APPROVED BY U.S. COAST GUARD	APPROVED BY BUREAU OF EXPLOSIVES
Chief, Cargo Systems Branch	SUPERVISOR, MILITARY & INTERMODAL SERVICES
DATE 5/31/78	DATE 5/23/78

INTERIM PROCEDURES

LOADING AND BRACING WITH IRSKIT IN COMMERCIAL INTERMODAL CONTAINERS OF SKIDDED UNITS OF 105MM BOXED AMMUNITION (LARGE BOX)(12-BOX UNIT)

THE INTERIM LOADING AND BRACING PROCEDURES SPECIFIED BY THIS DRAWING ARE ONLY APPLICABLE FOR USE ONE TIME, UNLESS OTHERWISE DIRECTED, IN SUPPORT OF A TRIAL SHIPMENT PROGRAM. APPROVAL OF THIS DRAWING, AS REFLECTED HEREON, IS BASED ON THE CONSTRAINTS SET FORTH IMMEDIATELY ABOVE.

THE DEPICTED IRSKIT DUNNAGE METHOD CAN BE APPLIED TO ANY COMMERCIAL INTERMODAL 20-FOOT CONTAINER, ALTHOUGH THE DUNNAGE DIMENSIONS HAVE BEEN GIVEN FOR A 92" WIDE BY 87" HIGH (INSIDE DIMENSIONS) CONTAINER. THE LOAD AS SHOWN IS BASED ON AN 8'-0" HIGH CONTAINER AND IS PREFERRED FOR SHIPPING THE DEPICTED LOAD.

LOADING AND BRACING SPECIFICATIONS AS DELINEATED HEREIN ARE ADEQUATE FOR SHIPMENTS TO BE MOVED BY ANY SURFACE MODE OF TRANSPORT (MOTOR, RAIL, AND WATER).

REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW.

A. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.

B. THE LOAD LIMIT OF A T/COFC RAIL CAR 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.

DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS/MODIFIED FLAT BED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.

THE TERM IRSKIT IDENTIFIES THE NAVY-DEVELOPED INTERNAL RESTRAINT SYSTEM KIT FOR 20-FOOT COMMERCIAL INTERMODAL CONTAINERS. THIS SYSTEM WAS DESIGNED AND TESTED BY NAVAL WEAPONS HANDLING LABORATORY, WPNSTA EARLE, COLTS NECK, NJ 07722. FOR DETAIL AND INSTALLATION OF THE SYSTEM, SEE NAVSEA DWG. NOS. NWHC 7712, 7713, 7658, 7659, 7660, 7661 AND 7664.

REVISIONS				DRAFTSMAN P/E	PROJ ENG GWP
				CHECKER RSH	LOG ENGRG OFFICE John Boyd

APPROVED, U. S. ARMY ARMAMENT MATERIEL READINESS COMMAND

APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM)

