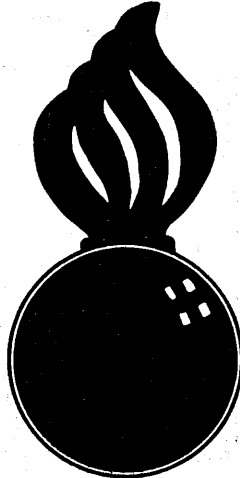


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DATE 5/22/63



LOADING & BRACING (CL & LCL) IN BOX CARS OF PALLETIZED M23 CHEMICAL MINES, 48/PALLET

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⊙ INCLUDES PROCEDURES FOR CONVENTIONAL AND "DF"-TYPE BOX CARS. THE TERM, "DF"-TYPE, IS USED HEREIN TO INDICATE ALL BOX CARS EQUIPPED WITH MECHANICAL BRACING DEVICES OF VARIOUS DESIGN AND MANUFACTURE.

LOADING & BRACING (CL & LCL) IN BOX CARS OF PALLETIZED M23 CHEMICAL MINES, 48/PALLET			
DESIGNED KSJ	WROTE DIW/DHd	CHECKED GWK/KV	APPROVED <i>A. F. Grassmuck</i> COMMANDER, SAVANNAH ARMY DEPOT
REVISIONS			EXAMINED & APPROVED <i>Ralph Hall</i> ARMORITION PROCUREMENT & SUPPLY AGENCY APPROVED BY ORDER OF COMMANDER, ARMY MATERIEL COMMAND <i>George J. Holly c. l. G.S.</i> ARMY SUPPLY MAINTENANCE COMMAND MATERIEL COMMAND U.S.A. 22 SEPTEMBER 1964
CLASS	DIVISION	DRAWING	FILE
19	48	4040	5PF1000

DO NOT SCALE

GENERAL NOTES

- A. LOADS AS SHOWN HEREIN ARE BASED ON "DF"-TYPE BOX CARS EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS, AND CONVENTIONAL BOX CARS, AND ARE FOR THE M23 CHEMICAL WINE PACKED THREE PER METAL DRUM, SIXTEEN DRUMS PER PALLET.
- B. PROCEDURES SHOWN HEREIN, FOR "DF"-TYPE CARS, MAY BE ADAPTED AS REQUIRED TO FACILITATE THE USE OF BOX CARS EQUIPPED WITH VARIOUS TYPES OF SELF-CONTAINED MECHANICAL BRACING DEVICES; HOWEVER, WALL MEMBERS (ADJUSTABLE OR FIXED) AND DOORWAY MEMBERS MUST BE LOCATED WITHIN THE TOLERANCED LIMITS OF THE SPECIFIED HEIGHTS ABOVE THE CAR FLOOR.
CAUTION: BOX CARS EQUIPPED WITH MEMBERS WHICH DO NOT MEET THE LOCATION REQUIREMENTS MUST NOT BE USED.
- C. **NOTICE:** SHIPMENTS WILL BE POSITIONED IN THE RAILCAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE RAILCAR CONCERNED OR THE QUANTITY TO BE SHIPPED; HOWEVER, THE APPROVED METHODS CONTAINED HEREIN FOR FULL OR PARTIAL CARLOAD MUST BE FOLLOWED FOR BLOCKING, BRACING, AND STAYING OF THIS ITEM.
- D. THE LOAD SHOWN ON PAGE 8 IS BASED ON "DF"-TYPE BOX CARS 50'-6" LONG x 8'-11" WIDE (MINIMUM INSIDE CLEARANCE) EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS POSITIONED AT SPECIFIED HEIGHTS ABOVE THE CAR FLOOR.
- E. THE LOAD SHOWN ON PAGE 9 IS BASED ON "DF"-TYPE BOX CARS 50'-6" LONG x 8'-11" WIDE (MINIMUM INSIDE CLEARANCE) EQUIPPED WITH DOORWAY MEMBERS, AND FIXED WALL MEMBERS ATTACHED TO SIDE WALLS, AT SPECIFIED HEIGHTS ABOVE THE CAR FLOOR.
CAUTION: THE "DF" MEMBER HEIGHT LOCATION DIMENSIONS SPECIFIED ON PAGE 9 DIFFER FROM THOSE SPECIFIED FOR THE LOAD SHOWN ON PAGE 8. CARS EQUIPPED WITH CROSS MEMBERS WITHOUT A HAILABLE SURFACE CANNOT BE USED FOR THIS METHOD.
- F. THE LOAD SHOWN ON PAGE 5 IS BASED ON CONVENTIONAL BOX CARS 50'-6" LONG x 9'-2" WIDE (INSIDE DIMENSIONS).
- G. THE TYPICAL LCL METHOD SHOWN ON PAGE 6 IS BASED ON "DF"-TYPE BOX CARS EQUIPPED WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS LOCATED AT SPECIFIED HEIGHTS ABOVE THE CAR FLOOR. FOR LCL SHIPMENTS IN "DF"-TYPE BOX CARS EQUIPPED WITH FIXED WALL MEMBERS LOCATED AT HEIGHTS OTHER THAN SPECIFIED, PRINCIPALS SHOWN ON PAGE 4 MAY BE EMPLOYED IF FIXED WALL MEMBERS ARE LOCATED WITHIN THE TOLERANCED LIMITS OF THE DIMENSIONS SPECIFIED ON PAGE 4.
- H. THE TYPICAL LCL METHOD SHOWN ON PAGE 7 IS BASED ON CONVENTIONAL BOX CARS 9'-2" WIDE (INSIDE DIMENSION).
- J. ANTI-CHAFING MATERIAL OF SUITABLE THICKNESS MUST BE USED TO PREVENT CONTACT BETWEEN EXPOSED METAL SURFACES ON THE SIDES OF "DF"-TYPE CARS AND STEEL STRAPPING AND/OR METAL CONTAINERS OF THE PALLET LOAD. THE ANTI-CHAFING MATERIAL MUST BE SECURED TO PREVENT DISPLACEMENT DURING TRANSIT.
- K. A D-F CROSS MEMBER WILL BE USED IN SUCH A MANNER THAT IT WILL NOT BE RELIED ON TO RETAIN MORE THAN 4,000 POUNDS OF LADING ON EITHER SIDE.* VOIDS LENGTHWISE WITHIN THE LOAD MUST BE MINIMUM AND CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE WALL MEMBER LOCKING HOLE SPACING PERMITS. LOCKING BARS (LEVER JACK) SHOULD BE USED FOR THIS PURPOSE. AN ADDITIONAL 1/2" OF ADJUSTMENT CAN BE MADE BY TURNING THE CROSS MEMBER END FOR END WHEN LOCKING PINS ARE OFF-CENTER. **NOTE:** IT IS RECOMMENDED THAT CROSS MEMBERS BE INSTALLED WITH EACH END ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS, AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM END OF CAR.
- L. **CAUTION:** ALL BLOCKING AND BRACING COMPONENTS ("DF" MEMBERS) 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 THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS.
- M. DETAIL OF PALLET.
PALLET UNIT DIMENSIONS - 47-3/4" LONG x 52-1/4" WIDE x 48-1/2" HIGH.
GROSS WEIGHT - 2,100 POUNDS (APPROX).
- N. ALL STRAPPING WILL BE SEALED WITH TWO (2) SEALS AND TWO (2) CRIMPS PER SEAL.
- O. THIS ITEM IS AN ICC CLASS "A" EXPLOSIVE. PROCEDURES SHOWN HEREIN ARE ALSO APPLICABLE FOR THE SHIPMENT OF PALLETIZED EMPTY METAL DRUMS OR EMPTY WINES IN DRUMS.

