

# METHOD FOR 50-FOOT CARS

## FIXED-LOAD PROCEDURES FOR LOADING AND BRACING (CL) IN BOXCAR<sup>⊕</sup> OF PALLETIZED EMPTY 105MM PROJECTILES<sup>●</sup> (M1 HE PROJ PACKED IN WIREBOUND BOX PLT)

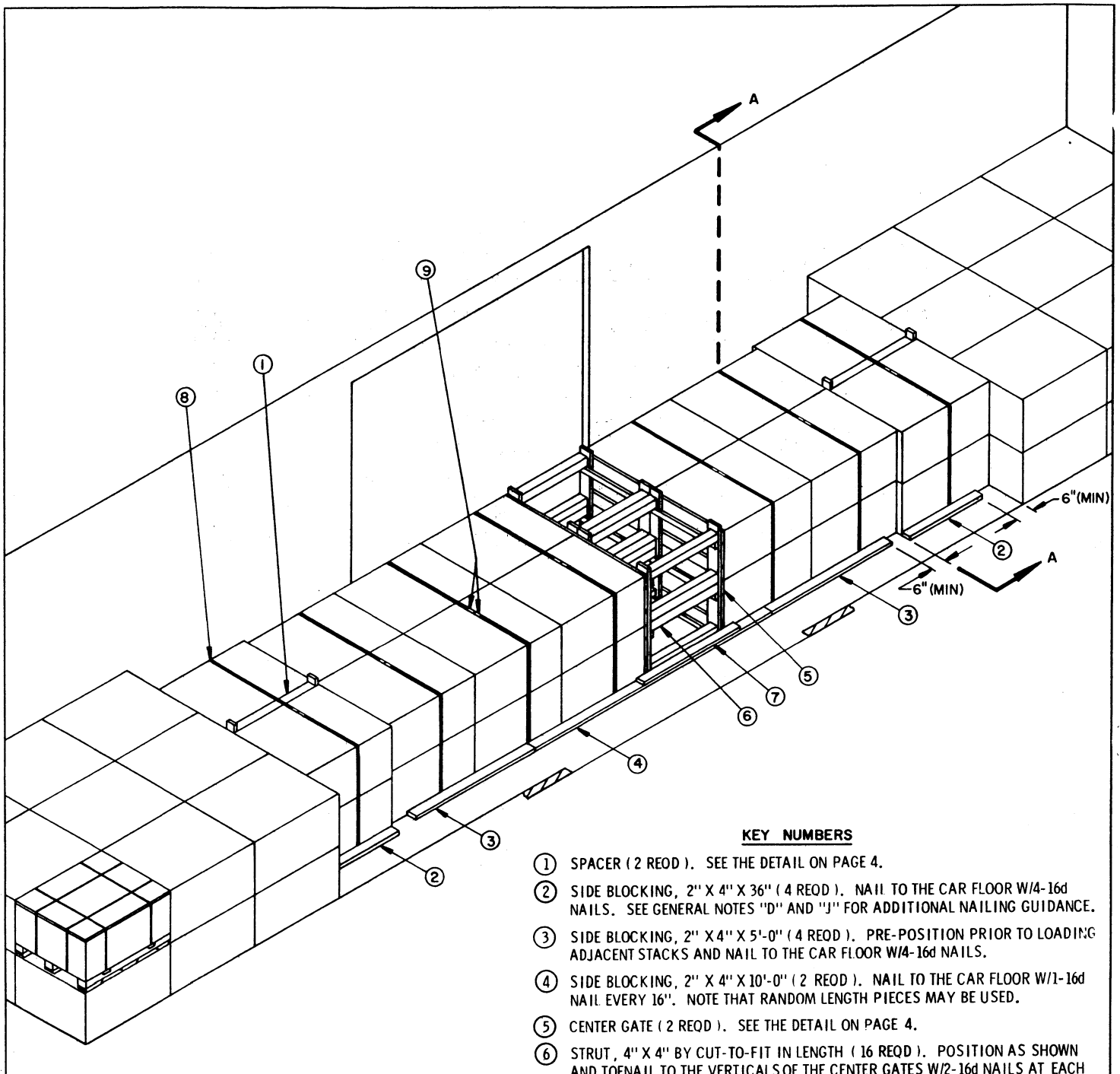
⊕ WHEN THE SPECIFICATIONS OF THIS DRAWING ARE USED, ONLY "HIGH CAPACITY" CUSHIONED BOX CARS CAN BE USED FOR SHIPPING THE SPECIFIED ITEM. NON-CUSHIONED CARS MUST NOT BE USED. CARS HAVING SLIDING CENTER SILL TYPE CUSHIONING DEVICES OR END-OF-CAR TYPE DEVICES WHICH HAVE AT LEAST 15" OF TRAVEL ARE ACCEPTABLE.

