## <u>ATACMS</u>

# STORAGE IN APPROVED MAGAZINES OF MISSILE/LAUNCH POD ASSEMBLY (M/LPA) FOR THE ARMY TACTICAL MISSILE SYSTEM

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#### U.S. ARMY MATERIEL COMMAND DRAWING APPROVED, U.S. ARMY AVIATION AND MISSILE COMMAND CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 18. DO NOT SCALE **AUGUST 1989 MELVIN DAEUMER** BASIC ENGINEER OR TECHNICIAN MELVIN SIX **REVISION NO. 2 MAY 2004** PROVED BY ORDER OF COMMANDING GENERAL. TRANSPORTATION U.S. ARMY MATERIEL COMMAND ENGINEERING SEE THE REVISION LISTING ON PAGE 2 una(1. DIVISION CLASS DIVISION VALIDATION DRAWING FILE ENGINEERING UWI DIVISION GM1-3-4-19 48 5262 **ENGINEERING** 14-22AT1 WIde DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER (U)

PROJECT

GM 810-88

#### **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 STORAGE PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO THE ARMY TACTICAL MISSILE SYSTEM (ATACMS) COMPLETE ROUND, WHEN PACKED IN THE MISSILE/LAUNCH POD ASSEMBLY (M/LPA). SUBSEQUENT REFERENCE TO ASSEMBLY HER
- C. FOR DETAILS OF THE MISSILE/LAUNCH POD ASSEMBLY, SEE US ARMY MISSILE COMMAND DRAWING NO. 13288205 AND THE ATACMS MISSILE/LAUNCH POD ASSEMBLY DETAIL ON PAGE 3.
- D. THIS IS A QD CLASS 1.1 ITEM AND IS IN COMPATIBILITY GROUP E. CAUTION: THIS ITEM IS IN A "PROPULSIVE STATE" AND MUST BE STORED WITH THE FORWARD END FACING TOWARD THE SAME MAGAZINE SIDEWALL OR THE REAR WALL AS INDICATED BY THE DIRECTIONAL ARROWS ON THE STORAGE VIEWS.
- E. THE STORAGE PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE APPLICABLE FOR STORAGE IN VARIOUS TYPES AND SIZES OF MAGAZINES. THE STORAGE PROCEDURES DEPICTED FOR THE SPECIFIC TYPES OF MAGAZINES MAY ALSO BE UTILIZED TO STORE ASSEMBLIES IN OTHER TYPES OF APPROVED MAGAZINES. MINOR ADJUSTMENTS MAY BE MADE TO FACILITATE STORAGE IN OTHER TYPES OF MAGAZINES; HOWEVER, THE BASIC PRINCIPLES AS DEPICTED HEREIN WILL BE FOLLOWED.
- F. CAUTION: THE ALLOWABLE "EXPLOSIVE LIMIT" ESTABLISHED FOR A MAGAZINE IS NOT TO BE EXCEEDED. THIS LIMITATION MAY REQUIRE A QUANTITY REDUCTION FROM THE STORAGE AS SHOWN.
- G. IF THE QUANTITY OF ASSEMBLIES FOR A MAGAZINE IS TO BE REDUCED FROM WHAT IS SHOWN HEREIN DUE TO THE PERMITTED "EXPLOSIVE LIMIT" OR FOR ANY OTHER REASON, SUCH AS A LIMITED QUANTITY TO BE STORED, THE DELINEATED PROCEDURES ARE TO BE ADJUSTED BY OMITTING STACKS RATHER THAN BY OMITTING LAYERS.
- H. STORED ASSEMBLIES MUST NOT CONTACT THE WALLS OF A MAGAZINE. THEREFORE, ASSEMBLIES WILL BE STORED A MINIMUM OF 6" FROM THE SIDEWALL OR CURVATURE OF THE MAGAZINE AS APPLICABLE. TO PROVIDE FOR THIS MANDATORY CLEARANCE REQUIREMENT, ASSEMBLIES MAY BE ELIMINATED FROM THE DEPICTED STORAGE PATTERN AS NECESSARY.
- J. AISLE DIMENSIONS SHOWN FOR STORAGE PROCEDURES IN MAGAZINES MAY BE ADJUSTED TO SUIT LOCAL CONDITIONS, AND/OR AVAILABLE MATERIALS HANDLING EQUIPMENT (MHE). HOWEVER, A 24" MINIMUM INSPECTION AISLE MUST BE MAINTAINED AT THE END OF THE ASSEMBLIES WHERE HUMIDITY INDICATORS ARE LOCATED.
- K. THE MAXIMUM FLOOR LOAD FOR A MAGAZINE AS PRESCRIBED BY LOCAL STANDARDS WILL NOT BE EXCEEDED.
- L. IF AVAILABLE MHE PERMITS, ADDITIONAL ASSEMBLIES MAY BE STORED WITHIN THE MHE AREA AND/OR OTHER AVAILABLE AREA OF THE MAGAZINE.
- M. OTHER COMPATIBLE ITEMS MAY BE STORED IN A MAGAZINE, WHICH IS PARTIALLY FILLED WITH THE DESIGNATED ITEM.
- N.  $\underline{\text{CAUTION}}:$  ASSEMBLIES MUST NOT BE STACKED MORE THAN FOUR ASSEMBLIES HIGH.
- O. THE HEIGHT OF THE PACKAGE GUARD ON SOME FORKLIFT TRUCKS MAY NOT PERMIT PLACEMENT OF SOME TOP LAYER ASSEMBLIES IN THE STACKS SHOWN IN THE STORAGE VIEWS HEREIN, UNLESS TWO UPPER ASSEMBLIES ARE HANDLED AS ONE LIFT OR THE PACKAGE GUARD IS REMOVED (TINE CARRIAGE WILL IN MOST INSTANCES PROVIDE ADEQUATE PACKAGE GUARD PROTECTION). ONLY A FORKLIFT TRUCK OF ADEQUATE CAPACITY WILL BE USED WHEN LIFTING TWO ASSEMBLIES AS ONE LIFT.

