# STORAGE IN APPROVED MAGAZINES OF 155MM COPPERHEAD SEPARATE LOADING PROJECTILES, PACKED ONE PER METAL CONTAINER, UNITIZED 6 CONTAINERS PER SPECIAL 4-WAY ENTRY PALLET

# INDEX

<u>ITEM</u>	PAGE(S)
GENERAL NOTES	2
UNIT DETAIL	3
81'-0", 60'-8" AND 40'-4" L X 26'-6" W X 12'-9" H IGLOO MAGAZINES	4,5
81'-2" L X 26'-6" W X 12'-1-3/4" H ARCH TYPE MAGAZINE	6,7
80'-0" AND 40'-0" L X 25'-0" W X 12'-1-3/4" H ARCH TYPE MAGAZINES	8,9
80'-0" AND 40'-0" L X 25'-0" W X 11'-0" H ARCH TYPE MAGAZINES	10,11
80'-0" AND 40'-0" L X 25'-0" W X 10'-0" H ARCH TYPE MAGAZINES	12,13
80'-0" L X 25'-0" W X 14'-0" H STRADLEY MAGAZINE	14,15
89'-0" L X 24'-10" W X 14'-4" H OVAL ARCH MAGAZINE	16,17
89'-0" L X 24'-1!" W X 13'-6" H STEEL ARCH MAGAZINE	18,19
52'-0" DIA CORBETTA MAGAZINE	20,21
100'-8" L X 50'-0" W RECTANGULAR MAGAZINE	22.23
60'-0" L X 40'-0" W X 15'-0" H TYPE II BUNKER MAGAZINE	24.25
60'-0" L X 40'-0" W X 11'-0" H TYPE III BUNKER MAGAZINE	26.27
40'-0"   X 20'-0" W X 11'-0" H TYPE IV BUNKER MAGAZINE	28.29
TYPICAL MULTIPLE-LOT STORAGE PROCEDURES	30-32

U.S. AR	MY MATERI	EL C	OMMA	AND DF	RAWING
APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND		DRAFTSMAN		O. WHITMORE	
David a Prihorik		ENGINEER	ENGINEER M. DAELIMER		
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REVISION NO. 3	APRIL 1999	19	48	4160	1-3-4-14-
SEE THE REVISION	LISTING ON PAGE 2.	, ,	70	7100	22PE1003

DO NOT SCALE

## 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 HEREIN ARE APPLICABLE TO THE 155MM COPPERHEAD SEPARATE LOADING PROJECTILE, PACKED ONE PER METAL SHIPPING AND STORAGE CONTAINER, UNITIZED SIX CONTAINERS PER SPECIAL 4-WAY ENTRY PALLET. SUBSEQUENT REFERENCE TO CONTAINER MEANS CONTAINER WITH CONTENTS. SUBSEQUENT REFERENCE TO PALLET UNIT MEANS THE PALLETIZED UNIT OF SIX CONTAINERS WITH CONTENTS.
- C. FOR DETAIL OF THE PALLET UNIT, REFER TO U. S. ARMY AMC DRAWING 19-48-4159-20PM1003, AND THE "PALLET UNIT" DETAIL ON PAGE 3.

PALLET UNIT DIMENSIONS - - 33" LONG X 64" WIDE X 27-3/4" HIGH.

GROSS WEIGHT - - - - - - 1,397 POUNDS (APPROX).

CUBE - - - - - - - - 33.6 CUBIC FEET (APPROX).

- D. 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 PALLET UNITS IN OTHER TYPES OF APPROVED MAGAZINES. MINDR ADJUSTMENTS MAY BE MADE TO FACILITATE STORAGE IN OTHER TYPES OF MAGAZINES, HOWEVER, THE BASIC PRINCIPLES AS DEPICTED HEREIN WILL BE FOLLOWED.
- E. AISLE DIMENSIONS AS SHOWN HEREIN MAY BE ADJUSTED TO SUIT LOCAL CONDITIONS AND/OR AVAILABLE MATERIAL HANDLING EQUIPMENT (MHE), HOWEVER, AN 18" MINIMUM INSPECTION AISLE MUST BE MAINTAINED AT THE END OF THE PALLET UNIT WHERE THE HUMIDITY INDICATORS ARE LOCATED.
- F. IF AVAILABLE MHE PERMITS, ADDITIONAL PALLETIZED UNITS MAY BE STORED WITHIN THE MHE AREA AND/OR OTHER AVAILABLE AREA OF THE MAGAZINE.
- G. STORED PALLET UNITS MUST NOT CONTACT THE WALLS OF A MAGAZINE. THEREFORE, PALLET UNITS WILL BE STORED A MINIMUM OF SIX INCHES (6") FROM THE SIDEWALL OR CURVATURE OF THE MAGAZINE AS APPLICABLE. TO PROVIDE FOR THIS MANDATORY CLEARANCE REQUIREMENT, UNITS MAY BE ELIMINATED FROM THE DEPICTED STORAGE PATTERN AS NFFESSAPY
- H. OTHER COMPATIBLE ITEMS MAY BE STORED IN A MAGAZINE WHICH IS PARTIALLY FILLED WITH THE DESIGNATED ITEM.
- J. PORTIONS OF THE MAGAZINES, SUCH AS SIDEWALLS, END WALLS, AND ROOFS HAVE NOT BEEN SHOWN IN THE STORAGE VIEWS FOR CLARITY PURPOSES.
- K. IF THE QUANTITY OF PALLET UNITS 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.
- L. STORAGE OF MULTIPLE LOTS IN A MAGAZINE WILL REQUIRE CAREFUL PRE-PLANNING SO AS TO INSURE MHE ACCESSIBILITY TO ANY LOT IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN THE APPLICABLE "SPECIAL NOTES" SECTIONS OF THE MULTIPLE LOT STORAGE PROCEDURES TYPICALLY SHOWN ON PAGES 30 THRU 32.
- M. ALTHOUGH SPECIFIC PROCEDURES ARE INCLUDED IN THIS DRAWING FOR STORING MULTIPLE LOTS WITHIN ONE STRUCTURE, THE BASIC STORAGE PATTERN AS SHOWN ON PAGES 4 THRU 29 CAN ALSO BE ADAPTED FOR THE STORING OF MORE THAN ONE LOT. MULTIPLE LOTS OF PALLET UNITS WHEN STORED IN ACCORDANCE WITH THE BASIC STORAGE PATTERN MAY BE STORED WITH ONE OR MORE STACKS USED FOR EACH LOT. LOTS WILL NOT BE MIXED, EXCEPT TO THE EXTENT THAT UNITS OF ONE LOT WILL NOT BE STACKED ON TOP OF PALLET UNITS FROM ANOTHER LOT. MULTIPLE LOTS OF PALLET UNITS MAY BE STORED WITH ONE OR MORE ROWS USED FOR EACH LOT. A ROW OF UNITS RUNS FROM THE REAR OF THE MAGAZINE TO THE FRONT. EACH LOT WITHIN THE MAGAZINE MUST BE ACCESSIBLE FOR MOVEMENT BY MHE. A SINGLE-LOT IS CONSIDERED "ACCESSIBLE" IF NO MORE THAN TWELVE (12) "LIFTS" (A LIFT MAY CONSIST OF DNE OR MORE PALLET UNITS) OF ANOTHER LOT OR LOTS HAVE TO BE MADE TO GAIN ACCESS TO THAT LOT.
- N. FOR STORAGE OF MULTIPLE LOTS OF PALLET UNITS, THE DISTANCE FROM THE MAGAZINE SIDEWALL WILL BE BASED ON THE OVER HEAD CLEARANCE REQUIRED FOR MHE.

### (GENERAL NOTES CONTINUED)

- O. GENERALLY, WHEN STORING MULTIPLE LOTS, THE LARGEST LOT SHOULD BE STORED IN THE REAR OF THE MAGAZINE. EACH LOT MUST BE ACCESSIBLE FOR REMOVAL AND INSPECTION/INVENTORY IN ACCORDANCE WITH OTHER CRITERIA SPECIFIED IN THESE GENERAL NOTES AND IN THE SPECIAL NOTES FOUND THROUGHOUT THIS DRAWING.
- P. ANY "LIGHT" PALLET UNIT THAT DOES NOT CONTAIN A FULL QUANTITY OF CONTAINERS WILL NOT BE BURIED IN STORAGE. IT MUST BE POSITIONED ADJACENT TO AN AISLE, PREFERABLY IN FRONT OF THE LOT.
- G. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" SECTIONS WHICH ARE IMMEDIATELY ADJACENT TO THE DEPICTED STORAGE METHODS.
- R. 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
- S. A PRODUCTION OR STORAGE FACILITY IS AUTHORIZED TO HAVE ONE INCOMPLETE, UN-BANDED PARTIAL UNIT LOAD PER LOT IN A STORAGE STRUCTURE. PRIOR TO SHIPMENT OF A PARTIAL UNIT, A LAYER MUST BE COMPLETED, IF APPLICABLE, BY THE POSITIONING OF ONE OR MORE FILLERS AS DELINEATED BY ORAWING 19-48-4159-20PM1003. THE UNIT MUST THEN BE REBANDED WITH THE SAME SIZE AND QUANTITY OF STRAPS AS THE ORTGINAL UNIT.
- T. PALLET UNITS PRESENTLY STORED IN ACCORDANCE WITH A PRIOR APPROVED DRAWING NEED NOT BE RE-STORED SOLELY TO CONFORM TO THE PROCEDURES SPECIFIED IN THIS DOCUMENT.
- U. 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.

### REVISIONS

REVISION NO. 1, DATED JUNE 1986, CONSISTS OF:

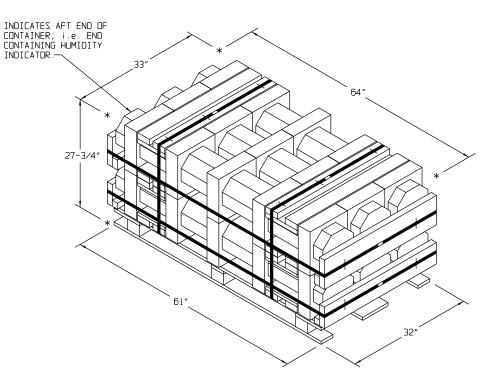
 UPDATING PROCEDURES TO REFLECT INCREASED PALLET UNIT WIDTH.