● THE OUTLOADING PROCEDURES SPECIFIED WITHIN THIS DRAWING ARE ONLY APPLICABLE TO ITEMS WHICH ARE EMPTY. NOTICE: THE SPECIFIED LOADING AND BRACING PROCEDURES WILL NOT BE USED FOR SHIPPING ITEMS CONTAINING EXPLOSIVES.

**DO NOT SCALE**

REVISIONS			DRAFTSMAN	PROJ ENG
			20/10/10	DIW/Alms
			ONE/CLM	LOG. ENGINE OFFICE
			JDS	1/14
			APPROVED	
			<i>(Signature)</i>	
			U. S. ARMY MUNITIONS COMMAND	
			APPROVED BY ORDER OF COMMANDING GENERAL	
			U. S. ARMY MATERIEL COMMAND	
			<i>(Signature)</i>	
			USAMC AMMO CENTER	
			U. S. ARMY MATERIEL COMMAND	
			DATE: MARCH 1973	
			AMC AMMO CEN DWG NO	
			<b>D-AMXAC-4333</b>	

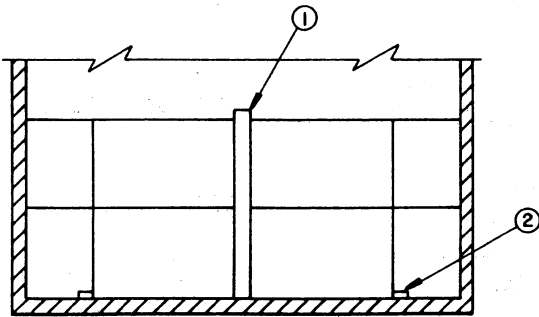
PROJECT \_\_\_\_\_



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① SPACER ( 2 REOD ). SEE THE DETAIL ON PAGE 4.
- ② SIDE BLOCKING, 2" X 4" X 36" ( 4 REOD ). NAIL TO THE CAR FLOOR W/4-16d NAILS. SEE GENERAL NOTES "D" AND "J" FOR ADDITIONAL NAILING GUIDANCE.
- ③ SIDE BLOCKING, 2" X 4" X 5'-0" ( 4 REOD ). PRE-POSITION PRIOR TO LOADING ADJACENT STACKS AND NAIL TO THE CAR FLOOR W/4-16d NAILS.
- ④ SIDE BLOCKING, 2" X 4" X 10'-0" ( 2 REOD ). NAIL TO THE CAR FLOOR W/1-16d NAIL EVERY 16". NOTE THAT RANDOM LENGTH PIECES MAY BE USED.
- ⑤ CENTER GATE ( 2 REOD ). SEE THE DETAIL ON PAGE 4.
- ⑥ STRUT, 4" X 4" BY CUT-TO-FIT IN LENGTH ( 16 REQD ). POSITION AS SHOWN AND TOENAIL TO THE VERTICALS OF THE CENTER GATES W/2-16d NAILS AT EACH END. SEE THE "STRUT DETAIL" ON PAGE 4 AND GENERAL NOTE "F" FOR ADDITIONAL GUIDANCE.
- ⑦ GATE RETAINER, 2" X 4" X 48" ( 2 REQD ). NAIL TO PIECE MARKED ④ W/6-10d NAILS.
- ⑧ BUNDLING STRAP, 1-1/4" X .035" X 22'-0" LONG STEEL STRAPPING ( 7 REOD ). ALTHOUGH IT IS NOT MANDATORY, IT IS SUGGESTED THAT A STRAP BE PRE-POSITIONED PRIOR TO LOADING A STACK SO THAT THE STRAP WILL ENCIRCLE THE STACK AS SHOWN, WHEN IT IS TENSIONED AND SEALED. SEAL EACH STRAP JOINT W/2-SEALS PER STRAP.
- ⑨ SEAL FOR 1-1/4" STEEL STRAPPING ( 14 REOD, 2 PER STRAP ). DOUBLE CRIMP EACH SEAL. SEE GENERAL NOTE "G".



