

APPROVED BY U. S. COAST GUARD <i>[Signature]</i>	APPROVED BY BUREAU OF EXPLOSIVES <i>[Signature]</i>
DATE <u>7/23/79</u>	DATE <u>5/22/79</u>

LOADING AND BRACING WITH WOODEN DUNNAGE IN COMMERCIAL CONTAINERS OF SKIDDED UNITS OF 66MM ROCKETS (MIXED LOAD OF 2-BOX AND 3-BOX SKIDDED UNITS)

THE DEPICTED WOODEN DUNNAGE METHOD CAN BE APPLIED TO ANY COMMERCIAL INTERMODAL 20-FOOT CONTAINER, ALTHOUGH THE DUNNAGE DIMENSIONS HAVE BEEN GIVEN FOR A 92" WIDE BY 95" HIGH (INSIDE DIMENSIONS) CONTAINER. ALTHOUGH THE LOAD AS SHOWN IS BASED ON AN 8'-6" HIGH CONTAINER, AN 8'-0" HIGH CONTAINER IS PREFERRED FOR SHIPPING THE DEPICTED LOAD. WHEN AN 8'-0" HIGH CONTAINER IS USED, THE HEIGHT OF SOME DUNNAGE ASSEMBLIES WILL HAVE TO BE LOWERED BY REMOVING SOME MATERIAL FROM THE TOP OR BOTTOM OF SOME OF THE VERTICAL PIECES.

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

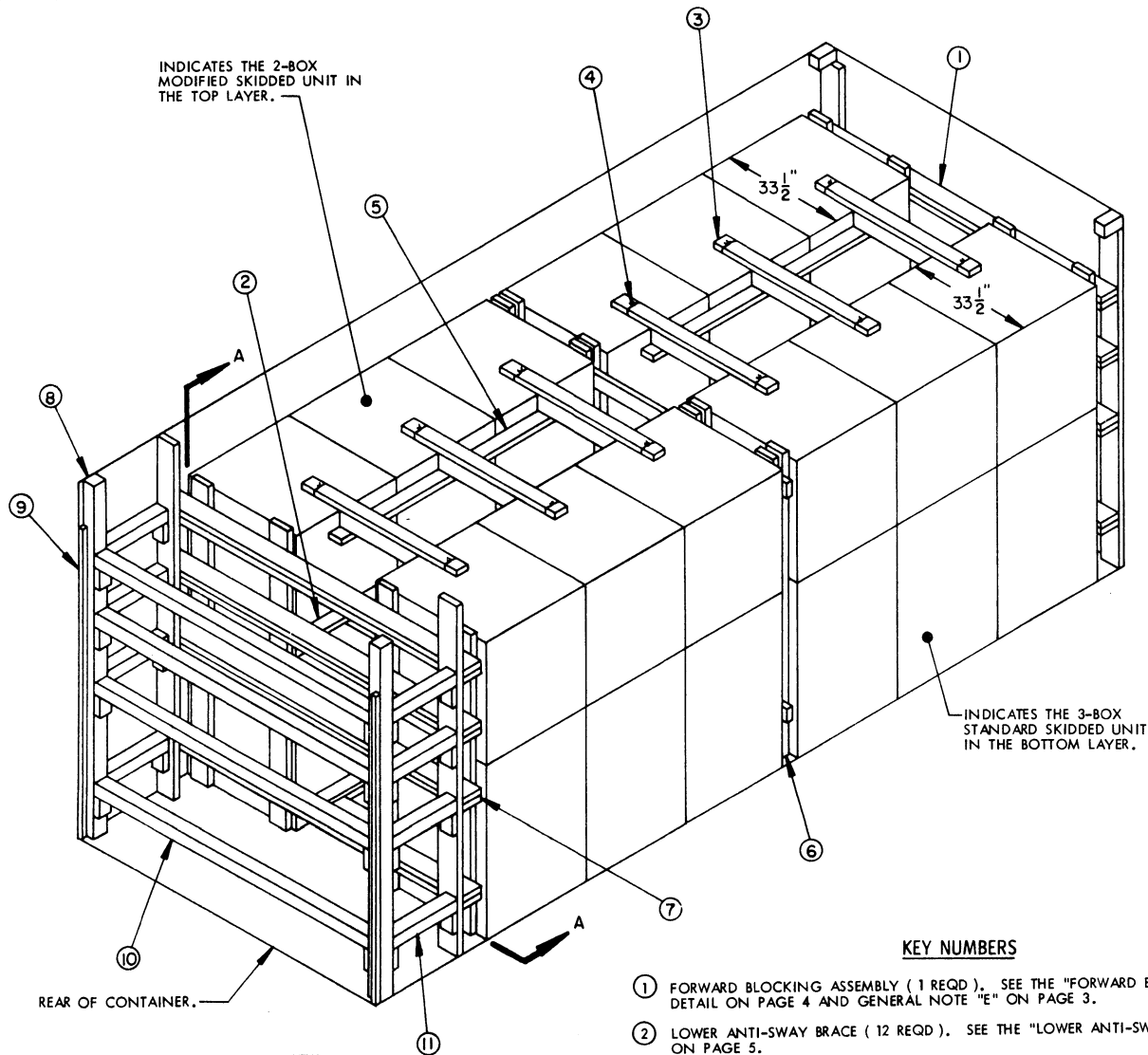
REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW.

