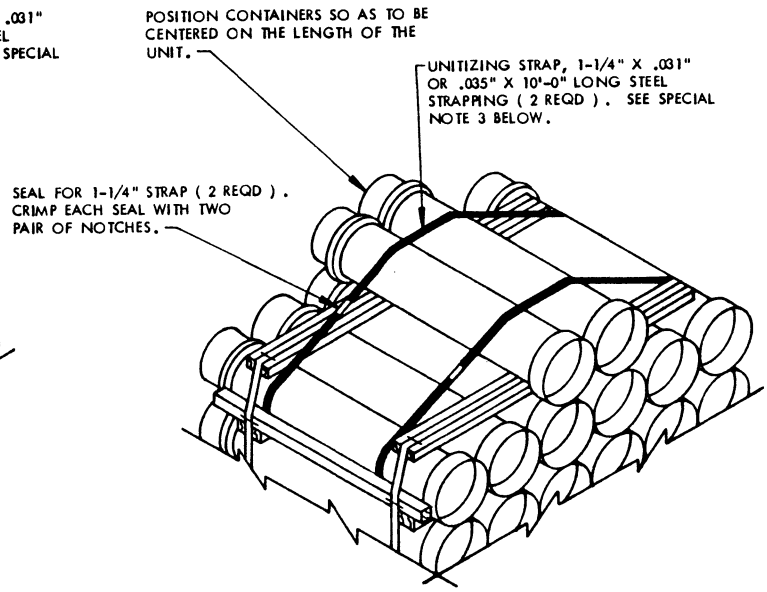
(ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED)

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.



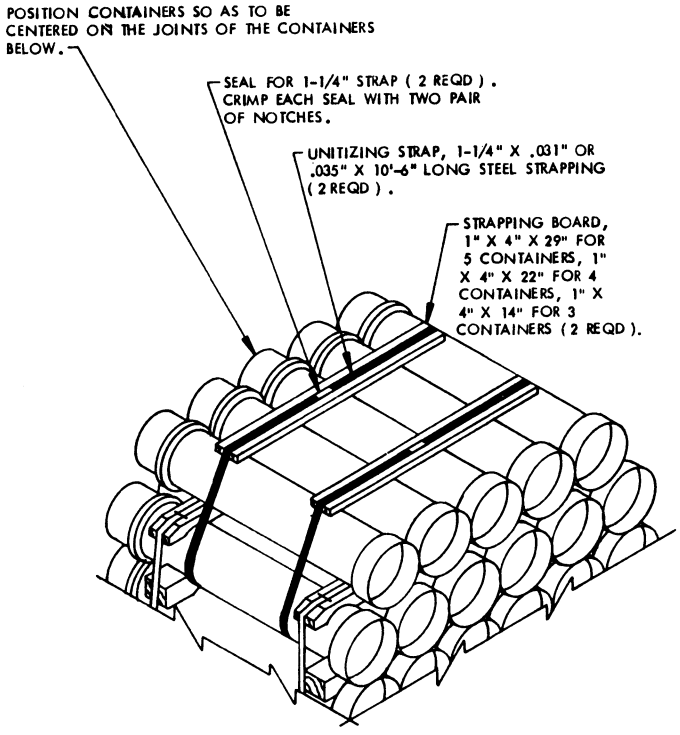
SECUREMENT OF ONE CONTAINER

(ALTERNATED CONTAINERS UNIT)



SECUREMENT OF TWO CONTAINERS

(FLAT DUNNAGE METHOD UNIT)



SECUREMENT OF FIVE CONTAINERS

(ROUTED DUNNAGE METHOD UNIT)

SPECIAL NOTES:

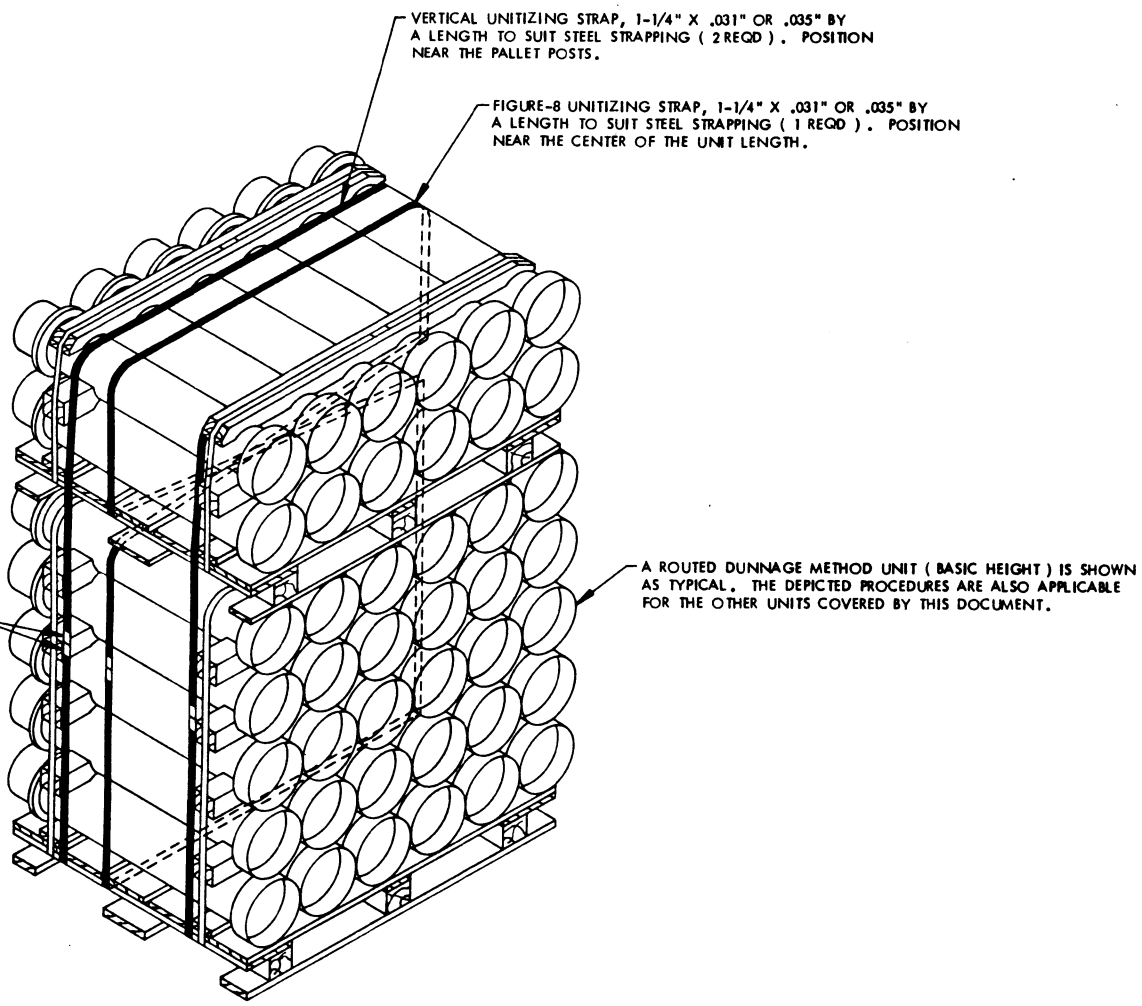
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS 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 110 OR WITHIN A LAYER AS SHOWN ON PAGES 107 AND 108.