REVISION NO. 2, DATED MAY 1995, CONSISTS OF:

- 1. UPDATING DRAWING FORMAT AND GENERAL NOTES, TO CURRENT STANDARDS.
- 2. ADDING PROCEDURES FOR STEEL ARCH MAGAZINE.

REVISION NO. 3, DATED APRIL 1999, CONSISTS OF:

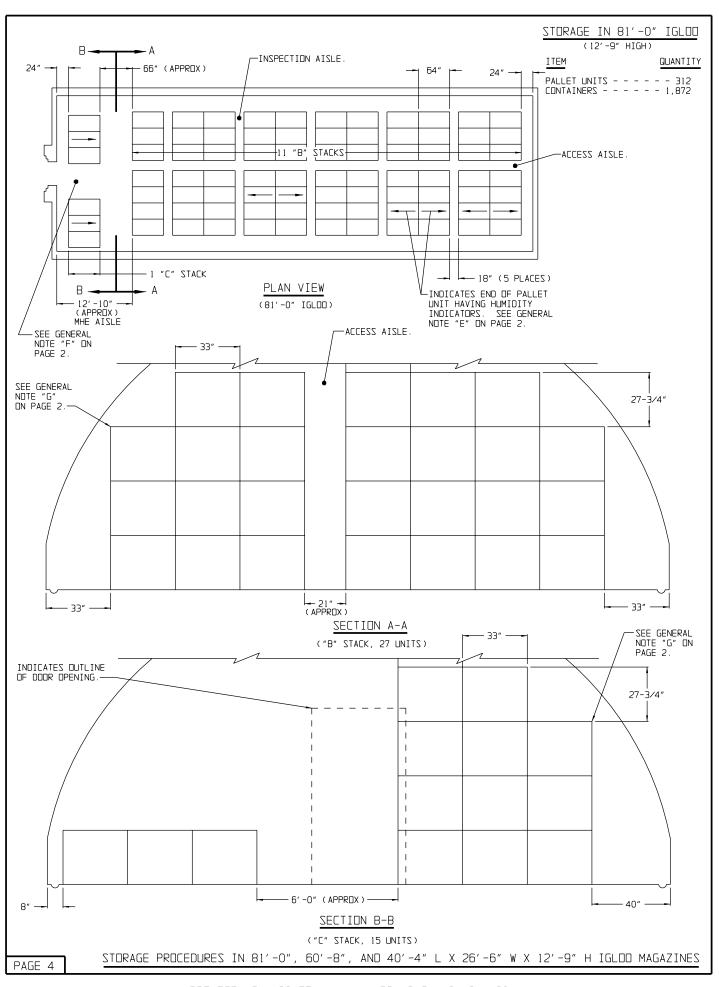
- 1. CHANGING PALLET UNIT HEIGHT.
- 2. CHANGING GENERAL NOTE "G"
- 3. ADJUSTING STORAGE SPACING DIMENSIONS TO CONFORM TO CLEARANCE REQUIREMENTS OF REVISED GENERAL NOTE "G" AND REVISING PROCEDURES AS NECESSARY.

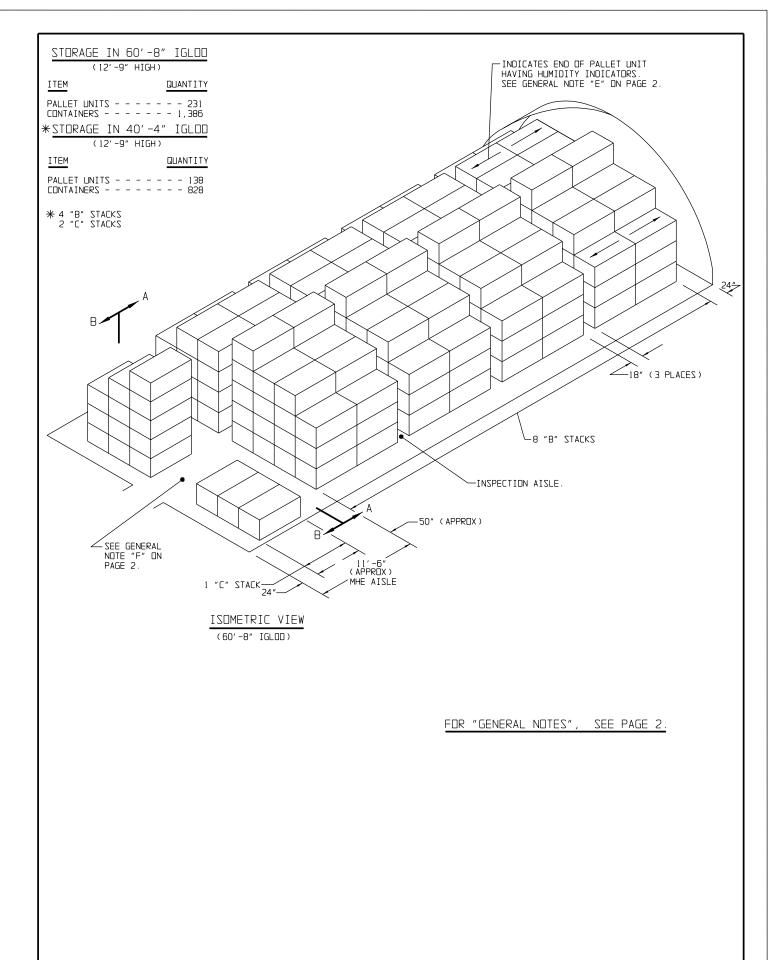


# PALLET UNIT DATA

GROSS WEIGHT - - - 1,397 LBS (APPROX) CUBE - - - - - - 33.6 CU. FT. (APPROX)

