

LOADING AND BRACING[⊕] IN SIDE OPENING ISO CONTAINERS OF ROCKET AND LAUNCHER, 83MM (SMAW-D) M141 BUNKER DEFEAT MUNITION, PACKED IN CYLINDRICAL METAL CONTAINERS, PALLETIZED

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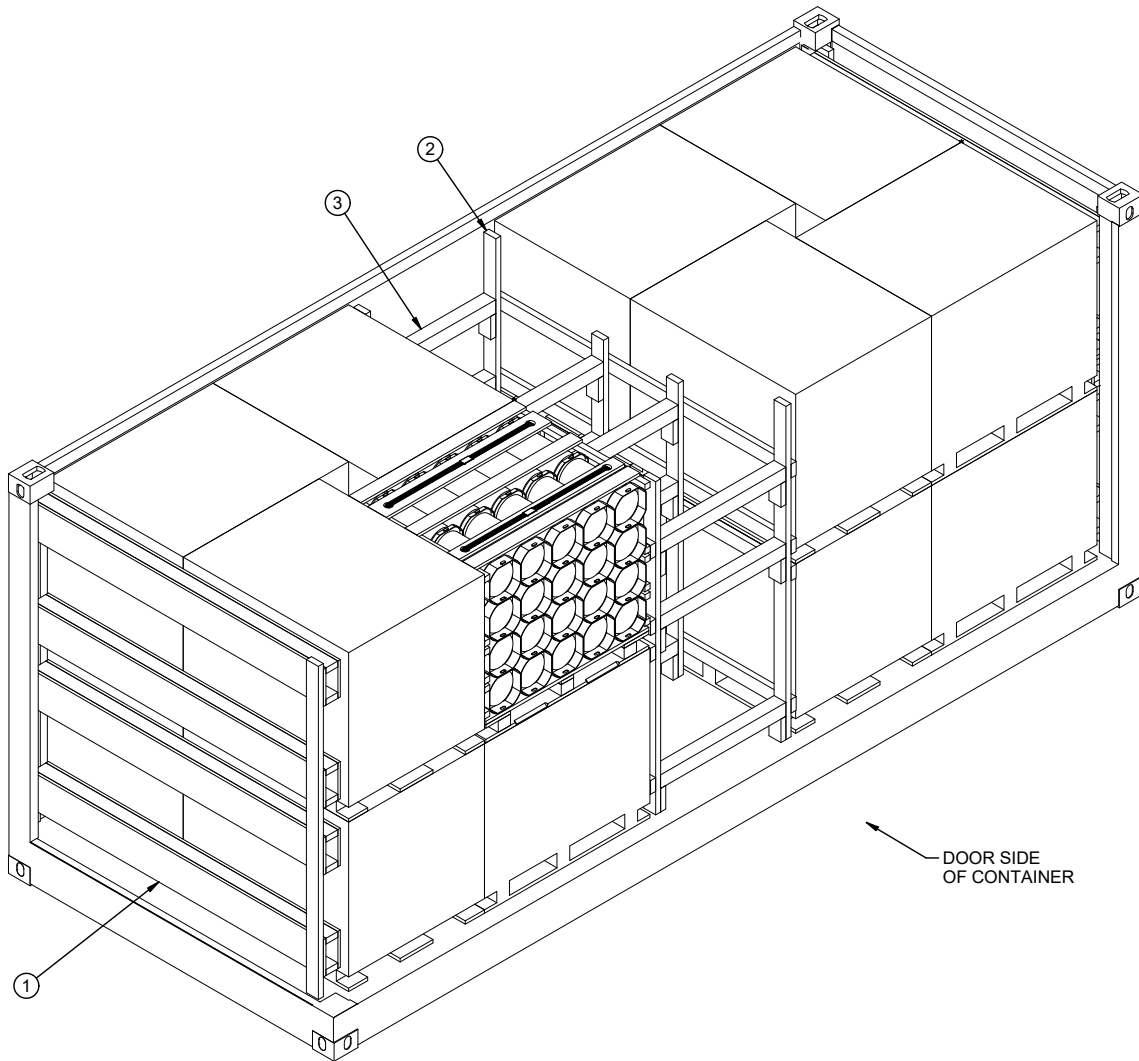
NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4116-20PA1002.

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ISOMETRIC VIEW

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6.
- ② CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 5.
- ③ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 37") (12 REQD). TOENAIL TO THE CENTER GATES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 5.

