

LOADING AND BRACING IN MILVAN CONTAINERS OF 155MM AND 8-INCH SEPARATE LOADING PROJECTILES LOADED IN SECONDARY STEEL CONTAINERS

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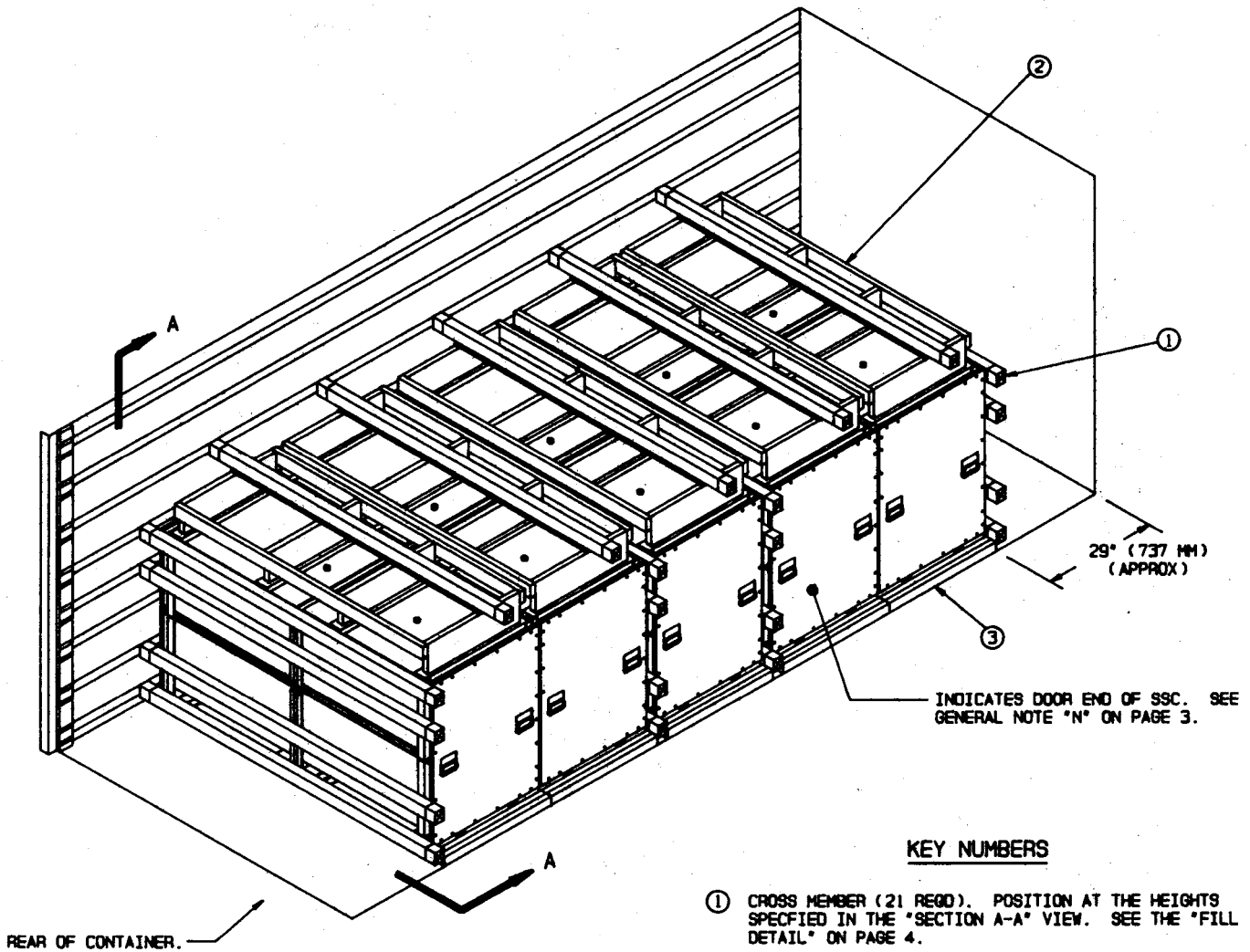
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● LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY OCONUS TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS. SEE GENERAL NOTE "L" ON PAGE 2.

