

REV NO. 2 APPROVED BY
BUREAU OF EXPLOSIVES

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DATE *1/16/86*

REV NO. 3

SIGNED *E. P. Bowen*

DATE *2/1/86*

TOW

LOADING AND BRACING (CL & LCL) IN BOX CARS OF GUIDED MISSILE PACKED ONE PER WIREBOUND WOODEN BOX (OVERPACK), UNPALLETIZED AND PALLETIZED (12 PER PALLET)

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THIS DRAWING, INCLUDING REVISION 3, SUPERSEDES
DRAWING 19-48-5489-GM501, DATED OCTOBER 1979, AND
ALL REVISIONS THERETO.

DO NOT SCALE

REVISIONS		DATE	BY	APPROVED BY
3	JAN 86	<i>WRF</i>	<i>WRF</i>	<i>John L. Byrd</i>
				APPROVED, U.S. ARMY SINGLE COMMAND
				APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)
				<i>John L. Byrd</i> U.S. ARMY DEFENSE ASSURANCE CENTER AND SCHOOL
U.S. ARMY AMC DRAWING				
JANUARY 1986				
CLASS	DIVISION	DRAWING	FILE	
19	48	5489	GM 5 TO1	

GENERAL NOTES

(GENERAL NOTES CONTINUED)

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO THE TOW GUIDED MISSILE PACKED ONE PER WIREBOUND WOODEN BOX (OVERPACK). SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE WIREBOUND WOODEN BOX WITH CONTENTS. ALSO, SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE PALLET UNIT OF TWELVE (12) WIREBOUND BOXES WITH CONTENTS.
- C. FOR DETAILS OF WIREBOUND WOODEN BOX (OVERPACK) SEE DRAWING NO. DT0224699 (U.S. ARMY MISSILE COMMAND), AND "CONTAINER UNIT" VIEW ON PAGE 3.
- CONTAINER DIMENSIONS -- 58-1/4" LONG X 11-5/8" WIDE X 11-5/8" HIGH (APPROX).
GROSS WEIGHT ----- 87 POUNDS (APPROX).
CUBE ----- 4.9 CUBIC FEET.
- D. FOR DETAIL OF THE PALLET UNITS SEE U.S. ARMY AMC (DARCOM) DRAWING NO. 19-48-5229-GM20T01 AND "PALLET UNIT" VIEWS ON PAGE 3.
- PALLET UNIT (4-WIDE BY 3-HIGH)
DIMENSIONS -- 58-1/4" LONG X 48" WIDE X 39-3/4" HIGH (APPROX).
GROSS WEIGHT -- 1,127 POUNDS (APPROX).
CUBE ----- 64.0 CUBIC FEET.
- PALLET UNIT (3-WIDE BY 4-HIGH)
DIMENSIONS -- 35-1/4" LONG X 58-1/4" WIDE X 51-1/4" HIGH (APPROX).
GROSS WEIGHT -- 1,112 POUNDS (APPROX).
CUBE ----- 60.9 CUBIC FEET.
- E. THIS ITEM WITH AN HE WARHEAD OR AN HEAT WARHEAD IS DOT SHIPPING NOMENCLATURE "ROCKET AMMUNITION WITH EXPLOSIVE PROJECTILE", AND IS A DOT CLASS "A" EXPLOSIVE. THIS ITEM, WHEN SHIPPED UNDER DOT SHIPPING NOMENCLATURE "ROCKET MOTOR, CLASS A EXPLOSIVE" (TELEMETRY OR INERT LOADED PROJECTILES), IS ALSO A DOT CLASS "A" EXPLOSIVE. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE 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.
- F. OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE FOR CONVENTIONAL TYPE BOX CARS OF VARIOUS LENGTH AND WIDTH COMBINATIONS.
- G. 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.
- H. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF THE DESIGNATED ITEMS WILL BE IN ACCORDANCE WITH HAZARDOUS MATERIALS REGULATIONS OF DOT AND AR 55-355, CHAPTER 213, FOR EXPLOSIVES OR OTHER DANGEROUS ARTICLES, IN FULL. SEE NOTE "U" AT RIGHT.
- J. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH THE WEIGHT DISTRIBUTION REQUIREMENTS OF THE AAR. THE APPROVED BLOCKING, BRACING, AND STAYING METHODS FOR THE LOADS SPECIFIED HEREIN MUST BE FOLLOWED. THE NUMBER OF UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE CAR TO BE LOADED, OR THE QUANTITY TO BE SHIPPED. FOR A LOAD QUANTITY OTHER THAN SPECIFIED, THE APPROVED METHODS MUST BE FOLLOWED AS CLOSELY AS POSSIBLE.
- K. 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 HEREIN.

(CONTINUED AT RIGHT)

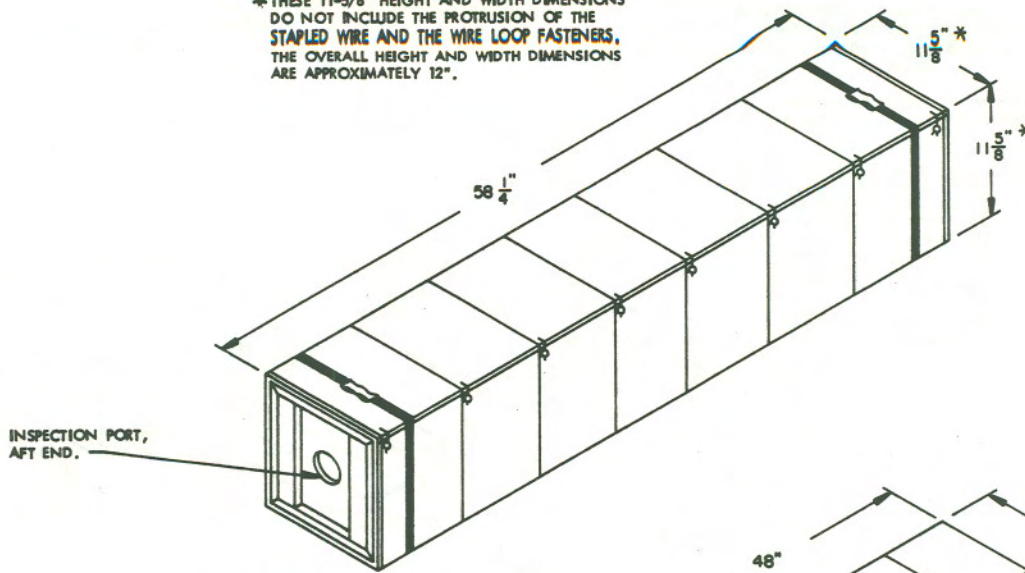
MATERIAL SPECIFICATIONS

- LUMBER -----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- NAILS -----: COMMON; FED SPEC FF-N-105.
- PLYWOOD -----: GROUP B OR C, GRADE* C-D (EXTERIOR); FED SPEC NN-P-530.
- STRAPPING, STEEL ---: CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C. FED SPEC QQ-S-781.
- SEAL, STRAP -----: TYPE D, STYLE I, II, OR IV, CLASS H, FINISH A, B (GRADE 2), OR C, FED SPEC QQ-S-781.
- WIRE -----: FED SPEC QQ-W-461.

* IF SPECIFIED GRADE IS NOT AVAILABLE A BETTER EXTERIOR GRADE MAY BE SUBSTITUTED.

- L. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT FOR A STRAP APPLICATION OTHER THAN FOR PALLETIZING, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.
- M. IN SOME INSTANCES CONTAINERS WILL ALREADY BE PALLETIZED WHEN OFFERED FOR LOADING. THESE PALLET UNITS SHOULD BE INSPECTED AND, AS REQUIRED, LOOSE UNITIZING STEEL STRAPPING MUST BE REPLACED USING STRAPPING MATERIAL SPECIFIED IN PALLETIZATION DRAWING 19-48-5229-GM20T01.
- N. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- O. IF THE CAR BEING LOADED FOR THE SHIPMENT OF THE DEPICTED LOADS 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 TO THE NAILING OF THE FLOOR DUNNAGE. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED IN LIEU OF THOSE SPECIFIED IN THE KEY NUMBERS.
- P. 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.
- Q. POWER DRIVEN STAPLES MAY BE USED AS ALTERNATIVE FASTENERS FOR NAILS WHEN CONSTRUCTING DUNNAGE ASSEMBLIES WHICH ARE TO BE USED IN THE DELINEATED TRAILER LOADS SHOWN THROUGHOUT THIS DRAWING. THE STAPLES TO BE USED MUST BE EQUAL IN LENGTH TO THE SPECIFIED NAIL SIZE AND MUST BE SUBSTITUTED ON A ONE STAPLE FOR ONE NAIL BASIS. STAPLES WHICH ARE 2-1/2" OR LESS IN LENGTH SHOULD BE IN ACCORDANCE WITH FEDERAL SPECIFICATION FF-N-105 AS NEARLY AS PRACTICABLE. STAPLES WHICH ARE LONGER THAN 2-1/2" WILL BE A COMMERCIAL GRADE, OF A QUALITY EQUIVALENT TO THOSE MANUFACTURED BY Senco PRODUCTS INCORPORATED. NOTE: STAPLES WILL NOT BE SUBSTITUTED FOR NAILS IN ANY LOAD RESTRAINING FLOOR DUNNAGE APPLICATION.
- R. 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.
- S. 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.
- T. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO DEPICTED OUTLOADING METHODS.
- U. 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 54 FOR GUIDANCE.
- 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 DETAIL ON PAGE 17. 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. NOTE THAT THE VERTICAL SPACING BETWEEN SOME LAYERS OF STRUTS MAY NOT PERMIT NAILING THE HORIZONTAL STRUT BRACING PIECES TO THE TOP SURFACES OF THE STRUTS. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF NAILED TO THE UNDER-SIDE SURFACES OF THOSE STRUTS.
- 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 17 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.

* THESE 11-5/8" HEIGHT AND WIDTH DIMENSIONS DO NOT INCLUDE THE PROTRUSION OF THE STAPLED WIRE AND THE WIRE LOOP FASTENERS. THE OVERALL HEIGHT AND WIDTH DIMENSIONS ARE APPROXIMATELY 12".

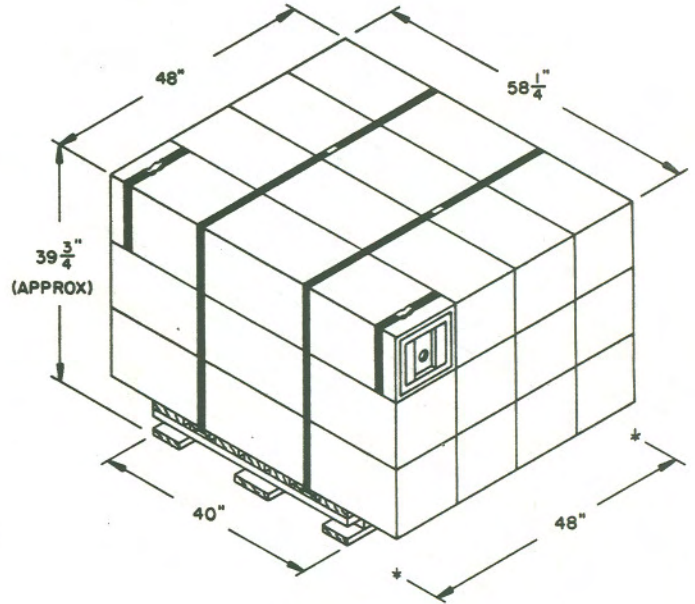


INSPECTION PORT,
AFT END.

CONTAINER UNIT

CONTAINER DATA:

GROSS WEIGHT ----- 87 POUNDS (APPROX).
CUBE ----- 4.9 CUBIC FEET.

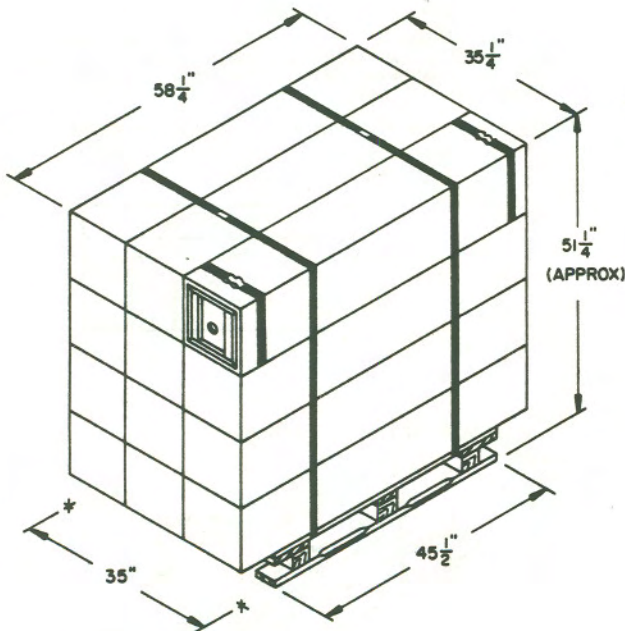


PALLET UNIT (4-W BY 3-H)

FOR FABRICATION OF THIS UNIT SEE U.S. ARMY
AMC (DARCOM) DRAWING NO. 19-48-5229-
GM20T01.

PALLET UNIT DATA:

NUMBER OF CONTAINERS --- TWELVE (12).
GROSS WEIGHT ----- 1,127 POUNDS (APPROX).
CUBE ----- 64.0 CUBIC FEET



PALLET UNIT (3-W BY 4-H)

FOR FABRICATION OF THIS UNIT SEE U.S. ARMY AMC
(DARCOM) DRAWING NO. 19-48-5229-GM20T01.

PALLET UNIT DATA:

NUMBER OF CONTAINERS --- TWELVE (12).
GROSS WEIGHT ----- 1,112 POUNDS (APPROX).
CUBE ----- 60.9 CUBIC FEET.

REVISIONS

REVISION NO. 1, DATED MAY 1970, CONSISTS OF:

1. CHANGED OUTLOADING PROCEDURES FOR REDESIGNED PALLET UNIT.

REVISION NO. 2, DATED OCTOBER 1979, CONSISTS OF:

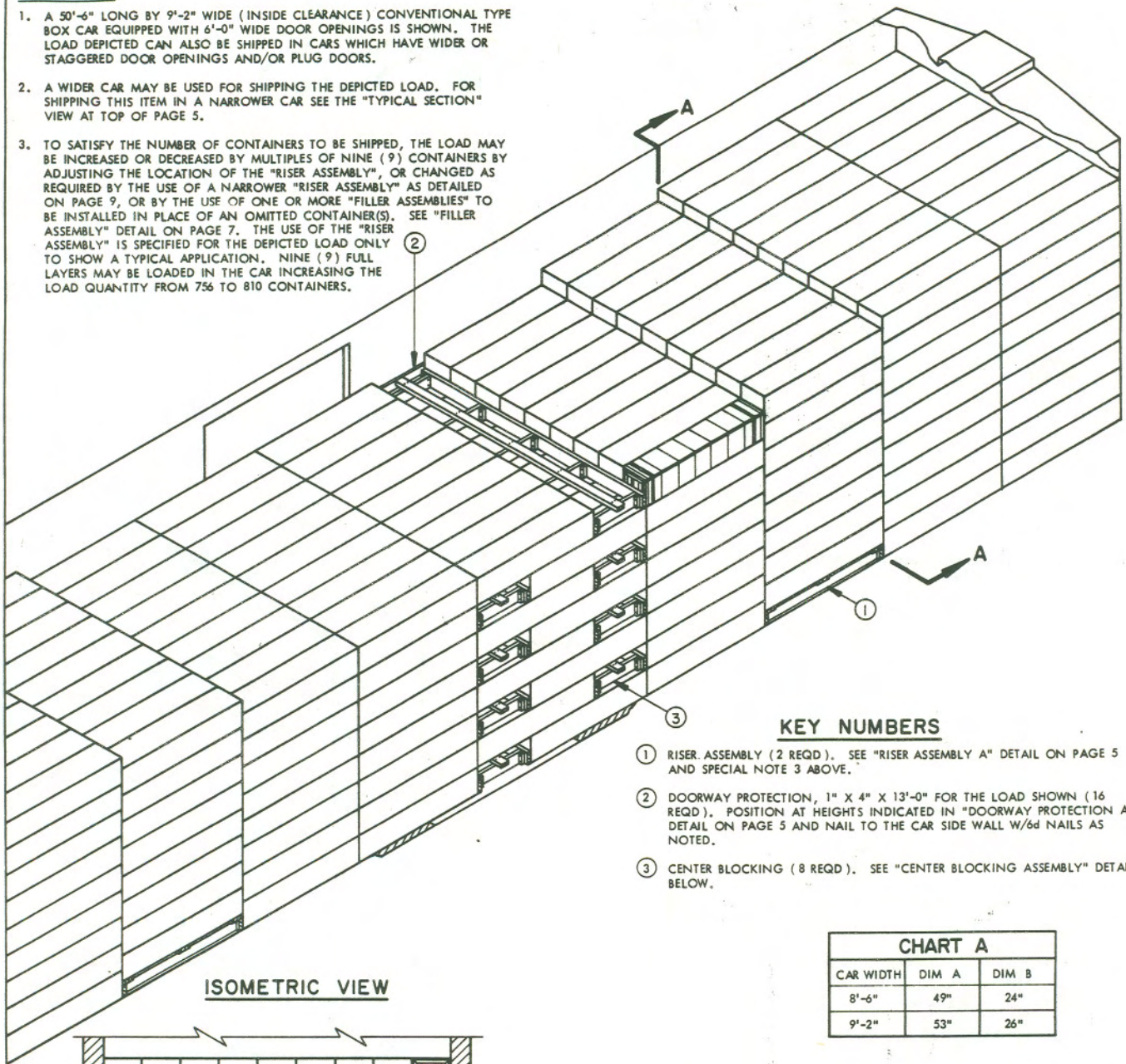
1. CHANGING DRAWING FILE NUMBER FROM GM5A171 TO GM5T01.
2. UPDATING THE GENERAL NOTES AND MATERIAL SPECIFICATIONS.
3. CHANGING THE CONTAINER UNIT AND PALLET UNIT WEIGHTS.
4. CHANGING THE PALLET UNIT DETAIL TO COMPLY WITH DRAWING NO. 19-48-5229-GM20T01.
5. ADDING PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS AND PARTIAL PALLETS.
6. CHANGING DUNNAGING IN LOAD VIEWS AND DETAILS TO SUIT CHANGED PALLET UNIT.

REVISION NO. 3, DATED JANUARY 1986, CONSISTS OF:

1. UPDATING THE GENERAL NOTES AND COVER PAGE.
2. ADDING PROCEDURES FOR 3-WIDE BY 4-HIGH PALLET UNIT.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 6'-0" WIDE DOOR OPENINGS IS SHOWN. THE LOAD DEPICTED CAN ALSO BE SHIPPED IN CARS WHICH HAVE WIDER OR STAGGERED DOOR OPENINGS AND/OR PLUG DOORS.
2. A WIDER CAR MAY BE USED FOR SHIPPING THE DEPICTED LOAD. FOR SHIPPING THIS ITEM IN A NARROWER CAR SEE THE "TYPICAL SECTION" VIEW AT TOP OF PAGE 5.
3. TO SATISFY THE NUMBER OF CONTAINERS TO BE SHIPPED, THE LOAD MAY BE INCREASED OR DECREASED BY MULTIPLES OF NINE (9) CONTAINERS BY ADJUSTING THE LOCATION OF THE "RISER ASSEMBLY", OR CHANGED AS REQUIRED BY THE USE OF A NARROWER "RISER ASSEMBLY" AS DETAILED ON PAGE 9, OR BY THE USE OF ONE OR MORE "FILLER ASSEMBLIES" TO BE INSTALLED IN PLACE OF AN OMITTED CONTAINER(S). SEE "FILLER ASSEMBLY" DETAIL ON PAGE 7. THE USE OF THE "RISER ASSEMBLY" IS SPECIFIED FOR THE DEPICTED LOAD ONLY TO SHOW A TYPICAL APPLICATION. NINE (9) FULL LAYERS MAY BE LOADED IN THE CAR INCREASING THE LOAD QUANTITY FROM 756 TO 810 CONTAINERS.

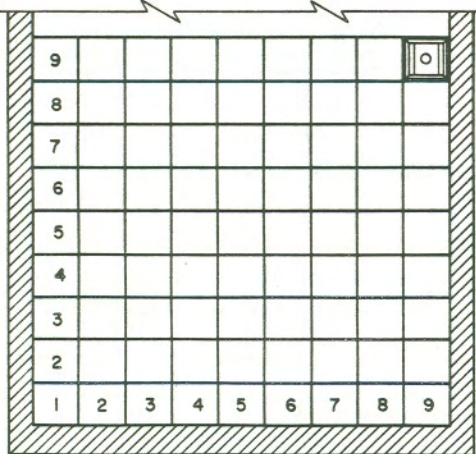


ISOMETRIC VIEW

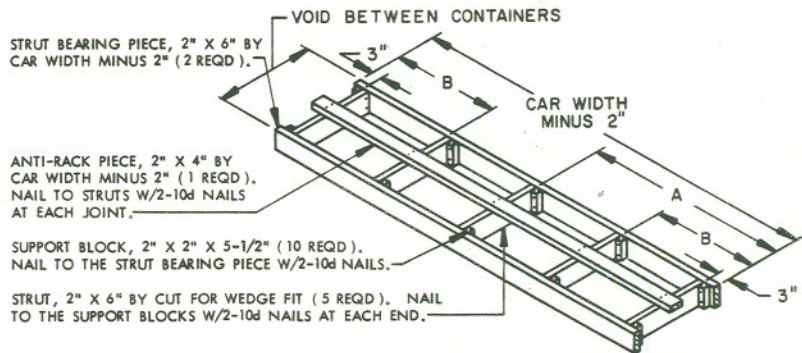
KEY NUMBERS

- ① RISER ASSEMBLY (2 REQD). SEE "RISER ASSEMBLY A" DETAIL ON PAGE 5 AND SPECIAL NOTE 3 ABOVE.
- ② DOORWAY PROTECTION, 1" X 4" X 13'-0" FOR THE LOAD SHOWN (16 REQD). POSITION AT HEIGHTS INDICATED IN "DOORWAY PROTECTION A" DETAIL ON PAGE 5 AND NAIL TO THE CAR SIDE WALL W/6d NAILS AS NOTED.
- ③ CENTER BLOCKING (8 REQD). SEE "CENTER BLOCKING ASSEMBLY" DETAIL BELOW.

CHART A		
CAR WIDTH	DIM A	DIM B
8'-6"	49"	24"
9'-2"	53"	26"



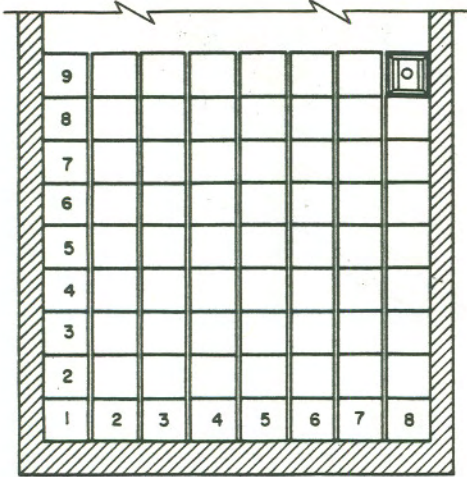
SECTION A-A



CENTER BLOCKING ASSEMBLY

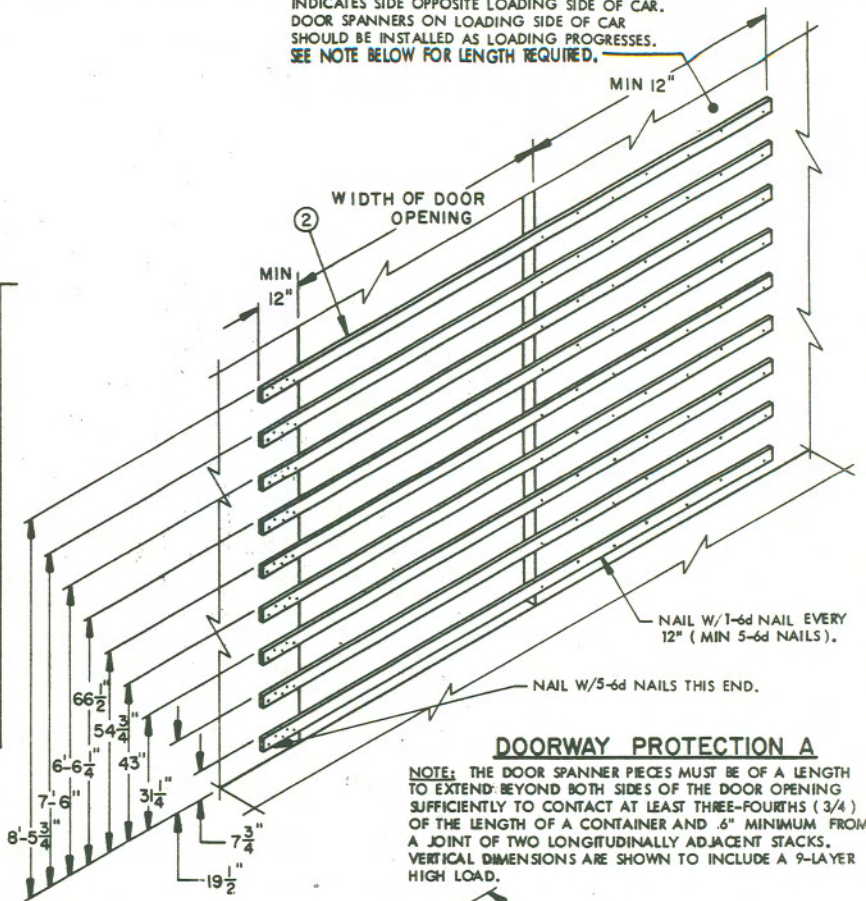
SEE "CHART A" ABOVE.

INDICATES SIDE OPPOSITE LOADING SIDE OF CAR.
 DOOR SPANNERS ON LOADING SIDE OF CAR
 SHOULD BE INSTALLED AS LOADING PROGRESSES.
 SEE NOTE BELOW FOR LENGTH REQUIRED.



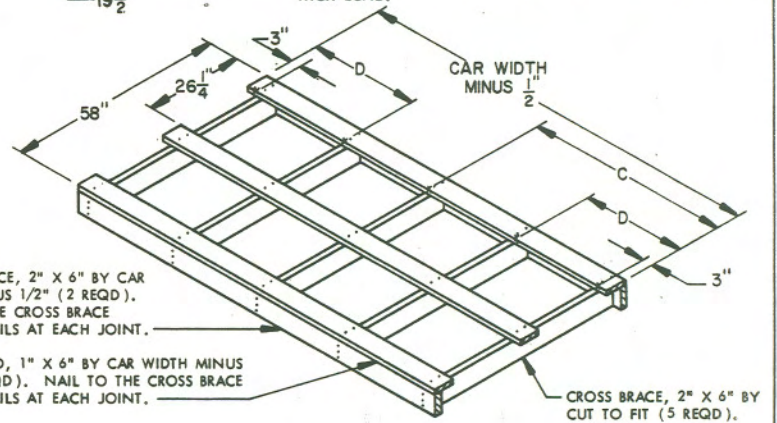
TYPICAL SECTION

THIS VIEW DEPICTS THE TYPICAL STACKING
 PATTERN FOR UNLOADING IN AN 8'-6"
 WIDE CAR.



DOORWAY PROTECTION A

NOTE: THE DOOR SPANNER PIECES MUST BE OF A LENGTH
 TO EXTEND BEYOND BOTH SIDES OF THE DOOR OPENING
 SUFFICIENTLY TO CONTACT AT LEAST THREE-FOURTHS (3/4)
 OF THE LENGTH OF A CONTAINER AND .6" MINIMUM FROM
 A JOINT OF TWO LONGITUDINALLY ADJACENT STACKS.
 VERTICAL DIMENSIONS ARE SHOWN TO INCLUDE A 9-LAYER
 HIGH LOAD.



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

DECK BOARD, 1" X 6" BY CAR WIDTH MINUS
 1/2" (3 REQD). NAIL TO THE CROSS BRACE
 W/2-10d NAILS AT EACH JOINT.

CROSS BRACE, 2" X 6" BY
 CUT TO FIT (5 REQD).

RISER ASSEMBLY A

SEE "CHART B" BELOW.

BILL OF MATERIAL

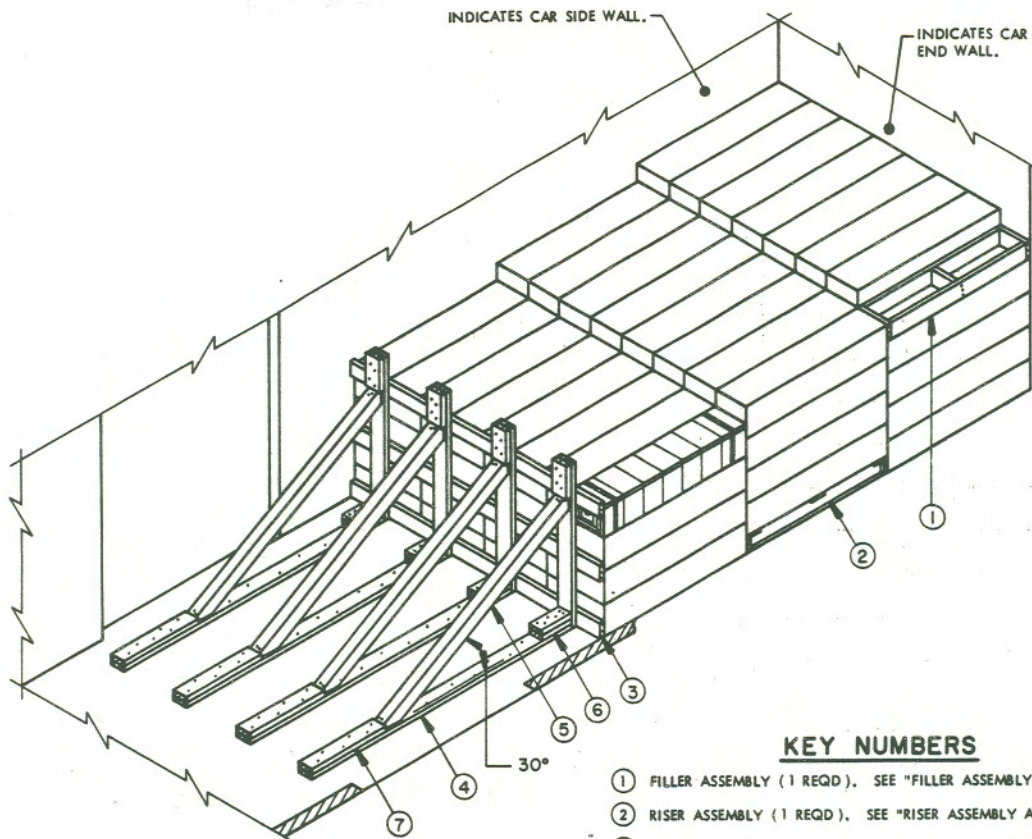
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	208	70
1" X 6"	55	28
2" X 2"	38	13
2" X 4"	73	49
2" X 6"	296	296
NAILS	NO. REQD	POUNDS
6d (2")	160	1
10d (3")	520	8

CHART B

CAR WIDTH	DIM C	DIM D
8'-6"	50	25
9'-2"	54	27

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CONTAINER	756	65,772 LBS
DUNNAGE		923 LBS
TOTAL WEIGHT		66,695 LBS



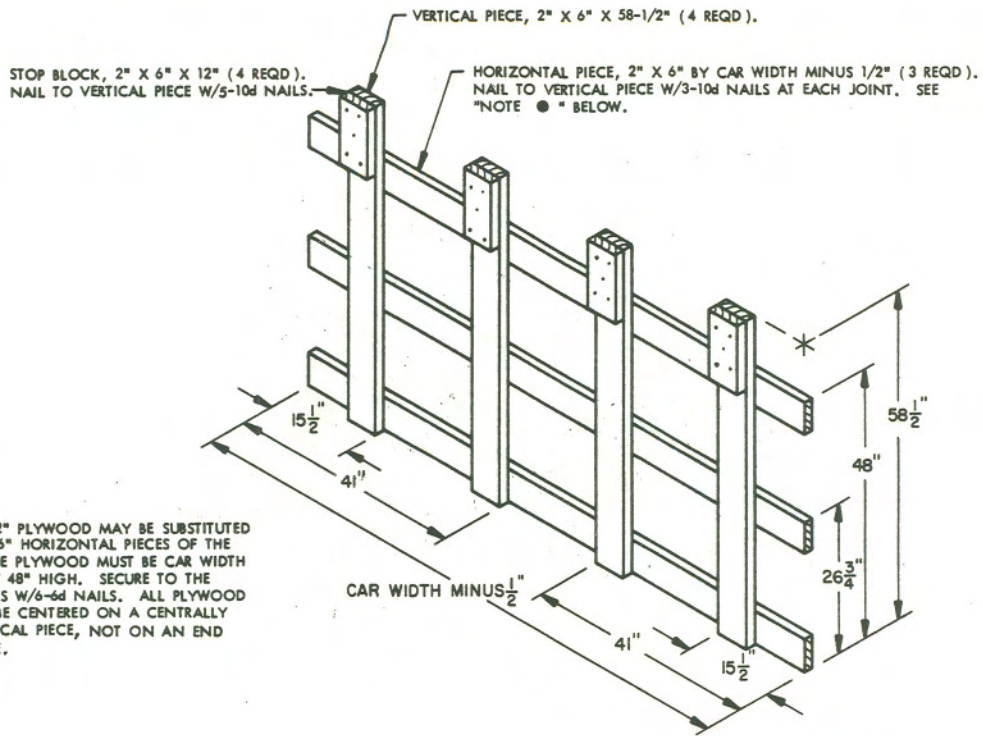
ISOMETRIC VIEW

KEY NUMBERS

- ① FILLER ASSEMBLY (1 REQD). SEE "FILLER ASSEMBLY" DETAIL ON PAGE 7.
- ② RISER ASSEMBLY (1 REQD). SEE "RISER ASSEMBLY A" DETAIL ON PAGE 5.
- ③ GATE (1 REQD). SEE "LCL GATE" DETAIL ON PAGE 7.
- ④ BACK-UP PIECE, 2" X 6" X 9'-0" (4 REQD). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ⑤ BRACE, 4" X 4" X 7'-6" (4 REQD). SEE "BRACE" DETAIL ON PAGE 7. TOENAIL TO PIECES MARKED ③ AND ④ W/2-16d NAILS AT EACH END.
- ⑥ POCKET CLEAT, 2" X 6" X 12" (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO PIECE MARKED ④ W/4-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER AND TOENAIL TO PIECE MARKED ③ W/2-16d NAILS.
- ⑦ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO PIECE MARKED ④ W/6-40d NAILS.

SPECIAL NOTES:

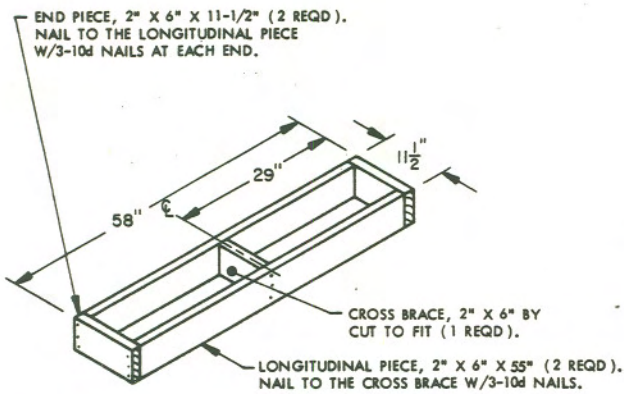
1. THESE OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE "KNEE BRACE" BLOCKING IN AN 8'-6" WIDE BOX CAR.
2. A "FILLER ASSEMBLY" IS SHOWN AS BEING USED IN PLACE OF ONE (1) OMITTED CONTAINER. THE ASSEMBLY CAN BE USED IN MULTIPLES FOR THE OMISSION OF MORE THAN ONE (1) CONTAINER. A "RISER ASSEMBLY" IS SHOWN AS BEING USED TO INCREASE/DECREASE THE LOAD BY MULTIPLES OF EIGHT (8) CONTAINERS. TO SATISFY THE NUMBER OF ITEMS TO BE SHIPPED, THE LOCATION OF THE DEPICTED "RISER" MAY BE ADJUSTED OR A NARROWER "RISER" AS DETAILED ON PAGE 9, MAY BE USED. CAUTION: A "RISER" OR A "FILLER" ASSEMBLY MUST NOT BE LOCATED ADJACENT TO THE "LCL GATE". THE "FILLER" AND "RISER" ASSEMBLIES ARE SPECIFIED FOR THE DEPICTED LOAD ONLY TO SHOW A TYPICAL APPLICATION.
3. THE "KNEE BRACE" IS ADEQUATE FOR RETAINING AN LCL LOAD OF NOT MORE THAN 17,000 POUNDS.
4. CAUTION: IF A CONTAINER EXTENDS MORE THAN 29" PAST A DOOR POST INTO THE DOORWAY AREA, DOOR SPANNER PIECES OF 1" X 4" MATERIAL WILL BE POSITIONED ACROSS THE DOOR OPENING AS DEPICTED IN THE "DOORWAY PROTECTION" DETAIL ON PAGE 5.



