

# HOWARD COUNTY

## DEPARTMENT OF PUBLIC WORKS

### ELLCOTT CITY, MARYLAND 21043

#### PERMIT INFORMATION CHART

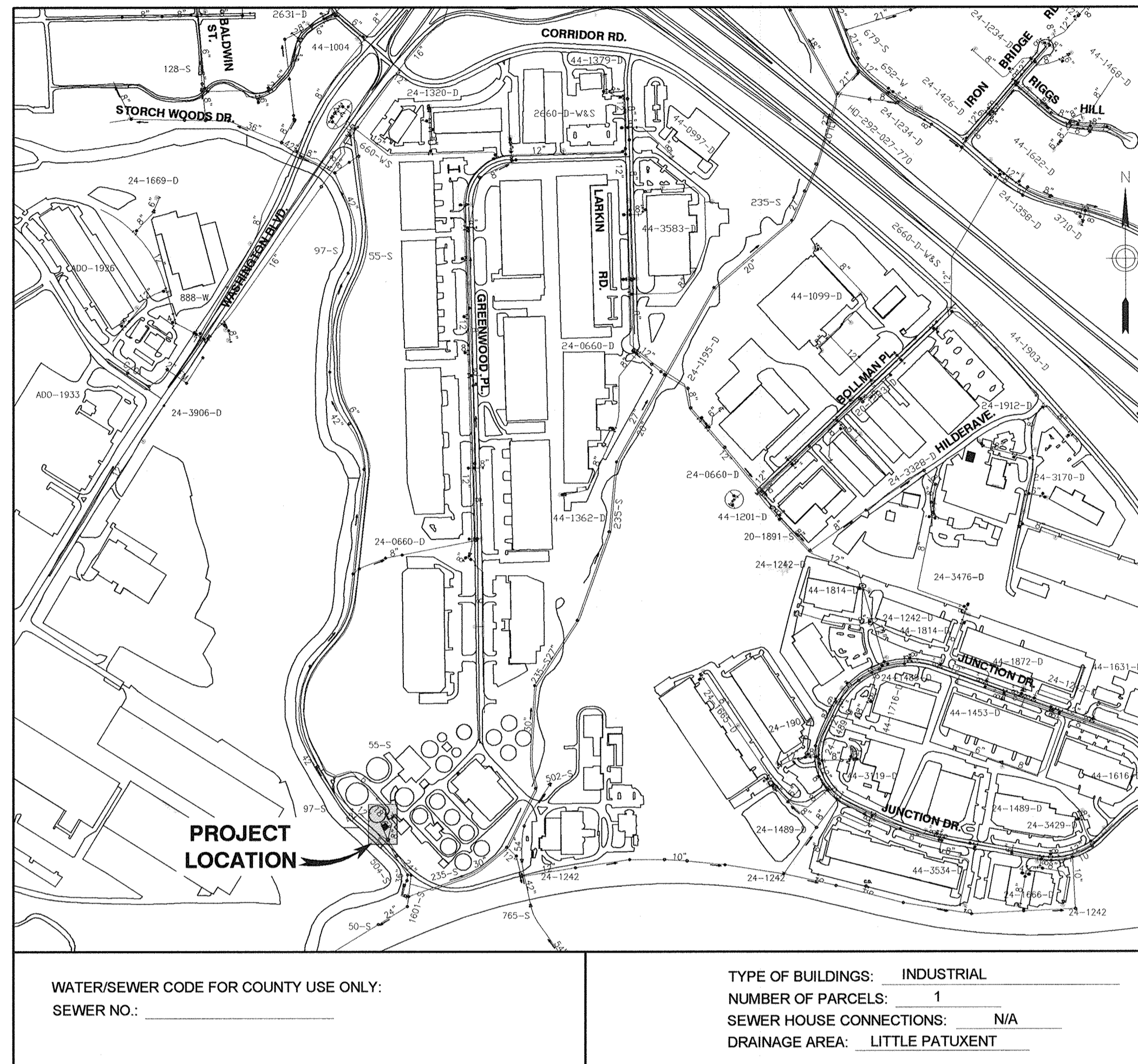
Subdivision Name	N/A	Section Area	N/A	Lot/Parcel No.	200
Plot # or L/F	31/17	Tax Map No.	47	Census Tract	6069.02
Water Code	C04	Sewer Code	4020000		

#### ADDRESS CHART

Lot/Parcel No.	Street Address
200	8900 Greenwood Place, Savage, MD

#### SITE ANALYSIS DATA CHART

Total Project Area:	794,752 sf (18.245 acres) (plant)
Area of Plan Submission	15,250 sf
Limit of Disturbed Area	13,250 sf
Present Zoning Designation	M-2
Proposed use	Aerobic Digester Tank & Appurtenances
Floor Space	N/A
Total Number of Units Allowed	N/A
Total Number of Units Proposed	N/A
Maximum Number of Employees	N/A
Number of Parking Spaces Required	N/A
Number of Parking Spaces Provided	N/A
Open Area on Site	N/A
Area of Recreation	N/A
Building Coverage	N/A
DPZ File References	SDP-00-094 & SDP-78-55
Soil Type	Cs Cornus silt loam



WATER/SEWER CODE FOR COUNTY USE ONLY:  
SEWER NO.:

TYPE OF BUILDINGS: INDUSTRIAL  
NUMBER OF PARCELS: 1  
SEWER HOUSE CONNECTIONS: N/A  
DRAINAGE AREA: LITTLE PATUXENT

VICINITY MAP  
SCALE: 1" = 600'

# LITTLE PATUXENT WATER RECLAMATION PLANT SCUM AND SEPTAGE FACILITY (PHASE 2)

CAPITAL PROJECT S-6245  
CONTRACT NO. 20-4695

#### GENERAL NOTES

- The purpose of this site development plan is for the addition of an Aerobic Digester to the proposed Scum and Septage Receiving Facility and Screenings Building for the Little Patuxent Water Reclamation Plant.
- The subject property is zoned M-2 per the 2-2-04 the Comprehensive Zoning Plan.
- The coordinates shown on the drawings are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 47F5 and 48D5 were used for this project.
- All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
- The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work. The contractor is to obtain any necessary permits.
- The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
- The existing topography is taken from field run survey with one foot contour intervals prepared by Dewberry dated April 2008 and January 2011.
- Water and sewer is public.
- The existing utilities are based on plant records and test pits.
- The project lies within the 100-year floodplain per FEMA Map 240044-0043B, Elev 142.27' as converted from NGVD29.
- There are no wetlands within the limits of this project.
- This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and the Landscape Manual.
- This project is exempt from the requirements of Section 16.1200 of the Howard County Code for Forest Conservation since the improvements are contained within the previously approved limit of disturbance (Section 16.1202(b)(iii) of the Subdivision Regulations).
- Soil Erosion and Sediment Control and Stormwater requirements for both Phase 1B and Phase 2 are included in this Plan Set.
- The Little Patuxent River Water Reclamation Plant was constructed under the following - referenced plans: SDP-00-094 and SDP-78-55.
- Project background information:

Little Patuxent River Water Reclamation Plant  
Savage, Maryland  
Election District 6  
Site Area (of this project): 0.35 acres

#### INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	FLOW SCHEMATIC, DESIGN CRITERIA AND LEGEND
3	SITE PLAN / GRADING, PAVING, TRUCK PULL-OFF AND MISCELLANEOUS DETAILS
4	SITE PLAN / YARD PIPING, DIGESTER TANK ELEVATION AND DETAILS
5	YARD PIPING PROFILES AND MISCELLANEOUS DETAILS
6	GREASE TRAP WASTE PUMPING STATION, PLAN AND SECTIONS
7	AEROBIC DIGESTER PLAN, ELEVATIONS, SECTIONS AND DETAILS
8	HEADWORKS BUILDING PLANS AND DIFFUSER AERATION LAYOUT PLAN
9	SCREENINGS CONVEYOR PLAN AND DETAILS
10	SCREENINGS CONVEYOR DETAILS
11	Mg(OH) <sub>2</sub> TANK PLANS, ELEVATION, PIPING SCHEMATIC AND DETAILS
12	E-1 ELECTRICAL SYMBOLS AND NOTES
13	E-2 PARTIAL ELECTRICAL SITE PLAN
14	E-3 HEADWORKS BUILDING PLAN AND DETAILS
15	E-4 MCC-DS DETAILS
16	E-5 INSTRUMENTATION AND CONTROLS SYMBOLS AND ABBREVIATIONS
17	E-6 PARTIAL P&ID
18	E-7 PARTIAL P&ID
19	E-8 ELECTRICAL DETAILS
20	EROSION AND SEDIMENT CONTROL PLAN & SEQUENCE OF CONSTRUCTION
21	SEDIMENT AND EROSION CONTROL DETAILS
22	SEDIMENT AND EROSION CONTROL NOTES
23	ADD/ALT ITEM NO. 1--8" DIA. PG-1 DRAINAGE LINE RELOCATION

NOTE TO CONTRACTOR: PHASE 1B AND PHASE 2 WERE ORIGINALLY DESIGNED AND INTENDED TO BE AWARDED AS TWO SEPARATE CONTRACTS. THE CONTRACT DOCUMENTS HAVE NOW BEEN MODIFIED IN ORDER TO FACILITATE THE MERGING OF BOTH PROJECTS INTO ONE CONTRACT. HOWEVER, IT IS ULTIMATELY THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE SEQUENCE OF CONSTRUCTION NECESSARY TO MINIMIZE/ELIMINATE ANY AND ALL POSSIBLE INSTALLATION CONFLICTS.

AS BUILT'S

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

#### PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

*T. Thomas N. D. Miller* 2/8/12  
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE  
*[Signature]* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE  
*[Signature]* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.285.8500  
FAX: 410.285.8875



DES: RJP  
DRN: CD  
CHK: TND  
DATE: 1/31/12

TITLE SHEET

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SCALE:  
AS  
SHOWN

SHEET  
1 OF 23



**DESIGN CRITERIA**

**SAP PUMPING STATION**

PUMPS 2  
 PUMP CAPACITY 191.8 gpm  
 FORCE MAIN 4"ø DIP

**AEROBIC DIGESTER TANK**

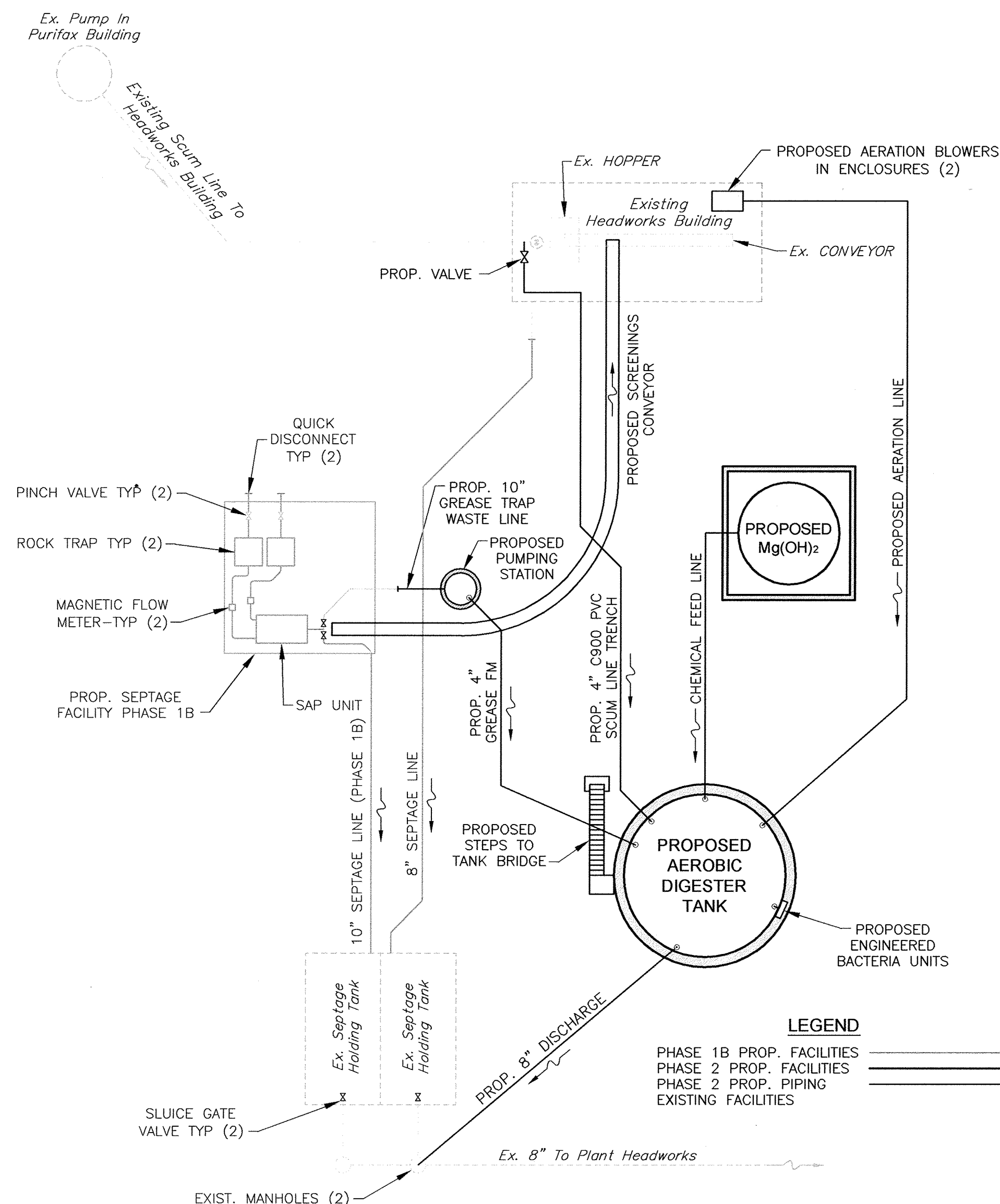
NO. OF TANKS 1  
 TANK DIAMETER 31 FT.  
 TANK SIDEWATER DEPTH 15 FT.  
 TANK VOLUME 84,000 GAL.  
 GREASE TRAP WASTE FLOW 13,000 gpm  
 HYDRAULIC RETENTION TIME 6.5 DAYS  
 AERATION RATE 739 scfm

**LEGEND**

- EXIST. CONCRETE WALK
- PROP. CONCRETE PAVING
- EXIST. HANDRAIL
- EXIST. GUARDRAIL
- EXIST. EDGE OF ROAD
- EXIST. CONCRETE DITCH
- PROP. CONCRETE DITCH
- EXIST. SANITARY PIPE
- PROP. PIPING
- EXIST. STRUCTURE/FACILITY
- PROP. STRUCTURE/FACILITY
- EXIST. MANHOLE/STRUCTURE
- PROP. PUMPING STATION
- EXIST. MANHOLE FRAME & COVER
- EXIST. BOLLARD
- PROP. BOLLARD (PHASE 1B)
- EXIST. ELECTRIC MANHOLE
- EXIST. VALVE BOX
- EXIST. ROOF DRAIN DOWNSPOUT
- EXIST. CLEANOUT
- PROP. CLEANOUT
- EXIST. YARD HYDRANT
- PROP. YARD HYDRANT
- EXIST. MINOR CONTOUR
- EXIST. MAJOR CONTOUR
- FW FLUSHING WATER
- PW POTABLE WATER

**PIPE SCHEDULE**

DIA.	MATERIAL	USE
12"	SS-SCH 40	AERATION PIPING
8"	DIP-CL 54	AEROBIC DIGESTER DISCHARGE LINE
8"	PVC-SCH 80	GUTTER DRAIN LINES
4"	DIP-CL 54	GREASE TRAP WASTE P.S. FORCE MAIN
4"	PVC-SCH 80	SCUM LINE
8"	SS-SCH 40	AERATION PIPING
2"	PVC-SCH 80	FLUSHING WATER



**LEGEND**  
 PHASE 1B PROP. FACILITIES  
 PHASE 2 PROP. FACILITIES  
 PHASE 2 PROP. PIPING  
 EXISTING FACILITIES

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
 CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
 DIRECTOR      DATE

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*Thomas N. D... [Signature]*      2/8/12  
 Date  
 Signature of Engineer

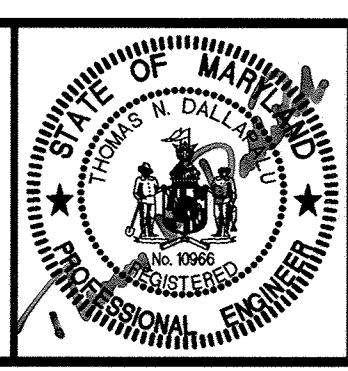
**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND

*[Signature]*      2/9/12  
 DIRECTOR OF PUBLIC WORKS      DATE

*[Signature]*      2/9/12  
 CHIEF, BUREAU OF UTILITIES      DATE

*[Signature]*      2/9/12  
 CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
 Dewberry & Davis LLC  
 3106 LORD BALTIMORE DRIVE  
 SUITE 110  
 BALTIMORE, MD 21244-2662  
 410.265.9500  
 FAX: 410.265.8875



DES:	RJP
DRN:	CD
CHK:	TND
DATE:	1/7/12
BY:	NO.
REVISIONS:	
DATE:	

**FLOW SCHEMATIC**  
**DESIGN CRITERIA AND LEGEND**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
 CONTRACT 20-4695

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

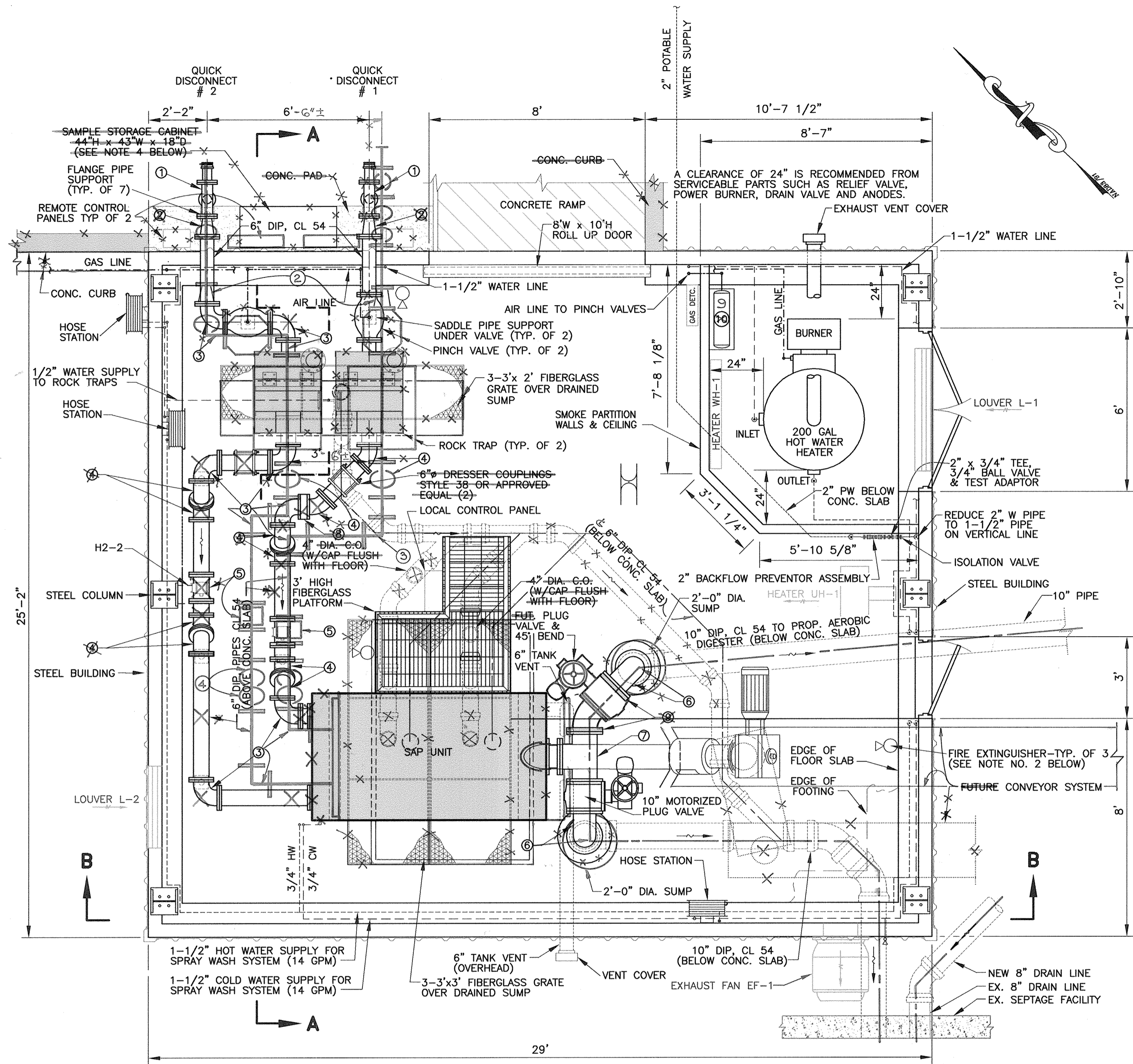
SHEET 2 OF 23

AS-BUILTS

Printed by: (c:\admin\1) on: Fri, 08 Feb 2012 - 10:14am  
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 User: [Name]      Date: 2/8/12      Time: 10:14am  
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**PLAN**

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

**NOTES:**

- AIR COMPRESSOR\* SHALL BE 3.0 SCFM, 110 PSI AS MANUFACTURED BY TUTHILL OR APPROVED EQUAL.
- FIRE EXTINGUISHER SHALL BE "KIDDE PRO 20 MP OR APPROVED EQUAL.
- ALL WATER, AIR, OR GAS LINES SHALL BE RUN ABOVE DOORWAYS OR BUILDING PENETRATIONS.
- SAMPLE STORAGE CABINET SHALL BE BY "JUSTRITE MODEL J893000" OR APPROVED EQUAL.

MATERIALS		
ITEM	DESCRIPTION	QUANTITY
1	4"x4"x3" FLANGED TEE	2
2	6"x4" FLANGED ECCENTRIC REDUCER	2
3	6" 90° FLANGED BENDS	2
4	6" 45° FLANGED BENDS	2
5	6" MAGNETIC FLOW METER	2
6	10" 90° FLANGED BENDS	2
7	10"x10"x10" FLANGED TEE	1
8	6" FILLER FLANGE (3" LG. ±)	1
9	AIR COMPRESSOR *	1

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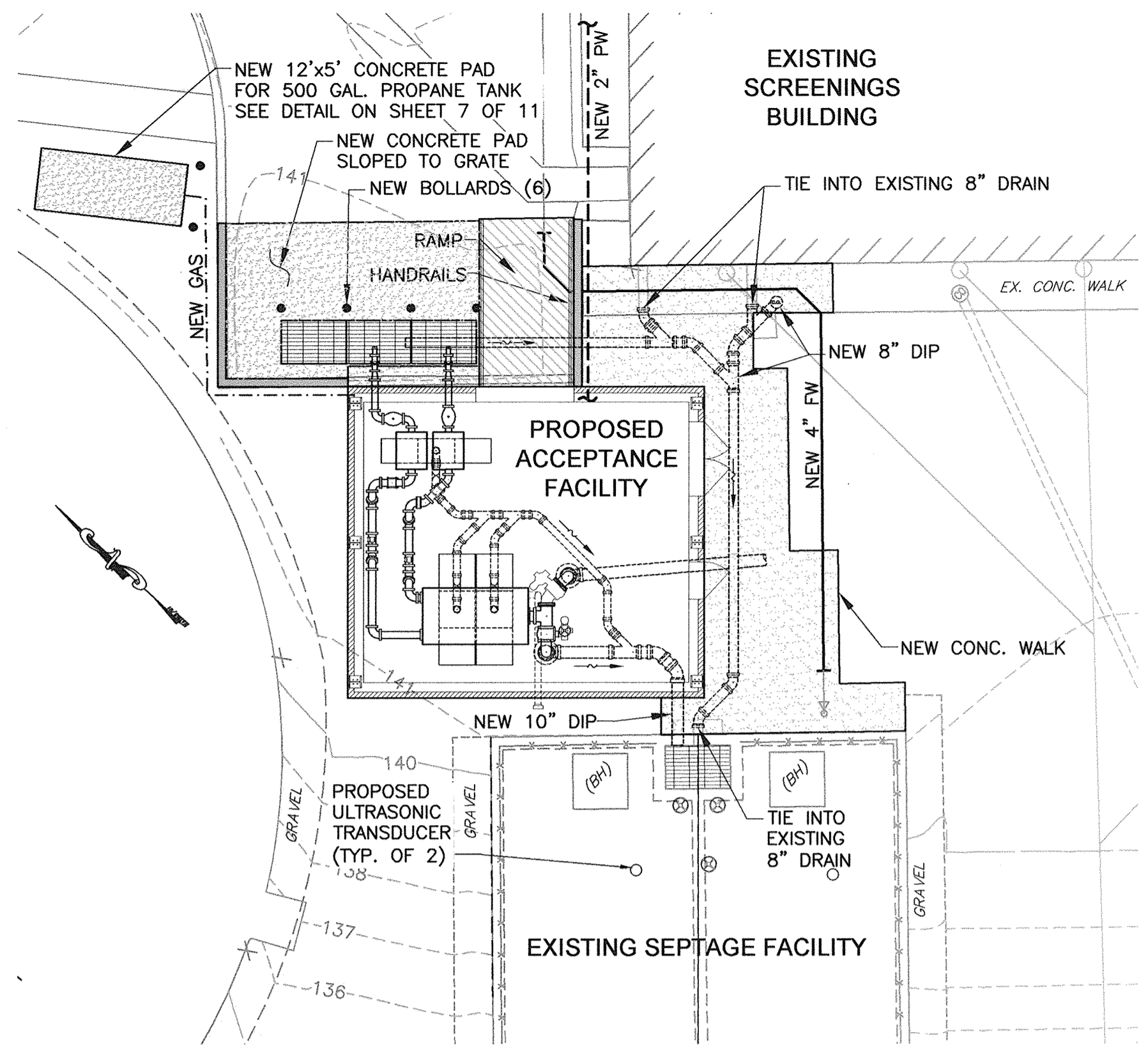
*Thomas N. Dallett*  
Signature of Engineer  
2/8/12  
Date

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

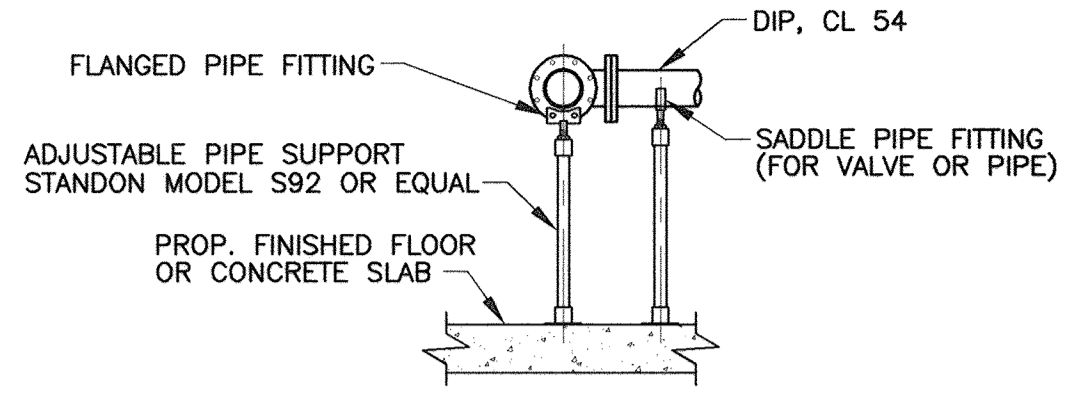
\_\_\_\_\_  
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DATE

\_\_\_\_\_  
DIRECTOR  
DATE



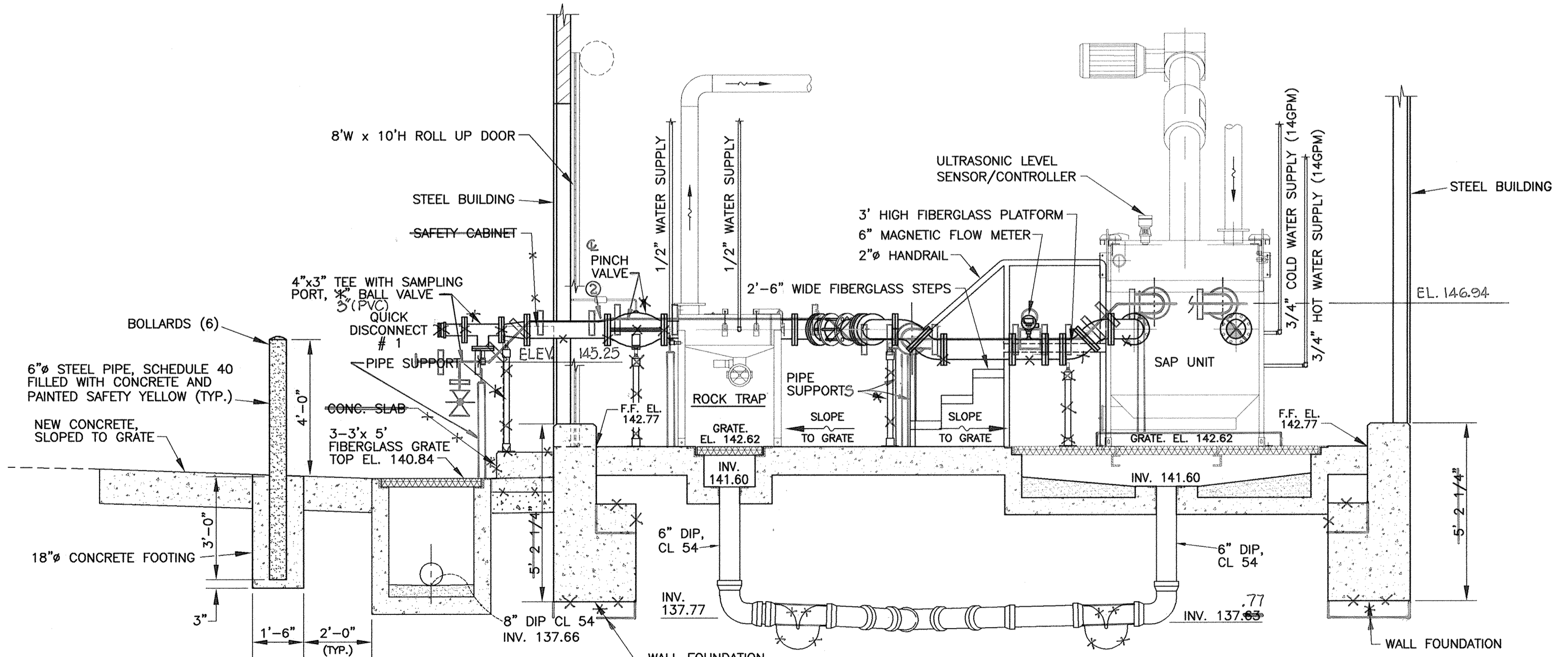
**PIPING SITE PLAN**

SCALE : 1" = 10'  
(SEE PHASE 2B DRAWING 4-209 OF 23)



**ADJUSTABLE PIPE SUPPORT DETAIL**

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



**SECTION A-A**

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

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**

*Carlyle* 2/9/12  
DIRECTOR OF PUBLIC WORKS  
DATE

*Thomas E. Gutter* 2/9/12  
CHIEF, BUREAU OF ENGINEERING  
DATE

*Steve Chen* 2/9/12  
CHIEF, BUREAU OF UTILITIES  
DATE

*Thomas E. Gutter* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION  
DATE



**Dewberry**  
Dewberry & Davis LLC  
3120 LORD BALTIMORE DRIVE  
SUITE 211  
BALTIMORE, MD 21244-2662  
410.285.9500  
FAX 410.285.8875



DES: GLN/RJP  
DRN: PWR/CD  
CHK: TND  
DATE: 1/7/12

**BUILDING EQUIPMENT PLAN  
SECTION AND  
PIPING SITE PLAN**

600' SCALE MAP NO. 47  
BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

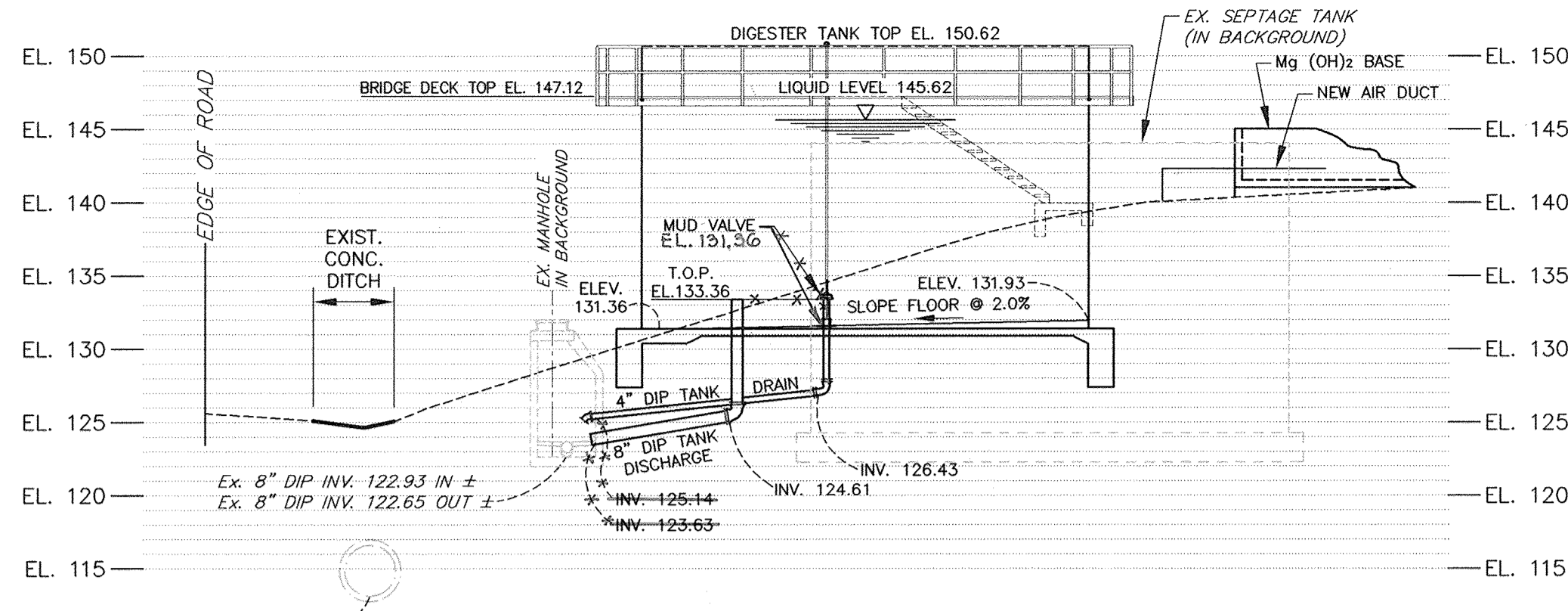
CAPITAL PROJECT S-6245  
CONTRACT 20-4700

ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE:  
AS  
SHOWN

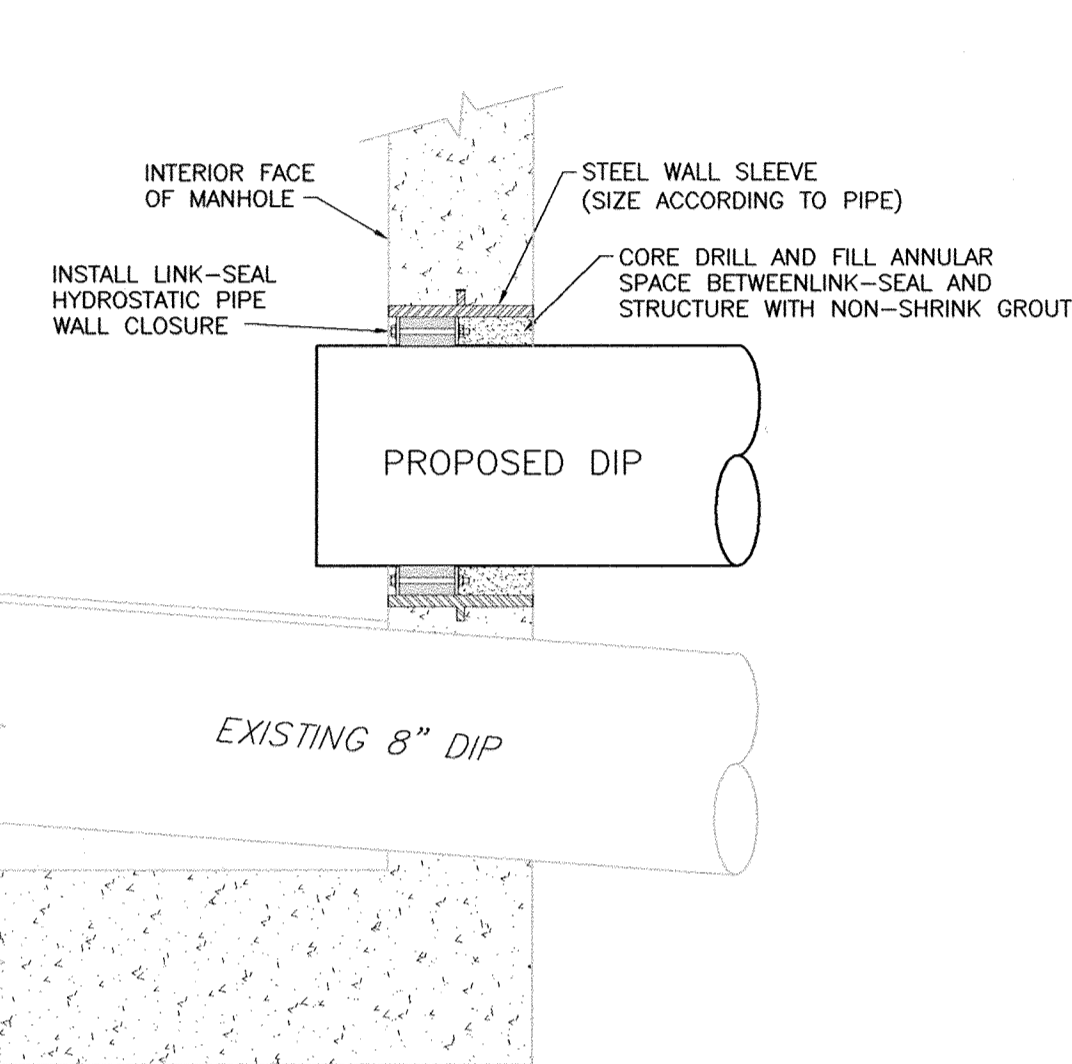
SHEET  
3 OF 11

Prepared by: (addressee) on: (date) Date: Feb 07, 2012, 2:48pm  
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 User: (addressee) Location: (addressee) Project: (addressee)  
 XREFS: (addressee) Project: (addressee)



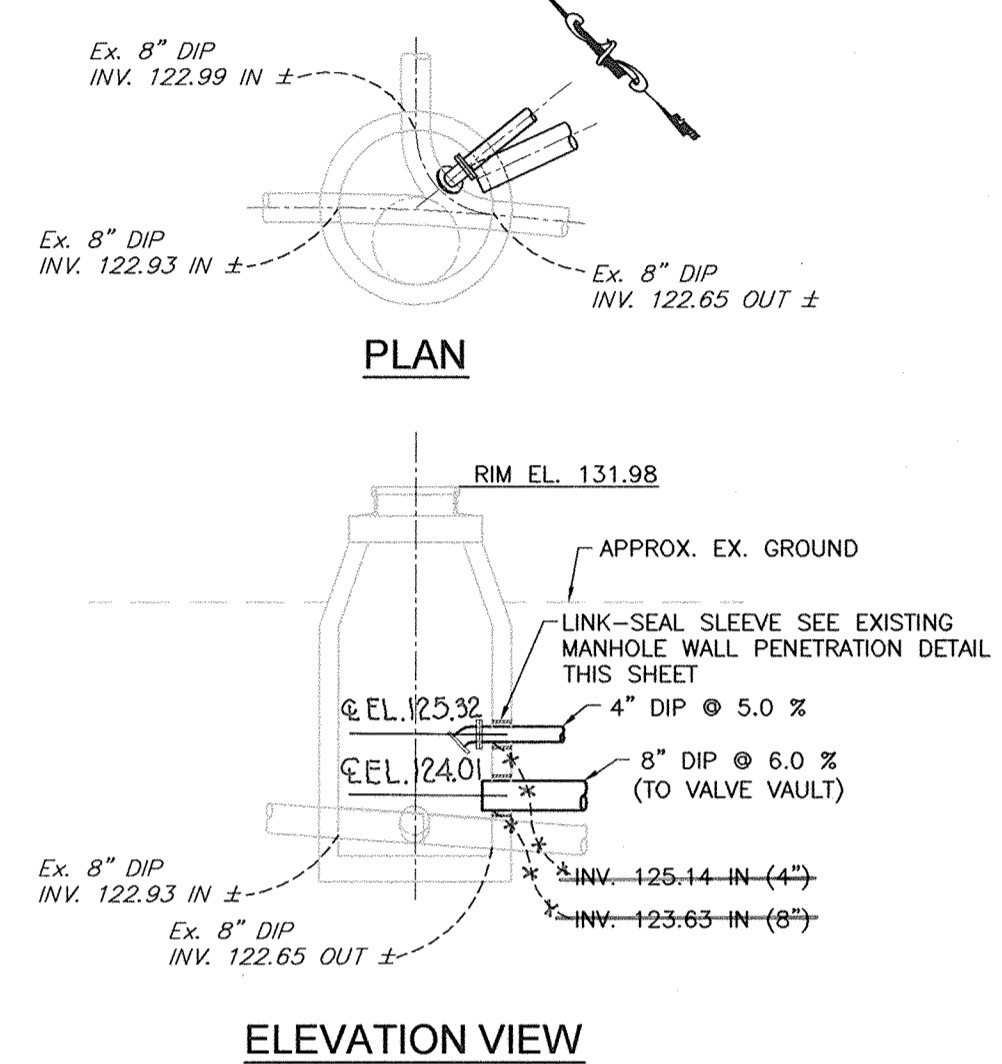
**DIGESTER TANK ELEVATION**

SCALE: 1" = 10' H; V



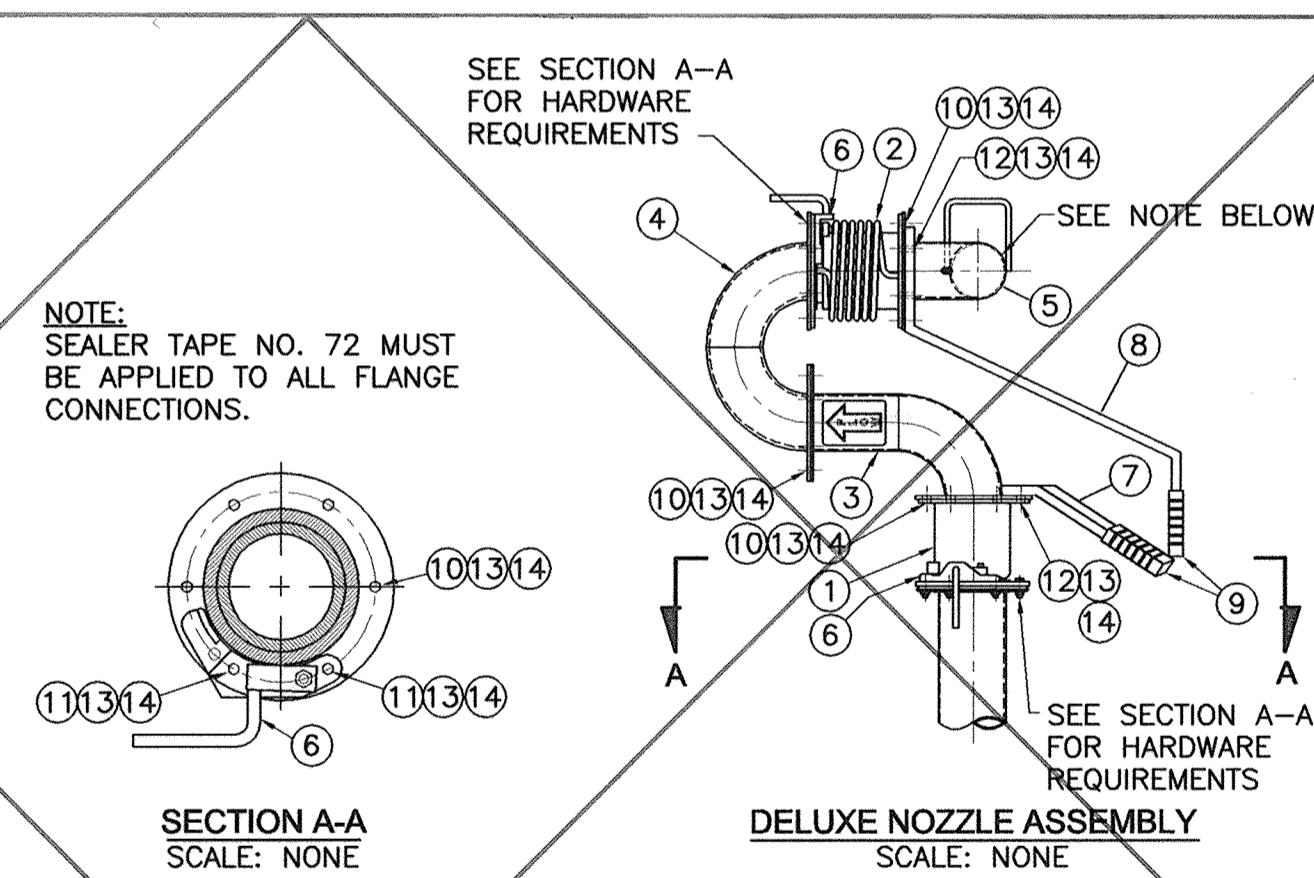
**EXISTING MANHOLE TANK DRAIN & DISCHARGE WALL PENETRATION DETAIL**

SCALE: NONE



**CONNECTION OF DIGESTER TANK PIPING TO EXISTING MANHOLE**

SCALE: 1"=5'



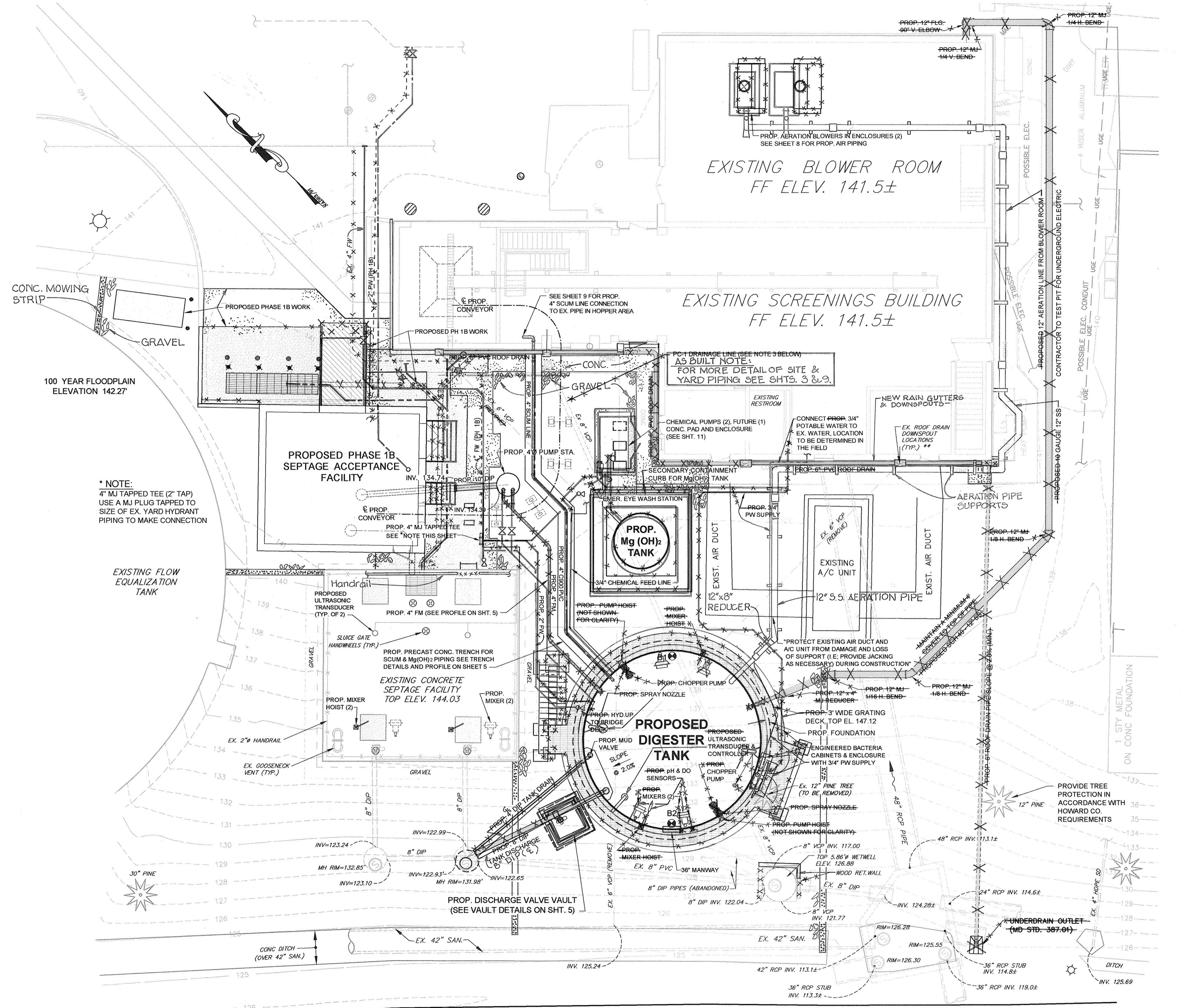
**SECTION A-A**

**DELUXE NOZZLE ASSEMBLY**

- NOTE:
- NOZZLES TO BE SITUATED 180° APART.
  - CONTRACTOR TO FABRICATE DUCK BILL ATTACHMENT TO ENABLE FANNING OF SPRAY. SPRAY SHALL BE CAPABLE OF REACHING A 180° RADIUS OF TANK. CONTRACTOR TO VERIFY WITH CHOPPER PUMP MANUFACTURER THAT DUCT BILL ATTACHMENT WILL NOT DAMAGE PUMP OR PIPING.

QTY. USED ON	PART NUMBER	DESCRIPTION	ITEM		
1	1	255567-126	ESPC PRODUCT FORMS	17	
1	1	084355-004	SEALER TAPE NO. 72	16	
24	30	12	252169-000	HEX NUT, 3/8"	14
24	30	12	252168-000	LOCKWASHER, 3/8"	13
4	4	2	017500-157	HEX HEAD CAP SCREW, 3/8" X 2"	12
2	4	2	017500-146	HEX HEAD CAP SCREW, 3/8" X 1 3/4"	11
18	22	8	017500-067	HEX HEAD CAP SCREW, 3/8" X 1 1/4"	10
1	2	1	259098-000	HANDLE GRIP	9
1	1	-	259226-000	VERTICAL HANDLE WELDMENT	8
1	2	1	259071-000	HORIZONTAL HANDLE	7
1	2	1	259097-000	LOCK - RETAINER ASSEMBLY	6
1	1	-	258756-000	AGITATION NOZZLE WELDMENT	5
1	1	-	258754-000	180° RETURN WELDMENT	4
1	1	-	258755-000	ELBOW PIPE WELDMENT	3
1	1	-	258700-001	SWIVEL JOINT ASSEMBLY	2
1	1	-	258700-000	SWIVEL JOINT ASSEMBLY	1
-	002	-001	-000	OVER-TOP NOZZLE ASSEMBLY	-

PART NUMBER	USED ON
259280-000	STANDARD NOZZLE ASSEMBLY
259280-001	DELUXE NOZZLE ASSEMBLY
259280-002	VERTICAL MODE CONVERSION ASSEMBLY



**PERIMETER ROAD**

**PLAN**

SCALE: 1"=10'

- NOTES:
- ALL EXPOSED ABOVEGROUND DISCHARGE PIPING WHICH TRAVELS UP AND OVER THE TOP OF THE AEROBIC DIGESTER WALL AND ALL EXPOSED POTABLE WATER LINES TO BE APPROPRIATELY HEAT TRACED.
  - CONTRACTOR TO INSTALL MIXER CRANE AT HEIGHT NECESSARY TO ENSURE ADEQUATE CLEARANCE OVER TANK SIDEWALL WHEN MIXER IS BEING REMOVED.
  - IF PG-1 DRAINAGE LINE WILL REMAIN IN PLACE UNDER PROPOSED DIGESTER TANK, REPLACE PORTION OF LINE UNDER TANK WITH 6L-54 D.I.P. AND ENGAGE LINE IN CONCRETE TO 5 FEET OUTSIDE OF TANK FOUNDATION ON EACH SIDE.