(CONTINUED AT RIGHT)

#### 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).

#### (GENERAL NOTES CONTINUED)

- P. PORTIONS OF THE MAGAZINES, SUCH AS SIDE WALLS, END WALLS, AND ROOFS HAVE NOT BEEN SHOWN IN THE STORAGE VIEWS FOR CLARITY PURPOSES
- Q. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENT MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4 MM. AND ONE POUND EQUALS 0.454 KG.
- R. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING 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. THE ATACMS IS A "LOW DENSITY" MISSILE SYSTEM. SMALL LOT SIZES ARE EXPECTED (LESS THAN 50). CURRENT REQUIREMENTS ARE FOR 10 PERCENT OF THE STOCK TO BE RECERTIFIED ANNUALLY THROUGH THE ATMF AND ANOTHER 20 PERCENT TO BE VISUALLY, PERIODICALLY INSPECTED TO INCLUDE ELECTRICAL TESTING UTILIZING THE MISSILE MONITOR TEST DEVICE (MMTD). STORAGE CONFIGURATIONS SHOULD INCORPORATE THESE EXTRA REWAREHOUSING REQUIREMENTS.
- T. CAUTION: WHEN STACKING MISSILE/LAUNCH POD ASSEMBLIES (M/LPAS), THE ALIGNMENT HOLES IN THE SHOCK ISOLATOR SKIDS OF AN UPPER CONTAINER MUST BE PROPERLY ALIGNED WITH THE STACKING PINS OF A LOWER CONTAINER TO PRECLUDE UNDUE STRESS ON THE SHOCK ABSORBERS AND FRAME AND TO PROVIDE FOR STABILITY OF THE STACK.
- U. THE SHOCK ISOLATOR (RUBBER) SKIDS OF A MISSILE/LAUNCH POD ASSEMBLY WILL NOT ADEQUATELY SUPPORT A STACK OF TWO ASSEMBLIES. THEREFORE, "POD SUPPORT" DUNNAGE MUST BE INSTALLED DIRECTLY BEHIND THE SKIDS OF THE LOWER CONTAINER(S) IF STACKS ARE TWO OR MORE HIGH. A "POD SUPPORT" IS NOT REQUIRED FOR A ONE-HIGH ASSEMBLY STACK, OR BETWEEN THE TOP TWO ASSEMBLIES OF STACKS MORE THAN ONE HIGH.

#### **REVISIONS**

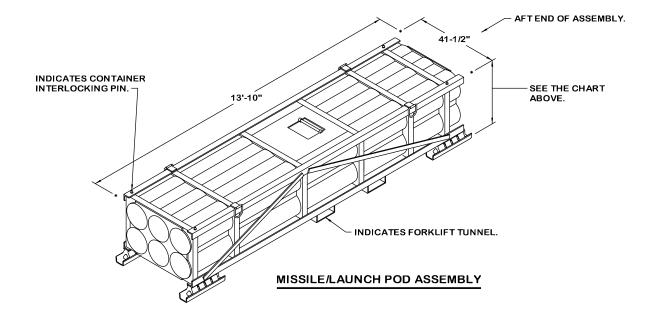
REVISION NO. 1, DATED MARCH 1994, CONSISTS OF:

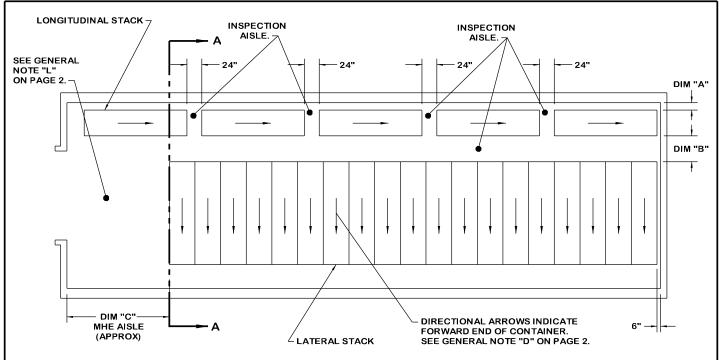
- 1. UPDATING DRAWING FORMAT.
- 2. REVISING GENERAL NOTES "G" AND "L" AND ADDING GENERAL NOTE "S" ON PAGE 2.
- 3. ADDING ALTERNATIVE STORAGE PROCEDURES ON PAGES 6 AND 7 FOR INCREASED STORAGE IN 81'-0", 60'-8" AND 40'-4" L X 26'-6" W X 12'-9" H IGLOO MAGAZINES AND CHANGING SUBSEQUENT PAGE NUMBERS ACCORDINGLY.