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.

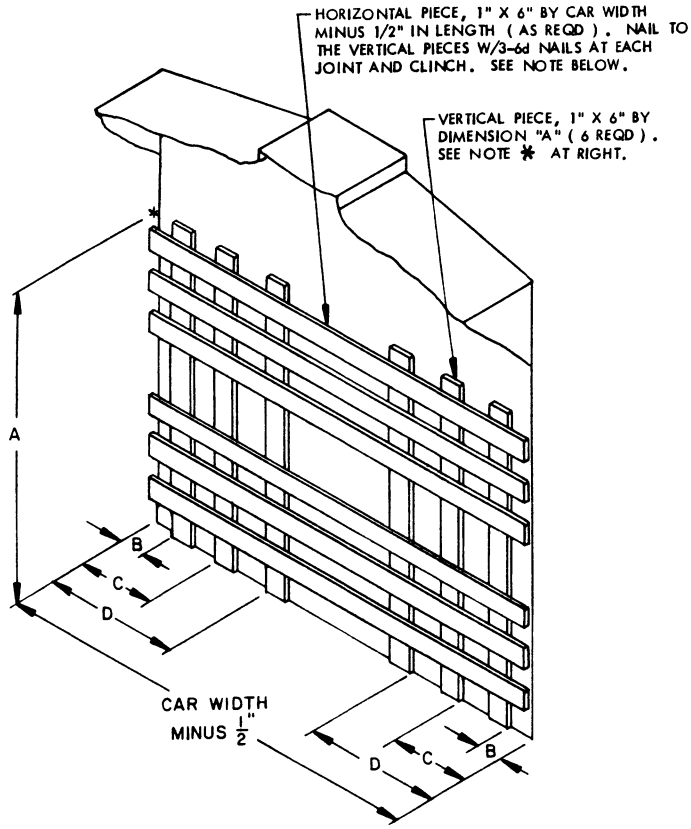
4. OBVIOUSLY, A PALLET UNIT WITH ONE OR MORE CONTAINERS STRAPPED TO THE TOP MUST BE POSITIONED IN THE TOP LAYER OF A LOAD. THE PREFERRED LOCATION WOULD BE NEAR THE CENTER AREA OF A CAR IF A FULL LOAD IS BEING SHIPPED.

5. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



SECUREMENT OF PARTIAL UNIT ON TOP OF A FULL PALLET UNIT

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 108.



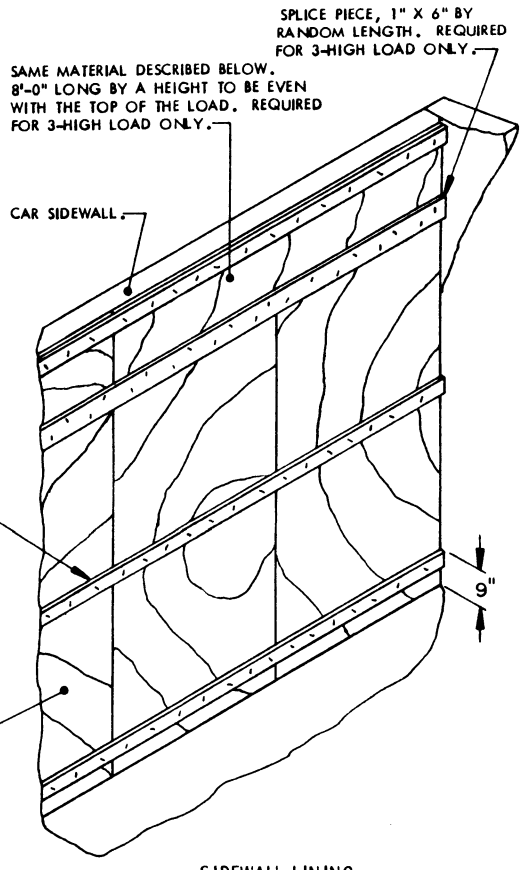
END WALL LINING

REFER TO THE PROPER CENTER GATE FOR THE UNIT TO BE LOADED ON PAGES 14, 26, 38, 50, 62, AND 74, FOR THE HEIGHT LOCATION OF THE 1" X 6" HORIZONTAL PIECES ON THE END WALL LINING. REFER TO THE UNIT IDENTIFICATION CHART, AND THE DIMENSIONAL CHART AT RIGHT ABOVE FOR THE VERTICAL PIECE HEIGHT AND LOCATION REPRESENTED BY LETTERS. NOTE THAT DIMENSION A CAN BE DERIVED FROM THE PAGES LISTED WITHIN THIS NOTE FOR END WALL LINING OF OTHER HEIGHTS.

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

PALLET UNIT NUMBER	DIMENSIONS			
	A	B	C	D
1	10'-5"	6"	19-3/4"	34"
2	8'-0"	6"	19-3/4"	34"
3	8'-0"	5-3/4"	21-1/4"	37"
4	7'-6"	5-3/4"	- - -	37"
5	8'-0"	4-3/4"	20-3/8"	36"
6	7'-6"	4-3/4"	- - -	36"

* NOTE THAT ONLY FOUR (4) VERTICAL PIECES ARE REQUIRED FOR UNIT NUMBERS 4 AND 6.



SIDEWALL LINING

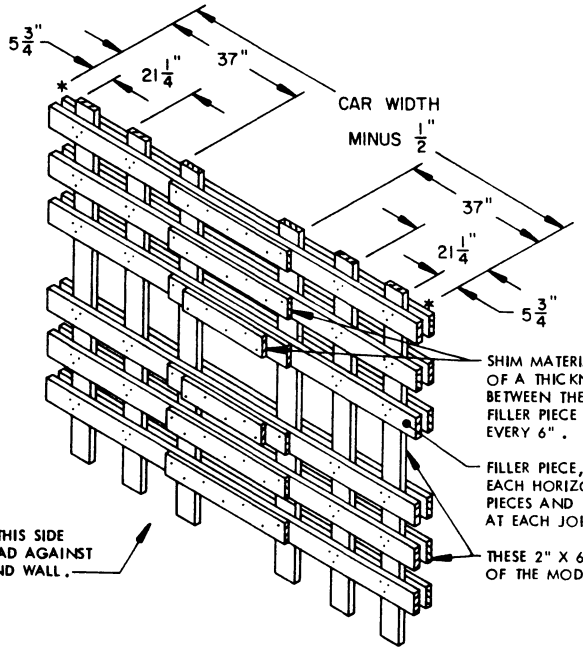
THIS VIEW DEPICTS LINING REQUIRED FOR SHIPMENT IN A CAR EQUIPPED WITH A STEEL SIDEWALL. NOTE THAT IF THE CAR IS EQUIPPED WITH A STEEL-FACED PLUG DOOR, THE SPECIAL LINING WILL ALSO BE REQUIRED IN THE DOORWAY AREA IF THE SPECIFIED DOORWAY PROTECTION DOES NOT SUFFICE.

