APPROVED BY
BUREAU OF EXPLOSIVES
SUPERVISOR, MILITARY & INTERMODAL SERVICES
DATE 9/4/87

LOADING AND BRACING (CL & LCL) IN BOX CARS ⌖ OF PALLETIZED PROPELLING CHARGES PACKED IN CYLINDRICAL METAL CONTAINERS PA96 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.

DO NOT SCALE

REVISIONS			

DRAFTSMAN: JW / 4h
PROJ ENGR: PB / WRF
CHECKER: PJB
LOG ENGRS OFFICE:
APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

U.S. ARMY AMC DRAWING

NOVEMBER 1987

CLASS	DIVISION	DRAWING	FILE
19	48	4042B/ 17	5PM 1000

PROJECT FSA 43B/17-63

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 PA96 SERIES PROPELLING CHARGE CONTAINER WHEN UNITIZED ON A 35" X 45-1/2" PALLET. SEE THE PICTORIAL VIEWS ON PAGE 4. REFER TO THE U.S. ARMY AMC (DARCOM) DRAWING 19-48-4042A/ 18-20PM1001 FOR UNITIZATION PROCEDURES FOR THE PA96 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. 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 CHART ON PAGE 36 MAY BE USED IN CONJUNCTION WITH THE DEPICTED LOADING PROCEDURES FOR GUIDANCE.

E. 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.

F. 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 63 FOR GUIDANCE.

G. 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.

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

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

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

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

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

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

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

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

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

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

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

(GENERAL NOTES CONTINUED)

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

L. 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.

M. 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 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" 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.

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

O. 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.

P. 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.

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

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOX CARS)

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

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

T. 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 65. 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.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED)

U. 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 65 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.

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

GENERAL NOTES

(FOR BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES)

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

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

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

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

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

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

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

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

(CONTINUED AT RIGHT)

CC. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 71 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 71. THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

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

EE. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS CLASS A OR CLASS B EXPLOSIVES AND THE LOAD IN EITHER END OF THE CAR WEIGHS 50,000 POUNDS OR MORE. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF CLASS A OR B EXPLOSIVES WEIGHING 50,000 POUNDS WHEN THE LADING AND ADEQUATE BLOCKING AND BRACING ARE POSITIONED TO COMPLETELY FILL THE SPACE BETWEEN THE INSTALLED BULKHEADS AS SPECIFIED IN GENERAL NOTE "FF-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 70.

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

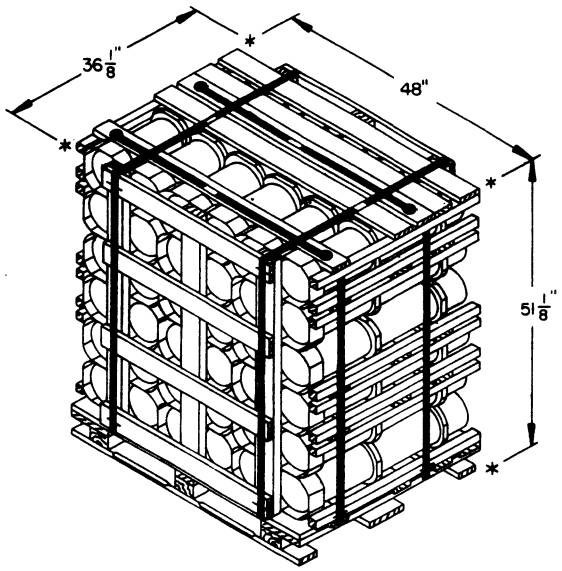
1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGE 42 THRU 45.

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 38 THRU 41 FOR GUIDANCE.

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

4 ONE OR MORE UNITS CAN BE POSITIONED IN CONTACT WITH A LOAD DIVIDER BULKHEAD ON THE CENTER-OF-CAR SIDE. BLOCK AND BRACE WITH LCL BRACES AS SHOWN ON PAGE 58, OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 52.

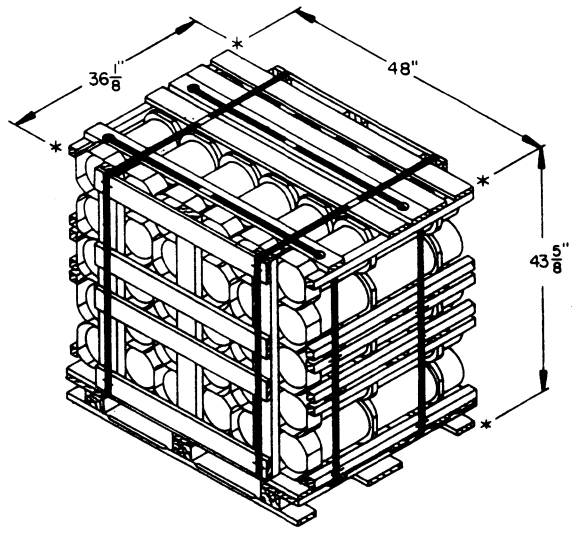
GG. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.



PALLET UNIT (BASIC HEIGHT)

CONTAINER ---------- 36 EACH @ 44 LBS (APPROX)
CUBE ---------- 51.3 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,783 LBS (APPROX)

REFER TO PAGES 6 THRU 13 FOR OUTLOADING PROCEDURES.

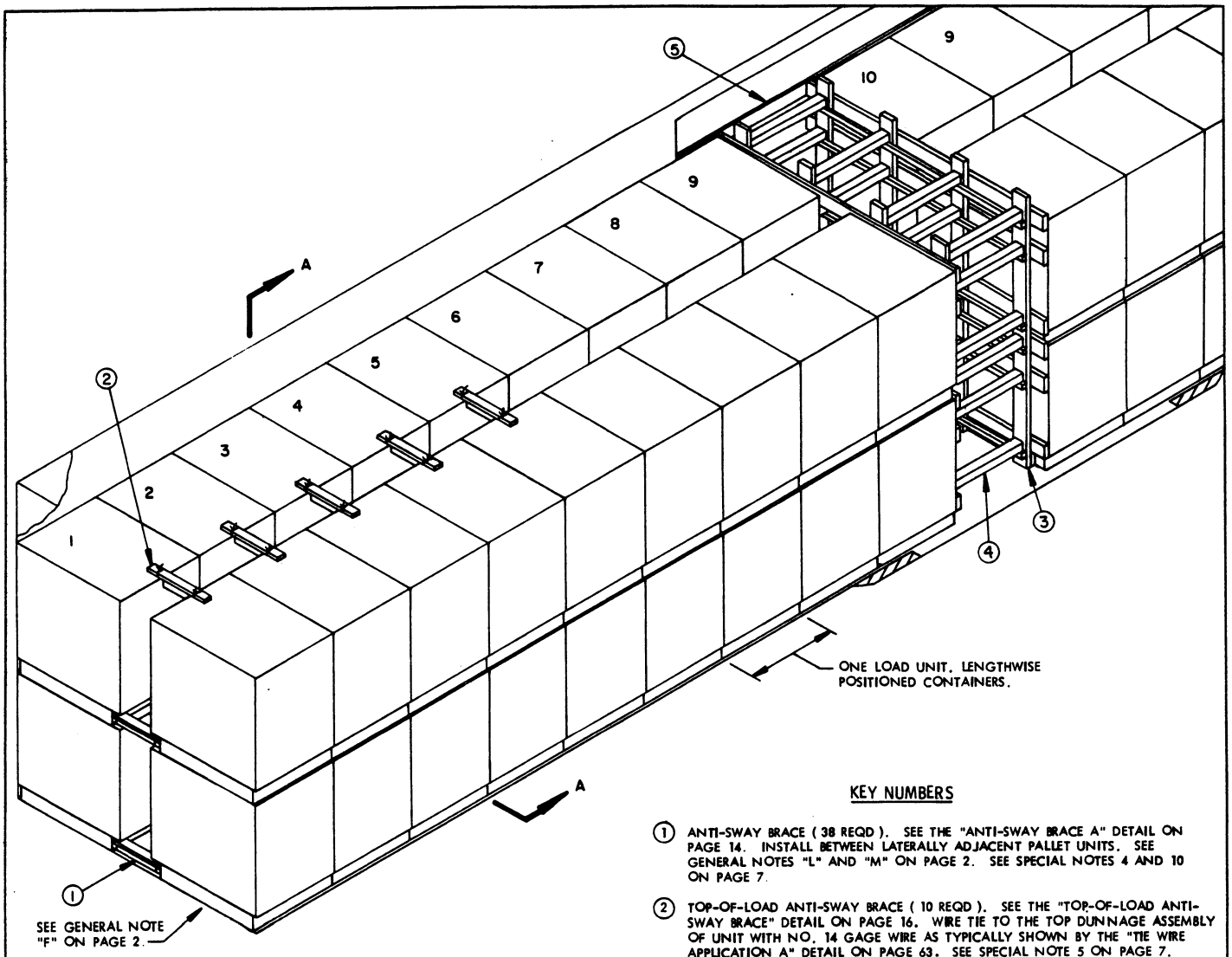


PALLET UNIT (DECREASED HEIGHT)

CONTAINER ---------- 30 EACH @ 44 LBS (APPROX)
CUBE ---------- 43.8 CUBIC FEET (APPROX)
GROSS WEIGHT ---------- 1,498 LBS (APPROX)

REFER TO PAGES 18 THRU 25 FOR OUTLOADING PROCEDURES.

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK



ISOMETRIC VIEW

KEY NUMBERS

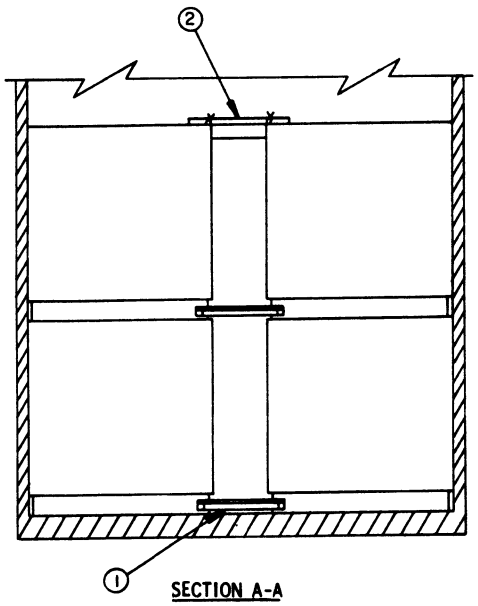
(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTES 4 AND 10 ON PAGE 7.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63. SEE SPECIAL NOTE 5 ON PAGE 7.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 14 . SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 7.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 35") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 14. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 9 AND 10 ON PAGE 7.



SECTION A-A

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

PROJECT FSA 43B/17-63

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 6 IS THE BASIC HEIGHT UNIT. A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 114,112 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 85,584 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 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' 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 BRACES 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) ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

6. 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 64 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR WIDTH GATES. IN LIEU OF EACH "CENTER GATE A", SHOWN AS PIECE MARKED (3) 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 64.

8. 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 66 FOR GUIDANCE.

9. 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 PIECE MARKED (5) 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 67 THRU 69 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.

10. 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 (5) , USE PIECES MARKED (3) THRU (6) ON PAGE 12. SEE SPECIAL NOTES 5 AND 6 ON PAGE 13 FOR GUIDANCE.

11. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR (4) 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 34 THRU 58 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 59 FOR GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

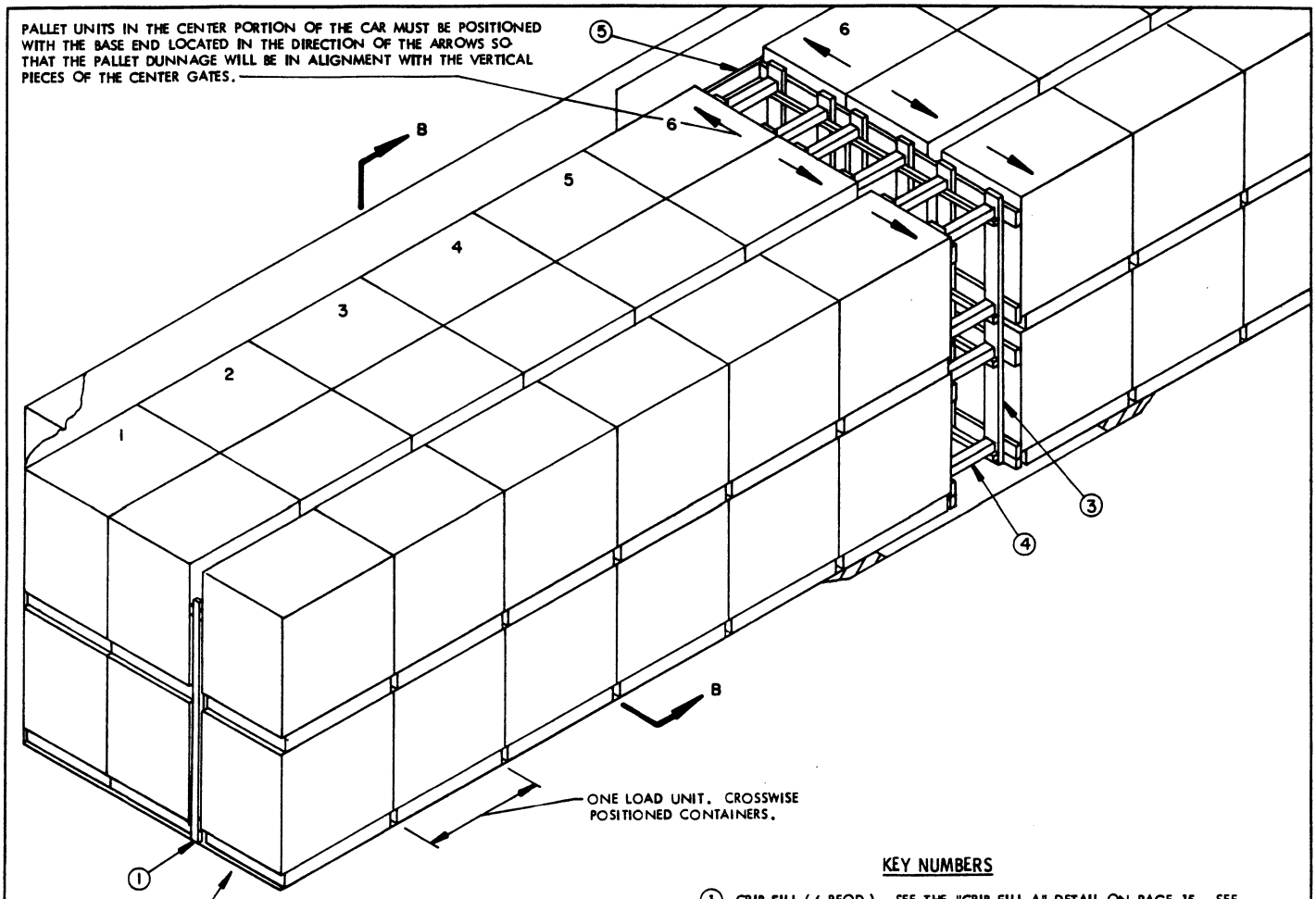
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	133	45
1" X 6"	80	40
2" X 2"	327	109
2" X 3"	42	21
2" X 4"	148	99
2" X 6"	196	196
4" X 4"	70	94
NAILS	**NO. REQD**	**POUNDS**
6d (2")	504	3
10d (3")	600	9-1/4
12d (3-1/4")	58	1
16d (3-1/2")	96	2
WIRE, NO. 14 GAGE	80' REQD	1-1/2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	135,508 LBS
DUNNAGE		1,225 LBS
TOTAL WEIGHT		136,733 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

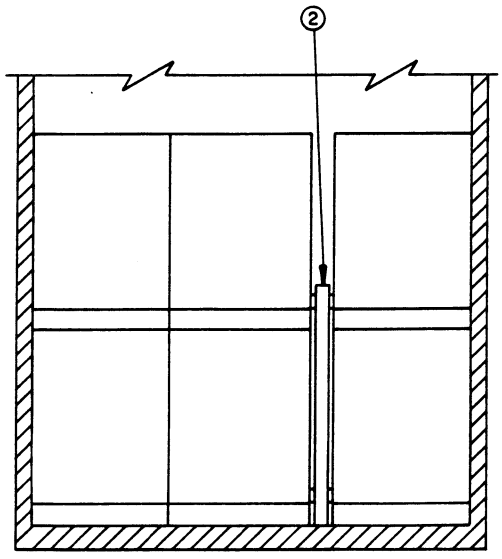
(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 15. SEE GENERAL NOTES "L" AND "M" ON PAGE 2, AND SPECIAL NOTE 4 ON PAGE 9.

(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: 24") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION B" DETAIL ON PAGE 16. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 AND 9 ON PAGE 9.



SECTION B-B

BASIC HEIGHT UNIT
72-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

PROJECT FSA 43B/17-63

(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 32, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 34 THRU 58 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 60 AND 62 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	192	64
1" X 6"	64	32
2" X 2"	68	23
2" X 3"	38	19
2" X 4"	254	170
2" X 6"	175	175
4" X 4"	48	64
NAILS	NO. REQD	POUNDS
6d (2")	432	2-1/2
10d (3")	280	4-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2-1/4

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-6" 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 PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 8 IS THE BASIC HEIGHT UNIT. A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 96,282 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 149,772 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 PALLET UNITS 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" CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR OPENING DECREASES.

4. CRIB FILL IS REQUIRED IF THE CAR BEING LOADED IS MORE THAN 9'-4" WIDE. THE HIGH "CRIB FILL A" DETAIL SHOWN ON PAGE 15, MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF A 50'-0" LONG CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR; USE CRIB FILL "B" FOR THE BALANCE OF THE LOAD. 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 CRIB FILL. NOTE: IF THE CAR TO BE LOADED IS LESS THAN 9'-6" WIDE THE CRIB FILL AND/OR FILL MATERIAL MAY BE OMITTED, HOWEVER, 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 64 FOR GUIDANCE.

6. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE C", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 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 64.

7. DOOR SPANNER TYPE GATE HOLD DOWN MAY BE USED IN LIEU OF THE DOUBLED 2" X 3" HOLD DOWNS ON CENTER GATES "C", PROVIDING THE CAR HAS NAILABLE SIDEWALLS. SEE THE DETAILS ON PAGE 66 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 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 67 THRU 69 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 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 THE 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)

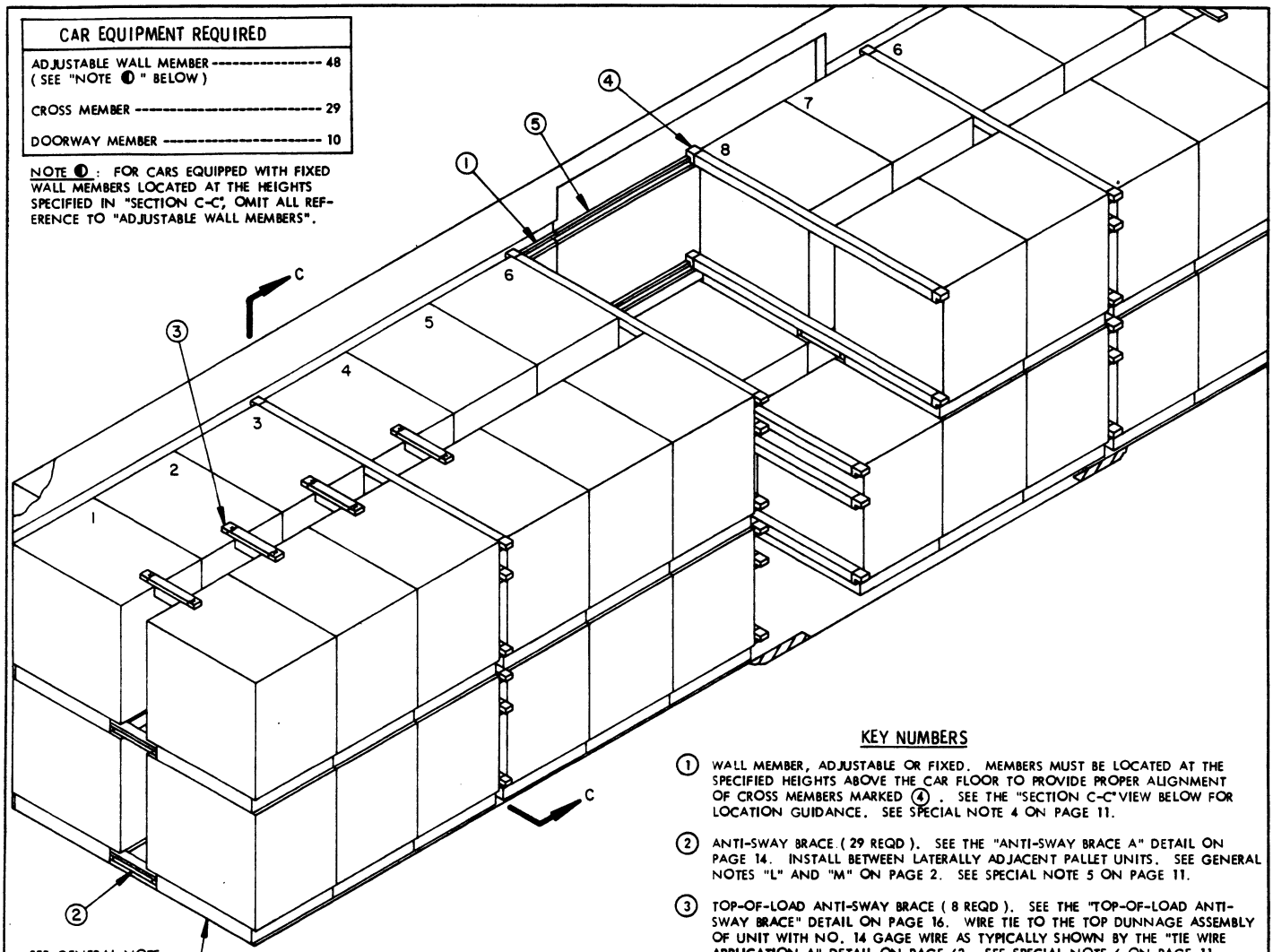
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	128,376 LBS
DUNNAGE		1,102 LBS
TOTAL WEIGHT		129,478 LBS

BASIC HEIGHT UNIT
72-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐ " BELOW)	48
CROSS MEMBER	29
DOORWAY MEMBER	10

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



SEE GENERAL NOTE "F" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 11.

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 (4) . SEE THE "SECTION C-C" VIEW BELOW FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 4 ON PAGE 11.

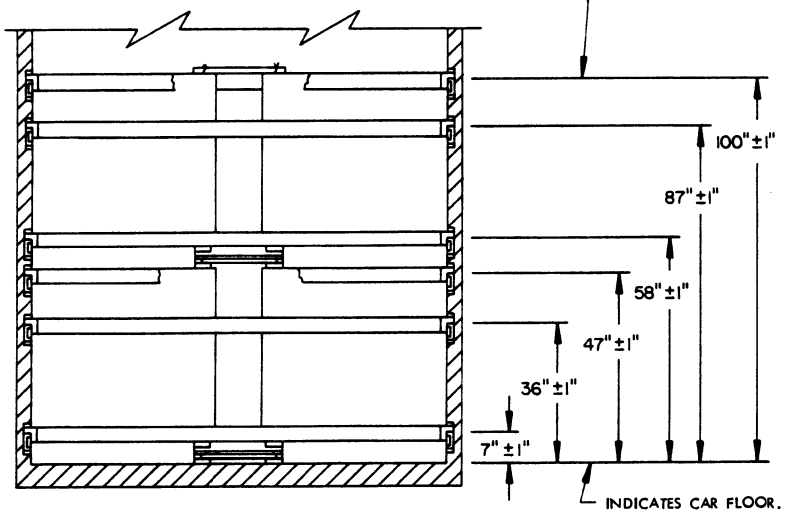
(2) ANTI-SWAY BRACE (29 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTE 5 ON PAGE 11.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63. SEE SPECIAL NOTE 6 ON PAGE 11.

(4) CROSS MEMBER, (29 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

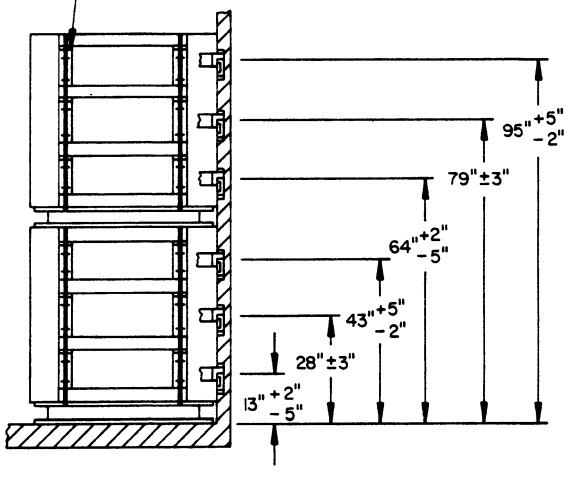
(5) DOORWAY MEMBER (10 REQD). SEE THE "SECTION C-C" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 7 ON PAGE 11.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED (1) AND/OR A DOORWAY MEMBER MARKED (5) IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER.



SECTION C-C

FILL PIECE, 1" X 4" BY A LENGTH TO SUIT (AS REQD). POSITION BEHIND EACH UNIT TIE DOWN STRAP AND APPLY TWO (2) STAPLES AS SHOWN.



ALTERNATIVE HEIGHT LOCATION

BASIC HEIGHT UNIT

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 10 IS THE BASIC HEIGHT UNIT. A MAXIMUM OF FORTY-TWO (42) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 74,886 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 "F" ON PAGE 2. THESE CROSS MEMBERS SHOULD BE INSTALLED AT THE SAME HEIGHTS AS THE CROSS MEMBERS USED THROUGHOUT THE LOAD AS BLOCKING MEMBERS.

4. IF THE WALL MEMBER LOCATIONS IN THE CAR BEING LOADED DO NOT MEET THE LOCATION REQUIREMENTS SPECIFIED IN "SECTION C-C" THE ALTERNATIVE METHOD MAY BE USED. FILL PIECES MUST BE POSITIONED BEHIND EACH PALLET TIE DOWN STRAP TO PROVIDE A BEARING SURFACE FOR THE CROSS MEMBERS AS SHOWN IN THE "ALTERNATIVE HEIGHT LOCATION" DETAIL ON PAGE 10.

5. ANTI-SWAY BRACES ARE REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACES, EACH ANTI-SWAY BRACE WHICH IS ADJACENT TO A CROSS MEMBER LOCATION MUST BE WIRE TIED TO THE PALLET POSTS WITH NO. 14 GAGE WIRE. NOTE THAT THE ANTI-SWAY BRACE BETWEEN LATERALLY ADJACENT UNITS NO. 3 WILL BE TIED ON THE END ADJACENT TO THE CROSS MEMBER, AND THE BRACE BETWEEN UNITS NO. 4 WILL BE WIRE TIED ON THE OPPOSITE END.

6. 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.

7. 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.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP TIER 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 30 AND 31 FOR GUIDANCE.

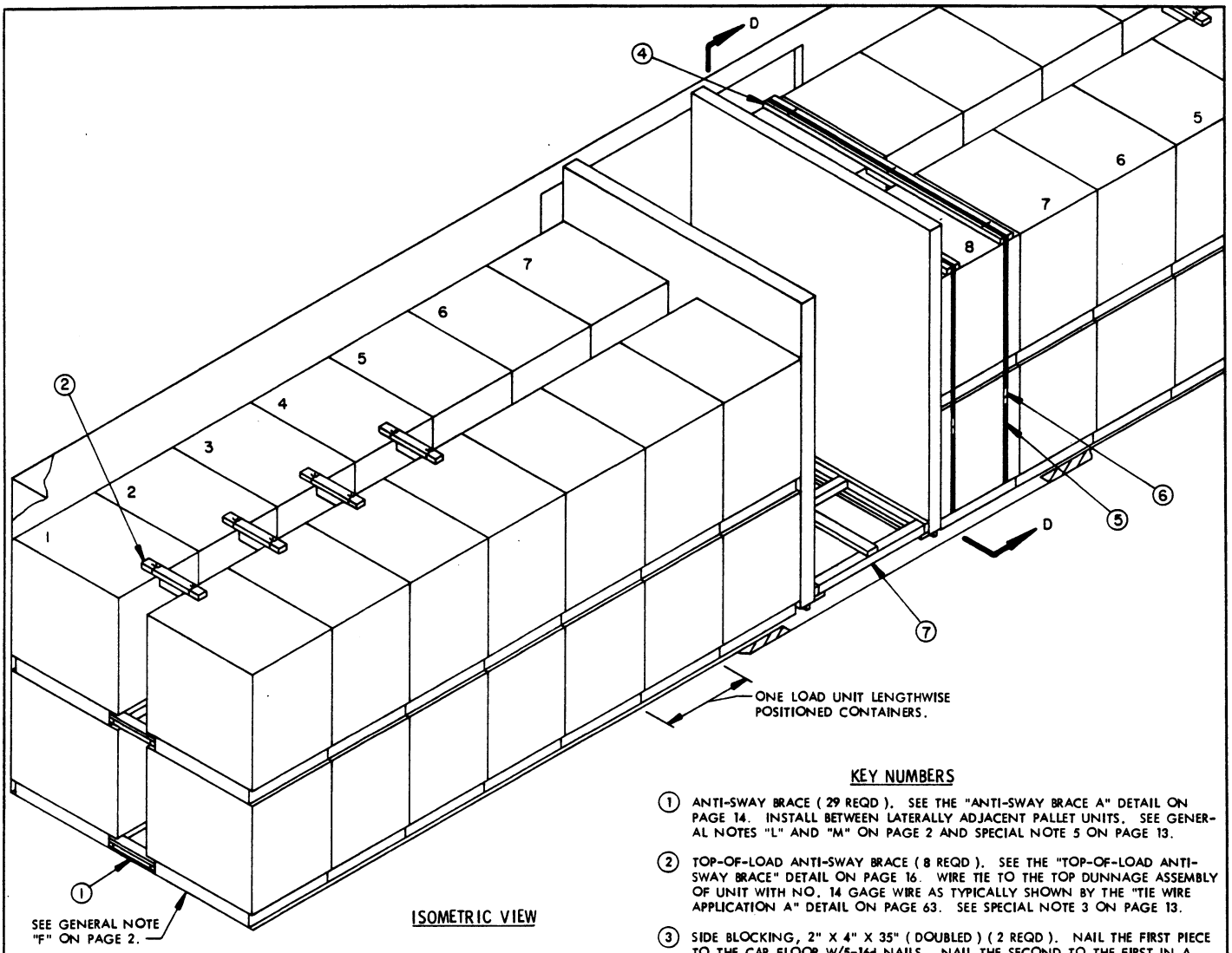
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 2" 2" X 4"	92 175 102	31 59 68
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	348 256	2 4
WIRE, NO. 14 GAGE ----------80' REQD ----------1-1/2		

LOAD AS SHOWN

ITEMS	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	58	103,414 LBS
DUNNAGE		324 LBS
TOTAL WEIGHT		103,738 LBS

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



SEE GENERAL NOTE "F" ON PAGE 2.

ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (29 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 13.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63. SEE SPECIAL NOTE 3 ON PAGE 13.

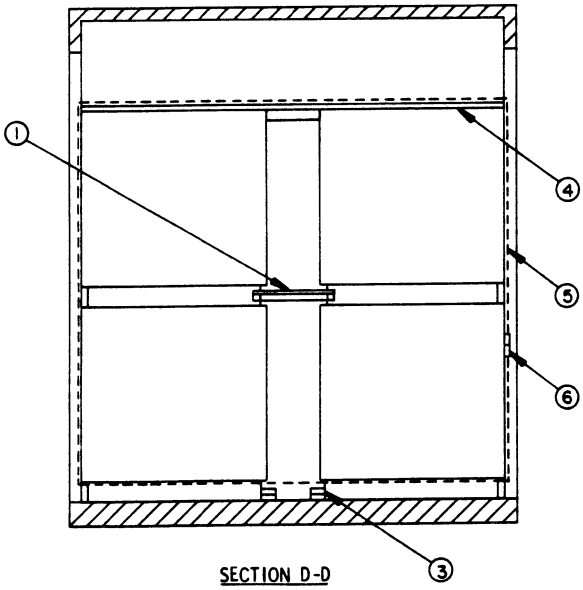
(3) SIDE BLOCKING, 2" X 4" X 35" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTES 4 THRU 6 ON PAGE 13.

(4) STRAPPING BOARD/SPACER ASSEMBLY "A" (2 REQD). SEE THE DETAIL ON PAGE 26.

(5) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 37'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO THE STRAPPING BOARD W/3 STAPLES.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 70. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 13.



SECTION D-D

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

PROJECT FSA 43B/17-63

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 12 IS THE BASIC HEIGHT UNIT. A MAXIMUM OF SEVENTY-SIX (76) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 135,508 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 85,584 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE CROSSWISE LOADING PATTERN SHOWN ON PAGE 8 IS EMPLOYED, EIGHTY-FOUR (84) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 149,772 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 117,678 POUNDS, AND FIFTY-FOUR (54) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 96,282 POUNDS.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED (2) IN THE LOAD ON PAGE 12 MUST BE INSTALLED IN EACH END OF THE CAR. 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. 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 PIECE MARKED (5) 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 67 THRU 69 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 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.

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 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.

