

CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT

PURCHASE SPECIFICATION

FOR

PRECAST CONCRETE MANHOLES

DATE	PREPARED BY	ISSUANCE/REVISION	APPROVAL PROCESS SUPV. / MATERIALS SUPV.
9/2/11	Arthur Gonzalez	Revision	

REASON FOR REVISION	AFFECTED PARAGRAPHS
9/2/11- Added burial depth criteria and reference to new drawings. Also added applicable standards.	3.0, 4.0, and Attachment 1

This specification, until rescinded, shall apply to each future purchase and contract for the commodity described herein.  
Retain for future reference.

**AUSTIN ENERGY  
PURCHASE SPECIFICATION  
FOR  
PRECAST CONCRETE MANHOLES**

**1.0 SCOPE**

- 1.1 The Electric Utility Department of the City of Austin hereinafter referred to as Austin Energy or AE. AE requires a qualified Vendor to supply precast concrete manholes. The precast concrete manholes shall be engineered and fabricated to provide a structurally safe design.

**2.0 CLASSIFICATION**

- 2.1 The precast concrete manholes will be used by AE for the underground transmission, distribution, and communication systems.

**3.0 APPLICABLE STANDARDS**

The Manholes shall conform to or exceed applicable requirements of the following standards and codes:

- 3.1 ASTM A-615 Grade 60 for Rebar  
3.2 ASTM A-185 Grade 65 for Mesh  
3.3 ASTM C-857 Minimum Structural Design Loading for Underground Precast Concrete Utility Structures  
3.4 AASHTO HS
- 3.5 ACI 318 for Structural Concrete  
3.6 ASTM C150 for Portland Cement  
3.7 ASTM C478 for Standard Specification for Precast Reinforced Concrete Manhole Sections  
3.8 ASTM C858 Standard Specification for Underground Precast Concrete Utility Structures

**4.0 DESIGN LOADS**

- 4.1 The precast concrete manholes (Attachment I) shall be rated for AASHTO HS 20 loading.

4.1 The precast concrete manholes (Attachment I) shall be rated for AASHTO HS-20 loading. Traffic (live load = 16,000lbs) shall approach the structure from any direction.

- 4.3 Manholes designed for a burial depth of 3 feet require access openings of 36" in diameter.

- 4.4 Manholes designed for a burial depth of 5 feet require access openings of 48" in diameter.

**5.0 PHYSICAL REQUIREMENTS**

- 5.1 The Vendor shall provide the manhole with a minimum compressive strength of concrete shall not be less than 4,000 psi in 28 days
- 5.2 The precast concrete manhole shall be provided as shown in the attached drawings (Attachment I). If not noted on drawings, the concrete cover for reinforcement shall be 1.5 inches minimum for main reinforcing bars and 3/4 inch for stirrups and ties.
- 5.3 The concrete finish shall be free of rock pockets and honeycombed areas.
- 5.4 The interior walls, ceiling and exterior surfaces exposed shall be smooth.
- 5.5 Knockout and duct openings shall be beveled on the exterior surface.
- 5.6 Inserts shall be provided as shown in the attached drawings (Attachment I)

**6.0 VENDOR REQUIREMENTS**

- 6.1 The Vendor shall supply all vehicles, equipment and accessories required to deliver, safely lift and place the manhole in the excavation for the manhole at the AE job site.
- 6.2 The Vendor shall present AE with the engineering data for the manholes, certified by the Vendor's registered professional engineer. The certified engineering data shall state the structural integrity for the manhole configurations listed in Attachment I.

## ATTACHMENT I

### AUSTIN ENERGY CIVIL MANHOLE STANDARDS

#### CONTAINS:

1458-05A MH 6FT X 6FT-2MAX BURIAL DEPTH

1458-05 MH 6FT X 6FT-2 FT MAX BURIAL DEPTH

1458-06A MH 6FT X 12FT-2 FT MAX BURIAL DEPTH

1458-06A1 MH 6FT X 12FT-2 FT MAX BURIAL DEPTH

1458-06A2 MH 6FT X 12FT-2 FT MAX BURIAL DEPTH

1458-06B MH 6FT X 12FT-2 FT MAX BURIAL DEPTH

1458-07A MH 6FT X 12FT W/CS - 2 FT MAX BURIAL DEPTH

1458-07B MH 6FT X 12FT W/CS -2 FT MAX BURIAL DEPTH

1458-12A MH 12FT X 12FT- 2 FT MAX BURIAL DEPTH

1458-12A1 MH 12FT X 12FT- 2 FT MAX BURIAL DEPTH

1458-12B MH 12FT X 12FT-2 FT MAX BURIAL DEPTH

1458-13A MH 12FT X 12FT W/CS -2 FT MAX BURIAL DEPTH

1458-13B MH 12FT X 12FT W/CS - 2 FT MAX BURIAL DEPTH

1458-18A MH 6FT X 12FT- 5FT MAX BURIAL DEPTH

1458-18B MH 6FT X 12FT- 5FT MAX BURIAL DEPTH

1458-18C MH 6FT X 12FT- 5FT MAX BURIAL DEPTH

1458-19A MH 6FT X 12FT W/CS 5FT- MAX BURIAL DEPTH

1458-19B MH 6FT X 12FT W/CS 5FT- MAX BURIAL DEPTH

1458-19C MH 6FT X 12FT W/CS 5FT- MAX BURIAL DEPTH

1458-24A MH 12FT X 12FT- 5FT MAX BURIAL DEPTH

1458-24B MH 12FT X 12FT- 5FT MAX BURIAL DEPTH

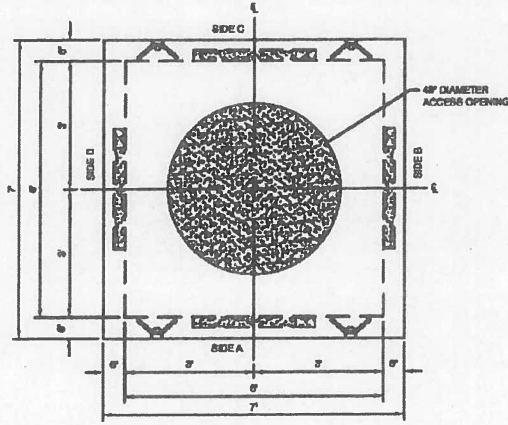
7B-1098-16 – STD 6FT X 8FT X 4FTH CABLE BOX

RS1 - 6FT X 12FT X 2FT

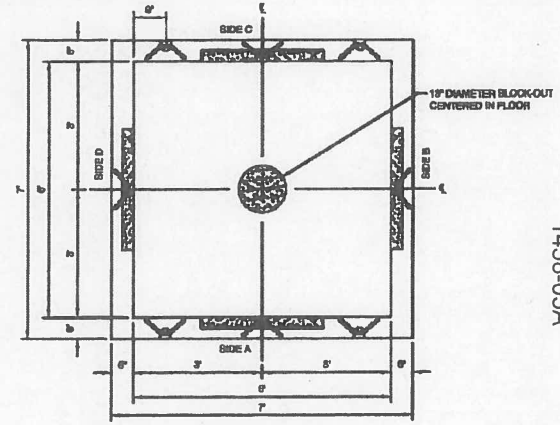
GR1 - 1FT GRADE RING

GR2 - 1 ½FT GRADE RING

GR3 - 3FT GRADE RING

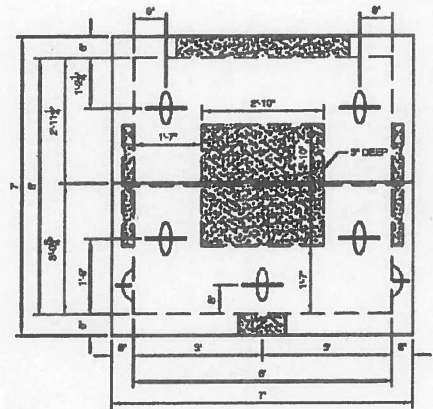


TOP VIEW

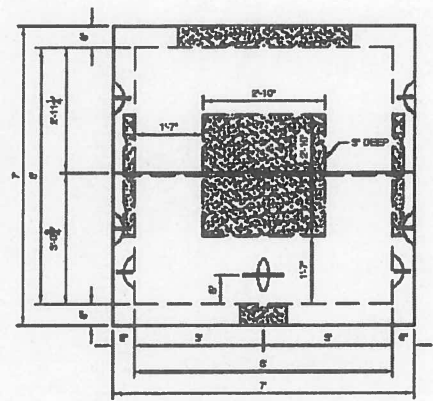


BOTTOM VIEW

1458-05A



SIDE A & C



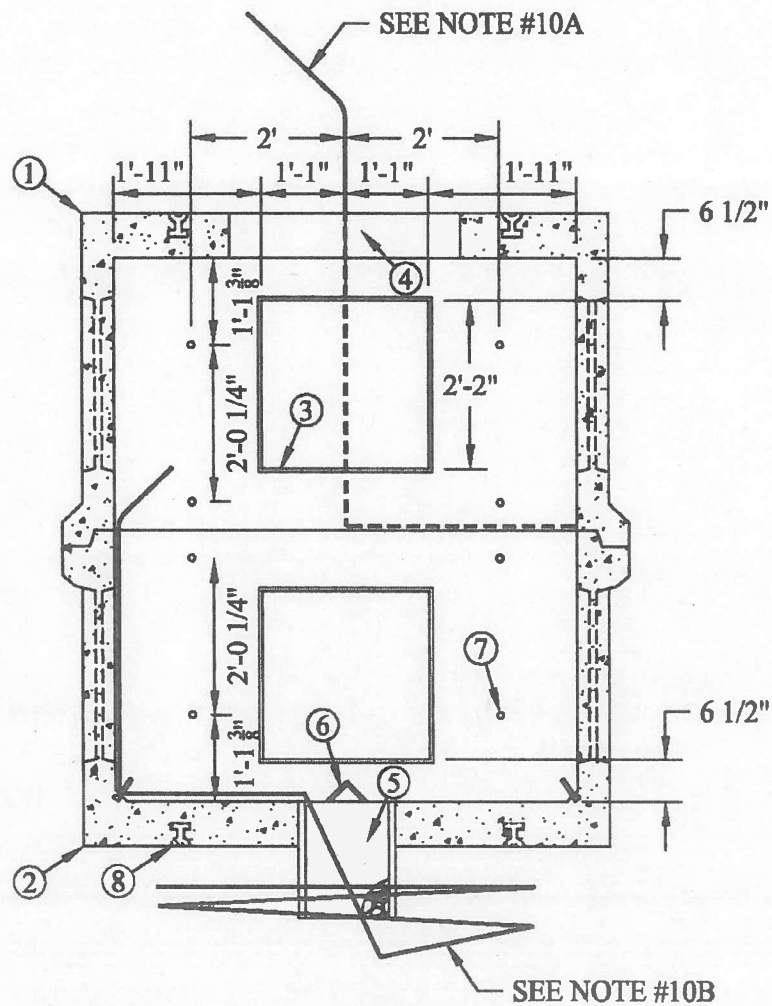
SIDE B & D

- NOTES:
1. SHALL BE DESIGNED FOR BURIAL DEPTH OF 5 FEET BELOW GRADE TO TOP OF VAULT.
  2. SHALL BE RATED FOR AASHTO HS 20 LOADING.




SCALE: 3/8"=1'-0"  
6'-0" X 6'-0" X 6'-0"  
MANHOLE





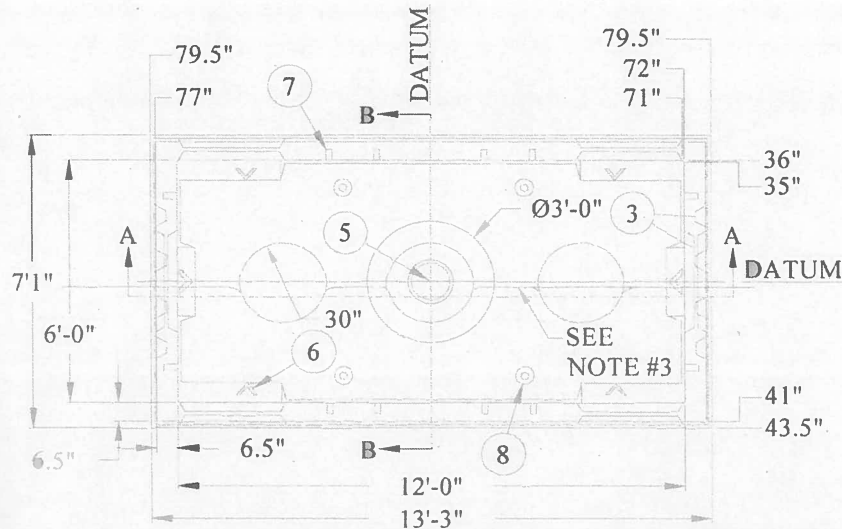
SEC B-B

- ① TOP SECTION WEIGHT 16,400 LBS. (SEE NOTE 2)
- ② BOTTOM SECTION WEIGHT 16,175 LBS. (SEE NOTE 2)
- ③ KNOCKOUT (12) REQUIRED
- ④ 36" MANHOLE OPENING
- ⑤ 13" DIAMETER OPENING FOR SUMP. (SEE NOTE 4 & 5)
- ⑥ PULL IRONS (6) REQUIRED
- ⑦ INSERTS 1/2" DIAMETER (48) REQUIRED
- ⑧ 2 TON RISS HANDLING ANCHOR (12) REQUIRED
- ⑨ SHALL BE DESIGNED FOR A BURIAL DEPTH OF 3 FEET BELOW GRADE TO TOP OF VAULT
- ⑩ SHALL BE RATED FOR AASHTO HS 20 LOADING

1458-06A	CIVIL	
Sheet 1 of 2	MANHOLES	
08/12/02	MANHOLES 6- FT X 12- FT	

Rev.: 04/02/15

1458 **MANHOLES**  
**1458-06A MANHOLES 6- FT X 12- FT**

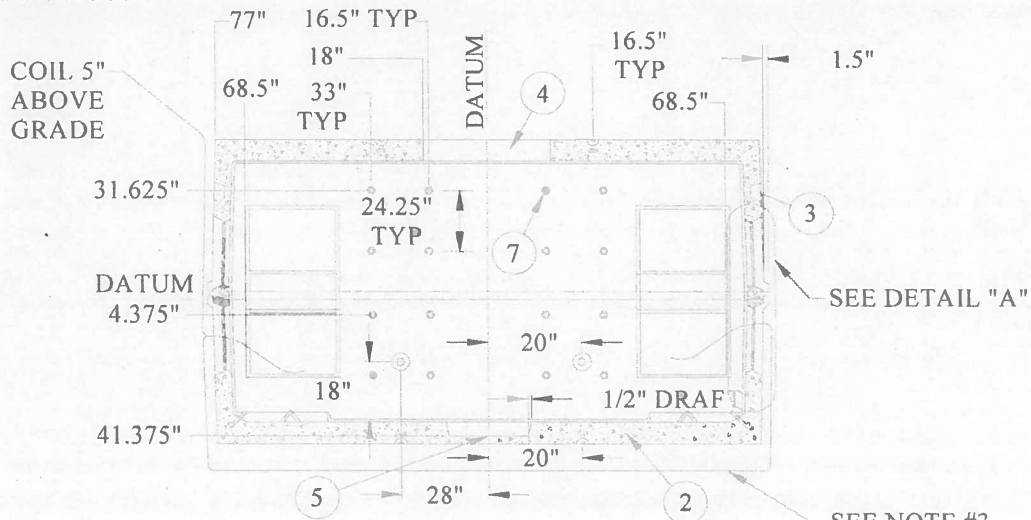


PLAN VIEW

1458-06-07

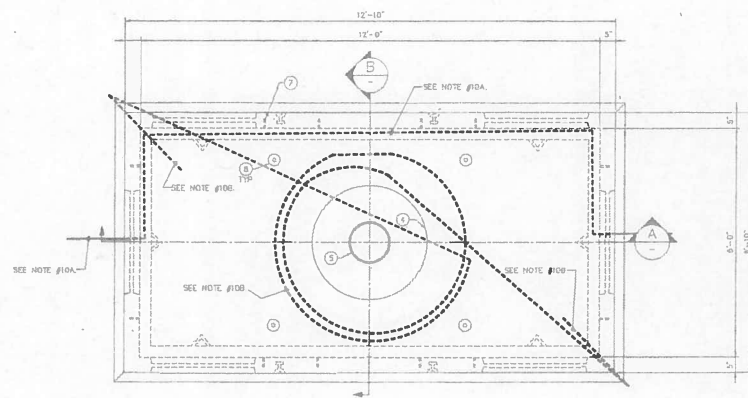
NOTES:

1. INSTALL 60'-70' OF 4/0 TINNED BARE CU WIRE IN BOTTOM OF EXCAVATION. BRING WIRE THROUGH A HOLE DRILLED AT OPPOSITE ENDS OF MANHOLE WITH 3'-4' LEFT IN MANHOLE AT EACH END. EXTEND ON END ABOVE GRADE AS SHOWN.
2. MAKE 3 COILS OF 4/0 TINNED BARE CU WIRE UNDER BOTTOM OF MANHOLE.