**REVISION NO. 2, DATED MAY 2004, CONSISTS OF:** 

- 1. ADDING "GROSS WEIGHT, DIMENSIONS AND CUBE OF GUIDED MISSILE LAUNCHING ASSEMBLIES, ON PAGE 3, WHICH INCLUDES NEW WEIGHTS FOR THE M/LPA.
- 2. UPDATING THE DRAWING FORMAT.
- 3. REDESIGNING STORAGE LAYOUTS TO INCLUDE 24" INSPECTION AISLES AND THE MORE COMMON TYPE BLOCK IA AND II ATACMS ASSEMBLIES.

		SS WEIGHT DED MISSIL	,	•			
NSN	DODIC	TYPE	LENGTH	WIDTH	HEIGHT	WEIGHT (LBS)	CUBE (CU FT)
1427-00-000-0195	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	5, 105	129. 7
1427-01-274-3904	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	4, 814	129. 7
1427-01-386-3113	PL81	BLOCK I	13' -10"	41-1/2"	32-5/8"	5, 111	129. 7
1427-01-398-6538	PL38	BLOCK IA	13' -10"	41-1/2"	33-3/4"	4, 640	134. 6
1427-01-463-0001	PL38	BLOCK IA	13' -10"	41-1/2"	33-3/4"	4, 640	134.6
1427-01-439-8639	PL47	BLOCK II	13' -10"	41-1/2"	33-3/4"	4, 985	134.6
1427-01-481-1620	N/A	TACMS 2K	13' -10"	41-1/2"	33-3/4"	4, 985	134.6
1427-01-480-8516	PL65	IA UNITARY	13' -10"	41-1/2"	33-3/4"	4, 682	134. 6

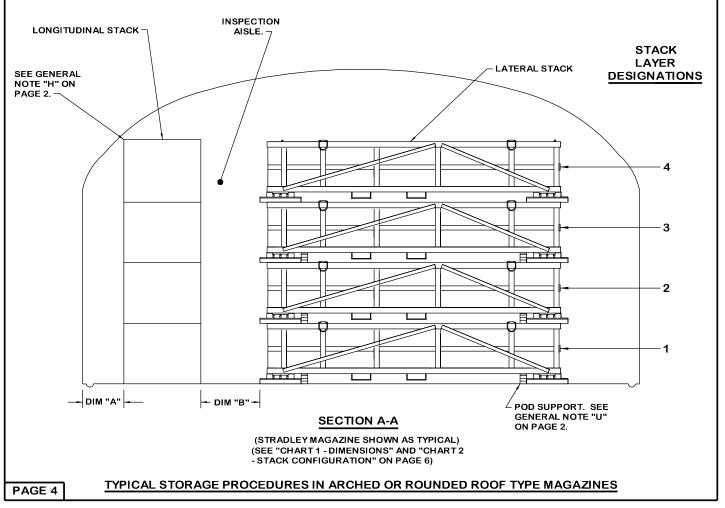




#### **PLAN VIEW**

(STRADLEY MAGAZINE SHOWN AS TYPICAL)

NOTE: FOR IDENTIFICATION OF LETTERED DIMENSIONS REFER TO CHART 1 ON PAGE 6.



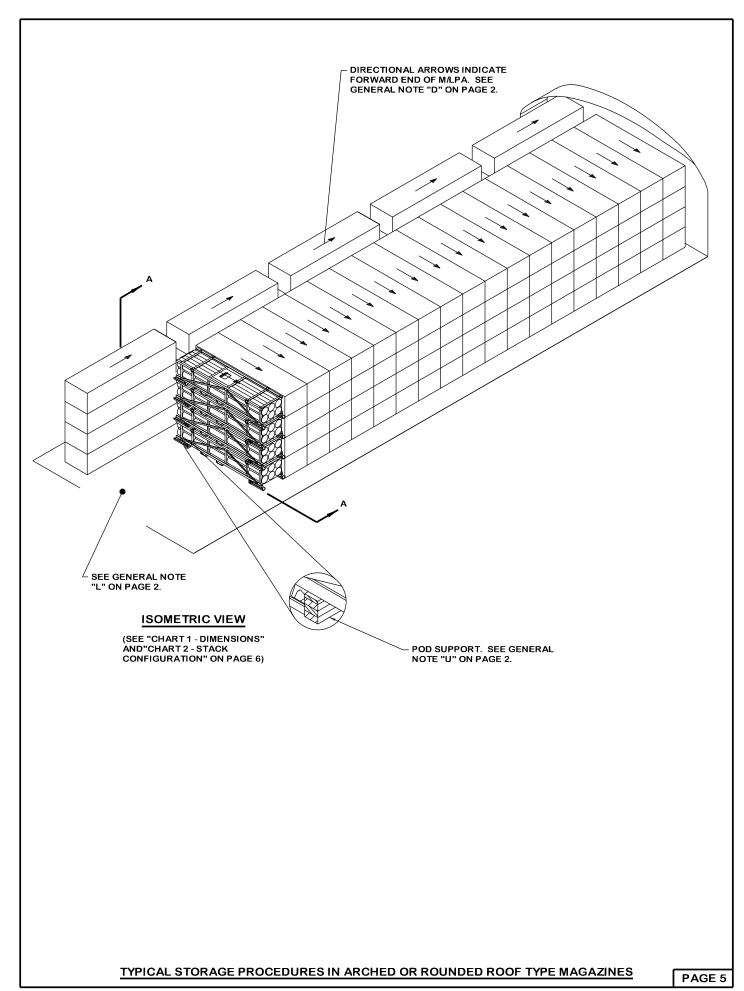
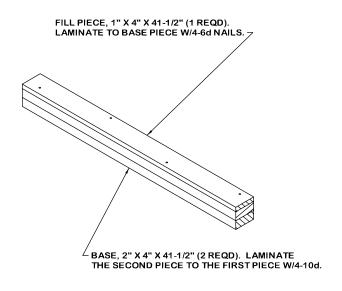
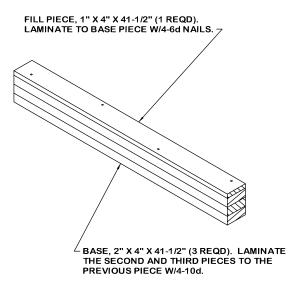


