



APPROVED  
BUREAU  
OF  
EXPLOSIVES  
*W. F. Brannan*  
1/28/55 INSPECTOR

# TRUCKLOADING OF AMMUNITION PACKED IN WOODEN BOXES

( WP AND PWP FILLED ITEMS NOT INCLUDED  
FOR THESE ITEMS SEE DWG. 19-48-4010-IIA1000 )

- INDEX -

- PAGE 2 GENERAL NOTES AND MATERIAL SPECIFICATIONS
- PAGES 3 & 4 TYPICAL LOADS (TL)
- PAGES 5, 6 & 7 TYPICAL LOADS (LTL)
- PAGE 8 WEIGHT DISTRIBUTION METHODS
- PAGE 9 MISCELLANEOUS DETAILS

**CAUTION: GENERAL NOTES, PAGE 2 WILL BE THOROUGHLY READ  
PRIOR TO LOADING.**

ESA  
14-59

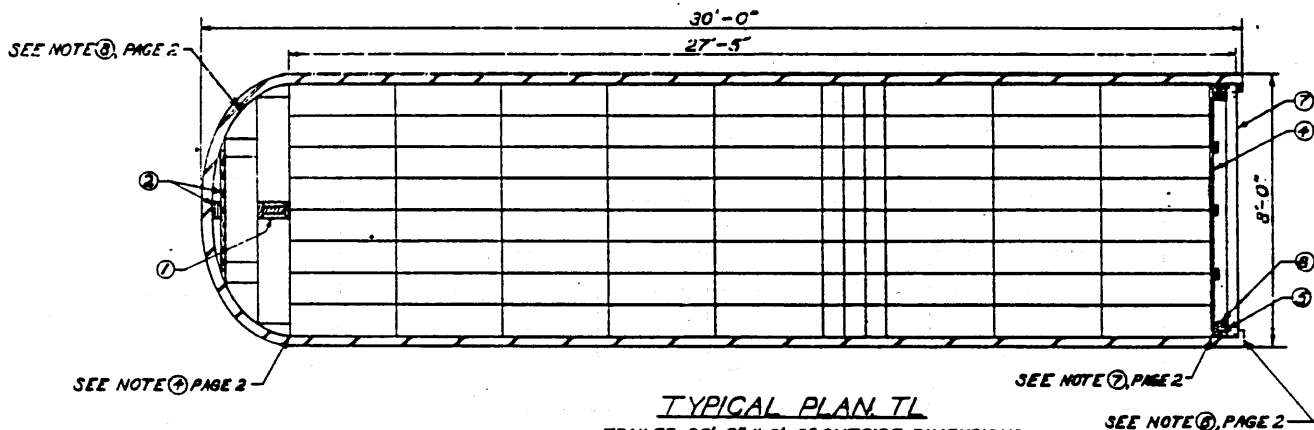
TRUCKLOADING OF AMMUNITION PACKED IN WOODEN BOXES			
DESIGNER <i>JCP</i>	TITLE <i>PK</i>	ENGINEER <i>ERT/ABC</i>	APPROVED BY <i>[Signature]</i>
CHECKER <i>JDB/</i>	DATE <i>PK</i>	DATE <i>PK</i>	ORGANIZATION ORDNANCE CORPS U.S.A.
REVISIONS			<i>John P. Diachin</i> ORDNANCE CORPS U.S.A.
			APPROVED BY <i>[Signature]</i> ORDNANCE CORPS U.S.A.
			ORDNANCE CORPS U.S.A.
			2 JUNE 1955
			CLASS DIVISION DRAWING FILE
			19 48 4013 IIA1001

