

APPROVED BY
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DATE 6/11/02

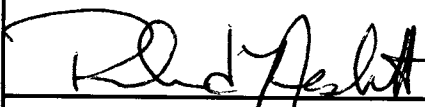
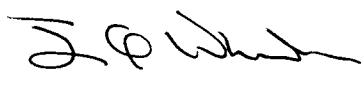
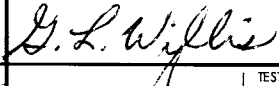
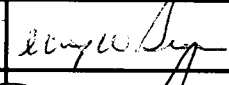
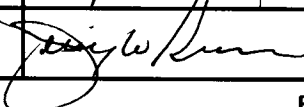
LOADING AND BRACING* IN SIDE OPENING ISO CONTAINERS OF 500 POUND HIGH DRAG BOMBS (MK82 ON MHU-149/E PALLET), COMPLETE ROUND

INDEX

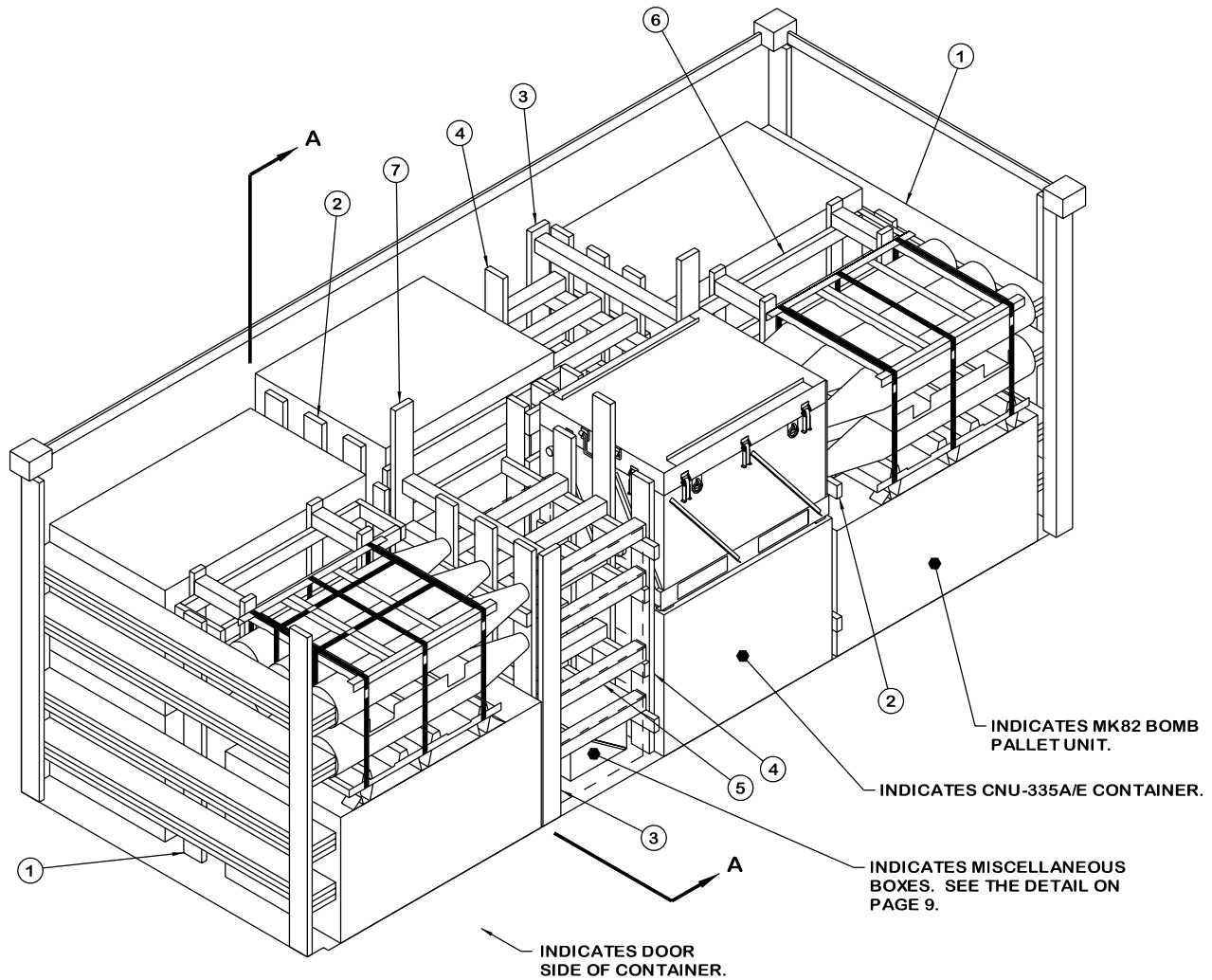
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- LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY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

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY OPERATIONS SUPPORT COMMAND 	CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL/DET THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 10.					
	DO NOT SCALE		MAY 2002			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  U.S. ARMY DEFENSE AMMUNITION CENTER	ENGINEER OR TECHNICIAN	BASIC REV.	PATRICK DOUGHERTY			
	TRANSPORTATION ENGINEERING DIVISION			CLASS		
	VALIDATION ENGINEERING DIVISION		TESTED	DIVISION	DRAWING	
ENGINEERING DIRECTORATE			19	48	8724	SP15M18

