

APPROVED BY  
BUREAU OF EXPLOSIVES

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# LOADING AND BRACING\* IN END OPENING ISO CONTAINERS OF HARPOON GUIDED MISSILE, AGM-84A (WITH OR WITHOUT WINGS AND FINS), PACKED 2 PER MK607 MOD 0 SHIPPING AND STORAGE CONTAINER

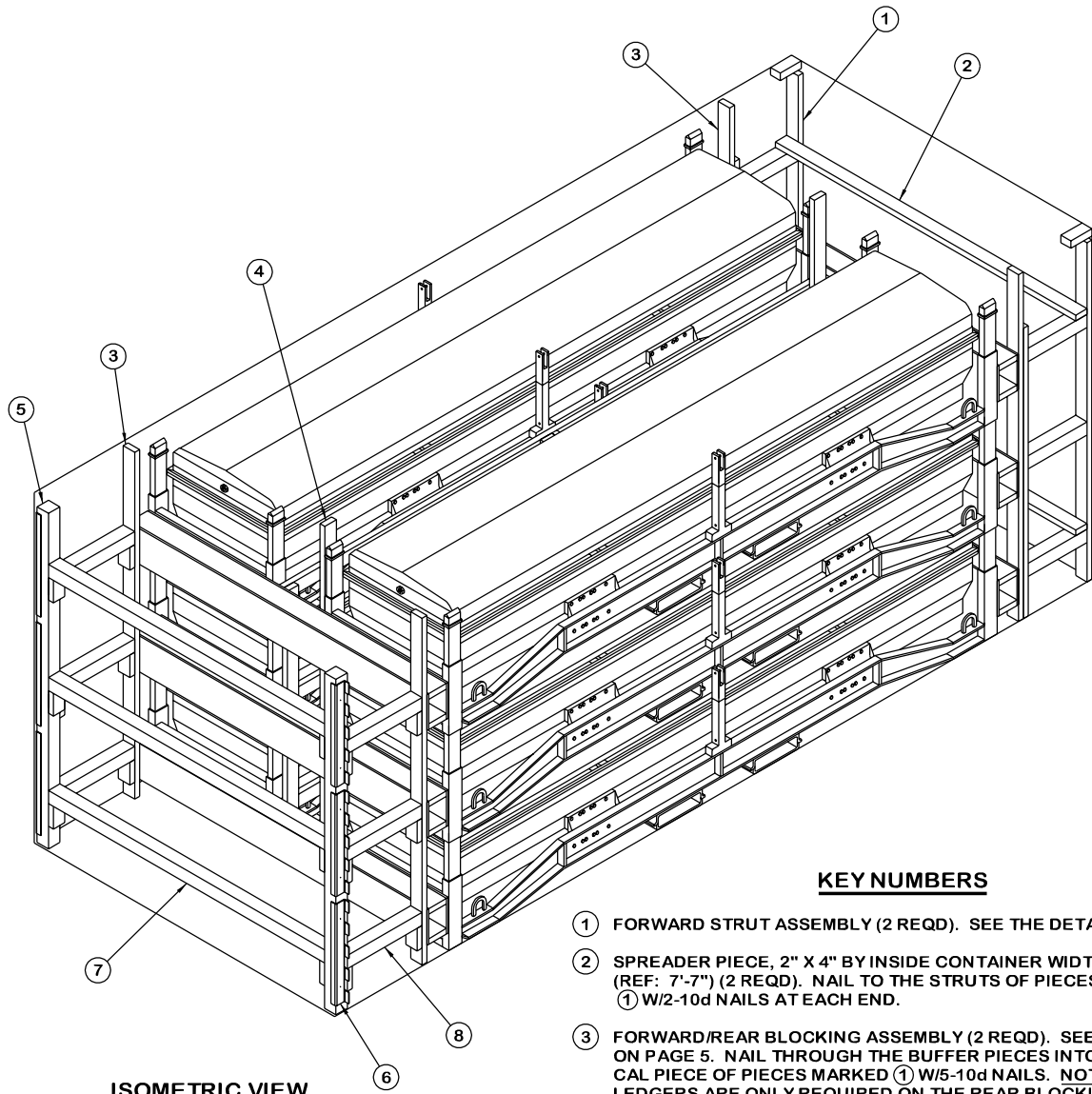
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\* LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