### GENERAL NOTES

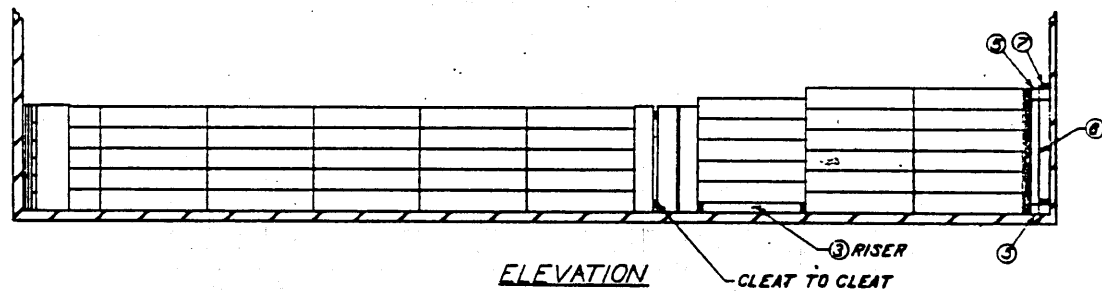
- ① - MOTOR CARRIERS ARE RESPONSIBLE FOR SUPERVISION OVER TOTAL WEIGHT AND DISTRIBUTION OF LOAD ON THEIR VEHICLE. INSTALLATION SHOULD REQUIRE ORIGIN CARRIER TO PROVIDE SUCH SUPERVISION, TO ASSURE COMPLIANCE WITH LAWS OF ALL STATES THROUGH WHICH ANY TRUCK LOAD SHIPMENT WILL PASS.
- ② - NAILING TO TRAILER SIDE WALLS WILL BE AVOIDED AS NO EFFECTIVE ANCHORING CAN BE EXPECTED, AND FALSE SECURITY CAN BE DANGEROUS. NAILING INTO TRAILER FLOORS WILL BE AVOIDED WHEREVER PRACTICABLE. ALL NAILING WILL NORMALLY BE ACCOMPLISHED WITHIN THE BLOCKING LUMBER, EXCEPT LTL ON WOODEN FLOOR.
- ③ - ALL BLOCKING SHOULD BE TO THE STRONG POINTS OF THE TRAILER, THAT IS, THE FLOOR, OR AGAINST SIDE FRAME MEMBERS AT THE FLOOR LINE. SECONDARY STRONG POINTS ARE AGAINST THE SIDE FRAME MEMBERS AT THE ROOF LINE. BRACING AGAINST SIDE MEMBERS AT POINTS BETWEEN FLOOR AND ROOF IS NOT RECOMMENDED.
- ④ - IN THE EVENT THE TRAILER IS PROVIDED WITH AN INSTALLED BULKHEAD, LOAD MAY BE POSITIONED DIRECTLY AGAINST IT.
- ⑤ - THIS DRAWING APPLIES TO TRAILERS HAVING WOOD, METAL & WOOD, OR METAL FLOORS.
- ⑥ - IN THOSE CASES WHEREIN TRAILERS DO NOT HAVE REAR CORNER STUDS TO BRACE AGAINST, BLOCKING WILL EXTEND TO DOORWAY, SO THAT DOORS, WHEN CLOSED, WILL PREVENT POSSIBLE SHIFTING OF LOAD.
- ⑦ - WHEN LOAD IN TRAILER EXTENDS TO WITHIN 4" OF END OF TRAILER, POSITIONING OF TAIL GATE AGAINST STUDS OR DOORS IS PERMITTED.
- ⑧ - WHEN A ROUND NOSED TRAILER IS LOADED WITH LIGHTLY CONSTRUCTED WOODEN BOXES, (SUCH AS ARE USED FOR TNT), OR WITH CARDBOARD CARTONS, A BULKHEAD WILL BE REQUIRED TO PREVENT DAMAGE TO CONTAINERS. FOR DETAIL OF BULKHEAD SEE PAGE 5.
- ⑨ - RISERS SHOULD BE 1/2 BOX HEIGHT. LENGTH AND WIDTH DIMENSIONS OF FILLER SHOULD BE THE SAME AS THE VOID SPACE TO BE OCCUPIED.

### MATERIAL SPECIFICATIONS

LUMBER: SEE PAR 5400, ORDM 3-4, VOL 2, DATED 3 MAY 1954.  
NAILS: COMMON CEMENT COATED, FED. SPEC. FF-N-101.  
ALT: ANNULARLY GROOVED NAILS OF SAME SIZE.  
STRAPPING, STEEL: TYPE 1, CLASS A OR C, FED. SPEC. QQ-3-781A.

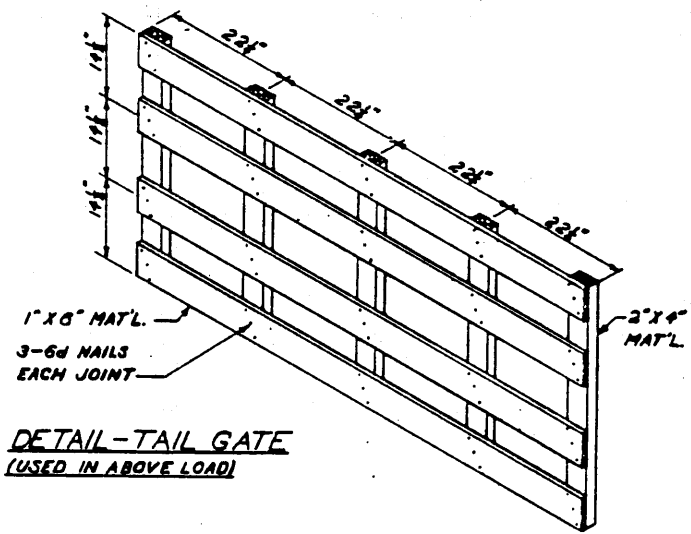


**TYPICAL PLAN, TL**  
 TRAILER 30'-0" X 8'-0" OUTSIDE DIMENSIONS  
 W/ WOODEN OR METAL FLOOR  
 BOX DIMENSIONS, 37 1/2" X 1 1/4" X 7 1/2"  
 BOX WEIGHT, 88.8 LBS.  
 LOAD AS SHOWN, 377 BOXES  
 LOAD WEIGHT, APPROXIMATELY 25,458 LBS.  
 (INCLUDING DUNNAGE)



