

# LOADING AND BRACING IN SOUTH KOREAN GONDOLA CAR OF PALLETIZED SEPARATE LOADING PROJECTILES, PROPELLING CHARGES AND/OR BOXED AMMUNITION

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REVISIONS				DRAFTER	TYPIST	CHECKER	TECHNICIAN	ENGINEER
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				CLASS	DIVISION	DRAWING	FILE	
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**DO NOT SCALE**

**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 CONTAINED HEREIN ARE APPLICABLE TO PALLETIZED SEPARATE LOADING PROJECTILES, PALLETIZED PROPELLING CHARGES, AND PALLETIZED BOXED AMMUNITION. SEE THE PICTORIAL VIEWS ON PAGE 3 FOR TYPICAL PALLET UNITS.
- C. AMMUNITION SHIPPED IN KOREAN NATIONAL RAILWAY ( KNR ) GONDOLA CARS IS LIMITED TO A WEIGHT OF TWO-THIRDS CAR CAPACITY. KNR GONDOLAS HAVE A NOMINAL CAPACITY OF 50 METRIC TONS OR 110,000 POUNDS; TWO-THIRDS OF THIS IS 73,333 POUNDS. SHIPMENTS OF UNITED STATES OWNED AMMUNITION MUST NOT EXCEED 73,333 POUNDS. DUNNAGE IS NOT INCLUDED IN THIS LIMIT. THIS WEIGHT REQUIREMENT IS ESTABLISHED BY PRESIDENTIAL DECREE 44-51 AND IS IMPLEMENTED BY KNR AND REPUBLIC OF KOREA ARMY REGULATIONS.
- D. THE SELECTION OF RAIL CARS FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE ORIGINATING CARRIER AND THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE IN OTHERWISE PROPER CONDITION, IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE REGULATORY DOCUMENT, WILL BE SELECTED.
- E. THE OUTLOADING PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR SHIPMENTS IN KOREAN GONDOLA CARS WHICH ARE 42'-9" (13,030MM) LONG BY 8'-9" (2,667MM) WIDE BY 54" (1,372MM) HIGH (INSIDE DIMENSIONS). THE PROCEDURES MAY BE ADJUSTED TO SUIT CARS OF OTHER SIZES.
- F. PORTIONS OF THE GONDOLA CARS DEPICTED WITHIN THIS PROCEDURAL DRAWING, SUCH AS SIDEWALLS AND END WALLS HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- G. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF A NOMINAL SIZE, UNLESS OTHERWISE SPECIFIED. FOR EXAMPLE, 1" X 6" OF MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE. SEE THE "LUMBER SIZE CONVERSION CHART AT RIGHT FOR GUIDANCE. IF THOSE MEMBERS SPECIFICALLY IDENTIFIED AS STRUTS WITHIN THE KEY NUMBERS OF A DEPICTED LOAD ARE SPECIFIED TO BE 4" X 4" MATERIAL, IT IS PERMISSIBLE TO USE TWO LAMINATED PIECES OF 2" X 6" MATERIAL IN LIEU OF EACH 4" X 4" STRUT. DOUBLED 2" X 6" STRUTS WILL BE LAMINATED W/1-10d NAIL EVERY 6".
- H. 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. THE OTHER END, WHICH CAN BE BEVELED ON THE LOWER CORNER IF DESIRED, WILL THEN BE DRIVEN DOWNWARD UNTIL IT CONTACTS THE STRUT LEDGER ON THE OTHER GATE. EACH END OF THE STRUT WILL BE TOENAILED TO THE ADJACENT CENTER GATE, AS SPECIFIED WITHIN THE KEY NUMBERS FOR A LOAD, IN SUCH A MANNER SO THAT AS NEARLY AS PRACTICAL EQUAL LENGTHS OF A NAIL ARE EMBEDDED IN THE STRUT AND IN THE VERTICAL PIECE OF THE CENTER GATE. SEE THE "BEVEL CUT" DETAIL ON PAGE 47 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.
- J. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS TYPICALLY SHOWN BY PIECES MARKED (5) AND (6) ON PAGE 4. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACES BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES.

- K. THE "NAIL SIZE CONVERSION" CHART BELOW PROVIDES GUIDANCE IN COMPARING U.S. AND METRIC SIZE OF NAILS. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN LAMINATING DUNNAGE. 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.
- L. PALLET UNITS HAVING BROKEN STRAPS WILL HAVE THE STRAPS REPLACED WITH THE SAME SIZE STEEL STRAPPING AS ORIGINALLY ON THE UNIT. IF THAT SIZE IS NOT AVAILABLE, A THICKER AND/OR WIDER SIZE STRAP MAY BE USED.
- M. THE NUMBER OF LADING UNITS MAY BE ADJUSTED TO FIT THE SIZE OF THE GONDOLA CAR BEING LOADED OR THE QUANTITY TO BE SHIPPED, HOWEVER, THE APPROVED METHODS SPECIFIED HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE UNITS. NOTICE: A SHIPMENT WILL BE POSITIONED IN THE RAIL CAR IN COMPLIANCE WITH WEIGHT DISTRIBUTION REQUIREMENTS.
- N. OTHER TYPES OF LADING ITEMS MAY BE LOADED IN CARS WHICH ARE PARTIALLY LOADED WITH THE DESIGNATED ITEMS, 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.
- O. THE PROCEDURES DEPICTED WITHIN THIS DRAWING ARE BASED ON THE USE OF DIMENSIONAL SIZED LUMBER. IN MOST CASES THE METRIC EQUIVALENT IS GIVEN IN PARENTHESIS FOLLOWING THE DIMENSION. HOWEVER, WHERE THE METRIC EQUIVALENT IS NOT SHOWN, IT MAY BE COMPUTED BY USING 1" EQUALS 25.4MM. METRIC EQUIVALENTS FOR WEIGHTS ARE BASED ON 1 LB EQUALS 0.454 KG.
- P. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTE" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED OUTLOADING METHODS. (CONTINUED BELOW)

LUMBER SIZE CONVERSION	
U.S. SIZE	METRIC SIZE
1" X 4"	19MM X 89MM
1" X 6"	19MM X 140MM
2" X 2"	38MM X 38MM
2" X 3"	38MM X 64MM
2" X 4"	38MM X 89MM
2" X 6"	38MM X 140MM
4" X 4"	89MM X 89MM

NAIL SIZE CONVERSION				
SIZE	LENGTH		DIAMETER	
	U.S.	METRIC	U.S.	METRIC
6d	2"	51MM	.113"	2.870MM
8d	2-1/2"	63.5MM	.131"	3.327MM
10d	3"	76MM	.148"	3.759MM
12d	3-1/4"	82.55MM	.148"	3.759MM
16d	3-1/2"	88.9MM	.162"	4.115MM
20d	4"	102MM	.192"	4.877MM
30d	4-1/2"	114.3MM	.207"	5.258MM
40d	5"	127MM	.225"	5.715MM
50d	5-1/2"	139.7MM	.244"	6.198MM
60d	6"	152MM	.263"	6.680MM

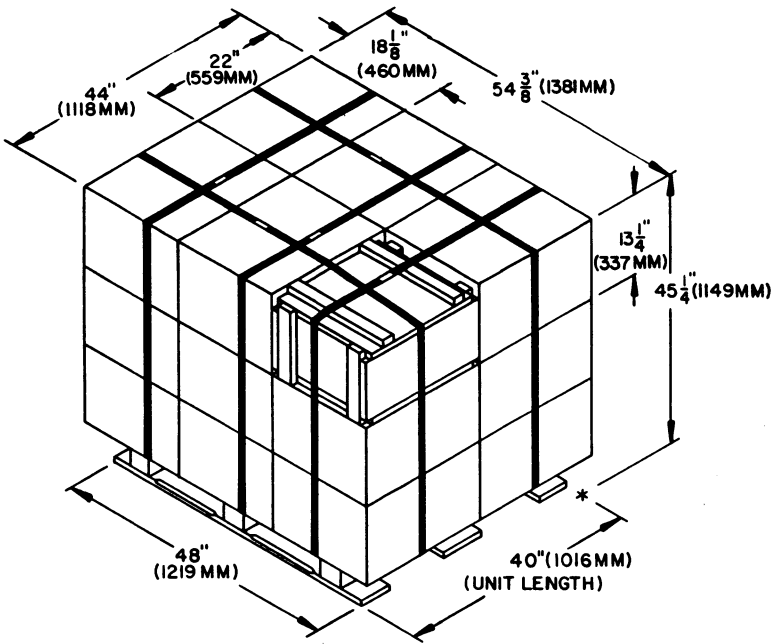
( GENERAL NOTES CONTINUED )

- Q. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF ONE (1) SEAL WITH TWO (2) PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP TYPE SEALER IS BEING USED.

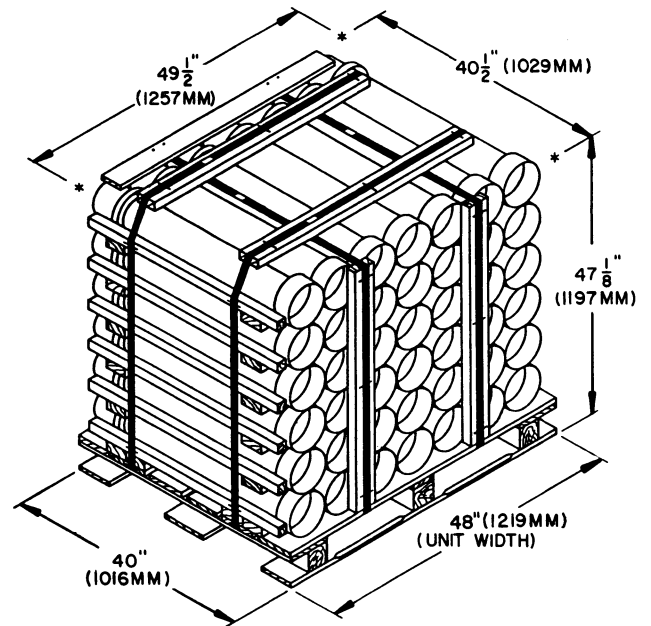
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**MATERIAL SPECIFICATIONS**

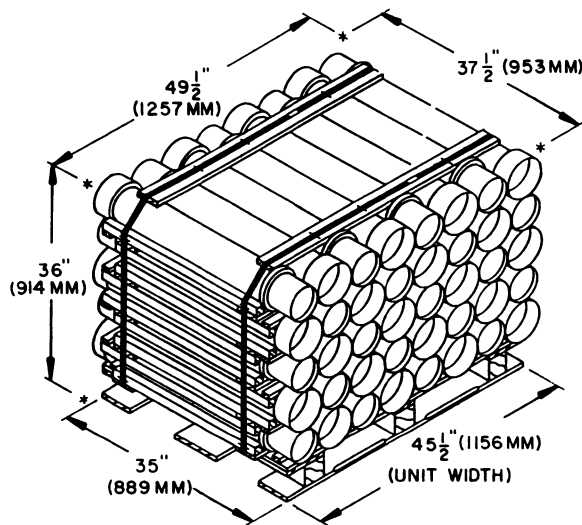
- LUMBER** -----: TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS** -----: FED SPEC FF-N-105; COMMON.
- STRAPPING, STEEL** -: ASTM D 3953; FLAT STRAPPING, TYPE 1 OR 2, HEAVY DUTY, COATED FINISH (ORGANIC), ZINC-COATED (GRADE 2), OR UNCOATED.
- SEAL, STRAP** -----: ASTM D 3953; CLASS H, FINISH A, B (GRADE 2), OR C, TYPE D, STYLE I, II, OR IV.
- STAPLE, STRAP** -----: COMMERCIAL GRADE
- WIRE** -----: FED SPEC QQ-W-461.



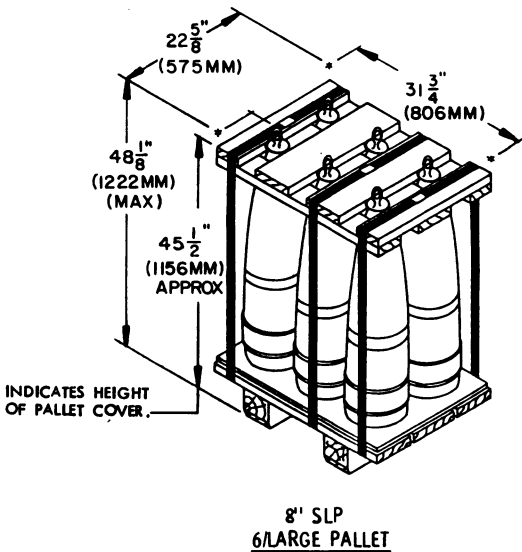
TYPICAL PALLET UNIT OF BOXES



TYPICAL PALLET UNIT OF PROPELLING CHARGES



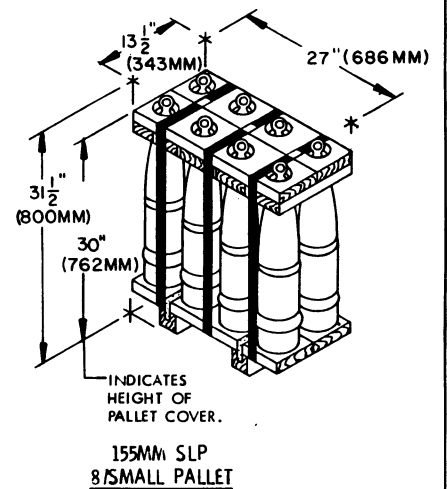
TYPICAL PALLET UNIT OF PROPELLING CHARGES



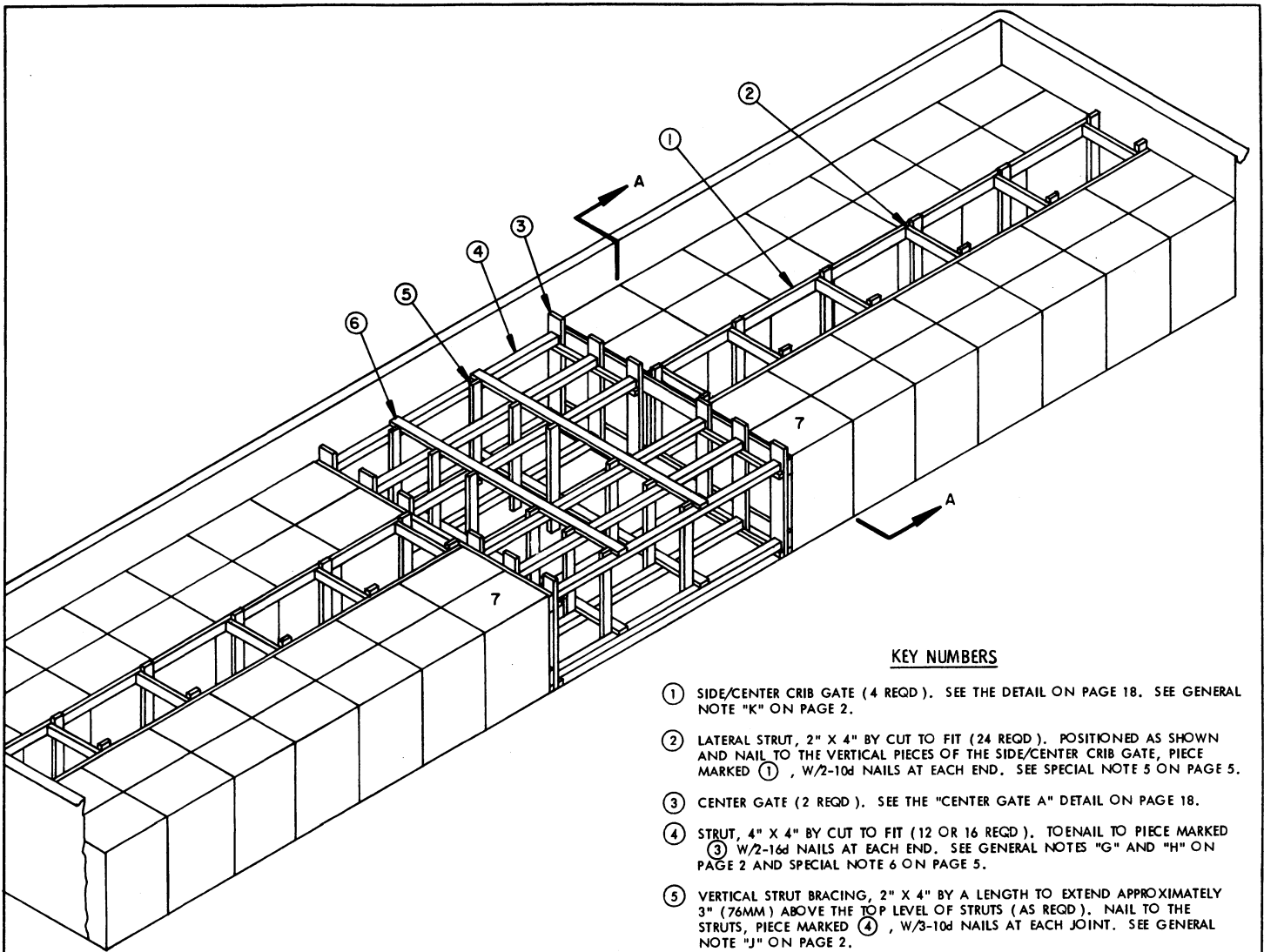
8' SLP  
6/LARGE PALLET

APPROXIMATE WEIGHT OF PROJECTILE UNITS	
UNIT	WEIGHT
155MM SMALL	814 LBS (370 KG)
155MM LARGE	882 LBS (400 KG)
175MM	934 LBS (424 KG)
8" SMALL	1,256 LBS (570 KG)
8" LARGE	1,288 LBS (585 KG)
8" SMALL/TALL	1,296 LBS (588 KG)

TYPICAL UNIT DETAILS



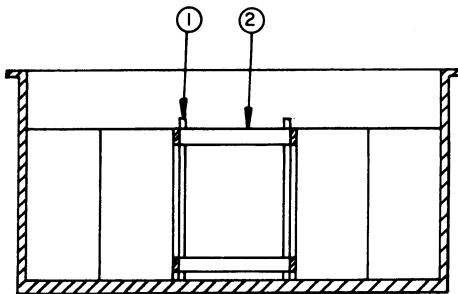
155MM SLP  
8/SMALL PALLET



ISOMETRIC VIEW

KEY NUMBERS

- ① SIDE/CENTER CRIB GATE (4 REQD). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② LATERAL STRUT, 2" X 4" BY CUT TO FIT (24 REQD). POSITIONED AS SHOWN AND NAIL TO THE VERTICAL PIECES OF THE SIDE/CENTER CRIB GATE, PIECE MARKED ①, W/2-10d NAILS AT EACH END. SEE SPECIAL NOTE 5 ON PAGE 5.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE A" DETAIL ON PAGE 18.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 OR 16 REQD). TO ENAIL TO PIECE MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "G" AND "H" ON PAGE 2 AND SPECIAL NOTE 6 ON PAGE 5.
- ⑤ VERTICAL STRUT BRACING, 2" X 4" BY A LENGTH TO EXTEND APPROXIMATELY 3" (76MM) ABOVE THE TOP LEVEL OF STRUTS (AS REQD). NAIL TO THE STRUTS, PIECE MARKED ④, W/3-10d NAILS AT EACH JOINT. SEE GENERAL NOTE "J" ON PAGE 2.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY CAR WIDTH MINUS 1/2" (13MM) IN LENGTH (AS REQD). NAIL TO THE STRUTS, PIECE MARKED ④, W/3-10d NAILS AT EACH JOINT.



SECTION A-A

**LOAD PLANNING CHART**

UNIT	NO. UNITS	UNIT DIM. ACROSS CAR	NO. WIDE	LATERAL VOID	NO. LONG	CENTER STRUT
155MM SMALL	56-72	13-1/2"	4	51"	14-18	10'-9" TO 21"
	96-108	13-1/2"	6	24"	14-18	10'-9" TO 21"
	56-74	27"	2	51"	28-37	10'-9" TO 7-1/2"
155MM LARGE	52-68	14-5/8"	4	46-1/2"	13-17	10'-8" TO 11-1/2"
	78-102	14-5/8"	6	17-1/4"	13-17	10'-8" TO 11-1/2"
	52-68	29-1/8"	2	46-3/4"	26-34	10'-6-1/2" TO 9-1/2"
175MM	60-76	17"	4	37"	15-19	10'-4-1/2" TO 22-1/2"
	90-114	17"	6	3"	15-19	10'-4-1/2" TO 22-1/2"
	46-58	25-1/2"	2	54"	23-29	9'-8" TO 14"
	92-116	25-1/2"	4	3"	23-29	9'-8" TO 14"
8" * SMALL	28-34	19-1/2"	2	66"	14-17	9'-0" TO 22-1/2"
	56-68	19-1/2"	4	27"	14-17	9'-0" TO 22-1/2"
	40-50	28-1/2"	2	48"	20-25	9'-8" TO 19-1/2"
8" LARGE	24-30	22-5/8"	2	59-3/4"	12-15	10'-6" TO 30-3/4"
	48-60	22-5/8"	4	14-1/2"	12-15	10'-6" TO 30-3/4"
	34-44	31-3/4"	2	41-1/2"	17-22	10'-2" TO 9"

\* ALSO APPLICABLE FOR THE 8" SMALL/TALL PALLET UNIT.

**MAXIMUM NO. OF UNITS BY WEIGHT/SIZE**

UNIT	73,333 LBS MAX		110,000 LBS MAX	
	BY WEIGHT	BY SIZE	BY WEIGHT	BY SIZE
155MM SMALL	90	90	135	108
155MM LARGE	83	83	124	102
175MM	78	78	117	116
8" SMALL	58	58	87	68
8" SMALL/TALL	56	56	84	68
8" LARGE	56	56	85	60

**SPECIAL NOTES:**

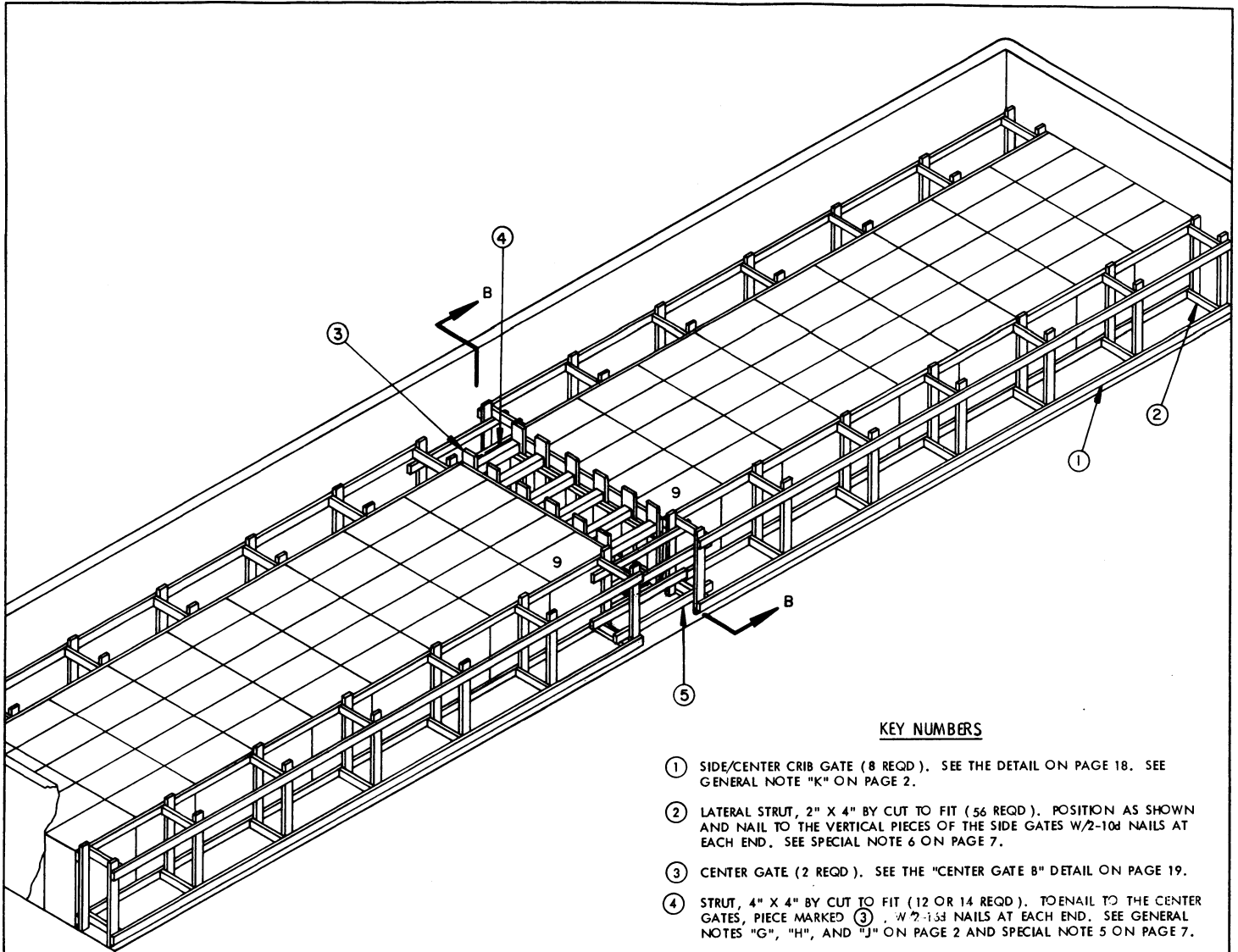
1. THE LOAD SHOWN ON PAGE 4 IS A TYPICAL LOAD OF SEPARATE LOADING PROJECTILES USING THE CENTER CRIB FILL TYPE LATERAL BRACING. THIS METHOD IS APPLICABLE ONLY FOR AN EVEN NUMBER OF ROWS IN A LCA D.
2. THE UNIT DEPICTED IN THE LOAD ON PAGE 4 IS THE 8" PROJECTILE PALLETIZED 6 ROUNDS PER SMALL PALLET. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE ITEMS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
3. THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE QUANTITY OF UNITS WHICH CAN BE ATTAINED USING THE CENTER CRIB FILL PROCEDURE IS SHOWN IN THE SECOND COLUMN OPPOSITE THE ITEM LISTED IN THE FIRST COLUMN. THE THIRD COLUMN SPECIFIES THE DIMENSION OF THE PALLET UNIT TO BE POSITIONED ACROSS THE WIDTH OF THE CAR, AND THE SIXTH COLUMN INDICATES THE NUMBER OF UNITS IN THE LENGTH OF THE CAR TO REACH THE QUANTITY SPECIFIED IN THE SECOND COLUMN. FOR GUIDANCE ONLY, THE WIDTH OF THE LATERAL VOID IS SHOWN IN THE FIFTH COLUMN AND THE APPROXIMATE LENGTH OF THE STRUTS OR OF SOLID FILL IS SHOWN IN THE SEVENTH COLUMN.
4. THE "LOAD PLANNING CHART" SPECIFIES THE MAXIMUM QUANTITY OF UNITS WHICH CAN BE LOADED WITHOUT REGARD TO WEIGHT LIMIT. REFER TO THE "MAXIMUM NO. OF UNITS BY WEIGHT/SIZE" CHART AT LEFT FOR GUIDANCE AS TO THE QUANTITY OF UNITS WHICH CAN BE LOADED BASED ON THE WEIGHT LIMITATION OF EITHER 73,333 POUNDS OR 110,000 POUNDS, OR AS LIMITED BY THE UNIT SIZE.
5. THE TOTAL LATERAL VOID IN A CAR WILL BE LIMITED TO NOT MORE THAN TWO INCHES (2") (51MM) TO PREVENT INTERLOCKING OF THE PALLET COVERS. FOR THE 175MM LOADS HAVING A LATERAL VOID OF APPROXIMATELY 3" (76MM) IT MAY BE NECESSARY TO INSTALL PLYWOOD OR OTHER MATERIAL BETWEEN THE ROWS TO REDUCE THE LATERAL VOID.
6. ALTHOUGH STRUTS ARE SHOWN FOR CENTER BLOCKING IN THE TYPICAL LOAD ON PAGE 4, IT MAY BE NECESSARY TO INSTALL SOLID FILL TYPE BLOCKING, DEPENDING UPON THE UNIT BEING LOADED AND THE NUMBER OF UNITS LONG IN THE CAR. SEE THE LOAD ON PAGE 8 FOR A TYPICAL INSTALLATION.
7. A LOAD QUANTITY IS ADJUSTABLE BY A MULTIPLE OF THE NUMBER WIDE SPECIFIED IN THE FOURTH COLUMN OF THE "LOAD PLANNING CHART". ONE OR MORE FILLER ASSEMBLIES CAN BE INSTALLED TO REDUCE A LOAD BY OTHER THAN A MULTIPLE OF THAT NUMBER. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 48 FOR CONSTRUCTION GUIDANCE. REFER TO THE "LOAD PLANNING CHART" ON PAGE 7 OR 9 IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY USING THE PROCEDURES ON PAGE 4, OR FOR AN ALTERNATIVE LOADING PROCEDURE.

**BILL OF MATERIAL (TYPICAL)**

LUMBER	LINEAR FEET		BOARD FEET	
	LINEAR FEET	METERS	BOARD FEET	
2" X 2"	44	13.4	15	
2" X 3"	5	1.5	3	
2" X 4"	344	101.8	223	
2" X 6"	77	23.4	77	
4" X 4"	108	32.8	144	
NAILS	NO. REQD		POUNDS	KG
10d (3")	528		8-1/4	3.75
16d (3-1/2")	48		1-1/4	0.57

**LOAD AS SHOWN (TYPICAL)**

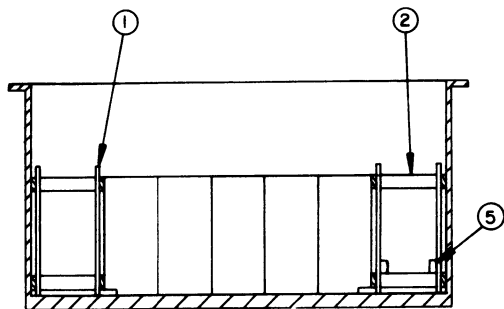
ITEM	QUANTITY	WEIGHT (APPROX)
8" (6/SMALL PALLET)	56	70,336 LBS (31933 KG)
DUNNAGE		934 LBS (424 KG)
<b>TOTAL WEIGHT</b>		<b>71,270 LBS (32357 KG)</b>



ISOMETRIC VIEW

**KEY NUMBERS**

- ① SIDE/CENTER CRIB GATE (8 REQD). SEE THE DETAIL ON PAGE 18. SEE GENERAL NOTE "K" ON PAGE 2.
- ② LATERAL STRUT, 2" X 4" BY CUT TO FIT (56 REQD). POSITION AS SHOWN AND NAIL TO THE VERTICAL PIECES OF THE SIDE GATES W/2-10d NAILS AT EACH END. SEE SPECIAL NOTE 6 ON PAGE 7.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE B" DETAIL ON PAGE 19.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 OR 14 REQD). TO ENAIL TO THE CENTER GATES, PIECE MARKED ③, W/2-10d NAILS AT EACH END. SEE GENERAL NOTES "G", "H", AND "J" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 7.
- ⑤ SIDE/CENTER CRIB GATE RETAINER, 2" X 4" BY LENGTH OF CENTER VOID PLUS 12" (305MM) (8 REQD). POSITION AS SHOWN AND NAIL TO THE VERTICAL PIECES OF PIECE MARKED ① W/2-10d NAILS AT EACH END.



SECTION B-B

LOAD PLANNING CHART						
UNIT	NO. UNITS	UNIT DIM. ACROSS CAR	NO. WIDE	LATERAL VOID EACH SIDE	NO. LONG	CENTER STRUT
155MM SMALL	70-90 84-111	13-1/2" 27"	5 3	18-3/4" 12"	14-18 28-37	10'-9" TO 21" 10'-9" TO 7.5"
155MM LARGE	39-51 65-85	14-5/8" 14-5/8"	3 5	30-1/2" 15-1/2"	13-17 13-17	10'-8" TO 11-1/2" 10'-8" TO 11-1/2"
175MM	45-57 75-95 69-87	17" 17" 25-1/2"	3 5 3	27" 10" 14"	15-19 15-19 23-29	10'-4-1/2" TO 22-1/2" 10'-4-1/2" TO 22-1/2" 9'-8" TO 14"
8" SMALL*	42-51 60-75	19-1/2" 28-1/2"	3 3	23" 9-1/2"	14-17 20-25	9'-0" TO 22-1/2" 9'-8" TO 19-1/2"
8" LARGE	36-45	22-5/8"	3	18-1/2"	12-15	10'-6" TO 30-1/2"

\* ALSO APPLICABLE FOR THE 8" SMALL/TALL PALLET UNIT.

MAXIMUM NO. OF UNITS BY WEIGHT/SIZE				
UNIT	73,333 LBS MAX		110,000 LBS MAX	
	BY WEIGHT	BY SIZE	BY WEIGHT	BY SIZE
155MM SMALL	90	90	135	111
155MM LARGE	83	83	124	85
175MM	78	78	117	95
8" SMALL	58	51	87	51
8" SMALL/TALL	56	51	84	51
8" LARGE	56	45	85	45

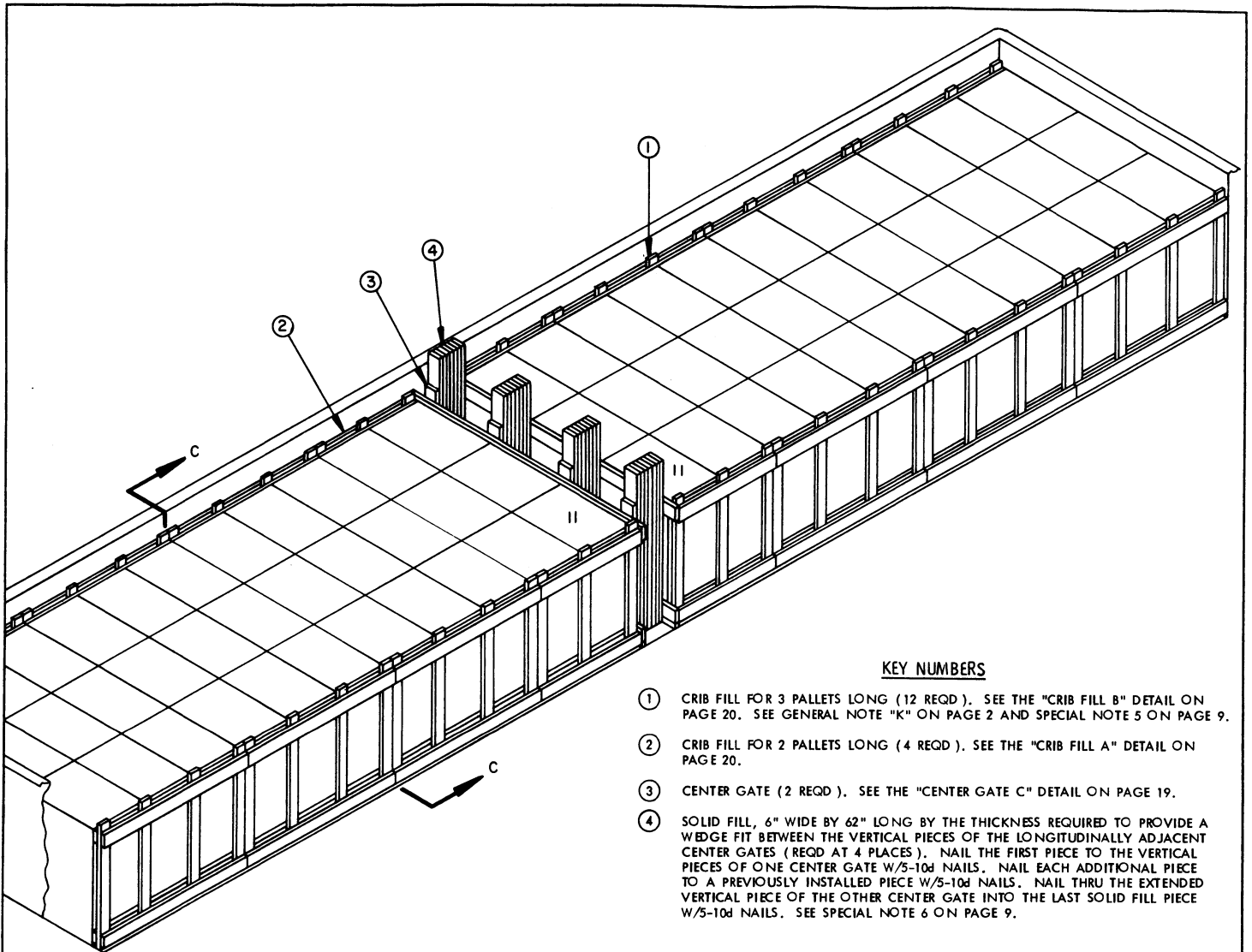
**SPECIAL NOTES:**

1. THE LOAD SHOWN ON PAGE 6 IS A TYPICAL LOAD OF SEPARATE LOADING PROJECTILES USING THE STRUTTED SIDE FILL GATES TYPE OF LATERAL BRACING. THIS METHOD IS APPLICABLE FOR AN ODD NUMBER OF ROWS IN A LOAD.
2. THE UNIT DEPICTED IN THE LOAD ON PAGE 6 IS THE 155MM PROJECTILE PALLETIZED 8 ROUNDS PER SMALL PALLET. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE ITEMS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
3. THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE QUANTITY OF UNITS WHICH CAN BE ATTAINED USING THE STRUTTED SIDE FILL GATES PROCEDURE IS SHOWN IN THE SECOND COLUMN OPPOSITE THE ITEM LISTED IN THE FIRST COLUMN. THE THIRD COLUMN SPECIFIES THE DIMENSION OF THE PALLET UNIT TO BE POSITIONED ACROSS THE WIDTH OF THE CAR, AND THE SIXTH COLUMN INDICATES THE NUMBER OF UNITS IN THE LENGTH OF THE CAR TO REACH THE QUANTITY SPECIFIED IN THE SECOND COLUMN. FOR GUIDANCE ONLY, THE WIDTH OF THE LATERAL VOID ON EACH SIDE OF THE CAR IS SHOWN IN THE FIFTH COLUMN AND THE APPROXIMATE LENGTH OF THE STRUTS OR OF SOLID FILL IS SHOWN IN THE SEVENTH COLUMN.
4. THE "LOAD PLANNING CHART" SPECIFIES THE MAXIMUM QUANTITY OF UNITS WHICH CAN BE LOADED WITHOUT REGARD TO WEIGHT LIMIT. REFER TO THE "MAXIMUM NO. OF UNITS BY WEIGHT/SIZE" CHART AT LEFT FOR GUIDANCE AS TO THE QUANTITY OF UNITS WHICH CAN BE LOADED BASED ON THE WEIGHT LIMITATION OF EITHER 73,333 POUNDS OR 110,000 POUNDS, OR AS LIMITED BY THE UNIT SIZE.
5. ALTHOUGH STRUTS ARE SHOWN FOR CENTER BLOCKING IN THE TYPICAL LOAD ON PAGE 6, IT MAY BE NECESSARY TO INSTALL SOLID FILL TYPE BLOCKING, DEPENDING UPON THE UNIT BEING LOADED AND THE NUMBER OF UNITS LONG IN THE CAR. SEE THE LOAD ON PAGE 8 FOR A TYPICAL INSTALLATION.
6. THE TOTAL LATERAL VOID IN A CAR WILL BE LIMITED TO NOT MORE THAN TWO INCHES (2") (51MM) TO PREVENT INTERLOCKING OF THE PALLET COVERS. THE WIDTH OF THE STRUTTED SIDE FILL GATES ALONG EACH SIDE OF THE CAR WILL BE CONSTRUCTED SO AS TO COMPLY WITH THIS REQUIREMENT.
7. A LOAD QUANTITY IS ADJUSTABLE BY A MULTIPLE OF THE NUMBER WIDE SPECIFIED IN THE FOURTH COLUMN OF THE "LOAD PLANNING CHART". ONE OR MORE FILLER ASSEMBLIES CAN BE INSTALLED TO REDUCE A LOAD BY OTHER THAN A MULTIPLE OF THAT NUMBER. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 48 FOR CONSTRUCTION GUIDANCE. REFER TO THE "LOAD PLANNING CHART" ON PAGE 5 OR 9 IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY USING THE PROCEDURES ON PAGE 6, OR FOR AN ALTERNATIVE LOADING PROCEDURE.

