APPROVED BY
BUREAU OF EXPLOSIVES

DATE 9/9/94

TOW

LOADING AND BRACING (CL & LCL) IN BOXCARS ⌖ OF GUIDED MISSILES PACKED ONE PER CNU-553/E CYLINDRICAL METAL CONTAINER

INDEX

⌖ INCLUDES CONVENTIONAL TYPE BOXCARS AND CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY MISSILE COMMAND

APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

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19	48	8210	GM5T02

DO NOT SCALE

PROJECT GM 875-93

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 HEREIN ARE APPLICABLE TO THE TOW GUIDED MISSILE PACKED ONE PER CNU-553/E CYLINDRICAL METAL CONTAINER. FOR DETAIL OF THE PALLET UNIT, SEE U.S. ARMY MATERIEL COMMAND DRAWING NO. 19-48-5268-GM20T02 AND PAGE 5.

PALLET DIMENSIONS - - - 45-1/2" LONG X 58-15/16" WIDE X 38-7/16" HIGH (APPROX)
GROSS WEIGHT - - - - - 1,542 POUNDS (APPROX)
CUBE - - - - - - - - - 59.7 CUBIC FEET (APPROX)

C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOXCARS AND FOR SHIPMENTS IN CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

D. CAUTION: METAL CNU-553/E CONTAINERS THAT ARE FLUSH WITH OR OVERHANG THE PALLET ADAPTERS MUST NOT BE ALLOWED TO CONTACT STEEL ENDWALLS OF BOXCARS. THIS TYPE OF UNIT LOAD SHOULD BE SHIPPED IN BOXCARS HAVING WOOD ENDWALLS. IF CARS WITH WOOD ENDWALLS ARE NOT AVAILABLE, AND ALL-STEEL CARS ARE USED, THE ENDWALLS MUST BE LINED WITH DIMENSIONAL LUMBER, PLYWOOD, HARDBOARD, OR SOLID FIBERBOARD. THE LINING SHOULD BE PROVIDED WHEREVER METAL-OF-CONTAINER TO METAL-OF-CAR CONTACT IS POSSIBLE. REFER TO PAGE 30 FOR GUIDANCE.

E. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF PALLET UNITS OF TOW MISSILES 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 RAILCARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOXCARS THAT DO NOT HAVE BOWED ENDWALLS. CARS HAVING BOWED ENDS CAN BE USED, HOWEVER, IF AN ENDWALL IS BOWED OUTWARD MORE THAN 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 30 FOR GUIDANCE.

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

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

LUMBER - - - - - - - -: SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.

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

PLYWOOD - - - - - - -: COMMERCIAL ITEM DESCRIPTION A-A-55057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

STRAPPING, STEEL - -: ASTM D3953; FLAT STRAPPING, TYPE I OR 2, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.

SEAL, STRAP - - - -: ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.

WIRE, CARBON STEEL -: ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800" DIA, GRADE 1006 OR BETTER.

STAPLE, STRAP - - -: COMMERCIAL GRADE.

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

FIBERBOARD - - - - -: FED SPEC PPP-F-320; TYPE SF (SOLID FIBERBOARD), CLASS DOMESTIC, ALL GRADES.

(GENERAL NOTES CONTINUED)

H. THE USE OF AN OFFSET LOADING PATTERN WILL FACILITATE LOADING AND UNLOADING OPERATIONS IN THE DOORWAY AREA OF THE CAR. UNLESS PROHIBITED WITHIN THE SPECIAL NOTES, 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 PALLET UNITS OF TOW MISSILES, 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.

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

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 BOXCAR LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" 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 ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. REFER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 31 FOR GUIDANCE.

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

P. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOXCAR 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 RAILCAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.

Q. CAUTION: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, PALLET UNITS BEING LOADED INTO THE CONVEYANCE MUST BE POSITIONED TO ALLOW A CLEAR PATH OF EXIT FOR THE OPERATOR AT ALL TIMES, SHOULD AN EMERGENCY EXIT BECOME NECESSARY.

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

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

(CONTINUED ON PAGE 3)

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOXCARS)

T. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES AND KNEE BRACE ASSEMBLIES IN THE LESS-THAN-FULL LOADS. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE APPLICABLE KEY NUMBERS. SEE GENERAL NOTE "L" ON PAGE 2.

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

V. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY KEY NUMBERS ⑤ AND ⑥ ON PAGE 4. 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 STRUT AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.

W. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT APPROXIMATELY 1/4" TO 3/8" LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. MEASUREMENTS FOR STRUT LENGTHS NEED TO BE ACCOMPLISHED AT SEVERAL PLACES DURING THE BLOCKING AND BRACING PROCESS. CARE MUST BE EXERCISED WHEN MEASURING FOR AND INSTALLING STRUTS. THE SPECIFIED APPROXIMATE DIMENSION FOR A STRUT LENGTH MAY BE ADJUSTED, AS NECESSARY, TO PROVIDE FOR A TIGHTLY BLOCKED LOAD WITHOUT DISTORTING, DENTING OR OTHERWISE DAMAGING THE CONTAINERS. 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 27 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON PAGE 31 FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.

X. WHERE 2" X 2" PIECES ARE SPECIFIED FOR STRUT LEDGERS, 2" X 4" MATERIAL MAY BE SUBSTITUTED, IF DESIRED.

GENERAL NOTES

(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

Y. CAUTION: FOR CUSHIONED BOXCARS 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.

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Z. THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, WHICH ARE REQUIRED IN CONVENTIONAL BOXCAR 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 TOW MISSILES. NOTICE: ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER SILL TYPE CUSHIONED DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST 15" OF TRAVEL ARE ACCEPTABLE.

AA. IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOXCARS 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 38 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 38, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.

BB. 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.

CC. A "STRUT ASSEMBLY" MUST BE INSTALLED BETWEEN THE LOAD DIVIDER BULKHEADS IF THE CAR CONTAINS HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 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 HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES. NOTE THAT THE STRUT ASSEMBLY MAY BE OMITTED FROM LOADS OF HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 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 "DD-3" BELOW. DETAILS OF STRUT ASSEMBLIES FOR USE BETWEEN 2-PIECE BULKHEADS AND BETWEEN 1-PIECE BULKHEADS ARE SHOWN ON PAGE 37.

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

1. ONE OR MORE RISERS CAN BE POSITIONED WITHIN A LOAD TO INCREASE A LOAD QUANTITY. SEE THE RISER PROCEDURES AND DETAILS ON PAGES 18 AND 19.

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 PAGE 12 FOR GUIDANCE.

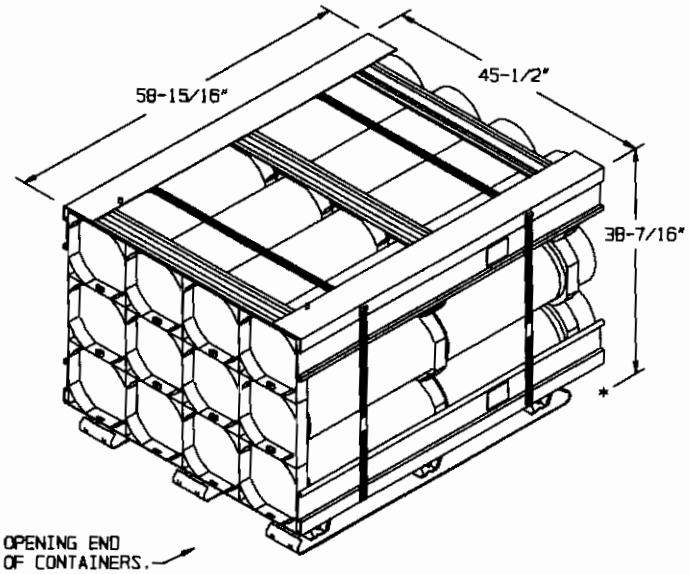
3. AT LOCATION(S) WHERE K-BRACES MIGHT NORMALLY BE USED IN A LOAD IN A CONVENTIONAL CAR, LOAD DIVIDER BULKHEADS CAN BE POSITIONED. LOADING CAN THEN CONTINUE TOWARD THE CENTER OF THE CAR FROM EACH INSTALLED LOAD DIVIDER BULKHEAD IN A ONE-HIGH LOADING PATTERN. INSTALL CENTER GATES AND STRUTS AS SHOWN ON PAGE 4 OR 6 OF THE CONVENTIONAL BOXCAR 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 24 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 22.

(SPECIAL NOTES CONTINUED)

10. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 25 FOR GUIDANCE.

11. A MAXIMUM OF 42 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 64,760 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR BY USING THE DEPICTED PROCEDURES. A MAXIMUM OF 66 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 101,770 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR BY USING THE DEPICTED PROCEDURES.



PALLET UNIT DATA

GROSS WEIGHT - - - - - - - - - - 1,542 LBS (APPROX)
CUBE - - - - - - - - - - - - - - 59.7 CUBIC FEET (APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
2" X 2"	55	19
2" X 3"	39	20
2" X 4"	287	192
2" X 6"	382	382
4" X 4"	105	140
NAILS	NO. REQD	POUNDS
6d (2")	72	1/2
10d (3")	714	11
12d (3-1/4")	18	1/2
16d (3-1/2")	72	1-3/4
WIRE, NO. 14 GAGE - - - 24' REQD - - - - - -		0.40 LBS

SPECIAL NOTES:

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

2. IF THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD SHOWN IN THE LOAD ON PAGE PAGE 6 IS USED IN LIEU OF THE WOODEN DOOR GATE TYPE PROTECTION, PIECE MARKED ⑦, NAILED FLOORLINE BLOCKING MUST BE USED IN LIEU OF EACH LOWER ANTI-SWAY BRACE IN THE DOORWAY AREA. NAILED BLOCKING IS REQUIRED FOR ALL PALLET STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH ON EITHER SIDE OF THE CAR.

3. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 4, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE LIFTING RINGS WITH NO. 14 GAGE WIRE AS SHOWN IN THE DETAIL ON PAGE 4. THREE BRACES ARE REQUIRED IN EACH END OF A LOAD IN ANY LENGTH CAR.

4. CENTER GATE "A" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 32 FOR GUIDANCE.

5. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT UPON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH "CENTER GATE A", SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 4, INSTALL TWO "CENTER GATE D" AS SHOWN ON PAGE 33. 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 33.

6. THE PALLET UNITS CLOSEST TO THE CENTER GATES MUST BE ORIENTED SUCH THAT THE OPENING ENDS OF THE CONTAINERS ARE ADJACENT TO THE CENTER GATES, IN ORDER FOR THE GATE HOLD-DOWN PIECES ON THE CENTER GATES TO FUNCTION PROPERLY. DO NOT ORIENT THE PALLET UNITS CLOSEST TO THE CENTER GATES WITH THE OPENING END OF THE CONTAINER POINTED AWAY FROM THE GATES.

7. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 4, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 34 THRU 36 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING AND PLUG DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS BUT DOES NOT HAVE NAILABLE SIDEWALLS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE LOAD ON PAGE 6 FOR GUIDANCE.

8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO UNITS BE OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR, THE ENTIRE TOP TIER OR TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 10 THRU 24 FOR GUIDANCE.

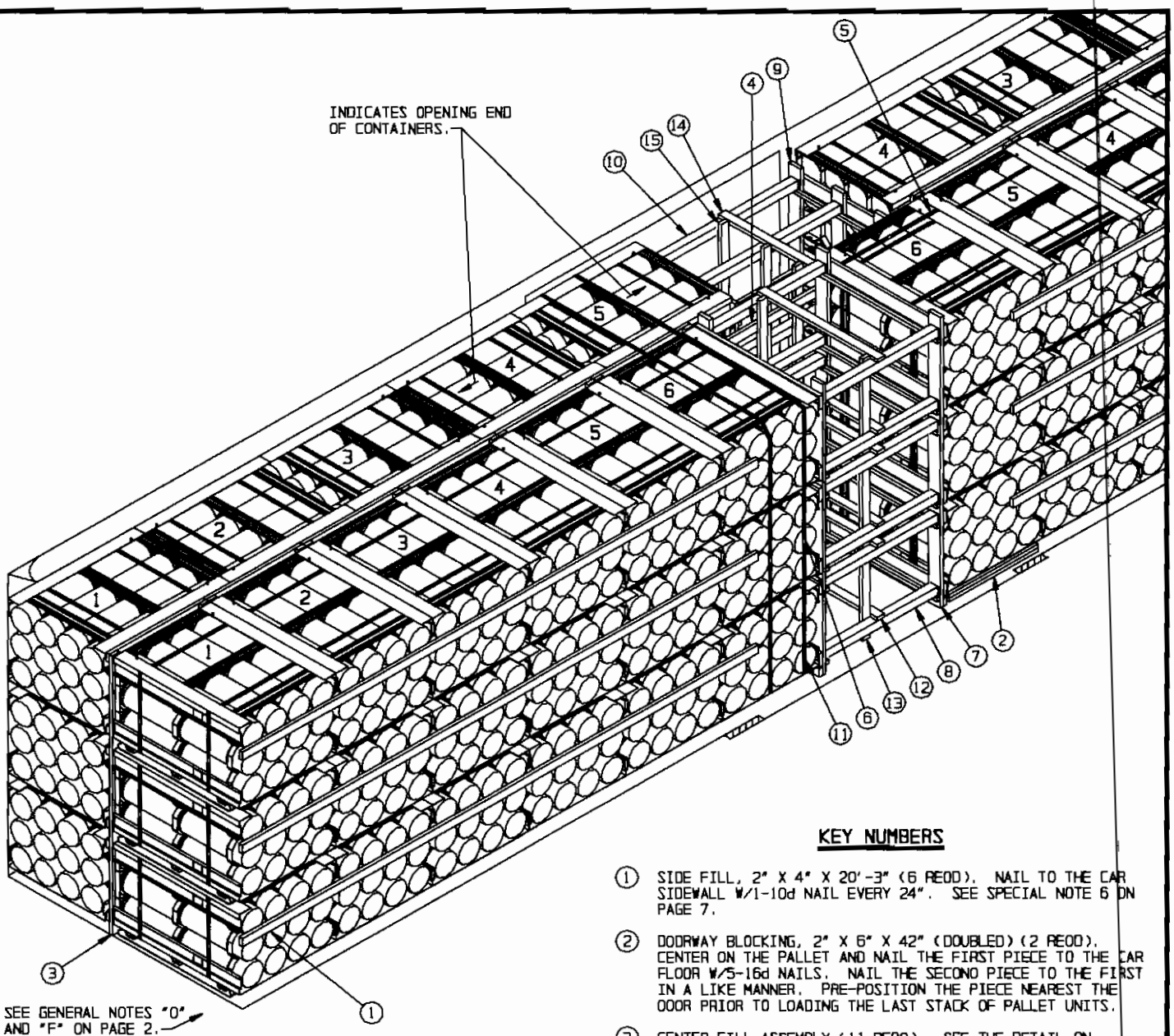
9. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 26 FOR SHIPPING GUIDANCE.

(CONTINUED AT LEFT)

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT - - - - -	54 - - - - - -	83,268 LBS
DUNNAGE - - - - - - - - - - - - - - -		1,641 LBS
TOTAL WEIGHT - - - - - - - -		84,909 LBS (APPROX)

54-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR



ISOMETRIC VIEW

KEY NUMBERS

(KEY NUMBERS CONTINUED)

⑩ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 69-1/2") (9 REQD). TOENAIL TO PIECES MARKED ⑨ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

⑪ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 38'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT STACKS AND CENTER FILL ASSEMBLY IN THE DOORWAY AREA. SEE SPECIAL NOTE 4 ON PAGE 7.

⑫ HORIZONTAL STRUT BRACING, 2" X 4" X 58-3/4" (6 REQD). NAIL TO THE STRUTS MARKED ⑧ W/3-10d NAILS AT EACH JOINT.

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

⑭ HORIZONTAL STRUT BRACING, 2" X 4" X 45-1/2" (3 REQD). NAIL TO THE STRUTS MARKED ⑩ W/3-10d NAILS AT EACH JOINT.

⑮ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (3 REQD). NAIL TO THE STRUTS MARKED ⑩ W/3-10d NAILS AT EACH JOINT.

① SIDE FILL, 2" X 4" X 20'-3" (6 REQD). NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 24". SEE SPECIAL NOTE 6 ON PAGE 7.

② DOORWAY BLOCKING, 2" X 6" X 42" (DOUBLED) (2 REQD). CENTER ON THE PALLET AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION THE PIECE NEAREST THE DOOR PRIOR TO LOADING THE LAST STACK OF PALLET UNITS.

③ CENTER FILL ASSEMBLY (1) REQD). SEE THE DETAIL ON PAGE 27.

④ CENTER FILL RETAINER, 2" X 4" X LENGTH TO SUIT (REF: 9'-4-1/2") (2 REQD). POSITION TO SPAN THE VERTICAL PIECES OF THE CENTER FILL ASSEMBLIES AT THE CENTER OF THE CAR AND NAIL TO EACH VERTICAL PIECE W/3-10d NAILS.

⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 27'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT STACK POSITIONED IN THE DOORWAY AREA WITH THE CONTAINERS PARALLEL TO THE WIDTH OF THE CAR.

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

⑦ CENTER GATE B (2 REQD). SEE THE DETAIL ON PAGE 28. SEE SPECIAL NOTE 2 ON PAGE 7.

⑧ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 54") (12 REQD). TOENAIL TO PIECES MARKED ⑦ W/2-16d NAILS AT EACH END SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

⑨ CENTER GATE D (2 REQD). SEE THE DETAIL ON PAGE 33. SEE SPECIAL NOTE 2 ON PAGE 7.

(CONTINUED AT LEFT)

SPECIAL NOTES:

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

2. CENTER GATES "B" AND "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 32 FOR GUIDANCE.

3. THE PALLET UNITS CLOSEST TO THE CENTER GATES POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR MUST BE ORIENTED SUCH THAT THE OPENING ENDS OF THE CONTAINERS ARE ADJACENT TO THE CENTER GATES, IN ORDER FOR THE GATE HOLD-DOWN PIECES ON THE CENTER GATES TO FUNCTION PROPERLY. DO NOT ORIENT THE PALLET UNITS CLOSEST TO THE CENTER GATES WITH THE OPENING END OF THE CONTAINER POINTED AWAY FROM THE GATES.

4. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK LENGTH. THE DEPICTED DOORWAY PROTECTION IS APPLICABLE FOR BOXCARS EQUIPPED WITH EITHER SLIDING TYPE OR PLUG TYPE DOORS, OR A COMBINATION THEREOF. ONE DOORWAY PROTECTION STRAP IS REQUIRED FOR PALLET STACKS WHICH EXTEND INTO THE DOORWAY AREA BY MORE THE HALF THE STACK WIDTH, BUT ARE RETAINED BY 6" OR MORE OF CAR SIDEWALL. TWO STRAPS ARE REQUIRED FOR PALLET STACKS THAT ARE RETAINED BY LESS THAN 6" OF CAR SIDEWALL. IF THE CAR BEING LOADED IS EQUIPPED WITH SLIDING TYPE DOORS, WOODEN DOOR GATES, SHOWN AS PIECE MARKED (7) ON PAGE 4, OR ANY OF THE ALTERNATIVES ON PAGES 34 THRU 36, MAY BE USED.

5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY SIX UNITS, A 2-TIER LOAD CAN BE REDUCED BY FOUR UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A TWO UNITS BY LEAVING OUT THE LENGTHWISE STACK NO. 5 AND THE ADJACENT CROSSWISE STACK NO. 6. THE ENTIRE TOP TIER OR TIERS CAN ALSO BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 10 THRU 24 FOR GUIDANCE.

6. THE SIDE FILL, PIECE MARKED (1), IS REQUIRED TO PROVIDE FOR PROPER WEIGHT DISTRIBUTION ACROSS THE CAR WIDTH. THE LENGTH OF THE SIDE FILL SHOULD BE SUCH THAT IT WILL EXTEND FROM THE END OF THE CAR TO THE DOORWAY. RANDOM LENGTH MATERIAL MAY BE USED. IF A 9'-4" WIDE CAR IS TO BE LOADED, AN ADDITIONAL 2" X 4" X 9'-4" PIECE MUST BE LAMINATED TO EACH VERTICAL PIECE OF THE CENTER FILL ASSEMBLY, PIECE MARKED (3), W/8-10d NAILS. IF A 9'-6" WIDE CAR IS TO BE LOADED, TWO ADDITIONAL 2" X 4" X 9'-4" PIECES MUST BE LAMINATED TO EACH VERTICAL PIECE OF THE CENTER FILL ASSEMBLY W/8-10d NAILS EACH. IF THE CAR BEING LOADED HAS NON-NAILABLE SIDEWALLS, SIDE FILL ASSEMBLIES AS DEPICTED ON PAGE 32 MUST BE USED THROUGHOUT THE LOAD IN LIEU OF PIECE MARKED (1).

7. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 26 FOR SHIPPING GUIDANCE.

8. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 25 FOR GUIDANCE.

9. A MAXIMUM OF 51 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 78,642 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR BY USING THE DEPICTED PROCEDURES. A MAXIMUM OF 78 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 120,280 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR BY USING THE DEPICTED PROCEDURES.