* AN ADDITIONAL (FOURTH) CROSS MEMBER IS USED IN THE DOORWAY AREA OF THE LOAD SHOWN ON PAGE 9 IN ORDER TO ENSURE THAT EACH CROSS MEMBER RETAINS NOT MORE THAN 4,000 POUNDS (GROSS) OF LADING.

MATERIAL SPECIFICATIONS

- LUMBER: SEE ORDM 3-4.
- NAILS: COMMON, CEMENT COATED, FED SPEC FF-N-106.
- ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.
- STRAPPING, STEEL: TYPE 1, CLASS "A" OR "C", FED SPEC 90-3-781.

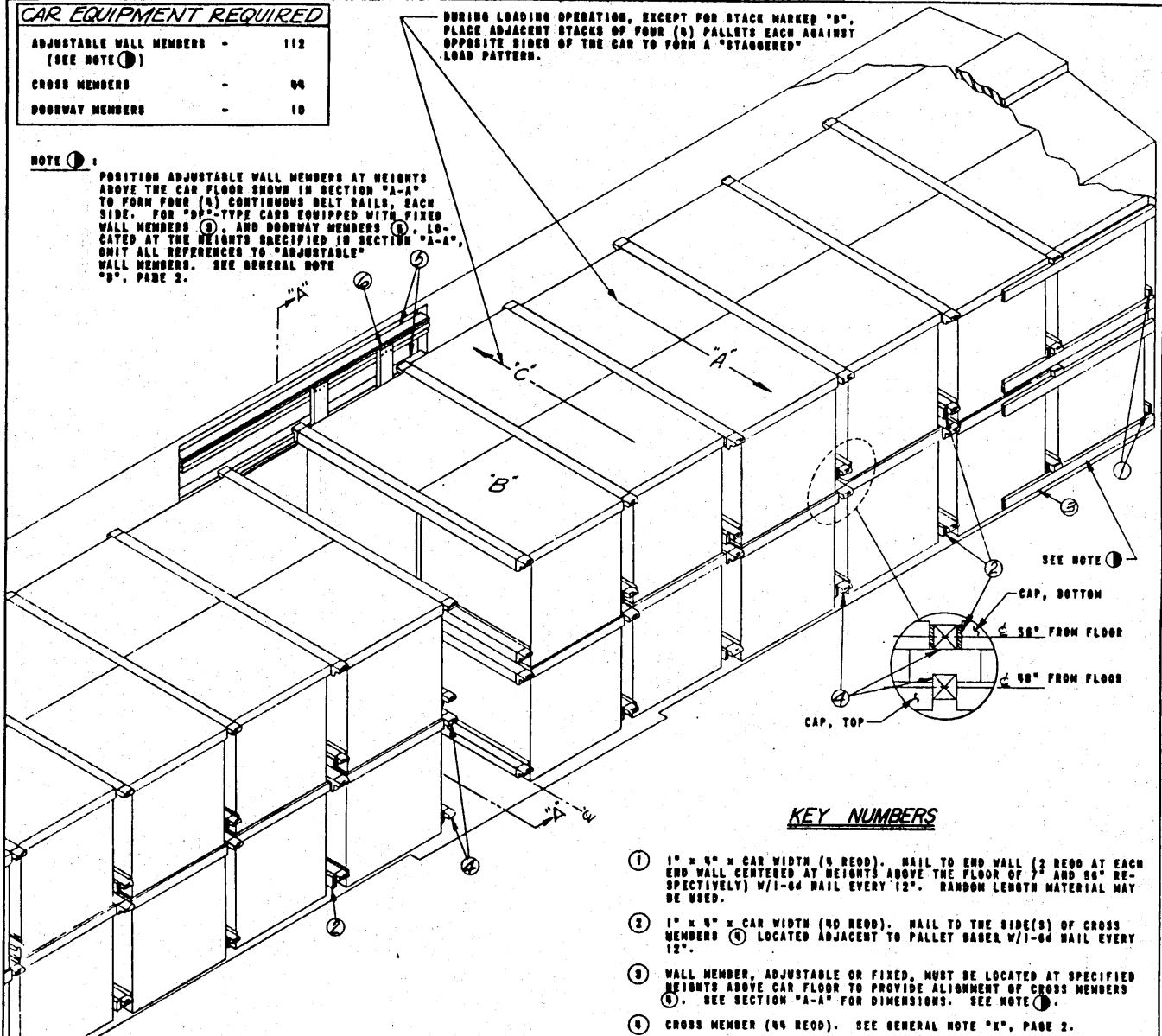
CAR EQUIPMENT REQUIRED

ADJUSTABLE WALL MEMBERS -	112
(SEE NOTE 1)	
CROSS MEMBERS -	44
DOORWAY MEMBERS -	10

NOTE 1:

POSITION ADJUSTABLE WALL MEMBERS AT HEIGHTS ABOVE THE CAR FLOOR SHOWN IN SECTION "A-A" TO FORM FOUR (4) CONTINUOUS BELT RAILS, EACH SIDE. FOR "D"-TYPE CARS EQUIPPED WITH FIXED WALL MEMBERS 1, AND DOORWAY MEMBERS 5, LOCATED AT THE HEIGHTS SPECIFIED IN SECTION "A-A", OMIT ALL REFERENCES TO "ADJUSTABLE" WALL MEMBERS. SEE GENERAL NOTE "D", PAGE 2.

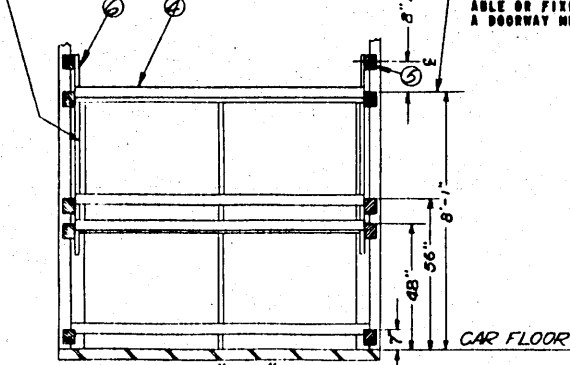
DURING LOADING OPERATION, EXCEPT FOR STACK MARKED "B", PLACE ADJACENT STACKS OF FOUR (4) PALLETS EACH AGAINST OPPOSITE SIDES OF THE CAR TO FORM A "STAGGERED" LOAD PATTERN.



ISOMETRIC VIEW

80'-0" L x 8'-11" W (MIN INSIDE CLEARANCE)