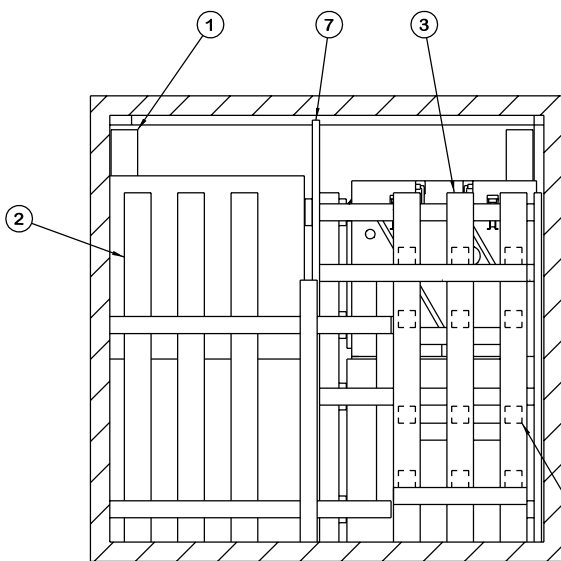
PROJECT SP 423-01



ISOMETRIC VIEW

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 5.
- ② CENTER GATE A (2 REQD). SEE THE DETAIL ON PAGE 5. INSTALL BETWEEN THE BOMB PALLET UNITS AND THE CNU-335A/E CONTAINERS AS SHOWN ABOVE.
- ③ CENTER GATE B (2 REQD). SEE THE DETAIL ON PAGE 6. INSTALL AGAINST THE BOMB PALLET UNITS AS SHOWN ABOVE.
- ④ CENTER GATE C (2 REQD). SEE THE DETAIL ON PAGE 7. INSTALL AGAINST THE CNU-335A/E CONTAINERS AS SHOWN ABOVE.
- ⑤ STRUT, 4" X 4" X CUT TO FIT (REF: 34-3/4") (24 REQD, 12 ON DOOR SIDE OF CONTAINER AND 12 ON FAR WALL SIDE OF CONTAINER). INSTALL BETWEEN CENTER GATES "B" AND "C". TOENAIL TO THE CENTER GATES W2-12d NAILS AT EACH END OF THE STRUT. SEE THE "BEVEL-CUT" DETAIL ON PAGE 7.
- ⑥ CRIB FILL (2 REQD). SEE THE DETAIL ON PAGE 8. INSTALL BETWEEN LATERALLY ADJACENT STACKS OF BOMB PALLET UNITS.
- ⑦ SEPARATOR GATE (2 REQD). SEE THE DETAIL ON PAGE 7. INSTALL AGAINST THE CNU-335A/E CONTAINERS AS SHOWN ABOVE.



SECTION A-A

(GENERAL NOTES CONTINUED)

- K. 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.
- 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.
- 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. 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.
- P. ANTI-CHAFING MATERIAL, CONSISTING OF NEUTRAL BARRIER MATERIAL, PLYWOOD, OR HARDBOARD, MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN THE LADING AND THE SIDE OPENING CONTAINER TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
MK82 BOMB PALLET UNIT	8	25,824 LBS
CNU-335A/E CONTAINER		
WITH BSU-49/B	4	4,152 LBS
FW26 BOX	6	156 LBS
G008 BOX	6	216 LBS
G119 BOX	8	312 LBS
DUNNAGE		1,610 LBS
ISO CONTAINER		6,050 LBS
TOTAL WEIGHT		38,320 LBS (APPROX)

GENERAL NOTES

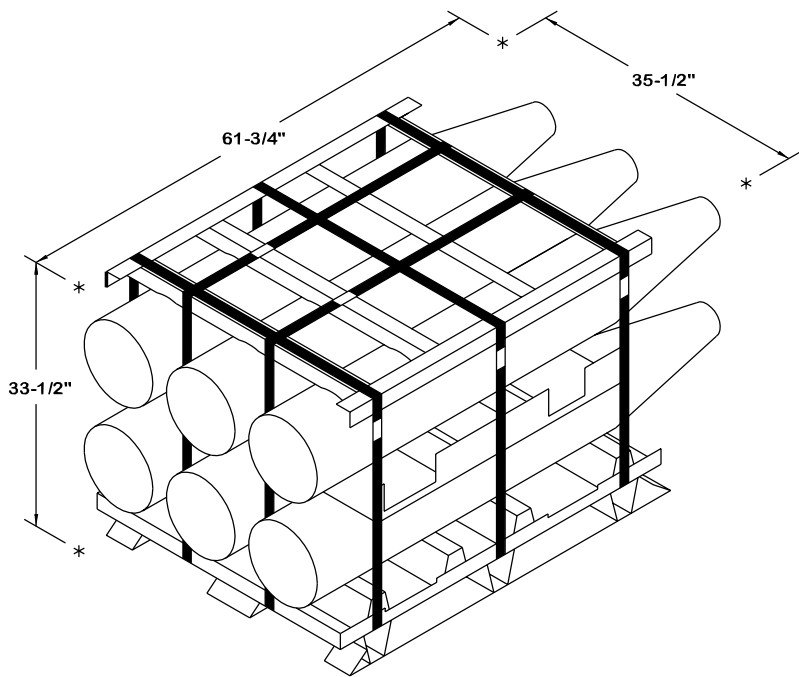
- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE OUTLOADING PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO LOADS OF 500 LB (MK82 ON MHU-149/E PALLETS) HIGH DRAG BOMBS, INCLUDING ASSOCIATED COMPONENTS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINERS WITH THE HIGH DRAG MK82 COMPONENTS. SEE PAGE 4 FOR DETAILS OF THE COMPONENTS. CAUTION: REGARDLESS OF THE QUANTITY OF UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOADS AS SHOWN ARE BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 89" WIDE BY 88" HIGH AND A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT; HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY MOTOR OR WATER CARRIERS. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN ALSO BE USED.
- D. WHEN LOADING THE UNITS, 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 VERTICAL PIECES ON THE CRIB FILL. NAIL EACH ADDITIONAL PIECE TO THE VERTICAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". THE SEPARATOR GATE CAN ALSO BE MODIFIED BY NAILING AN ADDITIONAL VERTICAL PIECE TO THE BEARING PIECES. ADDITIONALLY, THE THICKNESS AND QUANTITY OF THE DUNNAGE LUMBER USED MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE CONTAINER.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 6" MATERIAL IS ACTUALLY 3/4" THICK BY 5-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- 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 ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLIES 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 ENDWALLS ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER ENDWALLS, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR LONGITUDINAL BLOCKING.
- H. CAUTION: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEW FOR CLARITY PURPOSES.

