STORAGE IN APPROVED MAGAZINES OF MINIATURE AIR LAUNCHED DECOY (MALD), ADM-160, PACKED IN CNU-683 SHIPPING AND STORAGE CONTAINERS

INDEX

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND

PISKORIK.DAVID.A.1229069167 — Digitally signed by PISKORIK.DAVID.A.1229069167 DN: cn=PISKORIK.DAVID.A.1229069167, c=US, o=U.S. Government, ou=DoD, PKI, USA Date: 2008.08.25 08:47:27 -05'00'

AMSRD-AAR-AIL-TP(R)

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U.S. ARMY DEFENSE AMMUNITION CENTER

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 2008

ENGINEER OR TECHNICIAN	BASIC	ADIN FELICIANO	
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TRANSPORTATION ENGINEERING DIVISON		FIEFFER.LAURA.A.1230375727 — 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: 2008.07.24 12:36:19 -05'00'	
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CLASS	DIVISION	DRAWING	FILE
19	48	8869	SP1-3-4-14-22J55

PROJECT SP 568-07

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 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 MINIATURE AIR LAUNCHED DECOY, ADM-160, PACKED IN CNU-683 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.

C. THE STORAGE PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO MINIATURE AIR LAUNCHED DECOY, ADM-160, PACKED IN CNU-683 CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS CONTAINER WITH MUNITIONS INSIDE THEM. SEE PAGE 3 AND RAYTHEON DRAWING 2280133 FOR DETAILS OF THE CONTAINER.

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. STORED CONTAINERS MUST NOT CONTACT THE SIDES OF A MAGAZINE. THEREFORE, CONTAINERS MUST BE STORED A MINIMUM OF 6" FROM THE SIDEWALL OR CURVATURE OF THE MAGAZINE AS APPLICABLE. TO PROVIDE FOR THIS MANDATORY CLEARANCE REQUIREMENT, CONTAINERS 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 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. THE HEIGHT OF THE PACKAGE GUARD ON SOME FORKLIFT TRUCKS MAY NOT PERMIT PLACEMENT OF SOME TOP LAYER CONTAINERS 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.

K. THE USE OF "FLOOR DUNNAGE" IS OPTIONAL, ALTHOUGH THE USE OF THIS TYPE OF DUNNAGE IS DELINEATED WITHIN THIS STORAGE PROCEDURE DRAWING. THE PURPOSE OF FLOOR DUNNAGE IS TO KEEP THE BOTTOM OF THE CONTAINER DRY, THUS AIDING IN PREVENTING DETERIORATION. THEREFORE, FLOOR DUNNAGE SHOULD BE USED WHEN STORING IN A MAGAZINE THAT IS KNOWN TO HAVE A "DAMP" FLOOR. ALSO, IN LIEU OF USING ONE-INCH THICK FLOOR DUNNAGE AS SPECIFIED, THE USE OF THICKER FLOOR DUNNAGE MAY BE REQUIRED, AND SHOULD BE USED, TO ACHIEVE THE DESIRED OBJECTIVE. NOTE: SOME VIEWS WITHIN THIS DRAWING WILL NOT DEPICT ALL FLOOR DUNNAGE THAT IS REQUIRED WHEN DUNNAGE IS USED. FLOOR DUNNAGE IS SHOWN AT SOME LOCATIONS TO PROVIDE POSITIONING GUIDANCE. SEE GENERAL NOTE "Q" AT RIGHT.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

L. 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.

M. PORTIONS OF THE MAGAZINES, SUCH AS SIDEWALLS, END WALLS, AND ROOFS HAVE NOT BEEN SHOWN IN THE STORAGE VIEWS FOR CLARITY PURPOSES.

N. 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.

O. OTHER COMPATIBLE ITEMS MAY BE STORED IN A MAGAZINE, WHICH IS PARTIALLY FILLED WITH THE DESIGNATED ITEM.

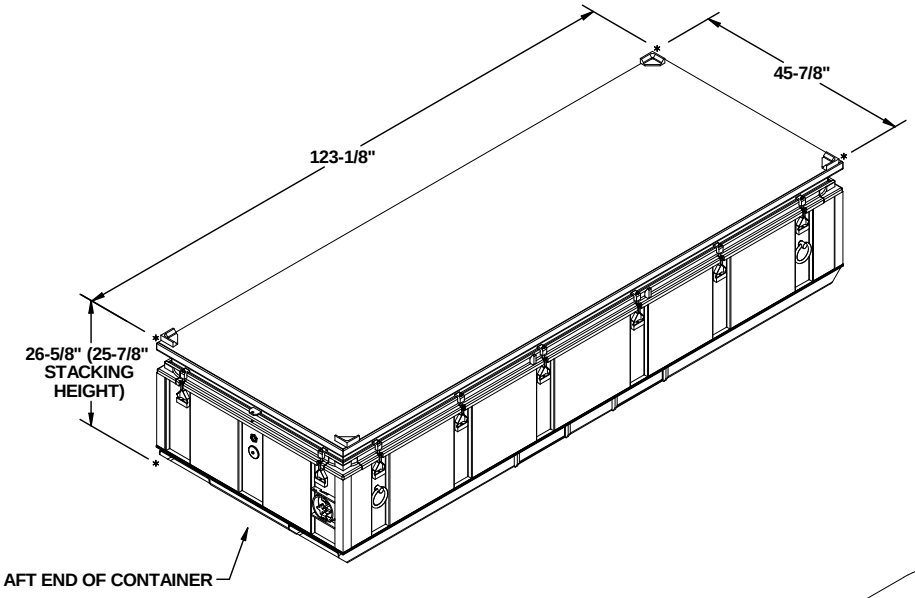
P. CONTAINERS PRESENTLY STORED IN ACCORDANCE WITH A PRIOR APPROVED DRAWING NEED NOT BE RE-STORED SOLELY TO CONFORM TO THE PROCEDURES SPECIFIED IN THIS DOCUMENT.

Q. IN IGLOO, ARCH TYPE AND STRADLEY MAGAZINES WHICH HAVE SLOPING FLOORS, THE DEPICTED STORAGE PATTERNS, IN SOME CASES, INCLUDE CONTAINER STACKS WHICH STRADDLE THE RIDGE OF THE FLOOR AT THE CENTER OF THE MAGAZINE. FLOOR DUNNAGE IN THE FORM OF SHIMS WILL BE USED AS REQUIRED TO ACHIEVE SOUND AND ACCEPTABLE STABLE STACKS. SEE DETAIL ON PAGE 18.

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.