**SECTION A-A**

NOTE: BUNDLING STRAP HAS BEEN OMITTED FROM THE SECTION VIEW FOR CLARITY PURPOSES.

( GENERAL NOTES CONTINUED )

GENERAL NOTES

- J. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- K. PORTIONS OF THE DEPICTED CAR, SUCH AS A CAR SIDEWALL, HAVE BEEN OMITTED FROM THE LOAD VIEWS FOR CLARITY PURPOSES.
- L. NOTICE: IF AUTHORIZED BY THE U. S. ARMY MUNITIONS COMMAND, JOLIET, ILLINOIS, ON A CASE BY CASE BASIS, THE LOADING AND BRACING SPECIFICATIONS OF THIS DRAWING CAN ALSO BE USED FOR SHIPPING OTHER EMPTY PROJECTILES. THESE OTHER PROJECTILES ARE IDENTIFIED WITHIN A TABULAR DATA TABLE IN PA DRAWING 8837835, IN ADDITION TO THE M1 HE PROJECTILE. HOWEVER, THE FOLLOWING CRITERIA WILL APPLY.
  - 1. ONLY EMPTY PROJECTILES ARE ACCEPTABLE. PROJECTILES CONTAINING EXPLOSIVE FILLER OR OTHER TYPES OF FILLER ARE NOT TO BE SHIPPED BY THE DELINEATED PROCEDURES.
  - 2. A PALLET UNIT OF PROJECTILES THAT WEIGHS MORE THAN 2,360 POUNDS IS NOT ACCEPTABLE.
  - 3. PROJECTILES THAT ARE LONGER THAN THE M1 HE PROJECTILE ARE NOT ACCEPTABLE. ALSO, PROJECTILES THAT ARE MORE THAN 1-1/4" SHORTER THAN THE M1 HE PROJECTILE ARE NOT ACCEPTABLE. IF PROJECTILES THAT ARE SHORTER THAN THE M1 HE ARE TO BE SHIPPED WOODEN OR OTHER SUITABLE "HARD" FILLER MATERIAL MUST BE USED TO FILL THE VOID BETWEEN THE TOP OF THE PROJECTILES AND THE INSIDE SURFACE OF THE PALLET UNIT COVER ASSEMBLY. ALSO, IF THE PROJECTILES DO NOT FULLY OCCUPY THE INTERIOR SPACE OF A PALLET UNIT AS THE M1 HE PROJECTILES DO, THE SAME TYPE OF FILLER MATERIAL MUST BE USED TO FILL VOIDS AT THE SIDES AND/OR ENDS OF THE PALLET LOAD BETWEEN THE PROJECTILES AND THE SIDE/END PANELS OF THE PALLET UNIT.