NOTE ▲:

THE ALTERNATIVE SEPARATOR GATE MAY BE USED IN LIEU OF THE SEPARATOR GATE SHOWN WITHIN A LOAD, WHICH IS FABRICATED FROM 1" X 4" AND 1" X 6" MATERIAL IN A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES ONLY. NOTE THAT THE GATE MUST BE POSITIONED SO THE TIE PIECES ARE ON THE SIDE OF THE GATE WHICH BEARS AGAINST THE CROSS MEMBERS. THE ALTERNATIVE SEPARATOR GATE CAN ONLY BE USED IN LOADS WHICH ARE ONE OR TWO PALLET UNITS IN HEIGHT.

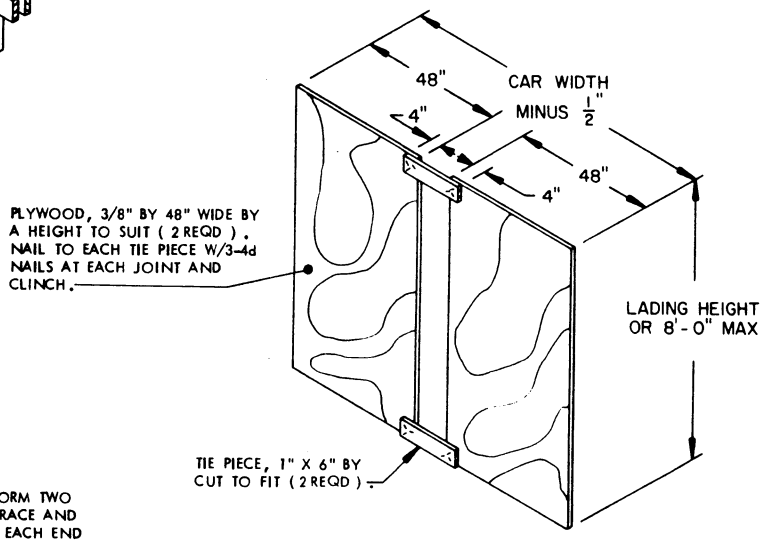
NOTE O:

IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED-OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS, OR AT THE END OF A CAR EQUIPPED WITH MECHANICAL BRACING DEVICES, IF DESIRED, IN LIEU OF USING CROSS MEMBERS. THE BULKHEAD MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD-DOWN PIECES. A MODIFIED CENTER GATE "L", AS DETAILED ON PAGE 38, IS SHOWN AS TYPICAL.



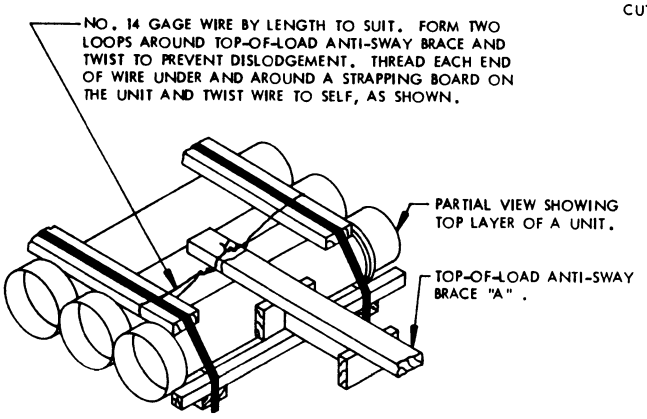
END-OF-CAR BULKHEAD

SEE "NOTE O" AT RIGHT.

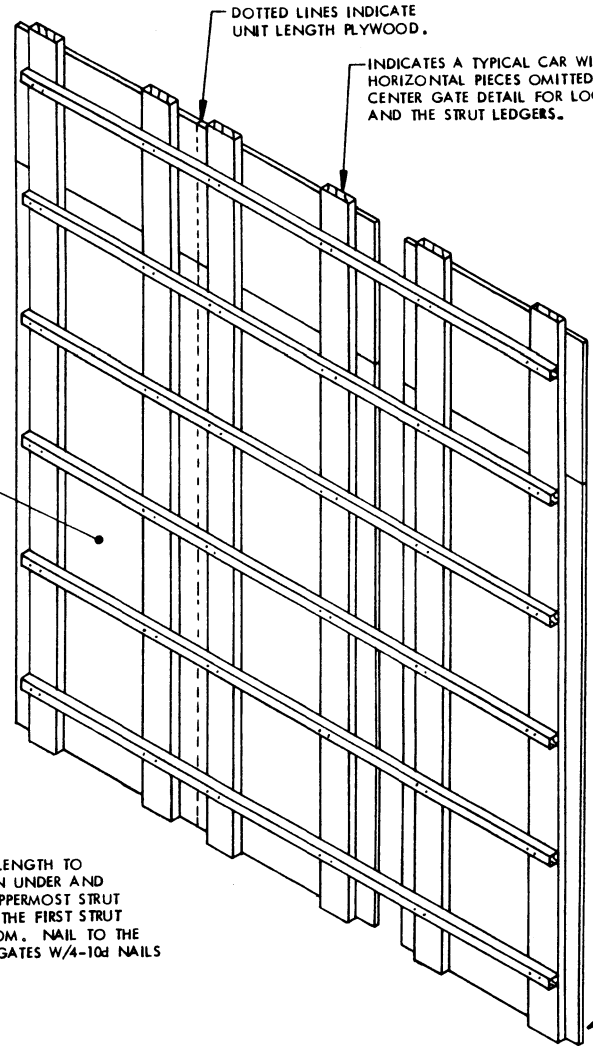


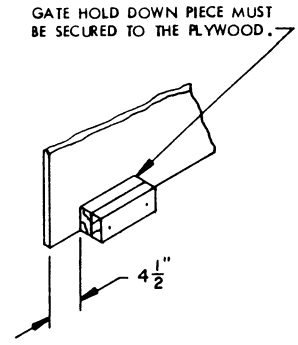
ALTERNATIVE SEPARATOR GATE

SEE "NOTE ▲" ABOVE.



TIE WIRE APPLICATION A



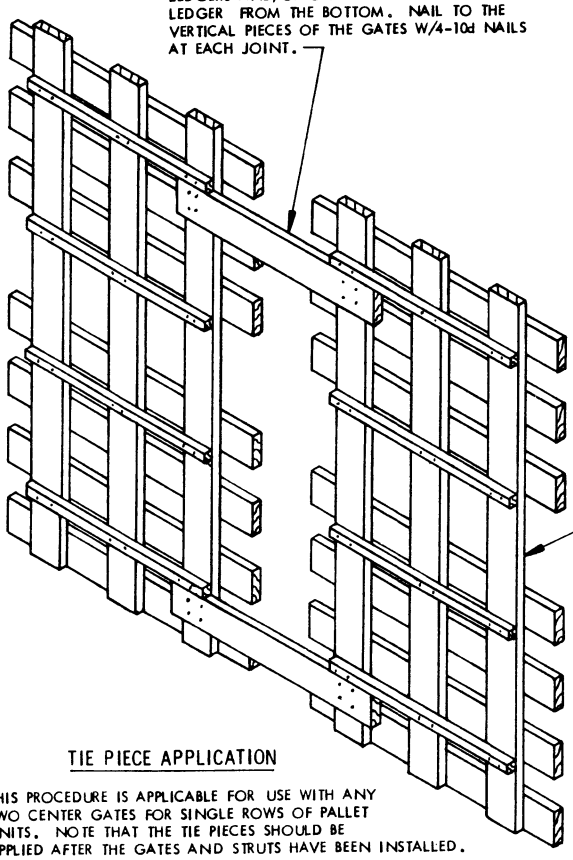


VIEW A

REFER TO THE APPLICABLE CENTER GATE DETAIL FOR LOCATION OF GATE HOLD DOWN PIECE.