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

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*Thomas W. DeMott* *2/8/12*  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, BUREAU OF UTILITIES \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, BUREAU OF ENGINEERING \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, UTILITY DESIGN DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

**Dewberry**

Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2062  
410.265.6500  
FAX: 410.265.8875

STATE OF MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
OFFICE OF THE PROFESSIONAL ENGINEER

DATE: 1/7/12

DES:	DRN:	CHK:	DATE:	BY:	NO.	REVISIONS	DATE:
RJP	CD	TND	1/7/12				

**SITE PLAN / YARD PIPING**  
**DIGESTER TANK ELEVATION**  
**AND DETAILS**

600' SCALE MAP NO. 47 BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

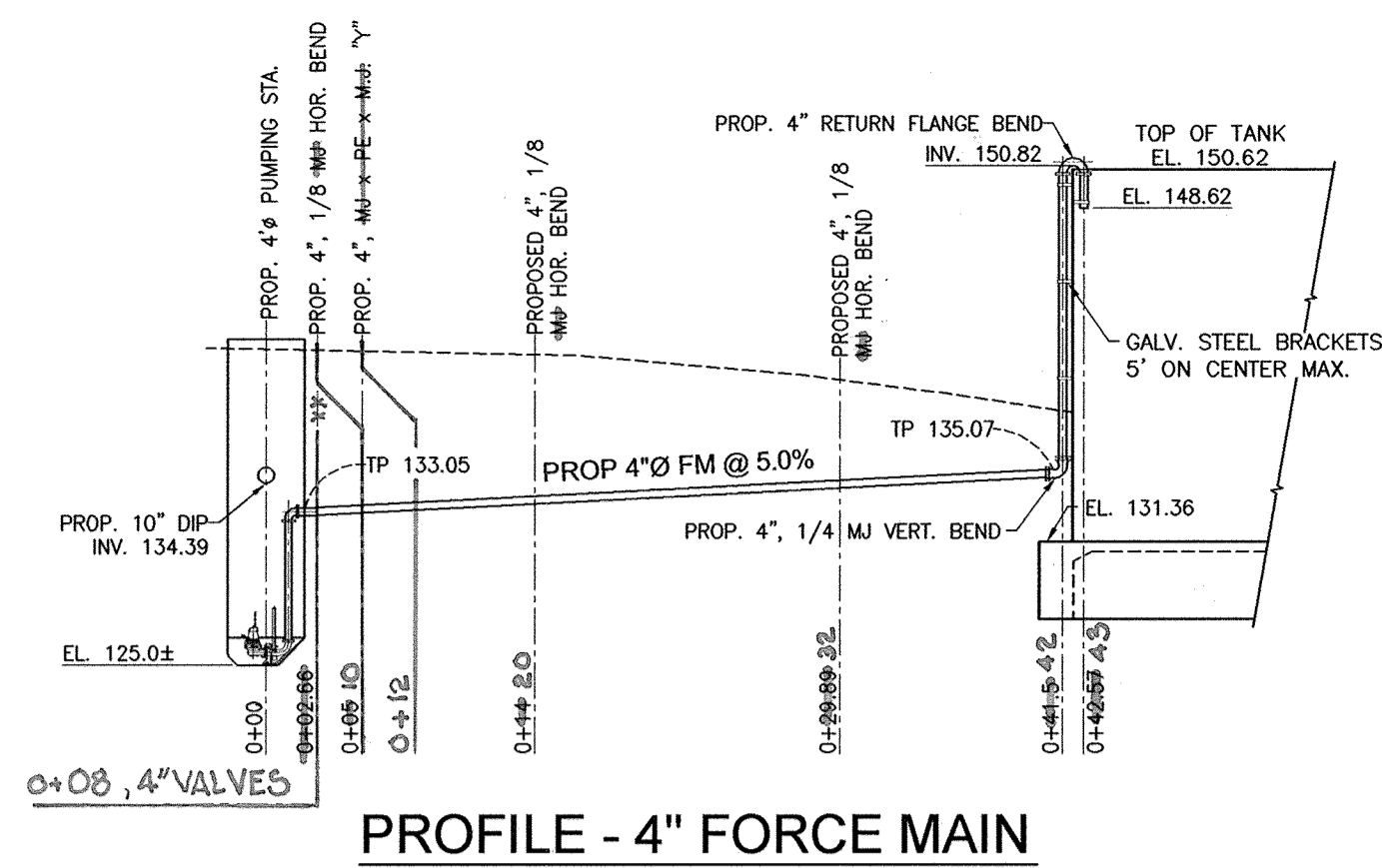
SCALE: AS SHOWN

SHEET 4 OF 23

Printed by (customer) on Feb 07, 2012, 3:31pm  
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 Plot: 2/7/2012, 3:31pm  
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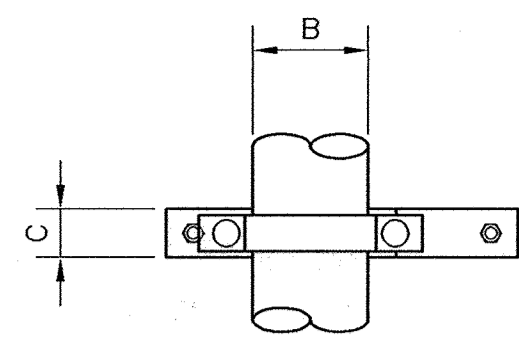




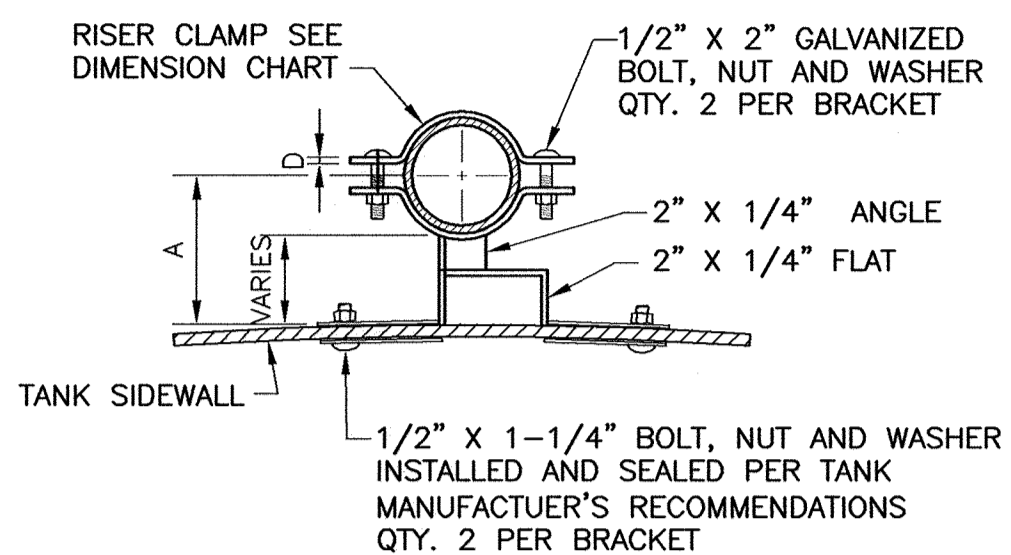


PROFILE - 4" FORCE MAIN

SCALE: 1" = 10' H;V



ELEVATION VIEW



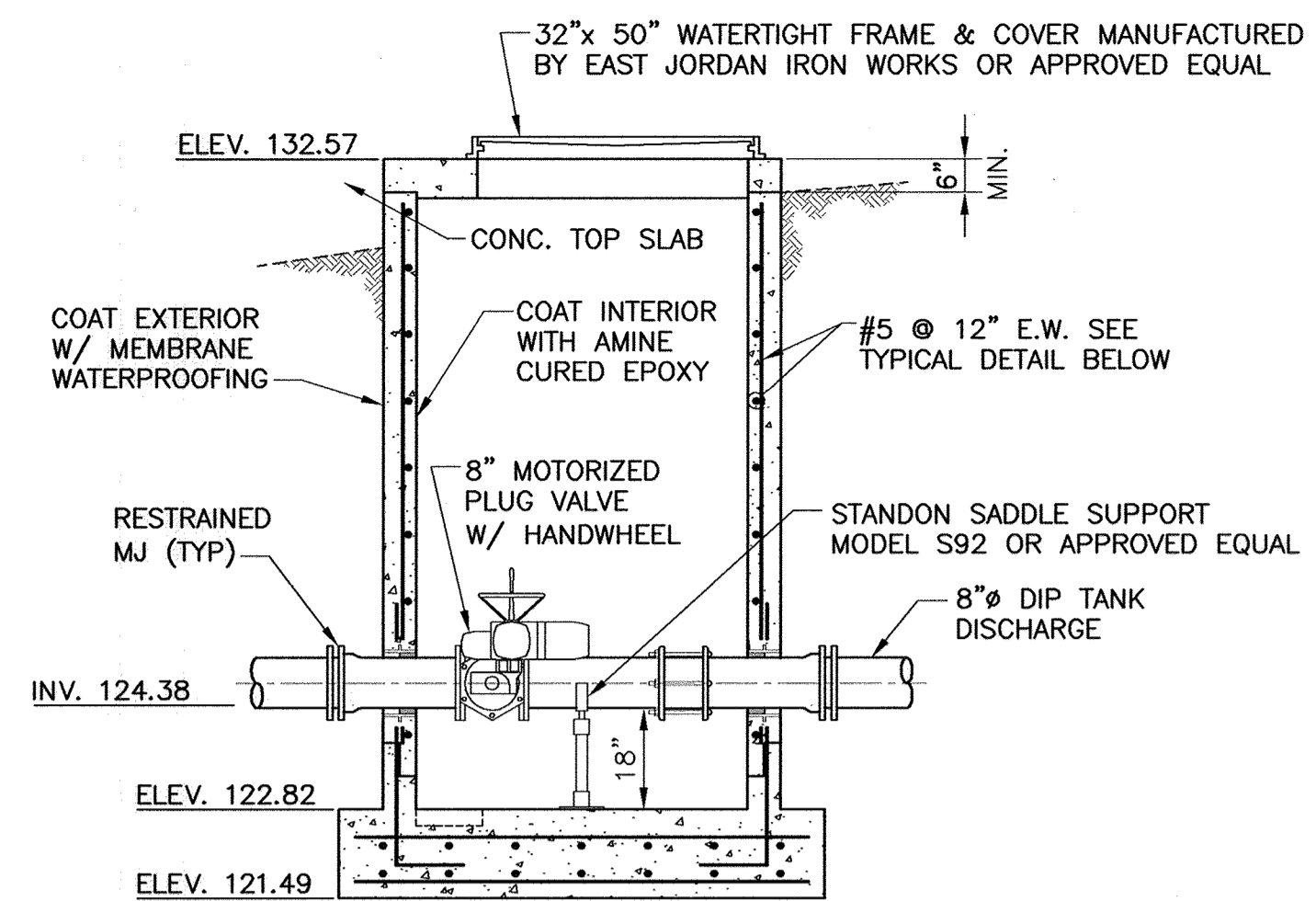
PLAN VIEW

GALVANIZED STEEL BRACKET DETAIL

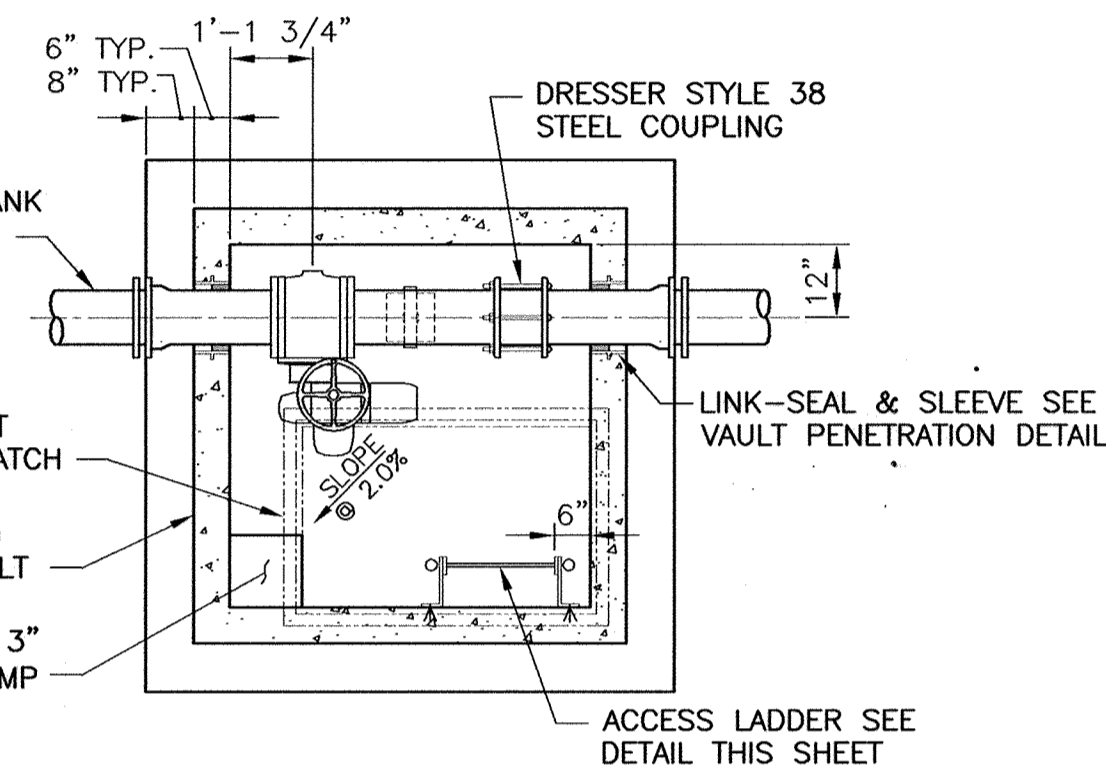
SCALE: NONE

DIMENSION CHART					
PIPE SIZE	A OS	A IS	B	C	D
2" FW	4-1/2"	-	2-1/2"	1"	1/4"
4" FM	6-3/8"	6-3/8"	4-1/2"	1"	1/4"
4" SCUM	12-5/8"	10"	11"	2"	5/16"
4" SPRAY LINE	6-3/8"	6-3/8"	4-1/2"	1"	1/4"
4" AERATION	7-17/32"	6-3/8"	4-1/2"	1"	1/4"

OS = OUTSIDE OF DIGESTER TANK WALL  
IS = INSIDE OF DIGESTER TANK WALL  
NOTE: DIMENSIONS TO BE VERIFIED BY THE CONTRACTOR.

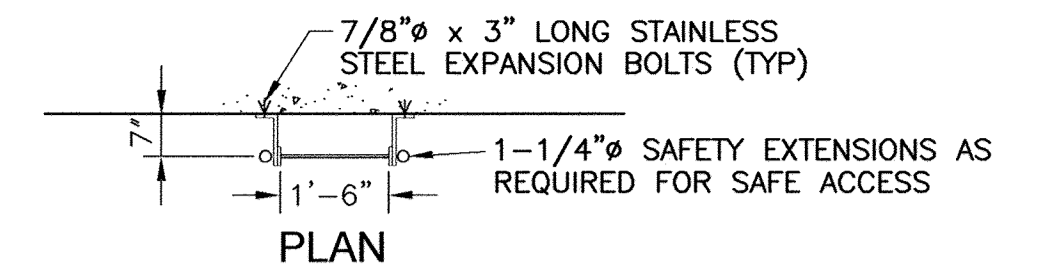


ELEVATION (LADDER NOT SHOWN FOR CLARITY)

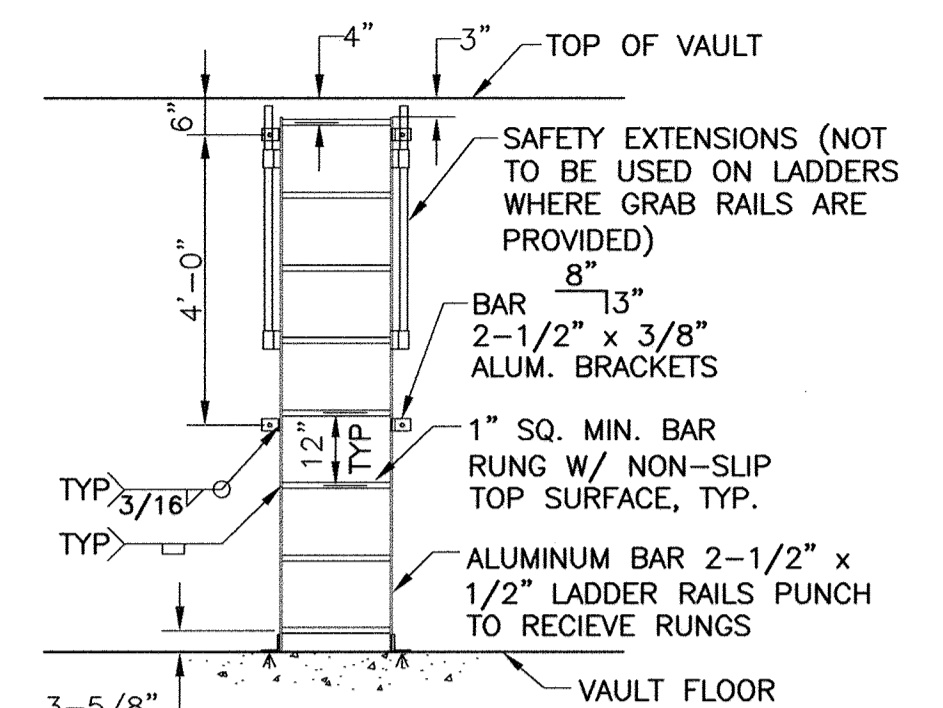


DIGESTER DISCHARGE VALVE VAULT

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



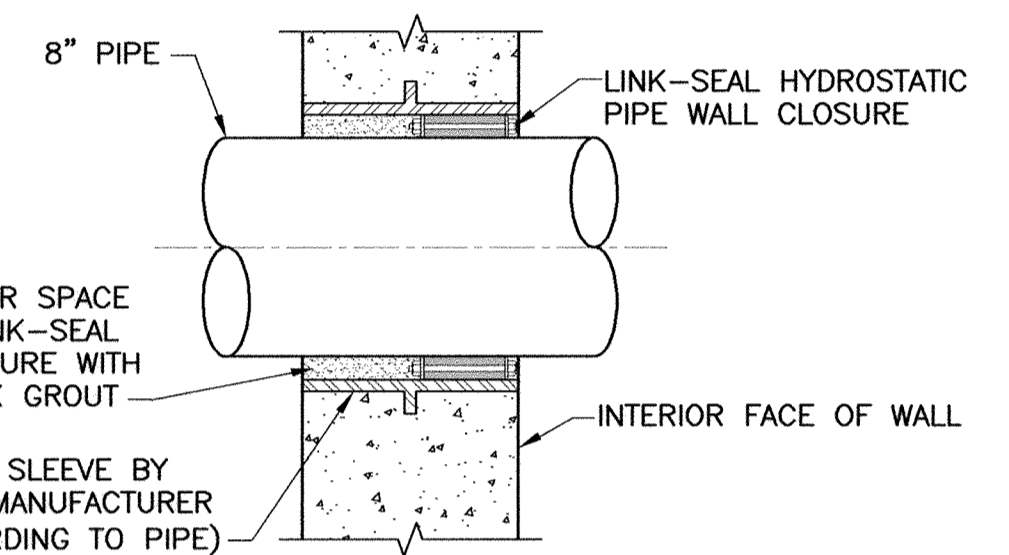
PLAN



ELEVATION

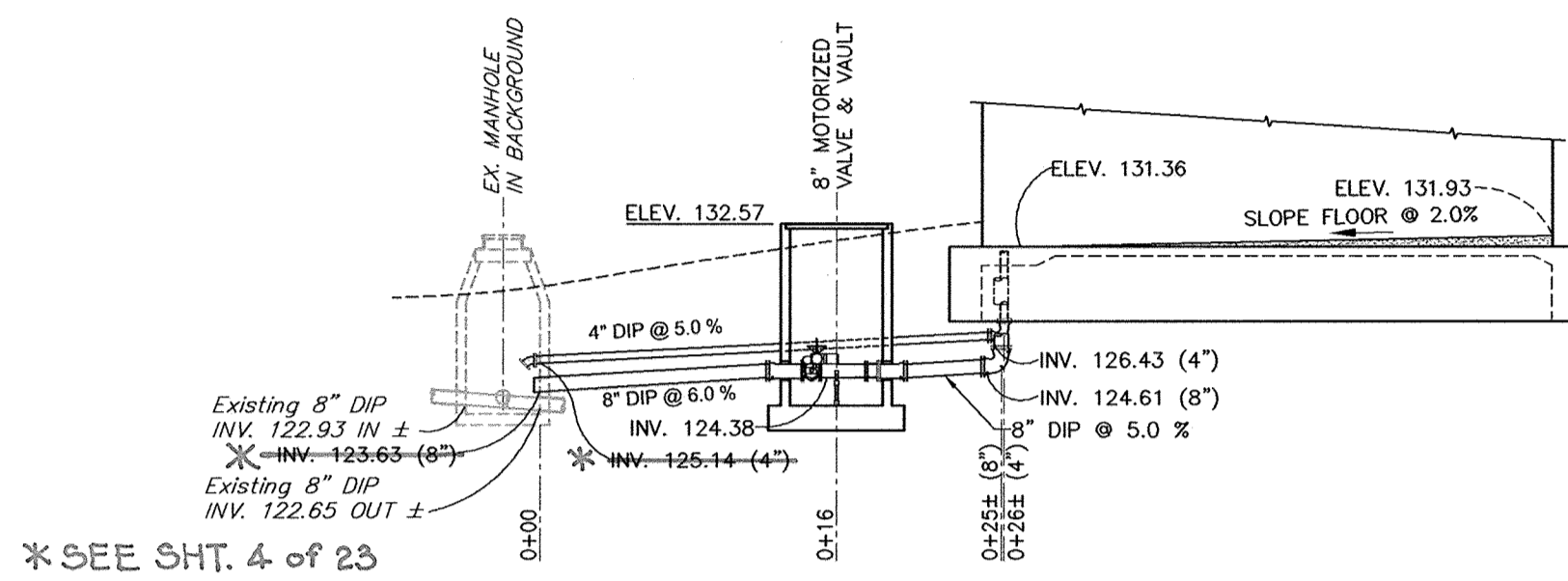
ACCESS LADDER DETAIL

SCALE: NONE



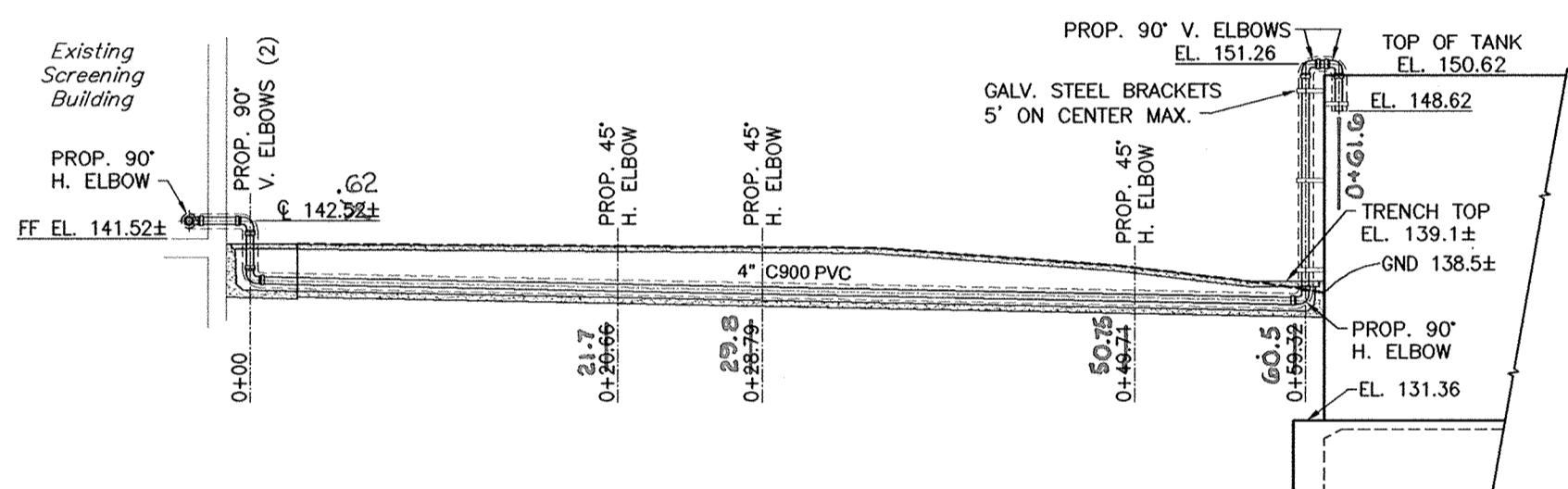
VAULT PENETRATION DETAIL

SCALE: NONE



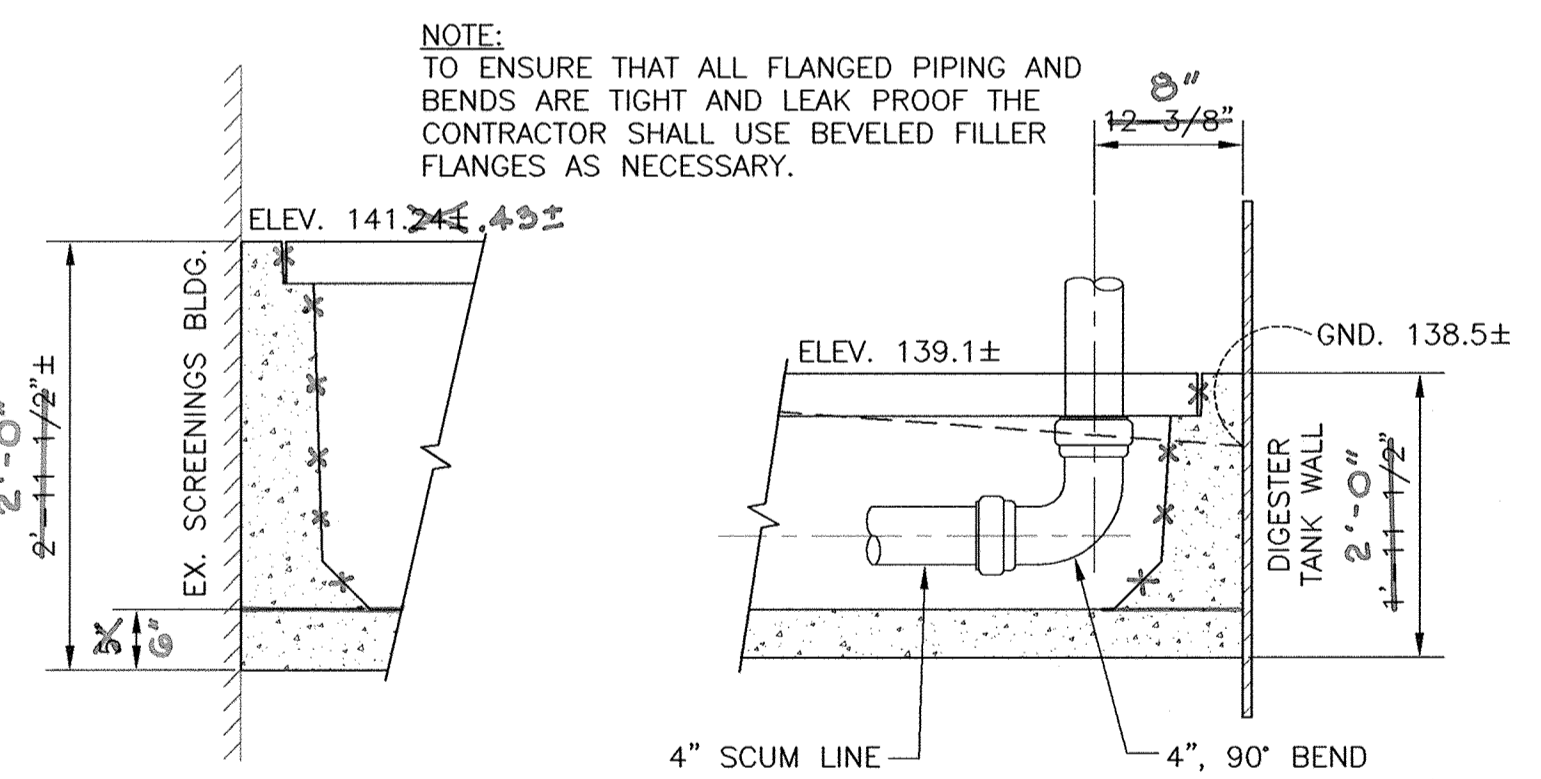
PROFILE - 4" TANK DRAIN & 8" TANK DISCHARGE

SCALE: 1" = 10' H;V



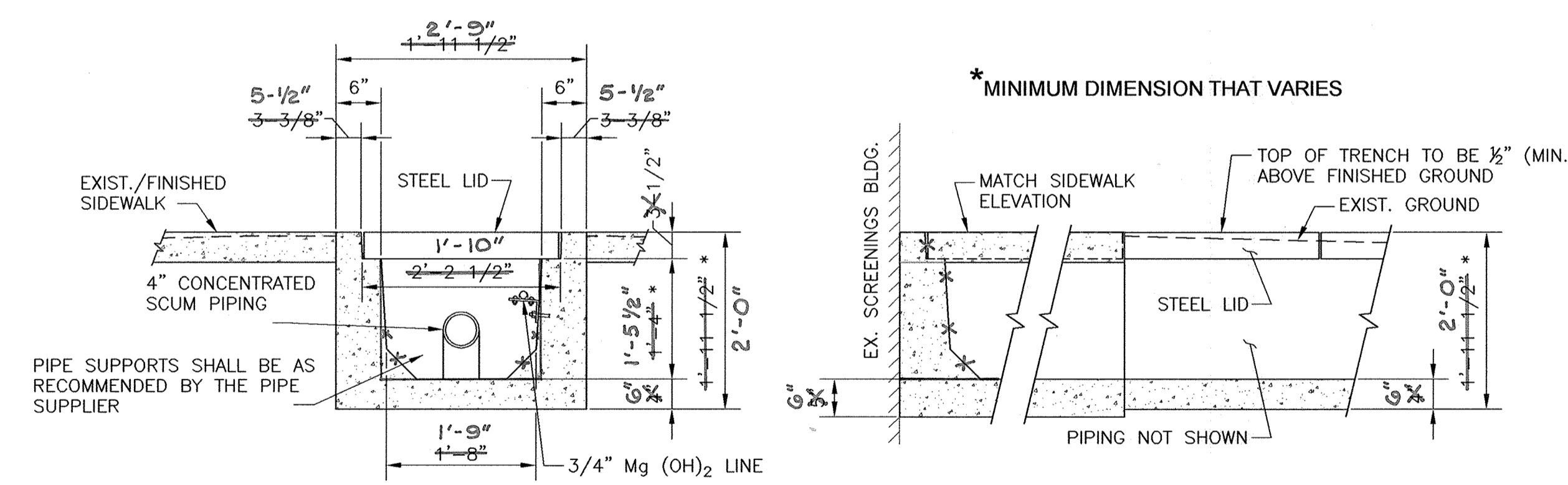
PROFILE - 4" SCUM LINE AND CONCRETE TRENCH

SCALE: 1" = 10' H;V



ELEVATION VIEW

ELEVATION VIEW

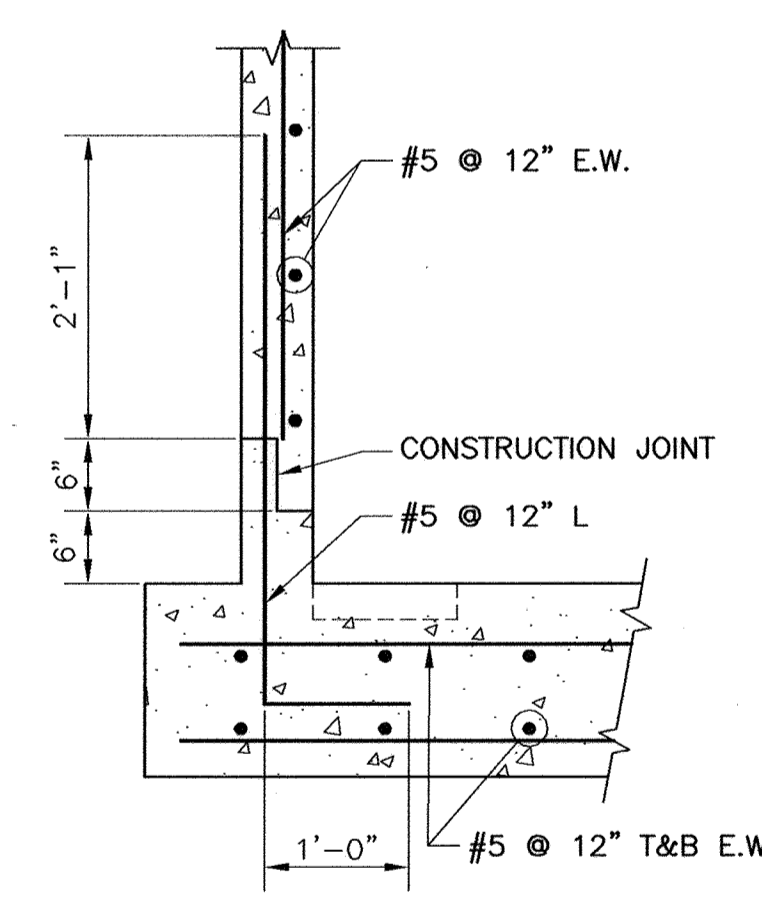


TYPICAL CROSS-SECTION

TYPICAL PROFILE-SECTION

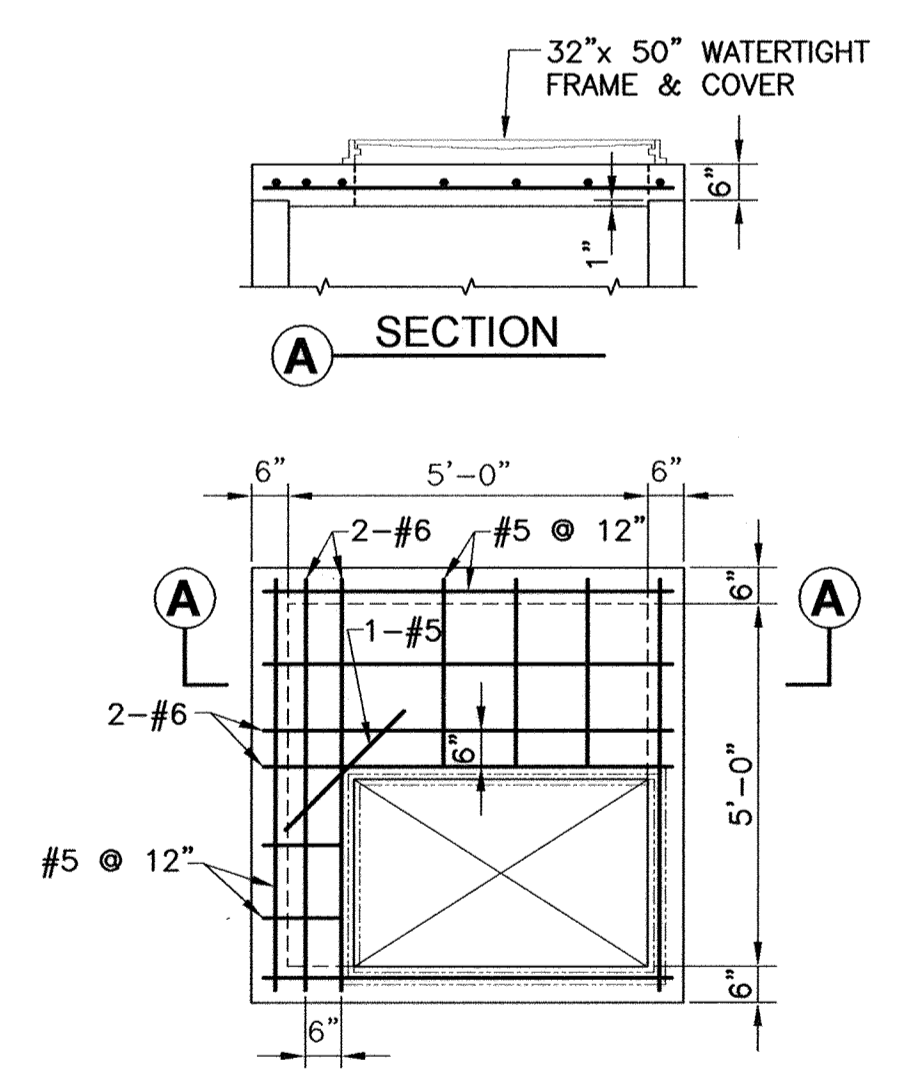
4" SCUM PIPE CONCRETE TRENCH DETAILS

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



TYPICAL VAULT REINFORCEMENT DETAIL

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



VALVE VAULT TOP SLAB DETAIL

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

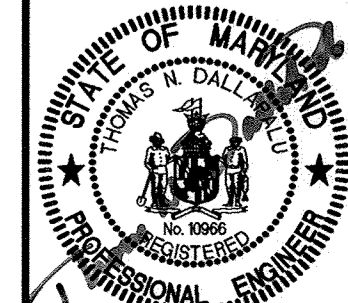
CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

PROFESSIONAL CERTIFICATION  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

*Thomas N. Dellechiaie* 2/8/12  
Signature of Engineer Date

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX: 410.265.8675



DES:	RJP
DRN:	CD
CHK:	TND
DATE:	1/7/12
BY	NO.
REVISIONS	DATE

YARD PIPING PROFILES AND MISCELLANEOUS DETAILS

600' SCALE MAP NO. 47 BLOCK NO. 24

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)

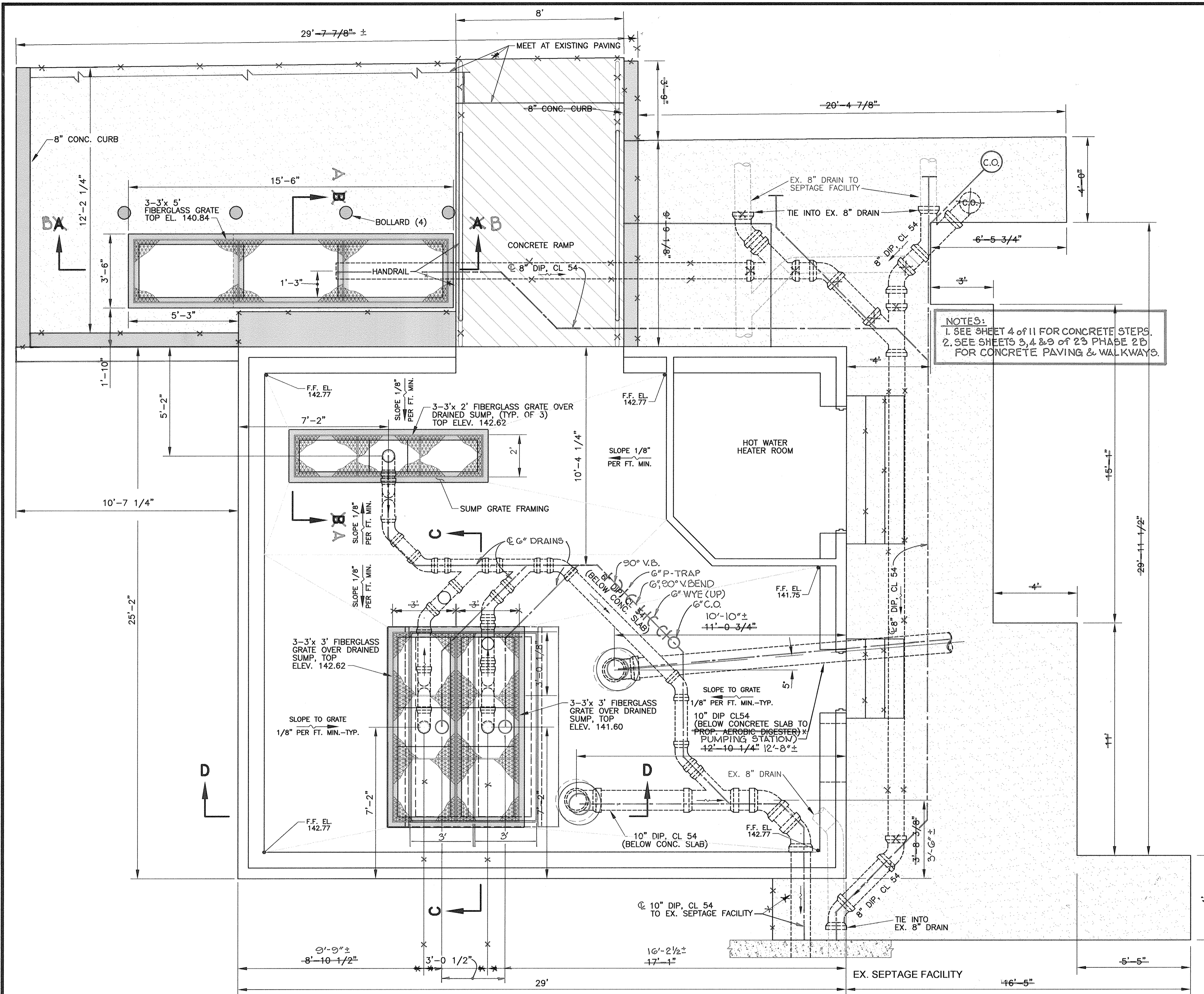
CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 5 OF 23

AS BUILTS

Project: (000000000) - See Also: 2012-0012 - 01 (1) - 01  
 Drawing: (000000000) - See Also: 2012-0012 - 01 (1) - 01  
 Date: 02/08/12  
 User: (000000000) - See Also: 2012-0012 - 01 (1) - 01  
 XREF: (000000000) - See Also: 2012-0012 - 01 (1) - 01



**DRAINAGE PLAN**  
SCALE: 3/8" = 1'-0"

PROFESSIONAL CERTIFICATION  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012  
*Thomas W. Duda*  
Signature of Engineer 2/9/12 Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*James M. ...* DATE *2/9/12*  
DIRECTOR OF PUBLIC WORKS

*Thomas W. Duda* DATE *2/9/12*  
CHIEF, BUREAU OF UTILITIES

*Thomas W. Duda* DATE *2/9/12*  
CHIEF, BUREAU OF ENGINEERING

*Thomas W. Duda* DATE *2/9/12*  
CHIEF, UTILITY DESIGN DIVISION

**Dewberry**  
Dewberry & Davis LLC  
3120 LORD BALTIMORE DRIVE  
SUITE 211  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX 410.265.8875



DES:	GLN/RJP
DRN:	PWR
CHK:	TND
DATE:	1/7/12
BY:	NO.
REVISIONS:	
DATE:	

**BUILDING DRAINAGE PLAN**  
SECTIONS AND LAYOUT DIMENSIONING

600' SCALE MAP NO. 47

BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4700

ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

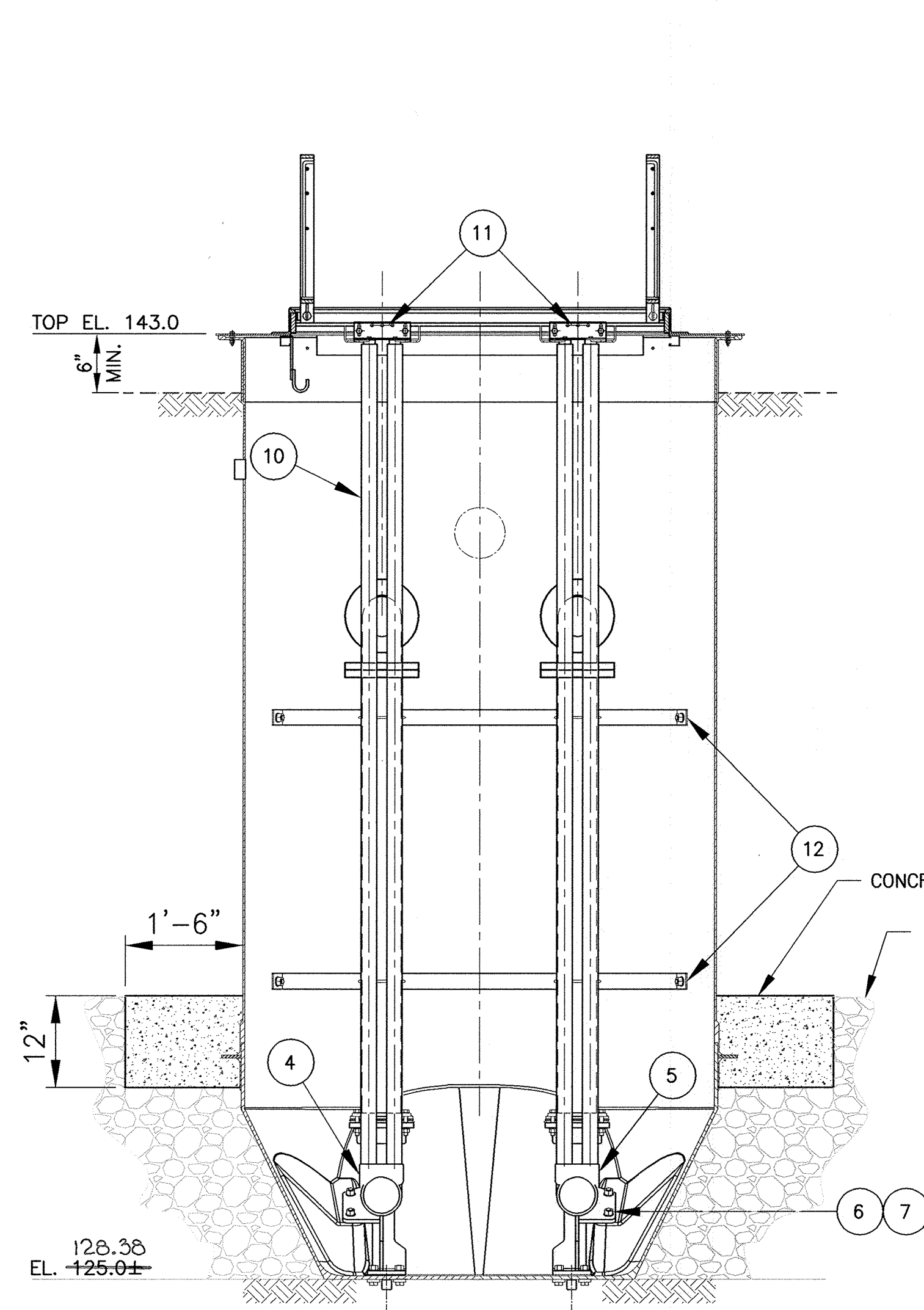
SCALE: AS SHOWN

SHEET 5 OF 11

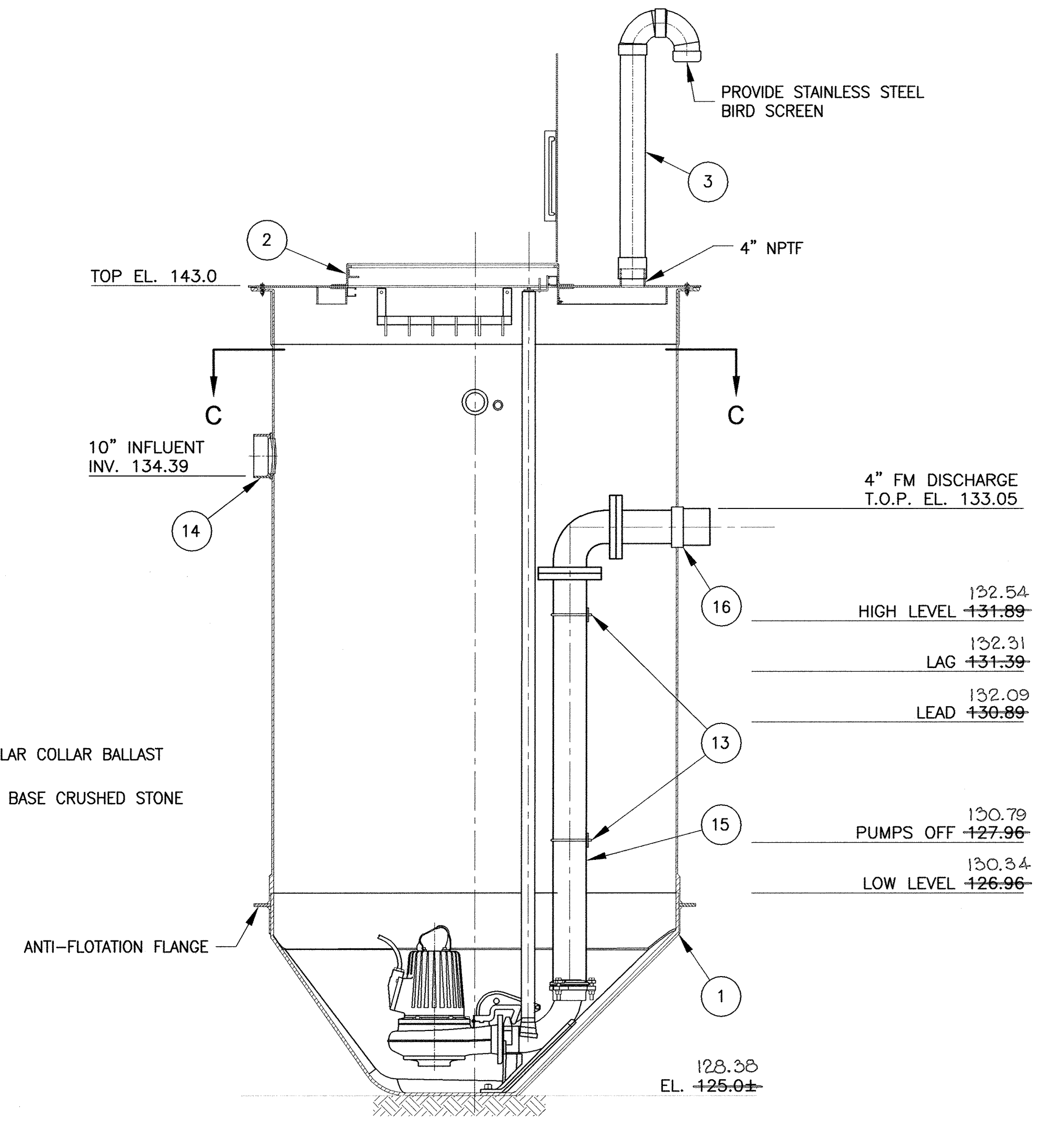


ITEM	DESCRIPTION	PART NUMBER	QTY
1	BASIN/CYLINDER ASSEMBLY, 36" dia		1
2	COVER, 36" dia		1
3	VENT PIPE, 4"	14-68 22 02	1
4	DISCHARGE CONNECTION, LEFT, 4"	620 02 10	1
5	DISCHARGE CONNECTION, RIGHT, 4"	620 01 10	1
6	NUT, 3/4"-10, 316 SST	94805A135	8
7	WASHER, 3/8" ID, 1 1/2" OD, GENERAL PURPOSE, 316 SST	91950A036	8
8	SEAL, CABLE WALL, LEVEL SENSOR	1860SCF125P	1
9	SEAL, CABLE WALL, PUMP		1
10	GUIDE BAR, 2", 316 SST		4
11	UPPER GUIDE BAR KIT, 2"		2
12	BRACING, DISCHARGE PIPE		2
13	U-BOLT 3/8"-11 OD 4-1/2", 4" PIPE	29605T11	4
14	HUB		1
15	PIPE, 4" DIP		ft
16	PIPING KIT		1

\* McMASTER-CARR



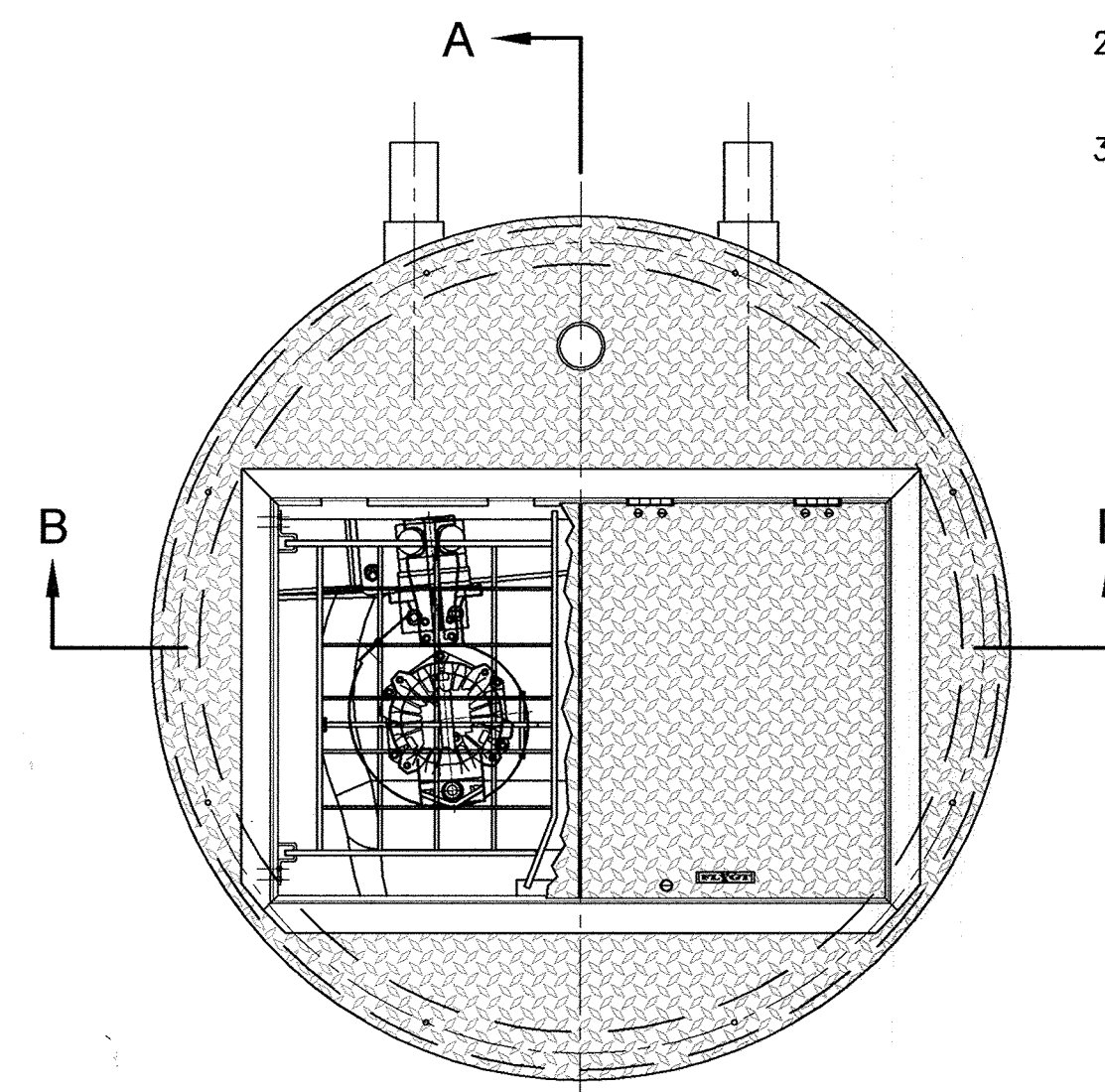
**SECTION B-B**  
NOT TO SCALE



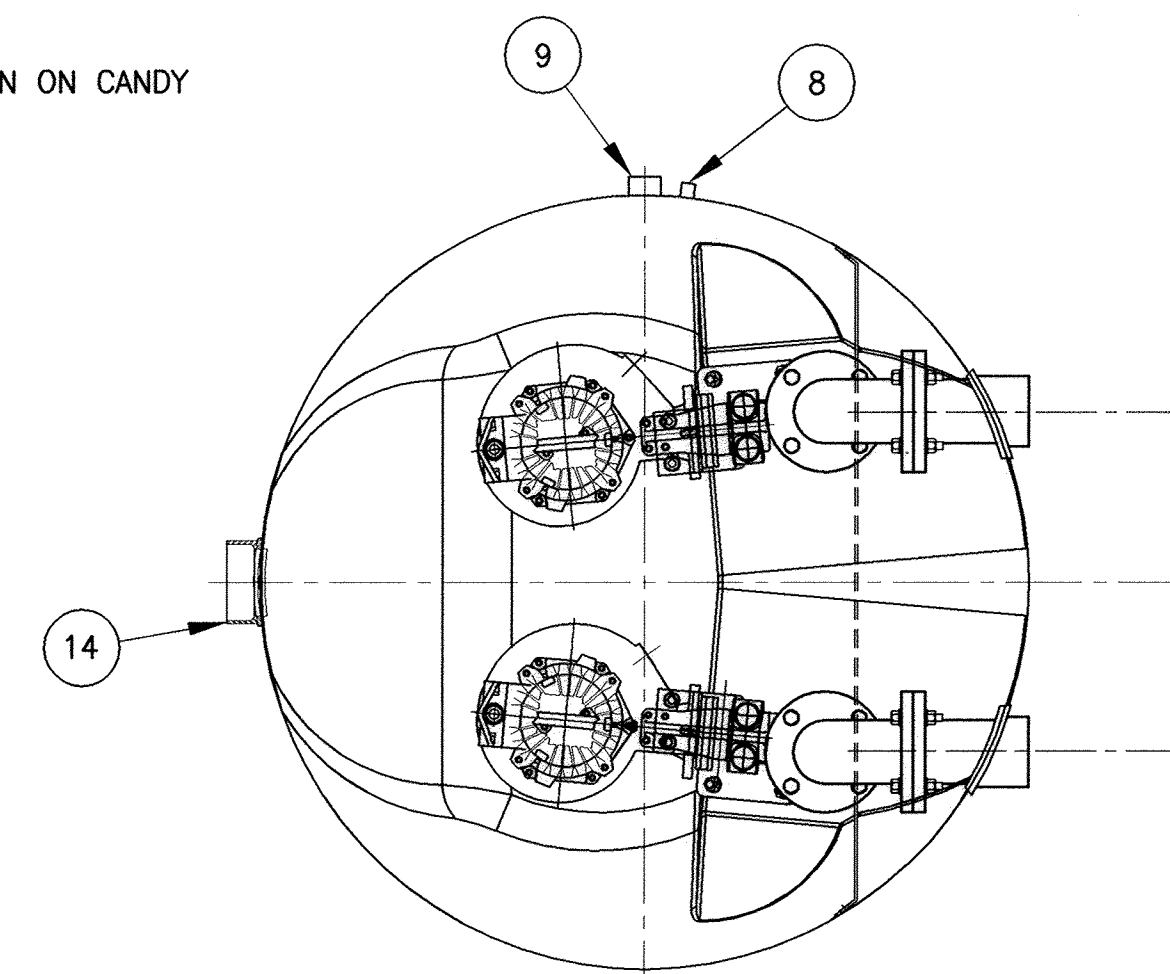
**SECTION A-A**  
NOT TO SCALE

**NOTES:**

1. STATION DEPTH TO BE 18 FEET.
2. ALL BOLT PENETRATIONS THRU WALLS MUST BE SEALED WITH SILICONE SEALANT.
3. PROVIDE STAINLESS STEEL BIRD SCREEN ON CANDY CANE VENT.