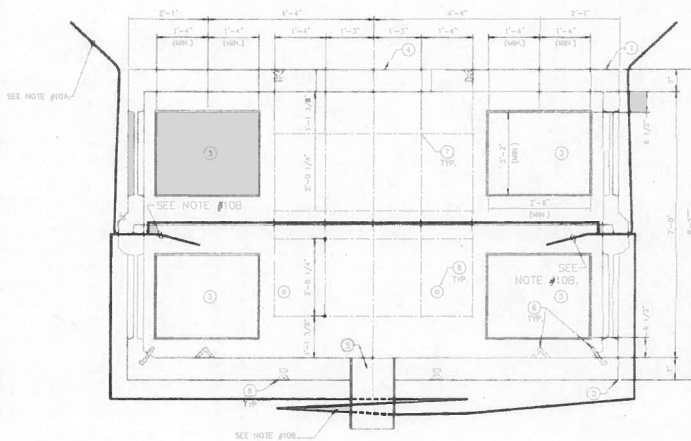


SECTION "A"

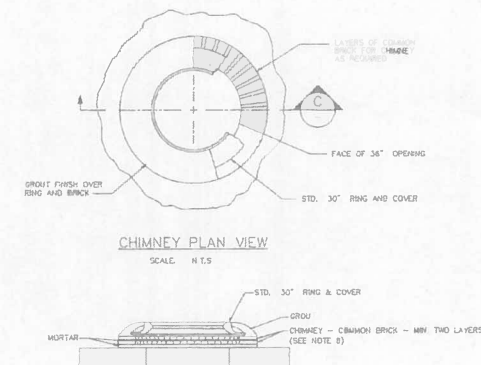
6 FT x 12 FT x 7 FT (PART 1 OF 2)



PLAN VIEW  
SCALE: 3/4"=1'-0"

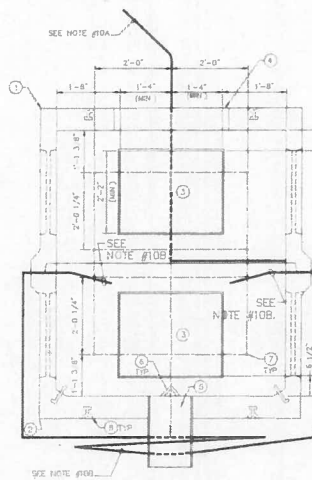


SECTION A  
SCALE: 3/4"=1'-0"



CHIMNEY PLAN VIEW  
SCALE: N.T.S.

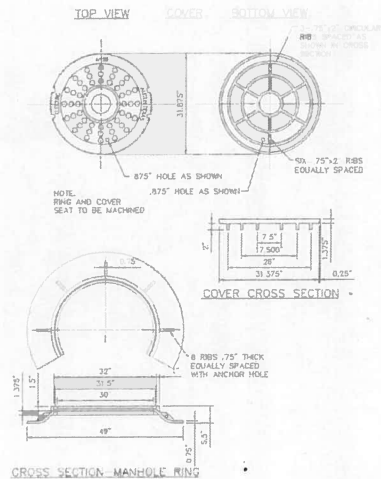
SECTION C  
SCALE: N.T.S.



SECTION B  
SCALE: 3/4"=1'-0"

#### LEGEND

- 1 TOP SECTION (SEE NOTE 2)
- 2 BOTTOM SECTION (SEE NOTE 2)
- 3 WINDOW (12) REQUIRED
- 4 36" MANHOLE OPENING
- 5 12" DIAMETER OPENING FOR SUMP (SEE NOTE 4 & 5)
- 6 PULL RINGS (8) REQUIRED
- 7 INSERTS 1/2" DIA (48) REQUIRED
- 8 2 TON RING HANDLING ANCHOR (12) REQUIRED



MANHOLE RING & COVER DETAIL  
SCALE: 1"=1'-0"

#### NOTES:

- 1 NOT USED.
- 2 WEIGHTS & STYLE ARE SUBJECT TO CHANGE DEPENDING ON MANHOLE SUPPLIER SELECTED.
- 3 DESIGNED FOR H-20 BRIDGE LOADING.
- 4 THE FINISHED SUMP SHALL BE 12" DIA. X 16" DEEP.
- 5 FILL THE BOTTOM 6" OF SUMP WITH PEA GRAVEL.
- 6 MINIMUM EXCAVATION SIZE: 8'-10" X 14'-10" X DEPTH REQUIRED.
- 7 WINDOWS SHALL BE SIZED FOR 12-5" CONCRETE EACH SIDE-WALL.
- 8 CHIMNEY SHALL NOT EXCEED 2" TO RING AND COVER.
- 9 RING ELEVATION SHALL BE 6" ABOVE FINAL GRADE.
- 10 THE GRADING REQUIREMENTS FOR MANHOLES DEPEND ON WHERE THE MANHOLE IS INSTALLED. ONE OF THE FOLLOWING SHALL BE USED BUT NOT BOTH:
  - 10A. FROM MANHOLES INSIDE OF A SUBSTATION: INSTALL 1989 COPPER-CLAD STEEL CABLE FOR CONNECTION TO THE STATION GROUNDING GRID. FORM RING CONDUCTOR ALONG THE CENTER OF THE INSIDE SURFACE OF THE MANHOLE WALL. BRING THE CONDUCTOR THROUGH THE SEAL AT OPPOSITE ENDS OF MANHOLE. EXTEND BOTH ENDS ABOVE GRADE AS SHOWN AND COIL 5' FOR CONNECTION TO THE STATION GROUNDING GRID.
  - 10B. FOR MANHOLES OUTSIDE OF A SUBSTATION: INSTALL 1989 COPPER-CLAD STEEL CABLE. LAY TWO 2 FOOT DIAMETER COILS IN THE BOTTOM OF THE EXCAVATION PRIOR TO PLACING THE MANHOLE. RUN THE CONDUCTOR TO OPPOSITE CORNERS AS SHOWN IN SECTIONS "A" AND "B". FORM IT ALONG THE OUTSIDE SURFACE OF THE BOTTOM RING SIDE OF THE MANHOLE WALL. BRING THE CONDUCTOR THROUGH THE SEAL AT OPPOSITE ENDS OF MANHOLE. LEAVE A 5 FOOT RING INSIDE THE MANHOLE AT EACH CORNER.

NO.	DATE	REVISION	BY	CHK	APP	DATE
1	06-13-20	UPDATED OPENING WINDOW FROM 20" W X 26" H TO 32" W X 26" H	MP	MP	J	MP
2		ORIGINAL DRAWING - STATION PER-8-B				

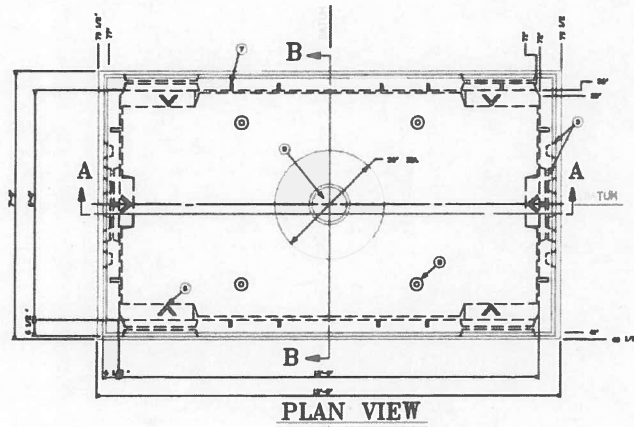
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ELECTRIC SERVICE DELIVERY  
SUBSTATION ENGINEERING

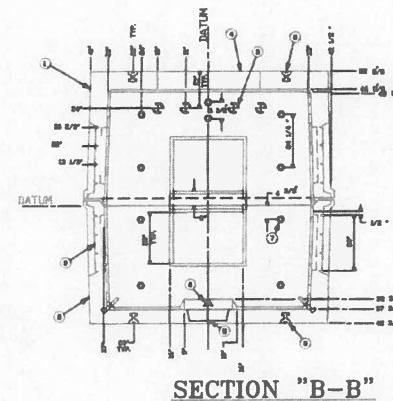
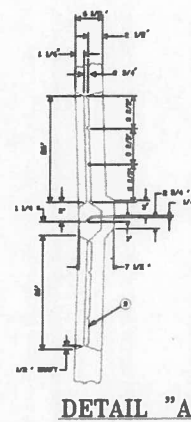
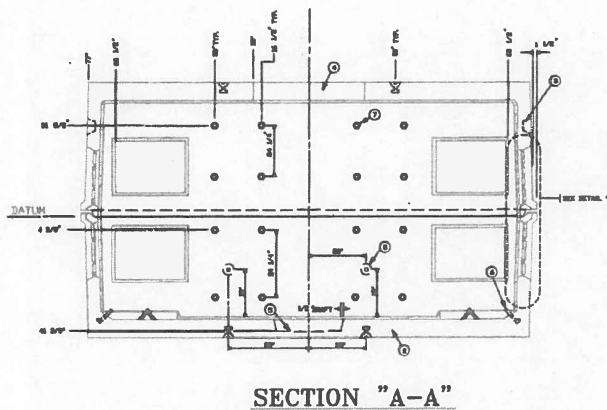
TITLE	UNITS	SCALE
STANDARD SUBSTATION 8' X 12' I.D. PRECAST MANHOLE		3/4"=1'
	FILE NAME	
	7B_1098_14.DWG	
	DATE	
	7B 1098 14	

1458-06A2



- ① TOP SECTION WEIGHT APPROX. 14,000#
- ② BOTTOM SECTION WEIGHT APPROX. 13,000#
- ③ INDICATE AS REV'D.
- ④ 36" MANHOLE OPENING
- ⑤ SUMP 18" DIA. BY 4" DEEP (1)REV'D. (SEE NOTES 4 AND 5 BELOW)
- ⑥ FULL DRUM (8)REV'D.
- ⑦ INSERTS 1/2" DIA. (2)REV'D.
- ⑧ 5-TON RISE HANDLING ANCHORS (12)REV'D.
- ⑨ SHALL BE DESIGNED FOR A BURIAL DEPTH OF 3 FEET BELOW GRADE TO TOP OF VAULT.
- ⑩ SHALL BE RATED FOR AASHTO HS 20 LOADING

- FOR INFORMATION ONLY -



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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NOTES:  
The data is not intended to be a substitute for the design of the engineer. Any party using the data without the consent of the engineer is doing so at their own risk. The engineer is not responsible for any errors or omissions in the data.



ELECTRIC SERVICE DELIVERY  
SUBSTATION ENGINEERING

CITY OF AUSTIN  
CITY OF AUSTIN STANDARD  
6' X 12' X 7' PRECAST MANHOLE

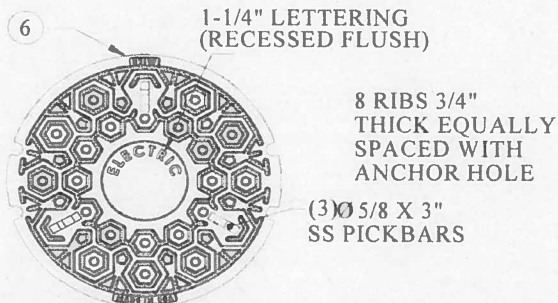
DATE	REV.
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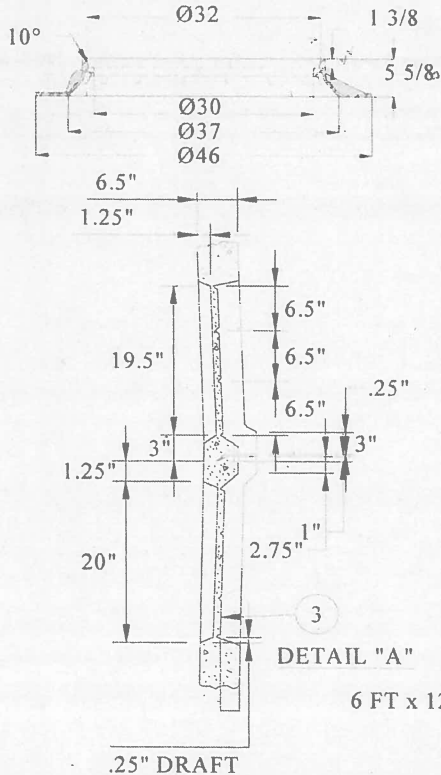
**1458-06B MANHOLES 6-FT X 12-FT**

**NOTES:**

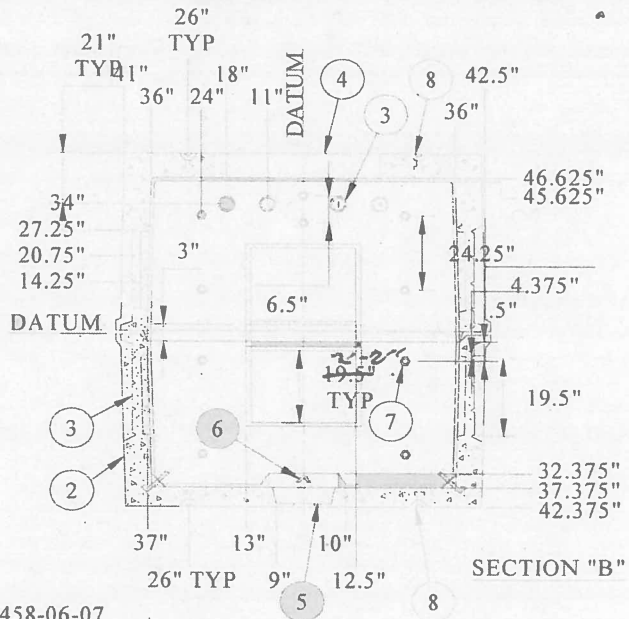
1. MIN. EXCAVATION SIZE: 8'-10"x14'-10"x DEPTH REQ'D.
2. DESIGNED FOR H-20 BRIDGE LOADING
3. INSTALL 60'-70' OF 4/0 TINNED BARE CU WIRE IN BOTTOM OF EXCAVATION. BRING WIRE THROUGH THE SEAM AT OPPOSITE ENDS OF MANHOLE WITH 3'± LEFT IN MANHOLE AT EACH END. EXTEND ONE END ABOVE GRADE AS SHOWN.
4. FINISHED SUMP TO BE 13"Ø BY 18" DEEP.
5. BOTTOM 6" OF SUMP TO BE FILLED WITH PEA GRAVEL.
6. MAKE 3 COILS OF 4/0 TINNED BARE CU WIRE UNDER BOTTOM OF MANHOLE.