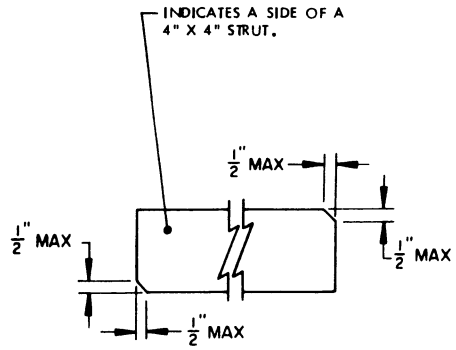
PLYWOOD CENTER GATE ALTERNATIVE

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.



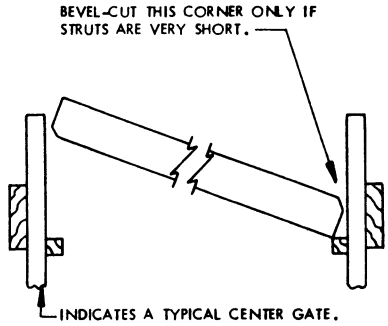
TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH ANY TWO CENTER GATES FOR SINGLE ROWS OF PALLET UNITS. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



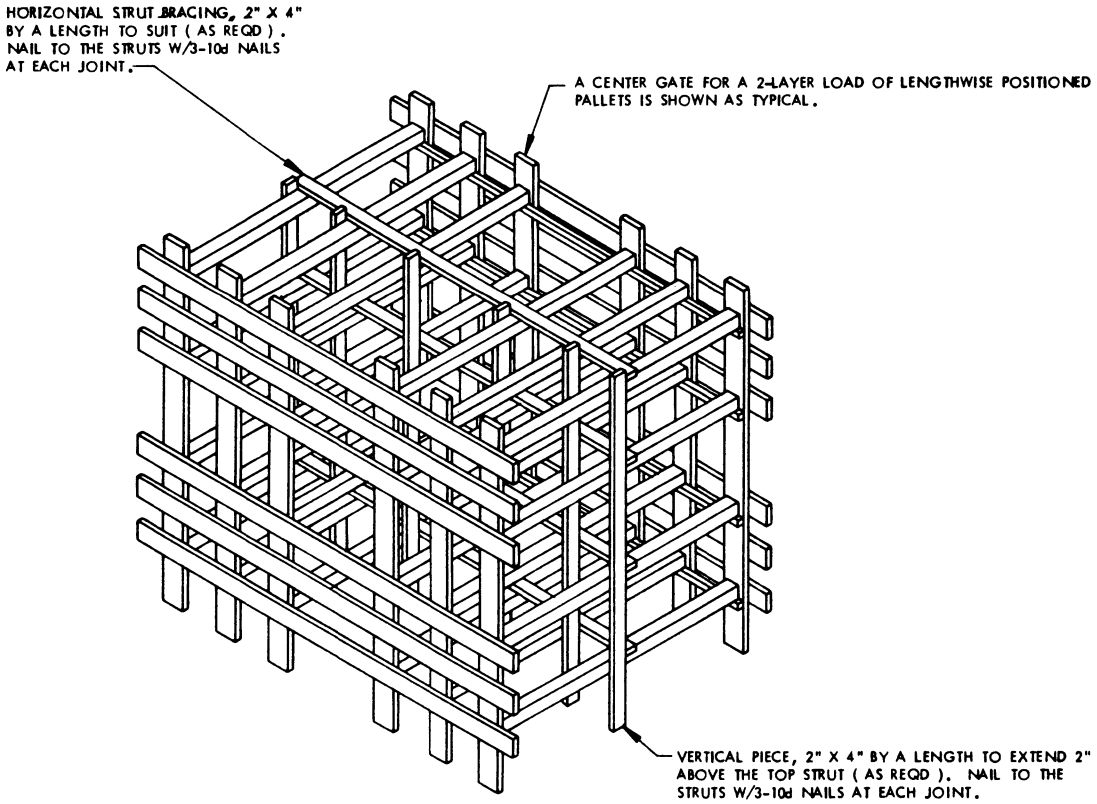
BEVEL-CUT

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



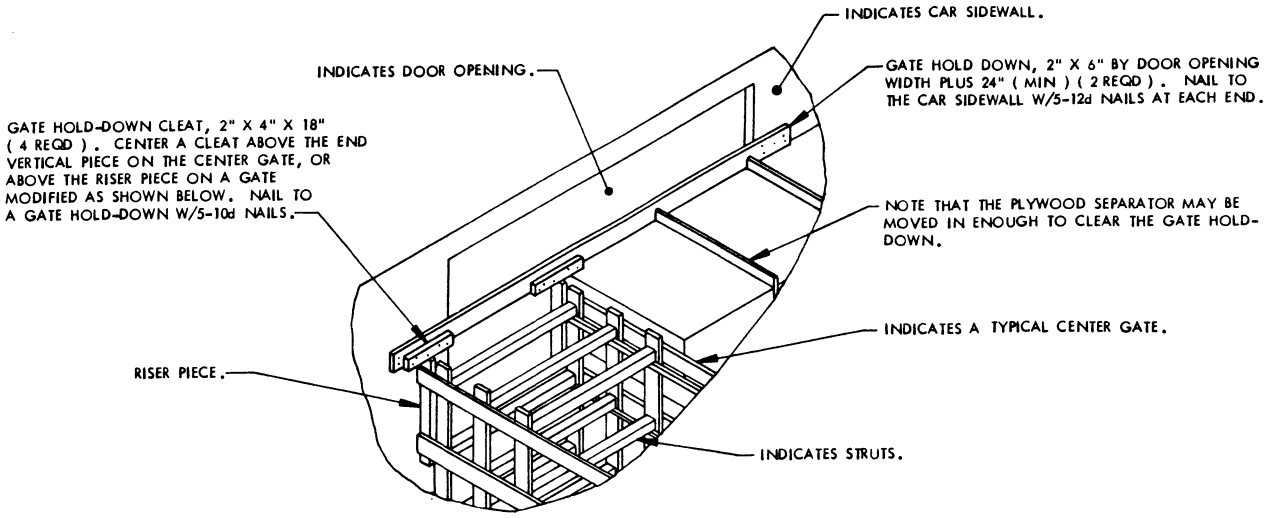
STRUT INSTALLATION

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



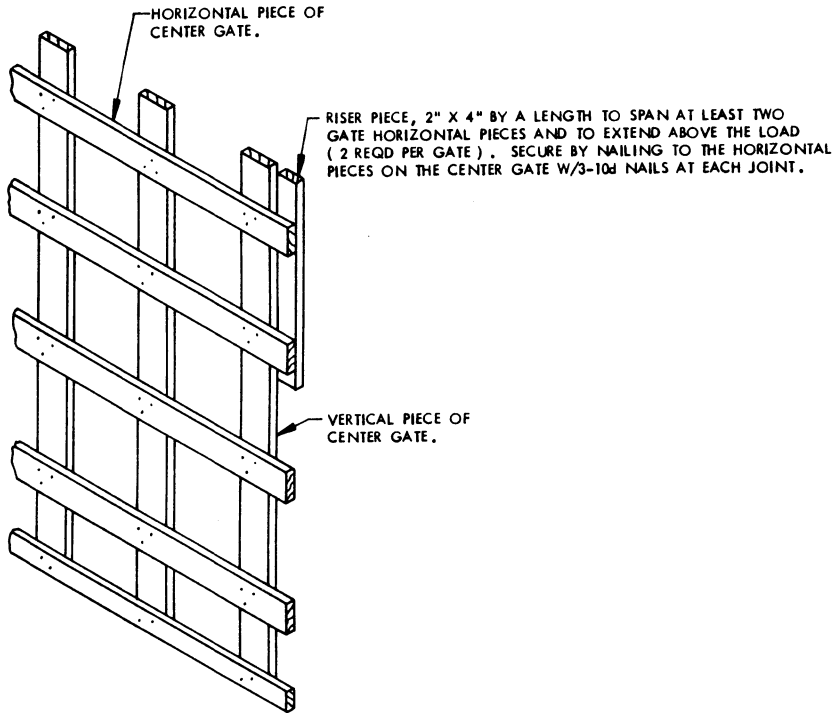
TYPICAL STRUT BRACING

SEE GENERAL NOTE "V" ON PAGE 3.



