THAAD

LOADING AND BRACING IN 40 FT SIDE OPENING ISO CONTAINER OF TERMINAL HIGH ALTITUDE AREA DEFENSE (THAAD) MISSILE PACKED IN SINGLE MISSILE ROUND TRANSPORT CONTAINER (SMRTC)

INDEX

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY
AVIATION ANDMISSILE COMMAND

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DO NOT SCALE

JUNE 2016

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

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CLASS	DIVISION	DRAWING	FILE
19	48	8239	GM15TH3

PROJECT GM 928-15

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 THAAD MISSILE PACKED IN SMRTC CONTAINER. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS SMRTC WITH THAAD MISSILE. SEE PAGE 3 AND LOCKHEED MARTIN DRAWING 13640484 FOR DETAILS OF THE SMRTC.

C. THE LOAD AS SHOWN ARE BASED ON A 10,787 POUND 40' LONG BY 8' WIDE BY 8'-6" HIGH COMMERCIAL SIDE OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 39'-6" LONG BY 7'-6" WIDE. THE LOAD IS DESIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT WHEN UTILIZING CUSHIONED RAILCARS ONLY. 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 A SMRTC CONTAINER, IT IS TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE LOAD MUST BE AS TIGHT AS POSSIBLE LONGITUDINALLY, THE STRUTS MUST BE INSTALLED WITH A DRIVE FIT TO ENSURE A TIGHT LOAD. 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 SIDE BLOCKING ASSEMBLY. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". ADDITIONALLY, THE LENGTH OF THE STRUTS IN THE SIDE BLOCKING ASSEMBLY MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE SIZE OF THE CONTAINER.

E. 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, ON TO, OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

F. IN SOME ISO CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES OF THE CORNER 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 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 ENDWALL LONGITUDINAL BLOCKING.

G. THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CONTAINER.

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

J. PORTIONS OF THE ISO CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE WALLS AND ROOF, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

K. THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING AND STAYING OF THE DESIGNATED ITEM. **NOTICE:** A SHIPMENT WILL BE POSITIONED ON A TRAILER CONSISTENT WITH STATE WEIGHT LAWS.

L. THESE PROCEDURES CAN ALSO BE UTILIZED FOR THE SHIPMENT OF THE CONTAINERS WHEN THEY ARE LOADED WITH AN ITEM WHICH IS IDENTIFIED DIFFERENTLY BY NOMENCLATURE THAN THE ITEM IDENTIFIED IN THE DRAWING TITLE, OR WHEN THEY ARE EMPTY.

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.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

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. 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.

P. 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.

Q. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN SMRTC AND BLOCKING, IF DESIRED, TO PREVENT CHAFING DAMAGE TO SMRTC PAINT AND MARKINGS.

R. RECOMMENDED SEQUENTIAL LOADING PROCEDURES FOR THE LOAD ON PAGE 4:

1. PREFABRICATE END BLOCKING ASSEMBLIES, CORNER ASSEMBLIES, AND SIDE BLOCKING ASSEMBLIES.

2. INSTALL ONE END BLOCKING ASSEMBLY, WITH CORRESPONDING CORNER ASSEMBLIES, STRUTS, BRACING, AND WITH ONE SIDE BLOCKING ASSEMBLY WIRE TIED TO END BLOCKING ASSEMBLY IN ONE END OF THE CONTAINER, TIGHT AGAINST THE END WALL. POSITION THE SECOND END BLOCKING ASSEMBLY, WITH ONE SIDE BLOCKING ASSEMBLY WIRE TIED, ON OPPOSITE END OF CONTAINER.

