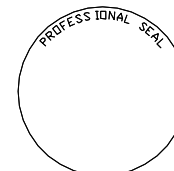


US Army Corps  
of Engineers  
Engineering and Support  
Center, Huntsville

# AIR FORCE MODULAR STORAGE MAGAZINE, BOX-TYPE STD 421-80-06

## DRAWING INDEX

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		REV. NO.	AM/CD	
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AIR FORCE MODULAR STORAGE  
MAGAZINE, BOX-TYPE  
DRAWING INDEX & COVER SHEET

U. S. ARMY ENGINEERING AND  
SUPPORT CENTER, HUNTSVILLE  
HUNTSVILLE, ALABAMA

Approved Functional Adequacy  
Title: \_\_\_\_\_ Date: \_\_\_\_\_  
Prepared by  
William H. Zehrt 28 SEP 99  
Title: Structural Engineer Date: \_\_\_\_\_

Constructibility Review  
Chief, Construction Div. \_\_\_\_\_ Date: \_\_\_\_\_  
Reviewed by  
Paul W. Lohoud 29 SEP 99  
Chief, CE Division \_\_\_\_\_ Date: \_\_\_\_\_  
John L. Boggett 30 SEP 99  
Chief, ME Division \_\_\_\_\_ Date: \_\_\_\_\_

Recommended by  
Ronald R. Lein 30 SEP 99  
Director of Engineering \_\_\_\_\_ Date: \_\_\_\_\_  
Approved by  
Col. Harry L. Spear 1 OCT 99  
Commander \_\_\_\_\_ Date: \_\_\_\_\_

This project was designed by the  
U.S. Army Corps of Engineers, Engineering and Support  
Center, Huntsville. The initials or  
signatures and registration  
numbers of individuals appearing  
on these documents within the  
boundaries of the project as  
required by ER 1110-1B15C.



Symbol	Description	Date	Approved

Date	Rev.	Designed by	Checked by	Reviewed by	Submitted by	File name	Plot date	Plot scale

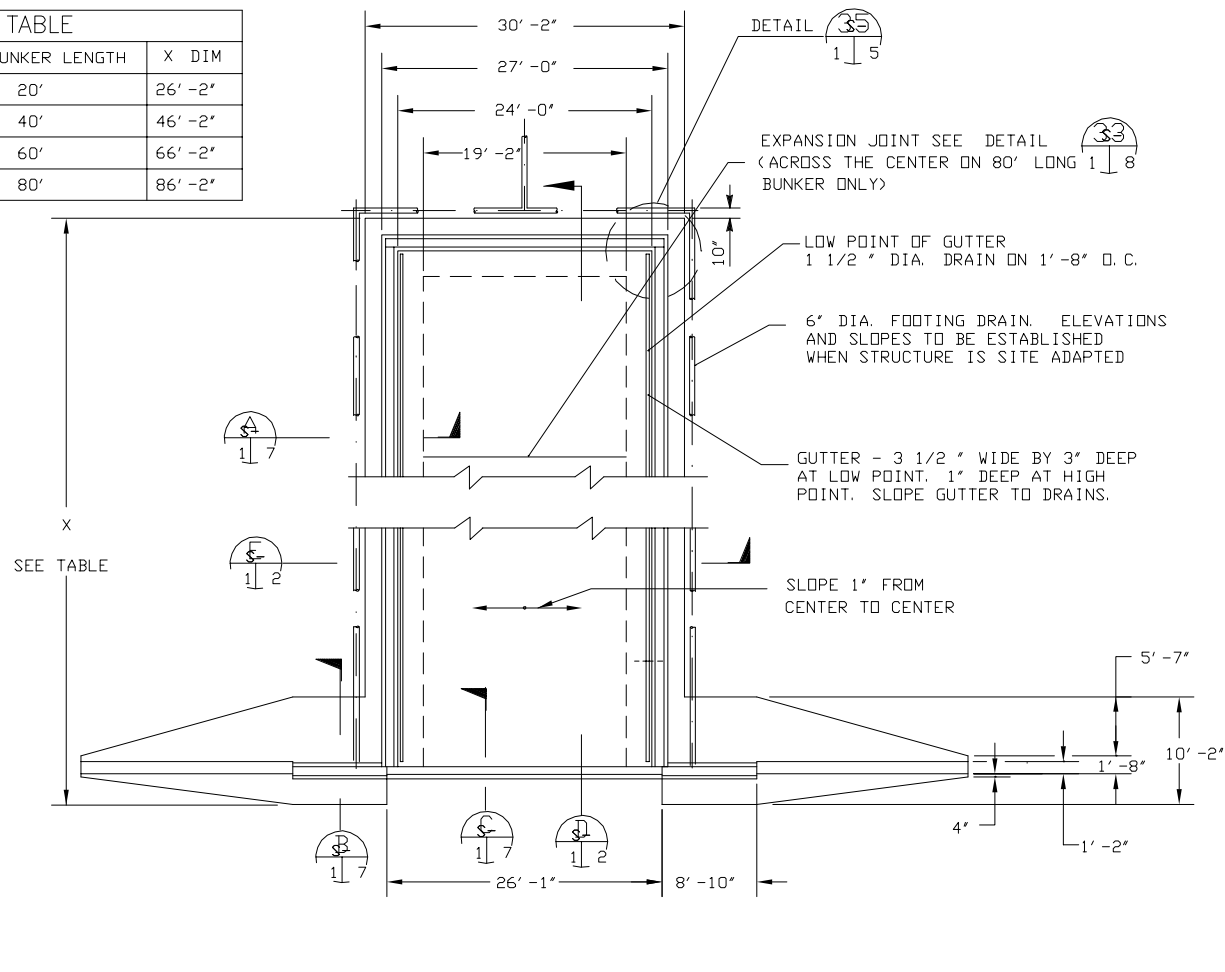
AIR FORCE MODULAR STORAGE MAGAZINE, BOX-TYPE 421-80-06	FOUNDATION & FLOOR PLAN
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Sheet reference number:  
S - 1  
Sheet of

GENERAL NOTES:

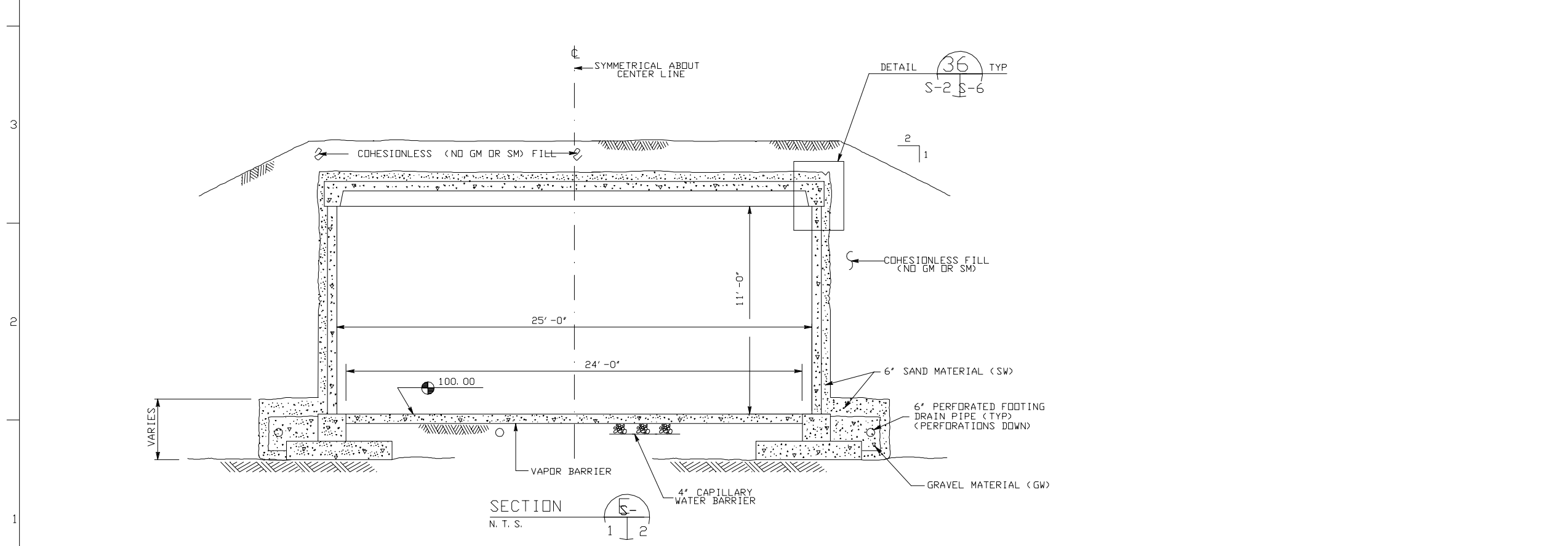
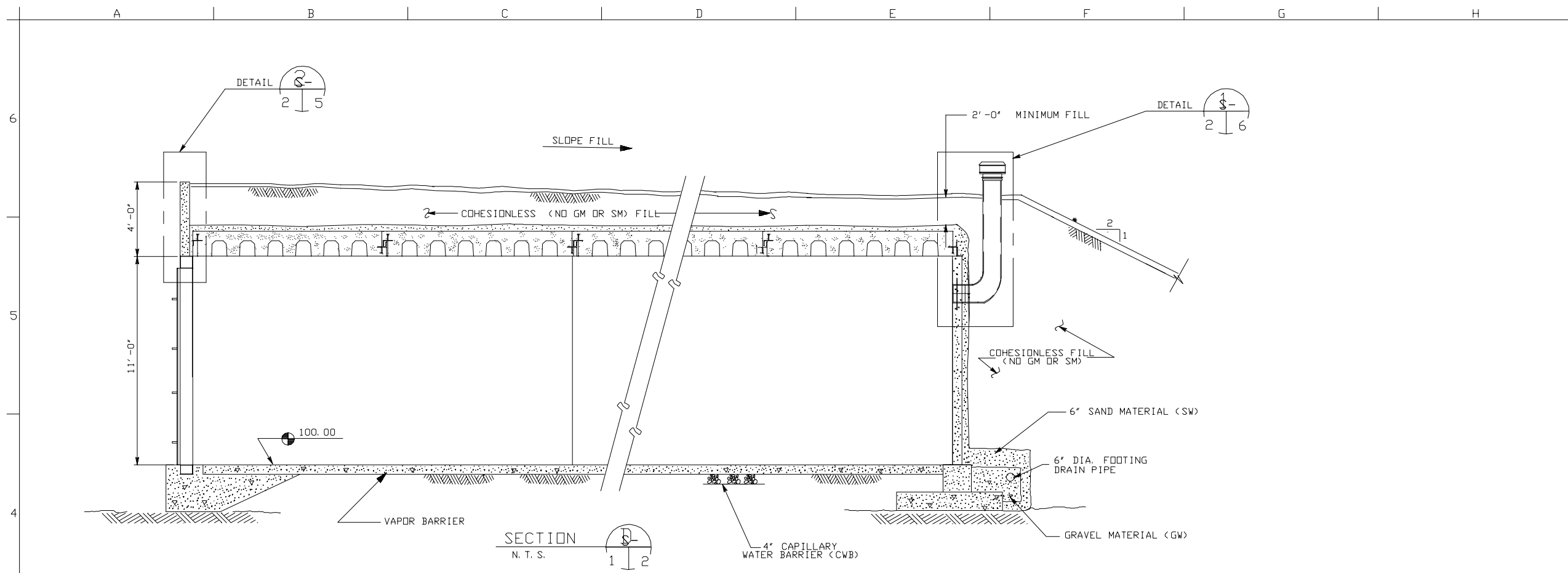
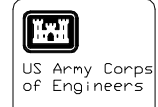
- LIGHTNING PROTECTION SYSTEM (LPS). ALL METAL PARTS, TO INCLUDE REINFORCEMENT IN FLOOR, PRECAST WALLS AND ROOF PANELS, LOUVERS, VENTILATORS, DOORS AND DOOR FRAME, SHALL BE MADE ELECTRICALLY CONTINUOUS BY BONDING (CLIPPING, BRAZING OR WELDING) AT 5 LINEAR FEET INTERVALS. ELECTRICAL CONTINUITY SHALL BE PROVIDED ACROSS FLOOR EXPANSION AND ISOLATION JOINTS TO FOUNDATION PEDESTALS AT 5 LINEAR FEET INTERVALS. ELECTRICAL CONTINUITY BETWEEN WALL AND ROOF PRECAST PANELS, AND BETWEEN PRECAST WALLS AND CONCRETE PEDESTAL FOOTING SHALL BE PROVIDED DURING CONSTRUCTION. ACCEPTABLE CONTINUITY METHODS ARE REINFORCEMENT BARS, COPPER STRAPS, ETC.
- WELDING OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE STRUCTURAL WELDING CODE FOR STEEL OF THE AMERICAN WELDING SOCIETY (AWS) D1.1.
- TUBE STEEL (TS) SHALL CONFORM TO ASTM A-500, GRADE B.
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A36.
- FOOTINGS SHOWN WERE SIZED FOR A SOIL BEARING VALUE OF 3000 PSF. FOOTINGS MUST BE REDESIGNED IF THE SOILS INVESTIGATION DOES NOT CONFORM TO THIS MINIMUM BEARING CAPACITY.
- IT IS THE RESPONSIBILITY OF THE SITE ADAPTATION ENGINEER TO MODIFY THESE DRAWINGS TO MEET LOCAL SITING, FOUNDATION, AND TOPOGRAPHIC CONDITIONS. INAPPROPRIATE NOTES AND DETAILS SHALL BE DELETED FROM THE DRAWINGS.
- JOINTS SHALL BE LOCATED AS SHOWN ON DRAWINGS.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
- REINFORCEMENT STEEL SHALL CONFORM TO ASTM A-615, GR. 60. TIES SHALL BE GR. 40 OR GR. 60.
- ALL REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH ACI BUILDING CODE (ACI-318) LATEST EDITION.
- WELDED WIRE FACRIC SHALL CONFORM TO ASTM 1-185, GR. 60.
- DETAILING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE LATEST ACI MANUAL FOR DETAILING (SP-66).
- ALL STRUCTURAL STEEL EXPOSED TO SOIL SHALL BE COATED WITH COAL TAR EPOXY.
- REINFORCEMENT BARS SHALL NOT BE BENT OR STRAIGHTENED IN A MANNER THAT WILL DAMAGE THE MATERIAL. BARS WITH KINKS OR IMPROPER BENDS SHALL NOT BE USED.
- REINFORCEMENT SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS, BUT DISCONTINUOUS AT ALL CONTROL JOINTS, UNLESS OTHERWISE NOTED.
- PROVIDE 24 INCHES EARTH COVER MINIMUM ON ROOF.
- WATERPROOF ALL SURFACES OF THE SHELTER WHICH WILL BE IN CONTACT WITH EARTH FILL AFTER SHELTER IS ERECTED.
- ALL STRUCTURAL DRAWINGS WERE DESIGNED BY THE AIR FORCE AND ARE REFORMATTED FROM THE AIR FORCE DRAWINGS:  
9210827 REV. B, 9210828 REV. A, 9210829 REV. A, 9210830 REV. A,  
9210831 REV. A, 9210832 REV. B, AND 9484969.