BILL OF MATERIAL (TYPICAL)			
LUMBER	LINEAR FEET	METERS	BOARD FEET
2" X 2"	33	10.0	11
2" X 3"	7	2.1	4
2" X 4"	578	175.7	386
2" X 6"	59	17.9	59
4" X 4"	21	6.4	28
NAILS	NO. REQD	POUNDS	KG
10d (3")	768	12	5.45
16d (3-1/2")	48	1-1/4	0.57

**LOAD AS SHOWN (TYPICAL)**

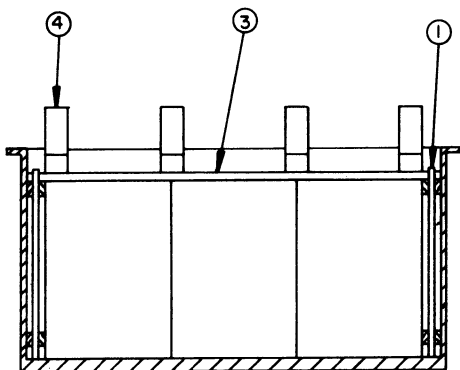
ITEM	QUANTITY	WEIGHT (APPROX)
155MM (8/PALLET) --	90	73,260 LBS (33260 KG)
DUNNAGE		990 LBS (449 KG)
<b>TOTAL WEIGHT</b>		<b>74,150 LBS (33709 KG)</b>



ISOMETRIC VIEW

KEY NUMBERS

- ① CRIB FILL FOR 3 PALLETS LONG (12 REQD). SEE THE "CRIB FILL B" DETAIL ON PAGE 20. SEE GENERAL NOTE "K" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 9.
- ② CRIB FILL FOR 2 PALLETS LONG (4 REQD). SEE THE "CRIB FILL A" DETAIL ON PAGE 20.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE C" DETAIL ON PAGE 19.
- ④ SOLID FILL, 6" WIDE BY 62" LONG BY THE THICKNESS REQUIRED TO PROVIDE A WEDGE FIT BETWEEN THE VERTICAL PIECES OF THE LONGITUDINALLY ADJACENT CENTER GATES (REQD AT 4 PLACES). NAIL THE FIRST PIECE TO THE VERTICAL PIECES OF ONE CENTER GATE W/5-10d NAILS. NAIL EACH ADDITIONAL PIECE TO A PREVIOUSLY INSTALLED PIECE W/5-10d NAILS. NAIL THRU THE EXTENDED VERTICAL PIECE OF THE OTHER CENTER GATE INTO THE LAST SOLID FILL PIECE W/5-10d NAILS. SEE SPECIAL NOTE 6 ON PAGE 9.



SECTION C-C



**LOAD PLANNING CHART**

UNIT	NO. UNITS	UNIT DIM. ACROSS CAR	NO. WIDE	LATERAL VOID EACH SIDE	NO. LONG	CENTER STRUT
155MM SMALL	98-126	13-1/2"	7	5"	14-18	10'-9" TO 21"
155MM LARGE	91-119	14-5/8"	7	1-1/4"	13-17	10'-8" TO 11-1/2"
	78-102	29-1/8"	3	8-1/2"	26-34	10'-6-1/2" TO 9-1/2"
8" SMALL*	70-85	19-1/2"	5	3-1/2"	14-17	9'-0" TO 22-1/2"
8" LARGE	51-66	31-3/4"	3	4-1/2"	17-22	10'-2" TO 9"

\* ALSO APPLICABLE FOR THE 8" SMALL/TALL PALLET UNIT

**MAXIMUM NO. OF UNITS BY WEIGHT/SIZE**

UNIT	73,333 LBS MAX		110,000 LBS MAX	
	BY WEIGHT	BY SIZE	BY WEIGHT	BY SIZE
155MM SMALL	90	90	135	126
155MM LARGE	83	83	124	119
8" SMALL	58	58	87	85
8" SMALL/TALL	56	56	84	84
8" LARGE	56	56	85	66

**SPECIAL NOTES:**

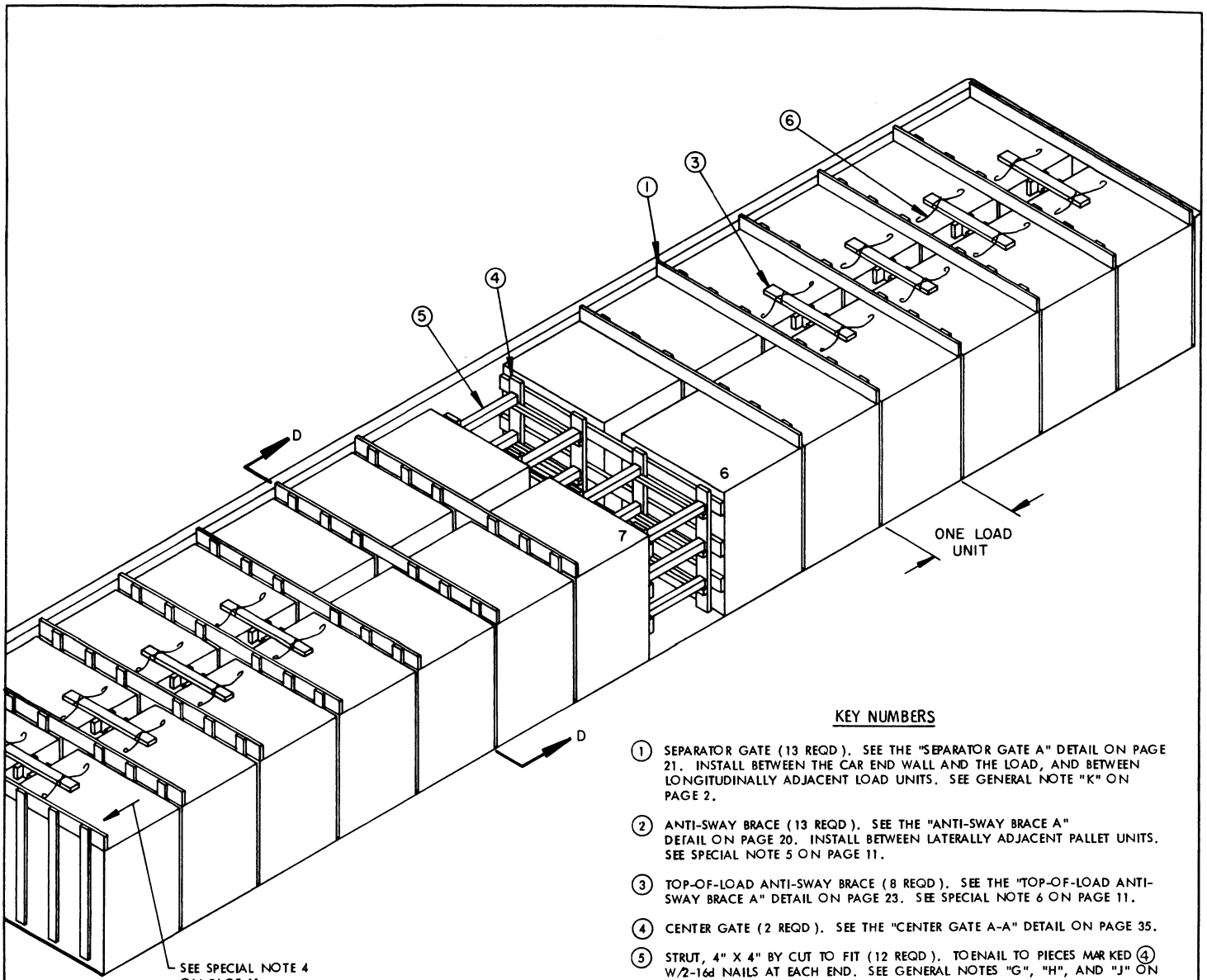
1. THE LOAD SHOWN ON PAGE 8 IS A TYPICAL LOAD OF SEPARATE LOADING PROJECTILES USING THE SIDE FILL GATES TYPE OF LATERAL BRACING. THIS METHOD IS APPLICABLE FOR AN ODD NUMBER OF ROWS IN A LOAD.
2. THE UNIT DEPICTED IN THE LOAD ON PAGE 8 IS THE 8" PROJECTILE PALLETIZED 6 ROUNDS PER LARGE PALLET. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE ITEMS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
3. THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE QUANTITY OF UNITS WHICH CAN BE ATTAINED USING THE SIDE FILL GATE PROCEDURE IS SHOWN IN THE SECOND COLUMN OPPOSITE THE ITEM LISTED IN THE FIRST COLUMN. THE THIRD COLUMN SPECIFIES THE DIMENSION OF THE PALLET UNIT TO BE POSITIONED ACROSS THE WIDTH OF THE CAR, AND THE SIXTH COLUMN INDICATES THE NUMBER OF UNITS IN THE LENGTH OF THE CAR TO REACH THE QUANTITY SPECIFIED IN THE SECOND COLUMN. FOR GUIDANCE ONLY, THE WIDTH OF THE LATERAL VOID IS SHOWN IN THE FIFTH COLUMN AND THE APPROXIMATE LENGTH OF THE STRUTS OR OF SOLID FILL IS SHOWN IN THE SEVENTH COLUMN.
4. THE "LOAD PLANNING CHART" SPECIFIES THE MAXIMUM QUANTITY OF UNITS WHICH CAN BE LOADED WITHOUT REGARD TO WEIGHT LIMIT. REFER TO THE "MAXIMUM NO. OF UNITS BY WEIGHT/SIZE" CHART AT LEFT FOR GUIDANCE AS TO THE QUANTITY OF UNITS WHICH CAN BE LOADED BASED ON THE WEIGHT LIMITATION OF EITHER 73,333 POUNDS OR 110,000 POUNDS, OR AS LIMITED BY THE UNIT SIZE.
5. THE TOTAL LATERAL VOID IN A CAR WILL BE LIMITED TO NOT MORE THAN TWO INCHES (2") (51MM) TO PREVENT INTERLOCKING OF THE PALLET COVERS. THE THICKNESS OF THE CRIB FILL WILL BE ADJUSTED SO AS TO COMPLY WITH THIS REQUIREMENT.
6. ALTHOUGH SOLID FILL TYPE CENTER BLOCKING IS SHOWN IN THE TYPICAL LOAD ON PAGE 8, IT MAY BE NECESSARY TO INSTALL 4" X 4" STRUTS, DEPENDING UPON THE UNIT BEING LOADED AND THE NUMBER OF UNITS LONG IN THE CAR. SEE THE LOADS ON PAGES 4 AND 6 FOR TYPICAL INSTALLATIONS.
7. A LOAD QUANTITY IS ADJUSTABLE BY A MULTIPLE OF THE NUMBER WIDE SPECIFIED IN THE FOURTH COLUMN OF THE "LOAD PLANNING CHART". ONE OR MORE FILLER ASSEMBLIES CAN BE INSTALLED TO REDUCE A LOAD BY OTHER THAN A MULTIPLE OF THAT NUMBER. SEE THE "FILLER ASSEMBLY" DETAIL ON PAGE 48 FOR CONSTRUCTION GUIDANCE. REFER TO THE "LOAD PLANNING CHART" ON PAGE 5 OR 7 IF THE QUANTITY TO BE SHIPPED CANNOT BE ATTAINED BY USING THE PROCEDURES ON PAGE 8, OR FOR AN ALTERNATIVE LOADING PROCEDURE.

**BILL OF MATERIAL (TYPICAL)**

LUMBER	LINEAR FEET	METERS	BOARD FEET	
2" X 2"	44	13.4	15	
2" X 3"	7	2.1	4	
2" X 4"	240	73.0	160	
2" X 6"	509	154.7	509	
NAILS	NO. REQD	POUNDS	KG	
10d (3")	712	11	4.99	

**LOAD AS SHOWN (TYPICAL)**

ITEM	QUANTITY	WEIGHT (APPROX)
8" (6/LARGE PALLET) - 66	-----	85,008 LBS (38594 KG)
DUNNAGE	-----	1,387 LBS (630 KG)
TOTAL WEIGHT		----- 86,395 LBS (39224 KG)

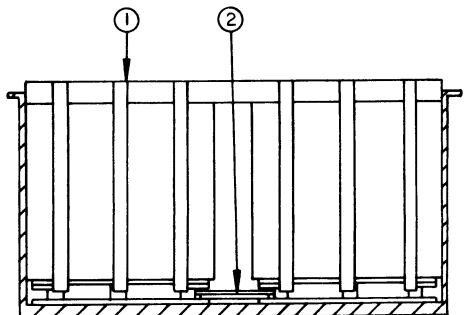


SEE SPECIAL NOTE 4  
ON PAGE 11.

**KEY NUMBERS**

- ① SEPARATOR GATE (13 REQD). SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 21. INSTALL BETWEEN THE CAR END WALL AND THE LOAD, AND BETWEEN LONGITUDINALLY ADJACENT LOAD UNITS. SEE GENERAL NOTE "K" ON PAGE 2.
- ② ANTI-SWAY BRACE (13 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 5 ON PAGE 11.
- ③ TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 23. SEE SPECIAL NOTE 6 ON PAGE 11.
- ④ CENTER GATE (2 REQD). SEE THE "CENTER GATE A-A" DETAIL ON PAGE 35.
- ⑤ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TO NAIL TO PIECES MARKED ④ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "G", "H", AND "J" ON PAGE 2.
- ⑥ TIE WIRE, NO. 14 GAGE WIRE OF A LENGTH TO SUIT (16 REQD). SEE THE "TIE WIRE APPLICATION C" OR "D" DETAIL ON PAGE 49.

**ISOMETRIC VIEW**



**SECTION D-D**

TYPICAL LOAD OF PROPELLING CHARGES  
POSITIONED WITH THE UNIT WIDTH ACROSS THE CAR WIDTH

**LOAD PLANNING CHART**

UNIT	DIM ACROSS CAR	SEPARATOR GATE	NO. LONG	CENTER GATE	APPROX STRUT LENGTH
M14 ALT FLAT RTD	49-1/2" (1257MM)	C	12	J	49" (1245MM)
	49-1/2" (1257MM)		12	K	21" (533MM)
	48" (1219MM)		12	L	21" (533MM)
M16 ALT RTD	49" (1245MM)	A	11	M	31" (787MM)
	50-1/2" (1283MM)		11	O	59" (1499MM)
PA37 ALT RTD	47-1/2" (1207MM)		13	V-V	42" (1067MM)
	51" (1295MM)		9	X-X	48" (1219MM)
PA68 ALT FLAT RTD	48-1/2" (1232MM)	A	12	R	43" (1092MM)
	51-1/2" (1308MM)		11	V	56" (1422MM)
	50-1/2" (1283MM)		11	W	56" (1422MM)
PA75 ALT FLAT RTD	45-1/2" (1156MM)	A	13	X	40" (1016MM)
	48-5/8" (1235MM)		13	Y	40" (1016MM)
	46-3/4" (1187MM)		13	Z	40" (1016MM)
PA91	47-3/4" (1213MM)	A	13	A-A	30" (762MM)
PA92	48-3/4" (1238MM)	A	13	B-B	22" (559MM)
PA94	46-3/4" (1187MM)	C	13	D-D	37" (940MM)
PA95 *	50" (1270MM)		12	E-E	43" (1092MM)
PA96	48" (1219MM)		13	F-F	37" (940MM)
PA97 *	50" (1270MM)		11	G-G	47" (1194MM)
PA99	46-1/2" (1181MM)		13	H-H	52" (1321MM)
PA100	48-1/2" (1232MM)		13	J-J	39" (991MM)
PA103	47-3/4" (1213MM)	A	12	K-K	43" (1092MM)
PA107	45-3/4" (1162MM)	A	13	M-M	40" (1016MM)

\* SEE SPECIAL NOTE 10 AT RIGHT.

**CENTER GATE REFERENCE CHART**

CENTER GATE	PAGE	CENTER GATE	PAGE
J	26	B-B	35
K	27	D-D	36
L	27	E-E	37
M	28	F-F	37
O	29	G-G	38
R	30	H-H	38
V	32	J-J	39
W	33	K-K	39
X	33	M-M	40
Y	34	V-V	40
Z	34	X-X	45
A-A	35		46

**SPECIAL NOTES:**

- THE LOAD AS SHOWN ON PAGE 10 IS A TYPICAL LOAD OF PALLETIZED PROPELLING CHARGES POSITIONED IN THE CAR WITH THE WIDTH OF THE UNIT ACROSS THE CAR WIDTH.
- THE UNIT DEPICTED IN THE LOAD ON PAGE 10 IS THE PA91 CONTAINER UNIT. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE CONTAINER UNITS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
- THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE FIRST COLUMN LISTS THE PALLET UNITS WHICH CAN BE SHIPPED USING THE PROCEDURES ON PAGE 10. THE SECOND COLUMN INDICATES THE DIMENSION OF THE PALLET UNIT TO BE POSITIONED ACROSS THE WIDTH OF THE CAR. THIS POSITIONING WILL ALLOW FOR SHIPPING THE LARGEST QUANTITY OF A PARTICULAR PALLET UNIT. THE MAXIMUM NUMBER OF PALLET UNITS WHICH CAN BE LOADED IN THE LENGTH OF THE CAR IS SPECIFIED IN THE FOURTH COLUMN.
- EXCEPT FOR PALLET UNITS OF ALTERNATED CONTAINERS, AND AS APPLICABLE, PALLET UNITS OF LENGTHWISE POSITIONED CONTAINERS AT THE ENDS OF THE CAR WILL BE POSITIONED WITH THE BASE ENDS OF THE CONTAINERS TOWARD THE CAR END WALL OR TOWARD A CAR SIDEWALL. LONGITUDINALLY ADJACENT UNITS OF LENGTHWISE POSITIONED CONTAINERS WILL BE POSITIONED WITH THE BASE END AGAINST BASE END OR BELL END AGAINST BELL END, EXCEPT FOR ALTERNATED CONTAINERS UNITS.
- THE LATERAL VOID IN A LOAD IS LIMITED TO NOT MORE THAN THREE INCHES (3") (76MM). ANTI-SWAY BRACES WILL BE REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS FOR ALL THE PALLET UNITS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
- TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ③ IN THE LOAD ON PAGE 10, MUST BE INSTALLED IN EACH END OF THE CAR. FOUR (4) BRACES ARE REQUIRED IN EACH END OF THE CAR FOR ALL PALLET UNITS LISTED AT LEFT.
- FOR THOSE PALLET UNITS IN WHICH THE LONGITUDINALLY POSITIONED CONTAINERS OVERHANG THE PALLET AND ARE NOT PROTECTED BY BATTENS, SEPARATOR GATES MUST BE INSTALLED AT THE ENDS OF THE CAR AND ALSO BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS. THOSE UNITS REQUIRING SEPARATOR GATES ARE INDICATED IN COLUMN THREE OF THE "LOAD PLANNING CHART". SEPARATOR GATE "A" IS DETAILED ON PAGE 21 AND SEPARATOR GATE "C" IS DETAILED ON PAGE 22.
- SEPARATOR GATES MAY BE FORMED FROM 3/8" (9.525MM) OR THICKER PLYWOOD IN LIEU OF 1" X 4" AND 1" X 6" LUMBER, IF DESIRED. PLYWOOD SEPARATOR GATES MAY BE EITHER 96" (2438MM) LONG SHEETS POSITIONED ACROSS THE CAR, RIPPED TO LOAD HEIGHT IF DESIRED, OR 48" (1219MM) WIDE BY LOAD HEIGHT PLUS 4" (101MM) PIECES ALIGNED WITH EACH ROW AND TIED TOGETHER ACROSS THE TOPS WITH A 1" X 4" PIECE EXTENDING AT LEAST 4" (101MM) ONTO EACH SHEET. SECURE BY NAILING THRU THE PLYWOOD INTO THE 1" X 4" W/3 APPLICABLY SIZED NAILS AND CLINCH, IF APPLICABLE.
- EACH PROPELLING CHARGE PALLET UNIT REQUIRES ITS OWN CENTER GATE AS STATED IN COLUMN FIVE OF THE "LOAD PLANNING CHART". FOR LOCATION OF THE DETAILS OF A CENTER GATE, REFER TO THE "CENTER GATE REFERENCE CHART" AT LEFT.
- THE PA95 AND PA97 CONTAINER PALLET UNITS HAVE THE LENGTH OF THE CONTAINERS CROSSWISE IN THE CAR AND THE UNITS DO NOT HAVE BATTENS ON THE ENDS OF THE CONTAINERS. THEREFORE, IT WILL BE NECESSARY TO LINE THE CAR SIDEWALL TO PREVENT METAL-TO-METAL CONTACT. THIS CAN BE ACCOMPLISHED WITH 1/4" (.6350MM) MINIMUM PLYWOOD, 1/8" (3.175MM) MINIMUM HARDBOARD, OR .060" (1.524MM) MINIMUM THICK SOLID WALL FIBERBOARD. ADJACENT SHEETS MUST BE TIED TOGETHER TO PREVENT DISPLACEMENT. USE 1" X 4" X 8" (457MM) POSITIONED NEAR BASE OF SHEETS UNDER THE OVERHANG OF THE CONTAINERS. SECURE 1" X 4" TO PLYWOOD OR HARDBOARD W/3 APPLICABLY SIZED NAIL AT EACH END AND CLINCH, OR SECURE FIBERBOARD WITH STAPLES. AS AN ALTERNATIVE, SEPARATOR GATES MAY BE USED. SEE THE "SEPARATOR GATE A" DETAIL ON PAGE 21. THE GATE IS DESIGNED FOR THE HORIZONTAL PIECE TO REST ON THE CAR SIDEWALL. THE GATES MUST BE PREVENTED FROM LONGITUDINAL MOVEMENT. LONGITUDINALLY ADJACENT GATES SHOULD BE TIED TOGETHER WITH 1" X 4" X 8" (457MM) ON THE JOINTS NAILED W/2-6d NAILS AT EACH END AND CLINCHED. AT THE CAR END AND NEXT TO THE CENTER GATE APPLY A VERTICALLY POSITIONED 1" X 4" OF A LENGTH TO CONTACT THE CAR END WALL AND/OR A CENTER GATE HORIZONTAL PIECE. SECURE IN A SIMILAR MANNER.
- A FULL LOAD QUANTITY MAY BE REDUCED BY A MULTIPLE OF TWO PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. TO REDUCE A LOAD BY ONE PALLET UNIT, THE "OMITTED UNIT PROCEDURES" SHOWN ON PAGE 48 MUST BE APPLIED.
- IF IT IS NECESSARY TO SHIP A PALLET UNIT WHICH DOES NOT CONSIST OF A FULL NUMBER OF LAYERS OF CONTAINERS, REFER TO THE "SHIPMENT OF PARTIAL UNIT" DETAIL ON PAGE 50 FOR GUIDANCE.

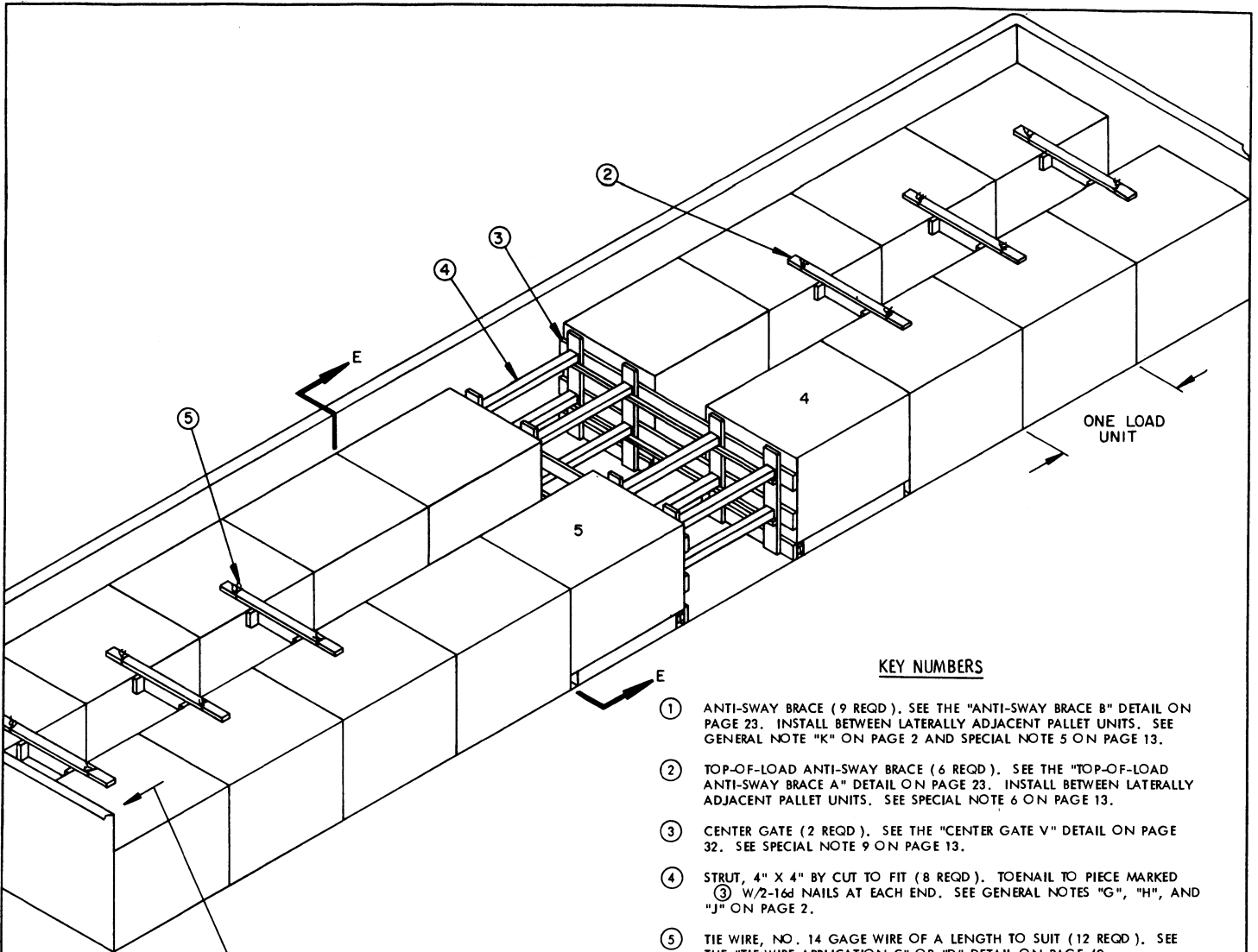
**BILL OF MATERIAL (TYPICAL)**

LUMBER	LINEAR FEET	METERS	BOARD FEET
1" X 4"	387	117.6	129
1" X 6"	114	34.7	57
2" X 2"	96	29.2	32
2" X 3"	7	2.1	4
2" X 4"	56	17.0	38
2" X 6"	117	35.6	117
4" X 4"	30	9.1	40
NAILS	NO. REQD	POUNDS	KG
6d (2")	416	2-1/2	1.14
10d (3")	272	4-1/4	1.93
16d (3-1/2")	48	1-1/4	0.57

**LOAD AS SHOWN (TYPICAL)**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	26	52,650 LBS (23903 KG)
DUNNAGE		842 LBS (382 KG)
<b>TOTAL WEIGHT</b>		<b>53,492 LBS (24285 KG)</b>

TYPICAL LOAD OF PROPELLING CHARGES  
POSITIONED WITH THE UNIT WIDTH ACROSS THE CAR WIDTH

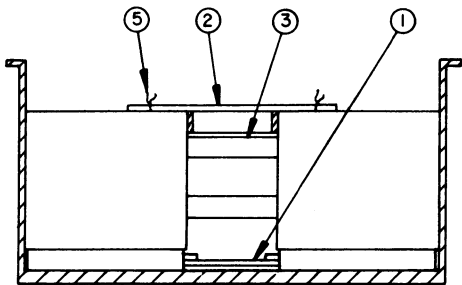


SEE SPECIAL NOTE 4 ON PAGE 13.

**KEY NUMBERS**

- ① ANTI-SWAY BRACE (9 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "K" ON PAGE 2 AND SPECIAL NOTE 5 ON PAGE 13.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE A" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 6 ON PAGE 13.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE V" DETAIL ON PAGE 32. SEE SPECIAL NOTE 9 ON PAGE 13.
- ④ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO PIECE MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "G", "H", AND "J" ON PAGE 2.
- ⑤ TIE WIRE, NO. 14 GAGE WIRE OF A LENGTH TO SUIT (12 REQD). SEE THE "TIE WIRE APPLICATION C" OR "D" DETAIL ON PAGE 49.

**ISOMETRIC VIEW**



**SECTION E-E**

TYPICAL LOAD OF PROPELLING CHARGES  
POSITIONED WITH THE UNIT LENGTH ACROSS THE CAR WIDTH

**LOAD PLANNING CHART**

UNIT	DIM ACROSS CAR	SEPARATOR GATE	NO. LONG	CENTER GATE	APPROX STRUT LENGTH
M10 ALT FLAT RTD	40-3/4" (1035MM)	B	8	E	62" (1575MM)
	43" (1092MM)	B	8	N-N	62" (1575MM)
	42" (1067MM)	B	8	O-O	62" (1575MM)
M13 FLAT RTD	41-1/2" (1054MM)	A	8	H	62" (1575MM)
	40" (1016MM)	A	8	P-P	62" (1575MM)
M16 FLAT	44-1/8" (1121MM)		9	N	34" (864MM)
M18 FLAT RTD	44" (1118MM)	A	9	P	27" (686MM)
	42" (1067MM)	A	9	Q-Q	27" (686MM)
M19 FLAT RTD	40-5/8" (1032MM)	B	8	R-R	34" (864MM)
	40" (1016MM)	B	8	S-S	34" (864MM)
M460 ALT FLAT RTD PROT	40" (1016MM)	B	8	Q	62" (1575MM)
	40-3/4" (1035MM)	B	8	T-T	62" (1575MM)
	40" (1016MM)	B	8	U-U	62" (1575MM)
	40" (1016MM)	B	8	U-U	62" (1575MM)
PA37 FLAT REV FLAT	45-1/2" (1156MM)		9	W-W	34" (864MM)
	35-3/4" (908MM)		9	D	34" (864MM)
PA93	40" (1016MM)	B	8	C-C	54" (1372MM)
PA106	40-5/8" (1032MM)	A	8	L-L	62" (1575MM)

**CENTER GATE REFERENCE CHART**

CENTER GATE	PAGE	CENTER GATE	PAGE
D	21	O-O	41
E	23	P-P	42
H	26	Q-Q	42
N	28	R-R	43
P	29	S-S	43
Q	30	T-T	44
C-C	36	U-U	44
L-L	40	W-W	45
N-N	41		

**SPECIAL NOTES:**

- THE LOAD AS SHOWN ON PAGE 12 IS A TYPICAL LOAD OF PALLETIZED PROPELLING CHARGES POSITIONED IN THE CAR WITH THE LENGTH OF THE UNIT ACROSS THE CAR WIDTH.
- THE UNIT DEPICTED IN THE LOAD ON PAGE 12 IS THE PA68 CONTAINER FLAT DUNNAGE METHOD UNIT. THE PROCEDURES ARE ALSO APPLICABLE FOR ANY OF THE CONTAINER UNITS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
- THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE FIRST COLUMN LISTS THE PALLET UNITS WHICH CAN BE SHIPPED USING THE PROCEDURES ON PAGE 12. THE SECOND COLUMN INDICATES THE DIMENSION OF THE PALLET UNIT TO BE POSITIONED ACROSS THE WIDTH OF THE CAR. THIS POSITIONING WILL ALLOW FOR SHIPPING THE LARGEST QUANTITY OF A PARTICULAR PALLET UNIT. THE MAXIMUM NUMBER OF PALLET UNITS WHICH CAN BE LOADED IN THE LENGTH OF THE CAR IS SPECIFIED IN THE FOURTH COLUMN.
- EXCEPT FOR PALLET UNITS OF ALTERNATED CONTAINERS, AND AS APPLICABLE, PALLET UNITS OF LENGTHWISE POSITIONED CONTAINERS AT THE ENDS OF THE CAR WILL BE POSITIONED WITH THE BASE ENDS OF THE CONTAINERS TOWARD THE CAR END WALL OR TOWARD A CAR SIDEWALL. LONGITUDINALLY ADJACENT UNITS OF LENGTHWISE POSITIONED CONTAINERS WILL BE POSITIONED WITH THE BASE END AGAINST BASE END OR BELL END AGAINST BELL END, EXCEPT FOR ALTERNATED CONTAINERS UNITS.
- THE LATERAL VOID IN A LOAD IS LIMITED TO NOT MORE THAN THREE INCHES (3") (76MM). ANTI-SWAY BRACES WILL BE REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS FOR ALL THE PALLET UNITS LISTED IN THE "LOAD PLANNING CHART" AT LEFT.
- TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED ② IN THE LOAD ON PAGE 12, MUST BE INSTALLED IN EACH END OF THE CAR. REFER TO THE "TOP-OF-LOAD ANTI-SWAY BRACE" CHART ON PAGE 23 FOR GUIDANCE AS TO THE NUMBER OF BRACES REQUIRED IN EACH END OF THE CAR.
- FOR THOSE PALLET UNITS IN WHICH THE LONGITUDINALLY POSITIONED CONTAINERS OVERHANG THE PALLET AND ARE NOT PROTECTED BY BATTENS, SEPARATOR GATES MUST BE INSTALLED AT THE ENDS OF THE CAR AND ALSO BETWEEN LONGITUDINALLY ADJACENT PALLET UNITS AS TYPICALLY SHOWN IN THE LOAD ON PAGE 10. THOSE UNITS REQUIRING SEPARATOR GATES ARE INDICATED IN COLUMN THREE OF THE "LOAD PLANNING CHART". SEPARATOR GATE "A" IS DETAILED ON PAGE 21 AND SEPARATOR GATE "C" IS DETAILED ON PAGE 22.
- SEPARATOR GATES MAY BE FORMED FROM 3/8" (9.525MM) OR THICKER PLYWOOD IN LIEU OF 1" X 4" AND 1" X 6" LUMBER, IF DESIRED. PLYWOOD SEPARATOR GATES MAY BE EITHER 96" (2438MM) LONG SHEETS POSITIONED ACROSS THE CAR, RIPPED TO LOAD HEIGHT IF DESIRED, OR 48" (1219MM) WIDE BY LOAD HEIGHT PLUS 4" (101MM) PIECES ALIGNED WITH EACH ROW AND TIED TOGETHER ACROSS THE TOPS WITH A 1" X 4" PIECE EXTENDING AT LEAST 4" (101MM) ONTO EACH SHEET. SECURE BY NAILING THRU THE PLYWOOD INTO THE 1" X 4" W/3 APPLICABLY SIZED NAILS AND CLINCH, IF APPLICABLE.
- EACH PROPELLING CHARGE PALLET UNIT REQUIRES ITS OWN CENTER GATE AS STATED IN COLUMN FIVE OF THE "LOAD PLANNING CHART". FOR LOCATION OF THE DETAILS OF A CENTER GATE, REFER TO THE "CENTER GATE REFERENCE CHART" AT LEFT.
- A FULL LOAD QUANTITY MAY BE REDUCED BY A MULTIPLE OF TWO PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. TO REDUCE A LOAD BY ONE PALLET UNIT, THE "OMMITTED UNIT PROCEDURES" SHOWN ON PAGE 48 MUST BE APPLIED.
- IF IT NECESSARY TO SHIP A PALLET UNIT WHICH DOES NOT CONSIST OF A FULL NUMBER OF LAYERS OF CONTAINERS, REFER TO THE "SHIPMENT OF PARTIAL UNIT" DETAIL ON PAGE 50 FOR GUIDANCE.