- 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.

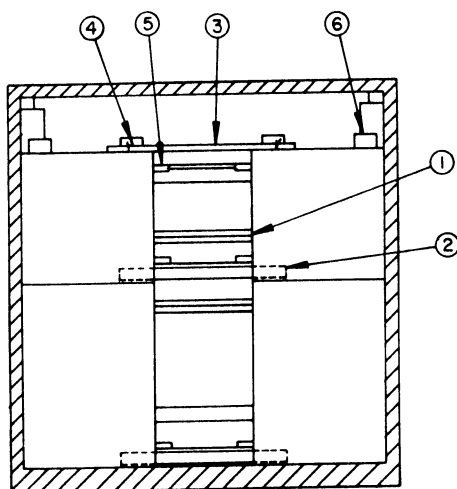
DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS/MODIFIED FLAT BED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.

REVISIONS			DRAFTSMAN <i>BL/DAK</i>	PROJ. ENG. <i>W.E. [Signature]</i>
			CHECKER <i>RS4</i>	LOG. ENGRG. OFFICE <i>W.F. [Signature]</i>
APPROVED, U. S. ARMY ARMAMENT MATERIEL READINESS COMMAND				
APPROVED BY ORDER OF COMMANDING GENERAL, U. S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND (DARCOM) <i>[Signature]</i> U. S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL				
U. S. ARMY DARCOM DRAWING				
MAY 1979				
DEF AMMO CEN & SCH DWG NO.				
D-SARAC-4416				

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 "E" ON PAGE 3.
- ② LOWER ANTI-SWAY BRACE (12 REQD). SEE THE "LOWER ANTI-SWAY BRACE" DETAIL ON PAGE 5.
- ③ TOP ANTI-SWAY BRACE (6 REQD). SEE THE "TOP ANTI-SWAY BRACE" DETAIL ON PAGE 5.
- ④ TIE WIRE, NO. 14 GAGE WIRE 24" LONG (12 REQD). INSTALL THE WIRE TO FORM A COMPLETE LOOP AROUND THE UNITIZING STRAP OF THE UNIT AND THE RETAINER PIECE OF THE TOP ANTI-SWAY BRACE, BRING ENDS TOGETHER AND TWIST TAUT.
- ⑤ TIE PIECE, 2" X 4" X 72" (4 REQD). NAIL TO THE TOP ANTI-SWAY BRACES W/2-10d NAILS AT EACH JOINT.
- ⑥ INTERMEDIATE GATE (1 REQD). SEE THE "INTERMEDIATE GATE" DETAIL ON PAGE 5.
- ⑦ REAR BLOCKING ASSEMBLY (1 REQD). SEE THE "REAR BLOCKING ASSEMBLY" DETAIL ON PAGE 4 AND GENERAL NOTE "E" ON PAGE 3.
- ⑧ DOOR POST VERTICAL (2 REQD). SEE THE "DOOR POST VERTICAL" DETAIL AND "DETAIL A" ON PAGE 7.
- ⑨ DOOR POST VERTICAL RETAINER (2 REQD). SEE THE "DOOR POST VERTICAL RETAINER" DETAIL AND "VIEW A" ON PAGE 6. NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/4-10d NAILS.
- ⑩ DOOR SPANNER, 4" X 4" MATERIAL, CUT TO A LENGTH THAT WILL PROVIDE FOR A DRIVE FIT BETWEEN DOOR POST VERTICALS (REF: 7'-1-3/8") (4 REQD). TOENAIL TO THE DOOR POST VERTICALS W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 7. AFTER INSTALLING THE BOTTOM AND THE TOP DOOR SPANNERS, THE STRUTS, PIECES MARKED ⑪, ARE TO BE INSTALLED.
- ⑪ STRUT, 4" X 4" BY CUT TO FIT (8 REQD). TOENAIL TO THE BUFFER PIECES OF THE "REAR BLOCKING ASSEMBLY" AND THE "DOOR POST VERTICAL" W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 7.

