

APPROVED BY
BUREAU OF EXPLOSIVES

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LOADING AND BRACING (CL & LCL) IN BOXCARS OF MAVERICK (AGM-65) MISSILE PACKED IN CNU-399/E OR CNU-425/E SHIPPING AND STORAGE CONTAINERS

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● THIS OUTLOADING DRAWING INCLUDES PROCEDURES FOR CONVENTIONAL TYPE BOXCARS AND CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

U.S. ARMY MATERIEL COMMAND DRAWING			
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DO NOT SCALE

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO THE MAVERICK (AGM-65) MISSILE PACKED IN THE CNU-399/E OR CNU-425/E CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CNU-399/E OR CNU-425/E CONTAINER WITH MISSILES INSTALLED. SEE PAGE 5 FOR THE CONTAINER DETAIL.
- C. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN CONVENTIONAL TYPE BOX-CARS AND FOR SHIPMENTS IN CUSHIONED BOXCARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.
- D. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF 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.
- E. 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 14 FOR GUIDANCE.
- F. BOXCARS 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.
- G. 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 AS SHOWN IN THE LOAD ON PAGE 6. 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.
- H. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH 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.
- J. 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 DOUBLED 2" X 6" MATERIAL, IT IS PERMISSIBLE TO USE 4" X 6" MATERIAL IN LIEU OF EACH DOUBLED 2" X 6" STRUT.
- K. 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.
- L. 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.
- M. 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 15 FOR GUIDANCE.
- N. 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.
- O. 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.
- P. CAUTION: WHEN POWER OR PNEUMATIC NAILERS ARE BEING USED IN THE APPLICATION OF NAILED FLOORLINE BLOCKING OR BRACING, CONTAINERS 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.
- 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.

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MATERIAL SPECIFICATIONS

LUMBER	SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
NAILS	FED SPEC FF-N-105; COMMON.
STRAPPING, STEEL	ASTM D3953; FLAT STRAPPING, TYPE 1 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.

(CONTINUED ON PAGE 3)

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOXCARS)

- 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 "K" ON PAGE 2.
- S. NOTICE: WHEN POSITIONING CONTAINERS IN A CAR, THEY SHOULD 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 CONTAINERS 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 THE CONTAINER FLANGE WHICH IS THE STRONG POINT OF THE CONTAINER. PADDING, OF 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 IN THE LOADS ON PAGES 6 AND 8. 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.
- U. 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.
- V. STRUTS OF 4" X 6" MATERIAL MAY BE USED IN LIEU OF DOUBLED 2" X 6" STRUTS. BEVELING ONE OR BOTH ENDS OF THE STRUTS WILL FACILITATE INSTALLATION. SEE THE "BEVEL CUT" DETAIL ON PAGE 15 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- W. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.

GENERAL NOTES

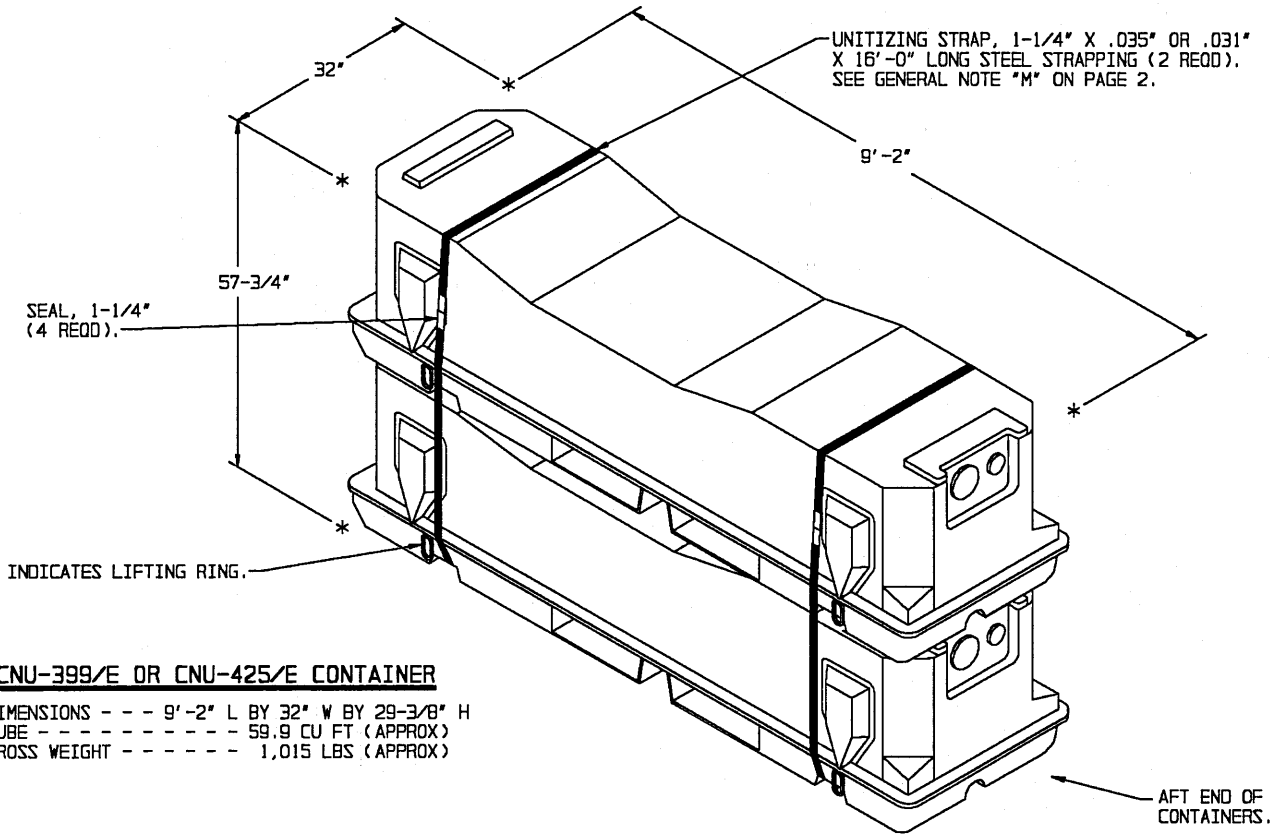
(FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS)

- AA. 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.
- 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 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 MISSILES. NOTICE: ONLY CUSHIONED CARS THAT HAVE SLIDING CENTER STILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST 15" OF TRAVEL ARE ACCEPTABLE.
- CC. 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 23 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 23, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- DD. NOTICE: AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.

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(GENERAL NOTES CONTINUED)

- EE. 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 CONTAINERS WHICH ARE IN ONE LOAD UNIT. A LOAD UNIT IS DEFINED AS A STACK OF CONTAINERS WHICH IS FULL CAR WIDTH BY FULL LOAD HEIGHT BY ONE UNIT IN LENGTH. IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY ADJUSTING THE NUMBER OF TIERS IN ONE OR BOTH ENDS OF A CAR, OR BY ADJUSTING THE NUMBER OF LOAD UNITS IN EITHER END OF THE CAR, ONE OF THE FOLLOWING PROCEDURES MUST BE USED IN ORDER TO OBTAIN THE DESIRED QUANTITY.
1. 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, TWO OR THREE-HIGH LOADING PATTERN. INSTALL CENTER GATES AND STRUTS AS SHOWN ON PAGE 6 OR 8 OF THE CONVENTIONAL BOXCAR DRAWING HEREIN TO PROVIDE FOR A TIGHT LOAD BETWEEN THE BULKHEADS.
 2. ONE OR MORE CONTAINERS 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 17 OR WITH KNEE BRACE ASSEMBLIES, AS SHOWN ON PAGE 18.
- FF. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHOD.



CNU-399/E OR CNU-425/E CONTAINER
 DIMENSIONS - - - 9'-2" L BY 32" W BY 29-3/8" H
 CUBE - - - - - 59.9 CU FT (APPROX)
 GROSS WEIGHT - - - - - 1,015 LBS (APPROX)

CONTAINER STACK DETAIL

UNITIZATION PROCEDURES:

1. WHEN STACKING CONTAINERS FOR UNITIZING, POSITION THE AFT END OF THE UPPER CONTAINER ABOVE THE AFT END OF THE LOWER ONE, AS SHOWN.
2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STRAPS. SEE GENERAL NOTE "M" ON PAGE 2.
 - A. POSITION STRAPS SO AS TO ENIRCLE THE CONTAINERS NEAR THE ENDS AS SHOWN IN THE ISOMETRIC VIEW AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK.
 - B. THE STRAPPING WILL BE FIRMLY TENSIONED BUT NOT SO MUCH SO AS TO DAMAGE THE CONTAINERS. EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15. THE LAP JOINT WILL BE MADE ALONG THE SIDE OF THE STACK. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEAL. SEE GENERAL NOTE "M" ON PAGE 2.

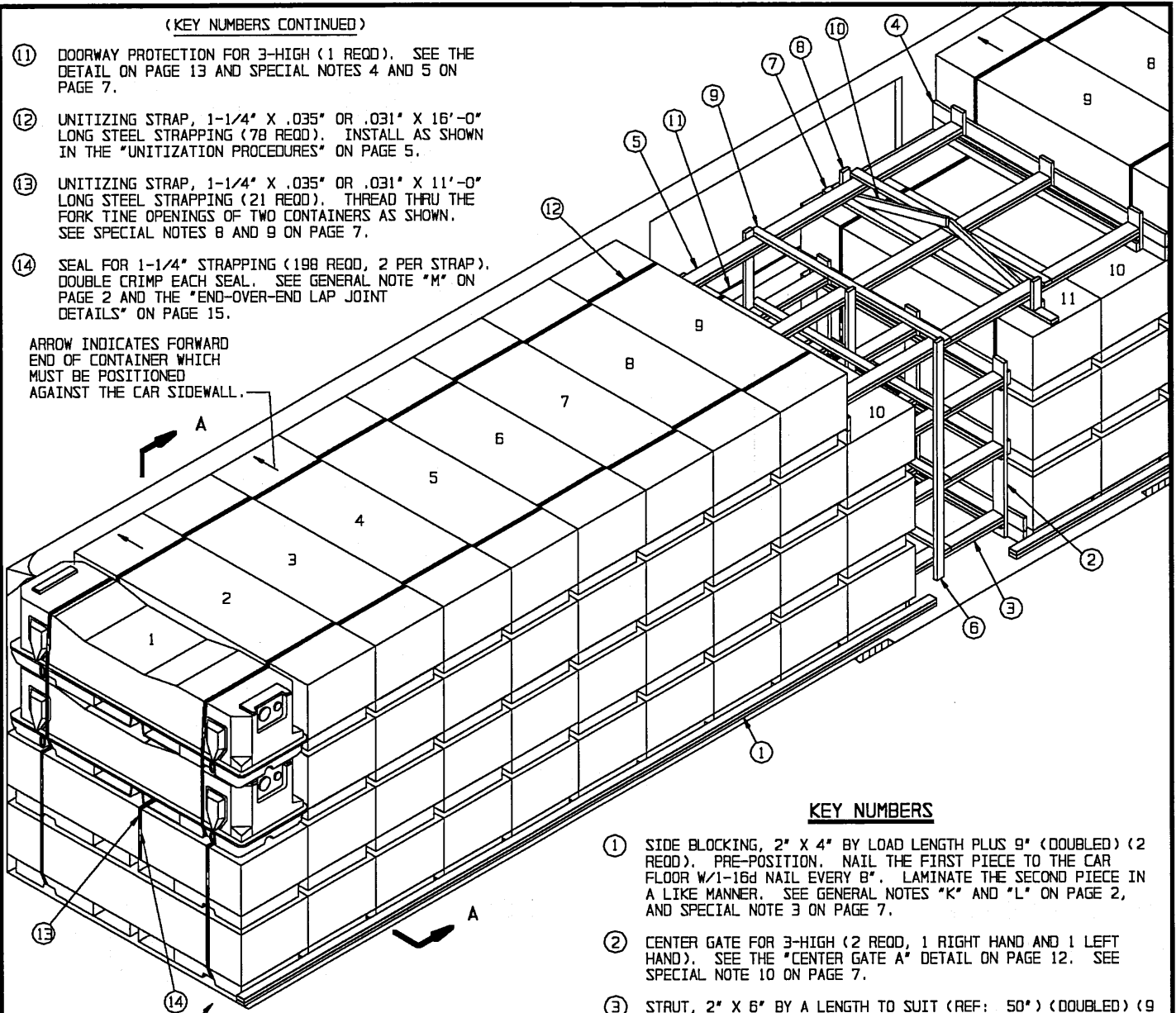
CONTAINER OR STACK HANDLING PROCEDURES:

1. APPROVED MATERIAL HANDLING EQUIPMENT (MHE) IS SPECIFIED IN OTHER DOCUMENTS. MHE IS INTENDED TO MEAN EQUIPMENT SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS AND SPREADER BARS.
2. PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.
 - A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIALS HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS.
 - B. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAINERS MUST BE HANDLED FROM A SIDE POSITION. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD.
 - C. IF A CONTAINER OR STACK OF CONTAINERS IS HANDLED BY SLINGING, THE SLING MUST BE OF SUCH A DESIGN THAT LIFTING IS DONE ON THE BOTTOM OF THE LOWER CONTAINER.