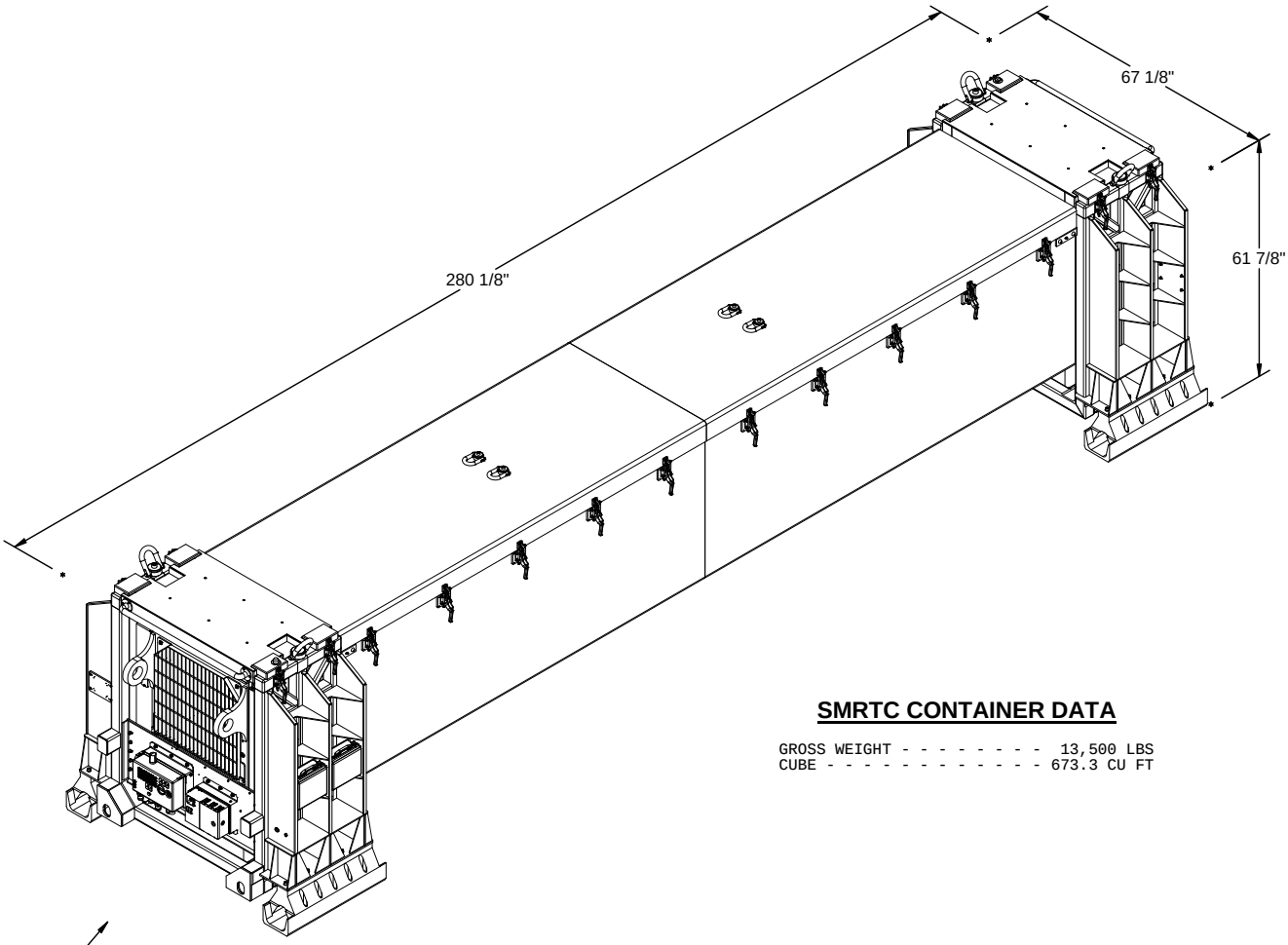
3. LOAD THE SMRTC, TIGHT AGAINST FIRST END BLOCKING AND SIDE BLOCKING ASSEMBLIES, AND THEN POSITION SECOND END BLOCKING ASSEMBLY AND SIDE BLOCKING ASSEMBLY AGAINST THE SMRTC. THE AFT END OF THE SMRTC SHOULD BE IN THE END OF THE CONTAINER WITH THE EXTERIOR DOOR SEAL WHICH ALLOWS THAT DOOR TO OPEN FIRST.