NOM. BUNKER LENGTH	X DIM
20'	26'-2"
40'	46'-2"
60'	66'-2"
80'	86'-2"



FOUNDATION AND FLOOR PLAN  
SCALE: N. T. S.

X  
SEE TABLE



Symbol	Description	Date Approved	Symbol	Description	Date Approved

Designed by: J. JENIS (Calc/CWB) Dra by: RLA	Date: Mkt 94	Rev.
Reviewed by: Submitted by: William H. Zehrt	Design File no. 99 - 421-80-06 Drawing Code	File name: AF328.rpt Plot date:
U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA		

AIR FORCE MODULAR STORAGE MAGAZINE, BOX-TYPE 421-80-06  
 BUILDING SECTIONS

Sheet reference number:  
 2 - 2  
 Sheet of

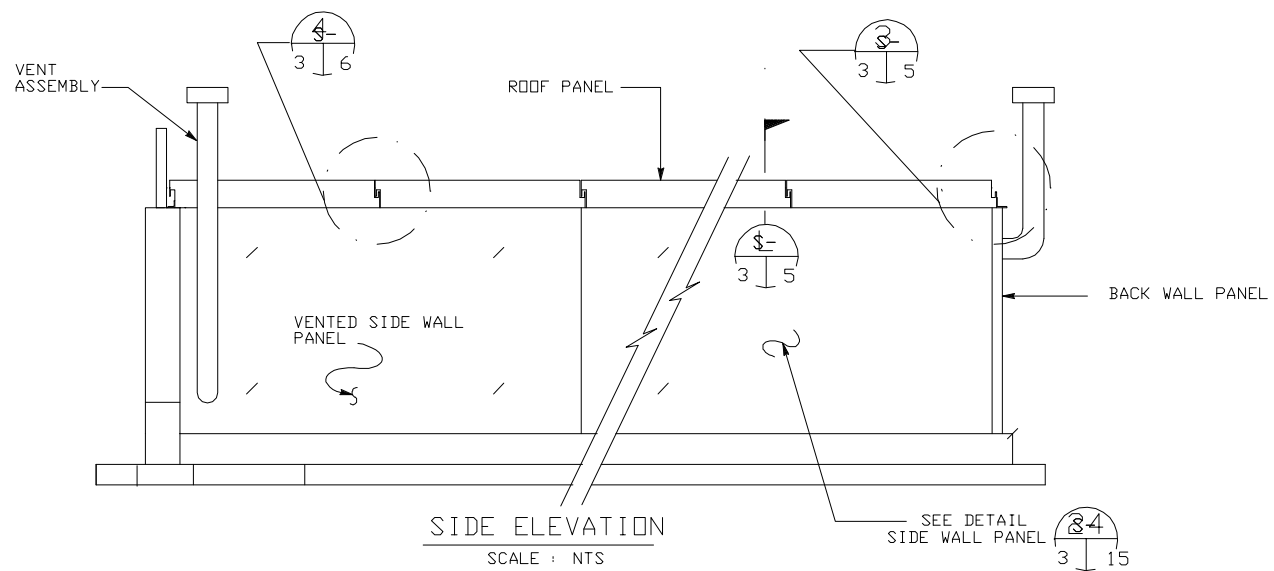
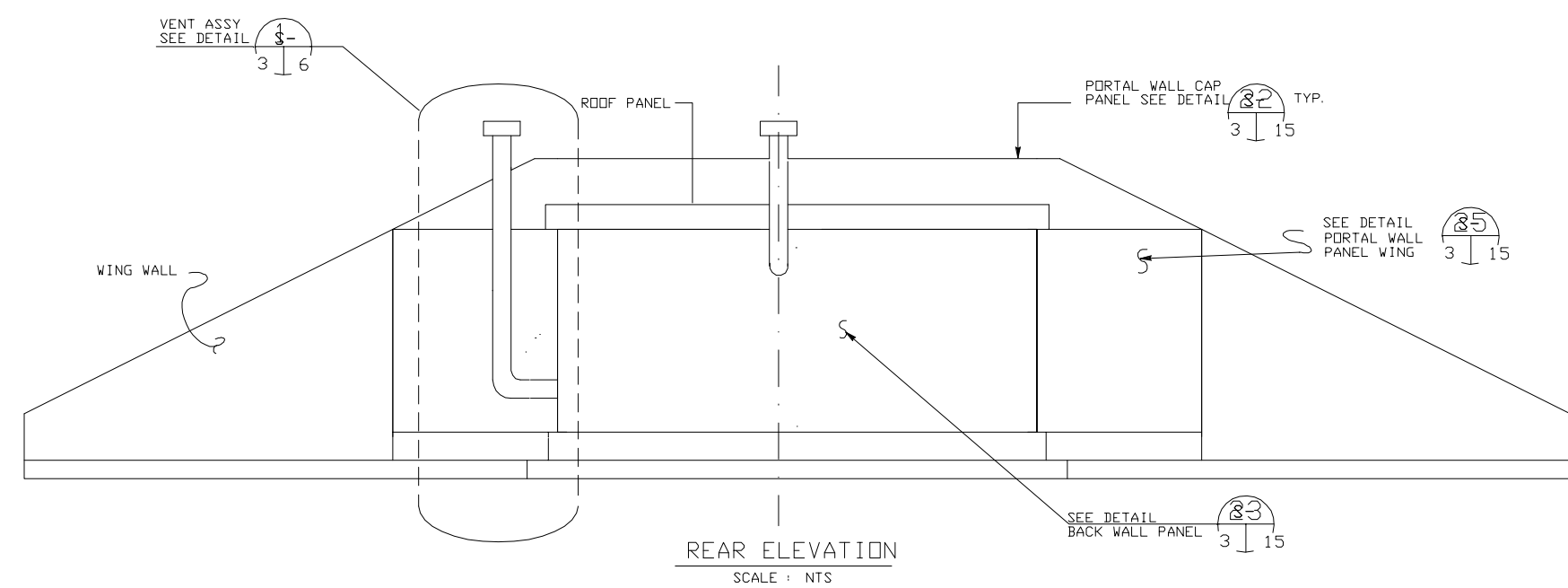
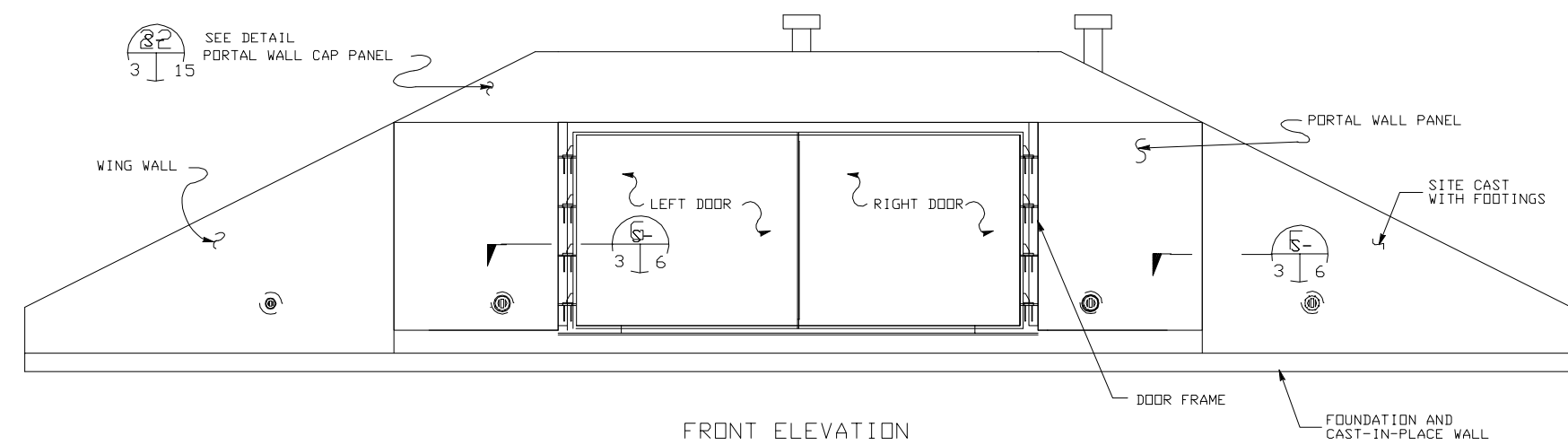


Symbol	Description	Date Approved	Symbol	Description	Date Approved

Rev.	Date	Designed by	Checked by	Submitted by

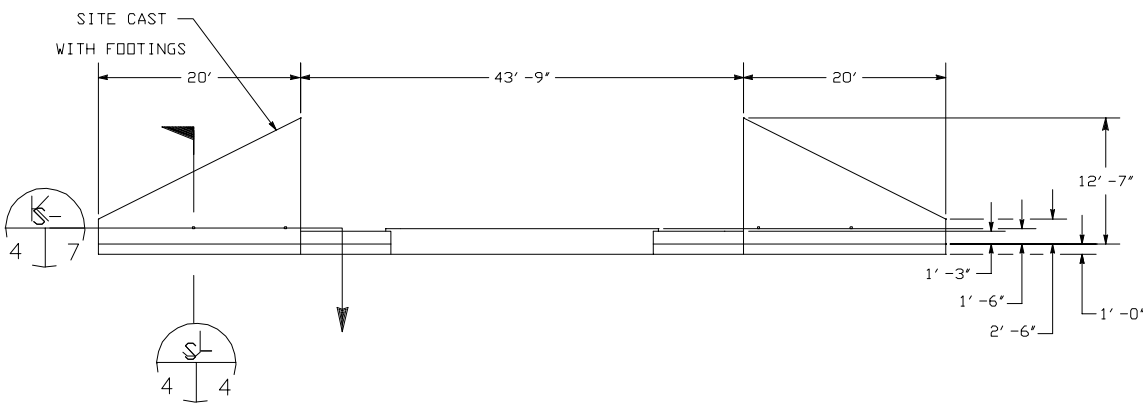
AIR FORCE MODULAR STORAGE  
MAGAZINE, BOX-TYPE  
421-80-06  
ELEVATIONS

Sheet reference number: 3  
Sheet of

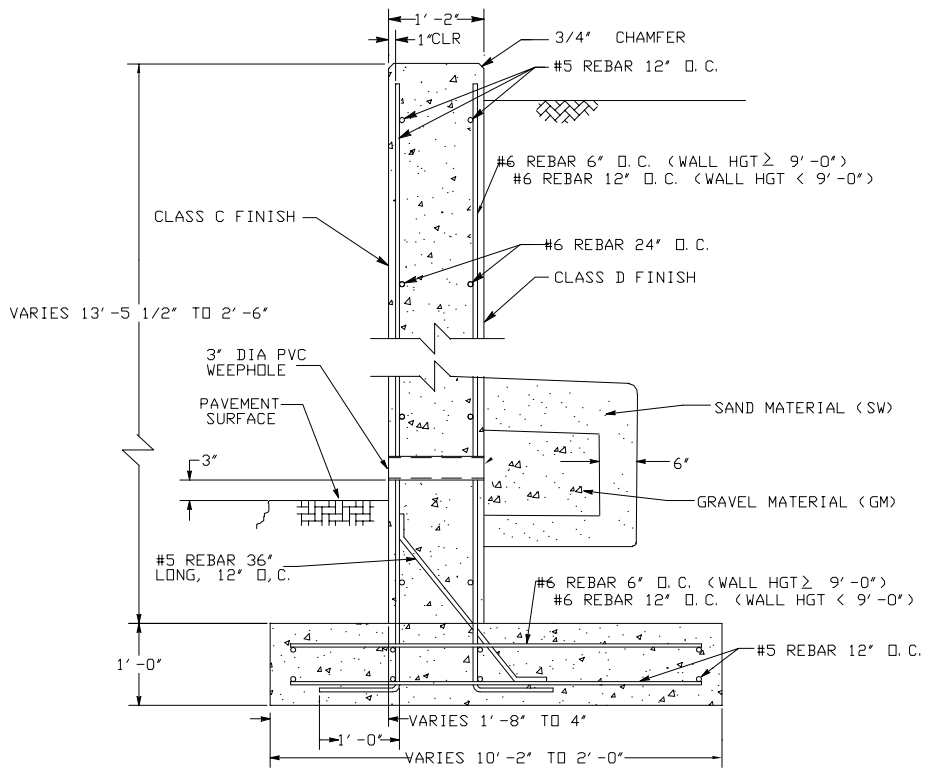


SPECIFIC NOTES:

1. JOINT SEALANT SHALL BE USED FOR ALL JOINTS EXPOSED TO VIEW AND SHALL BE IN ACCORDANCE WITH ASTM C920, TYPE S, GRADE NS, CLASS 25. PRIMER SHALL BE USED AS RECOMMENDED BY SEALANT MANUFACTURER.
2. JOINT SEALANT USED FOR ALL JOINTS THAT WILL BE WATERPROOFED, SHALL BE AS RECOMMENDED BY THE MANUFACTURER OF THE WATERPROOFING COMPOUND.
3. COAT ALL STRUCTURAL STEEL EXPOSED TO SOIL WITH TWO COATS OF COAL TAR EPOXY. EPOXY SHALL MEET THE REQUIREMENTS OF PAINT SPECIFICATION, SSPC - PAINT 16.
4. WATERPROOF ALL SURFACES OF THE SHELTER WHICH WILL BE IN CONTACT WITH EARTH FILL AFTER SHELTER IS ERECTED.



FOUNDATION FRONT ELEVATION  
SCALE 1/8" = 1'-0"



SECTION  
SCALE: N.T.S.