## U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY OPERATIONS SUPPORT COMMAND	ENGINEER	BASIC REV.	MICHAEL SARDONE	DO NOT SCALE			
	TECHNICIAN	BASIC REV.		WEBSITE: <a href="http://www.dac.army.mil">HTTP://WWW.DAC.ARMY.MIL</a>			
DRAFTSMAN		BASIC REV.		JANUARY 2002			
	APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	TRANSPORTATION ENGINEERING DIVISION					
VALIDATION ENGINEERING DIVISION				CLASS	DIVISION	DRAWING	FILE
LOGISTICS ENGINEERING OFFICE				19	48	8658	SP15J92



**ISOMETRIC VIEW**

**KEY NUMBERS**

- ① FORWARD STRUT ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 5.
- ② SPREADER PIECE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (2 REQD). NAIL TO THE STRUTS OF PIECES MARKED ① W/2-10d NAILS AT EACH END.
- ③ FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 5. NAIL THROUGH THE BUFFER PIECES INTO THE VERTICAL PIECE OF PIECES MARKED ① W/5-10d NAILS. NOTE: STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.
- ④ CENTER FILL ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 4.
- ⑤ DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 5, "DETAIL A" ON PAGE 6, AND GENERAL NOTE "L" ON PAGE 3.
- ⑥ UNIVERSAL LOAD RETAINER (6 REQD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE DEPARTMENT OF ARMY DRAWING DA-116, "DETAIL A" ON PAGE 6, AND GENERAL NOTE "L" ON PAGE 3.
- ⑦ DOOR SPANNER, 4" X 4" MATERIAL CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1-1/4") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 6.
- ⑧ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 22-7/8") (6 REQD). TOENAIL TO THE BUFFER PIECES OF THE REAR BLOCKING ASSEMBLY AND TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 6.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" x 4"	213	142
2" x 6"	91	91
4" x 4"	57	76
NAILS	NO. REQD	POUNDS
6d (2")	264	1-3/4
10d (3")	210	3-1/4
12d (3-1/4")	36	3/4
PLYWOOD, 1/2" - - - 72.04 SQ FT REQD - - - 99-1/4 LBS		
UNIVERSAL LOAD RETAINER - - - 6 REQD - - - 39 LBS		

**LOAD AS SHOWN**

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-242/E	6	19,050 LBS
DUNNAGE		760 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		24,510 LBS (APPROX)

(GENERAL NOTES CONTINUED)

M. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.

N. MAXIMUM LOAD WEIGHT CRITERIA:

THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. 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 INTERMODAL CONTAINER SYSTEM.

O. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:

- 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
2. THE LOAD LIMIT OF A T/COFC RAILCAR 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.

P. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE DETAIL ON PAGE 7. WHEN A CONTAINER IS TO BE LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTH-WISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

Q. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

- 1. PREFABRICATE TWO FORWARD STRUT ASSEMBLIES, TWO FORWARD/REAR BLOCKING ASSEMBLIES, ONE CENTER FILL ASSEMBLY, AND NAIL THREE UNIVERSAL LOAD RETAINERS TO EACH DOOR POST VERTICAL.
2. INSTALL THE TWO FORWARD STRUT ASSEMBLIES AND THE TWO SPREADER PIECES.
3. INSTALL THE FORWARD BLOCKING ASSEMBLY.
4. LOAD SIX CONTAINERS.
5. INSTALL THE CENTER FILL ASSEMBLY.
6. INSTALL THE REAR BLOCKING ASSEMBLY.
7. INSTALL THE TWO DOOR POST VERTICAL ASSEMBLIES (ONE RIGHT-HAND AND ONE LEFT-HAND).
8. INSTALL THE THREE DOOR SPANNER PIECES.
9. INSTALL THE SIX STRUTS.

MATERIAL SPECIFICATIONS

Table with 2 columns: Material Name and Specification. Includes LUMBER, NAILS, PLYWOOD, STRAPPING, STEEL, SEAL, STRAP, ANTI-CHAFING MATERIAL, and STEEL STRUCTURAL.