4. INSTALL REMAINING CORNER ASSEMBLIES, STRUTS AND VERTICAL AND HORIZONTAL STRUT BRACING TO POSITION THE SECOND END BLOCKING ASSEMBLY TIGHT AGAINST THE SMRTC.

5. INSTALL THE REMAINING TWO SIDE BLOCKING ASSEMBLIES, WIRE TIED TO END BLOCKING ASSEMBLIES.

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.
WIRE, 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 BARRIER MATERIAL.

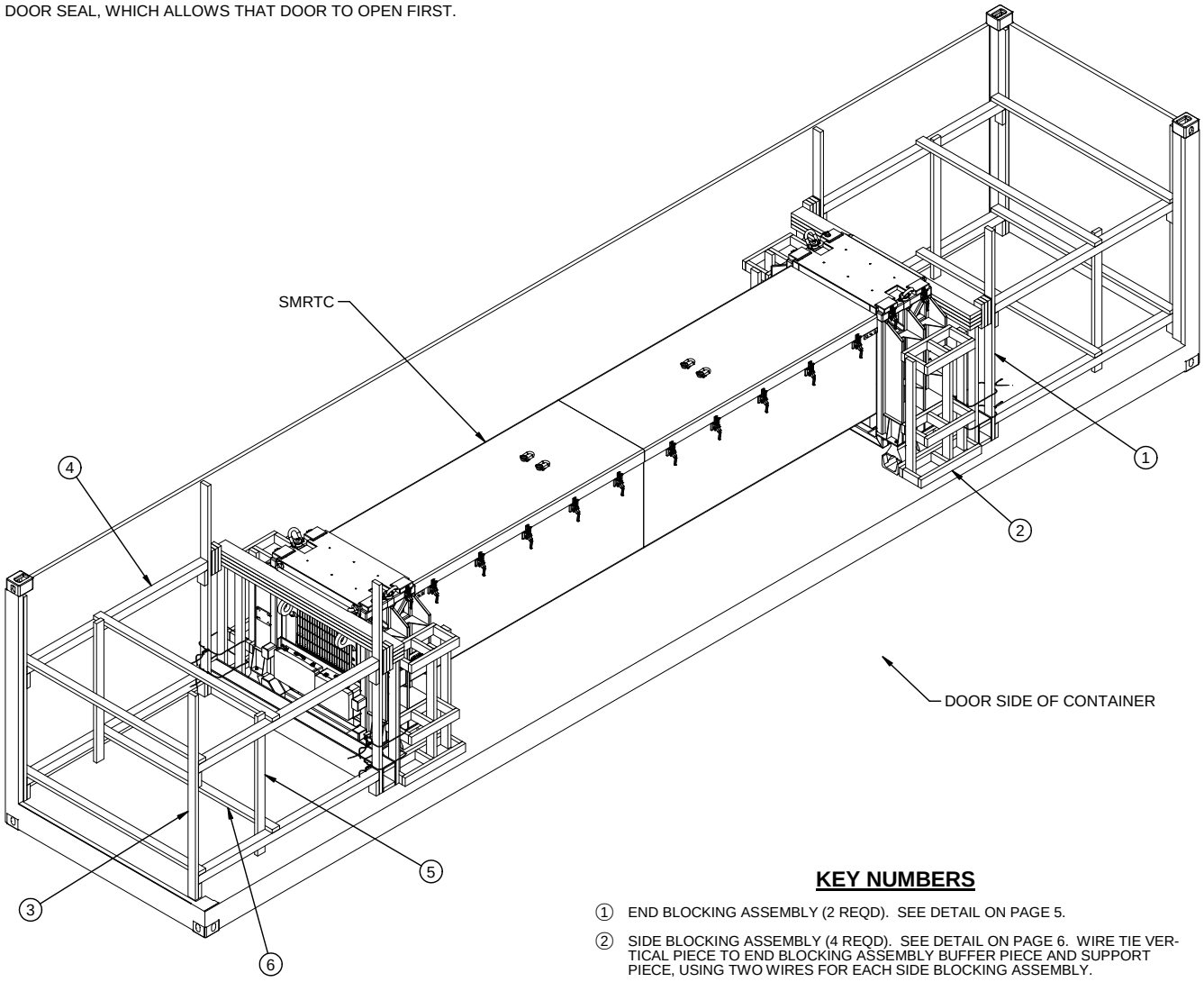


SMRTC CONTAINER DATA

GROSS WEIGHT - - - - - - - - - 13,500 LBS
CUBE - - - - - - - - - - - - - 673.3 CU FT

PROJECT **GM 928-15**

NOTE: FOR EASE OF MAINTENANCE, THE AFT END OF THE SMRTC SHOULD BE IN THE END OF THE CONTAINER WITH THE EXTERIOR DOOR SEAL, WHICH ALLOWS THAT DOOR TO OPEN FIRST.



ISOMETRIC VIEW

KEY NUMBERS

① END BLOCKING ASSEMBLY (2 REQD). SEE DETAIL ON PAGE 5.

② SIDE BLOCKING ASSEMBLY (4 REQD). SEE DETAIL ON PAGE 6. WIRE TIE VERTICAL PIECE TO END BLOCKING ASSEMBLY BUFFER PIECE AND SUPPORT PIECE, USING TWO WIRES FOR EACH SIDE BLOCKING ASSEMBLY.