NOTE ●:

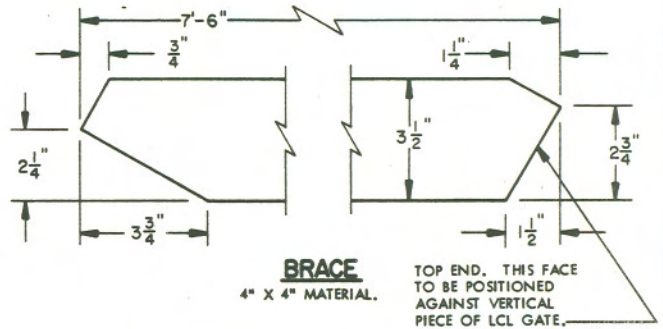
IF DESIRED, 1/2" PLYWOOD MAY BE SUBSTITUTED FOR THE 2" X 6" HORIZONTAL PIECES OF THE LCL GATE. THE PLYWOOD MUST BE CAR WIDTH MINUS 1/2" BY 48" HIGH. SECURE TO THE VERTICAL PIECES W/6-6d NAILS. ALL PLYWOOD JOINTS MUST BE CENTERED ON A CENTRALLY LOCATED VERTICAL PIECE, NOT ON AN END VERTICAL PIECE.

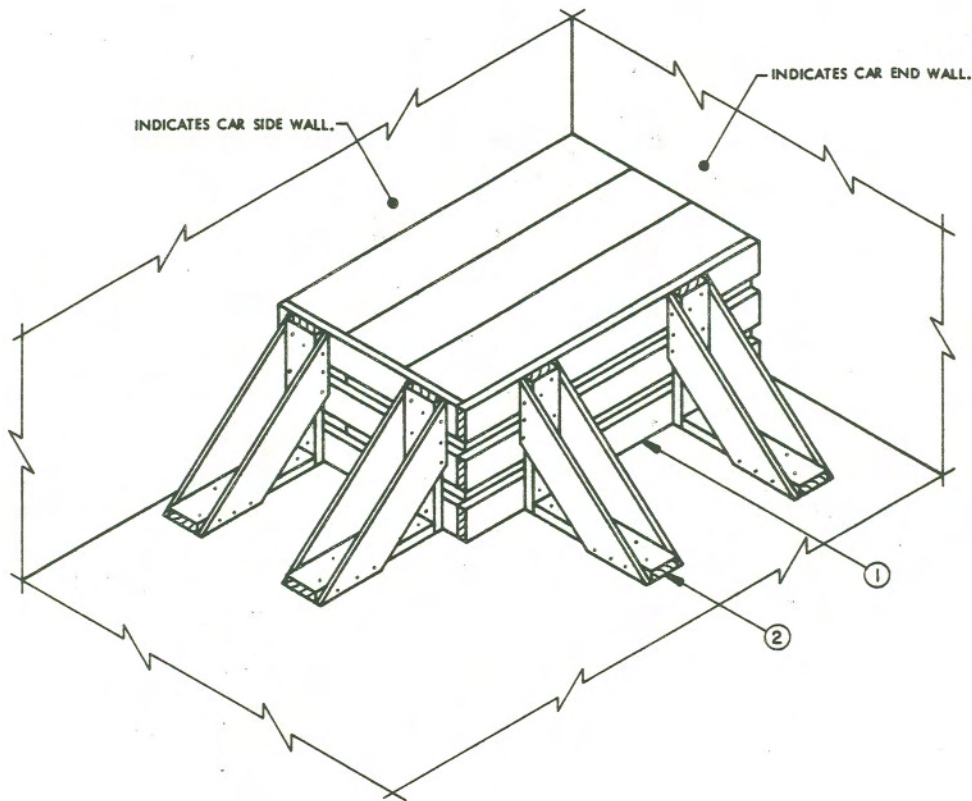
LCL GATE



FILLER ASSEMBLY

THE FILLER ASSEMBLY AS SHOWN IS TO BE USED WITHIN LOADS TO FILL A VOID WHEN A CONTAINER IS OMITTED FROM THE DEPICTED LOAD. IT MUST BE USED IN THE TOP LAYER ONLY.





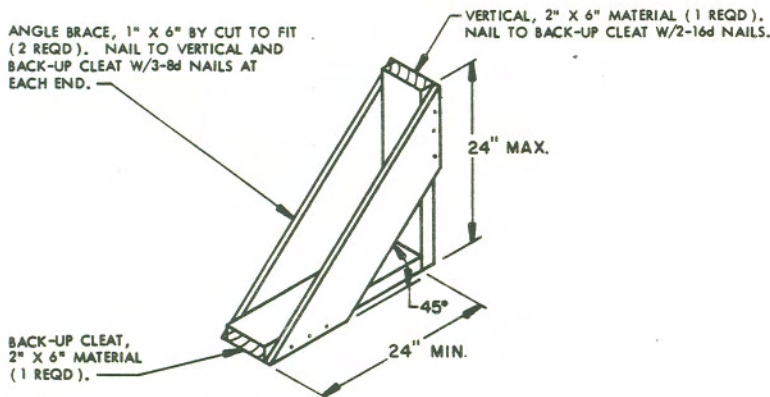
ISOMETRIC VIEW

SPECIAL NOTES:

1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF LCL BRACES. CONTAINERS MUST NOT BE STACKED MORE THAN TWO (2) CONTAINERS IN HEIGHT.
2. IF DESIRED LCL BRACES MAY BE INSTALLED AT EACH END OF THE LOAD.

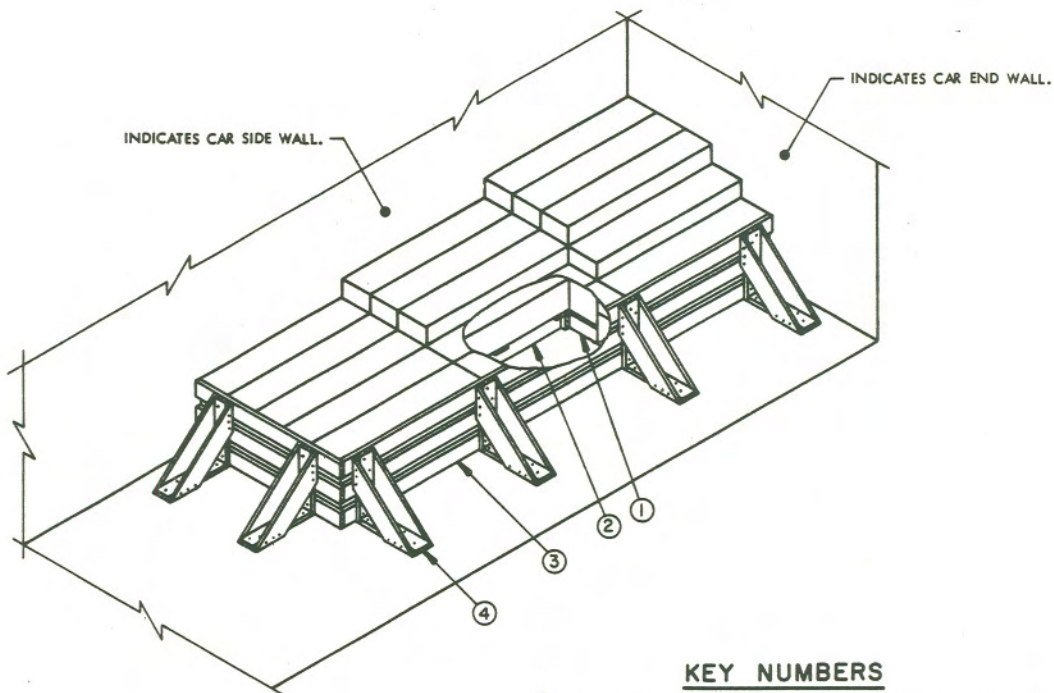
KEY NUMBERS

- ① HORIZONTAL PIECE, 2" X 6" MATERIAL BY LENGTH TO SUIT (AS REQD).
- ② LCL BRACE (4 REQD). SEE "LCL BRACE" DETAIL BELOW. 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 "O" AND "P" ON PAGE 2.



LCL BRACE

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 30" OR 48" INCREMENT OF LOAD DIMENSION; ADDITIONALLY, A MINIMUM OF TWO (2) BRACES MUST BE USED IN THEIR RESPECTIVE DIRECTIONS IF THE LOAD IS MORE THAN TWO (2) CONTAINERS LONG OR WIDE.



ISOMETRIC VIEW

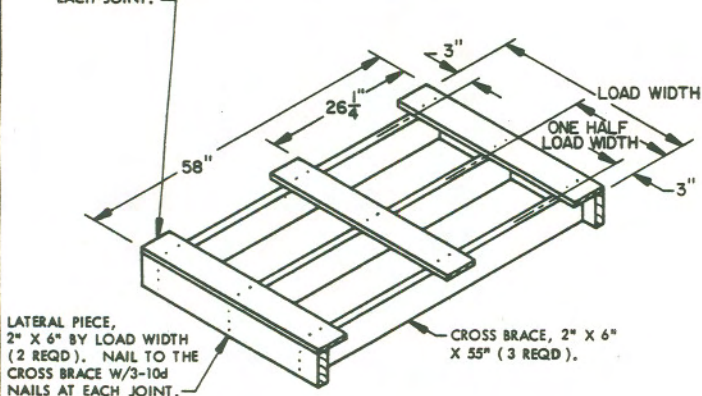
SPECIAL NOTES:

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.

KEY NUMBERS

- ① RISER (1 REQD.). SEE "RISER ASSEMBLY C" DETAIL ON THIS PAGE.
- ② RISER (1 REQD.). SEE "RISER ASSEMBLY B" DETAIL ON THIS PAGE.
- ③ HORIZONTAL PIECE, 2" X 6" MATERIAL BY LENGTH TO SUIT (AS REQD.).
- ④ LCL BRACE (6 REQD.). SEE "LCL BRACE" DETAIL ON PAGE 8. 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 "O" AND "P" ON PAGE 2.

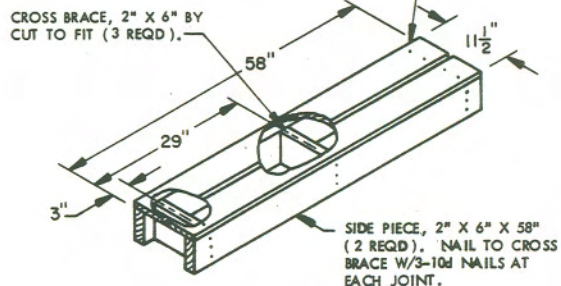
DECK BOARD, 1" X 6" BY LOAD WIDTH (3 REQD).
NAIL TO THE CROSS BRACE W/2-10d NAILS AT EACH JOINT.



RISER ASSEMBLY B

THIS ASSEMBLY IS DESIGNED FOR USE IN STEPPING UP OR STEPPING DOWN CONTAINERS AS SHOWN IN ISOMETRIC VIEW.

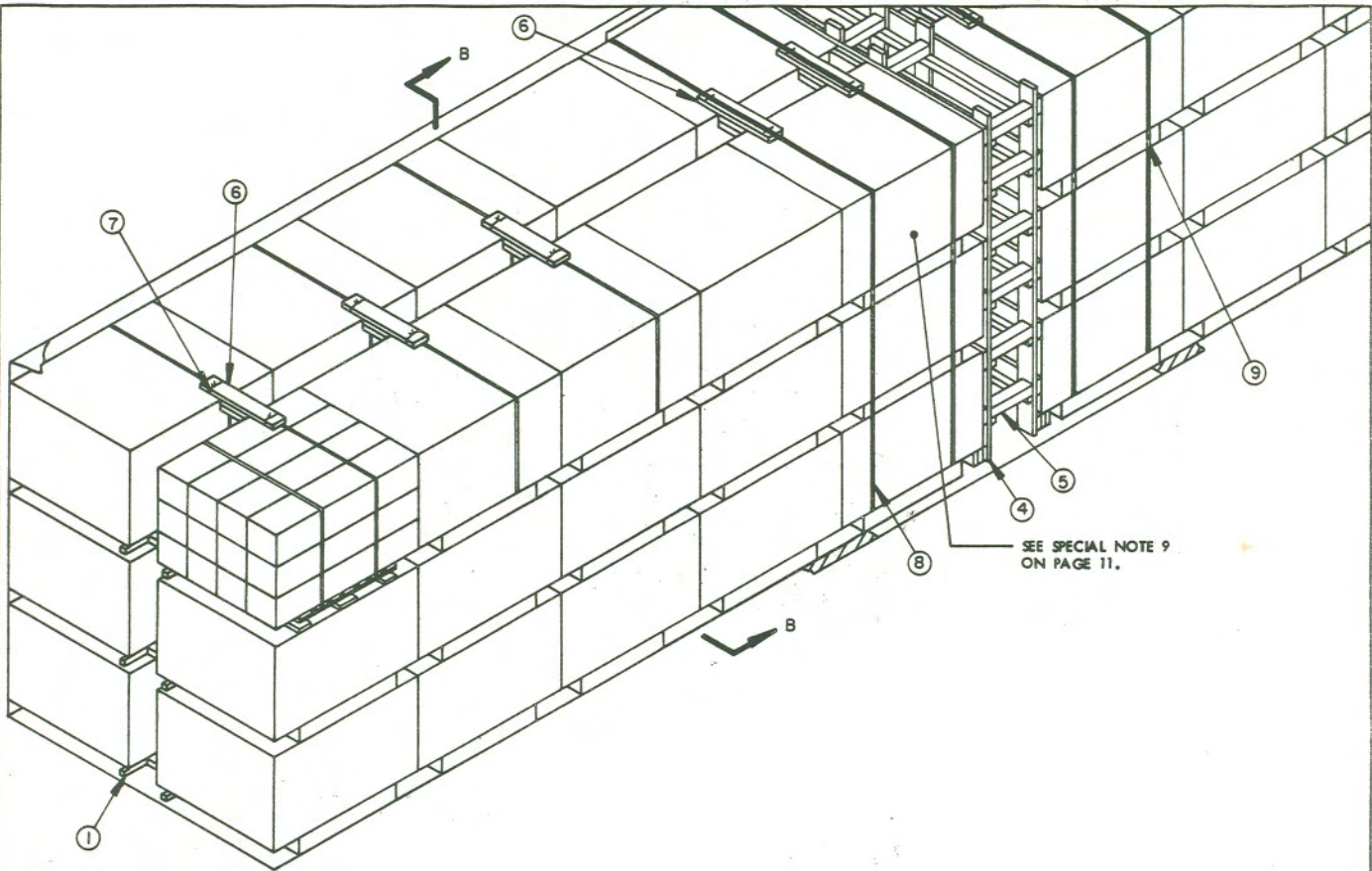
DECK BOARD, 1" X 6" X 58" (2 REQD).
NAIL TO CROSS BRACES W/2-10d NAILS AT EACH JOINT.



RISER ASSEMBLY C

THIS ASSEMBLY IS DESIGNED FOR USE IN STEPPING UP OR STEPPING DOWN CONTAINERS AS SHOWN IN ISOMETRIC VIEW.

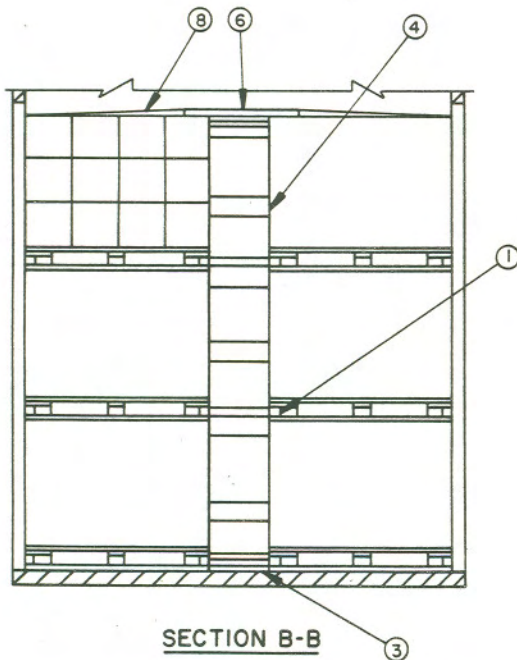
TYPICAL LCL (33-UNIT LOAD) UNPALLETIZED



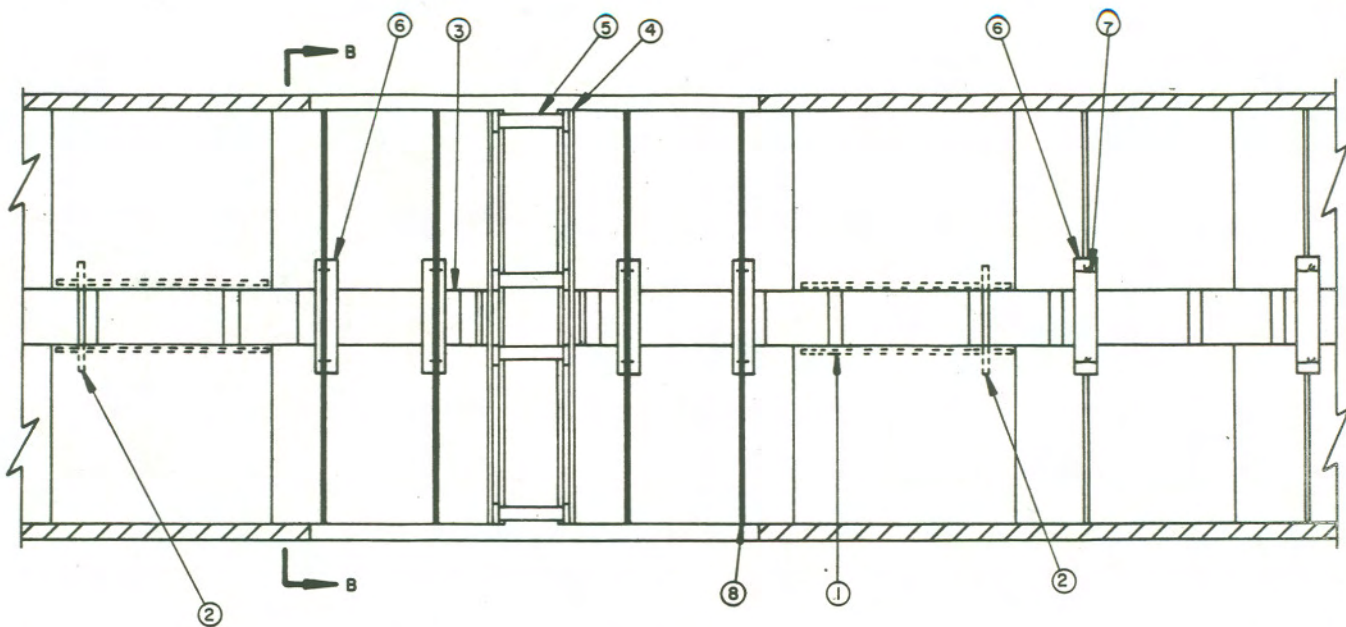
ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (28 REQD). POSITION BETWEEN LATERALLY ADJACENT PALLET OF EACH LAYER AS LOADING PROGRESSES. SEE THE DETAIL ON PAGE 14. SEE "SECTION B-B" BELOW FOR PLACEMENT LOCATION.
- ② STOP BLOCK, 2" X 2" X 30" (2 REQD). REQUIRED TO RETAIN BOTTOM ANTI-SWAY BRACE ADJACENT TO DOORWAY BLOCKING. NAIL TO BOTTOM OF ANTI-SWAY BRACE, PIECE MARKED ① W/1-10d NAIL AT EACH JOINT. SEE THE "PLAN VIEW" ON PAGE 11 FOR PLACEMENT LOCATION.
- ③ DOORWAY BLOCKING, 2" X 3" BY CUT TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS (REF. 14" FOR A 9'-2" WIDE CAR) (TRIPLED) (4 REQD). ALIGN WITH PALLET POSTS AND NAIL THE FIRST PIECE TO THE CAR FLOOR W/3-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ④ CENTER GATE (2 REQD). SEE "CENTER GATE A" DETAIL ON PAGE 14.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (24 REQD). SEE GENERAL NOTE "V" ON PAGE 2. TOENAIL TO THE CENTER GATES, PIECES MARKED ④, W/2-12d NAILS AT EACH END. FOR STRUTS 48" OR LONGER, SEE THE "STRUT BRACING" DETAIL ON PAGE 17 AND GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ TOP-OF-LOAD ANTI-SWAY BRACE (10 REQD). SEE THE DETAIL ON PAGE 15.
- ⑦ WIRE TIE, NO. 14 GAGE BLACK ANNEALED WIRE 18" LONG (12 REQD). INSTALL WIRE UNDER UNITIZING STRAP OF PALLET UNIT AND AROUND SUPPORT PIECE OF TOP-OF-LOAD ANTI-SWAY BRACE. BRING ENDS TOGETHER AND TWIST TAUT. WIRE TIE IS USED TO PREVENT TOP-OF-LOAD ANTI-SWAY BRACES WHICH ARE NOT RETAINED BY DOORWAY PROTECTION STRAPS, PIECES MARKED ⑧, FROM BECOMING DISLODGED DURING TRANSIT.
- ⑧ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 40'-0" LONG STEEL STRAPPING (4 REQD). INSTALL AS SHOWN, TO ENCIRCLE THOSE LOAD UNITS WHICH PROTRUDE INTO THE DOORWAY AREA. STAPLE TO THE TOP-OF-LOAD ANTI-SWAY BRACE, PIECE MARKED ⑥, W/2-1-3/8" X 3/4" STAPLES AT EACH LOCATION.
- ⑨ SEAL FOR 1-1/4" STEEL STRAPPING (8 REQD, 2 PER STRAP). POSITION JOINTS AT VOID BETWEEN UNITS AS SHOWN AND DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.



SECTION B-B



PLAN VIEW

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE BY 10'-3" HIGH (MIN) DOOR OPENINGS IS SHOWN. CARS WITH WIDER OR STAGGERED DOORWAYS MAY ALSO BE USED. CARS WITH DOORWAYS NARROWER THAN 10'-0" CAN BE USED. HOWEVER, IN SOME INSTANCES, A STACK OF SIX (6) UNITS MAY HAVE TO BE OMITTED FROM THE SPECIFIED LOAD IN THE DOORWAY AREA.
2. A WIDER OR NARROWER CAR MAY BE USED FOR SHIPPING THE DEPICTED LOAD.
3. TO SATISFY THE NUMBER OF UNITS TO BE SHIPPED, THE LOAD MAY BE DECREASED BY ONE (1) UNIT WITH THE USE OF THE OMITTED-UNIT GATE AND STRUTS AS DEPICTED ON PAGE 22. A PARTIAL SECOND OR THIRD LAYER MAY BE SHIPPED BY USING "PARTIAL LAYER BRACING" AS DEPICTED ON PAGE 22.
4. IF THE CAR BEING LOADED HAS PLUG DOORS, NO SPECIAL PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "G" ON PAGE 2 WILL BE OBSERVED.
5. A 42-UNIT LOAD MAY BE LOADED AND SHIPPED IN A 40'-6" LONG BOX CAR. DELETE EIGHT (8) "ANTI-SWAY BRACE" ASSEMBLIES WHEN SHIPPING A 42-UNIT LOAD. SEE SPECIAL NOTES 6 BELOW AND 7 AT RIGHT.
6. FOR EACH LOAD UNIT OF PALLETS WHICH EXTENDS 52" OR MORE INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR BEING LOADED, TWO (2) PIECES EACH MARKED ②, ③, AND ④, AND FOUR (4) PIECES MARKED ⑤ MUST BE INSTALLED TO BUNDLE THAT LOAD UNIT AS SHOWN WITHIN THE BASIC LOAD VIEWS. FOR EACH LOAD UNIT OF PALLETS WHICH EXTENDS LESS THAN 52", BUT MORE THAN 29" PAST A DOOR POST INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR BEING LOADED, ONE (1) EACH PIECES MARKED ④ AND ⑤, AND TWO (2) EACH PIECES MARKED ③ AND ⑥ MUST BE INSTALLED TO BUNDLE THAT UNIT. SEE GENERAL NOTE "G" ON PAGE 2.

(SPECIAL NOTES CONTINUED)

7. FOR EACH LOAD UNIT OF PALLETS WHICH DOES NOT EXTEND MORE THAN 29" PAST A DOOR POST, USE PIECE MARKED ① IN LIEU OF PIECES MARKED ② AND ③ AND OMIT PIECES MARKED ④, ⑤ AND ⑥.
8. THE FIRST THREE (3) LOAD UNITS IN EACH END OF THE CAR WILL REQUIRE A TOP-OF-LOAD ANTI-SWAY BRACE. WIRE TIE THESE BRACES TO THE UNITIZING STRAP OF THE PALLET UNIT. TOP-OF-LOAD ANTI-SWAY BRACES SERVE AS STRAPPING BOARDS IN THE DOORWAY AREA AND NEED NOT BE WIRE TIED TO PALLET UNITS.
9. IF THE DOOR HEIGHT OF THE CAR IS NOT OF A HEIGHT TO PERMIT LOADING THE PALLET UNITS THREE (3) UNITS HIGH IN THE DOORWAY AREA OF THE CAR AS DEPICTED IN THE ISOMETRIC VIEW, REFER TO PAGE 24 FOR THE SPECIFICATIONS WHICH MUST BE USED. IT WILL BE NECESSARY TO OMIT FOUR (4) PALLET UNITS FROM THE CAR LOAD.

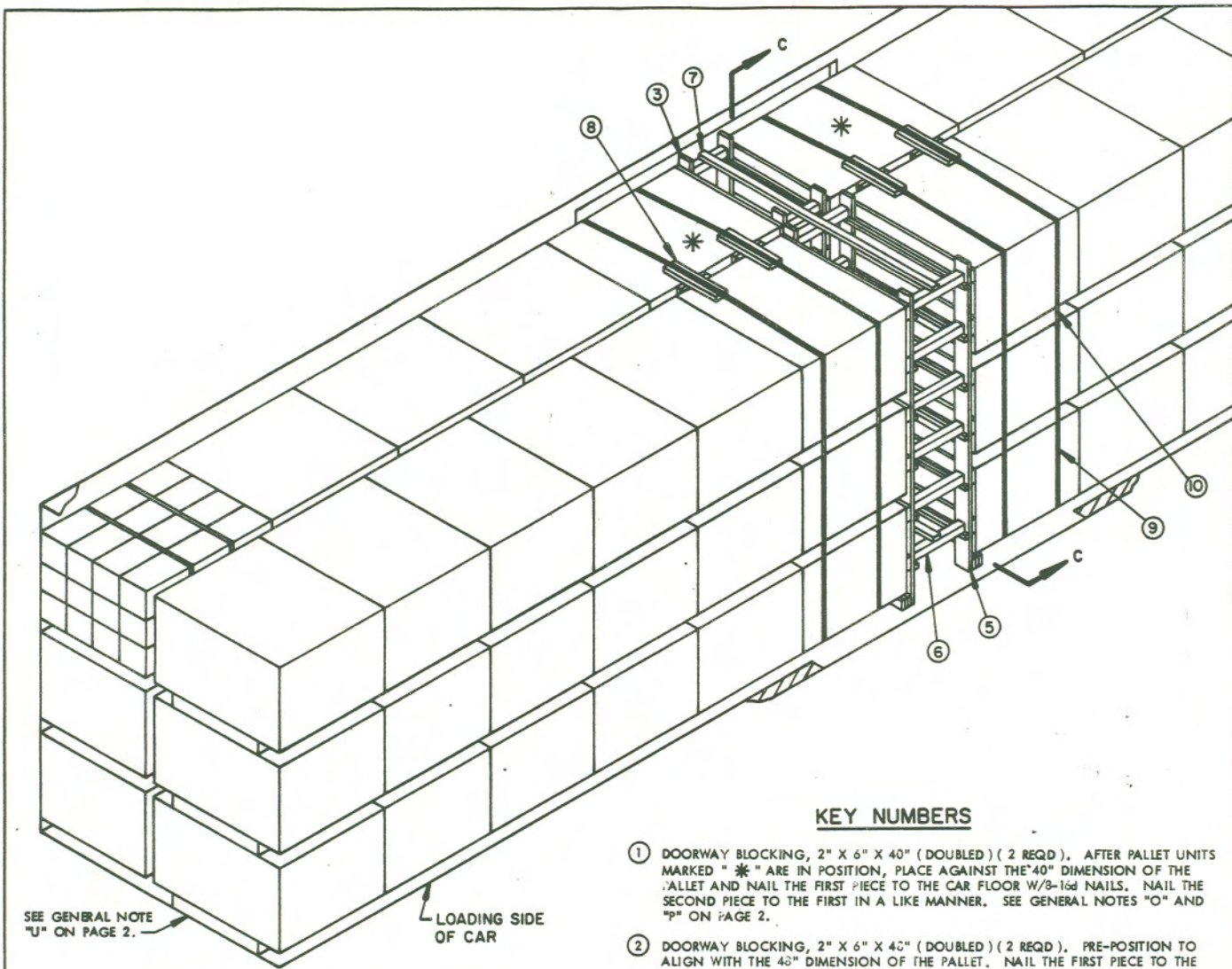
(CONTINUED AT RIGHT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	384	128
2" X 4"	138	92
2" X 6"	255	255
4" X 4"	34	46
NAILS	NO. REQD	POUNDS
10d (3")	628	9-3/4
12d (3-1/4")	98	1-3/4
16d (3-1/2")	36	1
STEEL STRAPPING, 1-1/4" X .035" OR .031"	160' REQD	23 LBS
SEAL FOR 1-1/4" STRAPPING	8 REQD	NIL
STAPLE, 1-3/8" X 3/4"	8 REQD	NIL
NO. 14 GAGE WIRE	18' REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	60	67,560 LBS
DUNNAGE		1,078 LBS
TOTAL WEIGHT		68,638 LBS

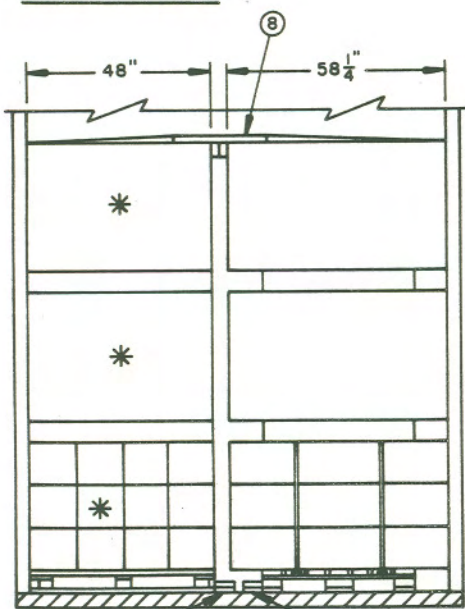
60-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CAR (PALLETIZED 4W/3H)



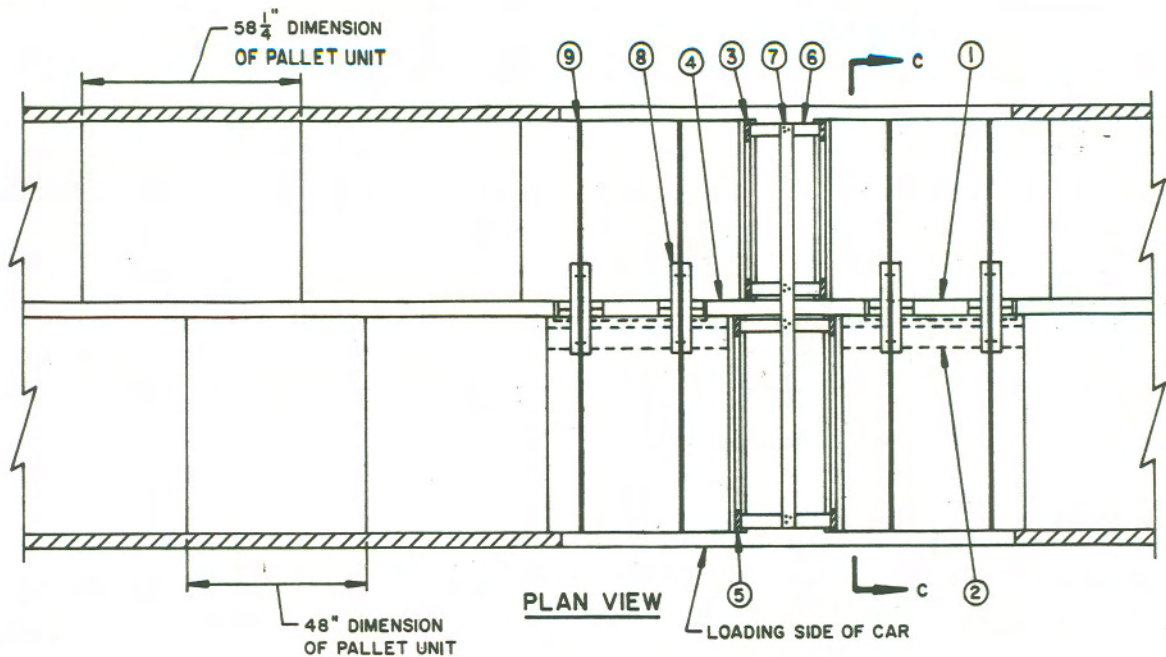
KEY NUMBERS

- ① DOORWAY BLOCKING, 2" X 6" X 40" (DOUBLED) (2 REQD). AFTER PALLET UNITS MARKED "*" ARE IN POSITION, PLACE AGAINST THE 40" DIMENSION OF THE PALLET AND 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 "O" AND "P" ON PAGE 2.
- ② DOORWAY BLOCKING, 2" X 6" X 40" (DOUBLED) (2 REQD). PRE-POSITION TO ALIGN WITH THE 40" DIMENSION OF THE PALLET. NAIL THE FIRST PIECE TO THE CAR FLOOR W/10-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE "SECTION C-C" FOR DIMENSION GUIDANCE.
- ③ CENTER GATE (2 REQD). SEE "CENTER GATE B" DETAIL ON PAGE 16.
- ④ CENTER GATE RETAINER, 2" X 4" BY CUT TO FIT BETWEEN PIECES MARKED ① (DOUBLED) (1 REQD). POSITION TO CONTACT THE VERTICALS OF CENTER GATES MARKED ③. NAIL THE FIRST PIECE TO THE CAR FLOOR W/1-16d NAIL EVERY 8". NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. NOTE: USE 2" X 6" MATERIAL IF THE CAR IS 9'-4" WIDE.
- ⑤ CENTER GATE (2 REQD). SEE "CENTER GATE C" DETAIL ON PAGE 16.
- ⑥ STRUT, 4" X 4" BY CUT TO FIT (24 REQD). SEE GENERAL NOTE "W" ON PAGE 2. TOENAIL TO THE CENTER GATES MARKED ③ AND ④ W/2-12d NAILS AT EACH END. FOR STRUTS 48" OR LONGER, SEE "STRUT BRACING" DETAIL ON PAGE 17 AND GENERAL NOTE "V" ON PAGE 2.
- ⑦ ANTI-SWAY BOARD, 2" X 4" BY CUT TO FIT (2 REQD). NAIL TO THE TOP AND BOTTOM LAYERS OF STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑧ STRAPPING BOARD (4 REQD). SEE "STRAPPING BOARD" DETAIL ON PAGE 15.
- ⑨ DOORWAY PROTECTION STRAP, 1-1/4" X .035" OR .031" X 40'-0" LONG STEEL STRAPPING (4 REQD). INSTALL AS SHOWN, TO ENCIRCLE THOSE LOAD UNITS WHICH PROTRUDE INTO THE DOORWAY AREA. STAPLE TO STRAPPING BOARD MARKED ⑧ W/2-1-3/8" X 3/4" STAPLES EACH LOCATION.
- ⑩ SEAL FOR 1-1/4" STEEL STRAPPING (8 REQD, 2 PER STRAP). POSITION JOINTS AT VOID BETWEEN UNITS AS SHOWN AND DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.

