LOADING AND BRACING⊕ IN END OPENING ISO CONTAINERS OF BLU-109 BOMBS PACKED TWO PER CNU-417 CONTAINER

INDEX

⊕ THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL, MOTOR, OR WATER CARRIERS.

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND

RUS.ALLEN.J.1230354282 Digitally signed by RUS.ALLEN.J.1230354282 Date: 2018.03.26 11:48:06 -05'00'

APPROVED BY ORDER OF COMMANDING GENERAL, U.S ARMY MATERIEL COMMAND

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U.S. ARMY DEFENSE AMMUNITION CENTER

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DO NOT SCALE

JULY 1995

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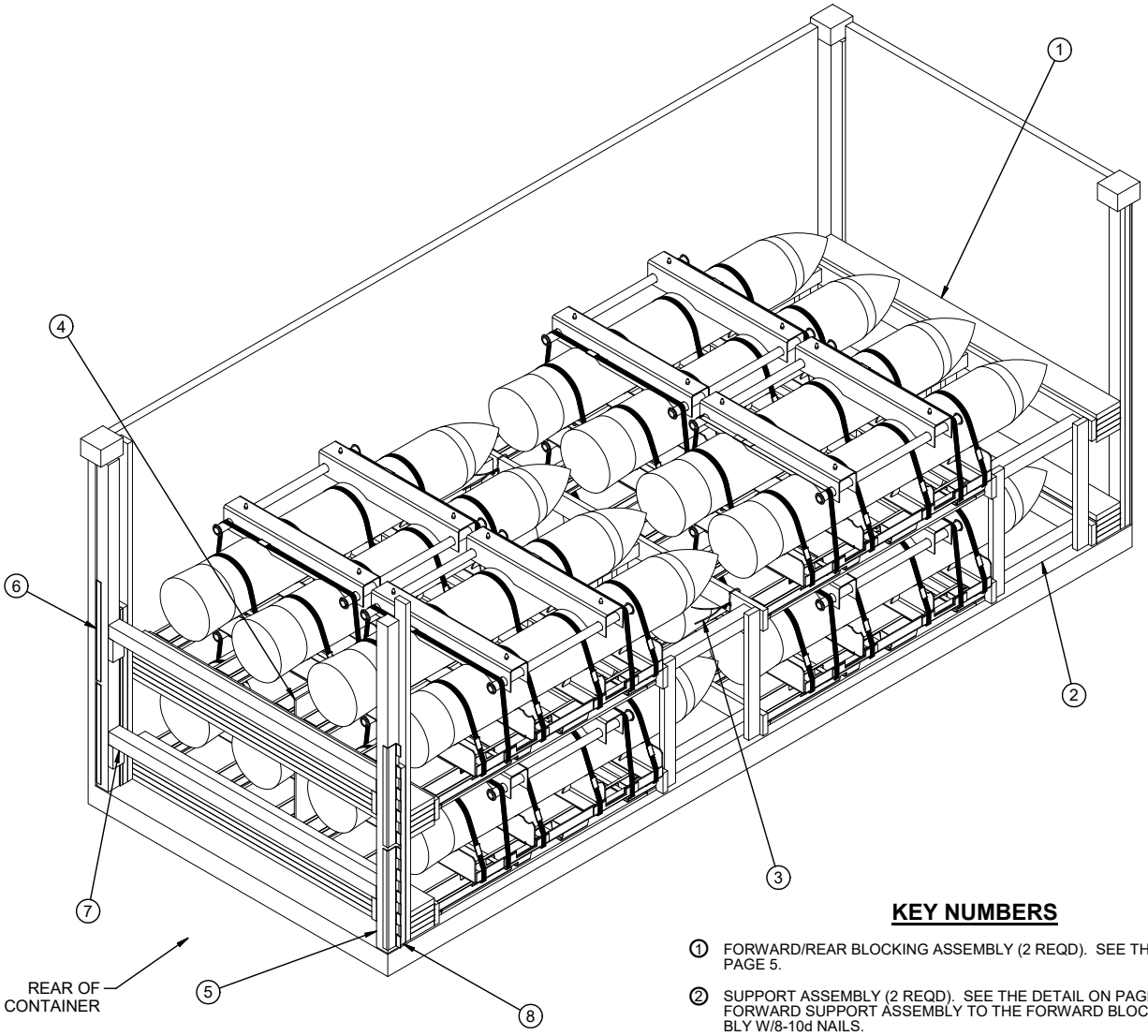
REVISION NO. 1 | **MARCH 2018**

SEE THE REVISION LISTING ON PAGE 4

CLASS	DIVISION	DRAWING	FILE
19	48	8610	SP15PB4

PROJECT SP 308-95



ISOMETRIC VIEW

KEY NUMBERS

① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 5.