CAR EQUIPPED WITH ADJUSTABLE AND/OR FIXED
WALL MEMBERS. SEE GENERAL NOTES "B"
AND "D", PAGE 2.

SEE GENERAL NOTE "J", PAGE 2.



SECTION "A-A"

TOLERANCE FOR ALL DIMENSIONS = ± 1/2"
(UNLESS OTHERWISE SHOWN)

KEY NUMBERS

- 1 1" x 4" x CAR WIDTH (4 REOD). NAIL TO END WALL (2 REOD AT EACH END WALL CENTERED AT HEIGHTS ABOVE THE FLOOR OF 72" AND 56" RESPECTIVELY) W/1-6d NAIL EVERY 12". RANDOM LENGTH MATERIAL MAY BE USED.
- 2 1" x 4" x CAR WIDTH (40 REOD). NAIL TO THE SIDE(S) OF CROSS MEMBERS 2 LOCATED ADJACENT TO PALLET BASES W/1-6d NAIL EVERY 12".
- 3 WALL MEMBER, ADJUSTABLE OR FIXED, MUST BE LOCATED AT SPECIFIED HEIGHTS ABOVE CAR FLOOR TO PROVIDE ALIGNMENT OF CROSS MEMBERS 2. SEE SECTION "A-A" FOR DIMENSIONS. SEE NOTE 1.
- 4 CROSS MEMBER (44 REOD). SEE GENERAL NOTE "K", PAGE 2.
- 5 DOORWAY MEMBER (10 REOD). POSITION AT HEIGHTS ABOVE THE CAR FLOOR SPECIFIED IN SECTION "A-A".
- 6 2" x 6" x 72" (4 REOD). NAIL TO TOP DOORWAY MEMBER 5 W/3-10d NAILS.

BILL OF MATERIAL

LUMBER	LINEAL FEET	BOARD FEET
1" x 4"	360	130
2" x 6"	24	24
NAILS	NO. REOD	POUNDS
6d (2")	306	2-1/2
10d (3")	12	1/2

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
PALLET	44	92,400 LBS (APPROX)
BURNAGE		368 LBS
TOTAL WEIGHT		92,768 LBS (APPROX)

