

LOADING PROCEDURES FOR AMMUNITION ITEMS IN STORAGE AND TRANSPORT FRAME (STF)

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U.S. ARMY MATERIEL COMMAND DRAWING

<p>APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND</p> <p>RUS.ALLEN.J .1230354282</p> <p><small>Digitally signed by RUS.ALLEN.J.1230354282 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RUS.ALLEN.J.1230354282 Date: 2015.09.15 11:52:26 -05'00'</small></p>		<p>CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8.</p>						
		DO NOT SCALE		OCTOBER 2015				
		DESIGN ENGINEER	BASIC REV.	RICHARD GARSIDE				
<p>APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND</p> <p>SHIMP.UPTON .R.1231257183</p> <p><small>Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2015.10.08 15:33:41 -05'00'</small></p> <p>U.S. ARMY DEFENSE AMMUNITION CENTER</p>		ENGINEERING DIVISION	<p>FIEFFER.LAUR A.A.1230375727</p> <p><small>Digitally signed by FIEFFER.LAURA.A.1230375727 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375727 Date: 2015.07.21 09:22:29 -05'00'</small></p>		CLASS	DIVISION	DRAWING	FILE
		TEST ENGINEER	<p>FELICIANO.AD IN.1259200373</p> <p><small>Digitally signed by FELICIANO.ADN.1259200373 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FELICIANO.ADN.1259200373 Date: 2015.07.27 07:27:48 -05'00'</small></p>		19	48	4349	16A1001
		TEST REPORT	12-26					
		EXPLOSIVE SAFETY DIRECTORATE	<p>TIRONE.JOSEPH.A NDREW.102668374</p> <p><small>Digitally signed by TIRONE.JOSEPH.ANDREW.102668374 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TIRONE.JOSEPH.ANDREW.102668374 Date: 2015.07.27 12:27:32 -05'00'</small></p>					

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 PROCEDURES ARE APPLICABLE TO STORAGE AND TRANSPORT FRAMES (STF) PACKED WITH AMMUNITION ITEMS. SEE PAGE 3 FOR DETAILS OF THE STF CONTAINERS. THE STF SHOWN THROUGHOUT THIS DRAWING, THE ISO 20 LARGE SHARKCAGE, IS TYPICAL ONLY. OTHER STF VARIANTS MAY BE USED TO LOAD IN ACCORDANCE WITH THIS DRAWING, AS LONG AS VALID AMMUNITION TRANSPORTABILITY CERTIFICATIONS HAVE BEEN ISSUED BY THE DEFENSE AMMUNITION CENTER FOR THE PARTICULAR VARIANT. THE STORAGE AND TRANSPORT FRAMES ARE COMMERCIAL PRODUCTS. FOR A SOURCE OF SUPPLY, VARIANTS OF FRAMES, AND FRAME ASSEMBLY AND MAINTENANCE, PLEASE CONTACT MOBILE STORAGE SYSTEMS, WWW.MSS-US.COM.
- C. THE PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR OTHER ITEMS WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN WHAT IS SHOWN ON PAGES 4 AND 7. THE AMMUNITION ITEMS DEPICTED IN THE DETAILS ON PAGES 4 THRU 7 ARE TYPICAL ONLY, AND ARE MEANT TO DEPICT VARIOUS BLOCKING AND BRACING SCENARIOS. EACH HALF SHELF OF THE STF SHOWS A DIFFERENT LOADING SCENARIO. ITEMS NOT SPECIFICALLY DEPICTED MAY ALSO BE TRANSPORTED USING THESE PROCEDURES, PROVIDED THAT THE GENERAL PRECEPTS DEPICTED WITHIN THIS DRAWING ARE FOLLOWED, AND THE LOADS ARE BLOCKED AND BRACED SECURELY. NOTE THAT THE DEPICTED LOADS ARE NOT NECESSARILY IN ACCORDANCE WITH COMPATABILITY REQUIREMENTS, BUT ARE SHOWN AS TYPICAL ONLY. ALL LOADS PRESENTED FOR SHIPMENT OR STORAGE MUST COMPLY WITH THE COMPATABILITY REQUIREMENTS CURRENTLY IN EFFECT.
- D. EXCESSIVE SLACK CAN BE ELIMINATED FROM LOADED SHELF BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE BLOCKING ASSEMBLIES. NAIL EACH ADDITIONAL PIECE W/1 APPROPRIATELY SIZED NAIL EVERY 12". THE LOAD ON EACH SHELF MUST BE AS TIGHT AS POSSIBLE, AVOIDING DAMAGING STF OR AMMUNITION ITEMS DURING LOADING AND TRANSPORT.
- E. THE BLOCKING ASSEMBLIES SHOWN ON PAGE 8 ARE TYPICAL. ASSEMBLIES MUST BE MODIFIED AS NECESSARY TO COMPLETELY FILL OUT A SHELF AND TO SUPPORT AMMUNITION CONTAINERS. VOIDS EXCEEDING 1/2" LATEROALLY OR LONGITUDINALLY MUST BE FILLED WITH DUNNAGE ASSEMBLIES OR SOLID FILL (PLYWOOD, HARDBOARD, ETC.).
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF BLOCKING ASSEMBLIES OR WHEN LAMINATING BLOCKING. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED BLOCKING WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BE-SIDE A NAIL IN A LOWER PIECE.
- G. DO NOT NAIL BLOCKING MATERIAL TO THE STF WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE BLOCKING.
- H. PORTIONS OF THE STF DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