② SUPPORT ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6. NAIL THE FORWARD SUPPORT ASSEMBLY TO THE FORWARD BLOCKING ASSEMBLY W/8-10d NAILS.

③ TIE WIRE, .0800 BY 36" LONG (2 REQD). INSTALL TO FORM A COMPLETE LOOP AROUND THE BEARING PIECE OF THE SUPPORT ASSEMBLY AND THE BOTTOM FRAME OF THE CNU-417 PALLET. BRING ENDS TOGETHER AND TWIST TAUT.

④ CENTER FILL ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 5.

⑤ DOOR POST VERTICAL (2 REQD). SEE THE DETAIL AND "DETAIL A" ON PAGE 7, AND GENERAL NOTE "P" ON PAGE 3.

⑥ UNIVERSAL LOAD RETAINER (4 REQD, 2 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 7, AND GENERAL NOTE "P" ON PAGE 3.

⑦ DOOR SPANNER, 4" X 4" MATERIAL CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-0") (2 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 4.

⑧ FILL MATERIAL, 4" WIDE BY 48" LONG MATERIAL (AS REQD). NAIL THE FIRST PIECE TO THE REAR BLOCKING ASSEMBLY W/4 NAILS OF A SUITABLE SIZE (10d FOR 2" THICK MATERIAL). NAIL EACH ADDITIONAL PIECE TO THE PREVIOUS PIECE IN A SIMILAR MANNER. **NOTE**: MULTIPLE PIECES MAY BE LAMINATED TOGETHER FIRST AND THEN TOENAILED TO THE REAR BLOCKING ASSEMBLY. SEE "DETAIL A" ON PAGE 7.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1″ X 4″	8	3
2″ X 4″	101	67
2″ x 6″	76	76
2″ x 8″	152	202
4″ X 4″	69	92
NAILS	**NO. REQD**	**POUNDS**
6d (2″)	8	1/4
10d (3″)	394	6-1/4
12d(3-1/4″)	8	1/4
PLYWOOD, 1/2″ - - 36.95 SQ FT REQD - - 50.80 LBS		
UNIVERSAL LOAD RETAINER - - 4 REQD - - 26.00 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
CNU-417	8	34,960 LBS
DUNNAGE		964 LBS
CONTAINER		4,700 LBS
TOTAL WEIGHT		40,624 LBS (APPROX)

PROJECT SP 308-95

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 BLU-109 BOMBS PACKED IN CNU-417 SHIPPING AND STORAGE CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH BOMBS. SEE PAGE 4 AND U.S. AIR FORCE DRAWING 8463212 FOR DETAILS OF THE CNU-417 CONTAINER. **CAUTION**: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER 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 END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92" WIDE BY 93" HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE A TOTAL INSIDE HEIGHT OF 95", BUT A CLEAR HEIGHT UNDER THE ROOF BOWS OF 93", VERIFY INSIDE CONTAINER HEIGHT PRIOR TO FABRICATING DUNNAGE. 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 DESIGN CONFIGURATION CAN BE USED.

D. WHEN LOADING CNU-417 CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE PLYWOOD IN THE CENTER FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS OF THE PLYWOOD IN THE CENTER FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE, OR THE CENTER FILL ASSEMBLY MAY BE OMITTED ENTIRED IF THE RESULTING VOID DOES NOT EXCEED 1-1/2". THE LOADS MUST BE AS TIGHT AS POSSIBLE LONGITUDINALLY, BUT THE VOID MUST NOT EXCEED 3/4" OVERALL.

E. THIS DRAWING DEPICTS AN 8-PALLET UNIT MAXIMUM CONFIGURATION, WITH A LADING WEIGHT OF 40,624 POUNDS. DUE TO RESTRICTIONS ENACTED BY THE SURFACE DEPLOYMENT AND DISTRIBUTION COMMAND AND THE JOINT MUNITIONS COMMAND, ANY ISO CONTAINER DESTINED TO BE MOVED OVER CONUS HIGHWAYS CAN NOT EXCEED 40,000 POUNDS GROSS WEIGHT. IN ORDER TO COMPLY WITH THIS RESTRICTION, ONE PALLET UNIT MUST BE ELIMINATED FROM THE 8-PALLET UNIT MAXIMUM LOAD. THIS WILL RESULT IN A 7-PALLET UNIT LOAD WITH A GROSS WEIGHT OF 36,339 POUNDS. SEE THE "LESS-THAN-FULL" LOAD PROCEDURES ON PAGE 8 FOR DETAILS.