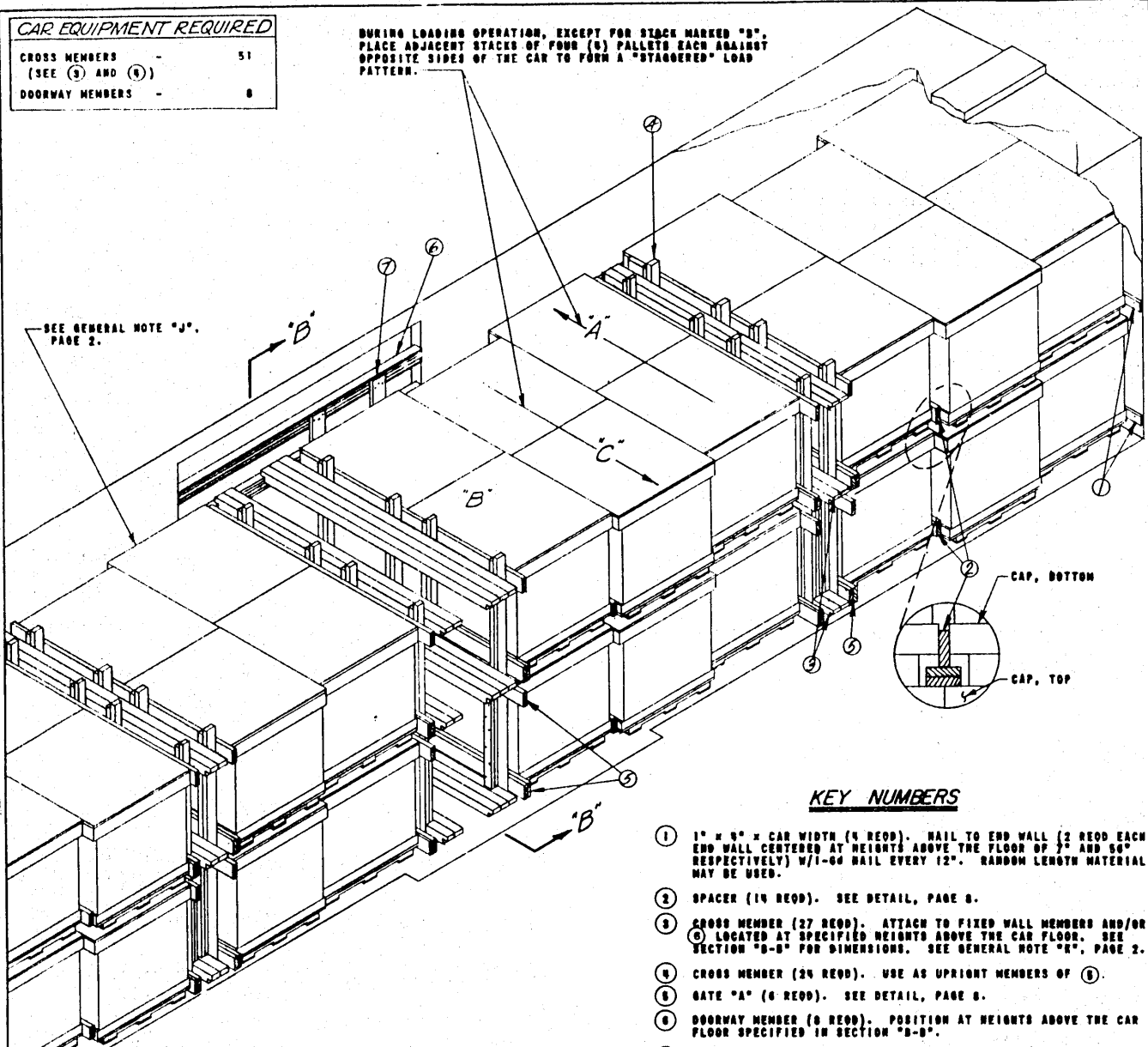
"D"-TYPE CAR WITH ADJUSTABLE AND/OR FIXED WALL MEMBERS

CAR EQUIPMENT REQUIRED

CROSS MEMBERS (SEE ③ AND ④)	51
DOORWAY MEMBERS	8

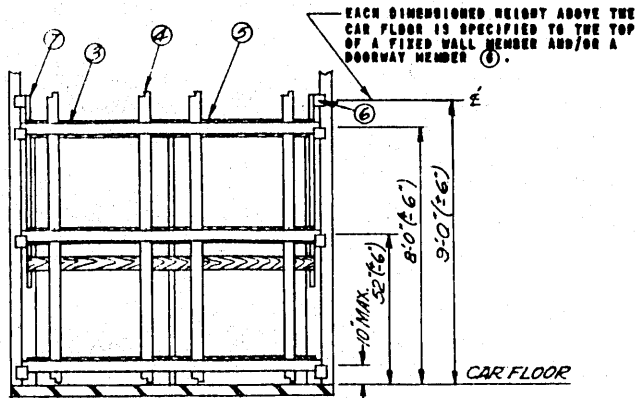
DURING LOADING OPERATION, EXCEPT FOR STACK MARKED "B", PLACE ADJACENT STACKS OF FOUR (4) PALLETS EACH AGAINST OPPOSITE SIDES OF THE CAR TO FORM A "STAGGERED" LOAD PATTERN.

SEE GENERAL NOTE "J", PAGE 2.



ISOMETRIC VIEW

50'-0" L x 8'-11" W (MIN INSIDE CLEARANCE)
CAR EQUIPPED WITH FIXED WALL MEMBERS. SEE
GENERAL NOTES "B" AND "E", PAGE 2.