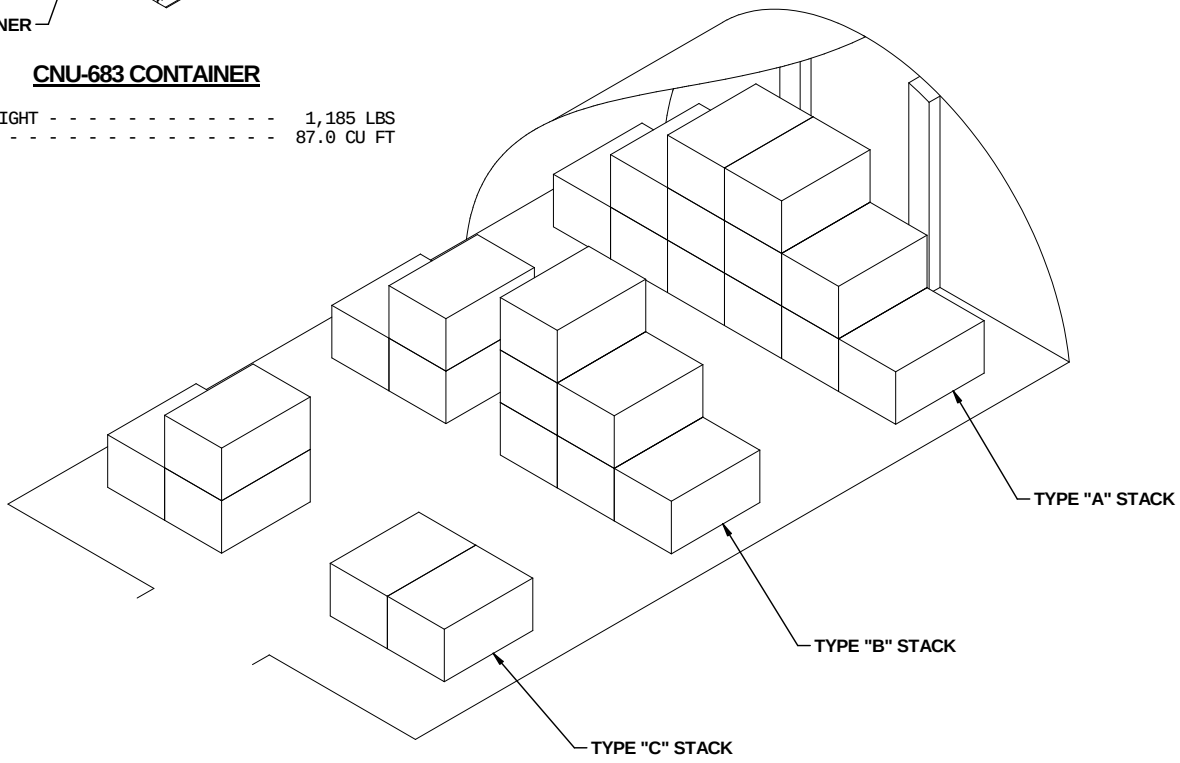
MATERIAL SPECIFICATION

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



CNU-683 CONTAINER

GROSS WEIGHT	1,185 LBS
CUBE	87.0 CU FT

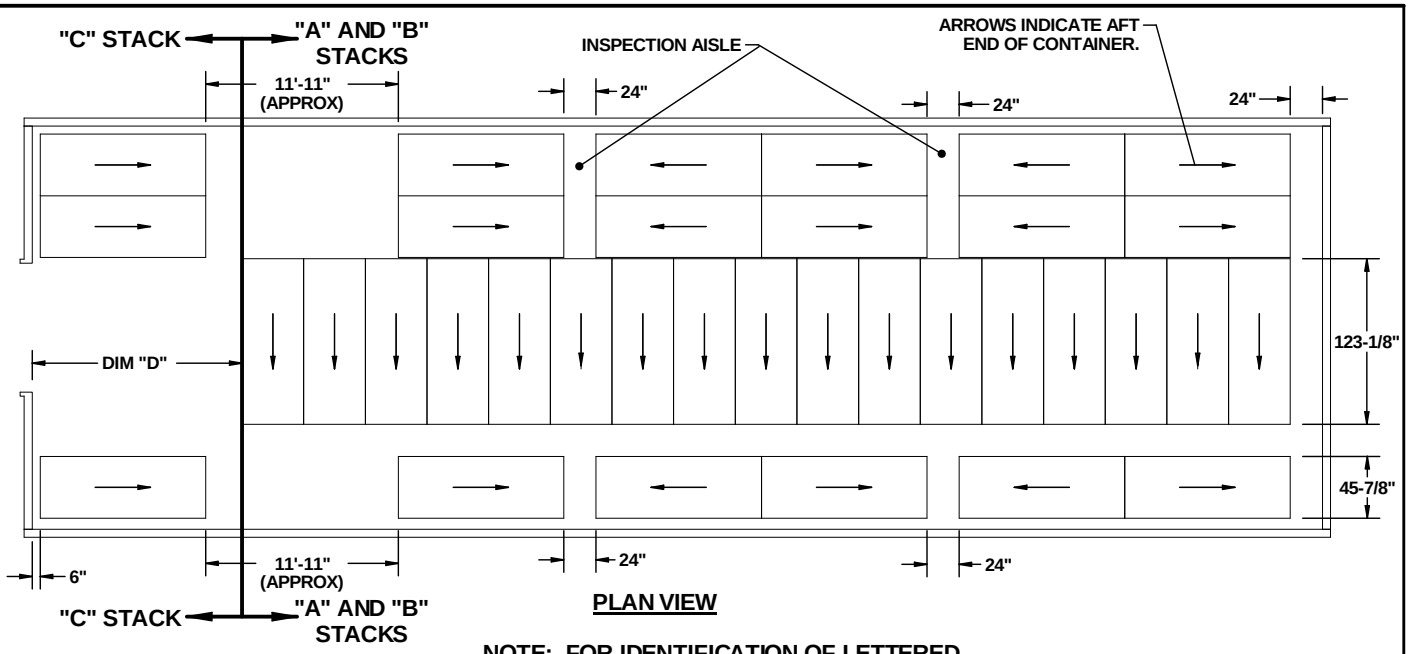


STACK IDENTIFICATION

A TYPE "A" STACK IS IDENTIFIED AS A GROUP OF ITEMS /UNITS WHICH EXTENDS FULL WIDTH AND HEIGHT OF THE MAGAZINE, AND IS ONE ITEM/UNIT LONG IN THE LENGTH OF THE MAGAZINE.

A TYPE "B" STACK IS IDENTIFIED AS A GROUP OF ITEMS/UNITS WHICH EXTEND FULL WIDTH AND HEIGHT OF THE MAGAZINE, AND IS ONE UNIT/ITEM LONG, BUT HAS AN AISLE AT OR NEAR THE CENTER OF THE WIDTH OF THE STACK.

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

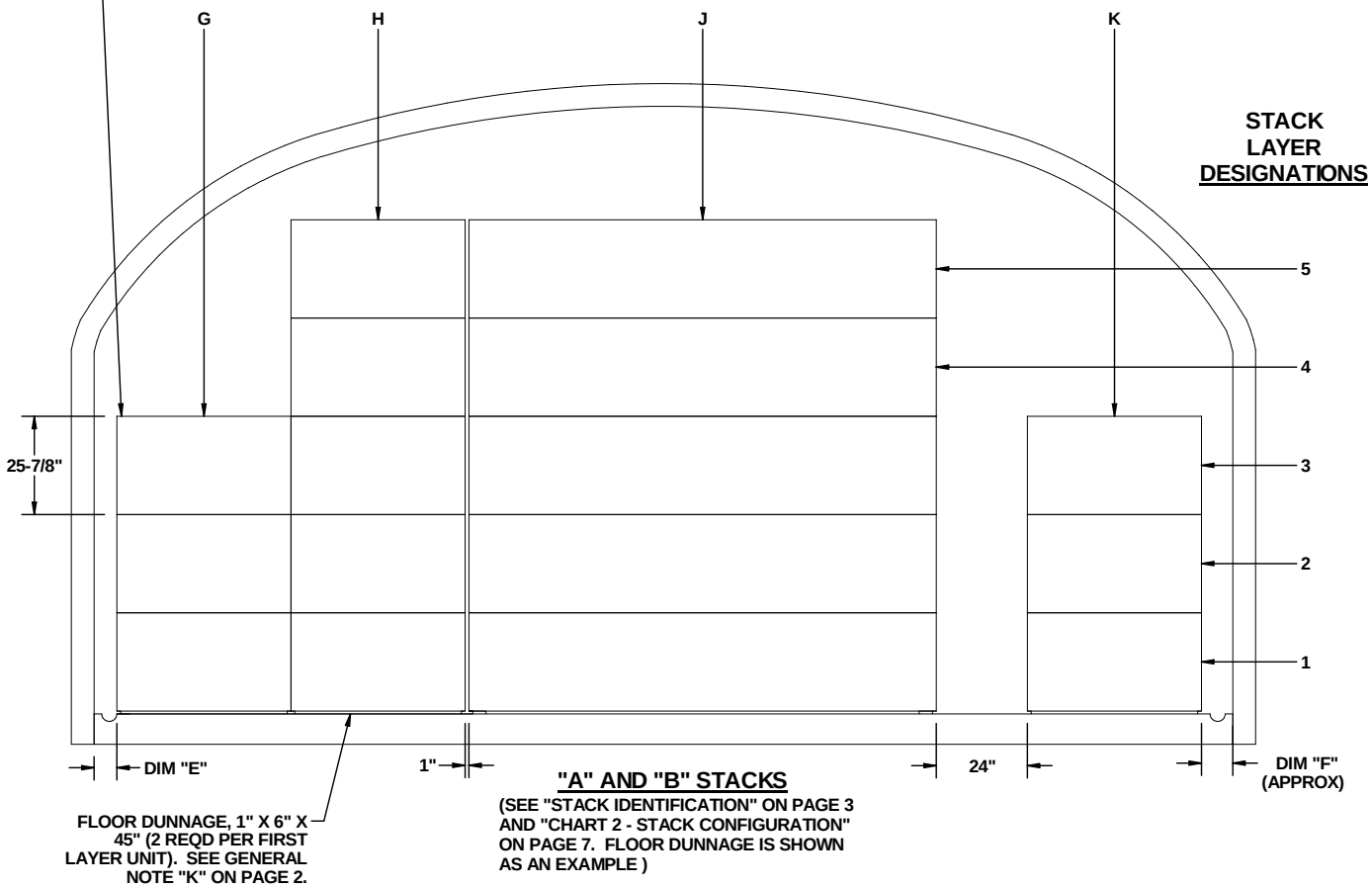


PLAN VIEW

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

SEE GENERAL NOTE "E" ON PAGE 2.

STACK COLUMN DESIGNATIONS

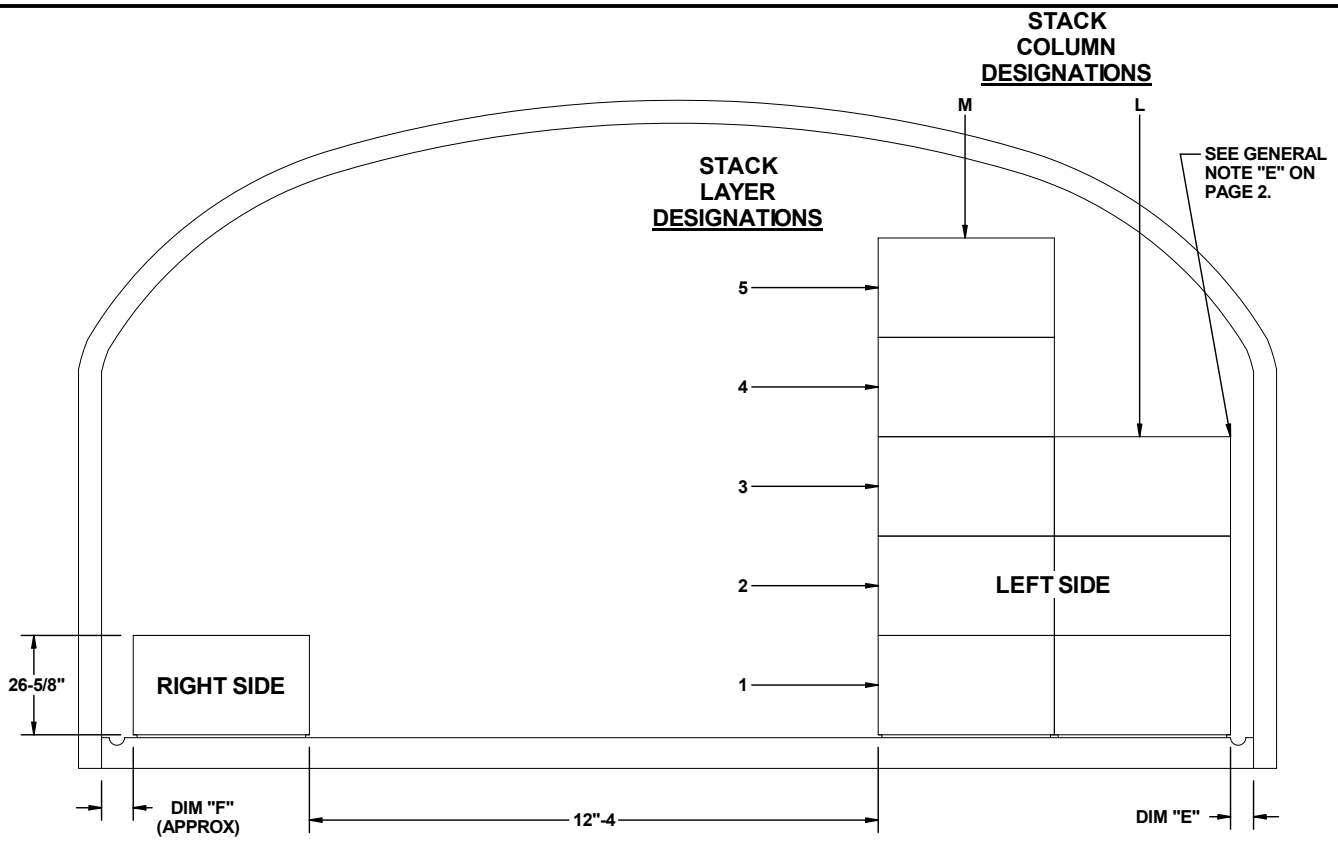


FLOOR DUNNAGE, 1" X 6" X 45" (2 REQD PER FIRST LAYER UNIT). SEE GENERAL NOTE "K" ON PAGE 2.