7. THE STRUT ASSEMBLY, SHOWN AS PIECE MARKED (7) IN THE LOAD ON PAGE 12, 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 SEVEN (7) 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 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 36 THRU 45 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO TRANSPORTED, REFER TO PAGE 59 AND/OR PAGES 60 AND 62 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	97	33
1" X 8"	17	12
2" X 2"	175	59
2" X 4"	158	106
2" X 6"	21	21
4" X 4"	17	23

NAILS	NO. REQD	POUNDS
6d (2")	366	2-1/4
10d (3")	266	4-1/4
12d (3-1/4")	40	3/4
16d (3-1/2")	20	1/2

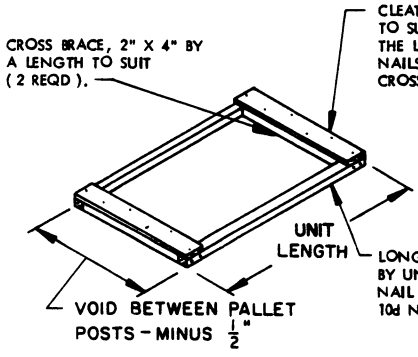
STEEL STRAPPING, 1-1/4" X .035" --- 74' REQD ---------- 11 LBS
SEAL FOR 1-1/4" STRAPPING ------- 4 REQD ---------- NIL
STAPLE FOR 1-1/4" STRAPPING ------ 6 REQD ---------- NIL

WIRE, NO. 14 GAGE ---------- 80 REQD ---------- 1

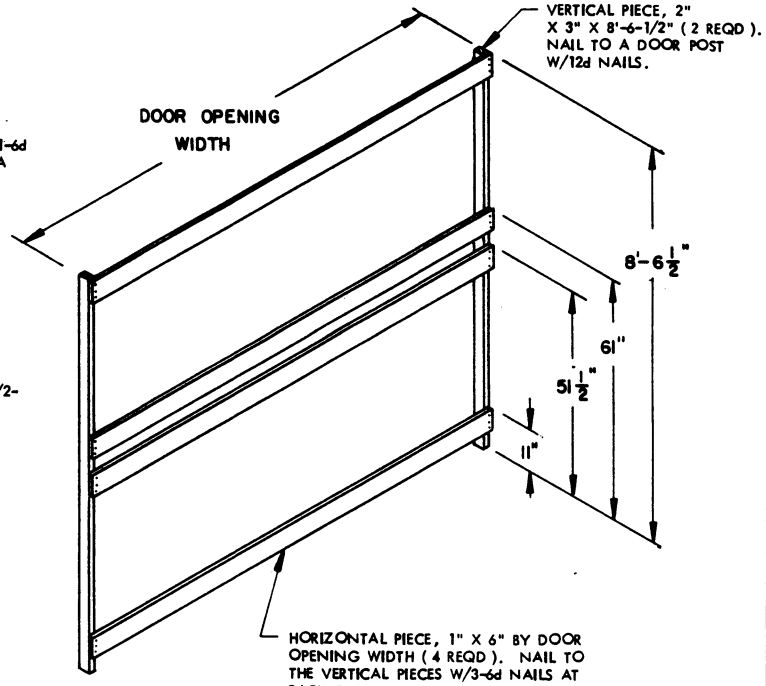
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	106,980 LBS
DUNNAGE		516 LBS
TOTAL WEIGHT		107,496 LBS

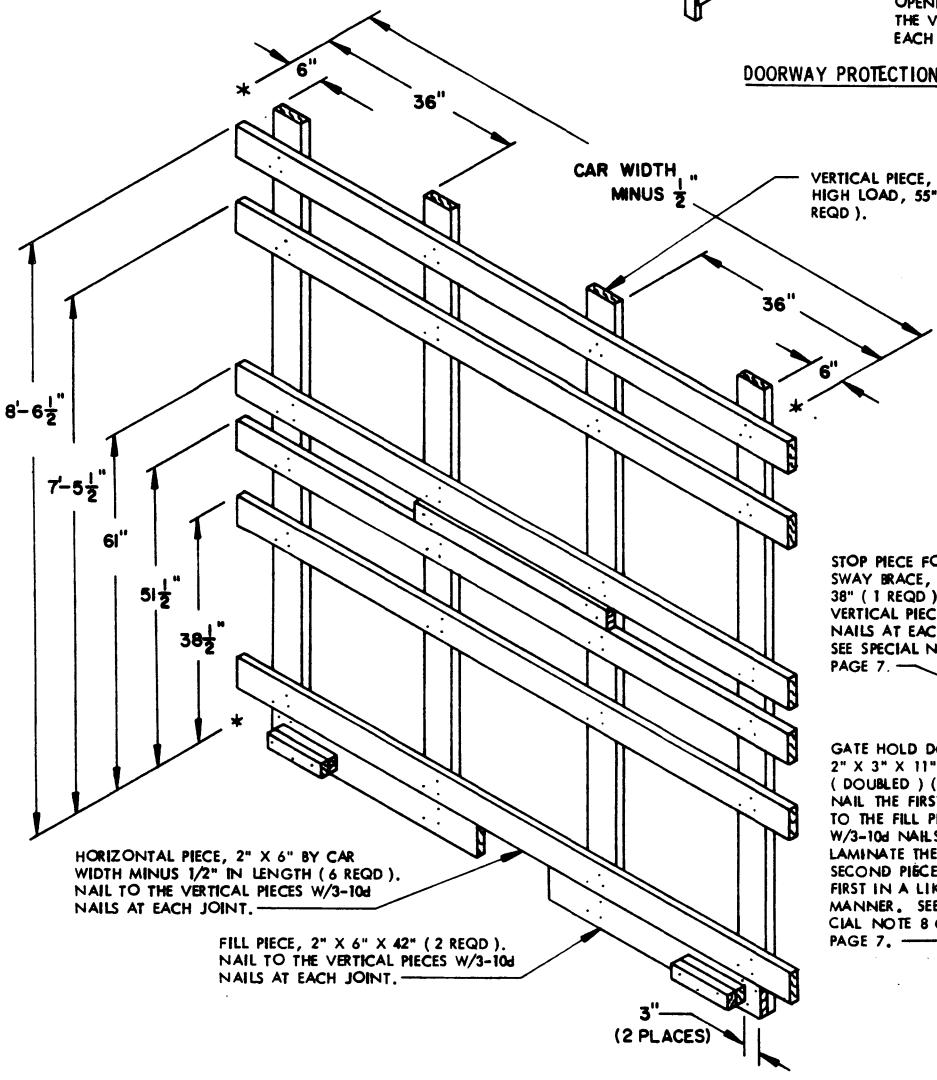
BASIC HEIGHT UNIT
60-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



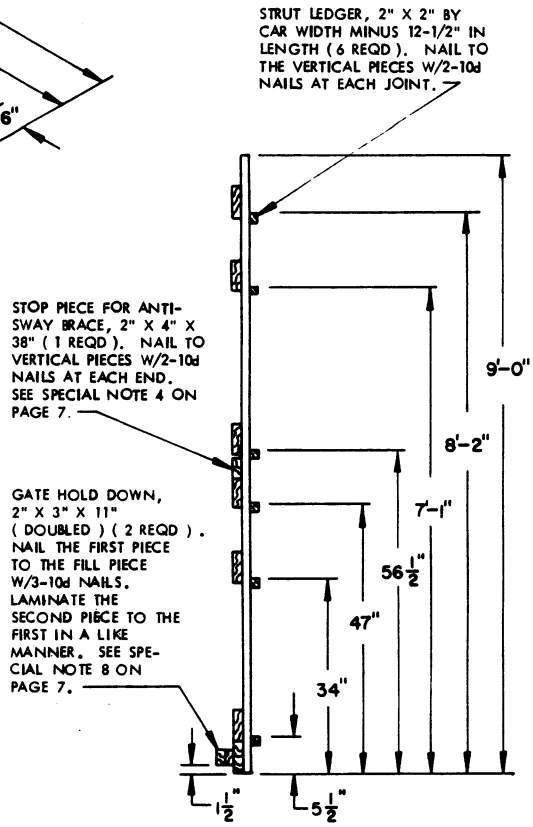
ANTI-SWAY BRACE A



DOORWAY PROTECTION A

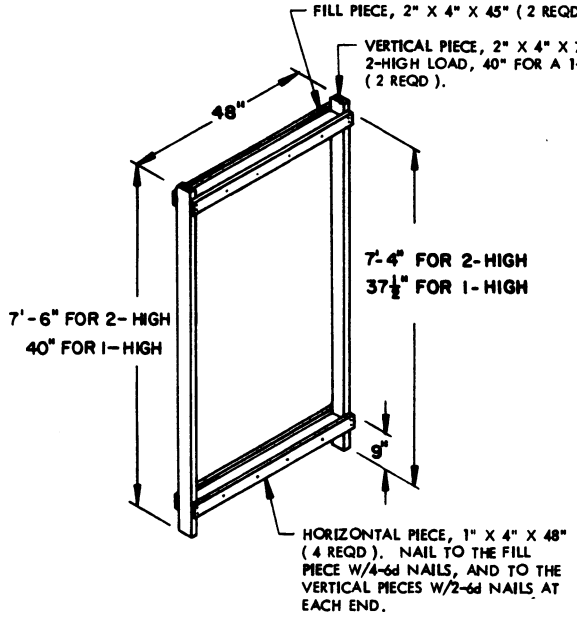


CENTER GATE A



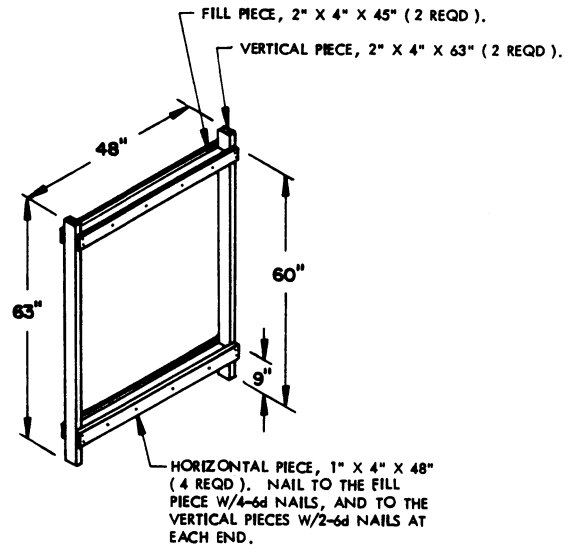
END VIEW

DETAILS FOR BASIC HEIGHT UNIT



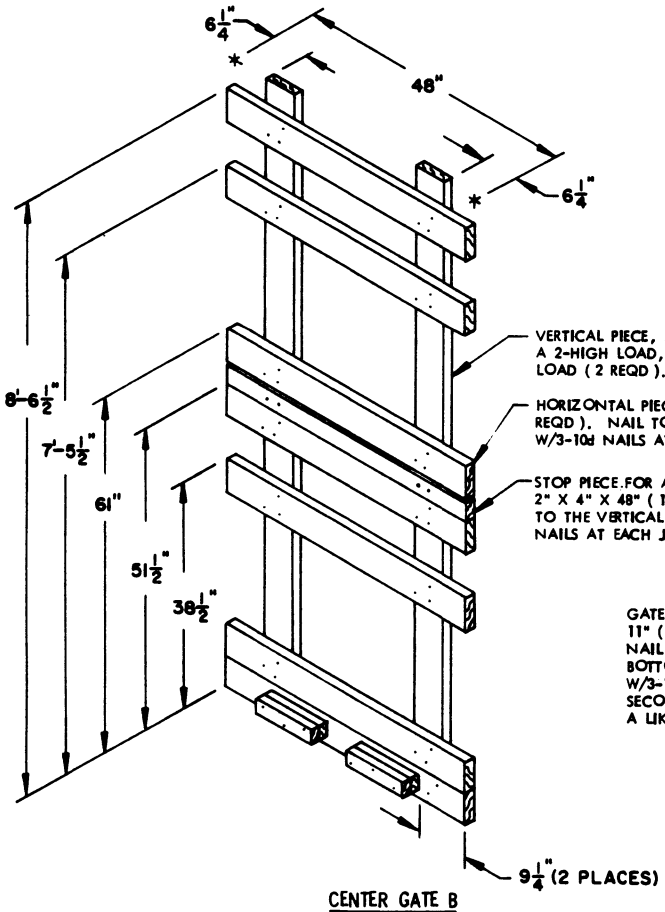
CRIB FILL A

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

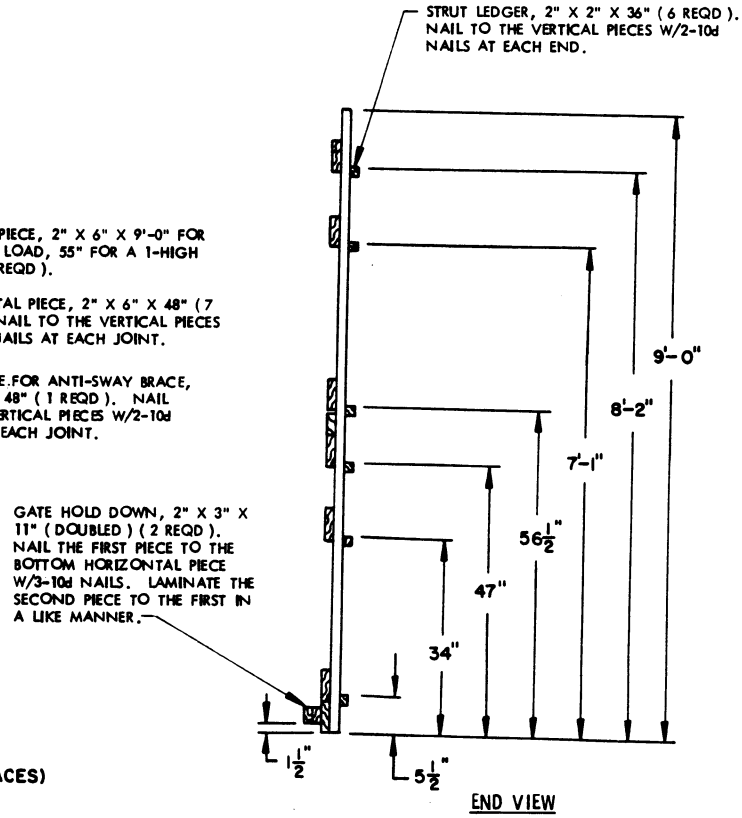


CRIB FILL B

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



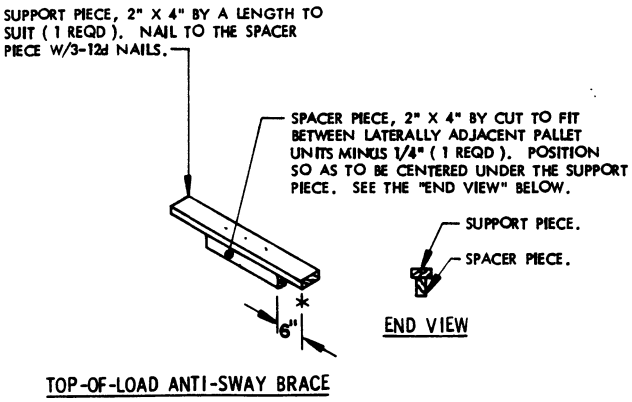
CENTER GATE B



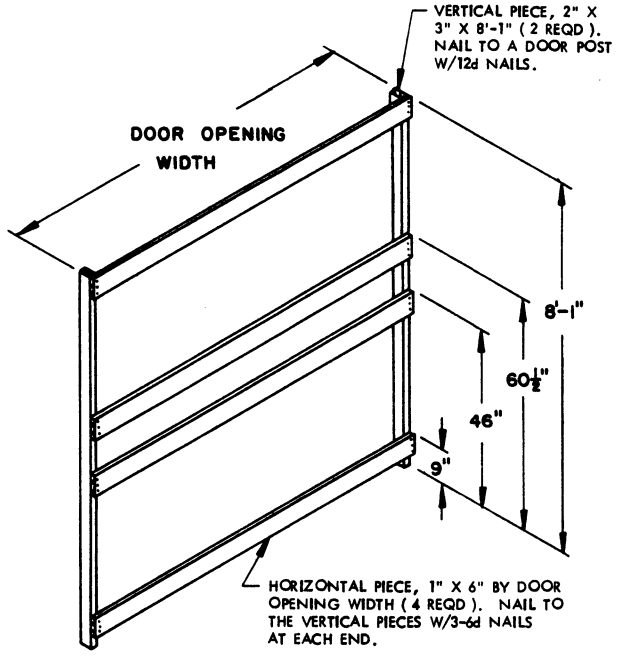
END VIEW

DETAILS FOR BASIC HEIGHT UNIT

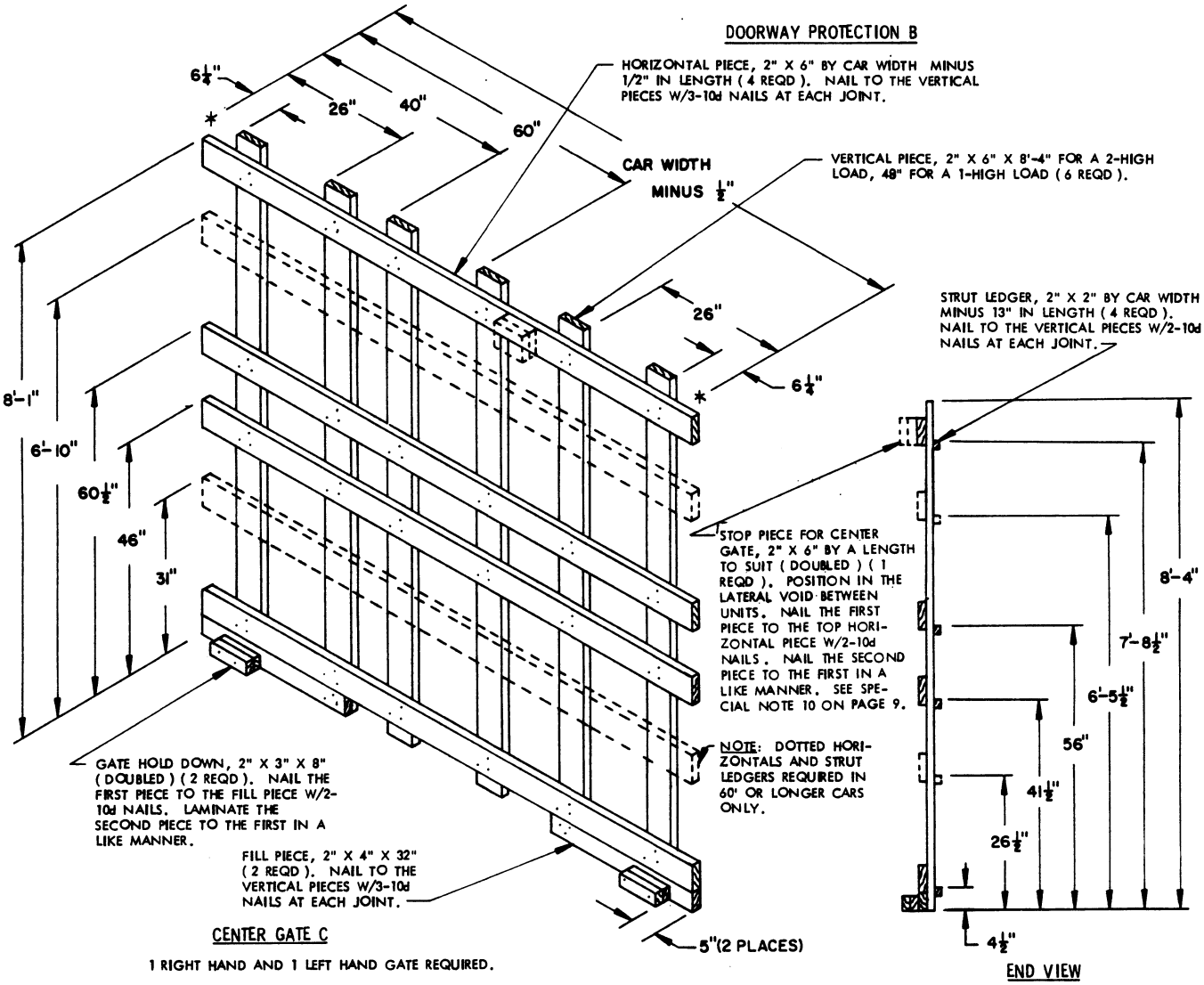
PROJECT FSA 43B/17-63



TOP-OF-LOAD ANTI-SWAY BRACE



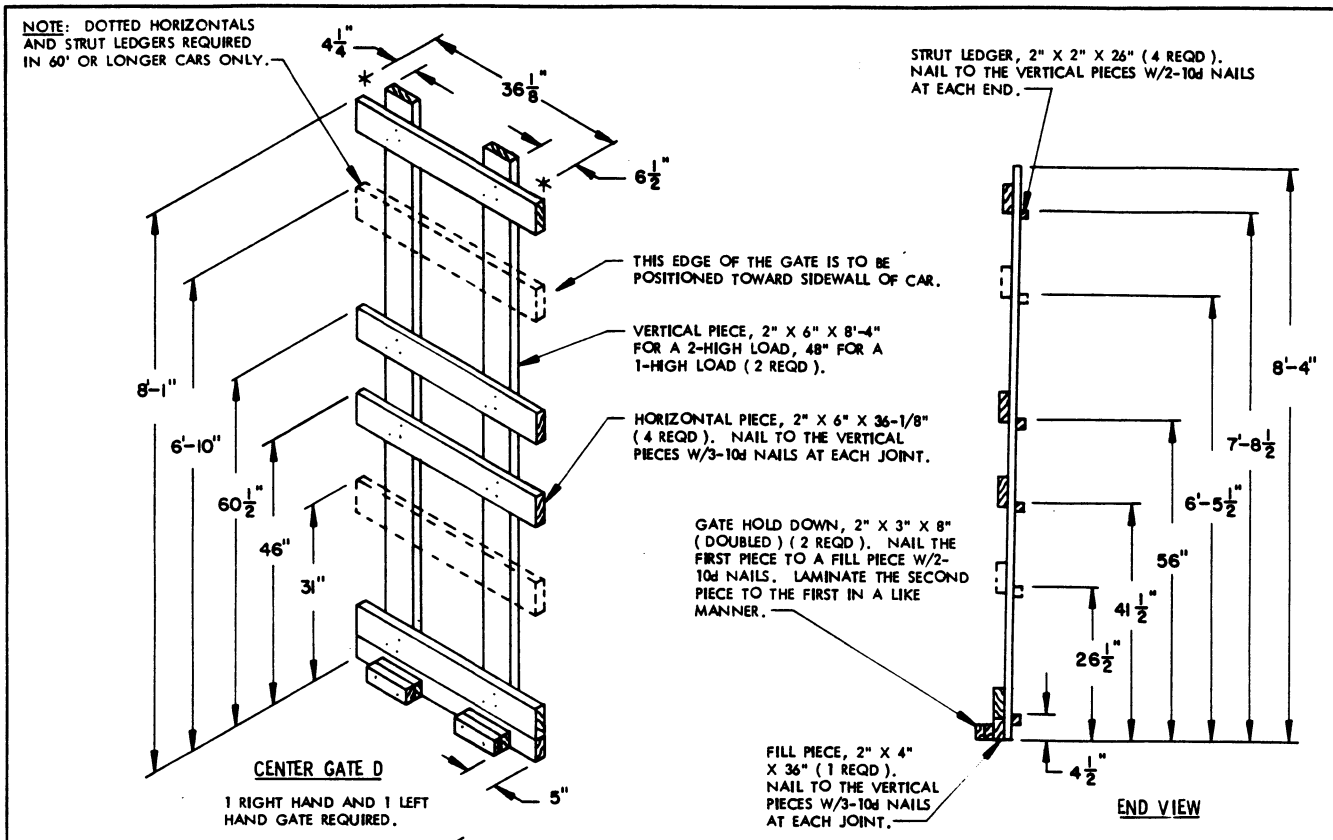
DOORWAY PROTECTION B

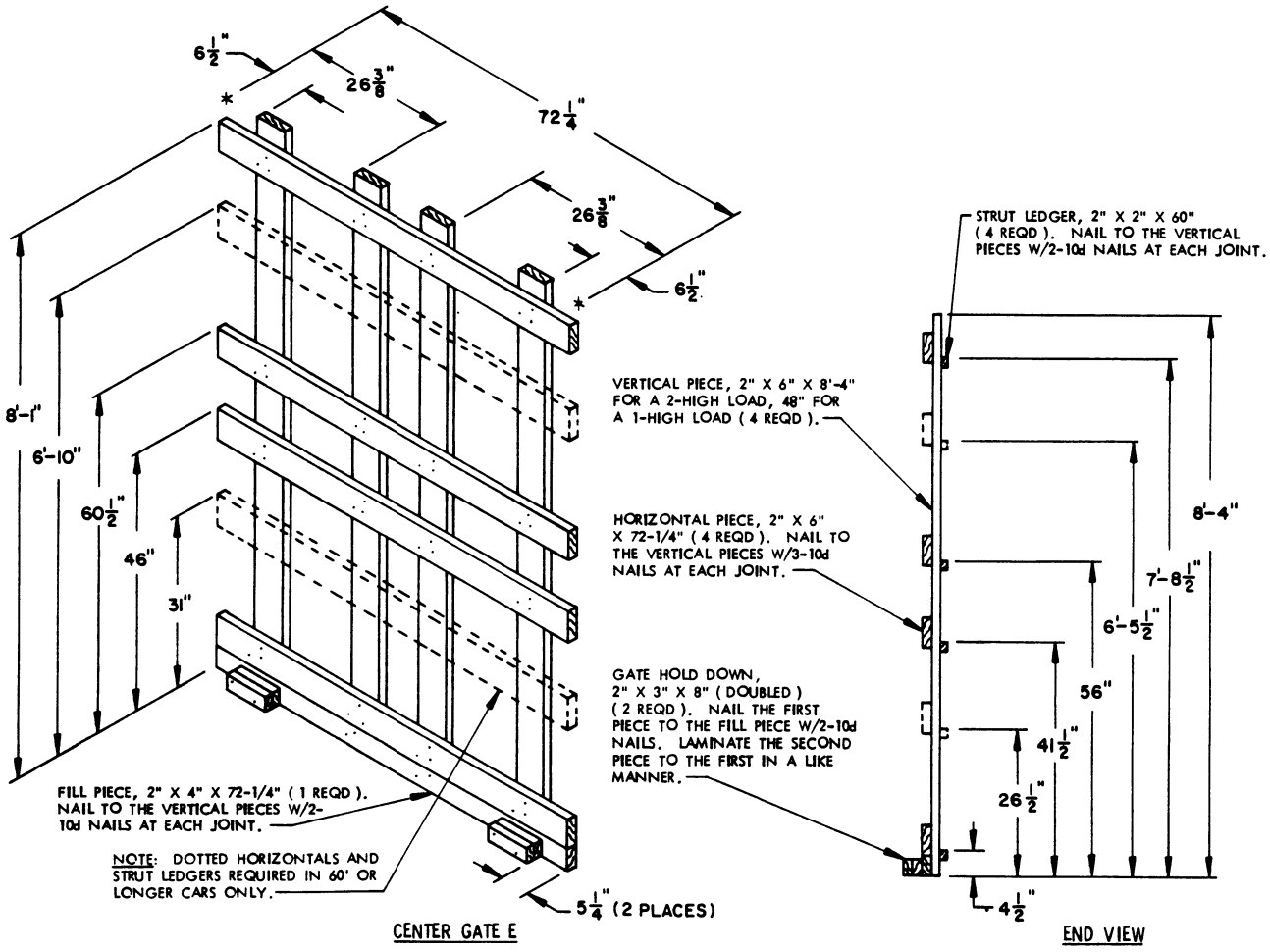


CENTER GATE C

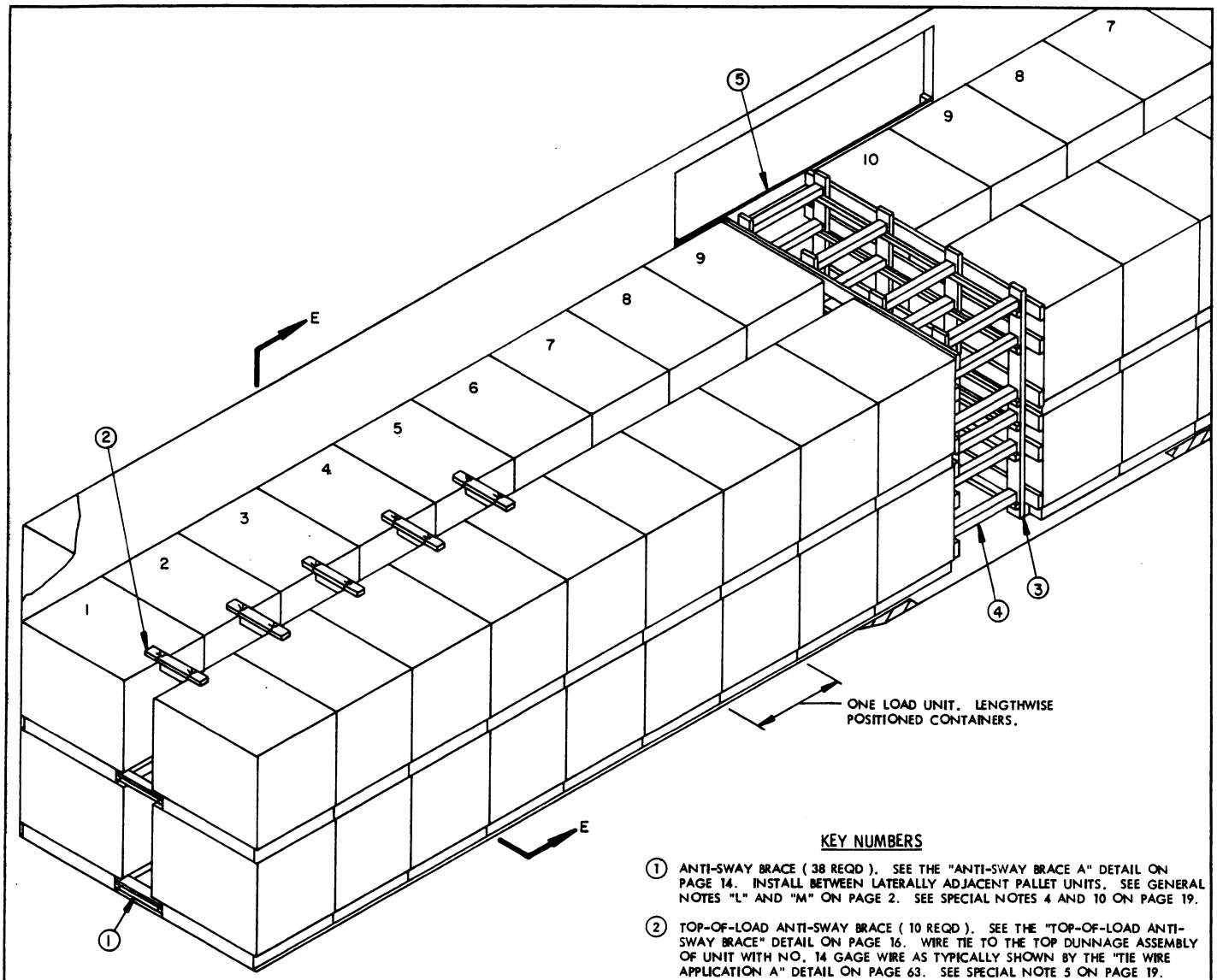
1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

DETAILS FOR BASIC HEIGHT UNIT





DETAILS FOR BASIC HEIGHT UNIT



KEY NUMBERS

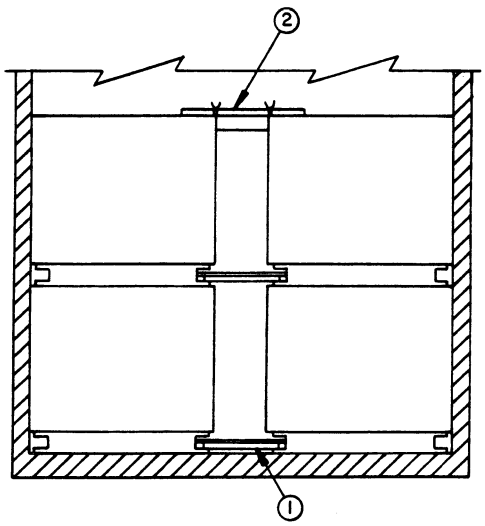
(1) ANTI-SWAY BRACE (38 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTES 4 AND 10 ON PAGE 19.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63. SEE SPECIAL NOTE 5 ON PAGE 19.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 26. SEE SPECIAL NOTES 6, 7, AND 8 ON PAGE 19.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 35") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION C" DETAIL ON PAGE 26. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 9 AND 10 ON PAGE 19.



SECTION E-E

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

PROJECT FSA 43B/17-63

(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 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 34 THRU 58 FOR GUIDANCE.

12. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 59 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

SPECIAL NOTES:

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

2. THE PALLETIZED UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 18 IS THE DECREASED HEIGHT UNIT. A MAXIMUM OF SIXTY-FOUR (64) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 95,872 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 71,904 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 OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLET UNITS SHOULD BE POSITIONED SO THERE ARE NINE (9) LOAD UNITS IN EACH END OF THE CAR. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6' MAY BE USED, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR 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 "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 ARE REQUIRED IN EACH END OF 40' AND 50' CARS.

6. 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 64 FOR GUIDANCE.

7. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH CENTER GATE "F", SHOWN AS PIECE MARKED (3) IN THE LOAD ON PAGE 18, CONSTRUCT 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 64.

8. 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 66 FOR GUIDANCE.

9. 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 PIECE MARKED (5) 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 67 THRU 69 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.

10. 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 (5) , USE PIECES MARKED (3) THRU (6) ON PAGE 12. SEE SPECIAL NOTES 5 AND 6 ON PAGE 13 FOR GUIDANCE.

(CONTINUED AT LEFT)

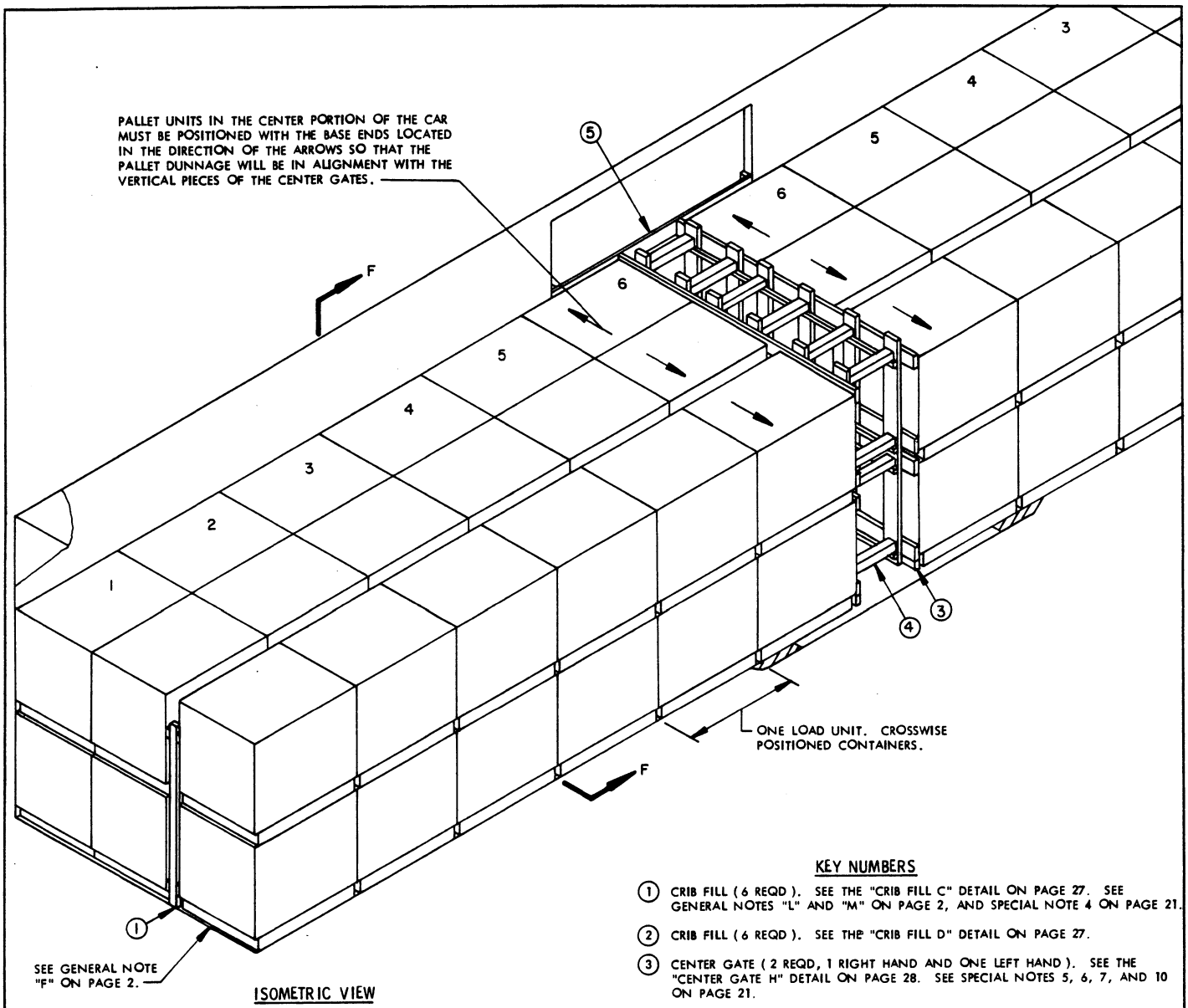
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	133	45
1" X 6"	80	40
2" X 2"	327	109
2" X 3"	37	19
2" X 4"	148	99
2" X 6"	185	185
4" X 4"	70	94
NAILS	**NO. REQD**	**POUNDS**
6d (2")	504	3
10d (3")	600	9-1/4
12d (3-1/4")	58	1
16d (3-1/2")	96	2
WIRE, NO. 14 GAGE ---------- 80' REQD ---------- 1-1/2		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	76	113,848 LBS
DUNNAGE		1,199 LBS
TOTAL WEIGHT		115,047 LBS

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



ISOMETRIC VIEW

KEY NUMBERS

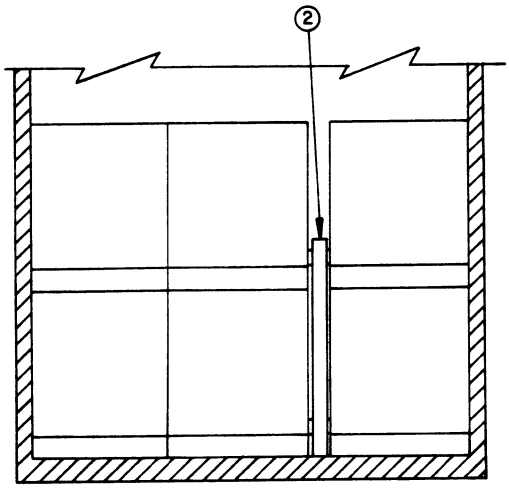
(1) CRIB FILL (6 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 27. SEE GENERAL NOTES "L" AND "M" ON PAGE 2, AND SPECIAL NOTE 4 ON PAGE 21.