(CONTINUED AT LEFT)

MATERIAL SPECIFICATIONS

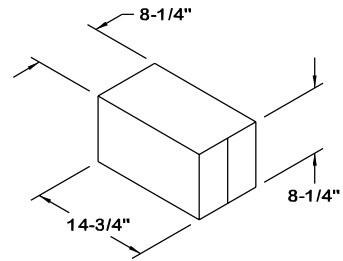
- LUMBER - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - - : ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMS).
- PLYWOOD - - - - - : COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
- ANTI-CHAFING MATERIAL - - - - - : MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
- HARDBOARD - - - - - : ANSI/AHA A135.4, CLASS 1.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	224	149
2" X 6"	237	237
2" X 8"	172	230
4" X 4"	113	151
NAILS	NO. REQD	POUNDS
6d (2")	38	1/4
10d (3")	838	12-3/4
12d (3-1/4")	96	1-3/4
PLYWOOD, 1/2"	44.66 SQ FT REQD	61.41 LBS



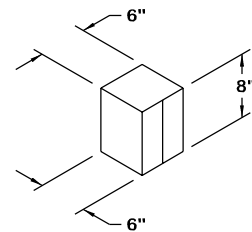
MK82 (E485) BOMBS ON MHU-149/E PALLET

GROSS WEIGHT - - - - - 3,228 LBS (APPROX)
 CUBE - - - - - 42.5 CU FT (APPROX)



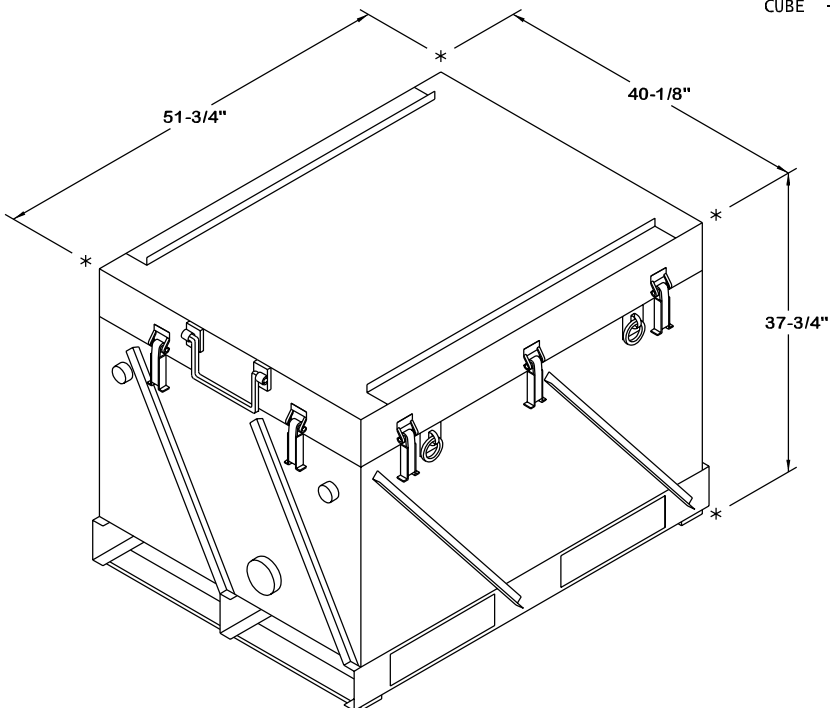
NOSE PLUGS (G008) IN FIBERBOARD BOX

GROSS WEIGHT - - - - - 36 LBS (APPROX)
 CUBE - - - - - 0.58 CU FT (APPROX)



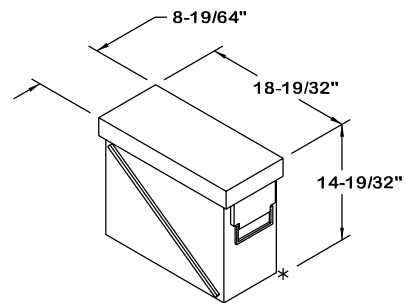
NOSE SUPPORT CUPS (FW26) IN FIBERBOARD BOX

GROSS WEIGHT - - - - - 26 LBS (APPROX)
 CUBE - - - - - 0.17 CU FT (APPROX)