		CHART 1 - DIMI	ENSIONS			
MAGAZINE			MAGAZINE TYPE			
DIMENSIONS	IGL00	ARCH 12' 26'-6" 25'-0"	ARCH 11'	ARCH 10'	OVAL ARCH STRADLEY	STEEL ARCH
LENGTH WIDTH HEIGHT	40' -4"   60' -8"   81' -0" 26' -6" 12' -9"	81' -2" 40' -0" 80' -0" 26' -6" 25' -0" 25' -0" 12' -1-3/4"	40' -0"   80' -0" 25' -0" 11' -0"	40' -0"   80' -0" 25' -0" 11' -0"	89' -0" 24' -10" 25' -0" 14' -5" 14' -0"	59' -0" 89' -0" 25' -0" 24' -11" 13' -10" 13' -6"
DIMENSIONS		CONTAI	NER SPACING DIM	MENSIONS		
DIM "A" DIM "B" (INSPECT. AISLE) DIM "C" (MHE AISLE)	30" 24" 12' -2"   11' -9"   11' -4"	18" 18" 24" 24" 10' -10" 11' -10" 13' -9"	18" 24" 11'-2"   13'-1"	18" 24" 11' -10"   13' -9"	30" 32" 24" 24" 12'-5" 13'-10"	18" 24" 24" 12' -5"

				CH	IART 2	- STAC	CONF	IGURA	TION					
MAGAZINE TYPE														
QUANTITY	40' -4"L	IGL00 60'-6"L	81' -0"L	ARCH 12' 26'-6"W	ARCH 12' 40' -0"L	X 25'W 80'-0"L	ARCH 40' -0''L	11' 80' -0"L	ARCI 40' -0"L	1 10'   80' -0"L	OVAL ARCH	STRADLEY	STEEL 59' -0"L	ARCH 89' –0''L
PER MAGAZINE	28	50	70	65	28	67	18	43	18	43	108	96	45	76
					LO	NGITUDI	NAL ST	ACK CO	NFIGURA	ATION				
LAYERS PER STACK		2		1	ã.	2	1	L	-	1	4	4	2	2
NUMBER OF STACKS	2	4	5	5	2	5	2	5	2	5	5	5	3	5
STACK TOTAL	4	8	10	5	4	10	2	5	2	5	20	20	6	10
					LA	TERAL S	TACK C	ONFIGU	RATION					
L AYERS PER STACK		3		3		3	Ž	2	2	2	4	4	3	3
NUMBER OF STACKS	8	14	20	20	8	19	8	19	8	19	22	19	13	22
STACK TOTAL	24	42	60	60	24	57	16	38	16	38	88	76	39	66

					-	LADT		05.14	ATERIA						
-		Ι			C	HART 3	3 - BILL			AL.					
	MAGAZINE				ı	4D.CU. 131		MAGAZI	NE TYPE			0.44	ı	ī	
	DIMENSIONS		IGL00		26' -6"	ARCH 12' 25'	-0"	ARCH	11'	ARCH	10'	OVAL ARCH	STRADLEY	STEEL	. ARCH
	LENGTH WIDTH HEIGHT	40' -4"	60' -8" 26' -6" 12' -9"	81' -0"	81' -2" 26' -6" 1	40' -0" 25' -0" 2' -1-3/	80' -0" 25' -0" 4"	40' -0" 25' 11'	80' -0" -0" -0"	25'	80' -0" -0" -0"	89' -0" 24' -10" 14' -5"	80' -0" 25' -0" 14' -0"	59' -0" 25' -0" 13' -10"	24' -11"
				POD SUP	PORT QUA	NTITIES	- BASEI	ON "CH	ART 2 -	STACK (	CONFIGUR	ATION" (	ON PAGE 6	j	
		36	64	90	80	36	86	16	36	16	36	162	144	48	98
	DESCRIPTION		MATERIAL QUANTITIES FOR ATACMS BLOCK I												
2" X	4" LINEAR FEET BOARD FEET	249' 166'	443' 296'	623' 415'	554' 369'	249' 166'	595' 397'	111' 74'	249' 166'	111' 74'	249' 166'	1121' 747'	996' 664'	332' 222'	678 <b>'</b> 452 <b>'</b>
1" X	4" LINEAR FEET BOARD FEET	125' 42'	222' 74'	312' 104'	277' 93'	125' 42'	298' 100'	56' 19'	125' 42'	56' 19'	125' 42'	561' 187'	498' 166'	166' 56'	339' 113'
	6d NAILS 10d NAILS	144	256	360	320	144	344	64	144	64	144	648	579	192	392
	DESCRIPTION					MATERIA	AL QUANT	ITIES F	OR ATACM	IS BLOCK	IA AND	II			
2" x	4" LINEAR FEET BOARD FEET	374' 249'	664' 443'	934' 623'	830' 554'	374' 249'	893' 595'	166' 111'	374' 249'	166' 111'	374' 249'	1681' 1121'	1494' 996'	498' 332'	1017' 678'
1" X	4" LINEAR FEET BOARD FEET	125' 42'	222 <b>'</b> 74'	312' 104'	277' 93'	125' 42'	298' 100'	56' 19'	125' 42'	56' 19'	125' 42'	561' 187'	498' 166'	166' 56'	339' 113'
	6d NAILS 10d NAILS	144 288	256 512	360 720	320 640	144 288	344 688	64 128	144 288	64 128	144 288	648 1296	579 1152	192 384	392 784





