

APPROVED BY
BUREAU OF EXPLOSIVES

D. M. Hardy

DATE 1-11-96

LOADING AND BRACING (CL & LCL) IN BOXCARS[⊕] OF CBU ITEMS PACKED IN CNU-80/E CONTAINERS AND/OR MAU ITEMS PACKED IN CNU-203/E AND/OR CNU-152/E CONTAINERS

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⊕ THIS PROCEDURAL 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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PROJECT SP 31-66

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE FOR CBU ITEMS PACKED IN CNU-80/E CONTAINERS AND MAU ITEMS INCLUDING MAU-157/B, MAU-157A/B, AND MAU-169/B PACKED IN CNU-203/E OR CNU-152/E CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH CBU OR MAU ITEMS. SEE THE "CONTAINER STACK DETAIL" ON PAGES 4 AND 5 FOR DETAILS OF THE CONTAINERS.
- 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. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF CBU ITEMS PACKED IN CNU-80/E CONTAINERS AND/OR MAU ITEMS PACKED IN CNU-203/E AND/OR CNU-152/E CONTAINERS 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 15 FOR GUIDANCE.
- F. 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.
- G. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH CNU-80/E, CNU-203/E, AND/OR CNU-152/E CONTAINERS, 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.

(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 1, 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.

(GENERAL NOTES CONTINUED)

- H. 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".
- J. 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.
- K. 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.
- L. 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 33 FOR GUIDANCE.
- M. 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.
- N. 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.
- O. 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.
- P. 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.

REVISIONS

REVISION NUMBER 1, DATED JULY 1995, CONSISTS OF:

1. CHANGING LOADING PATTERNS FROM LENGTHWISE TO CROSSWISE LOADING, EXCEPT IN THE DOORWAY.
2. UPDATING THE GENERAL NOTES AND MATERIAL SPECIFICATIONS.
3. ADDING PROCEDURES FOR THE CNU-203/E AND 152/E CONTAINERS.
4. ADDING PROCEDURES FOR CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

GENERAL NOTES

(FOR CONVENTIONAL TYPE BOXCARS)

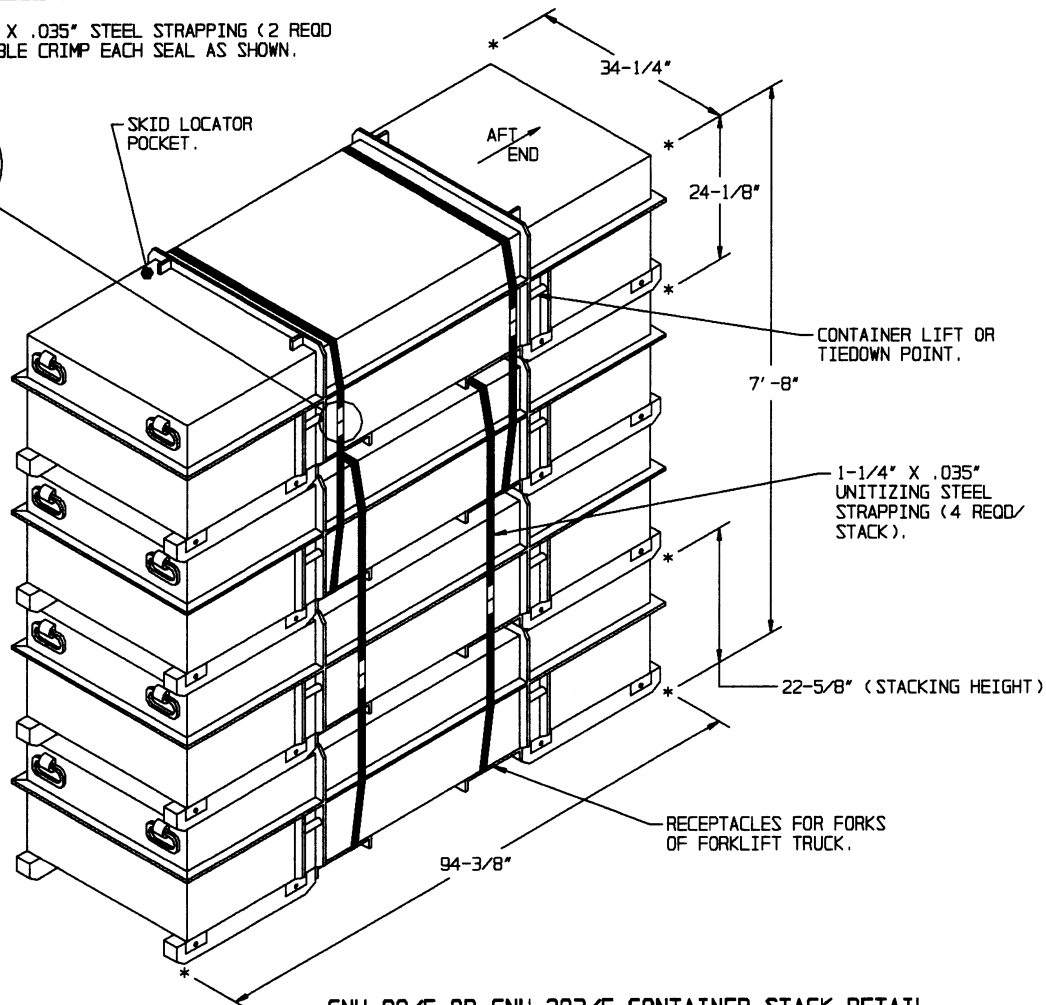
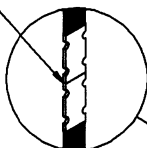
- D. IF THE CAR BEING USED FOR A SHIPMENT IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE "DOORWAY BLOCKING" PIECES IN THE FULL LOADS AND TO THE NAILING TO THE CAR FLOOR OF THE LCL BRACES 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 "J" ON PAGE 2.
- R. 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 STRONG POINTS OF THE CONTAINERS, SUCH AS THE COVER FLANGE OR THE CONTAINER SKIDS. PADDING, OF 2" THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
- S. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN BY THE "TYPICAL STRUT BRACING" DETAIL ON PAGE 33. 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.
- T. 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 33 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.
- U. WHERE 2" X 2" PIECES ARE SPECIFIED FOR STRUT LEDGERS, 2" X 4" MATERIAL MAY BE SUBSTITUTED, IF DESIRED.
- V. 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 CBU AND/OR MAU ITEMS. 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 34 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 34, THE "FILL PIECE" MATERIAL IS NOT REQUIRED.
- DD. NOTICE: AFTER THE LOAD DIVIDER BULKHEADS ARE POSITIONED AGAINST THE LADING, AND THE LOCKING PINS ARE ENGAGED IN THE HOLES OF THE RAILS, THE LOWER LOCKING PINS MUST BE INSPECTED TO ENSURE THAT THE PINS ARE FULLY ENGAGED IN THE LOCKING HOLES. IF THE PINS ARE NOT FULLY SEATED IN THE LOCKING HOLES, THE LINKAGE MECHANISM WILL BE ADJUSTED AS REQUIRED SO THAT THE PINS WILL BE FULLY SEATED INTO THE LOCKING HOLES OF THE LOWER RAILS. IF PRESENT, DEBRIS MUST BE REMOVED FROM BENEATH THE LOCKING HOLES WHICH HAVE BEEN SELECTED FOR SECURING A LOAD DIVIDER BULKHEAD.
- EE. 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. THE "CONTAINER OMITTED" METHOD OF OMITTING A CONTAINER MAY BE USED TO ADJUST A LOAD QUANTITY DOWNWARD BY OTHER THAN A MULTIPLE OF A LOAD UNIT. SEE THE PROCEDURES ON PAGE 26 FOR GUIDANCE.
 2. 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, TWO-HIGH, 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.
 3. 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 27, OR WITH KNEE BRACES AS SHOWN ON PAGES 31 AND 32.
- FF. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHOD.

SEALS FOR 1-1/4" X .035" STEEL STRAPPING (2 RECD PER STRAP). DOUBLE CRIMP EACH SEAL AS SHOWN.



CNU-80/E OR CNU-203/E CONTAINER STACK DETAIL

DIMENSIONS - - - - - 94-3/8" L X 34-1/4" W X 24-1/8" H
 CUBE - - - - - 45.1 CU FT (APPROX)
 CNU-80/E WEIGHT - - 934 TO 1,174 LBS (APPROX)
 CNU-203/E WEIGHT - - 850 LBS (APPROX)

UNITIZATION AND HANDLING GUIDANCE

(UNITIZING AND HANDLING GUIDANCE CONTINUED)

1. STACKING CONTAINERS FOR UNITIZING.

- A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
- B. POSITION THE AFT END OF AN UPPER CONTAINER ABOVE THE AFT END OF THE NEXT LOWER CONTAINER.
- C. THE CONTAINER SKIDS OF AN UPPER CONTAINER SHOULD BE FULLY SEATED IN THE SKID LOCATOR POCKETS ON THE COVER OF THE NEXT LOWER CONTAINER.

2. INSTALLATION OF 1-1/4" X .035" OR .031" UNITIZING STRAPPING.

- A. EACH OF THE TWO SETS OF UNITIZING STRAPS SHOULD BE POSITIONED AROUND THE CONTAINERS AS SHOWN. PLACE STRAPPING THROUGH FORK RECEPTACLES, AND SO THAT STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACES OF THE CONTAINERS; I.E., VERTICAL ALONG SIDES AND STRAIGHT ACROSS TOP AND BOTTOM OF THE STACK.
- B. STRAPPING WILL BE FIRMLY TENSIONED, AND EACH END-OVER-END LAP JOINT WILL BE SEALED WITH TWO DOUBLE CRIMPED STRAP SEALS AS SHOWN. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK SO THAT THE SEALS WILL NOT BE IN CONTACT WITH THE CONTAINERS. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO ENSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAPPING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

3. CONTAINER OR CONTAINER STACK HANDLING.

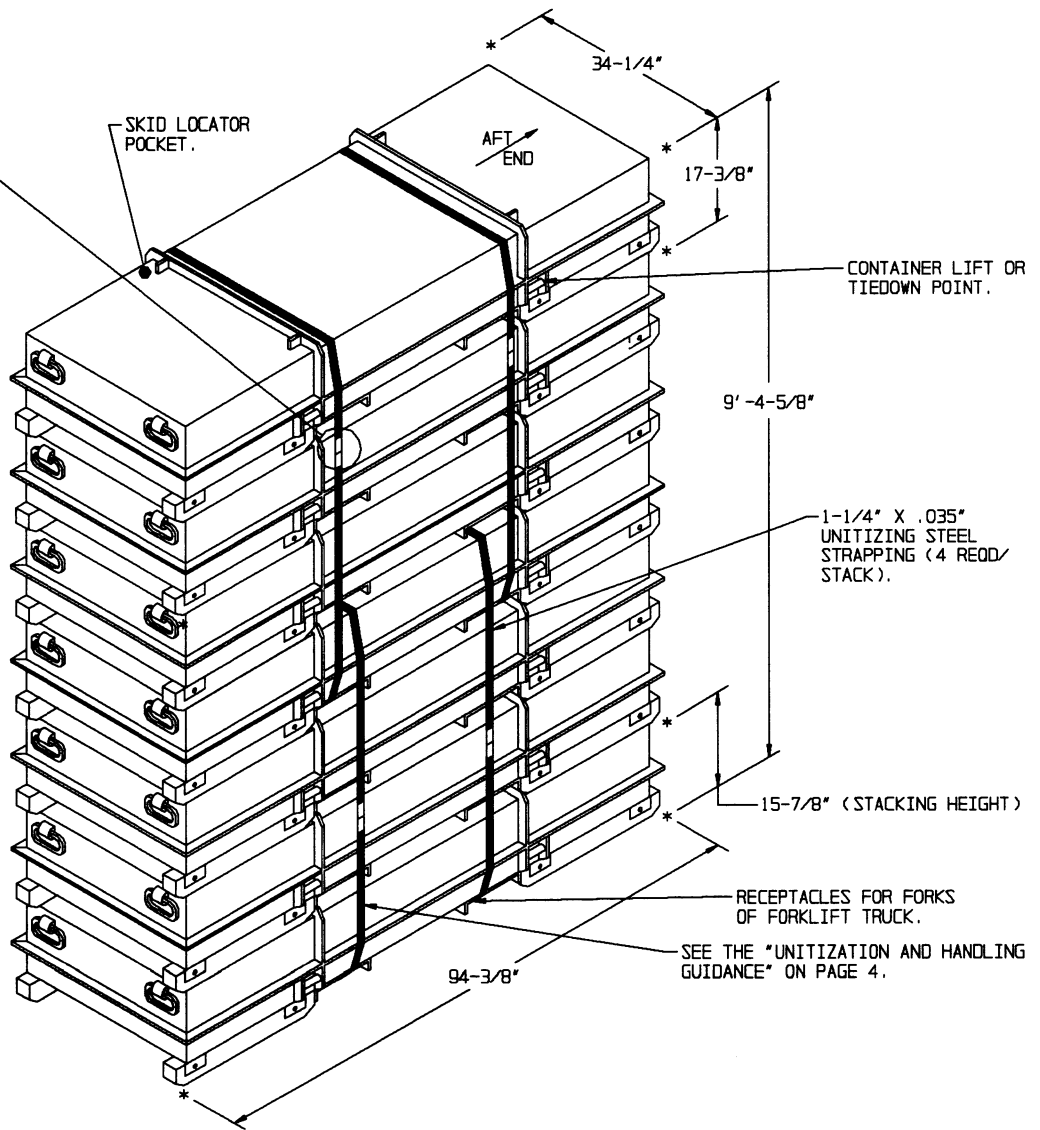
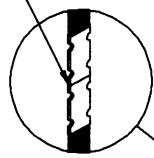
NOTES: (1) APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.

(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 SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSIBLE. 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. FOR VERY SHORT "INCHING" SPEED MOVEMENTS, SUCH AS WILL BE EXPERIENCED DURING CAR LOADING, A UNITIZED TWO, THREE, OR FOUR-HIGH CONTAINER STACK MAY BE HANDLED BY INSERTING THE FORKS OF A FORKLIFT TRUCK INTO THE FORK RECEPTACLES OF AN UPPER CONTAINER. IF ONE CONTAINER IS HANDLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE CONTAINER. HOWEVER, IF A TWO, THREE OR FOUR-HIGH STACK IS HANDLED BY SLINGING, DO NOT ATTACH THE SLING TO THE LIFTING POINTS ON A CONTAINER. THE SLING USED MUST BE OF SUCH A DESIGN THAT THE LIFTING IS DONE ON THE BOTTOM OF THE LOWEST CONTAINER.

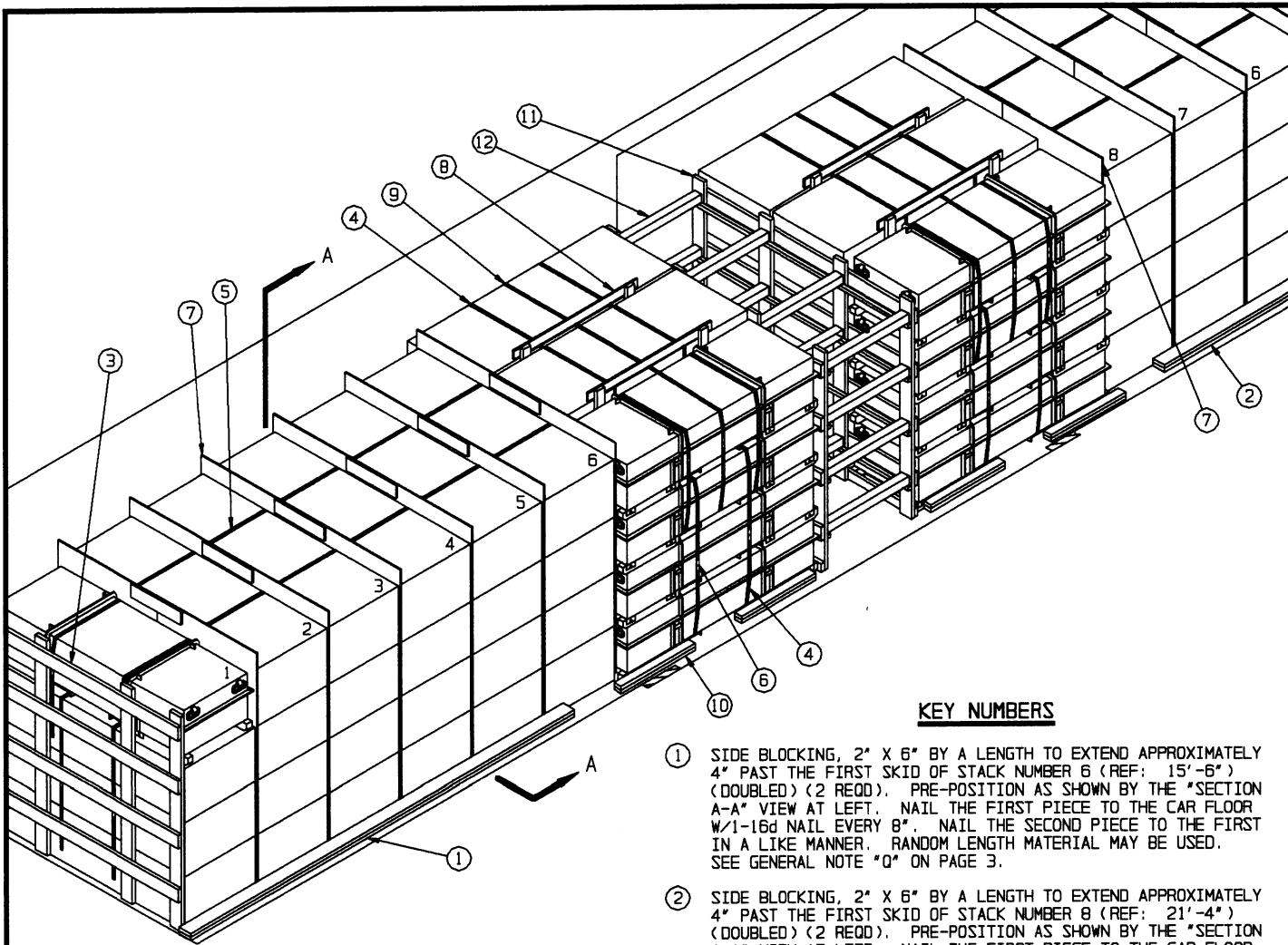
UNITIZATION AND HANDLING PROCEDURES

SEALS FOR 1-1/4" X .035" STEEL STRAPPING (2 REQD PER STRAP). DOUBLE CRIMP EACH SEAL AS SHOWN.



CNU-152/E CONTAINER STACK DETAIL

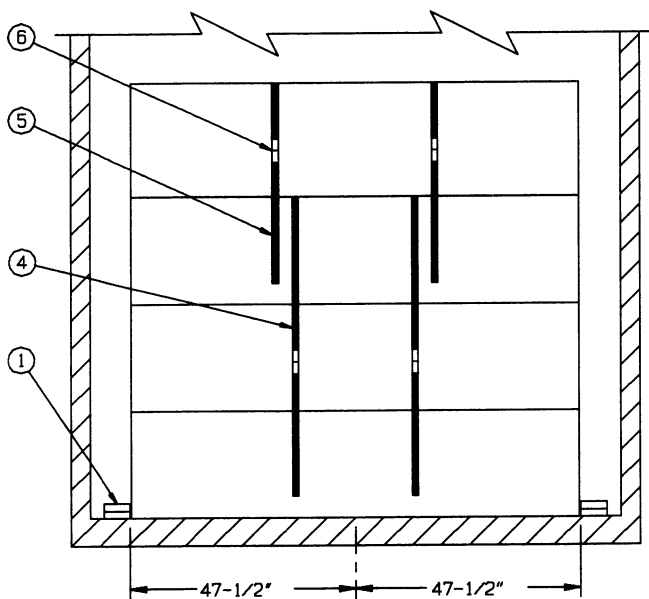
DIMENSIONS -- 94-3/8" L X 34-1/4" W X 17-3/8" H
 CUBE - - - - 32.5 CUBIC FEET (APPROX)
 WEIGHT - - - - 693 POUNDS (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 6 (REF: 15'-6") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION A-A" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "Q" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 8 (REF: 21'-4") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION A-A" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE A (2 REQD). SEE THE DETAIL ON PAGE 12. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-0" LONG STEEL STRAPPING (40 REQD). INSTALL TO ENCIRCLE THE BOTTOM THREE CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4. SEE SPECIAL NOTE 2 ON PAGE 7.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (40 REQD). INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS IN A STACK.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (164 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ SEPARATOR GATE A (14 REQD). SEE THE DETAIL ON PAGE 12. POSITION BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS, WITH THE TIE PIECES AGAINST THE ALREADY LOADED CONTAINERS. SEE SPECIAL NOTES 3 AND 5 ON PAGE 7.
- ⑧ ANTI-CHAFING ASSEMBLY A (4 REQD). SEE THE DETAIL ON PAGE 13. POSITION BETWEEN LATERALLY ADJACENT LONGITUDINAL CONTAINER STACKS IN THE DOORWAY AREA.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 26'-6" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE TOP TWO LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA. POSITION NEAR THE CENTER OF THE CONTAINER LENGTH. NOTE THAT THE STRAP MUST BE THREADED UNDER THE THIRD LAYER OF CONTAINERS AS THEY ARE BEING LOADED IF THE BUNDLING STRAP WILL NOT BE WITHIN THE DOOR OPENINGS ON BOTH SIDES OF THE CAR.



