STORAGE IN APPROVED MAGAZINES OF JASSM (AGM-158) MISSILES PACKED IN CNU-614/E CONTAINERS

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U.S. ARMY MATERIEL COMMAND DRAWING APPROVED, U.S. ARMY 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 12. **DO NOT SCALE** SEPTEMBER 2004 **LAURA FIEFFER** ENGINEER OR **TECHNICIAN** REV. APPROVED BY ORDER OF COMMANDING GENERAL, TRANSPORTATION U.S. ARMY MATERIEL COMMAND ENGINEERING DIVISION CLASS DIVISION VALIDATION. DRAWING ENGINEERING DIVISION SP1-3-4-19 8780 48 ENGINEERING 14-22J47 DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCOR-DANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE STORAGE PROCEDURES SPECIFIED HEREIN ARE APPLICABLE TO JASSM MISSILES PACKED IN CNU-614/E CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH MISSILE ITEMS. SEE PAGE 3 AND LOCKHEED MARTIN INTEGRATED SYSTEMS DRAWING 79601200 FOR DETAILS OF THE CONTAINER.
- C. 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 CONTAINERS 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.
- D. 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.
- E. CONTAINERS MUST NOT CONTACT THE WALLS OF A MAGAZINE. THEREFORE, CONTAINERS WILL BE STORED A MINIMUM OF 6" FROM THE SIDEWALL OR CURVATURE OF AN ARCHED OR ROUNDED MAGAZINE, AND A MINIMUM OF 3" FROM THE WALLS OF A RECTANGULAR MAGAZINE. TO PROVIDE FOR THIS MANDATORY CLEARANCE REQUIREMENT, UNITS MAY BE ELIMINATED FROM THE DEPICTED STORAGE PATTERN AS NECESSARY.
- F. AISLE DIMENSIONS SHOWN FOR STORAGE PROCEDURES IN MAGAZINES MAY BE ADJUSTED TO SUIT LOCAL CONDITIONS, VARIATIONS IN CONTAINER DIMENSIONS, AND/OR AVAILABLE MATERIALS HANDLING EQUIPMENT (MHE).
- G. THE MAXIMUM FLOOR LOAD FOR A MAGAZINE AS PRESCRIBED BY LOCAL STANDARDS WILL NOT BE EXCEEDED.
- H. IF AVAILABLE MHE PERMITS, ADDITIONAL CONTAINERS MAY BE STORED WITHIN THE MHE AREA AND/OR OTHER AVAILABLE AREA OF THE MAGAZINE.
- J. IF THE QUANTITY OF CONTAINERS 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.
- K. THE HEIGHT OF THE PACKAGE GUARD ON SOME FORKLIFT TRUCKS MAY NOT PERMIT PLACEMENT OF SOME TOP LAYER UNITS IN THE STACKS SHOWN IN THE STORAGE VIEWS HEREIN, UNLESS TWO UPPER CONTAINERS 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 CONTAINERS AS ONE LIFT.
- L. PORTIONS OF THE MAGAZINES, SUCH AS SIDEWALLS, ENDWALLS, AND ROOFS HAVE NOT BEEN SHOWN IN THE STORAGE VIEWS FOR CLARITY PURPOSES.

