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DATE <i>12/11/84</i>	DATE <i>10/17/84</i>

LOADING AND BRACING^① IN MILVAN CONTAINERS[⊕] OF 155 MM COPPERHEAD SEPARATE LOADING PROJECTILES, PACKED ONE PER METAL CONTAINER, UNITIZED 6 CONTAINERS PER SPECIAL 4-WAY ENTRY PALLET.

① LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS. SEE THE "SPECIAL T/COFC NOTES" BELOW.

⊕ ONLY MILVAN CONTAINERS WHICH HAVE BEEN MODIFIED TO INCLUDE A MECHANICAL LOAD-BRACING SYSTEM THAT SATISFIES THE REQUIREMENTS OF THE BUREAU OF EXPLOSIVE PAMPHLET 6C WILL BE USED FOR THE MOVEMENT OF AMMUNITION BY T/COFC SERVICE. CAUTION: OTHER REQUIREMENTS OF PAMPHLET 6C ALSO APPLY.

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U. S. ARMY AMC DRAWING					
JANUARY 1985					
CLASS	DIVISION	DRAWING	FILE		
19	48	4195	15PE 1006		

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 SPECIFIED HEREIN ARE APPLICABLE TO THE COPPERHEAD PALLET UNIT. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS UNITIZED COPPERHEAD PROJECTILES.
- C. FOR DETAIL OF THE COPPERHEAD PALLET UNIT, SEE PAGE 3.
PALLET UNIT DIMENSIONS ---- 61" LONG BY 33" WIDE BY 27-1/2" HIGH.
GROSS WEIGHT ----- 1,358 POUNDS (APPROX).
- D. THIS ITEM IS A DOT CLASS "A" EXPLOSIVE, AND A COAST GUARD CLASS VII. THE OUTLOADING PROCEDURES SPECIFIED HEREIN CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE DEPICTED CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM DESIGNATED WITHIN THE DRAWING TITLE.
- E. THE LOADS AS SHOWN ARE BASED ON A 20' LONG BY 8' WIDE BY 8' HIGH MILVAN CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 87" HIGH. THE LOADS ARE DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR SERVICE.
- F. THE SPECIFIED OUTLOADING PROCEDURES ARE FOR CONTAINERS EQUIPPED WITH SELF-CONTAINED MECHANICAL BRACING DEVICES AS DESCRIBED WITHIN BUREAU OF EXPLOSIVES PAMPHLET 6C. CROSS MEMBER ATTACHMENT FACILITIES WITHIN THESE CONTAINERS MUST PROVIDE FOR THE INSTALLATION OF LOAD BLOCKING CROSS MEMBERS AT THE HEIGHTS SPECIFIED. THE HEIGHT DIMENSIONS SPECIFIED WITHIN THIS DRAWING FOR THE INSTALLATION OF CROSS MEMBERS CONFORM WITH BUREAU OF EXPLOSIVES PAMPHLET 6C, WITH THE EXCEPTION THAT TWO (2) ADDITIONAL BELT RAILS HAVE BEEN SHOWN; ONE AT 72" AND ONE AT 83" HEIGHT FROM THE CONTAINER FLOOR. VOIDS LENGTHWISE WITHIN THE LOAD MUST BE HELD TO A MINIMUM. CROSS MEMBERS MUST BE PLACED AGAINST THE LADING AS TIGHTLY AS THE HOLE SPACING IN THE CROSS MEMBER ATTACHMENT FACILITY PERMITS. EACH CROSS MEMBER WILL BE INSTALLED WITH THE ENDS ATTACHED AS NEARLY AS POSSIBLE IN "MATED" POSITIONS (AT EQUAL HEIGHTS AND AT EQUAL DISTANCES FROM THE END OF THE CONTAINER). CROSS MEMBERS IN EMPTY CONTAINERS AND THOSE NOT USED IN LOADED CONTAINERS MUST BE FASTENED INTO BELT RAILS FOR SHIPMENT. COMPONENTS ASSIGNED TO EACH CONTAINER MUST REMAIN THEREWITH EVEN THOUGH UNUSED DURING SOME SHIPMENTS. SEE THE "FILL DETAIL" ON PAGE 5 FOR THE DUNNAGING METHOD REQUIRED TO ELIMINATE AN EXCESSIVE LENGTHWISE VOID WITHIN A LOAD. SEE GENERAL NOTE "P".
- G. VOIDS BETWEEN THE LOAD BEARING GATE AND THE LADING MUST NOT EXCEED ONE-HALF INCH (1/2"). ADDITIONAL MATERIAL MAY BE ADDED, OR THINNER MATERIAL MAY BE USED TO ACHIEVE THE PROPER THICKNESS AS REQUIRED.
- H. THE 1-3/8" THICK DIMENSIONAL LUMBER SPECIFIED IN THE FILL MATERIAL DETAIL CAN BE MADE BY PLANING NOMINAL 2" X 4" MATERIAL TO THE PROPER THICKNESS. ALSO, STRIPS OF PLYWOOD CAN BE USED AS FILL MATERIAL. USE PLYWOOD OF DIFFERENT THICKNESS TO ACHIEVE THE SPECIFIED 1-3/8".
- J. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE, UNLESS OTHERWISE SPECIFIED.
- K. **CAUTION:** DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- L. 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.
- M. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS ONE OF THE SIDEWALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