DARCOM AMMO CENTER

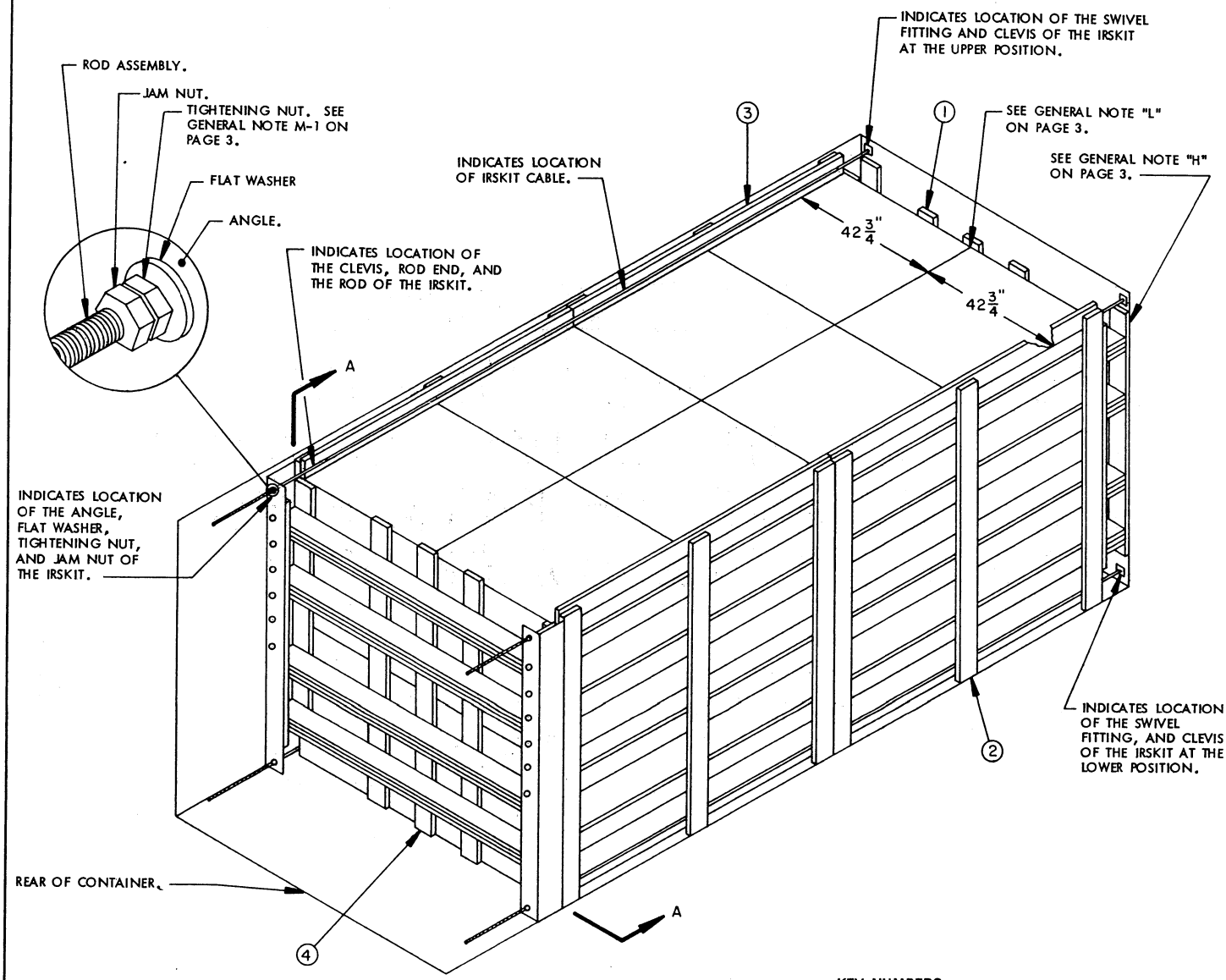
U. S. ARMY DARCOM DRAWING

JUNE 1978

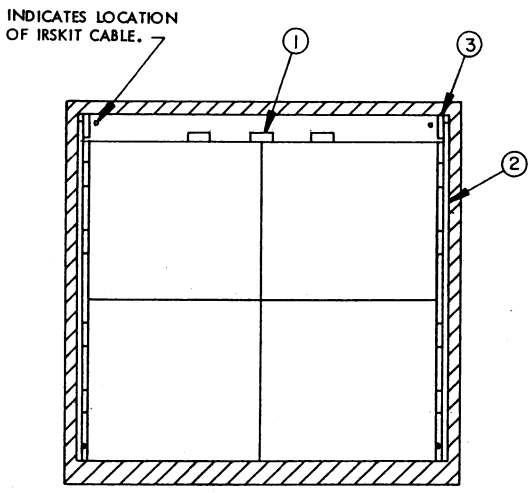
DARCOM AMMO CEN DWG NO.

D-SARAC-4399

DO NOT SCALE



ISOMETRIC VIEW



SECTION A-A

KEY NUMBERS

(1) FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE "FORWARD BLOCKING ASSEMBLY" DETAIL ON PAGE 4 AND GENERAL NOTE "G" ON PAGE 3.

(2) SIDE FILL ASSEMBLY (4 REQD). SEE THE "SIDE FILL ASSEMBLY" DETAIL ON PAGE 5 AND GENERAL NOTE "E" ON PAGE 3.