NOTE: UNLESS OTHERWISE NOTED 3" MINIMUM COVERAGE ON ALL REBAR.  
IF NO SPACE FOR HOOK, THEN HOOK IN OPPOSITE DIRECTION.

SPECIFIC NOTES:

- 1. THE SAND AND GRAVEL MATERIALS SHOWN IN THE SECTIONAL VIEW THROUGH WING WALL SHOULD BE TERMINATED AT THE POINT WHERE THE WING WALL HEIGHT IS INSUFFICIENT TO MAINTAIN THE 2'-3' COHESIONLESS FILL MATERIAL. PLACE COVER OVER AT LEAST 6" OF SAND MATERIAL. PAST THIS POINT, AN ADDITIONAL 6" OF SAND MATERIAL SHOULD BE ADDED TO "CLOSE IN" THE END OF GRAVEL MATERIAL.
- 2. AS AN OPTION, DEPENDING ON THE SITE SPECIFIC CONDITIONS, THE WEEPHOLES THROUGH THE WING WALLS MAY BE REPLACED WITH PERFORATED PIPE DRAINS PLACED IN THE GRAVEL MATERIAL RUNNING LATERALLY BEHIND THE WING WALLS AND PORTAL WALL PANELS AND CONNECTED TO THE PERIMETER FOOTING DRAINS.



Date	Approved Symbol	Description

Date	Rev.
Mid 94	
Design File no. 99-421-BD-06	
Drawing Code	
File name	AF304.dgn
Plot date	
Plot scale	

Designed by: J. JENIS, Calc/MDP  
Dwn by: RLA  
Reviewed by: MW  
Submitted by: WILLIAM H. ZEHR

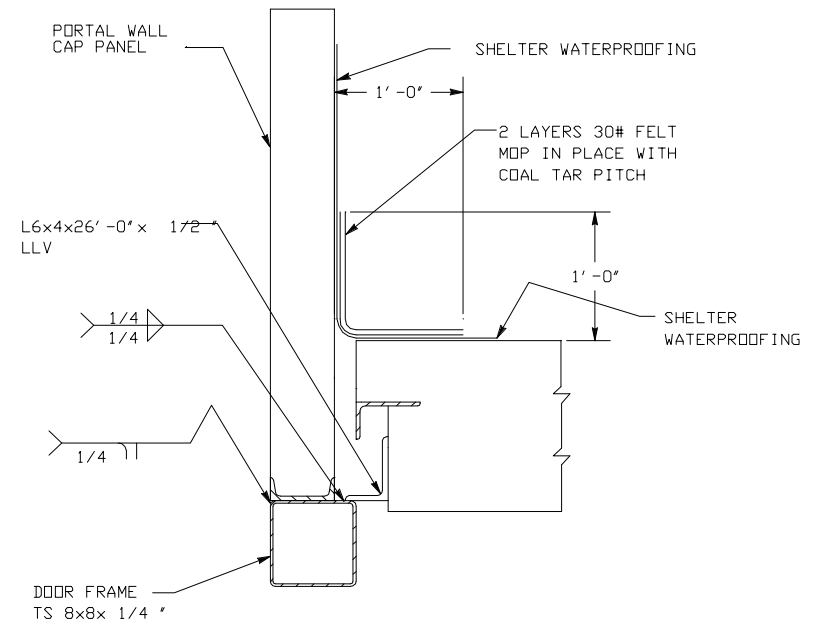
U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06  
FOUNDATION FRONT ELEVATION AND SECTION

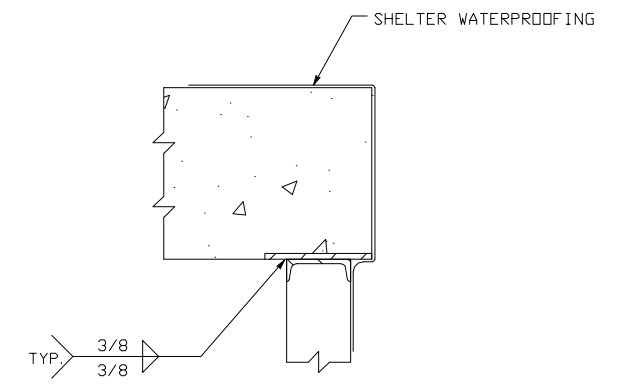
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Sheet of



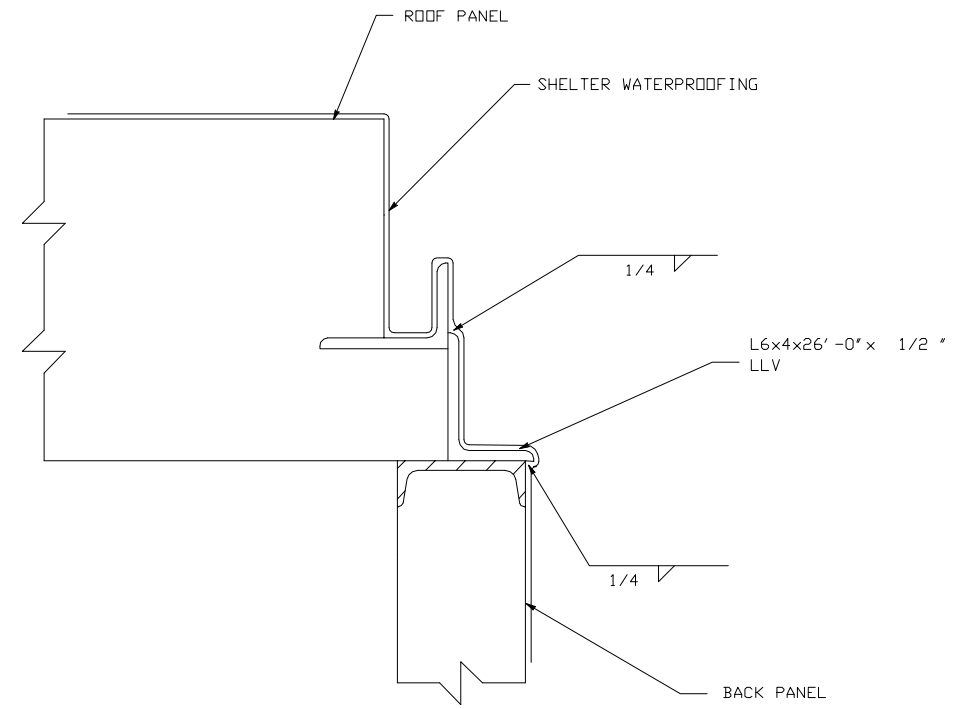
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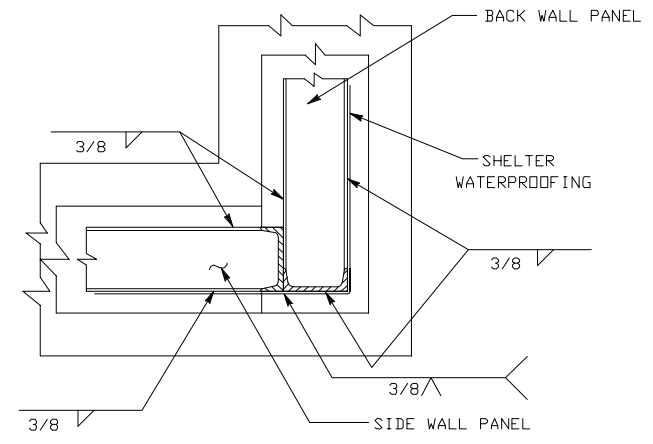
DETAIL 3-2  
SCALE: N. T. S. 2 5



SECTION 3-5  
SCALE: N. T. S. 3 5



DETAIL 3-3  
SCALE: N. T. S. 3 5



DETAIL 3-5 ROTATED 90 DEG. C. W.  
SCALE: N. T. S. 1 5

Date	Rev.
Mid 94	
Design File no. 99-421-80-06	
Design code	
File name AF-SOS.dgn	
Plot date	
Plot scale	

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE HUNTSVILLE, ALABAMA  
 Designed by: J. JENIS, LAC/WSP  
 Dwn by: RLA  
 Cld by: MW  
 Reviewed by: M  
 Submitted by: William H. Zent

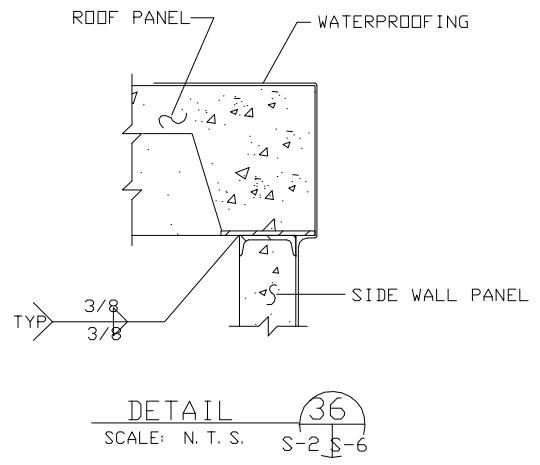
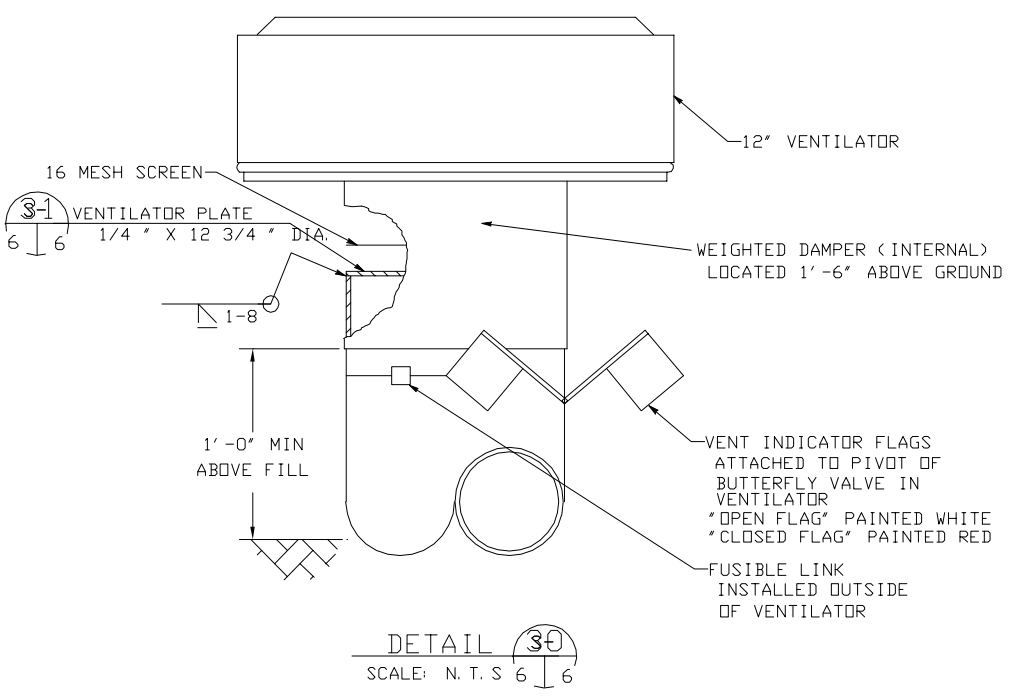
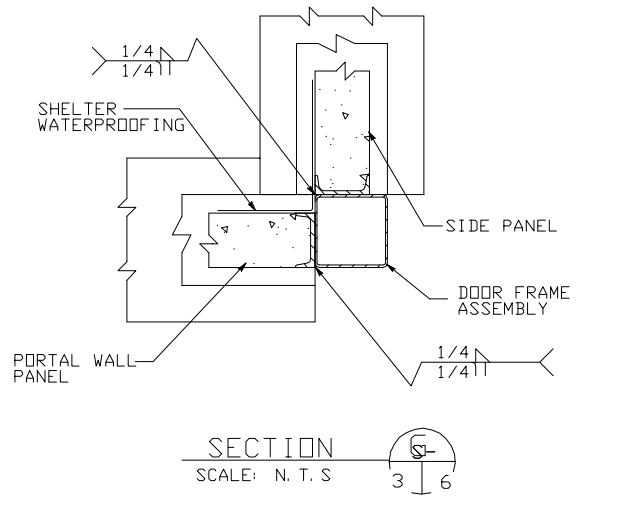
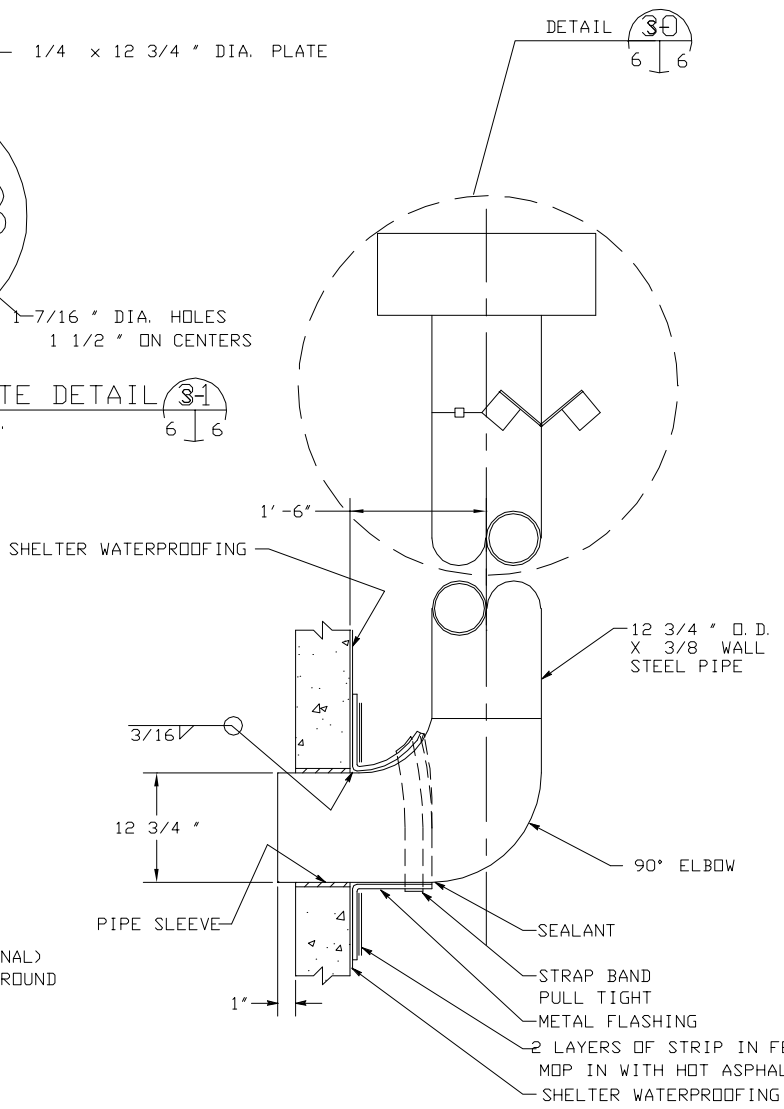
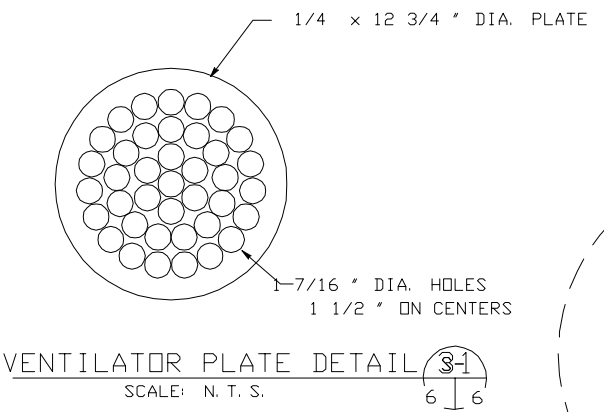
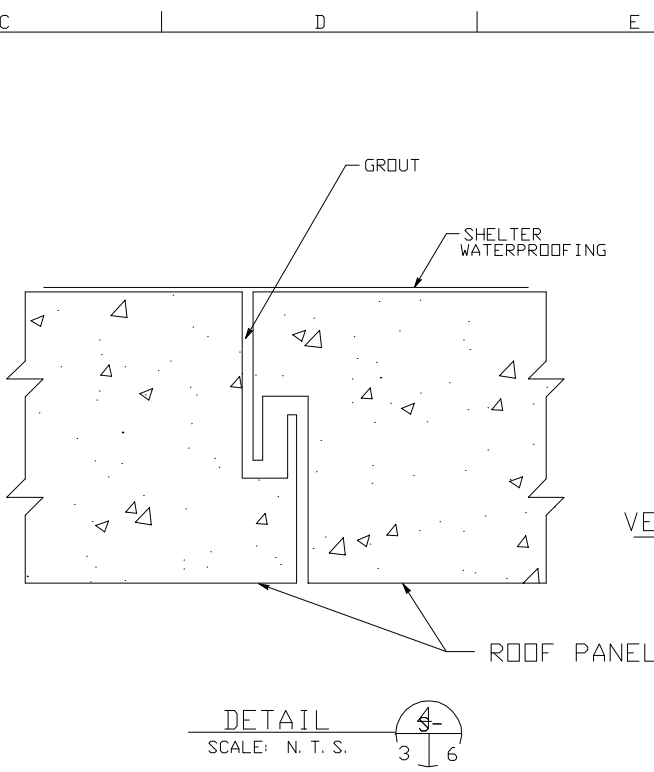
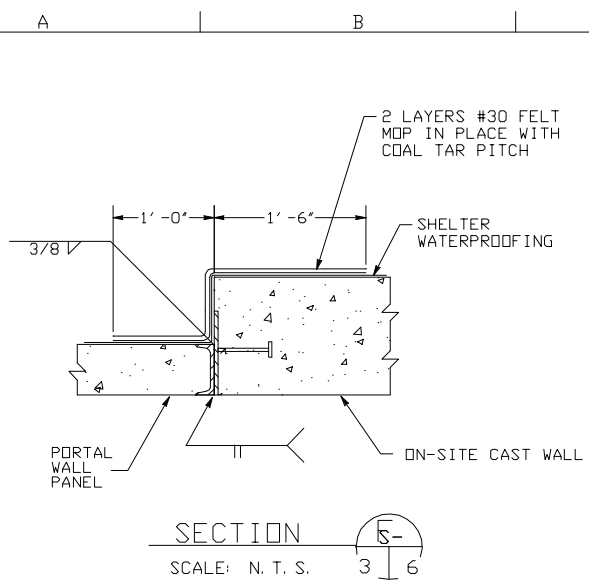
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 SECTION AND DETAILS  
 Sheet reference number: 5 - 5  
 Sheet of