COVER-M55A DUCTILE STEEL MARKED ELECTRIC  
NOTE: RING AND COVER SEAT TO BE MACHINED.  
BOTH DUCTILE IRON M55 30"

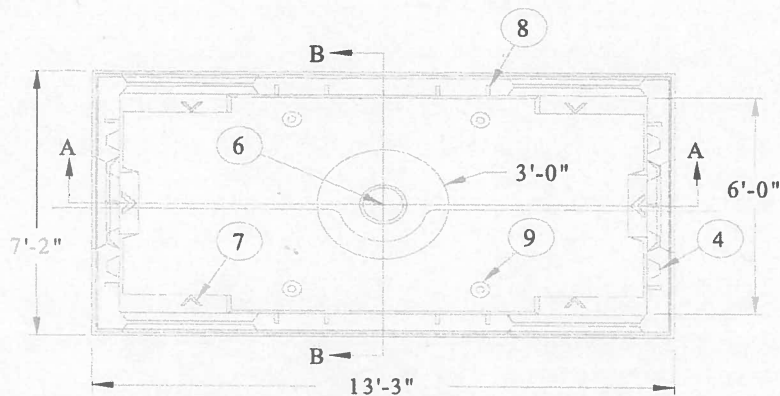


- 1 TOP SECTION WEIGHT APPROX. 14,000 LBS.
- 2 BOTTOM SECTION WEIGHT APPROX. 13,500 LBS.
- 3 KNOCKOUTS AS REQ'D.
- 4 36" MANHOLE OPENING
- 5 SUMP 13"Ø BY 4" DEEP (1) REQ'D. (SEE NOTE 4 & 5 BELOW)
- 6 PULL IRONS (6) REQ'D.
- 7 INSERT 1/2"Ø (52) REQ'D.
- 8 2-TON RISS HANDLING ANCHOR (12) REQ'D.



1458-06-07  
6 FT x 12 FT x 7 FT (PART 2 OF 2)

1458-07A	CIVIL	
Sheet 1 of 2	MANHOLES	
	MANHOLES 6- FT X 12- FT W/CENTER SECTION	Rev.: 08/01/20



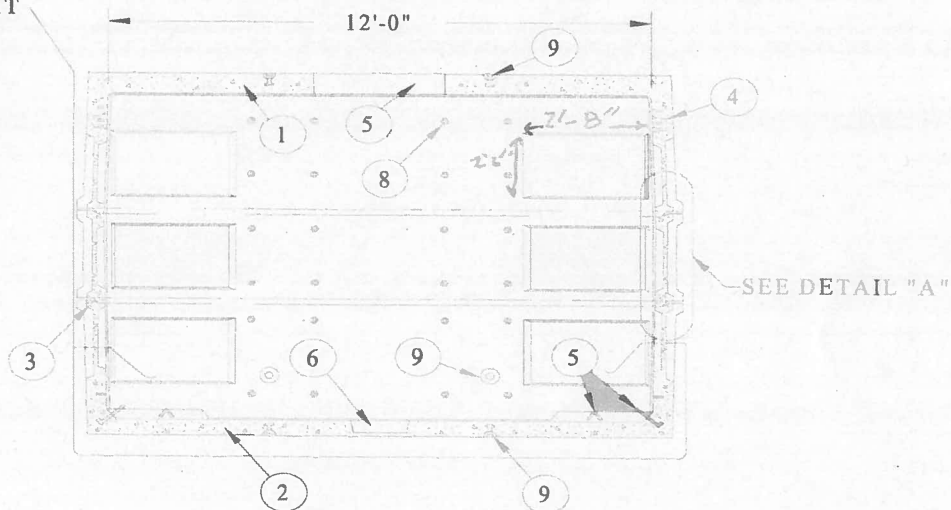
PLAN VIEW

NOTE:

1. INSTALL 70'-80' OF 4/0 TINNED BARE CU WIRE MAKING 3 COILS IN BOTTOM OF EXCAVATION . BRING WIRE THROUGH A HOLE DRILLED AT OPPOSITE ENDS OF MANHOLE WITH 3'+/-2" LEFT IN MANHOLE AT ONE END. EXTEND ONE END ABOVE GRADE.
2. MANHOLE NECK SHALL BE A MAXIMUM OF 30".


COIL 5" ABOVE  
GRADE FOR  
CONNECTION TO  
GROUND MAT

1458-06-07

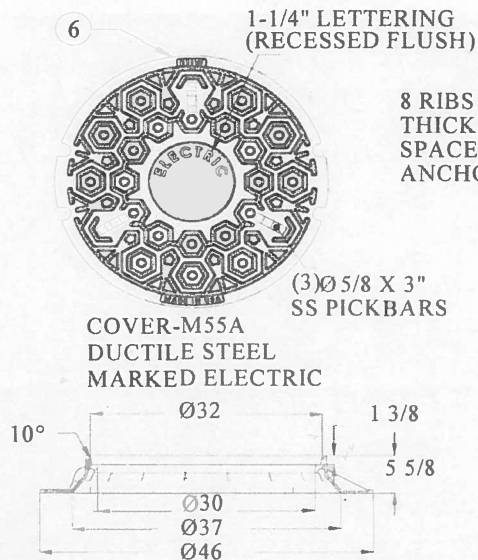


SECTION "A"

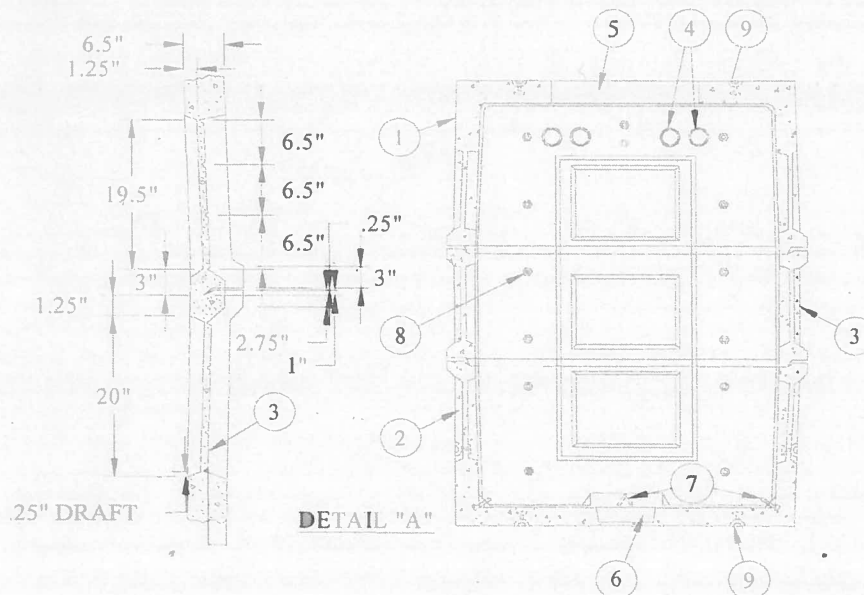
6 FT x 12 FT WITH CENTER SECTION FT (PART 1 OF 2)

 Rev: 04/02/15	CIVIL MANHOLES MANHOLES 6- FT X 12- FT W/CENTER SECTION	1458-07B
		Sheet 2 of 2
		08/12/02

**1458-07B MANHOLES 6- FT X 12- FT W/CENTER SECTION**



NOTE:  
RING AND COVER SEAT TO BE MACHINED. RING DUCTILE IRON M55 30"



- 1 TOP SECTION WEIGHT 13,955 LBS.
- 2 BOTTOM SECTION WEIGHT 13,212 LBS.
- 3 CENTER SECTION
- 4 VENT KNOCKOUT 6"Ø (8) REQ'D.
- 5 36" MANHOLE OPENING
- 6 SUMP 13"Ø BY 4" DEEP (1) REQ'D. (SEE NOTE 4 & 5 BELOW)
- 7 PULL IRONS (6) REQ'D.
- 8 INSERT 1/2"Ø (76) REQ'D.
- 9 2-TON RISS HANDLING ANCHOR (12) REQ'D.

NOTES:  
1. MIN. EXCAVATION  
SIZE: 8'-10"x14'-10"x  
DEPTH REQ'D.

2. DESIGNED FOR H-20  
BRIDGE LOADING


3. INSTALL 60'-70' OF 4/0  
TINNED BARE CU WIRE  
IN BOTTOM OF  
EXCAVATION. BRING  
WIRE THROUGH THE  
SEAM AT OPPOSITE  
ENDS OF MANHOLE  
WITH 3'± LEFT IN  
MANHOLE AT EACH  
END. EXTEND ONE END  
ABOVE GRADE AS  
SHOWN.

4. FINISHED SUMP TO BE  
13"Ø BY 18" DEEP.

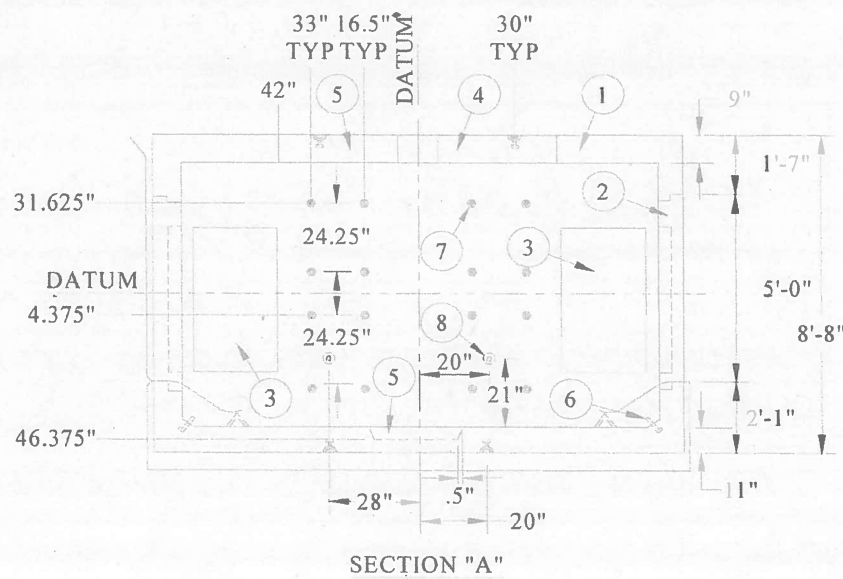
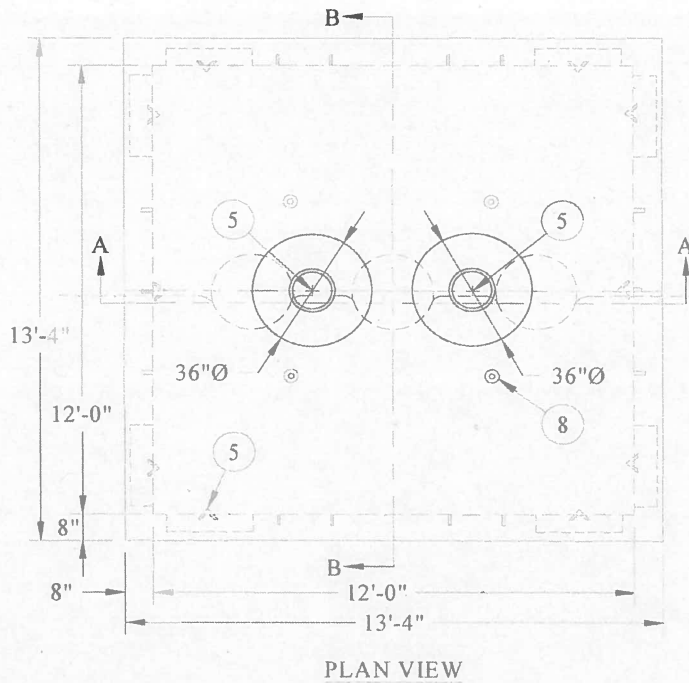
5. BOTTOM 6" OF SUMP  
TO BE FILLED WITH PEA  
GRAVEL.