"A" AND "B" STACKS

(SEE "STACK IDENTIFICATION" ON PAGE 3 AND "CHART 2 - STACK CONFIGURATION" ON PAGE 7. FLOOR DUNNAGE IS SHOWN AS AN EXAMPLE)

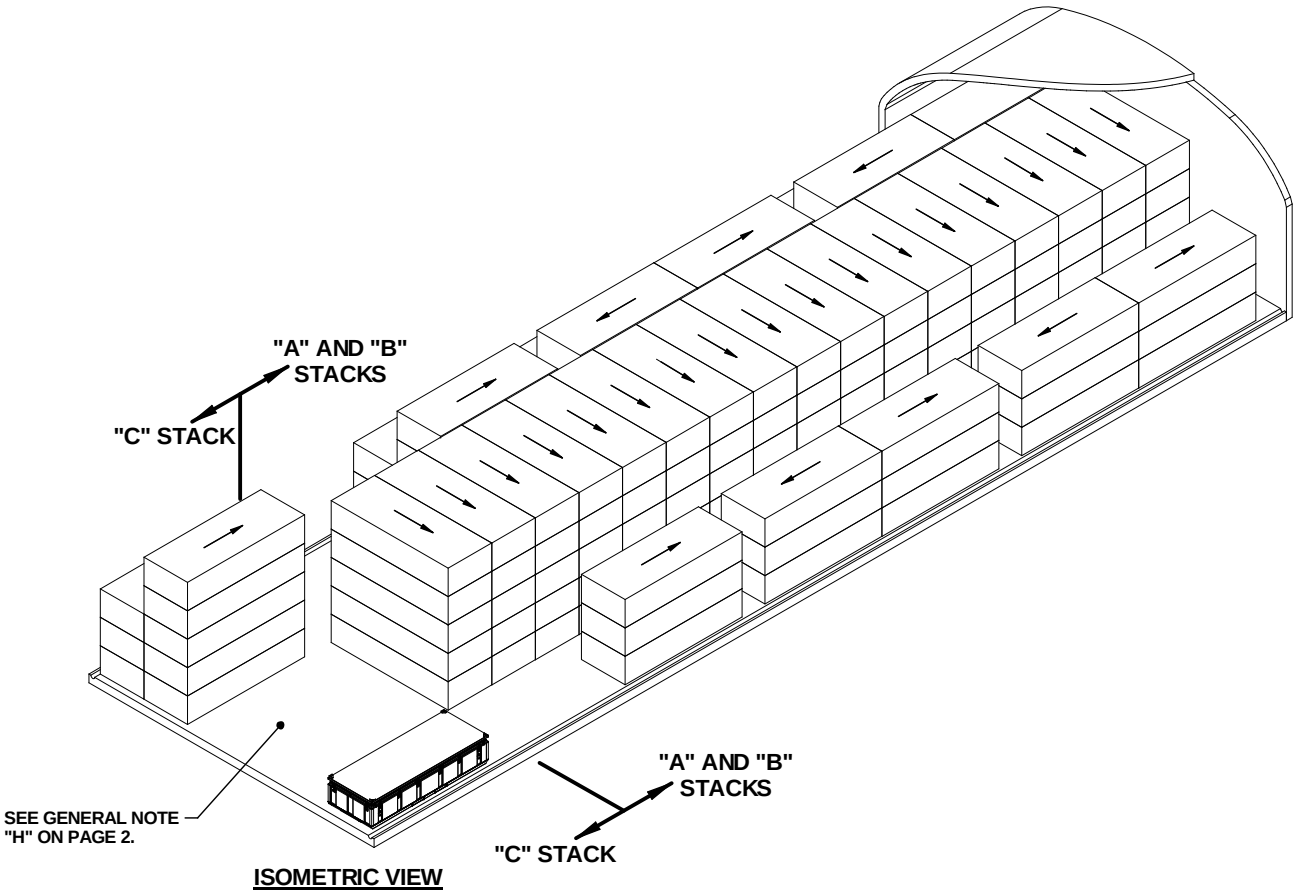
TYPICAL STORAGE IN ARCHED OR ROUNDED ROOF MAGAZINES



"C" STACK

TYPICAL "C" STACK FOR STRADLEY MAGAZINE.
(SEE "STACK IDENTIFICATION " ON PAGE 3 AND
"CHART 2 - STACK CONFIGURATION" ON PAGE 7)

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



ISOMETRIC VIEW

STRADLEY MAGAZINE
SHOWN AS TYPICAL.

CHART 1 - DIMENSIONS

MAGAZINE DIMENSIONS	MAGAZINE TYPE													
	IGLOO			ARCH 12' 26'-6"	ARCH 12' 25'-0"		ARCH 11'		ARCH 10'		OVAL ARCH	STRADLEY	STEEL ARCH	
LENGTH	40'-4"	60'-8"	81'-0"	81'-2"	40'-0"	80'-0"	40'-0"	80'-0"	40'-0"	80'-0"	89'-0"	80'-0"	59'-0"	89'-0"
WIDTH	26'-6"			26'-6"	25'-0"	25'-0"	25'-0"		25'-0"		24'-10"	25'-0"	25'-0"	24'-11"
HEIGHT	12'-9"			12'-1-3/4"			11'-0"		10'-0"		14'-5"	14'-0"	14'-0"	13'-6"
DIMENSIONS	PALLET UNIT SPACING DIMENSIONS													
DIM "D" (MHE AISLE APPROX)	11'-7"	12'-7"	14'-0"	13'-6"	11'-3"	13'-0"	14'-4"	12'-4"	11'-3"	13'-0"	14'-7"	13'-0"	11'-3"	14'-7"
DIM "E" ("A" STACK LEFT)	16-1/2"	16-1/2"	16-1/2"	6"	6-1/2"	6-1/2"	42-1/2"	42-1/2"	44"	44"	6"	10"	8"	7"
DIM "F" ("A" STACK RIGHT)	15-1/2"	15-1/2"	15-1/2"	15-1/2"	7-1/2"	7-1/2"	17-1/2"	17-1/2"	15"	15"	8"	11'-7"	6"	6"

SPECIAL NOTES:

1. THE FOLLOWING NOTES, CHART 1 ON THIS PAGE AND CHART 2 ON PAGE 7 ARE PRESENTED AS GUIDANCE IN THE SELECTION OF A STORAGE PATTERN, AND IN DETERMINING THE QUANTITY OF CONTAINERS WHICH CAN BE STORED IN THE STORAGE MAGAZINES LISTED IN THESE CHARTS.
2. CHART 1 ON THIS PAGE DESCRIBES THE STORAGE MAGAZINE GENERAL DIMENSIONS AND THE DIMENSIONS OF THE CONTAINER SPACING WITHIN THE STORAGE MAGAZINES.
3. DIMENSIONS "A", "B" AND "C" HAVE BEEN OMITTED TO AVOID CONFUSION WITH STACKS "A", "B" AND "C".
4. CHART 2 ON PAGE 7 DETAILS THE QUANTITY OF CONTAINERS IN EACH TYPE OF MAGAZINE AND THE LAYOUT OF THE STACKS FOR EACH TYPE OF MAGAZINE. THE CHART SHOWS THE NUMBER OF UNITS IN EACH STACK LAYER AND THE LOCATION OF THE CONTAINER ON EACH LAYER.

(CONTINUED AT RIGHT)

EXAMPLE:

CHART 2 – "B" STACK CONFIGURATION TO THE LEFT OF "A" STACK
MAGAZINE: STRADLEY

LAYER NUMBER 1: 2 (G-H)
LAYER NUMBER 2: 2 (G-H)
LAYER NUMBER 3: 2 (G-H)
LAYER NUMBER 4: 1 (H)
LAYER NUMBER 5: 1 (H)

EXPLANATION:

LAYER 1 (BOTTOM LAYER) HAS TWO CONTAINERS FROM THE "G" COLUMN (NEAREST THE LEFT SIDE OF THE MAGAZINE) TO THE "H" COLUMN.

LAYER 2 (ABOVE LAYER 1) HAS TWO CONTAINERS FROM THE "G" COLUMN (NEAREST THE LEFT SIDE OF THE MAGAZINE) TO THE "H" COLUMN.

LAYER 3 (ABOVE LAYER 2) HAS TWO CONTAINERS FROM THE "G" COLUMN (NEAREST THE LEFT SIDE OF THE MAGAZINE) TO THE "H" COLUMN.

LAYER 4 (ABOVE LAYER 3) HAS ONE CONTAINER IN THE "H" COLUMN.

LAYER 5 (TOP LAYER) HAS ONE CONTAINER IN THE "H" COLUMN.