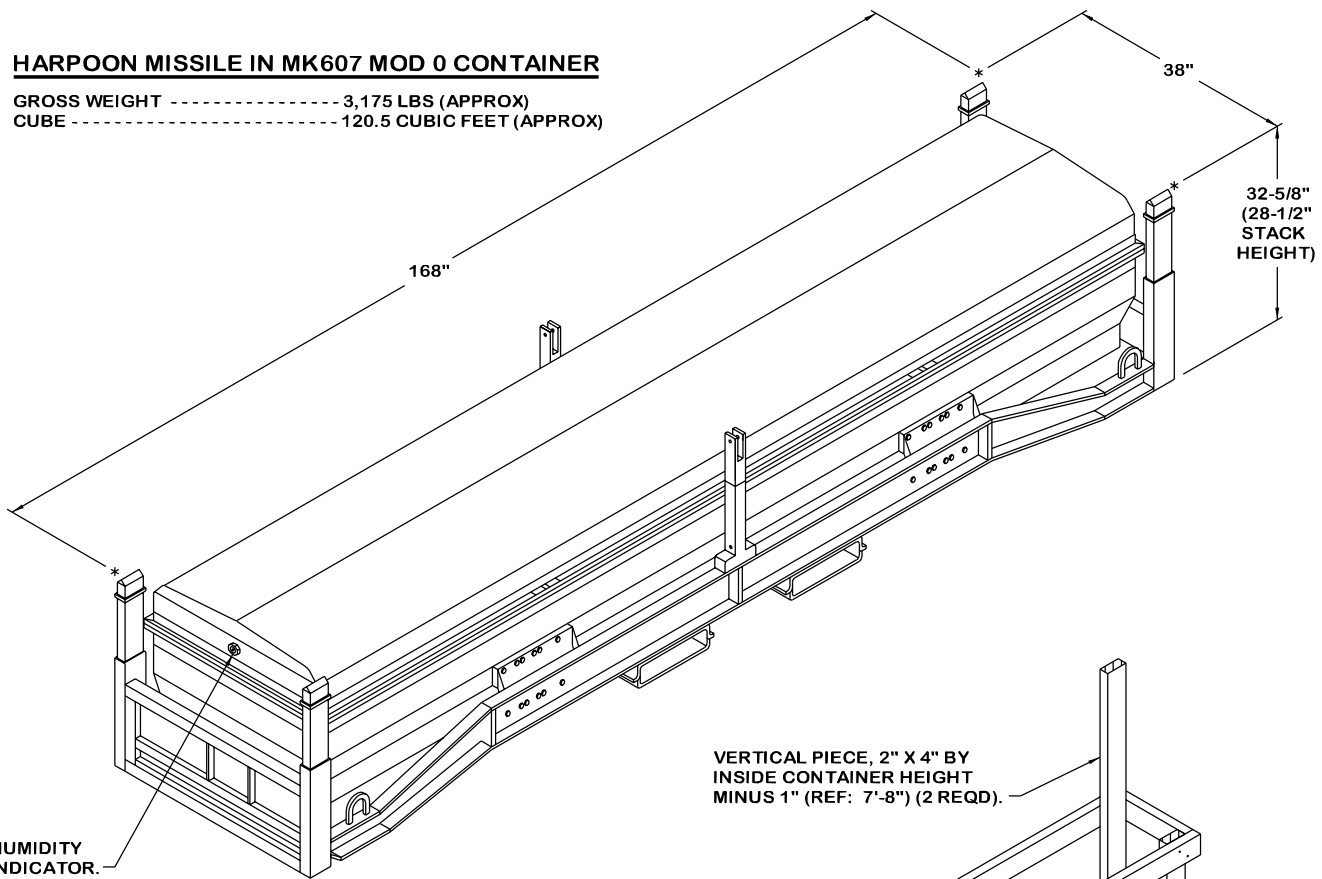
GENERAL NOTES

- 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 LOADS OF HARPOON MISSILE PACKED IN MK607 MOD 0 CONTAINER.
C. THE LOAD AS SHOWN IS BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH END OPENING ISO CONTAINER...
D. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD...
E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE...
F. A STAGGERED NAILING PATTERN WILL BE USED...
G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS...
H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR...
I. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING...
J. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER...
K. SIX UNIVERSAL LOAD RETAINERS ARE DEPICTED IN THE LOAD ON PAGE 2...
L. SIX UNIVERSAL LOAD RETAINERS ARE DEPICTED IN THE LOAD ON PAGE 2...
M. CONVERSION TO METRIC EQUIVALENTS...
N. MAXIMUM LOAD WEIGHT CRITERIA...
O. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS...
P. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD...
Q. RECOMMENDED SEQUENTIAL LOADING PROCEDURES...