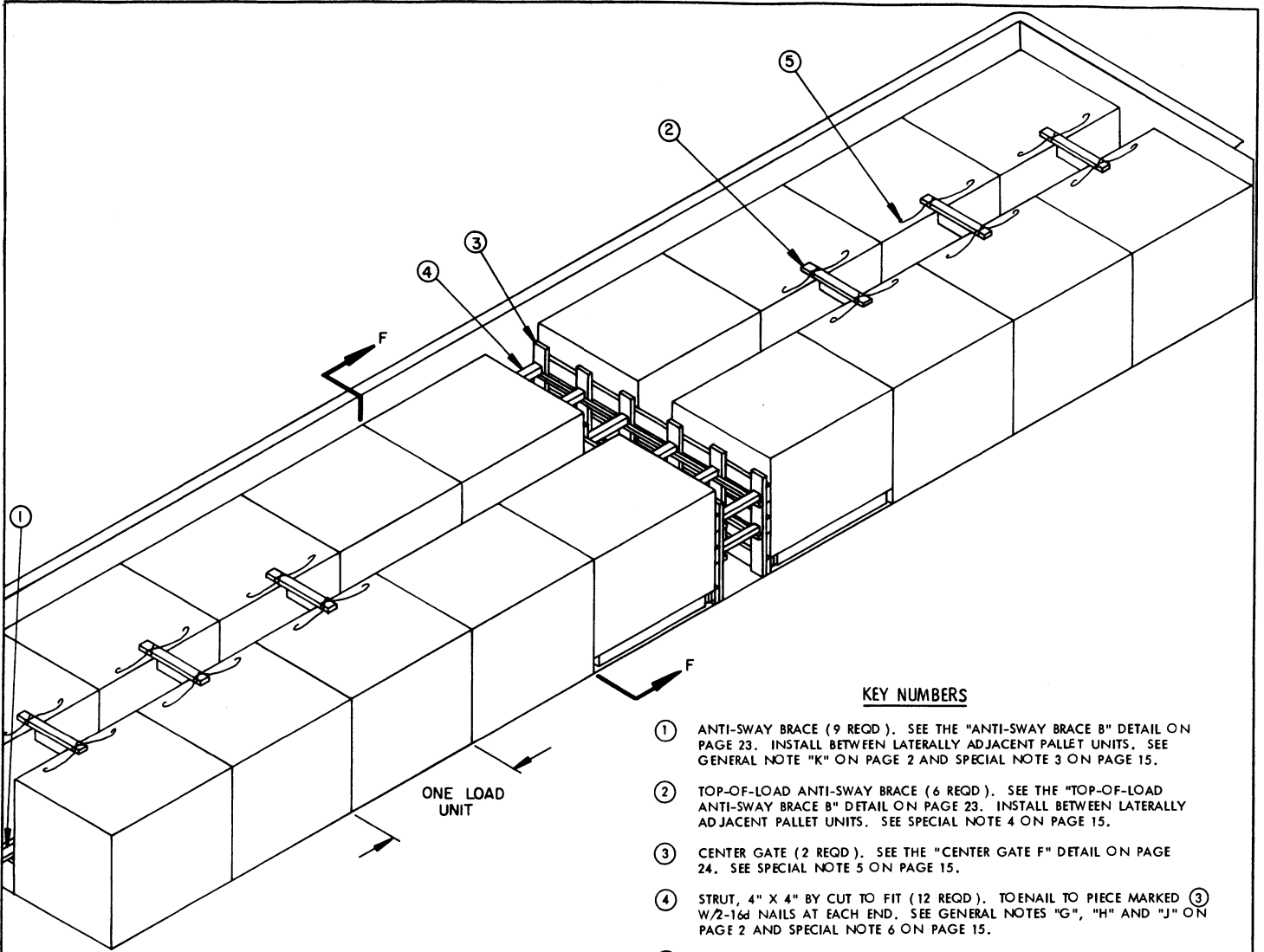
**BILL OF MATERIAL (TYPICAL)**

LUMBER	LINEAR FEET	METERS	BOARD FEET	
2" X 2"	132	40.1	44	
2" X 3"	117	35.6	59	
2" X 4"	29	8.8	20	
2" X 6"	8	2.4	8	
4" X 4"	35	10.6	47	
NAILS	NO. REQD	PCUNDS	KG	
10d (3")	338	5-1/4	2.38	
16d (3-1/2")	32	3/4	0.34	
WIRE, NO. 14 GAGE	36' REQD		1 LB (0.5 KG)	

**LOAD AS SHOWN (TYPICAL)**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT	14	25 200 LBS (11441 KG)
DUNNAGE		363 LBS (165 KG)
<b>TOTAL WEIGHT</b>		<b>25,563 LBS (11606 KG)</b>

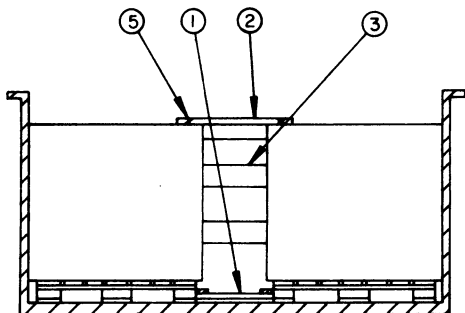
TYPICAL LOAD OF PROPELLING CHARGES  
POSITIONED WITH THE UNIT LENGTH ACROSS THE CAR WIDTH



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (9 REQD). SEE THE "ANTI-SWAY BRACE B" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "K" ON PAGE 2 AND SPECIAL NOTE 3 ON PAGE 15.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (6 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 15.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE F" DETAIL ON PAGE 24. SEE SPECIAL NOTE 5 ON PAGE 15.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TO ENAIL TO PIECE MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "G", "H" AND "J" ON PAGE 2 AND SPECIAL NOTE 6 ON PAGE 15.
- ⑤ TIE WIRE, NO. 14 GAGE WIRE OF A LENGTH TO SUIT (12 REQD). SEE THE "TIE WIRE APPLICATION A" OR "B" DETAIL ON PAGE 47.



SECTION F-F

TYPICAL LOAD OF PALLETIZED BOXES  
POSITIONED WITH UNIT LENGTH ACROSS THE CAR WIDTH

LOAD PLANNING CHART		
NO. LONG	UNIT SIZE RANGE	APPROX STRUT LENGTH
11	45-1/2" TO 45-3/4" (1156MM TO 1162MM)	6" TO 3-1/2" SOLID FILL
10	OVER 45-3/4" TO 50-1/4" (1162MM TO 1276MM)	49" TO 4"
9	OVER 50-1/4" TO 54" (1276MM TO 1372MM)	53" TO 21"
8	OVER 54" TO 58" (1372MM TO 1473MM)	6'-2" TO 43"

**SPECIAL NOTES:**

1. THE LOAD AS SHOWN ON PAGE 14 IS A TYPICAL LOAD OF PALLETIZED BOXES POSITIONED IN THE CAR WITH THE LENGTH OF THE UNIT, THE 35" (889MM) OR 40" (1016MM) DIMENSION OF THE PALLET, ACROSS THE WIDTH OF THE CAR. THE DEPICTED UNIT IS 44" LONG BY 54" WIDE X 45-1/4" HIGH ON A 40" X 48" PALLET AND WEIGHS 2,948 POUNDS.
2. THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE UNIT SIZE RANGE IN THE SECOND COLUMN INDICATES THE SIZE OF THE UNITS THAT CAN BE LOADED. THE NUMBER LONG SPECIFIED IN THE FIRST COLUMN, FOR GUIDANCE, THE APPROXIMATE STRUT LENGTH OR AMOUNT OF SOLID FILL IS SHOWN IN THE THIRD COLUMN.
3. ANTI-SWAY BRACES ARE REQUIRED BETWEEN ALL LATERALLY ADJACENT PALLET UNITS IN THE LOAD SHOWN ON PAGE 14.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 14, MUST BE INSTALLED IN EACH END OF THE CAR. REFER TO THE "TOP-OF-LOAD ANTI-SWAY BRACE" CHART ON PAGE 23 FOR GUIDANCE AS TO THE NUMBER OF BRACES REQUIRED IN EACH END OF THE CAR.
5. THE CENTER GATE "F" FOR USE IN THE LOAD ON PAGE 14, AS DETAILED ON PAGE 24, IS SHOWN WITH THREE HORIZONTAL PIECES AND SIX VERTICAL PIECES. SUCH A GATE WILL ACCOMMODATE NINE (9) 4" X 4" STRUTS WHICH IS SUFFICIENT FOR THE RETENTION OF THE MAXIMUM SIZE LOAD OF THE HEAVIEST PALLET UNIT. EACH ROW OF A LOAD WILL BE BRACED WITH A MINIMUM OF FOUR (4) STRUTS. REFER TO THE "NO. OF STRUTS PER ROW/MAX WEIGHT PER UNIT" CHART ON PAGE 24 FOR GUIDANCE IN DETERMINING THE NUMBER OF STRUTS REQUIRED FOR A LOAD. REFER TO THE NOTE BENEATH THE CHART FOR GUIDANCE IN THE CONSTRUCTION OF THE GATE TO ACCOMMODATE THOSE STRUTS.
6. ALTHOUGH STRUTS ARE SHOWN FOR CENTER BLOCKING IN THE TYPICAL LOAD ON PAGE 14, IT MAY BE NECESSARY TO INSTALL SOLID FILL TYPE BLOCKING, DEPENDING UPON THE QUANTITY AND SIZE OF THE UNITS BEING LOADED. SEE THE LOAD ON PAGE 8 FOR A TYPICAL INSTALLATION.
7. A FULL LOAD QUANTITY MAY BE REDUCED BY A MULTIPLE OF TWO PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. TO REDUCE A LOAD BY ONE PALLET UNIT, THE "OMITTED UNIT PROCEDURES" SHOWN ON PAGE 48 MUST BE APPLIED.
8. IF IT IS NECESSARY TO SHIP A PALLET UNIT WHICH DOES NOT CONSIST OF A FULL NUMBER OF LAYERS OF BOXES, REFER TO THE "SHIPMENT OF PARTIAL UNIT" DETAIL ON PAGE 50 FOR GUIDANCE.

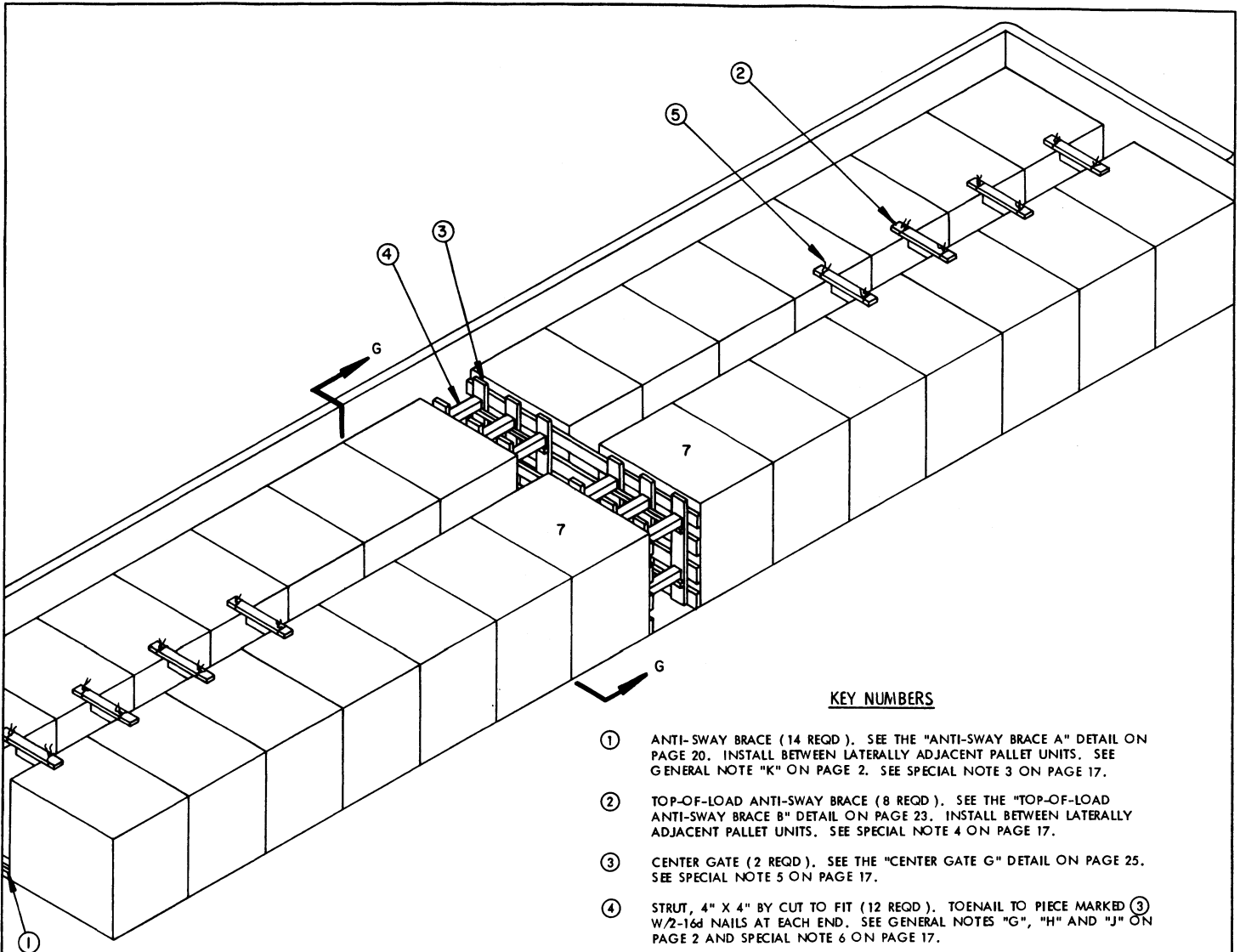
**BILL OF MATERIAL (TYPICAL)**

LUMBER	LINEAR FEET METERS		BOARD FEET	
2" X 2"	35	10,6	12	
2" X 4"	137	41,6	92	
2" X 6"	99	30,1	99	
4" X 4"	21	6,4	28	
NAILS	NO. REQD		POUNDS	KG
10d (3")	280		4-1/2	2,04
12d (3-1/4")	24		1/2	0,23
16d (3-1/2")	48		1-1/4	0,57
WIRE, NO. 14 GAGE ----- 80' REQD ----- 1 LB (0,5 KG)				

**LOAD AS SHOWN (TYPICAL)**

ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	18 -----	53,064 LBS (24091 KG)
DUNNAGE -----		470 LBS (213 KG)
TOTAL WEIGHT -----		53,534 LBS (24304 KG)

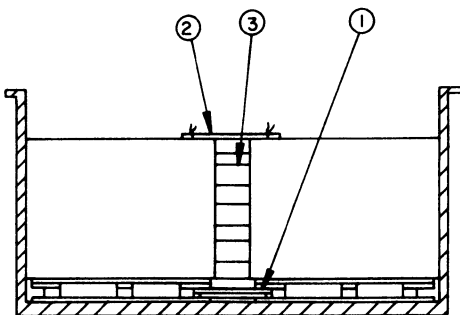
TYPICAL LOAD OF PALLETIZED BOXES  
POSITIONED WITH UNIT LENGTH ACROSS THE CAR WIDTH



ISOMETRIC VIEW

KEY NUMBERS

- ① ANTI-SWAY BRACE (14 REQD). SEE THE "ANTI-SWAY BRACE A" DETAIL ON PAGE 20. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE GENERAL NOTE "K" ON PAGE 2. SEE SPECIAL NOTE 3 ON PAGE 17.
- ② TOP-OF-LOAD ANTI-SWAY BRACE (8 REQD). SEE THE "TOP-OF-LOAD ANTI-SWAY BRACE B" DETAIL ON PAGE 23. INSTALL BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE SPECIAL NOTE 4 ON PAGE 17.
- ③ CENTER GATE (2 REQD). SEE THE "CENTER GATE G" DETAIL ON PAGE 25. SEE SPECIAL NOTE 5 ON PAGE 17.
- ④ STRUT, 4" X 4" BY CUT TO FIT (12 REQD). TOENAIL TO PIECE MARKED ③ W/2-16d NAILS AT EACH END. SEE GENERAL NOTES "G", "H" AND "J" ON PAGE 2 AND SPECIAL NOTE 6 ON PAGE 17.
- ⑤ TIE WIRE, NO. 14 GAGE WIRE OF A LENGTH TO SUIT (16 REQD). SEE THE "TIE WIRE APPLICATION A" OR "B" DETAIL ON PAGE 47.



SECTION G-G

TYPICAL LOAD OF PALLETIZED BOXES  
 POSITIONED WITH UNIT WIDTH ACROSS THE CAR WIDTH



LOAD PLANNING CHART		
NO. LONG	UNIT SIZE RANGE	APPROX STRUT LENGTH
14	35" TO 36" (889MM TO 914MM)	23" TO 2-1/2"
13	OVER 36" TO 38-3/4" (914MM TO 984MM)	39" TO 3"
12	OVER 38-3/4" TO 42" (984MM TO 1067MM)	40" TO 3"
11	OVER 42" TO 44" (1067MM TO 1118MM)	43" TO 23"

**SPECIAL NOTES:**

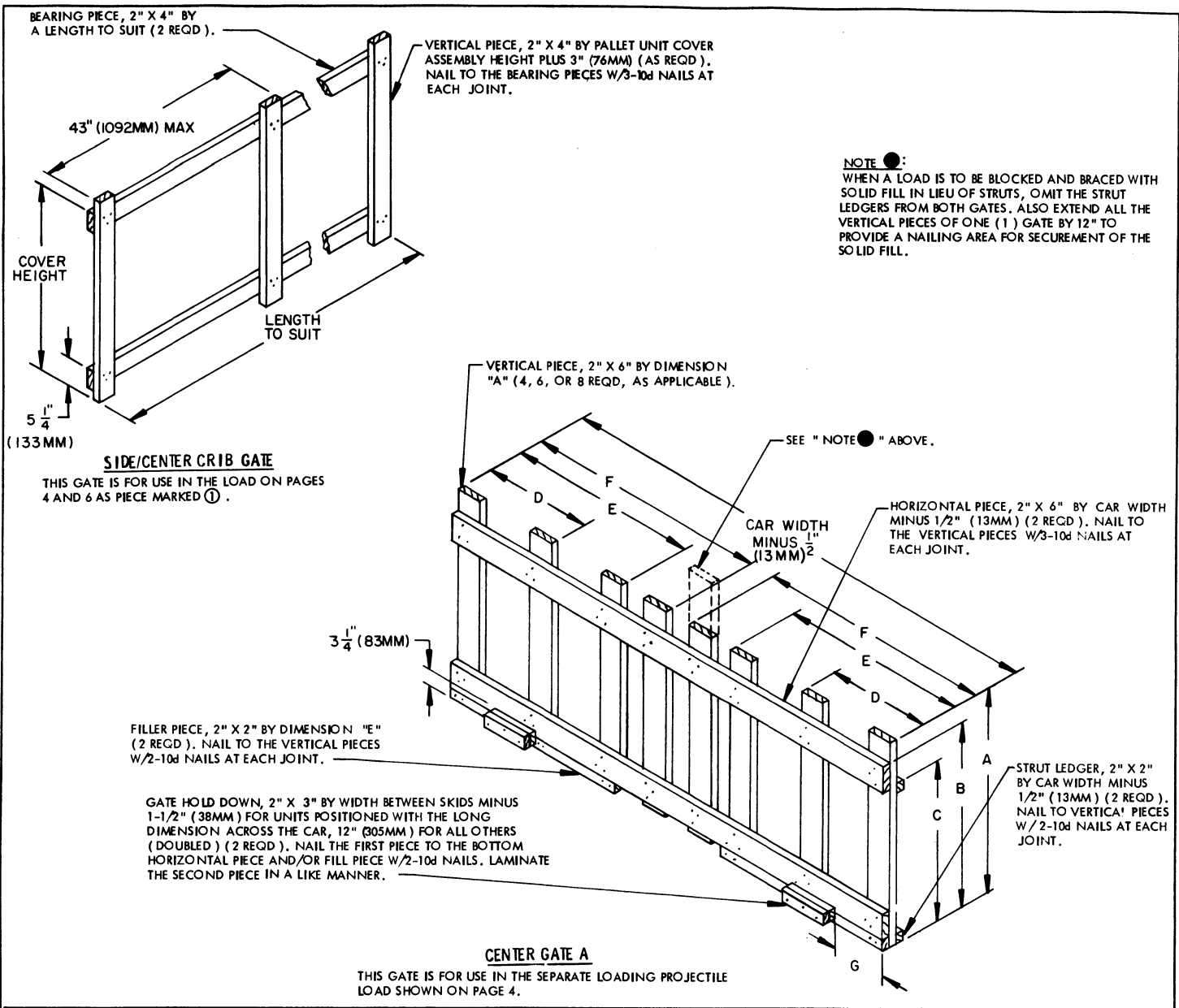
1. THE LOAD AS SHOWN ON PAGE 16 IS A TYPICAL LOAD OF PALLETIZED BOXES POSITIONED IN THE CAR WITH THE WIDTH OF THE UNIT, THE 45-1/2" (1156MM) OR 48" (1219MM) DIMENSION OF THE PALLET, ACROSS THE WIDTH OF THE CAR. THE DEPICTED UNIT IS 35" LONG BY 48" WIDE BY 40" HIGH ON A 35" X 45-1/2" PALLET AND WEIGHS 2,590 POUNDS.
2. THE "LOAD PLANNING CHART" MAY BE USED IN THE DEVELOPMENT OF A LOAD PATTERN. THE UNIT SIZE RANGE IN THE SECOND COLUMN INDICATES THE SIZE OF THE UNITS THAT CAN BE LOADED. THE NUMBER LONG SPECIFIED IN THE FIRST COLUMN. FOR GUIDANCE, THE APPROXIMATE STRUT LENGTH OR AMOUNT OF SOLID FILL IS SHOWN IN THE THIRD COLUMN.
3. THE LATERAL VOID IN A LOAD IS LIMITED TO NOT MORE THAN SIX INCHES (6") (152MM). ANTI-SWAY BRACES WILL BE REQUIRED BETWEEN LATERALLY ADJACENT PALLET UNITS FOR ALL PALLET UNITS WHICH ARE LESS THAN 49-1/2" (1257MM) IN WIDTH.
4. TOP-OF-LOAD ANTI-SWAY BRACES, SHOWN AS PIECE MARKED (2) IN THE LOAD ON PAGE 16, ARE REQUIRED IN EACH END OF THE CAR WHEN THE LATERAL VOID IS MORE THAN SIX INCHES (6") (152MM). REFER TO THE "TOP-OF-LOAD ANTI-SWAY BRACE" CHART ON PAGE 23 FOR GUIDANCE AS TO THE NUMBER REQUIRED IN EACH END OF THE CAR.
5. THE CENTER GATE "G" FOR USE IN THE LOAD ON PAGE 16, AS DETAILED ON PAGE 25, IS SHOWN WITH THREE HORIZONTAL PIECES AND SIX VERTICAL PIECES. SUCH A GATE WILL ACCOMMODATE NINE (9) 4" X 4" STRUTS WHICH IS SUFFICIENT FOR THE RETENTION OF THE MAXIMUM SIZE LOAD OF THE HEAVIEST PALLET UNIT. EACH ROW OF A LOAD WILL BE BRACED WITH A MINIMUM OF FOUR (4) STRUTS. REFER TO THE "NO. OF STRUTS PER ROW/MAX WEIGHT PER UNIT" CHART ON PAGE 25 FOR GUIDANCE IN DETERMINING THE NUMBER OF STRUTS REQUIRED FOR A LOAD. REFER TO THE NOTE BENEATH THE CHART FOR GUIDANCE IN THE CONSTRUCTION OF THE GATE TO ACCOMMODATE THOSE STRUTS.
6. ALTHOUGH STRUTS ARE SHOWN FOR CENTER BLOCKING IN THE TYPICAL LOAD ON PAGE 16, IT MAY BE NECESSARY TO INSTALL SOLID FILL TYPE BLOCKING, DEPENDING UPON THE QUANTITY AND SIZE OF THE UNITS BEING LOADED. SEE THE LOAD ON PAGE 8 FOR A TYPICAL INSTALLATION.
7. A FULL LOAD QUANTITY MAY BE REDUCED BY A MULTIPLE OF TWO PALLET UNITS BY OMITTING ONE OR MORE LOAD UNITS FROM THE CENTER PORTION OF A LOAD. TO REDUCE A LOAD BY ONE PALLET UNIT, THE "OMITTED UNIT PROCEDURES" SHOWN ON PAGE 48 MUST BE APPLIED. IF IT IS NECESSARY TO SHIP A PALLET UNIT WHICH DOES NOT CONSIST OF A FULL NUMBER OF LAYERS OF BOXES, REFER TO THE "SHIPMENT OF PARTIAL UNIT" DETAIL ON PAGE 50 FOR GUIDANCE.

BILL OF MATERIAL ( TYPICAL )			
LUMBER	LINEAR FEET	METERS	BOARD FEET
1" X 4"	43	13.1	15
2" X 2"	116	35.3	39
2" X 3"	7	2.1	4
2" X 4"	56	17.0	38
2" X 6"	95	28.9	95
4" X 4"	17	5.2	23
NAILS	NO. REQD	POUNDS	KG
5d (2")	196	1-1/4	0.44
10d (3")	284	4-1/2	2.04
12d (3-1/4")	24	1/2	0.23
16d (3-1/2")	48	1-1/4	0.44
WIRE, NO. 14 GAGE ----- 60' REQD ----- 1LB (0.5 KG)			

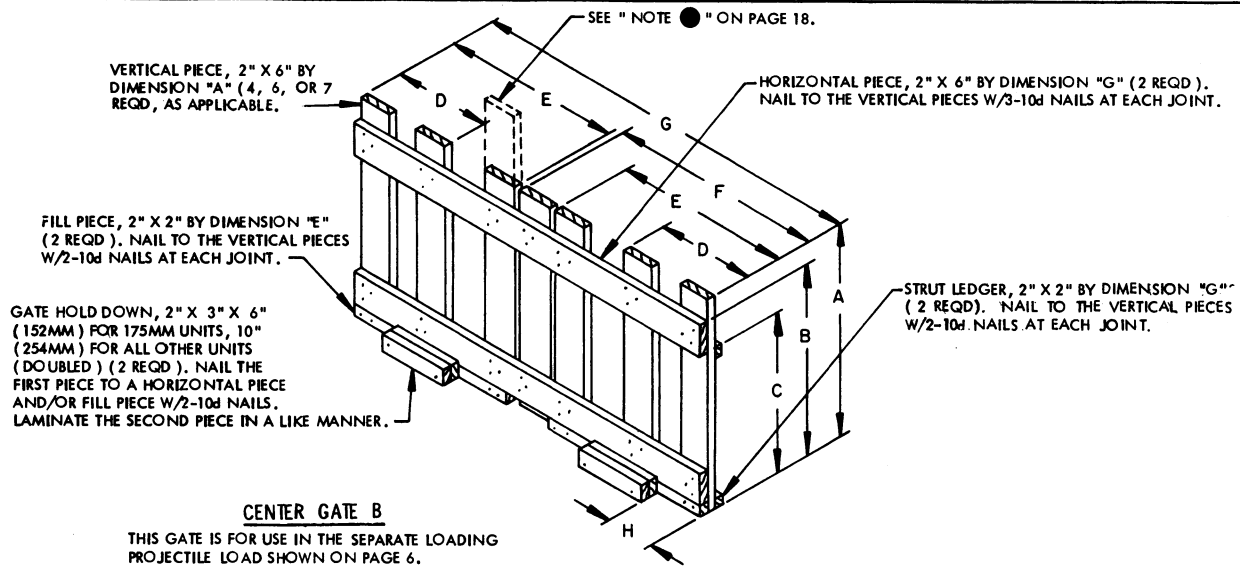
**LOAD AS SHOWN ( TYPICAL )**

ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	28 -----	72,520 LBS ( 32924 KG )
DUNNAGE -----	437 -----	LBS ( 198 KG )
TOTAL WEIGHT -----		72,957 LBS ( 33122 KG )

TYPICAL LOAD OF PALLETIZED BOXES  
POSITIONED WITH UNIT WIDTH ACROSS THE CAR WIDTH

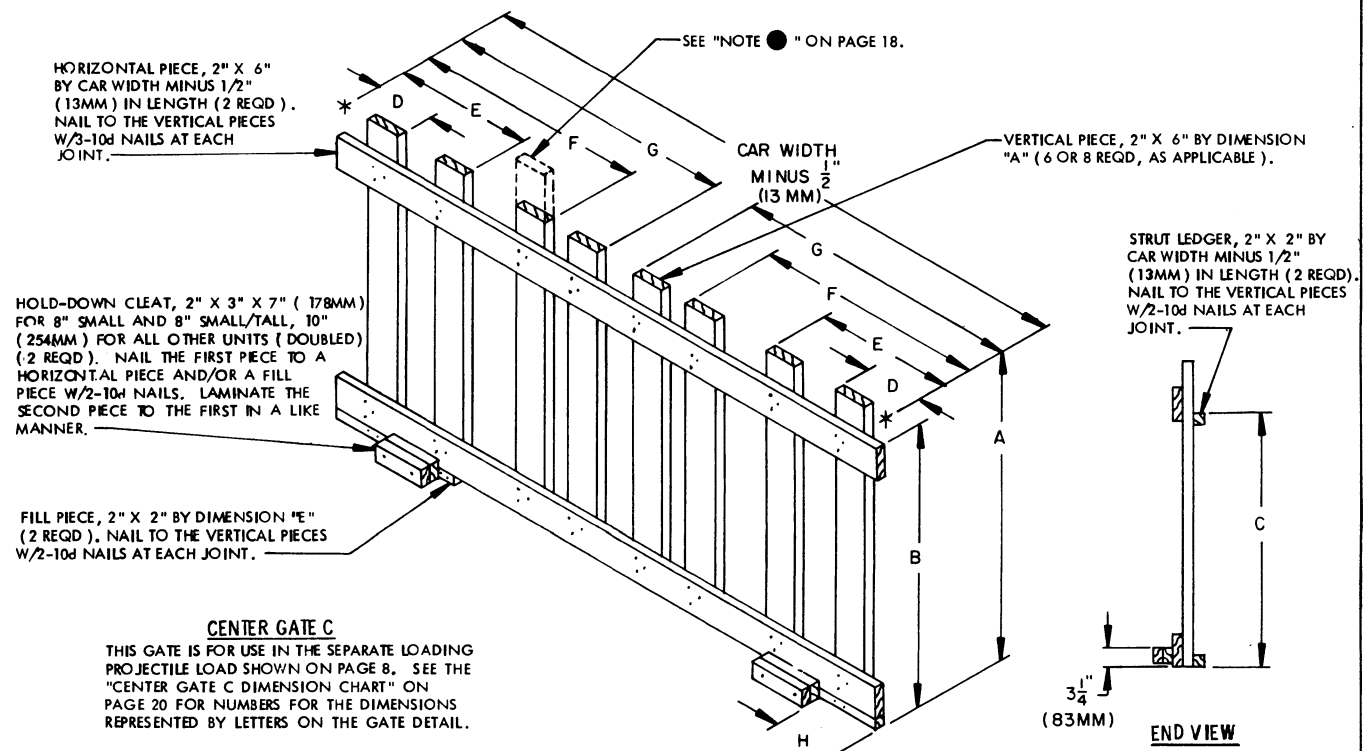


UNIT	UNIT DIM ACROSS CAR	NO. WIDE	DIMENSION						
			A	B	C	D	E	F	G
155MM SMALL	13-1/2" (343MM)	4	36" (914MM)	32" (813MM)	27-1/2" (699MM)	16" (406MM)	27" (686MM)	-----	8-1/2" (216MM)
	13-1/2" (343MM)	6	36" (914MM)	32" (813MM)	27-1/2" (699MM)	16" (406MM)	29-1/2" (749MM)	40-1/2" (1029MM)	8-1/2" (216MM)
	27" (686MM)	2	36" (914MM)	32" (813MM)	27-1/2" (699MM)	27" (686MM)	-----	-----	8-1/2" (216MM)
155MM LARGE	14-5/8" (371MM)	4	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	17" (432MM)	29" (737MM)	-----	9" (229MM)
	14-5/8" (371MM)	6	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	17" (432MM)	32" (813MM)	44" (1118MM)	9" (229MM)
	29-1/8" (740MM)	2	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	31-1/2" (800MM)	58" (1473MM)	-----	14-1/4" (362MM)
175MM	17" (432MM)	4	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	19-1/2" (495MM)	34" (864MM)	-----	12" (305MM)
	17" (432MM)	6	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	19-1/2" (495MM)	36-1/2" (927MM)	51" (1295MM)	12" (305MM)
	25-1/2" (648MM)	2	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	15-1/2" (394MM)	25-1/2" (648MM)	-----	9-1/2" (241MM)
	25-1/2" (648MM)	4	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	25-1/2" (648MM)	31" (787MM)	51" (1295MM)	9-1/2" (241MM)
8" SMALL	19-1/2" (495MM)	2	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	19-1/2" (495MM)	-----	-----	14" (356MM)
	19-1/2" (495MM)	4	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	19-1/2" (495MM)	25" (635MM)	39" (991MM)	14" (356MM)
	28-1/2" (724MM)	2	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	17" (432MM)	28-1/2" (724MM)	-----	19-3/4" (502MM)
8" SMALL/TALL	19-1/2" (495MM)	2	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	19-1/2" (495MM)	-----	-----	14" (356MM)
	19-1/2" (495MM)	4	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	19-1/2" (495MM)	25" (635MM)	39" (991MM)	14" (356MM)
	28-1/2" (724MM)	2	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	17" (432MM)	28-1/2" (724MM)	-----	19-3/4" (502MM)
8" LARGE (M509)	22-5/8" (574MM)	2	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	22-1/2" (572MM)	-----	-----	17" (432MM)
	22-5/8" (574MM)	4	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	22-1/2" (572MM)	28" (711MM)	45" (1143MM)	17" (432MM)
	31-3/4" (806MM)	2	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	18-1/2" (470MM)	31-3/4" (806MM)	-----	14-3/4" (375MM)
8" LARGE (M650)	22-5/8" (574MM)	2	49" (1245MM)	45" (1143MM)	40-1/2" (1029MM)	22-1/2" (572MM)	-----	-----	17" (432MM)
	22-5/8" (574MM)	4	49" (1245MM)	45" (1143MM)	40-1/2" (1029MM)	22-1/2" (572MM)	28" (711MM)	45" (1143MM)	17" (432MM)
	31-3/4" (806MM)	2	49" (1245MM)	45" (1143MM)	40-1/2" (1029MM)	18-1/2" (470MM)	31-3/4" (806MM)	-----	14-3/4" (375MM)



CENTER GATE B DIMENSION CHART

UNIT	UNIT DIM ACROSS CAR	NO. WIDE	DIMENSION							
			A	B	C	D	E	F	G	H
155MM SMALL	13-1/2" (343MM)	5	36" (914MM)	32" (813MM)	27-1/2" (699MM)	16-1/4" (413MM)	29-3/4" (756MM)	-----	67-1/2" (1715MM)	8-1/2" (216MM)
	27" (686MM)	3	36" (914MM)	32" (813MM)	27-1/2" (699MM)	16-1/4" (413MM)	29-3/4" (756MM)	-----	67-1/2" (1715MM)	8-1/2" (216MM)
155MM LARGE	14-5/8" (371MM)	3	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	17-1/4" (438MM)	-----	-----	44" (1117MM)	9" (229MM)
	14-5/8" (371MM)	5	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	17-1/4" (438MM)	32" (813MM)	-----	6'-1-1/4" (1861MM)	9" (229MM)
175MM	17" (432MM)	3	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	12-1/4" (311MM)	19-3/4" (502MM)	-----	51" (1295MM)	12" (305MM)
	17" (432MM)	5	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	19-3/4" (502MM)	36-3/4" (933MM)	45-1/4" (1149MM)	7'-1" (2159MM)	12" (305MM)
8" SMALL	25-1/2" (648MM)	3	45" (1143MM)	41" (1041MM)	36-1/2" (927MM)	15-1/2" (394MM)	28-1/4" (718MM)	41" (1041MM)	6'-4-1/2" (1937MM)	9-1/2" (241MM)
	19-1/2" (495MM)	3	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	12-1/2" (318MM)	22-1/4" (565MM)	-----	58-1/2" (1486MM)	14" (356MM)
8" SMALL/TALL	28-1/2" (724MM)	3	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	14-3/4" (375MM)	26-1/4" (667MM)	40-1/2" (1029MM)	50" (1270MM)	19-3/4" (502MM)
	19-1/2" (495MM)	3	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	12-1/2" (318MM)	22-1/4" (565MM)	-----	58-1/2" (1486MM)	14" (356MM)
	28-1/2" (724MM)	3	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	14-3/4" (375MM)	26-1/4" (667MM)	40-1/2" (1029MM)	50" (1270MM)	19-3/4" (502MM)

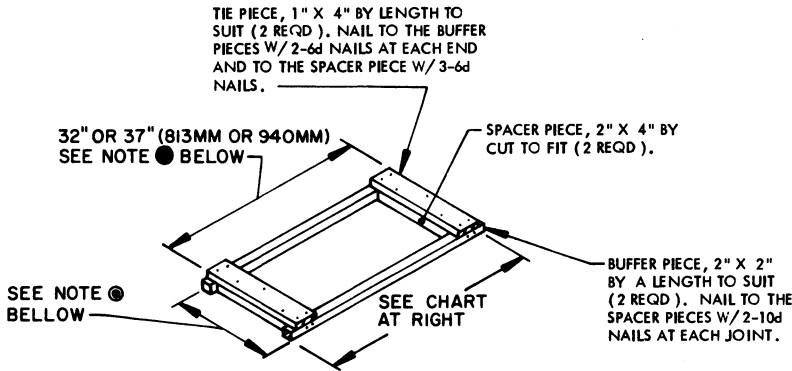


DETAILS

**GATE C DIMENSION CHART**

UNIT	UNIT DIM ACROSS CAR	NO. WIDE	DIMENSION							
			A	B	C	D	E	F	G	H
155MM SMALL	13-1/2" (343MM)	7	36" (914MM)	32" (813MM)	27-1/2" (699MM)	10-1/4" (260MM)	21" (533MM)	34-1/2" (876MM)	48" (1219MM)	5" (127MM)
155MM LARGE	14-5/8" (371MM)	7	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	6-1/2" (165MM)	18-1/2" (470MM)	33" (838MM)	47-3/4" (1213MM)	2" (51MM)
	29-1/8" (740MM)	3	44" (1118MM)	40" (1016MM)	35-1/2" (902MM)	13-3/4" (349MM)	25-1/2" (648MM)	40" (1016MM)	49-3/4" (1264MM)	14-1/4" (362MM)
8" SMALL	19-1/2" (495MM)	5	42" (1067MM)	38" (965MM)	33-1/2" (851MM)	8-3/4" (222MM)	25-1/2" (648MM)	42-1/4" (1073MM)	47-3/4" (1213MM)	3-1/2" (89MM)
8" LARGE, M509	21-1/2" (546MM)	3	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	9-3/4" (248MM)	23" (584MM)	38-3/4" (984MM)	49-1/4" (1251MM)	14-3/4" (375MM)
8" LARGE, M560	31-3/4" (806MM)	3	49" (1245MM)	45" (1143MM)	40-1/2" (1029MM)	9-3/4" (248MM)	23" (584MM)	38-3/4" (984MM)	49-1/4" (1251MM)	14-3/4" (375MM)
8" SMALL/TALL	19-1/2" (495MM)	5	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	8-3/4" (222MM)	25-1/2" (648MM)	42-1/4" (1073MM)	47-3/4" (1213MM)	3-1/2" (89MM)
8" LARGE, M509	22-5/8" (574MM)	3	52" (1583MM)	47-1/2" (1207MM)	43" (1092MM)	14" (356MM)	25-1/2" (648MM)	-----	68" (1727MM)	17" (432MM)
8" LARGE M560	22-5/8" (574MM)	3	49" (1245MM)	45" (1143MM)	40-1/2" (1029MM)	14" (356MM)	25-1/2" (648MM)	-----	68" (1727MM)	17" (432MM)

\* USE VERTICAL PLACEMENT DIMENSIONS "D" AND "F" ONLY FOR FULL LOADS OF 17-LONG 155MM AND 11-LONG 8" UNITS WHICH REQUIRE THE USE OF SOLID FILL BLOCKING.