- J. CAPACITY OF STF SHELVES LIMITED TO 1,000 LBS AND THE CAPACITY OF THE BOTTOM FRAME IS LIMITED TO 2,000 LBS. TOTAL CAPACITY OF THE STF IS LIMITED TO 5,000 LBS.
- 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. BLOCKING 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.
- M. FOR LESS THAN FULL SHELVES, WHEN THE QUANTITY OF ITEMS IS LIMITED OR WHEN THE WEIGHT OF THE SHELF NEEDS TO BE REDUCED, AN APPLICABLE FILLER ASSEMBLY CAN BE USED. SEE PAGE 6 FOR DETAILS OF THE FILLER ASSEMBLY.
- N. FOR EVERY AMMUNITION ITEM ON A SHELF, EITHER SINGLE ITEM LOADS OR MIXED ITEM LOADS, THE HEIGHTS OF ADJACENT PACKAGES SHOULD NOT DIFFER BY MORE THAN ONE HALF OF THE HEIGHT OF THE TALLER PACKAGE, TO HELP PREVENT THEM FROM OVERRIDING EACH OTHER DURING ROUGH TRANSIT.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

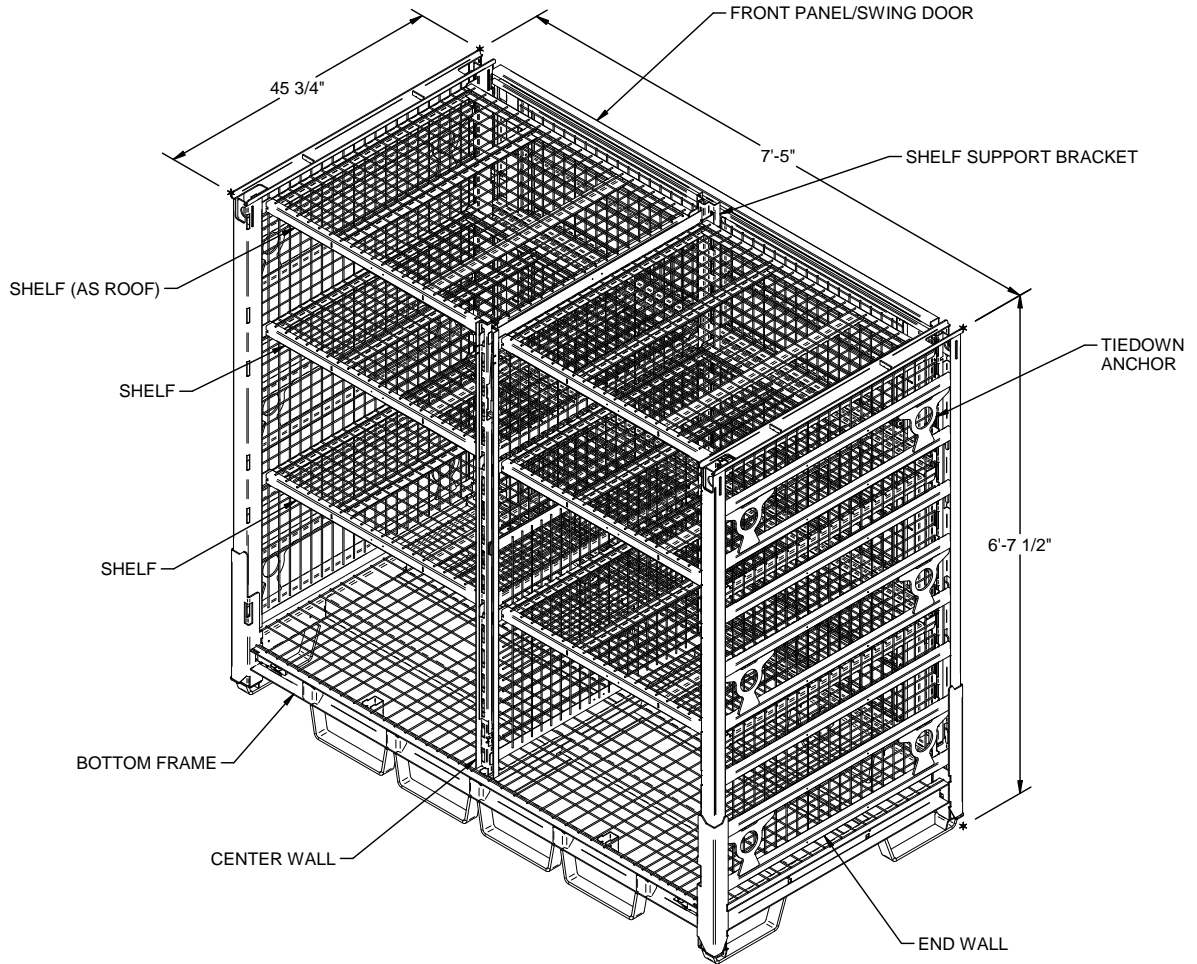
- ISO 20 LARGE DIVIDED STF - - - -: PART NUMBER 1GTL9-13050111 (MULTIPLE VARIANTS).
- LUMBER - - - - -: SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.
- NAILS - - - - -: ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).

