

APPROVED BY

BUREAU OF EXPLOSIVES

*A. F. Braconick*  
 DATE *1/8/71*

# LOADING AND BRACING (CL & LCL) IN BOX CARS <sup>⊙</sup> OF CBU\* ITEMS PACKED IN SKIDDED WOOD CONTAINERS

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\* RELOAD KITS FOR CBU 42/A MUNITIONS.

<sup>⊙</sup> INCLUDES PROCEDURES FOR CONVENTIONAL BOX CARS AND BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES OF VARIOUS DESIGN AND MANUFACTURE.

DESIGNED BY <i>W. J. ...</i>	PROJECT ENG. <i>MND/...</i>	AREA PROJ OFF <i>CH.</i>	SUBMITTED
CHECKED BY <i>TR/S/...</i>	DATE <i>...</i>	BY <i>...</i>	<i>M R Dickson</i> COMMANDEER OFFICER, SAVANNAH ARMY DEPOT
REVISIONS			EXAMINED AND APPROVED <i>Paul ...</i> AMMUNITION PROCUREMENT & SUPPLY AGENCY
			APPROVED BY CHIEF OF ENGINEERING GENERAL U. S. ARMY MATERIEL COMMAND <i>S. W. ...</i>
			U. S. ARMY MATERIEL COMMAND MARCH 25 1971
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DO NOT SCALE

## GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE RELOAD KITS FOR CBU 42/A MUNITIONS, WHEN THEY ARE PACKAGED IN THE SMALL OR LARGE SKIDDED WOOD CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER MEANS THE SKIDDED WOOD CONTAINER WITH CONTENTS.
- C. FOR DETAILS OF THE SMALL CONTAINER, SEE DRAWING NO. 9248145.  
CONTAINER DIMENSIONS -- 43-1/8" LONG BY 39" WIDE BY 26-3/4" HIGH.  
GROSS WEIGHT ----- 950 POUNDS (APPROX).
- D. FOR DETAILS OF THE LARGE CONTAINER, SEE DRAWING NO. 9248143.  
CONTAINER DIMENSIONS -- 43-1/4" LONG BY 43-1/2" WIDE BY 28-3/4" HIGH.  
GROSS WEIGHT ----- 950 POUNDS (APPROX).
- E. THE LOADS AS SHOWN ARE BASED ON CONVENTIONAL BOX CARS, OR ARE BASED ON BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES HAVING ADJUSTABLE AND/OR FIXED WALL MEMBERS. **NOTE:** ALL-METAL CARS CAN BE USED FOR THE LOADS DELINEATED ON PAGES 4 THROUGH 8, EXCEPT THAT THE CARS USED FOR THE LOAD ON PAGE 8 MUST HAVE NAILABLE FLOORS. ALL-METAL CARS CANNOT BE USED FOR LOADS REQUIRING A K-BRACE TYPE OF PARTIAL LAYER BLOCKING AS DEPICTED ON PAGE 9.
- F. THE OUTLOADING PROCEDURES SPECIFIED ON PAGES 4 THROUGH 9 ARE FOR CONVENTIONAL TYPE BOX CARS WHICH ARE 9'-2" WIDE AND OF VARIOUS LENGTHS. WIDER OR NARROWER CARS CAN BE USED.
- G. THE LOADS AS SHOWN ON PAGES 4 THROUGH 7 ARE BASED ON CARS WHICH HAVE 6'-0" WIDE THROUGH DOORS OF THE CONVENTIONAL SLIDING TYPE. CARS EQUIPPED WITH WIDER OR STAGGERED DOORS CAN BE USED. THE "DOORWAY AREA" WITHIN A CAR IS DEFINED AS THE CARGO SPACE WHICH IS ADJACENT TO A CONVENTIONAL TYPE AND/OR A PLUG TYPE DOOR. THE LENGTH OF THE DOORWAY AREA CAN BE AS MUCH AS 24 FEET IN SOME CARS THAT ARE EQUIPPED WITH STAGGERED DOORS.
- H. THE DEPICTED OUTLOADING PROCEDURES ARE ALSO APPLICABLE TO CARS WHICH ARE EQUIPPED WITH PLUG DOORS. HOWEVER, "DOORWAY PROTECTION", AS SPECIFIED IN THE "PROVISIONS FOR PLUG DOORS" PROCEDURES DEPICTED ON PAGE 13, MUST BE USED IN THE "DOORWAY AREA" OF THE CAR. **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 DOORWAY SPANNER DUNNAGE. ALSO, AFTER THE PLUG DOORS 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.
- J. THE OUTLOADING PROCEDURES SPECIFIED ON PAGES 10 THROUGH 12 ARE FOR 9'-0" WIDE BOX CARS OF VARIOUS LENGTHS WHICH ARE EQUIPPED WITH MECHANICAL BRACING DEVICES. WIDER OR NARROWER CARS CAN BE USED. THE PROCEDURES SHOWN MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES. HOWEVER, FIXED OR ADJUSTABLE WALL MEMBERS AND DOORWAY MEMBERS WITHIN THESE CARS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. **CAUTION:** BOX CARS WHICH ARE EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
1. A CROSS MEMBER WILL NOT BE RELIED UPON TO RETAIN MORE LADING WEIGHT ON EITHER SIDE THAN AS SHOWN FOR THE SPECIFIC OUTLOADING METHOD BEING USED. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM, AND CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE SPACING OF THE LOCKING HOLES IN THE WALL MEMBERS PERMITS. LOCKING BARS (LEVER JACKS) SHOULD BE USED FOR THIS PURPOSE. AN ADDITIONAL 1/2" OF ADJUSTMENT CAN BE MADE BY TURNING A CROSS MEMBER END-FOR-END WHEN LOCKING PINS ON THE CROSS MEMBER ARE OFF-CENTER. **NOTE:** IT IS RECOMMENDED THAT EACH CROSS MEMBER BE INSTALLED AS NEARLY AS POSSIBLE IN MATED POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CAR).

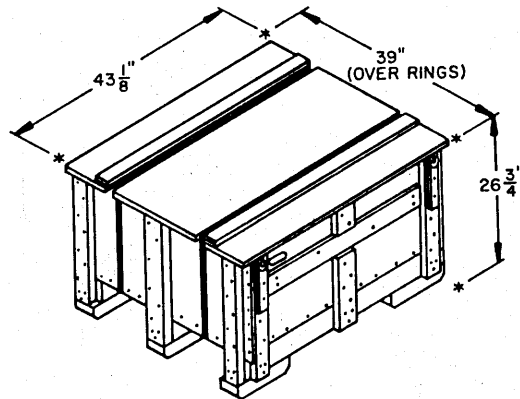
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## MATERIAL SPECIFICATIONS

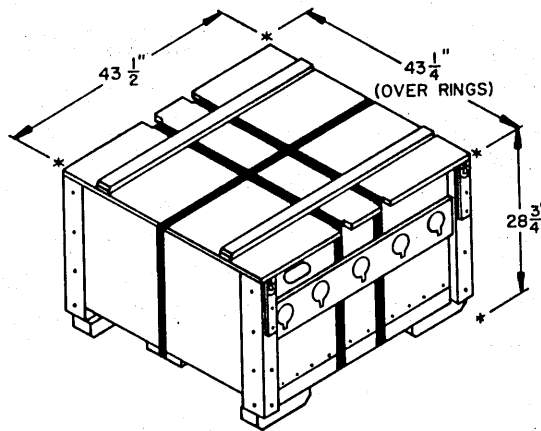
- LUMBER** ----- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS** ----- : COMMON, CEMENT COATED OR CHEMICALLY ETCHED, FED SPEC FF-N-105.  
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- STRAPPING, STEEL** - : TYPE I OR IV, CLASS A, B OR C; FED SPEC QQ-S-781.
- STRAP SEAL** ----- : COMMERCIAL GRADE.

## (GENERAL NOTES CONTINUED)

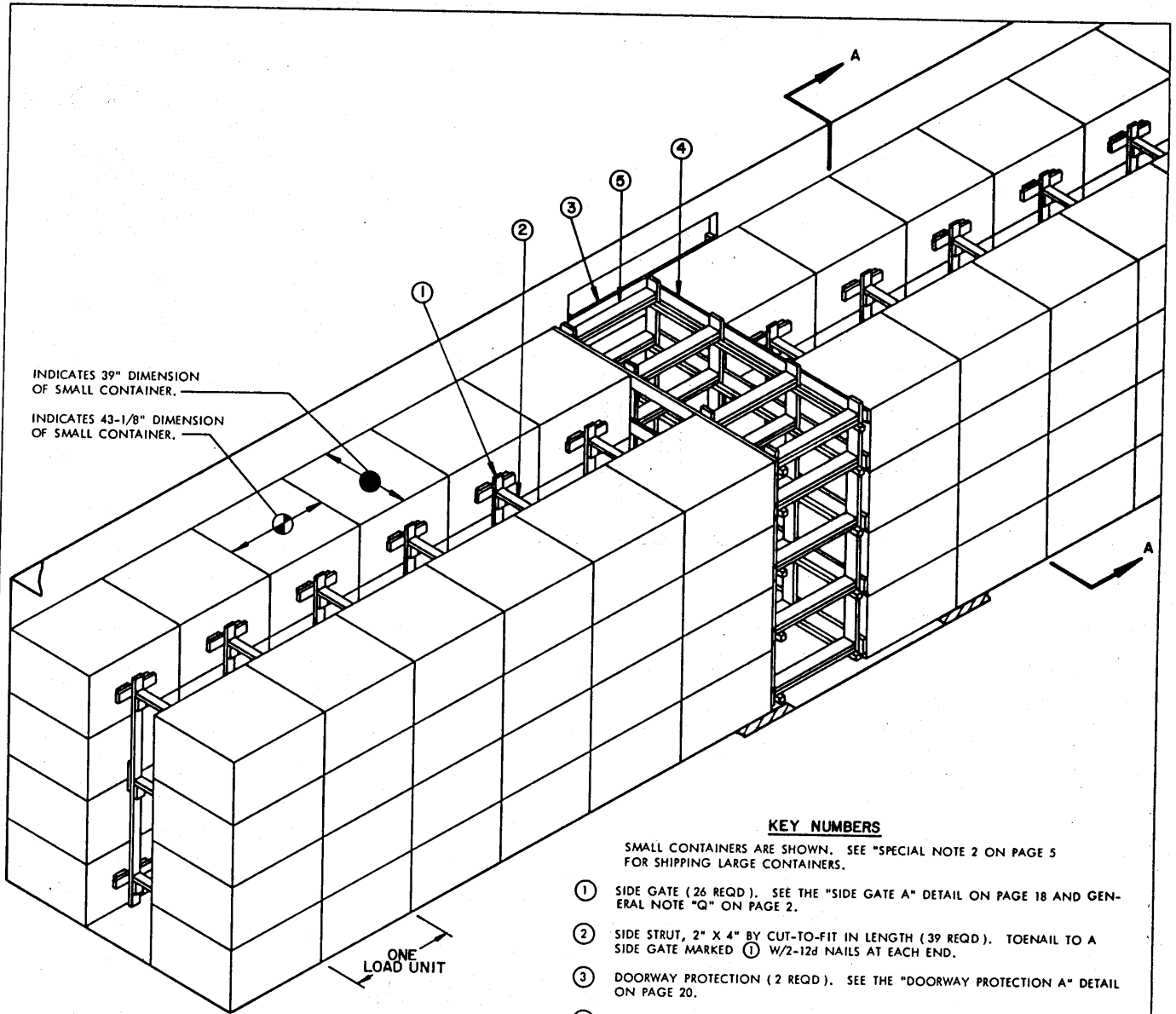
2. **CAUTION:** ALL BLOCKING AND BRACING COMPONENTS IN EMPTY CARS AND ALL UNUSED COMPONENTS IN LOADED CARS MUST BE "SECURED" FOR SHIPMENT ---- ADJUSTABLE WALL MEMBERS TO VERTICAL WALL ATTACHMENT RAILS, AND CROSS MEMBERS TO ADJUSTABLE WALL MEMBERS OR TO FIXED HORIZONTAL WALL MEMBERS OR TO DOORWAY MEMBERS, AND DOORWAY MEMBERS TO DOOR POSTS. COMPONENTS ASSIGNED TO EACH CAR MUST REMAIN THERE WITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
3. IF A CAR HAS A "BOWED END", RATHER THAN SQUARING OFF THE END BY INSTALLING DUNNAGE, ADDITIONAL CROSS MEMBERS CAN BE INSTALLED NEAR THE END OF THE CAR TO PROVIDE A "SQUARED" END. THESE CROSS MEMBERS SHOULD BE INSTALLED IN THE SAME QUANTITY AND AT THE SAME HEIGHTS AS CROSS MEMBERS USED THROUGHOUT THE LOAD AS LOAD BLOCKING MEMBERS.
- K. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE BOX CAR BEING LOADED OR THE QUANTITY OF ITEMS TO BE SHIPPED, AND COMBINATIONS OF THE OUTLOADING PROCEDURES SPECIFIED FOR THE VARIOUS LOADS SHOWN MAY BE USED AS REQUIRED. HOWEVER, THE APPROVED METHODS SPECIFIED FOR FULL OR PARTIAL CARLOADS MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING AND STAYING OF THE DESIGNATED ITEMS.
- L. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN BOX CARS WHICH ARE PARTIALLY LOADED WITH THE RELOAD KITS, 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 IN THIS DRAWING.
- M. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE EMPTY, OR ARE LOADED WITH EMPTY CANISTERS, OR ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEMS DESIGNATED WITHIN THE DRAWING TITLE. HOWEVER, THESE PROCEDURES DO NOT APPLY TO ITEMS REQUIRING IN-TRANSIT MONITORING.
- N. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT AS SHOWN, 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 THE CONTAINER.
- O. 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 SIDE WALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED FOR THE NAILING OF THE APPLICABLE DUNNAGE PIECES. IF A NAIL SIZE IS NOT SPECIFIED, 30d NAILS SHOULD BE USED.
- P. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-5/8" THICK BY 3-5/8" WIDE.
- Q. **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 A SIDE WALL OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. 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.
- R. THROUGHOUT THIS PROCEDURAL DRAWING, PORTIONS OF THE BLOCKING COMPONENTS AND OF THE DEPICTED CARS, SUCH AS A CAR SIDE WALL, HAVE BEEN OMITTED FROM THE LOAD VIEWS FOR CLARITY PURPOSES.
- S. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "DETAILS OF CONTAINERS" ON PAGE 3 AND TO THE "SPECIAL NOTES" SECTION WHICH IS IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.