(GENERAL NOTES CONTINUED)

GENERAL NOTES

J. RECOMMENDED SEQUENTIAL LOAD PROCEDURES:

1. PREFABRICATE ONE FORWARD BLOCKING ASSEMBLY, SIX TOP ANTI-SWAY BRACES, ONE INTERMEDIATE GATE, ONE REAR BLOCKING ASSEMBLY, AND NAIL A DOOR POST VERTICAL RETAINER TO EACH DOOR POST VERTICAL, ONE RIGHT HAND AND ONE LEFT HAND.
2. INSTALL FORWARD BLOCKING ASSEMBLY.
3. LOAD 12 SKIDDED UNITS, SIX 3-BOX UNITS AND SIX 2-BOX UNITS.
4. INSTALL THREE TOP ANTI-SWAY BRACES, TWO TIE PIECES AND TIE WIRE.
5. INSTALL SIX LOWER ANTI-SWAY BRACES (THESE ASSEMBLIES MUST BE FABRICATED IN PLACE, BETWEEN THE SKIDDED UNITS).
6. INSTALL INTERMEDIATE GATE.
7. REPEAT STEP 3.
8. REPEAT STEP 4.
9. REPEAT STEP 5.
10. INSTALL REAR BLOCKING ASSEMBLY.
11. INSTALL THE TWO DOOR POST VERTICAL ASSEMBLIES (ONE RIGHT HAND AND ONE LEFT HAND).
12. INSTALL TWO DOOR SPANNER PIECES (ONE AT THE LOWEST POSITION AND ONE AT THE UPPERMOST POSITION).
13. INSTALL THE STRUTS BETWEEN REAR BLOCKING ASSEMBLY AND THE DOOR POST VERTICALS.
14. INSTALL THE REMAINING TWO DOOR SPANNER PIECES.

- 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 PROCEDURE IS APPLICABLE TO A MIXED LOAD OF 3-BOX AND 2-BOX SKIDDED UNITS OF 66MM ROCKETS PACKED IN WIREBOUND BOXES. SUBSEQUENT REFERENCE TO SKIDDED UNIT MEANS THE SKIDDED UNIT WITH AMMUNITION ITEMS. SEE PAGE 8 FOR THE DETAILS OF THE SKIDDED UNITS. **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 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH INTERMODAL COMMERCIAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 95" HIGH. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. **NOTICE:** OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. 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.
- E. 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.
- F. IN SOME CONTAINERS, SUCH AS SOME ALL STEEL CONTAINERS, THERE IS A SLOT AT THE CORNERS 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.
- G. **CAUTION:** DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- H. 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.

(CONTINUED AT LEFT)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	48	16
2" X 4"	141	94
2" X 6"	265	265
4" X 4"	154	206
NAILS	NO. REQD	POUNDS
10d (3")	432	6-3/4
12d (3-1/4")	48	1
16d (3-1/2")	144	3-1/4
DOOR POST VERTICAL RETAINER ---	2 REQD -----	64 LBS
WIRE NO. 14 GAGE -----	24' REQD -----	1/2 LB

MATERIAL SPECIFICATIONS

- LUMBER ----- : TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
- NAILS ----- : FED SPEC FF-N-105; COMMON.
- STEEL, STRUCTURAL ----- : FED SPEC QQ-S-741; SQUARE STRUCTURAL TUBING AND ROLLED PLATE.
- WIRE ----- : FED SPEC QQ-W-461.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
3-BOX SKIDDED UNIT ---	12 -----	4,692 LBS
2-BOX SKIDDED UNIT ---	12 -----	3,288 LBS
DUNNAGE -----		1,238 LBS
CONTAINER -----		4,700 LBS
TOTAL WEIGHT -----		13,918 LBS