**PLAN**  
NOT TO SCALE



**VIEW C-C**  
NOT TO SCALE

AS BUILTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

PROFESSIONAL CERTIFICATION  
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*Thomas M. Delle*      2/8/12  
Signature of Engineer      Date

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*La. J. K.*      2/9/12      *Thomas M. Delle*      2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE      CHIEF, BUREAU OF ENGINEERING      DATE

*John C. Linn*      2/9/12      *Thomas M. Delle*      2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE      CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2682  
410.265.9500  
FAX: 410.265.8875



DES:	RJP			
DRN:	CD			
CHK:	TND			
DATE:	1/7/12			
BY	NO.	REVISIONS	DATE	

**GREASE TRAP WASTE PUMPING STATION PLAN AND SECTIONS**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

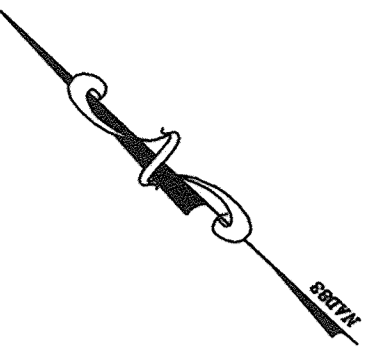
CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE:  
AS SHOWN

SHEET  
6 OF 23

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 User: cad000000    File: 01\_2012 - 1107.dwg  
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**STRUCTURAL NOTES**

- A. SEE CIVIL/MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF ALL SLAB PENETRATIONS AND FLOOR DRAINS.
- B. SEE CIVIL DRAWINGS FOR ALL ELEVATIONS NOT SHOWN ON THIS SHEET.
- C. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WORK.

**D. CODES AND SPECIFICATIONS:**

1. INTERNATIONAL BUILDING CODES (I.B.C.) 2006
2. BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY (ACI 318)
3. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES AND COMMENTARY (ACI 350-01)

**E. DESIGN LOADS:**

1. FLOOR LIVE LOAD..... 100 PSF
2. GROUND SNOW ..... 25 PSF
3. WIND LOADS:
  - a. BASIC WIND SPEED ..... 90 MPH
  - b. EXPOSURE ..... C
4. SEISMIC LOADS:
  - a. SPECTRAL RESPONSE COEFFICIENT S<sub>s</sub> = 0.159
  - b. SITE CLASS..... D

**F. CAST IN PLACE CONCRETE:**

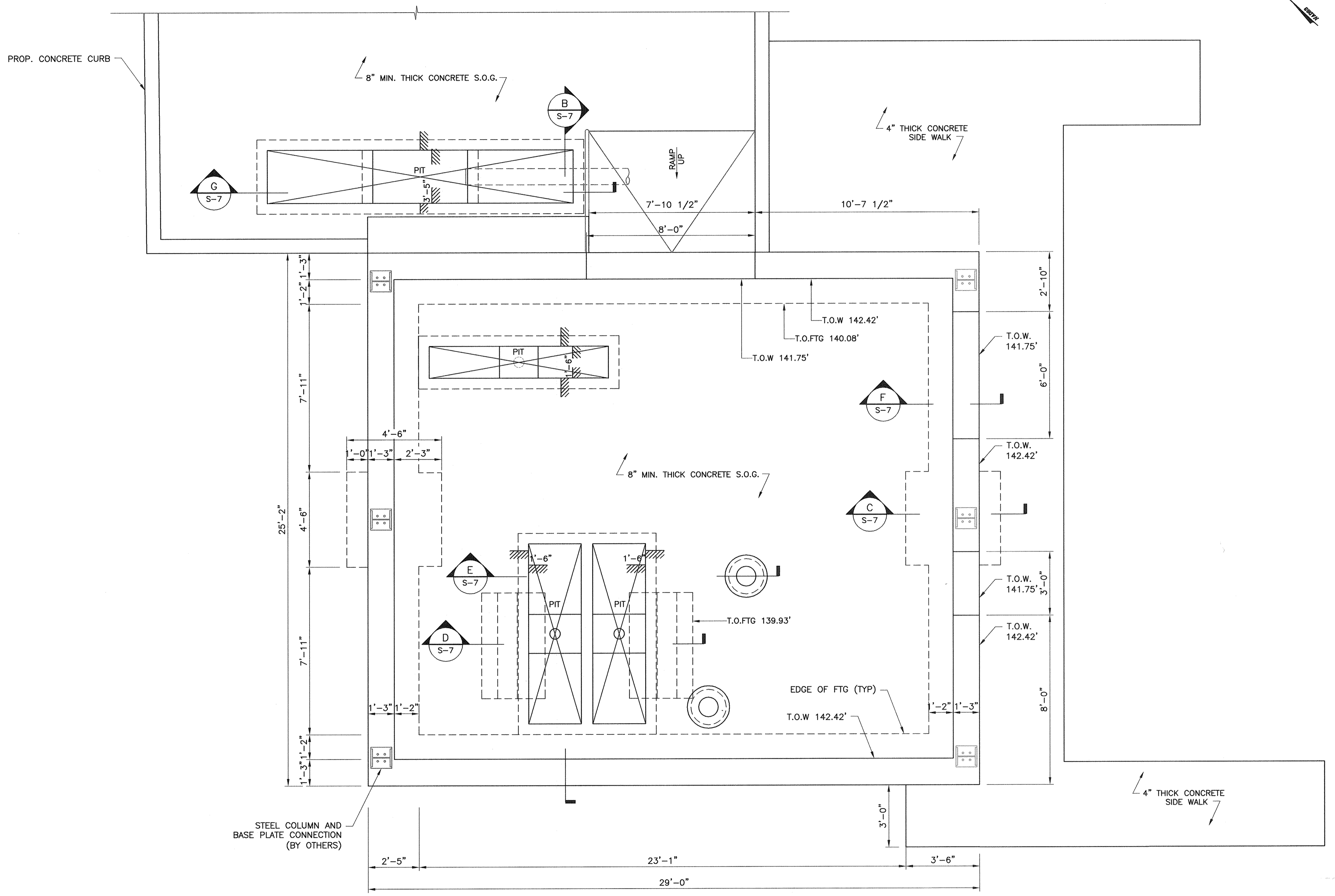
1. UNLESS NOTED OTHERWISE, ALL CAST IN PLACE CONCRETE SHALL BE AIR ENTRAINED WITH A MAXIMUM SLUMP OF 4 INCHES. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE ACI 318 AND ACI 301. CONCRETE SHALL ATTAIN MINIMUM 28 DAY STRENGTH OF 4000 PSI UNLESS OTHERWISE APPROVED.
2. ALL REINFORCING STEEL FOR CONCRETE SHALL CONFORM TO ASTM SPECIFICATIONS A 615, GRADE 60 FOR BARS AND A 185 FOR WELDED WIRE FABRIC. REINFORCING DETAILS SHALL BE IN ACCORDANCE WITH CURRENT ACI "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES". BAR LAPS SHALL BE CLASS "B" TENSION LAPS. PROVIDE CONCRETE COVER OVER REINFORCING BARS IN ACCORDANCE WITH ACI 318. HOOKS SHOWN SHALL BE STANDARD HOOKS UNLESS OTHERWISE DIMENSIONED.

**G. FOUNDATIONS:**

1. PROVIDE POLYETHYLENE PLASTIC VAPOR BARRIER OVER A MINIMUM 12 INCHES #57 STONE UNDER SLAB ON GRADE.
2. PROVIDE A MINIMUM NET ALLOWABLE BEARING CAPACITY OF 2,000 PSF BELOW ALL THE FOOTINGS AND TO A DISTANCE OUTSIDE THEIR PERIMETER SO AS TO INSURE PROPER FOUNDATION PERFORMANCE AS VERIFIED BY THE GEOTECHNICAL ENGINEER.
3. ALL SUBGRADE, FOOTING EXCAVATIONS, COMPACTED FILL AND BACKFILL SHALL BE INSPECTED AND TESTED BY A GEOTECHNICAL ENGINEER REGISTERED AS A PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND TO VERIFY CONFORMANCE WITH THE RECOMMENDATIONS HEREIN.
4. DURING CONSTRUCTION AND BACKFILLING OPERATIONS THE GROUND WATER LEVEL SHALL BE MAINTAINED AT 2 FEET (MIN.) BELOW THE BOTTOM OF THE EXCAVATION.

**LEGEND**

- 1'-0" INDICATES SLAB DEPRESSION
- S.O.G. SLAB ON GRADE
- T.O.FTG. TOP OF FOOTING
- T.O.S. TOP OF SLAB
- T.O.W. TOP OF WALL



**(A) FOUNDATION PLAN**  
 S-6 SCALE: 3/8"=1'-0"  
 (SEE DRAINAGE PLAN ON SHEET 5 OF 11)

SEE SHEET 7 FOR SECTION CUTS SHOWN ON THIS SHEET

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

\_\_\_\_\_  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

\_\_\_\_\_  
 DIRECTOR DATE

**PROFESSIONAL CERTIFICATION**

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20850 EXPIRATION DATE: MAY 30, 2011

*[Signature]*  
 Signature of Engineer Date 2-1-12

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND

*[Signature]* 2/1/12  
 DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 2/1/12  
 CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 2/9/12  
 CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 2/9/12  
 CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
 Dewberry & Davis LLC

3100 LORD BALTIMORE DRIVE  
 SUITE 211  
 BALTIMORE, MD 21244-2062  
 410.295.9500  
 FAX: 410.295.9875



DES:	YHD/KY				
DRN:	YHD/KY				
CHK:	FHK				
DATE:	1/31/12	BY	NO.	REVISIONS	DATE

**STRUCTURAL**  
**FOUNDATION PLAN AND NOTES**

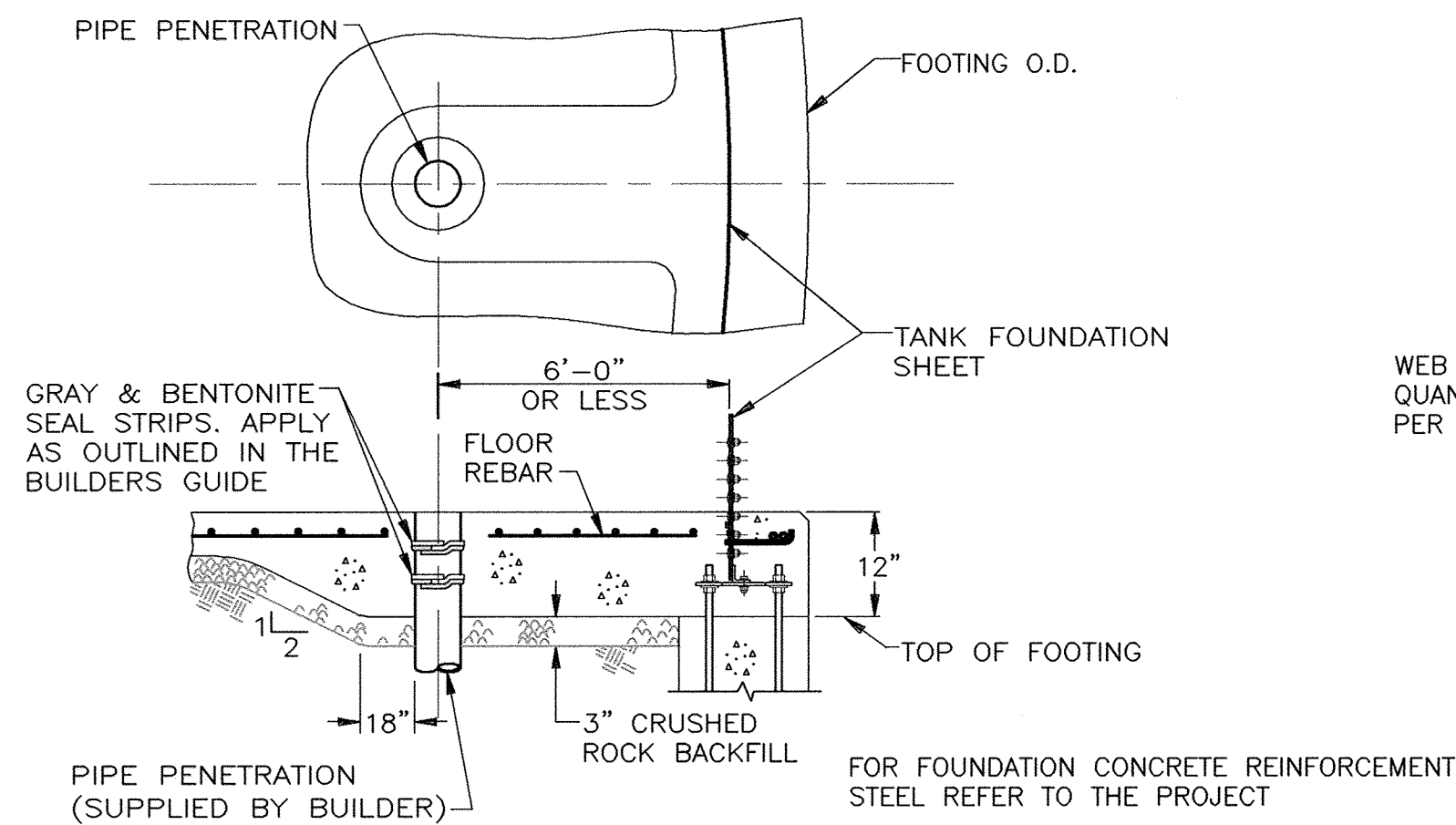
600' SCALE MAP NO. 47 BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

**CAPITAL PROJECT S-6245**  
**CONTRACT 20-4700**

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

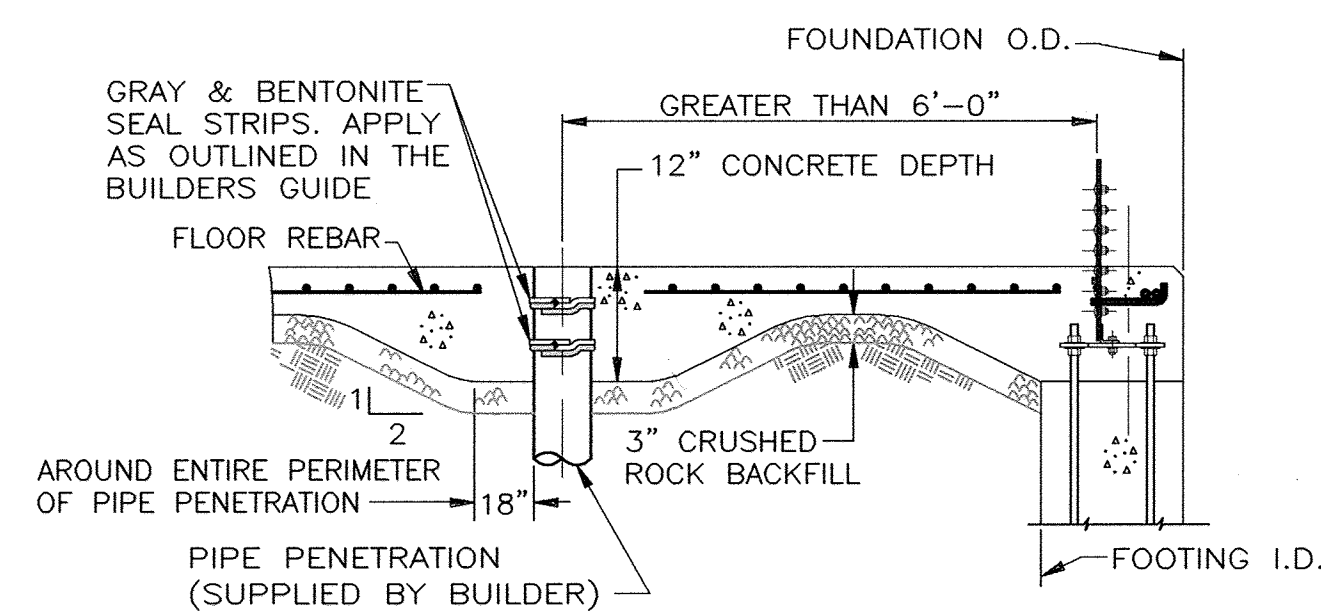
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**FLOOR PIPE PENETRATION**

NOT TO SCALE

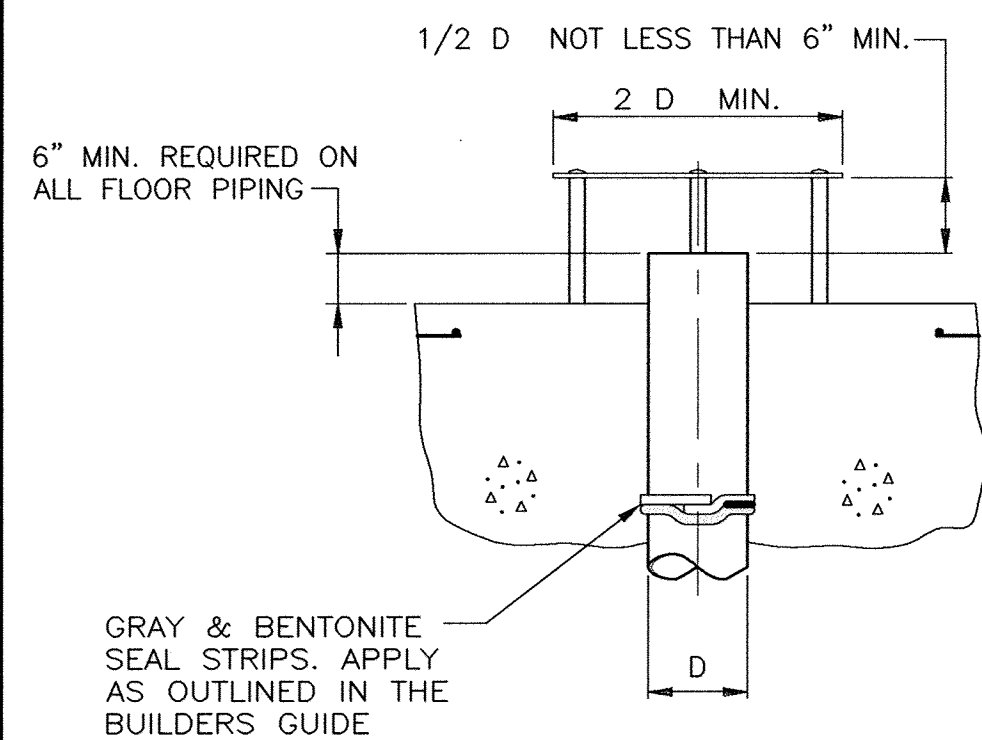
THIS IS A TYPICAL PIPE PENETRATION DETAIL THROUGH THE FOUNDATION FLOOR WHEN THE PIPE IS LOCATED LESS THAN 6'-0" FROM THE TANK INSIDE WALL.



**FLOOR PIPE PENETRATION**

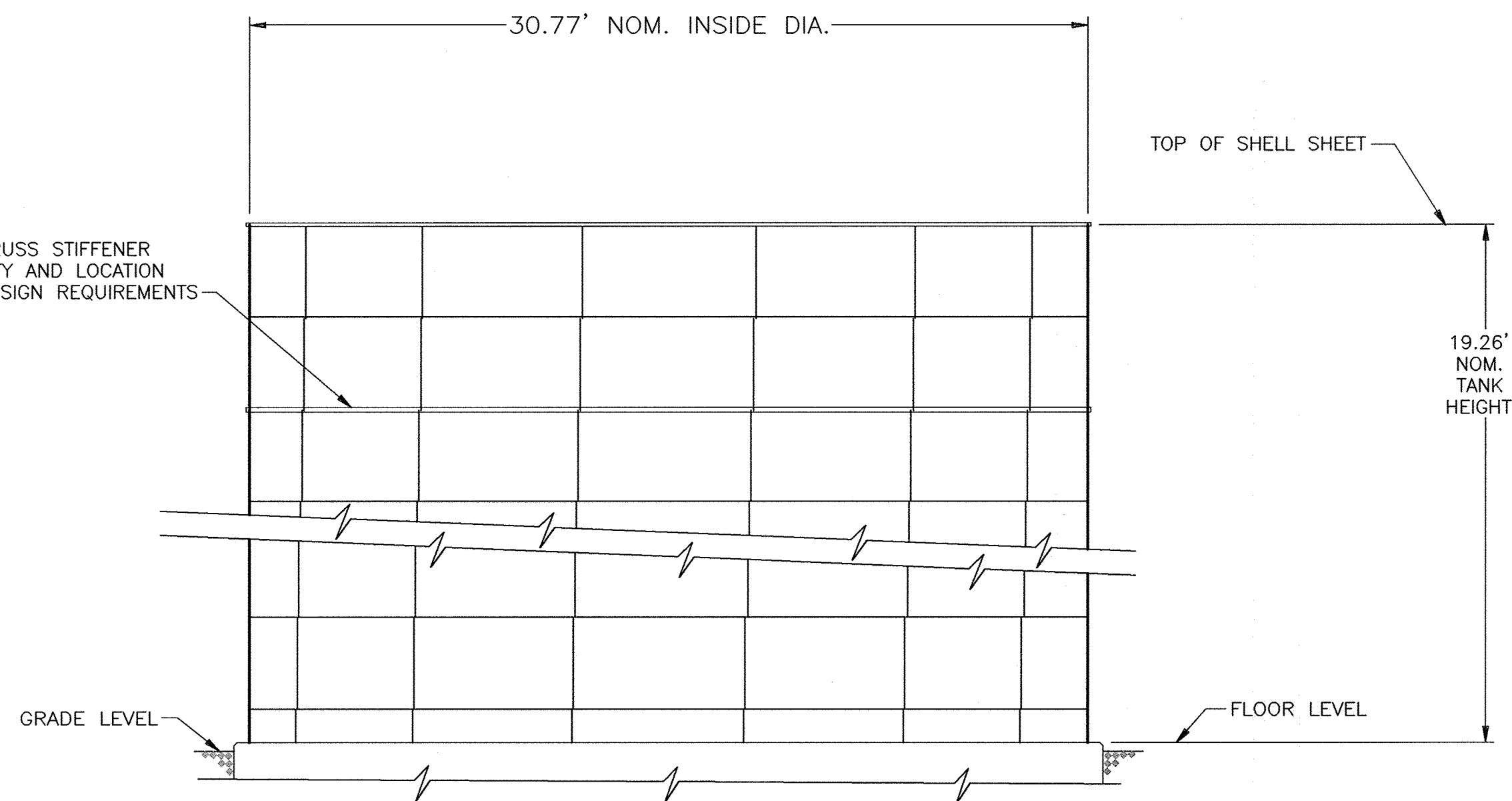
NOT TO SCALE

THIS IS A TYPICAL PIPE PENETRATION DETAIL THROUGH THE FOUNDATION FLOOR WHEN THE PIPE IS LOCATED GREATER THAN 6'-0" FROM THE TANK INSIDE WALL.



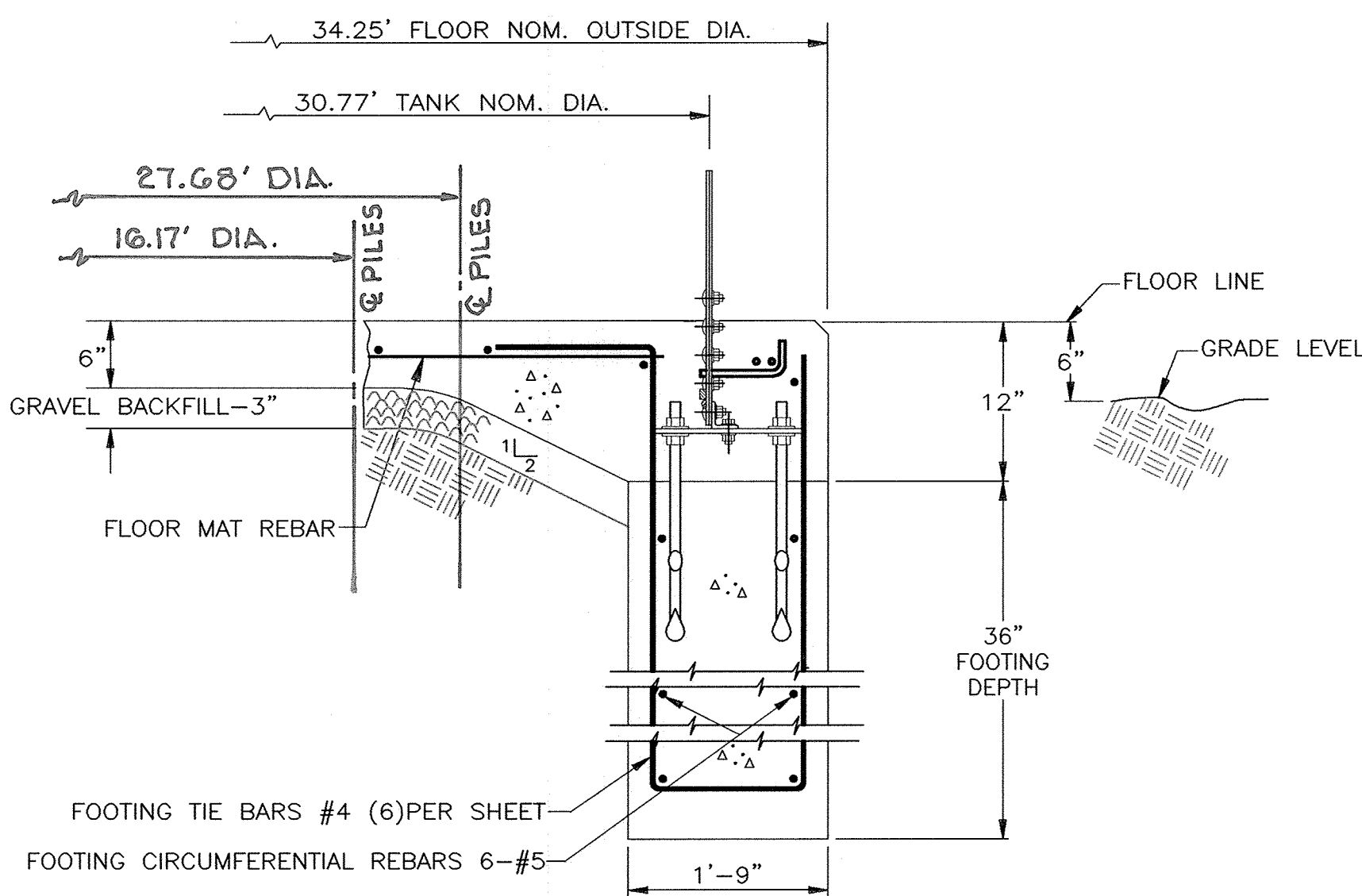
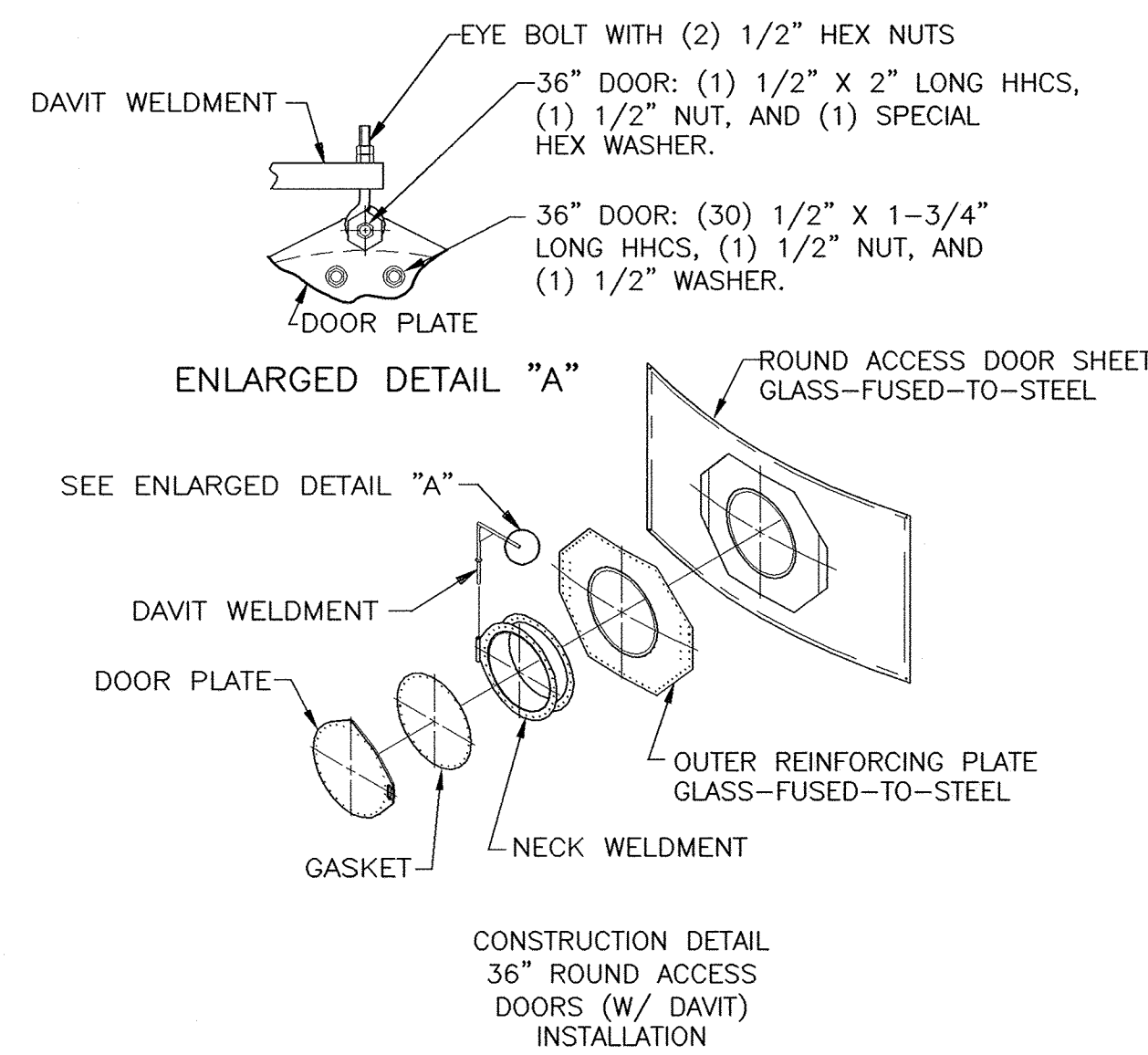
**TYPICAL FLOOR PIPE PENETRATION WITH ANTI VORTEX**

NOT TO SCALE



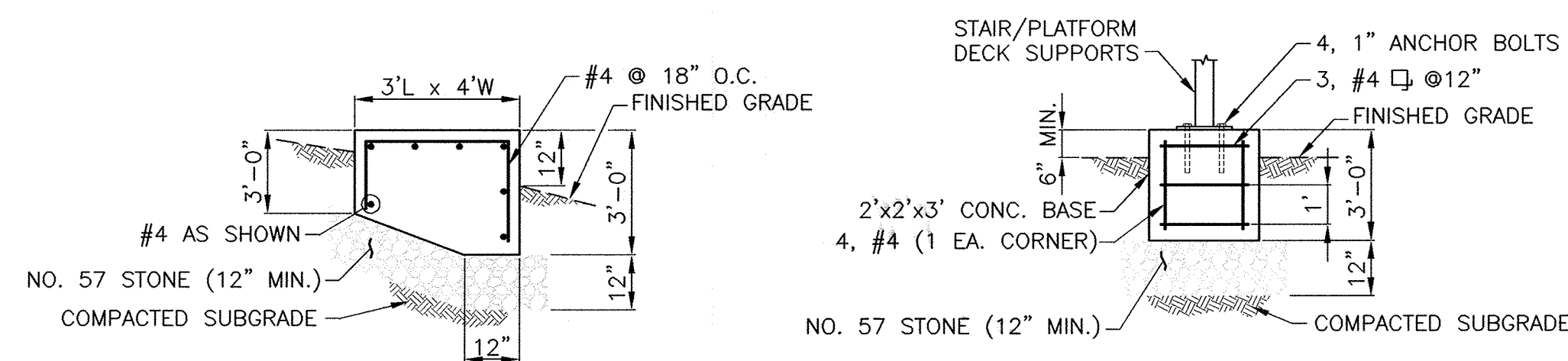
**DIGESTER TANK ELEVATION**

NOT TO SCALE



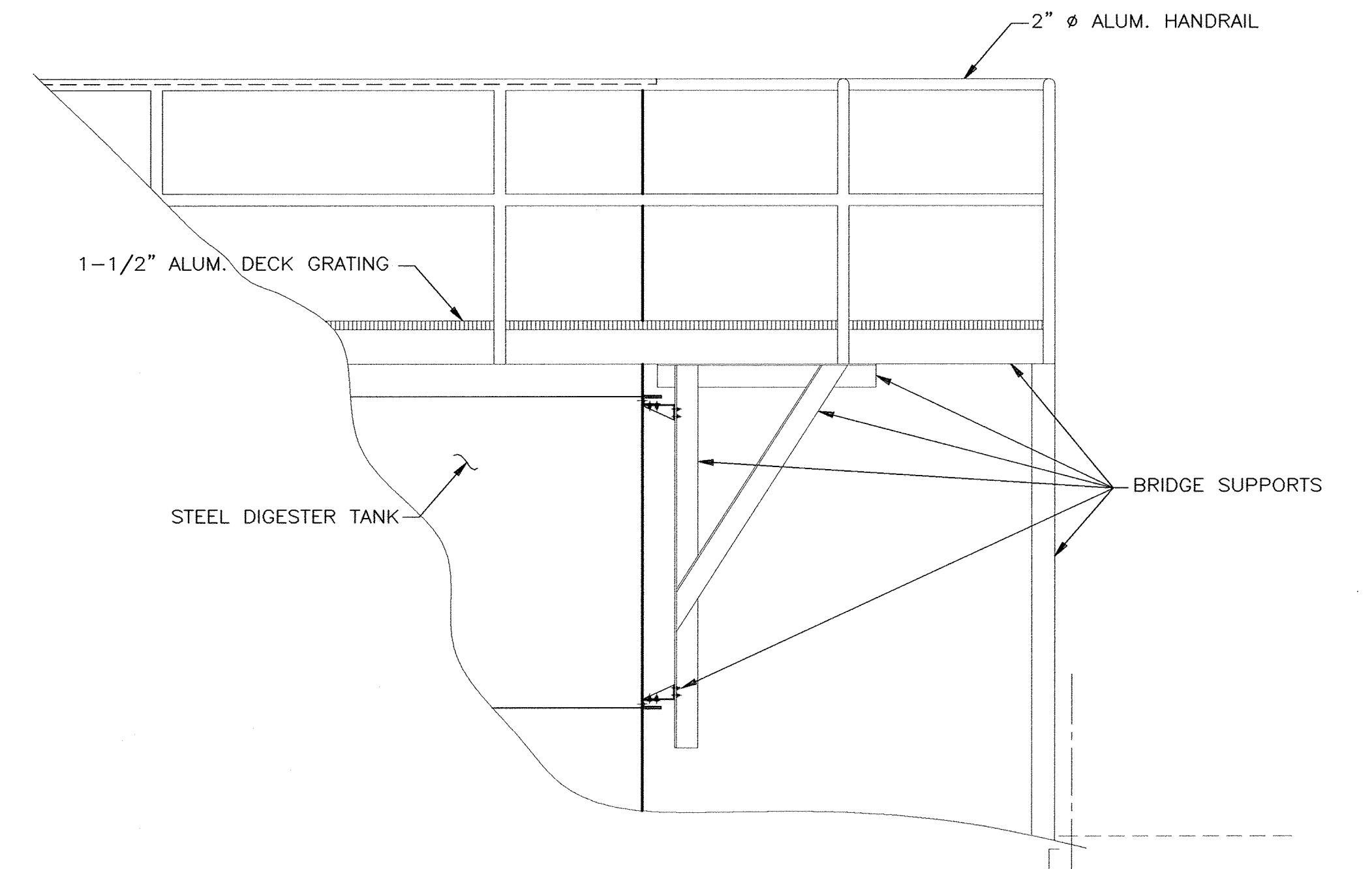
**SECTION THROUGH FOOTING**

NOT TO SCALE



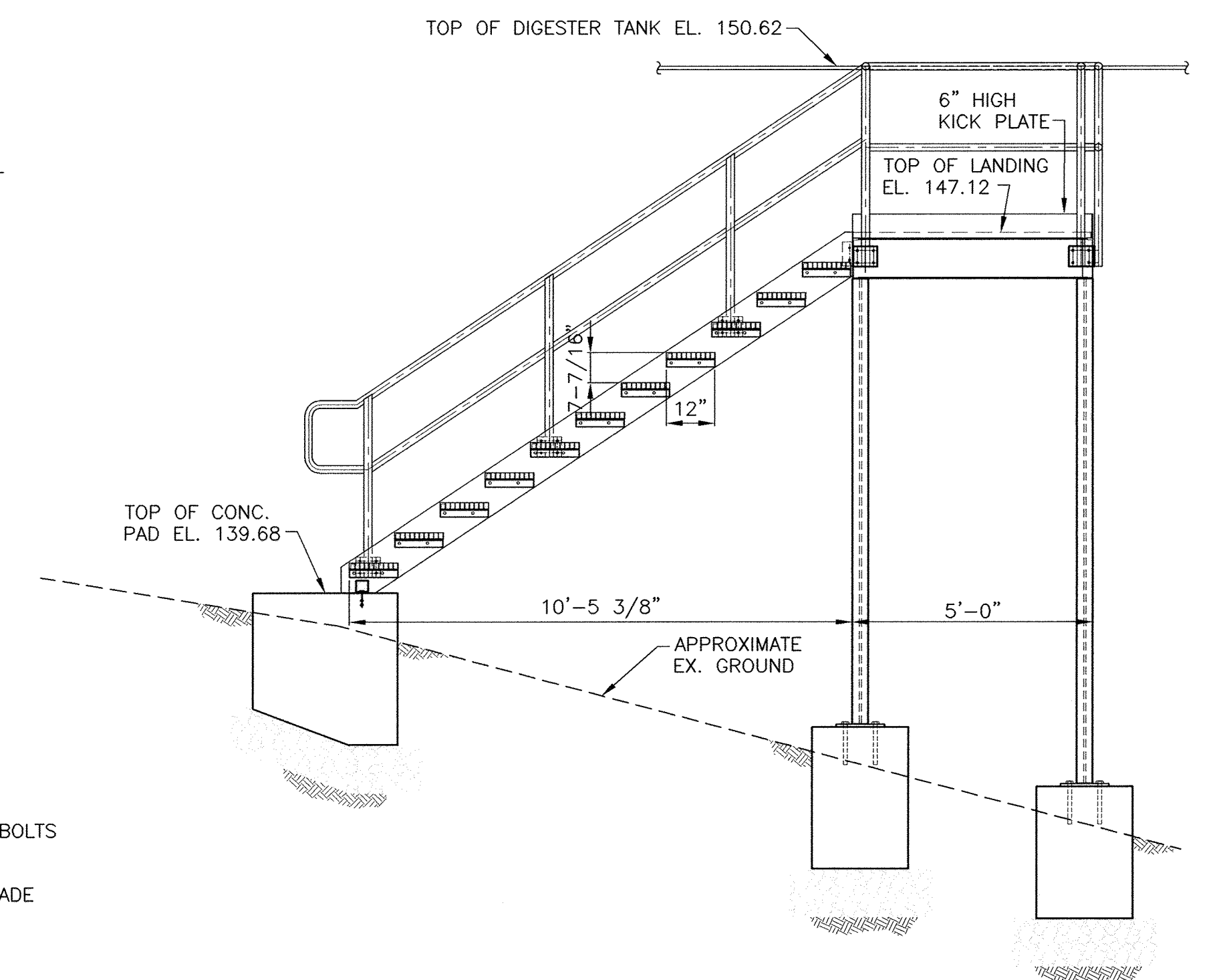
**CONCRETE REINFORCING DETAILS - STAIR BASE AND DECK SUPPORTS**

NOT TO SCALE



**BRIDGE DECK AND HANDRAIL**

NOT TO SCALE



**BRIDGE STEPS, DECK LANDING AND HANDRAIL**

NOT TO SCALE

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

**DRAWING NOT TO SCALE**

**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

*Thomas W. Dillard*  
Signature of Engineer      2/8/12  
Date

**NOTE:**

**CONTRACT DRAWINGS PROVIDE TANK MANUFACTURER'S STANDARD TANK FOUNDATION ONLY. FINAL FOUNDATION DESIGN MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO SUBMITTAL OF BID AND CONSTRUCTION.**

AS BUILTS

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*John R. ...* 2/8/12      *Thomas W. Dillard* 2/9/12  
DIRECTOR OF PUBLIC WORKS      CHIEF, BUREAU OF ENGINEERING  
*Allen ...* 2/8/12      *...* 2/9/12  
CHIEF, BUREAU OF UTILITIES      CHIEF, UTILITY DESIGN DIVISION

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2682  
410.265.9500  
FAX: 410.265.8875



DES: RJP/KY  
DRN: CD  
CHK: TND  
DATE: 1/7/12

BY	NO.	REVISIONS	DATE

**AEROBIC DIGESTER PLAN**  
ELEVATIONS, SECTIONS AND DETAILS

600' SCALE MAP NO. 47      BLOCK NO. 24

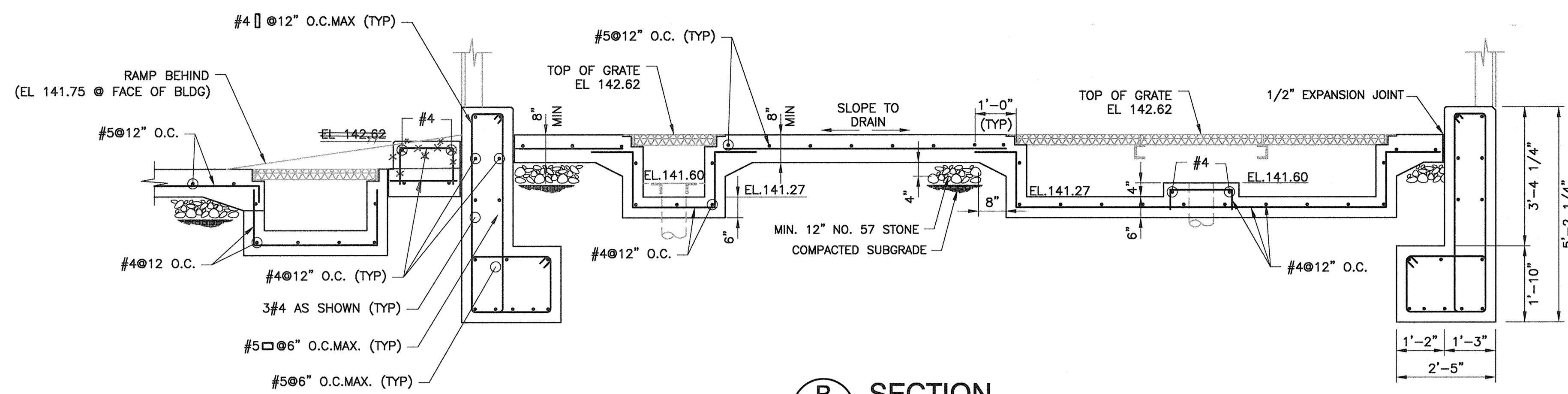
**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

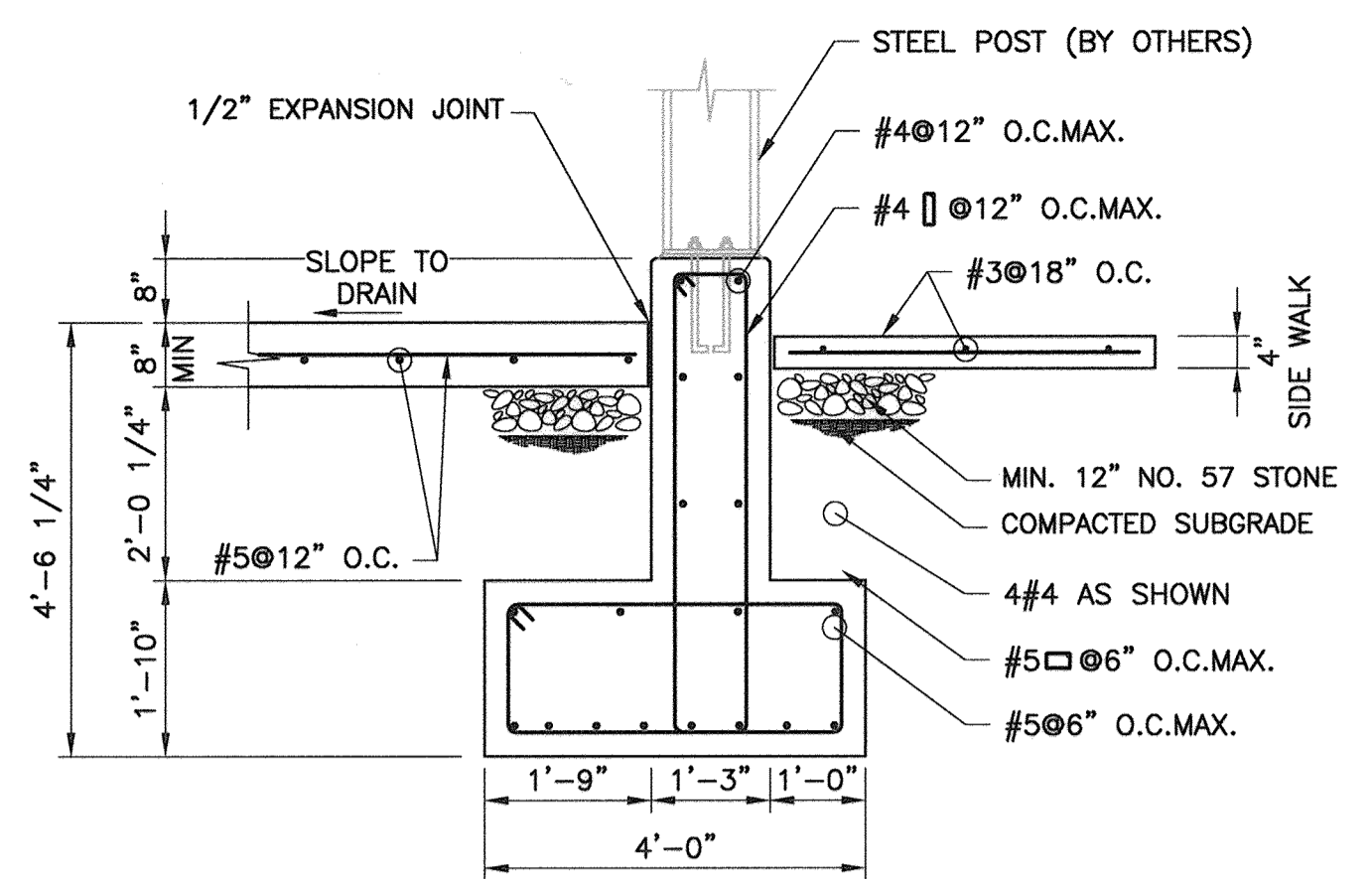
ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 7 OF 23

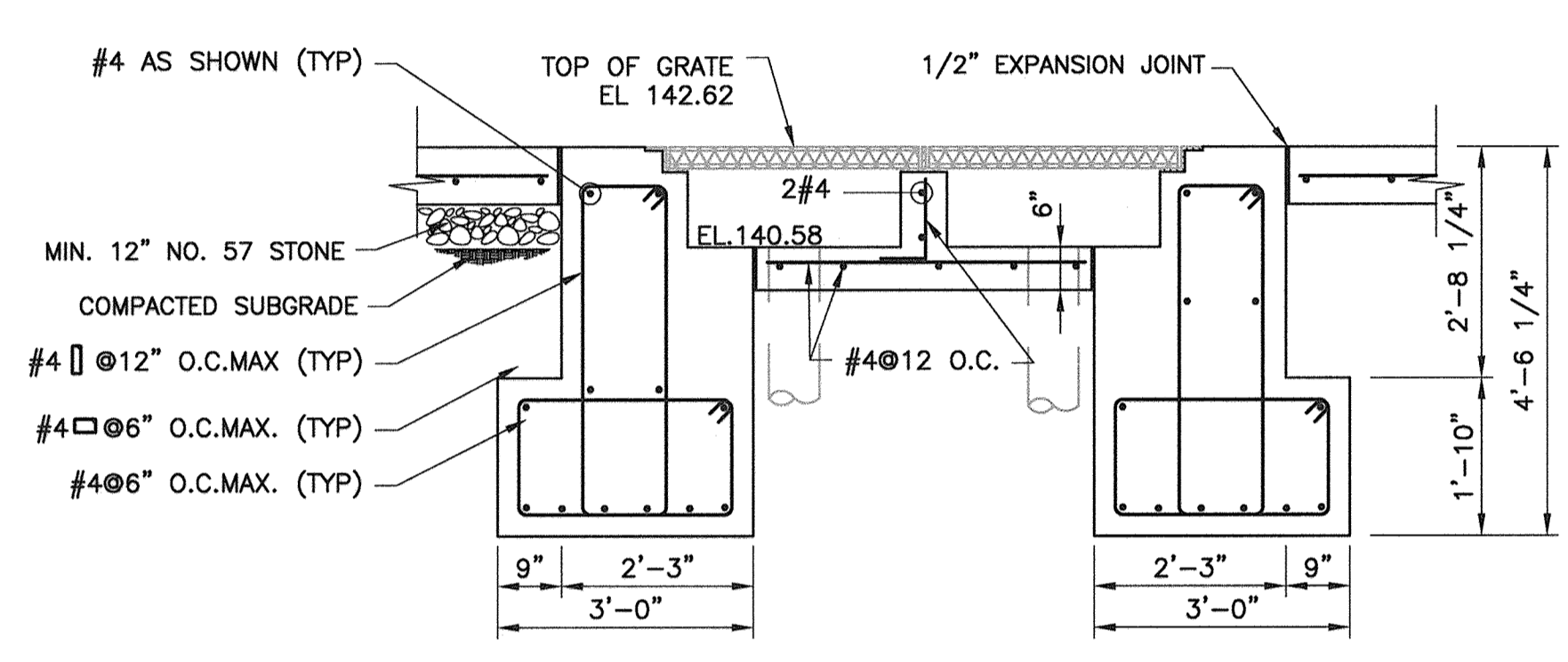
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 User: jrdavis  
 Plotter: HP DesignJet 5000 Series  
 Plot Size: 36" x 48"



**B SECTION**  
S-7 SCALE: 1/2"=1'-0"

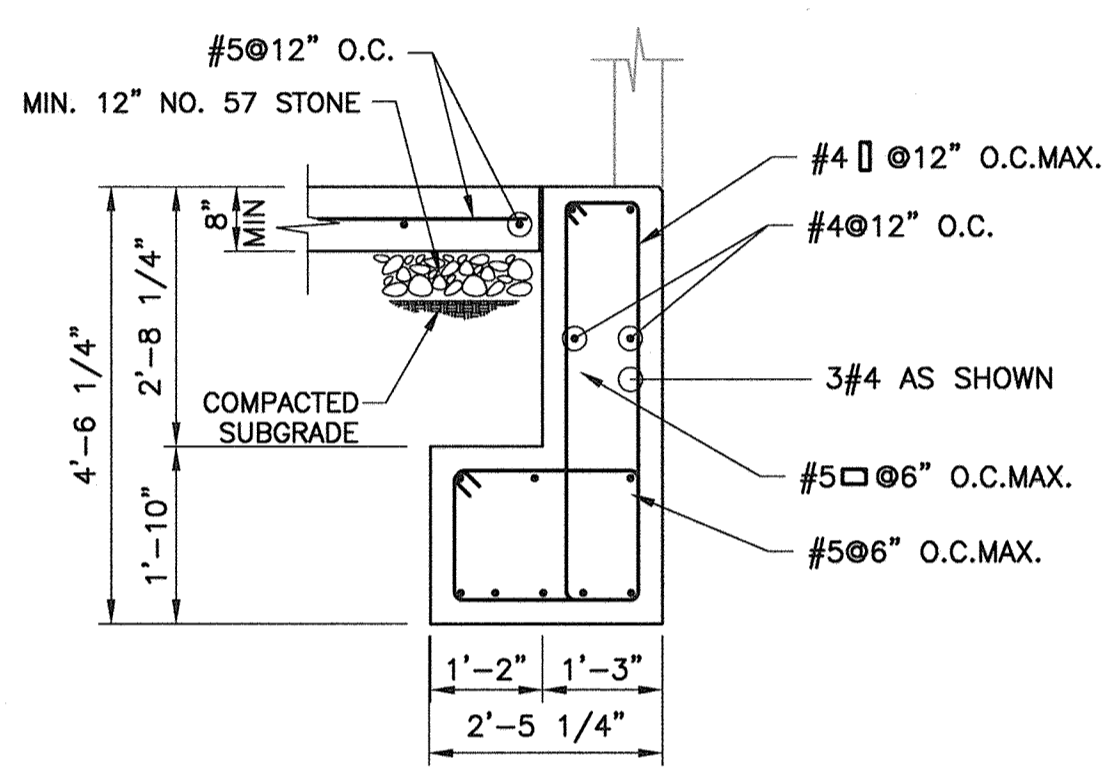


**C SECTION**  
S-7 SCALE: 1/2"=1'-0"

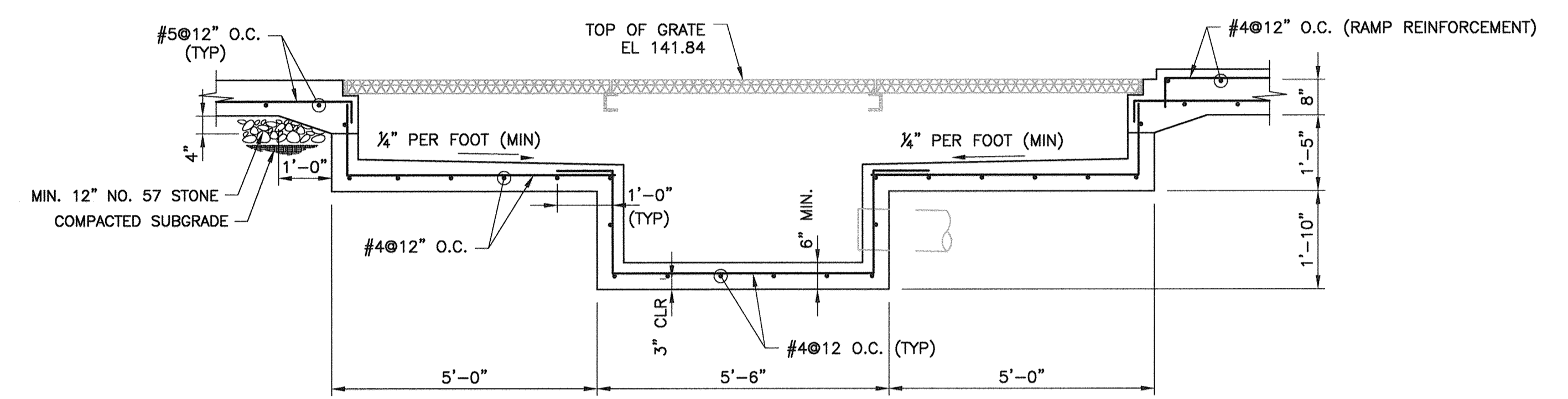


(SEE SECTION B-B SHEET 4 OF 11)

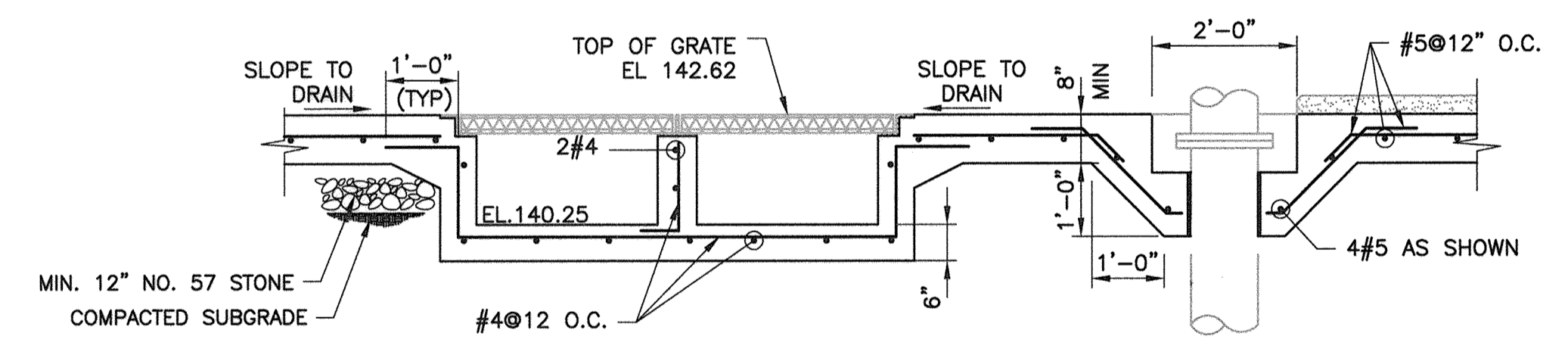
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S-7 SCALE: 1/2"=1'-0"