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	268	178
4" X 4"	37	49
NAILS	NO. REQD	POUNDS
6d (2")	480	3
10d (3")	176	2-3/4
PLYWOOD, 3/4" - - 96.80 SQ. FT. REQD - - - 188 LBS		

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
REDUCED HEIGHT PALLET UNIT	16	18,400 LBS
DUNNAGE		648 LBS
CONTAINER		6,050 LBS
TOTAL WEIGHT		25,098 LBS (APPROX)

GENERAL NOTES

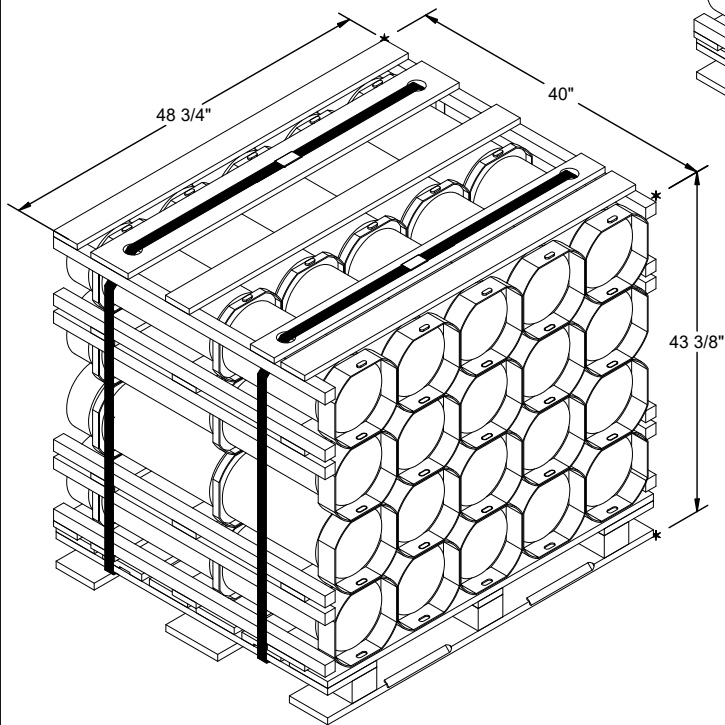
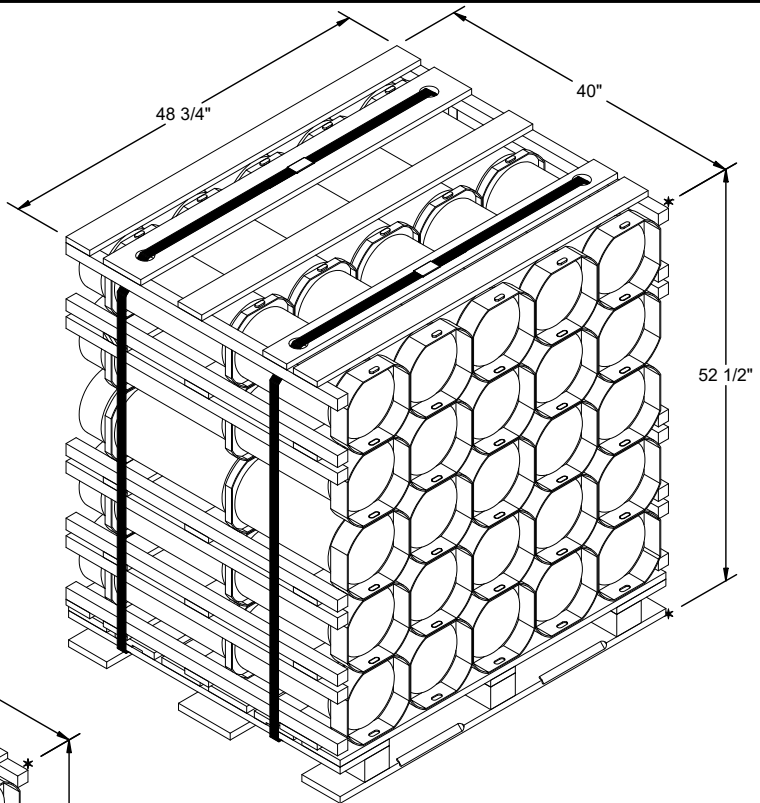
(GENERAL NOTES CONTINUED)