TYPICAL STORAGE IN ARCHED OR ROUNDED ROOF MAGAZINES

CHART 2 - STACK CONFIGURATION

MAGAZINE TYPE														
QUANTITY PER MAGAZINE	IGLOO			ARCH 12'	ARCH 12' X 25' W		ARCH 11'		ARCH 10'		OVAL ARCH	STRADLEY	STEEL ARCH	
	40'-4" L	60'-8" L	81'-0" L	26'-6" W	40'-0" L	80'-0" L	40'-0" L	80'-0" L	40'-0" L	80'-0" L			59'-0" L	89'-0" L
	58	99	140	109	46	104	36	92	30	69	183	149	104	150
"A" STACK CONFIGURATION														
LAYER	CONTAINERS PER LAYER													
1	1(J)			1(J)	1(J)		1(J)		1(J)		1(J)	1(J)	1(J)	
2	1(J)			1(J)	1(J)		1(J)		1(J)		1(J)	1(J)	1(J)	
3	1(J)			1(J)	1(J)		1(J)		1(J)		1(J)	1(J)	1(J)	
4	1(J)			1(J)	1(J)		1(J)		--		1(J)	1(J)	1(J)	
5	1(J)			--	--		--		--		1(J)	1(J)	1(J)	
SINGLE STACK TOTAL	5			4	4		4		3		5	5	5	
NUMBER OF STACKS	7	12	17	17	7	17	6	17	7	17	19	17	12	19
"A" STACK TOTAL	35	60	85	68	28	68	24	68	21	51	95	85	60	95
"B" STACK CONFIGURATION - TO THE LEFT OF "A" STACK														
LAYER	CONTAINERS PER LAYER													
1	2(G-H)			2(G-H)	2(G-H)		1(H)		1(H)		2(G-H)	2(G-H)	2(G-H)	2(G-H)
2	2(G-H)			1(H)	1(H)		1(H)		1(H)		2(G-H)	2(G-H)	2(G-H)	2(G-H)
3	1(H)			1(H)	1(H)		1(H)		--		2(G-H)	2(G-H)	1(H)	1(H)
4	1(H)			--	1(H)		--		--		2(G-H)	1(H)	1(H)	1(H)
5	--			--	--		--		--		1(H)	1(H)	1(H)	--
SINGLE STACK TOTAL	6			4	5		3		2		9	8	7	6
NUMBER OF STACKS	2	4	6	6	2	5	2	5	2	5	6	5	4	6
"B" STACK LF TOTAL	12	24	36	24	10	25	6	15	4	10	54	40	28	36
"B" STACK CONFIGURATION - TO THE RIGHT OF "A" STACK														
LAYER	CONTAINERS PER LAYER													
1	1(K)			1(K)	1(K)		1(K)		1(K)		1(K)	1(K)	1(K)	
2	1(K)			1(K)	--		--		--		1(K)	1(K)	1(K)	
3	--			--	--		--		--		1(K)	1(K)	--	
4	--			--	--		--		--		1(K)	--	--	
5	--			--	--		--		--		--	--	--	
SINGLE STACK TOTAL	2			2	1		1		1		4	3	2	
NUMBER OF STACKS	2	4	6	6	2	5	2	5	2	5	6	5	4	6
"B" STACK RT TOTAL	4	8	12	12	2	5	2	5	2	5	24	15	8	12
"C" STACK CONFIGURATION - LEFT SIDE														
LAYER	CONTAINERS PER LAYER													
1	2(L-M)			2(L-M)	2(L-M)		1(M)		1(M)		2(L-M)	2(L-M)	2(L-M)	2(L-M)
2	2(L-M)			1(M)	1(M)		1(M)		1(M)		2(L-M)	2(L-M)	2(L-M)	2(L-M)
3	1(M)			1(M)	1(M)		1(M)		--		2(L-M)	2(L-M)	1(M)	1(M)
4	1(M)			--	1(M)		--		--		2(L-M)	1(M)	1(M)	1(M)
5	--			--	--		--		--		1(M)	1(M)	1(M)	--
SINGLE STACK TOTAL	6			4	5		3		2		9	8	7	6
NUMBER OF STACKS	1			1			1		1		1	1	1	
"C" STACK LF TOTAL	6			4	5		3		2		9	8	7	6
"C" STACK CONFIGURATION - RIGHT SIDE														
"C" STACK RT TOTAL	1			1			1		1		1	1	1	