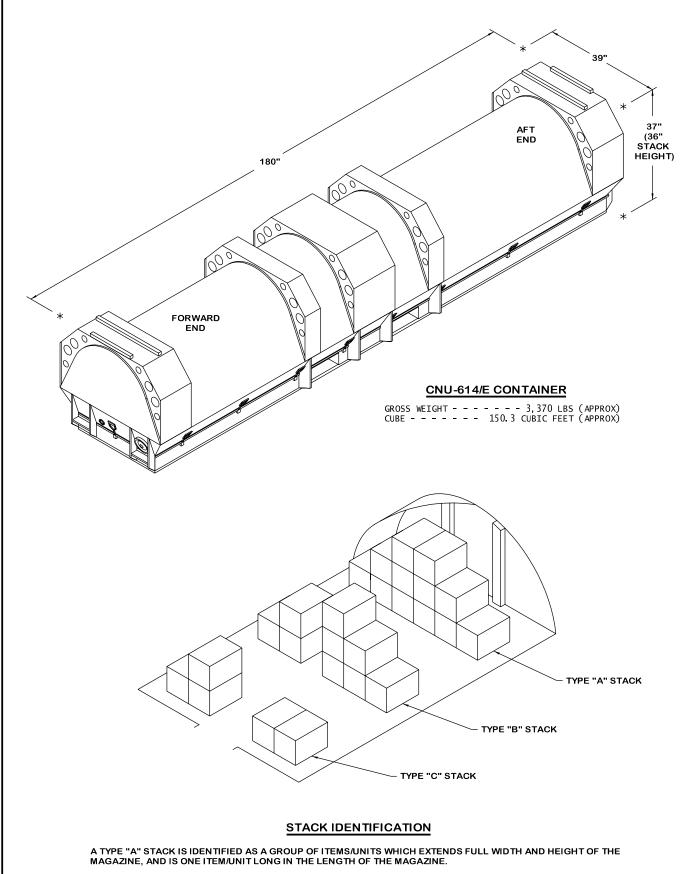
(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- M. THE USE OF NOMINAL SIZE 1" X 6" X 32" OR 2" X 6" X 32" FLOOR DUNNAGE UNDER EACH END OF THE FIRST-LAYER CONTAINER IS OPTIONAL, AND IS SHOWN ON PAGES 4 THROUGH 6 AS AN EXAMPLE ONLY. THE PURPOSE OF FLOOR DUNNAGE IS TO HELP KEEP THE RUNNERS OF A CONTAINER DRY, THUS AIDING IN PREVENTING DETERIORATION DUE TO CORROSION. THEREFORE, FLOOR DUNNAGE SHOULD BE USED WHEN STORING IN A MAGAZINE THAT IS KNOWN TO HAVE A DAMP FLOOR. IN IGLOO, ARCH TYPE AND STRADLEY MAGAZINES THAT HAVE FLOORS SLOPING TOWARD THE SIDEWALLS, THE DEPICTED STORAGE PATTERNS INCLUDE CONTAINER STACKS THAT STRADDLE THE RIDGE OF THE FLOOR AT THE CENTER OF THE MAGAZINE. AT THESE LOCATIONS 2" THICK MATERIAL MUST BE USED FOR FLOOR DUNNAGE UNDER THESE STACKS TO PREVENT THE BOTTOM OF THE CONTAINERS FROM CONTACTING THE CONCRETE FLOOR. SHIM MATERIAL OF VARYING THICKNESSES OR THICKER FLOOR DUNNAGE MAY BE USED AS REQUIRED UNDER THE LOAD BEARING LOCATIONS AT THE ENDS OF THE FIRST LAYER CONTAINERS TO ACHIEVE SOUND AND ACCEPTABLE STABLE STACKS. SEE THE "FLOOR DUNNAGE DETAIL" ON PAGE 12 AND THE VIEWS ON PAGES 4 THROUGH 6 FOR EXAMPLES.
- N. CONTAINERS PRESENTLY STORED IN ACCORDANCE WITH A PRIOR APPROVED DRAWING NEED NOT BE RE-STORED SOLELY TO CONFORM TO THE PROCEDURES SPECIFIED IN THIS DOCUMENT.
- O. OTHER COMPATIBLE ITEMS MAY BE STORED IN A MAGAZINE THAT IS PARTIALLY FILLED WITH THE DESIGNATED ITEM.
- P. WHEN LOCAL STORAGE CONDITIONS ARE SUCH THAT AN AMMUNITION STORAGE MAGAZINE NET EXPLOSIVE WEIGHT LIMIT WILL BE REACHED BEFORE ALL AVAILABLE STORAGE SPACE WILL BE UTILIZED, A COMBINATION OF THE VARIOUS STORAGE PATTERNS DELINEATED HEREIN MAY BE USED IN LIEU OF BLOCK STORAGE PATTERNS TO FACILITATE INVENTORY, INSPECTION, THE USE OF MATERIAL HANDLING EQUIPMENT, SURVEILLANCE, ETC., OF THE AMMUNITION TO BE STORED WITHIN THE MAGAZINE.
- Q. 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.
- R. 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 25.4MM, AND ONE POUND EQUALS 0.454 KG.