SMALL CONTAINER DETAIL



LARGE CONTAINER DETAIL



INDICATES 39" DIMENSION OF SMALL CONTAINER.

INDICATES 43-1/8" DIMENSION OF SMALL CONTAINER.

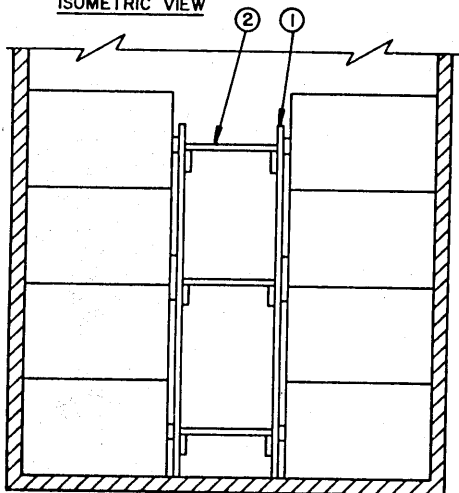
ONE LOAD UNIT

**KEY NUMBERS**

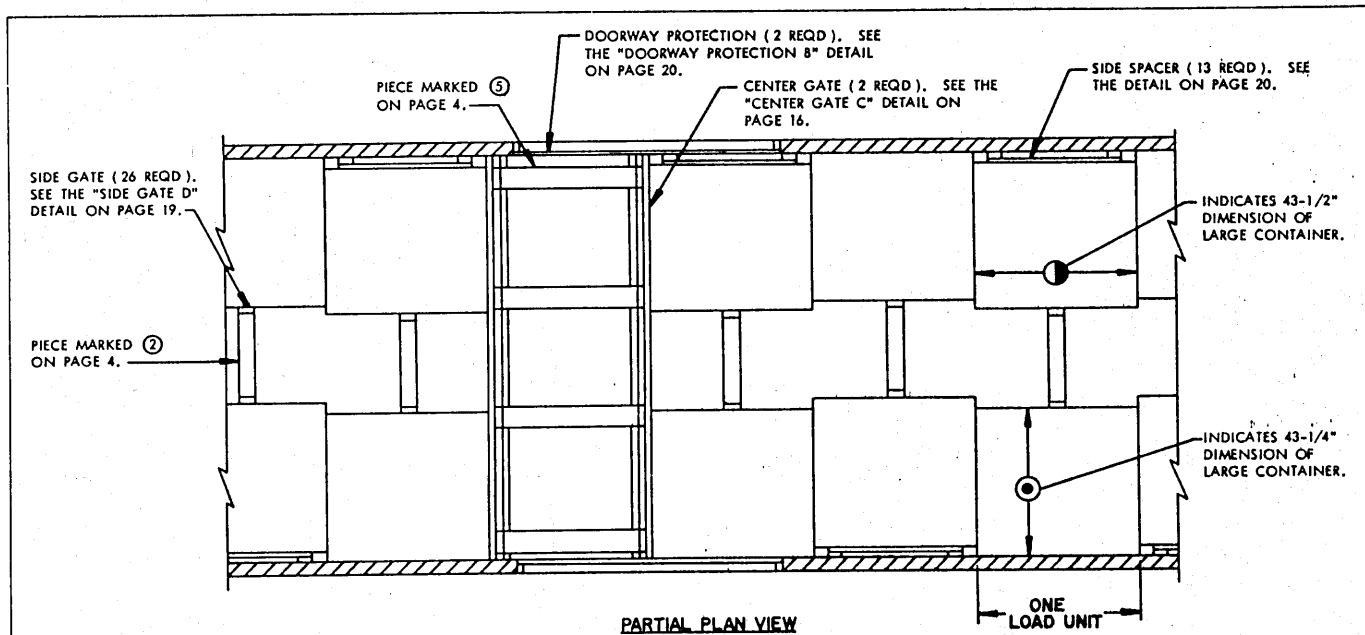
SMALL CONTAINERS ARE SHOWN. SEE "SPECIAL NOTE 2 ON PAGE 5 FOR SHIPPING LARGE CONTAINERS.

- ① SIDE GATE (26 REQD). SEE THE "SIDE GATE A" DETAIL ON PAGE 18 AND GENERAL NOTE "Q" ON PAGE 2.
- ② SIDE STRUT, 2" X 4" BY CUT-TO-FIT IN LENGTH (39 REQD). TOENAIL TO A SIDE GATE MARKED ① W/2-12d NAILS AT EACH END.
- ③ DOORWAY PROTECTION (2 REQD). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 15.
- ⑤ CENTER STRUT, 2" X 6" BY CUT-TO-FIT IN LENGTH (DOUBLED) (20 REQD). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TO A CENTER GATE MARKED ④ W/2-12d NAILS AT EACH END. FOR STRUTS 48" OR LONGER, SEE THE "STRUT BRACING DETAIL" ON PAGE 14 FOR SPECIAL REQUIREMENTS.

**ISOMETRIC VIEW**



**SECTION A-A**



**PARTIAL PLAN VIEW**

THIS PARTIAL PLAN VIEW DEPICTS AN OFFSET LOADING PATTERN TO BE USED WHEN SHIPPING THE LARGE CONTAINERS. NOTE THE ALTERNATE POSITIONING OF THE "SIDE SPACER" ASSEMBLIES.

**SPECIAL NOTES:**

1. THE ISOMETRIC VIEW SHOWS A LOAD OF SMALL CONTAINERS IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR WHICH IS EQUIPPED WITH 6'-0" WIDE DOOR OPENINGS OF A MINIMUM HEIGHT OF 8'-10". WIDER OR NARROWER CARS AND CARS WITH WIDER AND/OR STAGGERED DOORS MAY BE USED. ALSO, ALL-METAL CARS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THE PROCEDURES DEPICTED IN THE ISOMETRIC VIEW ARE ALSO APPLICABLE FOR SHIPPING THE SAME QUANTITY OF LARGE CONTAINERS, EXCEPT THAT THE CAR BEING USED MUST HAVE DOOR OPENINGS WHICH ARE NOT LESS THAN 9'-6" HIGH. ALSO, THE FOLLOWING ADJUSTMENTS MUST BE MADE FOR PROPER BLOCKING AND BRACING OF THE LARGE CONTAINERS:
  - A. AN OFFSET LOADING PATTERN WILL BE USED WITH A "SIDE SPACER" ASSEMBLY PROVIDED ON ALTERNATE SIDES OF THE LOAD, AS SHOWN IN THE "PARTIAL PLAN VIEW" ABOVE. SEE THE "SIDE SPACER" ASSEMBLY DETAIL ON PAGE 20.
  - B. IN LIEU OF PIECE MARKED ①, USE THE "SIDE GATE D" ASSEMBLY AS DETAILED ON PAGE 19.
  - C. IN LIEU OF PIECE MARKED ③, USE THE "DOORWAY PROTECTION B" ASSEMBLY AS DETAILED ON PAGE 20.
  - D. IN LIEU OF PIECE MARKED ④, USE THE "CENTER GATE C" ASSEMBLY AS DETAILED ON PAGE 16.
3. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CONTAINERS THAN SHOWN TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LOAD UNIT OR LAYER, A "FILLER ASSEMBLY" AS DETAILED ON PAGE 21 MUST BE SUBSTITUTED IN THE PLACE EACH OMITTED CONTAINER. CONTAINERS MAY BE OMITTED AT ANY

(SPECIAL NOTES CONTINUED)

4. WHEN SHIPPING LOADS WHICH ARE LESS THAN 4-LAYERS IN HEIGHT, IT WILL BE NECESSARY TO ADJUST THE HEIGHT OF THE CENTER GATES ACCORDINGLY. NOTE THAT ONLY ONE LAYER OF CENTER STRUTS CAN BE OMITTED FOR EACH OMITTED LAYER OF CONTAINERS. ALSO, IN LIEU OF PIECE MARKED ①, USE THE "SIDE GATE" ASSEMBLY DETAILED ON PAGE 18 OR 19 AS IS APPLICABLE TO THE NUMBER OF LAYERS OF CONTAINERS TO BE SHIPPED.
5. IF THE CAR BEING LOADED HAS PLUG DOORS AND THE ADJACENT STACK OF CONTAINERS DOES NOT EXTEND INTO THE DOORWAY AREA MORE THAN 21", NO DOORWAY PROTECTION IS REQUIRED. HOWEVER, IF A STACK EXTENDS MORE THAN 21" INTO THE DOORWAY AREA, THE "PROVISIONS FOR PLUG DOORS" PROCEDURES SHOWN ON PAGE 13 MUST BE USED. SEE GENERAL NOTES "H" AND "N" ON PAGE 2.

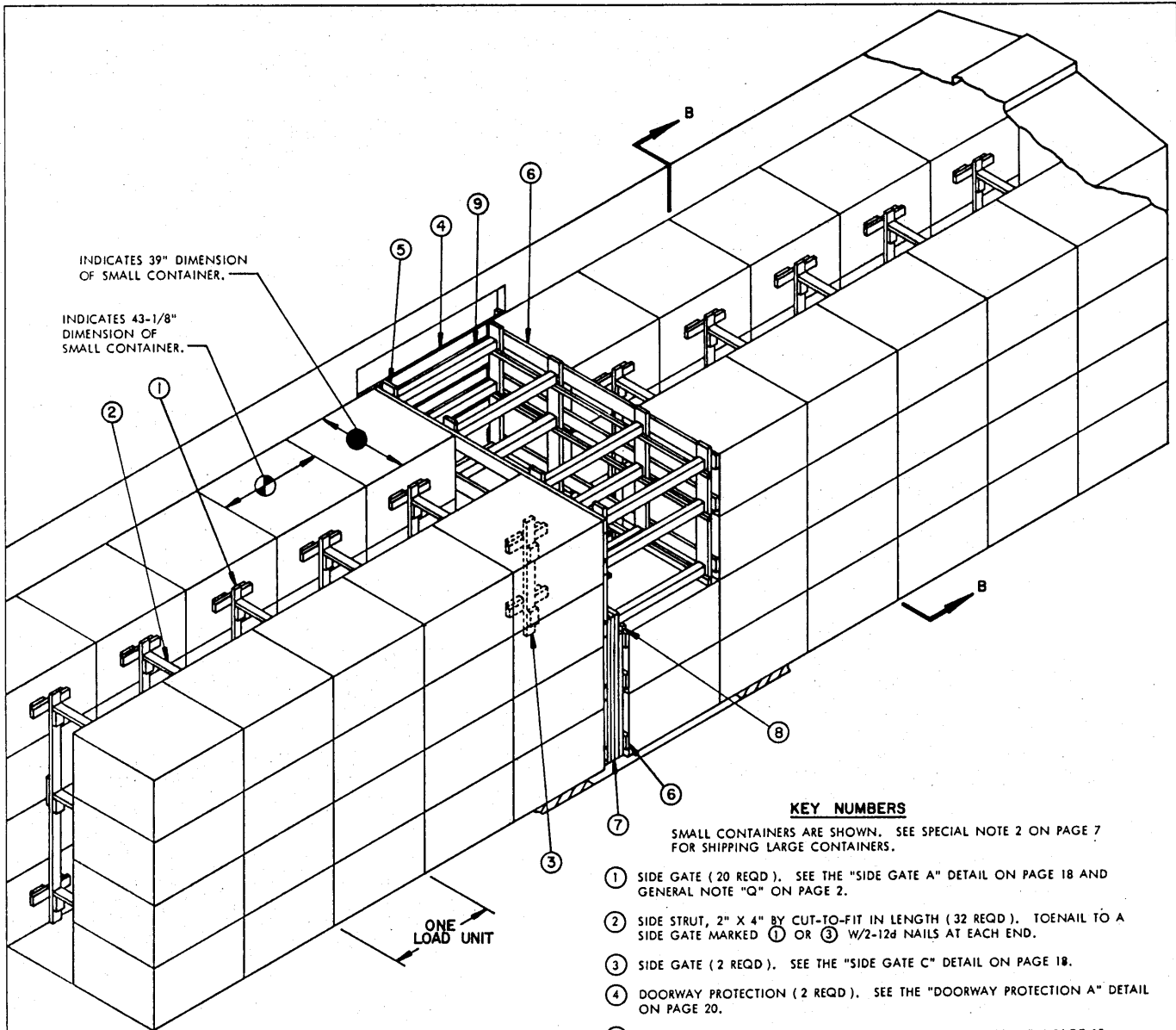
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BILL OF MATERIAL *		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	60	30
2" X 2"	92	31
2" X 3"	38	19
2" X 4"	504	336
2" X 6"	294	294
NAILS	NO. REQD	POUNDS
6d (2")	60	1/2
10d (3")	1,020	15-3/4
12d (3-1/4")	268	4-1/2

\* THE "BILL OF MATERIAL" AND THE "LOAD AS SHOWN" ARE BASED ON A LOAD OF SMALL CONTAINERS.

**LOAD AS SHOWN \***

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	104	98,800 LBS
DUNNAGE		1,796 LBS
<b>TOTAL WEIGHT</b>		<b>100,596 LBS</b>



INDICATES 39" DIMENSION OF SMALL CONTAINER.

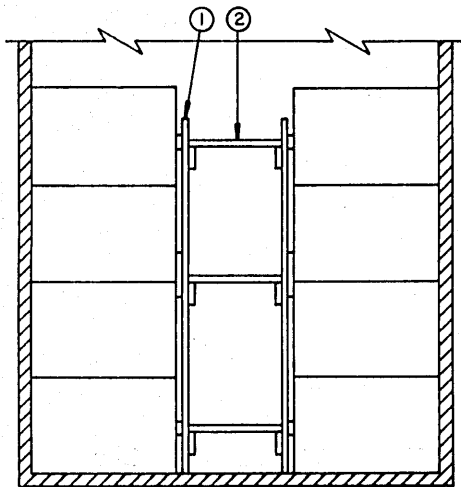
INDICATES 43-1/8" DIMENSION OF SMALL CONTAINER.

**KEY NUMBERS**

SMALL CONTAINERS ARE SHOWN. SEE SPECIAL NOTE 2 ON PAGE 7 FOR SHIPPING LARGE CONTAINERS.