- LUMBER -----: TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS -----: FED SPEC FF-N-105; COMMON.
- WIRE -----: FED SPEC QQ-W-461.
- PLYWOOD -----: FED SPEC NN-P-530; GROUP B, PS-1 (CONSTRUCTION AND INDUSTRIAL GRADE), INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.

N. MAXIMUM LOAD WEIGHT CRITERIA:

THE ITEMIZED LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALSO, THESE LISTED LOAD WEIGHTS IDENTIFY THE COMBINED WEIGHT OF AMMUNITION LADING UNITS AND DUNNAGE THAT CAN BE PLACED INTO ONE MILVAN CONTAINER WITHOUT VIOLATING ONE OR MORE OF THE "CAPABILITY FACTORS". SEE NOTES 1 AND 2 BELOW.

- 39,100 LBS IN 20-FT CONTAINER (W/O CHASSIS) ABOARD CONTAINER-SHIP.
- 39,100 LBS IN CONTAINER ON 20-FT CHASSIS WITH DOUBLE BOGIE. SEE NOTE 3.
- 25,300 LBS IN CONTAINER ON 20-FT CHASSIS WITH SINGLE BOGIE. SEE NOTE 4.
- 21,300 LBS IN EACH CONTAINER ON 40-FT CHASSIS (COUPLED WITH DOUBLE BOGIE). SEE NOTE 3.

NOTE 1: DUNNAGE INCLUDES MATERIALS, OTHER THAN COMPONENTS OF THE MECHANICAL LOAD-BRACING SYSTEM, USED TO BLOCK AND BRACE A LOAD.

NOTE 2: ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOAD CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. ADDITIONAL INSTRUCTIONS ARE FURNISHED IN THE "SPECIAL NOTE(S)" SECTION FOR THE REDUCED LOAD PROCEDURES.

NOTE 3: DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IMPOSED ON THE MILVAN SYSTEM.

NOTE 4: BY SPECIAL AUTHORITY, IT MAY BE POSSIBLE TO MOVE HEAVIER LOADS ON SINGLE BOGIE CHASSIS WITHIN AN INSTALLATION.

O. SPECIAL T/COFC NOTES:

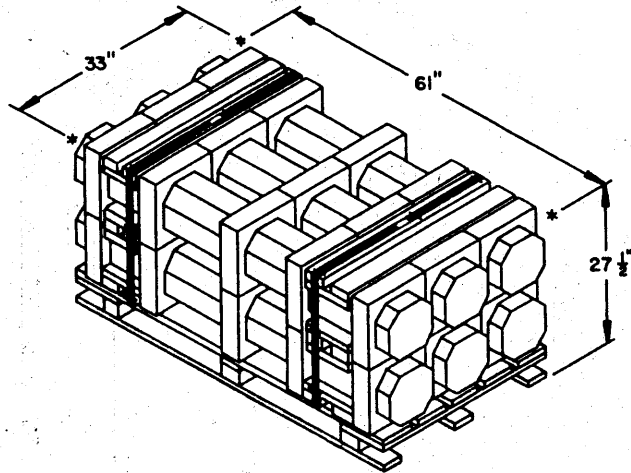
- 1. **CAUTION:** LOADED CONTAINERS MUST BE ON CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE, REGARDLESS OF LOAD WEIGHT WITHIN THE CONTAINERS.
- 2. LOAD LIMITS OF T/COFC RAIL CARS MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- 3. CHASSIS CONTAINERS COUPLED INTO A 40-FOOT TRAILER CONFIGURATION MUST BE PLACED AT THE B-END OF A TOFC RAIL CAR. THE REAR END OF THE 40-FOOT UNIT WILL OVER-HANG THE END OF THE CAR IF IT IS PLACED AT THE A-END. TWENTY-FOOT AND 40-FOOT UNITS CAN BE LOADED ON THE SAME CAR.