6. MAKE 3 COILS OF 4/0  
TINNED BARE CU WIRE  
UNDER BOTTOM OF  
MANHOLE.

1458-07-07  
6 FT x 12 FT WITH CENTER SECTION FT (PART 2 OF 2)

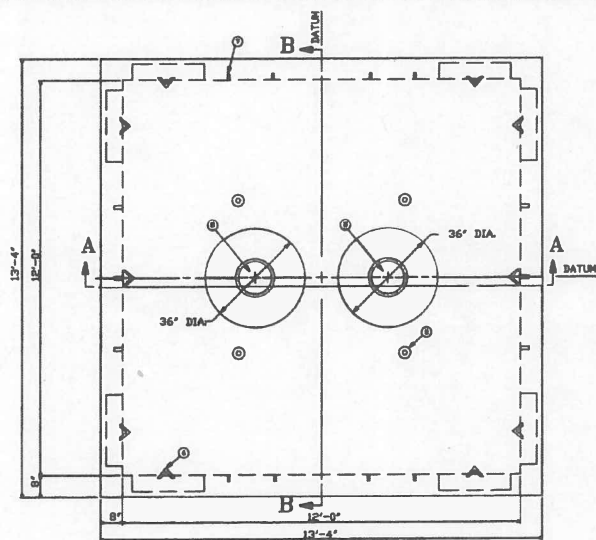
1458-12A	CIVIL MANHOLES MANHOLES 12- FT X 12- FT	 Rev.: 04/02/15
Sheet 1 of 2		
08/12/02		

1458-12A MANHOLES 12- FT X 12- FT

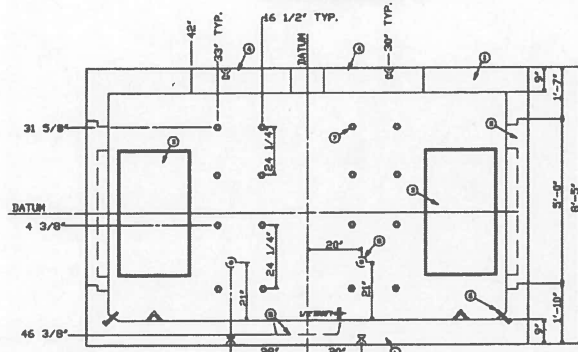


1458-12-07  
12 FT x 12 FT x 7 FT (PART 1 OF 2)

1458-12A1



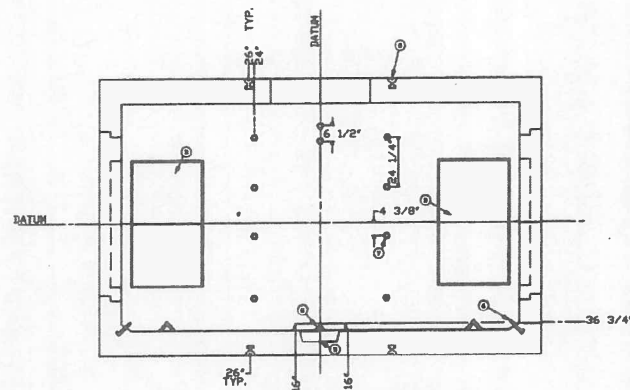
PLAN VIEW



SECTION "A-A"

- ① TOP AND BOTTOM SECTION WEIGHT APPROX. 20,000 LBS. EACH
- ② MIDDLE SECTION WEIGHT APPROX. 30,000 LBS.
- ③ KNOCKOUTS AS REQ'D.
- ④ 36" MANHOLE OPENING
- ⑤ SUMP 15" DIA. BY 4" DEEP (1)REQ'D. (SEE NOTES 4 AND 5 BELOW)
- ⑥ FULL IRONS (8)REQ'D.
- ⑦ INSERTS 1/2" DIA. (64)REQ'D.
- ⑧ 2-TON RISS HANDLING ANCHOR (12)REQ'D.
- ⑨ SHALL BE DESIGNED FOR A BURIAL DEPTH OF 3 FEET BELOW GRADE TO TOP OF VAULT.
- ⑩ SHALL BE RATED FOR AASHTO HS 20 LOADING

- FOR INFORMATION ONLY -



SECTION "B-B"

REV.	DATE	DESCRIPTION	DESIGNED	CHECKED	DRAWN	CHECKED	CIA	VO	RE	CHIEF	APP'D	CORRECTION	APP'D
1		REVISED TO 12' BY 24"											
2		ORIGINAL DRAWING											

CITY OF AUSTIN, TEXAS  
ELECTRIC DEPARTMENT  
SUBSTATION ENGINEERING & DESIGN



TITLE  
CITY OF AUSTIN  
12' x 12' I.D.  
PRECAST MANHOLE

DATE: JULY 1993  
SCALE: N.T.S.  
DRAWING NUMBER: 7B 1098 3  
REV: B



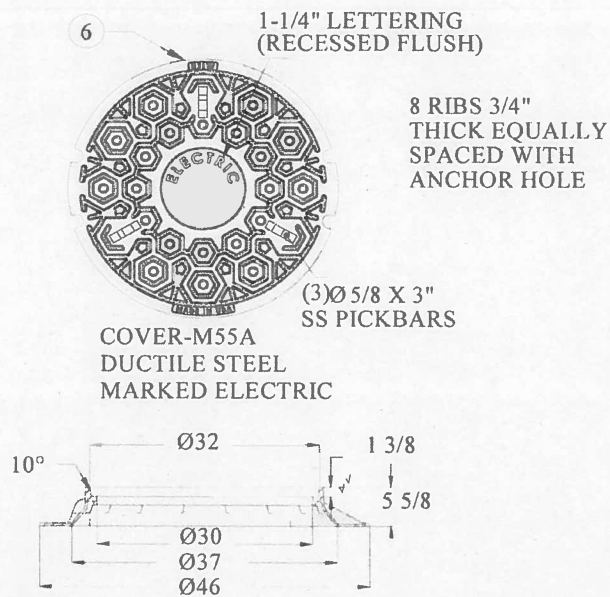
**CIVIL  
MANHOLES  
MANHOLES 12-FT X 12-FT**

**1458-12B**

Sheet 2 of 2

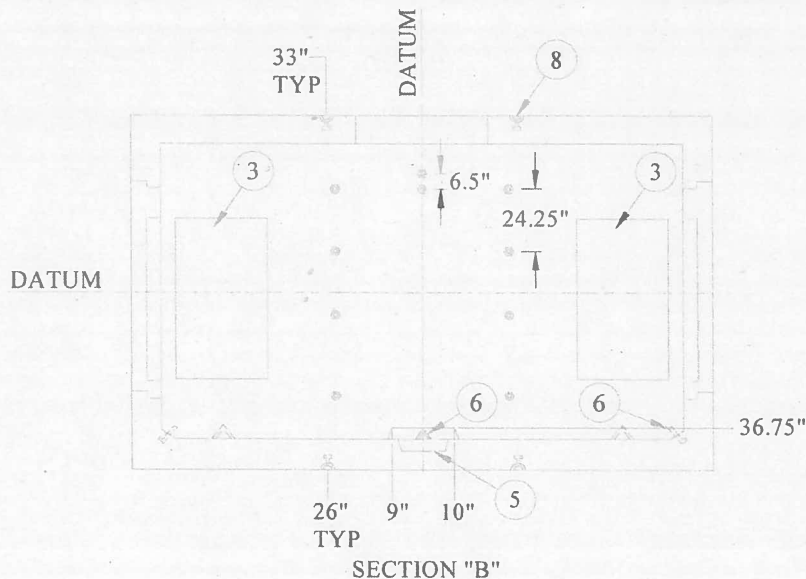
08/12/02

**1458-12B MANHOLES 12-FT X 12-FT**



NOTE:  
RING AND COVER SEAT TO BE MACHINED. RING DUCTILE IRON M55 30"

- 1 TOP SECTION WEIGHT APPROX. 26,000 LBS. EACH
- 2 BOTTOM SECTION WEIGHT APPROX. 30,000 LBS.
- 3 KNOCKOUTS AS REQ'D.
- 4 36" MANHOLE OPENING
- 5 SUMP 13"Ø BY 4" DEEP (1) REQ'D. (SEE NOTE 4 & 5 BELOW)
- 6 PULL IRONS (8) REQ'D.
- 7 INSERT 1/2"Ø (64) REQ'D.
- 8 2-TON RISS HANDLING ANCHOR (12) REQ'D.
- 9 MANHOLE NECK SHALL BE A MAXIMUM OF 24"



1458-12-07  
12 FT x 12 FT x 7 FT (PART 2 OF 2)


NOTES:  
1. MIN. EXCAVATION SIZE: 14'-10"x14'-10"x DEPTH REQ'D.

2. DESIGNED FOR H-20 BRIDGE LOADING

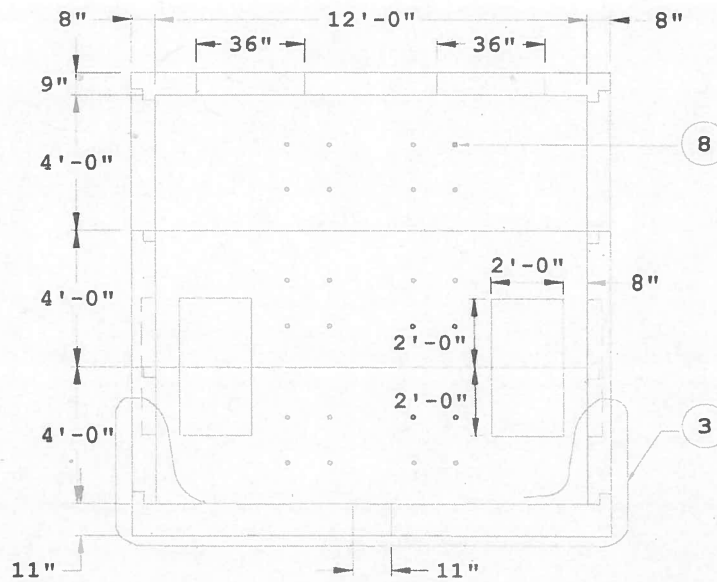
3. INSTALL 60'-70' OF 4/0 TINNED BARE CU WIRE IN BOTTOM OF EXCAVATION. BRING WIRE THROUGH A HOLE DRILLED AT OPPOSITE ENDS OF MANHOLE WITH 3'± LEFT IN MANHOLE AT EACH END. EXTEND ONE END ABOVE GRADE AS SHOWN.

4. FINISHED SUMP TO BE 13"Ø BY 18" DEEP.

5. BOTTOM 6" OF SUMP TO BE FILLED WITH PEA GRAVEL.

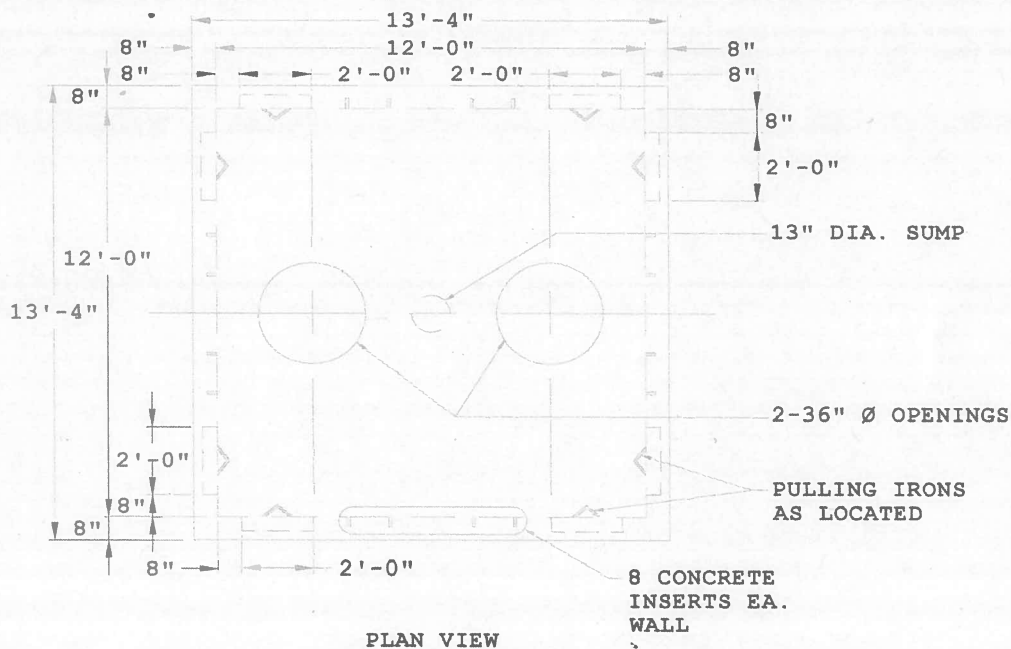
1458-13A	CIVIL MANHOLES MANHOLES 12-FT X 12-FT	 Rev.: 04/02/15
Sheet 1 of 2		
08/12/02		

**1458-13A MANHOLES 12-FT X 12-FT**




**ELEVATION**

**\*1458-13-12**

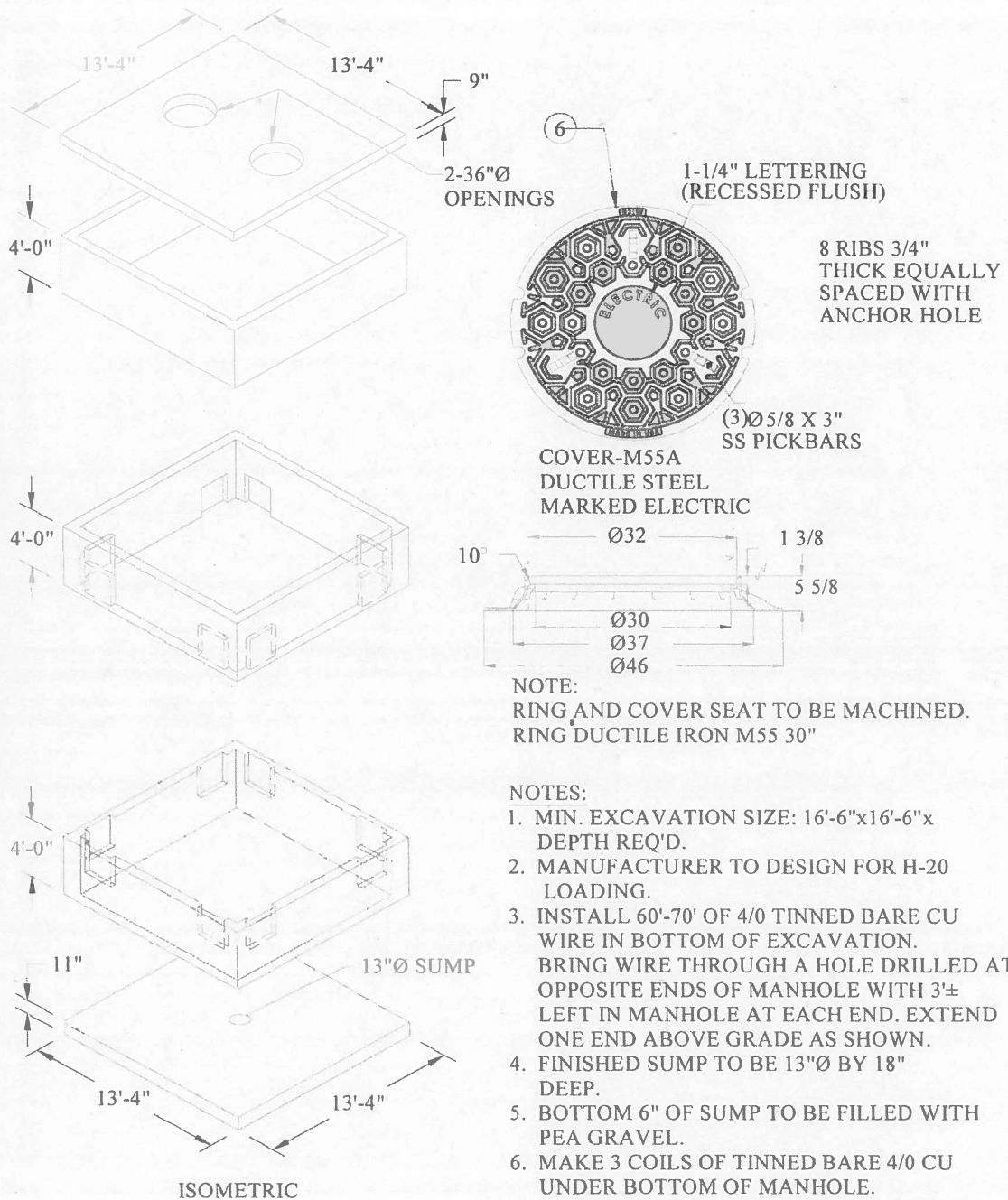


**PLAN VIEW**


**12 FT x 12 FT x 12 FT (PART 1 OF 2)**

 Rev: 04/02/15	CIVIL MANHOLES <b>MANHOLES 12-FT X 12-FT</b>	1458-13B
		Sheet 2 of 2
		08/12/02