F. 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.

G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE FORWARD WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE FORWARD BLOCKING ASSEMBLY TO PROVIDE A FLAT SURFACE FOR THE 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". NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH "TIE-BARS" IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN "TIE-BARS" ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE "TIE-BARS" VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER FORWARD WALL ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.

H. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

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

K. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

L. **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.

(CONTINUED AT RIGHT)

(**GENERAL NOTES CONTINUED**)

M. 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.

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

O. 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.

P. THE QUANTITY OF CNU-417 CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "LESS-THAN-FULL LOAD PROCEDURE" AND FILLER ASSEMBLY ON PAGE 8.

Q. FOUR UNIVERSAL LOAD RETAINERS, AS DEPICTED IN THE LOADS ON PAGES 2 AND 8, ARE REQUIRED WHEN LOADING A TWO HIGH LOAD, AND TWO ARE REQUIRED WHEN LOADING A ONE HIGH LOAD. REFER TO DAC DRAWING ACV00682 FOR DETAILS OF THE UNIVERSAL LOAD RETAINER CONSTRUCTION, AND TO DEPARTMENT OF THE ARMY DRAWING DA-116 FOR DETAILS FOR INSTALLATION TO THE DOOR POST VERTICAL, PLACEMENT INTO THE CONTAINER, AND FOR OTHER METHODS OF REAR-OF-LOAD RESTRAINT.

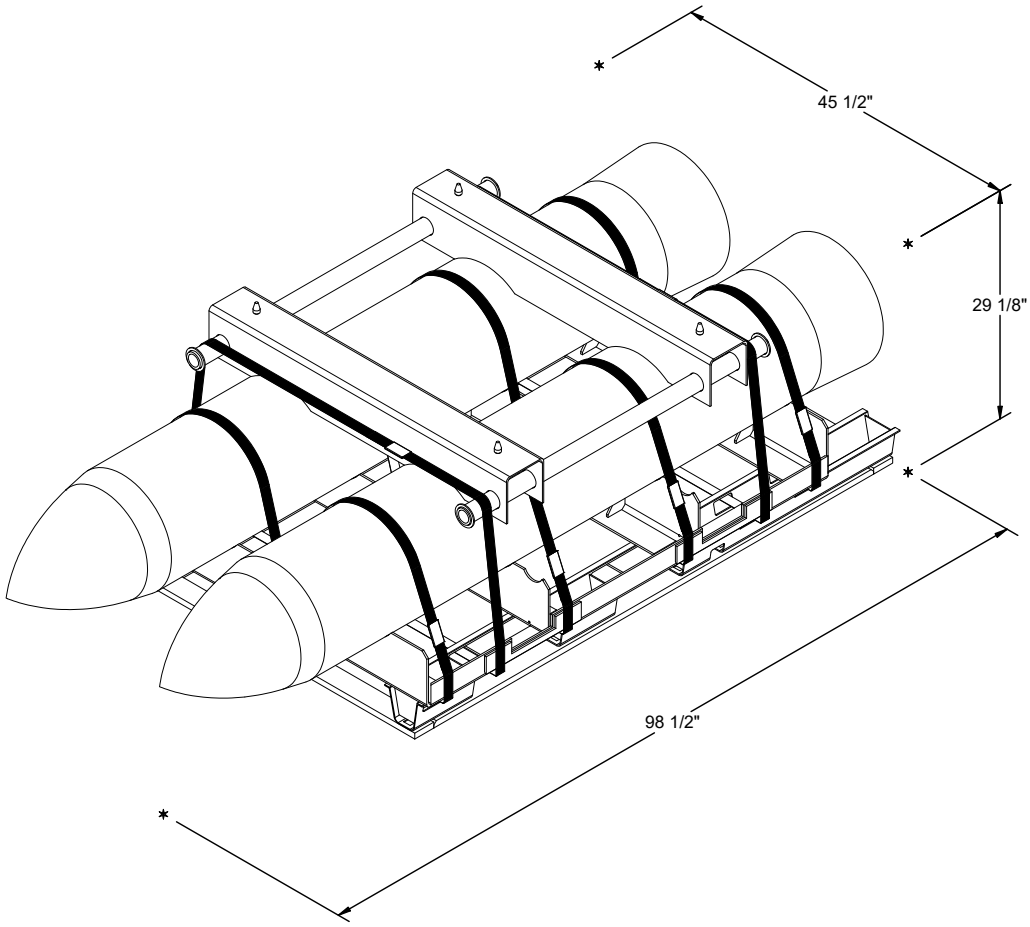
R. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.

S. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:

1. PREFABRICATE FORWARD BLOCKING ASSEMBLY, REAR BLOCKING ASSEMBLY, TWO SUPPORT ASSEMBLIES, TWO CENTER FILL ASSEMBLIES, AND TWO DOOR POST VERTICALS WITH UNIVERSAL LOAD RETAINERS.
2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
3. INSTALL ONE SUPPORT ASSEMBLY.
4. LOAD FOUR CNU-417 CONTAINERS.
5. INSTALL ONE CENTER FILL ASSEMBLY.
6. INSTALL ANOTHER SUPPORT ASSEMBLY.
7. LOAD LAST FOUR CNU-417 CONTAINERS.
8. INSTALL ANOTHER CENTER FILL ASSEMBLY.
9. INSTALL THE REAR BLOCKING ASSEMBLY.
10. INSTALL TWO DOOR POST VERTICALS WITH UNIVERSAL LOAD RETAINERS.
11. INSTALL THE LOWER DOOR SPANNER PIECE.
12. INSTALL THE FILL MATERIAL.
13. INSTALL THE REMAINING DOOR SPANNER PIECE.

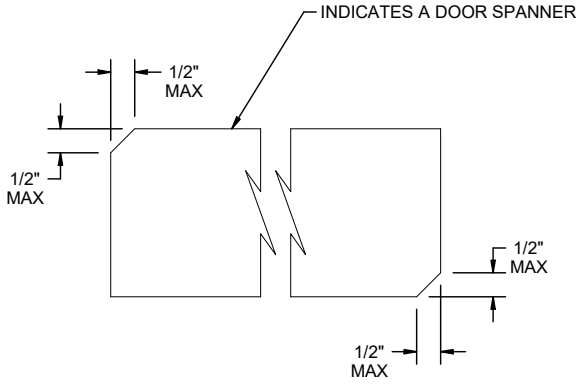
MATERIAL SPECIFICATIONS

LUMBER - - - - - - - -:	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
NAILS - - - - - - - -:	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
PLYWOOD - - - - - - -:	COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
STEEL, STRUCTURAL - - - - -:	ASTM A36; 36,000 PSI MINIMUM YIELD OR BETTER.
WIRE, CARBON STEEL -:	ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.



CNU-417 CONTAINER

GROSS WEIGHT - - - - - - - - - - - - - 4,370 LBS
CUBE - - - - - - - - - - - - - - - - - 75.6 CU FT



BEVEL CUT

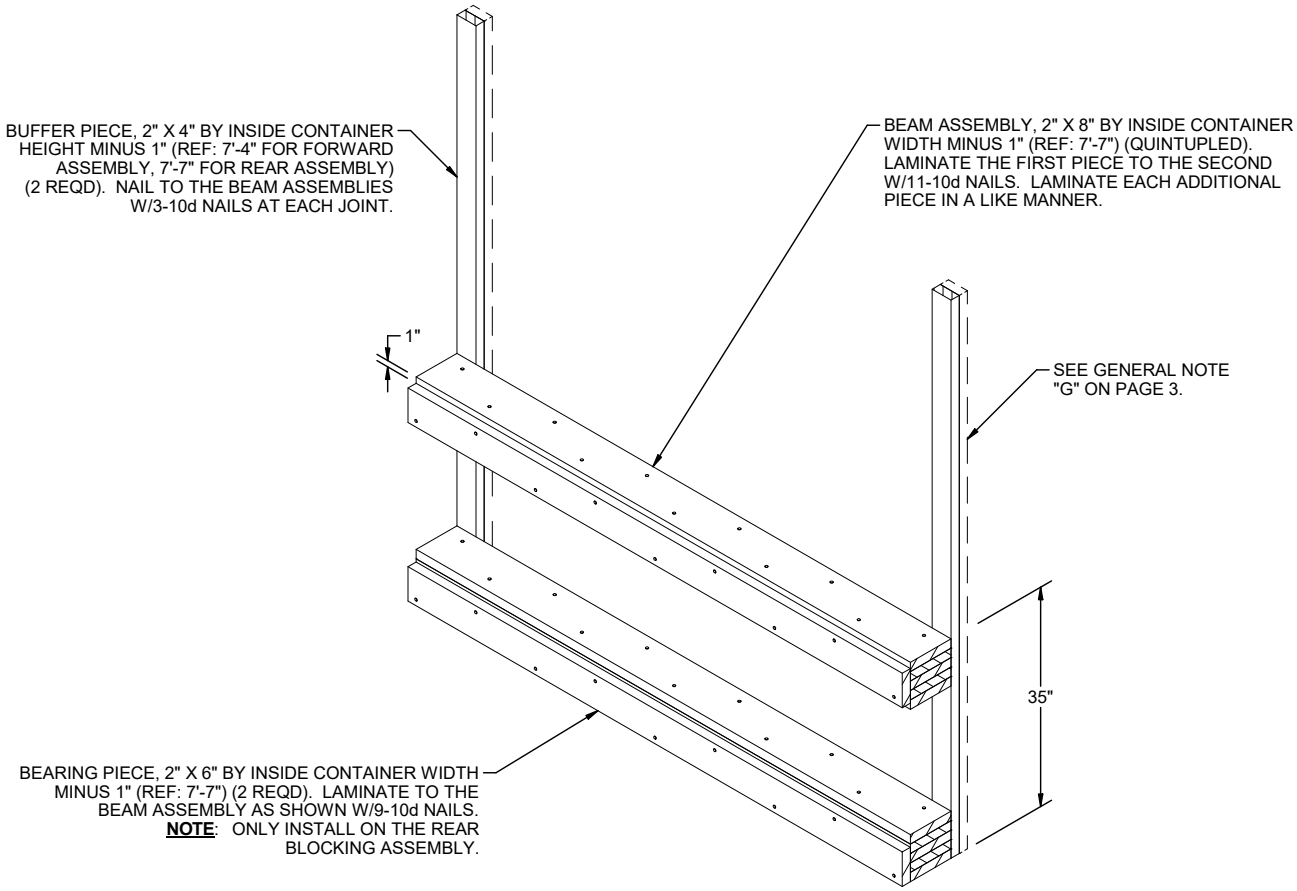
IF DESIRED, EACH END OF A DOOR SPANNER MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE INSTALLING THE STRUTS WITH A "DRIVE" FIT.