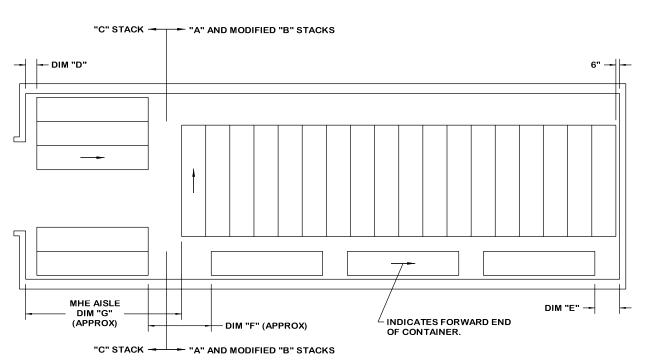
MATERIAL SPECIFICATIONS

<u>LUMBER</u> - - - - - - : SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20.



A TYPE "B" STACK IS IDENTIFIED AS A GROUP OF ITEMS/UNITS WHICH EXTENDS FULL WIDTH AND HEIGHT OF THE MAGAZINE, AND IS ONE ITEM/UNIT LONG, BUT HAS AN AISLE AT OR NEAR THE CENTER OF THE WIDTH OF THE STACK. THE "B" STACKS SHOWN IN THIS DRAWING HAVE BEEN MODIFIED TO ELIMINATE THE PORTION ON ONE SIDE OF THE MAGAZINE.

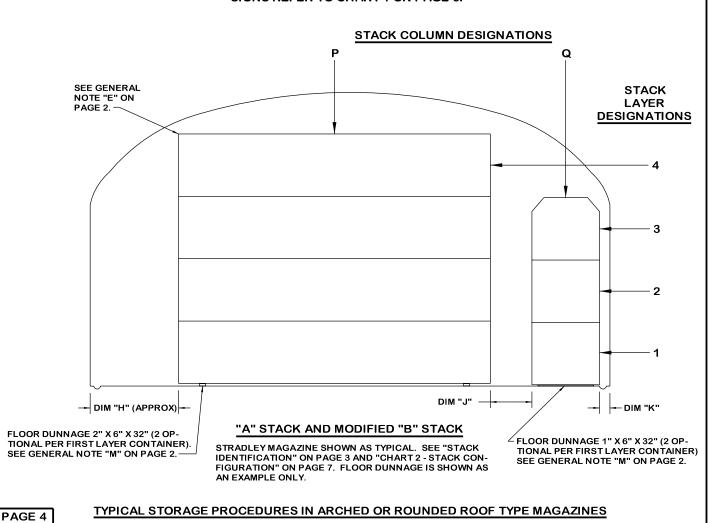
A TYPE "C" STACK IS IDENTIFIED AS A GROUP OF ITEMS/UNITS WHICH IS ONE ITEM/UNIT LONG AND CONSISTS OF PARTIAL STACKS ON EACH SIDE OF THE MAGAZINE, USUALLY ONE ITEM/UNIT HIGH ON ONE SIDE OF THE MAGAZINE.



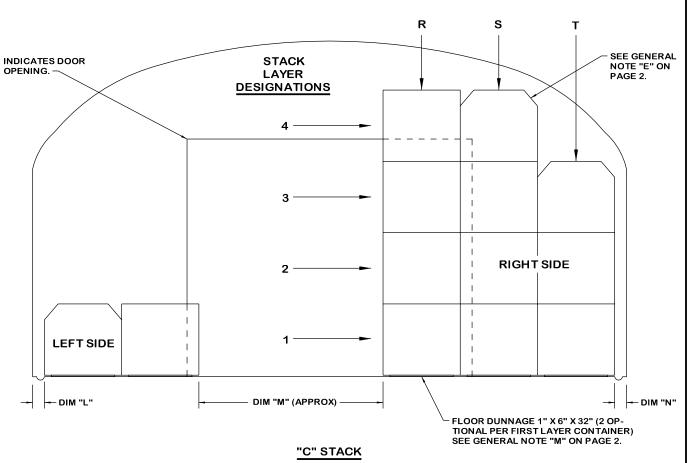
PLAN VIEW

(STRADLEY MAGAZINE SHOWN AS TYPICAL)