- P. THE LOAD BLOCKING COMPONENTS DESIGNATED AS "CROSS MEMBER" HEREIN, IS IDENTIFIED AS "BEAM ASSEMBLY" WITHIN TM 55-8115-200-23 & P, DATED DECEMBER 1979. THE BEAM ASSEMBLY IS FURTHER IDENTIFIED AS NSN 8115-00-165-6623.

REDUCED-LOAD PROVISIONS

WHEN A PALLET UNIT IS TO BE LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF A LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT IN A MILVAN, AND THE FOLLOWING CRITERIA WILL APPLY.

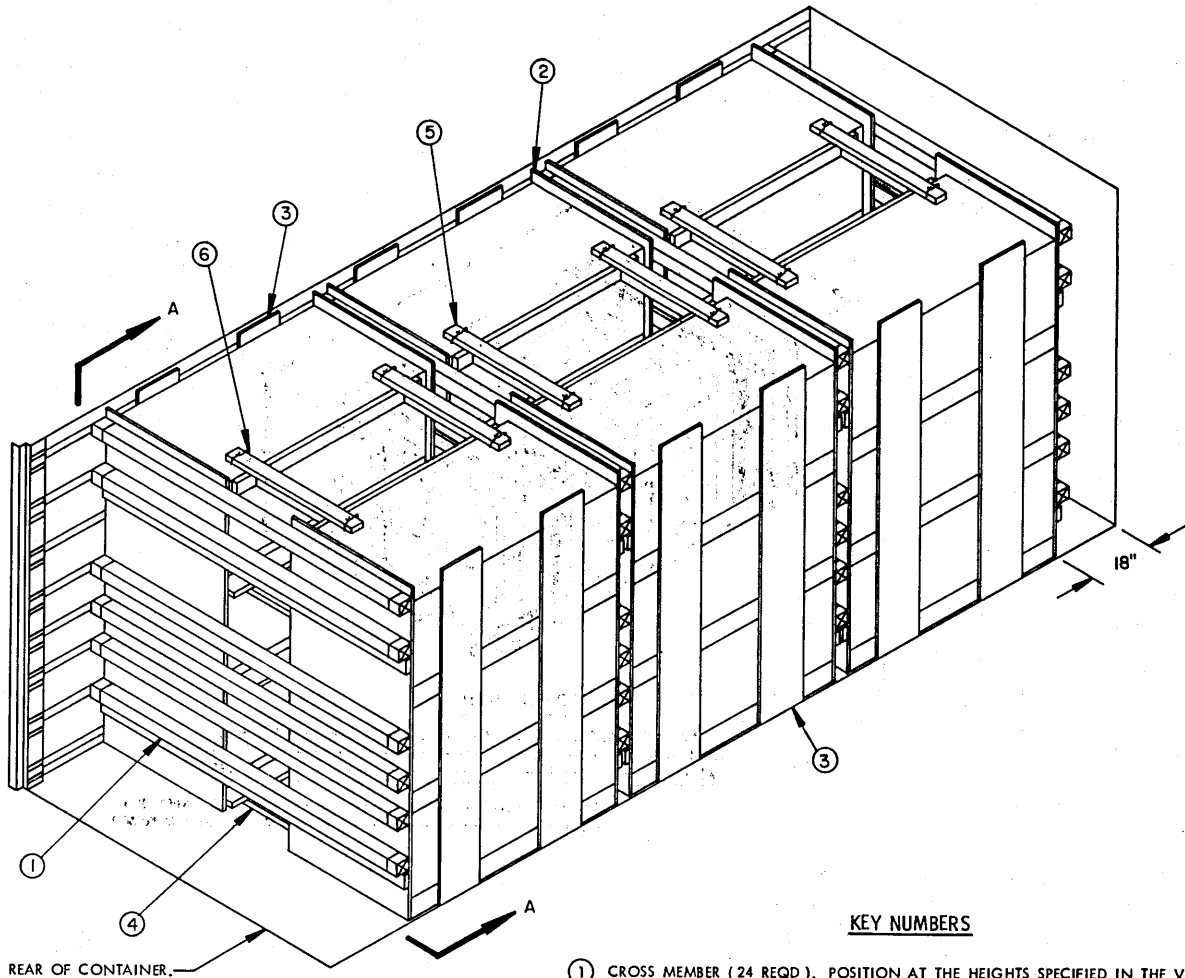
- A. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT, LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE REAR OF THE LOAD. SEE THE "ALTERNATIVE LOADING PATTERN" PROCEDURES FOR ADDITIONAL GUIDANCE.
- B. IF A LOAD IS REDUCED BY A LARGE AMOUNT, LADING UNITS SHOULD BE ELIMINATED FROM LOCATIONS WITHIN THE LOAD OR LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE TOTAL LOAD SHIFTED AS NECESSARY FORE OR AFT, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBUTION. THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY THOSE ADJUSTMENTS TO THE DUNNAGE WHICH ARE REQUIRED TO ACCOMMODATE THE NUMBER OF UNITS TO BE SHIPPED.
- C. COMBINATIONS OF THE DEPICTED LOADING PATTERNS MAY BE USED TO SATISFY THE NUMBER OF UNITS TO BE SHIPPED. HOWEVER, EACH LOAD BAY WILL BE INDEPENDENTLY BLOCKED AS A SEPARATE LOAD BAY IN ACCORDANCE WITH THE DEPICTED PROCEDURES FOR THAT SPECIFIC LOADING PATTERN.