- 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 UNLOADING PROCEDURES ARE APPLICABLE TO LOADS OF PALLETIZED SMAW-D BUNKER DEFEAT ROCKETS AND LAUNCHERS PACKED IN CYLINDRICAL METAL CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS PALLET UNIT WITH SMAW-D. SEE PAGE 4 AND AMC DRAWING 19-48-4079/13-20PM1002 FOR DETAILS OF THE PALLET UNIT. **CAUTION:** REGARDLESS OF THE QUANTITY OF PALLET UNITS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 6,050 POUND 20' LONG BY 8' WIDE BY 8'-6" HIGH SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-6-1/4" LONG BY 90" WIDE BY 89" HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE DIFFERENT INSIDE MEASUREMENTS, VERIFY INSIDE CONTAINER DIMENSIONS 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 PALLET 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 HORIZONTAL PIECES ON THE CENTER FILL ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/ APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE THICKNESS, WIDTH AND/OR QUANTITY OF THE VERTICAL OR HORIZONTAL PIECES IN THE CENTER FILL ASSEMBLIES MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE PALLET UNIT.
- E. 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.
- 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 ENDWALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END 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 ENDWALLS, 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.
- 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 PALLET UNITS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE FILLER ASSEMBLY ON PAGE 4, AND THE "LESS-THAN-FULL-LOAD PROCEDURES" ON PAGE 8.
1. IF A LOAD IS REDUCED BY ONLY A SMALL AMOUNT (ONE, TWO OR THREE LADING UNITS), LADING UNITS NORMALLY MAY BE ELIMINATED FROM THE CENTER OF THE LOAD.
 2. IF A LOAD IS REDUCED BY A LARGE AMOUNT (MORE THAN THREE LADING UNITS), LADING UNITS SHOULD BE ELIMINATED AS REQUIRED AND THE VOID IN THE LONGITUDINAL CENTER OF THE CONTAINER SHIFTED FORE OR AFT, AS NECESSARY, TO ACHIEVE A SYMMETRICAL WEIGHT DISTRIBUTION. THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS POSSIBLE, MAKING ONLY THOSE ADJUSTMENTS TO THE DUNNAGE WHICH ARE REQUIRED TO ACCOMMODATE THE NUMBER OF UNITS TO BE SHIPPED.
- Q. LOAD-BLOCKING STRUTS WHICH ARE 48" OR LONGER MUST BE STIFFENED BY THE APPLICATION OF HORIZONTAL AND VERTICAL STRUT BRACING AS SHOWN ON PAGE 8. BRACING IS NOT REQUIRED IF THE STRUTS FOR THE LOAD BEING SHIPPED ARE SHORTER THAN 48". THE LENGTH OF THE LOAD-BLOCKING STRUTS SHOULD BE KEPT AS SHORT AS POSSIBLE (APPROX 18" MINIMUM), BUT IN THE EVENT IT IS NECESSARY TO USE STRUTS WHICH ARE 8'-0" OR MORE IN LENGTH, IT WILL BE NECESSARY TO APPLY AN ADDITIONAL SET OF HORIZONTAL AND VERTICAL STRUT BRACING PIECES. STRUT BRACING SHOULD BE APPLIED SO AS TO PROVIDE NEARLY EQUAL SPACING BETWEEN THE BRACING PIECES AND THE CENTER GATES AND/OR BETWEEN ADJACENT STRUT BRACING PIECES. NOTE THAT HORIZONTAL STRUT BRACING PIECES FOR THE UPPER LEVEL OF STRUTS FOR ALL BUT THE UPPERMOST TIER OF A LOAD MAY BE DIFFICULT TO APPLY TO THE TOP SURFACES OF THE STRUT AS DEPICTED. STRUT BRACING WILL BE EQUALLY EFFECTIVE IF APPLIED TO THE UNDER SIDE OF THOSE STRUTS.
- R. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN PALLET UNITS AND THE SIDE OPENING CONTAINER, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.