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



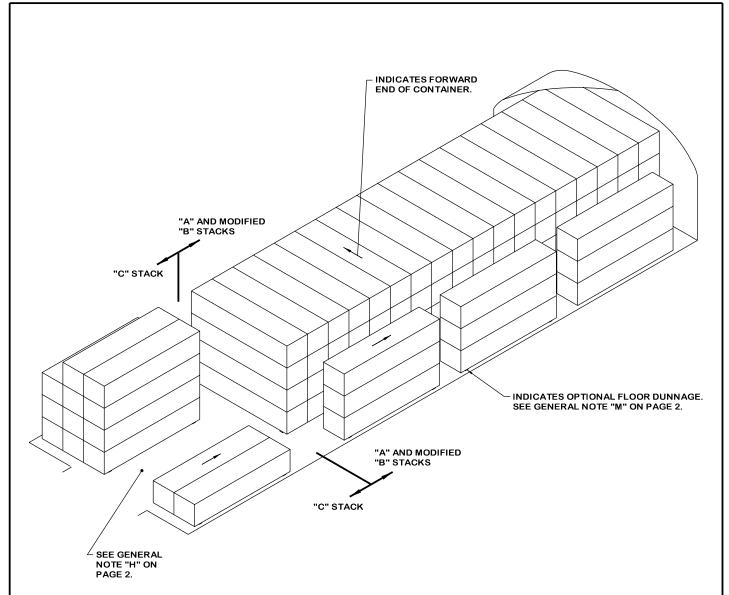
STACK COLUMN DESIGNATIONS



STRADLEY MAGAZINE SHOWN AS TYPICAL. SEE "STACK IDENTIFICATION" ON PAGE 3 AND "CHART 2 - STACK CONFIGURATION" ON PAGE 7. FLOOR DUNNAGE IS SHOWN AS AN EXAMPLE ONLY.

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

TYPICAL STORAGE PROCEDURES IN ARCHED OR ROUNDED ROOF TYPE MAGAZINES



ISOMETRIC VIEW

STRADLEY MAGAZINE SHOWN AS TYPICAL. FLOOR DUNNAGE IS SHOWN AS AN EXAMPLE ONLY.

CHART 1 - DIMENSIONS											
MAGAZINE	MAGAZINE TYPE										
DIMENSIONS	IGL00	ARCH 12' 26'-6" 25'-0"		ARCH 11'	ARCH 10'	OVAL ARCH STRADLE		y STEEL ARCH			
LENGTH WIDTH HEIGHT	40' -4" 60' -8" 81' -0" 26' -6" 12' -9"	81' -2" 26' -6" 1	40' -0" 80' -0" 25' -0" 25' -0" 2' -1-3/4"	40' -0" 80' -0" 25' -0" 11' -0"	40' -0" 80' -0" 25' -0" 11' -0"	89' -0" 24' -10" 14' -5"	25' -0"	59' -0" 25' -0" 13' -10"	89' -0" 24' -11" 13' -6"		
DIMENSIONS			CONTAINER SPACING DIMENSIONS								
DIM "D" ("C" STACK FRONT) DIM "E" ("B" STACK SPACE) DIM "F" ("B" TO "C" STACK) DIM "G" (MHE AISLE APPROX) DIM "H" ("A" STACK LEFT) DIM "J" (INSPECTION AISLE) DIM "K" ("B" STACK RIGHT) DIM "L" ("C STACK LEFT) DIM "M" (MHE AREA) DIM "N" ("C" STACK RIGHT)	20' -4" 21' -2" 22' -0" 65"	18" 12" NA NA NA 21'-6" 19'-4" 20'-4" 69" 60" NA NA 11" 7" 7" 7'-9" 19" 12"		12" 6" 40" 8' -6" 9' -0" 19' -4" 20' -4" 38" 24" 19" 13" 9' -10" 13"	12" NA NA 20' -0" 21' -0" 60" NA NA 19" 8' -10" 19"	18" 40" 17' -6" 20' -3" 62" 24" 7" 6" 8' -9" 6"	18" 40" 8' - 6" 21' - 0" 51" 24" 6" 6" 7' - 8" 6"	18" 40" 70" 19' -6" 51" 24" 6" 6" 7' -9"	18" 40" 17' - 6" 20' - 3" 50" 24" 6" 6" 7' - 8" 6"		