SECTION "B-B"

**"D"-TYPE CAR WITH
FIXED WALL MEMBERS**

KEY NUMBERS

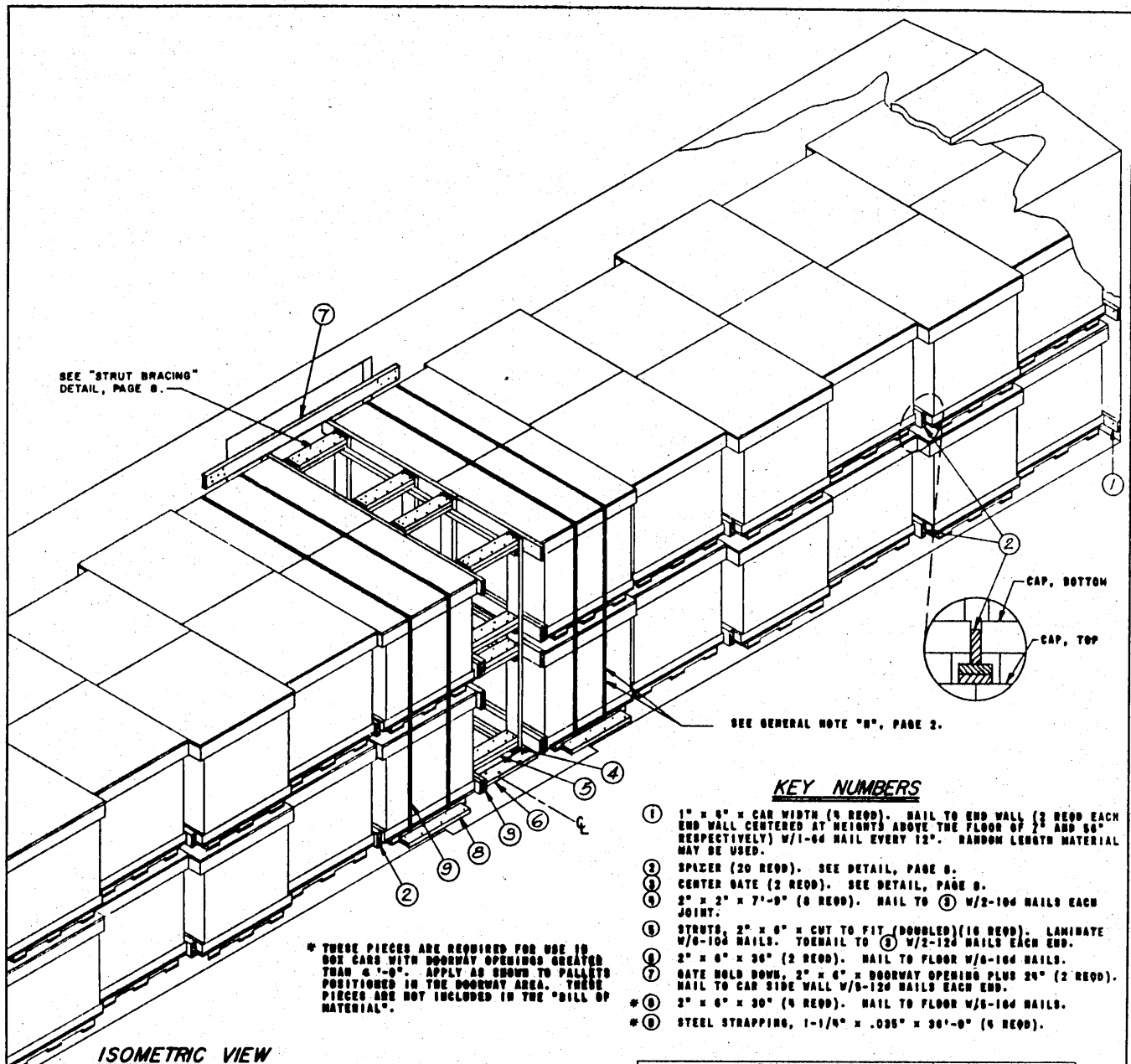
- ① 1" x 4" x CAR WIDTH (4 REED). NAIL TO END WALL (2 REED EACH END WALL CENTERED AT HEIGHTS ABOVE THE FLOOR OF 2" AND 56" RESPECTIVELY) W/1-04 NAIL EVERY 12". RANDOM LENGTH MATERIAL MAY BE USED.
- ② SPACER (14 REED). SEE DETAIL, PAGE 6.
- ③ CROSS MEMBER (27 REED). ATTACH TO FIXED WALL MEMBERS AND/OR ⑥ LOCATED AT SPECIFIED HEIGHTS ABOVE THE CAR FLOOR. SEE SECTION "B-B" FOR DIMENSIONS. SEE GENERAL NOTE "K", PAGE 2.
- ④ CROSS MEMBER (24 REED). USE AS UPRIGHT MEMBERS OF ①.
- ⑤ GATE "A" (6 REED). SEE DETAIL, PAGE 6.
- ⑥ DOORWAY MEMBER (8 REED). POSITION AT HEIGHTS ABOVE THE CAR FLOOR SPECIFIED IN SECTION "B-B".
- ⑦ 2" x 6" x 72" (4 REED). NAIL TO TOP DOORWAY MEMBER W/3-104 NAILS.

BILL OF MATERIAL

LUMBER	LINEAL FEET	BOARD FEET
1" x 4"	36	0
1" x 6"	108	54
2" x 4"	72	40
2" x 6"	426	426
NAILS	NO. REED	POUNDS
04 (2")	144	1
104 (3")	476	8

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
PALLET	96	92,400 LBS (APPROX)
DAMAGE		1,340 LBS
TOTAL WEIGHT		93,740 LBS (APPROX)



SEE "STRUT BRACING"
DETAIL, PAGE 8.

CAP, BOTTOM
CAP, TOP

SEE GENERAL NOTE "N", PAGE 2.