REVISION

REVISION NO. 1, DATED MARCH 2018, CONSISTS OF:

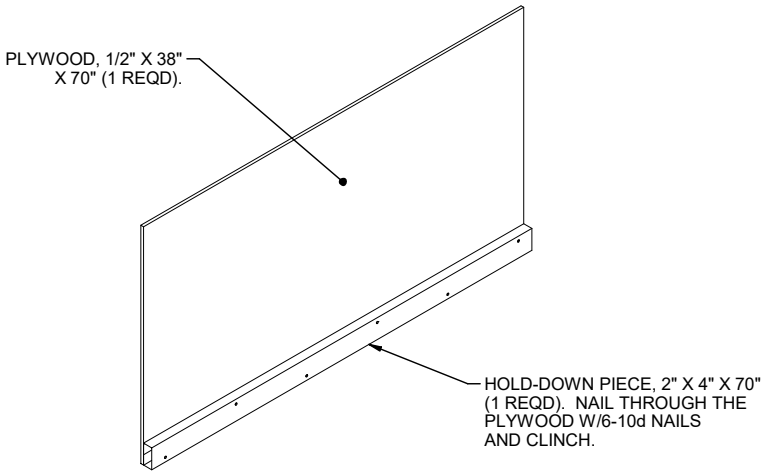
UPDATING DRAWING TO TAKE LOAD OFF OF BOMB NOSE.