⊕ 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.

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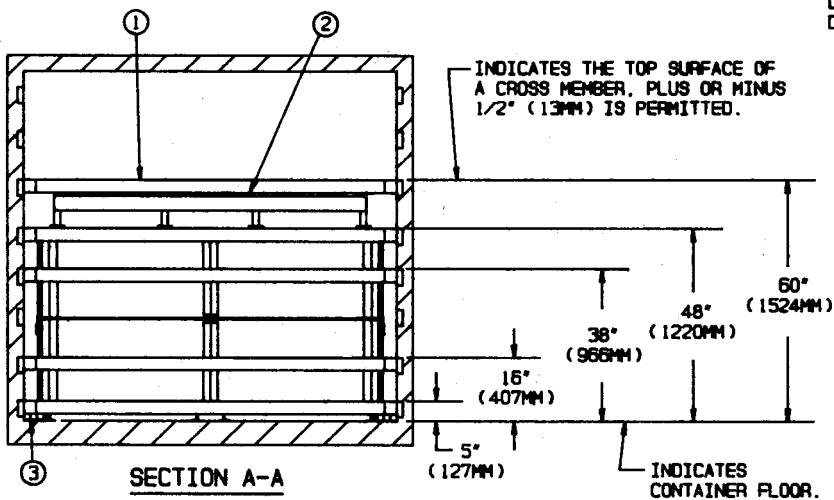
DO NOT SCALE



ISOMETRIC VIEW

KEY NUMBERS

- ① CROSS MEMBER (21 REQD). POSITION AT THE HEIGHTS SPECIFIED IN THE "SECTION A-A" VIEW. SEE THE "FILL DETAIL" ON PAGE 4.
- ② TOMMING ASSEMBLY (5 REQD). INSTALL WITH THE HOLD-DOWN PIECE TOWARDS THE REAR OF THE MILVAN. SEE THE "TOMMING ASSEMBLY A" DETAIL ON PAGE 5.
- ③ SIDE BLOCKING ASSEMBLY (10 REQD). SEE THE "SIDE BLOCKING ASSEMBLY" DETAIL ON PAGE 5, GENERAL NOTE "K" ON PAGE 3, AND THE "SIDE BLOCKING INSTALLATION DETAIL" ON PAGE 5.



(GENERAL NOTES CONTINUED)

- 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 WHENEVER 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 NOT SPECIFIED, METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.
- K. THE QUANTITY OF FILL PIECES DEPICTED IN THE LOAD MUST BE ADJUSTED, AS REQUIRED, TO COMPLY WITH THE DIMENSIONAL VARIANCE OF THE SSC, SO AS TO NOT ALLOW MORE THAN ONE INCH (1") VOID ACROSS THE WIDTH OF A BRACED LOAD. ADJUSTMENTS CAN BE MADE BY USING DIFFERENT THICKNESS OF FILL PIECES ON ONE OR BOTH SIDES OF THE CONTAINER OR BY LAMINATING ADDITIONAL PIECES TO THE FILL PIECES ON ONE OR BOTH SIDES OF THE CONTAINER W/1 APPROPRIATELY SIZED NAIL EVERY 12".
- L. THE PROCEDURES CONTAINED HEREIN HAVE BEEN TESTED AND HAVE SATISFACTORILY PASSED THE STANDARD ASSOCIATION OF AMERICAN RAILROADS, BUREAU OF EXPLOSIVES, RAIL IMPACT TEST FOR SHIPMENT OF HAZARDOUS MATERIALS.
- M. DUE TO A 34,000 POUND LADING WEIGHT LIMITATION THAT IS PRESENTLY IMPOSED ON INTERMODAL FREIGHT CONTAINER SHIPMENTS, THE PROCEDURE ON PAGE 4 DEPICTS A 10-SSC LOAD CONFIGURATION, WITH A LADING WEIGHT OF 33,983 POUNDS. A FULL 12-SSC LOAD CONFIGURATION MAY BE ACHIEVED BY ADDING TWO MORE SSCs TO THE MIDDLE LOAD BAY. THIS 12-SSC LOAD MAY ONLY BE USED IF THE LADING WEIGHT LIMITATIONS ARE LIFTED OR WAIVED.
- N. TWO CHALK LINES MAY BE PLACED IN THE MILVAN TO AID THE FORKLIFT OPERATOR IN THE PROPER LATERAL PLACEMENT OF THE SSCs. ONE CHALK LINE WILL BE 2" TO THE LEFT OF THE MILVAN CENTERLINE, AND THE OTHER WILL BE 2" TO THE RIGHT OF THE CENTERLINE. THE FORKLIFT OPERATOR CAN THEN ALIGN THE EDGE OF THE SSC SKID ON THE APPROPRIATE CHALK LINE. THIS WILL CENTER THE SSCs IN THE MILVAN AND WILL ENSURE THAT THE SIDE BLOCKING ASSEMBLIES CAN BE PROPERLY INSTALLED.