PALLET UNIT

6 EACH COPPERHEAD RDS IN CONTAINERS @ 206 LBS	----	1,236 LBS
DUNNAGE	-----	70 LBS
PALLET	-----	52 LBS

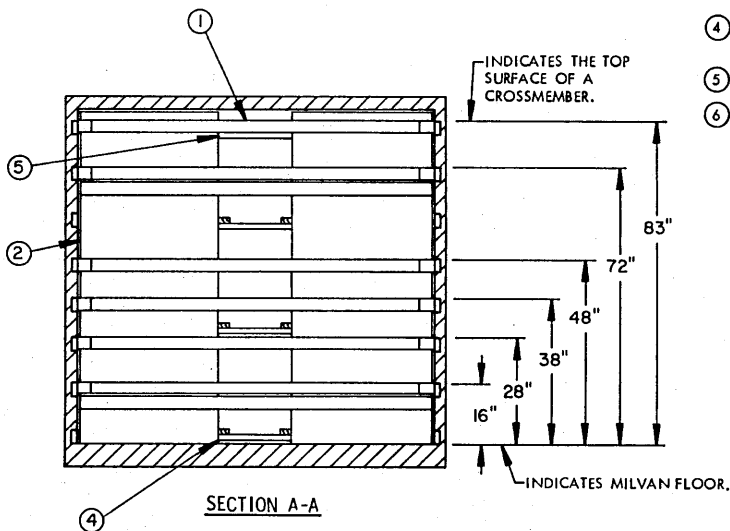
TOTAL WEIGHT	-----	1,358 LBS (APPROX)
CUBE	-----	32.0 CU FT (APPROX)



ISOMETRIC VIEW

KEY NUMBERS

- ① CROSS MEMBER (24 REQD). POSITION AT THE HEIGHTS SPECIFIED IN THE VIEW BELOW. SEE GENERAL NOTE "F" ON PAGE 2 AND THE "FILL DETAIL" ON PAGE 8.
- ② LOAD BEARING GATE (6 REQD). SEE THE DETAIL ON PAGE 6.
- ③ ANTI-CHAFING PIECE, TEMPERED HARDBOARD OR PLYWOOD, 1/2" X 12" BY CONTAINER HEIGHT MINUS 1" (REF: 7'-2") (12 REQD). POSITION SO AS TO CONTACT THE PALLET UNIT DUNNAGE ASSEMBLIES AND WIRE TIE TO THE 5" HIGH AND 72" HIGH BELT RAILS. SEE THE "ANTI-CHAFING SECUREMENT" DETAIL ON PAGE 8.
- ④ ANTI-SWAY BRACE (9 REQD), FABRICATE IN PLACE BETWEEN LATERALLY ADJACENT PALLET UNITS. SEE THE DETAIL ON PAGE 6.
- ⑤ TOP ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 6.
- ⑥ TIE WIRE, NO. 14 GAGE WIRE, LENGTH-TO-SUIT (36 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE TOP ANTI-SWAY BRACE AND THE UNITIZING STRAP OF THE PALLET UNIT OR THE ANTI-CHAFING PIECE AND THE BELT RAIL. BRING ENDS TOGETHER AND TWIST TAUT.