KEY NUMBERS

- ① 1" x 4" x CAR WIDTH (4 REED). NAIL TO END WALL (2 REED EACH END WALL CENTERED AT HEIGHTS ABOVE THE FLOOR OF 2' AND 56" RESPECTIVELY) W/1-64 NAIL EVERY 12". RANDOM LENGTH MATERIAL MAY BE USED.
- ② SPACER (20 REED). SEE DETAIL, PAGE 8.
- ③ CENTER GATE (2 REED). SEE DETAIL, PAGE 8.
- ④ 2" x 2" x 7'-0" (8 REED). NAIL TO ① W/2-104 NAILS EACH JOINT.
- ⑤ STRUTS, 2" x 6" x CUT TO FIT (DOUBLED)(16 REED). LAMINATE W/6-104 NAILS. TORNAIL TO ③ W/2-124 NAILS EACH END.
- ⑥ 2" x 6" x 36" (2 REED). NAIL TO FLOOR W/6-104 NAILS.
- ⑦ GATE HOLD DOWN, 2" x 6" x DOORWAY OPENING PLUS 24" (2 REED). NAIL TO CAR SIDE WALL W/8-124 NAILS EACH END.
- * ⑧ 2" x 6" x 30" (4 REED). NAIL TO FLOOR W/8-104 NAILS.
- * ⑨ STEEL STRAPPING, 1-1/4" x .035" x 36'-0" (4 REED).

* THESE PIECES ARE REQUIRED FOR USE IN BOX CARS WITH DOORWAY OPENINGS GREATER THAN 6'-0". APPLY AS SHOWN TO PALLET POSITIONED IN THE DOORWAY AREA. THESE PIECES ARE NOT INCLUDED IN THE "BILL OF MATERIAL".

ISOMETRIC VIEW

50'-6" LONG x 9'-2" WIDE
BOX CAR. SEE GENERAL NOTE
"F", PAGE 2.

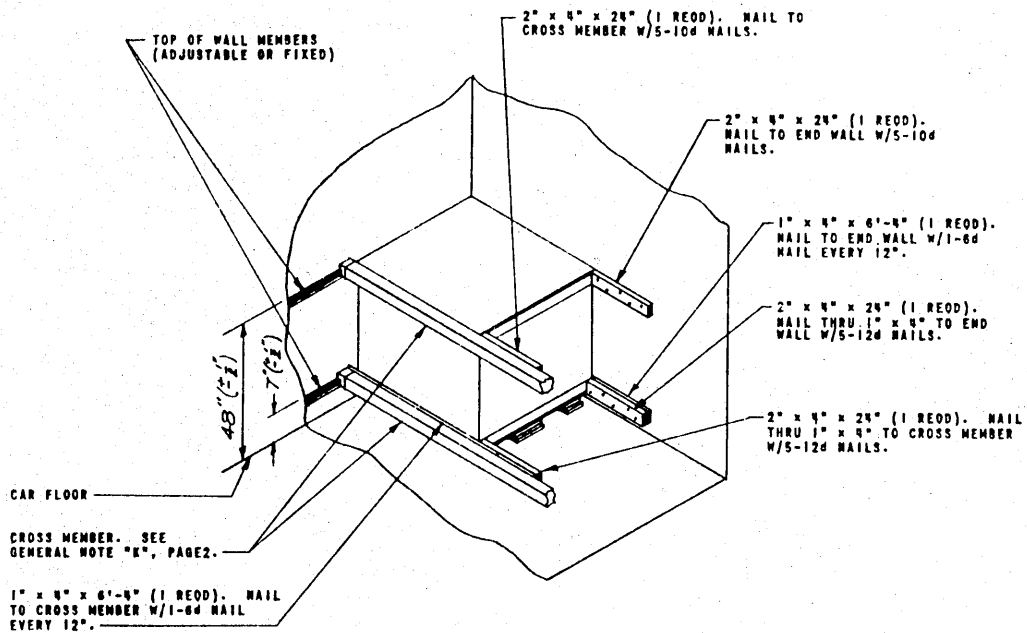
BILL OF MATERIAL

LUMBER	LINEAL FEET	BOARD FEET
1" x 4"	79	25
2" x 2"	82	21
2" x 6"	503	503
NAILS	NO. REED	POUNDS
64 (2")	36	1/8
104 (3")	504	7-3/8
124 (3 1/2")	100	3
164 (3 1/2")	12	1/4

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT
PALLET	90	100,000 LBS (APPROX)
DUMMIE		1,300 LBS
TOTAL WEIGHT		182,100 LBS (APPROX)

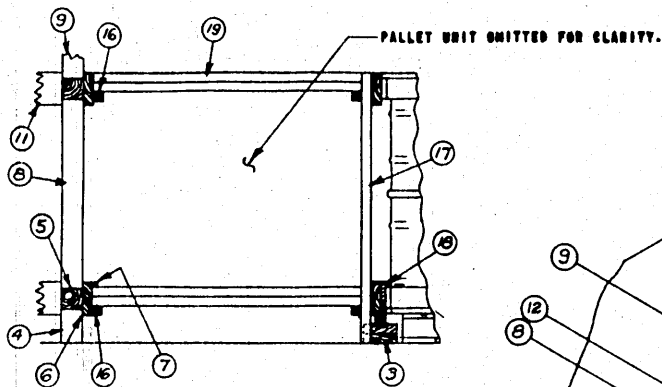
50'-6" L x 9'-2" W CONVENTIONAL BOX CAR



TYPICAL LCL

SEE GENERAL NOTES "B" AND "C", PAGE 2.