(3) HOLD-DOWN PIECE, 2" X 6" X 7'-7" (4 REQD). POSITION A HOLD-DOWN PIECE NEAR THE TOP OF THE SIDE FILL ASSEMBLY, SLIGHTLY BELOW THE ROOF BOWS/INSIDE CONTAINER ROOF. CONTACT BETWEEN A HOLD-DOWN PIECE AND THE ROOF BOWS/CONTAINER ROOF IS NOT PERMITTED. NAIL TO THE VERTICAL PIECES OF THE SIDE FILL ASSEMBLY W/3-10d NAILS AT EACH JOINT.

(4) REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY" DETAIL ON PAGE 4.

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. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED TO SUPPORT A TRIAL SHIPMENT PROGRAM. THE DELINEATED OUTLOADING PROCEDURES SPECIFY A "IRSKIT DUNNAGE" METHOD OF BLOCKING AMMUNITION IN COMMERCIAL INTERMODAL CONTAINERS.

C. THE SPECIFIED OUTLOADING PROCEDURE IS APPLICABLE TO A LOAD OF THE 12-BOX SKIDDED UNIT OF 105MM COMPLETE ROUNDS WHEN PACKED 2 PER WOODEN BOX (LARGE BOX). SUBSEQUENT REFERENCE TO SKIDDED UNIT MEANS THE SKIDDED UNIT WITH AMMUNITION ITEMS. SEE PAGE 5 FOR DETAIL OF THE SKIDDED UNIT. THE FORWARD AND REAR BLOCKING ASSEMBLIES ARE ADEQUATE FOR RETAINING A MAXIMUM LADING WEIGHT OF 28,000 POUNDS. WHEN A LADING WEIGHT EXCEEDS 28,000 POUNDS THE TRIPLED 2" X 6" BEAM ASSEMBLIES MUST BE INCREASED TO QUADRUPLED 2" X 6" BEAMS AT EACH LOCATION. FOUR QUADRUPLED 2" X 6" BEAM ASSEMBLIES ARE ADEQUATE FOR RETAINING A MAXIMUM LADING WEIGHT OF 35,200 POUNDS.

D. THE LOAD AS SHOWN IS BASED ON A 5,000 POUND 20' LONG BY 8' WIDE BY 8' HIGH INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 87" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER ON-FLATCAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME CONFIGURATION DESIGN CAN BE USED.

E. WHEN LOADING SKIDDED UNITS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST FORWARD AND SIDE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF ONE AND ONE-HALF INCHES (1-1/2") OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS PERMITTED, LATERAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITONAL PIECES OF APPROPRIATE THICKNESS TO THE BEARING PIECES ON A SIDE FILL ASSEMBLY. NAIL EACH ADDITIONAL PIECE TO THE BEARING PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". HOWEVER, IF THE SKIDDED UNIT LENGTH EXCEEDS THE 42-3/4" SHOWN HEREIN, IT MAY BE NECESSARY TO REDUCE THE THICKNESS OF THE BEARING PIECES OF THE "SIDE FILL ASSEMBLY" ON ONE AND/OR BOTH SIDES OF THE CONTAINER. BEARING PIECES MAY BE 1" X 6" MATERIAL IN LIEU OF THE 2" X 6" MATERIAL SPECIFIED IN THE DETAIL ON PAGE 5.

F. DUNNAGE LUMBER SPECIFIED IS OF A NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

G. A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE.

H. IN SOME CONTAINERS, SUCH AS SOME ALL STEEL CONTAINERS, THERE IS A SLOT AT THE CORNER OF THE FORWARD WALL. A PIECE OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE FORWARD BLOCKING ASSEMBLY TO PROVIDE A FLAT SURFACE FOR THE 2" X 6" BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3", OR A SPECIAL WIDTH PIECE CUT TO FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". THIS PIECE IS NOT REQUIRED WHEN THE FRONT WALL OF THE CONTAINER IS SMOOTH AND FLAT.

J. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.