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

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND ONE 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: 24") (24 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

(5) DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION D" DETAIL ON PAGE 28. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTES 8 THRU 10 ON PAGE 21.



SECTION F-F

DECREASED HEIGHT UNIT
72-UNIT LOAD IN A 50'-6" LONG BY 9'-6" 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 32, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 34 THRU 58 FOR GUIDANCE.

12. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 60 AND 62 FOR SHIPPING GUIDANCE.

13. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	192	64
1" X 6"	64	32
2" X 2"	68	23
2" X 3"	35	18
2" X 4"	233	156
2" X 6"	165	165
4" X 4"	48	64
NAILS	NO. REQD	POUNDS
6d (2")	432	2-1/2
10d (3")	280	4-1/2
12d (3-1/4")	28	1/2
16d (3-1/2")	96	2

SPECIAL NOTES:

1. A 50'-0" LONG BY 9'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. WIDER OR NARROWER 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 20 IS THE DECREASED HEIGHT UNIT. A MAXIMUM OF FIFTY-FOUR (54) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,892 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 125,832 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, 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'-6" LONG CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60'-8" LONG CAR; USE THE "LOW" CRIB SHOWN AS PIECE MARKED (2) FOR THE BALANCE OF THE LOAD. 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: IF THE CAR TO BE LOADED IS LESS THAN 9'-6" WIDE THE CRIB FILL AND/OR FILL MATERIAL MAY BE OMITTED HOWEVER, 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 64 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 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 64.

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 66 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 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 67 THRU 69 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 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 "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)

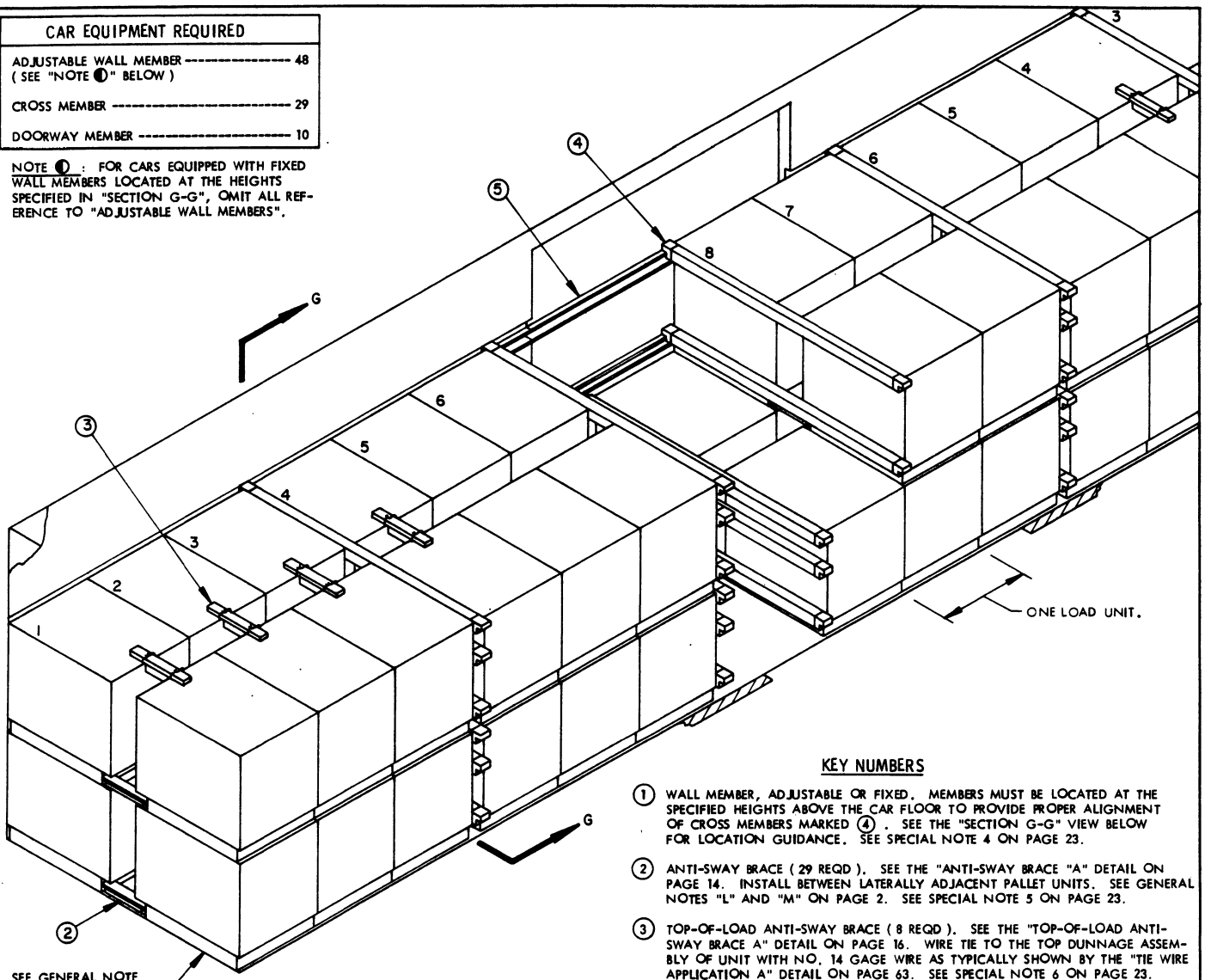
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	72	107,856 LBS
DUNNAGE		1,054 LBS
TOTAL WEIGHT		108,910 LBS

DECREASED HEIGHT UNIT
72-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE CONVENTIONAL BOX CAR

CAR EQUIPMENT REQUIRED	
ADJUSTABLE WALL MEMBER (SEE "NOTE ◐" BELOW)	48
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".



SEE GENERAL NOTE "F" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 23.

ISOMETRIC VIEW

KEY NUMBERS

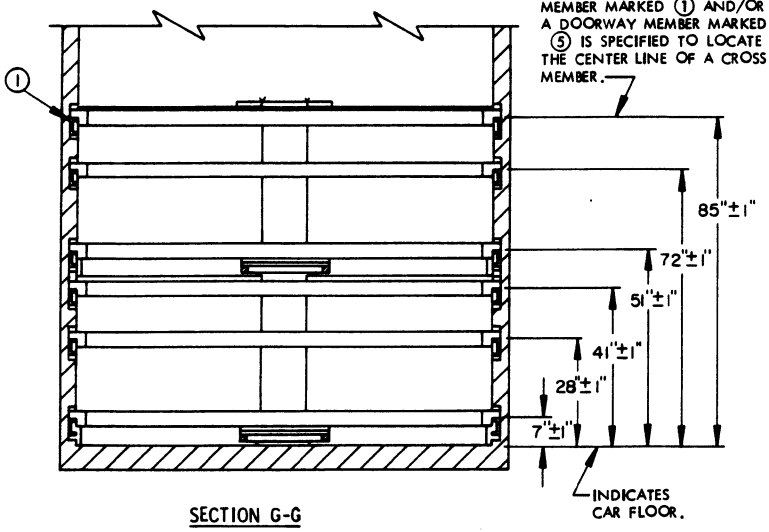
(1) WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED (4). SEE THE "SECTION G-G" VIEW BELOW FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 4 ON PAGE 23.

(2) ANTI-SWAY BRACE (29 REQD). SEE THE "ANTI-SWAY BRACE "A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2. SEE SPECIAL NOTE 5 ON PAGE 23.

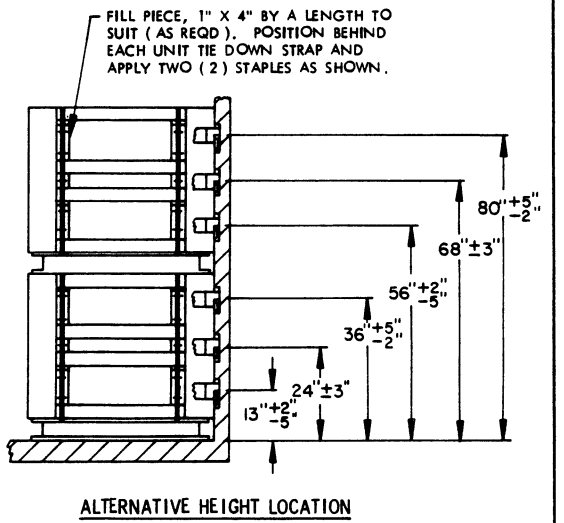
(3) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 16. WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63. SEE SPECIAL NOTE 6 ON PAGE 23.

(4) CROSS MEMBER, (29 REQD). SEE GENERAL NOTE "X" ON PAGE 3.

(5) DOORWAY MEMBER (10 REQD). SEE THE "SECTION G-G" VIEW AT LEFT FOR LOCATION GUIDANCE. SEE SPECIAL NOTE 7 ON PAGE 23.



SECTION G-G



ALTERNATIVE HEIGHT LOCATION

DECREASED HEIGHT UNIT

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

PROJECT FSA 43B/17-63

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 22 IS THE DECREASED HEIGHT UNIT. A MAXIMUM OF FORTY-TWO (42) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 62,916 POUNDS, CAN BE PLACED IN A 40'-6" LONG CAR.

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

4. IF THE WALL MEMBER LOCATIONS IN THE CAR BEING LOADED DO NOT MEET THE LOCATION REQUIREMENTS SPECIFIED IN "SECTION G-G" THE ALTERNATIVE METHOD MAY BE USED. FILL PIECES MUST BE POSITIONED BEHIND EACH PALLET TIE DOWN STRAP TO PROVIDE A BEARING SURFACE FOR THE CROSS MEMBERS AS SHOWN IN THE "ALTERNATIVE HEIGHT LOCATION" DETAIL ON PAGE 22.

5. ANTI-SWAY BRACES ARE REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS. TO PREVENT LONGITUDINAL DISPLACEMENT OF THE ANTI-SWAY BRACES, EACH ANTI-SWAY BRACE WHICH IS ADJACENT TO A CROSS MEMBER LOCATION MUST BE WIRE TIED TO THE PALLET POSTS WITH NO. 14 GAGE WIRE. NOTE THAT THE ANTI-SWAY BRACE BETWEEN LATERALLY ADJACENT UNITS NO. 3 WILL BE TIED ON THE END ADJACENT TO THE CROSS MEMBER, AND THE BRACE BETWEEN UNITS NO. 4 WILL BE WIRE TIED ON THE OPPOSITE END.

6. 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 CAR REGARDLESS OF THE CAR LENGTH.

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

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A LOAD MAY BE REDUCED BY MULTIPLES OF TWO (2) PALLET UNITS BY OMITTING LATERALLY ADJACENT UNITS FROM THE TOP LAYER OF ONE OR MORE LOAD UNITS, OR BY MULTIPLES OF FOUR (4) PALLET UNITS BY OMITTING ONE OR MORE ENTIRE LOAD UNITS. TO REDUCE A LOAD BY ONE (1) PALLET UNIT REFER TO THE LCL PROCEDURES ON PAGES 30 AND 31 FOR GUIDANCE.

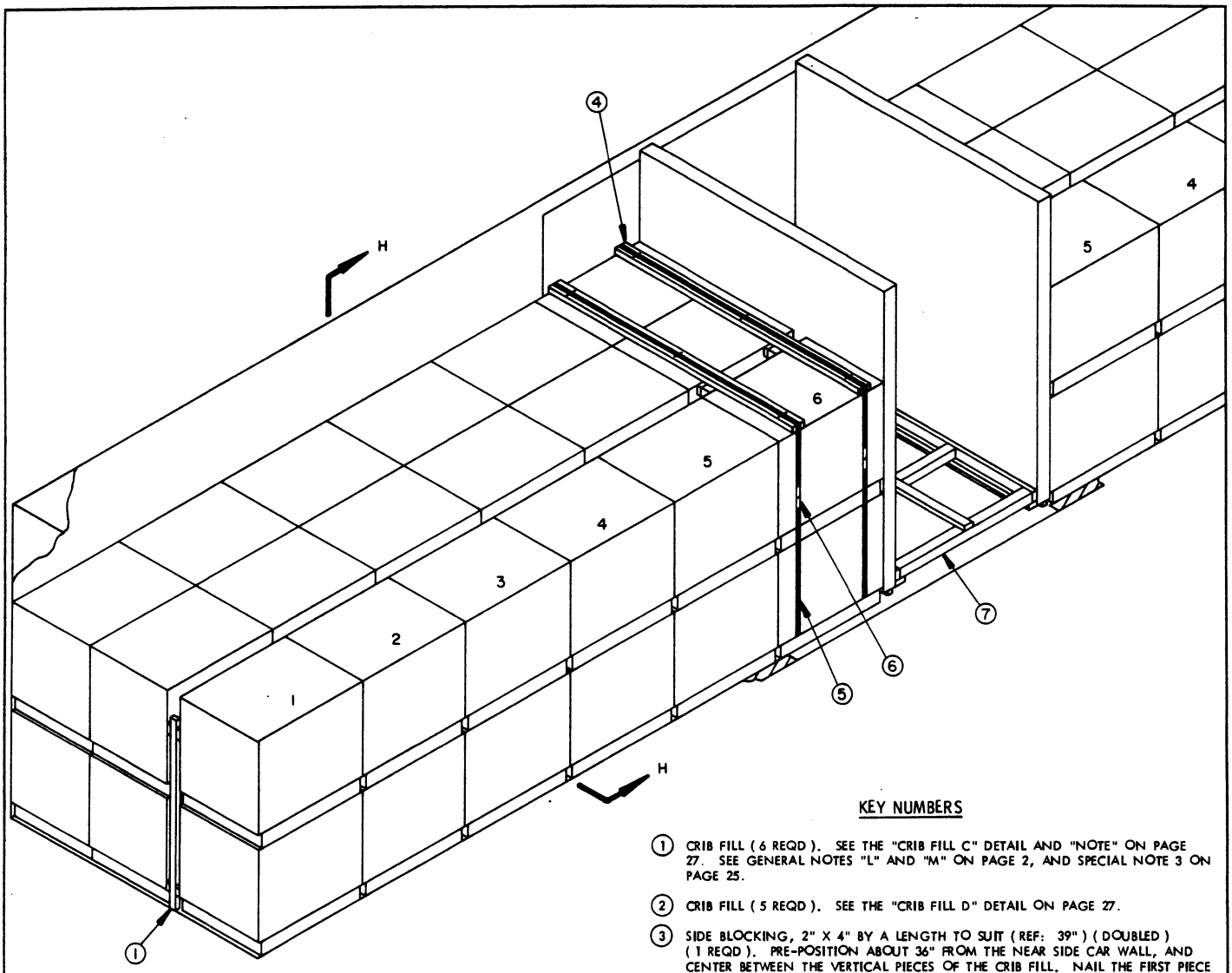
9. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 2" 2" X 4"	92 175 102	31 59 68
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	348 256	2 4
WIRE, NO. 14 GAGE	80' REQD	1-1/2

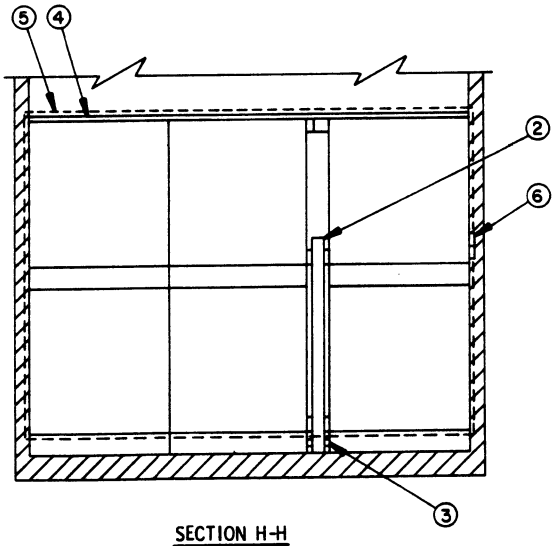
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	58	86,884 LBS
DUNNAGE		324 LBS
TOTAL WEIGHT		87,208 LBS .

DECREASED HEIGHT UNIT
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 "L" AND "M" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 25.

(2) CRIB FILL (5 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 27.

(3) SIDE BLOCKING, 2" X 4" BY A LENGTH TO SUIT (REF: 39") (DOUBLED) (1 REQD). PRE-POSITION ABOUT 36" FROM THE NEAR SIDE CAR WALL, AND CENTER BETWEEN THE VERTICAL PIECES OF THE CRIB FILL. 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 NOTES 4 AND 5 ON PAGE 25.

(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 35'-0" LONG STEEL STRAPPING (2 REQD). STAPLE TO STRAPPING BOARD MARKED (4) W/3 STAPLES. SEE SPECIAL NOTE 6 ON PAGE 25.

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

(7) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 70. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 7 ON PAGE 25.

DECREASED HEIGHT UNIT
66-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS

SPECIAL NOTES:

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

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 24 IS THE DECREASED HEIGHT UNIT. A MAXIMUM OF EIGHTY-FOUR (84) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 125,832 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" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 80,892 POUNDS, WHEN USING THE DEPICTED PROCEDURES. IF THE LENGTHWISE LOADING PATTERN SHOWN ON PAGE 18 IS EMPLOYED, SEVENTY-SIX (76) PALLET UNITS FOR AN APPROXIMATE LADING WEIGHT OF 113,848 POUNDS CAN BE PLACED IN A 60'-8" LONG CAR, SIXTY (60) UNITS CAN BE PLACED IN A 50'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 89,880 POUNDS, AND FORTY-EIGHT (48) UNITS CAN BE LOADED IN A 40'-6" LONG CAR FOR AN APPROXIMATE LADING WEIGHT OF 71,904 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' LONG CARS. FOUR (4) ARE REQUIRED IN EACH END OF 60' LONG CARS. NOTE: IF THE CAR TO BE LOADED IS LESS THAN 9'-6" WIDE, CRIB FILL IS NOT REQUIRED, HOWEVER, THE TOTAL ACCUMULATED SPACE ACROSS A CAR MUST NOT EXCEED 3".

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 PIECE MARKED (5) 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 67 THRU 69 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 ON PAGE 24, MUST BE USED FOR ALL UNITS REQUIRING BUNDLING STRAPS; IF THE PALLET UNITS ARE POSITIONED LENGTHWISE, REFER TO KEY NUMBERS (3) THRU (6) ON PAGE 12, AND SPECIAL NOTES 5 AND 6 ON PAGE 13 FOR GUIDANCE.

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 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.

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 ELEVEN (11) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 32, OR THE ENTIRE TOP TIER CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 36 THRU 45 AND GENERAL NOTE "FF" ON PAGE 3 FOR GUIDANCE.

9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 59 AND/OR PAGES 60 AND 62 FOR SHIPPING GUIDANCE.

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 61 FOR GUIDANCE.

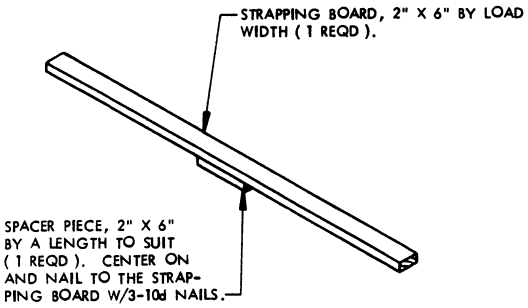
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	176	59
1" X 8"	17	12
2" X 4"	263	176
2" X 6"	19	19
4" X 4"	23	31
NAILS	**NO. REQD**	**POUNDS**
6d (2")	370	2-1/4
10d (3")	36	3/4
12d (3-1/4")	16	1/4
16d (3-1/2")	14	1/4
STEEL STRAPPING, 1-1/4" X .035"	70' REQD	10 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	6 REQD	NIL

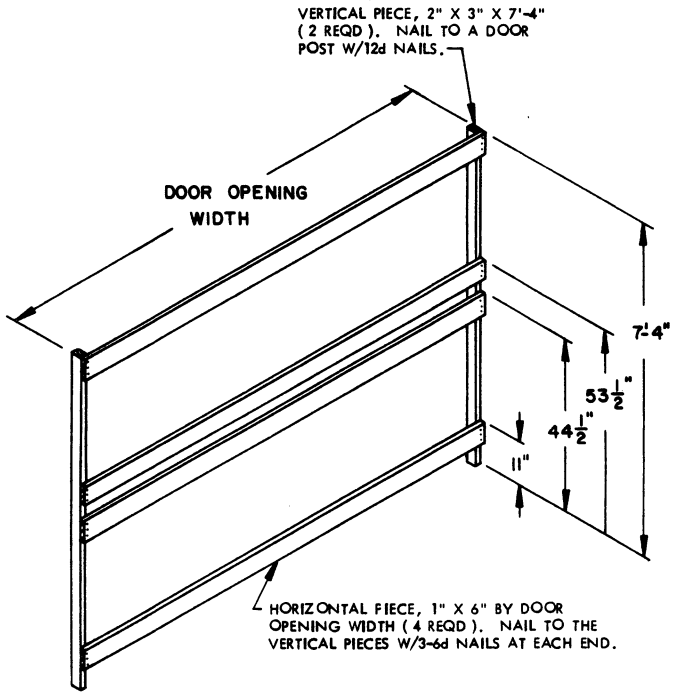
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	98,868 LBS
DUNNAGE		608 LBS
TOTAL WEIGHT		99,476 LBS

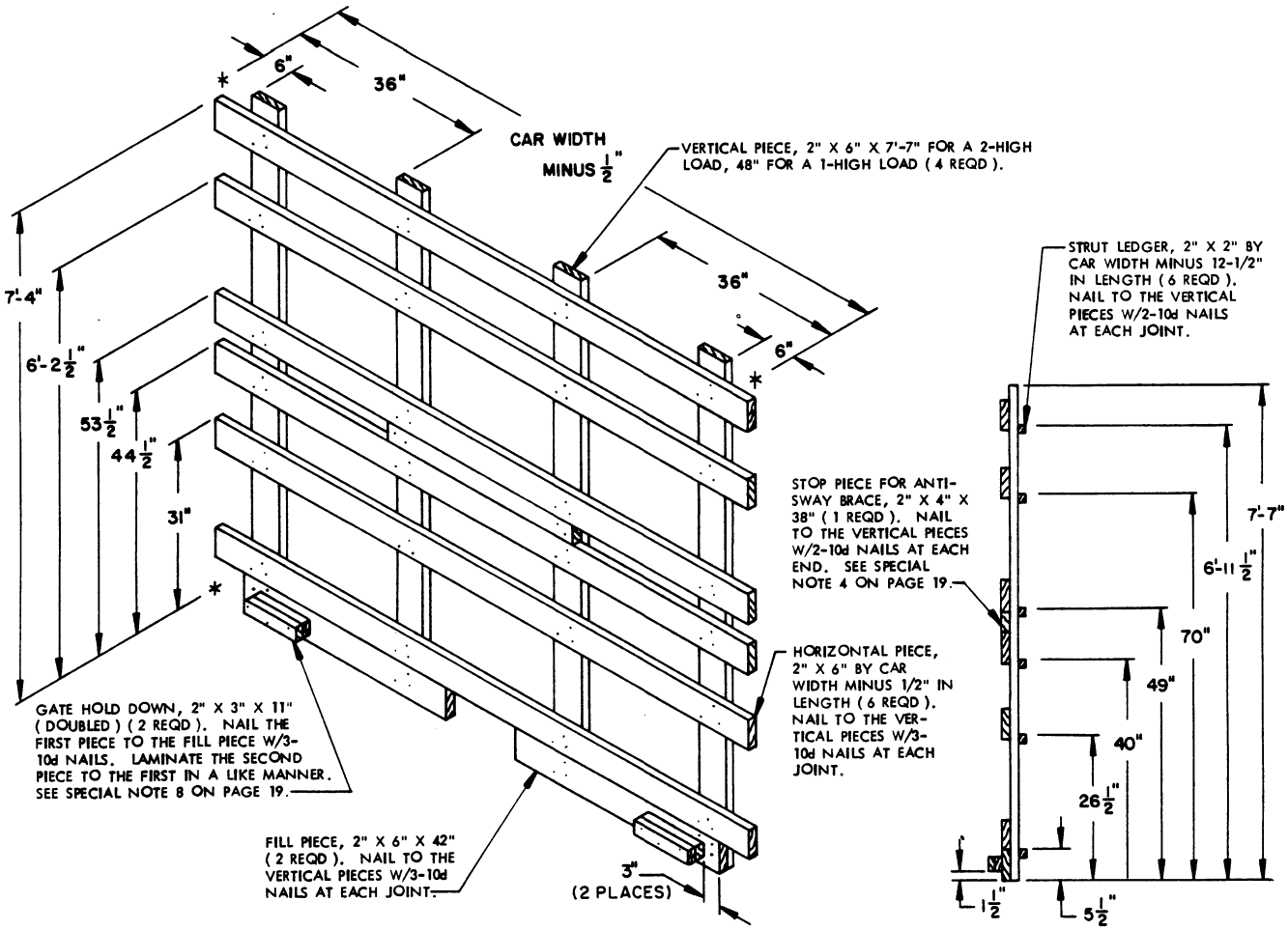
DECREASED HEIGHT UNIT
66-UNIT LOAD IN A 50'-6" LONG BY 9'-6" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS



STRAPPING BOARD/SPACER ASSEMBLY A



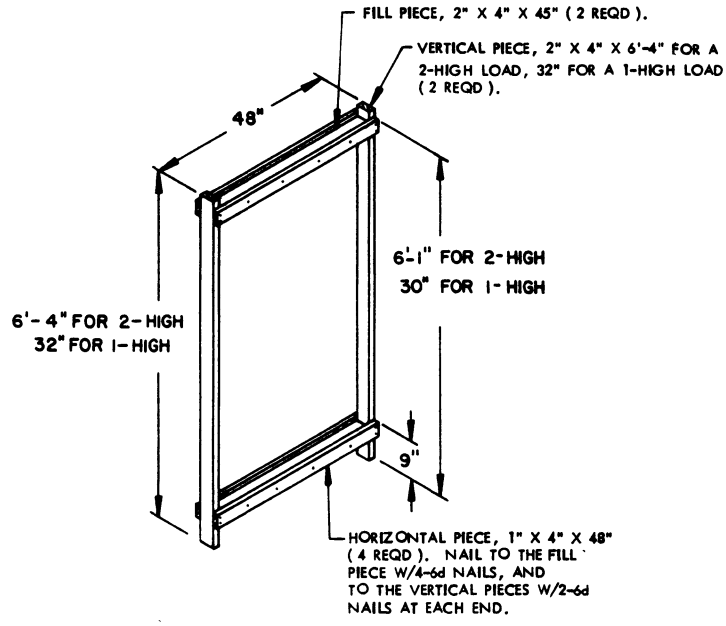
DOORWAY PROTECTION C



CENTER GATE F

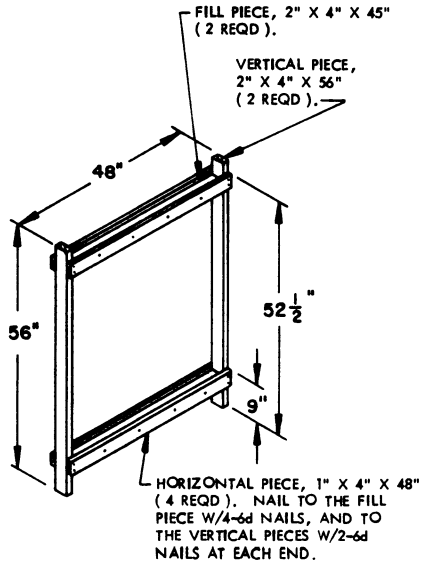
END VIEW

DETAILS FOR DECREASED HEIGHT UNIT



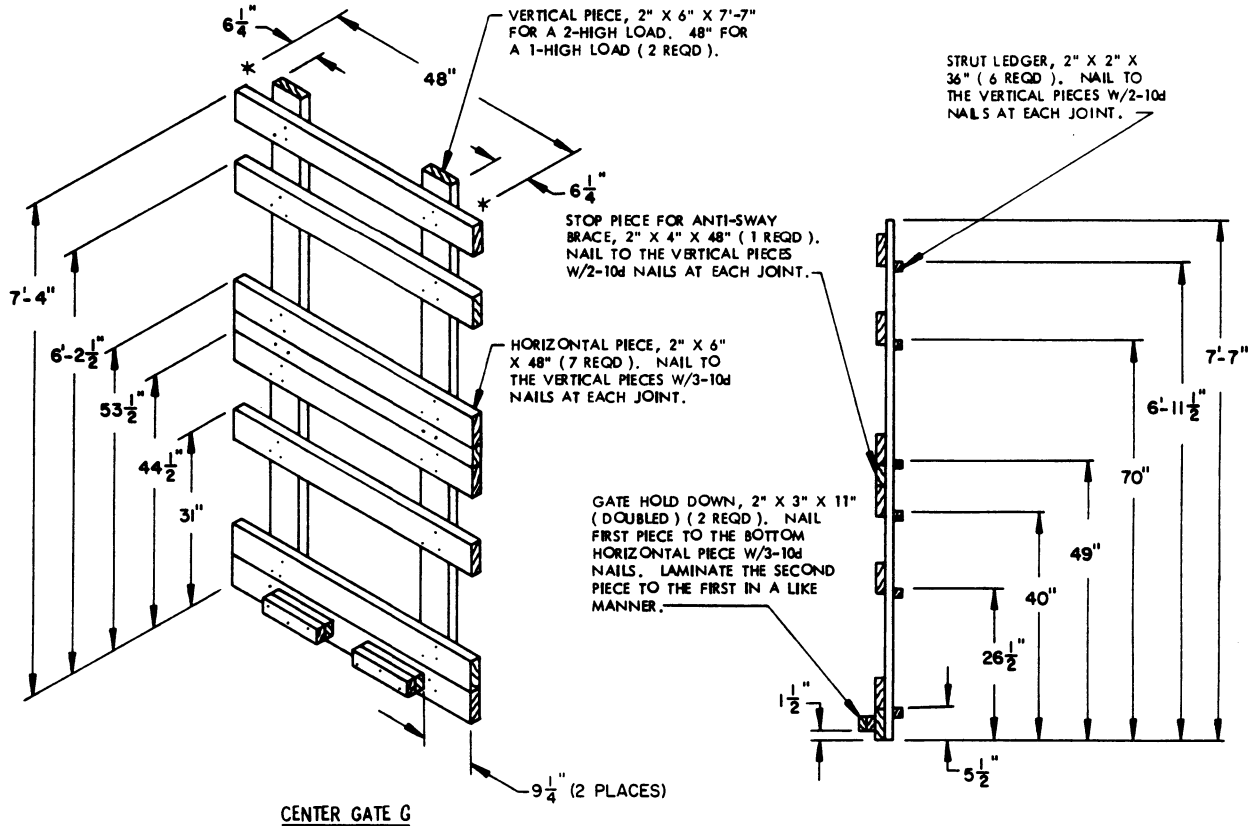
CRIB FILL C

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



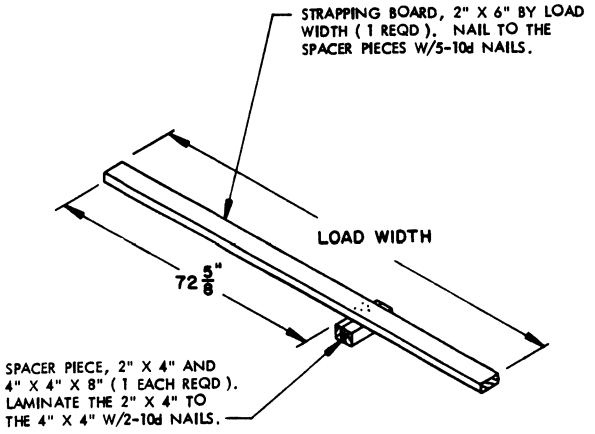
CRIB FILL D

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

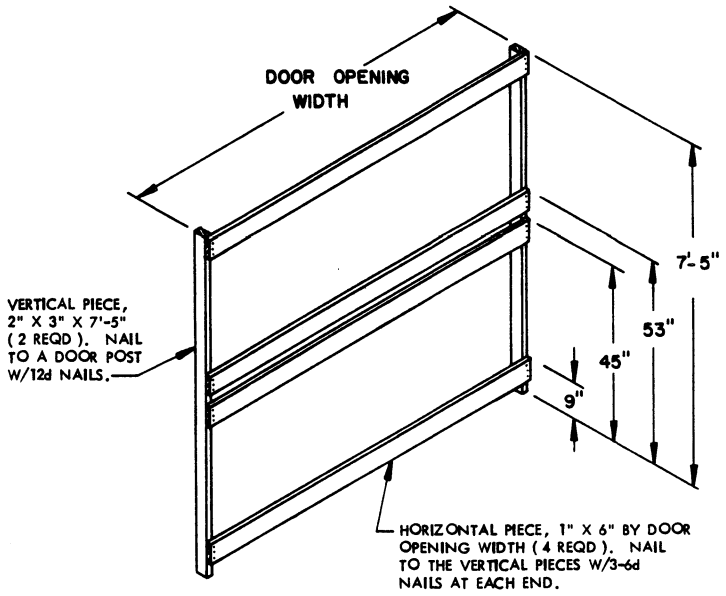


CENTER GATE G

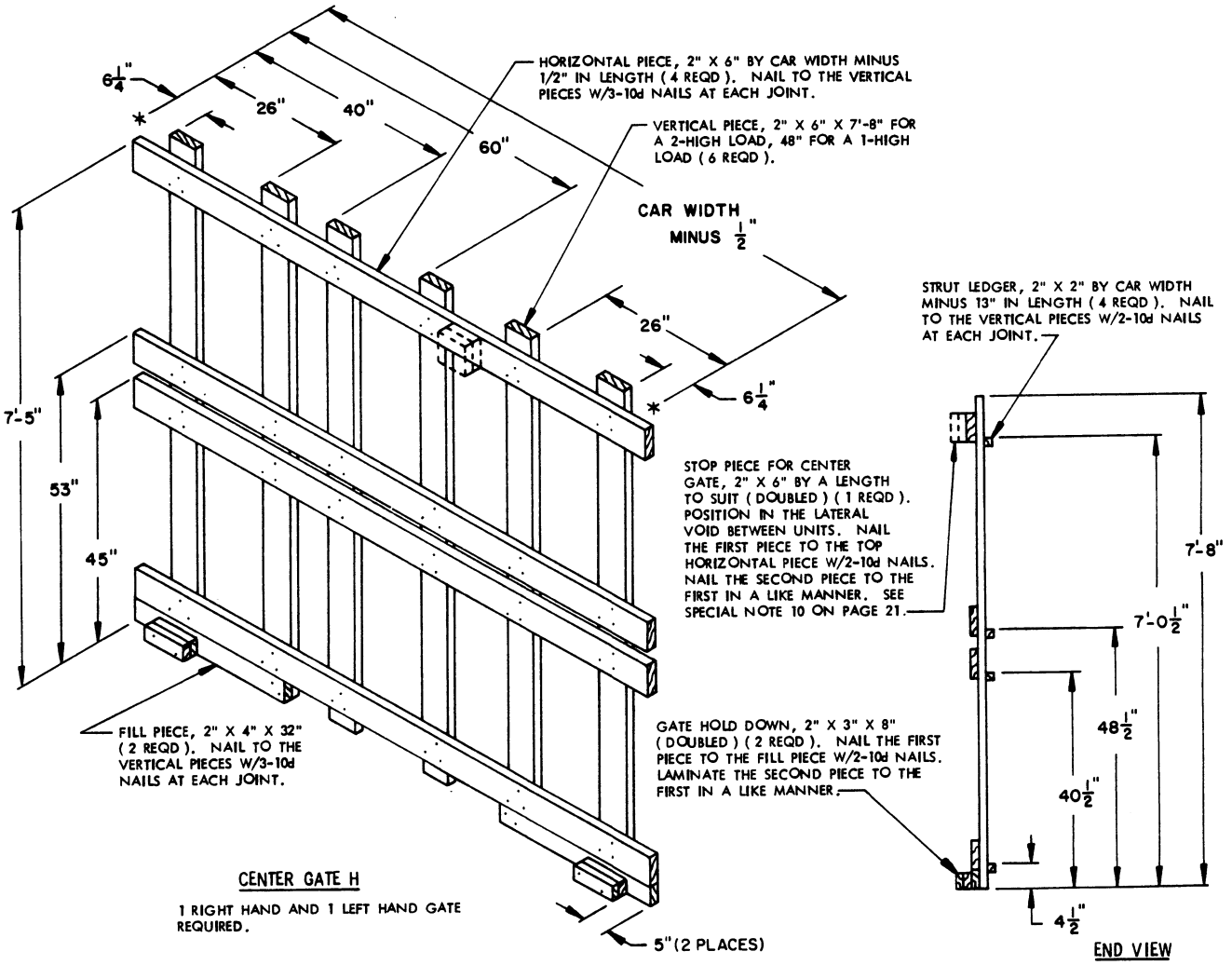
DETAILS FOR DECREASED HEIGHT UNIT



STRAPPING BOARD SPACER ASSEMBLY B



DOORWAY PROTECTION D

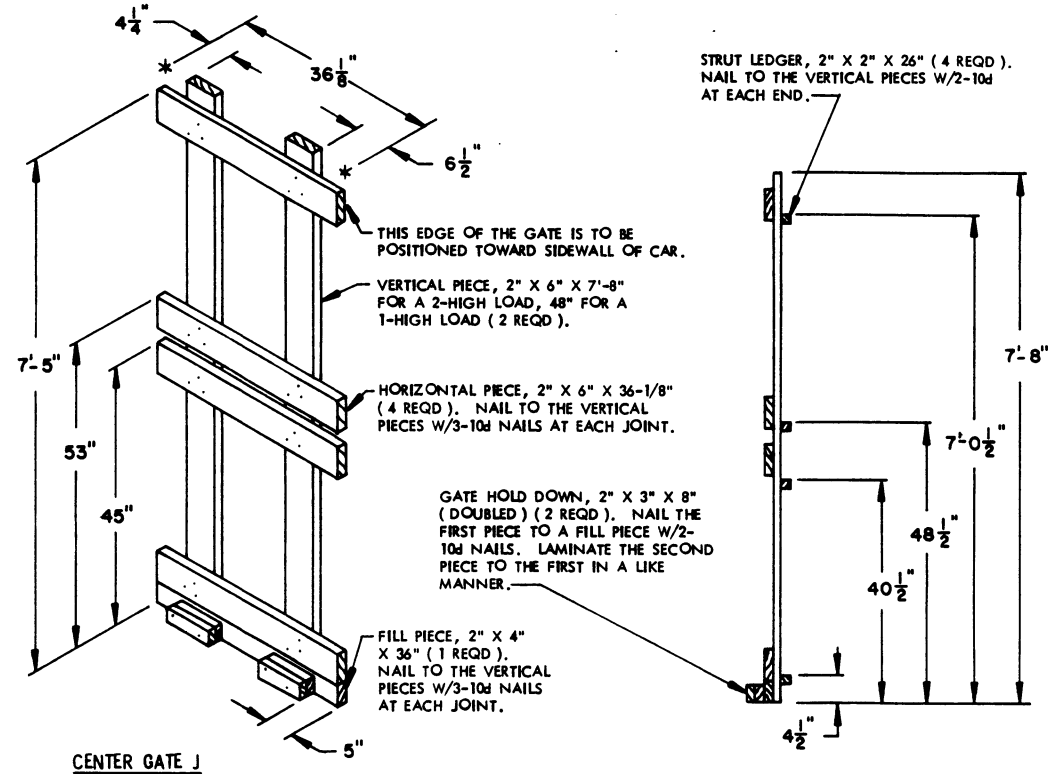


CENTER GATE H

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

END VIEW

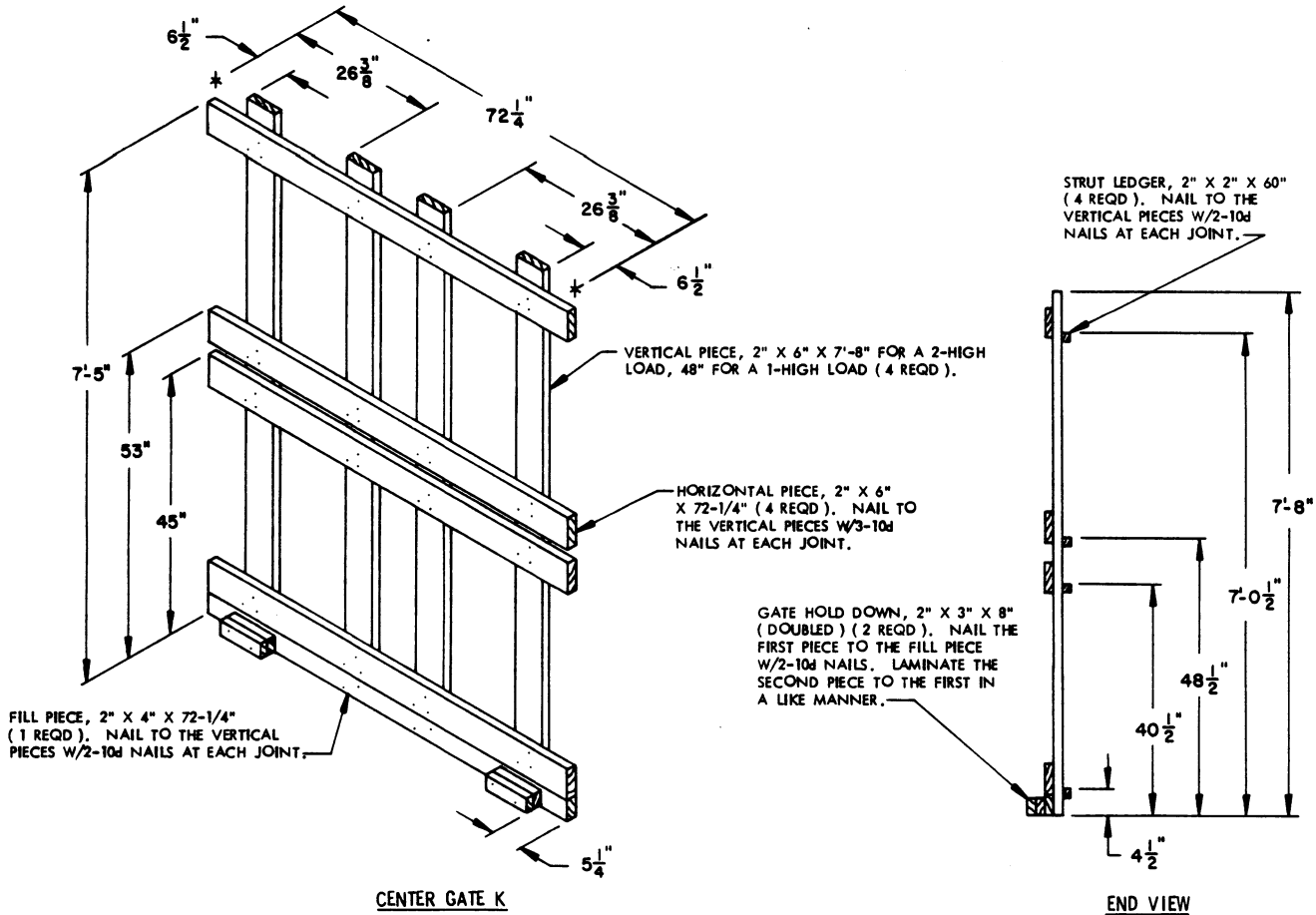
DETAILS FOR DECREASED HEIGHT UNIT



CENTER GATE J

1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED.

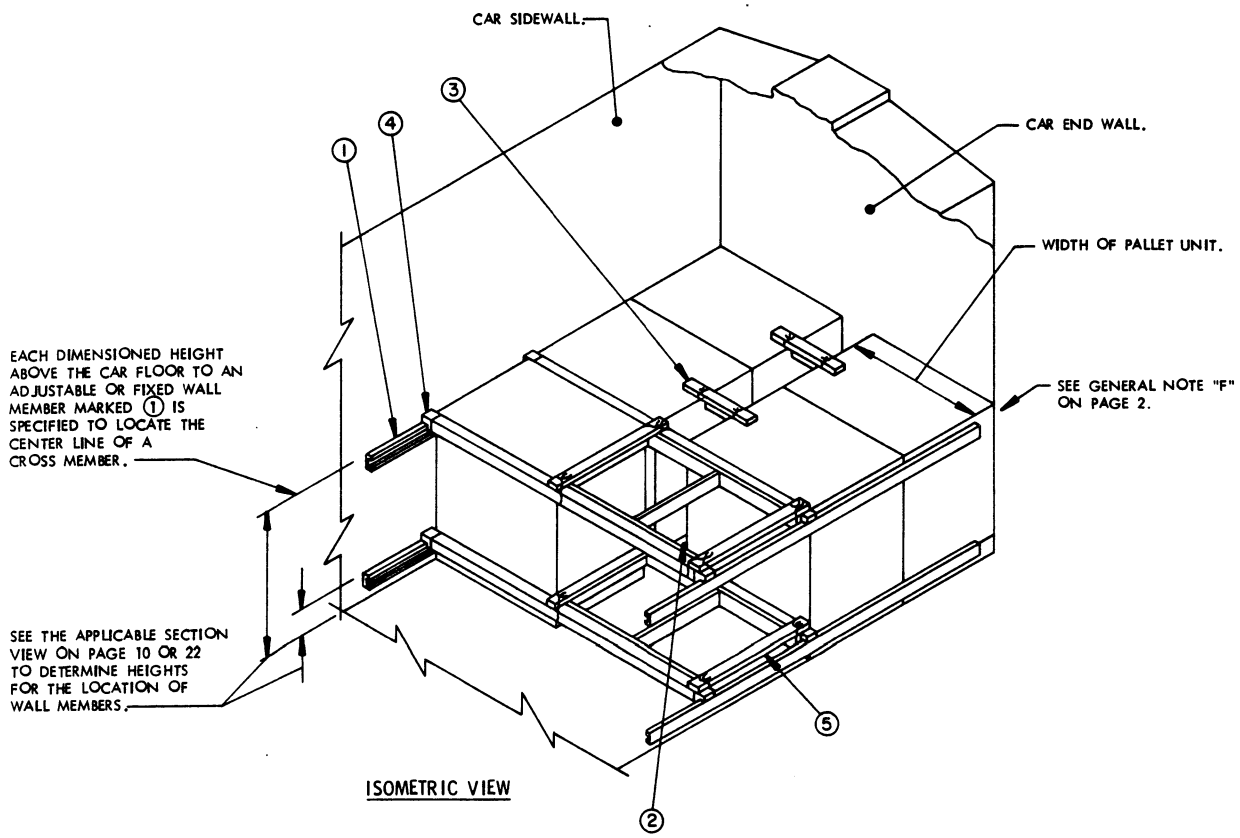
END VIEW



CENTER GATE K

END VIEW

DETAILS FOR DECREASED HEIGHT UNIT



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-0" WIDE (INSIDE CLEARANCE) WOOD-LINED BOX CAR FQUIPPED 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 BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

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. THE SPACER ASSEMBLIES, SHOWN AS PIECES MARKED (5) , MAY ALSO BE USED IN AN UPPER LAYER OF A LOAD FOR THE OMISSION OF A PALLET UNIT. IF THE ASSEMBLIES ARE USED NEXT TO THE CAR END WALL 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 (4) .

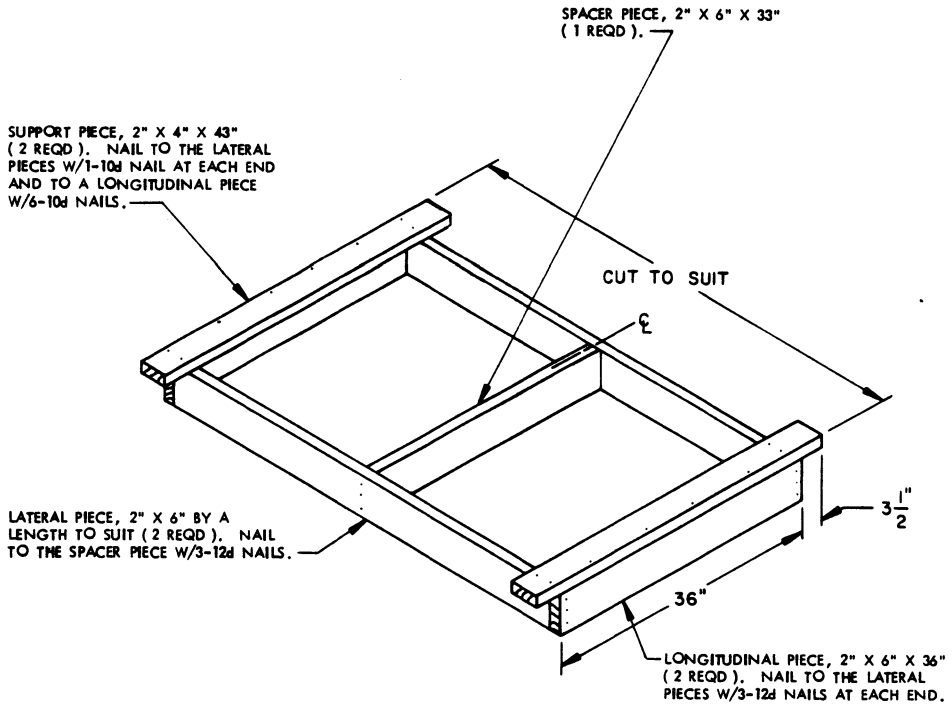
(2) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO PALLET UNITS AS SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63.

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

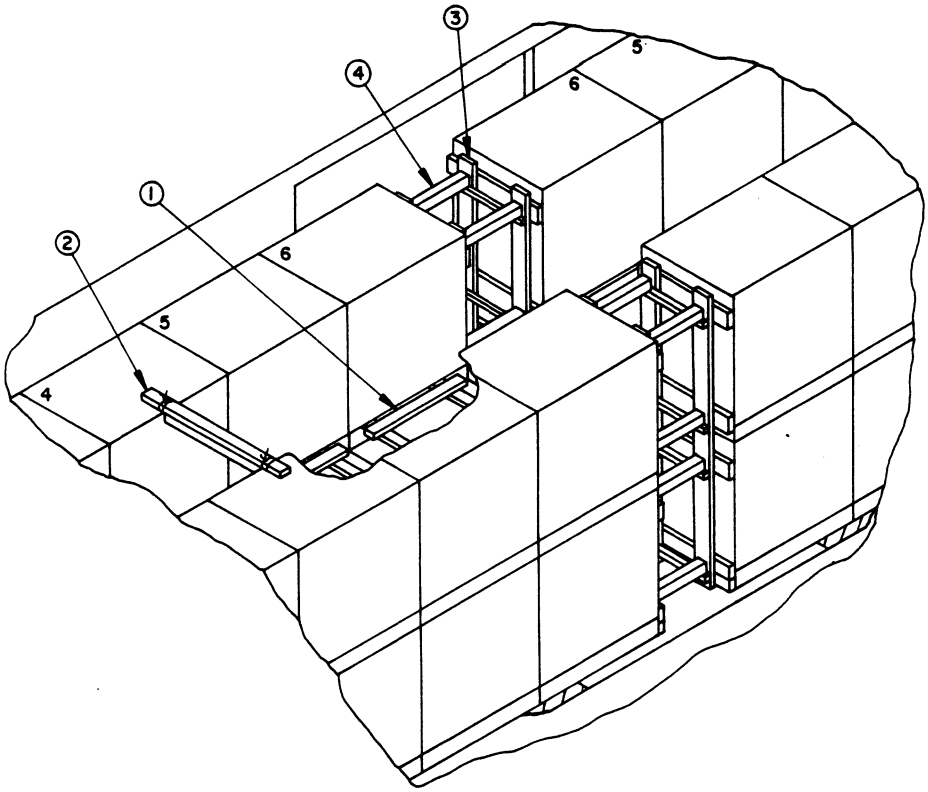
(5) SPACER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 31 AND SPECIAL NOTE 5 AT LEFT. WIRE TIE TO CROSS MEMBER W/2 WRAPS OF NO. 14 GAGE WIRE AT EACH CORNER.

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



SPACER ASSEMBLY

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE METHOD OF OMITTING THE CENTER ROW OF UNITS FROM THE TOP LAYER. THE PALLET UNIT SHOWN IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE DECREASED HEIGHT UNITS COVERED BY THIS DOCUMENT.

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

3. 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.

4. THE CENTER GATE "C" (MODIFIED) IS ONLY APPLICABLE FOR THE BASIC HEIGHT 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, ANTY-SWAY BRACES, AND CRIB FILL PIECES WILL ALSO VARY DEPENDENT UPON THE UNIT BEING LOADED. NOTE THAT 1-HIGH CRIB FILL WILL BE USED IN LIEU OF THE DEPICTED 2-HIGH CRIB FILL PIECES SHOWN IN THE LOAD VIEWS.

KEY NUMBERS

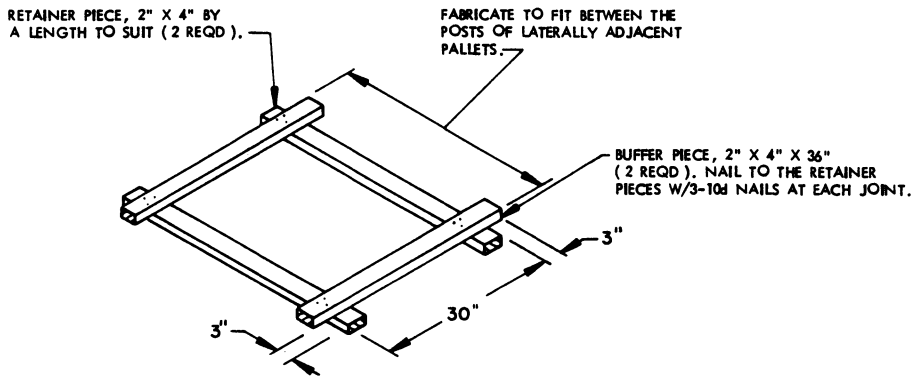
(1) ANTI-SWAY BRACE (12 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 33. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE END DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 63. SEE SPECIAL NOTE 3 AT LEFT.

(3) CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE SPECIAL NOTE 4 AT LEFT, AND THE "CENTER GATE MODIFICATION" DETAIL ON PAGE 33.

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 24") (20 REQD). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

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

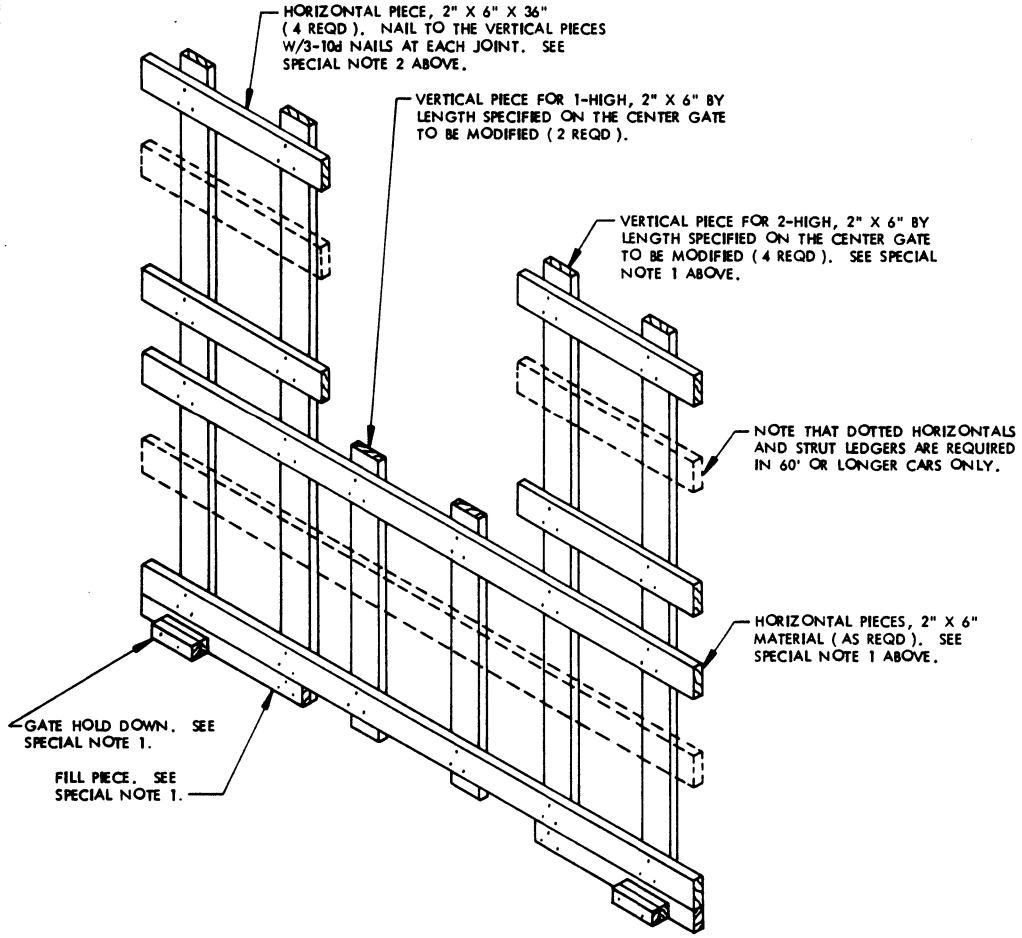


ANTI-SWAY BRACE B

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.

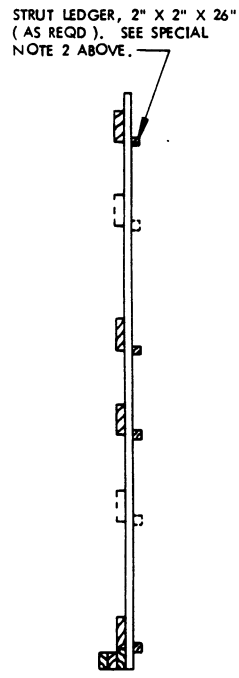
SPECIAL NOTES:

1. THE "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.
2. THE LENGTH OF THE 2" X 6" X 36" HORIZONTAL PIECES, AND THE 2" X 2" X 26" STRUT LEDGERS WILL BE THE SAME FOR ALL MODIFIED CENTER GATES.

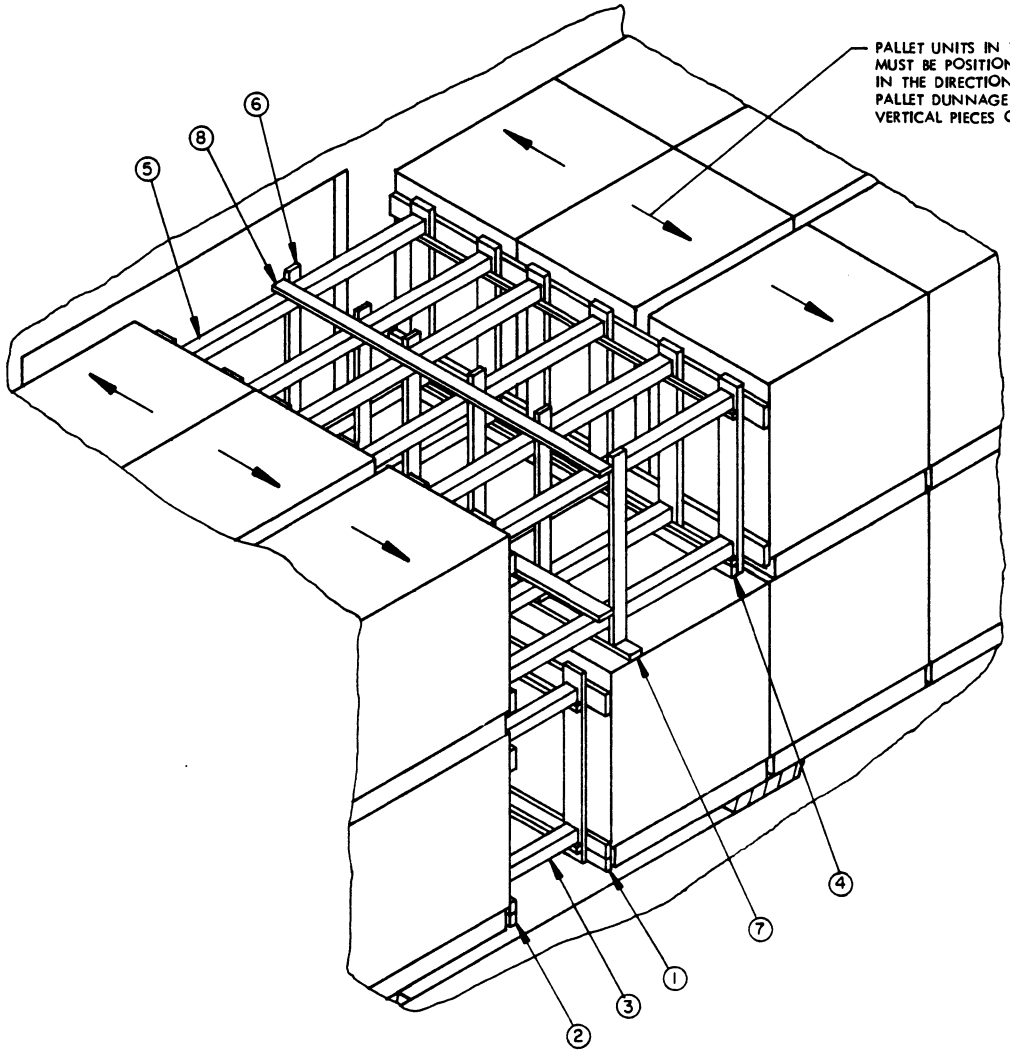


CENTER GATE MODIFICATION

(1 RIGHT HAND AND 1 LEFT HAND GATE REQUIRED)



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 BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE DECREASED HEIGHT UNIT.

3 THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THREE (3) UNITS FROM THE TOP LAYER OF A 2-HIGH LOAD ARE SHOWN AS TYPICAL.

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

5. THE CENTER GATE "C" USED IS ONLY APPLICABLE FOR THE BASIC HEIGHT 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 BRACES IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED ⑦ , MUST BE POSITIONED UNDER AND SECURED TO EACH APPLICABLE VERTICAL STRUT BRACING PIECE.

KEY NUMBERS

① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 16. SEE GENERAL NOTES "L" AND "M" ON PAGE 2 AND SPECIAL NOTES AT THE LEFT.

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

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

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

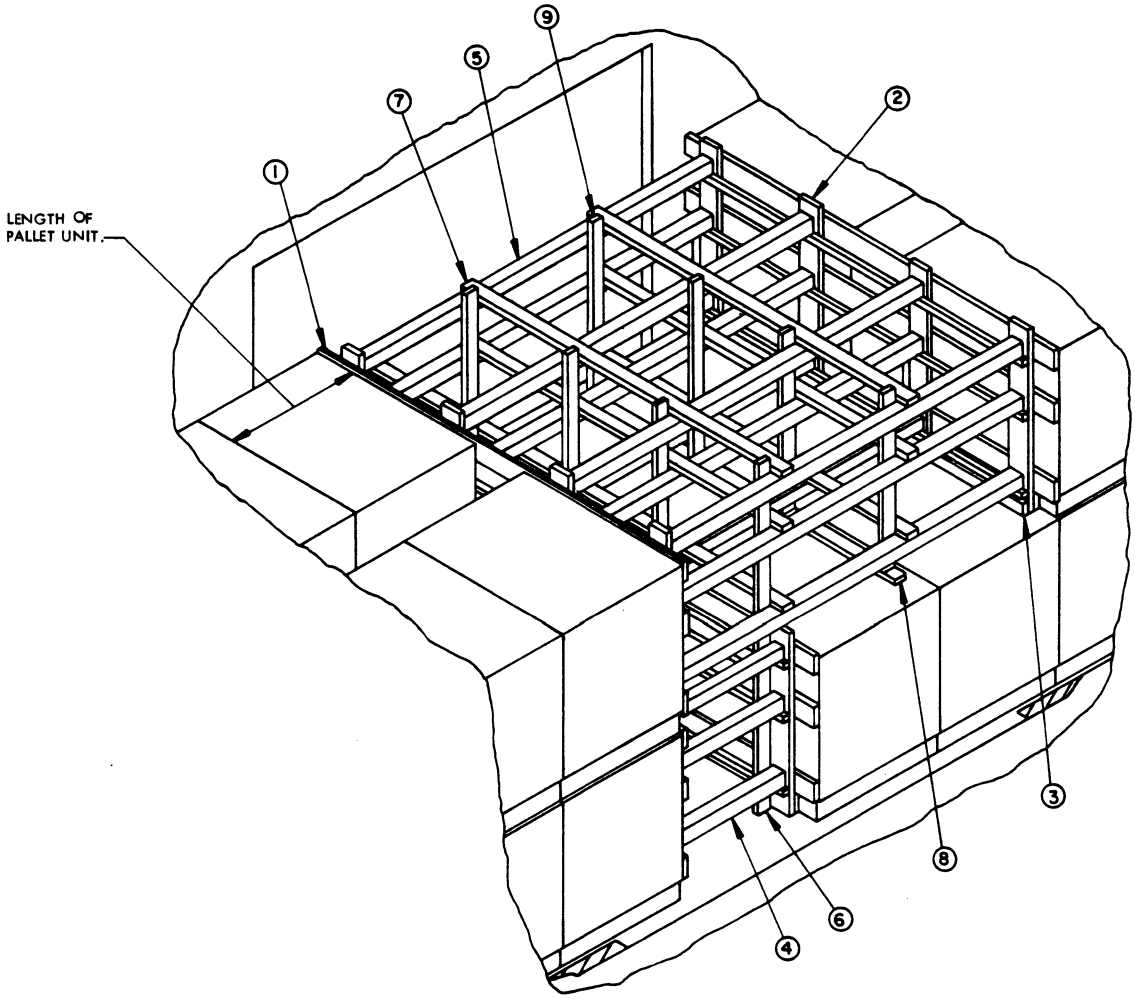
⑤ STRUT, 4" X 4" BY CUT TO FIT (AS REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ② , IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.

⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑦ , W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 6 AT LEFT.

⑦ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.

⑧ HORIZONTAL STRUT BRACING, 2" X 4" BY A LENGTH TO SUIT (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 DECREASED HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO ADAPTABLE FOR THE BASIC HEIGHT UNIT.
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 "F" USED IS ONLY APPLICABLE FOR THE DECREASED HEIGHT 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 BRACES IS INSTALLED ABOVE THE LOWER LAYER OF A LOAD, A SUITABLE LENGTH PAD OF 2" X 4" MATERIAL, SHOWN AS PIECE MARKED (8), 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 F" DETAIL ON PAGE 26. SEE SPECIAL NOTE 5 AT LEFT.

(2) CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 26.

(3) SUPPORT PIECE, 2" X 4" BY CAR WIDTH MINUS 12" IN LENGTH (1 REQD). NAIL TO THE VERTICAL PIECES ON CENTER GATE "F", SHOWN AS PIECE MARKED (2).

(4) STRUT, 4" X 4" BY CUT TO FIT (REF: 35") (12 REQD). TOENAIL TO PIECES MARKED (1) AND (2) W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "K" AND "T" ON PAGE 2. SEE GENERAL NOTE "U" ON PAGE 3.

(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 8'-11") (12 REQD). TOENAIL TO PIECES MARKED (1) AND (2) W/2-16d NAILS AT EACH END.

(6) VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED (4) AND (5) W/3-10d NAILS AT EACH JOINT.

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

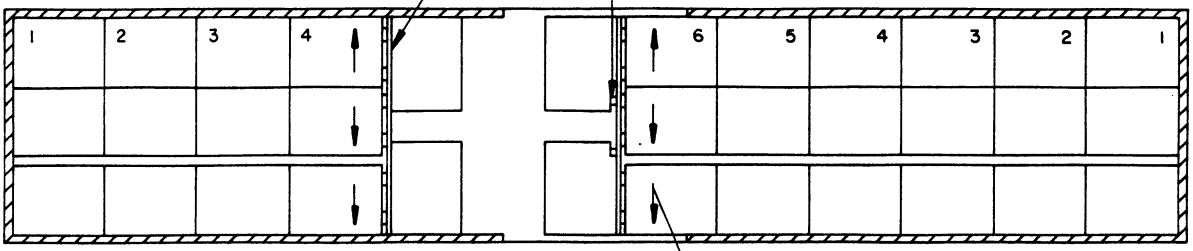
(8) STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN.