Date	Rev.	Description	Date Approved	Symbol

Designed by:	J. JENIS (C/AC/VPD)	Date:	Mid 94	Rev.	
Drawn by:	RLA	Design File no.:	99-421-80-06	Designing code:	
Checked by:		Submitted by:	William H. Zehet	File name:	AF506_01
Reviewed by:		Plot date:		Plot scale:	
U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA					

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06  
SECTIONS & DETAILS

Sheet reference number:  
S - 6  
Sheet of



Rev.	Date	Description	Symbol	Date Approved	By

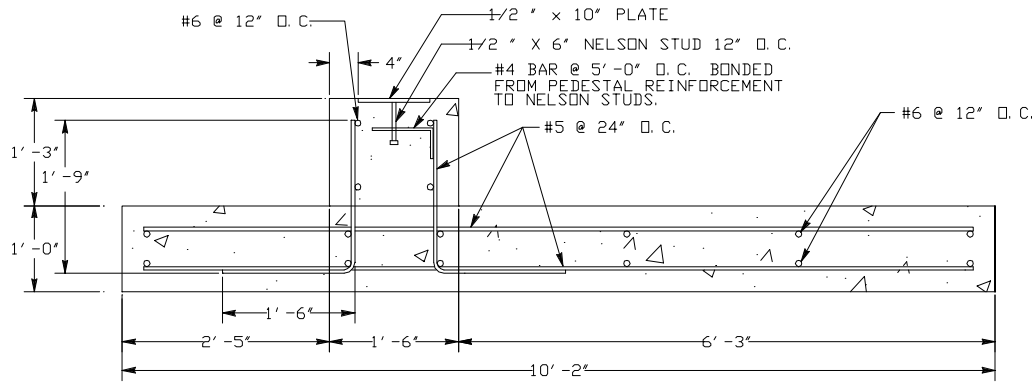
Rev.	Date	Description	Symbol	Date Approved	By

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06

BUILDING SECTIONS

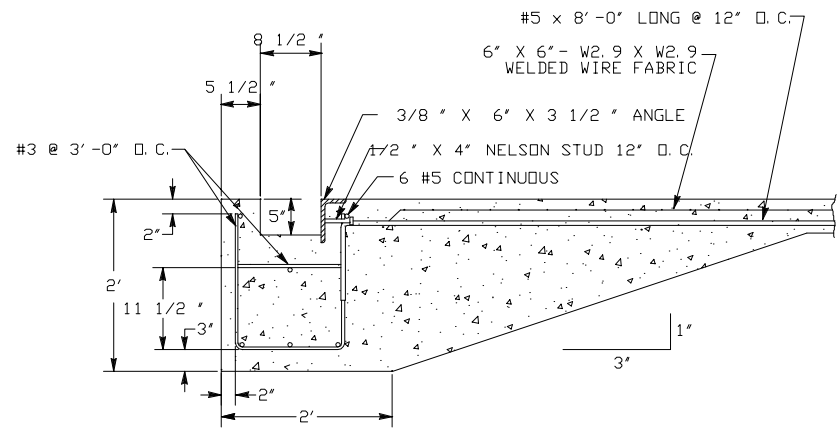
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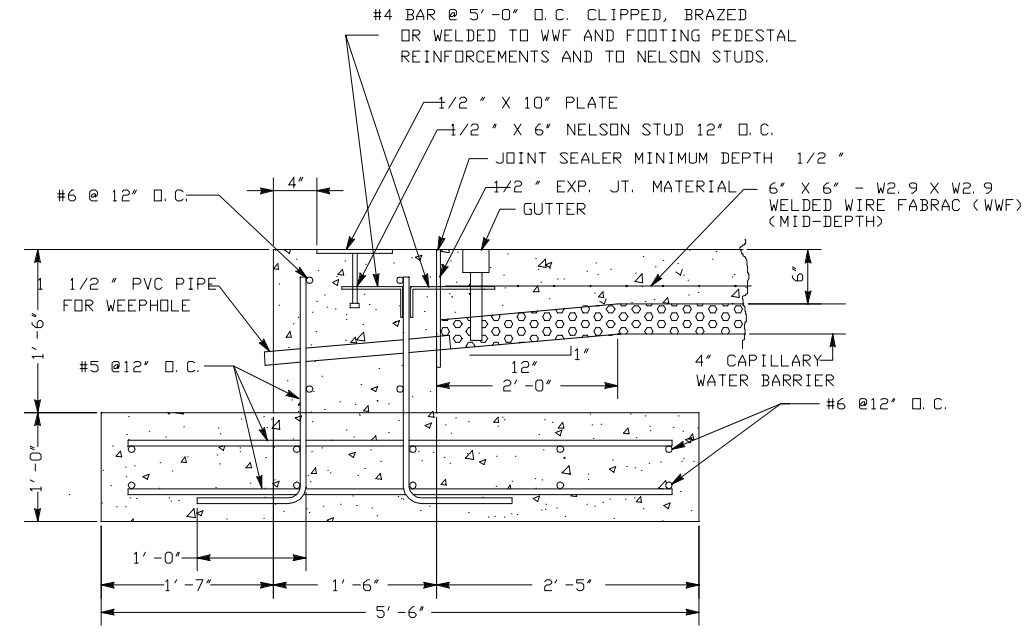
SECTION B  
SCALE: N. T. S.

ROTATED 90° CW  
SCALE: 1"=1'-0"  
NOTE: UNLESS OTHERWISE NOTED 3" MINIMUM COVERAGE ON ALL REBAR



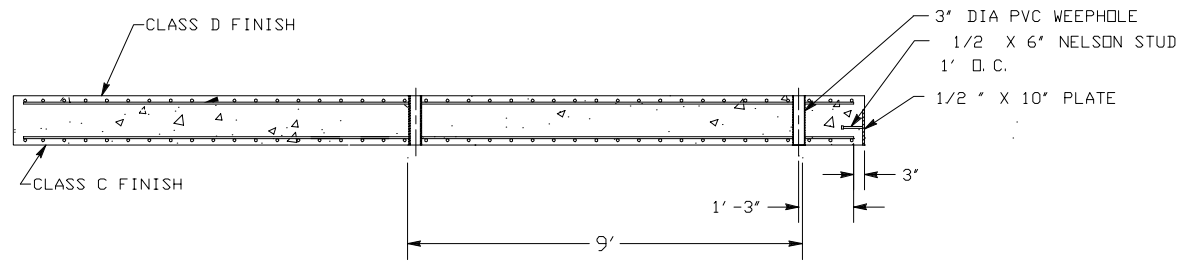
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NOTE: UNLESS OTHERWISE NOTED 3" MINIMUM COVERAGE ON ALL REBAR



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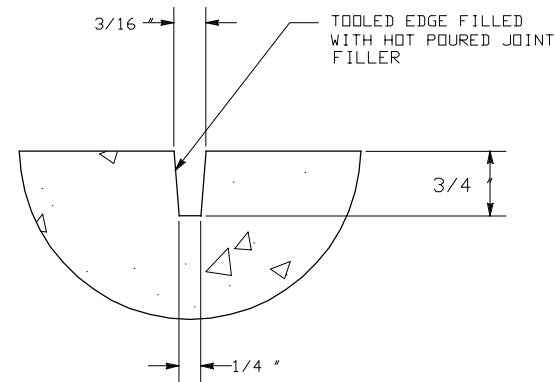
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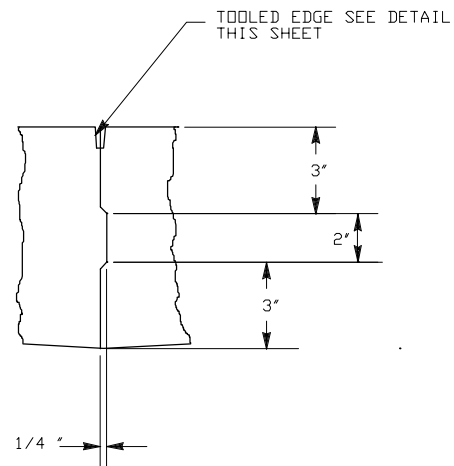
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NOTE: UNLESS OTHERWISE NOTED 3" MINIMUM COVERAGE ON ALL REBAR

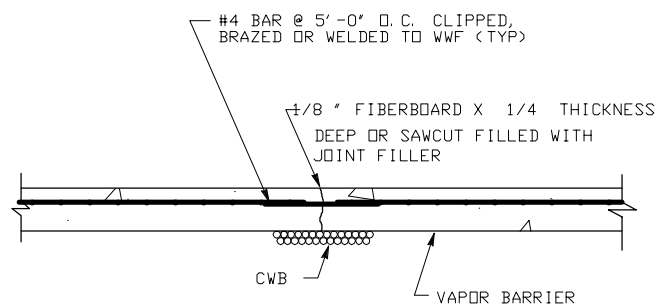




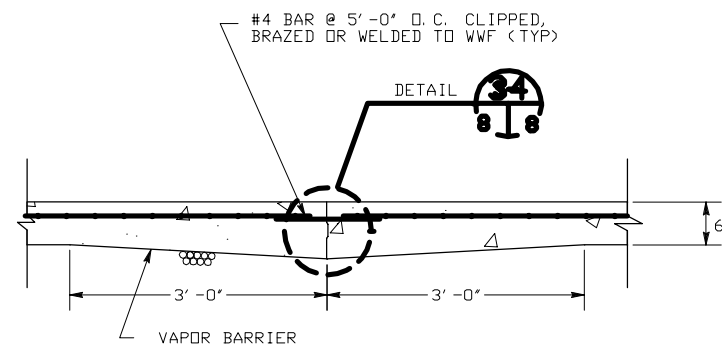
**TOOLED EDGE DETAIL**  
SCALE: N. T. S.