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 OUTLOADING PROCEDURE SPECIFIED HEREIN IS APPLICABLE TO PALLETIZED 155MM OR 8-INCH SEPARATE LOADING PROJECTILES LOADED IN SECONDARY STEEL CONTAINERS (SSC). SEE PAGE 4 OF THIS DRAWING AND DRAWING DA-100 FOR DETAIL OF THE SSC. CAUTION: REGARDLESS OF THE QUANTITY OF SSCs TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF 44,800 POUNDS MUST NOT BE EXCEEDED.
- C. 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 OCONUS 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 WEIGHT DIMENSIONS SPECIFIED WITHIN THIS DRAWING FOR THE INSTALLATION OF CROSS MEMBERS CONFORM WITH THE BUREAU OF EXPLOSIVES PAMPHLET 6C, WITH THE EXCEPTION THAT TWO ADDITIONAL BELT RAILS HAVE BEEN SHOWN: ONE AT 72" AND ONE AT 83" HIGH 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 HEIGHT 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 4 FOR THE DUNNAGING METHOD REQUIRED TO ELIMINATE AN EXCESSIVE LENGTHWISE VOID WITHIN A LOAD. THE LOAD BLOCKING COMPONENT 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 8115-00-185-6623.
- E. DUNNAGE LUMBER SPECIFIED IS OF A EUROPEAN NOMINAL SIZE. SEE THE "DUNNAGE LUMBER CHART" ON PAGE 4. NOTE: IF U.S. NOMINAL LUMBER IS USED, THE NUMBER AND THICKNESS OF DUNNAGE PIECES IN THE ASSEMBLIES WILL HAVE TO BE ADJUSTED TO PROVIDE FOR A TIGHT LOAD AS DESCRIBED IN GENERAL NOTE "K". WHEN NAILING EUROPEAN NOMINAL LUMBER, THE COMPARABLE NAIL SIZES TO BE USED ARE SPECIFIED IN THE "NAIL CHART" ON PAGE 4. NAILS USED TO FASTEN TWO BOARDS TOGETHER MUST BE OF A LENGTH TO PENETRATE TWO-THIRDS OF THE THICKNESS OF THE SECOND BOARD.

(CONTINUED AT LEFT)

MATERIAL SPECIFICATIONS

- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MH-L-751.
- NAILS - - - - - : FED SPEC FF-N-105; COMMON.
- WIRE - - - - - : FED SPEC GG-W-461; ANNEALED, BLACK.
- STAPLE, STRAP - - - : COMMERCIAL GRADE.