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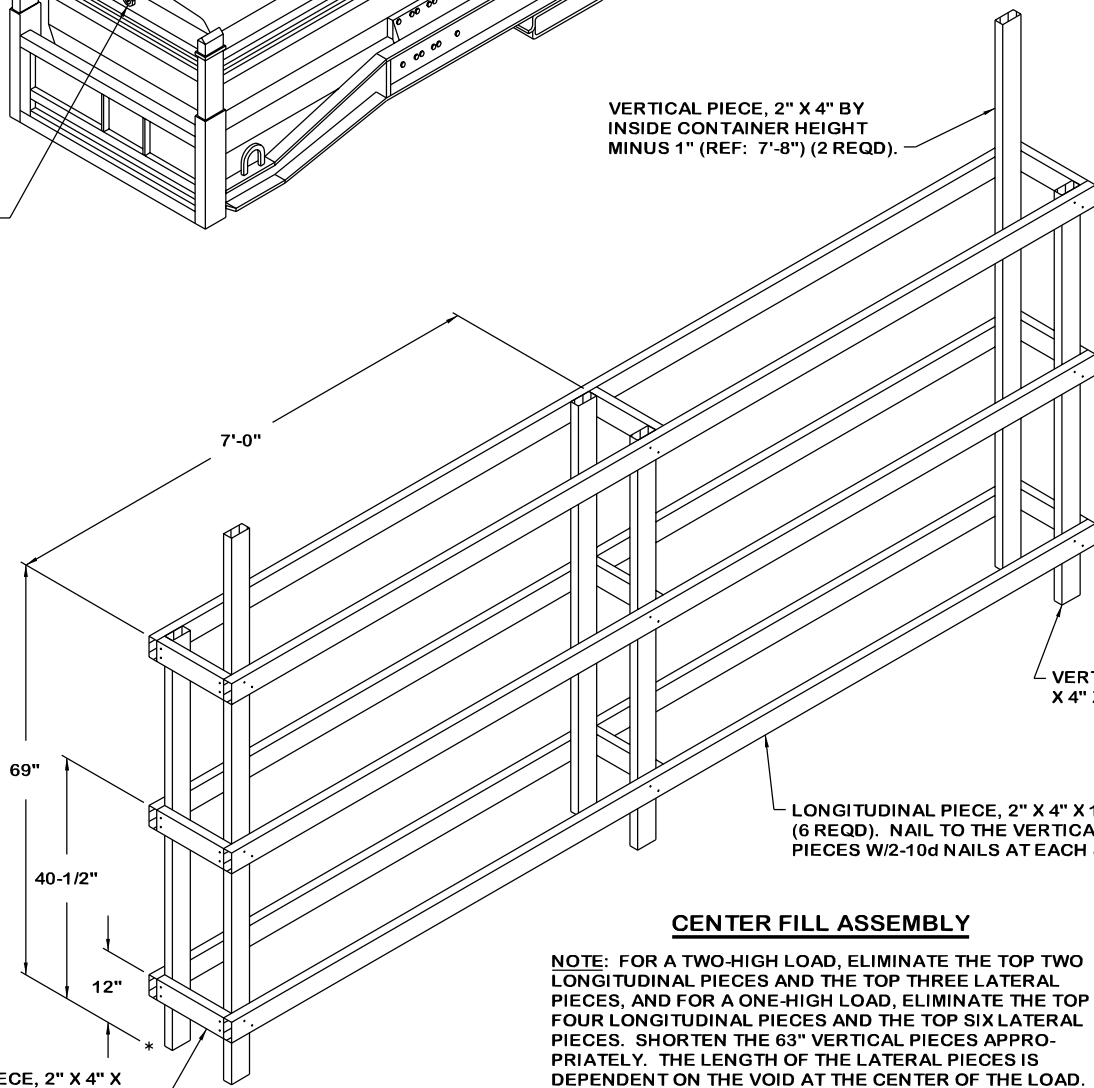
**HARPOON MISSILE IN MK607 MOD 0 CONTAINER**

GROSS WEIGHT ----- 3,175 LBS (APPROX)  
 CUBE ----- 120.5 CUBIC FEET (APPROX)



VERTICAL PIECE, 2" X 4" BY  
 INSIDE CONTAINER HEIGHT  
 MINUS 1" (REF: 7'-8") (2 REQD).

HUMIDITY  
 INDICATOR.



VERTICAL PIECE, 2"  
 X 4" X 69" (4 REQD).