**DETAIL 34**  
SCALE: N. T. S.



**EXPANSION JT. DETAIL 33**  
SCALE: N. T. S.



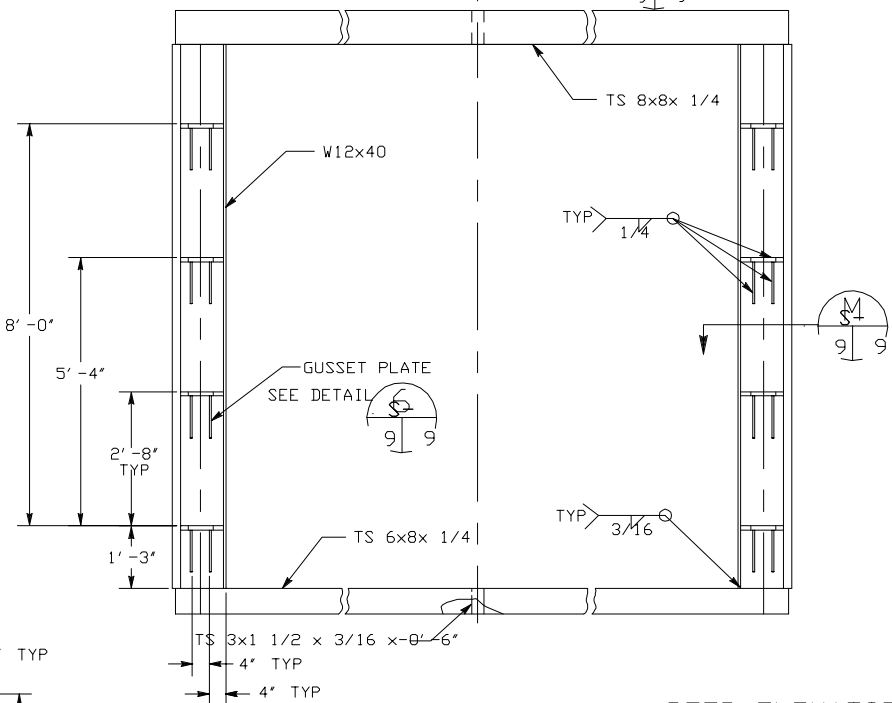
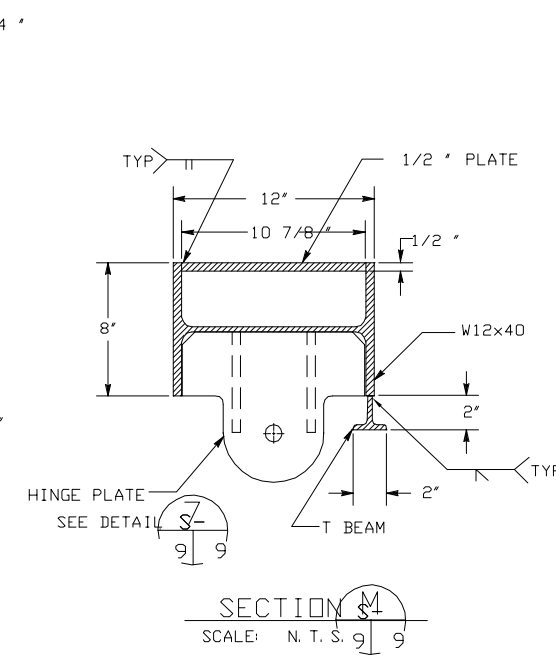
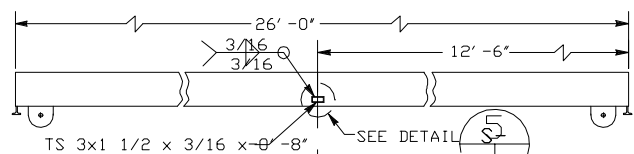
**OPTIONAL EXPANSION JOINT DETAIL**  
SCALE: N. T. S.

U. S. ARMY ENGINEERS AND SUPPORT CENTER, HUNTSVILLE, ALABAMA	Designed by J. James O'Connell Checked by W. B. Smith	Drawn by W. B. Smith	Scale As Shown
	Submitted by William B. Smith	Checked by W. B. Smith	Scale As Shown

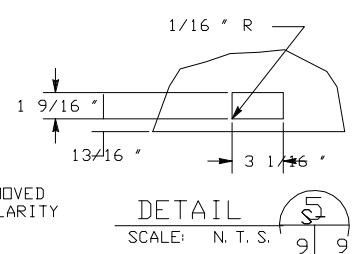
AIR FORCE HUNTSVILLE  
281-80-00  
BUILDING DETAILS

Sheet  
reference  
number  
5 - 00  
Sheet  
of

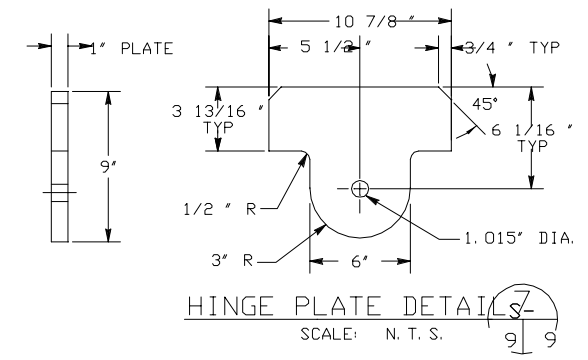
TOP VIEW



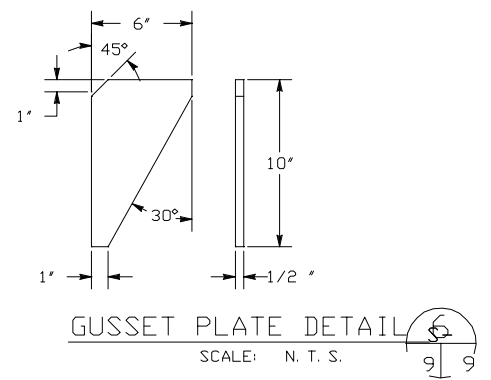
DOOR ELEVATION  
SCALE: N. T. S.



DETAIL 5-5  
SCALE: N. T. S.



HINGE PLATE DETAIL 7-7  
SCALE: N. T. S.



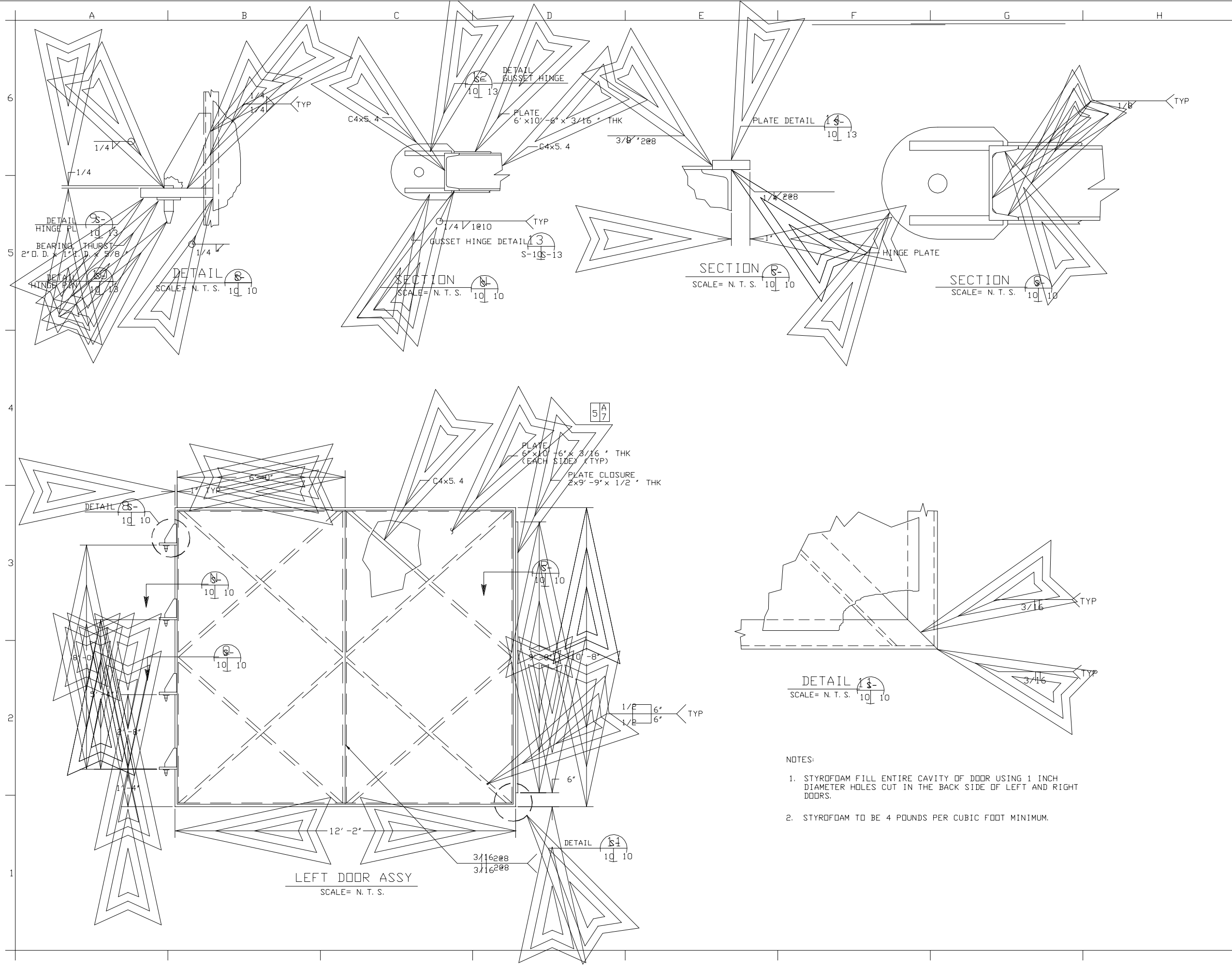
GUSSET PLATE DETAIL 6-6  
SCALE: N. T. S.

Date	Rev.	Description	Symbol	Date Approved	Symbol	Description	Date Approved

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA	Date: 94	Rev.:
Designed by: J. JENIS, Calc/UDP	Design File no. 99-421-80-06	
Drawn by: MAM	Drawing code: 82422	
Reviewed by: [Signature]	Plot date: 94	Plot scale: 1/1
Submitted by: William H. Zehnt		

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06  
DOOR FRAME ASSEMBLY

Sheet reference number: 5-1-9  
Sheet of



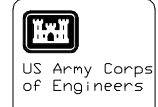
**LEFT DOOR ASSY**  
SCALE= N. T. S.

Symbol	Description	Date	Approved

<b>U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA</b>	Designed by: J. JENUS, LAC/WDB Dwn by: RLA CBP	Clad by: MW Reviewed by: William H. Zehrt Submitted by:	Date: Mid 94 Design File no.: 99-421-80-06 Drawing code: Drawn by: Plot date: Plot scale: 1:
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AIR FORCE MODULAR STORAGE  
MAGAZINE, BDX-TYPE  
421-80-06  
LEFT DOOR ASSEMBLY

- NOTES:
1. STYROFOAM FILL ENTIRE CAVITY OF DOOR USING 1 INCH DIAMETER HOLES CUT IN THE BACK SIDE OF LEFT AND RIGHT DOORS.
  2. STYROFOAM TO BE 4 POUNDS PER CUBIC FOOT MINIMUM.

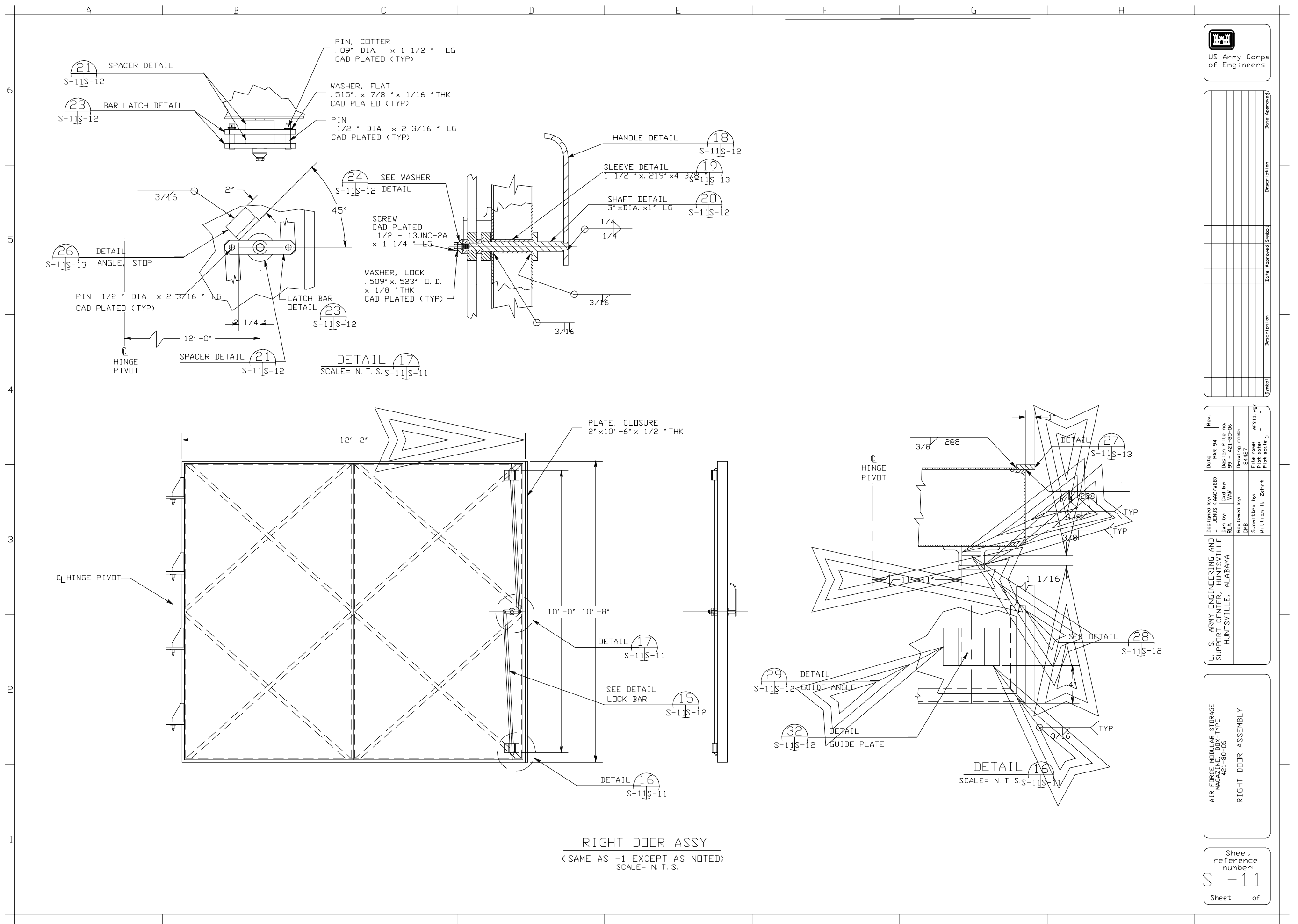


Symbol	Description	Date	Approved

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Designed by:	J. JENUS	Design File no.:	99-421-80-06
Drawn by:	MLA	Drawing code:	
Checked by:	MLA		
Reviewed by:		Submitted by:	William H. Zehrt