(9) VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS MARKED (5) W/3-10d NAILS AT EACH JOINT. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED (8), W/1-10d NAIL AT EACH JOINT. SEE SPECIAL NOTE 6 AT LEFT.

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

SEPARATOR GATE (1 OR 2 REQD, AS APPLICABLE). SEE THE "SEPARATOR GATE" DETAIL ON PAGE 37. POSITION AS SHOWN WITH THE VERTICAL PIECES AGAINST THE CROSSWISE POSITIONED PALLET UNITS.

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



TYPICAL COMBINATION LOAD PATTERN PLAN VIEW

10 CROSSWISE PLUS 2 LENGTHWISE LOAD UNITS ARE SHOWN.

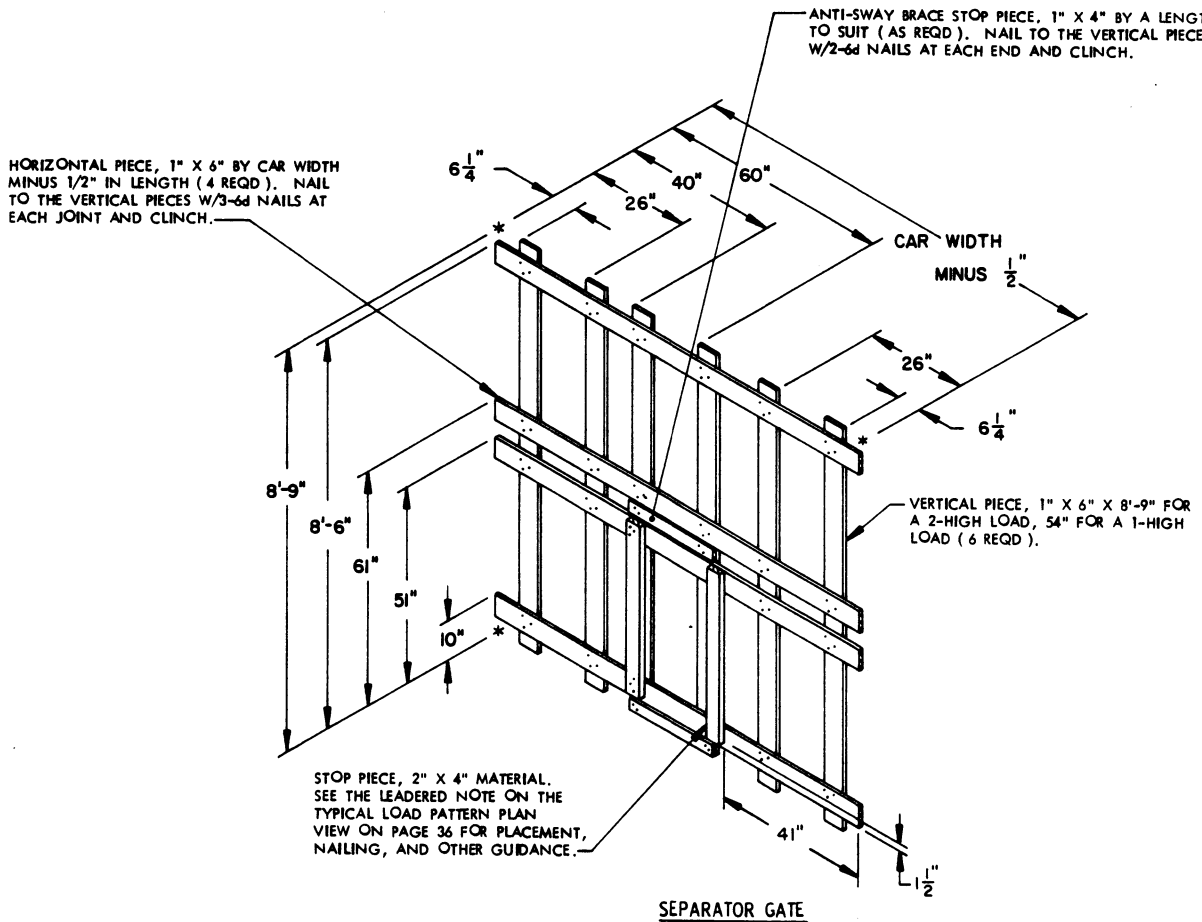
PALLET UNITS IN THE CENTER PORTION OF THE CAR MUST BE POSITIONED WITH THE BASE ENDS LOCATED IN THE DIRECTION OF THE ARROWS SO THAT THE PALLET DUNNAGE WILL BE IN ALIGNMENT WITH THE VERTICAL PIECES OF THE SEPARATOR GATES.

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 37 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 THE SEPARATOR GATE, HAS NOT BEEN SHOWN. REFER TO THE APPLICABLE LOAD PAGES FOR BLOCKING AND BRACING SPECIFICATIONS. A SEPARATOR GATE 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 THE VARIOUS QUANTITIES (PER LAYER) WHICH CAN BE ATTAINED BY THE COMBINATION LOAD METHOD, AND THE PATTERNS REQUIRED TO PROVIDE THESE QUANTITIES, ARE SPECIFIED. FOR COMPARISON PURPOSES, THE OTHER TYPE LOADS WHICH CAN BE USED TO ATTAIN A LIKE QUANTITY, OR A QUANTITY WITHIN THE RANGE OF THE COMBINATION LOAD METHOD, AS WELL AS THE APPROXIMATE LENGTH OF THE STRUTS, ARE ALSO INCLUDED IN THE CHART.

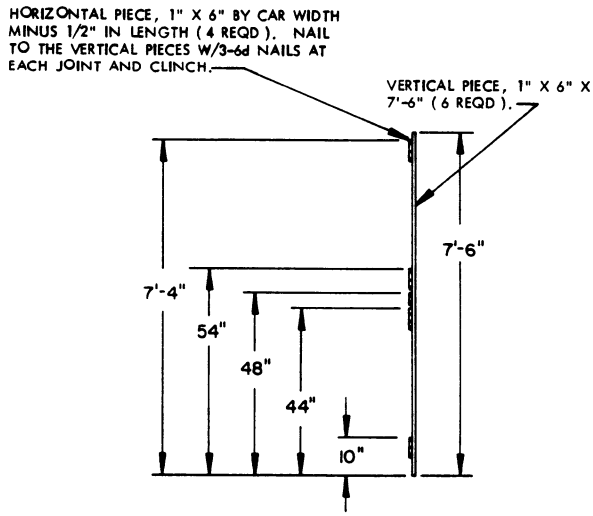
CAR LENGTH	UNITS PER LAYER	LOAD PATTERN	APPROX STRUT LENGTH
40'-6" CAR	27	CROSSWISE LOAD ON PAGE 8 OR 20	42"
	28	8 LONG AT 48" PLUS 2 AT 36-1/8"	20"
	26	6 LONG AT 48" PLUS 4 AT 36-1/8"	44"
	25	5 LONG AT 48" PLUS 5 AT 36-1/8"	56"
	24	LENGTHWISE LOAD ON PAGE 6 OR 18	46"
50'-6" CAR	36	CROSSWISE LOAD ON PAGE 8 OR 20	24"
	35	11 LONG AT 48" PLUS 1 AT 36-1/8"	34"
	34	8 LONG AT 48" PLUS 5 AT 36-1/8"	32"
	33	9 LONG AT 48" PLUS 3 AT 36-1/8"	44"
	32	LENGTHWISE LOAD ON PAGE 6 OR 18	22"
60'-8" CAR	42	CROSSWISE LOAD ON PAGE 8 OR 20	50"
	43	13 LONG AT 48" PLUS 2 AT 36-1/8"	22"
	41	11 LONG AT 48" PLUS 4 AT 36-1/8"	46"
	40	10 LONG AT 48" PLUS 5 AT 36-1/8"	58"
	38	LENGTHWISE LOAD ON PAGE 6 OR 18	35"

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



SEPARATOR GATE

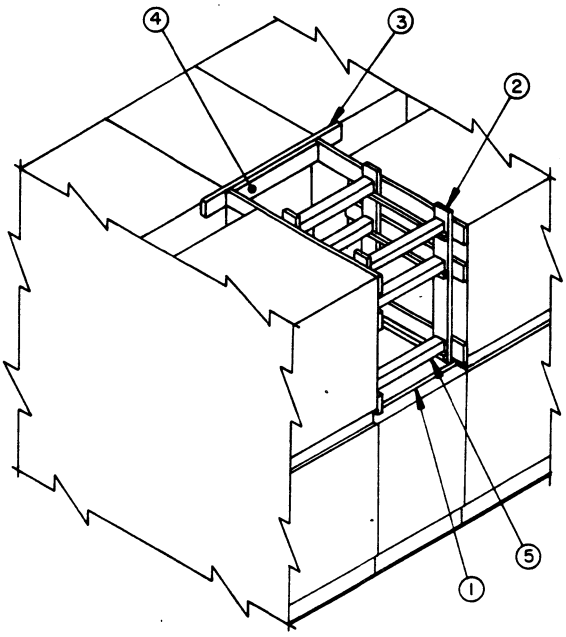
THIS VIEW DEPICTS A SEPARATOR GATE FOR THE BASIC HEIGHT UNIT IN A 2-HIGH LOAD. SEE THE "END VIEW" BELOW FOR HEIGHT DIMENSIONS FOR THE DECREASED HEIGHT UNIT. (ONE RIGHT HAND AND ONE LEFT HAND GATE IS REQUIRED). A RIGHT HAND GATE IS SHOWN.



END VIEW

THIS VIEW DEPICTS A SEPARATOR GATE FOR THE DECREASED HEIGHT UNIT.

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



SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE BASIC HEIGHT UNIT IS SHOWN. HOWEVER, THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. 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.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN: REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

KEY NUMBERS

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

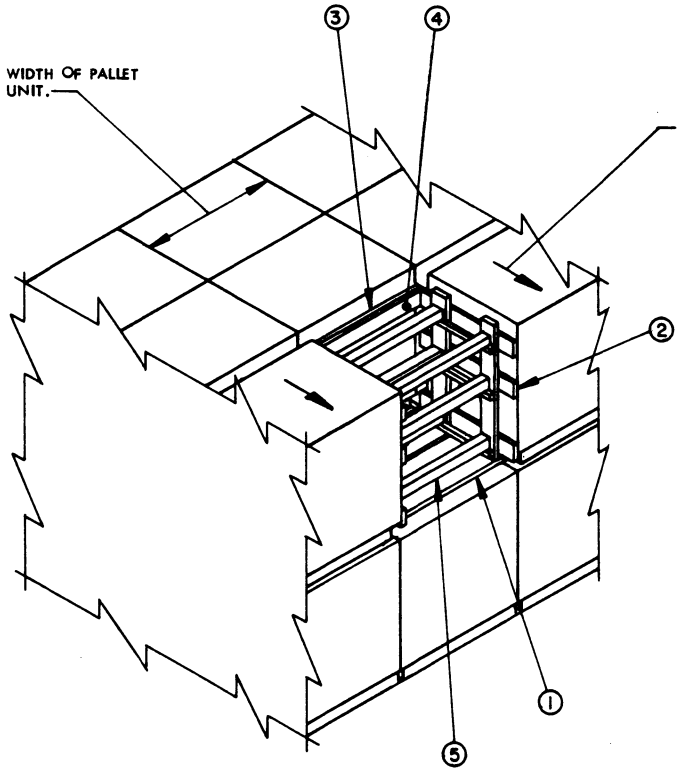
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE A" DETAIL ON PAGE 40. NAIL TO THE FILLER PIECE, PIECE MARKED (4), W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1), W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

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

(4) FILLER PIECE, 2" X 6" X 33" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (3), W/5-10d NAILS.

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

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE BASIC HEIGHT UNIT IS SHOWN. HOWEVER, THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. 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.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN: REFER TO THE APPLICABLE LOAD PAGE FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" X 48" (2 REQD). POSITION SO AS TO BE UNDER THE VERTICAL PIECES OF THE LOAD BEARING GATE, PIECE MARKED (2) .

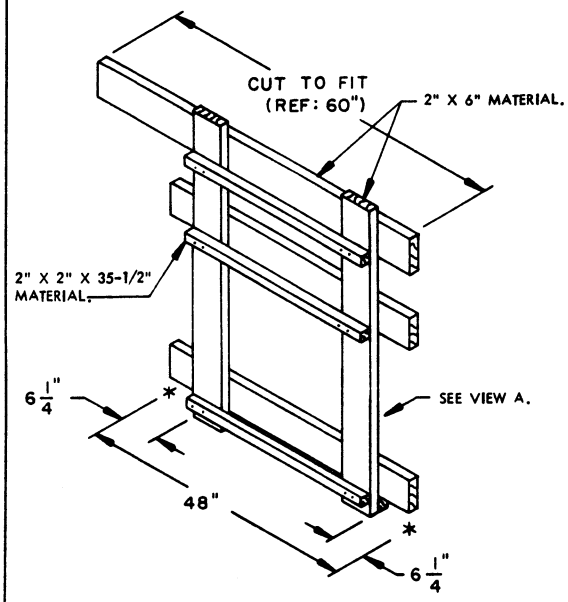
(2) LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE B" DETAIL ON PAGE 41. NAIL TO THE FILLER PIECE, PIECE MARKED (4) ,W/3-10d NAILS. TOENAIL TO THE SUPPORT PIECE, PIECE MARKED (1) ,W/2-10d NAILS AT EACH JOINT. CAUTION: USE CARE NOT TO TOENAIL INTO A CONTAINER.

(3) ANTI-SWAY BEARING PIECE, 2" X 6" X 48" (1 REQD).

(4) FILLER PIECE, 2" X 6" X 45" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED (3) ,W/5-10d NAILS.

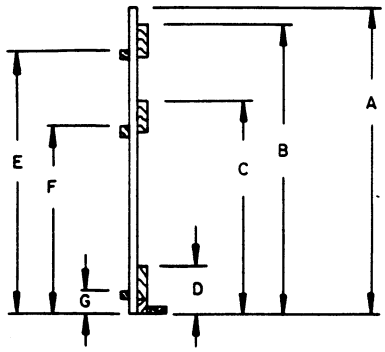
(5) STRUT, 4" X 4" BY CUT TO FIT (REF: 42") (AS REQD). TOENAIL TO PIECES MARKED (2) W/2-16d NAILS AT EACH END.

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

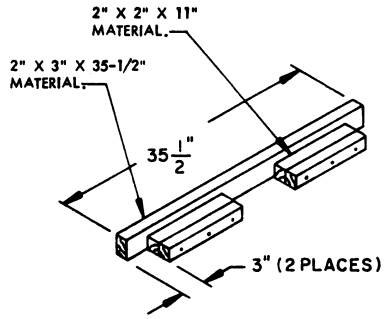


LOAD BEARING GATE A

SEE SPECIAL NOTE 1 BELOW. SEE SPECIAL NOTE 3 FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A RIGHT HAND GATE IS SHOWN.



END VIEW

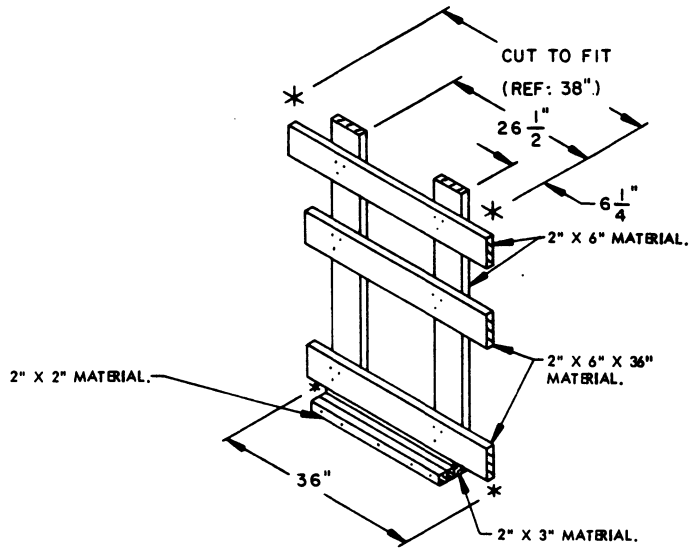


VIEW A

DIMENSIONAL CHART		
DIM	BASIC HEIGHT UNIT	DECREASED HEIGHT UNIT
A	53"	46"
B	50"	43"
C	37"	30"
D	8-1/2"	8-1/2"
E	45-1/2"	38-1/2"
F	32-1/2"	25-1/2"
G	4"	4"

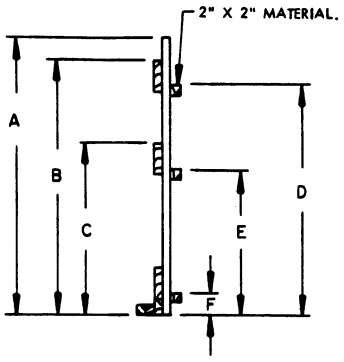
SPECIAL NOTES:

1. THE GATE SHOWN ON THIS PAGE IS FOR USE WITH BASIC/DECREASED HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 38. 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. SEE THE CHART AT LEFT FOR DIMENSIONS REPRESENTED BY LETTERS. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3" OR 2" X 6" HORIZONTAL PIECE (S) TO THE 2" X 6" VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO A 2" X 3" 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 END.



LOAD BEARING GATE B

SEE SPECIAL NOTE 1. SEE SPECIAL NOTE 3 FOR NAILING GUIDANCE. ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED. A LEFT HAND GATE IS SHOWN.

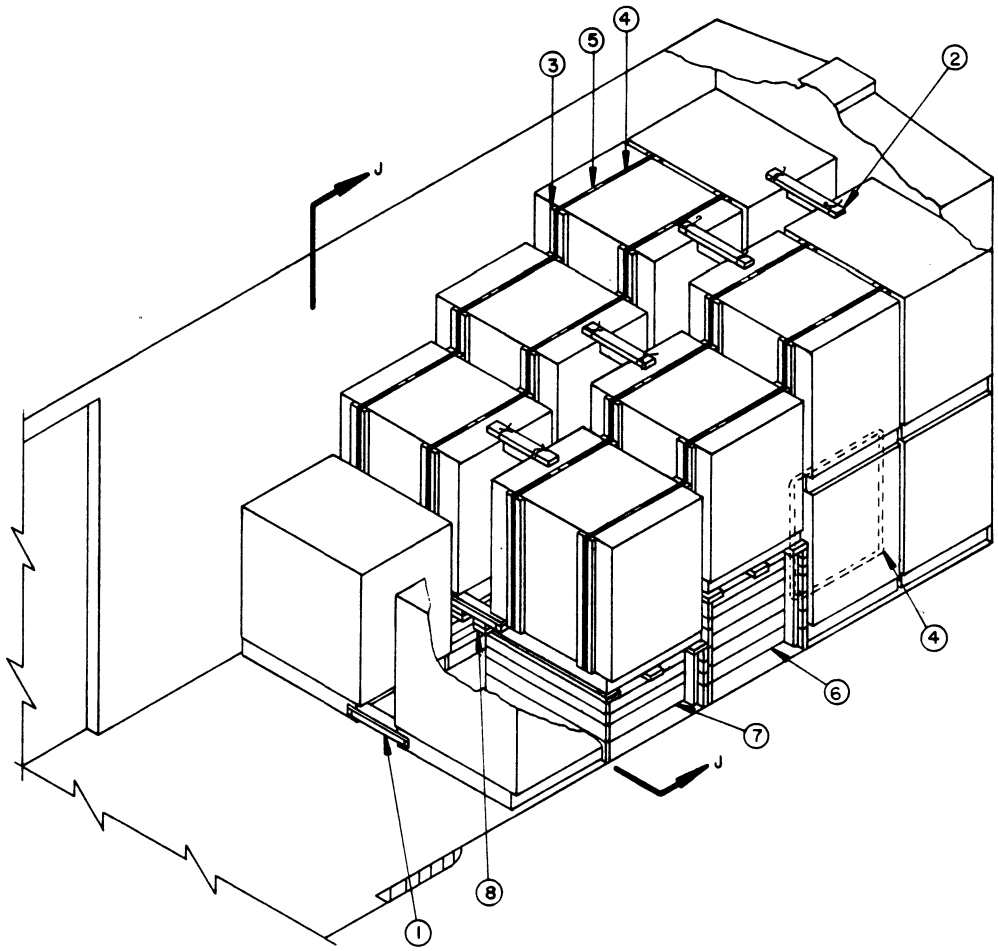


END VIEW

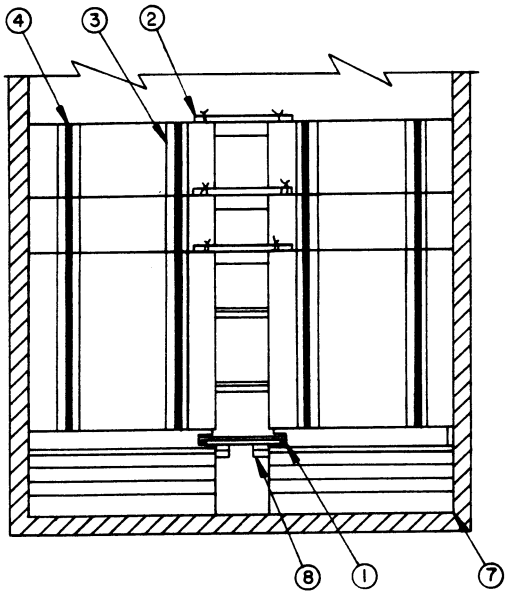
DIMENSIONAL CHART		
DIM	BASIC HEIGHT UNIT	DECREASED HEIGHT UNIT
A	48"	48"
B	44"	43"
C	29-1/2"	----
D	39-1/2"	38-1/2"
E	25"	----
F	3-3/4"	3-3/4"

SPECIAL NOTES:

1. THE GATE ON THIS PAGE IS FOR USE WITH BASIC AND/OR DECREASED-HEIGHT UNITS IN THE LCL PROCEDURES SHOWN ON PAGE 39. THOSE PROCEDURES DEPICT THE OMISSION OF A PALLET UNIT FROM A LOAD OF CROSSWISE-POSITIONED PALLET UNITS.
2. THE REFERENCE DIMENSION GIVEN FOR THE CUT-TO-FIT PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-4". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.
3. SEE THE CHART AT LEFT FOR DIMENSIONS REPRESENTED BY LETTERS. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 3" OR 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 2" GATE HOLD DOWN PIECES TO A HORIZONTAL PIECE W/5-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.



ISOMETRIC VIEW



SECTION J-J

KEY NUMBERS

(1) ANTI-SWAY BRACE (7 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. WIRE TIE TO THE PALLET POSTS WITH NO. 14 GAGE WIRE. SEE GENERAL NOTES "L" AND "M" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 43.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (4 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO THE UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63.

(3) STRAPPING BOARD, 2" X 6" X 45" (32 REQD/4 PER PALLET UNIT). POSITION AS SHOWN IN THE "METHOD A" DETAIL ON PAGE 44. SEE SPECIAL NOTE 6 ON PAGE 43.

(4) REINFORCING STRAP, 1-1/4" X .035" X 16'-0" LONG (REF) STEEL STRAPPING (16 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES. SEE THE "METHOD A" DETAIL ON PAGE 44.

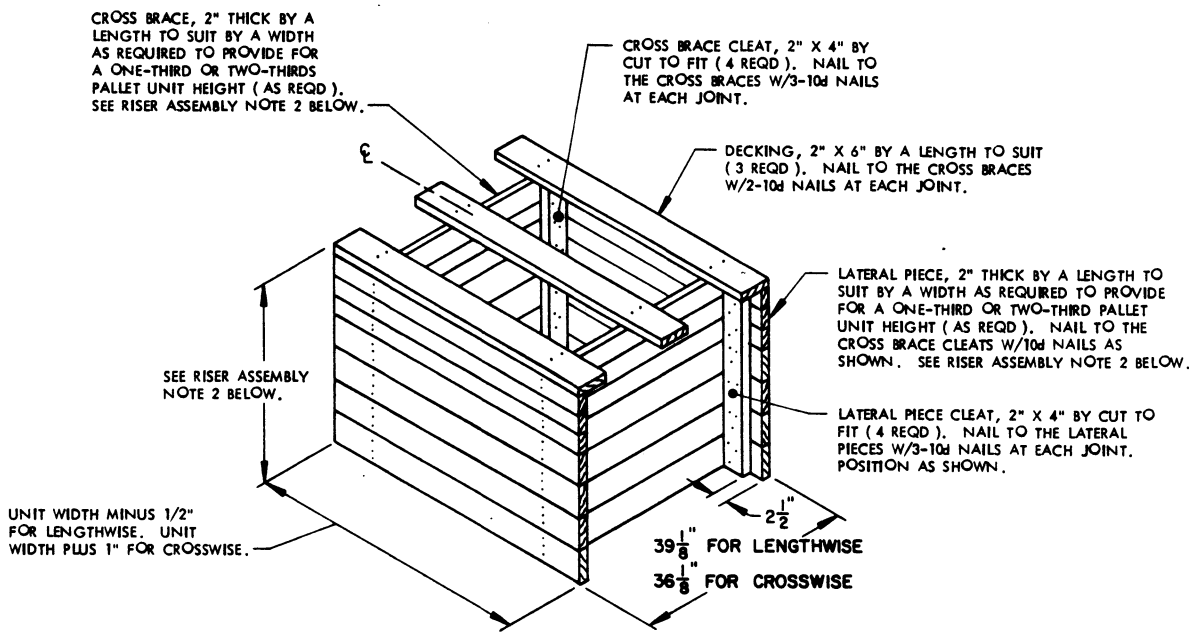
(5) SEAL FOR 1-1/4" STRAPPING (32 REQD/2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

(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 43.

(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 43.

(8) STOP PIECE (4 REQD). SEE THE "STOP PIECE LOCATION" DETAIL ON PAGE 45 FOR LOCATION AND NAILING GUIDANCE.

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

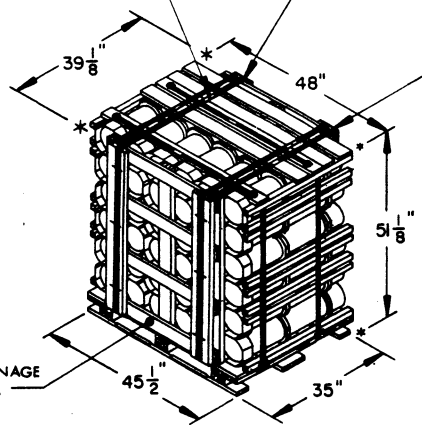
1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINED BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 42 IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
3. THE RISER METHOD OF PARTIAL-LAYER BRACING IS TYPICALLY SHOWN WITH THE PALLET UNITS POSITIONED LENGTHWISE IN THE CAR. THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE POSITIONED UNITS. SEE SPECIAL NOTES 5 THRU 7.
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 THE LENGTHWISE POSITIONED UNITS. NOTE THAT STOP PIECES, SHOWN AS PIECE MARKED (8) ON PAGE 42, 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" DETAIL ON PAGE 44 FOR MODIFICATIONS TO BE ACCOMPLISHED IN LIEU OF USING STRAPPING BOARDS.
7. IF THE PALLET UNITS ARE POSITIONED CROSSWISE, 3-PALLET STACKS WILL BE POSITIONED ACROSS THE WIDTH OF THE CAR. ALSO, IF THE CAR IS MORE THAN 9'-4" WIDE, 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 BASIC HEIGHT UNIT. THE HEIGHT OF THE BASIC UNIT IS 51-1/8". A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE, AND AS KEY NUMBER (6) IN THE LOAD ON PAGE 42. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM FOUR (4) PIECES OF 2" X 6" MATERIAL AND THREE (3) PIECES OF 2" X 4" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 34" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER (7) IN THE LOAD ON PAGE 42, WILL BE FABRICATED FROM ONE (1) PIECE OF 2" X 6" AND THREE (3) PIECES OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 17-1/2" 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.

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

REINFORCING STRAP, 1-1/4" X .035" X 16'-0" LONG STEEL STRAPPING FOR 6-LAYER UNITS, 14'-6" LONG FOR 5-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO EACH STRAPPING BOARD W/3 STAPLES.



STRAPPING BOARD, 2" X 6" X 45" FOR 6-LAYER UNITS, 2" X 6" X 37" FOR 5-LAYER UNITS (4 REQD). POSITION APPROXIMATELY ONE INCH (1") FROM THE SIDE OF THE END DUNNAGE ASSEMBLY.

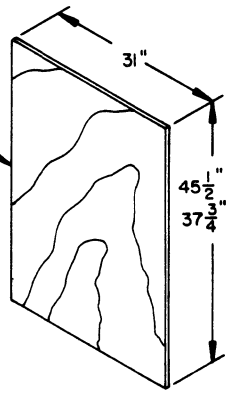
END DUNNAGE ASSEMBLY.

METHOD A

BASIC HEIGHT UNIT

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 42. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF UNITS TO BE POSITIONED CROSSWISE IN A CAR, REFER TO THE "METHOD B" DETAIL BELOW.

1/2" PLYWOOD, 31" WIDE BY A HEIGHT TO SUIT.

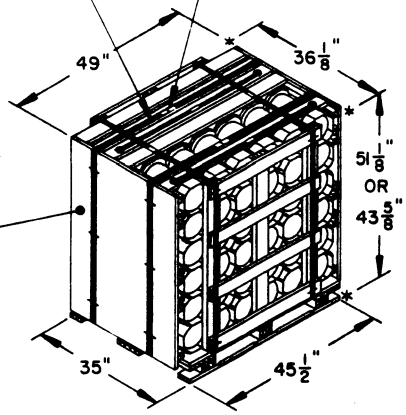


SIDE FILL ASSEMBLY

FOR METHOD "B" BELOW.

REINFORCING STRAP, 1-1/4" X .035" X 18'-0" LONG STEEL STRAPPING FOR 6-LAYER UNITS, 16'-6" FOR 5-LAYER UNITS (2 REQD). INSTALL TO ENCIRCLE THE PALLETIZED UNIT AND THE SIDE FILL ASSEMBLIES. SECURE TO THE SIDE FILL ASSEMBLIES W/STAPLES.

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



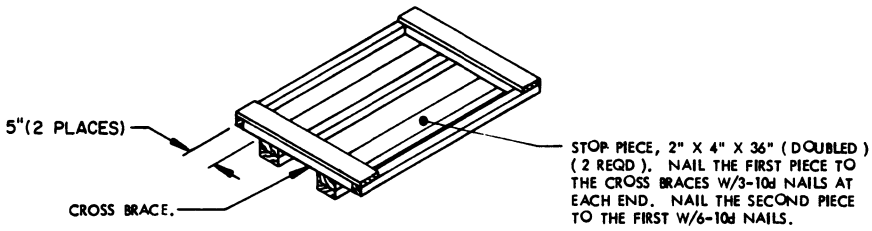
SIDE FILL ASSEMBLY (2 REQD). SEE THE "SIDE FILL ASSEMBLY " DETAIL ABOVE.

METHOD B

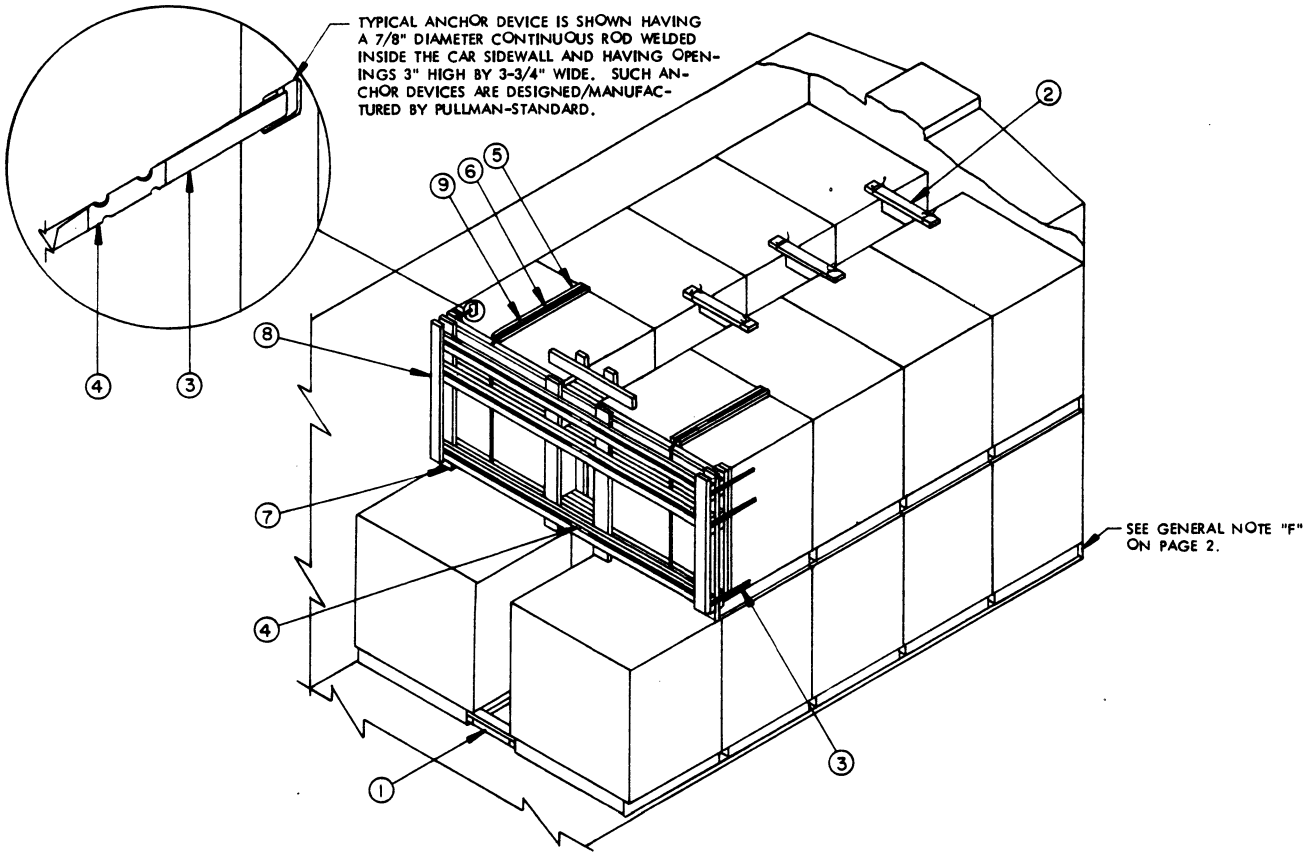
BASIC HEIGHT UNIT

NOTE:
THE "METHOD B" DETAIL AT LEFT SHOWS THE MODIFICATION REQUIRED FOR THE UNITS WHICH ARE TO BE POSITIONED CROSSWISE IN A CAR WHEN USING THE RISER METHOD OF PARTIAL-LAYER BRACING SHOWN ON PAGE 42. THE BASIC HEIGHT UNIT IS SHOWN, HOWEVER, THE PROCEDURE IS ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT. FOR MODIFICATION OF 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



STOP PIECE LOCATION DETAIL



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 BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

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 47)

KEY NUMBERS

(1) ANTI-SWAY BRACE (9 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN THE LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO PALLET UNITS WITH NO . 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIEWIRE APPLICATION A" DETAIL ON PAGE 63.