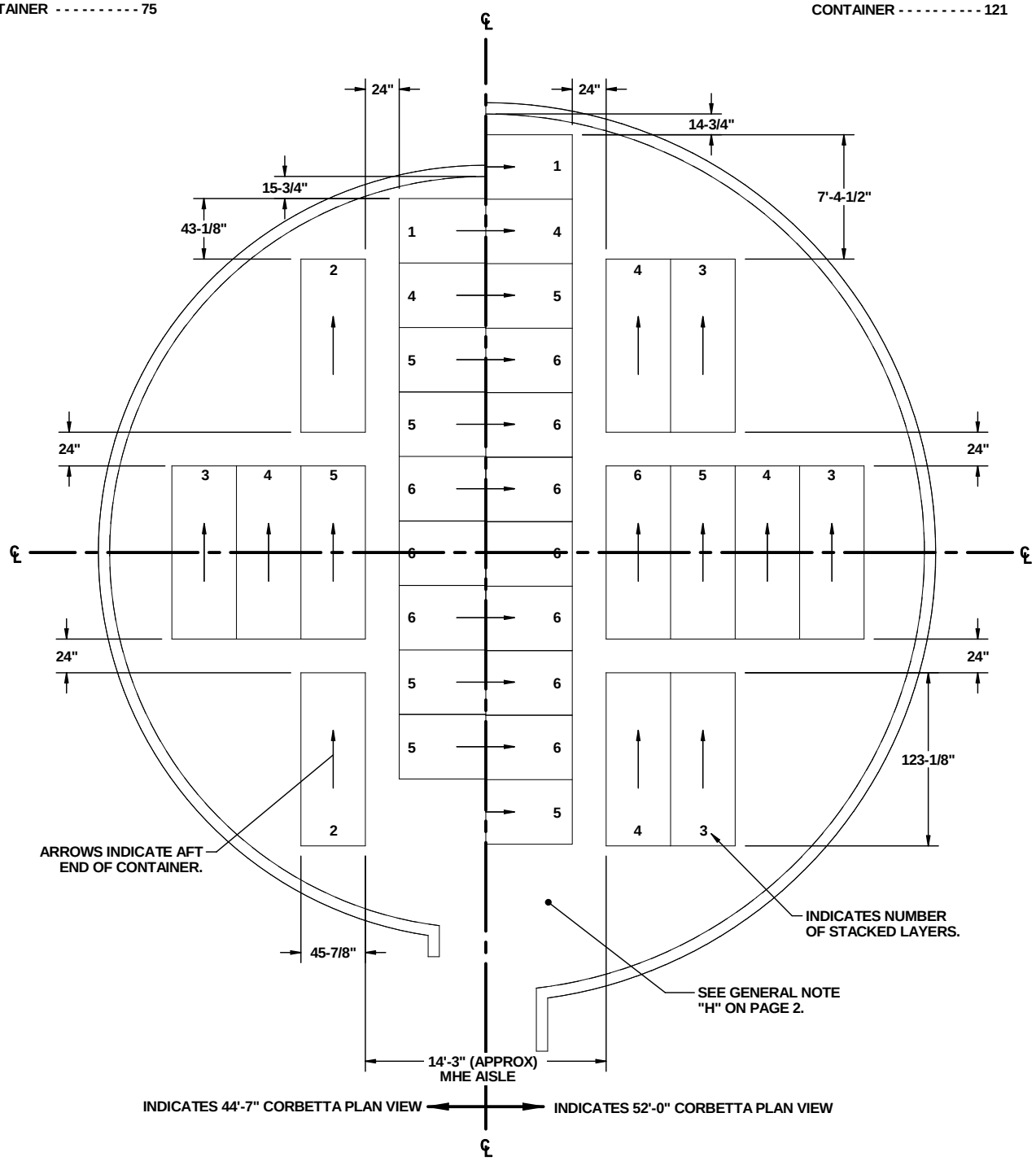
PROJECT SP 568-07

STORAGE IN 44'-7" MAGAZINE

ITEM	QUANTITY
CONTAINER	75

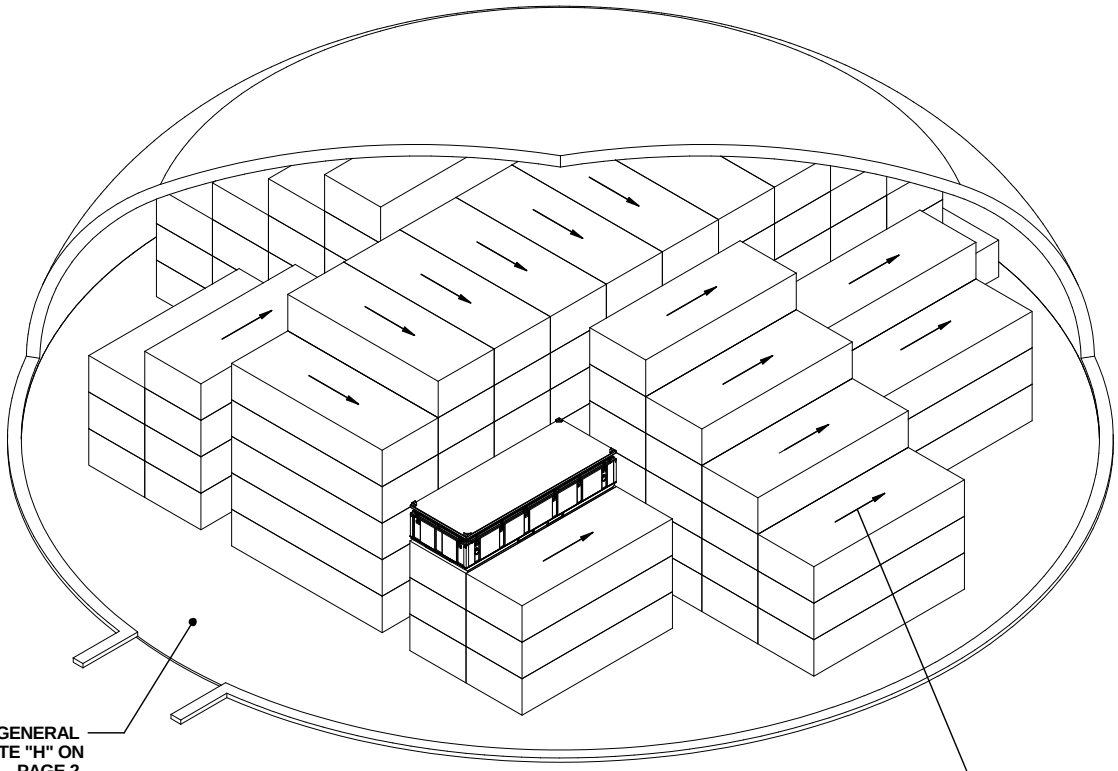
STORAGE IN 52'-0" MAGAZINE

ITEM	QUANTITY
CONTAINER	121



PLAN VIEW

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

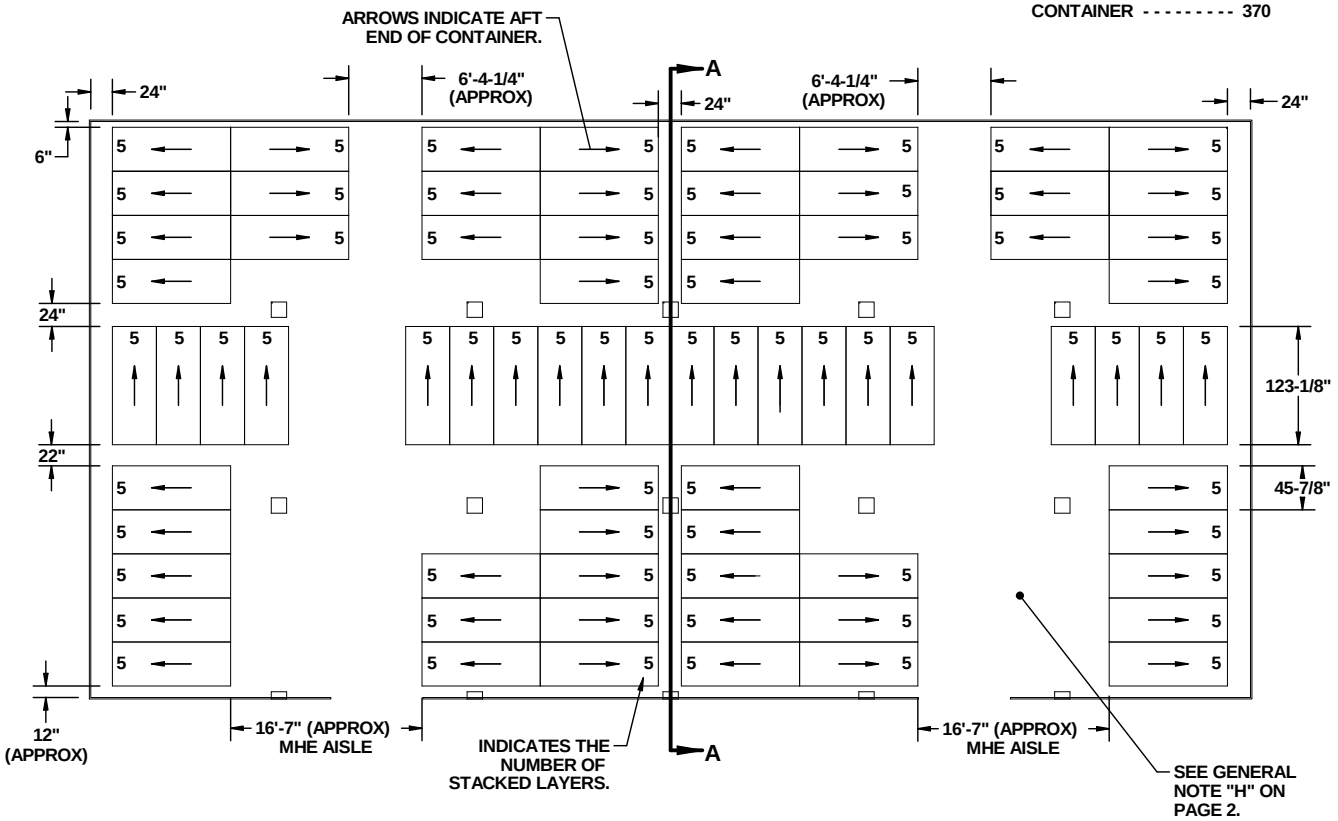


ISOMETRIC VIEW

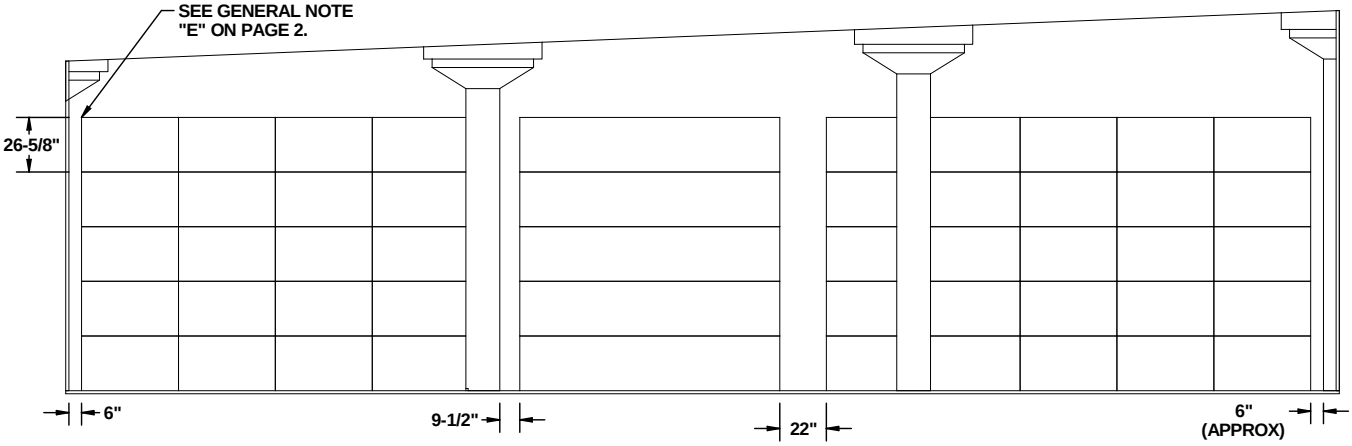
(52' - 0" DIA MAGAZINE)