**KEY NUMBERS & NOTES**

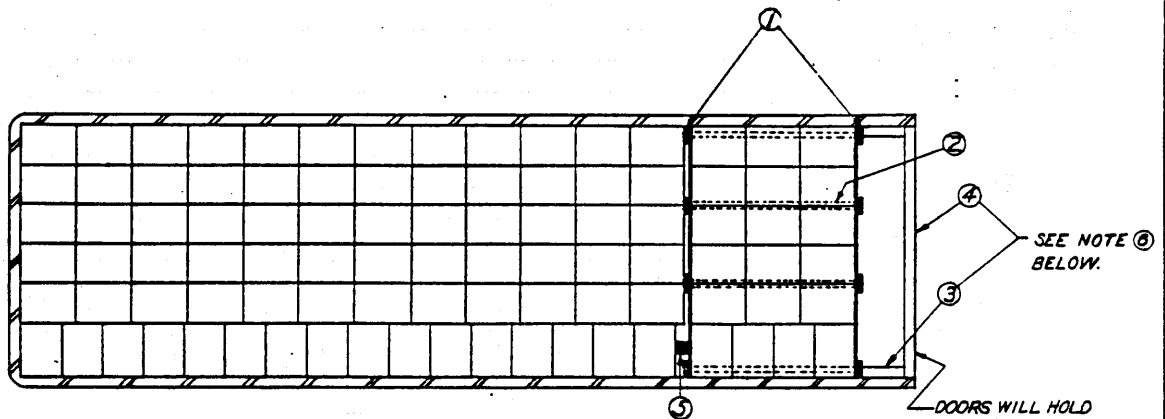
- ① SOLID FILL.
- ② 2" MATERIAL, AS REQUIRED.
- ③ RISER—SEE DETAIL, PAGE 7.
- ④ TAIL GATE - SEE DETAIL.
- ⑤ 4" X 4" CUT TO FIT BETWEEN TAIL GATE AND CORNER STUD. 4 REQ'D. TO NAIL TO GATE UPRIGHTS W/ 3-10d NAILS EACH JOINT.
- ⑥ 2" X 4" GATE HEIGHT. 2 REQ'D. NAIL TO PC. ③ W/ 2-10d NAILS EACH JOINT.
- ⑦ 2" X 4" X TRAILER WIDTH. 2 REQ'D. NAIL TO PC. ③ W/ 2-10d NAILS, EACH JOINT.



**DETAIL-TAIL GATE**  
 (USED IN ABOVE LOAD)

**NOTE:**  
 HORIZONTALS WILL BE POSITIONED AT EXTREME TOP AND BOTTOM OF GATE AND AT JOINTS BETWEEN EVERY OTHER LAYER, OR MAXIMUM OF 18" CENTER TO CENTER, WHICHEVER IS LESS IN HEIGHT.

WOOD OR METAL FLOOR TRAILER, WITH END CORNER STUDS



**NOTE**

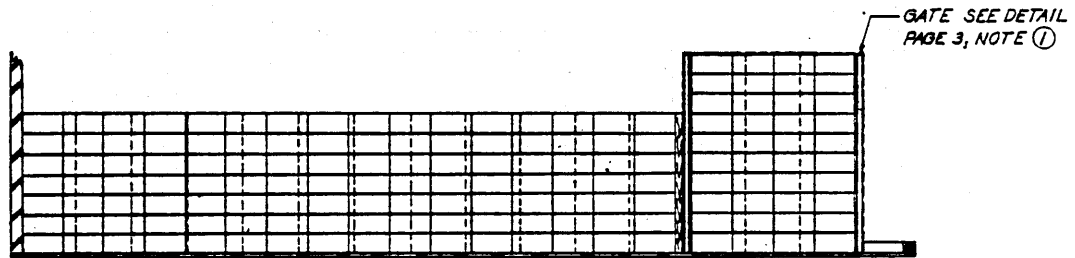
FOR POSITIONING OF BOXES IN TRAILER W/ ROUNDED FORWARD END, SEE PAGE 3.

**TYPICAL PLAN**

TRAILER 26'-0" X 8'-0" OUTSIDE DIMENSIONS  
 W/ METAL FLOOR, W/O END CORNER STUDS.  
 BOX DIMENSIONS 18 3/8" X 7" X 14"  
 BOX WEIGHT, 36 LBS.  
 LOAD AS SHOWN, 722 BOXES.  
 LOAD WEIGHT, APPROX. 26,240 LBS. (INCL. DUNNAGE).

DOORS WILL HOLD BRACING IN PLACE.

SEE NOTE ⑥ BELOW.