STORAGE AND TRANSPORT FRAMES APPROVED FOR AMMUNITION

PART NUMBER	TRANSPORTABILITY CERTIFICATION	NOMENCLATURE	DIMENSIONS	CAPACITY		
				SHELF (LBS)	FRAME (LBS)	TOTAL (LBS)
1GTL9-1305011	ATC 2014-008	ISO20 LARGE	7'-0"L X 46"W X 7'-1"H	1000	2000	5000
1GTL9-13050111	ATC 2014-008	ISO20 LARGE DIVIDED	7'-0"L X 46"W X 7'-1"H	1000	2000	5000
1GTL9-1305015	ATC 2014-004	ISO20 SMALL	7'-0"L X 46"W X 44"H	1000	2000	5000
1GTL9-13050151	ATC 2014-004	ISO20 SMALL DIVIDED	7'-0"L X 46"W X 44"H	1000	2000	5000
1GTL9-1305003	ATC 2014-005	SECONDARY LOAD	6'-6"L X 46"W X 60"H	1000	2000	5000
1GTL9-13050031	ATC 2014-005	SECONDARY LOAD DIVIDED	6'-6"L X 46"W X 60"H	1000	2000	5000
1GTL9-1305021	ATC 2014-006	TRI CON	70"L X 42"W X 6'-6"H	1000	2000	5000
1GTL9-13050211	ATC 2014-006	TRI CON DIVIDED	70"L X 42"W X 6'-6"H	1000	2000	5000
1GTL9-1305017	ATC 2014-007	WAREHOUSE	6'-5"L X 33"W X 7'-1"H	1000	2000	5000
1GTL9-13050171	ATC 2014-007	WAREHOUSE DIVIDED	6'-5"L X 33"W X 7'-1"H	1000	2000	5000

NOTES:

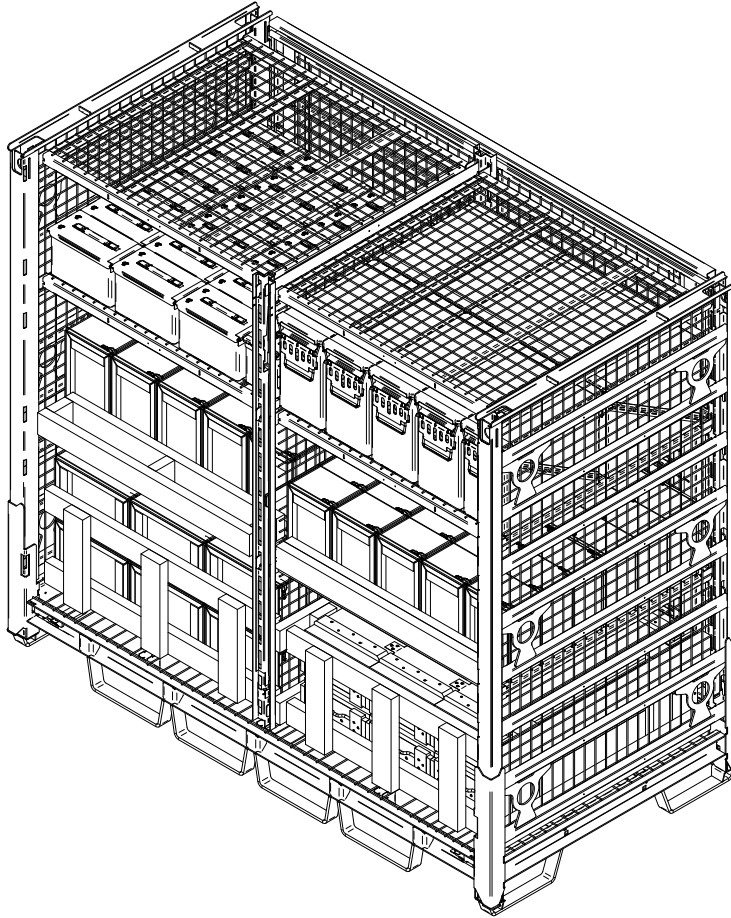
1. THE TABLE AT THE BOTTOM OF THIS PAGE LISTS VARIATIONS IN FRONT PANEL OR SWING DOOR CONFIGURATIONS FOR ONE TYPE OF STF. THE ISOMETRIC VIEW BELOW DEPICTS THE ISO 20 LARGE DIVIDED STF WITHOUT FRONT PANELS OR DOORS, SO IS INDICATIVE OF EITHER OF THE THREE VERSIONS LISTED IN THE TABLE ON THIS PAGE. NOTE THAT THE STF VERSIONS SHOWN IN THE TABLE ON PAGE 2 MAY ALSO HAVE VARIATIONS SIMILAR TO THOSE SHOWN IN THE TABLE ON THIS PAGE. FOR SUPPLIER CONTACT INFORMATION, SEE GENERAL NOTE "B" ON PAGE 2.
2. A DIVIDED STF IS SHOWN AND WILL HAVE SHELVES ON BOTH SIDES OF THE CENTER WALL. A STANDARD STF WILL HAVE FULL LENGTH SHELVES WHICH LOCK INTO THE SLOTS ON BOTH END WALLS.
3. TYPICAL SHELF LOCATIONS ARE SHOWN. THE SHELVES CAN BE PUT IN OTHER LOCATIONS TO BEST ACCOMMODATE THE PARTICULAR AMMUNITION REQUIREMENTS.
4. FRONT PANELS AND/OR SWING DOORS OMITTED ON ONE SIDE OF STF TO SHOW SHELVES AND CENTER WALL.