(KEY NUMBERS CONTINUED)

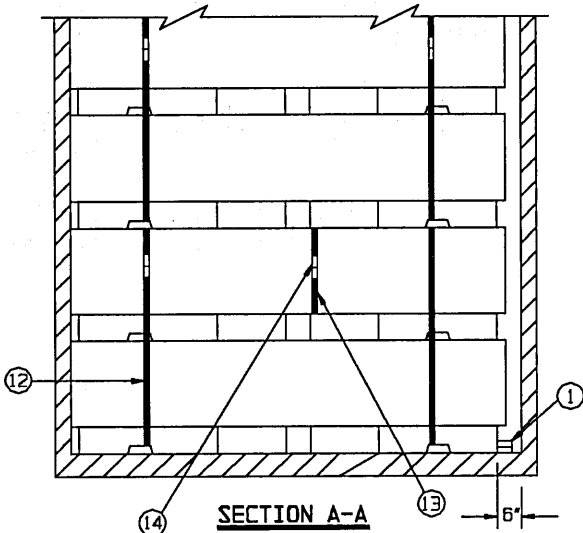
- ⑪ DOORWAY PROTECTION FOR 3-HIGH (1 REOD). SEE THE DETAIL ON PAGE 13 AND SPECIAL NOTES 4 AND 5 ON PAGE 7.
- ⑫ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (78 REOD). INSTALL AS SHOWN IN THE "UNITIZATION PROCEDURES" ON PAGE 5.
- ⑬ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-0" LONG STEEL STRAPPING (21 REOD). THREAD THRU THE FORK TINE OPENINGS OF TWO CONTAINERS AS SHOWN. SEE SPECIAL NOTES 8 AND 9 ON PAGE 7.
- ⑭ SEAL FOR 1-1/4" STRAPPING (198 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2 AND THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

ARROW INDICATES FORWARD END OF CONTAINER WHICH MUST BE POSITIONED AGAINST THE CAR SIDEWALL.



SEE GENERAL NOTE "E" ON PAGE 2.

ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" BY LOAD LENGTH PLUS 9" (DOUBLED) (2 REOD). PRE-POSITION. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE GENERAL NOTES "K" AND "L" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 7.
- ② CENTER GATE FOR 3-HIGH (2 REOD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 12. SEE SPECIAL NOTE 10 ON PAGE 7.
- ③ STRUT, 2" X 6" BY A LENGTH TO SUIT (REF: 50") (DOUBLED) (9 REOD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "T" AND "U" ON PAGE 3. SEE SPECIAL NOTE 7 ON PAGE 7.
- ④ CENTER GATE (2 REOD). SEE THE "CENTER GATE B" DETAIL ON PAGE 12.
- ⑤ STRUT, 2" X 6" BY A LENGTH TO SUIT (REF: 12'-2") (DOUBLED) (3 REOD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ④ W/2-16d NAILS AT EACH END.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" X 8'-0" (3 REOD). NAIL TO THE STRUTS, PIECES MARKED ③ AND ⑤, W/3-10d NAILS AT EACH JOINT.
- ⑦ STRUT BRACING PAD, 2" X 4" BY 8'-0" (1 REOD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED ⑥, AS SHOWN.
- ⑧ VERTICAL STRUT BRACING, 2" X 4" X 15" (2 REOD). NAIL TO THE OUTER STRUTS, PIECE MARKED ⑤, W/3-10d NAILS. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑦, W/2-10d NAILS.
- ⑨ HORIZONTAL STRUT BRACING, 2" X 4" X 7'-7" (5 REOD). NAIL TO THE STRUTS, PIECES MARKED ③ AND ⑤, W/3-10d NAILS AT EACH JOINT.
- ⑩ DIAGONAL STRUT BRACING, 2" X 4" X 48" (2 REOD). POSITION AS SHOWN, AND NAIL TO THE STRUT BRACING PAD AND THE HORIZONTAL STRUT BRACING, PIECES MARKED ⑧ AND ⑨ W/2-10d NAILS AT EACH END.

(CONTINUED ABOVE)

(SPECIAL NOTES CONTINUED)

10. IF THE CAR DOOR OPENING HEIGHT IS AT LEAST 9'-10", AN ADDITIONAL THREE CONTAINERS CAN BE POSITIONED IN THE TOP LAYER OF THE DEPICTED LOAD. PIECES MARKED ④, ⑤, ⑦, ⑧, AND ⑩ WILL THEN NOT BE REQUIRED. THREE MORE STRUTS, PIECE MARKED ③, AND ONE LESS HORIZONTAL STRUT BRACING, PIECE MARKED ⑨, WILL BE REQUIRED. THE CENTER GATES AND DOORWAY PROTECTION, PIECES MARKED ② AND ①, MUST BE INCREASED TO FOUR HIGH, AND SIX MORE UNITIZING STRAPS AND 12 SEALS, PIECES MARKED ⑬ AND ⑭ WILL BE REQUIRED. NOTE THAT CONTAINER STACKS IN THE CENTER AREA OF THE LOAD MUST BE STACKED AND UNITIZED OUTSIDE THE CAR AND END HANDLED (PUSHED) INTO PLACE. THE CONTAINERS ARE NOT DESIGNED FOR END HANDLING AND EXTREME CAUTION MUST BE USED IN THIS OPERATION. REFER TO PAGES 8 AND 9 FOR ALTERNATIVE LOADING PROCEDURES.
11. IF A 3-LAYER LOAD IS TO BE SHIPPED, THE UNITIZING STRAPS, PIECE MARKED ⑬, WILL BE THREADED THRU THE FORK TINE OPENINGS OF THE SECOND AND THIRD LAYER CONTAINERS AS THEY AS THEY ARE FOR A 4-HIGH LOAD. CENTER GATES "B", PIECE MARKED ④, THE STRUTS, VERTICAL STRUT BRACING, STRUT BRACING PAD, HORIZONTAL STRUT BRACING, AND DIAGONAL STRUT BRACING, PIECES MARKED ⑤, ⑦, ⑧, ⑨, AND ⑩, WILL NOT BE REQUIRED. ALSO, 36 UNITIZING STRAPS AND 72 SEALS, PIECES MARKED ⑬ AND ⑭, WILL NOT BE REQUIRED.

SPECIAL NOTES:

1. A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS (9'-3" MINIMUM WIDTH) AND CARS HAVING WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "E" ON PAGE 2.
2. A TYPICAL LOAD IS SHOWN ON PAGE 6. A MAXIMUM OF 68 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 69,020 POUNDS CAN BE LOADED IN A 50'-6" LONG CAR OR 52 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 52,780 POUNDS CAN BE LOADED IN A 40'-6" CAR WHEN USING THE DEPICTED LOADING PROCEDURES.
3. IF THE CAR TO BE LOADED IS 9'-4" WIDE OR LESS, SIDE BLOCKING, PIECE MARKED ①, WILL NOT BE REQUIRED. NOTE THAT WHEN SIDE BLOCKING IS NOT REQUIRED, IT WILL BE NECESSARY TO USE TWO DOORWAY PROTECTION ASSEMBLIES, SHOWN IN THE LOAD ON PAGE 6 AS PIECE MARKED ①.
4. DOORWAY PROTECTION IS REQUIRED FOR ALL CONTAINER 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 ① IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 22 FOR OTHER TYPES OF DOORWAY PROTECTION FOR SLIDING DOORS.
5. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, THE CONTAINER STACKS MAY BE LOADED AGAINST THE PLUG DOOR. IF THE CAR IS EQUIPPED WITH COMBINATION PLUG AND SLIDING DOORS, A WOODEN DOOR GATE MUST BE PROVIDED FOR THE SLIDING DOOR PORTION ON THE ONE SIDE OF THE CAR.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE CONTAINER STACKS FROM THE END PORTIONS OF THE LOAD, OR THE ENTIRE ONE, TWO, OR THREE TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD REFER TO THE TYPICAL LCL PROCEDURES ON PAGES 16 THRU 21 FOR GUIDANCE.
7. NOTE THAT 4" X 6" STRUTS MAY BE USED IN LIEU OF DOUBLED 2" X 6" STRUTS.
8. FOR THE THREE-HIGH STACKS IN THE CENTER AREA OF THE CAR, THE UNITIZING STRAPS, PIECE MARKED ⑬, ARE TO BE INSTALLED AROUND THE TWO UPPER CONTAINERS, AND THE UNITIZING STRAPS, PIECE MARKED ⑬, ARE TO BE INSTALLED THRU THE FORK OPENINGS OF THE FIRST AND SECOND-LAYER CONTAINERS.
9. IF THE DOOR HEIGHT OF THE CAR TO BE LOADED IS AT LEAST 9'-10", STACKS OF FOUR CONTAINERS, UNITIZED WITH PIECES MARKED ⑬ THRU ⑭, CAN BE LIFTED AS A UNIT AND TRANSPORTED INTO THE CAR IN LIEU OF THE LOADING OF 2-HIGH STACKS. INSTALLATION OF THE UNITIZING STRAPS, PIECE MARKED ⑬, INSIDE THE CAR, MUST BE ACCOMPLISHED IN THE DOORWAY AREA WHERE ACCESS CAN BE HAD TO BOTH SIDES OF A CONTAINER STACK.