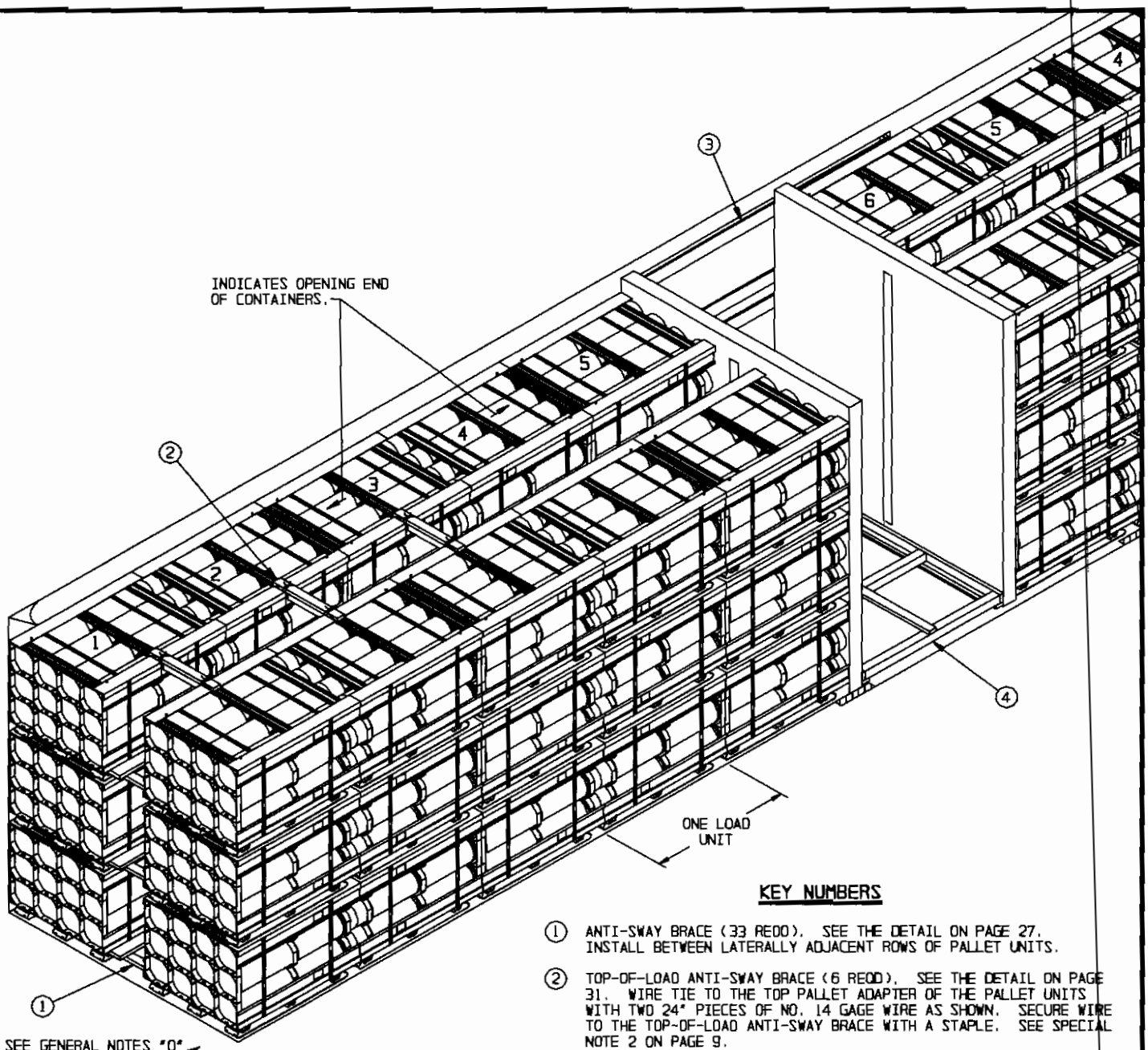
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	82	28
2" X 4"	728	486
2" X 6"	177	177
4" X 4"	107	143
NAILS	**NO. REQD**	**POUNDS**
10d (3")	716	11-1/4
16d (3-1/2")	104	2-1/2
STEEL STRAPPING, 1-1/4" - - 130' REQD - - 18.57 LBS		
SEAL FOR 1-1/4" STRAPPING - - 4 REQD - - - - - NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	63	97,145 LBS
DUNNAGE		1,701 LBS
TOTAL WEIGHT		98,847 LBS (APPROX)

63-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR



ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (33 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE. SEE SPECIAL NOTE 2 ON PAGE 9.

(3) DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 29. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 3 ON PAGE 9.

(4) STRUT ASSEMBLY (1 REQD). SEE THE "STRUT ASSEMBLY FOR 1-PIECE BULKHEADS" DETAIL ON PAGE 37. INSTALL BETWEEN THE LOAD DIVIDER BULKHEADS. SEE SPECIAL NOTE 5 ON PAGE 9.

66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE BOXCAR WITH LOAD DIVIDER BULKHEADS

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-2" WIDE WOOD-LINED CUSHIONED BOX CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "Y" THRU "DD" ON PAGE 3.

2. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 8, MUST BE INSTALLED IN EACH END OF THE CAR AND WIRE TIED TO THE LIFTING RINGS WITH NO. 14 GAGE WIRE AS SHOWN IN THE DETAIL ON PAGE 8. THREE BRACES ARE REQUIRED IN EACH END OF A LOAD IN ANY LENGTH CAR.

3. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGES 34 THRU 36 FOR ALTERNATIVE DOORWAY PROTECTION FOR CARS EQUIPPED WITH CONVENTIONAL SLIDING AND PLUG DOORS. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS BUT DOES NOT HAVE NAILABLE SIDEWALLS, NAILED FLOORLINE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE THE LOAD ON PAGE 6 FOR GUIDANCE.

4. A STRUT ASSEMBLY, SHOWN AS PIECE MARKED ④ IN THE LOAD ON PAGE 8, IS REQUIRED BETWEEN THE LOAD DIVIDER BULKHEADS WHEN THE LOAD IN EITHER END OF THE CAR IS 50,000 POUNDS OR MORE. FOR THE DEPICTED PALLET UNIT, A STRUT ASSEMBLY WILL BE REQUIRED IF THE LOAD IN ONE END OF THE CAR CONSISTS OF MORE THAN FIVE LOAD UNITS.

5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 3-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX UNITS, A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF FOUR UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF TWO UNITS BE OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD, OR, THE ENTIRE TOP TIER OR TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 10 THRU 24 FOR GUIDANCE.

6. IF PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 26 FOR SHIPPING GUIDANCE.

7. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 25 FOR GUIDANCE.

8. A MAXIMUM OF 42 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 64,760 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR BY USING THE DEPICTED PROCEDURES. A MAXIMUM OF 54 PALLET UNITS, FOR A LADING WEIGHT OF APPROXIMATELY 83,270 POUNDS, CAN BE LOADED IN A 50'-6" LONG CAR BY USING THE DEPICTED PROCEDURES.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	120	60
1" X 8"	17	12
2" X 3"	39	20
2" X 4"	255	170
2" X 6"	256	256
4" X 4"	22	30

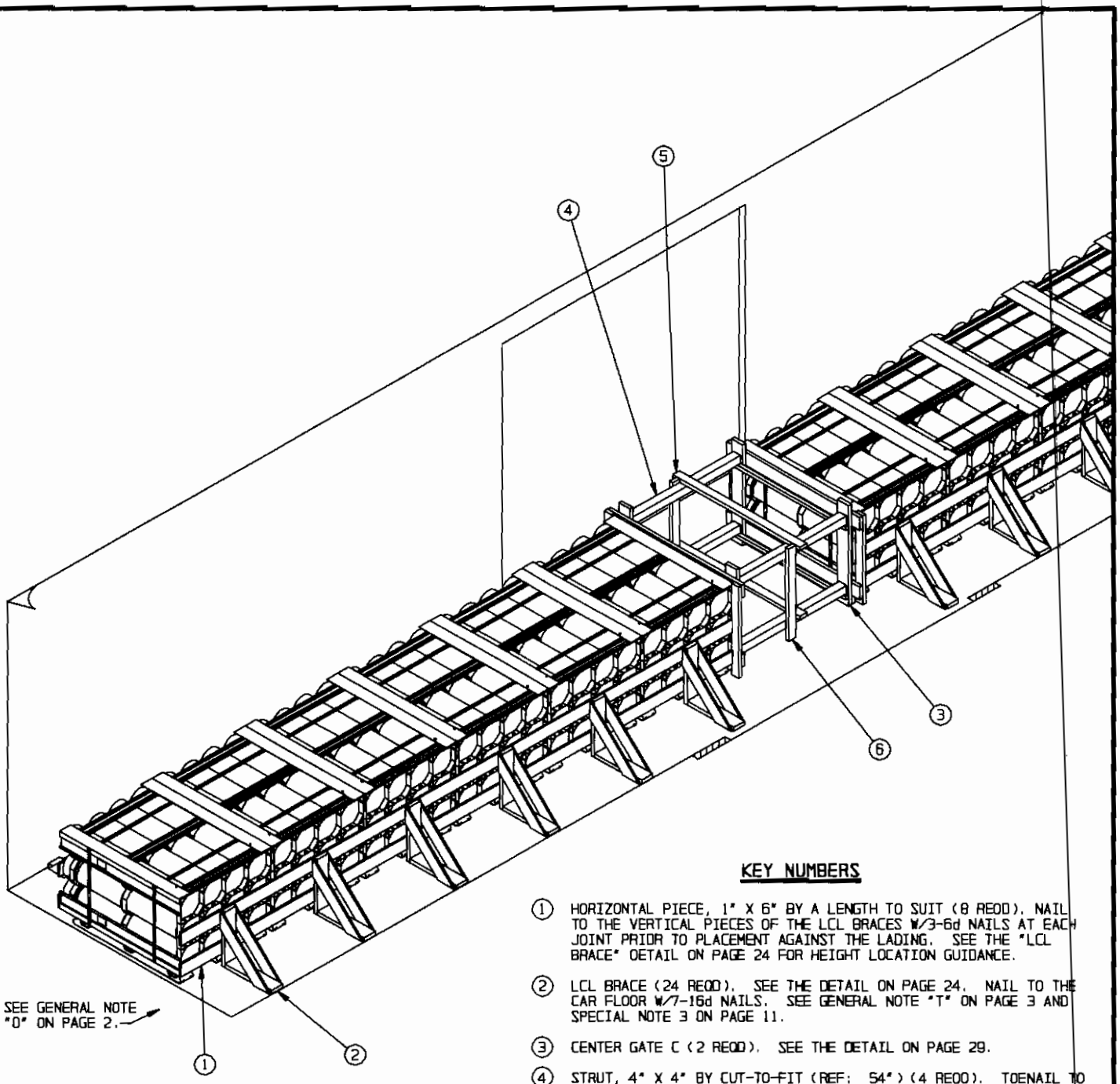
NAILS	NO. REQD	POUNDS
6d (2")	88	3/4
10d (3")	442	7
12d (3-1/4")	48	1

WIRE, NO. 14 GAGE - - - 24' REQD - - - - - 0.40 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	66	101,772 LBS
DUNNAGE		1,106 LBS
TOTAL WEIGHT		102,878 LBS (APPROX)

66-UNIT LOAD IN A 60'-8" LONG BY 9'-2" WIDE BOXCAR WITH LOAD DIVIDER BULKHEADS



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 24 FOR HEIGHT LOCATION GUIDANCE.

② LCL BRACE (24 REQD). SEE THE DETAIL ON PAGE 24. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "T" ON PAGE 3 AND SPECIAL NOTE 3 ON PAGE 11.

③ CENTER GATE C (2 REQD). SEE THE DETAIL ON PAGE 29.

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

⑤ HORIZONTAL STRUT BRACING, 2" X 4" X 64" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

⑥ VERTICAL STRUT BRACING, 2" X 4" X 40" (2 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

TYPICAL LCL LOAD USING A 1-WIDE LOADING METHOD

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. CARS OF OTHER WIOTHS AND LENGTHS CAN BE USED. SEE SPECIAL NOTE 2.

2. A 1-WIDE CROSSWISE LOAD IN A 50'-6" LONG CAR IS SHOWN AS TYPICAL. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR A 10-UNIT CROSSWISE LOAD IN A 40'-6" LONG CAR OR A 15-UNIT LOAD IN A 60'-8" LONG CAR. NOTE: THESE PROCEDURES ARE NOT APPLICABLE FOR SHIPPING PALLET UNITS WITH THE CONTAINERS LENGTHWISE IN THE CAR.

3. ONE LCL BRACE WILL BE USED AT EACH SIDE OF EACH PALLET UNIT. THE BRACES WILL BE LOCATED NEAR THE CENTER OF THE PALLET UNIT.

4. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT POSITIONING AND THEREFORE ARE ONLY TYPICAL.

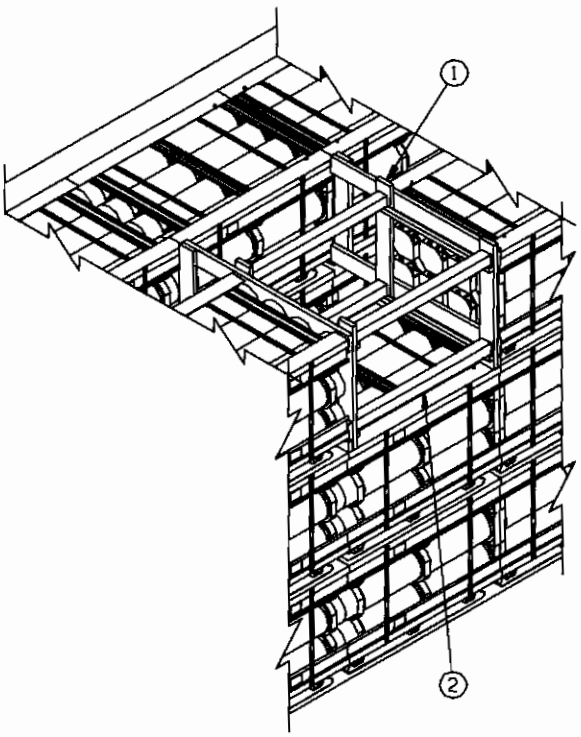
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	318	159
2" X 2"	20	7
2" X 4"	47	32
2" X 6"	131	131
4" X 4"	18	24
NAILS	**NO. REQD**	**POUNDS**
6d (2")	144	1
8d (2-1/2")	288	3-1/4
10d (3")	120	2
16d (3-1/2")	232	5-1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	12	18,504 LBS
DUNNAGE		718 LBS
TOTAL WEIGHT		19,222 LBS (APPROX)

TYPICAL LCL LOAD USING 1-WIDE LOADING METHOD



ISOMETRIC VIEW

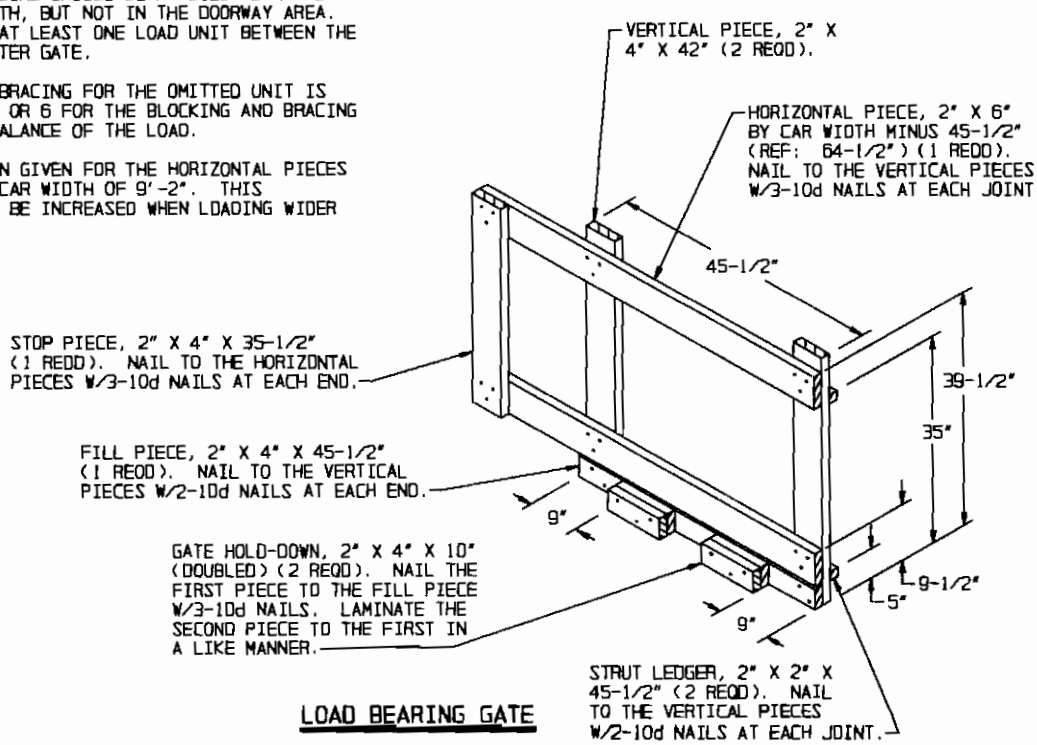
SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 3-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A PALLET UNIT FROM A 2-LAYER OR 1-LAYER LOAD.
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 LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN; REFER TO PAGE 4 OR 6 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
5. THE REFERENCE DIMENSION GIVEN FOR THE HORIZONTAL PIECES IS BASED ON AN INSIDE CAR WIDTH OF 9'-2". THIS DIMENSION WILL HAVE TO BE INCREASED WHEN LOADING WIDER CARS.

KEY NUMBERS

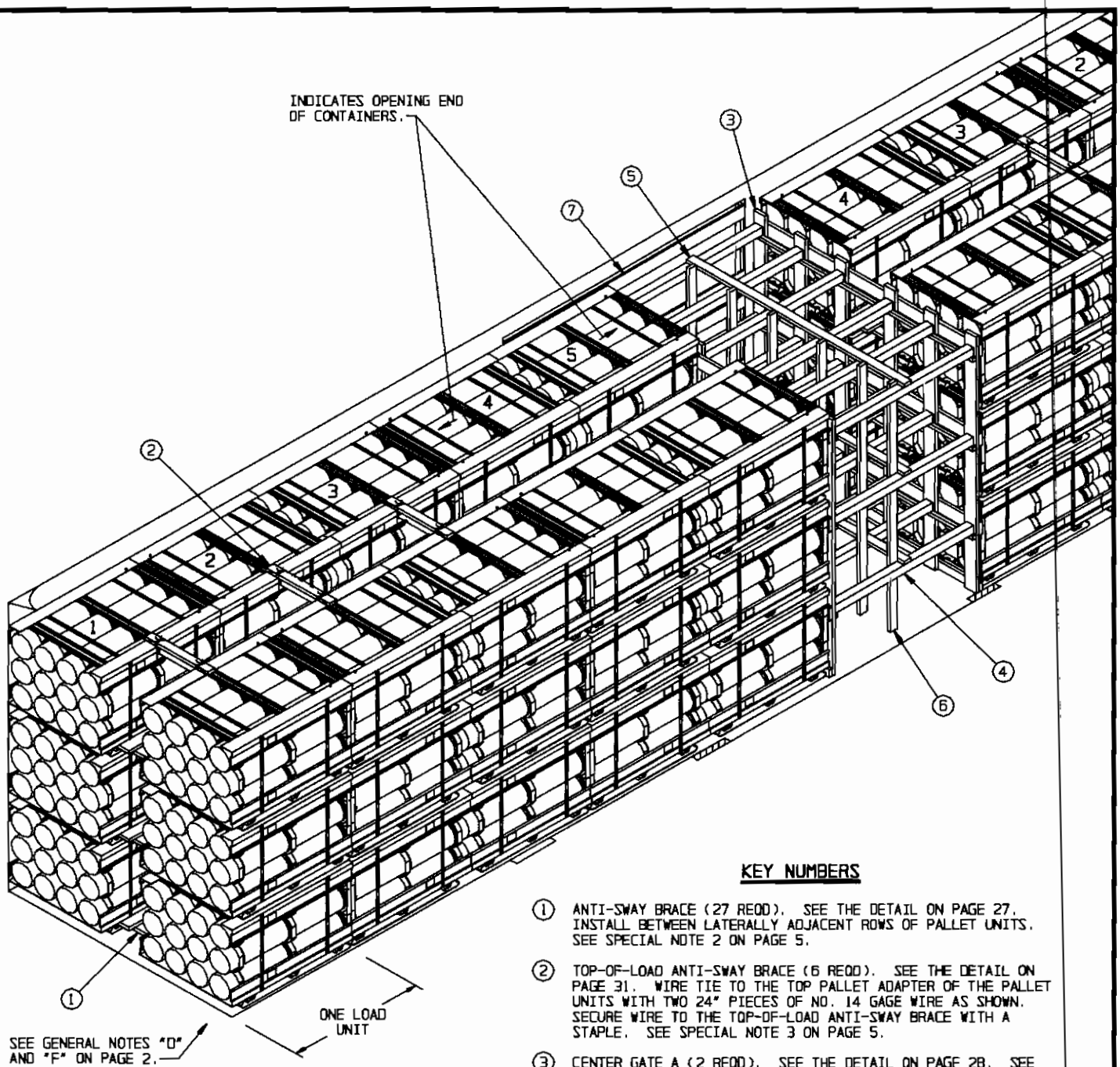
① LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE DETAIL BELOW.

② STRUT, 4" X 4" X 53" (4 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END.



LOAD BEARING GATE

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



ISOMETRIC VIEW

KEY NUMBERS

① ANTI-SWAY BRACE (27 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. SEE SPECIAL NOTE 2 ON PAGE 5.

② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE. SEE SPECIAL NOTE 3 ON PAGE 5.

③ CENTER GATE A (2 REQD). SEE THE DETAIL ON PAGE 28. SEE SPECIAL NOTES 4 AND 5 ON PAGE 5.

④ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 69-1/2") (18 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

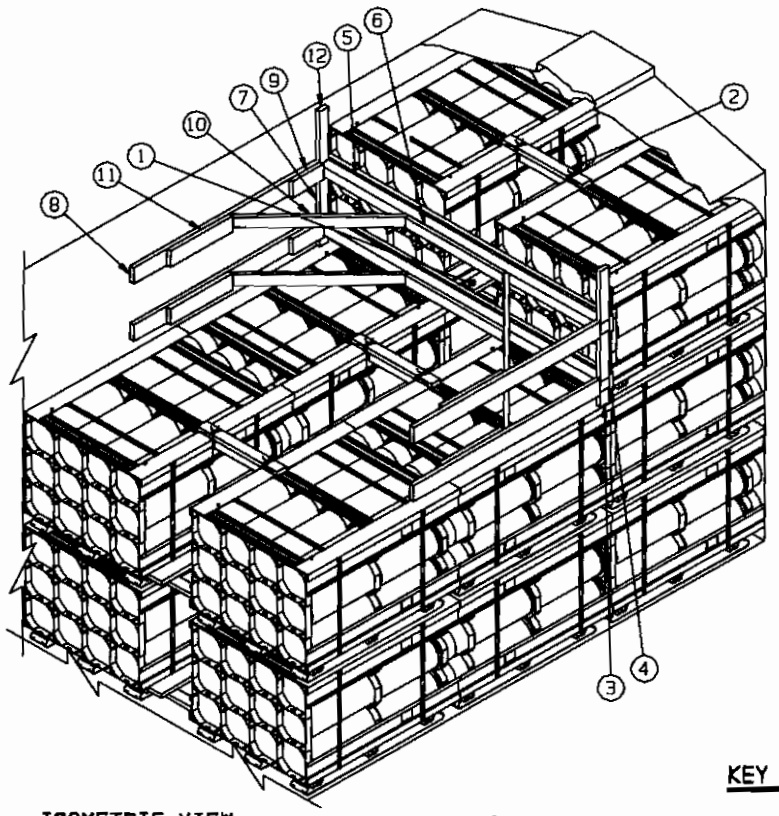
⑤ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1" IN LENGTH (3 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

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

⑦ DOORWAY PROTECTION (2 REQD). SEE THE DETAIL ON PAGE 29. NAIL TO THE DOOR POSTS W/12d NAILS. SEE SPECIAL NOTE 8 ON PAGE 5.