(3) BULKHEAD STRAP, 2" X .050" X 23'-0" LONG (REF) STEEL STRAPPING (3 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 47 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 4 THRU 6 AT LEFT.

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

(5) STRAPPING BOARD, 2" X 4" X 36" (2 REQD).

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

(7) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 47. SEE SPECIAL NOTE 3 AT LEFT.

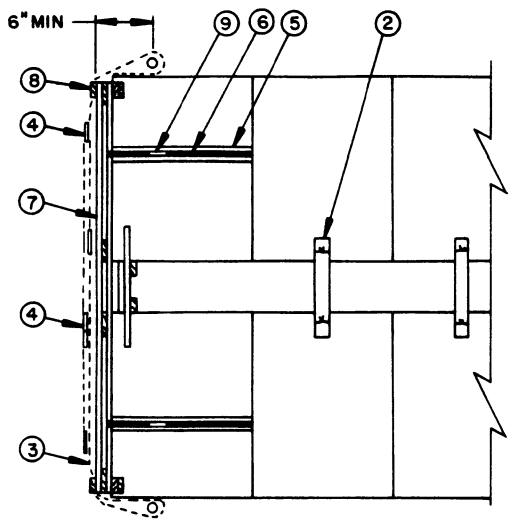
(8) STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

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

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

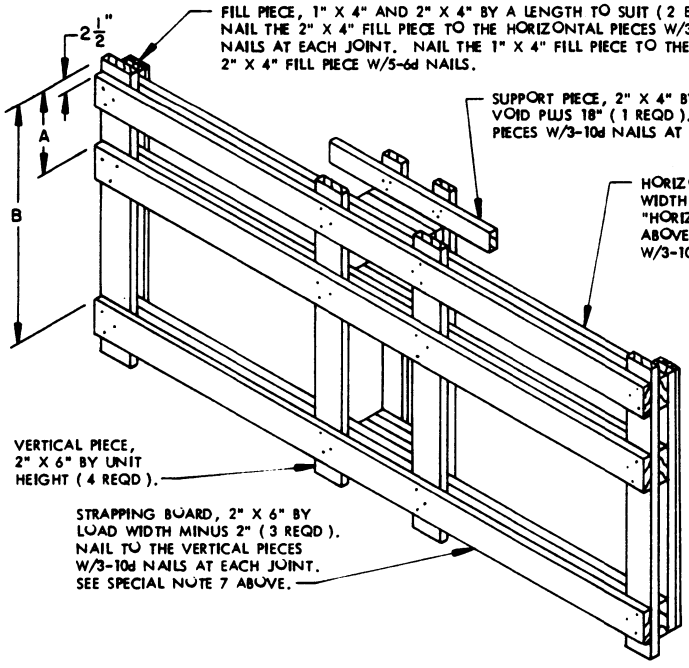
(SPECIAL NOTES CONTINUED)

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 UNITS.

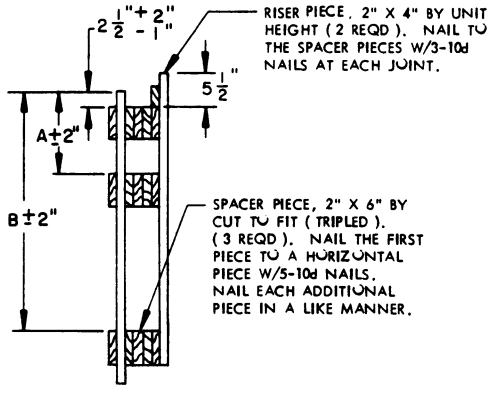


STRAP APPLICATION PLAN VIEW

HORIZONTAL PIECE LOCATION			
6-HIGH UNIT		5-HIGH UNIT	
DIM A	DIM B	DIM A	DIM B
17" ± 1"	42" ± 1"	17" ± 1"	34-1/2" ± 1"

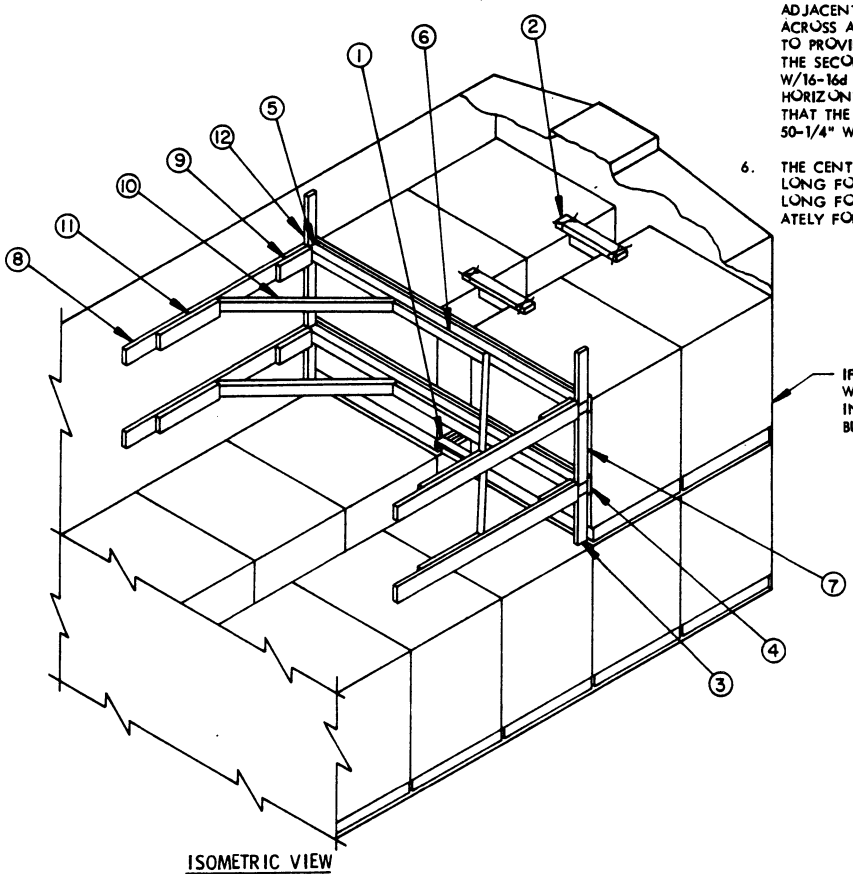


BULKHEAD GATE



END VIEW

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



ISOMETRIC VIEW

IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 63.

SPECIAL NOTES:

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

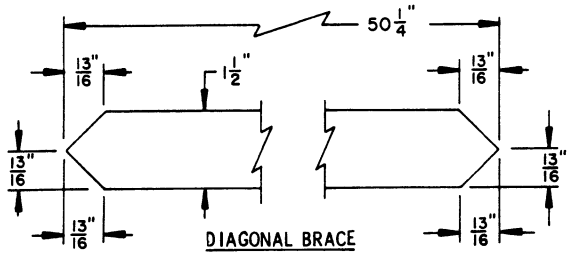
2. THE PALLET UNIT SHOWN IN THE TYPICAL LCL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

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 (4) SHOULD BE LOCATED SO AS TO BEAR AGAINST THE PALLET UNITS IN THE SAME LOCATION AS THE HORIZONTAL PIECES OF A CENTER GATE.

4. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT A SECOND TIER, 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 49, 50, AND 51 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

5. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED (3), (4), (5), (7), (9), AND (12) MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED (10) TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE

(CONTINUED AT RIGHT ABOVE)



DIAGONAL BRACE

(SPECIAL NOTES CONTINUED)

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

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

KEY NUMBERS

(1) ANTI-SWAY BRACE (2 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS, AND WIRE TIE TO THE PALLET POSTS WITH NO. 14 GAGE WIRE. SEE GENERAL NOTE "L" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16. WIRE TIE TO PALLET UNITS AS SHOWN BY THE APPLICABLE TIE WIRE APPLICATION DETAIL ON PAGE 63. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

(3) SUPPORT CLEAT, 2" X 4" X 17" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER THE LOWER PIECES MARKED (4) AND (5) ON THE SECOND CROSS PIECE FROM THE BOTTOM OF THE END DUNNAGE ASSEMBLY ON THE UNITS. SEE SPECIAL NOTE 5 AT LEFT.

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

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

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

(7) SPACER CLEAT, 2" X 4" X 24-1/2" FOR 6-LAYER UNITS, 17" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/ -12d NAILS.

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

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

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

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

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

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

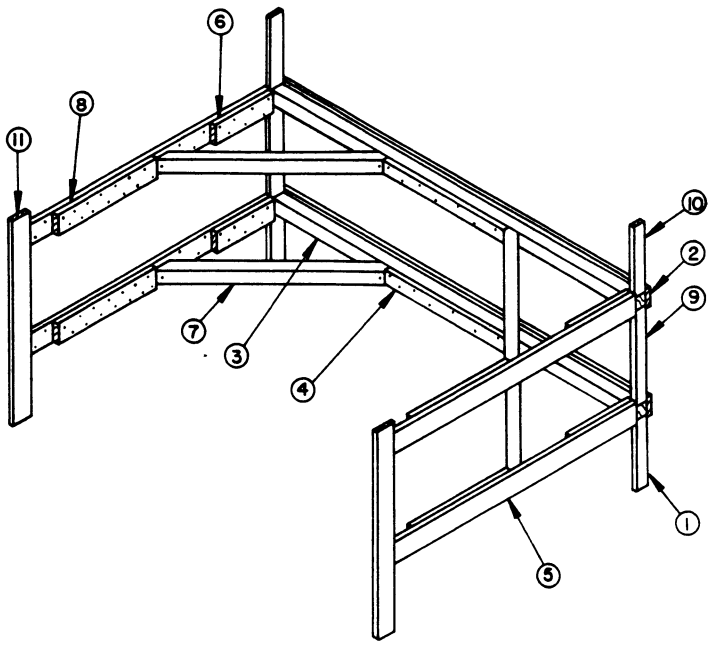
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. THIS WILL BE NOT MORE THAN NINE (9) 5-LAYER UNITS OR SEVEN (7) 6-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAILS ON PAGES 50 AND 51 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 48 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 48 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 17" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER THE LOWER PIECES MARKED ② AND ③ ON THE SECOND CROSS PIECE FROM THE BOTTOM OF THE END DUNNAGE ASSEMBLY 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 "L" ON PAGE 2.

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

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

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

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

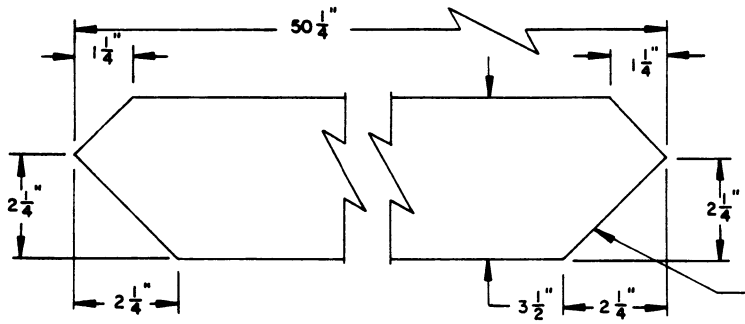
⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.

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

⑨ SPACER CLEAT, 2" X 4" X 24-1/2" FOR 6-LAYER UNITS, 17" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/ -12d NAILS.

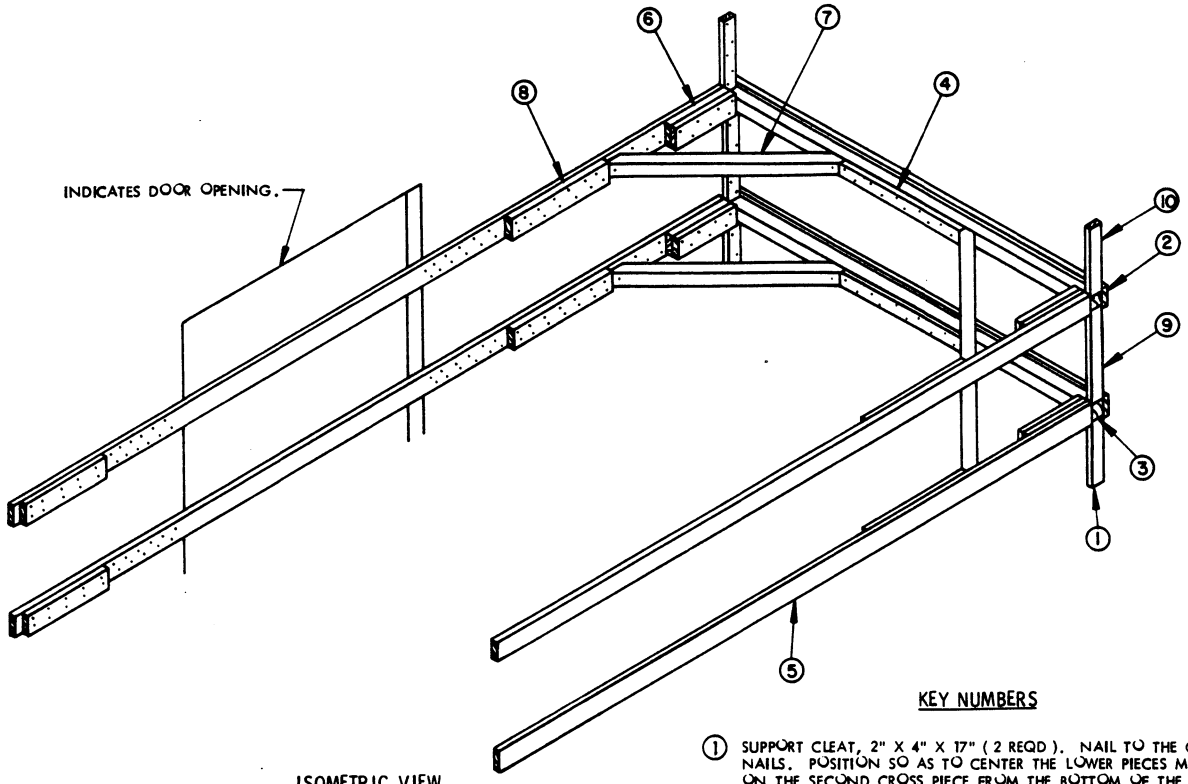
⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

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



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.



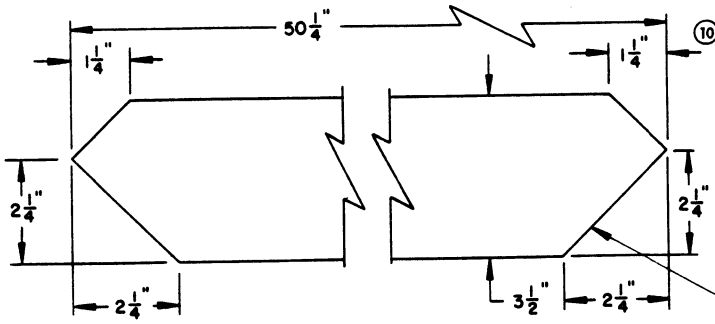
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER NOT MORE THAN 20,000 POUNDS. THIS WILL BE NOT MORE THAN THIRTEEN (13) 5-LAYER UNITS OR ELEVEN (11) 6-LAYER UNITS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 51 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 49 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 48 WILL BE ADEQUATE.

2. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, ⑨, AND ⑩ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.

(CONTINUED AT RIGHT)



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 17" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER THE LOWER PIECES MARKED ② AND ③ ON THE SECOND CROSS PIECE FROM THE BOTTOM OF THE END DUNNAGE ASSEMBLY 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 "L" ON PAGE 2.

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

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

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

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

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

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

⑨ SPACER CLEAT, 2" X 4" X 24-1/2" FOR 6-LAYER UNITS, 17" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/ 12d NAILS.

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

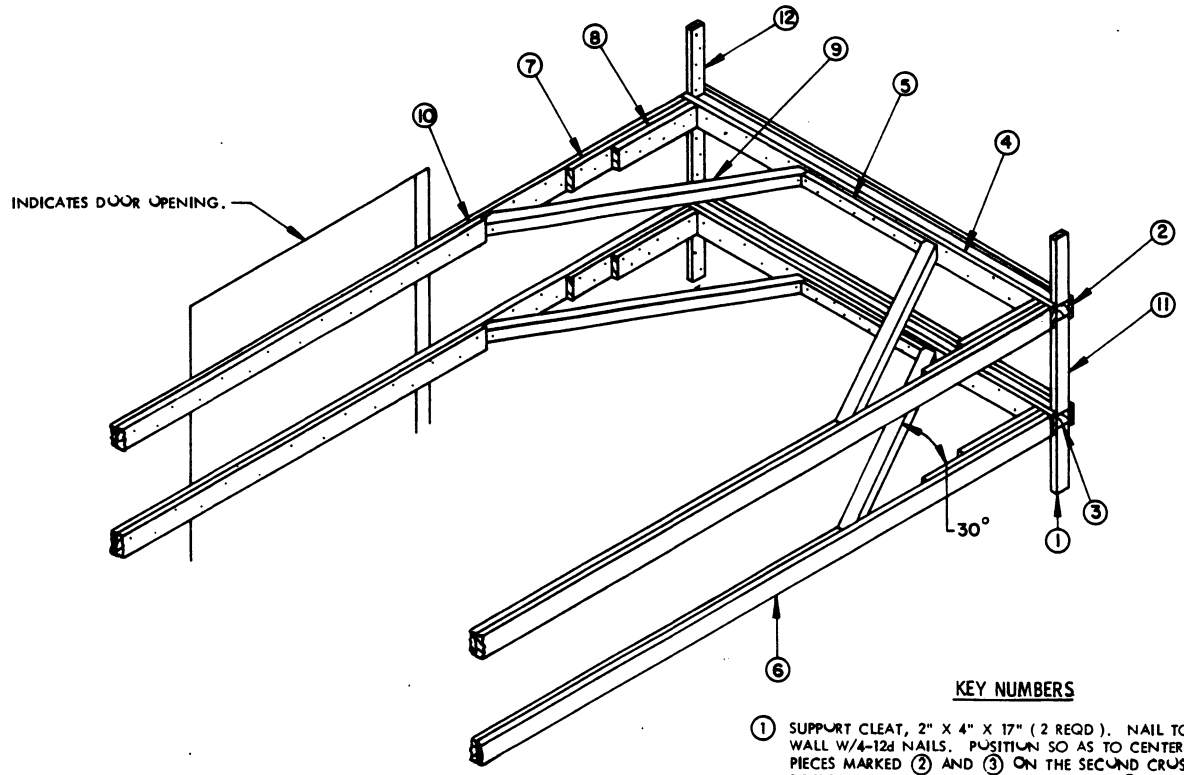
(SPECIAL NOTES CONTINUED)

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 .

TYPE "C" K-BRACE



ISOMETRIC VIEW

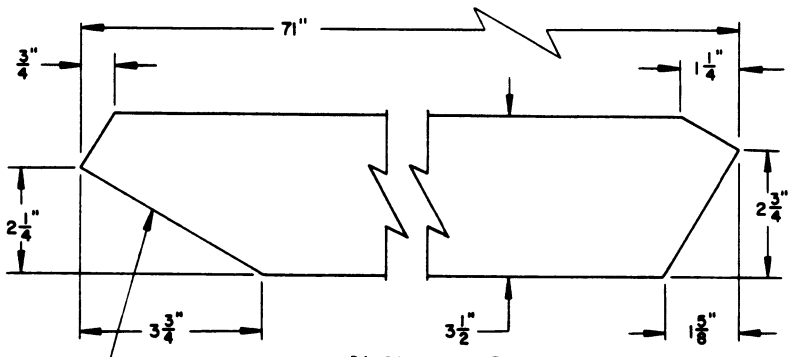
SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS. THIS WILL BE NOT MORE THAN SIXTEEN (16) 5-LAYER UNITS OR FOURTEEN (14) 6-LAYER UNITS. IF THE PARTIAL TIER TO BE BRACED WEIGHS BETWEEN 14,000 POUNDS AND 20,000 POUNDS, THE TYPE "C" K-BRACE DEPICTED ON PAGE 50 MAY BE USED. FOR A PARTIAL TIER OF 8,000 POUNDS TO 14,000 POUNDS, THE TYPE "B" K-BRACE DEPICTED ON PAGE 49 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED WEIGHS 8,000 POUNDS OR LESS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 48 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 SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.

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

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



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

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

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 17" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER THE LOWER PIECES MARKED ② AND ③ ON THE SECOND CROSS PIECE FROM THE BOTTOM OF THE END DUNNAGE ASSEMBLY 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 "L" ON PAGE 2.

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

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

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

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

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

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

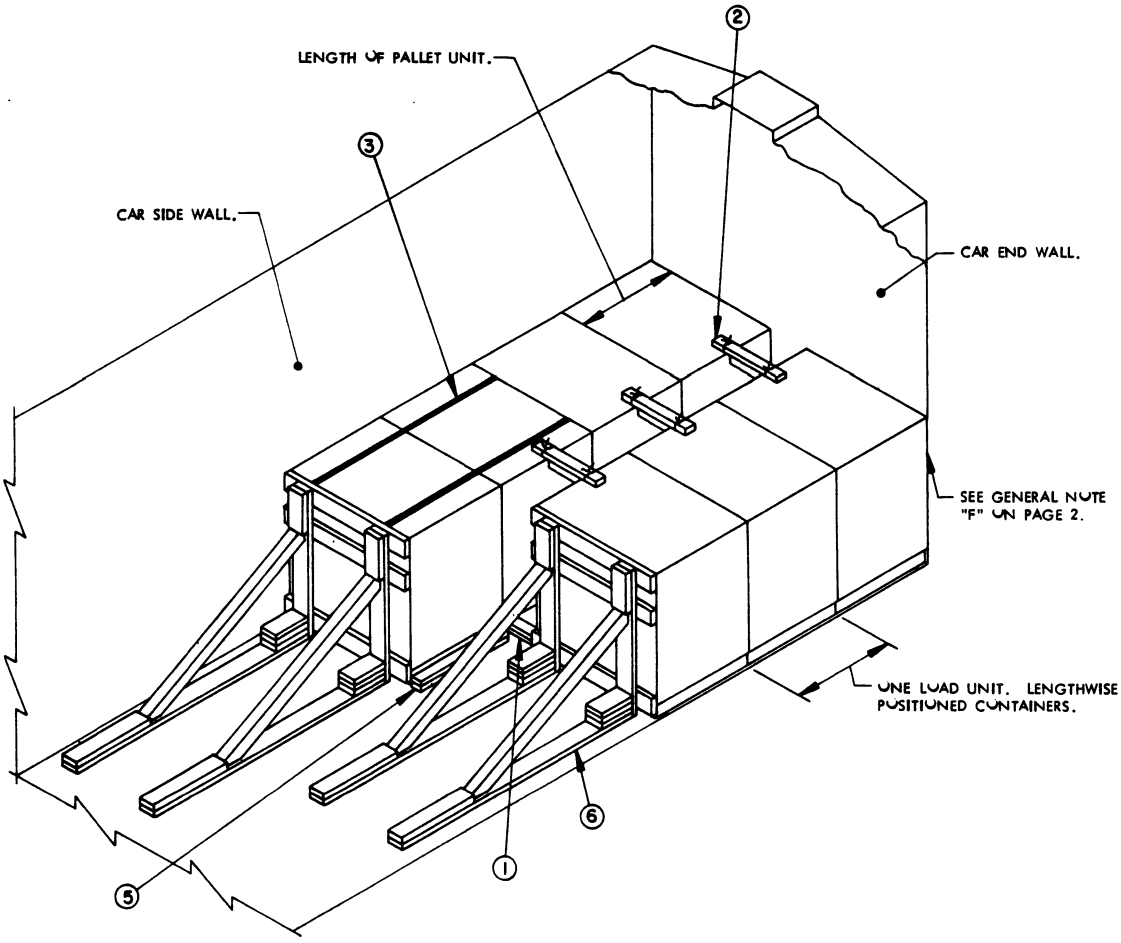
⑨ DIAGONAL BRACE, 4" X 4" X 71" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL CUTS REQUIRED. TOENAIL TO THE HORIZONTAL PIECE, PIECE MARKED ④, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥ W/1-60d NAIL AT EACH END.

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

⑪ SPACER CLEAT, 2" X 4" X 24-1/2" FOR 6-LAYER UNITS, 17" FOR 5-LAYER UNITS (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.

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

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 KNEE BRACE ASSEMBLY "A" SHOWN IN THE LOAD ABOVE IS APPLICABLE FOR THE BASIC HEIGHT, AND DECREASED HEIGHT UNITS POSITIONED LENGTHWISE IN THE CAR, AND FOR THE DECREASED HEIGHT UNIT POSITIONED CROSSWISE; USE KNEE BRACE ASSEMBLY "B" FOR THE BASIC HEIGHT UNIT POSITIONED CROSSWISE IN THE CAR. SEE THE DETAIL ON PAGE 55.

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 FILL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE LENGTHWISE ROW OF BASIC HEIGHT UNITS, REFER TO THE "CENTER GATE B" DETAIL ON PAGE 15.

KEY NUMBERS

(1) ANTI-SWAY BRACE (3 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 14. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 16, WIRE TIE TO THE TOP DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE AS TYPICALLY SHOWN BY THE "TIE WIRE APPLICATION A" DETAIL ON PAGE 63.

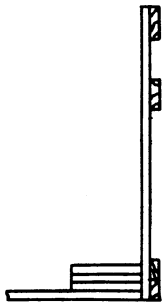
(3) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 22'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION TO ENCIRCLE THE ODD UNIT, AND THE ONE ADJACENT TO IT.

(4) SEAL FOR 1-1/4" STRAPPING (NOT SHOWN) (4 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF CRIMPS. SEE GENERAL NOTE "N" ON PAGE 2.

(5) SIDE BLOCKING, 2" X 4" X 36" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

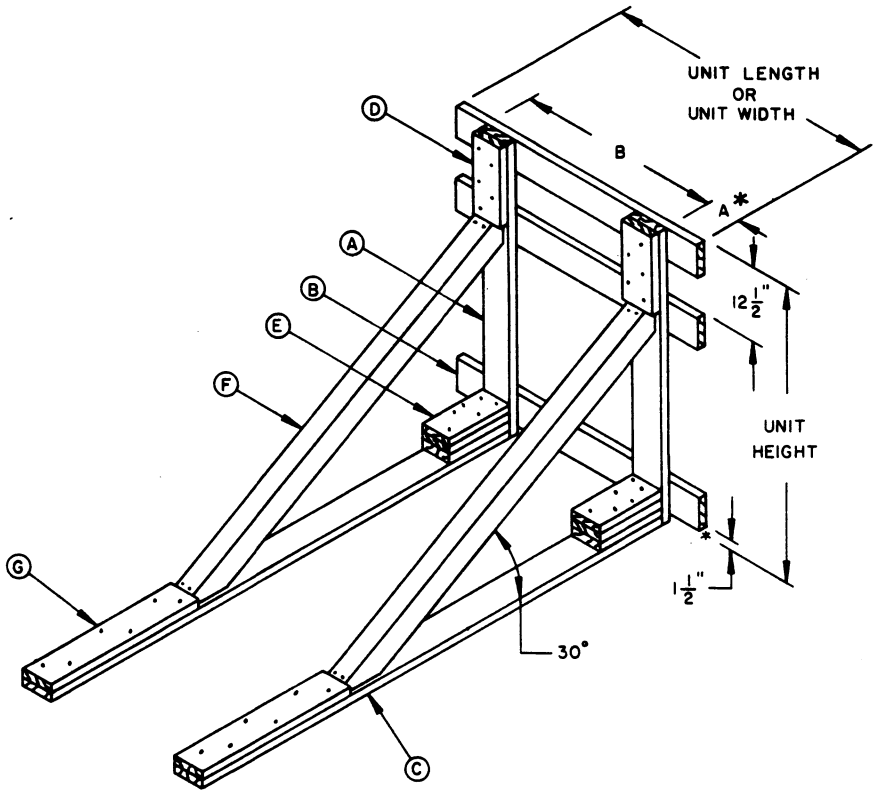
(6) KNEE BRACE ASSEMBLY (2 REQD). SEE THE "KNEE BRACE ASSEMBLY A" DETAIL ON PAGE 53 FOR CONSTRUCTION GUIDANCE, AND NAILING REQUIREMENTS. SEE SPECIAL NOTE 2 AT LEFT.

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



PARTIAL END VIEW

NOTE: IF UNITS ARE POSITIONED CROSSWISE, TWO (2) 2" X 4" FILL PIECES POSITIONED AS SHOWN ABOVE, WILL BE USED IN LIEU OF THE BOTTOM HORIZONTAL PIECE SHOWN AS PIECE MARKED (B) .



KNEE BRACE ASSEMBLY A

VERTICAL PIECE PLACEMENT FOR LENGTHWISE UNITS	
DIM A	DIM B
6-1/4"	35-1/2"

VERTICAL PIECE PLACEMENT FOR CROSSWISE UNITS	
DIM A *	DIM B
6-1/2"	25-1/2"

*FOR CROSSWISE POSITIONED UNITS, RIGHT HAND AND LEFT HAND ASSEMBLIES ARE REQUIRED. POSITION THE 6-1/2" DIMENSION AGAINST THE BASE END OF CONTAINERS.

KEY LETTERS

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

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

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

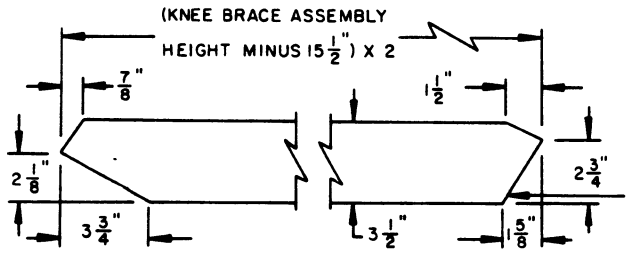
(D) HOLD-DOWN CLEAT, 2" X 6" X 14" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

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

(F) BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 15-1/2", TIMES 2) (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (A) AND (C) , W/2-16d NAILS AT EACH JOINT.

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

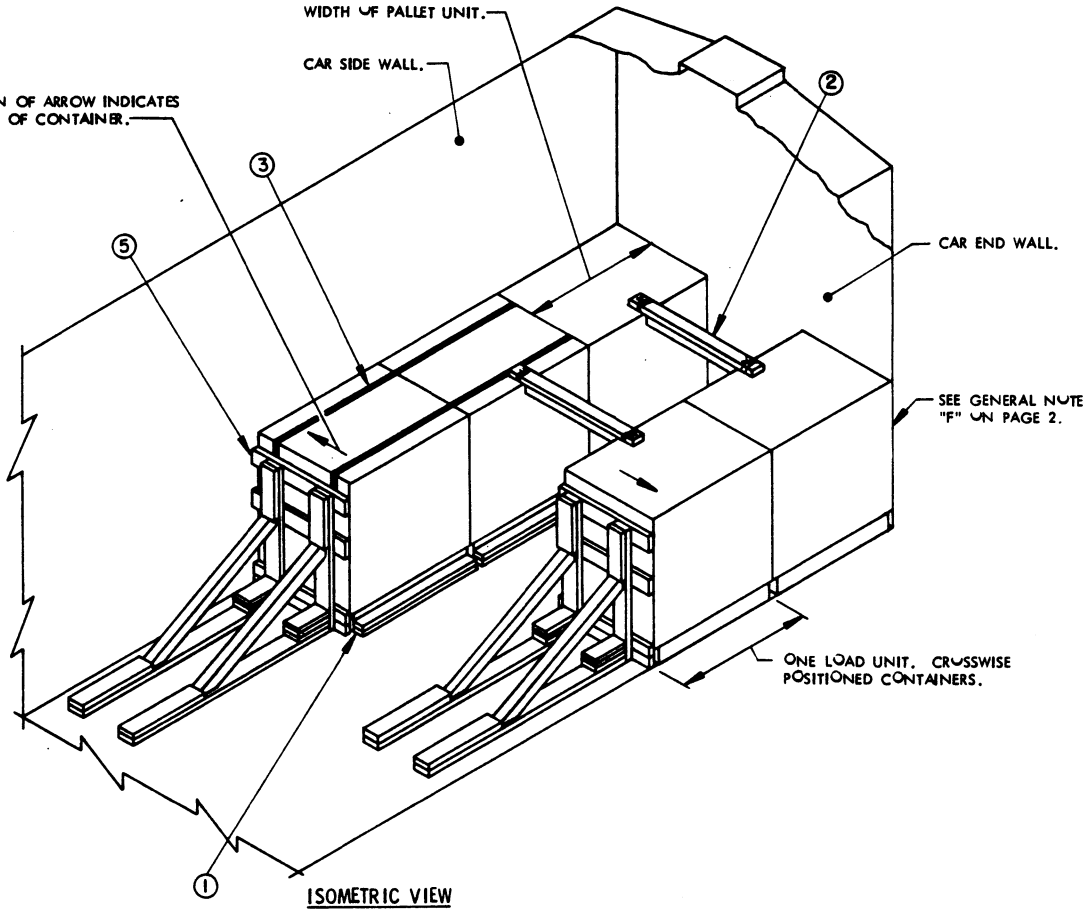
(H) HOLD-DOWN CLEAT (NOT SHOWN). SEE SPECIAL NOTE 5 ON PAGE 52.



BRACE
4" X 4" MATERIAL

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

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



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. NOTE THAT THE KNEE BRACE ASSEMBLY "B" SHOWN IN THE LOAD ABOVE IS APPLICABLE FOR THE BASIC HEIGHT UNIT ONLY. USE KNEE BRACE ASSEMBLY "A" SHOWN ON PAGE 53 FOR THE DECREASED HEIGHT UNIT.
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 FILL PIECE OF A KNEE BRACE ASSEMBLY. THE PROPER MATERIAL SIZE AND PLACEMENT WILL BE AS DEPICTED BY THE CENTER GATE DETAILS FOR ONE ROW SPECIFIED ELSEWHERE. FOR HOLD DOWN PIECES TO BE APPLIED TO THE KNEE BRACE ASSEMBLY WHICH IS USED AGAINST THE CROSSWISE ROW OF BASIC HEIGHT UNITS, SEE THE "CENTER GATE D" DETAIL ON PAGE 17.

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.

