

APPROVED BY U.S. COAST GUARD <i>R. Schurig</i> DATE 10-5-71	APPROVED BY BUREAU OF EXPLOSIVES <i>W. F. Grassmuck</i> DATE 8/26/71 MILITARY ASSISTANT
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LOADING AND BRACING[⊙] IN MILVAN CONTAINERS[⊕] OF SKIDDED UNITS OF 105MM BOXED AMMUNITION (15-BOX UNIT)

⊙ 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 OR AIR 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 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.
- 19,300 LBS IN 20-FT CONTAINER (W/O CHASSIS) ABOARD FIXED-WING AIRCRAFT.
- 39,100 LBS IN 20-FT CONTAINER (W/O CHASSIS) FOR ROTARY-WING AIRCRAFT. SEE NOTE 5.

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.

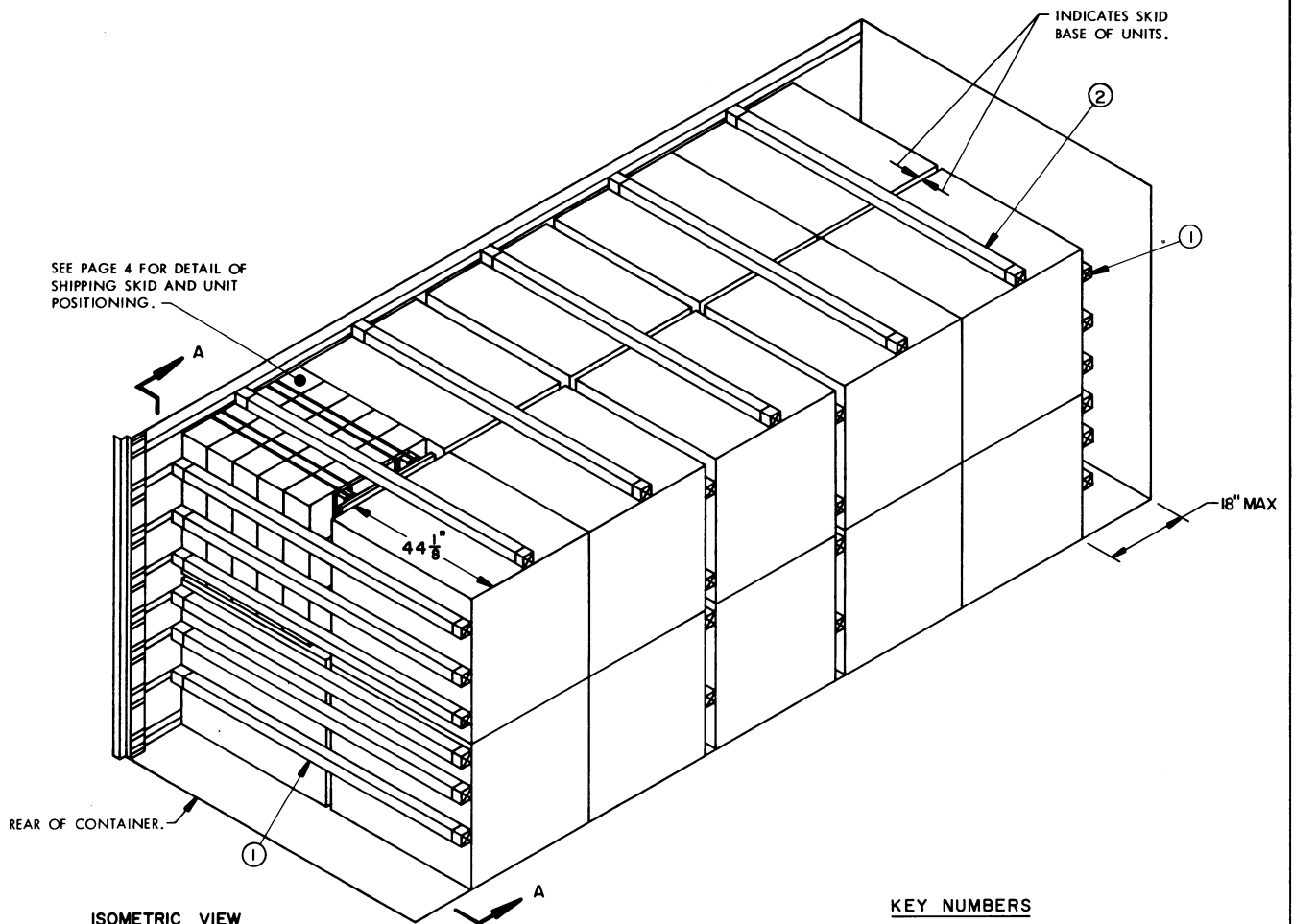
NOTE 5: IT WILL BE NECESSARY TO REDUCE WEIGHT OF SOME LOADS TO BE MOVED BY ROTARY-WING AIRCRAFT, DEPENDING ON "LIFT" CAPABILITY OF THE SCHEDULED AIRCRAFT.