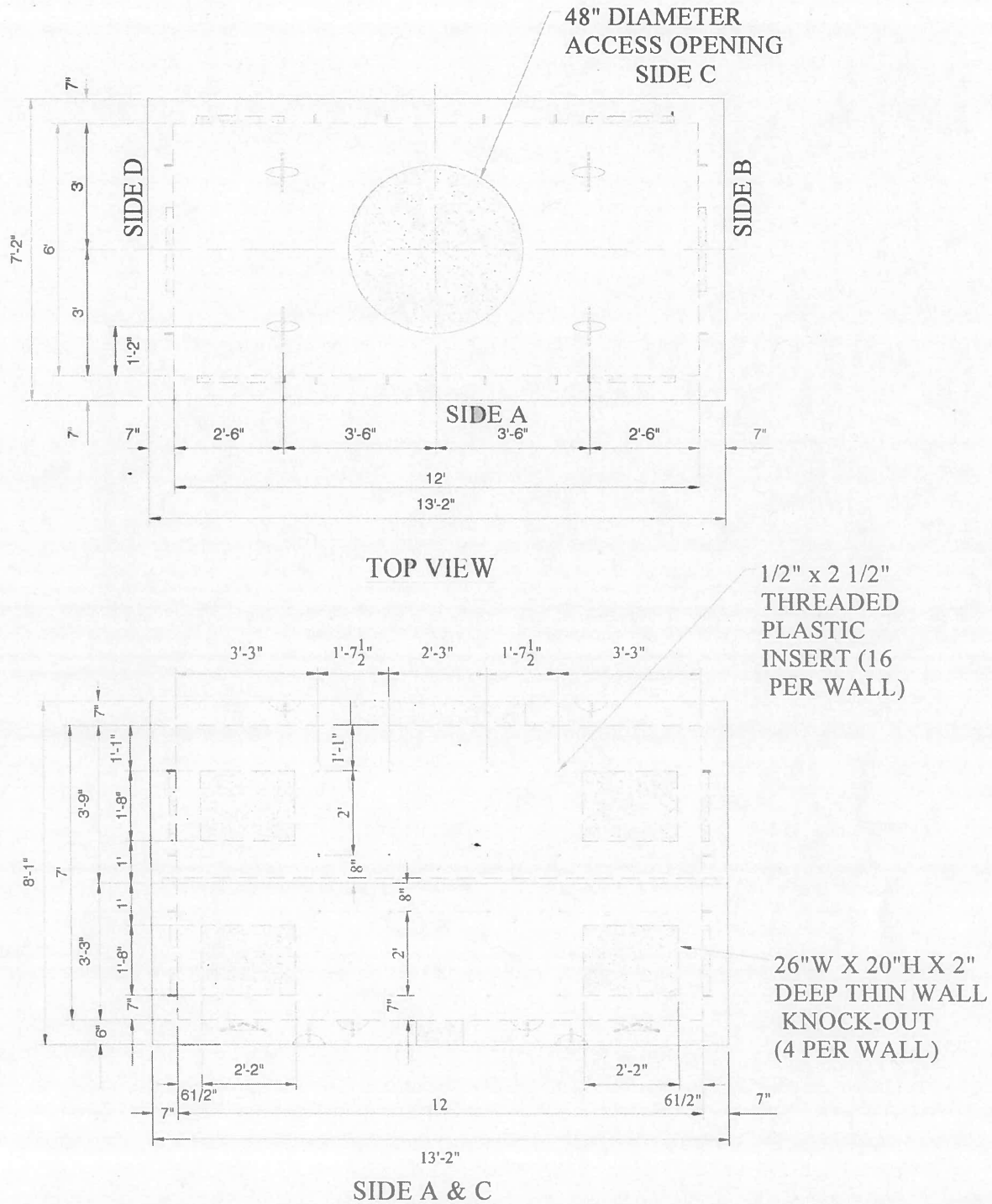
**1458-13B MANHOLES 12-FT X 12-FT**



1458-13-12  
12 FT x 12 FT x 12 FT (PART 2 OF 2)

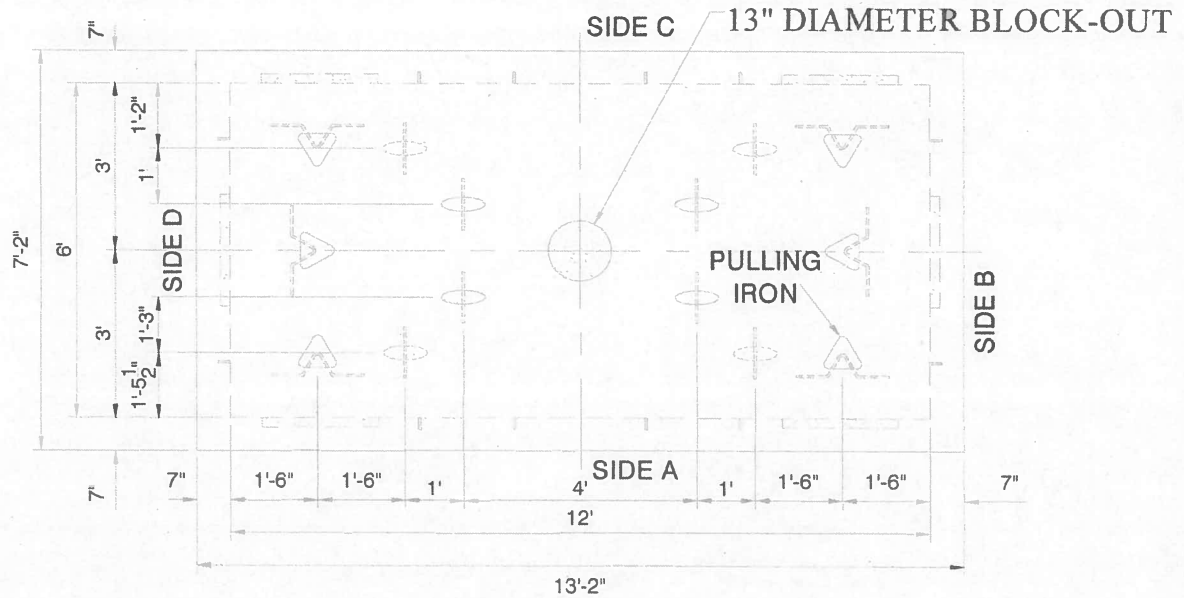
1458-18A	CIVIL MANHOLES MANHOLES 6-FT X 12-FT - 5FT MAX BURIAL DEPTH	 Rev.: 04/02/15
Sheet 1 of 3		
08/12/02		

**1458-18A MANHOLES 6-FT X 12-FT - 5FT MAX BURIAL DEPTH**

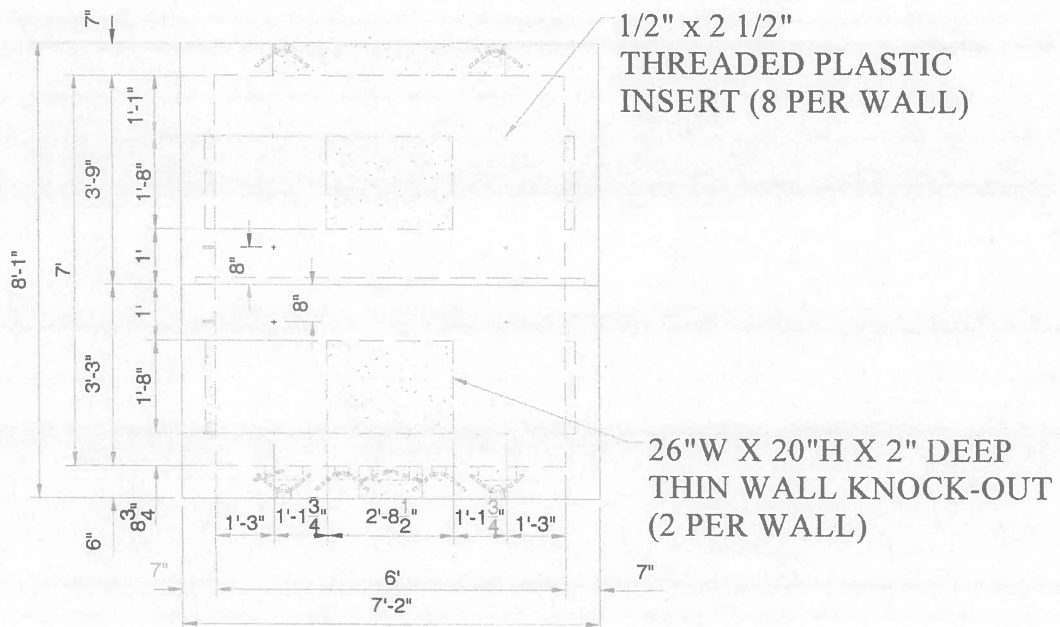


1458-18B

MANHOLES 6-FT X 12-FT - 5FT MAX BURIAL DEPTH




BOTTOM VIEW

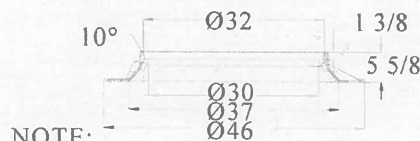
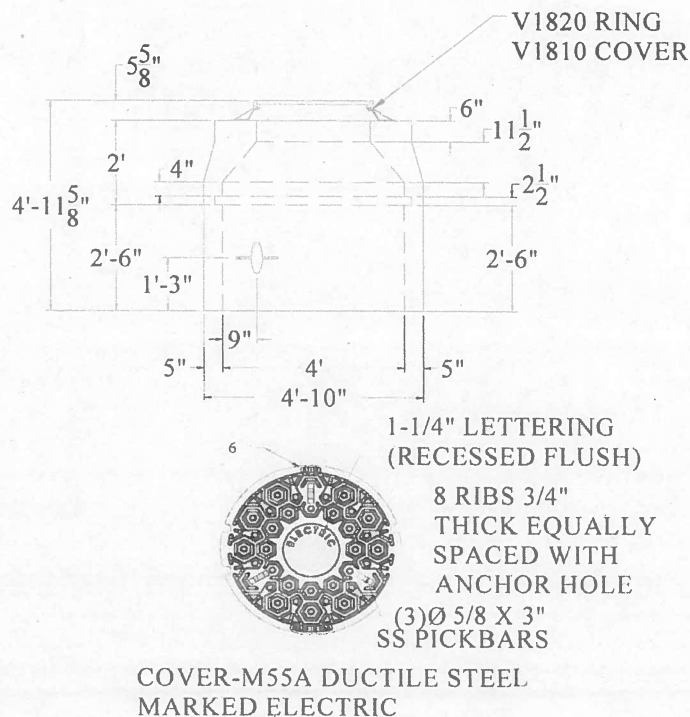


SIDE B & D



1458-18C	CIVIL MANHOLES MANHOLES 6- FT X 12- FT - 5FT MAX BURIAL DEPTH	 Rev.: 04/02/15
Sheet 3 of 3		
08/12/02		

**1458-18C MANHOLES 6- FT X 12- FT - 5FT MAX BURIAL DEPTH**



NOTE:  
RING AND COVER SEAT TO BE  
MACHINED. RING DUCTILE IRON M55  
30"

**NOTES:**

1. RATED FOR USE WITH A BURIAL DEPTH NO GREATER THAN 5 FEET BELOW GRADE TO THE TOP OF THE VAULT.
2. DESIGN FOR HS-20 LOADING.
3. INSTALL 60'-70' OF 4/0 TINNED BARE CU WIRE IN THE BOTTOM OF THE EXCAVATION. BRING THE WIRE THROUGH THE SEAM AT OPPOSITE ENDS OF THE MANHOLE WITH 3' ± LEFT IN THE MANHOLE AT EACH END. EXTEND ONE END ABOVE GRADE.
4. FINISHED SUMP TO BE 13"Ø BY 18" DEEP.
5. BOTTOM 6" OF SUMP TO BE FILLED WITH PEA GRAVEL.
6. MAKE 3 COILS OF 4/0 TINNED BARE CU WIRE UNDER THE BOTTOM OF THE MANHOLE.