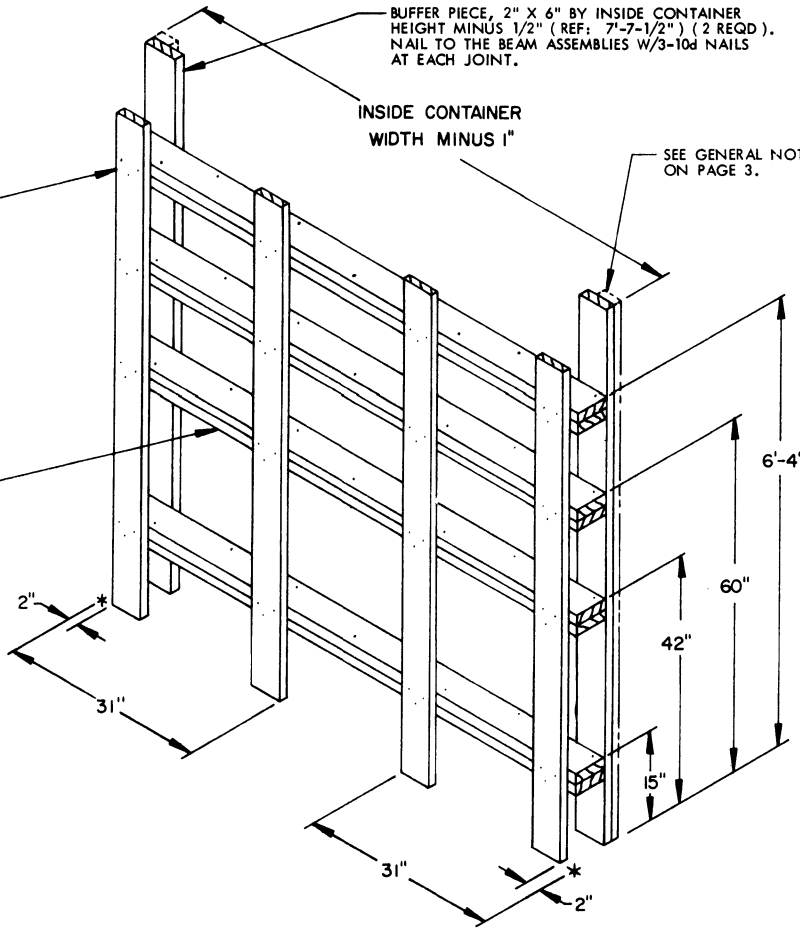
LOAD BEARING PIECE, 2" X 6" X 7'-0" (4 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

BEAM ASSEMBLY, 2" X 6" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (DOUBLED) (4 REQD). LAMINATE EACH BEAM W/11-10d NAILS.

BUFFER PIECE, 2" X 6" BY INSIDE CONTAINER HEIGHT MINUS 1/2" (REF: 7'-7-1/2") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

INSIDE CONTAINER WIDTH MINUS 1"

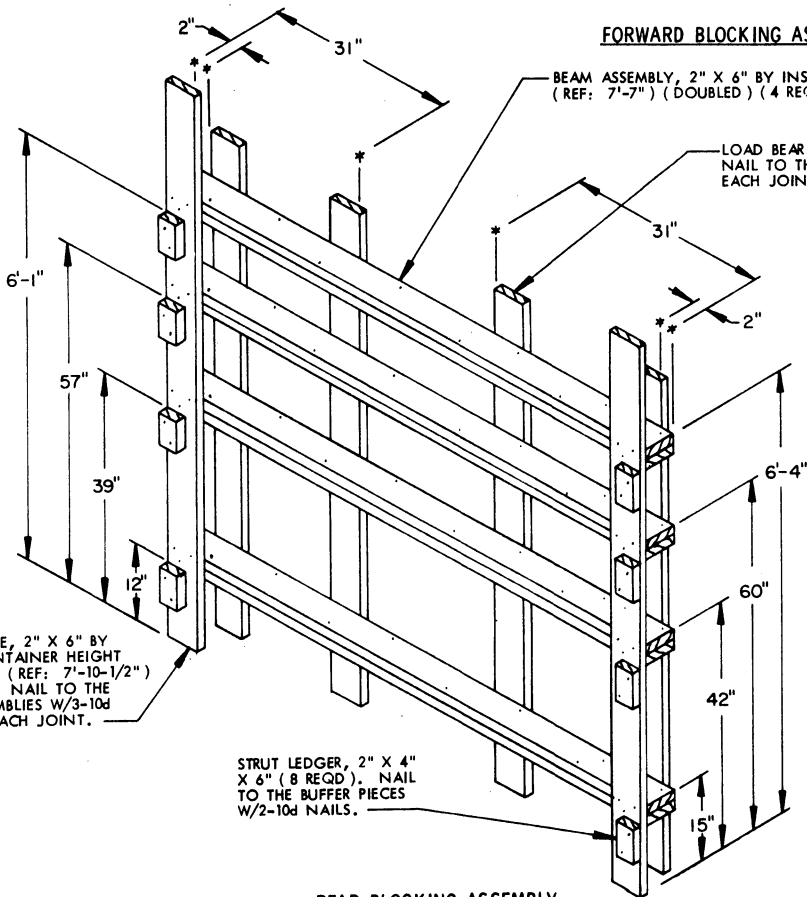
SEE GENERAL NOTE "F" ON PAGE 3.