SECTION A-A

18-PALLET UNIT LOAD

SPECIAL NOTES:

1. THE LOAD AS SHOWN ON PAGE 4 DEPICTS AN EIGHTEEN-PALLET UNIT LOAD IN A MILVAN CONTAINER.
2. IF A MILVAN CONTAINER IS TO BE LOADED WITH LESS PALLET UNITS THAN SHOWN IN THE LOAD VIEW ON PAGE 4, PALLET UNITS SHOULD BE ELIMINATED FROM THE REAR OF THE LOAD. FOR EXAMPLE IF ONLY SEVENTEEN UNITS ARE TO BE LOADED THE METHOD SPECIFIED BY THE "ALTERNATIVE LOADING PATTERN" ON PAGE 7 MUST BE APPLIED.
3. SPECIFICATIONS FOR THE "BASIC LOAD" SHOWN ON PAGE 4 AND THE "ALTERNATIVE LOADING PATTERN" SHOWN ON PAGE 7 WILL BE APPLIED SEPARATELY OR IN COMBINATION TO BLOCK AND BRACE OTHER THAN AN EIGHTEEN-PALLET UNIT LOAD.

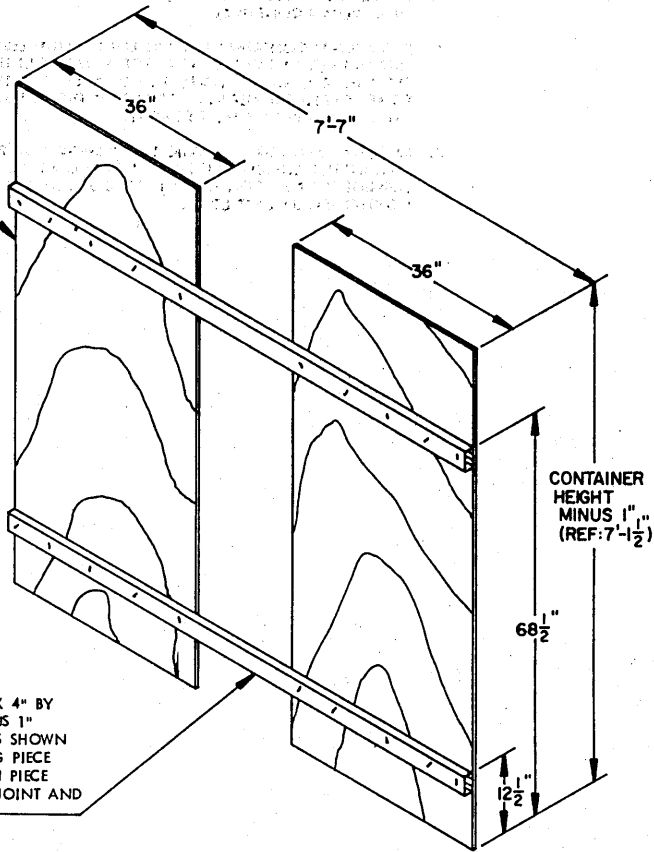
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	91	31
2" X 4"	114	76
2" X 6"	78	78
NAILS	NO. REQD	POUNDS
6d (2")	120	3/4
10d (3")	156	2-1/2
PLYWOOD, 1/2"	342 SQ FT REQD	471 LBS
WIRE, NO. 14 GAGE	90 FT REQD	1-1/2 LBS
CROSS MEMBER		24 REQD

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
COPPERHEAD		
PALLET UNIT	18	24,444 LBS
DUNNAGE		846 LBS
CONTAINER		5,700 LBS
TOTAL WEIGHT		30,990 LBS (APPROX)