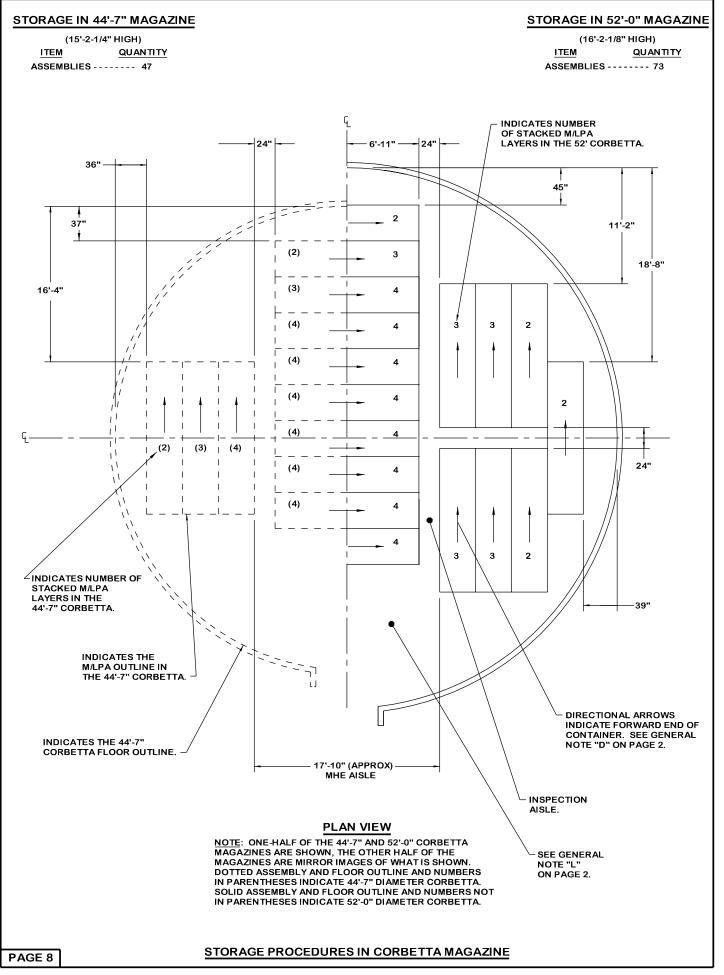
#### POD SUPPORT FOR ATACMS BLOCK I

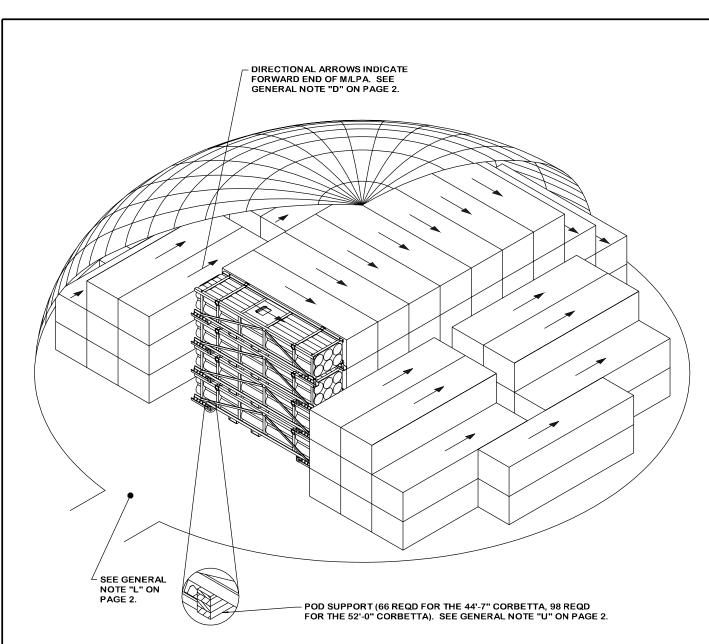
SEE GENERAL NOTE "U" ON PAGE 2.

#### POD SUPPORT FOR ATACMS BLOCK IA AND II

SEE GENERAL NOTE "U" ON PAGE 2.

NOTE: FOR STABILITY PURPOSES IT IS DESIRED THAT THE SKID OF A LOWER ASSEMBLY SUPPORT A PORTION OF THE WEIGHT OF THE ASSEMBLIES ABOVE. THE THICKNESS MAY BE REDUCED BY SUBSTITUTING 5/8" OR THINNER BY 3-1/2" PLYWOOD FOR THE 1" X 4" FILL PIECE. THE THICKNESS MAY BE INCREASED BY ADDING A 1/4" OR THICKER BY 3-1/2" WIDE PLYWOOD PIECE.