FORWARD BLOCKING ASSEMBLY

BEAM ASSEMBLY, 2" X 6" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (DOUBLED) (4 REQD). LAMINATE EACH BEAM W/11-10d NAILS.

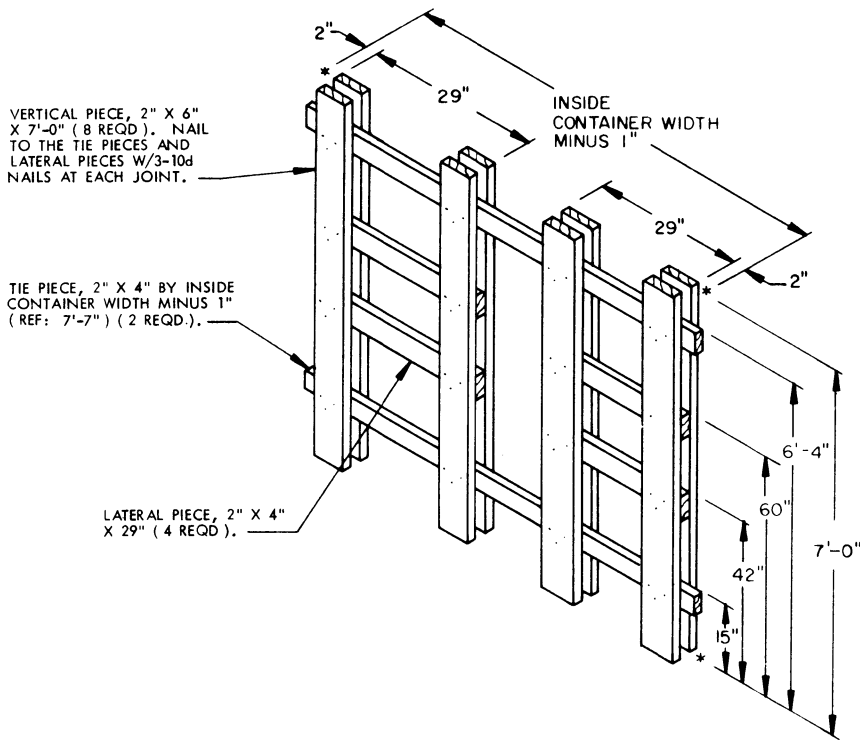
LOAD BEARING PIECE, 2" X 6" X 7'-0" (4 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.