③ CORNER ASSEMBLY (4 REQD). SEE DETAIL ON PAGE 5.

④ STRUT, 4" X 4" BY CUT-TO-FIT (REF: 7'-2 3/4") (8 REQD). TOENAIL TO THE END BLOCKING ASSEMBLY AND CORNER ASSEMBLY W/2-12d NAILS AT EACH END. SEE "BEVEL CUT" DETAIL ON PAGE 6.

⑤ VERTICAL STRUT BRACE, 2" X 4" X 58" (4 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH JOINT.

⑥ HORIZONTAL STRUT BRACE, 2" X 4" BY INSIDE CONTAINER WIDTH MINUS 1" (REF: 7'-2") (8 REQD). NAIL TO THE STRUTS W/2-10d NAILS AT EACH END.

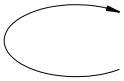
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	295	196
2" X 6"	86	86
4" X 4"	58	77
NAILS	**NO. REQD**	**POUNDS**
6d (2")	88	1/2
10d (3")	434	6-3/4
12d (3 1/4")	32	1/2
PLYWOOD, 1/2" - - - - - 23.7 SQ FT - - - - - - -		32.5 LBS
WIRE, .0800" DIA - - - AS REQD - - - - - - -		0.5 LBS

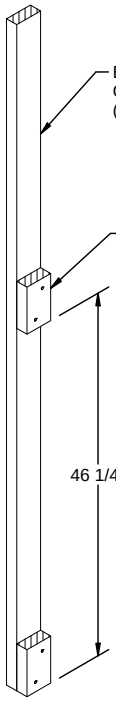
LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
THAAD SMRTC	1	13,500 LBS
DUNNAGE		760 LBS
ISO CONTAINER		10,787 LBS
TOTAL WEIGHT		25,047 LBS