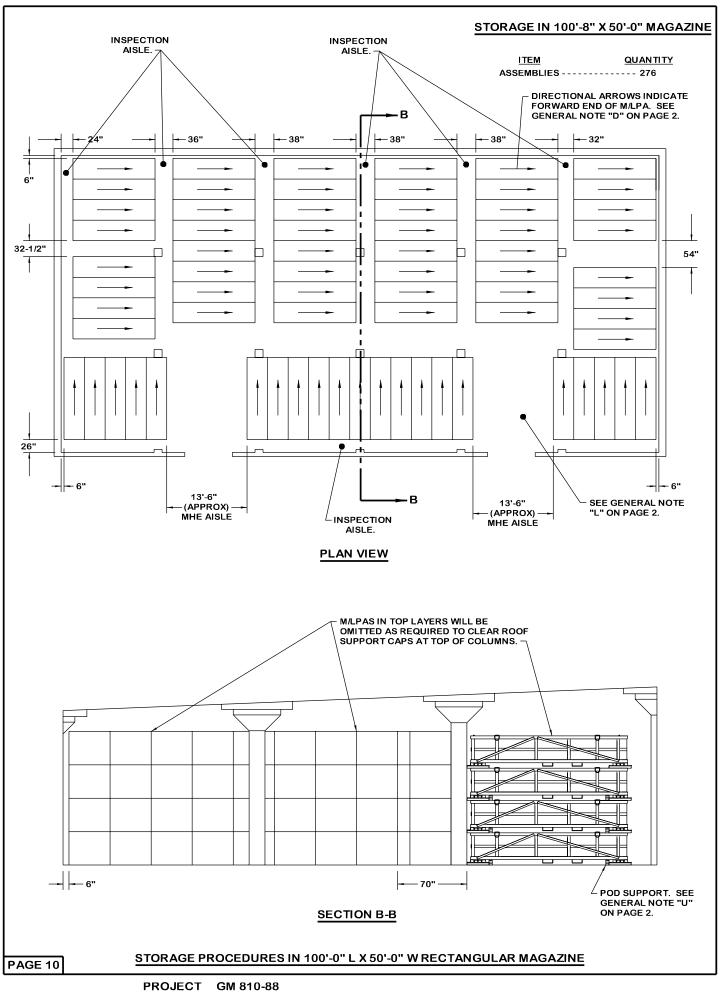
(52'-0" DIA MAGAZINE)

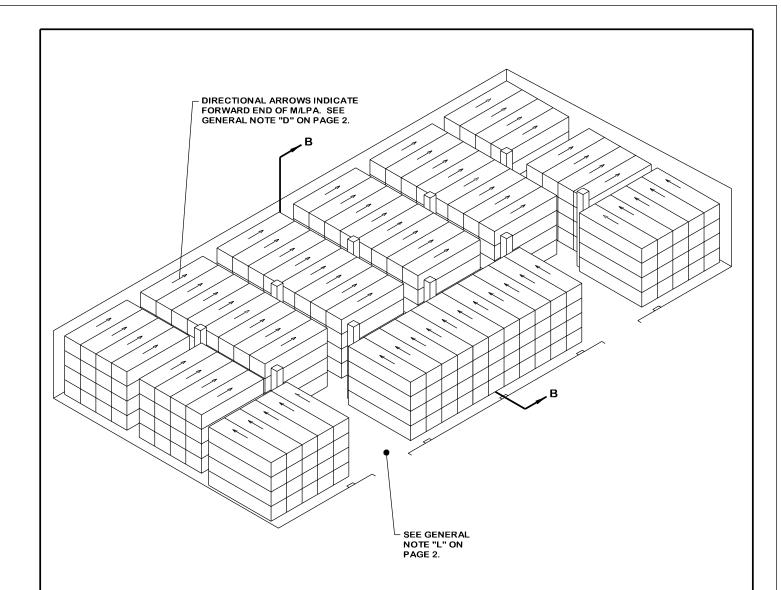
BILL OF MA	TERIAL - 44'-7 66 POD SUPPORTS ATACMS BLOCK I	" CORBETTA
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	229 457	77 305
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	264 264	2 5
AT	TACMS BLOCK IA AND	II
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	229 685	77 457
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	264 528	2 9

BILL OF MA	TERIAL - 52'-0 98 POD SUPPORTS ATACMS BLOCK I	" CORBETTA
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	339 678	113 452
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	392 392	3 7
AT	ACMS BLOCK IA AND	II
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	339 1016	113 678
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	392 784	3 13