PAGE 6

TYPICAL STORAGE PROCEDURES IN ARCHED OR ROUNDED ROOF TYPE MAGAZINES

CHART 2 - STACK CONFIGURATION														
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	ARCH 40' -0''L	10' 80' -0"L	OVAL ARCH	STRADLEY	STEEL 59' -0"L	ARCH 89' -0"L
PER MAGAZINE	28	47	66	63	27	63	18	44	17	41	97	94	48	76
	"A" STACK CONFIGURATION													
LAYER	CONTAINERS PER LAYER													
1 2 3 4	1 (P) 1 (P) 1 (P) 0			1 (P) 1 (P) 1 (P) 0			1 (P) 1 (P) 0 0		1 (P) 1 (P) 0		1 (P) 1 (P) 1 (P) 1 (P)	1 (P) 1 (P) 1 (P) 1 (P)	1 (P) 1 (P) 1 (P) 0	
SINGLE STACK TOTAL	3			3			2		2		4	4	3	
STACKS	6	12	18	18	6	18	6	18	6	18	21	18	12	21
"A" STACK TOTAL	18	36	54	54	18	54	12	36	12	36	84	72	36	63
		МО	DIFIED	"B" S7	TACK CO	NFIGUR	ATION -	TO TH	E RIGH	T OF "/	A'' STA	CK		
LAYER														
1 2 3 4	1 (Q) 0 0 0			0 0 0 0			1 (Q) 0 0 0		0 0 0 0		1 (Q) 0 0	1 (Q) 1 (Q) 1 (Q) 0	1 (Q) 0 0 0	
SINGLE STACK TOTAL											1	3		
STACKS	1	2	3	0	0	0	1	3	0	0	3	3	2	3
"B" STACK TOTAL	1	2	3	0	0	0	1	3	0	0	3	9	2	3
"C" STACK CONFIGURATION - LEFT SIDE														
"C" STACK LF TOTAL 2		2			2		2		2	2 2		2		
	"C" STACK CONFIGURATION - RIGHT SIDE													
LAYER	YER CONTAINERS PER LAYER													
1 3 (R-T) 2 2 (R-S) 3 2 (R-S) 4 0				3 (R-T) 2 (R-S) 2 (R-S) 0			2 (R-S) 1 (R) 0 0		2 (R-S) 1 (R) 0 0		3 (R-T) 3 (R-T) 3 (R-T) 2 (R-S)		R-S) R-S)	
"C" STACK RT TOTAL				7			3		3		8	11	8	

SPECIAL NOTES:

- THE FOLLOWING NOTES, CHART 1 ON PAGE 6, AND CHART 2 ON THIS PAGE ARE PRESENTED AS GUIDANCE IN THE SELECTION OF A STORAGE PATTERN, AND IN DETERMINING THE QUANTITY OF CONTAINERS WHICH CAN BE STORED IN THE MAGAZINES LISTED IN THESE CHARTS.
- 2. CHART 1 ON PAGE 6 DESCRIBES THE STORAGE MAGAZINE GENERAL DIMENSIONS AND THE DIMENSIONS OF THE CONTAINER SPACING WITHIN THE MAGAZINES.
- 3. DIMENSIONS "A", "B" AND "C" HAVE BEEN OMITTED TO AVOID CONFUSION WITH STACKS "A", "B" AND "C".
- 4. CHART 2 ON THIS PAGE DETAILS THE QUANTITY OF CONTAINERS IN EACH TYPE OF MAGAZINE AND THE LAYOUT OF THE STACKS. THE CHART SHOWS THE NUMBER OF CONTAINERS IN EACH STACK LAYER AND THE LOCATION OF THE CONTAINERS ON EACH LAYER.
- 5. THE "B" STACKS SHOWN IN THIS DRAWING HAVE BEEN MODIFIED TO ELIMINATE THE PORTION ON ONE SIDE OF THE MAGAZINE.