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06  
RIGHT DOOR ASSEMBLY

Sheet reference number:  
S - 11  
Sheet of

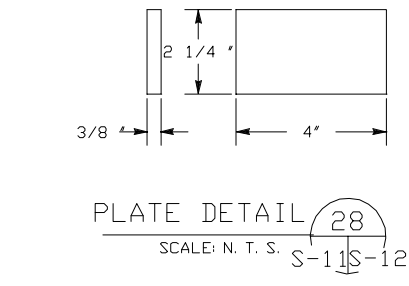
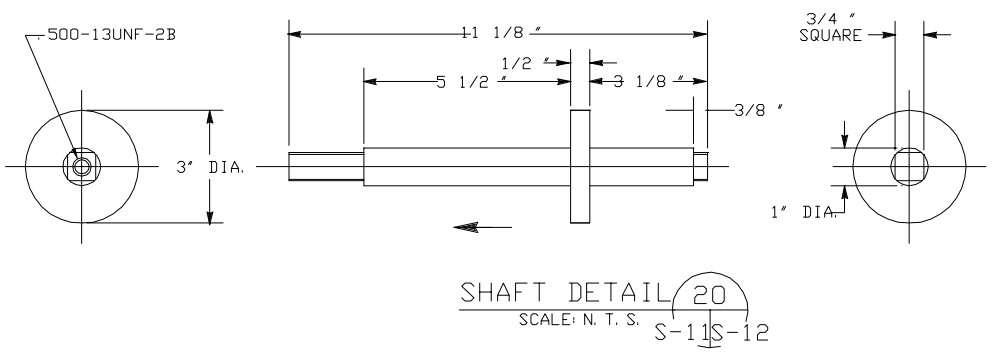
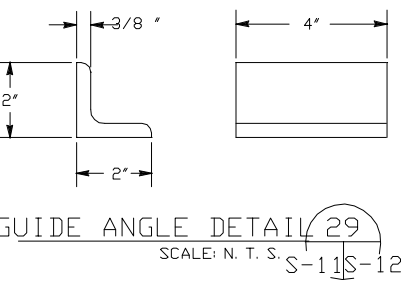
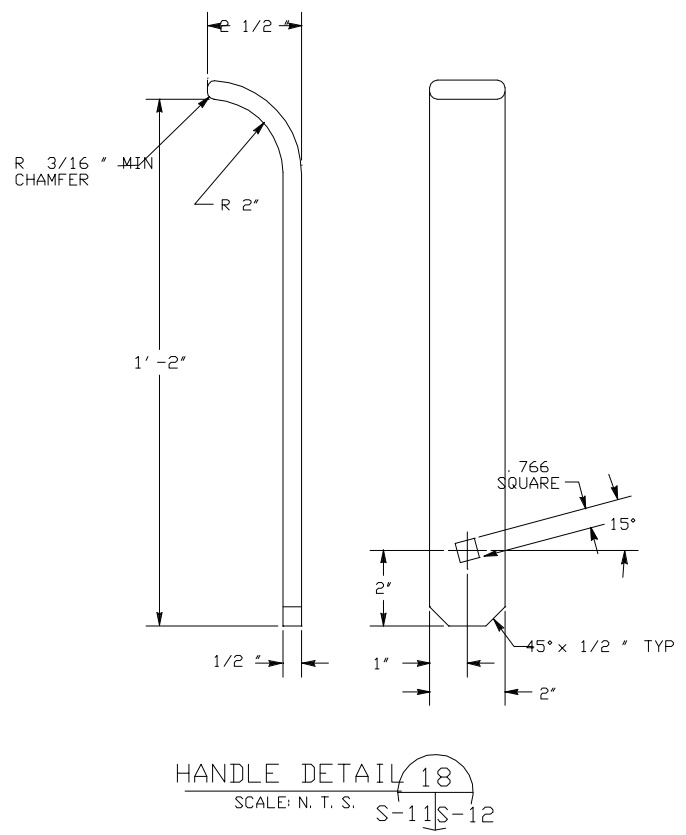
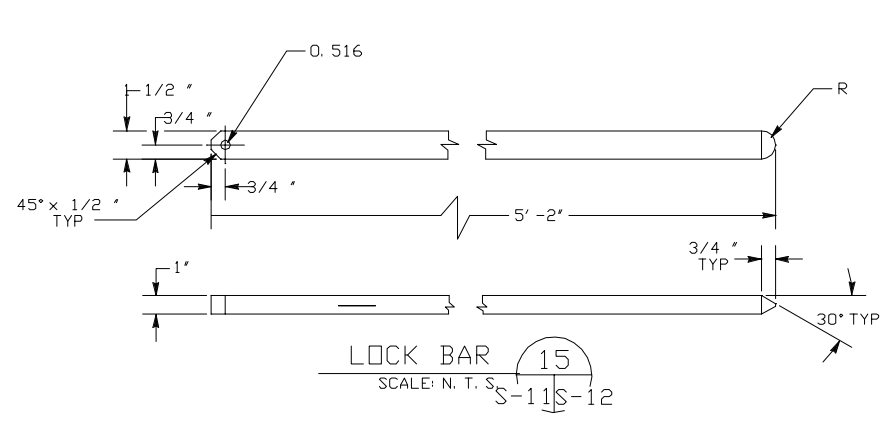
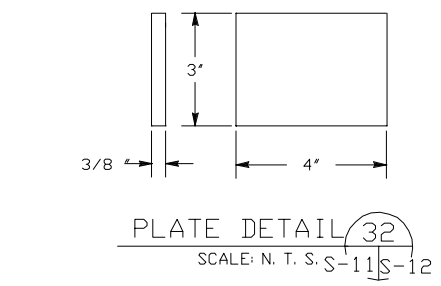
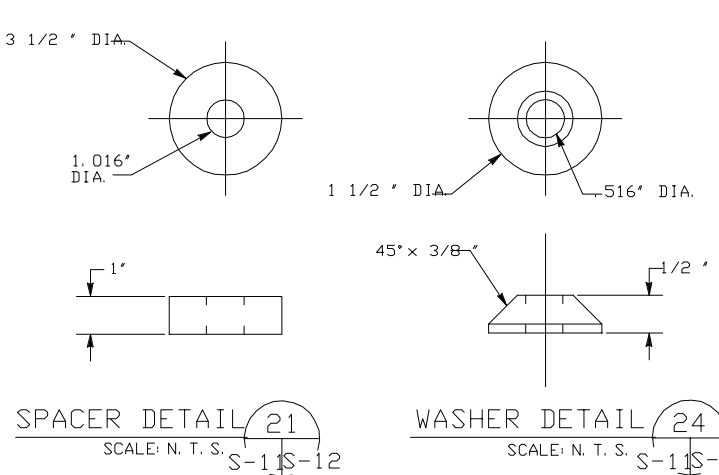
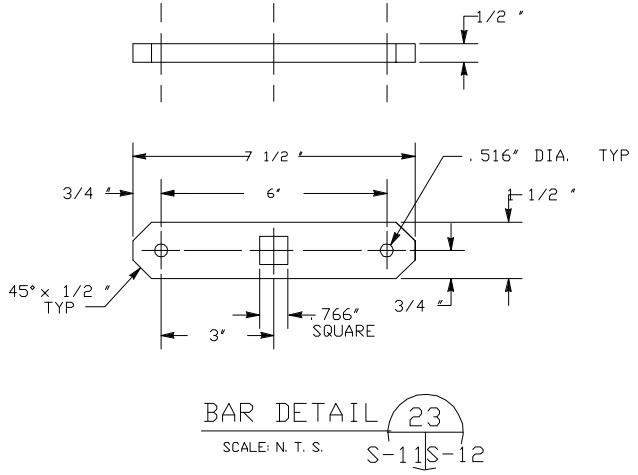


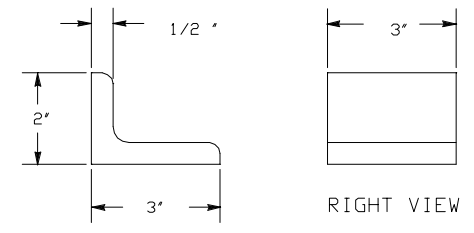
Rev.	Date	Description	Symbol	Date Approved

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE HUNTSVILLE, ALABAMA	Designed by: J. JENUS, TAC/USP Dwn by: RLA	Checked by: MM	Reviewed by: [Signature]	Submitted by: William H. Zehnt	DATE: 9/12/80 Plot scale: 1"
	Date: Mid 94	Design File no: 99-421-80-06	Drawing Code:		

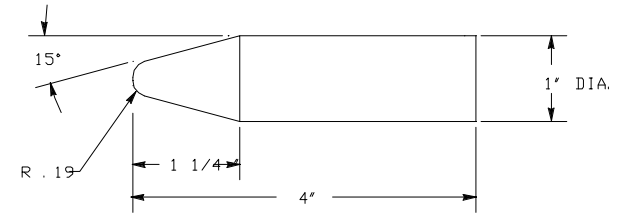
AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE  
421-80-06  
RIGHT DOOR ASSEMBLY DETAILS

Sheet reference number:  
S-112  
Sheet of





ANGLE STOP DETAIL  $\$10$   
SCALE: 1/2" = 1'-0" 11 13



HINGE PIN DETAIL  $\$10$   
SCALE: 1" = 1'-0" 10 13

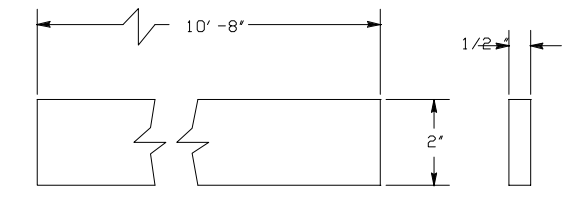
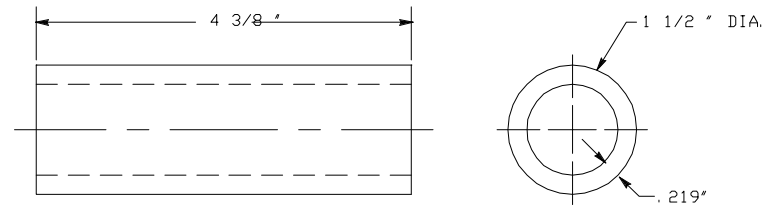
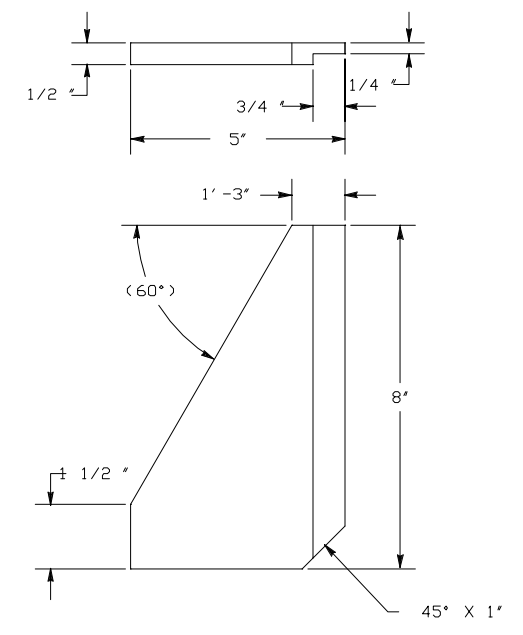


PLATE DETAIL  $\$7$   
SCALE: 1/2" = 1'-0" 11 13



SLEEVE DETAIL  $\$9$   
SCALE: 1" = 1'-0" 11 13



GUSSET DETAIL  $\$2$   
SCALE: 1/2" = 1'-0" 10 13

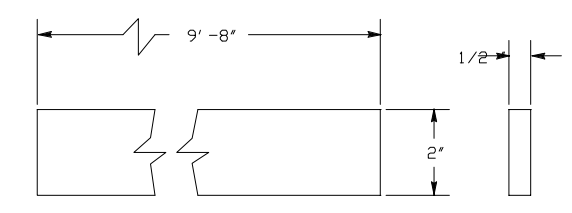
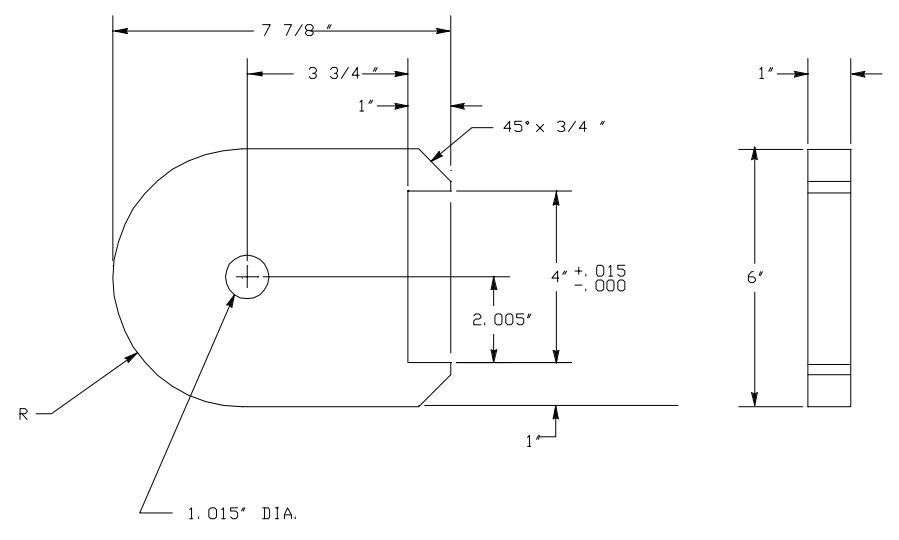
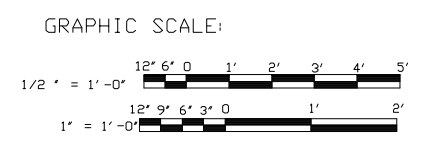