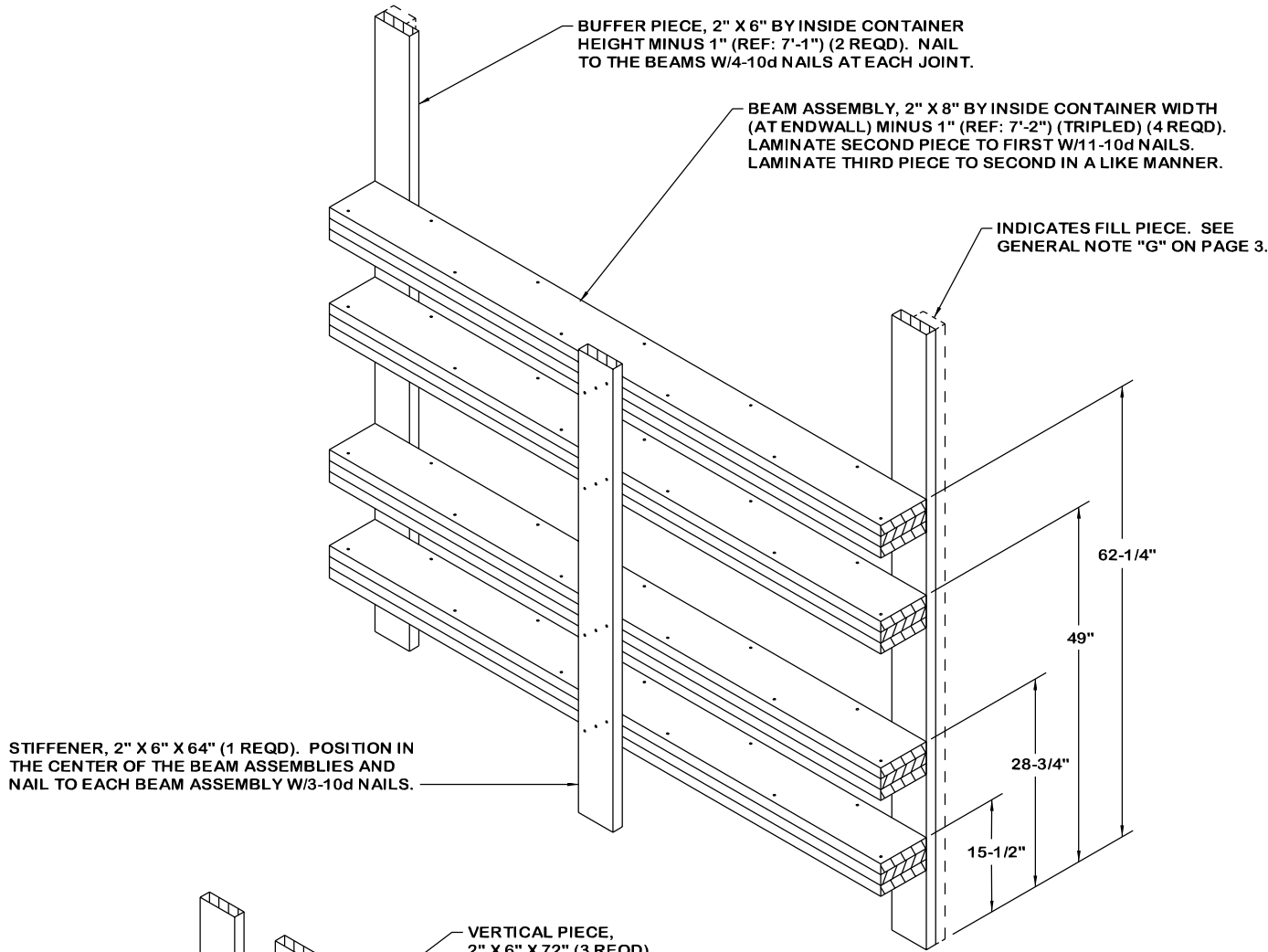
BSU-49/B (GY25) IN CNU-335A/E CONTAINER

GROSS WEIGHT - - - - - 1,038 LBS (APPROX)
 CUBE - - - - - 45.4 CU FT (APPROX)

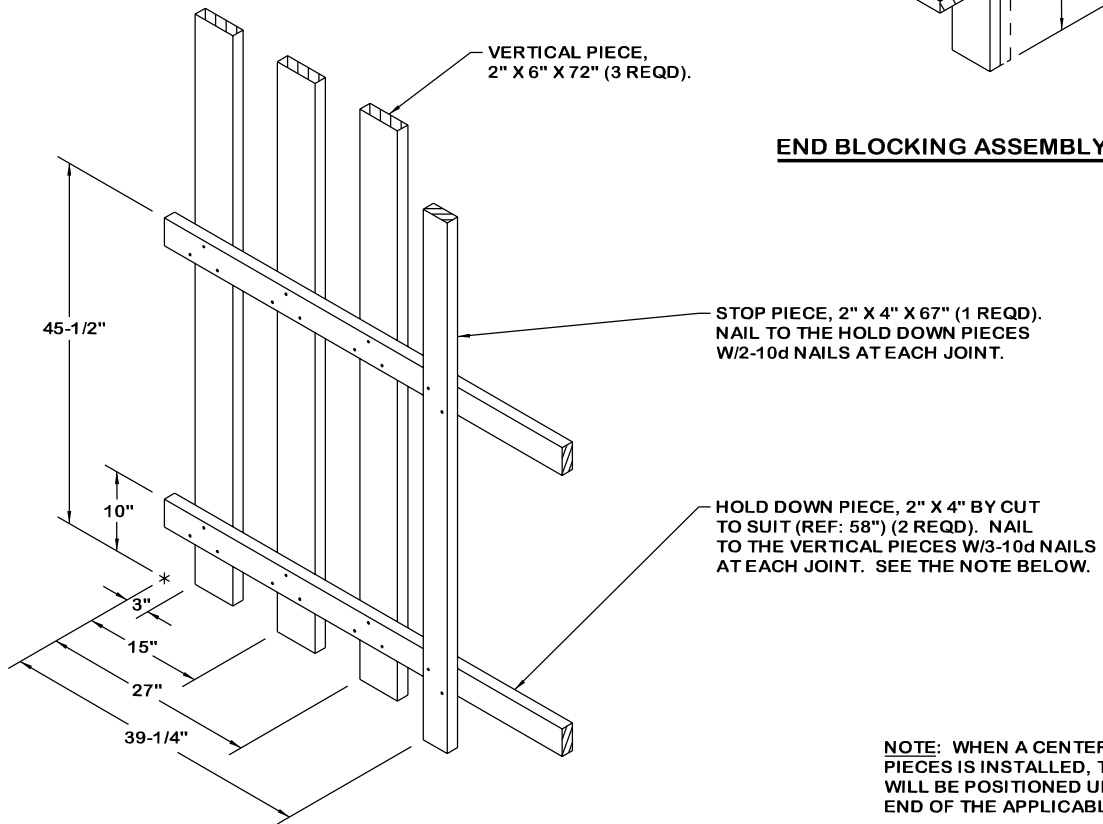


FMU139A/B (G119) IN M548 METAL BOX

GROSS WEIGHT - - - - - 39 LBS (APPROX)
 CUBE - - - - - 1.3 CU FT (APPROX)



END BLOCKING ASSEMBLY



CENTER GATE A

NOTE: WHEN A CENTER GATE WITH HOLD DOWN PIECES IS INSTALLED, THE HOLD DOWN PIECES WILL BE POSITIONED UNDERNEATH THE NOSE-END OF THE APPLICABLE LAYER OF BOMBS.

DETAILS

BEARING PIECE, 2" X 6" X 72" (1 REQD).
NAIL TO THE HORIZONTAL PIECES
W/2-10d NAILS AT EACH JOINT.

VERTICAL PIECE, 2" X 6" X 72" (3 REQD).
NAIL TO THE HORIZONTAL PIECES
W/3-10d NAILS AT EACH JOINT.

