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SUPERVISOR, MILITARY & INTERMODAL SERVICES
DATE 12/13/83

DRAGON

LOADING AND BRACING (CL & LCL) IN BOX CARS[⊕] OF GUIDED MISSILE AND LAUNCHER, SURFACE ATTACK, M222, OR PRACTICE, M223, PACKED ONE PER SHIPPING AND STORAGE CONTAINER, UNPALLETIZED AND PALLETIZED (20 PER PALLET), AND PACKED 15 PER MULTIPACK PALLET UNIT

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⊕ INCLUDES CONVENTIONAL TYPE BOX CARS AND CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.

THIS DRAWING, INCLUDING REVISION NO. 2, SUPERSEDES DRAWING 19-48-5508-GM5DR1, DATED DECEMBER 1973, AND REVISION NO.1 THERETO.

DO NOT SCALE

REVISIONS				DRAFTSMAN DRC SRS	DAK	PROJ. ENG. RWS/HK	AWP/er
1	JUN 79	<i>THE RWS</i>	<i>Wm J. Hoguen</i>	<i>SRG</i>		<i>LTJ ENGINE OFFICE</i>	<i>SRG / SRS</i>
2	NOV 83	<i>WALT</i>	<i>William J. Hoguen</i>				
			<i>John A. Byrd Jr.</i>				
APPROVED, U.S. ARMY MISSILE MATERIEL READINESS COMMAND							
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)							
U.S. ARMY DARCUM DRAWING							
JUNE 1979							
		CLASS	DIVISION	DRAWING	FILE		
		19	48	5508	GM 5DR1		

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 WITHIN THIS DOCUMENT ARE APPLICABLE TO THE DRAGON GUIDED MISSILE AND LAUNCHER, SURFACE ATTACK, M222, OR PRACTICE, M223, PACKED EITHER ONE (1) EACH PER SHIPPING AND STORAGE CONTAINER, TWENTY (20) EACH PER PALLET UNIT OR FIFTEEN (15) EACH PER MULTIPACK PALLET UNIT. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MISSILE COMPONENTS, SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT WITH TWENTY (20) MISSILE COMPONENTS, AND SUBSEQUENT REFERENCE TO MULTIPACK UNIT HEREIN MEANS THE MULTIPACK BOX PALLET WITH FIFTEEN (15) MISSILE COMPONENTS.
- C. FOR DETAIL OF THE CONTAINER SEE PACKAGING DATA SHEET NUMBER 10695149 OR 10695150 (U.S. ARMY MISSILE COMMAND) AND THE "CONTAINER" DETAIL ON PAGE 3.
- CONTAINER DIMENSIONS ----- 47-1/2" LONG X 16" WIDE X 16" HIGH.
GROSS WEIGHT ----- 67 POUNDS (APPROX).
CUBE ----- 7.0 CUBIC FEET.
- D. FOR DETAIL OF THE PALLET UNIT SEE U.S. ARMY DARCOM DRAWING NO. 19-48-5218-GM20DR1 AND THE "PALLET UNIT" DETAIL ON PAGE 3.
- PALLET UNIT DIMENSIONS ----- 47-1/2" LONG X 6'-8" WIDE X 69" HIGH.
GROSS WEIGHT ----- 1,451 POUNDS (APPROX).
CUBE ----- 151.7 CUBIC FEET.
- E. FOR DETAIL OF THE MULTIPACK UNIT SEE U.S. ARMY MISSILE COMMAND DRAWING NO. 13013762 AND "MULTIPACK UNIT" DETAIL ON PAGE 3.
- MULTIPACK UNIT DIMENSIONS -- 37-1/4" LONG X 49" WIDE X 66" HIGH.
GROSS WEIGHT ----- 658 POUNDS (APPROX).
CUBE ----- 69.7 CUBIC FEET.
- F. THIS ITEM 10695150 (M222) IS A DOT CLASS "A" EXPLOSIVE, AND A COAST GUARD CLASS X-C. ITEM 10695149 (M223) IS A DOT CLASS "B" EXPLOSIVE AND A COAST GUARD CLASS II-B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE, OR WHEN THEY ARE EMPTY.
- G. WHEN REFERRING TO THE PALLET UNIT LENGTH OR UNIT WIDTH, THE 47-1/2" DIMENSION OF THE PALLET UNIT CONSTITUTES THE LENGTH AND THE 6'-8" DIMENSION CONSTITUTES THE WIDTH. SEE THE PALLET UNIT ON PAGE 3. WHEN REFERRING TO THE MULTIPACK UNIT LENGTH OR WIDTH, THE 37-1/4" DIMENSION OF THE MULTIPACK UNIT CONSTITUTES THE LENGTH AND THE 49" DIMENSION CONSTITUTES THE WIDTH. SEE THE MULTIPACK UNIT ON PAGE 3.
- H. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE FOR CONVENTIONAL TYPE BOX CARS OF VARIOUS LENGTH AND WIDTH COMBINATIONS WITH WOOD OR NAILABLE METAL FLOORS AND EQUIPPED WITH CONVENTIONAL SLIDING AND/OR PLUG TYPE DOORS. ALL-METAL CARS WITH NAILABLE FLOORS CAN BE USED FOR ALL FULL LOADS SHOWN HEREIN, EXCEPT THE LOAD DEPICTED ON PAGE 6 WHICH REQUIRES 8'-6" WIDE CARS TO HAVE NAILABLE WALLS. PROCEDURES ARE ALSO INCLUDED FOR SHIPMENT IN CUSHIONED BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS AND WITH OR WITHOUT ADJUSTABLE SIDE FILLERS.
- J. THE LOADS AS SHOWN ARE BASED ON CARS WHICH HAVE VARIOUS WIDTH DOORS OF THE CONVENTIONAL SLIDING TYPE. THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO CARS WHICH ARE EQUIPPED WITH PLUG DOORS. THE "DOORWAY AREA" WITHIN A CAR IS DEFINED AS THE CARGO SPACE THAT IS ADJACENT TO A CONVENTIONAL TYPE AND/OR A PLUG TYPE DOOR. THE LENGTH OF A "DOORWAY AREA" CAN BE AS MUCH AS 24 FEET IN SOME CARS THAT ARE EQUIPPED WITH STAGGERED DOORS. CAUTION: DUNNAGE MATERIAL MUST NOT BE NAILED TO ANY PLUG DOOR, WHETHER AUXILIARY OR MAIN, EXCEPT TO A NAILING STRIP IF A DOOR IS SO EQUIPPED FOR SECURING SUCH ITEMS AS GATE HOLD DOWNS OR DOORWAY SPANNER DUNNAGE; ALSO, SPECIAL PROVISIONS MUST BE IMPLEMENTED AS DIRECTED WITHIN THE "SPECIAL NOTES" SECTION WHICH APPLIES TO THE BASIC LOAD INVOLVED. 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 THROUGH THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER.
- K. TO LOAD THE PALLET UNITS IN THE CAR, IT WILL BE NECESSARY TO HANDLE THE UNITS FROM AN END POSITION WITH THE TINES OF A FORKLIFT TRUCK UNDER THE 2" X 4" STRINGERS OF THE PALLET. AFTER A PALLET HAS BEEN LOCATED IN ITS APPROXIMATE SHIPPING POSITION IT WILL BE LOWERED TO REST ON THE FLOOR OF THE CAR ON A SHORT 4" X 4" BLOCK ON THE NEAR SIDE. THE BLOCK WILL FACILITATE WITHDRAWAL OF THE FORKLIFT TINES. THE FORKLIFT TINES WILL THEN BE PLACED UNDER THE EDGE OF THE PLATFORM OF THE PALLET AND USED TO RAISE THE PALLET UNIT JUST ENOUGH TO ALLOW FOR THE REMOVAL OF THE 4" X 4" BLOCK. AFTER THE PALLET UNIT HAS BEEN LOWERED, IT WILL BE INCHED INTO ITS SHIPPING POSITION.

(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.
- STRAPPING, STEEL -- : FED SPEC QQ-S-781; TYPE I OR IV, CLASS A, B (GRADE 2) OR C.
- WIRE ----- : FED SPEC QQ-W-461.
- SEAL, STRAP ----- : FED SPEC QQ-S-781; TYPE D, STYLE I, II OR IV, CLASS H.
- STAPLE, STRAP ----- : COMMERCIAL GRADE.
- HARDBOARD ----- : FED SPEC LLL-B-810; TYPE I, (STANDARD).

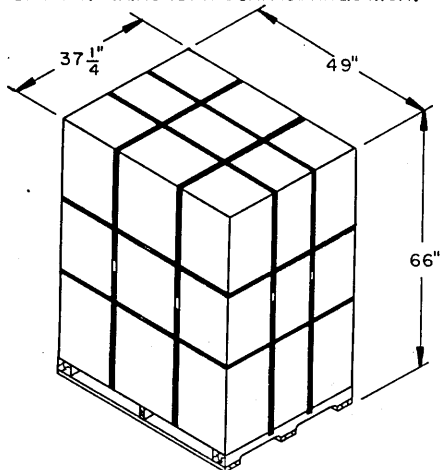
(GENERAL NOTES CONTINUED)

- L. THE OUTLOADING PROCEDURES SPECIFIED ON PAGES 12, 13, 28, 29, 30, 46, AND 47 ARE FOR BOX CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS. CAUTION: 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.
- IF NAILING TO A CAR SIDEWALL IS NOT REQUIRED, BOX CARS EQUIPPED WITH ADJUSTABLE SIDE FILLERS THAT HAVE 3/8" OR THICKER PANELS MAY BE USED. HOWEVER, THESE SIDE FILLERS MUST NOT BE USED FOR LATERAL BLOCKING; THEY MUST BE RETRACTED AND LOCKED AGAINST THE CAR SIDEWALL. A "FILL PIECE" MUST BE INSTALLED IN THE VOID BETWEEN THE CAR SIDEWALL AND THE SIDE FILLER PANEL. SEE THE "TYPICAL TYPE A" VIEW ON PAGE 19 FOR GUIDANCE. IF THE BACKS OF THE SIDE FILLER PANELS ARE REINFORCED WITH VERTICAL AND HORIZONTAL STEEL MEMBERS AS SHOWN IN THE "TYPICAL TYPE B" VIEW ON PAGE 19, THE "FILL PIECE" MATERIAL IS NOT REQUIRED. NOTE: DUNNAGE MATERIALS MUST NOT BE NAILED TO SIDE FILLERS.
 - 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 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.
 - THE USE OF LOAD DIVIDER EQUIPPED CARS WILL ELIMINATE THE NEED FOR CENTER GATES AND STRUTS, AND GATE HOLD DOWNS (WHEN APPLICABLE) WHICH ARE REQUIRED IN CONVENTIONAL BOX CAR LOADS. THIS WILL ACCOUNT FOR A CONSIDERABLE SAVING IN MATERIAL AND LABOR COSTS. THEREFORE, EVERY EFFORT SHOULD BE MADE TO ACQUIRE CUSHIONED CARS EQUIPPED WITH LOAD DIVIDERS FOR SHIPMENT OF AMMUNITION ITEMS.
- M. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF THE DESIGNATED ITEMS 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 DOCUMENT, WILL BE SELECTED. WHEN SELECTING RAIL CARS, EVERY EFFORT SHOULD BE MADE TO OBTAIN BOX CARS THAT DO NOT HAVE BOWED END WALLS. CARS WITH BOWED ENDS CAN BE USED, HOWEVER, IF AN END WALL IS BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE TO SIDE OR FROM FLOOR TO ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. REFER TO PAGE 48 FOR GUIDANCE.
- N. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR.
- O. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN A CAR WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, 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.
- P. PALLET UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS CAN BE TRANSPORTED. A PARTIAL UNIT MAY BE POSITIONED ON TOP OF THE LOAD, BOX CAR HEIGHT PERMITTING, AND SECURED TO THE UNIT DIRECTLY BELOW WITH STEEL STRAPPING. REFER TO THE "SHIPMENT OF PARTIAL PALLET UNITS" ON PAGES 31 THRU 33 FOR GUIDANCE. FOR THE TRANSPORTATION OF A QUANTITY OF CONTAINERS INSUFFICIENT TO FORM A PARTIAL PALLET UNIT (A PARTIAL PALLET UNIT WILL CONSIST OF FULL LAYERS) REFER TO THE "SHIPMENT OF LEFTOVER CONTAINERS" PROCEDURES ON PAGE 34 FOR GUIDANCE.
- Q. IN SOME INSTANCES CONTAINERS WILL ALREADY BE UNITIZED WHEN OFFERED FOR LOADING. THESE UNITS SHOULD BE INSPECTED AND, AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED OR TIGHTENED.
- R. NOTICE: WHEN POSITIONING UNITS IN A CAR, THEY SHOULD BE PLACED TIGHTLY AGAINST A CAR SIDEWALL AND/OR AGAINST A LATERALLY ADJACENT UNIT, AS APPLICABLE, AND ARE TO BE PRESSED TIGHTLY TOGETHER LENGTHWISE SO AS TO ACHIEVE A TIGHT LOAD. TO AID IN ACHIEVING TIGHTNESS LENGTHWISE IN A FULL LOAD, A LOAD-COMPRESSING JACK MAY BE EMPLOYED IN THE AREA OF THE CENTER GATES TO MOVE THE UNITS INTO THEIR FINAL SHIPPING POSITION. A HYDRAULIC JACK IS RECOMMENDED FOR THIS OPERATION. CAUTION: WHEN USING A JACK TO COMPACT A LOAD, THE JACK MUST BE USED AGAINST STRONG POINTS OF THE UNITS, SUCH AS THE JOINTS BETWEEN THE LAYERS OF BOXES ON THE UNIT. PADDING OF 2-INCH (2") THICK LUMBER OR ANY OTHER MATERIAL OF SIMILAR CONSISTENCY, SHOULD BE PLACED BETWEEN THE JACK AND THE LADING.
- S. 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 FOR THE NAILING OF THE APPLICABLE DUNNAGE PIECES. IF THE NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE KEY NUMBERS. SEE GENERAL NOTE "U" ON THIS PAGE.
- T. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" 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. DOUBLE 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- U. 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.

(CONTINUED ON PAGE 3)

(GENERAL NOTES CONTINUED)

- V. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN IN THE "STRUT BRACING DETAIL" ON PAGE 18. THESE PIECES ARE 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.
- W. TO ACHIEVE A TIGHTLY BLOCKED LOAD, A STRUT WILL BE CUT SLIGHTLY LONGER THAN THE MEASURED DISTANCE BETWEEN THE STRUT BEARING AREAS ON THE TWO CENTER GATES. ONE END OF THE STRUT WILL BE POSITIONED AT ITS BEARING AREA JUST ABOVE THE STRUT LEDGER ON ONE GATE, THEN THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL 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 18 FOR BEVELING INSTRUCTIONS AND THE "STRUT INSTALLATION" DETAIL ON THAT PAGE FOR A PICTORIAL VIEW SHOWING THE PROPER POSITIONING OF A BEVELED STRUT FOR INSTALLATION. NOTE THAT THE UPPER CORNER NEEDS TO BE BEVELED ONLY IF THE STRUTS ARE VERY SHORT. IF ONLY ONE END IS BEVEL-CUT, THE BEVELED EDGE WILL BE PLACED IN THE DOWNWARD POSITION SO THAT IT WILL ALLOW THE STRUT END TO SLIDE MORE FREELY DOWN THE FACE OF THE VERTICAL PIECE ON THE ADJACENT CENTER GATE AS THE STRUT IS DRIVEN DOWN INTO ITS FINAL BLOCKING POSITION.
- X. UNLESS OTHERWISE SPECIFIED, WHEN STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT. CAUTION: EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO LADING ITEMS.
- Y. PORTIONS OF THE BOX CARS DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS SIDEWALLS, END WALLS, AND ROOFS, AND PORTIONS OF THE BLOCKING AND BRACING COMPONENTS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- Z. ALL THE LOADS SHOWN HEREIN ARE TYPICAL. BECAUSE OF THIS FACT, IT IS MOST LIKELY THAT THE ACTUAL QUANTITY TO BE SHIPPED WILL NOT BE DEPICTED IN ANY OF THE LOADING PROCEDURES HEREIN. A LOAD PLAN SHOULD BE DEVELOPED WHICH WILL BE THE MOST EFFICIENT AS TO THE AMOUNT OF DUNNAGE REQUIRED AND THE EASE OF LOADING FOR THE QUANTITY TO BE SHIPPED.
- AA. NOTICE: FOR MAXIMUM LOADS WITHIN THIS DRAWING, 50'-6" LONG BOX CARS ARE SHOWN. HOWEVER, THE BLOCKING AND BRACING PROCEDURES USED ARE ALSO ADEQUATE FOR MAXIMUM LOADS IN BOX CARS WHICH ARE 60'-8" LONG, OR OF OTHER LENGTHS.
- BB. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS.
- CC. 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.
- DD. 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" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY SENCO PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.



MULTIPACK UNIT

MULTIPACK UNIT DATA:

NUMBER OF MISSILES ----- FIFTEEN (15)
 UNIT WEIGHT ----- 658 POUNDS (APPROX)
 CUBE ----- 69.7 CUBIC FEET

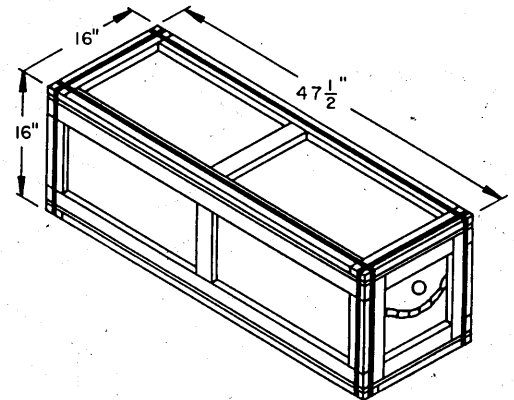
REVISIONS

REVISION NO. 1, DATED JUNE 1979, CONSISTS OF:

- 1. ADDING PROCEDURES FOR PARTIAL PALLET UNITS AND LEFTOVER CONTAINERS.
- 2. ADDING PROCEDURES FOR THE FIFTEEN (15) MISSILE MULTIPACK UNIT.
- 3. CHANGING PROCEDURES TO CONFORM TO CURRENT STANDARDS.

REVISION NO. 2, DATED NOVEMBER 1983, CONSISTS OF:

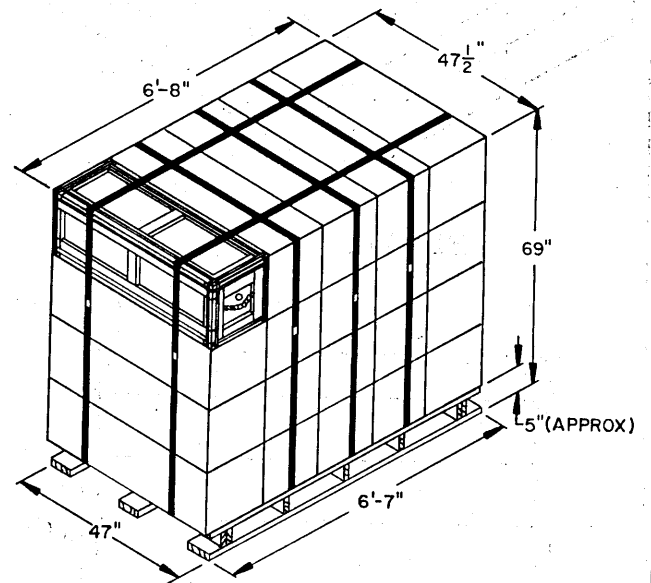
- 1. UPDATING PALLET UNIT CONFIGURATION AND WEIGHT.
- 2. CHANGING PROCEDURES TO CONFORM TO 1.



CONTAINER

CONTAINER DATA:

GROSS WEIGHT ----- 67 POUNDS (APPROX)
 CUBE ----- 7.0 CUBIC FEET

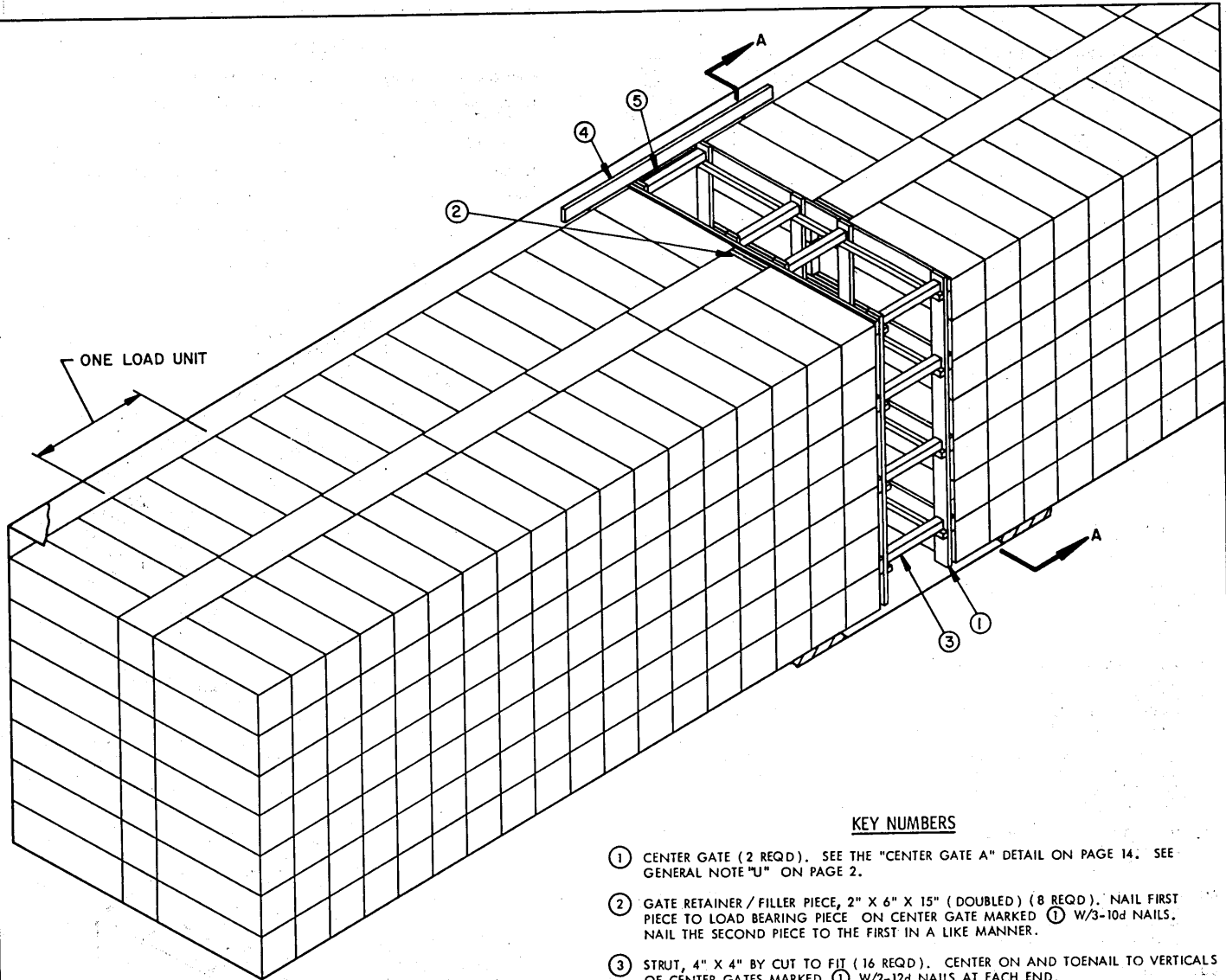


* PALLET UNIT

PALLET UNIT DATA:

NUMBER OF CONTAINERS ----- TWENTY (20)
 GROSS WEIGHT ----- 1,451 POUNDS (APPROX)
 CUBE ----- 151.7 CUBIC FEET

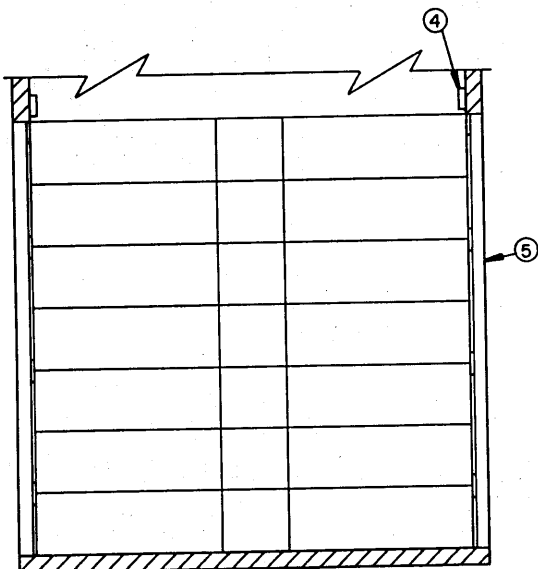
* THE PALLET UNIT DEPICTED ABOVE IS THAT WHICH IS DELINEATED WITHIN REVISION 2 TO US ARMY DARCOM DRAWING 19-48-5218-GM20DR1. ALTHOUGH THE BLOCKING AND BRACING PROCEDURES CONTAINED WITHIN THIS DRAWING ARE DESIGNED FOR USE WITH THE ABOVE DEPICTED PALLET UNIT, THEY CAN ALSO BE APPLIED TO PALLET UNITS WHICH WERE BUILT IN ACCORDANCE TO REVISION 1 TO DRAWING 19-48-5218-GM20DR1.



ISOMETRIC VIEW

KEY NUMBERS

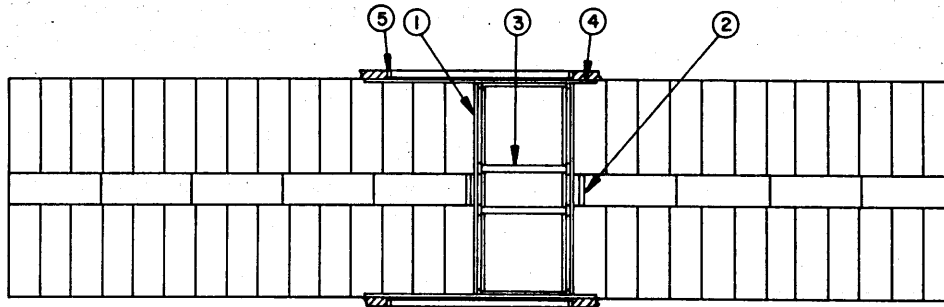
- ① CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 14. SEE GENERAL NOTE "U" ON PAGE 2.
- ② GATE RETAINER / FILLER PIECE, 2" X 6" X 15" (DOUBLED) (8 REQD). NAIL FIRST PIECE TO LOAD BEARING PIECE ON CENTER GATE MARKED ① W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ③ STRUT, 4" X 4" BY CUT TO FIT (16 REQD). CENTER ON AND TOENAIL TO VERTICALS OF CENTER GATES MARKED ① W/2-12d NAILS AT EACH END.
- ④ GATE HOLD-DOWN, 2" X 6" BY DOORWAY OPENING PLUS 24" (2 REQD). NAIL TO CAR SIDEWALL W/5-12d NAILS AT EACH END.
- ⑤ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION" DETAIL ON PAGE 14.