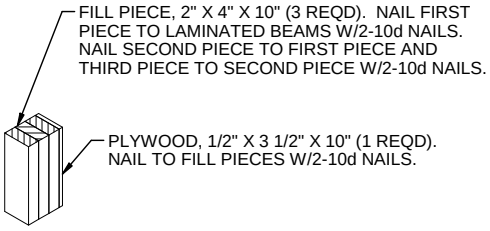
PROJECT GM 928-15



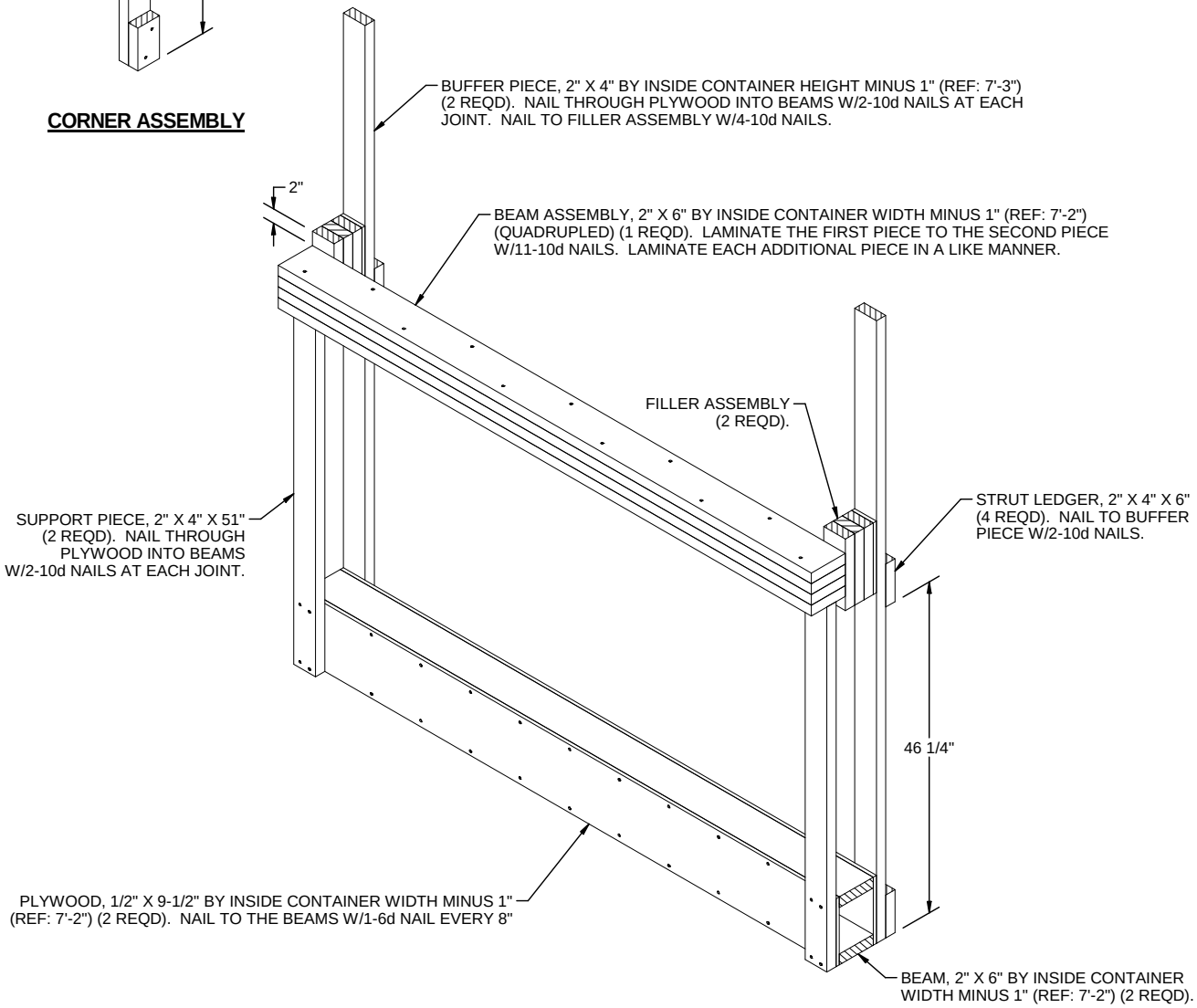
ROTATED 90° FROM THE ISOMETRIC VIEW SHOWN ON PAGE 4.