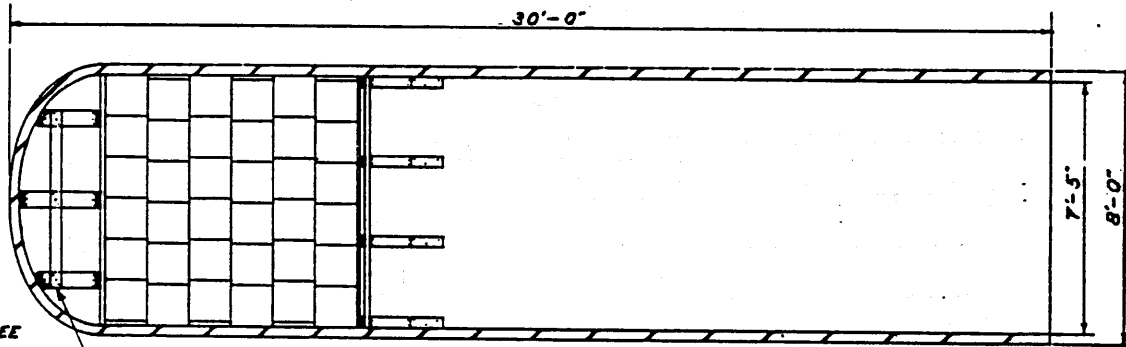


**ELEVATION**

**KEY NUMBERS & NOTES**

- ① - GATE (2 REQ'D) FORWARD GATE MAY BE LOCATED TO SUIT WEIGHT-DISTRIBUTION REQUIREMENTS.
- ② - 1/2" x .035" LENGTH TO SUIT, STEEL STRAPPING, (4 REQ'D).
- ③ - 4" x 4", CUT TO FIT (2 REQ'D) FIT BETWEEN GATE UPRIGHT & PC ④.
- ④ - 4" x 4" TLR WIDTH. POSITION AT REAR OF TRAILER. TO NAIL TO GATE UPRIGHT W/ 2-12d NAILS EA. JT.
- ⑤ - 4" x 4" TLR WIDTH. POSITION AT REAR OF TRAILER. TO NAIL TO PC ③ W/ 2-12d NAILS EA. JT. THIS PIECE IS TO CONTACT DOORS WHEN CLOSED. (1 REQ'D)
- ⑥ - FILL AS REQ'D. (NAIL THROUGH GATE HORIZONTALS INTO FILL)
- ⑦ - WHEN LOAD EXTENDS TO WITHIN 4" OF REAR DOORS, PCS ③ & ④ MAY BE OMITTED.

WOOD OR METAL FLOOR TRAILER W/O END CORNER STUDS



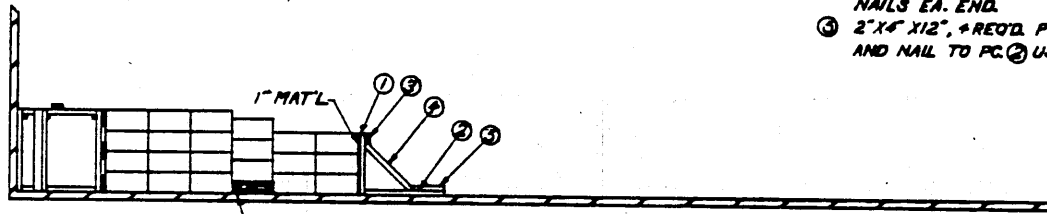
BULKHEAD-SEE  
DETAIL BELOW

TYPICAL PLAN (LTL)

TRAILER W/WOODEN FLOOR, 30'-0" X  
8'-0" OUTSIDE DIMENSIONS  
LIGHTLY CONSTRUCTED, WOODEN BOX.  
1 1/2" X 1 1/2" X 7/8"  
GROSS WEIGHT OF PACKAGE, 55 LBS.

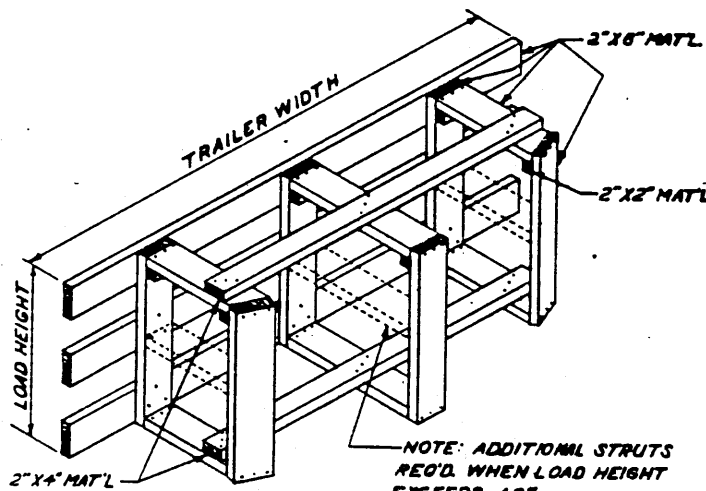
KEY NUMBERS & NOTES

- ① GATE. 1" MAT'L. HORIZONTALS. 2" X 4" UPRIGHTS, HEIGHT OF LOAD.
- ② 2" X 4" X 30", 4 REQ'D. NAIL TO FLOOR USING 1-16d NAIL EVERY 6".
- ③ 2" X 4" X TRAILER WIDTH. NAIL TO GATE UPRIGHTS USING 2-12d NAILS EA. JOINT
- ④ 2" X 4" MAT'L. 4 REQ'D. DOUBLE BEVEL EA. END AND POSITION AT 45°. TO NAIL TO GATE UPRIGHTS & PC. ② USING 2-10d NAILS EA. END.
- ⑤ 2" X 4" X 12", 4 REQ'D. POSITION AS SHOWN AND NAIL TO PC. ② USING 3-12d NAILS.