PLATE DETAIL  $\$4$   
SCALE: 1/2" = 1'-0" 10 13



HINGE PLATE DETAIL  $\$9$   
SCALE: 1/2" = 1'-0" 10 13

DETAIL 12 GUSSET  
(AS SHOWN)  
DETAIL 13 GUSSET  
(OPPOSITE AS SHOWN)



Symbol	Description	Date Approved	Symbol	Description	Date Approved

Date: Mid 94	Rev.
Design File no. 99-421-80-06	
Drawn by: MM	Drawing code: 421-80-06
Reviewed by: William H. Zehrt	Plot date: Plot scale: 1"
Submitted by: William H. Zehrt	
Designed by: J. JENIS, Calc/WDP	
Checked by: MM	
U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA	

AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE  
DOOR DETAILS



Symbol	Description	Date	Approved

- GENERAL NOTES:
- UNLESS OTHERWISE NOTED CONCRETE COVER OVER STEEL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS BY ACI 318.
  - REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
  - CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI. PANELS MAY BE PRECAST BY A MANUFACTURER SPECIALIZING IN PRECAST PRODUCTS OR PRECAST AT THE JOB SITE.
  - WIRE TIE REINFORCING BAR AS NEEDED, USING NO 14 WIRE.
  - A CLASS C FINISH IS REQUIRED FOR EXPOSED FORMED SURFACES OF PRECAST PANELS. A CLASS C OR D FINISH IS REQUIRED FOR SURFACES WHICH WILL BE BELOW GRADE OR NOT EXPOSED TO VIEW AFTER FINAL ASSEMBLY.
  - PIPE SLEEVE MATERIAL: 3/8 THICK X 6' WIDE X 42" LONG STEEL PLATE PER ASTM A36 ROLLED TO 13" I.D.
  - SIZE, LOCATION, AND QUANTITY OF TILT-UP BRACE ATTACHMENT POINTS AND LIFTING INSERTS TO BE DETERMINED BY CONTRACTOR.
  - THE TWO REBAR PATTERNS IN PANELS ARE TO BE STAGGERED TO PRODUCE A 6' X 6' SQUARE MESH PATTERN OF #5 AND #7 REBAR. STAGGER NELSON STUDS FOR A UNIFORM SPACING OF 12 INCHES.
  - PROVIDE ELECTRICAL CONTINUITY FOR LIGHTNING PROTECTION BY BONDING #4 BAR @ 5'-0" O.C. E.F.E.W. TO C6 CHANNELS AND PRECAST VERTICAL AND HORIZONTAL REINFORCEMENT.
  - PROVIDE ELECTRICAL CONTINUITY BY WELDING VERTICAL AND HORIZONTAL REINFORCEMENTS TO VENT PIPE SLEEVE.

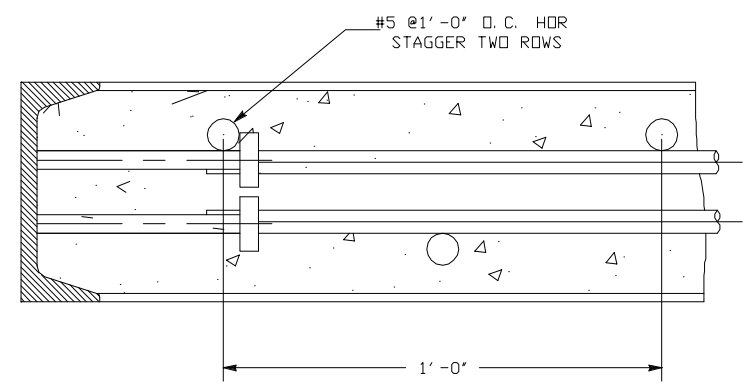
Date	Rev.

Designed by: J. JENIS Calc/UDP	Checked by: MM	Date: MAY 94
Drawn by: RLA	Reviewed by: CJM	Design File no. 99 - 421-80-06
Submitted by: William H. Zehnt		Drawing Code 647356
		Plot date: 
		Plot scale: 

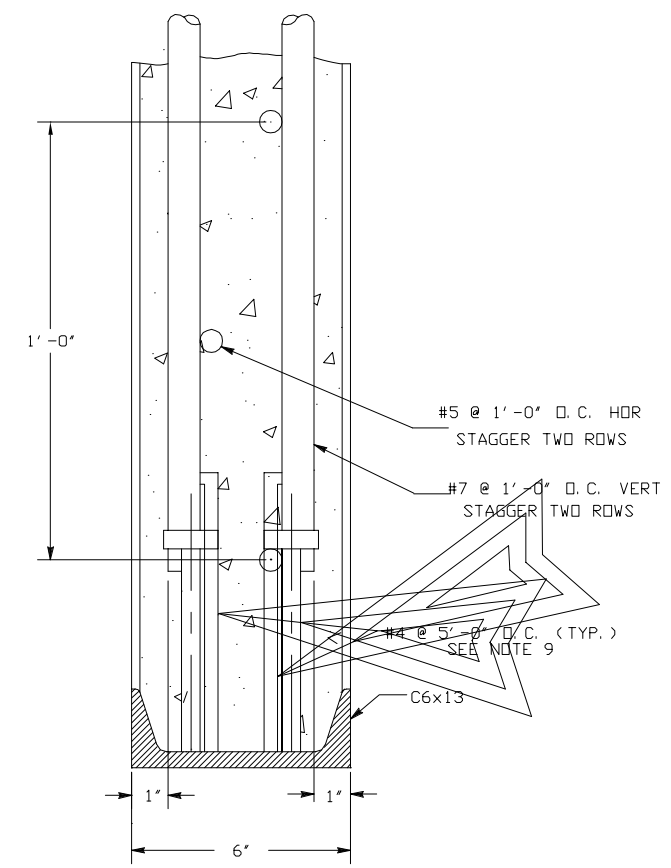
AIR FORCE MODULAR STORAGE  
MAGAZINE, BDX-TYPE  
421-80-06

PRECAST PANELS SECTIONS & DETAIL

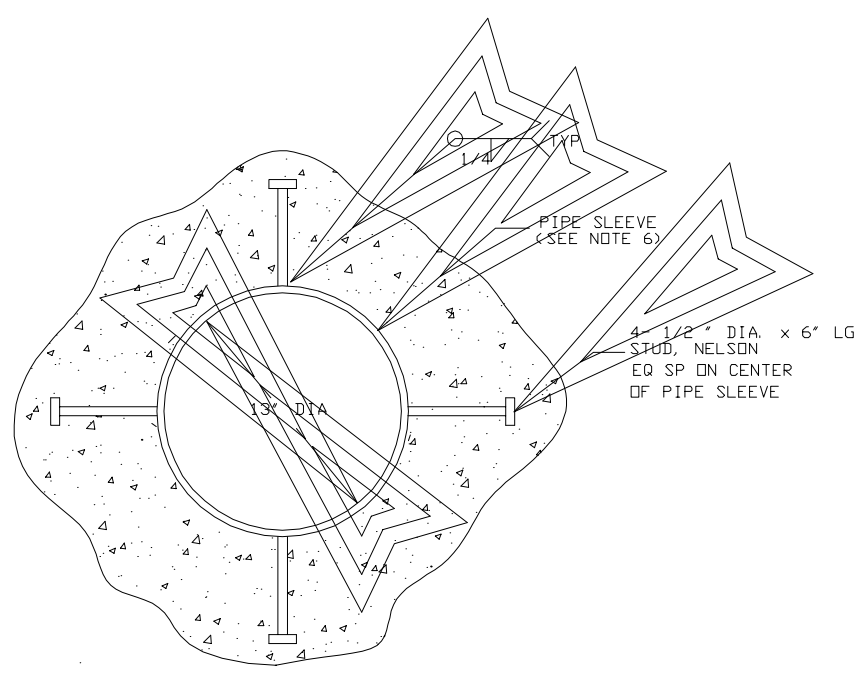
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number:  
S - 14  
Sheet  
of



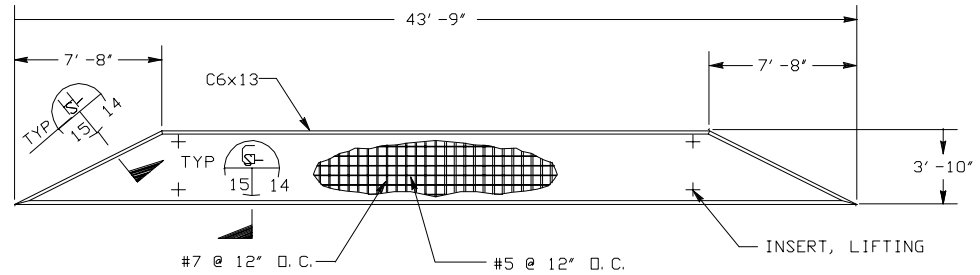
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SCALE: N. T. S. 15 | 14



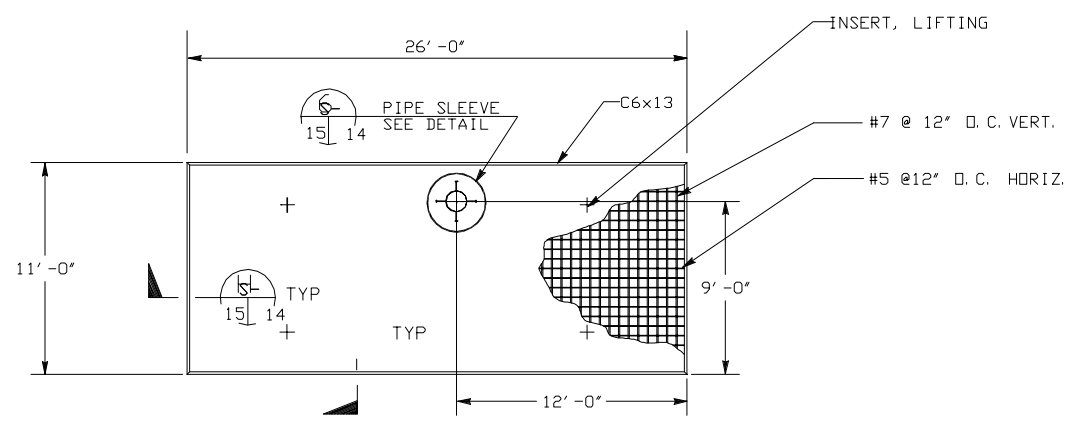
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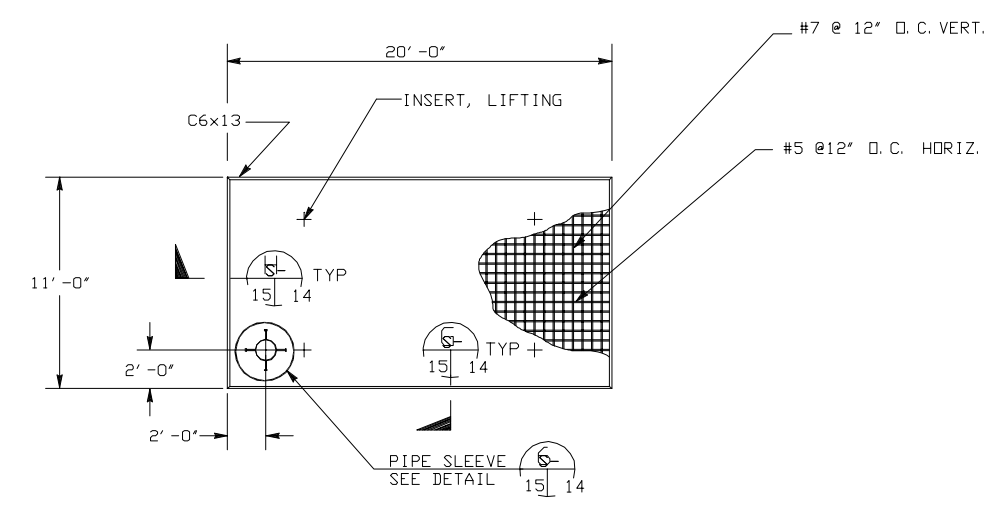
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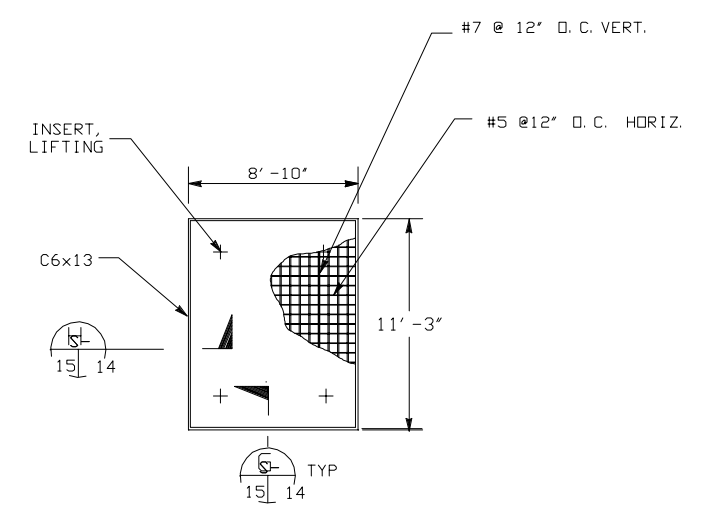
CAP PANEL (32)  
SCALE: N. T. S. 3/15



BACK WALL PANEL (33)  
SCALE: N. T. S. 3/15



SIDE WALL PANEL, SEE NOTE 3 THIS SHEET (34)  
SCALE: N. T. S. 3/15



WALL PANEL DETAIL (35)  
SCALE: N. T. S. 3/15

GENERAL NOTES:

1. THE TWO REBAR PATTERNS IN PANELS ARE TO BE STAGGERED TO PRODUCE A 6" x 6" SQUARE MESH PATTERN OF #5 AND #7 REBAR.
2. SIZE, LOCATION AND QUANTITY OF TILT-UP BRACE ATTACHMENT POINTS AND LIFTING INSERTS TO BE DETERMINED BY CONTRACTOR.
3. PROVIDE ONE SIDE WALL PANEL TO BE VENTED. WING SIMILAR TO PIPING CONFIGURATION AS PROVIDED IN DETAIL 6, SHEET 14
4. PROVIDE ELECTRICAL CONTINUITY FOR LIGHTNING PROTECTION BY BONDING #4 BAR @ 5'-0" O.C. E. F. E. W. TO C6 CHANNELS AND PRECAST VERTICAL AND HORIZONTAL REINFORCEMENT.
5. PROVIDE ELECTRICAL CONTINUITY BY WELDING VERTICAL AND HORIZONTAL REINFORCEMENTS TO VENT PIPE SLEEVE.