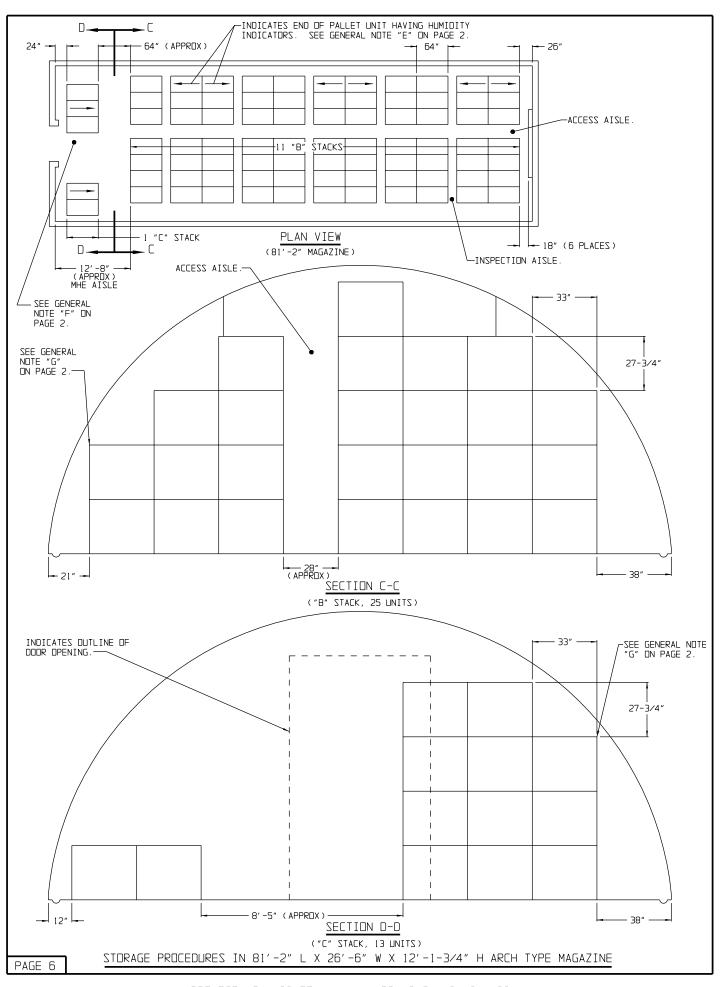
PALLET UNIT DETAIL

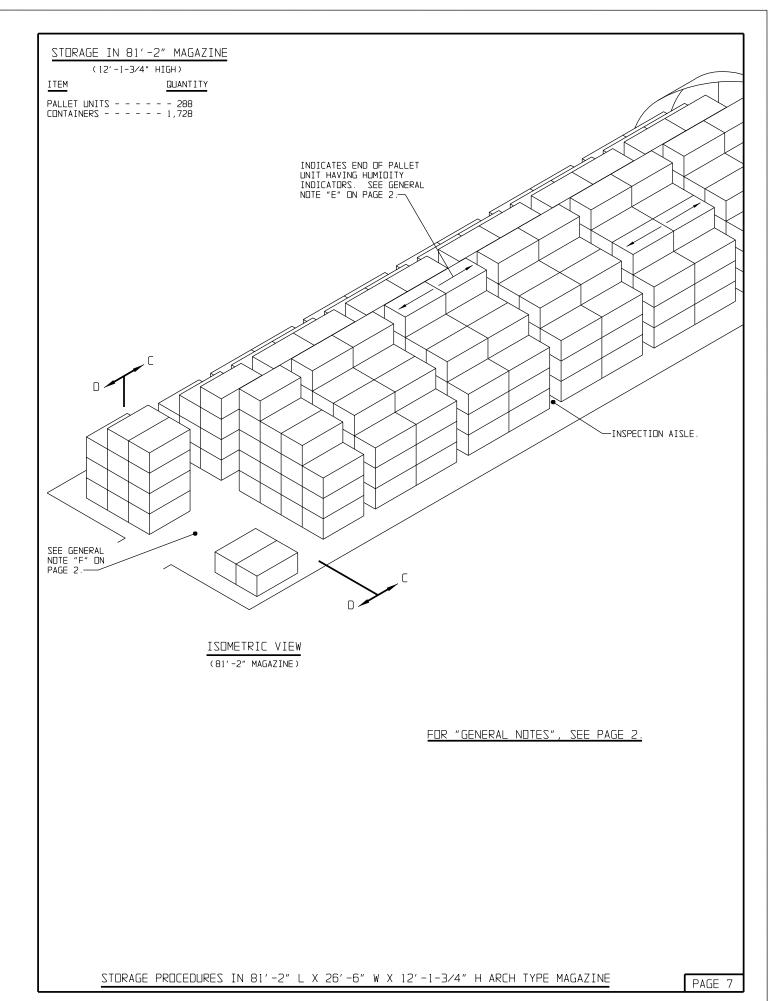


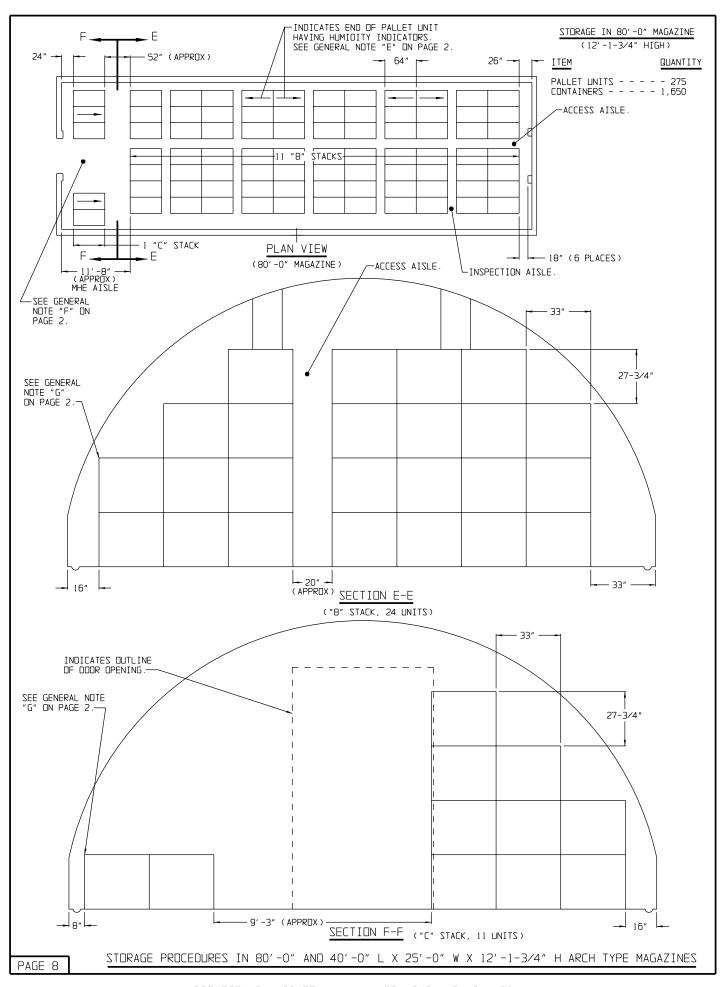


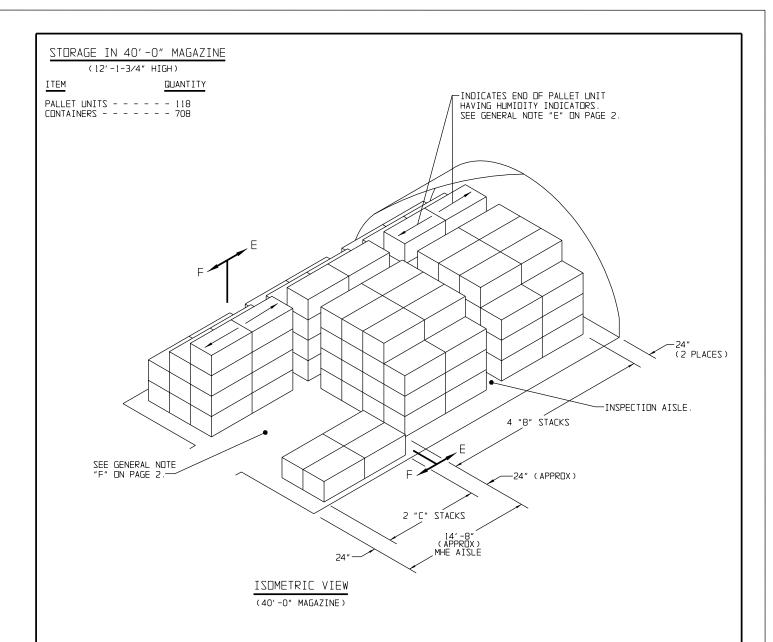
PAGE 5

STORAGE PROCEDURES IN 81'-0", 60'-8" AND 40'-4" L