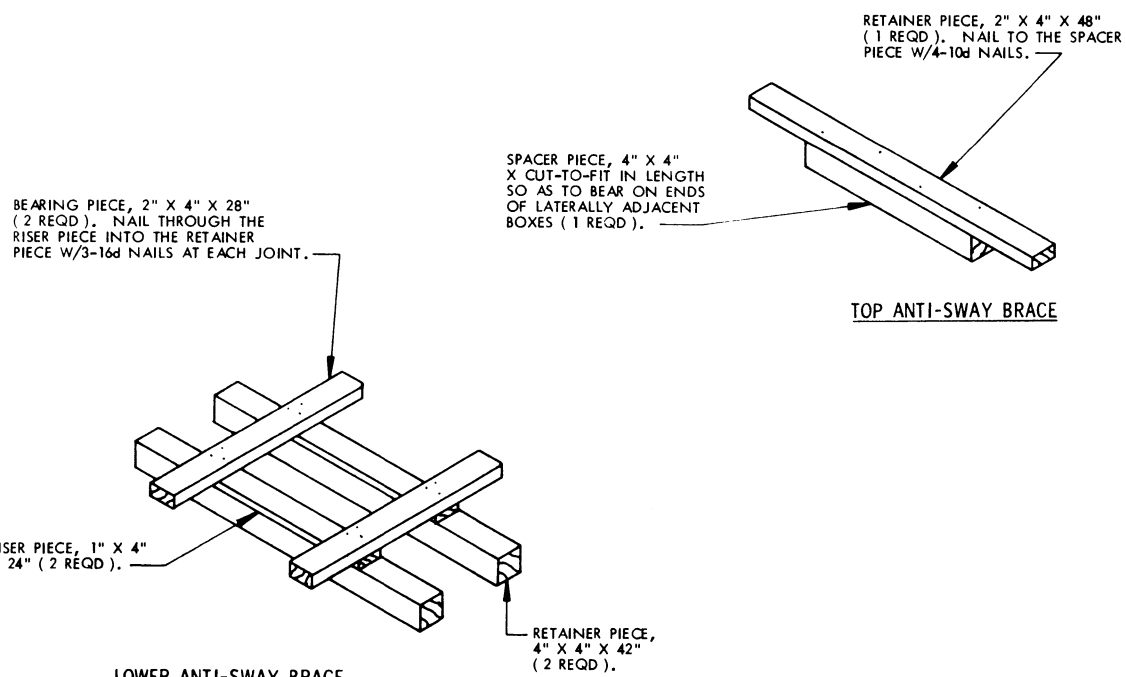
BUFFER PIECE, 2" X 6" BY INSIDE CONTAINER HEIGHT MINUS 1/2" (REF: 7'-10-1/2") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

STRUT LEDGER, 2" X 4" X 6" (8 REQD). NAIL TO THE BUFFER PIECES W/2-10d NAILS.