**ANTI - SWAY BRACE A**

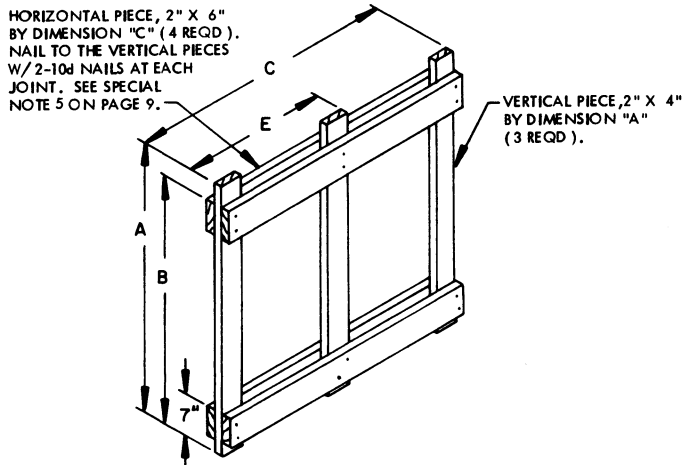
NOTE : THE 32" (813MM) DIMENSION IS APPLICABLE FOR THE 35" X 45-1/2" (889MM X 1156MM) PALLET AND THE 37" (940MM) DIMENSION IS APPLICABLE FOR THE 40" X 48" (1016MM X 1219MM) PALLET.

NOTE : FABRICATE WIDTH OF ASSEMBLY TO FIT BETWEEN THE POSTS OF LATERALLY ADJACENT PALLET UNITS MINUS 1/2" (13MM).

ANTI-SWAY BRACE DIMENSION			
PALLET UNIT	BRACE LENGTH	PALLET UNIT	BRACE LENGTH
M14 ALT	38" (965MM)	PA91	36-1/2" (927MM)
FLAT	40-1/4" (1022MM)	PA92	36-1/2" (927MM)
RTD	40-1/4" (1022MM)	PA94	35-1/4" (895MM)
M16 ALT	43" (1092MM)	PA95	38-1/2" (978MM)
RTD	44" (1118MM)	PA96	36" (914MM)
M37 ALT	35-1/2" (902MM)	PA97	41-1/2" (1054MM)
PA66ALT	37-1/2" (953MM)	PA99	34-3/4" (883MM)
PA68ALT	38-1/2" (978MM)	PA100	35-3/4" (908MM)
FLAT	40-3/4" (1035MM)	PA103	38-1/2" (978MM)
RTD	40-3/4" (1035MM)	PA107	35-3/4" (908MM)
PA75ALT	35-3/4" (908MM)	BOXES	UNIT LENGTH MINUS 1/4" (6.35MM)
FLAT	35-3/4" (908MM)		
RTD	35-3/4" (908MM)		

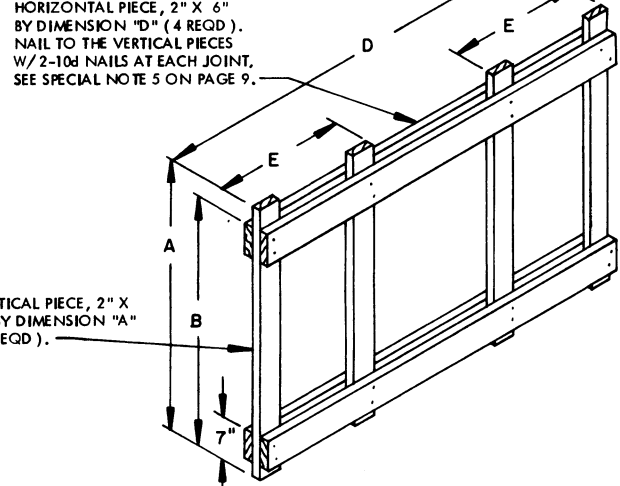
CRIB FILL A AND CRIB FILL B						
UNIT	DIM ACROSS CAR	DIMENSIONS				
		A	B	C	D	E
155MM SMALL	13-1/2" (343MM)	32" (813MM)	30" (762MM)	53-3/4" (1365MM)	6'-8-3/4" (2051MM)	28-3/4" (730MM)
155MM LARGE	14-5/8" (371MM)	41" (1041MM)	38" (965MM)	58" (1473MM)	7'-3" (2210MM)	30-3/4" (781MM)
	29-1/8" (740MM)	41" (1041MM)	38" (965MM)	29" (737MM)	43-3/4" (1111MM)	22-3/4" (579MM)
8" SMALL	19-1/2" (495MM)	38" (965MM)	36" (914MM)	56-3/4" (1441MM)	7'-1-1/4" (2165MM)	30-1/4" (768MM)
8" SMALL/TALL	19-1/2" (495MM)	48" (1219MM)	45-1/2" (1156MM)	56-3/4" (1441MM)	7'-1-1/4" (2165MM)	30-1/4" (768MM)
8" LARGE, M509	31-3/4" (806MM)	48" (1219MM)	45-1/2" (1156MM)	45" (1143MM)	67-3/4" (1721MM)	35-1/2" (902MM)
8" LARGE, M560	31-3/4" (806MM)	46" (1168MM)	43" (1092MM)	45" (1143MM)	67-3/4" (1721MM)	35-1/2" (902MM)

\* CRIB FILL NOT REQUIRED FOR A 7-WIDE LOAD IN AN 8'-9" WIDE CAR.  
 ● USE 2" X 4" VERTICAL PIECES POSITIONED ON EDGE.



**CRIB FILL A**

THIS CRIB FILL IS FOR USE IN THE LOAD ON PAGE 8. IT IS FOR TWO (2) UNITS LONG IN THE LENGTH OF THE CAR FOR ALL ITEMS.



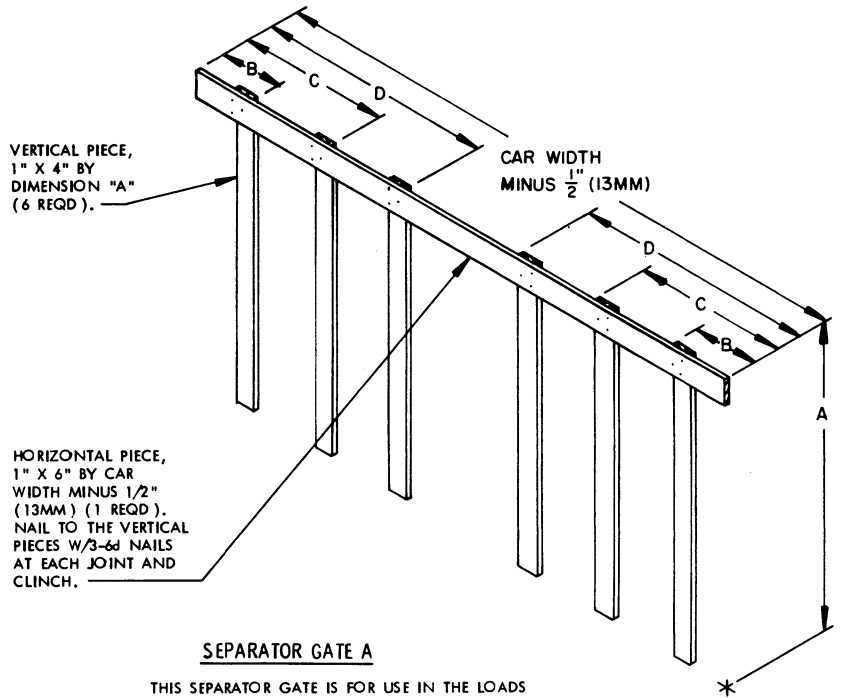
**CRIB FILL B**

THIS CRIB FILL IS FOR USE IN THE LOAD ON PAGE 8. IT IS FOR THREE (3) UNITS LONG IN THE LENGTH OF THE CAR FOR ALL ITEMS.

**SEPARATOR GATE A DIMENSION CHART**

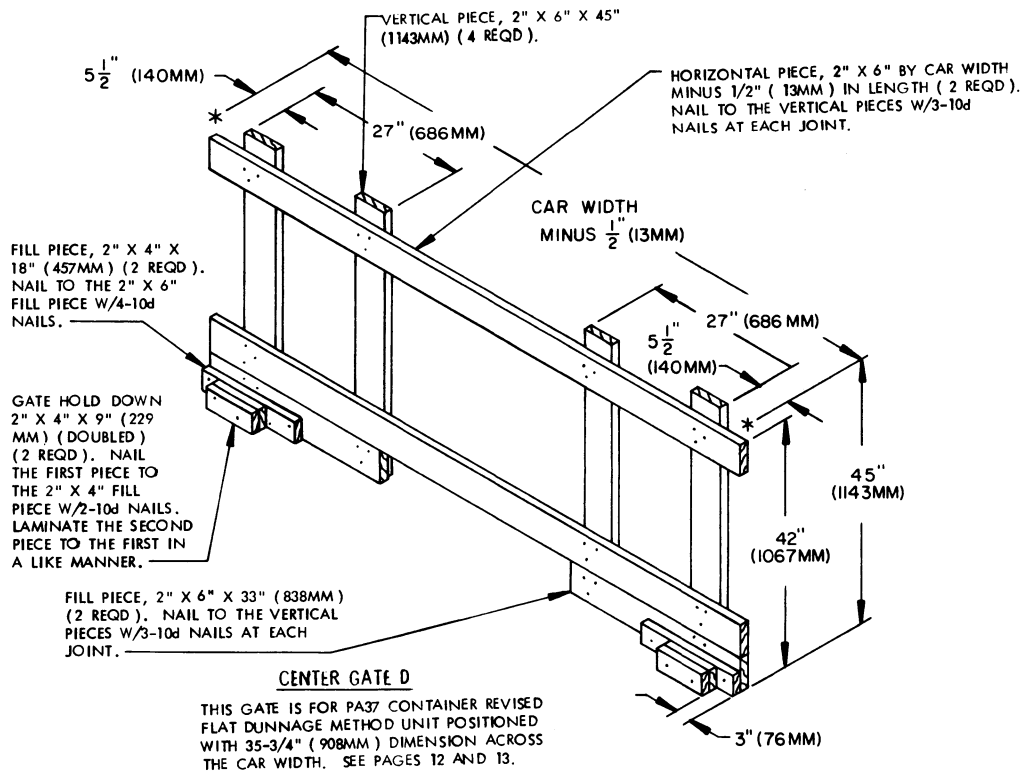
PALLET UNIT	DIMENSION			
	A	B	C	D
M13 FLAT	49" (1245MM)	10-1/2" (267MM)	22-1/2" (572MM)	34-1/2" (876MM)
M13 RTD	48" (1219MM)	10-1/2" (267MM)	21-1/2" (546MM)	33-3/4" (857MM)
M16 ALT	39" (1003MM)	11-1/2" (292MM)	26-1/4" (667MM)	41-3/4" (1060MM)
M18 FLAT	52" (1321MM)	10-3/4" (273MM)	23-1/2" (597MM)	36-1/2" (927MM)
M18 RTD	51" (1295MM)	10" (254MM)	22-1/2" (572MM)	35-1/2" (902MM)
PA66 ALT	39" (1003MM)	12" (305MM)	31" (787MM)	50-1/2" (1283MM)
PA68 ALT	40" (1016MM)	10-1/2" (267MM)	26" (660MM)	41-1/4" (1048MM)
PA75 ALT	45" (1143MM)	10-1/4" (260MM)	24-1/2" (622MM)	38-3/4" (984MM)
PA75 FLAT	49" (1245MM)	10-1/4" (260MM)	26" (660MM)	42" (1067MM)
PA75 RTD	49" (1245MM)	9-1/4" (235MM)	25" (635MM)	40-1/2" (1029MM)
PA91	54" (1372MM)	10-1/4" (260MM)	25-1/2" (648MM)	40-1/2" (1029MM)
PA92	56" (1422MM)	12" (305MM)	30-1/2" (775MM)	47-1/2" (1207MM)
PA95	56" (1422MM)	10-1/4" (260MM)	21" (533MM)	32" (813MM)
PA97	56" (1422MM)	11" (279MM)	22-1/2" (572MM)	34-1/4" (870MM)
PA103	39" (1003MM)	10-1/2" (267MM)	25-1/2" (648MM)	40-3/4" (1035MM)
PA106	52" (1321MM)	11-1/2" (292MM)	22" (559MM)	33" (838MM)
PA107	52" (1321MM)	10" (254MM)	24-1/2" (622MM)	39-1/4" (997MM)

SEE SPECIAL NOTE 10 ON PAGE 10.



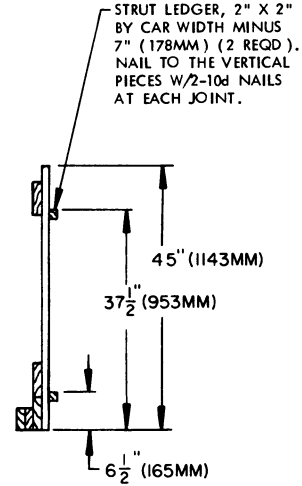
**SEPARATOR GATE A**

THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 10 AND 12 FOR THE PALLET UNITS LISTED AT LEFT.



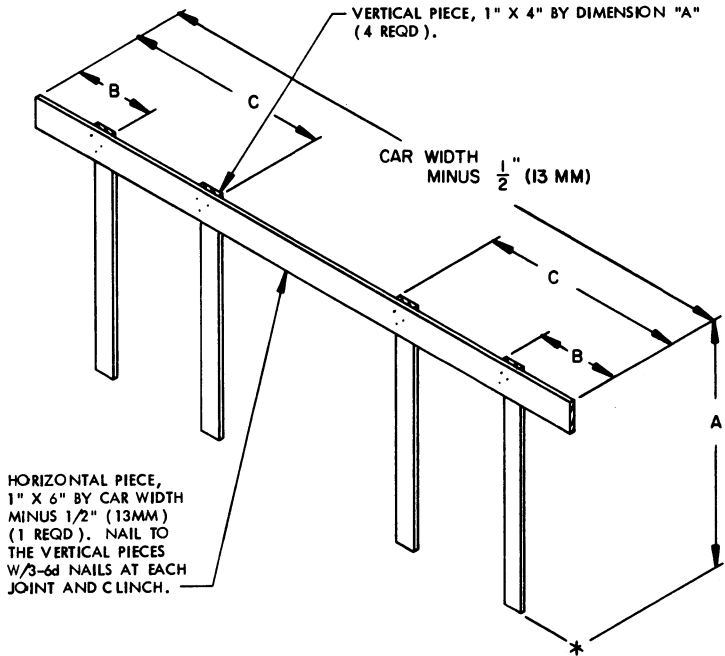
**CENTER GATE D**

THIS GATE IS FOR PA37 CONTAINER REVISED FLAT DUNNAGE METHOD UNIT POSITIONED WITH 35-3/4" (908MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



**END VIEW**

**DETAILS**



PALLET UNIT	DIMENSION		
	A	B	C
M10 ALT	38" (965MM)	12" (305MM)	31-1/2" (800MM)
M10 FLAT	51" (1295MM)	12-1/2" (318MM)	33-1/2" (851MM)
M10 RTD	51" (1295MM)	12-1/4" (311MM)	33-1/4" (845MM)
M19 FLAT	49" (1245MM)	12" (305MM)	31-3/4" (806MM)
M19 RTD	49" (1245MM)	11-1/2" (292MM)	31-1/2" (800MM)
M460 ALT	46" (1168MM)	12" (305MM)	31-1/2" (800MM)
M460 FLAT	49" (1245MM)	12" (305MM)	31-3/4" (806MM)
M460 RTD	49" (1245MM)	11-1/2" (292MM)	31-1/2" (800MM)
M460 PROT	49" (1245MM)	11-1/2" (292MM)	31-1/2" (800MM)
PA93	54-1/2" (1384MM)	12-1/2" (318MM)	30-1/2" (775MM)

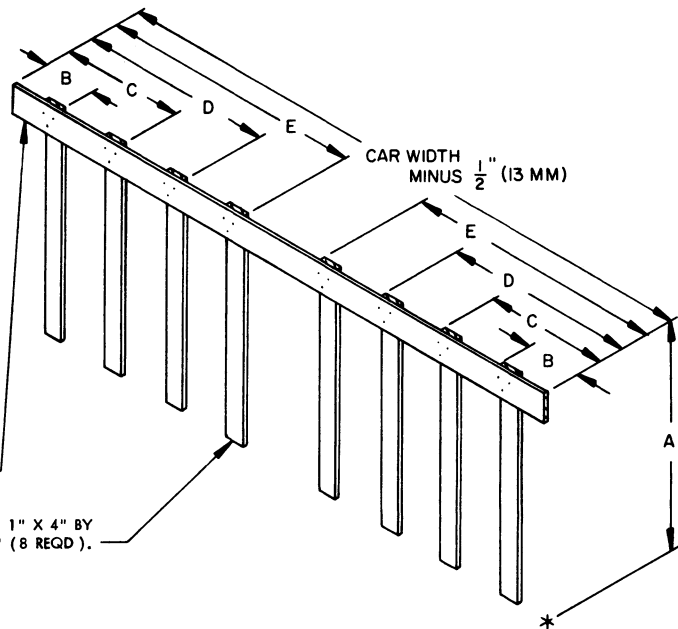
**SEPARATOR GATE B**

THIS SEPARATOR GATE IS FOR USE IN THE LOADS SHOWN ON PAGES 10 AND 12 FOR THE PALLET UNITS LISTED AT RIGHT.

PALLET UNIT	DIMENSION				
	A	B	C	D	E
M14 ALT	39" (991MM)	8-1/2" (216MM)	20-1/ (521MM)	32-1/2" (826MM)	44-1/2" (1130MM)
PA94	53" (1346MM)	9-1/2" (241MM)	22" (559MM)	34-1/2" (876MM)	45-1/2" (1156MM)

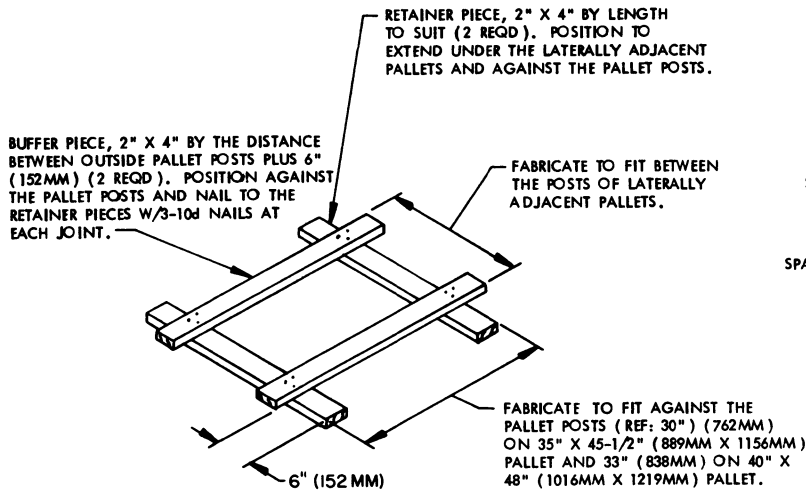
HORIZONTAL PIECE, 1" X 6" BY CAR WIDTH MINUS 1/2" (13MM) (1 REQD). NAIL TO THE VERTICAL PIECES W/3-6d NAILS AT EACH JOINT AND CLINCH.

VERTICAL PIECE, 1" X 4" BY DIMENSION "A" (8 REQD).



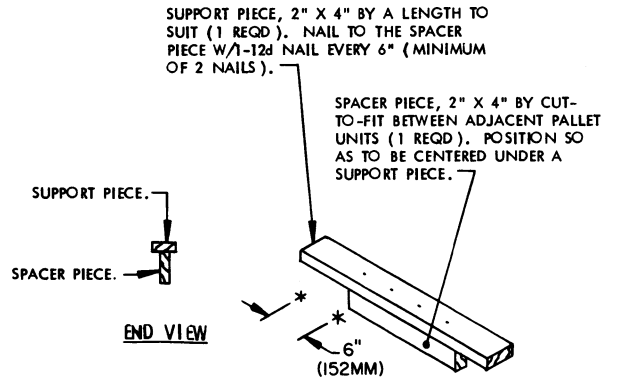
**SEPARATOR GATE C**

THIS SEPARATOR GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 10 FOR THE M14 ALTERNATED CONTAINERS UNIT AND THE PA94 CONTAINER PALLET UNIT.



**ANTI-SWAY BRACE B**

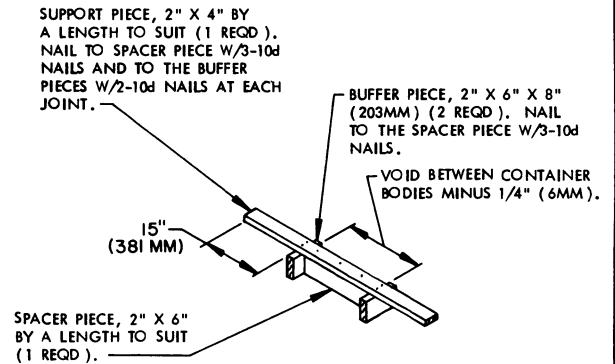
FOR USE WITH 35" X 45-1/2" (889MM X 1156MM) OR 40" X 48" (1016MM X 1219MM) PALLETS. NOTE THAT IF THE OVERHANG OF THE ITEMS ON A PALLET PREVENT OR MAKE IT DIFFICULT TO NAIL THE LAST BUFFER PIECE TO BE APPLIED, 2" X 6" MATERIAL MAY BE USED TO FACILITATE NAILING.



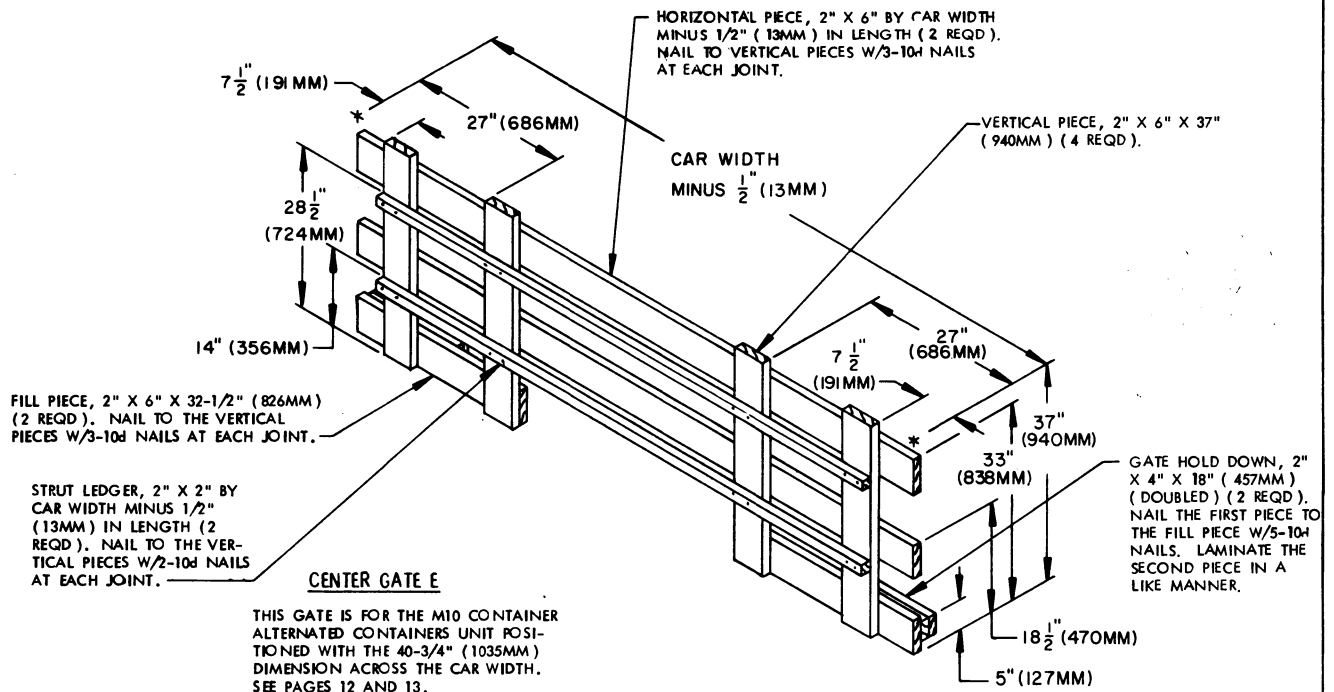
**TOP-OF-LOAD ANTI-SWAY BRACE B**

THIS ASSEMBLY IS DESIGNED FOR USE BETWEEN THE TOPS OF LATERALLY ADJACENT PALLET UNITS IN EACH END OF A CAR. THE ASSEMBLY WILL BE WIRE TIED TO THE UNITIZING STRAPS TO PREVENT DISPLACEMENT.

TOP-OF-LOAD ANTI-SWAY BRACES	
UNIT SIZE	NO. BRACES REQUIRED
35" TO 44"	4
OVER 44" TO 58"	3



**TOP-OF-LOAD ANTI-SWAY BRACE A**



HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (13MM) IN LENGTH (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" BY UNIT HEIGHT PLUS 4" (102MM) (6 REQD).

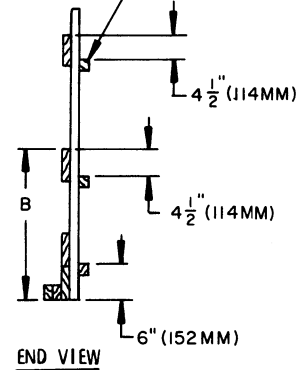
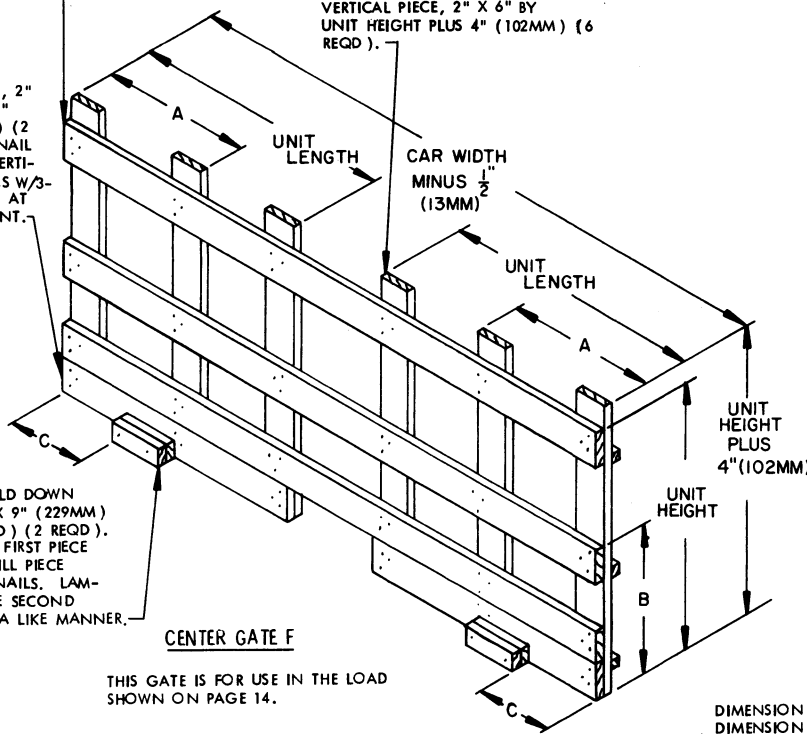
FILL PIECE, 2" X 6" X 44" (1118MM) (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 1/2" (13MM) (3 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

GATE HOLD DOWN 2" X 3" X 9" (229MM) (DOUBLED) (2 REQD). NAIL THE FIRST PIECE TO THE FILL PIECE W/2-10d NAILS. LAMINATE THE SECOND PIECE IN A LIKE MANNER.

CENTER GATE F

THIS GATE IS FOR USE IN THE LOAD SHOWN ON PAGE 14.



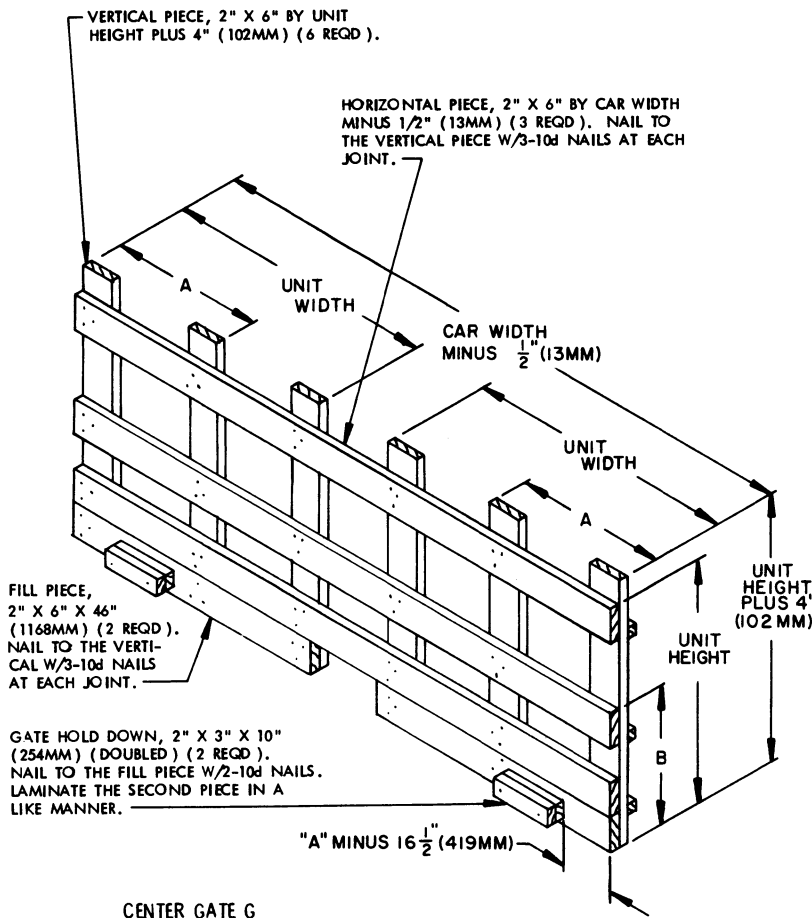
DIMENSION "A" EQUALS ONE-HALF UNIT LENGTH PLUS 2-3/4" (70MM). DIMENSION "B" EQUALS ONE-HALF UNIT HEIGHT PLUS 2-3/4" (70MM). DIMENSION "C" EQUALS DIMENSION "A" MINUS 12" (305MM) FOR 35" (889MM) LONG PALLETS OR DIMENSION "A" MINUS 13-3/4" (349MM) FOR 40" (1016MM) LONG PALLETS.

NO. OF STRUTS PER ROW/MAX WEIGHT PER UNIT		
NO. STRUTS PER ROW	NO. UNITS LONG IN LONG END	
	5	4
4	2,450 LBS	3,060 LBS
6	3,675 LBS	OVER 3,060 LBS
9	OVER 3,675 LBS	----

NOTE:

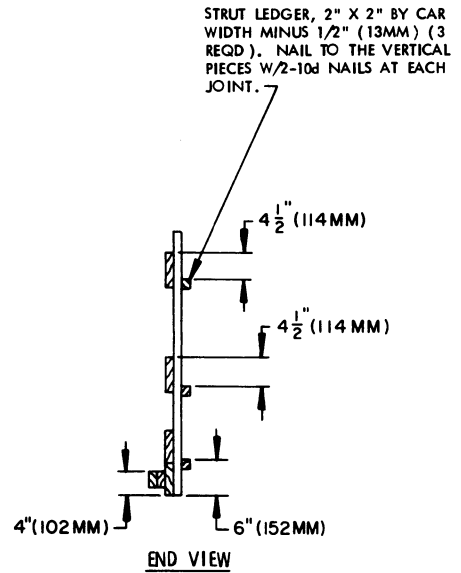
FOR A ROW REQUIRING 4 STRUTS, USE ONLY THE 4 VERTICAL PIECES AT THE ENDS OF THE UNIT AND ONLY THE UPPER AND LOWER CAR WIDTH HORIZONTAL PIECES. FOR A GATE FOR 6 STRUTS, ADD VERTICAL PIECES AT DIMENSION "A" AND USE ONLY THE UPPER AND LOWER HORIZONTAL PIECES. FOR A GATE FOR 9 STRUTS, ADD VERTICAL PIECES AT DIMENSION "A" AND A HORIZONTAL PIECE AT DIMENSION "B". STRUT LEDGERS ARE REQUIRED ONLY OPPOSITE THE HORIZONTAL PIECES BEING USED; 2 ARE REQUIRED FOR 4 OR 6 STRUTS AND 3 FOR 9 STRUTS.