SECTION A-A

SPECIAL NOTES:

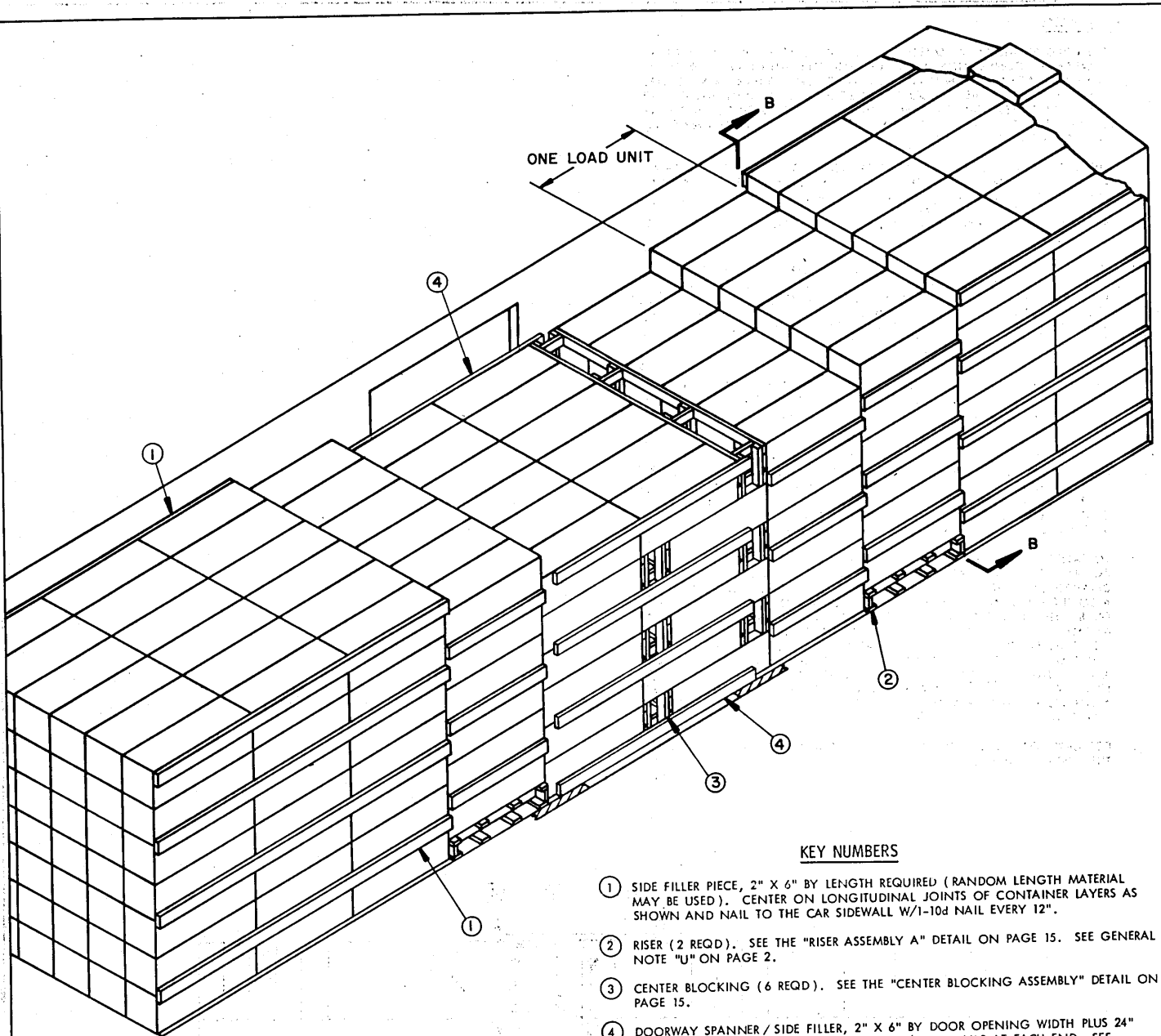
1. THE LOAD AS SHOWN IS BASED ON A 50'-6" LONG BY 9'-4" WIDE (INSIDE CLEARANCE) CONVENTIONAL BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS WITH CONVENTIONAL SLIDING DOORS. WIDER CARS OR CARS WHICH HAVE NARROWER, WIDER OR STAGGERED DOOR OPENINGS CAN BE USED. CARS LESS THAN 9'-4" IN WIDTH CANNOT BE USED FOR SHIPMENT OF THE DEPICTED LOAD CONFIGURATION. FOR USE OF NARROWER CARS SEE NOTES 3 AND 4 BELOW.
2. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO THE SHIPMENT OF A 441-UNIT LOAD IN A 40'-6" LONG BY 9'-4" WIDE CAR. SEE THE "SPECIAL PLAN VIEW" BELOW. NOTE THAT THE THICKNESS OF PIECES MARKED ② WILL BE REDUCED AS NECESSARY TO FILL THE VOID BETWEEN THE LOAD BEARING PIECES OF CENTER GATES MARKED ① AND THE CENTER STACKS OF CONTAINERS.
3. IF A 50'-6" LONG CAR, 8'-9" THRU 9'-3" IN WIDTH, IS TO BE USED, A 504-UNIT LOAD CAN BE SHIPPED BY POSITIONING ALL CONTAINERS LONGITUDINALLY IN THE CAR AND APPLYING PIECES MARKED ①, ③, ④ AND ⑤ AT THE CENTER OF THE CAR. HOWEVER, IN LIEU OF PIECES MARKED ②, TWELVE (12) SPACER ASSEMBLIES AS SHOWN IN THE "SPACER ASSEMBLY A" DETAIL ON PAGE 15 WILL BE REQUIRED. SEE THE "TYPICAL SECTION" VIEW ON PAGE 7 FOR LOCATION OF SPACER ASSEMBLIES.
4. THE PROCEDURES OUTLINED IN NOTE 3 CAN ALSO BE APPLIED TO THE SHIPMENT OF A 378-UNIT LOAD IN A 40'-6" LONG BY 8'-9" THRU 9'-3" WIDE CAR, EXCEPT THAT ONLY NINE (9) SPACER ASSEMBLIES WILL BE REQUIRED.
5. IF THE 9'-4" WIDE CAR BEING LOADED HAS PLUG TYPE DOORS, IT WILL BE NECESSARY TO OMIT CENTER STACKS OF CONTAINERS IN THE "DOORWAY AREA" TO PERMIT APPLICATION OF THE "SPECIAL PROVISIONS" SPECIFIED ON PAGE 11 WHICH MUST BE USED. NOTE THAT THE WIDTH OF THE CENTER GATES MARKED ① MAY REQUIRE ADJUSTMENT AS SPECIFIED IN "CHART B" ON PAGE 14. SEE GENERAL NOTE "J" ON PAGE 2.
6. TO SATISFY A LESS THAN FULL LOAD QUANTITY, ONE OR MORE CONTAINERS MAY BE OMITTED FROM THE TOP LAYER AND A "FILLER ASSEMBLY", AS DETAILED ON PAGE 17, USED IN THE PLACE OF EACH OMITTED CONTAINER. ALSO THE LOAD MAY BE DECREASED BY MULTIPLES OF SEVEN (7) CONTAINERS BY USE OF ONE OR MORE "RISER ASSEMBLIES" AS SHOWN IN THE "RISER ASSEMBLY A" DETAIL ON PAGE 15 AND AS TYPICALLY DEPICTED IN THE ISOMETRIC LOAD VIEW ON PAGE 6. ADDITIONALLY, QUANTITIES CAN BE ADJUSTED BY OMITTING ONE OR MORE ENTIRE LAYERS, OR BY OMITTING A LOAD UNIT. CAUTION: "FILLER ASSEMBLIES" OR "RISER ASSEMBLIES" MUST NOT BE LOCATED ADJACENT TO A CENTER GATE. WHEN OMITTING A LOAD UNIT, STRUT BRACING WILL BE REQUIRED AS SHOWN IN THE "STRUT BRACING" DETAIL ON PAGE 18.
7. FOR CARS LESS THAN 8'-9" WIDE, SEE THE PROCEDURES ON PAGE 6 AND THE SPECIAL NOTES ON PAGE 7.



SPECIAL PLAN VIEW
441-UNIT LOAD IN A 40'-6" LONG BY 9'-4" WIDE CAR

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	64	32
2" X 2"	75	25
2" X 3"	38	19
2" X 6"	191	191
4" X 4"	32	43
NAILS	NO. REQD	POUNDS
6d (2")	48	1/2
10d (3")	208	3-1/4
12d (3-1/4")	120	2

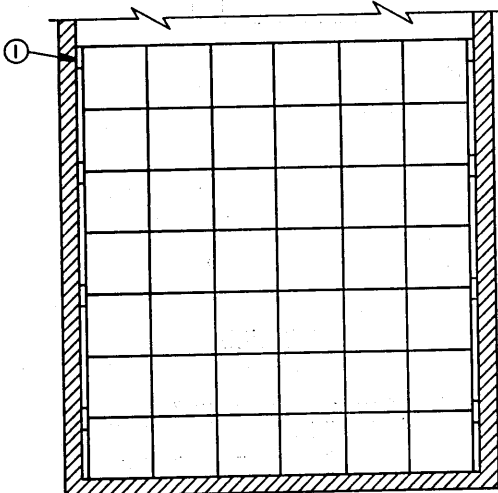
LOAD AS SHOWN		
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	588	39,396 LBS
DUNNAGE		626 LBS
TOTAL WEIGHT		40,022 LBS



KEY NUMBERS

- ① SIDE FILLER PIECE, 2" X 6" BY LENGTH REQUIRED (RANDOM LENGTH MATERIAL MAY BE USED). CENTER ON LONGITUDINAL JOINTS OF CONTAINER LAYERS AS SHOWN AND NAIL TO THE CAR SIDEWALL W/1-10d NAIL EVERY 12".
- ② RISER (2 REQD). SEE THE "RISER ASSEMBLY A" DETAIL ON PAGE 15. SEE GENERAL NOTE "U" ON PAGE 2.
- ③ CENTER BLOCKING (6 REQD). SEE THE "CENTER BLOCKING ASSEMBLY" DETAIL ON PAGE 15.
- ④ DOORWAY SPANNER / SIDE FILLER, 2" X 6" BY DOOR OPENING WIDTH PLUS 24" (8 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS AT EACH END. SEE SPECIAL NOTE 4 ON PAGE 7.

ISOMETRIC VIEW

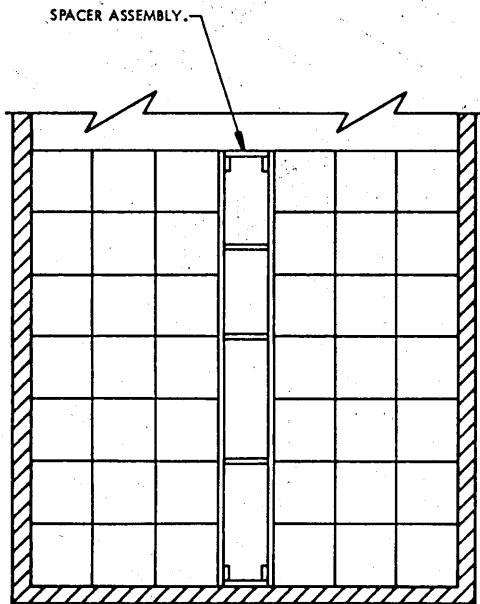


SECTION B-B

390-UNIT LOAD IN A 40'-6" LONG BY 8'-6" WIDE CAR (CONVENTIONAL) (UNPALLETIZED)

SPECIAL NOTES:

1. THE LOAD AS SHOWN ON PAGE 6 IS BASED ON CARS 8'-6" THRU 8'-8" WIDE BY 40'-6" LONG HAVING 6'-0" WIDE DOOR OPENINGS WITH CONVENTIONAL SLIDING AND/OR PLUG TYPE DOORS AND EQUIPPED WITH NAILABLE WALLS. CARS WITH WIDER OR STAGGERED DOOR OPENINGS CAN BE USED. IF THE CAR IS 41'-6" OR MORE IN LENGTH, CENTER GATES AND STRUTS MUST BE USED IN THE DOORWAY AREA IN LIEU OF "CENTER BLOCKING" PIECES MARKED (3). SEE THE LOAD VIEW ON PAGE 4 FOR GUIDANCE. ALSO, SEE SPECIAL NOTE 4 BELOW FOR ADDITIONAL GUIDANCE.
2. FOR CARS WIDER THAN 8'-8", SEE THE "TYPICAL SECTION" ON THIS PAGE AND THE PROCEDURES AND SPECIAL NOTES ON PAGES 4 AND 5.
3. THE QUANTITY OF UNITS TO BE SHIPPED CAN BE ADJUSTED BY OMITTING ONE OR MORE CONTAINERS IN THE TOP LAYER AND SUBSTITUTING A "FILLER ASSEMBLY", AS DETAILED ON PAGE 17, IN THE PLACE OF EACH OMITTED CONTAINER. ALSO, THE QUANTITY OF "RISER ASSEMBLIES" MAY BE VARIED AS REQUIRED TO ADJUST THE QUANTITY OF UNITS TO BE SHIPPED. CAUTION: IF CENTER GATES AND STRUTS ARE USED IN THE LOAD, "FILLER ASSEMBLIES" OR "RISER ASSEMBLIES" MUST NOT BE LOCATED ADJACENT TO A CENTER GATE.
4. IF ONE OR MORE SIX-LAYER LOAD UNITS ARE TO BE LOADED IN THE DOORWAY AREA OF A CAR AS SHOWN IN THE LOAD VIEW ON PAGE 6, THE BOXCAR MUST HAVE A DOOR OPENING THAT IS AT LEAST 9'-6" HIGH. THE DEPICTED PROCEDURES REQUIRE THAT THE FOUR (4) PIECES MARKED (4), ON THE LOADING SIDE OF THE CAR, MUST BE NAILED IN PLACE AS LOADING IN THE DOORWAY AREA PROGRESSES. NOTE THAT THIS METHOD MUST BE USED IF THE CAR HAS PLUG TYPE DOORS. HOWEVER, IF THE CAR BEING LOADED IS EQUIPPED WITH CONVENTIONAL SLIDING DOORS, DOORWAY PROTECTION GATES AS DETAILED ON PAGE 14 MAY BE USED IF DESIRED OR IF THE CAR BEING LOADED HAS A DOOR OPENING THAT IS NOT HIGH ENOUGH TO PERMIT LOADING OF THE TOP-LAYER CONTAINERS IN THE DOORWAY AREA. IF A PAGE-14 TYPE OF DOORWAY PROTECTION GATE IS USED, PIECES MARKED (4) WILL BE REDUCED IN LENGTH TO EQUAL THE WIDTH OF THE DOOR OPENING AND USED ONLY AS SIDE-FILLERS BY LAMINATING ONE OF THE PIECES TO EACH HORIZONTAL MEMBER OF THE "DOORWAY PROTECTION GATE". THIS METHOD WILL PERMIT THE COMPLETE LOADING OF THE CAR PRIOR TO PLACEMENT OF THE "DOORWAY PROTECTION GATE", WITH SIDE-FILLER PIECES, IN THE DOOR OPENING ON THE LOADING SIDE OF THE CAR.



TYPICAL SECTION

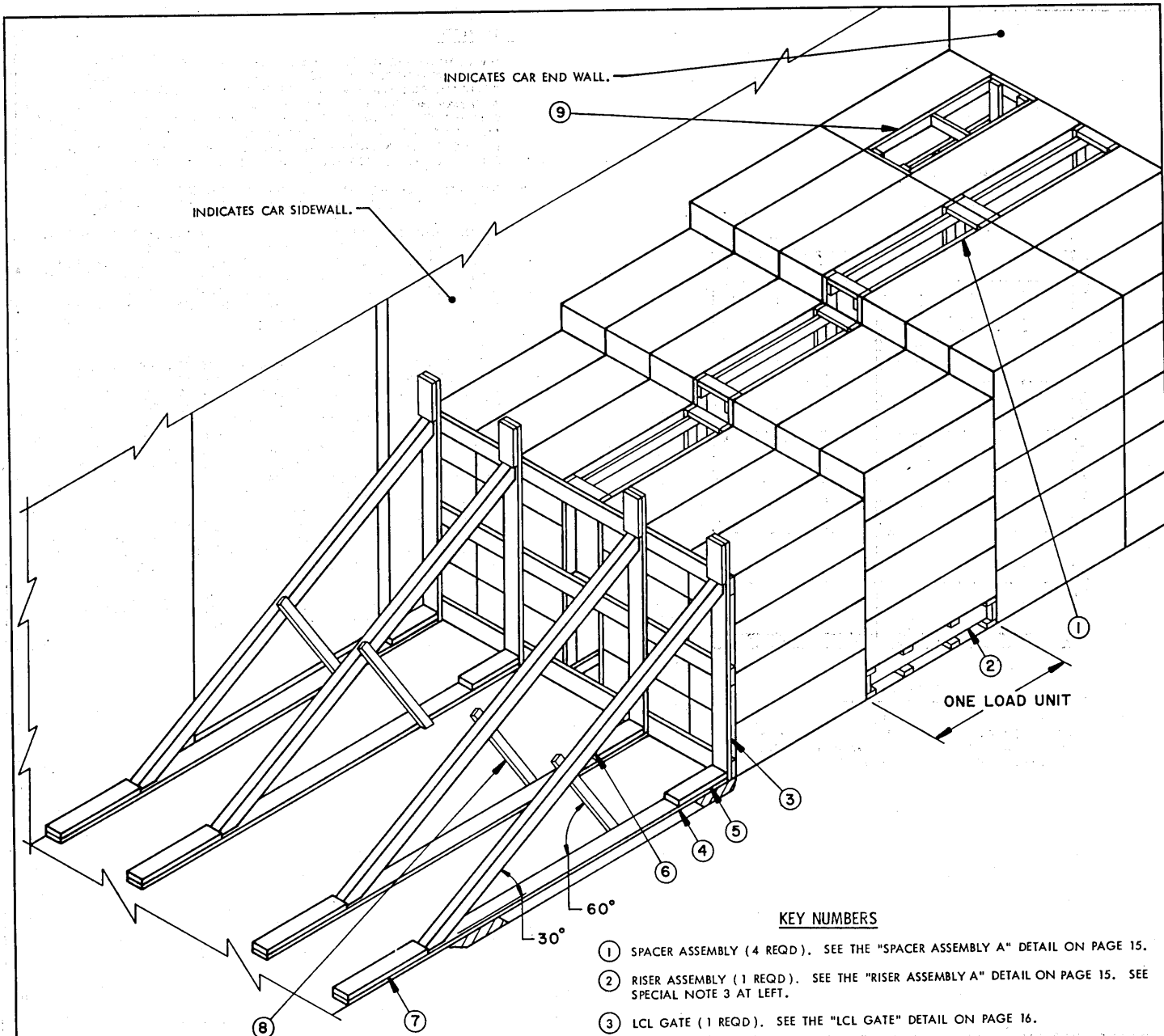
THE SECTION VIEW ABOVE DEPICTS THE REQUIRED USE OF "SPACER ASSEMBLIES" IN 8'-9" THRU 9'-3" WIDE CARS. SEE SPECIAL NOTES 3 AND 4 ON PAGE 5 AND THE "SPACER ASSEMBLY A" DETAIL ON PAGE 15.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	428	286
2" X 6"	375	375
NAILS	NO. REQD	POUNDS
10d (3")	932	14-1/2
12d (3-1/4")	80	1-1/2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	390	26,130 LBS
DUNNAGE		1,339 LBS
TOTAL WEIGHT		27,468 LBS

390-UNIT LOAD IN A 40'-6" LONG BY 8'-6" WIDE CAR (CONVENTIONAL) (UNPALLETIZED)



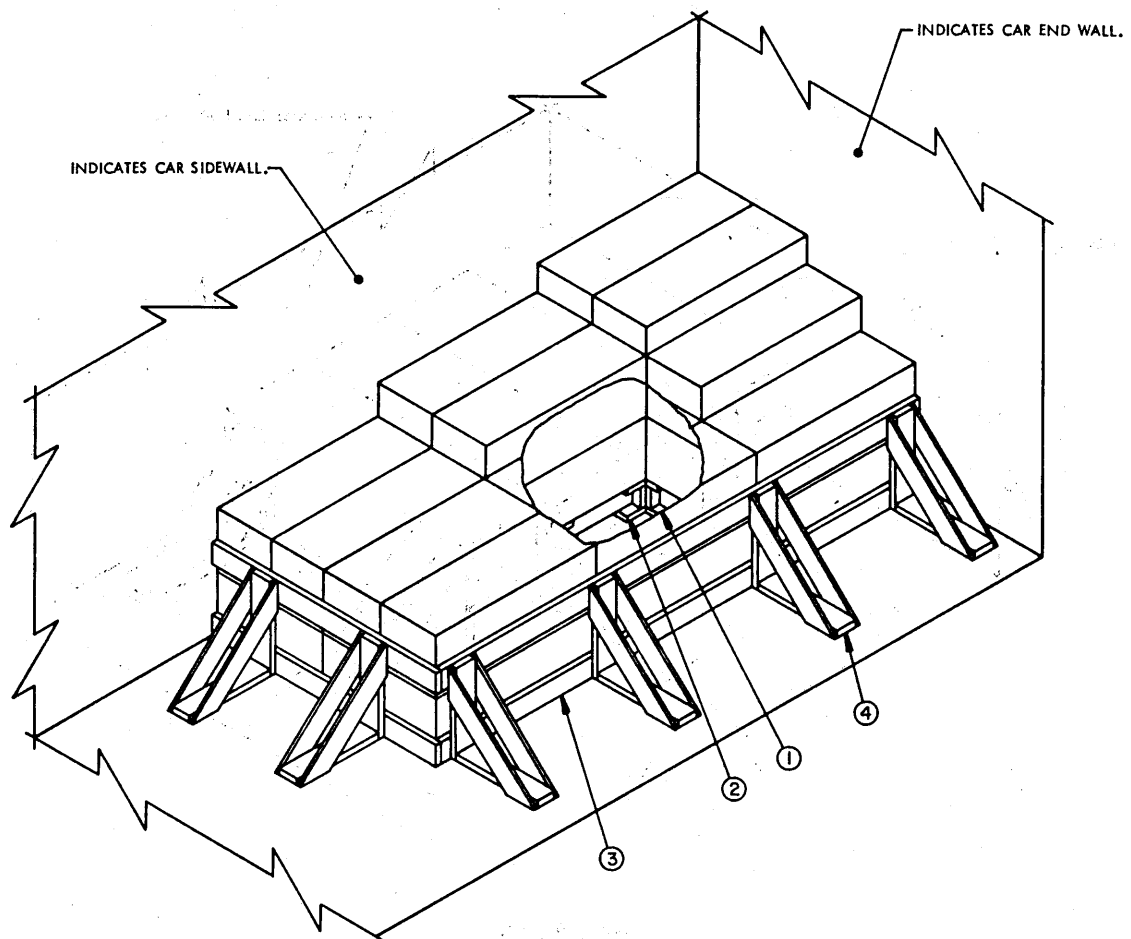
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE PROCEDURES SHOWN ARE FOR AN 8'-9" THRU 9'-3" WIDE BOX CAR AND DEPICT THE USE OF "KNEE BRACE" TYPE BLOCKING. FOUR KNEE BRACE ASSEMBLIES AS SHOWN ARE ADEQUATE FOR RETAINING A MAXIMUM SIZE LCL LOAD. HOWEVER, THE MAXIMUM STACK HEIGHT ADJACENT TO AN LCL GATE IS LIMITED TO FOUR (4) CONTAINERS HIGH.
2. THE USE OF THE "RISER ASSEMBLY" AND "FILLER ASSEMBLY" ARE SPECIFIED FOR THE DEPICTED LOAD ONLY TO SHOW A TYPICAL APPLICATION. "RISER ASSEMBLIES" AND "FILLER ASSEMBLIES" MAY BE USED IN THE LOAD AS REQUIRED TO ADJUST THE LOADING PATTERN FOR THE NUMBER OF CONTAINERS TO BE SHIPPED.
3. "RISER ASSEMBLIES" AND "FILLER ASSEMBLIES" MUST NOT BE USED IN THE LOAD UNIT WHICH IS ADJACENT TO AN LCL GATE. ALSO, "FILLER ASSEMBLIES" MUST BE USED IN THE TOP LAYER ONLY.

KEY NUMBERS

- ① SPACER ASSEMBLY (4 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL ON PAGE 15.
- ② RISER ASSEMBLY (1 REQD). SEE THE "RISER ASSEMBLY A" DETAIL ON PAGE 15. SEE SPECIAL NOTE 3 AT LEFT.
- ③ LCL GATE (1 REQD). SEE THE "LCL GATE" DETAIL ON PAGE 16.
- ④ FLOOR CLEAT, 2" X 6" X 11'-6" (4 REQD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ⑤ SUPPORT PIECE, 2" X 6" X 18" (4 REQD). NAIL TO PIECE MARKED ④ W/4-40d NAILS AND TOENAIL TO VERTICAL OF GATE MARKED ③ W/2-12d NAILS.
- ⑥ DIAGONAL BRACE, 4" X 4" X 10'-5" (4 REQD). SEE THE "DIAGONAL BRACE" DETAIL ON PAGE 17. TOENAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑦ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO PIECE MARKED ④ W/6-40d NAILS.
- ⑧ DIAGONAL BRACE SUPPORT, 2" X 4" X 42" (4 REQD). BEVEL THE BOTTOM END WITH 60° CUT. CENTER ON THE DIAGONAL BRACE AND NAIL TO PIECES MARKED ④ AND ⑥ W/2-12d NAILS AT EACH LOCATION.
- ⑨ FILLER ASSEMBLY (1 REQD). SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 17. SEE SPECIAL NOTE J AT LEFT.



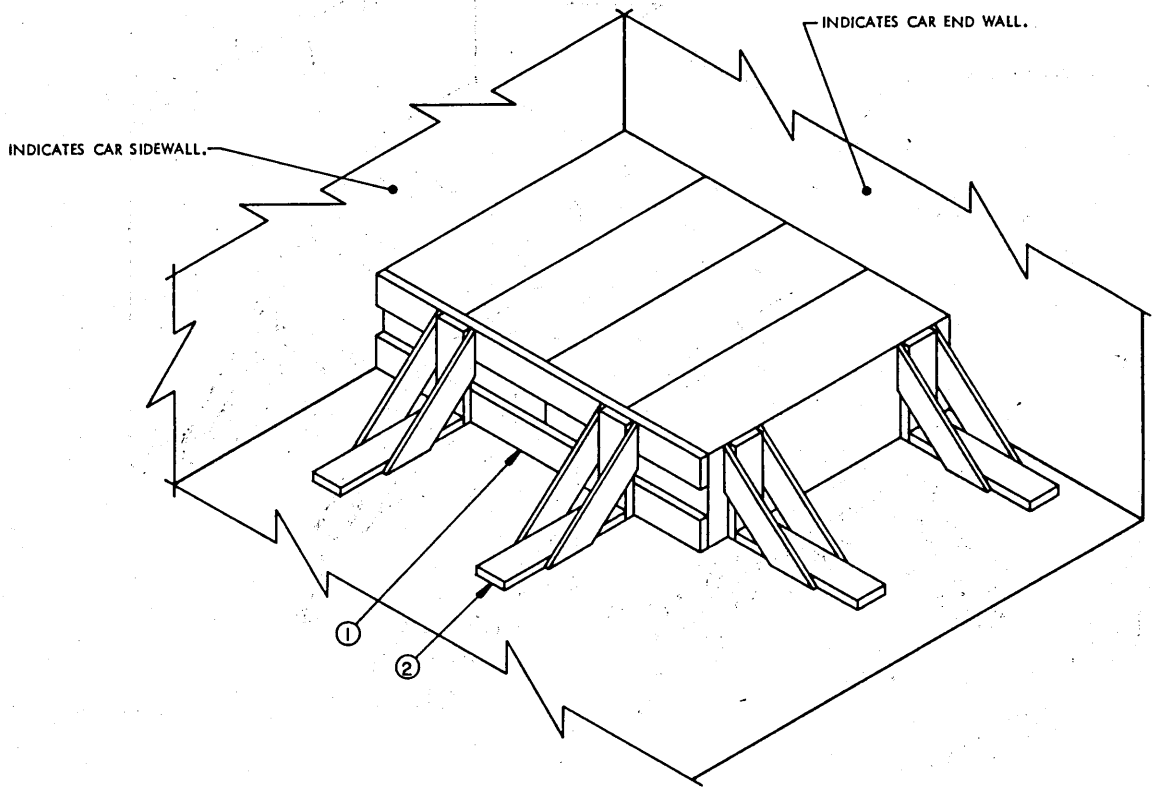
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF "LCL BRACES" AND "RISER ASSEMBLIES".
2. CONTAINERS MUST NOT BE STACKED MORE THAN TWO (2) CONTAINERS HIGH ADJACENT TO AN LCL BRACE.
3. IF DESIRED, LCL BRACES MAY BE INSTALLED AT EACH END OF A TWO (2) CONTAINER HIGH LOAD.
4. THE USE OF THE "RISER ASSEMBLIES" ARE SPECIFIED FOR THE DEPICTED LOAD ONLY TO SHOW A TYPICAL APPLICATION. "RISER ASSEMBLIES" MAY BE USED IN THE LOAD AS REQUIRED TO ADJUST THE LOADING PATTERN FOR THE NUMBER OF CONTAINERS TO BE SHIPPED.
5. EACH BRACE AS APPLIED FOR LONGITUDINAL OR LATERAL BRACING WILL SUPPORT 2,000 OR 8,000 POUNDS OF LADING, RESPECTIVELY. ALSO, RESPECTIVELY, A BRACE MUST BE USED FOR EACH 32" OR 48" INCREMENT OF LOAD DIMENSION; ADDITIONALLY, A MINIMUM OF TWO (2) BRACES MUST BE USED IN THEIR RESPECTIVE DIRECTIONS.

KEY NUMBERS

- ① RISER ASSEMBLY (1 REQD). SEE THE "RISER ASSEMBLY C" DETAIL ON PAGE 16.
- ② RISER ASSEMBLY (1 REQD). SEE THE "RISER ASSEMBLY B" DETAIL ON PAGE 16.
- ③ HORIZONTAL PIECE, 2" X 6" BY LENGTH TO SUIT (4 REQD).
- ④ LCL BRACE (6 REQD). SEE THE "LCL BRACE A" DETAIL ON PAGE 17. NAIL TO THE CAR FLOOR W/7-16d NAILS AND NAIL TO PIECES MARKED ③ W/2-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2. SEE SPECIAL NOTE 5.



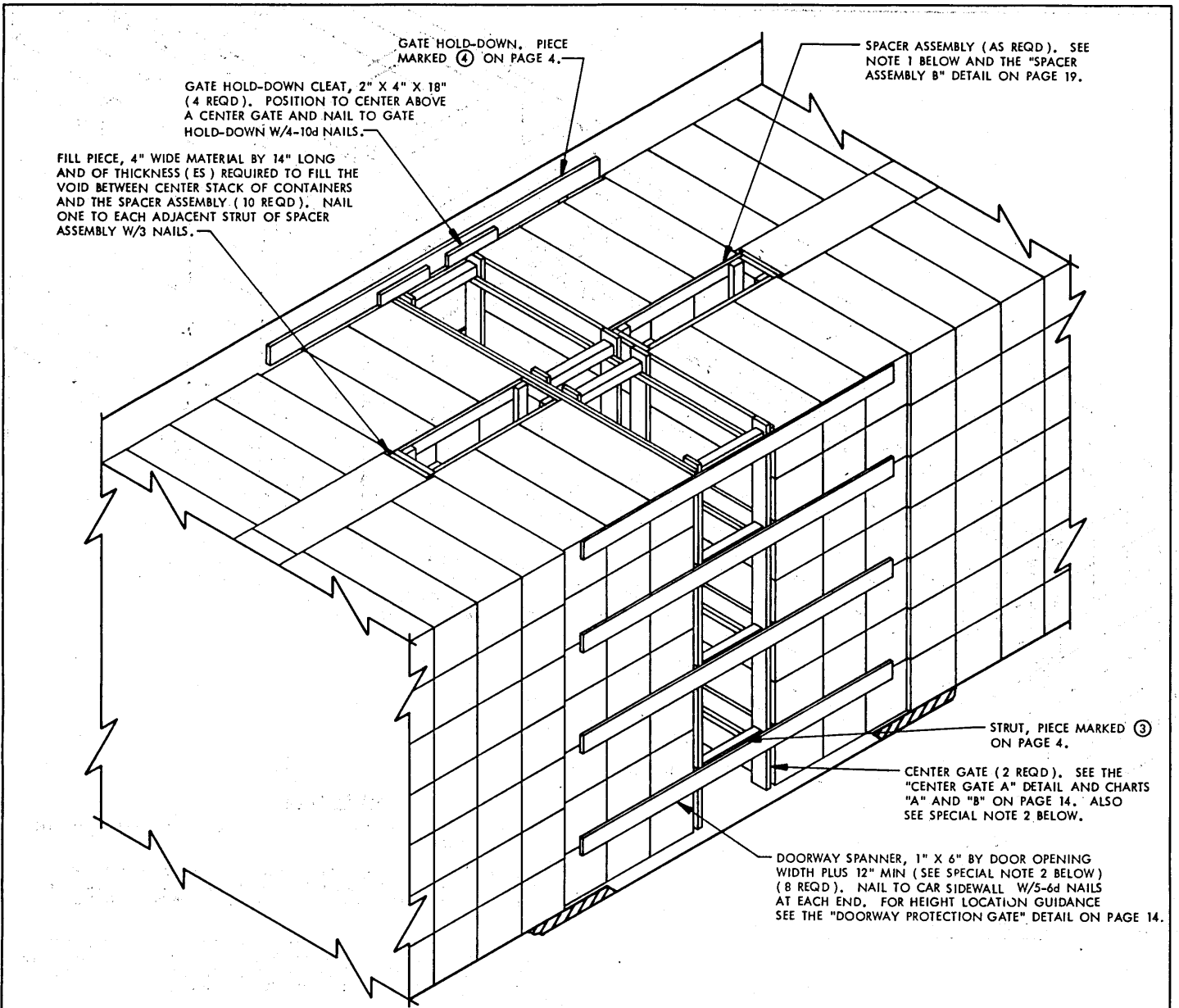
ISOMETRIC VIEW

KEY NUMBERS

- ① HORIZONTAL PIECE, 2" X 6" X 64" (2 REQD).
- ② LCL BRACE (4 REQD). SEE THE "LCL BRACE B" DETAIL ON PAGE 17. NAIL TO THE CAR FLOOR W/7-16d NAILS AND NAIL TO PIECES MARKED ① W/2-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2. SEE SPECIAL NOTE 4.