ISOMETRIC VIEW



① **SECTION C-C** ②



SPECIAL NOTES:

(SPECIAL NOTES CONTINUED)

1. A 50'-6" LONG BY 9'-2" WIDE (INSIDE CLEARANCE) CONVENTIONAL TYPE BOX CAR EQUIPPED WITH 10'-0" WIDE BY 10'-3" HIGH (MIN) DOOR OPENINGS IS SHOWN. CARS WITH WIDER OR STAGGERED DOORWAYS MAY ALSO BE USED. CARS WITH DOORWAYS NARROWER THAN 10'-0" CAN BE USED, BUT A STACK OF SIX (6) UNITS WILL HAVE TO BE OMITTED FROM THE SPECIFIED LOAD IN THE DOORWAY AREA.
2. A NARROWER WIDTH CAR MAY BE USED FOR SHIPPING THE DEPICTED LOAD. NOTE: IF A CAR IS USED WHICH IS 8'-11" WIDE OR LESS THE PROCEDURES DEPICTED ON PAGES 10 AND 11 WILL HAVE TO BE USED.
3. TO SATISFY THE NUMBER OF UNITS TO BE SHIPPED THE LOAD MAY BE DECREASED BY ONE (1) UNIT WITH THE USE OF THE OMITTED-UNIT GATE AND STRUTS AS DEPICTED ON PAGE 22.
4. IF THE CAR BEING LOADED HAS PULL DOORS NO SPECIAL CHANGES TO THE SPECIFIED PROCEDURES ARE REQUIRED; HOWEVER, THE CRITERIA SET FORTH IN GENERAL NOTE "G" ON PAGE 2 WILL BE OBSERVED.
5. FOR EACH LOAD UNIT WHICH EXTENDS 52" OR MORE ON THE 58-1/4" DIMENSION OF THE UNIT OR 42" OR MORE ON THE 48" DIMENSION OF THE UNIT INTO THE DOORWAY AREA ON ONE OR BOTH SIDES OF THE CAR BEING LOADED, ONE (1) EACH PIECES MARKED ① AND ②, TWO (2) EACH PIECES MARKED ③ AND ④, AND FOUR (4) PIECES MARKED ⑤ MUST BE INSTALLED TO BUNDLE THOSE UNITS AS SHOWN WITHIN THE BASIC LOAD VIEWS. FOR EACH LOAD UNIT WHICH EXTENDS LESS THAN 52" BUT MORE THAN 29" ON THE 58-1/4" DIMENSION OF THE UNIT OR LESS THAN 42" BUT MORE THAN 24" ON THE 48" DIMENSION OF THE UNIT PAST A DOOR POST INTO THE DOORWAY AREA ON ONE OR BOTH SIDES, ONE (1) EACH PIECES MARKED ①, ②, ③ AND ④, AND TWO (2) PIECES MARKED ⑤ MUST BE INSTALLED TO BUNDLE THAT UNIT. SEE GENERAL NOTE "G" ON PAGE 2.
6. FOR EACH LOAD UNIT WHICH EXTENDS LESS THAN 29" ON THE 58-1/4" DIMENSION OF THE UNIT OR LESS THAN 24" ON THE 48" DIMENSION OF THE UNIT PAST A DOOR POST ON BOTH SIDES OF THE CAR, OMIT ALL PIECES MARKED ①, ②, ③, ④, AND ⑤.
7. IF THE DOOR HEIGHT OF THE CAR IS NOT OF A HEIGHT TO PERMIT LOADING THE PALLET UNITS THREE (3) UNITS HIGH IN THE DOORWAY AREA OF THE CAR AS DEPICTED IN THE ISOMETRIC VIEW, REFER TO PAGE 25 FOR THE SPECIFICATIONS WHICH MUST BE USED. IT WILL BE NECESSARY TO OMIT FOUR (4) PALLET UNITS FROM THE CAR LOAD.

(CONTINUED AT RIGHT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	107	36
2" X 4"	57	38
2" X 6"	231	231
4" X 4"	42	56
NAILS	NO. REQD	POUNDS
10d (3")	356	5-1/2
12d (3-1/4")	96	1-3/4
16d (3-1/2")	82	1-3/4
STEEL STRAPPING, 1-1/4" X .035" OR .031" - 160'	REQD	23 LBS
SEAL FOR 1-1/4" STEEL STRAPPING	8 REQD	NIL
STAPLES, 1-3/8" X 3/4"	8 REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
ALLET UNIT	66	74,316 LBS
DRAINAGE		754 LBS
TOTAL WEIGHT		75,070 LBS

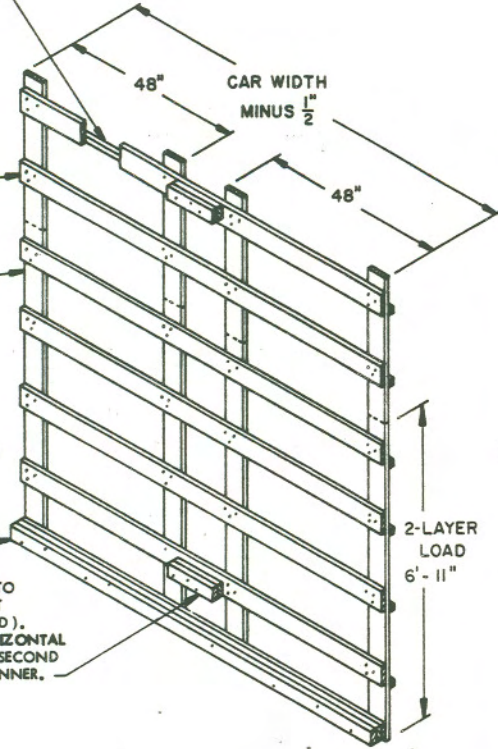
STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 1/2" (6 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

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

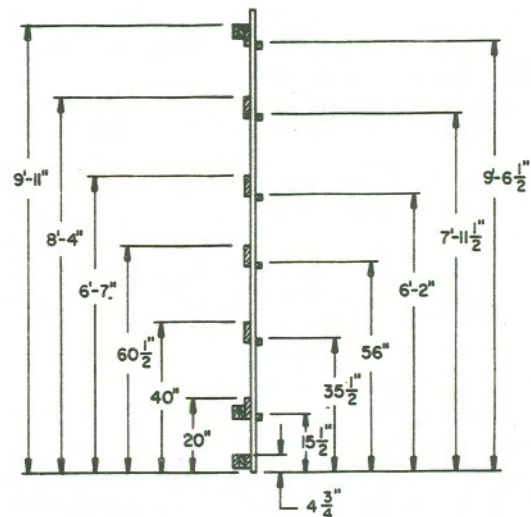
VERTICAL PIECE, 2" X 6" X 10'-3" (4 REQD).

GATE HOLD DOWN, 2" X 4" BY CAR WIDTH MINUS 1/2" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL EACH ADDITIONAL PIECE W/1-10d NAIL EVERY 12".

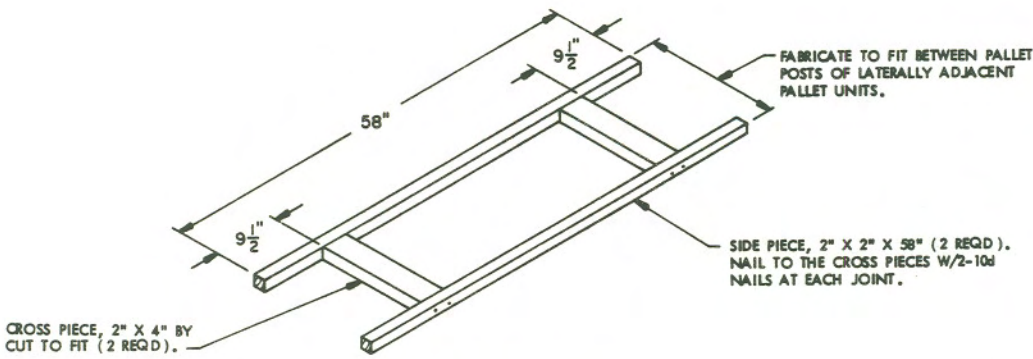
GATE RETAINER, 2" X 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.



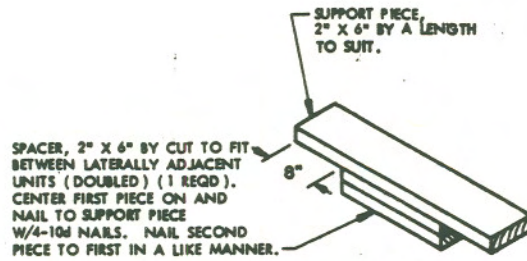
CENTER GATE A



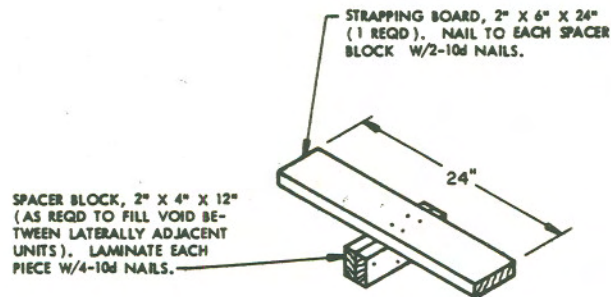
END VIEW



ANTI-SWAY BRACE A



TOP-OF - LOAD ANTI - SWAY BRACE



STRAPPING BOARD

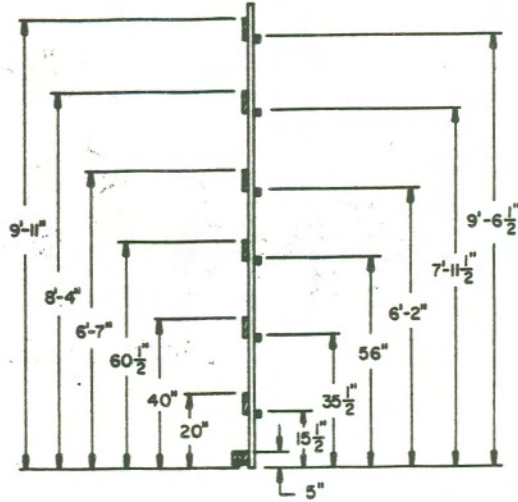
LOAD BEARING PIECE, 2" X 6" X 48" (6 REQD). NAIL TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT.

STRUT BEARING PIECE, 2" X 6" X 10'-3" (2 REQD).

GATE HOLD DOWN, 2" X 4" X 48" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE STRUT BEARING PIECES W/3-10d NAILS. NAIL THE SECOND AND THIRD PIECES TO THE FIRST W/1-10d NAIL EVERY 8".

STRUT LEDGER, 2" X 2" X 48" (6 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

CENTER GATE B



END VIEW

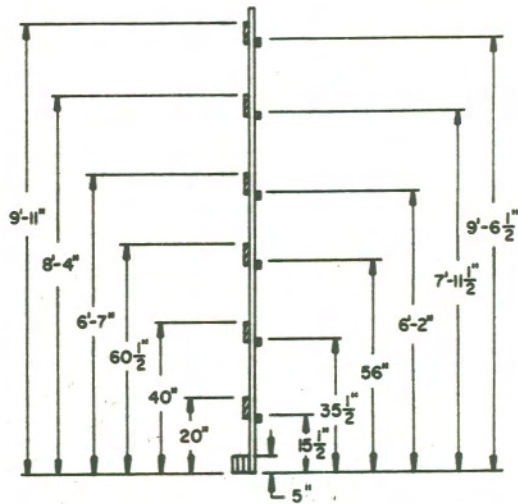
LOAD BEARING PIECE, 2" X 6" X 58-1/4" (6 REQD). NAIL TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT.

STRUT BEARING PIECE, 2" X 6" X 10'-3" (2 REQD).

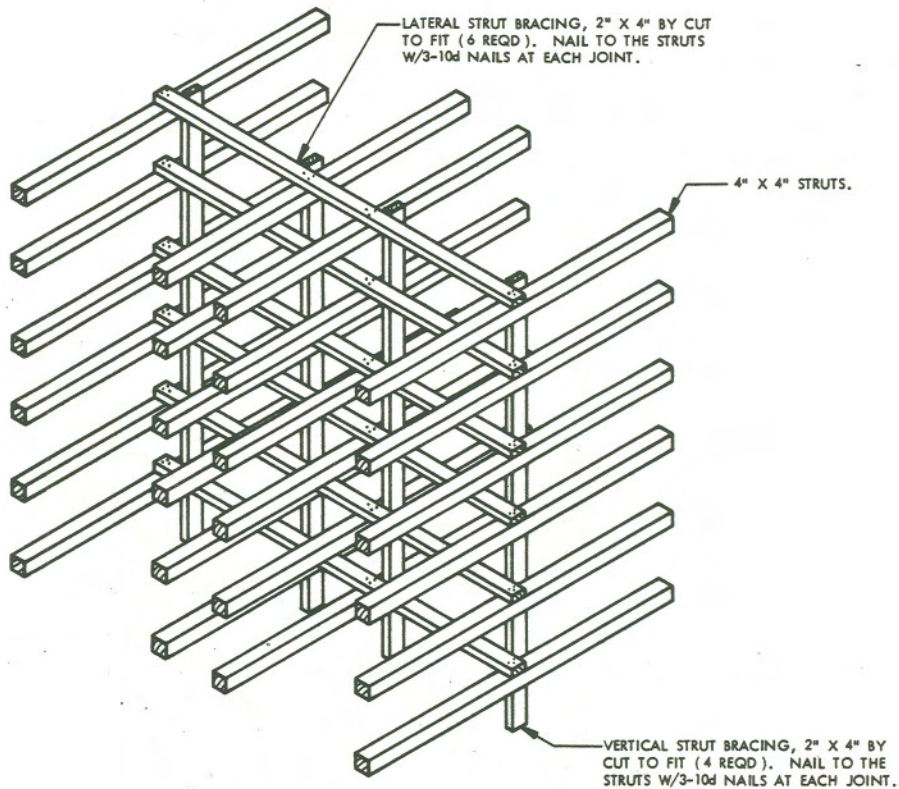
GATE HOLD DOWN, 2" X 6" X 5" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE STRUT BEARING PIECES W/2-10d NAILS. NAIL THE SECOND AND THIRD PIECES TO THE FIRST IN A LIKE MANNER.

STRUT LEDGER, 2" X 2" X 58-1/4" (6 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

CENTER GATE C

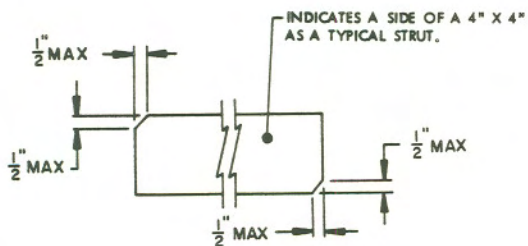


END VIEW



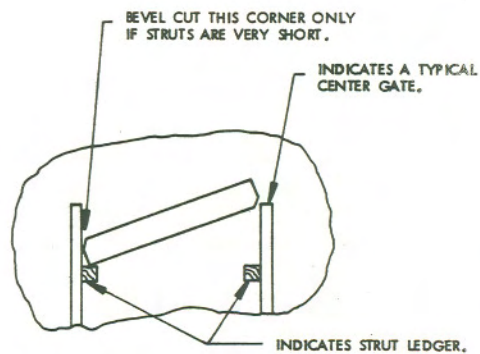
STRUT BRACING

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. SEE GENERAL NOTE "V" ON PAGE 2.



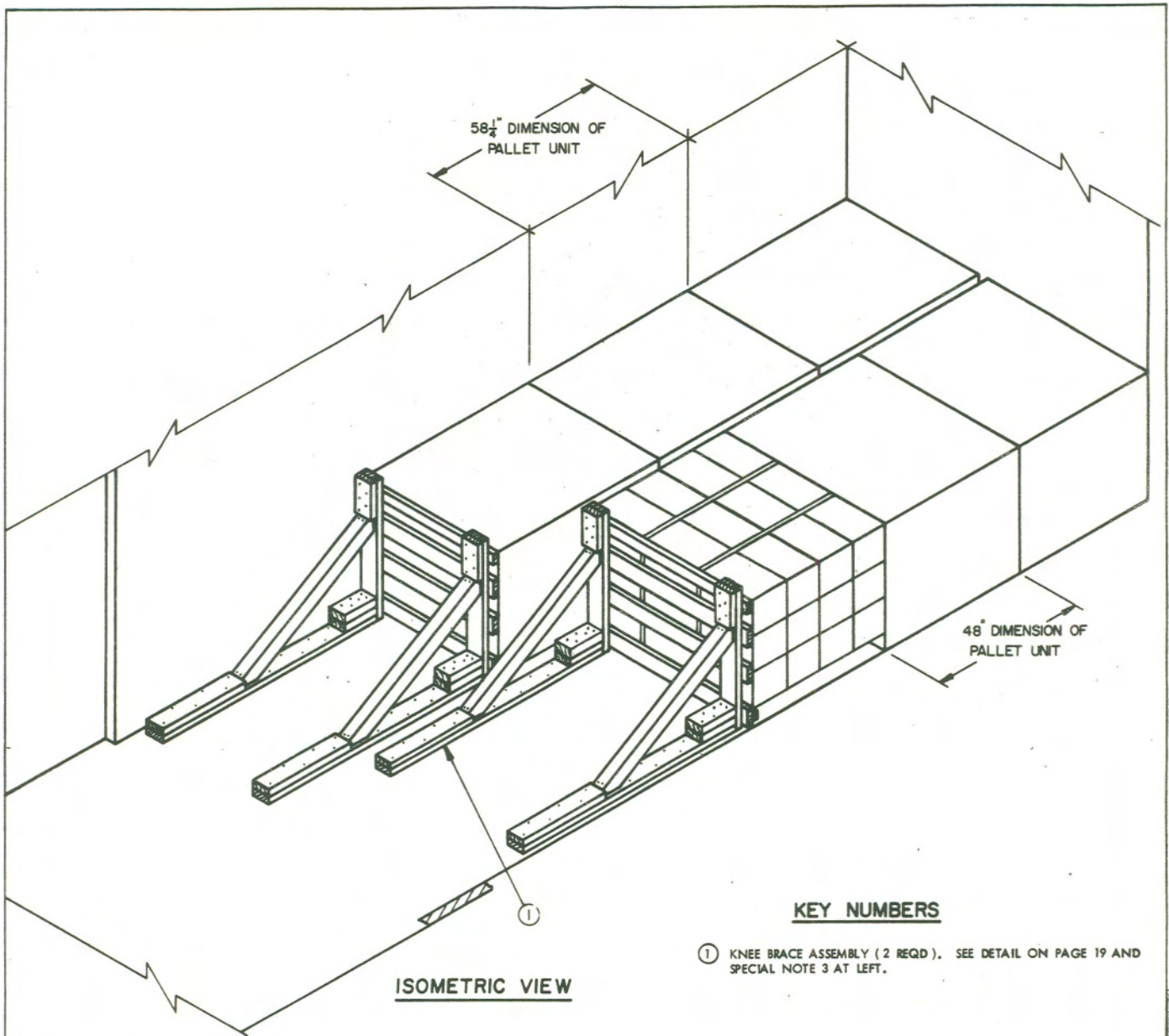
BEVEL CUT

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").



STRUT INSTALLATION

SEE GENERAL NOTE "W" ON PAGE 2 FOR ADDITIONAL STRUT INSTALLATION GUIDANCE.

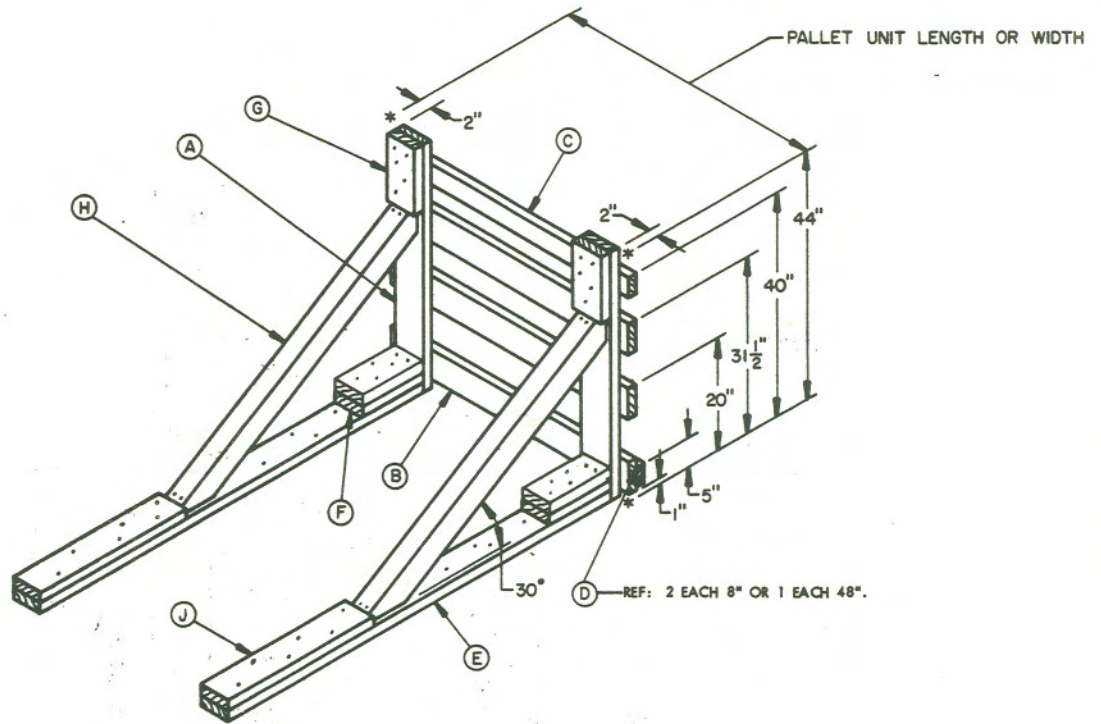


KEY NUMBERS

① KNEE BRACE ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 19 AND SPECIAL NOTE 3 AT LEFT.

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. **CAUTION:** IF A PALLET UNIT EXTENDS MORE THAN ONE-HALF OF ITS WIDTH OR LENGTH PAST A DOOR POST INTO THE DOORWAY AREA IN A CONVENTIONAL TYPE DOOR OPENING OR A CAR EQUIPPED WITH PLUG DOORS, A PIECE OF DOOR SPANNING DUNNAGE OF 2" X 6" MATERIAL BY DOOR-OPENING-WIDTH PLUS 24" IN LENGTH WILL BE POSITIONED ACROSS THE DOOR OPENING APPROXIMATELY 24" ABOVE THE CAR FLOOR AND NAILED TO THE CAR SIDE WALL W/5-12d NAILS AT EACH END. SEE GENERAL NOTE "G" ON PAGE 2.
3. EACH KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A LCL LOAD OF NOT MORE THAN 8,500 POUNDS OF LADING.
4. WHEN ALL PALLETS ARE POSITIONED IN THE CAR WITH THE 58-1/4" DIMENSION RUNNING PARALLEL WITH THE CAR LENGTH, SUCH AS WILL BE WHEN OUTLOADING AN 8'-6" WIDE BOX CAR, "ANTI-SWAY BRACE ASSEMBLIES" WILL BE REQUIRED BETWEEN LATERALLY ADJACENT UNITS. IF THE QUANTITY SHOULD INCLUDE AN ODD NUMBER OF UNITS, SUCH AS THREE, FIVE, OR SEVEN UNITS, A DOUBLED 2" X 6" X 48" PIECE FOR SIDE BLOCKING WILL BE REQUIRED AGAINST THE PALLET UNIT NOT BLOCKED LATERALLY WITH AN ANTI-SWAY BRACE ASSEMBLY. NAIL EACH PIECE OF SIDE BLOCKING TO THE CAR FLOOR W/8-16d NAILS.



KNEE BRACE ASSEMBLY

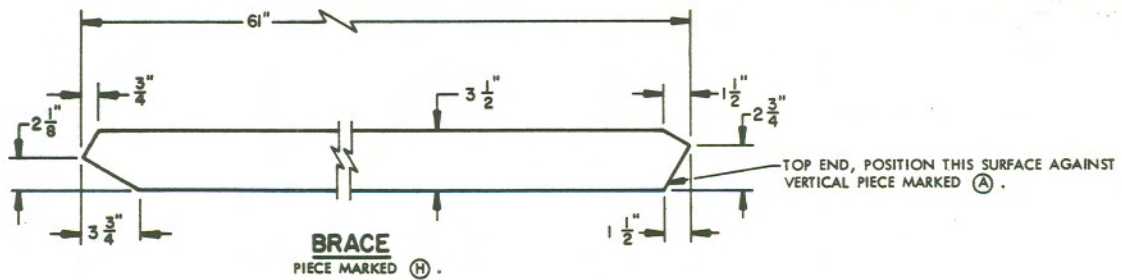
ONE (1) KNEE BRACE ASSEMBLY AS SHOWN ABOVE IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF 8,500 POUNDS OF LADING.

NOTE ●:

IF DESIRED, 1/2" PLYWOOD MAY BE SUBSTITUTED FOR PIECES MARKED (B) AND (C). THE PLYWOOD MUST BE PALLET UNIT LENGTH OR WIDTH BY PALLET UNIT HEIGHT. NAIL THE PLYWOOD TO PIECES MARKED (A) W/6-d NAILS AT EACH LOCATION. NAIL THE PLYWOOD TO PIECE MARKED (D) W/6-d NAILS.

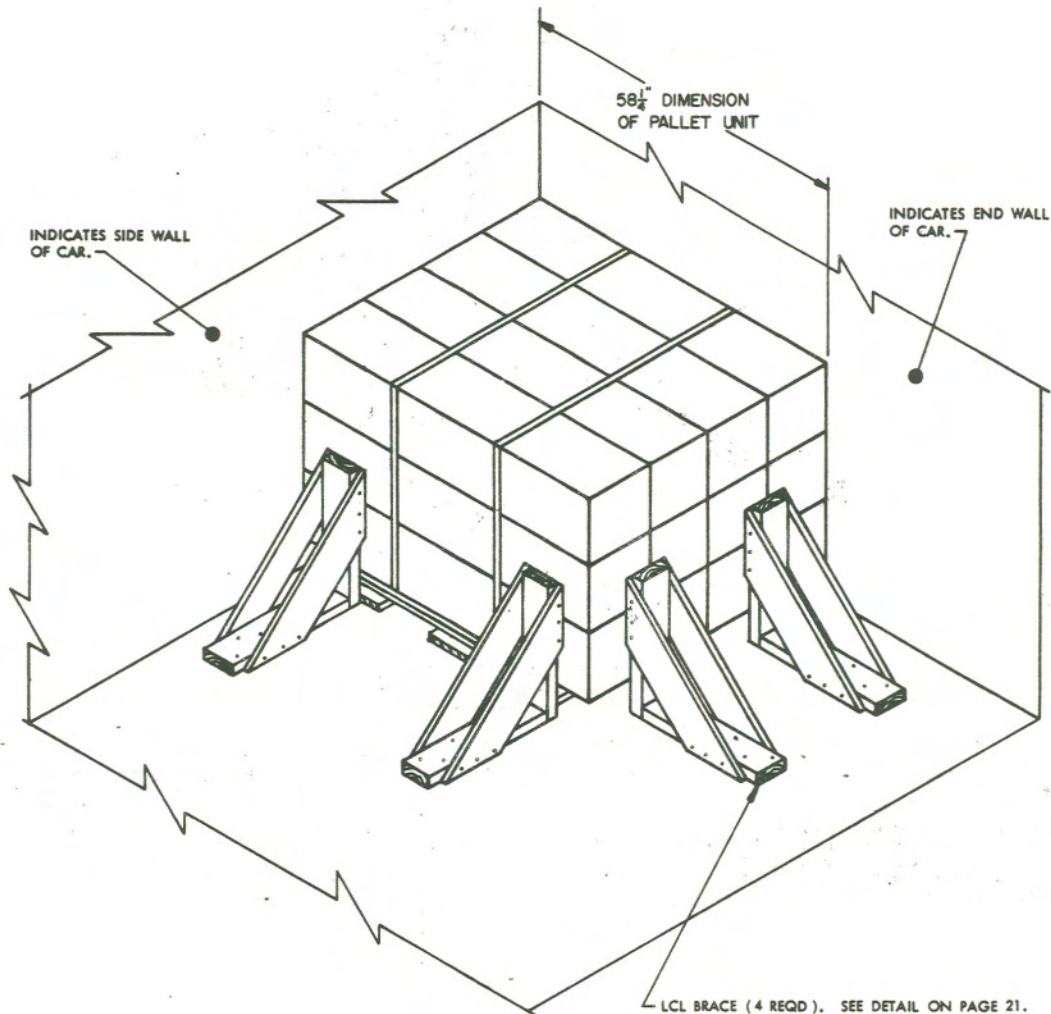
LUMBER AND NAILING DATA

PC MK	LUMBER SIZE	NO. REQD	NAIL TO	NUMBER AND SIZE OF NAIL
(A)	2" X 6" X 44"	2	-----	-----
(B)	2" X 6" BY CUT TO FIT SEE "NOTE ●" AT LEFT	3	(A)	3-10d AT EACH JOINT
(C)	2" X 4" BY CUT TO FIT	1	(A)	3-10d AT EACH JOINT
(D)	2" X 4" X 8"	2	(B)	3-10d EACH
(E)	2" X 6" X 6'-11"	2	CAR FLOOR	1-16d EVERY 8"
(F)	2" X 6" X 12" (DOUBLED)	2	(E)	4-16d EACH PIECE
(G)	2" X 6" X 12"	2	(A)	TOENAIL W/2-16d
(H)	4" X 4" X 61" SEE "BRACE" DETAIL BELOW	2	(A) & (E)	5-10d EACH
(J)	2" X 6" X 30"	2	(E)	2-16d AT EACH END
(J)	2" X 6" X 30"	2	(E)	6-40d



TYPICAL LCL (6-UNIT LOAD) PALLETIZED: 4W/3H

PAGE 19

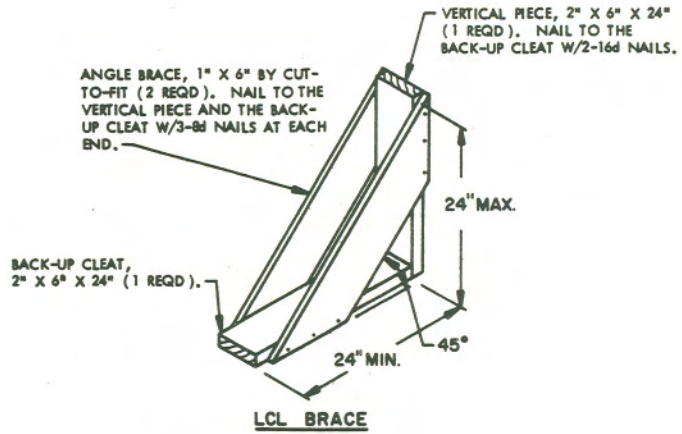


ISOMETRIC VIEW

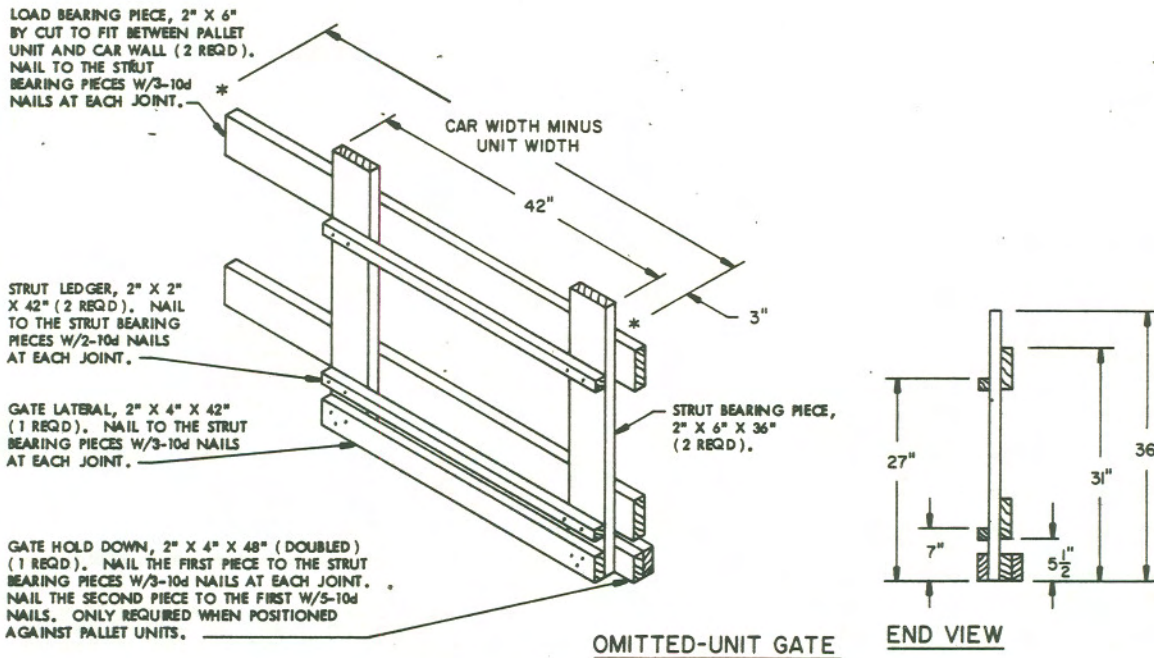
LCL BRACE (4 REQD). SEE DETAIL ON PAGE 21. POSITION AS SHOWN AND NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.

SPECIAL NOTES:

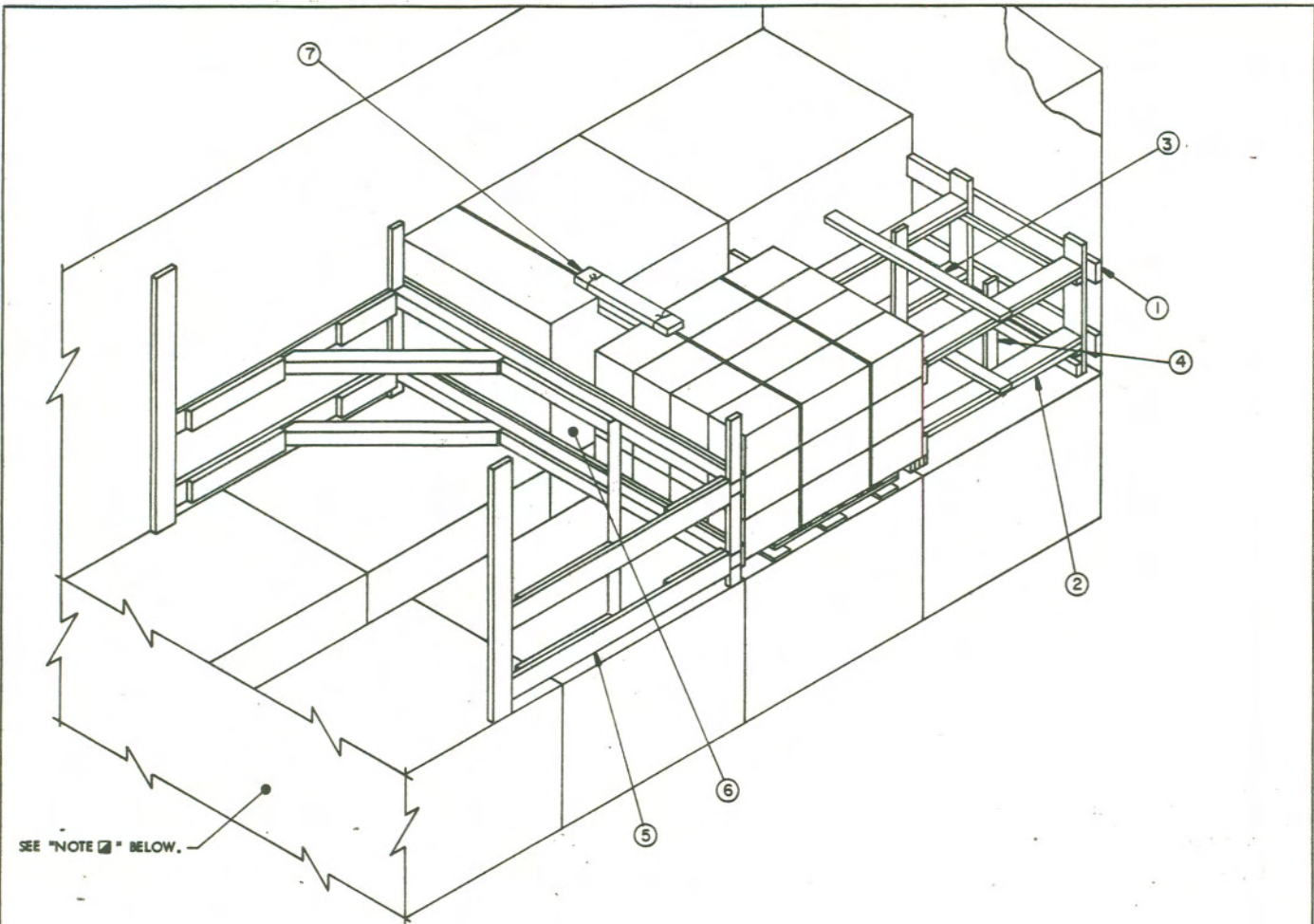
1. THESE LCL OUTLOADING PROCEDURES ARE SHOWN DEPICTING THE USE OF LCL BRACES IN A BOX CAR WITH WOOD OR AVAILABLE METAL FLOORS.
2. IF DESIRED LCL BRACES MAY BE INSTALLED ON EACH END OR EACH SIDE OF THE PALLET UNIT.
3. TWO (2) LCL BRACES ARE ADEQUATE FOR RETAINING NOT MORE THAN THREE (3) PALLET UNITS.