MATERIAL SPECIFICATIONS

- LUMBER** - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAI LS** - - - - - : 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.
- WI RE, CARBON STEEL** - : ASTM A853; ANNEALED AT FINISH, BLACK OXIDE FINISH, 0.0800" DIA, GRADE 1006 OR BETTER.
- ANTI -CHAFING MATERIAL** - - - - - : MIL-PRF-121 (OR EQUAL); NEUTRAL BAR

(CONTINUED AT RIGHT)



BASIC HEIGHT PALLET UNIT DATA

GROSS WEIGHT - - - - - 1,375 LBS
 CUBE - - - - - 59.2 CU FT

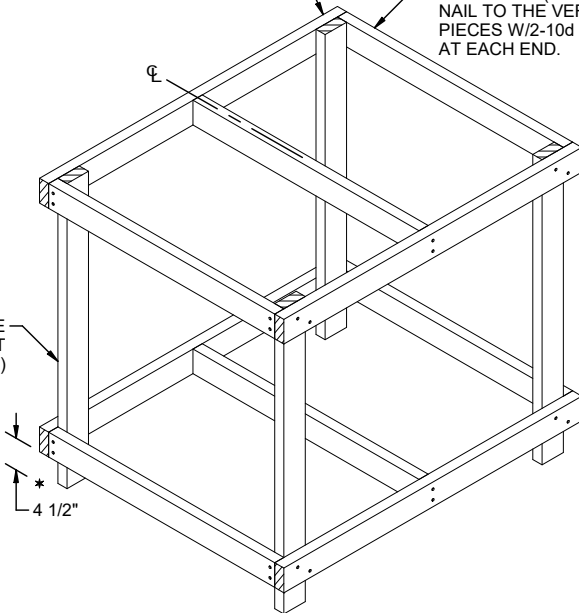
REDUCED HEIGHT PALLET UNIT DATA

GROSS WEIGHT - - - - - 1,150 LBS
 CUBE - - - - - 48.8 CU FT

LONGITUDINAL PIECE,
 2" X 4" X 48-3/4" (4 REQD.)
 NAIL TO THE VERTICAL
 PIECES AND THE CENTER
 LATERAL PIECE W/2-10d
 NAILS AT EACH JOINT.

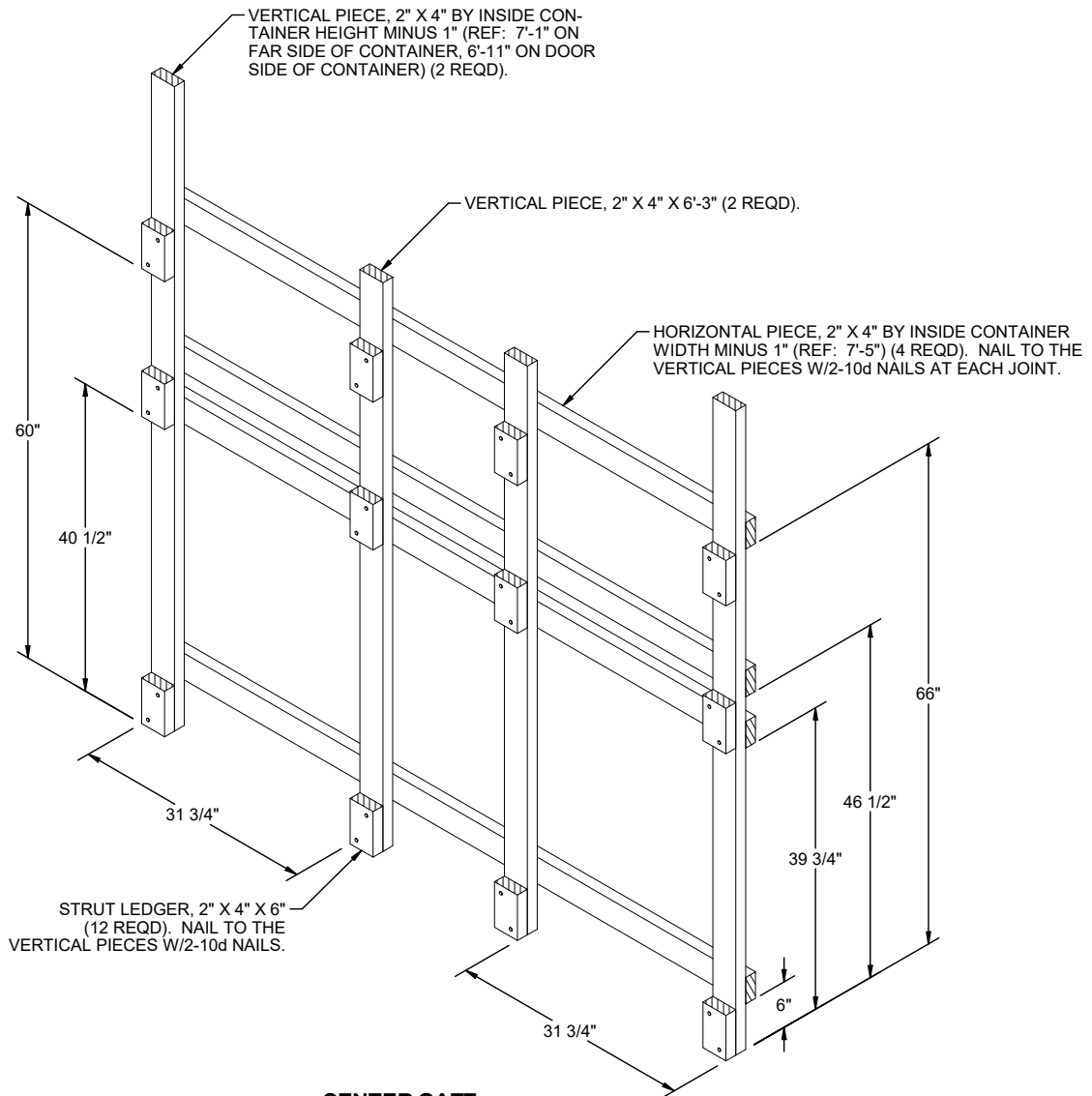
LATERAL PIECE,
 2" X 4" X 37" (6 REQD.)
 NAIL TO THE VERTICAL
 PIECES W/2-10d NAILS
 AT EACH END.