SPECIAL T/COFC NOTES:

- A. **CAUTION:** LOADED CONTAINERS MUST BE ON CHASSIS EQUIPPED W/2 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 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

DRAFTER <i>W. H. H. / M. H. / G. W. P. / H. W. / C. H. /</i>	PROJ ENG <i>G. W. P. / H. W. /</i>	DATE <i>10/5/71</i>	SUBMITTED <i>W. R. Dickson</i> COMMANDING OFFICER, SAVANNA ARMY DEPOT
CHECKED <i>W. H. H. / R. W. /</i>	ARC AMMO CTR <i>John Boyd</i>		EXAMINED AND APPROVED <i>William B. Porter</i> U. S. ARMY MUNITIONS COMMAND
REVISIONS			APPROVED BY ORDER OF COMMANDING GENERAL U. S. ARMY MATERIEL COMMAND <i>W. F. Elvinger</i> USAMC AMMO CENTER
			U. S. ARMY MATERIEL COMMAND
			DATE: JUNE 1971
			SAVANNA AD DWG NO
			D-AMXSV-4271

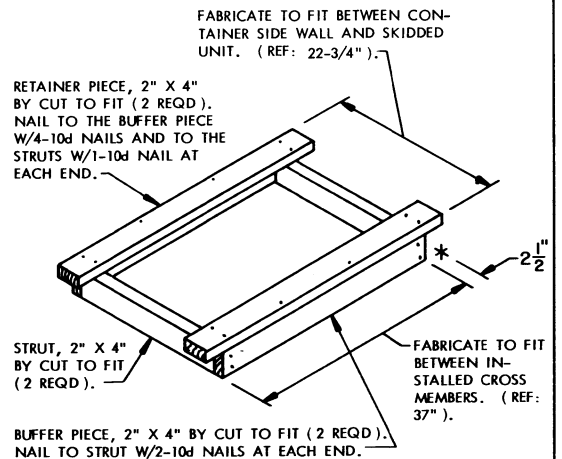
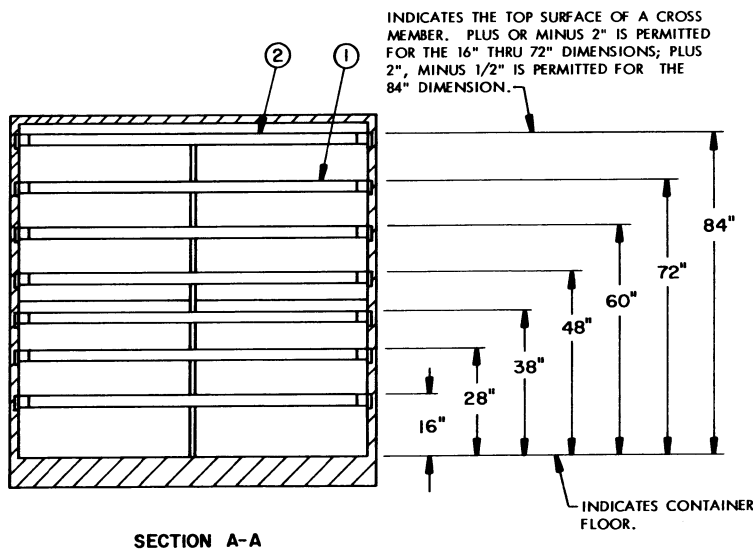