EACH BRACE AS APPLIED FOR LONGITUDINAL
OR LATERAL BRACING WILL SUPPORT 2,000 OR
8,000 POUNDS OF LADING RESPECTIVELY. A
MINIMUM OF TWO (2) BRACES MUST BE USED
FOR LONGITUDINAL OR LATERAL BRACING.



ONE GATE REQUIRED AS SHOWN ABOVE AND ONE REVERSE
GATE REQUIRED WITH LOAD BEARING PIECES, STRUT LEDGERS,
AND GATE LATERAL ON OPPOSITE SIDE OF STRUT BEARING
PIECES.



ISOMETRIC VIEW

A 9'-2" WIDE BOX CAR WITH A PARTIAL SECOND LAYER IS DEPICTED.

SEE "NOTE 2" BELOW.

NOTE 2:

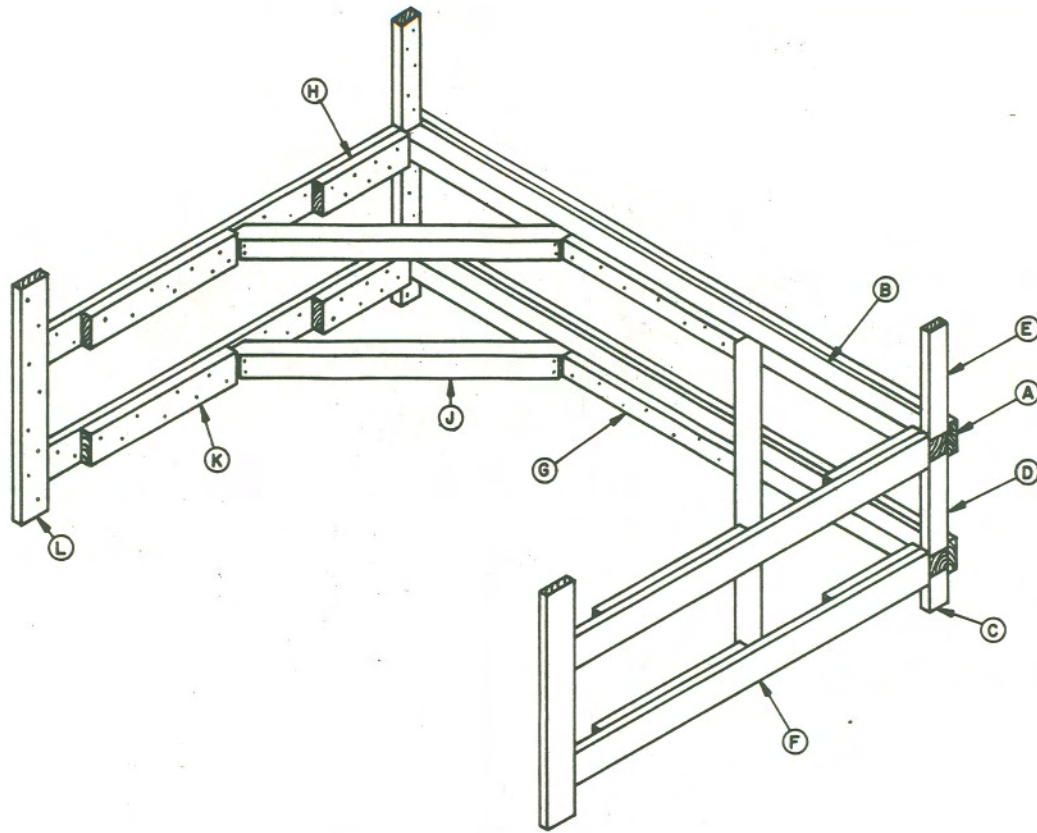
FOR BLOCKING SPECIFICATIONS APPLICABLE TO THE FIRST AND/OR SECOND LAYER OF PALLET UNITS, REFER TO THE LOAD DEPICTED ON PAGES 10 AND 11 FOR ANTI-SWAY BRACE ASSEMBLIES, DOORWAY BLOCKING AND STRUTS. CONSTRUCT THE CENTER GATE TO BLOCK A ONE OR TWO LAYER LOAD.

SPECIAL NOTES:

1. WHEN ONE (1) PALLET UNIT IS OMITTED FROM A LOAD AS SHOWN ON PAGES 10 AND 11, THE LOCATION OF THE OMITTED-UNIT DUNNAGE ABOVE SHOULD BE POSITIONED NEAR THE CENTER OF THE CAR.
2. A "K-BRACE ASSEMBLY" AS SHOWN IS ADEQUATE FOR RETAINING A MAXIMUM PARTIAL LAYER LOAD OF NOT MORE THAN 14,000 POUNDS.
3. ALTHOUGH THE VIEW DEPICTS A PARTIAL SECOND LAYER, THE METHOD IS ALSO APPLICABLE TO A PARTIAL THIRD LAYER.
4. IF DESIRED, 4" X 4" MATERIAL STRUT MAY BE SUBSTITUTED FOR EACH DOUBLED 2" X 6" STRUT THAT IS SPECIFIED.

KEY NUMBERS

- ① OMITTED-UNIT GATE (2 REQ'D). SEE THE DETAIL ON PAGE 21 AND SPECIAL NOTE 1 BELOW. FOR GATE AGAINST THE CAR END WALL, NAIL EACH LATERAL PIECE OF GATE TO THE CAR END WALL W/5-12d NAILS.
- ② STRUT, 2" X 6" BY CUT TO FIT (DOUBLED) (4 REQ'D). LAMINATE W/1-10d NAIL EVERY 6". TOENAIL TOP PIECE TO PIECES MARKED ① W/2-12d NAILS AT EACH END.
- ③ LATERAL STRUT BRACING, 2" X 4" BY CUT TO FIT (2 REQ'D). NAIL TO THE STRUTS MARKED ② W/3-10d NAILS AT EACH JOINT.
- ④ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO FIT (2 REQ'D). NAIL TO THE STRUTS MARKED ② W/3-10d NAILS AT EACH JOINT.
- ⑤ K-BRACE (1 REQ'D). SEE THE DETAIL ON PAGE 23 AND SPECIAL NOTE 2 AT LEFT.
- ⑥ TIE WIRE, LENGTH TO SUIT (1 REQ'D). WIRE TIE ANTI-SWAY BRACE TO THE PALLET UNIT BELOW THE LAYER BEING BRACED. INSERT A LENGTH OF WIRE THROUGH WIRE ON SIDE OF WIREBOUND BOX, LOOP OVER "CROSS PIECE" OF "ANTI-SWAY BRACE" AND BRING LOOSE ENDS TOGETHER AND TWIST TAUT. SEE "SECTION B-B" VIEW ON PAGE 10 FOR LOCATION OF THE "ANTI-SWAY BRACE" ASSEMBLY.
- ⑦ TOP-OF-LOAD ANTI-SWAY BRACE (1 REQ'D). SEE THE DETAIL ON PAGE 15. WIRE TIE TO UNITIZING STRAPS OF PALLET UNITS.



K-BRACE ASSEMBLY

K-BRACE ASSEMBLY AS SHOWN ABOVE IS ADEQUATE* FOR RETAINING A MAXIMUM LCL OR PARTIAL-LAYER LOAD OF 14,000 POUNDS.

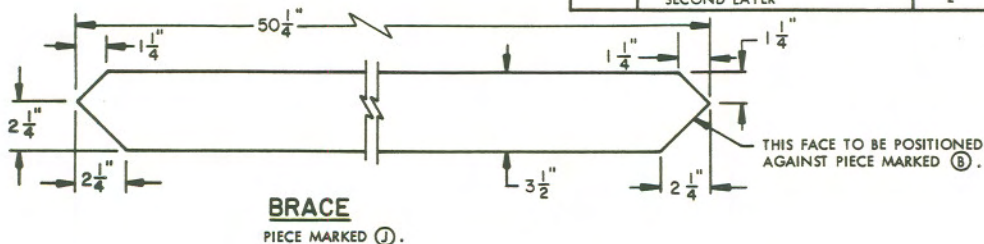
CAUTION: SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL LAYER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED (A), (B), (C), (D), (E), AND (H) OR THE COMPARABLE PIECES ON 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 TO BEAR IN FRONT OF A DOOR OPENING; HOWEVER, THE ADJACENT PIECE MARKED (F) OR THE COMPARABLE PIECE ON A HEAVIER BRACE MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE.

NOTE ⊕:

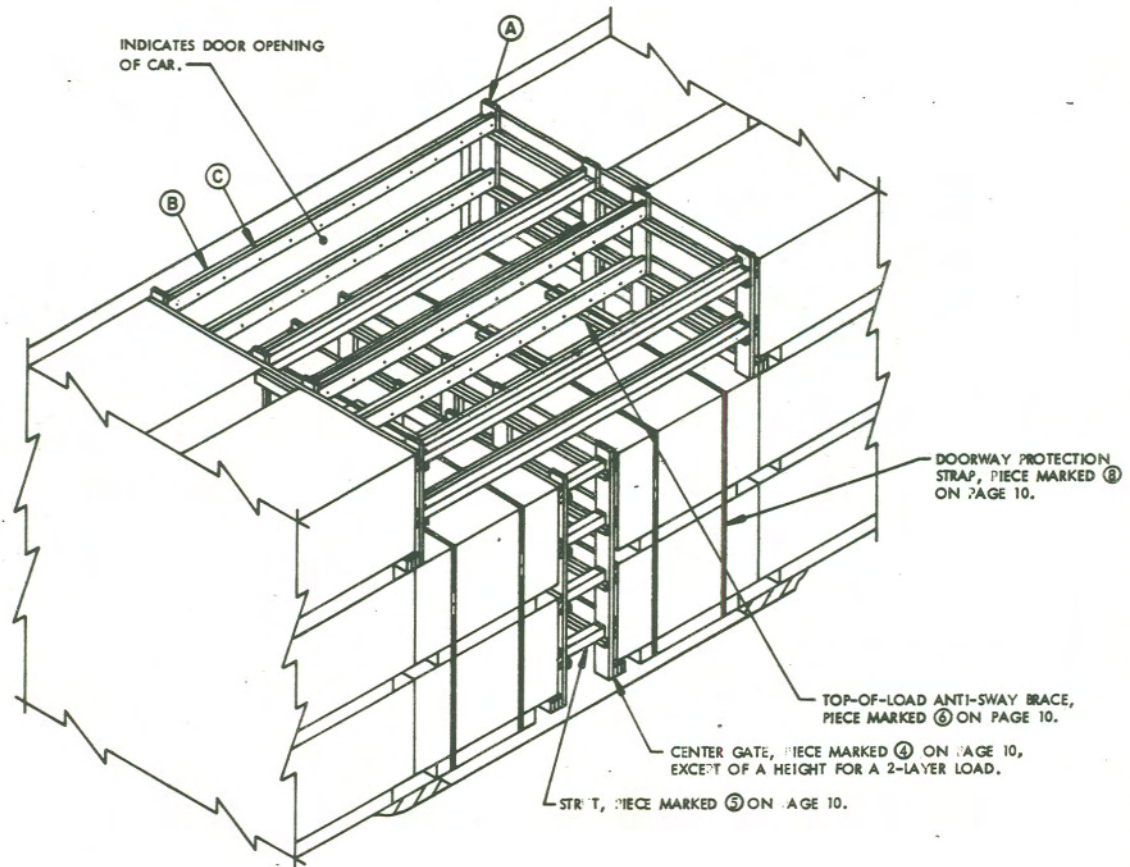
1/2" PLYWOOD MAY BE SUBSTITUTED FOR PIECE MARKED (A). THE PLYWOOD MUST BE OF A SIZE TO COVER THE AREA OF THE PALLET UNIT ADJACENT TO THE "K-BRACE". SECURE THE PLYWOOD TO PIECE MARKED (B) W/1-6d NAIL EVERY 6".

LUMBER AND NAILING DATA

PC MK	LUMBER SIZE	NO. REQD	NAIL TO	NUMBER AND SIZE OF NAILS
(A)	2" X 6" BY CAR WIDTH (SEE "NOTE ⊕" BELOW)	2	(B)	1-12d EVERY 12"
(B)	4" X 4" BY CAR WIDTH	2	-----	-----
(C)	2" X 4" X 5-1/2"	2	CAR WALL	2-10d
(D)	2" X 4" X 16-1/2"	2	CAR WALL	4-10d
(E)	2" X 4" X 18"	2	CAR WALL	5-10d
(F)	2" X 6" X 72"	4	CAR WALL	16-12d
(G)	2" X 4" X 28" FOR A 8'-6" WIDE BOX CAR OR 2" X 4" X 36" FOR A 9'-2" WIDE BOX CAR	2	(B)	7-16d
(H)	2" X 6" X 18"	4	(F)	7-16d
(J)	4" X 4" MATERIAL, SEE "BRACE" DETAIL BELOW	4	(B) & (F)	2-16d EACH END
(K)	2" X 6" X 30"	4	(F)	8-16d
(L)	2" X 6" X 42" FOR A PARTIAL THIRD LAYER OR 2" X 6" X 72" FOR A PARTIAL FIRST OR SECOND LAYER	2	CAR WALL	8-12d



PARTIAL LAYER BRACING



ISOMETRIC VIEW

SPECIAL NOTES:

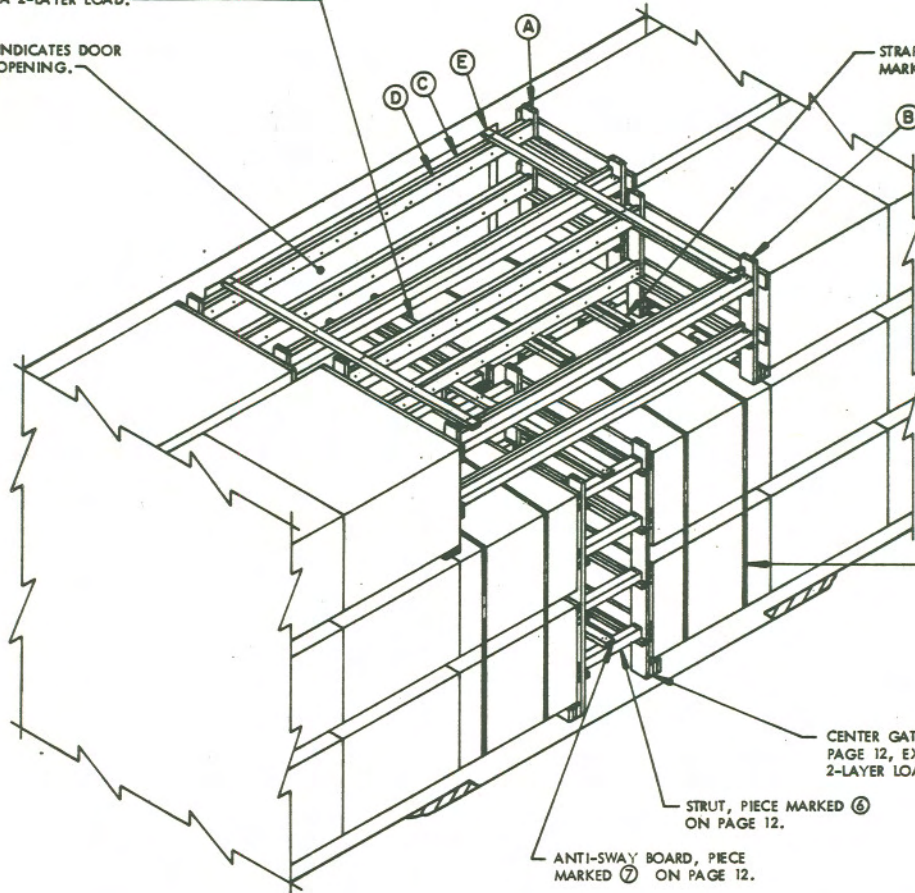
THE ISOMETRIC VIEW ABOVE DEPICTS THE PROCEDURES WHICH MUST BE USED IF THE DOOR OPENING HEIGHT IS NOT OF A HEIGHT TO PERMIT LOADING THE PALLET UNITS THREE UNITS HIGH IN THE DOORWAY AREA OF THE CAR. THE KEY NUMBERS ON PAGE 10 WILL BE FOLLOWED WITH THESE CHANGES: THE NUMBER OF ANTI-SWAY BRACES MARKED ① WILL BE REDUCED TO 26 REQUIRED AND THE LENGTH OF THE DOORWAY PROTECTION STRAP MARKED ② WILL BE SHORTENED ACCORDINGLY. IF ADDITIONAL UNITS HAVE TO BE OMITTED FROM THE DEPICTED LOAD, AND THE WIDTH OF THE DOOR OPENING IS SUCH THAT A PARTIAL-LAYER BRACE MAY BE USED SEE THE PROCEDURES AND NOTES ON PAGES 22 AND 25.

KEY LETTERS

- ① PARTIAL-LAYER GATE (2 REQD). SEE "PARTIAL-LAYER GATE A" ON PAGE 26.
- ② STRUT, 4" X 4" BY CUT TO FIT (3 REQD). TOENAIL TO PARTIAL-LAYER GATES MARKED ① W/2-12d NAILS AT EACH END. SEE KEY LETTER ③ BELOW.
- ③ STRUT, 2" X 6" BY CUT TO FIT (3 REQD). NAIL TO STRUT MARKED ② W/1-10d NAIL EVERY 8". TOENAIL TO PARTIAL-LAYER GATES MARKED ① W/2-12d NAILS AT EACH END.

CENTER GATE, PIECE MARKED ③
ON PAGE 12, EXCEPT OF A
HEIGHT FOR A 2-LAYER LOAD.

INDICATES DOOR
OPENING.



STRAPPING BOARD, PIECE
MARKED ⑧ ON PAGE 12.

DOORWAY PROTECTION STRAP,
PIECE MARKED ⑨ ON PAGE 12.

CENTER GATE, PIECE MARKED ⑤ ON
PAGE 12, EXCEPT OF A HEIGHT FOR A
2-LAYER LOAD.

STRUT, PIECE MARKED ⑥
ON PAGE 12.

ANTI-SWAY BOARD, PIECE
MARKED ⑦ ON PAGE 12.

ISOMETRIC VIEW

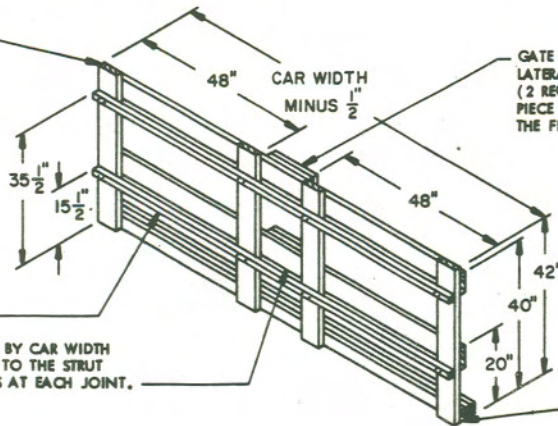
KEY LETTERS

SPECIAL NOTES:

THE ISOMETRIC VIEW ABOVE DEPICTS THE PROCEDURES WHICH MUST BE USED IF THE DOOR OPENING HEIGHT IS NOT OF A HEIGHT TO PERMIT LOADING THE PALLET UNITS THREE UNITS HIGH IN THE DOORWAY AREA OF THE CAR. KEY NUMBERS ON PAGE 12 WILL BE FOLLOWED, EXCEPT THAT THE LENGTH OF THE DOORWAY PROTECTION STRAPS MARKED ⑨ WILL BE SHORTENED ACCORDINGLY.

- Ⓐ PARTIAL-LAYER GATE (2 REQD). SEE "PARTIAL-LAYER GATE B" ON PAGE 26 .
- Ⓑ PARTIAL-LAYER GATE (2 REQD). SEE "PARTIAL-LAYER GATE C" ON PAGE 26 .
- Ⓒ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PARTIAL-LAYER GATES MARKED Ⓐ OR Ⓑ W/2-12d NAILS AT EACH END. SEE KEY LETTER Ⓓ BELOW.
- Ⓓ STRUT, 2" X 6" BY CUT TO FIT (8 REQD). NAIL TO STRUT MARKED Ⓒ W/1-10d NAIL EVERY 8". TOENAIL TO PARTIAL-LAYER GATES MARKED Ⓐ OR Ⓑ W/2-12d NAILS AT EACH END.
- Ⓔ ANTI-SWAY BOARD, 2" X 4" BY CUT TO FIT (2 REQD). NAIL TO STRUTS MARKED Ⓓ W/2-10d NAILS AT EACH JOINT.

STRUT BEARING PIECE, 2" X 6" X 42" (4 REQD).



GATE RETAINER, 2" X 4" BY CUT TO FIT BETWEEN LATERALLY ADJACENT PALLET UNITS (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO LOAD BEARING PIECE W/3-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

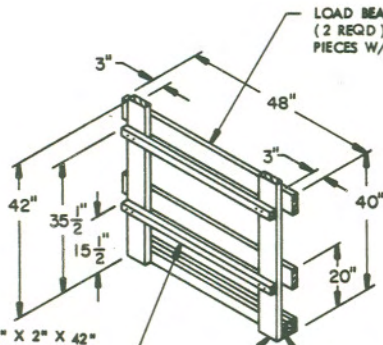
STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 1/2" (2 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

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

GATE HOLD-DOWN, 2" X 4" BY CAR WIDTH MINUS 1/2" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT. NAIL EACH ADDITIONAL PIECE W/1-10d NAIL EVERY 12".

PARTIAL-LAYER GATE A

PIECE MARKED (A) ON PAGE 24.

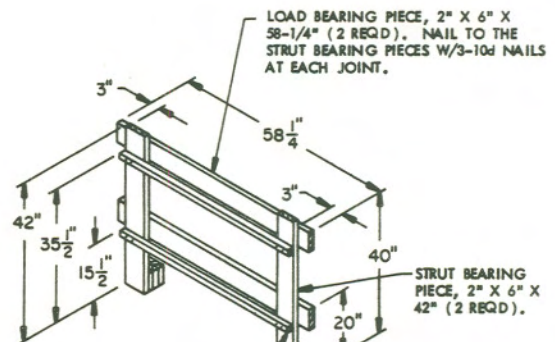


STRUT LEDGER, 2" X 2" X 42" (2 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

STRUT BEARING PIECE 2" X 6" X 42" (2 REQD).

LOAD BEARING PIECE, 2" X 6" X 48" (2 REQD). NAIL TO STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 4" X 42" (TRIPLED) (1 REQD). NAIL THE FIRST PIECE TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT. NAIL EACH ADDITIONAL PIECE W/5-10d NAILS EACH.



LOAD BEARING PIECE, 2" X 6" X 58-1/4" (2 REQD). NAIL TO THE STRUT BEARING PIECES W/3-10d NAILS AT EACH JOINT.

STRUT BEARING PIECE, 2" X 6" X 42" (2 REQD).

STRUT LEDGER, 2" X 2" X 52" (2 REQD). NAIL TO THE STRUT BEARING PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD DOWN, 2" X 6" X 5" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE STRUT BEARING PIECE W/2-10d NAILS. NAIL EACH ADDITIONAL PIECE IN A LIKE MANNER.

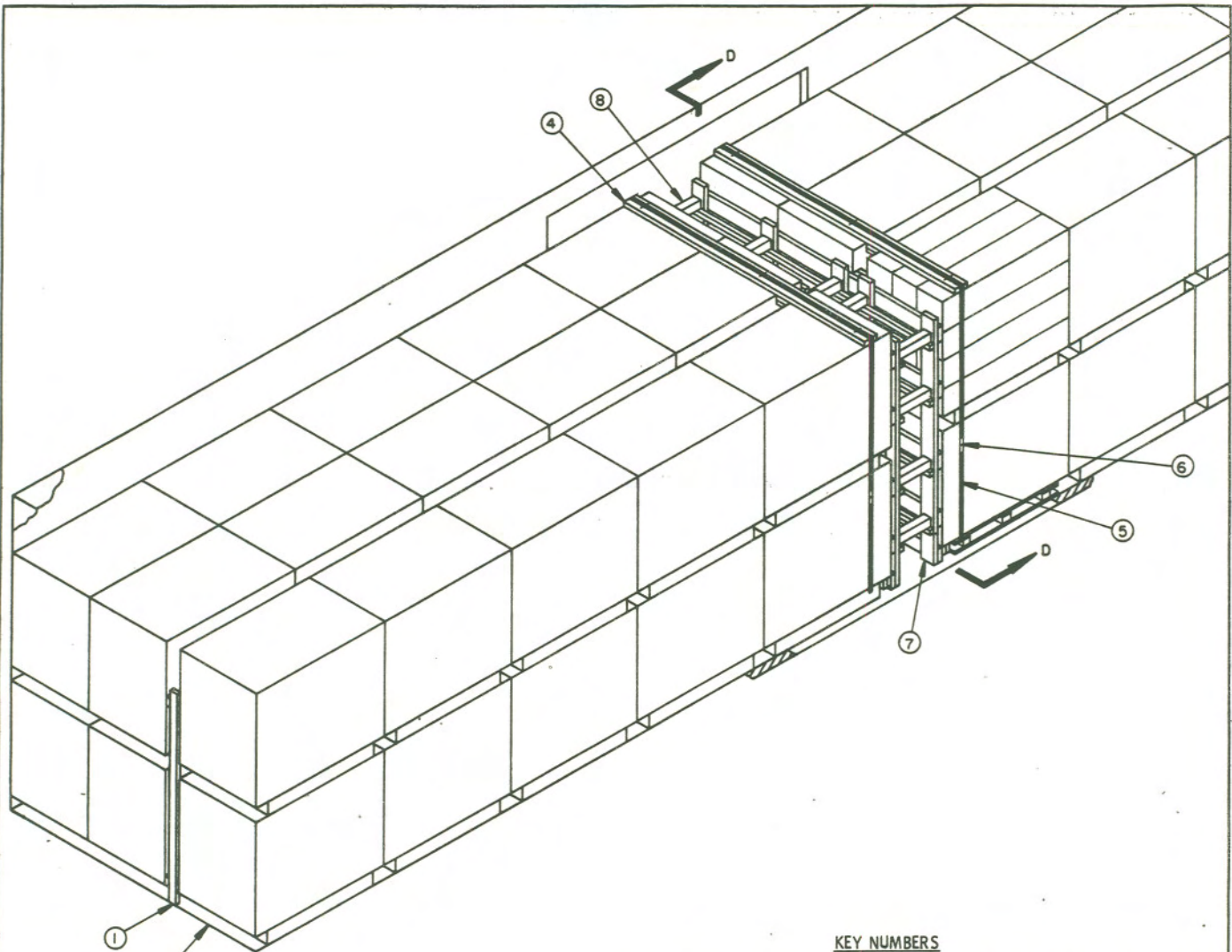
PARTIAL-LAYER GATE B

PIECE MARKED (A) ON PAGE 25.

PARTIAL-LAYER GATE C

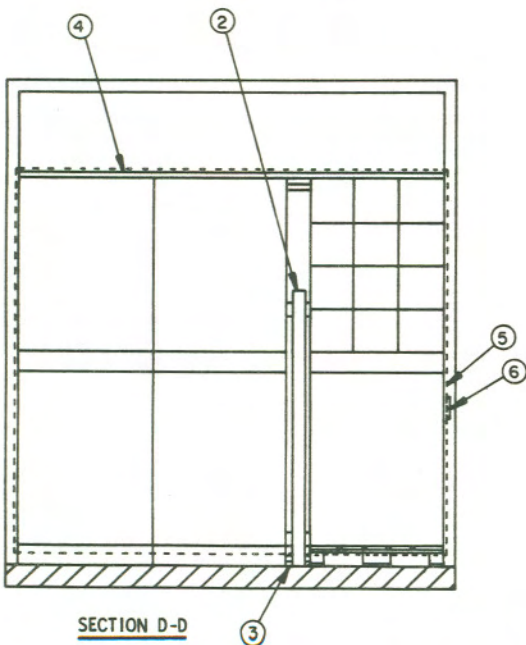
PIECE MARKED (B) ON PAGE 25.

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SEE GENERAL NOTE
"U" ON PAGE 2.

ISOMETRIC VIEW



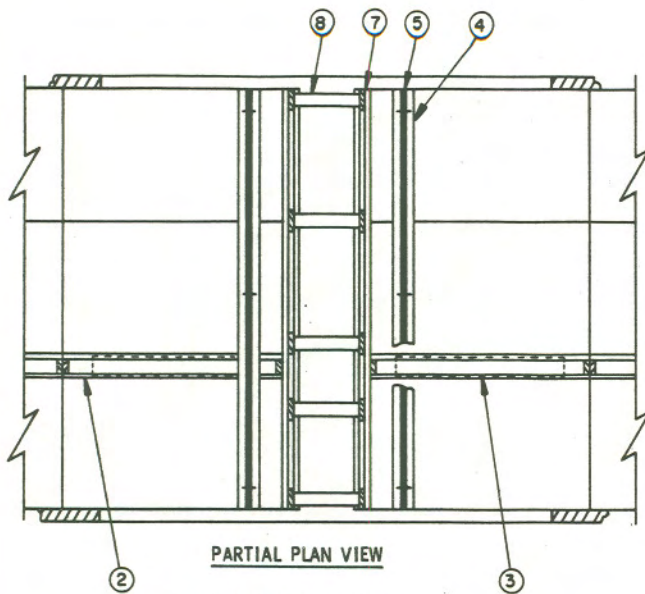
SECTION D-D

KEY NUMBERS

- ① CRIB FILL (6 REQD). SEE THE "CRIB FILL A" DETAIL AND "NOTE" ON PAGE 35. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2, AND SPECIAL NOTE 4 ON PAGE 29.
- ② CRIB FILL (4 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 35.
- ③ SIDE BLOCKING, 2" X 6" BY A LENGTH TO SUIT (REF: 45") (DOUBLED) (2 REQD). PRE-POSITION ABOUT 35-1/2" FROM THE NEAR SIDE CAR WALL. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" AND SPECIAL NOTES 5 AND 6 ON PAGE 29. SEE GENERAL NOTES "O" AND "P" ON PAGE 2.
- ④ STRAPPING BOARD/SPACER ASSEMBLY "A" (2 REQD). SEE THE DETAIL ON PAGE 34.
- ⑤ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 37'-6" LONG STEEL STRAPPING (2 REQD). STAPLE TO THE STRAPPING BOARD MARKED ④ W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 29.
- ⑥ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑦ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE D" DETAIL ON PAGE 32. SEE SPECIAL NOTES 8 THRU 11 ON PAGE 29.
- ⑧ STRUT, 4" X 4" BY CUT TO FIT (REF: 17") (20 REQD). TOENAIL TO PIECES MARKED ⑦ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2.

(3-WIDE/4-HIGH UNIT)

60-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR



(SPECIAL NOTES CONTINUED)

13. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGES 51 AND 53 FOR SHIPPING GUIDANCE.
14. FOR SHIPMENT OF LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 52 FOR GUIDANCE.

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-4" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 10'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 28 IS THE 3-WIDE/4-HIGH UNIT. A MAXIMUM OF FORTY-EIGHT (48) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 53,376 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SEVENTY-TWO (72) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 80,064 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 10' OR WIDER. IF THE CAR TO BE LOADED HAS DOOR OPENINGS LESS THAN 10'-0" WIDE AND NOT OF SUFFICIENT HEIGHT TO ALLOW PERSONNEL TO EXIT OVER THE TOP OF THE LOAD WHEN NECESSARY, THE PALLETS SHOULD BE POSITIONED SO THERE ARE FIVE (5) LOAD UNITS IN ONE END OF THE CAR, AND FOUR (4) IN THE OTHER. NOTE THAT ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 8'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR DECREASES.
4. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. THREE (3) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FOUR (4) ARE REQUIRED IN EACH END OF A 60' CAR. IF DESIRED, IN CARS HAVING NAILABLE SIDEWALLS, 1" X 6" OR 2" X 6" FILL MATERIAL MAY BE NAILED TO ONE OR BOTH SIDEWALLS AT THE HEIGHTS SPECIFIED FOR THE HORIZONTALS ON THE CENTER GATES, IN LIEU OF THE DEPICTED CRIB FILL. NOTE THAT THE TOTAL ACCUMULATED SPACE ACROSS A CAR SHOULD NOT EXCEED THREE INCHES (3").
5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS "DOORWAY PROTECTION B" DETAIL ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE SPECIAL NOTE 11.
6. SIDE BLOCKING SHOWN AS PIECE MARKED ③ IN THE LOAD VIEW, IS REQUIRED FOR ALL UNITS REQUIRING BUNDLING STRAPS. NOTE THAT CRIB FILL SHOWN AS PIECE MARKED ② MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF EACH VERTICAL PIECE THAT RESTS ON THE SIDE BLOCKING.
7. TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH.
8. CENTER GATE "D" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 55 FOR GUIDANCE.
9. FOR EASE OF HANDLING, SPLIT CENTER GATES, WHICH ARE NOT DEPENDENT ON THE WIDTH OF THE CAR, MAY BE USED AS AN ALTERNATIVE TO THE CAR-WIDTH GATES. IN LIEU OF EACH CENTER GATE "D", SHOWN AS PIECE MARKED ⑦ IN THE LOAD ON PAGE 28, INSTALL TWO (2) CENTER GATES "E" AND TWO (2) CENTER GATES "F" AS SHOWN ON PAGE 33. AFTER THE SPLIT GATES AND STRUTS HAVE BEEN INSTALLED, THE SPLIT GATES MUST BE TIED TOGETHER AS DEPICTED BY THE "TIE PIECE APPLICATION" DETAIL ON PAGE 55.
10. STOP PIECES MUST BE APPLIED TO CENTER GATES "D" IN THE DOORWAY TO PREVENT DISPLACEMENT, AS SHOWN BY THE "CENTER GATE D" DETAIL ON PAGE 32. IF SPLIT CENTER GATES "E" AND "F" ARE USED, EXTEND THE LENGTH OF THE SIDE BLOCKING NINE INCHES (9") BEYOND THE GATES TO PREVENT DISPLACEMENT. SEE SPECIAL NOTE 6.
11. IF THE WOODEN GATE TYPE OF DOORWAY PROTECTION IS USED, OMIT PIECES MARKED ③ THRU ⑥, OMIT STOP PIECES ON THE CENTER GATES, AND INSTALL "DOORWAY PROTECTION B" AS DIRECTED BY THE DETAIL ON PAGE 54.
12. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF SIX (6) PALLET UNITS, OR A 1-TIER LOAD CAN BE REDUCED BY A MULTIPLE OF THREE (3) UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF THE LOAD. ALSO, A 2-TIER LOAD CAN BE REDUCED BY TEN (10) UNITS BY OMITTING THE CENTER ROW OF THE TOP TIER AS SHOWN ON PAGE 36, OR THE ENTIRE TOP TIER MAY BE OMITTED. FOR OTHER METHODS OF REDUCING A LOAD, AND FOR TYPICAL LCL PROCEDURES, REFER TO PAGES 38 THRU 49 FOR GUIDANCE.