LONGITUDINAL PIECE, 2" X 4" X 14'-0"  
 (6 REQD). NAIL TO THE VERTICAL  
 PIECES W/2-10d NAILS AT EACH JOINT.

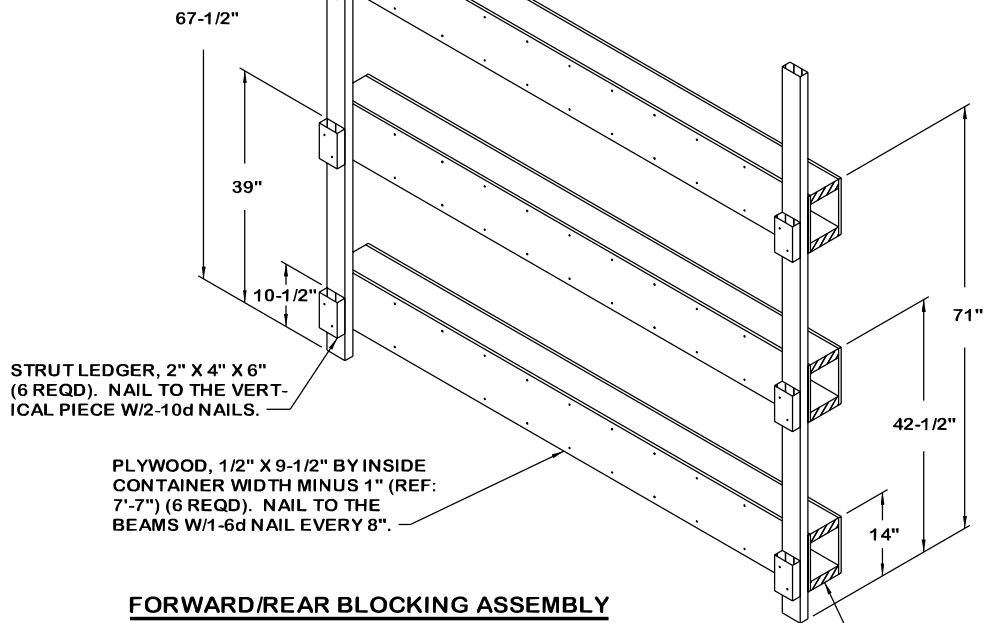
LATERAL PIECE, 2" X 4" X  
 12" (9 REQD). NAIL TO THE  
 VERTICAL PIECES W/2-10d  
 NAILS AT EACH END.

**CENTER FILL ASSEMBLY**

NOTE: FOR A TWO-HIGH LOAD, ELIMINATE THE TOP TWO  
 LONGITUDINAL PIECES AND THE TOP THREE LATERAL  
 PIECES, AND FOR A ONE-HIGH LOAD, ELIMINATE THE TOP  
 FOUR LONGITUDINAL PIECES AND THE TOP SIX LATERAL  
 PIECES. SHORTEN THE 63" VERTICAL PIECES APPRO-  
 PRIATELY. THE LENGTH OF THE LATERAL PIECES IS  
 DEPENDENT ON THE VOID AT THE CENTER OF THE LOAD.

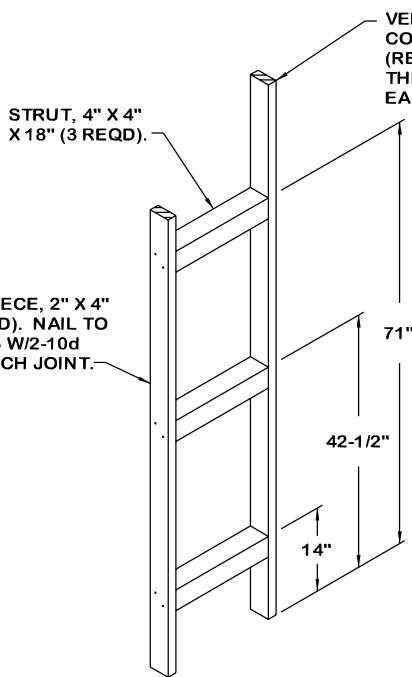
STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.

BUFFER PIECE, 2" X 4" BY CONTAINER HEIGHT MINUS 1" (REF: 7'-8") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/2-10d NAILS AT EACH JOINT.