- ① SIDE GATE ( 20 REQD ). SEE THE "SIDE GATE A" DETAIL ON PAGE 18 AND GENERAL NOTE "Q" ON PAGE 2.
- ② SIDE STRUT, 2" X 4" BY CUT-TO-FIT IN LENGTH ( 32 REQD ). TOENAIL TO A SIDE GATE MARKED ① OR ③ W/2-12d NAILS AT EACH END.
- ③ SIDE GATE ( 2 REQD ). SEE THE "SIDE GATE C" DETAIL ON PAGE 18.
- ④ DOORWAY PROTECTION ( 2 REQD ). SEE THE "DOORWAY PROTECTION A" DETAIL ON PAGE 20.
- ⑤ CENTER GATE ( 1 REQD ). SEE THE "CENTER GATE B" DETAIL ON PAGE 15.
- ⑥ CENTER GATE ( 2 REQD ). SEE THE "CENTER GATE E" DETAIL AND "NOTE ●" ON PAGE 17.
- ⑦ SOLID FILL, 6" WIDE BY 60" LONG BY THE THICKNESS REQUIRED TO FILL THE EXCESS SPACE BETWEEN CENTER GATES MARKED ⑤ AND ⑥. INSTALL TO PROVIDE FOR A WEDGE FIT ( REQUIRED AT FOUR PLACES ). NAIL THROUGH THE UPPER PORTION OF THE FIRST PIECE AND INTO THE CENTER GATE MARKED ③ W/5-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.
- ⑧ STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 1/2" ( 1 REQD ). POSITION SO THAT THE TOP OF THE STRUT LEDGER IS 55-1/2" ABOVE THE CAR FLOOR. NAIL TO THE SOLID FILL W/2-10d NAILS AT EACH JOINT.
- ⑨ CENTER STRUT, 4" X 4" BY CUT-TO-FIT IN LENGTH ( 12 REQD ). TOENAIL TO VERTICALS OF CENTER GATES MARKED ⑤ AND ⑥ AND/OR SOLID FILL MARKED ⑦ W/2-16d NAILS AT EACH END. FOR STRUTS 48" OR LONGER, SEE THE "STRUT BRACING DETAIL" ON PAGE 14 FOR SPECIAL REQUIREMENTS.

**ISOMETRIC VIEW**



**SECTION B-B**

**84-UNIT LOAD IN A 40'-6" LONG BY 9'-2" WIDE CAR (CONVENTIONAL)**

**SPECIAL NOTES:**

1. A LOAD OF SMALL CONTAINERS IS SHOWN IN A 40'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR WHICH IS EQUIPPED WITH 6'-0" WIDE DOOR OPENINGS OF A MINIMUM HEIGHT OF 8'-10". WIDER OR NARROWER CARS AND CARS WITH WIDER AND/OR STAGGERED DOORS MAY BE USED. ALSO, ALL-METAL CARS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR SHIPPING THE SAME QUANTITY OF LARGE CONTAINERS, EXCEPT THAT THE CAR BEING USED MUST HAVE DOOR OPENINGS WHICH ARE NOT LESS THAN 9'-6" HIGH. ALSO, THE FOLLOWING ADJUSTMENTS MUST BE MADE FOR PROPER BLOCKING AND BRACING OF THE LARGE CONTAINERS:
  - A. AN OFFSET LOADING PATTERN WILL BE USED WITH A "SIDE SPACER" ASSEMBLY PROVIDED ON ALTERNATE SIDES OF THE LOAD, AS SHOWN IN THE "PARTIAL PLAN VIEW" ON PAGE 5. SEE THE "SIDE SPACER" ASSEMBLY DETAIL ON PAGE 20.
  - B. IN LIEU OF PIECES MARKED ① AND ③, USE "SIDE GATE D" AND "SIDE GATE F" ASSEMBLIES RESPECTIVELY, AS DETAILED ON PAGE 19.
  - C. OMIT PIECE MARKED ④ AND SUBSTITUTE THEREFOR "DOORWAY PROTECTION B" AS DETAILED ON PAGE 20.
  - D. USE A "CENTER GATE D" ASSEMBLY AS DETAILED ON PAGE 16 IN LIEU OF PIECE MARKED ⑤.
  - E. SUBSTITUTE "CENTER GATE F" ASSEMBLIES FOR PIECES MARKED ⑥. SEE THE DETAIL AND "NOTE ●" ON PAGE 17.
  - F. INCREASE LENGTH OF SOLID FILL PIECES MARKED ⑦ TO 64".
  - G. POSITION STRUT LEDGER, PIECE MARKED ⑧, SO THAT TOP LEDGER IS 59-1/2" ABOVE THE CAR FLOOR.
3. IF THE DELINEATED OUTLOADING METHOD IS USED FOR THE SHIPMENT OF A LOAD WHICH CONTAINS LESS CONTAINERS THAN SHOWN TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, AND THE QUANTITY CANNOT BE SATISFIED BY OMITTING A COMPLETE LOAD UNIT OR LAYER, A "FILLER ASSEMBLY" AS DETAILED ON PAGE 21, MUST BE SUBSTITUTED IN THE PLACE OF EACH OMITTED CONTAINER. CONTAINERS MAY BE OMITTED AT ANY LOCATION WITHIN THE TOP LAYER EXCEPT FROM STACKS WHICH ARE ADJACENT TO THE CENTER GATES. IF THE QUANTITY TO BE SHIPPED CANNOT READILY BE ACHIEVED BY APPLYING THE CRITERIA JUST CITED, IT WILL BE NECESSARY TO INSTALL A "K-BRACE" ASSEMBLY AS DETAILED ON PAGE 14, TO RETAIN A PARTIAL LAYER. SEE THE "PARTIAL LAYER BRACING" PROCEDURES ON PAGE 9 FOR TYPICAL APPLICATION OF A "FILLER ASSEMBLY" AND/OR A "K-BRACE".
4. IF AN 80-UNIT LOAD IS TO BE SHIPPED, OMIT THE 2-HIGH (4-CONTAINER) LOAD UNIT SHOWN IN THE DOORWAY AREA AND OMIT PIECES MARKED ③, ⑦ AND ⑧. IN LIEU OF PIECES MARKED ⑤ AND ⑥, USE TWO (2) "CENTER GATE A" ASSEMBLIES AS DETAILED ON PAGE 15. ALSO, INCREASE THE QUANTITY OF CENTER STRUTS, PIECES MARKED ②, TO TWENTY (20).
5. WHEN SHIPPING LOADS WHICH ARE LESS THAN 4-LAYERS IN HEIGHT, IT WILL BE NECESSARY TO ADJUST THE HEIGHT OF THE CENTER GATES ACCORDINGLY. NOTE THAT ONLY ONE LAYER OF CENTER STRUTS CAN BE OMITTED FOR EACH OMITTED LAYER OF CONTAINERS. ALSO, IN LIEU OF PIECE MARKED ①, USE THE "SIDE GATE" ASSEMBLY DETAILED ON PAGE 18 OR 19 AS IS APPLICABLE TO THE NUMBER OF LAYERS OF CONTAINERS TO BE SHIPPED.
6. IF THE CAR BEING LOADED HAS PLUG DOORS AND THE ADJACENT STACK OF CONTAINERS DOES NOT EXTEND INTO THE DOORWAY AREA MORE THAN 21", NO DOORWAY PROTECTION IS REQUIRED. HOWEVER, IF A STACK EXTENDS MORE THAN 21" INTO THE DOORWAY AREA, AS IS THE CASE WITH THE 2-HIGH (4 CONTAINER) LOAD UNIT SHOWN IN THE ISOMETRIC VIEW, THE "PROVISIONS FOR PLUG DOORS" PROCEDURES SHOWN ON PAGE 13 MUST BE USED. SEE GENERAL NOTES "H" AND "N" ON PAGE 2.

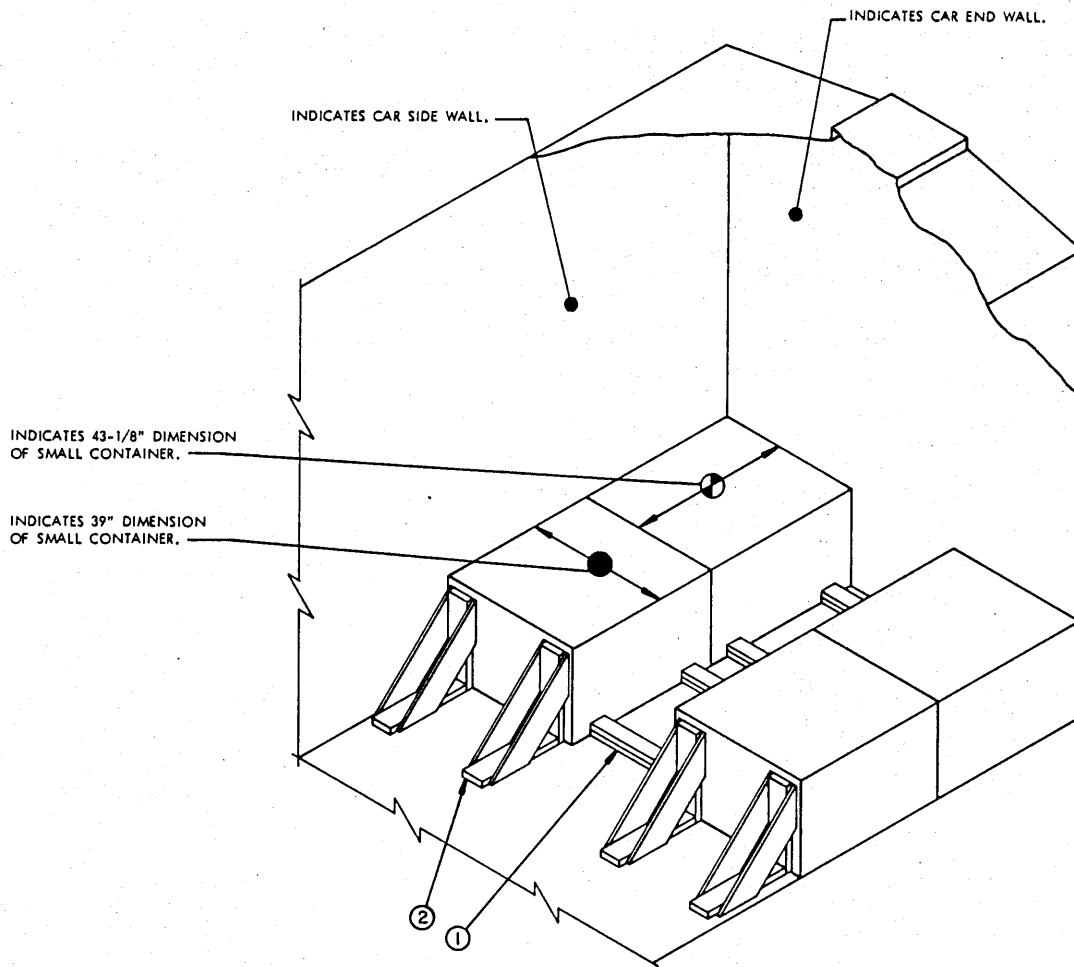
BILL OF MATERIAL *		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	60	30
2" X 2"	46	16
2" X 3"	49	25
2" X 4"	395	264
2" X 6"	233	233
4" X 4"	48	64
NAILS	NO. REQD	POUNDS
6d (2")	60	1/2
10d (3")	800	12-1/2
12d (3-1/4")	160	2-3/4
16d (3-1/2")	48	1-1/4

\* THE "BILL OF MATERIAL" AND "THE LOAD AS SHOWN" ARE BASED ON A LOAD OF SMALL CONTAINERS.

**LOAD AS SHOWN \***

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	84	79,800 LBS
DUNNAGE		1,597 LBS
<b>TOTAL WEIGHT</b>		<b>81,397 LBS</b>

