

APPROVED BY
U.S. COAST GUARD
P. R. Dickey
DATE 2 June 1986

APPROVED BY
BUREAU OF EXPLOSIVES
J. W. Fleishman
SUPERVISOR, MILITARY & INTERMODAL SERVICES
DATE 4/27/86

LOADING AND BRACING^① IN MILVAN CONTAINERS[⊕] OF COMPLETE ROUND PACKED IN M159 CYLINDRICAL METAL CONTAINERS (PALLETIZED)

- 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 "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 EXPLOSIVES PAMPHLET 6C WILL BE USED FOR THE MOVEMENT OF AMMUNITION BY T/COFC SERVICE. CAUTION: OTHER REQUIREMENTS OF PAMPHLET 6C ALSO APPLY.

MAXIMUM LOAD WEIGHT CRITERIA:

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

- 39,100 LBS IN 20-FT CONTAINER (W/O CHASSIS) ABOARD CONTAINERSHIP.
- 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 LOAD IS DELINEATED ON PAGES 2 AND 3, 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 UNDER THE "REDUCED-LOAD PROVISIONS" SECTION ON PAGE 2.

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.

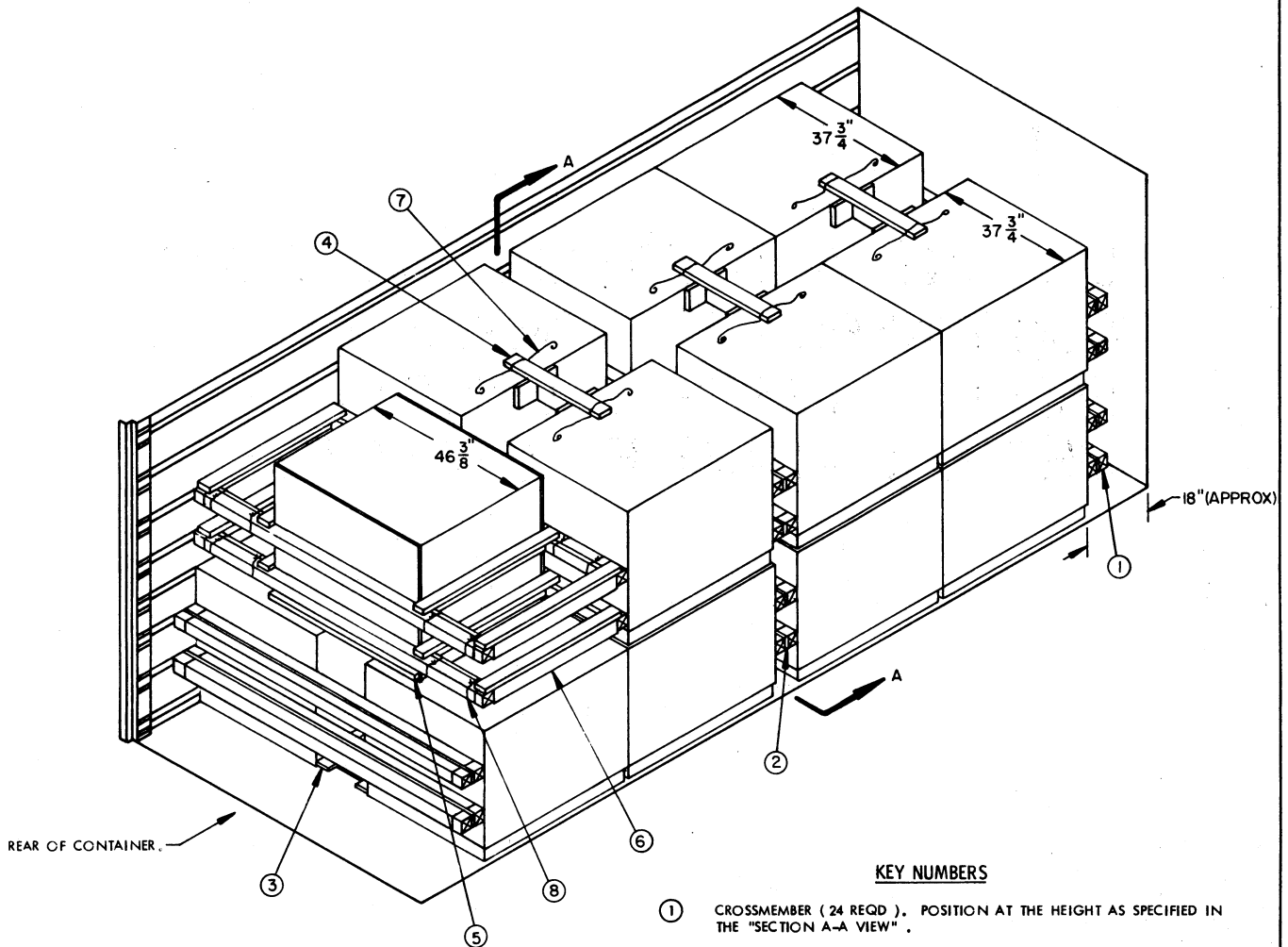
NOTE 4: BY SPECIAL AUTHORITY, IT MAY BE POSSIBLE TO MOVE HEAVIER LOADS ON SINGLE BOGIE CHASSIS WITHIN AN INSTALLATION.