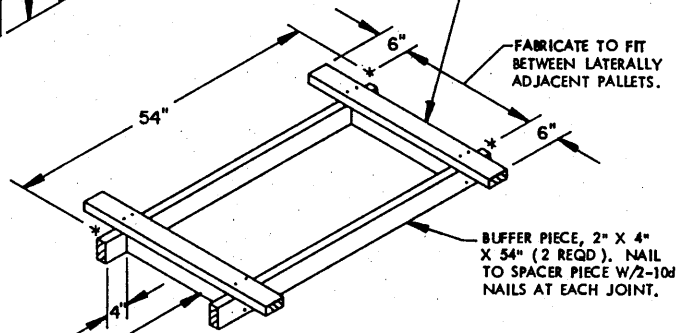
BEARING PIECE,
PLYWOOD, 1/2"
THICK (2 REQD.).

HOLD-DOWN PIECE, 1" X 4" BY
CONTAINER WIDTH MINUS 1"
(2 REQD.). POSITION AS SHOWN
AND NAIL THRU BEARING PIECE
INTO EACH HOLD-DOWN PIECE
W/5-6d NAILS AT EACH JOINT AND
CLINCH.



LOAD BEARING GATE

RETAINER PIECE, 2" X 4" BY LENGTH
TO SUIT (2 REQD.). NAIL TO BUFFER
PIECE W/2-10d NAILS AT EACH
JOINT.

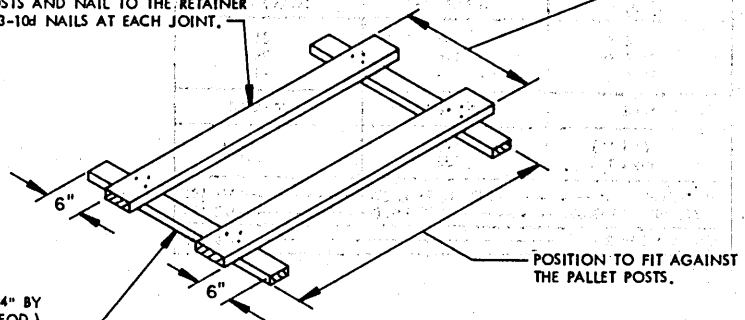


TOP ANTI-SWAY BRACE

SPACER PIECE,
2" X 4" BY
CUT-TO-FIT
(2 REQD.).

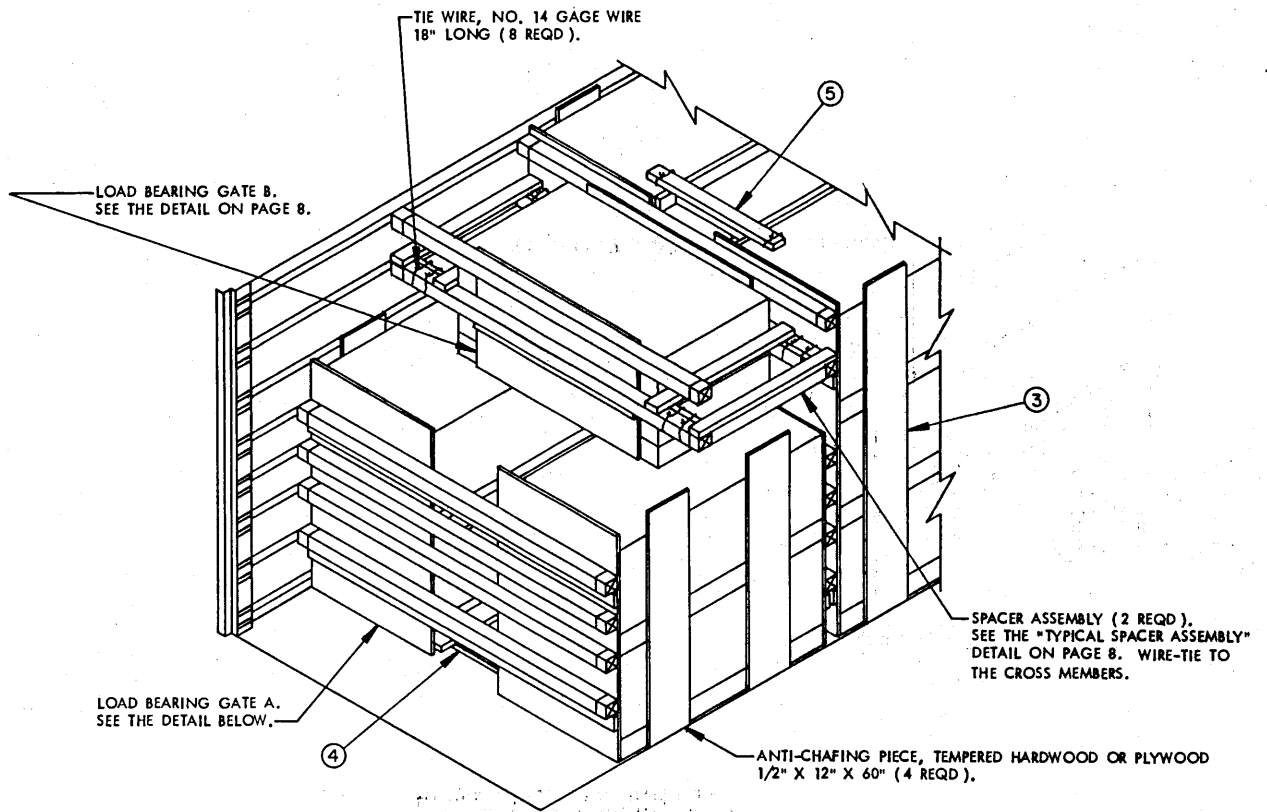
BUFFER PIECE, 2" X 6" BY THE DISTANCE
BETWEEN OUTSIDE PALLET POSTS PLUS 6"
(2 REQD.). POSITION AGAINST THE
PALLET POSTS AND NAIL TO THE RETAINER
PIECES W/3-10d NAILS AT EACH JOINT.