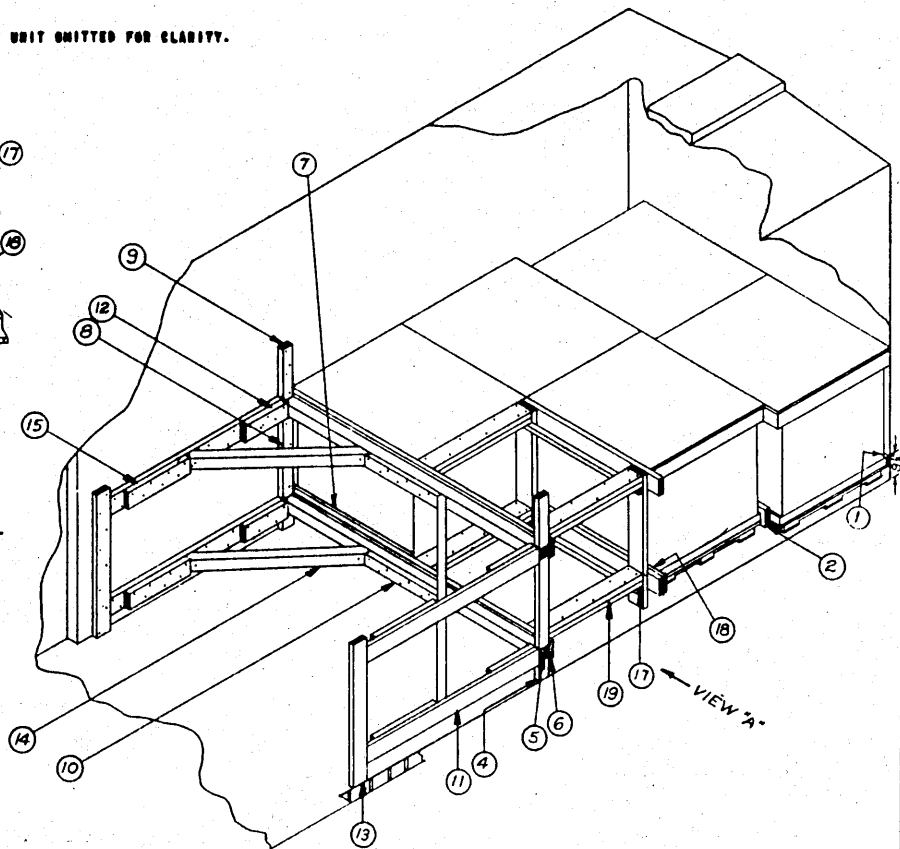
TYPICAL LCL
DF-TYPE CAR W/FIXED AND/OR ADJUSTABLE WALL MEMBERS



VIEW "A"

NOTE:

FOR AUTHORIZED METHODS OF BRACING PARTIAL LAYERS OTHER THAN SHOWN SEE ORD CORPS DRAWING 10-40-2210-SPDM. K-BRACING AS SHOWN IS ADEQUATE TO RETAIN A MAXIMUM OF SIX PALLETS; HOWEVER, WHEN USED TO BLOCK SIX PALLETS ITS USE IS LIMITED TO 50'-6" LONG CARS WHICH HAVE 12" OR LESS DOOR OPENINGS. WHEN USED IN 50'-6" LONG CARS THE LADING CAR ONLY BE A MAXIMUM OF TWO STACKS LONG, PROVIDING THE DOOR OPENING IS NO GREATER THAN 10' WIDE.

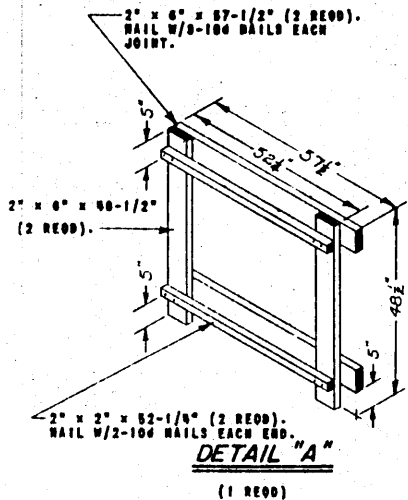


TYPICAL LCL

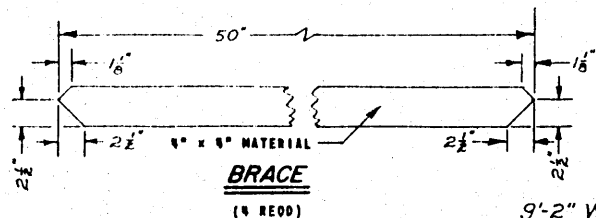
50'-6" LONG X 9'-2" WIDE BOX CAR WITH 12'-0" DOORWAY OPENING

KEY NUMBERS

- ① 1" x 4" x CAR WIDTH (1 REOD). NAIL TO CAR END WALL W/1-04 NAIL EVERY 12".
- ② SPACER (FOR TWO WIDE LOAD)(1 REOD). SEE DETAIL, PAGE 6.
- ③ SPACER (FOR ONE WIDE LOAD)(1 REOD). SEE DETAIL, PAGE 6. SEE "VIEW A".
- ④ 2" x 4" x 6" (2 REOD). NAIL TO CAR WALL W/2-104 NAILS.
- ⑤ 4" x 4" x CAR WIDTH (2 REOD).
- ⑥ 2" x 6" x CAR WIDTH (2 REOD). NAIL TO ⑤ W/1-124 NAIL EVERY 8".
- ⑦ 1" x 6" x 52" (1 REOD). NAIL TO LOWER PIECE ⑥ W/5-04 NAILS.
- ⑧ 2" x 4" x 30-1/4" (2 REOD). NAIL TO CAR SIDE WALL W/4-104 NAILS.
- ⑨ 2" x 4" x 18" (2 REOD). NAIL TO CAR SIDE WALL W/5-124 NAILS.
- ⑩ 2" x 4" x 30" (2 REOD). NAIL TO ⑥ W/7-124 NAILS.
- ⑪ 2" x 6" x 72" (4 REOD). NAIL TO CAR SIDE WALL W/16-124 NAILS.
- ⑫ 2" x 6" x 18" (4 REOD). NAIL TO ⑪ W/7-124 NAILS.
- ⑬ 2" x 6" x 54" (2 REOD). NAIL TO CAR SIDE WALL W/8-124 NAILS.
- ⑭ BRACE 4" x 4" x 50" (4 REOD). NAIL W/1-04 NAIL EACH END. SEE DETAIL.
- ⑮ 2" x 6" x 30" (4 REOD). NAIL TO ⑪ W/7-124 NAILS.
- ⑯ 2" x 2" x 53" (2 REOD). NAIL TO ⑥ W/4-104 NAILS. SEE "VIEW A".
- ⑰ GATE (1 REOD). SEE DETAIL "A".
- ⑱ 1" x 6" x 57-1/2" (1 REOD). NAIL TO ⑰ W/7-04 NAILS.
- ⑲ STRUTS, 2" x 8" x CUT TO FIT (DOUBLED)(4 REOD) LAMINATE W/7-104 NAILS. TOENAIL TO ⑥ AND/OR ⑰ W/2-124 NAILS EACH END.