SPECIAL NOTES:

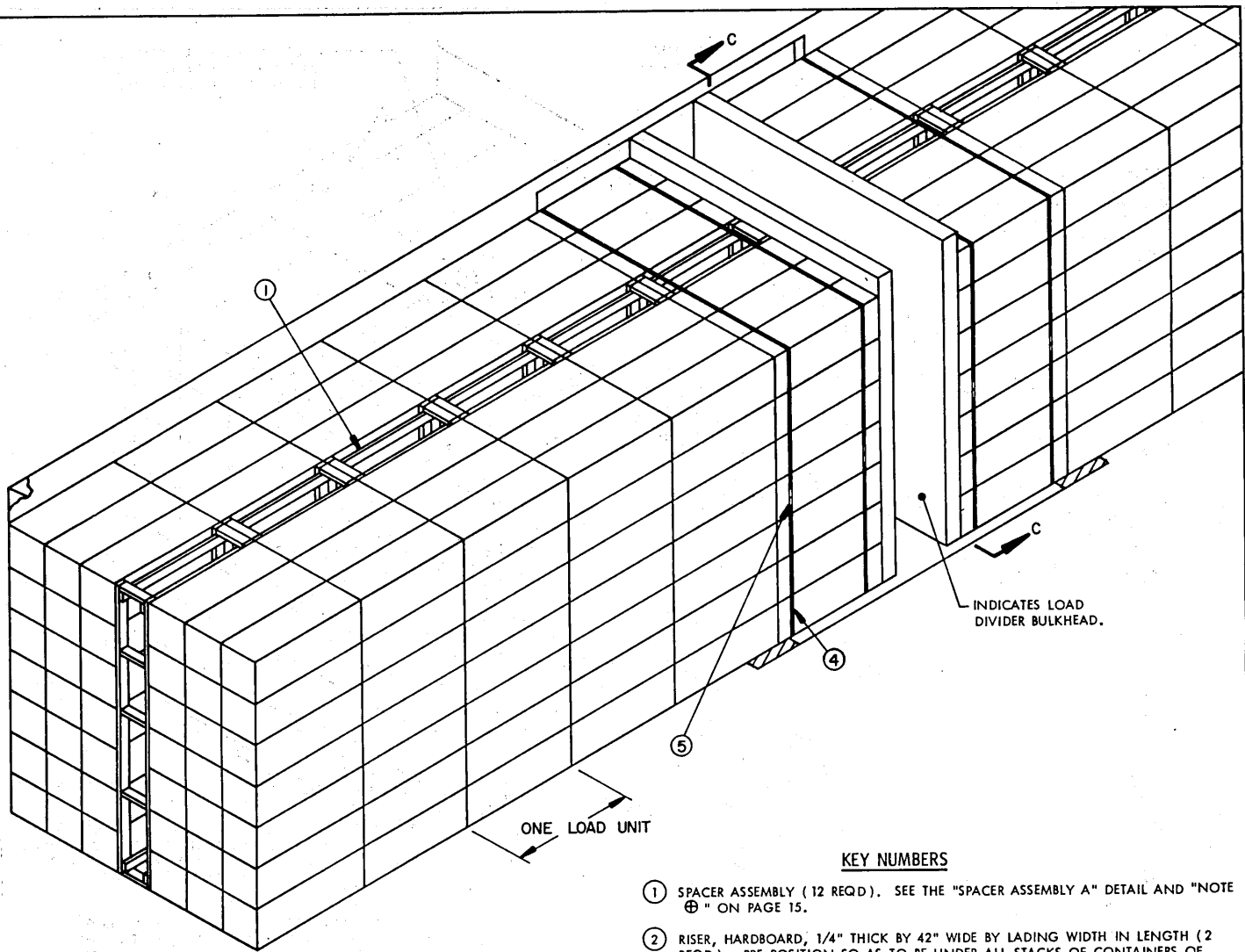
- 1. PROCEDURES SHOWN DEPICT THE USE OF LCL BRACES.
- 2. CONTAINERS MUST NOT BE STACKED IF THESE BLOCKING PROCEDURES ARE USED.
- 3. IF DESIRED LCL BRACES AND 2" MATERIAL MAY BE INSTALLED AT EACH END OF THE LOAD.
- 4. EACH BRACE AS APPLIED FOR LONGITUDINAL OR LATERAL BRACING WILL SUPPORT 2,000 OR 8,000 POUNDS OF LADING, RESPECTIVELY. ALSO, RESPECTIVELY, A BRACE MUST BE USED FOR EACH 32" OR 48" INCREMENT OF LOAD DIMENSION; ADDITIONALLY, A MINIMUM OF TWO (2) BRACES MUST BE USED IN THEIR RESPECTIVE DIRECTIONS.



ISOMETRIC VIEW

SPECIAL NOTES:

1. THE PROCEDURES AS SHOWN APPLY TO A 9'-4" WIDE BOX CAR EQUIPPED WITH PLUG TYPE DOORS. IT WILL BE NECESSARY, WITHIN THE "DOORWAY AREA", TO SUBSTITUTE SPACER ASSEMBLIES FOR CENTER STACKS OF CONTAINERS AS TYPICALLY SHOWN IN THE ISOMETRIC VIEW. THE QUANTITY OF CENTER STACKS TO BE OMITTED AND SPACER ASSEMBLIES REQUIRED IN LIEU THEREOF, WILL DEPEND ON THE LENGTH OF THE "DOORWAY AREA". SEE GENERAL NOTE "J" ON PAGE 2 FOR DEFINITION OF A "DOORWAY AREA". FOR CARS OF OTHER WIDTHS SEE NOTE 3 BELOW.
2. DOORWAY SPANNER PIECES MUST EXTEND NOT LESS THAN 6" BEYOND EACH SIDE OF THE DOOR OPENING FOR NAILING PURPOSES. ADDITIONALLY, EACH SPANNER PIECE MUST BE OF SUFFICIENT LENGTH SO THAT EACH END WILL BE IN CONTACT WITH AN ADJACENT CONTAINER AT LEAST 6" BUT NOT MORE THAN 10". FOR THE DOOR OPENING OPPOSITE THE LOADING SIDE OF THE CAR, SPANNER PIECES MUST BE POSITIONED PRIOR TO LOADING CONTAINERS IN THE DOORWAY AREA. PIECES ON THE LOADING SIDE OF THE CAR WILL BE INSTALLED AS LOADING PROGRESSES. ALSO, THE CENTER GATES MUST BE PLACED INSIDE THE CAR PRIOR TO INSTALLING SPANNER PIECES ON THE LOADING SIDE.
3. THE DEPICTED PROCEDURES ALSO APPLY TO CARS 8'-9" THRU 9'-3" WIDE WITH PLUG DOORS WHEN ALL CONTAINERS ARE LOADED LONGITUDINALLY WITH THE LENGTH OF THE CAR, EXCEPT THAT EACH DOORWAY SPANNER PIECE MUST BE OF SUFFICIENT LENGTH SO THAT EACH END WILL BE IN CONTACT WITH AN ADJACENT CONTAINER AT LEAST 30" BUT NOT MORE THAN 42". SPACER ASSEMBLIES WILL BE AS SPECIFIED IN THE "TYPICAL SECTION" SHOWN ON PAGE 7.



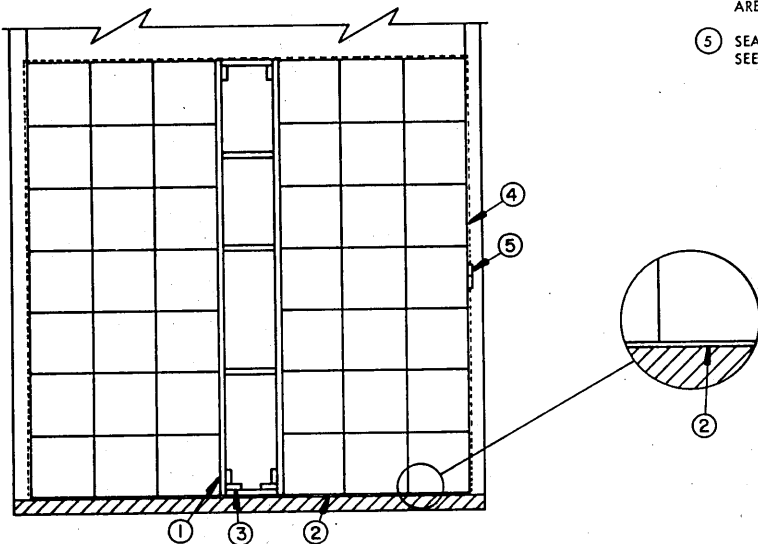
ISOMETRIC VIEW

INDICATES LOAD DIVIDER BULKHEAD.

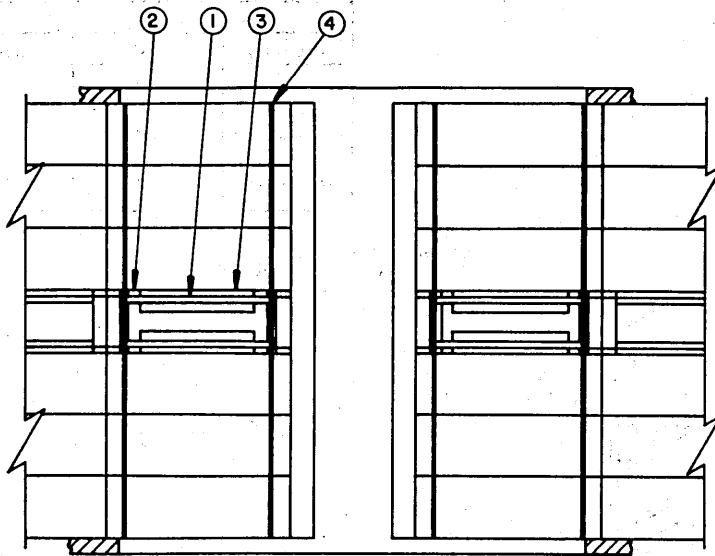
ONE LOAD UNIT

KEY NUMBERS

- ① SPACER ASSEMBLY (12 REQD). SEE THE "SPACER ASSEMBLY A" DETAIL AND "NOTE Ⓟ" ON PAGE 15.
- ② RISER, HARDBOARD, 1/4" THICK BY 42" WIDE BY LADING WIDTH IN LENGTH (2 REQD). PRE-POSITION SO AS TO BE UNDER ALL STACKS OF CONTAINERS OF A LOAD UNIT LOCATED IN THE DOORWAY AREA. SEE SPECIAL NOTE 3 ON PAGE 13.
- ③ SIDE BLOCKING, 2" X 6" X 30" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE THRU PIECE MARKED ②, TO THE CAR FLOOR W/7-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" ON PAGE 13 AND GENERAL NOTES "S" AND "U" ON PAGE 2.
- ④ DOORWAY PROTECTION BUNDLING STRAP, 1-1/4" X .035" X 40'-0" LONG STEEL STRAPPING (4 REQD). PRE-POSITION ON TOP OF PIECE MARKED ② AND INSTALL AS SHOWN TO ENCIRCLE THE LOAD UNIT LOCATED IN THE DOORWAY AREA. SEE SPECIAL NOTE 3 ON PAGE 13.
- ⑤ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



SECTION C-C



PARTIAL PLAN VIEW

SPECIAL NOTES:

1. A 504-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE BOX CAR EQUIPPED WITH LOAD DIVIDERS AND HAVING DOORS OF THE CONVENTIONAL SLIDING OR PLUG TYPE. WIDER OR NARROWER CARS CAN BE USED. NOTE: ONLY THOSE CARS WHICH SATISFY THE SPECIFICATIONS CONTAINED IN GENERAL NOTE "L" ON PAGE 2 CAN BE USED.
2. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CONTAINERS THAN SHOWN, "FILLER ASSEMBLIES" OR "RISER ASSEMBLIES" MAY BE USED. SEE THE LOAD VIEW SHOWN ON PAGE 8 FOR PROPER APPLICATION AND GUIDANCE. CAUTION: "RISER ASSEMBLIES" SHOULD ONLY BE USED WHEN THE QUANTITY TO BE SHIPPED CANNOT BE SATISFIED BY THE OMISSION OF A LOAD UNIT OF 42 CONTAINERS AND/OR THE OMISSION OF A COMPLETE LAYER FROM ONE OR BOTH ENDS OF THE CAR. "RISER ASSEMBLIES" MUST NOT BE USED ADJACENT TO A LOAD DIVIDER BULKHEAD. "FILLER ASSEMBLIES" MUST ONLY BE USED IN THE TOP LAYER OF A LOAD.
3. PIECES MARKED ② THRU ⑤ ARE ONLY REQUIRED WHEN A LOAD UNIT EXTENDS MORE THAN 24" INTO THE DOORWAY AREA ON EITHER SIDE OF THE CAR. ONE BUNDLING STRAP MARKED ④ IS REQUIRED FOR UNITS EXTENDING MORE THAN 24" BUT LESS THAN 41" INTO THE DOORWAY AREA; TWO STRAPS, AS SHOWN, ARE REQUIRED WHEN LOAD UNITS EXTEND MORE THAN 41" INTO THE DOORWAY AREA.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	770	514
2" X 6"	20	20
NAILS	NO. REQD	POUNDS
10d (3")	768	12
16d (3-1/2")	56	1-1/4
HARDBOARD, 1/4" THICK -----64 SQ FT REQD-----		50 LBS
STRAPPING, STEEL, 1-1/4" X .035" ---160' REQD-----		23 LBS
SEAL FOR 1-1/4" STRAPPING -----8 REQD-----		NIL

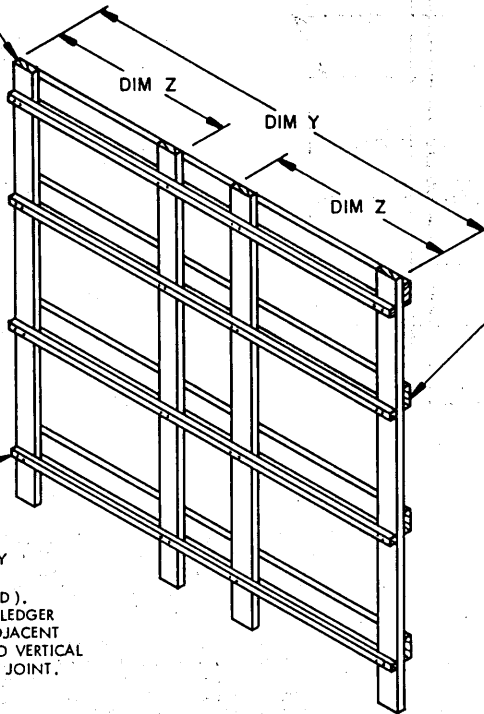
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER -----	504-----	33,768 LBS
DUNNAGE -----	-----	1,105 LBS
TOTAL WEIGHT -----		34,873 LBS

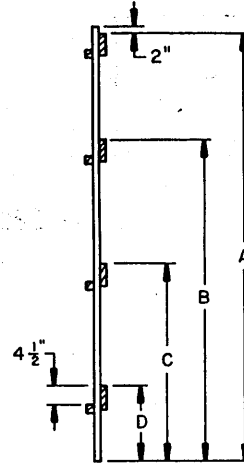
*FOR CARS 8'-9" AND WIDER EQUIPPED WITH PLUG TYPE DOORS, DIM Y WILL BE CAR WIDTH MINUS 2" TO PROVIDE FOR DOOR SPANNER PIECES AS SHOWN ON PAGE 11.

CHART B		
CAR WIDTH	DIM Y	DIM Z
9'-4" & WIDER	*CAR WIDTH MINUS 1/2"	49"
8'-9" THRU 9'-3"	*CAR WIDTH MINUS 1/2"	35"
8'-6" THRU 8'-8"	CAR WIDTH MINUS 3-1/2"	35"

VERTICAL PIECE, 2" X 6" X LENGTH TO SUIT (4 REQD).



LOAD BEARING PIECE, 2" X 6" X DIM Y (AS REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



STRUT LEDGER, 2" X 2" X DIM Y (ONE REQUIRED ADJACENT TO EACH LOAD BEARING PIECE USED). POSITION TOP EDGE OF STRUT LEDGER 4-1/2" BELOW TOP EDGE OF ADJACENT LOAD BEARING PIECE. NAIL TO VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

CENTER GATE A

END VIEW

SEE "CHARTS A AND B" ON THIS PAGE.

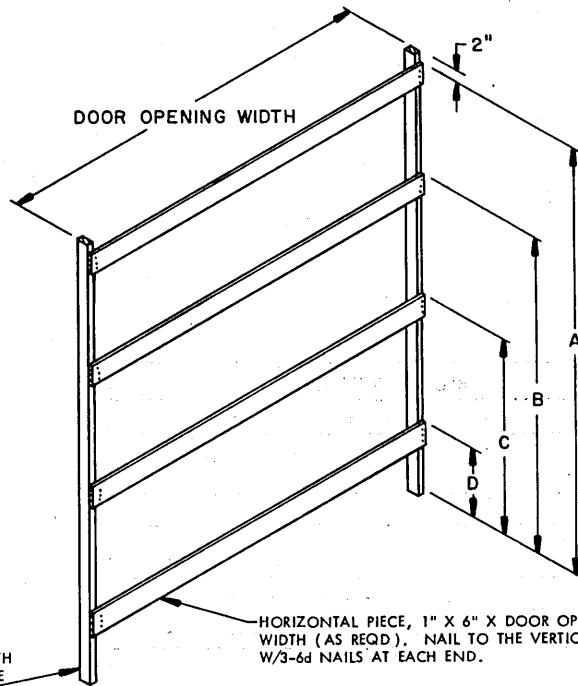
CHART A					
LAYERS OF CONTAINERS	NO. OF STRUT LEDGERS *	DIM A	DIM B	DIM C	DIM D
3	2	48"			19"
4	3	64"		42"	19"
5	3	6'-8"		51"	19"
6	4	8'-0"	6'-2"	51"	19"
7	4	9'-4"	6'-11"	51"	19"

*THIS COLUMN NOT REQUIRED FOR THE "DOORWAY PROTECTION GATE".

NOTE ● :

WHEN A CAR HAS DOOR POSTS WHICH DO NOT PROVIDE FOR ADEQUATE SECUREMENT OF THE GATE AS SHOWN BY THE SPECIFIED NAILING METHOD, REFER TO DRAWING 19-48-1634-5A29 OR TO "BUREAU OF EXPLOSIVES PAMPHLET NO. 6" FOR ALTERNATIVE GATE SECURING METHODS OR DOORWAY PROTECTION SPECIFICATIONS.

VERTICAL PIECE, 2" X 3" X LENGTH TO SUIT (2 REQD). NAIL TO THE DOOR POST W/12d NAILS.



HORIZONTAL PIECE, 1" X 6" X DOOR OPENING WIDTH (AS REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

DOORWAY PROTECTION GATE

SEE "CHART A" AND "NOTE ● " AT LEFT.

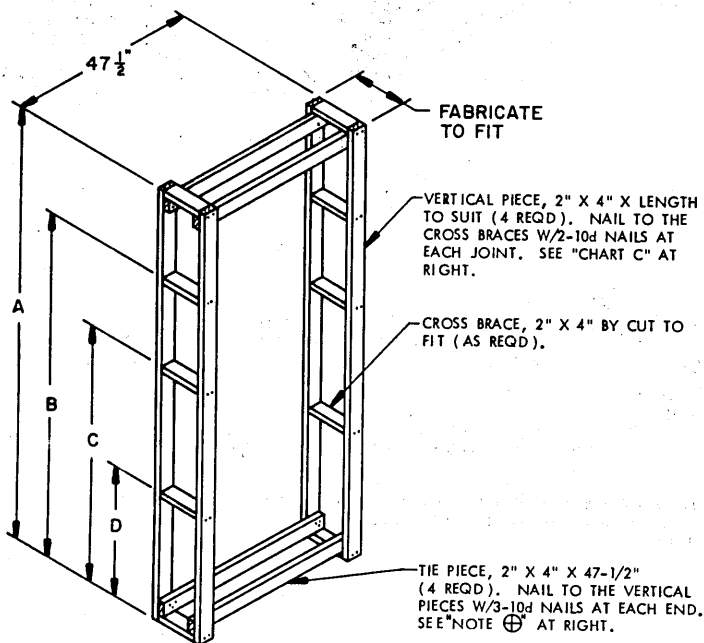
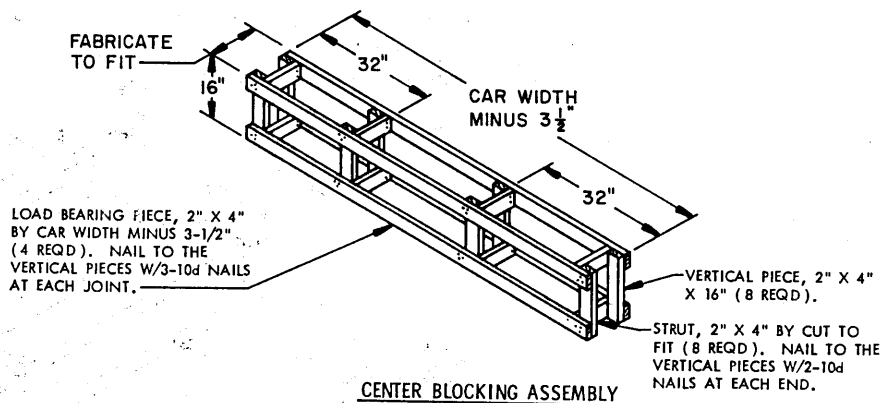
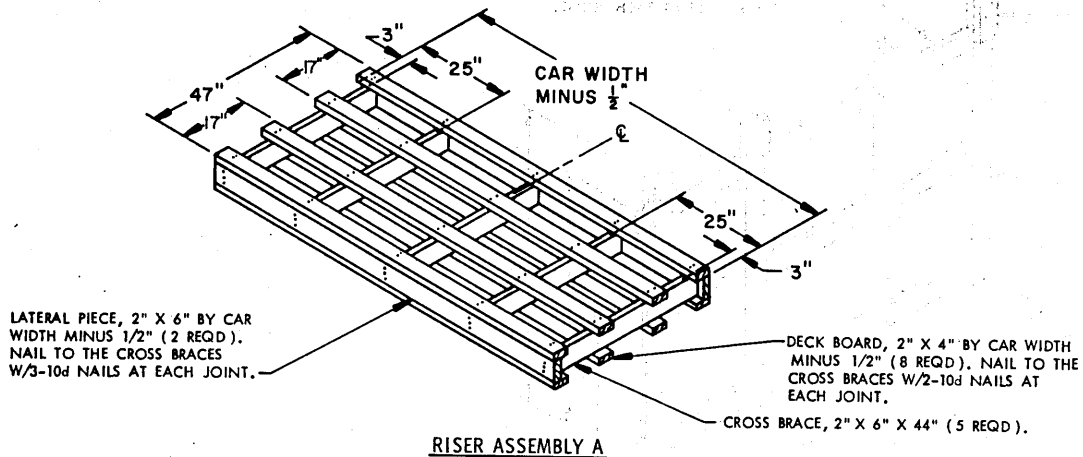


CHART C

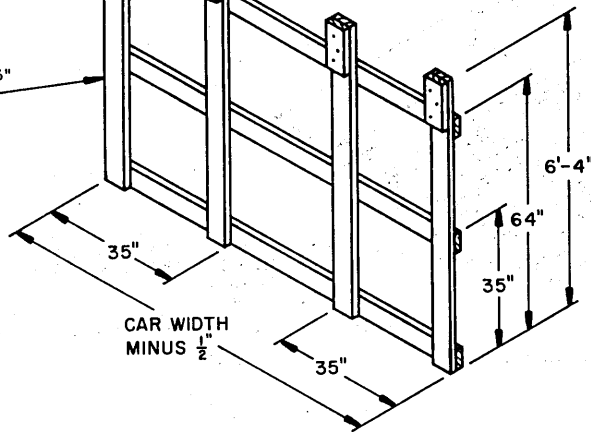
LAYERS OF CONTAINERS	DIM A	DIM B	DIM C	DIM D
2	32"			
3	48"			25"
4	64"			33"
5	6'-8"		57"	33"
6	8'-0"		65"	33"
7	9'-4"	7'-4"	65"	33"

NOTE ⊕ : WHEN DOORWAY PROTECTION BUNDLING STRAPPING IS USED AS DEPICTED IN THE LOAD SHOWN ON PAGES 12 AND 13, THE BOTTOM EDGE OF THE LOWER TIE PIECES OF SPACER ASSEMBLIES LOCATED IN THE DOORWAY AREA MUST BE POSITIONED APPROXIMATELY 4" FROM THE BOTTOM OF THE ASSEMBLY TO ALLOW FOR SIDE BLOCKING PIECES.

HOLD DOWN BLOCK, 2" X 6" X 12" (4 REQD). NAIL TO THE VERTICAL PIECE W/3-10d NAILS.

LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" X 6'-4" (4 REQD).



LCL GATE

UPPER DECK BOARD, 2" X 4" X 32" (1 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

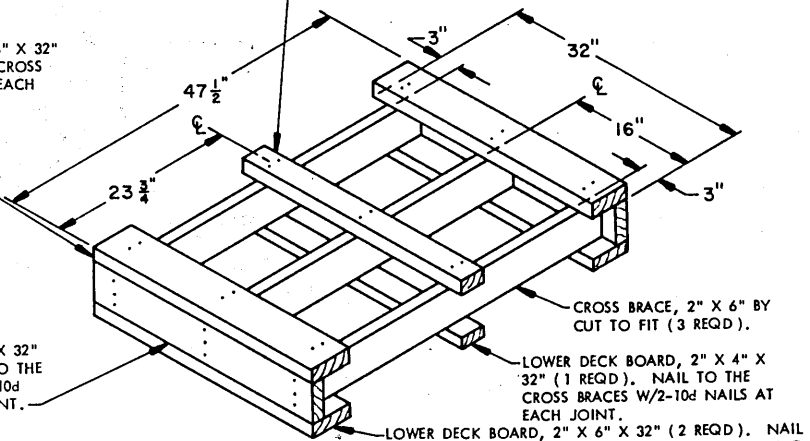
UPPER DECK BOARD, 2" X 6" X 32" (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

TIE PIECE, 2" X 6" X 32" (2 REQD). NAIL TO THE CROSS BRACES W/3-10d NAILS AT EACH JOINT.

CROSS BRACE, 2" X 6" BY CUT TO FIT (3 REQD).

LOWER DECK BOARD, 2" X 4" X 32" (1 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

LOWER DECK BOARD, 2" X 6" X 32" (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.



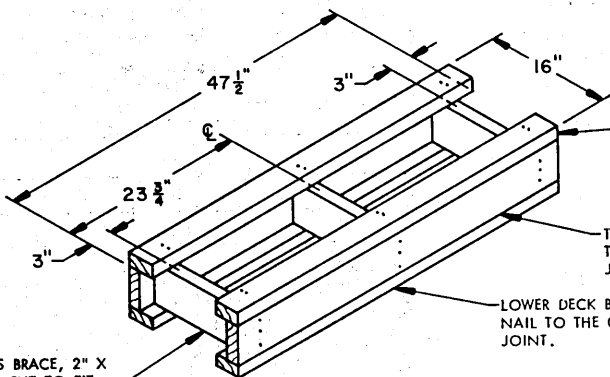
RISER ASSEMBLY B

UPPER DECK BOARD, 2" X 4" X 47-1/2" (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

TIE PIECE, 2" X 6" X 47-1/2" (2 REQD). NAIL TO THE CROSS BRACES W/3-10d NAILS AT EACH JOINT.

LOWER DECK BOARD, 2" X 4" X 47-1/2" (2 REQD). NAIL TO THE CROSS BRACES W/2-10d NAILS AT EACH JOINT.

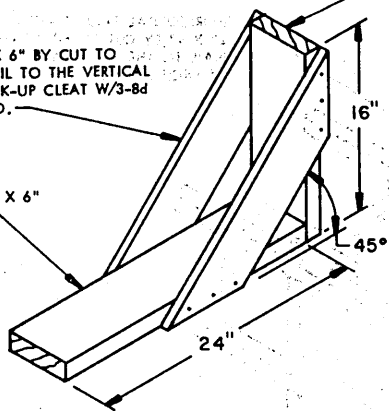
CROSS BRACE, 2" X 6" BY CUT TO FIT (3 REQD).



RISER ASSEMBLY C

ANGLE BRACE, 1" X 6" BY CUT TO FIT (2 REQD.). NAIL TO THE VERTICAL PIECE AND THE BACK-UP CLEAT W/3-8d NAILS AT EACH END.

BACK-UP CLEAT, 2" X 6" X 24" (1 REQD.).

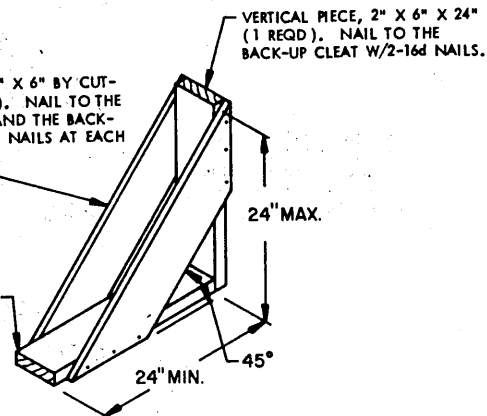


LCL BRACE B

VERTICAL PIECE, 2" X 6" X 16" (1 REQD.). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.

ANGLE BRACE, 1" X 6" BY CUT-TO-FIT (2 REQD.). NAIL TO THE VERTICAL PIECE AND THE BACK-UP CLEAT W/3-8d NAILS AT EACH END.

BACK-UP CLEAT, 2" X 6" X 24" (1 REQD.).



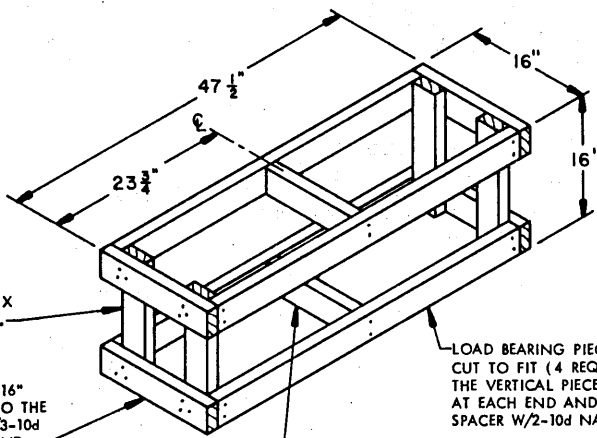
LCL BRACE A

VERTICAL PIECE, 2" X 4" X 16" (4 REQD.).