X 26'-6" W X 12'-9" H IGLOO MAGAZINES

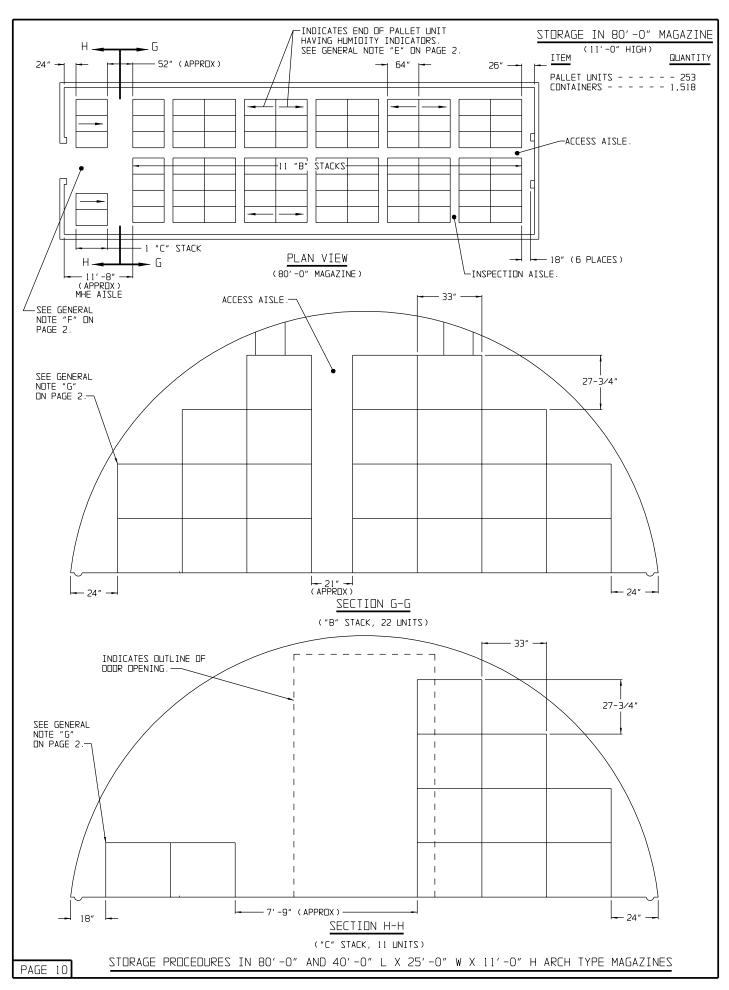


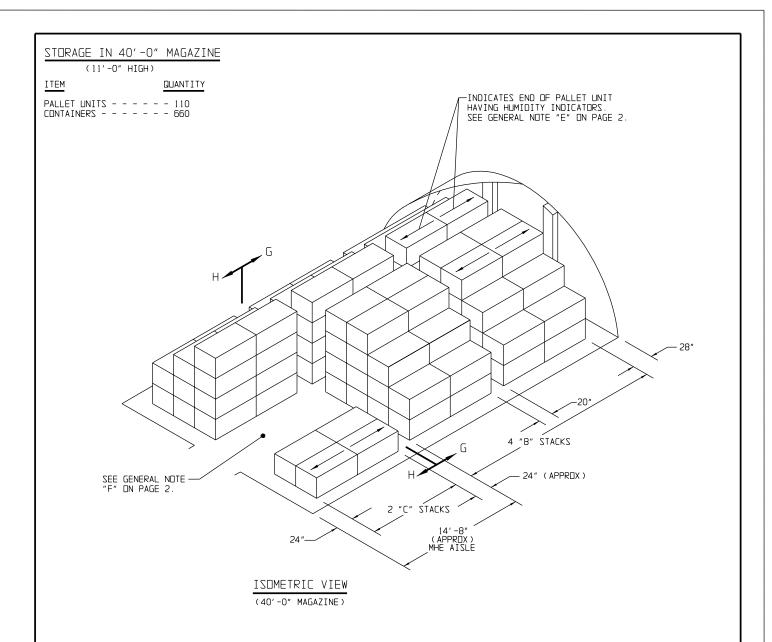


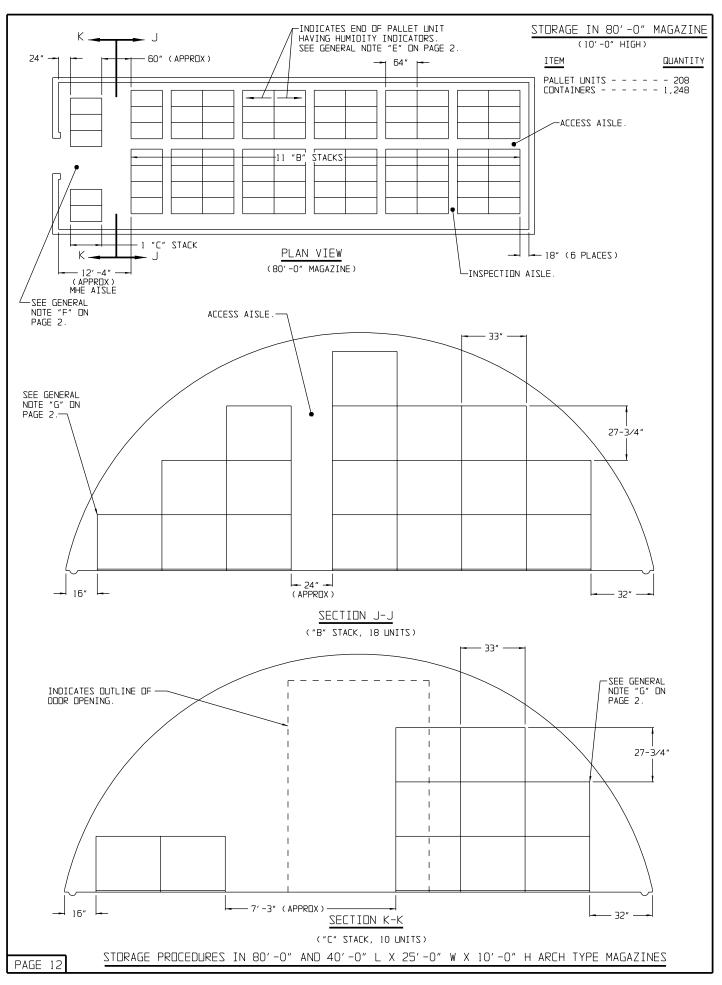


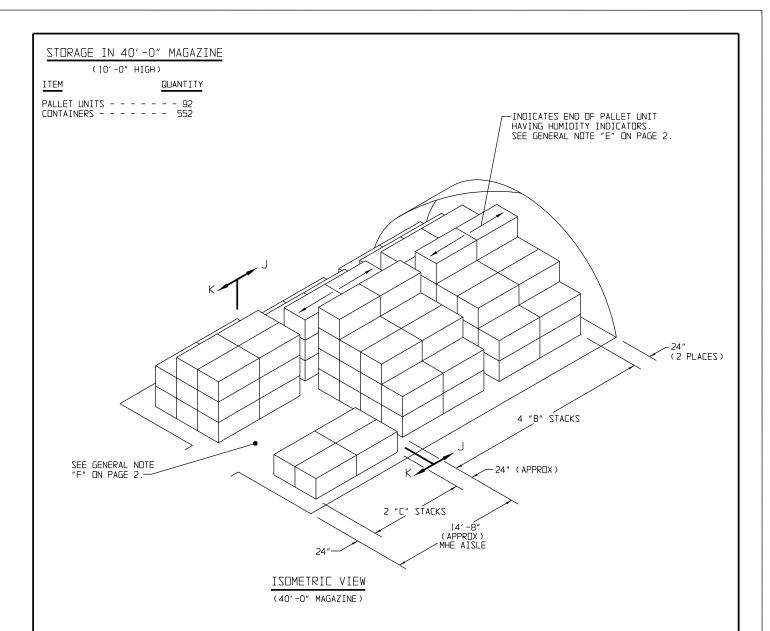


FOR "GENERAL NOTES", SEE PAGE 2.