VERTICAL PIECE
 2" X 4" BY PALLET
 UNIT HEIGHT (4 REQD.)



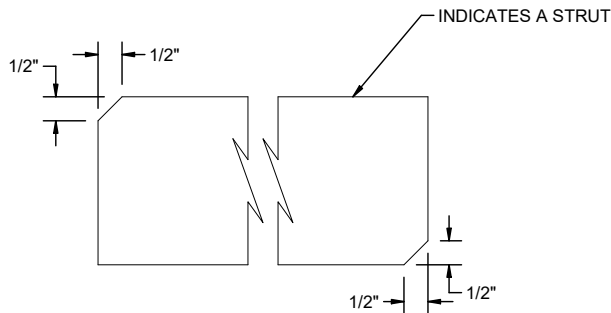
FILLER ASSEMBLY

THE ASSEMBLY DEPICTED ABOVE IS FOR USE IN PLACE OF AN OMITTED PALLET UNIT. FILLER ASSEMBLIES MUST BE WIRE TIED TO AN ADJACENT PALLET UNIT STRAP TO PREVENT UNDUE MOVEMENT. NO MORE THAN THREE FILLER ASSEMBLIES WILL BE USED IN ANY LOAD.



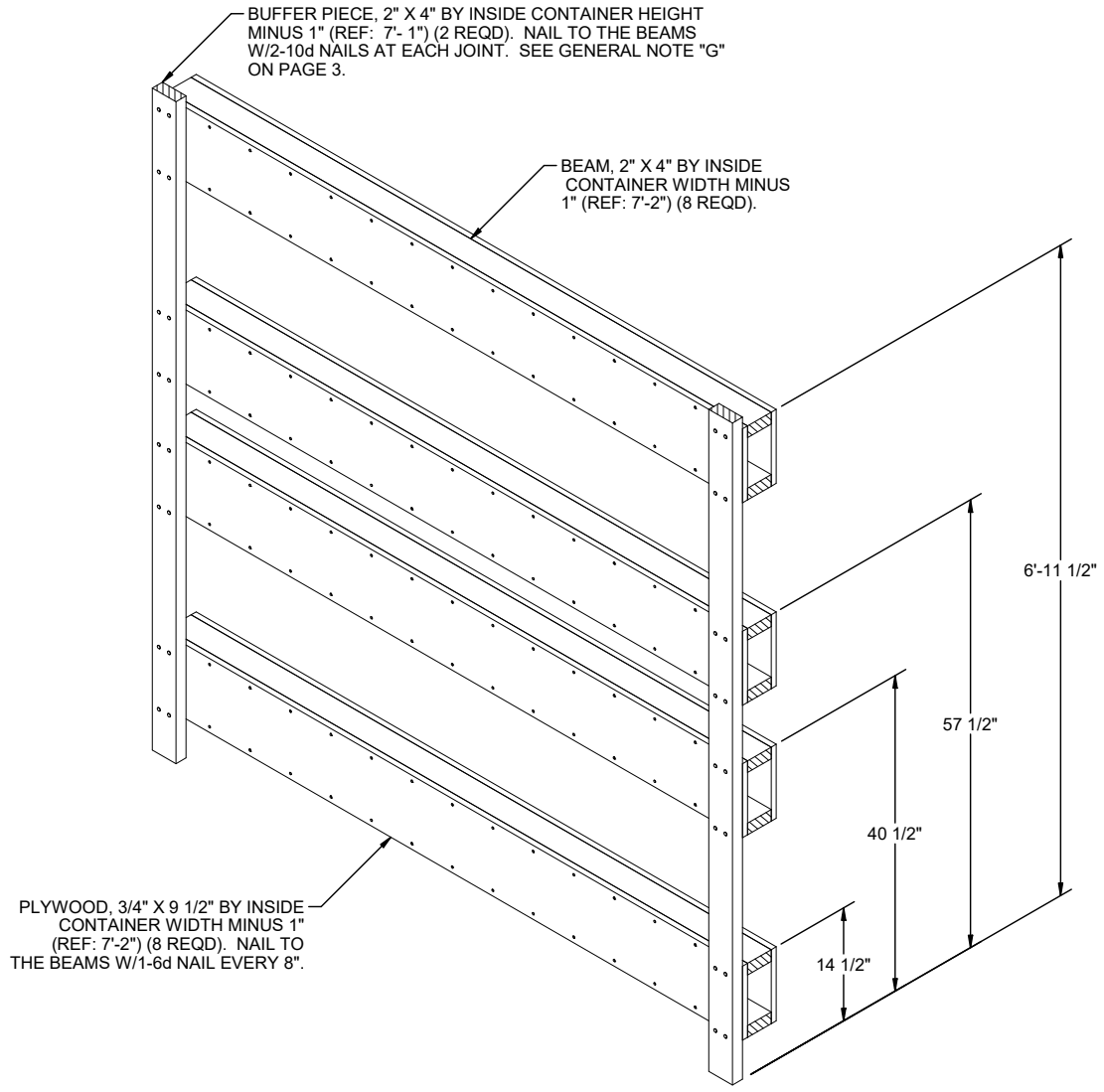
CENTER GATE

THE ASSEMBLY DEPICTED ABOVE IS FOR USE IN A TWO HIGH LOAD OF REDUCED HEIGHT PALLET UNITS. FOR A ONE HIGH LOAD, ELIMINATE THE TOP TWO HORIZONTAL PIECES, THE TOP FOUR STRUT LEDGERS, RELOCATE THE STRUT LEDGERS FROM 40-1/2" TO 39-3/4", AND SHORTEN THE TWO 6'-3" VERTICAL PIECES TO 50". IF FOR USE IN A ONE HIGH LOAD CONSISTING OF BASIC HEIGHT PALLET UNITS, MODIFY AS ABOVE, EXCEPT RELOCATE THE STRUT LEDGERS TO 49", RELOCATE THE 39-3/4" HORIZONTAL PIECE TO 49", AND SHORTEN THE 6'-3" VERTICAL PIECES TO 58".