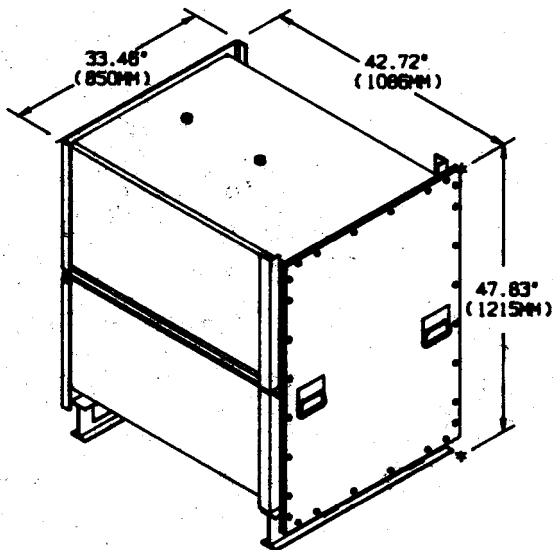
BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	28	7
1" X 4"	33	11
2" X 3"	83	42
2" X 4"	118	79
2" X 8"	48	64
NAILS	NO. REQD	POUNDS
6d (2")	70	1/2
10d (3")	220	3-1/2
CROSS MEMBER - - - - -	25 REQD	

LOAD AS SHOWN FOR 155MM SLP PALLETS

ITEM	QUANTITY	WEIGHT (APPROX)
SSC - - - - -	10 - - - - -	32,850 LBS (14914 KG)
DUNNAGE - - - - -	- - - - -	410 LBS (186 KG)
CONTAINER - - - - -	- - - - -	5,700 LBS (2588 KG)
TOTAL WEIGHT - - - - -	- - - - -	38,960 LBS (17688 KG)

LOAD AS SHOWN FOR 8-INCH SLP PALLETS

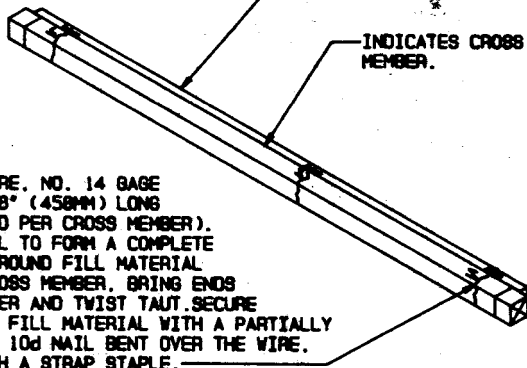
ITEM	QUANTITY	WEIGHT (APPROX)
SSC - - - - -	10 - - - - -	32,400 LBS (14710 KG)
DUNNAGE - - - - -	- - - - -	410 LBS (186 KG)
CONTAINER - - - - -	- - - - -	5,700 LBS (2588 KG)
TOTAL WEIGHT - - - - -	- - - - -	38,510 LBS (17484 KG)



SECONDARY STEEL CONTAINER

WEIGHT W/155MM SLPs ----- 3,285 LBS (1492 KG) (APPROX)
 WEIGHT W/8-INCH SLPs ----- 3,240 LBS (1471 KG) (APPROX)
 CUBE ----- 39.6 CUBIC FEET (1.12 CUBIC METERS)

FILL MATERIAL, 1" X 4" OR 2" X 4" MATERIAL BY CONTAINER WIDTH MINUS 1" (AS REQD).



TIE WIRE, NO. 14 GAGE WIRE 18" (458MM) LONG (3 REQD PER CROSS MEMBER). INSTALL TO FORM A COMPLETE LOOP AROUND FILL MATERIAL AND CROSS MEMBER. BRING ENDS TOGETHER AND TWIST TAUT. SECURE TO THE FILL MATERIAL WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE, OR WITH A STRAP STAPLE.

FILL DETAIL

THIS DETAIL DEPICTS METHOD OF POSITIONING FILL MATERIAL BETWEEN LOAD-BRACING CROSS MEMBER AND LADING WHEN THE VOID BETWEEN THE TWO IS GREATER THAN ONE INCH (25MM) FOR LONGITUDINAL BRACING.