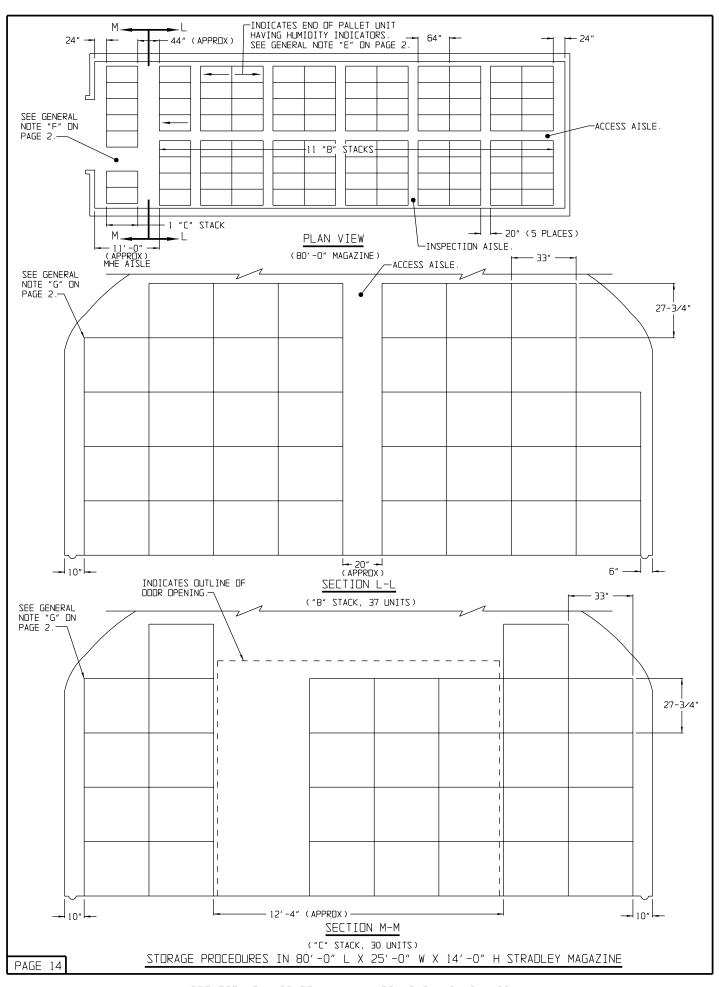


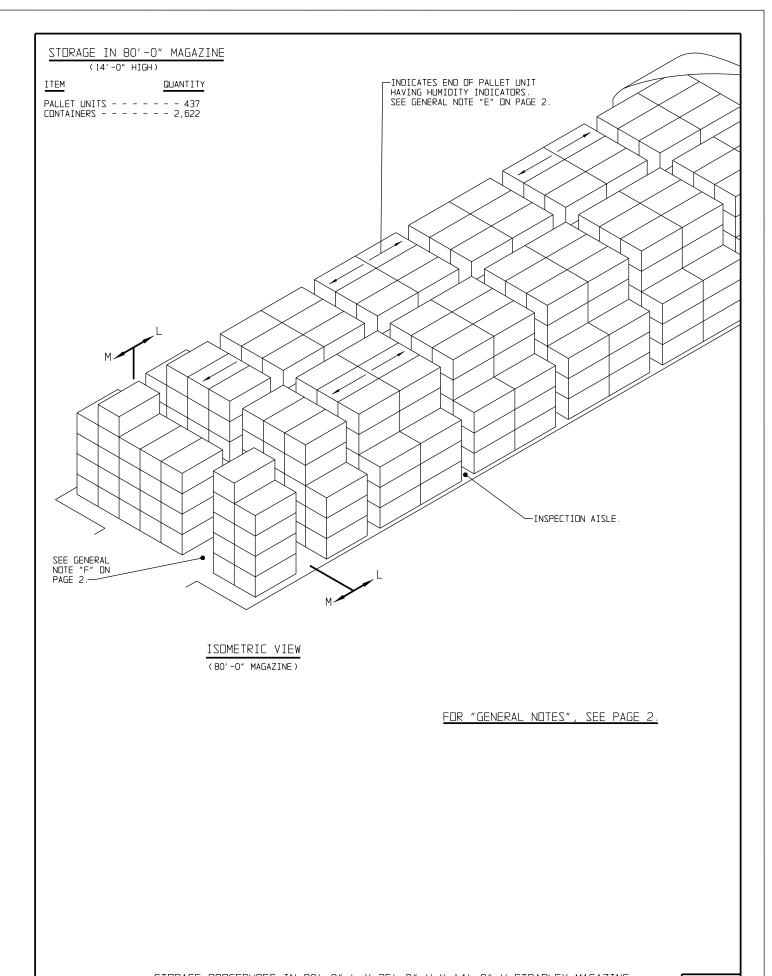


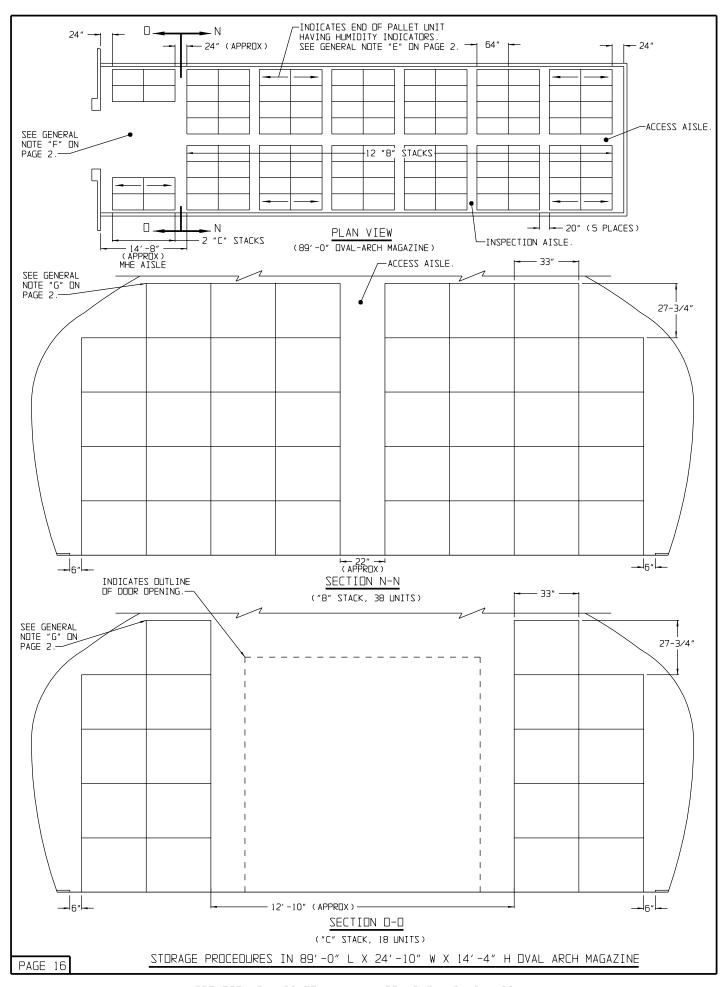


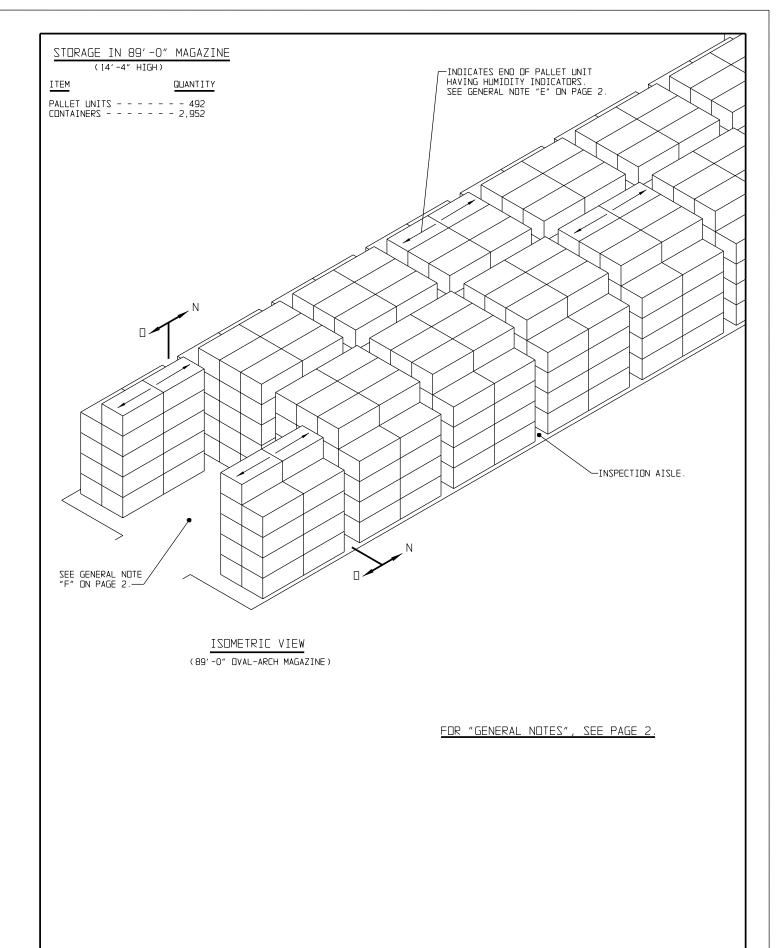
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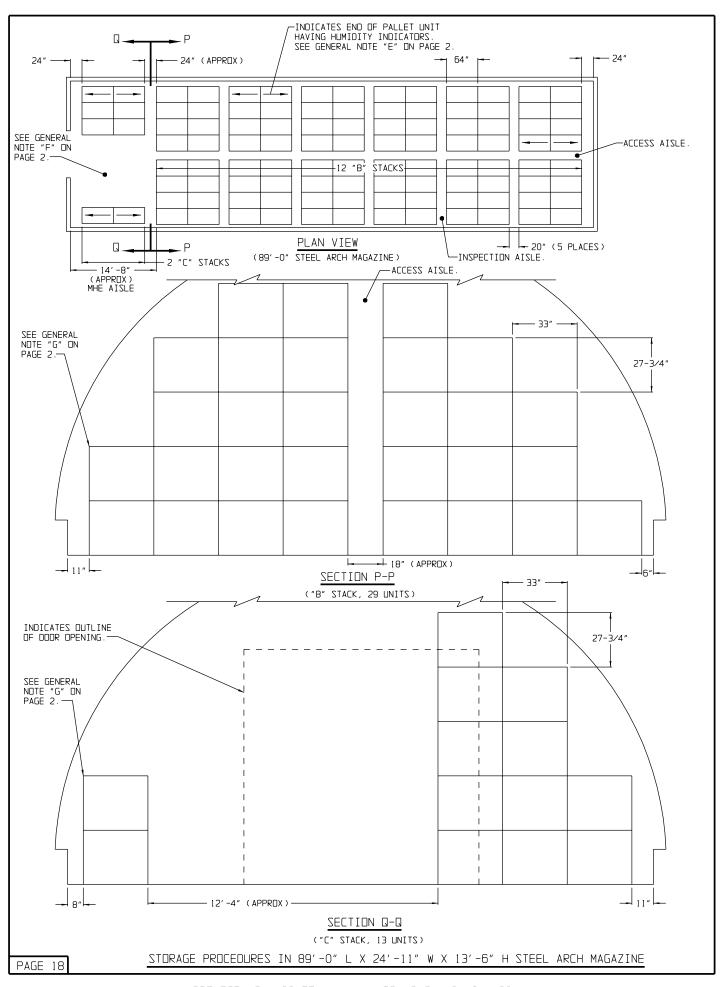
STORAGE PROCEDURES IN 80'-0" AND 40'-0" L X 25'-0" W X 10'-0" H ARCH TYPE MAGAZINES