REDUCED-LOAD PROVISIONS

1. IF A CONTAINER IS TO BE LOADED WITH LESS UNITS THAN SHOWN, SKIDDED UNITS SHOULD BE ELIMINATED FROM THE REAR OF THE LOAD. FOR EXAMPLE, IF A LOAD WAS RESTRICTED SO AS TO NOT INCLUDE MORE THAN 34,000 POUNDS OF AMMUNITION AND A 1,740-POUND UNIT WAS BEING SHIPPED, ONLY 19 SKIDDED UNITS COULD BE LOADED. IN THIS CASE, THE METHOD SPECIFIED BY THE "ALTERNATIVE LOADING PATTERN" DETAIL ON PAGE 3 MUST BE APPLIED.
2. SPECIFICATIONS FOR THE "BASIC LOAD", FOR THE "ALTERNATIVE LOADING PATTERN", AND FOR THE "ONE-LAYER HOLD-DOWN METHOD" SHOWN ON PAGE 4 WILL BE APPLIED SEPARATELY OR IN COMBINATION TO BLOCK AND BRACE OTHER THAN 20-UNIT LOADS.

KEY NUMBERS

- ① CROSS MEMBER (LONGITUDINAL BRACING) (20 REQD). POSITION AT THE HEIGHTS SPECIFIED IN THE "SECTION A-A" VIEW.
- ② CROSS MEMBER (HOLD DOWN) (5 REQD). POSITION AT THE HEIGHT SPECIFIED IN THE "SECTION A-A" VIEW.



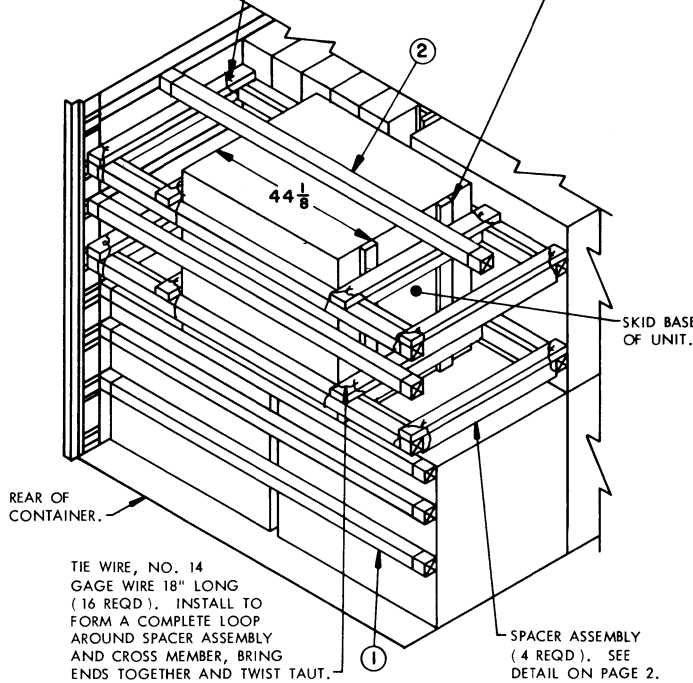
SPACER ASSEMBLY

SECURE THE WIRE TO THE SPACER ASSEMBLY WITH A PARTIALLY DRIVEN 10d NAIL BENT OVER THE WIRE, OR WITH A STRAP STAPLE.