**84-UNIT LOAD IN A 40'-6" LONG BY 9'-2" WIDE CAR (CONVENTIONAL)**



**ISOMETRIC VIEW**

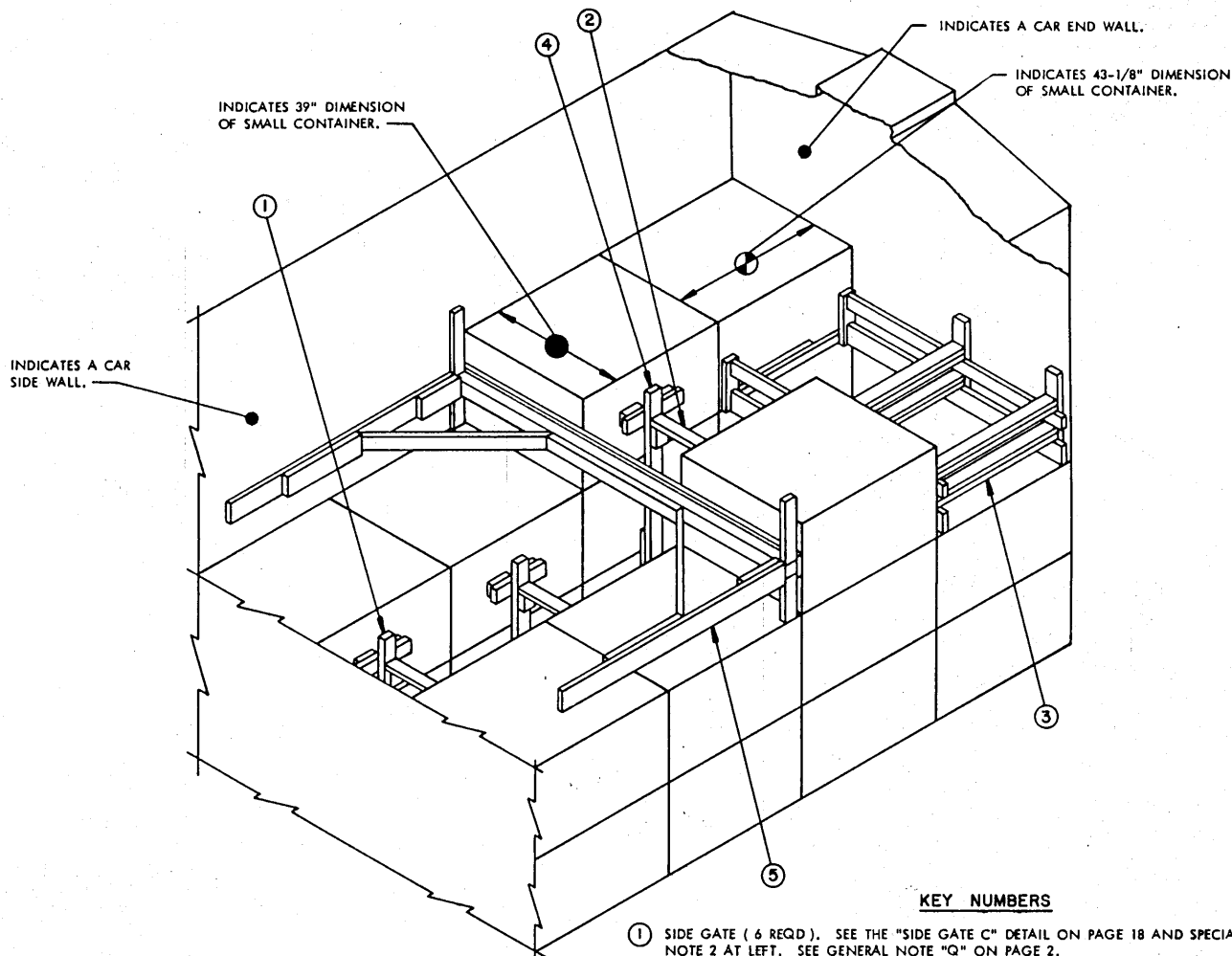
**SPECIAL NOTES:**

1. A 9'-2" WIDE BOX CAR IS SHOWN; HOWEVER, ANY WIDTH CAR CAN BE USED FOR THE TYPE OF OUTLOADING DEPICTED.
2. THE ISOMETRIC VIEW ABOVE DEPICTS AN LCL LOAD OF SMALL CONTAINERS; HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE TO THE LARGE CONTAINER, EXCEPT THAT "SIDE SPACER" ASSEMBLIES AS DETAILED ON PAGE 20 MUST BE USED ON ALTERNATE SIDES OF THE LOAD, AS IS DEPICTED IN THE "PARTIAL PLAN VIEW" ON PAGE 5.
3. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL SUPPORT 2,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR BLOCKING EACH ROW OF CONTAINERS.
4. THE BLOCKING PROCEDURES SHOWN ON THIS PAGE ARE RESTRICTED TO LCL SHIPMENTS THAT ARE ONLY ONE (1) LAYER HIGH.

**KEY NUMBERS**

- ① SIDE BLOCKING, 2" X 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT CONTAINERS (DOUBLED) (4 REQD). LOCATE JUST INSIDE THE TWO OUTSIDE CLEATS OF THE CONTAINER AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "O" AND "Q" ON PAGE 2.
- ② LCL BRACE (4 REQD). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 3 AT LEFT. NAIL TO THE CAR FLOOR W/7-16d NAILS.





**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① SIDE GATE ( 6 REQD ). SEE THE "SIDE GATE C" DETAIL ON PAGE 18 AND SPECIAL NOTE 2 AT LEFT. SEE GENERAL NOTE "Q" ON PAGE 2.
- ② SIDE STRUT, 2" X 4" BY CUT-TO-FIT ( 8 REQD ). TOENAIL TO A SIDE GATE MARKED ① OR ④ W/2-12d NAILS AT EACH END.
- ③ FILLER ASSEMBLY ( 1 REQD ). SEE THE "FILLER ASSEMBLY A" DETAIL ON PAGE 21 AND SPECIAL NOTE 2 AT LEFT. NAIL THROUGH THE STRUT BEARING PIECES AND INTO THE CAR END WALL W/4-12d NAILS EACH.
- ④ SIDE GATE ( 2 REQD ). SEE THE "SIDE GATE B" DETAIL ON PAGE 18 AND SPECIAL NOTE 2 AT LEFT.
- ⑤ K-BRACE ASSEMBLY ( 1 REQD ). SEE THE DETAIL ON PAGE 14 AND SPECIAL NOTE 3 AT LEFT.

**SPECIAL NOTES:**

- 1. A PARTIAL LAYER LOAD IS SHOWN IN A 9'-2" WIDE BOX CAR; HOWEVER, ANY WIDTH CAR CAN BE USED. IF IT IS NECESSARY TO BLOCK A HEAVIER LOAD, REFER TO DRAWING 19-48-4016-5M1001 FOR THE PROPER SIZED K-BRACE TO USE AND THE DESIGN SPECIFICATIONS FOR THE SELECTED BRACE.
- 2. THE ISOMETRIC VIEW ABOVE DEPICTS A PARTIAL LOAD OF SMALL CONTAINERS; HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE TO THE LARGE CONTAINER. FOR SHIPMENT OF THE LARGE CONTAINERS, PROCEDURES SPECIFIED IN STEP A OF SPECIAL NOTE 2 ON PAGE 5 MUST BE FOLLOWED. ALSO, THE FOLLOWING ADJUSTMENTS WILL BE MADE:
  - A. IN LIEU OF PIECE MARKED ①, USE THE "SIDE GATE F" ASSEMBLY, AS DETAILED ON PAGE 19.
  - B. IN LIEU OF PIECE MARKED ③, USE THE "FILLER ASSEMBLY B", AS DETAILED ON PAGE 21.
  - C. IN LIEU OF PIECE MARKED ④, USE THE "SIDE GATE E" ASSEMBLY, AS DETAILED ON PAGE 19.
- 3. THE "K-BRACE" ASSEMBLY AS SHOWN IS ADEQUATE FOR RETAINING A PARTIAL LAYER LOAD OF 4,000 POUNDS.
- 4. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL LAYER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES ①, ②, ③, ④, ⑤, ⑥ AND ⑦, OR THE COMPARABLE PIECES FOR A HEAVIER BRACE, MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDE WALL. IT IS ALRIGHT FOR THE END OF A DIAGONAL BRACE MARKED ③ OR THE COMPARABLE PIECE FOR A HEAVIER BRACE, TO BEAR IN FRONT OF A DOOR OPENING; HOWEVER, THE ADJACENT PIECE MARKED ⑤ OR THE

( CONTINUED AT RIGHT )

( SPECIAL NOTES CONTINUED )

COMPARABLE PIECE ON A HEAVIER BRACE, MUST BE DOUBLED TO EXTEND ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE.

**PARTIAL LAYER BRACING**

**CAR EQUIPMENT REQUIRED**

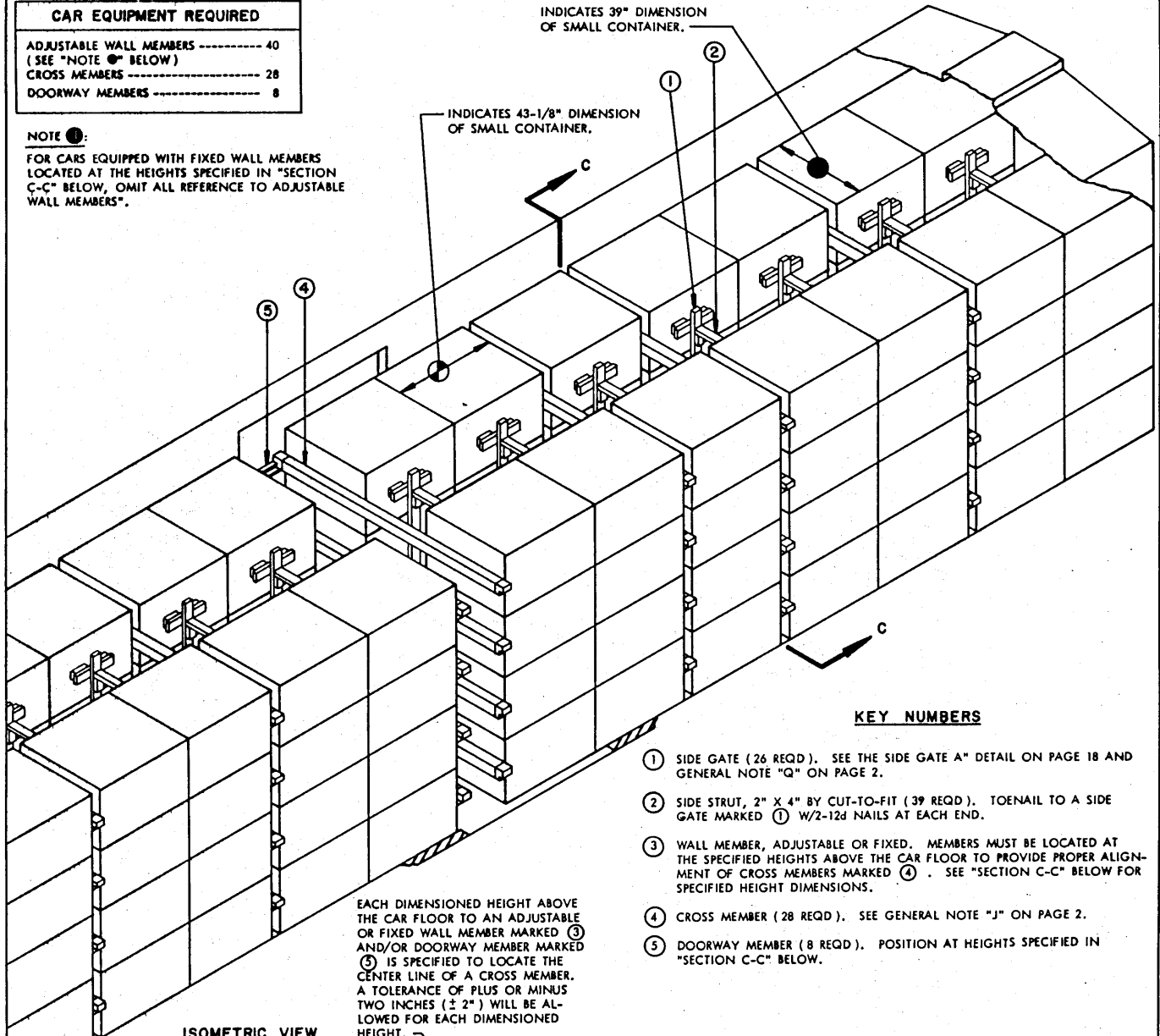
ADJUSTABLE WALL MEMBERS -----	40
(SEE "NOTE 1" BELOW)	
CROSS MEMBERS -----	28
DOORWAY MEMBERS -----	8

**NOTE 1:**

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

INDICATES 39" DIMENSION OF SMALL CONTAINER.

INDICATES 43-1/8" DIMENSION OF SMALL CONTAINER.

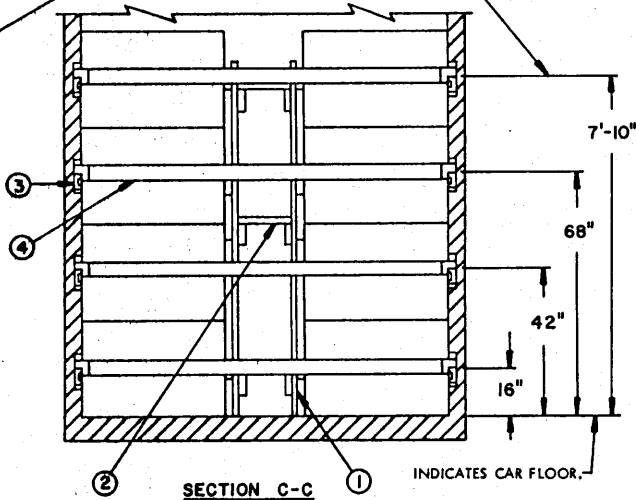


**KEY NUMBERS**

- ① SIDE GATE (26 REQD). SEE THE SIDE GATE "A" DETAIL ON PAGE 18 AND GENERAL NOTE "Q" ON PAGE 2.
- ② SIDE STRUT, 2" X 4" BY CUT-TO-FIT (39 REQD). TOENAIL TO A SIDE GATE MARKED ① W/2-12d NAILS AT EACH END.
- ③ WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ④. SEE "SECTION C-C" BELOW FOR SPECIFIED HEIGHT DIMENSIONS.
- ④ CROSS MEMBER (28 REQD). SEE GENERAL NOTE "J" ON PAGE 2.
- ⑤ DOORWAY MEMBER (8 REQD). POSITION AT HEIGHTS SPECIFIED IN "SECTION C-C" BELOW.

EACH DIMENSIONED HEIGHT ABOVE THE CAR FLOOR TO AN ADJUSTABLE OR FIXED WALL MEMBER MARKED ③ AND/OR DOORWAY MEMBER MARKED ⑤ IS SPECIFIED TO LOCATE THE CENTER LINE OF A CROSS MEMBER. A TOLERANCE OF PLUS OR MINUS TWO INCHES ( $\pm 2"$ ) WILL BE ALLOWED FOR EACH DIMENSIONED HEIGHT.