STORAGE IN RECTANGULAR MAGAZINE

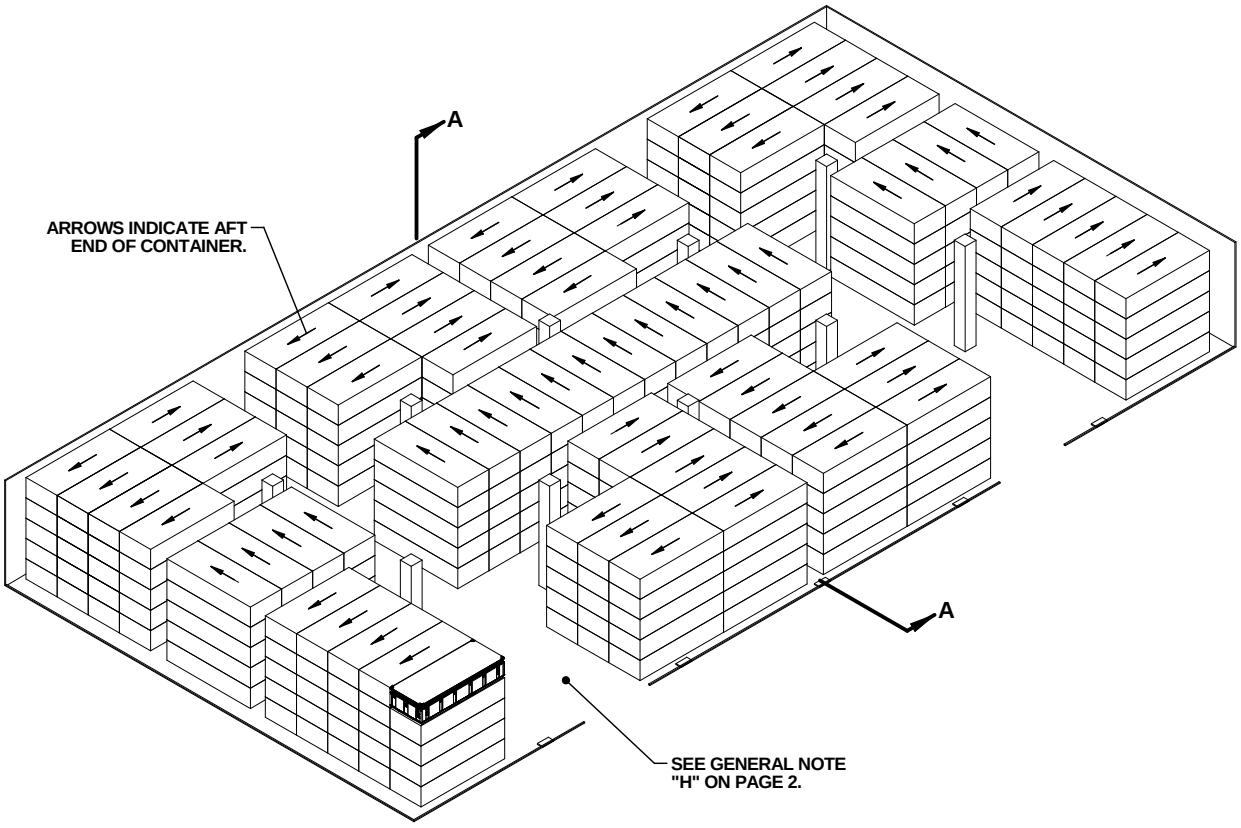
ITEM	QUANTITY
CONTAINER	370



PLAN VIEW



SECTION A-A

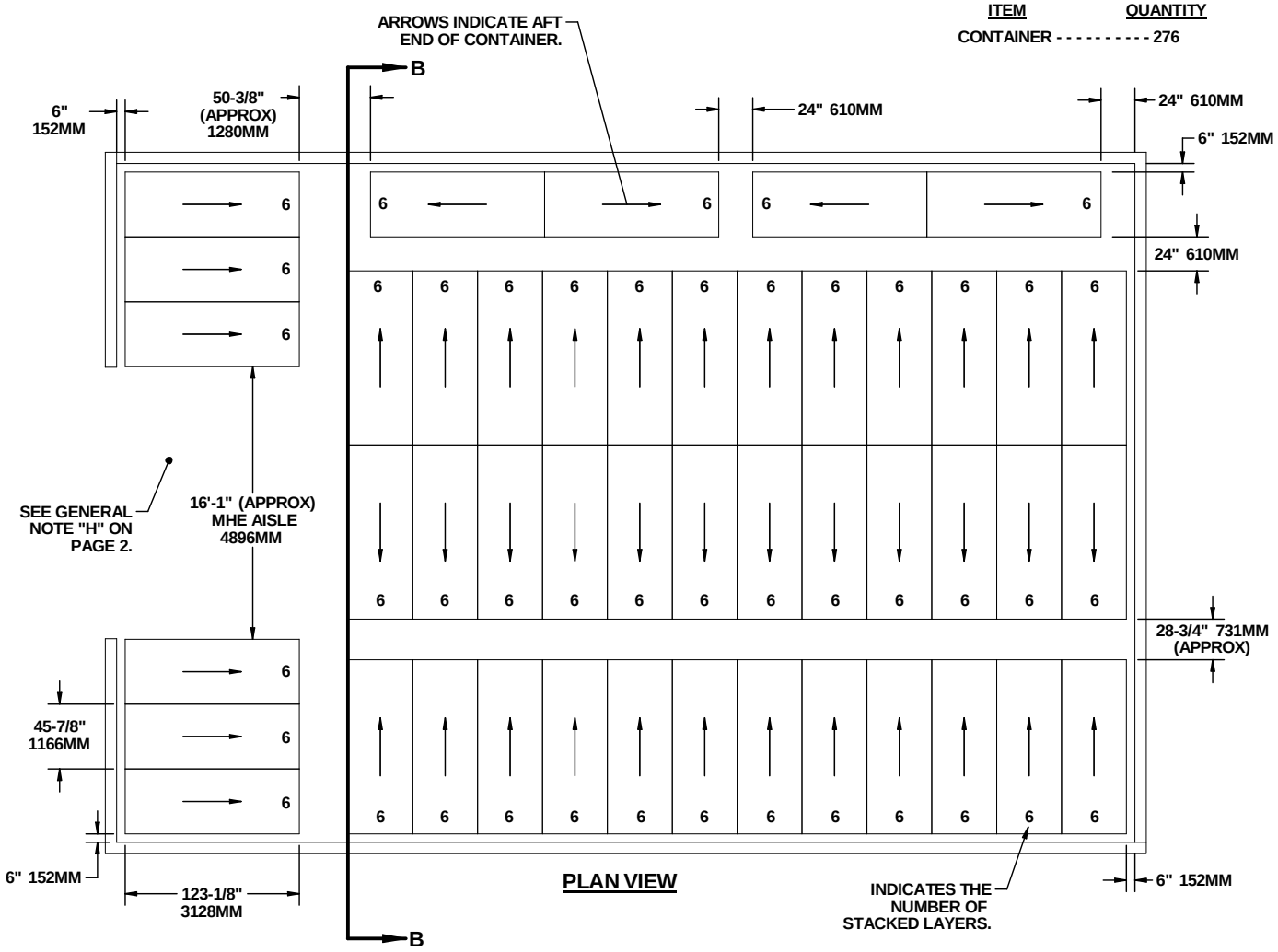


ISOMETRIC VIEW

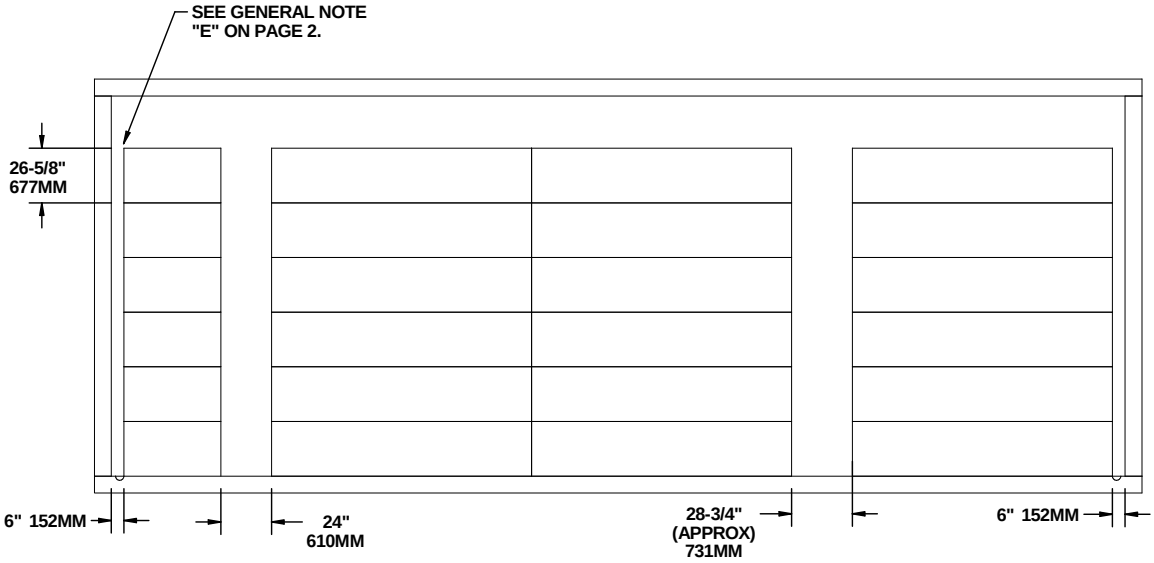
(50'-0" MAGAZINE)