SECTION A-A

(CONTINUED ON PAGE 7)

80-UNIT LOAD OF CNU-80/E OR
CNU-203/E CONTAINERS IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR

(SPECIAL NOTES CONTINUED)

9. THOSE SIDE BLOCKING PIECES, PIECES MARKED ⑩, WHICH ARE NOT IN A DOOR OPENING MUST BE PRE-POSITIONED. LOCATE 51-1/2" FROM THE CENTERLINE OF THE CAR.
10. IF THE CAR BEING LOADED IS LESS THAN 9'-4" WIDE, THERE WILL NOT BE SUFFICIENT SPACE TO APPLY THE SIDE BLOCKING ON THE OUTER SIDE OF THE CONTAINER SKIDS FOR THOSE LENGTHWISE STACKS IN THE DOORWAY AREA. IT WILL BE NECESSARY TO PRE-POSITION PIECES BETWEEN THE CONTAINER SKIDS OF THE OUTER STACKS. SEE PIECE MARKED ⑨ ON PAGE 10 FOR MATERIAL SIZE AND PLACEMENT GUIDANCE.
11. IF DESIRED, WHEN CONSTRUCTING THE CENTER GATES, PIECES MARKED ⑪, 1/2" PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "TYPICAL ALTERNATIVE PLYWOOD CENTER GATE" DETAIL ON PAGE 25 FOR GUIDANCE.
12. THE "LOAD AS SHOWN" FOR THE CNU-80/E CONTAINER IS BASED ON THE MAXIMUM WEIGHT OF 1,174 POUNDS FOR THAT ITEM. THE TOTAL LOAD WEIGHT BASED ON THE MINIMUM WEIGHT OF 934 POUNDS FOR THE ITEM WILL BE 77,260 POUNDS. THE MAXIMUM WEIGHT FOR OTHER ITEMS WILL BE SOMEWHERE IN BETWEEN.

(KEY NUMBERS CONTINUED FROM PAGE 6)

- ⑩ SIDE BLOCKING, 2" X 4" X 36" (DOUBLED) (8 REQD). POSITION AGAINST A CONTAINER SKID, WITH THE FIRST PIECES IN EACH END OF THE LOAD EXTENDING APPROXIMATELY 4" BEYOND THE SEPARATOR GATE, PIECE MARKED ⑦, AND WITH THE SECOND PIECES APPROXIMATELY 3" FROM THE END OF THE CONTAINER SKID. NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTES 9 AND 10 ABOVE.
- ⑪ CENTER GATE A (2 REQD). SEE THE DETAIL ON PAGE 13. SEE SPECIAL NOTE 11 ABOVE.
- ⑫ STRUT, 4" X 4" BY CUT TO FIT (REF: 41") (16 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑪, W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "H" ON PAGE 2 AND GENERAL NOTES "S" AND "T" ON PAGE 3. SEE SPECIAL NOTE 8 AT RIGHT.

SPECIAL NOTES:

1. AN 80-UNIT LOAD IS SHOWN IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 5 FOR GUIDANCE.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM THREE CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP, PIECE MARKED ⑤, SHOULD BE THREADED UNDER THE THIRD LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE THREE-HIGH STACK.
3. THE PLYWOOD SEPARATOR GATE, SEPARATOR GATE A, SHOULD BE USED WITHIN THIS LOAD. THE USE OF THE SEPARATOR GATE CONSTRUCTED OF 1" X 6" MATERIAL, SEPARATOR GATE B, MAY REDUCE THE SPACE REMAINING IN THE CENTER OF THE LOAD SO MUCH AS TO MAKE DIFFICULT THE INSTALLATION OF THE STRUTS, PIECES MARKED ⑫.
4. TO FACILITATE LOADING, THE LENGTHWISE CONTAINER STACKS TO THE RIGHT SIDE OF THE DOOR OPENING SHOULD BE LOADED BEFORE THE CONTAINER STACKS ON THE LEFT SIDE OF THE DOOR ARE LOADED.
5. IF THE CAR TO BE LOADED IS EQUIPPED WITH 8'-0" OR 10'-0" WIDE THRU DOORS, EIGHT CROSSWISE STACKS SHOULD BE LOADED IN EACH END OF THE CAR. THE SIDE BLOCKING WILL BE 21'-4" LONG IN EACH END OF THE CAR. ONE LENGTHWISE LOAD UNIT CAN THEN BE LOADED IN THE DOORWAY AREA. THE STRUTS WILL BE APPROXIMATELY 33' LONG.
6. IF THE CAR TO BE LOADED IS ONLY 9'-2" OR LESS IN WIDTH, THE LENGTHWISE LOAD UNIT(S) IN THE DOORWAY AREA WILL BE TWO CONTAINERS WIDE IN LIEU OF THREE, AS SHOWN. SEE THE PROCEDURES ON PAGE 8 FOR GUIDANCE.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. FOUR CONTAINERS CAN BE OMITTED BY ELIMINATING THE CENTER STACK OF THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA. THE LOAD CAN BE REDUCED BY FOUR OR EIGHT ADDITIONAL CONTAINERS BY OMITTING A STACK FROM ONE OR BOTH ENDS OF THE LOAD. NOTE THAT IF FOUR ARE OMITTED THEY WOULD BEST BE FROM THE RIGHT END OF THE LOAD, ALTHOUGH ELIMINATING CONTAINERS FROM EITHER END MAY MAKE DIFFICULT THE LOADING OF THE LONGITUDINAL STACKS IN THE CENTER OF THE CAR. THE ENTIRE TOP LAYER MAY BE OMITTED. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 26.
8. NOTE THAT DOUBLED 2" X 6" STRUTS MAY BE USED IN LIEU OF THE DEPICTED 4" X 4" STRUTS, PIECES MARKED ⑫. LAMINATE THE DOUBLED 2" X 6" STRUTS W/1-10d NAILS EVERY 6".

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	40	14
1" X 6"	66	33
2" X 2"	71	24
2" X 4"	141	94
2" X 6"	359	359
4" X 4"	55	74
NAILS	NO. REQD	POUNDS
6d (2")	328	2
10d (3")	312	5
16d (3-1/2")	412	9
STEEL STRAPPING, 1-1/4" - 1,353' REQD		194 LBS
SEAL FOR 1-1/4" STRAPPING	164 REQD	8 LBS
PLYWOOD, 1/2" X 48" X 96"	28 REQD	1,232 LBS

LOAD AS SHOWN

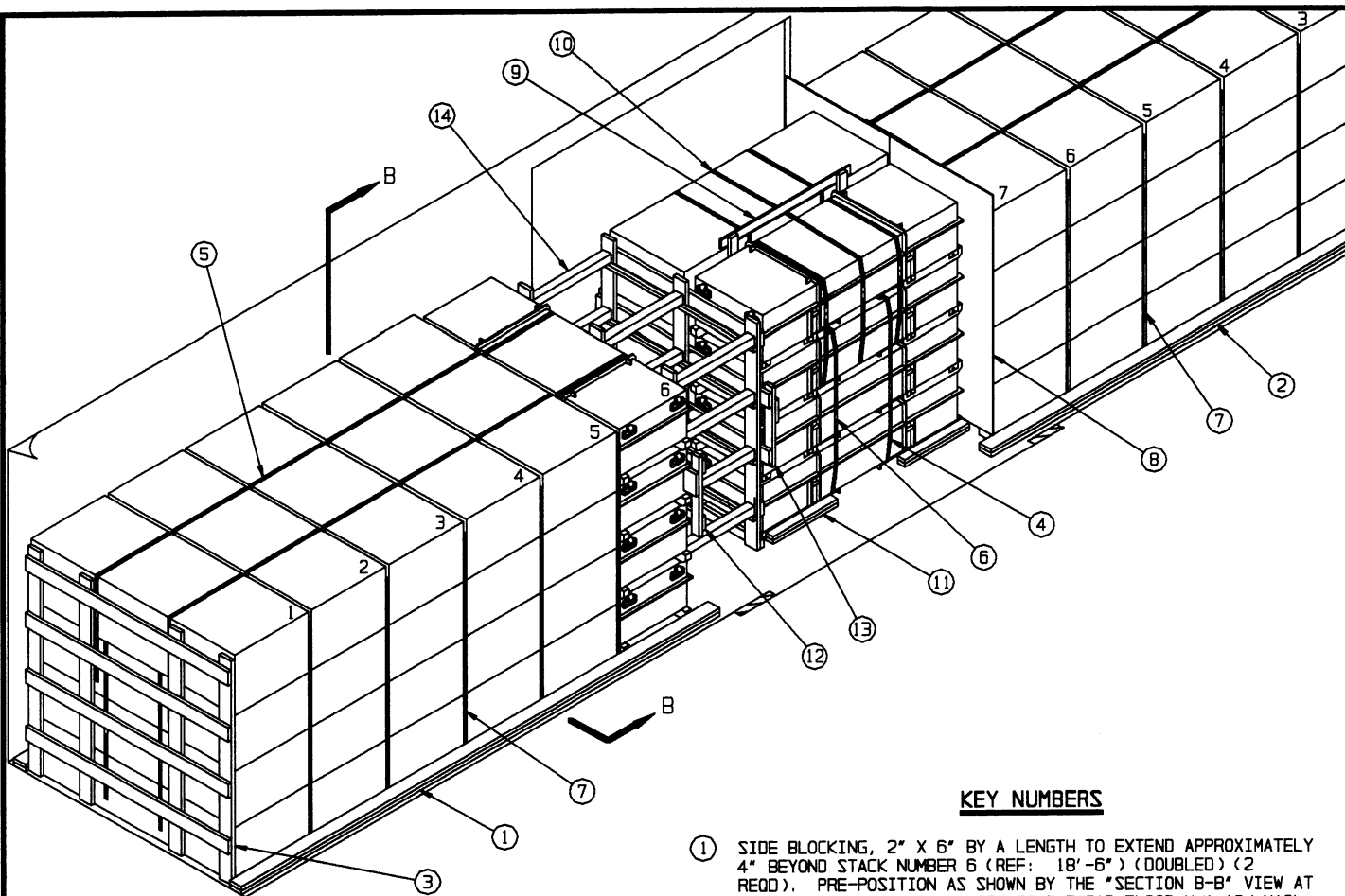
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-80/E CONTAINER	80	93,920 LBS (MAX) *
DUNNAGE		2,646 LBS
TOTAL WEIGHT		96,566 LBS (APPROX)

* SEE SPECIAL NOTE 12 ABOVE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-203/E CONTAINER	80	68,000 LBS
DUNNAGE		2,646 LBS
TOTAL WEIGHT		70,646 LBS (APPROX)

80-UNIT LOAD OF CNU-80/E OR
CNU-203/E CONTAINERS IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR

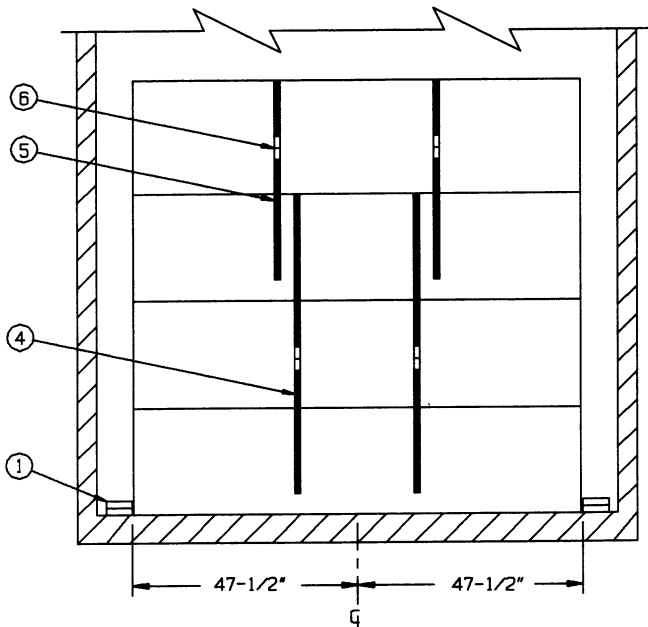


ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" BEYOND STACK NUMBER 6 (REF: 18'-6") (DOUBLED) (2 REOD). PRE-POSITION AS SHOWN BY THE "SECTION B-B" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "O" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" BEYOND STACK NUMBER 7 (REF: 21'-6") (DOUBLED) (2 REOD). PRE-POSITION AS SHOWN BY THE "SECTION B-B" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE A (2 REOD). SEE THE DETAIL ON PAGE 12. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-0" LONG STEEL STRAPPING (30 REOD). INSTALL TO ENCIRCLE THE BOTTOM THREE CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4. SEE SPECIAL NOTE 2 ON PAGE 9.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (30 REOD). INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS IN A STACK.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (122 REOD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ SEPARATOR GATE B (11 REOD). SEE THE DETAIL ON PAGE 14. POSITION BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS. SEE SPECIAL NOTE 3 ON PAGE 9.
- ⑧ SEPARATOR GATE A (1 REOD). SEE THE DETAIL ON PAGE 12. INSTALL BETWEEN A CROSSWISE CONTAINER STACK AND THE LONGITUDINAL CONTAINER STACKS. POSITION WITH THE TIE PIECES AGAINST THE ALREADY LOADED CONTAINERS.
- ⑨ ANTI-CHAFING ASSEMBLY A (1 REOD). SEE THE DETAIL ON PAGE 13. POSITION BETWEEN LATERALLY ADJACENT LENGTHWISE CONTAINER STACKS IN THE DOORWAY AREA.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 20'-6" LONG STEEL STRAPPING (1 REOD). INSTALL TO ENCIRCLE THE TOP TWO LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA.

(CONTINUED ON PAGE 9)



SECTION B-B

**60-UNIT LOAD OF
CNU-80/E OR CNU-203/E CONTAINERS IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR**

- ⑪ SIDE BLOCKING, 2" X 4" X 30" (DOUBLED) (4 REQD). POSITION AGAINST A CONTAINER SKID, WITH ONE SET OF PIECES APPROXIMATELY 4" FROM THE CENTER GATE END OF THE CONTAINER SKID. NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑫ CENTER GATE B (1 REQD). SEE THE DETAIL ON PAGE 14. SEE SPECIAL NOTE 8 AT RIGHT.
- ⑬ CENTER GATE C (1 REQD). SEE THE DETAIL ON PAGE 15.
- ⑭ STRUT, 4" X 4" BY CUT TO FIT (REF: 38") (12 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑫ AND ⑬, W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "H" ON PAGE 2 AND GENERAL NOTES "S" AND "T" ON PAGE 3. SEE SPECIAL NOTE 7 AT RIGHT.

SPECIAL NOTES:

1. A 60-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS (8'-0" MINIMUM) CAN BE USED.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM THREE CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP, PIECE MARKED ⑤, SHOULD BE THREADED UNDER THE THIRD LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE THREE-HIGH STACK.
3. IF DESIRED, THE PLYWOOD SEPARATOR GATE, PIECE MARKED ⑧, MAY BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑦.
4. IF THE CAR TO BE LOADED IS EQUIPPED WITH 15'-0" OR 16'-0" WIDE STAGGERED DOORS, THE SAME LOADING PATTERN WILL APPLY.
5. IF THE CAR TO BE LOADED IS AT LEAST 9'-4" WIDE, THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA CAN BE LOADED THREE CONTAINERS WIDE IN LIEU OF TWO AS SHOWN. SEE THE PROCEDURES ON PAGE 6 FOR GUIDANCE.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. FOUR CONTAINERS CAN BE OMITTED BY ELIMINATING A CROSSWISE STACK FROM THE LONG END OF THE LOAD. THE LOAD CAN BE REDUCED BY FOUR OR EIGHT ADDITIONAL CONTAINERS BY OMITTING ONE OR TWO STACKS FROM THE OPPOSITE END OF THE LOAD. NOTE THAT TO FACILITATE LOADING, THE LENGTHWISE LOAD UNIT SHOULD BE IN THE DOORWAY. THE ENTIRE TOP LAYER MAY BE OMITTED. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 12.
7. NOTE THAT DOUBLED 2" X 6" STRUTS MAY BE USED IN LIEU OF THE DEPICTED 4" X 4" STRUTS, PIECES MARKED ⑭. LAMINATE THE DOUBLED 2" X 6" STRUTS W/1-10d NAIL EVERY 6".
8. IF DESIRED, WHEN CONSTRUCTING THE CENTER GATES, PIECES MARKED ⑫ AND ⑬, 1/2" PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "TYPICAL ALTERNATIVE PLYWOOD CENTER GATE" DETAIL ON PAGE 25 FOR GUIDANCE.
9. FORTY-FOUR CONTAINERS CAN BE LOADED IN A 40'-6" LONG BY 9'-2" WIDE BOXCAR OR FORTY-EIGHT CAN BE LOADED IN A 9'-4" WIDE CAR BY USING THE DEPICTED PROCEDURES. FIVE STACKS CAN BE LOADED IN EACH END OF THE CAR AND ONE LENGTHWISE LOAD UNIT CAN BE LOADED IN THE DOORWAY AREA. FOUR STACKS CAN BE LOADED IN THE DOORWAY AREA.
10. THE "LOAD AS SHOWN" FOR THE CNU-80/E CONTAINER IS BASED ON THE MAXIMUM WEIGHT OF 1,174 POUNDS FOR THAT ITEM. THE TOTAL LOAD WEIGHT BASED ON THE MINIMUM WEIGHT OF 934 POUNDS FOR THE ITEM WILL BE 58,168 POUNDS. THE MAXIMUM WEIGHT FOR OTHER WEIGHT ITEMS WILL BE SOMEWHERE BETWEEN.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	10	4
1" X 6"	667	334
2" X 2"	48	16
2" X 4"	59	40
2" X 6"	383	383
4" X 4"	38	51
NAILS	NO. REQD	POUNDS
6d (2")	556	3-1/2
10d (3")	270	4-1/4
16d (3-1/2")	344	7-1/2
STEEL STRAPPING, 1-1/4" -- 996' REQD --- 143 LBS		
SEAL FOR 1-1/4" STRAPPING - 122 REQD --- 6 LBS		
PLYWOOD, 1/2" X 48" X 96" -- 2 REQD --- 88 LBS		

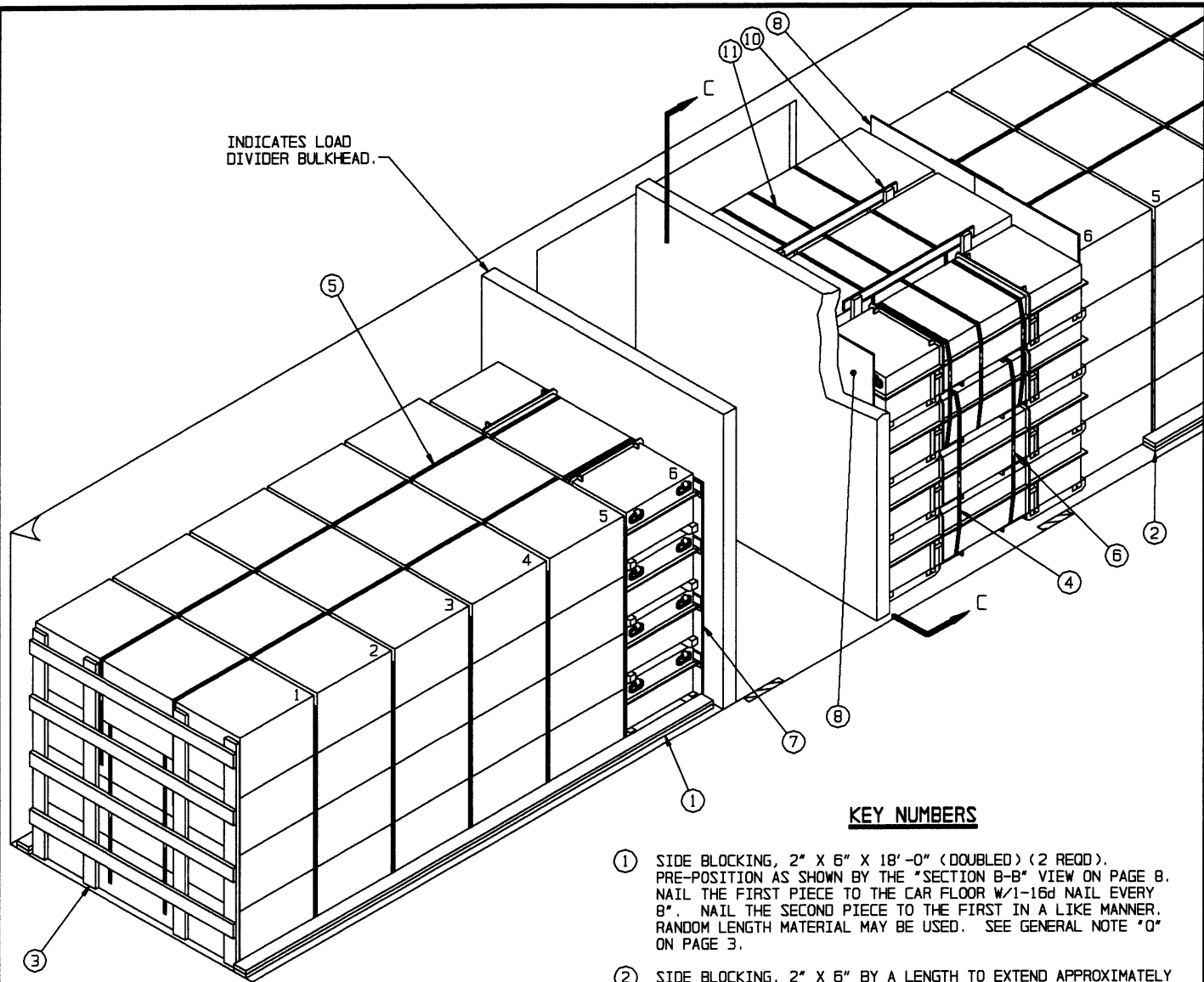
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-80/E CONTAINER	60	70,440 LBS (MAX) *
DUNNAGE		1,909 LBS
TOTAL WEIGHT		72,349 LBS (APPROX)