ISO 20 LARGE DIVIDED – FRONT PANEL/SWING DOOR VARIATIONS						
PART NUMBER	NOMENCLATURE	DESCRIPTION	QTY/20' ISO	TARE WT (LBS)	TOTAL CAPACITY (LBS)	
1GTL9-13050111-A1	STF (6+0)	6 FRONT PANELS	5	815	5000	
1GTL9-13050111-A2	STF (3+3)	3 FRONT PANELS & 3 FP W/SD	5	863	5000	
1GTL9-13050111-A3	STF (0+6)	6 FRONT PANELS W/SWING DOOR	5	911	5000	

NOTES:

1. THE FRONT PANELS AND/OR SWING DOORS ARE OMITTED ON ONE SIDE OF STF TO SHOW CONTENTS OF SHELVES.
2. FOR DETAILED LOADING GUIDANCE, SEE PAGES 5 AND 6.



LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
AMMUNITION BOXES	68	4,875 LBS
DUNNAGE		122 LBS
ISO 20 LARGE SHARKCAGE		911 LBS
TOTAL WEIGHT		5,908 LBS
CUBE		187 CU FT

TYPICAL STF COMPOSITION CHART

NSN	DODIC	NOMENCLATURE	PKG TYPE	NO. REQD	UNIT WT (LBS)
1305-01-482-1053	AA58	.50 CAL	2M2A1/WI REBOUND	10	80
1305-00-529-0591	A127	CTG, 7.62MM	4M19A1/WI REBOUND	10	82
1305-01-258-8692	A062	5.56MM	2PA108/WI REBOUND	12	75
1305-01-015-6185	A071	5.56MM	M2A1 METAL CAN	21	38
1305-01-116-3924	A792	CTG, 20MM	M548 METAL CAN	9	93
1315-00-028-4809	C445	CTG, 105MM	WOODEN BOX	6	120

NOTES:

1. THE LOADS SHOWN ARE TYPICAL SHELF LAYOUTS FOR SINGLE ITEM LOADS. OTHER SINGLE ITEM LOADS OR MIXED ITEM LOADS MAY BE USED, WITHIN THE WEIGHT LIMIT OF THE SHELVES.
2. SHELF LOCATIONS USED IN THE DETAILS BELOW ARE AS FOLLOWS, OTHER LOCATIONS ARE POSSIBLE AND MAY BE USED.
BOTTOM SHELVES USE THE 7TH SLOT FROM THE BOTTOM.
CENTER SHELVES USE THE 13TH SLOT FROM THE BOTTOM.
TOP SHELVES (ROOF) USE THE TOP SLOT.
3. THE QUANTITY OF DUNNAGE ASSEMBLIES DELINEATED BELOW IS PER HALF SHELF. EACH HALF SHELF WILL HAVE IT'S OWN REQUIREMENTS AND QUANTITIES.

5.56MM CTG IN WIREBOUND BOX (12 SHOWN)

BLOCKING ASSEMBLY B (2 REQD),
SEE THE DETAIL ON PAGE 8.

BLOCKING ASSEMBLY B (1 REQD), SEE THE DETAIL ON PAGE 8.

105MM CTG IN WOODEN BOX (6 SHOWN)