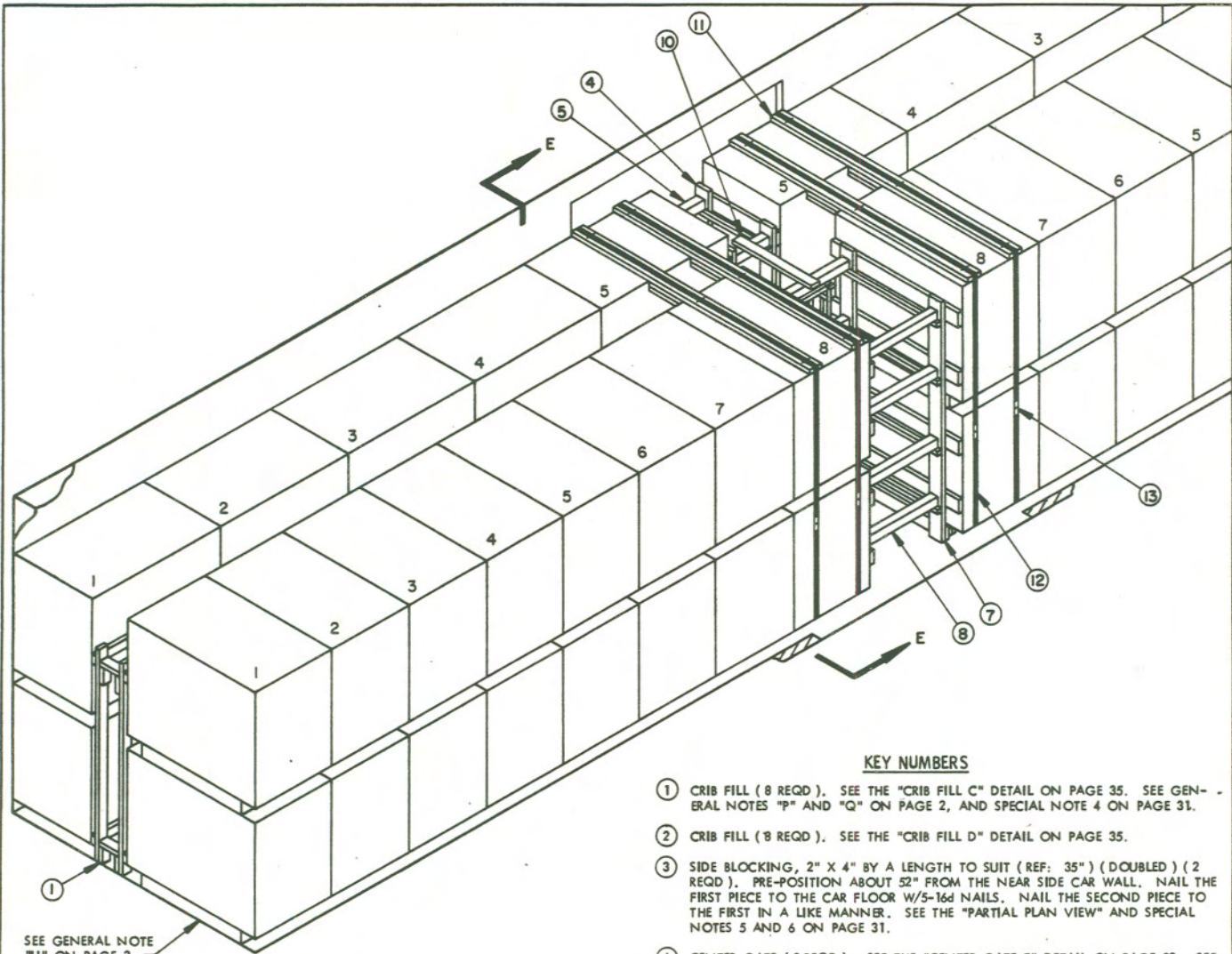
(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	98	33
2" X 2"	75	25
2" X 4"	234	156
2" X 6"	215	215
4" X 4"	29	39
NAILS	NO. REQD	POUNDS
6d (2")	80	1/2
10d (3")	344	5-1/2
16d (3-1/2")	104	2-1/4
STEEL STRAPPING, 1-1/4" -----	75' REQD -----	11 LBS
SEAL FOR 1-1/4" STRAPPING -----	4 REQD -----	NIL
STAPLE FOR 1-1/4" STRAPPING -----	6 REQD -----	NIL

LOAD AS SHOWN

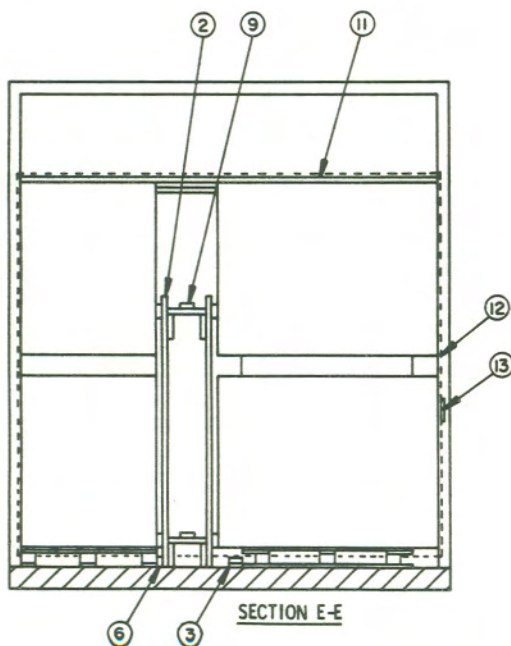
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT-----	60	66,720 LBS
DUNNAGE-----		955 LBS
TOTAL WEIGHT-----		67,675 LBS

(3-WIDE/4-HIGH UNIT)
60-UNIT LOAD IN A 50'-6" LONG BY 9'-4" WIDE CONVENTIONAL BOX CAR



SEE GENERAL NOTE "U" ON PAGE 2.

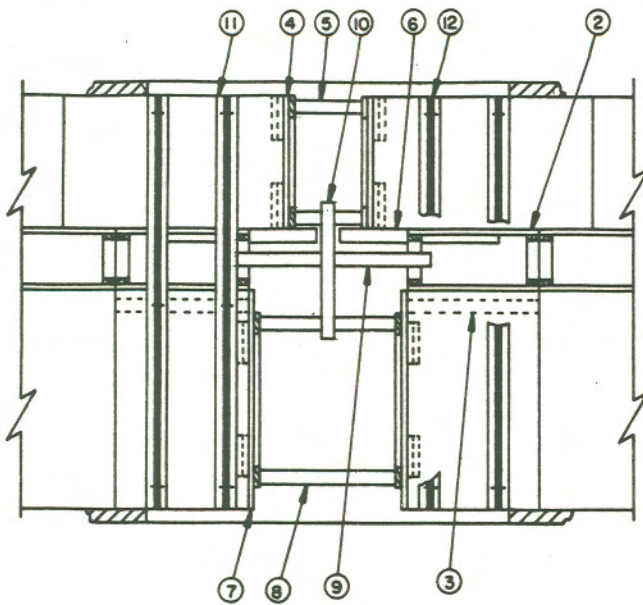
ISOMETRIC VIEW



SECTION E-E

KEY NUMBERS

- ① CRIB FILL (8 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 35. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2, AND SPECIAL NOTE 4 ON PAGE 31.
- ② CRIB FILL (8 REQD). SEE THE "CRIB FILL D" DETAIL ON PAGE 35.
- ③ SIDE BLOCKING, 2" X 4" BY A LENGTH TO SUIT (REF: 35") (DOUBLED) (2 REQD). PRE-POSITION ABOUT 52" FROM THE NEAR SIDE CAR WALL. NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" AND SPECIAL NOTES 5 AND 6 ON PAGE 31.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 33. SEE SPECIAL NOTE 8 ON PAGE 31.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (REF: 17") (8 REQD). TOENAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑥ SIDE BLOCKING, 2" X 4" BY A LENGTH TO SUIT (REF: 42") (DOUBLED) (2 REQD). POSITION TO EXTEND AT LEAST 6" BEYOND THE CENTER GATES MARKED ④ AS SHOWN IN THE "PARTIAL PLAN VIEW" ON PAGE 31. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑦ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 34. SEE SPECIAL NOTE 8 ON PAGE 31.
- ⑧ STRUT, 4" X 4" BY CUT TO FIT (REF: 36") (8 REQD). TOENAIL TO PIECES MARKED ⑦ W/2-16d NAILS AT EACH END.
- ⑨ CRIB FILL RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 54") (2 REQD). POSITION TO SPAN THE STRUTS OF LONGITUDINALLY ADJACENT CRIB FILL "D" ASSEMBLIES AND NAIL TO EACH STRUT W/2-10d NAILS. SEE THE "PARTIAL PLAN VIEW" ON PAGE 31.
- ⑩ GATE RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (REF: 36") (1 REQD). POSITION TO SPAN THE UPPER STRUTS MARKED ⑤ AND ⑧ AS SHOWN BY THE "PARTIAL PLAN VIEW" ON PAGE 31. NAIL TO EACH STRUT W/2-10d NAILS.
- ⑪ STRAPPING BOARD/SPACER ASSEMBLY "B" (4 REQD). SEE THE DETAIL ON PAGE 34.
- ⑫ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 37'-0" LONG STEEL STRAPPING (4 REQD). STAPLE TO THE STRAPPING BOARD MARKED ⑪ W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 31.
- ⑬ SEAL FOR 1-1/4" STRAPPING (8 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.



PARTIAL PLAN VIEW

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOXCAR EQUIPPED WITH 8'-0" WIDE DOOR OPENINGS IS SHOWN. CARS OF OTHER DIMENSIONS AND HAVING WIDER OR NARROWER DOOR OPENINGS CAN BE USED. SEE SPECIAL NOTE 3 BELOW.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 30 IS THE 3-WIDE/4-HIGH UNIT. A MAXIMUM OF FORTY-TWO (42) OF THESE UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 46,704 POUNDS, CAN BE LOADED IN A 40'-6" LONG CAR WHEN USING THE DEPICTED PROCEDURES; SIXTY-FOUR (64) UNITS, FOR AN APPROXIMATE LADING WEIGHT OF 71,168 POUNDS, CAN BE LOADED IN A 60'-8" LONG CAR.
3. THE DEPICTED LOADING PATTERN IS ADEQUATE FOR CARS HAVING DOOR OPENINGS 8' OR WIDER. ALTHOUGH CARS HAVING DOOR OPENINGS AS NARROW AS 6'-0" WIDE CAN BE USED FOR FULL LOADS, LOADING IS PROGRESSIVELY MORE DIFFICULT AS THE WIDTH OF THE DOOR DECREASES.
4. THE "HIGH CRIB", SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FOUR (4) ASSEMBLIES ARE REQUIRED IN EACH END OF THE LOAD IN A 50' CAR. FIVE (5) ARE REQUIRED IN EACH END OF A 60' CAR.
5. DOORWAY PROTECTION IS REQUIRED FOR ALL PALLET UNIT STACKS WHICH ARE COMPLETELY WITHIN THE DOORWAY AREA OR WHICH EXTEND INTO IT BY ONE-HALF OR MORE OF THE STACK WIDTH. THE WOODEN GATE TYPE OF DOORWAY PROTECTION, SHOWN AS "DOORWAY PROTECTION B" DETAIL ON PAGE 54, IS APPLICABLE FOR BOX CARS EQUIPPED WITH CONVENTIONAL SLIDING DOORS AND NAILABLE DOOR POSTS; OR NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MAY BE USED. NOTE: IF THE CAR BEING LOADED IS EQUIPPED WITH PLUG TYPE DOORS, NAILED SIDE BLOCKING AND LOAD BUNDLING STRAPS MUST BE USED. SEE SPECIAL NOTE 9.
6. SIDE BLOCKING, PIECES MARKED 3 AND 6 IN THE LOAD VIEW, IS REQUIRED FOR ALL UNITS REQUIRING BUNDLING STRAPS. NOTE THAT CRIB FILL SHOWN AS PIECE MARKED ② MUST HAVE THREE INCHES (3") CUT OFF THE BOTTOM OF EACH VERTICAL PIECE AND BOTTOM SUPPORT PIECE THAT RESTS ON THE SIDE BLOCKING.
7. TWO (2) BUNDLING STRAPS ARE REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS COMPLETELY WITHIN THE DOORWAY AREA OR WHICH IS NOT RETAINED BY AT LEAST SIX INCHES (6") OF THE SIDEWALL ON BOTH SIDES OF THE CAR. ONE (1) BUNDLING STRAP IS REQUIRED FOR EACH PALLET STACK AND/OR LOAD UNIT WHICH IS RETAINED BY FROM 6" TO ONE-HALF THE PALLET/LOAD UNIT WIDTH OR LENGTH.
8. CENTER GATES "F" AND "G" MAY BE PARTIALLY FORMED FROM 1/2" OR THICKER PLYWOOD, IF DESIRED. PLYWOOD MAY BE USED IN LIEU OF THE 2" X 6" HORIZONTAL PIECES. SEE THE "PLYWOOD CENTER GATE ALTERNATIVE" DETAIL ON PAGE 55 FOR GUIDANCE.
9. IF THE WOODEN GATE TYPE OF DOORWAY PROTECTION IS USED, OMIT PIECES MARKED ③, ④, ⑪, ⑫, AND ⑬. INSTALL "DOORWAY PROTECTION B" AS DIRECTED BY THE DETAIL ON PAGE 54.
10. THE DEPICTED LOAD CAN BE REDUCED TO SUIT THE QUANTITY TO BE SHIPPED. A 2-TIER LOAD CAN BE REDUCED BY ONE OR MORE PALLET UNITS BY EMPLOYING THE PROCEDURES ON PAGE 50. FOUR (4) UNITS CAN BE OMITTED FROM A 2-TIER LOAD BY LEAVING OUT THE LENGTHWISE STACKS NO. 5 AND THE CROSS-WISE STACKS NO. 8. NOTE THAT STRUT BRACING WILL THEN BE REQUIRED, OR THE ENTIRE TOP TIER CAN BE OMITTED. A PARTIAL 1-TIER LOAD CAN BE SHIPPED IN ONE OR BOTH ENDS OF A CAR BY USING KNEE BRACES AS SHOWN ON PAGES 40 AND 41.
11. IF PALLETIZED UNITS WHICH DO NOT CONTAIN A FULL QUANTITY OF CONTAINERS ARE TO BE TRANSPORTED, REFER TO PAGE 53 FOR SHIPPING GUIDANCE FOR CROSSWISE UNITS AND PAGES 51 AND 53 FOR LENGTHWISE UNITS.
12. FOR SHIPMENT OF ONE OR MORE LEFTOVER CONTAINERS, SEE THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" ON PAGE 52 FOR GUIDANCE.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	55	19
2" X 3"	8	4
2" X 4"	773	516
2" X 6"	188	188
4" X 4"	36	48
NAILS		POUNDS
10d (3")	1,132	18
16d (3-1/2")	108	2-1/2
STEEL STRAPPING, 1-1/4"	148' REQD	22 LBS
SEAL FOR 1-1/4" STRAPPING	8 REQD	NIL
STAPLE FOR 1-1/4" STRAPPING	12 REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	52	57,824 LBS
DUNNAGE		1,593 LBS
TOTAL WEIGHT		59,417 LBS

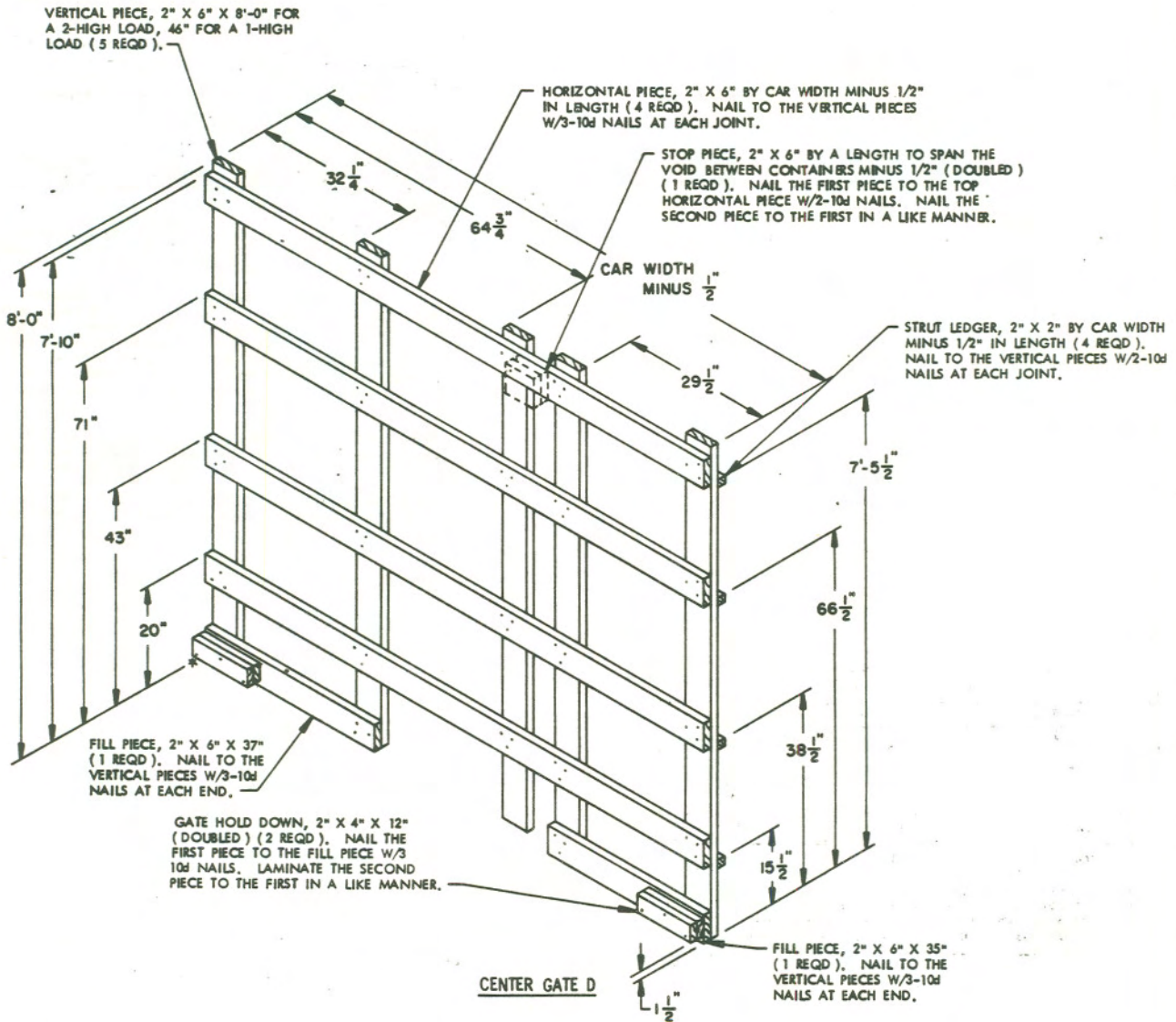
(3-WIDE/4-HIGH UNIT)
52-UNIT LOAD IN A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL BOX CAR

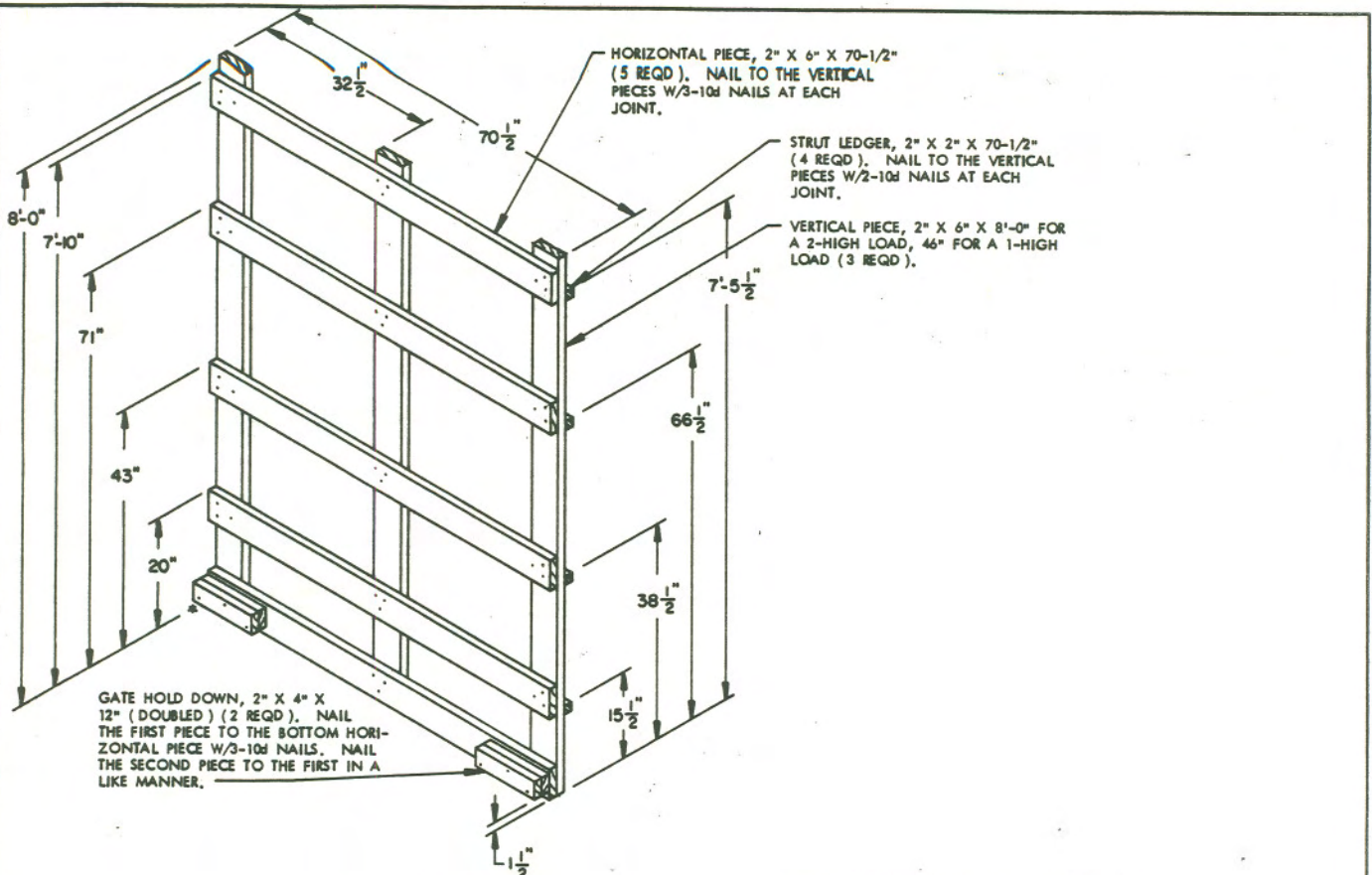
VERTICAL PIECE, 2" X 6" X 8'-0" FOR A 2-HIGH LOAD, 46" FOR A 1-HIGH LOAD (5 REQD).

HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (4 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

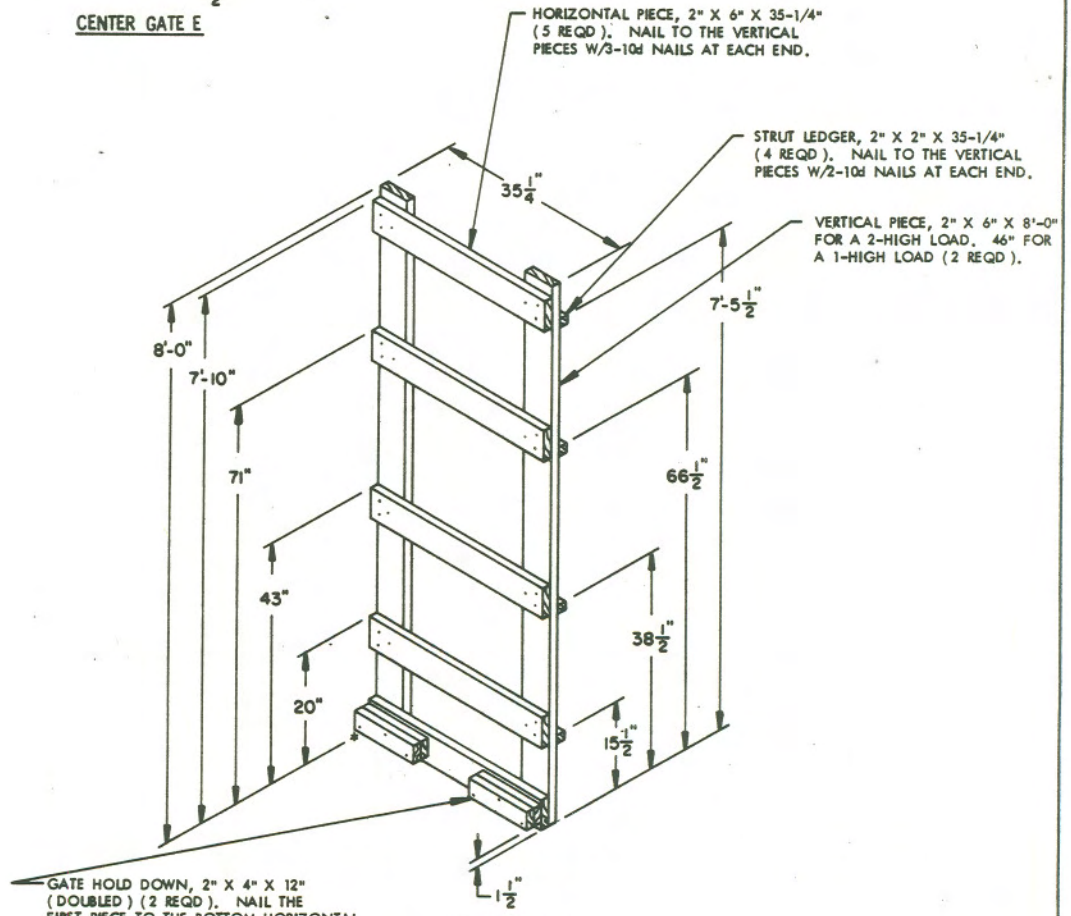
STOP PIECE, 2" X 6" BY A LENGTH TO SPAN THE VOID BETWEEN CONTAINERS MINUS 1/2" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE TOP HORIZONTAL PIECE W/2-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 1/2" IN LENGTH (4 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



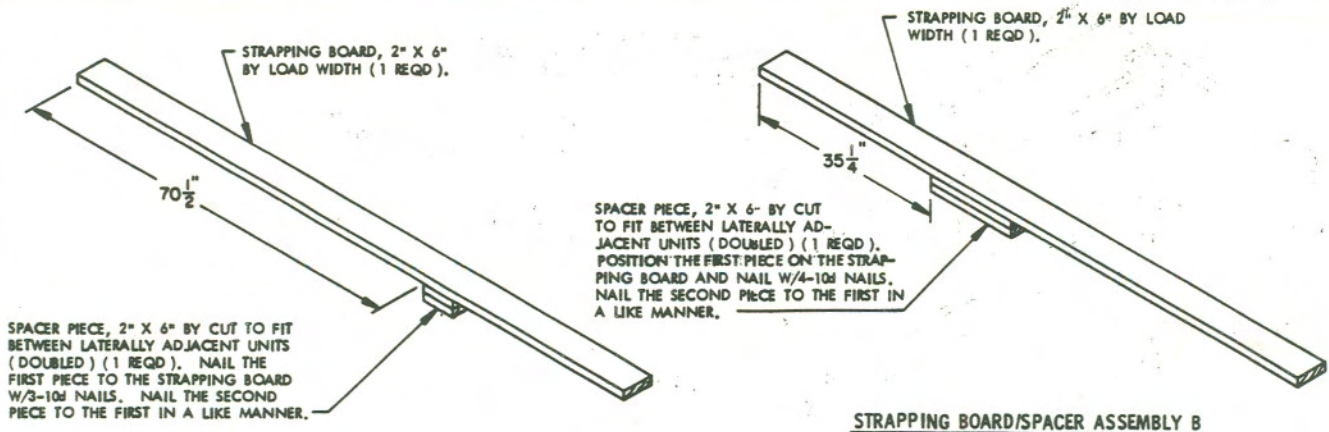


CENTER GATE E



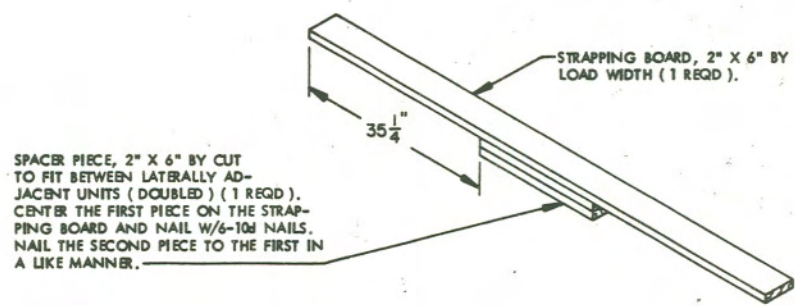
CENTER GATE F

DETAILS

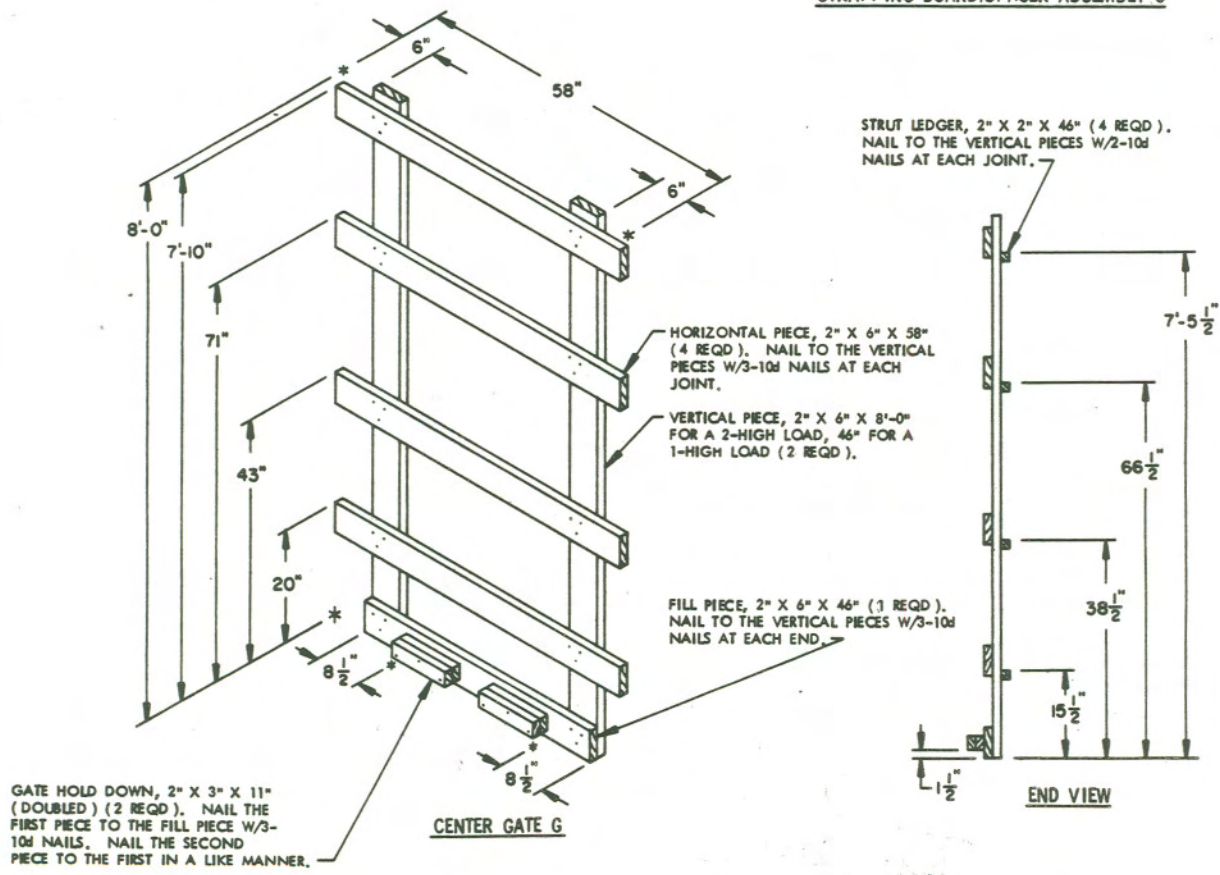


STRAPPING BOARD/SPACER ASSEMBLY A

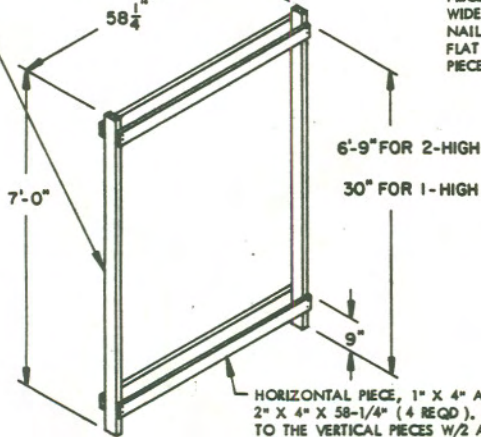
STRAPPING BOARD/SPACER ASSEMBLY B



STRAPPING BOARD/SPACER ASSEMBLY C



VERTICAL PIECE, 2" X 4" X 7'-0"
FOR A 2-HIGH LOAD, 33" FOR A
1-HIGH LOAD (2 REQD).
SEE NOTE AT RIGHT.



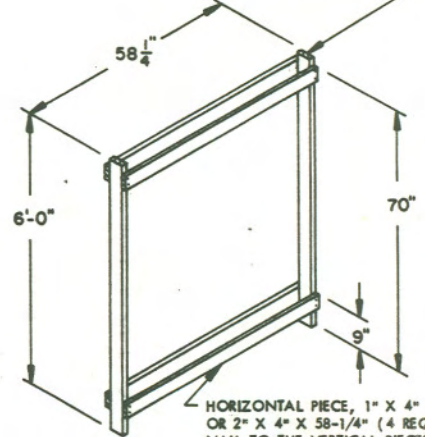
HORIZONTAL PIECE, 1" X 4" AND/OR
2" X 4" X 58-1/4" (4 REQD). NAIL
TO THE VERTICAL PIECES W/2 APPLICABLY
SIZED NAILS AT EACH END.

CRIB FILL A

CRIB FILL ASSEMBLIES "A" AND "B" SHOULD BE
PRE-FABRICATED. CONSTRUCT TO BE 1/2" TO
3/4" LESS IN WIDTH THAN THE DISTANCE BE-
TWEEN LATERALLY ADJACENT ROWS OF PALLET
UNITS.

NOTE: THE DEPICTED CRIB FILL
IS DESIGNED FOR USE IN A
9'-4" WIDE CAR. 2" X 6" VERTICAL
PIECES WILL BE USED IN A 9'-6"
WIDE CAR. IF THE CAR IS 9'-2" WIDE,
NAIL THE HORIZONTAL PIECES TO THE
FLAT SIDE OF THE 2" X 4" VERTICAL
PIECES W/3-APPLICABLY SIZED NAILS.

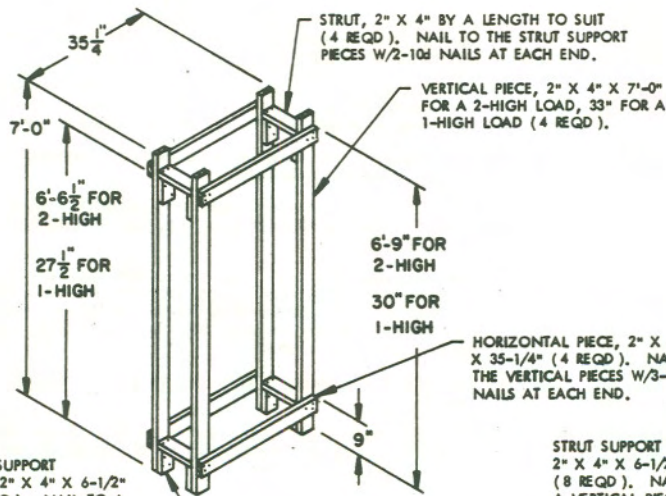
VERTICAL PIECE, 2" X 4" X 72"
(2 REQD). SEE NOTE AT LEFT.



HORIZONTAL PIECE, 1" X 4" AND/
OR 2" X 4" X 58-1/4" (4 REQD).
NAIL TO THE VERTICAL PIECES
W/2 APPLICABLY SIZED NAILS AT
EACH END.