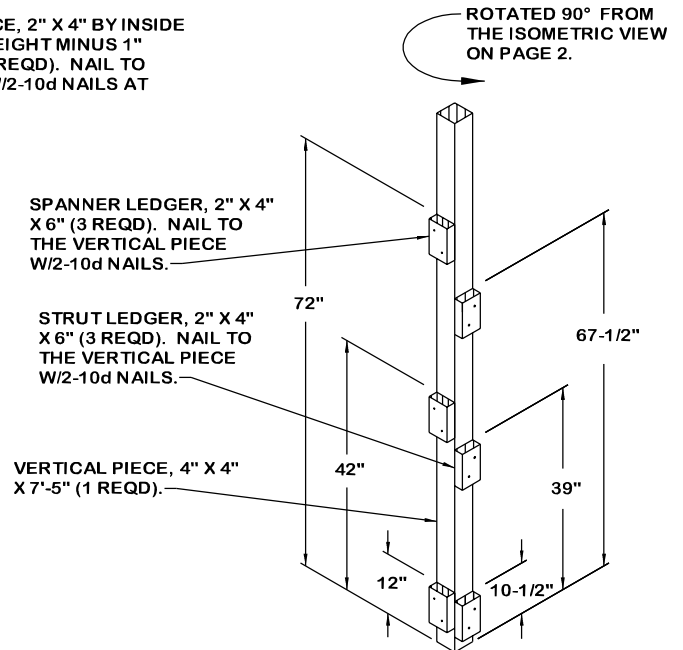
**FORWARD/REAR BLOCKING ASSEMBLY**

NOTE: FOR A TWO-HIGH LOAD, ELIMINATE THE TOP BOX BEAM ASSEMBLY AND THE TOP TWO STRUT LEDGERS (ON THE REAR BLOCKING ASSEMBLY ONLY). FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES AND THE TOP SIX STRUT LEDGERS (ON THE REAR BLOCKING ASSEMBLY ONLY).



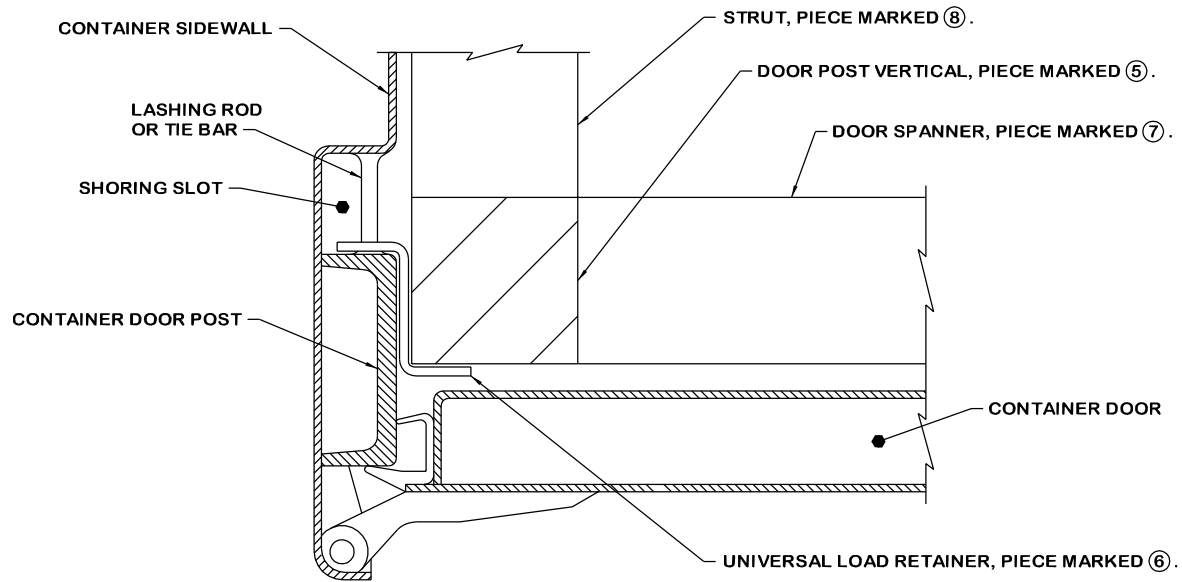
**FORWARD STRUT ASSEMBLY**

NOTE: FOR A TWO-HIGH LOAD, ELIMINATE THE TOP STRUT, AND FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO STRUTS. SHORTEN THE VERTICAL PIECE APPROPRIATELY.