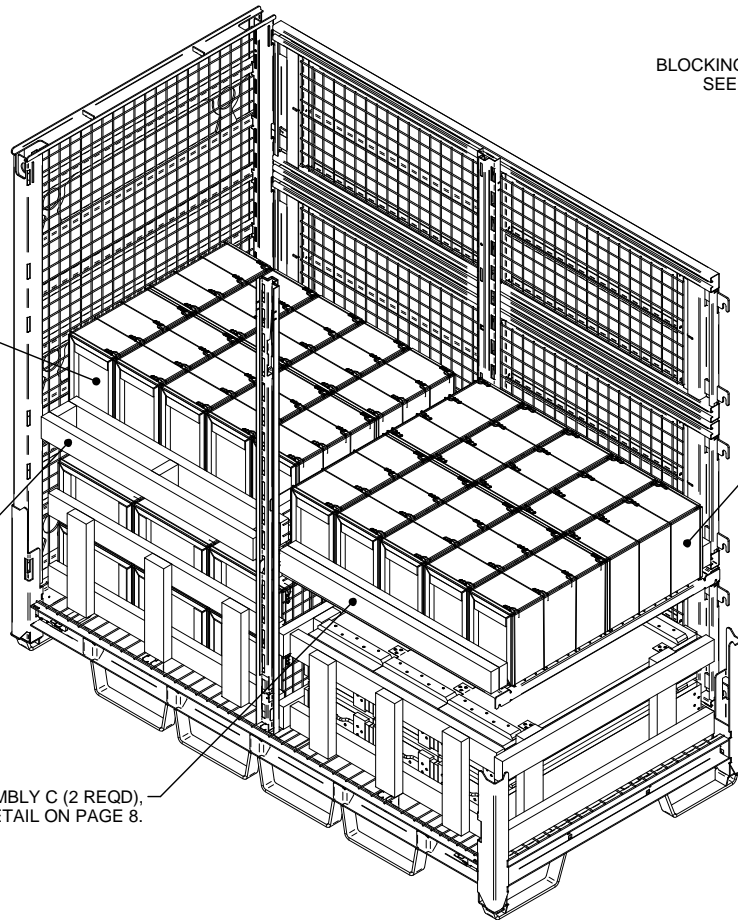
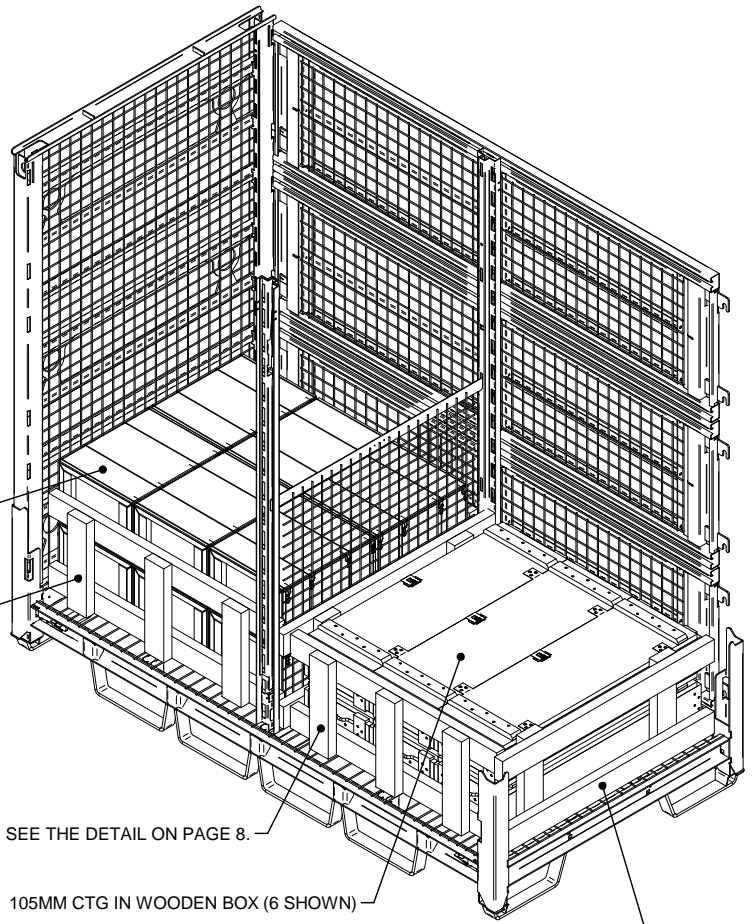
BLOCKING ASSEMBLY A (2 REQD),
SEE THE DETAIL ON PAGE 8.

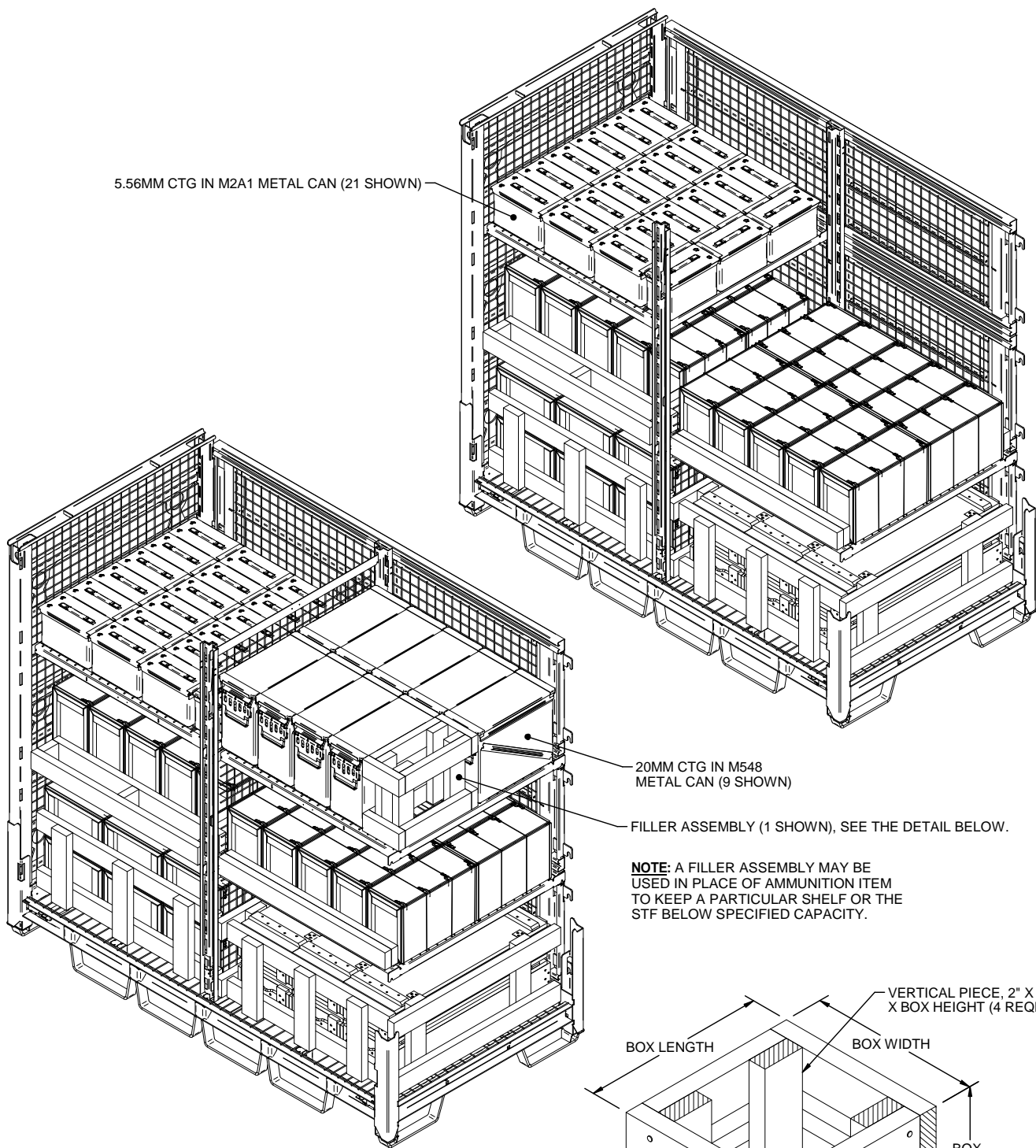
.50 CAL IN WIREBOUND
BOX (10 SHOWN)