**ISOMETRIC VIEW**



104-UNIT LOAD IN A 50'-6" LONG BY 9'-0" WIDE CAR (MECHANICAL)

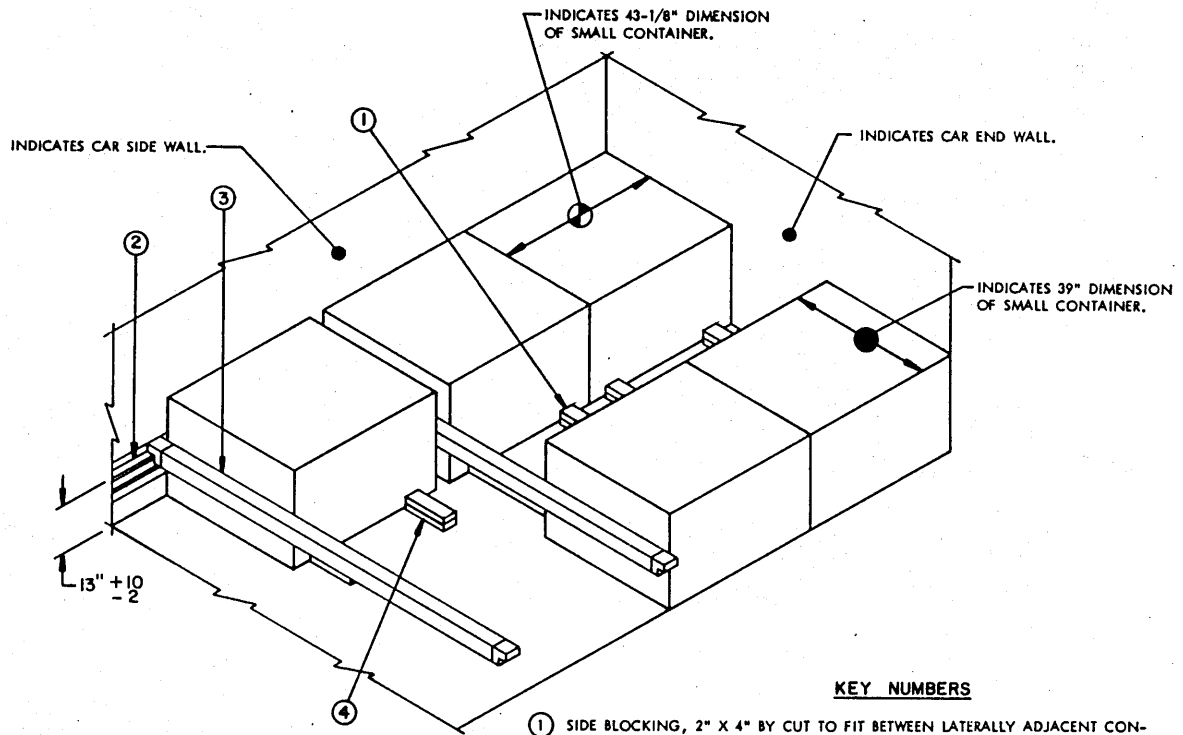
**SPECIAL NOTES:**

1. A LOAD OF SMALL CONTAINERS IS SHOWN IN A 50'-6" LONG BY 9'-0" WIDE (INSIDE CLEARANCE) BOX CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS AND WITH 6'-0" WIDE DOOR OPENINGS OF A MINIMUM HEIGHT OF 8'-10". WIDER OR NARROWER CARS AND CARS WITH WIDER AND/OR STAGGERED DOORS MAY BE USED. ALSO, ALL-METAL CARS MAY BE USED FOR SHIPMENT OF THE DEPICTED LOAD.
2. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR SHIPPING THE SAME QUANTITY OF LARGE CONTAINERS, EXCEPT THAT THE CAR BEING USED MUST HAVE DOOR OPENINGS WHICH ARE NOT LESS THAN 9'-6" HIGH. ALSO, THE FOLLOWING ADJUSTMENTS MUST BE MADE FOR PROPER BLOCKING AND BRACING OF THE LARGE CONTAINERS:
  - A. AN OFFSET LOADING PATTERN WILL BE USED WITH A "SIDE SPACER" ASSEMBLY PROVIDED ON ALTERNATE SIDES OF THE LOAD, AS SHOWN IN THE "PARTIAL PLAN VIEW" ON PAGE 5. SEE THE "SIDE SPACER" ASSEMBLY DETAIL ON PAGE 20.
  - B. IN A CAR EQUIPPED WITH ADJUSTABLE WALL MEMBERS, PROVIDING THE FIXED WALL MEMBERS WHICH ARE PRESENT IN SOME "ADJUSTABLE" CARS ARE NOT PROPERLY POSITIONED TO PROVIDE SIDE BEARING BETWEEN "SIDE SPACER" ASSEMBLIES AND THE CAR SIDE WALLS, ADJUSTABLE WALL MEMBERS (AS REQUIRED) MUST BE INSTALLED TO PROVIDE ADEQUATE BEARING SURFACE FOR THE 2" X 4" VERTICAL PIECES OF THE "SIDE SPACER" ASSEMBLIES.
  - C. IN LIEU OF PIECE MARKED ①, USE THE "SIDE GATE D" ASSEMBLY AS DETAILED ON PAGE 19.
  - D. WALL MEMBERS MARKED ③ AND DOORWAY MEMBERS MARKED ⑤ WILL BE LOCATED AT HEIGHTS OF 16", 44", 6'-0" AND 8'-4" IN LIEU OF THE HEIGHTS SPECIFIED IN THE "SECTION C-C" VIEW ON PAGE 10.
3. IF THE CAR BEING USED IS EQUIPPED WITH DOOR OPENINGS WHICH DO NOT MEET THE MINIMUM HEIGHT REQUIREMENTS SPECIFIED FOR THE LOAD OF CONTAINERS TO BE SHIPPED, THE FOLLOWING WILL APPLY:
  - A. IT WILL BE NECESSARY TO OMIT THE TOP CONTAINERS OF TWO (2) LATERALLY ADJACENT STACKS LOCATED IN THE CENTER OF THE CAR TO PERMIT UNLOADING FROM EITHER SIDE.
  - B. IN LIEU OF THE TWO (2) ADJACENT SIDE GATES FOR 4-HIGH STACKS, SUBSTITUTE SIDE GATE ASSEMBLIES FOR 3-HIGH STACKS AS APPLICABLE TO THE SIZE OF THE CONTAINERS BEING SHIPPED. SEE THE "SIDE GATE B" AND "SIDE GATE E" DETAILS ON PAGES 18 AND 19 RESPECTIVELY.
  - C. THE TOP CROSS MEMBER MUST BE LOCATED TO BEAR AGAINST THE NEXT TWO (2) ADJACENT FOURTH-LAYER CONTAINERS.
4. TO SATISFY A LESS-THAN-FULL-LOAD QUANTITY, A TOP LAYER CONTAINER WITHIN ANY BAY OF TWO OR FOUR STACKS MAY BE OMITTED AND THE APPLICABLE "FILLER ASSEMBLY", AS DETAILED ON PAGE 21, SUBSTITUTED FOR THE OMITTED CONTAINER. IT WILL ALSO BE NECESSARY TO USE SIDE GATE ASSEMBLIES FOR A 3-HIGH STACK WHEN A "FILLER ASSEMBLY" IS USED. IF TWO (2) CONTAINERS ARE TO BE OMITTED, PROCEDURES SPECIFIED IN SPECIAL NOTE 3 ABOVE WILL APPLY.
5. THESE PROCEDURES CAN ALSO BE USED FOR THE SHIPMENT OF AN 80-UNIT LOAD IN A 40'-6" LONG CAR EQUIPPED WITH MECHANICAL BRACING DEVICES.

BILL OF MATERIAL *		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	501	334
NAILS	NO. REQD	POUNDS
10d (3")	676	10-1/2
12d (3-1/4")	156	2-3/4

\* THE "BILL OF MATERIAL" AND THE "LOAD AS SHOWN" ARE BASED ON A LOAD OF SMALL CONTAINERS.

LOAD AS SHOWN *		
ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	104	98,800 LBS
DUNNAGE		849 LBS
TOTAL WEIGHT		99,649 LBS



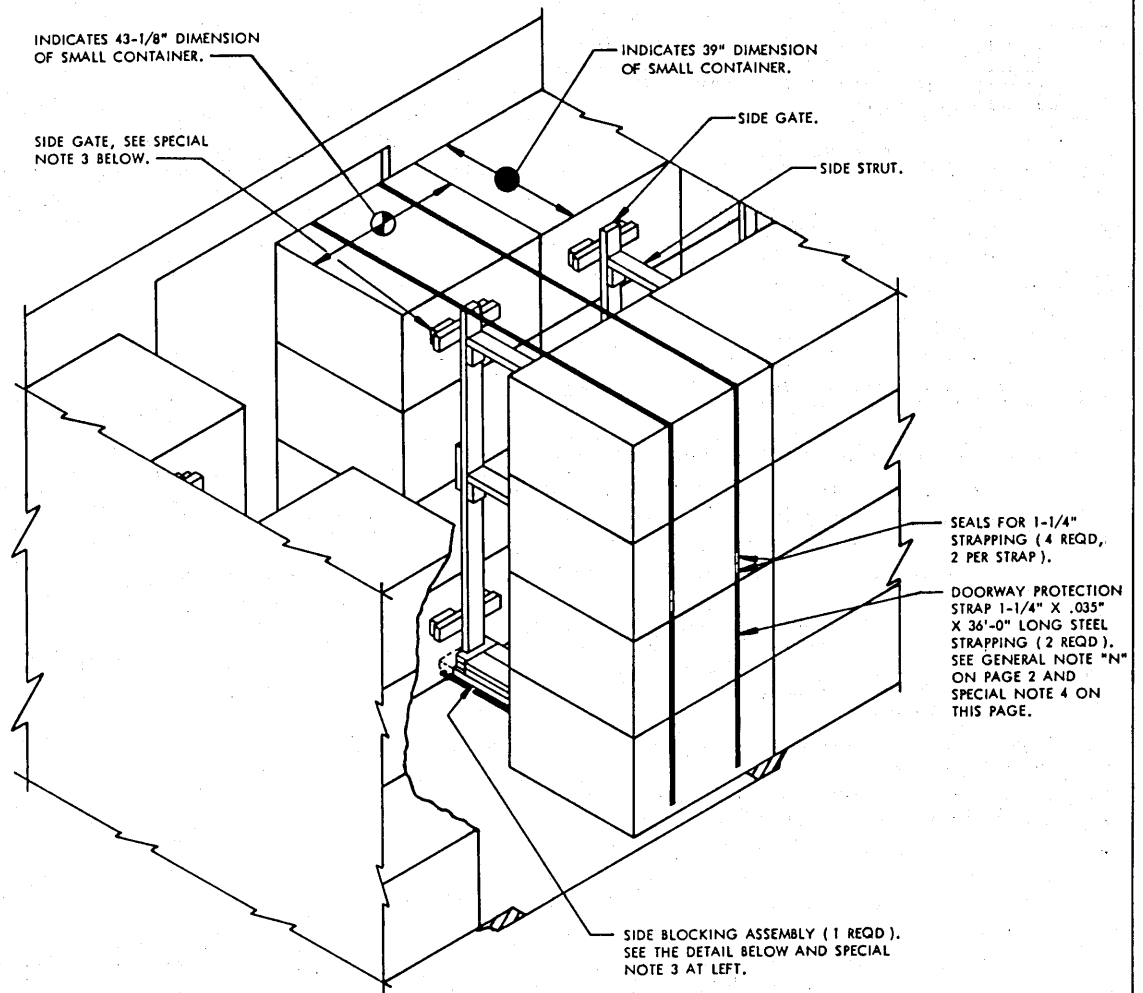
**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① SIDE BLOCKING, 2" X 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT CONTAINERS (DOUBLED) (4 REQD). LOCATE JUST INSIDE THE TWO OUTSIDE CLEATS OF THE CONTAINER AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/8-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE GENERAL NOTES "O" AND "Q" ON PAGE 2.
- ② WALL MEMBER, ADJUSTABLE OR FIXED. MEMBERS MUST BE LOCATED AT THE SPECIFIED HEIGHT ABOVE THE CAR FLOOR TO PROVIDE PROPER ALIGNMENT OF CROSS MEMBERS MARKED ③
- ③ CROSS MEMBER (2 REQD). SEE GENERAL NOTE "J" ON PAGE 2.
- ④ SIDE BLOCKING, 2" X 4" X 12" (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

**SPECIAL NOTES:**

- 1. A 9'-0" WIDE BOX CAR IS SHOWN. A WIDER OR NARROWER CAR CAN BE USED.
- 2. THE ISOMETRIC VIEW ABOVE DEPICTS A PARTIAL LOAD OF SMALL CONTAINERS; HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE TO THE LARGE CONTAINER. TO SHIP THE LARGE CONTAINER, THE WALL MEMBERS MARKED ② WILL BE LOCATED AT A HEIGHT OF 16" IN LIEU OF THE HEIGHT SPECIFIED IN THE LOAD VIEW ABOVE. ALSO, AN OFFSET LOADING PATTERN WITH "SIDE SPACER" ASSEMBLIES MUST BE USED AS DEPICTED IN THE "PARTIAL PLAN VIEW" ON PAGE 5.
- 3. ONE (1) CROSS MEMBER, SHOWN AS PIECE MARKED ③, IS ADEQUATE FOR RETAINING A 4-UNIT, 1-LAYER LOAD. IF MORE THAN FOUR (4) CONTAINERS ARE TO BE LOADED IN THE CAR, ADDITIONAL BAYS, AND/OR LAYERS MUST BE USED. SEE "SECTION C-C" ON PAGE 10 FOR HEIGHT LOCATIONS OF CROSS MEMBERS FOR ADDITIONAL LAYERS. ALSO, SIDE GATES AND SIDE STRUTS MUST BE INSTALLED IN LIEU OF PIECE MARKED ① WHEN THE LOAD IS MORE THAN ONE (1) LAYER IN HEIGHT, AS DEPICTED ON PAGE 10.

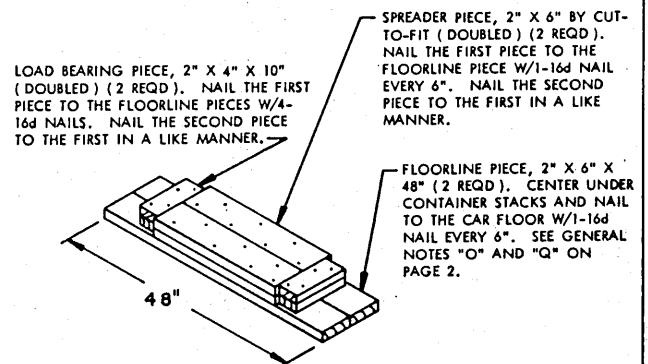


**ISOMETRIC VIEW**

NOTE THAT CENTER GATES, CENTER STRUTS, THE BOTTOM STRUT LEDGER OF THE SIDE GATE, AND THE LOWER SIDE STRUT HAVE BEEN OMITTED FOR CLARITY.

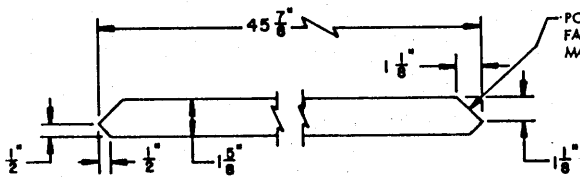
**SPECIAL NOTES:**

1. THE ISOMETRIC VIEW DEPICTS "DOORWAY PROTECTION" APPLICABLE TO SHIPMENTS OF CONTAINERS IN CARS WHICH ARE EQUIPPED WITH PLUG DOORS. SEE GENERAL NOTE "H" ON PAGE 2.
2. IF A STACK OF CONTAINERS EXTENDS INTO THE DOORWAY AREA 21" OR LESS, THE SPECIFIED DOORWAY PROTECTION IS NOT REQUIRED.
3. TO PERMIT INSTALLATION OF THE "SIDE BLOCKING ASSEMBLY", THE SIDE GATES FOR STACKS IN THE DOORWAY AREA MUST BE SHORTENED 5" AT THE BOTTOM.
4. ONE "SIDE BLOCKING ASSEMBLY" AND TWO STEEL STRAPS, AS SHOWN, ARE REQUIRED AS DOORWAY PROTECTION WHENEVER A STACK EXTENDS MORE THAN 36" INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR; HOWEVER, IF THE STACK EXTENDS MORE THAN 21" BUT NOT MORE THAN 36" INTO THE DOORWAY AREA, ONE STRAP MAY BE OMITTED.