54-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

PROJECT GM 875-93



IF THE CAR HAS A BOWED END WALL, A BULKHEAD MUST BE INSTALLED. SEE THE "END-OF-CAR BULKHEAD" DETAIL ON PAGE 30.

ISOMETRIC VIEW

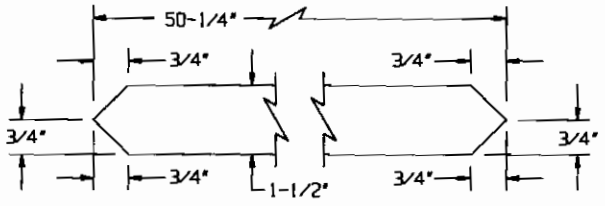
SPECIAL NOTES:

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

2. PARTIAL-LAYER BRACING MAY BE APPLIED FOR ANY OF THE CONVENTIONAL CARLOADS DEPICTED HEREIN. IF ONLY ONE PALLET UNIT IS TO BE SHIPPED IN A PARTIAL THIRD LAYER, IT WILL BE POSITIONED DIRECTLY ABOVE THE LOWER PALLET UNIT. FOR A PARTIAL FIRST LAYER POSITION THE PALLET UNIT IN ONE CORNER. PROVIDE LATERAL BRACING BY APPLYING VERTICALLY POSITIONED DOUBLED 2" X 4" X 40" LONG PIECES TO THE CAR ENDWALL AND TO THE K-BRACE. NAIL TO THE CAR ENDWALL W/6-12d NAILS EACH LAYER. THE FIRST PIECE APPLIED TO THE K-BRACE WILL BE NAILED TO PIECE MARKED ④ W/3-12d NAILS EACH JOINT. LAMINATE THE SECOND PIECE W/6-12d NAILS.

3. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN WOOD-LINED CARS FOR THE SECUREMENT OF A PARTIAL THIRD, SECOND OR FIRST TIER. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 8,000 LBS (FIVE PALLET UNITS). IF IT IS NECESSARY TO BRACE MORE THAN FIVE PALLET UNITS, REFER TO THE DETAILS ON PAGES 15, 16 OR 17 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

4. 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.



DIAGONAL BRACE

KEY NUMBERS

① ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS. SEE SPECIAL NOTE 2 AT LEFT.

② TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE. NOTE THAT THE QUANTITY IS ONLY FOR THE PARTIAL-TIER UNITS.

③ SUPPORT CLEAT, 2" X 4" X 5" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO ALIGN PIECES MARKED ④ AND ⑤ WITH THE BOTTOM OF THE LOWEST CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

④ HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ⑤, W/1-12d NAIL EVERY 6"

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 4 AT LEFT.

⑦ SPACER CLEAT, 2" X 4" X 16" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d 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

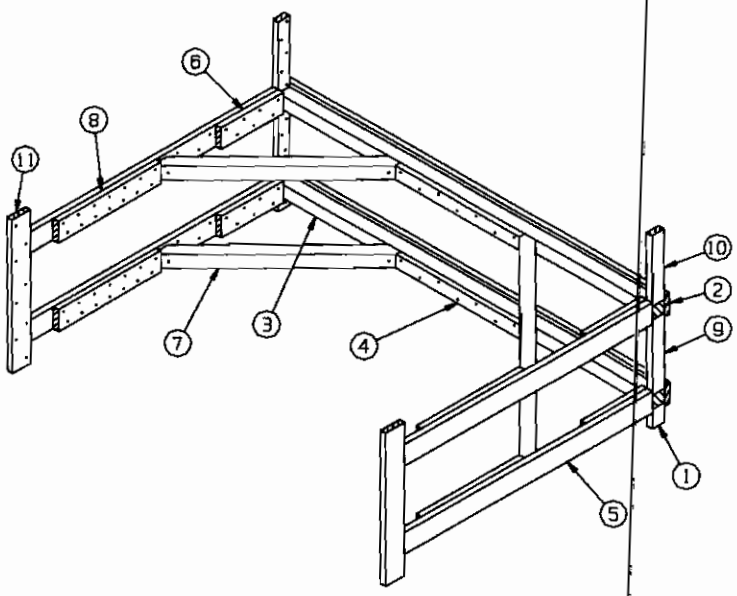
SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS (NINE PALLET UNITS). IF IT IS NECESSARY TO BLOCK MORE THAN NINE PALLET UNITS, REFER TO THE DETAILS ON PAGES 16 AND 17 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF LESS THAN NINE PALLET UNITS ARE TO BE SHIPPED IN THE PARTIAL LAYER, THE TYPE "A" K-BRACE DEPICTED ON PAGE 14 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, ⑤, 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 14 FOR A TYPICAL INSTALLATION OF A K-BRACE.



ISOMETRIC VIEW

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 5" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO ALIGN PIECES MARKED ② AND ③ WITH THE BOTTOM OF THE LOWEST CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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".

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.

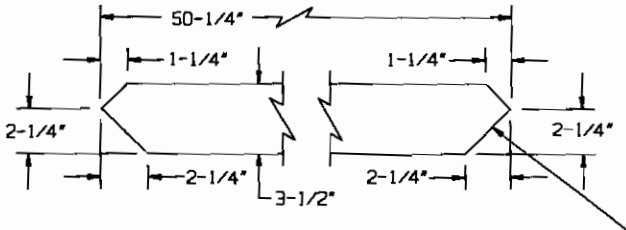
⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL BELOW FOR BEVEL-CUTS REQUIRED. TOENAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.

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 16" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

⑩ HOLD-DOWN CLEAT, 2" X 6" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

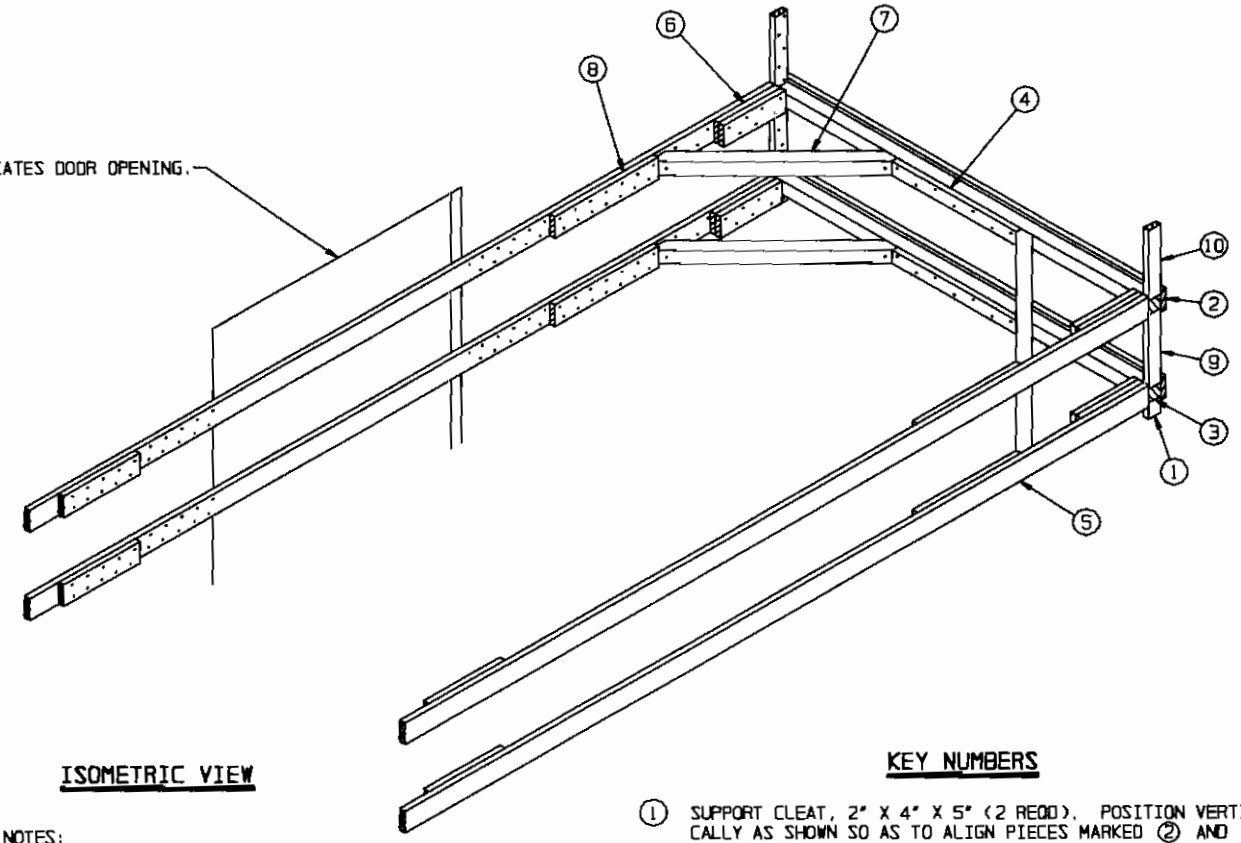
⑪ VERTICAL BACK-UP CLEAT, 2" X 6" X 39" (2 REQD). NAIL TO THE CAR SIDEWALL W/8-12d NAILS.



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

TYPE "B" K-BRACE



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 20,000 POUNDS (12 PALLET UNITS). IF IT IS NECESSARY TO BLOCK MORE THAN 12 PALLET UNITS, REFER TO THE DETAIL ON PAGE 17 FOR SELECTION OF THE APPLICABLY SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE. IF IT IS NECESSARY TO BLOCK LESS THAN 10 PALLET UNITS, REFER TO THE DETAILS ON PAGES 14 AND 15.

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

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

4. CAUTION: A TYPE "C" K-BRACE MUST BE USED IN BOTH ENDS OF THE CAR; THE BRACE IS NOT DESIGNED FOR USE IN ONLY ONE END. NOTE THAT EXCEPT FOR PIECES MARKED ⑤, THE QUANTITIES SPECIFIED ARE APPLICABLE ONLY FOR THE BRACE IN ONE END.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 5" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO ALIGN PIECES MARKED ② AND ③ WITH THE BOTTOM OF THE LOWEST CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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".

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" 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.

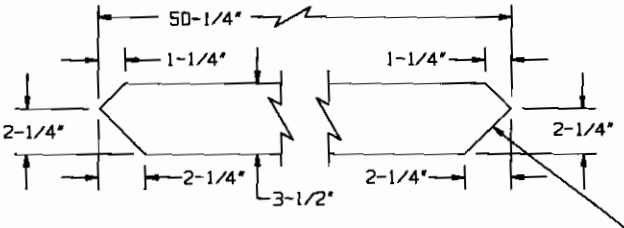
⑥ POCKET CLEAT, 2" X 6" X 18" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

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 16" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

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

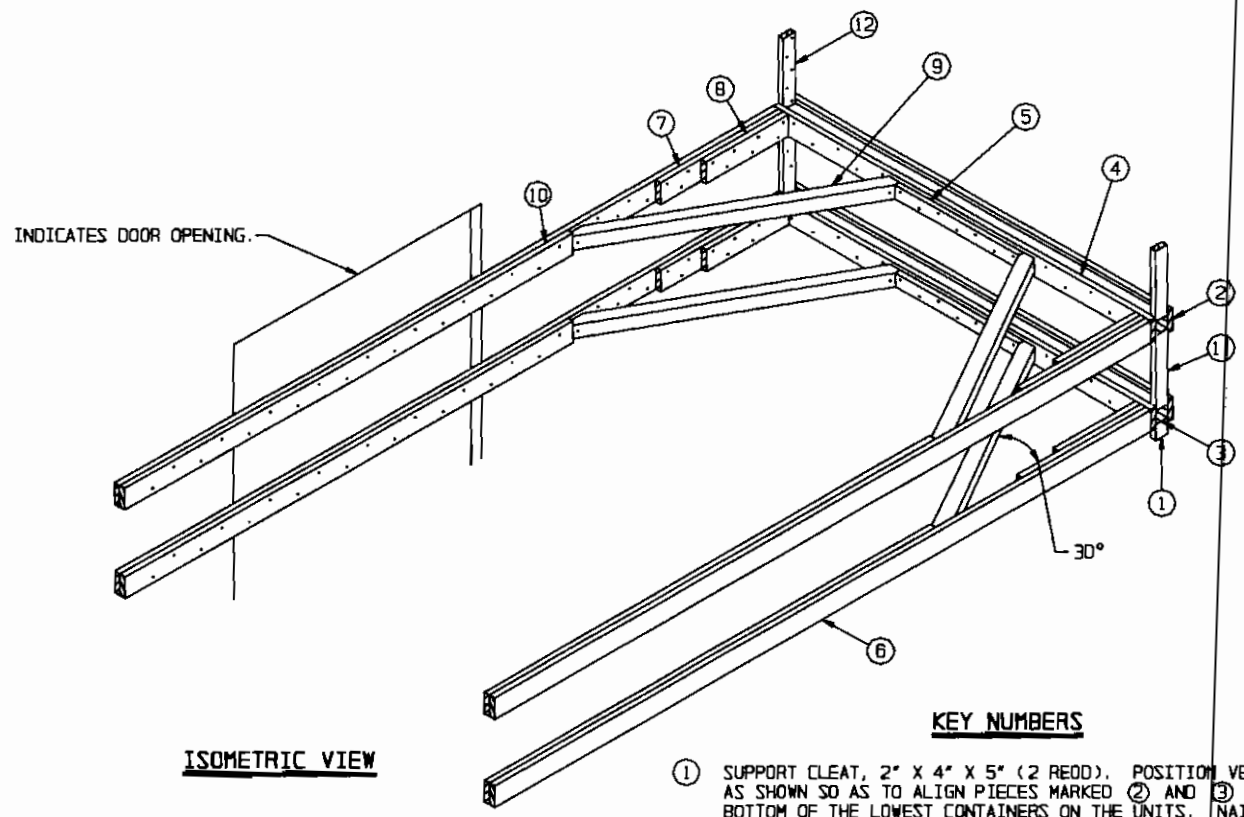


DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

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

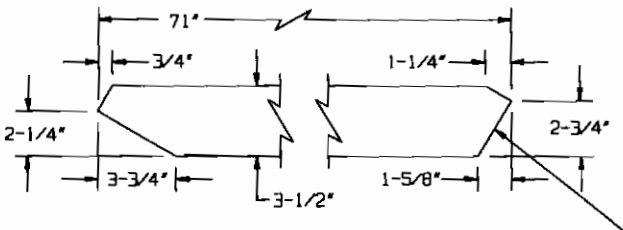
SPECIAL NOTES:

1. THE TYPE "D" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 25,000 POUNDS (16 PALLET UNITS). IF IT IS NECESSARY TO BRACE FEWER THAN 13 PALLET UNITS, REFER TO THE DETAILS ON PAGES 14, 15 AND 16, FOR SELECTION OF THE APPLICABLE SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE BRACE.

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 QUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑦, ⑧, ⑪, AND ⑫ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑨ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑥ MUST BE DOUBLED. LAMINATE THE SECOND PIECE TO THE FIRST W/40-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 70-1/4" LONG IN LIEU OF 71" LONG WHEN PIECE MARKED ⑥ IS DOUBLED.

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

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



DIAGONAL BRACE

SEE SPECIAL NOTE 2 ABOVE.

KEY NUMBERS

① SUPPORT CLEAT, 2" X 4" X 5" (2 REQD). POSITION VERTICALLY AS SHOWN SO AS TO ALIGN PIECES MARKED ② AND ③ WITH THE BOTTOM OF THE LOWEST CONTAINERS ON THE UNITS. NAIL TO THE CAR SIDEWALL W/3-12d NAILS.

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".

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 OPENINGS 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.

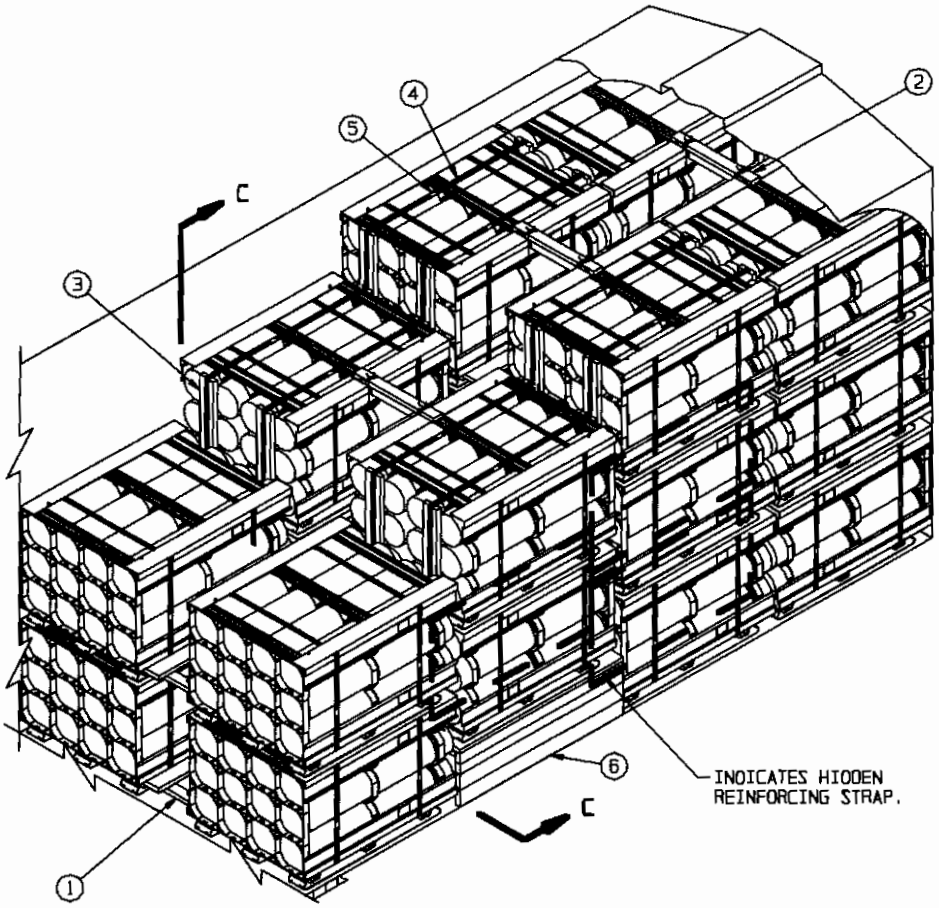
⑩ BACK-UP CLEAT, 2" X 6" BY CUT TO FIT (4 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND TO CONTACT THE DIAGONAL BRACE, PIECE MARKED ⑨, IN THE OPPOSITE END OF THE CAR. NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑥, W/18-16d NAILS. CLINCH THOSE NAILS WHICH PROTRUDE THRU THE HORIZONTAL WALL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

⑪ SPACER CLEAT, 2" X 4" X 16" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

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

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

TYPE "D" K-BRACE



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

ISOMETRIC VIEW

KEY NUMBERS

(1) ANTI-SWAY BRACE (10 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS

(2) TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE.

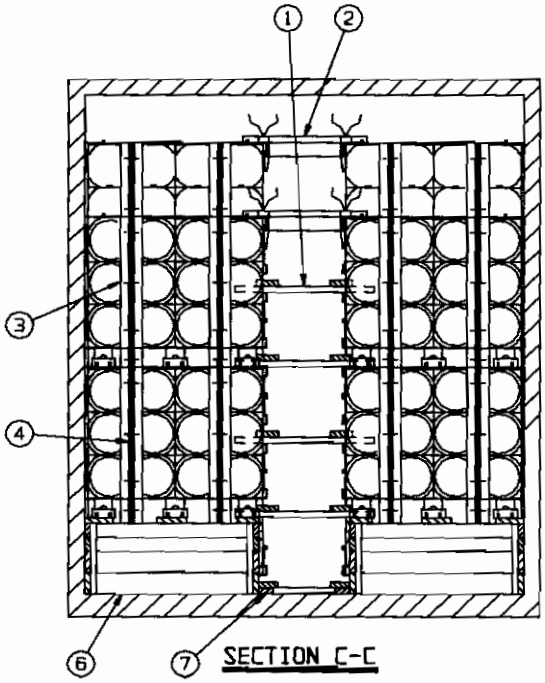
(3) STRAPPING BOARD, 2" X 6" X 33" (40 REQD/4 PER PALLET UNIT). POSITION SO AS TO BE CENTERED ON THE JOINTS BETWEEN THE OUTER TWO STACKS OF CONTAINERS.

(4) REINFORCING STRAP, 1-1/4" X .035" OR .031" X 16'-6" LONG STEEL STRAPPING (20 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS, PIECE MARKED (3). SECURE TO A STRAPPING BOARD W/3 STAPLES.