HORIZONTAL PIECE,
4" X 4" X 44-1/4" (4 REQD).

STRUT LEDGER, 2" X 4" X 29-1/2"
(2 REQD). NAIL TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH JOINT.

HOLD DOWN PIECE, 2" X 4" X 27-1/2"
(2 REQD). NAIL TO THE VERTICAL
PIECES W/3-10d NAILS AT EACH
JOINT. SEE THE NOTE ON PAGE 5.

RESTRAINT PIECE, 2" X 4" X 49-1/2"
(1 REQD). NAIL TO THE HORIZONTAL
PIECES W/3-10d NAILS AT EACH
JOINT.

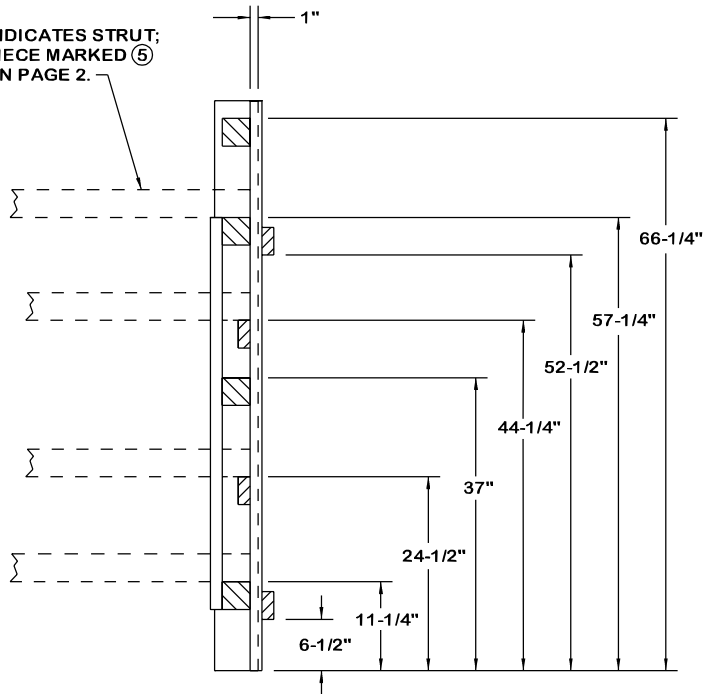
VIEW B

VIEW A

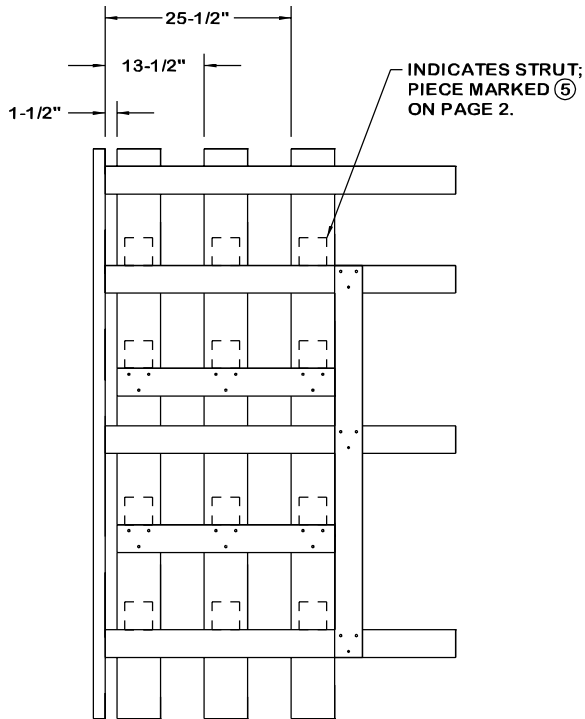
CENTER GATE B

STRUTS, MARKED KEY NUMBER ⑤ ON
PAGE 2, ARE NOT SHOWN IN THIS VIEW.

INDICATES STRUT;
PIECE MARKED ⑤
ON PAGE 2.



VIEW A



INDICATES STRUT;
PIECE MARKED ⑤
ON PAGE 2.

VIEW B

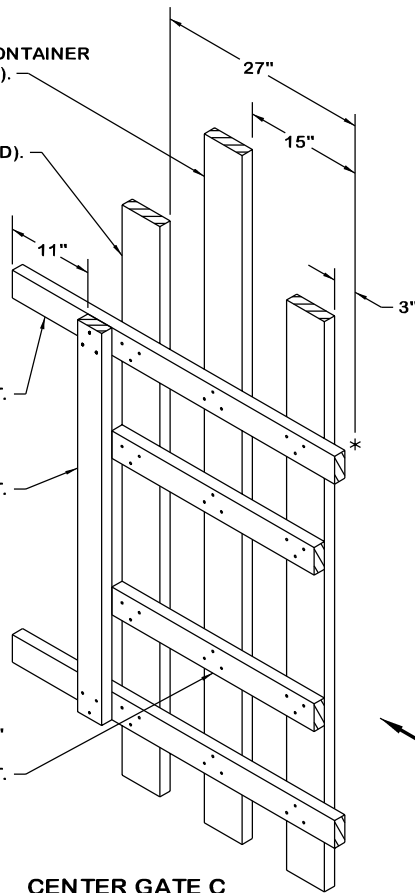
VERTICAL PIECE A, 2" X 6" X INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-3") (1 REQD).

VERTICAL PIECE B, 2" X 6" X 72" (2 REQD).

HORIZONTAL PIECE A, 2" X 4" X 47" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.

RESTRAINT PIECE, 2" X 4" X 49-1/2" (1 REQD). NAIL TO THE HORIZONTAL PIECES W/3-10d NAILS AT EACH JOINT.