BLOCKING ASSEMBLY D
(2 REQD), SEE THE DETAIL
ON PAGE 8.

7.62MM CTG IN WIREBOUND
BOX (10 SHOWN)

BLOCKING ASSEMBLY C (2 REQD),
SEE THE DETAIL ON PAGE 8.



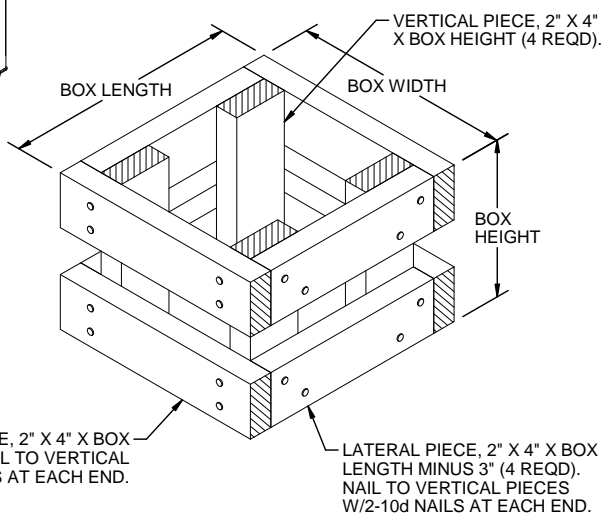


5.56MM CTG IN M2A1 METAL CAN (21 SHOWN)

20MM CTG IN M548 METAL CAN (9 SHOWN)

FILLER ASSEMBLY (1 SHOWN), SEE THE DETAIL BELOW.

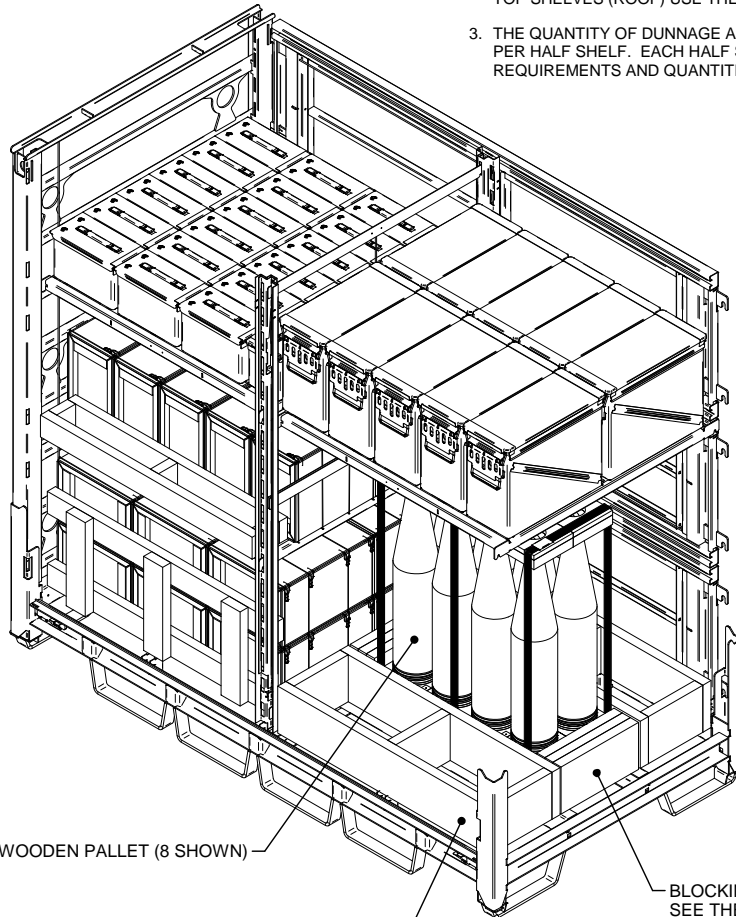
NOTE: A FILLER ASSEMBLY MAY BE USED IN PLACE OF AMMUNITION ITEM TO KEEP A PARTICULAR SHELF OR THE STF BELOW SPECIFIED CAPACITY.