STORAGE PROCEDURES IN 52'-0" DIAMETER CORBETTA MAGAZINE

PAGE 9

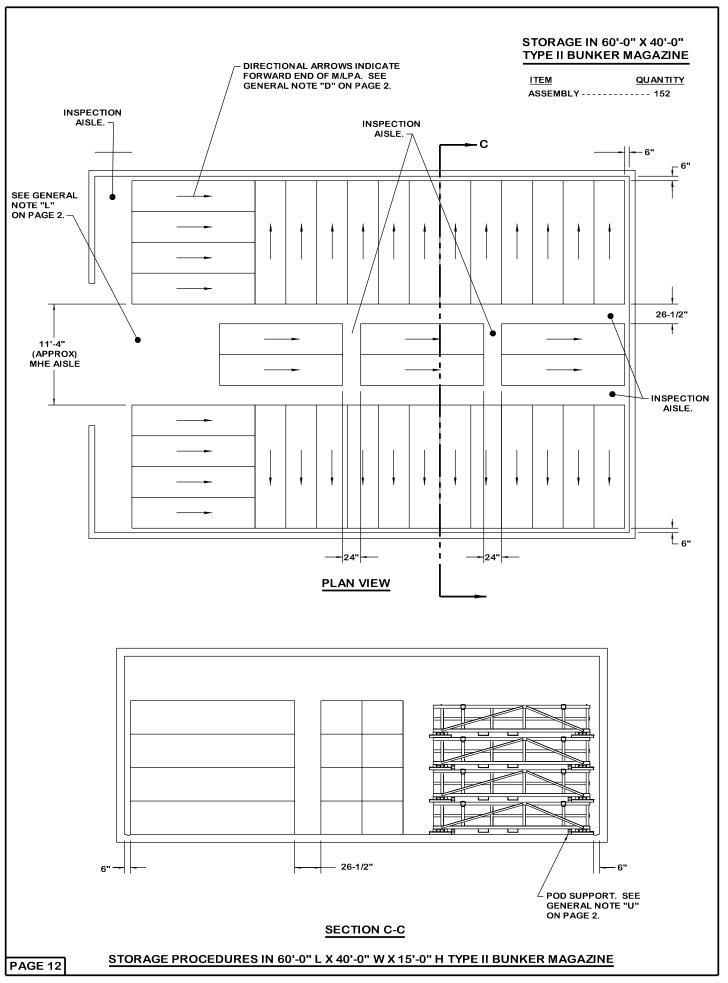


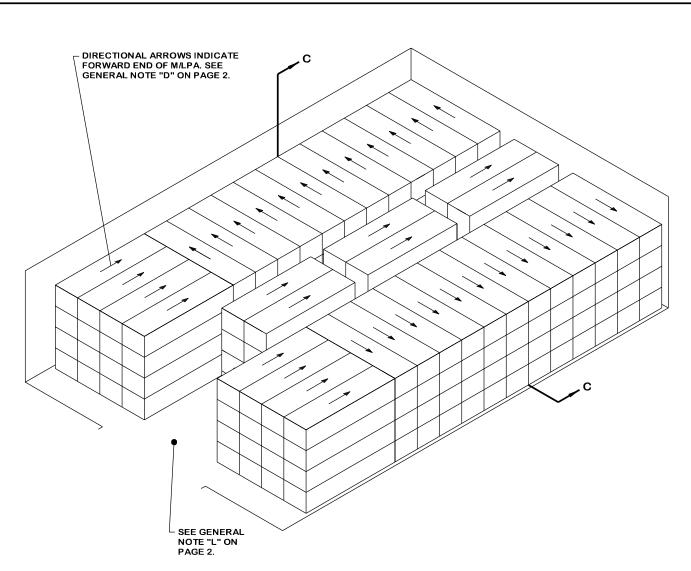


_	ILL OF MATERIA BLOCK I - 414 POD S	-
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	1432 2864	478 1909
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	1656 1656	10 25

_	ILL OF MATERIA K IA AND II - 414	—
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	1432 4296	478 2864
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	1656 3312	10 51

STORAGE PROCEDURES IN 100'-0" L X 50'-0" W RECTANGULAR MAGAZINE

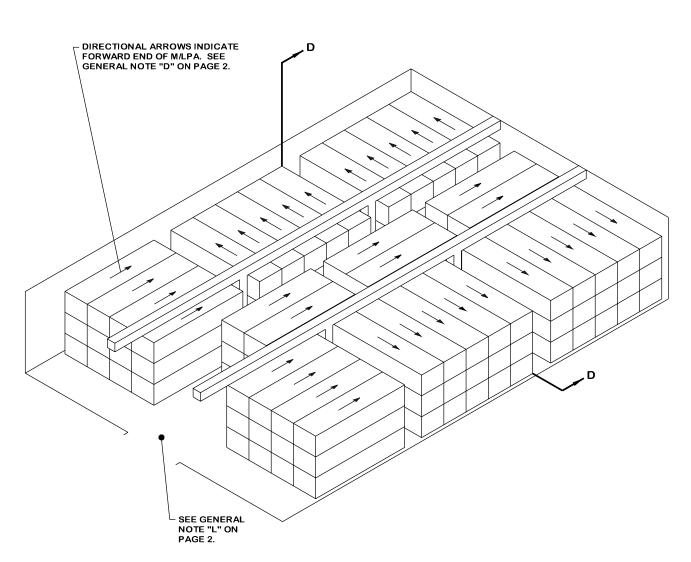




_	ILL OF MATERIA BLOCK I - 228 POD S	-
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	789 1577	263 1052
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	912 912	6 15

_	ILL OF MATERIA K IA AND II - 228	_
LUMBER	LINEAR FEET	BOARD FEET
1" X 4" 2" X 4"	789 2366	263 1577
NAILS	NO. REQD	POUNDS
6d (2") 10d (3")	912 1824	6 29