CRIB FILL B

CRIB FILL "B" IS NOT REQUIRED FOR A 1-HIGH
LOAD; THE CRIB FILL "A" WILL BE USED THROUGH-
OUT THE LENGTH OF THE LOAD.



STRUT SUPPORT
PIECE, 2" X 4" X 6-1/2"
(8 REQD). NAIL TO A
VERTICAL PIECE W/2-10d
NAILS.

CRIB FILL C

CRIB FILL ASSEMBLIES "C" AND "D" SHOULD
BE PRE-FABRICATED. CONSTRUCT TO BE
1/2" TO 3/4" LESS IN WIDTH THAN THE
DISTANCE BETWEEN LATERALLY ADJACENT
ROWS OF PALLET UNITS.

STRUT, 2" X 4" BY A LENGTH TO SUIT
(4 REQD). NAIL TO THE STRUT SUPPORT
PIECES W/2-10d NAILS AT EACH END.

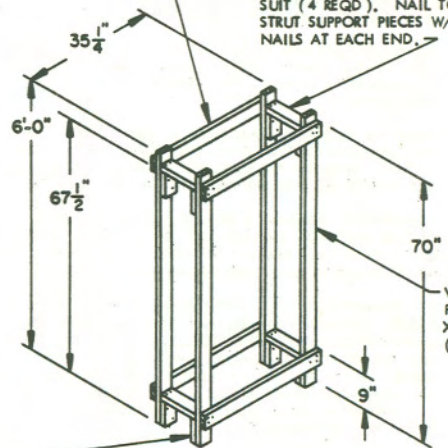
VERTICAL PIECE, 2" X 4" X 7'-0"
FOR A 2-HIGH LOAD, 33" FOR A
1-HIGH LOAD (4 REQD).

HORIZONTAL PIECE, 2" X 4"
X 35-1/4" (4 REQD). NAIL TO
THE VERTICAL PIECES W/3-10d
NAILS AT EACH END.

STRUT SUPPORT
PIECE, 2" X 4" X 6-1/2"
(8 REQD). NAIL TO
A VERTICAL PIECE
W/2-10d NAILS.

HORIZONTAL PIECE, 2" X 4" X 35-1/4" (4
REQD). NAIL TO VERTICAL PIECES W/3-10d
NAILS AT EACH END.

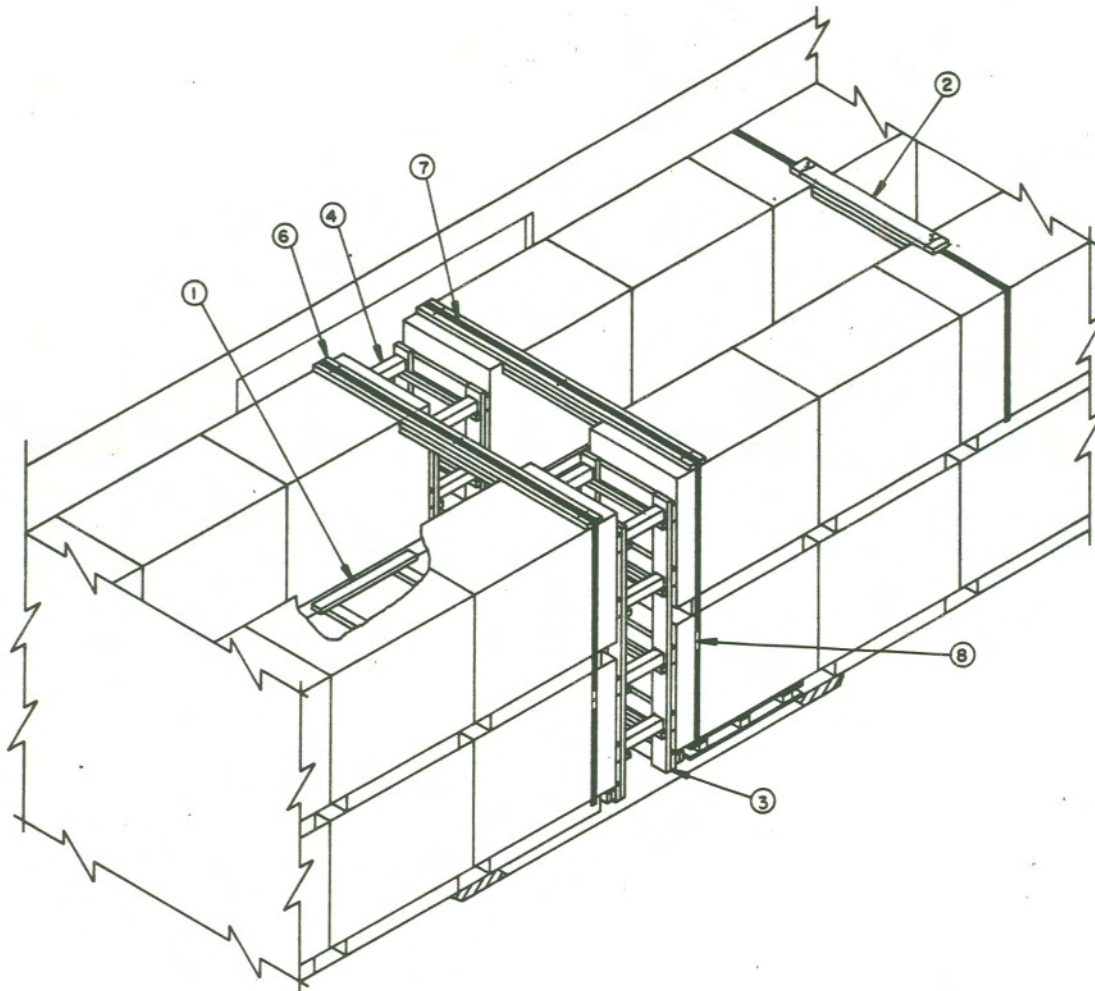
STRUT, 2" X 4" BY A LENGTH TO
SUIT (4 REQD). NAIL TO THE
STRUT SUPPORT PIECES W/2-10d
NAILS AT EACH END.



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

CRIB FILL D

CRIB FILL "D" IS NOT REQUIRED FOR A 1-HIGH
LOAD; USE CRIB FILL "C" THROUGHOUT THE
LENGTH OF THE LOAD.



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BCK CAR IS SHOWN TO PORTRAY THE METHOD OF OMITTING THE CENTER ROW OF UNITS FROM THE TOP LAYER. THE PALLET UNIT SHOWN IS THE 3 WIDE/4 HIGH UNIT.
2. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE CENTER ROW OF UNITS FROM THE TOP LAYER OF A 2-HIGH LOAD ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR A 1-HIGH LOAD.
3. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE CENTER ROW OF UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO THE LOAD ON PAGES 28 AND 29 FOR BLOCKING AND BRACING PROCEDURES FOR THE BALANCE OF THE LOAD.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECES MARKED ② ABOVE MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF THE LOAD IN A 60' CAR. THREE (3) BRACES ARE REQUIRED IN EACH END OF 40' AND 50' CARS.
5. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUTS, ANTI-SWAY BRACES, AND CRIB FILL PIECES WILL VARY DEPENDENT UPON THE QUANTITY TO BE LOADED. NOTE THAT 1-HIGH CRIB FILL WILL BE USED IN LIEU OF THE DEPICTED 2-HIGH CRIB FILL PIECES SHOWN IN THE LOAD VIEWS. IF THE DEPICTED PROCEDURES ARE USED FOR A 1-HIGH LOAD; OMIT THE LOWER ANTI-SWAY BRACES IN THE DOORWAY, AND INSTALL SIDE BLOCKING SHOWN AS PIECE MARKED ⑤. NOTE THAT FOUR (4) SIDE BLOCKING PIECES WILL BE REQUIRED.

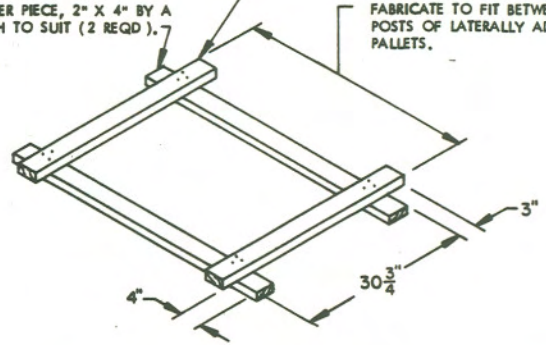
KEY NUMBERS

- ① ANTI-SWAY BRACE (10 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 37. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (AS REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 15. WIRE TIE TO PALLET STRAP WITH NO. 14 GAGE WIRE AS SHOWN ABOVE. SEE SPECIAL NOTE 4 AT LEFT.
- ③ CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "CENTER GATE H" DETAIL ON PAGE 37.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 17") (20 REQD). TOENAIL TO PIECES MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2.
- ⑤ SIDE BLOCKING, 2" X 6" BY A LENGTH TO SUIT (REF: 45") (DOUBLED) (2 REQD). PRE-POSITION ABOUT 35-1/2" FROM THE NEAR SIDE CAR WALL. NAIL THE FIRST PIECE TO THE CAR FLOOR W/6-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "PARTIAL PLAN VIEW" AND SPECIAL NOTES 5 AND 6 ON PAGE 29.
- ⑥ STRAPPING BOARD/SPACER ASSEMBLY "C" (2 REQD). SEE THE DETAIL ON PAGE 34.
- ⑦ BUNDLING STRAP, 1-1/4" X .031" OR .035" X 37'-6" LONG STEEL STRAPPING (2 REQD). STAPLE TO THE STRAPPING BOARD MARKED ⑥ W/3 STAPLES. SEE SPECIAL NOTE 7 ON PAGE 29.
- ⑧ SEAL FOR 1-1/4" STRAPPING (4 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.

BUFFER PIECE, 2" X 4" X 36-3/4"
(2 REQD), NAIL TO THE RETAINER
PIECES W/3-10d NAILS AT EACH JOINT.

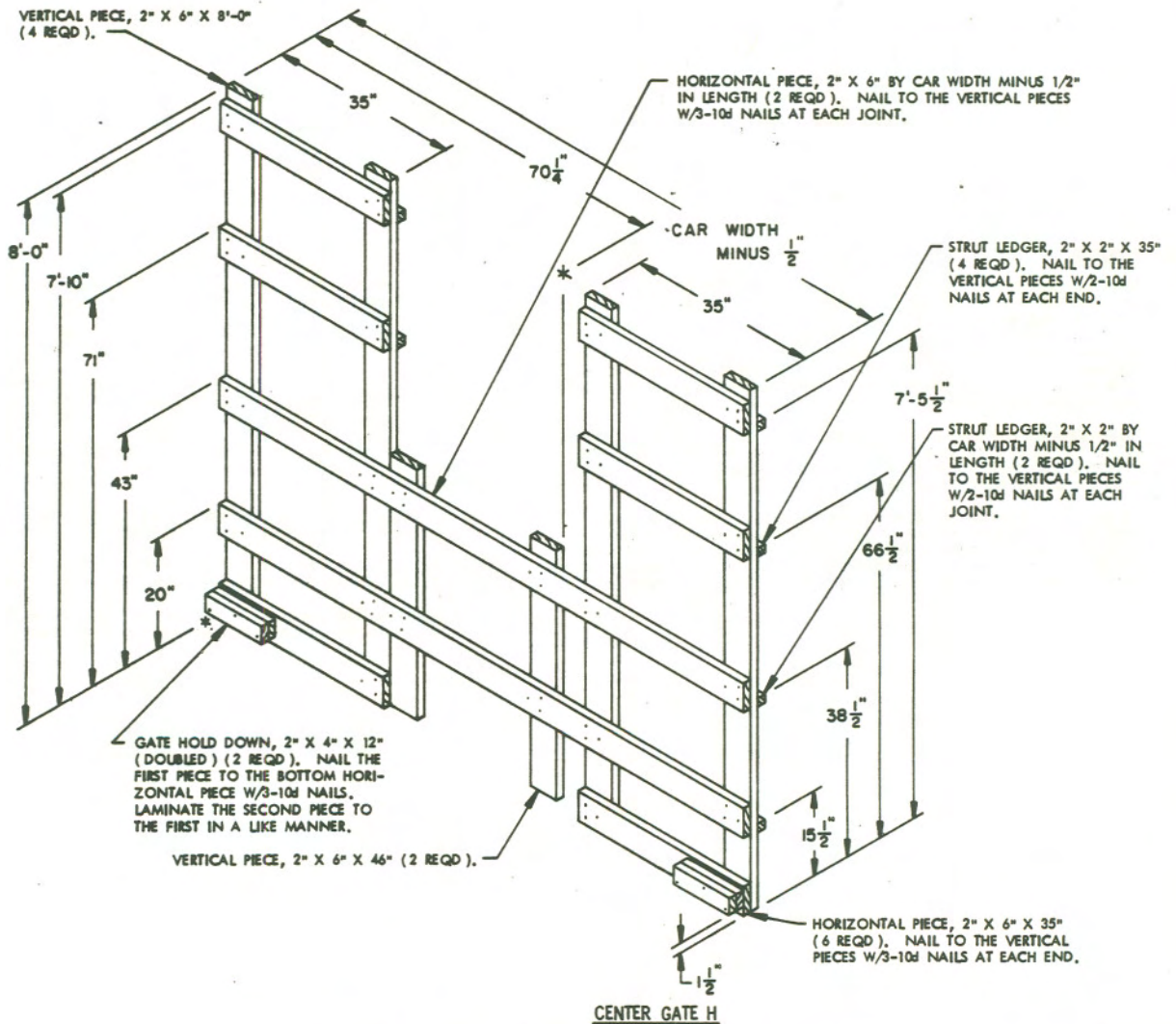
RETAINER PIECE, 2" X 4" BY A
LENGTH TO SUIT (2 REQD).

FABRICATE TO FIT BETWEEN THE
POSTS OF LATERALLY ADJACENT
PALLET.

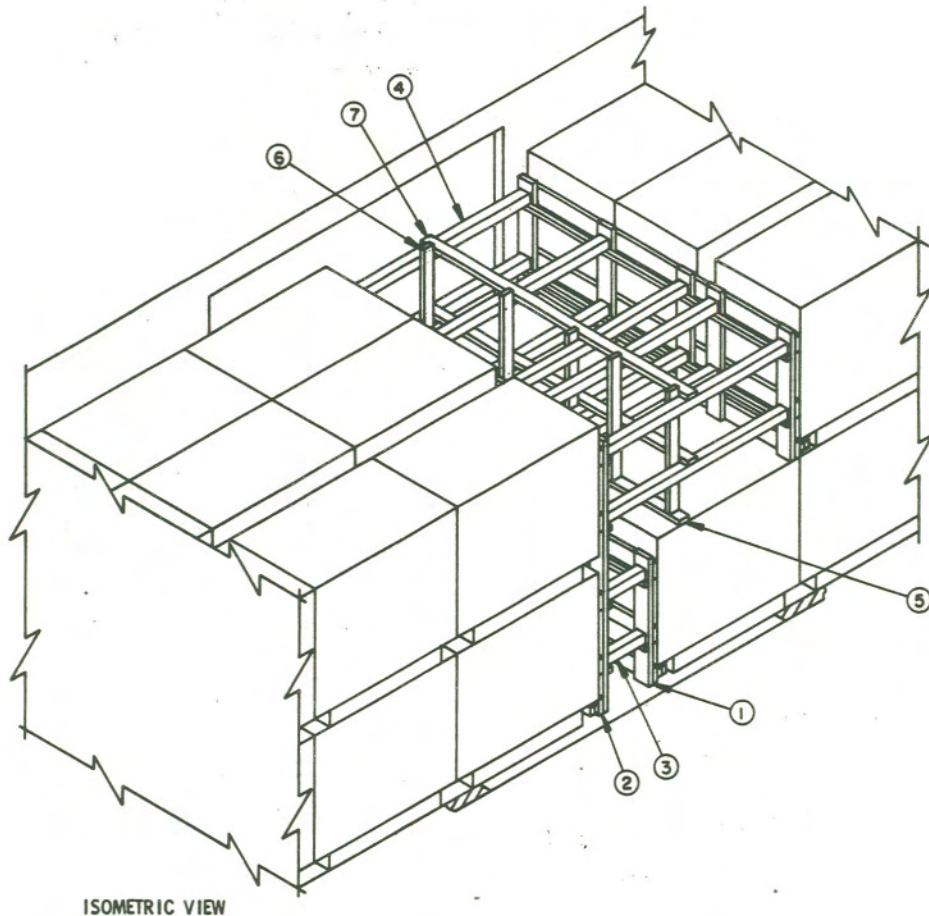


ANTI-SWAY BRACE B

IF DESIRED, THE ANTI-SWAY BRACE CAN BE PARTIALLY PRE-ASSEMBLED; ONE BUFFER PIECE CAN BE NAILED TO BOTH RETAINER PIECES. THE LONG ENDS OF THE ASSEMBLY CAN THEN BE INSTALLED INTO THE FORKLIFT OPENING OF A LOADED PALLET PRIOR TO POSITIONING THE LATERALLY ADJACENT PALLET.



TYPICAL LCL METHOD OF OMITTING THE CENTER ROW FROM THE TOP LAYER



ISOMETRIC VIEW

SPECIAL NOTES:

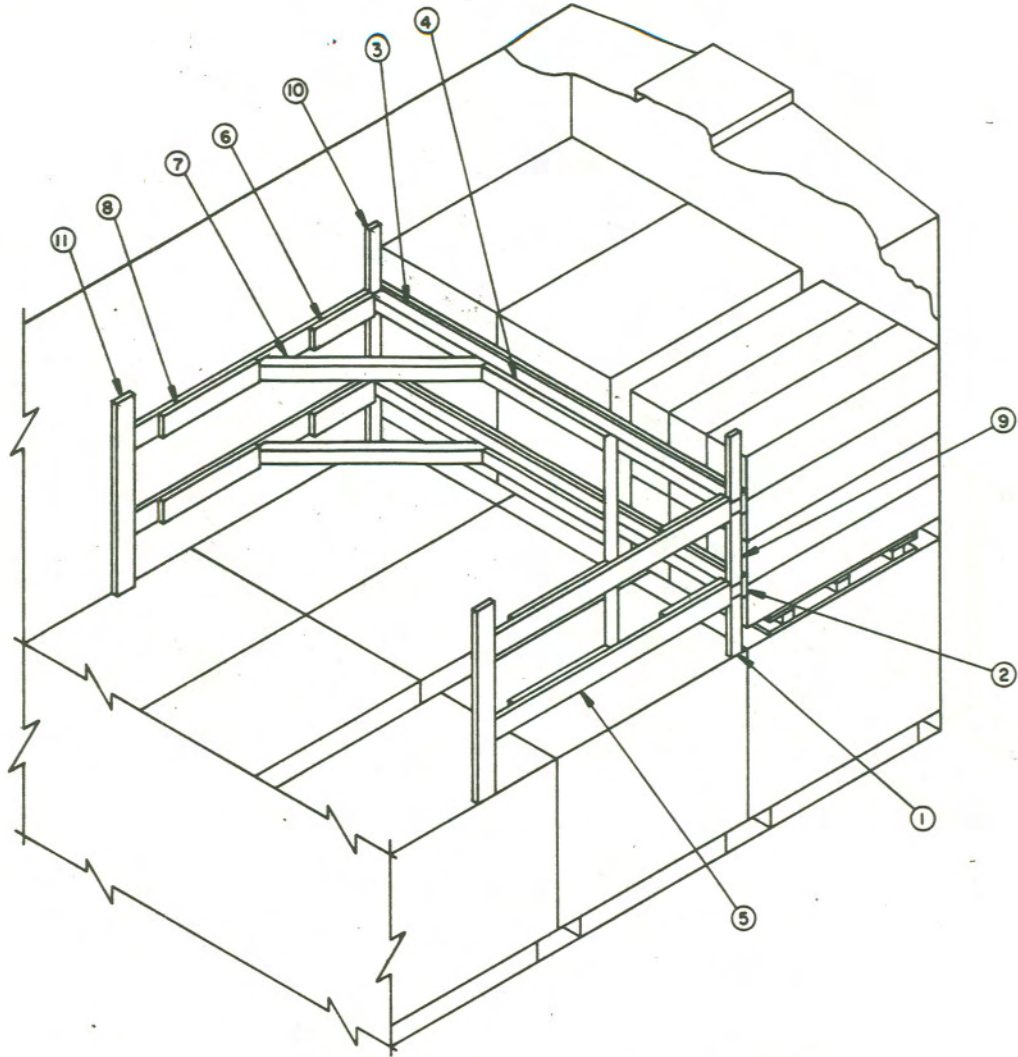
1. ONLY THE CENTER PORTION OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN TO PORTRAY THE STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING. WIDER OR NARROWER CARS CAN ALSO BE USED.
2. THE PALLET UNIT SHOWN IS THE 3-WIDE/4-HIGH UNIT. ONLY THE BLOCKING AND BRACING PIECES WHICH ARE NECESSARY TO PERMIT THE OMISSION OF THE UNITS FROM THE TOP LAYER ARE SHOWN. REFER TO PAGE 28 FOR BLOCKING AND BRACING PROCEDURES FOR THE BALANCE OF THE LOAD.
3. THE PROCEDURES FOR THE ADJUSTMENT OF A LOAD QUANTITY BY THE OMISSION OF THE TOP LAYER FROM ONE (1) LOAD UNIT ARE SHOWN AS TYPICAL. THE PRINCIPLES MAY ALSO BE APPLIED FOR THE OMISSION OF SIX TO NINE UNITS FROM THE CENTER PORTION OF THE LOAD.
4. THE QUANTITY REQUIRED FOR DUNNAGE PIECES, SUCH AS THE NUMBER OF STRUT BRACING PADS AND STRUT BRACING PIECES, WILL VARY DEPENDENT UPON THE QUANTITY BEING LOADED. NOTE THAT THE VERTICAL STRUT BRACING PIECES MARKED ⑥ CAN BE POSITIONED ON TOP OF A STRAPPING BOARD/SPACER ASSEMBLY SHOWN AS PIECE MARKED ④ ON PAGE 28 IF DESIRED.

KEY NUMBERS

- ① CENTER GATE FOR 1-HIGH (2 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 32. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② CENTER GATE FOR 2-HIGH (1 REQD). SEE THE "CENTER GATE D" DETAIL ON PAGE 32.
- ③ STRUT, 4" X 4" BY CUT TO FIT (10 REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ② , IN THE FIRST LAYER AND TOENAIL W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2.
- ④ STRUT, 4" X 4" BY CUT TO FIT (10 REQD). POSITION BETWEEN THE CENTER GATES, PIECES MARKED ① AND ② , IN THE SECOND LAYER AND TOENAIL W/2-16d NAILS AT EACH END.
- ⑤ STRUT BRACING PAD, 2" X 4" BY LENGTH TO SUIT (1 REQD). POSITION UNDER THE VERTICAL STRUT BRACING AS SHOWN. SEE SPECIAL NOTE 4 AT LEFT.
- ⑥ VERTICAL STRUT BRACING, 2" X 4" BY CUT TO EXTEND 3" ABOVE THE TOP STRUT (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.
- ⑦ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 2" IN LENGTH (AS REQD). NAIL TO THE STRUTS W/3-10d NAILS AT EACH JOINT.

(3-WIDE/4-HIGH UNIT)

TYPICAL LCL LOAD USING STRUTTED GATE METHOD OF PARTIAL-LAYER BRACING



ISOMETRIC VIEW

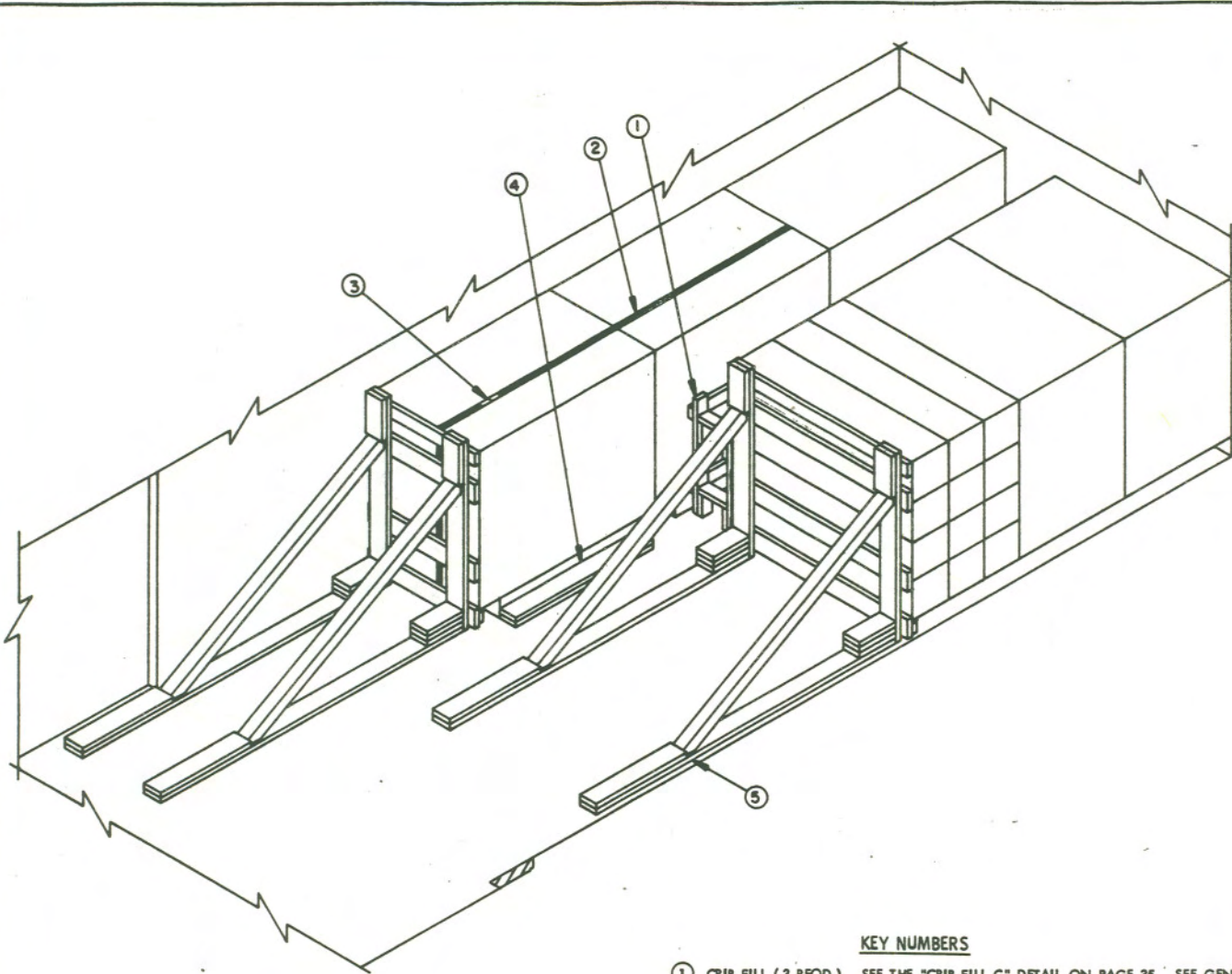
SPECIAL NOTES:

1. THE K-BRACE SHOWN IS ADEQUATE FOR RETAINING A PARTIAL TIER OF NOT MORE THAN 14,000 POUNDS. A MAXIMUM OF 12 UNITS CAN BE HELD BY THE DEPICTED K-BRACE.
2. **CAUTION:** SOME CARS ARE NOT SUITED FOR THE APPLICATION OF "PARTIAL-LAYER BRACING" BECAUSE THE LENGTH OF THE PARTIAL TIER TO BE SHIPPED AND/OR THE SIZE OR CONFIGURATION OF THE CAR DOORS WILL NOT PERMIT PROPER INSTALLATION OF THE SPECIFIED K-BRACE DUNNAGE. PIECES MARKED ①, ②, ③, ④, ⑧, ⑨, ⑩, AND ⑪ MUST BE SUPPORTED AT THE SIDES OF A CAR BY A CAR SIDEWALL. IT IS ALRIGHT FOR THE ENDS OF THE DIAGONAL BRACES MARKED ⑦ TO BEAR IN FRONT OF A DOOR OPENING, HOWEVER, THE ADJACENT PIECE MARKED ⑤ MUST BE DOUBLED AND EXTENDED ACROSS AND FAR ENOUGH PAST THE DOOR OPENING (REF: 54") TO PROVIDE FOR THE SPECIFIED NAILING OF EACH PIECE. LAMINATE THE SECOND PIECE OF THE DOUBLED PIECE MARKED ⑤ TO THE FIRST W/16-16d NAILS. CLINCH THOSE NAILS WHICH PRO- TRUDE THRU THE HORIZONTAL WALL CLEAT WITHIN THE DOOR OPENING. NOTE THAT THE DIAGONAL BRACE WILL BE 49-1/8" LONG IN LIEU OF 50-1/4" WHEN PIECE MARKED ⑤ IS DOUBLED.
3. THE CENTER CLEAT, SHOWN AS PIECE MARKED ④, WILL BE 28" LONG FOR AN 8'-6" WIDE CAR, 36" LONG FOR A 9'-2", AND 38" LONG FOR A 9'-4" WIDE CAR. ADJUST THE LENGTH PROPORTIONATELY FOR CARS OF OTHER WIDTHS.

KEY NUMBERS

- ① SUPPORT CLEAT, 2" X 4" X 14" (2 REQD). NAIL TO THE CAR SIDEWALL W/4-12d NAILS. POSITION SO AS TO CENTER PIECES MARKED ② AND ③ ON THE JOINT BETWEEN THE BOTTOM TWO LAYERS OF CONTAINERS ON THE UNITS. SEE SPECIAL NOTES 1 AND 2 AT LEFT.
- ② LOAD BEARING PIECE, 2" X 6" BY CAR WIDTH (CUT TO FIT) (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/1-12d NAIL EVERY 6". SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ③ CROSS CAR BRACE, 4" X 4" BY CAR WIDTH (CUT TO FIT) (2 REQD).
- ④ CENTER CLEAT, 2" X 4" X 36" (2 REQD). NAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, W/7-16d NAILS. SEE SPECIAL NOTE 3 AT LEFT.
- ⑤ HORIZONTAL WALL CLEAT, 2" X 6" X 72" (4 REQD). NAIL TO THE CAR SIDEWALL W/16-12d NAILS.
- ⑥ POCKET CLEAT, 2" X 6" X 18" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/7-16d NAILS.
- ⑦ DIAGONAL BRACE, 4" X 4" X 50-1/4" (4 REQD). SEE THE DETAIL ON PAGE 23 FOR BEVEL CUTS REQUIRED. TONAIL TO THE CROSS CAR BRACE, PIECE MARKED ③, AND TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/1-60d NAIL AT EACH END.
- ⑧ BACK-UP CLEAT, 2" X 6" X 30" (4 REQD). NAIL TO THE HORIZONTAL WALL CLEAT, PIECE MARKED ⑤, W/14-16d NAILS.
- ⑨ SPACER CLEAT, 2" X 4" X 19-1/2" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑩ HOLD-DOWN CLEAT, 2" X 4" X 18" (2 REQD). NAIL TO THE CAR SIDEWALL W/5-12d NAILS.
- ⑪ VERTICAL BACK-UP CLEAT, 2" X 6" BY UNIT HEIGHT (2 REQD). NAIL TO THE CAR SIDEWALL W/10-12d NAILS.

(3-WIDE/4-HIGH UNIT)
TYPICAL LCL LOAD USING K-BRACE METHOD OF PARTIAL-LAYER BRACING



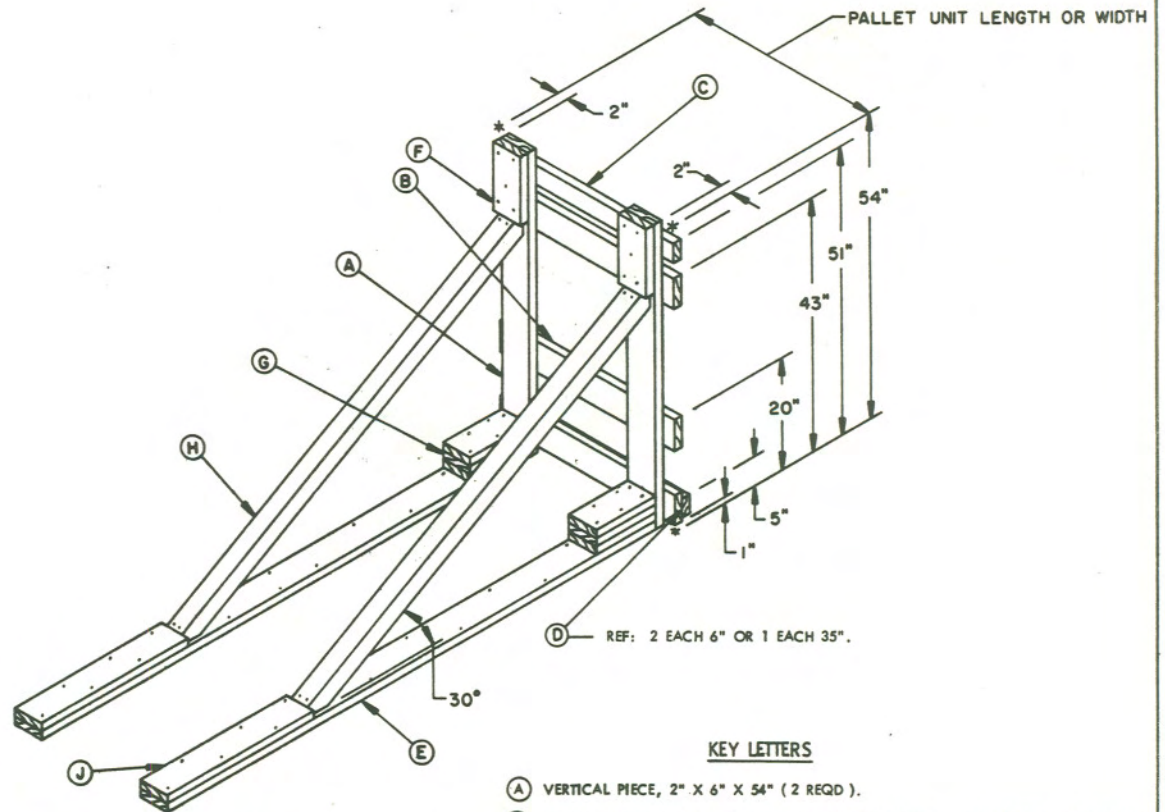
ISOMETRIC VIEW

SPECIAL NOTES:

1. A 9'-2" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS AND CARS HAVING METAL LININGS CAN BE USED.
2. THE PALLET UNIT SHOWN IS THE 3-WIDE/4-HIGH UNIT.
3. THE LOAD SHOWN DEPICTING THE KNEE BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. THE QUANTITY MAY BE ADJUSTED TO SUIT, PROVIDED THE LIMITATIONS OF THE KNEE BRACE AS SET FORTH IN SPECIAL NOTE 4 ARE NOT EXCEEDED. ALSO, THE LOAD MAY CONSIST OF TWO LENGTH-WISE ROWS, IN LIBJ OF ONE OF EACH AS DEPICTED; THEN SIDE BLOCKING AND TOP OF LOAD ANTI-SWAY BRACES WILL BE USED IN LIBJ OF THE DEPICTED CRIB FILL. SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE" DETAIL ON PAGE 15.
4. A KNEE BRACE ASSEMBLY WILL BE USED FOR EACH ROW OF PALLET UNITS. ONE (1) KNEE BRACE ASSEMBLY IS ADEQUATE FOR RETAINING A MAXIMUM LCL LOAD OF NOT MORE THAN 8,500 POUNDS.

KEY NUMBERS

- ① CRIB FILL (3 REQD). SEE THE "CRIB FILL C" DETAIL ON PAGE 35. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② BUNDLING STRAP, 1-1/4" X .031" OR .035" X 29'-6" LONG STEEL STRAPPING (1 REQD). PRE-POSITION TO ENCIRCLE THE ODD UNIT, AND THE UNIT ADJACENT TO IT.
- ③ SEAL FOR 1-1/4" STRAPPING (2 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ④ SIDE BLOCKING, 2" X 4" X 45", OR A LENGTH TO SUIT (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE CAR FLOOR W/5-16d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.
- ⑤ KNEE BRACE ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 41 FOR CONSTRUCTION SPECIFICATIONS AND NAILING REQUIREMENTS. SEE SPECIAL NOTE 4 AT LEFT.