FILLER ASSEMBLY

NOTES:

1. THE LOADS SHOWN ARE TYPICAL SHELF LAYOUTS FOR SINGLE ITEM LOADS. OTHER SINGLE ITEM LOADS OR MIXED ITEM LOADS MAY BE USED, WITHIN THE WEIGHT LIMIT OF THE SHELVES. THE PROJECTILE PALLET UNIT REQUIRES REMOVAL OF A SHELF TO ACCOMMODATE. THE LOADING DETAILS FOR THE THREE LEFT SHELVES AND THE TOP RIGHT SHELF ARE DEPICTED ON PAGES 4 THRU 6. THIS PAGE DEPICTS AN ALTERNATIVE CONFIGURATION FOR THE LOWER TWO RIGHT SHELVES.
2. SHELF LOCATIONS USED IN THE DETAILS BELOW ARE AS FOLLOWS, OTHER LOCATIONS ARE POSSIBLE AND MAY BE USED.
 BOTTOM SHELVES USE THE 7TH SLOT FROM THE BOTTOM.
 CENTER SHELVES USE THE 13TH SLOT FROM THE BOTTOM.
 TOP SHELVES (ROOF) USE THE TOP SLOT.
3. THE QUANTITY OF DUNNAGE ASSEMBLIES DELINEATED BELOW IS PER HALF SHELF. EACH HALF SHELF WILL HAVE IT'S OWN REQUIREMENTS AND QUANTITIES.



155MM PROJECTILES ON WOODEN PALLET (8 SHOWN)

BLOCKING ASSEMBLY E (2 REQD), SEE THE DETAIL ON PAGE 8.

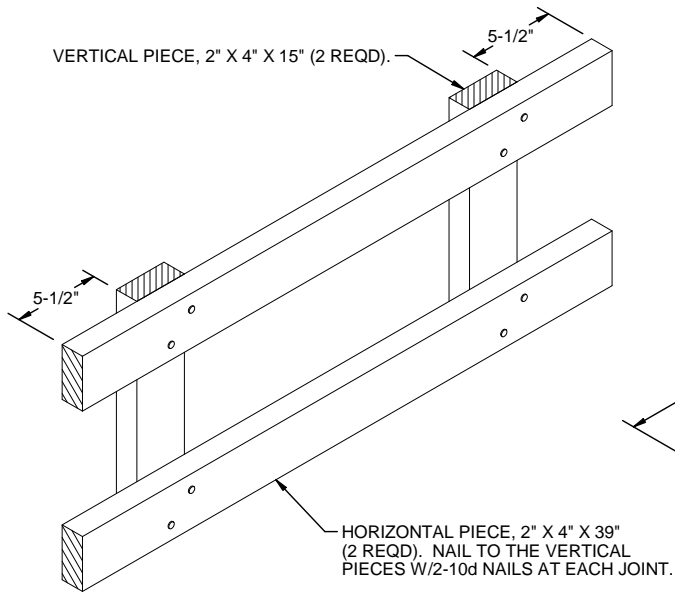
BLOCKING ASSEMBLY F (2 REQD), SEE THE DETAIL ON PAGE 8.

LOAD AS SHOWN

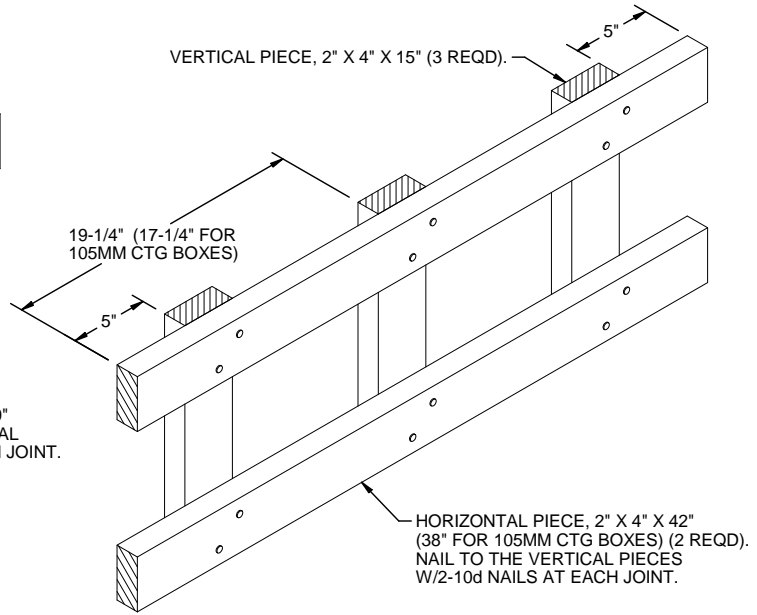
ITEM	QUANTITY	WEIGHT (APPROX)
AMMUNITION BOXES	53	3,428 LBS
PROJ PALLET UNIT	1	874 LBS
DUNNAGE		117 LBS
ISO 20 LARGE SHARKCAGE		911 LBS
TOTAL WEIGHT		5,330 LBS
CUBE		187 CU FT