SPECIAL T/COFC NOTES:

- A. 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.
- B. 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.
- C. 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.

DO NOT SCALE

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				<i>[Signature]</i>	
				APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)	
				<i>[Signature]</i>	
				U.S. ARMY AMMUNITION CENTER AND SCHOOL	
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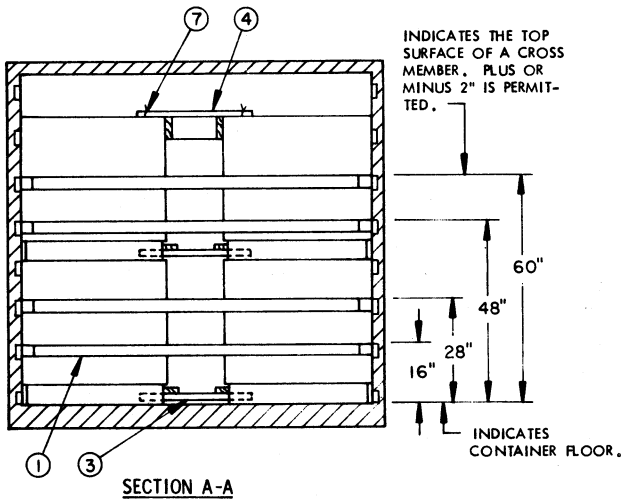


ISOMETRIC VIEW

REAR OF CONTAINER.

KEY NUMBERS

- ① CROSSMEMBER (24 REQD). POSITION AT THE HEIGHT AS SPECIFIED IN THE "SECTION A-A VIEW" .
- ② FILL MATERIAL, 1-3/8" X 3-1/2" BY INSIDE CONTAINER WIDTH MINUS 1" (10 REQD). SEE THE "FILL MATERIAL INSTALLATION" DETAIL ON PAGE 3.
- ③ LOWER ANTI-SWAY BRACE (7 REQD). SEE THE DETAIL ON PAGE 4.
- ④ TOP-OF-LOAD ANTI-SWAY BRACE (3 REQD). SEE THE DETAIL ON PAGE 4 . WIRE TIE TO THE PALLET UNITIZING STRAP WITH PIECE MARKED ⑦ .
- ⑤ SEPARATOR ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 4.
- ⑥ SPACER ASSEMBLY (4 REQD). SEE THE DETAIL ON PAGE 4.
- ⑦ TIE WIRE, NO. 14 GAGE WIRE 36" LONG (6 REQD). ATTACH ONE END TO A PALLET UNITIZING STRAP, FORM A COMPLETE LOOP AROUND THE TOP ANTI-SWAY BRACE, AND ATTACH THAT END TO A SECOND UNITIZING STRAP.
- ⑧ TIE WIRE, NO. 14 GAGE 18" LONG (18 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE SPACER ASSEMBLY AND CROSS MEMBER, BRING THE ENDS TOGETHER AND TWIST TAUT. SECURE TO THE SPACER ASSEMBLY WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE OR WITH A STRAP STAPLE.



SECTION A-A

INDICATES THE TOP SURFACE OF A CROSS MEMBER. PLUS OR MINUS 2" IS PERMITTED.