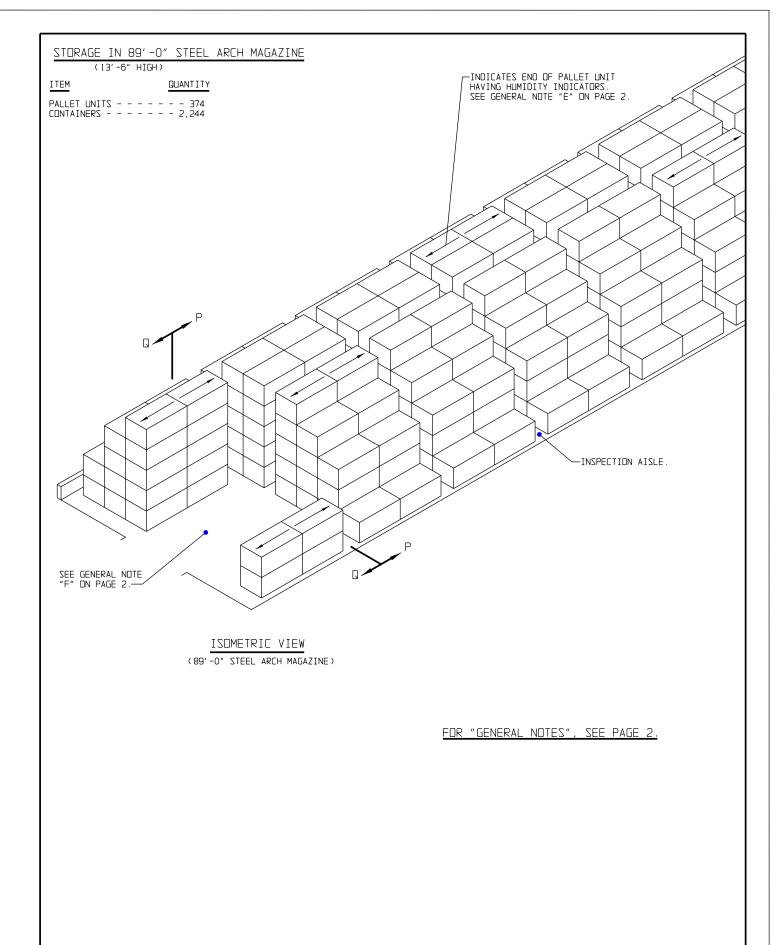




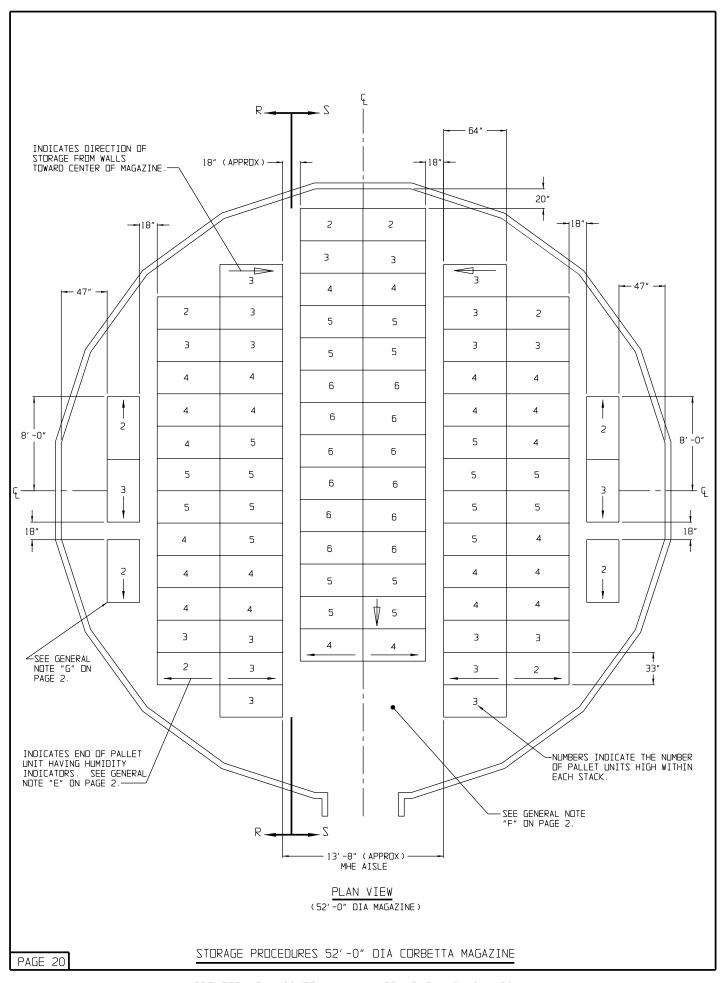


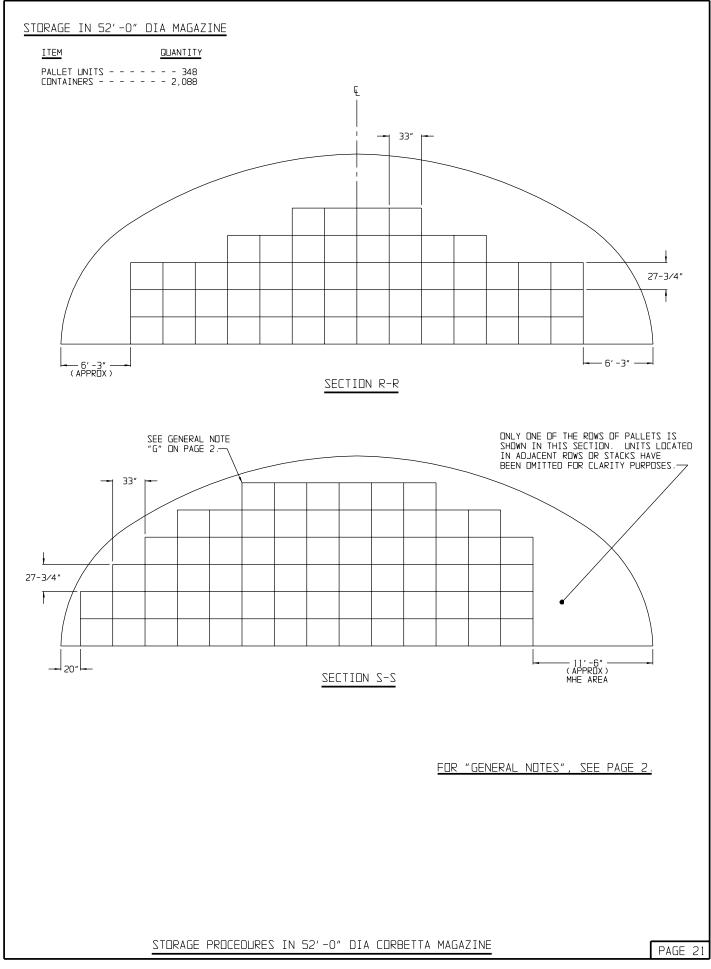


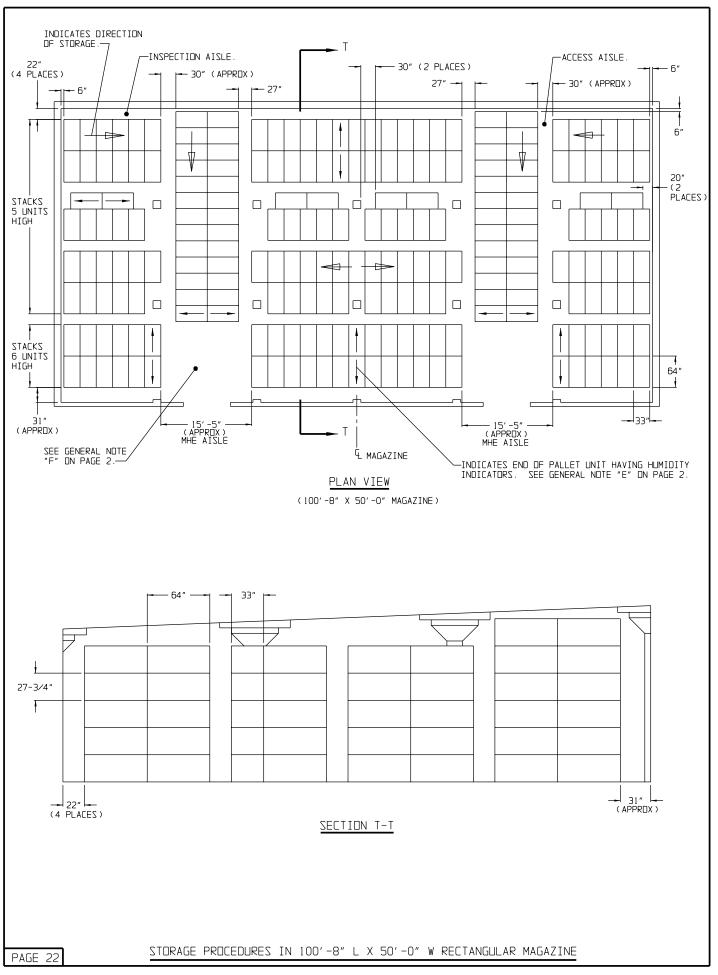


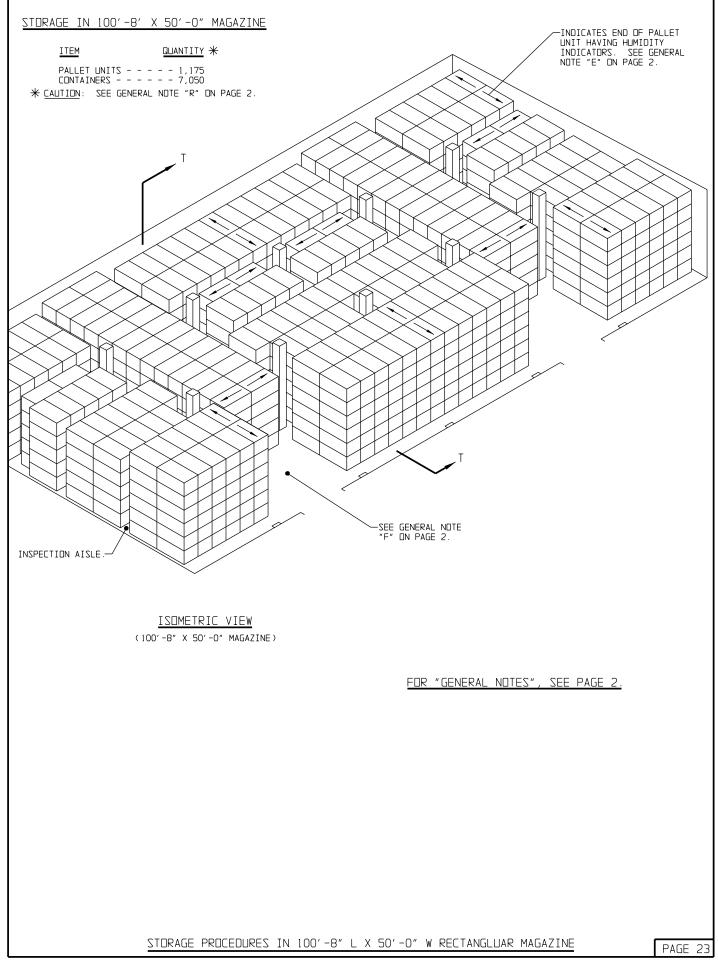


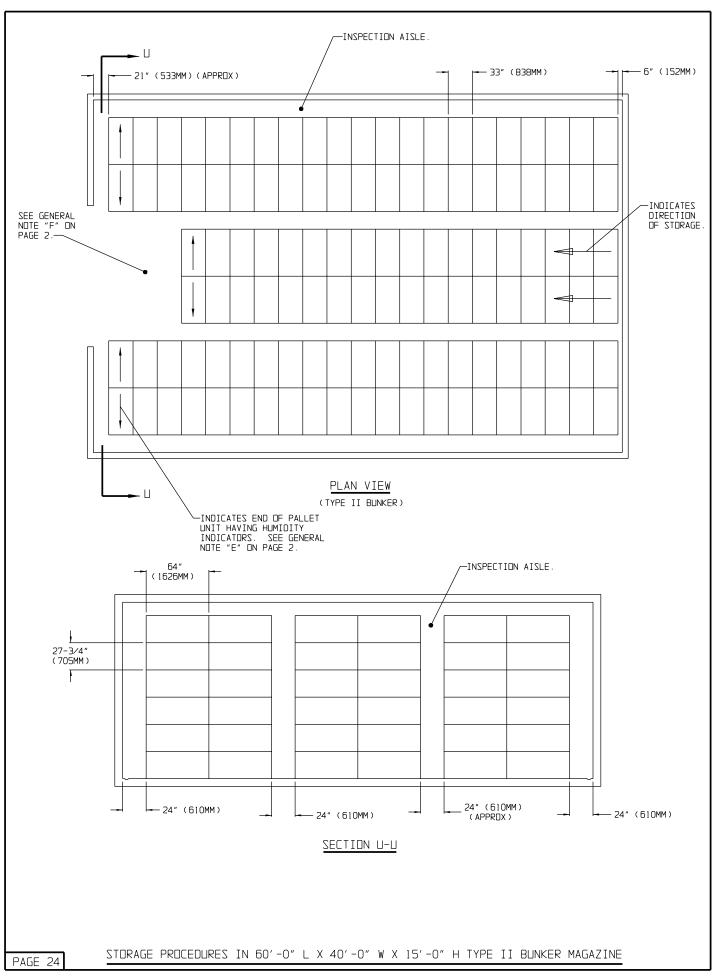
STORAGE PROCEDURES IN 89'-0" L X 24'-11" W X 13'-6" H STEEL ARCH MAGAZINE

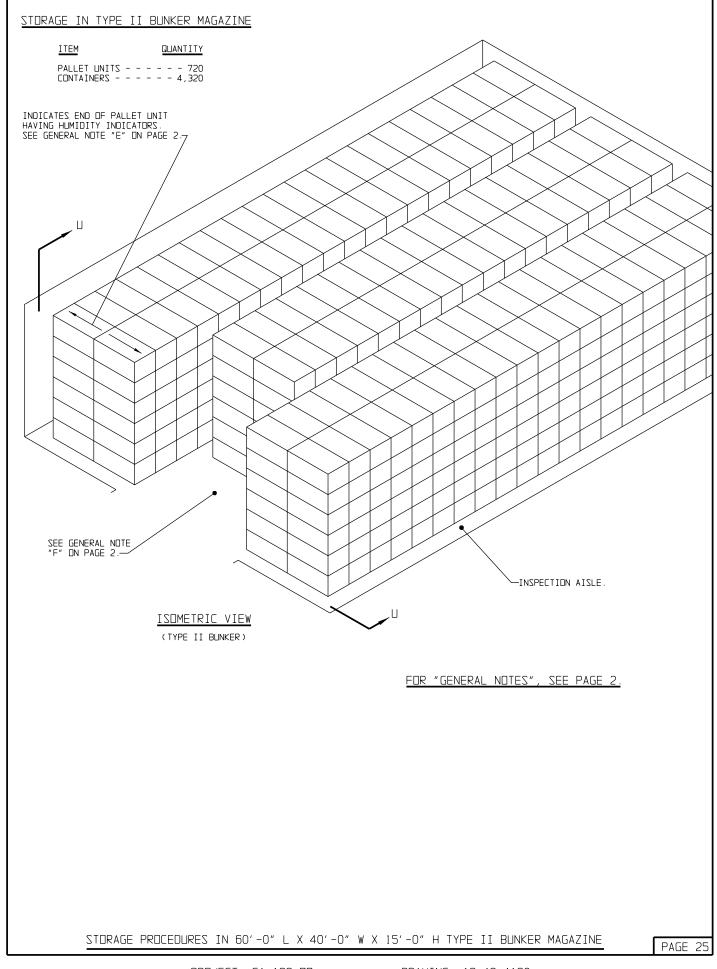


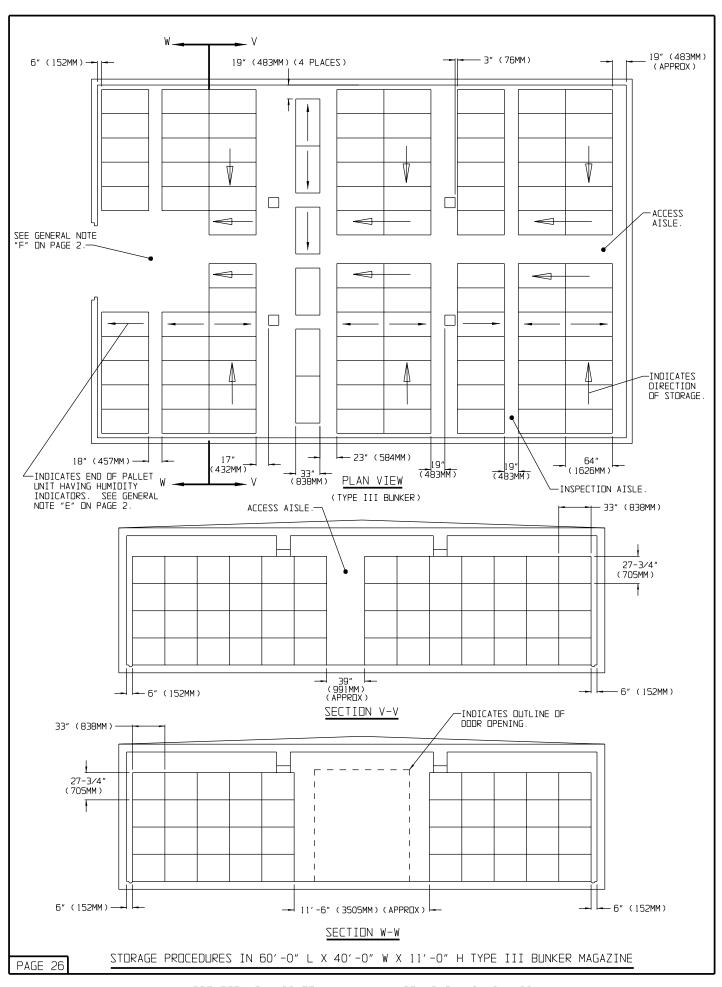