SPACER, 2" X 4" X 16" (4 REQD.). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

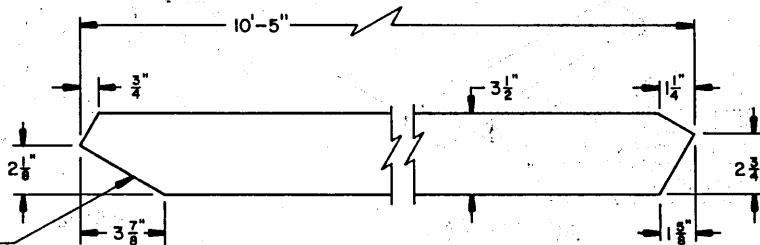
LOAD BEARING PIECE, 2" X 4" BY CUT TO FIT (4 REQD.). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END AND TO THE CENTER SPACER W/2-10d NAILS.

CENTER SPACER, 2" X 4" BY CUT TO FIT (2 REQD.).



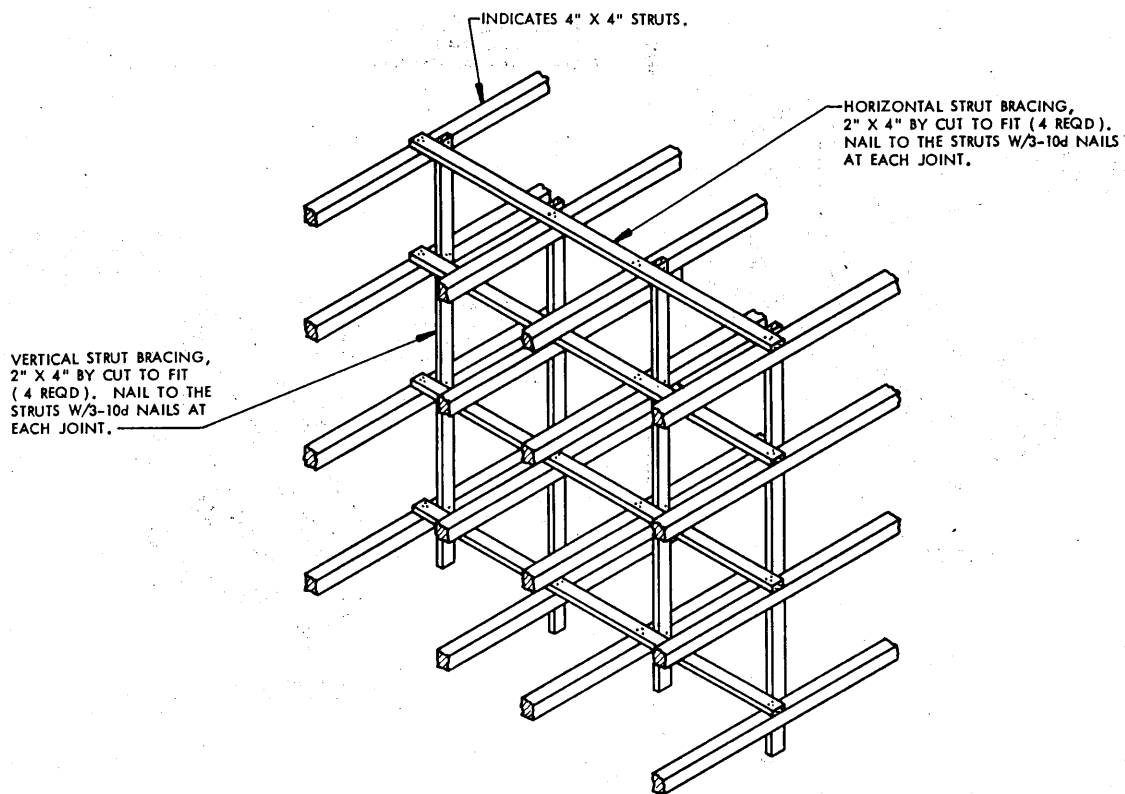
FILLER ASSEMBLY

THIS BEARING SURFACE MUST BE IN CONTACT WITH THE FLOOR CLEAT MARKED ④ ON PAGE 8.



DIAGONAL BRACE

4" X 4" MATERIAL.

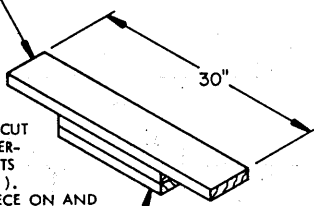


STRUT BRACING

STRUT BRACING IS REQUIRED WHEN STRUTS ARE 48" OR GREATER IN LENGTH. ONE (1) SET, AS SHOWN ABOVE, IS REQUIRED FOR EVERY 48" OF STRUT LENGTH.

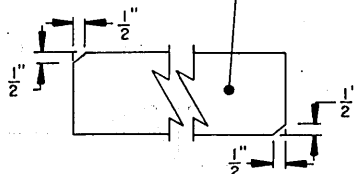
SUPPORT PIECE, 2" X 6" X 30" (1 REQD).

SPACER, 2" X 6" BY CUT TO FIT BETWEEN LATERALLY ADJACENT UNITS (DOUBLED) (1 REQD). CENTER THE FIRST PIECE ON AND NAIL TO THE SUPPORT PIECE W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



ANTI-SWAY BRACE

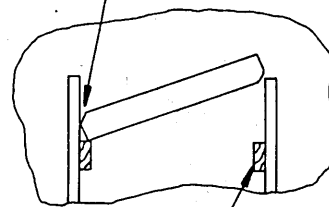
INDICATES A SIDE OF A 4" X 4" AS A TYPICAL STRUT.



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").

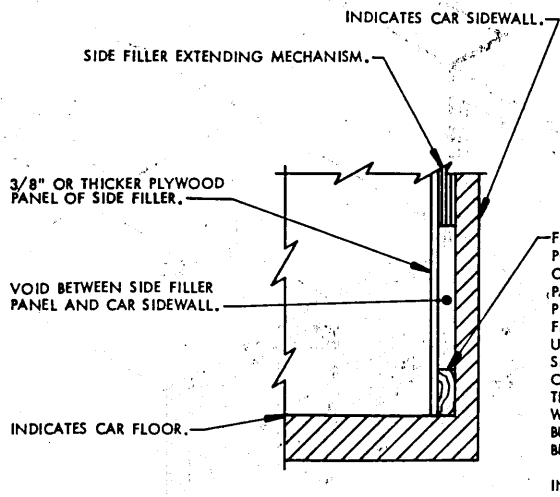
BEVEL-CUT THIS CORNER ONLY IF STRUTS ARE VERY SHORT.



INDICATES A TYPICAL CENTER GATE.

STRUT INSTALLATION

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

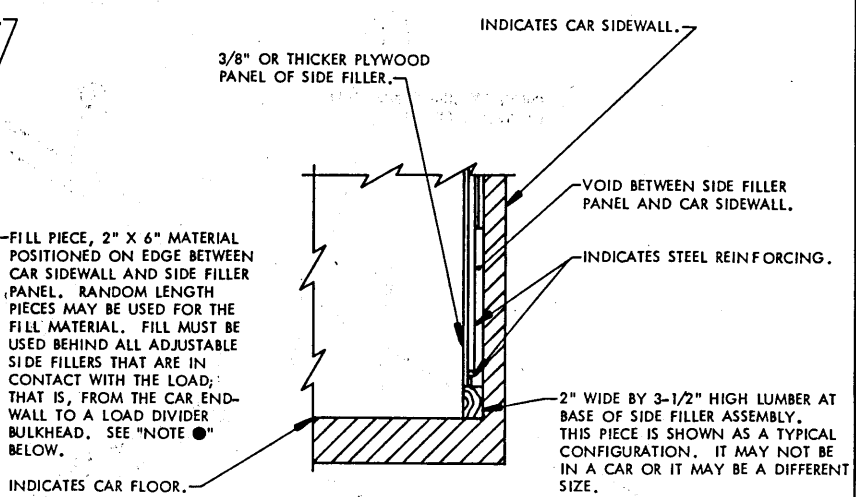


TYPICAL TYPE A

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

NOTE ●:

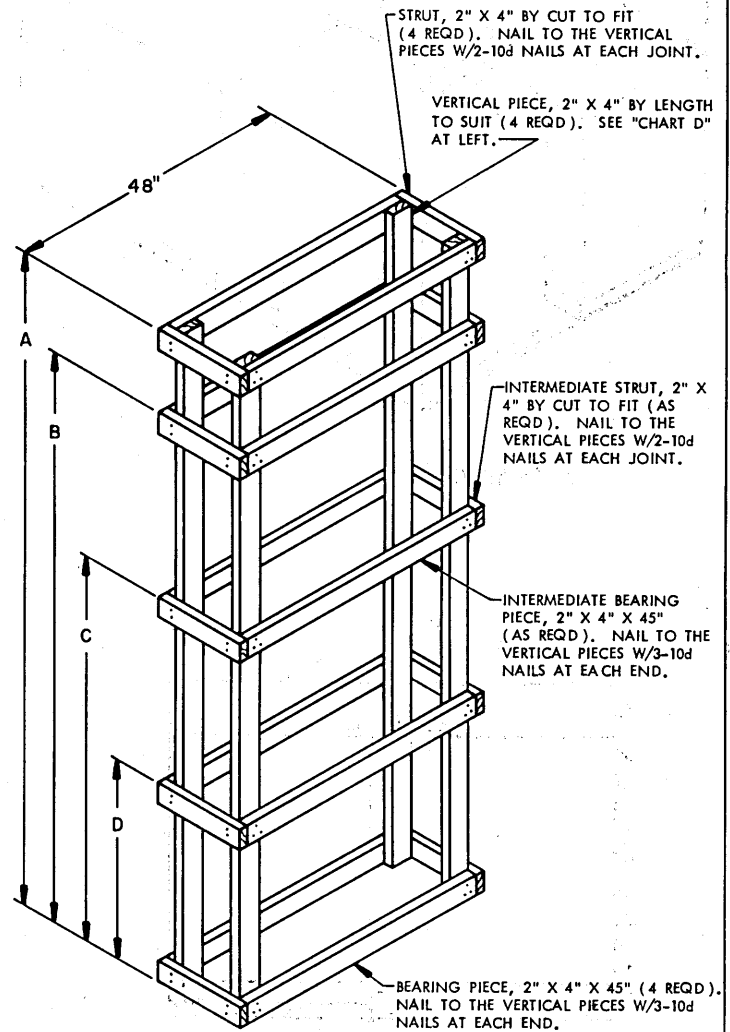
NAILING OF "FILL PIECES" IS NOT REQUIRED EXCEPT THAT EACH "FILL PIECE" LOCATED NEAREST THE DOOR OPENINGS OF THE CAR WILL BE SECURED AGAINST LONGITUDINAL MOVEMENT W/1-6d NAIL DRIVEN THROUGH THE SIDE FILLER PANEL AND INTO THE "FILL PIECE".



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 AT THE LEFT, IS NOT REQUIRED IN CARS SO EQUIPPED.

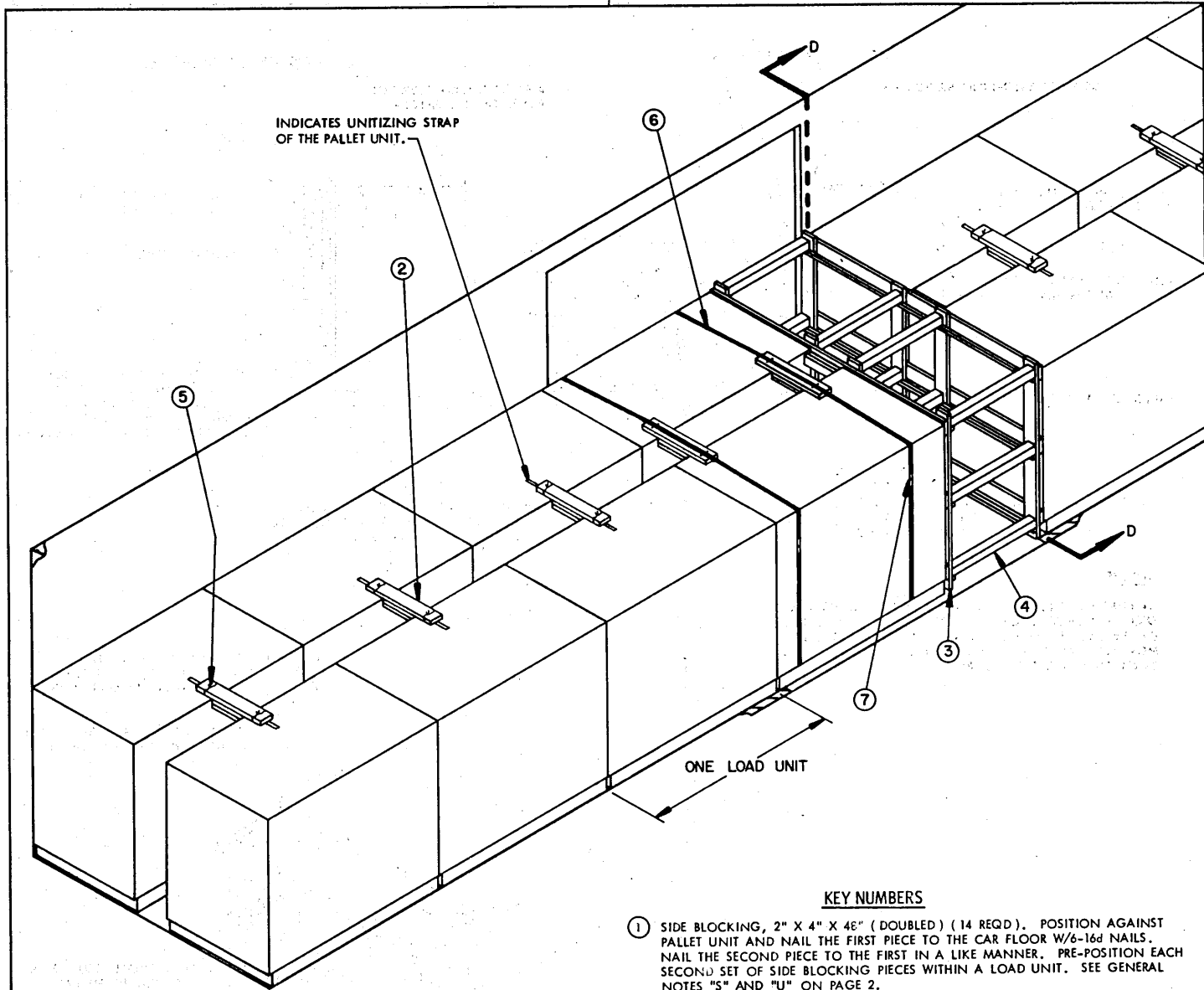
CHART D				
LAYERS OF CONTAINERS	DIM A	DIM B	DIM C	DIM D
2	32"			
3	48"			34"
4	64"			34"
5	6'-8"		66"	34"
6	8'-0"		66"	34"
7	9'-4"	8'-2"	66"	34"



SPACER ASSEMBLY B

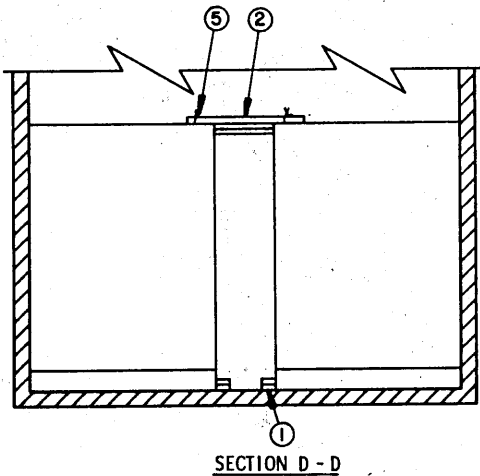
SEE "CHART D" AT LEFT.

DETAILS



INDICATES UNITIZING STRAP
OF THE PALLET UNIT.

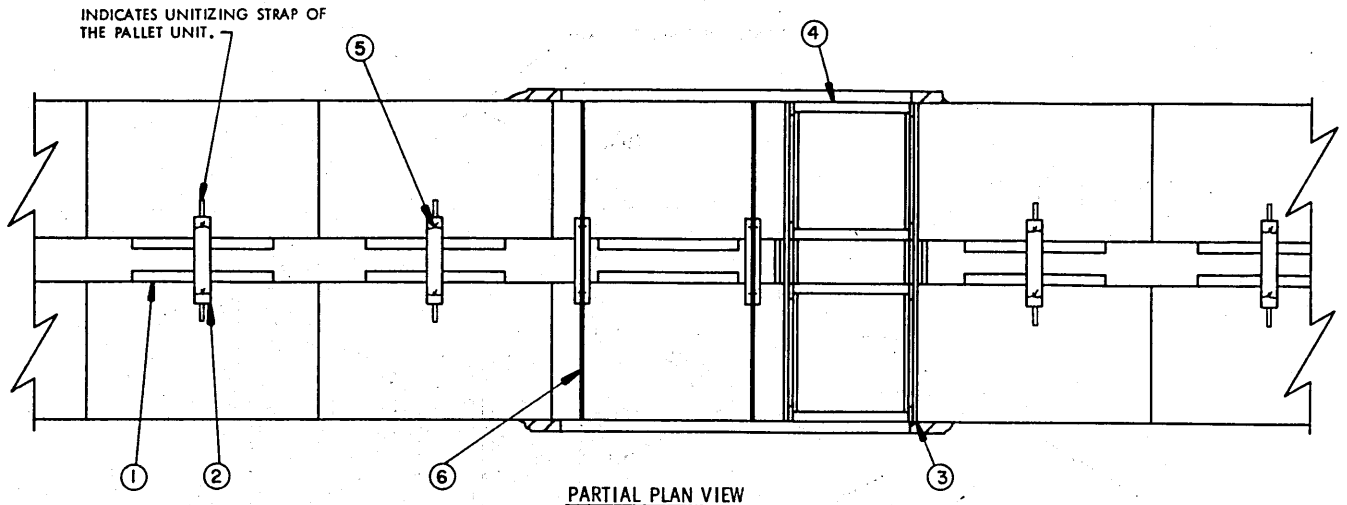
ISOMETRIC VIEW



SECTION D - D

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 48" (DOUBLED) (14 REQD). POSITION AGAINST PALLET UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 18.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 27.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2-12d NAILS AT EACH END.
- ⑤ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (12 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE PALLET UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE THE LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2-STAPLES. SEE SPECIAL NOTE 5 ON PAGE 21.
- ⑦ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



PARTIAL PLAN VIEW

SPECIAL NOTES:

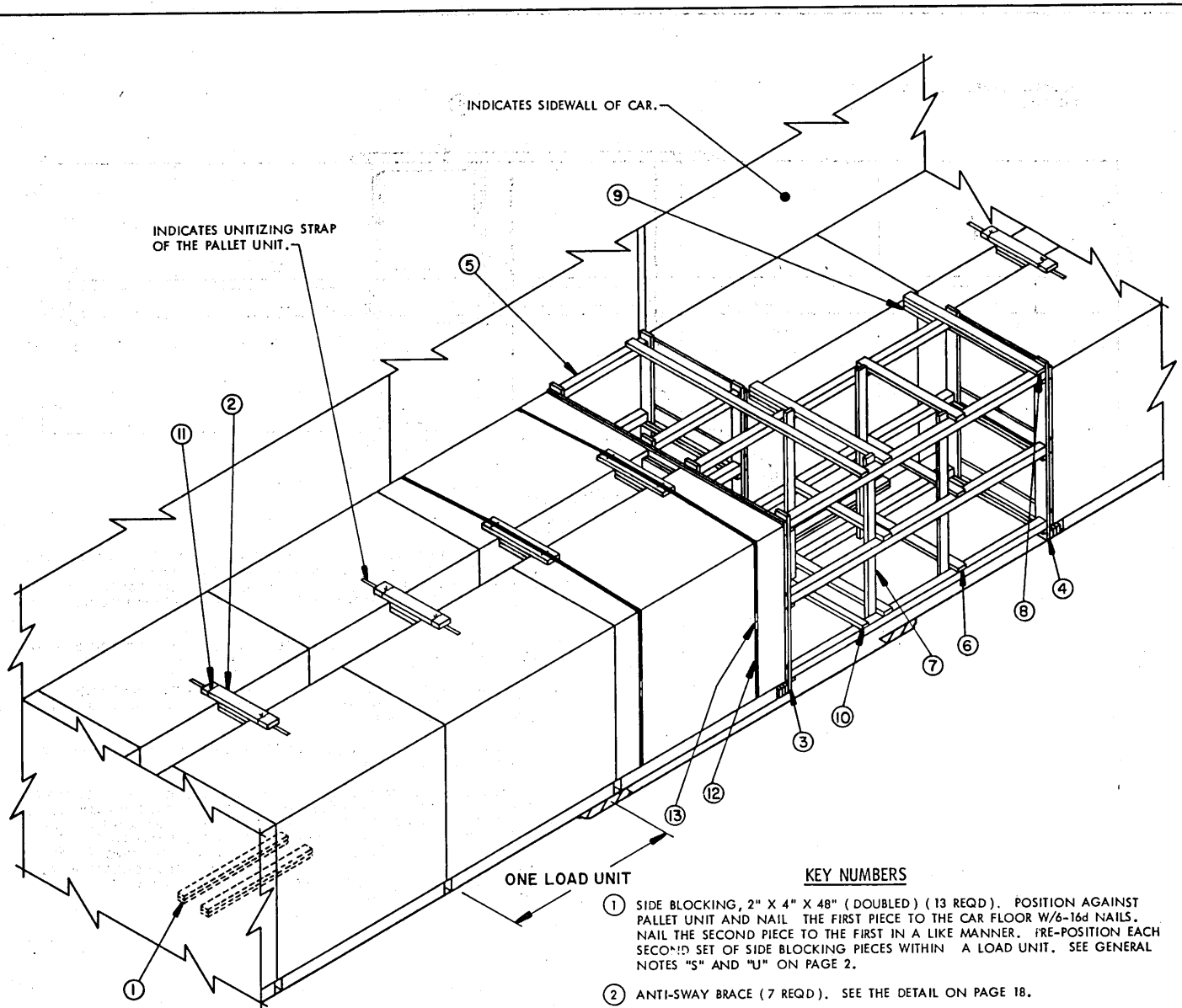
1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS OF THE SLIDING OR PLUG TYPE IS SHOWN. CARS WITH DOOR OPENINGS LESS THAN 8'-0" WIDE CANNOT BE USED. WIDER OR NARROWER CARS MAY BE USED. SEE GENERAL NOTE "K" ON PAGE 2.
2. TO SATISFY A LESS THAN FULL LOAD QUANTITY OF PALLET UNITS TO BE SHIPPED SEE THE PROCEDURES SPECIFIED ON PAGES 22 THRU 26.
3. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "J" ON PAGE 2 WILL BE OBSERVED.
4. THE DEPICTED PROCEDURES ALSO APPLY TO THE SHIPMENT OF A 10-UNIT LOAD IN A 40'-6" LONG BOX CAR.
5. TWO SETS OF PIECES MARKED ②, ⑥ AND ⑦ AS SHOWN ARE REQUIRED FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 72" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR. WHEN A LOAD UNIT EXTENDS FROM 40" TO 72" INTO THE DOORWAY AREA ONLY ONE SET OF PIECES MARKED ②, ⑥ AND ⑦ WILL BE NECESSARY. DOORWAY PROTECTION STRAPPING IS NOT REQUIRED FOR UNITS EXTENDING LESS THAN 40" INTO THE DOORWAY AREA; HOWEVER, ONE SET OF PIECES MARKED ② AND ⑤ MUST BE USED. SEE GENERAL NOTE "J" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	55	19
2" X 3"	14	7
2" X 4"	128	86
2" X 6"	143	143
4" X 4"	40	54
NAILS	NO. REQD	POUNDS
10d (3")	256	4
12d (3-1/4")	48	1
16d (3-1/2")	168	3-3/4
STEEL STRAPPING, 1-1/4" X .035"--64' REQD-----		10 LBS
SEAL FOR 1-1/4" STRAPPING ----- 4 REQD-----		NIL
STAPLE FOR 1-1/4" STRAPPING ----- 4 REQD-----		NIL
NO. 14 GAGE WIRE----- 18' REQD-----		NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	14	20,314 LBS
DUNNAGE-----		637 LBS
TOTAL WEIGHT-----		20,951 LBS

14-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CAR (CONVENTIONAL) (PALLETIZED)



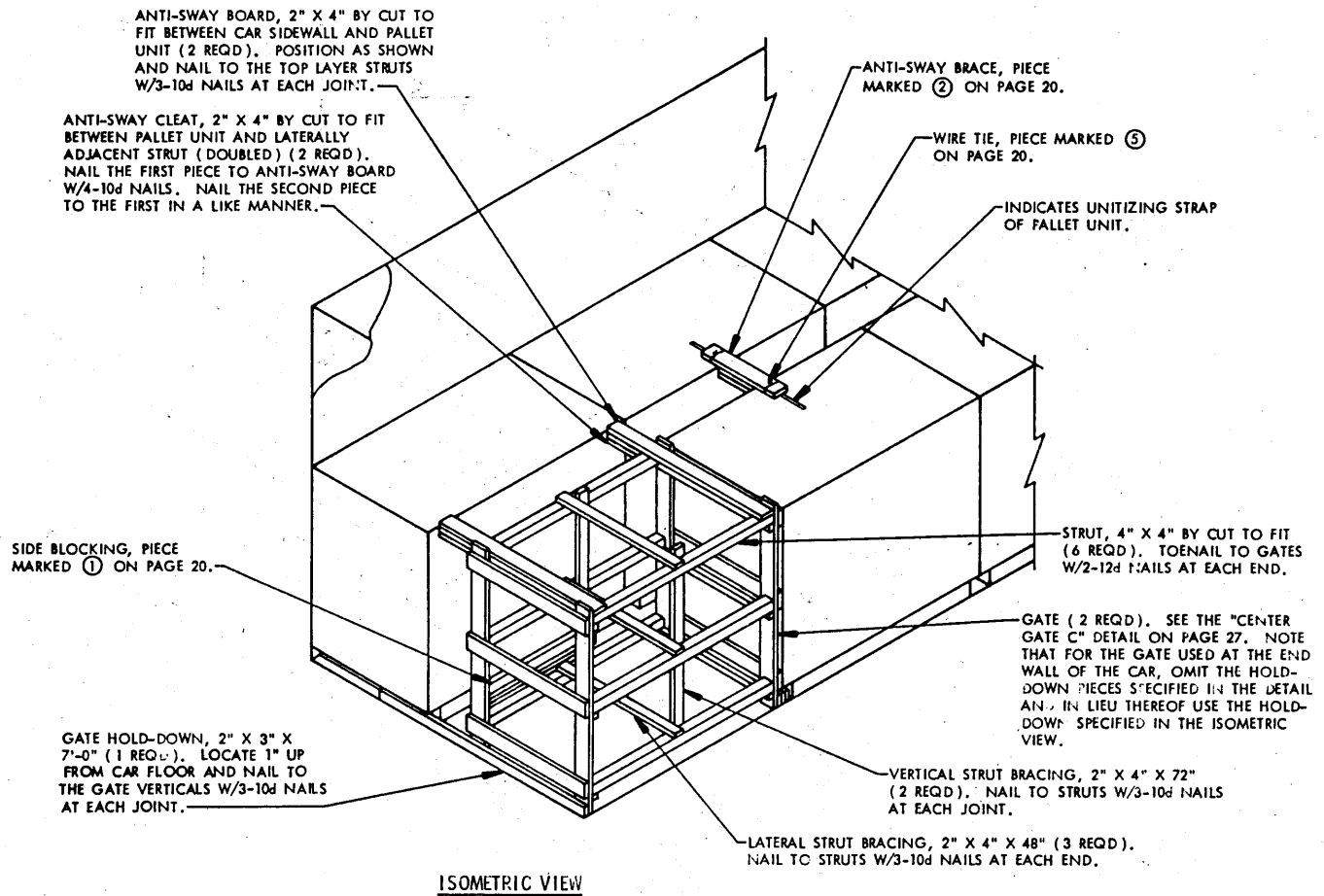
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE PROCEDURES SPECIFY REQUIREMENTS FOR OMITTING A PALLET UNIT FROM THE LOAD DEPICTED ON PAGES 20 AND 21. HOWEVER, A PALLET UNIT MUST NOT BE OMITTED FROM A LOAD UNIT WHICH EXTENDS MORE THAN 40" INTO THE DOORWAY AREA, ON EITHER SIDE OF THE CAR, AS WILL BE THE CASE IN SOME CARS WHICH ARE EQUIPPED WITH STAGGERED DOOR OPENINGS. PROCEDURES SPECIFIED ON PAGE 23 SHOULD BE USED FOR CARS HAVING STAGGERED DOOR OPENINGS.
2. IF DESIRED, IN LIEU OF PROCEDURES DEPICTED IN THE ISOMETRIC VIEW ABOVE, THE PROCEDURES SHOWN ON PAGE 23 MAY BE USED FOR AN OMITTED PALLET UNIT.
3. IF TWO PALLET UNITS (ONE LOAD UNIT) ARE TO BE OMITTED FROM A LOAD, THE PROCEDURES SPECIFIED ON PAGES 20 AND 21 WILL APPLY, EXCEPT THAT "STRUT BRACING" WILL ALSO BE REQUIRED AS SHOWN IN THE "STRUT BRACING" DETAIL ON PAGE 18.