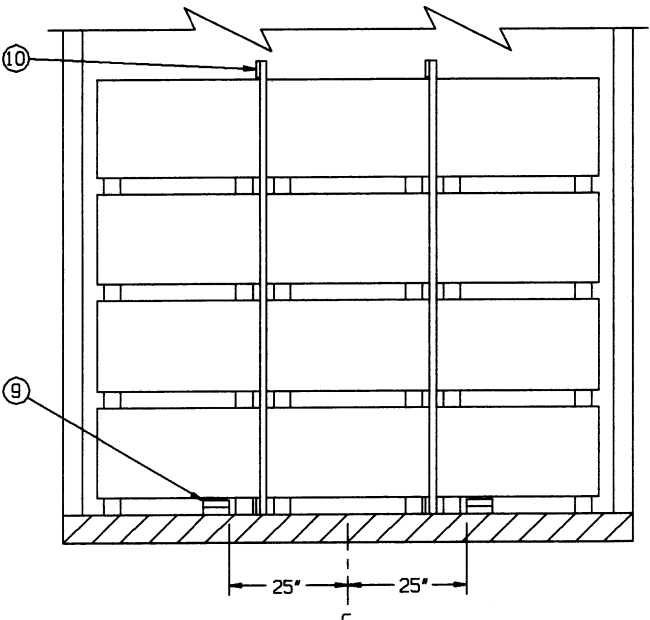
* SEE SPECIAL NOTE 10 ABOVE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-203/E CONTAINER	60	51,000 LBS
DUNNAGE		1,909 LBS
TOTAL WEIGHT		52,909 LBS (APPROX)



ISOMETRIC VIEW



SECTION C-C

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 18'-0" (DOUBLED) (2 REQ). PRE-POSITION AS SHOWN BY THE "SECTION B-B" VIEW ON PAGE 8. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "Q" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 6 (REF: 15'-6") (DOUBLED) (2 REQ). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE A (2 REQ). SEE THE DETAIL ON PAGE 12. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 18'-0" LONG STEEL STRAPPING (30 REQ). INSTALL TO ENCIRCLE THE BOTTOM THREE CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4. SEE SPECIAL NOTE 2 ON PAGE 11.
- ⑤ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING (30 REQ). INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS IN A STACK.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (122 REQ, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ SEPARATOR GATE B (11 REQ). SEE THE DETAIL ON PAGE 14. POSITION BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS AND BETWEEN THE CROSSWISE CONTAINER STACK AND THE LOAD DIVIDER BULKHEAD.
- ⑧ SEPARATOR GATE A (2 REQ). SEE THE DETAIL ON PAGE 12. INSTALL BETWEEN A CROSSWISE CONTAINER STACK AND THE LONGITUDINAL CONTAINER STACKS, AND BETWEEN THE LONGITUDINAL CONTAINER STACKS AND THE LOAD DIVIDER BULKHEAD. POSITION WITH THE TIE PIECES AGAINST THE LONGITUDINALLY LOADED CONTAINERS.

(CONTINUED ON PAGE 11)

60-UNIT LOAD OF CNU-80/E OR CNU-203/E CONTAINERS
IN A 50'-6" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS

(KEY NUMBERS CONTINUED FROM PAGE 10)

- ⑨ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN BY THE "SECTION C-C" VIEW ON PAGE 10 AND SO AS TO BE ALONGSIDE THE CONTAINER SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑩ ANTI-CHAFING ASSEMBLY A (2 REQD). SEE THE DETAIL ON PAGE 13. POSITION BETWEEN Laterally ADJACENT LENGTHWISE CONTAINER STACKS IN THE DOORWAY AREA.
- ⑪ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 20'-6" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE TOP TWO LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA.

SPECIAL NOTES:

1. A 60-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-4" WIDE CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE DOOR OPENINGS. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS (8'-0" MINIMUM) CAN BE USED.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM THREE CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP, PIECE MARKED ⑤, SHOULD BE THREADED UNDER THE THIRD LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE THREE-HIGH STACK.
3. IF DESIRED, THE PLYWOOD SEPARATOR GATE, PIECE MARKED ⑥, MAY BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑦.
4. IF THE CAR TO BE LOADED IS ONLY 9'-2" WIDE, THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA CAN ONLY BE LOADED TWO CONTAINERS WIDE IN LIEU OF THREE AS SHOWN. SEE THE PROCEDURES ON PAGE 8 FOR GUIDANCE.
5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. FOUR OR EIGHT CONTAINERS CAN BE OMITTED BY ELIMINATING ONE OR TWO CROSSWISE STACKS FROM THE SHORT END OF THE LOAD. THE LOAD CAN BE REDUCED BY TWELVE CONTAINERS BY OMITTING THE LENGTHWISE CONTAINERS FROM THE DOORWAY AREA. FURTHER ADJUSTMENT CAN BE ACCOMPLISHED BY OMITTING ADDITIONAL CROSSWISE STACKS OR BY OMITTING LAYERS. THE ENTIRE TOP LAYER MAY BE OMITTED. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 26.
6. FORTY-FOUR CONTAINERS CAN BE LOADED IN A 40'-6" LONG BY 9'-2" WIDE BOXCAR OR FORTY-EIGHT CAN BE LOADED IN A 9'-4" WIDE CAR BY USING THE DEPICTED PROCEDURES. FIVE STACKS CAN BE LOADED IN ONE END OF THE CAR AND ONE LENGTHWISE LOAD UNIT CAN BE LOADED IN THE DOORWAY AREA. FOUR STACKS CAN BE LOADED IN THE OPPOSITE END OF THE CAR.
7. THE "LOAD AS SHOWN" FOR THE CNU-80/E CONTAINER IS BASED ON THE MAXIMUM WEIGHT OF 1,174 POUNDS FOR THAT ITEM. THE TOTAL LOAD WEIGHT BASED ON THE MINIMUM WEIGHT OF 934 POUNDS WILL BE 57,604 POUNDS. THE MAXIMUM WEIGHT FOR OTHER ITEMS WILL BE SOMEWHERE BETWEEN.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	20	7
1" X 6"	672	336
2" X 4"	56	38
2" X 6"	258	258
NAILS	NO. REQD	POUNDS
6d (2")	572	3-1/2
10d (3")	96	1-1/2
16d (3-1/2")	264	5-3/4
STEEL STRAPPING, 1-1/4"	996' REQD	143 LBS
SEAL FOR 1-1/4" STRAPPING	122 REQD	6 LBS
PLYWOOD, 1/2" X 48" X 96"	4 REQD	176 LBS

LOAD AS SHOWN

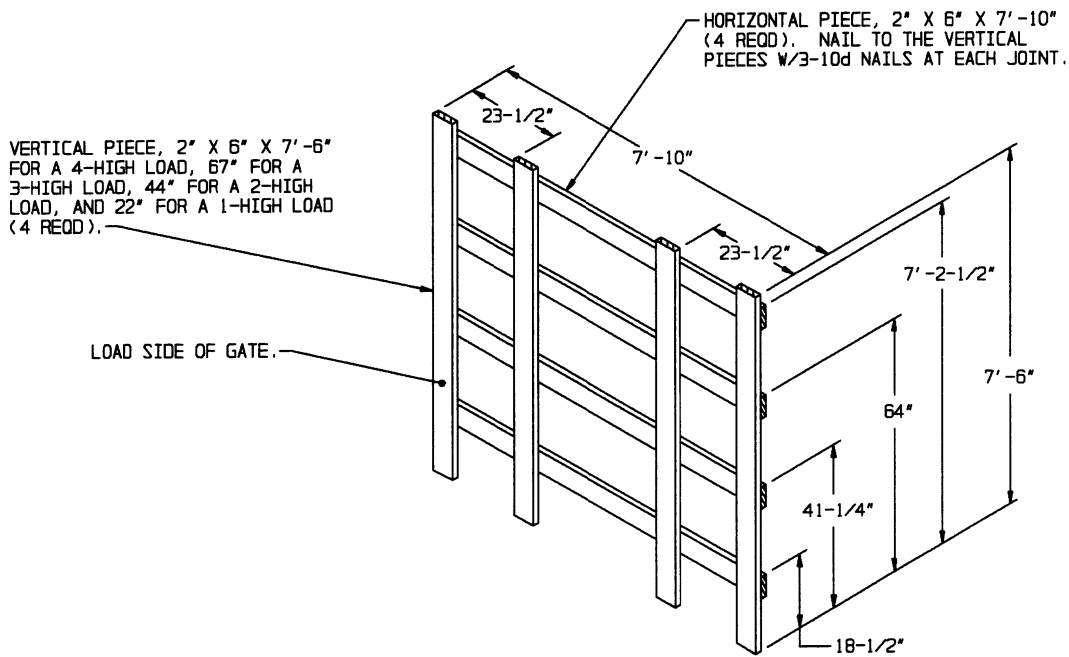
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-80/E CONTAINER	60	70,440 LBS (MAX) *
DUNNAGE		1,614 LBS
TOTAL WEIGHT		72,054 LBS (APPROX)

* SEE SPECIAL NOTE 7 ABOVE.

LOAD AS SHOWN

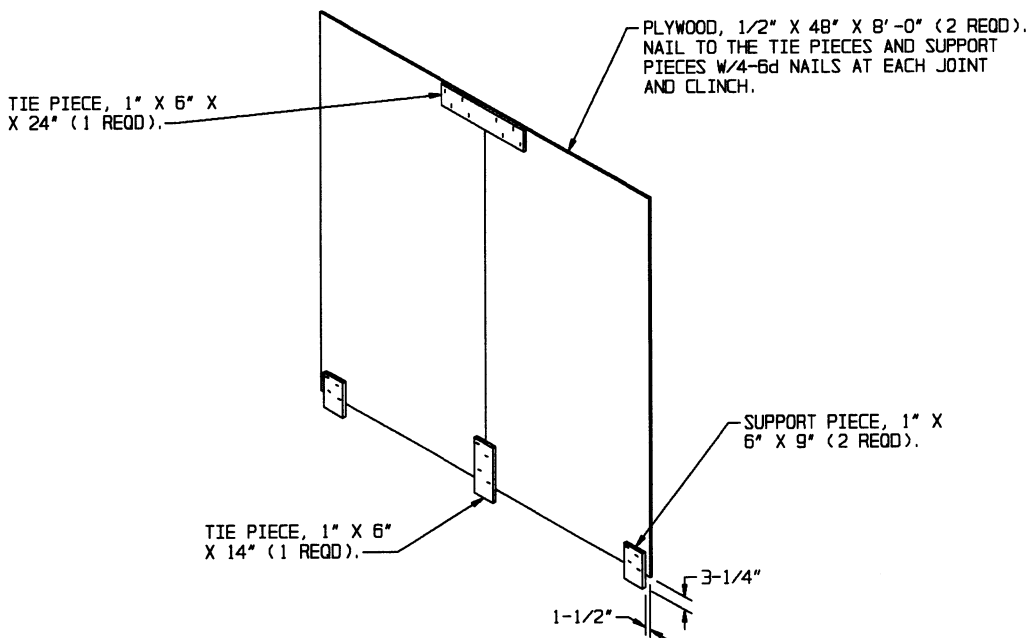
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-203/E CONTAINER	60	51,000 LBS
DUNNAGE		1,614 LBS
TOTAL WEIGHT		52,614 LBS (APPROX)

**60-UNIT LOAD OF CNU-80/E OR CNU-203/E CONTAINERS
IN A 50'-6" LONG BY 9'-4" WIDE BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS**



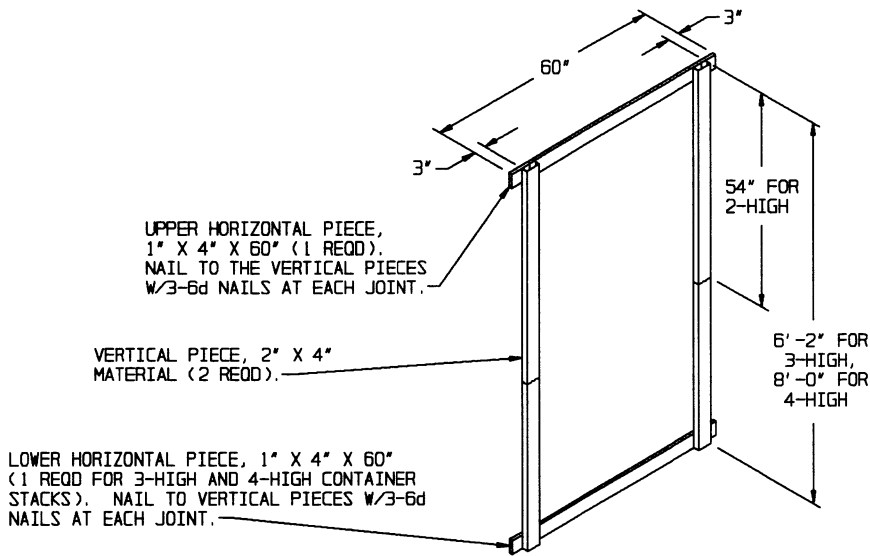
ENDWALL GATE A

THIS ENDWALL GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 6, 8, AND 10.



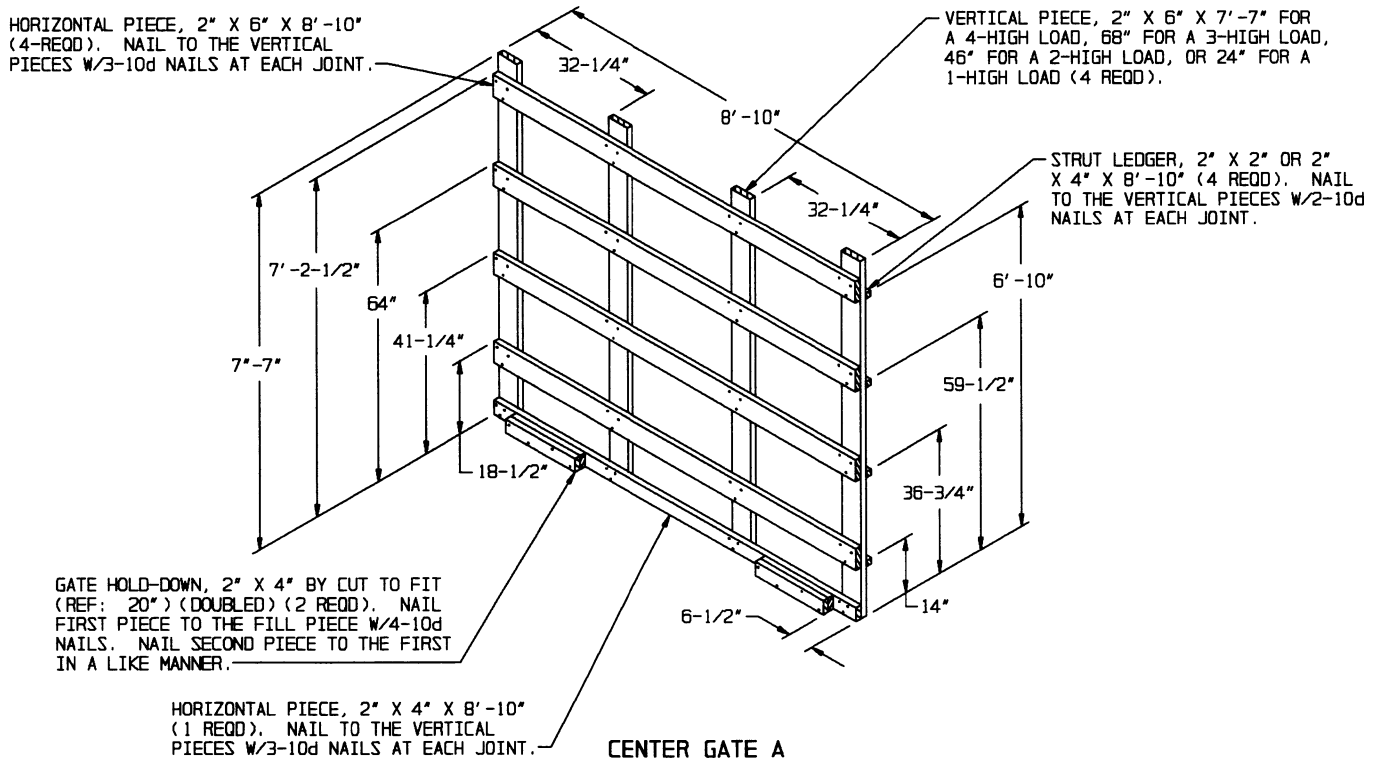
SEPARATOR GATE A

THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 6, 8 AND 10.



ANTI-CHAFING ASSEMBLY A

THIS ANTI-CHAFING ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 6, 8, AND 10.

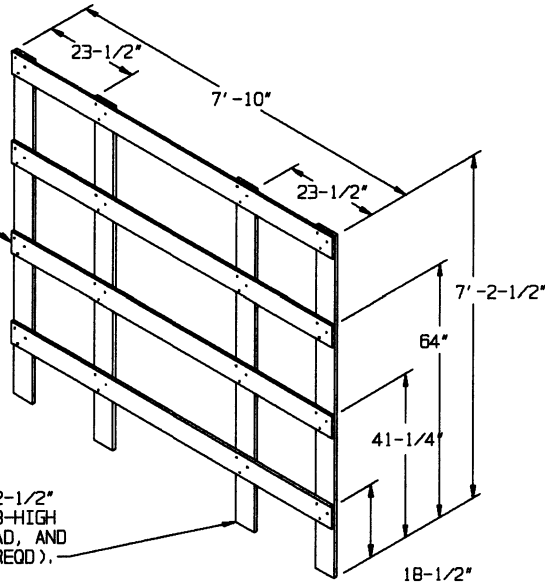


THIS CENTER GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 6.

DETAILS

HORIZONTAL PIECE, 1" X 6" X 7'-10" (4 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

VERTICAL PIECE, 1" X 6" X 7'-2-1/2" FOR A 4-HIGH LOAD, 64" FOR A 3-HIGH LOAD, 41-1/4" FOR A 2-HIGH LOAD, AND 18-1/2" FOR A 1-HIGH LOAD (4 REQD).



SEPARATOR GATE B

THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 8 AND 10.

VERTICAL PIECE, 2" X 6" X 7'-7" FOR A 4-HIGH LOAD, 68" FOR A 3-HIGH LOAD, 46" FOR A 2-HIGH LOAD (3 REQD).

HORIZONTAL PIECE, 2" X 6" X 72" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

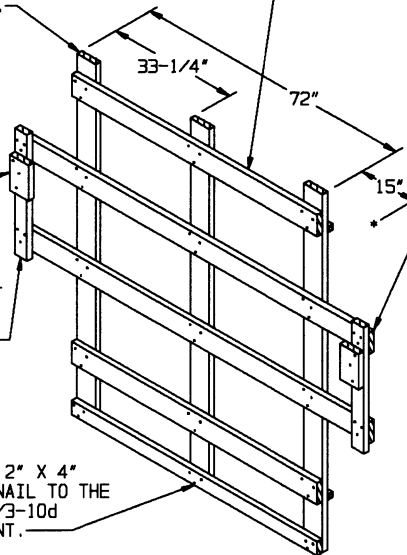
HORIZONTAL PIECE, 2" X 6" X 8'-6" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2" X 2" OR 2" X 4" X 72" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD-DOWN, 2" X 6" X 9" (2 REQD). POSITION TO CONTACT BOTTOM OF COVER FLANGE. NAIL TO A STOP PIECE W/3-10d NAILS.