(CONTINUED AT LEFT)

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	30	15
2" X 2"	60	20
2" X 3"	12	6
2" X 4"	208	139
2" X 6"	294	294
NAILS	NO. REOD	POUNDS
6d (2")	18	1/4
10d (3")	449	7
12d (3-1/4")	14	1/4
16d (3-1/2")	216	4-3/4
STEEL STRAPPING, 1-1/4"		
X .035" OR .031" - - - - -	1,479' REOD - - - - -	212 LBS
SEAL FOR 1-1/4" STRAPPING - - - - -	198 REOD - - - - -	9 LBS

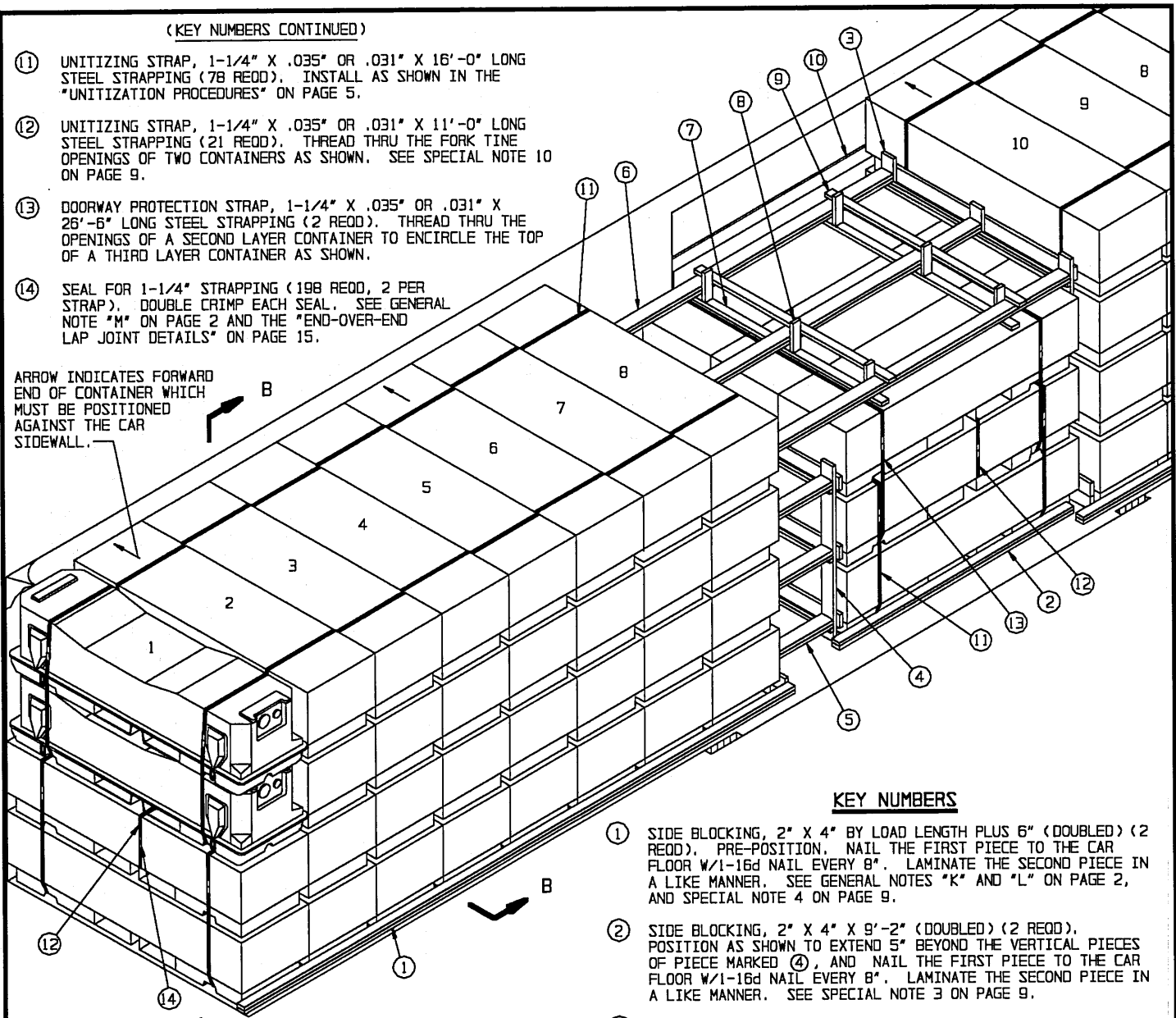
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER - - - - -	81 - - - - -	82,215 LBS
DUNNAGE - - - - -	- - - - -	1,182 LBS
TOTAL WEIGHT - - - - -		83,399 LBS (APPROX)

(KEY NUMBERS CONTINUED)

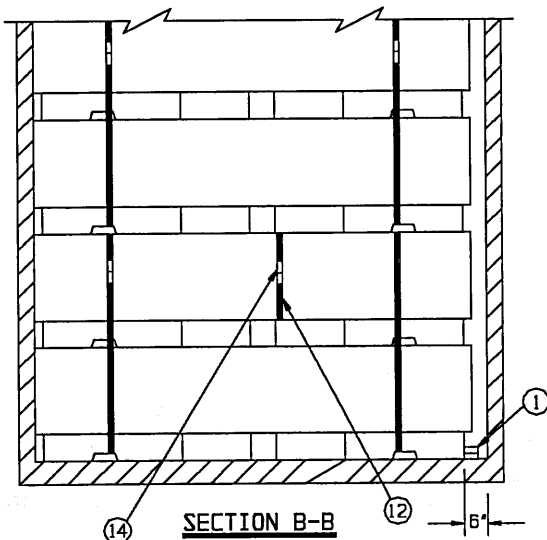
- ⑪ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (78 REQD). INSTALL AS SHOWN IN THE "UNITIZATION PROCEDURES" ON PAGE 5.
- ⑫ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-0" LONG STEEL STRAPPING (21 REQD). THREAD THRU THE FORK TINE OPENINGS OF TWO CONTAINERS AS SHOWN. SEE SPECIAL NOTE 10 ON PAGE 9.
- ⑬ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 26'-6" LONG STEEL STRAPPING (2 REQD). THREAD THRU THE OPENINGS OF A SECOND LAYER CONTAINER TO ENCIRCLE THE TOP OF A FIRST LAYER CONTAINER AS SHOWN.
- ⑭ SEAL FOR 1-1/4" STRAPPING (198 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2 AND THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

ARROW INDICATES FORWARD END OF CONTAINER WHICH MUST BE POSITIONED AGAINST THE CAR SIDEWALL.



ISOMETRIC VIEW

SEE GENERAL NOTE "E" ON PAGE 2.



SECTION B-B

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" BY LOAD LENGTH PLUS 6" (DOUBLED) (2 REQD). PRE-POSITION, NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE GENERAL NOTES "K" AND "L" ON PAGE 2, AND SPECIAL NOTE 4 ON PAGE 9.
- ② SIDE BLOCKING, 2" X 4" X 9'-2" (DOUBLED) (2 REQD). POSITION AS SHOWN TO EXTEND 5" BEYOND THE VERTICAL PIECES OF PIECE MARKED ④, AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 3 ON PAGE 9.
- ③ CENTER GATE FOR 4-HIGH (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE A" DETAIL ON PAGE 12. SEE SPECIAL NOTE 5 ON PAGE 9.
- ④ CENTER GATE FOR 3-HIGH (1 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 13.
- ⑤ STRUT, 2" X 6" BY A LENGTH TO SUIT (REF: 33") (DOUBLED) (9 REQD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "T" AND "U" ON PAGE 3. SEE SPECIAL NOTE 9 ON PAGE 9.
- ⑥ STRUT, 2" X 6" BY A LENGTH TO SUIT (REF: 12'-2") (DOUBLED) (3 REQD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ③ W/2-16d NAILS AT EACH END.
- ⑦ STRUT BRACING PAD, 2" X 4" BY 8'-0" (2 REQD). POSITION UNDER THE VERTICAL STRUT BRACING, PIECE MARKED ⑧, AS SHOWN.
- ⑧ VERTICAL STRUT BRACING, 2" X 4" X 15" (6 REQD). NAIL TO THE STRUTS W/3-10d NAILS. TOENAIL TO THE STRUT BRACING PAD, PIECE MARKED ⑦, W/2-10d NAILS.
- ⑨ HORIZONTAL STRUT BRACING, 2" X 4" X 7'-7" (2 REQD). NAIL TO THE STRUTS, PIECE MARKED ⑥, W/3-10d NAILS AT EACH JOINT.
- ⑩ DOORWAY PROTECTION FOR 4-HIGH (1 REQD). SEE THE DETAIL ON PAGE 13, AND SPECIAL NOTES 6 AND 7 ON PAGE 9.

(CONTINUED ABOVE)

(SPECIAL NOTES CONTINUED)

11. IF THE DOOR HEIGHT OF THE CAR TO BE LOADED IS AT LEAST 9'-10", STACKS OF FOUR CONTAINERS, UNITIZED WITH PIECES MARKED ①, ②, AND ④, CAN BE LIFTED AS A UNIT AND TRANSPORTED INTO THE CAR IN LIEU OF THE LOADING OF 2-HIGH STACKS. INSTALLATION OF THE UNITIZING STRAPS, PIECE MARKED ②, IF DONE INSIDE THE CAR, MUST BE ACCOMPLISHED IN THE DOORWAY AREA WHERE ACCESS CAN BE HAD TO BOTH SIDES OF A CONTAINER STACK.
12. IF THE CAR DOOR OPENING HEIGHT IS AT LEAST 9'-10", AN ADDITIONAL THREE CONTAINERS CAN BE POSITIONED IN THE DOORWAY OF THE DEPICTED LOAD. PIECES MARKED ③, ⑥, ⑦, ⑧, AND ⑨ WILL THEN NOT BE REQUIRED. OMIT THE STRUT LEDGER FROM THE CENTER GATE WHICH IS POSITIONED BETWEEN THE CROSSWISE AND LENGTHWISE STACKS. OMIT PIECE MARKED ④ AND REPLACE IT WITH A CENTER GATE "A", PIECE MARKED ⑤, ADD THREE STRUTS, PIECE MARKED ⑤, SIX UNITIZING STRAPS, PIECE MARKED ①, AND 12 SEALS, PIECE MARKED ④.
13. IF A 3-LAYER LOAD IS TO BE SHIPPED, THE UNITIZING STRAPS, PIECE MARKED ②, WILL BE THREADED THRU THE FORK TINE OPENINGS OF THE SECOND AND THIRD LAYER CONTAINERS AS THEY ARE FOR A 4-HIGH LOAD. THE CENTER GATE "A", PIECE MARKED ⑤, WILL THEN BE FOR 3-HIGH, AND PIECES MARKED ⑥, ⑦, ⑧, AND ⑨ WILL NOT BE REQUIRED. ALSO, 36 UNITIZING STRAPS AND 72 SEALS, PIECES MARKED ① AND ④, WILL NOT BE REQUIRED.

SPECIAL NOTES:

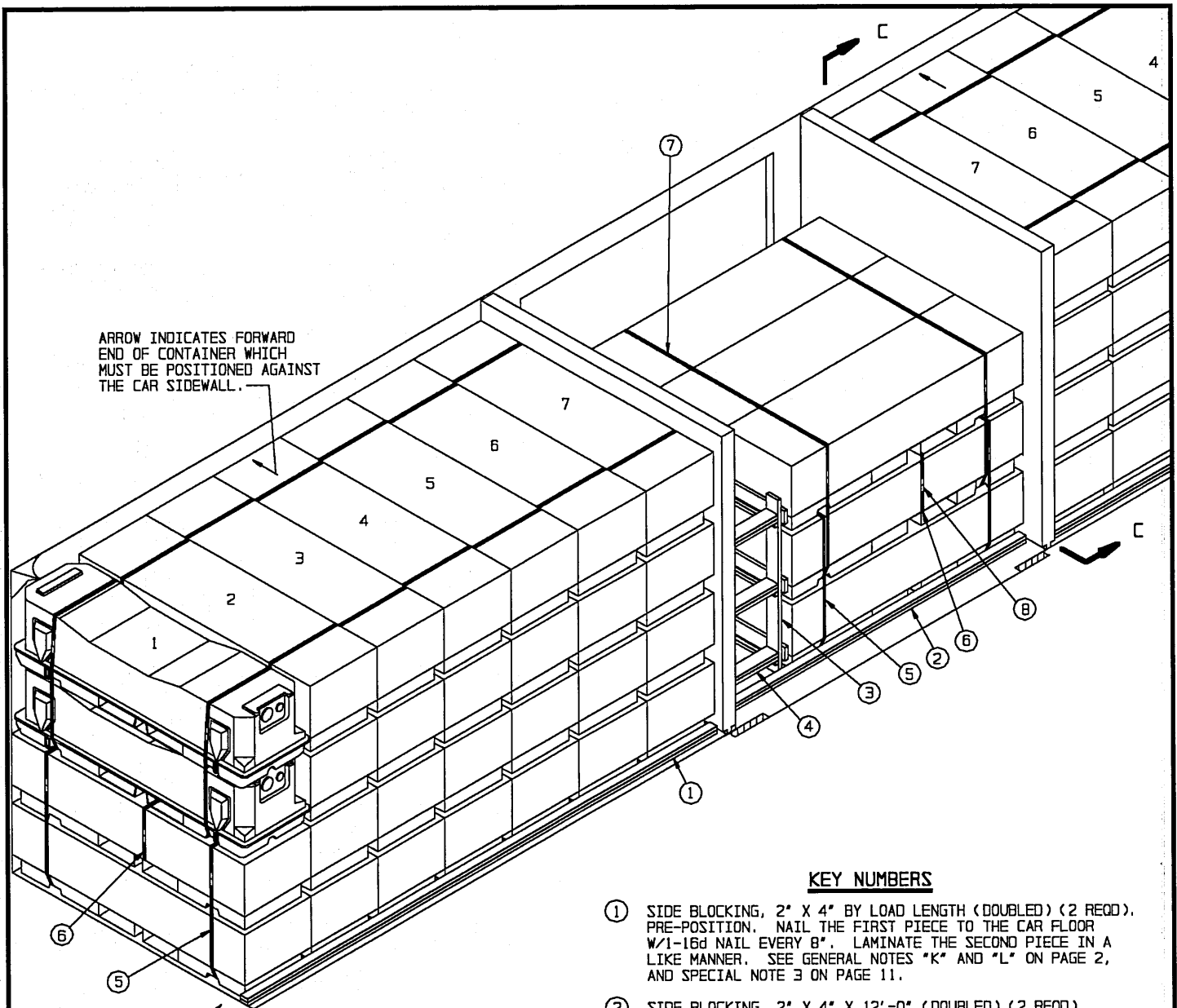
1. A 60'-8" LONG BY 9'-6" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS (9'-3" MINIMUM WIDTH) AND CARS HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTE "E" ON PAGE 2.
2. A TYPICAL LOAD IS SHOWN ON PAGE 8. A MAXIMUM OF 65 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 65,975 POUNDS CAN BE LOADED IN A 50'-6" LONG CAR OR 49 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 49,735 POUNDS CAN BE LOADED IN A 40'-6" CAR WHEN USING THE DEPICTED LOADING PROCEDURES.
3. THE LIFTING RINGS ON THE LENGTHWISE-POSITIONED CONTAINERS WILL HAVE TO BE RAISED TO AN UPRIGHT POSITION BEFORE LOADING IN ORDER CLEAR THE SIDE BLOCKING.
4. IF THE CAR TO BE LOADED IS 9'-4" WIDE OR LESS, SIDE BLOCKING, PIECE MARKED ①, WILL NOT BE REQUIRED FOR THE CONTAINERS POSITIONED CROSSWISE IN THE CAR. NOTE THAT WHEN SIDE BLOCKING IS NOT REQUIRED, IT WILL BE NECESSARY TO USE DOORWAY PROTECTION ASSEMBLIES ON EACH SIDE OF THE CAR, SHOWN IN THE LOAD ON PAGE 8 AS PIECE MARKED ⑩.
5. THE STRUT LEDGERS AT THE 6", 34-1/2", AND 63-1/2" HEIGHTS ON CENTER GATE A, PIECE MARKED ③, POSITIONED AGAINST CONTAINER STACK NUMBER 10, WILL BE DELETED. ONLY THE TOP STRUT LEDGER IS REQUIRED FOR THIS GATE.
6. DOORWAY PROTECTION IS REQUIRED FOR ALL CONTAINER 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 ⑩ IN THE LOAD ON PAGE 8, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 22 FOR OTHER TYPES OF DOORWAY PROTECTION FOR SLIDING DOORS.
7. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, THE CROSSWISE-CONTAINER STACKS MAY BE LOADED AGAINST THE PLUG DOOR. IF THE CAR IS EQUIPPED WITH COMBINATION PLUG AND SLIDING DOORS, A WOODEN DOOR GATE MUST BE PROVIDED FOR THE SLIDING DOOR PORTION ON THE ONE SIDE OF THE CAR.
8. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE CONTAINER STACKS FROM THE END PORTION OF THE LOAD, OR THE ENTIRE ONE, TWO, OR THREE TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD REFER TO THE TYPICAL LCL PROCEDURES ON PAGES 16 THRU 21 FOR GUIDANCE.
9. NOTE THAT 4" X 6" STRUTS MAY BE USED IN LIEU OF DOUBLED 2" X 6" STRUTS.
10. FOR THE THREE-HIGH LENGTHWISE STACKS IN THE DOORWAY AREA, THE STACK UNITIZING STRAPS, PIECE MARKED ①, ARE TO BE INSTALLED AROUND THE LOWER TWO CONTAINERS, AND THE UNITIZING STRAPS, PIECE MARKED ②, ARE TO BE INSTALLED THRU THE FORK OPENINGS OF THE SECOND AND THIRD-LAYER CONTAINERS.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	60	30
2" X 2"	60	20
2" X 3"	16	8
2" X 4"	180	120
2" X 6"	302	302
NAILS	NO. REQD	POUNDS
6d (2")	24	1/4
10d (3")	354	5-1/2
12d (3-1/4")	16	1/4
16d (3-1/2")	220	5
STEEL STRAPPING, 1-1/4"		
X .035" OR .031" - - - -	1,479' REQD - - - -	212 LBS
SEAL FOR 1-1/4" STRAPPING - - -	198 REQD - - - -	9 LBS

LOAD AS SHOWN

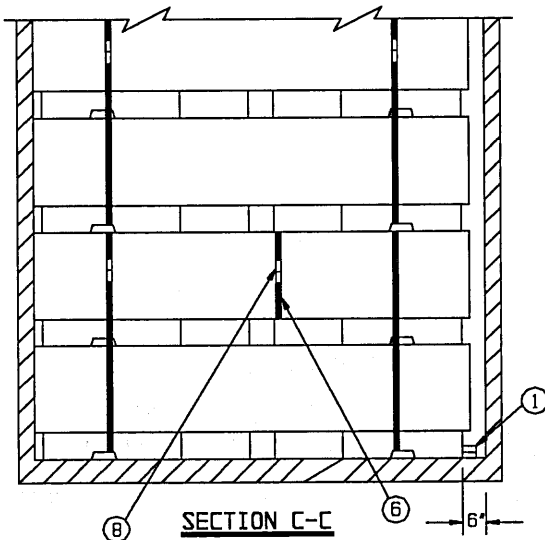
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER - - - - -	81 - - - - -	82,215 LBS
DUNNAGE - - - - -	- - - - -	1,192 LBS
TOTAL WEIGHT - - - - -		83,407 LBS (APPROX)



ARROW INDICATES FORWARD
END OF CONTAINER WHICH
MUST BE POSITIONED AGAINST
THE CAR SIDEWALL.

SEE GENERAL NOTE
"E" ON PAGE 2.

ISOMETRIC VIEW



SECTION C-C

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" BY LOAD LENGTH (DOUBLED) (2 REOD), PRE-POSITION. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE GENERAL NOTES "K" AND "L" ON PAGE 2, AND SPECIAL NOTE 3 ON PAGE 11.
- ② SIDE BLOCKING, 2" X 4" X 12'-0" (DOUBLED) (2 REOD), POSITION AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE SPECIAL NOTE 3 ON PAGE 11.
- ③ CENTER GATE (2 REOD). SEE THE "CENTER GATE C" DETAIL ON PAGE 13.
- ④ STRUT, 2" X 6" BY A LENGTH TO SUIT (REF: 30") (DOUBLED (9 REOD)). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "T" AND "U" ON PAGE 3. SEE SPECIAL NOTE 8 ON PAGE 11.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (62 REOD). INSTALL AS SHOWN IN THE "UNITIZATION PROCEDURES" ON PAGE 5.
- ⑥ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 11'-0" LONG STEEL STRAPPING (17 REOD). THREAD THRU THE FORK TINE OPENINGS OF TWO CONTAINERS AS SHOWN. SEE SPECIAL NOTES 9 AND 10 ON PAGE 11.
- ⑦ DOORWAY PROTECTION STRAP, 1-1/4" X .031" OR .035" X 26'-6" (2 REOD). THREAD THRU THE FORK TINE OPENINGS OF A SECOND LAYER CONTAINER TO ENCIRCLE THE TOP OF A THIRD-LAYER CONTAINER AS SHOWN.
- ⑧ SEAL FOR 1-1/4" STRAPPING (162 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "M" ON PAGE 2 AND THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.

(SPECIAL NOTES CONTINUED)

10. IF THE DOOR HEIGHT OF THE CAR TO BE LOADED IS AT LEAST 9'-10", STACKS OF FOUR CONTAINERS, UNITIZED WITH PIECES MARKED ⑤, ⑥, AND ⑦, CAN BE LIFTED AS A UNIT AND TRANSPORTED INTO THE CAR IN LIEU OF THE LOADING OF 2-HIGH STACKS. INSTALLATION OF THE UNITIZING STRAPS, PIECE MARKED ⑥, IF DONE INSIDE THE CAR, MUST BE ACCOMPLISHED IN THE DOORWAY AREA WHERE ACCESS CAN BE HAD TO BOTH SIDES OF A CONTAINER STACK.
11. IF THE CAR DOOR OPENING HEIGHT IS AT LEAST 9'-10", AN ADDITIONAL THREE CONTAINERS CAN BE POSITIONED IN THE DOORWAY OF THE DEPICTED LOAD. INCREASE THE HEIGHT OF THE CENTER GATES, PIECE MARKED ③, AND ADD THREE STRUTS, PIECE MARKED ④. SIX ADDITIONAL UNITIZING STRAPS AND 12 SEALS, PIECES MARKED ⑤ AND ⑥, WILL BE REQUIRED.
12. IF A 3-LAYER LOAD IS TO BE SHIPPED, THE UNITIZING STRAPS, PIECE MARKED ⑥, WILL BE THREADED THRU THE FORK TINE OPENINGS OF THE SECOND AND THIRD LAYER CONTAINERS AS THEY ARE FOR A 4-HIGH LOAD. TWENTY-EIGHT UNITIZING STRAPS AND 56 SEALS, PIECES MARKED ⑥ AND ⑦, WILL NOT BE REQUIRED.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-6" WIDE CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS (9'-3" MINIMUM WIDTH) AND CARS HAVING WIDER DOOR OPENINGS CAN BE USED. SEE GENERAL NOTES "AA" THRU "EE" ON PAGE 4.
2. A TYPICAL LOAD IS SHOWN ON PAGE 10. A MAXIMUM OF 81 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 82,215 POUNDS CAN BE LOADED IN A 60'-8" LONG CAR OR 49 CONTAINERS FOR AN APPROXIMATE LADING WEIGHT OF 49,735 POUNDS CAN BE LOADED IN A 40'-6" CAR WHEN USING THE DEPICTED LOADING PROCEDURES.
3. THE LIFTING RINGS ON THE LENGTHWISE-POSITIONED CONTAINERS WILL HAVE TO BE RAISED TO AN UPRIGHT POSITION BEFORE LOADING IN ORDER TO CLEAR THE SIDE BLOCKING.
4. IF THE CAR TO BE LOADED IS 9'-4" WIDE OR LESS, SIDE BLOCKING, PIECE MARKED ①, WILL NOT BE REQUIRED FOR THE CONTAINERS POSITIONED CROSSWISE IN THE CAR.
5. DOORWAY PROTECTION IS REQUIRED FOR ALL CONTAINER STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO THE DOORWAY AREA BY ONE-HALF OR MORE OF THE STACK WIDTH. IF CONTAINERS ARE POSITIONED CROSSWISE IN THE DOORWAY AREA AS SHOWN IN THE LOAD ON PAGE 6, WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS PIECE MARKED ① IN THE LOAD ON PAGE 6, IS APPLICABLE FOR BOXCARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS. REFER TO PAGE 22 FOR OTHER TYPES OF DOORWAY PROTECTION FOR SLIDING DOORS.
6. IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, THE CROSS-WISE CONTAINER STACKS MAY BE LOADED AGAINST THE PLUG DOOR, IF APPLICABLE. IF THE CAR IS EQUIPPED WITH COMBINATION PLUG AND SLIDING DOORS, A WOODEN DOOR GATE MUST BE PROVIDED FOR THE SLIDING DOOR PORTION ON THE ONE SIDE OF THE CAR.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED BY OMITTING ONE OR MORE CONTAINER STACKS FROM THE END PORTIONS OF THE LOAD, OR THE ENTIRE ONE, TWO, OR THREE TOP TIERS CAN BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD REFER TO THE TYPICAL LCL PROCEDURES ON PAGES 16 THRU 21 FOR GUIDANCE.
8. NOTE THAT 4" X 6" STRUTS MAY BE USED IN LIEU OF DOUBLED 2" X 6" STRUTS.
9. FOR THE THREE-HIGH LENGTHWISE STACKS IN THE DOORWAY AREA, THE STACK UNITIZING STRAPS, PIECE MARKED ⑤, ARE TO BE INSTALLED AROUND THE LOWER TWO CONTAINERS, AND THE UNITIZING STRAPS, PIECE MARKED ⑥, ARE TO BE INSTALLED THRU THE FORK OPENINGS OF THE SECOND AND THIRD-LAYER CONTAINERS.