K. PORTIONS OF THE CONTAINERS DEPICTED WITHIN THIS DRAWING, SUCH AS ONE OF THE SIDE WALLS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

L. TO MAKE LOADING EASIER, TO HELP ACHIEVE A TIGHT LOAD ACROSS A CONTAINER, AND TO PREVENT UNACCEPTABLE DAMAGE TO LADING UNITS WHEN LOADING A CONTAINER, A SLIP-SHEET CAN BE USED EFFECTIVELY AS A "SHOEHORN" TYPE DEVICE. THE SLIP-SHEET WILL PROVIDE A SMOOTH SURFACE THAT WILL PREVENT UNIT STRAPS AND/OR BOX CLEATS FROM INTERLOCKING OR CATCHING ON OTHER PROJECTIONS WHEN LATERALLY ADJACENT LADING UNITS ARE BEING LOADED. A SLIP-SHEET WILL BE USED AFTER ONE-HALF OF A STACK IS LOADED WITH ONE OF ITS SIDES IN TIGHT CONTACT AT ONE SIDE OF THE CONTAINER. THE SLIP-SHEET IS TO BE PLACED AGAINST THE OTHER SIDE OF THE HALF-STACK BEFORE THE LAST HALF OF THE STACK IS LOADED. AFTER A STACK IS COMPLETED, THE SLIP-SHEET IS TO BE REMOVED FOR SUBSEQUENT USE WITH THE NEXT STACK. A SLIP-SHEET OF SUITABLE SIZE CAN BE MADE FROM A SHEET OF 1/8" TEMPERED HARDBOARD (MASONITE) OR FROM A SHEET OF ANY OTHER MATERIAL THAT WILL SATISFY THE REQUIREMENT.

(CONTINUED AT LEFT)

(GENERAL NOTES CONTINUED)

M. CONTAINER PREPARATION AND LOADING PROCEDURES:

1. FOR INSTALLATION OF THE WASHER PLATE, SWIVEL FITTING, SOCKET HEAD CAP SCREWS, AND HOLE LOCATIONS, SEE NAVAL SEA COMMAND DRAWING NO. D-NWHC-7712. TORQUE THE SOCKET HEAD CAP SCREWS TO 200 FT LBS. ATTACH CABLES TO THE SWIVEL FITTINGS AND RODS TO TIE CABLE ENDS AS DEPICTED.
2. PREFABRICATE ONE FORWARD BLOCKING ASSEMBLY, ONE REAR BLOCKING ASSEMBLY, AND FOUR SIDE FILL ASSEMBLIES. SEE SPECIAL NOTES ON PAGE 5.
3. INSTALL FORWARD BLOCKING ASSEMBLY.
4. INSTALL ONE SIDE FILL GATE AND PIECE MARKED ③ . PIECE MARKED ③ WILL BE POSITIONED NEAR THE TOP OF THE VERTICAL PIECES, SLIGHTLY BELOW THE INSIDE ROOF BOWS/INSIDE CONTAINER ROOF. CONTACT BETWEEN PIECE MARKED ③ AND THE BOWS/ROOF IS NOT PERMITTED. NAIL PIECE MARKED ③ TO THE VERTICAL PIECES AS SPECIFIED.
5. LOAD TWO SKIDDED UNITS, TWO HIGH, AGAINST THE SIDE FILL GATE.
6. REPEAT STEP 4.
7. REPEAT STEP 5. SEE GENERAL NOTE "L" AT RIGHT.
8. REPEAT STEP 5.
9. REPEAT STEP 7.
10. REPEAT STEP 4.
11. REPEAT STEP 5.
12. REPEAT STEP 4.
13. REPEAT STEP 7.
14. REPEAT STEP 5.
15. REPEAT STEP 7.
16. INSTALL REAR BLOCKING ASSEMBLY.
17. INSTALL THE ANGLES, ONE RIGHT HAND AND ONE LEFT HAND. MOVE ANGLES TOWARD THE REAR BLOCKING ASSEMBLY, AND AT THE SAME TIME INSERT THREADED ROD ASSEMBLIES THROUGH THE TOP AND THE BOTTOM HOLES OF THE ANGLE. INSTALL FLAT WASHER, TIGHTENING NUT AND TIGHTEN. INSTALL JAM NUT. THE TIGHTENING NUT SHOULD BE TENSIONED UNTIL ALL SLACK IS REMOVED FROM THE LADING AND THE CABLES.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 6"	520	520
NAILS	NO. REQD	POUNDS
10d (3")	524	8