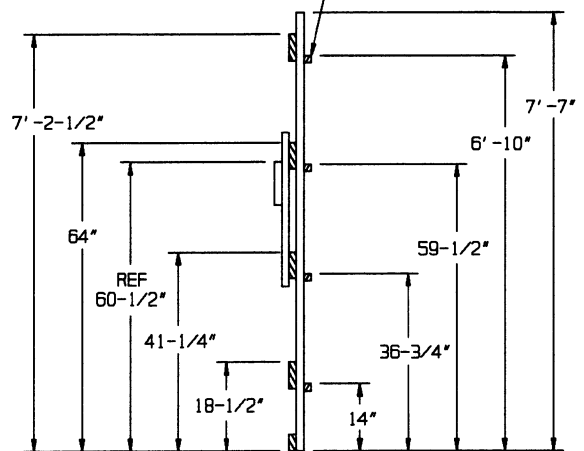
STOP PIECE, 2" X 4" X 32" (2 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 4" X 72" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



CENTER GATE B

THIS CENTER GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 8.



END VIEW

VERTICAL PIECE, 2" X 6" X 7'-7" FOR A 4-HIGH LOAD, 68" FOR A 3-HIGH LOAD, 46" FOR A 2-HIGH LOAD (3 REQD).

HORIZONTAL PIECE, 2" X 6" X 72" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

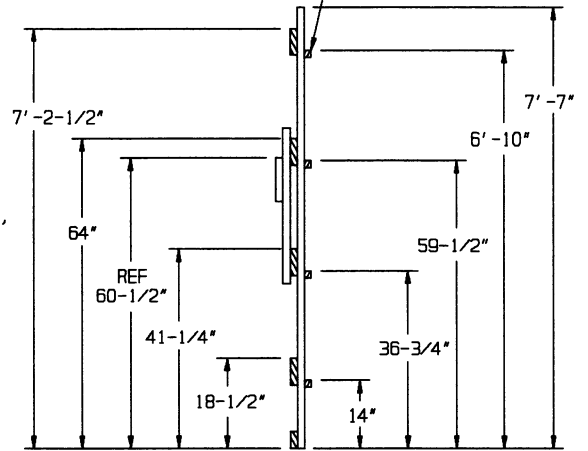
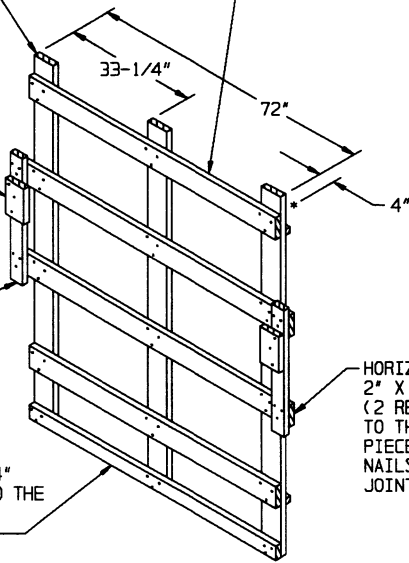
GATE HOLD-DOWN, 2" X 6" X 9" (2 REQD). POSITION TO CONTACT BOTTOM OF COVER FLANGE. NAIL TO A STOP PIECE W/3-10d NAILS.

STOP PIECE, 2" X 4" X 32" (2 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 4" X 72" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" X 6'-8" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2" X 2" OR 2" X 4" X 72" (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



CENTER GATE C

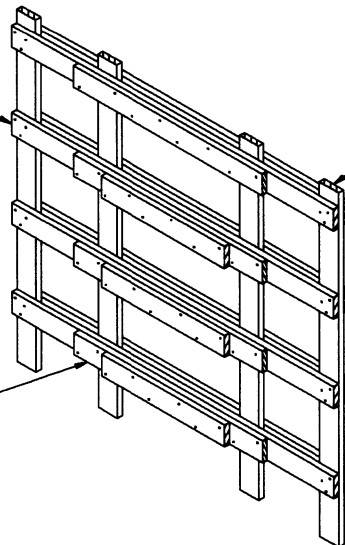
END VIEW

THIS CENTER GATE IS FOR USE IN THE LOAD SHOWN ON PAGE B.

FILLER PIECE, 2" X 6" X 7'-10" (ONE REQUIRED FOR EACH HORIZONTAL PIECE ON THE ENDWALL GATE). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

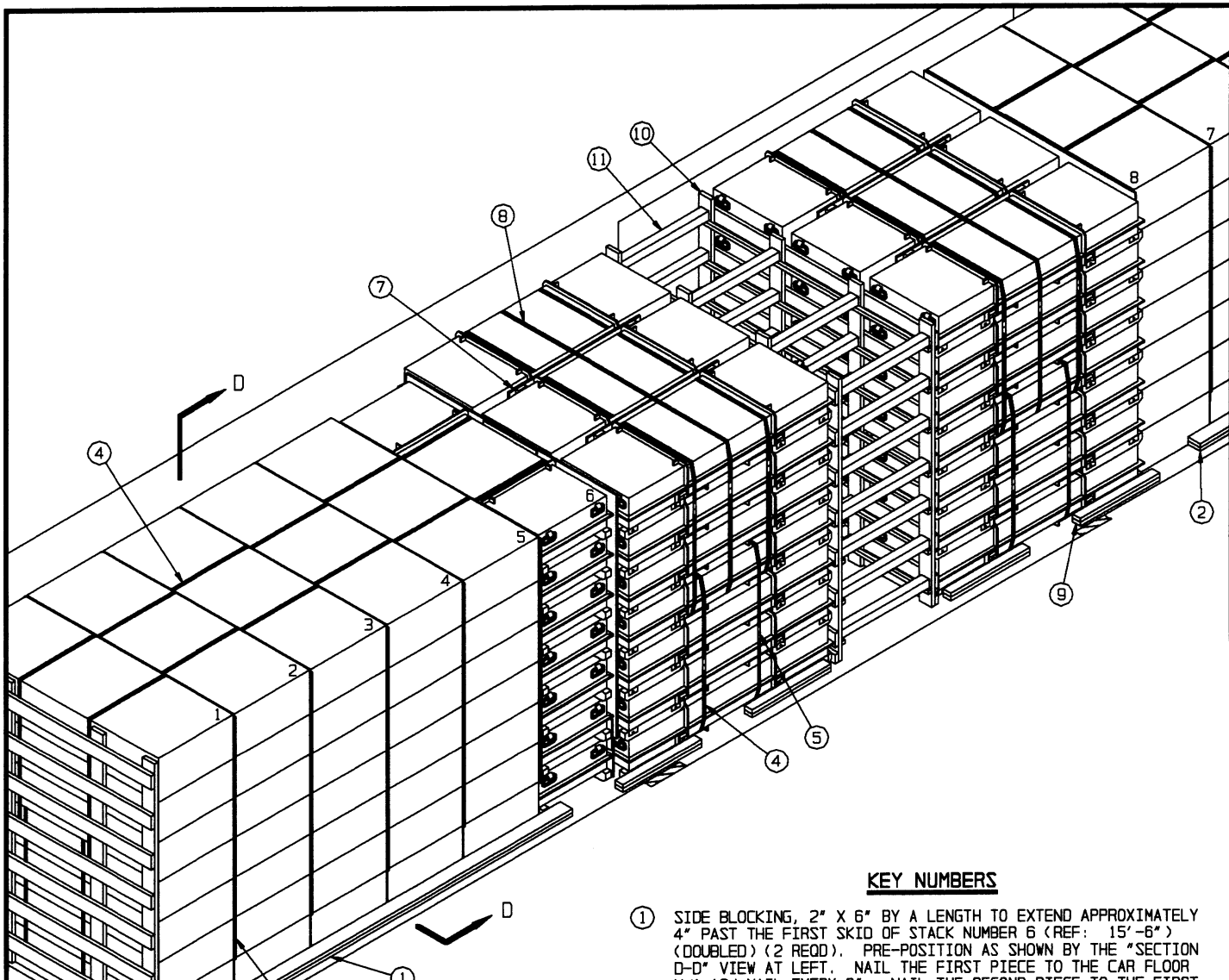
ENDWALL GATE. SEE THE APPLICABLE DETAIL ON PAGE 12 OR 22.

SHIM MATERIAL, 6" WIDE PLYWOOD OR DIMENSIONAL LUMBER OF A THICKNESS AND LENGTH AS REQUIRED TO FILL THE VOID BETWEEN THE CAR ENDWALL AND THE BULKHEAD. NAIL TO THE FILLER PIECE AND/OR LAMINATE W/1 APPLICABLY SIZED NAIL EVERY 6".

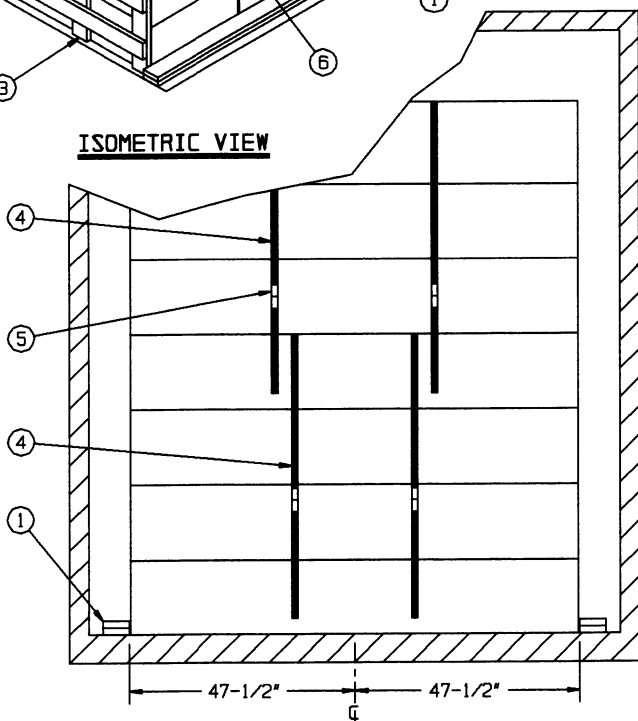


TYPICAL END-OF-CAR BULKHEAD

DETAILS



ISOMETRIC VIEW



SECTION D-D

**140-UNIT LOAD OF CNU-152/E CONTAINERS
IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR**

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 6 (REF: 15'-6") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION D-D" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "O" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 8 (REF: 21'-4") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION D-D" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE B (2 REQD). SEE THE DETAIL ON PAGE 22. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 17'-6" LONG STEEL STRAPPING (80 REQD). INSTALL TO ENCIrcLE THE BOTTOM FOUR AND THE TOP FOUR CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4 AND THE "CNU-152/E CONTAINER STACK DETAIL" ON PAGE 5. SEE SPECIAL NOTE 2 ON PAGE 17.
- ⑤ SEAL FOR 1-1/4" STEEL STRAPPING (164 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑥ SEPARATOR GATE C (14 REQD). SEE THE DETAIL ON PAGE 22. INSTALL BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS. POSITION WITH THE TIE PIECES AGAINST THE ALREADY LOADED CONTAINERS. SEE SPECIAL NOTES 3 AND 5 ON PAGE 17.
- ⑦ ANTI-CHAFING ASSEMBLY B (4 REQD). SEE THE DETAIL ON PAGE 23. POSITION BETWEEN LATERALLY ADJACENT LONGITUDINAL CONTAINER STACKS IN THE DOORWAY AREA.

(CONTINUED ON PAGE 17)

(KEY NUMBERS CONTINUED FROM PAGE 16)

- ⑧ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 30'-0" LONG STEEL STRAPPING (2 REQD). INSTALL TO ENCIRCLE THE TOP FOUR LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA. POSITION NEAR THE CENTER OF THE CONTAINER LENGTH. NOTE THAT THE STRAP MUST BE THREADED UNDER THE FOURTH LAYER OF CONTAINERS AS THEY ARE BEING LOADED IF THE BUNDLING STRAP WILL NOT BE WITHIN THE DOOR OPENINGS ON BOTH SIDES OF THE CAR.
- ⑨ SIDE BLOCKING, 2" X 4" X 36" (DOUBLED) (8 REQD). POSITION AGAINST A CONTAINER SKID, WITH THE FIRST PIECES IN EACH END OF THE LOAD EXTENDING APPROXIMATELY 4' BEYOND THE SEPARATOR GATE, PIECE MARKED ⑥, AND WITH THE SECOND PIECES APPROXIMATELY 3" FROM THE END OF THE CONTAINER SKID. NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE SPECIAL NOTES 9 AND 10 AT RIGHT.
- ⑩ CENTER GATE D (2 REQD). SEE THE DETAIL ON PAGE 23. SEE SPECIAL NOTE 10 AT RIGHT.
- ⑪ STRUT, 4" X 4" BY CUT TO FIT (REF: 41") (28 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ⑩, W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "H" ON PAGE 2 AND GENERAL NOTES "S" AND "T" ON PAGE 3. SEE SPECIAL NOTE 8 AT RIGHT.

SPECIAL NOTES:

1. A 140-UNIT LOAD IS SHOWN IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 15'-0" WIDE STAGGERED DOOR OPENINGS WHICH ARE AT LEAST 9'-8" HIGH. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 5 FOR GUIDANCE.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM FOUR CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP FOR THE UPPER THREE LAYERS, PIECE MARKED ④, SHOULD BE THREADED UNDER THE FOURTH LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE FOUR-HIGH STACK.
3. THE PLYWOOD SEPARATOR GATE, SEPARATOR GATE C, SHOULD BE USED WITHIN THIS LOAD. THE USE OF THE SEPARATOR GATE CONSTRUCTED OF 1" X 6" MATERIAL, SEPARATOR GATE D, MAY REDUCE THE SPACE REMAINING IN THE CENTER OF THE LOAD SO MUCH AS TO MAKE DIFFICULT THE INSTALLATION OF THE STRUTS, PIECES MARKED ①.
4. TO FACILITATE LOADING, THE LENGTHWISE CONTAINER STACKS TO THE RIGHT SIDE OF THE DOOR OPENING SHOULD BE LOADED BEFORE THE CONTAINER STACKS ON THE LEFT SIDE OF THE DOOR ARE LOADED.
5. IF THE CAR TO BE LOADED IS EQUIPPED WITH 8'-0" OR 10'-0" WIDE THRU DOORS, EIGHT CROSSWISE STACKS SHOULD BE LOADED IN EACH END OF THE CAR. THE SIDE BLOCKING WILL BE 21'-4" LONG IN EACH END OF THE CAR. ONE LENGTHWISE LOAD UNIT CAN THEN BE LOADED IN THE DOORWAY AREA. THE STRUTS WILL BE APPROXIMATELY 33" LONG.
6. IF THE CAR TO BE LOADED IS ONLY 9'-2" OR LESS IN WIDTH, THE LENGTHWISE LOAD UNIT(S) IN THE DOORWAY AREA WILL BE TWO CONTAINERS WIDE IN LIEU OF THREE, AS SHOWN. SEE THE PROCEDURES ON PAGE 18 FOR GUIDANCE.
7. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. SEVEN CONTAINERS CAN BE OMITTED BY ELIMINATING THE CENTER STACK OF THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA. THE LOAD CAN BE REDUCED BY SEVEN OR FOURTEEN ADDITIONAL CONTAINERS BY OMITTING A STACK FROM ONE OR BOTH ENDS OF THE LOAD. NOTE THAT IF SEVEN ARE OMITTED THEY WOULD BEST BE FROM THE RIGHT END OF THE LOAD, ALTHOUGH ELIMINATING CONTAINERS FROM EITHER END MAY MAKE DIFFICULT THE LOADING OF THE LONGITUDINAL STACKS IN THE CENTER OF THE CAR. ONE OR MORE ENTIRE LAYERS MAY BE OMITTED FROM THE TOP OF THE LOAD. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 26.
8. NOTE THAT DOUBLED 2" X 6" STRUTS MAY BE USED IN LIEU OF THE DEPICTED 4" X 4" STRUTS, PIECES MARKED ①. LAMINATE THE DOUBLED 2" X 6" STRUTS W/1-10d NAIL EVERY 6".
9. IF THE CAR BEING LOADED IS LESS THAN 9'-4" WIDE, THERE WILL NOT BE SUFFICIENT SPACE TO APPLY THE SIDE BLOCKING ON THE OUTER SIDE OF THE CONTAINER SKIDS FOR THOSE LENGTHWISE STACKS IN THE DOORWAY AREA. IT WILL BE NECESSARY TO PRE-POSITION PIECES BETWEEN THE CONTAINER SKIDS OF THE OUTER STACKS. SEE PIECE MARKED ⑨ ON PAGE 20 FOR MATERIAL SIZE AND PLACEMENT GUIDANCE.
10. IF DESIRED, WHEN CONSTRUCTING THE CENTER GATES, PIECES MARKED ⑩, 1/2" PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "TYPICAL ALTERNATIVE PLYWOOD CENTER GATE" DETAIL ON PAGE 25 FOR GUIDANCE.

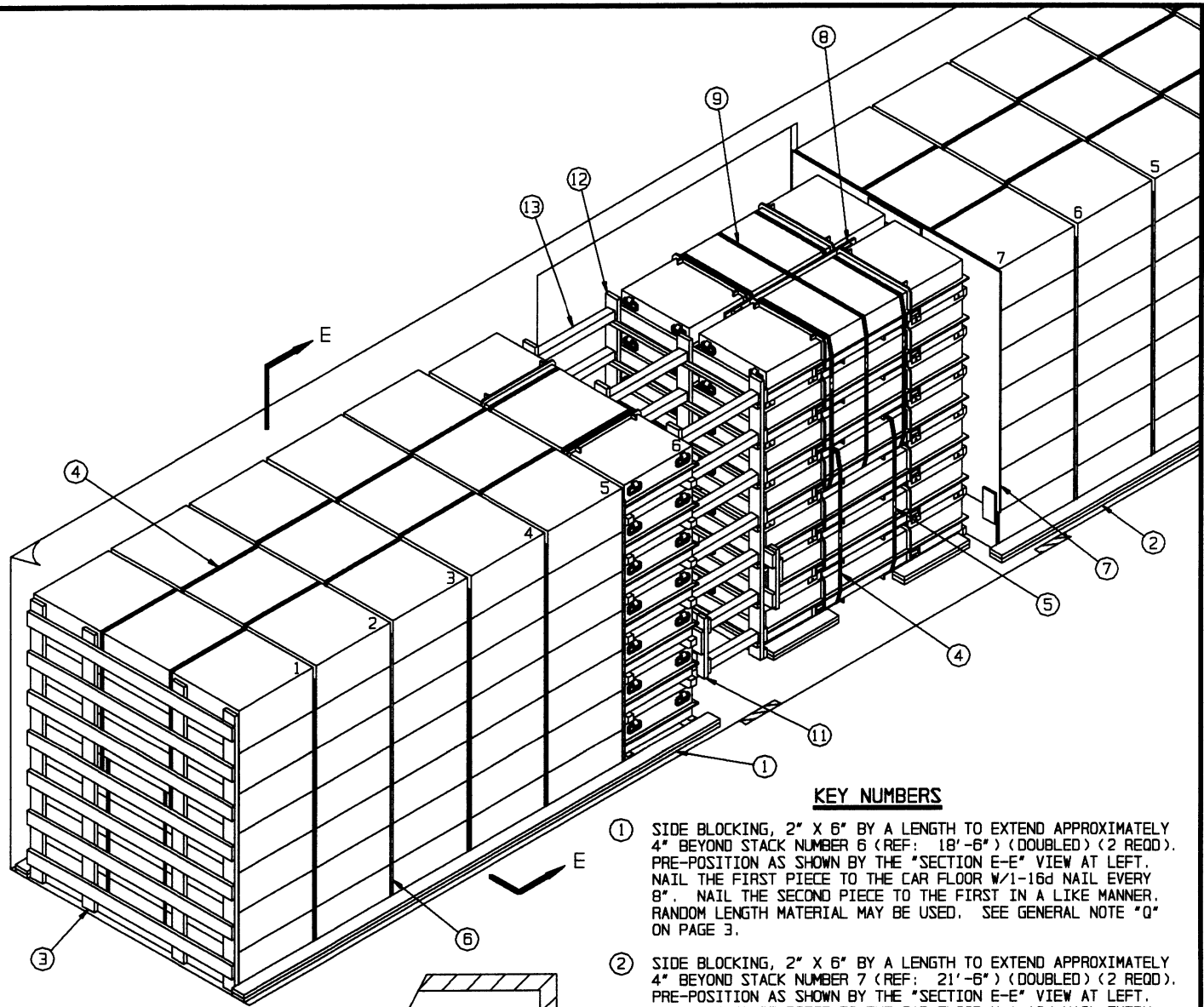
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	40	14
1" X 6"	84	42
2" X 2"	124	42
2" X 4"	153	102
2" X 6"	529	529
4" X 4"	96	128
NAILS	NO. REQD	POUNDS
6d (2")	678	4
10d (3")	504	8
16d (3-1/2")	460	10
STEEL STRAPPING, 1-1/4" - 1,460' REQD - - - 209 LBS		
SEAL FOR 1-1/4" STRAPPING - 164 REQD - - - - 8 LBS		
PLYWOOD, 1/2" X 48" X 96" - 32.67 REQD - - 1,438 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-152/E CONTAINER	- 140	- - - - - 97,020 LBS
DUNNAGE	- - - - -	- - - - - 3,391 LBS

TOTAL WEIGHT - - - - - 100,411 LBS (APPROX)

140-UNIT LOAD OF CNU-152/E CONTAINERS
IN A 60'-8" LONG BY 9'-4" WIDE CONVENTIONAL BOXCAR

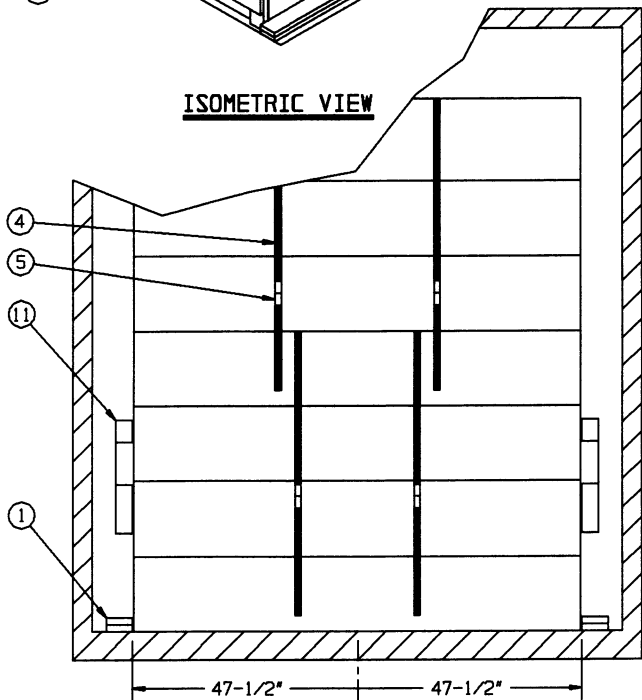


KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" BEYOND STACK NUMBER 6 (REF: 18'-6") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION E-E" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "O" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" BEYOND STACK NUMBER 7 (REF: 21'-6") (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION E-E" VIEW AT LEFT. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE B (2 REQD). SEE THE DETAIL ON PAGE 22. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 17'-6" LONG STEEL STRAPPING (60 REQD). INSTALL TO ENCIRCLE THE BOTTOM FOUR AND THE TOP FOUR CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4 AND THE "CNU-152/E CONTAINER STACK DETAIL" ON PAGE 5. SEE SPECIAL NOTE 2 ON PAGE 19.
- ⑤ SEAL FOR 1-1/4" STEEL STRAPPING (122 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑥ SEPARATOR GATE D (11 REQD). SEE THE DETAIL ON PAGE 24. POSITION BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS. SEE SPECIAL NOTE 3 ON PAGE 19.
- ⑦ SEPARATOR GATE C (1 REQD). SEE THE DETAIL ON PAGE 22. INSTALL BETWEEN A CROSSWISE CONTAINER STACK AND THE LONGITUDINAL CONTAINER STACKS. POSITION WITH THE TIE PIECES AGAINST THE ALREADY LOADED CONTAINERS.
- ⑧ ANTI-CHAFING ASSEMBLY B (1 REQD). SEE THE DETAIL ON PAGE 23. POSITION BETWEEN LATERALLY ADJACENT LENGTHWISE CONTAINER STACKS IN THE DOORWAY AREA.
- ⑨ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 24'-0" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE TOP FOUR LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA.