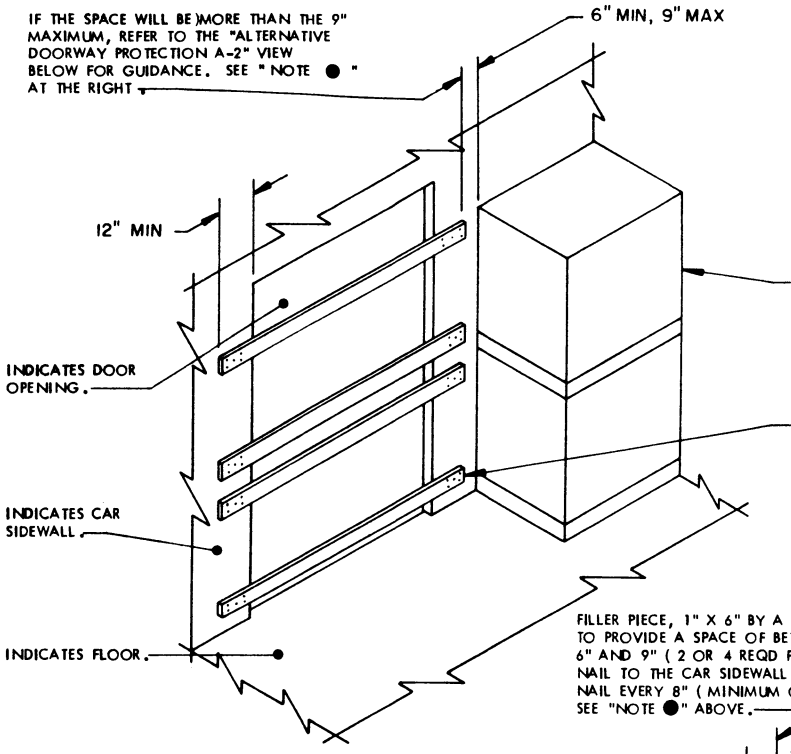
ALTERNATIVE GATE HOLD-DOWN

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. 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.

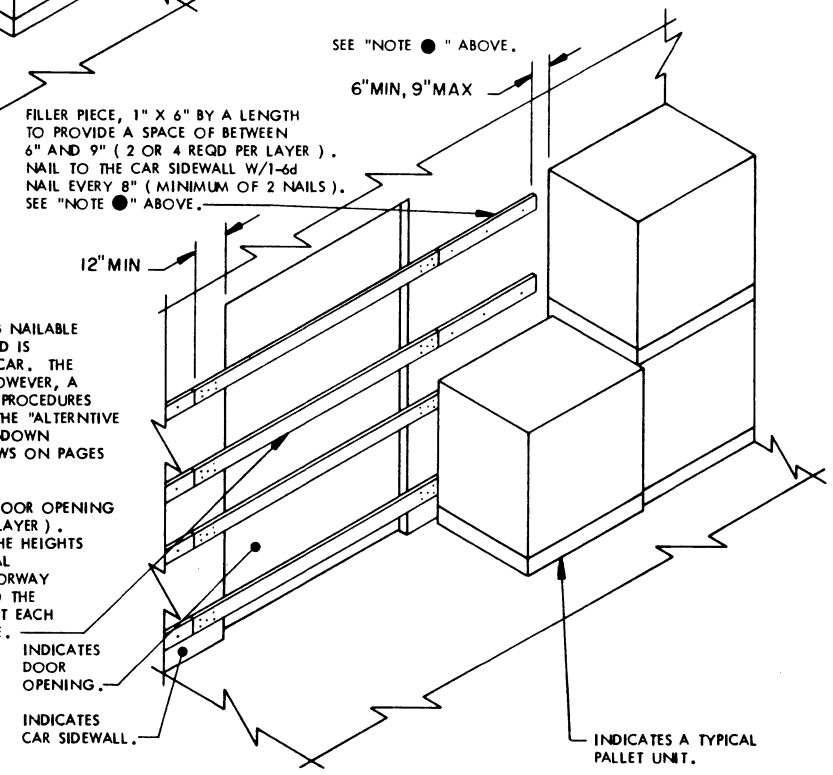


NOTE ● :

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 ALL LOADS OF CROSSWISE POSITIONED UNITS, 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.

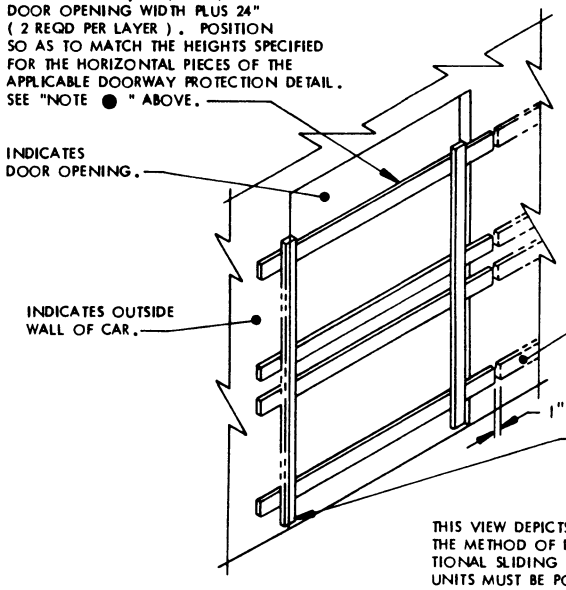
ALTERNATIVE DOORWAY PROTECTION A-1

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 "ALTERNTIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 117 OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED IN THE LOAD VIEWS ON PAGES 12, 24, 36, AND 48.