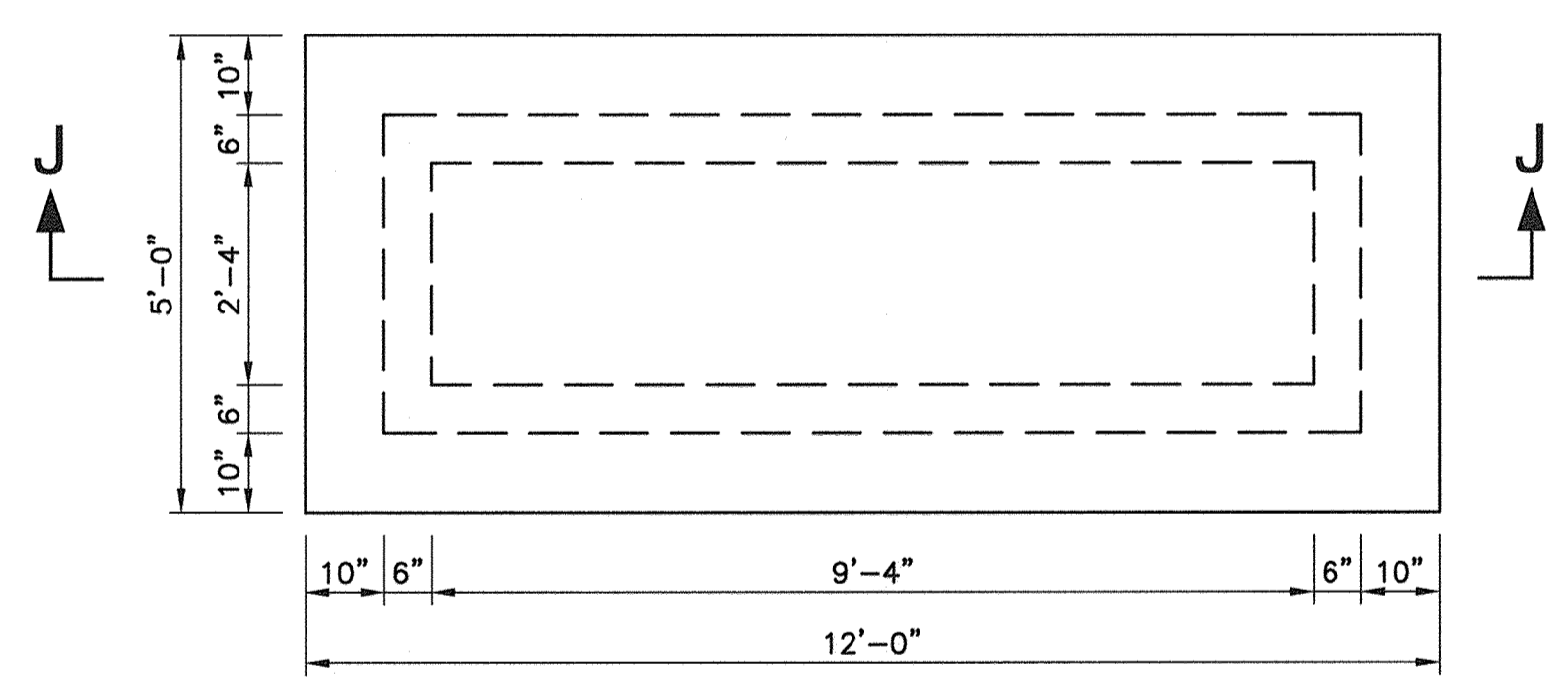
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S-7 SCALE: 1/2"=1'-0"



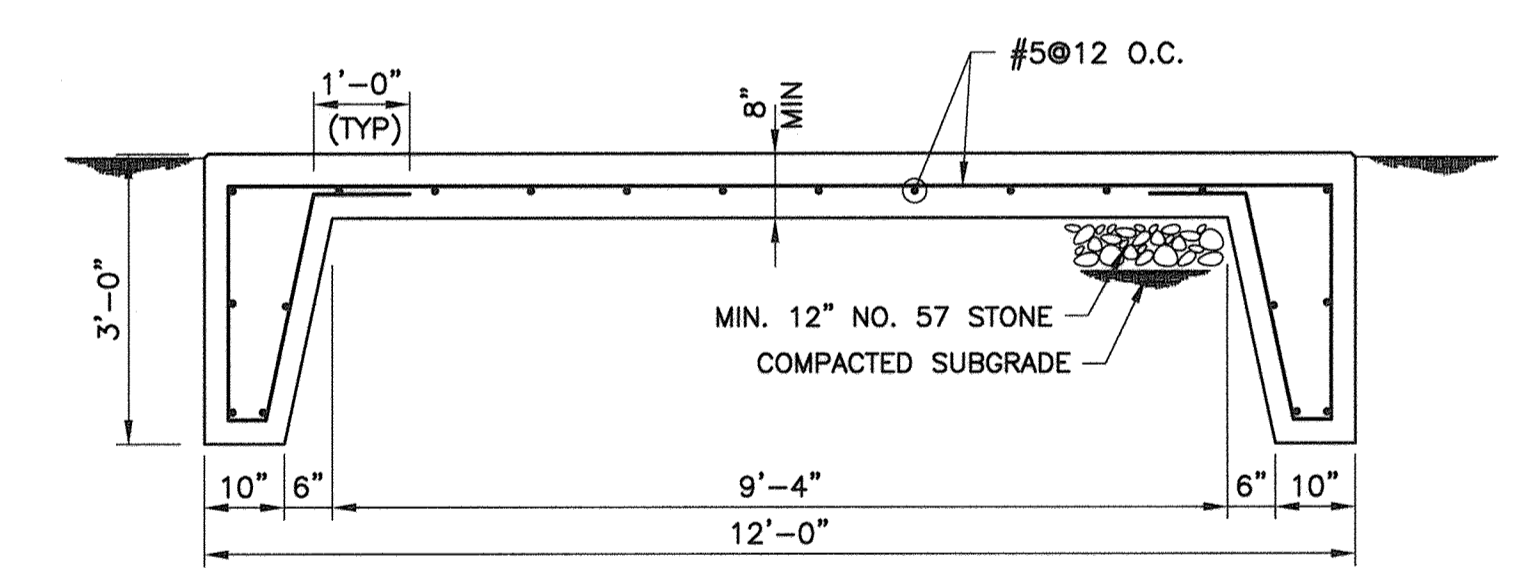
**G SECTION**  
S-7 SCALE: 1/2"=1'-0"



**E SECTION**  
S-7 SCALE: 1/2"=1'-0"

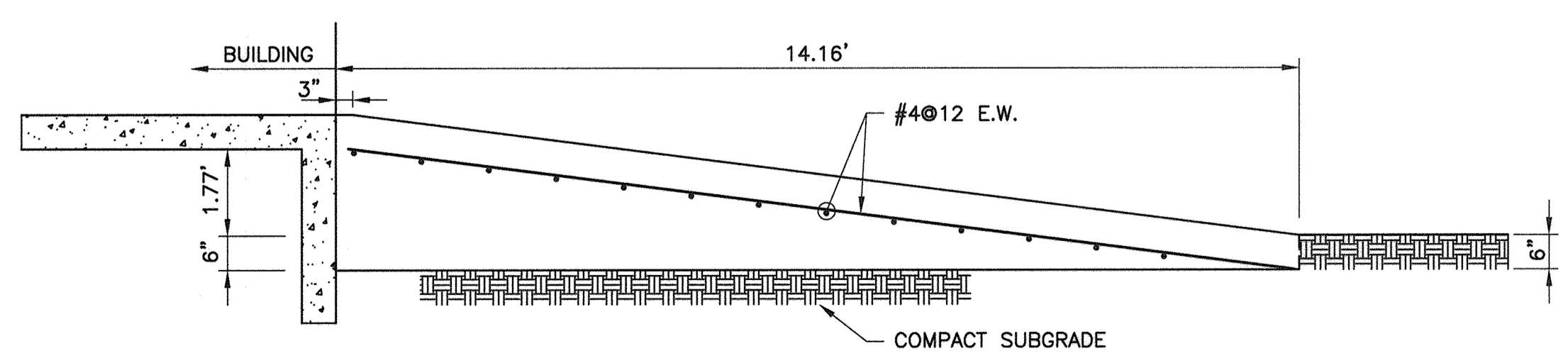


**PLAN**  
SCALE: 1/2"=1'-0"



**SECTION J**  
SCALE: 1/2"=1'-0"

**SLAB ON GRADE FOR PROPANE TANK**



**ROLL-UP DOOR RAMP**

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

\_\_\_\_\_  
DIRECTOR DATE

**PROFESSIONAL CERTIFICATION**

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20850 EXPIRATION DATE: MAY 30, 2011

*[Signature]*  
Signature of Engineer

2-1-12  
Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*[Signature]* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE

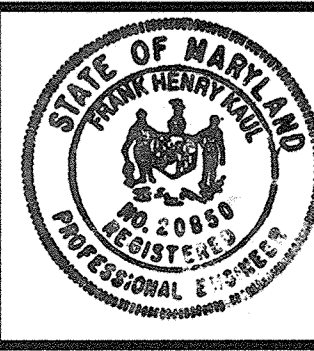
*[Signature]* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC

3120 LORD BALTIMORE DRIVE  
SUITE 211  
BALTIMORE, MD 21244-2662  
410.285.3500  
FAX: 410.285.8875



DES:	YHD/KY
DRN:	YHD/KY
CHK:	FHK
DATE:	1/31/12
BY:	
NO.:	
REVISIONS:	
DATE:	

**STRUCTURAL PLAN AND SECTIONS**

600' SCALE MAP NO. 47

BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

**CAPITAL PROJECT S-6245**  
CONTRACT 20-4700

ELECTION DISTRICT NO. 6

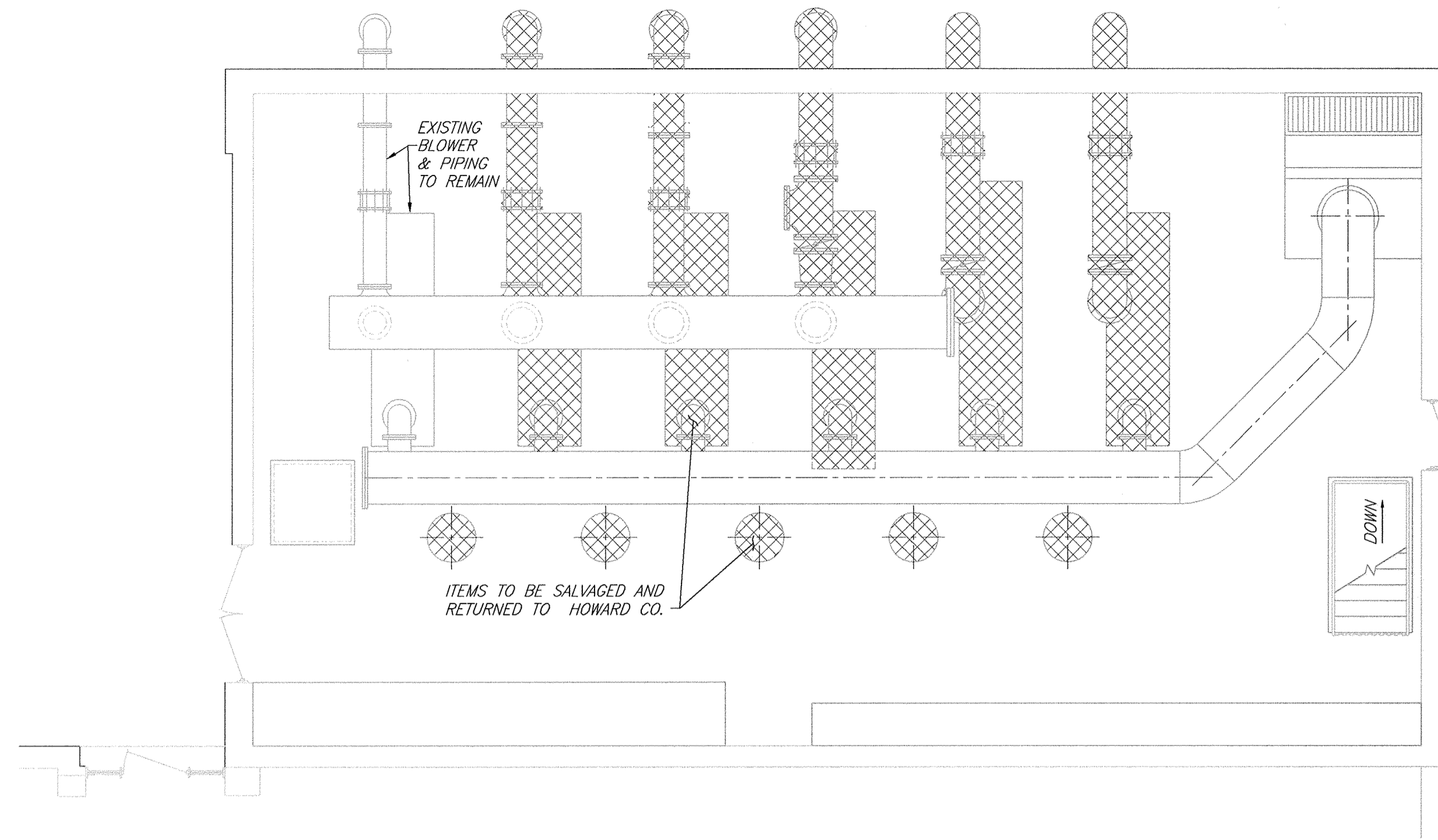
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 7 OF 11

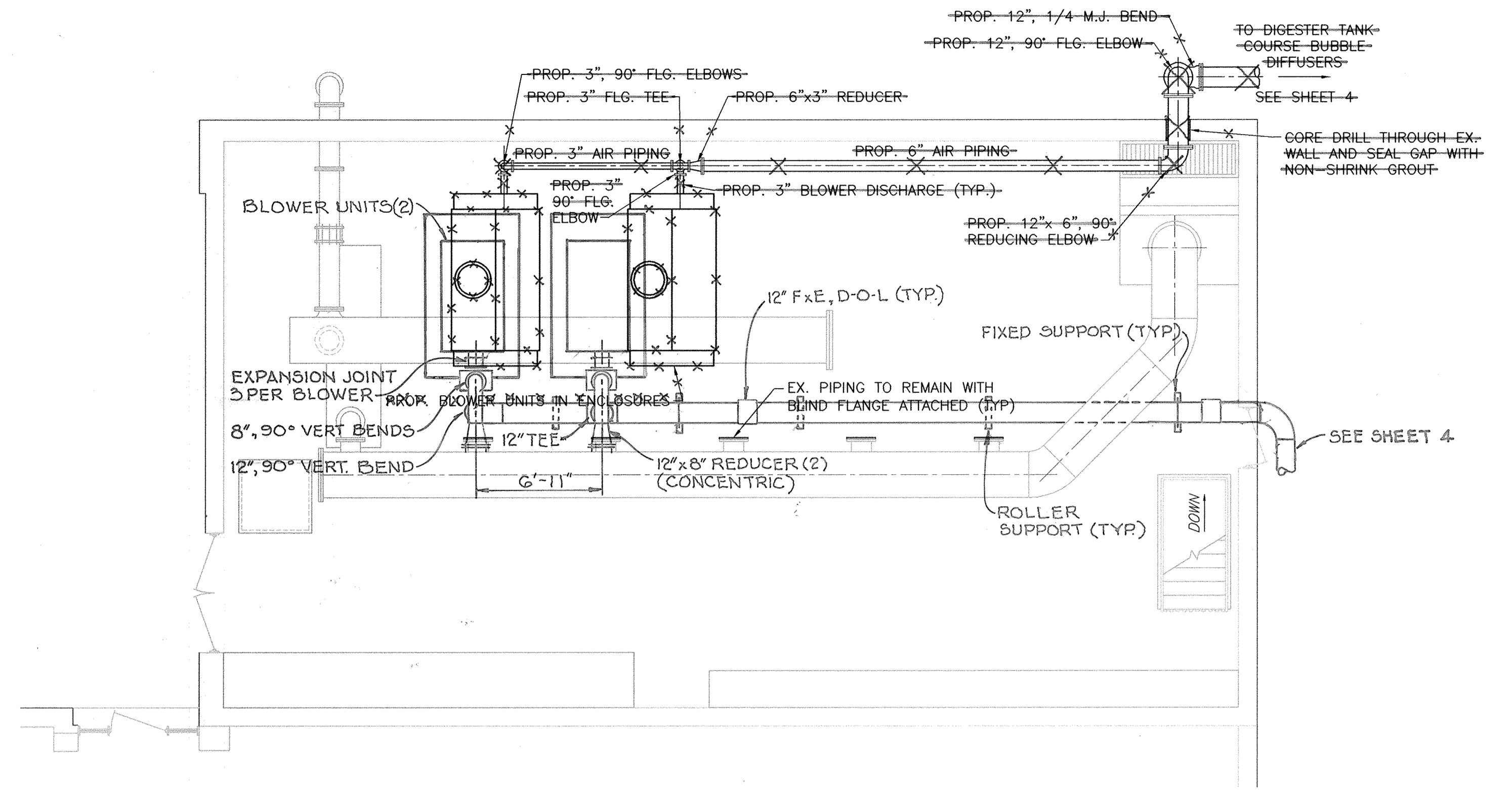
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User: S-7-00001615  
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Printer: HP DesignJet 5000 Series  
Plotter: HP DesignJet 5000 Series  
Scale: 1/2"=1'-0"  
Sheet: 7 of 11



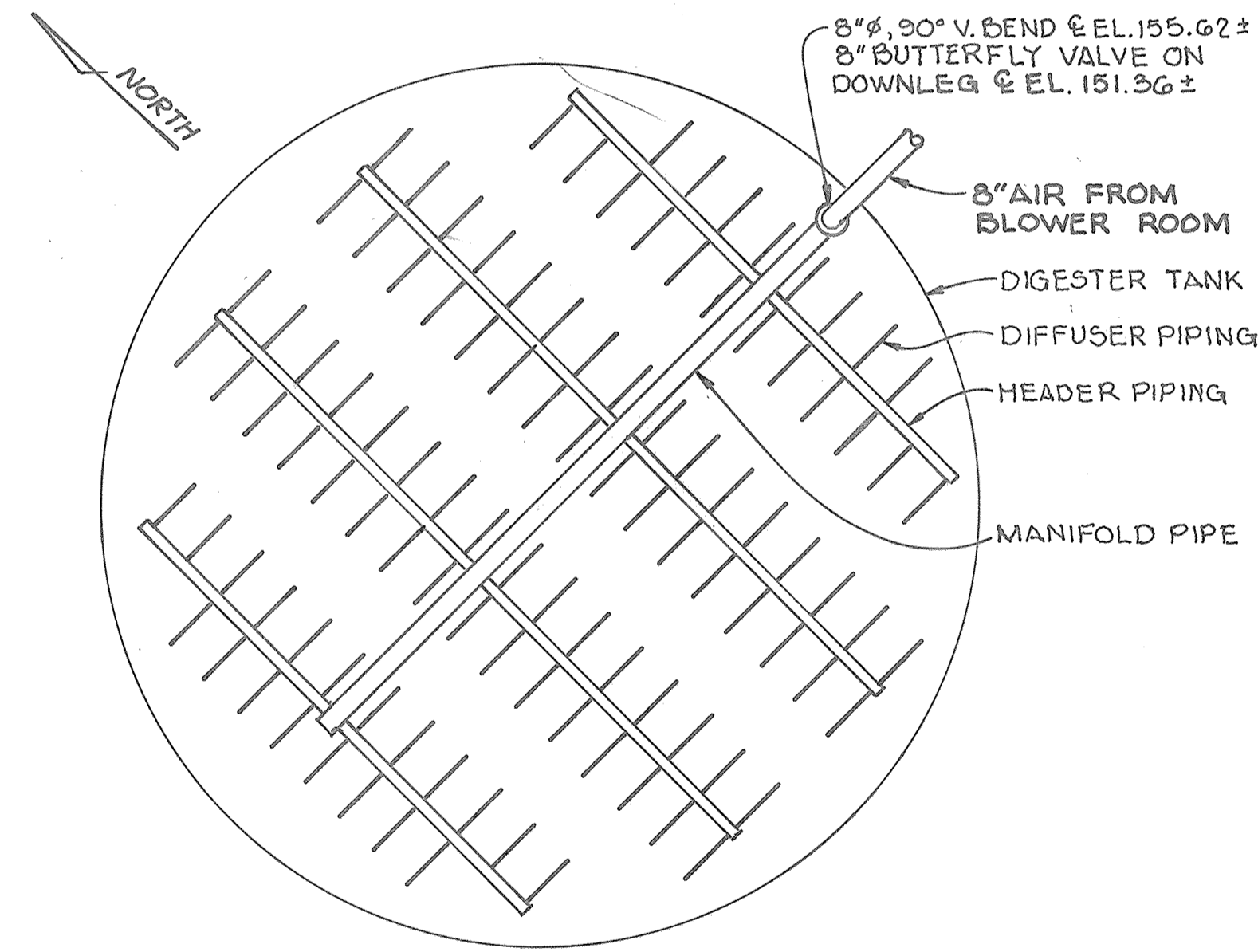
**EXISTING BLOWER ROOM  
DEMOLITION PLAN**

SCALE: 3/16"=1'-0"



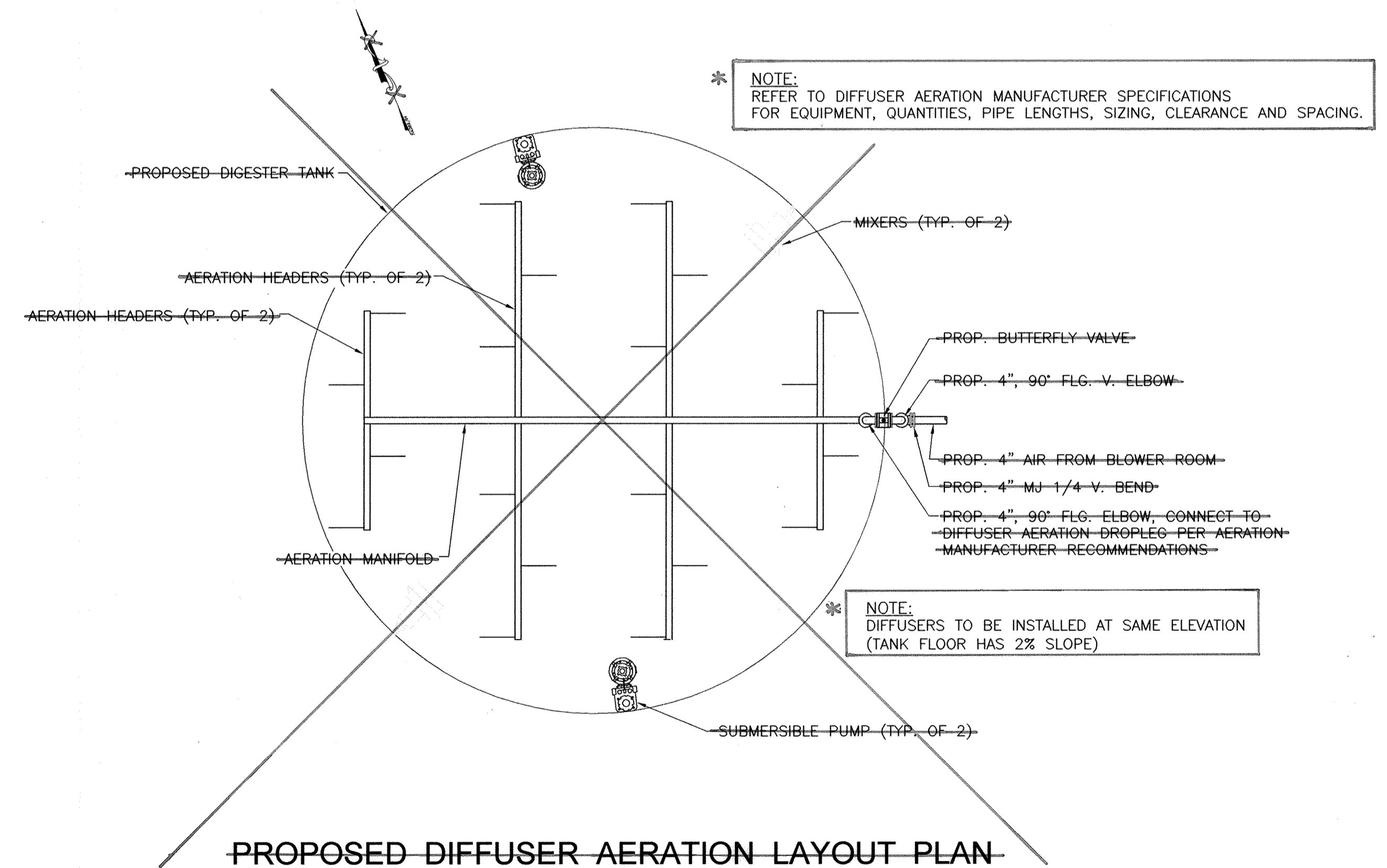
**EXISTING BLOWER ROOM  
PROPOSED PLAN**

SCALE: 3/16"=1'-0"



**DIFFUSER AERATION LAYOUT PLAN**

NOT TO SCALE  
\* SEE NOTES



**PROPOSED DIFFUSER AERATION LAYOUT PLAN**

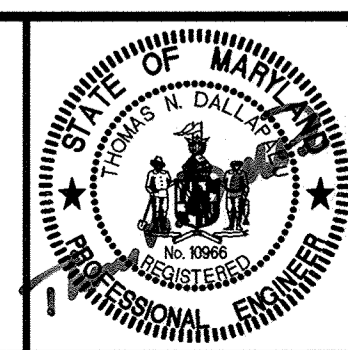
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<b>APPROVED: DEPARTMENT OF PLANNING AND ZONING</b>	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
DIRECTOR	DATE

**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012  
*Thomas W. Deller* 2/8/12  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**  
*Ralph* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE  
*Steve Chen* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE  
*Thomas E. Bull* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE  
*Chun Kim* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3109 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX: 410.265.8875



DES:	RJP
DRN:	CD
CHK:	TND
DATE:	1/7/12
BY	NO.
REVISIONS	DATE

**HEADWORKS BUILDING PLANS AND  
DIFFUSER AERATION LAYOUT PLAN**  
600' SCALE MAP NO. 47 BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**  
CAPITAL PROJECT S-6245  
CONTRACT 20-4695  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE:  
AS  
SHOWN  
SHEET  
8 OF 23

AS BUILTS

Printed by (Customer) on (Plot Date) Feb 07, 2012, 2:41pm  
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 Title: LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)  
 User: Thomas W. Deller  
 Plot Size: 11.0000 x 17.0000  
 XREF: 300 - 300, 300087733 (DWG) (Common) - BDR002E - phase 8.dwg

# ELECTRICAL SYMBOLS

- FLUORESCENT OR INCANDESCENT LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE AND MOUNTING.
- WALL MOUNTED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE.
- WALL MOUNTED COMBINATION EM/EXIT LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE.
- SINGLE POLE TOGGLE SWITCH - 20 AMP, 120 VOLT, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- THREE WAY TOGGLE SWITCH - 20 AMP, 120 VOLT, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- MOTOR RATED SWITCH WITH THERMAL OVERLOAD PROTECTION, MOUNT ADJACENT TO OR ON THE MOTOR BEING CONTROLLED.
- JUNCTION BOX, CEILING OR WALL MOUNTED.
- DOUBLE DUPLEX GROUNDING TYPE RECEPTACLE - 20 AMP, 120 VOLT, NEMA 5-20R, M.H. 18" AFF, UNLESS NOTED OTHERWISE.
- DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER PROTECTION - 20 AMP, 120 VOLT, NEMA 5-20R, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- DISCONNECT SWITCH, AMP, VOLT, POLES AND FUSING AS NOTED ON DRAWING.
- UNLESS OTHERWISE NOTED, FUSIBLE SWITCH COMBINATION MAGNETIC STARTER WITH HOA AND 120 VAC CONTROL CIRCUIT TRANSFORMER, NEMA 1 ENCLOSURE.
- ELECTRIC MOTOR CONNECTION - HORSEPOWER AS NOTED.
- BRANCH CIRCUIT CONDUIT AND WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE. CROSSMARKS AND NUMERALS INDICATE NUMBER AND SIZE OF CONDUCTORS, AND SHOWN ONLY WHERE REQUIRED FOR CLARITY.
- BRANCH CIRCUIT CONDUIT AND WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE, UNDER GROUND OR UNDER SLAB. CROSSMARKS AND NUMERALS INDICATE NUMBER AND SIZE OF CONDUCTORS, AND SHOWN ONLY WHERE REQUIRED FOR CLARITY.
- HOMERUN WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE TO THE REFERENCED PANELBOARD. ARROW HEADS AND NUMERALS INDICATE THE CIRCUIT NUMBERS.
- CONDUIT SEALING FITTING

# ELECTRICAL SYMBOLS CONTINUED

- LIMIT SWITCH
- NOTC TIMING RELAY CONTACT NORMALLY OPEN TIMED CLOSED
- NCTO TIMING RELAY CONTACT NORMALLY CLOSED TIMED OPEN
- NOTO TIMING RELAY CONTACT NORMALLY OPEN TIMED OPEN
- NCTC TIMING RELAY CONTACT NORMALLY CLOSED TIMED CLOSED
- TEMPERATURE SWITCH
- FLOAT SWITCH
- MAGNETIC RELAY COIL
- 480/3 - EQUIPMENT VOLTAGE
- INDICATES PHASE
- INDICATES VOLTAGE
- SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION:

PKT.	HAND	OFF	AUTO
1	X	0	0
2	0	0	X

- X - CLOSED CONTACT  
O - OPEN CONTACT
- CURRENT TRANSFORMER
- INDICATING LIGHT - LETTER INDICATES COLOR:  
A - AMBER G - GREEN  
B - BLUE R - RED  
C - CLEAR W - WHITE
- PHASE OR DIAMETER

# FIRE ALARM SYMBOLS

- FIRE ALARM MANUAL PULL STATION
- FIRE ALARM HORN WITH FLASHING LIGHT. NUMERAL INDICATES CANDELA LEVEL. WALL MOUNTED CEILING MOUNTED IF SUBSCRIPT C IS INDICATED
- SMOKE DETECTOR, CEILING MOUNTED
- HEAT DETECTOR, CEILING MOUNTED
- FIRE ALARM CONTROL PANEL

# ABBREVIATIONS

- A, AMP AMPERE
- AFF ABOVE FINISHED FLOOR
- AIC SYMMETRICAL AMPERE INTERRUPTING RATING
- AL ALUMINUM
- ANCH ANCHOR
- APPROX APPROXIMATE
- BLD BUILDING
- BRKR CIRCUIT BREAKER
- C CONDUIT
- CKT CIRCUIT
- CL CENTERLINE
- CO COMPANY
- CONC CONCRETE
- CONT CONTROL
- CTR CURRENT TRANSFORMER
- CONTROL CONTROL
- DIA DIAMETER
- DN DOWN
- DP DEEP
- DWG DRAWING
- EA EACH
- EC EMPTY CONDUIT
- ELECT'L ELECTRICAL
- EMBED EMBEDMENT DEPTH
- ENCL ENCLOSURE
- EQ EQUAL
- EQUIP EQUIPMENT
- EXIST EXISTING
- EXP EXPANSION
- FC FOOTCANDLE
- FR FROM
- GALV GALVANIZED
- GEC GROUND ELECTRODE CONDUCTOR
- GFCI GROUND FAULT CIRCUIT INTERRUPTER (5 MILLIAMPERE SENSITIVITY)
- GROUND GROUND
- H HIGH
- HP HORSEPOWER
- HT HEATER
- KAIC 1000 AIC
- KVA KILOVOLT-AMPERES
- KW KILOWATTS
- L ANGLE, LENGTH
- LOC LOCATION
- LTS LIGHTS
- MAT'L MATERIAL
- MECH MECHANICAL
- MCB MAIN CIRCUIT BREAKER
- MTD MOUNTED
- NEC NATIONAL ELECTRICAL CODE
- NTS NOT TO SCALE
- OD OUTSIDE DIAMETER
- OH, OHE OVERHEAD ELECTRICAL
- OPN'G OPENING
- P POLE OR PHASE
- PL PLATE
- PNL, PANEL CIRCUIT BREAKER PANELBOARD
- PRI PRIMARY VOLTAGE (ABOVE 600 VOLTS)
- PWR POWER
- QTY QUANTITY
- RCP REACTOR CONTROL PANEL
- RECEPT RECEPTACLE
- RQ'D REQUIRED
- RQM'TS REQUIREMENTS
- SEC SECONDARY VOLTAGE (600 VOLTS OR LESS)
- SPR STANDARD PRACTICE RECOMMENDATION, SIZE FOR CRUSHED STONE
- SS STAINLESS STEEL
- STA STATION, AS IN PUMP STATION
- STR STRUCTURE
- SVC SERVICE
- SURF SURFACE
- SW SWITCH
- T TRANSFORMER
- TEL TELEPHONE
- THRU THROUGH
- TRANS, TRANSF TRANSFORMER OR TRANSFER
- TSTAT THERMOSTAT
- TYP TYPICAL
- UG, UGE UNDERGROUND ELECTRICAL
- UT, UGT UNDERGROUND TELEPHONE
- V VOLTS
- VAC VOLTS A.C.
- W WIDE OR WIRE
- W/ WITH
- WW WIREWAY
- XP EXPLOSION PROOF (CLASS I DIVISION I GROUP D UNLESS NOTED)

# CONDUIT & WIRE SIZE SCHEDULE

(UNLESS OTHERWISE SHOWN)

CIRCUIT BREAKER TRIP	GROUND WIRE SIZE	1 OR 2 POLE		3 POLE	
		CONDUIT	WIRE	CONDUIT	WIRE
15A	1 #12	3/4"	#12	3/4"	#12
20A	1 #12	3/4"	#12	3/4"	#12
30A	1 #10	3/4"	#10	3/4"	#10
40A	1 #10	3/4"	#8	1"	#8
50A	1 #10	3/4"	#8	1"	#8
60A	1 #8	1"	#6	1"	#6
70A	1 #8	1"	#4	1-1/4"	#4
80A	1 #8	1-1/4"	#4	1-1/4"	#4
90A	1 #8	1-1/4"	#2	1-1/4"	#2
100A	1 #8	1-1/4"	#2	1-1/4"	#2

# GENERAL ELECTRICAL CONSTRUCTION NOTES

- LOCATIONS OF LINES AND EQUIPMENT SHALL BE DETERMINED FROM ACTUAL FIELD CONDITIONS. THE OUTLINES OF THE CONSTRUCTION SHOWN ON THE ELECTRICAL DRAWINGS ARE INTENDED ONLY AS A GUIDE TO INDICATE RELATIVE LOCATIONS OF THE WORK. REFER TO THE APPLICABLE DRAWINGS OF OTHER TRADES AND THE EQUIPMENT SUPPLIER'S INSTALLATION DRAWINGS FOR EXACT LOCATIONS AND ARRANGEMENTS.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER RELATION OF HIS WORK TO THE FACILITY STRUCTURES AND TO THE WORK OF OTHER TRADES. NO ADDITIONAL COMPENSATION NOR EXTENSION OF COMPLETION TIME WILL BE GRANTED FOR EXTRA WORK CAUSED BY THE LACK OF COORDINATION.
- DUE TO DIFFERENCES IN VARIOUS MANUFACTURER'S EQUIPMENT CONNECTIONS AND MOTOR CURRENTS, THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS INSTALLATION WITH THAT EQUIPMENT ACTUALLY FURNISHED AND SHALL VERIFY THE CORRECT SIZES AND DETAILS OF INSTALLATION BEFORE ROUGHING IN.
- RECEPTACLES, SWITCHES, THERMOSTATS, AND OTHER SIMILAR ITEMS SHALL ALIGN VERTICALLY OR HORIZONTALLY WITH EACH OTHER, WITH THE STRUCTURE AND OTHER FEATURES THEREOF WHEN IT APPEARS OBVIOUS AND LOGICAL THAT THEY SHOULD. THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE GENERAL CONSTRUCTION SUPERINTENDENT REGARDING THIS REQUIREMENT AND ALSO FOR THE LOCATION OF EQUIPMENT, DOOR SWINGS, BLOCK COURSING, ALIGNMENT OF THIS AND OTHER SIMILAR FEATURES BEFORE ROUGHING-IN FOR THESE COMPONENTS.
- ALL CONDUITS ENTERING UNDERGROUND STRUCTURES SHALL HAVE WATER-TIGHT EXPANSION WALL SEALS.
- THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
- ALL CONDUITS WITH WIRING ENTERING UNDERGROUND STRUCTURES WHERE WATER MIGHT ENTER THE CONDUIT AND DRAIN INTO THE STRUCTURE, SHALL BE FITTED WITH WATER-TIGHT BUSHINGS WITH SEALING COMPOUND SUCH AS OZ/GEDNEY STYLE CSB.
- ALL ABOVE GROUND RACEWAYS & RACEWAYS INSIDE STRUCTURES SHALL BE RUN EXPOSED.

- CONTACT - NORMALLY OPEN
- CONTACT - NORMALLY CLOSED
- OVERLOAD RELAY HEATER
- MAGNETIC STARTER WITH NEMA SIZE INDICATED
- CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
- FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
- SWITCH - CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
- LIGHTNING ARRESTER
- FUSE
- GROUND
- TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE
- PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
- PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
- REMOTE DEVICE

# APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

# PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013

*Drew Wayne Klein* 2/7/12  
Signature of Engineer Date

# DEPARTMENT OF PUBLIC WORKS

*Jay De...* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE

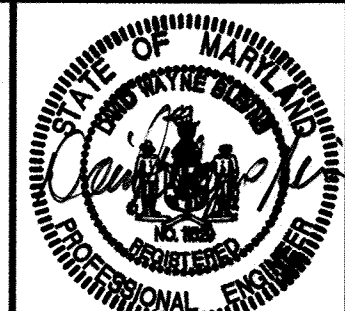
*Thomas E. Suttler* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE

*Sheri...* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE

*...* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

# Dewberry

Dewberry & Davis LLC  
3120 LORD BALTIMORE DRIVE  
SUITE 211  
BALTIMORE, MD 21244-2882  
410.265.9500  
FAX: 410.265.8875



DES:	DB
DRN:	ST
CHK:	DB
DATE:	2/7/12
BY:	NO.
NO.	REVISIONS
DATE:	600' SCALE MAP NO. 47
DATE:	BLOCK NO. 24

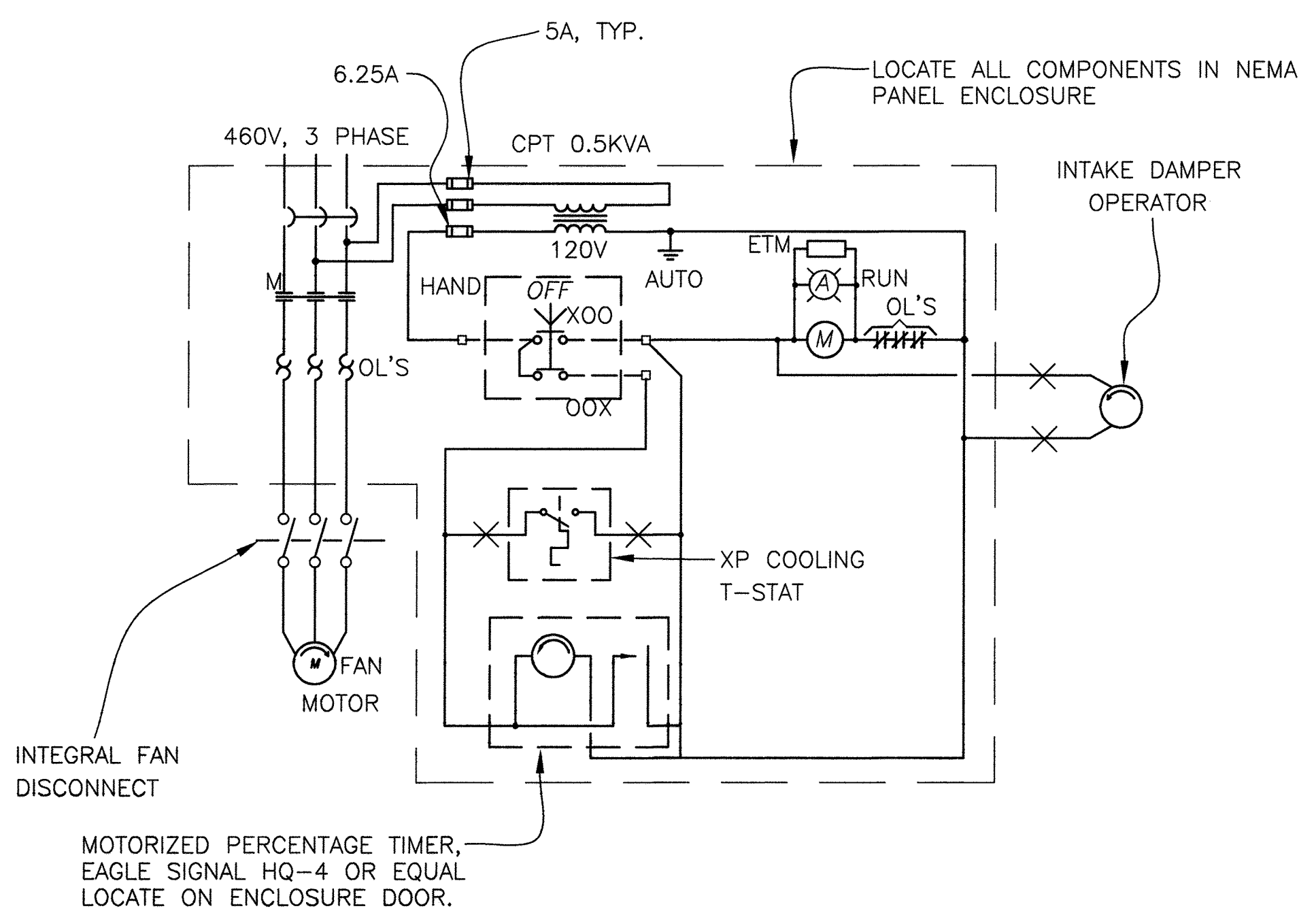
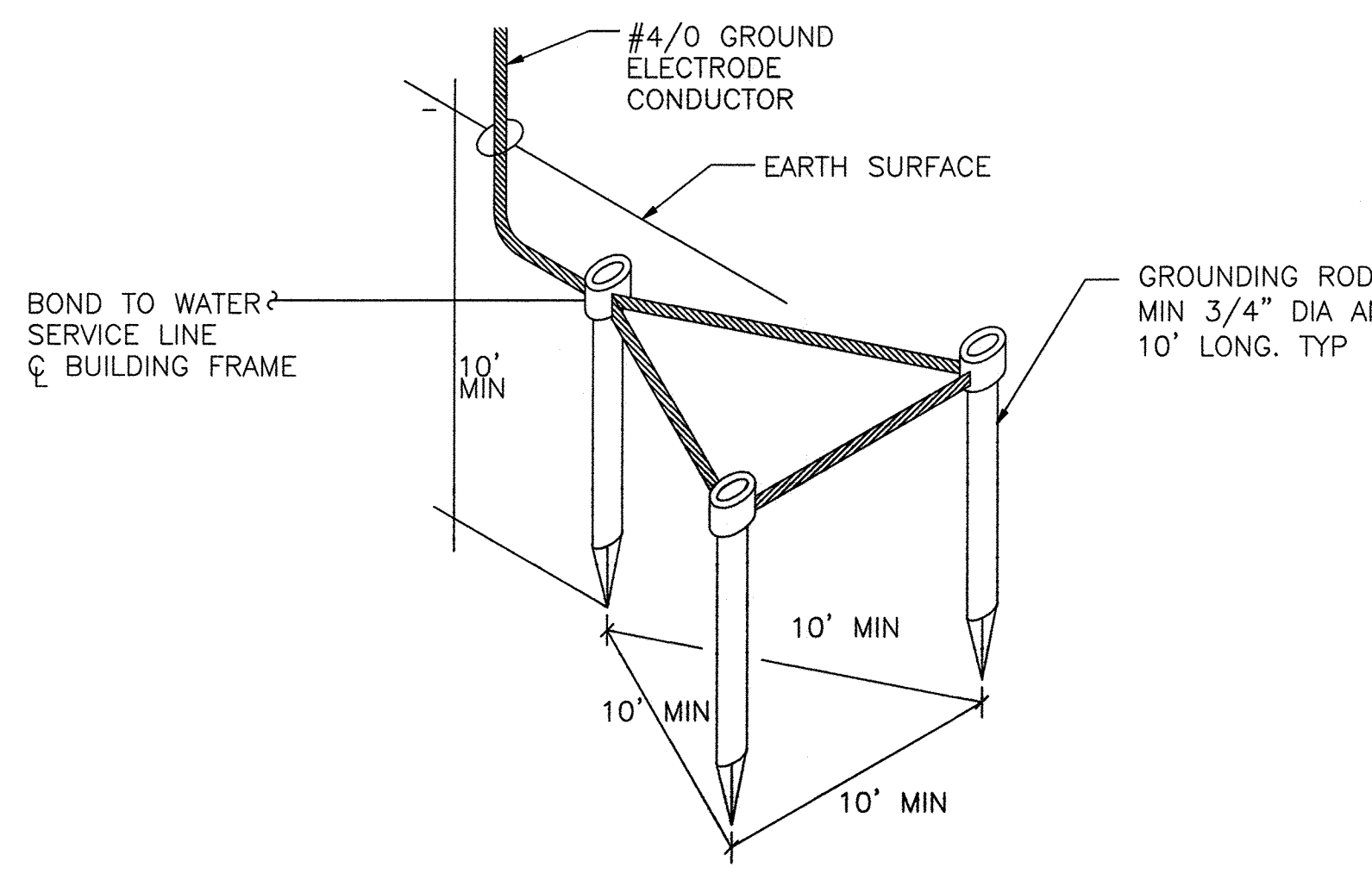
# E1 ELECTRICAL SYMBOLS AND NOTES

# LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)

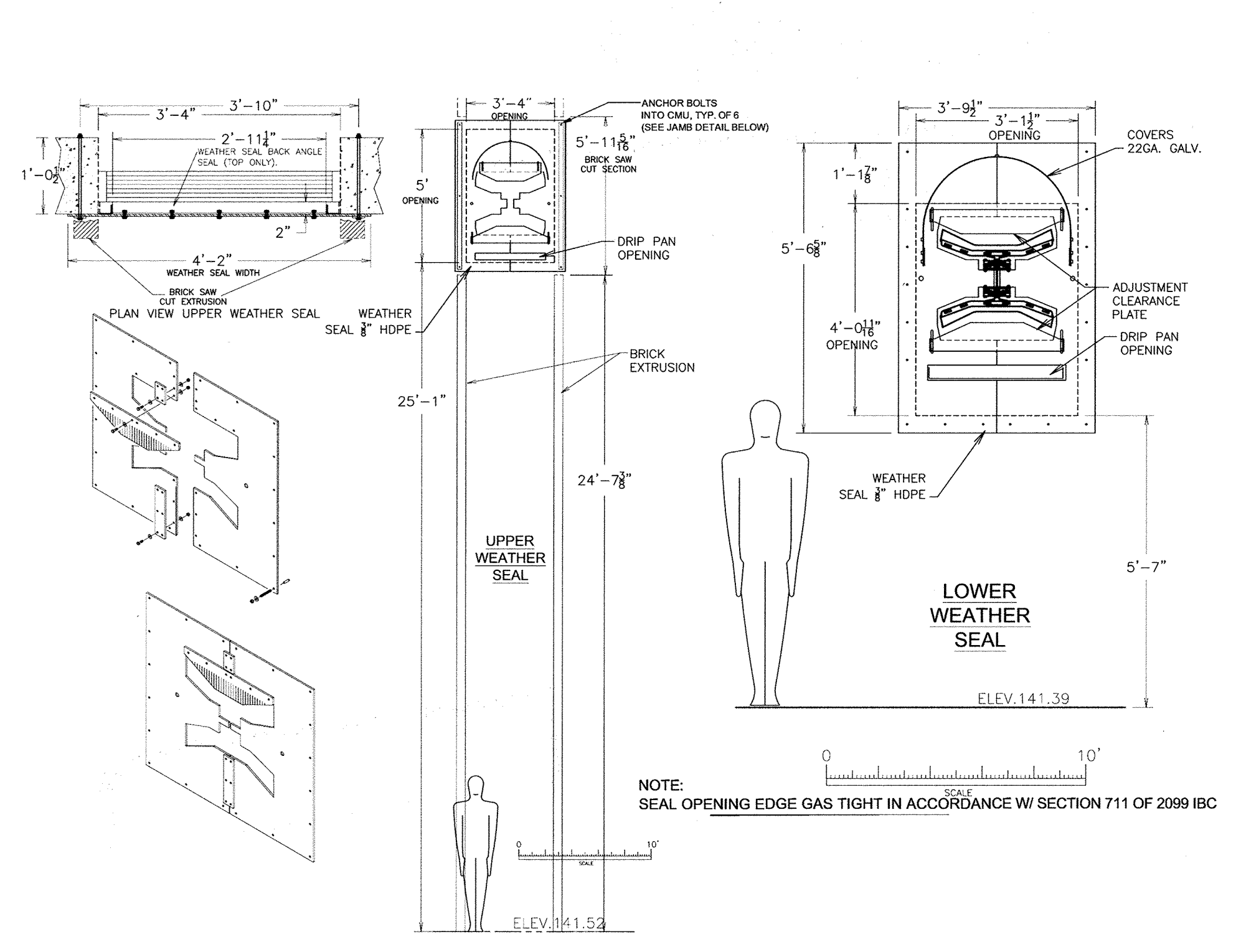
CAPITAL PROJECT S-6245  
CONTRACT 20-4700  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 8 OF 11

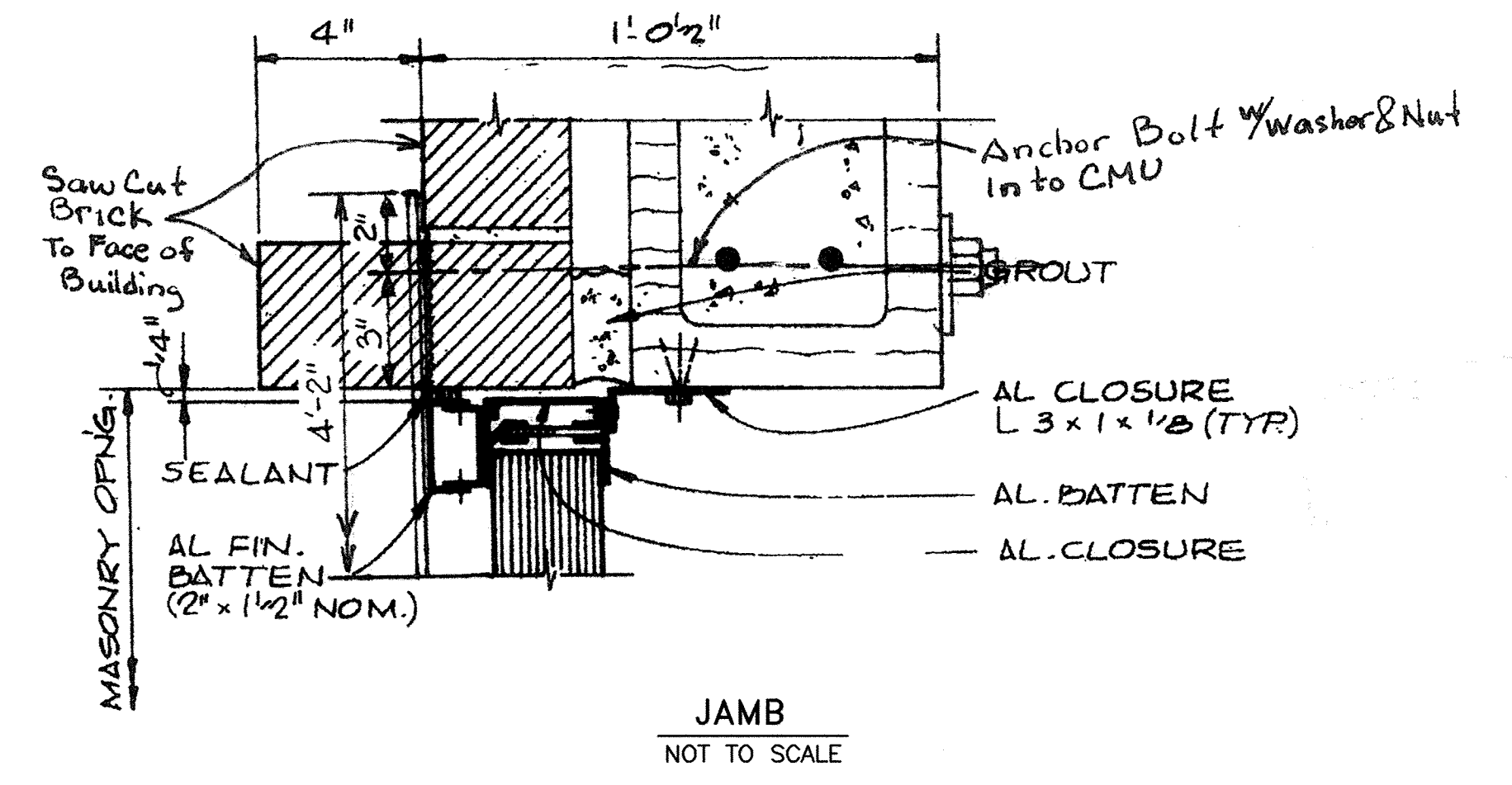
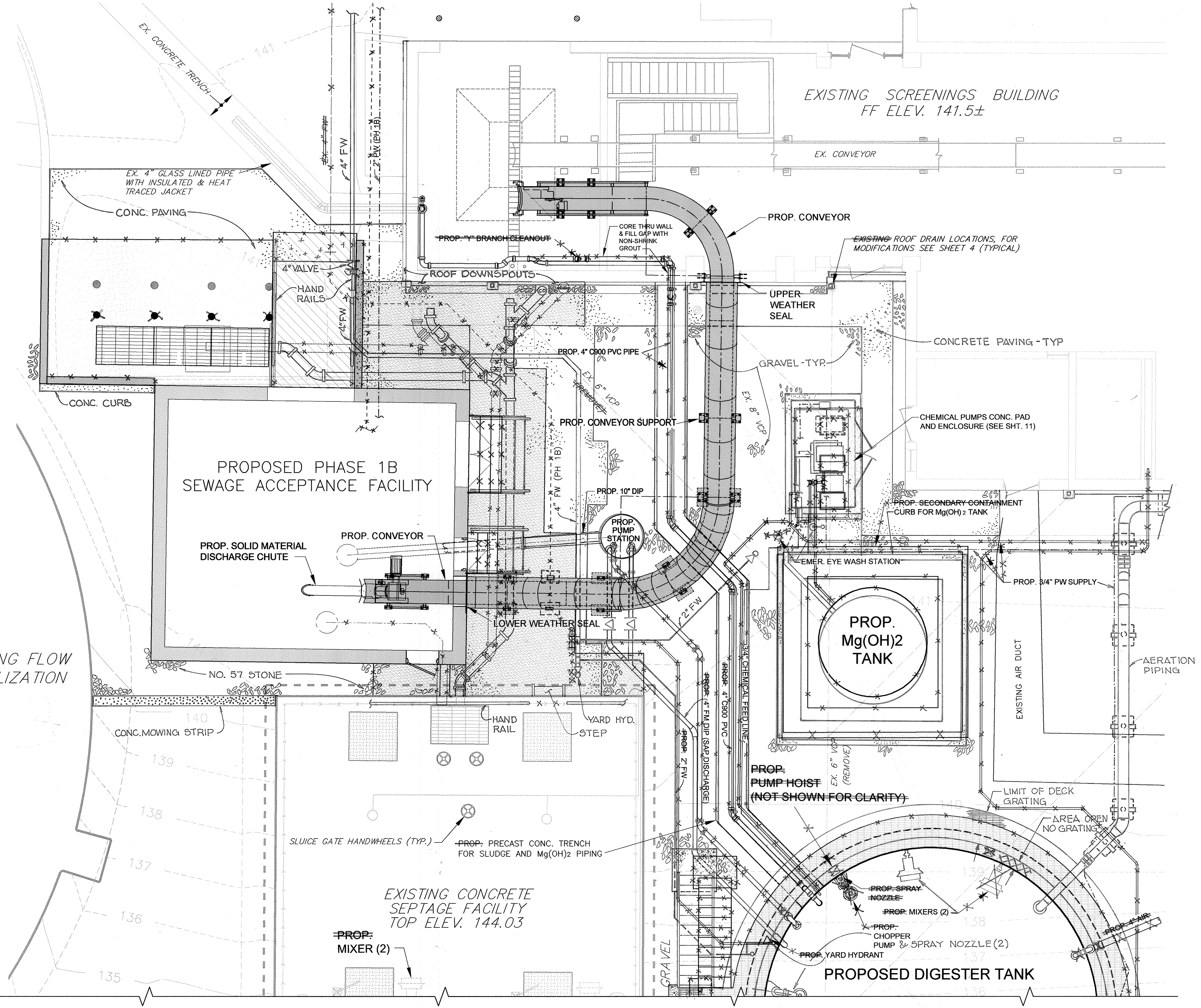
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 User: (Dewberry) - 11137am  
 Plot Date: 2/7/12 4:30pm  
 Plotter: (Dewberry)







UPPER AND LOWER WEATHER SEAL DETAILS FOR BUILDING PENETRATIONS  
NOT TO SCALE



EXISTING FLOW EQUALIZATION

EXISTING CONCRETE SEPTAGE FACILITY  
TOP ELEV. 144.03

PLAN  
SCALE: 1" = 5'

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

**PROFESSIONAL CERTIFICATION**

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*Thomas N. Dalletta*      2/8/12  
Signature of Engineer      Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*[Signature]*      2/9/12      DATE  
DIRECTOR OF PUBLIC WORKS

*[Signature]*      2/9/12      DATE  
CHIEF, BUREAU OF UTILITIES

*[Signature]*      2/9/12      DATE  
CHIEF, BUREAU OF ENGINEERING

*[Signature]*      2/9/12      DATE  
CHIEF, UTILITY DESIGN DIVISION

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX: 410.265.8875



DES:	RJP
DRN:	PWR
CHK:	TND
DATE:	1/7/12
BY:	NO.
REVISIONS:	DATE

**SCREENINGS CONVEYOR  
PLAN AND DETAILS**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

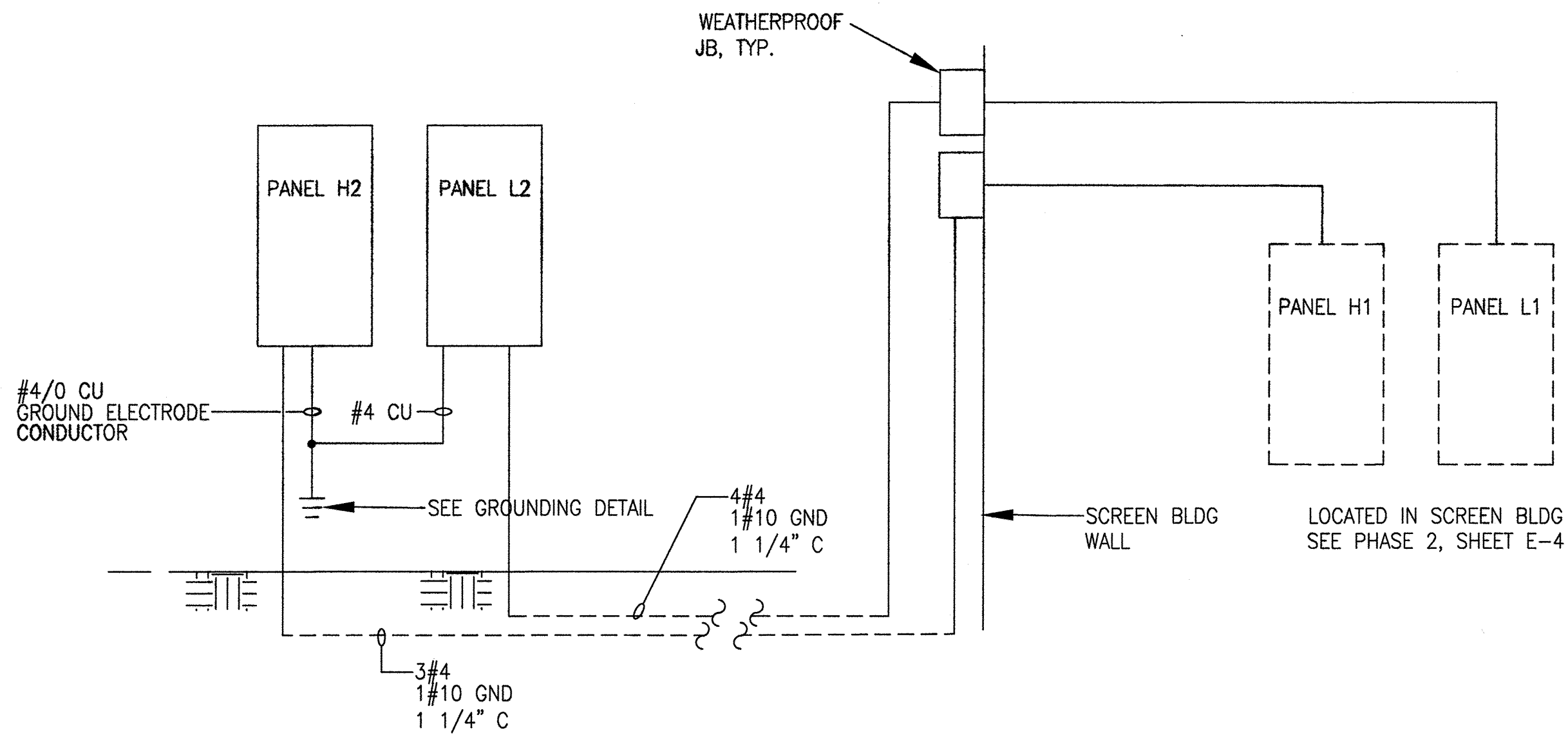
CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE:  
AS SHOWN

SHEET  
9 OF 23

AS BUILTS



**1 ELECTRIC POWER RISER DIAGRAM**  
SCALE: NOT TO SCALE

NOTE: SEE SHT. E-4 FOR LOCATION OF PANELS.