(CONTINUED ON PAGE 19)

ISOMETRIC VIEW



SECTION E-E

105-UNIT LOAD OF CNU-152/E CONTAINERS
IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR

(KEY NUMBERS CONTINUED FROM PAGE 18)

- ⑩ SIDE BLOCKING, 2" X 4" X 30" (DOUBLED) (4 REQD). POSITION AGAINST A CONTAINER SKID, WITH ONE SET OF PIECES APPROXIMATELY 4" FROM THE SEPARATOR GATE, PIECE MARKED ⑦, AND WITH ONE SET APPROXIMATELY 4" FROM THE CENTER GATE, PIECE MARKED ⑫. NAIL THE FIRST PIECE TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑪ CENTER GATE E (1 REQD). SEE THE DETAIL ON PAGE 24. SEE SPECIAL NOTE 8 AT RIGHT.
- ⑫ CENTER GATE F (1 REQD). SEE THE DETAIL ON PAGE 25.
- ⑬ STRUT, 4" X 4" BY CUT TO FIT (REF: 38") (21 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ① AND ②, W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "H" ON PAGE 2 AND GENERAL NOTES "S" AND "T" ON PAGE 3. SEE SPECIAL NOTE 7 AT RIGHT.

SPECIAL NOTES:

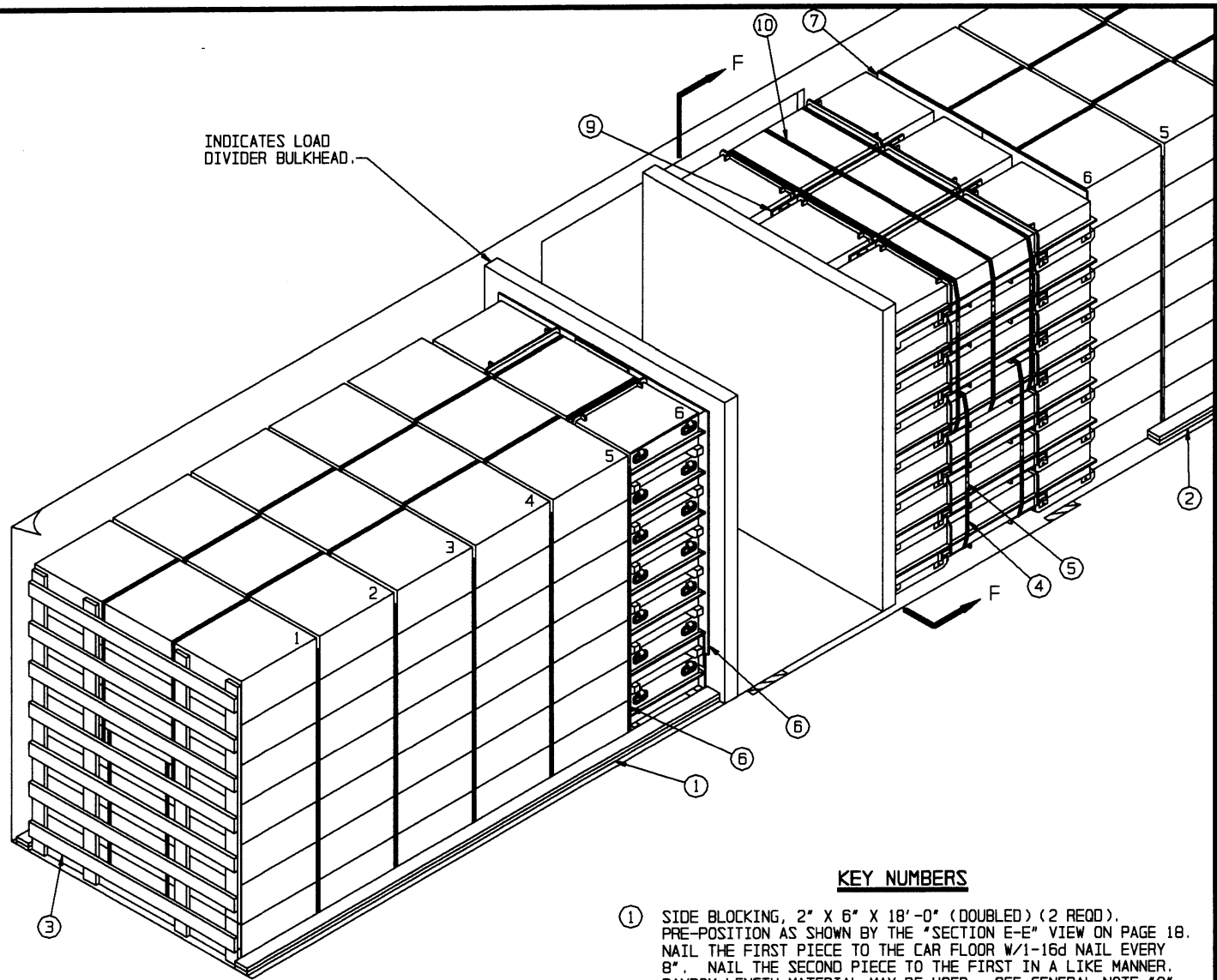
1. A 105-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS (8'-0" MINIMUM) CAN BE USED.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM FOUR CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP, PIECE MARKED ④, SHOULD BE THREADED UNDER THE FOURTH LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE FOUR-HIGH STACK.
3. IF DESIRED, THE PLYWOOD SEPARATOR GATE, PIECE MARKED ⑦, MAY BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑥.
4. IF THE CAR TO BE LOADED IS EQUIPPED WITH 15'-0" OR 16'-0" WIDE STAGGERED DOORS, THE SAME LOADING PATTERN WILL APPLY.
5. IF THE CAR TO BE LOADED IS AT LEAST 9'-4" WIDE, THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA CAN BE LOADED THREE CONTAINERS WIDE IN LIEU OF TWO AS SHOWN. SEE THE PROCEDURES ON PAGE 16 FOR GUIDANCE.
6. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. SEVEN CONTAINERS CAN BE OMITTED BY ELIMINATING A CROSSWISE STACK FROM THE LONG END OF THE LOAD. THE LOAD CAN BE REDUCED BY SEVEN OR FOURTEEN ADDITIONAL CONTAINERS BY OMITTING ONE OR TWO STACKS FROM THE OPPOSITE END OF THE LOAD. NOTE THAT TO FACILITATE LOADING, THE LENGTHWISE LOAD UNIT SHOULD BE IN THE DOORWAY. ONE OR MORE ENTIRE LAYERS MAY BE OMITTED FROM THE TOP OF THE LOAD. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 26.
7. NOTE THAT DOUBLED 2" X 6" STRUTS MAY BE USED IN LIEU OF THE DEPICTED 4" X 4" STRUTS, PIECES MARKED ⑬. LAMINATE THE DOUBLED 2" X 6" STRUTS W/1-10d NAIL EVERY 6".
8. IF DESIRED, WHEN CONSTRUCTING THE CENTER GATES, PIECES MARKED ① AND ②, 1/2" PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "TYPICAL ALTERNATIVE PLYWOOD CENTER GATE" DETAIL ON PAGE 25 FOR GUIDANCE.
9. SEVENTY-SEVEN CONTAINERS CAN BE LOADED IN A 40'-6" LONG BY 9'-2" WIDE BOXCAR OR FORTY-EIGHT CAN BE LOADED IN A 9'-4" WIDE CAR BY USING THE DEPICTED PROCEDURES. FIVE STACKS CAN BE LOADED IN EACH END OF THE CAR AND ONE LENGTHWISE LOAD UNIT CAN BE LOADED IN THE DOORWAY AREA.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	10	4
1" X 6"	1,002	501
2" X 2"	84	28
2" X 4"	59	40
2" X 6"	492	492
4" X 4"	67	90
NAILS	NO. REQD	POUNDS
6d (2")	981	6
10d (3")	432	6-3/4
16d (3-1/2")	380	8-1/2
STEEL STRAPPING, 1-1/4" - 1,074' REQD - - - 154 LBS		
SEAL FOR 1-1/4" STRAPPING - 122 REQD - - - 6 LBS		
PLYWOOD, 1/2" X 48" X 96" - 2.34 REQD - - - 103 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-152/E CONTAINER	- 105	- - - - - 72,765 LBS
DUNNAGE	- - - - -	- - - - - 2,595 LBS
TOTAL WEIGHT		- - - - - 75,360 LBS (APPROX)

105-UNIT LOAD OF CNU-152/E CONTAINERS
IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOXCAR



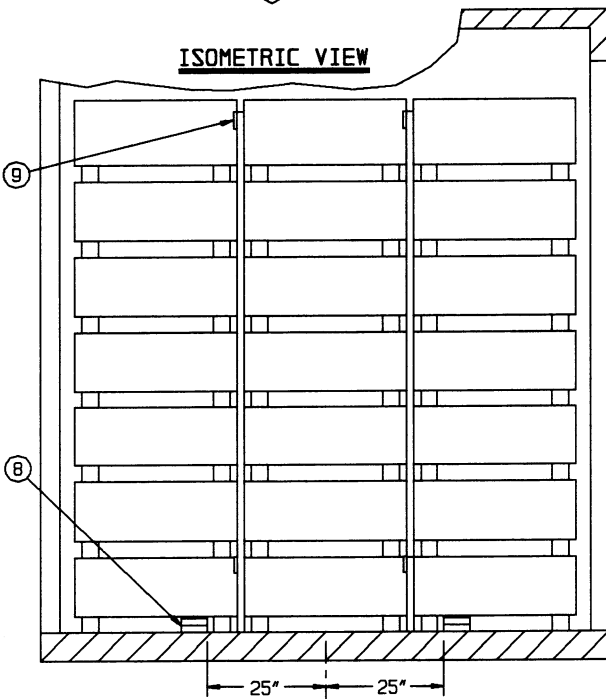
INDICATES LOAD DIVIDER BULKHEAD.

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 6" X 18'-0" (DOUBLED) (2 REQD). PRE-POSITION AS SHOWN BY THE "SECTION E-E" VIEW ON PAGE 18. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RANDOM LENGTH MATERIAL MAY BE USED. SEE GENERAL NOTE "O" ON PAGE 3.
- ② SIDE BLOCKING, 2" X 6" BY A LENGTH TO EXTEND APPROXIMATELY 4" PAST THE FIRST SKID OF STACK NUMBER 6 (REF: 15'-6") (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ ENDWALL GATE B (2 REQD). SEE THE DETAIL ON PAGE 22. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ④ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 17'-6" LONG STEEL STRAPPING (60 REQD). INSTALL TO ENIRCLE BOTTOM FOUR AND THE TOP FOUR CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4 AND THE "CNU-152/E CONTAINER STACK DETAIL" ON PAGE 5. SEE SPECIAL NOTE 2 ON PAGE 21.
- ⑤ SEAL FOR 1-1/4" STEEL STRAPPING (122 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑥ SEPARATOR GATE D (11 REQD). SEE THE DETAIL ON PAGE 24. POSITION BETWEEN LONGITUDINALLY ADJACENT CROSSWISE CONTAINER STACKS AND BETWEEN THE CROSSWISE CONTAINER STACK AND THE LOAD DIVIDER BULKHEAD.
- ⑦ SEPARATOR GATE C (2 REQD). SEE THE DETAIL ON PAGE 22. INSTALL BETWEEN A CROSSWISE CONTAINER STACK AND THE LONGITUDINAL CONTAINER STACKS, AND BETWEEN THE LONGITUDINAL CONTAINER STACKS AND THE LOAD DIVIDER BULKHEAD. POSITION WITH THE TIE PIECES AGAINST THE LONGITUDINALLY LOADED CONTAINERS.

(CONTINUED ON PAGE 21)

ISOMETRIC VIEW



SECTION F-F

105-UNIT LOAD OF CNU-152/E CONTAINERS
IN A 50'-6" LONG BY 9'-4" WIDE CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS

(KEY NUMBERS CONTINUED FROM PAGE 20)

- ⑧ SIDE BLOCKING, 2" X 6" X 24" (DOUBLED) (4 REQD). PRE-POSITION AS SHOWN BY THE "SECTION F-F" VIEW ON PAGE 20 AND SO AS TO BE ALONGSIDE THE CONTAINER SKIDS. NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑨ ANTI-CHAFING ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 23. POSITION BETWEEN LATERALLY ADJACENT LENGTHWISE CONTAINER STACKS IN THE DOORWAY AREA.
- ⑩ BUNDLING STRAP, 1-1/4" X .035" OR .031" X 30'-0" LONG STEEL STRAPPING (1 REQD). INSTALL TO ENCIRCLE THE TOP FOUR LAYERS OF CONTAINERS IN THE LONGITUDINAL LOAD UNIT IN THE DOORWAY AREA.

SPECIAL NOTES:

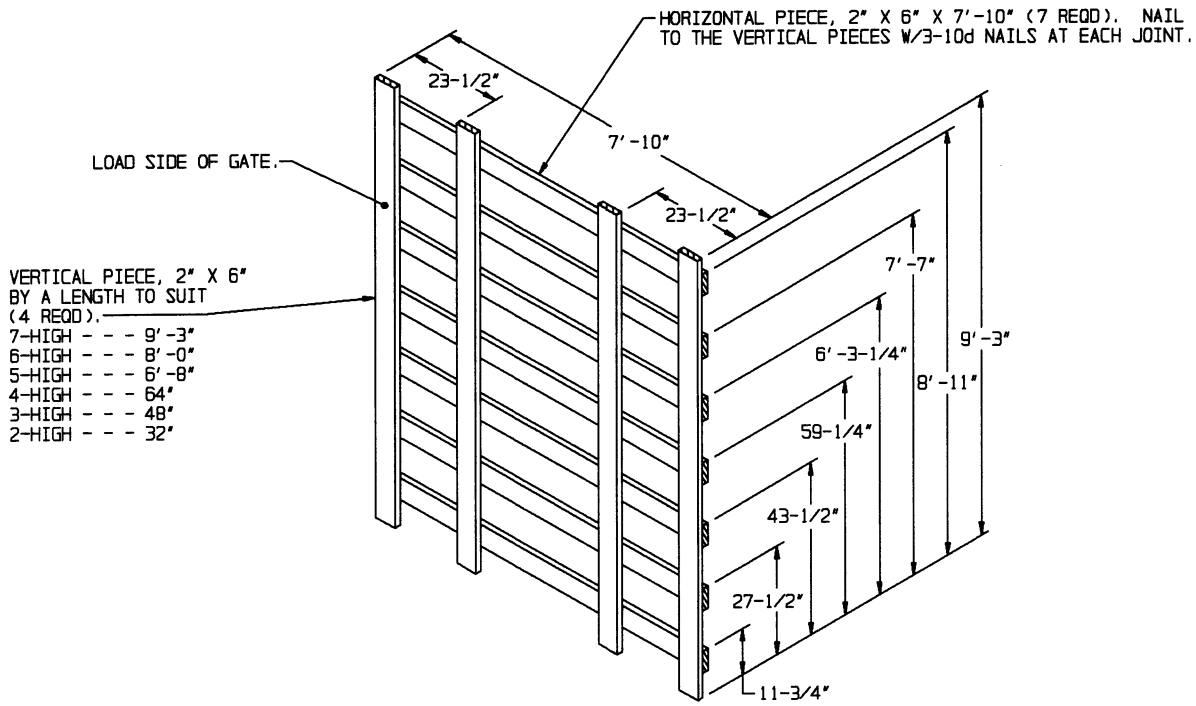
1. A 105-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-4" WIDE CUSHIONED BOXCAR EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH 10'-0" WIDE BY 9'-8" HIGH (MINIMUM) HIGH DOOR OPENINGS. CARS OF OTHER DIMENSIONS AND CARS HAVING OTHER WIDTH DOOR OPENINGS (8'-0" MINIMUM) CAN BE USED.
2. IF THE CAPACITY OF THE AVAILABLE MATERIAL HANDLING EQUIPMENT PERMITS, IT IS RECOMMENDED THAT THE CONTAINER STACKS BE UNITIZED PRIOR TO LOADING INTO THE CAR. IF ONLY THE BOTTOM FOUR CONTAINERS ARE UNITIZED PRIOR TO LOADING, THE UNITIZING STRAP, PIECE MARKED ④, SHOULD BE THREADED UNDER THE FOURTH LAYER CONTAINER PRIOR TO FINAL POSITIONING OF THE FOUR-HIGH STACK.
3. IF DESIRED, THE PLYWOOD SEPARATOR GATE, PIECE MARKED ⑦, MAY BE USED THROUGHOUT THE LENGTH OF THE LOAD IN LIEU OF PIECE MARKED ⑥.
4. IF THE CAR TO BE LOADED IS ONLY 9'-2" WIDE, THE LENGTHWISE LOAD UNIT IN THE DOORWAY AREA CAN ONLY BE LOADED TWO CONTAINERS WIDE IN LIEU OF THREE AS SHOWN. SEE THE PROCEDURES ON PAGE 18 FOR GUIDANCE.
5. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. SEVEN OR FOURTEEN CONTAINERS CAN BE OMITTED BY ELIMINATING ONE OR TWO CROSSWISE STACK FROM THE SHORT END OF THE LOAD. THE LOAD CAN BE REDUCED BY FOURTEEN CONTAINERS BY OMITTING THE LENGTHWISE CONTAINERS FROM THE DOORWAY AREA. FURTHER ADJUSTMENT CAN BE ACCOMPLISHED BY OMITTING ADDITIONAL CROSSWISE STACKS OR BY OMITTING LAYERS. THE ENTIRE TOP LAYER MAY BE OMITTED. ONE CONTAINER CAN BE OMITTED BY EMPLOYING THE PROCEDURES SHOWN ON PAGE 26.
6. SEVENTY-SEVEN CONTAINERS CAN BE LOADED IN A 40'-6" LONG BY 9'-2" WIDE BOXCAR OR EIGHTY-FOUR CAN BE LOADED IN A 9'-4" WIDE CAR BY USING THE DEPICTED PROCEDURES. FIVE STACKS CAN BE LOADED IN ONE END OF THE CAR AND ONE LENGTHWISE LOAD UNIT CAN BE LOADED IN THE DOORWAY AREA. FOUR STACKS CAN BE LOADED IN THE OPPOSITE END OF THE CAR.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	20	7
1" X 6"	1,007	504
2" X 4"	37	25
2" X 6"	334	334
NAILS	NO. REQD	POUNDS
6d (2")	1,038	6-1/4
10d (3")	168	2-3/4
16d (3-1/2")	264	5-3/4
STEEL STRAPPING, 1-1/4" - 1,114' REQD - - - 160 LBS		
SEAL FOR 1-1/4" STRAPPING - 122 REQD - - - 6 LBS		
PLYWOOD, 1/2" X 48" X 96" - 4.68 REQD - - - 206 LBS		