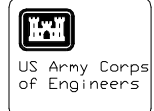
Rev.	Date	Description	Date Approved

Designed by: J. JENUS, Calc/MDP	Date: MAY 94	Rev.
Drawn by: RCA	Design File no. 99-421-P80-06	
Checked by: MM	Drawing Code	
Reviewed by:	Submitted by: William H. Zehrt	
	Plot date:	af315.dgn
	Plot scale:	1" = 1'-0"

AIR FORCE MODULAR STORAGE  
MAGAZINE, BOX-TYPE  
421-80-06  
PRECAST PANELS DETAILS

Sheet reference number:  
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Sheet of



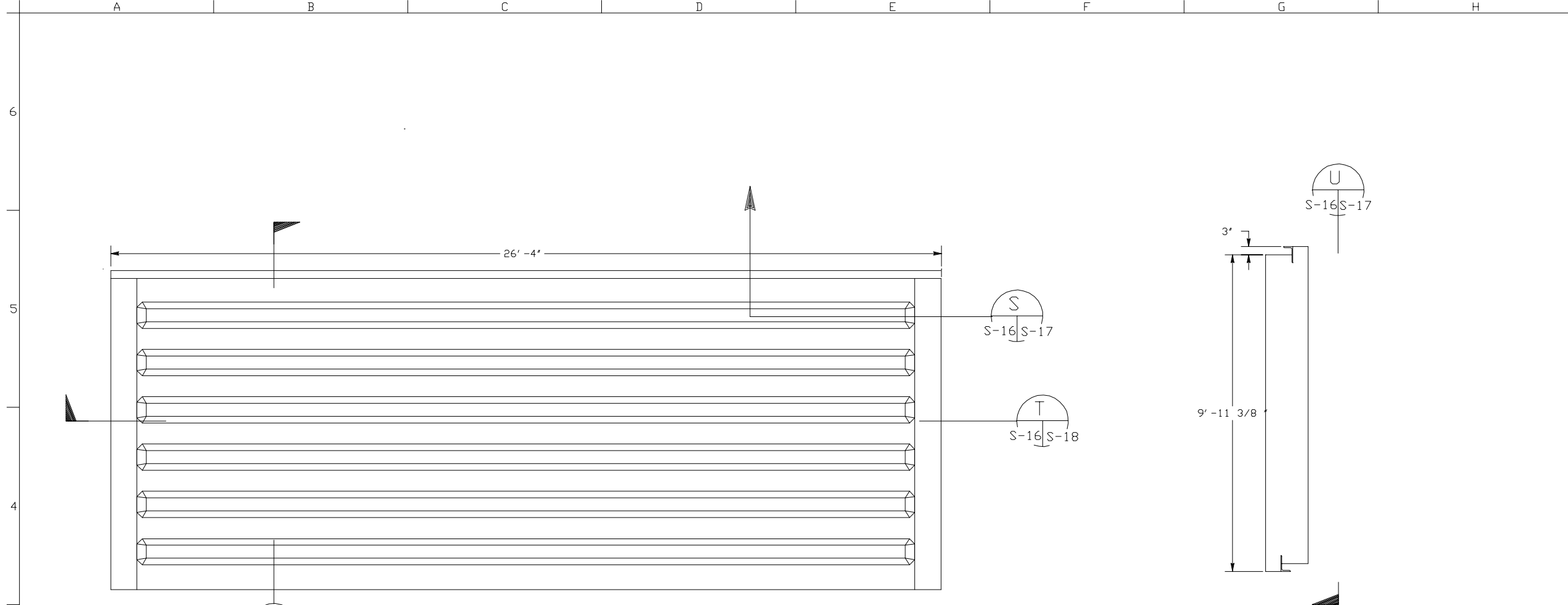


Symbol	Description	Date	Approved Symbol	Date	Approved

Designed by: J. JENIS, Calc./MSP	Date: MAY 94	Rev.
Drawn by: RCA	Design File no. 99 - 421-80-06	
Checked by: MM	Drawing code 042356	
Reviewed by:	Submitted by: William H. Zehnt	at 516.00 Plot date: Plot scale: 1"

AIR FORCE MODULAR STORAGE  
MAGAZINE, BOX-TYPE  
421-80-06  
ROOF PANEL PLAN

Sheet  
reference  
number:  
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Sheet of



**ROOF PANEL PLAN**  
SCALE: N. T. S.

- NOTES:**
- UNLESS OTHERWISE NOTED CONCRETE COVER OVER STEEL REINFORCEMENT SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF ACI 318.
  - REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 OR GRADE 60.
  - CONCRETE USED SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI. PANEL MAY BE PRECAST BY A MANUFACTURER SPECIALIZING IN PRECAST PRODUCTS OR PRECAST AT THE JOB SITE.
  - WIRE TIE REINFORCING BAR AS NEEDED, USING WIRE NO. 13.
  - A CLASS C FINISH IS REQUIRED FOR EXPOSED FORMED SURFACES OF ROOF PANEL. A CLASS D FINISH IS REQUIRED FOR SURFACES WHICH WILL BE BELOW GRADE OR NOT EXPOSED TO VIEW AFTER FINAL ASSEMBLY.
  - SIZE, LOCATION AND QUANTITY OF LIFTING INSERTS TO BE DETERMINED BY CONTRACTOR.
  - PROVIDE ELECTRICAL CONTINUITY WITHIN THE ROOF PRECAST PANEL BY BONDING (CLIPPING, BRAZING OR WELDING) AT 5 LINEAR FEET INTERVALS ACROSS TOP OF STIRRUPS TO END ANGLES IN ONE DIRECTION. IN THE OTHER DIRECTION, FROM BOTTOM PLATE TO #4 REINFORCEMENT.

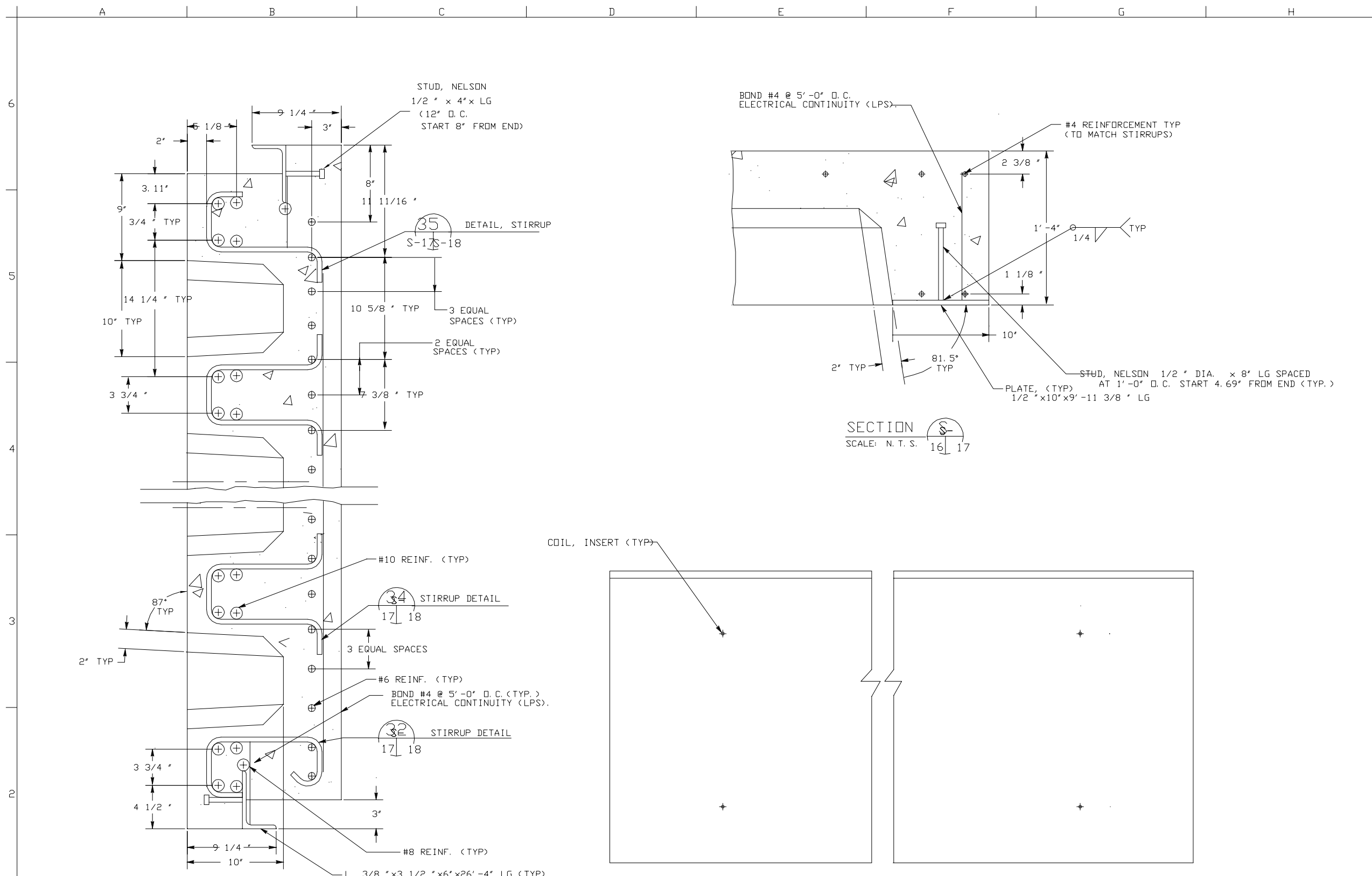


Symbol	Description	Date Approved	Symbol	Description	Date Approved

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA	Designed by:	J. JENIS, Calc./VDP	Date:	Mid 94	Rev.
	Drawn by:	MLA	Design File no.:	99-421-80-06	
AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06	Reviewed by:	MLA	Drawing code:	84235	
	Submitted by:	William H. Zehrt	File name:	af317.dgn	
ROOF SECTIONS & VIEW			Plot date:		Plot scale:

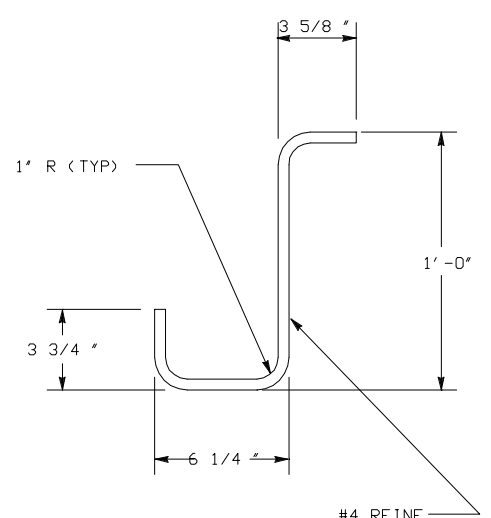
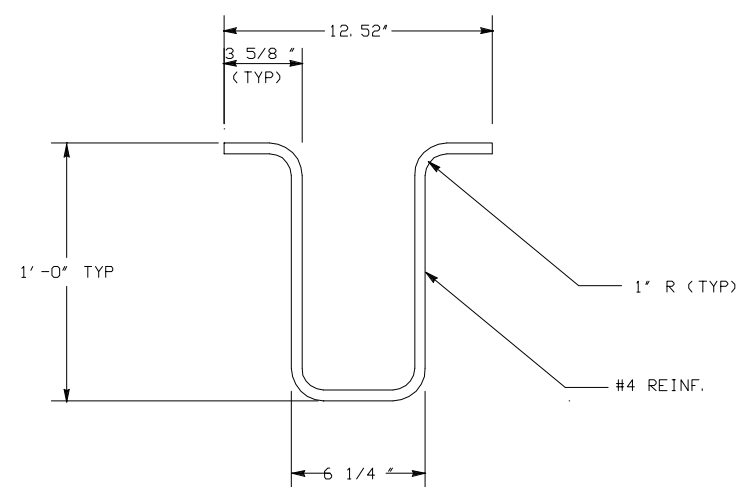
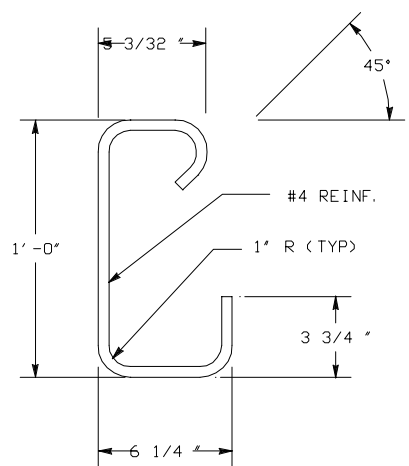
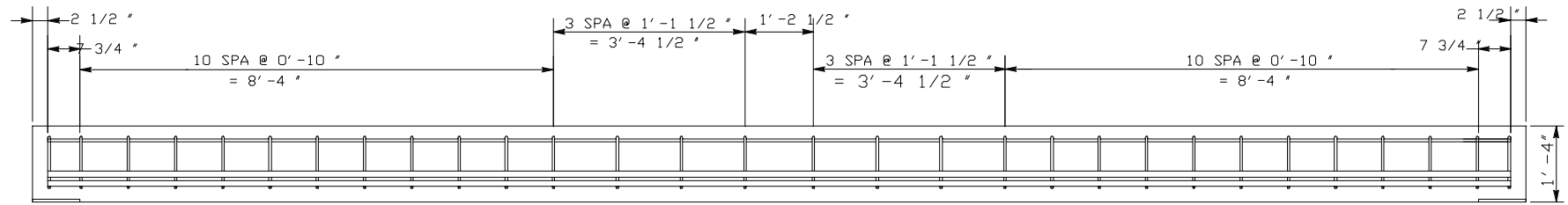
AIR FORCE MODULAR STORAGE MAGAZINE, BDX-TYPE 421-80-06  
ROOF SECTIONS & VIEW

Sheet reference number:  
S-17  
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Symbol	Description	Date Approved	Symbol	Description	Date Approved



Date	Rev.	Designed by	Checked by	Reviewed by	Submitted by	Plot date	Plot scale

AIR FORCE MODULAR STORAGE  
MAGAZINE, BDX-TYPE  
421-80-06  
ROOF SECTION & DETAILS

Sheet reference number:  
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Sheet of