MATERIAL SPECIFICATIONS

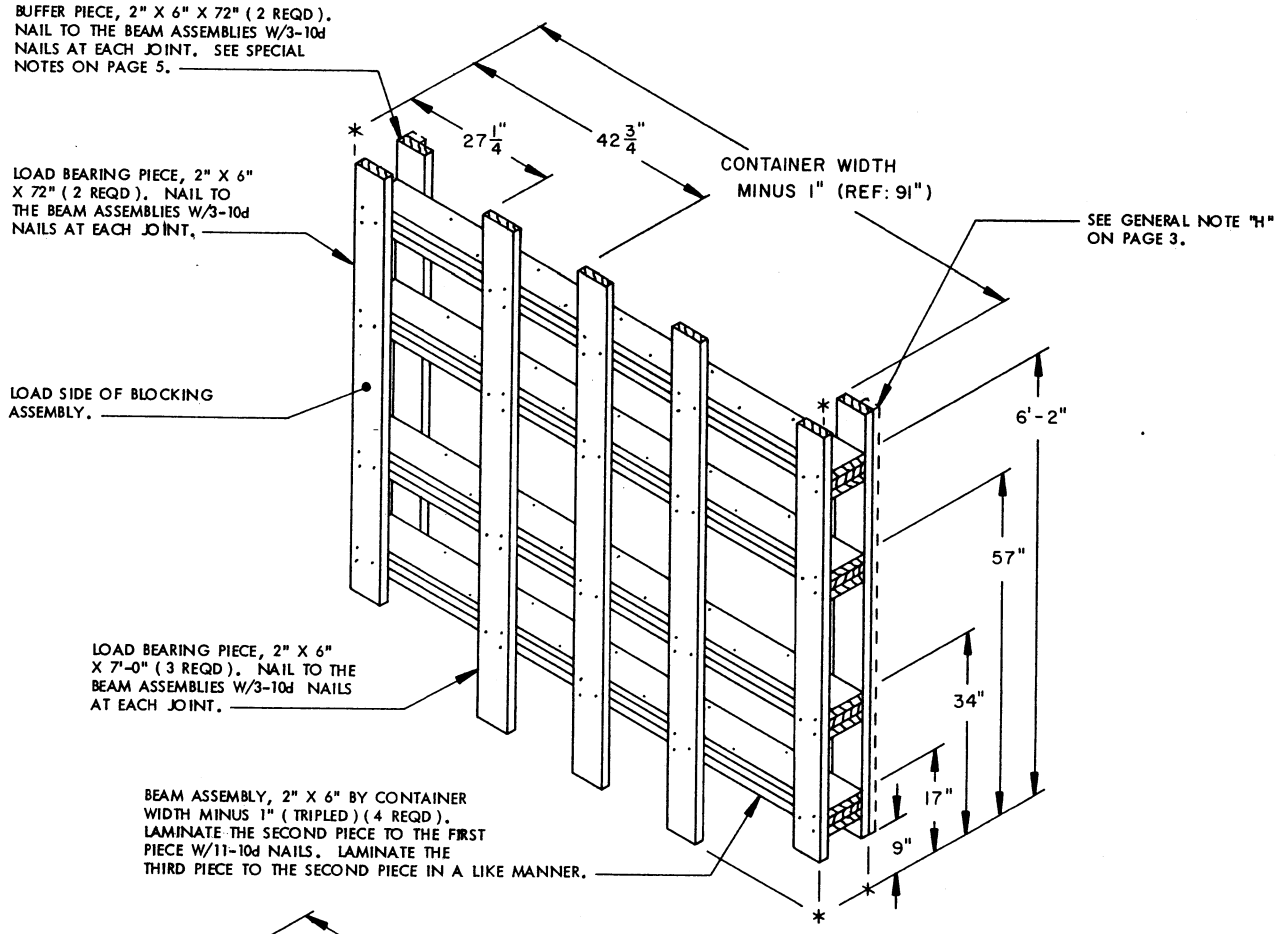
LUMBER ---------- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.