CORNER ASSEMBLY

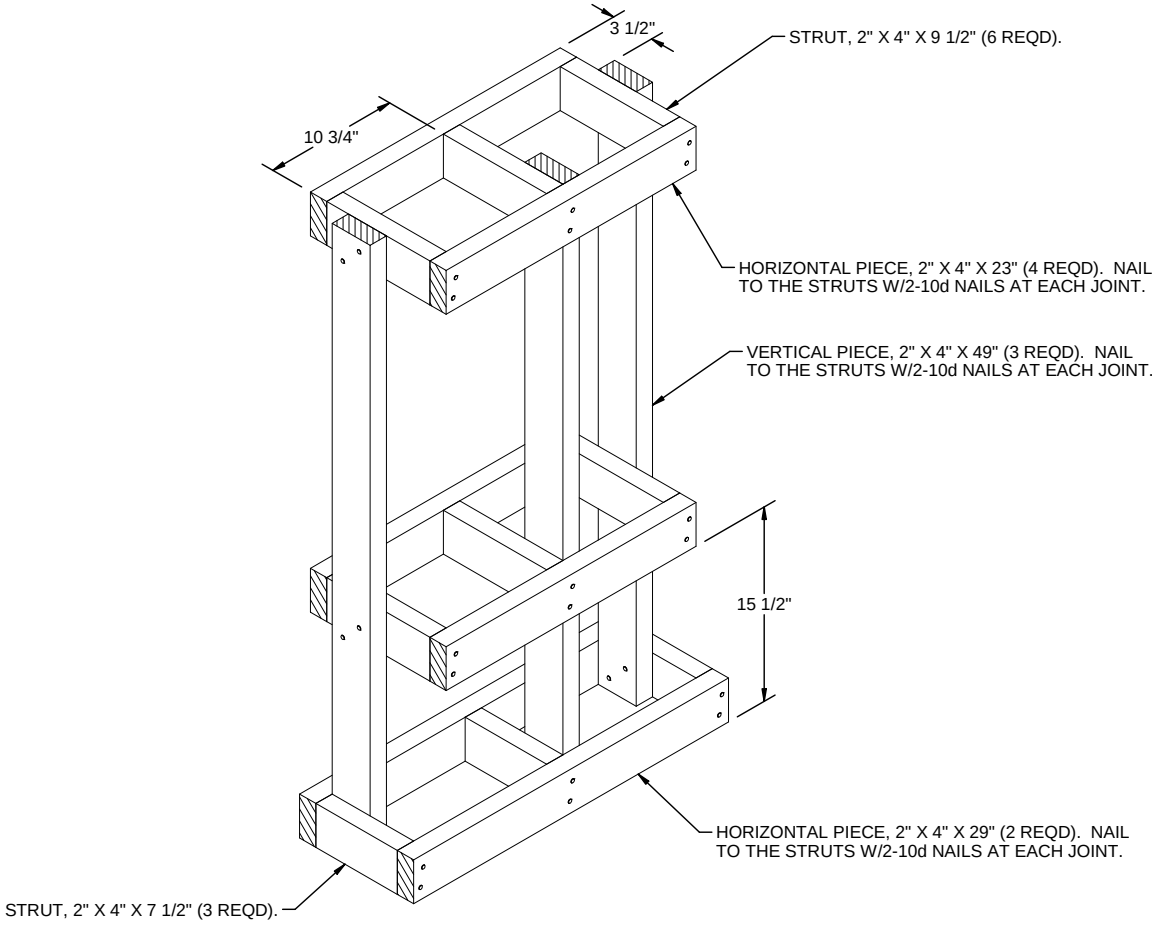


FILLER ASSEMBLY

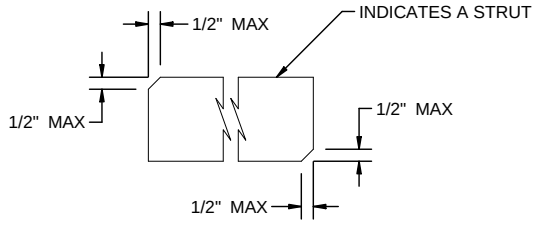


END BLOCKING ASSEMBLY

PROJECT GM 928-15



SIDE BLOCKING ASSEMBLY



BEVEL CUT

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

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