LOAD AS SHOWN

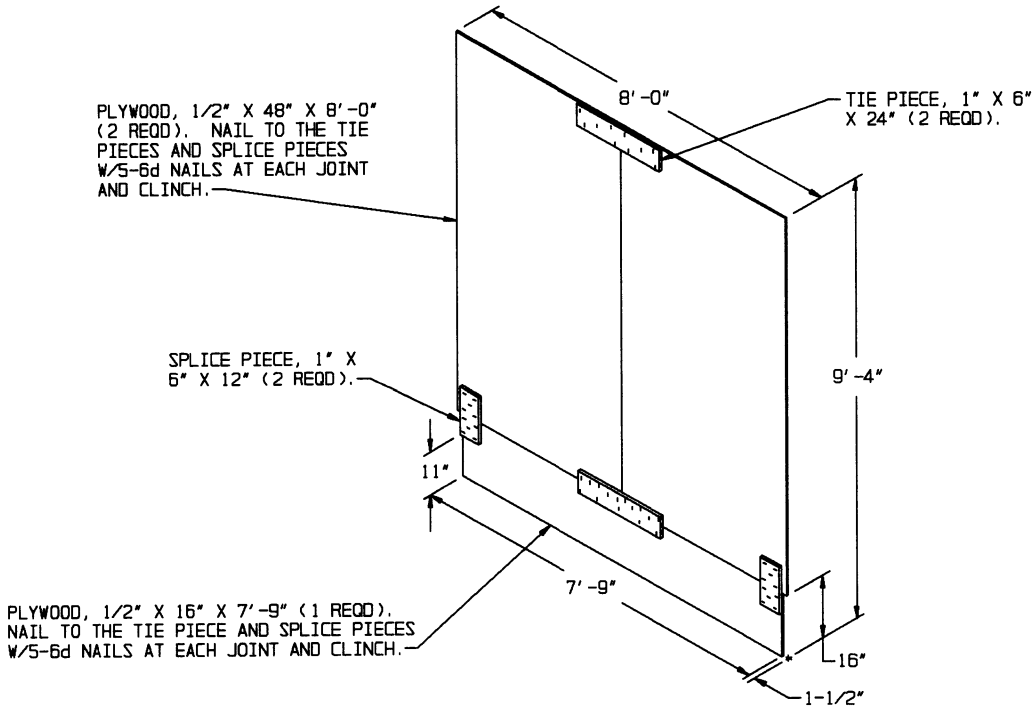
ITEM	QUANTITY	WEIGHT (APPROX)
CNU-152/E CONTAINER	- 105	- - - - - 72,765 LBS
DUNNAGE	- - - - -	- - - - - 2,127 LBS
TOTAL WEIGHT		- - - - - 74,892 LBS (APPROX)

105-UNIT LOAD OF CNU-152/E CONTAINERS
 IN A 50'-6" LONG BY 9'-4" WIDE CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS



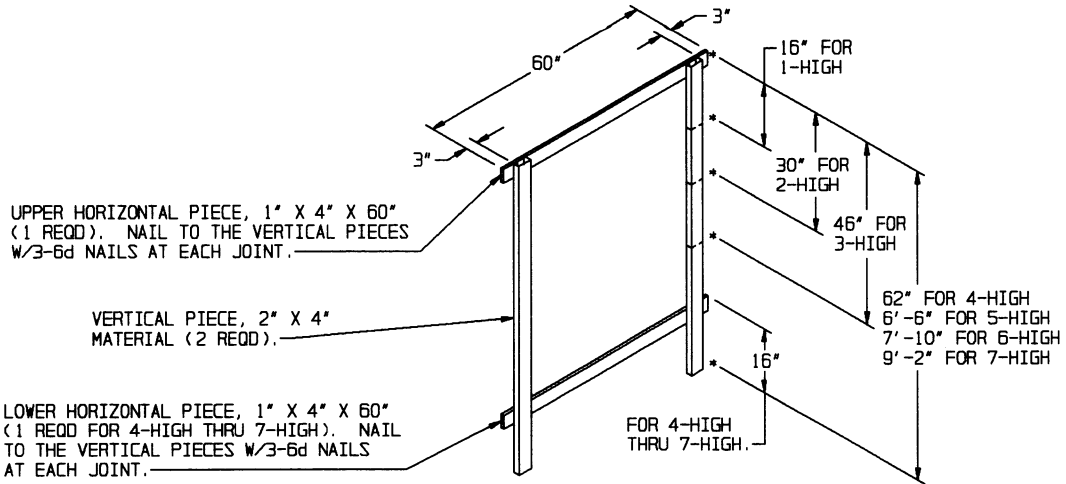
ENDWALL GATE B

THIS ENDWALL GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 16, 18, AND 20.



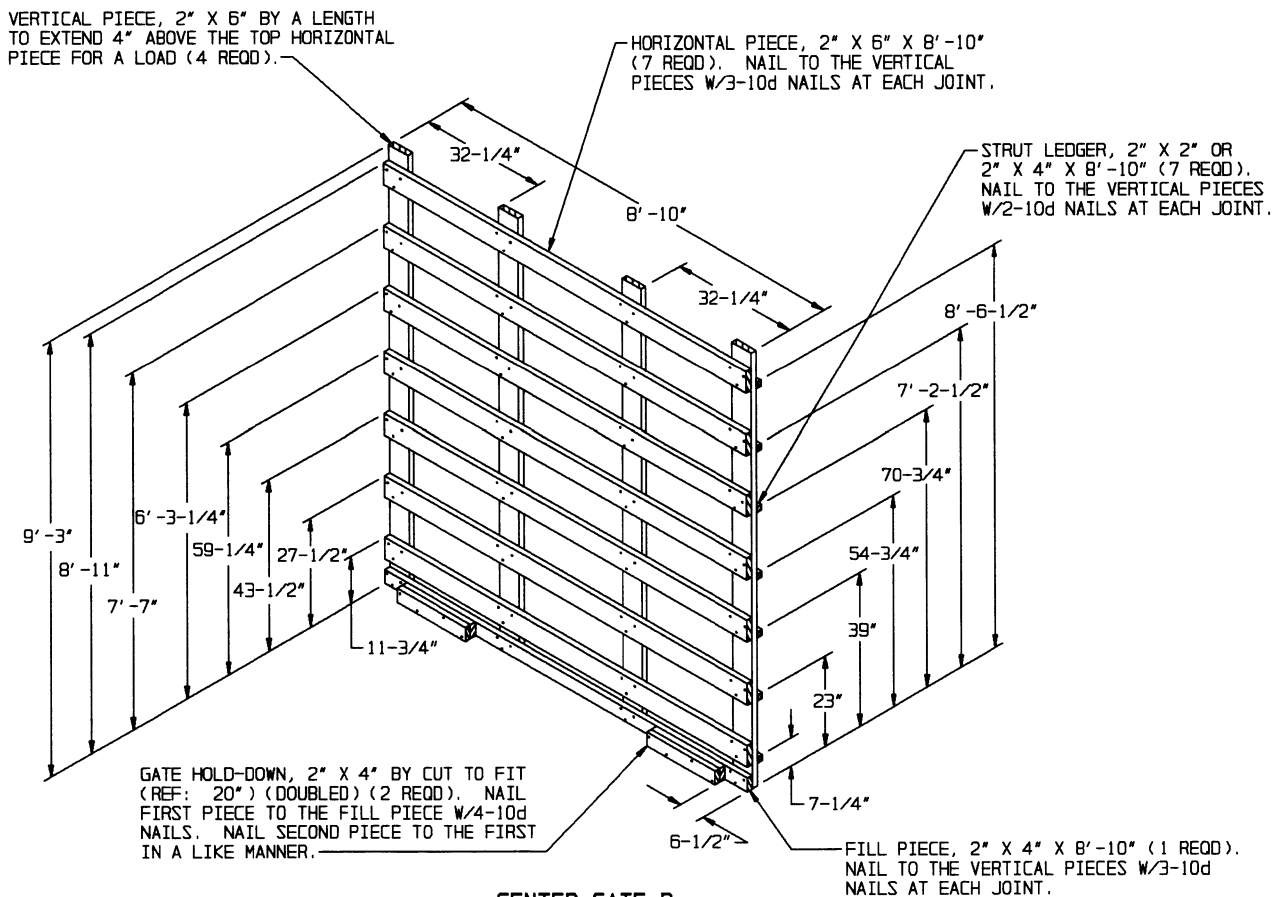
SEPARATOR GATE C

THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 16, 18, AND 20.



ANTI-CHAFING ASSEMBLY B

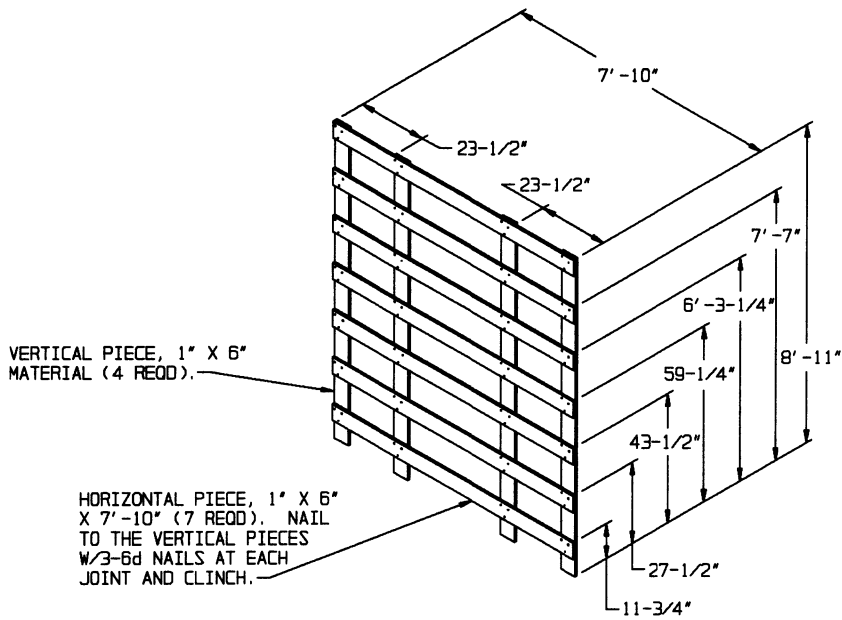
THIS ANTI-CHAFING ASSEMBLY IS FOR USE IN THE LOADS SHOWN ON PAGES 16, 18, AND 20.



CENTER GATE D

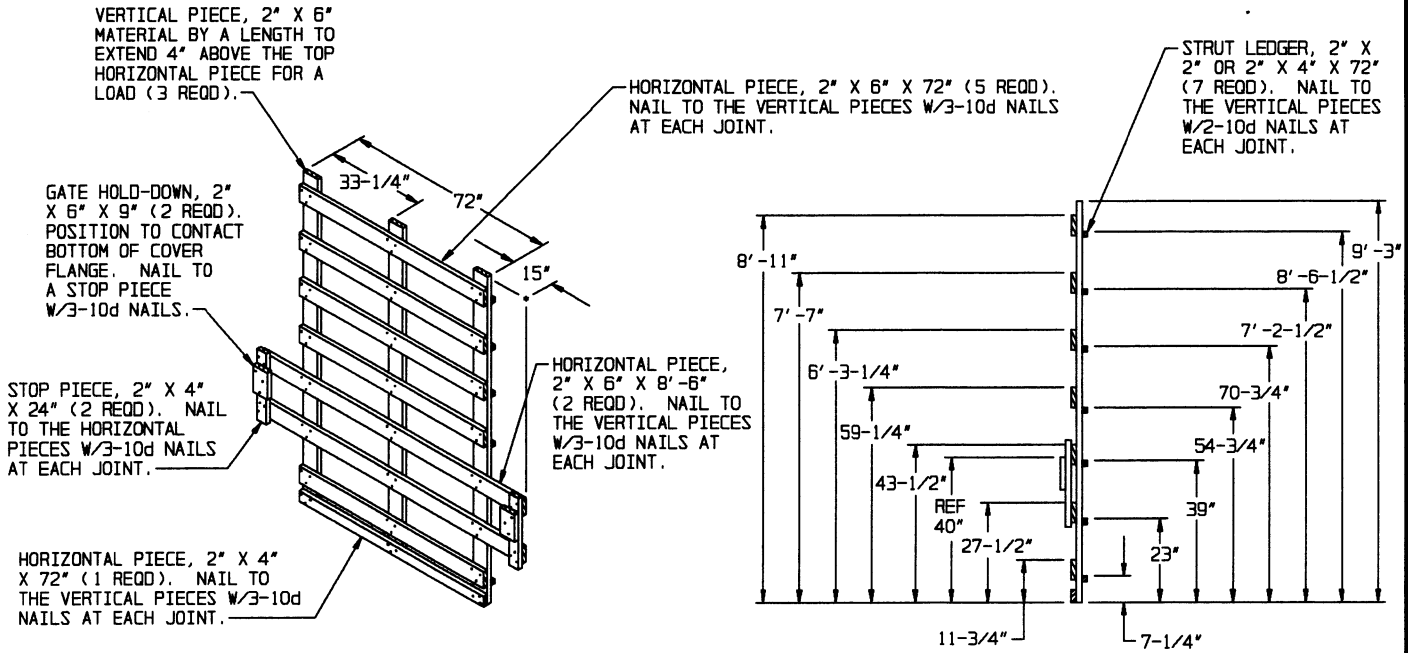
THIS CENTER GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 16.

DETAILS



SEPARATOR GATE D

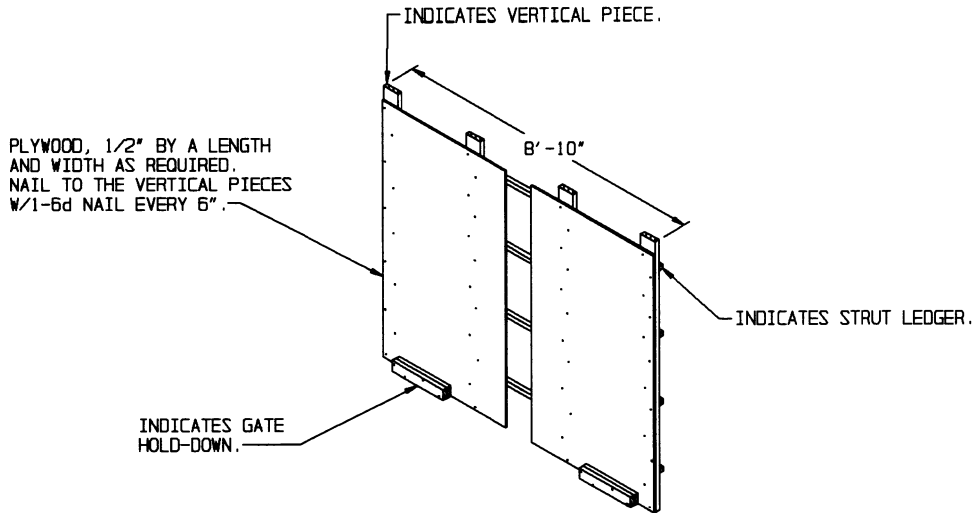
THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 18 AND 20.



CENTER GATE E

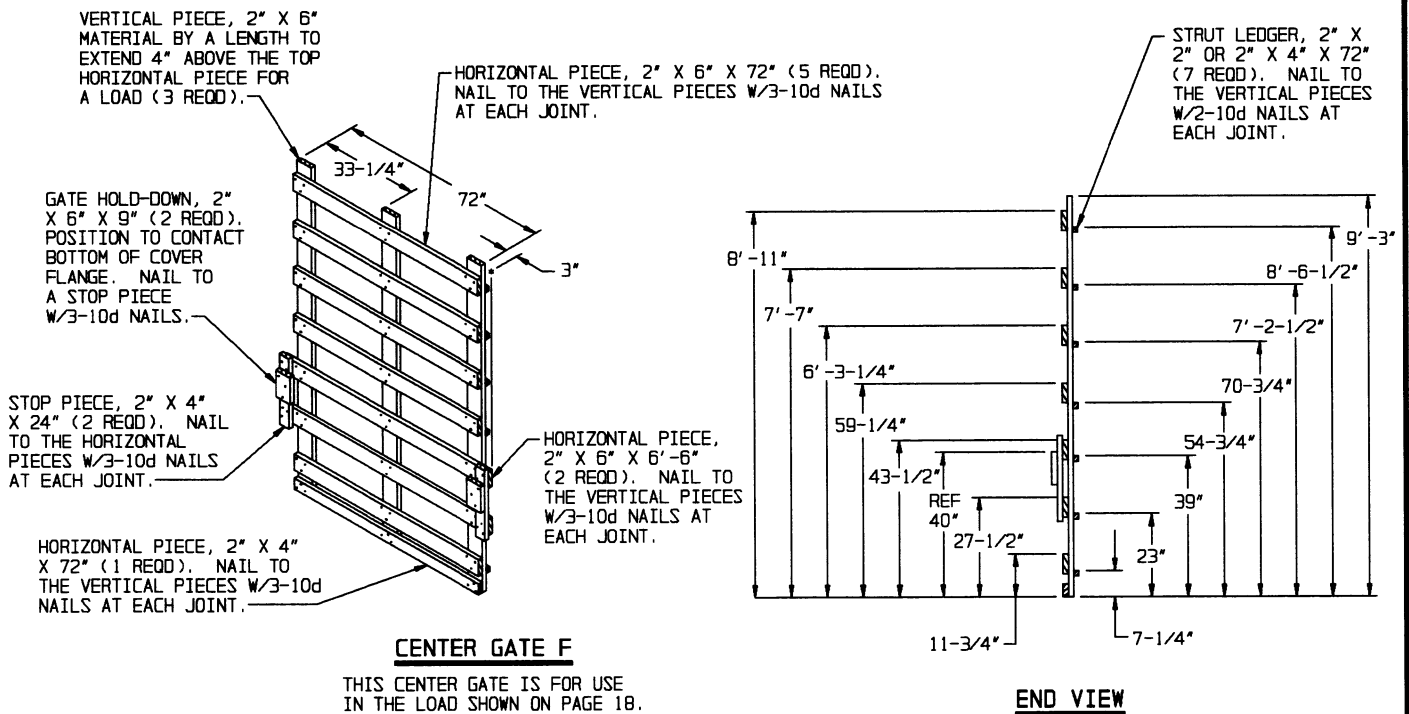
THIS CENTER GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 18.

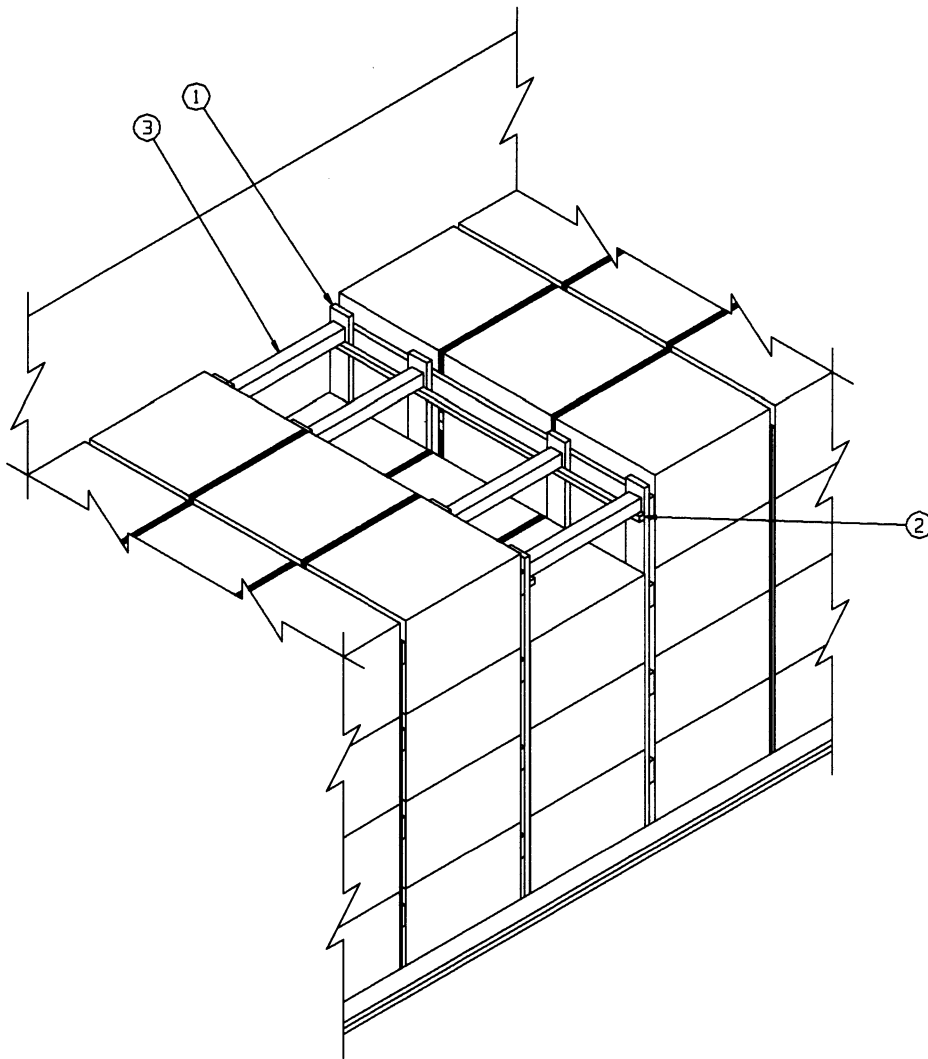
END VIEW



TYPICAL ALTERNATIVE PLYWOOD CENTER GATE

A PLYWOOD FACE CENTER GATE "A" IS SHOWN AS TYPICAL. PLYWOOD FACING MAY BE USED FOR ANY OF THE DEPICTED CENTER GATES. THE PLYWOOD MAY BE ALLOWED TO EXTEND ABOVE THE HEIGHT OF THE GATE AND/OR BEYOND THE WIDTH PROVIDING THE OVERHANG DOES NOT INTERFERE WITH THE BLOCKING AND BRACING SHOWN. SPLICES, IF REQUIRED, SHOULD BE MADE ON THE VERTICAL PIECES.