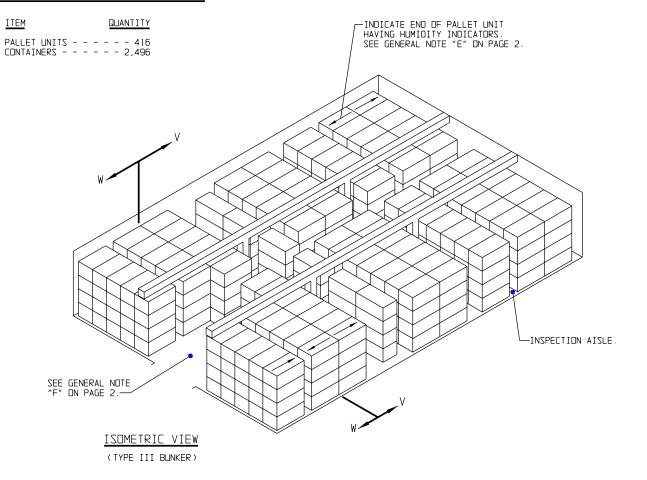






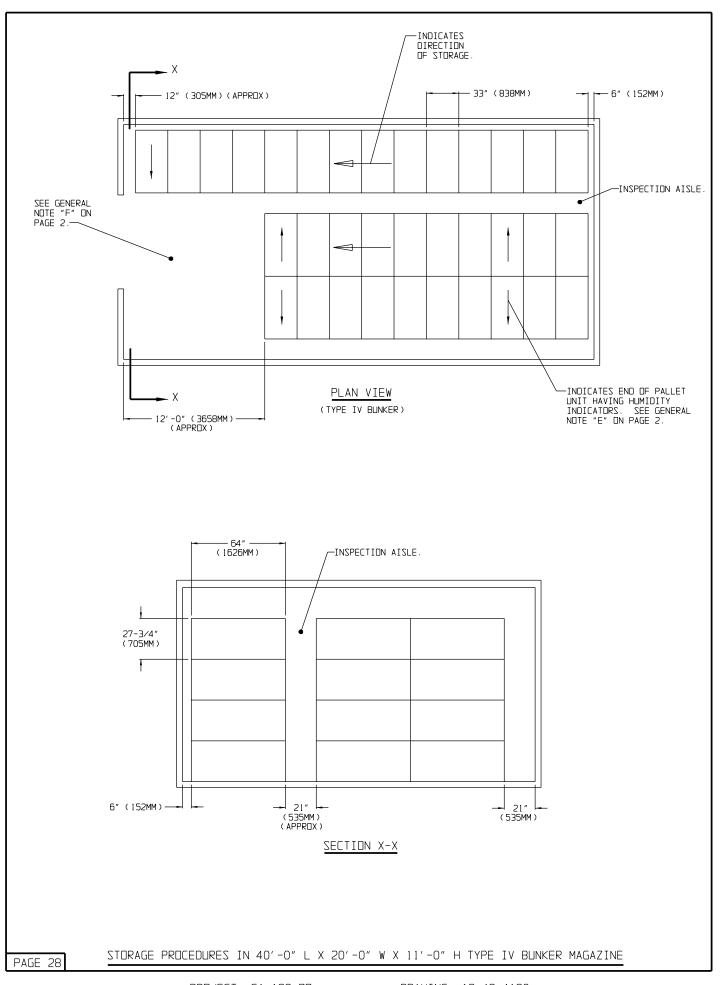


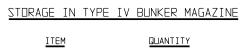
# STORAGE IN TYPE III BUNKER MAGAZINE



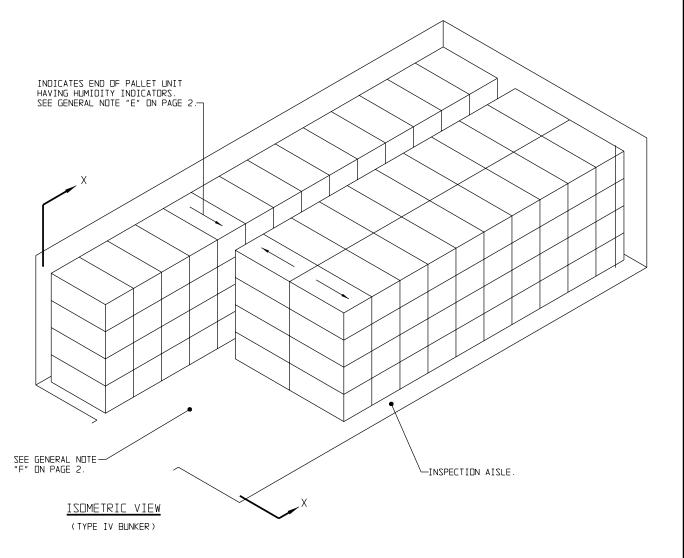
FOR "GENERAL NOTES", SEE PAGE 2.

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



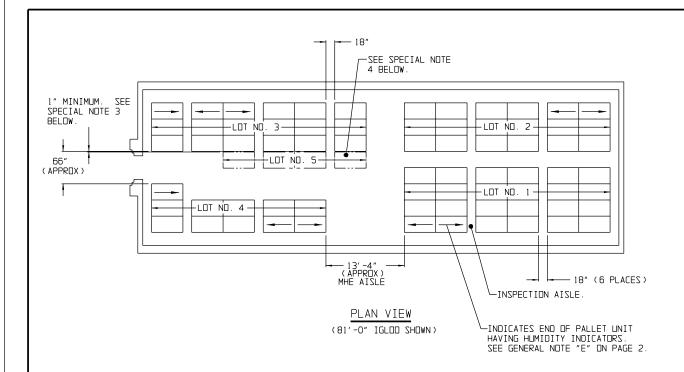


PALLET UNITS - - - - - 136 CONTAINERS - - - - - - 816



FOR "GENERAL NOTES", SEE PAGE 2.