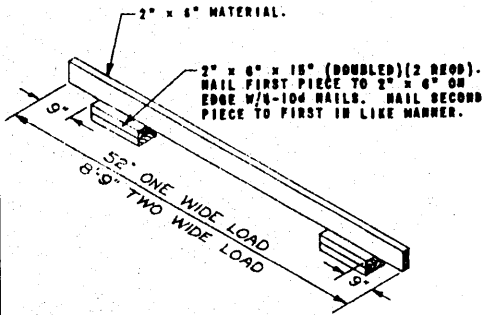


DETAIL "A"
(1 REOD)



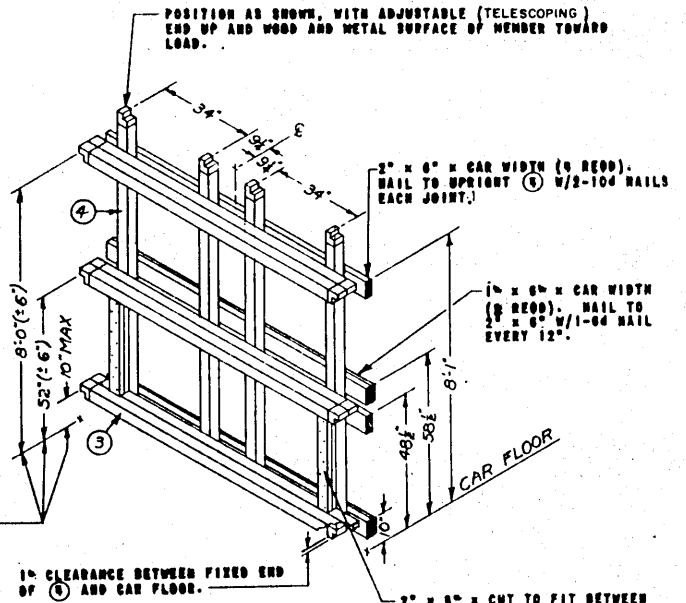
BRACE
(4 REOD)

TYPICAL LCL
9'-2" W CONVENTIONAL BOX CAR



SPACER

THESE DIMENSIONED HEIGHTS ABOVE THE CAR FLOOR ARE SPECIFIED TO THE TOP OF A FIXED WALL MEMBER AND/OR A DOORWAY MEMBER.



GATE "A"

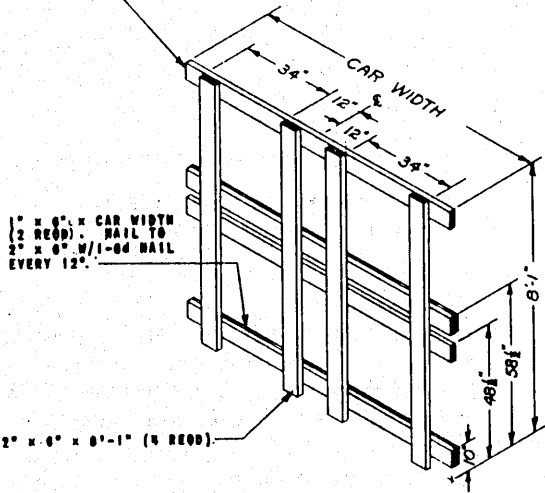
(4 REOD)

SEE NOTE Δ .

NOTE Δ

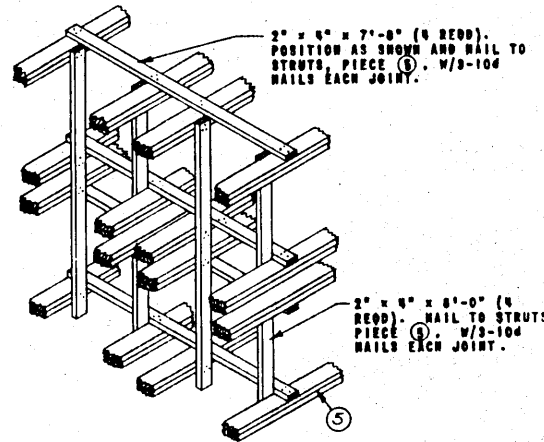
IT IS RECOMMENDED THAT GATE BE PRE-ASSEMBLED AND INSTALLED AGAINST THE LADING AS A UNIT.

2" x 6" x CAR WIDTH (4 REOD).
NAIL TO UPRIGHT W/3-10d NAILS
EACH JOINT.



CENTER GATE

(2 REOD)



STRUT BRACING

FOR STRUTS 40' OR GREATER IN LENGTH. POSITION EVERY 60'.

DETAILS