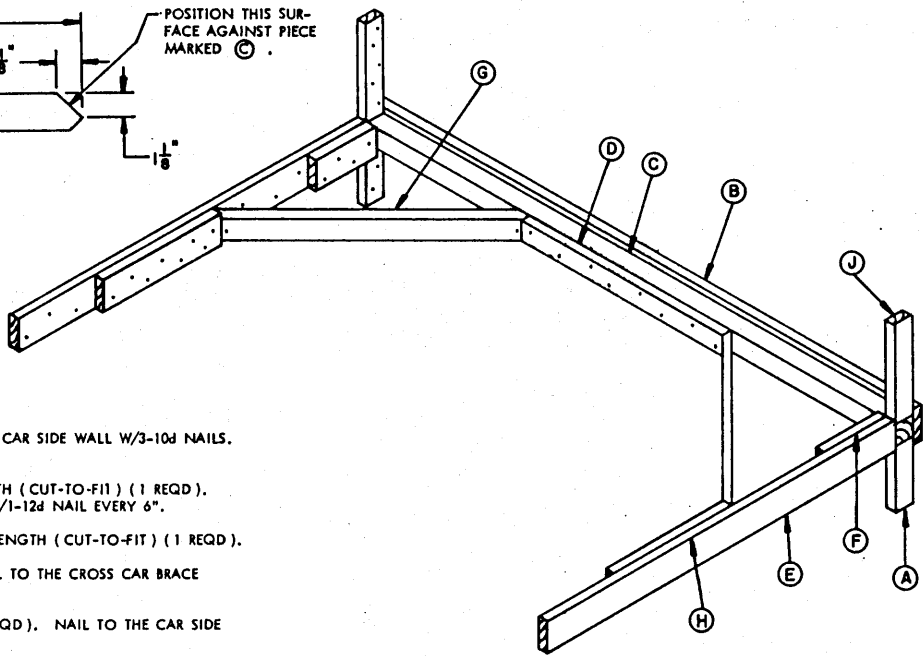
**SIDE BLOCKING ASSEMBLY**

**PROVISIONS FOR PLUG DOORS**



**DIAGONAL BRACE**

POSITION THIS SURFACE AGAINST PIECE MARKED ©.

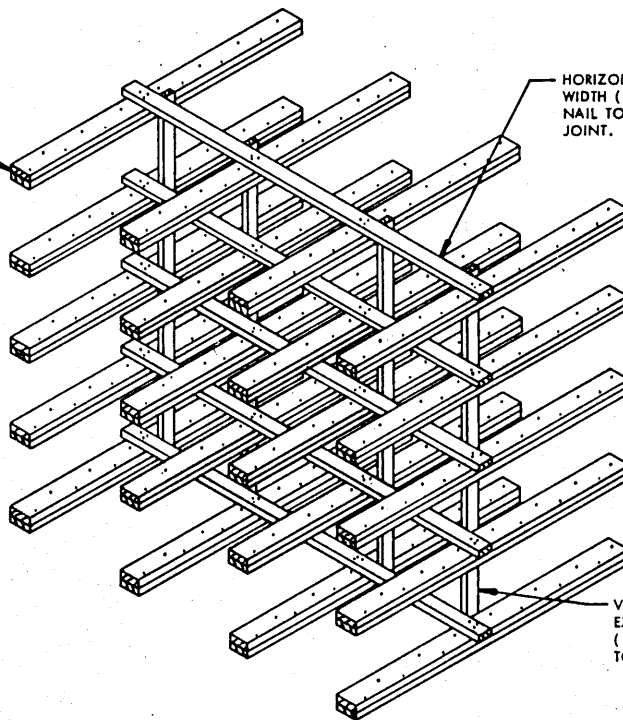


**K-BRACE DETAIL**

**KEY LETTERS**

- (A) RISER, 2" X 4" X 12" (2 REQD). NAIL TO THE CAR SIDE WALL W/3-10d NAILS. SEE GENERAL NOTE "Q" ON PAGE 2.
- (B) HORIZONTAL, 2" X 6" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (1 REQD). NAIL TO THE CROSS CAR BRACE MARKED © W/1-12d NAIL EVERY 6".
- (C) CROSS CAR BRACE, 4" X 4" BY CAR WIDTH IN LENGTH (CUT-TO-FIT) (1 REQD).
- (D) CENTER CLEAT, 2" X 4" X 42" (1 REQD). NAIL TO THE CROSS CAR BRACE MARKED © W/8-20d NAILS.
- (E) HORIZONTAL WALL CLEAT, 2" X 6" X 72" (2 REQD). NAIL TO THE CAR SIDE WALL W/16-12d NAILS.
- (F) POCKET CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT MARKED © W/4-20d NAILS.
- (G) DIAGONAL BRACE, 2" X 4" X 45-7/8" (2 REQD). TOENAIL TO THE HORIZONTAL WALL CLEAT MARKED © AND CROSS CAR BRACE MARKED © W/1-20d NAIL AT EACH END.
- (H) BACK-UP CLEAT, 2" X 6" X 24" (2 REQD). NAIL TO THE HORIZONTAL WALL CLEAT W/8-20d NAILS.
- (J) HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDE WALL W/5-12d NAILS.

INDICATES STRUT.



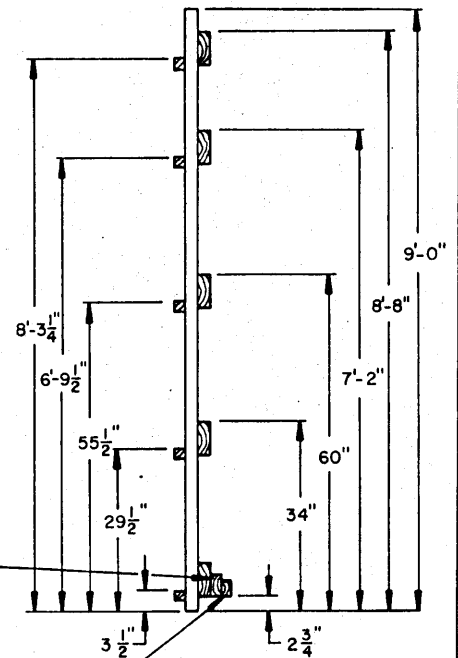
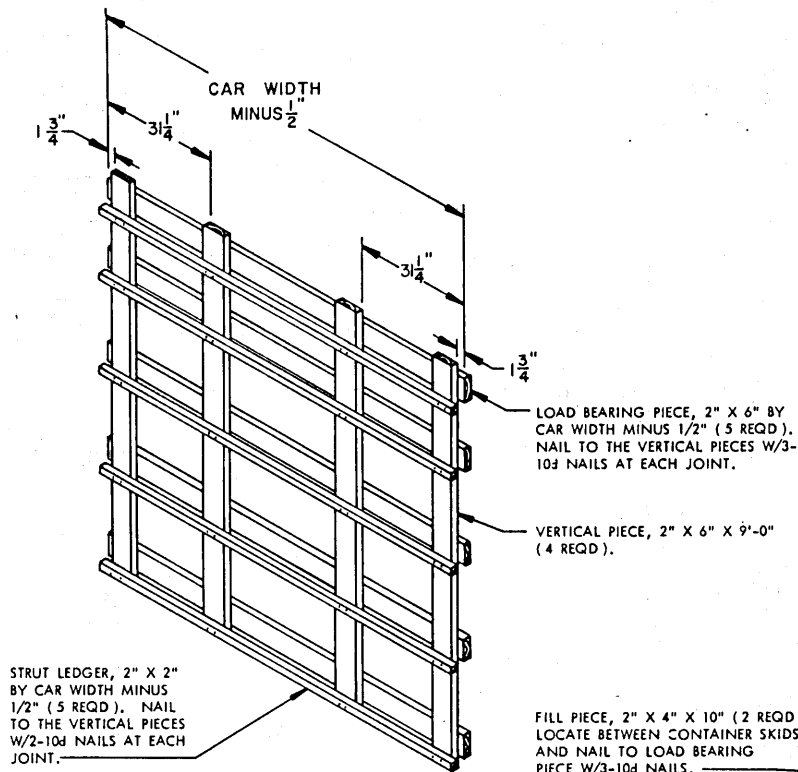
HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH (1 REQD FOR EACH LAYER OF STRUTS). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND FROM THE CAR FLOOR TO TWO INCHES (2") ABOVE THE TOP STRUT (4 REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

**STRUT BRACING DETAIL**

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

**DETAILS**

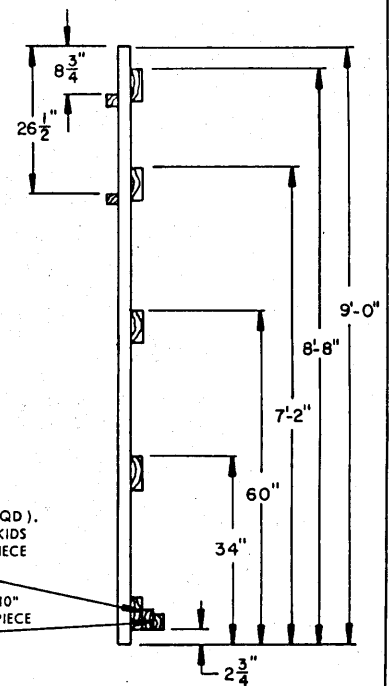
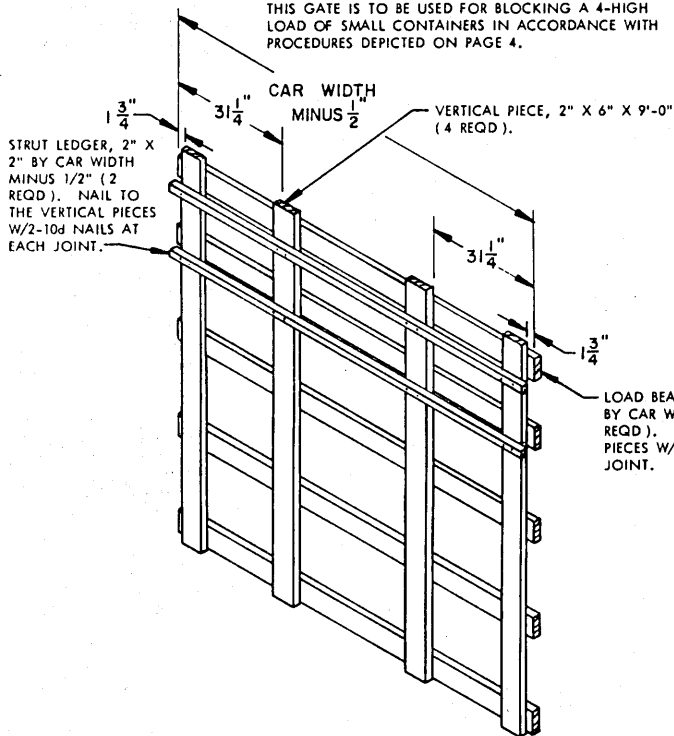


**CENTER GATE A**

THIS GATE IS TO BE USED FOR BLOCKING A 4-HIGH LOAD OF SMALL CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGE 4.

**END VIEW**

GATE HOLD DOWN, 2" X 3" X 10" (2 REQD). NAIL TO THE FILL PIECE W/3-10d NAILS.



**CENTER GATE B**

THIS GATE IS TO BE USED FOR BLOCKING A 4-HIGH LOAD OF SMALL CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGE 6.

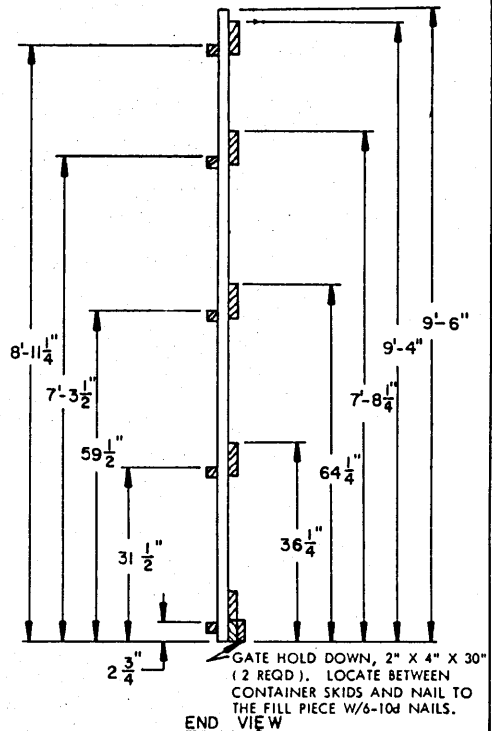
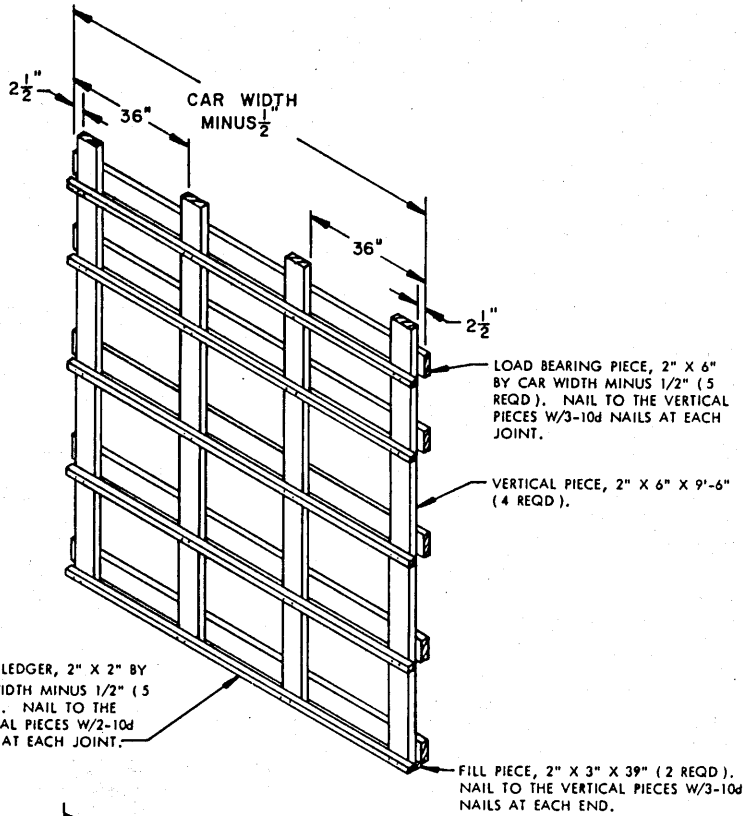
FILL PIECE, 2" X 4" X 10" (2 REQD). LOCATE BETWEEN CONTAINER SKIDS AND NAIL TO LOAD BEARING PIECE W/3-10d NAILS.