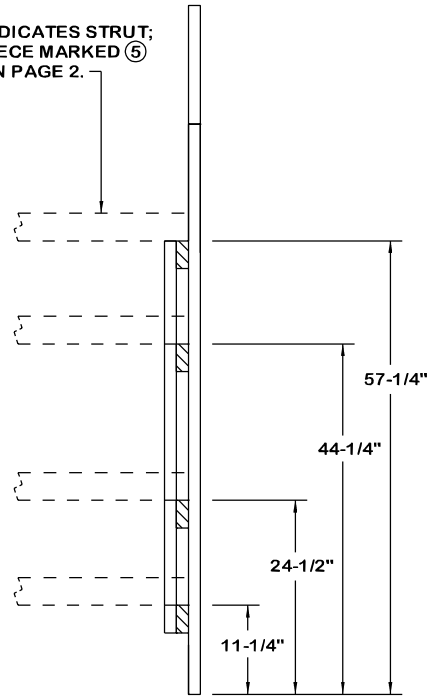
HORIZONTAL PIECE B, 2" X 4" X 29-1/2" (2 REQD). NAIL TO THE VERTICAL PIECES W/3-10d NAILS AT EACH JOINT.



CENTER GATE C

STRUTS, MARKED KEY NUMBER ⑤ ON PAGE 2, ARE NOT SHOWN IN THIS VIEW.

INDICATES STRUT; PIECE MARKED ⑤ ON PAGE 2.



VIEW C

VIEW C

HORIZONTAL PIECE, 2" X 6" X 45-3/4" (4 REQD). NAIL TO THE VERTICAL PIECE W/3-10d NAILS AT EACH JOINT. NAIL TO THE SPACER PIECES W/3-10d NAILS AT EACH JOINT.

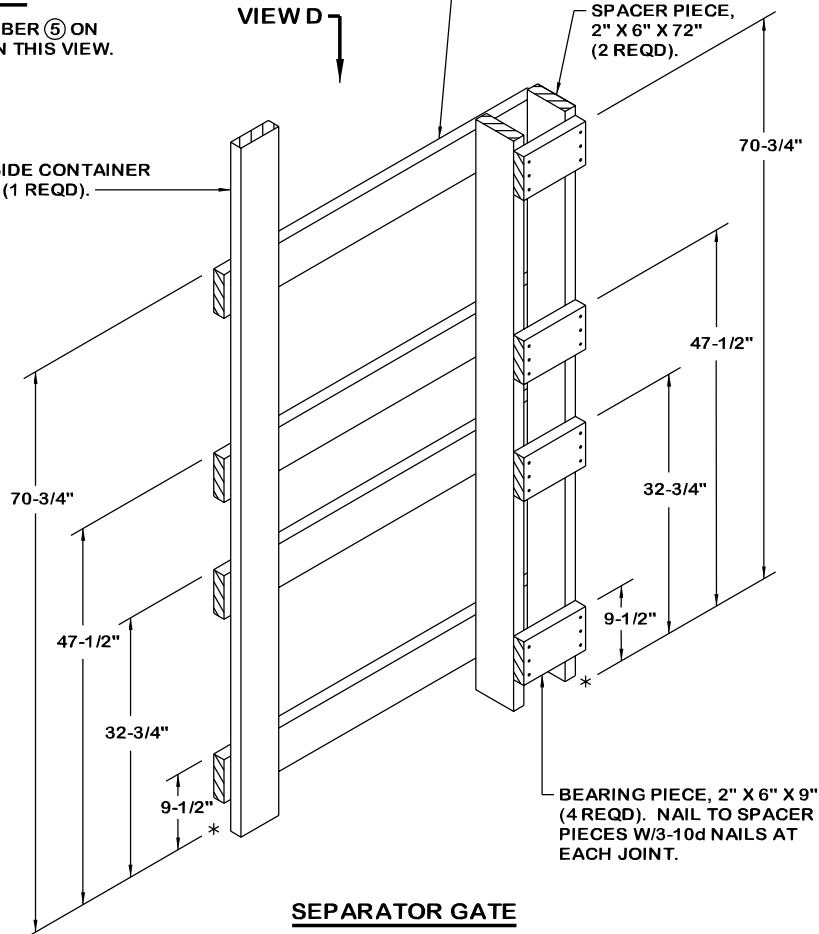
SPACER PIECE, 2" X 6" X 72" (2 REQD).

VERTICAL PIECE, 2" X 6" X INSIDE CONTAINER HEIGHT MINUS 1" (REF: 7'-3") (1 REQD).