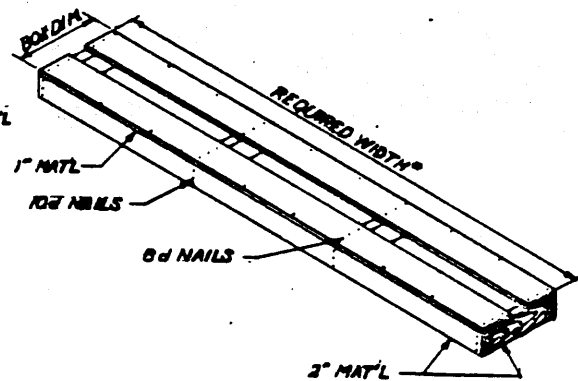


RISER - SEE  
DETAIL BELOW

ELEVATION



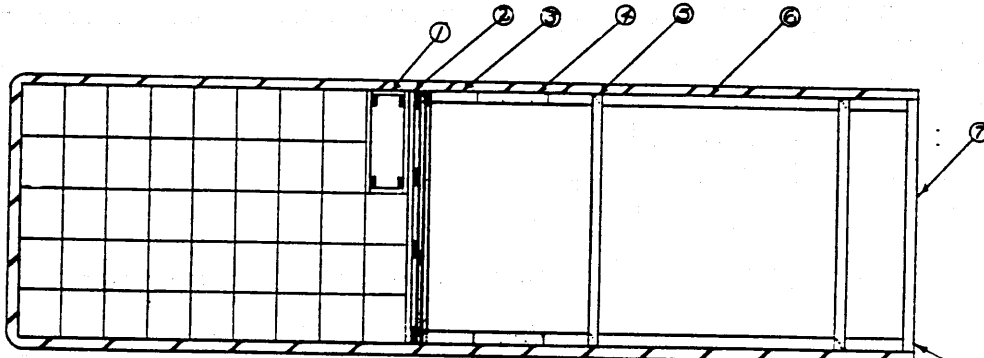
DETAIL OF BULKHEAD  
(USED FOR LIGHTLY CONSTRUCTED  
BOXES ONLY)



DETAIL OF RISER OR FILLER FOR  
FIBER CONTAINERS

\*NOTE: SEE PAGE 2, NOTE 3

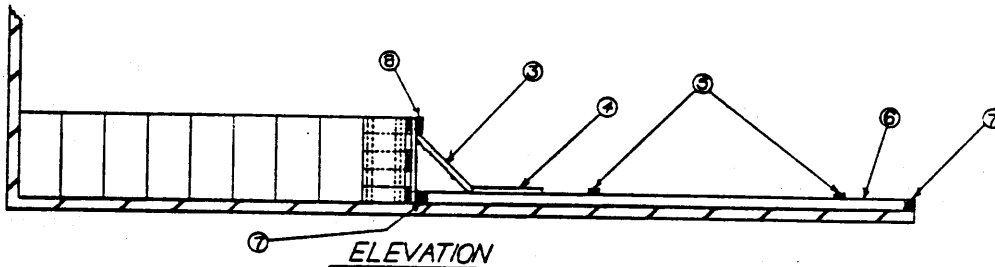
LTL LIGHTLY CONSTRUCTED BOXES IN WDN FLOOR TRAILER W/ROUND NOSE



TYPICAL PLAN LTL

TRAILER 26'-0" X 8'-0" OUTSIDE DIMENSIONS  
 W/METAL FLOOR, W/O CORNER STUDS (NOTE A)  
 METAL-LINED WOODEN BOX 17 1/2" X 14 1/2" X 30"H.  
 WEIGHT OF BOX (W/O PROPELLANT) APPROX. 45 LBS.

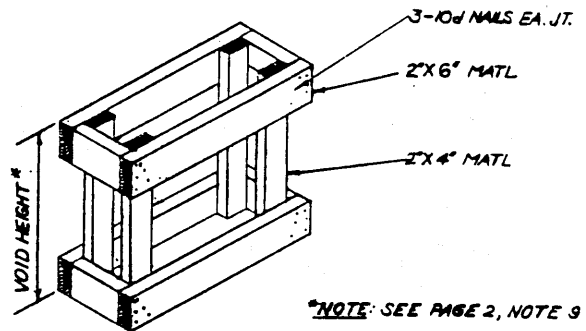
NOTE A:  
 FOR BLOCKING AT REAR, IN TRAILERS  
 WITH CORNER STUDS SEE LTL  
 METAL FLOOR PAGE 7.



ELEVATION

KEY NUMBERS & NOTES

- ① SEE DETAIL FILLER.
- ② GATE-SEE DETAIL, PAGE 3.
- ③ 2X6" MATL. LENGTH AS REQ'D. 2 REQ'D. DOUBLE BEVEL EA. END. POSITION AT APPROX. 45° L. TOENAIL TO GATE AND ⑥ W/3-12d NAILS EA. JOINT.
- ④ 2X4X24", 2 REQ'D. NAIL TO ③ W/4-16d NAILS.
- ⑤ 2X4X4" TRAILER WIDTH, 2 REQ'D. NAIL TO ③ W/3-12d NAILS EA. END.
- ⑥ 4"X4" CUT TO FIT, BETWEEN PCS. ③. 2 REQ'D. TOENAIL TO ① W/2-12d NAILS EA. END.
- ⑦ 4"X4"X TRAILER WIDTH, 2 REQ'D.
- ⑧ 2"X6"X TRAILER WIDTH, 1 REQ'D. NAIL TO GATE UP-RIGHTS AS HOLD DOWN FOR ③.