NAILS ---------- : COMMON, CEMENT COATED, OR CHEMICALLY ETCHED; FED SPEC FF-N-105.
ALT: ANNULAR-RING TYPE NAIL OF THE SAME SIZE.

LOAD AS SHOWN

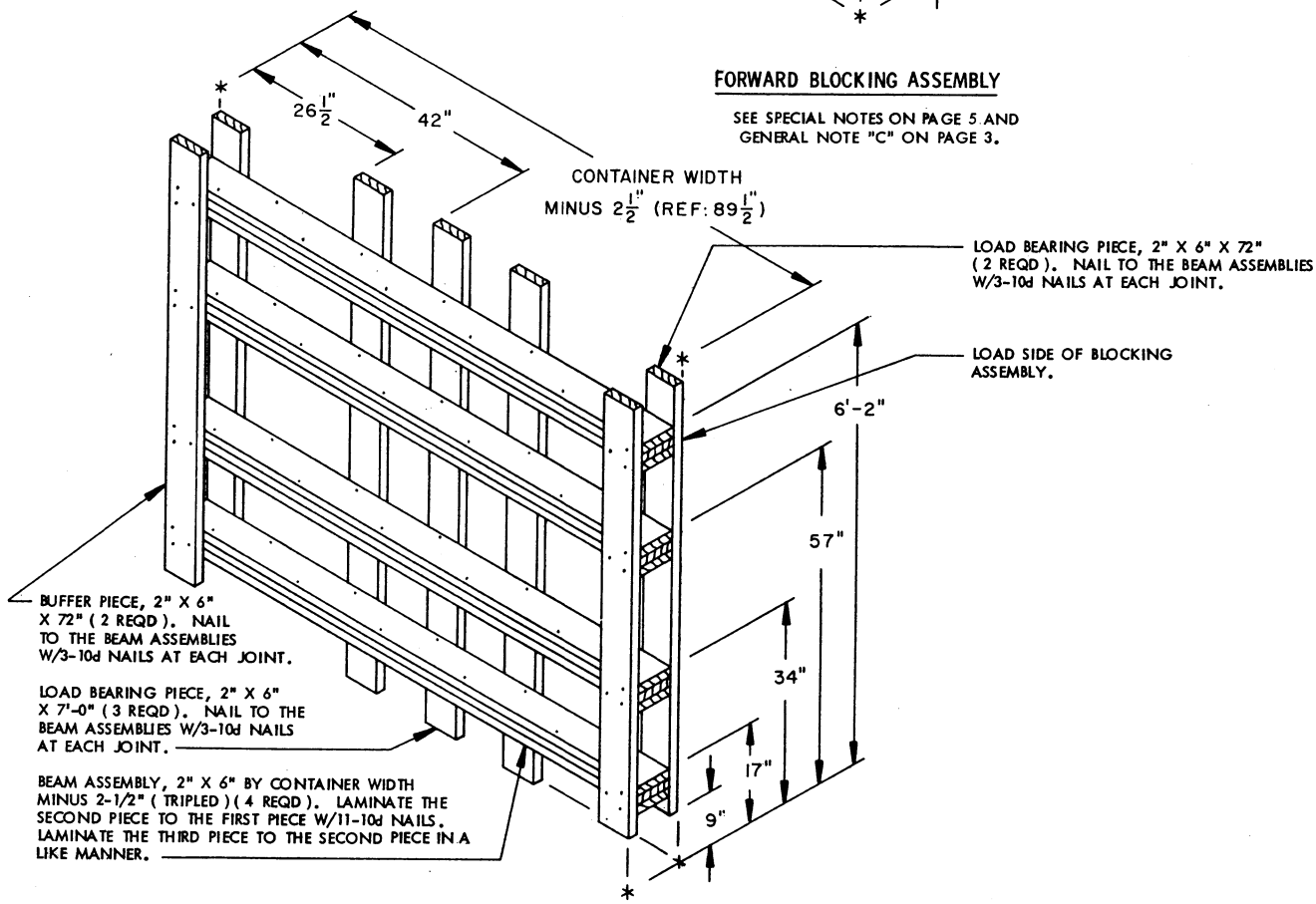
ITEM	QUANTITY	WEIGHT (APPROX)
SKIDDED UNIT	16	26,160 LBS ✳
DUNNAGE		1,047 LBS
IRSKIT		272 LBS
CONTAINER		5,000 LBS
TOTAL GROSS WEIGHT		32,479 LBS

✳ SEE GENERAL NOTE "C" ABOVE.