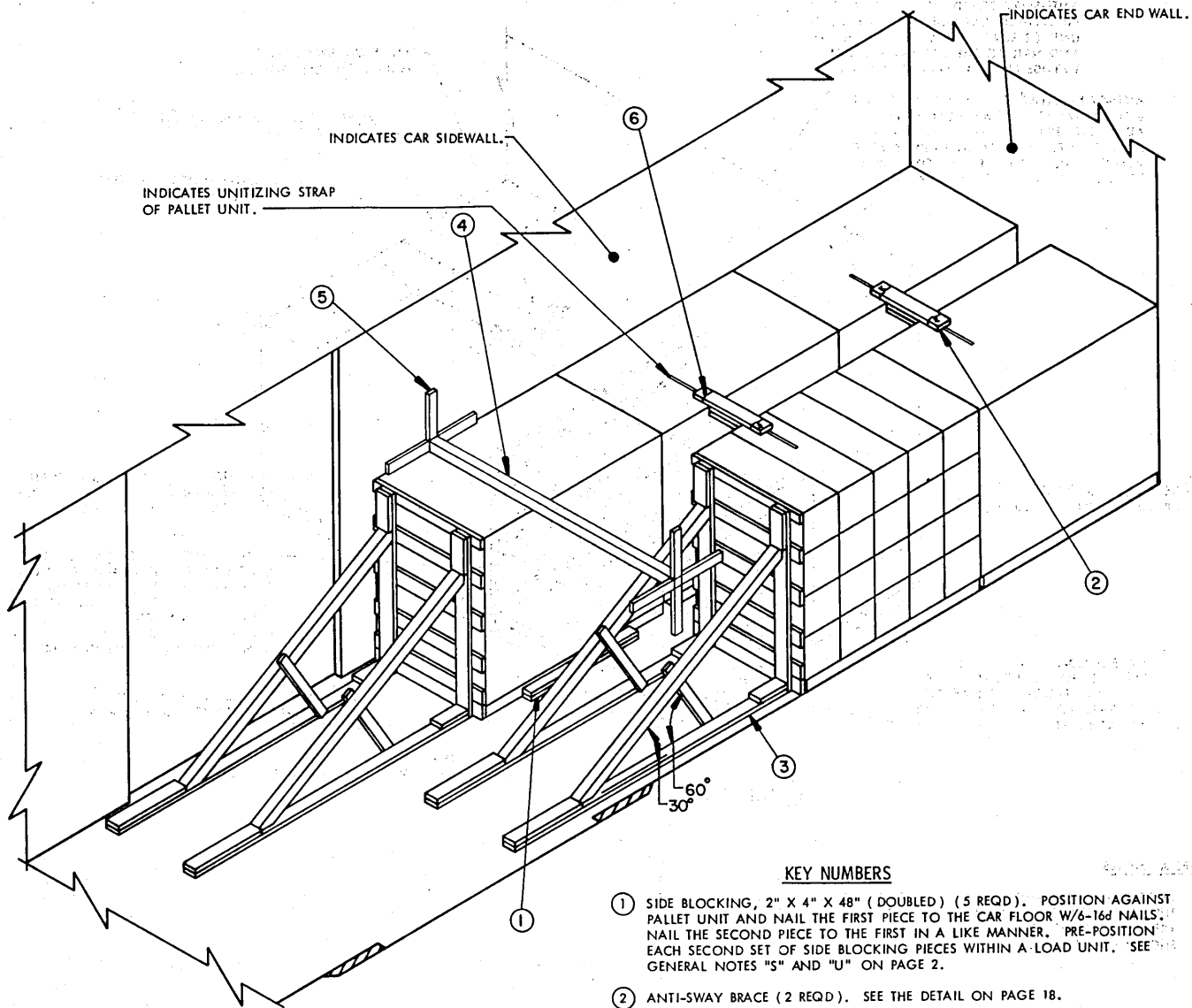
KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 48" (DOUBLED) (13 REQD). POSITION AGAINST PALLET UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. RE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A LOAD UNIT. SEE GENERAL NOTES "S" AND "J" ON PAGE 2.
- ② ANTI-SWAY BRACE (7 REQD). SEE THE DETAIL ON PAGE 18.
- ③ CENTER GATE (1 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 27.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 27.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO CENTER GATES MARKED ③ AND ④ W/2-12d NAILS AT EACH END.
- ⑥ LATERAL STRUT BRACING, 2" X 4" X 48" (5 REQD). NAIL TO STRUTS W/3-10d NAILS AT EACH END. SEE THE "STRUT BRACING" DETAIL ON PAGE 18.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 72" (4 REQD). NAIL TO STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ ANTI-SWAY BOARD, 2" X 4" BY CUT TO FIT BETWEEN CAR SIDEWALL AND PALLET UNIT (2 REQD). POSITION AS SHOWN AND NAIL TO TOP LAYER STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑨ ANTI-SWAY CLEAT, 2" X 4" BY CUT TO FIT BETWEEN PALLET UNIT AND LATERALLY ADJACENT STRUT (DOUBLED) (2 REQD). NAIL FIRST PIECE TO ANTI-SWAY BOARD MARKED ⑧ W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑩ LATERAL TIE PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO TOP AND/OR BOTTOM LAYER OF STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑪ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (10 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE PALLET UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑫ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE THE LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2-STAPLES. SEE SPECIAL NOTE 5 ON PAGE 21 FOR GUIDANCE IN DETERMINING QUANTITY OF STRAPS REQUIRED.
- ⑬ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



SPECIAL NOTES:

1. THESE PROCEDURES SPECIFY REQUIREMENTS FOR OMITTING A PALLET UNIT FROM THE LOAD DEPICTED ON PAGES 20 AND 21 AND SHOULD BE USED WHEN CARS ARE EQUIPPED WITH STAGGERED DOOR OPENINGS IN LIEU OF PROCEDURE SHOWN ON PAGE 22.



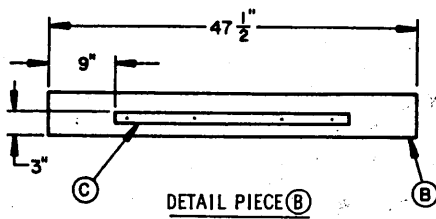
ISOMETRIC VIEW

SPECIAL NOTES:

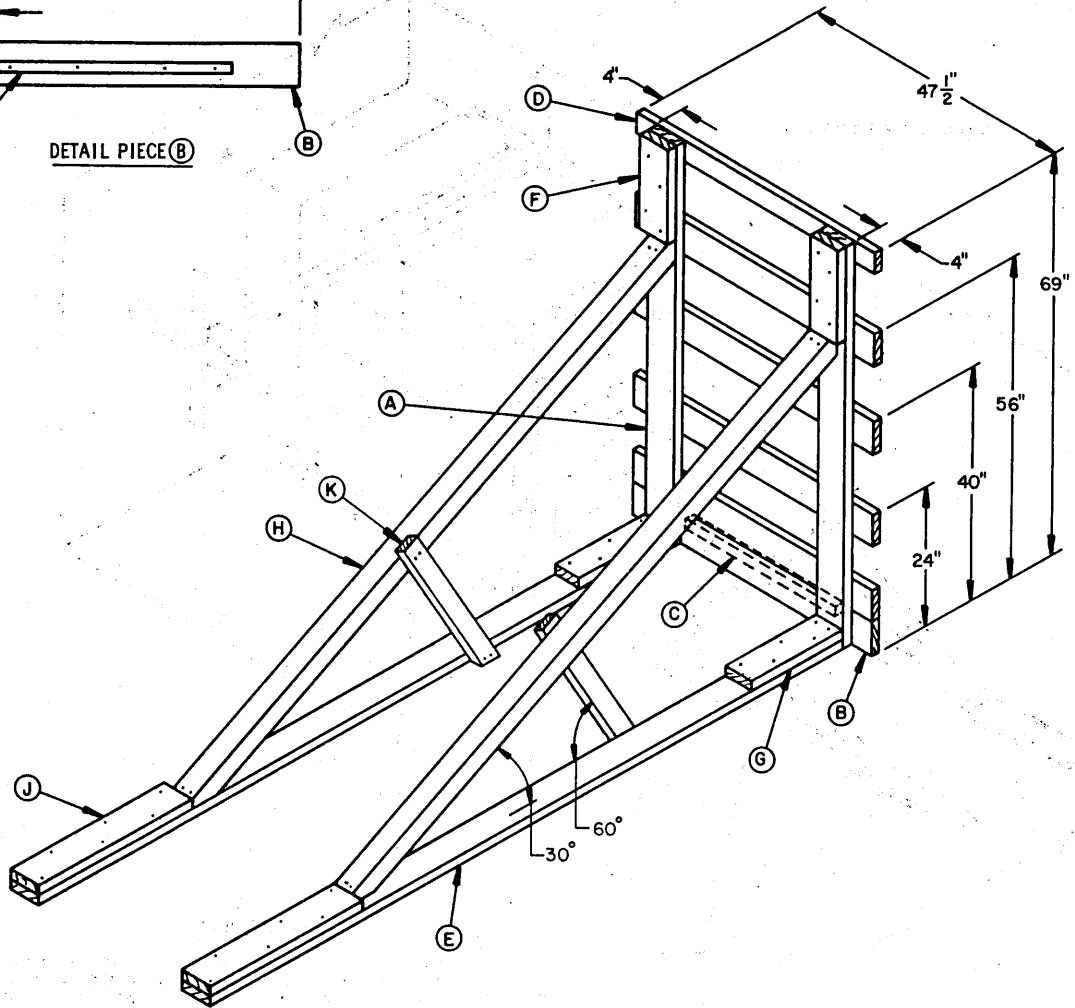
1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF KNEE-BRACE ASSEMBLIES IN A BOX CAR EQUIPPED WITH WOOD OR NAILABLE METAL FLOORS. SEE GENERAL NOTE "K" ON PAGE 2.
2. IF A PALLET UNIT EXTENDS MORE THAN 40" INTO THE DOORWAY AREA, A PIECE OF DOOR SPANNING DUNNAGE OF 2" X 6" MATERIAL WILL BE POSITIONED ACROSS THE DOOR OPENING APPROXIMATELY 36" ABOVE THE CAR FLOOR AND NAILED TO THE CAR SIDEWALL W/5-12d NAILS AT EACH END. THIS DUNNAGE MUST BE OF A LENGTH TO ALLOW IT TO SPAN THE DOOR OPENING AND EXTEND 12" PAST THE EDGE OF THE DOOR OPENING, OR, IF THE DISTANCE BETWEEN IT AND THE PALLET UNIT ADJACENT TO THE PALLET UNIT PARTIALLY IN THE DOORWAY AREA IS LESS THAN 3", EXTEND SLIGHTLY PAST THE MIDPOINT OF THE ADJACENT PALLET UNIT. SEE GENERAL NOTE "J" ON PAGE 2. ALSO, 2" X 6" BY A LENGTH TO SUIT DOOR SPANNER PIECES MUST BE PROVIDED, AS REQUIRED, FOR NAILING POCKET CLEATS MARKED (5) AND TO PROVIDE A FULL BEARING SURFACE FOR THE ENDS OF THE HOLD-DOWN PIECE MARKED (4) WHEN LOCATED IN A DOORWAY AREA. THESE PIECES WILL EXTEND AT LEAST 12" PAST THE EDGE OF THE DOOR OPENING AND BE NAILED TO THE CAR SIDEWALL W/5-12d NAILS AT EACH END. IF NECESSARY, THOSE PIECES MARKED (5) WHICH ARE SHOWN IN A VERTICAL POSITION IN THE ISOMETRIC VIEW MAY BE INSTALLED HORIZONTALLY.
3. TWO (2) KNEE BRACE ASSEMBLIES AS SHOWN ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD.

KEY NUMBERS

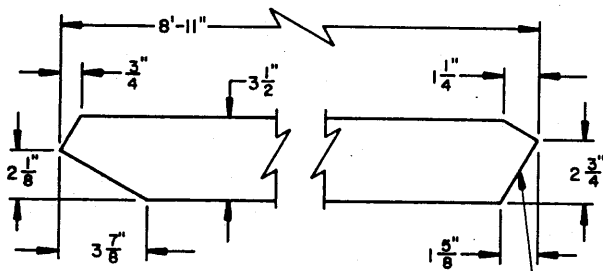
- (1) SIDE BLOCKING, 2" X 4" X 48" (DOUBLED) (5 REQD). POSITION AGAINST PALLET UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- (2) ANTI-SWAY BRACE (2 REQD). SEE THE DETAIL ON PAGE 18.
- (3) KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 25. NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE SPECIAL NOTES 2 AND 3 AT LEFT.
- (4) HOLD-DOWN, 4" X 4" BY CAR WIDTH (1 REQD). SEE SPECIAL NOTE 2 AT LEFT.
- (5) POCKET CLEAT, 2" X 4" X 18" (7 REQD). NAIL TO THE CAR SIDE WALL W/5-10d NAILS.
- (6) WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (4 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE PALLET UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.



DETAIL PIECE (B)



KNEE BRACE ASSEMBLY



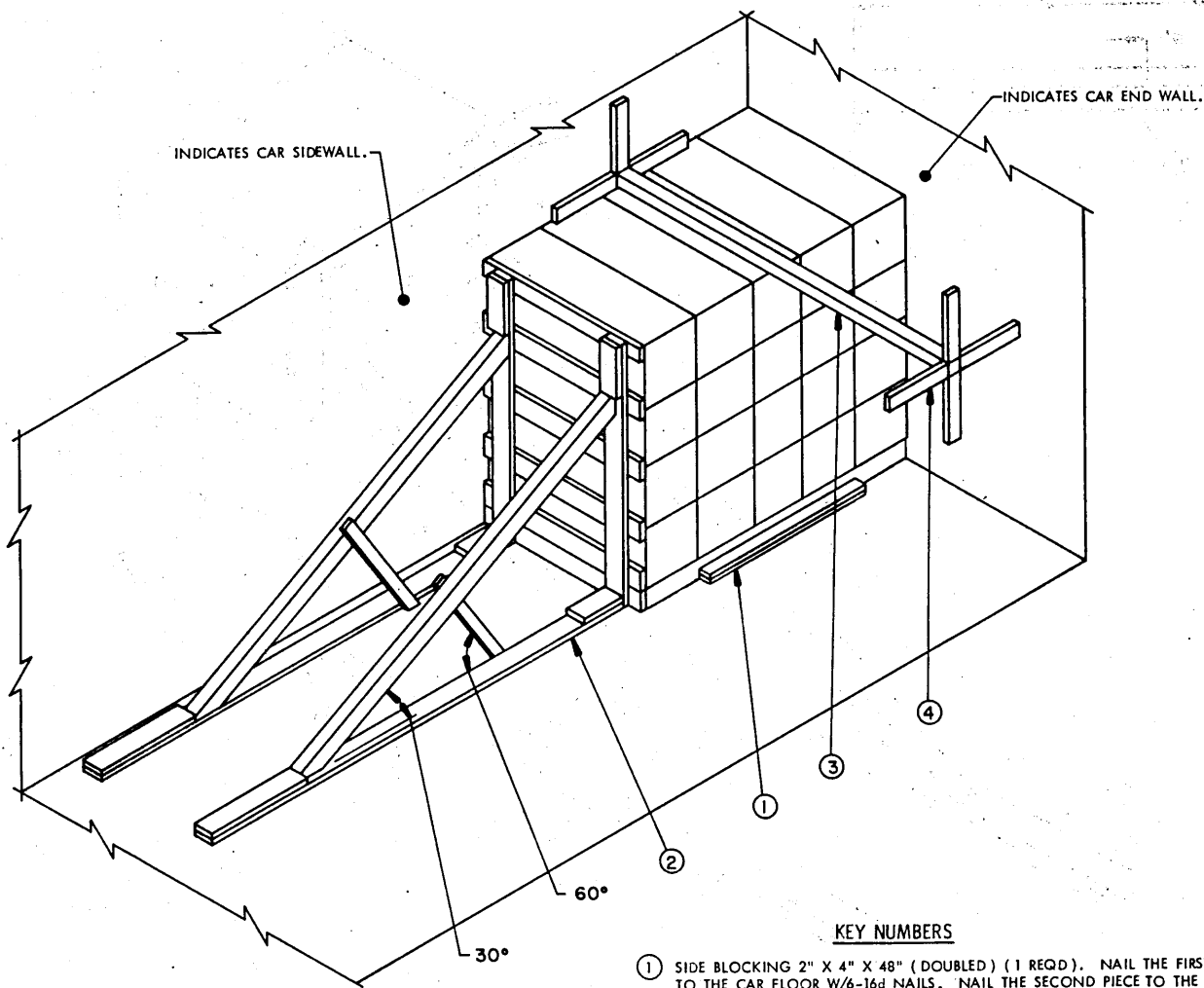
DETAIL PIECE (H)

4" X 4" MATERIAL.

THIS BEARING SURFACE MUST BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A) ABOVE.

LUMBER AND NAILING DATA

PC MK	LUMBER SIZE	NO. REOD	NAIL TO	NUMBER AND SIZE OF NAILS
(A)	2" X 6" X 69"	2		
(B)	2" X 6" X 47-1/2"	5	(A)	3-10d AT EACH JOINT
(C)	2" X 2" X 30" SEE "PIECE MARKED (B)" DETAIL	1	(B)	4-10d
(D)	2" X 4" X 47-1/2"	1	(A)	3-10d AT EACH JOINT
(E)	2" X 6" X 10'-3"	2	CAR FLOOR	1-16d EVERY 8"
(F)	2" X 6" X 14"	2	(A)	4-10d
(G)	2" X 6" X 18"	2	(A)	TOENAIL W/2-12d
(H)	4" X 4" X 8'-11" SEE BRACE DETAIL	2	(A) AND (E)	4-40d
(J)	2" X 6" X 30"	2	(E)	2-16d AT EACH END
(K)	2" X 4" BY LENGTH TO SUIT BEVEL ONE END WITH 60° CUT	2	(H) AND (E)	6-40d



ISOMETRIC VIEW

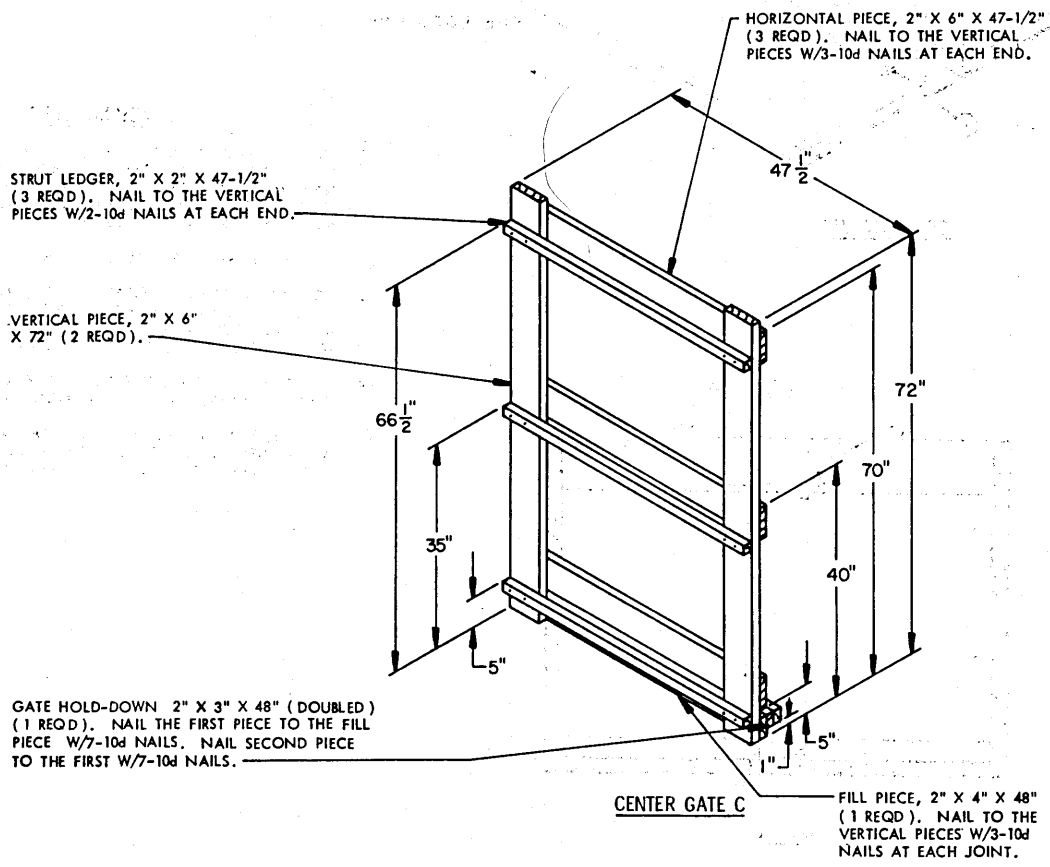
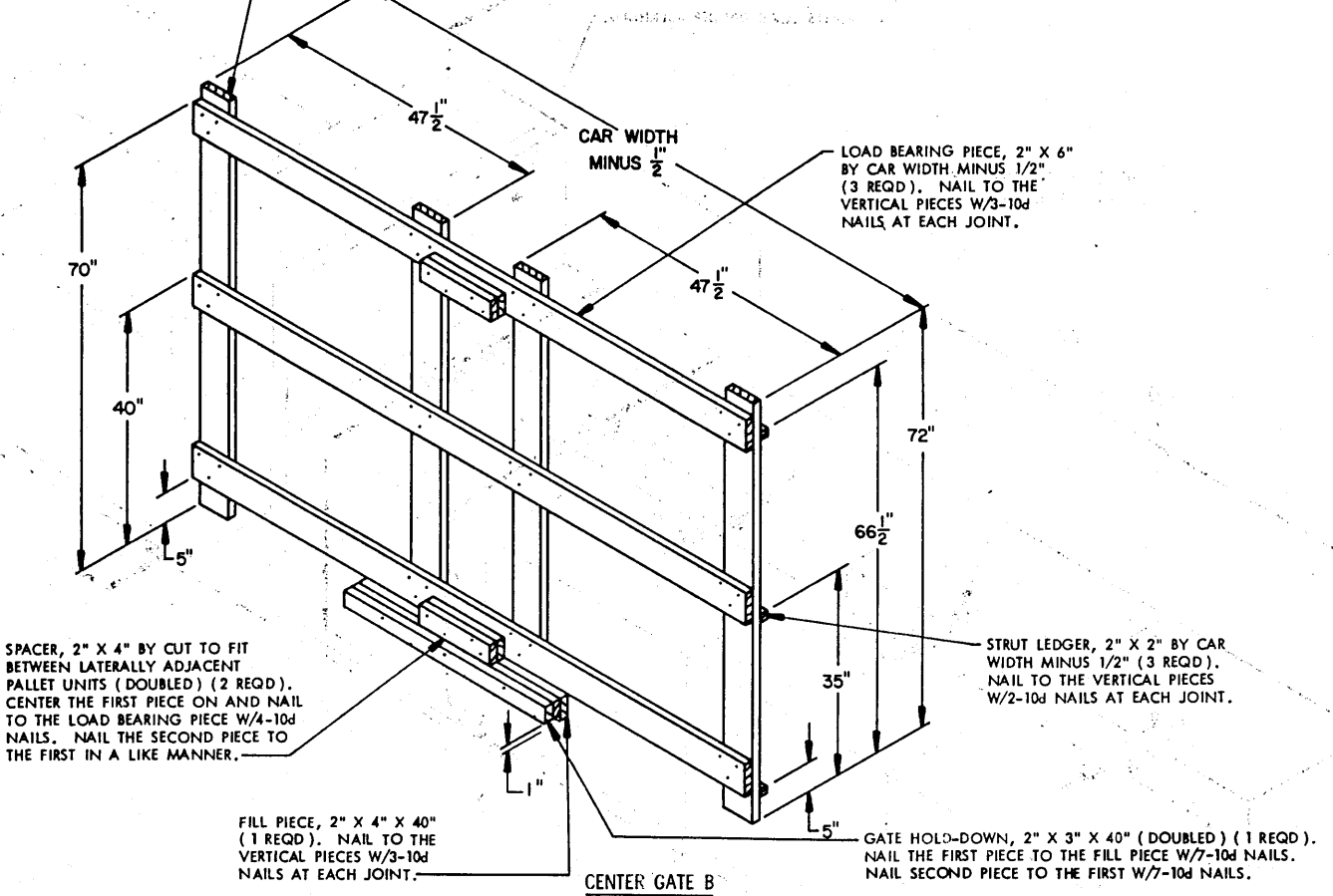
SPECIAL NOTES:

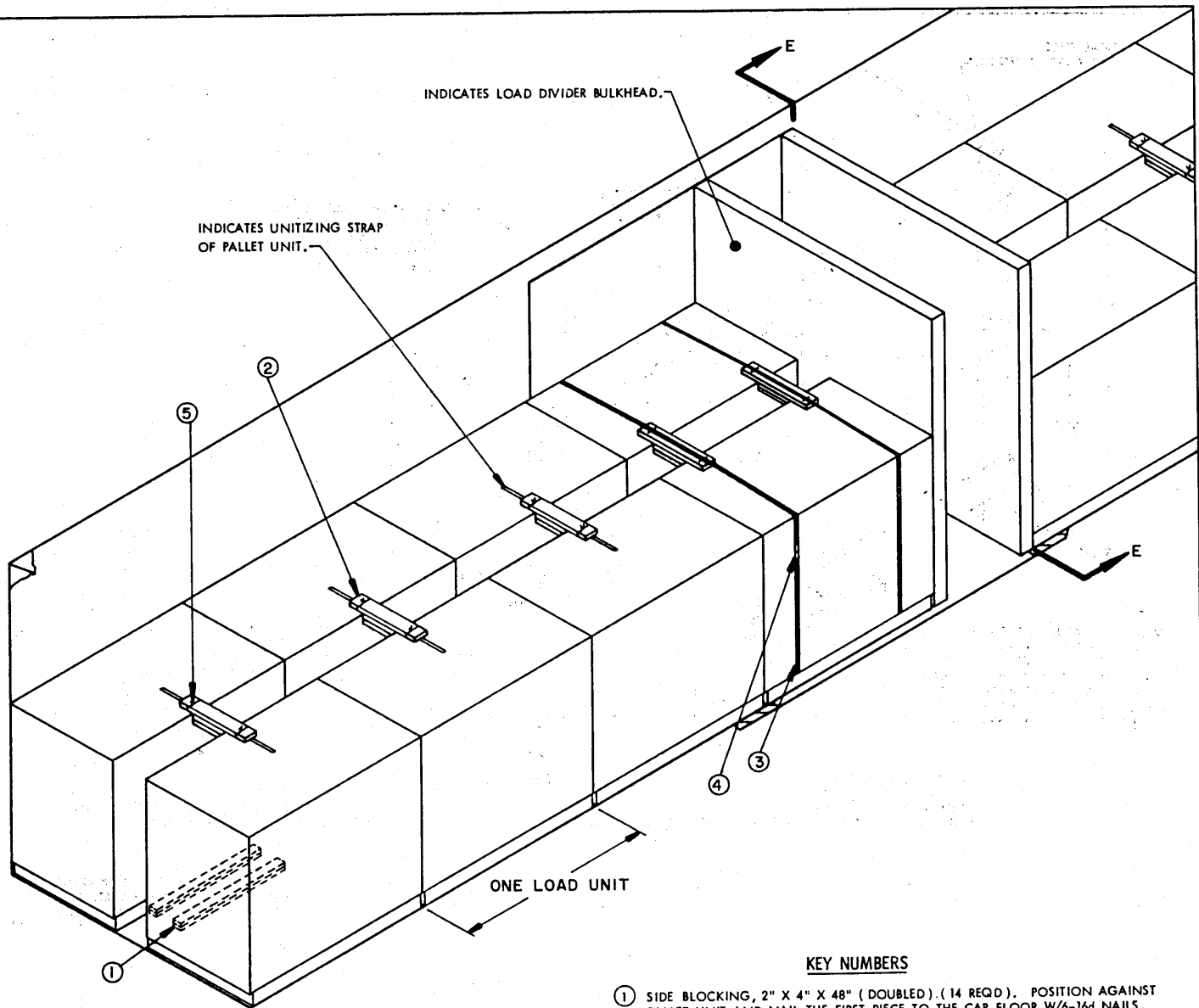
1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF A KNEE-BRACE ASSEMBLY IN A BOX CAR EQUIPPED WITH WOOD OR NAILABLE METAL FLOORS.
2. ONE KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING NOT MORE THAN 8,500 POUNDS OF LADING.

KEY NUMBERS

- ① SIDE BLOCKING 2" X 4" X 48" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "5" AND "U" ON PAGE 2.
- ② KNEE BRACE ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 25. NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE SPECIAL NOTE 2 AT LEFT.
- ③ HOLD-DOWN, 4" X 4" BY CAR WIDTH (1 REQD).
- ④ POCKET CLEAT, 2" X 4" X 18" (7 REQD). NAIL TO THE CAR SIDEWALL W/5-10d NAILS.

VERTICAL PIECE,
2" X 6" X 72" (4 REQD).





INDICATES UNITIZING STRAP
OF PALLET UNIT.

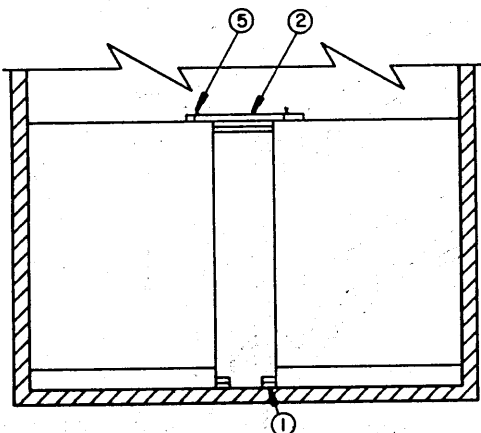
INDICATES LOAD DIVIDER BULKHEAD.

ONE LOAD UNIT

ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 48" (DOUBLED). (14 REQD). POSITION AGAINST PALLET UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (8 REQD). SEE THE DETAIL ON PAGE 18.
- ③ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE THE LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 29.
- ④ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.
- ⑤ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (12 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE PALLET UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.