GATE HOLD DOWN, 2" X 3" X 10" (2 REQD). NAIL TO THE FILL PIECE W/3-10d NAILS.

**END VIEW**

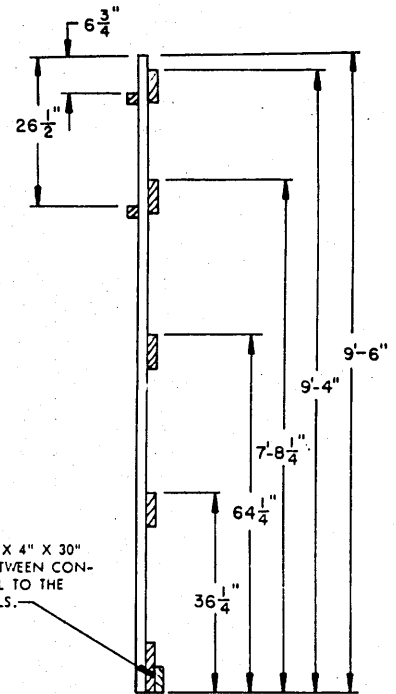
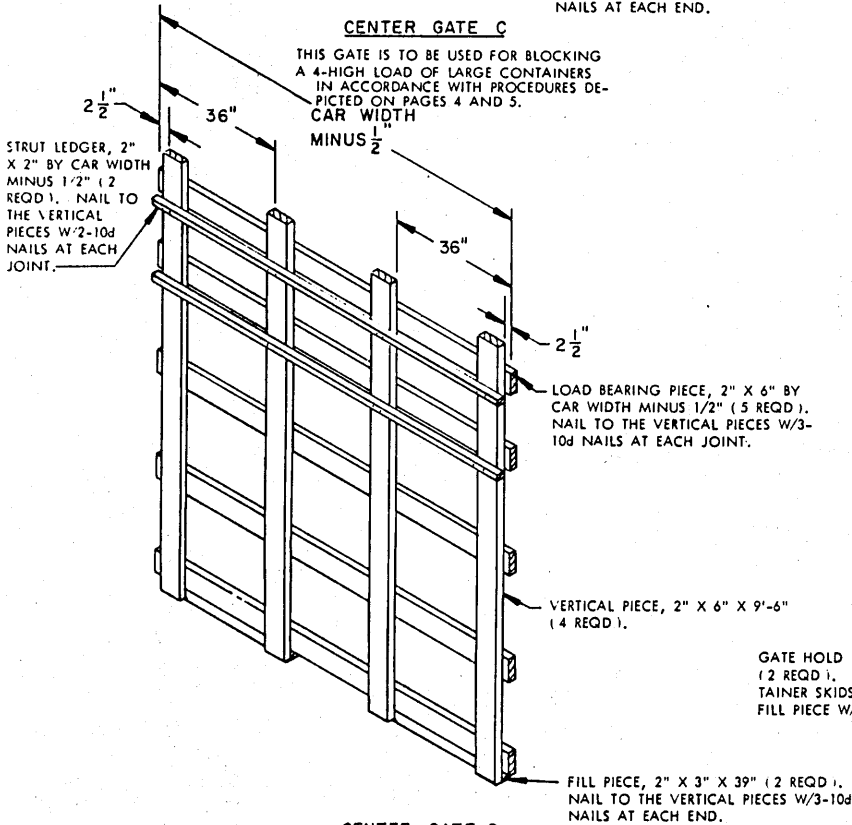
DETAILS

PAGE 15



**CENTER GATE C**

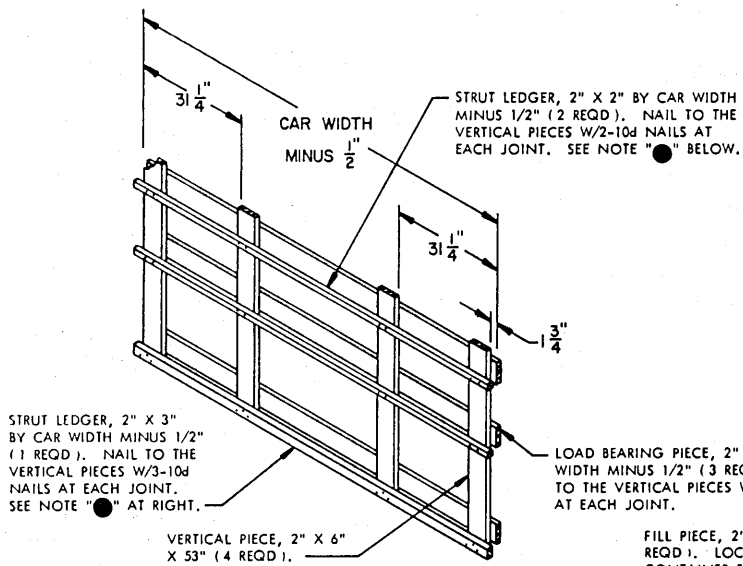
THIS GATE IS TO BE USED FOR BLOCKING A 4-HIGH LOAD OF LARGE CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGES 4 AND 5.



**CENTER GATE D**

THIS GATE IS TO BE USED FOR BLOCKING A 4-HIGH LOAD OF LARGE CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGE 6.



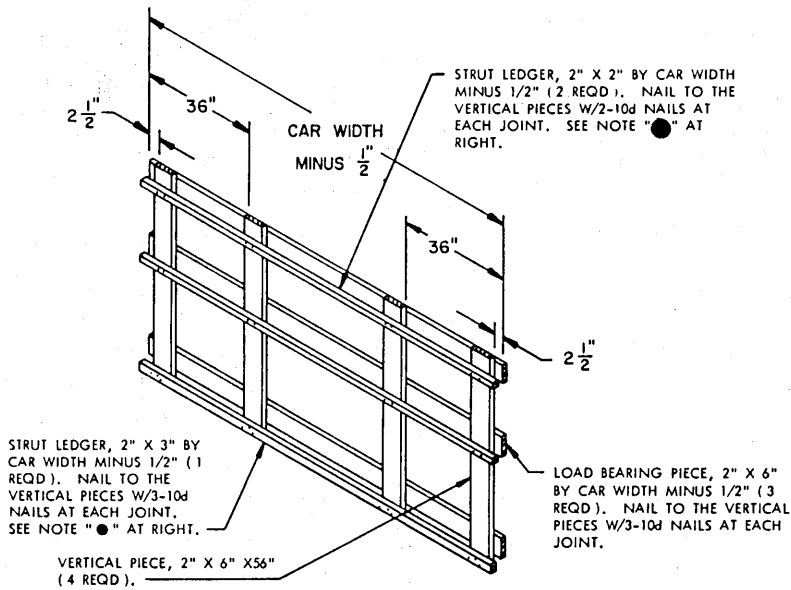


**CENTER GATE E**

THIS GATE IS TO BE USED FOR BLOCKING THE 2-HIGH PORTION OF A LOAD OF SMALL CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGE 6.

**NOTE ●:**

OMIT STRUT LEDGERS ON GATES WHICH ARE ADJACENT TO SOLID FILL.



**CENTER GATE F**

THIS GATE IS TO BE USED FOR BLOCKING THE 2-HIGH PORTION OF A LOAD OF LARGE CONTAINERS IN ACCORDANCE WITH PROCEDURES DEPICTED ON PAGE 6.

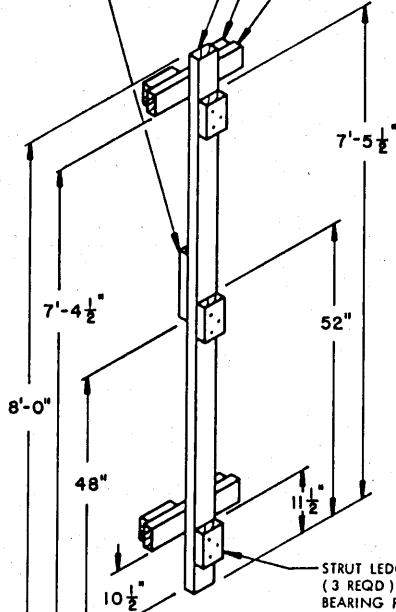
**DETAILS**

STRUT BEARING PIECE, 2" X 4" X 8'-0" (1 REQD).

FILL PIECE, 2" X 4" X 12" (1 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.

RETAINER BLOCK, 2" X 4" X 6" (4 REQD). LOCATE AGAINST CONTAINER CLEAT AND NAIL TO THE LOAD BEARING PIECE W/2-10d NAILS.

LOAD BEARING PIECE, 2" X 4" X 18" (2 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.



**SIDE GATE A**

THIS GATE IS TO BE USED WHEN BLOCKING A 4-HIGH LOAD OF SMALL CONTAINERS.

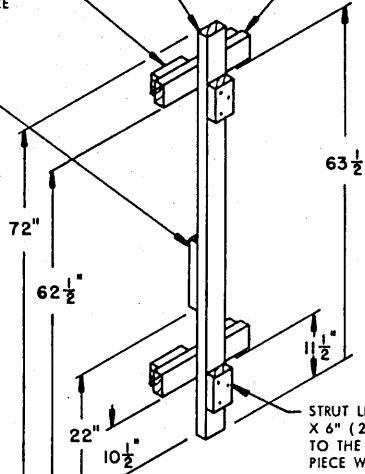
RETAINER BLOCK, 2" X 4" X 6" (4 REQD). LOCATE AGAINST CONTAINER CLEAT AND NAIL TO THE LOAD BEARING PIECE W/2-10d NAILS.

FILL PIECE, 2" X 4" X 12" (1 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.

STRUT LEDGER, 2" X 4" X 6" (3 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.

STRUT BEARING PIECE, 2" X 4" X 72" (1 REQD).

LOAD BEARING, 2" X 4" X 18" (2 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.



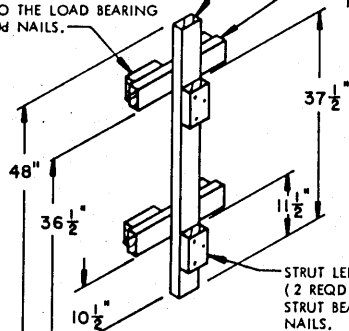
**SIDE GATE B**

THIS GATE IS TO BE USED WHEN BLOCKING A 3-HIGH LOAD OF SMALL CONTAINERS.

STRUT BEARING PIECE, 2" X 4" X 48" (1 REQD).

RETAINER BLOCK, 2" X 4" X 6" (4 REQD). LOCATE AGAINST CONTAINER CLEAT AND NAIL TO THE LOAD BEARING PIECE W/2-10d NAILS.

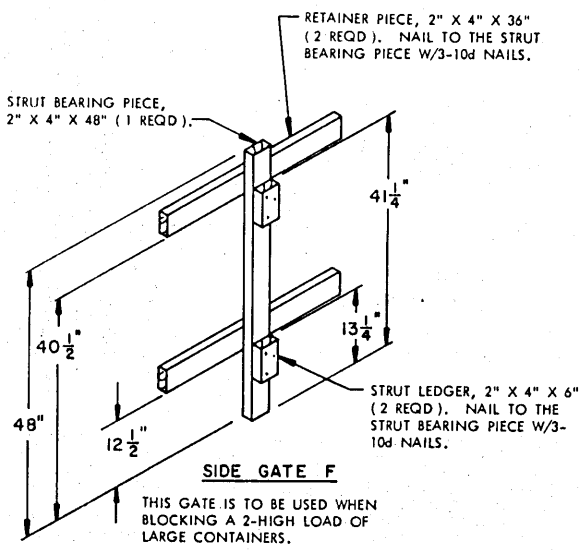
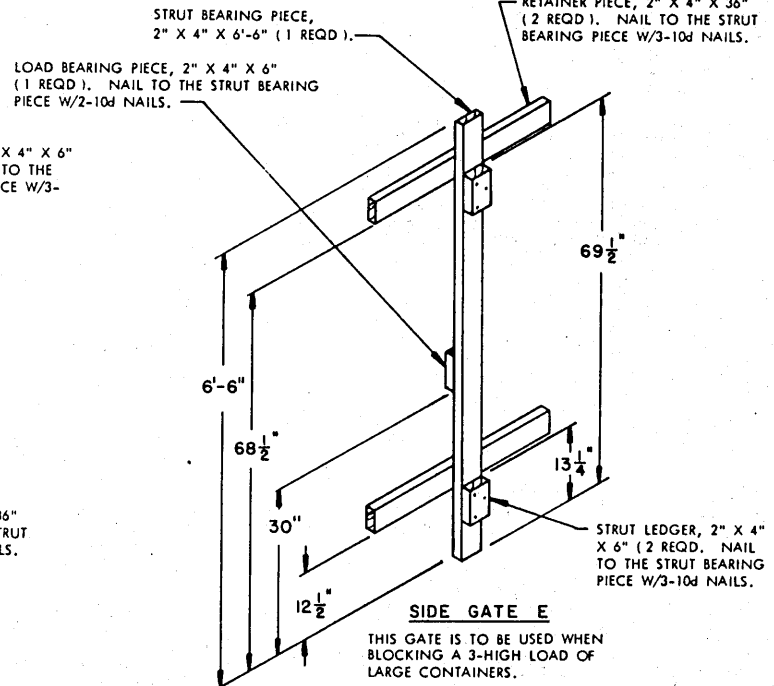
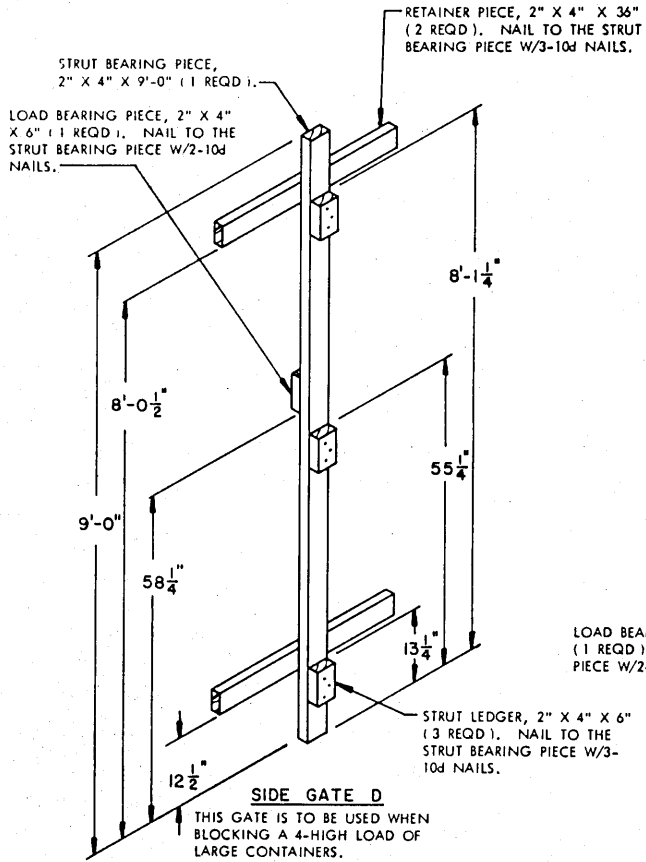
LOAD BEARING PIECE, 2" X 4" X 18" (2 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.