FABRICATE TO FIT
BETWEEN THE POSTS
OF LATERALLY ADJACENT
PALLETS.



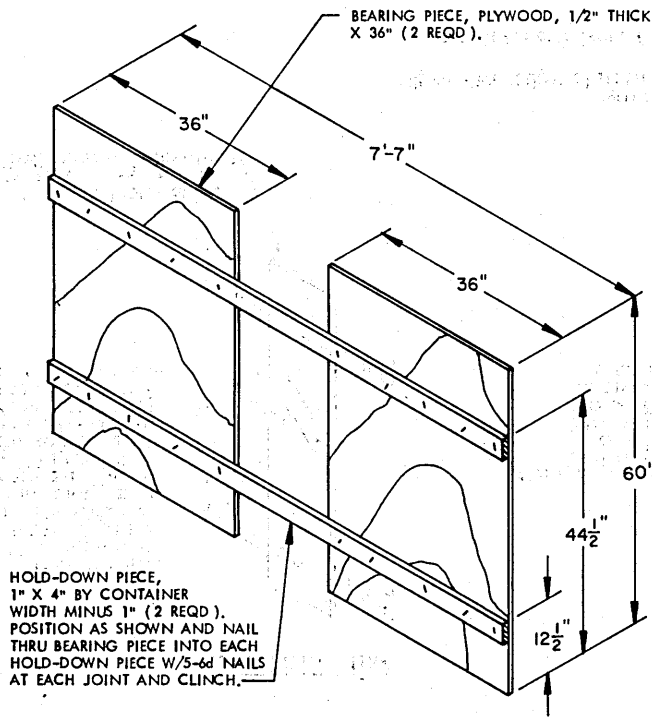
ANTI-SWAY BRACE

RETAINER PIECE, 2" X 4" BY
LENGTH TO SUIT (2 REQD.).
POSITION TO EXTEND UNDER
THE LATERALLY ADJACENT
PALLETS AND AGAINST THE
PALLET POSTS.