ALTERNATIVE DOORWAY PROTECTION A-2

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



ALTERNATIVE DOORWAY PROTECTION A-3

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

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

VIEW B

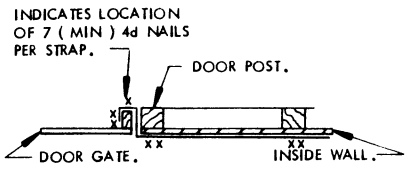
VERTICAL PIECE, 2" X 3" BY A LENGTH TO SUIT (2 REQD).

INDICATES DOOR OPENING.

DOORWAY PROTECTION -GATE STRAP, 1-1/4" X .035" X 3'-0" (REF) NAIL-ON TYPE STEEL STRAPPING (4 REQD PER LAYER OF LOAD). NAIL TO GATE AND CAR SIDEWALL AS SHOWN BY THE "VIEW B" SKETCH BELOW.. NOTE THAT TYPE 1 STRAPPING MAY BE PUNCHED FOR NAILING IF TYPE 2 STRAPPING IS NOT AVAILABLE.

INDICATES CAR SIDEWALL.

INDICATES FLOOR.



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

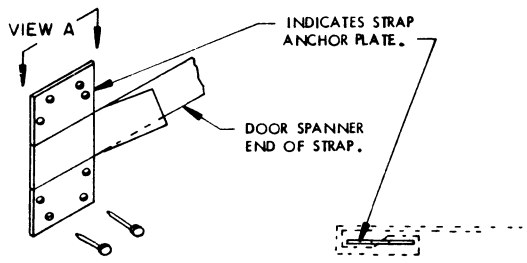
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUT NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.

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.

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

INDICATES DOOR OPENING.

INDICATES CAR SIDEWALL.



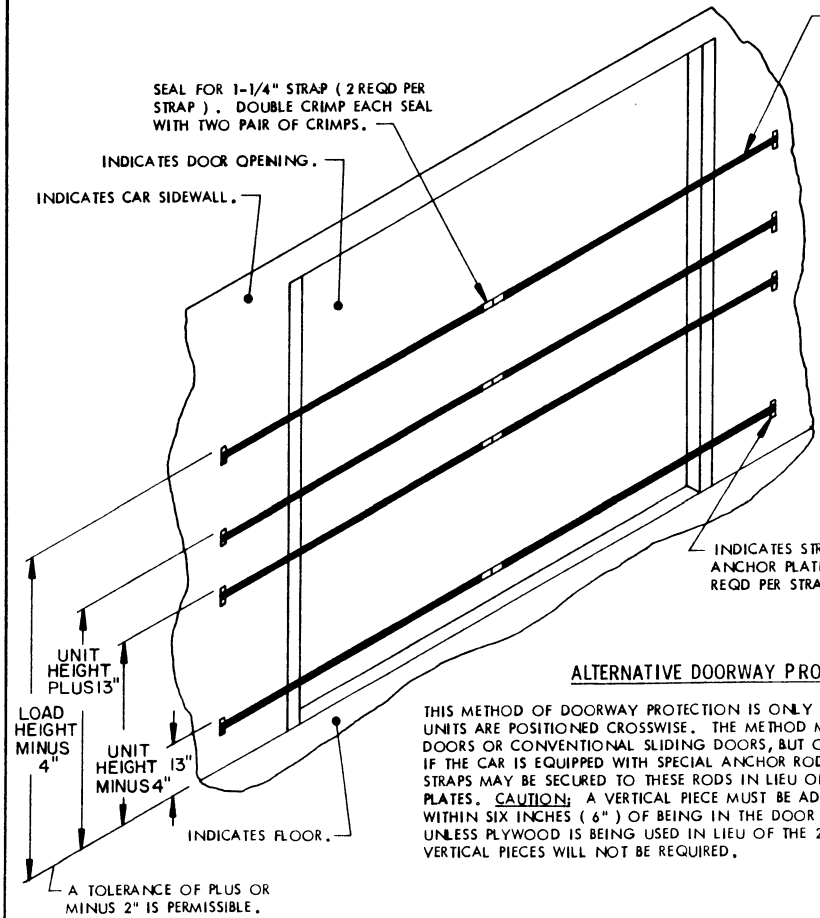
ISOMETRIC VIEW

VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

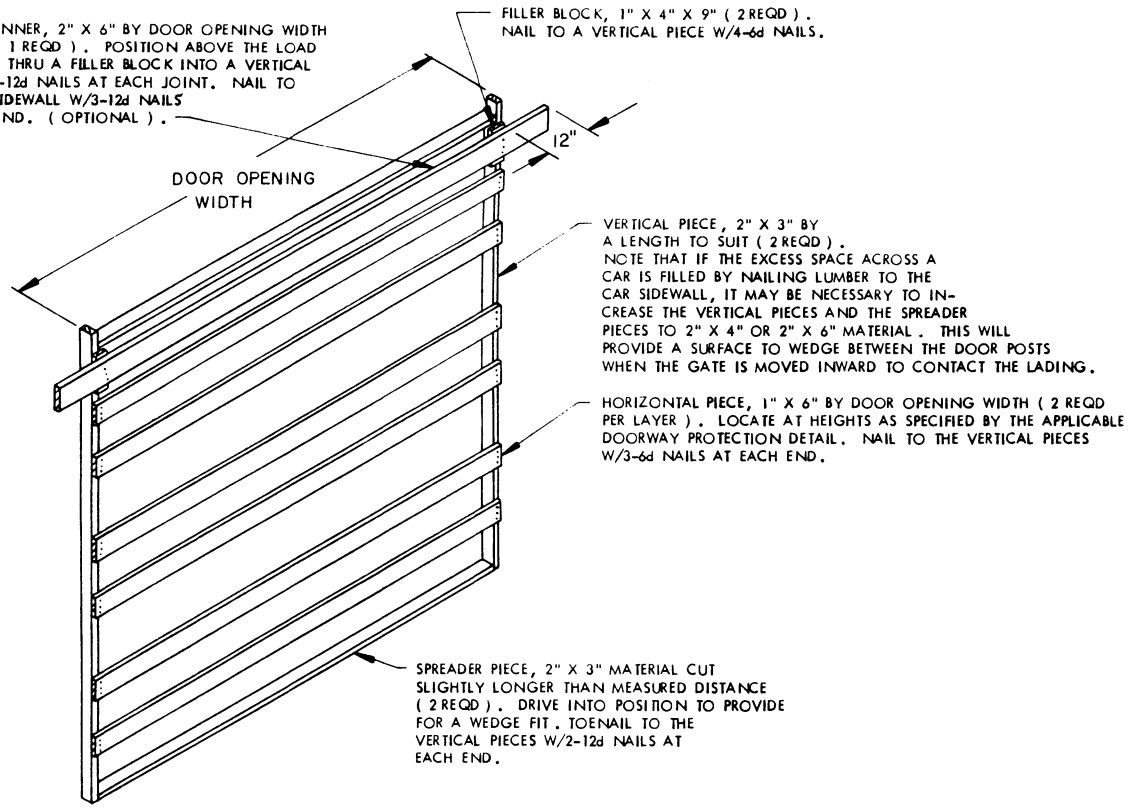
THESE VIEWS DEPICT THE PROPER THREADING OF A DOORWAY PROTECTION STRAP THRU AN ANCHOR PLATE.