PANEL SCHEDULE													
PANEL: L2		60 AMPS, MAIN CIRCUIT BREAKER						PHASE: 3					
POLE SPACES: 18		MOUNTING: SURFACE						WIRE: 4					
LOCATION: SAP		120/208 VOLTS						NEMA 3R ENCLOSURE					
LOAD	KW/PHASE			CIR/BKR			WIRE			LOAD			
	A	B	C	NO.	TRIP	NO.	NO.	NO.	A	B	C		
LIGHTS	0.42			1	20	12	1	A	2			SPARE	
LIGHTS		1.1		1	20	12	3	B	4			SPARE	
AIR COMP.			0.9	2	20	12	5	C	6			SPARE	
GAS DETECTOR		0.9					7	A	8	12	2	15	1
WATER HEATER		0.4		1	15	12	9	B	10				1
ACCESS CTR	0.8			0.67	1	20	12	11	C	12	12	1	20
SPACE							13	A	14				0.6
SPACE							15	B	16				RECEPTACLES
SPACE							17	C	18				SPACE

SUITABLE FOR SERVICE ENTRANCE EQUIPMENT

PANEL SCHEDULE													
PANEL: H2		60 AMPS, MAIN CIRCUIT BREAKER						PHASE: 3					
POLE SPACES: 30		MOUNTING: SURFACE						WIRE: 3					
LOCATION: SAP		480 VOLTS						NEMA 3R ENCLOSURE					
LOAD	KW/PHASE			CIR/BKR			WIRE			LOAD			
	A	B	C	NO.	TRIP	NO.	NO.	NO.	A	B	C		
UH-1	3.3			3	20	12	1	A	2			UH-2	
		3.3					3	B	4				
			3.3				5	C	6			3.3	
EF-1	0.3			3	15	12	7	A	8	12	3	20	1
		0.3					9	B	10				2
			0.3				11	C	12				2
SLUICE GATES	0.5			3	15	12	13	A	14				3
		0.5					15	B	16				
			0.5				17	C	18				
PLUG VALVE	0.3			3	15	12	19	A	20				3
		0.3					21	B	22				15
			0.3				23	C	24				
SPACE							25	A	26				SPACE
							27	B	28				SPACE
							29	C	30				SPACE

SUITABLE FOR SERVICE ENTRANCE EQUIPMENT

FAN SCHEDULE										
EQUIP. NO.	TYPE	AIR FLOW (CFM)	EXTERNAL STATIC WG	RPM	HP	VOLTAGE PHASE	MOTOR TYPE	CONTROL TYPE	FEATURES	MODEL
EF-1	BELT DRIVE SIDE WALL CENTRIFUGAL - ALUMINUM CONSTRUCTION, STAINLESS STEEL SHAFT AND FASTENERS, MOUNT AT EAVE HEIGHT	950	0.2	947	1/4	460/3	EXP	TSTAT AND TIMER AS DETAILED	AUTO BELT TENSIONERS	GREENHECK CWB-121-4

LIGHT FIXTURE SCHEDULE					
MARK	SYMBOL	DESCRIPTION	LAMP	MANUFACTURER TYPE	REMARKS
A	□	2 LAMP 4' FLUORESCENT WHITE ENAMEL OPEN REFLECTOR. 8% UPLIGHT. 120 VOLT	2-32W T8	LITHONIA LA MULTI-TAP BALLAST	PENDANT MOUNT UP 10'
B	○	METAL HALIDE CLASS I, DIVISION 1. EPOXY COATED ALUMINUM BODY, GLASS GLOBE, POLYESTER DOME HOOD. 120 VOLT	175 W. PULSE START MH	APPLETON CODE MASTER JR W/ PULSE START MULTI-TAP BALLAST	PENDANT MOUNT UP 13'
C	□	WALL MOUNT COMPACT FLUORESCENT OUTDOOR WALL MOUNT. CAST ALUMINUM BODY, GLASS LENS, NATURAL ALUMINUM FINISH	2-42 W TRT	LITHONIA TWF W/ MULTI-TAP BALLAST	WALL MOUNT ON BUILDING. HEIGHT AS DIRECTED BY THE ENGINEER. PROVIDE PHOTO CONTROL.
D	□	WALL MOUNT COMBINATION EM/EXIT WALL MOUNT FIXTURE. WITH REMOTE HEAD CLASS 1, DIV. 1	3-14W TUNGSTEN HALOGEN	CROUSE HINDS ELPS502 EXD GB AND EVLA12	WALL MOUNT ABOVE DOOR

HVAC LOUVER SCHEDULE							TYPE:	REMARKS
MARK NO.	TYPE	USE	HxW (IN)	FREE AREA	CONSTRUCTION			
L-1	STATIONART EXTRUDED ALUMINUM, DRAINABLE BLADE	INTAKE	18"x54"	2.26	EXTRUDED ALUMINUM	RUSKIN GFL800D DRAINABLE BLADE	SEE NOTES-1, 2, 3.	
L-2	MOTORIZED ADJUSTABLE DRAINABLE BLADE LOUVER. MOTOR OPEN, SPRING CLOSED	INTAKE	36"x36"	2.45	EXTRUDED ALUMINUM	RUSKIN ELM811D 120 VAC ACTUATOR IN CLASS 1, DIV 1 HOUSING	SEE NOTES-1, 2, 4.	

**NOTES:**

- COLOR TO MATCH BUILDING COLOR.
- PROVIDE REMOVABLE INTERIOR ALUMINUM BIRD SCREEN
- MOUNT ABOVE DOOR
- MOUNT TOP AT BUILDING EAVE HEIGHT

ELECTRIC HEATER SCHEDULE					TYPE:
MARK NO.	TYPE	CAPACITY	VOLTS/PHASE	DESCRIPTION	
WH-1	INSTITUTIONAL SLOPE TOP ELECTRIC WALL CONVECTOR	1500 W	480/1	4' LENGTH X 5" DEPTH STEEL CONSTRUCTION, STAINLESS STEEL ELEMENT, INTEGRAL THERMOSTAT AND THERMAL OVERLOAD	TPI 8800 SERIES MOUNT BOTTOM UP 5"
UH-1/UH-2	HAZARDOUS LOCATION HORIZONTAL SUSPENSION ELECTRIC UNIT HEATER	10 KW	480/3	STEEL AND STAINLESS STEEL CONSTRUCTION, THERMAL CUTOUT, INTEGRAL DISCONNECT, CONTACTOR, AND TRANSFORMER, WALL MOUNTED THERMOSTAT, WALL MOUNTING BRACKET	TPI HLA SERIES WITH HLT THERMOSTAT MOUNT BOTTOM UP 8'
UH-3	COMPACT HORIZONTAL SUSPENSION ELECTRIC UNIT HEATER	1.9 KW	208/1	INTEGRAL THERMOSTAT W/POSITIVE OFF MOUNTING BRACKET	BERKO PHFP25 MOUNT BOTTOM UP 7'6"

REFER TO EXHIBIT E FOR THE AS CONSTRUCTED PANEL SCHEDULES

AS BUILT

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE \_\_\_\_\_

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE \_\_\_\_\_

\_\_\_\_\_  
DIRECTOR      DATE \_\_\_\_\_

**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013

*Dennis Wayne Klein*      2/7/12  
Signature of Engineer      Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*Ray K. Zlatn*      2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE

*Thomas E. Butler*      2/9/12  
CHIEF, BUREAU OF ENGINEERING      DATE

*Steve Chan*      2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE

*Debra L. ...*      2/9/12  
CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
3120 LORD BALTIMORE DRIVE  
SUITE 211  
BALTIMORE, MD 21244-2882  
410.285.9200  
FAX: 410.285.8875

*[Professional Engineer Seal]*

DES: DB  
DRN: ST  
CHK: DB  
DATE: 2/7/12

BY NO.      REVISIONS      DATE

**E-2 ELECTRICAL SCHEDULES & DETAILS**

600' SCALE MAP NO. 47      BLOCK NO. 24

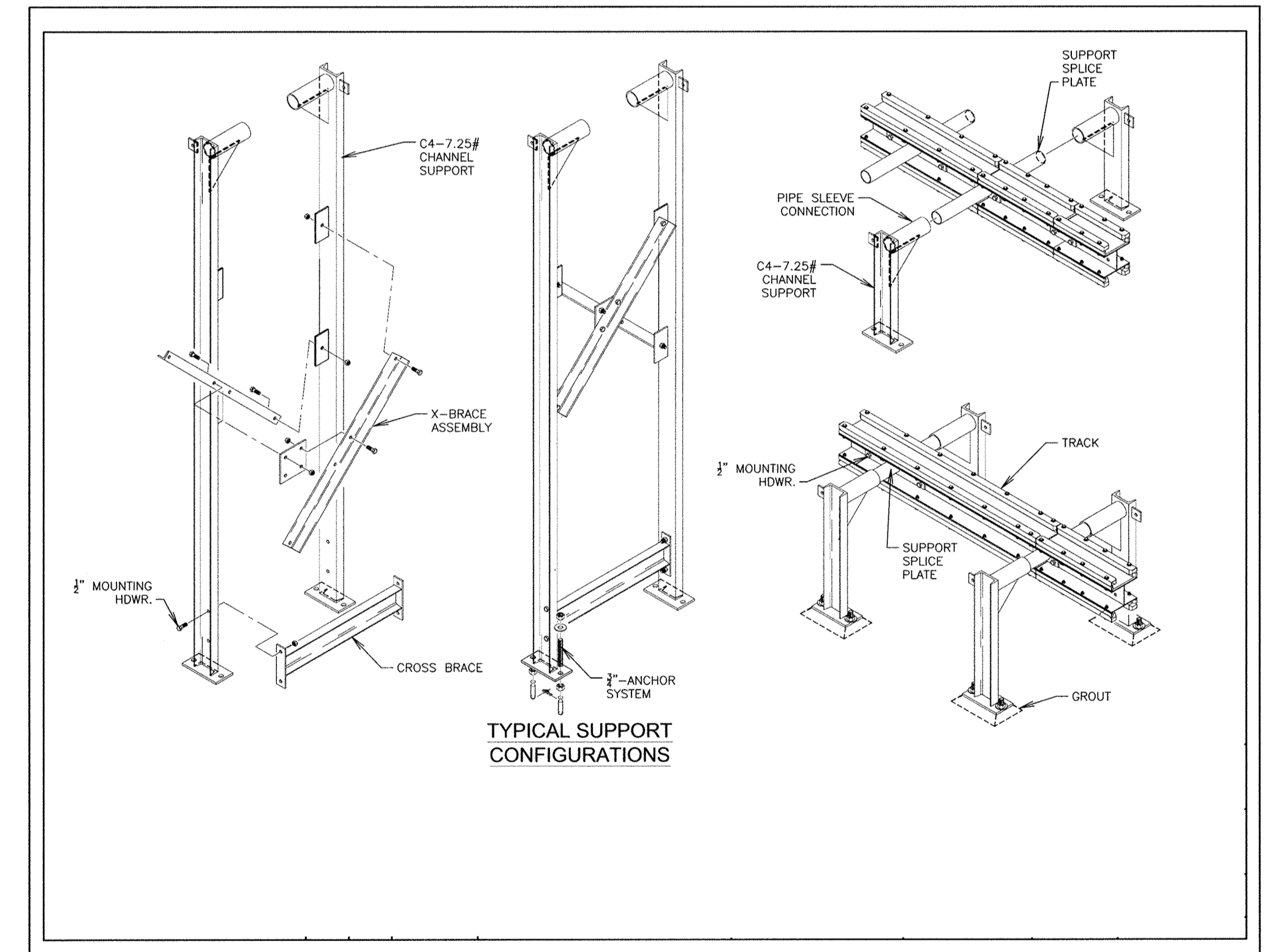
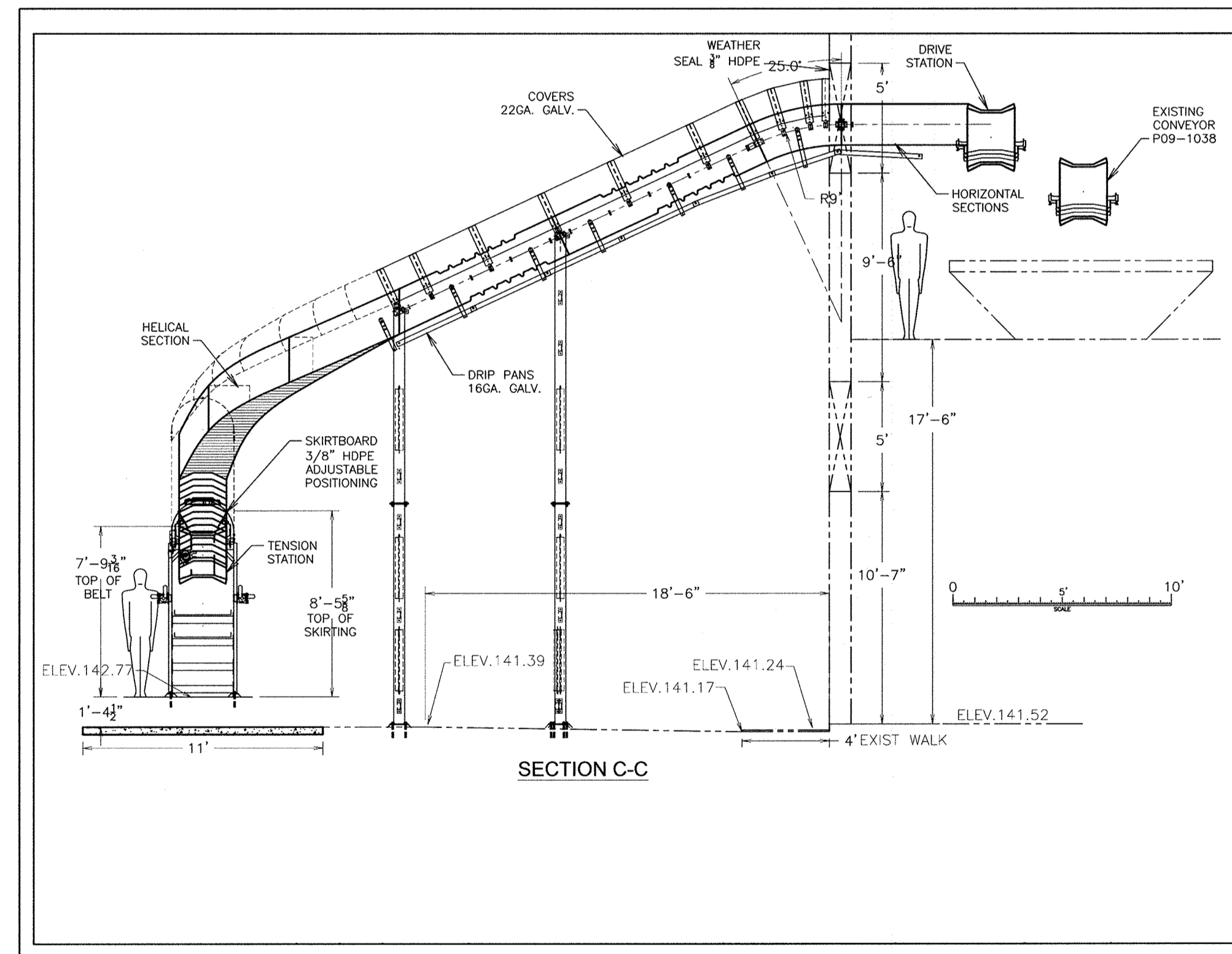
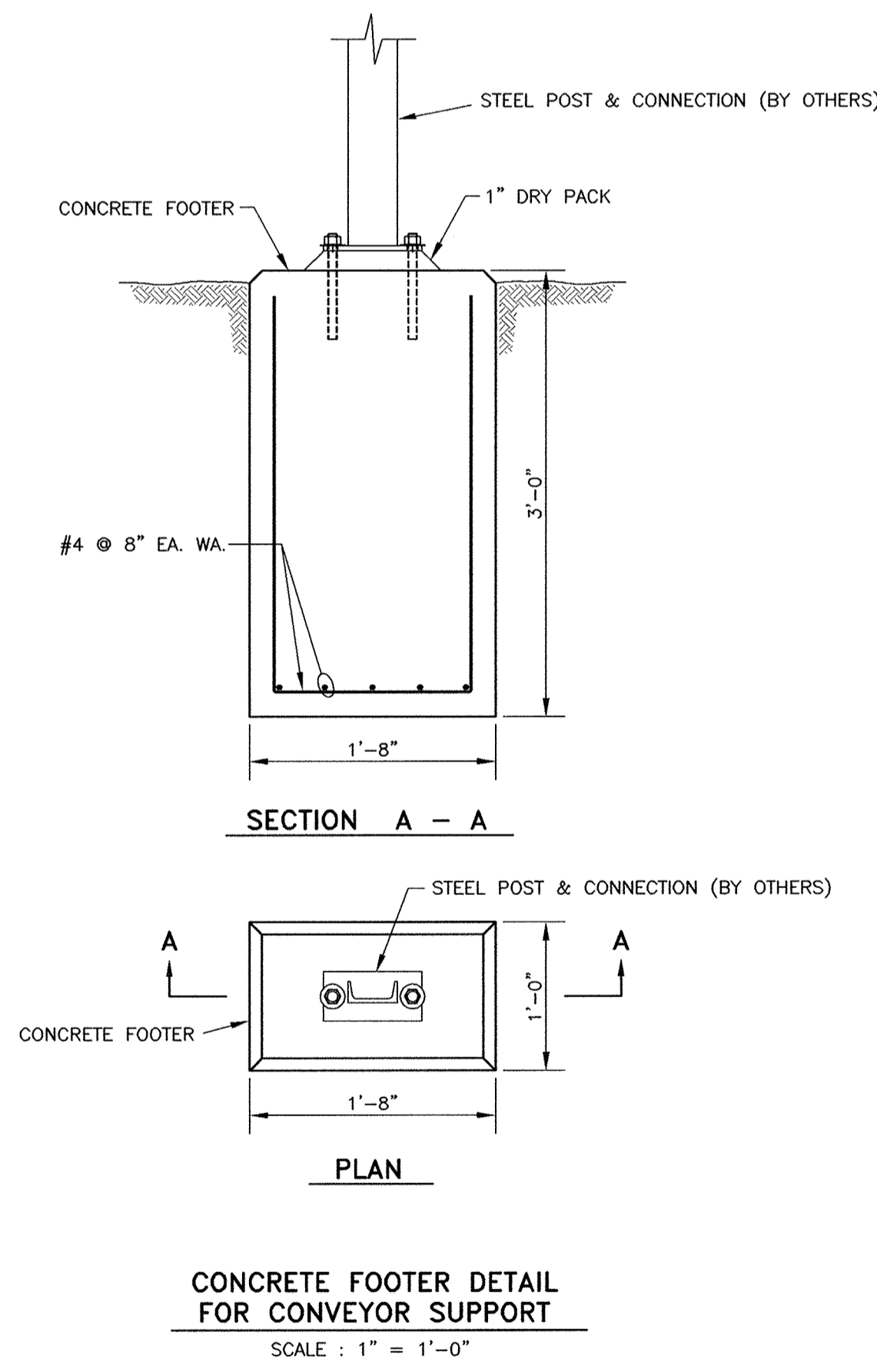
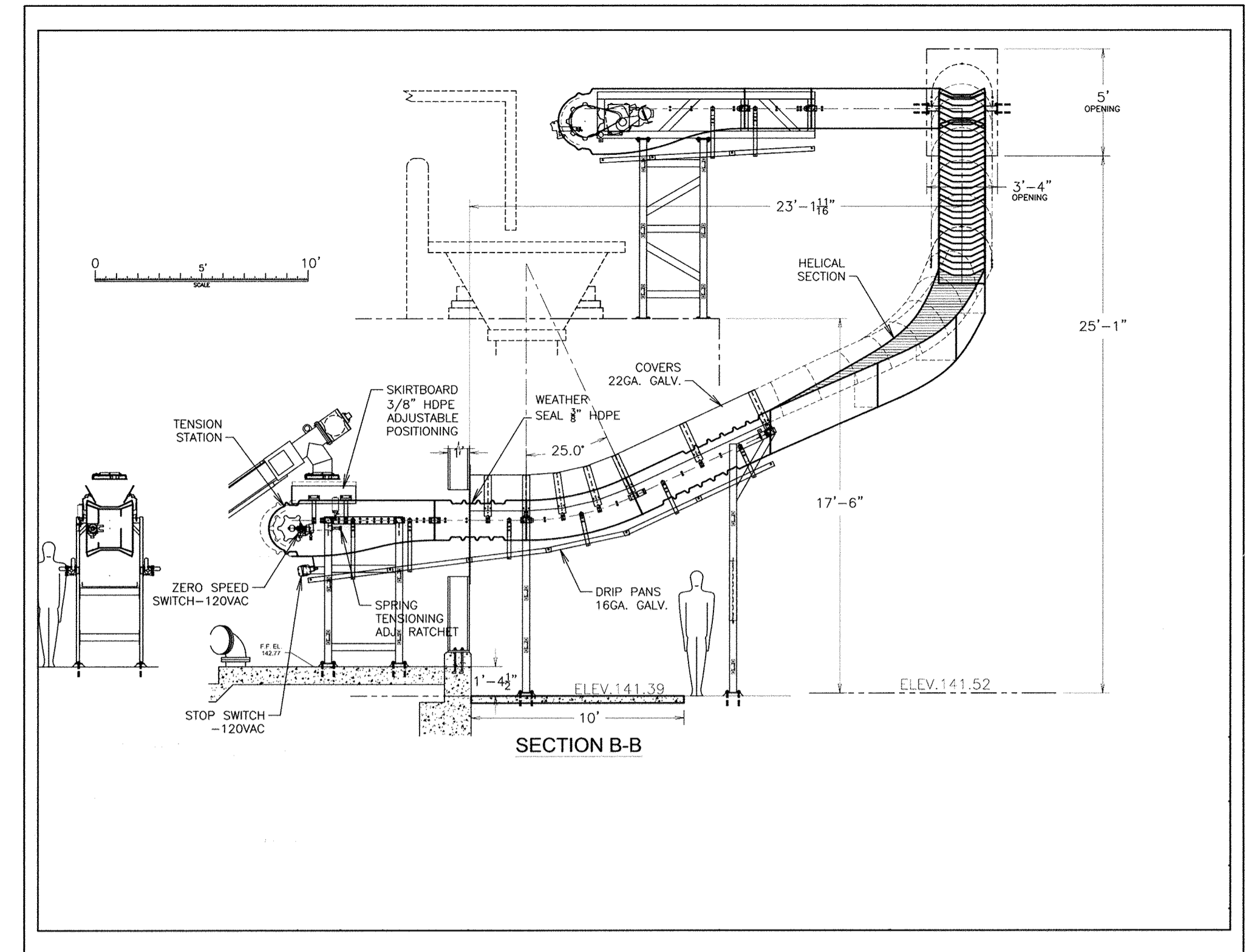
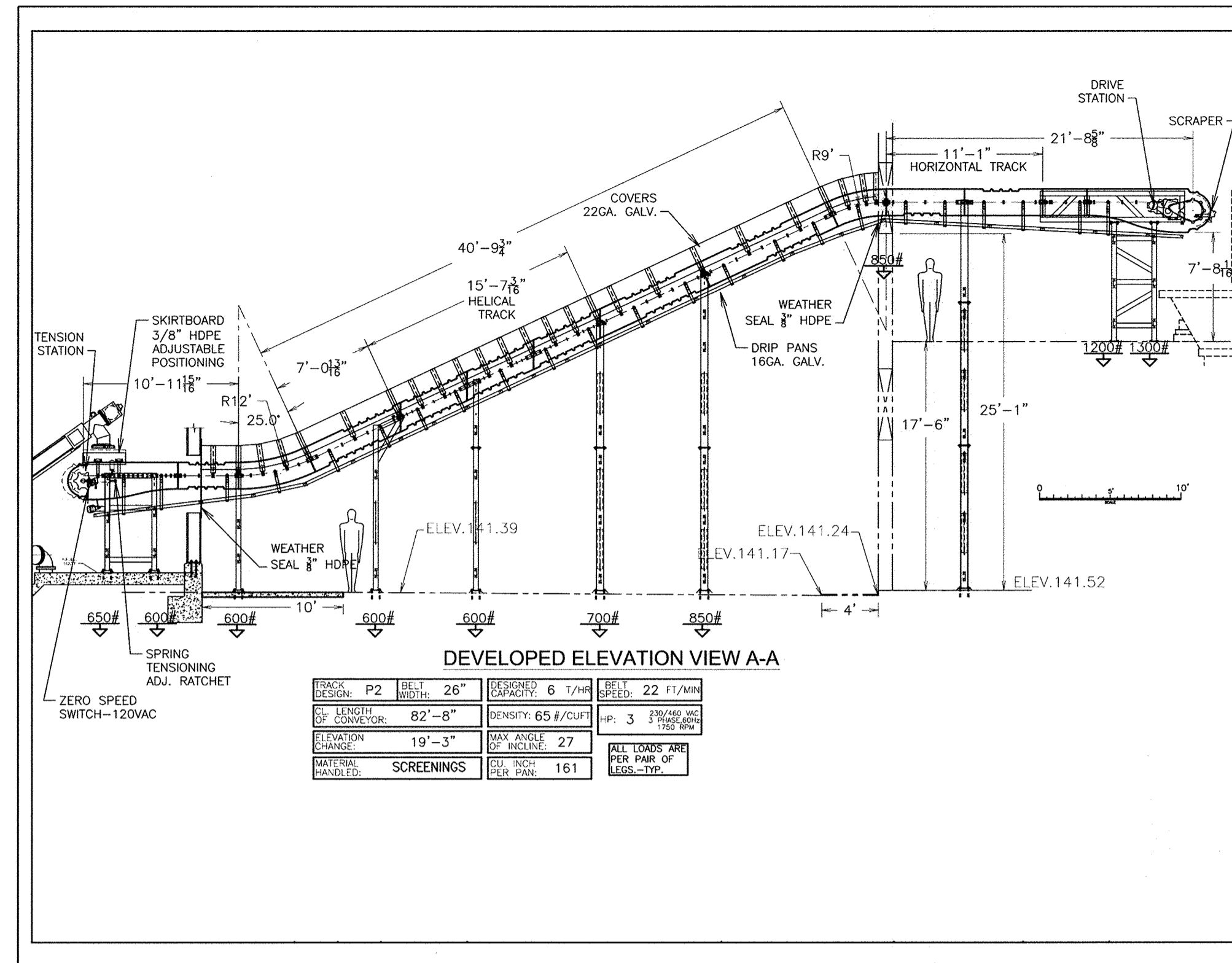
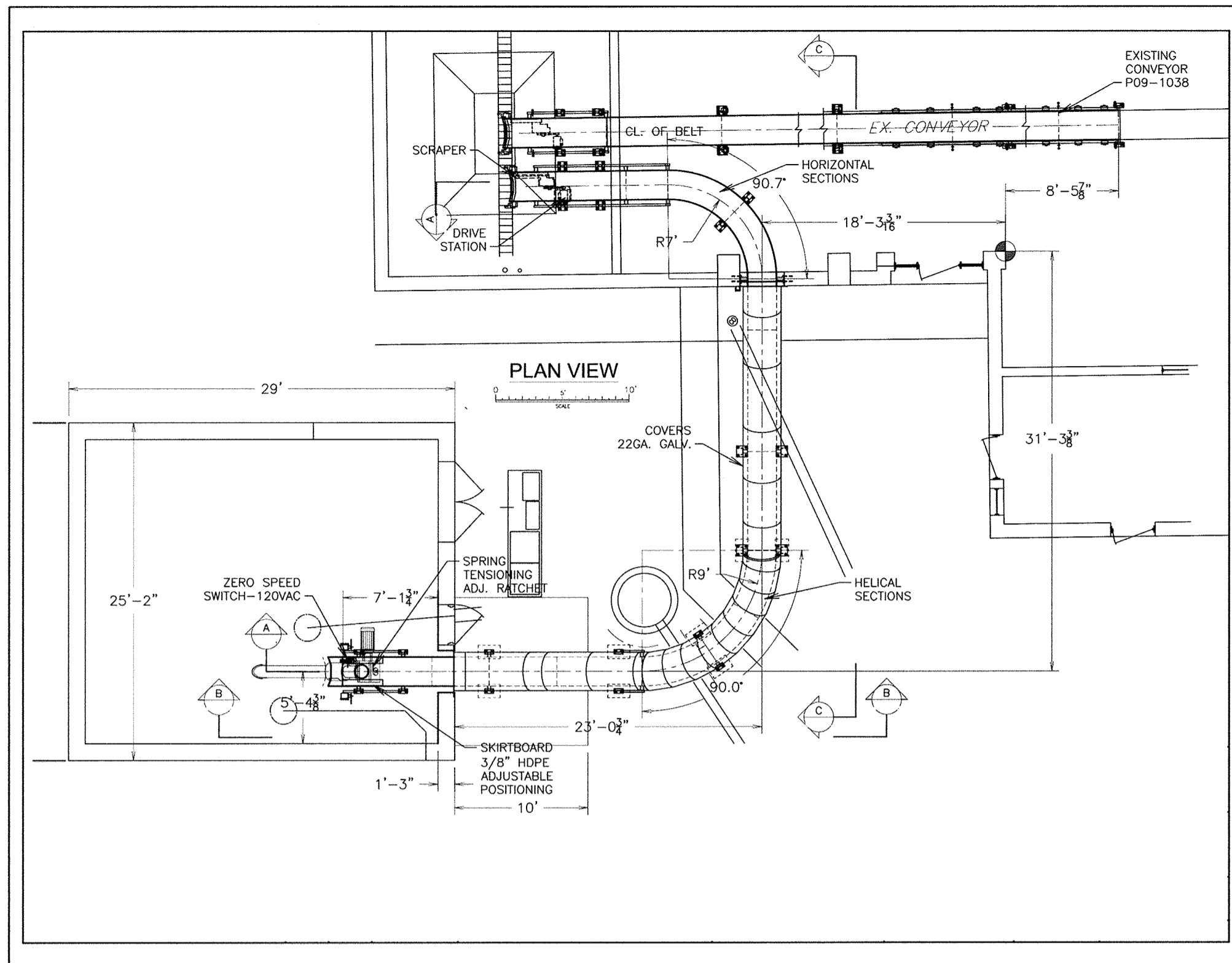
**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4700

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 9 OF 11

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User: dbrun



**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

**PROFESSIONAL CERTIFICATION**

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

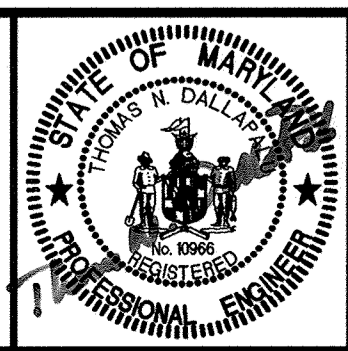
*Thomas W. Doherty*      2/8/12  
Signature of Engineer      Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*Joseph J. ...* 2/8/12      *Marcus S. ...* 2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE      CHIEF, BUREAU OF ENGINEERING      DATE

*Silvia ...*      *...* 2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE      CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.265.9500  
FAX: 410.265.8875



DES:	RJP/KY				
DRN:	PWR				
CHK:	TND				
DATE:	1/7/12	BY	NO.	REVISIONS	DATE

**SCREENINGS CONVEYOR DETAILS**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

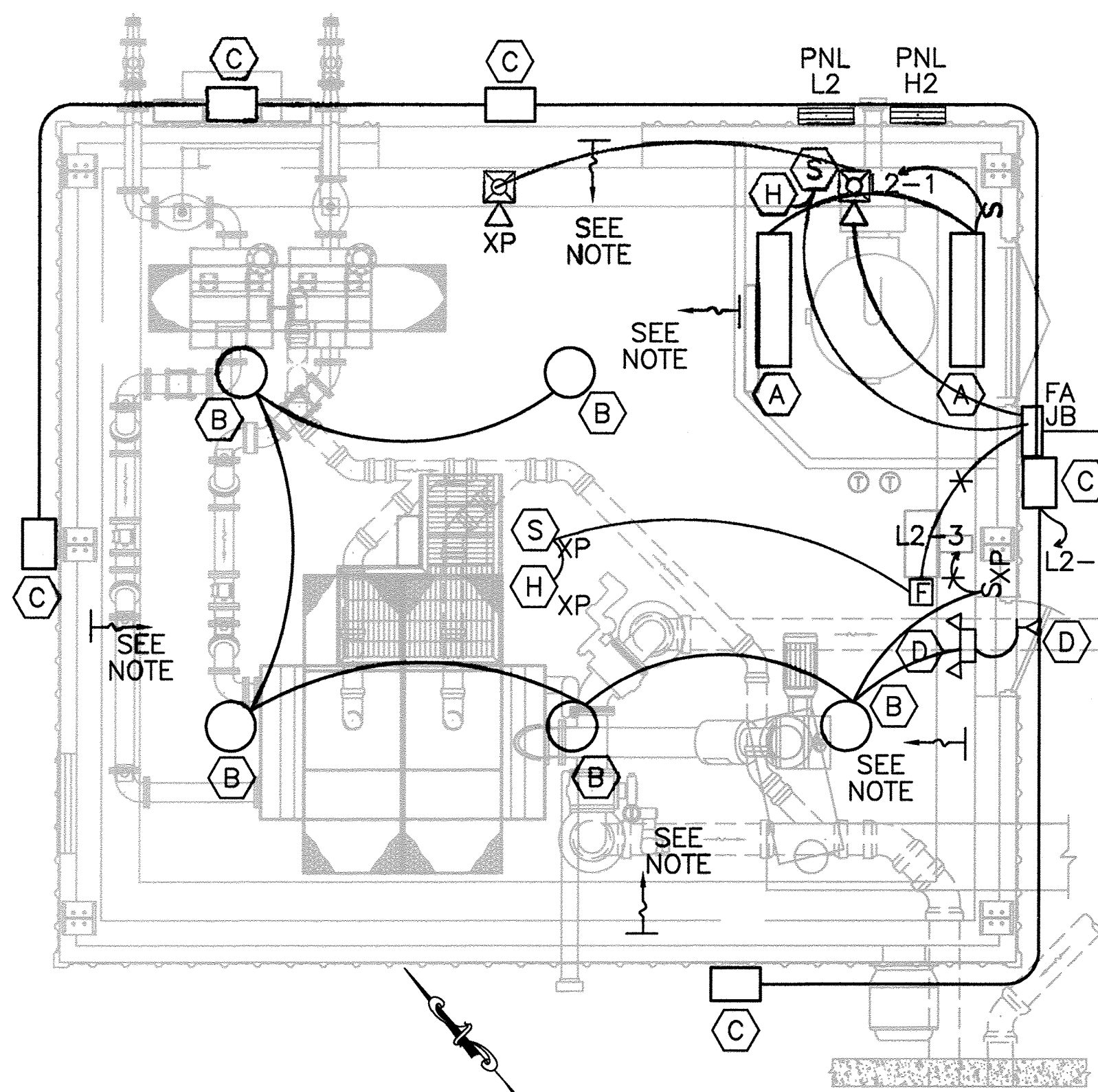
ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

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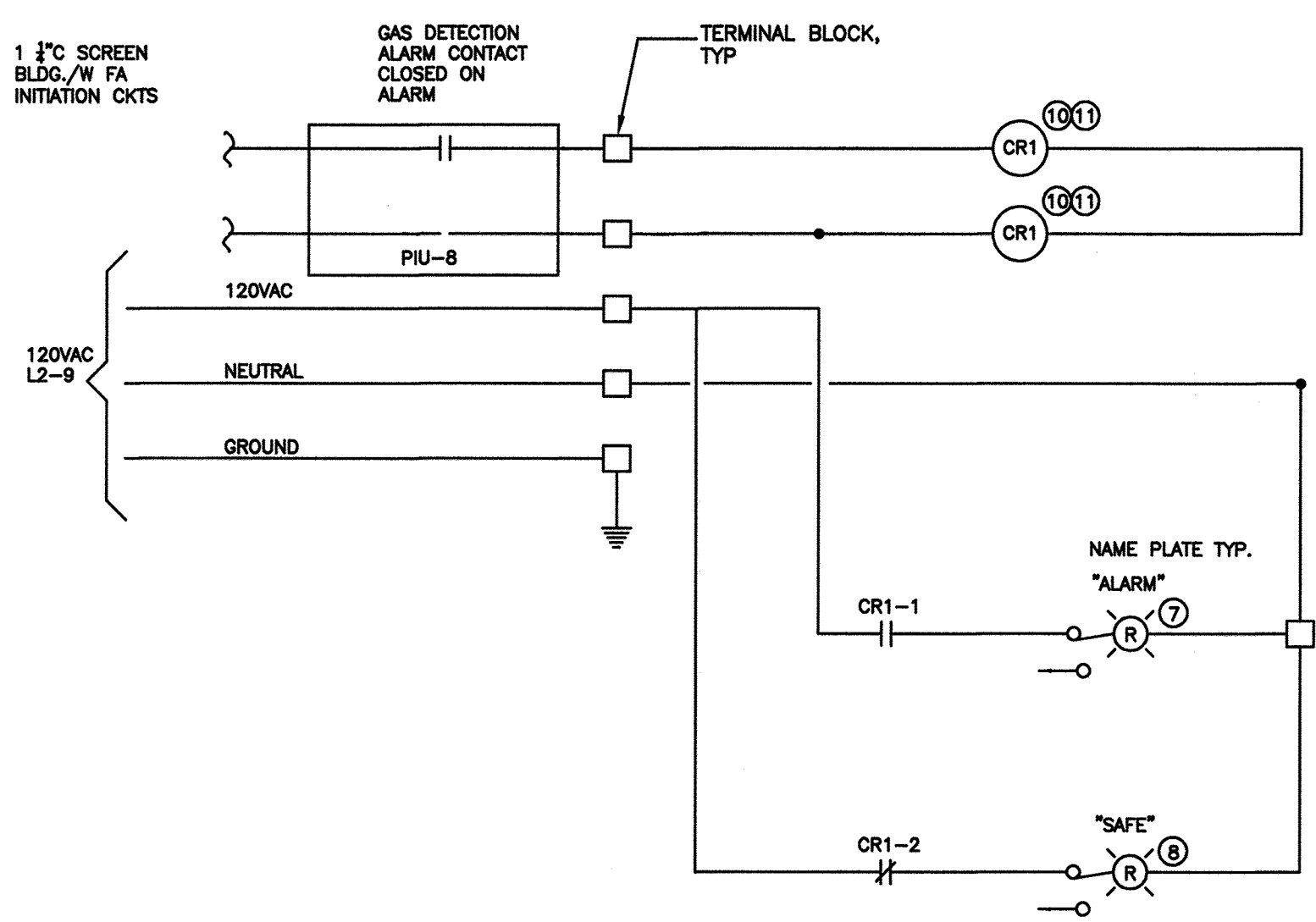
SHEET 10 OF 23

AS BUILTS

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ITEM	DESCRIPTION
1	ENCLOSURE, NEMA 4X, 316SS
2	BACK PANEL
3	DIN RAIL
4	END ANCHOR
5	TERMINAL BLOCKS
6	END BARRIER
7	PILOT LIGHT, PUSH-TO-TEST - RED
8	PILOT LIGHT, PUSH-TO-TEST - GREEN
9	TERMINAL BLOCK, GROUND, YEL/GRN
10	RELAY CONTROL
11	RELAY, SOCKET, PIN TYPE

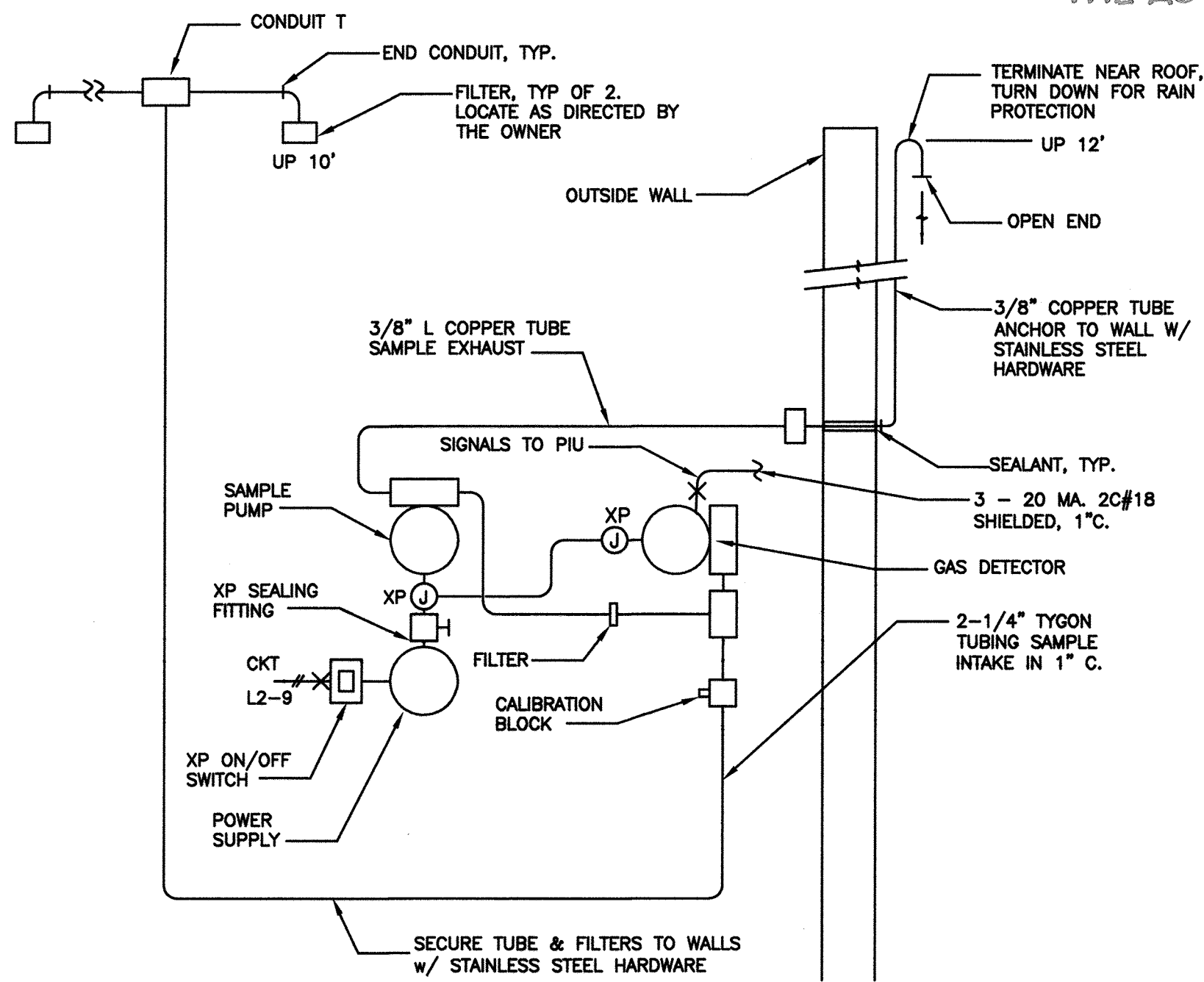


**LIGHTING AND FIRE ALARM PLAN**

SCALE: 1/4" = 1'-0"

NOTE: LIMITS OF CLASSIFIED AREA

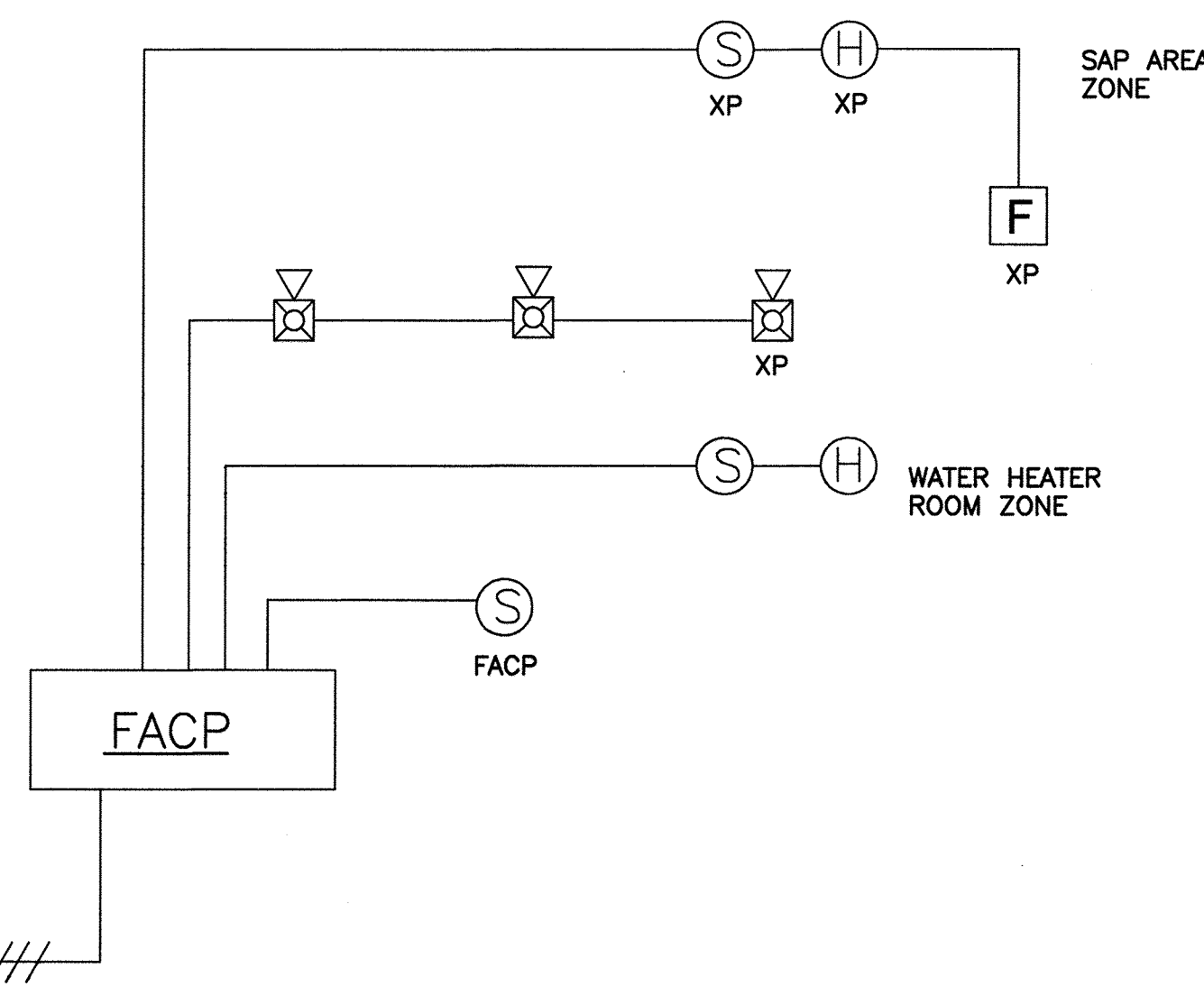
REFER TO EXHIBITS A, B, & E FOR THE AS CONSTRUCTED INFORMATION



**DETAIL COMBUSTIBLE GAS SENSOR INSTALLATION**  
N.T.S.

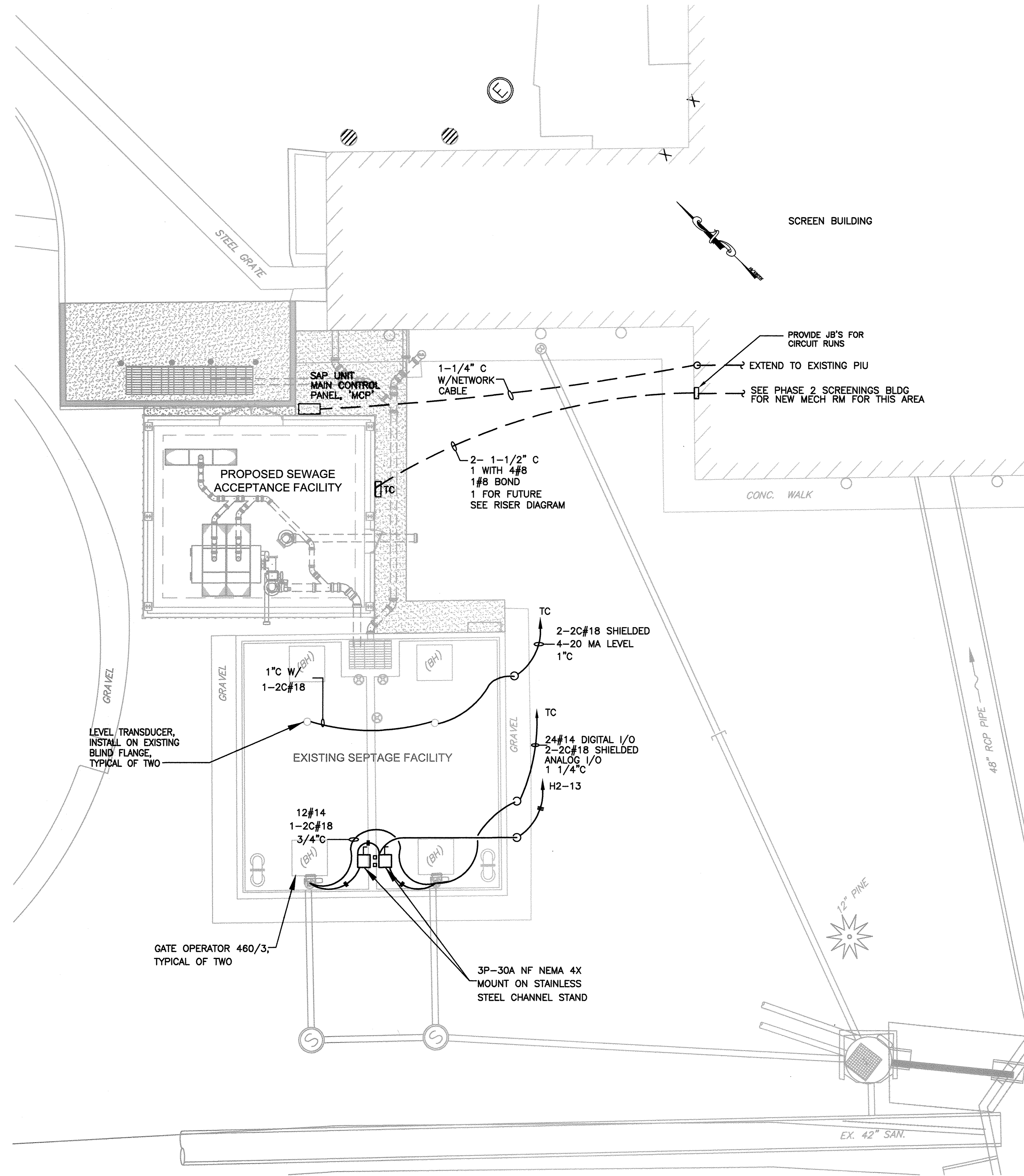
**SCHEMATIC, GAS DETECTION ALARM**

N.T.S.