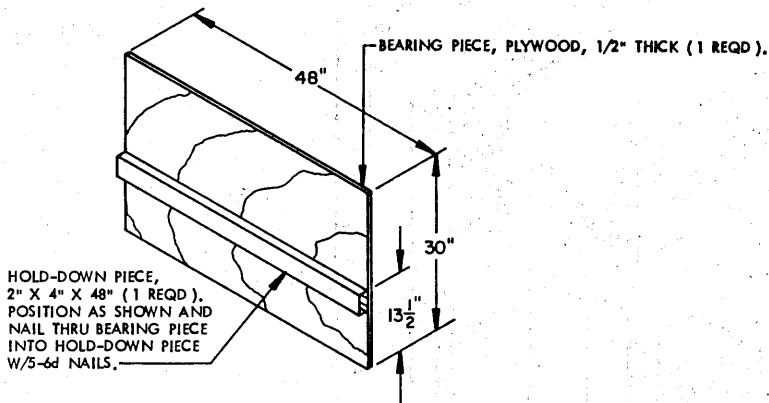


ALTERNATIVE LOADING PATTERN

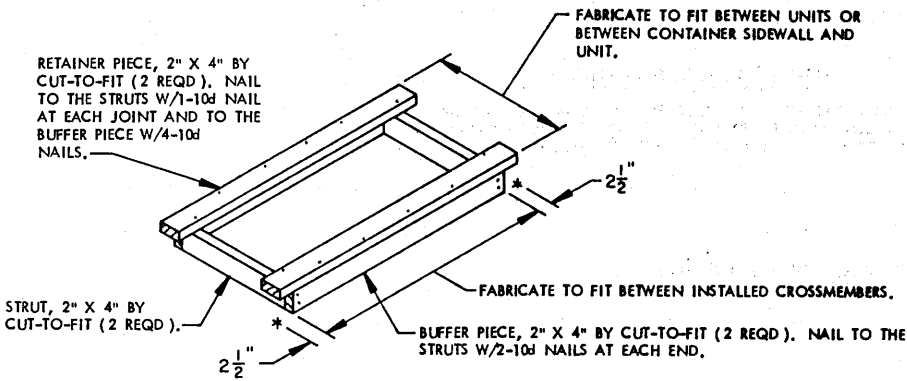
THE DETAIL ABOVE SPECIFIES A BLOCKING METHOD TO BE USED IN A "REDUCED-LOAD" CONTAINER LOAD. FOR ADDITIONAL GUIDANCE SEE THE "REDUCED LOADING PROCEDURES" ON PAGE 2.



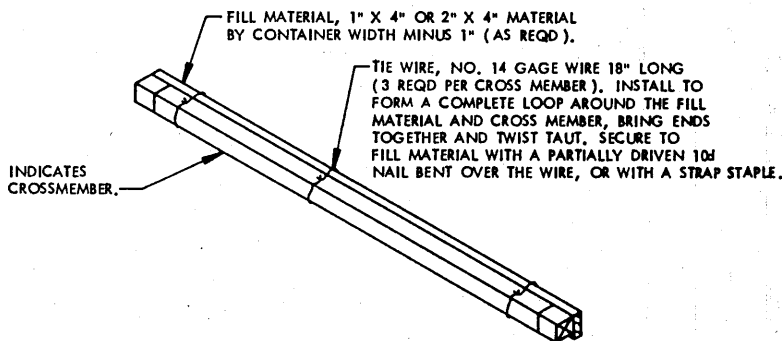
LOAD BEARING GATE A



LOAD BEARING GATE B

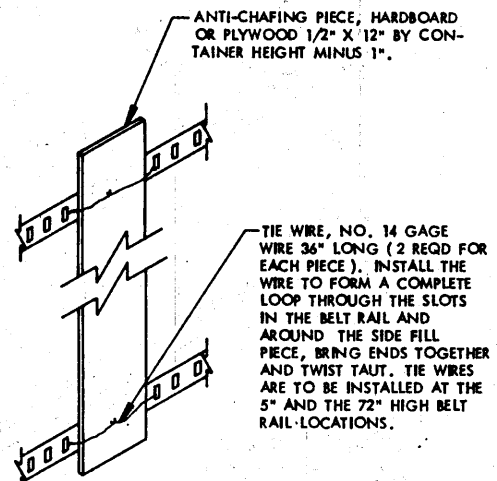


TYPICAL SPACER ASSEMBLY



FILL DETAIL

THIS DETAIL DEPICTS THE METHOD OF POSITIONING FILL MATERIAL BETWEEN THE CROSS MEMBER AND REAR BLOCKING ASSEMBLY OR SHIPPING AND STORAGE CONTAINER WHEN THE VOID BETWEEN THE TWO IS GREATER THAN ONE INCH (1").



ANTI-CHAFING PIECE