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13.
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE "INTERIM PROCEDURES" APPLICABLE TO THE OUTLOADING OF PALLETIZED EMPTY 105MM PROJECTILES. THIS DRAWING WILL BE USED UNTIL CANCELLED AND/OR SUPERSEDED BY USAMC 19-48 SERIES DRAWING.
- C. PALLET UNIT DATA:
  - DIMENSIONS ( APPROX ) ---- 43-1/4" LONG X 35-3/4" WIDE X 22-3/4" HIGH.
  - GROSS WEIGHT ( APPROX ) — 2,360 POUNDS.
- D. THE 64-UNIT LOAD DEPICTED HEREIN IS BASED ON A 50'-6" LONG BY 9'-2" WIDE CUSHIONED BOXCAR THAT HAS 10'-0" WIDE THROUGH DOORS OF THE CONVENTIONAL SLIDING TYPE AND HAS A LOAD LIMIT OF NOT LESS THAN 153,500 POUNDS. WHEN SHIPPING A 64-UNIT LOAD, A CAR THAT HAS A LOAD LIMIT LESS THAN 153,500 POUNDS MUST NOT BE USED. HOWEVER, WIDER CARS MAY BE USED, AND CARS WITH ANY TYPE OR WIDTH DOOR CAN BE USED. BUT TO FACILITATE LOADING OPERATIONS CARS THAT HAVE DOOR OPENINGS LESS THAN 10'-0" WIDE SHOULD NOT BE USED. IF A CAR WITH PLUG DOORS IS USED, AFTER THE PLUG DOORS ON A CAR ARE CLOSED AND READY FOR THE INSTALLATION OF "CAR SEALS", A PIECE OR WIRE OF SUITABLE SIZE WILL BE USED IN ADDITION TO, AND IN CONJUNCTION WITH, EACH CAR SEAL USED TO "SEAL" THE CAR. THE WIRE WILL BE THREADED THROUGH THE HOLES IN THE DOOR LATCH ASSEMBLY ONE OR MORE TIMES, AND THE WIRE ENDS WILL BE TWISTED TOGETHER. ALSO, ALL-METAL CARS CAN BE USED. IF THE CAR BEING USED FOR THE SHIPMENT OF THE DEPICTED LOAD IS EQUIPPED WITH A NAILABLE METAL FLOOR AND A NAIL SIZE FOR FLOOR NAILING IS MARKED ON THE SIDEWALL OF THE CAR, THAT GUIDANCE SHOULD BE APPLIED TO THE NAILING OF THE APPLICABLE DUNNAGE PIECES. IF A NAIL SIZE IS NOT SPECIFIED IN THE CAR, 30d NAILS SHOULD BE USED. IF 30d NAILS CANNOT BE DRIVEN PROPERLY, THEN 20d NAILS SHOULD BE USED. NAILS OF A LESSER SIZE ARE NOT ACCEPTABLE.
- E. THE SELECTION OF RAILCARS FOR THE TRANSPORT OF THE DESIGNATED ITEM IS THE RESPONSIBILITY OF THE SHIPPER. ONLY CARS WHICH HAVE "SOUND" FLOORS AND ARE IN OTHERWISE PROPER CONDITION TO SAFELY TRANSPORT THE LADING TO DESTINATION WITHOUT DAMAGE WILL BE SELECTED.
- F. WHEN LOADING THE CAR, THE 2-WIDE PORTIONS OF THE LOAD ARE TO BE CENTERED AS NEAR AS PRACTICAL ON THE WIDTH OF THE CAR. ADDITIONALLY, PALLET UNITS ARE TO BE PLACED INTO A LOAD AS CLOSE TOGETHER AS POSSIBLE THROUGHOUT THE LENGTH OF THE LOAD BAYS TO ACHIEVE A "TIGHT" LOAD. IT IS RECOMMENDED THAT "LOAD JACKS" BE USED TO TIGHTEN A LOAD AFTER THE CENTER GATES HAVE BEEN POSITIONED AND PRIOR TO INSTALLING THE STRUTS. EXERCISE CAUTION WHEN USING LOAD JACKS SO AS TO NOT OVER TIGHTEN A LOAD AND DAMAGE THE PALLET UNITS. WHEN LOAD JACKS ARE NOT AVAILABLE, THE PROVISIONS OF THE "STRUT DETAIL" ON PAGE 4 CAN BE APPLIED TO AID IN ACHIEVING A "TIGHT" LOAD. STRUTS SHOULD BE CUT SLIGHTLY LONGER THAN THE "MEASURED DISTANCE" AND THEN DRIVEN INTO PLACE, THUS FORCING THE CENTER GATES AND LOAD BAYS APART.
- G. WHEN ANY STRAP IS SEALED AT AN END-OVER-END LAP JOINT, TWO ( 2 ) SEALS, BUTTED TOGETHER, WITH TWO ( 2 ) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT. CAUTION: EXERCISE CARE DURING TENSIONING TO PREVENT DAMAGE TO PALLET UNITS.
- H. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE OR 1-5/8" THICK BY 3-5/8" WIDE AND 4" X 4" MATERIAL IS ACTUALLY 3-1/2" THICK BY 3-1/2" WIDE OR 3-5/8" THICK BY 3-5/8" WIDE. IF 2" X 3" MATERIAL IS NOT AVAILABLE, TWO SUITABLE WIDTH PIECES CAN BE MADE BY "RIPPING" NOMINAL 2" X 6" MATERIAL. ALTHOUGH NOMINAL SIZE LUMBER IS SPECIFIED HEREIN, "ROUGH CUT" LUMBER OF EQUAL OR GREATER STRENGTH CAN BE SUBSTITUTED, PROVIDING NAIL SIZES ARE ADJUSTED ACCORDINGLY.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 2"	12	4
2" X 3"	28	14
2" X 4"	76	51
2" X 6"	80	80
4" X 4"	74	99
NAILS	NO. REQD	POUNDS
10d ( 3" )	12	1/4
16d ( 3-1/2" )	302	6-1/2
STEEL STRAPPING 1-1/4" X .035" ----- 154' REQD ---22 LBS		
SEAL FOR 1-1/4" STRAPPING----- 14 REQD --- 3/4 LB		