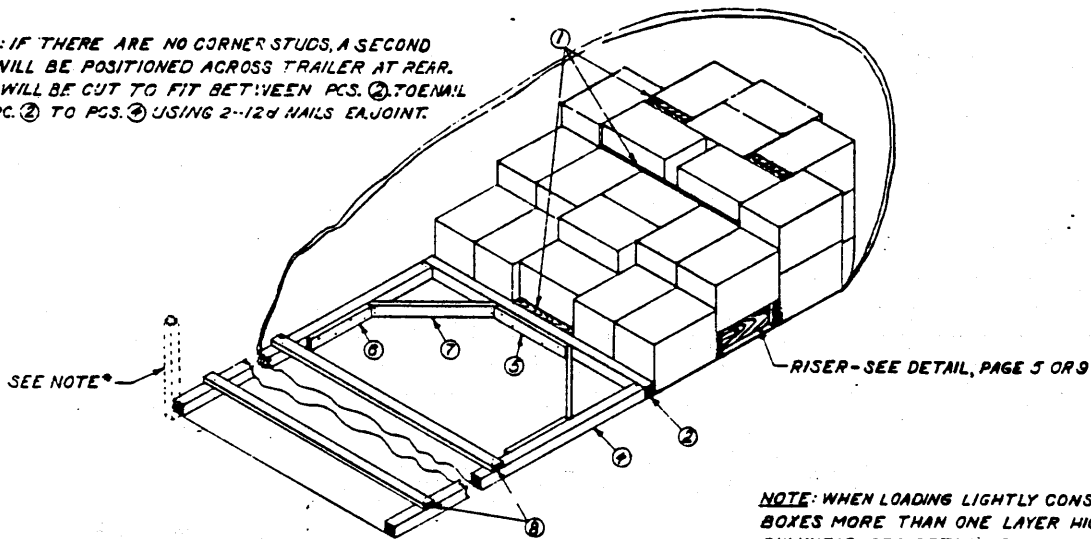


DETAIL-FILLER

\*NOTE: SEE PAGE 2, NOTE 9

LTL IN METAL FLOOR TRAILER WITH SQUARE NOSE

**NOTE\***: IF THERE ARE NO CORNER STUDS, A SECOND PC. ② WILL BE POSITIONED ACROSS TRAILER AT REAR. PCS. ③ WILL BE CUT TO FIT BETWEEN PCS. ②. TOENAIL REAR PC. ② TO PCS. ③ USING 2-12d NAILS EA. JOINT.

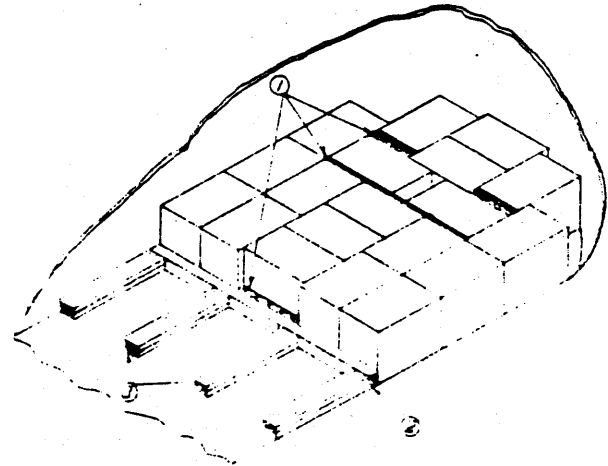


ISOMETRIC (LTL)  
METAL FLOOR

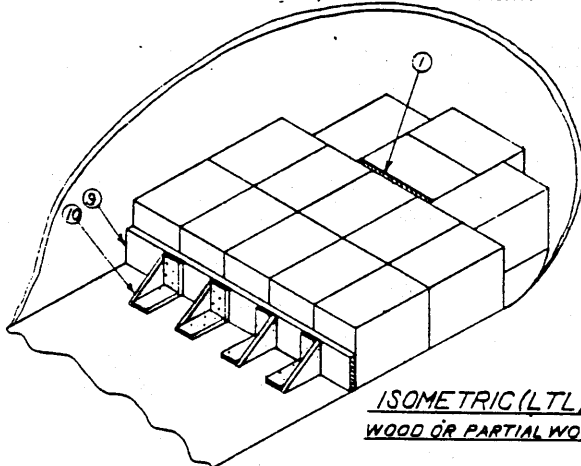
**NOTE**: WHEN LOADING LIGHTLY CONSTRUCTED BOXES MORE THAN ONE LAYER HIGH, INSTALL BULKHEAD. SEE DETAIL - PAGE 5.