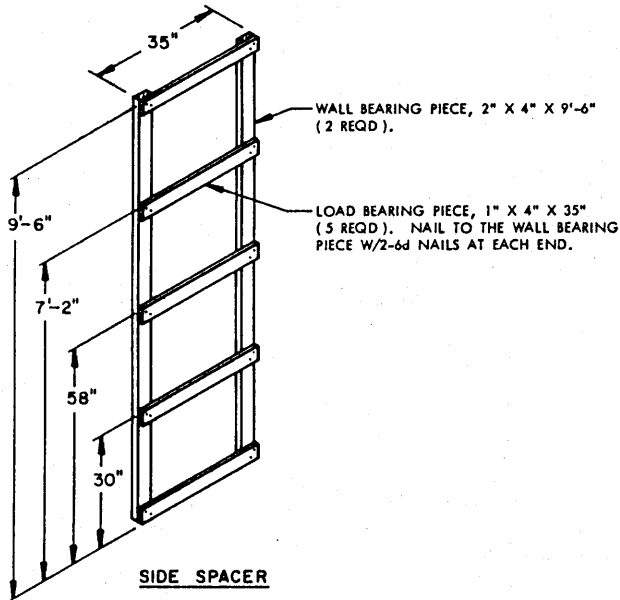


**SIDE GATE C**

THIS GATE IS TO BE USED WHEN BLOCKING A 2-HIGH LOAD OF SMALL CONTAINERS.

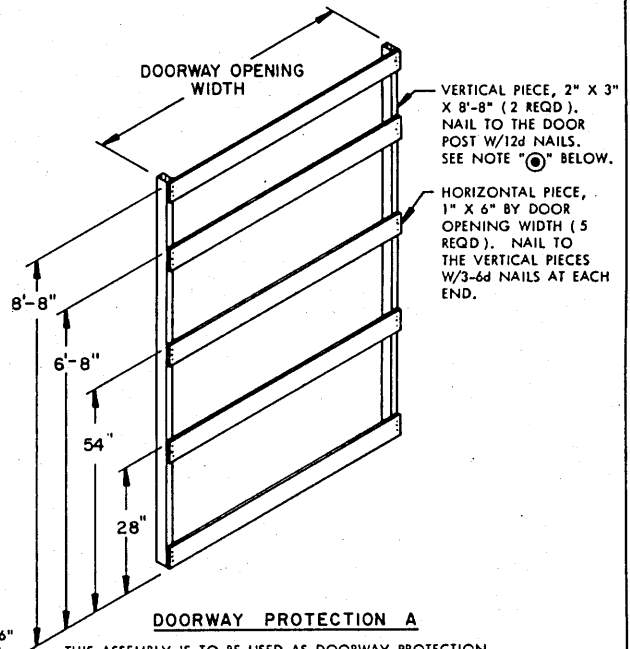
STRUT LEDGER, 2" X 4" X 6" (2 REQD). NAIL TO THE STRUT BEARING PIECE W/3-10d NAILS.





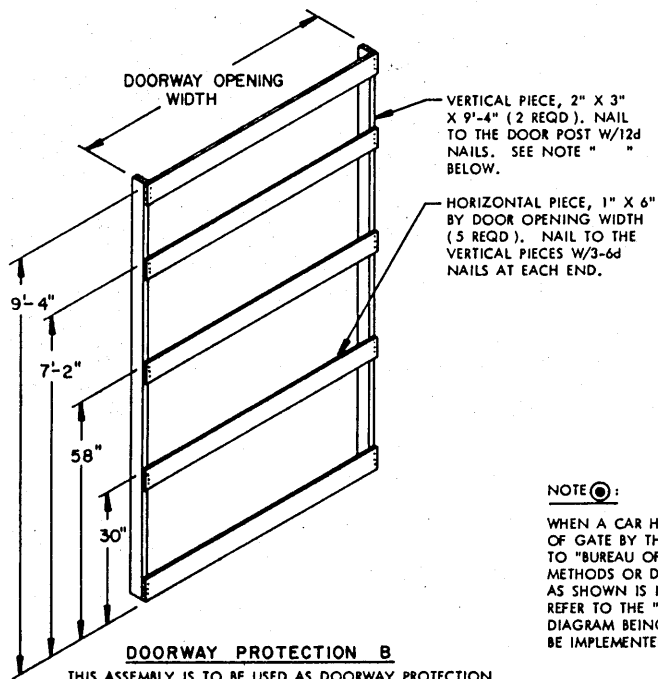
**SIDE SPACER**

THIS ASSEMBLY IS TO BE USED AS A SPACER BETWEEN A 4-LAYER CONTAINER STACK AND THE CAR SIDE WALL ON ALTERNATE SIDES OF THE CAR WITHIN A LOAD OF LARGE CONTAINERS. FOR STACKS LESS THAN 4 LAYERS HIGH, ELIMINATE ONE LOAD BEARING PIECE FOR EACH LAYER OMITTED AND REDUCE HEIGHT OF WALL BEARING PIECES ACCORDINGLY.



**DOORWAY PROTECTION A**

THIS ASSEMBLY IS TO BE USED AS DOORWAY PROTECTION WHEN SHIPPING A LOAD OF SMALL CONTAINERS. SEE NOTE (B) BELOW.



**DOORWAY PROTECTION B**

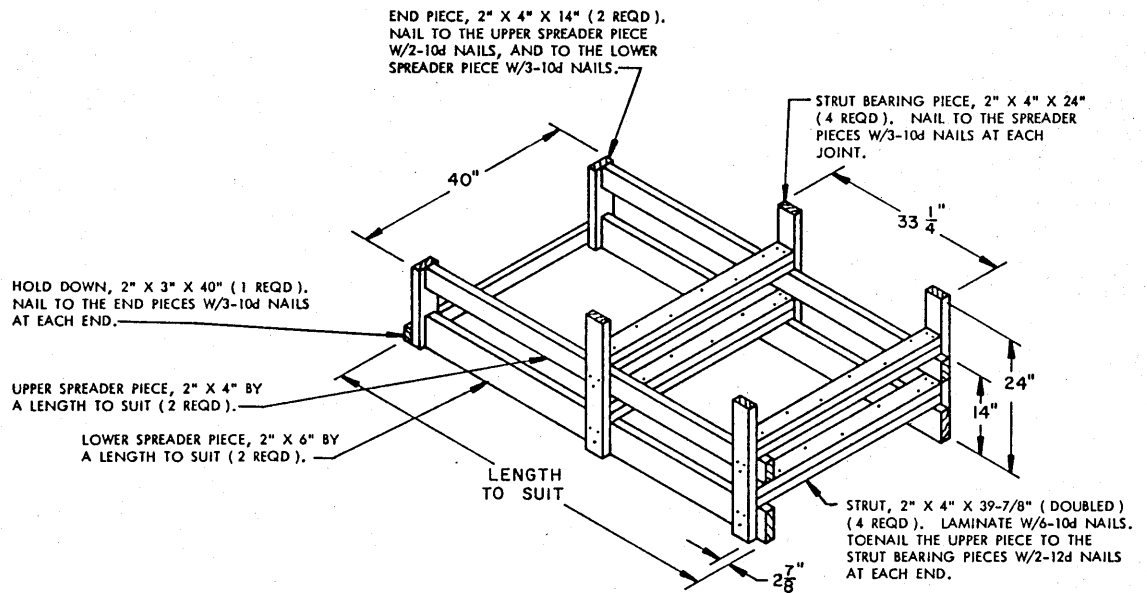
THIS ASSEMBLY IS TO BE USED AS DOORWAY PROTECTION WHEN SHIPPING A LOAD OF LARGE CONTAINERS. SEE NOTE (B) AT RIGHT.

**NOTE (B):**

DOORWAY PROTECTION AS DETAILED IS FOR A 4-LAYER LOAD. FOR LOADS LESS THAN 4 LAYERS HIGH, ELIMINATE ONE HORIZONTAL PIECE FOR EACH LAYER OMITTED AND REDUCE HEIGHT OF VERTICALS ACCORDINGLY.

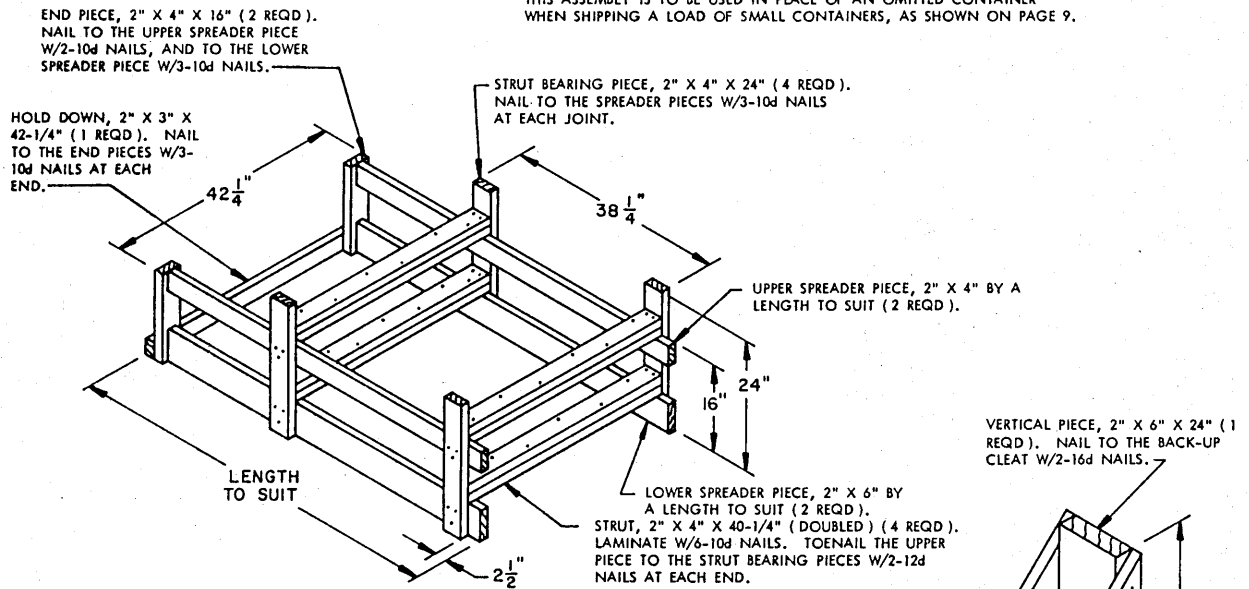
**NOTE (C):**

WHEN A CAR HAS DOOR POSTS WHICH DO NOT PROVIDE FOR ADEQUATE SECUREMENT OF GATE 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. DOORWAY PROTECTION DUNNAGE AS SHOWN IS NOT REQUIRED IF ALL OF THE DOORS IN A CAR ARE OF THE PLUG TYPE. REFER TO THE "SPECIAL NOTES" SECTION IMMEDIATELY ADJACENT TO THE BASIC LOADING DIAGRAM BEING FOLLOWED, FOR SPECIAL DOOR PROTECTION PROVISIONS WHICH MUST BE IMPLEMENTED.



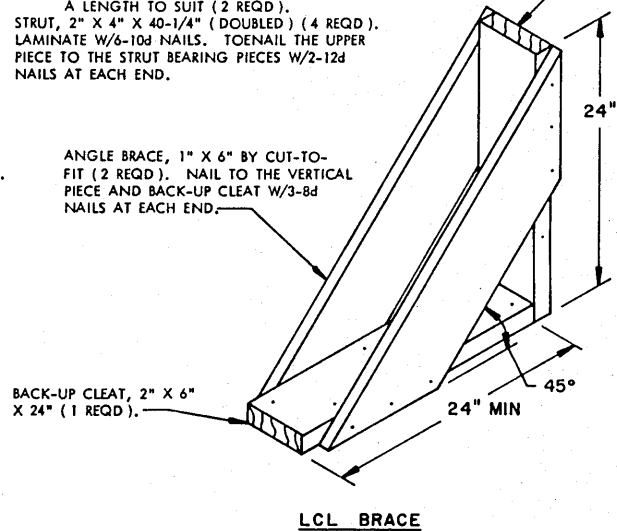
**FILLER ASSEMBLY A**

THIS ASSEMBLY IS TO BE USED IN PLACE OF AN OMITTED CONTAINER WHEN SHIPPING A LOAD OF SMALL CONTAINERS, AS SHOWN ON PAGE 9.



**FILLER ASSEMBLY B**

THIS ASSEMBLY IS TO BE USED IN PLACE OF AN OMITTED CONTAINER WHEN SHIPPING A LOAD OF LARGE CONTAINERS.



**LCL BRACE**