PROJECT SP 308-95



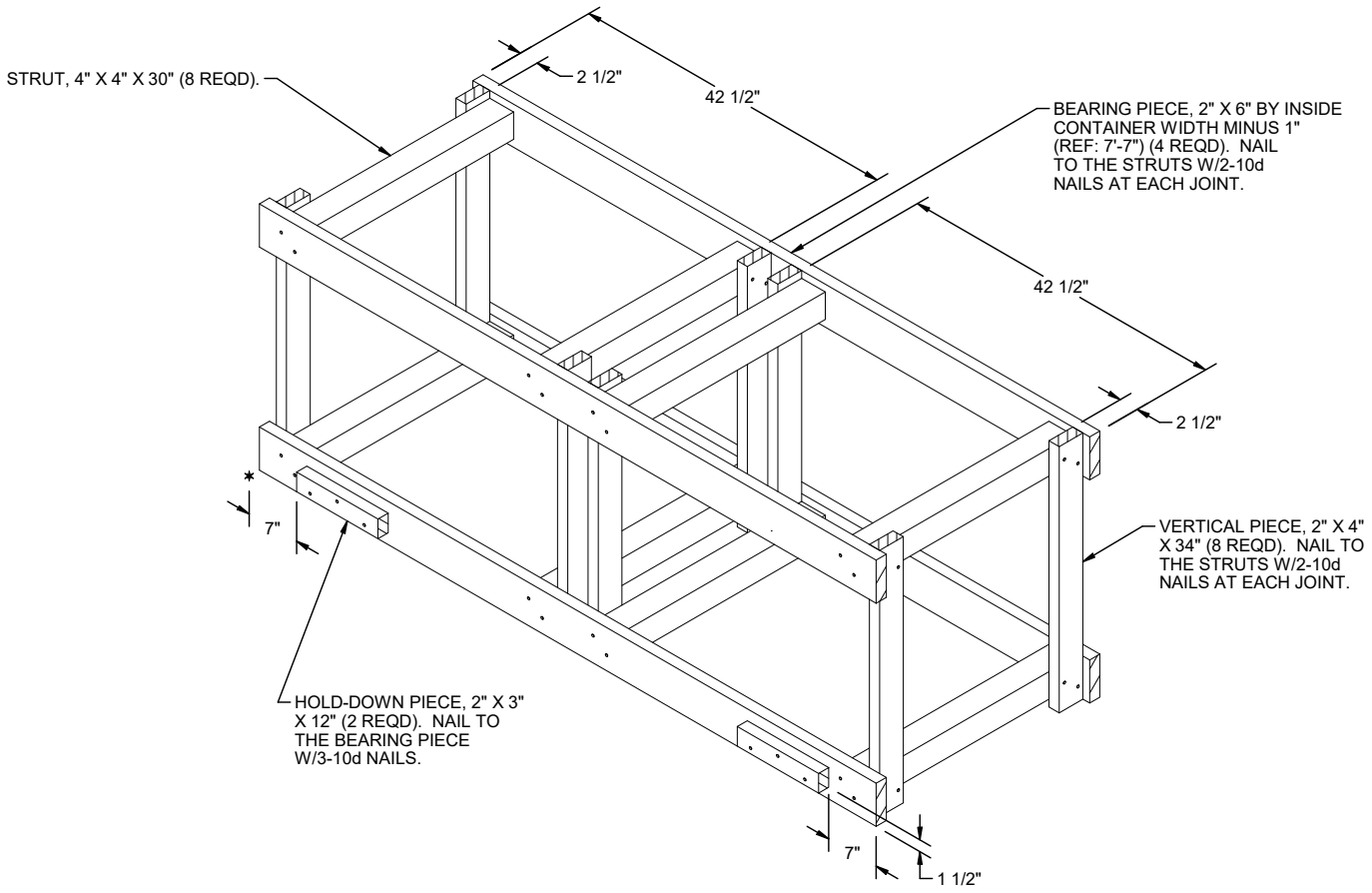
FORWARD/REAR BLOCKING ASSEMBLY

FOR A ONE-HIGH LOAD, ELIMINATE TOP BEAM ASSEMBLY AND BEARING PIECE.