BUFFER PIECE, 2" X 4" X 40" (2 REQD). ALIGN WITH STRONG POINTS OF UNIT AND NAIL TO SPACER ASSEMBLIES W/2-10d NAILS AT EACH JOINT. ONLY REQUIRED WHEN SPACER ASSEMBLIES ARE ADJACENT TO THE SKIDDED BASE OF THE UNIT.

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO THE 15-BOX SKIDDED UNIT OF THE 105MM COMPLETE ROUND WHEN PACKED 2 PER WOODEN BOX. SUBSEQUENT REFERENCE TO UNIT MEANS THE SKIDDED UNIT OF BOX-PACKED AMMUNITION ITEMS. **NOTE:** FOR DETAILS OF UNIT, SEE PAGE 4. **CAUTION:** REGARDLESS OF THE QUANTITY OF UNITS 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 84" 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 "FILL DETAIL" ON PAGE 4.
- E. VOIDS BETWEEN HOLD-DOWN CROSS MEMBERS (PIECE MARKED ②) AND THE TOP OF THE LOAD MUST NOT EXCEED ONE-HALF INCH (1/2"). IF THE VOID IS MORE THAN 1/2", SEE "FILL DETAIL" ON PAGE 4.
- F. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-5/8" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-5/8" THICK BY 3-5/8" WIDE.
- G. **CAUTION:** DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- H. 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.
- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS ONE OF THE SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.
- K. **CAUTION:** EXERCISE CARE WHEN POSITIONING THE SKIDDED UNITS IN THE CONTAINER TO INSURE THAT THE UNITS ARE PLACED AS CLOSE AS POSSIBLE AGAINST THE SIDE WALLS OF THE CONTAINER OR "SIDE FILL" AS SHOWN BELOW.



ALTERNATIVE LOADING PATTERN

THE DETAIL ABOVE SPECIFIES A BLOCKING METHOD TO BE USED IN A "REDUCED-LOAD" CONTAINER LOAD. THE DELINEATED METHOD IS ALSO APPLICABLE TO A 1-UNIT BAY (FIRST LAYER ONLY). ONLY TWO SPACER ASSEMBLIES ARE REQUIRED FOR A 1-UNIT BAY, INSTALLED AT THE 16" HEIGHT, IF THE HOLD-DOWN METHOD ON PAGE 4 IS USED.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	133	45
2" X 4"	17	11
3" X 4"	120	120
NAILS	NO. REQD	POUNDS
10d (3")	240	1-1/2
16d (3-1/2")	80	1-1/4
CROSS MEMBER	-----	25 REQD

THE "BILL OF MATERIAL" COVERS 20 SHIPPING SKIDS AS DETAILED ON PAGE 4. THE DELINEATED LOAD DOES NOT REQUIRE ANY DUNNAGE, OTHER THAN FOR THE SKIDS.

MATERIAL SPECIFICATIONS

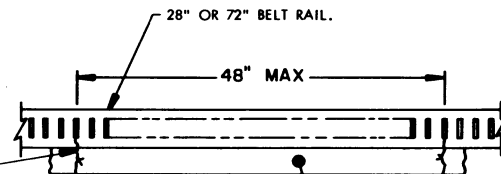
LUMBER : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.

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 OR B, FED SPEC QQ-S-781.

STAPLE, STRAP;
SEAL, STRAP ----- : COMMERCIAL GRADE.