REAR BLOCKING ASSEMBLY



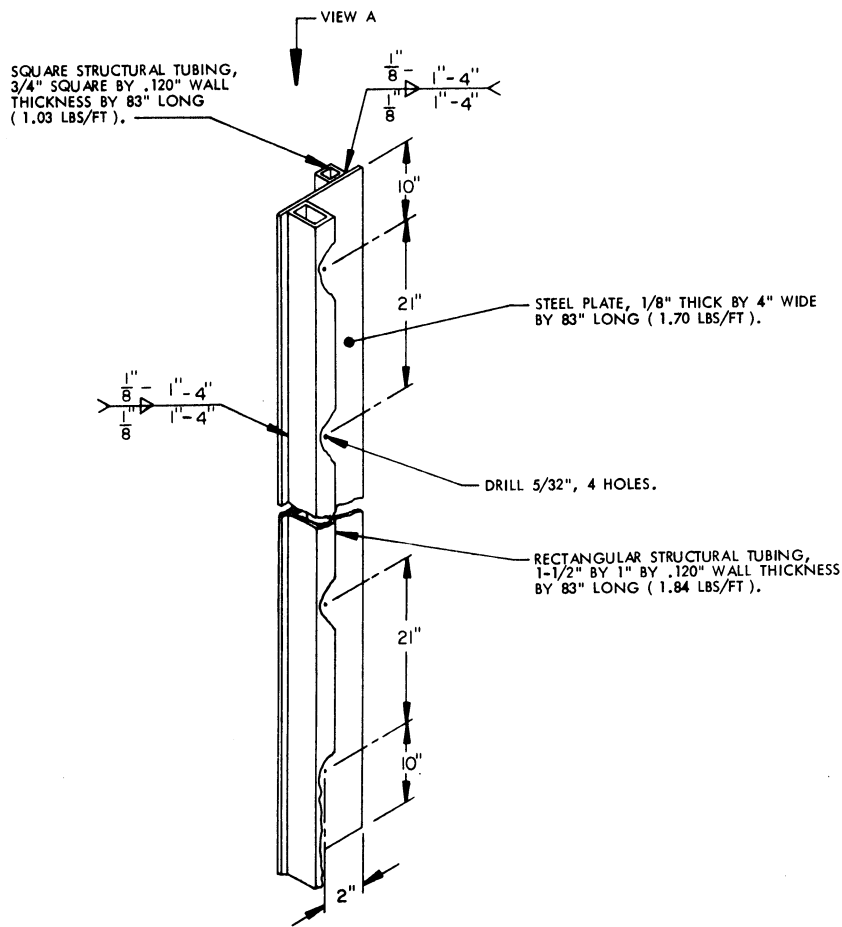
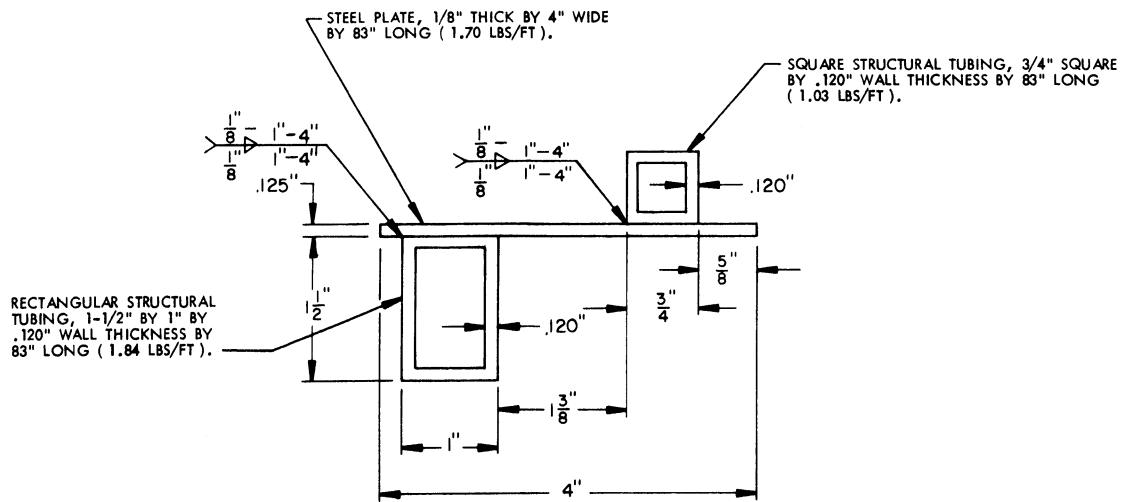
INTERMEDIATE GATE



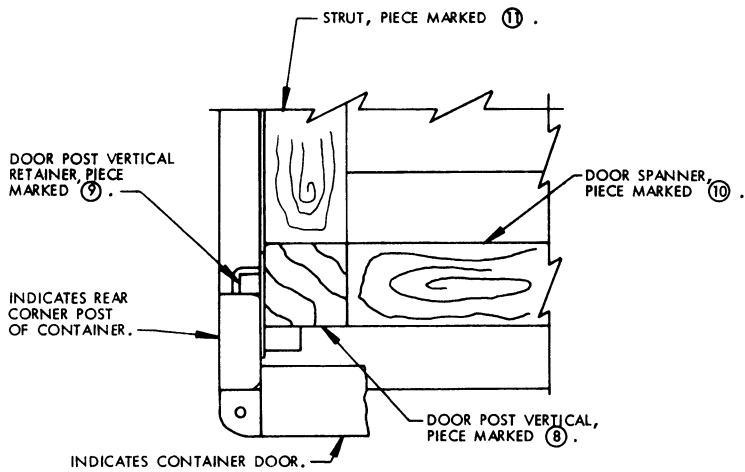
TOP ANTI-SWAY BRACE

LOWER ANTI-SWAY BRACE

THIS ASSEMBLY MUST BE FABRICATED IN PLACE, BETWEEN THE SKIDDED UNITS.