INDICATES STRAP ANCHOR PLATE (2 REQD PER STRAP).



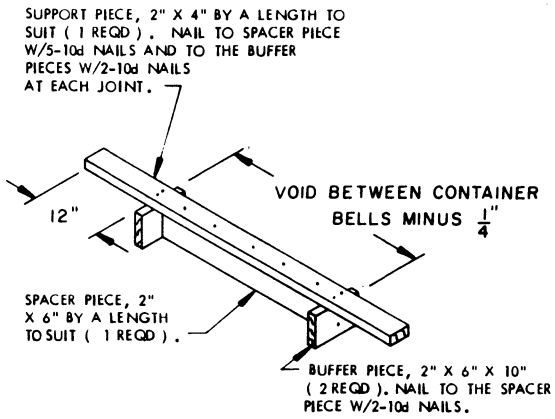
ALTERNATIVE DOORWAY PROTECTION C

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.

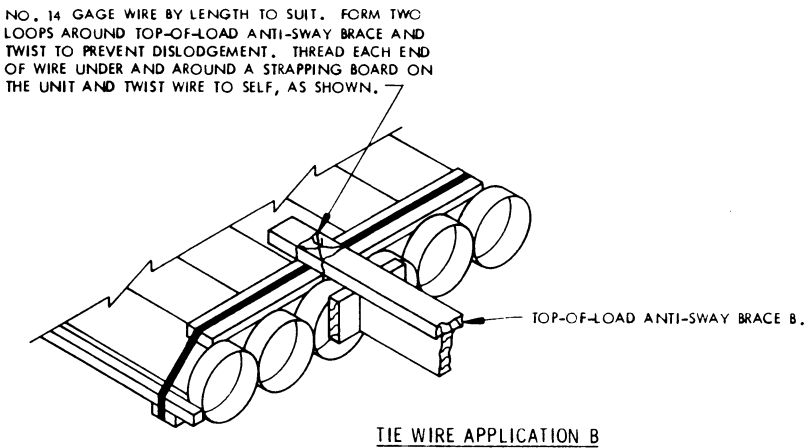


ALTERNATIVE DOORWAY PROTECTION D

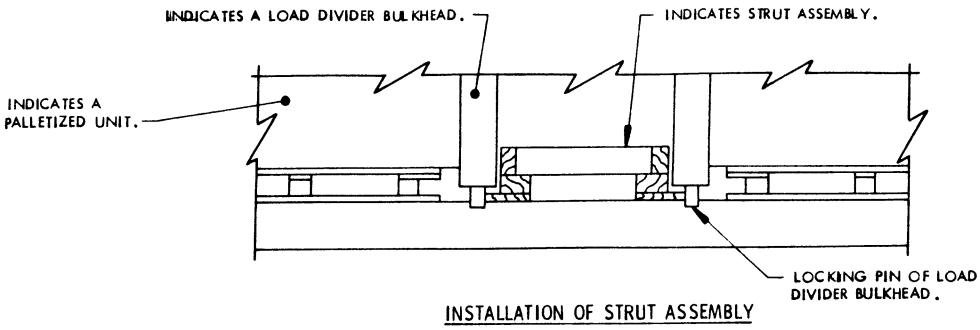
THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT NAILABLE. IF THE CAR HAS NAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION B" DETAIL ON PAGE 117 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 115.