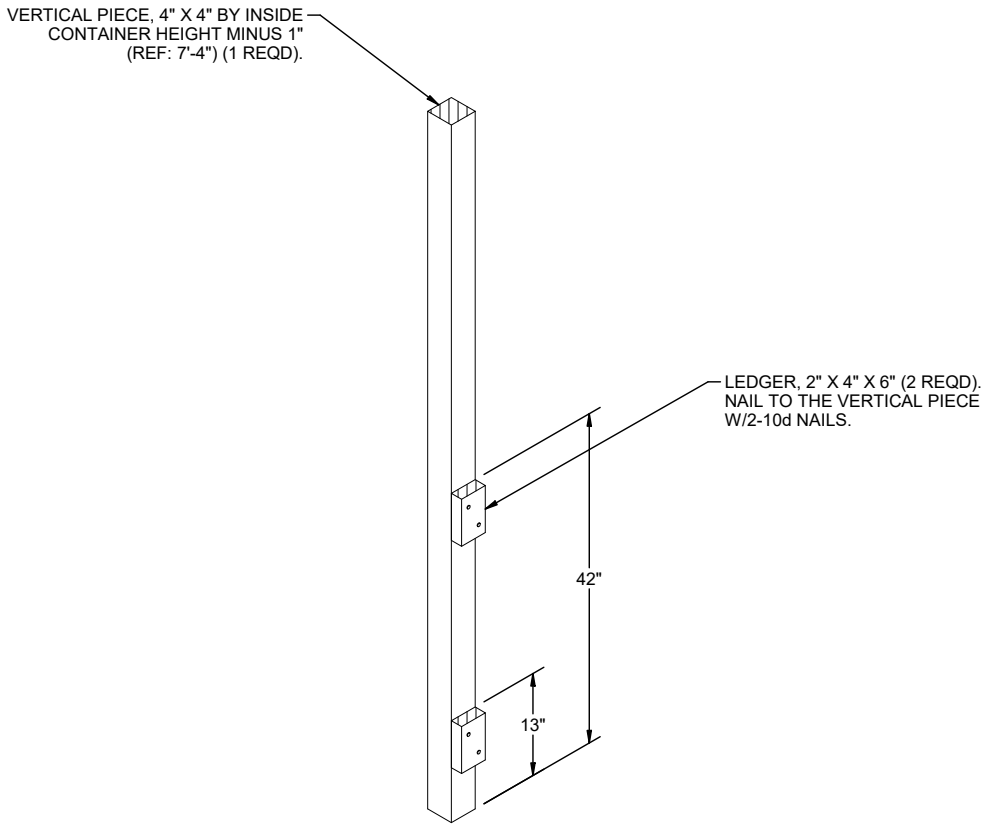
CENTER FILL ASSEMBLY

FOR A ONE-HIGH LOAD, REDUCE THE HEIGHT OF PLYWOOD FROM 38" TO 10".

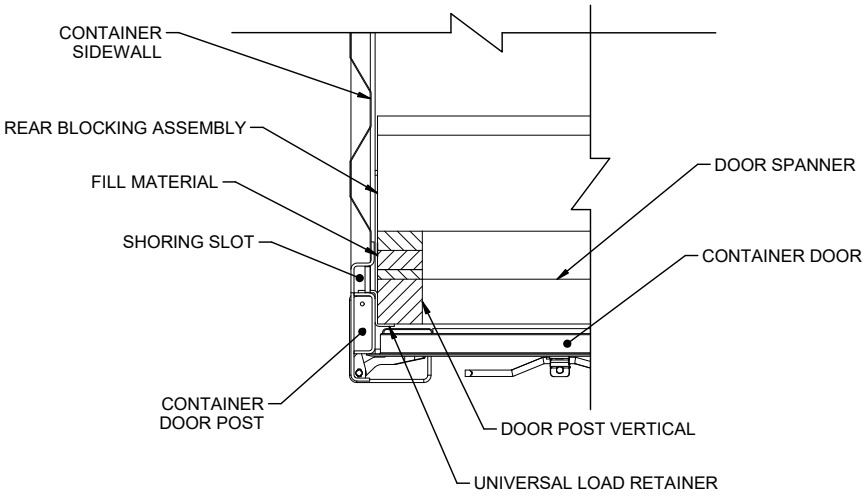


SUPPORT ASSEMBLY

FOR A ONE-HIGH LOAD, ELIMINATE ALL EIGHT VERTICAL PIECES, TOP TWO BEARING PIECES, AND TOP FOUR STRUTS. NAIL THE BEARING PIECE ON THE SIDE WITH NO HOLD-DOWN PIECE TO THE BEAM ASSEMBLY OF THE FORWARD BLOCKING ASSEMBLY. FOR THE SUPPORT ASSEMBLY BETWEEN TWO CNU CONTAINERS, TIE THE SIMILAR BEARING PIECE TO THE BOTTOM FRAME OF THE CNU CONTAINER WITH TWO TIE WIRES.