# STORAGE IN 60'-0" X 40'-0" TYPE III BUNKER MAGAZINE **QUANTITY** ASSEMBLY ----- 102 INSPECTION AISLE. **-** D – 67" –<del>-</del> **- 33-1/2"** SEE GENERAL NOTE "L" ON PAGE 2. 26-1/2" (APPROX) MHE AISLE INSPECTION AISLE. DIRECTIONAL ARROWS INDICATE FORWARD END OF M/LPA. SEE GENERAL NOTE "D" ON PAGE 2. **PLAN VIEW** – D POD SUPPORT SEE GENERAL NOTE "U" ON PAGE 2. SECTION D-D STORAGE PROCEDURES IN 60'-0" L X 40'-0" W X 11'-0" H TYPE III BUNKER MAGAZINE PAGE 14



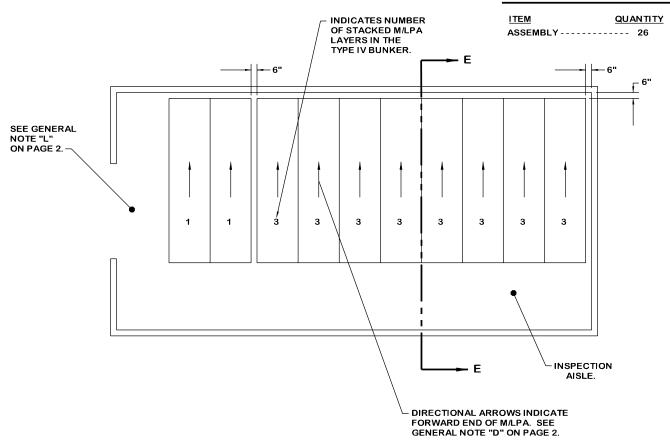
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BILL OF MATERIAL ATACMS BLOCK I - 136 POD SUPPORTS			
LUMBER	LINEAR FEET	BOARD FEET	
1" X 4" 2" X 4"	471 941	157 628	
NAILS	NO. REQD	POUNDS	
6d (2") 10d (3")	544 544	4 9	

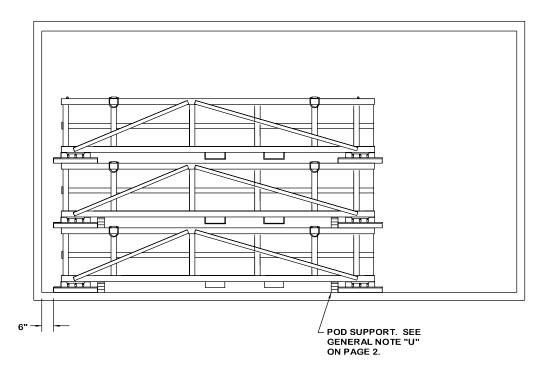
BILL OF MATERIAL ATACMS BLOCK IA AND II - 136 POD SUPPORTS				
LUMBER	LINEAR FEET	BOARD FEET		
1" X 4" 2" X 4"	471 1411	157 941		
NAILS	NO. REQD	POUNDS		
6d (2") 10d (3")	544 1088	4 17		

STORAGE PROCEDURES IN 60'-0" L X 40'-0" W X 11'-0" H TYPE III BUNKER MAGAZINE

## STORAGE IN 40'-0" X 20'-0" TYPE IV BUNKER MAGAZINE



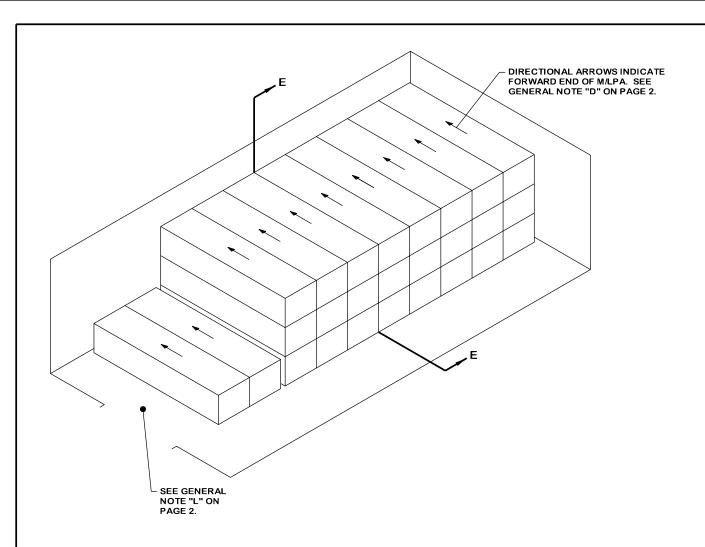
### **PLAN VIEW**



### SECTION E-E

STORAGE PROCEDURES IN 40'-0" L X 20'-0" W X 11'-0" H TYPE IV BUNKER MAGAZINE

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BILL OF MATERIAL ATACMS BLOCK I - 32 POD SUPPORTS			
LUMBER	LINEAR FEET	BOARD FEET	
1" X 4" 2" X 4"	111 222	37 148	
NAILS	NO. REQD	POUNDS	
6d (2") 10d (3")	128 256	1 2	

BILL OF MATERIAL ATACMS BLOCK IA AND II - 32 POD SUPPORTS				
LUMBER	LINEAR FEET	BOARD FEET		
1" X 4" 2" X 4"	111 332	37 222		
NAILS	NO. REQD	POUNDS		
6d (2") 10d (3")	128 256	1 4		

STORAGE PROCEDURES IN 40'-0" L X 20'-0" W X 11'-0" H TYPE IV BUNKER MAGAZINE