*** DUNNAGE LUMBER CHART**

NOMINAL SIZE (INCHES)	APPROXIMATE ACTUAL SIZE	
	INCHES	MILLIMETERS
1 X 4	13/16 X 3-5/8	21 X 92
1 X 6	13/16 X 5-5/8	21 X 143
2 X 4	1-5/8 X 3-5/8	42 X 92
2 X 6	1-5/8 X 5-5/8	42 X 143
2 X 8	1-5/8 X 7-3/8	42 X 188
2 X 10	1-5/8 X 9-3/8	42 X 239

*** NAIL CHART**

SIZE	LENGTH	DIAMETER
4d	1-1/2" (38MM)	0.088" (2.51MM)
6d	2" (51MM)	0.113" (2.87MM)
8d	2-1/2" (64MM)	0.131" (3.33MM)
10d	3" (76MM)	0.148" (3.77MM)
12d	3-1/4" (83MM)	0.148" (3.77MM)

* SEE GENERAL NOTE "E" ON PAGE 3.

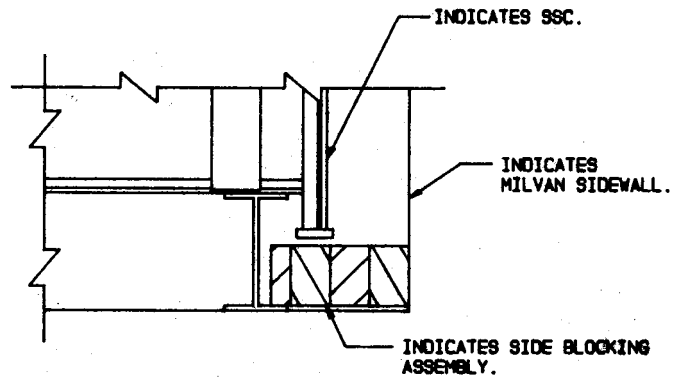
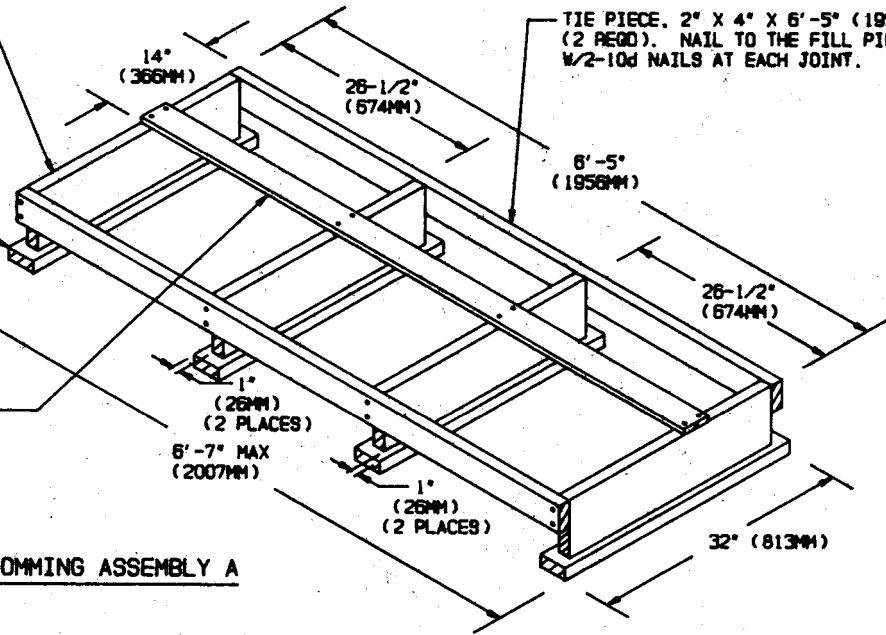
FILL PIECE. 2" X 8" X
28-3/4" (731MM) (4 REQD).

BEARING PIECE. 2" X 4"
X 32" (813MM) (4 REQD).
NAIL TO THE FILL PIECE
W/4-10d NAILS.