ISOMETRIC VIEW

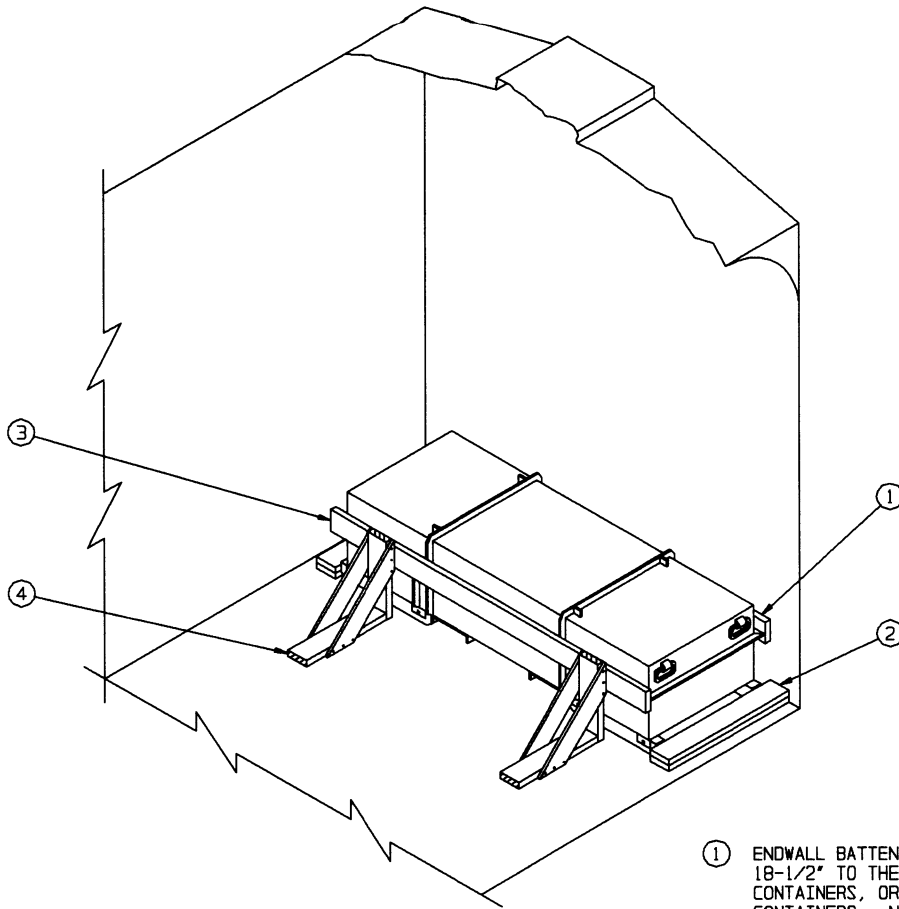
SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-4" WIDE CONVENTIONAL TYPE BOXCAR IS SHOWN. OTHER WIDTH CARS CAN ALSO BE USED. THE PROCEDURE IS ALSO APPLICABLE FOR USE IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS.
2. A CONTAINER OMITTED FROM A FULL LOAD OF CNU-80/E CONTAINERS IS SHOWN. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A TOP-LAYER CONTAINER FOR THE OTHER CONTAINERS HEREIN.
3. A UNIT OMITTED FROM THE TOP LAYER OF A 4-LAYER LOAD IS SHOWN AS TYPICAL. THE PROCEDURES ARE ALSO APPLICABLE FOR THE OMISSION OF A CONTAINER FROM THE TOP LAYER OF ANY HEIGHT LOAD.
4. THE OMITTED UNIT PROCEDURES SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE CROSSWISE LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE AND/OR BETWEEN THE OMITTED UNIT AND A LENGTHWISE LOAD UNIT.
5. ONLY THE BLOCKING AND BRACING FOR THE OMITTED CONTAINER IS SHOWN. REFER TO PAGE 6, 8, AND/OR 10 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD FOR CNU-80/E OR CNU-203/E CONTAINERS, REFER TO PAGE 16, 18, AND/OR 20 FOR THE CNU-152/E CONTAINERS.

KEY NUMBERS

- ① ENDWALL GATE (2 REOD). SEE THE "ENDWALL GATE A" DETAIL ON PAGE 12 FOR THE CNU-80/E OR CNU-203/E CONTAINERS OR THE "ENDWALL GATE B" DETAIL ON PAGE 22 FOR THE CNU-152/E CONTAINERS. INSTALL ONE WITH THE HORIZONTAL PIECES AGAINST THE ALREADY-LOADED CONTAINERS AND ONE SO AS TO BE AGAINST THE NEXT STACK OF CONTAINERS. OMIT SEPARATOR GATES AT THESE LOCATIONS.
- ② STRUT LEDGER, 2" X 2" OR 2" X 4" X 7'-10" (2 REOD). POSITION 14" ABOVE THE BODY OF THE NEXT LOWER CONTAINER FOR THE CNU-80/E OR CNU-203/E CONTAINERS, OR 7'-1/4" ABOVE THE BODY OF THE NEXT LOWER CONTAINER FOR THE CNU-152/E CONTAINERS. NAIL TO THE VERTICAL PIECES OF THE ENDWALL GATE, PIECE MARKED ①, W/2-10d NAILS AT EACH JOINT.
- ③ STRUT, 4" X 4" X 34-1/4" (4 REOD). TOENAIL TO THE VERTICAL PIECES OF THE ENDWALL GATES W/2-16d NAILS AT EACH END.

TYPICAL LCL-ONE CONTAINER OMITTED FROM TOP LAYER



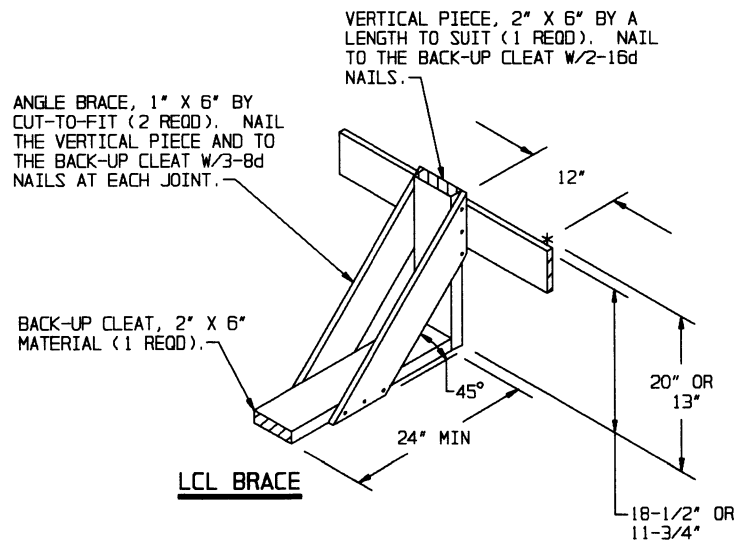
ISOMETRIC VIEW

KEY NUMBERS

- ① ENDWALL BATTEN, 2" X 6" X 8'-0" (1 REQD). POSITION AT 18-1/2" TO THE TOP FOR THE CNU-80/E AND CNU-203/E CONTAINERS, OR AT 11-3/4" TO THE TOP FOR THE CNU-152/E CONTAINERS. NAIL TO THE CAR ENDWALL W/5-10d NAILS. SEE GENERAL NOTE "J" ON PAGE 2. SEE SPECIAL NOTE 2 AT LEFT.
- ② SIDE BLOCKING 2" X 6" X 36" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "O" ON PAGE 3.
- ③ HORIZONTAL PIECE, 2" X 6" X 8'-0" (1 REQD). NAIL TO THE LCL BRACES W/3-10d NAILS AT EACH JOINT. SEE THE "LCL BRACE" DETAIL BELOW FOR LOCATION.
- ④ LCL BRACE (2 REQD). SEE THE DETAIL BELOW. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.

SPECIAL NOTES:

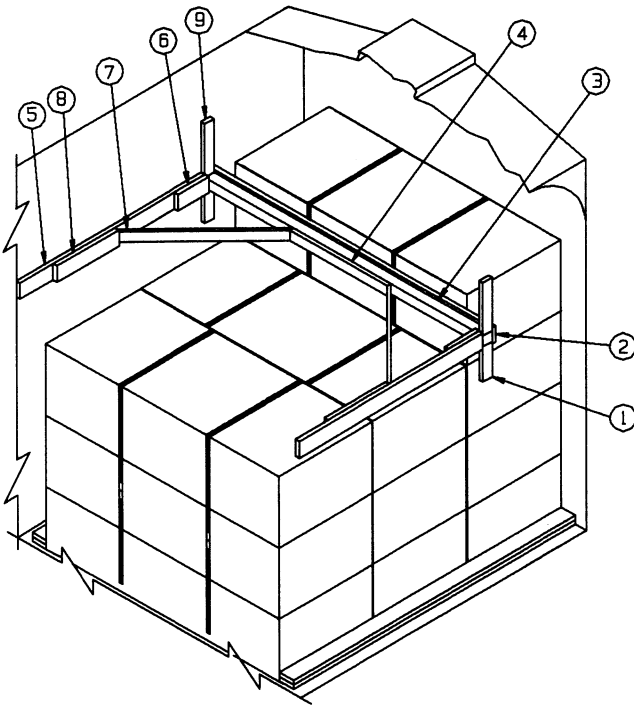
1. A 1-UNIT LOAD OF A CNU-80/E CONTAINER IS SHOWN IN A 9'-4" WIDE CONVENTIONAL TYPE BOXCAR. CARS OF OTHER WIDTHS MAY BE USED. THE PROCEDURES ARE ALSO APPLICABLE FOR SHIPMENT OF THE OTHER CONTAINERS HEREIN.
2. IF THE CAR ENDWALL IS NOT AVAILABLE, AN ENDWALL GATE WILL BE USED IN LIEU OF THE BATTEN, PIECE MARKED ①. SEE THE "ENDWALL GATE A" DETAIL ON PAGE 12 FOR THE CNU-80/E AND CNU-203/E CONTAINERS. SEE THE "ENDWALL GATE B" DETAIL ON PAGE 22 FOR THE CNU-152/E CONTAINER.
3. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. A MINIMUM OF TWO BRACES MUST BE USED FOR LONGITUDINAL BRACING.
4. IF MORE THAN ONE CONTAINER IS TO BE SHIPPED, A SEPARATOR GATE MUST BE INSTALLED BETWEEN THE CONTAINERS. SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 14 FOR THE CNU-80/E OR CNU-203/E CONTAINERS. SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 24 FOR THE CNU-152/E CONTAINER.



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

KEY NUMBERS

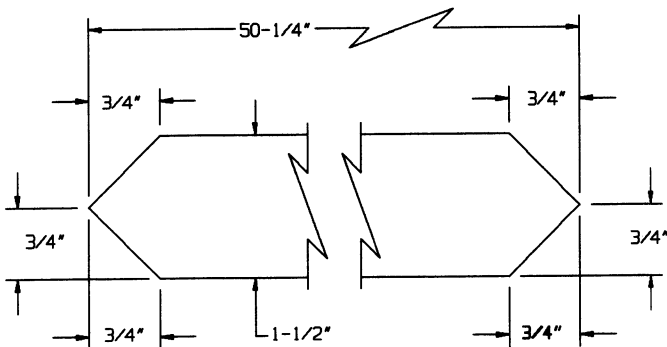
- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). POSITION SO AS TO CENTER PIECE MARKED ② ON THE COVER FLANGE OF THE CONTAINER. NAIL TO THE CAR SIDEWALL W/4-12d NAILS. SEE GENERAL NOTE "J" ON PAGE 2.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6".
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REQD).
- ④ CENTER CLEAT, 2" X 4" X 38" (1 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 4 BELOW.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (2 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/4-16d NAILS.
- ⑦ DIAGONAL BRACE, 2" X 4" X 50-1/4" (2 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/2-16d NAILS AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/8-16d NAILS.
- ⑨ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.



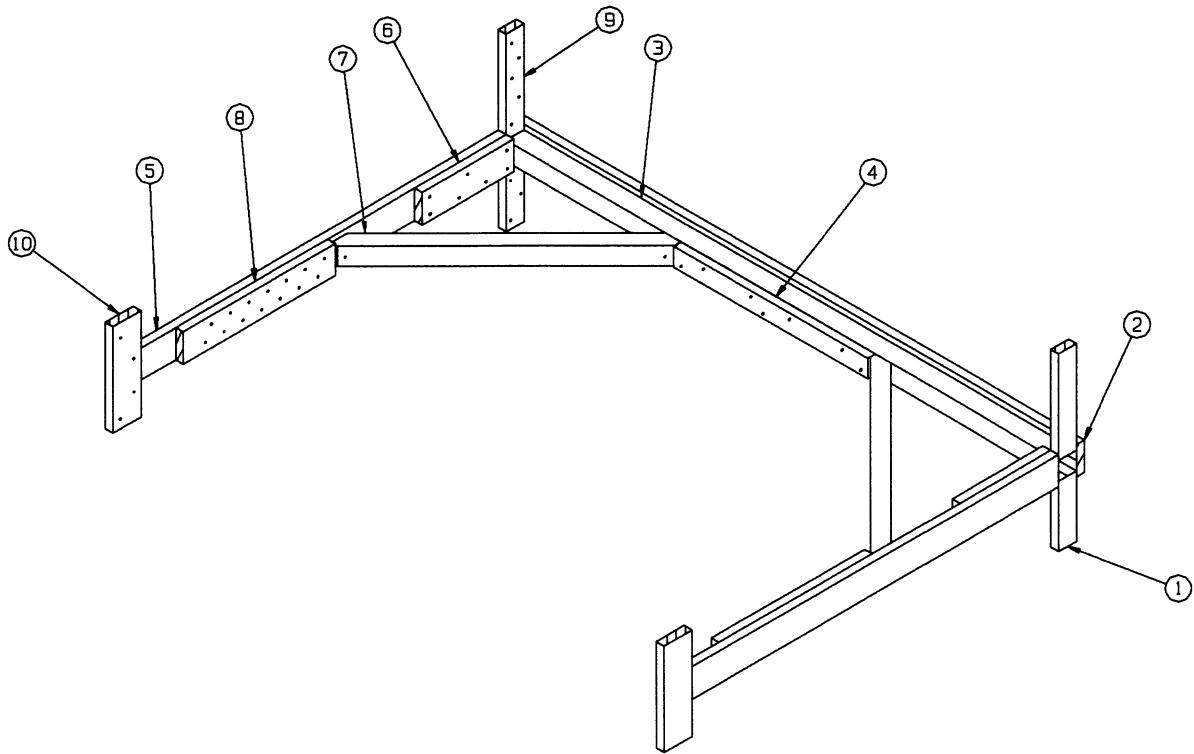
ISOMETRIC VIEW

SPECIAL NOTES:

- 1. A 9'-4" WIDE WOOD-LINED (SIDEWALLS) CONVENTIONAL BOXCAR IS SHOWN WITH A TYPICAL K-BRACE. WOOD-LINED CARS OF OTHER WIDTHS 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 A FIRST, SECOND, THIRD OR OTHER TIER. THE TYPE "A" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 4,000 POUNDS. THIS WILL BE NOT MORE THAN THREE CNU-80/E CONTAINERS AT THEIR MAXIMUM WEIGHT OR FOUR AT 934 TO 1,000 POUNDS, OR FOUR CNU-203/E CONTAINERS, OR FIVE CNU-152/E CONTAINERS. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 29.
- 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/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 40" LONG FOR A 9'-6" WIDE CAR, 36" FOR A 9'-2" CAR, AND 34" FOR A 9'-0" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.



DIAGONAL BRACE



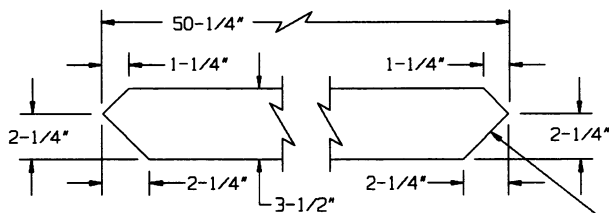
ISOMETRIC VIEW

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 CNU-80/E CONTAINERS AT A WEIGHT OF 1,001 POUNDS TO THEIR MAXIMUM WEIGHT, OR SEVEN AT 934 POUNDS TO 1,000 POUNDS, OR EIGHT CNU-203 CONTAINERS, OR EIGHT CNU-152/E CONTAINERS. IF THE PARTIAL TIER TO BE BRACED WEIGHS LESS THAN 4,000 POUNDS, THE TYPE "A" K-BRACE DEPICTED ON PAGE 28 MAY BE USED. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO THE DETAIL ON PAGE 30.
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 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, PIECE MARKED ⑦, 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 40" LONG FOR A 9'-6" WIDE CAR, 38" FOR A 9'-4" CAR, 36" FOR A 9'-2" CAR, AND 34" FOR A 9'-0" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.
4. REFER TO PAGE 28 FOR A TYPICAL INSTALLATION OF A K-BRACE.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REOD). POSITION SO AS TO CENTER PIECE MARKED ② ON THE COVER FLANGE OF THE CONTAINER. NAIL TO THE CAR SIDEWALL W/4-12d NAILS. SEE GENERAL NOTE "J" ON PAGE 2. 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".
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 REOD).
- ④ CENTER CLEAT, 2" X 4" X 38" (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 A 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.

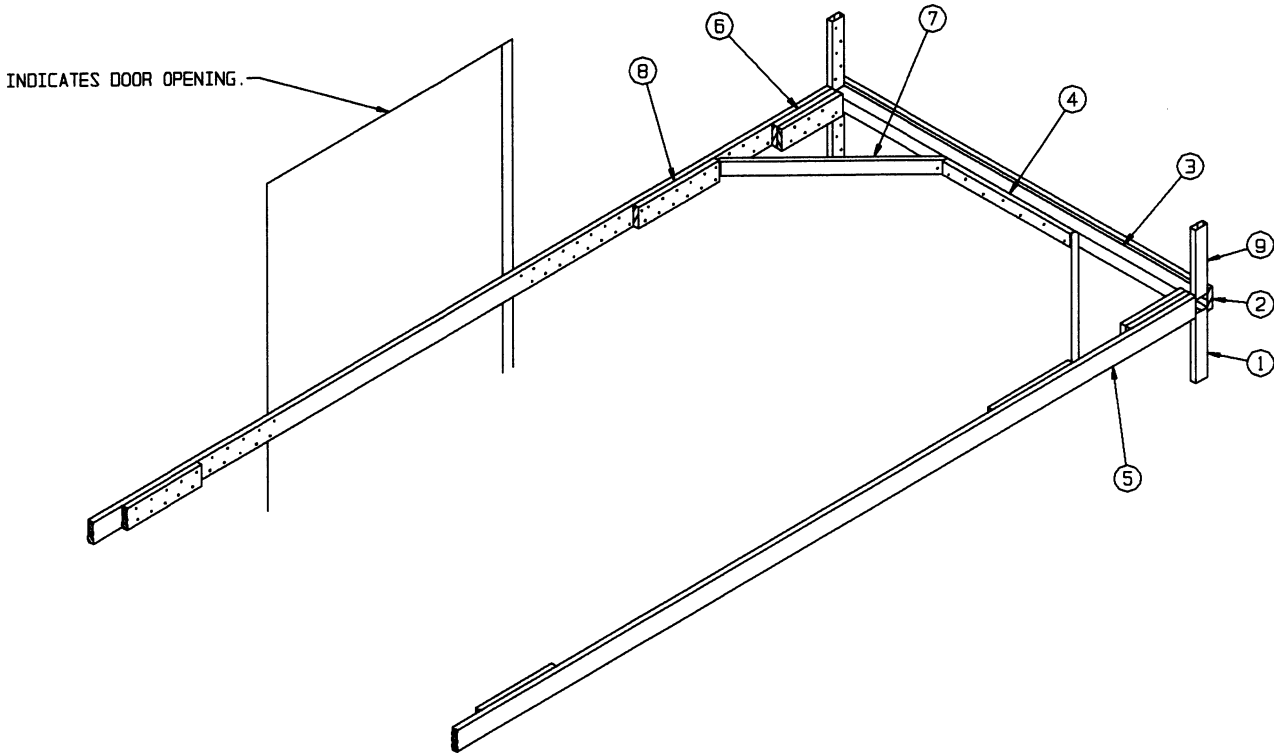


DIAGONAL BRACE

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.