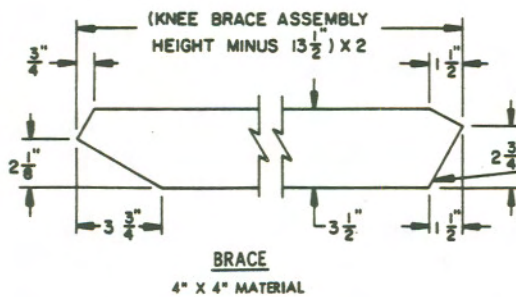
KNEE BRACE ASSEMBLY B

NOTE ●:

IF DESIRED, 1/2" PLYWOOD MAY BE SUBSTITUTED FOR PIECES MARKED **B** AND **C**. THE PLYWOOD MUST BE PALLET UNIT LENGTH OR WIDTH BY 54" HIGH. NAIL THE PLYWOOD TO PIECES MARKED **A** W/6-6d NAILS AT EACH LOCATION. NAIL THE PLYWOOD TO PIECE MARKED **D** W/6-6d NAILS.

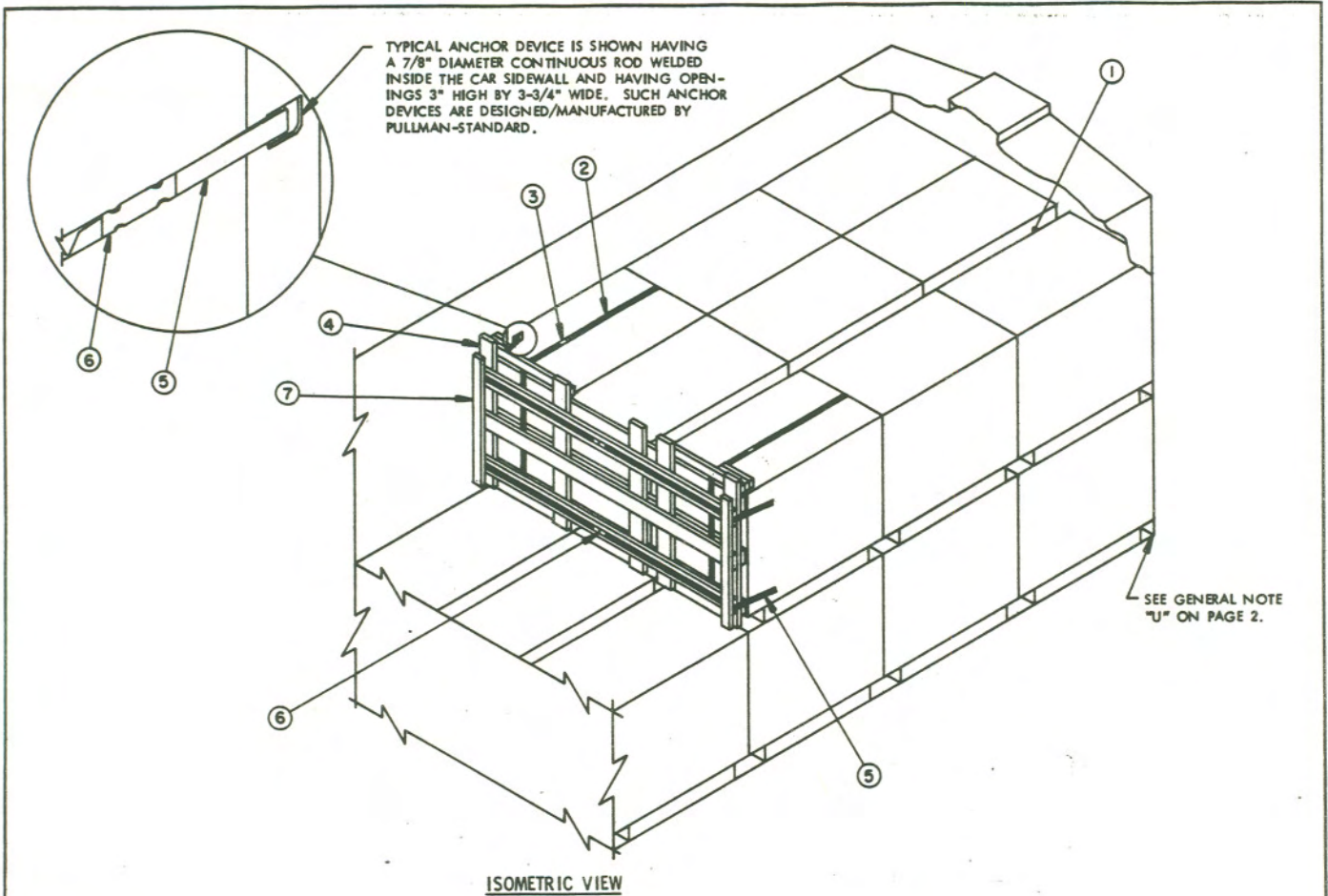
KEY LETTERS

- A** VERTICAL PIECE, 2" X 6" X 54" (2 REQD).
- B** HORIZONTAL PIECE, 2" X 6" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH PLUS 3", AS APPLICABLE (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- C** HORIZONTAL PIECE, 2" X 4" BY PALLET UNIT LENGTH, OR PALLET UNIT WIDTH (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.
- D** HOLD-DOWN, 2" X 4" X 6" (2 REQD). NAIL TO THE BOTTOM HORIZONTAL PIECES W/3-10d NAILS EACH; OR 2" X 4" X 35" (1 REQD). NAIL TO THE BOTTOM HORIZONTAL PIECE W/5-10d NAILS.
- E** FLOOR CLEAT, 2" X 6" BY LENGTH TO SUIT (.87 OR 7/8 TIMES LENGTH OF PIECE MARKED **H**), PLUS 30" (2 REQD). ALIGN WITH A VERTICAL PIECE AND NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 8". SEE GENERAL NOTE "O" ON PAGE 2.
- F** HOLD-DOWN CLEAT, 2" X 6" X 12" (2 REQD). NAIL TO A VERTICAL PIECE W/5-10d NAILS.
- G** POCKET CLEAT, 2" X 6" X 12" (TRIPLED) (2 REQD). NAIL THE FIRST PIECE TO THE FLOOR CLEAT, PIECE MARKED **E**, W/4-16d NAILS. NAIL THE SECOND AND THIRD PIECES IN A LIKE MANNER AND TOENAIL THE THIRD PIECE TO THE VERTICAL PIECE, PIECE MARKED **A**, W/2-16d NAILS.
- H** BRACE, 4" X 4" BY CUT TO FIT (KNEE BRACE ASSEMBLY HEIGHT MINUS 13-1/2", TIMES 2) (2 REQD). SEE THE DETAIL AT LEFT FOR BEVEL CUTS REQUIRED. TOENAIL TO THE VERTICAL PIECE AND TO THE FLOOR CLEAT, PIECES MARKED **A** AND **E**, W/2-16d NAILS AT EACH JOINT.
- J** BACK UP CLEAT, 2" X 6" X 30" (2 REQD). NAIL TO THE FLOOR CLEAT, PIECE MARKED **E**, W/6-40d NAILS.



THE BRACE MUST BE INSTALLED SO THAT THIS BEARING SURFACE WILL BE IN CONTACT WITH THE VERTICAL PIECE MARKED **A**.

(3-WIDE/4-HIGH UNIT)
TYPICAL LCL LOAD USING KNEE BRACE METHOD OF PARTIAL-LAYER BRACING



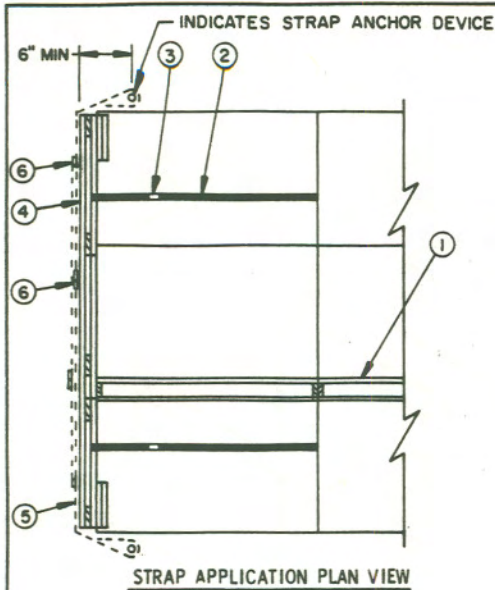
SPECIAL NOTES:

1. A 9'-4" WIDE ALL-METAL BOX CAR EQUIPPED WITH STRAP ANCHOR DEVICES AND HAVING AN AAR MECHANICAL DESIGNATION CLASS OF XL IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING IS ONLY APPLICABLE FOR USE IN LOADS OF 3-WIDE/4-HIGH PALLET UNITS AS SHOWN IN THE VIEW ABOVE. ONLY THE PROCEDURES FOR INSTALLING THE BULKHEAD GATE HAVE BEEN SHOWN. REFER TO PAGE 28 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
3. A BULKHEAD GATE USED IN CONJUNCTION WITH THREE (3) BULKHEAD STRAPS WILL RETAIN UP TO 18,000 POUNDS OF LADING; A BULKHEAD GATE WITH TWO (2) STRAPS WILL RETAIN NOT MORE THAN 12,000 POUNDS. IF ONLY TWO STRAPS ARE USED, THEY MUST BE APPLIED OVER THE UPPER AND LOWER STRAPPING BOARDS.
4. THE ANCHOR DEVICES TO BE USED FOR THE ATTACHMENT OF THE BULKHEAD STRAPS MUST BE LOCATED AT LEAST SIX INCHES (6") TOWARD THE CAR END WALL FROM THE OPPOSITE-THE-LOAD SIDE OF THE BULKHEAD GATE.
5. BULKHEAD STRAPS WILL BE TWO INCH (2") WIDE STEEL STRAPPING; 1-1/4" STRAPPING MUST NOT BE USED. A BULKHEAD STRAP WILL BE OF A LENGTH TO SUIT AND WILL BE THREADED THRU THE ANCHOR DEVICE (PRIOR TO POSITIONING THE ADJACENT UNITS) FAR ENOUGH TO PROVIDE FOR ONE LEG BEING APPROXIMATELY 48" LONGER THAN THE OTHER. THE STRAP ATTACHED TO THE MATING ANCHOR DEVICE WILL HAVE THE OPPOSITE LEG EXTENDING 48". THE TWO LEGS OF EACH HALF OF A STRAP WILL BE SECURED NEAR THE ANCHOR DEVICE WITH ONE DOUBLE CRIMPED SEAL. NOTE THAT THIS SEAL MUST BE POSITIONED EITHER CLOSE ENOUGH TO OR FAR ENOUGH AWAY FROM THE ANCHOR DEVICE SO AS NOT TO BE AT THE POINT WHERE THE STRAP BENDS AROUND THE END OF THE BULKHEAD GATE OR AROUND THE CORNER OF THE ADJACENT UNIT. THE STRAP ENDS OF EACH PAIR OF LONG AND SHORT LEGS WILL BE SECURED WITH TWO (2) SEALS BUTTED TOGETHER AND DOUBLE CRIMPED.

(CONTINUED ON PAGE 43)

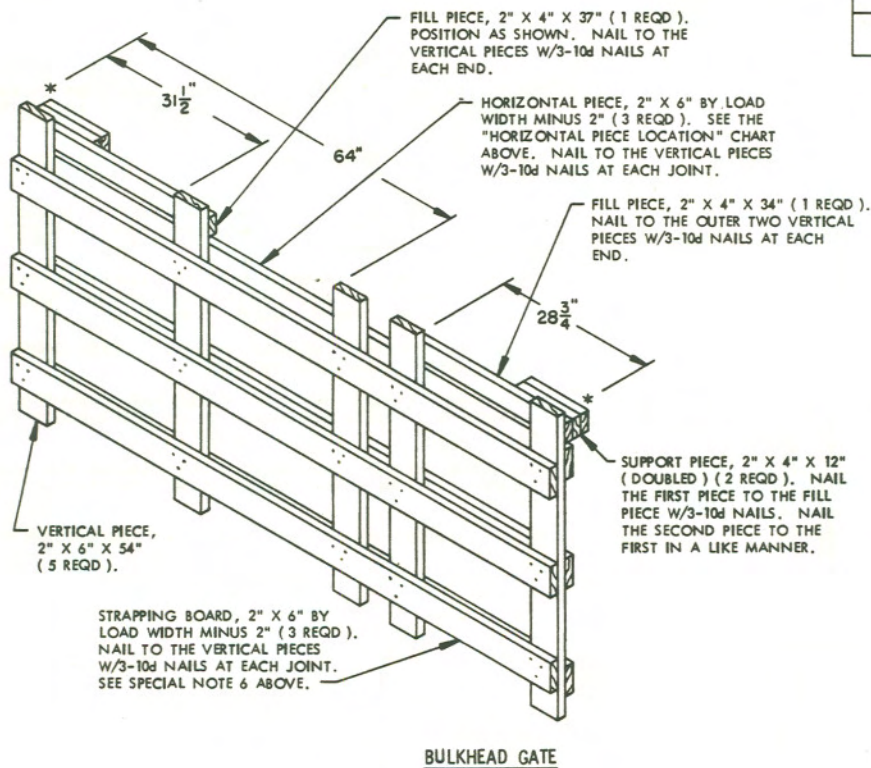
KEY NUMBERS

- ① CRIB FILL (3 REQD). SEE THE "CRIB FILL A" DETAIL AND "NOTE" ON PAGE 35. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② BUNDLING STRAP, 1-1/4" X .035" X 20'-0" LONG (REF) STEEL STRAPPING (2 REQD). ENCIRCLE THE PALLET UNIT AND THE HORIZONTAL PIECES OF THE BULKHEAD GATE. TENSION AND SEAL AFTER TENSIONING THE BULKHEAD STRAPS, PIECES MARKED ⑤.
- ③ SEAL FOR 1-1/4" STEEL STRAPPING (2 REQD, 1 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ④ BULKHEAD GATE (1 REQD). SEE THE DETAIL ON PAGE 43. SEE SPECIAL NOTE 2 AT LEFT.
- ⑤ BULKHEAD STRAP, 2" X .050" X 23'-0" LONG (REF) STEEL STRAPPING (2 REQD). INSTALL FROM 2 EQUAL LENGTH PIECES. SEE THE "STRAP APPLICATION PLAN VIEW" ON PAGE 43 FOR INSTALLATION GUIDANCE. SEE SPECIAL NOTES 3 THRU 5 AT LEFT.
- ⑥ SEAL FOR 2" STRAPPING (12 REQD, 6 PER STRAP). DOUBLE CRIMP EACH SEAL.
- ⑦ STRAP RETAINER, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE BULKHEAD GATE W/2-12d NAILS ABOVE AND BELOW EACH BULKHEAD STRAP.

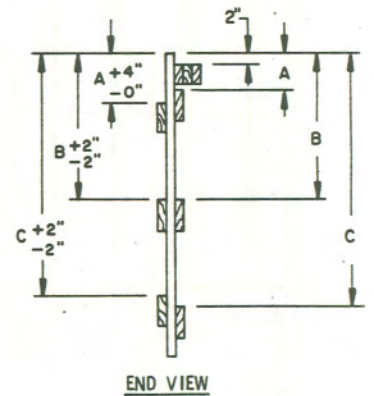


(SPECIAL NOTES CONTINUED)

- THE STRAPPING BOARDS ON A BULKHEAD GATE ARE TO BE ALIGNED AS NEARLY AS POSSIBLE WITH THE ANCHOR DEVICES IN THE CAR TO WHICH THE BULKHEAD STRAPS ARE ATTACHED. TOLERANCES ARE SPECIFIED ON THE END VIEW OF THE BULKHEAD GATE BELOW FOR THE LOCATION OF THE HORIZONTAL PIECES IN RELATION TO THE LOCATION OF THE STRAPPING BOARDS. THE STRAPPING BOARDS/HORIZONTAL PIECES SHOULD BE LOCATED WITHIN THESE TOLERANCES. IF THIS IS NOT POSSIBLE, ADDITIONAL HORIZONTAL PIECES MUST BE APPLIED, AS NECESSARY TO PROVIDE PROPER BEARING AGAINST THE CONTAINERS.

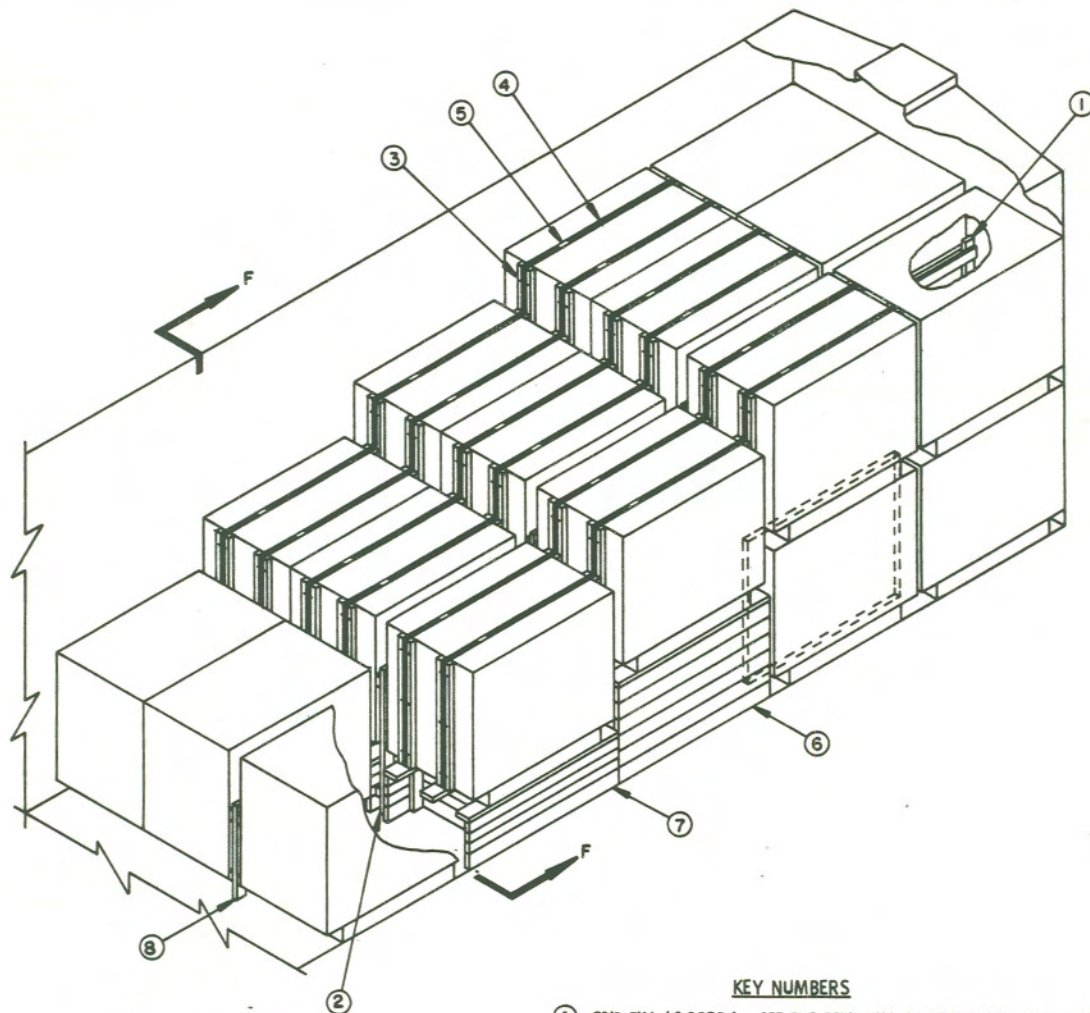


HORIZONTAL PIECE LOCATION		
DIM A	DIM B	DIM C
6-1/2" + 4"	26" + 2"	45" + 1"
- 0"	- 2"	- 4"

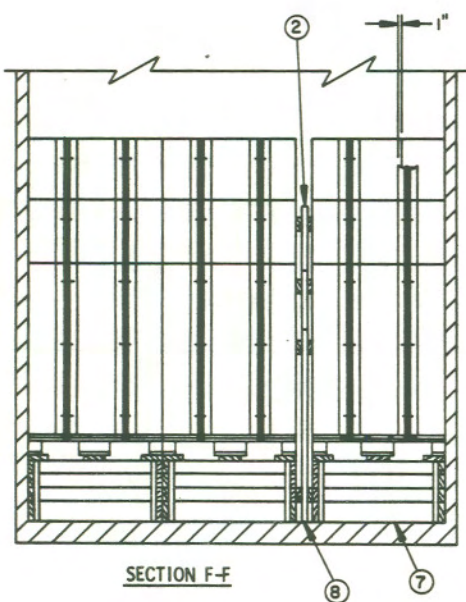


TYPICAL LCL LOAD USING BULKHEAD GATE METHOD OF PARTIAL-LAYER BRACING

PAGE 43



ISOMETRIC VIEW



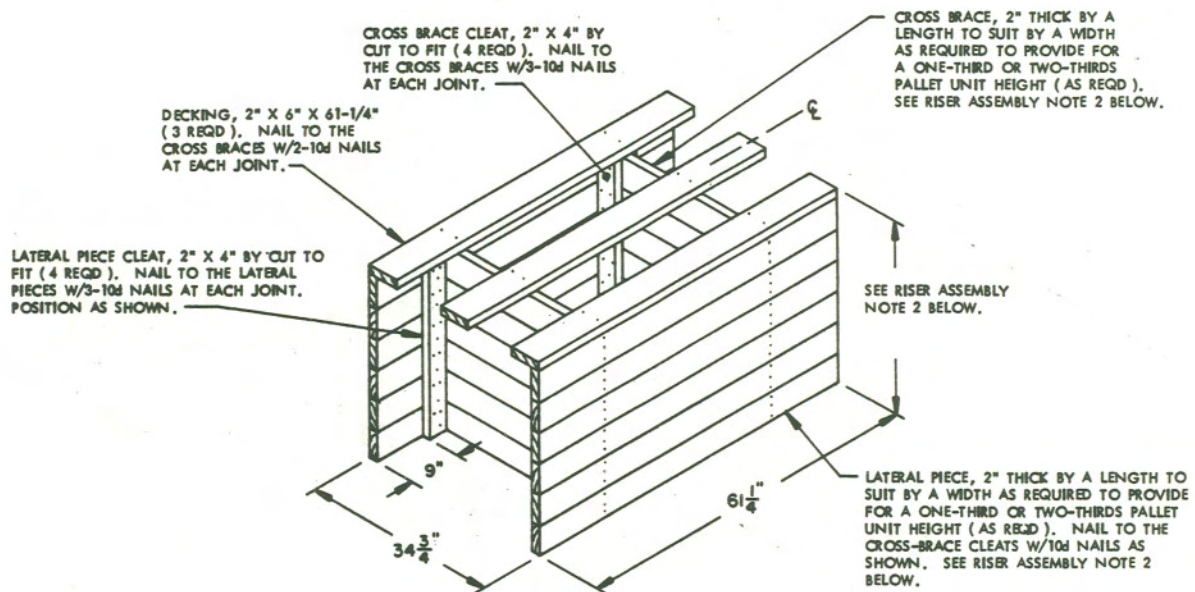
SECTION F-F

KEY NUMBERS

- ① CRIB FILL (2 REQD). SEE THE "CRIB FILL A" DETAIL AND "NOTE" ON PAGE 35. SEE SPECIAL NOTE 3 ON PAGE 45. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2.
- ② CRIB FILL (2 REQD). SEE THE 1-HIGH "CRIB FILL A" DETAIL ON PAGE 35, AND SPECIAL NOTE 3 ON PAGE 45.
- ③ STRAPPING BOARD, 2" X 6" X 45-3/4" (48 REQD, 4 PER PALLET UNIT). POSITION TO OVERLAP THE CENTER CONTAINER BY ONE INCH (1") AS SHOWN IN THE "SECTION F-F" VIEW AT LEFT.
- ④ REINFORCING STRAP, 1-1/4" X .035" X 15'-6" LONG (REF) STEEL STRAPPING (24 REQD). INSTALL TO ENCIRCLE THE PALLET UNIT AND THE STRAPPING BOARDS. SECURE TO A STRAPPING BOARD W/3 STAPLES.
- ⑤ SEAL FOR 1-1/4" STRAPPING (48 REQD, 2 PER STRAP). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "L" ON PAGE 2.
- ⑥ RISER ASSEMBLY (3 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE TWO-THIRDS OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 45.
- ⑦ RISER ASSEMBLY (3 REQD). THE HEIGHT OF THESE RISER ASSEMBLIES WILL BE ONE-THIRD OF THE PALLET UNIT HEIGHT. SEE THE "RISER ASSEMBLY" DETAIL ON PAGE 45.
- ⑧ CRIB FILL (AS REQD). SEE THE 1-HIGH "CRIB FILL A" DETAIL ON PAGE 35.

(3-WIDE/4-HIGH UNIT)

TYPICAL LCL LOAD USING RISER METHOD OF PARTIAL-LAYER BRACING



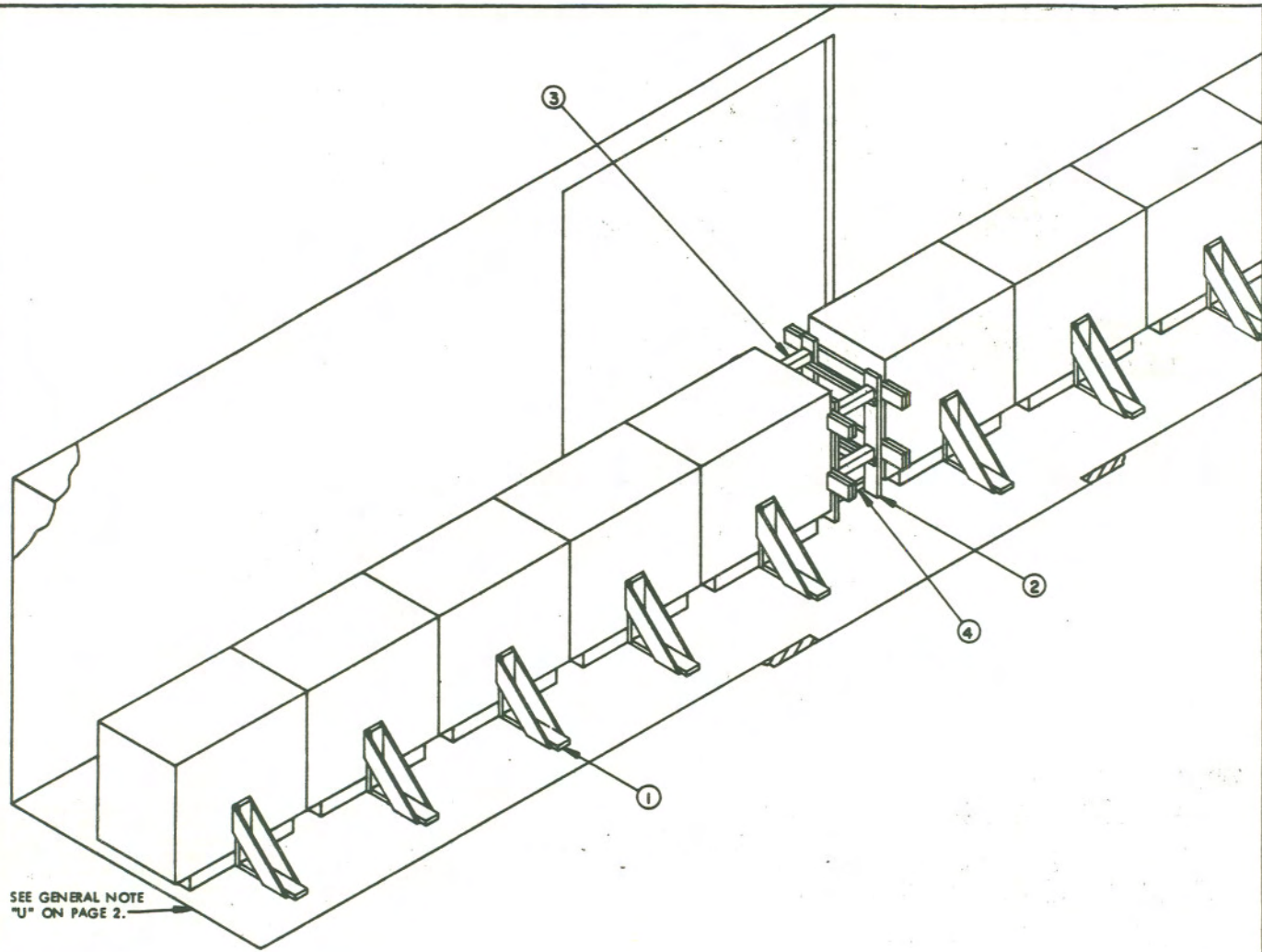
RISER ASSEMBLY

SPECIAL NOTES FOR LOAD:

1. A 9'-2" WIDE CONVENTIONAL TYPE WOOD-LINES BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED. SEE GENERAL NOTE "D" ON PAGE 2.
2. THE PALLET UNIT SHOWN IN THE TYPICAL LOAD ON PAGE 44 IS THE 3-WIDE/4-HIGH UNIT. ONLY THE BLOCKING AND BRACING FOR THE RISER METHOD OF PARTIAL-LAYER BRACING IS SHOWN. REFER TO THE PROCEDURES ON PAGE 28 FOR BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD.
3. THE "HIGH" CRIB, SHOWN AS PIECE MARKED ①, MUST BE INSTALLED IN EACH END OF THE LOAD. FOR CRIB FILL LOCATED BETWEEN THE RISER ASSEMBLIES, THE HEIGHT OF THE TOP HORIZONTAL PIECES MUST BE ADJUSTED; USE THE SPECIFIED HEIGHT FOR A 1-HIGH CRIB FILL, PLUS THE RISER ASSEMBLY HEIGHT.

SPECIAL NOTES FOR RISER ASSEMBLY:

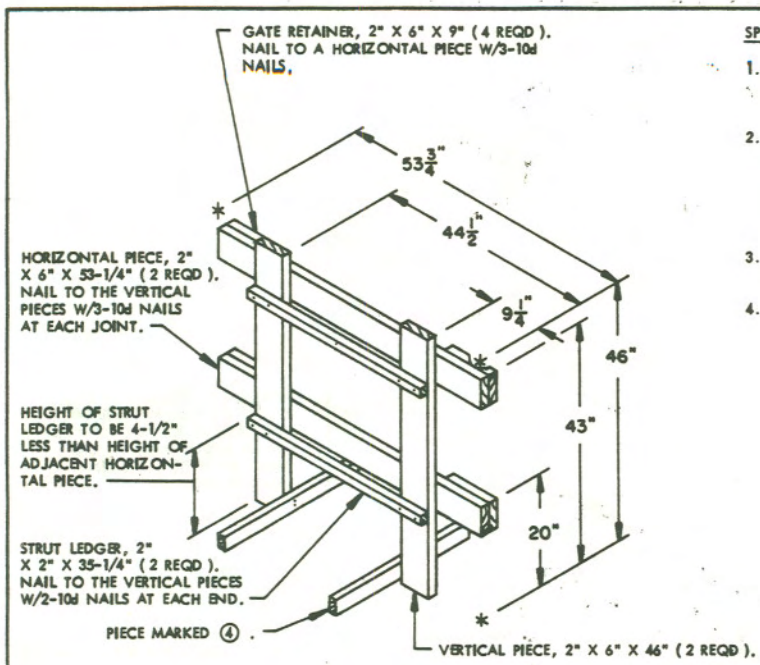
1. THE TYPICAL RISER ASSEMBLY SHOWN ABOVE IS FOR THE 3-WIDE/4-HIGH UNIT. A TWO-THIRDS UNIT HEIGHT RISER IS SHOWN ABOVE AND AS KEY NUMBER ⑥ IN THE LOAD ON PAGE 44. EACH CROSS BRACE AND EACH LATERAL PIECE OF THE RISER IS FABRICATED FROM SIX (6) PIECES OF 2" X 6" MATERIAL TO PROVIDE FOR A TOTAL HEIGHT OF 34-1/2" AFTER THE DECKING IS IN PLACE. A ONE-THIRD HEIGHT RISER, SHOWN AS KEY NUMBER ⑦ IN THE LOAD ON PAGE 44, WILL BE FABRICATED FROM ONE (1) PIECE OF 2" X 6" AND THREE (3) PIECES OF 2" X 4" MATERIAL FOR EACH CROSS BRACE AND EACH LATERAL PIECE, TO PROVIDE FOR A TOTAL HEIGHT OF 17-1/2" AFTER THE DECKING IS IN PLACE.
2. SELECT THE PROPER WIDTH COMBINATIONS FOR THE LATERAL/CROSS BRACE PIECES PRIOR TO CONSTRUCTING A RISER ASSEMBLY, TO ASSURE THAT THE TOTAL HEIGHT OF THE RISER ASSEMBLY IS ONE-THIRD OR TWO-THIRDS OF THE PALLET UNIT HEIGHT, BASED ON THE LOCATION OF THE RISER ASSEMBLY WITHIN THE LOAD. **NOTE:** A PLUS OR MINUS 1" TOLERANCE IS PERMISSIBLE ON THE RISER HEIGHT.



ISOMETRIC VIEW

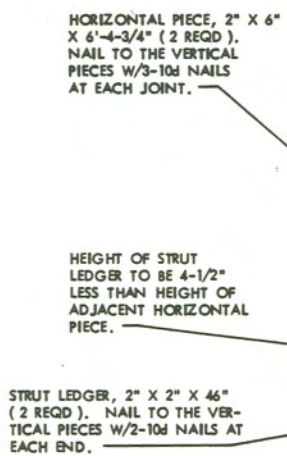
KEY NUMBERS

- ① LCL BRACE (20 REQD). SEE THE DETAIL ON PAGE 48 AND SPECIAL NOTE 3 ON PAGE 47. NAIL TO THE CAR FLOOR W/7-16d NAILS. SEE GENERAL NOTE "O" ON PAGE 2.
- ② CENTER GATE (2 REQD). SEE THE "CENTER GATE J" OR THE "CENTER GATE K" DETAIL ON PAGE 47 FOR LENGTHWISE OR CROSSWISE UNITS, RESPECTIVELY.
- ③ STRUT, 4" X 4" BY CUT TO FIT (REF: 17") (4 REQD FOR LENGTHWISE, 4 REQD FOR CROSSWISE). TOENAIL TO PIECES MARKED ② W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "V" AND "W" ON PAGE 2.
- ④ GATE HOLD DOWN, 2" X 3" BY LENGTH OF CENTER VOID PLUS 24" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE CENTER GATES W/2-10d NAILS AT EACH JOINT. SEE THE "CENTER GATE J" DETAIL ON PAGE 47 FOR LOCATION GUIDANCE. NOTE THAT FOR THE CROSSWISE UNITS, THE GATE HOLD DOWN PIECES WILL BE POSITIONED ON THE OUTWARD SIDE OF THE CENTER GATE VERTICAL PIECES. SEE SPECIAL NOTE 4 ON PAGE 47.



CENTER GATE J

THIS GATE IS FOR USE WITH LENGTHWISE UNITS.



CENTER GATE K

THIS GATE IS FOR USE WITH CROSSWISE UNITS.

BILL OF MATERIAL (TYPICAL)		
LUMBER	LINEAR FEET	BOARD FEET
1" X 6"	114	57
2" X 2"	12	4
2" X 3"	8	4
2" X 6"	123	123
4" X 4"	6	8
NAILS	NO. REQD	POUNDS
8d (2-1/2")	240	2-1/2
10d (3")	72	1-1/4
16d (3-1/2")	196	4-1/4

SPECIAL NOTES:

1. A 50'-6" LONG BY 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED, AND SHORTER BUT NOT LONGER CARS WILL BE USED.
2. THE PALLET UNIT SHOWN IN THE TYPICAL 1-WIDE LOAD IS THE 3-WIDE/4-HIGH UNIT. A LENGTHWISE LOAD IS SHOWN, HOWEVER, THE DEPICTED PROCEDURES ARE ALSO APPLICABLE FOR 1-WIDE CROSSWISE LOADS. NOTE THAT THE QUANTITY OF LCL BRACES, PIECES MARKED ①, IS NOT CORRECT FOR CROSSWISE LOADS. ONE (1) LCL BRACE WILL BE CENTERED AT EACH SIDE OF EACH PALLET UNIT.
3. THE BILL OF MATERIAL AND LOAD AS SHOWN ARE BASED ON THE DEPICTED UNIT AND THEREFORE ARE ONLY TYPICAL.
4. NOTE THAT GATE HOLD DOWN PIECES, SHOWN ELSEWHERE ON THE APPLICABLE CENTER GATE FOR A SINGLE ROW MAY BE USED IN LIEU OF PIECE MARKED ④.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	10	11,120 LBS
DUNNAGE		400 LBS
TOTAL WEIGHT		11,520 LBS

HORIZONTAL PIECE, 1" X 6" X 35-1/4" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

HORIZONTAL PIECE, 1" X 6" X 58-1/4" (2 REQD). NAIL TO THE VERTICAL PIECES OF THE LCL BRACES W/3-6d NAILS AT EACH JOINT PRIOR TO PLACEMENT AGAINST LADING.