TYPICAL STF COMPOSITION CHART

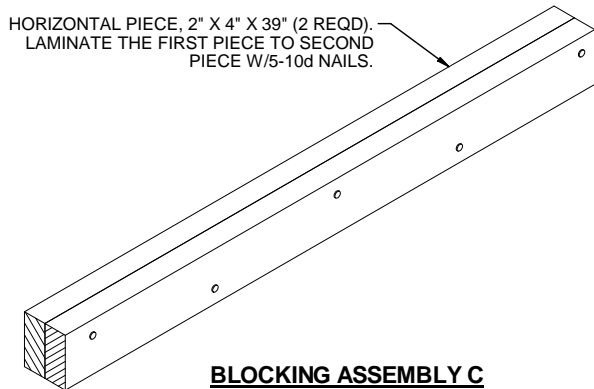
NSN	DODIC	NOMENCLATURE	PKG TYPE	NO. REQD	UNIT WT (LBS)
1305-01-482-1053	AA58	.50 CAL	2M2A1/WI REBOUND	10	80
1305-01-258-8692	A062	5.56MM	2PA108/WI REBOUND	12	75
1305-01-015-6185	A071	5.56MM	M2A1 METAL CAN	21	38
1305-01-116-3924	A792	CTG, 20MM	M548 METAL CAN	10	93
1320-01-260-8720	D563	155MM PROJ	8/PALLET UNIT	1	874



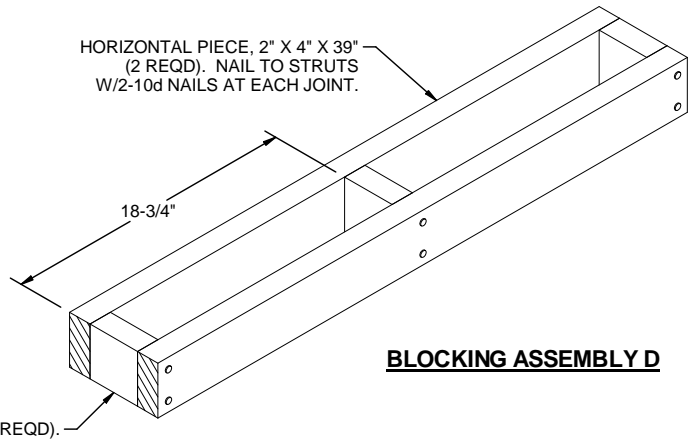
BLOCKING ASSEMBLY A



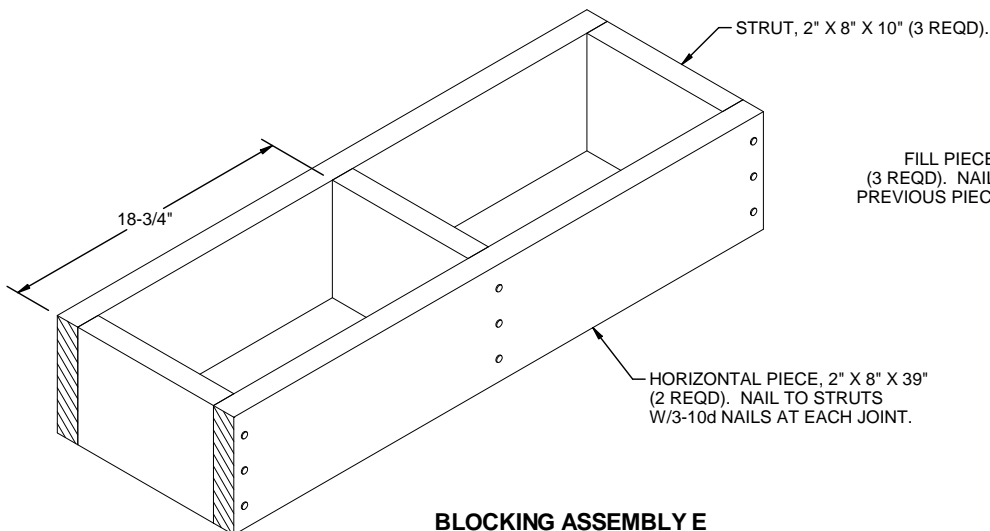
BLOCKING ASSEMBLY B



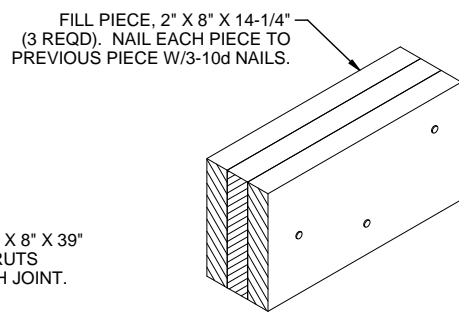
BLOCKING ASSEMBLY C



BLOCKING ASSEMBLY D



BLOCKING ASSEMBLY E



BLOCKING ASSEMBLY F