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



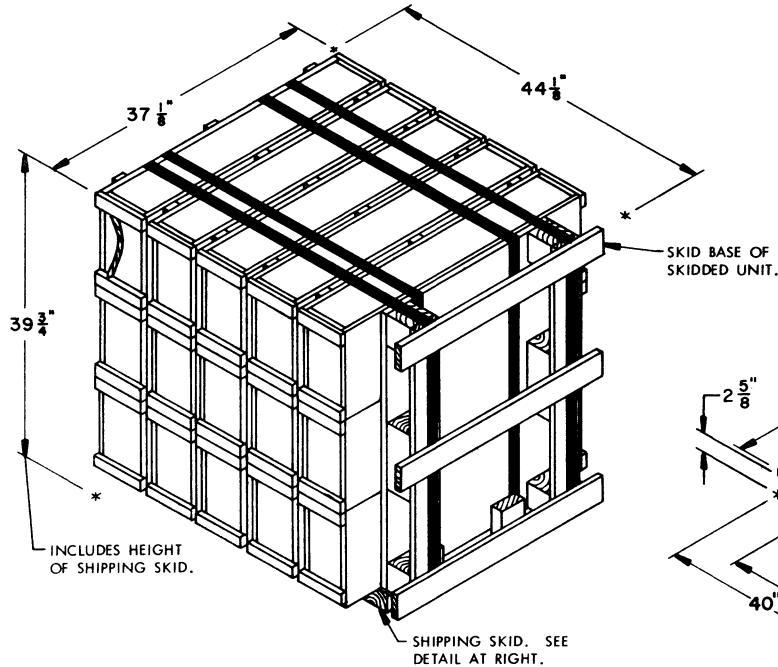
SIDE FILL

CARE IS TO BE EXERCISED SO THAT A "TIGHT" LOAD IS ACHIEVED CROSSWISE IN A CONTAINER. EXCESS SPACE UP TO ONE AND ONE-HALF INCH (1-1/2") IS PERMITTED. THE DETAIL ABOVE SPECIFIES BLOCKING THAT MUST BE USED IF THE EXCESS SPACE EXCEEDS 1-1/2". BECAUSE THE SIZE OF LADING UNITS WILL VARY, THE THICKNESS OF THE "SIDE FILL" PIECES WILL HAVE TO BE ADJUSTED ACCORDINGLY. IT IS PERMITTED TO LAMINATE ADDITIONAL THICKNESSES OF DUNNAGE TO THE LOAD-SIDE OF THE FILL MATERIAL AS SHOWN ABOVE.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
SKIDDED UNIT	20	38,400 LBS *
DUNNAGE	-----	443 LBS
CONTAINER	-----	5,700 LBS
TOTAL GROSS WEIGHT	-----	44,543 LBS *

* LOAD AS SHOWN IS BASED ON THE 1,920-POUND UNIT. TWENTY UNITS IS THE MAXIMUM NUMBER THAT CAN BE LOADED INTO THE AVAILABLE SPACE, REGARDLESS OF WEIGHT OF UNIT BEING LOADED.

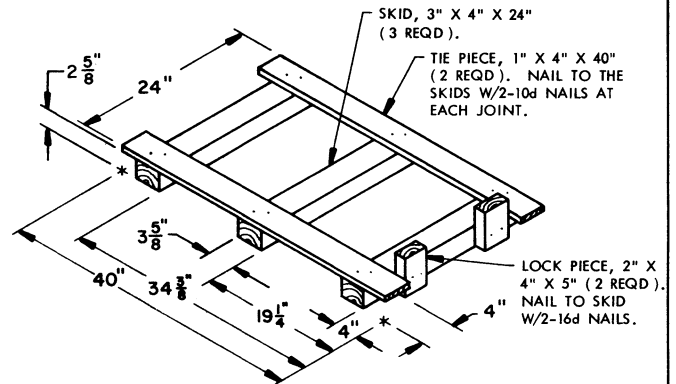


* INCLUDES HEIGHT OF SHIPPING SKID.

SKIDDED UNIT

UNIT WEIGHT ----- 1,665 TO 1,920 POUNDS.
 CUBE ----- 34.6 CUBIC FEET.
 (W/O SHIPPING SKID)

THE DIMENSIONS SHOWN ABOVE WILL VARY BETWEEN DIFFERENT 105MM ITEMS. THE OUTLOADING PROCEDURES SPECIFIED BY THIS DRAWING ARE APPLICABLE TO THE DIFFERENT ITEMS, PROVIDING THE DIMENSION SHOWN AS 39-3/4" ABOVE IS BETWEEN 37" AND 40-1/8", AND THE DIMENSION SHOWN AS 44-1/8" ABOVE IS BETWEEN 43" AND 45-1/2". THERE IS NO CONTROL REQUIRED FOR THE 37-1/8" DIMENSION.