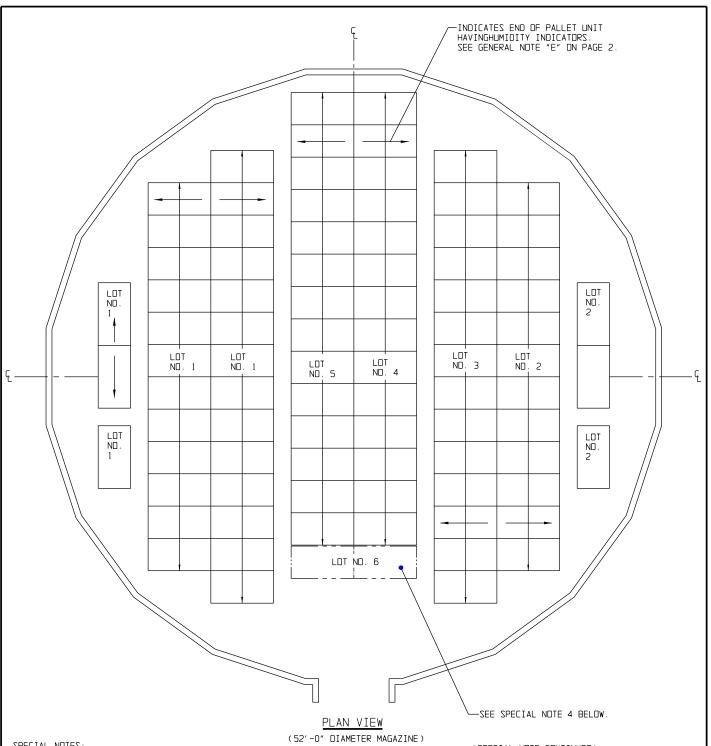
STORAGE PROCEDURES IN 40'-0" L X 20'-0" W X 11'-0" H TYPE IV BUNKER MAGAZINE



### SPECIAL NOTES:

- 1. THE MULTIPLE-LOT STORAGE SHOWN ABOVE IS TYPICAL ONLY AND APPLIES TO STORAGE OF RELATIVELY LARGE LOTS. ADAPTATIONS MAY BE MADE DEPENDING ON THE NUMBER AND SIZE OF LOTS TO BE STORED IN THE MAGAZINE.
- 2. THESE PROCEDURES WILL BE USED FOR DEVELOPING MULTIPLE-LOT STORAGE IN IGLOD, ARCH TYPE, STRADLEY, OVAL ARCH AND STEEL ARCH MAGAZINES. WHEN DEVELOPING A MULTIPLE-LOT STORAGE PLAN FOR PALLET UNITS, A COMBINATION OF THE PROCEDURES SHOWN ON PAGES 4 THRU 19 MUST BE USED, DEPENDING ON WHICH TYPE OF MAGAZINE IS TO BE USED.
- 3. WHEN TWO OR MORE LOTS ARE STORED ADJACENT TO EACH OTHER WITHIN THE SAME STACK, AS SHOWN BY LOT NO. 3 AND LOT NO. 5 IN THE "PLAN VIEW" ABOVE, THEY MUST BE SEPARATED BY AT LEAST 1" TO PROVIDE CLEARANCE FOR THE REMOVAL OF EITHER LOT.
- 4. UNITS SHOWN BY PHANTOM LINES INDICATE LOCATIONS WHERE ADDITIONAL LOTS MAY BE STORED. COMPLIANCE WITH ALL OF THE MULTIPLE-LOT CRITERIA AS SET FORTH ON THIS PAGE MUST BE OBSERVED. THE SIZE OF THE LOTS BEING STORED AND THE CRITERIA OF GENERAL NOTE "M" ON PAGE 2, RELATIVE TO "12 LIFTS", WILL BE MAJOR FACTORS IMPACTING ON THE NUMBER OF UNITS THAT CAN BE STORED IN AN "ADDITIONAL STORAGE LOCATION" MORE OR FEWER STACKS THAN SHOWN MAY BE STORED. A "CENTER AISLE" IS TO BE AT LEAST 48" WIDE. AN AISLE SLIGHTLY WIDER THAN 48" WILL ENHANCE FORKLIFT TRUCK MOVEMENT WITHIN THE MAGAZINE; HOWEVER, THIS SHOULD NOT BE MADE WIDER IF A LOSS IN STORAGE RESULTS.
- 5. FOR ADDITIONAL GUIDANCE, SEE GENERAL NOTES "L", "M", "N" AND "O" ON PAGE 2.
- 6. AISLE DIMENSIONS MAY BE ADJUSTED. SEE GENERAL NOTE "E" ON PAGE 2.

TYPICAL MULTIPLE-LOT STORAGE PROCEDURES IN IGLOO, ARCH TYPE, STRADLEY, OVAL ARCH AND STEEL ARCH MAGAZINES

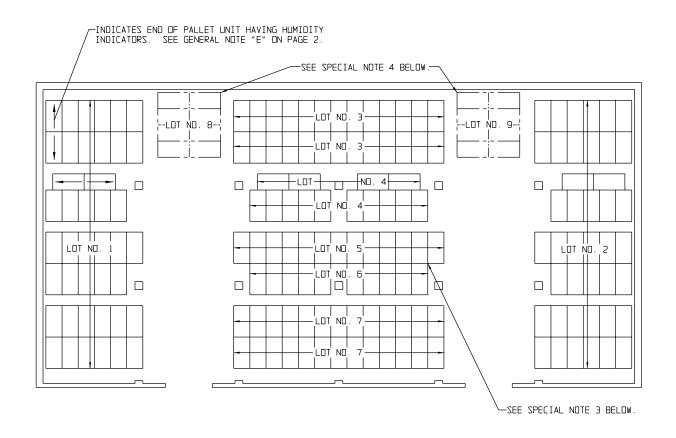


SPECIAL NOTES:

(SPECIAL NOTE CONTINUED)

- THE STORAGE PLAN AND CONFIGURATIONS SHOWN ON THIS PAGE ARE TYPICAL ONLY AND APPLY TO STORAGE OF RELATIVELY LARGE LOTS. ADAPTATIONS MAY BE MADE AS NUMBER AND SIZE OF LOTS TO BE STORED IN THE MAGAZINE REQUIRE. SEE THE STORAGE PROCEDURES ON PAGES 20 AND 21 FOR DIMENSIONS OF AISLE, AND LOCATION OF STACKS WITHIN THE MAGAZINE.
- WHEN DEVELOPING A STORAGE PLAN FOR MULTIPLE-LOT STORAGE, A COMBINATION OF THE PROCEDURES SHOWN IN THE "PLAN VIEW" ABOVE AND DN PAGES 20 AND 21 MUST BE USED
- WHEN TWO OR MORE LOTS ARE STORED ADJACENT TO EACH OTHER, THEY MUST BE SEPARATED BY AT LEAST 1" TO PROVIDE CLEARANCE FOR REMOVAL OF EITHER LOT.
- THE MHE AISLE MAY BE USED TO STORE ADDITIONAL LOTS OR ADDITIONAL ITEMS FROM AN ADJACENT LOT. COMPLIANCE WITH ALL OF THE MULTIPLE-LOT CRITERIA AS SET FORTH ON THIS PAGE MUST BE OBSERVED. THE SIZE OF THE LOTS BEING STORED AND THE CRITERIA OF GENERAL NOTE "M" ON PAGE 2, RELATIVE TO "12 LIFTS", WILL BE MAJOR FACTORS IMPACTING ON THE NUMBER OF UNITS THAT CAN BE STORED IN AN "ADDITIONAL STORAGE LOCATION". MORE OR FEWER STACKS THAN SHOWN MAY BE STORED. THE MHE OPERATING AREA CAN BE ENLARGED AS REQUIRED TO SUIT AVAILABLE FORKLIFT TRUCKS. AN SHOULD BE MADE SMALLER TO SUIT AVAILABLE FORKLIFT TRUCKS, AN SHOULD BE MADE SMALLER IF AVAILABLE MHE PERMITS. HOWEVER, THIS AISLE SHOULD NOT BE IF AVAILABLE MHE PERMITS. HOWEVER, THIS A MADE SMALLER IF A LOSS IN STORAGE RESULTS.
- AISLE DIMENSIONS MAY BE ADJUSTED. SEE GENERAL NOTE "E" ON PAGE 2.
- FOR ADDITIONAL GUIDANCE, SEE GENERAL NOTES "L", "M", "N", AND "D" DN PAGE 2.

TYPICAL MULTIPLE-LOT STORAGE PROCEDURES IN CORBETTA MAGAZINES



# PLAN VIEW

(100'-8" X 50'-0" MAGAZINE)

# SPECIAL NOTES:

- 1. THE STORAGE PLANS AND CONFIGURATIONS SHOWN ON THIS PAGE ARE
  TYPICAL ONLY AND APPLY TO STORAGE OF RELATIVELY LARGE LOTS.
  ADAPTATIONS MAY BE MADE AS THE NUMBER AND SIZE OF LOTS TO BE STORED IN THE
  MAGAZINE REQUIRE. SEE THE STORAGE PROCEDURES ON PAGES 22 AND 23 FOR
  DIMENSIONS OF AISLES, AND LOCATION OF STACKS WITHIN THE MAGAZINE.
- 2. WHEN DEVELOPING A STORAGE PLAN FOR MULTIPLE-LOT STORAGE, A COMBINATION OF THE PROCEDURES SHOWN IN THE "PLAN VIEW" ABOVE AND ON PAGES 22 AND 23 MUST BE USED.
- 3. WHEN TWO OR MORE LOTS ARE STORED ADJACENT TO EACH OTHER, THEY MUST BE SEPARATED BY AT LEAST 1" TO PROVIDE CLEARANCE FOR REMOVAL OF EITHER LOT.
- 4. THE UNITS SHOWN WITHIN THE MHE AISLE INDICATE LOCATIONS WHERE ADDITIONAL LOTS MAY BE STORED. COMPLIANCE WITH ALL OF THE MULTIPLE-LOT CRITERIA AS SET FORTH ON THIS PAGE MUST BE OBSERVED. THE SIZE OF THE LOTS BEING STORED AND THE CRITERIA OF GENERAL NOTE "M" ON PAGE 2, RELATIVE TO "12 LIFTS", WILL BE MAJOR FACTORS IMPACTING ON THE NUMBER OF UNITS THAT CAN BE STORED IN AN "ADDITIONAL STORAGE LOCATION".

  MORE OR FEWER STACKS THAN SHOWN MAY BE STORED. THE MHE OPERATING AREA CAN BE ENLARGED AS REGUIRED TO SUIT AVAILABLE FORKLIFT TRUCKS, AND SHOULD BE MADE SMALLER IF AVAILABLE MHE PERMITS. HOWEVER, THIS AISLE SHOULD NOT BE MADE WIDER IF A LOSS IN STORAGE RESULTS.
- 5. AISLE DIMENSIONS MAY BE ADJUSTED. SEE GENERAL NOTE "E" ON PAGE 2.
- 6. FOR ADDITIONAL GUIDANCE, SEE GENERAL NOTES "L", "M", "N", AND "O" ON PAGE 2.

TYPICAL MULTIPLE-LOT STORAGE PROCEDURES IN RECTANGULAR MAGAZINES