BEVEL CUT

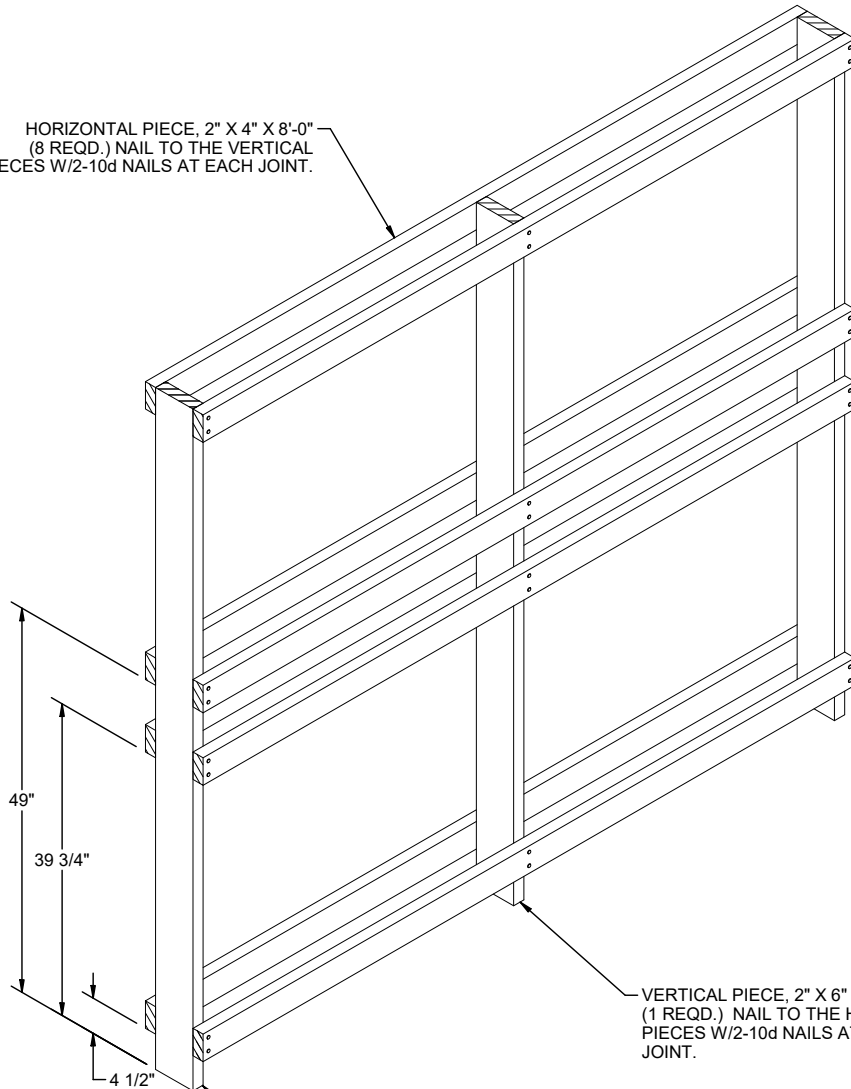
IF DESIRED, EACH END OF A STRUT MAY BE BEVEL-CUT AS SHOWN ABOVE TO FACILITATE INSTALLING THE STRUTS WITH A "DRIVE" FIT.



END BLOCKING ASSEMBLY

THE ASSEMBLY DEPICTED ABOVE IS FOR USE WITH THE TWO HIGH REDUCED HEIGHT LOAD DEPICTED ON PAGE 2. FOR A ONE HIGH LOAD OF REDUCED HEIGHT PALLET UNITS, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES. FOR A ONE HIGH LOAD OF BASIC HEIGHT PALLET UNITS DEPICTED ON PAGE 8, ELIMINATE THE TOP TWO BOX BEAM ASSEMBLIES AND REPOSITION THE UPPERMOST BOX BEAM ASSEMBLY AT 52".

HORIZONTAL PIECE, 2" X 4" X 8'-0"
(8 REQD.) NAIL TO THE VERTICAL
PIECES W/2-10d NAILS AT EACH JOINT.