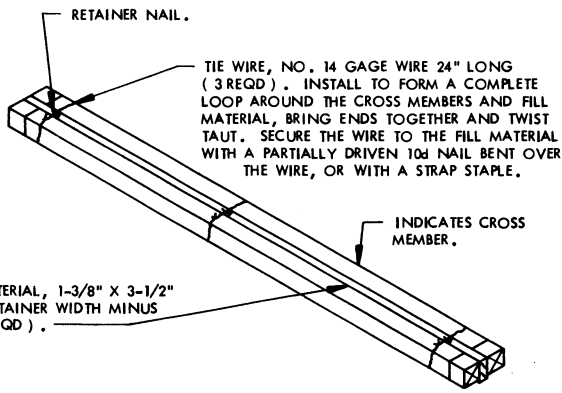
INDICATES CONTAINER FLOOR.

REDUCED-LOAD PROVISIONS

WHEN A CONTAINER 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 MIDPOINT IN A MILVAN.

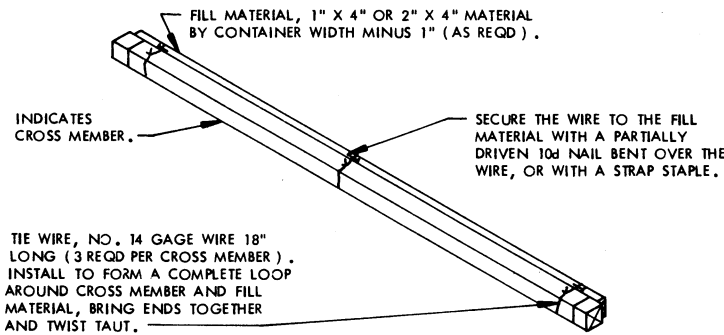
GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1, AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO A LOAD OF 30-CONTAINER PALLET UNITS OF COMPLETE ROUNDS OF AMMUNITION PACKED IN M159 SERIES CYLINDRICAL METAL CONTAINERS, SUBSEQUENT REFERENCE TO UNIT MEANS THE PALLETIZED UNIT WITH AMMUNITION ITEMS. SEE PAGE 4 OF THIS DRAWING AND U.S. ARMY DARCOM DRAWING NO. 19-48-4079/3-20PM1002 FOR DETAIL OF THE PALLETIZED UNIT. **CAUTION:** REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF 44,800 POUNDS MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS 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 LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT.
- D. 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" AT THE LEFT, FOR THE DUNNAGE METHOD REQUIRED TO ELIMINATE AN EXCESSIVE LENGTHWISE VOID WITHIN A LOAD. THE LOAD BLOCKING COMPONENT DESIGNED AS "CROSS MEMBER" HEREIN, IS IDENTIFIED AS "BEAM ASSEMBLY" WITHIN TM 55-8115-200-24, DATED SEPTEMBER 1972. THE BEAM ASSEMBLY IS FURTHER IDENTIFIED AS NSN 8115-00-165-6623 (FSN 8115-165-6623).
- E. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.
- F. **CAUTION:** DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- G. 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.
- H. 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.
- J. IF 1-3/8" THICK DIMENSIONAL LUMBER IS NOT AVAILABLE FOR THE SPECIFIED FILL MATERIAL, PIECES 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".
- K. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENT MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4 MM AND ONE POUND EQUALS 0.454 KG.



FILL MATERIAL INSTALLATION

SEE GENERAL NOTE "J" AT RIGHT.



FILL DETAIL

THIS DETAIL DEPICTS METHOD OF POSITIONING FILL MATERIAL BETWEEN CROSS MEMBER AND LADING WHEN THE VOID BETWEEN THE TWO IS GREATER THAN ONE INCH (1").

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
* 1-3/8" X 3-1/2"	76	51
2" X 2"	8	3
2" X 4"	155	103
2" X 6"	10	10
NAILS	NO. REQD	POUNDS
6d (2")	8	NIL
10d (3")	166	2-1/2
PLYWOOD, 1/2" -----	24 SQ FT REQD	33 LBS
N.O. 14 GAGE WIRE -----	36' REQD	1/2 LB
CROSS MEMBER -----	24 REQD	

* SEE GENERAL NOTE "J" AT THE RIGHT.

MATERIAL SPECIFICATIONS

LUMBER -----: TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.

NAILS -----: FED SPEC FF-N-105; COMMON.