MATERIAL SPECIFICATIONS

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

( CONTINUED AT UPPER LEFT )

LOAD AS SHOWN

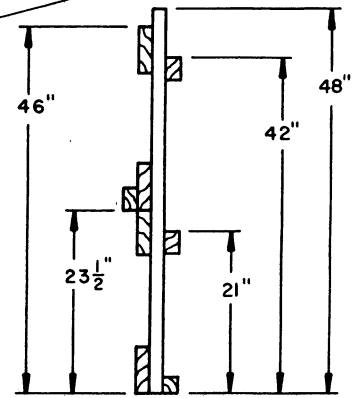
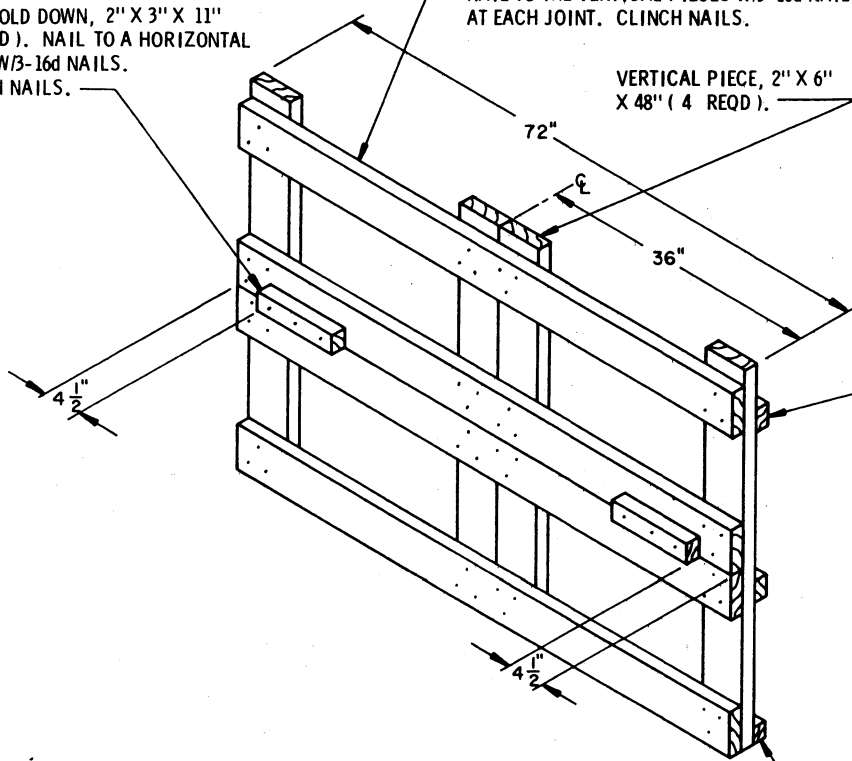
ITEM	QUANTITY	WEIGHT ( APPROX )
PALLET UNIT -----	64 -----	151,040 LBS
DUNNAGE-----	-----	630 LBS
TOTAL WEIGHT-----		151,670 LBS

GATE HOLD DOWN, 2" X 3" X 11"  
(2 REQD). NAIL TO A HORIZONTAL  
PIECE W/3-16d NAILS.  
CLINCH NAILS.