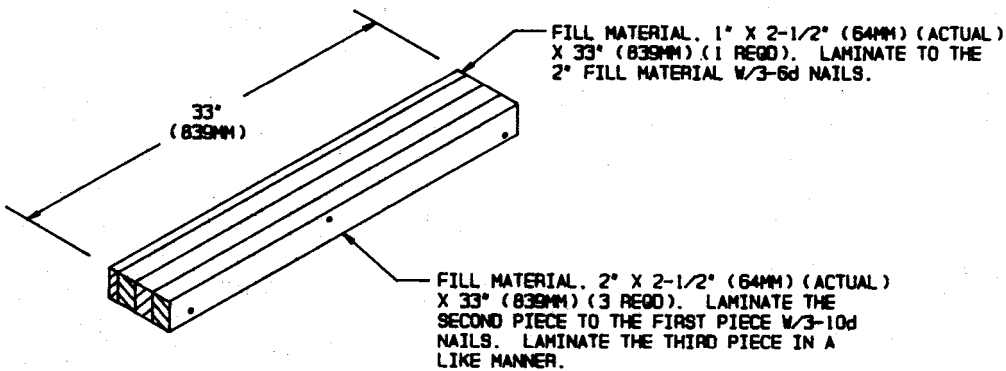
HOLD-DOWN PIECE. 1" X 4"
X 6'-5" (1956MM) (1 REQD).
NAIL TO THE FILL PIECES
W/2-10d NAILS AT EACH JOINT.

TIE PIECE. 2" X 4" X 6'-5" (1956MM)
(2 REQD). NAIL TO THE FILL PIECES
W/2-10d NAILS AT EACH JOINT.

TOMMING ASSEMBLY A

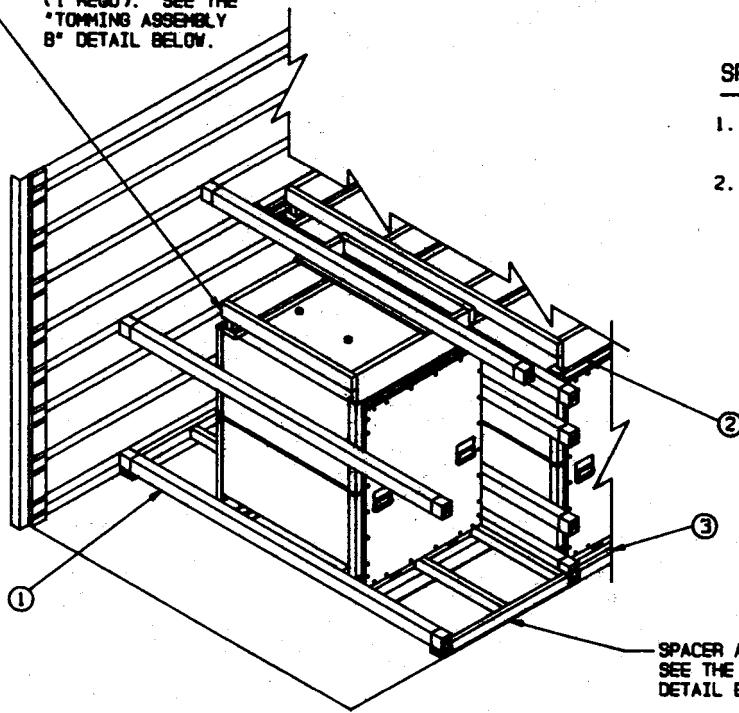


SIDE BLOCKING
INSTALLATION DETAIL



SIDE BLOCKING ASSEMBLY

TOMMING ASSEMBLY
(1 REQD). SEE THE
"TOMMING ASSEMBLY
B" DETAIL BELOW.



SPACER ASSEMBLY (2 REQD).
SEE THE "SPACER ASSEMBLY"
DETAIL BELOW.