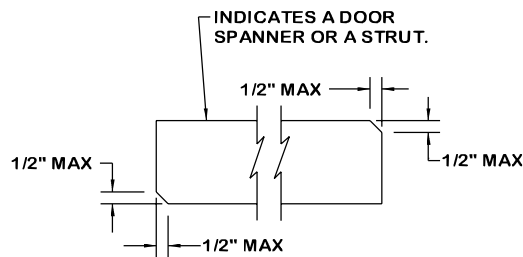
**DOOR POST VERTICAL**

A LEFT-HAND ASSEMBLY IS DEPICTED ABOVE, A RIGHT-HAND ASSEMBLY IS ALSO REQUIRED. NOTE: FOR A TWO-HIGH LOAD, ELIMINATE THE TOP STRUT LEDGER AND THE TOP SPANNER LEDGER. FOR A ONE-HIGH LOAD, ELIMINATE THE TOP TWO STRUT LEDGERS AND THE TOP SPANNER LEDGER (TWO SPANNERS REQUIRED).



**DETAIL A**

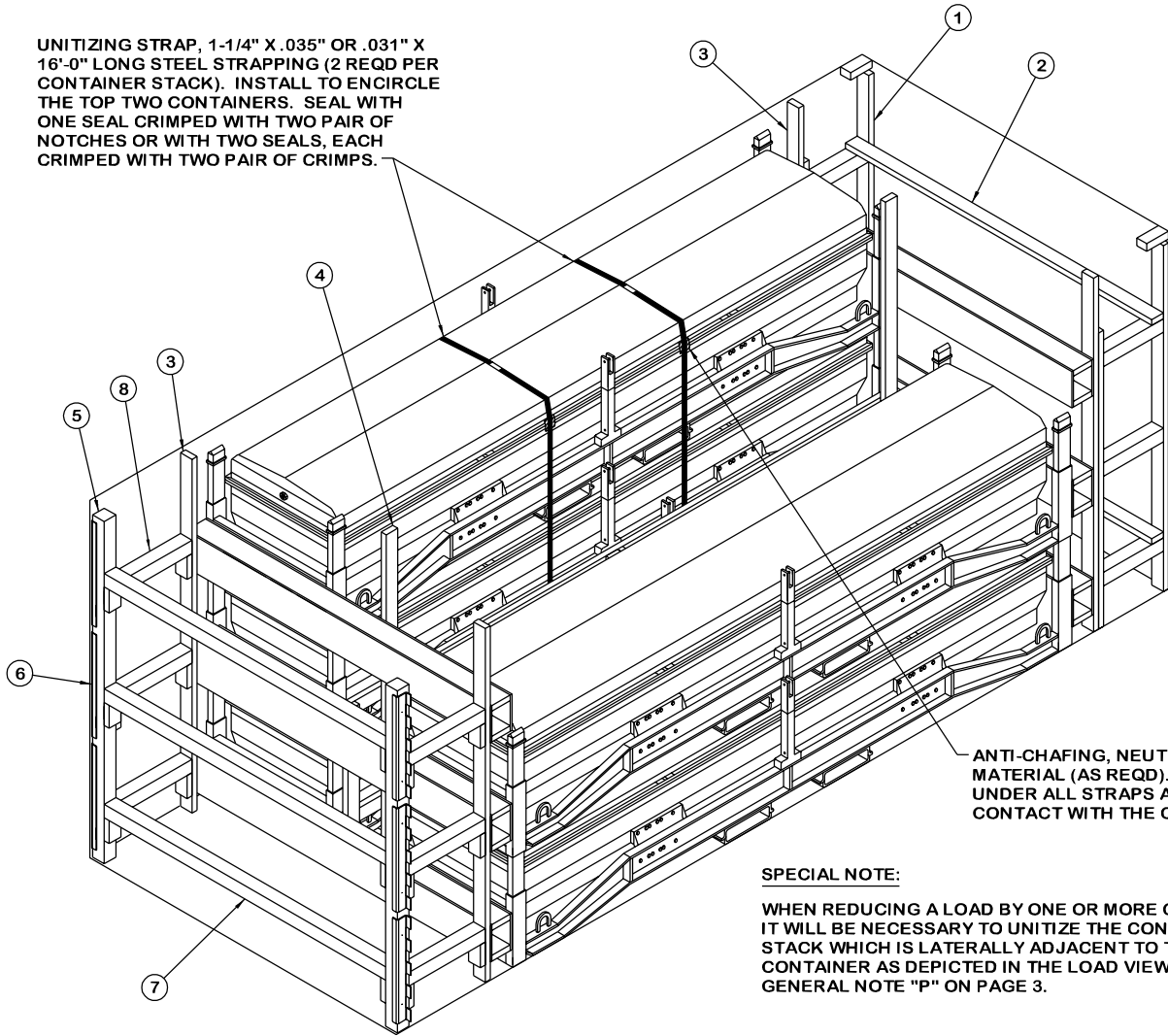
A PARTIAL PLAN VIEW OF THE LEFT REAR PORTION OF THE CONTAINER IS SHOWN DEPICTING THE PROPER POSITION OF THE UNIVERSAL LOAD RETAINER AND ADJACENT DUNNAGE PIECES. SEE DEPARTMENT OF ARMY DRAWING DA-116 FOR ADDITIONAL DETAILS AND PROCEDURES FOR OTHER TYPES OF RETAINERS THAT MAY BE USED FOR REAR-OF-LOAD RESTRAINT.