TYPE "B" K-BRACE



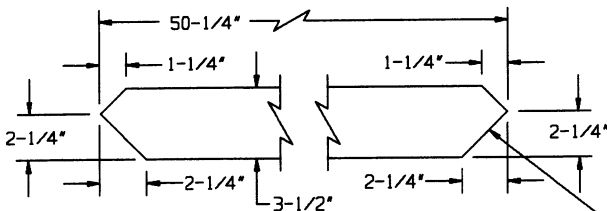
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE TYPE "C" K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 10,000 POUNDS. THIS WILL BE ADEQUATE FOR EIGHT OF THE HEAVIEST CNU-80/E CONTAINERS, OR EIGHT CNU-152/E CONTAINERS, THE MAXIMUM NUMBER WHICH CAN BE LOADED IN A 60'-8" LONG CAR. IF THE PARTIAL TIER TO BE BRACED IS ONLY SIX CNU-80/E CONTAINERS AT A WEIGHT OF 1,001 POUNDS TO THEIR MAXIMUM WEIGHT OR SEVEN AT 934 POUNDS TO 1,000 POUNDS, OR IS MORE THAN FOUR CNU-203/E CONTAINERS, THE K-BRACE ON PAGE 29 MAY BE USED. IF THE PARTIAL TIER TO BE BRACED IS NOT MORE THAN FOUR CONTAINERS, THE K-BRACE ON PAGE 28 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 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. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ 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 40" LONG FOR A 9'-6" WIDE CAR, 38" LONG FOR A 9'-4" CAR, 36" FOR A 9'-2" CAR, AND 34" FOR A 9'-0" WIDE CAR.
4. REFER TO PAGE 28 FOR A TYPICAL INSTALLATION OF A K-BRACE.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 12" (2 REQD). POSITION SO AS TO CENTER PIECE MARKED ② ON THE COVER FLANGE OF THE CONTAINER. NAIL TO THE CAR SIDEWALL W/4-12d NAILS. SEE GENERAL NOTE "J" ON PAGE 2.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH IN LENGTH (CUT TO FIT) (1 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 IN LENGTH (CUT TO FIT) (1 REQD).
- ④ CENTER CLEAT, 2" X 4" X 38" (1 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 (2 REQD). A CLEAT WILL BE OF A LENGTH AS NECESSARY TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING 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) (2 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" (2 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" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.

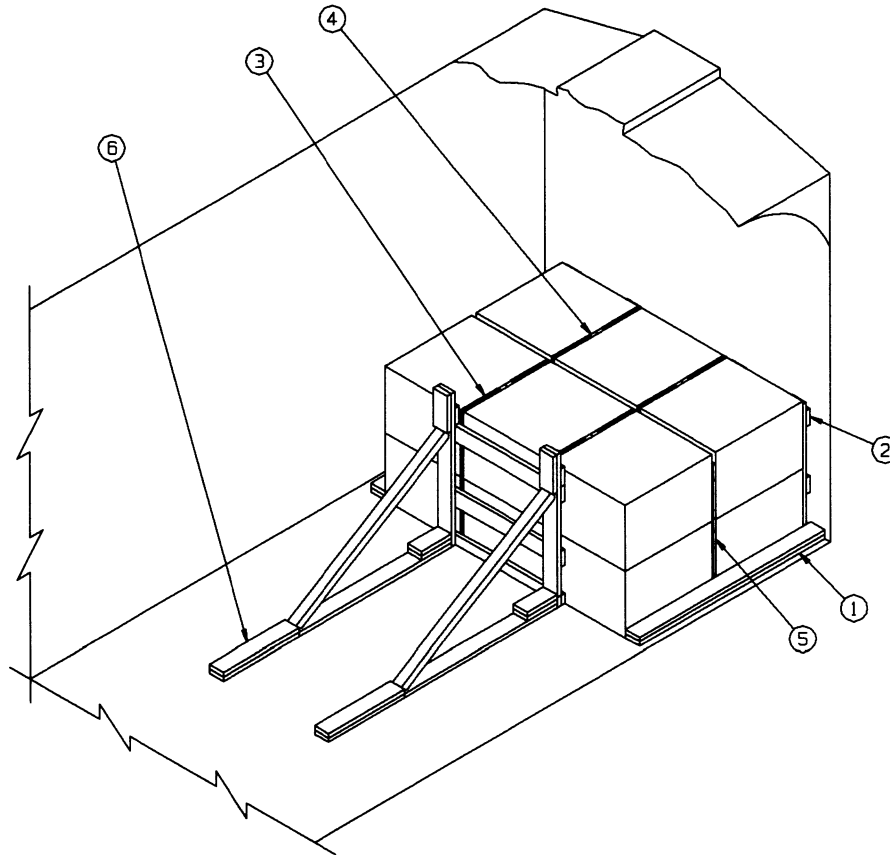


DIAGONAL BRACE

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



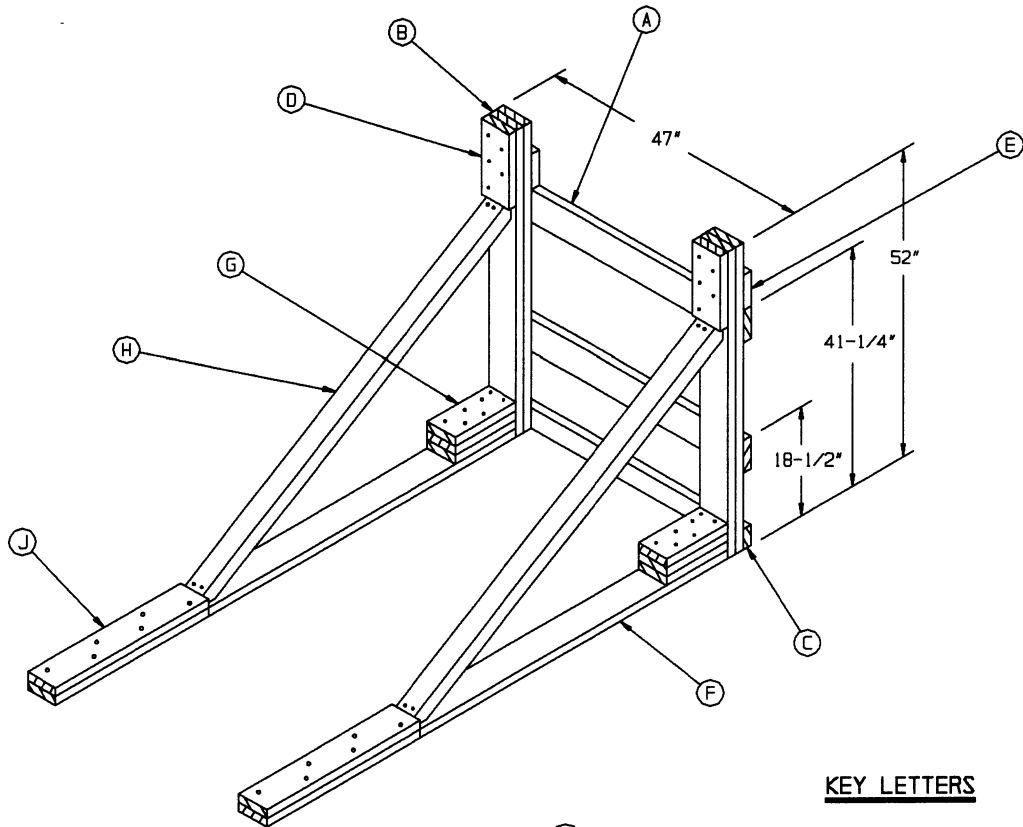
ISOMETRIC VIEW

KEY NUMBERS

SPECIAL NOTES:

1. A 4-UNIT LOAD IS SHOWN IN A 9'-4" WIDE CONVENTIONAL BOXCAR. CARS OF OTHER WIDTHS CAN BE USED.
2. IT IS RECOMMENDED THAT THE CONTAINERS BE UNITIZED PRIOR TO LOADING INTO THE CAR.
3. THE TOTAL KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS. THIS WILL BE NOT MORE THAN SIX CNU-80/E CONTAINERS WEIGHING FROM 1,063 POUNDS TO THE MAXIMUM WEIGHT, OR EIGHT CONTAINERS WEIGHING LESS THAN 1,063 POUNDS, OR TEN CNU-203/E CONTAINERS, OR 10 CNU-152/E CONTAINERS.

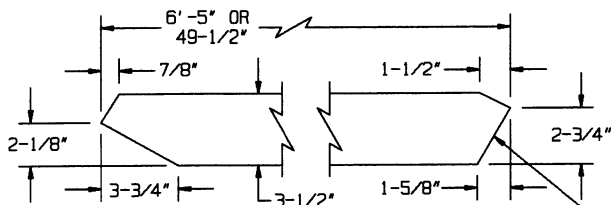
- ① SIDE BLOCKING, 2" X 6" BY LOAD LENGTH (REF: 6'-1") (DOUBLED) (2 REQD). PRE-POSITION. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 16". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "Q" ON PAGE 2.
- ② ENDWALL GATE (1 REQD). SEE THE ENDWALL GATE A" DETAIL ON PAGE 12 FOR THE CNU-80/E AND CNU-203/E CONTAINERS, OR THE "ENDWALL GATE B" DETAIL ON PAGE 22 FOR THE CNU-152/E CONTAINER. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- ③ UNITIZING STRAP, 1-1/4" X .035" OR .031" X 14'-6" LONG STEEL STRAPPING FOR THE CNU-80/E AND CNU-203/E CONTAINERS, OR 12'-0" FOR THE CNU-152/E CONTAINER (4 REQD). INSTALL TO ENCIRCLE THE CONTAINERS IN A STACK. SEE THE "UNITIZATION AND HANDLING GUIDANCE" ON PAGE 4. SEE SPECIAL NOTE 2 AT LEFT.
- ④ SEAL FOR 1-1/4" STEEL STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑤ SEPARATOR GATE (1 REQD). SEE THE "SEPARATOR GATE B" DETAIL ON PAGE 14 FOR THE CNU-80/E AND CNU-203/E CONTAINERS. SEE THE "SEPARATOR GATE D" DETAIL ON PAGE 24 FOR THE CNU-152/E CONTAINER. POSITION BETWEEN LONGITUDINALLY ADJACENT CONTAINER STACKS.
- ⑥ KNEE BRACE ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 32 AND SPECIAL NOTE 3 AT LEFT.



KNEE BRACE ASSEMBLY

KEY LETTERS

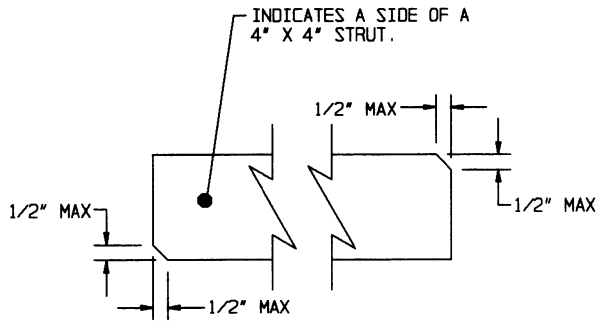
- (A) LOAD BEARING PIECE, 2" X 6" X 47" (2 REQD). NAIL TO THE VERTICAL PIECES, PIECES MARKED (B), W/3-10d NAILS AT EACH END. SEE GENERAL NOTES "J" AND "K" ON PAGE 2.
- (B) VERTICAL PIECE, 2" X 6" X 52" FOR THE CNU-80/E AND CNU-203/E CONTAINERS OR 38-1/4" FOR THE CNU-152/E CONTAINER (DOUBLED) (2 REQD). LAMINATE THE 52" PIECE W/9-10d NAILS, OR THE 38-1/4" PIECE W/6-10d NAILS. NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED (F), W/2-16d NAILS.
- (C) FILL PIECE, 2" X 4" X 47" (1 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH END.
- (D) HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE, PIECE MARKED (B), W/5-10d NAILS.
- (E) REINFORCING PIECE, 2" X 6" X 6" (2 REQD). POSITION IN CONTACT WITH PIECE MARKED (A) AND NAIL TO A VERTICAL PIECE, PIECE MARKED (B), W/3-10d NAILS.
- (F) FLOOR CLEAT, 2" X 6" X 8'-1" FOR THE CNU-80/E AND CNU-203/E CONTAINERS OR 6'-1" FOR THE CNU-152/E CONTAINER (2 REQD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "Q" ON PAGE 3.
- (G) POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO A FLOOR CLEAT, PIECE MARKED (F), W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST AND THE THIRD TO THE SECOND IN A LIKE MANNER. TOENAIL THE TOP PIECE TO A VERTICAL PIECE, PIECE MARKED (B), W/2-10d NAILS.
- (H) BRACE, 4" X 4" X 6'-5" FOR THE CNU-80/E OR CNU-203/E CONTAINERS, OR 49-1/2" FOR THE CNU-152/E CONTAINER (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED (B) AND (F), W/2-16d NAILS AT EACH END.
- (J) BACK-UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED (F), W/6-40d NAILS.



BRACE

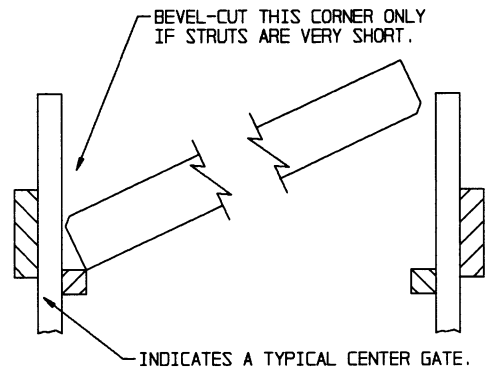
4" X 4" MATERIAL

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



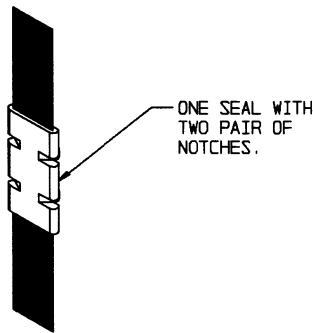
BEVEL-CUT

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



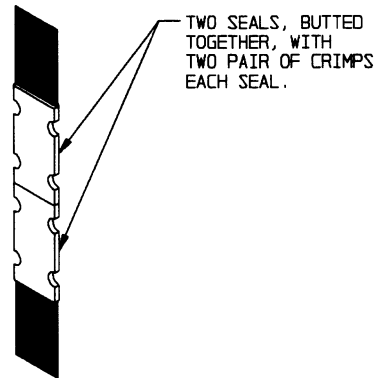
STRUT INSTALLATION

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



STRAP JOINT A

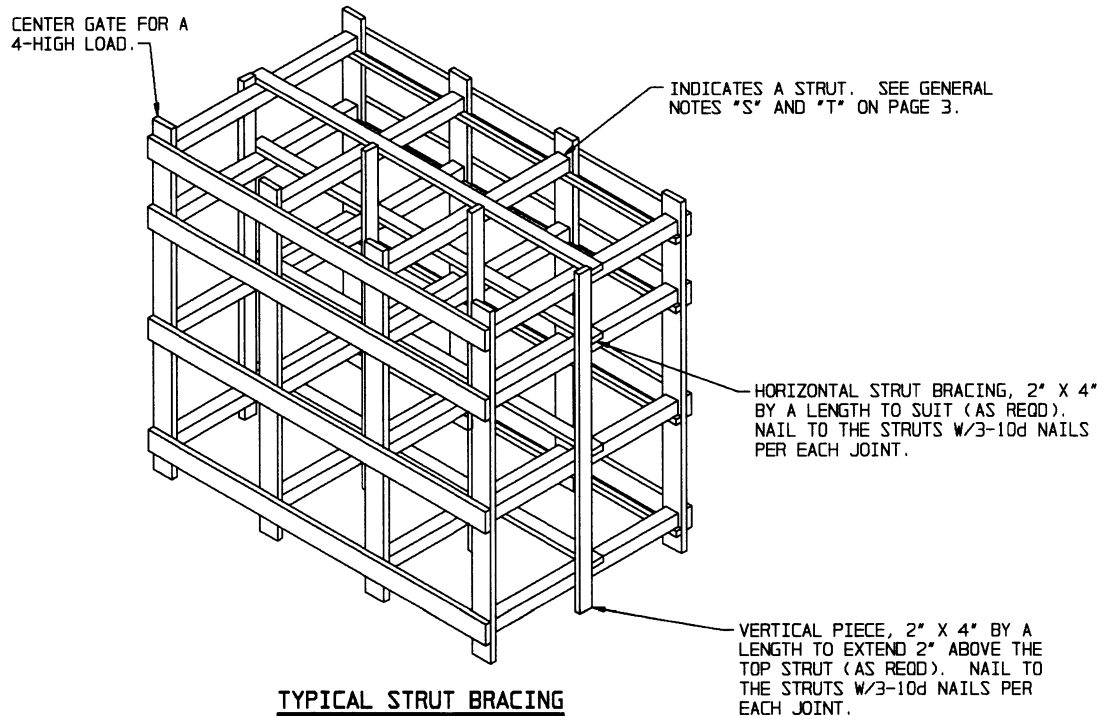
METHOD OF SECURING A STRAP JOINT WHEN USING A NOTCH-TYPE SEALER.



STRAP JOINT B

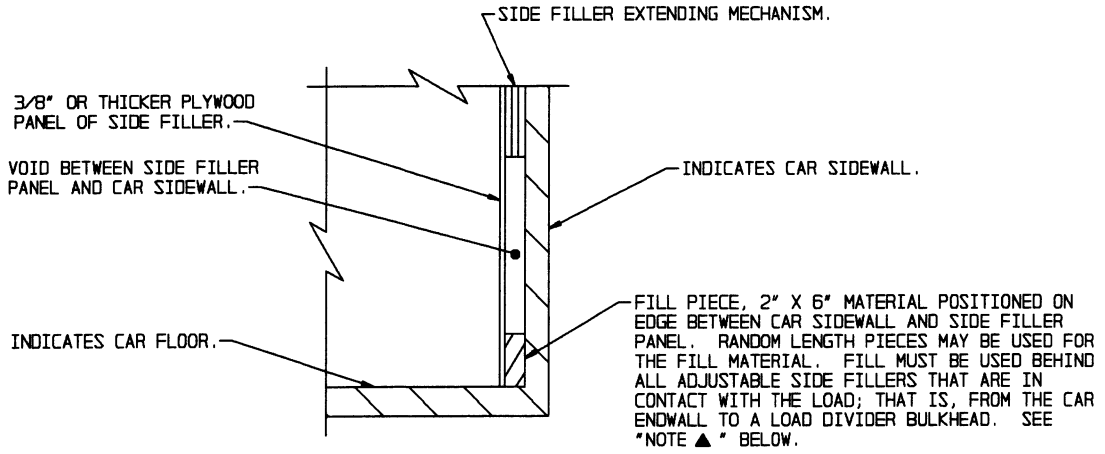
METHOD OF SECURING A STRAP JOINT WHEN USING A CRIMP-TYPE SEALER.

END-OVER-END LAP JOINT DETAILS



TYPICAL STRUT BRACING

DETAILS

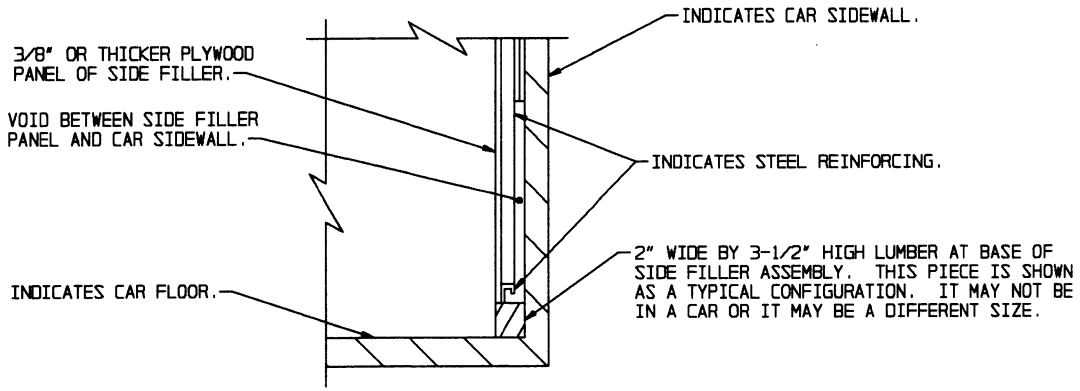


TYPICAL TYPE A

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.