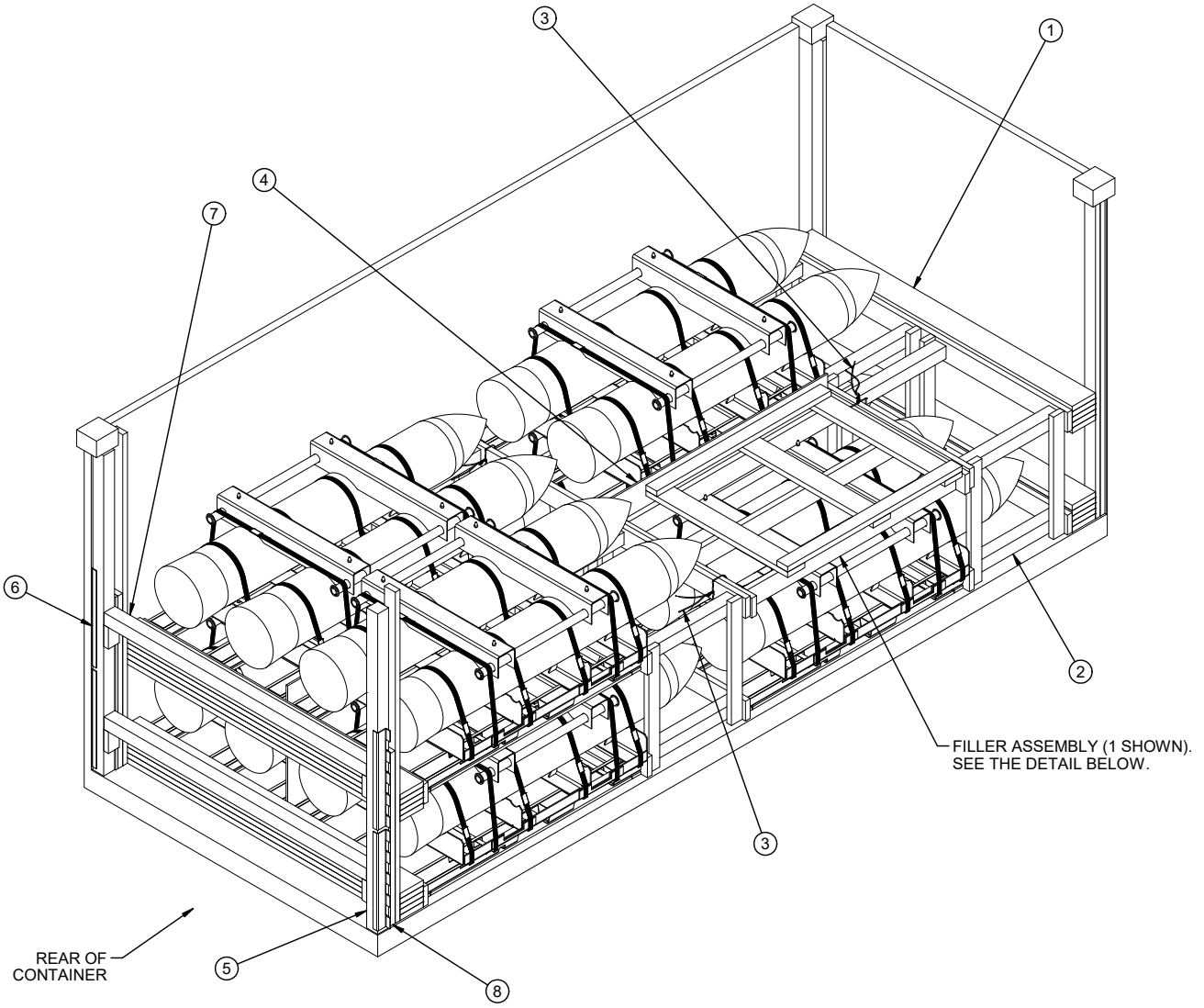


DOOR POST VERTICAL



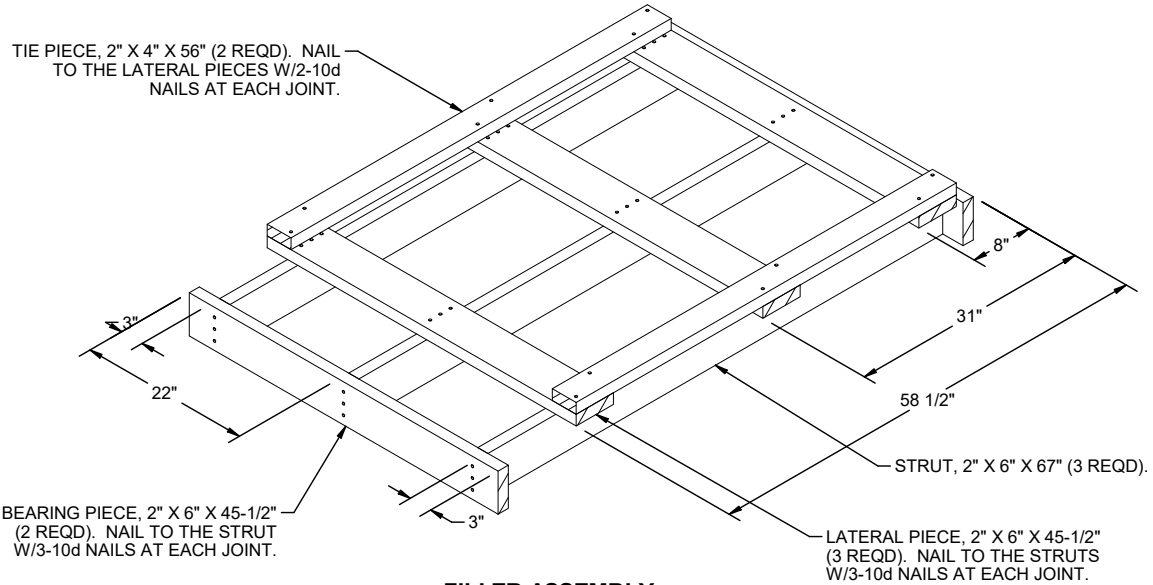
DETAIL A

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



LESS-THAN-FULL-LOADPROCEDURE

KEY NUMBERS REFER TO KEY NUMBERS ON PAGE 2. ADD ANOTHER TIE WIRE FOR FILLER ASSEMBLY. SEE GENERAL NOTES "H" AND "P" ON PAGE 3.



FILLER ASSEMBLY