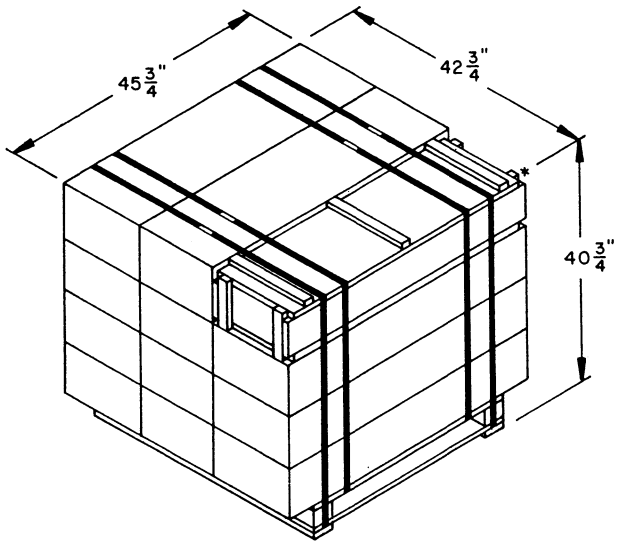
FORWARD BLOCKING ASSEMBLY

SEE SPECIAL NOTES ON PAGE 5 AND GENERAL NOTE "C" ON PAGE 3.



REAR BLOCKING ASSEMBLY

SEE GENERAL NOTE "C" ON PAGE 3.



SKIDDED UNIT

UNIT WEIGHT ---------- 1,635 LBS

CUBE ---------- 46.1 CUBIC FEET

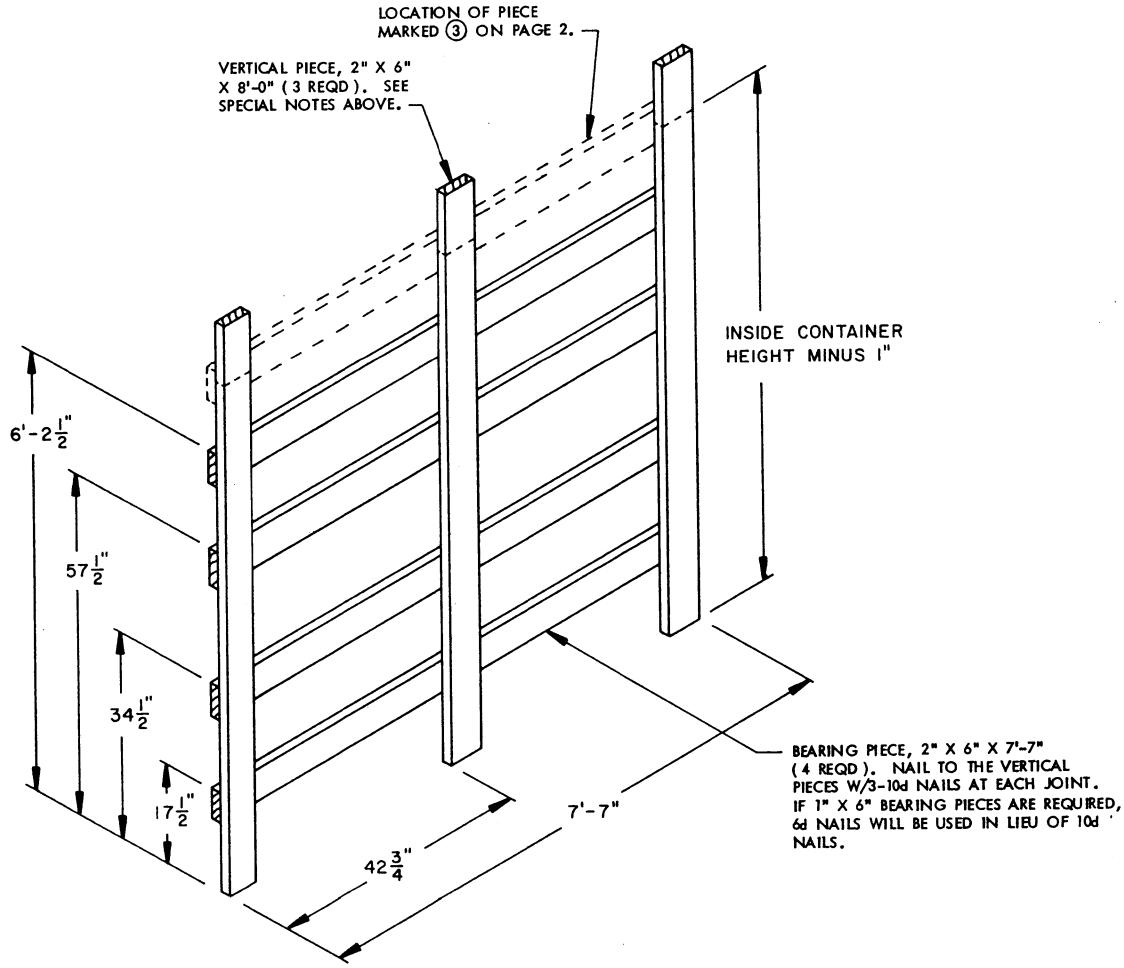
SPECIAL NOTES:

1. FORWARD BLOCKING ASSEMBLY:

   THE TWO OUTSIDE 6'-0" LOAD BEARING PIECES AND THE TWO BUFFER PIECES OF THE FORWARD BLOCKING ASSEMBLY ARE NOT TO BE NAILED INTO PLACE UNTIL THE SUB-ASSEMBLY MADE UP FROM THE OTHER PIECES HAS BEEN MOVED INTO THE CONTAINER. LAY THE FORWARD BLOCKING SUB-ASSEMBLY ON THE FLOOR OF THE CONTAINER WITH THE BEAMS RUNNING CROSS-WISE AND THE LOAD-SIDE OF THE BEARING PIECES ON THE FLOOR. SLIDE THE SUB-ASSEMBLY FORWARD UNTIL THE BASE END OF THE BEARING PIECES CONTACT THE FRONT WALL, AND POSITION IT LATERALLY UNTIL THE ENDS OF THE BEAMS ARE AT EQUAL DISTANCE (APPROX 1/2") FROM THE SIDE WALLS OF THE CONTAINER. PLACE THE FORWARD BUFFER PIECES ON THE SUB-ASSEMBLY WITH THE OUTSIDE EDGE OF EACH PIECE ALMOST IN CONTACT WITH THE ADJACENT SIDE WALL OF THE CONTAINER. NAIL EACH PIECE AS SPECIFIED. RAISE THE ASSEMBLY AND POSITION IT AGAINST THE FORWARD WALL OF THE CONTAINER. PLACE THE TWO 6'-0" LONG LOAD BEARING PIECES SO THAT THE OUTER EDGE OF EACH PIECE IS IN CONTACT WITH THE ADJACENT SIDE WALL OF THE CONTAINER. NAIL EACH PIECE AS SPECIFIED. SLIGHT ADJUSTMENT MAY BE REQUIRED FOR THE LENGTH OF THE BUFFER PIECES, DEPENDING ON LOCATION OF THE SWIVEL FITTINGS.

2. SIDE FILL ASSEMBLY:

   THE VERTICAL PIECES OF THE SIDE FILL ASSEMBLY HAVE BEEN SHOWN AS 8'-0". AFTER THE INSIDE HEIGHT OF THE CONTAINER IS ESTABLISHED, THESE VERTICAL PIECES CAN BE CUT AT THE LOADING SITE. THIS WILL FACILITATE LOADING OF DIFFERENT HEIGHT CONTAINERS.



SIDE FILL ASSEMBLY

SEE SPECIAL NOTES ABOVE AND GENERAL NOTE "E" ON PAGE 3.