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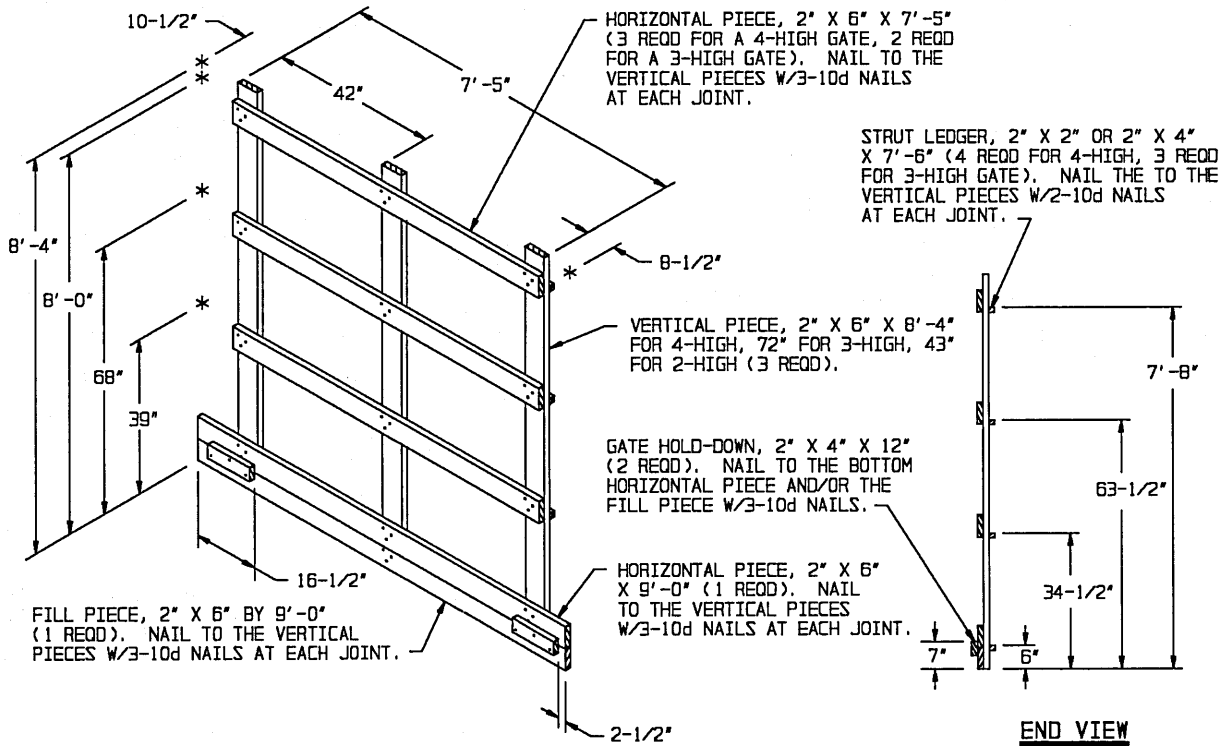
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	45	15
2" X 4"	125	84
2" X 6"	146	146
NAILS	NO. REQD	POUNDS
10d (3")	159	2-1/2
16d (3-1/2")	220	5
STEEL STRAPPING, 1-1/4"		
X .035" OR .031" - - - - -	1,232' REQD - - - - -	176 LBS
SEAL FOR 1-1/4" STRAPPING - - - - -	162 REQD - - - - -	7 LBS

LOAD AS SHOWN

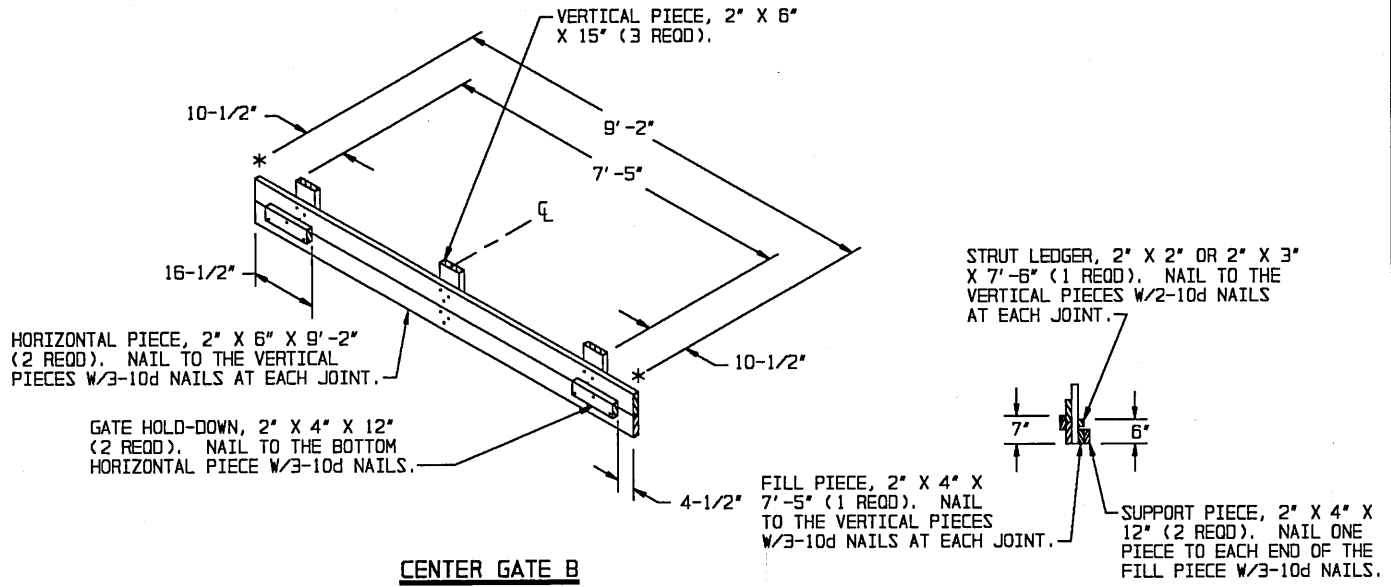
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER - - - - -	65 - - - - -	65,975 LBS
DUNNAGE - - - - -	- - - - -	681 LBS
TOTAL WEIGHT - - - - -		66,656 LBS (APPROX)

POSITION THIS END OF GATE AGAINST CAR SIDEWALL.



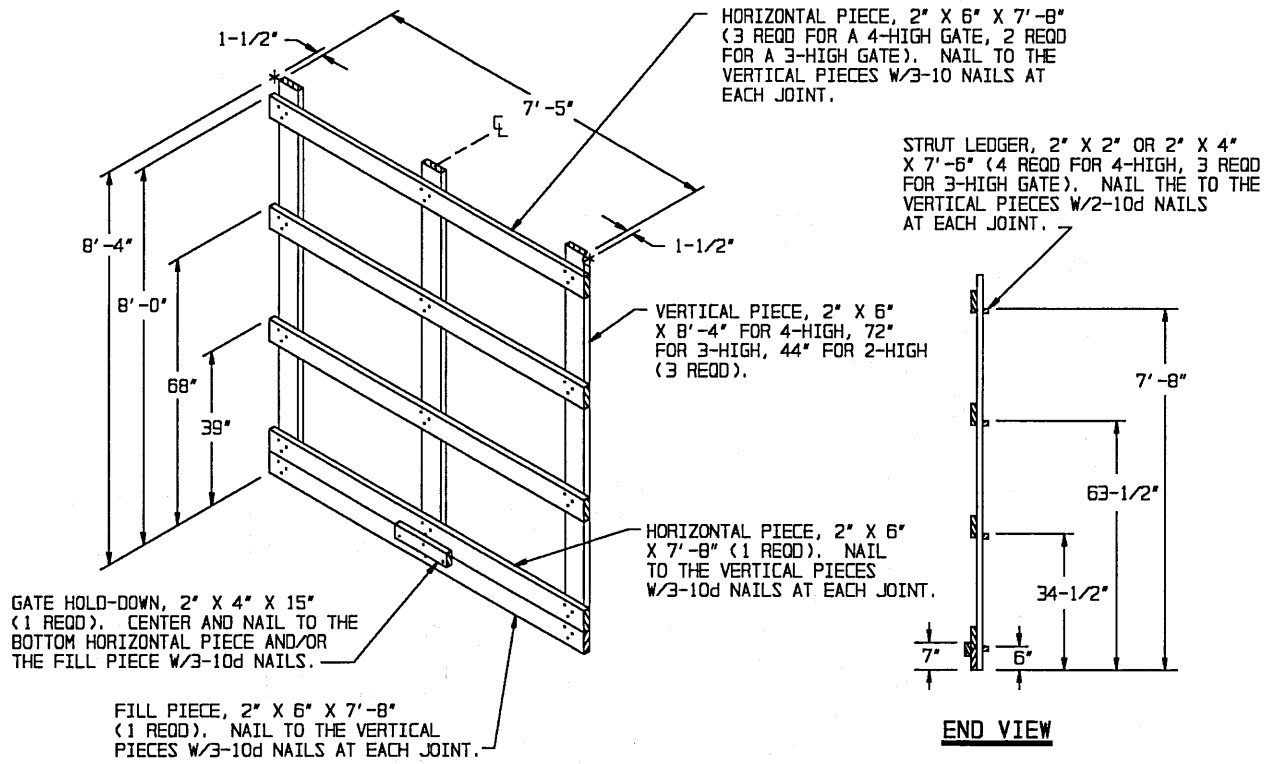
CENTER GATE A

ONE RIGHT HAND AND ONE LEFT HAND GATE REQUIRED.