EXAMPLE:

CHART 2 - "C" STACK CONFIGURATION - RIGHT SIDE MAGAZINE: IGLOO

LAYER NUMBER 1: 3 (R-T) LAYER NUMBER 2: 2 (R-S) LAYER NUMBER 3: 2 (R-S) LAYER NUMBER 4: 0

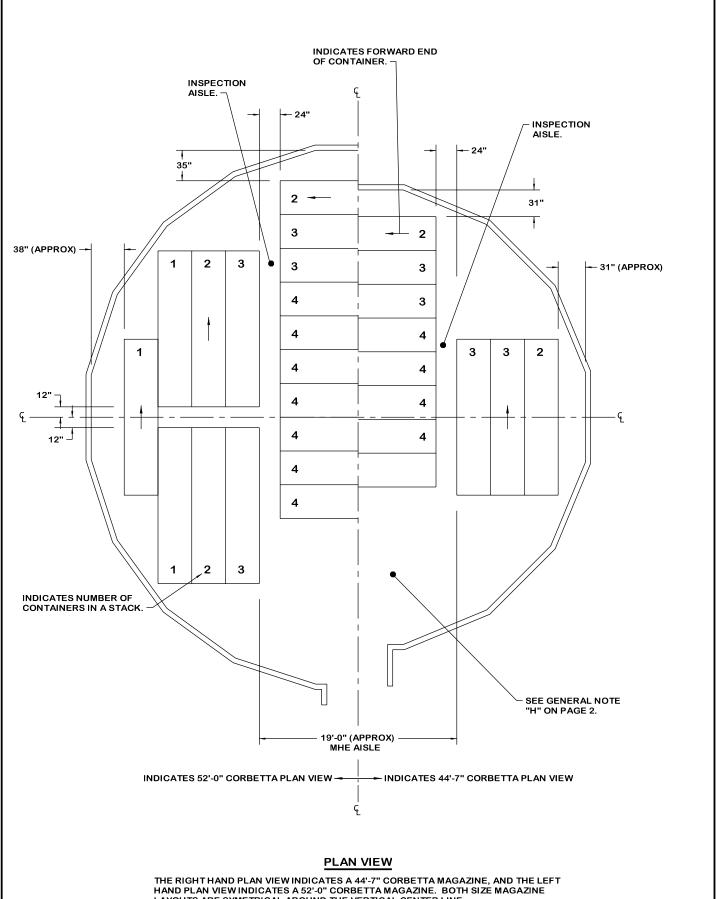
EXPLANATION:

LAYER 1 (BOTTOM LAYER) HAS THREE CONTAINERS FROM THE "R" COLUMN (NEAREST THE DOOR ON THE RIGHT SIDE OF MAGAZINE) TO THE "T" COLUMN (CLOSEST TO WALL ON THE RIGHT).

LAYER 2 (ON TOP OF LAYER 1) HAS TWO CONTAINERS FROM THE "R" COLUMN (NEAREST THE DOOR ON THE RIGHT SIDE OF MAGAZINE) TO THE "S" COLUMN (MIDDLE COLUMN ON THE RIGHT).

LAYER 3 (ON TOP OF LAYER 2) HAS TWO CONTAINERS FROM THE "R" COLUMN (NEAREST THE DOOR ON THE RIGHT SIDE OF MAGAZINE) TO THE "S" COLUMN (MIDDLE COLUMN ON THE RIGHT).

LAYER 4 (ON TOP OF LAYER 3) HAS NO CONTAINERS.



THE RIGHT HAND PLAN VIEW INDICATES A 44'-7" CORBETTA MAGAZINE, AND THE LEFT HAND PLAN VIEW INDICATES A 52'-0" CORBETTA MAGAZINE. BOTH SIZE MAGAZINE LAYOUTS ARE SYMETRICAL AROUND THE VERTICAL CENTER LINE.