Rev: 04/02/15

CIVIL  
MANHOLES

MANHOLES 6-FT X 12-FT W/CS - 5FT MAX BURIAL DEPTH

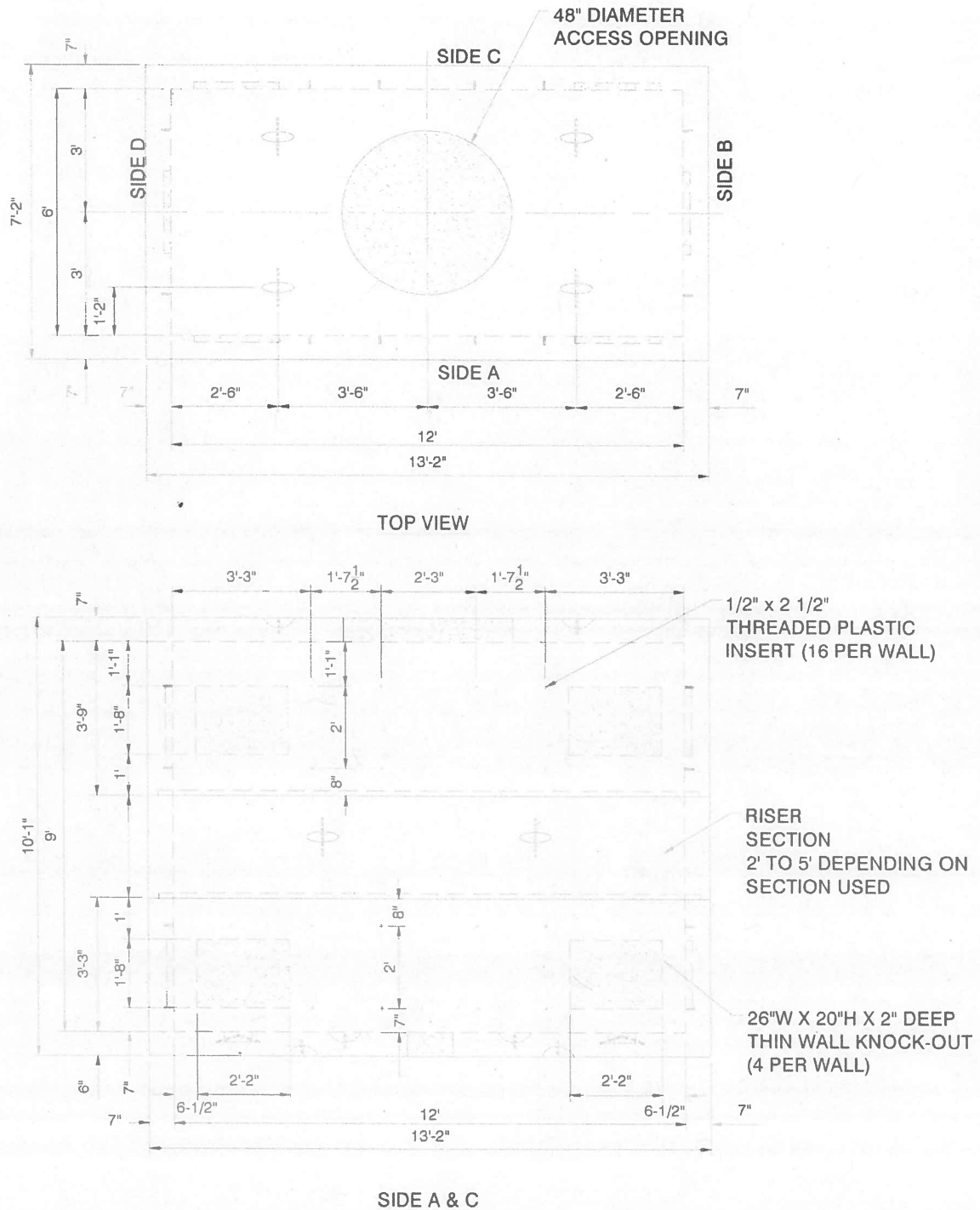
1458-19A

Sheet 1 of 3


08/12/02

1458-19A

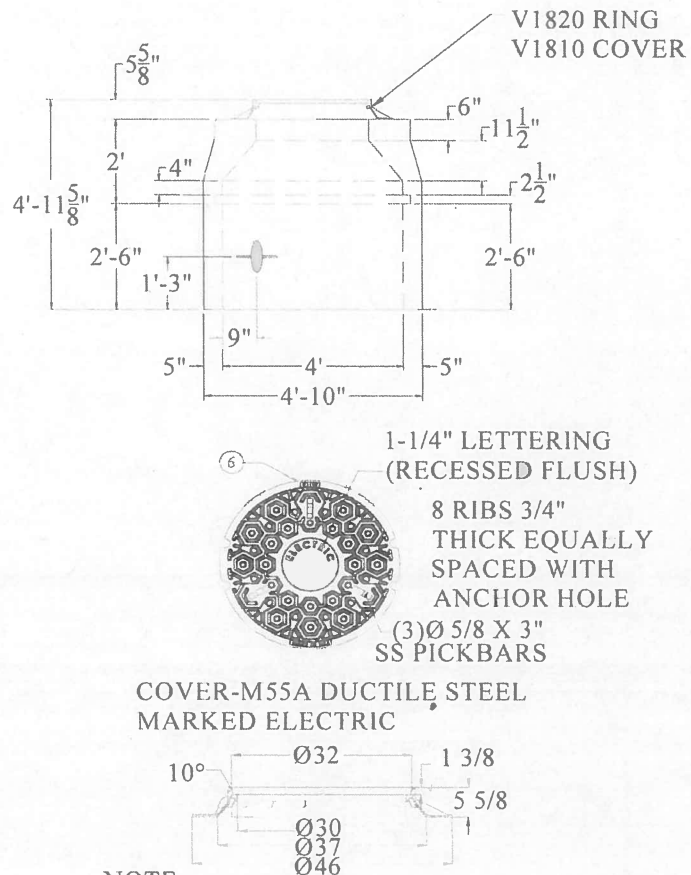
MANHOLES 6-FT X 12-FT W/CS - 5FT MAX BURIAL DEPTH





 Rev: 04/02/15	<b>CIVIL</b> <b>MANHOLES</b> <b>MANHOLES 6- FT X 12- FT W/CS - 5FT MAX BURIAL DEPTH</b>	<b>1458-19C</b>
		Sheet 3 of 3
		08/12/02


**1458-19C      MANHOLES 6- FT X 12- FT W/CS - 5FT MAX BURIAL DEPTH**



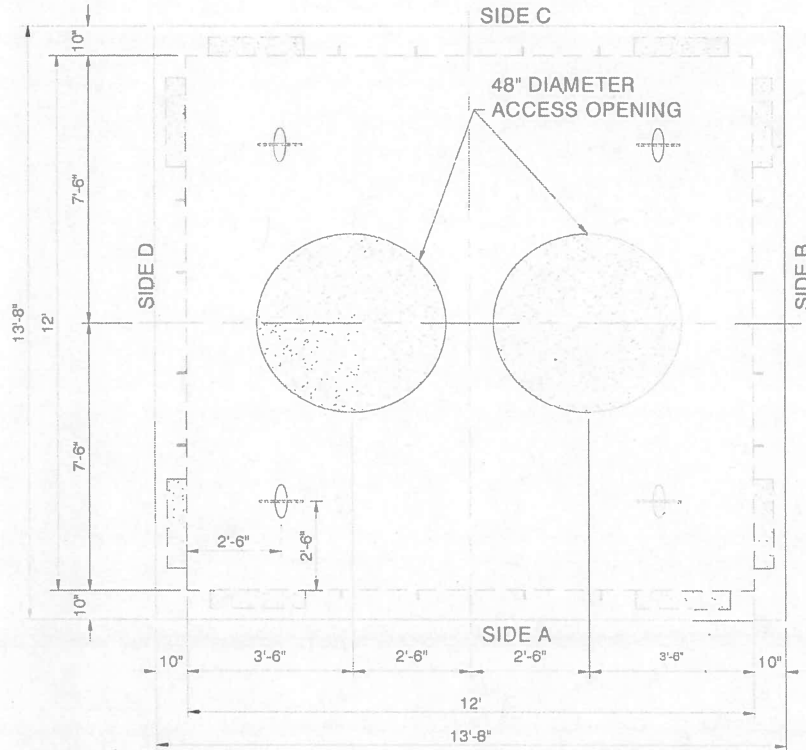
NOTE:  
RING AND COVER SEAT TO BE  
MACHINED. RING DUCTILE IRON M55  
30"

**NOTES:**

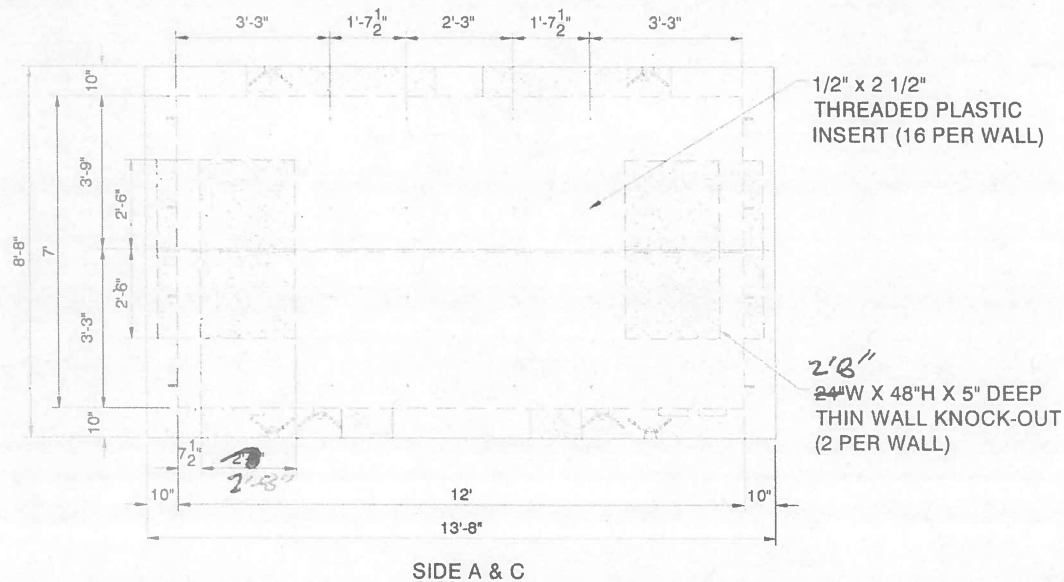
1. RATED FOR USE WITH A BURIAL DEPTH NO GREATER THAN 5 FEET BELOW GRADE TO THE TOP OF THE VAULT.
2. DESIGN FOR HS-20 LOADING.
3. INSTALL 60'-70' OF 4/0 TINNED BARE CU WIRE IN THE BOTTOM OF THE EXCAVATION. BRING THE WIRE THROUGH THE SEAM AT OPPOSITE ENDS OF THE MANHOLE WITH 3' ± LEFT IN THE MANHOLE AT EACH END. EXTEND ONE END ABOVE GRADE.
4. FINISHED SUMP TO BE 13"Ø BY 18" DEEP.
5. BOTTOM 6" OF SUMP TO BE FILLED WITH PEA GRAVEL.
6. MAKE 3 COILS OF 4/0 TINNED BARE CU WIRE UNDER THE BOTTOM OF THE MANHOLE.

1458-24A	CIVIL	
Sheet 1 of 3	MANHOLES	
08/12/02	MANHOLES 12-FT X 12-FT - 5FT MAX BURIAL DEPTH	
		Rev.: 04/02/15


**1458-24A MANHOLES 12-FT X 12-FT - 5FT MAX BURIAL DEPTH**

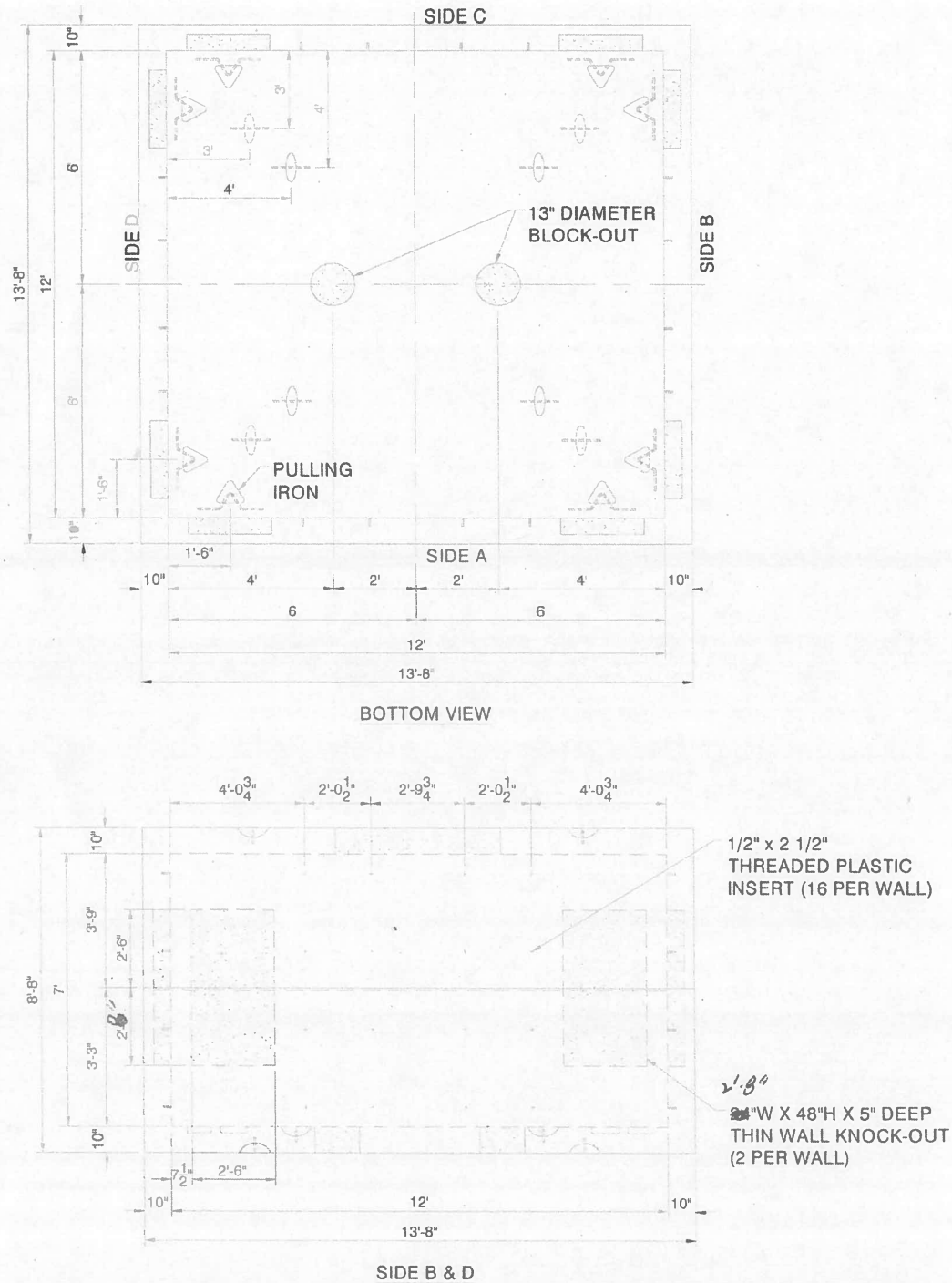


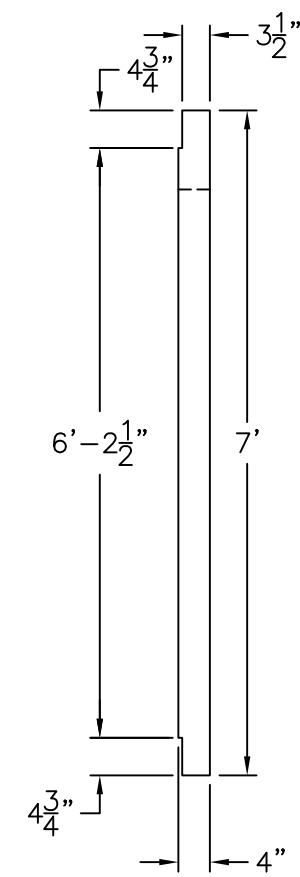
TOP VIEW



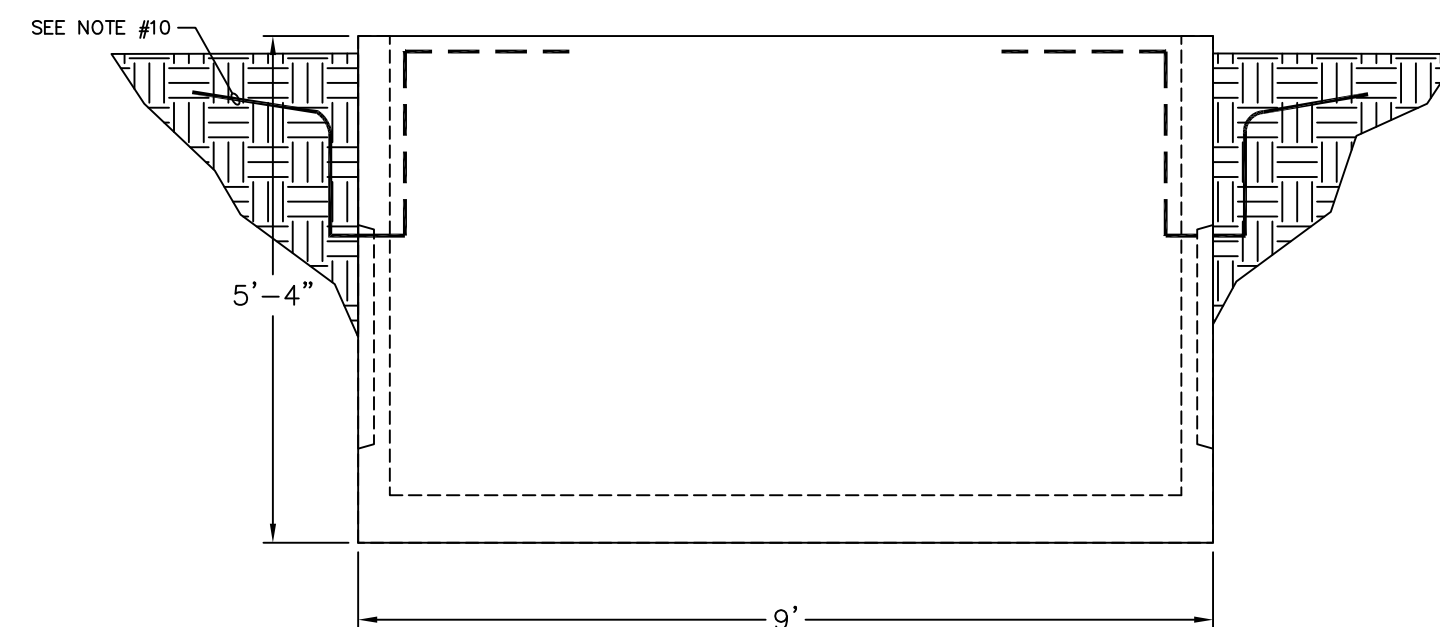


 Rev: 04/02/15	CIVIL MANHOLES MANHOLES 12-FT X 12-FT - 5FT MAX BURIAL DEPTH	1458-24B Sheet 2 of 3
	MANHOLES 12-FT X 12-FT - 5FT MAX BURIAL DEPTH	08/12/02
	1458-24B MANHOLES 12-FT X 12-FT - 5FT MAX BURIAL DEPTH	