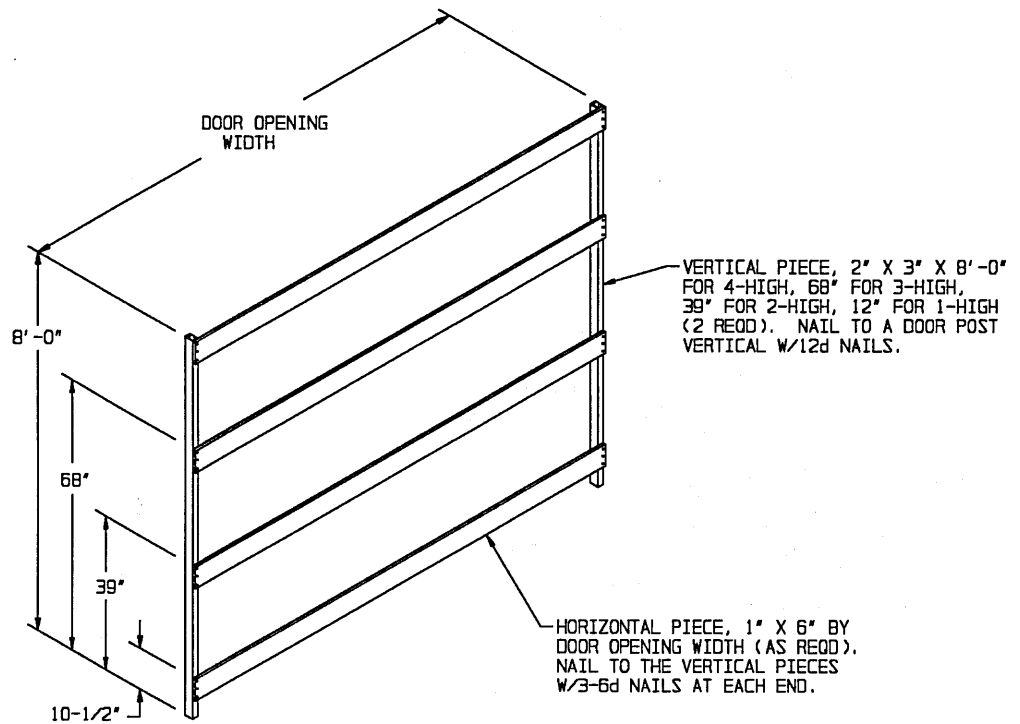


CENTER GATE B

END VIEW

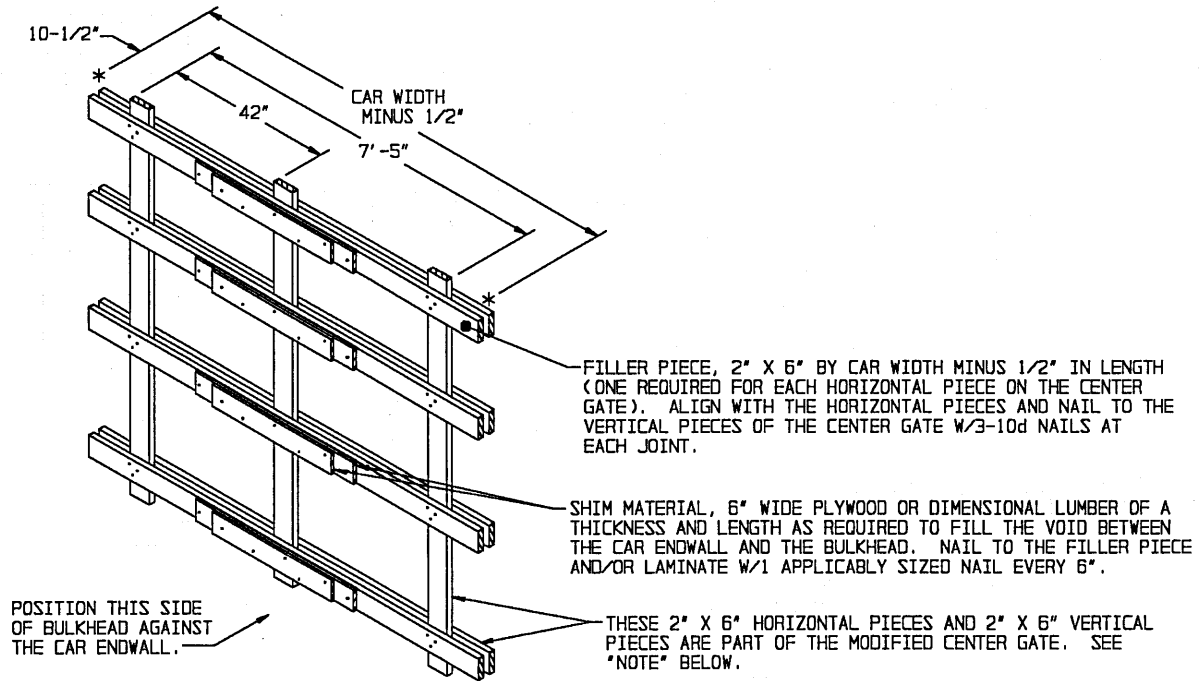


CENTER GATE C



DOORWAY PROTECTION

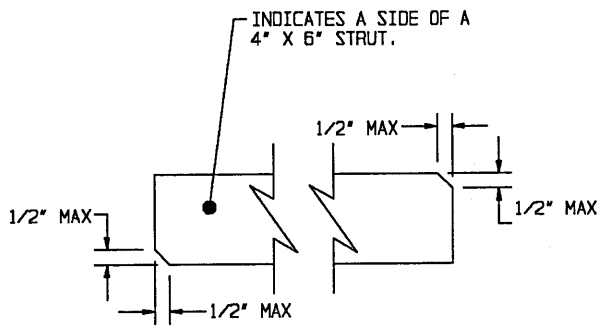
DETAILS



END-OF-CAR-BULKHEAD

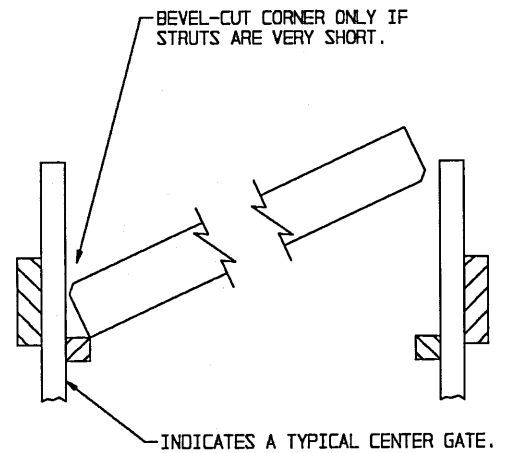
THE BULKHEAD SHOWN IS FOR USE IN THE NEAR END OF THE DEPICTED LOADS. THE GATE WILL BE OPPOSITE HAND FOR THE OTHER END. SEE "NOTE" BELOW.

NOTE:
 IF A BOXCAR TO BE LOADED HAS BOWED ENDWALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES, 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 BOXCAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS. THE BULKHEAD MAY BE FABRICATED FROM THE CENTER GATE "A", HOWEVER THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD-DOWN PIECES. NOTE THAT THE HORIZONTAL PIECES WILL BE CAR WIDTH MINUS 1/2" AND THE FILL PIECE MAY BE OMITTED. THE VERTICAL PIECES AND HORIZONTAL PIECES WILL BE LOCATED AS SHOWN ABOVE AND/OR BY THE CENTER GATE "A" DETAIL ON PAGE 12.



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"). THIS DETAIL IS APPLICABLE FOR THE 4" X 6" STRUTS WHICH MAY BE USED AS AN ALTERNATIVE TO USING DOUBLED 2" X 6" STRUTS.



STRUT INSTALLATION

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



ONE SEAL WITH TWO PAIR OF NOTCHES.

STRAP JOINT A

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



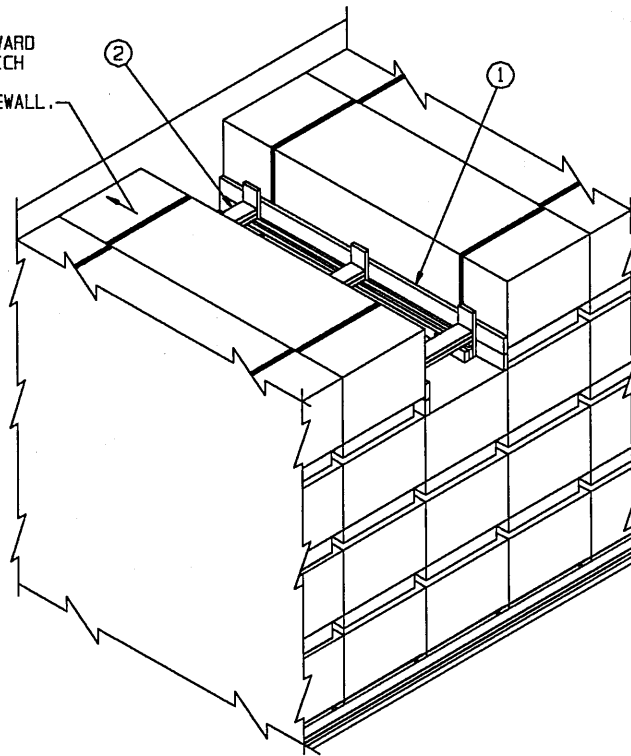
TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS EACH SEAL.

STRAP JOINT B

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

END-OVER-END LAP JOINT DETAILS

ARROW INDICATES FORWARD
END OF CONTAINER WHICH
MUST BE POSITIONED
AGAINST THE CAR SIDEWALL.



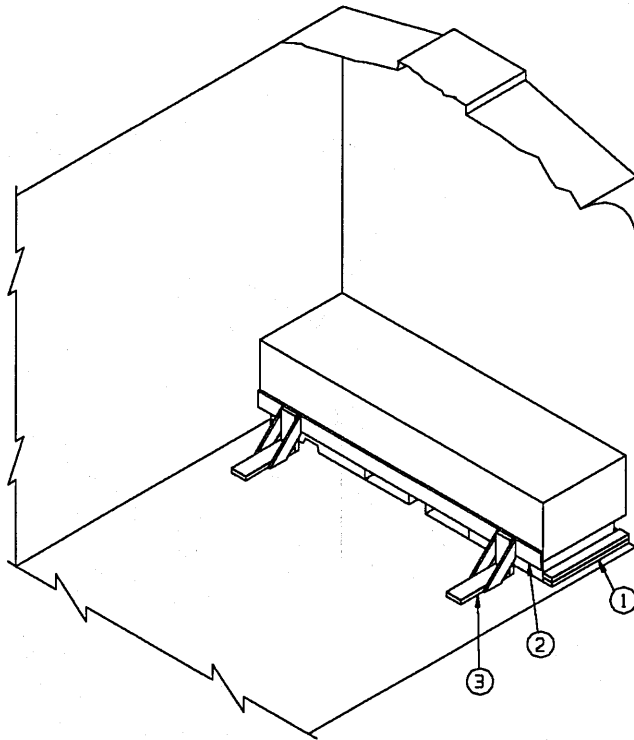
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-6" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS (9'-3" MINIMUM) CAN ALSO BE USED.
2. A CROSSWISE POSITIONED CONTAINER OMITTED FROM THE TOP LAYER OF A 4-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER CONTAINER FROM A 3-LAYER OR A 2-LAYER LOAD.
3. THE OMITTED CONTAINER PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH. ALSO, THERE SHOULD BE AT LEAST ONE LOAD UNIT BETWEEN THE OMITTED CONTAINER AND THE CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED CONTAINER AND THE FLOOR BLOCKING ARE SHOWN. REFER TO ANY OF THE FULL LOAD PAGES FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.

KEY NUMBERS

- ① CENTER GATE (2 REOD). SEE THE "CENTER GATE B" DETAIL ON PAGE 12.
- ② STRUT, 2" X 6" BY CUT TO FIT (REF: 26") (DOUBLED) (3 REOD). LAMINATE W/1-10d NAIL EVERY 6" AND TOENAIL THE TOP PIECE TO PIECES MARKED ① W/2-16d NAILS AT EACH END. SEE THE "STRUT INSTALLATION DETAIL" ON PAGE 15 AND GENERAL NOTES "T" AND "U" ON PAGE 3.



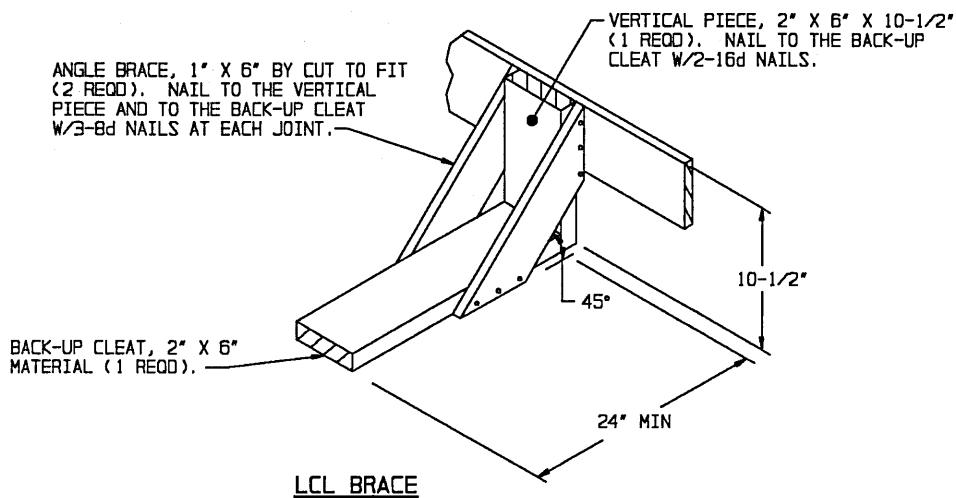
ISOMETRIC VIEW

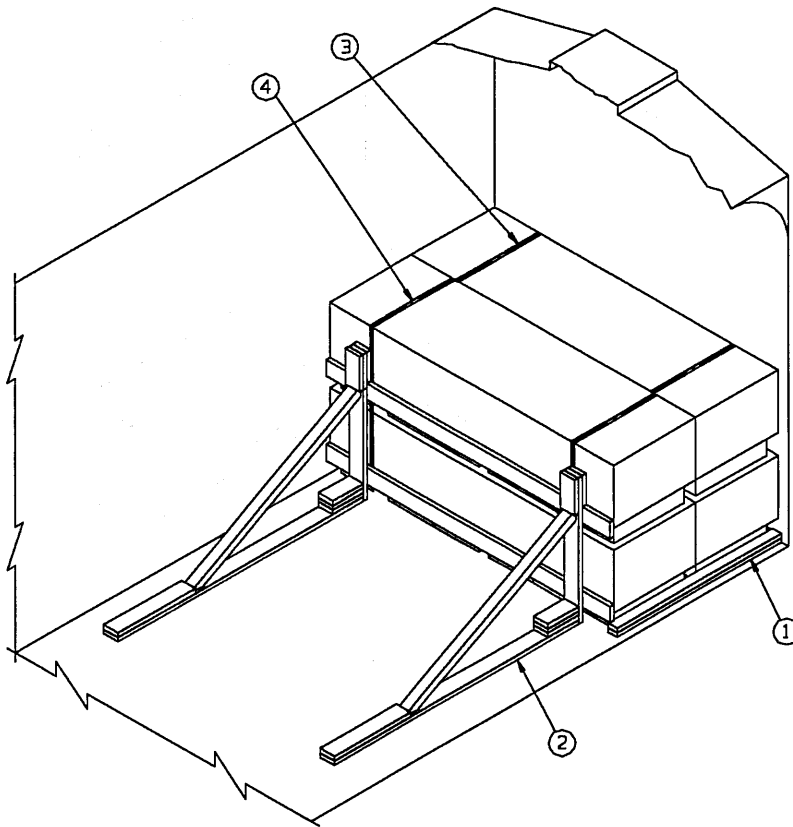
SPECIAL NOTES:

1. A 9'-6" WIDE CONVENTIONAL TYPE BOXCAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS (9'-3" MINIMUM) CAN BE USED.
2. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. A MINIMUM OF TWO BRACES MUST BE USED.
3. IF THE CAR TO BE LOADED IS 9'-4" WIDE OR LESS, SIDE BLOCKING, PIECE MARKED ①, WILL NOT BE REQUIRED.

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" BY LOAD LENGTH (DOUBLED) (1 REOD). PRE-POSITION. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE GENERAL NOTE "K" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② HORIZONTAL PIECE, 1" X 6" X 9'-0" (1 REOD). NAIL TO THE LCL BRACES W/3-6d NAILS AT EACH JOINT.
- ③ LCL BRACE (2 REOD). SEE THE "LCL BRACE" DETAIL BELOW. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "R" ON PAGE 3 AND SPECIAL NOTE 2 AT LEFT.





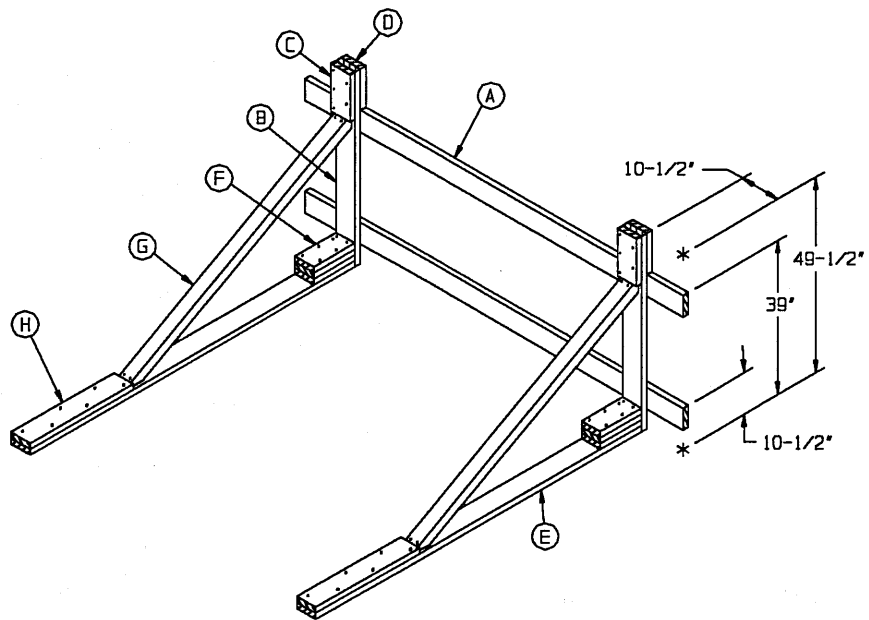
ISOMETRIC VIEW

SPECIAL NOTES:

1. A FOUR-CONTAINER LOAD IS SHOWN IN A 9'-6" WIDE CONVENTIONAL BOXCAR. CARS OF OTHER WIDTHS (9'-3" MINIMUM) CAN BE USED.
2. IF THE CAR TO BE LOADED IS 9'-4" WIDE OR LESS, SIDE FILL, PIECE MARKED ①, WILL NOT BE REQUIRED.
3. THE TOTAL KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 LBS.

KEY NUMBERS

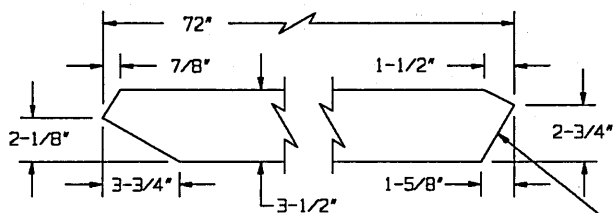
- ① SIDE BLOCKING, 2" X 4" BY LOAD LENGTH (DOUBLED) (1 REQD). PRE-POSITION. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". LAMINATE THE SECOND PIECE IN A LIKE MANNER. SEE GENERAL NOTE "K" ON PAGE 2 AND SPECIAL NOTE 2 AT LEFT.
- ② KNEE BRACE ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 19 AND SPECIAL NOTE 3 AT LEFT.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" BY A LENGTH TO SUIT (REF: 16'-0") (4 REQD). THREAD THRU THE FORK TINE OPENINGS OF THE LOWER CONTAINER.
- ④ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). CRIMP EACH SEAL WITH TWO PAIR OF NOTCHES. SEE GENERAL NOTE "M" ON PAGE 2 AND THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 15.



ISOMETRIC VIEW

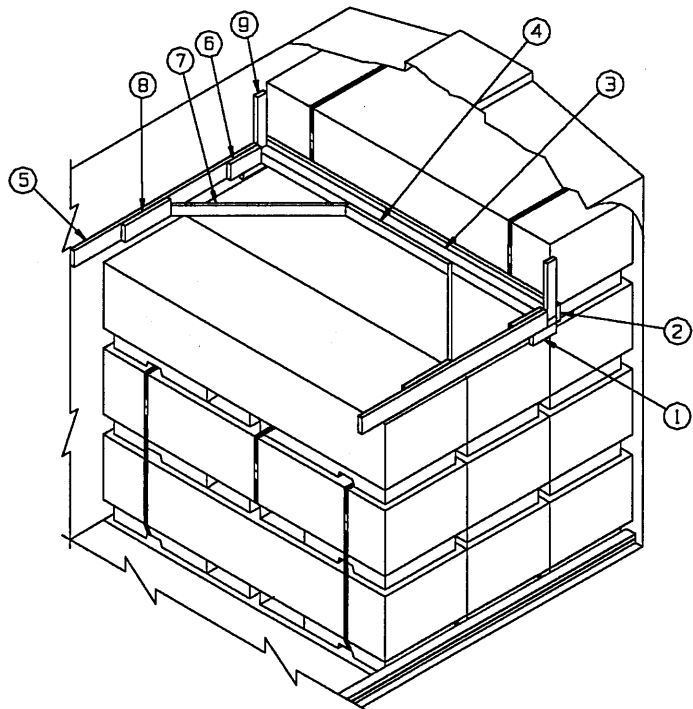
KEY LETTERS

- (A) LOAD BEARING PIECE, 2" X 6" X 9'-0" (2 REOD). NAIL TO THE VERTICAL PIECES, PIECE MARKED (B), W/3-10d NAILS AT EACH JOINT.
- (B) VERTICAL PIECE, 2" X 6" X 49-1/2" (2 REOD). LOCATE 10-1/2" FROM END OF LOAD BEARING PIECE, PIECE MARKED (A).
- (C) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REOD). NAIL TO THE VERTICAL PIECE, PIECE MARKED (B), W/5-10d NAILS.
- (D) REINFORCING PIECE, 2" X 6" X 10-1/2" (2 REOD). POSITION IN CONTACT WITH PIECE MARKED (A) AND NAIL TO THE VERTICAL PIECE, PIECE MARKED (B), W/5-10d NAILS.
- (E) FLOOR CLEAT, 2" X 6" X 7'-8" (2 REOD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "K" ON PAGE 2.
- (F) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REOD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (E), W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD PIECE TO THE SECOND IN A LIKE MANNER. TOENAIL THE TOP PIECE TO THE VERTICAL PIECE W/2-10d NAILS.
- (G) BRACE, 4" X 4" X 72" (2 REOD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND FLOOR CLEAT, PIECES MARKED (B) AND (E), W/2-16d NAILS AT EACH JOINT.
- (H) BACK-UP CLEAT, 2" X 6" X 30" (2 REOD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (E), W/6-40d NAILS.



BRACE
4" X 4" MATERIAL

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



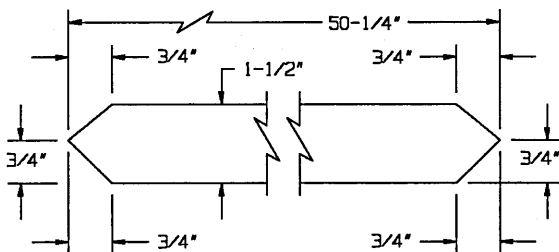
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-6" WIDE WOOD-LINED (SIDEWALLS) CONVENTIONAL BOXCAR IS SHOWN WITH A TYPICAL K-BRACE. WOOD-LINED CARS OF OTHER WIDTHS (9'-3" MINIMUM) CAN BE USED.
2. THE K-BRACE METHOD OF PARTIAL-LAYER (TIER) BRACING SHOWN MAY BE USED IN A WOOD-LINED CAR FOR THE SECUREMENT OF A PARTIAL TOP TIER, BE IT FIRST, SECOND, THIRD OR FOURTH TIER. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 4,000 POUNDS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 21.
3. CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ⑥, AND ⑨ 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: 60") 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.
4. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

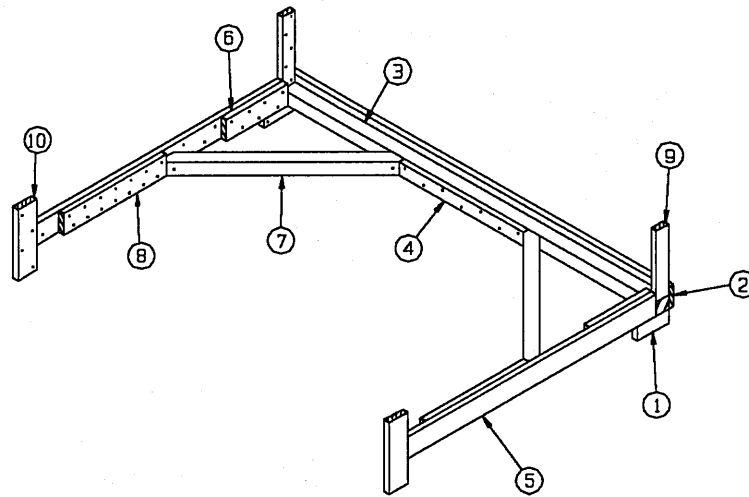
KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 9" (2 REOD). POSITION HORIZONTALLY AS SHOWN 2" ABOVE THE LOAD. NAIL TO THE CAR SIDEWALL W/4-12d NAILS.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REOD). 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 IN LENGTH (CUT TO FIT) (1 REOD).
- ④ CENTER CLEAT, 2" X 4" X 40" (1 REOD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 4 AT LEFT.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (2 REOD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 12" (2 REOD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/4-16d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 4" X 50-1/4" (2 REOD). 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/2-16d NAILS AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 24" (2 REOD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/8-16d NAILS.
- ⑨ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REOD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.