(5) SEAL FOR 1-1/4" STRAPPING (20 REQD). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

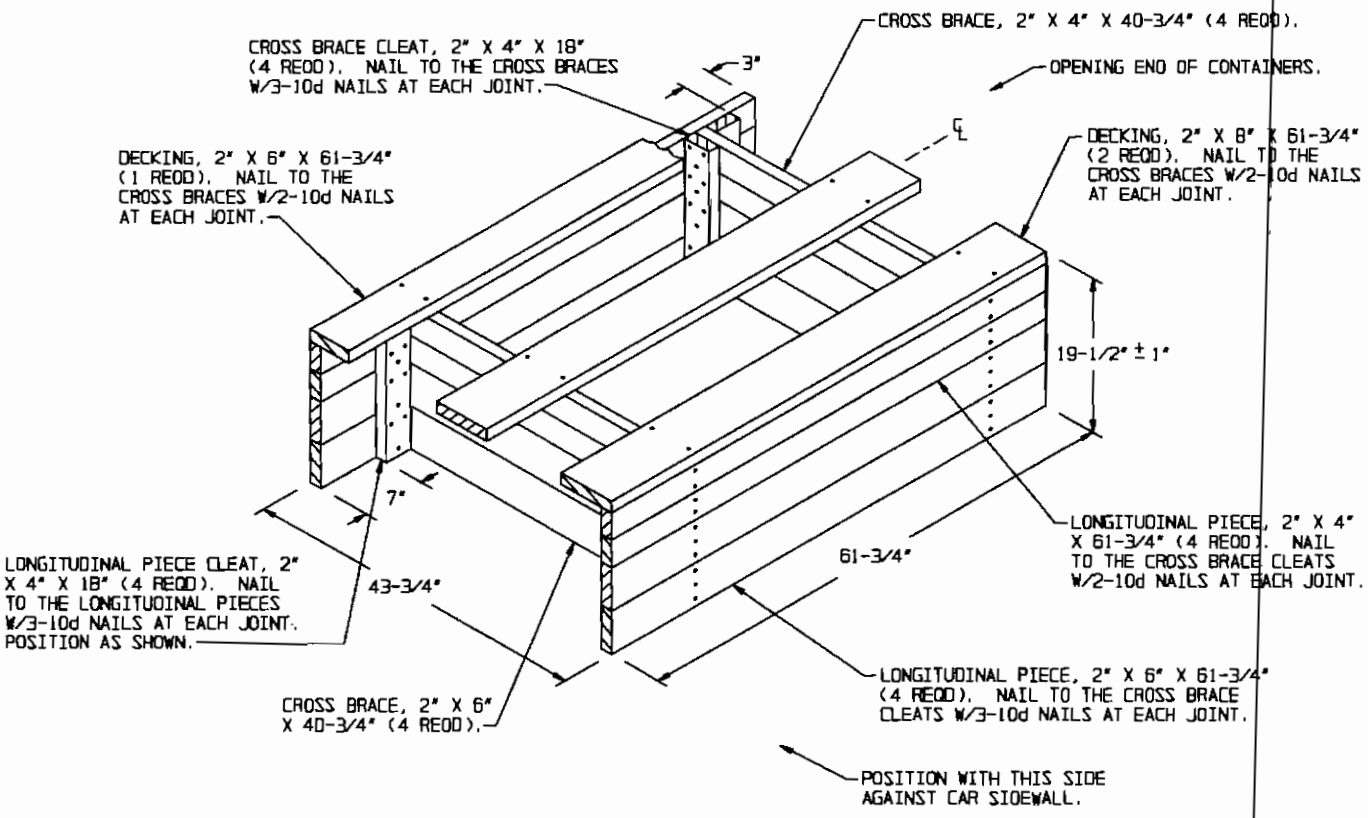
(6) RISER ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 19.

(7) RISER STOP PIECE, 2" X 4" X 48" (2 REQD). POSITION AGAINST A RISER ASSEMBLY AND NAIL TO THE CAR FLOOR W/4-16d NAILS.



SECTION C-C

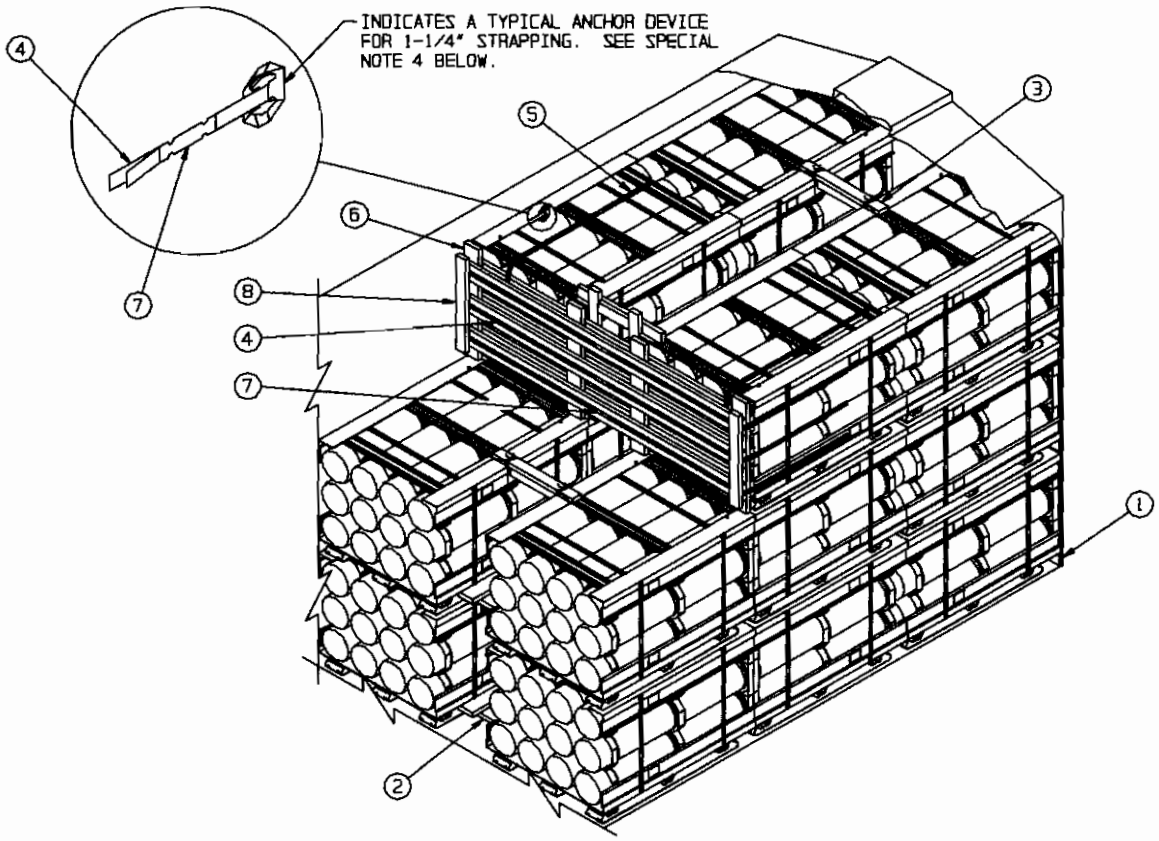
TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD LINED BOXCAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE RISER METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR PALLET UNITS POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR.
3. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO PAGE 4 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE ALL-METAL BOXCAR 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 BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS POSITIONED WITH THE CONTAINERS LENGTHWISE IN THE CAR, AS SHOWN IN THE VIEW ABOVE.

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

4. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST 36" TOWARD THE CAR ENDWALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE. IF THE ANCHOR DEVICES IN THE CAR BEING LOADED ARE NOT LOCATED NEAR ENOUGH TO THE END OF THE CAR SO THAT THE 36" REQUIREMENT CAN BE SATISFIED, IT WILL BE NECESSARY TO INSTALL GATES AND STRUTS AT THE END OF THE CAR. THESE GATES WILL BE 1-HIGH GATES FOR THE ITEM BEING LOADED AND WILL BE INSTALLED SIMILAR TO THE STRUTTED GATE METHOD SHOWN ON PAGE 13 FOR AN EVEN QUANTITY OF UNITS, OR THE PALLET UNIT OMITTED PROCEDURES ON PAGE 12 FOR A SINGLE UNIT.

5. THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE ON PAGE 21 FOR THE LOCATION OF THE STRAPPING BOARDS IN RELATION TO THE LOCATION OF THE HORIZONTAL PIECES. THE STRAPPING BOARDS SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY, TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

KEY NUMBERS

(1) END-WALL LINING (1 REQD). SEE THE DETAIL ON PAGE 30. SEE GENERAL NOTE "O" ON PAGE 2. NOTE THAT IF AN END-OF-CAR BULKHEAD, AS DETAILED ON PAGE 30 IS USED, THE END-WALL LINING IS NOT REQUIRED.

(2) ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

(3) TOP-OF-LOAD ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE.

(4) BULKHEAD STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (3 REQD). INSTALL FROM TWO EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 21 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 3 AND 4 AT LEFT.

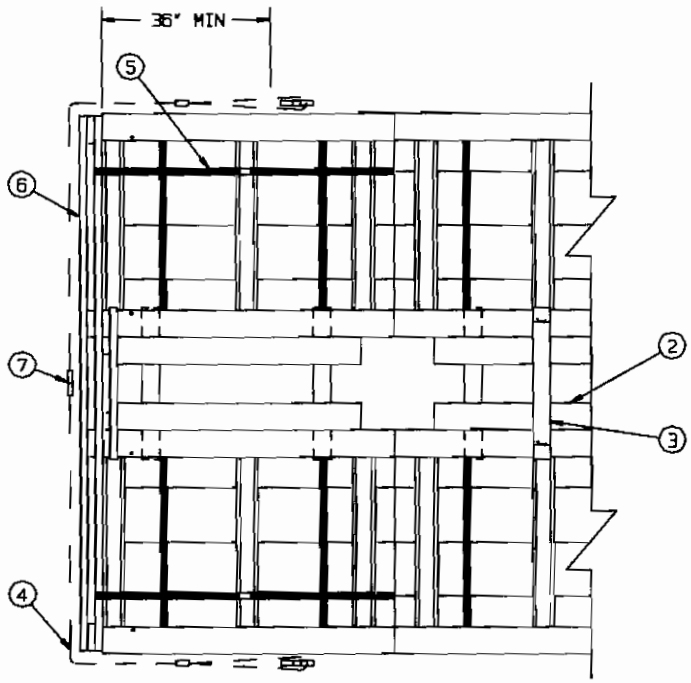
(5) BUNDLING STRAP, 1-1/4" X .031" OR .035" X 16'-6" LONG STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT AND THE HORIZONTAL PIECES OF THE BULKHEAD GATE. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED (4).

(6) BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 21. SEE SPECIAL NOTES 3 AND 5 AT LEFT.

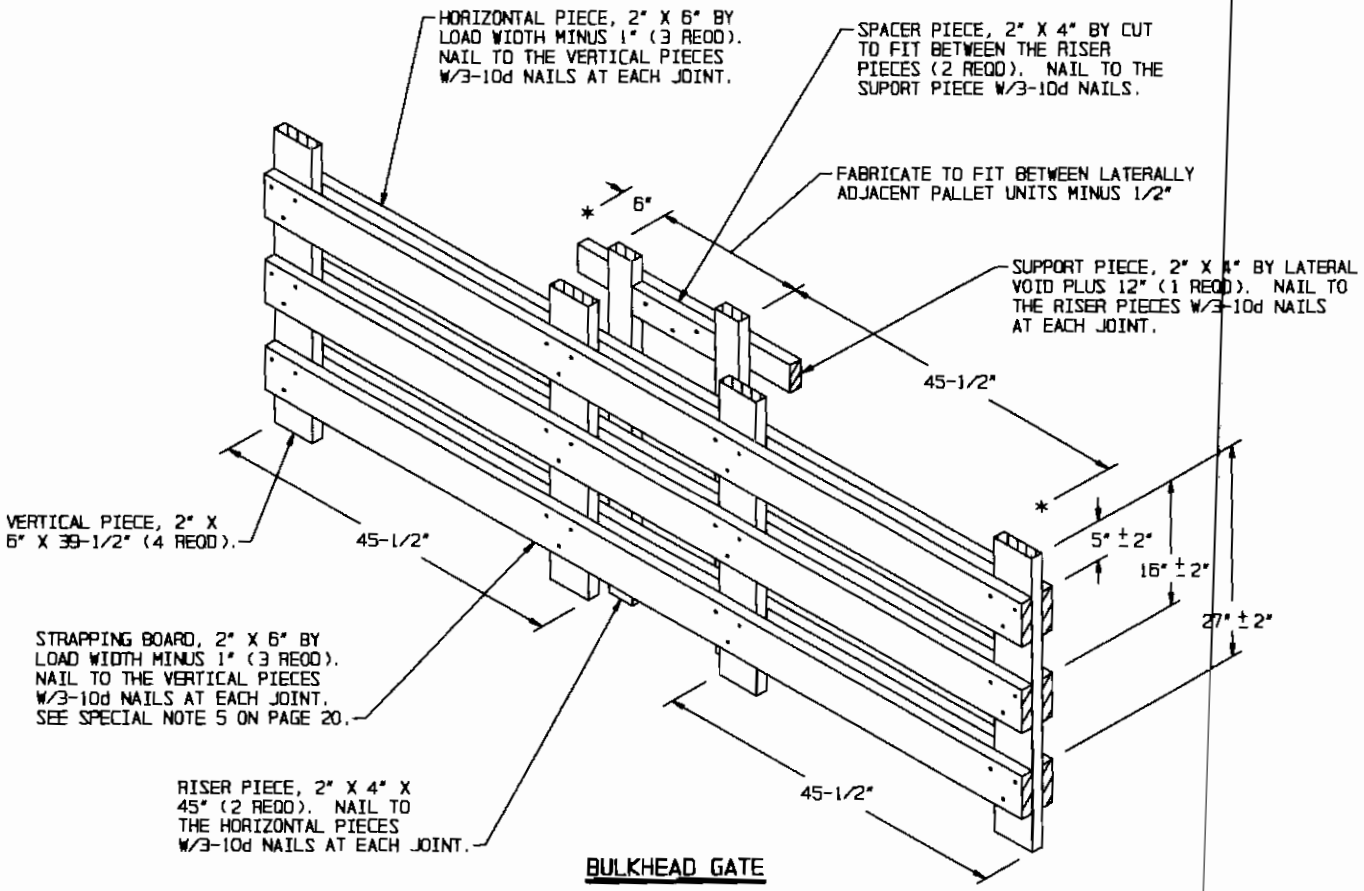
(7) SEAL FOR 1-1/4" STEEL STRAPPING (14 REQD, 4 PER BULKHEAD STRAP, PIECE MARKED (4), AND 1 PER BUNDLING STRAP, PIECE MARKED (5)). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "N" ON PAGE 2.

(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.

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

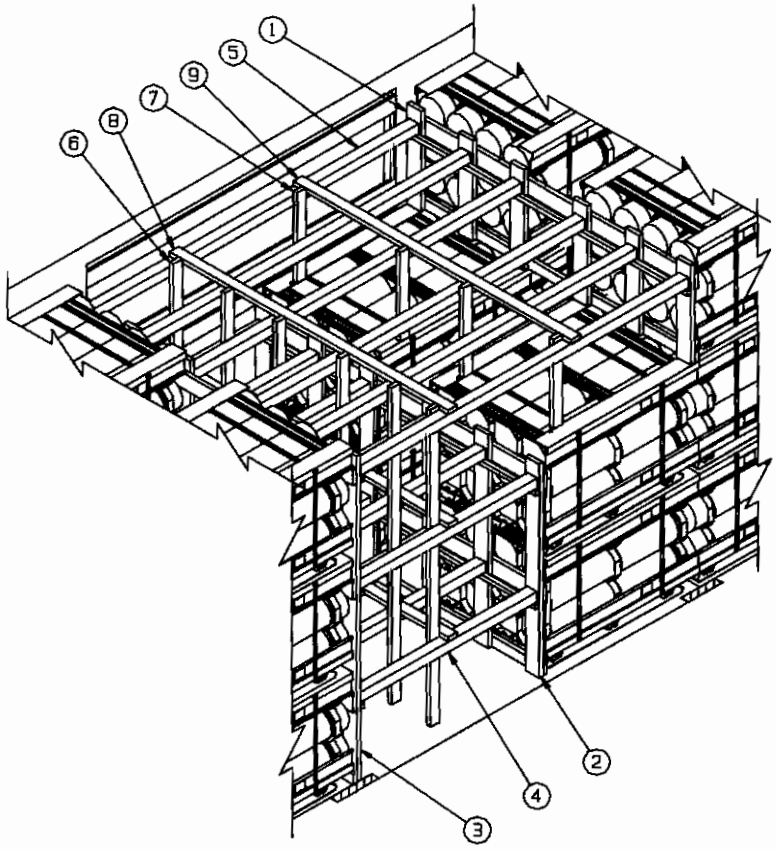


STRAP APPLICATION PLAN VIEW



BULKHEAD GATE

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



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. CARS OF OTHER WIDTHS AND CARS OF OTHER LENGTHS CAN ALSO BE USED.

2. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO PAGE 4 FOR LATERAL BRACING AND DOORWAY PROTECTION REQUIREMENTS.

KEY NUMBERS

① CENTER GATE FOR 1-HIGH (1 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 28.

② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 28.

③ CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 28.

④ STRUT, 4" X 4" BY CUT-TO-FIT (12 REQD). POSITION BETWEEN PIECES MARKED ② AND ③ IN THE FIRST AND SECOND LAYERS AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

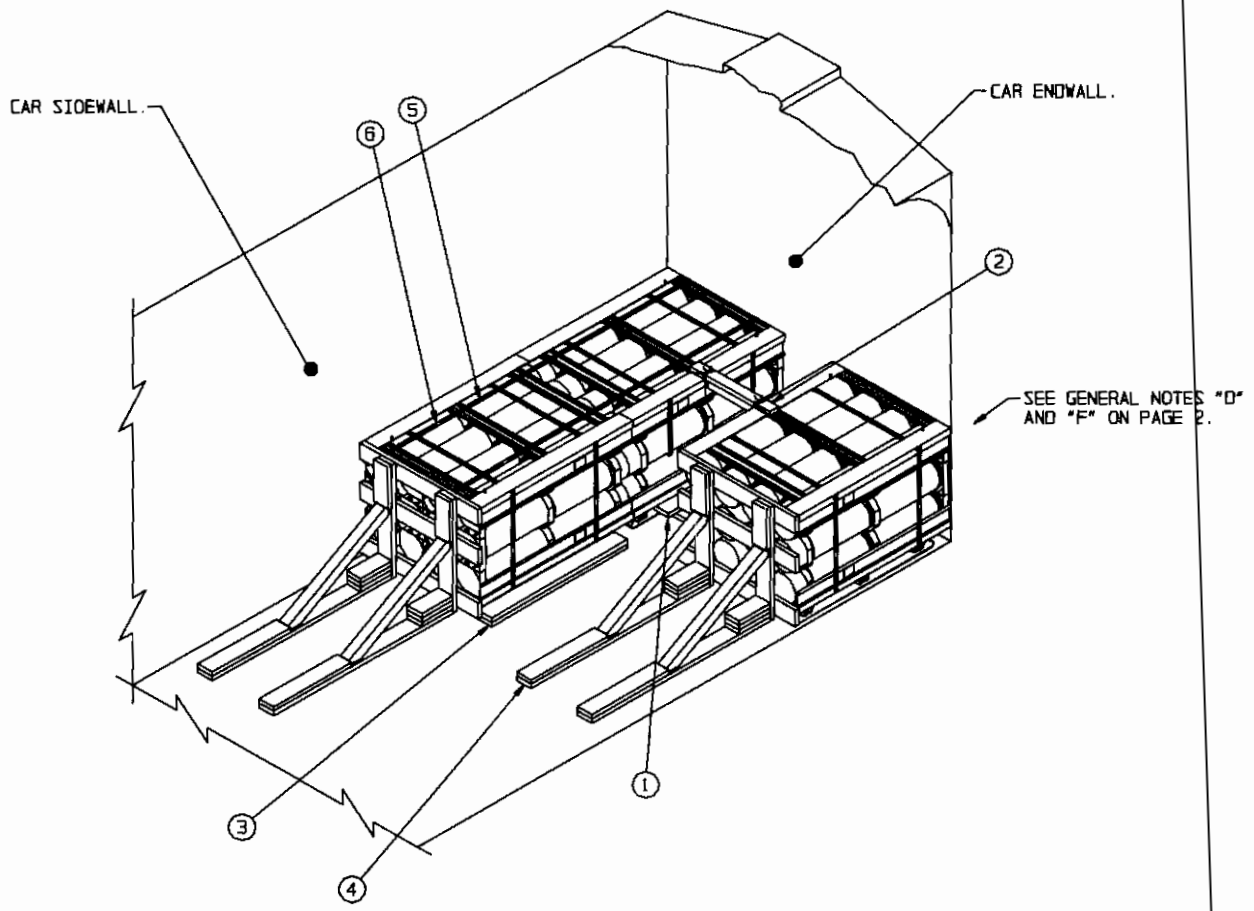
⑤ STRUT, 4" X 4" BY CUT-TO-FIT (6 REQD). POSITION BETWEEN PIECES MARKED ① AND ③ IN THE THIRD LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 3.

⑥ VERTICAL STRUT BRACING, 2" X 4" X 9'-0" (6 REQD). NAIL TO THE STRUTS MARKED ④ AND ⑤ W/3-10d NAILS AT EACH JOINT.

⑦ VERTICAL STRUT BRACING, 2" X 4" X 30" (4 REQD). NAIL TO THE STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT.

⑧ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1" IN LENGTH (3 REQD). NAIL TO THE STRUTS MARKED ④ AND/OR ⑤ W/3-10d NAILS AT EACH JOINT.

⑨ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1" IN LENGTH (1 REQD). NAIL TO THE STRUTS MARKED ⑤ W/3-10d NAILS AT EACH JOINT.



ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.

2. 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 3 ARE NOT EXCEEDED.

3. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS (FIVE PALLET UNITS). AN ADDITIONAL "KNEE" MAY BE ADDED IF IT IS NECESSARY TO BRACE 12,750 POUNDS (EIGHT PALLET UNITS).

KEY NUMBERS

(1) ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 27. INSTALL BETWEEN LATERALLY ADJACENT ROWS OF PALLET UNITS.

(2) TOP-OF-LOAD ANTI-SWAY BRACE (1 REQD). SEE THE DETAIL ON PAGE 31. WIRE TIE TO THE TOP PALLET ADAPTER OF THE PALLET UNITS WITH TWO 24" PIECES OF NO. 14 GAGE WIRE AS SHOWN. SECURE WIRE TO THE TOP-OF-LOAD ANTI-SWAY BRACE WITH A STAPLE.