TOP-OF-LOAD ANTI-SWAY BRACE B

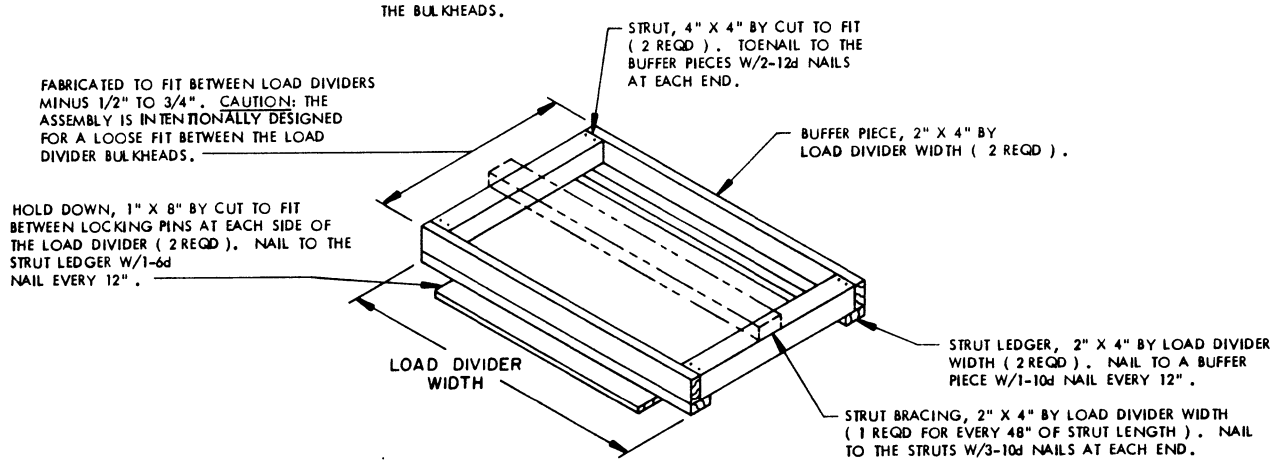


TIE WIRE APPLICATION B



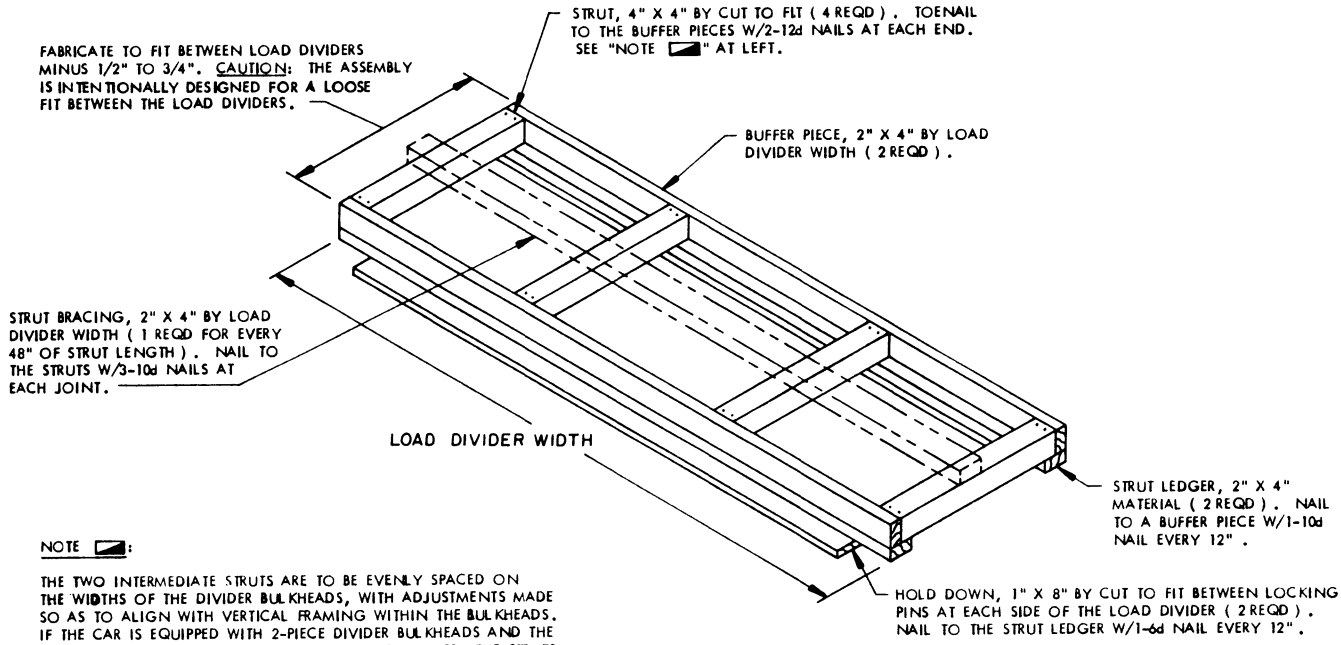
INSTALLATION OF STRUT ASSEMBLY

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.

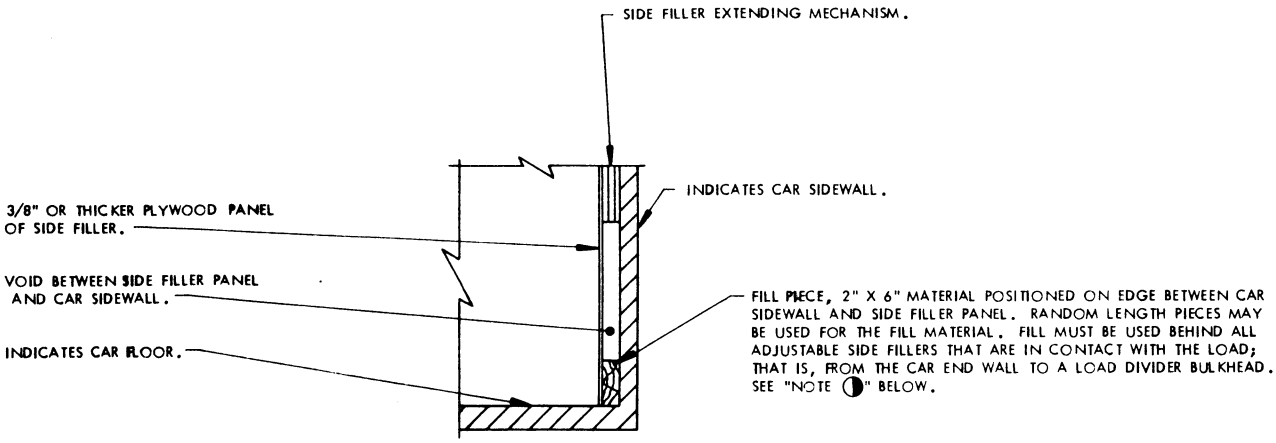


NOTE ◪:

THE TWO INTERMEDIATE STRUTS ARE TO BE EVENLY SPACED ON THE WIDTHS OF THE DIVIDER BULKHEADS, WITH ADJUSTMENTS MADE SO AS TO ALIGN WITH VERTICAL FRAMING WITHIN THE BULKHEADS. IF THE CAR IS EQUIPPED WITH 2-PIECE DIVIDER BULKHEADS AND THE BULKHEADS ARE LATERALLY ALIGNED WITH EACH OTHER, THE STRUTS SHOULD BE ALIGNED WITH THE EDGES OF THE BULKHEADS; IF THE BULKHEADS ARE NOT ALIGNED, THE "STRUT ASSEMBLY FOR 2-PIECE BULKHEADS" MUST BE USED. SEE THE DETAIL ABOVE.

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

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

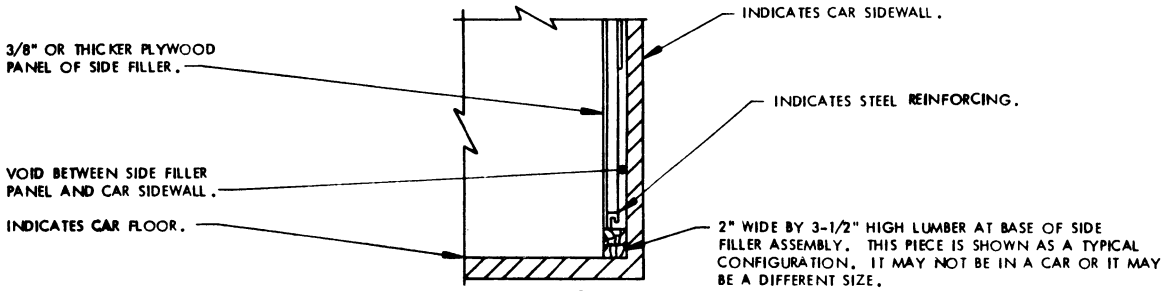


TYPICAL TYPE A

THIS VIEW SHOWS THE INSTALLATION OF A "FILL PIECE" IN A CAR EQUIPPED WITH A STANDARD ADJUSTABLE SIDE FILLER.

NOTE ◑:

NAILING OF "FILL PIECES" IS NOT REQUIRED EXCEPT THAT EACH "FILL PIECE" LOCATED NEAREST THE DOOR OPENINGS OF THE CAR WILL BE SECURED AGAINST LONGITUDINAL MOVEMENT W/1-6d NAIL DRIVEN THROUGH THE SIDE FILLER PANEL AND INTO THE "FILL PIECE".



TYPICAL TYPE B

THIS VIEW SHOWS A TYPICAL SECTION OF A CAR EQUIPPED WITH HEAVY DUTY, STEEL REINFORCED, ADJUSTABLE SIDE FILLERS. A "FILL PIECE", AS SHOWN IN THE "TYPICAL TYPE A" DETAIL ABOVE, IS NOT REQUIRED IN CARS SO EQUIPPED.

PROJECT FSA 43B/11-63

*U.S. GOVERNMENT PRINTING OFFICE: 1989 644-240