CABLE VAULT LID  
SIDE VIEW

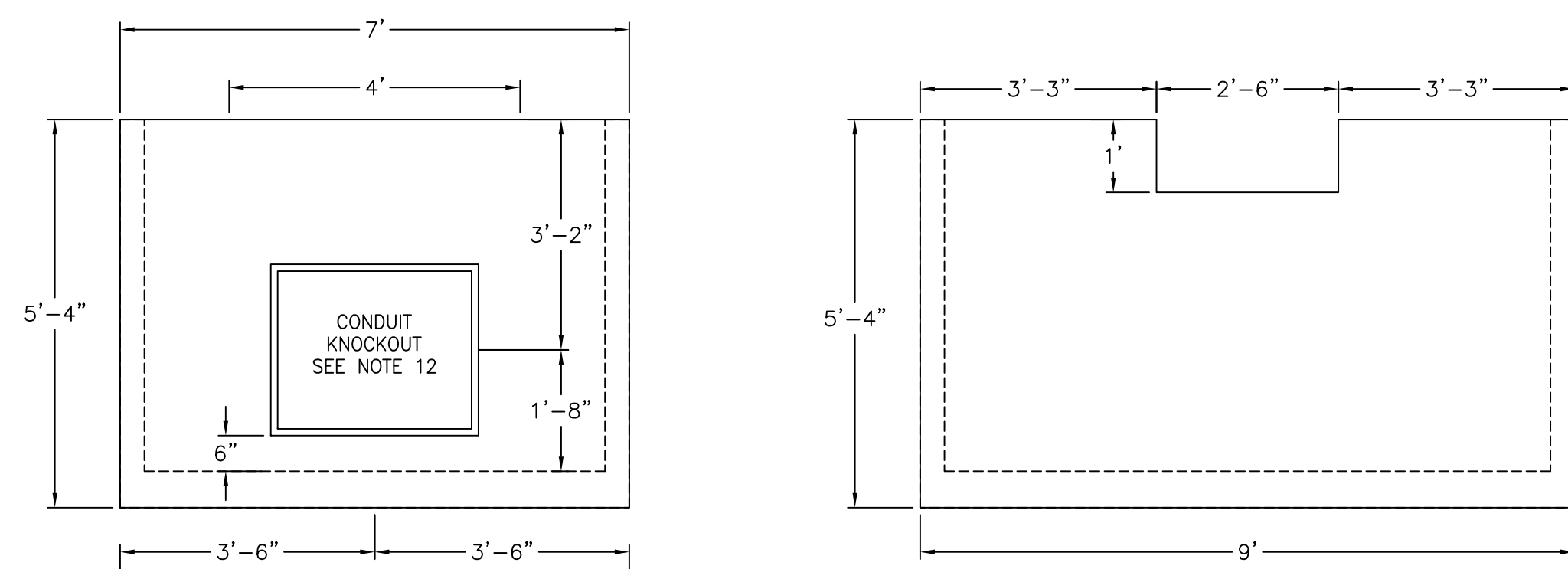


5'-4"

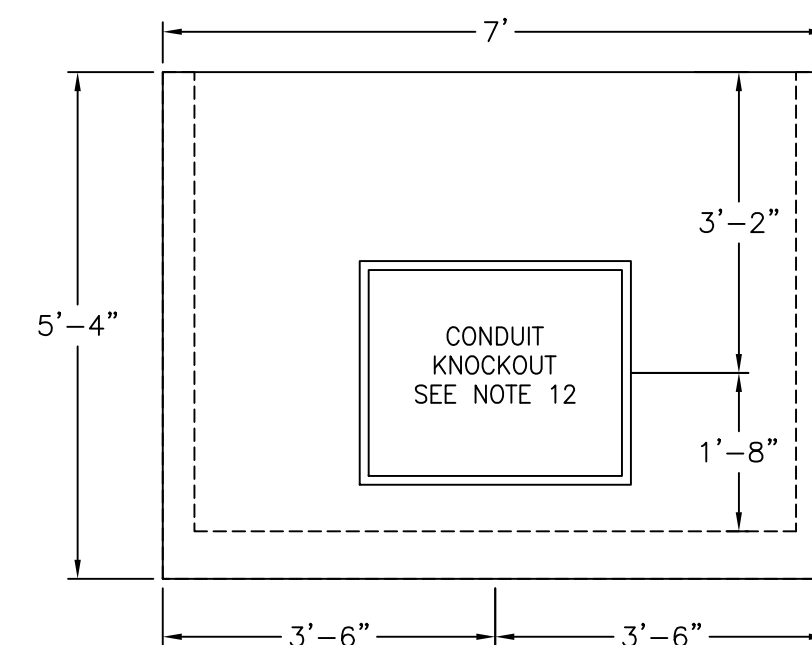
7'

SEE NOTE #10

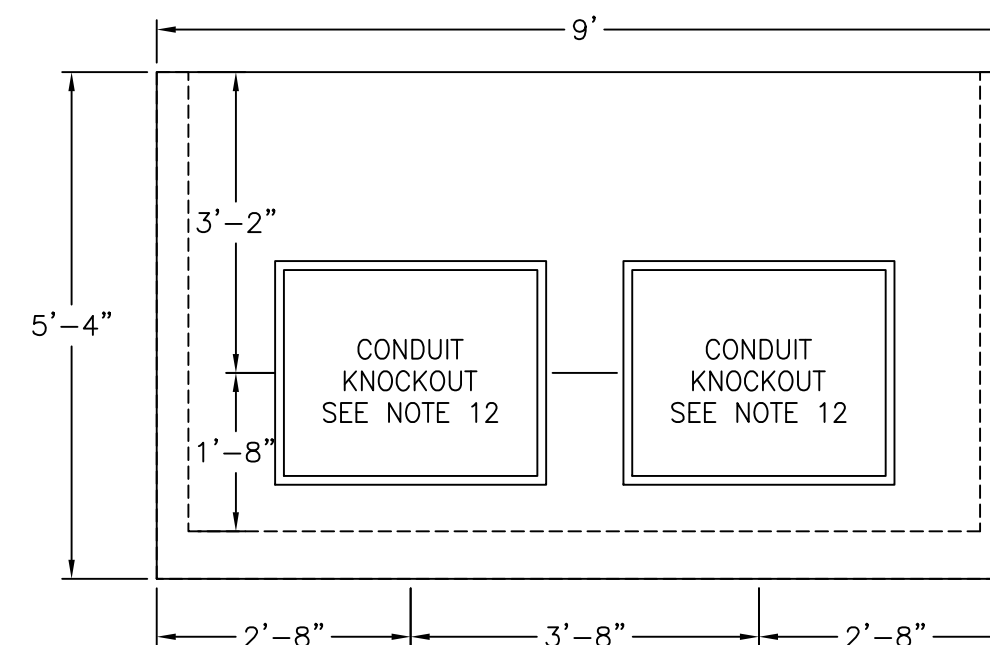
SECTION B-B



SIDE B



SIDE C

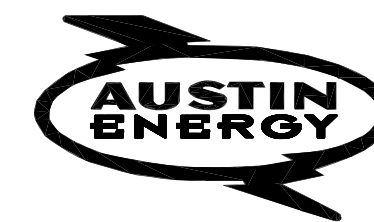


SIDE D

1. THE CABLE VAULT SHALL BE A "ONE-PIECE" DESIGN OR ENGINEER APPROVED EQUAL.
2. THE CABLE VAULT SHALL CONSIST OF A PRECAST CONCRETE BASE AND COVER WITH TORSION ASSISTED LIDS. IT SHALL BE INSTALLED WITH LID EXTENDING ABOVE THE SURROUNDING CRUSHED ROCK SURFACE. THE COVER & LID SHALL BE MANUFACTURED AS HEAVY DUTY VEHICULAR TRAFFIC RATINGS OR ENGINEER APPROVED EQUAL.
3. THE TORSION ASSIST LIDS SHALL OPEN A MINIMUM OF 90° AND REQUIRE NO MORE THAN 55 LBS. OF LIFT TO OPEN OR CLOSE A SINGLE LID FROM ANY POSITION. LIDS SHALL HAVE PROVISIONS FOR LOCKING IN THE OPEN POSITION.
4. THE CABLE VAULT AND LID SHALL BE DESIGNED TO SUPPORT AT LEAST 200 POUNDS PER SQUARE FOOT LIVE LOAD FOR PEDESTRIAN TRAFFIC.
5. THE CABLE VAULT SHALL HAVE AN MINIMUM INTERIOR CLEAR CROSS SECTIONAL AREA OF 76" WIDE X 100" LONG X 58" DEEP. THE OVERALL DIMENSIONS SHALL BE APPROXIMATELY 84" WIDE X 108" LONG X 64" DEEP, OVERALL INCLUDING COVER.
6. THE VAULT WALLS SHALL HAVE KNOCKOUTS IN THE WALLS. SEE THE CABLE VAULT PLAN & SECTION VIEWS FOR THE SIZE AND PLACEMENT OF THE OPENINGS.
7. PROVIDE WINDOW IN THE BACK OF THE BASE. THIS WINDOW SHALL BE 30" WIDE AND 12" HIGH. SEE SIDE B FOR DETAILS. PROVIDE WINDOW IN THE BACK OF THE LID. THIS WINDOW SHALL BE 30" WIDE AND 10" HIGH. SEE CABLE VAULT DRAWING FOR DETAILS.
8. THE CABLE VAULT SHALL BE DESIGNED AND CONSTRUCTED SO THAT NEITHER THE LIDS, NOR TEMPORARY SIDE-TO-SIDE BRACES NEED TO BE INSTALLED TO FACILITATE INSTALLATION OR SUBSEQUENT MACHINE BACKFILLING AND TAMPING.
9. THE CABLE VAULT SHALL HAVE TWO TORSION ASSISTED LIDS. THEY SHALL BE EASILY ACCESSIBLE FOR MAINTENANCE. LIDS SHALL HAVE A PROVISION FOR LOCKING WITH A HEX-HEAD BOLT. SPRING STEEL RODS SHALL BE USED TO MAKE OPENING THE LIDS EASIER. LIDS SHALL BE DIAMOND PLATED AND HAVE HANDLES THAT ARE FLUSH TO PREVENT TRIPPING HAZARDS. LIDS SHALL HAVE A GROUNDING PAD FOR ATTACHMENT TO THE SITE GROUND GRID. THE LIDS SHALL BE RATED FOR PEDESTRIAN TRAFFIC. THE LIDS SHALL BE HOT DIP GALVANIZED PER ASTM A-123. OTHER LID SYSTEMS MAY BE BID FOR EVALUATION BY THE AUSTIN ENERGY ENGINEER.
10. PROVIDE A NEMA GROUND PAD ON EACH LID FOR CONNECTING A 19#9 COPPER GROUND WIRE TO THE SUBSTATION GROUNDING GRID. GROUND WIRE SHALL BE RUN INSIDE VAULT AND OUT NEAREST WINDOW TO GROUND GRID.
11. FURNISH AND INSTALL FOUR LIFTING ANCHORS IN THE CABLE VAULT. THESE ANCHORS WILL BE USED TO LIFT THE CABLE VAULT DURING INSTALLATION. THESE ANCHORS SHALL PROVIDE A MEANS TO LIFT THE VAULT WITHOUT DAMAGE.
12. ALL CONDUIT KNOCKOUT WINDOWS SHALL BE 32"x26". THERE SHALL BE TWO (2) CONDUIT KNOCKOUT WINDOWS CENTERED IN SIDE D SIZED 32"x26".
13. CUT AND ADJUST REINFORCING STEEL AS REQUIRED TO CLEAR KNOCKOUTS.