**FIRE ALARM RISER DIAGRAM**

N.T.S.



**SEPTAGE HOLDING ELECTRICAL SITE PLAN**

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

REFER TO EXHIBITS A, C, AND EXHIBIT E FOR THE AS CONSTRUCTED CONDITIONS

AS BUILT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_  
 CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_  
 DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

**PROFESSIONAL CERTIFICATION**

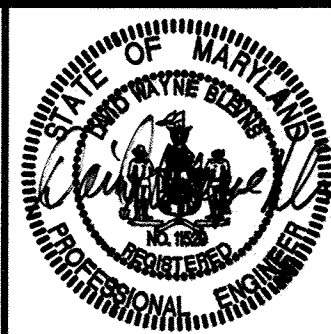
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013

*Samuel Klem* 2/7/12  
 Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND

*Janet Klem* 2/9/12 *Thomas S. Suttler* 2/9/12  
 DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING  
*William Klem* 2/9/12 *Chris P. Klem* 2/9/12  
 CHIEF, BUREAU OF UTILITIES DATE CHIEF, UTILITY DESIGN DIVISION

**Dewberry**  
 Dewberry & Davis LLC  
 3120 LORD BALTIMORE DRIVE  
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 BALTIMORE, MD 21244-2882  
 410.285.8900  
 FAX: 410.285.8875



DES:	DB				
DRN:	ST				
CHK:	DB				
DATE:	2/7/12				
BY:	NO.	REVISIONS	DATE	600' SCALE MAP NO. 47	BLOCK NO. 24

**E-3 ELECTRICAL PLANS & DETAILS**

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

CAPITAL PROJECT S-6245  
 CONTRACT 20-4700

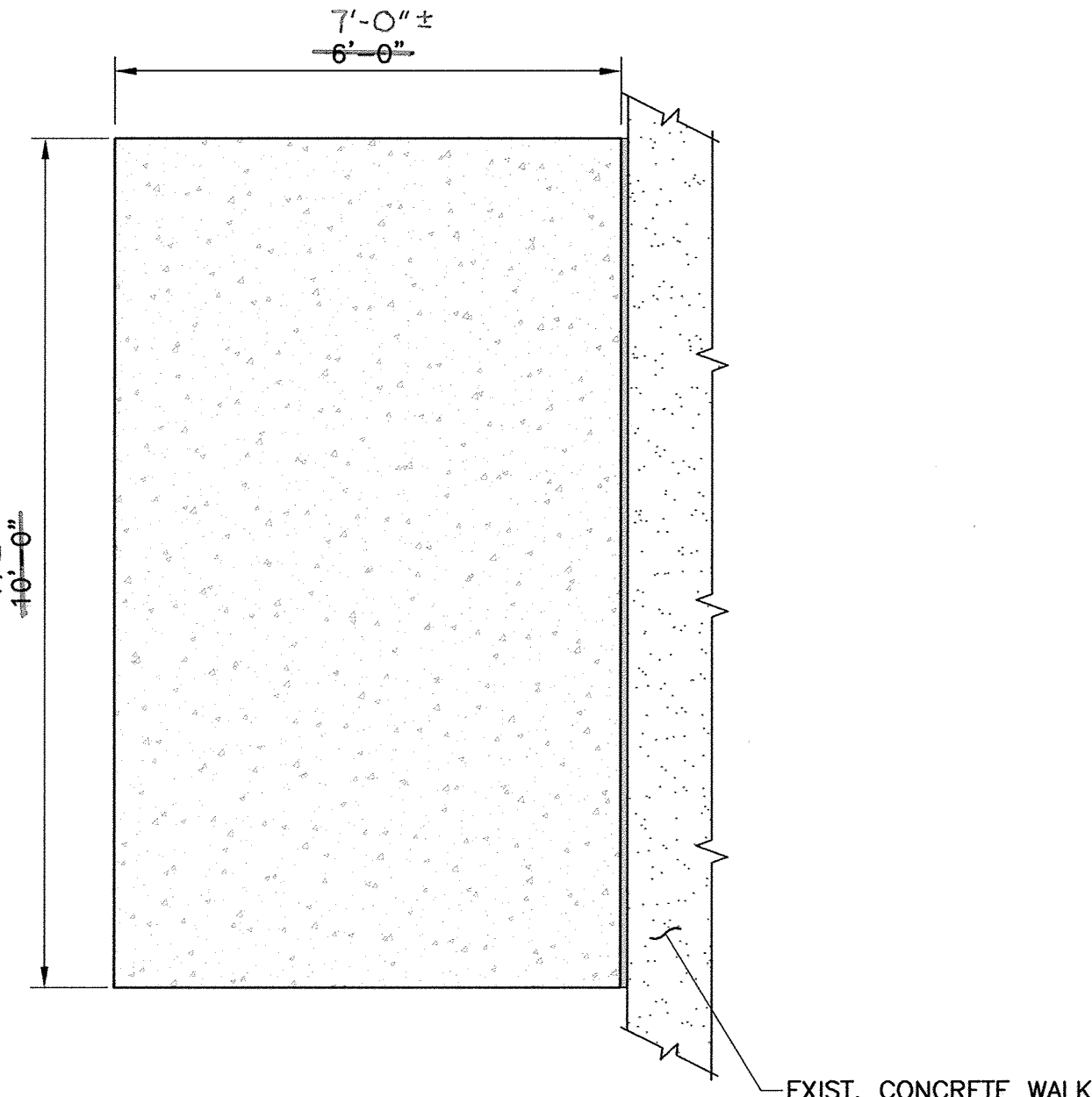
ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

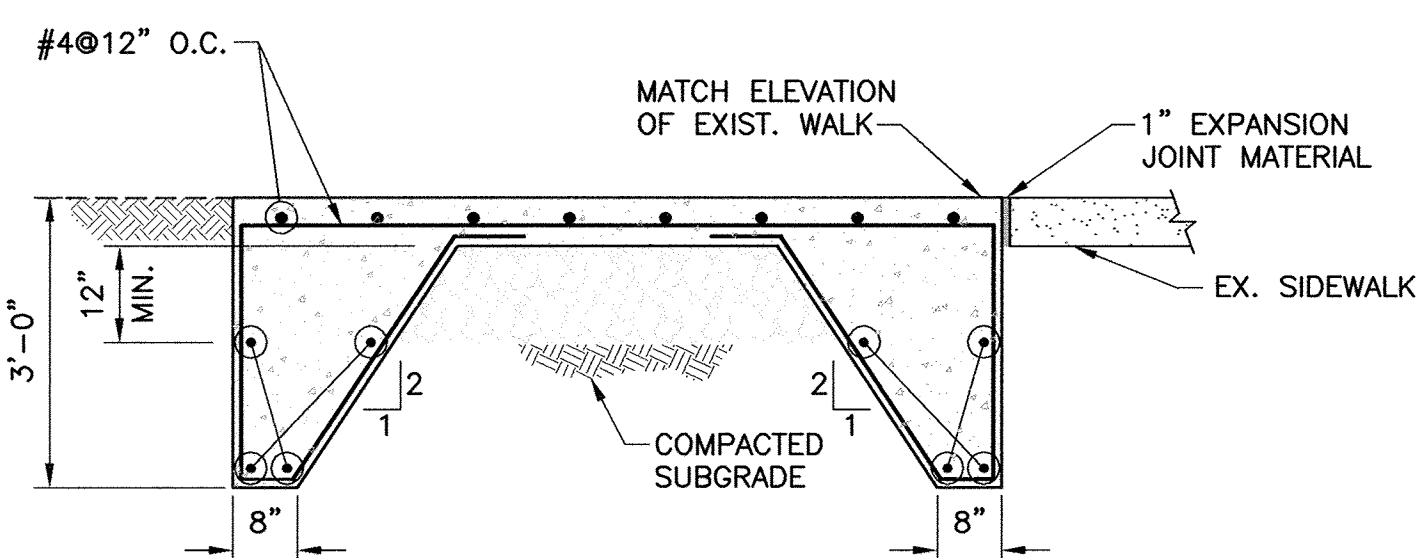
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SHEET 10 OF 11

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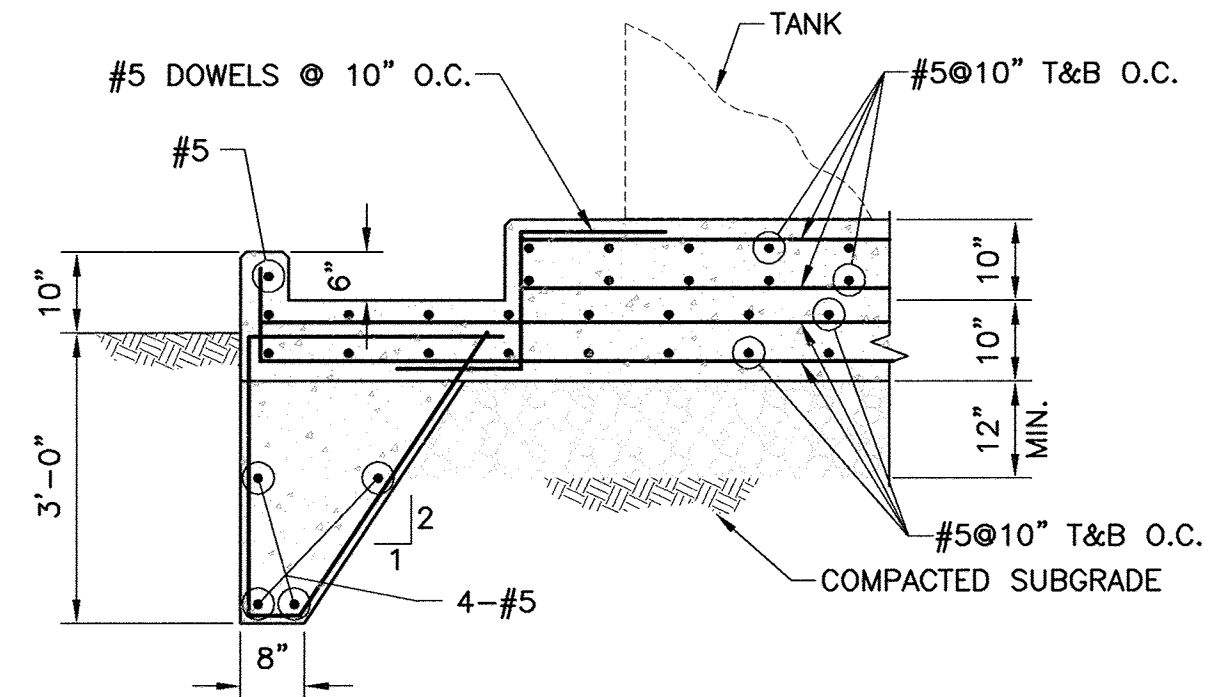
PLAN VIEW



SECTIONAL VIEW

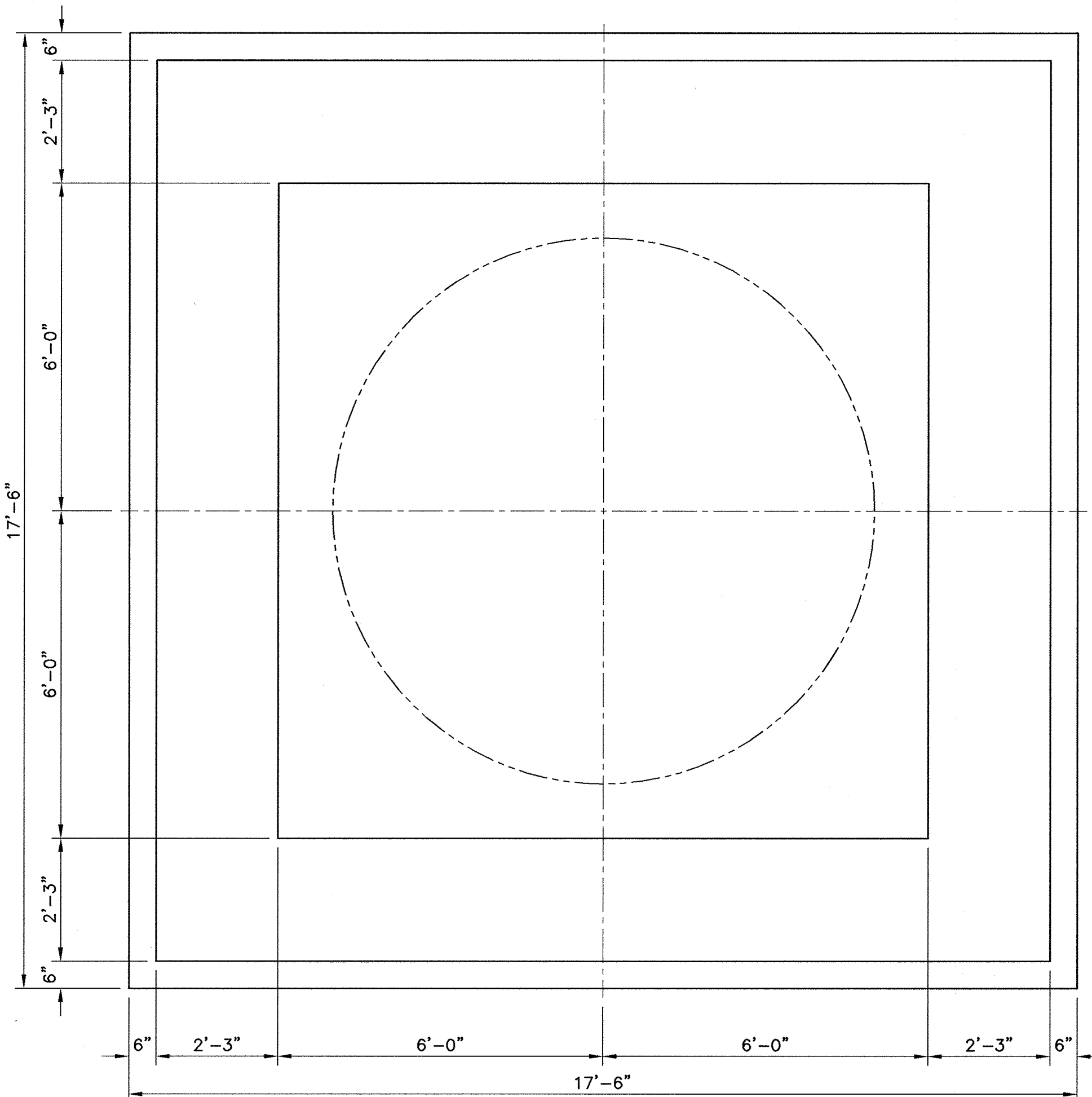
Mg(OH)<sub>2</sub> TANK CONCRETE PUMP PAD

SCALE: 1/2" = 1'-0"



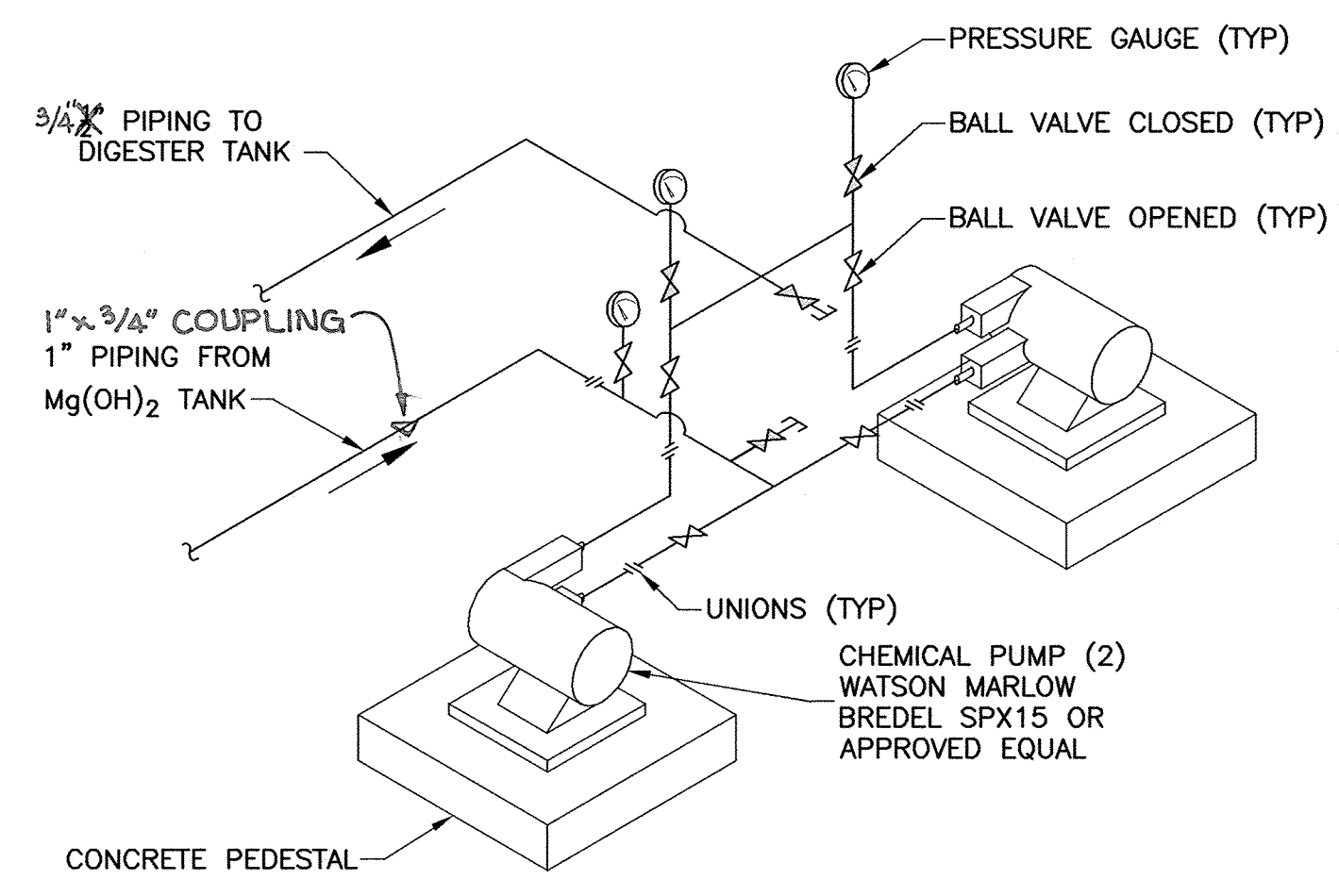
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SCALE: 1/2" = 1'-0"



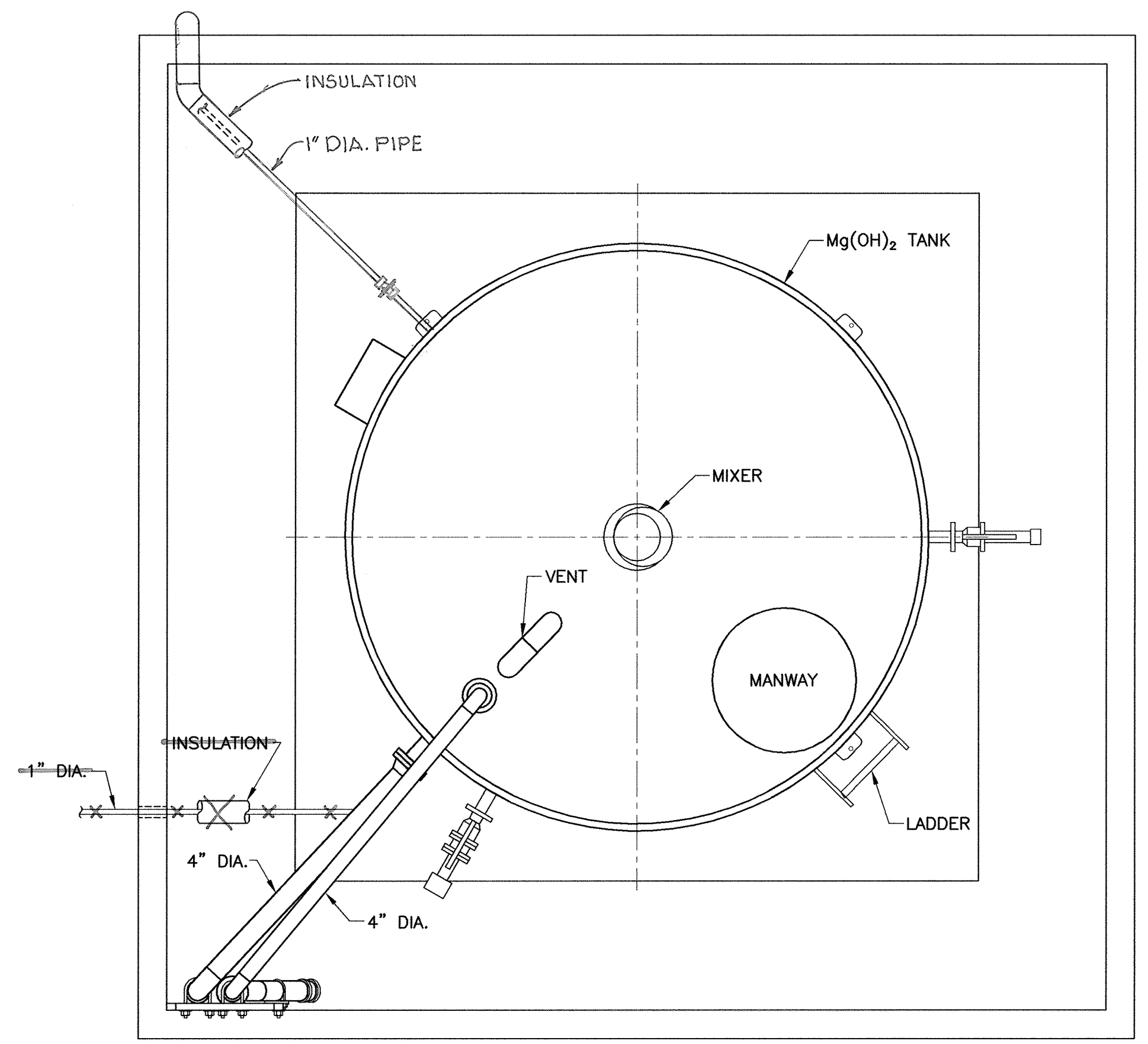
Mg(OH)<sub>2</sub> TANK CONTAINMENT BASE PLAN

SCALE: 1/2" = 1'-0"



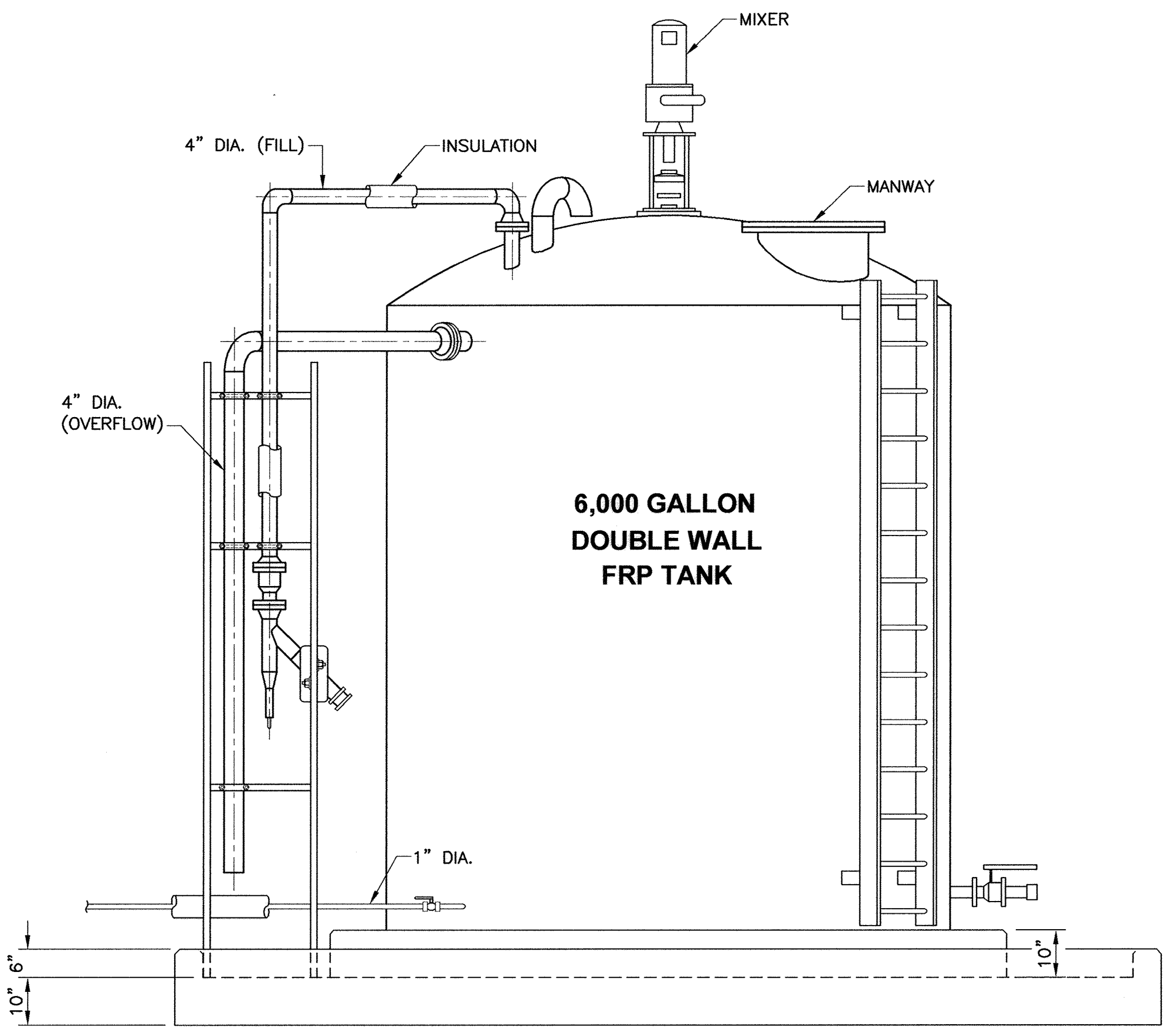
Mg(OH)<sub>2</sub> PUMP PIPING SCHEMATIC

SCALE: NONE



Mg(OH)<sub>2</sub> TANK PLAN

SCALE: 1/2" = 1'-0"



TANK ELEVATION VIEW

SCALE: 1/2" = 1'-0"

AS BUILTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

PROFESSIONAL CERTIFICATION  
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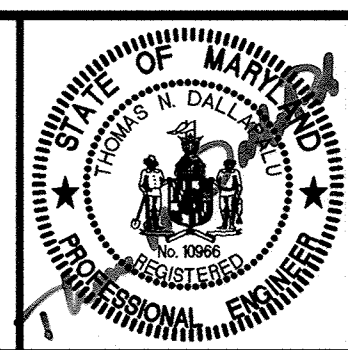
*Thomas W. Daulton* 2/8/12  
 Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Jan 7 2012* 2/8/12  
 DIRECTOR OF PUBLIC WORKS DATE  
 CHIEF, BUREAU OF UTILITIES DATE

*Thomas W. Daulton* 2/8/12  
 CHIEF, BUREAU OF ENGINEERING DATE  
 CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
 Dewberry & Davis LLC  
 3106 LORD BALTIMORE DRIVE  
 SUITE 110  
 BALTIMORE, MD 21244-2662  
 410.265.9500  
 FAX 410.265.8675



DES:	RJP/KY
DRN:	CD
CHK:	TND
DATE:	1/7/12
BY	NO.
REVISIONS	

Mg(OH)<sub>2</sub> TANK PLANS, ELEVATION,  
 PIPING SCHEMATIC AND DETAILS

600' SCALE MAP NO. 47 BLOCK NO. 24

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)

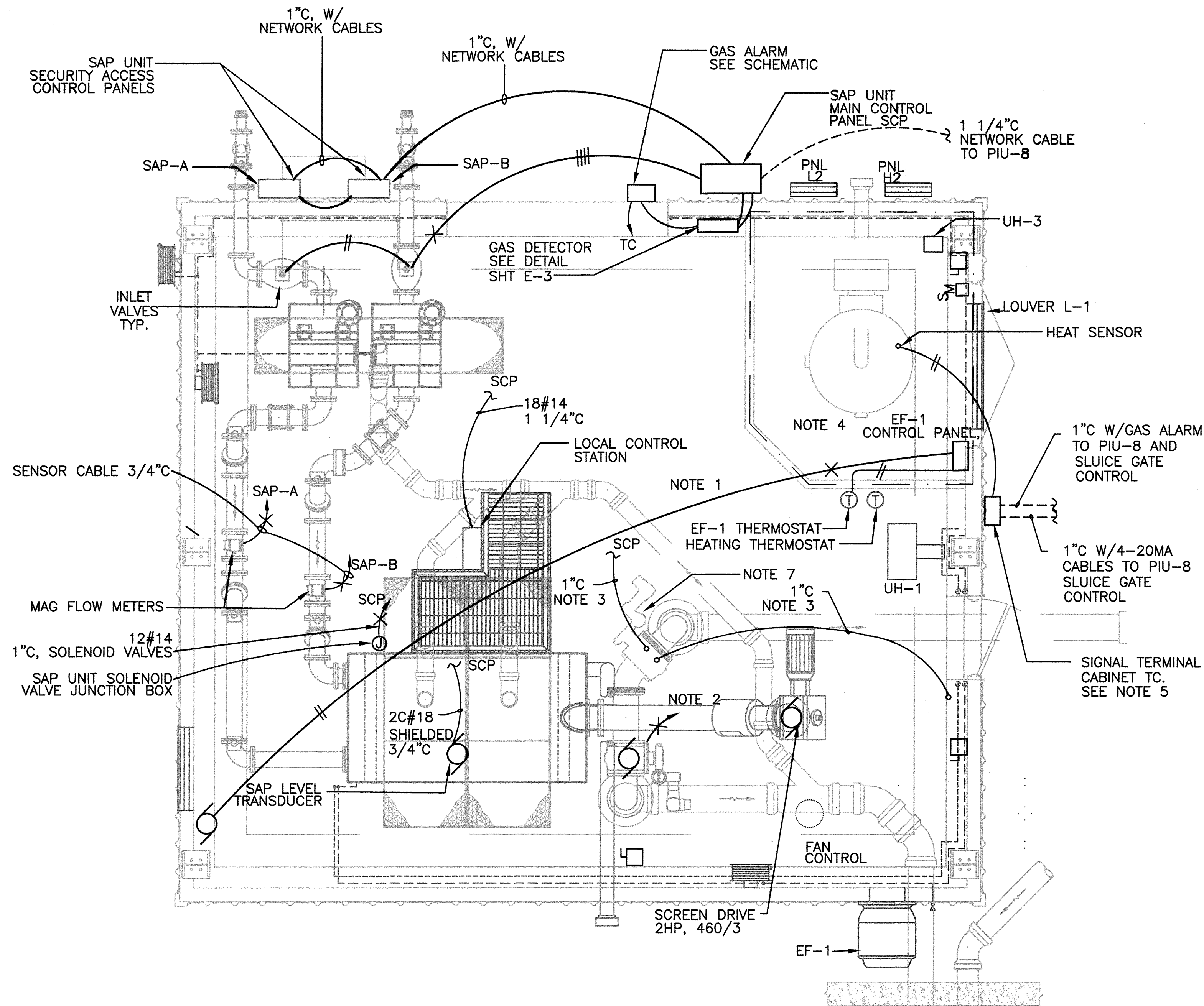
CAPITAL PROJECT S-6245  
 CONTRACT 20-4695

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE:  
 AS SHOWN

SHEET  
 11 OF 23

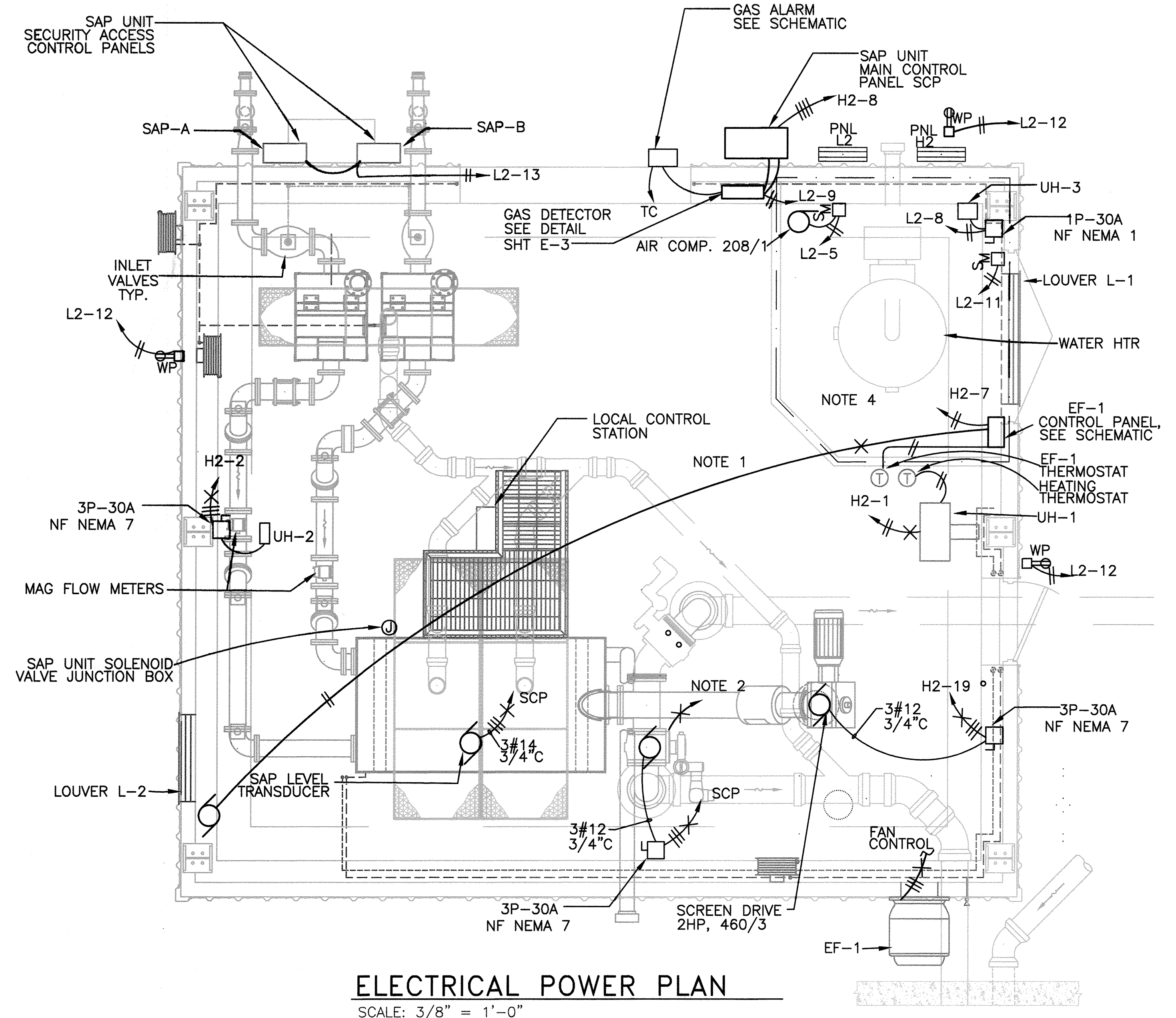
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**ELECTRICAL SIGNAL PLAN**

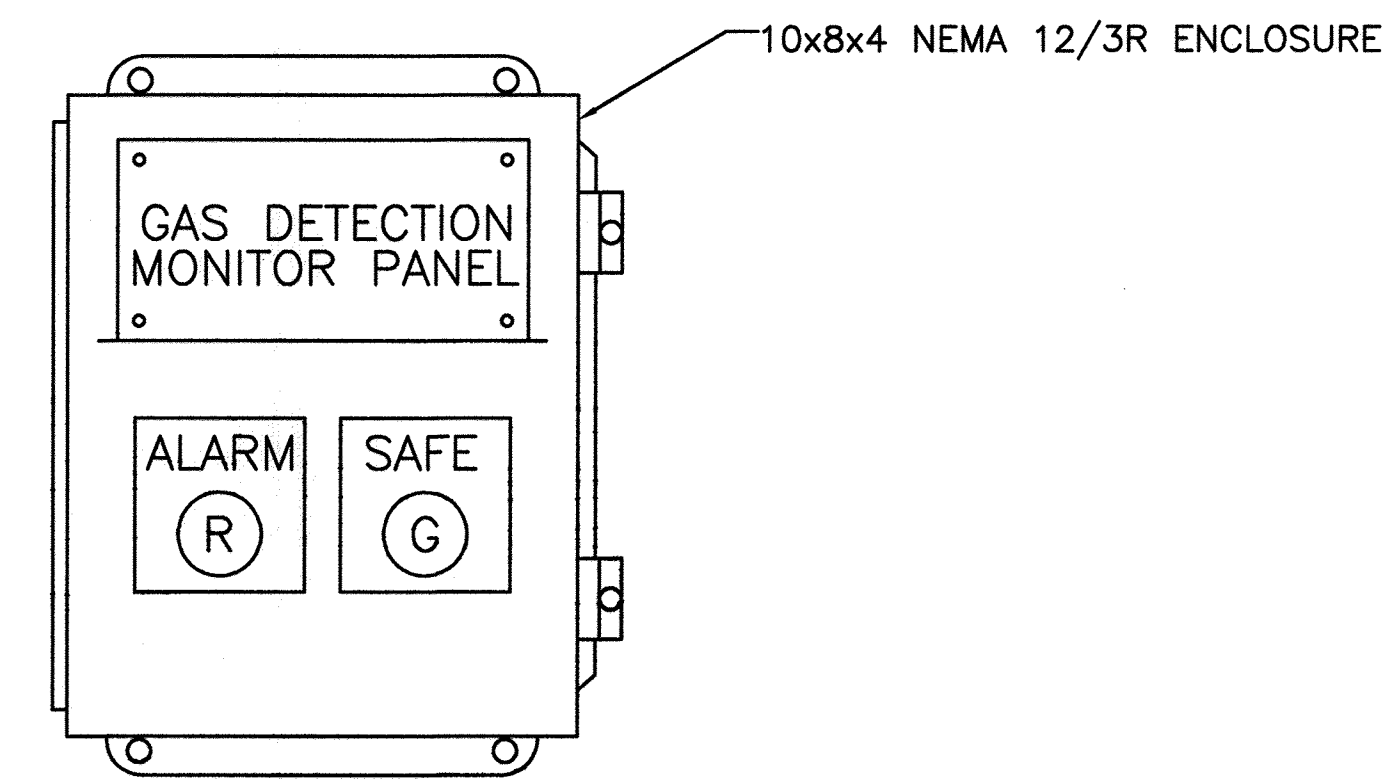
SCALE: 3/8" = 1'-0"  
SEE NOTE 6

FOR THE RECORD CONSTRUCTED ELECTRICAL WORK IN THIS AREA SEE EXHIBITS A, B, E AND EXHIBIT F



**ELECTRICAL POWER PLAN**

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



**ELEVATION BUILDING GAS DETECTION ALARM PANEL**

SCALE: NOT TO SCALE

**NOTES:**

- ALL ELECTRICAL WORK INSIDE SAP AREA OF BUILDING SHALL BE CLASS 1, DIVISION 1.
- VALVE CONTROL TO SCP. 12#14, 2C#18 SHIELDED, 1" C.
- EMPTY CONDUIT FOR PLUG VALVE INSTALLED UNDER PHASE 2 WORK.
- NON CLASSIFIED AREA.
- 16"x24" NEMA 4 PANEL ENCLOSURE WITH TERMINALS. PROVIDE CONDUCTIVE BARRIER BETWEEN ANALOG AND DIGITAL SIGNAL TERMINALS.
- REFER TO THE COMBINED P & ID IN THE PHASE 2 WORK FOR ADDITIONAL ELECTRICAL AND PROCESS CONTROL REQUIREMENTS.
- THE GREASE PLUG VALVE WILL BE INSTALLED UNDER THE PHASE 2 WORK. PROVIDE EMPTY CONDUITS AS NOTED FOR THIS VALVE. VALVE WILL BE CONNECTED TO SAME CIRCUIT AS SHOWN.

AS BUILTS

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

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*David Wayne Klein*      2/7/12  
Signature of Engineer      Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*Langh*      2/6/12  
\_\_\_\_\_  
DIRECTOR OF PUBLIC WORKS      DATE

*Primmer & Butler*      2/8/12  
\_\_\_\_\_  
CHIEF, BUREAU OF ENGINEERING      DATE

*Chen*      2/6/12  
\_\_\_\_\_  
CHIEF, BUREAU OF UTILITIES      DATE

*Chen*      2/9/12  
\_\_\_\_\_  
CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
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SUITE 211  
BALTIMORE, MD 21244-2882  
410.265.8500  
FAX: 410.265.8575



DES:	DB			
DRN:	ST			
CHK:	DB			
DATE:	2/7/12			
BY	NO.	REVISIONS	DATE	

**E-4 ELECTRICAL POWER PLAN & DETAILS**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE IB)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4700

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 11 OF 11

Printed by: (David Klein) on: Wed, 07/27/2012 - 12:01pm  
 Path: \\s-2>A:\CORPORATE\Utility\Scum and Septage Facility\Phase 2 Change Order\CADD\ELECT\1 - 62310(E)-4.dwg  
 User: David Klein      Date: 07/27/2012 - 9:49am  
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ELECTRICAL SYMBOLS

- FLUORESCENT OR INCANDESCENT LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE AND MOUNTING.
- WALL MOUNTED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE.
- POLE MOUNTED HIGH INTENSITY DISCHARGE LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE.
- SINGLE POLE TOGGLE SWITCH - 20 AMP, 120 VOLT, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- THREE WAY TOGGLE SWITCH - 20 AMP, 120 VOLT, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- MOTOR RATED SWITCH WITH THERMAL OVERLOAD PROTECTION, MOUNT ADJACENT TO OR ON THE MOTOR BEING CONTROLLED.
- JUNCTION BOX, CEILING OR WALL MOUNTED.
- DOUBLE DUPLEX GROUNDING TYPE RECEPTACLE - 20 AMP, 120 VOLT, NEMA 5-20R, M.H. 18" AFF, UNLESS NOTED OTHERWISE.
- DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER PROTECTION - 20 AMP, 120 VOLT, NEMA 5-20R, M.H. 48" AFF, UNLESS NOTED OTHERWISE.
- DISCONNECT SWITCH, AMP, VOLT, POLES AND FUSING AS NOTED ON DRAWING.
- UNLESS OTHERWISE NOTED, COMBINATION STARTER WITH HOA AND 120 VAC CONTROL CIRCUIT TRANSFORMER, ENCLOSURE AS NOTED
- ELECTRIC MOTOR CONNECTION - HORSEPOWER AS NOTED.
- BRANCH CIRCUIT CONDUIT AND WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE. CROSSMARKS AND NUMERALS INDICATE NUMBER AND SIZE OF CONDUCTORS, AND SHOWN ONLY WHERE REQUIRED FOR CLARITY.
- BRANCH CIRCUIT CONDUIT AND WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE, UNDER GROUND OR UNDER SLAB. CROSSMARKS AND NUMERALS INDICATE NUMBER AND SIZE OF CONDUCTORS, AND SHOWN ONLY WHERE REQUIRED FOR CLARITY.
- HOMERUN WIRING WITH A DEDICATED EQUIPMENT GROUND WIRE TO THE REFERENCED PANELBOARD. ARROW HEADS AND NUMERALS INDICATE THE CIRCUIT NUMBERS.
- CONDUIT SEALING FITTING
- COMBINATION VARIABLE FREQUENCY DRIVE. ENCLOSURE AND SEQUENCE AS INDICATED

- CONTACT - NORMALLY OPEN
- CONTACT - NORMALLY CLOSED
- OVERLOAD RELAY HEATER
- MAGNETIC STARTER WITH NEMA SIZE INDICATED
- CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
- INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
- SWITCH - CURRENT RATING INDICATED, 3 POLE FUSED SWITCH, SWITCH AND FUSE CURRENT RATING UNLESS INDICATED OTHERWISE.
- LIGHTNING ARRESTER
- FUSE
- GROUND
- TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE

ELECTRICAL SYMBOLS CONTINUED

- PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
- PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
- REMOTE DEVICE
- LIMIT SWITCH
- TIMING RELAY CONTACT NORMALLY OPEN TIMED CLOSED
- TIMING RELAY CONTACT NORMALLY CLOSED TIMED OPEN
- TIMING RELAY CONTACT NORMALLY OPEN TIMED OPEN
- TIMING RELAY CONTACT NORMALLY CLOSED TIMED CLOSED
- TEMPERATURE SWITCH
- FLOAT SWITCH
- MAGNETIC RELAY COIL
- 480/3 -EQUIPMENT VOLTAGE
- INDICATES PHASE
- INDICATES VOLTAGE
- SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION:
- CURRENT TRANSFORMER
- INDICATING LIGHT - LETTER INDICATES COLOR
- PHASE OR DIAMETER

SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION:

CKT.	POSITION			X - CLOSED CONTACT O - OPEN CONTACT
	HAND	OFF	AUTO	
1	X	O	O	
2	O	O	X	

ABBREVIATIONS

- A, AMP AMPERE
- AFF ABOVE FINISHED FLOOR
- AIC SYMMETRICAL AMPERE INTERRUPTING RATING
- AL ALUMINUM
- ANCH ANCHOR
- APPROX APPROXIMATE
- BLD BUILDING
- BRKR CIRCUIT BREAKER
- C CONDUIT
- CKT CIRCUIT
- CL CENTERLINE
- CO COMPANY
- CONC CONCRETE
- CONT CONTROL
- CT CURRENT TRANSFORMER
- CTR CONTROL
- DIA DIAMETER
- DN DOWN
- DP DEEP
- DWG DRAWING
- EA EACH
- EC EMPTY CONDUIT
- ELECT'L ELECTRICAL
- EMBED EMBEDDED DEPTH
- ENCL ENCLOSURE
- EQ EQUAL
- EQUIP EQUIPMENT
- EXIST EXISTING
- EXP EXPANSION
- FC FOOTCANDLE
- FR FROM
- GALV GALVANIZED
- GEC GROUND ELECTRODE CONDUCTOR
- GFCI GROUND FAULT CIRCUIT INTERRUPTER (5 MILLIAMPER SENSITIVITY)
- GND GROUND
- H HIGH
- HP HORSEPOWER
- HT HEATER
- HT 1000 AIC
- KVA KILOWOLT-AMPERES
- KW KILOWATTS
- L ANGLE, LENGTH
- LOC LOCATION
- LTS LIGHTS
- MAT'L MATERIAL
- MECH MECHANICAL
- MCB MAIN CIRCUIT BREAKER
- MTD MOUNTED
- NEC NATIONAL ELECTRICAL CODE
- NTS NOT TO SCALE
- OD OUTSIDE DIAMETER
- OH, OHE OVERHEAD ELECTRICAL
- OPN'G OPENING
- P POLE OR PHASE
- PL PLATE
- PNL, PANEL CIRCUIT BREAKER PANELBOARD
- PRI PRIMARY VOLTAGE (ABOVE 600 VOLTS)
- PWR POWER
- QTY QUANTITY
- RCP REACTOR CONTROL PANEL
- RECEPT RECEPTACLE
- RQ'D REQUIRED
- RQM'TS REQUIREMENTS
- SEC SECONDARY VOLTAGE (600 VOLTS OR LESS)
- SPR STANDARD PRACTICE RECOMMENDATION, SIZE FOR CRUSHED STONE
- SS STAINLESS STEEL
- STA STATION, AS IN PUMP STATION
- STR STRUCTURE
- SVC SERVICE
- SURF SURFACE
- SW SWITCH
- T TRANSFORMER
- TEL TELEPHONE
- THRU THROUGH
- TRANS, TRANSF TRANSFORMER OR TRANSFER
- TSTAT THERMOSTAT
- TYP TYPICAL
- UG, UGE UNDERGROUND ELECTRICAL
- UT, UGT UNDERGROUND TELEPHONE
- V VOLTS
- VAC VOLTS A.C.
- W WIDE OR WIRE
- W/ WITH
- WW WIREWAY
- XP EXPLOSION PROOF (CLASS I DIVISION I GROUP D UNLESS NOTED)

GENERAL ELECTRICAL CONSTRUCTION NOTES

- THE DRAWINGS INDICATE THE EXTENT AND GENERAL ARRANGEMENT OF THE ELECTRICAL SYSTEMS.
- LOCATIONS OF LINES AND EQUIPMENT SHALL BE DETERMINED FROM ACTUAL FIELD CONDITIONS. THE OUTLINES OF THE CONSTRUCTION SHOWN ON THE ELECTRICAL DRAWINGS ARE INTENDED ONLY AS A GUIDE TO INDICATE RELATIVE LOCATIONS OF THE WORK. REFER TO THE APPLICABLE DRAWINGS OF OTHER TRADES AND THE EQUIPMENT SUPPLIER'S INSTALLATION DRAWINGS FOR EXACT LOCATIONS AND ARRANGEMENTS.
  - THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER RELATION OF HIS WORK TO THE FACILITY STRUCTURES AND TO THE WORK OF OTHER TRADES. NO ADDITIONAL COMPENSATION NOR EXTENSION OF COMPLETION TIME WILL BE GRANTED FOR EXTRA WORK CAUSED BY THE LACK OF COORDINATION.
  - DUE TO DIFFERENCES IN VARIOUS MANUFACTURER'S EQUIPMENT CONNECTIONS AND MOTOR CURRENTS, THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS INSTALLATION WITH THAT EQUIPMENT ACTUALLY FURNISHED AND SHALL VERIFY THE CORRECT SIZES AND DETAILS OF INSTALLATION BEFORE ROUGHING IN.
  - RECEPTACLES, SWITCHES, THERMOSTATS, AND OTHER SIMILAR ITEMS SHALL ALIGN VERTICALLY OR HORIZONTALLY WITH EACH OTHER, WITH THE STRUCTURE AND OTHER FEATURES THEREOF WHEN IT APPEARS OBVIOUS AND LOGICAL THAT THEY SHOULD. THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE GENERAL CONSTRUCTION SUPERINTENDENT REGARDING THIS REQUIREMENT AND ALSO FOR THE LOCATION OF EQUIPMENT, DOOR SWINGS, BLOCK COURSING, ALIGNMENT OF THIS AND OTHER SIMILAR FEATURES BEFORE ROUGHING-IN FOR THESE COMPONENTS.
  - ALL CONDUITS ENTERING UNDERGROUND STRUCTURES SHALL HAVE WATERTIGHT EXPANSION WALL SEALS.
  - THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
  - ALL CONDUITS WITH WIRING ENTERING UNDERGROUND STRUCTURES WHERE WATER MIGHT ENTER THE CONDUIT AND DRAIN INTO THE STRUCTURE, SHALL BE FITTED WITH WATERTIGHT BUSHINGS WITH SEALING COMPOUND SUCH AS OZ/GEDNEY STYLE CSB.
  - ALL ABOVE GROUND RACEWAYS & RACEWAYS INSIDE STRUCTURES SHALL BE RUN EXPOSED.

CONDUIT & WIRE SIZE SCHEDULE

(UNLESS OTHERWISE SHOWN)

CIRCUIT BREAKER TRIP	GROUND WIRE SIZE	1 OR 2 POLE		3 POLE	
		CONDUIT	WIRE	CONDUIT	WIRE
15A	1 #12	3/4"	#12	3/4"	#12
20A	1 #12	3/4"	#12	3/4"	#12
30A	1 #10	3/4"	#10	3/4"	#10
40A	1 #10	3/4"	#8	1"	#8
50A	1 #10	3/4"	#8	1"	#8
60A	1 #8	1"	#6	1"	#6
70A	1 #8	1"	#4	1-1/4"	#4
80A	1 #8	1-1/4"	#4	1-1/4"	#4
90A	1 #8	1-1/4"	#2	1-1/4"	#2
100A	1 #8	1-1/4"	#2	1-1/4"	#2

FIRE ALARM SYSTEM

- F FIRE ALARM MANUAL PULL STATION
- 15cd FIRE ALARM HORN WITH FLASHING LIGHT. NUMERAL INDICATES CANDELA LEVEL. WALL MOUNTED CEILING MOUNTED IF SUBSCRIPT C IS INDICATED
- S SMOKE DETECTOR, CEILING MOUNTED
- H HEAT DETECTOR, CEILING MOUNTED
- FACP FIRE ALARM CONTROL PANEL

ELECTRICAL DEMOLITION NOTES

- THE CONTRACTOR SHALL REMOVE EXISTING WORK AS CALLED FOR ON THE DRAWINGS OR AS REQUIRED TO CLEAR THE AREAS OF NEW CONSTRUCTION.
- ALL EQUIPMENT REMOVED THAT IS NOT BEING REUSED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STORED OR DISPOSED OF AS DIRECTED.
- EXCEPT AS OTHERWISE NOTED, ALL EXISTING ELECTRICAL WORK WHICH WILL NOT BE RENDERED OBSOLETE AND WHICH MAY BE DISTURBED DUE TO ANY CHANGES REQUIRED BY THIS WORK SHALL BE RESTORED TO ITS ORIGINAL OPERATING CONDITION. OTHER ELECTRICAL WORK OR MATERIAL RENDERED OBSOLETE SHALL BE ABANDONED WHERE CONCEALED AND REMOVED WHERE EXPOSED. OLD UNUSED WIRING SHALL BE REMOVED FROM THE ABANDONED (CONCEALED) CONDUITS. ANY CONDUITS STUBBED OUT OF CONCRETE SURFACE SHALL BE CUT INTO SURFACE AND PATCHED.
- WHERE EXISTING ELECTRICAL WORK INTERFERES WITH NEW WORK AND WHERE SUCH INSTALLATIONS ARE TO REMAIN IN USE THE INSTALLATIONS SHALL BE DISCONTINUED AND RELOCATED AND/OR RECONNECTED TO COORDINATE WITH THE WORK INDICATED ON THE DRAWINGS AND AS SPECIFIED.
- WHERE EXISTING RACEWAYS THAT ARE NOT TO BE REUSED INTERFERE WITH NEW WORK, THESE RACEWAYS SHALL BE REMOVED BACK TO THE NEAREST JUNCTION BOX OR PULLBOX AND THE OPENINGS BLANKED.
- ALL WORK SHALL BE PERFORMED IN SUCH A MANNER TO CREATE MINIMAL POWER OUTAGES FOR THE OWNER. ALL SUCH OUTAGES SHALL BE CAREFULLY COORDINATED WITH THE OWNER SO THAT POWER TO ESSENTIAL SERVICES CAN BE MAINTAINED.
- CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF CIRCUITS SERVING MULTIPLE ITEMS OF WHICH ONE OR MORE ARE BEING DEMOLISHED. CONDUCTORS AND CONDUITS FOR THOSE ITEMS BEING DEMOLISHED SHALL BE REMOVED AS FAR AS PRACTICABLE.
- ALL EQUIPMENT INDICATED TO REMAIN IN PLACE SHALL REMAIN IN NORMAL OPERATION AT ALL TIMES DURING CONSTRUCTION. IF ANY CIRCUIT WIRING FEEDING THIS EQUIPMENT IS DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL REPLACE WITH NEW WIRING OF THE SAME SIZE AND TYPE.