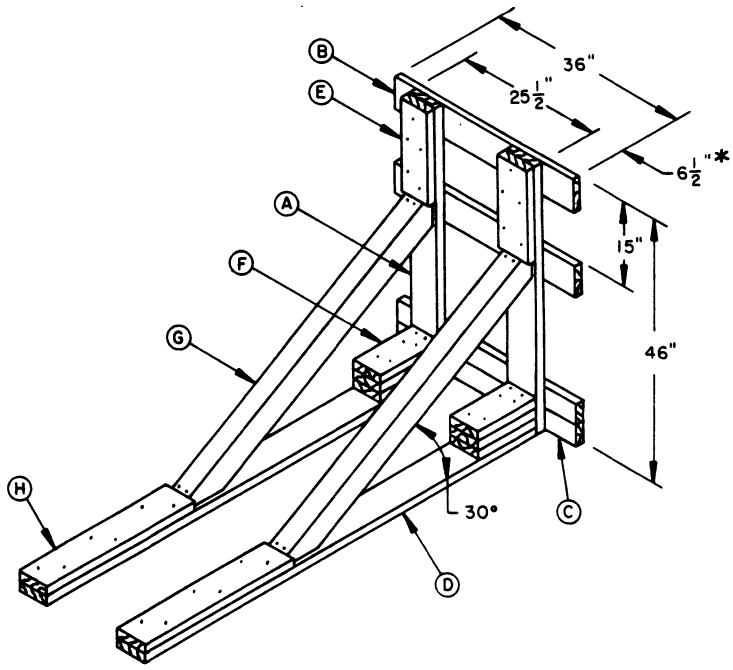
(2) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). WIRE TIE TO THE END DUNNAGE ASSEMBLY OF UNIT WITH NO. 14 GAGE WIRE. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 16, AND THE "TIE WIRE APPLICATION B" DETAIL ON PAGE 63. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(3) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 26'-0" LONG STEEL STRAPPING (2 REQD). PRE-POSITION TO ENCIRCLE THE ODD UNIT, AND THE UNIT ADJACENT TO IT.

(4) SEAL FOR 1-1/4" STRAPPING (NOT SHOWN) (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

(5) KNEE BRACE ASSEMBLY (2 REQD). SEE THE "KNEE BRACE ASSEMBLY B" DETAIL ON PAGE 55 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS. SEE SPECIAL NOTE 2 AT LEFT.

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



KNEE BRACE ASSEMBLY B

* POSITION THIS END OF KNEE BRACE AGAINST THE BASE END OF CONTAINER. 1 RIGHT HAND AND 1 LEFT HAND ASSEMBLY REQUIRED. A RIGHT HAND ASSEMBLY IS SHOWN.

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" X 46" (2 REQD).

(B) HORIZONTAL PIECE, 2" X 6" X 36" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "L" AND "M" ON PAGE 2.

(C) FILL PIECE, 2" X 4" X 36" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d 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 "R" ON PAGE 2.

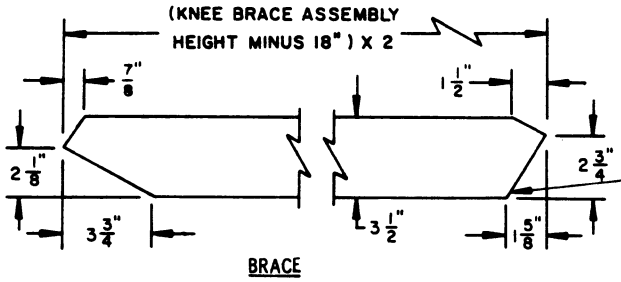
(E) HOLD-DOWN CLEAT, 2" X 6" X 16-1/2" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.

(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 18" 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 54.

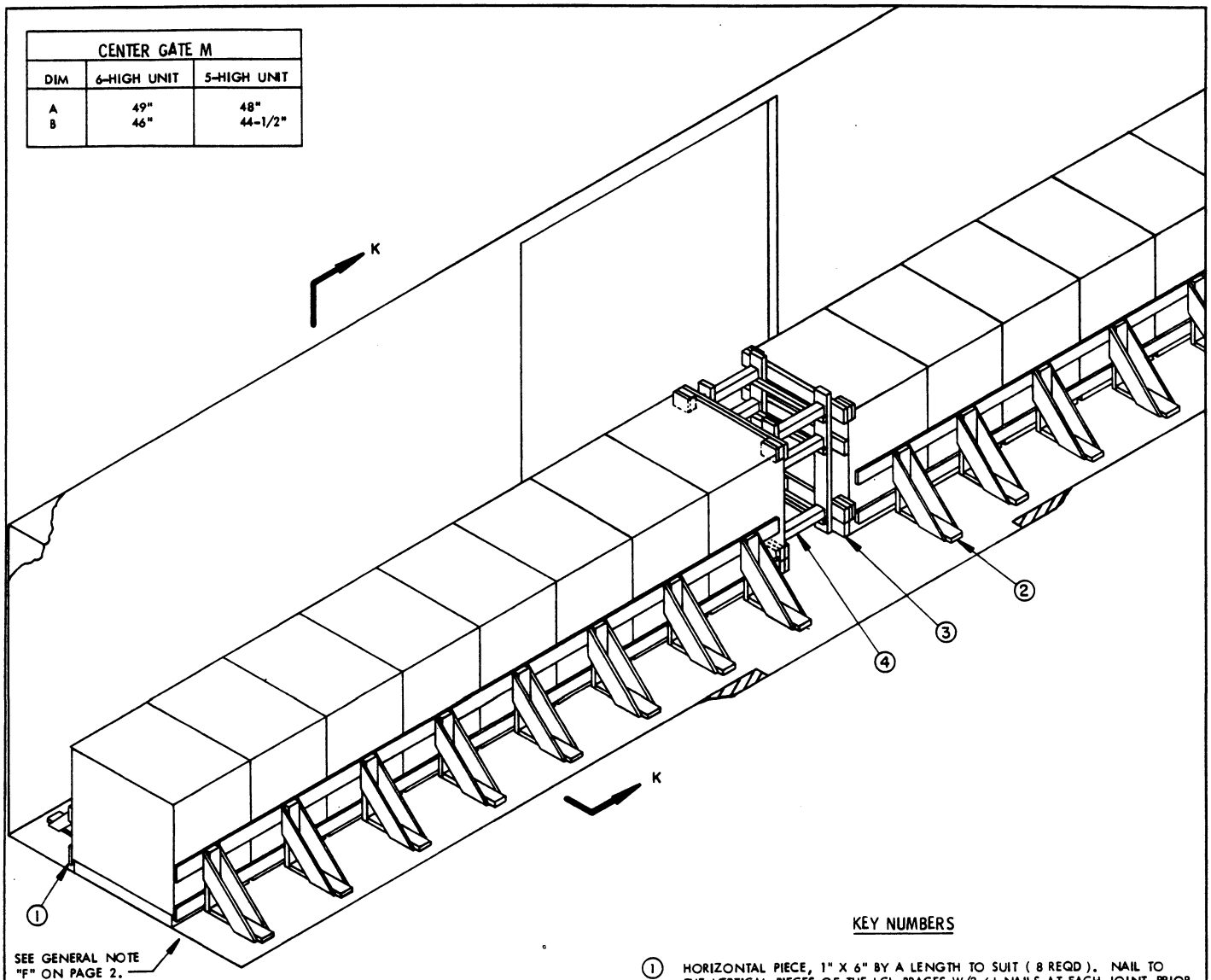


BRACE

4" X 4" MATERIAL

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

CENTER GATE M		
DIM	6-HIGH UNIT	5-HIGH UNIT
A	49"	48"
B	46"	44-1/2"



ISOMETRIC VIEW

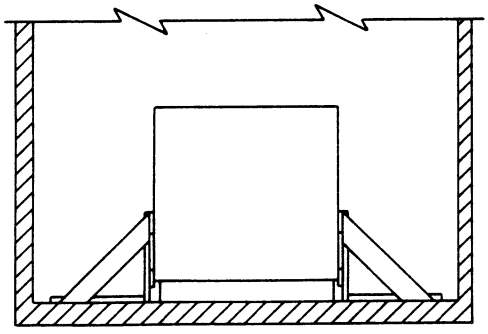
KEY NUMBERS

(1) HORIZONTAL PIECE, 1" X 6" BY A LENGTH TO SUIT (8 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST THE LADING. SEE THE "LCL BRACE" DETAIL ON PAGE 58 FOR HEIGHT LOCATION GUIDANCE.

(2) LCL BRACE (32 REQD). SEE THE DETAIL AND SPECIAL NOTE 4 ON PAGE 58 . NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "R" ON PAGE 2.

(3) CENTER GATE (2 REQD). SEE THE "CENTER GATE L" OR THE "CENTER GATE M" DETAIL ON PAGE 57 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.

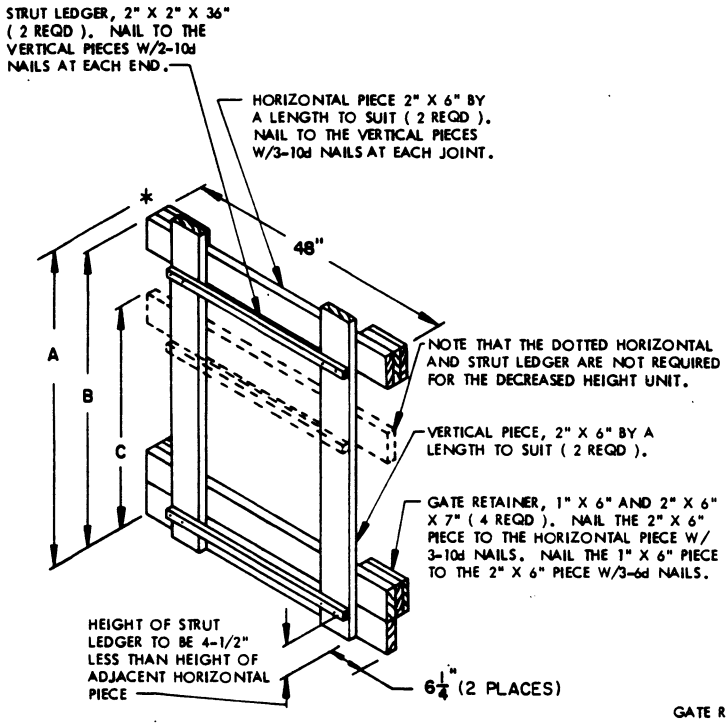
(4) STRUT, 4" X 4" BY CUT TO FIT (6 REQD FOR LENGTHWISE, 4 REQD FOR CROSSWISE). TOENAIL TO PIECES MARKED (3) W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "T" ON PAGE 2 , AND "U" ON PAGE 3.



SECTION K-K

CENTER GATE L		
DIM	6-HIGH UNIT	5-HIGH UNIT
A	55"	48"
B	51-1/2"	44-1/4"
C	38-1/2"	-----

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD

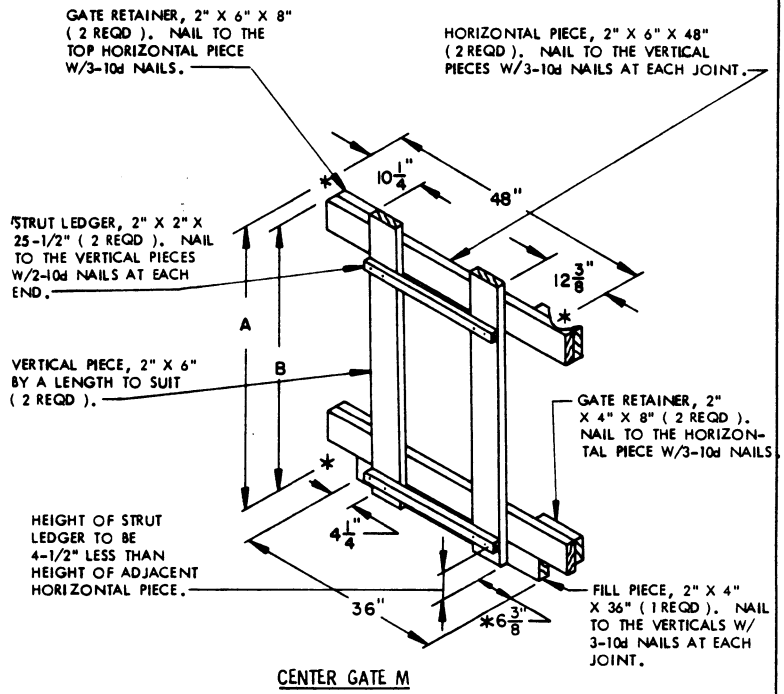


CENTER GATE L

THIS GATE IS FOR USE WITH LENGTHWISE UNITS. REFER TO THE "CENTER GATE L" CHART ON PAGE 56 FOR FIGURES REPRESENTED BY LETTERS ON THE ABOVE DETAIL.

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 BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.
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 QUANTITY OF LCL BRACES, PIECES MARKED (2), IS LESS FOR CROSSWISE LOADS.
4. ONE (1) LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. FOR CROSSWISE PALLET UNITS, THE BRACES WILL BE CENTERED ON THE WIDTH OF THE UNIT. FOR THE LENGTHWISE UNITS, THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE UNIT LENGTH.
5. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL..



CENTER GATE M

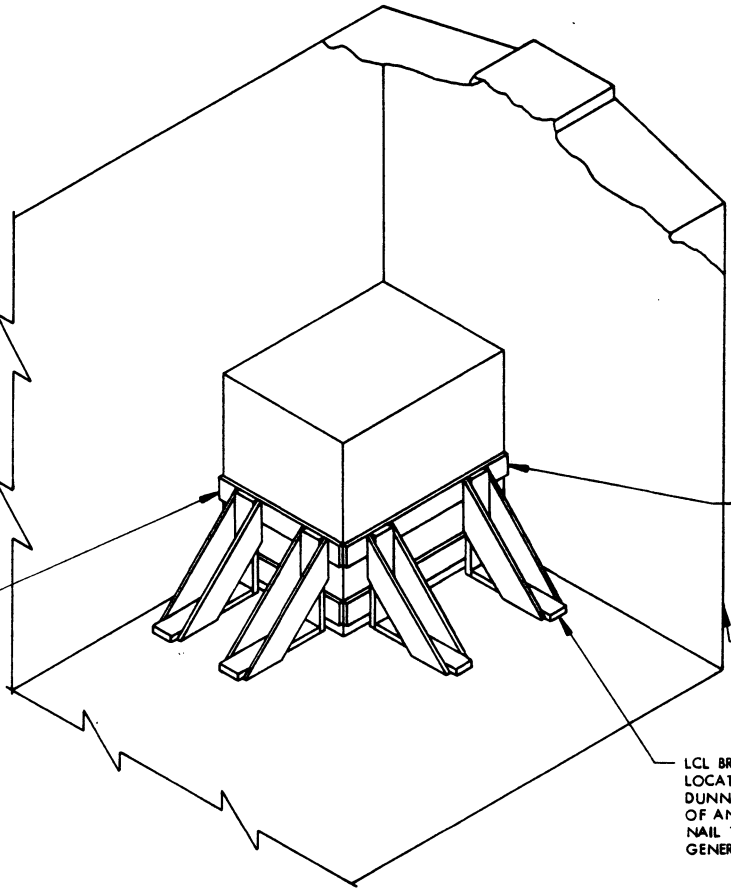
THIS GATE IS FOR USE WITH CROSSWISE UNITS. REFER TO THE "CENTER GATE M" CHART AT TOP OF PAGE 56 FOR FIGURES REPRESENTED BY LETTERS ON THE DETAIL ABOVE. * THIS END OF THE GATE MUST BE POSITIONED AGAINST THE BASE END OF THE CONTAINER.

BILL OF MATERIAL (TYPICAL)

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	350	175
2" X 2"	18	6
2" X 3"	8	4
2" X 6"	183	183
4" X 4"	11	15
NAILS	**NO. REQD**	**POUNDS**
6d (2")	216	1-1/4
8d (2-1/2")	384	4
10d (3")	108	1-3/4
16d (3-1/2")	248	5-1/2"

LOAD AS SHOWN (TYPICAL)

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	16	28,528 LBS
DUNNAGE		779 LBS
TOTAL WEIGHT		29,307 LBS (APPROX)



HORIZONTAL PIECE, 1" X 6" X 36" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

HORIZONTAL PIECE, 1" X 6" BY UNIT WIDTH (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

SEE GENERAL NOTE "F" ON PAGE 2.

LCL BRACE (4 REQD). SEE THE DETAIL BELOW. LOCATE SO AS TO BE AGAINST THE INTERMEDIATE DUNNAGE PIECES, OR AGAINST THE CROSS PIECE OF AN END DUNNAGE ASSEMBLY OF THE UNIT. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTES "L" AND "R" ON PAGE 2.

ISOMETRIC VIEW

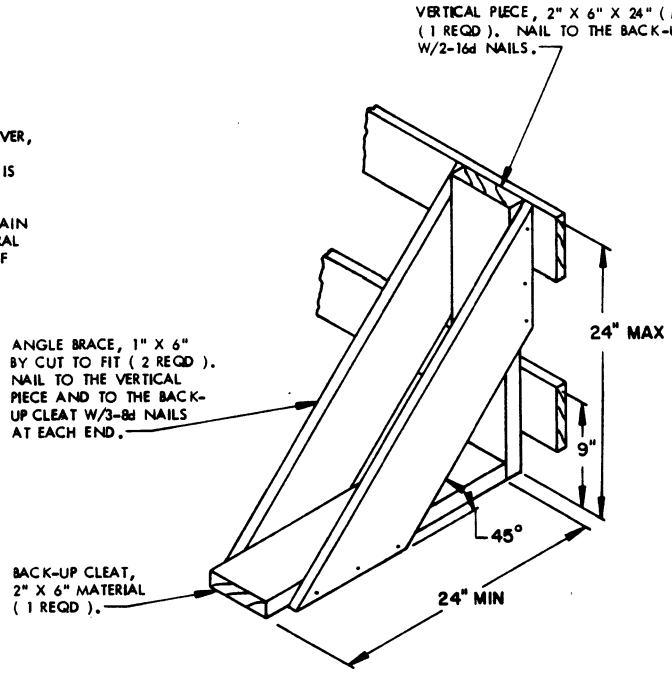
SPECIAL NOTES:

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 NOTE "R" ON PAGE 2.

2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

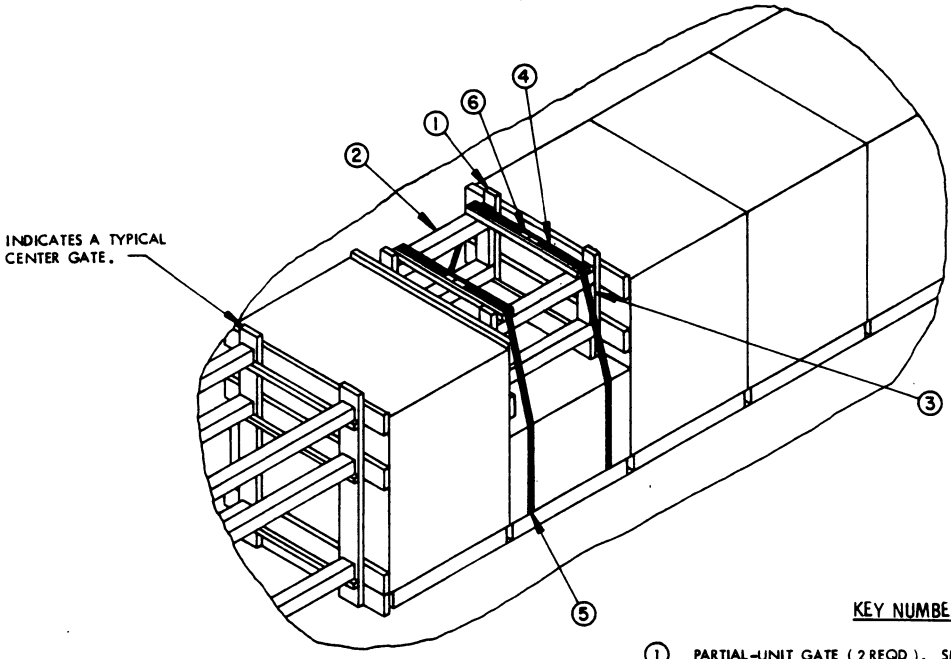
3. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A CROSSWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR LENGTHWISE UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 4.

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 BRACE METHOD OF PARTIAL-LAYER BRACING



POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER

KEY NUMBERS

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

(2) STRUT, 4" X 4" X 36-1/8" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED (1) , W/2-16d NAILS AT EACH END.

(3) STRUT SUPPORT PIECE, 2" X 4" X 9-1/2" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.

(4) STRAPPING BOARD, 2" X 4" X 33-1/2" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED (2) , 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). PRE-POSITION.

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

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.

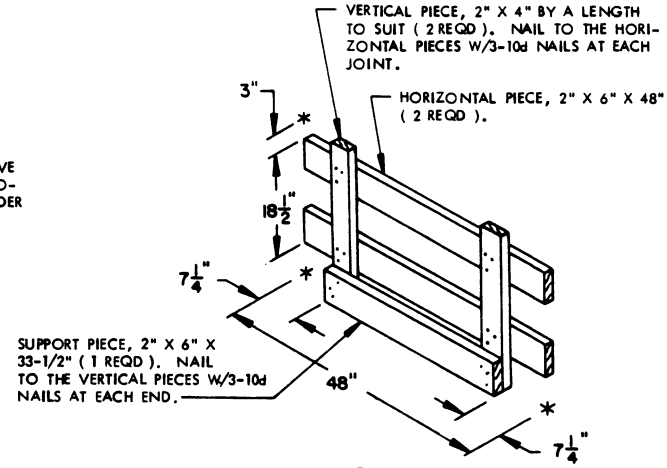
2. THE PALLET UNIT SHOWN IN THE SHIPMENT OF PARTIAL UNITS VIEW IS THE BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF LENGTHWISE-POSITIONED PROPELLING CHARGES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 3-LAYER UNIT WITHIN A 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

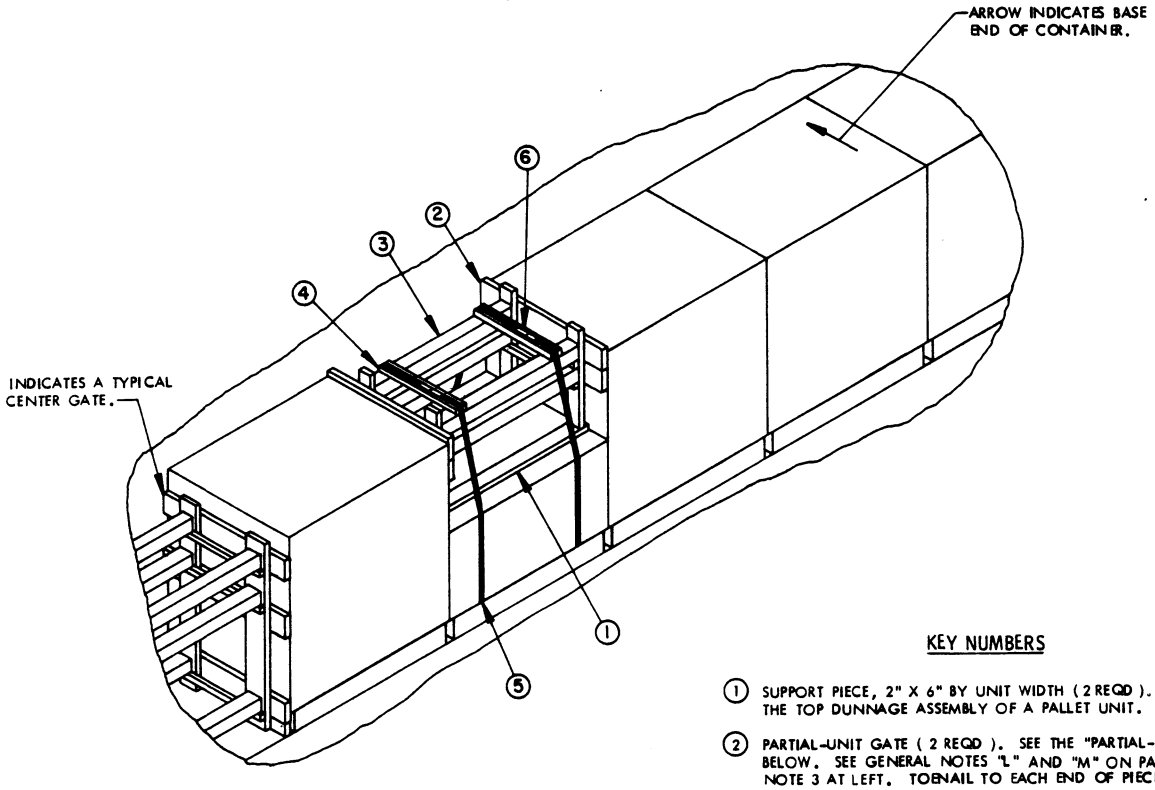
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/18-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

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



POSITIONING OF A PARTIAL CROSSWISE UNIT IN A LAYER

SPECIAL NOTES:

1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OT 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 BASIC HEIGHT UNIT. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE DECREASED HEIGHT UNIT.

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 6-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.

4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF SIX (6) CONTAINERS, OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-4042A/18-20PM1001, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.

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

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

7. FOR THE SHIPMENT OF A PARTIAL UNIT CONSISTING OF ONE OR TWO LAYERS, THE PROCEDURES SHOWN ON PAGE 62 MAY BE MORE ECONOMICAL.

KEY NUMBERS

(1) SUPPORT PIECE, 2" X 6" BY UNIT WIDTH (2 REQD). POSITION ON THE TOP DUNNAGE ASSEMBLY OF A PALLET UNIT.

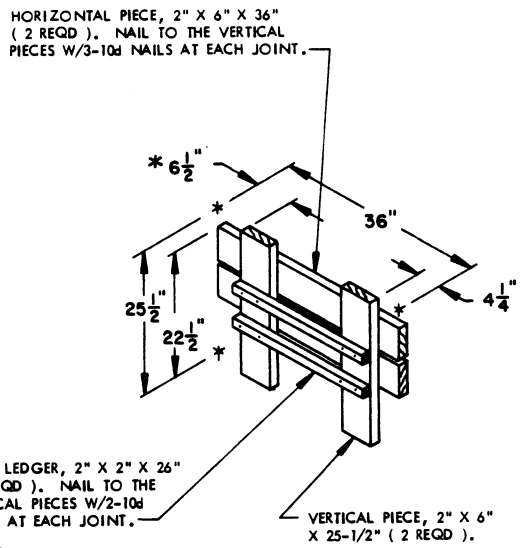
(2) PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE B" DETAIL BELOW. SEE GENERAL NOTES "L" AND "M" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT. TOENAIL TO EACH END OF PIECE MARKED (1) W/1-10d NAIL.

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

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

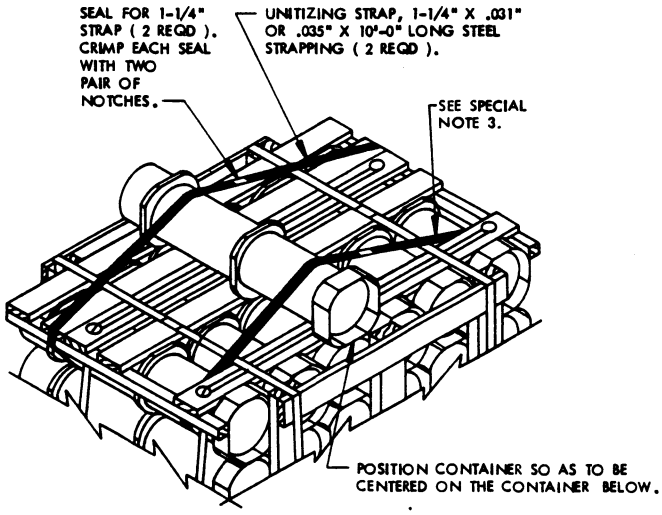
(5) UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.

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



PARTIAL-UNIT GATE B

* POSITION WITH 6-1/2" DIMENSION AGAINST THE BASE END OF CONTAINER.



SECUREMENT OF ONE CONTAINER

SPECIAL NOTES:

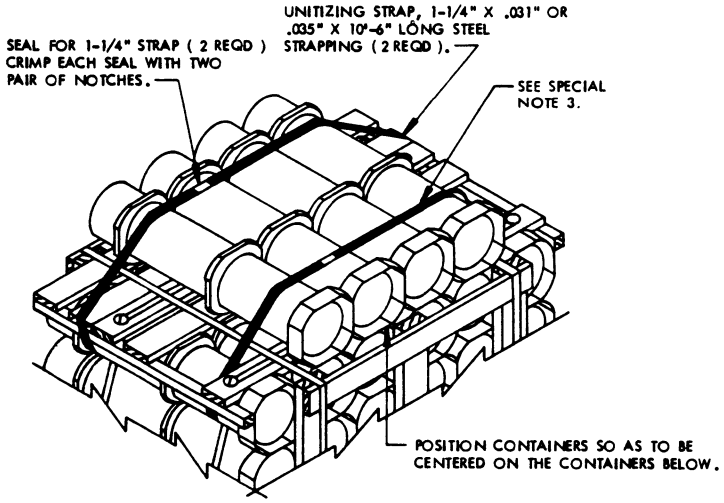
1. SHIPMENTS OF PROPELLING CHARGES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS. LEFTOVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SHIPMENT EITHER ON TOP OF A LOAD AS SHOWN ON PAGE 62 OR WITHIN A LAYER AS SHOWN ON PAGES 59 AND 60.

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

3. THE DEPICTED PROCEDURES ARE APPLICABLE FOR ALL OF THE UNITS COVERED BY THIS DOCUMENT. NOTE THAT ONE OF THE UNITIZING STRAPS MUST NOT GO AROUND THE TOP 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.



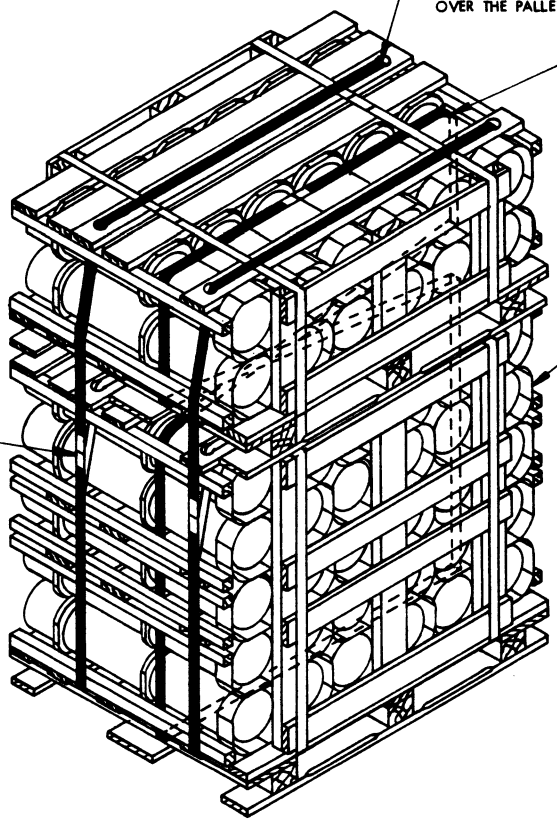
SECUREMENT OF FOUR CONTAINERS

VERTICAL UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). POSITION OVER THE PALLET LOAD STRAPS AS SHOWN.

FIGURE-8 UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (1 REQD). POSITION NEAR THE CENTER OF THE UNIT LENGTH. NOTE THAT THE STRAP PASSES UNDER THE TOP DECK BOARDS OF THE BOTTOM PALLET, AND IS THREADED BEHIND THE PALLET DUNNAGE.

A DECREASED HEIGHT UNIT IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR THE BASIC HEIGHT UNIT.

INDICATES TWO (2) 1-1/4" STRAP SEALS.

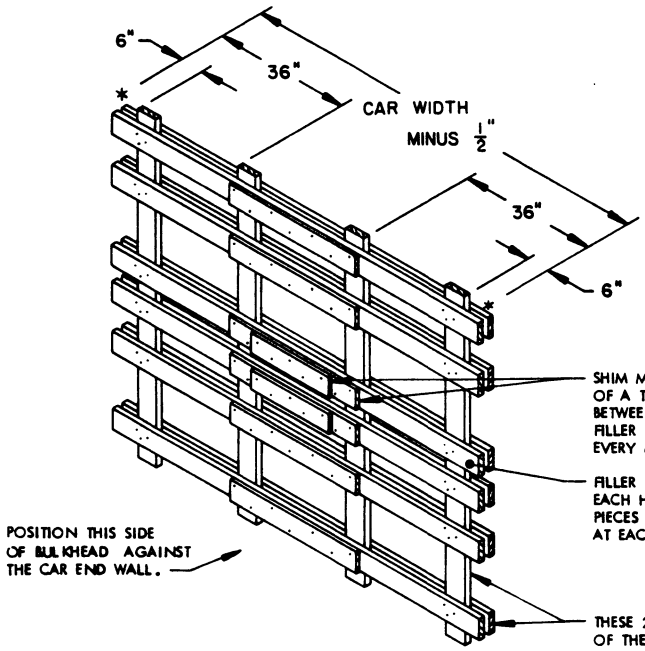


SECUREMENT OF PARTIAL UNIT ON TOP

THIS PROCEDURE IS APPLICABLE ONLY FOR USE IN A CROSSWISE LOAD. CAUTION: THE PARTIAL UNIT ON TOP IS LIMITED TO NOT MORE THAN TWO (2) LAYERS OF CONTAINERS. FOR SHIPMENT OF MORE THAN TWO LAYERS OF CONTAINERS, OR AN ALTERNATIVE METHOD FOR ONE OR TWO LAYERS, REFER TO THE PROCEDURES ON PAGE 60.

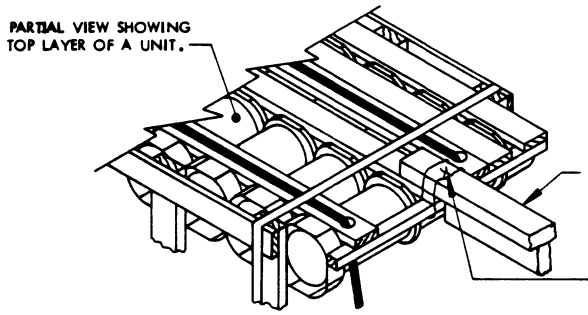
NOTE O:

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 "F", AS DETAILED ON PAGE 26, IS SHOWN AS TYPICAL.

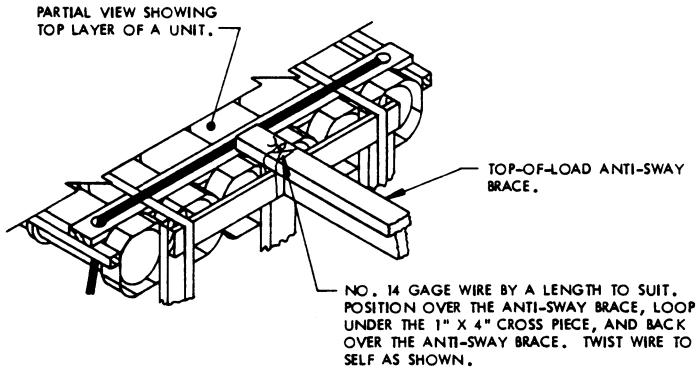


END-OF-CAR BULKHEAD

SEE "NOTE O" ABOVE.



TIE WIRE APPLICATION A



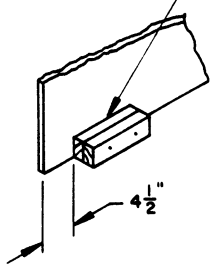
TIE WIRE APPLICATION B

DOTTED LINE INDICATES UNIT LENGTH PLYWOOD.

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

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

GATE HOLD DOWN PIECE MUST BE SECURED TO THE PLYWOOD.