**BEVEL-CUT**

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

UNITIZING STRAP, 1-1/4" X .035" OR .031" X 16'-0" LONG STEEL STRAPPING (2 REQD PER CONTAINER STACK). INSTALL TO ENCIRCLE THE TOP TWO CONTAINERS. SEAL WITH ONE SEAL CRIMPED WITH TWO PAIR OF NOTCHES OR WITH TWO SEALS, EACH CRIMPED WITH TWO PAIR OF CRIMPS.



ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). POSITION UNDER ALL STRAPS AT POINTS OF CONTACT WITH THE CONTAINERS.

**SPECIAL NOTE:**

WHEN REDUCING A LOAD BY ONE OR MORE CONTAINERS, IT WILL BE NECESSARY TO UNITIZE THE CONTAINER STACK WHICH IS LATERALLY ADJACENT TO THE OMITTED CONTAINER AS DEPICTED IN THE LOAD VIEW ABOVE. SEE GENERAL NOTE "P" ON PAGE 3.

**ISOMETRIC VIEW**

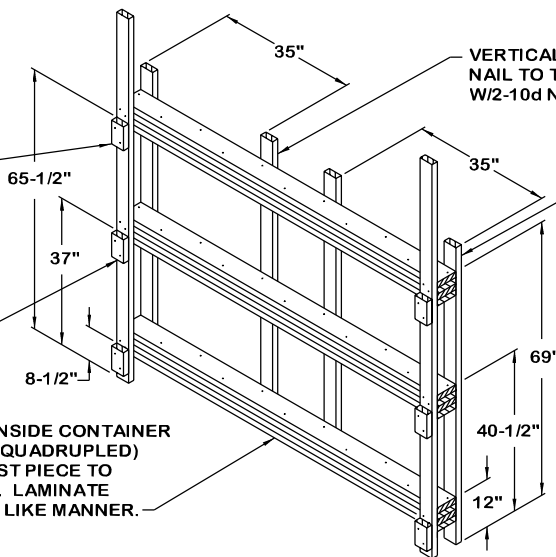
**LESS-THAN-FULL-LOAD PROCEDURE**

KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. NOTE THAT THE CENTER FILL ASSEMBLY HAS BEEN MODIFIED AS DESCRIBED ON PAGE 4.

STRUT LEDGERS ARE ONLY REQUIRED ON THE REAR BLOCKING ASSEMBLY. DO NOT INSTALL STRUT LEDGERS ON THE FORWARD BLOCKING ASSEMBLY.

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

BEAM ASSEMBLY, 2" X 6" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-7") (QUADRUPLED) (3 REQD). LAMINATE THE FIRST PIECE TO THE SECOND W/11-10d NAILS. LAMINATE THE ADDITIONAL PIECES IN A LIKE MANNER.



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

BUFFER PIECE, 2" X 4" BY INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-8") (2 REQD). NAIL TO THE BEAM ASSEMBLIES W/3-10d NAILS AT EACH JOINT.

**ALTERNATIVE FORWARD/REAR BLOCKING ASSEMBLY**

NOTE: WHEN USING THE "ALTERNATIVE FORWARD/REAR BLOCKING ASSEMBLY" DEPICTED ABOVE, MODIFY THE STRUT LEDGER HEIGHTS ON THE "DOOR POST VERTICAL" DEPICTED ON PAGE 5 TO MATCH THE STRUT LEDGER HEIGHTS SHOWN ABOVE.