HORIZONTAL PIECE, 2" X 6" X 72"  
(4 REQD). NAIL TO THE VERTICAL  
PIECES W/3-16d NAILS  
AT EACH JOINT. CLINCH NAILS.

VERTICAL PIECE, 2" X 6"  
X 48" (4 REQD).

STRUT LEDGER, 2" X 3" X 72"  
(2 REQD). NAIL  
TO THE VERTICAL PIECES  
W/2-16d NAILS AT EACH  
JOINT. CLINCH EXPOSED  
NAILS.

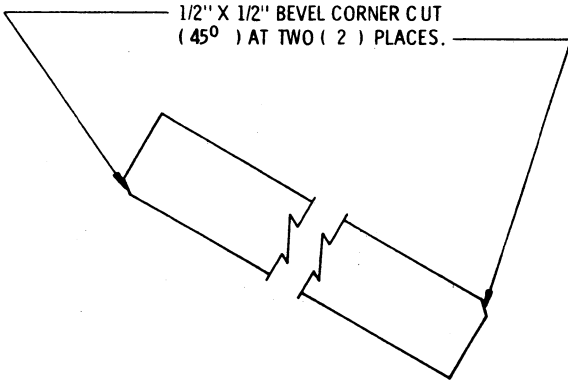


**CENTER GATE**

STRUT LEDGER, 2" X 2"  
X 72" (1 REQD). NAIL  
TO THE VERTICAL PIECES  
W/2-16d NAILS AT EACH  
JOINT.

**END VIEW**

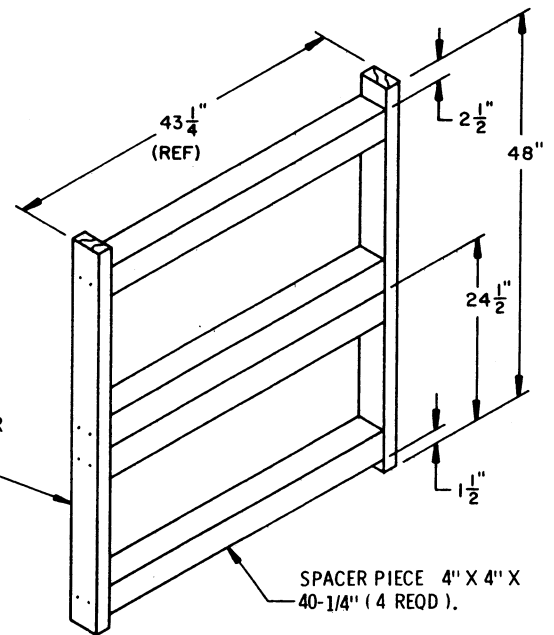
1/2" X 1/2" BEVEL CORNER CUT  
(45°) AT TWO (2) PLACES.



**STRUT DETAIL**

BEVEL CUTS SHOWN ARE REQUIRED TO FACILITATE A TIGHT  
WEDGE FIT. THE BEVEL CUT PROVISIONS ARE OPTIONAL,  
BUT THEY ARE RECOMMENDED IF "LOAD JACKS" ARE NOT  
AVAILABLE TO TIGHTEN A LOAD IN ACCORDANCE WITH  
GUIDANCE SET FORTH BY GENERAL NOTE "F" ON PAGE 3.

TIE PIECE 2" X 4" X 48" (2  
REQD). NAIL TO THE SPACER  
PIECES W/2-16d NAILS AT  
EACH JOINT.



**SPACER**

SPACER PIECE 4" X 4" X  
40-1/4" (4 REQD).