SHIPPING SKID

PREPARATORY TO LOADING A UNIT INTO A CONTAINER IT MUST BE TIPPED ONTO ITS SIDE AND PLACED ON A "SHIPPING SKID". THIS CAN BE ACCOMPLISHED BY USING A 2-FORKLIFT METHOD; ONE TO TIP THE UNIT AND ONE TO CATCH THE UNIT ON SPREAD FORK TINES RAISED ABOUT 20". THE SECOND FORKLIFT CAN THEN PLACE THE UNIT ONTO THE SKID.

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

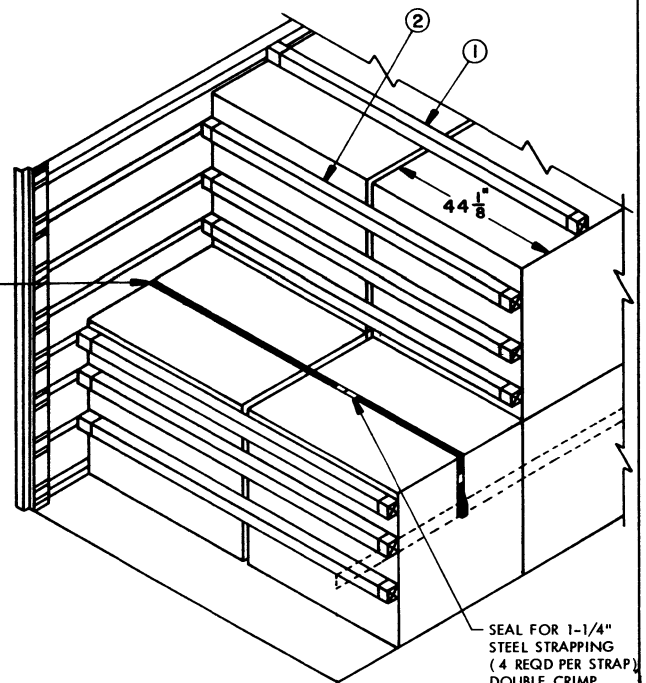
INDICATES CROSS MEMBER.

TIE WIRE, NO. 14 GAGE WIRE 18" 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 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 CROSS MEMBER AND LADING, WHEN THE VOID BETWEEN THE TWO IS GREATER THAN ONE INCH (1") FOR LONGITUDINAL BRACING OR ONE-HALF INCH (1/2") FOR VERTICAL BRACING. THIS METHOD CAN BE USED ON THE SIDE OF A LONGITUDINAL-BRACING CROSS MEMBER OR ON THE BOTTOM ON A HOLD-DOWN CROSS MEMBER.

HOLD-DOWN STRAP, 1-1/4" X .035" X 15'-0" (1 REQD). ATTACH EACH END AROUND THE 28" HIGH BELT RAIL. A HOLD-DOWN STRAP SHOULD BE FORMED FROM TWO PIECES OF STRAPPING SO THAT THE TWO PIECES CAN BE BROUGHT TOGETHER ABOVE THE LOAD FOR TENSIONING AND SEALING. NOTE THAT TWO (2) SEALS MUST BE USED TO SEAL THIS END-OVER-END LAP JOINT.



ONE-LAYER HOLD-DOWN METHOD

THE DETAIL ABOVE SPECIFIES A HOLD-DOWN METHOD TO BE USED IN A "REDUCED-LOAD" CONTAINER LOAD. THE STRAP METHOD CAN ALSO BE USED TO SECURE A 1-UNIT BAY; HOWEVER, THE STRAP MUST BE THREADED DOWN BEHIND THE 16" HIGH BELT RAIL BEFORE PASSING UPWARD AND OVER THE UNIT.