**CENTER GATE G**

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

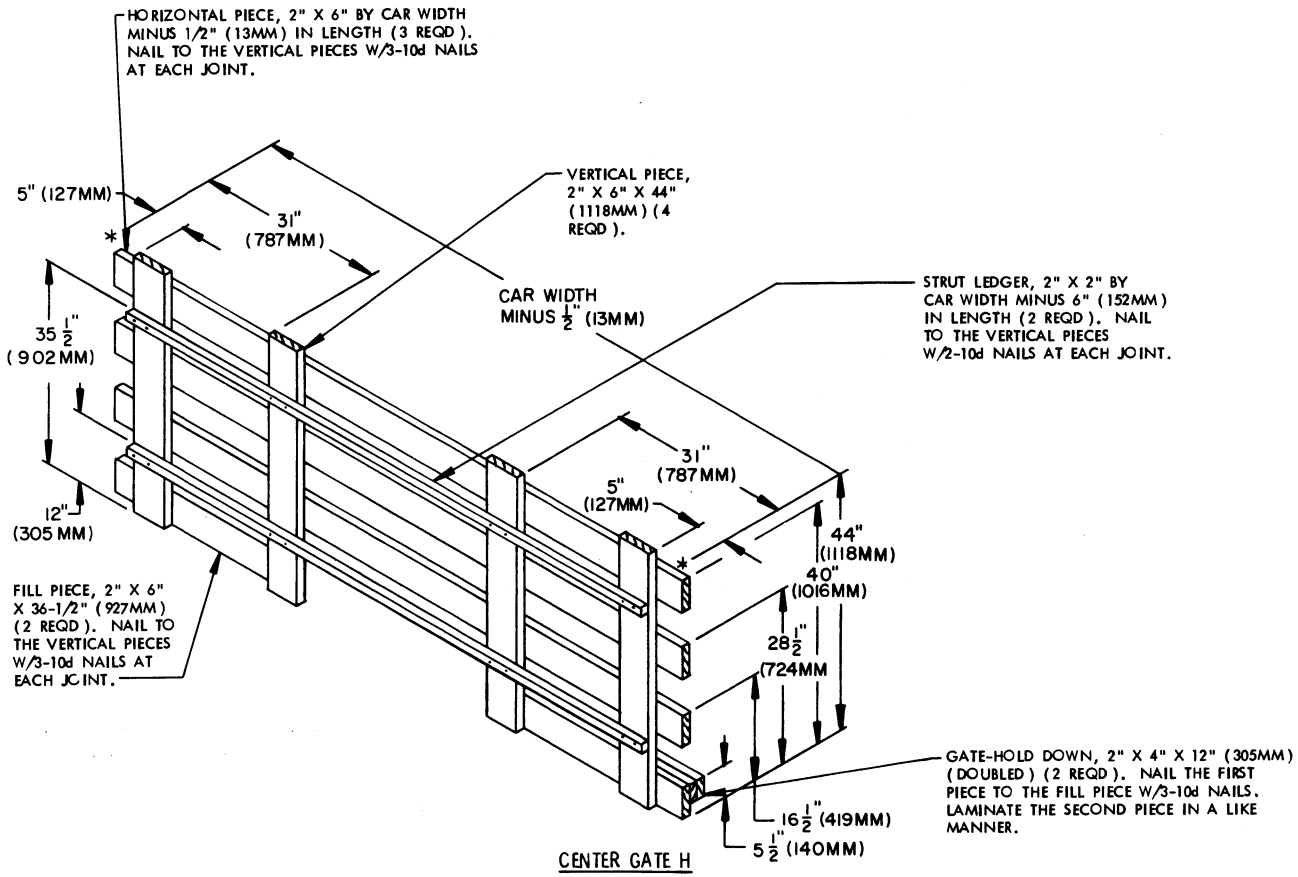


DIMENSION "A" EQUALS ONE-HALF UNIT WIDTH PLUS 2-3/4" (70MM)  
 DIMENSION "B" EQUALS ONE-HALF UNIT HEIGHT PLUS 2-3/4" (70MM)

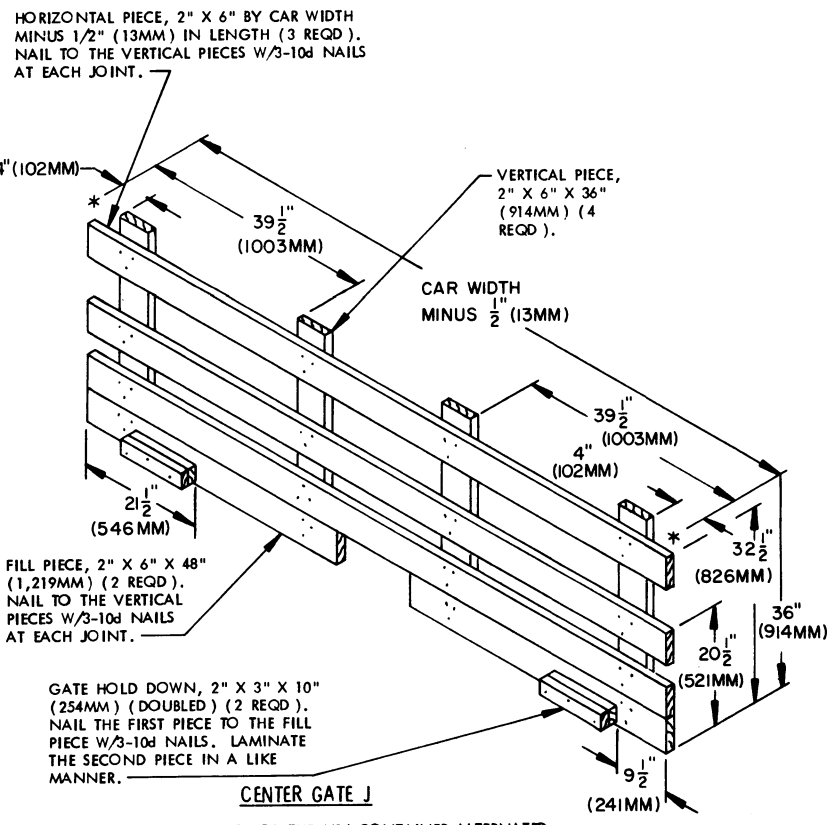
NO. STRUTS PER ROW/MAX WEIGHT PER UNIT			
NO. STRUTS PER ROW	NO. UNITS LONG IN LONG END		
	7	6	5
4	1,750 LBS	2,040 LBS	2,450 LBS
6	2,625 LBS	3,060 LBS	3,675 LBS
9	OVER 2,625 LBS	OVER 3,060 LBS	OVER 3,675 LBS

**NOTE :**

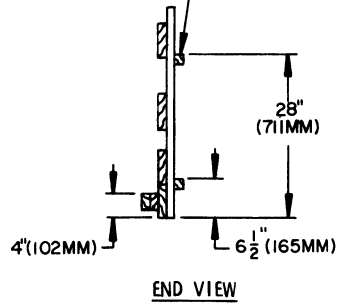
FOR A ROW REQUIRING 4 STRUTS, USE ONLY THE 4 VERTICAL PIECES AT THE ENDS OF THE UNIT AND ONLY THE UPPER AND LOWER CAR WIDTH HORIZONTAL PIECES. FOR A GATE FOR 6 STRUTS, ADD VERTICAL PIECES AT DIMENSION "A" AND USE ONLY UPPER AND LOWER HORIZONTAL PIECES. FOR A GATE FOR 9 STRUTS, ADD VERTICAL PIECES AT DIMENSION "A" AND HORIZONTAL PIECE AT DIMENSION "B". STRUT LEDGERS ARE REQUIRED ONLY OPPOSITE THE HORIZONTAL PIECES BEING USED; 2 ARE REQUIRED FOR 4 OR 6 STRUTS AND 3 FOR 9 STRUTS.



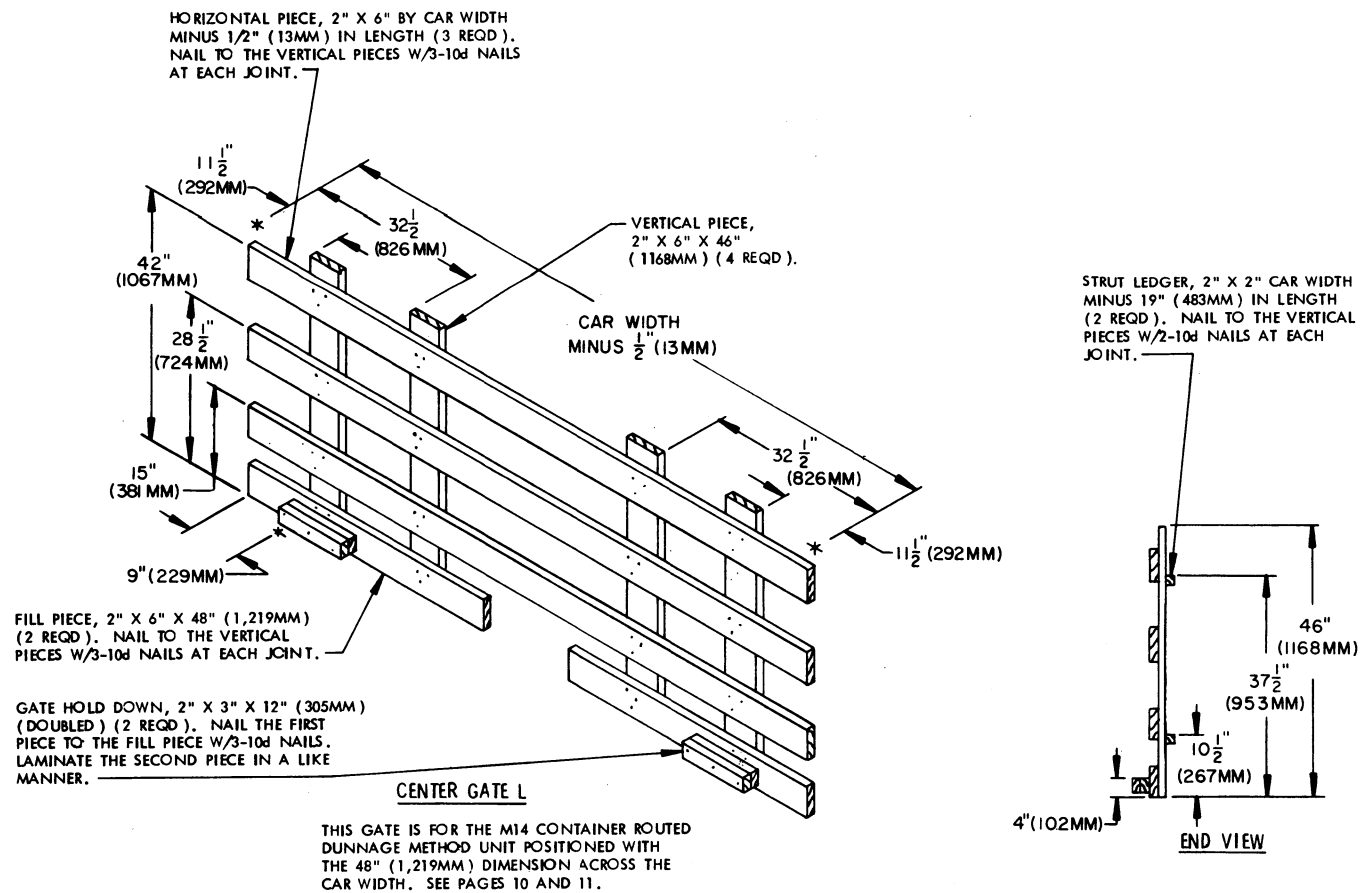
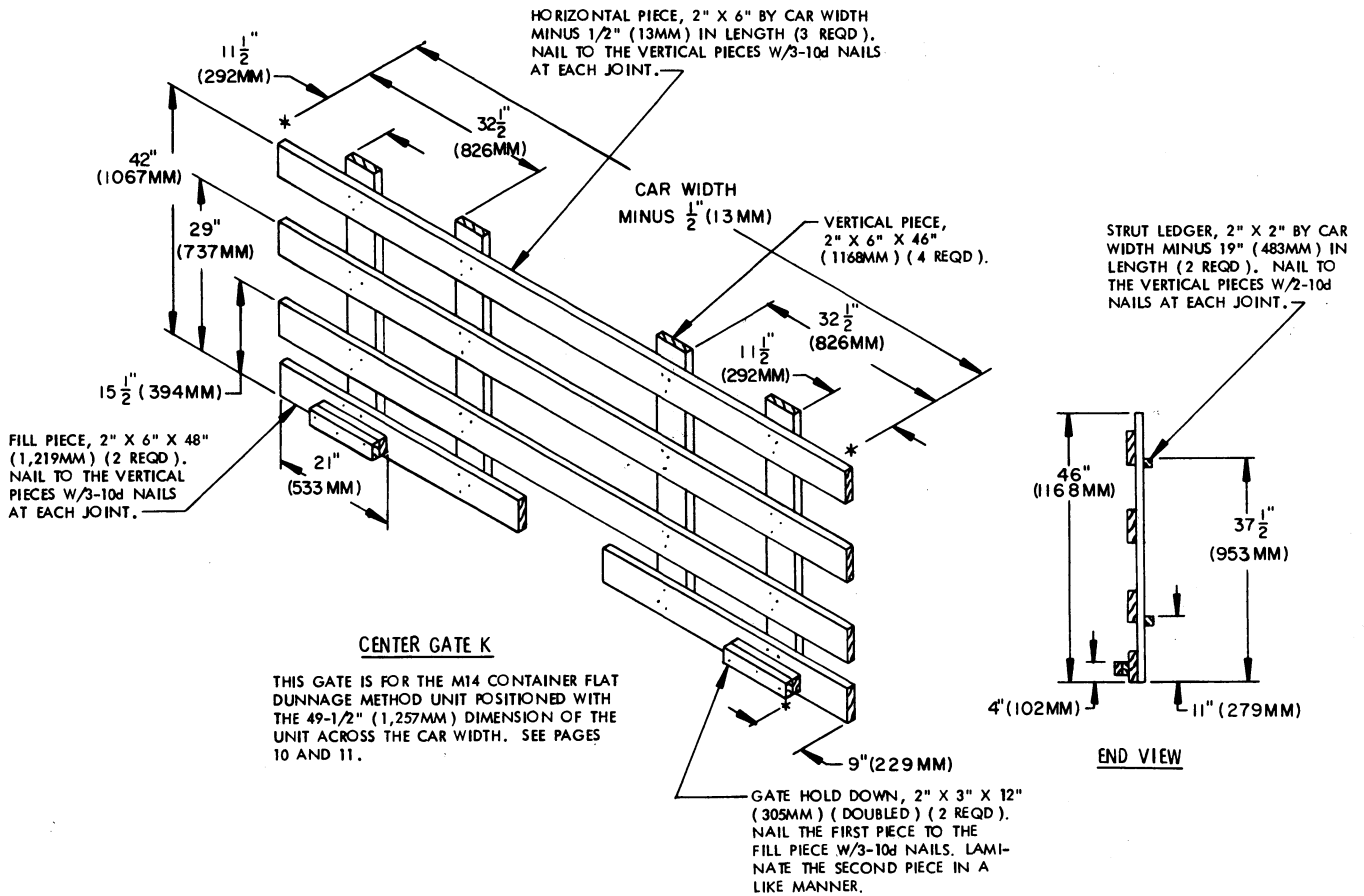
THIS GATE IS FOR THE M13 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 41-1/2" (1,054MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.

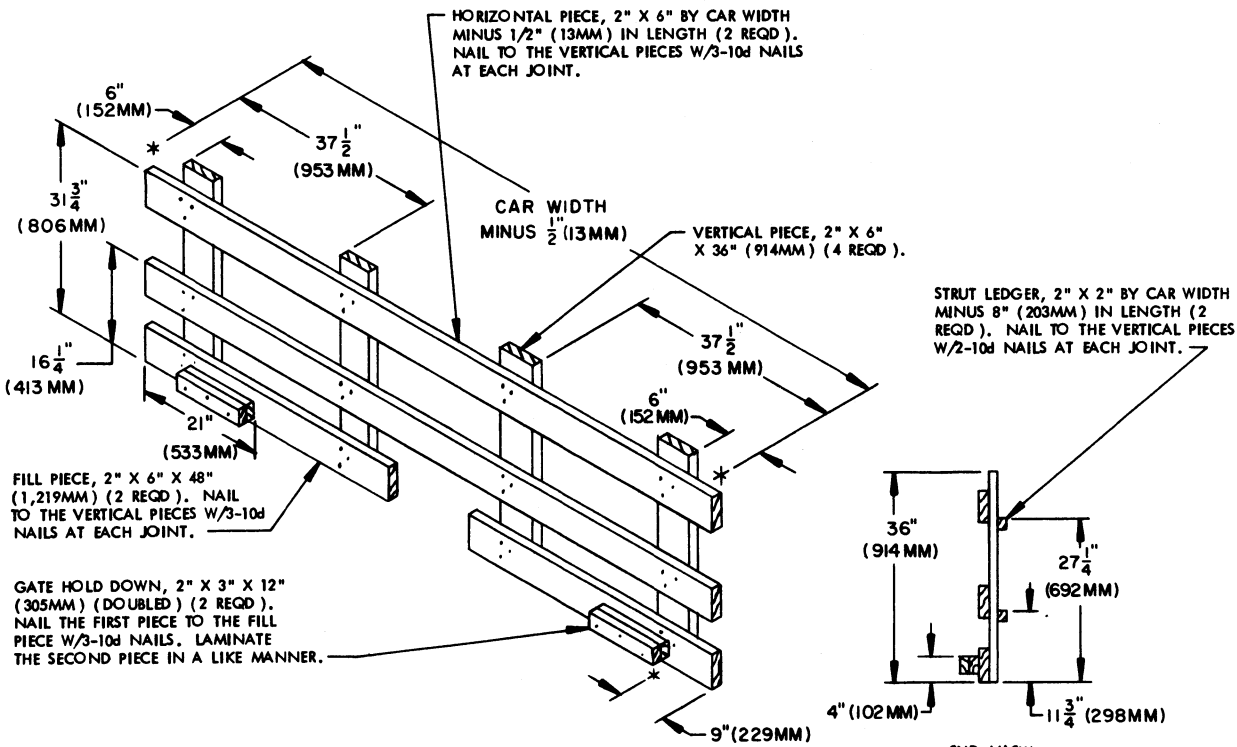


THIS GATE IS FOR THE M14 CONTAINER ALTERNATED CONTAINERS UNIT POSITIONED WITH THE 49-1/2" (1,257MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



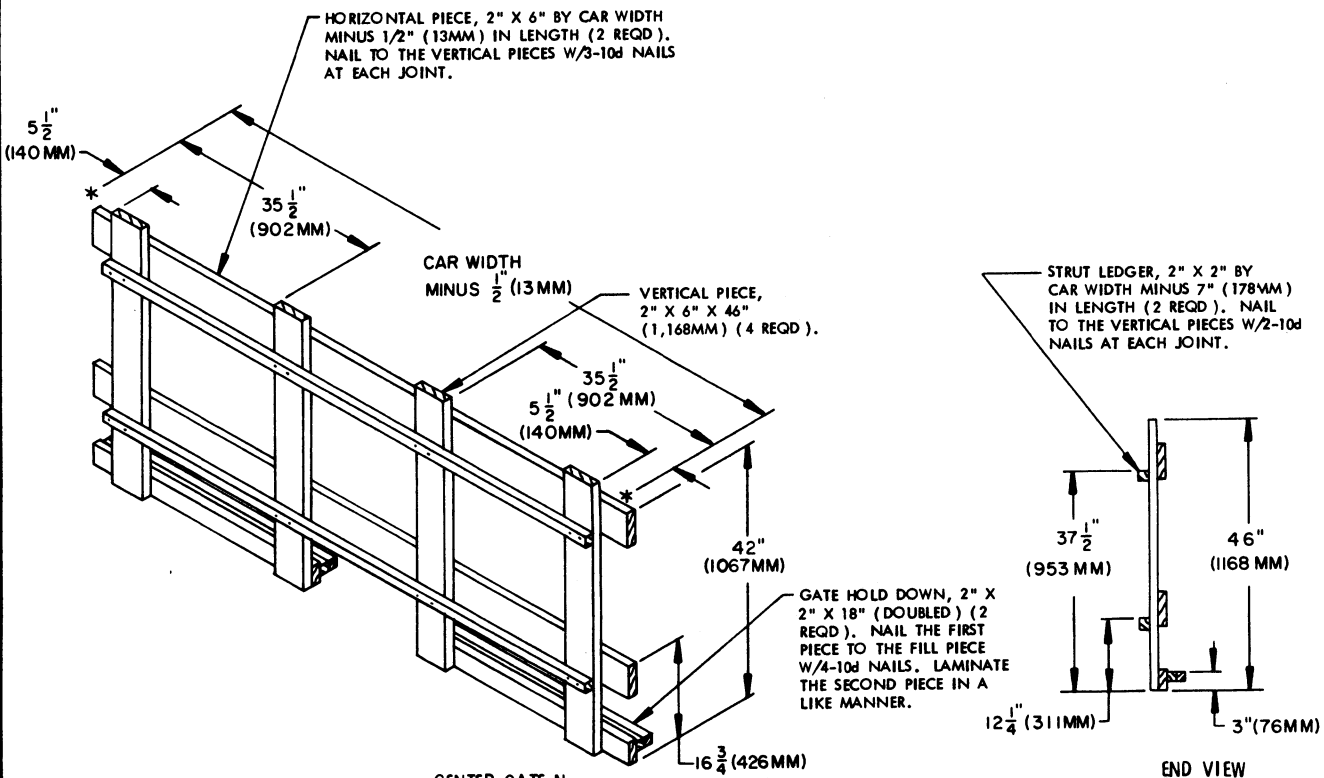
**DETAILS**





**CENTER GATE M**

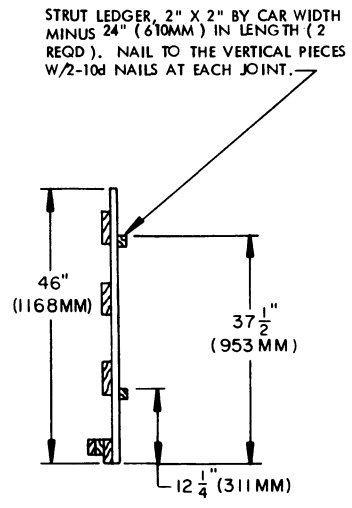
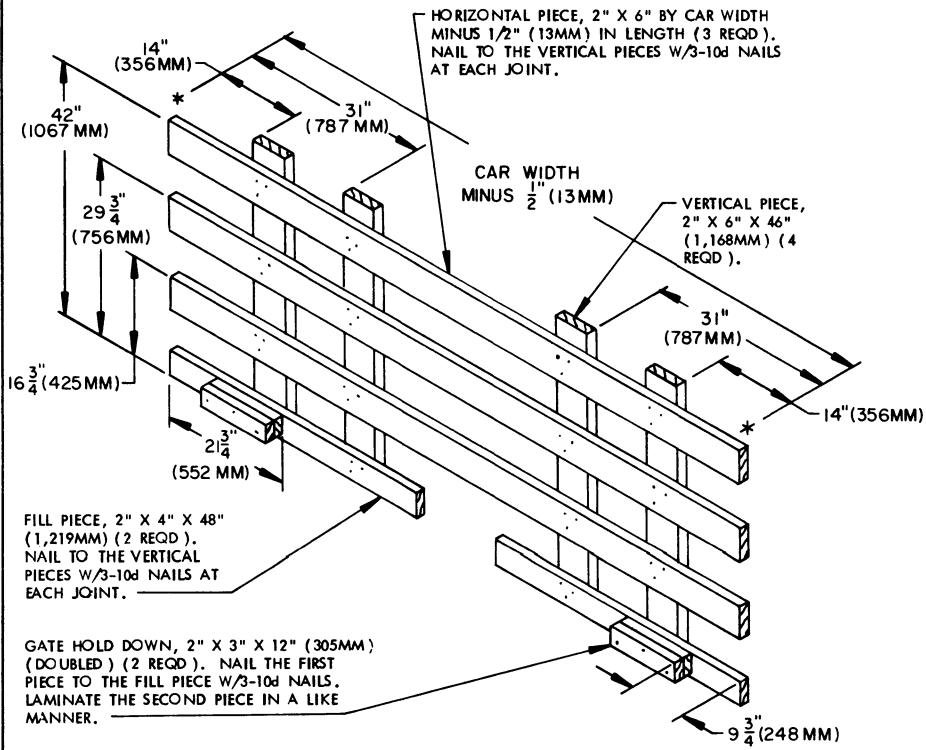
THIS GATE IS FOR THE M16 CONTAINER ALTERNATED CONTAINERS UNIT POSITIONED WITH THE 49" (1,245MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



**CENTER GATE N**

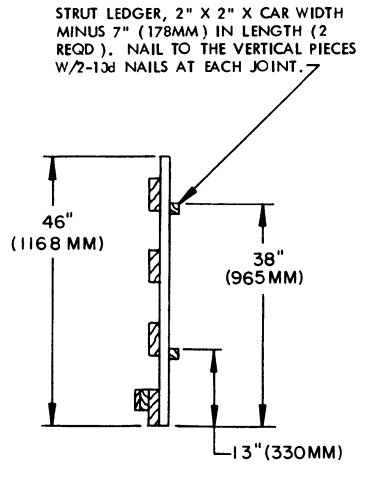
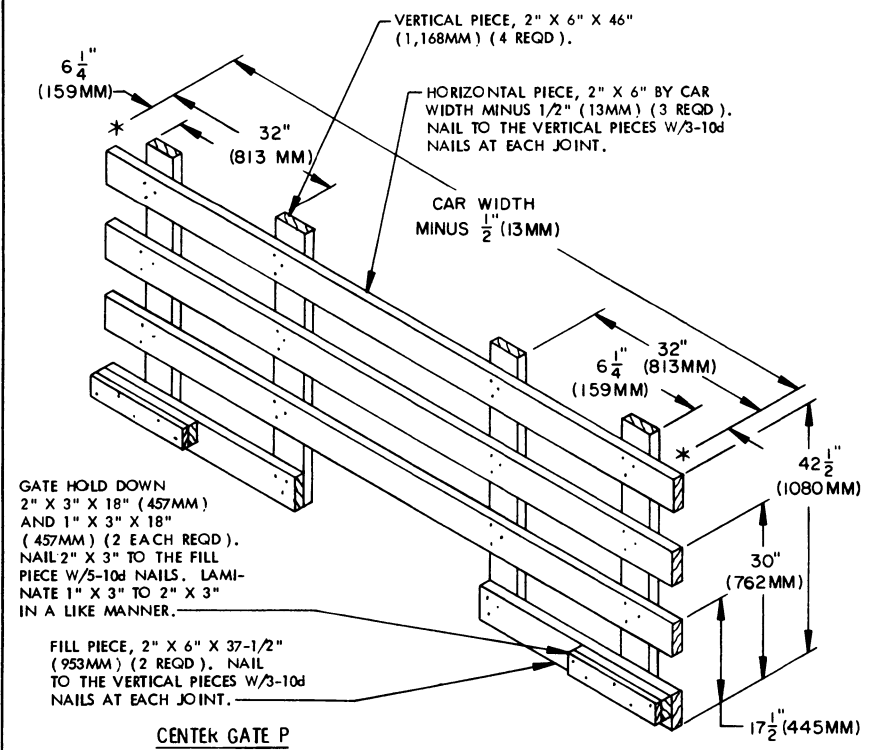
THIS GATE IS FOR THE M16 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 44-1/8" (1,121MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.

**DETAILS**



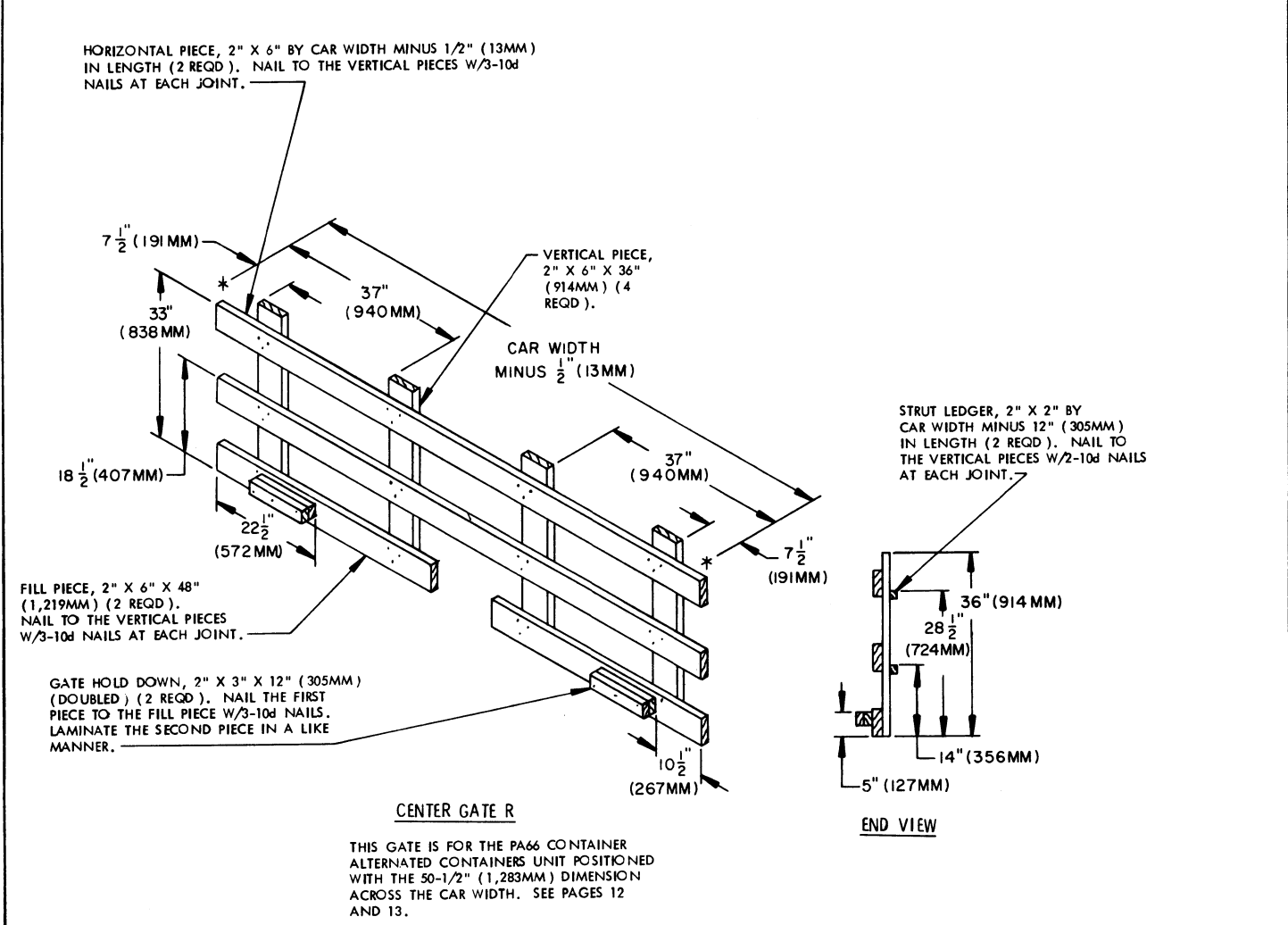
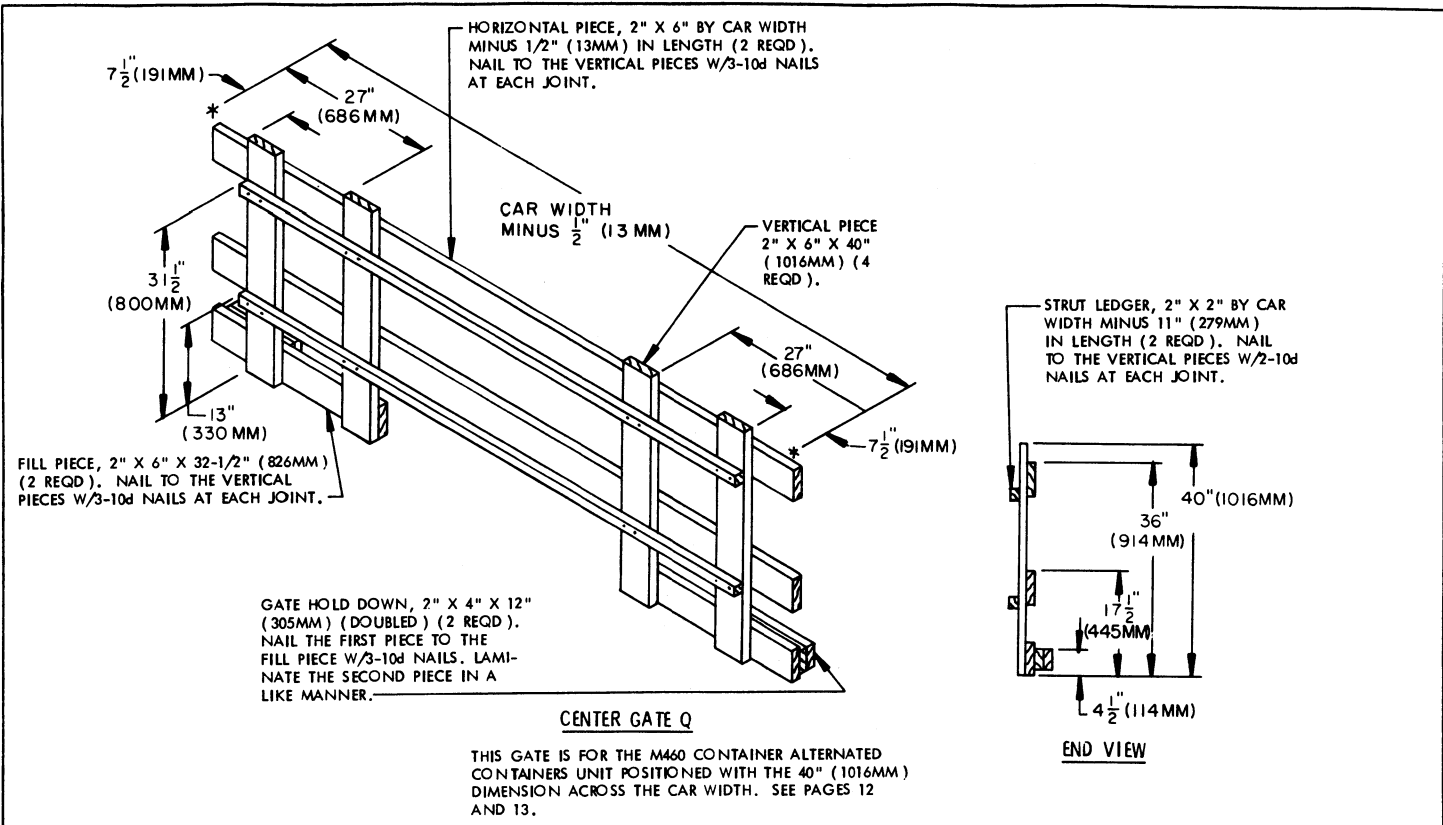
**CENTER GATE O**

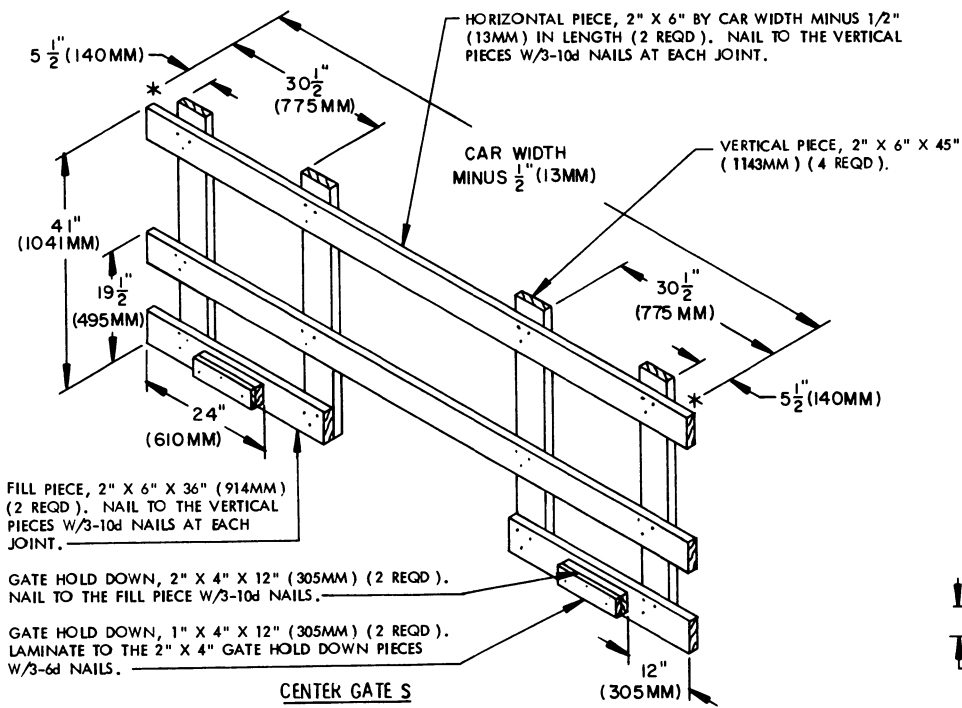
THIS GATE IS FOR THE M16 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 51-1/2" (1,283MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



**CENTEK GATE P**

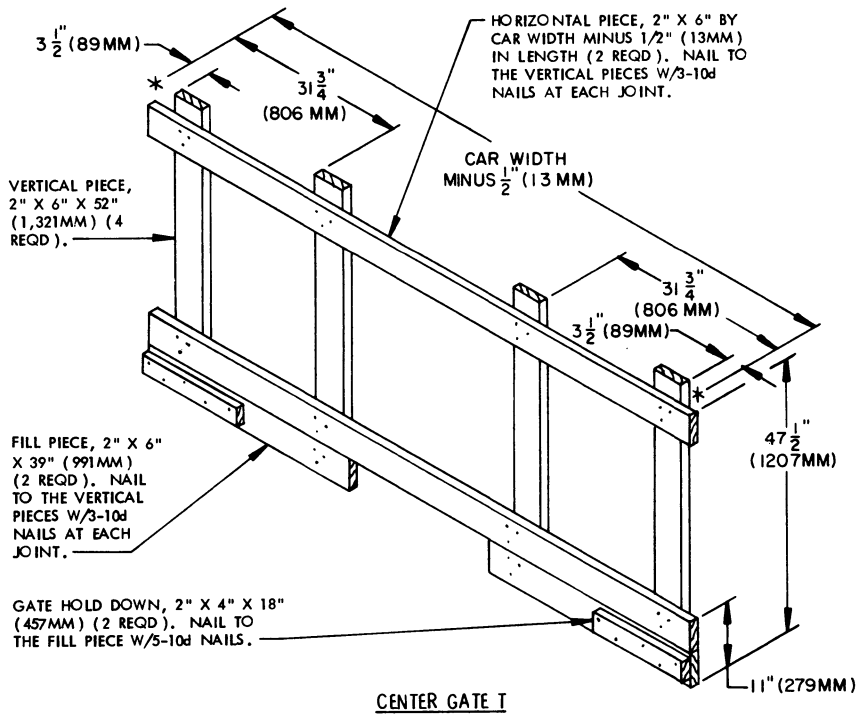
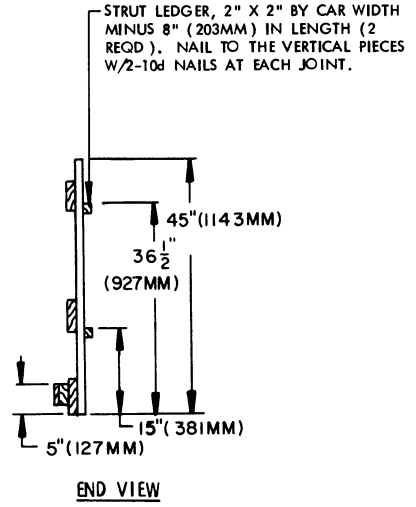
THIS GATE IS FOR THE M18 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 44" (1,118MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.