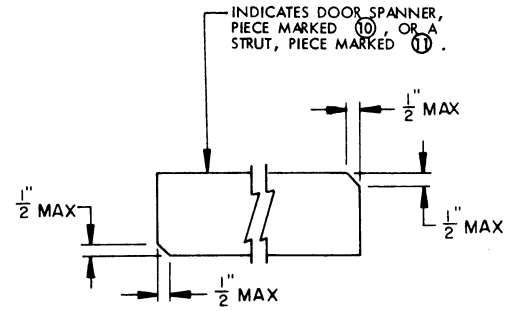


DOOR POST VERTICAL RETAINER



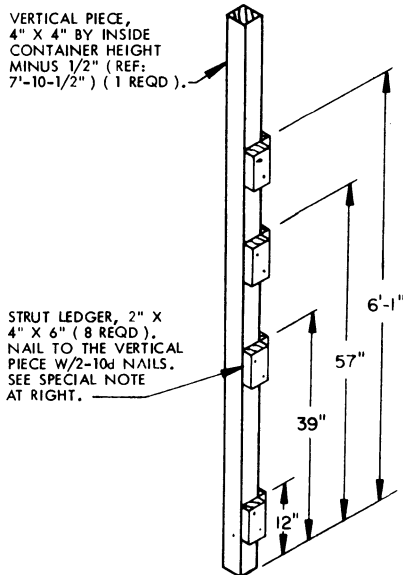
DETAIL A

A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE DOOR POST VERTICAL AND ADJACENT DUNNAGE PIECES.



BEVEL-CUT

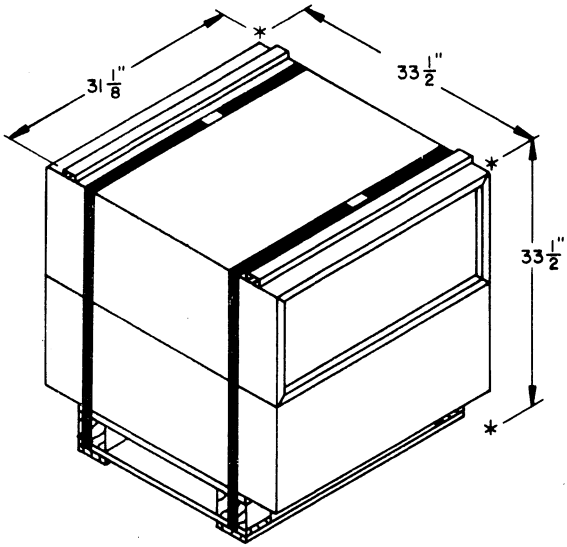
IF DESIRED, EACH END OF A DOOR SPANNER PIECE OR A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT DOOR-POST-TO-DOOR-POST FIT OR A TIGHT REAR-OF-LOAD FIT.



DOOR POST VERTICAL

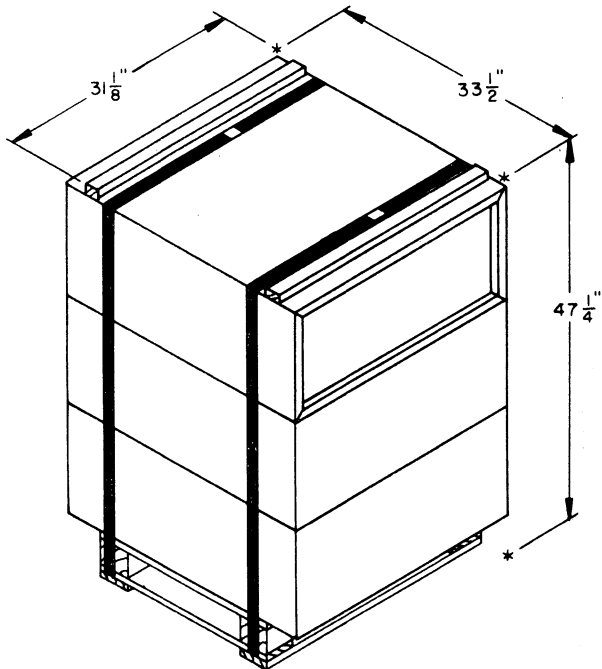
SPECIAL NOTE:

THE STRUT LEDGERS CAN ONLY BE PRE-NAILED TO THE DOOR POST VERTICAL ON ONE SIDE OF THE CONTAINER FOR THE DOOR SPANNER PIECES. ALSO, THE STRUT LEDGERS FOR THE STRUTS CAN ONLY BE PRE-NAILED TO THE REAR BLOCKING ASSEMBLY OR THE DOOR POST VERTICAL AT THE LOWEST DIMENSION.



SKIDDED UNIT (MODIFIED)

UNIT WEIGHT ----- 274 POUNDS (APPROX)
 CUBE ----- 20.2 CUBIC FEET



SKIDDED UNIT (STANDARD)

UNIT WEIGHT ----- 391 POUNDS (APPROX)
 CUBE ----- 28.5 CUBIC FEET