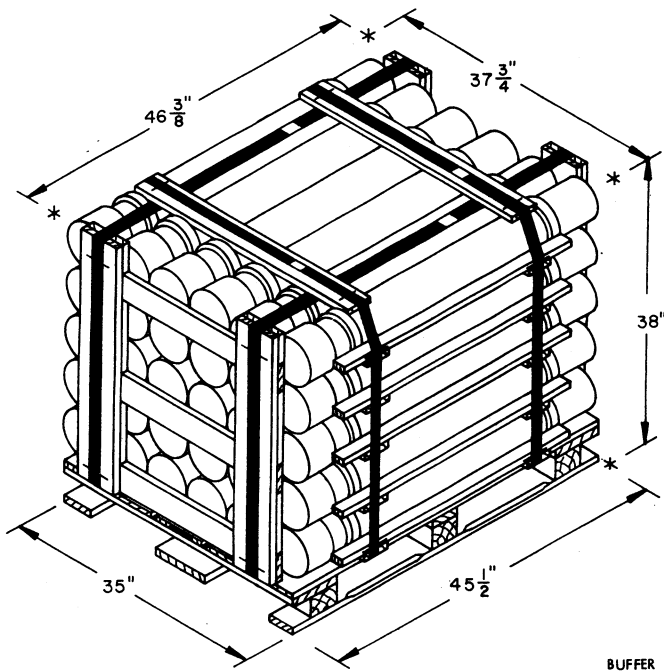
WIRE -----: FED SPEC QQ-W-461.

STAPLE, STRAP --: COMMERCIAL GRADE.

PLYWOOD -----: GROUP B, CONSTRUCTION AND INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A INTERIOR OR EXTERIOR GRADE MAY BE SUBSTITUTED; FED SPEC NN-P-530.

LOAD AS SHOWN

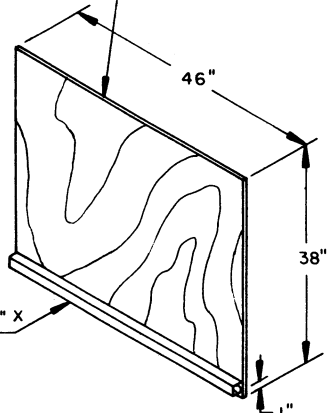
ITEM	QUANTITY	WEIGHT (APPROX)
PALLET UNIT -----	15	32,640 LBS
DUNNAGE -----		370 LBS
CONTAINER -----		5,700 LBS
TOTAL GROSS WEIGHT ----		38,710 LBS



ISOMETRIC VIEW

UNIT WEIGHT ----- 2,176 LBS (APPROX)
 CUBE ----- 38,5 CU FT (APPROX)

BEARING PIECE, PLYWOOD,
 1/2" X 46" X 38" (1 REQD).
 NAIL TO THE HOLD DOWN
 PIECE W/4-6d NAILS.



SEPARATOR ASSEMBLY

HOLD DOWN PIECE, 2" X
 2" X 46" (1 REQD).

RETAINER PIECE, 2" X 4" BY
 CUT-TO-FIT (2 REQD). NAIL
 TO THE BUFFER PIECE W/4-10d
 NAILS AND TO THE STRUTS
 W/1-10d NAIL AT EACH END.

FABRICATE TO FIT BETWEEN
 CONTAINER SIDE WALL AND
 THE UNITS.

BUFFER PIECE, 2" X 4" BY
 CUT-TO-FIT (2 REQD). NAIL
 TO THE STRUTS W/2-10d
 NAILS AT EACH END.

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

FABRICATE TO FIT BETWEEN
 INSTALLED CROSS MEMBERS.

SPACER ASSEMBLY

RETAINER PIECE, 2" X 4" X 30"
 (1 REQD). NAIL TO THE BUFFER
 PIECES AND TO THE SPACER
 PIECE W/2-10d NAILS.

BUFFER PIECE, 2" X 6"
 X 12" (2 REQD). NAIL
 TO THE SPACER PIECE
 W/2-10d NAILS.

SPACER PIECE, 2"
 X 6" BY CUT-TO-
 FIT (1 REQD).

TOP-OF-LOAD ANTI-SWAY BRACE

BUFFER PIECE, 2" X 4" X 40"
 (2 REQD). NAIL TO THE
 RETAINER PIECES W/2-10d
 NAILS AT EACH JOINT.

FABRICATE TO FIT BETWEEN
 LATERALLY ADJACENT UNITS.

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

LOWER ANTI-SWAY BRACE

THIS ASSEMBLY MUST BE
 FABRICATED IN PLACE
 BETWEEN PALLETS.