STORAGE IN TYPE II BUNKER MAGAZINE

ITEM	QUANTITY
CONTAINER	276



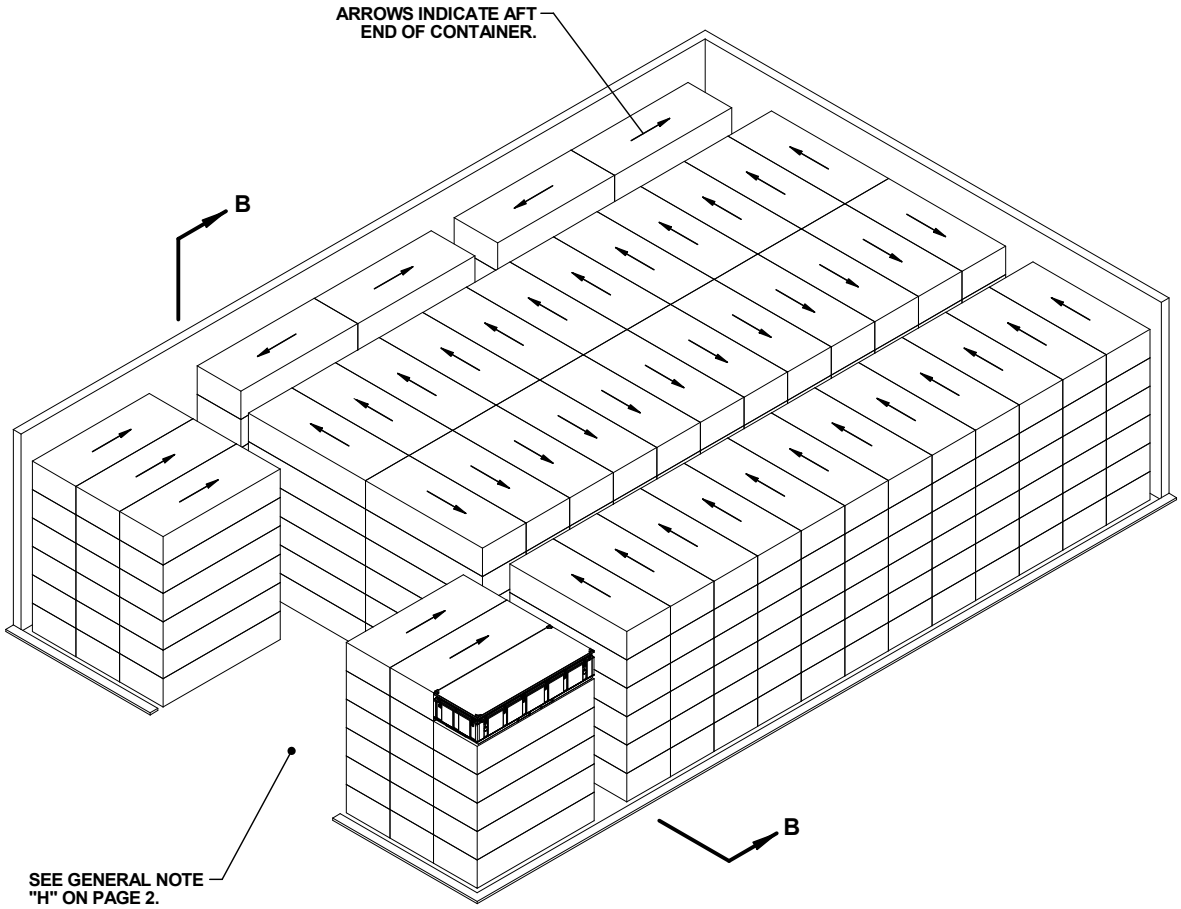
PLAN VIEW



SECTION B-B

60'-0" L X 40'-0" W X 15'-0" H TYPE II BUNKER MAGAZINE

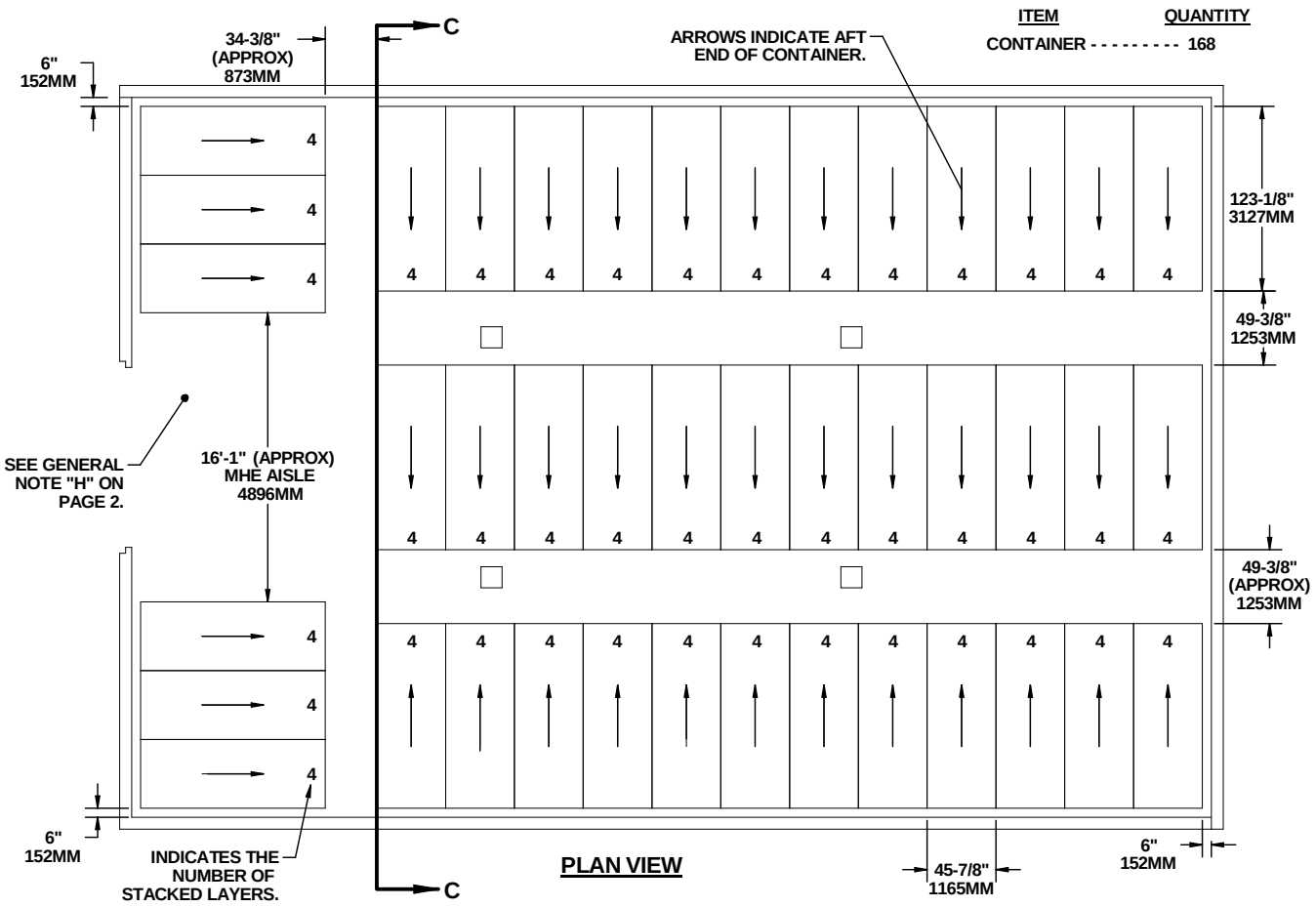
PROJECT SP 568-07



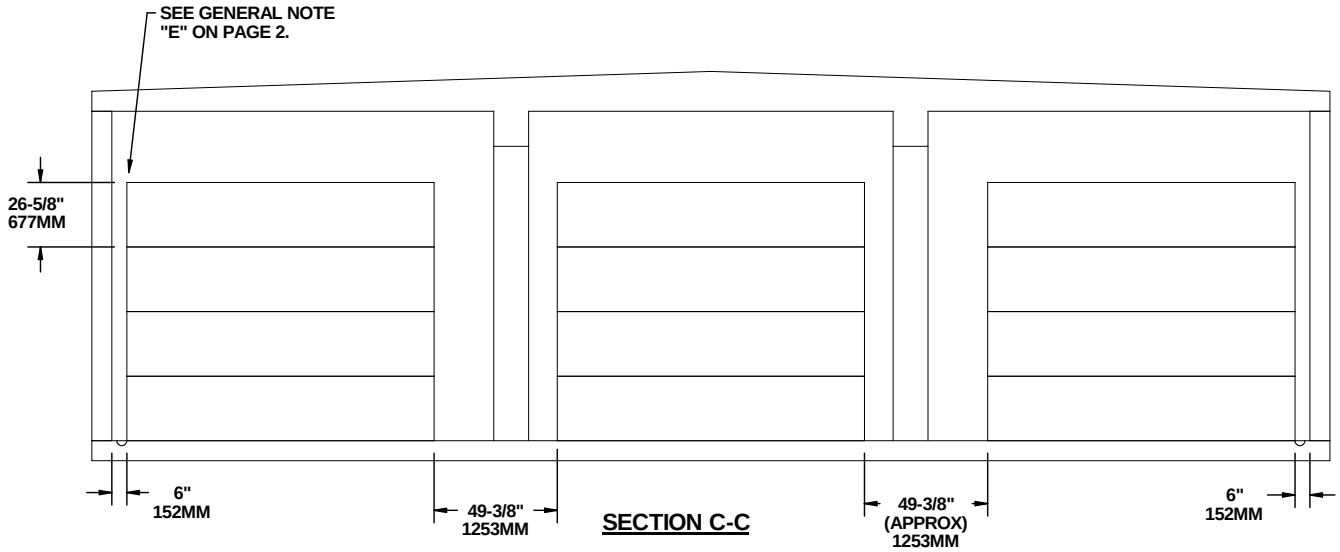
ISOMETRIC VIEW

(TYPE II BUNKER MAGAZINE)