SPECIAL NOTES:

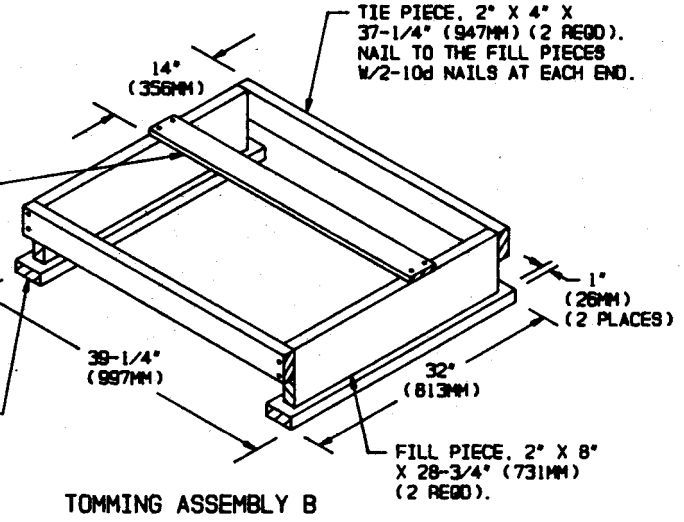
1. THE "ALTERNATIVE LOADING PATTERN" AT LEFT WILL BE USED WHEN AN UNEVEN NUMBER OF SSCs IS TO BE SHIPPED.
2. IF A MILVAN LOAD CONSISTS OF 8 OR LESS SSCs, THE ENTIRE LOAD MUST BE SHIFTED TOWARDS THE DOOR END OF THE MILVAN TO ENSURE THAT THE CENTER OF GRAVITY OF THE LOAD IS WITHIN 12" (305MM), FORE OR AFT, OF THE MIDPOINT OF THE MILVAN.

ALTERNATIVE LOADING PATTERN

KEY NUMBERS ABOVE REFER TO KEY NUMBERS LISTED ON PAGE 2.

HOLD-DOWN PIECE, 1" X 4" X
37-1/4" (947MM) (1 REQD).
NAIL TO THE FILL PIECES
W/2-6d NAILS AT EACH END.

BEARING PIECE, 2" X 4"
X 32" (813MM) (2 REQD).
NAIL TO THE FILL PIECES
W/4-10d NAILS.



TIE PIECE, 2" X 4" X
37-1/4" (947MM) (2 REQD).
NAIL TO THE FILL PIECES
W/2-10d NAILS AT EACH END.

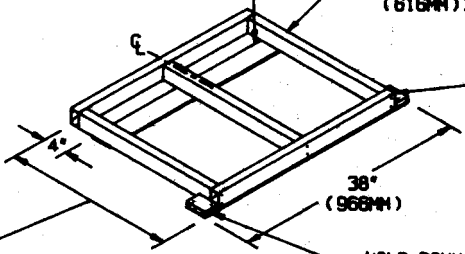
FILL PIECE, 2" X 8"
X 28-3/4" (731MM)
(2 REQD).

TOMMING ASSEMBLY B

RISER PIECE, PLYWOOD, 1/4" (7MM)
X 3-1/2" (89MM) X 33" (839MM)
(2 REQD). NAIL TO THE TIE PIECE
W/2-6d NAILS AT EACH JOINT.

TIE PIECE, 2" X 2-1/2" (ACTUAL)
(64MM) X CUT-TO-FIT (REF: 24-1/4"
(616MM)) (3 REQD).

LONGITUDINAL PIECE, 2" X 2-1/2" (ACTUAL) (64MM)
X 33" (839MM) (2 REQD). NAIL TO THE TIE PIECE
W/2-10d NAILS AT EACH JOINT.



HOLD DOWN PIECE, 1" X 4"
X 2-1/2" (64MM) (2 REQD).
NAIL THRU THE RISER PIECE
W/2-6d NAILS AND CLINCH.

FABRICATE TO FIT
BETWEEN CONTAINER
SIDEWALL AND VERTICAL
SECTION OF SSC SKID
(REF: 27-1/2" (699MM)).

SPACER ASSEMBLY