8											
7											
6											
5											
4											
3											
2	08-14-20	UPDATE CABLE VAULT DIMENSION		---	MP	MP	GLN	---	---	MP	
1	07-28-20	UPDATE CONDUIT KNOCKOUT TO 32"x26"		---	MP	MP	GLN	---	---	MP	
0	06-03-20	ORIGINAL DRAWING		---	GLN	GLN	CHK	---	---	MP	
NO	DATE	REVISION	TASKNUM	DSGN DWN	CHK	DSGN APPD	CON APPD	ENG APPD	FOR CONSTRUCTION / DATE		

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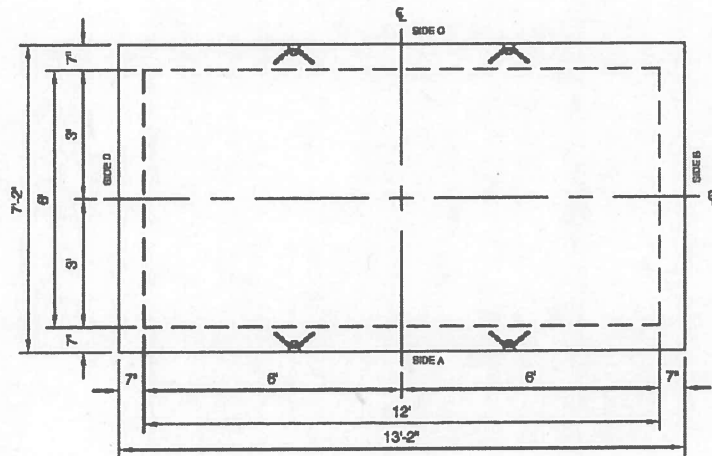
ELECTRIC SERVICE DELIVERY  
SUBSTATION ENGINEERING

TITLE :
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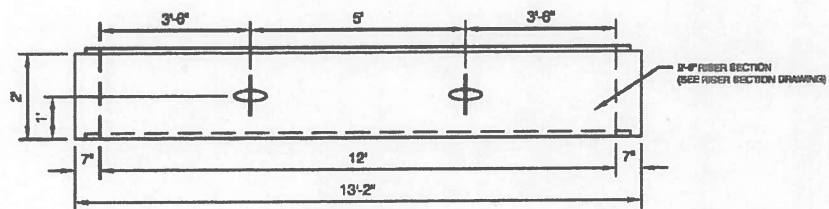
STANDARD SUBSTATION  
CONTROL HOUSE  
6'X8'X5'H CABLE VAULT

MASTER NO.	SCALE
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FILE NAME	
7B_1098_16.DWG	
DRAWING NUMBER	
7B 1098 16	

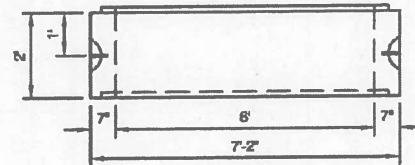
RS1 -6FT X 12FT X 2FT



TOP VIEW



SIDE A & C



SIDE B & D

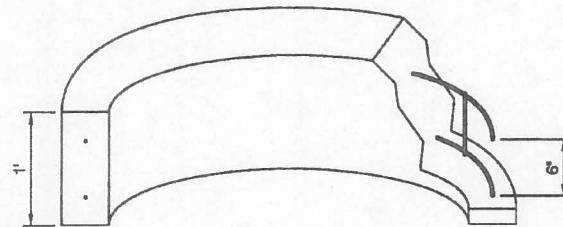
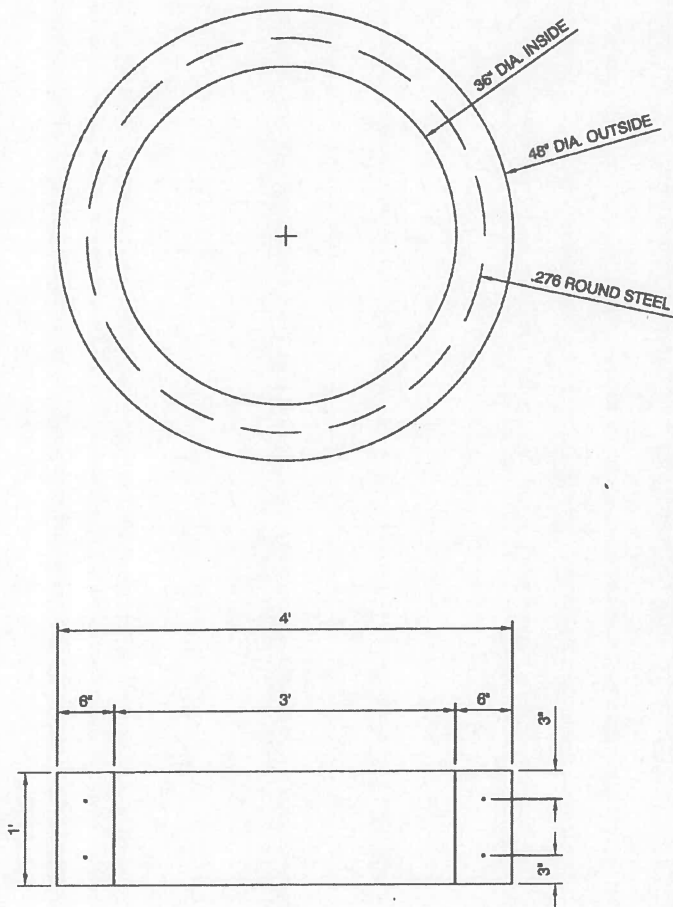
- NOTES:
1. FOR USE ON VAULTS THAT ARE DESIGNED FOR A BURIAL DEPTH OF 5 FEET BELOW GRADE TO TOP OF VAULT.
  2. SHALL BE RATED FOR AASHTO HS 20 LOADING.



SCALE: 3/8"=1'-0"  
6'-0" X 12'-0" X 2'-0"  
RISER SECTION

Exhibit A

GR1 -1FT GRADE RING



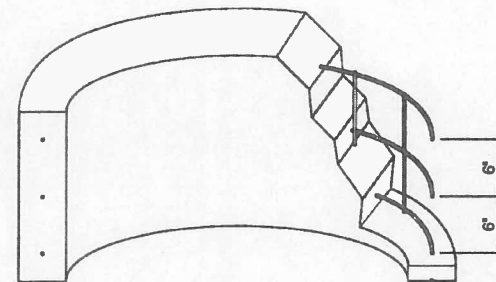
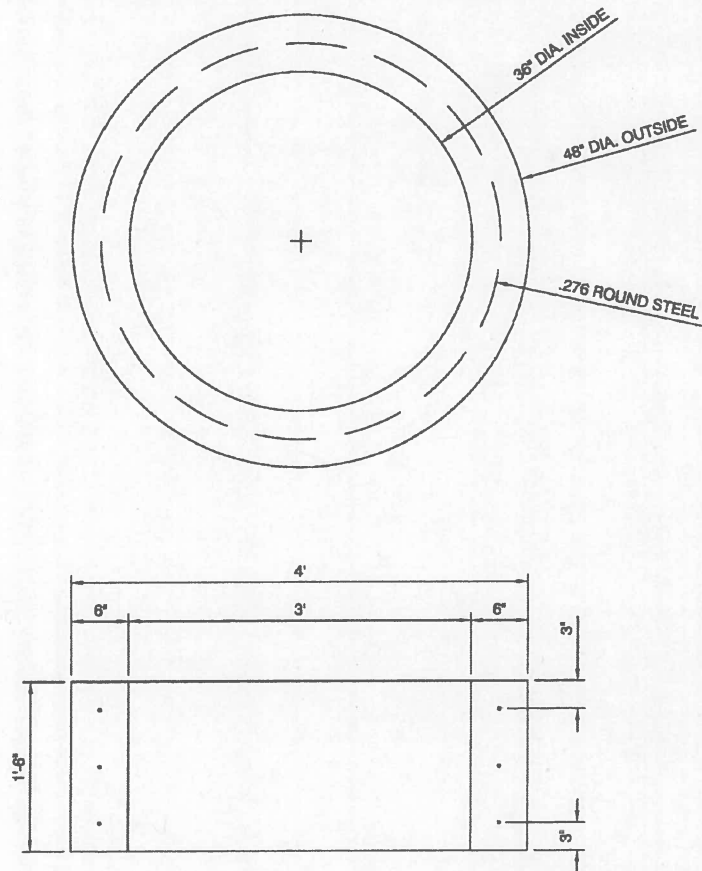
- NOTES:
1. SHALL BE COMPLIANT WITH  
ASTM C478  
CEMENT: ASTM C-150  
REBAR: ASTM A-615 GRADE 60
  2. SHALL BE RATED FOR  
AASHTO HS 20 LOADING.
  3. CONCRETE 28 DAY  
COMPRESSIVE STRENGTH  
SHALL BE 4,000 PSI



SCALE: 1"=1'-0"  
36" GRADE RING  
12" HIGH

Exhibit A

GR2 - 1 1/2 FT GRADE RING



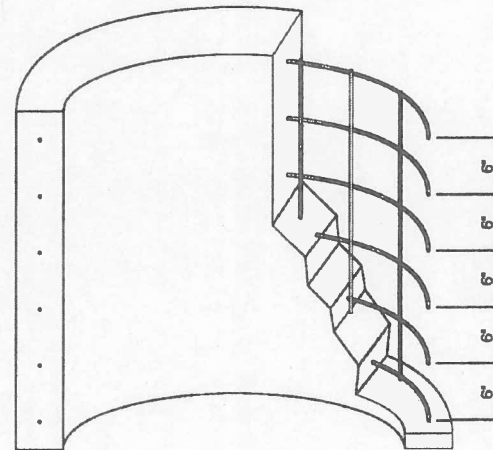
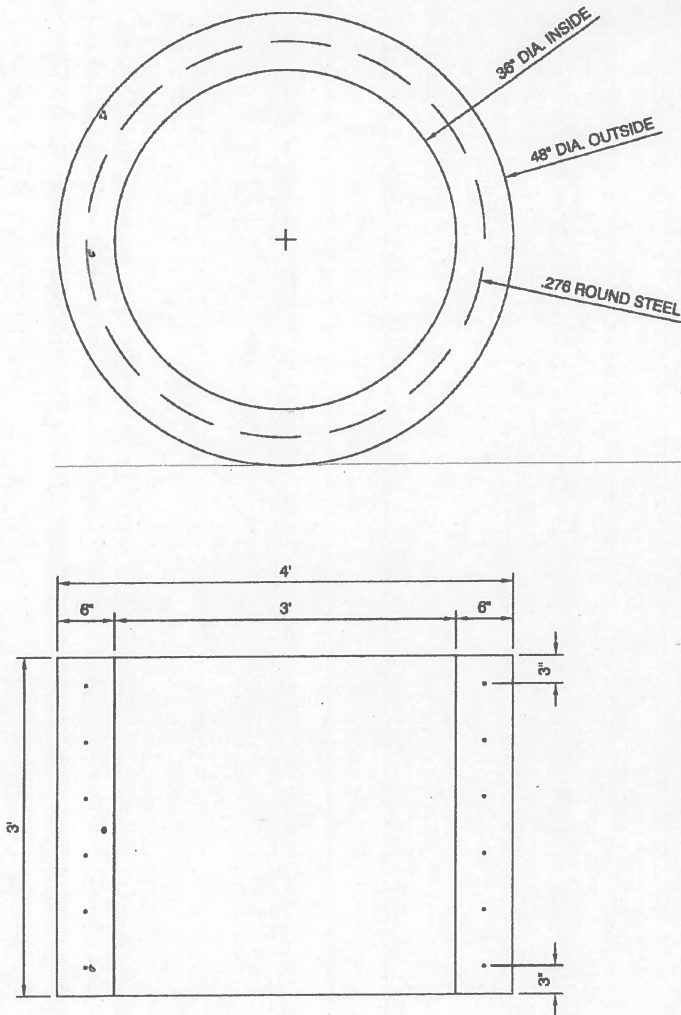
- NOTES:
1. SHALL BE COMPLIANT WITH  
ASTM C478  
CEMENT: ASTM C-150  
REBAR: ASTM A-615 GRADE 60
  2. SHALL BE RATED FOR  
AASHTO HS 20 LOADING.
  3. CONCRETE 28 DAY  
COMPRESSIVE STRENGTH  
SHALL BE 4,000 PSI



SCALE: 1"=1'-0"  
36" GRADE RING  
18" HIGH

Exhibit A

GR3 - 3FT GRADE RING



NOTES:  
1. SHALL BE COMPLIANT WITH  
ASTM C478  
CEMENT: ASTM C-150  
REBAR: ASTM A-615 GRADE 60

2. SHALL BE RATED FOR  
AASHTO HS 20 LOADING.

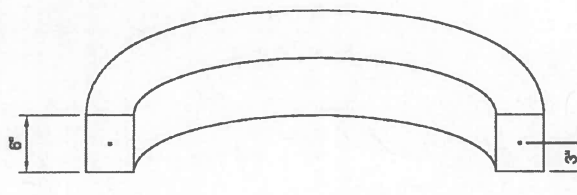
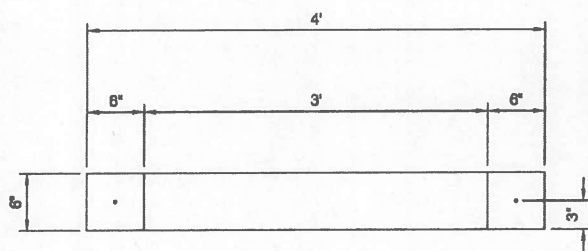
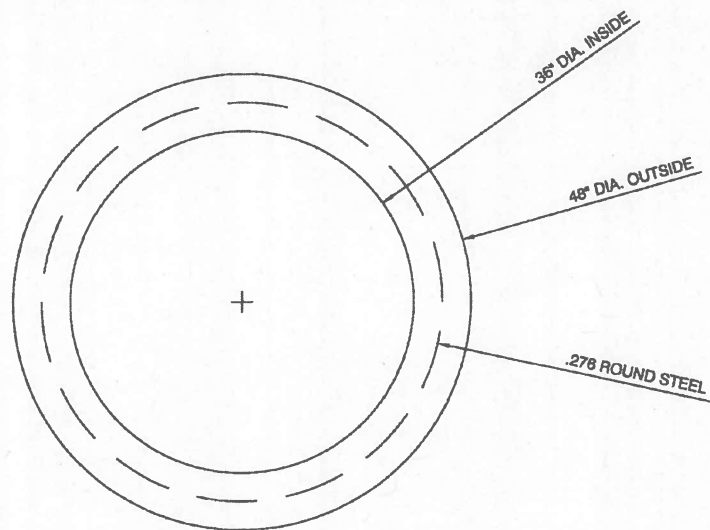
3. CONCRETE 28 DAY  
COMPRESSIVE STRENGTH  
SHALL BE 4,000 PSI



SCALE: 1"=1'-0"  
36" GRADE RING  
36" HIGH

Exhibit A





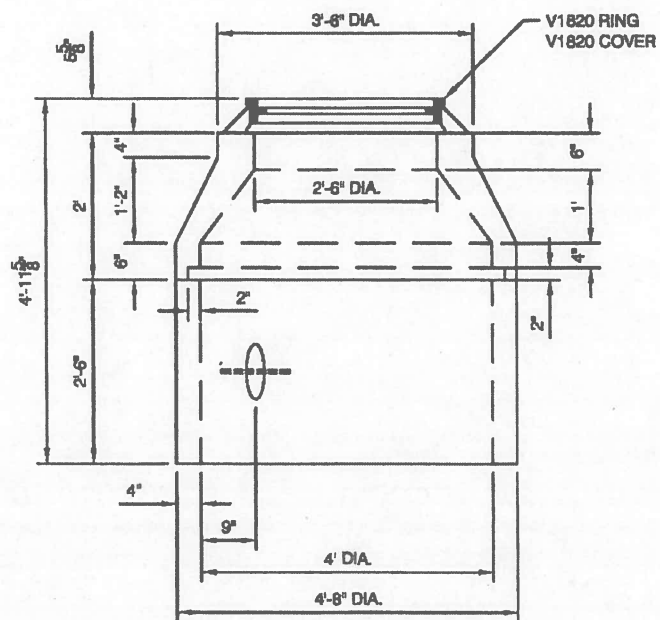
NOTES:  
 1. SHALL BE COMPLIANT WITH  
 ASTM C478  
 CEMENT: ASTM C-150  
 REBAR: ASTM A-615 GRADE 60

2. SHALL BE RATED FOR  
 AASHTO HS 20 LOADING.

3. CONCRETE 28 DAY  
 COMPRESSIVE STRENGTH  
 SHALL BE 4,000 PSI



SCALE: 1"=1'-0"  
 36" GRADE RING  
 6" HIGH  
 Exhibit A



SCALE: 3/8" = 1'-0"

48" DIA.

RISER



Exhibit A