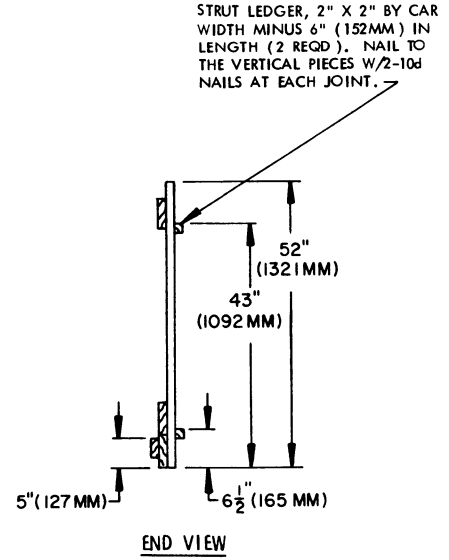
**CENTER GATE S**

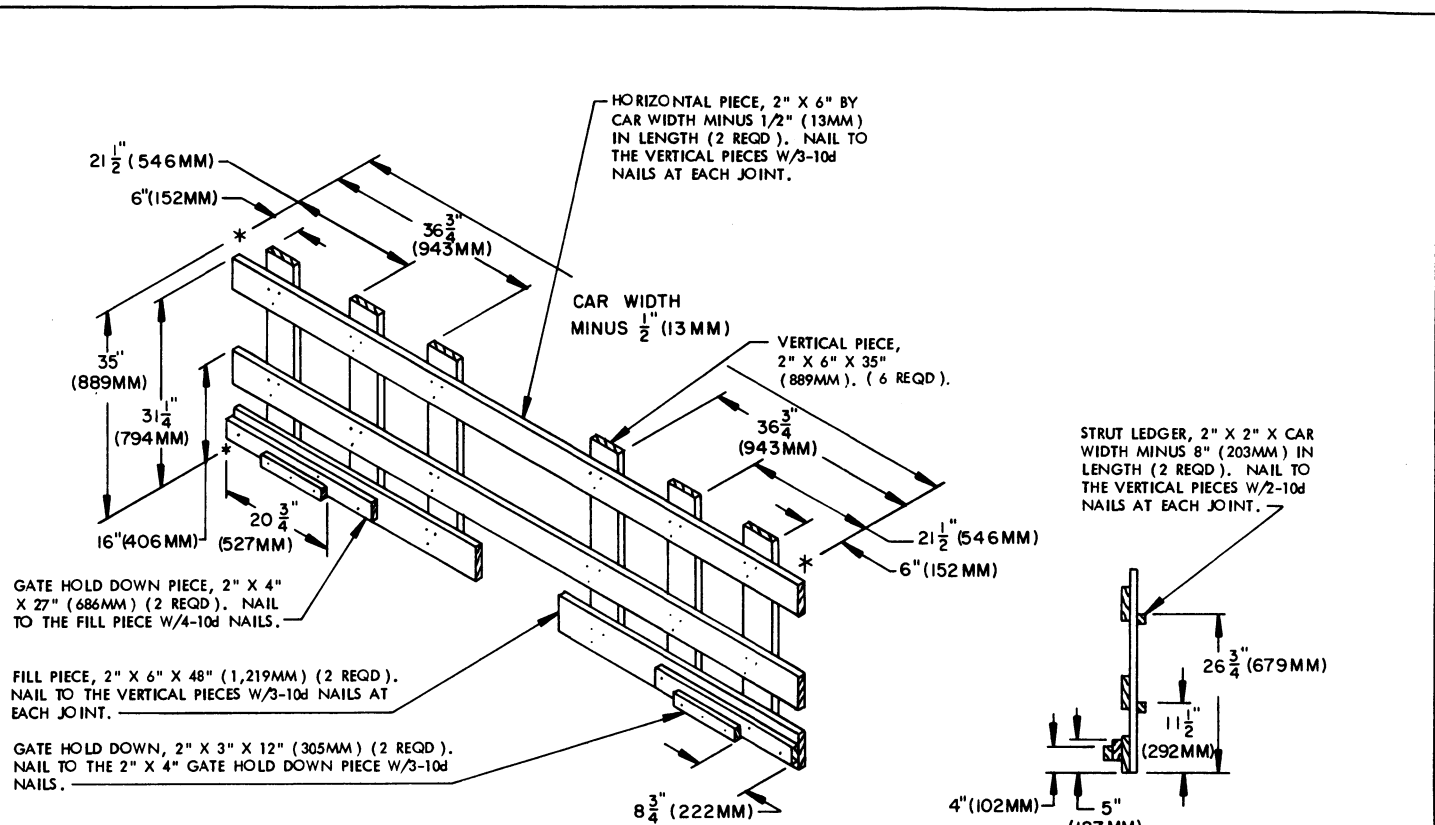
THIS GATE IS FOR THE PA66 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 40-3/4" (1,035MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



**CENTER GATE T**

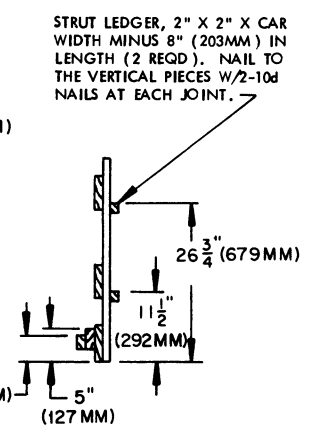
THIS GATE IS FOR THE PA66 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 40-3/4" (1,035MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



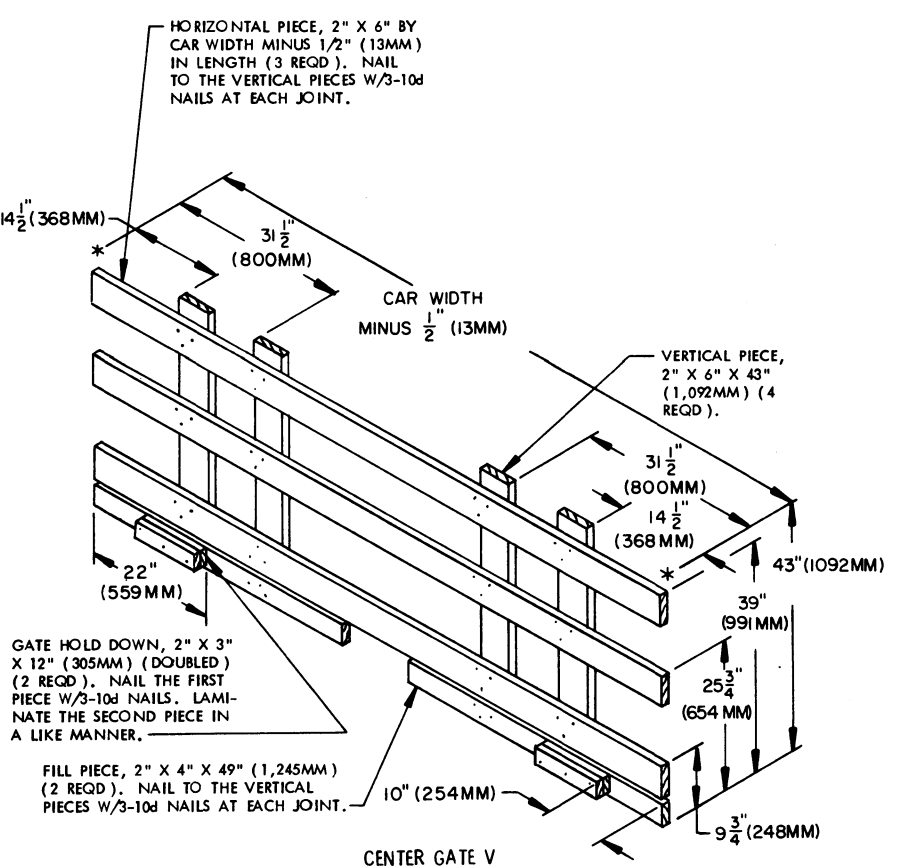


**CENTER GATE U**

THIS GATE IS FOR THE PA68 CONTAINER ALTERNATED CONTAINERS UNIT POSITIONED WITH THE 48-1/2" (1,232MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

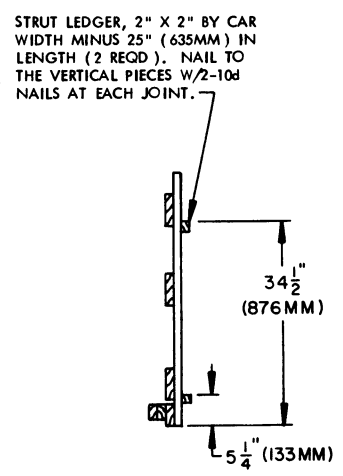


**END VIEW**



**CENTER GATE V**

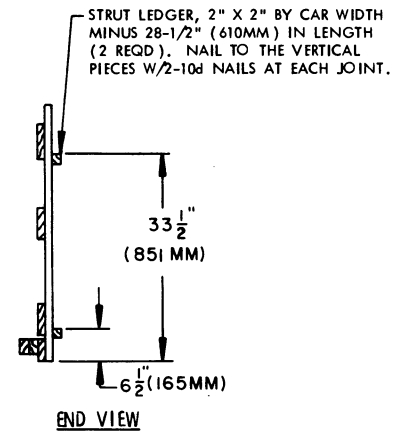
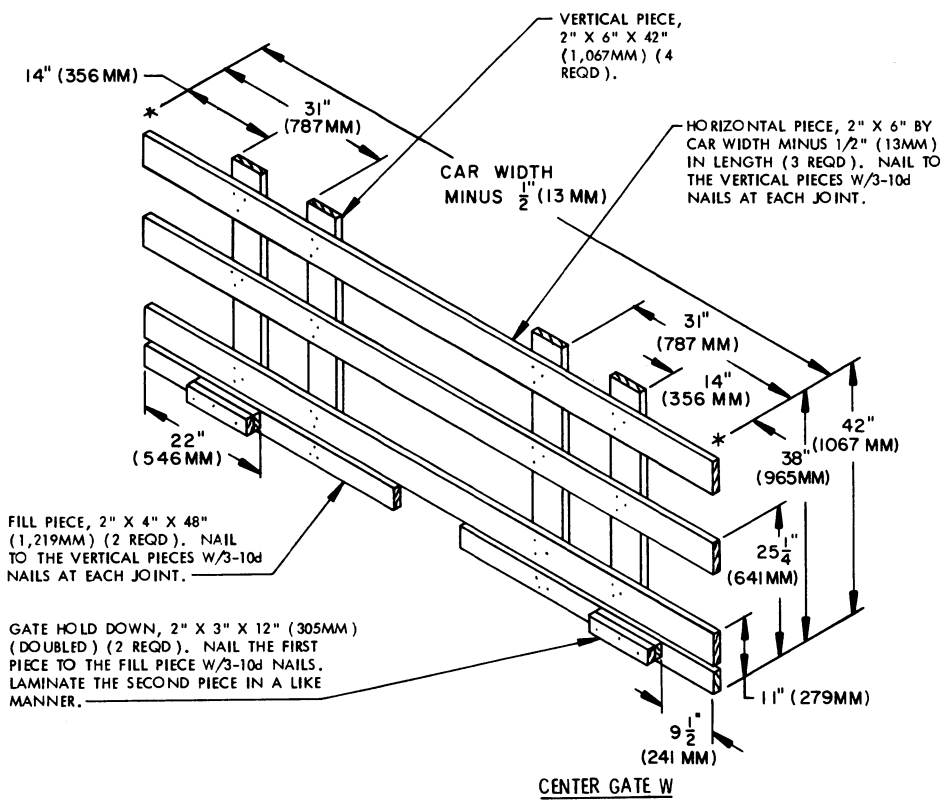
THIS GATE IS FOR THE PA68 CONTAINERS FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 51-1/2" (1,308MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



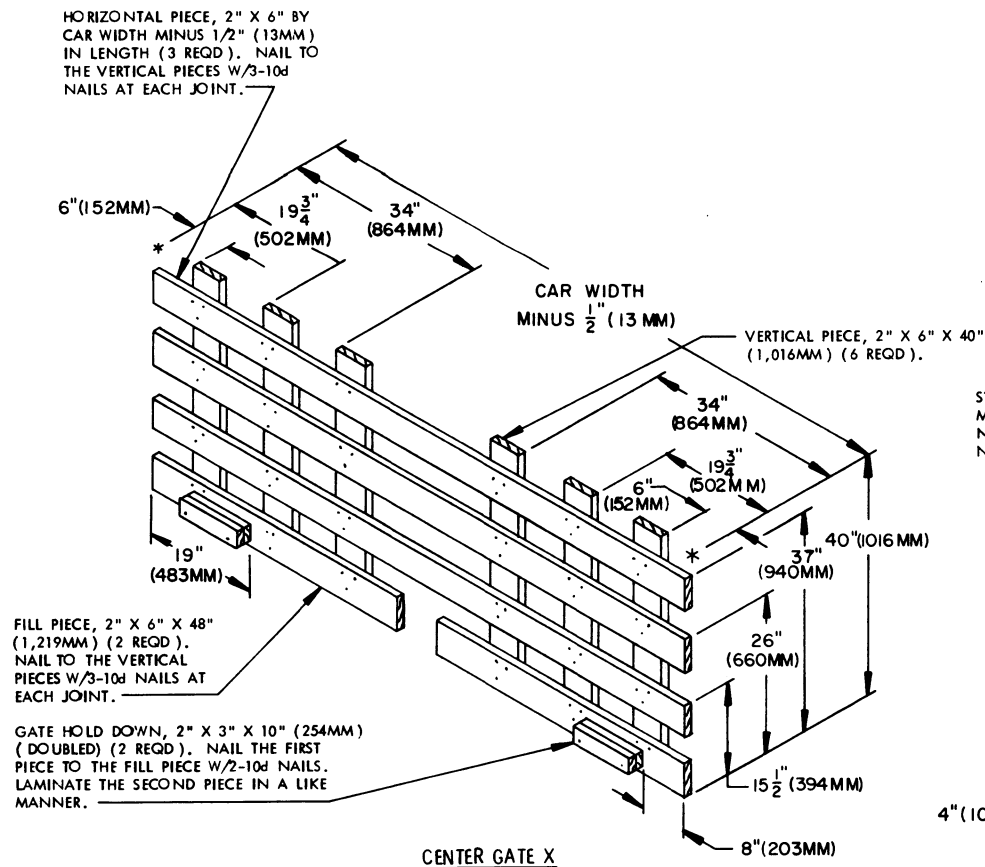
**END VIEW**

**DETAILS**

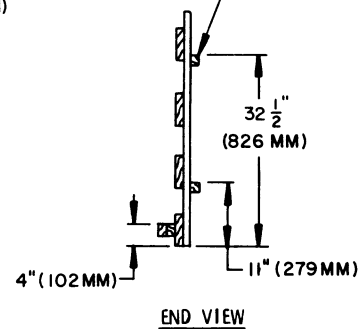




THIS GATE IS FOR THE PA68 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 50- $\frac{1}{2}$ " (1,283 MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

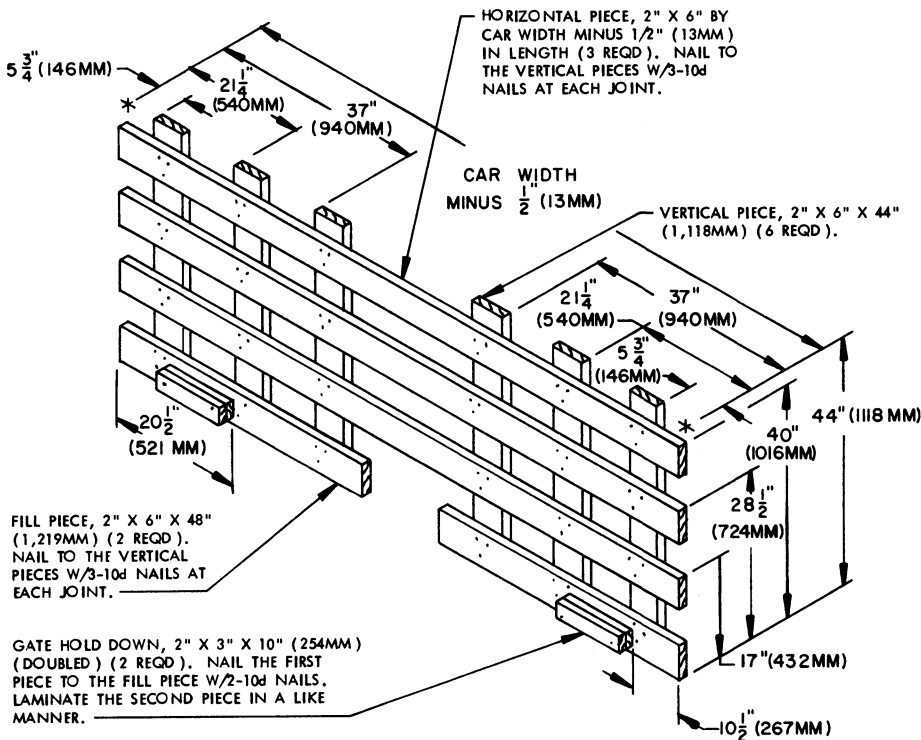


STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 8" (203 MM) IN LENGTH (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



THIS GATE IS FOR THE PA75 CONTAINER ALTERNATED CONTAINERS UNIT HAVING THE 45- $\frac{1}{2}$ " (1,156 MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

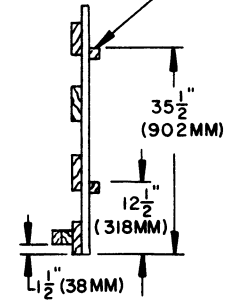
DETAILS



**CENTER GATE Y**

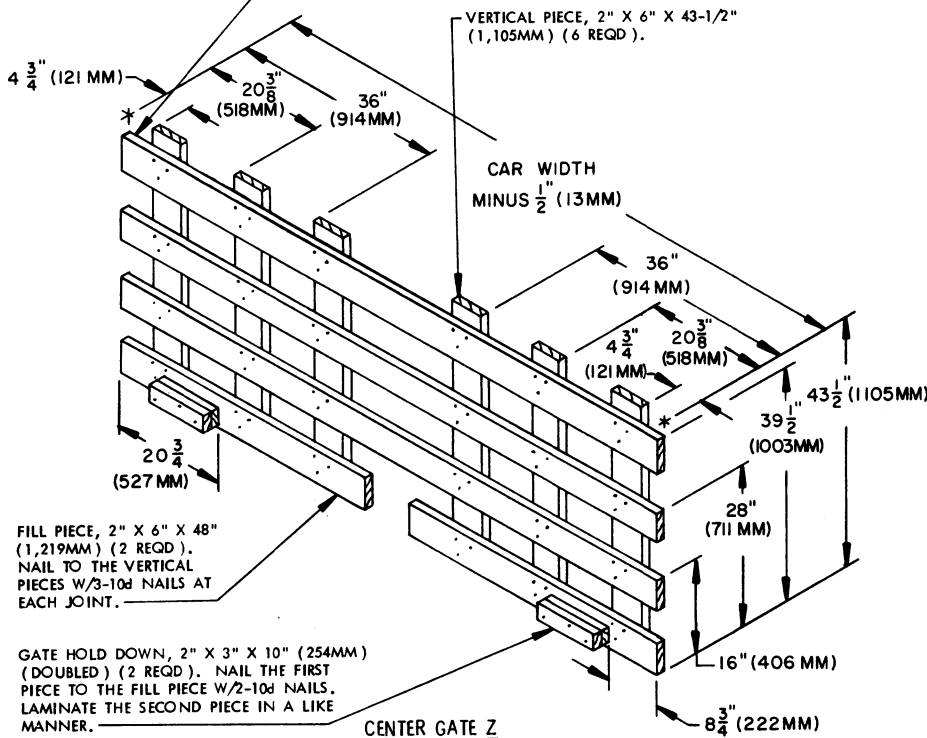
THIS GATE IS FOR THE PA75 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 48-5/8" (1,235MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 8" (203MM) IN LENGTH (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



**END VIEW**

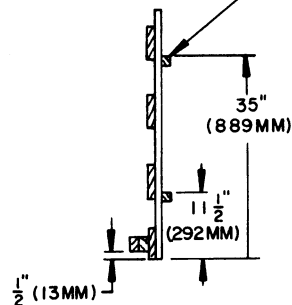
HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (13MM) IN LENGTH (3 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



**CENTER GATE Z**

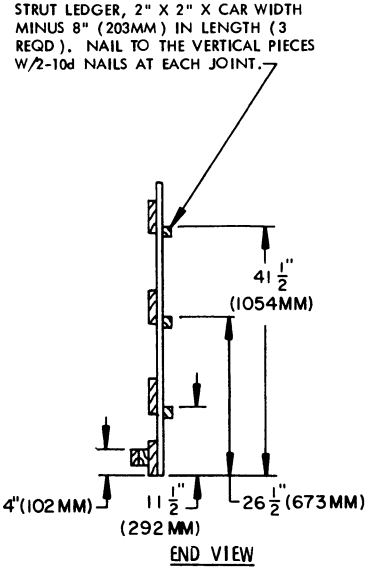
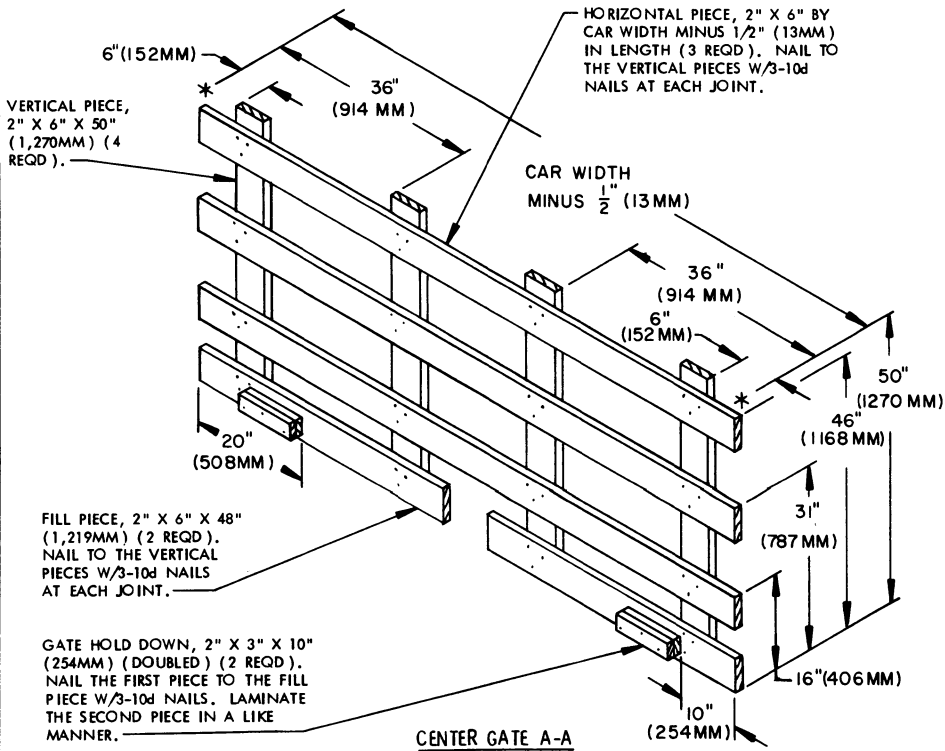
THIS GATE IS FOR THE PA75 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 46-3/4" (1,187MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 6" (152MM) IN LENGTH (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

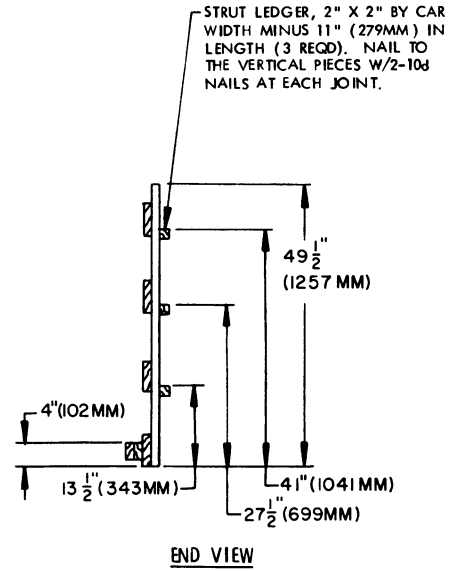
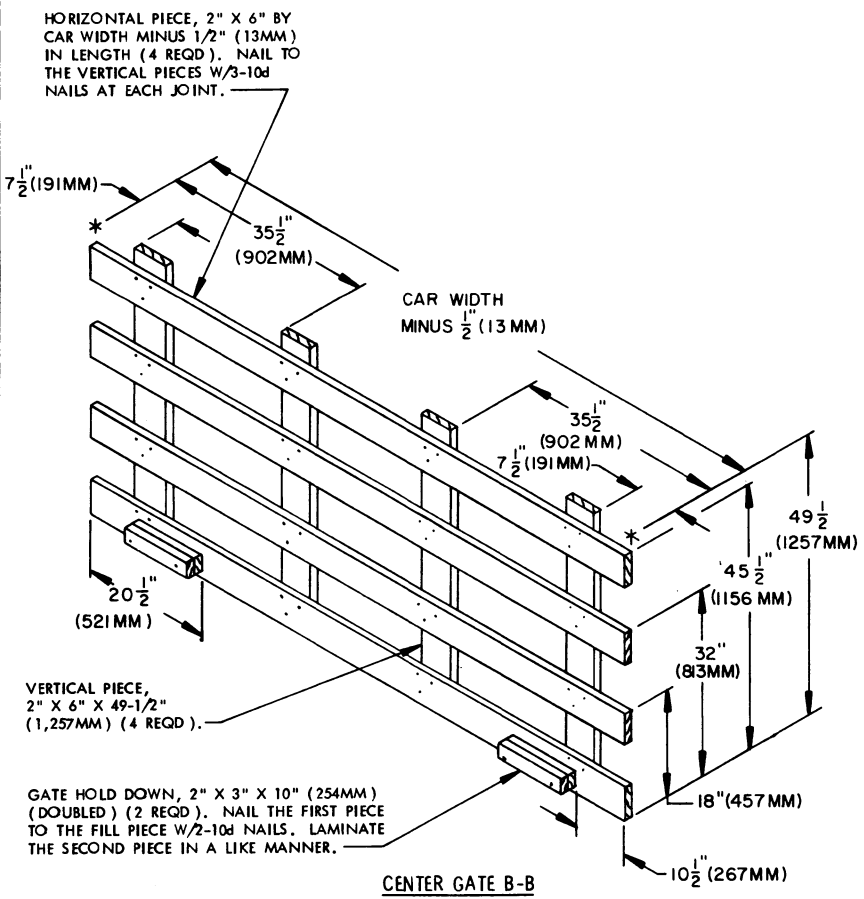


**END VIEW**

**DETAILS**

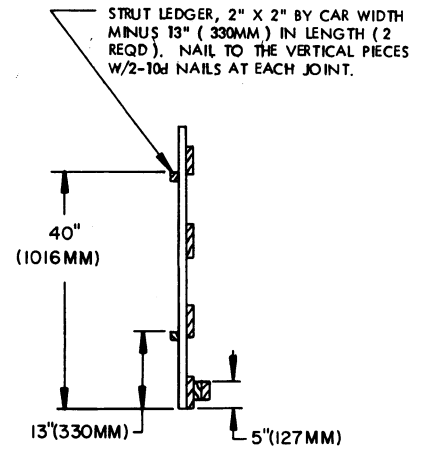
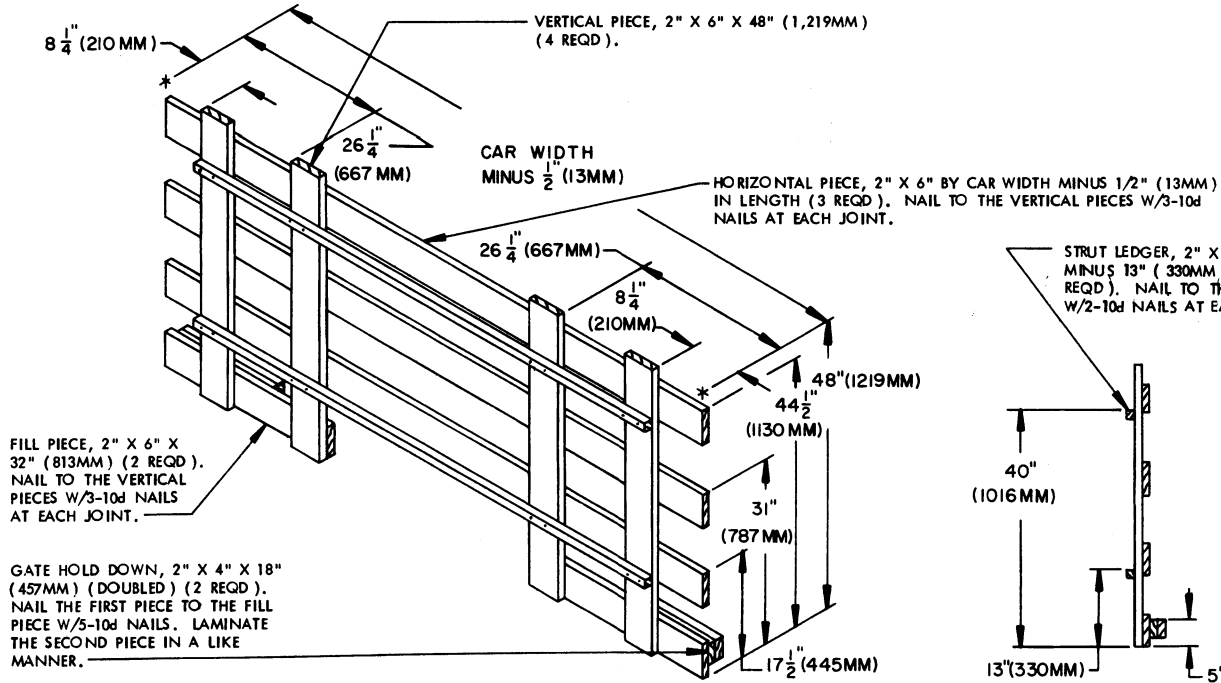


THIS GATE IS FOR THE PA91 CONTAINER PALLET UNIT POSITIONED WITH THE 47-3/4" (1,213MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



THIS GATE IS FOR THE PA92 CONTAINER PALLET UNIT POSITIONED WITH THE 48-3/4" (1,238MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

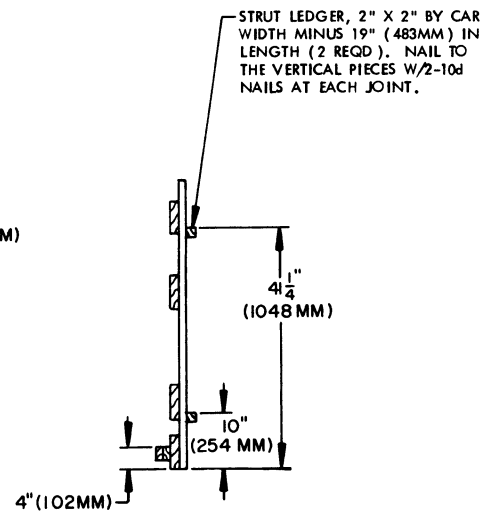
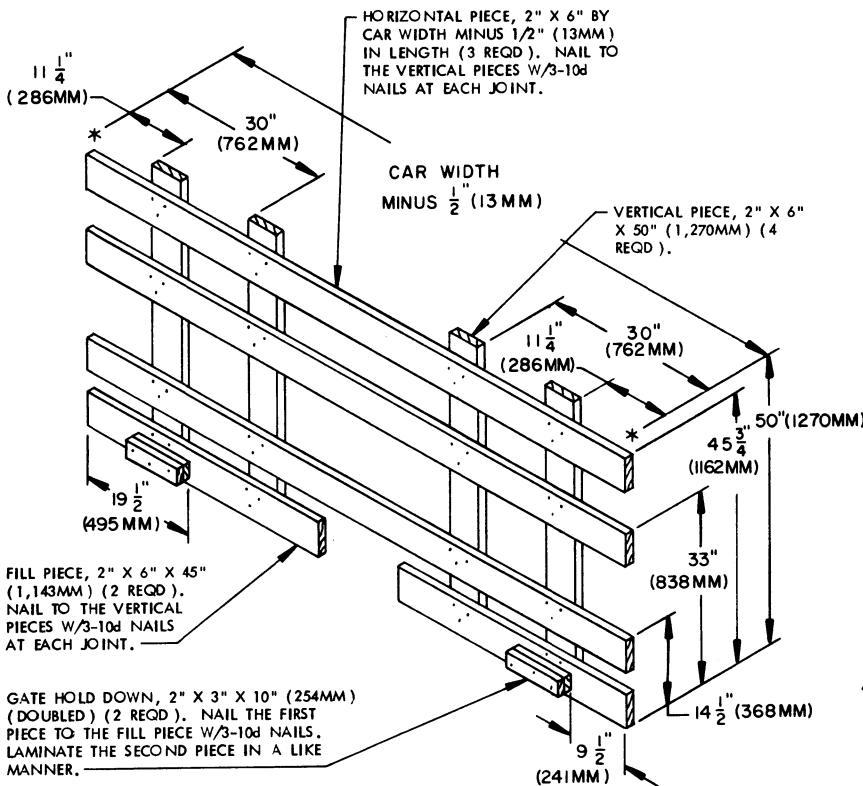
DETAILS



**CENTER GATE C-C**

THIS GATE IS FOR THE PA93 CONTAINER PALLET UNIT POSITIONED WITH THE 40" (1,016MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.

**END VIEW**

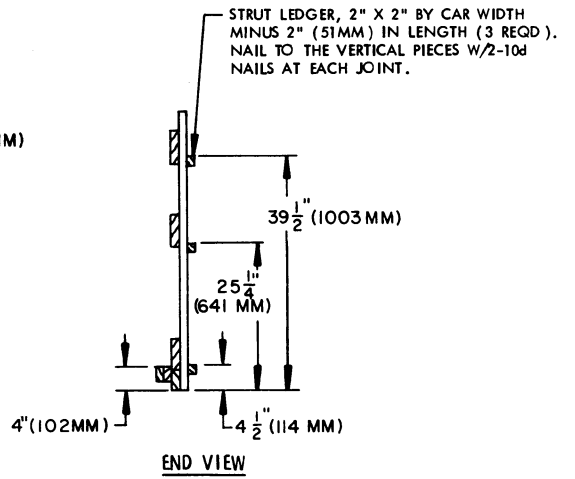
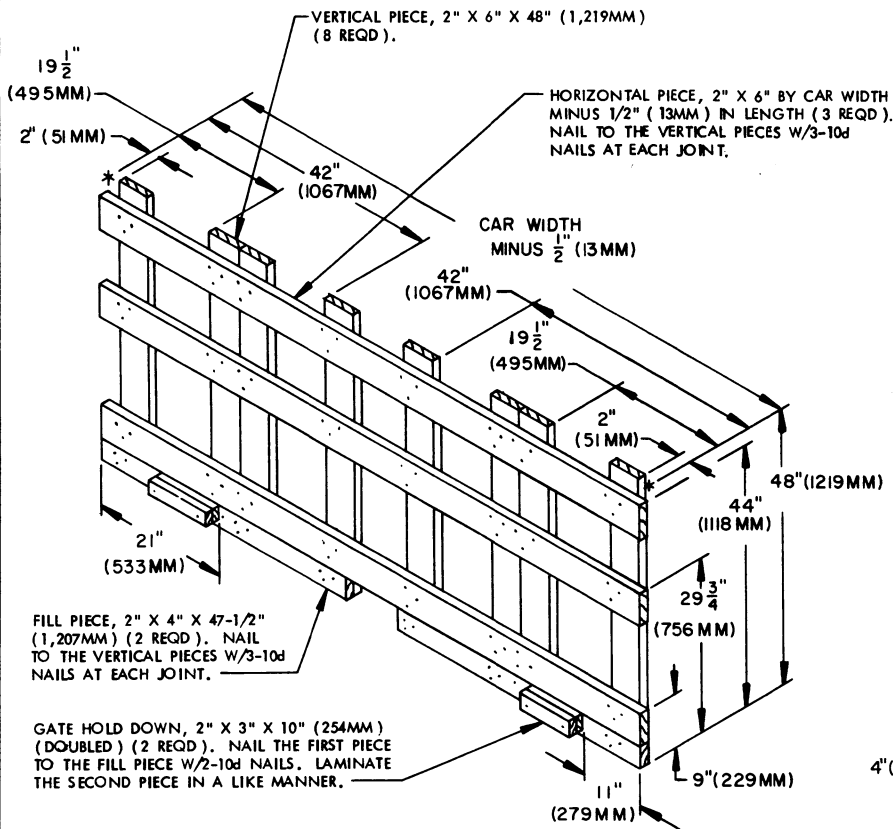


**CENTER GATE D-D**

THIS GATE IS FOR THE PA94 CONTAINER PALLET UNIT POSITIONED WITH THE 46-3/4" (1,187MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

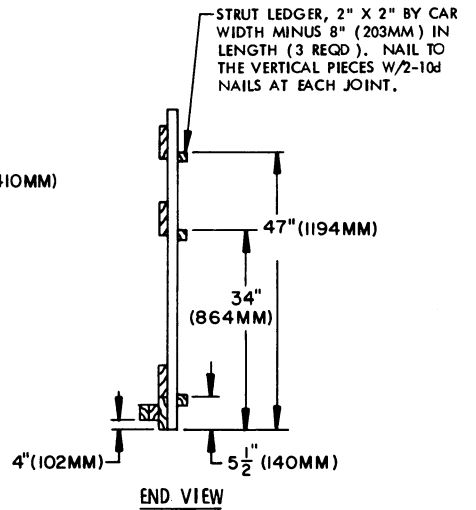
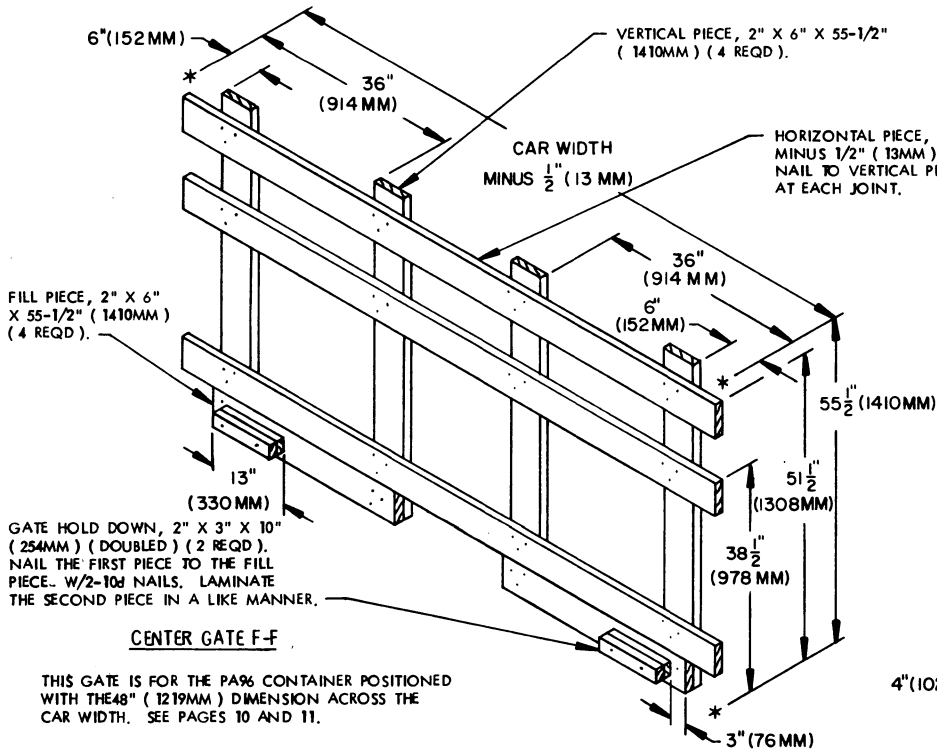
**END VIEW**

**DETAILS**



CENTER GATE E-E

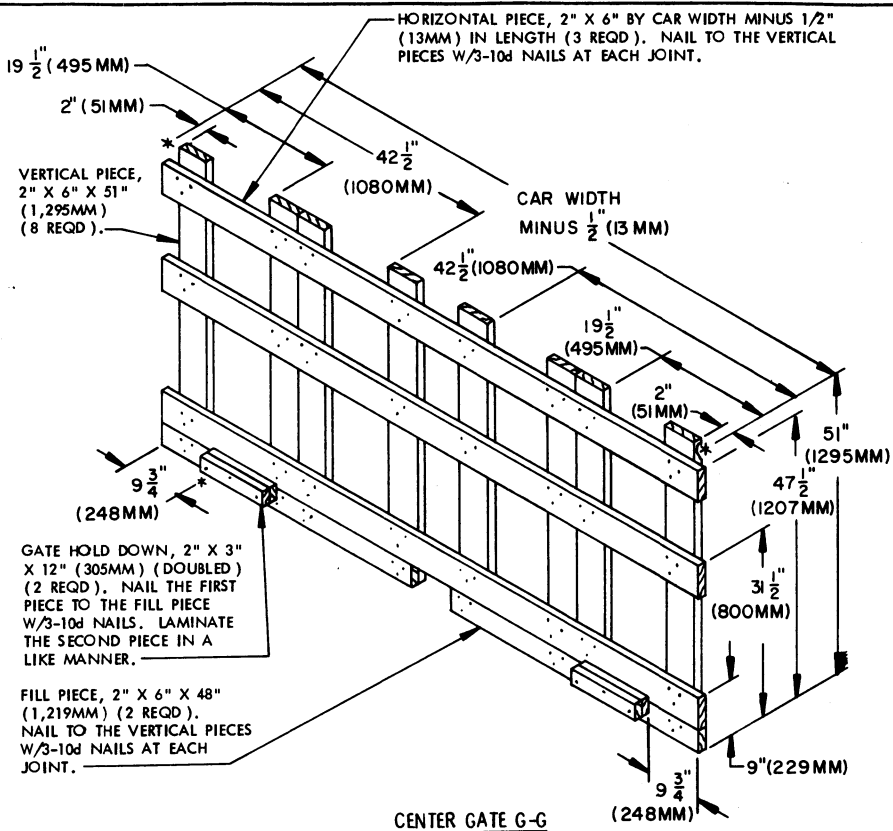
THIS GATE IS FOR THE PA95 CONTAINER PALLET UNIT POSITIONED WITH THE 50" (1,270MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.