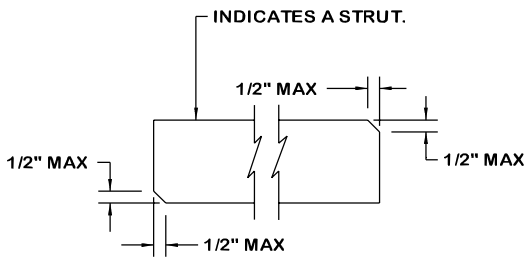


VIEW D

VIEW D



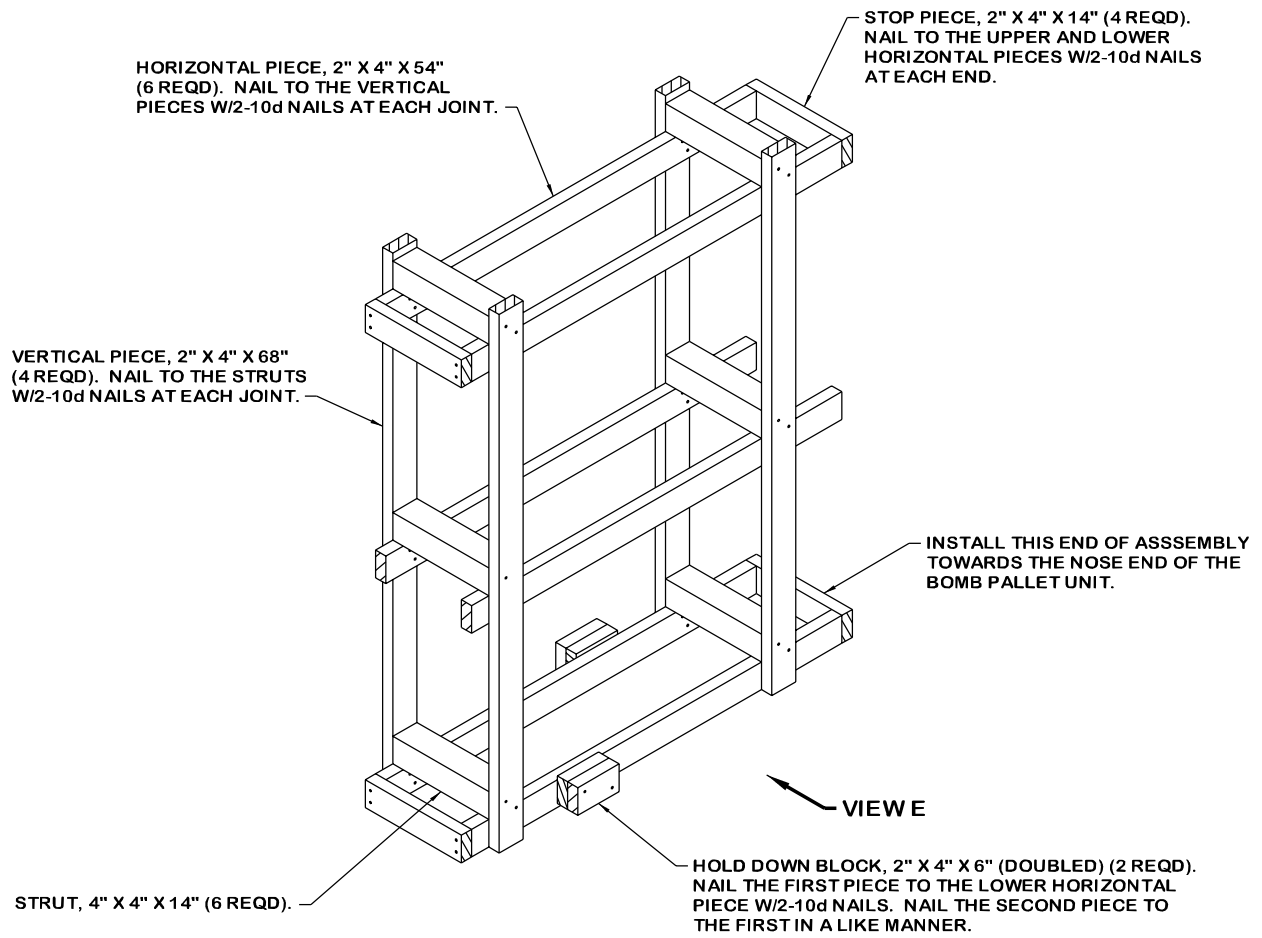
SEPARATOR GATE



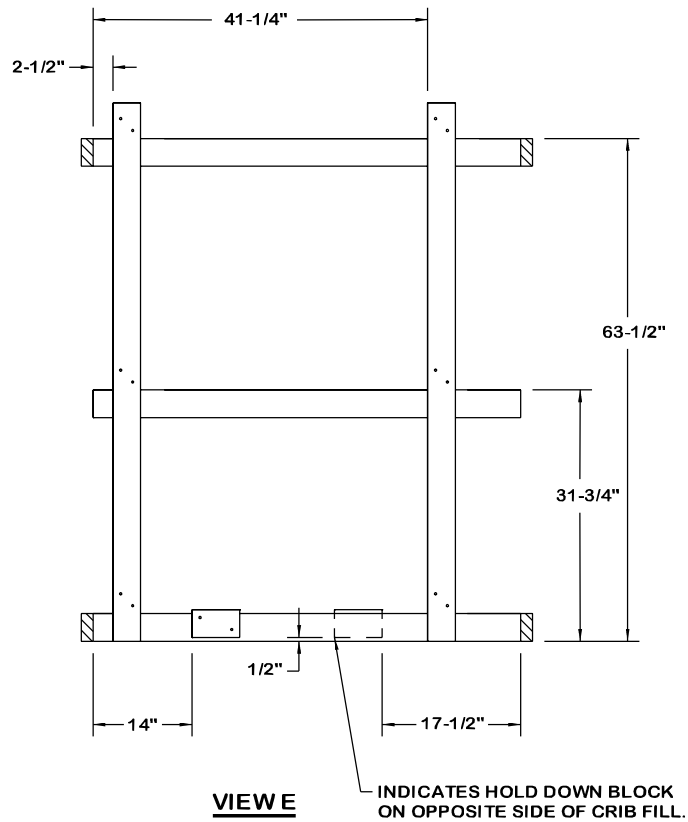
BEVEL-CUT

IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE THE ACHIEVEMENT OF A TIGHT CENTER-GATE-TO-CENTER-GATE FIT.