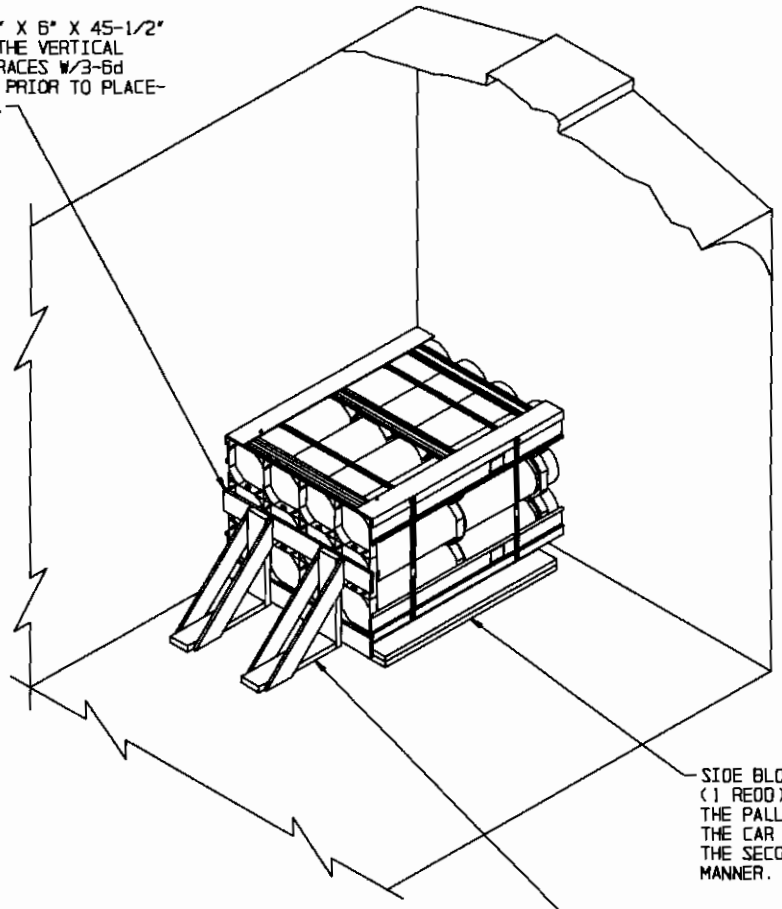
(3) SIDE BLOCKING, 2" X 6" X 53" (DOUBLED) (1 REQD). POSITION AS SHOWN, AGAINST THE PALLET. NAIL THE FIRST PIECE TO THE CAR FLOOR W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

(4) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 23.

(5) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 26'-3" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE TWO LONGITUDINALLY ADJACENT PALLET UNITS.

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

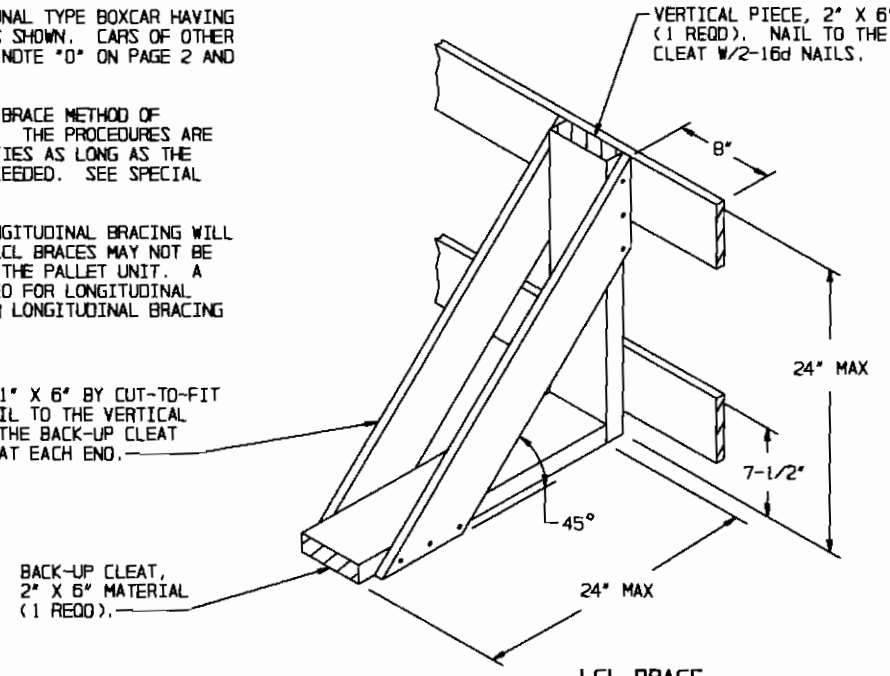
TYPICAL LCL LOAD USING KNEE BRACE METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

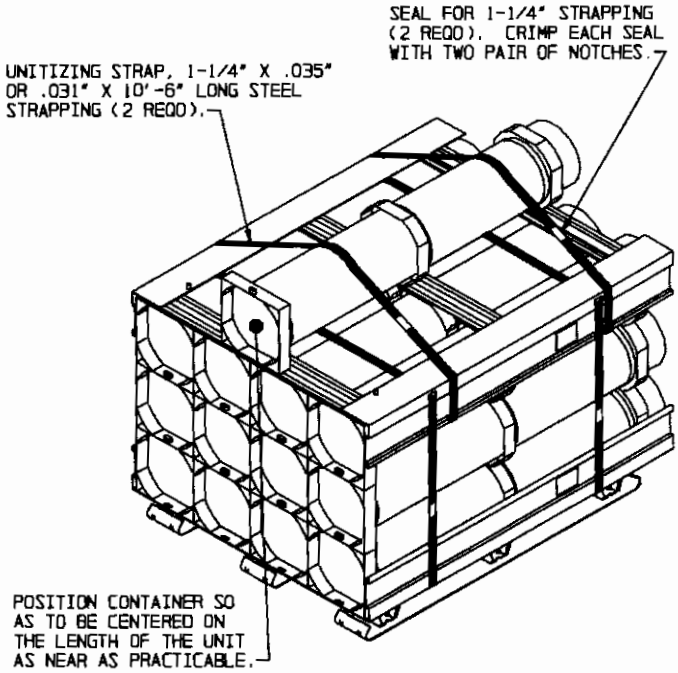
SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "O" ON PAGE 2 AND GENERAL NOTE "T" ON PAGE 3.
2. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 3.
3. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. LCL BRACES MAY NOT BE APPLIED TO THE 58-15/16" SIDE OF THE PALLET UNIT. A MINIMUM OF TWO BRACES MUST BE USED FOR LONGITUDINAL BRACING. BRACES MAY BE ADDED FOR LONGITUDINAL BRACING AS NECESSARY.



LCL BRACE

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



SECUREMENT OF ONE CONTAINER

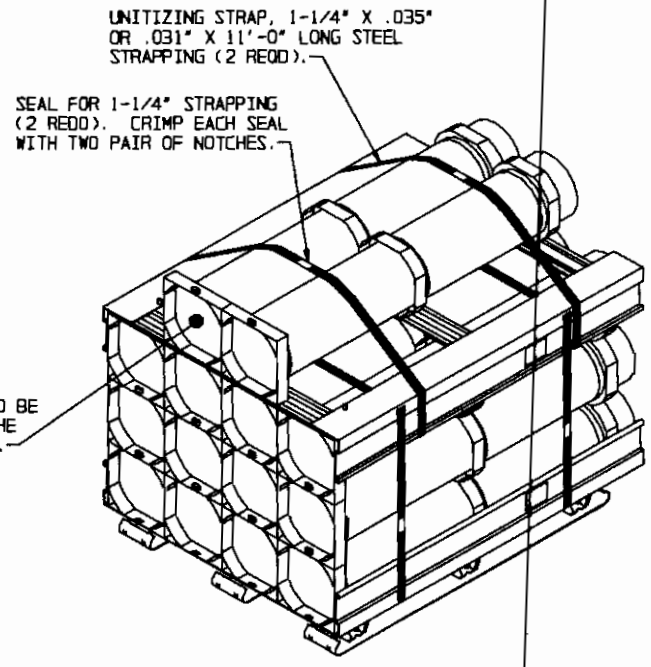
SPECIAL NOTES:

1. SHIPMENTS OF PALLET UNITS OF TOW MISSILES SHOULD CONSIST OF FULL-HEIGHT 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 ANY QUANTITY OF CONTAINERS BETWEEN ONE AND SEVEN.

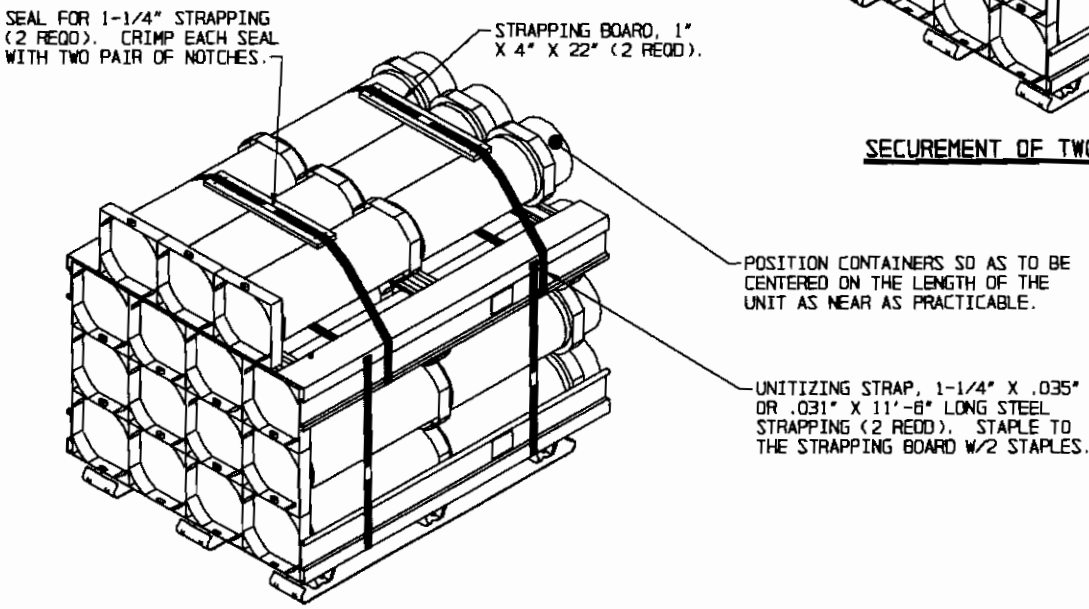
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. CAUTION: A LOAD CONTAINING LEFTOVER 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 PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SECUREMENT OF LEFTOVER CONTAINERS FOR SHIPMENT. THE PROCEDURES ARE ALSO APPLICABLE FOR SECUREMENT OF LEFT-OVER CONTAINERS TO PARTIAL UNITS FOR SHIPMENT ON TOP OF A LOAD. SEE SPECIAL NOTE 5 ON PAGE 26 FOR LIMITATIONS. IN ADDITION, THE PROCEDURES ARE APPLICABLE FOR SECURING LEFTOVER CONTAINERS TO A PARTIAL UNIT FOR SHIPMENT WITHIN A TIER.

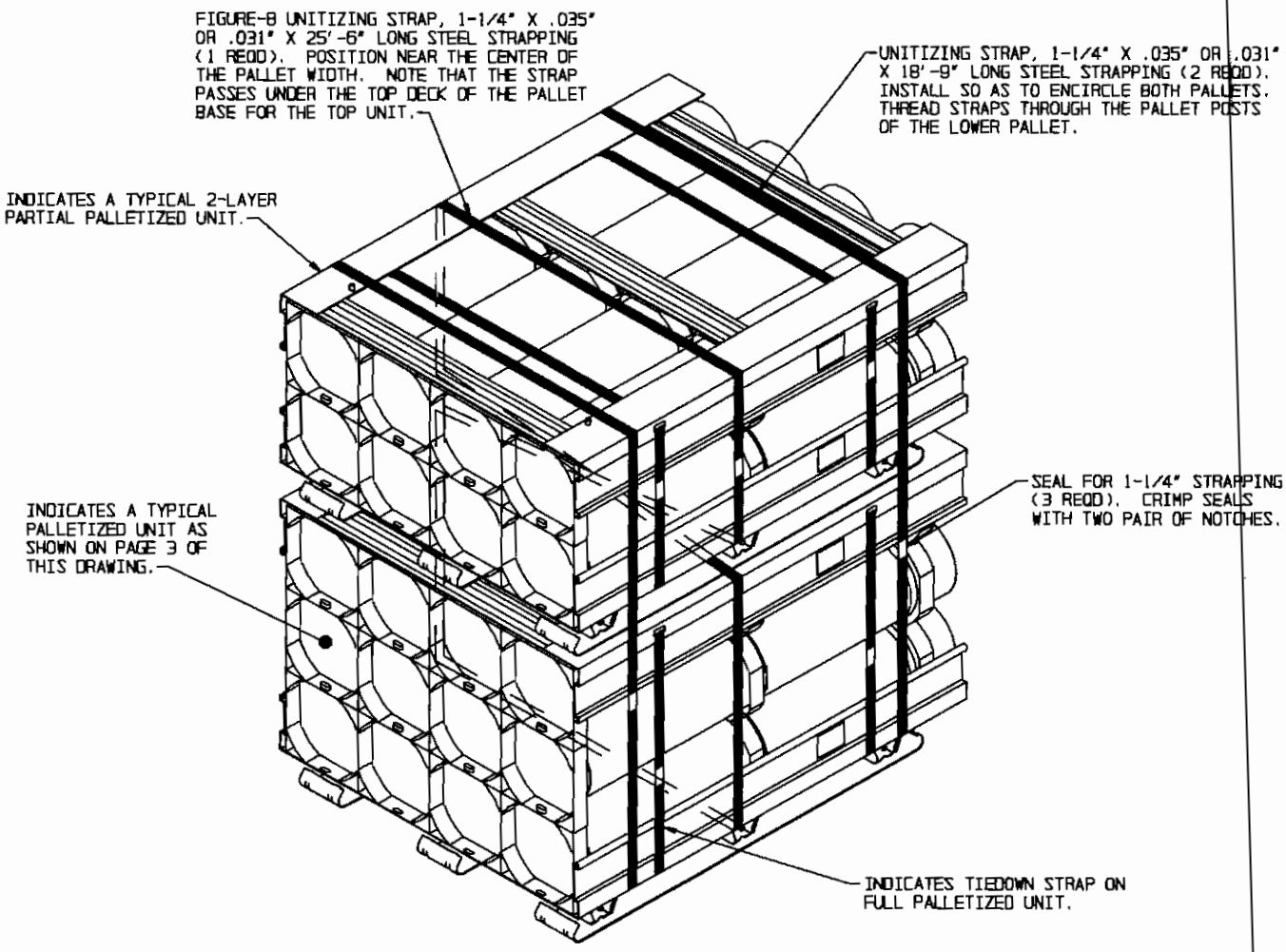
4. THE PROCEDURES DEPICTED ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFTOVER CONTAINERS IN ANY OF THE LOADS DEPICTED HEREIN.



SECUREMENT OF TWO CONTAINERS



SECUREMENT OF THREE CONTAINERS



SECUREMENT OF A PARTIAL PALLET UNIT ON TOP OF A FULL PALLET UNIT

SPECIAL NOTES:

1. SHIPMENTS OF PALLET UNITS OF AMMUNITION AND/OR COMPONENTS 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 THESE PARTIAL UNITS.

2. A PARTIAL PALLET UNIT MUST CONSIST OF TWO FULL LAYERS OF CONTAINERS IN ORDER FOR THE TOP AND BOTTOM ADAPTER ASSEMBLIES TO PROPERLY FUNCTION. A LAYER MAY PARTIALLY CONSIST OF EMPTY CONTAINERS, THOUGH, AS DESCRIBED IN THE GENERAL NOTES OF AMC DRAWING 19-48-5268-GM20T02.

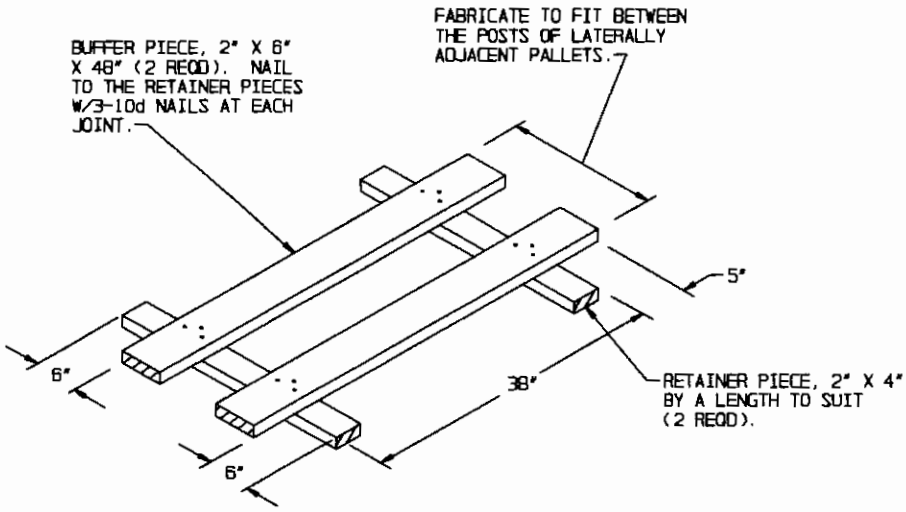
3. A LESS THAN FULL HEIGHT PALLET UNIT CAN BE SHIPPED BY POSITIONING IT EITHER ON THE TOP TIER OF A LOAD OR ON THE TOP OF THE LOWER PORTION OF A LOAD WHEN THE LOAD CONTAINS A PARTIAL TIER IN THE END OF THE CAR. THE PARTIAL UNIT WILL BE STRAPPED TO THE PALLETIZED UNIT DIRECTLY BELOW WITH TWO VERTICAL UNITIZING STRAPS. SEE THE "SECUREMENT OF PARTIAL UNIT ON TOP" VIEW ABOVE FOR GUIDANCE. PLACEMENT WITHIN THE LENGTH OF THE CAR IS OPTIONAL, ALTHOUGH NEAR THE DOORWAY AREA IS RECOMMENDED AS LONG AS IT IS NOT WITHIN A LOAD UNIT WHICH IS TO BE ENCIRCLED WITH DOORWAY PROTECTION STRAPS.

(CONTINUED AT RIGHT)

(SPECIAL NOTES CONTINUED)

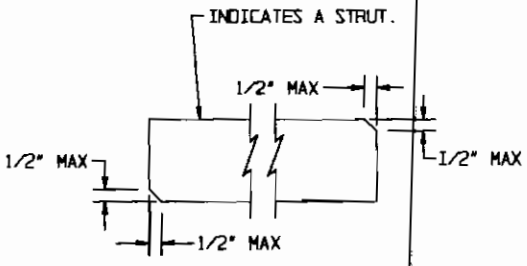
4. LEFTOVER CONTAINERS, IN AN AMOUNT WHICH IS LESS THAN THE QUANTITY IN ONE LAYER OF A UNIT, CAN BE SECURED TO THE TOP OF A PARTIAL UNIT FOR SECUREMENT ON TOP OF A LOAD. THE LEFTOVER CONTAINERS MUST BE SECURED TO THE PARTIAL UNIT WITH THEIR OWN STRAPPING, SEPARATE FROM THE STRAPS FOR THE PARTIAL UNIT. SEE THE DETAILS ON PAGE 25 FOR GUIDANCE IN STRAP APPLICATION.

5. THE "SHIPMENT OF PARTIAL UNITS" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS AS WELL AS FOR LOADS IN CONVENTIONAL BOXCARS. PARTIAL UNITS ON TOP OF A TIER MUST BE BLOCKED AND BRACED IN ACCORDANCE WITH THE PROCEDURES DEPICTED WITHIN THAT PORTION OF THIS DRAWING.



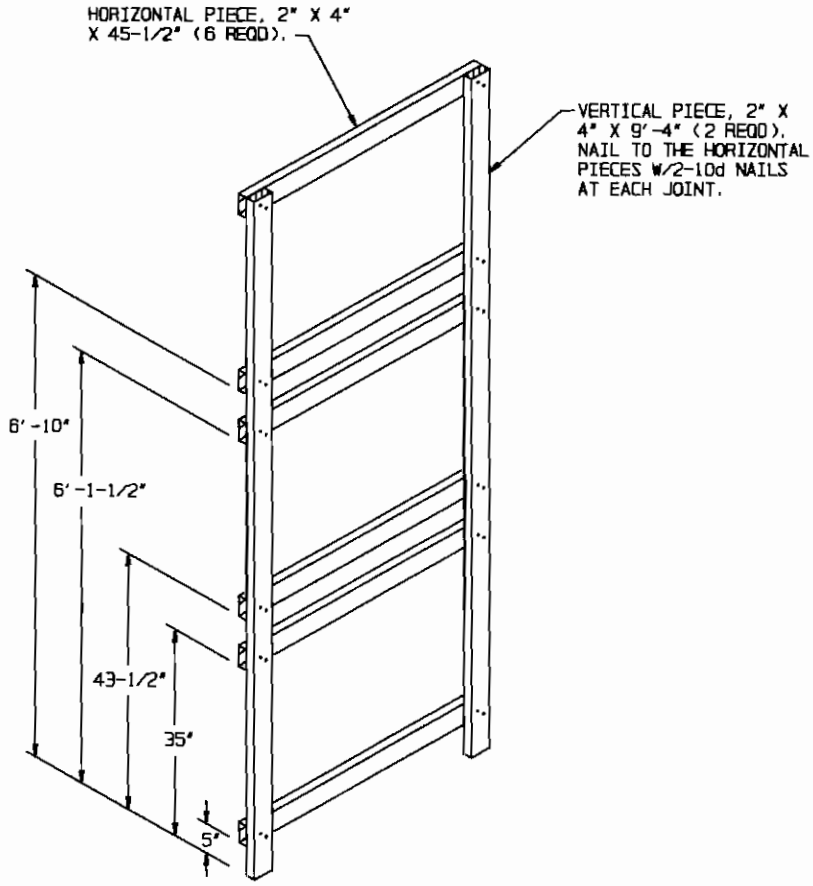
ANTI-SWAY BRACE

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



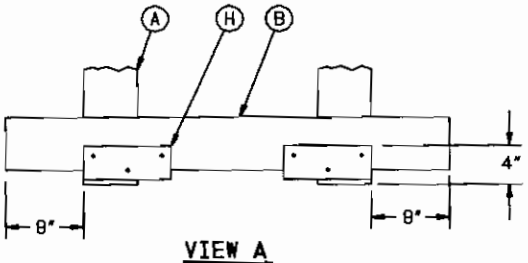
BEVEL-CUT

IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT FIT.