SECTION E-E

SPECIAL NOTES:

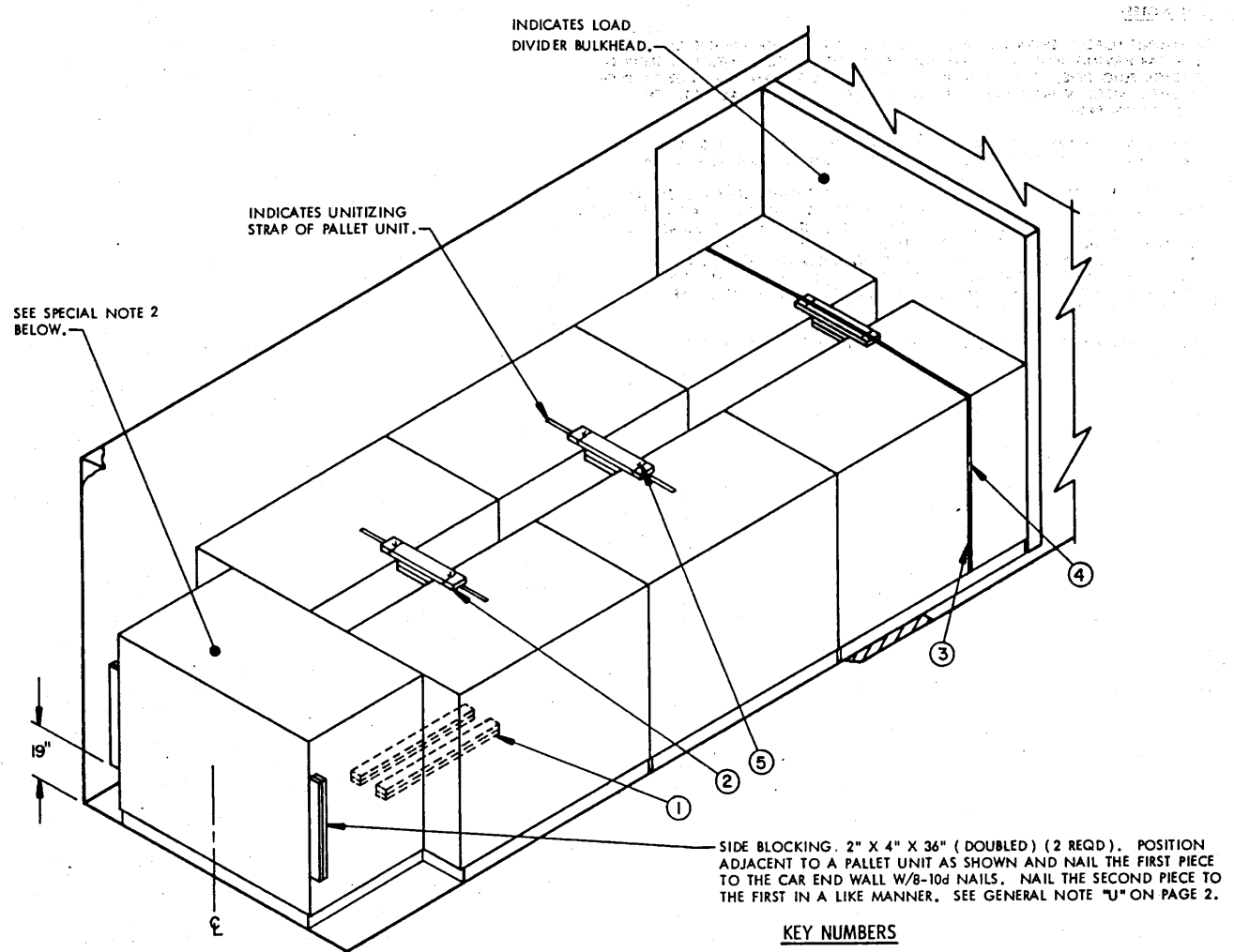
1. A 14-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) BOX CAR HAVING 10'-0" WIDE THROUGH DOORS OF THE CONVENTIONAL SLIDING AND/OR PLUG TYPE. CARS WITH DOOR OPENINGS LESS THAN 8'-0" WIDE CANNOT BE USED. WIDER OR NARROWER CARS CAN BE USED. SEE GENERAL NOTES "K" AND "L" ON PAGE 2.
2. TO SATISFY A SHIPMENT OF AN UNEVEN QUANTITY OF PALLET UNITS, THE "PROCEDURES FOR OMITTED PALLET UNIT" AS SPECIFIED ON PAGE 30 WILL APPLY.
3. TWO SETS OF PIECES MARKED ②, ③ AND ④ AS SHOWN ARE REQUIRED FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 72" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR. WHEN A LOAD UNIT EXTENDS FROM 40" TO 72" INTO THE DOORWAY AREA ONLY ONE SET OF PIECES MARKED ②, ③ AND ④ WILL BE NECESSARY. DOORWAY PROTECTION STRAPPING IS NOT REQUIRED FOR UNITS EXTENDING LESS THAN 40" INTO THE DOORWAY AREA; HOWEVER, ONE SET OF PIECES MARKED ② AND ⑤ MUST BE USED. SEE GENERAL NOTE "J" ON PAGE 2.
4. THE DEPICTED PROCEDURES ALSO APPLY TO THE SHIPMENT OF A 10-UNIT LOAD IN A 40'-6" LONG BOX CAR.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	112	75
2" X 6"	40	40
NAILS	NO. REQD	POUNDS
10d (3")	64	1
16d (3-1/2")	168	3-3/4
STEEL STRAPPING, 1-1/4" X .035"----- 64' REQD ----- 10 LBS		
SEAL FOR 1-1/4" STRAPPING----- 4 REQD ----- NIL		
STAPLE FOR 1-1/4" STRAPPING----- 4 REQD ----- NIL		
NO. 14 GAGE WIRE----- 18' REQD ----- NIL		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	14	20,314 LBS
DUNNAGE-----		245 LBS
TOTAL WEIGHT-----		20,559 LBS



ISOMETRIC VIEW

SIDE BLOCKING. 2" X 4" X 36" (DOUBLED) (2 REQD). POSITION ADJACENT TO A PALLET UNIT AS SHOWN AND NAIL THE FIRST PIECE TO THE CAR END WALL W/8-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTE "U" ON PAGE 2.

KEY NUMBERS

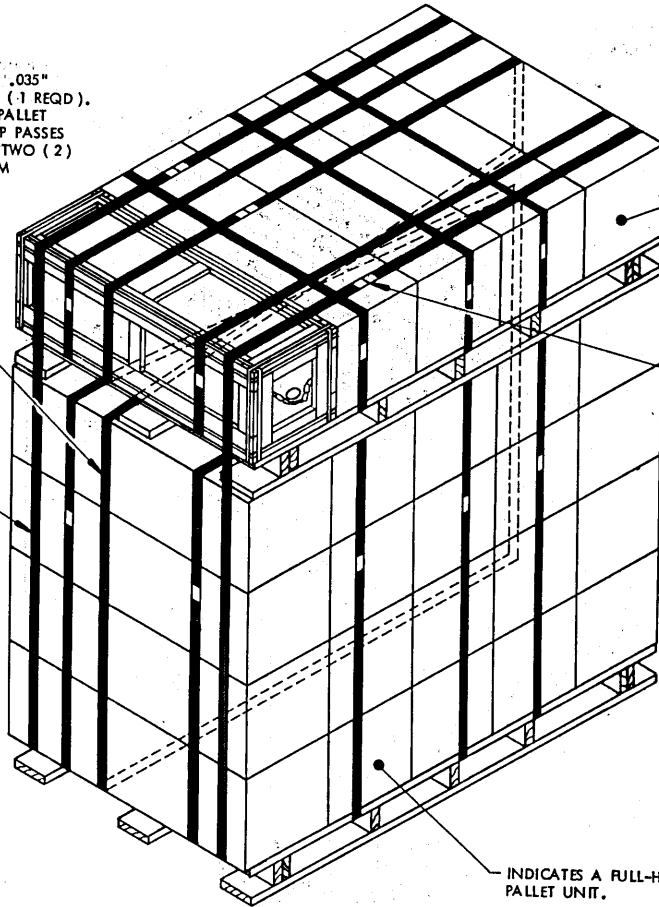
FOR KEY NUMBERS, REFER TO PAGE 28. ADJUST THE QUANTITY REQUIRED TO SUIT THE NUMBER OF PALLET UNITS TO BE SHIPPED.

SPECIAL NOTES:

- 1. THESE PROCEDURES SPECIFY REQUIREMENTS FOR OMITTING A PALLET UNIT FROM THE LOAD DEPICTED ON PAGES 28 AND 29 AND APPLY FOR THE SHIPMENT OF AN UNEVEN QUANTITY OF PALLET UNITS.
- 2. EXERCISE CARE WHEN POSITIONING THE PALLET UNIT AGAINST THE END WALL OF THE CAR TO ASSURE THAT IT IS CENTERED LATERALLY IN THE CAR.
- 3. SEE SPECIAL NOTE 3 ON PAGE 29 FOR DOORWAY PROTECTION STRAPPING REQUIREMENTS.

FIGURE-8 UNITIZING STRAP, 1-1/4" X .035" BY LENGTH-TO-SUIT STEEL STRAPPING (1 REQD), POSITION NEAR THE CENTER OF THE PALLET UNIT LENGTH. NOTE THAT THE STRAP PASSES UNDER THE STRINGERS AND BETWEEN TWO (2) SKIDS OF BOTH THE TOP AND BOTTOM PALLET UNITS.

VERTICAL UNITIZING STRAP, 1-1/4" X .035" BY A LENGTH-TO-SUIT STEEL STRAPPING (2 REQD), POSITION BETWEEN THE SKIDS OF THE PALLET AS SHOWN.



INDICATES A TYPICAL 1-LAYER PALLET UNIT.

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

INDICATES A FULL-HEIGHT PALLET UNIT.

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

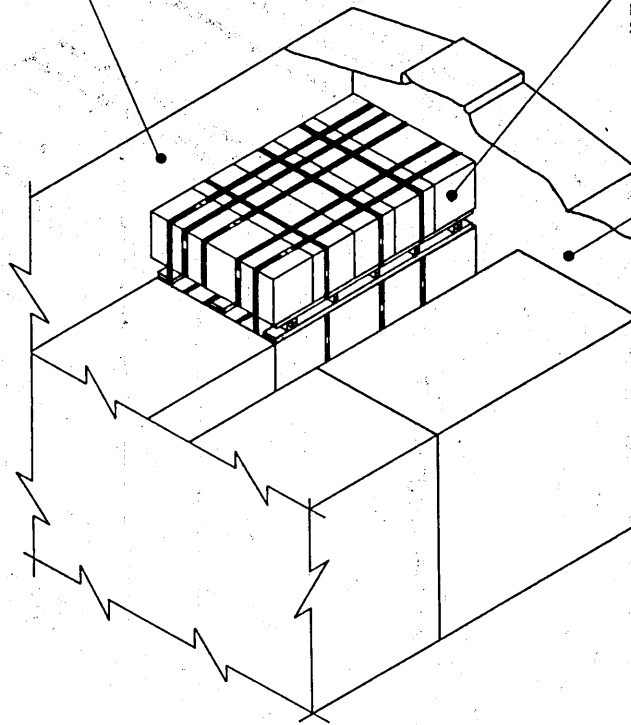
SPECIAL NOTES:

1. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT, OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE AND ON PAGES 32 AND 33 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
2. THE PARTIAL PALLET UNIT WILL BE STRAPPED TO THE PALLET UNIT DIRECTLY BELOW WITH TWO (2) VERTICAL UNITIZING STRAPS AND A FIGURE-8 UNITIZING STRAP, AS SHOWN ABOVE. PLACEMENT WITHIN THE LOAD IS OPTIONAL.
3. THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS AS WELL AS FOR LOADS IN CONVENTIONAL BOX CARS.
4. FOR SHIPMENT OF "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 34.

INDICATES SIDEWALL OF CAR.

INDICATES A LESS-THAN-FULL HEIGHT PALLET UNIT. SEE SPECIAL NOTE 1 BELOW.

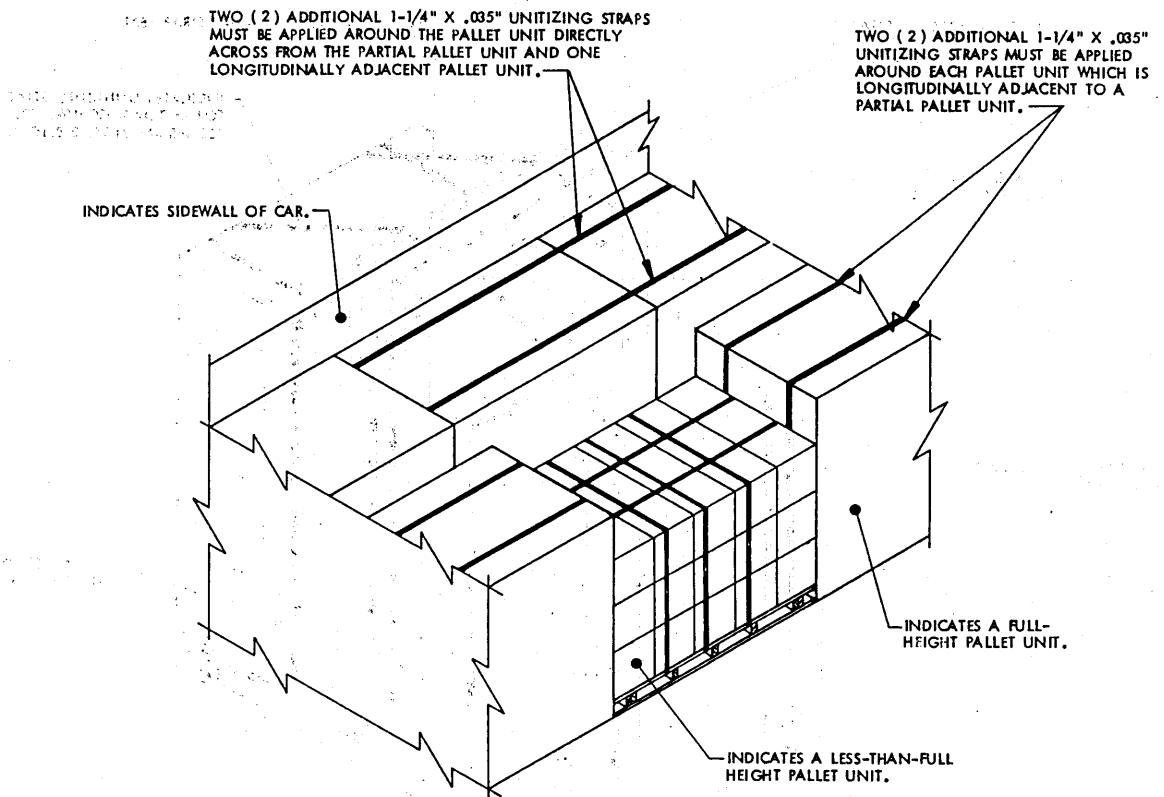
INDICATES END WALL OF CAR.



**POSITIONING OF A PARTIAL
PALLET UNIT WITHIN A LOAD**

SPECIAL NOTES:

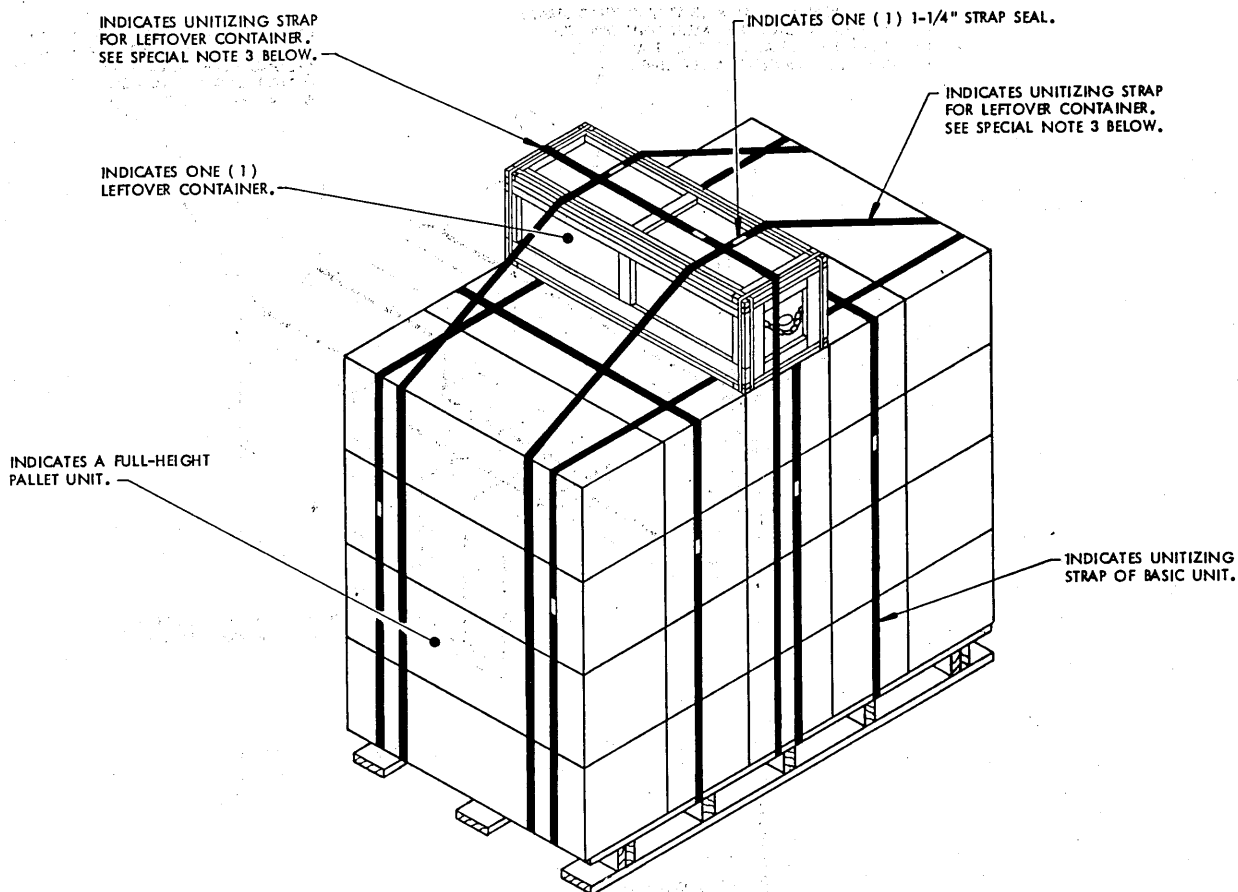
1. FOR SECUREMENT OF A PARTIAL PALLET UNIT ON TOP OF A FULL-HEIGHT PALLET UNIT, SEE PAGE 31.
2. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE AND ON PAGE 33 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF PARTIAL UNITS.
3. THE PROCEDURES SHOWN ON THIS PAGE ARE ONLY APPLICABLE TO PARTIAL PALLET UNITS CONSISTING OF ONE LAYER OF CONTAINERS. FOR SHIPMENT OF "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 34.
4. THE SHIPMENT OF A PARTIAL PALLET UNIT AS SHOWN ABOVE IS APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS AS WELL AS FOR LOADS IN CONVENTIONAL BOX CARS.
5. ALTHOUGH NOT SHOWN ABOVE, ANTI-SWAY BRACING WILL BE REQUIRED FOR LOAD UNITS WHICH INCLUDE A PARTIAL PALLET UNIT.



POSITIONING OF A PARTIAL PALLET UNIT WITHIN A LOAD

SPECIAL NOTES:

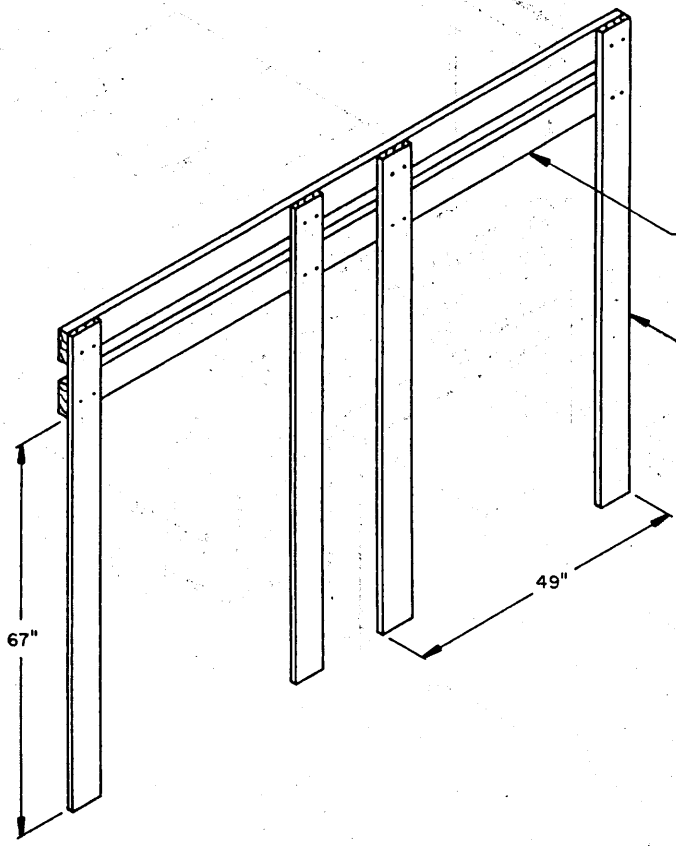
1. FOR SECUREMENT OF A PARTIAL PALLET UNIT ON TOP OF A FULL-HEIGHT PALLET UNIT, SEE PAGE 31.
2. SHIPMENT OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE. HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LESS-THAN-FULL UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE AND ON PAGE 32 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.
3. THE PROCEDURES SHOWN ON THIS PAGE ARE ONLY APPLICABLE TO PARTIAL PALLET UNITS CONSISTING OF THREE LAYERS OF CONTAINERS. FOR SHIPMENT OF "LEFTOVER" CONTAINERS, SEE THE PROCEDURES ON PAGE 34.
4. LEFTOVER CONTAINERS, IN AN AMOUNT WHICH IS NOT MORE THAN THE QUANTITY IN ONE LAYER OF A UNIT, CAN BE SECURED TO THE TOP OF A PARTIAL UNIT FOR PLACEMENT WITHIN A LOAD, WITH THESE LIMITATIONS:
 - A. LEFTOVER CONTAINERS ON TOP OF A PARTIAL UNIT ARE APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEAD-QUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE, AND PACK PLANTS TO DEPOTS. **CAUTION:** A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A PARTIAL UNIT, MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.
 - B. THE LEFTOVER CONTAINERS MUST BE SECURED TO THE PARTIAL UNIT WITH THEIR OWN STRAPPING, SEPARATE FROM THE STRAPS FOR THE PARTIAL UNIT. SEE THE DETAILS ON PAGE 34 FOR GUIDANCE IN STRAP APPLICATION.
5. THE PARTIAL UNIT SHOULD BE PLACED IN THE LOAD SO THAT THERE IS AT LEAST ONE (1) FULL-HEIGHT UNIT BETWEEN IT AND THE CENTER GATE.
6. THE "POSITIONING OF A PARTIAL PALLET UNIT WITHIN A LOAD" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD. HOWEVER, THE "SHIPMENT OF A PARTIAL PALLET UNIT" PROCEDURES ON THIS PAGE ARE ALSO APPLICABLE FOR LOADS IN CARS EQUIPPED WITH LOAD DIVIDER BULKHEADS.



SECUREMENT OF LEFTOVER CONTAINERS

SPECIAL NOTES:

1. SHIPMENTS OF PALLET UNITS SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTENT POSSIBLE, HOWEVER, THE END OF A LOT OR THE QUANTITY OF ITEMS NEEDED TO FILL A REQUISITION, MAY NECESSITATE THE SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS.
2. THE QUANTITY OF LEFTOVER CONTAINERS WHICH CAN BE SECURED TO A FULL-HEIGHT PALLET UNIT WILL NOT EXCEED FOUR. IF FIVE LEFTOVER CONTAINERS ARE TO BE SHIPPED, TWO CONTAINERS WILL BE SECURED TO THE TOP OF ONE PALLET UNIT AND THREE CONTAINERS WILL BE SECURED TO THE TOP OF A DIFFERENT PALLET UNIT.
3. LEFTOVER CONTAINERS MUST BE SECURED TO A FULL-HEIGHT PALLET UNIT LATERALLY WITH TWO (2) PIECES OF STEEL STRAPPING (SEPARATE FROM UNIT STRAPS) OF A SIZE AT LEAST AS HEAVY AS THE UNITIZING STRAPPING. THREAD A STRAP UNDER THE PALLET STRINGERS AND COMPLETELY ENCIRCLE THE PALLET UNIT AND THE LEFTOVER CONTAINERS AS SHOWN. TENSION, AND SEAL THE STRAP JOINT WITH ONE DOUBLE CRIMPED SEAL. ONE (1) PIECE OF STEEL STRAPPING OF A SIZE AT LEAST AS HEAVY AS THE UNITIZING STRAPPING MUST ENCIRCLE EACH LEFTOVER CONTAINER AND THE PALLET UNIT LONGITUDINALLY AS SHOWN ABOVE.
4. LEFTOVER CONTAINERS MAY ALSO BE SECURED ON TOP OF A PARTIAL PALLET UNIT.
5. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS RAILROAD SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOTS TO POSTS, CAMPS, AND STATIONS, OR UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM LOAD, ASSEMBLE AND PACK PLANTS TO DEPOTS. **CAUTION:** A LOAD CONTAINING LEFTOVER CONTAINERS IN AN AMOUNT WHICH IS LESS THAN A FULL LAYER, AND SECURED TO THE TOP OF A FULL OR PARTIAL UNIT MUST NOT BE DESTINED FOR SHIPMENT OVERSEAS BY WATER CARRIER.



HORIZONTAL PIECE, 2" X 6" BY
CAR WIDTH MINUS 1/2" (2 REQD.).

VERTICAL PIECE, 1" X 6" X 7'-0" (4 REQD.).
NAIL TO HORIZONTAL PIECES W/2-10d
NAILS AT EACH JOINT. CLINCH NAILS.

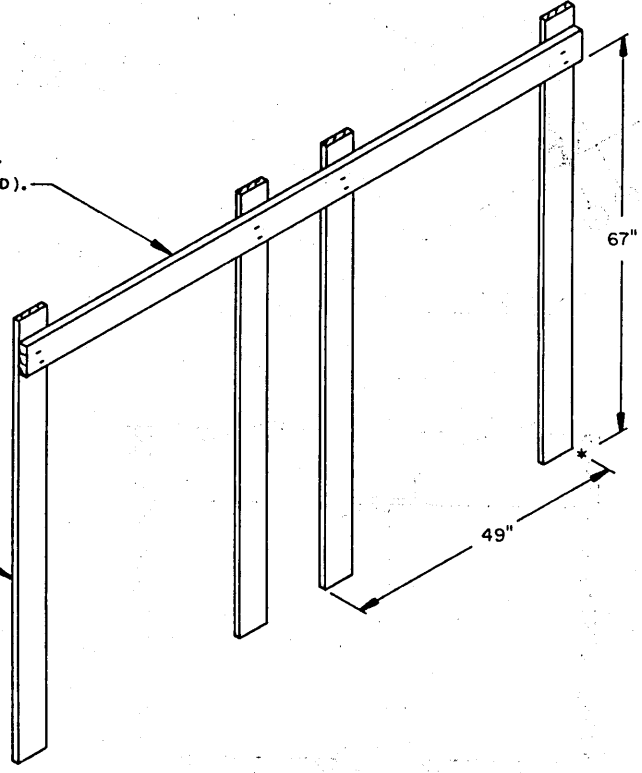
67"

49"

CENTER GATE D

HORIZONTAL PIECE, 2" X 6" BY
CAR WIDTH MINUS 1/2" (1 REQD.).

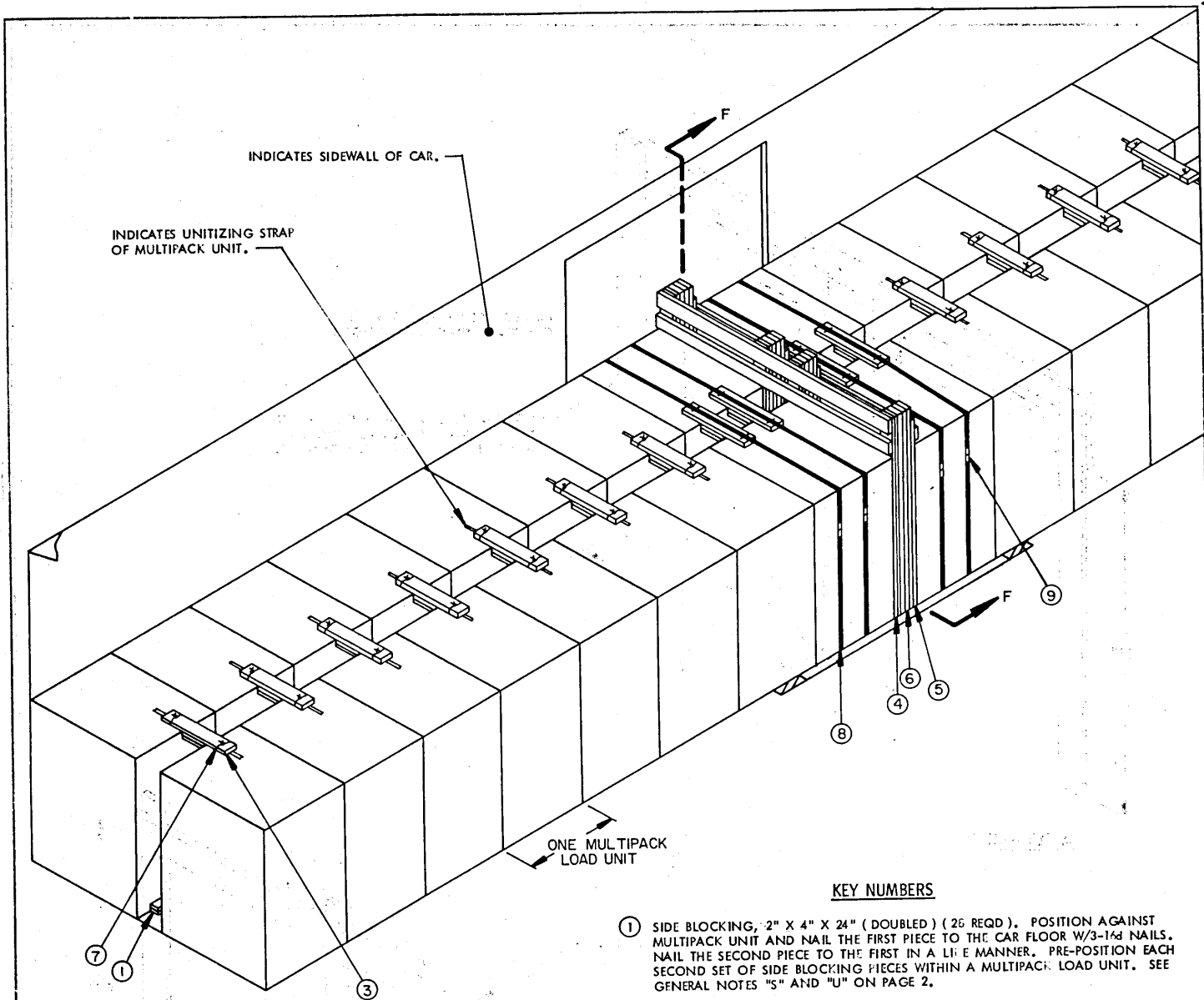
VERTICAL PIECE, 1" X 6" X 6'-4" (4 REQD.).
NAIL TO HORIZONTAL PIECE W/2-10d
NAILS. CLINCH NAILS.