SEE GENERAL NOTE "U" ON PAGE 2.

LCL BRACE (4 REQD). SEE THE DETAIL BELOW. POSITION AGAINST THE OUTER EDGES OF THE CONTAINER ENDS, AND ABOUT SIX INCHES (6") FROM THE END OF THE CONTAINER SIDES AS SHOWN. NAIL TO THE CAR FLOOR W/7-16d NAILS.

ISOMETRIC VIEW

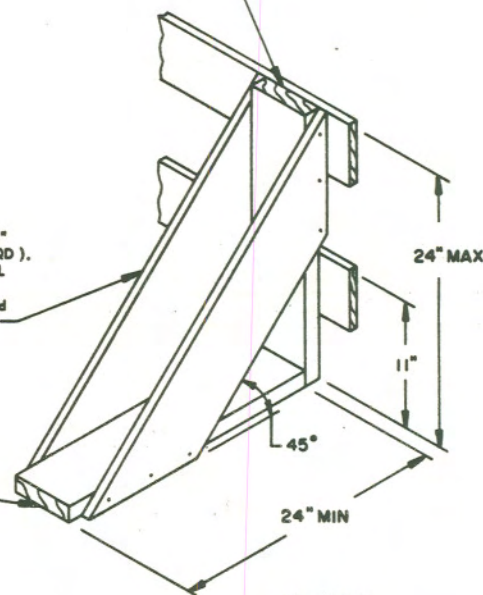
SPECIAL NOTES:

1. AN 8'-6" WIDE WOOD-LINED CONVENTIONAL TYPE BOX CAR HAVING A WOOD OR NAILABLE METAL FLOOR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. THE LOAD SHOWN DEPICTING THE LCL BRACE METHOD OF PARTIAL-LAYER BRACING IS TYPICAL. A LENGTHWISE UNIT IS SHOWN. HOWEVER, THE PROCEDURES ARE ALSO APPLICABLE FOR CROSSWISE UNITS AND FOR OTHER QUANTITIES AS LONG AS THE CAPACITY OF THE BRACES IS NOT EXCEEDED. SEE SPECIAL NOTE 3.
3. EACH LCL BRACE AS APPLIED FOR LONGITUDINAL BRACING WILL RETAIN 2,000 POUNDS OF LADING. EACH LCL BRACE AS APPLIED FOR LATERAL BRACING WILL SUPPORT 8,000 POUNDS OF LADING. A MINIMUM OF TWO (2) BRACES MUST BE USED FOR LONGITUDINAL BRACING.

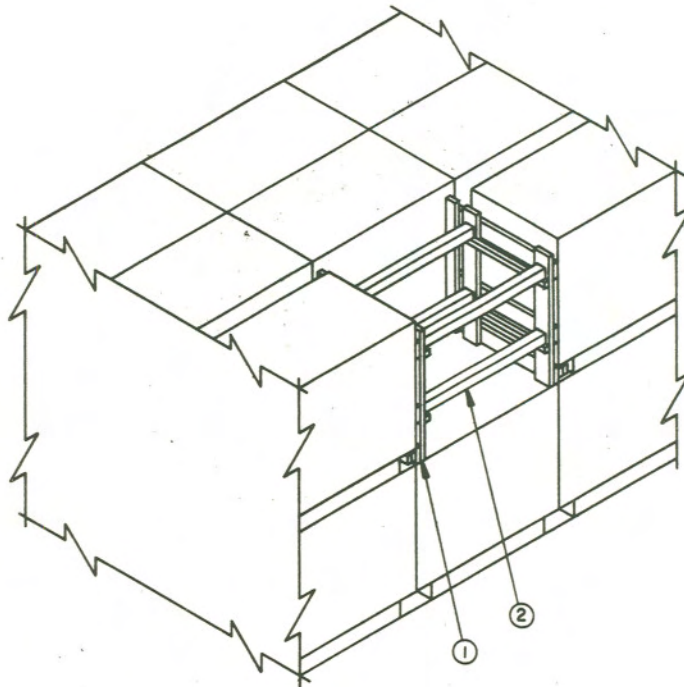
VERTICAL PIECE, 2" X 6" X 24" (MAXIMUM) (1 REQD). NAIL TO THE BACK-UP CLEAT W/2-16d NAILS.

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

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



LCL BRACE



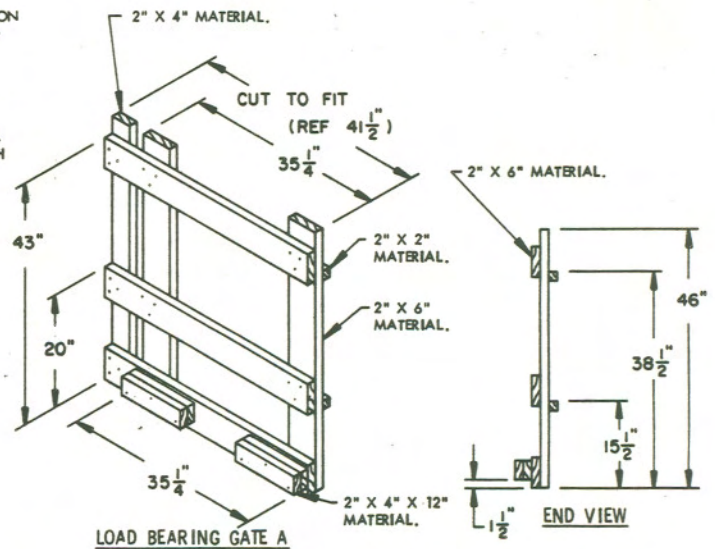
ISOMETRIC VIEW

SPECIAL NOTES:

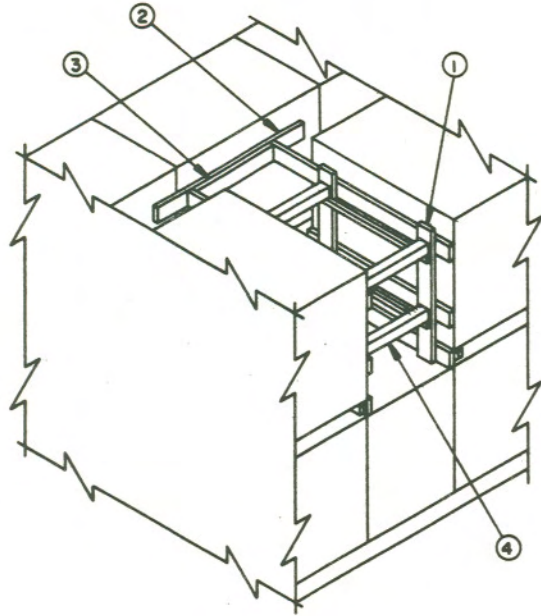
1. A PARTIAL VIEW OF A 9'-4" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PALLET UNIT SHOWN IS THE 3-WIDE/4-HIGH UNIT.
3. THE OMITTED-UNIT PROCEDURE SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN, REFER TO THE LOAD ON PAGE 28 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD. NOTE THAT CRIB FILL "A" FOR A 1-HIGH UNIT WILL BE USED IN LIEU OF ONE (1) CRIB FILL "B" MARKED ② IN THE LOAD ON PAGE 28.
5. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-4". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
6. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 4" GATE HOLD DOWN PIECES TO A 2" X 6" HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

KEY NUMBERS

- ① LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE A" DETAIL BELOW.
- ② STRUT, 4" X 4" BY CUT TO FIT (REF: 52-1/4") (4 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END.



SEE SPECIAL NOTES 5 AND 6 AT LEFT FOR CONSTRUCTION GUIDANCE.



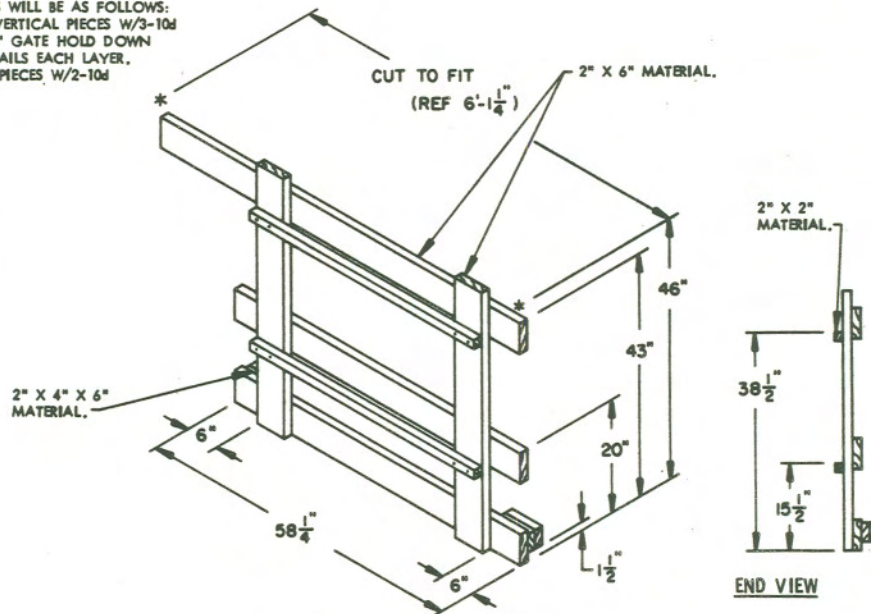
ISOMETRIC VIEW

SPECIAL NOTES:

1. A PARTIAL VIEW OF A 9'-2" WIDE CONVENTIONAL TYPE BOX CAR IS SHOWN. CARS OF OTHER WIDTHS CAN BE USED.
2. A UNIT OMITTED FROM THE TOP LAYER OF A 2-LAYER LOAD IS SHOWN AS TYPICAL. THE PALLET UNIT SHOWN IS THE 3-WIDE/4-HIGH UNIT.
3. THE OMITTED-UNIT PROCEDURE SHOULD BE APPLIED NEAR THE CENTER OF THE CAR LENGTH, BUT NOT IN THE DOORWAY AREA. ALSO, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE.
4. ONLY THE BLOCKING AND BRACING FOR THE OMITTED UNIT IS SHOWN; REFER TO THE LOAD ON PAGE 30 FOR THE BLOCKING AND BRACING REQUIREMENTS FOR THE BALANCE OF THE LOAD. NOTE THAT CRIB FILL "C" FOR A 1-HIGH UNIT WILL BE USED IN LIEU OF ONE (1) CRIB FILL "D" MARKED ② IN THE LOAD ON PAGE 30.
5. THE REFERENCE DIMENSIONS GIVEN FOR THE CUT-TO-FIT PIECES ARE BASED ON AN INSIDE CAR WIDTH OF 9'-2". THESE DIMENSIONS WILL HAVE TO BE ADJUSTED WHEN LOADING CARS OF OTHER WIDTHS.
6. THE NAILING OF THE VARIOUS PARTS OF THE GATES WILL BE AS FOLLOWS: NAIL THE 2" X 6" HORIZONTAL PIECE (S) TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT. NAIL THE DOUBLED 2" X 4" GATE HOLD DOWN PIECES TO A 2" X 6" HORIZONTAL PIECE W/3-10d NAILS EACH LAYER. NAIL THE 2" X 2" STRUT LEDGERS TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

KEY NUMBERS

- ① LOAD BEARING GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). SEE THE "LOAD BEARING GATE B" DETAIL BELOW. NAIL TO THE FILLER PIECE, PIECE MARKED ③, W/3-10d NAILS.
- ② ANTI-SWAY BEARING PIECE, 2" X 6" X 60" (1 REQD).
- ③ FILLER PIECE, 2" X 6" X 32-1/4" (1 REQD). NAIL TO THE ANTI-SWAY BEARING PIECE, PIECE MARKED ②, W/5-10d NAILS.
- ④ STRUT, 4" X 4" BY CUT TO FIT (REF: 30") (4 REQD). TOENAIL TO PIECES MARKED ① W/2-16d NAILS AT EACH END.

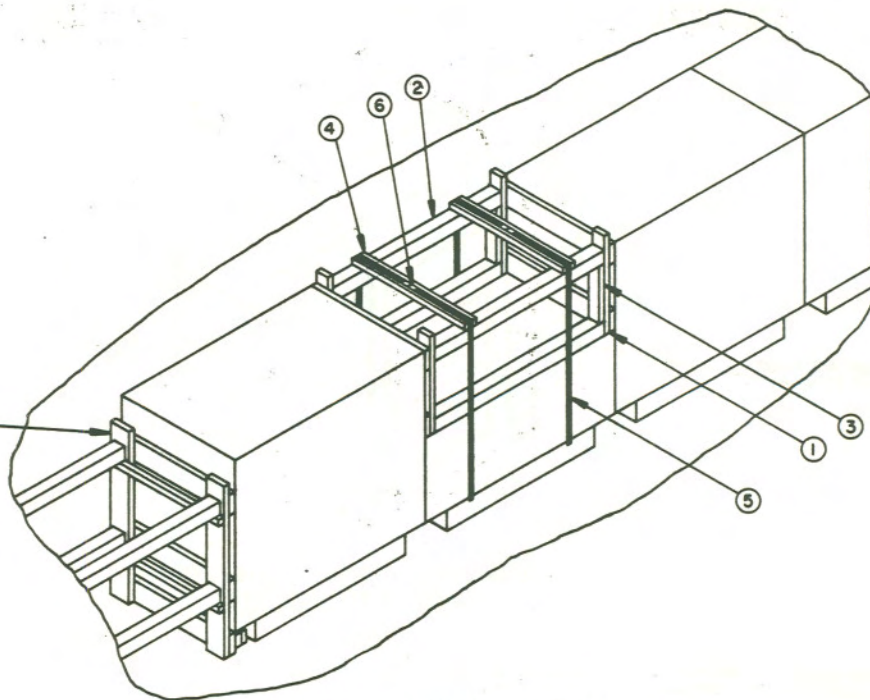


LOAD BEARING GATE B

SEE SPECIAL NOTES 5 AND 6 FOR CONSTRUCTION GUIDANCE.

TYPICAL LCL-ONE PALLET UNIT OMITTED FROM THE TOP LAYER OF A COMBINATION LOAD

INDICATES A TYPICAL CENTER GATE.



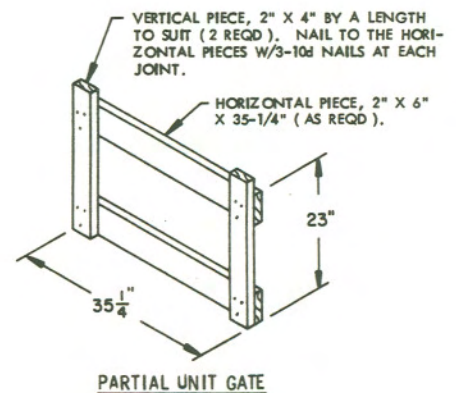
POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER.

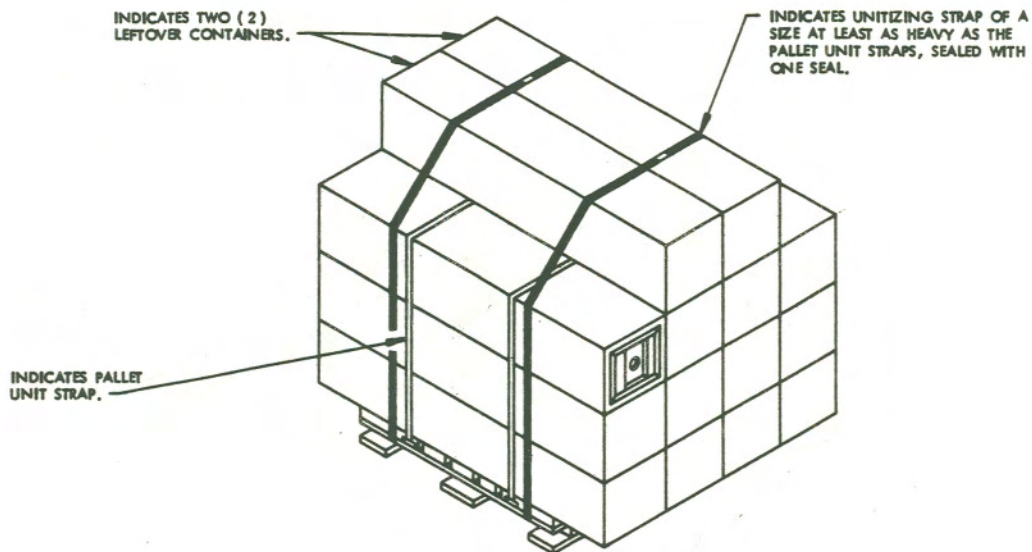
SPECIAL NOTES:

1. SHIPMENTS OF GUIDED MISSILES SHOULD CONSIST OF FULL-HEIGHT AND FULL-LAYER UNITS TO THE MAXIMUM EXTEND 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 ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF A PARTIAL UNIT WITHIN A LENGTHWISE LOAD.
2. THE "POSITIONING OF PARTIAL LENGTHWISE UNIT WITHIN A LAYER" VIEW ABOVE DEPICTS A PORTION OF A CONVENTIONAL BOX CAR LOAD. THE PALLET UNIT SHOWN IS THE 3-WIDE/4-HIGH UNIT.
3. A LESS-THAN-FULL HEIGHT PALLET UNIT OF GUIDED MISSILES WHICH IS TO BE SHIPPED WITHIN A LAYER OF A LOAD HAS NO LIMITATIONS AS TO THE NUMBER OF LAYERS OF CONTAINERS ON THE PARTIAL UNIT. THE DEPICTED PROCEDURES SHOW THE BRACING OF A 2-LAYER UNIT WITHIN A 4-LAYER LOAD. THE PRINCIPLES CAN BE ADAPTED TO SUIT OTHER SIZE PARTIAL UNITS.
4. A PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF THREE (3) CONTAINERS OR AN APPROVED FILLER ASSEMBLY, AS DETAILED BY DRAWING 19-48-5229-GM20T01, MUST BE INSTALLED IN THE PLACE OF OMITTED CONTAINERS.
5. THE FILLERS AS REFERENCED IN SPECIAL NOTE 4 AND THE DUNNAGE DEPICTED ABOVE FOR THE SHIPMENT OF THE PARTIAL UNIT MAY BE REMOVED WHEN A SHIPMENT REACHES DESTINATION. OR IF DESIRED, THE FILLERS MAY REMAIN WITH THE UNIT DURING STORAGE (IF APPLICABLE) FOR POSSIBLE USE IN A FUTURE SHIPMENT.

KEY NUMBERS

- ① PARTIAL-UNIT GATE (2 REQD). SEE THE "PARTIAL-UNIT GATE" DETAIL BELOW. SEE GENERAL NOTES "P" AND "Q" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ② STRUT, 4" X 4" X 52-1/4" (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ①, W/2-16d NAILS AT EACH END.
- ③ STRUT SUPPORT PIECE, 2" X 4" X 15" (4 REQD). NAIL TO A VERTICAL PIECE OF THE PARTIAL-UNIT GATE W/3-10d NAILS.
- ④ STRAPPING BOARD, 2" X 4" X 35-1/4" (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ②, W/3-10d NAILS AT EACH END.
- ⑤ UNITIZING STRAP, 1-1/4" X .031" X .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). POSITION UNDER TOP DECK BOARDS OF PALLET.
- ⑥ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER STRAP). SEE GENERAL NOTE "L" ON PAGE 2.

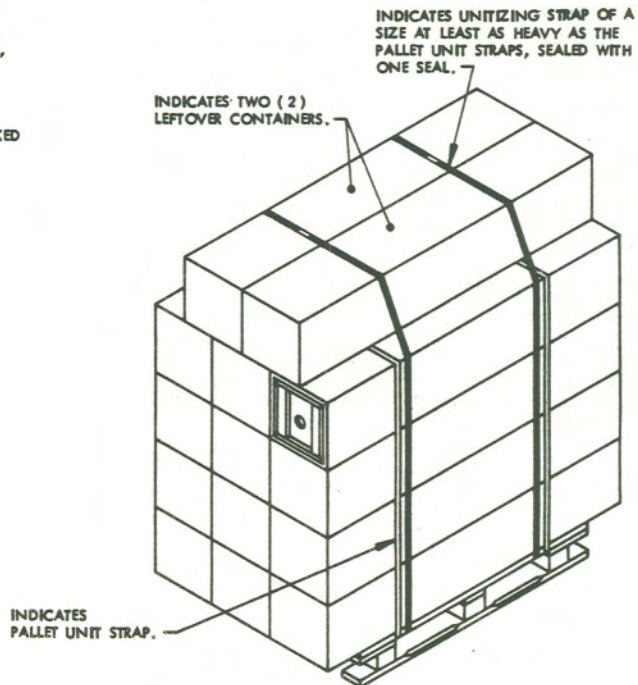




SECUREMENT OF LEFTOVER CONTAINERS ON TOP OF A FULL (4W BY 3H) PALLET UNIT

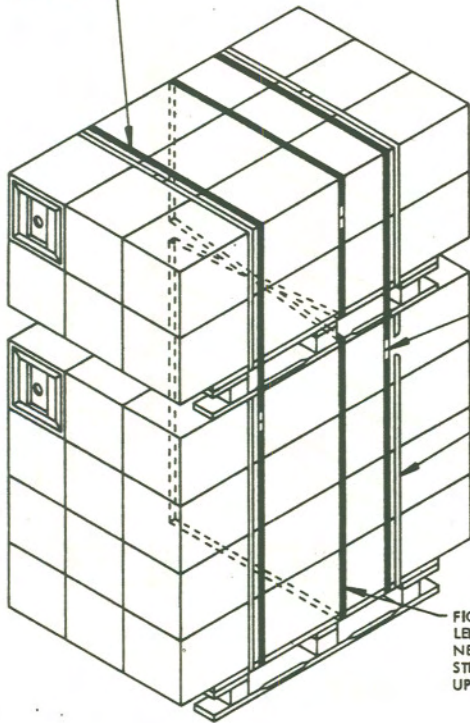
SPECIAL NOTES:

1. SHIPMENTS OF GUIDED MISSILES 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. LEFT-OVER CONTAINERS ARE DESCRIBED AS A QUANTITY OF CONTAINERS WHICH IS INSUFFICIENT TO FORM A FULL-LAYERED PARTIAL UNIT FOR SECUREMENT ON TOP OF A FULL PALLET UNIT AS SHOWN ON PAGE 53.
2. SHIPMENT OF LEFTOVER CONTAINERS IS APPLICABLE FOR CONUS AND OCONUS MOTOR CARRIER SHIPMENTS FROM DEPOT TO DEPOT OR FROM DEPOT TO POSTS, CAMPS, AND STATIONS, OR, UPON APPROVAL FROM HIGHER HEADQUARTERS, FOR SHIPMENTS FROM MANUFACTURING 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 OVBSEAS BY WATER CARRIER.
3. THE PREFERRED LOCATION FOR THE POSITIONING OF A PALLET UNIT HAVING ONE OR MORE CONTAINERS STRAPPED TO THE TOP WOULD BE WITHIN THE ONE-HIGH PORTION OF THE LOAD; IT MUST NOT HAVE A PALLET UNIT STACKED ON TOP.
4. THE PROCEDURES ON THIS PAGE ARE APPLICABLE FOR THE SHIPMENT OF LEFT-OVER CONTAINERS IN ANY OF THE PALLETIZED LOADS DEPICTED HEREIN.



SECUREMENT OF LEFTOVER CONTAINERS ON TOP OF A FULL (3W BY 4H) PALLET UNIT

VERTICAL UNITIZING STRAP, 1-1/4" X .031" OR .035"
BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD),
POSITION AS SHOWN.



SECUREMENT OF A PARTIAL PALLET UNIT
ON TOP OF A FULL (3W BY 4H) PALLET UNIT

SPECIAL NOTES:

1. THE VIEWS SHOWN BELOW DEPICT "PARTIAL-LAYER" PALLET UNITS POSITIONED ON TOP OF A FULL-HEIGHT PALLET UNIT AND UNITIZED WITH TWO VERTICAL UNITIZING STRAPS. PLACEMENT WITHIN THE LOAD IS OPTIONAL, EXCEPT THAT THE PREFERRED LOCATION WOULD BE WITHIN A ONE-HIGH PORTION OF A LOAD IF AVAILABLE, OR WITHIN THE TOP LAYER OF A LOAD IF THE CAR HEIGHT PERMITS.
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 PALLET UNITS WITHIN A LOAD. THE PROCEDURES ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SHIPMENT OF THESE PARTIAL UNITS.

SEAL FOR 1-1/4" STEEL STRAPPING (6 REQD, 2 PER STRAP),
DOUBLE CRIMP EACH SEAL.

INDICATES UNITIZING STRAP ON
THE 3-WIDE/4-HIGH PALLET UNIT.

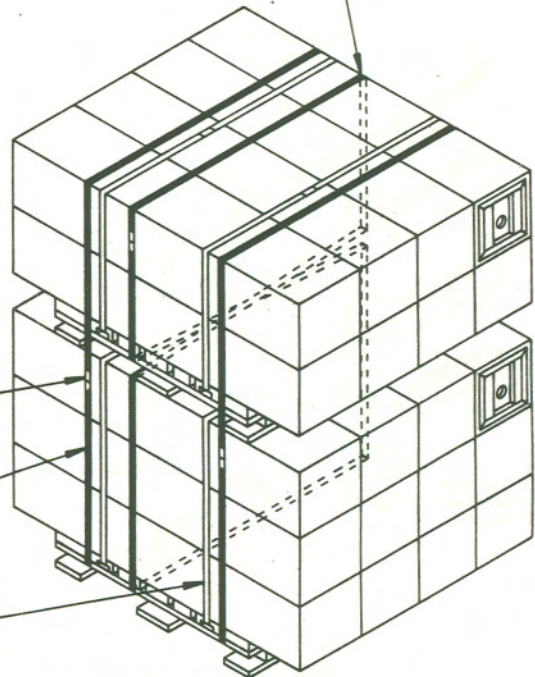
FIGURE-8 UNITIZING STRAP, 1-1/4" X .031" OR .035" BY
A LENGTH TO SUIT STEEL STRAPPING (1 REQD). POSITION
NEAR THE CENTER OF THE UNIT WIDTH. NOTE THAT THE
STRAP PASSES THRU THE FORK LIFT OPENINGS OF THE
UPPER UNIT.

FIGURE-8 UNITIZING STRAP,
1-1/4" X .031" OR .035" BY
A LENGTH TO SUIT STEEL
STRAPPING (1 REQD). POSITION
NEAR THE CENTER OF THE UNIT.

SEAL FOR 1-1/4" STEEL STRAPPING (6 REQD, 2 PER STRAP),
DOUBLE CRIMP EACH SEAL.

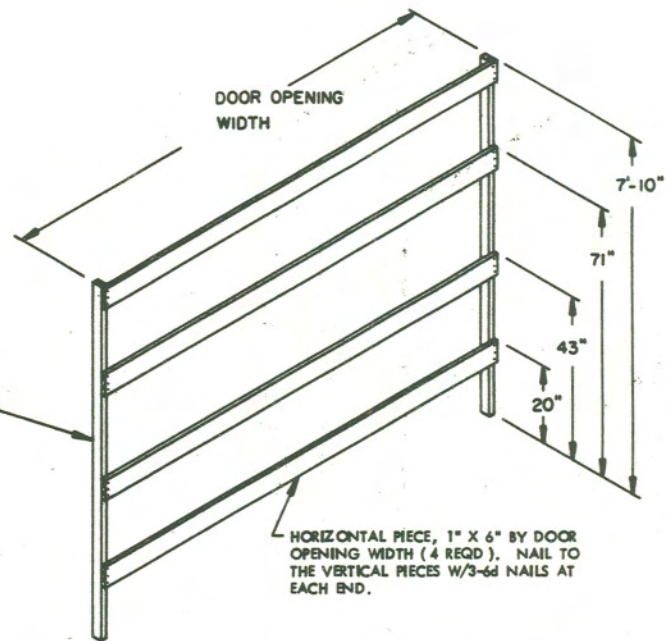
VERTICAL UNITIZING STRAP, 1-1/4" X .031" OR .035"
BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD).

INDICATES UNITIZING STRAP ON THE
4-WIDE/3-HIGH PALLET UNIT.



SECUREMENT OF A PARTIAL PALLET UNIT ON
TOP OF A FULL (4W BY 3H) PALLET UNIT

VERTICAL PIECE, 2" X 3" X 7'-10" FOR A 2-HIGH LOAD, 43" FOR A 1-HIGH LOAD (2 REQD). NAIL TO A DOOR POST W/12d NAILS.

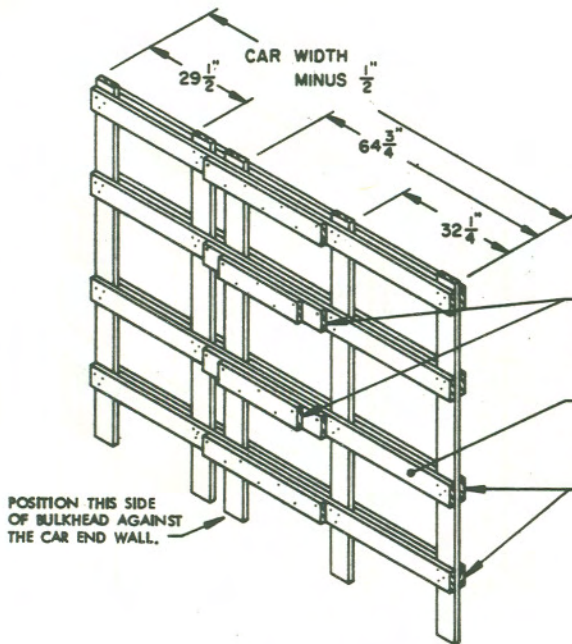


HORIZONTAL PIECE, 1" X 6" BY DOOR OPENING WIDTH (4 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH END.

DOORWAY PROTECTION B

NOTE ○:

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 MAY BE FABRICATED FROM A CENTER GATE FOR THE UNIT THAT IS TO BE LOADED AND FOR THE UNIT POSITIONING (LENGTHWISE OR CROSSWISE). NOTE THAT THE GATE MUST BE MODIFIED BY OMITTING THE 2" X 2" STRUT LEDGERS AND THE GATE HOLD-DOWN PIECES. A MODIFIED CENTER GATE "D", AS DETAILED ON PAGE 32, IS SHOWN AS TYPICAL.



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

FILLER PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" IN LENGTH (ONE REQUIRED FOR EACH HORIZONTAL PIECE ON THE CENTER GATE). ALIGN WITH THE HORIZONTAL PIECES AND NAIL TO THE VERTICAL PIECES OF THE CENTER GATE W/3-10d NAILS AT EACH JOINT.

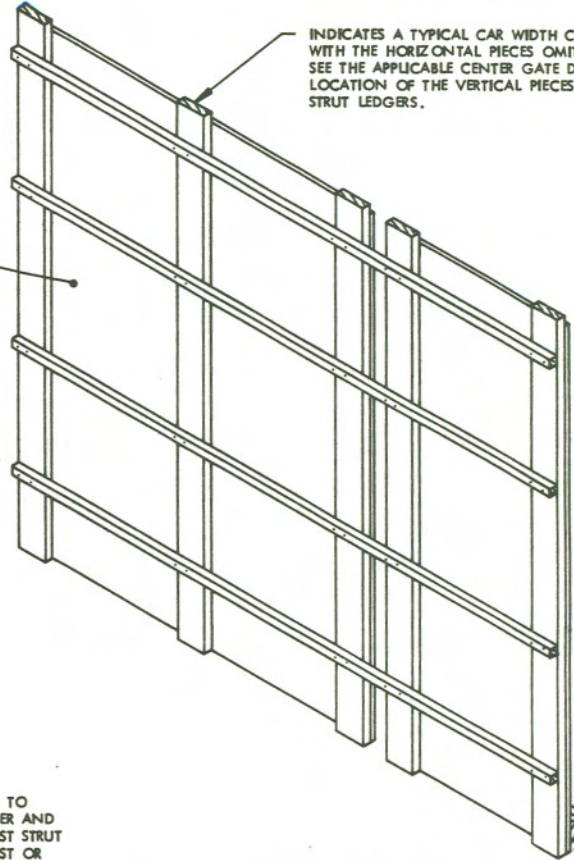
THESE 2" X 6" HORIZONTAL PIECES AND 2" X 6" VERTICAL PIECES ARE PART OF THE MODIFIED CENTER GATE. SEE "NOTE ○" ABOVE.

END-OF-CAR BULKHEAD

SEE "NOTE ○" ABOVE.

PLYWOOD, 1/2" THICK BY THE UNIT WIDTH OR LENGTH BY THE LOAD HEIGHT (3 REQD). NAIL TO THE VERTICAL PIECES W/1-6d NAIL EVERY 6". PLYWOOD MAY BE ALLOWED TO EXTEND BEYOND THE UNIT LENGTH OR WIDTH IN THE VOID BETWEEN ROWS, IF DESIRED.

INDICATES A TYPICAL CAR WIDTH CENTER GATE, WITH THE HORIZONTAL PIECES OMITTED (1 REQD). SEE THE APPLICABLE CENTER GATE DETAIL FOR LOCATION OF THE VERTICAL PIECES AND THE STRUT LEDGERS.



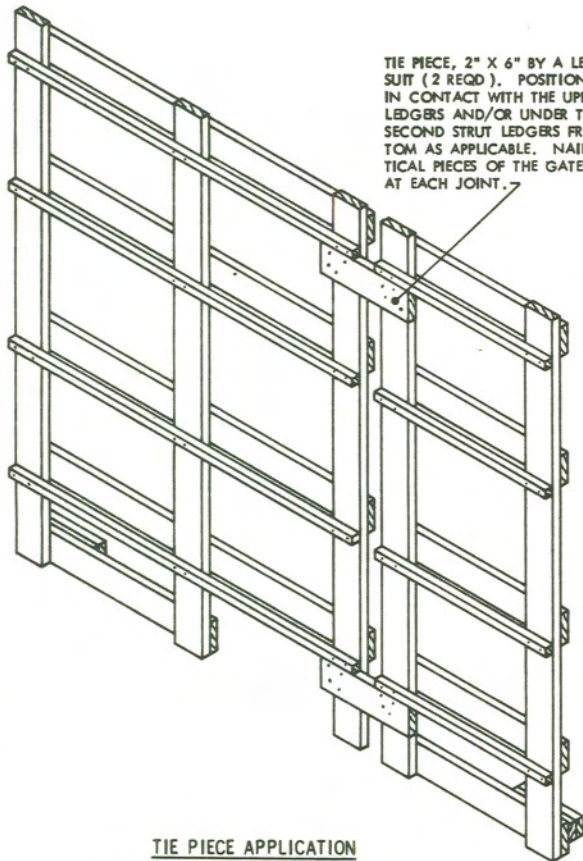
GATE HOLD DOWN PIECE MUST BE SECURED TO THE PLYWOOD AND TO THE VERTICAL PIECE.

1 1/2"

PLYWOOD CENTER GATE ALTERNATIVE

CENTER GATE "D" IS SHOWN AS TYPICAL. PLYWOOD MAY BE USED IN LIEU OF THE HORIZONTAL PIECES ON ANY CENTER GATE DEPICTED HEREIN, INCLUDING THOSE WHICH ARE FOR THE BRACING OF A SINGLE ROW.

TIE PIECE, 2" X 6" BY A LENGTH TO SUIT (2 REQD). POSITION UNDER AND IN CONTACT WITH THE UPPERMOST STRUT LEDGERS AND/OR UNDER THE FIRST OR SECOND STRUT LEDGERS FROM THE BOTTOM AS APPLICABLE. NAIL TO THE VERTICAL PIECES OF THE GATES W/4-10d NAILS AT EACH JOINT.



TIE PIECE APPLICATION

THIS PROCEDURE IS APPLICABLE FOR USE WITH CENTER GATES "E" AND "F". NOTE THAT THE TIE PIECES SHOULD BE APPLIED AFTER THE GATES AND STRUTS HAVE BEEN INSTALLED.