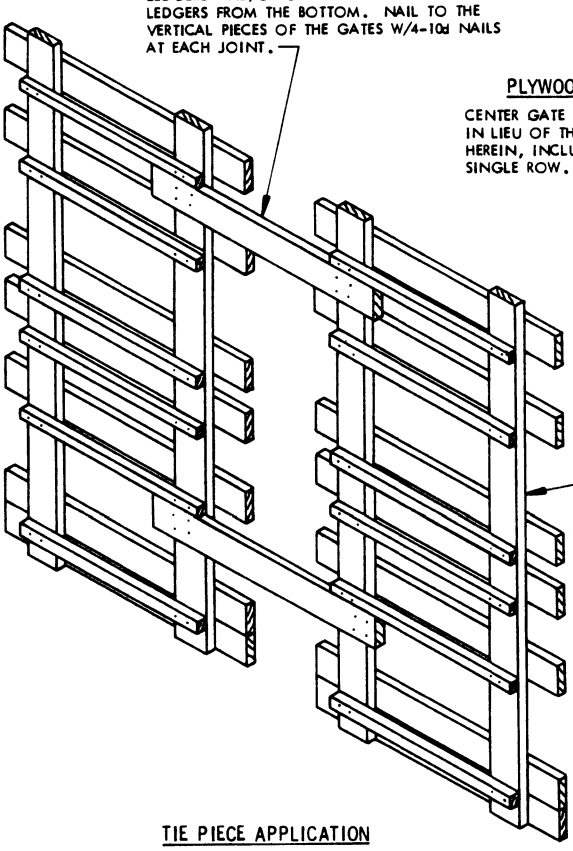
VIEW A

SEE VIEW A.

PLYWOOD CENTER GATE ALTERNATIVE

CENTER GATE "H" 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 BRACING OF A SINGLE ROW.

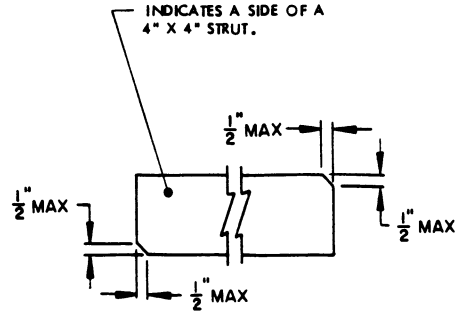
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE SECOND STRUT LEDGERS FROM THE BOTTOM. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



INDICATES A TYPICAL CENTER GATE FOR A SINGLE ROW (2 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR THE UNIT BEING SHIPPED. A GATE FOR UNITS WHICH ARE POSITIONED WITH THE UNIT LENGTH PARALLEL TO THE CAR SIDEWALL IS SHOWN. THE PROCEDURE IS ALSO APPLICABLE TO GATES FOR UNITS WHICH ARE POSITIONED WITH THE UNIT WIDTH PARALLEL TO THE CAR SIDEWALL.

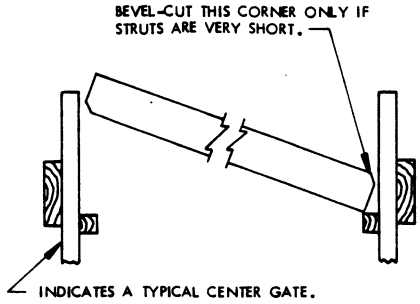
TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH ANY TWO CENTER GATES FOR SINGLE ROWS OF PALLET UNITS. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



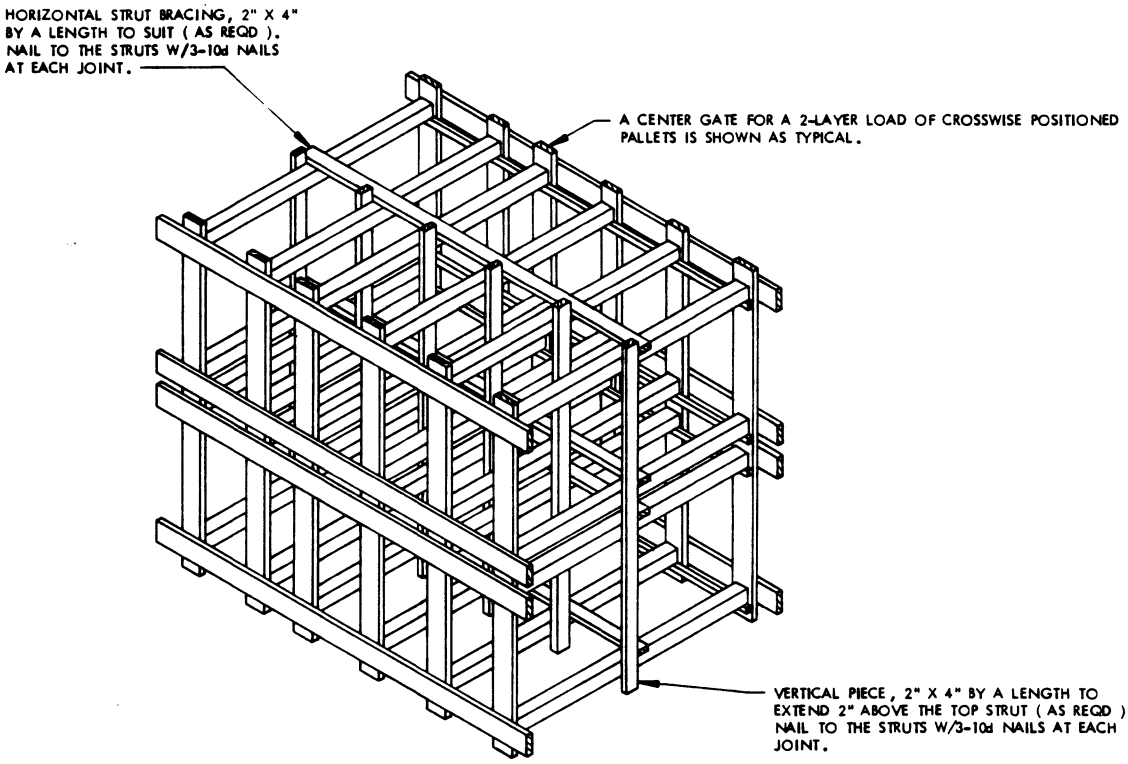
BEVEL-CUT

BEVEL CUTTING THE STRUTS AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". CAUTION: DO NOT BEVEL A CORNER MORE THAN ONE-HALF INCH (1/2").



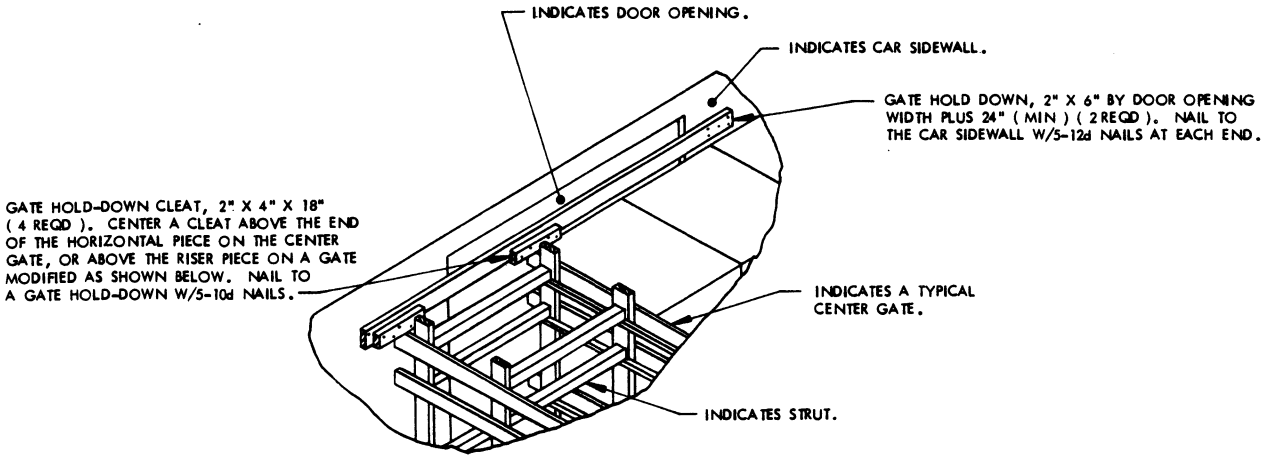
STRUT INSTALLATION

SEE GENERAL NOTE "U" ON PAGE 3 FOR ADDITIONAL STRUT INSTALLATION GUIDANCE.



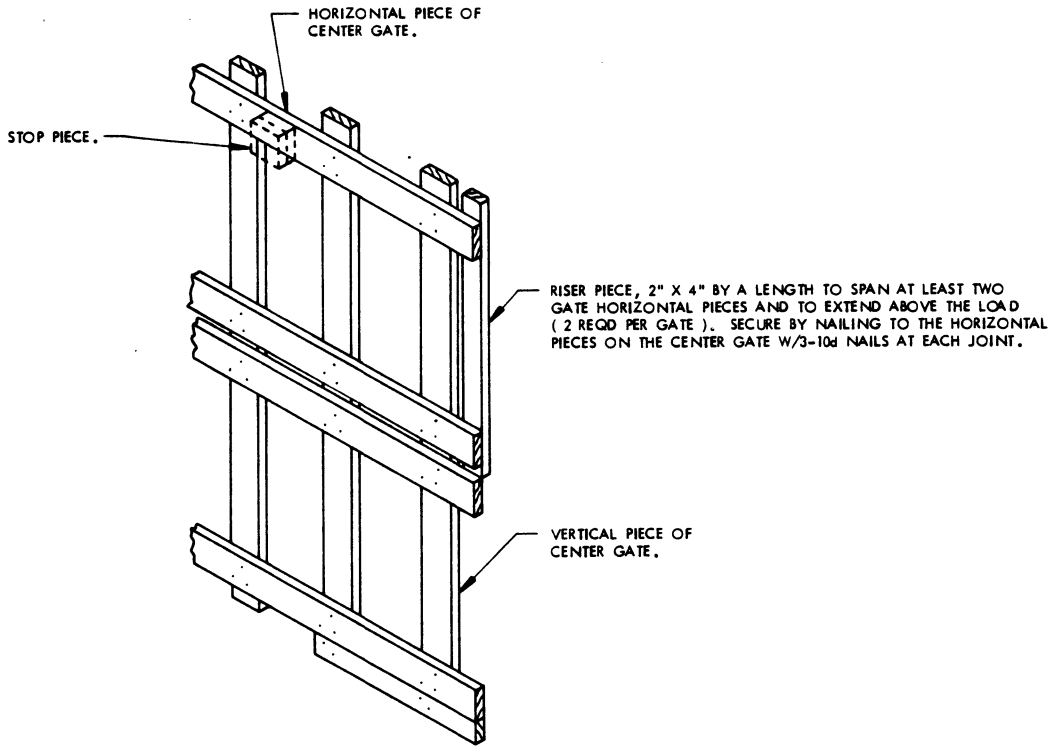
TYPICAL STRUT BRACING

SEE GENERAL NOTE "T" ON PAGE 2.



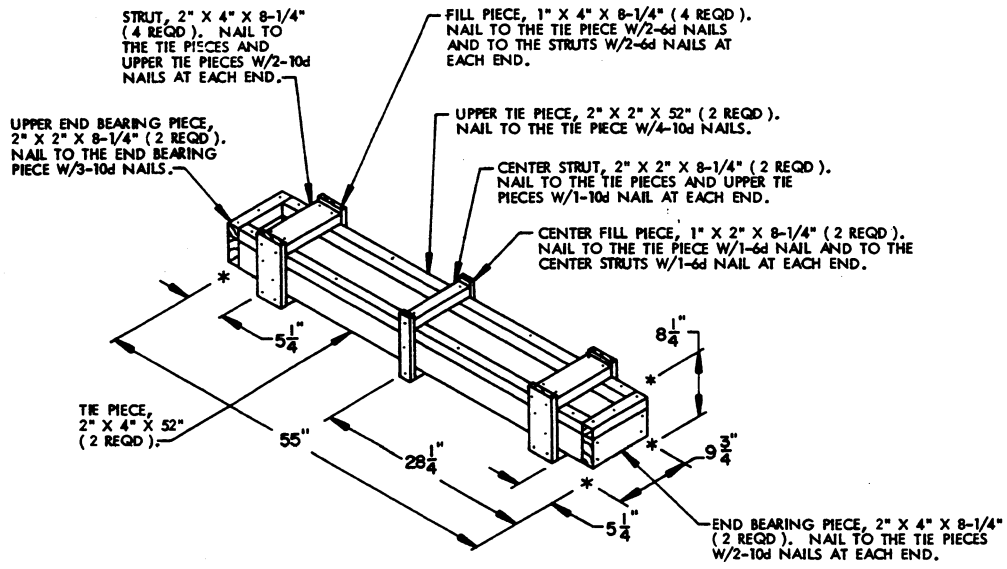
ALTERNATIVE GATE HOLD-DOWN

THIS VIEW DEPICTS AN ALTERNATIVE METHOD OF CENTER GATE HOLD DOWN WHICH CAN BE USED IF DESIRED, PROVIDING THE CAR HAS NAILABLE SIDEWALLS. THIS METHOD MAY BE APPLIED IN LIEU OF USING THE GATE HOLD DOWN PIECES WHICH ARE PART OF A CENTER GATE. 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.



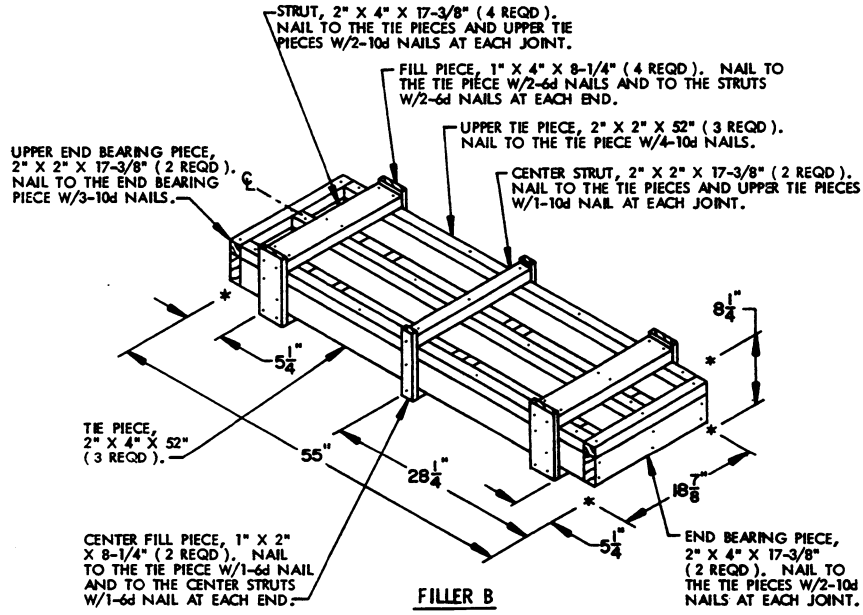
CENTER GATE MODIFICATION

THE MODIFICATION PROCEDURES SHOWN IN THIS VIEW ARE APPLICABLE FOR THE CENTER GATES WHICH ARE CONSTRUCTED FOR CROSSWISE POSITIONED UNITS, AND 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.



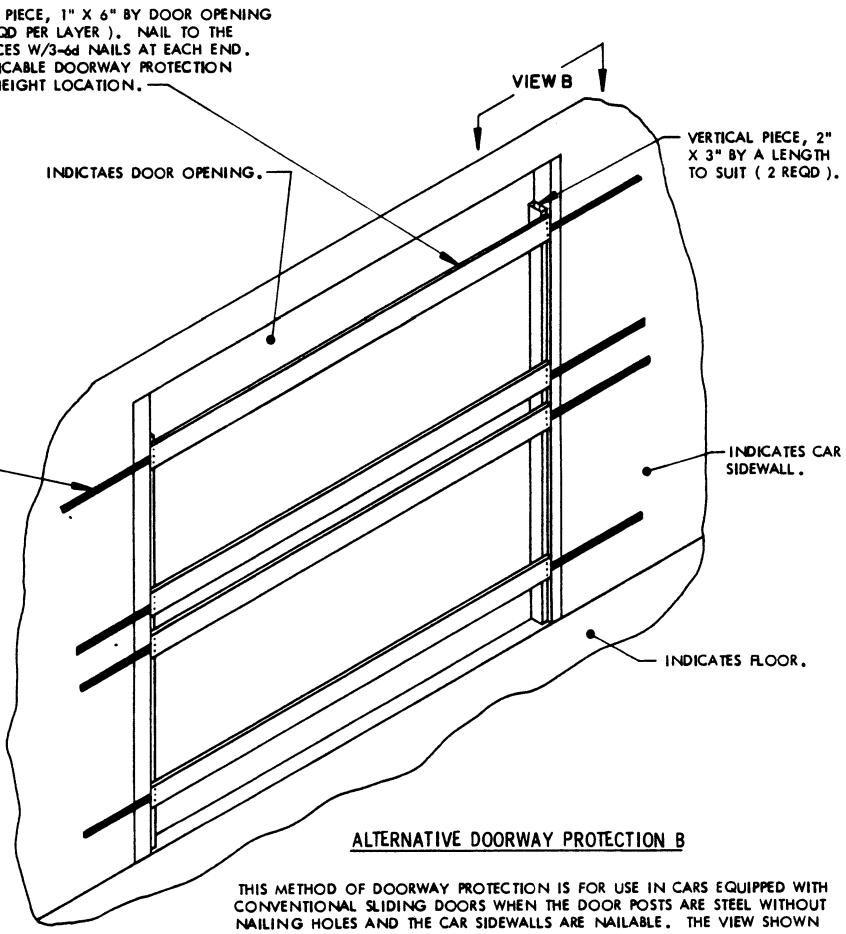
FILLER A

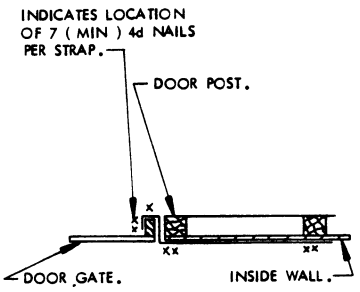
THIS FILLER IS TO BE USED WHEN ONE CONTAINER IS TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



FILLER B

THIS FILLER IS TO BE USED WHEN TWO CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



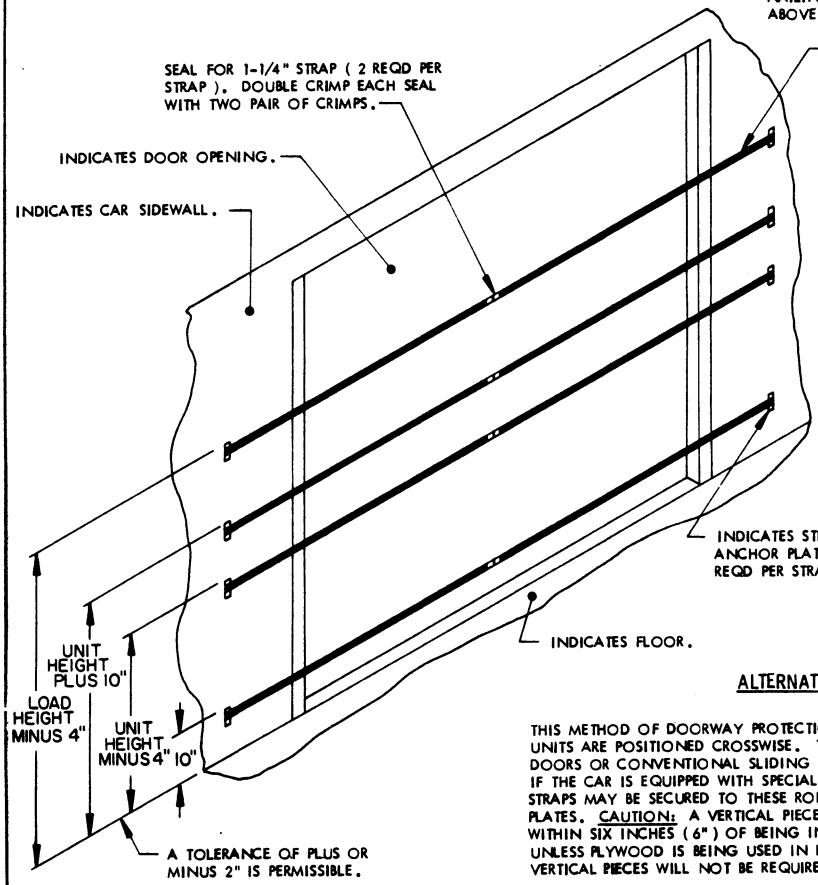


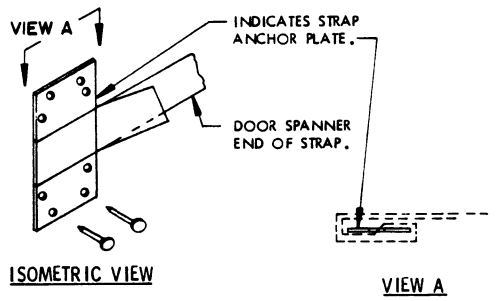
VIEW B

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 TWO-LAYER LOAD.





ISOMETRIC VIEW

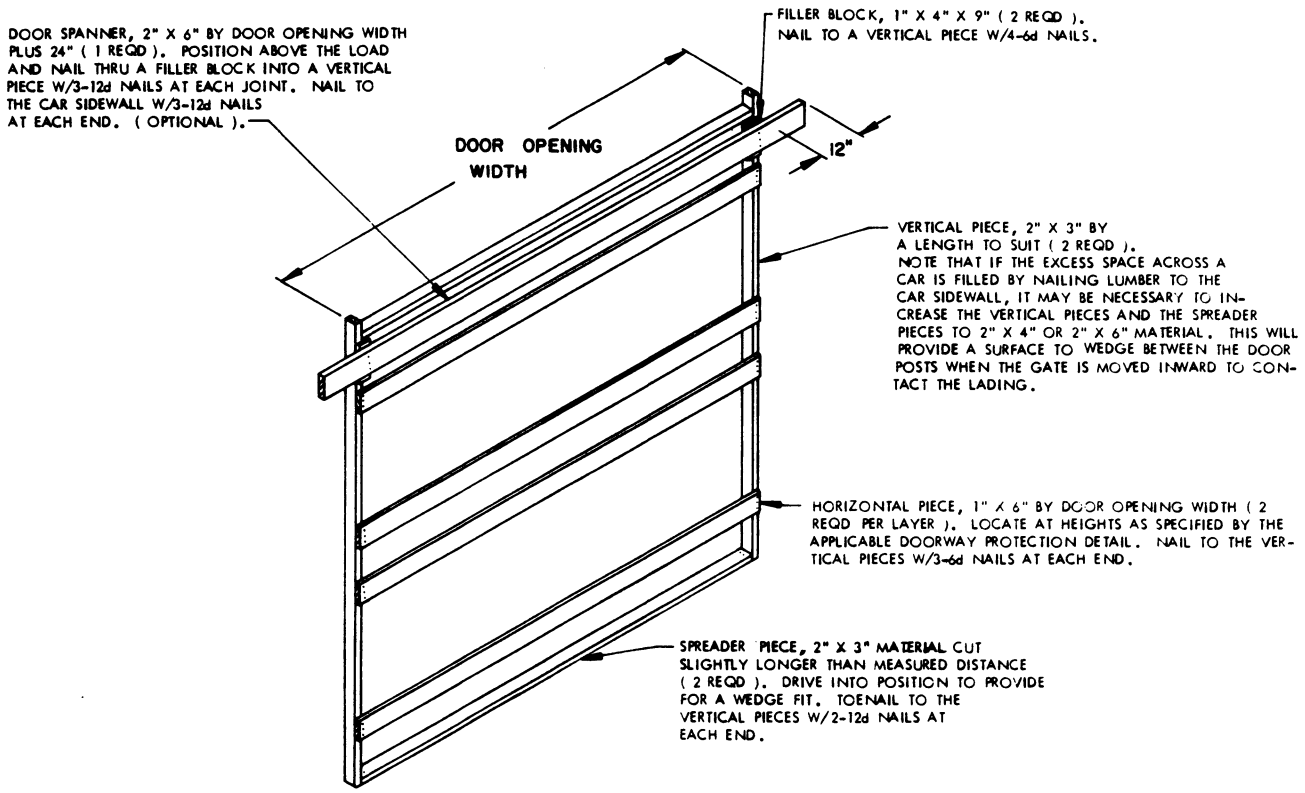
VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

THESE VIEWS DEPICT THE PROPER THREADING OF A DOORWAY PROTECTION STRAP THRU AN ANCHOR PLATE.

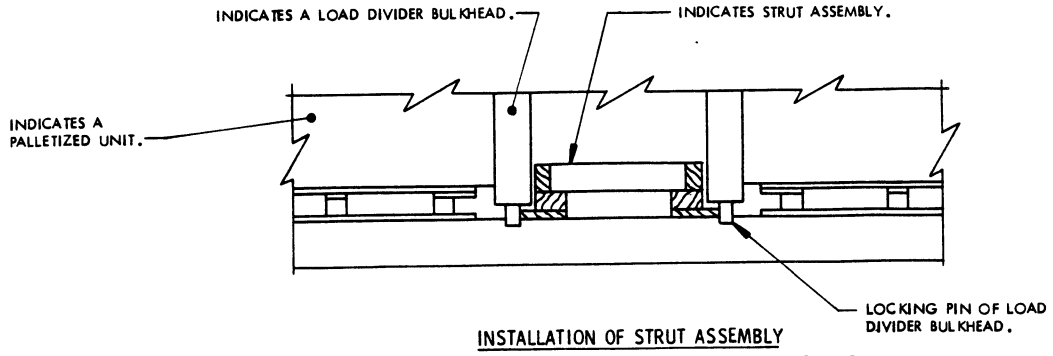
ALTERNATIVE DOORWAY PROTECTION C

THIS METHOD OF DOORWAY PROTECTION IS ONLY FOR USE WITH THOSE LOADS IN WHICH THE PALLET UNITS ARE POSITIONED 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.



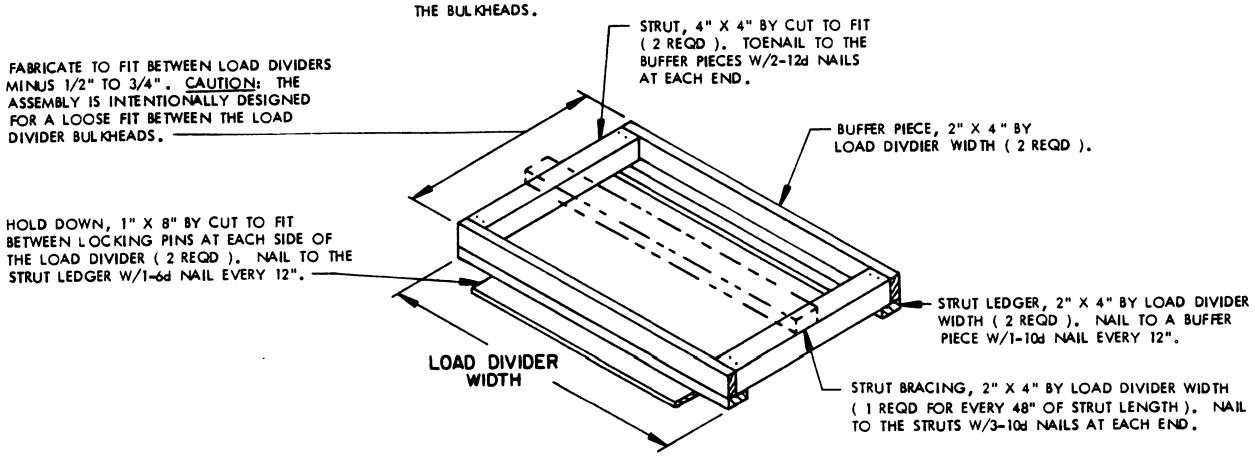
ALTERNATIVE DOORWAY PROTECTION D

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 68 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 66.



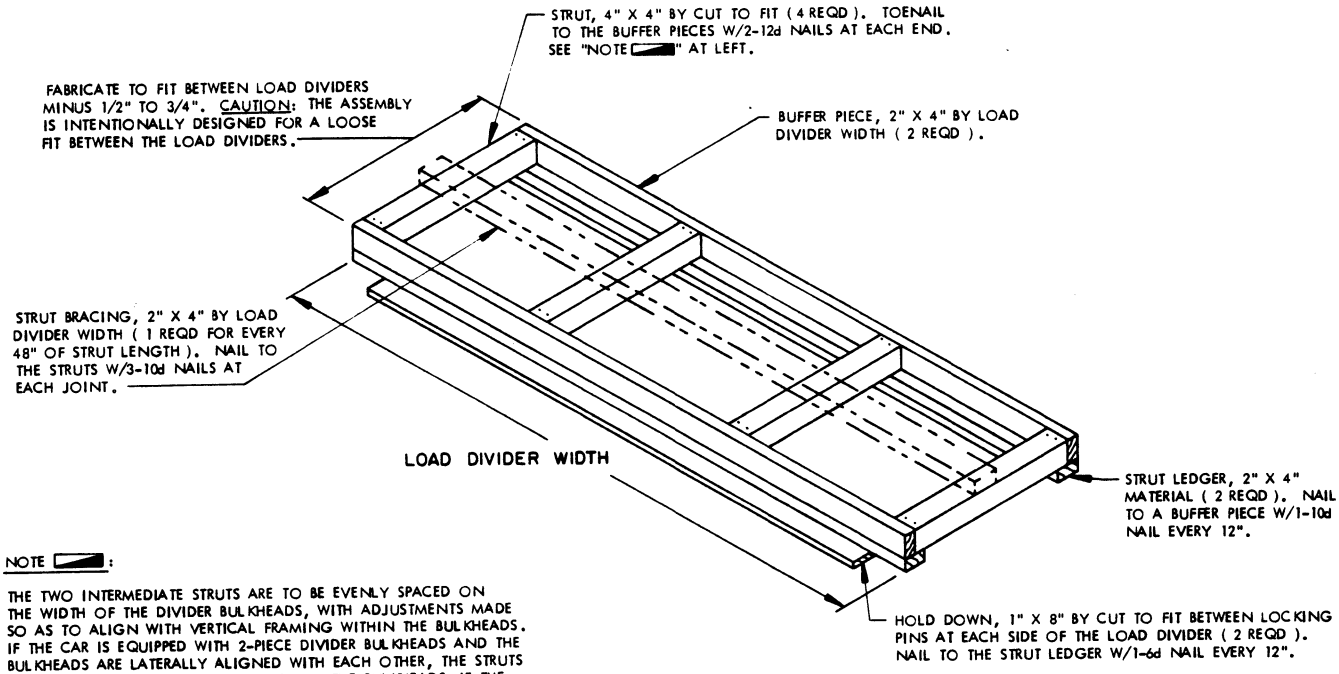
INSTALLATION OF STRUT ASSEMBLY

THIS VIEW SHOWS THE STRUT ASSEMBLY INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS. NOTE THE 1/2" TO 3/4" (TOTAL) SPACE INTENTIONALLY PROVIDED BETWEEN THE ASSEMBLY AND THE BULKHEADS.



STRUT ASSEMBLY FOR 2-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD. NOTE: TWO (2) ASSEMBLIES AS SHOWN ARE REQUIRED FOR A 2-PIECE BULKHEAD IF NOT LATERALLY ALIGNED. SEE "NOTE ▬ " BELOW.

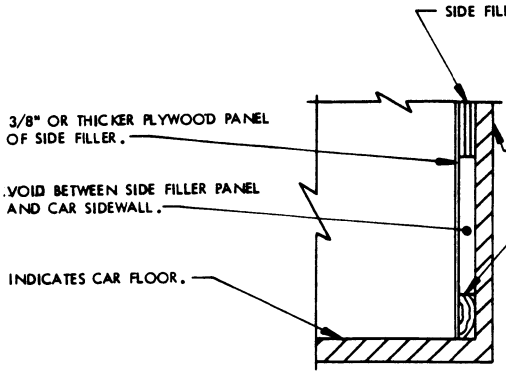


NOTE ▬:

THE TWO INTERMEDIATE STRUTS ARE TO BE EVENLY SPACED ON THE WIDTH OF THE DIVIDER BULKHEADS, WITH ADJUSTMENTS MADE SO AS TO ALIGN WITH VERTICAL FRAMING WITHIN THE BULKHEADS. IF THE CAR IS EQUIPPED WITH 2-PIECE DIVIDER BULKHEADS AND THE BULKHEADS ARE LATERALLY ALIGNED WITH EACH OTHER, THE STRUTS SHOULD BE ALIGNED WITH THE EDGES OF THE BULKHEADS; IF THE BULKHEADS ARE NOT ALIGNED, THE "STRUT ASSEMBLY FOR 2-PIECE BULKHEADS" MUST BE USED. SEE THE DETAIL ABOVE.

STRUT ASSEMBLY FOR 1-PIECE BULKHEADS

A STRUT ASSEMBLY IS REQUIRED WHEN THE LOAD BEHIND EITHER LOAD DIVIDER BULKHEAD EXCEEDS 50,000 POUNDS OF CLASS A OR CLASS B EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF CLASS C EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.

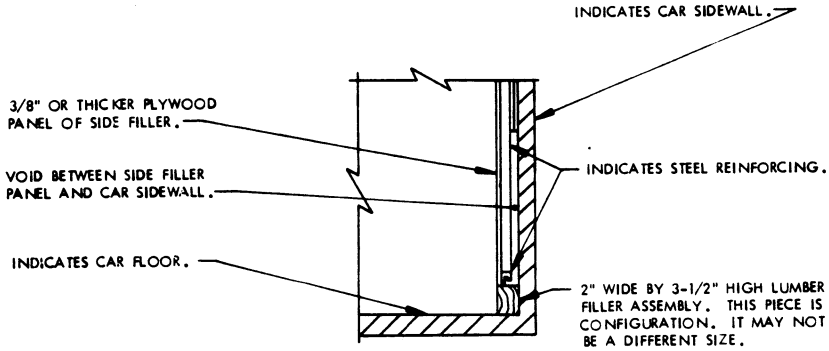


TYPICAL TYPE A

THIS VIEW SHOWS THE INSTALLATION OF A "FILL PIECE" IN A CAR EQUIPPED WITH A STANDARD ADJUSTABLE SIDE FILLER.

NOTE ◑:

NAILING OF "FILL PIECES" IS NOT REQUIRED EXCEPT THAT EACH "FILL PIECE" LOCATED NEAREST THE DOOR OPENINGS OF THE CAR WILL BE SECURED AGAINST LONGITUDINAL MOVEMENT W/1-6d NAIL DRIVEN THROUGH THE SIDE FILLER PANEL AND INTO THE "FILL PIECE".



TYPICAL TYPE B

THIS VIEW SHOWS A TYPICAL SECTION OF A CAR EQUIPPED WITH HEAVY DUTY, STEEL REINFORCED, ADJUSTABLE SIDE FILLERS. A "FILL PIECE", AS SHOWN IN THE "TYPICAL TYPE A" DETAIL ABOVE, IS NOT REQUIRED IN CARS SO EQUIPPED.