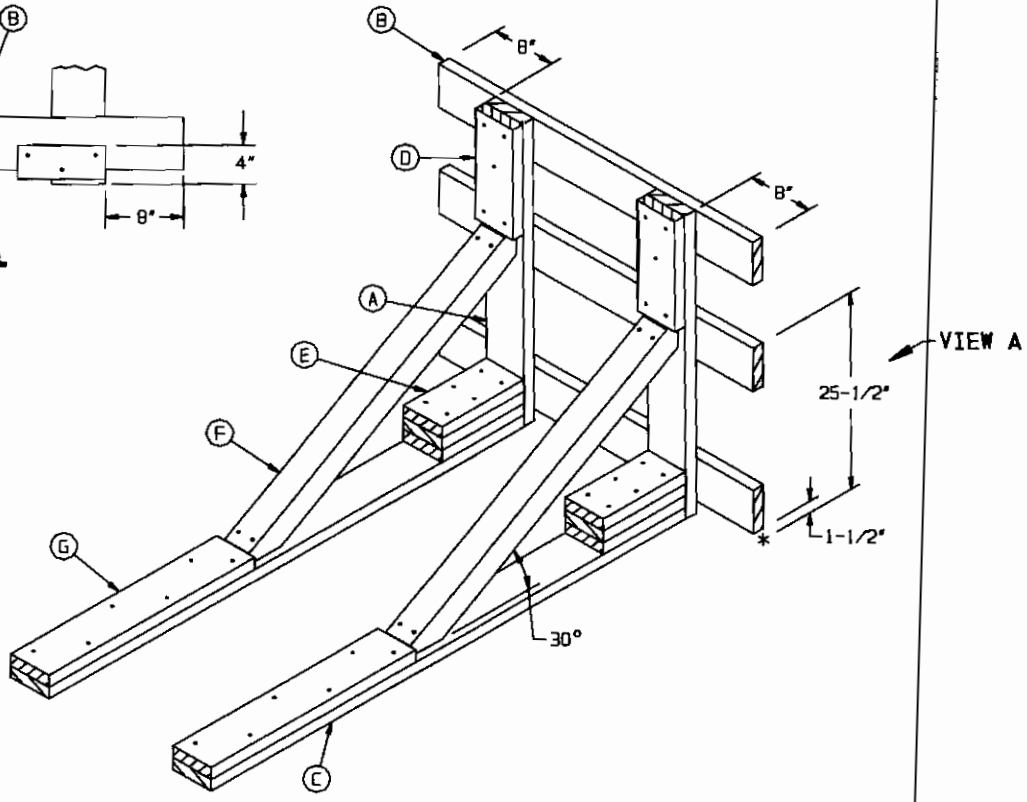


CENTER FILL ASSEMBLY

NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES, SHORTEN THE VERTICAL APPROPRIATELY.



VIEW A



KNEE BRACE ASSEMBLY

KEY LETTERS

(A) VERTICAL PIECE, 2" X 6" X 39-1/2" (2 REQD). NAIL TO A FLOOR CLEAT, PIECE MARKED (C), W/3-16d NAILS.

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

(C) FLOOR CLEAT, 2" X 6" X 69-3/4" (2 REQD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "T" ON PAGE 3.

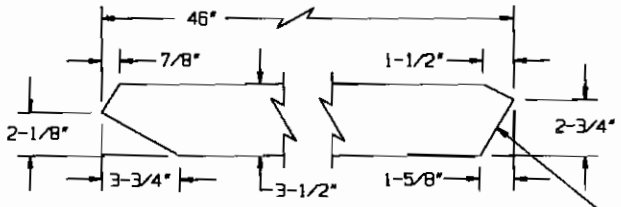
(D) HOLD-DOWN CLEAT, 2" X 6" X 14" (2 REQD). NAIL TO A VERTICAL PIECE, PIECE MARKED (A), W/5-10d NAILS.

(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" X 46" (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.

(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, 2" X 4" X 9" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO A HORIZONTAL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "VIEW A" DETAIL ABOVE FOR LOCATION DIMENSIONS.

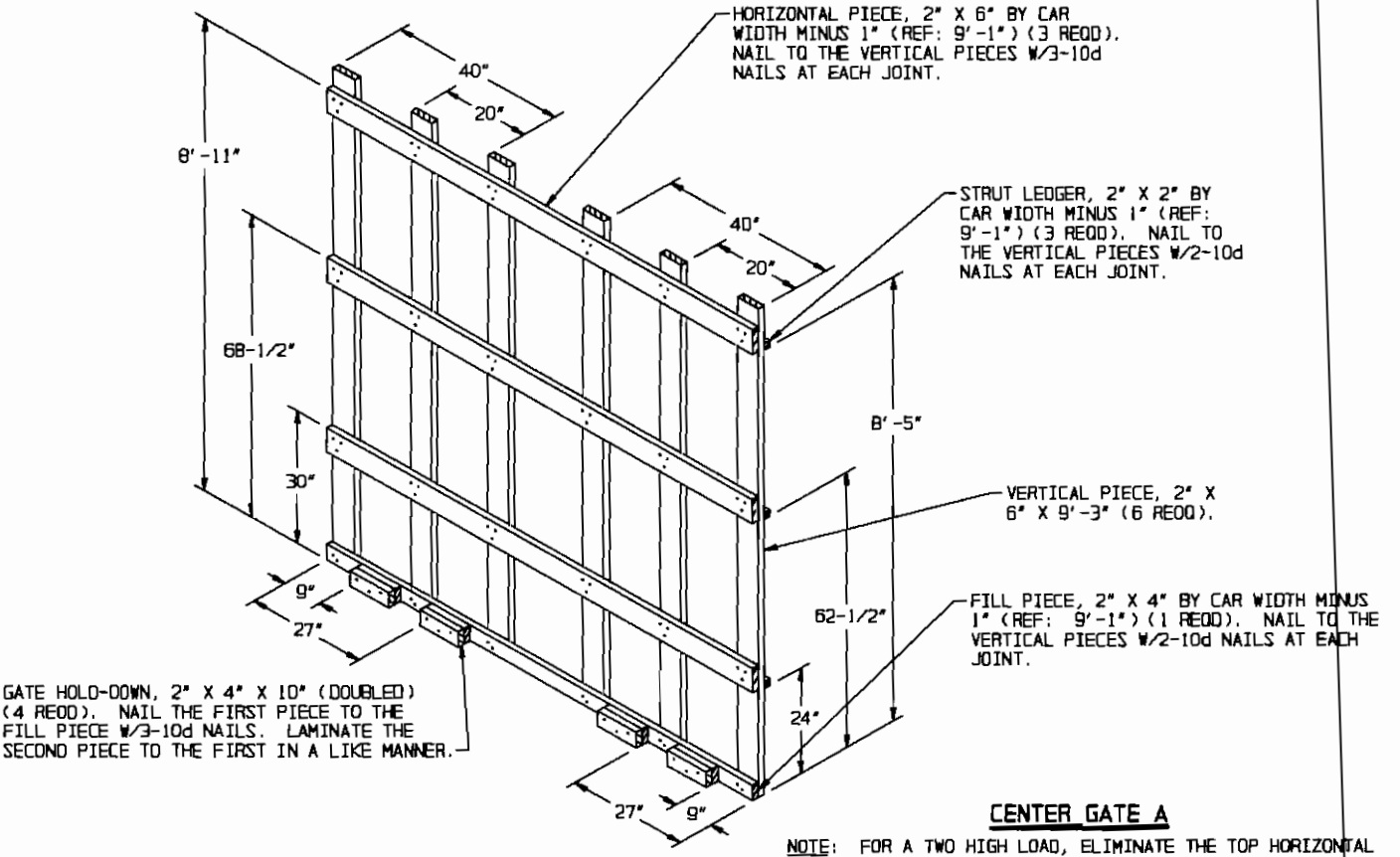


BRACE

4" X 4" MATERIAL

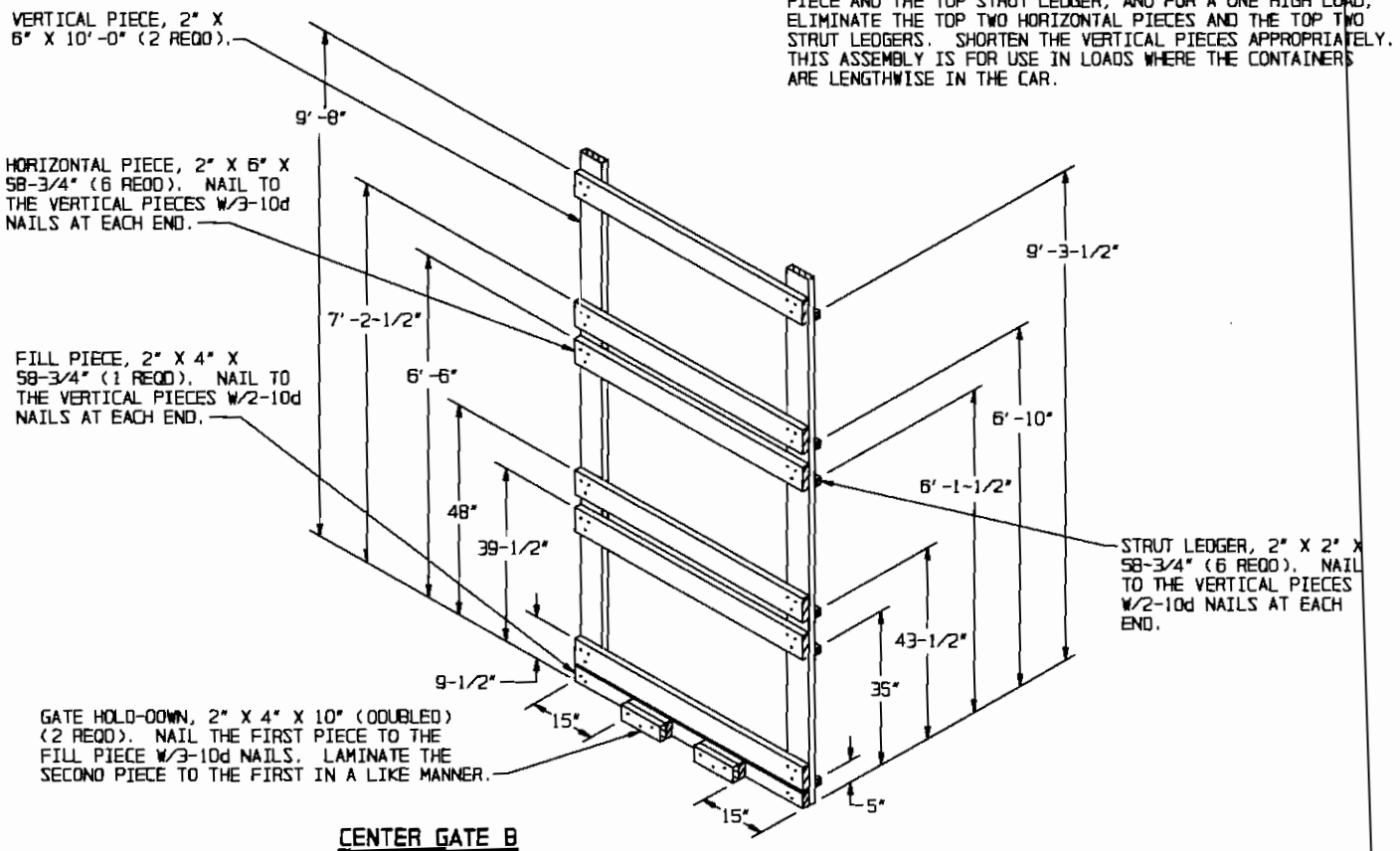
THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A).

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



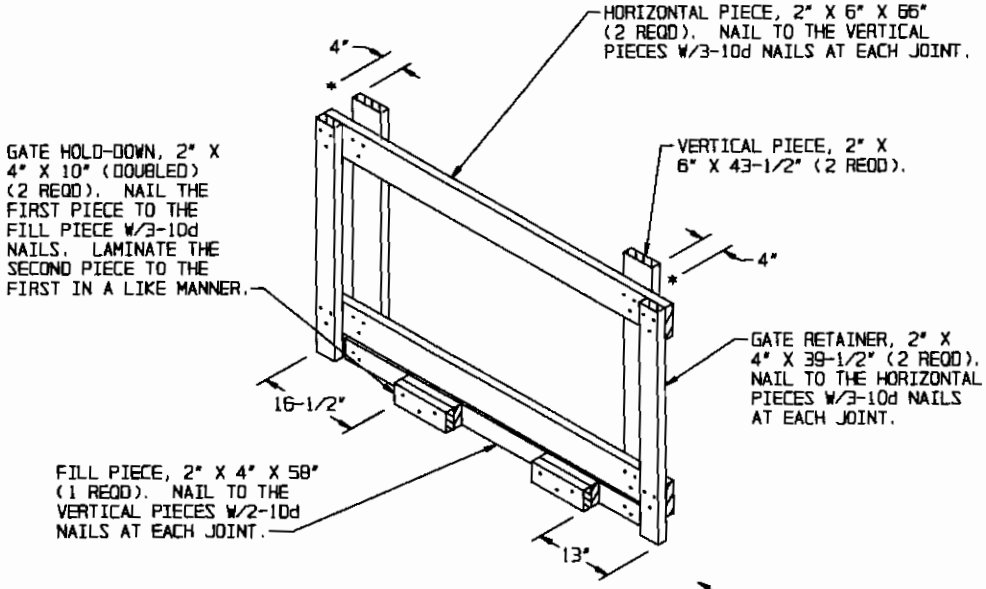
CENTER GATE A

NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP HORIZONTAL PIECE AND THE TOP STRUT LEDGER, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES AND THE TOP TWO STRUT LEDGERS. SHORTEN THE VERTICAL PIECES APPROPRIATELY. THIS ASSEMBLY IS FOR USE IN LOADS WHERE THE CONTAINERS ARE LENGTHWISE IN THE CAR.



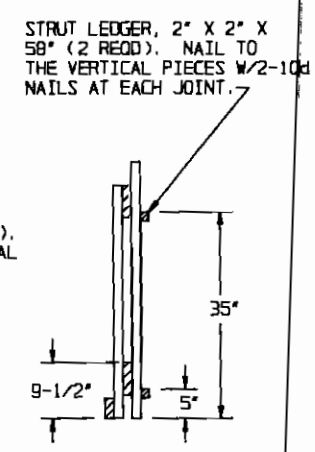
CENTER GATE B

NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES AND THE TOP TWO STRUT LEDGERS, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES AND THE TOP FOUR STRUT LEDGERS. SHORTEN THE VERTICAL PIECES APPROPRIATELY. THIS ASSEMBLY IS FOR USE IN LOADS WHERE THE PALLET UNITS ARE POSITIONED WITH CONTAINERS CROSSWISE IN THE CAR.

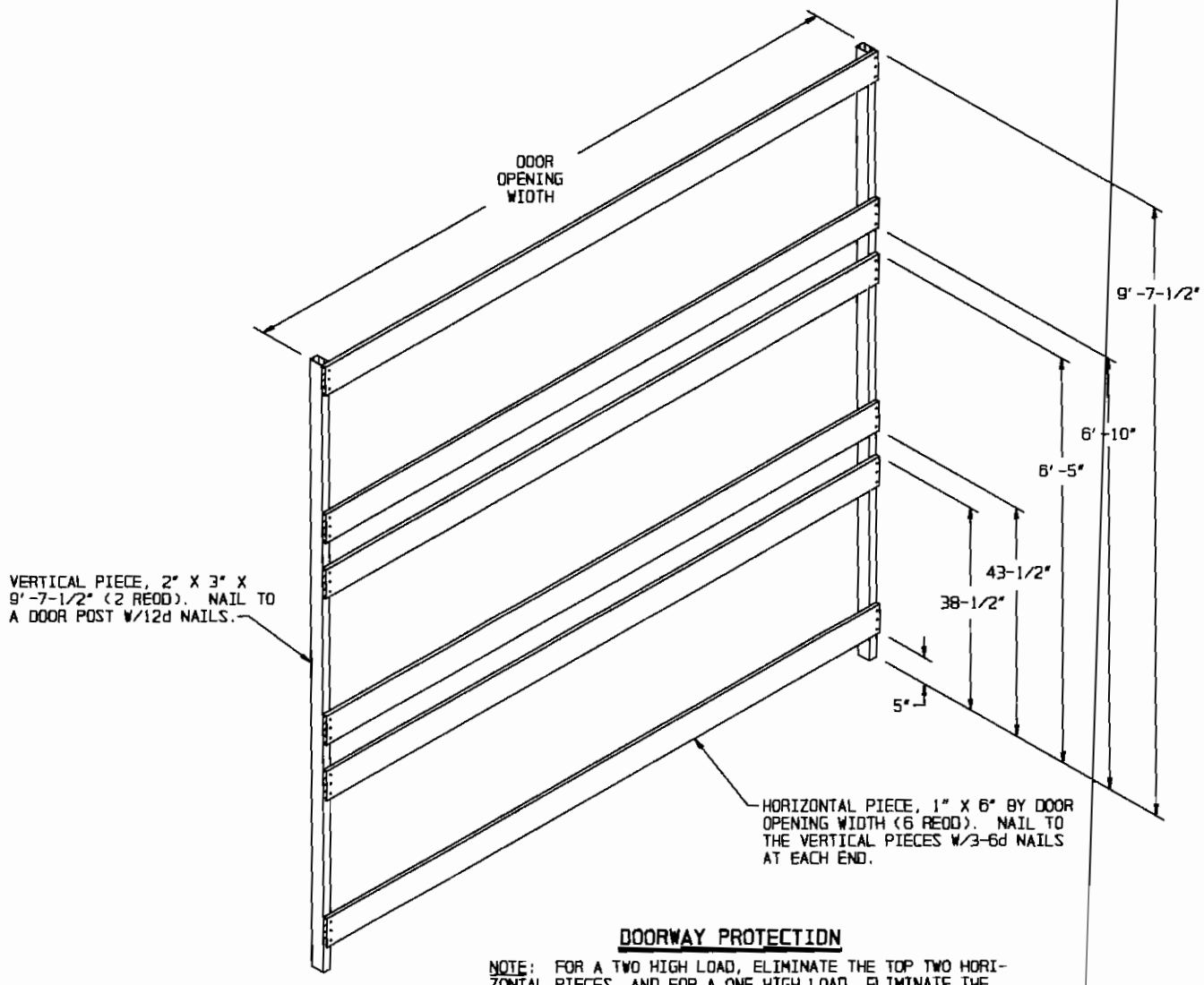


CENTER GATE C

FOR A 1-WIDE CONTAINERS CROSSWISE LOAD, AS DEPICTED ON PAGE 10.



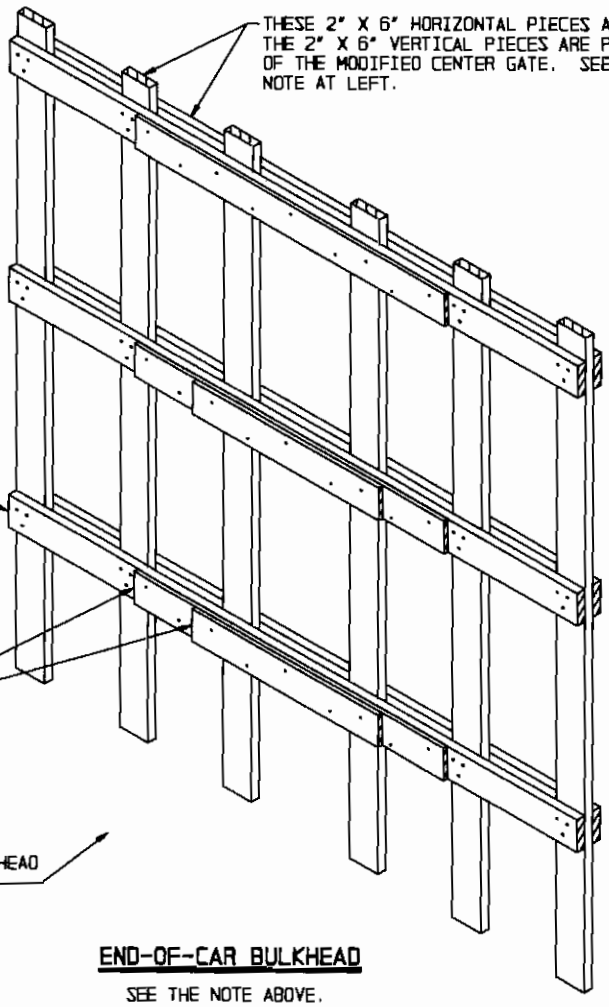
END VIEW



DOORWAY PROTECTION

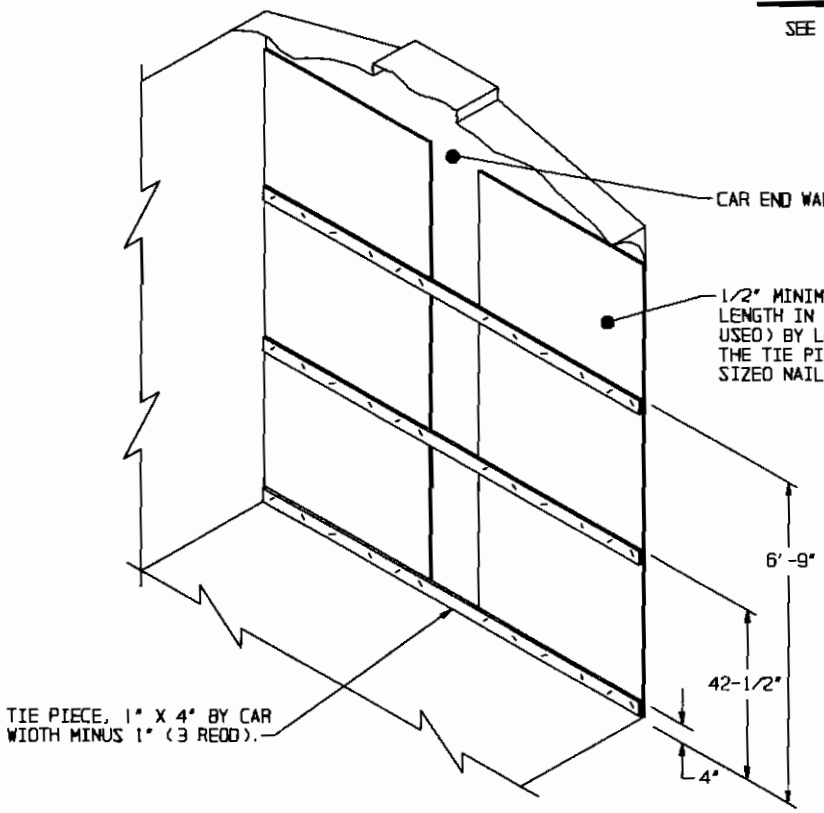
NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP FOUR HORIZONTAL PIECES. SHORTEN THE VERTICAL PIECES APPROPRIATELY.