CENTER GATE F-F

THIS GATE IS FOR THE PA96 CONTAINER POSITIONED WITH THE 48" (1219MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

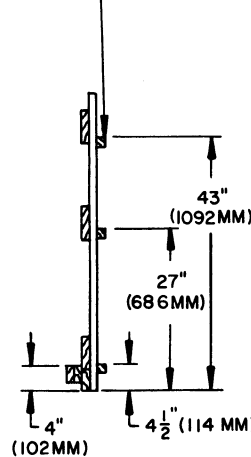
DETAILS



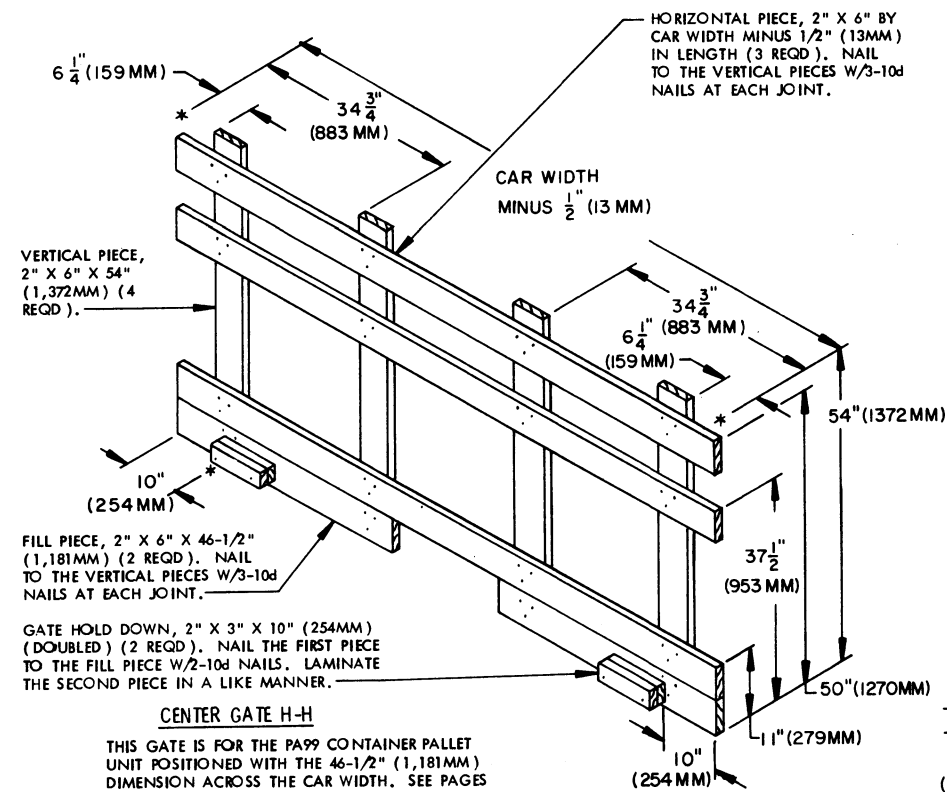
**CENTER GATE G-G**

THIS GATE IS FOR THE PA97 CONTAINER PALLET UNIT POSITIONED WITH THE 50" (1,270MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 2" (51MM) IN LENGTH (3 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



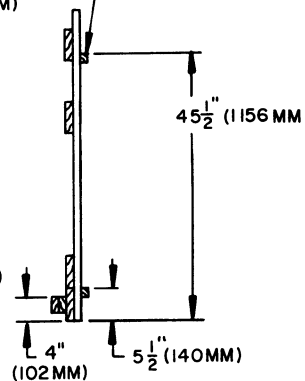
**END VIEW**



**CENTER GATE H-H**

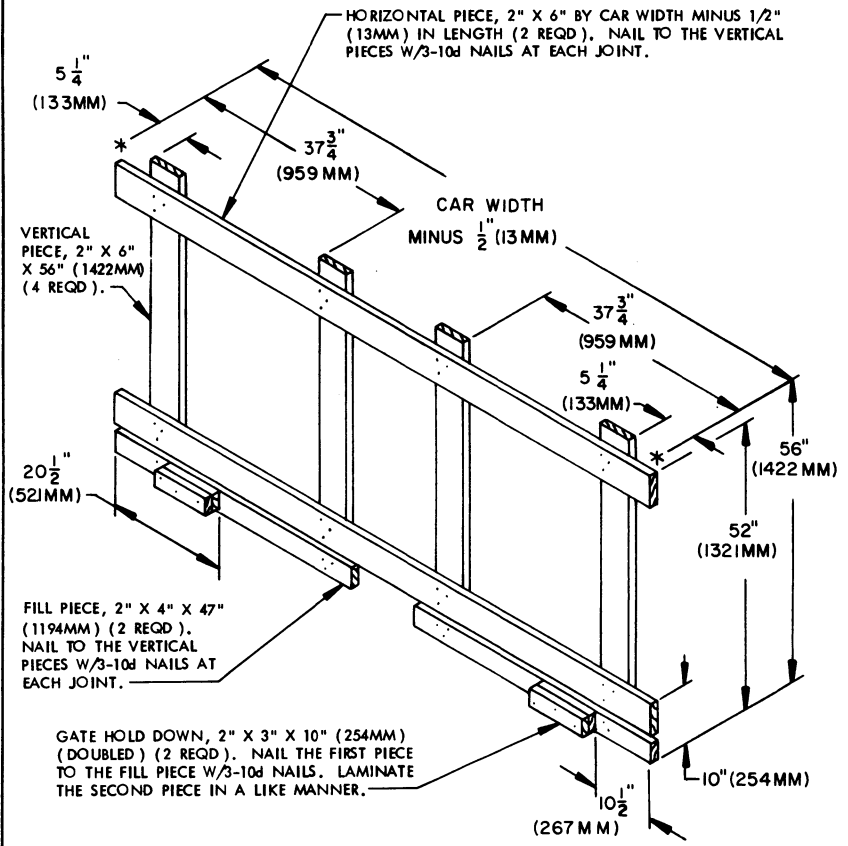
THIS GATE IS FOR THE PA99 CONTAINER PALLET UNIT POSITIONED WITH THE 46-1/2" (1,181MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 9" (229MM) IN LENGTH (2 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



**END VIEW**

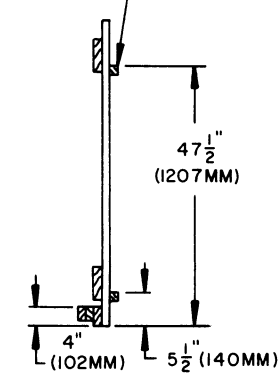
**DETAILS**



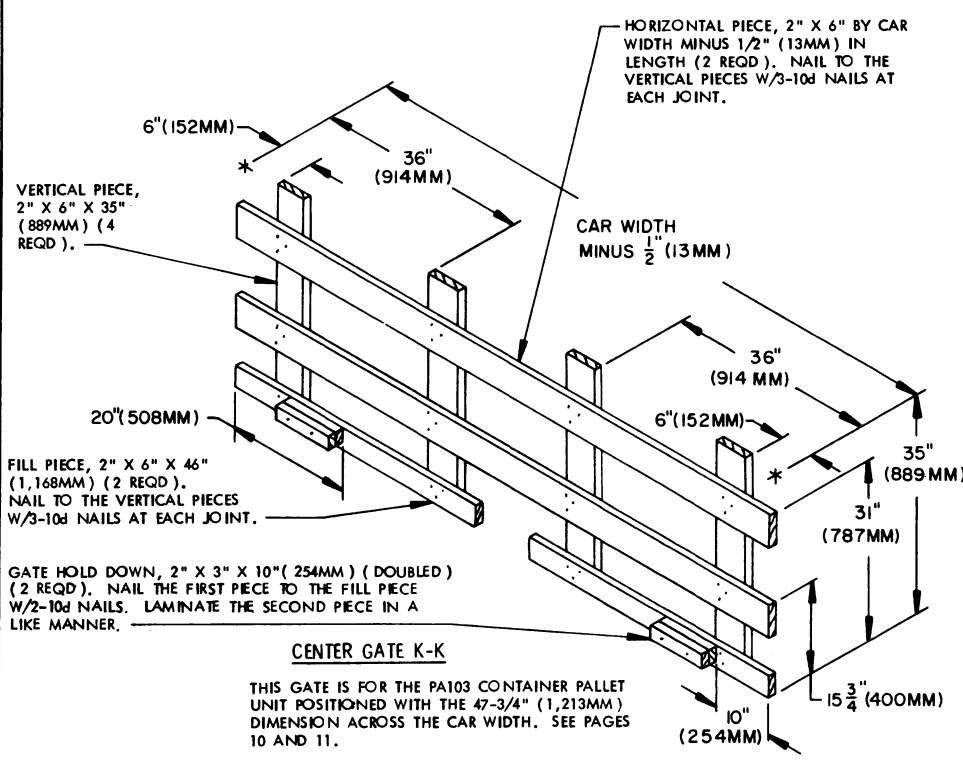
**CENTER GATE J-J**

THIS GATE IS FOR THE PA100 CONTAINER PALLET UNIT POSITIONED WITH THE 48-1/2" (1,232MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" X CAR WIDTH MINUS 6" (152MM) IN LENGTH (2 REQD.). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.



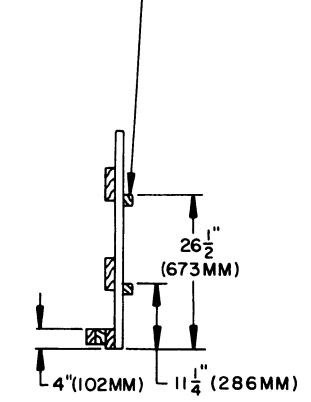
**END VIEW**



**CENTER GATE K-K**

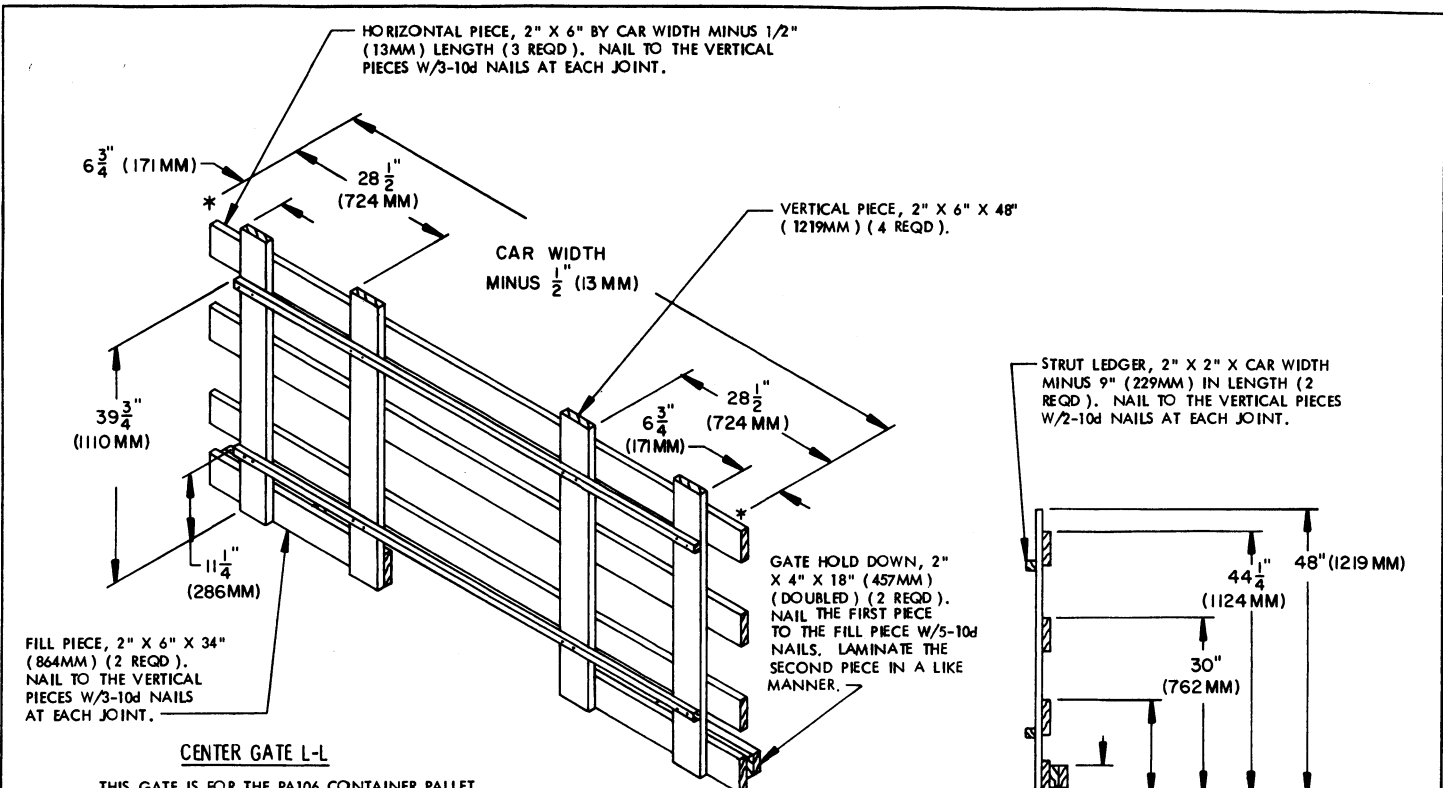
THIS GATE IS FOR THE PA103 CONTAINER PALLET UNIT POSITIONED WITH THE 47-3/4" (1,213MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

STRUT LEDGER, 2" X 2" BY CAR WIDTH MINUS 8" (203MM) IN LENGTH (2 REQD.). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH JOINT.

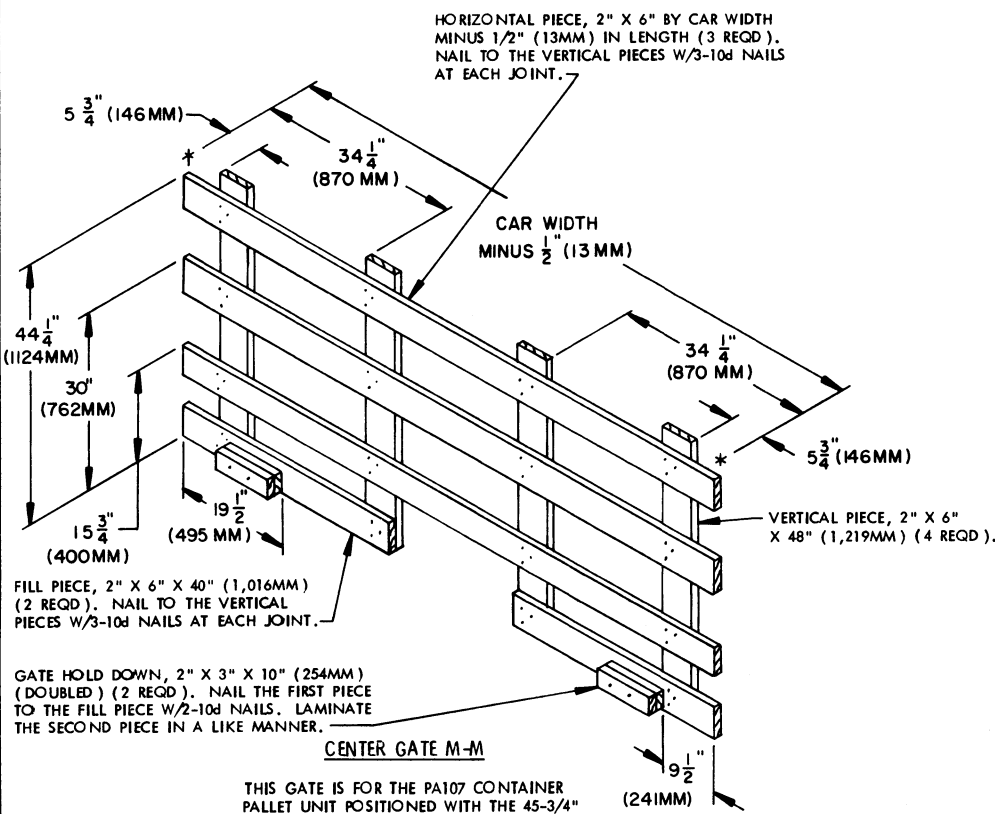
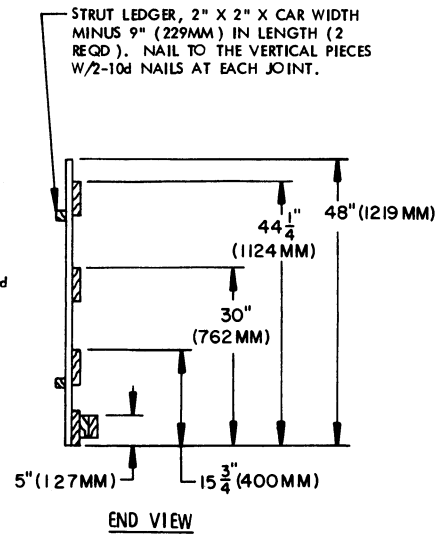


**END VIEW**

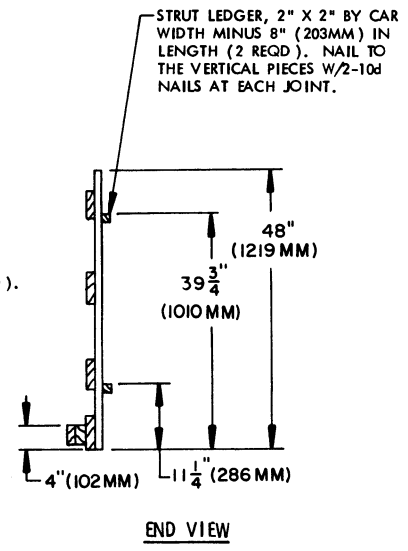
**DETAILS**



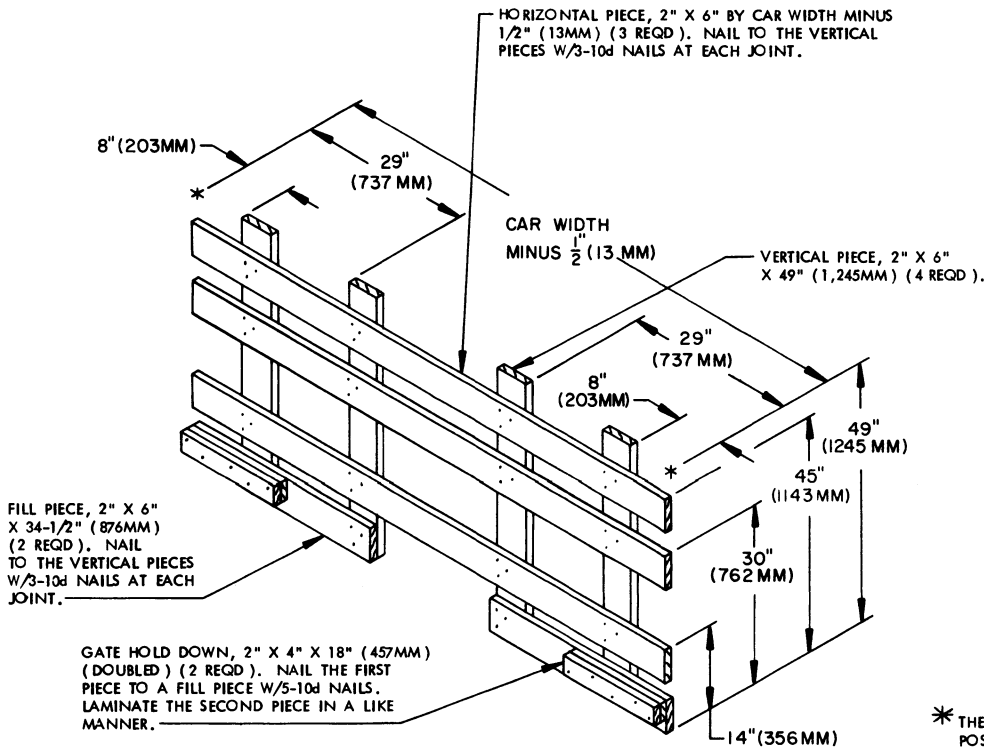
THIS GATE IS FOR THE PA106 CONTAINER PALLET UNIT POSITIONED WITH THE 40-5/8" (1,032MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



THIS GATE IS FOR THE PA107 CONTAINER PALLET UNIT POSITIONED WITH THE 45-3/4" (1,162MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 10 AND 11.

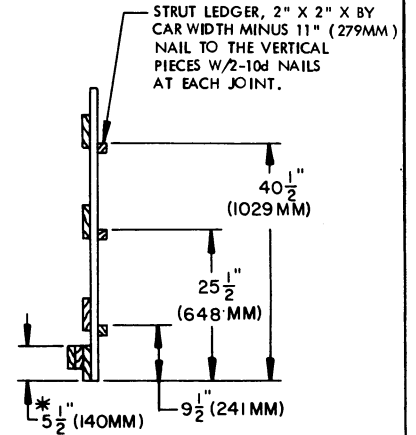






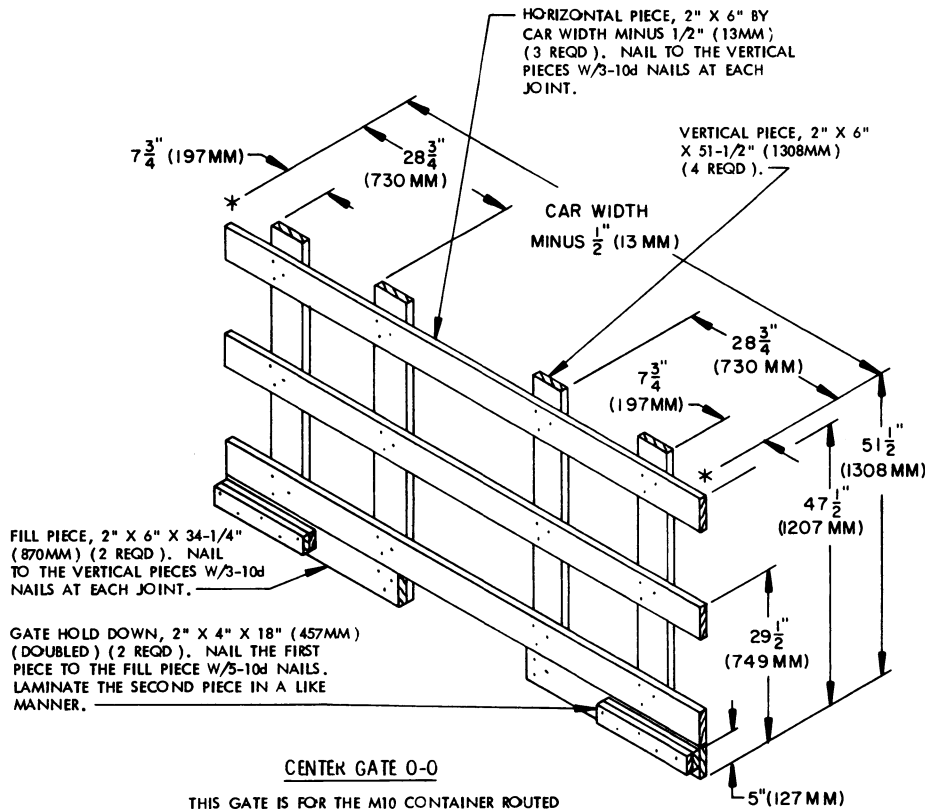
**CENTER GATE N-N**

THIS GATE IS FOR THE M10 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 43" (1092MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



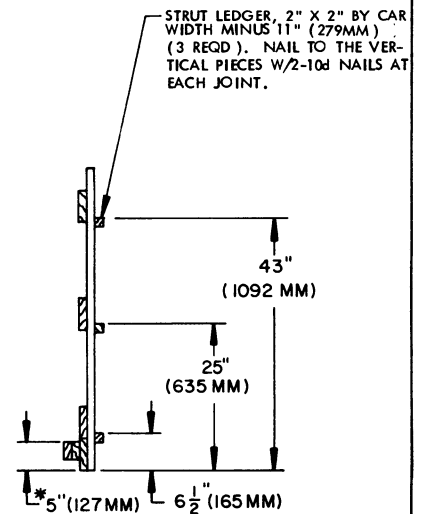
**END VIEW**

\* THE DIMENSION SHOWN IS FOR A GATE WHICH IS TO BE POSITIONED AGAINST THE BELL END OF THE CONTAINER. THIS DIMENSION WILL BE 6-1/2" (165MM) FOR THE BASE END OF UNITS.



**CENTER GATE O-O**

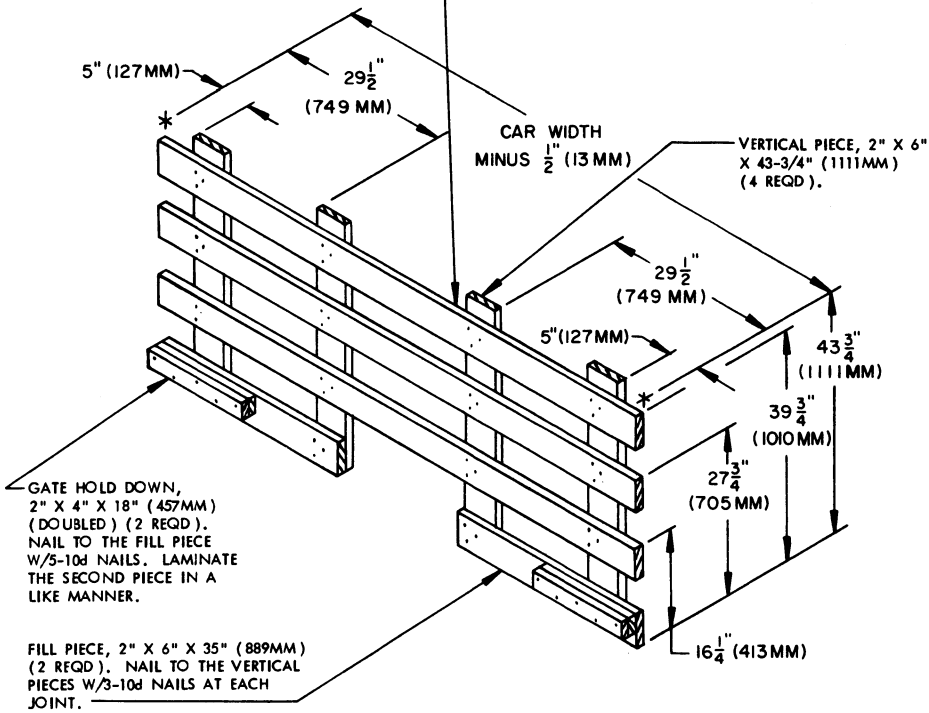
THIS GATE IS FOR THE M10 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 42" (1067MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



**END VIEW**

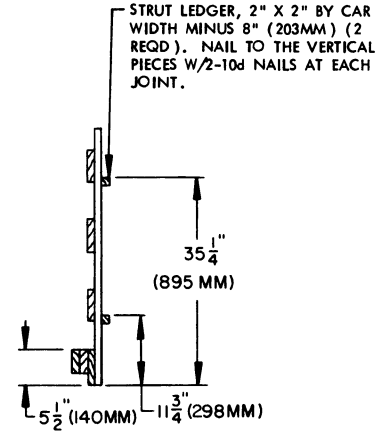
\* THE DIMENSION SHOWN IS FOR A GATE WHICH IS TO BE POSITIONED AGAINST THE BELL END OF THE CONTAINERS. THIS DIMENSION WILL BE 5-3/4" (46MM) FOR THE BASE END OF THE UNIT.

HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (13MM) (3 REQD.). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

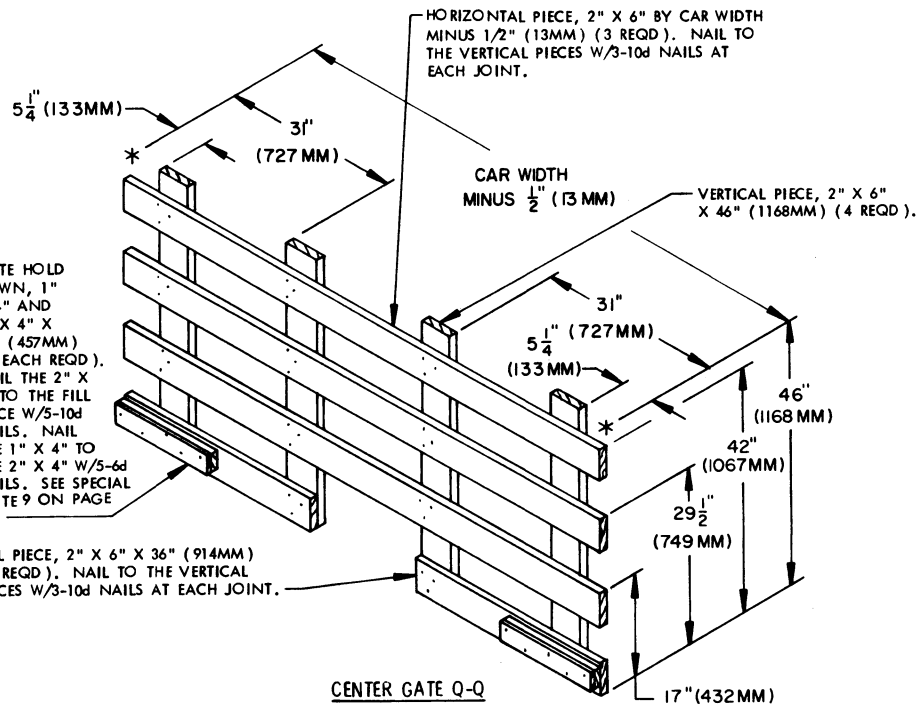


**CENTER GATE P-P**

THIS GATE IS FOR THE M13 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 40" (1016MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGE 12 AND 13.

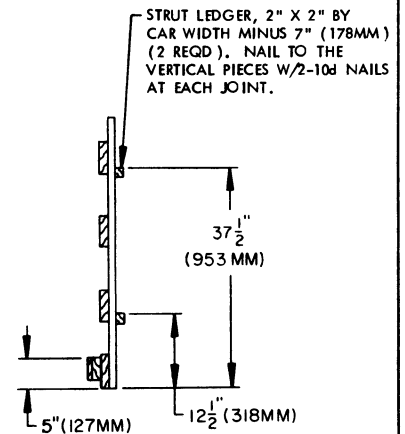


**END VIEW**

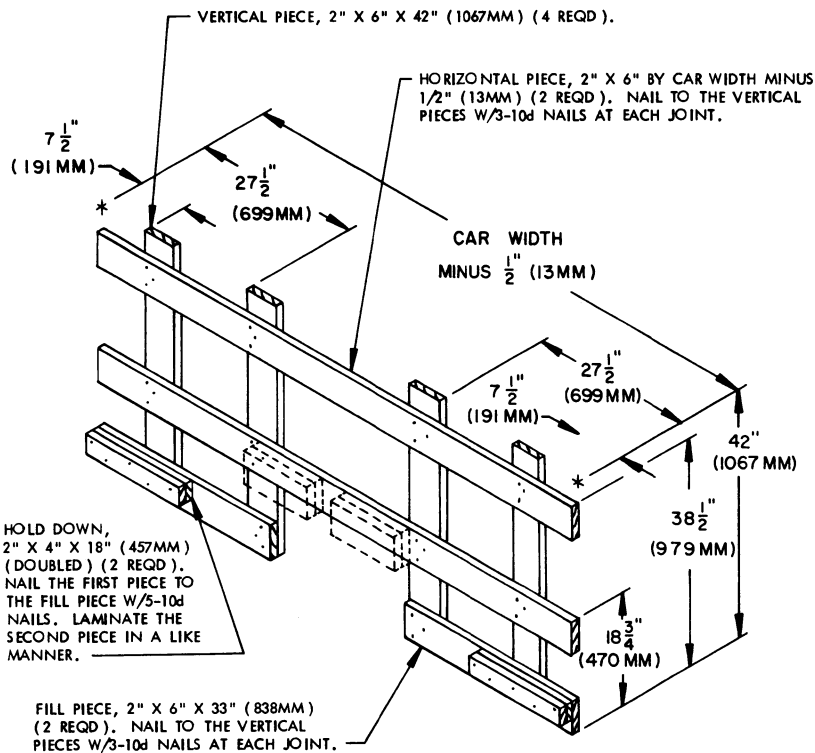


**CENTER GATE Q-Q**

THIS GATE IS FOR THE M18 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 42" (1076MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.



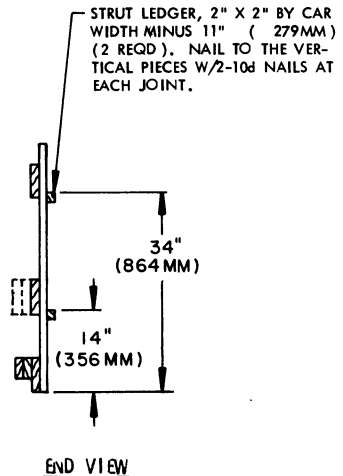
**END VIEW**



HOLD DOWN,  
2" X 4" X 18" (457MM)  
(DOUBLED) (2 REQD).  
NAIL THE FIRST PIECE TO  
THE FILL PIECE W/5-10d  
NAILS. LAMINATE THE  
SECOND PIECE IN A LIKE  
MANNER.