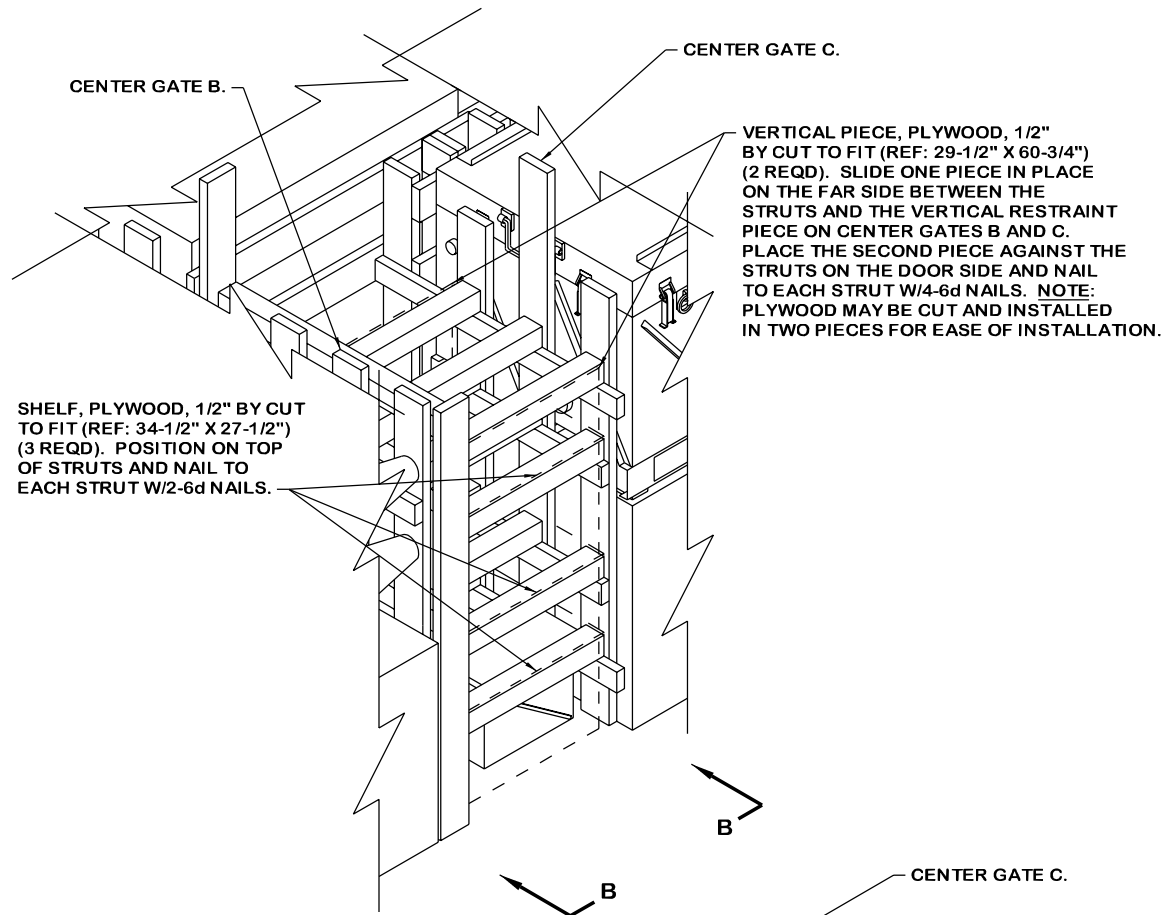
DETAILS



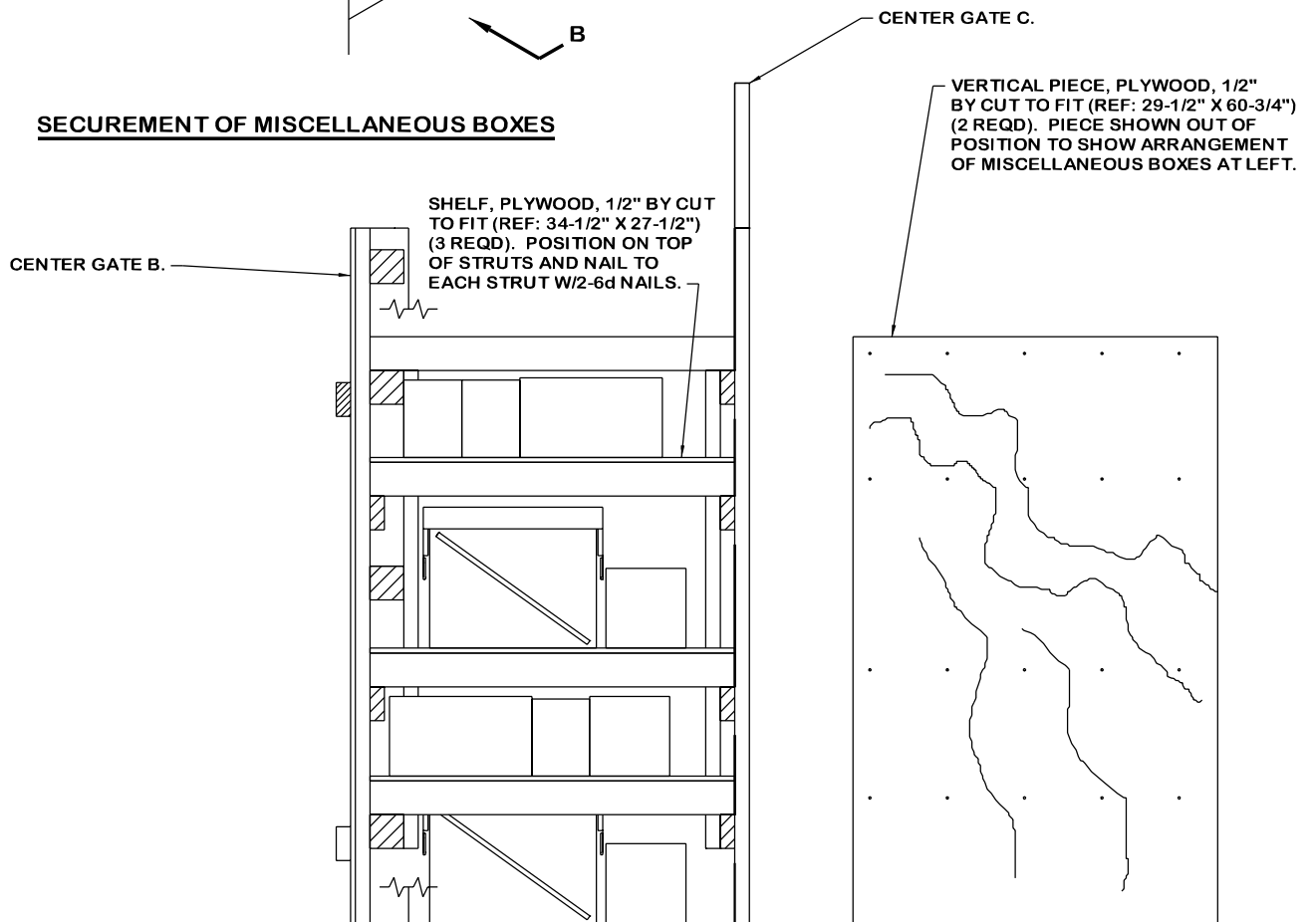
CRIB FILL



DETAILS



SECUREMENT OF MISCELLANEOUS BOXES



SECTION B-B

DETAILS