STORAGE IN TYPE III BUNKER MAGAZINE



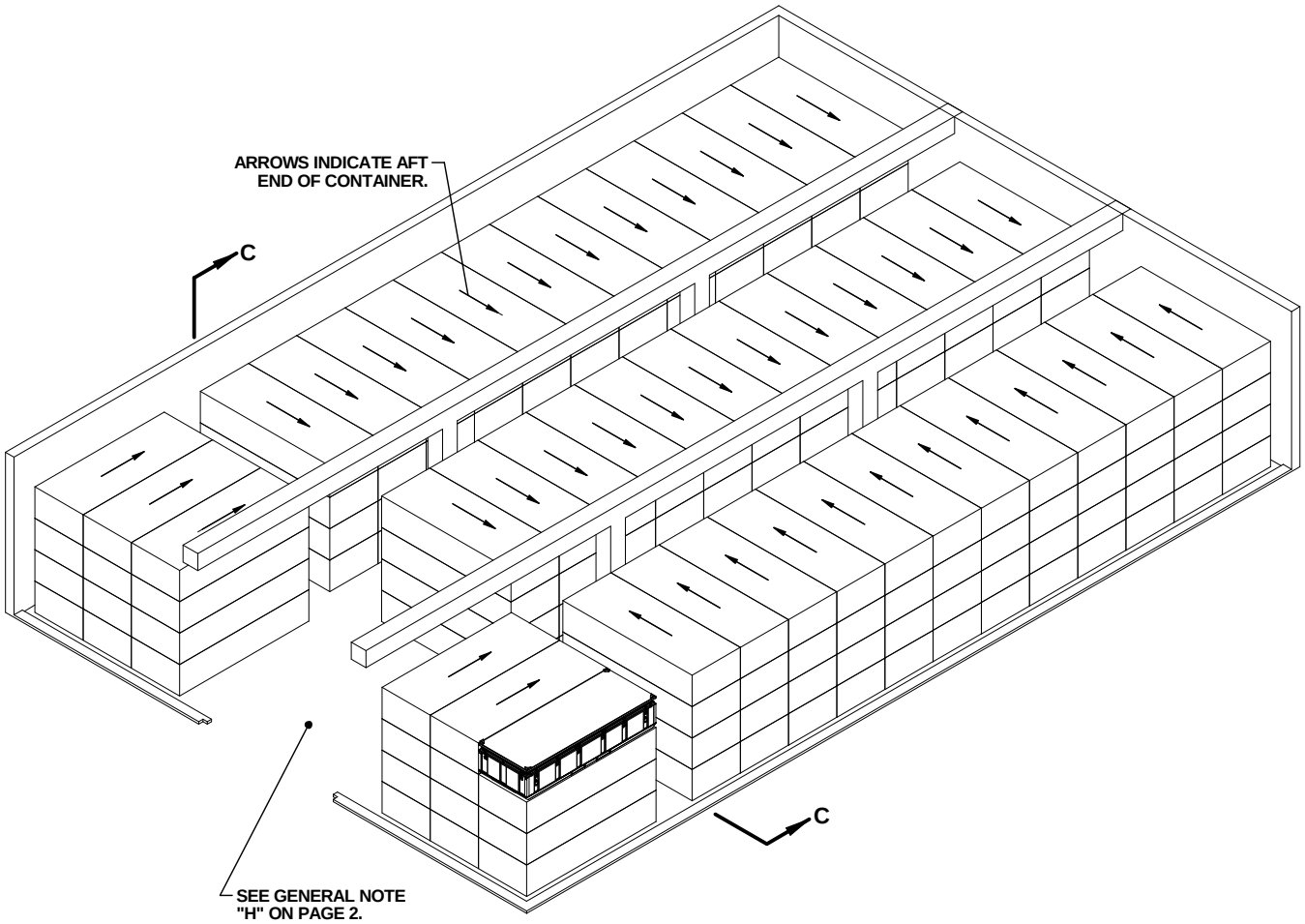
PLAN VIEW



SECTION C-C

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

PROJECT SP 568-07

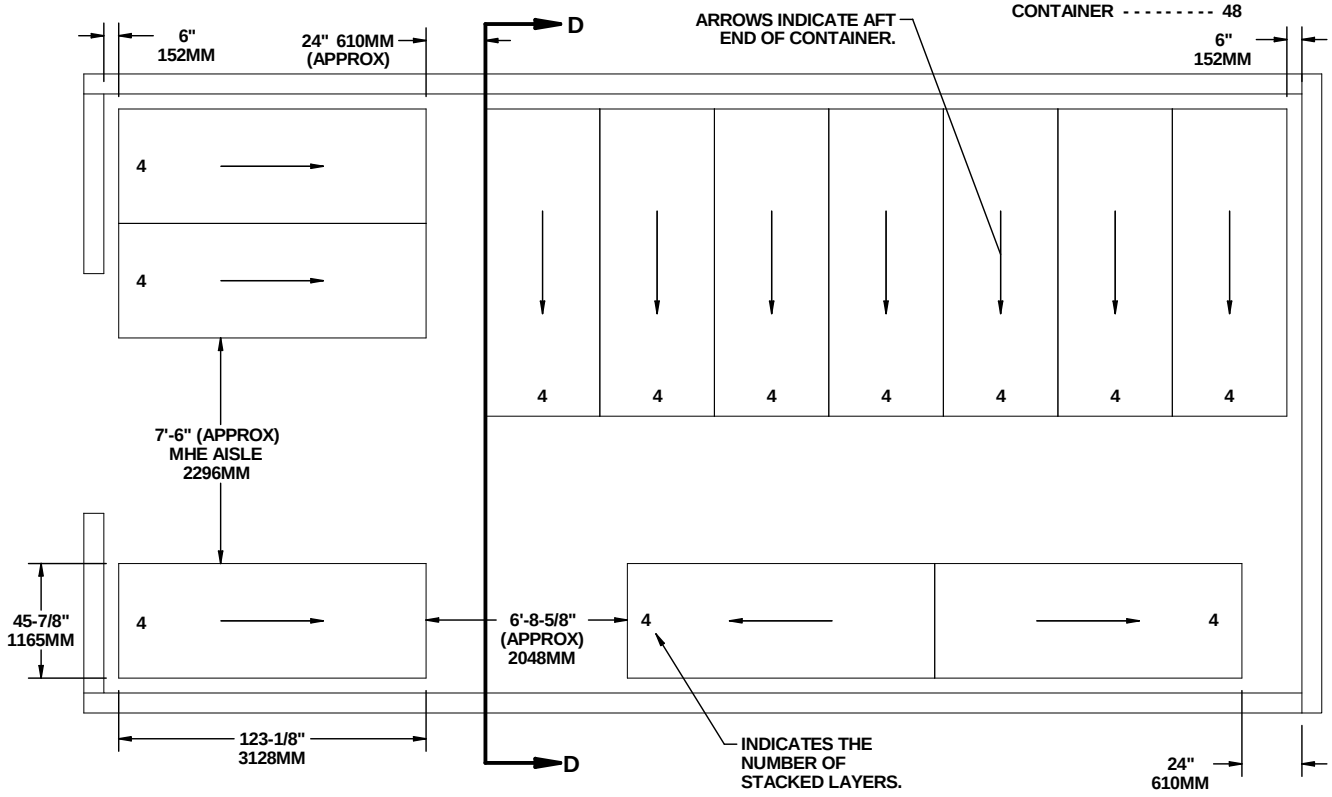


ISOMETRIC VIEW

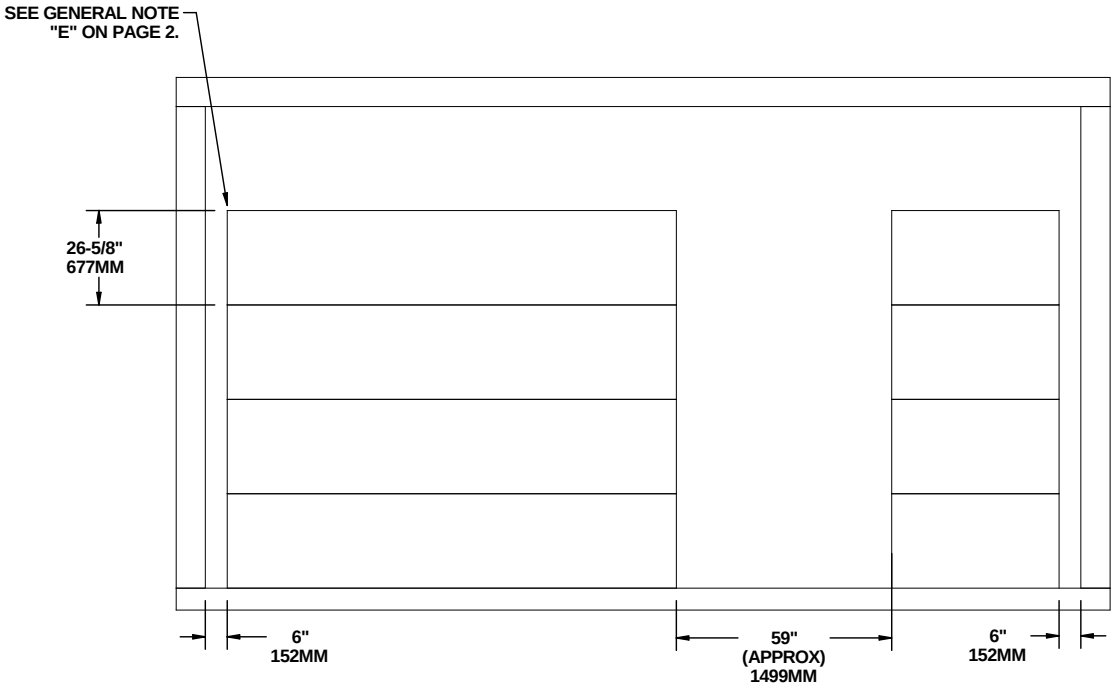
(TYPE III BUNKER MAGAZINE)

STORAGE IN TYPE IV BUNKER MAGAZINE

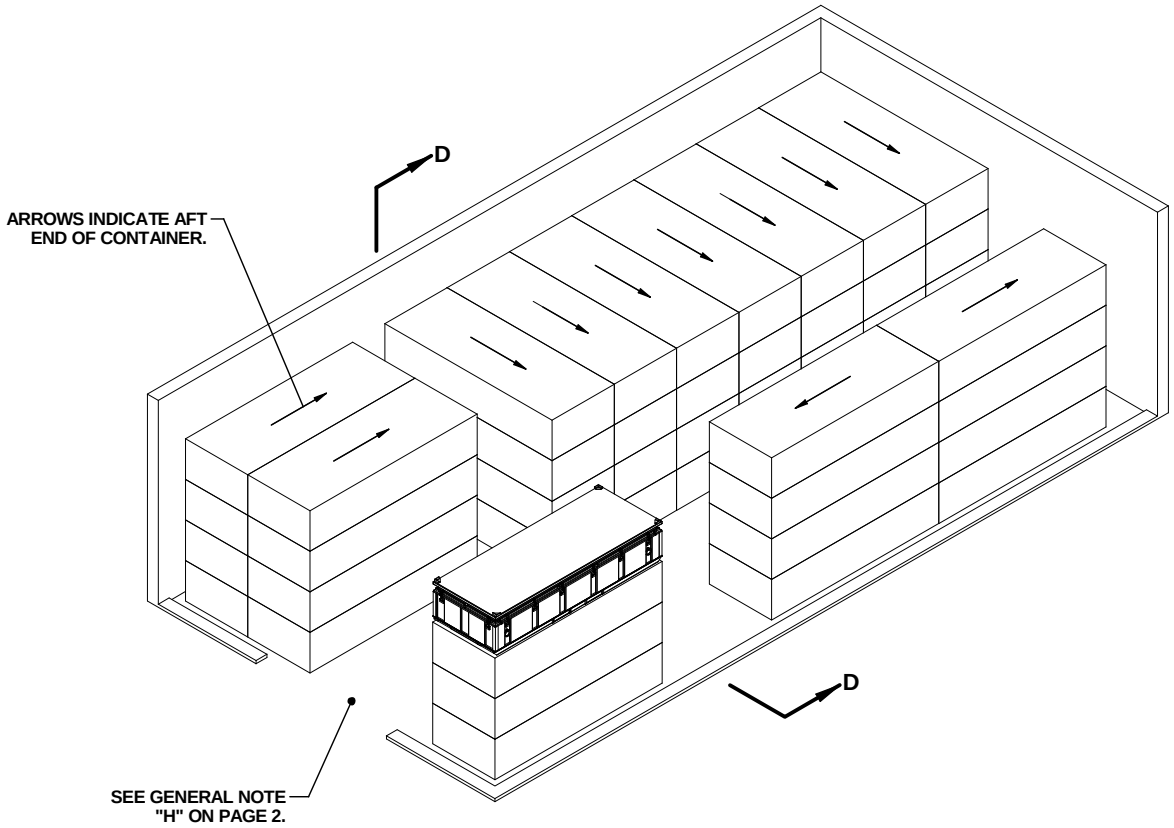
ITEM	QUANTITY
CONTAINER	48



PLAN VIEW



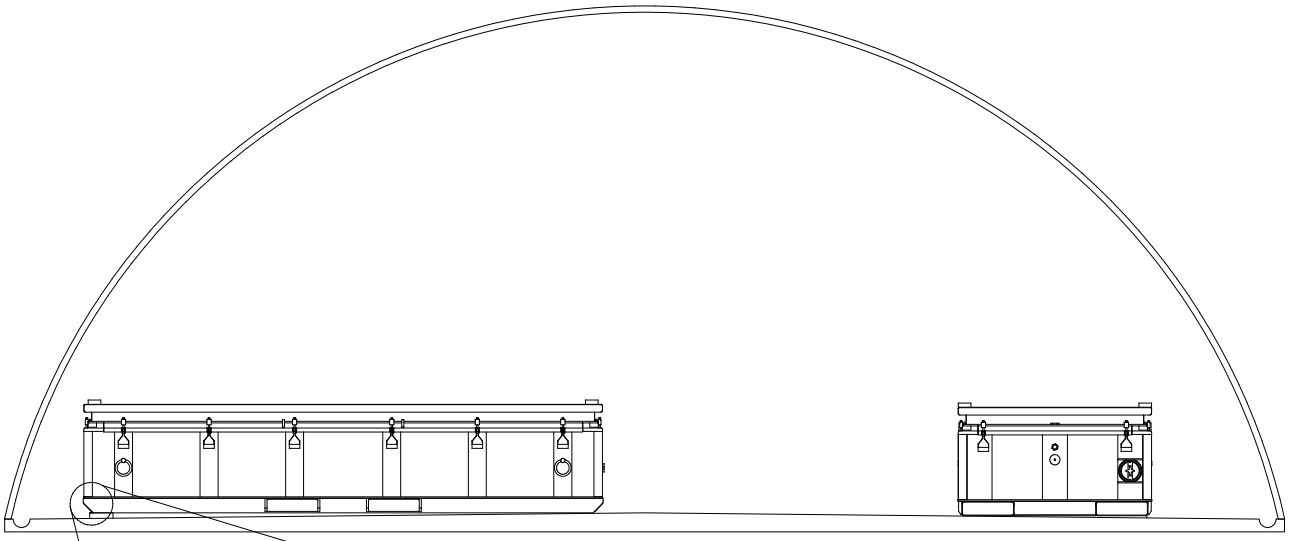
SECTION D-D



ISOMETRIC VIEW

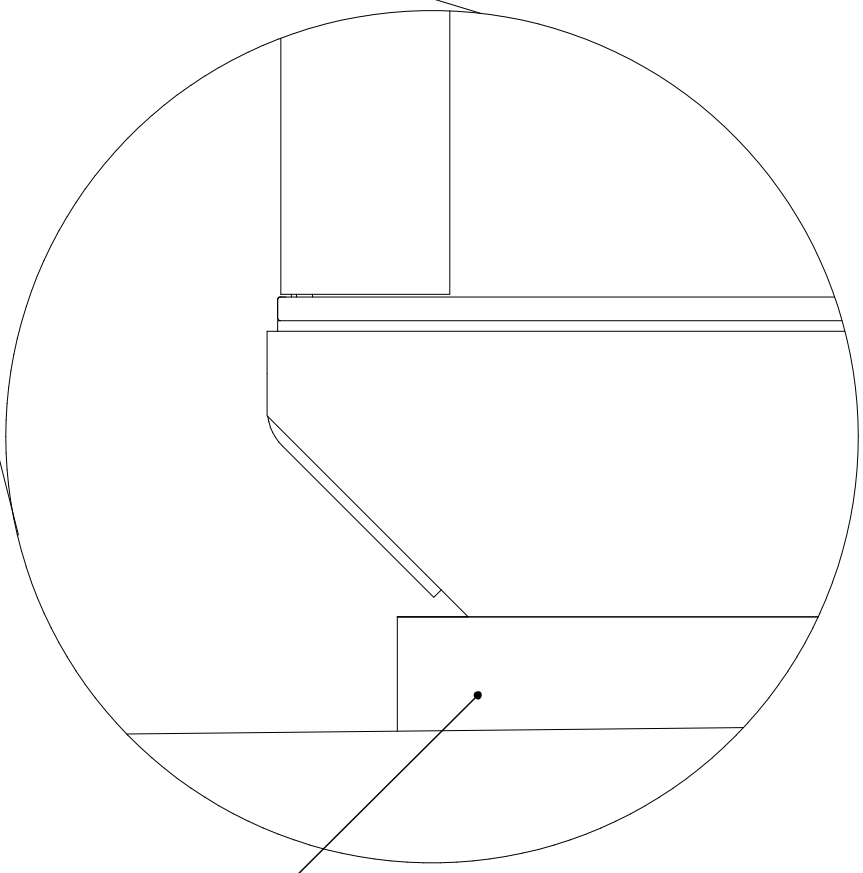
(TYPE IV BUNKER MAGAZINE)

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



SHIM DETAIL

SEE GENERAL NOTE "R" ON PAGE 2.



SHIM (AS REQD TO PROVIDE A LEVEL BEARING SURFACE FOR THE CONTAINER SKIDS). POSITION UNDER CONTAINER SKIDS. SEE GENERAL NOTE "R" ON PAGE 2.

SHIM LOCATION DETAIL