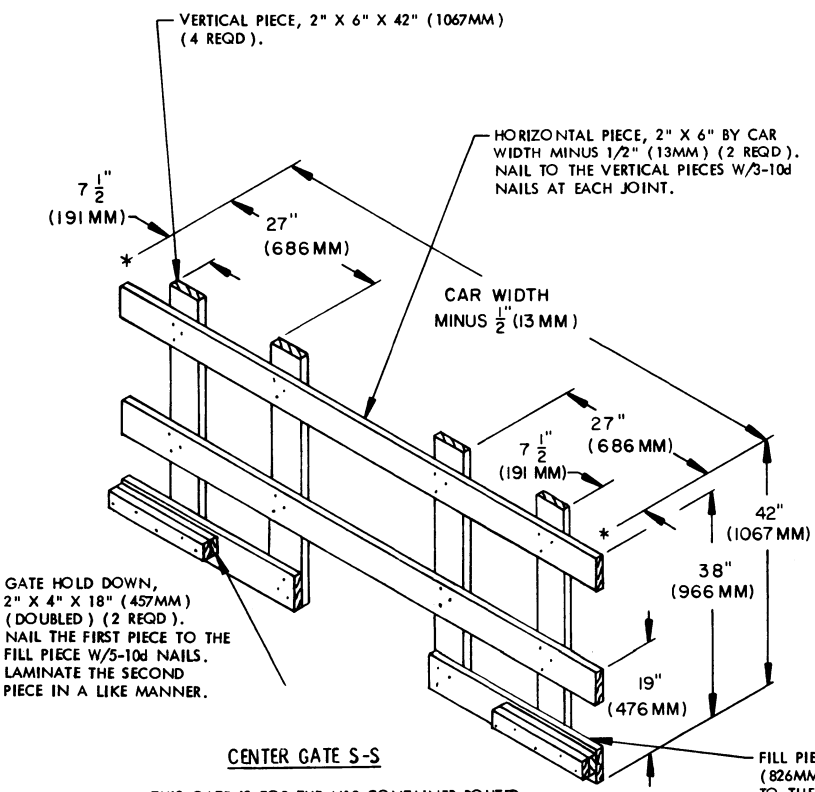
FILL PIECE, 2" X 6" X 33" (838MM)  
(2 REQD). NAIL TO THE  
VERTICAL  
PIECES W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (13MM) (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



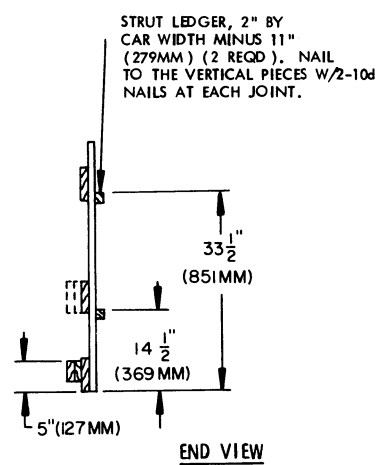
**CENTER GATE R-R**

THIS GATE IS FOR THE M19 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH THE 40-5/8" (1032MM) DIMENSION ACROSS CAR WIDTH. SEE PAGES 12 AND 13.



GATE HOLD DOWN,  
2" X 4" X 18" (457MM)  
(DOUBLED) (2 REQD).  
NAIL THE FIRST PIECE TO THE  
FILL PIECE W/5-10d  
NAILS. LAMINATE THE SECOND  
PIECE IN A LIKE  
MANNER.

HORIZONTAL PIECE, 2" X 6" BY CAR WIDTH MINUS 1/2" (13MM) (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

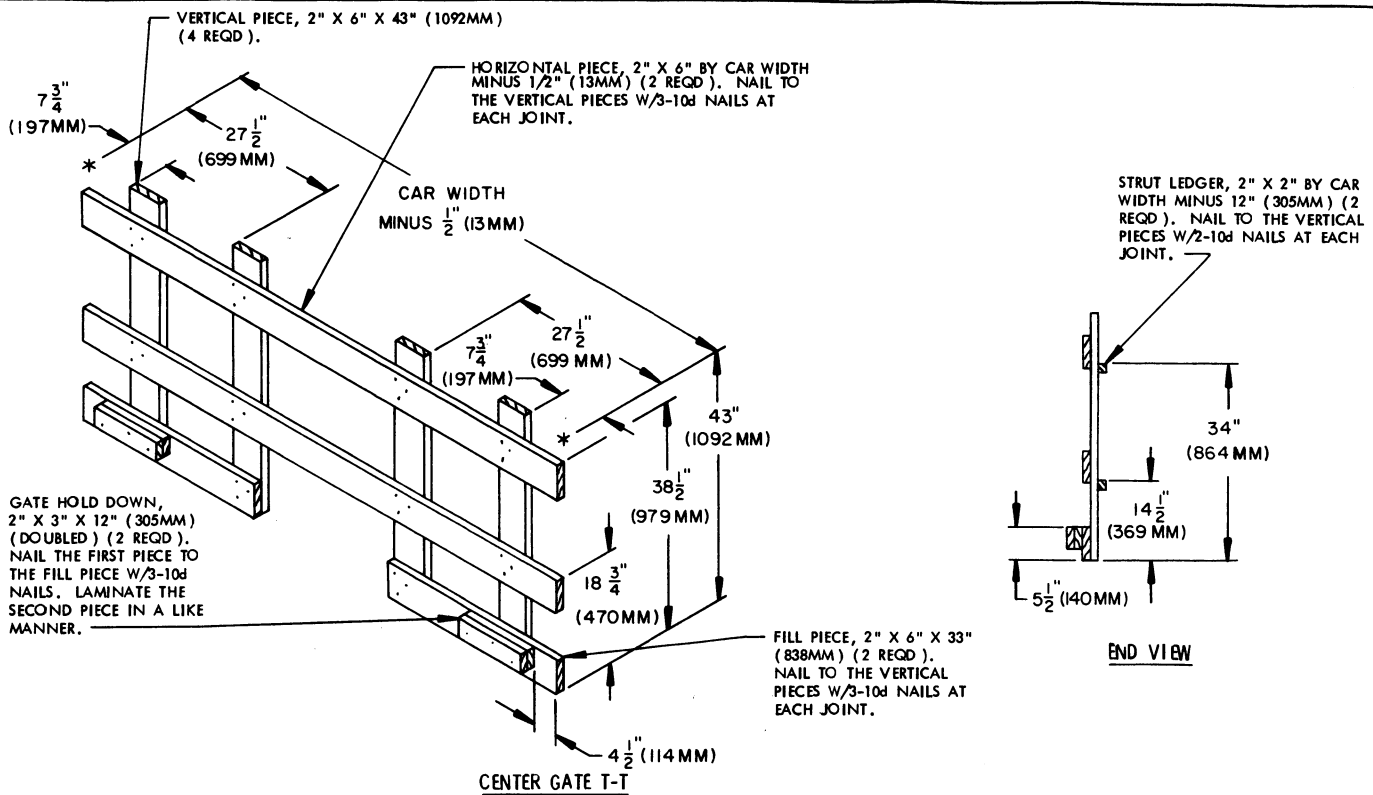


**CENTER GATE S-S**

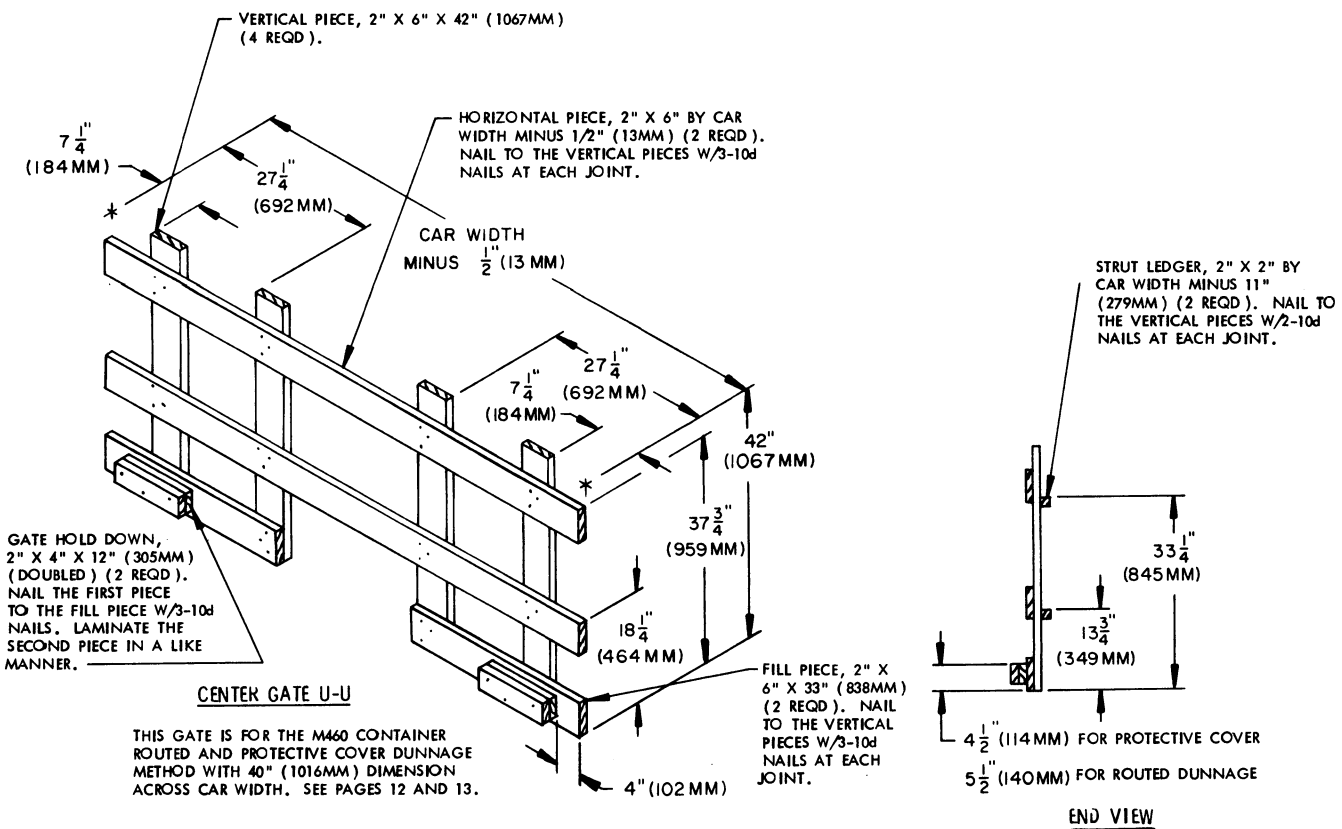
THIS GATE IS FOR THE M19 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH THE 40" (1016MM) DIMENSION ACROSS THE CAR WIDTH. SEE PAGES 12 AND 13.

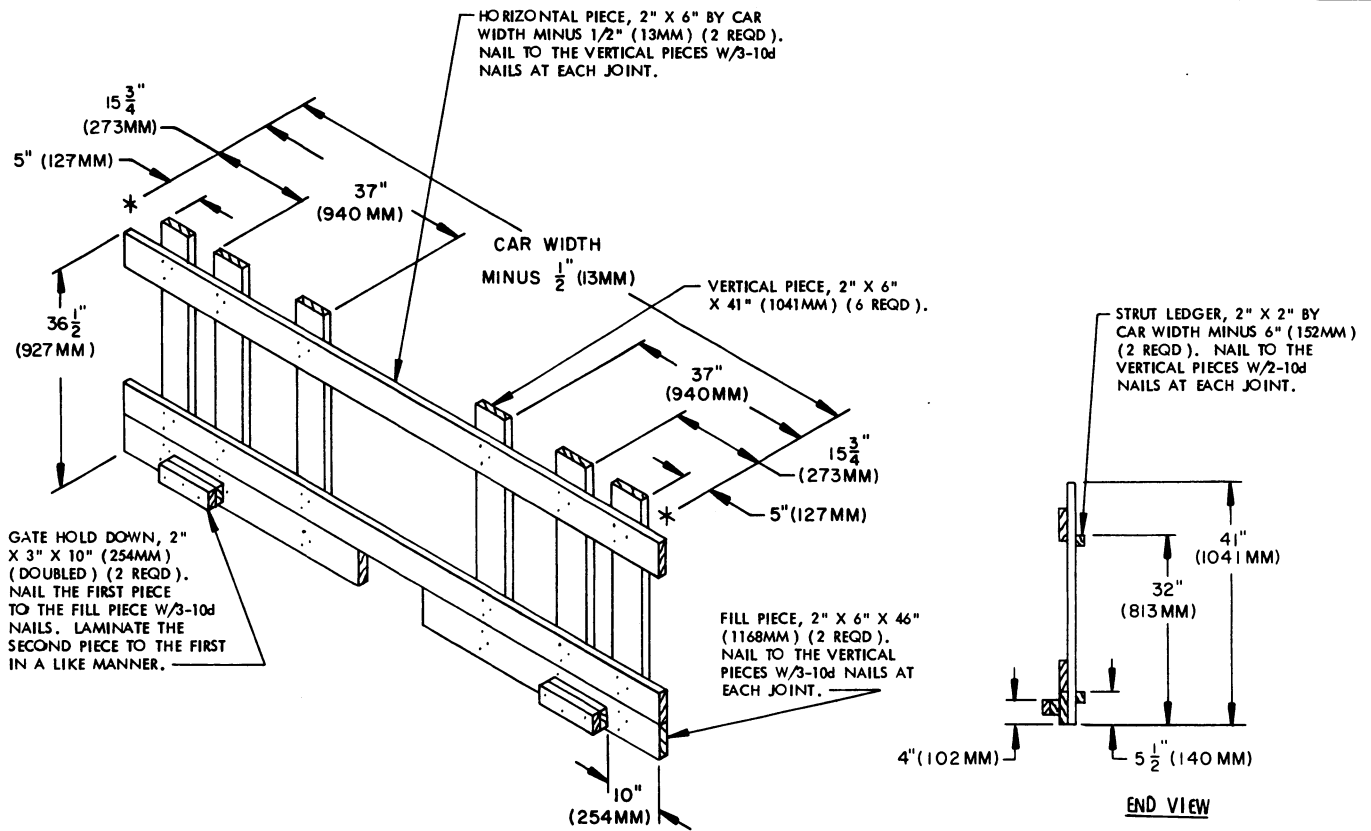
FILL PIECE, 2" X 6" X 32-1/2" (826MM) (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

**DETAILS**



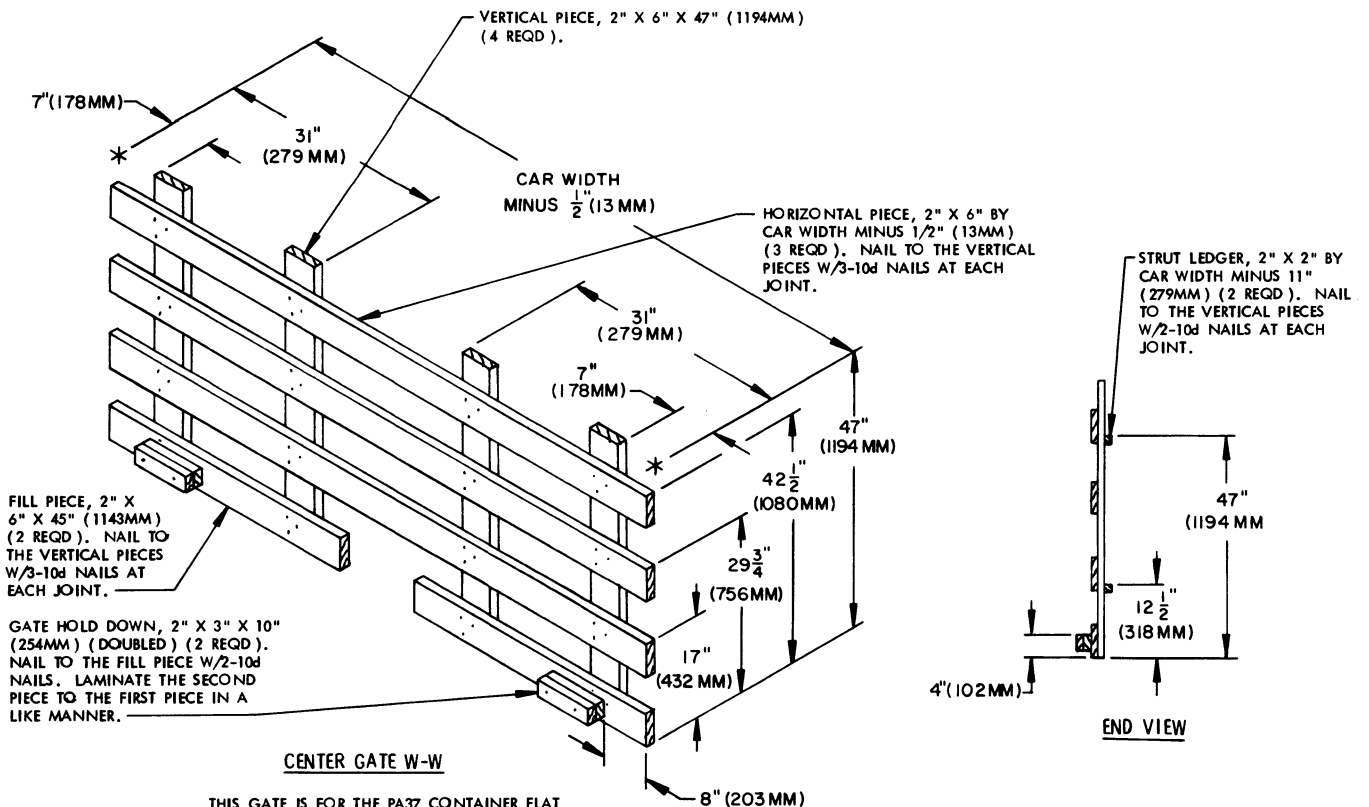
THIS GATE IS FOR THE M460 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH 40-3/4" (1035MM) DIMENSION ACROSS CAR WIDTH. SEE PAGES 12 AND 13.





**CENTER GATE V-V**

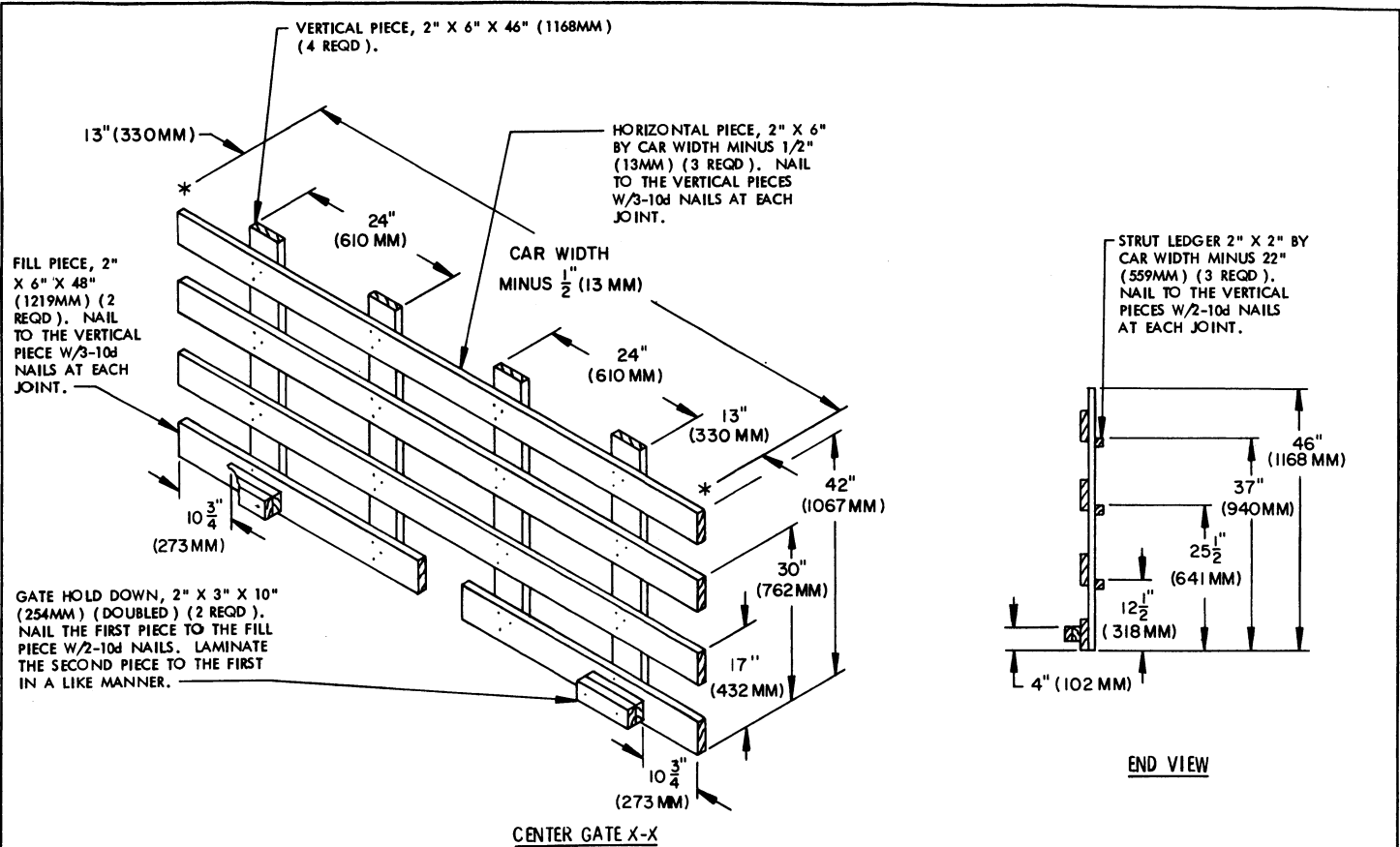
THIS GATE IS FOR THE PA37 ALTERNATED CONTAINERS UNIT POSITIONED WITH 47-1/2" (1207MM) DIMENSION ACROSS CAR WIDTH. SEE PAGES 10 AND 11.



**CENTER GATE W-W**

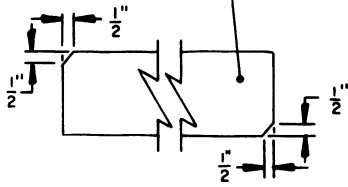
THIS GATE IS FOR THE PA37 CONTAINER FLAT DUNNAGE METHOD UNIT POSITIONED WITH 45-1/2" (1156MM) DIMENSION ACROSS CAR WIDTH. SEE PAGES 12 AND 13.

**DETAILS**



THIS GATE IS FOR THE PA37 CONTAINER ROUTED DUNNAGE METHOD UNIT POSITIONED WITH 51" (1295MM) DIMENSION ACROSS CAR WIDTH. SEE PAGES 10 AND 11.

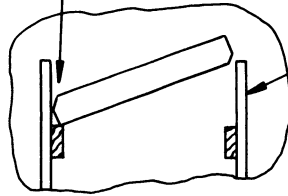
INDICATES A SIDE OF  
A 4" X 4" STRUT.



**BEVEL CUT**

BEVEL CUTTING THE STRUTS AS SPECIFIED WILL FACILITATE INSTALLING THE STRUTS WITH A "DRIVE FIT". **CAUTION:** DO NOT BEVEL A CORNER MORE THAN ONE-HALF INCH (1/2").

BEVEL CUT THIS CORNER  
ONLY IF STRUTS ARE  
VERY SHORT.

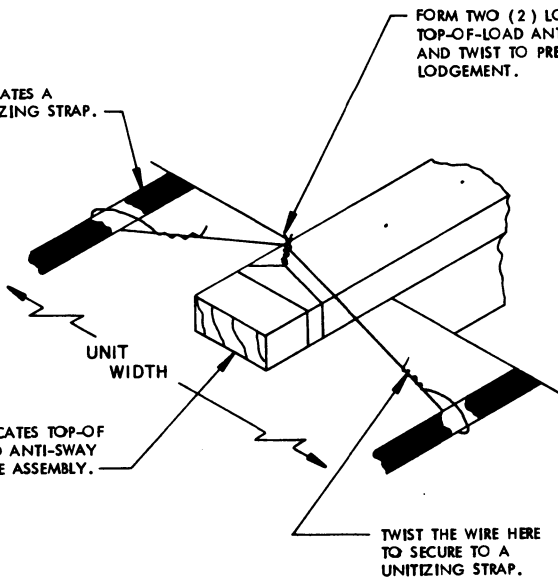


INDICATES A TYPICAL  
CENTER GATE.

**STRUT INSTALLATION**

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

INDICATES A  
UNITIZING STRAP.

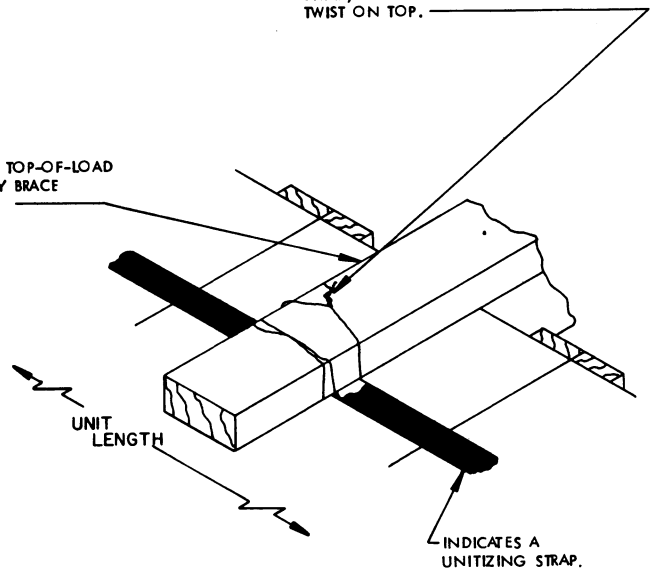


**TIE WIRE APPLICATION A**

THIS VIEW DEPICTS THE SECUREMENT OF A TOP-OF-LOAD ANTI-SWAY BRACE TO THE TOP OF A PALLET UNIT OF BOXES BY WIRE TYING TO THE UNITIZING STRAPS WITH NO. 14 GAGE WIRE.

FORM A COMPLETE LOOP AROUND  
TOP-OF-LOAD ANTI-SWAY BRACE,  
THREAD ENDS UNDER A UNITIZING  
STRAP, AND BRING TOGETHER AND  
TWIST ON TOP.

INDICATES TOP-OF-LOAD  
ANTI-SWAY BRACE  
ASSEMBLY.



**TIE WIRE APPLICATION B**

THIS VIEW DEPICTS THE SECUREMENT OF A TOP-OF-LOAD ANTI-SWAY BRACE TO THE TOP OF A PALLET UNIT OF BOXES BY WIRE TYING TO THE UNITIZING STRAPS WITH NO. 14 GAGE WIRE.

**FILLER ASSEMBLY DIMENSION CHART**

ITEM	DIMENSION					
	A	B	C *	D	E	F *
155MM, SMALL	36" (914MM)	32" (813MM)	27" (686MM)	10" (254MM)	8-1/2" (216MM)	13-1/2" (343MM)
155MM, LARGE ▲	48" (1219MM)	40" (1016MM)	29" (737MM)	12" (305MM)	8-1/2" (216MM)	14-5/8" (371MM)
175MM, 6 PER PALLET	44" (1118MM)	41" (1041MM)	25-1/2" (648MM)	6-1/2" (165MM)	9-1/2" (241MM)	17" (432MM)
8", SMALL PALLET	40" (1016MM)	38" (965MM)	28-1/2" (724MM)	7-1/2" (191MM)	10-1/4" (260MM)	19-1/2" (495MM)
8", M509	52" (1321MM)	47-1/2" (1207MM)	31-3/4" (806MM)	10" (254MM)	11" (279MM)	22-5/8" (575MM)
8", XM650	49" (1247MM)	45" (1143MM)	31-3/4" (806MM)	10" (254MM)	11" (279MM)	22-5/8" (575MM)
8", 6 TALL/ SMALL PLT	48" (1247MM)	45" (1143MM)	28-1/2" (724MM)	7-1/2" (191MM)	10-1/4" (260MM)	19-1/2" (495MM)

\*THE DIMENSIONS IN COLUMNS C AND F MAY NEED TO BE REVERSED OR MAY NEED TO BE ADJUSTED TO SUIT THE LOCATION THE FILLER IS TO BE USED.

▲ DIMENSIONS "A" AND "B" ARE BASED ON A PALLET UNIT HAVING A COVER HEIGHT OF 38". THESE DIMENSIONS MUST BE ADJUSTED FOR PALLET UNITS OF OTHER HEIGHTS.

STRUT, 2" X 6" BY CUT TO SUIT (DOUBLED) (4 REQD). NAIL THE FIRST PIECE TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END. NAIL THE SECOND PIECE TO THE FIRST W/1-10d NAIL EVERY 6" (MINIMUM 2). NOTE THAT THE ASSEMBLY IS TO BE POSITIONED ONLY WITH THE STRUTS LONGITUDINALLY IN A CAR.

HORIZONTAL PIECE, 2" X 6" BY DIMENSION "C" (4 REQD).

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

FILL PIECE, 2" X 2" BY DIMENSION "C" (1 REQD). NAIL TO THE VERTICAL PIECES W/2-10d NAILS AT EACH END.

HOLD-DOWN CLEAT, 2" X 3" BY DIMENSION "D" (DOUBLED) (1 REQD). NAIL THE FIRST PIECE TO THE HORIZONTAL PIECE AND/OR FILL PIECE W/2-10d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER.

**FILLER ASSEMBLY**

THIS ASSEMBLY IS FOR USE IN THE PLACE OF ANY OMITTED PALLET UNIT OF SEPARATE LOADING PROJECTILES.

PARTIAL CENTER GATE (2 REQD, 1 RIGHT HAND AND 1 LEFT HAND). CONSTRUCT SIMILAR TO A CENTER GATE FOR A LOAD. USE ONE-HALF THE WIDTH OF A CENTER GATE EXCEPT THAT THE UPPER AND LOWER HORIZONTAL PIECES WILL BE EXTENDED TO CONTACT THE LATERALLY ADJACENT PALLET UNIT.

LOAD RETAINER PIECE, 2" X 4" BY A LENGTH TO SUIT (2 REQD). POSITION AGAINST A PALLET UNIT AND NAIL TO THE HORIZONTAL PIECES OF THE PARTIAL GATE W/3-10d NAILS AT EACH JOINT.

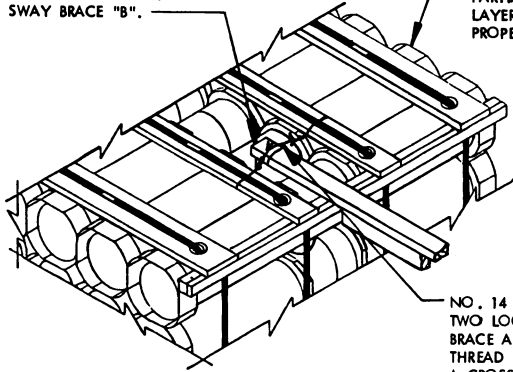
STRUT, 4" X 4" BY CUT TO FIT (4 REQD OR 6 REQD, AS APPLICABLE). TOENAIL TO THE PARTIAL GATE W/2-16d NAILS AT EACH END.

**OMITTED UNIT PROCEDURES**

THIS PROCEDURE IS APPLICABLE FOR THE OMISSION OF A PALLET UNIT OF PROPELLING CHARGES OR A PALLET UNIT OF BOXES FROM A LOAD. THERE SHOULD BE ONE LOAD UNIT BETWEEN THE OMITTED UNIT AND A CENTER GATE FOR A LOAD.



TOP-OF-LOAD ANTI-SWAY BRACE "B".

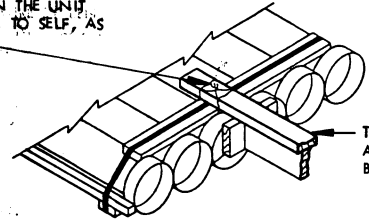


TIE WIRE APPLICATION C

PARTIAL VIEW SHOWING TOP LAYER OF PALLET UNIT OF PROPELLING CHARGES.

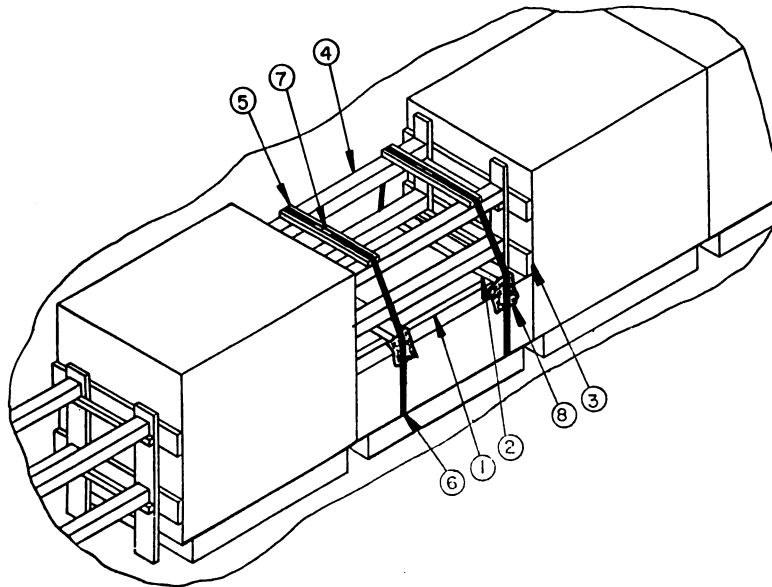
NO. 14 GAGE WIRE BY A LENGTH TO SUIT. FORM TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE AND TWIST TO PREVENT DISPLACEMENT. THREAD EACH END OF WIRE UNDER AND AROUND A CROSS PIECE OF THE TOP DUNNAGE ASSEMBLY AND TWIST WIRE TO SELF, AS SHOWN.

NO. 14 GAGE WIRE BY LENGTH TO SUIT. FORM TWO LOOPS AROUND TOP-OF-LOAD ANTI-SWAY BRACE AND TWIST TO PREVENT DISLODGE-  
MENT. THREAD EACH END OF WIRE UNDER AND AROUND A STRAP-PING BOARD ON THE UNIT AND TWIST WIRE TO SELF, AS SHOWN.



TOP-OF-LOAD ANTI-SWAY BRACE "A".

TIE WIRE APPLICATION D



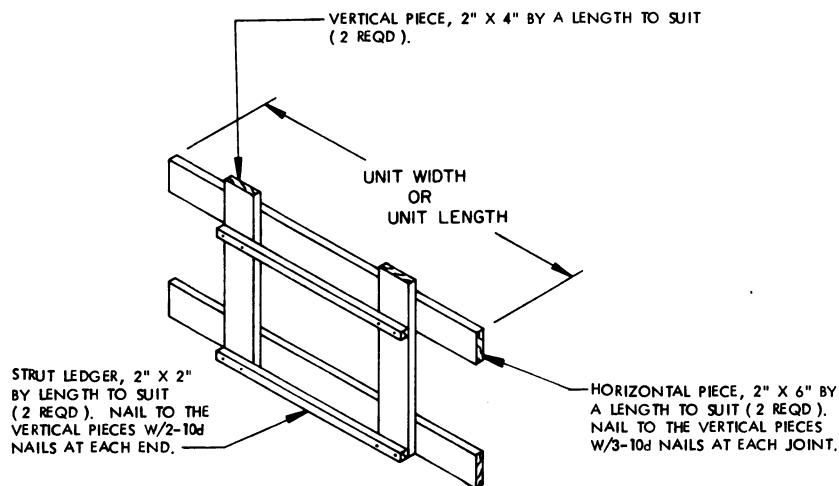
ISOMETRIC VIEW

SPECIAL NOTES:

1. THE DEPICTED PARTIAL-UNIT PROCEDURE IS APPLICABLE FOR ANY LESS-THAN-FULL UNIT OF PROPELLING CHARGES OR PALLETIZED BOXES.
2. THERE IS NO RESTRICTION AS TO THE NUMBER OF LAYERS ON THE PARTIAL UNIT. THE CONFIGURATION OF THE PARTIAL-UNIT GATE WILL BE ADJUSTED TO SUIT.
3. ALTHOUGH FOUR (4) STRUTS ARE SHOWN FOR BRACING THE ABOVE PARTIAL UNIT, ONLY TWO (2) STRUTS CAN BE USED, BASED ON THE HEIGHT OF THE PARTIAL UNIT.
4. THE PARTIAL UNIT MUST CONSIST OF FULL LAYERS OF BOXES OR OF CONTAINERS, AS APPLICABLE.
5. THE PARTIAL UNIT PROCEDURE MUST BE APPLIED NEAR THE CENTER OF THE CAR. HOWEVER, THERE SHOULD BE AT LEAST ONE (1) LOAD UNIT BETWEEN THE PARTIAL UNIT AND A CENTER GATE.

KEY NUMBERS

- ① SUPPORT PIECE, 2" X 6" BY UNIT WIDTH OR UNIT LENGTH (2 REQD). POSITION SO AS TO SUPPORT THE VERTICAL PIECES OF THE PARTIAL UNIT GATES. THESE PIECES NOT REQUIRED IF THE TOP OF THE PARTIAL UNIT WILL SUPPORT THE GATES.
- ② THE RETAINER PIECE, 2" X 4" BY UNIT WIDTH OR UNIT LENGTH (2 REQD). NAIL TO THE SUPPORT PIECES W/2-10d NAILS AT EACH JOINT.
- ③ PARTIAL-UNIT GATE (2 REQD). SEE THE DETAIL BELOW. SEE GENERAL NOTE "J" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ④ STRUT, 4" X 4" BY CUT TO FIT (4 REQD). TOENAIL TO THE VERTICAL PIECES OF THE PARTIAL-UNIT GATE, PIECE MARKED ③, W/2-16d NAILS AT EACH END. SEE GENERAL NOTE "J" ON PAGE 2 AND SPECIAL NOTE 3 AT LEFT.
- ⑤ STRAPPING BOARD, 2" X 4" BY A LENGTH TO SUIT (2 REQD). NAIL TO THE STRUTS, PIECES MARKED ④, W/3-10d NAILS AT EACH END.
- ⑥ UNITIZING STRAP, 1-1/4" X .031" OR .035" BY A LENGTH TO SUIT STEEL STRAPPING (2 REQD). PRE-POSITION THRU THE FORKLIFT OPENINGS OF THE PALLET.
- ⑦ SEAL FOR 1-1/4" STEEL STRAPPING (4 REQD, 2 PER JOINT). SEE GENERAL NOTE "Q" ON PAGE 2.
- ⑧ ANTI-CHAFING NEUTRAL BARRIER MATERIAL. POSITION BETWEEN CONTAINERS AND STRAPPING AT POINTS OF CONTACT WITH METAL CONTAINERS.



PARTIAL UNIT GATE

SHIPMENT OF PARTIAL UNIT