KEY NUMBERS & NOTES

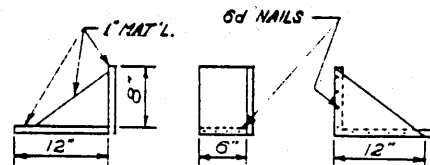
- ① SOLID FILL.
- ② 4" X 4" X TRAILER WIDTH, 1 REQ'D. POSITION AS SHOWN.
- ③ 2" X 6" X 36", 3 REQ'D. LAMINATED. NAIL BOTTOM PIECE TO FLOOR W/1-5d NAIL EVERY 8". NAIL TOP PIECE TO ONE BELOW IN LIKE MANNER. TOENAIL ③ TO ② W/3-2d NAILS EA. JOINT.
- ④ 4" X 4" X CUT TO FIT (TO EXTEND TO REAR OF TRAILER). 2 REQ'D. TOENAIL TO ② W/3-12d NAILS EA. JOINT.
- ⑤ 2" X 4" X 30", 1 REQ'D. NAIL TO ② W/1-12d NAIL EVERY 5".
- ⑥ 2" X 4" X 24", 2 REQ'D. NAIL TO ② W/1-12d NAIL EVERY 5".
- ⑦ 2" X 4" MAT'L. 2 REQ'D. DOUBLE BEVEL EA. END AND POSITION AT 45° L. TOENAIL TO ② & ③ W/3-12d NAILS EA. END.
- ⑧ 2" X 4" X TRAILER WIDTH, 2 REQ'D. NAIL TO ③ W/3-12d NAILS EA. END.
- ⑨ 2" X 3" X TRAILER WIDTH. POSITION AS SHOWN.
- ⑩ BOX CLEATS (SEE DETAIL), 4 REQ'D. NAIL TO FLOOR W/4-15d NAILS EA. CLEAT. NAIL TO ③ W/4-5d NAILS EA. CLEAT.



ISOMETRIC (LTL)  
WOOD OR PARTIAL WOOD FLOOR

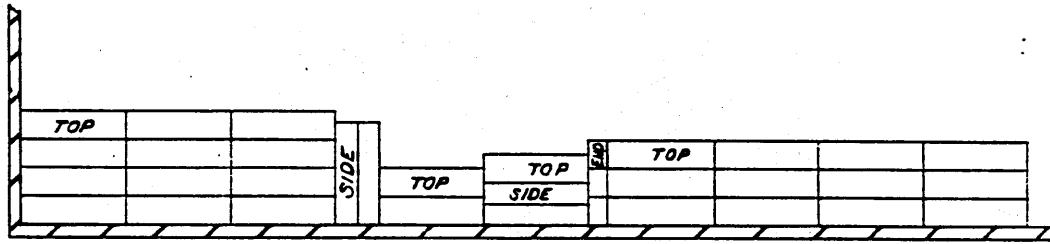


ISOMETRIC (LTL)-ALT.  
WOOD OR PARTIAL WOOD FLOOR



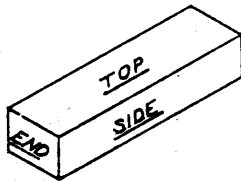
DETAIL OF BOX CLEATS

TYPICAL METHOD OF BRACING ON METAL OR WOODEN FLOORS (LTL)

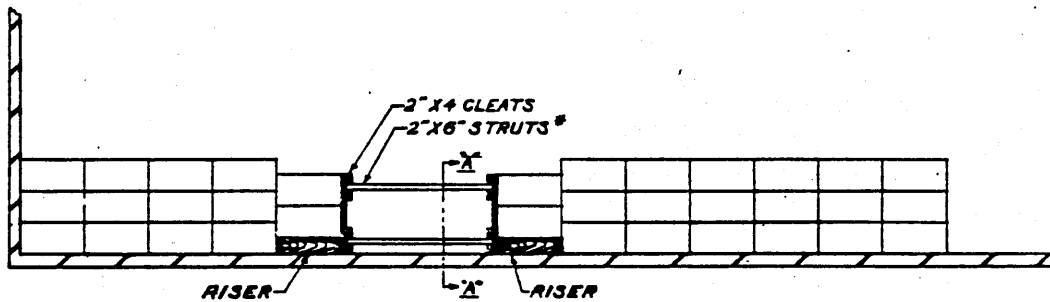


APPROVED METHODS OF POSITIONING  
BOXES FOR PROPER WEIGHT DISTRIBUTION

NOTE: EXCEPTION - WHEN LOADING BOXES MARKED  
"THIS SIDE UP".