AS BUILTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE \_\_\_\_\_

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE \_\_\_\_\_

\_\_\_\_\_  
DIRECTOR DATE \_\_\_\_\_

PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013

*David Wayne Plin* 2/7/12  
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Janet K...* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE

*Thomas S. Brittle* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE

*Steve C...* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE

*...* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**

Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2882  
410.265.8600  
FAX: 410.265.5875

DES: \_\_\_\_\_

DRN: \_\_\_\_\_

CHK: \_\_\_\_\_

DATE: 2/7/12

BY NO. REVISIONS DATE

E-1 ELECTRICAL SYMBOLS AND NOTES

600' SCALE MAP NO. 47

BLOCK NO. 24

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)

CAPITAL PROJECT S-0245  
CONTRACT 20-4695

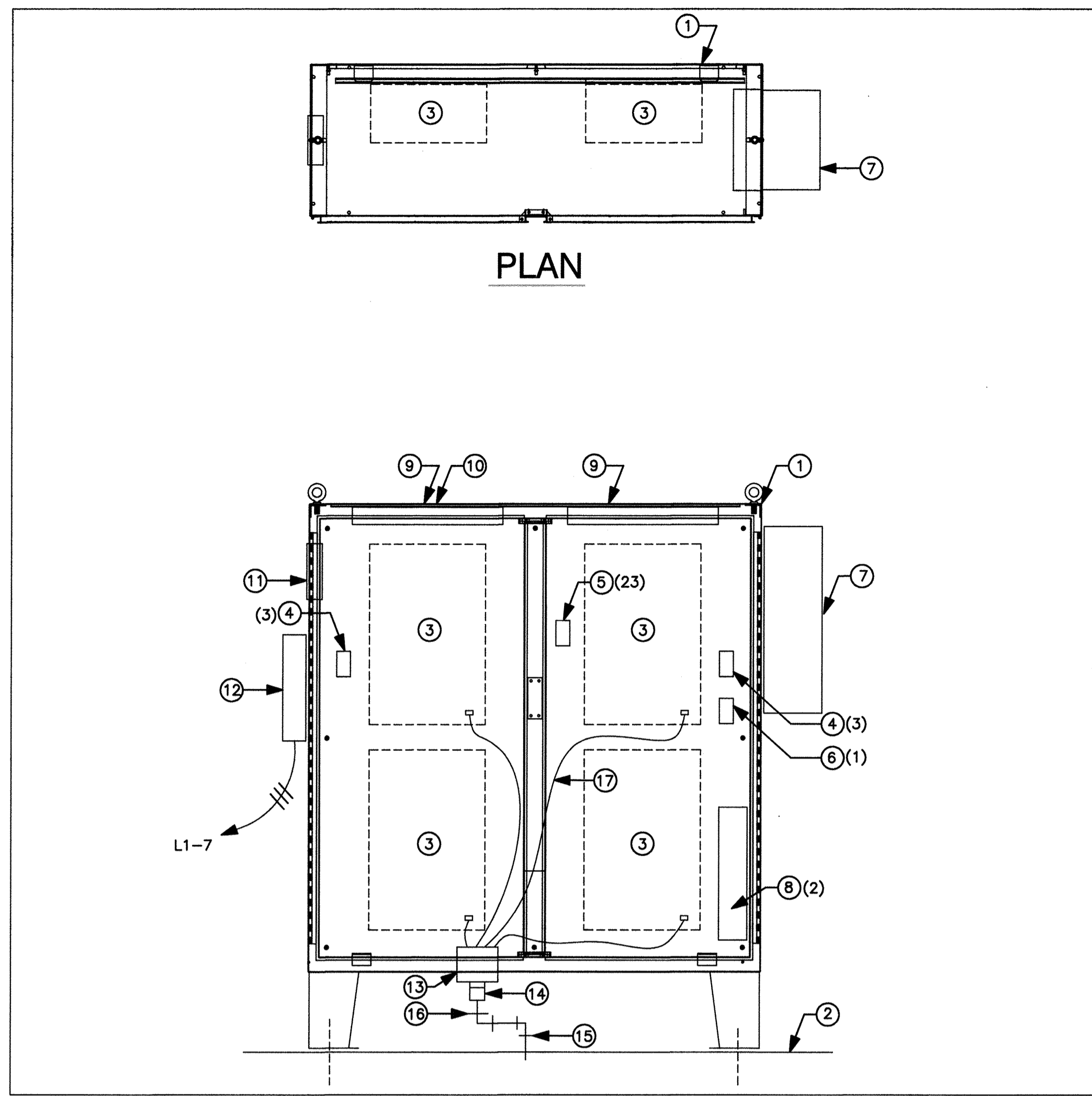
ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 12 OF 23

Printed by: (David.Brown) on Print Date: Feb 07, 2012 - 10:12am  
Path: \\dewberry.com\Users\David.Brown\Projects\Phase 2\0400\7-14-2011\1-102020R - Phase 2.dwg  
Title: LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)



**ELEVATION, ENGINEERED BACTERIA CABINET ENCLOSURE**

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

PANEL L-3 CIRCUIT NUMBERS ARE AS INDICATED THIS ( )

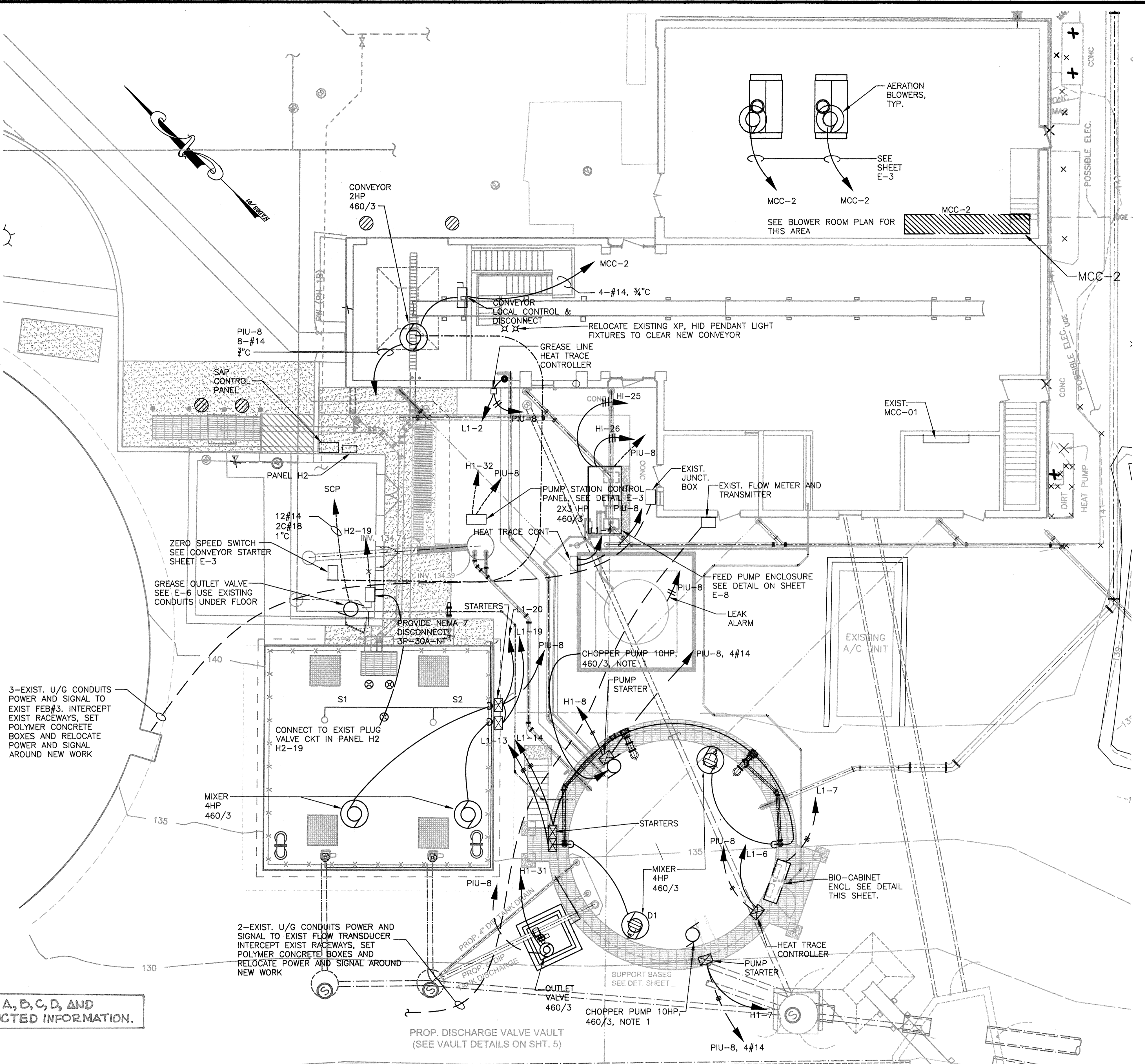
- ① NEMA 4X STAINLESS STEEL ENCLOSURE COMPLETE W/PANEL, DOUBLE DOORS AND 3-POINT LATCHES, FLOOR STANDS, AND OTHER ACCESSORIES INDICATED. 72"W X 74"H X 24" DP.
- ② SEE PROCESS PLANS FOR PLATFORM. ANCHOR ENCLOSURE AS RECOMMENDED BY MFG.
- ③ ENGINEERED BACTERIA CABINETS BY OTHERS, TYP OF 4.
- ④ DUPLEX GFCI RECEPTACLE
- ⑤ LIGHT SWITCH
- ⑥ SINGLE 20A, 120V RECEPTACLE FOR AC UNIT, ITEM 7
- ⑦ CABINET AIR CONDITIONER. POWDER COAT STEEL ENCLOSURE. RATED 2700 BTUH AT 95F/95F. 120VAC, HOFFMAN/PENTAIR CR29 OR EQUAL. COMPLETE W/ FILTERS AND INTEGRAL THERMOSTAT.
- ⑧ HEATER. FAN FORCED ELECTRIC RATED 1.5 KW AT 120VAC EQUAL TO TPI 3320 COMPLETE W/SURFACE MOUNTING FRAME, THERMOSTAT, AND DISCONNECT.
- ⑨ ENCLOSURE LIGHT. SINGLE STRIP FLUORESCENT. 17W/8 LAMP, MULTI VOLT BALLAST. LITHONIA TYPE S OR EQUAL.
- ⑩ ALL COMPONENTS NOT BACK OF PANEL MOUNTED W/ STAINLESS STEEL SELF SEALING FASTENERS EQUAL TO APM SEELBOLT.
- ⑪ CABINET VENTILATION LOUVER 7.8"W X 8.8" HIGH APPROX. WALL LOUVER W/ ALUMINUM MESH FILTER.
- ⑫ PANEL L3. SEE SEPARATE SCHEDULE.
- ⑬ 3" PVC LARGE TOP FLOOR DRAIN. SIOUX CHIEF 842 OR SIMILAR WITH 2" CONNECTION ADAPTER.
- ⑭ 2 X 1-1/2 REDUCER WITH 1-1/2 X 1-1/4 BUSHING
- ⑮ 1-1/4 DRAIN. EXTEND INTO DIGESTER.
- ⑯ PAINT ALL EXPOSED PVC FOR SUNLIGHT PROTECTION.
- ⑰ 5/8" EPDM HOSE, TYP.

3-EXIST. U/G CONDUITS POWER AND SIGNAL TO EXIST FEB#3. INTERCEPT EXIST RACEWAYS, SET POLYMER CONCRETE BOXES AND RELOCATE POWER AND SIGNAL AROUND NEW WORK

2-EXIST. U/G CONDUITS POWER AND SIGNAL TO EXIST FLOW TRANSDUCER INTERCEPT EXIST RACEWAYS, SET POLYMER CONCRETE BOXES AND RELOCATE POWER AND SIGNAL AROUND NEW WORK

REFER TO EXHIBITS A, B, C, D, AND E FOR THE CONSTRUCTED INFORMATION.

**PROFESSIONAL CERTIFICATION**  
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*Dawn Wayne Klein* 2/7/12  
 Signature of Engineer Date



NOTE 1: SEE SITE PLAN FOR EXACT LOCATION REFER TO PID, SHEETS E-5 THROUGH E-7 FOR DETAILS OF CIRCUIT, CONTROL AND INSTRUMENTATION RUNS.

**PARTIAL ELECTRICAL SITE PLAN**

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

A5 BUILTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_  
 CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_  
 DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

**DEPARTMENT OF PUBLIC WORKS**  
 HOWARD COUNTY, MARYLAND

*James K. ...* 2/9/12  
 DIRECTOR OF PUBLIC WORKS DATE  
*Thomas J. ...* 2/9/12  
 CHIEF, BUREAU OF UTILITIES DATE

**Dewberry**  
 Dewberry & Davis LLC  
 3100 LORD BALTIMORE DRIVE  
 SUITE 110  
 BALTIMORE, MD 21244-2882  
 410.285.9500  
 FAX: 410.285.9875



DES:	_____
DRN:	_____
CHK:	_____
DATE:	2/7/12
BY:	NO.
REVISIONS:	_____
DATE:	_____

**E-2 PARTIAL ELECTRICAL SITE PLAN**

600' SCALE MAP NO. 47

BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
 CONTRACT 20-4695

ELECTION DISTRICT NO. 6

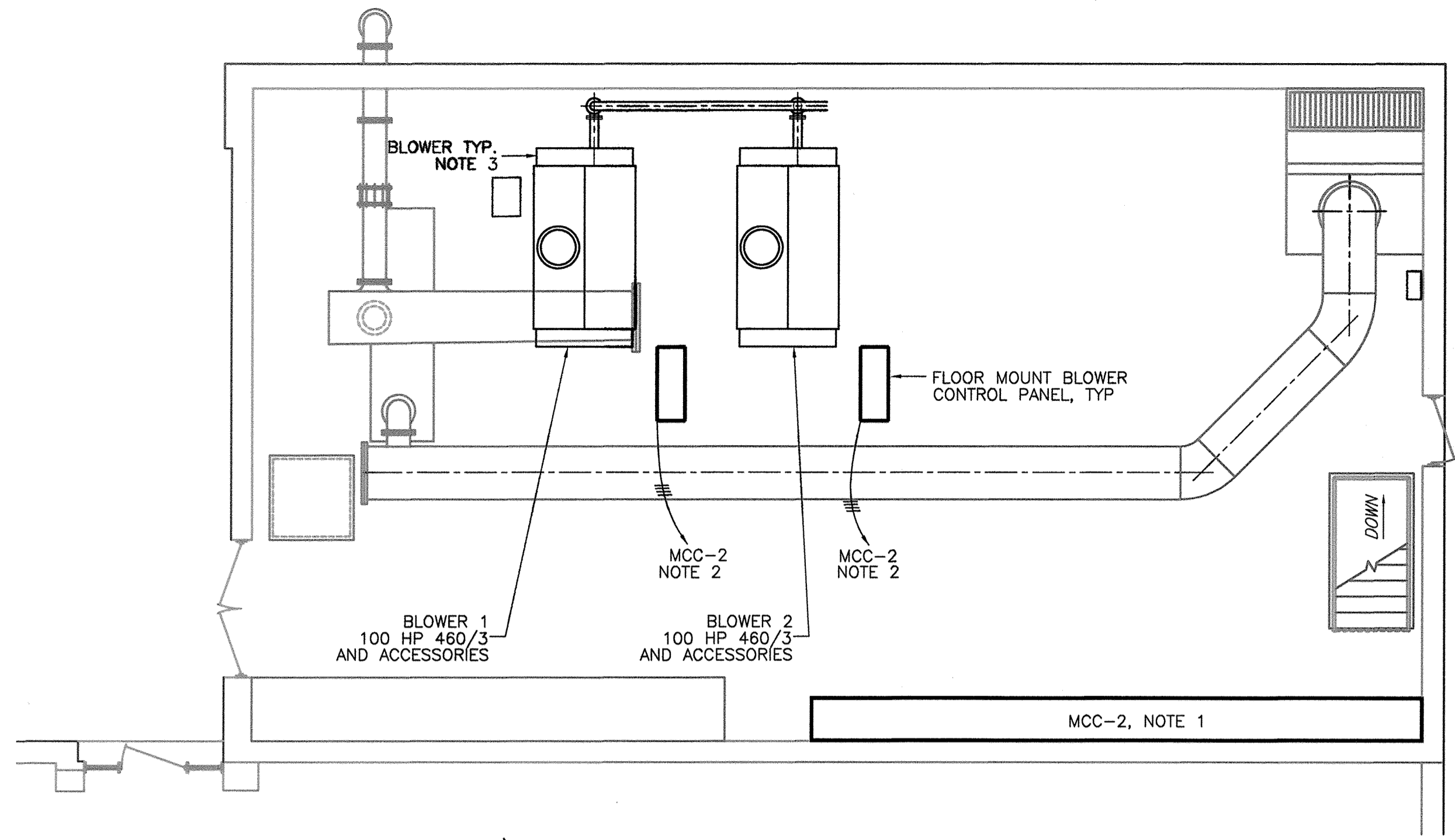
HOWARD COUNTY, MARYLAND

SCALE:  
 AS  
 SHOWN

SHEET  
 13 OF 23

Project: LPWRP SCUM and Septage Facility (Phase 2) - 2011-11-14 - 11:00 AM  
 Drawing: E-2 PARTIAL ELECTRICAL SITE PLAN  
 Date: 2/7/12  
 Author: J. Klein  
 Checker: T. Klein  
 Title: Professional Engineer  
 License: 11529  
 State: MD  
 Scale: 1/8"=1'-0"  
 Plot Date: 2/7/12 10:58:00 AM  
 Plot Path: C:\Users\jklein\Documents\2011\LPWRP SCUM and Septage Facility\Phase 2\CD\CD\ELECT\working\E-2.dwg  
 User: jklein  
 Plot Size: 11.00 x 17.00  
 Plot Scale: 1/8"=1'-0"  
 Plot Orientation: Landscape  
 Plot Color: Black  
 Plot Lineweight: 0.20  
 Plot Linetype: Solid  
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 Plot Title: E-2 PARTIAL ELECTRICAL SITE PLAN  
 Plot Sheet: 13 OF 23  
 Plot Date: 2/7/12 10:58:00 AM  
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 Plot Color: Black  
 Plot Lineweight: 0.20  
 Plot Linetype: Solid  
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 Plot Title: E-2 PARTIAL ELECTRICAL SITE PLAN  
 Plot Sheet: 13 OF 23  
 Plot Date: 2/7/12 10:58:00 AM



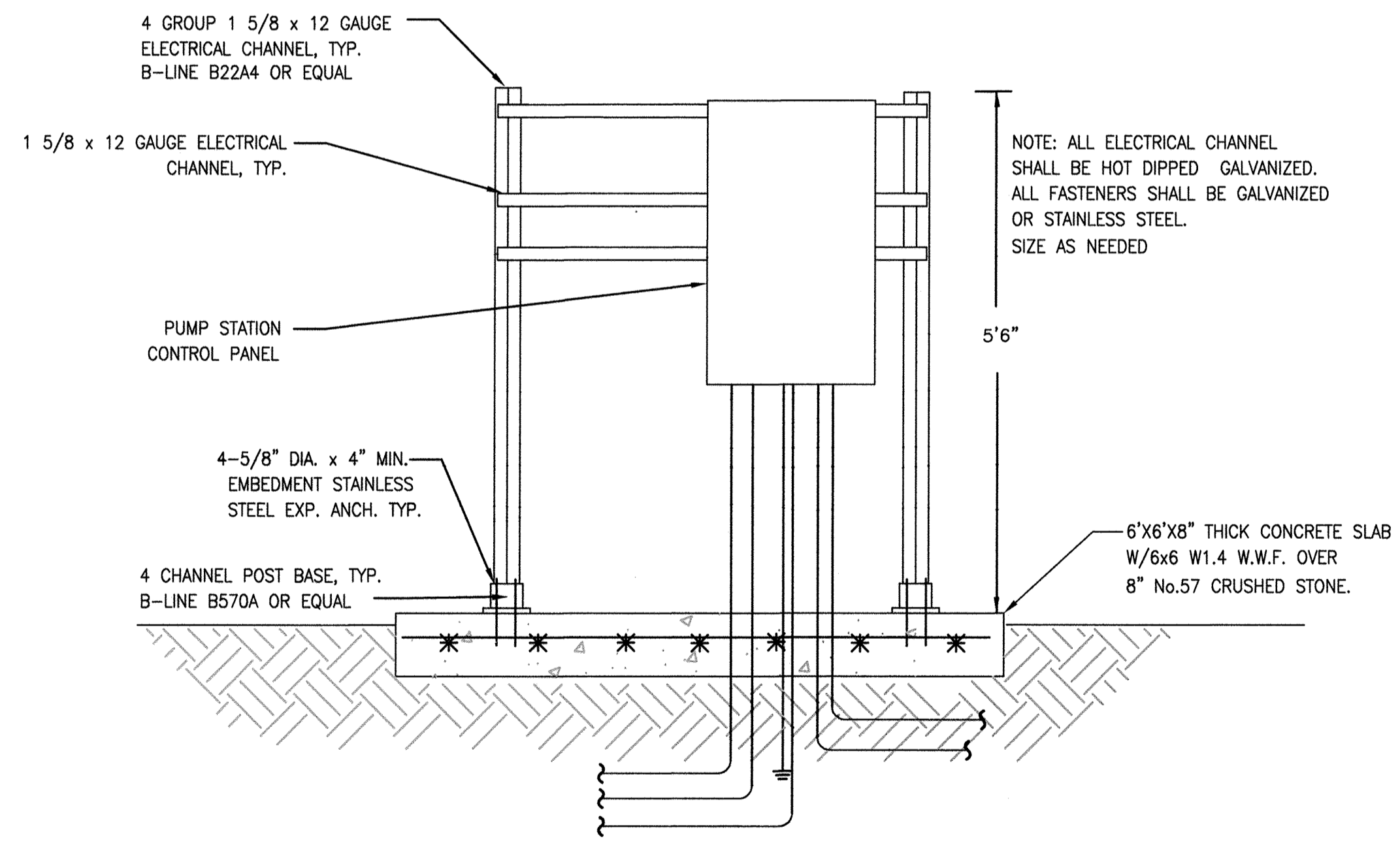


**ELECTRICAL PLAN  
EXISTING BLOWER ROOM**  
SCALE: 3/16"=1'-0"

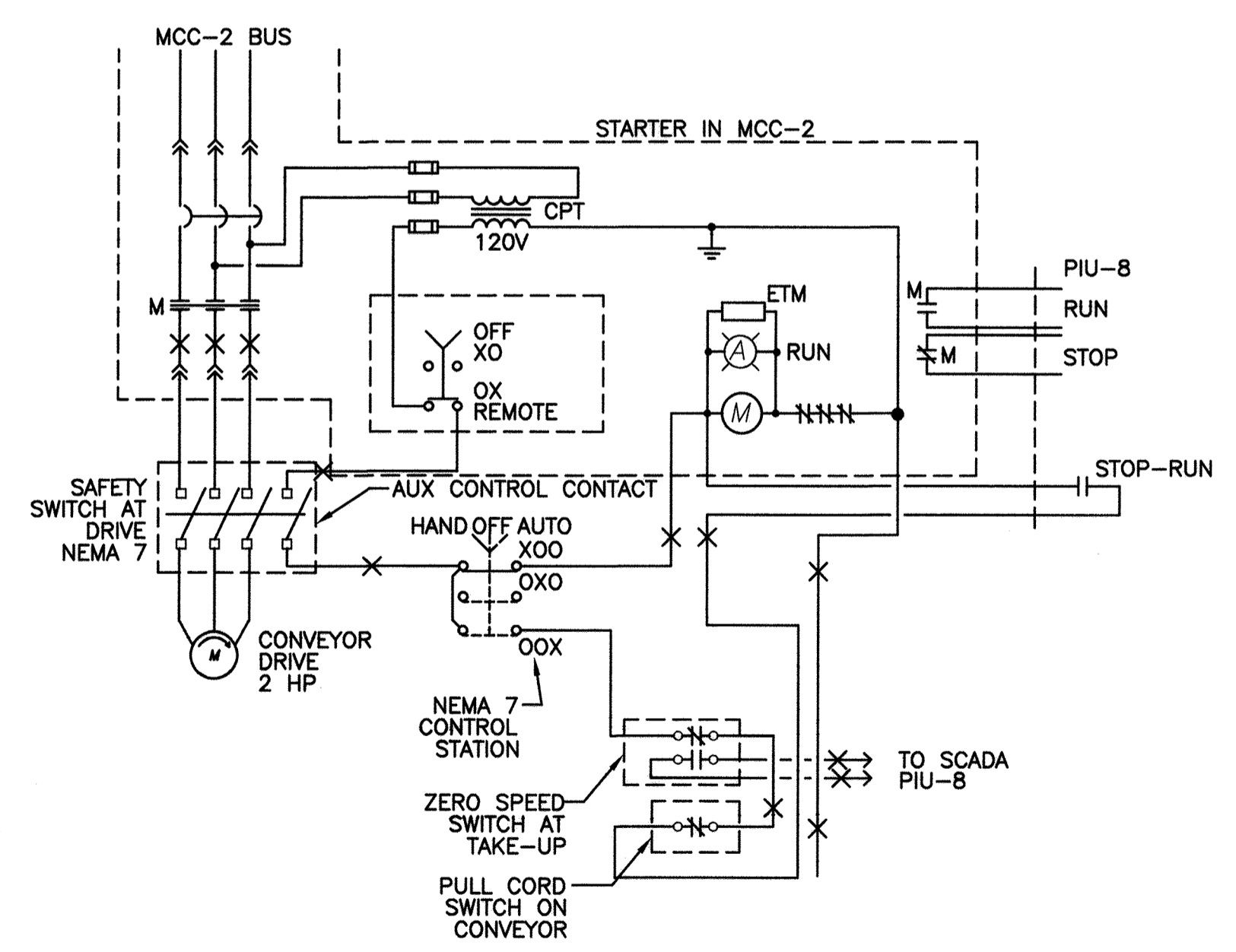


**MCC-2 NOTES:**  
THE FOLLOWING EQUIPMENT WILL BE PROVIDED BY ANOTHER PROJECT:  
1. 2 HP CONVEYOR STARTER  
2. 2-225 AMP TRIP 3-POLE CIRCUIT BREAKERS FOR THE TWO BLOWERS  
THIS PROJECT WILL PROVIDE ALL WIRE, CONDUIT, CONNECTIONS, AND COMMISSIONING FOR THE EQUIPMENT PROVIDED.

**NOTES:**  
1. MCC-2 IS PROVIDED BY ANOTHER PROJECT. COORDINATE CIRCUIT CONNECTIONS WITH THAT WORK.  
2. CONNECT TO 3P-225 AMP TRIP CIRCUIT BREAKER. 3#2/0, 1#4 BOND, 2"C.  
3. FOR EXISTING BLOWERS THAT ARE REMOVED, REMOVE ALL EXISTING WIRING AND THE ACCESSIBLE RACEWAYS BACK TO THE MOTOR CONTROL CENTERS.  
4. SEE DEMOLITION NOTES, SHEET E-1.



**DETAIL AT PUMP STATION CONTROL PANEL**  
NTS



**SCHEMATIC WIRING, CONVEYOR STARTER**  
NTS

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

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*David Wayne Klein* 2/7/12  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**

*Laurel K. Clark* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE

*Thomas J. Butler* 2/9/12  
CHIEF, BUREAU OF ENGINEERING DATE

*Shawn Green* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE

*David Klein* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
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FAX: 410.288.8875

DES: _____	BY _____	NO. _____	REVISIONS _____	DATE _____
DRN: _____				
CHK: _____				
DATE: 2/7/12				

**E-3 HEADWORKS BUILDING  
PLAN AND DETAILS**

600' SCALE MAP NO. 47

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

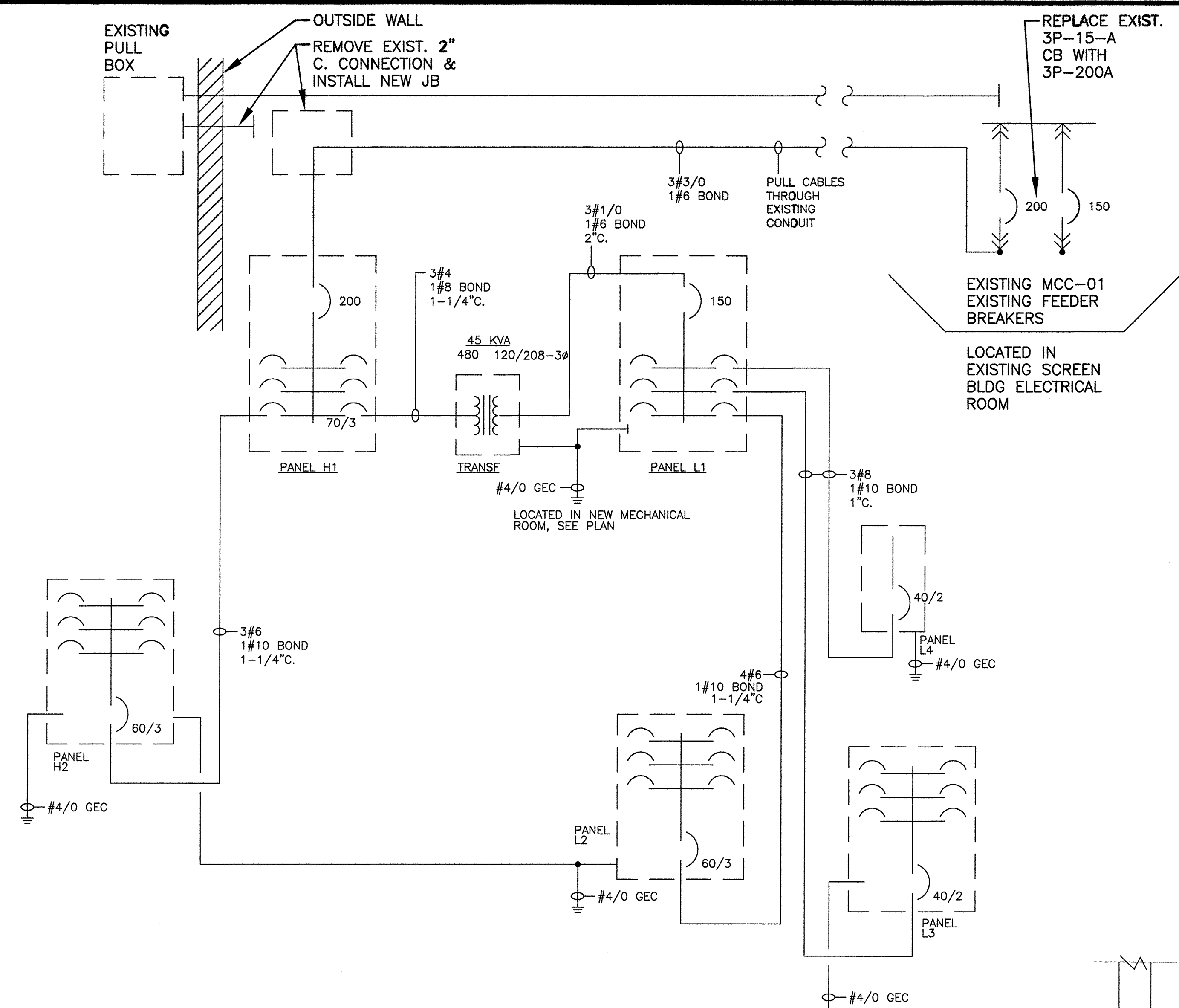
ELECTION DISTRICT NO. 6

HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 14 OF 23

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 Path: [unclear]  
 User: [unclear]  
 Title: [unclear]  
 Author: [unclear]  
 Status: [unclear]  
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 Print: [unclear]  
 Refresh: [unclear]  
 Help: [unclear]



**ONE LINE DIAGRAM**  
NTS

**NOTE:**  
PANELS H2 AND L2 ARE PROVIDED UNDER THE PHASE 1B WORK.

**PANEL SCHEDULE**

PANEL: DS-H1 200 AMPS, MAIN CIRCUIT BREAKER PHASE: 3  
POLE SPACES: 42 MOUNTING: SURFACE WIRE: 4  
LOCATION: SCREEN BLDG 277/480 VOLTS

LOAD	KW/PHASE			CIR/BKR	WIRE	CIR/NO.	CIR/NO.	WIRE	CIR/BKR	KW/PHASE			LOAD	
	A	B	C							A	B	C		
TRANSFORMER	15			3	70	4	1	A	2	6	3	60	4.3	PANEL H2
		15											5.3	
CHOPPER PUMP	3.7			3	30	12	7	A	8	12	3	30	3.7	CHOPPER PUMP
		3.7											3.7	
MIXER	1.7			3	15	12	13	A	14	12	3	15	1.7	MIXER
		1.7											1.7	
MIXER	1.7			3	15	12	19	A	20	12	3	15	1.7	MIXER
		1.7											1.7	
WATER HEATER	8			3	40	8	25	A	26	12	3	15	0.6	MGOH
		8											0.6	
OUTLET VLV	0.2			3	15	12	31	A	32	12	3	20	3.8	GREASE PUMPS
		0.2											3.8	
SPACE													3.8	SPACE

① PROVIDE PADLOCK OFF ATTACHMENT 25 KAIC

**PANEL SCHEDULE**

PANEL: L1 150 AMPS, MAIN CIRCUIT BREAKER PHASE: 3  
POLE SPACES: 30 MOUNTING: SURFACE WIRE: 4  
LOCATION: SCREEN BLDG 120/208 VOLTS

LOAD	KW/PHASE			CIR/BKR	WIRE	CIR/NO.	CIR/NO.	WIRE	CIR/BKR	KW/PHASE			LOAD	
	A	B	C							A	B	C		
PANEL L2	3.2			3	60	6	1	A	2	12	1	20	1.5	GREASE HT.
		2.5											1	MGOH HT TRACE
PANEL L3	2.4			2	40	8	7	A	8	12	1	20	0.6	SPARE
		0.8												
PANEL L4			1.1	2	4	8	11	C	12	1	20			SPACE
SPACE														SPACE

① 30 MA GROUND FAULT INTERRUPTER 10 KAIC

REFER TO EXHIBIT E FOR THE AS CONSTRUCTED PANEL SCHEDULES

**PANEL SCHEDULE**

PANEL: L3 40 AMPS, MAIN CIRCUIT BREAKER PHASE: 1  
POLE SPACES: 14 MOUNTING: SURFACE WIRE: 3  
LOCATION: BACT CABINET 120/240 VOLTS NEMA 3R ENCLOSURE

LOAD	KW/PHASE			CIR/BKR	WIRE	CIR/NO.	CIR/NO.	WIRE	CIR/BKR	KW/PHASE			LOAD	
	A	B	C							A	B	C		
AC UNIT	0.9			1	20	12	1	A	2	12	1	20	1.5	HEATER
RECEP		0.7		1	20	12	3	B	4	12	1	20	0.1	LIGHTS
SPACE														SPACE
														SPACE
														SPACE
														SPACE

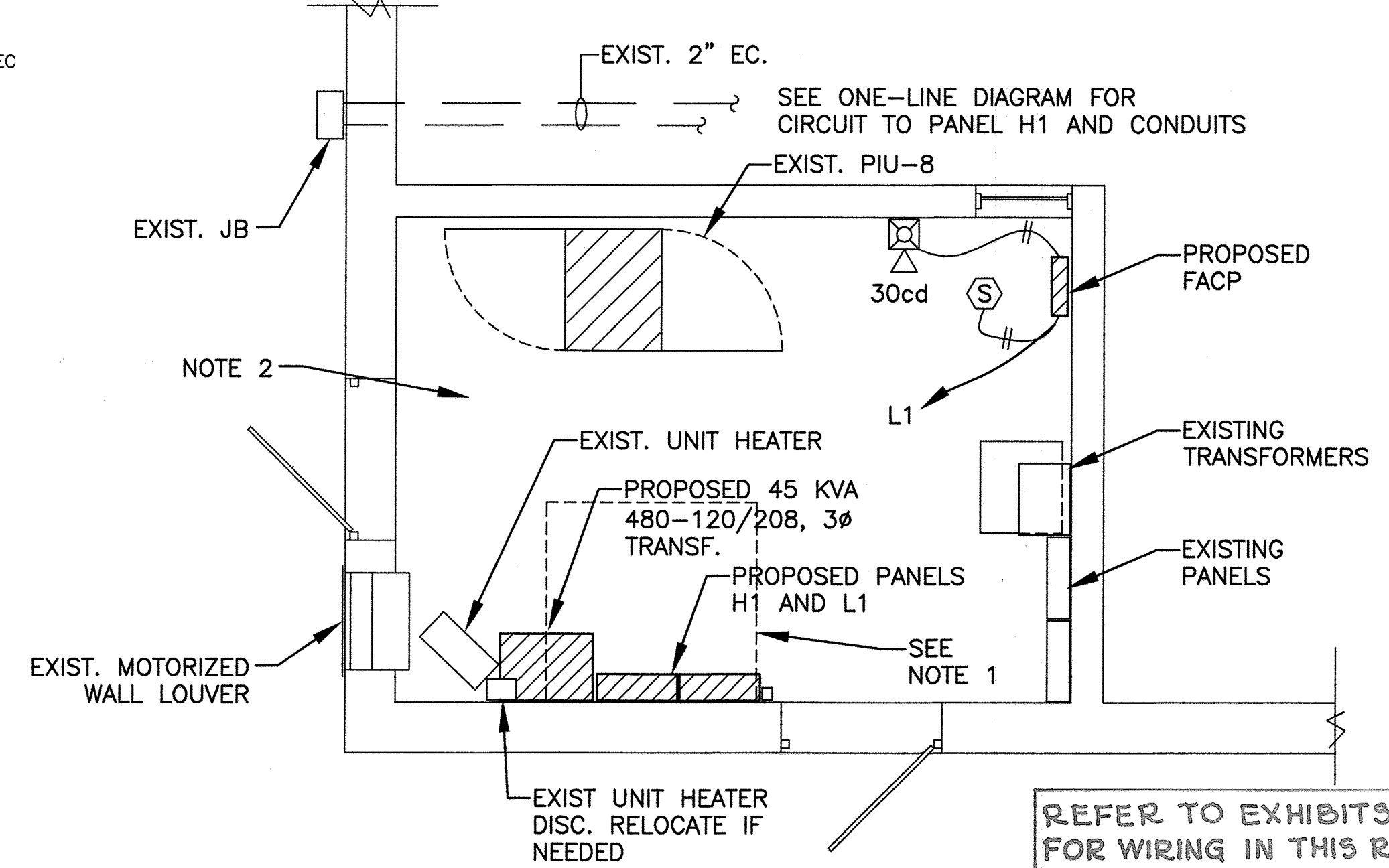
LOAD CENTER 10KW AIC SUITABLE OR SERVICE ENTRANCE EQUIPMENT

**PANEL SCHEDULE**

PANEL: L4 40 AMPS, MAIN CIRCUIT BREAKER PHASE: 1  
POLE SPACES: 14 MOUNTING: SURFACE WIRE: 3  
LOCATION: MGOH 120/240 VOLTS NEMA 3R ENCLOSURE

LOAD	KW/PHASE			CIR/BKR	WIRE	CIR/NO.	CIR/NO.	WIRE	CIR/BKR	KW/PHASE			LOAD	
	A	B	C							A	B	C		
FAN LIGHTS	0.4			1	20	12	1	A	2	12	1	20	0.7	RECEP.
HEATER														SPACE
SPACE														SPACE
														SPACE
														SPACE

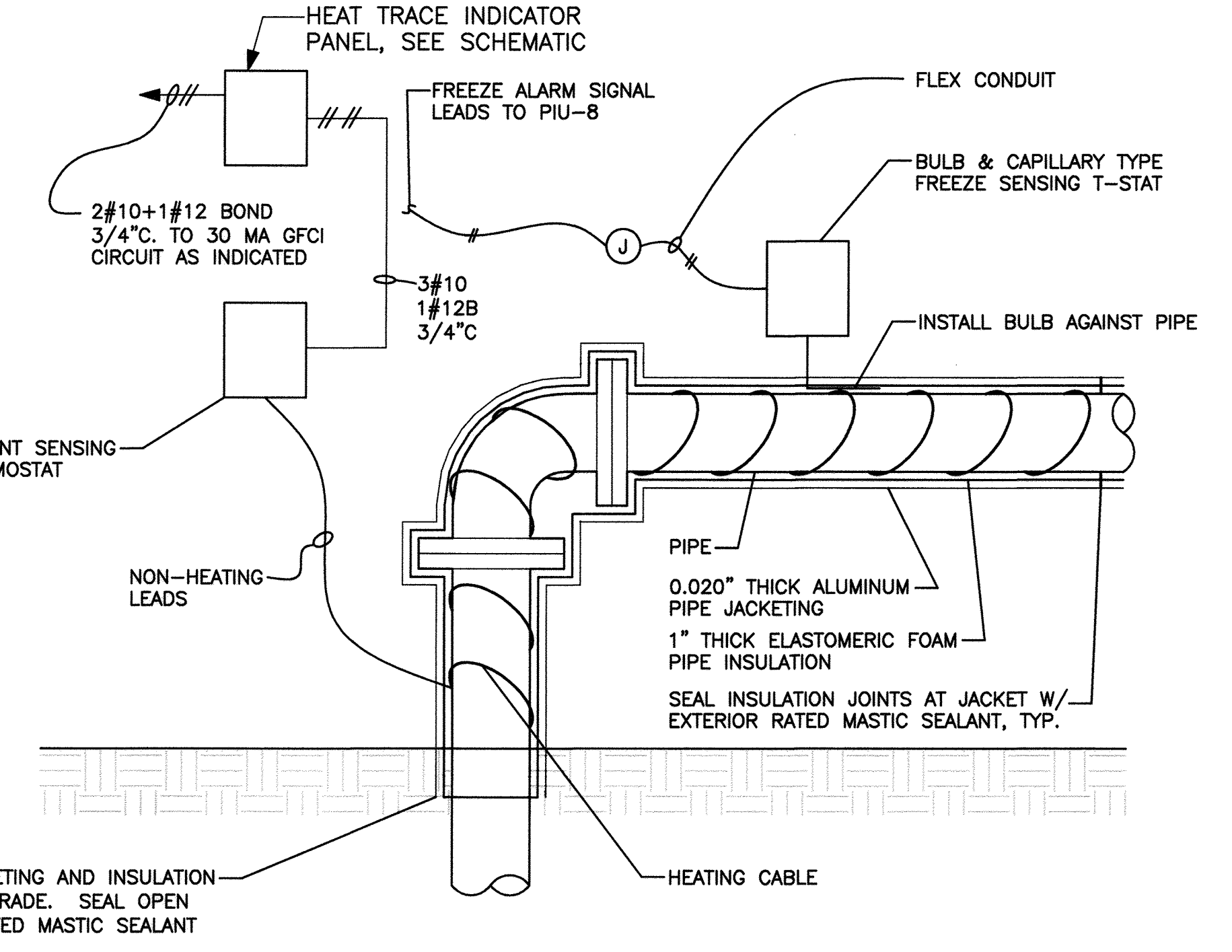
LOAD CENTER 10KW AIC SUITABLE OR SERVICE ENTRANCE EQUIPMENT



**ELECTRICAL PLAN**  
SCREEN BLDG NEW MECHANICAL ROOM  
SCALE: 3/8" = 1'0"

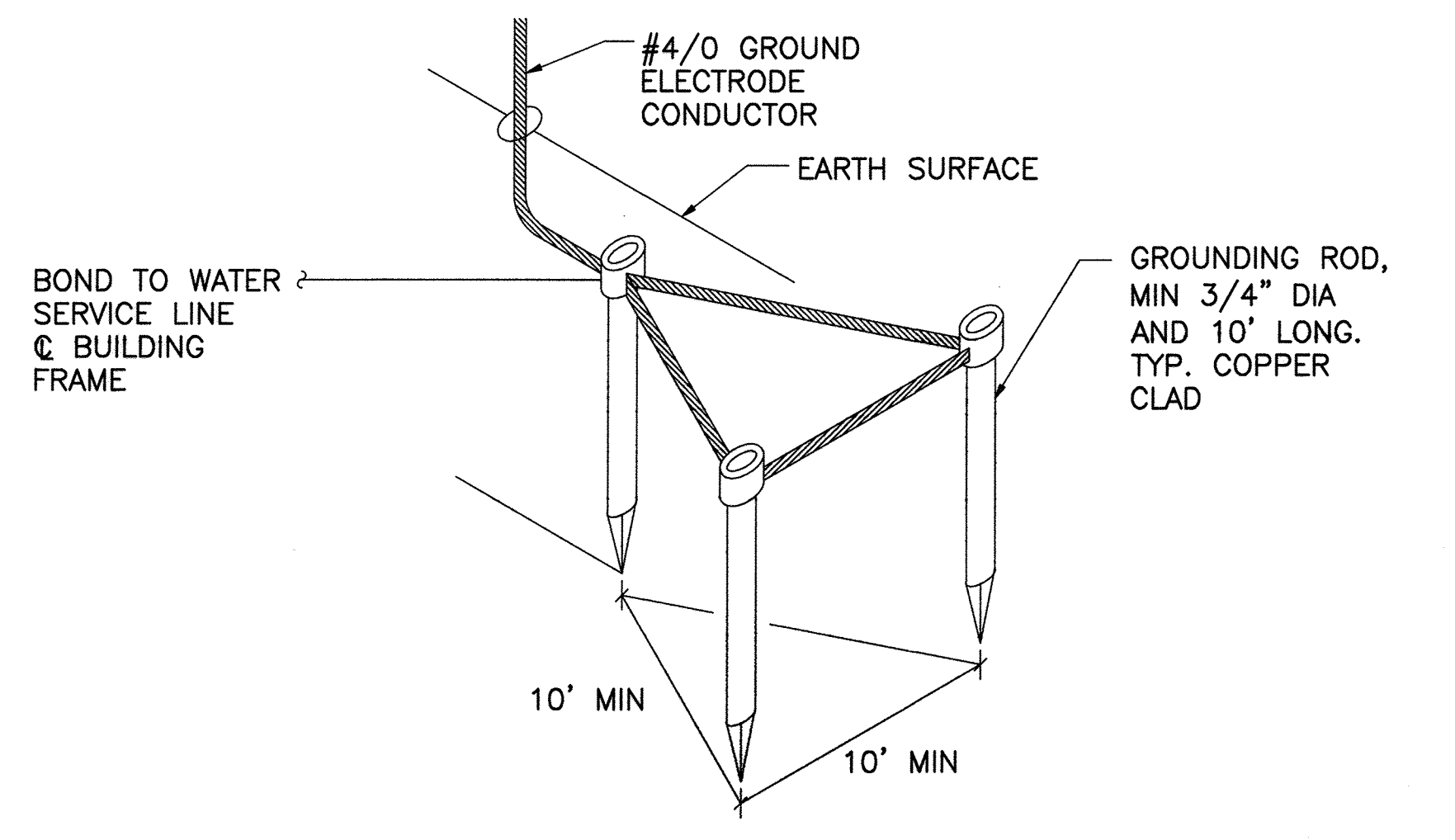
- NOTE:**
- REMOVE EXISTING MAIN CONTROL PANEL AND PIU.
  - REMOVE ALL UN-USED CONCRETE HOUSE KEEPING PADS IN THIS ROOM AND PATCH FLOOR SMOOTH.

**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013.  
*Daniel Williams* 2/7/12  
Signature of Engineer Date



**PIPE HEAT TRACING DETAIL**  
NTS

**NOTE:**  
FOR GREASE PIPING, WRAP PIPE UNDER HEATING CABLE WITH 2 LAYERS OF 5 MIL ALUMINUM FOIL.



**DETAIL, GROUNDING ELECTRODE**  
NTS

AS BUILT

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE \_\_\_\_\_

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE \_\_\_\_\_

\_\_\_\_\_  
DIRECTOR DATE \_\_\_\_\_

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*James B. Butler* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE

*Debra L. ...* 2/12/12  
CHIEF, BUREAU OF UTILITIES DATE

*Debra L. ...* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2862  
410.285.9500  
FAX: 410.285.9575



DES: _____	NO.	REVISIONS	DATE
DRN: _____			
CHK: _____			
DATE: 2/7/12			

**E-4 ELECTRICAL**  
DIAGRAMS AND DETAILS

60' SCALE MAP NO. 47 BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

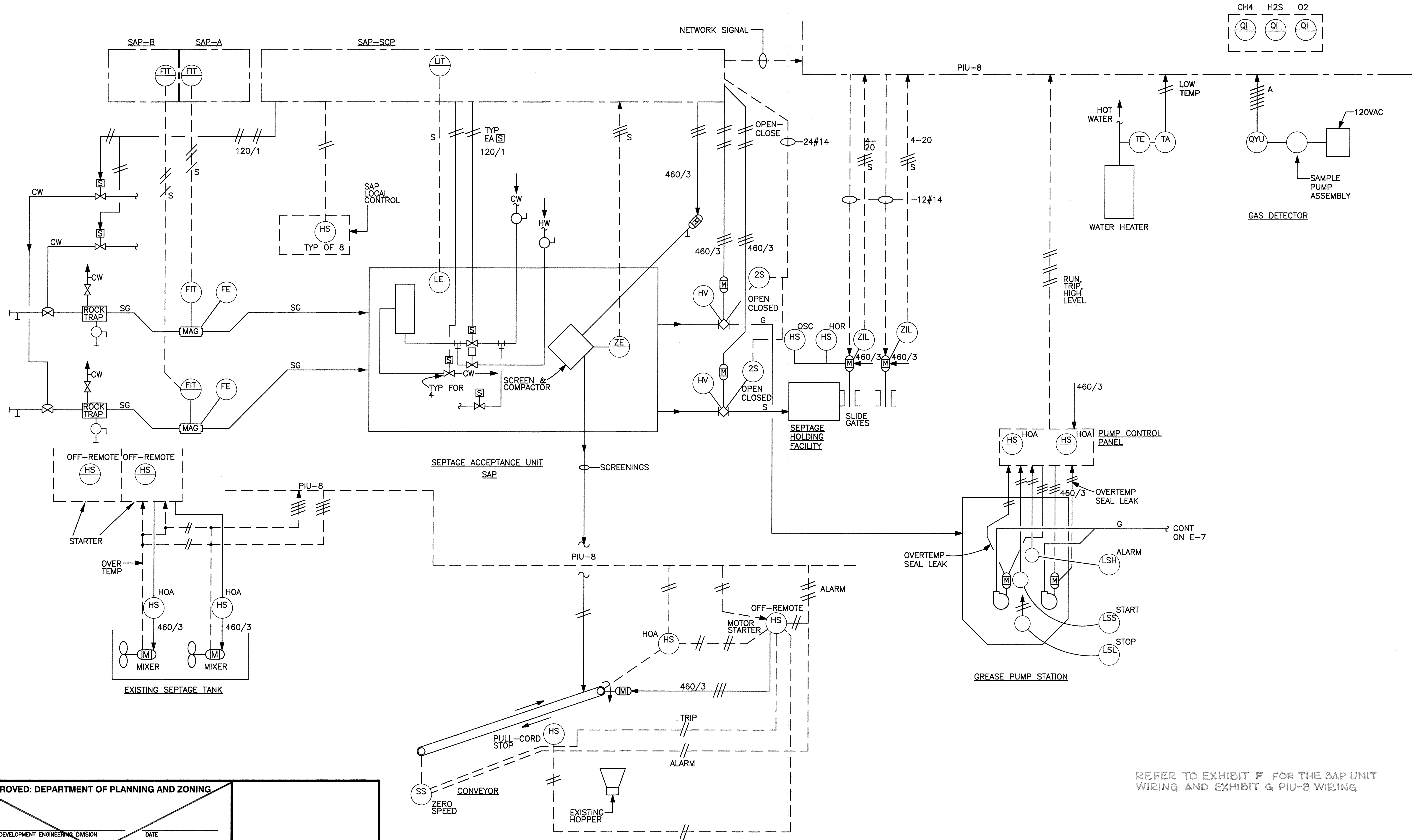
CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 15 OF 23

Project: [unclear] Date: Feb 07, 2012 11:51:30 AM  
 Path: [unclear]  
 User: [unclear]  
 Title: [unclear]  
 Author: [unclear]  
 Status: [unclear]  
 Version: [unclear]





REFER TO EXHIBIT F FOR THE SAP UNIT WIRING AND EXHIBIT G PIU-8 WIRING

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE \_\_\_\_\_

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE \_\_\_\_\_

\_\_\_\_\_  
DIRECTOR      DATE \_\_\_\_\_

**PROFESSIONAL CERTIFICATION**  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 11529    EXPIRATION DATE: JULY 9, 2013  
*David W. Davis*      2/7/12  
Signature of Engineer      Date

**PARTIAL P&ID**  
NTS

AS BUILT

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

*Jack*      2/9/12      *Murray Suttles*      2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE      CHIEF, BUREAU OF ENGINEERING      DATE

*John*      2/9/12      *David*      2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE      CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2862  
410-285-9800  
FAX: 410-285-8875



DES: _____	BY: _____	NO. _____	REVISIONS _____	DATE: 2/7/12
DRN: _____				
CHK: _____				

**E-6 PARTIAL P&ID**

600' SCALE MAP NO. 47      BLOCK NO. 24

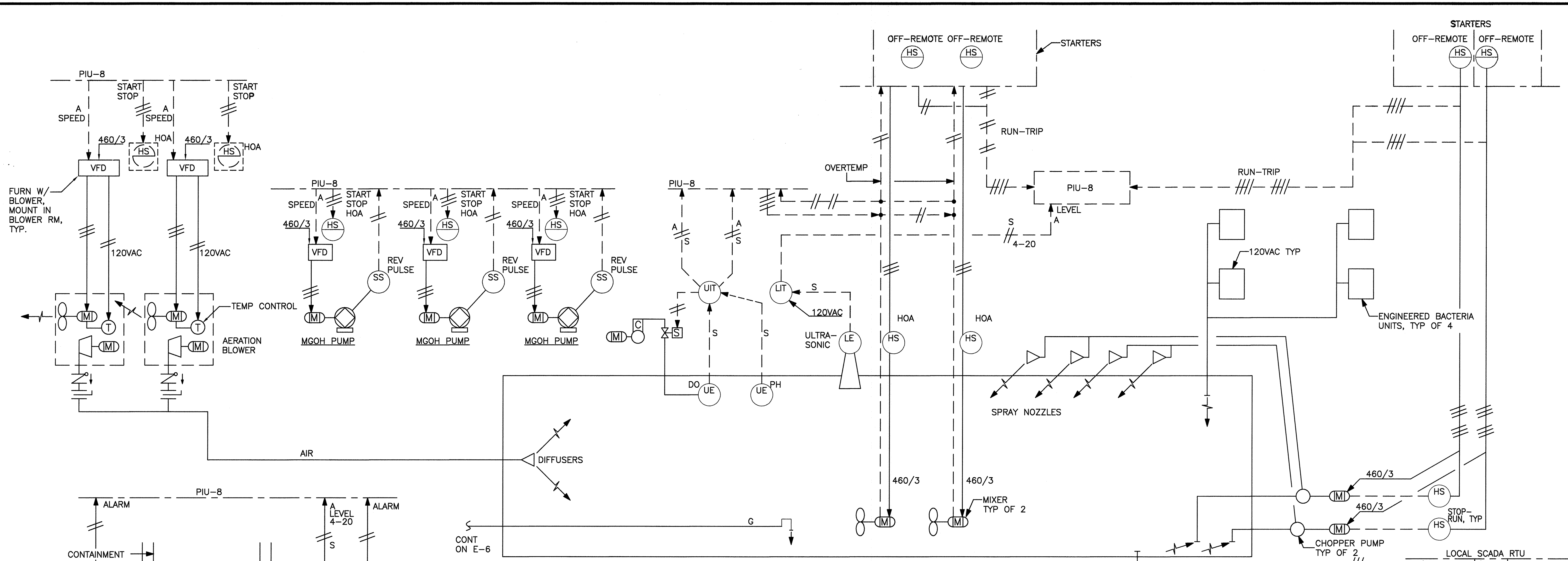
**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 17 OF 23

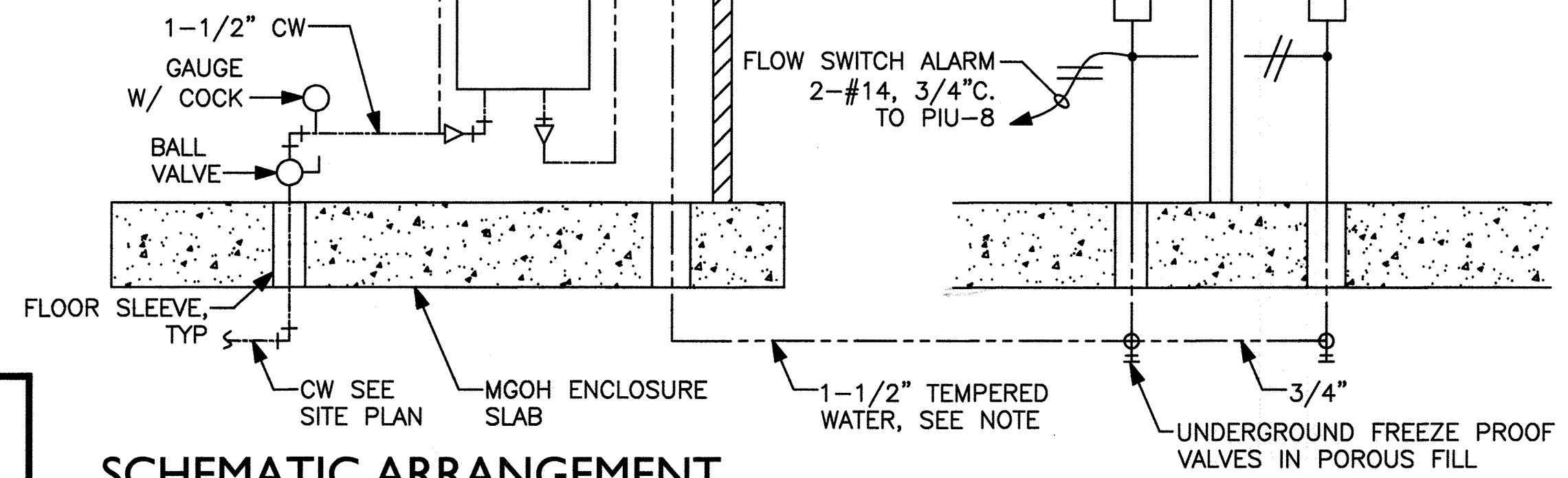
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 User: David Davis  
 Date: 02-09-12 11:37am  
 PLOT: P:\[unclear] Sum and Septage Facility\Phase 2\CAD\2011\1-ORDER - phase 2.dwg



**PARTIAL P&ID**  
NTS

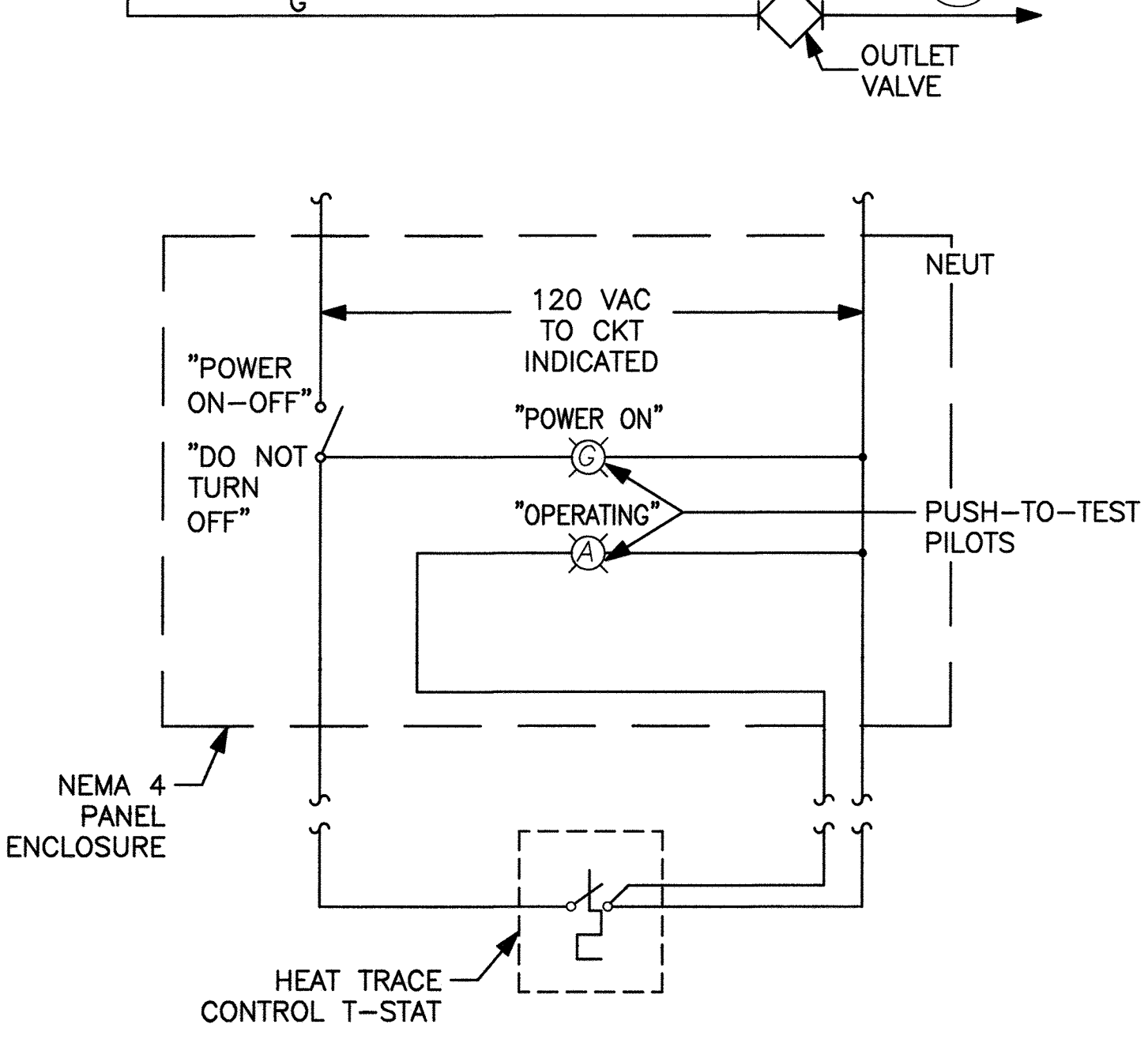
NOTE: INSULATE UNDERGROUND TEPID WATER LINES WITH 3/4" THICK ELASTOMERIC FOAM PIPE INSULATION WRAPPED WITH MASTIC SEALING TAPE.