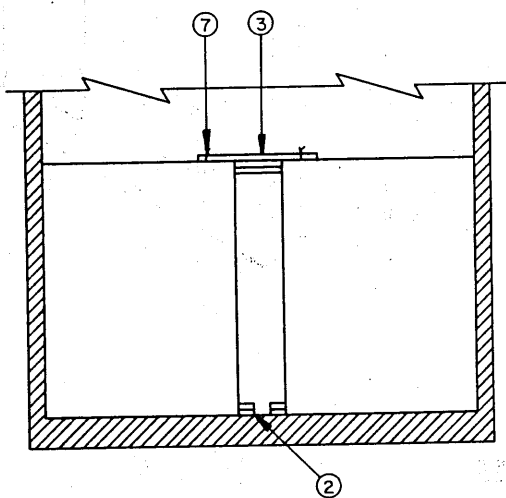
67"

49"

CENTER GATE E



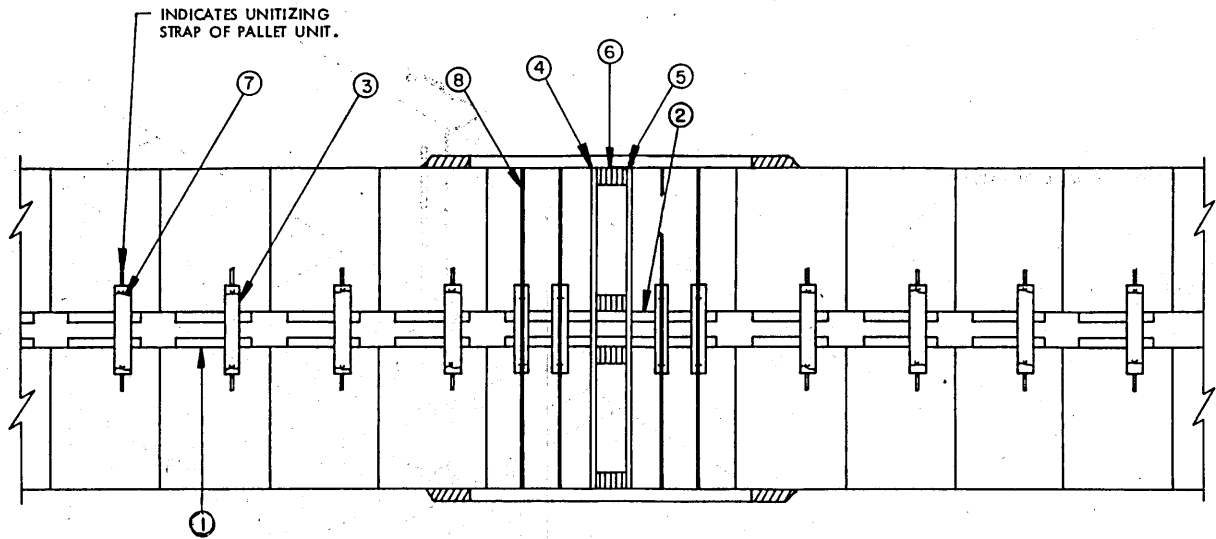
ISOMETRIC VIEW



SECTION F-F

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (26 REQD). POSITION AGAINST MULTIPACK UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② SIDE BLOCKING, 2" X 4" X 72" (DOUBLED) (2 REQD). POSITION AGAINST MULTIPACK UNITS ON EITHER SIDE OF CENTER GATES AND INTERIOR VERTICAL PIECES OF CENTER GATES. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ③ ANTI-SWAY BRACE (18 REQD). SEE THE DETAIL ON PAGE 18.
- ④ CENTER GATE (1 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 35. NOTE THAT THIS GATE IS CONSTRUCTED WITH TALLER VERTICAL PIECES TO PERMIT NAILING OF THE SOLID FILL, PIECES MARKED ⑥.
- ⑤ CENTER GATE (1 REQD). SEE THE "CENTER GATE E" DETAIL ON PAGE 35.
- ⑥ SOLID FILL, 6" WIDE X 7'-0" LONG MATERIAL BY THE THICKNESS REQUIRED TO FILL THE VOID BETWEEN THE VERTICAL PIECES OF THE CENTER GATES (REQUIRED AT 4 PLACES). DRIVE IN BETWEEN THE GATE VERTICALS TO INSURE A TIGHT FIT. NAIL TO THE TOP EXPOSED PART OF THE TALL GATE VERTICAL PIECE W/4 PROPERLY SIZED NAILS. NOTE: NAIL THE TOP EXPOSED PART OF EACH "CENTER GATE E" VERTICAL PIECE TO THE ADJACENT FINAL SOLID FILL PIECE W/2 PROPERLY SIZED NAILS.
- ⑦ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (28 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE MULTIPACK UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑧ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (4 REQD). INSTALL AS SHOWN TO ENIRCLE THE MULTIPACK LOAD UNITS WHICH PROTRUDE INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ③, W/2 STAPLES. SEE SPECIAL NOTE 4 ON PAGE 37.
- ⑨ SEAL FOR 1-1/4" STEEL STRAPPING (8 REQD, 2 PER STRAP). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



PARTIAL PLAN VIEW

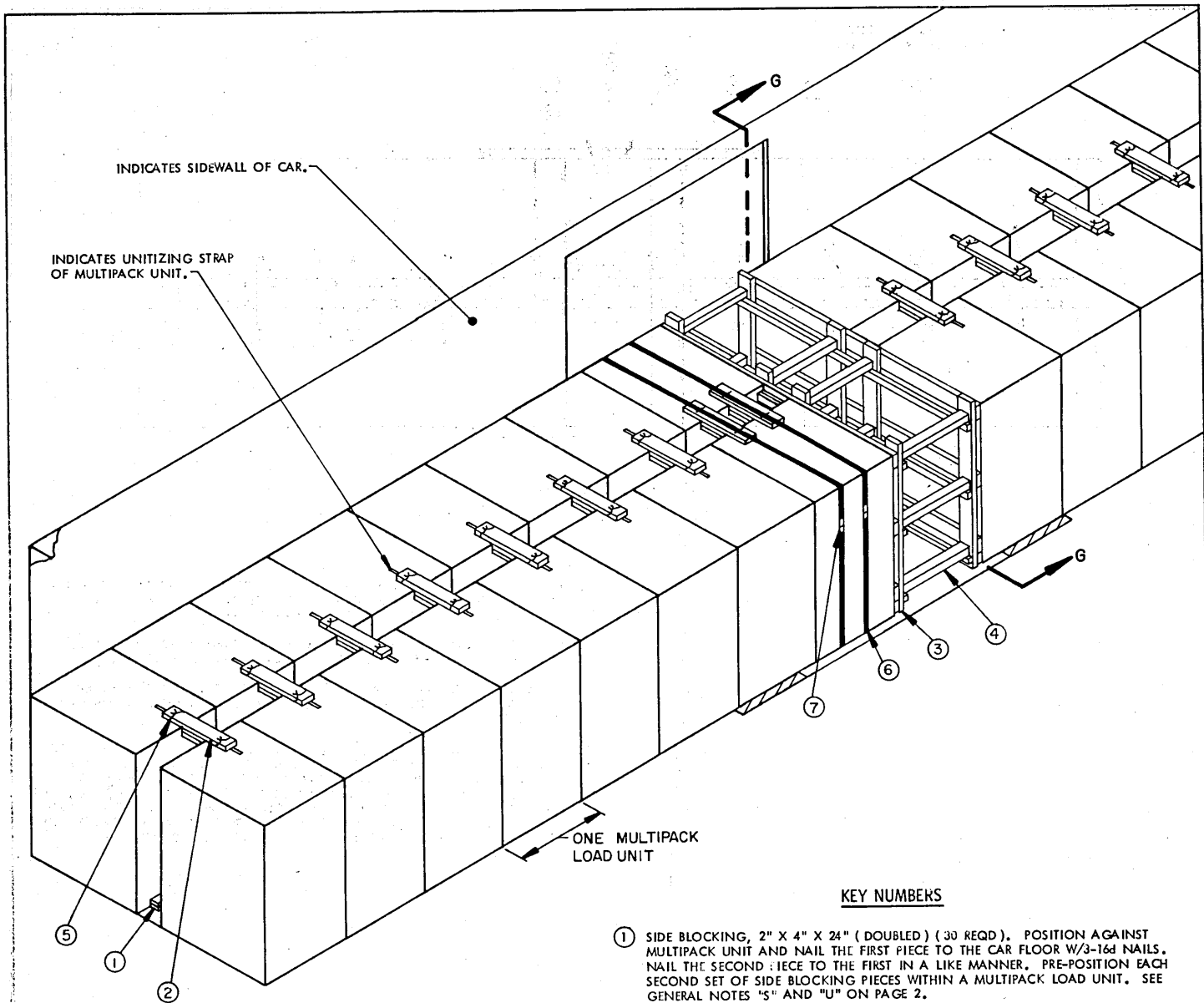
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS OF THE SLIDING OR PLUG TYPE IS SHOWN. WIDER OR NARROWER CARS MAY BE USED.
2. TO SATISFY A LESS THAN FULL LOAD QUANTITY OF MULTIPACK UNITS AS SHOWN TO BE SHIPPED, SEE THE PROCEDURES SPECIFIED ON PAGES 41 THRU 45.
3. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "J" ON PAGE 2 WILL BE OBSERVED.
4. TWO SETS OF PIECES MARKED ③, ④ AND ⑤ AS SHOWN ARE REQUIRED FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 30" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR. WHEN A LOAD UNIT EXTENDS FROM 18" TO 30" INTO THE DOORWAY AREA, ONLY ONE SET OF PIECES MARKED ③, ④ AND ⑤ WILL BE NECESSARY. DOORWAY PROTECTION STRAPPING IS NOT REQUIRED FOR UNITS EXTENDING LESS THAN 18" INTO THE DOORWAY AREA; HOWEVER, ONE SET OF PIECES MARKED ③ AND ⑦ MUST BE USED. SEE GENERAL NOTE "J" ON PAGE 2.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	53	27
2" X 4"	136	91
2" X 6"	272	272
NAILS	NO. REQD	POUNDS
6d (2")	24	1/4
10d (3")	248	3-3/4
16d (3-1/2")	204	4-1/2
STEEL STRAPPING, 1-1/4" X .035"	128' REQD	18 LBS
SEAL FOR 1-1/4" STRAPPING	8 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	8 REQD	NIL
NO. 14 GAGE WIRE	42' REQD	NIL

LOAD AS SHOWN

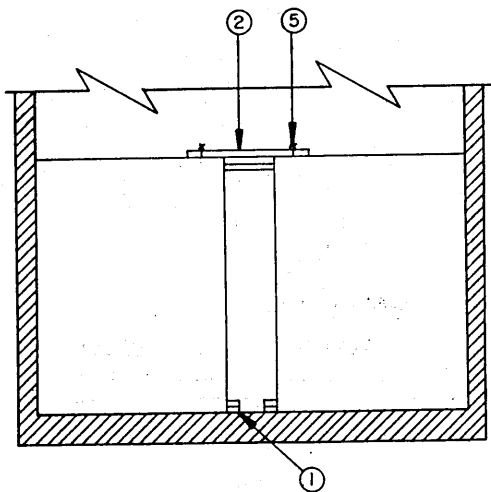
ITEM	QUANTITY	WEIGHT (APPROX)
MULTIPACK UNIT	32	21,056 LBS
DUNNAGE		807 LBS
TOTAL WEIGHT		21,863 LBS



ISOMETRIC VIEW

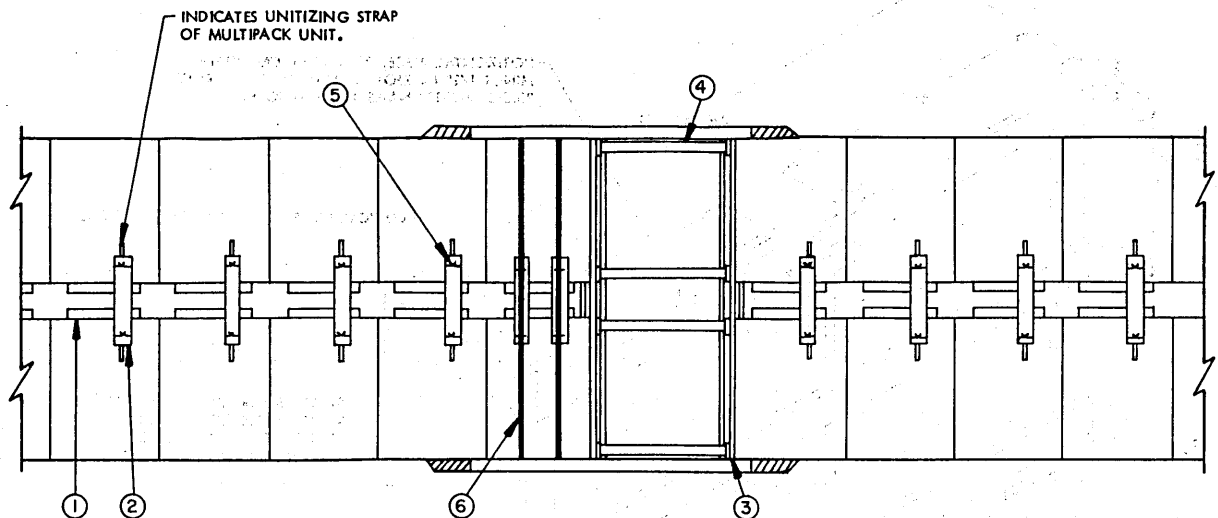
KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (30 REQD). POSITION AGAINST MULTIPACK UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (16 REQD). SEE THE DETAIL ON PAGE 18.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 40.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO THE CENTER GATES, PIECES MARKED ③, W/2-12d NAILS AT EACH END.
- ⑤ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (26 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE MULTIPACK UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑥ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCIRCLE THE MULTIPACK LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2-STAPLES. SEE SPECIAL NOTE 4 ON PAGE 39.
- ⑦ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



SECTION G-G

30-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CAR (CONVENTIONAL) (MULTIPACK)



PARTIAL PLAN VIEW

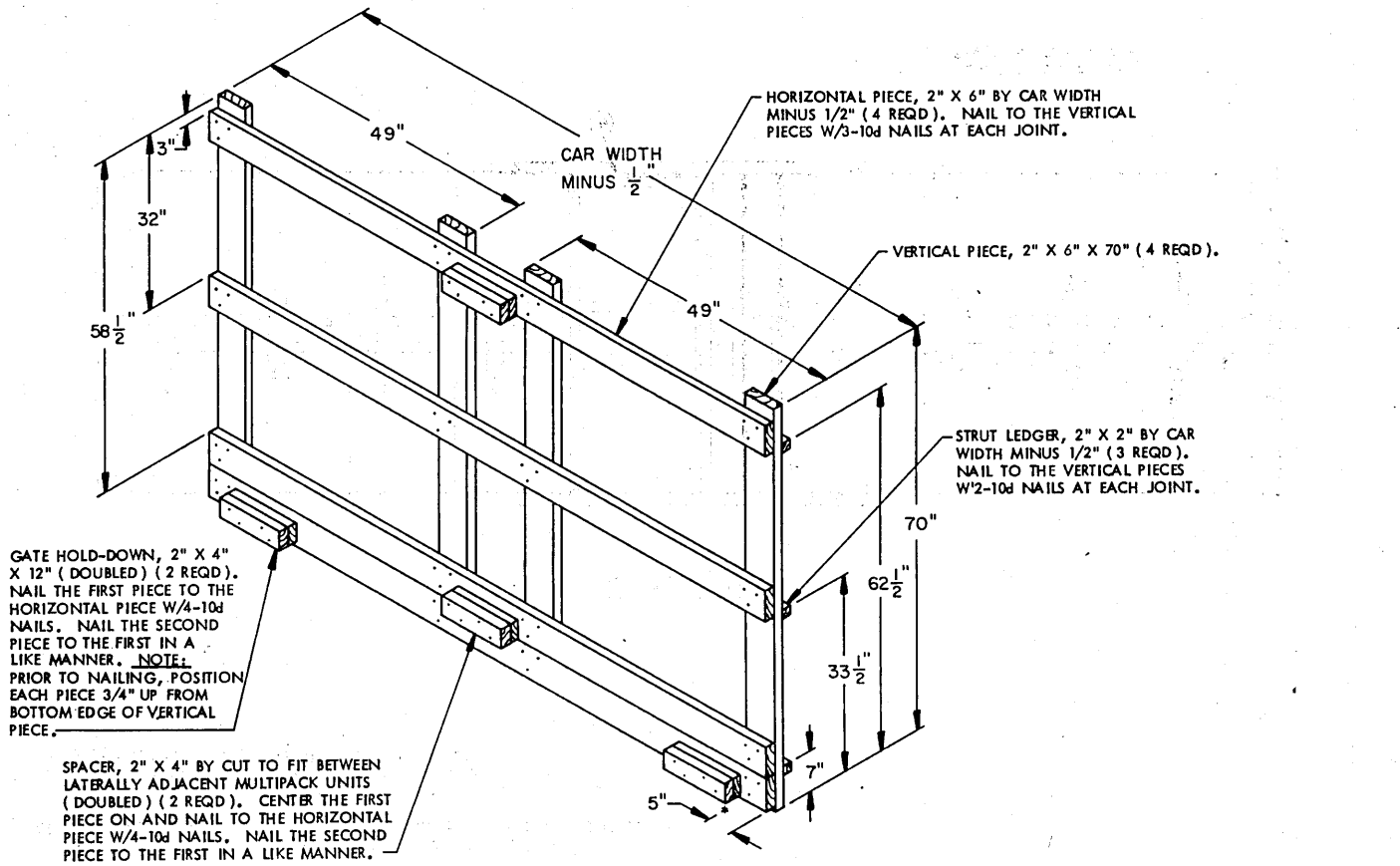
SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS OF THE SLIDING OR PLUG TYPE IS SHOWN. WIDER OR NARROWER CARS MAY BE USED.
2. TO SATISFY A LESS THAN FULL LOAD QUANTITY OF MULTIPACK UNITS AS SHOWN TO BE SHIPPED, SEE THE PROCEDURES SPECIFIED ON PAGES 41 THRU 45.
3. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "J" ON PAGE 2 WILL BE OBSERVED.
4. TWO SETS OF PIECES MARKED ②, ⑥ AND ⑦ AS SHOWN ARE REQUIRED FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 30" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR. WHEN A LOAD UNIT EXTENDS FROM 18" TO 30" INTO THE DOORWAY AREA, ONLY ONE SET OF PIECES MARKED ②, ④ AND ⑦ WILL BE NECESSARY. DOORWAY PROTECTION STRAPPING IS NOT REQUIRED FOR UNITS EXTENDING LESS THAN 18" INTO THE DOORWAY AREA; HOWEVER, ONE SET OF PIECES MARKED ② AND ⑤ MUST BE USED. SEE GENERAL NOTE "J" ON PAGE 2.

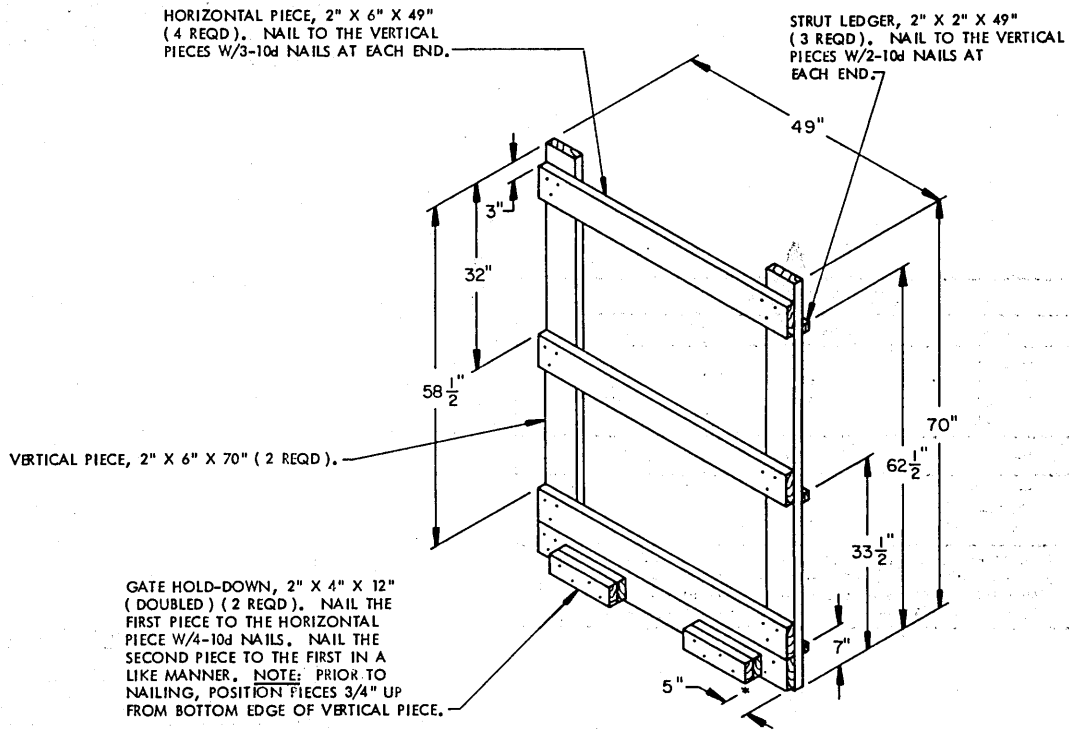
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	55	18
2" X 4"	136	91
2" X 6"	192	192
4" X 4"	41	55
NAILS	NO. REQD	POUNDS
10d (3")	336	5-1/4
12d (3-1/4")	48	3/4
16d (3-1/2")	180	4
STEEL STRAPPING, 1-1/4" X .035"	64' REQD	10 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	4 REQD	NIL
NO. 14 GAGE WIRE	42' REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MULTIPACK UNIT	30	19,740 LBS
DUNNAGE		732 LBS
TOTAL WEIGHT		20,472 LBS

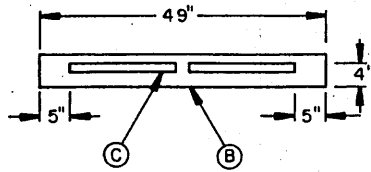


CENTER GATE F

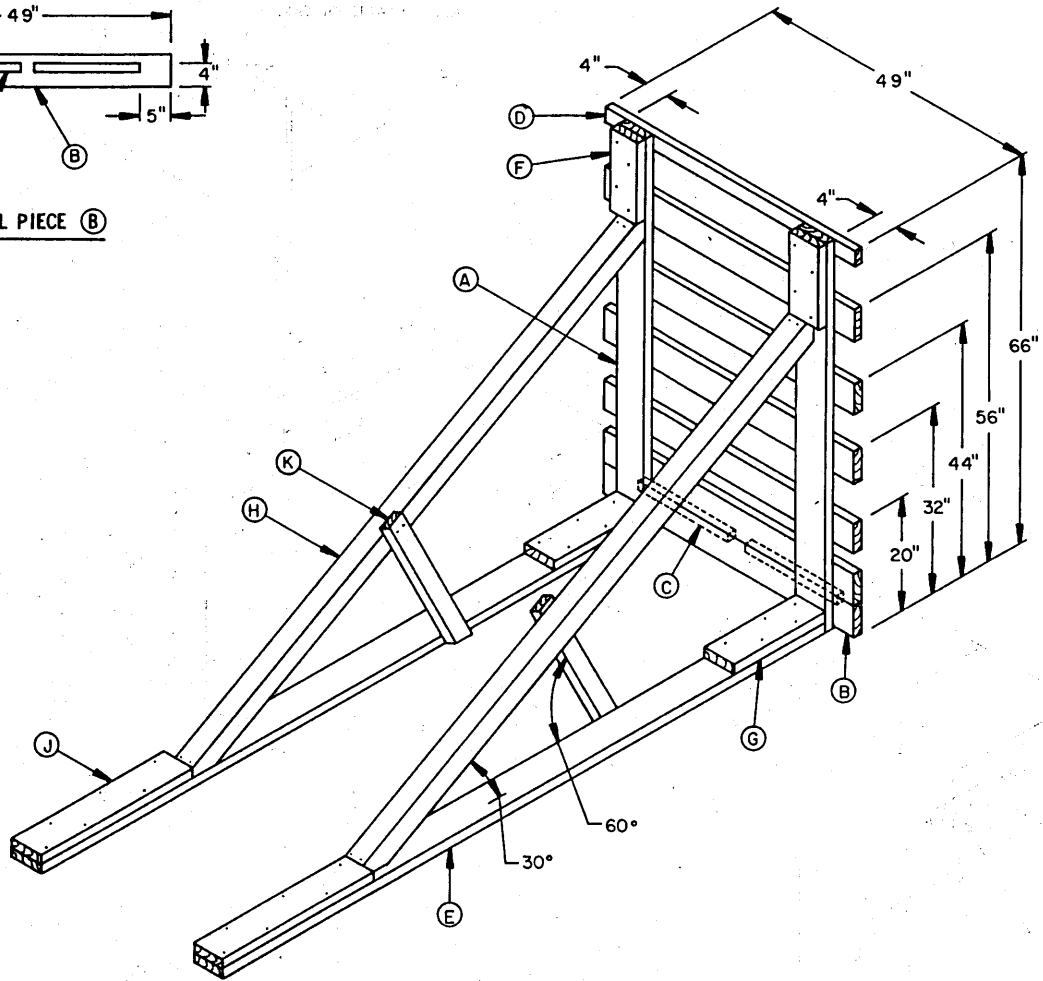


CENTER GATE G

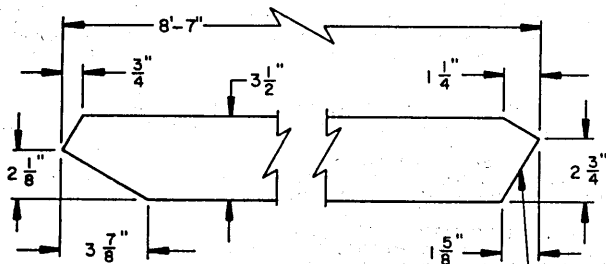
DETAILS



DETAIL PIECE (B)



KNEE BRACE ASSEMBLY



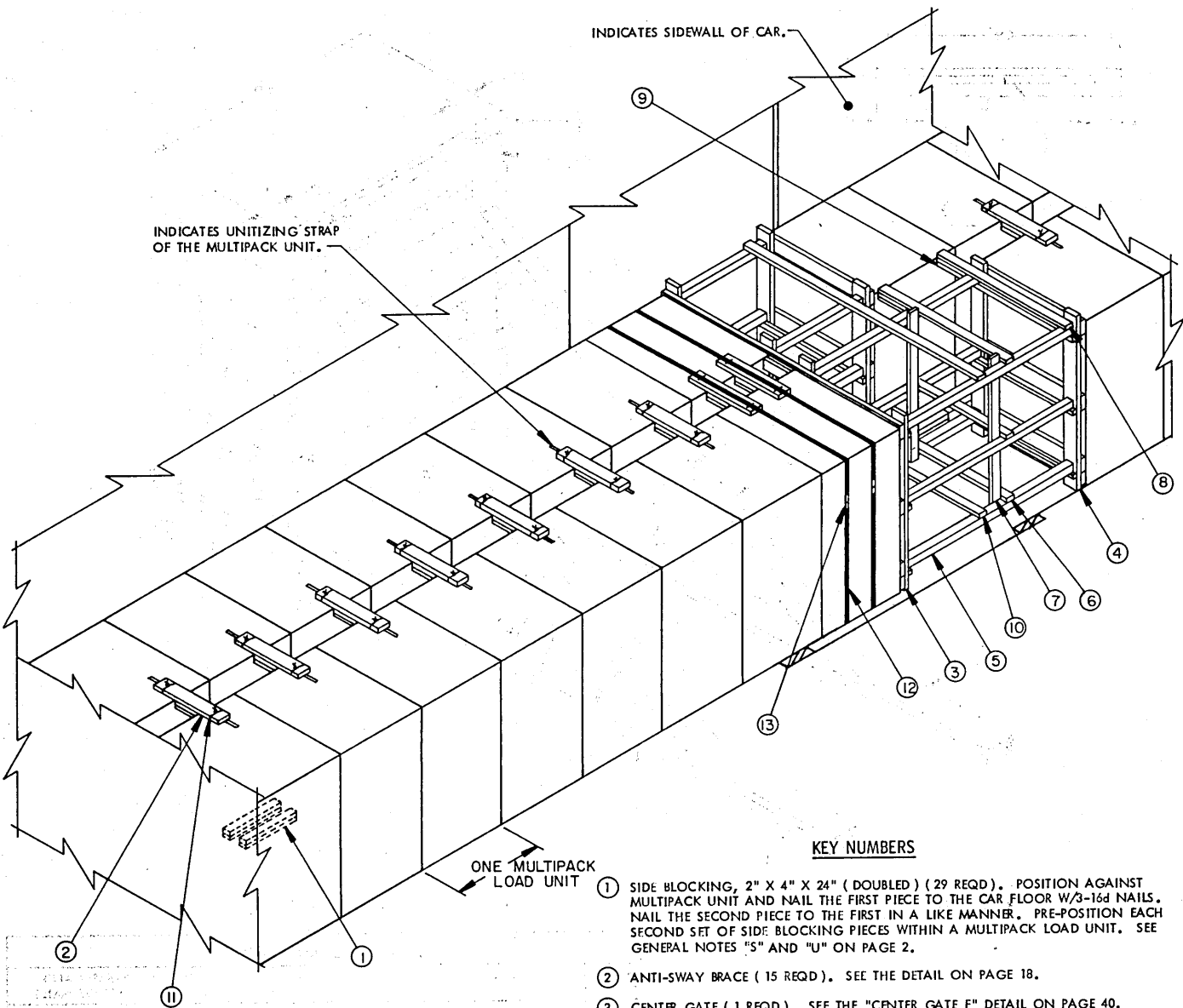
DETAIL PIECE (H)
4" X 4" MATERIAL

THIS BEARING SURFACE MUST BE IN CONTACT WITH THE VERTICAL PIECE MARKED (A) ABOVE.