NOTE: IF A BOXCAR TO BE LOADED HAS BOWED ENDWALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED-OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOXCAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS. THE BULKHEAD WILL BE FABRICATED FROM EITHER CENTER GATE "A" OR CENTER GATE "B". NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS, THE FILL PIECE, AND THE GATE HOLD-DOWN PIECES. A MODIFIED CENTER GATE "A", AS DETAILED ON PAGE 28, IS SHOWN AS TYPICAL.



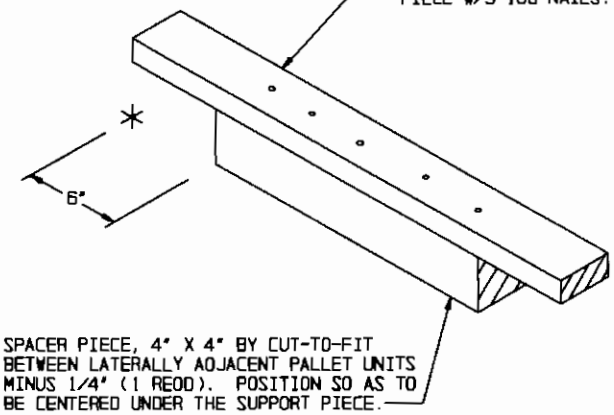
END-OF-CAR BULKHEAD

SEE THE NOTE ABOVE.



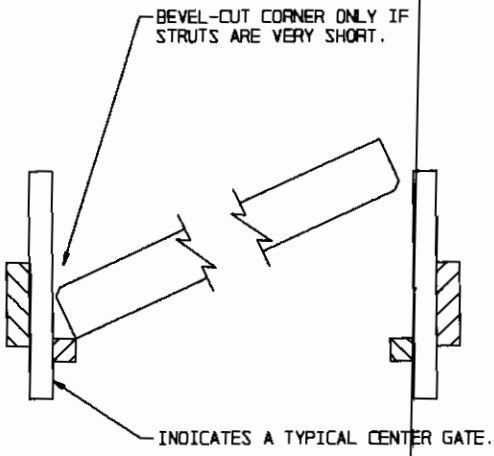
END-WALL LINING

THIS VIEW DEPICTS LINING REQUIRED FOR A LOAD IN A CAR EQUIPPED WITH A STEEL ENDWALL.



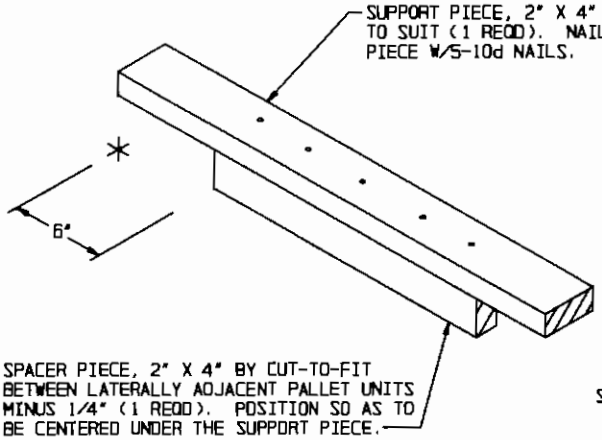
SPACER ASSEMBLY

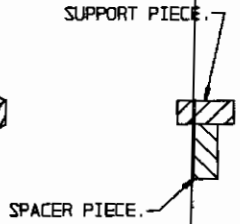
THIS ASSEMBLY IS FOR USE UNDER A DOORWAY PROTECTION STRAP WHICH IS INSTALLED AROUND PALLET UNITS IN THE DOORWAY AREA OF THE LOAD, WHEN THE CONTAINERS ARE PARALLEL TO THE CAR SIDEWALL.



STRUT INSTALLATION

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

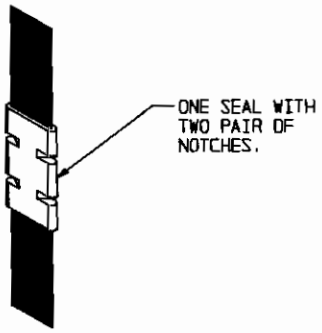




END VIEW

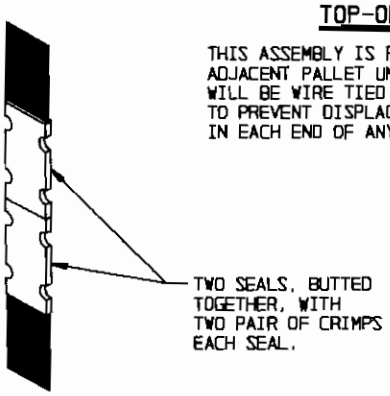
TOP-OF-LOAD ANTI-SWAY BRACE

THIS ASSEMBLY IS FOR USE BETWEEN THE TOPS OF LATERALLY ADJACENT PALLET UNIT STACKS IN EACH END OF THE CAR AND WILL BE WIRE TIED TO THE TOP ADAPTERS OF THE PALLET UNITS TO PREVENT DISPLACEMENT. THREE ASSEMBLIES ARE REQUIRED IN EACH END OF ANY LENGTH CAR.



STRAP JOINT A

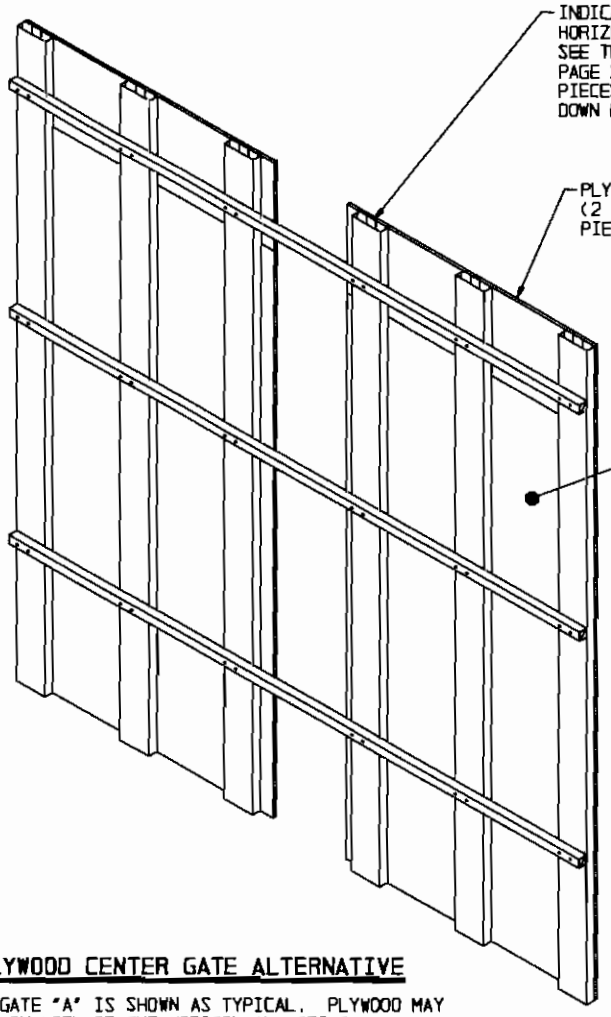
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

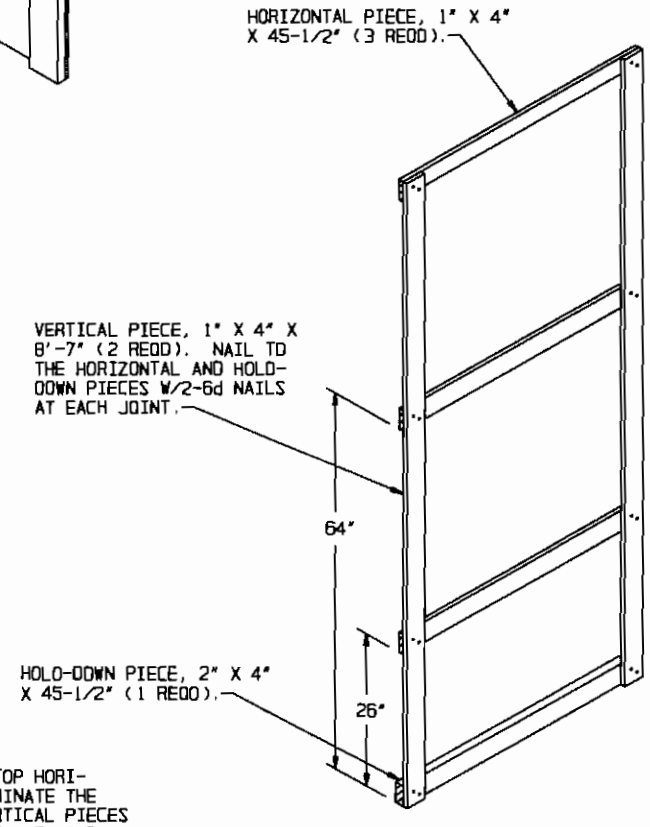
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



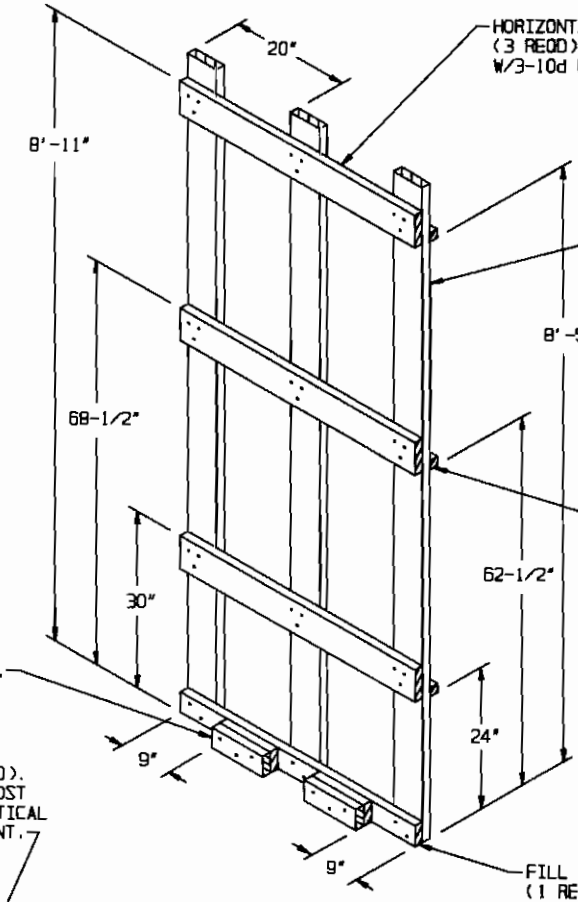
PLYWOOD CENTER GATE ALTERNATIVE

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



SIDE FILL ASSEMBLY

NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP HORIZONTAL PIECE, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES. SHORTEN THE VERTICAL PIECES APPROPRIATELY. THIS ASSEMBLY IS FOR USE IN THE COMBINATION LOAD SHOWN ON PAGE 6 WHEN LOADED INTO A CAR WITH NON-NAILABLE SIDEWALLS. SIDE FILL ASSEMBLIES REPLACE THE SIDE FILL, PIECE MARKED 1 , ON PAGE 6.



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

VERTICAL PIECE, 2" X 6" X 9'-3" (3 REQD).

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

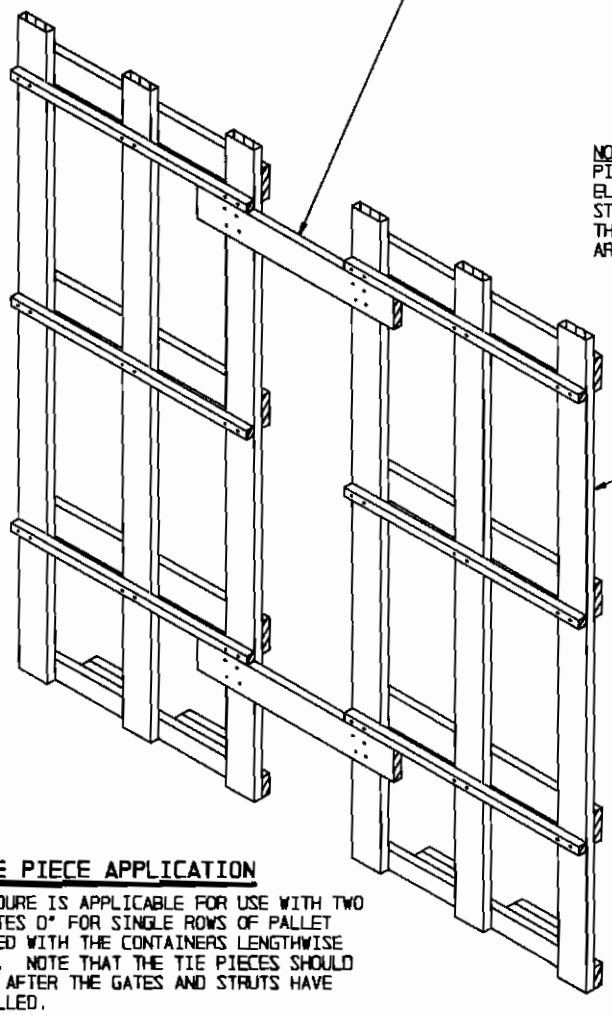
GATE HOLD-DOWN, 2" X 4" X 10" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE FILL PIECE W/3-10d NAILS. LAMINATE THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

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

CENTER GATE D

NOTE: FOR A TWO HIGH LOAD, ELIMINATE THE TOP HORIZONTAL PIECE AND THE TOP STRUT LEDGER, AND FOR A ONE HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES AND THE TOP TWO STRUT LEDGERS. SHORTEN THE VERTICAL PIECES APPROPRIATELY. THIS ASSEMBLY IS FOR USE IN LOADS WHERE THE CONTAINERS ARE LENGTHWISE IN THE CAR.

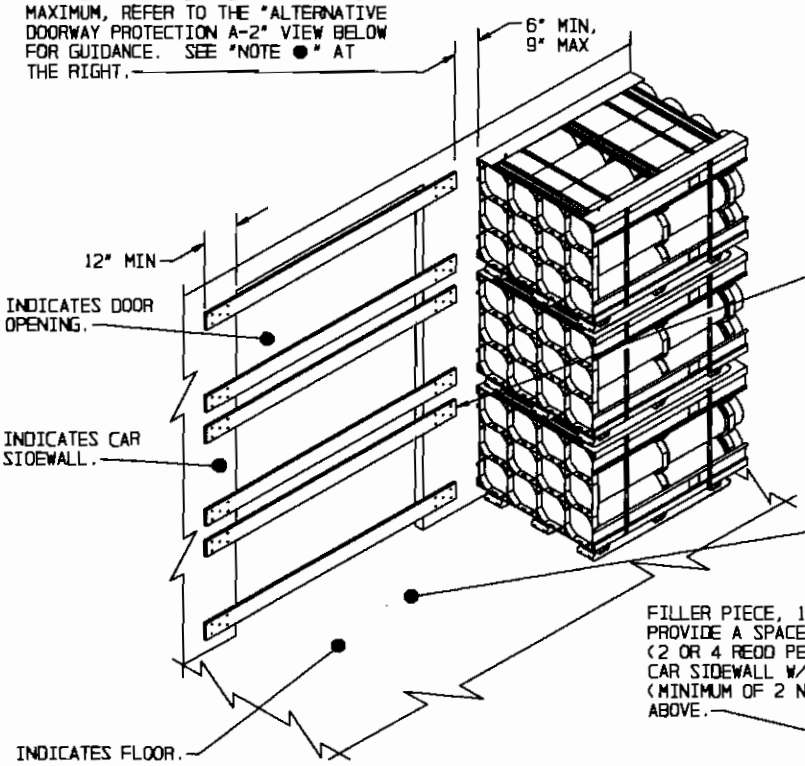
TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST AND LOWERMOST STRUT LEDGERS. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



INDICATES A TYPICAL "SPLIT" CENTER GATE (2 REQD). SEE THE "CENTER GATE D" DETAIL ABOVE.

TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH TWO "CENTER GATES D" FOR SINGLE ROWS OF PALLET UNITS LOADED WITH THE CONTAINERS LENGTHWISE IN THE CAR. NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.



NOTE ●:

THE TOLERANCE DIMENSION (6" MIN, 9" MAX) IS ALLOWED TO PROVIDE FOR CLEARANCE DURING THE NORMAL LONGITUDINAL SHIFTING OF A LOAD IN TRANSIT.

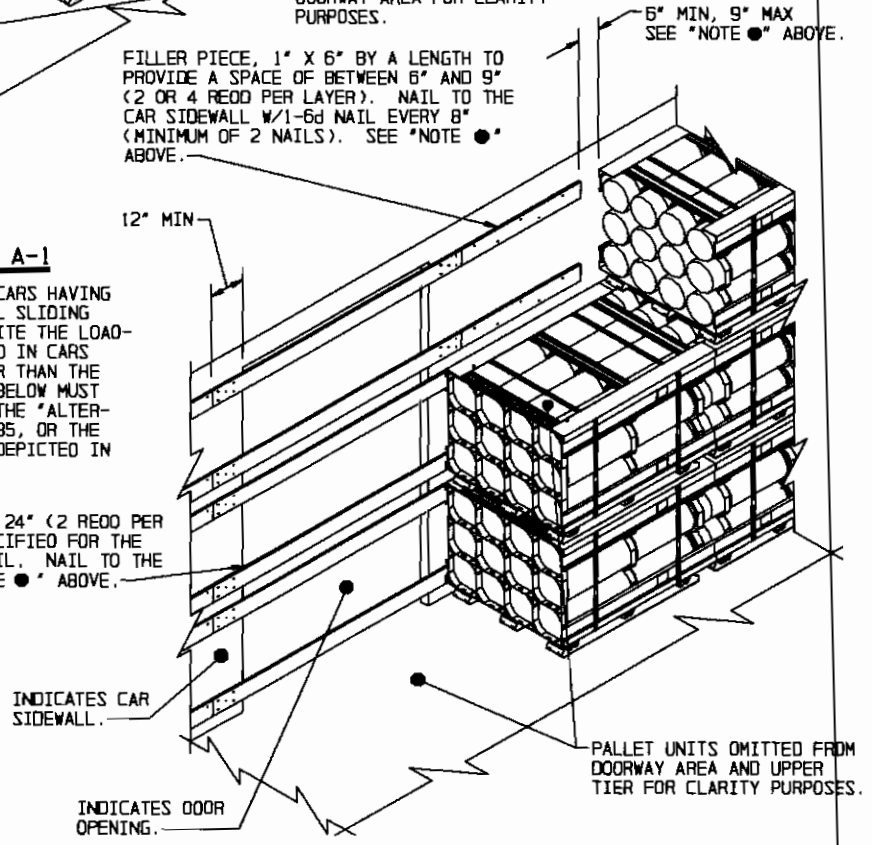
DOOR SPANNER, 1" X 6" BY DOOR OPENING WIDTH PLUS 24" (MIN) (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION DETAIL. NAIL TO THE CAR SIDEWALL W/5-6d NAILS AT EACH END. SEE "NOTE ●" ABOVE.

PALLET UNITS OMITTED FROM DOORWAY AREA FOR CLARITY PURPOSES.

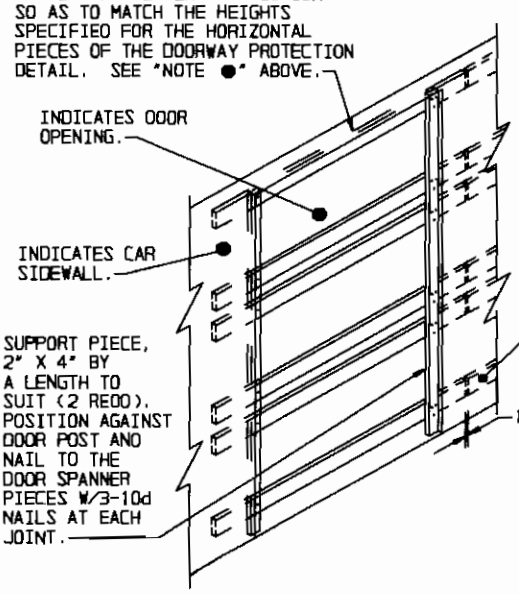
ALTERNATIVE DOORWAY PROTECTION A-1

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. THE METHOD CAN ALSO BE USED IN CARS EQUIPPED WITH PLUG DOORS; HOWEVER, A METHOD OTHER THAN THE "ALTERNATIVE DOORWAY PROTECTION A-3" PROCEDURES BELOW MUST BE USED ON THE LOADING SIDE OF THE CAR, SUCH AS THE "ALTERNATIVE DOORWAY PROTECTION C" PROCEDURES ON PAGE 35, OR THE NAILED-DOWN BLOCKING AND STEEL STRAPPING METHOD DEPICTED IN THE LOAD ON PAGE 6.