TEMPERED WATER HEATER EEMAX TANKLESS MODEL CE-24KW OR EQUAL, 460/3 COMPLETE WITH ELECTRONIC TEMP CONTROL AND MIXING VALVE. CIRCUIT H1-25 WITH 3-#8, 1-#10 BOND, IN 1" CW. SEE PLAN SHEET E-8.



**SCHEMATIC ARRANGEMENT**  
**EYE WASH/SHOWER UNIT WATER SUPPLY**  
SCALE: NTS

PROFESSIONAL CERTIFICATION  
I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013  
*David Wayne Klein* 2/7/12  
Signature of Engineer Date



**SCHEMATIC WIRING**  
**HEAT TRACE INDICATOR PANEL**  
SCALE: NTS

AS BUILTS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
\_\_\_\_\_  
DIRECTOR DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
*James H. ...* 2/9/12  
DIRECTOR OF PUBLIC WORKS DATE  
*Shirley ...* 2/9/12  
CHIEF, BUREAU OF UTILITIES DATE  
*... ..* 2/9/12  
CHIEF, UTILITY DESIGN DIVISION DATE

**Dewberry**  
Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2882  
410.286.9293  
FAX: 410.286.8875

DES:	
DRN:	
CHK:	
DATE:	2/7/12
BY:	
NO.	
REVISIONS	
DATE	

E-7 PARTIAL P&ID  
600' SCALE MAP NO. 47  
BLOCK NO. 24

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)  
CAPITAL PROJECT S-6245  
CONTRACT 20-4695  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

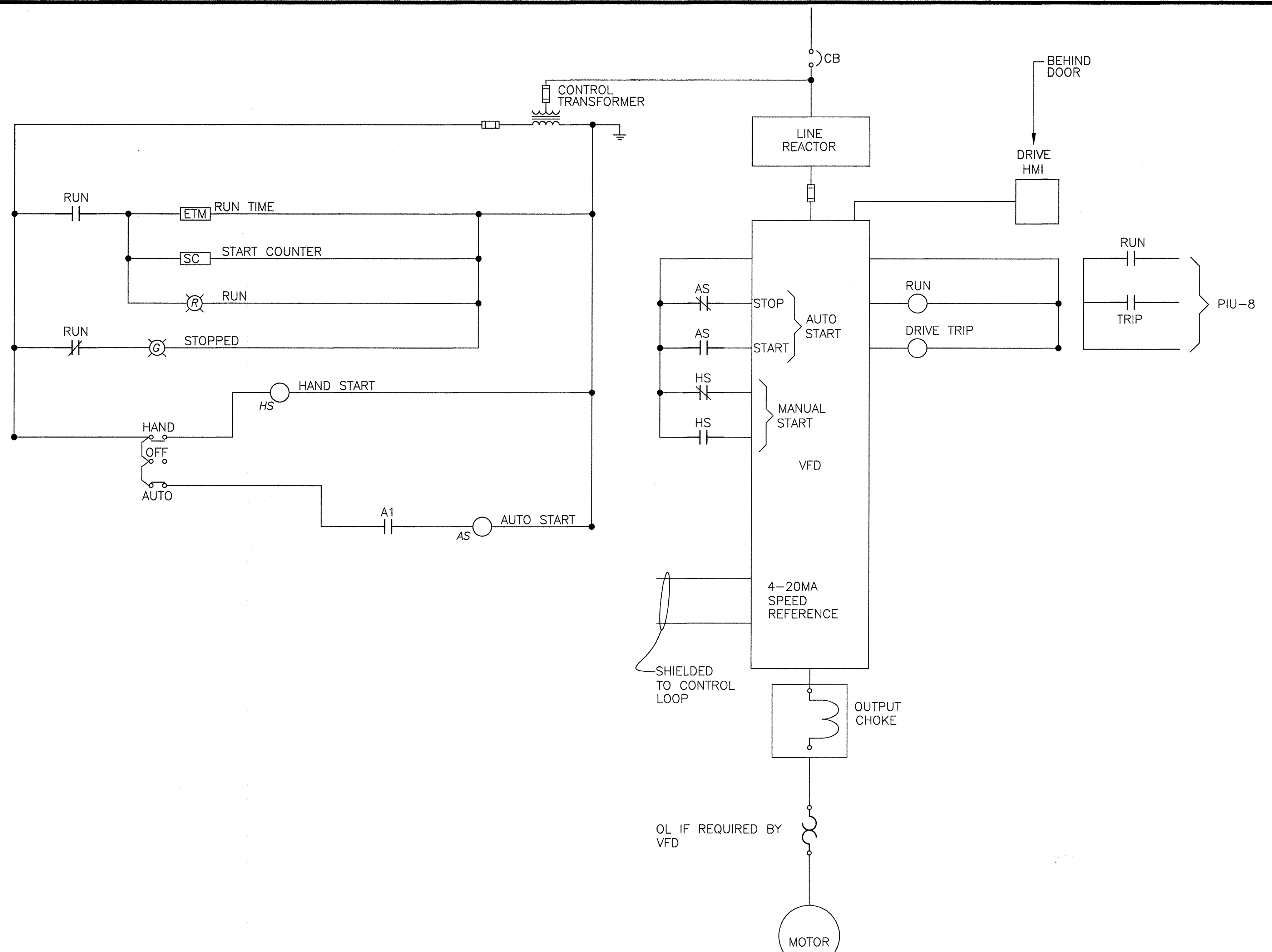
SCALE: AS SHOWN  
SHEET 18 OF 23

Plotted by: [unclear] Plot Date: Feb 07, 2012 10:18am  
 Title: LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2) Change Order (CADD/ELECTRICAL) E-7.dwg  
 User: [unclear] Plot Date: 2/7/12 10:18am  
 XREF: S-30, S-31, S-32, S-33, S-34, S-35, S-36, S-37, S-38, S-39, S-40, S-41, S-42, S-43, S-44, S-45, S-46, S-47, S-48, S-49, S-50, S-51, S-52, S-53, S-54, S-55, S-56, S-57, S-58, S-59, S-60, S-61, S-62, S-63, S-64, S-65, S-66, S-67, S-68, S-69, S-70, S-71, S-72, S-73, S-74, S-75, S-76, S-77, S-78, S-79, S-80, S-81, S-82, S-83, S-84, S-85, S-86, S-87, S-88, S-89, S-90, S-91, S-92, S-93, S-94, S-95, S-96, S-97, S-98, S-99, S-100, S-101, S-102, S-103, S-104, S-105, S-106, S-107, S-108, S-109, S-110, S-111, S-112, S-113, S-114, S-115, S-116, S-117, S-118, S-119, S-120, S-121, S-122, S-123, S-124, S-125, S-126, S-127, S-128, S-129, S-130, S-131, S-132, S-133, S-134, S-135, S-136, S-137, S-138, S-139, S-140, S-141, S-142, S-143, S-144, S-145, S-146, S-147, S-148, S-149, S-150, S-151, S-152, S-153, S-154, S-155, S-156, S-157, S-158, S-159, S-160, S-161, S-162, S-163, S-164, S-165, S-166, S-167, S-168, S-169, S-170, S-171, S-172, S-173, S-174, S-175, S-176, S-177, S-178, S-179, S-180, S-181, 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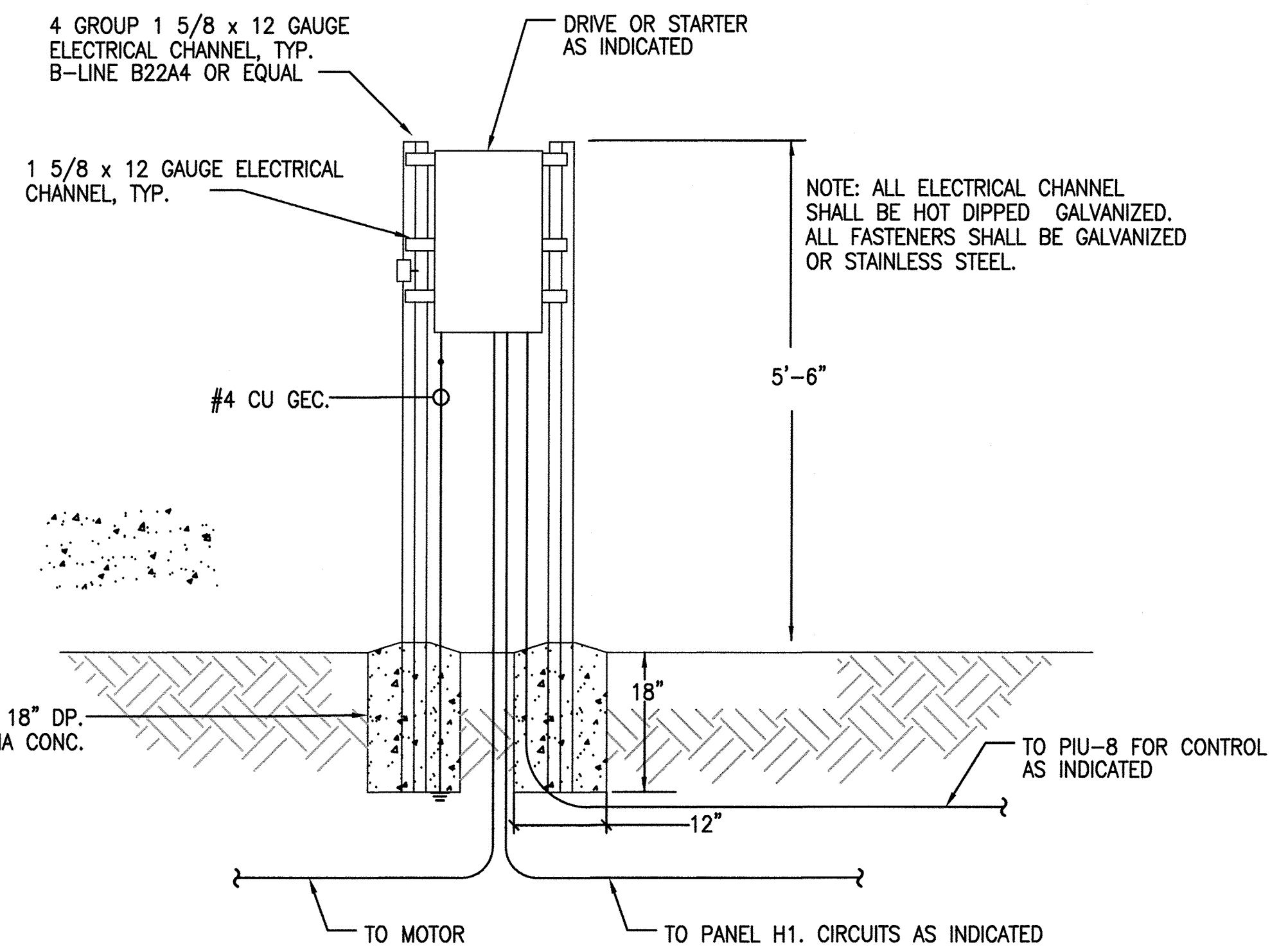
LIGHT FIXTURE SCHEDULE				
MARK	SYMBOL	DESCRIPTION	LAMP	MANUFACTURER TYPE
A		2 LAMP 4' FLUORESCENT DAMP LOCATION CEILING SURFACE MOUNT, 120V	2-32W T8	LITHONIA DMW, MULTI-TAP BALLAST

FAN SCHEDULE									
EQUIP. NO.	TYPE	AIR FLOW (CFM)	EXTERNAL STATIC WG	RPM	HP	VOLTAGE PHASE	CONTROL TYPE	FEATURES	MODEL
EF-1	DIRECT DRIVE CENTRIFUGAL ROOF EXHAUSTER, ALUMINUM CONSTRUCTION	230	1/8"	1550 NOMINAL	1/60	120/1	PROVIDE COOLING WALL TSTAT	SPEED CONTROL, ALUMINUM CURB W/ MOTORIZED BACKDRAFT DAMPER, INTEGRAL DISCONNECT	GREENHECK G-065-D

ELECTRIC HEATER SCHEDULE					TYPE:
MARK NO.	TYPE	CAPACITY	VOLTS/PHASE	DESCRIPTION	
H-1	FAN FORCED WALL HEATER	1 KW	120/1	SURFACE MOUNT WALL HEATER W/ INTEGRAL THERMOSTAT	TPI 3320

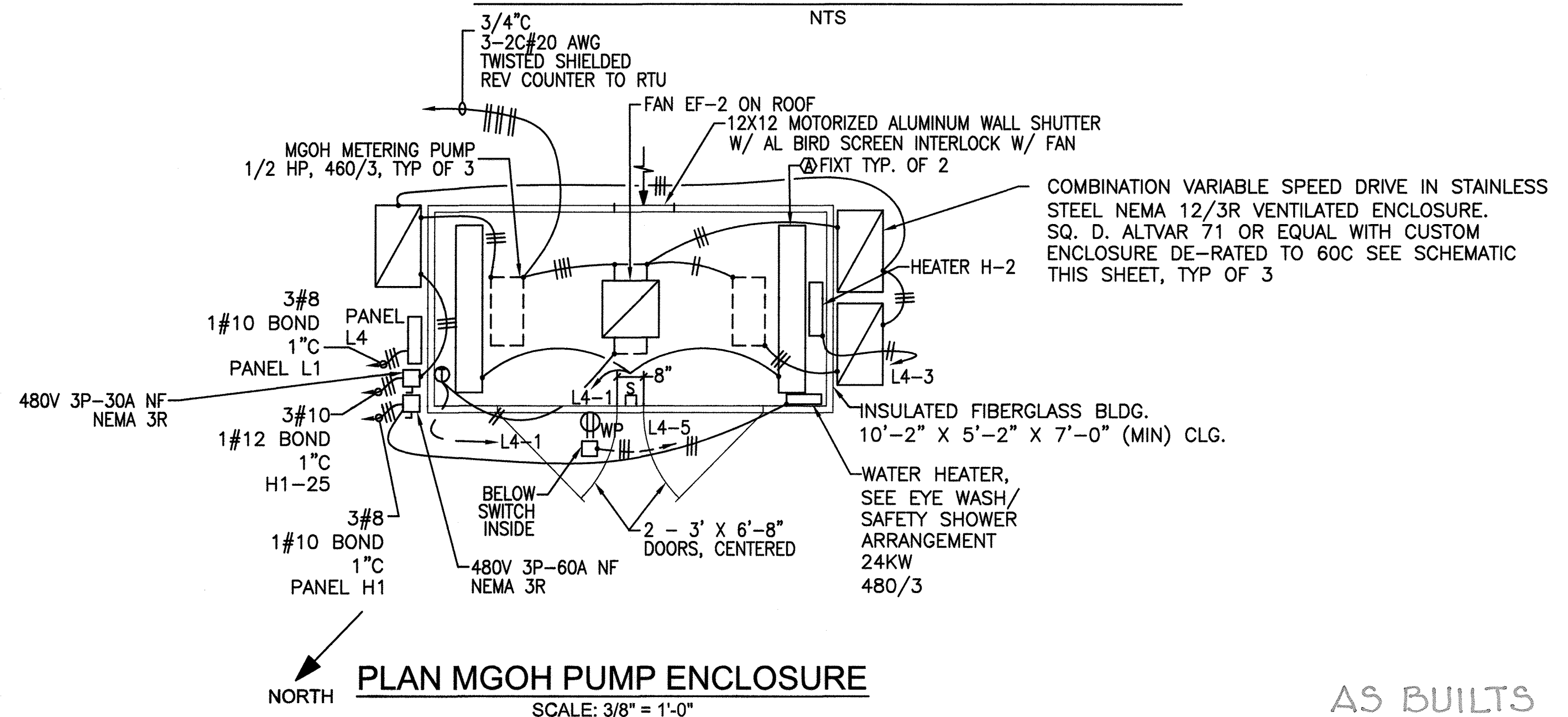


VFD STARTER ELEMENTARY CONNECTIONS



DETAIL, TYPICAL FIELD MOUNTED STARTER OR DRIVE

- NOTES:
1. ALL FIELD MOUNTED DRIVES OR STARTER SHALL BE COMBINATION TYPE SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT.
  2. ENCLOSURES SHALL BE NEMA 12/3R GASKETED STAINLESS STEEL AND DRIVES SHALL HAVE SUNSHIELDS PLUS THERMAL MANAGEMENT FOR 14" TO 122°F RANGE. NEMA E4X ENCLOSURES MAY BE USED IN LIEU OF THE 12/3R CONSTRUCTION.



PLAN MGOH PUMP ENCLOSURE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE \_\_\_\_\_

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE \_\_\_\_\_

\_\_\_\_\_  
DIRECTOR      DATE \_\_\_\_\_

PROFESSIONAL CERTIFICATION

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11529 EXPIRATION DATE: JULY 9, 2013

*David Wayne Klein*      2/7/12  
Signature of Engineer      Date

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Joseph R. ...*      2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE

*Thomas S. ...*      2/6/12  
CHIEF, BUREAU OF ENGINEERING      DATE

*...*      2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE

*...*      2/9/12  
CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**  
Dewberry & Davis LLC  
3105 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2882  
410.285.9900  
FAX: 410.285.0875

DES:	_____
DRN:	_____
CHK:	_____
DATE:	2/7/12

E-8 ELECTRICAL DETAILS

600' SCALE MAP NO. 47      BLOCK NO. 24

LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)

CAPITAL PROJECT S-6245  
CONTRACT 20-4695

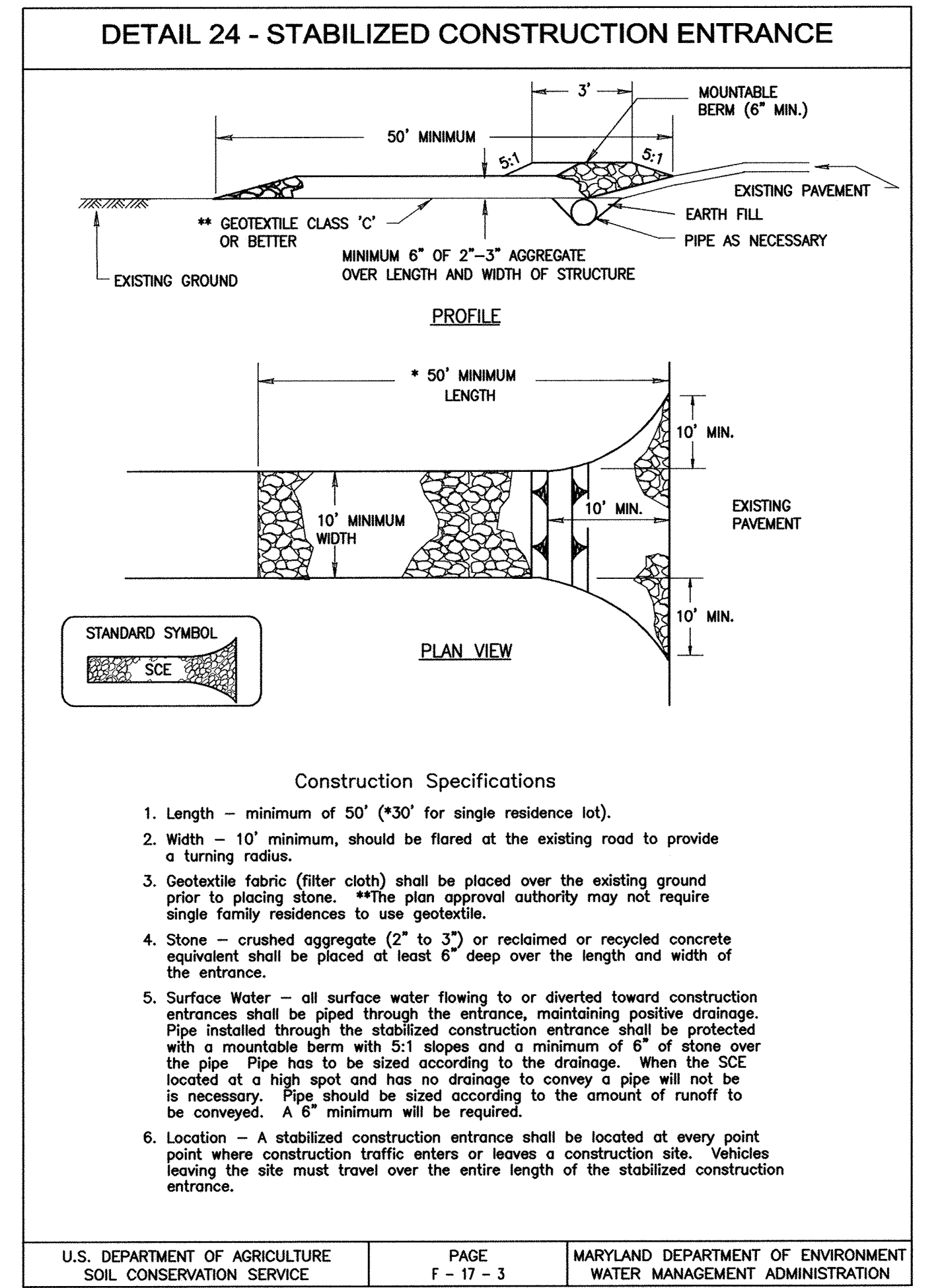
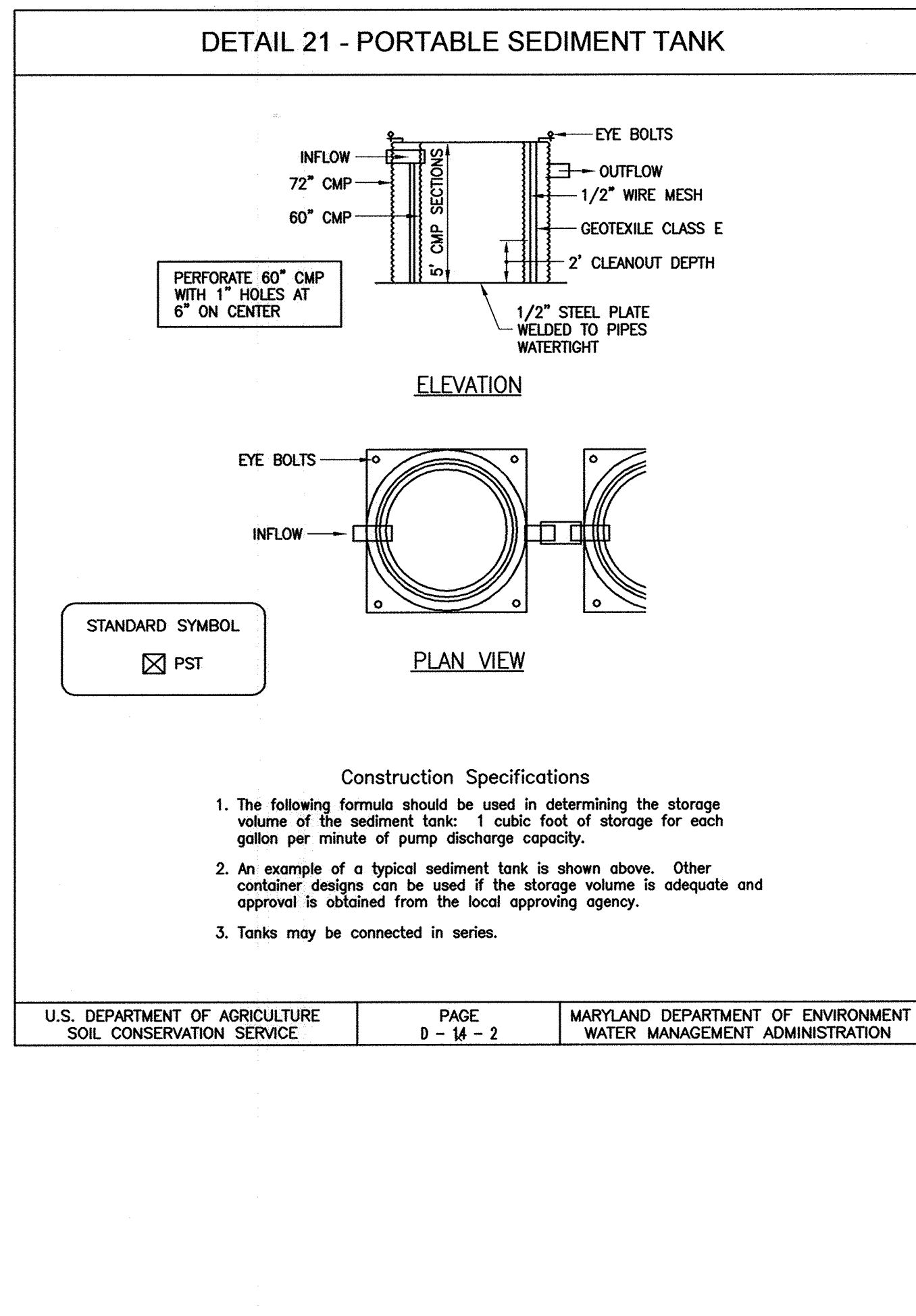
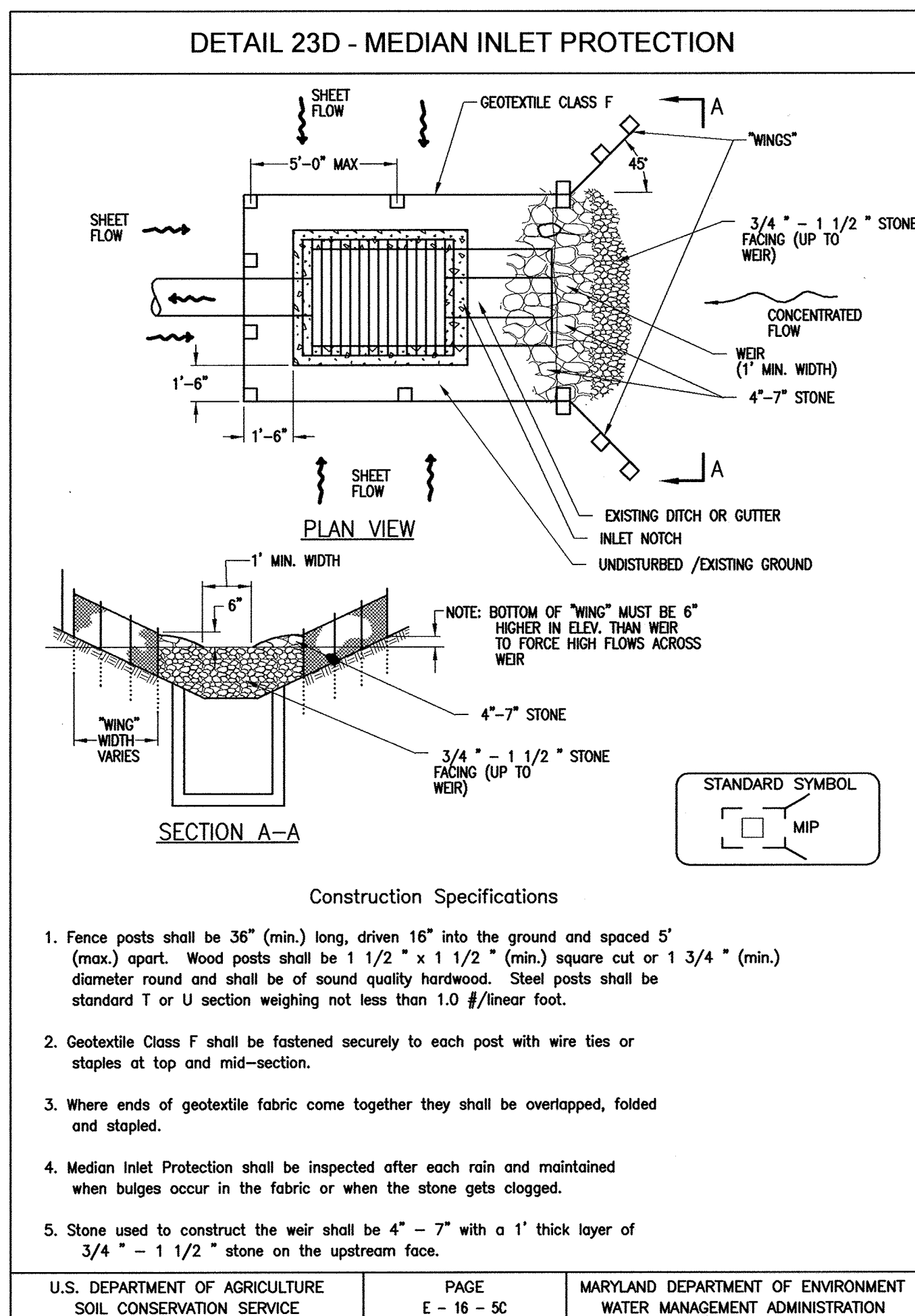
ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET 19 OF 23

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 Plot Title: E-8 ELECTRICAL DETAILS  
 Plot User: jwagner





**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

\_\_\_\_\_  
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
DIRECTOR      DATE

**PROFESSIONAL CERTIFICATION**

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

*Thomas N. Dalletta*      2/8/12  
Signature of Engineer      Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*John C. Redden*      3/1/12  
Howard Soil Conservation District      Date

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

*Thomas N. Dalletta*      2/29/12  
Signature of Engineer      Date

**THOMAS N. DALLAPAO**  
Print Name

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

\_\_\_\_\_  
Signature of Developer      Date

\_\_\_\_\_  
Print Name

AS BUILT

**DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND**

*Ray K...*      2/9/12      *Momas S. Butler*      2/9/12  
DIRECTOR OF PUBLIC WORKS      DATE      CHIEF, BUREAU OF ENGINEERING      DATE

*Silvia...*      2/9/12      *...*      2/9/12  
CHIEF, BUREAU OF UTILITIES      DATE      CHIEF, UTILITY DESIGN DIVISION      DATE

**Dewberry**

Dewberry & Davis LLC  
3108 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.285.9500  
FAX: 410.285.8875

DES: RJP			
DRN: CD			
CHK: TND			
DATE: 1/7/12			
BY	NO.	REVISIONS	DATE

**SEDIMENT AND EROSION CONTROL  
DETAILS**

600' SCALE MAP NO. 47      BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

**CAPITAL PROJECT S-6245  
CONTRACT 20-4695**

ELECTION DISTRICT NO. 6      HOWARD COUNTY, MARYLAND

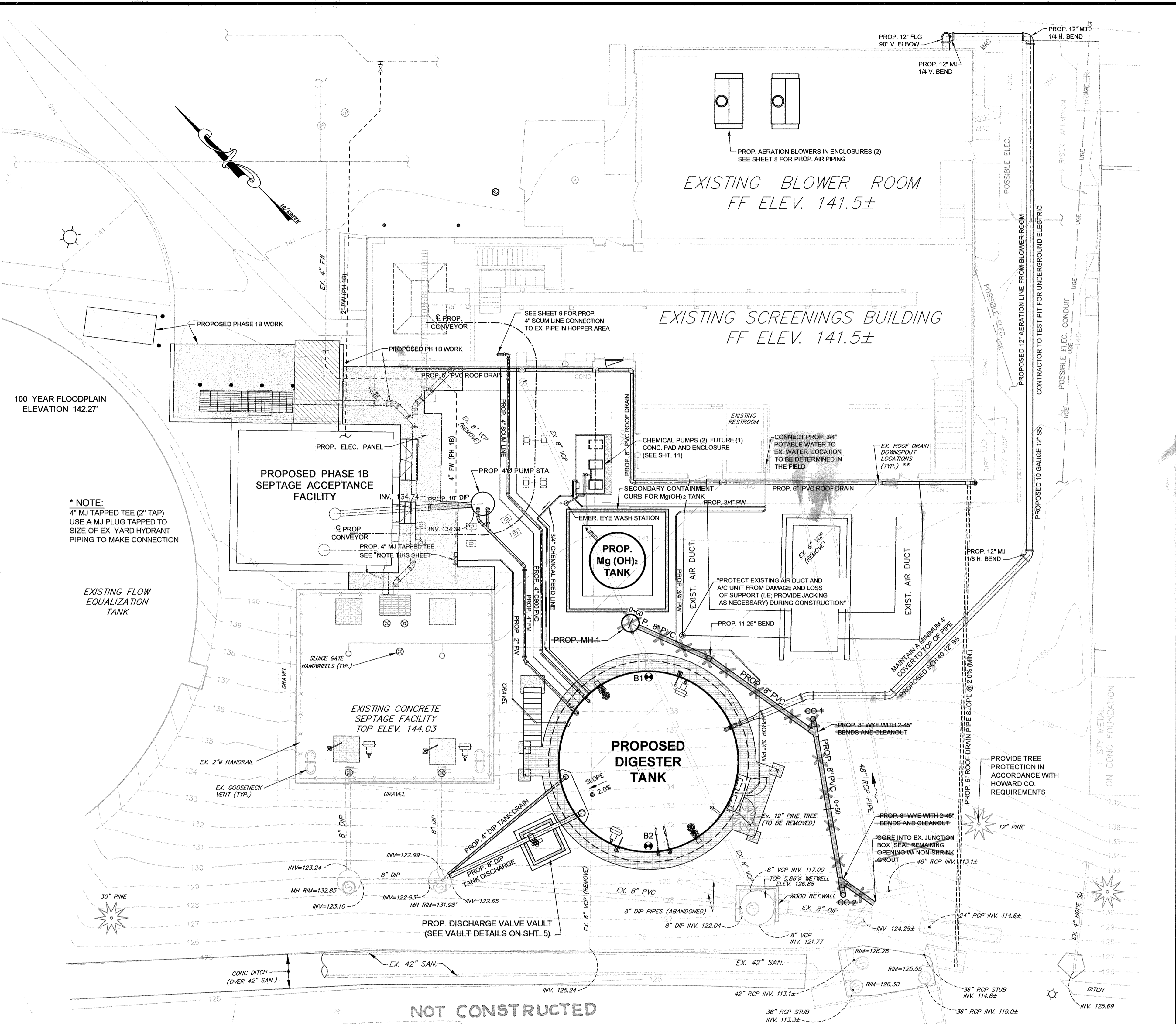
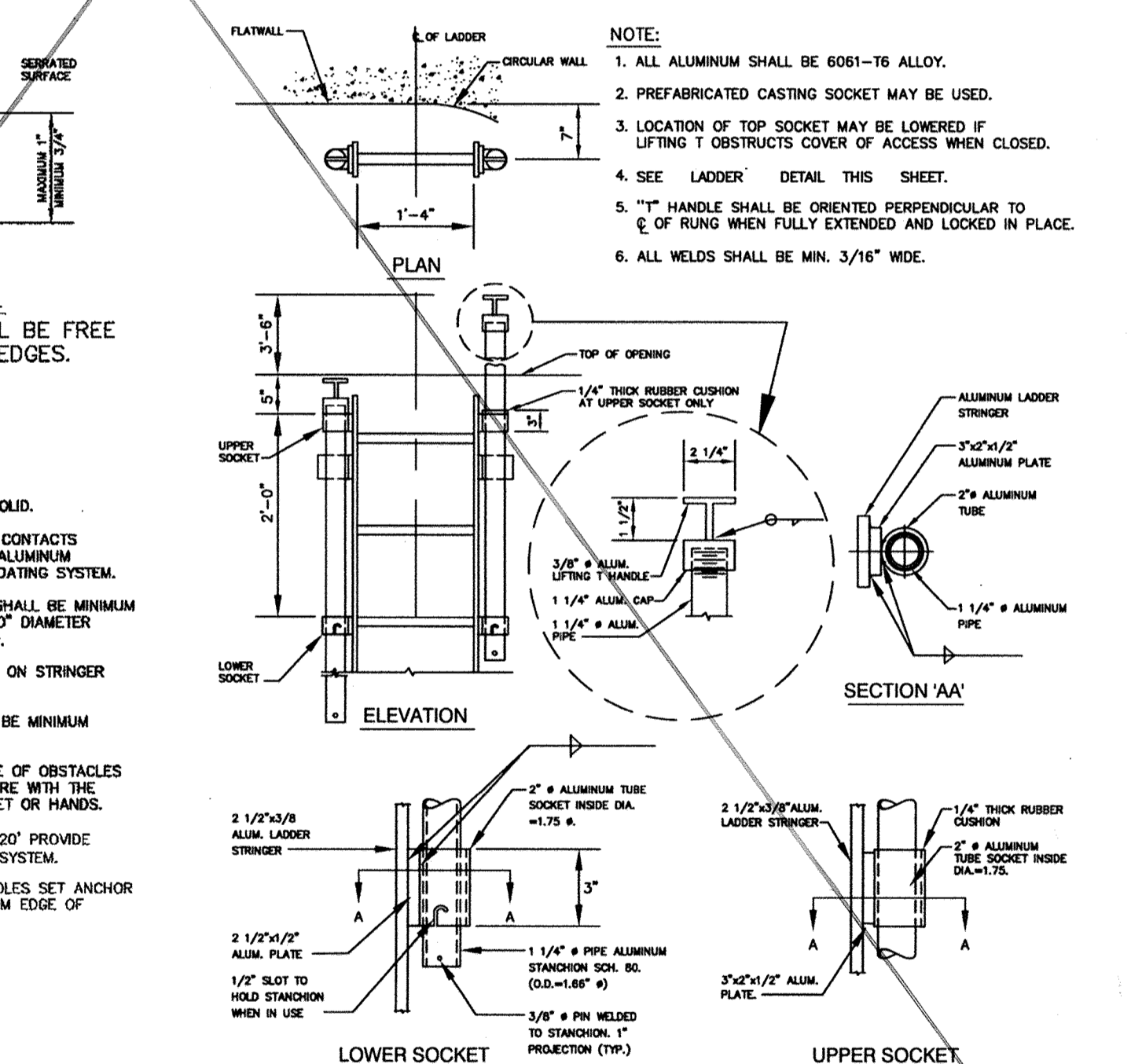
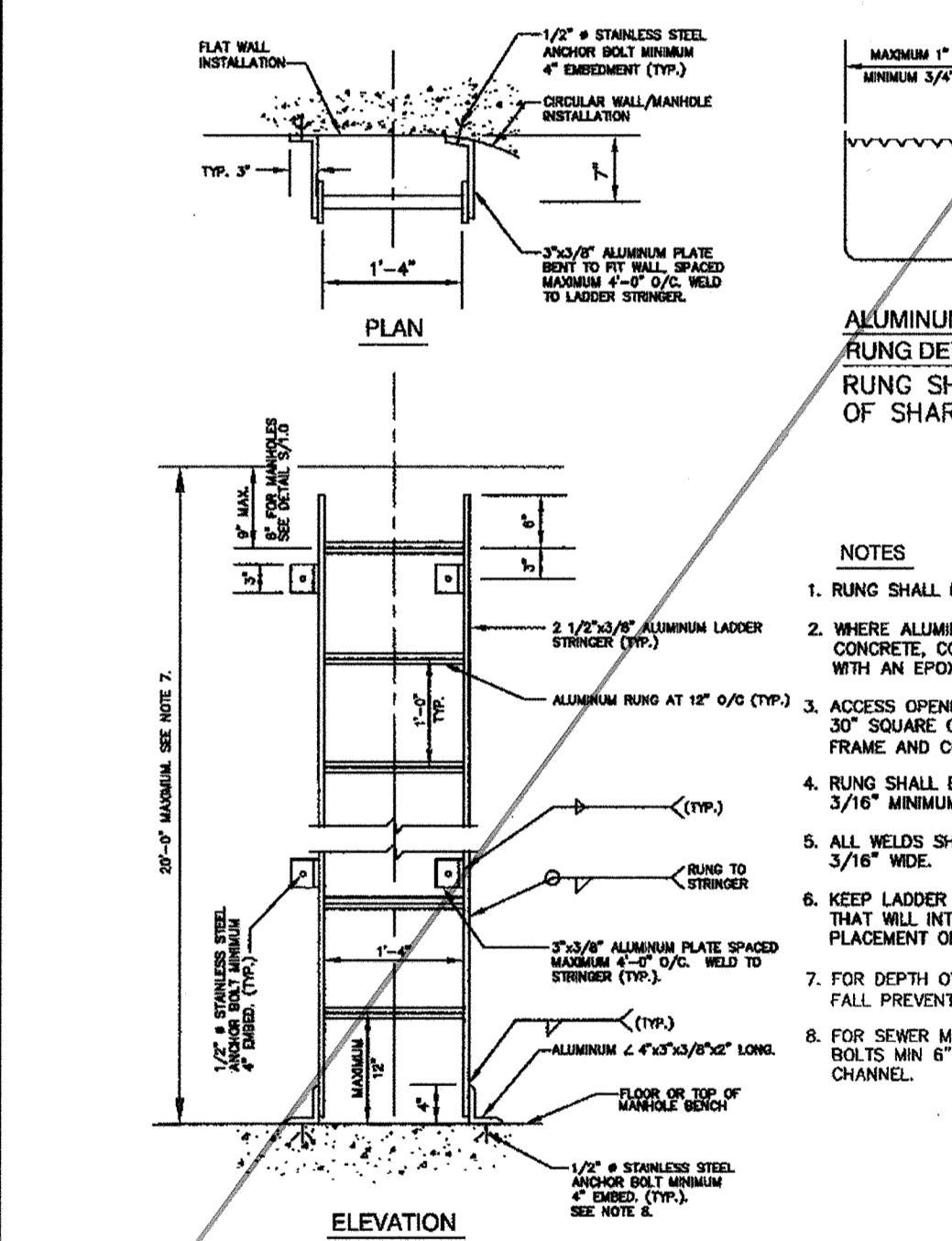
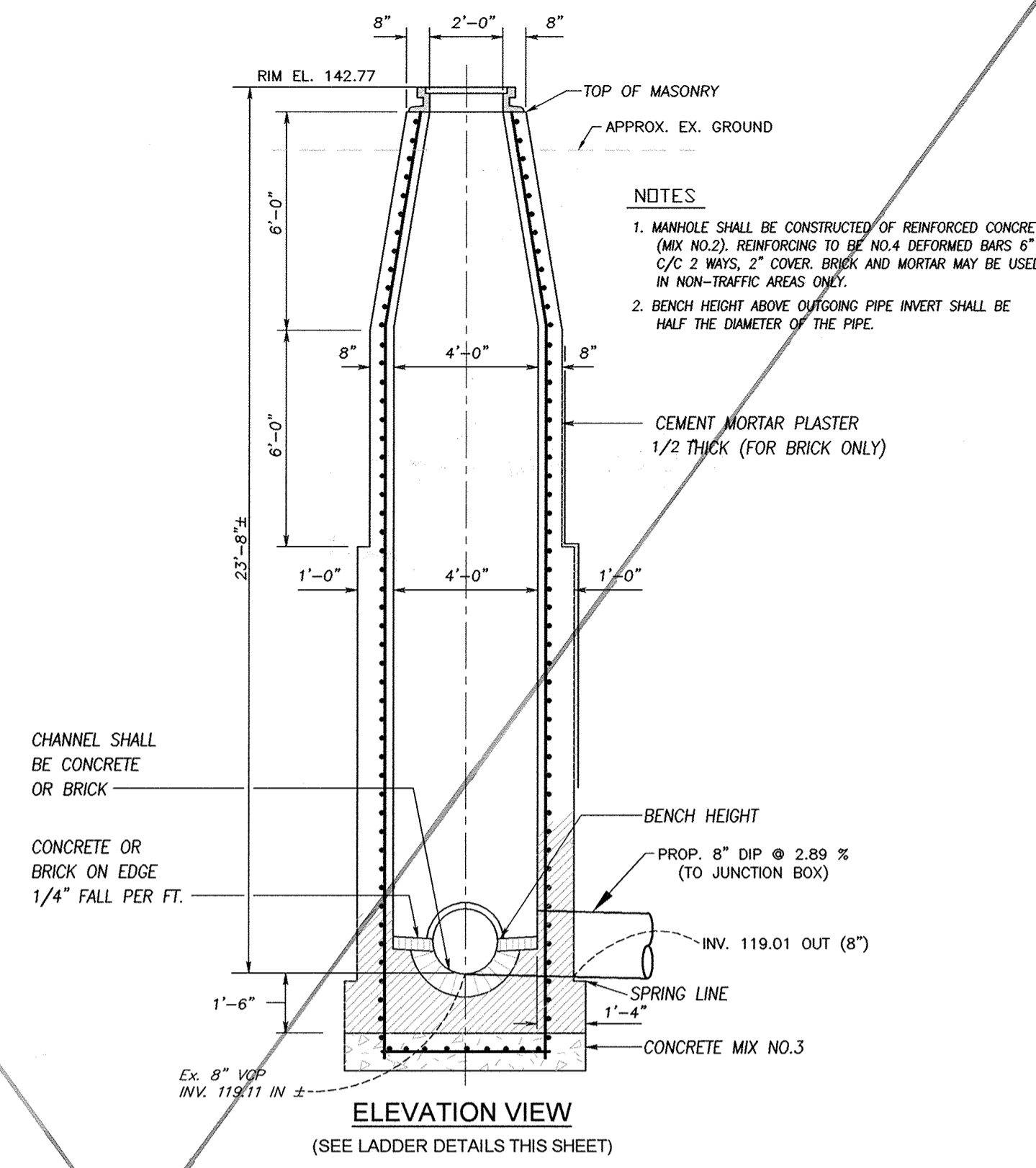
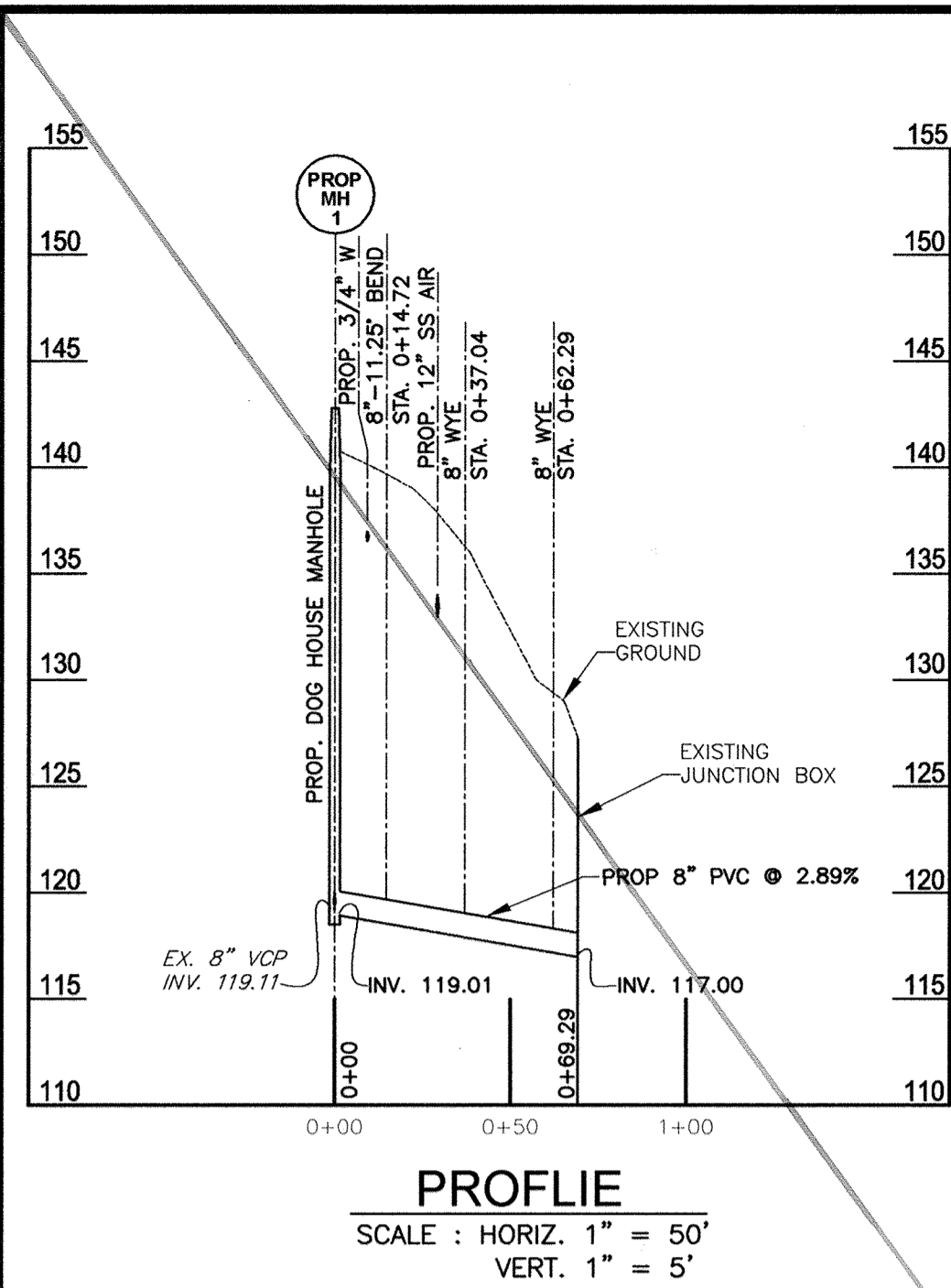
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21 OF 23

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**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

**PROFESSIONAL CERTIFICATION**

I, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 10966 EXPIRATION DATE: MAY 31, 2012

*Thomas H. DellePelle* 2/8/12  
Signature of Engineer Date

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

2/9/12  
DATE

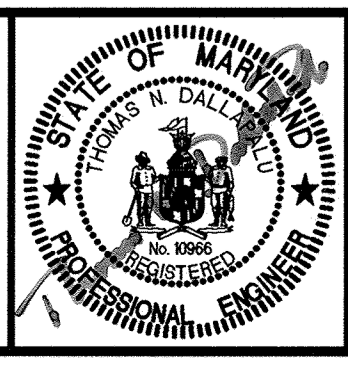
*Simon C. ...*  
CHIEF, BUREAU OF UTILITIES

2/9/12  
DATE

*Thomas E. ...*  
CHIEF, UTILITY DESIGN DIVISION

2/9/12  
DATE

**Dewberry**  
Dewberry & Davis LLC  
3106 LORD BALTIMORE DRIVE  
SUITE 110  
BALTIMORE, MD 21244-2662  
410.295.9500  
FAX: 410.265.8875



DES:	RJP	BY	NO.	REVISIONS	DATE
DRN:	CD				
CHK:	TND				
DATE:	1/7/12				

**ADD/ALT ITEM NO.1**  
**8" DIA. PC-1 DRAINAGE**  
**LINE RELOCATION**

60' SCALE MAP NO. 47  
BLOCK NO. 24

**LPWRP SCUM AND SEPTAGE FACILITY (PHASE 2)**

**CAPITAL PROJECT S-6245**  
**CONTRACT 20-4695**

ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN  
SHEET 23 OF 23

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