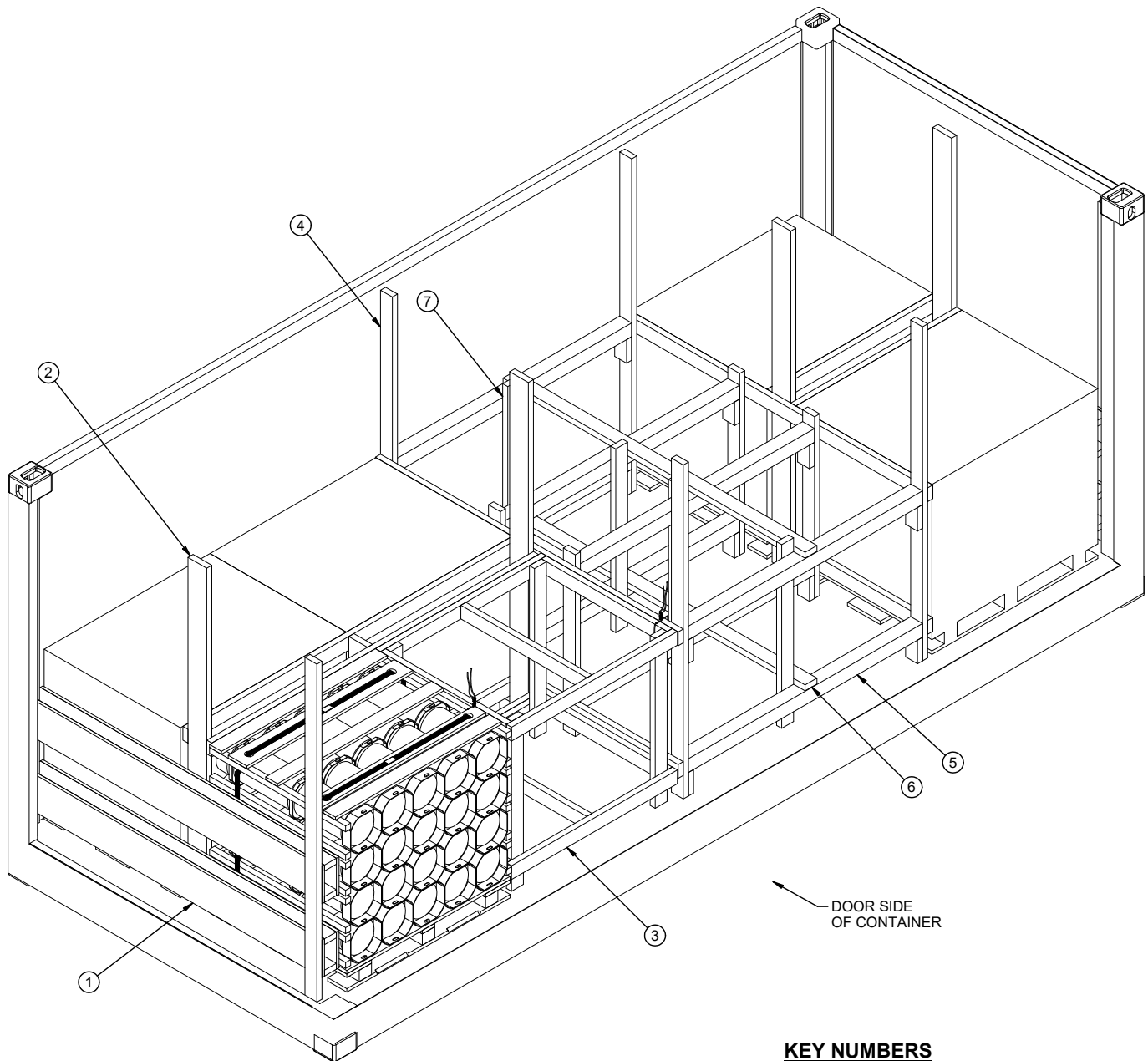


VERTICAL PIECE, 2" X 6" X 7'-4"
(1 REQD.) NAIL TO THE HORIZONTAL
PIECES W/2-10d NAILS AT EACH
JOINT.

VERTICAL PIECE, 2" X 6" BY INSIDE OF
CONTAINER HEIGHT MINUS 1" (REF: 7'-4")
(2 REQD.)

CENTER FILL ASSEMBLY

THE ASSEMBLY DEPICTED ABOVE IS FOR USE WHEN LOADING TWO REDUCED HEIGHT PALLET UNITS IN LENGTH AND TWO IN HEIGHT. FOR A SINGLE UNIT HIGH, REMOVE THE TOP FOUR HORIZONTAL PIECES AND SHORTEN THE CENTER VERTICAL PIECE TO 43-1/4". FOR A ONE UNIT LONG AND TWO UNIT HIGH ASSEMBLY, SHORTEN THE HORIZONTAL PIECE TO 48-3/4" AND ELIMINATE THE CENTER VERTICAL PIECE.



LESS-THAN-FULL-LOADPROCEDURES

ATTACH FILLER ASSEMBLY TO REPLACE A SINGLE PALLET LOAD. SEE GENERAL NOTE "H", "P", AND "Q" IN GENERAL NOTES ON PAGE 3.

KEY NUMBERS

- ① END BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 6.
- ② CENTER FILL ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 7.
- ③ FILLER ASSEMBLY (1 SHOWN). SEE THE DETAILS ON PAGE 4. USE TIE WIRE, .0800" BY 24" LONG TO SECURE TO ADJACENT DUNNAGE OR PALLET UNIT. INSTALL TIE WIRE TO FORM A COMPLETE LOOP AROUND THE PALLET UNIT OR CENTER GATE. BRING ENDS TOGETHER AND TWIST TAUT. SECURE W/1-10d NAIL BENT OVER WIRE OR WITH A STRAP STAPLE.
- ④ CENTER GATE (2 REQD). SEE THE DETAIL ON PAGE 5.
- ⑤ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 69") (8 REQD). TOENAIL TO THE CENTER GATES W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 5.
- ⑥ HORIZONTAL STRUT BRACING, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-5") (2 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.
- ⑦ VERTICAL STRUT BRACING, 2" X 4" X 46-3/4" (4 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.