LUMBER AND NAILING DATA

PC MK	LUMBER SIZE	NO. REQD	NAIL TO	NUMBER AND SIZE OF NAILS
(A)	2" X 6" X 66"	2		
(B)	2" X 6" X 49"	6	(A)	3-10d AT EACH JOINT
(C)	2" X 2" X 18" SEE "PIECE MARKED (B)" DETAIL	2	(B)	3-10d
(D)	2" X 4" X 49"	1	(A)	3-10d AT EACH JOINT
(E)	2" X 6" X 9'-11"	2	CAR FLOOR	1-16d EVERY 8"
(F)	2" X 6" X 14"	2	(A)	4-10d
(G)	2" X 6" X 18"	2	(A)	TOENAIL W/2-12d
(H)	4" X 4" X 8'-7" SEE BRACE DETAIL	2	(A) AND (E)	4-40d
(J)	2" X 6" X 30"	2	(E)	2-16d AT EACH END
(K)	2" X 4" BY LENGTH TO SUIT BEVEL ONE END WITH 60° CUT	2	(H) AND (E)	6-40d
				2-12d AT EACH END

DETAILS



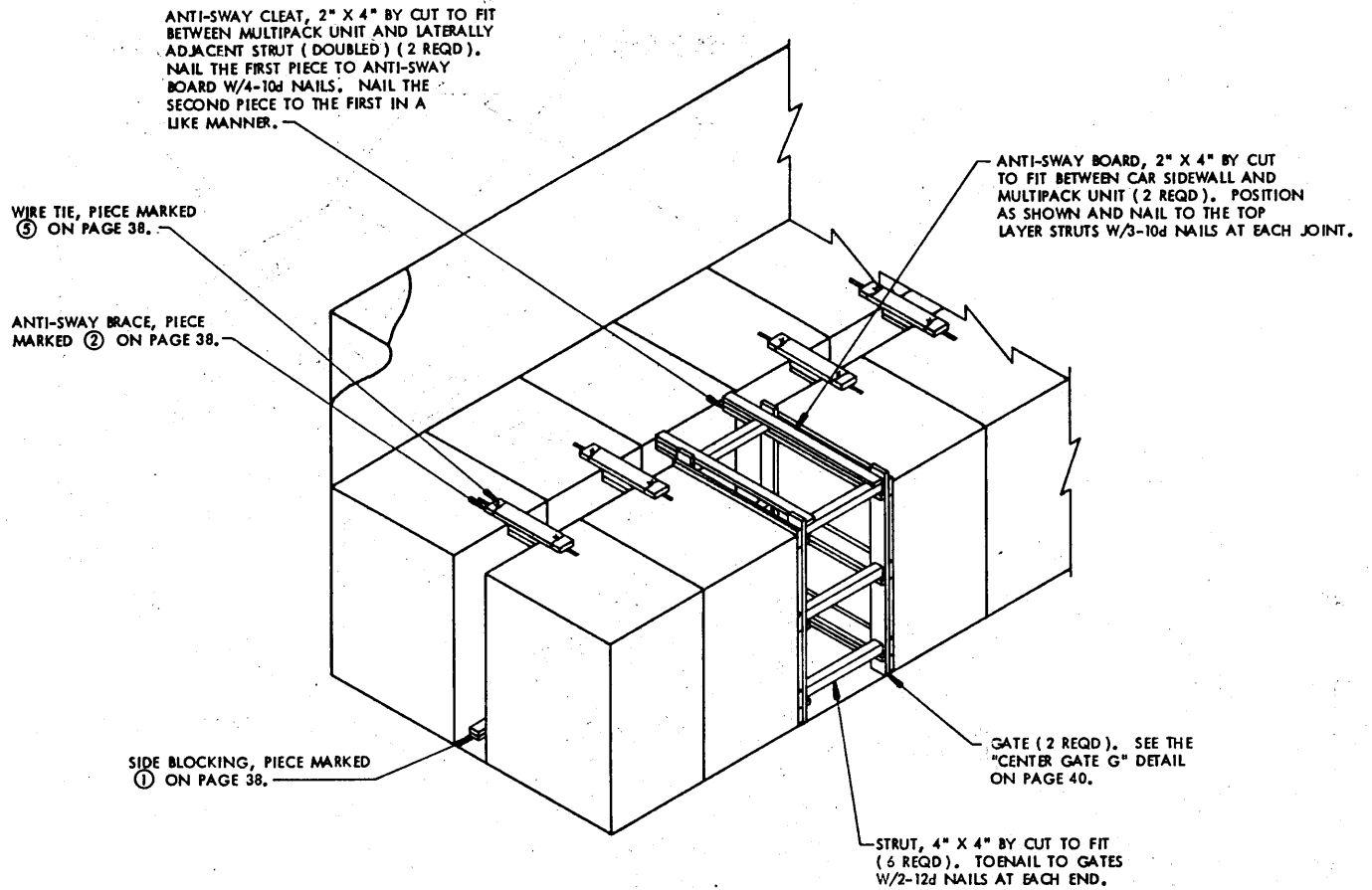
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE PROCEDURES SPECIFY REQUIREMENTS FOR OMITTING A MULTIPACK UNIT FROM THE LOAD DEPICTED ON PAGES 38 AND 39. HOWEVER, A MULTIPACK UNIT MUST NOT BE OMITTED FROM A LOAD UNIT WHICH EXTENDS MORE THAN 18" INTO THE DOORWAY AREA, ON EITHER SIDE OF THE CAR, AS WILL BE THE CASE IN SOME CARS WHICH ARE EQUIPPED WITH STAGGERED DOOR OPENINGS. PROCEDURES SPECIFIED ON PAGE 43 SHOULD BE USED FOR CARS HAVING STAGGERED DOOR OPENINGS.
2. IF DESIRED, IN LIEU OF PROCEDURES DEPICTED IN THE ISOMETRIC VIEW ABOVE, THE PROCEDURES SHOWN ON PAGE 43 MAY BE USED FOR AN OMITTED MULTIPACK UNIT.
3. IF TWO MULTIPACK UNITS (ONE MULTIPACK LOAD UNIT) ARE TO BE OMITTED FROM A LOAD, THE PROCEDURES SPECIFIED ON PAGES 38 AND 39 WILL APPLY, EXCEPT THAT "STRUT BRACING" WILL ALSO BE REQUIRED AS SHOWN IN THE "STRUT BRACING" DETAIL ON PAGE 18.

KEY NUMBERS

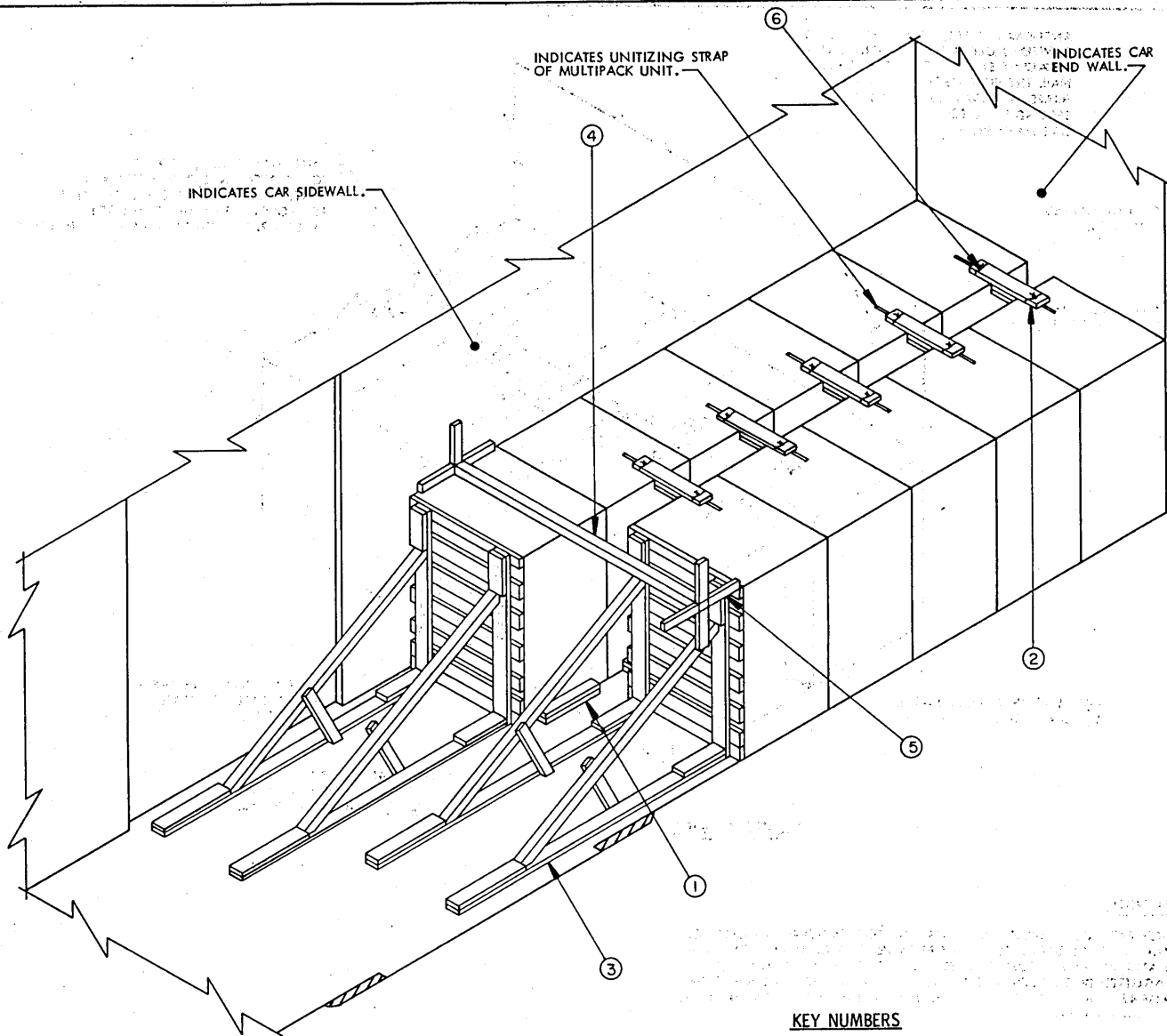
- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (29 REQD). POSITION AGAINST MULTIPACK UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (15 REQD). SEE THE DETAIL ON PAGE 18.
- ③ CENTER GATE (1 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 40.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 40.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO CENTER GATES MARKED ③ AND ④ W/2-12d NAILS AT EACH END.
- ⑥ LATERAL STRUT BRACING, 2" X 4" X 49" (2 REQD). NAIL TO STRUTS W/3-10d NAILS AT EACH END. SEE THE "STRUT BRACING" DETAIL ON PAGE 18.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 70" (2 REQD). NAIL TO STRUTS W/3-10d NAIL AT EACH JOINT.
- ⑧ ANTI-SWAY BOARD, 2" X 4" BY CUT TO FIT BETWEEN CAR SIDEWALL AND MULTIPACK UNIT (2 REQD). POSITION AS SHOWN AND NAIL TO TOP LAYER STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑨ ANTI-SWAY CLEAT, 2" X 4" BY CUT TO FIT BETWEEN MULTIPACK UNIT AND LATERALLY ADJACENT STRUT (DOUBLED) (2 REQD). NAIL FIRST PIECE TO ANTI-SWAY BOARD MARKED ⑧ W/4-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑩ LATERAL TIE PIECE, 2" X 4" BY CAR WIDTH MINUS 1/2" IN LENGTH (2 REQD). NAIL TO TOP AND/OR BOTTOM LAYER OF STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑪ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (26 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE MULTIPACK UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.
- ⑫ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENIRCLE THE MULTIPACK LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2-STAPLES. SEE SPECIAL NOTE 4 ON PAGE 39 FOR GUIDANCE IN DETERMINING QUANTITY OF STRAPS REQUIRED.
- ⑬ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.



ISOMETRIC VIEW

SPECIAL NOTE:

1. THESE PROCEDURES SPECIFY REQUIREMENTS FOR OMITTING A MULTIPACK UNIT FROM THE LOADS DEPICTED ON PAGES 36 AND 37 AND ON PAGES 38 AND 39, AND SHOULD BE USED WHEN CARS ARE EQUIPPED WITH STAGGERED DOOR OPENINGS IN LIEU OF THE PROCEDURES SHOWN ON PAGE 42. THE OMITTED MULTIPACK UNIT WILL NOT BE LOCATED AT THE END WALL OF THE CAR.



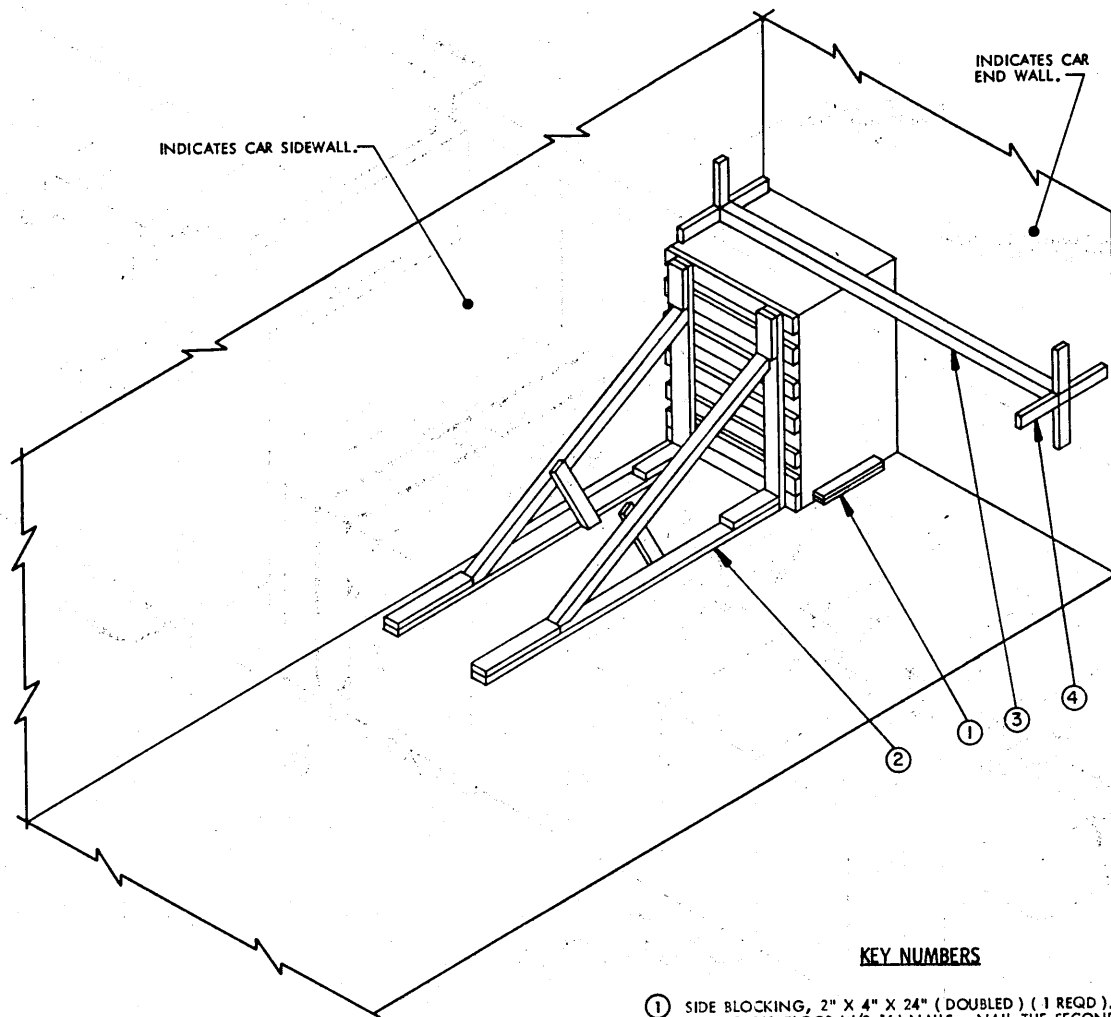
ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (11 REQD). POSITION AGAINST MULTIPACK UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (5 REQD). SEE THE DETAIL ON PAGE 18.
- ③ KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 41. NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE SPECIAL NOTES 2 AND 3 AT LEFT.
- ④ HOLD-DOWN, 4" X 4" BY CAR WIDTH (1 REQD). SEE SPECIAL NOTE 2 AT LEFT.
- ⑤ POCKET CLEAT, 2" X 4" X 15" (7 REQD). NAIL TO THE CAR SIDEWALL W/5-10d NAILS.
- ⑥ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (10 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE MULTIPACK UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.

SPECIAL NOTES:

1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF KNEE-BRACE ASSEMBLIES IN A BOX CAR EQUIPPED WITH WOOD OR NAILABLE METAL FLOORS.
2. IF A MULTIPACK UNIT EXTENDS MORE THAN 18" INTO THE DOORWAY AREA, A PIECE OF DOOR SPANNING DUNNAGE OF 2" X 6" MATERIAL WILL BE POSITIONED ACROSS THE DOOR OPENING APPROXIMATELY 36" ABOVE THE CAR FLOOR AND NAILED TO THE CAR SIDEWALL W/5-12d NAILS AT EACH END. THIS DUNNAGE MUST BE OF A LENGTH TO ALLOW IT TO SPAN THE DOOR OPENING AND EXTEND 12" PAST THE EDGE OF THE DOOR OPENING, OR, IF THE DISTANCE BETWEEN IT AND THE MULTIPACK UNIT ADJACENT TO THE MULTIPACK UNIT PARTIALLY IN THE DOORWAY AREA IS LESS THAN 3", EXTEND SLIGHTLY PAST THE MIDPOINT OF THE ADJACENT MULTIPACK UNIT. SEE GENERAL NOTE "J" ON PAGE 2. ALSO, 2" X 6" BY A LENGTH TO SUIT DOOR SPANNER PIECES MUST BE PROVIDED, AS REQUIRED, FOR NAILING POCKET CLEATS MARKED ⑤ AND TO PROVIDE A FULL BEARING SURFACE FOR THE ENDS OF HOLD-DOWN PIECE MARKED ④ WHEN LOCATED IN A DOORWAY AREA. THESE PIECES WILL EXTEND AT LEAST 12" PAST THE EDGE OF THE DOOR OPENING AND BE NAILED TO THE CAR SIDEWALL W/5-12d NAILS AT EACH END. IF NECESSARY, THOSE PIECES MARKED ⑤ WHICH ARE SHOWN IN A VERTICAL POSITION IN THE ISOMETRIC VIEW MAY BE INSTALLED HORIZONTALLY.
3. TWO (2) KNEE BRACE ASSEMBLIES AS SHOWN ARE ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD.



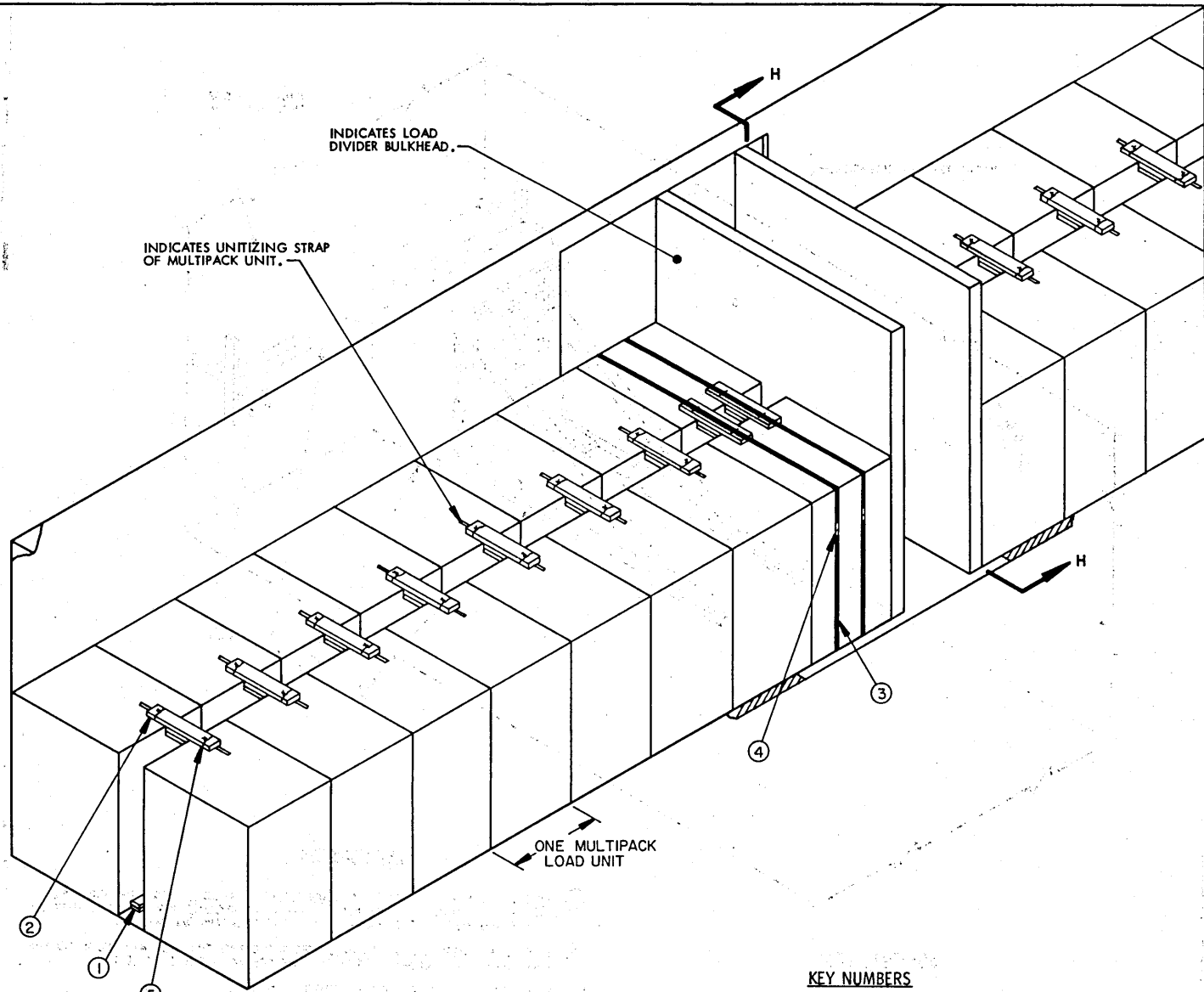
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF A KNEE-BRACE ASSEMBLY IN A BOX CAR EQUIPPED WITH WOOD OR NAILABLE METAL FLOORS.
2. ONE KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING NOT MORE THAN 8,500 POUNDS OF LADING.

KEY NUMBERS

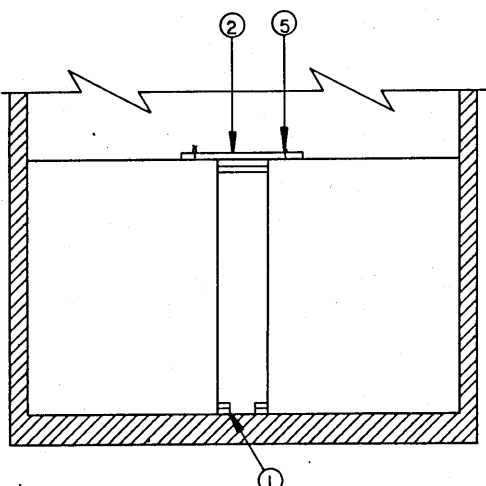
- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② KNEE BRACE ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 41. NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE SPECIAL NOTE 2 AT LEFT.
- ③ HOLD-DOWN, 4" X 4" BY CAR WIDTH (1 REQD).
- ④ POCKET CLEAT, 2" X 4" X 15" (7 REQD). NAIL TO THE CAR SIDEWALL W/5-10d NAILS.



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE BLOCKING, 2" X 4" X 24" (DOUBLED) (30 REQD). POSITION AGAINST MULTIPACK UNIT AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. PRE-POSITION EACH SECOND SET OF SIDE BLOCKING PIECES WITHIN A MULTIPACK LOAD UNIT. SEE GENERAL NOTES "S" AND "U" ON PAGE 2.
- ② ANTI-SWAY BRACE (16 REQD). SEE THE DETAIL ON PAGE 18.
- ③ DOORWAY PROTECTION STRAP, 1-1/4" X .035" X 32'-0" LONG STEEL STRAPPING (2 REQD). INSTALL AS SHOWN TO ENCLOSE THE MULTIPACK LOAD UNIT WHICH PROTRUDES INTO THE DOORWAY AREA. STAPLE TO ANTI-SWAY BRACE, PIECE MARKED ②, W/2 STAPLES. SEE SPECIAL NOTE 3 ON PAGE 47.
- ④ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD). POSITION AS SHOWN. DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "X" ON PAGE 3.
- ⑤ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (28 REQD). INSTALL WIRE UNDER THE UNITIZING STRAP OF THE MULTIPACK UNIT AND OVER THE SUPPORT PIECE OF THE ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT.



SECTION H-H

SPECIAL NOTES:

1. A 30-UNIT LOAD IS SHOWN IN A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) BOX CAR HAVING 8'-0" WIDE THROUGH DOORS OF THE CONVENTIONAL SLIDING AND/OR PLUG TYPE. WIDER OR NARROWER CARS CAN BE USED. SEE GENERAL NOTE "L" ON PAGE 2.
2. TO SATISFY A SHIPMENT OF AN UNEVEN QUANTITY OF MULTIPACK UNITS, THE "PROCEDURES FOR OMITTED MULTIPACK UNIT" AS SPECIFIED ON PAGE 43 WILL APPLY.
3. TWO SETS OF PIECES MARKED ②, ③ AND ④ AS SHOWN ARE REQUIRED FOR EACH LOAD UNIT WHICH EXTENDS MORE THAN 30" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR. WHEN A MULTIPACK LOAD UNIT EXTENDS FROM 18" TO 30" INTO THE DOORWAY AREA, ONLY ONE SET OF PIECES MARKED ②, ③ AND ④ WILL BE NECESSARY. DOORWAY PROTECTION STRAPPING IS NOT REQUIRED FOR UNITS EXTENDING LESS THAN 18" INTO THE DOORWAY AREA; HOWEVER, ONE SET OF PIECES MARKED ② AND ⑤ MUST BE USED. SEE GENERAL NOTE "J" ON PAGE 2.
4. THE DEPICTED PROCEDURES ALSO APPLY TO THE SHIPMENT OF A 24-UNIT LOAD IN A 40'-6" LONG BOX CAR.

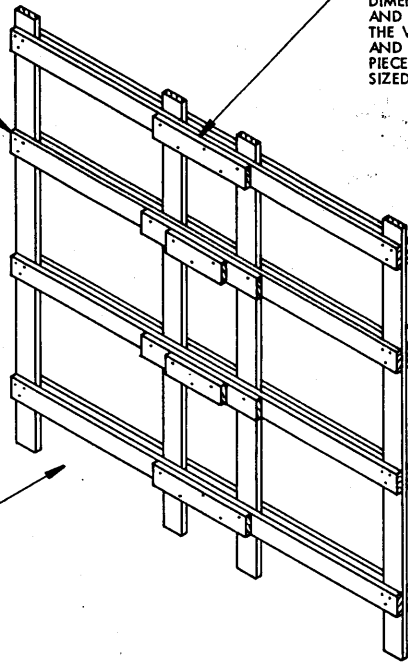
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	120	80
2" X 6"	72	72
NAILS	NO. REQD	POUNDS
10d (3")	128	2
16d (3-1/2")	180	4
STEEL STRAPPING, 1-1/4" X .035" -----	64' REQD -----	9 LBS
SEAL FOR 1-1/4" STRAPPING -----	4 REQD -----	NIL
STAPLE FOR 1-1/4" STRAPPING -----	4 REQD -----	NIL
NO. 14 GAGE WIRE -----	42' REQD -----	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MULTIPACK UNIT -----	30 -----	19,740 LBS
DINNAGE -----		391 LBS
TOTAL WEIGHT -----		20,131 LBS

FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH. ALIGN WITH THE GATE HORIZONTAL PIECES. NAIL TO THE VERTICAL PIECES OF THE BULKHEAD W/3-10d NAILS AT EACH JOINT.

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



A MODIFIED "CENTER GATE A". SEE THE "CENTER GATE A" DETAIL ON PAGE 14.

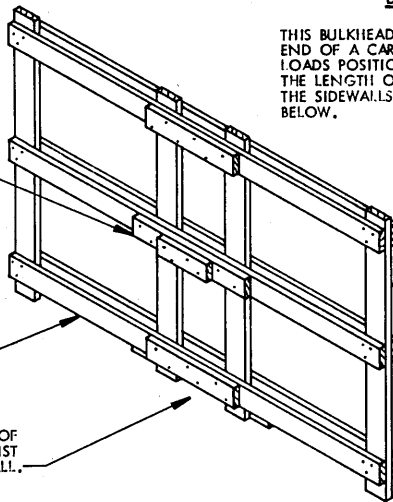
LOAD SIDE OF BULKHEAD.

PLACE THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

BULKHEAD A

THIS BULKHEAD IS APPLICABLE FOR USE AT THE END OF A CAR FOR UNPALLETIZED CONTAINER LOADS POSITIONED WITH EITHER THE WIDTH OR THE LENGTH OF THE CONTAINERS PARALLEL TO THE SIDEWALLS OF THE CAR. SEE SPECIAL NOTE 2 BELOW.

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



A MODIFIED "CENTER GATE B". SEE THE "CENTER GATE B" DETAIL ON PAGE 27.

LOAD SIDE OF BULKHEAD.

FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH. ALIGN WITH THE GATE HORIZONTAL PIECES. NAIL TO THE VERTICAL PIECES OF THE BULKHEAD W/3-10d NAILS AT EACH JOINT.

PLACE THIS SIDE OF BULKHEAD AGAINST THE CAR END WALL.

BULKHEAD B

SEE SPECIAL NOTE 3 BELOW.

SPECIAL NOTES:

1. IF A BOX CAR TO BE LOADED HAS BOWED END WALLS WHICH ARE BOWED OUTWARD MORE THAN TWO INCHES (2"), EITHER FROM SIDE-TO-SIDE OR FROM FLOOR-TO-ROOF, AN END-OF-CAR BULKHEAD MUST BE INSTALLED TO PROVIDE A "SQUARED OFF" SURFACE FOR THE LOAD AT THE END OF THE CAR. THE BULKHEAD IS APPLICABLE FOR USE AT THE END OF A LOAD IN A CONVENTIONAL BOX CAR OR IN A CAR EQUIPPED WITH LOAD DIVIDER BULKHEADS.
2. IF THE END WALL OF A CAR MUST BE "SQUARED OFF" FOR A LOAD OF UNPALLETIZED CONTAINERS WHICH ARE TO BE POSITIONED WITH THE WIDTH OR LENGTH OF THE CONTAINERS PARALLEL TO THE SIDEWALLS OF THE CAR AS SHOWN ON PAGE 4 THRU 19, THE PROCEDURES DEPICTED BY THE "BULKHEAD A" DETAIL ABOVE WILL BE APPLIED. THE BULKHEAD CONSISTS OF A "CENTER GATE A" WHICH IS USED FOR BLOCKING AND BRACING A COMPLETED LOAD, MODIFIED FOR USE AT THE END OF THE CAR BY OMITTING THE STRUT LEDGERS AND ADDING FILLER PIECES AND SHIM MATERIAL AS SHOWN. SEE THE "CENTER GATE A" DETAILS ON PAGE 14.

(SPECIAL NOTES CONTINUED)

3. THE "BULKHEAD B" DETAIL IS TYPICAL AND DEPICTS AN END WALL BULKHEAD TO BE USED WITH A LOAD OF PALLET UNITS IN A BOX CAR WITH A BOWED END WALL. THE "BULKHEAD B" DETAIL WILL BE APPLIED TO LOADS OF PALLET UNITS AS DEPICTED IN THE PROCEDURES ON PAGES 20 THRU 34. IT WILL CONSIST OF A "CENTER GATE B", WHICH IS USED FOR BLOCKING AND BRACING A COMPLETED LOAD, MODIFIED FOR USE AT THE END OF A CAR BY OMITTING THE STRUT LEDGERS AND ADDING FILLER PIECES AND SHIM MATERIAL AS SHOWN. THE END WALL BULKHEAD TO BE USED WITH A LOAD OF MULTIPACK UNITS IN A BOX CAR WITH A BOWED END WALL WILL CONSIST OF A "CENTER GATE F", WHICH IS USED FOR BLOCKING AND BRACING A COMPLETED LOAD OF MULTIPACK UNITS, MODIFIED AS DIRECTED ABOVE. SEE THE "CENTER GATE B" DETAIL ON PAGE 27 AND THE "CENTER GATE F" DETAIL ON PAGE 40.

(CONTINUED AT RIGHT)