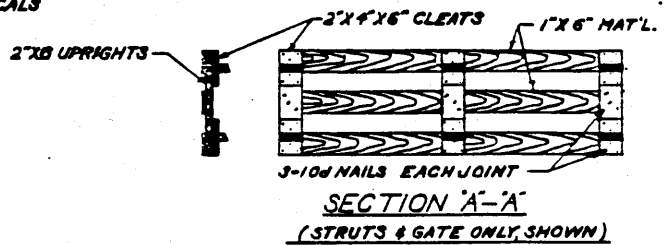


KEY TO BOX POSITIONS



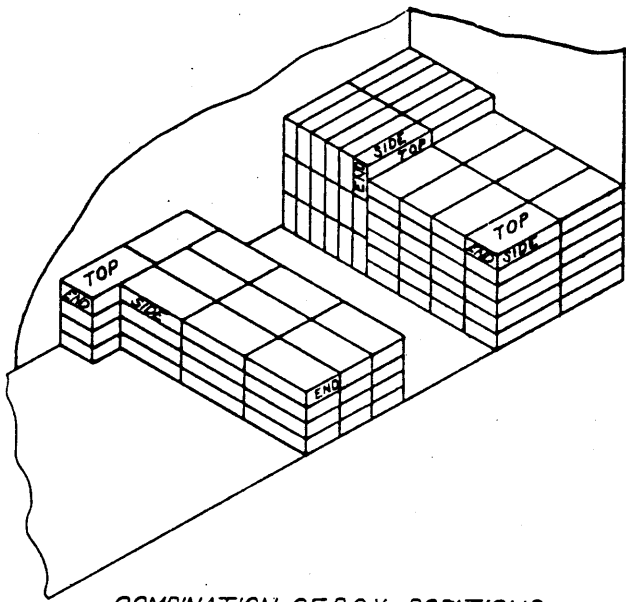
ALTERNATE WEIGHT DISTRIBUTION METHOD  
(USED PARTICULARLY FOR HEAVY, COMPACT ITEMS)

NOTE: STRUTS GREATER THAN 6'-0" IN LENGTH  
SHOULD BE BRACED AT CENTER WITH 1" X 4" VERTICALS  
TO PREVENT SPRINGING.



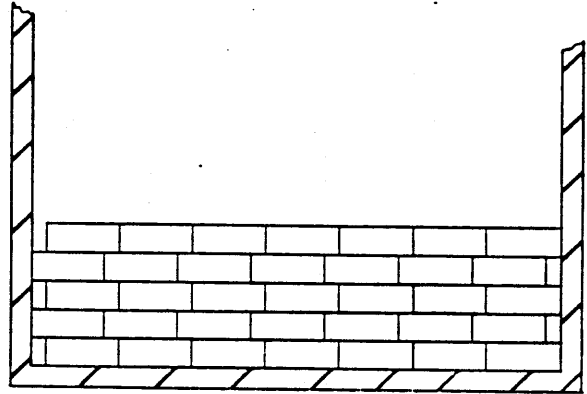
WEIGHT DISTRIBUTION METHODS





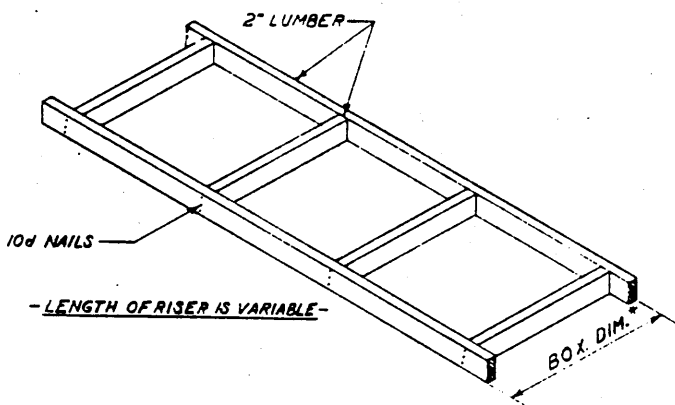
COMBINATION OF BOX POSITIONS

NOTE: EXCESS SPACE ACROSS TRUCK MUST NOT EXCEED  $\frac{1}{3}$  OF THE BOX DIMENSION.



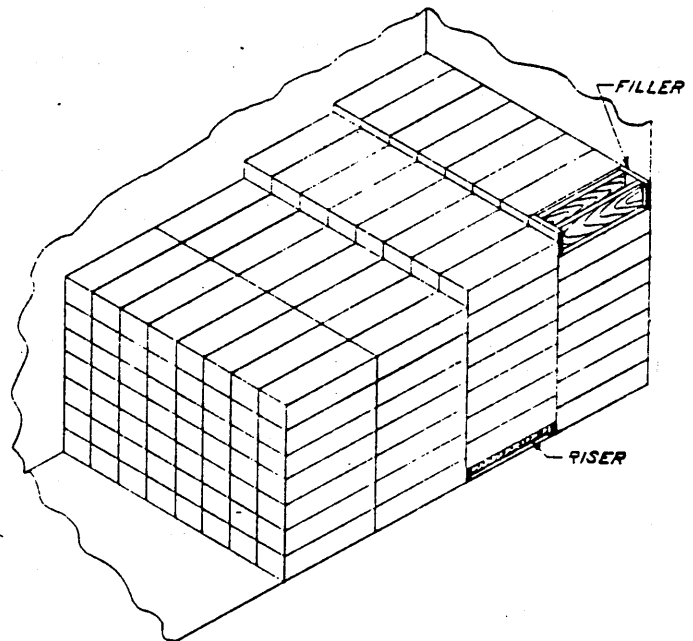
ALTERNATING OF LAYERS IN TRUCK WIDTH

UTILIZATION OF SPACE ACROSS WIDTH OF TRUCK



DETAIL OF RISER OR FILLER FOR WOODEN BOXES

\*NOTE: SEE PAGE 2, NOTES



STEP-DOWN METHOD OF LOADING USING RISER & FILLER DETAILED AT LEFT.