DOOR SPANNER, 1" X 6" BY DOOR OPENING WIDTH PLUS 24" (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION DETAIL. NAIL TO THE CAR SIDEWALL W/5-6d NAILS AT EACH END. SEE "NOTE ●" ABOVE.



DOOR SPANNER, 2" (MIN) X 6" BY DOOR OPENING WIDTH PLUS 24" (2 REQD PER LAYER). POSITION SO AS TO MATCH THE HEIGHTS SPECIFIED FOR THE HORIZONTAL PIECES OF THE DOORWAY PROTECTION DETAIL. SEE "NOTE ●" ABOVE.



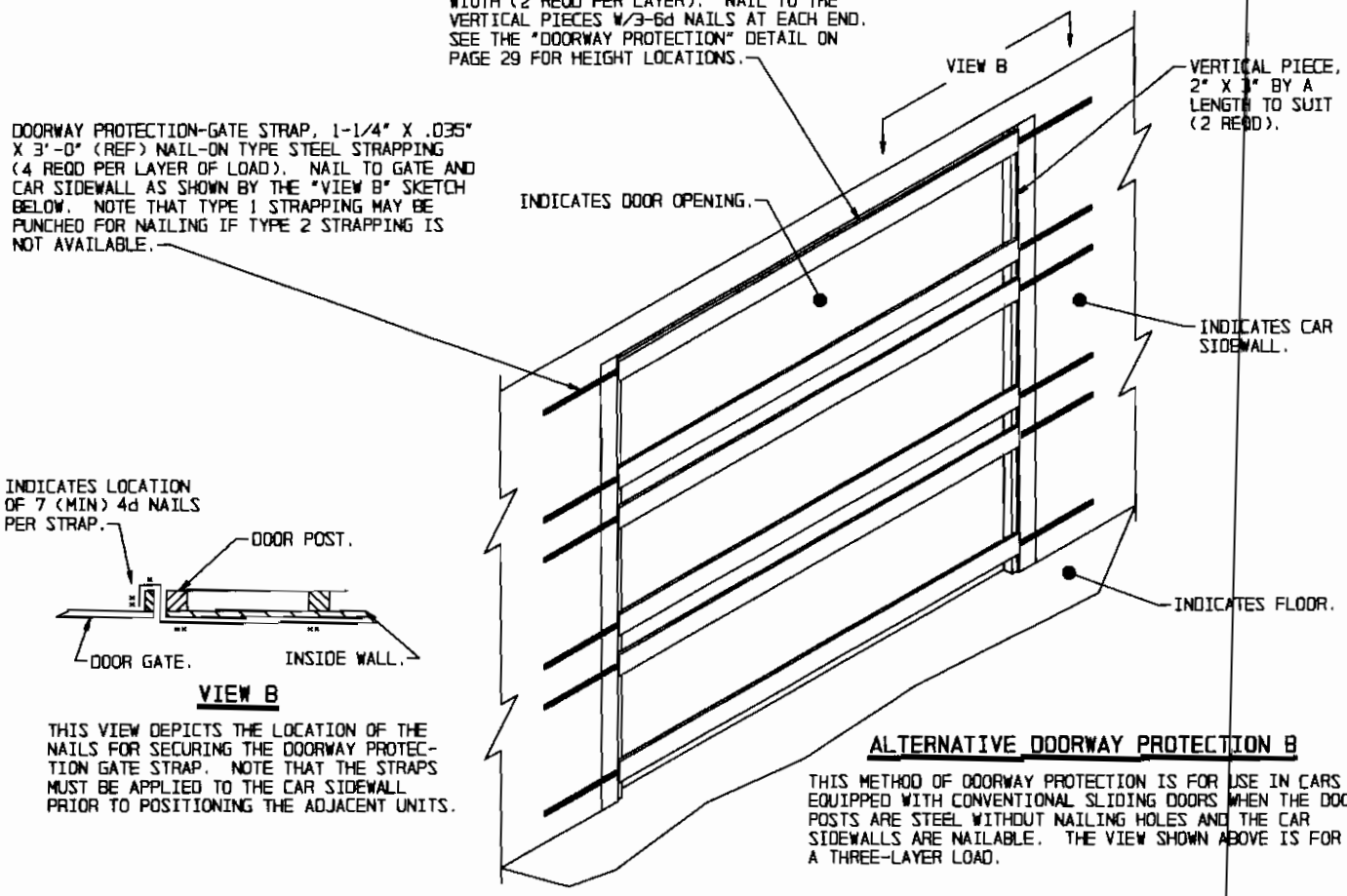
ALTERNATIVE DOORWAY PROTECTION A-2

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE ONLY FOR THE SIDE OPPOSITE THE LOADING SIDE OF THE CAR. SEE THE NOTE UNDER "A-1" PROCEDURES.

INDICATES A FILLER PIECE, 2" X 6" BY A LENGTH TO EQUAL THE LENGTH OF THE FILLER PIECE ON THE OPPOSITE SIDEWALL MINUS 1" (QUANTITY TO BE THE SAME AS FOR THE DOOR SPANNER AND/OR FILLER PIECES ON THE OPPOSITE SIDEWALL). SEE "NOTE ●" ABOVE.

ALTERNATIVE DOORWAY PROTECTION A-3

THIS VIEW DEPICTS THE DOOR OPENING OF A CAR AS IT APPEARS WHEN LOOKING AT IT FROM OUTSIDE OF THE CAR. THE METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS HAVING NAILABLE SIDEWALLS AND EQUIPPED WITH CONVENTIONAL SLIDING DOORS, AND IS APPLICABLE FOR THE LOADING SIDE OF THE CAR. NOTE THAT THE ADJACENT PALLET UNITS MUST BE POSITIONED APPROXIMATELY 1-3/4" (REF) FROM THE CAR SIDEWALL (1/4" MORE THAN THE THICKNESS OF THE DOOR SPANNER PIECES) TO FACILITATE THE INSTALLATION OF THESE DOOR SPANNER PIECES. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.

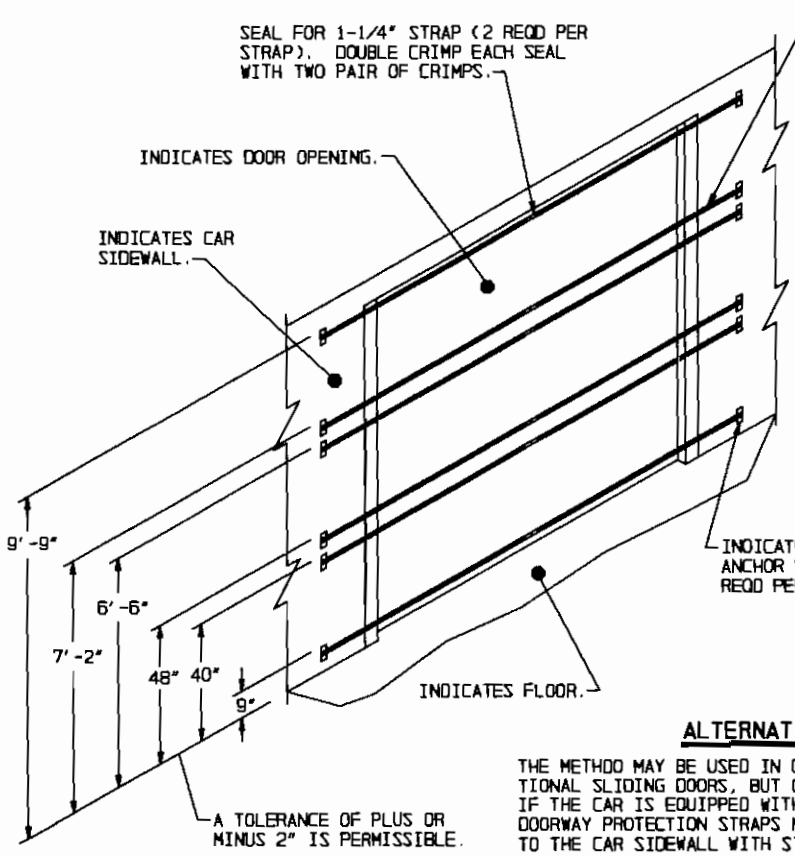


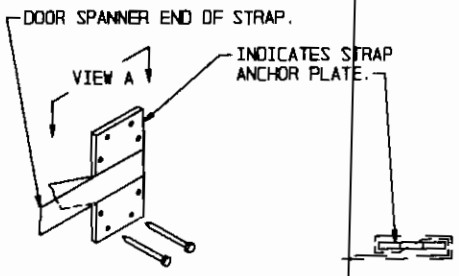
VIEW B

THIS VIEW DEPICTS THE LOCATION OF THE NAILS FOR SECURING THE DOORWAY PROTECTION GATE STRAP. NOTE THAT THE STRAPS MUST BE APPLIED TO THE CAR SIDEWALL PRIOR TO POSITIONING THE ADJACENT UNITS.

ALTERNATIVE DOORWAY PROTECTION B

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE STEEL WITHOUT NAILING HOLES AND THE CAR SIDEWALLS ARE NAILABLE. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.





ISOMETRIC VIEW

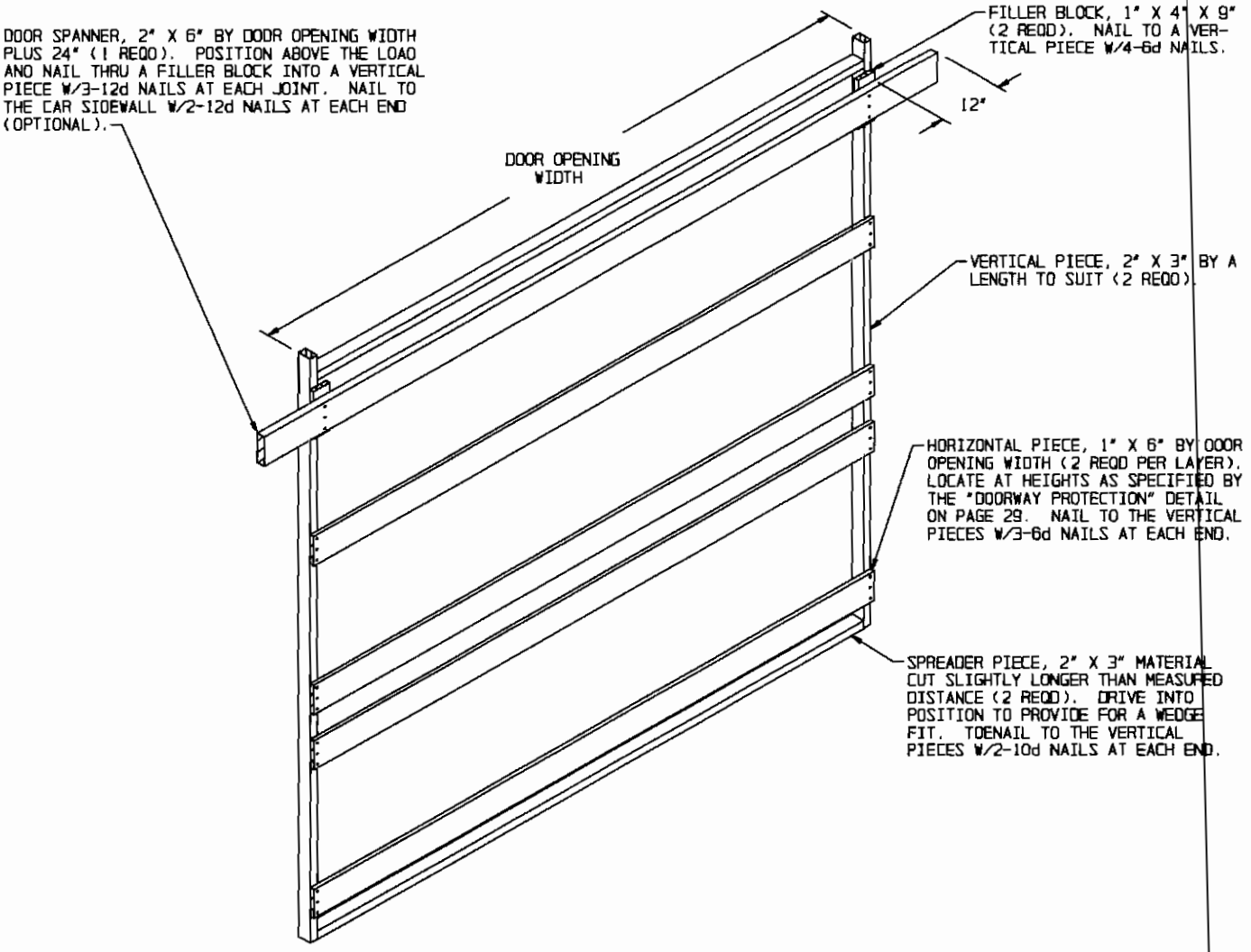
VIEW A

APPLICATION OF STRAPPING TO STRAP ANCHOR PLATE

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

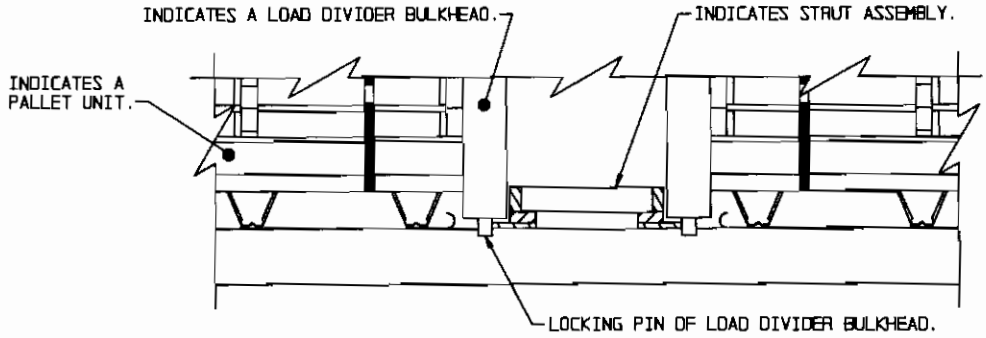
ALTERNATIVE DOORWAY PROTECTION C

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.



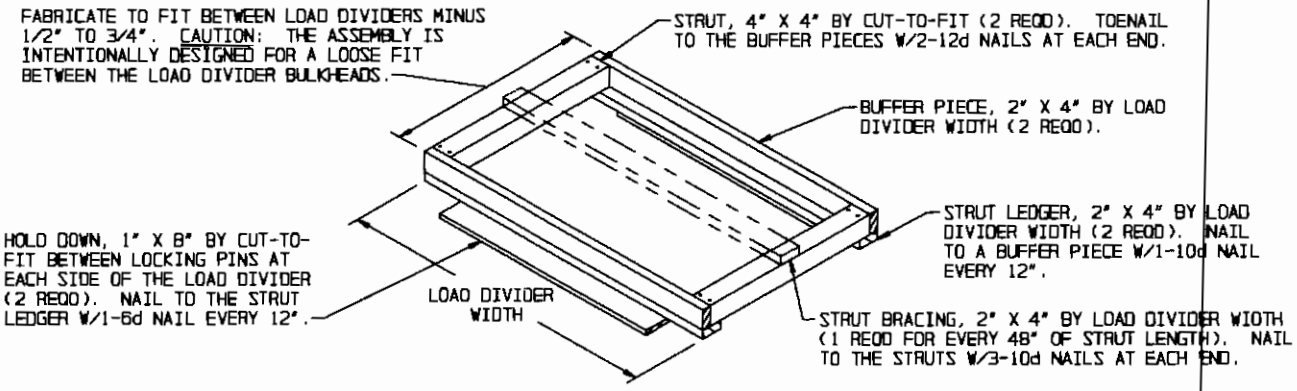
ALTERNATIVE DOORWAY PROTECTION O

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 35 FOR GUIDANCE. NOTE THAT THIS METHOD MAY ONLY BE USED IN TWO- OR ONE-HIGH LOADS, NOT IN THREE-HIGH LOADS.



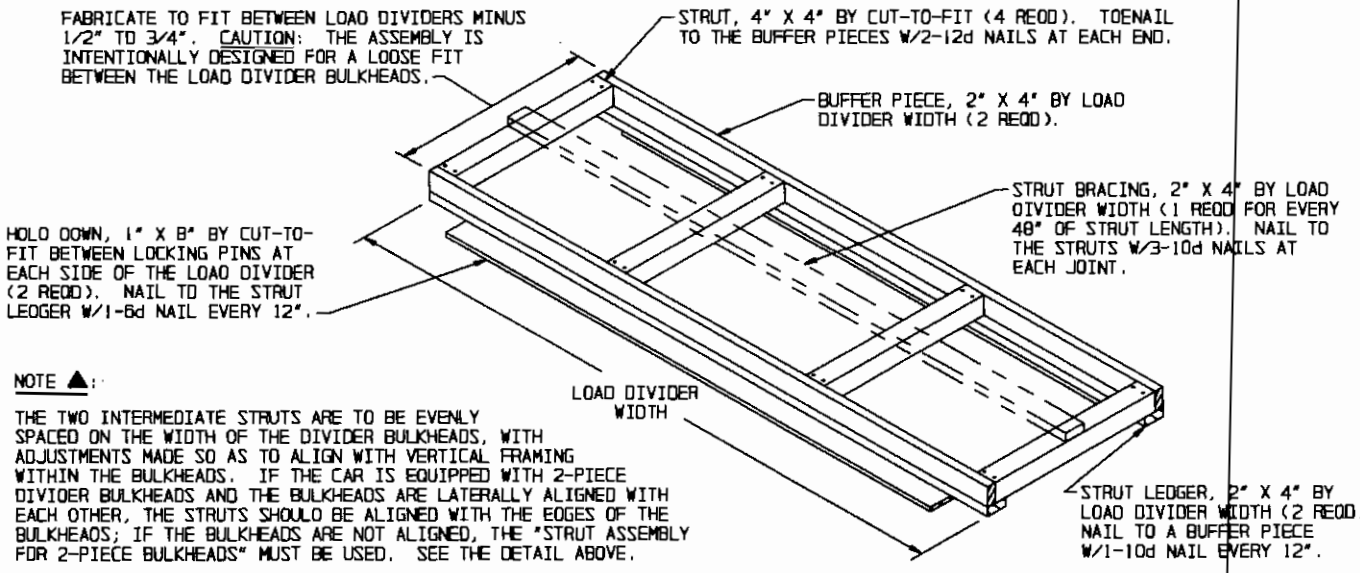
INSTALLATION OF STRUT ASSEMBLY

THIS SIDE ELEVATION 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 HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD. NOTE: TWO ASSEMBLIES AS SHOWN ARE REQUIRED FOR A 2-PIECE BULKHEAD IF NOT LATERALLY ALIGNED. SEE "NOTE ▲" BELOW.

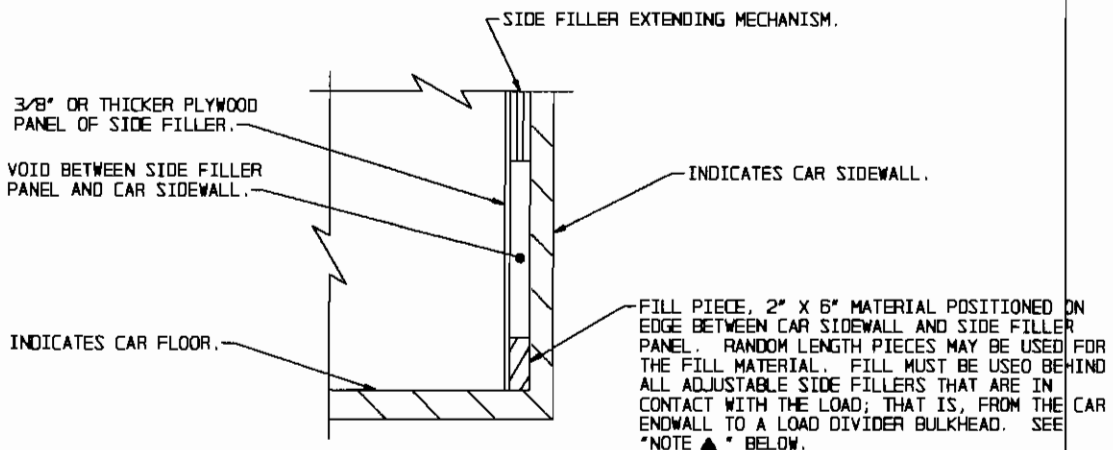


NOTE ▲:

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 HAZARD CLASS AND DIVISION 1.1, 1.2, OR 1.3 EXPLOSIVES. A STRUT ASSEMBLY IS NOT REQUIRED FOR LOADS OF HAZARD CLASS AND DIVISION 1.4 EXPLOSIVES, REGARDLESS OF THE WEIGHT OF THE LOAD.

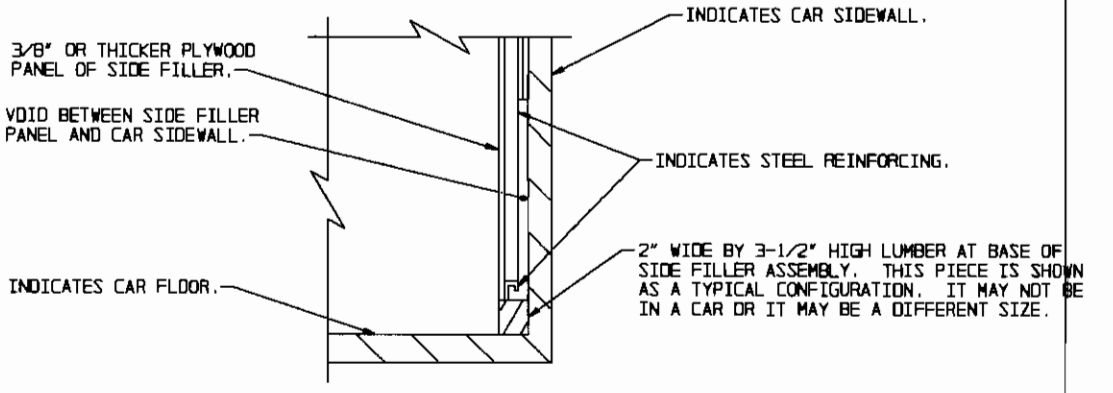


TYPICAL TYPE A

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.