DIAGONAL BRACE

SEE SPECIAL NOTE 3 ABOVE.



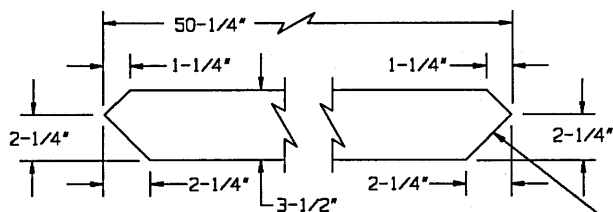
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "B" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 7,000 POUNDS. THIS WILL BE NOT MORE THAN SIX CONTAINERS. IF THE PARTIAL TIER TO BE BRACED WEIGHS LESS THAN 4,000 POUNDS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 20 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, ⑧, 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 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 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 20 FOR A TYPICAL INSTALLATION OF A K-BRACE.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 9" (2 REOD). POSITION HORIZONTALLY AS SHOWN 2" ABOVE THE LOAD. NAIL TO THE CAR SIDEWALL W/4-12d NAILS. SEE SPECIAL NOTE 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REOD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTE "K" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REOD).
- ④ CENTER CLEAT, 2" X 4" X 40" (1 REOD). 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" (2 REOD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (2 REOD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (2 REOD). 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" (2 REOD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REOD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑩ VERTICAL BACK-UP CLEAT, 2" X 6" X 18" (2 REOD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS.



DIAGONAL BRACE

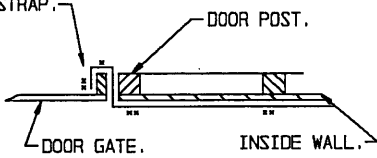
SEE SPECIAL NOTE 2 ABOVE.

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.

HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (3 REOD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END. SEE THE "DOORWAY PROTECTION" DETAIL ON PAGE 13 FOR HEIGHT LOCATIONS.

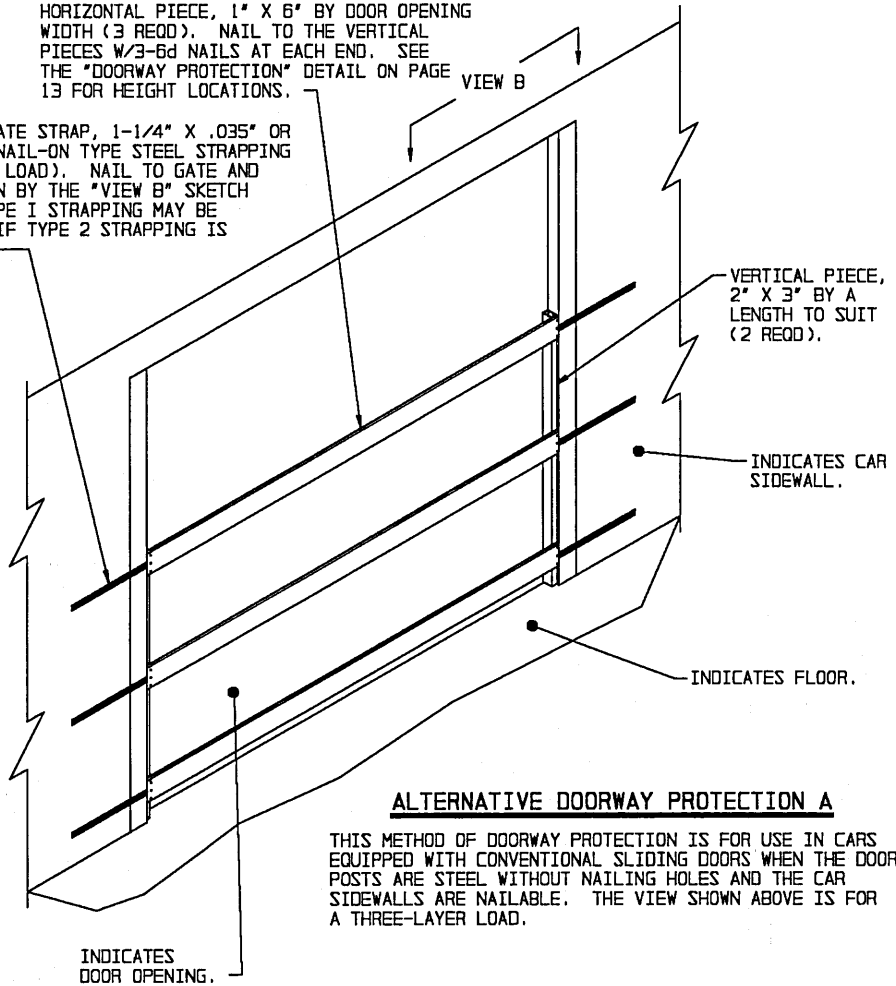
DOORWAY PROTECTION GATE STRAP, 1-1/4" X .035" OR .031" X 3'-0" (REF) NAIL-ON TYPE STEEL STRAPPING (2 REOD PER LAYER OF LOAD). NAIL TO GATE AND CAR SIDEWALL AS SHOWN BY THE "VIEW B" SKETCH BELOW. NOTE THAT TYPE 1 STRAPPING MAY BE PUNCHED FOR NAILING IF TYPE 2 STRAPPING IS NOT AVAILABLE.

INDICATES LOCATION OF 7 (MIN) 4d NAILS PER STRAP.



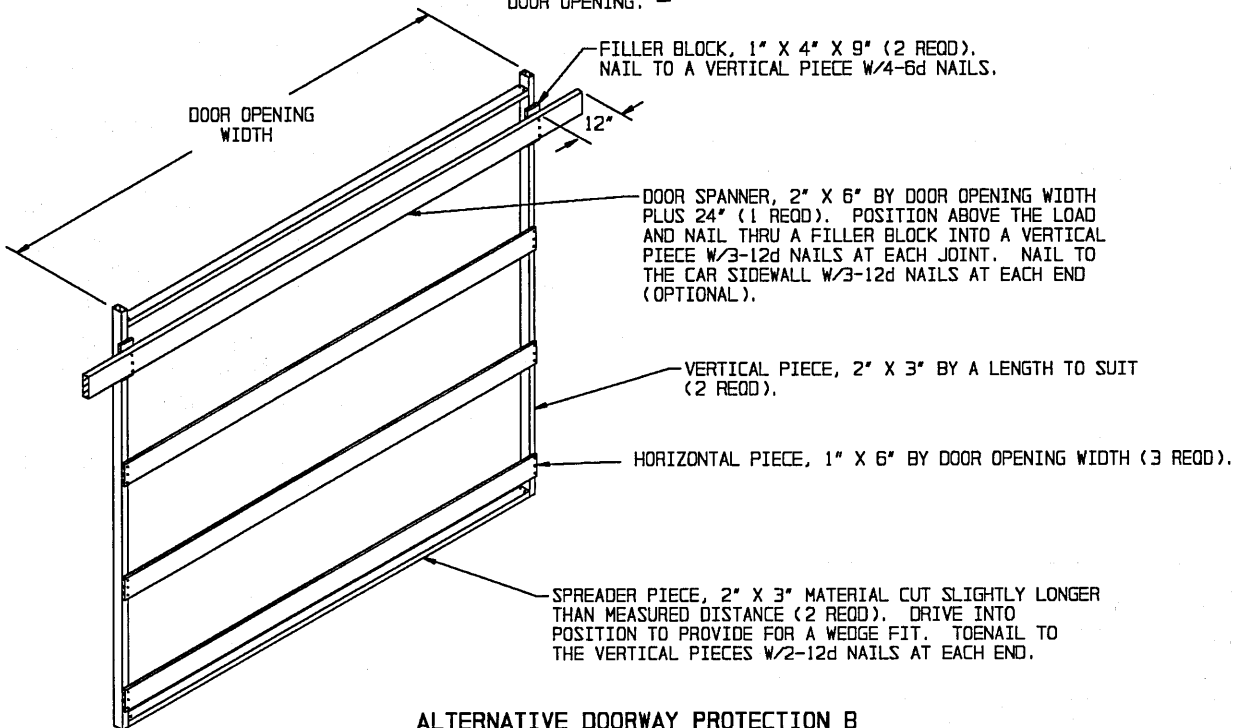
VIEW B

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.



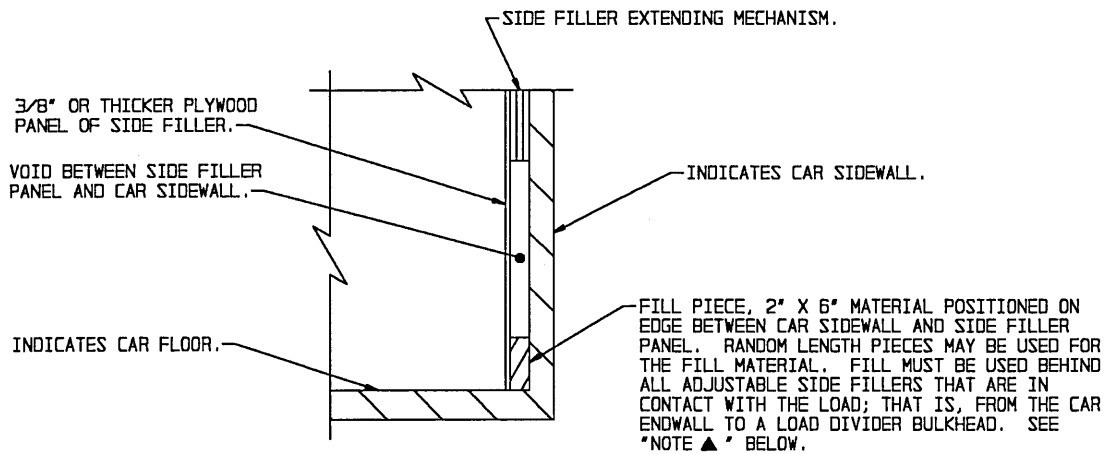
ALTERNATIVE DOORWAY PROTECTION A

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 AVAILABLE. THE VIEW SHOWN ABOVE IS FOR A THREE-LAYER LOAD.



ALTERNATIVE DOORWAY PROTECTION B

THIS METHOD OF DOORWAY PROTECTION IS FOR USE IN CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS WHEN THE DOOR POSTS ARE NOT AVAILABLE. IF THE CAR HAS AVAILABLE SIDEWALLS, NAIL-ON TYPE STRAPPING MAY BE USED TO SECURE THE GATE IN LIEU OF USING THE SPREADER PIECES. SEE THE "ALTERNATIVE DOORWAY PROTECTION A" DETAIL ABOVE FOR GUIDANCE.

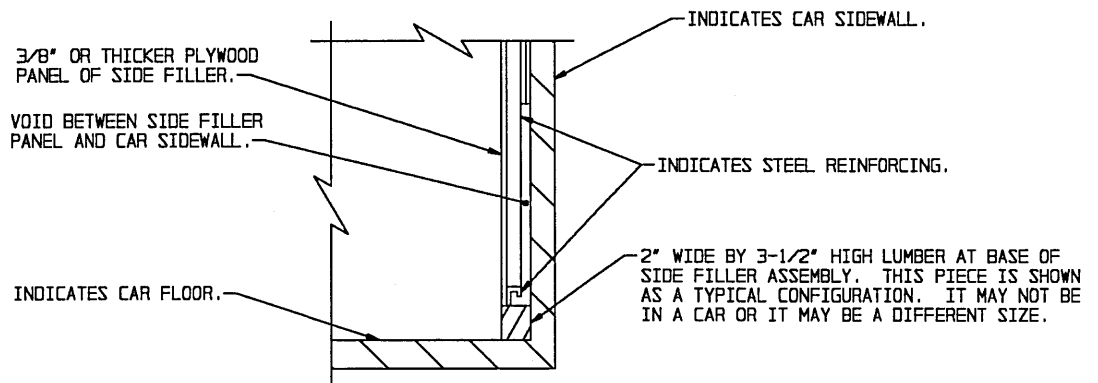


TYPICAL TYPE A

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.