STORAGE PROCEDURES IN CORBETTA MAGAZINE

STORAGE IN 52'-0" MAGAZINE STORAGE IN 44'-7" MAGAZINE (16'-2-1/8" HIGH) (15'-2-1/4" HIGH) ITEM **QUANTITY** QUANTITY ITEM CONTAINER ---- 62 **CONTAINER ---- 44**

ISOMETRIC VIEW

A 52'-0" CORBETTA MAGAZINE IS DEPICTED ABOVE. THE OPTIONAL FLOOR DUNNAGE IS NOT SHOWN IN THE VIEW ABOVE, BUT IS SHOWN ON PAEGS 4 THROUGH 6 AS AN EXAMPLE.

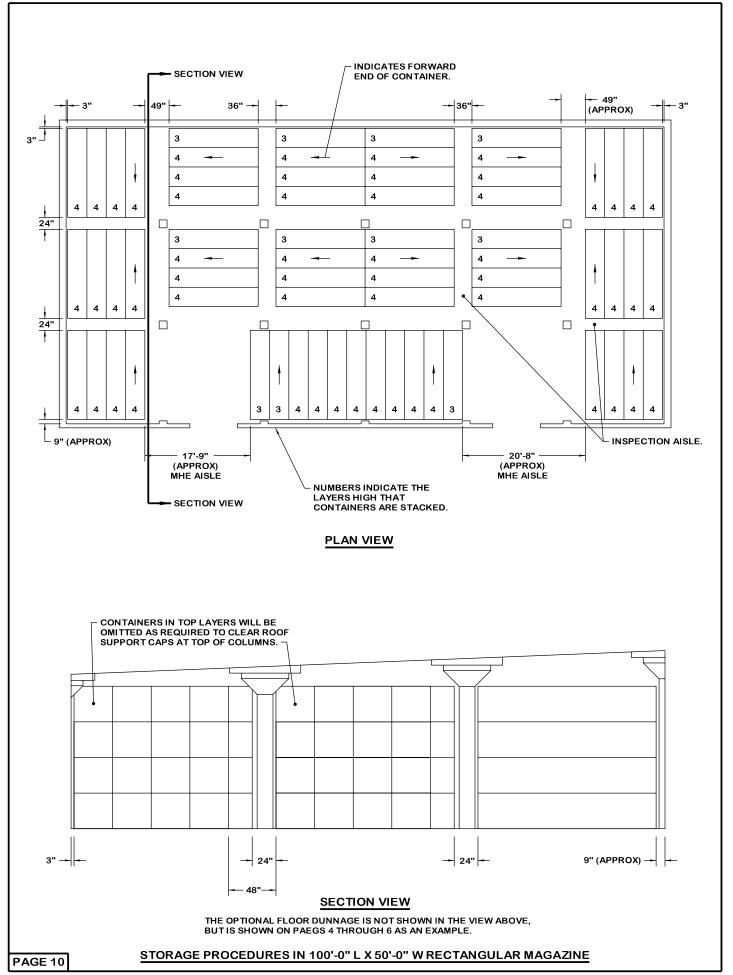
SEE GENERAL NOTE "H" ON PAGE 2.

STORAGE PROCEDURES IN CORBETTA MAGAZINE

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INDICATES FORWARD

END OF CONTAINER.

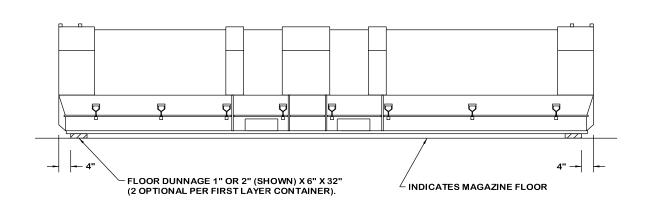


STORAGE IN 100'-8" X 50'-0" MAGAZINE <u>ITEM</u> **QUANTITY** INDICATES FORWARD END OF CONTAINER. CONTAINER ----- 272 SECTION VIEW SEE GENERAL NOTE "H" ON PAGE 2. SECTION VIEW INSPECTION AISLE

ISOMETRIC VIEW

THE OPTIONAL FLOOR DUNNAGE IS NOT SHOWN IN THE VIEW ABOVE, BUT IS SHOWN ON PAGES 4 THROUGH 6 AS AN EXAMPLE.

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



FLOOR DUNNAGE LOCATION

SEE GENERAL NOTE "M" ON PAGE 2.